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Submitted Electronically via EDIS and in Copies to the Commission, Investigation No. 332-540

Lisa R. Barton

Acting Secretary to the Commission.

United States International Trade Commission

500 E Street, SW

Washington, D.C. 20024

Re: IIPA Written Submission Related to: *International Trade Commission, Digital Trade in the U.S. and Global Economies, Part 2*, 78 Fed. Reg. 12787, February 25, 2013.

To the United States International Trade Commission:

The International Intellectual Property Alliance (IIPA),¹ a private sector coalition formed in 1984 of trade associations representing U.S. copyright-based industries, appreciates the opportunity to provide the United States International Trade Commission with this written submission related to *International Trade Commission, Digital Trade in the U.S. and Global Economies, Part 2*. IIPA participated in Part 1 through the submission of a Pre-Hearing Brief and Statement related to: *International Trade Commission, Digital Trade in the U.S. and Global Economies, Parts 1 and 2* in February 2013 and testified at the March 2013 hearing.²

¹ The IIPA is a private sector coalition, formed in 1984, of trade associations representing U.S. copyright-based industries working to improve international protection and enforcement of copyrighted materials and to open foreign markets closed by piracy and other market access barriers. IIPA's seven member associations represent over 3,200 U.S. companies producing and distributing materials protected by copyright laws throughout the world. These include all types of computer software, including operating systems, systems software such as databases and security packages, business applications, and consumer applications such as games, personal finance, and reference software, free software, open source software, and software as a service; entertainment software including interactive games for videogame consoles, handheld devices, personal computers and the Internet, and educational software; motion pictures, television programming, DVDs and home video and digital representations of audiovisual works; music, records, CDs, and audiocassettes; and fiction and non-fiction books, education instructional and assessment materials, and professional and scholarly journals, databases and software in all formats. Members of the IIPA include [Association of American Publishers](#), [BSA | The Software Alliance](#), [Entertainment Software Association](#), [Independent Film & Television Alliance](#), [Motion Picture Association of America](#), [National Music Publishers' Association](#), and [Recording Industry Association of America](#).

² See International Intellectual Property Alliance (IIPA), *IIPA Pre-Hearing Brief and Statement Related to: International Trade Commission, Digital Trade in the U.S. and Global Economies, Part 1; Institution of Investigation and Scheduling of Hearing, Investigation No. 332-531*, 78 Fed. Reg. 2690, January 14, 2013; and *International Trade Commission, Digital Trade in the U.S. and Global Economies, Part 2; Institution of Investigation and Scheduling of Hearing, Investigation No. 332-540*, 78 Fed. Reg. 12787, February 25, 2013, February 28, 2013, at http://www.iipa.com/pdf/2013_Feb28_IIPA_USITC_Digital_Trade_Statement.pdf. See also IIPA, *IIPA Supplemental Post-Hearing Written Submission Related to: International Trade Commission, Digital Trade in the U.S. and Global Economies, Part 1; Institution of Investigation and Scheduling of Hearing, Investigation No. 332-531*, 78 Fed. Reg. 2690, January 14, 2013; and *International Trade Commission, Digital Trade in the U.S. and Global Economies, Part 2; Institution of Investigation and Scheduling of Hearing, Investigation No. 332-540*, 78 Fed. Reg. 12787, February 25, 2013, March 21, 2013, at http://www.iipa.com/pdf/2013_Mar21_IIPA_USITC_Digital_Trade_Supplemental.pdf.



Digital Trade in the U.S. and Global Economies Part 2 Report Objectives

According to the USITC, following from its first report,³ and to “the extent practicable,” the second report will: 1) estimate the value of U.S. digital trade and the potential growth of this trade (with the potential growth estimates to highlight any key trends and discuss their implications for U.S. businesses and employment); 2) provide insight into the broader linkages and contributions of digital trade to the U.S. economy (such linkages and contributions may include effects on consumer welfare, output, productivity, innovation, business practices, and job creation); 3) present case studies that examine the importance of digital trade to selected U.S. industries that use or produce such goods and services, with some of the case studies to highlight, if possible, the impact of digital trade on small and medium-sized enterprises; and 4) examine the effect of notable barriers and impediments to digital trade on selected industries and the broader U.S. economy.

IIPA Input Into Digital Trade in the U.S. and Global Economies Part 2

In Part 2 of the USITC’s *Digital Trade in the U.S. and Global Economies* investigation, IIPA urges the Commission to make further attempts to evaluate more comprehensively the contribution of copyright-intensive goods and services to digital trade, given the known data points from the series of *Copyright Industries in the U.S. Economy* reports (the latest which was released in November 2013, and which is attached as Appendix A),⁴ the U.S. Commerce Department’s 2012 report, *Intellectual Property and the U.S. Economy: Industries in Focus* (which is attached as Appendix B),⁵ the December 2013 White Paper from the U.S. Bureau of Economic Analysis and the National Endowment for the Arts Office of Research & Analysis, *NEA Guide to the U.S. Arts and Cultural Production Satellite Account: Including a Blueprint for Capturing the Economic Value of Arts and Cultural Workers and Volunteers* and related documents (the *Guide* is attached as Appendix C) (describing positive adjustments in the “Arts and Cultural Production Satellite Account (ACPSA)”), and other available data points.⁶ While limited by the scope of publicly-available U.S. Government data, and the relative lack of disaggregation of data points which would encompass the Commission’s definition of “digital trade,” we hope the Commission can employ methodologies to disaggregate some of this already-available data to appropriately reflect the size and scope of U.S. digital trade,

³ United States International Trade Commission, *Digital Trade in the U.S. and Global Economies, Part 1*, Investigation No. 332-531, USITC Publication 4415, July 2013, at <http://www.usitc.gov/publications/332/pub4415.pdf> [hereinafter USITC Digital Trade Part 1].

⁴ Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 2013 Report*, November 19, 2013. The report and summary can be accessed at http://www.iipa.com/copyright_us_economy.html.

⁵ United States Commerce Department, Economic and Statistics Administration and the United States Patent and Trademark Office, *Intellectual Property and the U.S. Economy: Industries in Focus*, March 2012, at http://www.uspto.gov/news/publications/IP_Report_March_2012.pdf [hereinafter Commerce Department, *IP and the U.S. Economy*].

⁶ Art Works and National Endowment for the Arts, *NEA Guide to the U.S. Arts and Cultural Production Satellite Account: Including a Blueprint for Capturing the Economic Value of Arts and Cultural Workers and Volunteers*, December 2013, at http://arts.gov/sites/default/files/nea_guide_white_paper.pdf. See National Endowment for the Arts, *Arts Data Profile 2, Accounting for the Nation’s Arts and Cultural Goods and Services*, December 5, 2013, at <http://arts.gov/artistic-fields/research-analysis/data-profiles/issue-2> and <http://arts.gov/artistic-fields/research-analysis/data-profiles/issue-2#sthash.viyDxkqZ.dpuf> [hereinafter NEA/BEA Arts and Culture Satellite Account]. See also National Endowment for the Arts, *U.S. Bureau of Economic Analysis and National Endowment for the Arts Release Preliminary Report on Impact of Arts and Culture on U.S. Economy: Arts and Cultural Production Account for 3.2 Percent -- or \$504 Billion -- of Gross Domestic Product in 2011*, December 5, 2013, at <http://arts.gov/news/2013/us-bureau-economic-analysis-and-national-endowment-arts-release-preliminary-report-impact>.



taking into account the integral linkage between copyright-related products and services to the overall valuation of digital trade.

The Significance of Copyright-Intensive Industries Within the Valuation of Digital Trade

The size and scope of copyright-intensive goods and services within the overall valuation of digital trade is considerable, even taking into account the exclusion of “commerce in most physical goods, such as goods ordered online and physical goods that have a digital counterpart such as books and software, music, and movies sold on CDs or DVDs.” In Part 2, we urge the Commission to make further attempts to evaluate the contribution of copyright-intensive goods and services to digital trade. In November 2013, IIPA released the latest update of the comprehensive economic report, *Copyright Industries in the U.S. Economy: The 2013 Report*, prepared by Stephen Siwek of Economists Inc. The study tracks the economic impact and contributions of U.S. industries creating, producing, distributing, broadcasting or exhibiting copyright materials, including computer software, videogames, books, newspapers, periodicals and journals, motion pictures, music, and radio and television programming. For the first time, the “core” copyright industries added over \$1 trillion in value to the U.S. economy in a single year, accounting for almost 6.5 percent of the total U.S. GDP.⁷ The “total” copyright industries contributed \$1.7 trillion in value to the U.S. economy.⁸

The core copyright industries employed nearly 5.4 million U.S. workers – nearly 5 percent of total private sector employment– with jobs paying an average of 33 percent more than the rest of the workforce. Employment in the core industries also grew at an aggregate annual rate of 4.7 percent, more than twice the rate of growth for the U.S. economy as a whole. Certain sectors of the core copyright industries accounted for \$142 billion in foreign sales and exports, far more than sectors such as aerospace, agriculture, food, and pharmaceuticals and medicines.⁹ Studies employing virtually the same agreed-upon methodology in 40 countries have been documented by the World Intellectual Property Organization (WIPO) in its report, *WIPO Studies on the Economic Contribution of Copyright: Overview* (2013).¹⁰ Other studies have measured the contribution of certain sectors to

⁷ The “core” copyright industries are those whose primary purpose is to create, produce, distribute, or exhibit copyright materials.

⁸ The “total” copyright industries include not only the core copyright but also the partial copyright, non-dedicated support, and interdependent industries. “Partial” copyright industries are industries in which only some aspect or portion of the products that they create they can qualify for copyright protection. These industries range from fabric to jewelry to furniture to toys and games. “Non-dedicated support” industries include industries that distribute both copyright and non-copyright protected materials to business and consumers. Examples here include transportation services, telecommunications and wholesale and retail trade. As in past studies, only a portion of the total value added by these industries is considered to be part of the copyright industries. “Interdependent” industries include those that produce, manufacture, and sell equipment whose function is primarily to facilitate the creation, production, or use of works of copyrighted matter. These industries include manufacturers, wholesalers and retailers of TV sets, personal computers, and other devices, and usage dependent products including blank recording material, and certain categories of paper.

⁹ The sectors represented in the *Copyright Industries* report are record music; motion pictures, TV, video; computer software; and newspapers, books, and periodicals. These numbers are not reflective of government statistics, although we understand that, in recent years, efforts have been undertaken to improve the scope of copyright product export statistics that are gathered in government surveys. It is important to accurately count exports, especially in light of the increasing importance of digital trade in legitimate copyright goods and services around the globe, and as reflected by the announcement of this investigation by the USITC.

¹⁰ *WIPO Studies on the Economic Contribution of Copyright: Overview* (2013), available at http://www.wipo.int/export/sites/www/copyright/en/performance/pdf/economic_contribution_analysis_2012.pdf, last accessed December 17, 2013. That report was provided to the Commission in IIPA’s February 2013 pre-hearing brief. In 2003, WIPO published a guidebook on the economic parameters to develop such studies entitled *Guide on Surveying the Economic Contribution of the Copyright-Based Industries* (WIPO Publication No. 893) (2003), at http://www.wipo.int/export/sites/www/itpublications/en/copyright/893/wipo_pub_893.pdf. The Guide, developed by an experts’ group, describes methodologies for measuring the role of copyright industries in domestic



national economies,¹¹ or the benefits of reducing software piracy on national GDP.¹² These various industry-led studies are relevant to the four indicators to be determined in Part 2 of the USITC investigation.

The U.S. Commerce Department, in April 2012, released a comprehensive report, entitled *Intellectual Property and the U.S. Economy: Industries in Focus*, which finds that intellectual property (IP)-intensive industries support at least 40 million jobs and contribute more than \$5 trillion dollars to, or 34.8 percent of, U.S. gross domestic product (GDP).¹³ Finally, as noted, the latest reporting in December 2013 of positive adjustments in the “Arts and Cultural Production Satellite Account (ACPSA)” by the U.S. Bureau of Economic Analysis and the National Endowment for the Arts Office of Research & Analysis demonstrates that in 2011, the production of arts and cultural goods and services contributed \$504.4 billion to the U.S. economy, amounting to 3.25 percent of GDP.¹⁴

Public data disaggregating digital trade in copyright (“the delivery of [copyright] products and services over either fixed-line or wireless digital networks”) is not readily available. In Part 2, we encourage the Commission to more accurately count legitimate value-added of copyright to the digital trade valuation.¹⁵

The Size of the Internet Market Devoted to Infringement of Copyright

In undertaking Part 2 of the USITC’s investigation, IIPA urges the Commission to take into account a chief impediment to growth of digital trade in copyright materials – namely, copyright infringement over the Internet and the broad distortions in legitimate trade effected by this form of unfair competition. When licensed services must compete against unlicensed competitors, not only does it result in a lack of uptake in legitimate services, but it also negatively affects the licensing environment as between creators and their licensed partners. We hope the Commission will fully examine the effect of these notable barriers and impediments to digital trade on the copyright industries and the broader U.S. economy (as indicated in the Commission’s aims). While the studies cited above amply demonstrate the contribution of copyright-based industries to the economy, they do not reveal the massive costs imposed by copyright piracy and other barriers to legitimate digital trade in copyright materials. Copyright industries are forced to face unfair competition from those who

economies. These national studies provide the economic underpinnings for efforts to reform copyright law and enforcement and to lower rates of copyright piracy.

¹¹ For example, the Motion Picture Association Asia Pacific has issued a series of “Economic Contribution of the Film and Television Industry” studies for India (2014), Indonesia (2012), Japan (2012), South Korea (2012), Thailand (2012), New Zealand (2009, 2012), Australia (2011), and Hong Kong (2009). See Motion Picture Association Asia-Pacific, *Research and Statistics*, at http://mpa-i.org/index.php/research_statistics.

¹² See BSA | The Software Alliance and INSEAD, *Competitive Advantage: The Economic Impact of Properly Licensed Software*, May 2013, at <http://portal.bsa.org/insead/index.html>.

¹³ See Commerce Department, *IP and the U.S. Economy*, *supra* note 5. In the Commerce Department study, copyright made up \$641 billion in value-added, but excluded some WIPO-approved “core” categories from its calculation.

¹⁴ NEA/BEA Arts and Culture Satellite Account, *supra* note 6. A great portion of this value is attributable to digital trade.

¹⁵ The USITC notes certain anecdotal sources of publicly-available data. The sources include Friedlander, “News and Notes on 2012 RIAA Music Industry Shipment and Revenue Statistics” (accessed April 5, 2013); Orden, “Online Movie Sales Log Rare Increase,” January 8, 2013; NPD Group, “Research Shows \$14.80 Billion Spent on Video Game Content,” February 6, 2013; and Owen, “Ebooks Made Up 20% of the U.S. Consumer Book Industry,” May 15, 2013. See USITC Digital Trade Part 1, Table ES.2, at xvi. These anecdotal reports of “revenue” cannot be said to fully reflect the value added to GDP from the industry sectors cited, and the USITC acknowledges that “there are significant shortcomings in the available data related to the value of digital trade.”



engage in digital piracy as a high-profit, low risk enterprise. Today, legitimate online businesses built on copyright are facing increased threats, as they must compete with the massive proliferation of illegal online services unencumbered by costs associated with either producing copyrighted works or obtaining rights to use them.

IIPA participates in the Special 301 trade program, by which the U.S. government identifies countries that fail to provide adequate and effective copyright protection or fail to afford fair and equitable market access, thus, contributing to the understanding of the size and scope of piracy. IIPA's 2014 Special 301 Submission letter (without country appendices) is attached for the Commission's reference as Appendix D.¹⁶ IIPA also assists in bringing to light concerns over businesses built on Internet and mobile piracy, by participating in a U.S. Government-launched Special 301 "Out-of-Cycle Review of Notorious Markets." Through this process, the U.S. Government has successfully identified key online and physical marketplaces that are involved in online (as well as physical) intellectual property rights infringements. IIPA has participated in the notorious markets OCR every year since its inception. Most recently, in an October 2013 submission, IIPA identified almost 80 notorious online marketplaces – markets "where counterfeit trademark or pirated copyright products are prevalent to such a degree that the market exemplifies the problem of marketplaces that deal in infringing goods and help sustain global piracy and counterfeiting." The notorious markets recommended by IIPA include some of the most accessed websites in the world.¹⁷ The IIPA's notorious markets filing is attached for the Commission's reference as Appendix E.

On a global scale, an independent study released by BASCAP in 2011 entitled *Estimating the Global Economic and Social Impacts of Counterfeiting and Piracy* (the study is provided to the Commission as Appendix F) estimated the commercial value of digitally pirated music, movies and software (not losses) at \$30-75 billion in 2010, and growing to \$80-240 billion by 2015.¹⁸ Others have issued reports on the economic consequences of piracy for specific industry sectors.¹⁹ On January 14, 2014, the United Nations Office on Drugs and Crime (UNODC) launched a new global campaign to raise awareness among consumers of the harm being caused by the estimated \$250 billion a year illicit trafficking of counterfeiting and piracy.²⁰

¹⁶ IIPA, *IIPA Written Submission Regarding 2014 Special 301 Review: Identification of Countries Under Section 182 of the Trade Act of 1974: Request for Public Comment and Announcement of Public Hearing*, 79 Fed. Reg. 420 (Jan. 3, 2014), February 7, 2014, at <http://www.iipa.com/pdf/2014SPEC301COVERLETTER.pdf> [hereinafter IIPA 2014 Special 301 Submission]. The country appendices are also available at http://www.iipa.com/2014_SPEC301_TOC.htm.

¹⁷ IIPA, *IIPA Written Submission Re: 2013 Special 301 Out-of-Cycle Review of Notorious Markets: Request for Public Comments*, 78 Fed. Reg. 57924 (September 20, 2013), 78 Fed. Reg. 60367 (October 1, 2013) (*Extending Deadline*), October 25, 2013, at http://www.iipa.com/pdf/2013_Oct25_Notorious_Markets.pdf. The U.S. Trade Representative issued its "notorious markets" list on February 12, 2014. See United States Trade Representative, *2013 Out-of-Cycle Review of Notorious Markets*, February 12, 2014, at http://www.ustr.gov/sites/default/files/FINAL-PUBLISHED%202013_Notorious_Markets_List-02122014.pdf.

¹⁸ Frontier Economics, *Estimating the Global Economic and Social Impacts of Counterfeiting and Piracy: A Report Commissioned by Business Action to Stop Counterfeiting and Piracy (BASCAP)*, February 2011, at <http://www.icwbo.org/Advocacy-Codes-and-Rules/BASCAP/BASCAP-Research/Economic-impact/Global-Impacts-Study/>.

¹⁹ The Motion Picture Association has commissioned studies from IPSOS and Oxford Economics on *Economic Consequences of Movie Piracy: Japan* (2011) and *Economic Consequences of Movie Piracy: Australia* (2011). BSA Global Software Piracy Study (2012) estimating the software piracy rate and commercial value of unlicensed software in more than 100 markets in 2011 at www.bsa.org/globalstudy. BSA plans to release an updated study in the second quarter of 2014.

²⁰ See United Nations Office on Drugs and Crime (UNODC), *'Counterfeit: Don't Buy Into Organized Crime' - UNODC Launches New Outreach Campaign on \$250 Billion a Year Counterfeit Business*, January 14, 2014, at <http://www.unodc.org/counterfeit/>, accessed January 24, 2014. The campaign, *Counterfeit: Don't Buy Into Organized Crime*, informs consumers that buying counterfeit goods could be funding organized criminal groups, puts consumer health and safety at risk, and contributes to other ethical and environmental



Estimates now suggest that almost 2.8 billion individuals use the Internet as of 2013, according to the International Telecommunications Union (ITU). ITU estimates almost the same number of mobile and fixed broadband users, due to a surge in mobile broadband connectivity which has almost doubled in the past two years. This connectivity has had a positive transformative effect on many economies, and provides significant opportunities to copyright-intensive industries to build legitimate businesses based on digital trade in their products and services. Unfortunately, these opportunities are compromised by the challenges of Internet and mobile piracy. According to NetNames, an astonishing 23.8% of all Internet bandwidth in North America, Europe, and the Asia-Pacific was devoted to copyright infringement.²¹ The NetNames study is attached for the Commission's reference as Appendix G. The NetNames study updated a 2011 study conducted by Envisional, concluding that nearly half of all infringing activity occurred using BitTorrent, with the rest divided among cyberlockers, peer-to-peer (P2P) downloading and uploading, forums or bulletin boards, and streaming.²² Research also indicates there is a correlation between shutting down a major suspected piracy service, or improving enforcement legislation, and increases in legitimate distribution of copyright materials.²³

The harm from Internet (and mobile) piracy cannot be overstated. Unauthorized downloading or streaming of a motion picture, for example, often sourced to a single illegal camcording incident, can decimate box office sales and harm subsequent release windows.²⁴ Online and mobile piracy threatens the viability of licensed platforms, and erodes the capacity of artists, musicians, filmmakers, performers and songwriters to earn a living from their craft. Online piracy of entertainment software continues at prolific rates, facilitated by sites that link to infringing copies stored on cyberlockers or through peer to peer-to-peer (P2P) networks. Book and journal publishers are harmed by sites that provide and deliver unauthorized digital copies of medical and scientific journal articles on an illegal subscription basis, as well as sites that traffic in illegally obtained subscription login credentials, and increasingly face online piracy of trade books (fiction and non-fiction) and academic textbooks. Infringing software of all types is also prevalent on online sites, which constitutes a major source for unlicensed software for both consumers and business enterprises. IIPA has identified several areas to effectively address Internet and mobile piracy, including establishing an adequate legal framework;

concerns. See also International Intellectual Property Alliance (IIPA), *Statement of IIPA Hailing United Nations New Campaign "Counterfeits: Don't Buy Into Organized Crime,"* January 14, 2014, at http://www.iipa.com/pressreleases/2014_Jan14_IIPA_Statement_UN_Anti_Counterfeit_Program.PDF.

²¹ David Price, *Sizing the Piracy Universe*, NetNames, September 2013, at <https://s3.amazonaws.com/www2.itif.org/panelists+powerpoints/2013-netnames-piracy.pdf> (from an Information Technology & Innovation Foundation event entitled "The Size and Shape of Online Piracy," September 17, 2013, at the Russell Senate Office Building). A power point presentation given by the author at the event, explaining the updated statistics from the Envisional study is available at <https://s3.amazonaws.com/www2.itif.org/panelists+powerpoints/2013-sizing-piracy-universe-ppt.pdf>.

²² Envisional, *Technical Report: An Estimate of Infringing Use of the Internet*, January 2011, at http://documents.envisional.com/docs/Envisional-Internet_Usage-Jan2011.pdf.

²³ See, e.g., Brett Danaher, Michael D. Smith, Rahul Telang, Siwen Chen, *The Effect of Graduated Response Anti-Piracy Laws on Music Sales: Evidence from an Event Study in France*, January 21, 2012, available at SSRN: <http://ssrn.com/abstract=1989240> or <http://dx.doi.org/10.2139/ssrn.1989240> (increased consumer awareness of HADOPI caused iTunes song and album sales to increase by 22.5% and 25% respectively relative to changes in the control group); Dianna Dilworth, *How to Stop Piracy: Carnegie Mellon Professor Michael Smith at DBW*, January 16, 2013, at http://www.mediabistro.com/appnewser/how-to-stop-piracy-carnegie-mellon-professor-michael-smith-at-dbw_b31162 (Carnegie-Mellon Economist Michael D. Smith indicates his research demonstrates that every 1% reduction in *Megaupload* usage translated into a 2.6-4.1% increase in legitimate digital sales).

²⁴ For the independent sector of the motion picture and television industry, such piracy also drastically reduces the license fees that may be obtained from local distributors around the world, thus removing the incentive and often the ability for the independents to finance and produce a particular film or television program altogether.



adopting appropriate civil, administrative, and criminal procedures; and fostering effective voluntary efforts.²⁵

Increasingly, the role of advertising and ad networks in sustaining piracy has come under scrutiny. Some companies have decided to take affirmative steps to terminate such practices. In 2012, upon learning that their ad networks had placed advertising for Coca-Cola and Samsung on the notorious piracy website *zing* (a social network site which enables mass infringement of copyright materials with search portals for pirate materials in several languages and featuring infringing content from many countries), those companies responsibly halted all advertisement on the site.²⁶ In some cases, advertisers may be unaware that their advertisements appear on sites that facilitate access to infringing content. Industry has responded with best practices in some areas, but more can be done.²⁷ Similar choices are being made by payment processors (online services as well as more traditional credit card companies) to halt services to pirate or counterfeit operations.²⁸ As an indication that more needs to be done to establish the right framework for legitimate commerce in copyright materials, the music industry just noted its 100 millionth notice to a major search engine.²⁹

Conclusion

In conclusion, IIPA appreciates the opportunity to provide the Commission with further input into the *Digital Trade in the U.S. and Global Economies* investigation, and hope this input assists the Commission to meet its objectives for Part 2 of that investigation. We remain available as needed to assist the Commission in its ongoing work.

Respectfully submitted,

Michael Schlesinger
International Intellectual Property Alliance

²⁵ As IIPA has noted in public submissions, governments must attack both supply and demand. Education and criminal and administrative actions all have a role to play. A sound framework for civil actions, and legislation that creates incentives for network service providers to curb the use of their networks and services for infringing purposes, are also essential. For a more detailed discussion, see IIPA 2014 Special 301 Submission and country appendices, *supra* note 16.

²⁶ See, e.g., Chris Brummitt, *APNewsBreak: Coke, Samsung Pull Vietnam Site Ads*, Associated Press, October 3, 2012, at <http://bigstory.ap.org/article/coke-samsung-pull-ads-vietnam-website-citing-concerns-over-unlicensed-music-downloads> (reporting decisions by Coca-Cola and Samsung to divest from *zing.com* over piracy concerns).

²⁷ Interactive Advertising Bureau (IAB), *Standards, Guidelines & Best Practices*, at <http://www.iab.net/guidelines/508676>. See also *Best Practices Guidelines for Ad Networks to Address Piracy and Counterfeiting*, July 2013, at <http://www.2013ippractices.com/>.

²⁸ For example, in the “CD Cheap” case, a criminal counterfeiting ring that employed 10,000 slave computers to sell counterfeit software, was shut down when financial institutions closed the merchant accounts of the sites involved, for violations of terms of service prohibiting fraudulent activities.

²⁹ Cary Sherman, *Google's 100 Million Notices*, The Hill, January 13, 2014, at <http://thehill.com/blogs/ballot-box/195107-googles-100-million-notices> (noting the music industry had sent its 100 millionth copyright takedown notice to Google in January 2014, without a “demonstrable demotion of sites that receive a high volume of piracy notices”).



APPENDIX A

Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 2013 Report*, November 19, 2013, available at http://www.iipa.com/copyright_us_economy.html.

COPYRIGHT INDUSTRIES IN THE U.S. ECONOMY



The 2013 Report

By Stephen E. Siwek
Economists Incorporated

Prepared for the
International Intellectual Property Alliance®

COPYRIGHT INDUSTRIES IN THE U.S. ECONOMY



The 2013 Report

Copyright Industries in the U.S. Economy: The 2013 Report is the fourteenth report on the U.S. copyright industries prepared for the International Intellectual Property Alliance (IIPA) since 1990.

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This latest *Report* updates and supplements thirteen previous reports produced by Economists Incorporated for the IIPA:

- Stephen E. Siwek and Harold Furchgott-Roth, *Copyright Industries in the U.S. Economy* (released in November 1990)
- Stephen E. Siwek and Harold Furchgott-Roth, *Copyright Industries in the U.S. Economy: 1977-1990* (released in September 1992)
- Stephen E. Siwek and Harold Furchgott-Roth, *Copyright Industries in the U.S. Economy: 1993 Perspective* (released in October 1993)
- Stephen E. Siwek and Harold Furchgott-Roth, *Copyright Industries in the U.S. Economy: 1977-1993* (released in January 1995)
- Stephen E. Siwek and Gale Mosteller, *Copyright Industries in the U.S. Economy: The 1996 Report* (released in October 1996)
- Stephen E. Siwek and Gale Mosteller, *Copyright Industries in the U.S. Economy: The 1998 Report* (released in May 1998)
- Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 1999 Report* (released in December 1999)
- Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 2000 Report* (released in December 2000)
- Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 2002 Report* (released in April 2002)
- Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 2004 Report* (released in October 2004)
- Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 2006 Report* (released in January 2007)
- Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 2003-2007 Report* (released in July 2009)
- Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 2011 Report* (released in November 2011)

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ABOUT THE AUTHOR

Stephen E. Siwek is Principal, Economists Incorporated, 2121 K Street, NW, Suite 1100, Washington, DC 20037, www.ei.com. He is co-author of *International Trade in Computer Software* (Quorum Books, 1993) and *International Trade in Films and Television Programs* (American Enterprise Institute/Ballinger Publishing Company, 1988) and has written and lectured extensively on trade in media services in the United States and Europe. Mr. Siwek has served as an economic and financial consultant to numerous communications and media corporations and trade associations. He is the principal author of thirteen prior reports on the economic contributions of the U.S. copyright industries to the U.S. economy. Mr. Siwek has also been instrumental in furthering the global efforts of the World Intellectual Property Organization (“WIPO”) to encourage other nations to measure the economic contribution of copyright-based industries in their own countries. In this regard, Mr. Siwek has been closely associated with the development of the WIPO “Guide” for the measurement of copyright industry contributions and he has directly assisted a number of foreign governments in the preparation of their own studies.

ACKNOWLEDGEMENTS

Economists Incorporated is grateful to the International Intellectual Property Alliance (IIPA) and its member associations for their support and assistance in the drafting of this *Report*. In particular, we would like to thank Michael Schlesinger of the IIPA for his guidance throughout this process. We would also like to thank Pamela Burchette for her assistance in preparing this *Report*.

The IIPA is a private sector coalition, formed in 1984, of trade associations representing U.S. copyright-based industries in bilateral and multilateral efforts working to improve international protection and enforcement of copyrighted materials, and to open up foreign markets closed by piracy and other market access barriers. IIPA’s seven member associations represent over 3,200 U.S. companies producing and distributing materials protected by copyright laws throughout the world—all types of computer software, including operating systems, systems software such as databases and security packages, business applications, and consumer applications such as games, personal finance, and reference software, free software, open source software, and software as a service, entertainment software including interactive games for videogame consoles, handheld devices, personal computers and the Internet, and educational software; motion pictures, television programming, DVDs and home video and digital representations of audiovisual works; music, records, CDs, and audiocassettes; and fiction and non-fiction books, education instructional and assessment materials, and professional and scholarly journals, databases and software in all formats. Members of the IIPA include Association of American Publishers, BSA | The Software Alliance, Entertainment Software Association, Independent Film & Television Alliance, Motion Picture Association of America, National Music Publishers’ Association, and Recording Industry Association of America.

PREFACE

Since 1984, IIPA and its association members, representing industries reliant on copyright – producers and distributors of software, movies, music, videogames, and books and journals for the world – have worked in partnership with the U.S. government to improve the ability of the copyright industries to do business in foreign markets. These efforts have resulted in significant improvements in copyright laws and enforcement around the world and in the lowering of market access barriers and addressing other policies that hinder these industries' ability to compete on a level playing field in global markets. These improvements in turn have had a substantial positive impact over the years on how these industries contribute to value added to the U.S. economy; to employment and wages; and to foreign sales and exports, thereby benefiting countless millions of individuals and enterprises in the United States.

To quantify the contribution of the copyright industries, IIPA commenced a series of economic studies in 1990. *Copyright Industries in the U.S. Economy: The 2013 Report*, the fourteenth such report, by Stephen E. Siwek of Economists Incorporated, covers the period 2009-2012. This *Report* shows that the copyright industries make up an increasingly large percentage of value added to GDP; create more and better-paying jobs; grow faster than the rest of the U.S. economy; and contribute substantially to U.S. foreign sales and exports, outpacing many industry sectors. The specific findings of this year's *Report* mark a milestone: for the first time, the contribution of the core copyright industries of the U.S. economy surpassed one trillion dollars in 2012.¹

As international trade has increased and glo-

balized, foreign governments and international IP organizations such as the World Intellectual Property Organization (WIPO) have become acutely aware of the significance of copyright industries to national economies, and the linkage to their economic growth, technological innovation, and cultural diversity. In 2003, WIPO took a critical step forward in issuing a *Guide on Surveying the Economic Contribution of the Copyright-Based Industries*. The *Guide*, developed by an experts' group which included the author of this *Report*, Stephen E. Siwek, describes methodologies for measuring the role of copyright industries in domestic economies that have now been adopted in well over 40 countries' national reports, with more in the pipeline.² These national studies provide the economic underpinnings for efforts to reform copyright law and enforcement and to lower rates of copyright piracy.

Despite the robust achievements of the copyright industries during the period covered in this *Report*, significant challenges remain. As the copyright industries derive a growing percentage of their revenue from sales outside the United States, global online and physical copyright piracy, as well as market access and other stifling discriminatory barriers to doing business in various countries, inhibit the growth of the copyright industries in the U.S. and globally. Economic reports such as this one underscore what is at stake. They provide a compelling argument for more effective legal, enforcement, and market access regimes to promote and foster the growth of the copyright industries in the U.S. and in countries around the world.

– Michael Schlesinger and Steven J. Metalitz,
International Intellectual Property Alliance

¹ The "core" copyright industries are those industries whose primary purpose is to create, produce, distribute or exhibit copyright materials, and include such sectors as computer software, videogames, books, newspapers, periodicals and journals, motion pictures, recorded music, and radio and television broadcasting.

² The various national studies are described and compared in a WIPO document, *2013 WIPO Studies on the Economic Contribution of the Copyright Industries Overview*. National studies conducted to date include: Australia (2011), Bhutan (2011), Brunei (2011), Bulgaria (2011), Canada (2004), China (2009), Colombia (2006), Croatia (2007), Dominica (2012), Grenada (2012), Finland (2010), Hungary (2010), Jamaica (2007), Jordan (2012), Kenya (2009), Korea (2012), Latvia (2004), Lebanon (2007), Lithuania (2012), Malawi (2013), Malaysia (2008), Mexico (2006), Netherlands (2009), Pakistan (2010), Panama (2009), Peru (2009), Philippines (2006), Romania (2008), Russia (2007), Singapore (2007), Slovenia (2010), South Africa (2011), St. Kitts/Nevis (2012), St. Lucia (2012), St. Vincent (2012), Tanzania (2012), Thailand (2012), Trinidad and Tobago (2011), Ukraine (2008), and United States (2011).

I. EXECUTIVE SUMMARY

This report, *Copyright Industries in the U.S. Economy: The 2013 Report*, demonstrates that the core copyright industries of the United States – those industries whose primary purpose is to create, produce, distribute or exhibit copyright materials, and which include computer software, videogames, books, newspapers, periodicals and journals, motion pictures, recorded music, and radio and television broadcasting – provide significant value added to GDP; an increasing number of high-paying jobs; real growth which outpaces the rest of the economy; and substantial foreign sales and exports, surpassing many industry sectors.

Copyright Industries Contribute Significantly to U.S. Gross Domestic Product (GDP)

- In 2012, the value added by the core copyright industries to U.S. GDP exceeded \$1 trillion dollars (\$1,015.6 billion) for the first time, accounting for 6.48% of the U.S. economy.
- In 2012, the value added by the total copyright industries³ to GDP exceeded \$1.7 trillion (\$1,765 billion), accounting for 11.25% of the U.S. economy.

Copyright Industries Employ Millions of Workers Who Earn a “Compensation Premium”

- The core copyright industries employed nearly 5.4 million workers in 2012, accounting for 4.04% of the entire U.S. workforce, and 4.83% of total private employment in the U.S.
- The annual 2012 compensation paid to core copyright workers – \$85,644 – far exceeds the average annual compensation paid to all U.S. workers – \$64,594 – amounting to a 33%

“compensation premium” over the average U.S. annual wage.

- The total copyright industries employed more than 11.1 million workers in 2012, accounting for 8.35% of all U.S. employment, or 10% (9.99%) of all private employment in the United States. The average annual compensation paid to employees of the total copyright industries in 2012, \$75,926, exceeds the U.S. average annual wage by 18%.

Copyright Industries’ Real Growth Rates Outpace the Rest of the U.S. Economy

- During the period 2009-2012, the core copyright industries grew at an aggregate annual rate of 4.73%. The average annual growth rate of the entire U.S. economy over the same period was only 2.14%, less than half as much.
- During the same period, the total copyright industries grew at an annual rate of 4.99%.

Copyright Industries Contribute Significantly to Foreign Sales and Exports, Outperforming Many Major U.S. Industry Sectors

- Sales of select U.S. copyright sectors in overseas markets amounted to \$142 billion in 2012, a significant increase over previous years.
- As a comparison, the foreign sales of select copyright industry sectors exceed foreign sales of other major U.S. industries, including aerospace exports (\$106 billion), U.S. agricultural exports (\$70.1 billion), food (\$64.7 billion) and pharmaceuticals and medicines (\$50.9 billion).

³ The “total” copyright industries include not only the core copyright but also the partial copyright, non-dedicated support, and interdependent industries. “Partial” copyright industries are industries in which only some aspect or portion of the products that they create they can qualify for copyright protection. These industries range from fabric to jewelry to furniture to toys and games. “Non-dedicated support” industries include industries that distribute both copyright and non-copyright protected materials to business and consumers. Examples here include transportation services, telecommunications and wholesale and retail trade. As in past studies, only a portion of the total value added by these industries is considered to be part of the copyright industries. “Interdependent” industries include those that produce, manufacture, and sell equipment whose function is primarily to facilitate the creation, production, or use of works of copyrighted matter. These industries include manufacturers, wholesalers and retailers of TV sets, personal computers, and other devices, and usage dependent products including blank recording material, and certain categories of paper.

II. INTRODUCTION

Copyright Industries in the U.S. Economy: The 2013 Report is the fourteenth in a series issued over the last 23 years by Economists Incorporated, updating and supplementing thirteen prior reports prepared on behalf of the IIPA. This latest *Report* presents data on the value added contributions of the copyright sector to the U.S. economy; the percentage contribution of the copyright sector to the overall U.S. economy; the relative growth of the creative industries compared with the remainder of the economy; employment levels in the creative sector; the average compensation for workers in the copyright sector in comparison to other sectors; and the contributions of selected copyright industries to exports and foreign sales. The *Report* confirms once again that the U.S. copyright industries contribute significantly to U.S. GDP. The creative industries continue to outpace the rest of the economy in real growth. The copyright industries also continue to employ millions of workers whose average compensation levels substantially exceed the average level of compensation paid to all U.S. workers. The core copyright industries of the U.S. continued to grow in terms of foreign sales and exports during 2009-2012, outperforming many key industrial sectors.

As in previous years, this study is presented in five sections:

- The copyright industries
- Value added by the copyright industries to the U.S. economy
- Employment and compensation in the copyright industries in the U.S. economy
- U.S. copyright materials in the world market
- Conclusion

This *Report* presents estimates of the copyright industries' contributions to the U.S. economy for the years 2009-2012.⁴ The underlying data used in this *Report* are current through 2012. The period covered by this *Report* was one of generally improving economic conditions in the U.S. as a whole. In 2010, the American economy began to emerge from the painful recession of 2008-2009. Subsequently, the economy expanded in 2011 and grew even more vigorously in 2012. This *Report* clearly documents the end of negative growth in value added and in employment for the copyright industries and for the U.S. economy as a whole.

This study continues to reflect the use of industry data classifications adopted under the North American Industry Classification System ("NAICS") which has been widely implemented

⁴ In this study, the values presented for 2009 have been updated from the 2009 results presented in *Copyright Industries in the U.S. Economy: The 2011 Report*. The updates result from data revisions published by the U.S. Bureau of Economic Analysis and by other government agencies since the last report was completed.

by U.S. statistical agencies. It also continues to follow the international standards and recommendations propounded by WIPO in 2003 regarding the development of economic and statistical standards to measure the impact of domestic copyright industries on domestic economies.⁵

In July 2013, the U.S. Bureau of Economic Analysis (“BEA”) announced changes in how it accounts for the costs of producing “artistic originals” in the determination of U.S. GDP, classifying them as an investment as opposed to current expenditures. Artistic originals include “books, movies, TV shows, music, photographs and greeting cards...” At this writing, BEA has not yet made use of the methodology described above to produce revised estimates of annual GDP by industry. Indications are that applying its methodology looking at the economic benefit of the “costs” of production would result in increases in the contribution of industries associated with “artistic originals.”⁶ However, given the lack of revised data to date, the U.S. copyright industry results presented in this *Report* do not reflect the possible effect of the BEA capitalization procedures.

The data in this study quantify the size and critical importance of the copyright industries to the U.S. economy, generally using the most

current data available. As in past studies, the U.S. copyright industries’ contribution to the U.S. economy is measured by three economic indicators: value added to the U.S. GDP in current dollars; industry employment and share of national employment; and revenues generated from foreign sales and exports. Further, this study includes two additional indicators of the importance of the copyright industries to the U.S. economy: compensation per employee, and real annual growth. As set forth below, during the period 2009-2012, the copyright industries, both core and total, achieved real growth rates in excess of 4.5% per year. By contrast, during the period considered in the *Copyright Industries in the U.S. Economy: The 2011 Report* (2007-2010), the copyright industries produced real growth rates of less than 1.5% annually.

Of course, the copyright industries were not the only beneficiaries of the improving economic climate after 2009. For example, during the years 2009-2012, real GDP for the U.S. as a whole increased at an annual rate of 2.14%. This growth rate significantly exceeded the annual growth figures reported in the 2011 study for the U.S. as a whole. U.S. real annual growth over that period (2007-2010) was only 0.05%. As this study documents, the U.S. copyright industries continue to make a disproportionately positive contribution to real growth in U.S. GDP.

⁵ The author of this *Report*, Stephen E. Siwek, participated as an expert at the meeting of the “Working Group of Experts on the Preparation of a WIPO Handbook on Survey Guidelines for Assessing the Economic Impact of Copyright and Related Rights” which was co-sponsored by WIPO and held in Helsinki, Finland, in July 2002. That meeting launched the process which resulted in WIPO’s 2003 publication of its *Guide on Surveying the Economic Contribution of the Copyright-Based Industries* which describes many of the recommendations and standards used in this *Report*.

⁶ BEA is expected to publish revised estimates of annual value added by industry in December 2013.

III. THE COPYRIGHT INDUSTRIES

In nine of our thirteen prior reports, we divided the copyright industries into four groups: core, partial, distribution, and copyright-related; these are the sectors we developed and defined in our first report issued in 1990. In the four most recent reports (2004, 2006, 2003-2007, and 2011), we still used four categories, but in order to conform to the international standard, we relied upon the four copyright industry categories defined by WIPO in its 2003 *Guide*: core copyright, partial copyright, non-dedicated support, and interdependent industries.

The **core** copyright industries are those industries whose primary purpose is to create, produce, distribute or exhibit copyright materials. These industries include computer software, videogames, books, newspapers, periodicals and journals, motion pictures, recorded music, and radio and television broadcasting.

Partial copyright industries are industries in which only some aspect or portion of the products that they create can qualify for copyright protection. These industries range from fabric

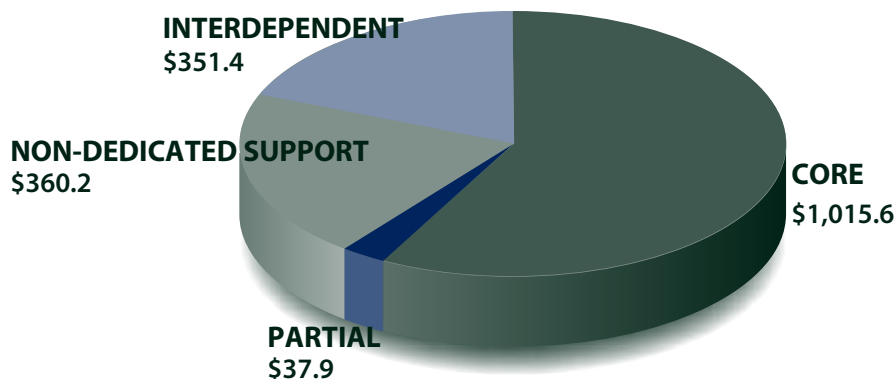
to jewelry to furniture to toys and games.

Non-dedicated support industries include those that distribute both copyright and non-copyright protected materials to businesses and consumers. Examples here include transportation services, telecommunications and wholesale and retail trade. As in past studies, only a portion of the total value added by these industries is considered to be part of the copyright industries.

Interdependent industries include those that produce, manufacture, and sell equipment whose function is primarily to facilitate the creation, production, or use of works of copyrighted matter. These industries include manufacturers, wholesalers and retailers of TV sets, personal computers and usage dependent products including blank recording material, and certain categories of paper.

We refer to the four groups together – core, partial, non-dedicated support, and interdependent – as the “**total**” copyright industries.

COPYRIGHT INDUSTRIES IN THE US ECONOMY 2012
(VALUE ADDED IN BILLIONS OF DOLLARS)



TOTAL: \$1,765.2 BILLION OR \$1.765 TRILLION

IV. VALUE ADDED BY THE COPYRIGHT INDUSTRIES

The most appropriate way to measure an industry's contribution to the national economy is to measure the industry's value added. Value added reflects the economic contribution of labor and capital of a particular industry. The sum of the value added of all industries in the United States is equal to gross domestic product (GDP), a standard measure of the size of the U.S. economy. For this reason, value added calculations can be used to draw comparisons of the relative size and growth rates of different industries in a way that is consistent with the federal government's national income and product accounting data.

The value added estimates for the copyright industries that are contained in this *Report* reflect underlying data obtained from the BEA, the U.S. Census Bureau and other government statistical agencies. In particular, the estimates of copyright industry value added make direct use of the industry-specific estimates of U.S. value added that are regularly published by the

BEA. These industry-specific estimates (in both current dollar and real terms) are used as starting points to derive the contributions made by the core and total copyright industries to U.S. GDP.⁷

As noted above, the harmful effects of the recession of 2008-2009 were much diminished by 2010 and most U.S. industries experienced increasing sales and profits during those years. Nevertheless, the copyright industries remained a particularly important contributor to U.S. GDP. As shown in Table 1, the current dollar value added to U.S. GDP by the core copyright industries reached over \$1 trillion (\$1,015.6 billion) in 2012. In the same year, U.S. GDP reached \$15.68 trillion. Thus, in 2012, the core copyright industries constituted a 6.48% share of nominal U.S. GDP. The value added by the total copyright industries in the same period is also shown in Table 1, which reports the value added to U.S. GDP by the total copyright industries in 2012 was \$1.765 trillion, or 11.25% of U.S. GDP.

2009-2012 VALUE ADDED (BILLIONS OF US DOLLARS)

TABLE 1:

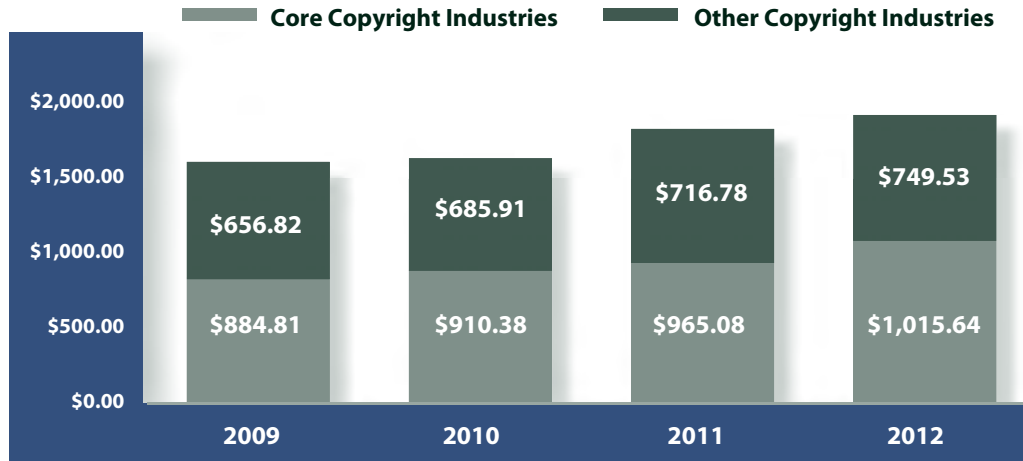
	2009	2010	2011	2012
Core Copyright Industries	\$884.8	\$910.4	\$965.1	\$1,015.6
Total US GDP	\$13,973.7	\$14,498.9	\$15,075.7	\$15,684.8
Core Share of US GDP	6.33%	6.28%	6.40%	6.48%
	2009	2010	2011	2012
Total Copyright Industries	\$1,541.6	\$1,596.2	\$1,681.9	\$1,765.2
Total US GDP	\$13,973.7	\$14,498.9	\$15,075.7	\$15,684.8
Total Share of US GDP	11.03%	11.01%	11.16%	11.25%

The current dollar estimates of the value added for the core copyright industries in 2009, 2010, 2011 and 2012, also expressed below in Chart 1, show an increase from \$884.81 billion in 2009 to \$1,015.64 billion, or more than \$1 trillion, in 2012. The estimated value added for the other (non-core) copyright industries rose from \$656.82 billion in 2009 to \$749.53 billion in 2012.

⁷ See Section II and Appendix B for a discussion of recent changes announced in calculation of certain sectors by BEA.

COPYRIGHT INDUSTRIES VALUE ADDED (IN BILLIONS OF CURRENT DOLLARS)

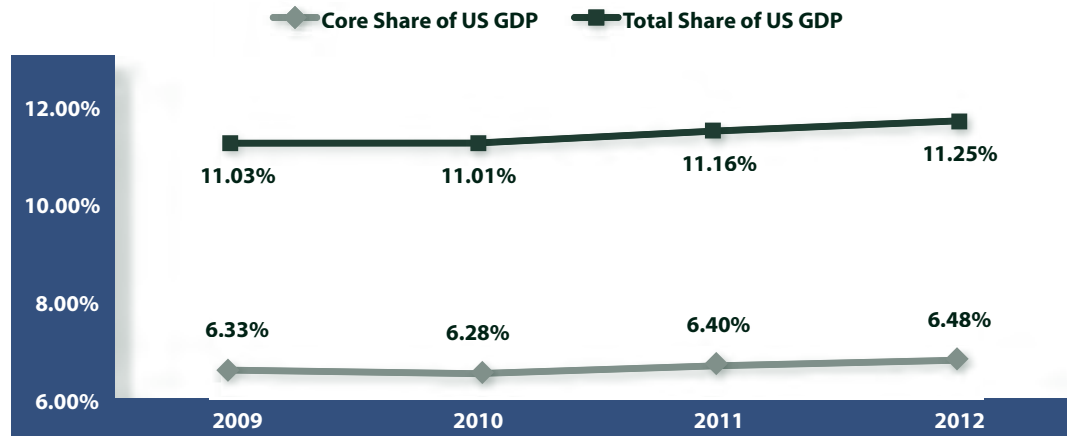
CHART 1:



The copyright industries' current dollar share of the U.S. economy is also expressed in Chart 2. On the basis of the methodology described above, we now estimate that the core copyright industries' current dollar share of the U.S. economy has increased from approximately 6.3% to nearly 6.5% of the U.S. economy over the years 2009 through 2012. The core copyright industries' current dollar share of the U.S. economy reached 6.48% in 2012. During that same period, the total copyright industries current dollar share of U.S. GDP reached 11.25% in 2012.

COPYRIGHT INDUSTRIES SHARE OF CURRENT DOLLAR GDP

CHART 2:



To put these figures in perspective, it is useful to compare the economic contributions of the U.S. copyright industries to the contributions made by other U.S. industries in the same time period. Inter-industry comparisons to the U.S. copyright industry are shown in Table 2.

Table 2 reports the total value added to the U.S. economy by the entire federal government in 2012 was \$668.3 billion.⁸ This amount is substantially lower than the value added by the total copyright industries in the same year. In 2012, the total value added to the U.S. economy by state and local governments was \$1,357.9 billion. This value is approximately 23% lower than the value added by the total copyright industries in 2012. Comparisons of the copyright industry's value added in 2011 and 2012, to other sectors of the U.S. economy are also provided in Table 2. These comparisons clearly document the size and importance of the copyright industries today.

2011 AND 2012 VALUE ADDED COMPARISONS TO OTHER SECTORS (BILLIONS OF US DOLLARS)

TABLE 2:

	2011	2012
Core Copyright - Value Added	\$965.1	\$1,015.6
Total Copyright - Value Added	\$1,681.9	\$1,765.2
Federal Government - Value Added	\$658.1	\$668.3
State and Local Government - Value Added	\$1,335.8	\$1,357.9
Construction - Value Added	\$529.5	\$558.7
Health Care and Social Assistance - Value Added	\$1,136.9	\$1,164.8
Finance and Insurance - Value Added	\$1,159.3	\$1,242.3

Since BEA calculates both current dollar and constant dollar value added for the industry classifications that it analyzes, we can estimate real growth rates of the copyright industries. In this *Report*, the constant dollar value added figures are used to derive estimates of the real growth rates achieved by the core and total copyright industries on a year by year basis. These data are also used to measure the contribution made by the copyright industries to the real annual growth achieved by the U.S. economy as a whole.

Real growth rates in value added experienced by the U.S. copyright industries and by the U.S. economy during the period 2009-2012 are provided in Table 3.⁹ For each of the periods 2009-2010, 2010-2011, and 2011-2012, the U.S. core copyright industries experienced positive real growth in excess of 3.9% annually. Over the entire period 2009-2012, the core copyright industries grew at a real annual growth rate of 4.73%.

⁸ U.S. GDP figures from Elrod, A., Lindberg, B., and Morgan, E., *Annual Industry Accounts – Advanced Statistics on GDP by Industry*, Survey of Current Business, May 2013, Table 7. (Hereinafter – U.S. BEA, Annual Industry Accounts).

⁹ Real growth rates measure changes in constant dollar value added over time. In these estimates, current dollar value added figures are converted to “chained” dollars for the year 2005.

The total copyright industries experienced a comparable pattern of real growth during the years 2009-2012. As shown in Table 3, in 2009-2010, 2010-2011, and 2011-2012, the total copyright industries grew at annual rates in excess of 4.3% per year. For the full period 2009-2012, the real value added by the total copyright industries grew at a rate of 4.99% per year.

Both the U.S. copyright industries and the U.S. economy experienced positive real annual growth during the years 2010 through 2012. In order to provide a basis of comparison, the growth patterns for the U.S. economy are also provided in Table 3.

For the period 2009-2012, the U.S. economy grew at an annual rate of 2.14%. For the individual years 2009-2010, 2010-2011, and 2011-2012, the U.S. economy increased at annual rates of 2.39%, 1.81% and 2.21% respectively. As these figures make clear, for this period, the compound annual growth rate achieved by the U.S. copyright industries significantly exceeded the compound annual growth rate achieved by the U.S. economy as a whole. Overall, these industry sectors grew more than twice as fast as the economy as a whole during the period 2009 to 2012.

REAL ANNUAL GROWTH RATES VALUE ADDED TO US GDP

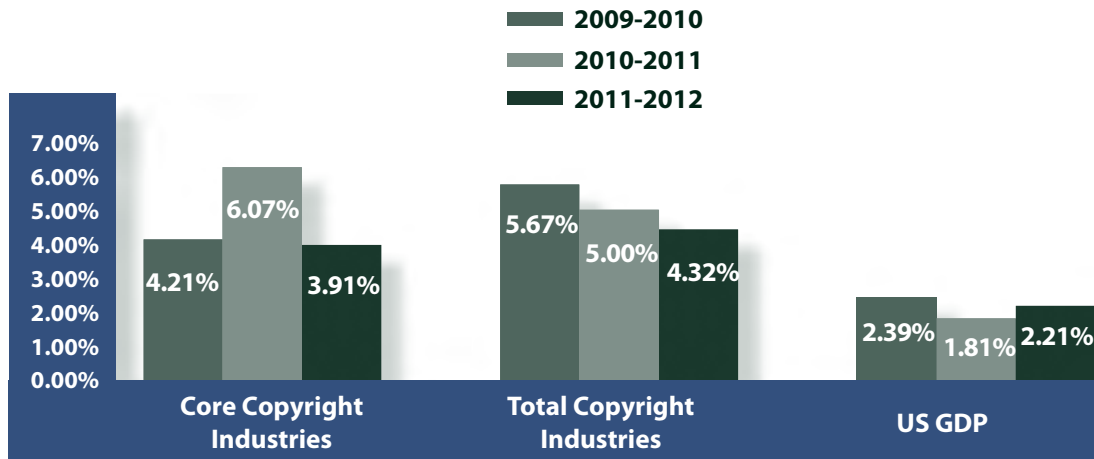
TABLE 3:

	2009-2010	2010-2011	2011-2012	<i>Annual Growth Rate 2009-2012</i>
Core Copyright Industries	4.21%	6.07%	3.91%	4.73%
Total Copyright Industries	5.67%	5.00%	4.32%	4.99%
US GDP	2.39%	1.81%	2.21%	2.14%

The real (constant dollar) annual growth rates experienced by the copyright industries during the periods 2009-2010, 2010-2011, and 2011-2012 are also expressed in Chart 3. As shown in Chart 3, the core copyright industries grew in excess of 3.9% in 2009-2010, 2010-2011, and 2011-2012, with a peak growth rate of 6.07% in 2010-2011. Similarly, as shown in the Chart, the total copyright industries grew sizably, in excess of 4.3% in 2009-2010, 2010-2011, and 2011-2012, with a peak growth rate of 5.67% in 2009-2010. By contrast, as noted, the real growth rates achieved by the U.S. economy as a whole were 2.39% in 2009-2010, 1.81% in 2010-2011, and 2.21% in 2011-2012. As Chart 3 demonstrates graphically, since 2009 the core and the total copyright industries have grown substantially faster than the real annual rate of growth experienced for the U.S. GDP as a whole.

REAL ANNUAL GROWTH RATES COPYRIGHT INDUSTRIES AND US GDP

CHART 3:



V. EMPLOYMENT AND COMPENSATION IN THE COPYRIGHT INDUSTRIES

In this *Report*, we estimate the number of workers employed in the core and total copyright industries for the years 2009-2012. The procedures used to derive our estimates of employment were largely based on the formulas derived in prior reports. In those reports, employee counts were derived to be consistent in both the NAICS and ISIC classification systems. As in the past, the actual employee counts by NAICS code were extracted from the Bureau of Labor Statistics (“BLS”) database.

Employment figures for the core and total copyright industries for the years 2009, 2010, 2011, and 2012 are provided in Table 4. As shown in Table 4, the core copyright industries employed 5,178,100 workers in 2009, representing 3.96% of the total U.S. workforce. By 2012, the number of core copyright employees in the United States had increased by 221,000 workers to 5,399,100. These workers represented 4.04% of the total U.S. workforce in 2012. In 2009, the total copyright industries employed more than 10.8 million workers. By 2012, employment in the total copyright industries had increased to more than 11.17 million. During the same period, total U.S. employment increased from 130,859,000 in 2009 to 133,736,200 in 2012.

2009-2012 TOTAL EMPLOYMENT (IN THOUSANDS)

TABLE 4:

	2009	2010	2011	2012
Core Copyright Industries	5,178.1	5,202.9	5,296.9	5,399.1
Total US Employment	130,859.0	129,911.1	131,499.8	133,736.2
Core Share of US	3.96%	4.00%	4.03%	4.04%
	2009	2010	2011	2012
Total Copyright Industries	10,818.5	10,776.9	10,944.1	11,170.9
Total US Employment	130,859.0	129,911.1	131,499.8	133,736.2
Total Share of US	8.27%	8.30%	8.32%	8.35%

For U.S. private industry, employment growth during the years 2009 through 2012 was comparable to the employment trends experienced for the U.S. economy as a whole. As shown in Table 5, total U.S. private employment increased from 108,306,000 in 2009 to 111,822,100 in 2012. During these years, the core copyright industries maintained a roughly 4.8% share of all private employment while the total copyright industries' share of private employment remained at or near 10% for the entire period.

2009-2012 TOTAL PRIVATE EMPLOYMENT (IN THOUSANDS)

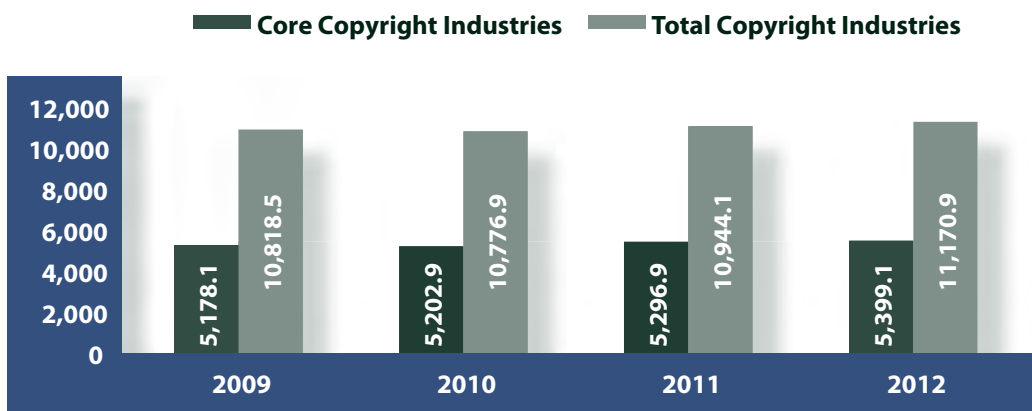
TABLE 5:

	2009	2010	2011	2012
Core Copyright Industries	5,178.1	5,202.9	5,296.9	5,399.1
Total US Private Employment	108,306.0	107,420.1	109,408.3	111,822.1
Core Share of US	4.78%	4.84%	4.84%	4.83%
	2009	2010	2011	2012
Total Copyright Industries	10,818.5	10,776.9	10,944.1	11,170.9
Total US Private Employment	108,306.0	107,420.1	109,408.3	111,822.1
Total Share of US	9.99%	10.03%	10.00%	9.99%

U.S. copyright industry employment is also expressed in Chart 4. Chart 4 demonstrates graphically that the total number of workers in the core copyright industries consistently increased from 2009 to 2012.¹⁰ Because U.S. total employment also rose in this period, the core copyright industries' share of total U.S. employment remained at approximately 4%, while the total copyright industries' share of employment increased from 8.27% in 2009 to 8.35% in 2012.

US COPYRIGHT INDUSTRY EMPLOYMENT (IN THOUSANDS)

CHART 4:



In this *Report*, we also quantify the average compensation per employee received by workers in the copyright industries and in the U.S. as a whole for the years 2009-2012. In these calculations “compensation” means “wages and salary accruals and supplements to wages and salary accruals.”¹¹ These supplements include “employer contributions for employee pensions and insurance funds and employer contributions for government social insurance.” These data are shown in Table 6.

During the period 2009-2012, average compensation per employee in both the core and total copyright industries increased. As shown in Table 6, average compensation earned by core copyright employees stood at \$85,643.9 in 2012. This value was nearly 33% higher than the average compensation paid to all U.S. employees in 2012. For total copyright industry workers, average compensation in 2012 was \$75,925.9, almost 18% higher than the U.S. average.

¹⁰ As a whole, the core copyright industries have consistently been able to add jobs to the U.S. economy. Within the core however, certain component industries, particularly in the printing sector, have experienced declines in employment since the late 1990s.

¹¹ The definition of compensation used in this *Report* tracks that used by the U.S. Bureau of Economic Analysis.

2009 – 2012 COMPENSATION PER EMPLOYEE (US DOLLARS)

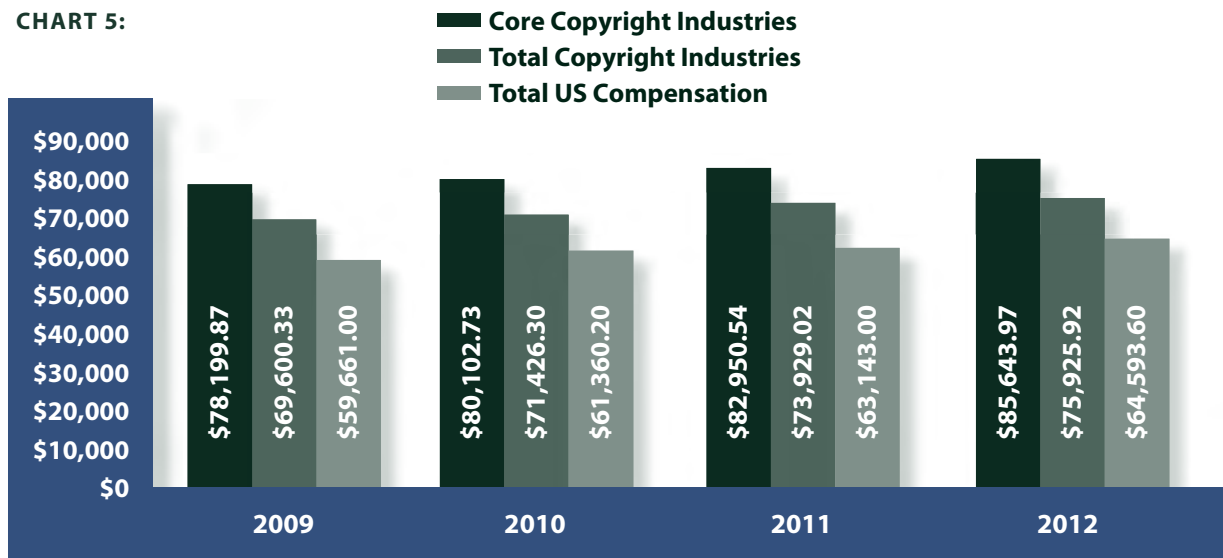
TABLE 6:

	2009	2010	2011	2012
Core Copyright Industries	\$78,199.8	\$80,102.7	\$82,950.5	\$85,643.9
Total US Compensation	\$59,661.0	\$61,360.2	\$63,143.0	\$64,593.6
Ratio: Core to US	1.31	1.31	1.31	1.33
	2009	2010	2011	2012
Total Copyright Industries	\$69,600.3	\$71,426.3	\$73,929.0	\$75,925.9
Total US Compensation	\$59,661.0	\$61,360.2	\$63,143.0	\$64,593.6
Ratio: Total to US	1.17	1.16	1.17	1.18

Compensation data are also reported graphically in Chart 5. The compensation “premium” paid to workers in the copyright industries continued and increased through 2010, 2011, and 2012.

US COPYRIGHT INDUSTRY COMPENSATION PER EMPLOYEE

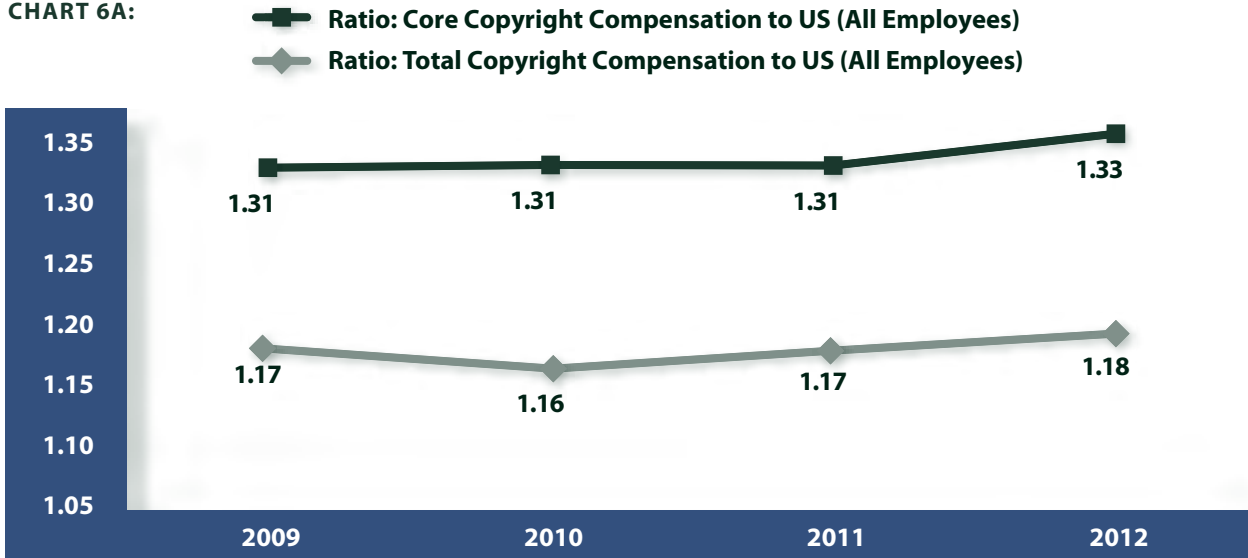
CHART 5:



The compensation premium ratio is also expressed in Chart 6A. As shown in Chart 6A, the average compensation paid to employees in the core and total copyright industries is compared to the average compensation paid to all workers in the United States. For core copyright employees, the compensation premium rose to 33% in 2012. For total copyright employees, the compensation premium rose to 18% in 2012, with its average for the period reported at about 17%. In other words, core copyright employees on average received 33% more compensation than the average U.S. worker in 2012, while total copyright industry employees received about 18% more compensation in 2012.

US COPYRIGHT INDUSTRY COMPENSATION RATIOS COMPARED TO ALL US EMPLOYEES (1.00=100%)

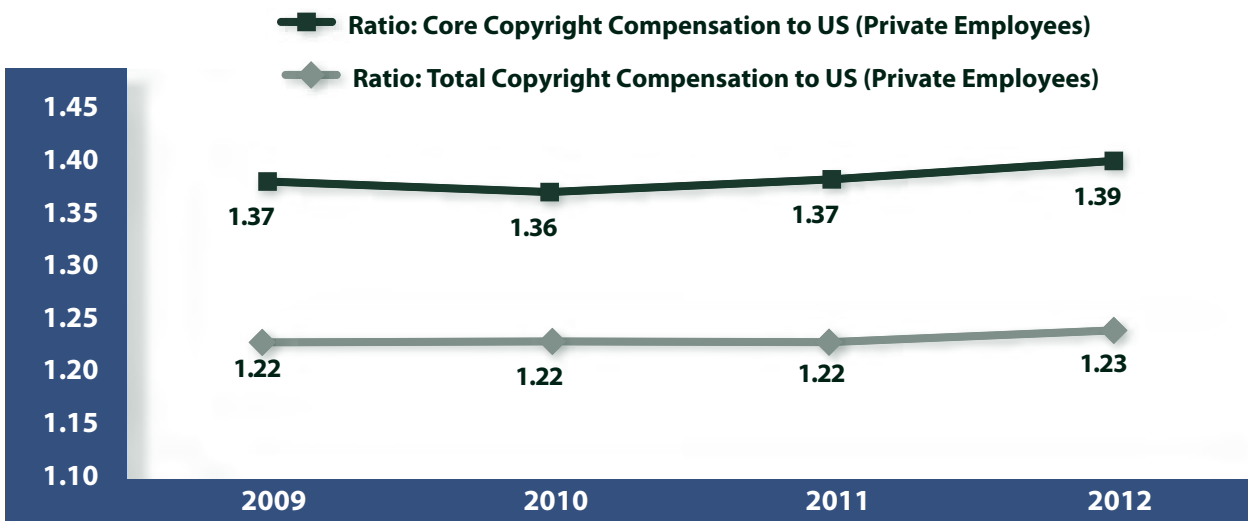
CHART 6A:



As noted, copyright industry workers are paid more than the average U.S. worker in private industry, and the compensation premium is even more pronounced when copyright workers are compared with only private industry workers. As shown in Chart 6B, the compensation paid to workers in the core copyright industries has generally been about 37% higher than the average compensation paid to U.S. private industry employees, and rose to a 39% compensation premium in 2012. Similarly, the compensation paid to workers in the total copyright industries has generally been about 22% higher than the average compensation paid to U.S. private industry employees as a whole, rising to a 23% compensation premium in 2012.

US COPYRIGHT INDUSTRY COMPENSATION RATIOS COMPARED TO PRIVATE US EMPLOYEES (1.00=100%)

CHART 6B:



VI. U.S. COPYRIGHT MATERIALS IN WORLD MARKETS

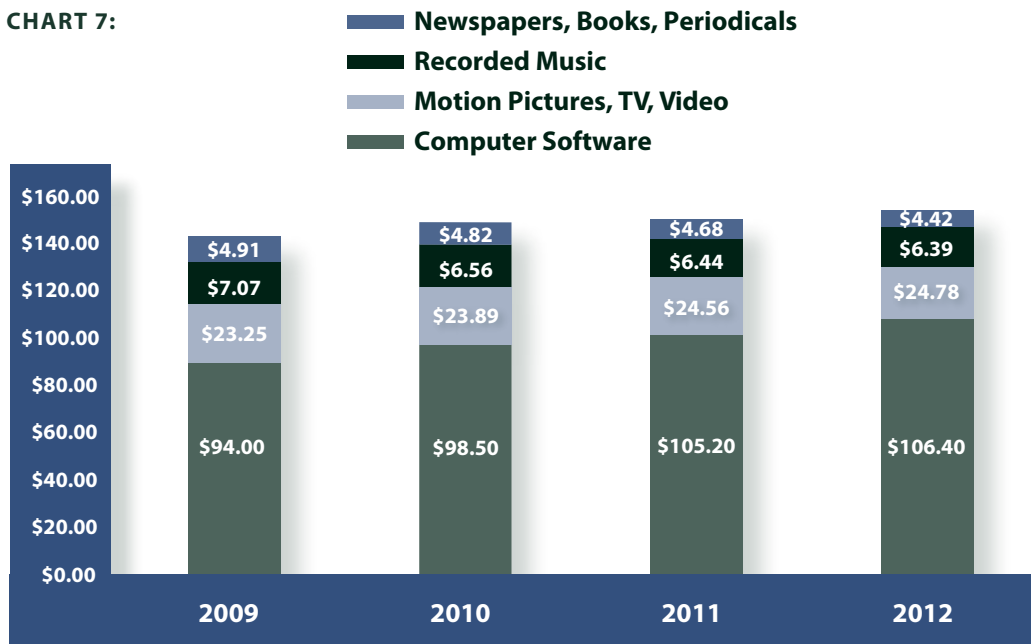
Consumers in non-U.S. markets continue to demand products that embody American creativity. Copyright products that are sold abroad may be manufactured in the U.S. or in foreign markets but, in either case, the creative components of those products are nurtured by the protection afforded under U.S. laws.

As noted in prior reports on these industries, we believe that the U.S. government's statistics on "exports" of copyright products fail to accurately measure the true value of American copyright works sold abroad, particularly in light of the increasing importance of digital trade in legitimate copyright goods and services around the globe. We recognize that, in recent years, efforts have been undertaken to improve the scope of the copyright product export statistics that are gathered in government surveys. For example, the U.S. Census Bureau now reports "Estimated Export Revenue for Employer firms," for a number of the copyright industries including the motion picture industry and the sound recording industry.¹² However, the export statistics reported by Census are substantially lower than foreign market sales figures derived from non-government sources.

As in past reports, we again provide estimates of foreign sales and exports for four selected core copyright industries during the years 2009 through 2012. These core industries are: the sound recording industry, the motion picture industry, the computer software industry, and the non-software publishing industry which includes newspapers, books, and periodicals. For these years, we report total foreign sales for the "selected" core copyright industries of \$129.2 billion in 2009,¹³ \$133.8 billion in 2010, \$140.9 billion in 2011, and \$142.0 billion in 2012. In Chart 7, these estimates are disaggregated as among the four copyright industries studied. The underlying figures by industry are also provided in Appendix A, Table A.5.

2009-2012 REVENUE GENERATED BY FOREIGN SALES/EXPORTS OF SELECTED COPYRIGHT INDUSTRIES (IN BILLIONS OF DOLLARS)

CHART 7:



¹² See, e.g., U.S. Census Bureau, Information Sector Services (NAICS 51), *Estimated Export Revenue for Employer Firms*.

¹³ See *Copyright Industries in The U.S. Economy: The 2011 Report*, Table A.3, page 17.

Annual growth rates for foreign sales of the selected core copyright industries are provided in Table 7. As shown below, foreign sales for these industries increased substantially in 2010 and 2011 but remained essentially flat in 2012.

ANNUAL GROWTH RATE OF FOREIGN SALES AND EXPORTS

TABLE 7:

	2010	2011	2012
Growth Rate	3.6%	5.3%	0.8%

In addition, the foreign sales/exports of the core copyright industries remain significantly larger than the exports of many other major industry sectors. As reported in Table 8, in 2011, the core copyright industries generated non-U.S. sales of \$140.9 billion, exceeding foreign sales and/or exports for other key sectors of the U.S. economy, including chemicals (excluding pharmaceuticals and medicines), aerospace products and parts, agricultural products, food and kindred products, and pharmaceuticals. In 2012, the core copyright industries generated non-U.S. sales of \$142.0 billion, again out-performing most industry sectors surveyed, including U.S. aerospace exports (\$105.8 billion), U.S. agricultural exports (\$71.1 billion), food (\$64.7 billion), and pharmaceuticals and medicines (\$50.9 billion). By contrast, the U.S. chemical industry (excluding pharmaceuticals and medicines) achieved slightly higher foreign sales of \$146.7 billion in 2012.¹⁴

FOREIGN SALES AND EXPORTS FOR SELECTED INDUSTRIES (BILLIONS OF US DOLLARS)

TABLE 8:

	2011	2012
Selected Copyright Industries (Computer Software; Motion Pictures, TV, Video; Recorded Music; Newspapers, Books, Periodicals)	\$140.9	\$142.0
Chemicals (excluding Pharmaceuticals & Medicines)	\$131.6	\$146.7
Aerospace Products & Parts	\$89.4	\$105.8
Agricultural Products	\$72.0	\$71.1
Food and Kindred Products	\$59.9	\$64.7
Pharmaceuticals & Medicines	\$47.9	\$50.9

¹⁴ In this Report, U.S. exports by industry were taken from the International Trade Statistics "Censtats" data base at the U.S. Census Bureau. Export statistics by industry were identified by NAICS code.

VII. CONCLUSION

The U.S. copyright industries have consistently outperformed the rest of the U.S. economy, in terms of their real annual growth rates and their contributions to the overall growth of the U.S. economy as a whole. These industries also command significant shares of U.S. gross domestic product and they employ millions of U.S. workers. In addition, the average compensation paid to U.S. workers in the copyright industries consistently and substantially exceeds the average compensation level paid to U.S. workers as a whole, and even more significantly exceeds the average compensation paid to U.S. private sector workers. Finally, the copyright industries continue to play a prominent role in the growth of U.S. exports.

Value added in the copyright industries continues to grow. As of 2012, the value added by the core copyright industries exceeded \$1 trillion (\$1,015.6 billion) for the first time, approximately 6.48% of U.S. GDP. In the same year, value added for the total copyright industries stood at well over \$1.7 trillion (\$1,765.2 billion), amounting to 11.25% of GDP. In 2009-2010, 2010-2011, and 2011-2012, the real annual growth rates achieved by both the core and total copyright industries were significantly higher than the real annual growth rates exhibited by the U.S. as a whole.

The U.S. core copyright industries now employ nearly 5.4 million workers while some 11.2 million people are employed by the total copyright industries. The annual compensation paid to core copyright workers now exceeds the average annual compensation paid to all U.S. workers by 33%. The average compensation paid to employees of the total copyright industries exceeds the U.S. average by 18%. Compared with all private sector workers, the compensation premium comes in even higher, at 39% for core copyright industry workers, and 23% for total copyright industry workers.

Sales for U.S. copyright sectors continue to expand in overseas markets. We estimate that total core copyright sales in foreign markets for four major copyright sectors exceeded \$129 billion in 2009, and \$142 billion in 2012. The foreign sales of the copyright industries continue to exceed foreign sales of many other U.S. industries including aerospace, agricultural products, food and kindred products, and pharmaceuticals and medicines.

These consistently positive trends solidify the status of the copyright industries as a key engine of growth for the U.S. economy as a whole. New technologies leading to the development of new distribution methods for legitimate copyrighted products, supported by good laws and enforcement, will allow the U.S. copyright-based industries to enjoy economic growth in the future.

APPENDIX A: TABLES OF STATISTICS

CORE COPYRIGHT INDUSTRIES VALUE ADDED TO US GDP

TABLE A.1

Nominal Value Added <i>(Billions of dollars)</i>	2009 Rev.	2010	2011	2012 est.
Core Copyright	\$884.81	\$910.38	\$965.08	\$1,015.64
US GDP	\$13,973.70	\$14,498.90	\$15,075.70	\$15,684.80
Share	6.33%	6.28%	6.40%	6.48%
Real Value Added <i>(Billions of 2005 dollars)</i>	2009 Rev.	2010	2011	2012 est.
Core Copyright	\$864.05	\$900.44	\$955.10	\$992.46
US GDP	\$12,757.90	\$13,063.00	\$13,299.10	\$13,593.20
Annual Growth in Real Value Added	2008-2009	2009-2010	2010-2011	2011-2012
Core	N/A	4.21%	6.07%	3.91%
US GDP	N/A	2.39%	1.81%	2.21%

Compound Annual Growth Rates *(2009-2010 to 2011-2012)*

Core	4.73%
US GDP	2.14%

**TOTAL COPYRIGHT INDUSTRIES
VALUE ADDED TO US GDP**

TABLE A.2

Nominal Value Added (Billions of dollars)	2009 Rev.	2010	2011	2012 est.
Total Copyright	\$1,541.63	\$1,596.29	\$1,681.86	1,765.17
US GDP	\$ 13,973.70	\$14,498.90	\$15,075.70	\$15,684.80
Share	11.03%	11.01%	11.16%	11.25%
Real Value Added (Billions of 2005 dollars)	2009 Rev.	2010	2011	2012 est.
Total Copyright	\$1,536.50	\$1,623.55	\$1,704.71	\$1,778.42
US GDP	\$12,757.90	\$13,063.00	\$13,299.10	\$13,593.20
Annual Growth in Real Value Added	2008-2009	2009-2010	2010-2011	2011-2012
Total Copyright	N/A	5.67%	5.00%	4.32%
US GDP	N/A	2.39%	1.81%	2.21%

**Compound Annual Growth Rates
(2009-2010 to 2011-2012)**

Total	4.99%
US GDP	2.14%

US COPYRIGHT INDUSTRY EMPLOYMENT (IN THOUSANDS)

TABLE A.3

Core Copyright	2009 rev.	2010	2011	2012
Core Copyright Employment	5,178.1	5,202.9	5,296.9	5,399.1
Total US Employment	130,859.0	129,911.1	131,499.8	133,736.2
Total Private US Employment	108,306.0	107,420.1	109,408.3	111,822.1
Core Copyright Share of US	3.96%	4.00%	4.03%	4.04%
Core Copyright Share of Private US	4.78%	4.84%	4.84%	4.83%
Total Copyright	2009 rev.	2010	2011	2012
Total Copyright Employment	10,818.5	10,776.9	10,944.1	11,170.9
Total U.S. Employment	130,859.0	129,911.1	131,499.8	133,736.2
Total Private US Employment	108,306.0	107,420.1	109,408.3	111,822.1
Total Copyright Share of US	8.27%	8.30%	8.32%	8.35%
Total Copyright Share of Private US	9.99%	10.03%	10.00%	9.99%

US COPYRIGHT INDUSTRY COMPENSATION PER EMPLOYEE (DOLLARS)

TABLE A.4

Core Copyright	2009 rev.	2010	2011	2012
Core Copyright Compensation/Employee	\$78,199.87	\$80,102.73	\$82,950.54	\$85,643.97
Average US Compensation/Employee	\$59,661.00	\$61,360.20	\$63,143.00	\$64,593.60
Average Private US Compensation/ Employee	\$57,021.60	\$58,736.80	\$60,417.20	\$61,805.10
Ratio: Core Copyright Compensation to US	1.31	1.31	1.31	1.33
Ratio: Core Copyright Compensation to Private US	1.37	1.36	1.37	1.39
Total Copyright	2009 rev.	2010	2011	2012
Total Copyright Compensation / Employee	\$69,600.33	\$71,426.30	\$73,929.02	\$75,925.92
Average US Compensation / Employee	\$59,661.00	\$61,360.20	\$63,143.00	\$64,593.60
Average Private US Compensation / Employee	\$57,021.60	\$58,736.80	\$60,417.20	\$61,805.10
Ratio: Total Copyright Compensation to US	1.17	1.16	1.17	1.18
Ratio: Total Copyright Compensation to Private US	1.22	1.22	1.22	1.23

2009-2012 REVENUE GENERATED BY FOREIGN SALES/EXPORTS OF SELECTED US CORE COPYRIGHT INDUSTRIES (BILLIONS OF DOLLARS)

TABLE A.5

Industry	2009 Rev.	2010	2011	2012
Recorded Music	\$7.07	\$6.56	\$6.44	\$6.39
Motion Pictures, TV, Video	\$23.25	\$23.89	\$24.56	\$24.78
Computer Software	\$94.00	\$98.50	\$105.20	\$106.40
Newspapers, Books, Periodicals	\$4.91	\$4.82	\$4.68	\$4.42
Total for Selected Industries	\$129.2	\$133.8	\$140.9	\$142.0

APPENDIX B: BEA'S REVISIONS IN TREATMENT OF ENTERTAINMENT EXPENDITURES

Introduction

In July 2013, the U.S. Bureau of Economic Analysis ("BEA") announced changes in how it accounts for the costs of producing "artistic originals" in the determination of U.S. Gross Domestic Product ("GDP"), classifying them as an investment as opposed to current expenditures. Artistic originals include "books, movies, TV shows, music, photographs and greeting cards..."¹⁵ The revisions have been undertaken as part of the BEA's 14th comprehensive revision of the U.S. national income and product accounts.

Historically, industry expenditures for entertainment, literary and artistic "originals" have been recorded as intermediate inputs used up during the production of other goods. Because the costs of these originals were treated as intermediate inputs, they were not included in U.S. GDP. From an end-user viewpoint however, these costs were recovered as part of the ticket sales, DVD sales and rental fees that the entertainment industries charged to view the final creative product.

In accord with its 14th comprehensive revision, the BEA now treats the costs of certain artistic originals not as current expenditures but rather as long-lived investments. In BEA's view, "These expenditures have many characteristics of other fixed assets – ownership rights can be established – and they are long lasting and used repeatedly in production processes."¹⁶

Measurement Process

In order to implement the proposed revisions, BEA is adopting the following procedure. First, BEA is estimating the total current period revenue from licensing fees, merchandise sales, ticket sales, and other revenue generating activities for the industries producing the assets.¹⁷ Second, the value of sales costs – such as advertising, manufacturing of reproductions, and other marketing type costs – are subtracted from the total current period revenues to derive net revenue values. Third, these net revenue values are adjusted further to include only the revenue from the release of new works (that is "originals") using BEA-derived investment values.

In the final step of the analysis, BEA is making use of Net Present Value ("NVP") ratios to complete its valuations of these assets. BEA assumes a seven percent (7%) real discount rate for all asset types and is applying an NPV adjustment factor, a ratio that represents the average NPV-to-current period revenues from new works, to current year revenues. This procedure permits BEA to derive estimates of the net current investments made by businesses in entertainment originals for any given year.¹⁸

As part of this process, BEA must also determine the appropriate service lives and depreciation rates to apply to particular entertainment investments over time. BEA estimates applying the following annual depreciation rates to specific types of entertainment assets: motion pictures – 3.8%; television programs – 16.8%; music – 26.7%; books – 12.1%; and theatrical play scripts, greeting card designs and stock photography – 10.9%.¹⁹

¹⁵ Somer, Jeff, *Getting Creative with the GDP*, <http://www.nytimes.com/2013/07/28/>.

¹⁶ See *BEA Expands Coverage of Intellectual Property Products*, www.bea.gov/gdp-revisions.

¹⁷ See *Preview of the 2013 Comprehensive Revision of the National Income and Product Accounts*, March 2013, P. 19.

¹⁸ *Id.* page 19.

¹⁹ *Id.*

Initial Results

Based on the methodology described above, BEA developed estimates of the net current investment values of long-lived entertainment, literary and other artistic originals in 2007.²⁰ The industries analyzed by BEA included theatrical movies, television programs, books, music and miscellaneous entertainment. The miscellaneous category included three types of long-lived entertainment: theatrical play scripts, greeting card designs and commercial stock photography.

Recalculating its previous treatment of “artistic originals,” BEA concluded that its new methodology for these products results in an increase in U.S. GDP of \$70.6 billion in 2007. This figure represents the “current period investment value of the future revenue streams” associated with new entertainment, literary and other artistic originals. Within this total, BEA derived separate investment values for theatrical movies, television programs, books, music and miscellaneous entertainment.

At this writing, BEA has not yet made use of the methodology described above to produce revised estimates of annual GDP by industry. Indications are that applying its methodology would result in increases in the contribution of industries associated with “artistic originals.” BEA is expected to publish revised estimates of annual value added by industry in December 2013. However, given the lack of revised data to date, the U.S. copyright industry results presented in this *Report* do not reflect the possible effect of the BEA capitalization procedures.

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Copyright Industries in the U.S. Economy: The 2013 Report



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APPENDIX B

United States Commerce Department, Economic and Statistics
Administration and the United States Patent and Trademark Office,
*Intellectual Property and the U.S. Economy: Industries in Focus, March
2012*, at

http://www.uspto.gov/news/publications/IP_Report_March_2012.pdf.



INTELLECTUAL PROPERTY AND THE U.S. ECONOMY: **INDUSTRIES IN FOCUS**

PREPARED BY
ECONOMICS AND STATISTICS ADMINISTRATION
AND
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MARCH 2012

INTELLECTUAL PROPERTY AND THE U.S. ECONOMY: Industries in Focus



Prepared by the

Economics and Statistics Administration

and the

United States Patent and Trademark Office



U.S. Department of Commerce

March 2012

INTELLECTUAL PROPERTY AND THE U.S. ECONOMY: Industries in Focus

Foreword

As President Obama has said, if we are to win the future and be successful in an increasingly competitive international market, the United States of America must innovate. Innovation, the process through which new ideas are generated and put into commercial practice, is a key force behind U.S. economic growth and national competitiveness. Likewise, U.S. companies' use of trademarks to distinguish their goods and services from those of competitors enables firms to capture market share and further strengthen our economy. The dynamics of a globally connected market mean that the United States will need to develop the brightest minds with the most advanced training to make the best products. The Obama Administration's determination to promote innovation and protect intellectual property (IP) rights will harness the inherent drive and ingenuity of the American people in meeting that goal.

Innovation protected by IP rights is key to creating new jobs and growing exports. Innovation has a positive pervasive effect on the entire economy, and its benefits flow both upstream and downstream to every sector of the U.S. economy. Intellectual property is not just the final product of workers and companies—every job in some way, produces, supplies, consumes, or relies on innovation, creativity, and commercial distinctiveness. Protecting our ideas and IP promotes innovative, open, and competitive markets, and helps ensure that the U.S. private sector remains America's innovation engine.

There is a broad range of industries that benefit from IP, both directly and indirectly, and for every innovation in a given industry, generally there are corresponding economic opportunities for other industries to bring advances to the public. Examples of these complementary industries include the computer manufacturer that uses inputs made by semiconductor firms to make the hardware that is needed to run applications made by software companies, the Internet company that generates the on-line applications to distribute copyrighted music, and the auto manufacturer that incorporates patented energy-saving engines in the cars it sells. In each of these cases, industries are supported by the complementary products and services of another industry, so each industry is in a position to benefit from the safeguard of the IP underpinning their business models. When companies are more confident that their ideas will be protected, they have the incentive to pursue advances that push efficiency forward, costs down, and employment up.

Further evidence of this domino effect is seen as downstream businesses benefit from innovative products that lower their costs and improve their processes and finished articles. For example, a more precise machine could make manufacturing pharmaceuticals safer; a more reliable software program could improve military hardware while making it more affordable; or a clearer sound system could boost the quality of a recording studio's album. In each of these cases, and many more, the innovation feeds directly into a new finished article or service that has commercial value. The innovation may increase customer satisfaction through a higher quality product or service or decrease production costs. This additional value can help businesses protect earnings that can support their labor force.

Finally, in addition to the companies that produce, complement, and consume the innovation, logistical and supporting businesses are required to keep these companies up and running. These entities include marketing firms that inform consumers about innovations that can save time and money, packaging companies that ship advanced goods to retailers, and Internet service providers that create and maintain the communications pathways needed to compete in an increasingly on-line world.

This report by the Economics and Statistics Administration (ESA) and the U.S. Patent and Trademark Office (USPTO) of the U.S. Department of Commerce attempts to identify the first-order players that are growing IP in the U.S. economy and protecting their innovations through patents, trademarks, or copyrights. These IP-intensive industries support tens of millions of jobs and contribute several trillion dollars to our gross domestic product (GDP). This report not only estimates the contributions of these industries to our economy, but also gauges the ripple, or domino, effects they have on employment throughout the economy. They represent the leading edge of our economy that is built on the ingenuity of the American people and their future growth is increasingly dependent on effective protection of IP rights both here and abroad.

Rebecca M. Blank

Acting Deputy Secretary of Commerce

and

*Under Secretary for Economic Affairs,
Economics and Statistics Administration*

David J. Kappos

Under Secretary for Intellectual Property

and

Director, U.S. Patent and Trademark Office

INTELLECTUAL PROPERTY AND THE U.S. ECONOMY: Industries in Focus

Economics and Statistics
Administration

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INTELLECTUAL PROPERTY AND THE U.S. ECONOMY: Industries in Focus

EXECUTIVE SUMMARY

Innovation—the process through which new ideas are generated and successfully introduced in the marketplace—is a primary driver of U.S. economic growth and national competitiveness.¹ Likewise, U.S. companies' use of trademarks to distinguish their goods and services from those of competitors represents an additional support for innovation, enabling firms to capture market share, which contributes to growth in our economy. The granting and protection of intellectual property rights is vital to promoting innovation and creativity and is an essential element of our free-enterprise, market-based system. Patents, trademarks, and copyrights are the principal means used to establish ownership of inventions and creative ideas in their various forms, providing a legal foundation to generate tangible benefits from innovation for companies, workers, and consumers. Without this framework, the creators of intellectual property would tend to lose the economic fruits of their own work, thereby undermining the incentives to undertake the investments necessary to develop the IP in the first place.² Moreover, without IP protection, the inventor who had invested time and money in developing the new product or service (sunk costs) would always be at a disadvantage to the new firm that could just copy and market the product without having to recoup any sunk costs or pay the higher salaries required by those with the creative talents and skills. As a result, the benefits associated with American ingenuity would tend to more easily flow outside of the United States.

IP is used everywhere in the economy, and IP rights support innovation and creativity in virtually every U.S. industry. While IP rights play a large role in generating economic growth, little attention has been given to identifying which industries produce or use significant amounts of IP and rely most intensively on these rights. This report begins such an investigation by developing several industry-level metrics on IP use and employing these measures to identify a set of the most IP-intensive industries in the U.S. economy. To develop the industry-level metrics discussed, several databases were used, some of which (for the patent and trademark analyses) are publicly available.³ In the future, more user-friendly sets of these patent and trademark data will be made available on the U.S. Patent and Trademark Office (USPTO) website.

¹ National Economic Council et al. 2011, 7.

² Ibid., 11.

³ See www.uspto.gov/web/offices/ac/ido/oeip/taf/data/naics_concl/ and also www.google.com/googlebooks/uspto-trademarks.html.

This report employs USPTO administrative data to identify the industries that most intensively use the protection offered by patents and trademarks. For copyrights, the report identifies the set of industries primarily responsible for both the creation and production of copyrighted materials. The report then uses standard statistical methods to identify which American industries are the most patent-, trademark-, and copyright-intensive, and defines this subset of industries as “IP-intensive.” Using data collected from sources across the U.S. government, the report examines both the important trends and economic characteristics of these highly IP-intensive industries and their meaningful contributions to the U.S. economy. There are several important findings contained in the report.

According to the analysis in this report, the direct and indirect employment in these industries is substantial: Direct employment in the subset of most IP-intensive industries identified in this report amounted to 27.1 million jobs in 2010, while indirect activities associated with these industries provided an additional 12.9 million jobs throughout the economy in 2010, for a total of 40.0 million jobs, or 27.7 percent of all jobs in the economy.

Because all U.S. industries rely on IP to some degree, the statistics reported here for the sectors that use IP most intensively may tend to under-represent the broad impact of IP in the American economy. Moreover, the statistics reported here may not fully reflect the long-run economic benefits and costs of IP in promoting innovation and productivity growth. For example, while this report shows that employment in trademark-intensive industries is almost six times as great as employment in patent-intensive industries, it may be that the kinds of innovation protected by patents play a larger role in driving the long-run growth of productivity throughout the economy.

This report does not contain policy recommendations and is not intended to directly advance particular policy issues. By developing new quantitative measures of IP-intensity by industry, the report aims to promote a better understanding of the industries where IP plays a particularly important role. Although policy issues are not discussed in this report, as a general matter, we note the importance of achieving a balanced system of IP rights that protects inventors and creators from unlawful use of their work while encouraging innovation, competition, and the markets for technology in which IP is transacted. Importantly, using IP rights to support innovation and creativity means recognizing the public domain and limits such as fair use which balance the public’s right to use content legally with IP owners’ interests.

PRINCIPAL FINDINGS

- The entire U.S. economy relies on some form of IP, because virtually every industry either produces or uses it.
- By focusing on relevant data and various statistical measures, this report identified 75 industries (from among 313 total) as IP-intensive. These IP-intensive industries directly accounted for 27.1 million American jobs, or 18.8 percent of all employment in

the economy, in 2010.⁴ A substantial share of IP-intensive employment in the United States was in the 60 trademark-intensive industries, with 22.6 million jobs in 2010. The 26 patent-intensive industries accounted for 3.9 million jobs in 2010, while the 13 copyright-intensive industries provided 5.1 million jobs.⁵

- IP-intensive industries accounted for about \$5.06 trillion in value added, or 34.8 percent of U.S. gross domestic product (GDP), in 2010.
- While IP-intensive industries directly supported 27.1 million jobs either on their payrolls or under employment contracts, these sectors also indirectly supported 12.9 million more supply chain jobs throughout the economy. In other words, every two jobs in IP-intensive industries support an additional one job elsewhere in the economy. In total, 40.0 million jobs, or 27.7 percent of all jobs, were directly or indirectly attributable to the most IP-intensive industries.
- Due primarily to historic losses in manufacturing jobs, overall employment in IP-intensive industries has lagged other industries during the last two decades. While employment in non-IP-intensive industries was 21.7 percent higher in 2011 than in 1990, overall IP-intensive industry employment grew 2.3 percent over this same period. Because patent-intensive industries are all in the manufacturing sector, they experienced relatively more employment losses over this period, especially during the past decade. While trademark-intensive industry employment had edged down 2.3 percent by the end of this period, copyright-intensive industries provided a sizeable employment boost, growing by 46.3 percent between 1990 and 2011.
- Between 2010 and 2011, the economic recovery led to a 1.6 percent increase in direct employment in IP-intensive industries, faster than the 1.0 percent growth in non-IP-intensive industries. Growth in copyright-intensive industries (2.4 percent), patent-intensive industries (2.3 percent), and trademark-intensive industries (1.1 percent) all outpaced gains in non-IP-intensive industries.
- Jobs in IP-intensive industries pay well compared to other jobs. Average weekly wages for IP-intensive industries were \$1,156 in 2010 or 42 percent higher than the \$815 average weekly wages in other (non-IP-intensive) private industries. This wage premium nearly doubled from 22 percent in 1990 to 42 percent by 2010. Patent- and copyright-intensive industries have seen particularly fast wage growth in recent years, with the wage premium

⁴ Using data provided by the Bureau of Labor Statistics' Industry Productivity program, employment covers the sum of payroll jobs, self-employed persons, and unpaid family workers, and totaled 144.2 million jobs in 2010. Because the unit of measure is jobs (as opposed to persons) and because about 5 percent of all workers have more than one job, the total number of jobs is greater than the 139.1 million employed persons in 2010, as estimated from the Current Population Survey (www.bls.gov/cps).

⁵ Because several industries were found to intensively use both patents and trademarks or copyrights and trademarks, total IP-intensive industry employment is less than the sum of patent-, trademark-, and copyright-intensive industry employment.

in patent-intensive industries increasing from 66 percent in 2005 to 73 percent in 2010, and the premium in copyright-intensive industries rising from 65 percent to 77 percent.

- The comparatively high wages in IP-intensive industries correspond to, on average, the completion of more years of schooling by these workers. More than 42 percent of workers aged 25 and over in these industries in 2010 were college educated, compared with 34 percent on average in non-IP-intensive industries.
- Merchandise exports of IP-intensive industries totaled \$775 billion in 2010, accounting for 60.7 percent of total U.S. merchandise exports.
- Data on foreign trade of IP-intensive service-providing industries is limited; however, this report does find that exports of IP-intensive service-providing industries accounted for approximately 19 percent of total U.S. private services exports in 2007.

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I. INTRODUCTION

“The key to our success – as it has always been – will be to compete by developing new products, by generating new industries, by maintaining our role as the world’s engine of scientific discovery and technological innovation. It’s absolutely essential to our future.”

– President Barack Obama, November 17, 2010

A defining characteristic of the U.S. economy throughout its history is its rapid and sustained growth. For example, real income per person two hundred years ago was four percent of what it is today.⁶ Strong and sustained economic growth results from several factors, but among the most important is innovation, “the process by which individuals and organizations generate new ideas and put them into practice” and create “new and better ways of producing goods and services.”⁷ Likewise, U.S. companies’ use of trademarks to distinguish their goods and services from those of competitors represents an additional support for innovation, enabling firms to capture market share and promoting growth in our economy.

One important way to help encourage innovation is through the protection of intellectual property (IP). The investments necessary to develop IP are often quite substantial. Firms and individuals, in order to invest the necessary resources, need some assurance that they will benefit from and recover the costs of the creation of intellectual property. IP rights help protect authors, inventors, and merchants of goods and services from having their creations and innovations quickly and easily exploited by other firms or individuals, diminishing the benefits to the inventor of the IP. This reduction in private benefits to be gained from the underlying innovation could, in turn, reduce the incentives to undertake the investments necessary to develop the IP in the first place.⁸

Protection of IP has been a critical function of the U.S. government since the founding of this country. Indeed, Article I, Section 8, Clause 8 of the U.S. Constitution grants to Congress the power to “promote the Progress of Science and useful Arts by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”

Patents, trademarks, and copyrights are the principal means for establishing ownership rights to inventions and ideas, and they provide a legal foundation by which intangible ideas generate tangible benefits to firms and workers. IP protection affects commerce throughout the economy by:

⁶ Maddison 2006.

⁷ National Economic Council et al. 2011, 7.

⁸ Ibid., 11.

- Providing incentives to invent and create;
- Protecting innovators from unauthorized copying;
- Facilitating vertical specialization in technology markets;
- Creating a platform for financial investments in innovation;
- Supporting entrepreneurial liquidity through mergers, acquisitions, and IPOs;
- Making licensing-based technology business models possible; and
- Enabling a more efficient market for technology transfer and trading in technology and ideas.

Certain industries find IP protection to be especially important and consequently register a relatively high number of patents, trademarks, and copyrights compared with other similarly sized industries. Still, as a general matter, we note the importance of achieving a balanced system of IP rights that protects inventors and creators from unlawful use of their work while encouraging innovation, competition, and the markets for technology in which IP is transacted. Importantly, using IP to support innovation and creativity means recognizing the public domain and limits such as fair use which balance the public's right to use content legally with IP owners' interests.

This report, prepared by the Economics and Statistics Administration (ESA) and the U.S. Patent and Trademark Office (USPTO) of the U.S. Department of Commerce, focuses on identifying these IP-intensive industries and examining their characteristics and contributions to the overall economy. Using administrative data and economic literature analyzing IP protection, this report develops various metrics of IP usage by industry. The report does not contain policy recommendations and is not intended to directly advance particular policy issues. By developing new measures of IP-intensity by industry, the report provides a better understanding of the industries where IP plays a particularly important role.

To be specific, the report identifies 75 industries (from among 313 total) that are particularly dependent on patent, copyright, or trademark protection and which we define as IP-intensive. The second section of this report, "Identifying IP-Intensive Industries," lays out the methodologies used to develop these metrics and details which industries were selected as IP-intensive. Given the differing natures of patents, copyrights and trademarks along with data limitations, we developed separate approaches that are consistent, to the extent possible, for identifying which industries rely on patents, trademarks, or copyrights.

In the third section of this report, we present evidence on the size of these industries relative to the economy as a whole. This analysis points to several key results. First, these industries accounted for 27.1 million, or 18.8 percent, of all jobs in 2010.⁹ They contributed 34.8 percent to gross domestic product (GDP), with total value added of \$5.06 trillion in 2010. The bulk of employment and value added correspond to the 60 trademark-intensive industries, which is a reflection of the nearly ubiquitous use of trademarks and logos in the marketplace. The share of total employment in many IP-intensive industries has edged down over the past two decades. Further, it is important to note that these 75 industries are by no means the only ones with business models and profits supported by IP protection. Indeed, as discussed more below, this report reinforces the notion that all sectors of the economy actively use IP protection.

In addition, we examine how these industries have performed relative to other, less IP-intensive industries. In particular, although IP-intensive industries have not performed as well in job growth relative to other sectors over the last two decades, IP-intensive industries have been a source of high-quality jobs, with average weekly wages in these industries averaging 42 percent higher than the average for all other industries. The workers in IP-intensive industries also tend to be better educated, on average, than other workers: more than 42 percent of workers age 25 and over in these IP-intensive industries were college educated, compared to one in three in other industries. Copyright-intensive industries, in particular, employed the most educated workers, with 61 percent holding at least a college degree. Finally, IP-intensive industries were large contributors to U.S. foreign trade, accounting for about 60.7 percent of total merchandise exports and about 19 percent of service exports.

⁹ This analysis uses employment data from the Bureau of Labor Statistics' Industry Productivity program, which includes the sum of payroll jobs, self-employed persons, and unpaid family workers and totaled 144.2 million jobs in 2010. Because the unit of measure is jobs (as opposed to persons) and because about 5 percent of all workers have more than one job, the total number of jobs is greater than the 139.1 million employed persons in 2010, as estimated from the Current Population Survey (www.bls.gov/cps).

II. IDENTIFYING IP-INTENSIVE INDUSTRIES

PATENTS

Overview

Utility patents, hereafter referred to as “patents” unless otherwise noted, assist owners in protecting the rights to inventions and innovative processes.¹⁰ A patent issued by the USPTO enables the owner to pursue legal action to exclude “others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States.”¹¹ U.S. patents are issued to inventors who can assign their ownership rights to individuals, corporations, universities, other organizations, or branches of governments of any nationality.^{12, 13} Our patent analysis focuses only on patents issued to U.S. corporations, which accounted for about 45 percent of total patents issued between fiscal years (FY) 2004 and 2008 and 87 percent of all U.S.-owned patents for this time period.^{14, 15}

Patents are further classified in over 430 patent “technology classes” that distinguish their inventive content.¹⁶ Additionally, the USPTO maintains a general concordance between its technology classifications and 32 North America Industry Classification System (NAICS) codes (26 unique codes and 6 combinations), which enables analysts to associate patents with these industries.¹⁷ We rely on these NAICS-based patent counts for FY 2004 to FY 2008 to identify

¹⁰ In addition to utility patents, there are two other types of patents: design and plant. Utility patents apply to processes, machines, articles of manufacture, composition of matter, or any new and useful improvements thereof. Design patents apply to ornamental designs for an article of manufacture. Plant patents apply to the invention or discovery of selected new varieties of asexually reproducing plants.

¹¹ 35 U.S.C. § 157(a)(1). This right was established over 200 years ago in fulfillment of Article 1, Section 8 of the United States Constitution: “The Congress shall have Power... To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;” www.uspto.gov/patents/index.jsp.

¹² Inventors, who are always individuals and not organizations, apply for patents. The inventors can transfer (assign) their rights to anyone, including organizations, and can do so before or after the patent is issued. Commonly, inventors work for employers who hire them to create new inventions, and as part of their employment agreements agree in advance to assign to their employers any patent rights that result from their work.

¹³ Today, multiple inventors on a single patent often come from several nations, an example of globalization’s impact on innovation.

¹⁴ The “U.S. corporation” category of ownership in USPTO reports broadly includes private organizations, including small and large companies, nonprofits, partnerships, and universities.

¹⁵ See Tables A1-1a, A1-1b at www.uspto.gov/web/offices/ac/ido/oeip/taflh_at.htm#PartA1_1b.

¹⁶ Utility patents may be classified into more than one technology class, but are organized according to their primary classification.

¹⁷ This concordance was created by the USPTO with financial support from the National Science Foundation. For an overview of NAICS, see www.census.gov/eos/www/naics/index.html.

patent-intensive industries.¹⁸ Just as a patent can be assigned to more than one technology class, it also may be associated with multiple industries. Because no similar concordances to NAICS are available for plant or design patents, only utility patents were used in our analysis.¹⁹ This approach strictly limits the patent analysis to the manufacturing sector because the concordance system only associates patents with manufacturing industries. Service-providing industries may also rely on utility patents in their production processes, but these industries are not captured by the patent-NAICS concordance that we employ.

Fractional vs. Whole Patents Counts

The USPTO reports patent data by NAICS category using two different counting measures. The first gives one full count to every industry associated with a particular patent. The second divides each patent by the number of industries it is associated with, thus creating fractional counts of patents. The sum of the fractional counts equals the total number of patents issued in a given year, while the sum of the whole counts across industries is greater than the number of patents issued. Patent analyses within a given industry or technology class commonly use whole counts; however, cross-industry analyses typically use fractional counts in order to avoid over-counting. For these same reasons, fractional counts are used in this report.^{20, 21} It is important to note that the NAICS concordance maintained by the USPTO associates each patent with its final use in the economy. In practice, this means that the patents are all associated with manufacturing NAICS codes regardless of whether the company that owns them is a manufacturer or a company that may be classified in the services sector.²²

Methodology

The USPTO has NAICS-based patent data covering the period from 1963 to 2008. We calculated a measure of industry patent “intensity,” defined as the ratio of total patents over the five years in a NAICS category to the average payroll employment by industry. Because employment is a gauge of industry size, dividing patent counts by employment normalizes patenting activity with respect to industry size.²³ This approach helps put all industries on an even playing field, so that the most patent-intensive industries were defined not as the ones with the most patents, but rather those with the most patents per job.

¹⁸ See www.uspto.gov/web/offices/ac/ido/oeip/taf/data/misc/patenting_trends/info_ptrends2008.txt.

¹⁹ To contrast the scale of technology patents, design patents break out into 33 classes and plant patents into only one patent class. See www.uspto.gov/web/offices/ac/ido/oeip/taf/all_tech.htm for more information on utility patents.

²⁰ It should be noted that the use of fractional patent counts differs somewhat from our treatment of trademark registrations for which whole counts of registrations by class were used.

²¹ As a robustness check, we repeated our analysis using full counts and found little difference in our final results.

²² For full details on the nature and caveats of the patent data used, see www.uspto.gov/web/offices/ac/ido/oeip/taf/govt/naics/explan_naics.htm.

²³ Value added and gross output are two alternative gauges of industry size; however, estimates at the level of detail needed for this analysis are not publicly available due to data confidentiality limitations.

By using a five-year period (in this case, FY 2004-08, the most recent period for which data are available) instead of just one year helps minimize the chance that anomalies in any given year will skew our results. The analysis was performed at the greatest possible level of NAICS industry detail, and so results include four-digit industries as well as some individual three-digit industries and combinations of three- or four-digit industries.²⁴ As will be seen in the results, most patent-intensive industries in the sample fall into the four-digit NAICS industries, which may be a product of the patent-intensive nature of these more finely disaggregated industry sectors.

Results

We defined patent-intensive industries as ones with above-average patent intensity (patent/job ratio) when comparing all industries.²⁵ (See Table 1.) The four most patent-intensive industries all have intensity rates that are one standard deviation above the mean patent-intensity cutoff, and are all classified in computer and electronic product manufacturing (NAICS 334). This three-digit NAICS industry includes computer and peripheral equipment; communications equipment; other computer and electronic products; semiconductor and other electronic components; and navigational, measuring, electro-medical, and control instruments. This is unsurprising when one also looks at the recent top ten U.S. companies ranked by granted patents.^{26, 27} This group of companies includes Intel, Hewlett-Packard, Micron Technology, and Texas Instruments, each of which is closely associated with computer and computer peripheral manufacturing.

USPTO's Patent Class - NAICS Concordance

The scheme used by the USPTO to associate utility patents with their proper NAICS designation includes groups of four-digit as well as three-digit NAICS codes. With respect to machinery manufacturing (NAICS 333) and electrical equipment, appliance, and component manufacturing (NAICS 335), the USPTO does not provide a breakdown beyond this three-digit level, largely because many of the classes in these categories overlap with other NAICS codes. Thus, our analysis of patents cannot measure patent intensity in NAICS 333 and 335 at a more disaggregated level because technology classes corresponding to these industry categories cannot easily and cleanly be associated with more detailed NAICS industries. Because we cannot disaggregate these two industries, or the groupings of NAICS 3343 and 3346, and NAICS 3253, 3255, and 3256 (which also were found to be patent-intensive) into their four-digit NAICS components, it is not possible to know whether each of the individual four-digit industries is patent-intensive according to our definition.

²⁴ In the NAICS classification, a three-digit code is a larger aggregation as compared to a four-digit code. So, for instance, NAICS 236 "construction of buildings" is a larger aggregation of which NAICS 2361 "residential building construction" is a smaller and more specific subset.

²⁵ Although we pooled the FY 2004-08 patent counts, we also examined individual years to see how stable the selection of patent-intensive industries would be over time. The list of most intensive industries proves to be relatively stable over time, especially the high rankings of the computer and peripheral equipment manufacturers.

²⁶ See www.uspto.gov/web/offices/aclido/oeip/taflasgstclusa_ror.htm.

²⁷ The OneSource Business Browser was used to classify companies to NAICS industries; www.onesource.com/businessbrowser.aspx.

Table 1. Patent Intensity, FY 2004-08

NAICS code	Industry title	Patents (number)	Employment (1000 jobs)	Patent intensity (patents/1000 jobs)
3341	Computer and peripheral equipment	54,416	196.1	277.5
3342	Communications equipment	35,797	135.2	264.8
3344	Semiconductor and other electronic components	50,088	448.7	111.6
3343,-6	Other computer and electronic products	7,744	71.4	108.5
3345	Navigational, measuring, electromedical, and control instruments	42,415	441.3	96.1
3251	Basic chemicals	12,109	150.9	80.2
335	Electrical equipment, appliance, and components	23,503	433.0	54.3
3254	Pharmaceutical and medicines	13,627	291.3	46.8
3399	Other miscellaneous	12,717	339.2	37.5
3253,-5,-6,-9	Other chemical products and preparation	10,322	318.1	32.4
3391	Medical equipment and supplies	9,716	303.2	32.0
333	Machinery	37,105	1,173.7	31.6
3252	Resin, synthetic rubber, fibers, and filaments	2,771	106.4	26.0
326	Plastics and rubber products	8,289	775.8	10.7
3361-3363	Motor vehicles, trailers and parts	8,298	1,029.8	8.1
327	Nonmetallic mineral products	3,651	497.2	7.3
3365,-6,-9	Other transportation equipment	1,585	222.4	7.1
3364	Aerospace products and parts	2,726	473.3	5.8
313,-4,-5,-6	Textiles, apparel and leather	2,566	632.2	4.1
332	Fabricated metal products	5,495	1,532.5	3.6
331	Primary metals	998	458.9	2.2
337	Furniture and related products	1,107	543.0	2.0
322,-3	Paper, printing and support activities	1,313	1102.6	1.2
312	Beverage and tobacco products	217	195.5	1.1
321	Wood products	428	527.8	0.8
311	Food	719	1,483.1	0.5
Total		354,360	13,882.7	25.5

Above mean

Source: ESA calculations using data from USPTO and the Bureau of Labor Statistics' Current Employment Statistics program.
 Note: The patent count is the total for fiscal years 2004-08, while employment shows the calendar year 2004-08 average in thousands of jobs.

Alternatives and Robustness

The methodology used in this report identifies industries only, and so should not be used to draw conclusions about specific companies in these industries, or in other industries which did not make our list. For example, industries with a relatively small stock of highly valuable patents, but relatively large numbers of employees, would not be selected as patent-intensive in our methodology, even though companies in that industry may rely critically upon patent protection.

The aerospace industry is a good illustration of this point. Its patent-to-jobs ratio was about one-fifth the overall average, but there is other evidence suggesting that patenting is considered important by aerospace companies. In a survey conducted by researchers at Carnegie-Mellon University in 1994, aerospace company R&D managers reported on average that 78 percent of their business units filed for patents (about the same share reported by the pharmaceutical and basic chemical industries, both of which make our list of patent-intensive industries) and that 51 percent of product innovations were being patented (about the same share as in the semiconductor industry, which was also included in our list).²⁸ So, while it does appear that patenting was relatively important to companies in the aerospace industry during the early 1990s, this sector does not show up in our current list. This outcome could indicate that patent protection is less useful in aerospace than two decades ago (probably unlikely), or it may be an artifact of the manner in which technologies are assigned to industries in our methodology.

Another possibility is that industries may rely on proprietary protections other than patents, such as a trade secret, which may very well be a safer mode of protecting new discoveries in an industry with few competitors monitoring each other closely. Whereas patenting requires disclosure of the details of the new discovery, a trade secret allows the discovery to remain undisclosed, under close in-house protection.

The Carnegie-Mellon University survey allows the consideration of an alternative measure of IP reliance, based not on the number of patents granted per employee, but instead on the responses of research and development (R&D) lab managers to questions concerning the effectiveness of different methods for protecting innovation. Because managers were asked in the survey to report on the percentage of product and process innovations for which patent protection was effective at capturing competitive advantage from the innovation, the study provides a window into the relative importance of patent protection considered against the stock of innovations that industries are producing. As Table 2 makes clear, this survey method results in a different ranking among industries than the patent intensity measures used in this report, with sectors such as pharmaceuticals (drugs), medical equipment, and chemicals ranked most highly.

Because this survey was conducted in the mid 1990s, it was not considered an ideal principal measure for current industry activities. It is noteworthy, however, that the industries reporting that patents were effective for more than 51.0 percent of product innovations and 23.3 percent of process innovations (the overall averages in the survey) are largely the same industries with above-average patent-to-jobs ratios (patent intensity) in the mid-to-late 2000s. For this reason, the Carnegie-Mellon University survey results serve as an important robustness check for the accuracy of the methodology selected in this report for patent-intensive industries.

²⁸ See Cohen et al. 2000.

Table 2. Percent of Product and Process Innovations for which Patents were Considered an Effective Mechanism for Appropriating the Returns to Innovation, by Industry.

SIC code	Industry title	Product innovations (percent)	SIC code	Industry title	Process innovations (percent)
3311	Medical equipment	54.70%	2320	Petroleum	36.67%
2423	Drugs	50.20%	2423	Drugs	36.15%
2920	Special purpose machinery, nec.	48.83%	3311	Medical equipment	34.02%
3430	Auto parts	44.35%	2700	Metal, nec.	31.67%
3010	Computers	41.00%	2610	Glass	30.83%
2429	Miscellaneous chemicals	39.66%	3010	Computers	30.25%
2800	Metal products	39.43%	2411	Basic chemicals	29.71%
3410	Car/truck	38.89%		Special purpose machinery, nec.	28.57%
2411	Basic chemicals	38.86%	2920	Paper	27.58%
2910	General purpose machinery, nec.	38.78%	2100	Paper	27.58%
3230	TV/radio	38.75%	2429	Miscellaneous chemicals	27.32%
2400	Chemicals, nec.	37.46%	1700	Textiles	25.22%
2100	Paper	36.94%	3430	Auto parts	24.35%
2922	Machine tools	36.00%		General purpose machinery, nec.	23.62%
3100	Electrical equipment	34.55%	2910	Other manufacturing	23.42%
3600	Other manufacturing	33.81%	2600	Mineral products	23.33%
2320	Petroleum	33.33%		Semiconductors and related equipment	23.33%
2413	Plastic resins	32.96%	3210	Metal products	22.50%
3530	Aerospace	32.92%	2800	Metal products	22.50%
2500	Rubber/plastic	32.71%	3110	Motor/generator	22.14%
2610	Glass	30.83%	3410	Car/truck	21.67%
2695	Concrete, cement, lime	30.00%	3530	Aerospace	21.38%
3314	Search/navigational equipment	28.68%	2413	Plastic resins	21.30%
3210	Electronic components	26.67%	2400	Chemicals, nec.	20.40%
3312	Precision instruments	25.86%	2500	Rubber/plastic	19.86%
3220	Communications equipment	25.74%	3100	Electrical equipment	19.09%
3110	Motor/generator	25.23%	3230	TV/radio	18.75%
2710	Steel	22.00%	2695	Concrete, cement, lime	18.50%
3210	Semiconductors and related equipment	21.35%	2922	Machine tools	18.00%
2600	Mineral products	21.11%	3312	Precision instruments	16.77%
1700	Textiles	20.00%	1500	Food	16.40%
2700	Metal, nec.	20.00%	2710	Steel	15.50%
1500	Food	18.26%	3210	Electronic components	15.19%
2200	Printing/publishing	12.08%	3220	Communications equipment	14.70%
	All industries	34.83%	3314	Search/navigational equipment	13.24%
			2200	Printing/publishing	8.64%
	All industries	34.83%		All industries	23.30%

Source: Cohen et al. 2000, Tables 1 and 2.

Note: Estimates are the mean percentage of product or process innovations for which patents were considered by respondent to be effective for securing competitive advantage. Bolded industries in each list are those with response scores above the industry-level mean for all industries surveyed in the study. Industries are defined according to the 1987 Standard Industrial Classification (SIC) system, the precursor to NAICS. The abbreviation “nec.” stands for “not elsewhere classified.”

Trademarks

Overview

Industries throughout the economy rely on trademarks registered at the USPTO to protect brands for the goods and services they market.²⁹ A trademark is “a word, phrase, symbol, or design, or a combination thereof, that identifies and distinguishes the source of the goods of one party from those of others.”³⁰ Unlike a patent, which protects an invention, or a copyright, which protects a work of original authorship, a trademark does not protect a new product or service *per se*. A trademark instead confers protection upon the brand or identity of a good, thus preventing competitors from leveraging another firm’s reputation and confusing consumers as to the source of the goods. Service marks are similar in nature to trademarks, but distinguish the source of a service rather than a good.³¹ In the remainder of this text, the term “trademark” will refer to both trademarks and service marks.

Any company or individual, American or foreign, can apply to register a trademark with the USPTO for a nominal fee. Once granted, trademark registrations can remain in force indefinitely as long as the trademark remains in active use and maintenance payments are made. If the trademark is not in active use and maintained, the rights will cease after a period of time, normally five years. To maintain trademark registrations, new owners must file a Section 8 Affidavit of Continuous Use before the end of the sixth year after the initial registration date. Trademark registrations must be renewed on or about every 10-year anniversary of the registration of the trademark.³²

Identifying Trademark-Intensive Industries

Unlike patents, there is little academic research examining industry use of trademarks. Accordingly, this report offers what may be the first comprehensive analysis of trademark use by U.S. industries that is grounded in original research, data, and measurement theory. As a preliminary matter, we recognized that each trademark registration has a description of the type of good or service with which the protected mark is used in commerce. The USPTO classifies goods and services for administrative convenience, and applicants for trademark registration must provide a separate description—and pay separate application and maintenance fees—for

²⁹ We note that trademark owners are not required to register their trademarks. Parties can acquire rights in their trademarks merely by using those trademarks. In addition, trademark owners who wish to register their trademark may do so not only at the USPTO, but with state authorities as well, or with both. The trademarks that were analyzed in connection with the present study were all registered at the USPTO.

³⁰ USPTO 2010a.

³¹ For example, the Whole Foods Market grocery store brand name is a service mark for retail grocery store services, and also a trademark for hair shampoo and soap.

³² There is no further 6-year affidavit requirement after the first 10-year term. Overall, 46 percent of the nearly 822,000 registrations from the 1990s “survived” into the 2000s.

each “class” in which the goods or services associated with the trademark is classified.³³ This makes working with trademark registration data different from working with patent grant data.

Trademark application and maintenance fees are assessed on a per-class basis, and registration holders may elect to renew their registrations with respect to some but not all classes. As a result, holding a “multi-class” registration is practically equivalent to holding multiple registrations, one for each class. Accordingly, in the foregoing analysis each class listed on a registration was considered as the unit of analysis, creating a class-registration count. For example, if one mark (or logo) is registered in three classes, then our input measure in the analysis reflects three trademark registration counts, one for each class.³⁴

In practice, the vast majority of trademark registrations are associated with a single class. However, from 2000 to 2009, about 16 percent of trademarks were registered in more than one class. About 10 percent were registered in two classes, while the remaining six percent were registered in anywhere from three to 45 classes. As a result of this variation, the sum of registration-class observations is somewhat greater than the sum of registrations.³⁵

As an example of a firm that has chosen to register a trademark in multiple classes, consider Whole Foods’ “365 Everyday Value” brand. Whole Foods protects the 365 Everyday Value brand in 10 different trademark classes.³⁶ The goods classes under which the 365 Everyday Value logo is applied include processed foods (from frozen dinners to trail mix), staple foods (cereal, tortilla chips, pasta sauce, cookies), as well as food storage containers, paper products (paper towels and coffee filters), and cosmetics and cleaning preparations (laundry detergent, shampoo, bath gels). In effect, these 10 classes are 10 distinct registrations, each of which can be renewed, or not, separately.

The approach that we adopted for measuring trademark-intensive industries parallels, but differs from, the approach employed when analyzing patents.³⁷ For patents, each patent was counted only once overall; for trademark measurements, each mark is counted once for each class in which it belongs, potentially counting it more than once overall according to the number of classes in which it is registered. Since it is not easy to ascertain which trademark class-registrations are relatively more important, we used the best measure available, based on the

³³ For a list of classes, see Trademark Manual of Examining Procedure (TMEP) chapter 1400 (7th ed. 2010). Fees also are a function of the type of application form used. For more information on the trademarking process, see USPTO 2010a.

³⁴ An example is the mark “Nike” being registered in classes associated with (a) software, (b) golf equipment, and (c) eyewear. See U.S. trademark registration numbers 3406594, 3389746, and 3081688, each by Nike, Inc.

³⁵ Another way to think about this is to consider the registration counts to be weighted by the number of classes. So, if the mark for brand A is registered in a single class and the mark for brand B is registered in five classes, then, we calculate total registrations = $\sum (\text{classes per mark}_{\text{brand } i} * \text{mark}_{\text{brand } i}) = (1*1) + (5*1) = 6$.

³⁶ This trademark is serial number 76977931 and can be found by using the USPTO searchable trademark database at tarr.uspto.gov/servlet/tarr?regser=serial&entry=76977931.

³⁷ For example, the list of industries selected because of their trademark intensity, as described in the next section, includes 55 industries. Had we calculated the intensities based on fractional trademark counts, the list would have numbered 51 industries, with 49 industries appearing on both lists.

economic realities of the fee system.³⁸ Because each trademark class registration involves some fixed filing fee paid to the USPTO, the more classes in which a trademark is registered indicate more times that a fee has been paid to the USPTO. Using these fee-payments is an effective method to base an IP-intensity measure and this approach was followed consistently for both trademarks and patents. Also, as a sensitivity measure, we found that counting patents and trademarks differently, by using whole counts for patents for example, produced similar results.

Because trademark registrations can be segmented by class but not by industry, there is no USPTO NAICS concordance for these data. Due to this methodological limitation, there is no single, straightforward way to tabulate registrations and measure trademark intensities by industry. Accordingly, and because the measurement of trademark use is a new science, we opted for over-inclusiveness and developed a three-pronged approach to identifying trademark-intensive industries.

We relied on three related but distinct approaches, using different samples of companies that have registered USPTO trademarks. The first approach is the closest approximation to the methodology used to identify patent-intensive industries. Starting with the complete set of trademark registrations, we matched publicly traded companies by their name to a separate database containing information on the firms' primary industry and number of employees. These data allowed us to calculate trademark intensities by industry for the matched firms. In the second approach, we reviewed lists of the top 50 corporate trademark registrants published by the USPTO (which, unlike the first approach, include both private and public companies) and identified industries that appear repeatedly. To help moderate the tendency of the first two approaches to under-represent smaller and younger firms, our third approach focused on a representative and random sample of firms drawn from the complete database of U.S. corporate trademark registrations from FY 2004 to FY 2008.

Trademark Intensities

Methodology

Parallel to our method for defining patent intensities, we defined trademark intensities as the ratio of trademark registrations to employment in a given industry. Thus, we measured the number of trademark registrations per employee. The USPTO applied a firm-name standardization routine developed originally for patent analysis in order to match companies with new trademark registrations to companies in Compustat's database of financial statements of publicly traded companies.³⁹ This matching identified 386,998 distinct standardized firm names in the FY 2004-08 trademark registration and trademark renewal records. These were firms that either registered or renewed at least one trademark from FY 2004 to FY 2008. These records were matched with 9,539 parent-company records drawn from the Compustat database.

³⁸ We could weight companies by number of employees, but it is more difficult to decide whether a given trademark taken by itself should be weighted heavily or lightly.

³⁹ This methodology has previously been applied in studies of patents, particularly as detailed in Hall, Jaffe, and Trajtenberg 2001. This paper and other supporting documentation are available at www.nber.org/patents/.

Successful matches were made for 3,475 firms. Since Compustat records also include NAICS codes, it was straightforward to sum trademark registrations and employment by four-digit NAICS industry and then estimate industry trademark intensity as the number of matched firm trademarks per worker in each industry.⁴⁰

Because Compustat does not record the relationships between parent and subsidiary companies, the identities of trademark registrants were only matched to the name of the publicly traded parent company reporting financial statements to the U.S. government. Accordingly, trademarks registered in the name of subsidiaries that have different names than the parent company were not matched by this method.⁴¹

Results

Overall, this procedure identified 235 four-digit NAICS industries with trademark registrations among publicly traded parent companies. The employment-weighted mean trademark intensity for these firms was 1.86 trademarks per 1,000 workers, and the weighted standard deviation was 3.80. Upon examining this distribution, we defined as trademark-intensive the 55 industries with trademark intensities above the sample industry mean, consistent with our approach for identifying patent-intensive industries. We also set as a minimum a sample size in each four-digit NAICS industry of five distinct firms and 100 registrations over the 5-year period. These minima helped us avoid wrongly selecting as trademark-intensive any industries that had high estimated trademark intensities but very few firms in the matched sample or very low absolute trademark registration activity.

As shown in Table 3, the 55 industries span most major industry sectors, with many industries in the manufacturing and information sectors, as well as others from the financial activities, professional and technical services, mining, construction, healthcare, and leisure and hospitality sectors. Four industries stood out from the rest due to their notably high trademark intensities: audio and video equipment manufacturing (82.5 trademarks per 1,000 employees), other miscellaneous manufacturing (64.5), satellite telecommunications (35.3), and lessors of nonfinancial intangible assets (33.3). The first two industries also ranked above the mean in our patent-intensive listing. The category “lessors of nonfinancial intangible assets” is a special case. That industry’s sole function is to assign “rights to assets, such as patents, trademarks, brand names, and/or franchise agreements [but not to copyrighted works] for which a royalty payment or licensing fee is paid to the asset holder.”⁴² Thus, the industry is by definition IP-

⁴⁰ To the extent that matched firms differ in their trademarking behavior relative to unmatched firms, these trademark intensities are biased. However, what really matters for our analysis is not whether the estimates are individually biased but rather if any bias varies across industries.

⁴¹ For this reason, this method not only tends to overweight large, publicly traded companies, but also those companies that have a particular trademark-registration approach. Although no studies to our knowledge have been done on the practices of corporate trademark registration at the parent or subsidiary level, recent patent scholarship suggests that IP ownership may show systematic differences along these dimensions. See Arora, Belenzon, and Rios 2011, 29-30.

⁴² See www.census.gov/cgi-bin/sssd/naics/naicsrch?code=533110&search=2007, noting that six-digit NAICS industry 533110 and four-digit NAICS industry 5331 are identical. The entire 2007 NAICS manual can be found online at www.census.gov/eos/www/naics/index.html.

intensive, but could not be selected as patent-intensive because all patents were assigned by the USPTO NAICS concordance only to manufacturing industries.

Table 3. Industries with Above-Average Trademark Intensity, FY 2004-08

NAICS code	Industry title	Trademark intensity (trademarks/1000 workers)	NAICS code	Industry title	Trademark intensity (trademarks/1000 workers)
3343	Audio & video equipment mfg.	82.5	3231	Printing & related support activities	3.6
3399	Other miscellaneous manufacturing	64.5	5416	Management & technical consulting	3.5
5174	Satellite telecommunications	35.3	3345	Electronic instrument mfg.	3.4
5331	Lessors of nonfinancial intangible assets	33.3	5241	Insurance carriers	3.4
5191	Other information services	14.8	4234	Commercial equip. merchant wholesalers	3.1
5615	Travel arrangement & reservation	13.5	3115	Dairy product manufacturing	3.0
5179	Other telecommunications	12.4	3222	Converted paper product mfg.	2.9
5311	Lessors of real estate	11.2	3251	Basic chemical manufacturing	2.9
5112	Software publishers	8.2	4511	Sporting goods, hobby, and musical instrument stores	2.9
4541	Electronic shopping & mail-order houses	7.7	3121	Beverage manufacturing	2.8
3256	Soap, cleaning compound, & toiletries	7.4	5614	Business support services	2.7
3322	Cutlery & handtool manufacturing	7.3	3221	Pulp, paper, & paperboard mills	2.6
3339	Other general purpose machinery manufacturing	6.1	3252	Resin, rubber, & artificial fibers	2.6
3391	Medical equipment & supplies manufacturing	5.9	3261	Plastics product manufacturing	2.6
5111	Newspaper, book, & directory publishers	5.8	3259	Other chemical product & preparations	2.5
3333	Commercial & service industry manufacturing	5.4	4242	Druggists' goods merchant wholesalers	2.5
5417	Scientific research & development	5.4	3353	Electrical equipment mfg.	2.4
3359	Other electrical equipment & components	4.7	6214	Outpatient care centers	2.4
3254	Pharmaceutical & medicine mfg.	4.6	5239	Other financial investment activities	2.3
3162	Footwear manufacturing	4.4	7132	Gambling industries	2.3
5121	Motion picture & video industries	4.3	3112	Grain & oilseed milling	2.2
3371	Household & institutional furniture	4.2	3336	Turbine & power transmission equipment	2.2
4244	Grocery & related product wholesalers	4.1	5152	Cable & other subscription programming	2.2
2361	Residential building construction	4.0	3119	Other food manufacturing	2.0
3352	Household appliance manufacturing	3.8	3329	Other fabricated metal product manufacturing	1.9
2111	Oil & gas extraction	3.7	3341	Computer & peripheral equipment	1.9
3332	Industrial machinery manufacturing	3.7	5221	Depository credit intermediation	1.9
3342	Communications equipment mfg.	3.7			

Source: USPTO calculations using the agency's trademark registration data and company employment data from Compustat.

Top 50 Trademark-Registering Companies

Methodology

Since 2006, the USPTO's annual *Fiscal Year Performance and Accountability Reports* have identified the 50 companies that obtained the largest number of trademark registrations during the Federal fiscal year.⁴³ Because these reports do not provide the primary NAICS code of the companies in question, we used OneSource, a subscription-based dataset, to determine the relevant NAICS industry classification for each of the companies listed for FY 2006-10.^{44, 45} On the theory that these large companies operate in industries with large numbers of trademark registrations relative to the size of the industry, a subset of those industries was defined as trademark-intensive.

After assigning each company to a four-digit NAICS industry, we tabulated the number of times each industry appeared in the top 50 during the FY 2006-10 period. We designated industries as trademark-intensive if they had counts of five or higher. At the extremes, counts of five or higher occurred if a given company was among the top 50 registrants in each of the five years studied, or if five different companies in an industry had reached the top 50 in a single year during the period. The tabulations showed neither of those extremes. Two industries were selected based on their score of five—sugar and confectionary products (NAICS 3113) and household appliances (3352)—and in both cases, two or more companies accounted for the top 50 trademark registrations.

Results

There are 14 industries with counts of five or greater, with other miscellaneous manufacturing at the top with 32.⁴⁶ (See Table 4.) Also scoring in the double-digits are pharmaceutical and medicine manufacturing; soap, cleaning compound, and toiletry product manufacturing; and

⁴³ See www.uspto.gov/about/stratplan/ar/index.jsp to access the annual "Performance and Accountability Reports." In each report, the Top 50 Trademark Registrants tables are Table 29B within the USPTO Workload Tables in section 5, "Other Accompanying Information."

⁴⁴ This subscription-based dataset is available online at businessbrowser.onesource.com/homepage.aspx.

⁴⁵ As the results will highlight, classifying a company into a single NAICS industry is not straightforward. Generally, this report used the OneSource entry for the parent company of the firm in the top 50 listing to assign an industry code. The exceptions were when a company did not appear in OneSource and when the listed firm's industry differed considerably from the parent company's industry. As an example of the latter case, Bath & Body Works is a health and personal care store (NAICS 4461) even though its parent company Limited Brands, Inc. is classified under clothing stores (NAICS 4481). Other publicly available data were used to classify companies not included in OneSource.

⁴⁶ Toys, jewelry, sporting goods, pencils, signs, musical instruments, buttons, and caskets, among other goods, are some of the product lines in the miscellaneous manufacturing industry. Games and toys, however, are what dominate the trademarking activity for this NAICS code, as Hasbro, Mattel, International Game Technology, and WMS Gaming are each classified within "Other miscellaneous manufacturing." These four companies account for 18 of the 32 appearances for this NAICS code in the top 50 lists.

motion picture and video industries.⁴⁷ The industries that were selected using this approach further validated the trademark-intensity approach, as 10 of the 14 industries identified here were also flagged based on their trademark intensity. The four additional industries are sugar and confectionary product manufacturing, motor vehicle manufacturing, grocery stores, and radio and television broadcasting.

Table 4. Industries with Five or More Appearances in the Listings of Top 50 Trademark Registering Companies, FY 2006-10

NAICS code	Industry title	Number of Top 50 appearances
3399	Other miscellaneous manufacturing	32
3254	Pharmaceutical and medicine manufacturing	30
3256	Soap, cleaning compound, and toiletry product manufacturing	29
5121	Motion picture and video industries	14
5111	Newspaper, periodical, book, and directory publishers	9
5151	Radio and television broadcasting	9
5241	Insurance carriers	7
3343	Audio and video equipment manufacturing	7
3121	Beverage manufacturing	7
7132	Gambling industries	6
4451	Grocery stores	6
3361	Motor vehicle manufacturing	6
3352	Household appliance manufacturing	5
3113	Sugar and confectionery product manufacturing	5

Source: ESA calculations using data from the USPTO Annual Reports, Table 29B and OneSource.

⁴⁷ Three companies were responsible for the bulk of the top 50 trademark registrations in the motion picture and video industry: Twentieth Century Fox, Warner Brothers, and World Wrestling Entertainment. The fact that these three companies are classified principally in the motion picture and video industry helps illustrate the difficulty of summarizing large enterprises' activities within a single industry code.

Random Sample of Trademark Registrations

Methodology

One shortcoming of identifying industries based on the trademark intensities or top 50 appearances is that these approaches tend to bias selection toward larger companies that register a greater number of trademarks. Moreover, these approaches can fail to account for the critical importance that single trademarks may hold for large entities (for instance, Coca-Cola soft drinks) or differences in industry composition and concentration. These methods also can miss industries composed of smaller companies that may account for many trademarks as a group but do not otherwise fall in the USPTO top 50 listing. To help overcome these shortcomings, we supplemented the analyses with a random sample of registrants drawn from the universe of all 166,844 trademarks registered in FY 2010. These data were generated by USPTO using publicly available source data.⁴⁸ They comprise all 106,560 trademark registrants, both corporate and individual, including company/person name and number of trademarks registered in that year. To measure the industry share of total registered trademarks, a random sample of 300 registrations was drawn from this dataset. U.S. companies were listed as the registrant on 196 of these 300 trademark registrations, or about two-thirds.⁴⁹ We assigned four-digit NAICS industry codes to these firms using the same procedure employed for the top 50 corporate registrants.⁵⁰ Although limited in size, the sample's industry distribution reinforces the breadth and depth of trademarking activity seen in the other data highlighted throughout this report.

One limitation of this approach is that the sample was drawn from records that pertain to only a single year. This may result in the under-identification of industries that generally register frequently in an average year, but, for some reason, were less active in 2010. The sample size is another important limitation. The sample we used was small because assigning NAICS codes to each company requires the use of many resources. In an ideal data world, the USPTO trademark registry would include each corporate registrant's NAICS code; however, such information is not provided in trademark applications and therefore is not included in the USPTO database. The process of assigning NAICS codes to companies was especially cumbersome because many of the firms drawn from the sample were small businesses with few employees and little publicly available information from which to find or infer a NAICS classification.

⁴⁸ See USPTO Bulk Data available at www.google.com/googlebooks/uspto.html.

⁴⁹ This analysis was restricted to U.S.-owned firms because of the great difficulty in assigning NAICS codes to small, foreign-owned firms.

⁵⁰ Because the sample was drawn by registrations as opposed to registrants, a single individual or company could be drawn more than once. One company was selected twice in the sample, and so the 196 registrations corresponded to 195 firms.

Results

Table 5 below lists the NAICS industries as well as the share of registrations within the sample for all industries with at least five registrations that were drawn from the sample. We recognize that setting the limit at five registrations is somewhat arbitrary. Because there were no natural breaks in the sample distribution of trademark registrations, we chose this cutoff because it was two standard deviations above the mean and thus a relatively high bar. The seven industries listed in Table 5 account for one-fifth of trademark registrations from the 196 U.S. companies in our sample. Consistent with the list of trademark-intensive industries selected thus far, the ones selected based on the sample span a number of major industry sectors, including manufacturing, retail trade, wholesale trade, and professional and business services. Furthermore, six of the seven selected industries had already been selected as trademark-intensive based on their trademark intensities. The sole addition is clothing stores, which was one of the two NAICS categories with the highest share of registrations in the sample; the other was management, scientific, and technical consulting services. The selection of these seven industries will be further reinforced through a review of corporate brand rankings and trademark class data.

Table 5. Percent Distribution of Trademark Registrations of Selected Industries from Sample of U.S.-Owned, Trademark-Registrant Companies, Ranked by Percent, FY 2010

NAICS code	Industry title	Percent
4481	Clothing stores	3.5%
5416	Management, scientific, and technical consulting services	3.5%
3121	Beverage manufacturing	2.5%
4234	Professional and commercial equipment and supplies merchant wholesalers	2.5%
4511	Sporting goods, hobby, and musical instrument stores	2.5%
5112	Software publishers	2.5%
5417	Scientific research and development services	2.5%

Source: ESA calculations using trademark registration data provided by USPTO and OneSource.

Identifying Trademark-Intensive Industries

This combined approach for determining trademark intensity by industry—and any comprehensive examination of the USPTO trademark registration database—shows that a wide range of industries use trademarks in commerce. This fact maps onto our everyday experience, in which trademarks, brands, and logos are ubiquitous in the marketplace. The results also show that the latter two approaches tend to complement the first approach. The first approach is the most data intensive, and relies on a systematic matching of the entire U.S. trademark registration dataset over a five-year period to a comprehensive dataset of all publicly traded companies in the U.S. Nevertheless, it has limitations, as it may undercount some industries and smaller companies, either because a single trademark in an industry that is highly concentrated may be underrepresented (for instance, Coca-Cola and Pepsi-Cola) or because many small companies are not publicly traded. While the second and third approaches were meant to mitigate these shortcomings, it is interesting to note that there was substantial correlation in the results, with the majority of industries chosen in these two methods also being selected using the criteria in the first analysis. Nevertheless, our intention to capture a broad swath of trademark-intensive industries and the recognition that there were conceptual shortcomings in each approach has led us to treat all three approaches as complementary, and to define as trademark-intensive any industry identified by any of the three approaches. As will be detailed, the final results are broadly corroborated by a separate review of trademark class data and corporate brand rankings.

Table 6 shows the complete list of 60 trademark-intensive industries, which again are defined as any four-digit NAICS industry that is selected based on any one of the three methods: trademark intensity, top 50 registrants, or trademark registration sample. All but five of the industries listed in Table 6 were selected based on their above-average trademark intensity. The five additional industries were selected based on either their top 50 registrations or the trademark registration sample. Only one industry, beverage manufacturing (NAICS 3121), was selected through all three methods.

Table 6. Trademark-Intensive Industries and Selection Criteria

NAICS code	Industry title	Selection criteria		
		Trademark intensity	Top 50	Sample
2111	Oil and gas extraction	X		
2361	Residential building construction	X		
3112	Grain and oilseed milling	X		
3113	Sugar and confectionery product manufacturing		X	
3115	Dairy product manufacturing	X		
3119	Other food manufacturing	X		
3121	Beverage manufacturing	X	X	X
3162	Footwear manufacturing	X		
3221	Pulp, paper, and paperboard mills	X		
3222	Converted paper product manufacturing	X		
3231	Printing and related support activities	X		
3251	Basic chemical manufacturing	X		
3252	Resin, rubber, and artificial fibers	X		
3254	Pharmaceutical and medicine manufacturing	X	X	
3256	Soap, cleaning compound, and toiletries	X	X	
3259	Other chemical product and preparations	X		
3261	Plastics product manufacturing	X		
3322	Cutlery and handtool manufacturing	X		
3329	Other fabricated metal product manufacturing	X		
3332	Industrial machinery manufacturing	X		
3333	Commercial and service industry manufacturing	X		
3336	Turbine and power transmission equipment	X		
3339	Other general purpose machinery manufacturing	X		
3341	Computer and peripheral equipment	X		
3342	Communications equipment manufacturing	X		
3343	Audio and video equipment manufacturing	X	X	
3345	Electronic instrument manufacturing	X		
3352	Household appliance manufacturing	X	X	
3353	Electrical equipment manufacturing	X		
3359	Other electrical equipment and components	X		
3361	Motor vehicle manufacturing		X	

Table 6. Trademark-Intensive Industries and Selection Criteria—Continued

NAICS code	Industry title	Selection criteria		
		Trademark intensity	Top 50	Sample
3371	Household and institutional furniture	X		
3391	Medical equipment and supplies manufacturing	X		
3399	Other miscellaneous manufacturing	X	X	
4234	Commercial equip. merchant wholesalers	X		X
4242	Druggists' goods merchant wholesalers	X		
4244	Grocery and related product wholesalers	X		
4451	Grocery stores		X	
4481	Clothing stores			X
4511	Sporting goods and musical instrument stores	X		X
4541	Electronic shopping and mail-order houses	X		
5111	Newspaper, book, and directory publishing	X	X	
5112	Software publishers	X		X
5121	Motion picture and video industries	X	X	
5151	Radio and television broadcasting		X	
5152	Cable and other subscription programming	X		
5174	Satellite telecommunications	X		
5179	Other telecommunications	X		
5191	Other information services	X		
5221	Depository credit intermediation	X		
5239	Other financial investment activities	X		
5241	Insurance carriers	X	X	
5311	Lessors of real estate	X		
5331	Lessors of nonfinancial intangible assets	X		
5416	Management and technical consulting	X		X
5417	Scientific research and development	X		X
5614	Business support services	X		
5615	Travel arrangement and reservation	X		
6214	Outpatient care centers	X		
7132	Gambling industries	X	X	

Source: ESA and USPTO calculations.

Brands

Firms with high-value brands are likely to seek protection for those brands through trademark law. To check robustness of the methodology for selected trademark-intensive industries, we examined the Interbrand listing of the “Best Global Brands in 2010,” focusing on the extent to which firms with highly valued corporate brands operate in industries that have been identified as trademark-intensive.⁵¹

Methodology

Briefly, Interbrand’s methodology for ranking global brands considers the ongoing investment and management of the brand as a business asset.⁵² Three key aspects contribute to the assessment of each brand:

- *Financial performance* measures an organization’s raw financial return to the investors.
- *Role of brand* measures the portion of the decision to purchase that is attributable to brand.
- *Brand strength* measures the ability of the brand to secure the delivery of expected future earnings.

Before discussing the brand rankings, it is important to review caveats and differences in scope between Interbrand’s approach and our approach for identifying trademark-intensive industries. To be included in Interbrand’s ranking, companies must have corporate brands that are truly “global, visible, and relatively transparent.” First, the company must be present on at least three continents, including “broad coverage in growing and emerging markets.” At least 30 percent of revenues must be from outside of the home country, with no more than 50 percent from any single continent. Second, the brand’s public profile must extend beyond its own marketplace. Third, firms must prove their profitability through publicly available financial data. These criteria are restrictive relative to the rest of this report, in which the general focus is on all corporations, regardless of their global presence or profits.

Also, it should be emphasized that “brand” refers to single corporate brands as opposed to product brands. This distinction led Interbrand to exclude pharmaceutical companies, which are considered better identified through specific products than the companies themselves. Similarly, Wal-Mart is excluded not because it is insufficiently global as a company, but because it does not operate under a single Wal-Mart brand globally.⁵³

The corporate brands included in Interbrand’s Best Global Brands are identified by company name, and we assigned four-digit NAICS codes to each listed company using OneSource,

⁵¹ Corporate brand generally is equivalent to company name (with its corresponding protected logo), as opposed to a specific product brand, with some exceptions, such as Sprite and Budweiser.

⁵² Interbrand 2011a.

⁵³ Wal-Mart does top the separate rankings of the best retail brands in 2011. See Interbrand 2011b.

following the same methodology we used to assign NAICS codes to the top 50 trademark registrants.⁵⁴ We then compared the industries with top-ranked brands with the industries selected as trademark-intensive.

Results

We discovered considerable overlap between the trademark-intensive industries and those with high-ranking brands. Upon assigning NAICS codes to each brand, we calculated that the top 100 ranked brands corresponded to 41 different four-digit NAICS industries, and 24 of these industries (covering 70 brands) were selected as trademark-intensive. Put another way, 24 of the 60 trademark-intensive industries also had high-ranking brands either in the United States or abroad.

Table 7 lists the 24 trademark-intensive industries in which 70 of the various top 100 brands operate.⁵⁵ Beverage manufacturing (NAICS 3121) was the most heavily represented industry on the list, with 11 of the top 100 brands—including Coca-Cola, Interbrand’s #1 ranked global brand, as well as Pepsi (#23), Budweiser (#30), Sprite (#61), Jack Daniel’s (#80), and six foreign brands.⁵⁶ This industry is noteworthy because it also was the only one to be selected as trademark-intensive based on all three measures.

While there is much overlap between the trademark-intensive industries and the top-ranked brands, there also were 17 industries that were not considered trademark-intensive based on any of our three measures. Several happened to be among the top 10 brands, including IBM (#2, NAICS 5415), McDonald’s (#4, NAICS 7222), General Electric (#5, NAICS 5222), and Intel (#7, NAICS 3344). Nonetheless, these brands are captured to some extent elsewhere in the report. IBM and Intel operate in industries that are found to be copyright- and patent-intensive industries, respectively. General Electric, like a number of the companies examined in this report, operates in various industries. Although its consumer finance arm is in an industry that is not found to be trademark-intensive, other parts of the company are in trademark-intensive industries, such as turbine and power transmission equipment (NAICS 3336). The food service industry, such as limited-service eating places (NAICS 7222), is not captured by

⁵⁴ The difficulty of assigning a single NAICS code to companies is further highlighted in our analysis of these companies. Take, for example, General Electric, which as described in OneSource is a “diversified technology, media and financial services company... [with] products and services includ[ing] aircraft engines, power generation, water processing, security technology, medical imaging, business and consumer financing, media content and industrial product.” No one NAICS code can capture GE. In terms of sales, GE Capital is largest of the company’s five principal segments, accounting for 32 percent of total revenue in calendar year 2010, and by this criteria, it makes sense to classify GE in nondepository credit intermediation (NAICS 5222). Still, this does miss the fact that the vast majority of GE’s revenues is from other sectors. Two of those sectors, interestingly, also cover industries selected as trademark-intensive. The NBC Universal business segment operates in radio and television broadcasting (NAICS 5151) while part of the Home & Business Solutions segment includes household appliance manufacturing (NAICS 3352). Together these two segments account for 17 percent of total revenue. It should be noted that this discussion applies to data prior to GE’s sale of NBC Universal to Comcast.

⁵⁵ For a complete listing of Interbrand’s top 100 Global Brands, see Interbrand 2011a.

⁵⁶ Although Budweiser is part of Anheuser-Busch InBev N.V., which is based in Leuven, Belgium, Interbrand considers the Budweiser brand to be American.

any of the trademark-intensive measures or elsewhere in this report. This is not to say that trademarks or other forms of IP protection are unimportant for protecting food-service industry brands, four of which are in the top 100.

Table 7. Trademark-Intensive Industries with Top 100 Global Brands in 2011

NAICS code	Industry title	Brand		
2111	Oil and gas extraction	Shell		
3112	Grain and oilseed milling	Kellogg's		
3115	Dairy product manufacturing	Nestle	Danone	
3121	Beverage manufacturing	Coca-Cola	Pepsi	Nescafe
		Budweiser	Sprite	Jack Daniel's
		Moet and Chandon		Corona
		Smirnoff	Johnnie Walker	
		Heineken		
3162	Footwear manufacturing	Nike	Adidas	
3222	Converted paper product manufacturing	Kleenex		
3254	Pharmaceutical and medicine manufacturing	Johnson and Johnson		
3256	Soap, cleaning compound, and toiletries	Gillette	L'Oreal	Colgate
		Avon	Nivea	Lancome
3341	Computer and peripheral equipment	HP	Apple	Canon
		Dell		
3342	Communications equipment manufacturing	Nokia	Cisco	Blackberry
3343	Audio and video equipment manufacturing	Samsung	Sony	Philips
		Panasonic		
3345	Electronic instrument manufacturing	Siemens		
3361	Motor vehicle manufacturing	Toyota	Mercedes	BMW
		Honda	Ford	Volkswagen
		Audi	Hyundai	Porsche
		Ferrari		
3399	Other miscellaneous manufacturing	Nintendo	Cartier	
4481	Clothing stores	Zara	Gap	
4541	Electronic shopping and mail-order houses	Amazon.com	EBay	
5111	Newspaper, book, and directory publishers	Thomson Reuters		
5112	Software publishers	Microsoft	Oracle	SAP
		Adobe		
5151	Radio and television broadcasting	Disney	MTV	
5191	Other information services	Google	Yahoo	
5221	Depository credit intermediation	J.P. Morgan	Santander	
5239	Other financial investment activities	Citi	UBS	
5241	Insurance carriers	AXA	Allianz	Zurich
5416	Management and technical consulting	Accenture		

Source: ESA calculations using Interbrand's Top 100 Global Brands and data from OneSource.

Trademark Registrations by Class

As discussed earlier, the USPTO organizes trademark registrations by class as opposed to industry. For several reasons, it is not possible to use the registration class data to identify trademark-intensive industries by four-digit NAICS industry. First, the classes are not sufficiently detailed for our purposes. There are 49 trademark classes, as opposed to 313 four-digit NAICS industries. So, even if it were possible to clearly define the correspondence between class and NAICS, a meaningful level of detail would be lacking.

Second, there is no straightforward correspondence between trademark classes and industries because the classes and NAICS industries are conceptually quite distinct. NAICS industries are defined according to the principal business activity of an establishment. Trademark classes indicate the type of good or service associated with a particular trademark. In a sense, the classes tell us what type of product is carrying the protected mark or logo. Consider the Whole Foods example cited earlier. Their “365 Everyday Value” logo appears on a wide range of goods covering 10 different trademark classes. As another example, consider Five Guys, the fast food franchise. This company has protected its “Five Guys” logo within six different trademark classes, ranging from meats and processed foods (for the sandwiches), to staple foods (processed peanut and fried potatoes), non-alcoholic beverages, advertising and business (franchising), clothing, and vehicles (to protect license plate holders with the logo).⁵⁷ Within the NAICS framework, however, Five Guys would simply be considered a limited-service eating place (NAICS 7222), a service-providing industry. So, while Five Guys is a service-provider under NAICS, most of its trademark classes relate to goods, that is, the “vessels” on which the company logo appears.

Despite the difficulty in precisely relating trademark classes to NAICS industries, it is worthwhile to look for similarities between the distribution of trademark registrations by class and our selection of trademark-intensive industries. Table 8 lists total registrations by trademark class for the period from November 16, 1999 to November 15, 2009, ranking the registration classes by trademark count. These data provide insight into which areas of the economy (by class) take advantage most often of trademark protection through the Federal trademark registration system.

The top seven categories accounted for more than half of all registrations in the 2000s. Three of these categories—advertising and business, education and entertainment, and insurance and financials—are very broad and cover services ranging from wholesale and retail trade to professional and business services; financial services; insurance; educational services; and the arts, entertainment, and recreation industry. At a superficial level, it rings true that these sectors rely on trademarks because they cover many of the services and brands that consumers use on a daily basis. Not surprisingly, several of the trademark-intensive industries correspond to these classes; however, many other industries do as well. On the other hand, consider the trademark classes for light beverages as well as wine and spirits, both of which would be expected to

⁵⁷ This trademark is serial number 85255019 and can be found by using the online search engine at tarr.uspto.gov/servlet/tarr?regser=serial&entry=85255019.

correspond to beverage manufacturing (NAICS 3121). This industry is clearly trademark-intensive as it was the only industry to be selected by all three criteria (trademark intensities, top 50 list, and sample). Furthermore, several beverages appeared in the top 100 brands. Yet, the light beverages class only accounted for 0.8 percent of registrations (15,253) while wine and spirits accounted for 1.1 percent (20,727) for FY 2000 to FY 2009.

Table 8. Trademark Registrations by Class, Ranked by Number of Registrations, FY 2000-09

Trademark class	Class title	Trademark registrations		
		Total	Percent of total	Cumulative percent
9	Electrical and scientific apparatus	209,639	11.6%	11.6%
35	Advertising and business	184,274	10.2%	21.9%
41	Education and entertainment	151,547	8.4%	30.3%
42	Computer and scientific	136,025	7.5%	37.8%
16	Paper goods and printed matter	97,739	5.4%	43.2%
36	Insurance and financial	92,759	5.1%	48.4%
25	Clothing	91,923	5.1%	53.5%
5	Pharmaceuticals	57,081	3.2%	56.6%
28	Toys and sporting goods	53,292	3.0%	59.6%
3	Cosmetics and cleaning preparations	51,940	2.9%	62.5%
30	Staple foods	43,550	2.4%	64.9%
37	Building construction and repair	39,557	2.2%	67.1%
7	Machinery	36,683	2.0%	69.1%
38	Telecommunications	32,482	1.8%	70.9%
11	Environmental control apparatus	31,374	1.7%	72.7%
10	Medical apparatus	30,872	1.7%	74.4%
20	Furniture and articles, nec.	29,527	1.6%	76.0%
29	Meats and processed foods	27,188	1.5%	77.5%
1	Chemicals	27,009	1.5%	79.0%
44	Medical, beauty, and agricultural	26,404	1.5%	80.5%
12	Vehicles	25,891	1.4%	81.9%
43	Hotels and restaurants	25,825	1.4%	83.4%
39	Transportation and storage	25,562	1.4%	84.8%
21	Housewares and glass	25,356	1.4%	86.2%
6	Metal goods	21,724	1.2%	87.4%
14	Jewelry	21,422	1.2%	88.6%

Table 8. Trademark Registrations by Class, Ranked by Number of Registrations, FY 2000-09—Continued

Trademark class	Class title	Trademark registrations		
		Total	Percent of total	Cumulative percent
18	Leather goods	20,843	1.2%	89.7%
33	Wine and spirits	20,727	1.1%	90.9%
40	Treatment of materials	19,532	1.1%	92.0%
19	Nonmetallic building materials	17,801	1.0%	93.0%
32	Light beverages	15,253	0.8%	93.8%
31	Natural agricultural products	14,744	0.8%	94.6%
45	Personal	14,390	0.8%	95.4%
24	Fabrics	13,233	0.7%	96.2%
17	Rubber goods	11,637	0.6%	96.8%
8	Hand tools	11,098	0.6%	97.4%
2	Paints	8,352	0.5%	97.9%
4	Lubricants and fuels	7,502	0.4%	98.3%
34	Smokers' articles	5,004	0.3%	98.6%
27	Floor coverings	4,771	0.3%	98.8%
26	Fancy goods	4,698	0.3%	99.1%
22	Cordage and fibers	3,809	0.2%	99.3%
13	Firearms	3,628	0.2%	99.5%
15	Musical instruments	3,555	0.2%	99.7%
200	Collective membership	1,577	0.1%	99.8%
23	Yarns and threads	1,423	0.1%	99.9%
B	Services certification mark	1,391	0.1%	100.0%
A	Goods certification mark	765	0.0%	100.0%
	Total	1,802,378	100.0%	100.0%

Source: ESA calculations using unpublished USPTO data.

Note: The cumulative percent figures may not equal the sum of the percent of total figures because of rounding.

Copyrights

Overview

Copyrights, the third form of IP rights covered in this report, protect “original works of authorship.”⁵⁸ These works must be fixed in a tangible form of expression, meaning that concepts that never leave the confines of our minds cannot be copyrighted. Protection under copyright, which lasts for the life of the author plus an additional 70 years, is secured automatically when a work is created.⁵⁹ Neither publication nor registration with the Copyright Office is required to secure copyright protection. But registering a copyright does establish a public record of the copyright, and it can be beneficial because of incentives provided to encourage registration. For example, a registered copyright can be recorded with the U.S. Customs and Border Protection to protect against the importation of infringing copies.⁶⁰

More than 33.7 million copyrights have been registered in the United States since 1790, when Congress enacted the first Federal copyright law. Of these, approximately 150,000 were registered between 1790 and the centralization of copyright functions in the Library of Congress in 1870.⁶¹ In 2009, more than 382,000 basic copyrights were registered.

The types of works that can be copyrighted are outlined in the 1976 Copyright Act. A partial list of copyrighted materials includes the following:

- literary works (including fiction, nonfiction, and computer programs)
- musical works, including any accompanying words
- dramatic works, including any accompanying music
- pantomimes and choreographic works
- pictorial, graphic, and sculptural works
- motion pictures and other audiovisual works
- sound recordings
- architectural works, including vessel hull designs

Of the 382,000 registrations in 2009, about 93,000 covered performing arts works, such as films, musical and dramatic works, and choreography. There were 75,000 registrations of works

⁵⁸ U.S. Copyright Office 2008, 2.

⁵⁹ A work is “created” when it is fixed in a copy for the first time, regardless of whether the work is published or not.

⁶⁰ U.S. Copyright Office 2008, 7.

⁶¹ See the Brief History of the Copyright Office at www.copyright.gov/circs/circ1a.html. Copyright registration data are published in U.S. Copyright Office 2009, 68.

of visual and applied arts. These covered fine and graphic arts, sculptures, technical drawings and models, photographs and cartographic works, and commercial prints and labels. Registrations of sound recordings totaled 42,000.⁶²

Identifying Copyright-Intensive Industries

Our methodology for designating copyright-intensive industries draws heavily from definitions established by the World Intellectual Property Organization's (WIPO) *Guide on Surveying the Economic Contribution of the Copyright-based Industries*.⁶³ A series of reports by Stephen Siwek entitled *Copyright Industries in the U.S. Economy* have applied these definitions to the U.S. economy.⁶⁴ While this established literature underlies our analysis, we used a more narrow definition of copyright-intensive industries than WIPO, focusing on industries that produce copyrighted work and excluding several industries associated with the distribution of copyrighted material. This deviation from the WIPO Guide was needed in order to maintain internal consistency with our measures of patent- and trademark-intensive industries.

Methodology

Because WIPO's *Guide on Surveying the Economic Contribution of the Copyright-based Industries* clearly distinguishes the type of works that can be copyrighted, the industries in which those works are created, and the downstream (distribution) industries delivering the produced copyrighted works, it is possible to develop a list of copyright-intensive industries that is comparable in scope to our lists of patent- and trademark-intensive industries. We started by focusing on "core" copyright industries, which WIPO defines as industries "wholly engaged in creation, production and manufacturing, performance, broadcast, communication and exhibition, or distribution and sales of works and other protected subject matter."⁶⁵ In other words, core copyright industries are considered 'core' because they either produce copyrighted materials or bring them to market.

For this report, we are only concerned with the set of industries that are primarily responsible for the *creation or production* of copyrighted materials and designate them as copyright-intensive. Thus, to the extent possible using four-digit NAICS industry codes, we excluded industries whose primary purpose is to distribute copyright materials to businesses, consumers, or both. For example, we did not count industries such as book, periodical, and music stores (NAICS 4512) or consumer goods rental (NAICS 5322), which includes video rentals, as copyright-intensive even though they are part of the "core" category in the WIPO guide.⁶⁶ Our

⁶² Ibid., 69.

⁶³ World Intellectual Property Organization 2003.

⁶⁴ See, for example, Siwek 2009.

⁶⁵ World Intellectual Property Organization 2003, 29. The core copyright industries represent one of four main groups of copyright-based industries. The others are interdependent, partial, and non-dedicated support industries.

⁶⁶ This discussion should not imply that distribution industries as a whole cannot by our definitions be considered IP-intensive. As discussed above, a broad range of industries seek trademark protection, including distribution industries like clothing stores, which are identified as IP-intensive.

definition is narrower than WIPO's in order to be consistent with our treatment of patent- and trademark-intensive industries, where the industries most responsible for the production of protected IP are the main focus. This approach simply reflects our goal of examining the industries in the economy that are most responsible for the production of protected IP and use of this approach is not a criticism of WIPO's guidelines.

One conceptual distinction between the approach taken here and that selected in the patent and trademark sections is worth noting. Throughout this report, the focus was on industries that produce protected IP, whether patents, trademarks, or copyrights. In the case of patents and trademarks, we defined "intensive" industries as the subset of all patent or trademark producers that had high scores in various "intensity" measures, whereas we defined as copyright-intensive essentially all industries associated with the production of copyrighted materials.

Results

Table 9 lists the copyright-intensive industries. All are involved in the creation and/or recording (in print, magnetically, or digitally) of protected works. For industries such as other information services (NAICS 5191), the title of which does not clearly indicate what protected materials are produced, the relevant copyrighted product is listed in parentheses.

Table 9. Copyright-Intensive Industries

NAICS code	Industry title
5111	Newspaper, periodical, book, and directory publishers
5112	Software publishers
5121	Motion picture and video industries
5122	Sound recording industries
5151	Radio and television broadcasting
5152	Cable and other subscription programming
5191	Other information services (news syndicates and internet sites)
5414	Specialized design services (visual and graphic arts)
5415	Computer systems design and related services (software and databases)
5418	Advertising, public relations, and related services
5419	Other professional, scientific, and technical services (photography and translation)
7111	Performing arts companies
7115	Independent artists, writers, and performers

Source: ESA selection based on World Intellectual Property Organization 2003.

Some of the selected industries are involved in both the production and distribution of copyrighted materials since both functions are often performed within a single business establishment.⁶⁷ The newspaper industry provides a good example of the blurry line between the creation and distribution of copyrighted materials. We considered newspaper, periodical, book and directory publishers (NAICS 5111) to be copyright-intensive because much copyrighted material actually is developed within establishments classified in this industry, as evidenced by the fact that this industry had 31,000 reporters and correspondents, 25,000 graphic designers, and 4,000 photographers on its payrolls in 2010.⁶⁸

This line of reasoning underlies the inclusion of several industries on the list, such as sound recording, broadcasting, cable programming, and performing arts companies. These industries have many “creators” (writers, composers, choreographers, and others) directly on their payrolls, in addition to other independent artists and content creators under individual contracts with their companies.

Our list of copyright-intensive industries also includes two additional industries directly involved in the writing and publishing of newspapers: independent artists, writers, and performers (NAICS 7115) and other information services (NAICS 5191), which includes news syndicates. However, we excluded printing and related support activities (NAICS 3231), because its role is simply to print the newspapers themselves. WIPO considers this a “core” copyright industry because it is directly involved in creating a “vessel” for copyrighted material, meaning that it exists in order to deliver copyrighted materials in a tangible form to a consumer or audience. However, printing is distinct from the actual development of the copyrighted materials (such as news articles and photographs), so we did not consider it to be a copyright-intensive industry.

As another example, consider the manufacturing and reproducing magnetic and optical media industry (NAICS 3346). This industry produces software CDs and DVDs, as well as other prerecorded disks, tapes and vinyl records. While inextricably linked to copyright-intensive industries, this industry is not part of the actual process of developing and recording software or music, but rather a part of the downstream process of putting the material on a tangible vessel. So as with the printing example above, while manufacturing and reproducing magnetic and optical media is a WIPO-defined core industry, it is not counted as copyright-intensive in this report. It should be noted, however, that both printing and related support activities (NAICS 3231) and manufacturing and reproducing magnetic and optical media (NAICS 3346) were found to be trademark-intensive.

⁶⁷ World Intellectual Property Organization 2003, 27.

⁶⁸ These data are from the Bureau of Labor Statistics, Occupational Employment Statistics program and are for private wage and salary workers in newspaper, periodical, book and directory publishers (NAICS 5111). See www.bls.gov/oes/current/naics4_511100.htm#27-0000.

IP-Intensity and the Use of Intellectual Property Protection

Before reviewing the complete list of IP-intensive industries, we should note that defining “IP intensity” as the use of intellectual property protection is an approach open to criticism. Although commonly used in the scientific literature, such intensity measures tend to overweight those industries that more commonly use patents, trademarks, or copyrights for purposes other than activities closely related to R&D or commercialization *per se*.⁶⁹

The term “IP-intensive” defined in this report is not necessarily directly related to the value or purpose of the IP held by companies. In some industries a single patent may support revenues in the billions of dollars, while in other industries, many patents may be required just to market marginally profitable products.^{70, 71} The same logic holds for trademarks and copyrights.⁷²

For example, the Carnegie-Mellon University survey, previously mentioned, shows significant differences across industries in how companies acquire and use patents.⁷³ These findings are not surprising. First, companies employ other protections, such as trade secrets, that may be a substitute for patent protection. And, because the term of protection is limited, patent efficacy can be diminished by lengthy product and process development. Often companies will seek patent protection early in that timeline (as patent costs remain relatively inexpensive in the United States), only to determine after further research and development that the patent protection was neither needed nor particularly useful in the final outcome.

Prior economic studies have also shown that patents can be used for defensive purposes, and our method for selecting IP-intensive industries necessarily sweeps widely, including industries in which companies seek patent protection regardless of the purpose.⁷⁴ To understand the various motivations for patenting, the Carnegie-Mellon study also focused on the reasons companies in different industries sought patent protection and the multiple uses of patents. The reasons included earning licensing revenue, use in negotiations, blocking competitors, enhancing reputation, or as a measure of employee performance. The research found that companies reported that their patents often served multiple purposes. All drug companies surveyed, for instance, used product patenting to prevent copying, while 97 percent used product patenting to block competitors, 69 percent to enhance the company’s reputation, and 61 percent to aid in

⁶⁹ Jaffe and Trajtenberg 2002.

⁷⁰ The pharmaceutical industry is a prime example of the former. Merck & Company, for instance, lost billions of dollars in sales beginning in 2008 on the osteoporosis drug Fosamax when generic manufacturers successfully invalidated its core patent. See Higgins and Graham 2009, 370-71.

⁷¹ Electronics products are prime examples of the latter, as products from Motorola, Samsung, and Nokia, now competing with Apple’s iPhone in the hand-held market, all require the rights to many patents in order to be legally sold in the U.S. market.

⁷² The appendix to this report examines the extent to which industries selected as IP-intensive have relatively high revenue shares from the licensing of rights to use protected intellectual property and other IP-related product lines.

⁷³ Cohen et al. 2000.

⁷⁴ Hall and Ziedonis 2001.

negotiations. In the aerospace industry, 57 percent of companies reported using product patents for licensing revenue, while 50 percent of those companies used process patents for the same purpose. Among companies in the machine tool sector, 13 percent reported that they used product patents as a measure of employees' performance. Collectively, these findings show that the term "use" is complex at the company level, and that complexity must be acknowledged in interpreting the aggregated measures we report at the industry level.

IP-Intensive Industries

Seventy-five IP-intensive industries emerged after combing through the lists of patent-, trademark-, and copyright-intensive industries. (See Table 10.) This 75-industry total is smaller than the sum of the parts. Indeed, there is considerable overlap between the patent-intensive and trademark-intensive industry lists, as 18 of the 26 patent-intensive industries also were identified among the 60 trademark-intensive ones. There also is some overlap between the copyright-intensive and trademark-intensive list with six of the 13 copyright-intensive industries also selected as trademark-intensive. By definition, however, there is no overlap between the patent and copyright lists. The USPTO classified all patents within manufacturing industries, whereas industries involved in the creation and/or recording of protected works are classified as service-providing industries and not in the manufacturing sector.

Table 10 also lists total employment of each IP-intensive industry. Employment refers to wage and salary jobs as well as self-employment, which accounts for a sizeable portion of employment in the copyright-intensive industries.⁷⁵ Employment in IP-intensive industries totaled 27.1 million jobs in 2010. The next section will examine in more detail their contribution to overall employment and gross domestic product in the U.S. economy as well as workers' wages, educational attainment, and foreign trade.

⁷⁵ Unpaid family workers also are included in the employment estimates from the BLS Industry Productivity program. However, because unpaid family workers account for only about one percent of the combined total of the self-employed and unpaid family workers outside of agriculture, they are not referred to or analyzed elsewhere in this report.

Table 10. IP-Intensive Industries and Selection Criteria

NAICS code	Industry title	Selection criteria			
		Employment in 2010 (1000 jobs)	Patent-intensive	Trademark-intensive	Copyright-intensive
2111	Oil and gas extraction	163.3		X	
2361	Residential building construction	934.3		X	
3112	Grain and oilseed milling	58.3		X	
3113	Sugar and confectionery product manufacturing	69.9		X	
3115	Dairy product manufacturing	130.4		X	
3119	Other food manufacturing	165.5		X	
3121	Beverage manufacturing	169.5		X	
3162	Footwear manufacturing	13.5		X	
3221	Pulp, paper, and paperboard mills	112.7		X	
3222	Converted paper product manufacturing	285.9		X	
3231	Printing and related support activities	524.4		X	
3251	Basic chemical manufacturing	143.1	X	X	
3252	Resin, rubber, and artificial fibers	90.1	X	X	
3253	Agricultural chemical manufacturing	36.7	X		
3254	Pharmaceutical and medicine manufacturing	277.6	X	X	
3255	Paint, coating, and adhesive manufacturing	56.4	X		
3256	Soap, cleaning compound, and toiletries	104.2	X	X	
3259	Other chemical product and preparations	84.9	X	X	
3261	Plastics product manufacturing	501.5		X	
3322	Cutlery and handtool manufacturing	42.1		X	
3329	Other fabricated metal product manufacturing	256.4		X	
3331	Ag., construction, and mining machinery manufacturing	208.9	X		
3332	Industrial machinery manufacturing	102.2	X	X	
3333	Commercial and service industry manufacturing	91.3	X	X	
3334	HVAC and commercial refrigeration	124.4	X		
3335	Metalworking machinery manufacturing	156.1	X		
3336	Turbine and power transmission equipment manufacturing	91.5	X	X	
3339	Other general purpose machinery manufacturing	229.8	X	X	
3341	Computer and peripheral equipment	161.9	X	X	
3342	Communications equipment manufacturing	118.5	X	X	
3343	Audio and video equipment manufacturing	20.2	X	X	

Table 10. IP-Intensive Industries and Selection Criteria—Continued

NAICS code	Industry title	Selection criteria			
		Employment in 2010 (1000 jobs)	Patent-intensive	Trademark-intensive	Copyright-intensive
3344	Semiconductor and electronic component manufacturing	373.8	X		
3345	Electronic instrument manufacturing	408.7	X	X	
3346	Magnetic media manufacturing and reproducing	26.3	X		
3351	Electric lighting equipment manufacturing	46.2	X		
3352	Household appliance manufacturing	60.7	X	X	
3353	Electrical equipment manufacturing	137.3	X	X	
3359	Other electrical equipment and components	118.7	X	X	
3361	Motor vehicle manufacturing	151.8		X	
3371	Household and institutional furniture	245.8		X	
3391	Medical equipment and supplies manufacturing	311.5	X	X	
3399	Other miscellaneous manufacturing	309.6	X	X	
4234	Commercial equip merchant wholesalers	615.4		X	
4242	Druggists' goods merchant wholesalers	193.3		X	
4244	Grocery and related product wholesalers	735.3		X	
4451	Grocery stores	2,521.6		X	
4481	Clothing stores	1,114.4		X	
4511	Sporting goods and musical instrument stores	514.6		X	
4541	Electronic shopping and mail-order houses	303.9		X	
5111	Newspaper, book, and directory pub	530.9		X	X
5112	Software publishers	259.8		X	X
5121	Motion picture and video industries	414.6		X	X
5122	Sound recording industries	36.4			X
5151	Radio and television broadcasting	216.7		X	X
5152	Cable and other subscription programming	85.6		X	X
5174	Satellite telecommunications	14.6		X	
5179	Other telecommunications	127.5		X	
5191	Other information services	145.5		X	X
5221	Depository credit intermediation	1,735.6		X	
5239	Other financial investment activities	427.4		X	
5241	Insurance carriers	1,368.2		X	
5311	Lessors of real estate	823.9		X	
5331	Lessors of nonfinancial intangible	25.5		X	

Table 10. IP-Intensive Industries and Selection Criteria—Continued

NAICS code	Industry title	Selection criteria			
		Employment in 2010 (1000 jobs)	Patent-intensive	Trademark-intensive	Copyright-intensive
5414	Specialized design services	242.6			X
5415	Computer systems design and related services	1,595.1			X
5416	Management and technical consulting	1,233.8		X	
5417	Scientific research and development	638.2		X	
5418	Advertising, PR, and related services	461.2			X
5419	Other professional and technical services	673.4			X
5614	Business support services	883.9		X	
5615	Travel arrangement and reservation	201.7		X	
6214	Outpatient care centers	636.6		X	
7111	Performing arts companies	132.1			X
7115	Independent artists, writers, and performers	306.1			X
7132	Gambling industries	133.9		X	

Source: ESA calculations using data from the Bureau of Labor Statistics' Industry Productivity program.

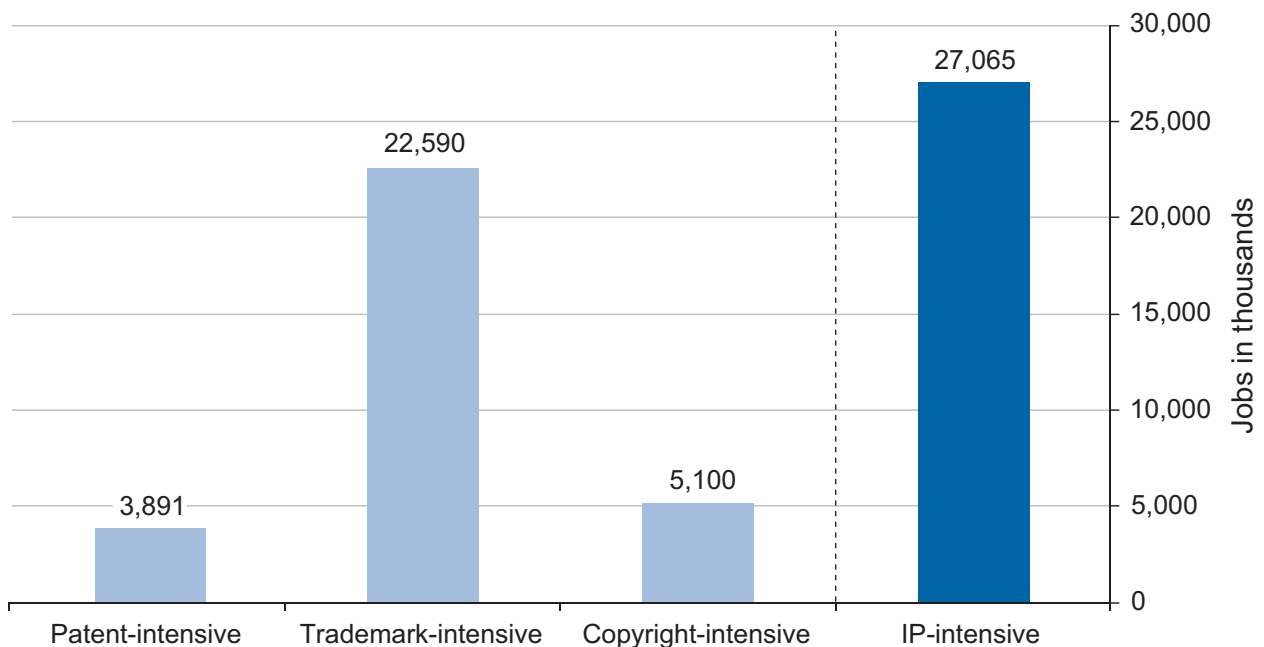
Note: Employment includes wage and salary jobs, the self-employed, and unpaid family workers and is measured in thousands of jobs.

III. IP-INTENSIVE INDUSTRIES IN THE ECONOMY

Employment

Employment totaled 27.1 million jobs in IP-intensive industries in 2010, representing 18.8 percent of all jobs in the economy. (See Figure 1.) Our definition of jobs includes not just payroll (or wage and salary workers), but also the self-employed and unpaid family workers.⁷⁶ Labor market analyses of this type often overlook the self-employed, but as will be seen, they are a critical source of staff for copyright-intensive industries, and to a lesser extent, for trademark-intensive industries.

Figure 1. Employment in IP-Intensive Industries, 2010



Source: ESA calculations using data from the Bureau of Labor Statistics' Industry Productivity program.

Note: Estimates include wage and salary employment, the self-employed, and unpaid family workers. Because several industries were found to be trademark-intensive and patent- or copyright-intensive, total employment in IP-intensive industries is less than the sum of employment in patent-, trademark-, and copyright-intensive industries.

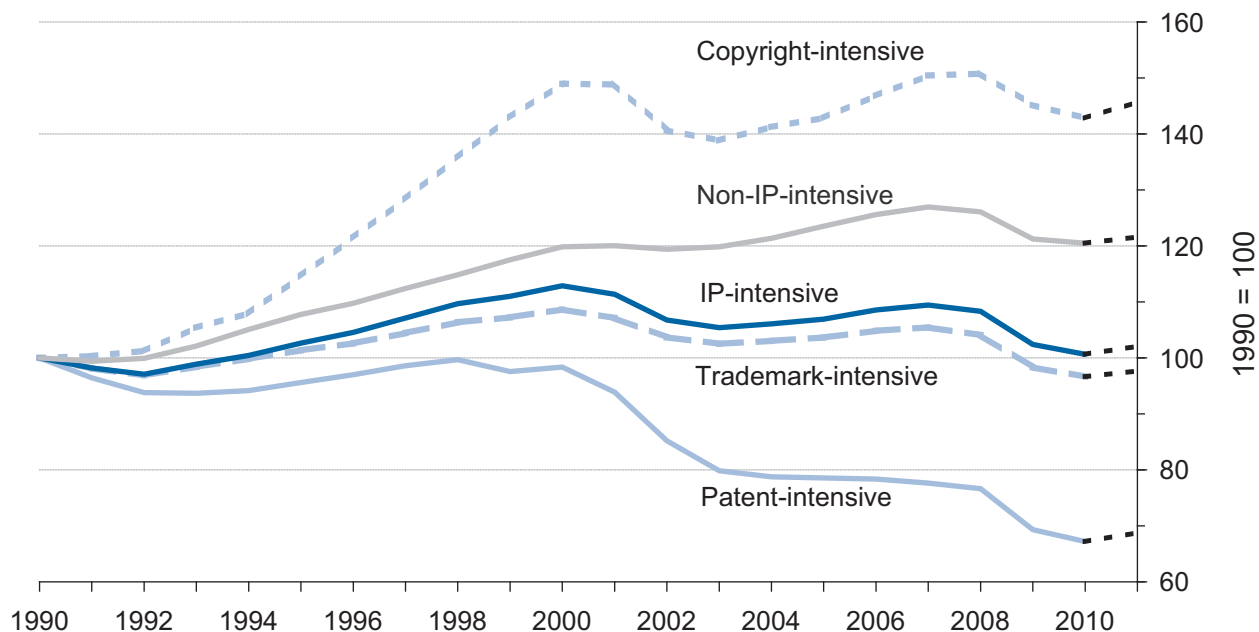
Given that 60 of the 75 IP-intensive industries were considered trademark-intensive, it follows that these industries would account for the majority of IP-intensive jobs (22.6 million or 83 percent of all IP-intensive jobs). Indeed, employment in the patent- and copyright-

⁷⁶ As noted earlier, the employment data cited here were provided by the Bureau of Labor Statistics' Industry Productivity program. Employment covers the sum of payroll jobs, self-employed persons, and unpaid family workers and totaled 144.2 million jobs in 2010. Because the unit of measure is jobs (as opposed to persons) and because about 5 percent of all workers have more than one job, the total number of jobs is greater than the 139.1 million employed persons in 2010, as estimated from the Current Population Survey (www.bls.gov/cps).

intensive industries was significantly lower. In 2010, patent-intensive industries had 3.9 million jobs and copyright-intensive industries had 5.1 million jobs. The 24 industries that were considered intensive with respect to more than one form of IP protection had 4.5 million jobs.⁷⁷

As can be seen in Figure 2, employment growth over the past two decades has varied considerably across IP-intensive industries. The figure compares the relative job growth in the various industry groupings since 1990. Employment in IP-intensive industries in 2010 was little changed from 1990 as the 12-percent growth in employment during the 1990s was subsequently reversed during the 2000s. In contrast, non-IP-intensive employment grew in the 1990s and had relatively flat employment in the 2000s.⁷⁸ As a result, the IP-intensive industries' share of total employment edged down from 21.7 percent in 1990 to 20.7 percent in 2000 and declined nearly 2 more percentage points by 2010 to 18.8 percent.

Figure 2. Indexed Employment in IP-Intensive Industries, 1990-2011



Source: ESA calculations using data from the Bureau of Labor Statistics' Industry Productivity program.

Note: Black dotted lines represent ESA projections of 2011 employment growth based on data from the Bureau of Labor Statistics' Current Employment Statistics program.

Overall employment in IP-intensive industries has lagged other industries over the past two decades due primarily to historic losses in manufacturing jobs. This decline tracks with other statistics showing that during the last decade the economy was underinvesting and underperforming in manufacturing. For much of the 2000s, manufacturing capacity remained stagnant, and for the first time in decades, manufacturing firms' real investment in fixed assets

⁷⁷ The 4.5 million jobs figure can be calculated by subtracting overall IP-intensive employment from the sum of employment of the trademark-, patent-, and copyright-intensive industries.

⁷⁸ Non-IP-intensive employment refers to employment in private sector industries not selected as IP-intensive, plus employment in government and in private households.

stagnated.⁷⁹ During this same period, the U.S. manufacturing sector lost more than 3 million jobs.⁸⁰

Over the two decades, shrinking employment in patent-intensive industries was offset by expansion in the copyright-intensive ones. Patent-intensive industries are a subset of the manufacturing sector, and its job losses are much like those experienced throughout the nation's manufacturing sector. The copyright-intensive industries largely belong to the information and professional and technical services industry sectors in NAICS, and their employment trends parallel the trends seen in those sectors: steady growth in the 1990s and offsetting gains and losses in the 2000s.⁸¹ That is, job growth between 2000 and 2010 in professional and technical services was largely offset by employment declines in the information industries.

As the economic recovery has unfolded, real business fixed investment in equipment and software has rebounded, growing by nearly 33 percent from the second quarter of 2009 through the end of 2011.⁸² At the same time, manufacturing production surged at a 5.7 percent annual rate from June 2009 through December 2011, the fastest pace of growth of production in a decade.⁸³ The resurgence in production led manufacturers to add 346,000 factory jobs in 2010 and 2011, the strongest two-year period of manufacturing job growth since the late 1990s.⁸⁴

Preliminary employment projections from the Economics and Statistics Administration for 2011 show that as the economic recovery has taken hold, IP-intensive industry employment has rebounded and contributed disproportionately to overall employment growth. As shown in Figure 2, job growth was widespread, with a 1.6 percent rise in employment in IP-intensive industries outpacing the 1.0 percent increase in non-IP-intensive industries. Breaking IP-intensive industries out into its constituent parts uncovers 2.4 percent job growth in copyright-intensive industries, 2.3 percent growth in patent-intensive industries, and 1.1 percent growth in trademark-intensive industries.

⁷⁹ Data on industrial capacity published by the Federal Reserve Board and data on private fixed investment by industry from the Bureau of Economic Analysis' Fixed Assets Accounts Table 3.8ES, as cited in White House 2012, 1 and 7. The data are available at www.federalreserve.gov/releases/g17/caputl.htm and www.bea.gov/iTable/index_FA.cfm.

⁸⁰ Data from the Bureau of Labor Statistics' Current Employment Statistics program, available at www.bls.gov/ces.

⁸¹ The copyright-intensive industries from the information sector are newspaper, periodical, book and directory publishers; software publishers; motion picture and video industries; sound recording industries; radio and television broadcasting; cable and other subscription programming; and other information services. The copyright-intensive industries drawn from the professional and technical services sector are specialized design services; computer systems design and related services; advertising, public relations, and related services; and other professional, scientific, and technical services.

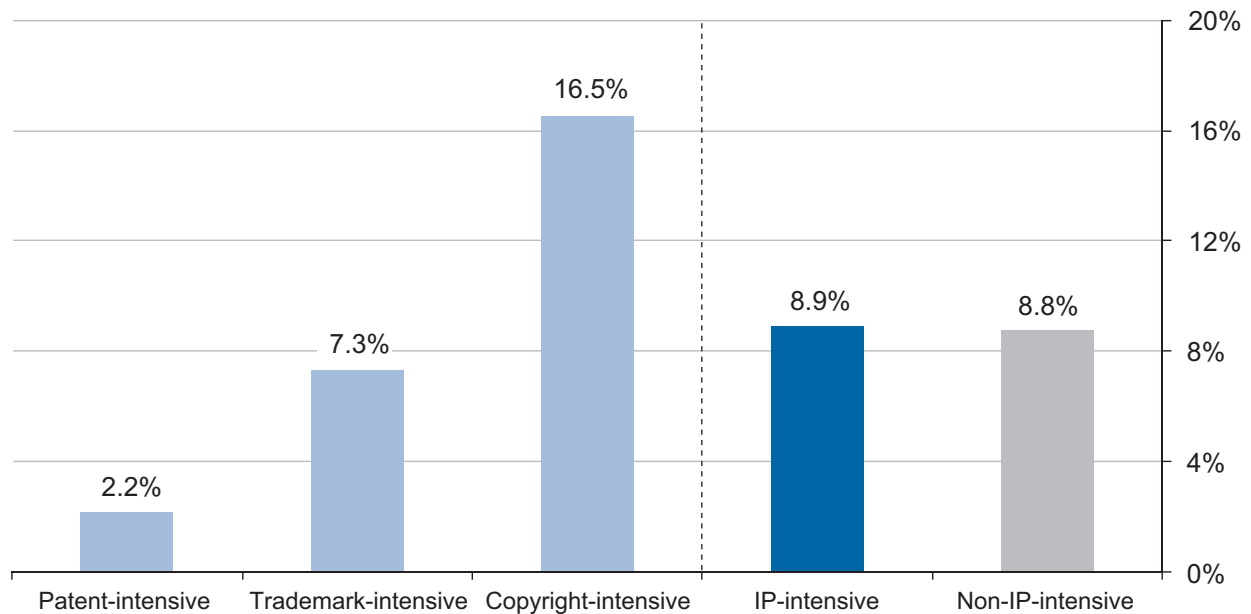
⁸² See Bureau of Economic Analysis' National Income and Product Accounts, Table 1.1.6, available online at http://www.bea.gov/iTable/index_nipa.cfm.

⁸³ Data on industrial production are published by the Federal Reserve Board, with historical data available at www.federalreserve.gov/releases/g17/table1_2.htm.

⁸⁴ Data from the Bureau of Labor Statistics' Current Employment Statistics program, available at www.bls.gov/ces.

In 2010, the self-employed filled 2.4 million jobs in IP-intensive industries. This 8.9 percent self-employment share was essentially equal to the 8.8 percent share in other (non-IP-intensive) industries; however, there was notable variation across IP-intensive industries (See Figure 3). Trademark-intensive industries had the largest number of self-employed persons at 1.7 million or 7.3 percent of all trademark-intensive jobs. The highest self-employment share, however, was in the copyright-intensive industries, in which the 0.8 million self-employed workers filled 16.5 percent of all jobs. This high share is not surprising as many jobs in the creative and performing arts are contract rather than payroll jobs, usually related to the completion or performance of a specific authored work.

Figure 3. Self-Employed Share of All Jobs in IP-Intensive Industries, 2010



Source: ESA calculations using data from the Bureau of Labor Statistics' Industry Productivity program.

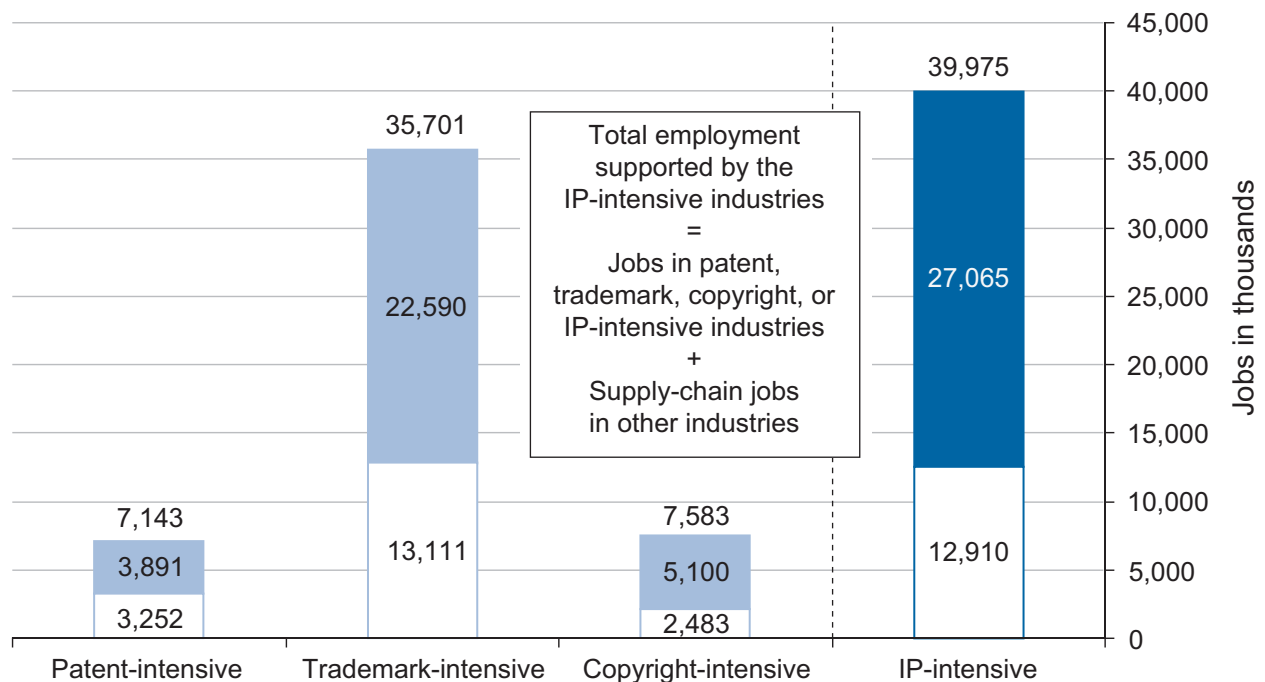
Note: Estimates show the self-employed and unpaid family workers as a share of all jobs. However, unpaid family workers account for only about one percent of the combined total of the self-employed and unpaid family workers outside of agriculture.

Total Employment Supported by IP-Intensive Industries

While IP-intensive industries had 27.1 million jobs either on their payrolls or under contract in 2010, these industries indirectly supported an additional 12.9 million jobs in other (non-IP-intensive) industries throughout the economy. In other words, IP-intensive industries supported 40.0 million jobs (or 27.7 percent of all jobs) directly and indirectly, through a supply chain that stretches across the economy.⁸⁵

Figure 4 expands on Figure 1, showing employment in IP-intensive industries (medium blue bar) plus indirect employment in the supply chain (the rectangle below the blue bar). The figure also shows the jobs that the patent-, trademark-, and copyright-intensive industries support in their respective (non-patent-, trademark-, and copyright-intensive) supply chains. Thus, as shown, patent-intensive industries supported an additional 3.3 million workers indirectly. Likewise, trademark-intensive industries supported 13.1 million jobs indirectly, and copyright-intensive industries indirectly via the supply chain supported 2.5 million jobs.

Figure 4. Total Employment Supported by IP-Intensive Industries, 2010



Source: ESA calculations using data from the Bureau of Economic Analysis' Industry Accounts office and the Bureau of Labor Statistics' Industry Productivity program.

Note: Estimates include wage and salary employment, the self-employed, and unpaid family workers.

⁸⁵ These estimates are derived from unpublished input/output tables computed and analyzed by staff from the Bureau of Economic Analysis' Industry Accounts office. Data are consistent with the December 2010 annual revision to the annual input/output tables and are based on the 2009 after-redefinition domestic make and use tables and estimates of the share of 2010 employment attributable to final demand in IP-intensive industries. Total output requirement tables were calculated based on the make and use table following the methodology published in mathIO.doc, which are available at www.bea.gov/industry/zip/cxctr2002detail.zip.

As these data suggest, patent-intensive industries relied more deeply than the trademark- and copyright-intensive industries on an outside supply chain and indirectly supported a relatively large number of jobs. Consider that the patent-intensive industries, despite being smaller in terms of employment than the copyright-intensive ones, supported a larger multiple of outside supply chain employment. This is because patent-intensive industries come from the manufacturing sector, which typically has a larger multiplier effect than the service sector, from which the copyright-intensive industries are drawn.

Additionally, as the “intensive” industry lists become longer, the number of “non-intensive” industries, which is the source of the indirect, supply chain jobs, becomes shorter. This is why trademark-intensive industries alone indirectly supported 13.1 million workers, while IP-intensive industries as a whole indirectly supported only 12.9 million workers. This is also why the 60 trademark-intensive industries were more likely to self-supply some of their inputs than the 26 patent-intensive industries and less likely to rely on outside industries. Put another way, the potential outside supply chain (indirect jobs) for patent-intensive industries was larger (covers more industries) than the potential supply chain for the trademark-intensive industries.

These results may appear conservative relative to multiplier analyses often cited in the economic literature with employment multipliers of about 2. Such multipliers tell us that if growing demand for final goods and services (as opposed to intermediate inputs to production) spurs companies to add 100 new jobs, then an additional 100 jobs will be added indirectly throughout the economy.⁸⁶ We estimated that for IP-intensive industries this multiplier would be about 1.8, which is close to the multiplier of 2 found in similar industry analyses. As noted earlier, because a relatively large number of industries are considered IP-intensive, much of the IP supply chain is internal to these industries, which reduces the multiplier effect relative to analyses that focus on a single industry. At the extreme, the jobs-to-jobs multiplier could be calculated for the entire economy and would be 1 because there would be no external supply chain left.

In this report, the question that is being addressed differs subtly from the question that can be answered by a traditional multiplier analysis. Rather than focusing on a hypothetical change in final demand for IP-intensive goods and services, we were interested in learning which IP-intensive jobs were tied to final demand, which were in the supply chain, and how many jobs in other industries were part of that supply chain. Teasing out these data from the input/output framework, we estimated that 16.2 million jobs in IP-intensive industries were associated with producing goods and services to satisfy final demand while 10.9 million jobs in these industries were associated with production for the supply chain. An additional 12.9 jobs in other (non-IP-intensive industries) also were part of the IP supply chain.⁸⁷

⁸⁶ In Miller and Blair 1985, these multipliers are referred to as “type I employment multipliers,” while in the Bureau of Economic Analysis 1997, they are referred to as direct-effect employment multipliers.

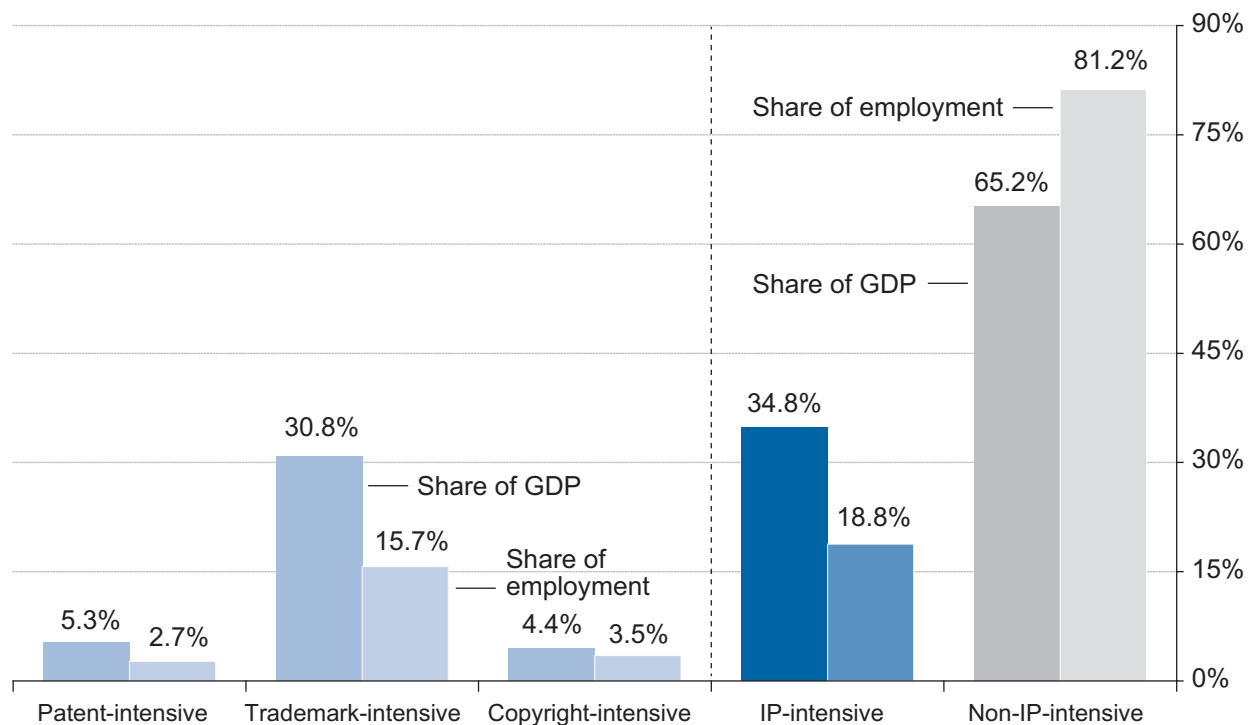
⁸⁷ The 16.2 million jobs in IP-intensive industries directly linked to final demand was found by examining the share of IP output associated with final demand (excluding imports). We then fed the vector of final demand IP-intensive employment into a jobs-to-jobs total requirements matrix in several iterations until we accounted for all 27.1 million jobs in the IP-intensive industries. The first iteration told us that a total of 29.4 million jobs were associated with the 16.2 million final-demand, IP-intensive jobs, giving us the 1.8 multiplier figure we cite. This first iteration, however, only accounted for about 20 million jobs in IP-intensive industries. Subsequent iterations uncovered the full set of supply chain jobs in IP-intensive industries as well as the full supply chain in other (non-IP-intensive) industries.

As is typical with input/output analyses, these data emphasize upstream industries (supply chain) that provide intermediate inputs needed to produce goods and services in IP-intensive industries. They do not, however, capture the significant downstream channels that facilitate the distribution and trade in IP-intensive goods and services. Therefore, the estimate that there were 40.0 million jobs supported by IP-intensive industries is actually a conservative estimate of employment linked to these industries.

Value Added

While IP-intensive industries accounted for 18.8 percent of all jobs in the economy in 2010, their \$5.06 trillion in value added in 2010 represented 34.8 percent of total GDP.⁸⁸ This total share of GDP has edged down since 2003. Because 60 of the 75 IP-intensive industries were considered trademark-intensive, it is unsurprising that this segment alone accounted for almost 31 percent of GDP with \$4.5 trillion in value added in 2010. (See Figure 5.) Patent-intensive and copyright-intensive industries accounted for 5.3 and 4.4 percent of GDP, with \$763 billion and \$641 billion in value added, respectively.

Figure 5. Value Added and Employment Shares of IP-Intensive Industries, 2010



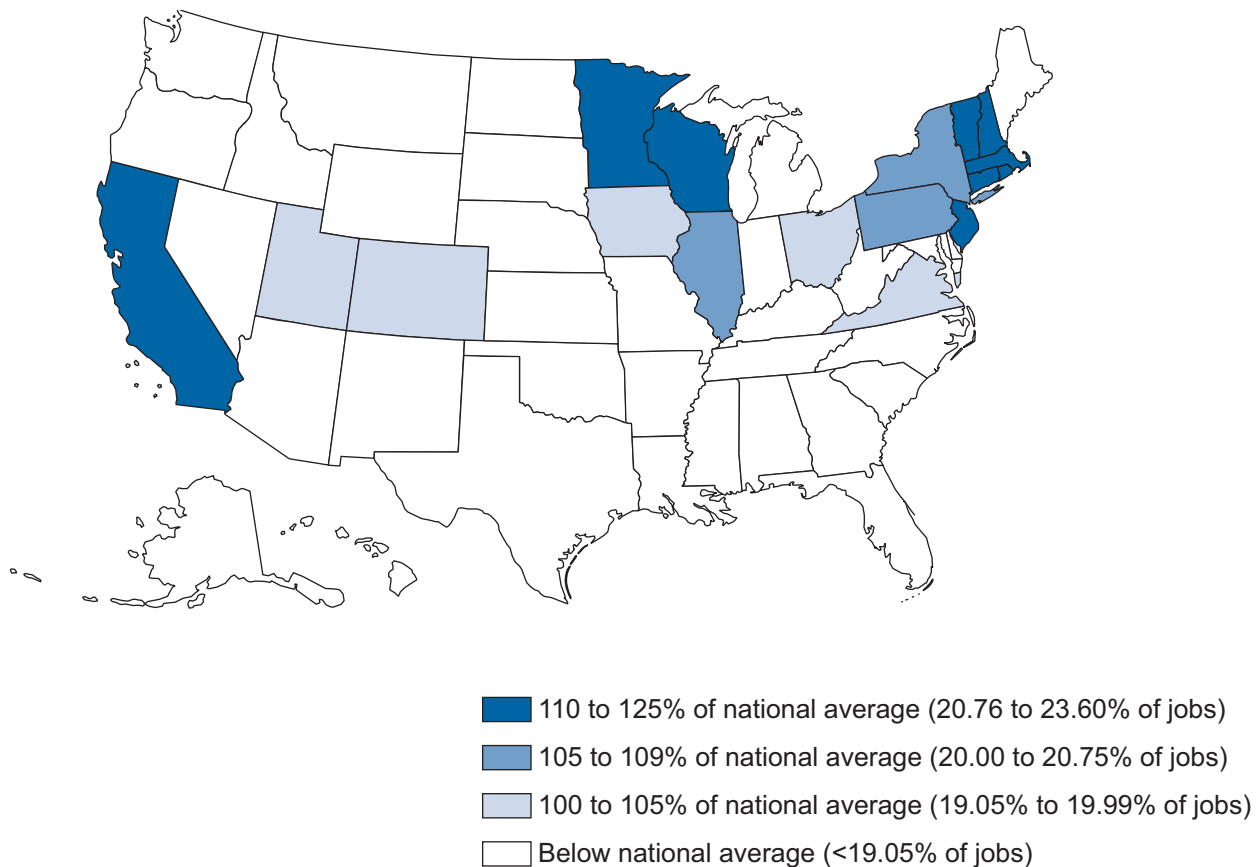
Source: ESA calculations using data from the Bureau of Economic Analysis, National Income and Product Accounts and the Bureau of Labor Statistics' Industry Productivity program.

⁸⁸ Value added is defined as the difference between an industry's total output (its sales plus the change in inventories arising from production) and the value of its intermediate purchases from other industries (that is, from its supply chain). GDP can be defined as the sum of value added across all industries in the economy. When value added is summed across all industries, industry sales to and purchases from each other cancel out, and the remainder is industry sales to final users, or GDP.

Payroll Employment by State in IP-Intensive Industries

The IP-intensive share of all covered employment varies notably across states and regions, as shown in Map 1.⁸⁹ Four of the top five states in IP-intensive employment share were in New England: Massachusetts (23.6 percent), New Hampshire (22.0 percent), Connecticut (21.7 percent), and Vermont (21.6 percent). Wisconsin, with a 23.0 percent share, occupied second place on the list. Overall there were 16 states above the national average of 19.1 percent. These states were spread throughout the mid-Atlantic, Northeast, and Midwest and also include California, Colorado, and Utah.

Map 1. IP-Intensive Industries' Share of Covered Employment by State, 2010

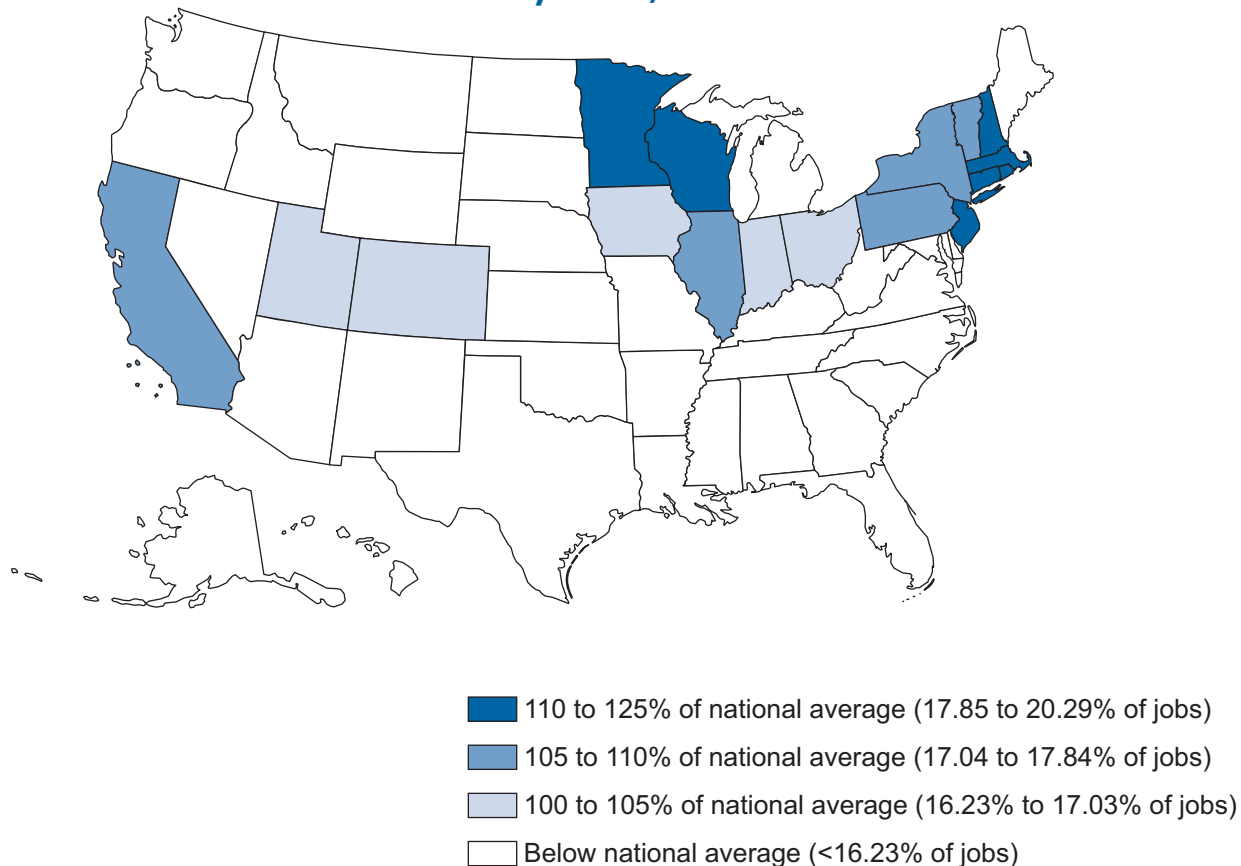


Source: ESA calculations using data from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages.

⁸⁹ The data used to examine state employment are from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW) and measure covered employment. Covered employment refers to jobs covered by state and Federal unemployment insurance law, and includes practically all civilian wage and salary employment. These data do not include the self-employed or unpaid family workers. For more information on QCEW, see www.bls.gov/cew.

Given that 60 of the 75 IP-intensive industries were designated as trademark-intensive, it is not surprising to find that 15 of the 16 states with above-average shares of IP-intensive jobs also had above-average shares of trademark-intensive jobs. (See Map 2.) Only Virginia had a high percentage of IP-intensive jobs, but a below-average share of trademark-intensive employment, as 14.2 percent of employment in the state was in trademark-intensive industries, below the national average of 16.2 percent.

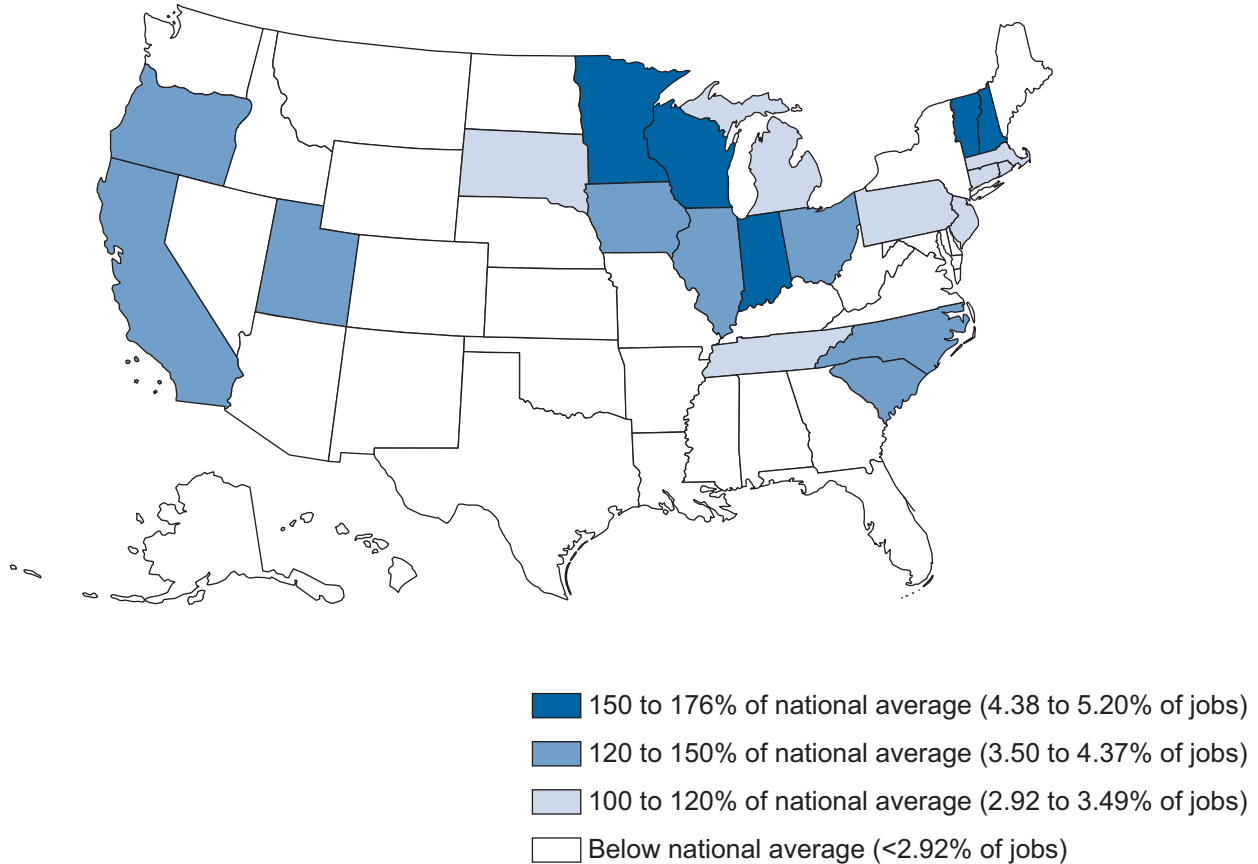
Map 2. Trademark-Intensive Industries' Share of Covered Employment by State, 2010



Source: ESA calculations using data from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages.

As highlighted in Map 3, there were 21 states with patent-intensive employment shares above the 3.0 percent national average. States from New England and the Midwest had the highest shares, led by New Hampshire (5.2 percent), Wisconsin (4.9 percent), and Minnesota, Indiana, and Vermont (4.4 percent each). Essentially all regions of the country had at least one state with an above-average percentage of employment in patent-intensive industries, including the South with North Carolina, South Carolina, and Tennessee.

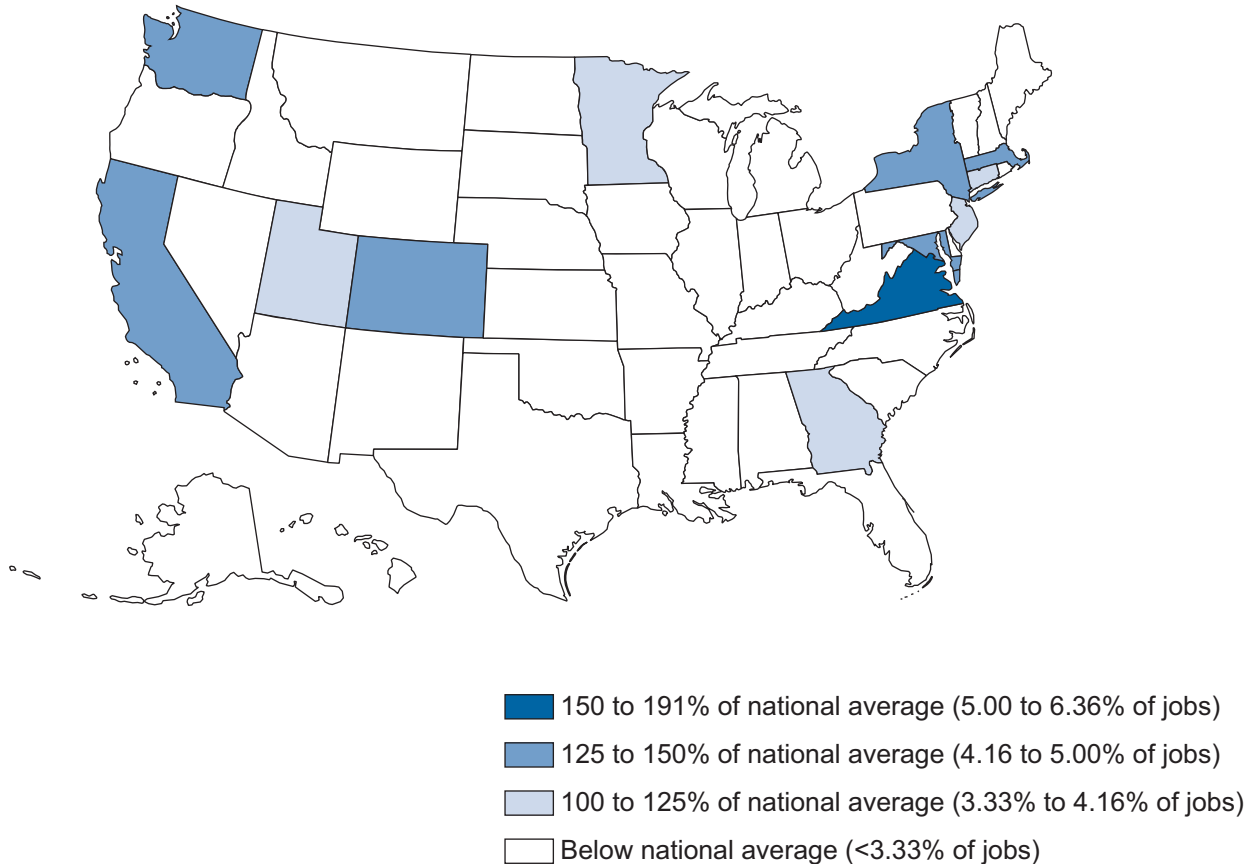
Map 3. Patent-Intensive Industries' Share of Covered Employment by State, 2010



Source: ESA calculations using data from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages.

The 13 states with above-average employment shares in copyright-intensive industries were mostly spread along the East and West coasts, as seen in Map 4. The District of Columbia (6.4 percent), Virginia (5.9 percent), and New York (4.9 percent) had copyright-intensive employment shares more than 1.5 times above the national average of 3.3 percent. They were followed by Washington State, California, and Colorado (4.7 percent each). Utah and Minnesota were the only other non-coastal states on the list.

Map 4. Copyright-Intensive Industries' Share of Covered Employment by State, 2010



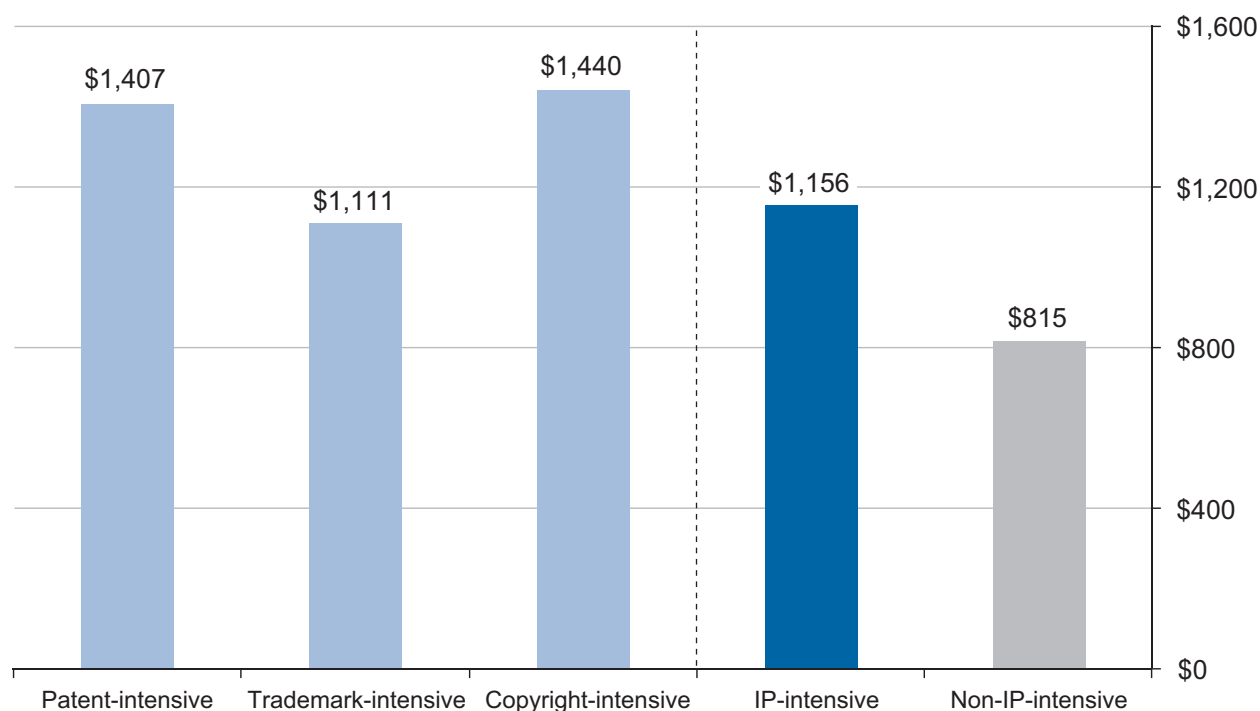
Source: ESA calculations using data from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages.

Putting these rankings together, we found six states that had above-average employment shares for patent-, trademark-, and copyright-intensive industries: California, Connecticut, Massachusetts, Minnesota, New Jersey, and Utah. These results echo an underlying theme of this report—intellectual property permeates our entire economy. Industries from a broad range of economic sectors are IP-intensive, and the jobs they support span all regions of the United States.

Average Weekly Wages

Private wage and salary workers in IP-intensive industries had average weekly wages of \$1,156 in 2010, or 42 percent higher than workers in non-IP-intensive industries in the private sector.⁹⁰ (See Figure 6.) This difference was even higher for workers in patent-intensive industries, who earned \$1,407 per week on average, and in copyright-intensive industries, with weekly wages of \$1,440. Workers in trademark-intensive industries earned \$1,111 per week, less than their counterparts in patent-intensive and copyright-intensive industries. This may reflect the fact that trademark-intensive industries represent a wider range of industries than patent-intensive and copyright-intensive industries. As was outlined earlier, patent-intensive industries are a subset of manufacturing industries, while copyright-intensive ones are concentrated in the information sector and the professional and technical services sector. Workers in manufacturing, information, and professional and technical services all have relatively high average weekly wages.

Figure 6. Average Weekly Wages of Private Wage and Salary Workers in IP-Intensive Industries, 2010



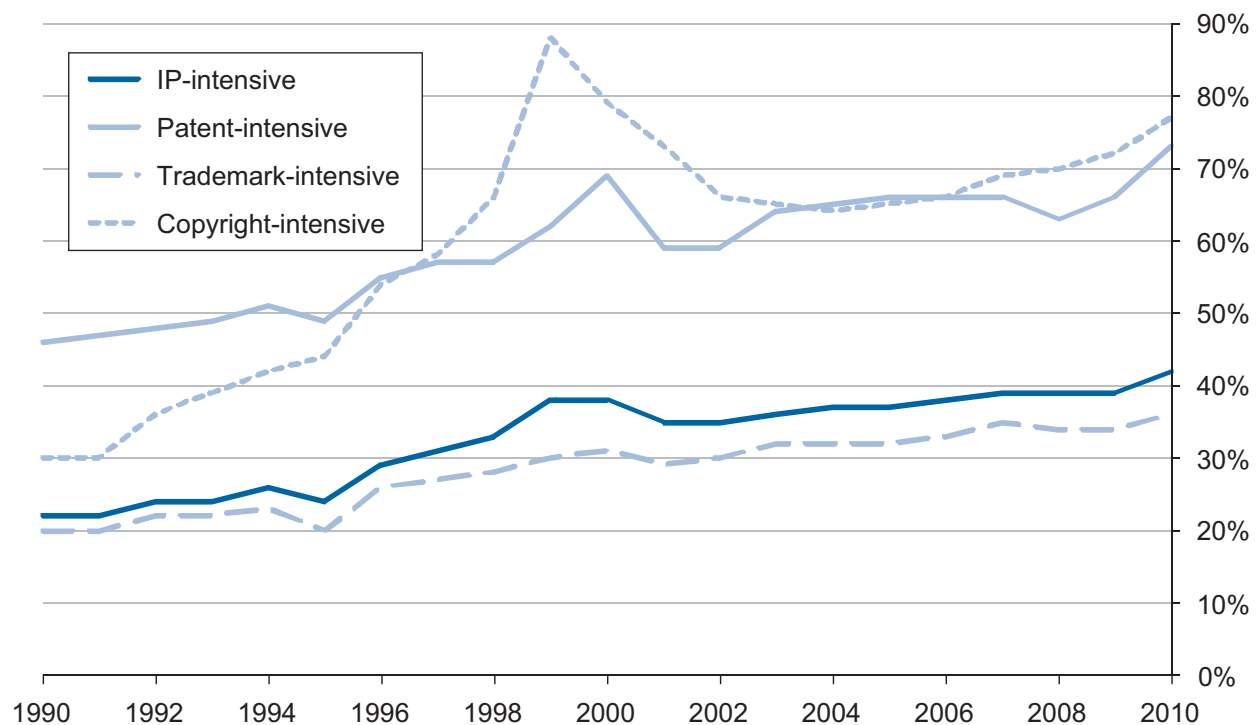
Source: ESA calculations using data from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages.

⁹⁰ This section focuses on the average weekly earnings of private wage and salary workers using data from the QCEW. According to QCEW data, there were 24.5 million private wage and salary jobs in IP-intensive industries in 2010. Wages represent total compensation paid during the calendar year, regardless of when services were performed. Included in wages are pay for vacation and other paid leave, bonuses, stock options, tips, the cash value of meals and lodging, and in some states, contributions to deferred compensation plans (such as 401(k) plans).

The premium for working in an IP-intensive industry has grown over time, as shown in Figure 7. In 1990, IP-intensive jobs paid 22 percent more than jobs in other industries and a decade later this premium had risen to 38 percent. It lost some ground early in the 2000s before edging back up and reaching a new high of 42 percent in 2010. Trademark-intensive industries followed a similar but slightly lower upward path over the past two decades. In 1990, trademark-intensive industries paid 20 percent more on average than non-IP-intensive industries, with this premium climbing to 31 percent by 2000 and 36 percent in 2010. Wages in patent-intensive industries started out at a 46 percent premium in 1990, and this premium grew through the 1990s before surging up to 69 percent by 2000. This surge was reversed in 2001, and the premium changed little in the last decade before rising again over the past few years. In 2010, patent-intensive workers earned 73 percent more per hour than workers in non-IP industries.

Copyright-intensive industries followed a more extreme version of the trends outlined above. Workers in these industries earned 30 percent more than non-IP workers on average in 1990, and this premium tripled during the following decade to 88 percent in 1999. Over the next five years, the premium decreased to 64 percent before growing again to 77 percent in 2010.

Figure 7. Average Weekly Wage Premium of Workers in IP-Intensive Industries Relative to Non-IP-Intensive Industries, 1990-2010

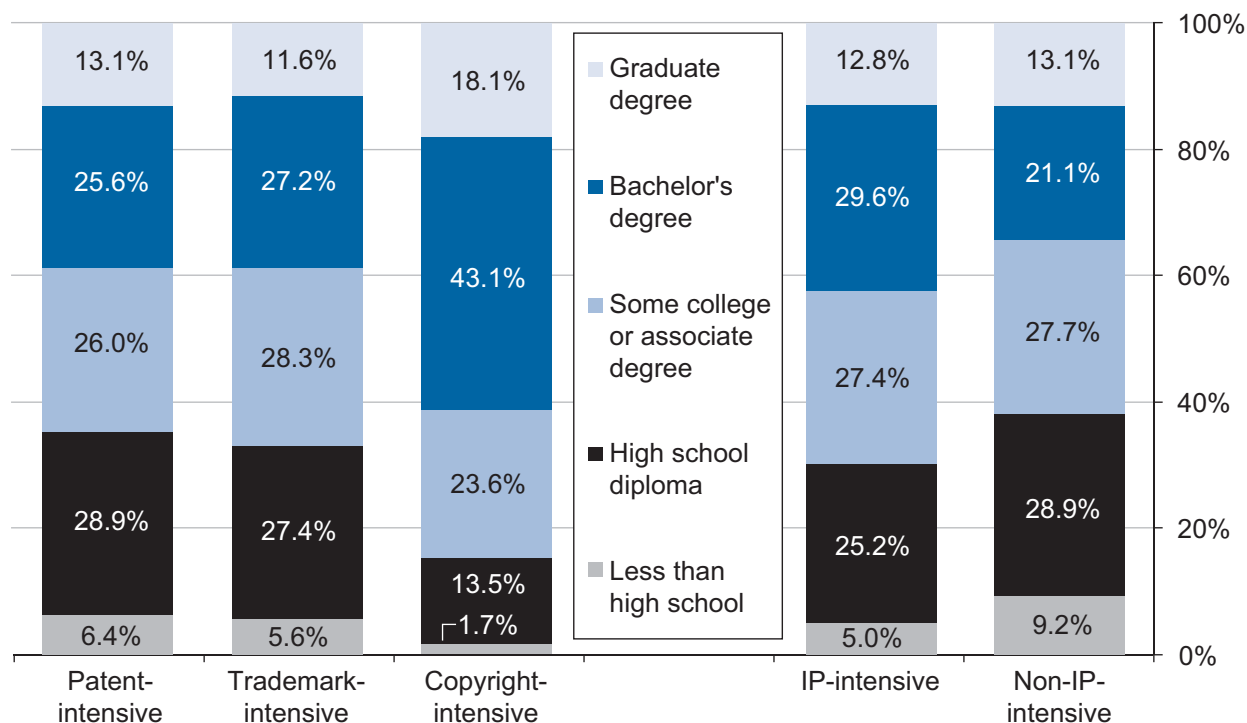


Source: ESA calculations using data from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages.

Educational Attainment

In competitive labor markets, wages are closely correlated to worker productivity, and educational attainment is a common gauge of workers' skills and expected productivity. Thus, it would be expected that employees in IP-intensive industries have relatively high educational attainment. The data bear that out as 42.4 percent of workers age 25 and older in the IP-intensive industries in 2010 had a bachelor's degree or higher, compared with 34.2 percent in private non-IP-intensive industries.⁹¹ (See Figure 8.) Workers in copyright-intensive industries were the most educated of the three IP-intensive segments with 61.2 percent having attained a bachelor's degree or higher, and only 1.7 percent having less than a high school diploma. Essentially identical shares of workers in the patent- and trademark-intensive industries (38.7 and 38.8 percent, respectively) had at least a bachelor's degree.

Figure 8. Distribution of Employed Persons in IP-Intensive Industries by Educational Attainment, 2010



Source: ESA calculations using Current Population Survey public-use microdata.

Note: Estimates are for employed persons age 25 and over.

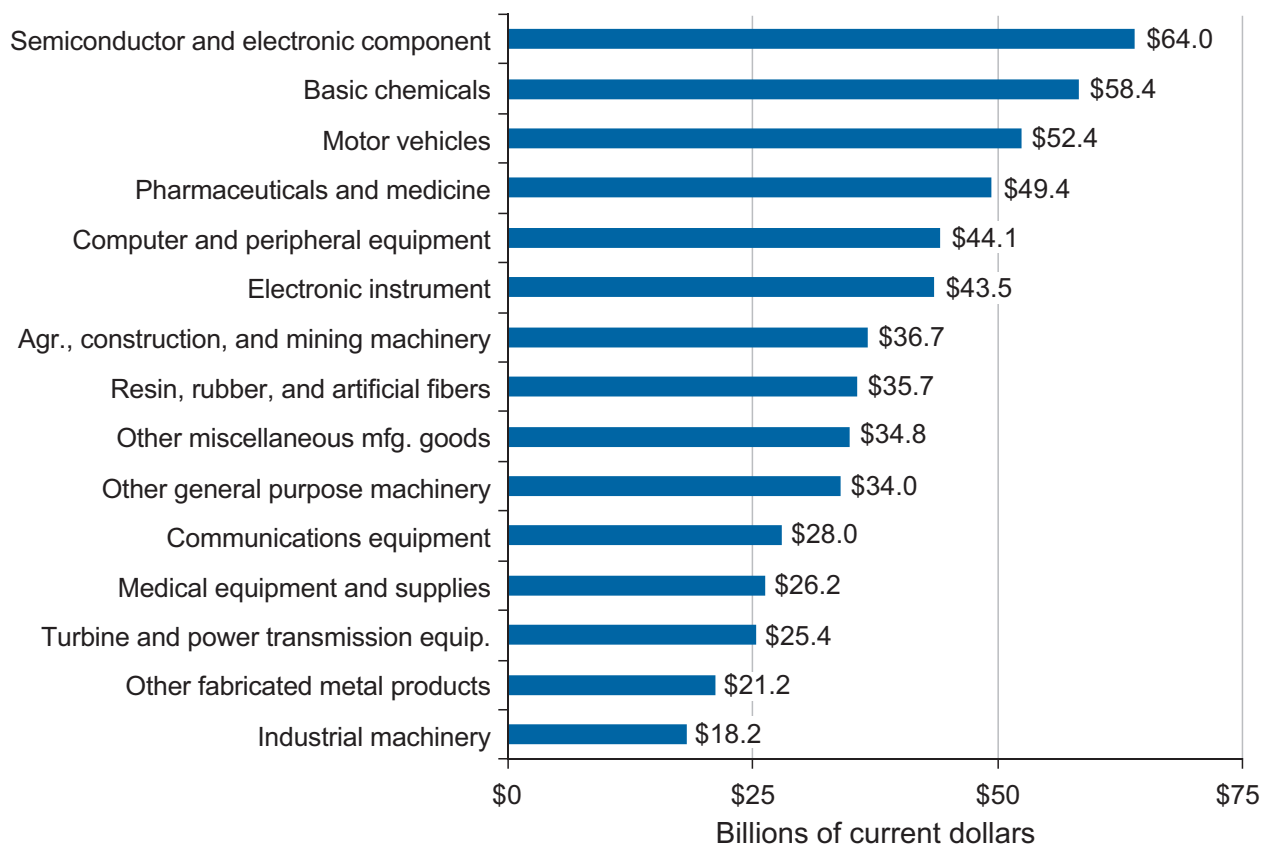
⁹¹ These estimates are calculated from 2010 Current Population Survey public-use microdata, as accessed through the Census Bureau's DataFerrett tool at dataferrett.census.gov.

Foreign Trade

Although trade statistics do not tell us anything about the IP content of exports or imports, U.S. IP-intensive industries are a major part of U.S. trade. Merchandise exports of IP-intensive industries totaled \$775 billion in 2010, accounting for 60.7 percent of total U.S. merchandise exports, while merchandise imports of IP-intensive industries stood at \$1,336 billion or 69.9 percent of total U.S. merchandise imports. From 2000 to 2010, exports of IP-intensive industries increased 52.6 percent while imports of IP-intensive industries rose 61.6 percent.

Manufacturing industries were responsible for almost 99 percent of IP-intensive merchandise exports in 2010, with oil and gas extraction and software publishing accounting for the rest. Exports from the semiconductors and electronic parts sector led the way, totaling \$64.0 billion or 8.3 percent of IP-intensive industries' merchandise exports. (See Figure 9.) The next largest export categories were basic chemicals (\$58.4 billion), motor vehicles (\$52.4 billion), pharmaceuticals and medicine (\$49.4 billion), and computer and peripherals (\$44.1 billion).

Figure 9. Merchandise Exports of Selected IP-Intensive Industries, 2010



Source: ESA calculations using data from the Census Bureau's Foreign Trade Division.

Note: The selected industries accounted for 74 percent of merchandise exports of IP-intensive industries.

On the imports side, manufacturing accounted for 79 percent of total imports of IP-intensive industries while oil and gas represented 21 percent and software publishing less than 1 percent. Among imports of manufactured goods, the largest category was motor vehicles (9.7 percent of all imports of IP-intensive industries), followed by computers and peripheral equipment (6.7 percent) and pharmaceuticals and medicines (6.5 percent).

It should be noted that the imports of goods of IP-intensive industries included those produced by U.S.-owned establishments located overseas and by foreign producers under U.S. licenses. In 2009, Americans received \$89.8 billion from royalties and license fees, which included industrial processes and trademarks, while paying foreigners \$25.2 billion. Imports also provide benefits for American consumers and industries. Imports tend to increase market competition and thus lower prices, making some products affordable to more American consumers. Likewise, many imports are intermediate inputs for American industries which make their finished products more competitive.⁹²

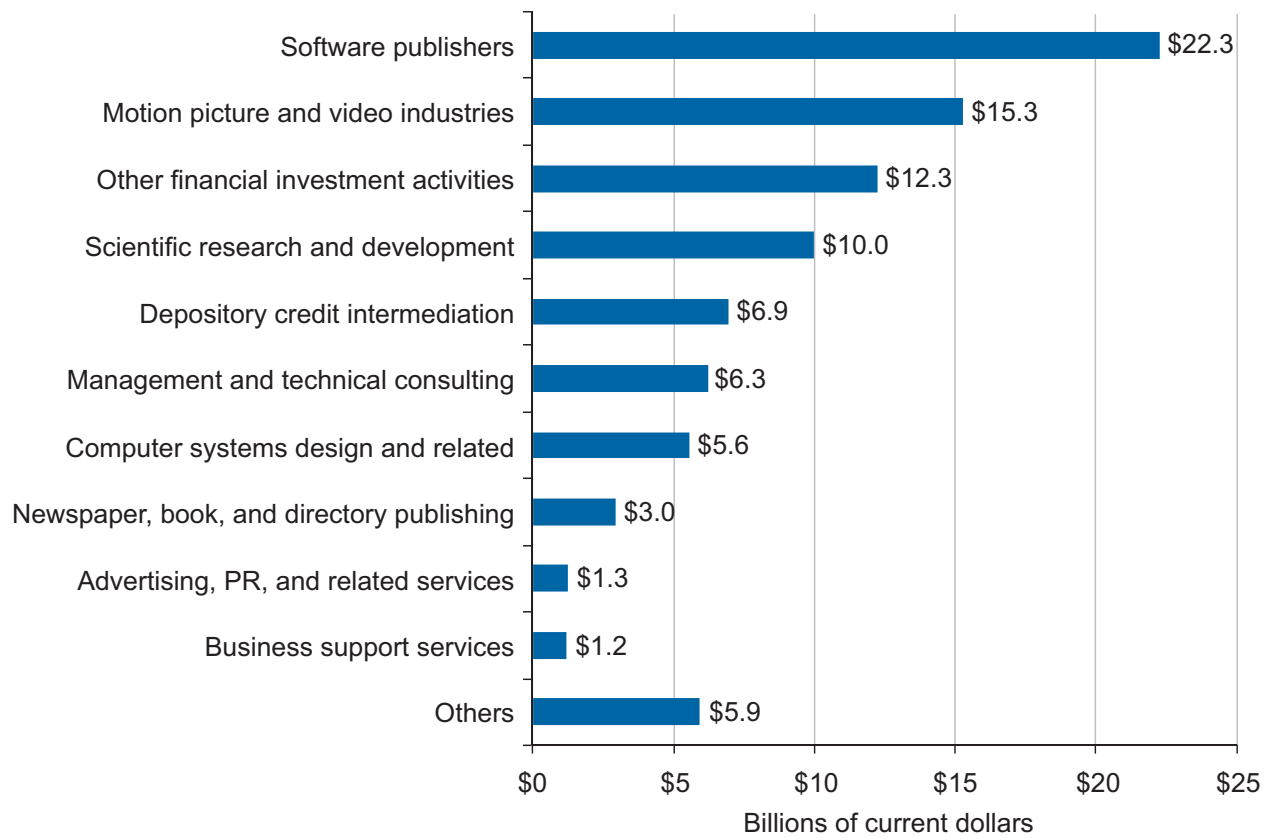
More generally, one must keep in mind that trade statistics do not convey the importance of IP-intensive products to the U.S. economy. For instance, U.S. electronics companies like Apple tend to capture a significant portion of the value added in their global supply chain from products like the iPod and iPhone, two products that are assembled offshore.⁹³ These companies also tend to capture a large share of the profits from their global supply chains while retaining market share and an innovative edge globally. At home, these companies employ many high-skilled workers who earn much more than the low-wage, low-skill workers that assemble products overseas.⁹⁴ Trade statistics themselves do not capture this complete picture of the contribution of these industries to the U.S. economy and its competitiveness. A casual examination of the trade balance in the IP-intensive electronics-related sectors misses this nuanced and important reality.

Data on foreign trade of services are more limited. We used the 2007 Economic Census in order to get the most detailed accounting of services exports and to calculate total exports of IP-intensive service-providing industries. Exports of IP-intensive service-providing industries totaled about \$90 billion in 2007, accounting for approximately 19 percent of total U.S. private services exports. As shown in Figure 10, exports of software publishers, at \$22.3 billion, were the largest group of services exports in 2007, followed by the motion picture and video industry at \$15.3 billion. Other major services export categories in 2007 included financial investment activities (\$12.3 billion, excluding securities and commodity contracts intermediation and brokerage), scientific research and development (\$10 billion), depository credit intermediation (\$6.9 billion), and management and technical consulting (\$6.3 billion).

⁹² An estimated 53 percent of U.S. merchandise imports were intermediate products in 2007, according to unpublished data from Koopman et al. 2010.

⁹³ Linden, Dedrick, and Kraemer 2010.

⁹⁴ Linden, Dedrick, and Kraemer 2009.

Figure 10. Exports of IP-Intensive Service-Providing Industries, 2007

Source: ESA calculations using data from the Census Bureau's 2007 Economic Census.

APPENDIX

Revenue Generated from the Licensing of Rights to Use Protected Intellectual Property

Every five years, the Census Bureau conducts an Economic Census of U.S. business establishments, with the latest conducted in 2007. Data collected include number of employees, annual payroll, and value of sales by specific product lines. As a robustness measure of our list of IP-intensive industries, we examined the extent to which industries with high revenue share from IP-related product lines were among our 75 IP-intensive industries. Specifically, we identified 91 product codes from the Economic Census that were associated with licensing, royalties, and other forms of trade of intellectual property.

Examples of such product codes include:

- Licensing of rights:
 - to use intellectual property (product code 39400)
 - to use intellectual property-protected by copyright (39401)
 - to use intellectual property-protected as industrial property (39402)
 - to use intellectual property-protected by trademark (39403)
 - to use intellectual property-protected by patent (39404)
- Outright sale of:
 - original works of intellectual property (39250)
 - intellectual property protected by copyright (31500)
- “Contract production” of various forms of intellectual property (product codes 30150, 31510, 31520, 35113, 35111, 35114, 35115, 35112, 35110, 35540) and “exclusivity” rights (product code 31256)

Table 11 shows the 31 four-digit NAICS industries that had at least some IP-related revenue, ranked by the IP share of total revenue in 2007. The distribution of IP-related revenue was fairly concentrated. Ten industries had IP revenue shares above the 6.6 percent average (among industries with IP-related revenue), and these industries accounted for about 95 percent of total revenue from IP-related products. All but one of the ten industries also were identified in this

report as IP-intensive. The sole exception was promoters of performing arts, sports, and similar events (NAICS 7113). This industry generated 6.2 percent of its revenue in 2007 from a few IP-related areas, including exclusivity rights; licensing of rights to use property protected by trademark; licensing of rights to use property protected by copyright; contract production services for intellectual property protected by copyright, excluding live performing arts; and contract production services for intellectual property protected by trademark.⁹⁵

Overall, 14 of the 31 industries with any revenue generated by the protection of IP products and services in 2007 made it into our IP-intensive industry list. Of the 17 industries that were not defined as IP-intensive, four were in the broader education sector and four were in the “other services (except public administration)” sector.

⁹⁵ See factfinder.census.gov/servlet/IBQTable?_bm=y&-ds_name=EC077113&-NAICS2007=7113&-lang=en.

Table 11. Industries with IP-Related Revenue, Ranked by IP-Revenue Intensity, 2007

NAICS code	IP-intensive	Industry title	IP-related revenue (\$millions)	Cumulative share	IP-revenue intensity (IP/total revenue)
7115	X	Independent artists, writers, and performers	\$9,776	6.8%	76.6%
5331	X	Lessors of nonfinancial intangible assets	24,473	23.7%	74.3%
5121	X	Motion picture and video industries	51,132	59.2%	64.1%
5152	X	Cable and other subscription programming	17,256	71.1%	38.4%
5122	X	Sound recording industries	5,290	74.8%	34.8%
7111	X	Performing arts companies	3,208	77.0%	23.6%
5112	X	Software publishers	12,868	86.0%	9.5%
5417	X	Scientific research and development services	8,532	91.9%	9.0%
5191	X	Other information services	2,812	93.8%	7.5%
7113		Promoters of performing arts, sports, and similar events	999	94.5%	6.2%
7112		Spectator sports	1,024	95.2%	3.4%
8139		Professional and similar organizations	1,822	96.5%	3.2%
7114		Agents and managers for public figures	80	96.5%	1.6%
5511		Management of companies and enterprises	1,349	97.5%	1.3%
5151	X	Radio and television broadcasting	628	97.9%	1.1%
6114		Business schools and computer and management training	107	98.0%	1.1%
5111	X	Newspaper, periodical, book, and directory publishers	883	98.6%	0.6%
5413		Architectural, engineering, and related services	1,130	99.4%	0.4%
6117		Educational support services	37	99.4%	0.4%
8132		Grantmaking and giving services	258	99.6%	0.3%
8133		Social advocacy organizations	64	99.6%	0.3%
5419	X	Other professional, scientific, and technical services	86	99.7%	0.2%
5179	X	Other telecommunications	54	99.7%	0.2%
8134		Civic and social organizations	23	99.7%	0.2%

Table 11. Industries with IP-Related Revenue, Ranked by IP-Revenue Intensity, 2007—Continued

NAICS code	IP-intensive	Industry title	IP-related revenue (\$millions)	Cumulative share	IP-revenue intensity (IP/total revenue)
5415	X	Computer systems design and related services	287	99.9%	0.1%
7121		Museums, historical sites, and similar institutions	20	100.0%	0.1%
6116		Other schools and instruction	19	100.0%	0.1%
5171		Wired telecommunications carriers	19	100.0%	0.0%
5418	X	Advertising, public relations, and related services	16	100.0%	0.0%
5172		Wireless telecommunications carriers (except satellite)	4	100.0%	0.0%
6115		Technical and trade schools	3	100.0%	0.0%
Total		All industries with IP-related revenue	144,259	100.0%	6.6%

Source: ESA calculations using data from the Census Bureau's 2007 Economic Census.

Note: The intensity measure is the percent of overall revenue generated for each four-digit NAICS industry from the licensing of intellectual property protected assets.

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APPENDIX C

Art Works and National Endowment for the Arts, *NEA Guide to the U.S. Arts and Cultural Production Satellite Account: Including a Blueprint for Capturing the Economic Value of Arts and Cultural Workers and Volunteers*, December 2013, at
http://arts.gov/sites/default/files/nea_guide_white_paper.pdf.

NEA GUIDE TO THE U.S. ARTS AND CULTURAL PRODUCTION SATELLITE ACCOUNT

*INCLUDING A BLUEPRINT FOR
CAPTURING THE ECONOMIC VALUE OF ARTS AND
CULTURAL WORKERS AND VOLUNTEERS*



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PREFACE

In 2012, the National Endowment for the Arts (NEA) and the U.S. Department of Commerce’s Bureau of Economic Analysis (BEA) agreed to devise a system for valuing arts and culture as a distinct sector of the nation’s economy.

Thereafter, in consultation with the NEA, the BEA made arrangements to track a cohort of arts and cultural commodities and industries and compute their annual impact on gross domestic product (GDP). The result is the first-ever U.S. Arts and Cultural Production Satellite Account (ACPSA), preliminary estimates from which are being released with this guide.

The timing is propitious. In this year of the first release of ACPSA data, the BEA already has taken steps to account for arts and cultural contributions more comprehensively.

In the spring of 2013, the BEA announced that it would begin to consider spending on “artistic originals” (i.e., films, long-running TV shows, theatrical play scripts, books, music recordings, commercial stock photography, and greeting card designs) as capital assets rather than as expenses. In retrospect, the move added more than \$70 billion to the GDP in 2012. (This revision occurred outside the ACPSA development process, and while the result is not reflected in the account’s preliminary estimates, it will show up in future iterations.)

Other countries also have shown the way. Economists in the UK, Canada, Australia, Spain, and Colombia, to name a few examples, have proposed or established arts-related satellite accounts for their countries—whether the organizing principle is creative production, cultural activity, or some hybrid of both concepts.

In working with the BEA staff to design the ACPSA framework, the NEA Office of Research & Analysis has taken every opportunity to avail of these resources. This white paper is partly an attempt to repay the debt, by taking the reader through the U.S. process for assigning economic value to industries and commodities.

The first part of this paper, then, explains what a satellite account is, what types of information it ultimately will provide, how the BEA and NEA tackled complex issues of definition, and which commodities, in whole or in part, are represented by existing data.

Midway through work on the satellite account, however, the NEA’s research staff decided that the white paper could serve a second purpose. In conversations with multiple stakeholders about the ACPSA project, there frequently arose confusion—or, at any rate, unanswered questions—about how the choice of arts and cultural commodities might bear on future recognition of arts/cultural workers (and not just industries) as a critical component of economic value.

This line of inquiry led NEA researchers to advance a new taxonomy of arts and cultural occupations, to supplement use of the commodities that appear in the satellite account. This list stems from an evaluation of Bureau of Labor Statistics occupation codes, but it allows for individual and combined estimates of economic value—which, again, may be examined profitably alongside the ACPSA.

Another method presented here is more empirical. Instead of a top-down approach for determining which occupations merit inclusion in an arts/cultural workforce taxonomy, this method consists of analyzing the presence of all types of occupation within arts and cultural industries, and reporting financial data on the occupations that are the most highly represented within each industry.

This paper, therefore, serves jointly as a guide to the ACPSA in its first year and as a blueprint for building a comparable robustness in the methodology used to track arts and cultural occupations at the U.S. level. Likewise, a section on capturing the economic value of the nation's arts/cultural volunteers supports the NEA's long-term aim of more comprehensive accounting for this sector.

Economic outcomes from the arts fall into one domain of impacts under investigation by the NEA as part of its strategic plan and five-year research agenda. According to the plan, the NEA seeks to "advance public knowledge about the arts' contributions to American life."

Other research projects bid to achieve the following goals: to quantify audience members' levels of engagement with NEA-funded arts programming; to track the long-term relationship between the arts and livability in communities throughout the nation; evaluate the effects of creative arts therapies in military personnel experiencing psychological illnesses and mild traumatic brain injury; and to address knowledge gaps concerning the arts' link to human development at every stage of the lifespan. For many of these studies, the NEA is collaborating with one or more federal agencies to realize a shared objective. The BEA satellite account is a flagship instance of such ventures.

Finally, the length of this paper and the variegated ground it attempts to cover are testimony to the wide-ranging ambition behind satellite accounts in general. As the BEA has noted, they are regarded as laboratories for distilling fine-grained information about sectors that are treated more summarily in the main industry accounts. As the NEA embarks on the second year of this experiment with the BEA, we hope this white paper will illumine the factors and choices that informed the account's creation, even while we know that there will be ample scope for improvement in the months ahead.

Sunil Iyengar
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PART I: ACCOUNTING FOR THE NATION'S ARTS AND CULTURAL INDUSTRIES: WHY, WHAT, AND HOW?

Section 1. Why a Satellite Account on Arts and Culture?

The Bureau of Economic Analysis (BEA), nestled within the U.S. Department of Commerce, produces a system of accounts that measure what the U.S. economy produces, how much is earned by that production, and how earnings are spent. The BEA's **national income and product accounts** (NIPAs) include **gross domestic product** (GDP)—which captures the final value of the goods and services produced in the United States over a given period—and **personal consumption expenditures** (PCE), which make up 70 percent of the total value of U.S. GDP.

Complementing the NIPAs are the BEA's **industry accounts**, which provide a framework to measure and analyze, by industry, the production of goods and services. These accounts depict the internal workings of the U.S. economy.

The BEA releases industry accounts in two main formats. The first are the annual industry accounts, which report estimates for 65 industries, and the second are the “benchmark” industry accounts, which are released every five years and contain data for 425 detailed industries. For example, the BEA's *annual* industry accounts show that the performing arts, spectator sports, and museums, combined, added \$83 billion to the U.S. economy in 2011. The more detailed *benchmark* accounts, by contrast, reveal that the performing arts, as distinct from sports and museum industries, contributed \$7.2 billion to GDP in 2002.

Despite the wealth of information available from the BEA's industry accounts, they do not visibly capture every aspect of the economy. **Satellite accounts**, alternatively, expand the capacity of the national accounting system. Linked to, but distinct from, the main industry system, they cut across sectors and arrange industry data to show detail without overburdening the main industry accounts. Because they are supplemental, satellite accounts also permit conceptual development—in effect, they can serve as laboratories for economic accounting.

The BEA, for example, produces a satellite account on travel and tourism (the Travel and Tourism Satellite Account, or TTSA)¹. Travel and tourism services are provided, in either large or small part, by a variety of industries spanning accommodation, transportation, entertainment, and retail sales. Consequently, the value of travel and tourism is not evident in the main system of accounts.

To illustrate: the BEA estimates that 75 percent of the services provided by the accommodations industry (e.g., hotels and B&Bs) relate to travel and tourism, while 13 percent of gas-station sales stem from

¹ In addition to the TTSA, the BEA has produced a satellite account on transportation (last updated in May 2000) and is in the midst of producing a satellite account on healthcare. For more information, see the References section for BEA's literature on these accounts.

travel and tourism. The TTSA teases out the portion of each relevant industry's travel and tourism production to arrive at a total for the sector—in 2011, travel and tourism added \$415 billion to the U.S. economy.

A Satellite Account on Arts and Cultural Production

Arts and cultural production is included in the GDP and in the BEA's central industry accounts. However, economic contributions specific to the arts are lost in the aggregated industry figures. To draw out these details for the production of arts and cultural goods and services, therefore, the NEA and the BEA agreed to develop an Arts and Cultural Production Satellite Account (ACPSA). This account will ensure, for example, that estimates for the performing arts are reported not only in aggregate, but also for specific commodities such as theaters, dance troupes, and symphony orchestras.

Moreover, there are a number of industries whose production is only partly related to arts and culture. To include the entire amounts produced by these industries would falsely inflate the economic value of the arts and culture, while excluding the industries in their entirety would result in underestimation.

To rectify this matter, the ACPSA, like the TTSA, includes only the share of production related to the arts. For example, the ACPSA includes only the percentage of software publishing related to computer games, computer-assisted design (CAD), and other arts-related software. Similarly, entries for computer design systems (a professional services industry) are restricted to production supporting the motion picture and sound recording industries. The ACPSA also includes fractional production by advertising services, educational services (e.g., colleges and universities), and printing, to name a few.

As a satellite account, the ACPSA has the flexibility to comprehensively measure arts and cultural production in the U.S., providing an unprecedented amount of detail about the economic value created by this sector.

Section 2. What Does the ACPSA Measure?

Before addressing the commodities and industries captured by the ACPSA, it is helpful to understand some of the inner workings of the account. This section summarizes the data sources used to generate the account. It introduces the concept of “I-O” tables and their resulting measures such as consumption and value added, which are part of the BEA’s framework for measuring economic activity.

At the time of producing this white paper, the NEA did not have access to the 2013 ACPSA, then in the final stages of preparation. The examples shown below, consequently, draw on figures for motion picture and sound recording industries reported in the BEA’s most recent 2011 *annual* industry accounts.

Data Sources

The BEA uses a wide range of data sources and methods to prepare the National Income and Product Accounts (NIPAs) and industry estimates. Data produced by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics are key data sources, as are government administrative data such as tax returns.

Because they do not interfere with the BEA’s main industry estimates, satellite accounts can also draw from less conventional data sources, including data collected by private industry.

Below is a partial summary of data sources the BEA used or accessed in preparing the ACPSA:

Data from the U.S. Census Bureau

Economic Census; Services Annual Survey (SAS); Non-Employer Statistics; Census of Governments

Among the most important data sources used by the BEA is the Economic Census,

which is conducted by the U.S. Census Bureau in years ending in “2” and “7.” The Economic Census provides the most comprehensive data available in terms of industry coverage and in the measurement of the economic units in those industries.

In addition to the five-year Economic Census, the BEA also draws from the Census Bureau’s annual surveys of business establishments. The Service Annual Survey (SAS) is sent to 72,000 service businesses (both taxable and tax-exempt) with paid employees. Many of the industries included in the ACPSA are service industries, including motion picture and sound recording, publishing, designer services, and the performing arts.

Workers in a number of arts and cultural occupations, however, report high rates of self-employment. For example, 68 percent of writers and authors are self-employed, as are 60 percent of photographers, art directors, and craft artists.

The ACPSA measures the production and earnings of the self-employed through the Census Bureau’s non-employer statistics, which are based, in turn, on Schedule C attachments to IRS Form 1040, U.S. Individual Income Tax Return. The Schedule C applies to the self-employed if the primary purpose of the work is to generate income or profit and the work is done regularly. If these criteria are met, Schedule C attachments are required of self-employed workers with business income of \$400 over and above expenses.

The ACPSA also includes arts and cultural production by government, including government-operated libraries and museums. Source data for these estimates includes the Census of Governments, which, like the Economic Census, is conducted by the Census Bureau every five years, for years ending in “2” and “7.”

Data from the U.S. Bureau of Labor Statistics and the U.S. Department of Labor

Quarterly Census of Employment and Wages; Consumer Expenditure Survey; LM2 Reports

The Quarterly Census of Employment and Wages (QCEW) program produces a comprehensive tabulation of employment and wage information for workers covered by unemployment insurance programs.² The QCEW program publishes employment and wage data down to the six-digit NAICS industry level, if disclosure restrictions are met.

Conducted by the Census Bureau for the BLS is the Consumer Expenditure Survey (CES), which consists of interview and diary components. The CES is the only federal survey to provide information on the complete range of consumers' expenditures and incomes.

The ACPSA includes estimates for arts-related unions such as organizations representing stage and screen actors. Labor organizations with \$250,000 or more in total annual receipts are required to file LM-2, the Labor Organization Annual Report, with the Office of Labor-Management Standards within the Department of Labor.

Data from Non-Government Sources

The ACPSA also draws on non-government source data. For example, the ACPSA includes the construction of educational and recreational buildings such as libraries and museums. These estimates were derived, in part, from data supplied by McGraw Hill Construction, part of McGraw Hill Financial.

As another example, detail within the architectural services industry was estimated using the Work-on-the-Boards

² Excluded from the QCEW are members of the armed forces, the self-employed, proprietors, domestic workers, unpaid family workers, and railroad workers covered by the railroad unemployment insurance system.

Survey and Panel, which is conducted by the American Institute of Architects' Economics and Market Research Group.

NAICS Codes

Central to the workings of the ACPSA is the North American Industrial Classification System (NAICS), a two- through six-digit hierarchical classification system that groups business establishments (page 39) into industries according to similarity in the process used to produce goods and services. As explained by the U.S. Census Bureau, each digit in the NAICS code is part of a series of progressively narrower categories: more digits in the code mean greater classification detail.³

Additionally, NAICS definitions are revised and incorporated into the BEA's industry framework on a five-year basis. The current iteration of the ACPSA is measured using 2002 NAICS definitions, while the second wave of the account (planned for release in the fall of 2014) will reflect 2007 revisions.

Revised industry classifications update the accounts to more accurately portray the dynamic U.S. economy and permit better international comparisons with economic data from other countries. For example, the ACPSA includes "Internet publishing and broadcasting" among its arts and cultural industries. The 2002 reclassification better accounted for this industry than did the previous (1997) classification, which combined Internet publishing and broadcasting with other industries, such as newspapers and periodicals.

Appendix A illustrates the NAICS hierarchy for performing arts industries.

The Inner Workings of the ACPSA: I-O Accounts

While it is beyond the scope of this document to attempt to fully explain the

³ Please see Appendix A for an illustration of the NAICS hierarchy.

BEA's methods of calculating national income and product accounts (NIPA) and industry estimates, this section draws on the agency's annual industry accounts to highlight the ACPSA's inner workers through "input-output" (I-O) accounts.⁴

As a satellite account, the ACPSA expands on the BEA's main industry accounts, which, in turn, consist of the "input-output" (I-O) accounts that trace the flow of goods and services among industries in the production process.⁵ I-O accounts, as the BEA explains, show the interdependence among the producers and the consumers in the U.S. economy. Two main tables in the I-O accounts are the standard "make" and "use" tables.

The standard make table shows the value of commodities (e.g., goods, merchandise, or services) produced by each industry in a given year. For example, virtually all motion picture and sound recording merchandise and services are produced by motion picture and sound recording industries (NAICS 512)—\$102.7 billion in 2011.⁶

The standard use table, alternatively, is a matrix showing the use of commodities by industries as "intermediate inputs" and by "final users" in a given year.

Intermediate and Final Uses

Of the \$102.9 billion in motion picture and sound recording commodities produced in 2011, roughly 60 percent were purchased as intermediate inputs—i.e., the goods and services that are used in the production process to produce other goods and services.

The remaining 40 percent of motion picture and sound recording merchandise and services produced were bought by "final users," composed of: U.S. consumers, who make up a large majority of final users; U.S. businesses; and foreign purchasers (exports). In 2011, U.S. consumers purchased \$36 billion in motion picture and sound recording merchandise and services—86 percent of all final-use purchases. An additional \$11.1 billion was exported to foreign purchasers, while the U.S. imported \$5.2 billion.

Change in private inventories shows that, in 2011, \$156 million more in motion picture and sound recording merchandise and services was sold than produced—businesses drew down their inventories. Selling more than what was produced in a given period, a year in this case, is a sign that motion picture and sound recording industries may step up production in the next year.

⁴ Readers interested in a full explanation of the BEA's methods of calculating NIPAs and industry estimates should refer to the bureau's technical documentation, shown in the references section of this document.

⁵ Because the I-O accounts drive the BEA's industry estimates, I-O accounts are also released on annual and five-year benchmark timeframes. The most recent annual I-O accounts report estimates for 2011, while the current benchmark I-O accounts are shown for 2002.

⁶ The BEA's make table reports that computer systems design industries and miscellaneous professional, scientific, and technical services industries produced \$481 million and \$156 million, respectively, in motion picture and sound recording commodities in 2011.

BUSINESS ESTABLISHMENTS VS. ENTERPRISES:

Madison Square Garden as an Example

The ACPSA measures arts and cultural production by business *establishments*. The U.S. Census Bureau defines a business establishment as a single physical location where business is conducted or where services or industrial operations are performed. An enterprise, on the other hand, may consist of more than one location performing the same or different types of economic activities.

As an illustration, the Madison Square Garden Company is a sports, media, and entertainment *enterprise*. Madison Square Garden *establishments* include Radio City Music Hall (home to the Rockettes), the Beacon Theater, the Chicago Theatre, the Forum, and the Madison Square Garden Arena. Each of these establishments falls into NAICS 71131, “promoters of performing arts, sports, and similar events, with facilities,” which is “partially” in scope of the ACPSA. (In other words, the ACPSA restricts production from this industry to the performing arts.)

The Madison Square Garden Company also owns and operates Fuse, a music television network within broadcasting, which is another industry captured by the ACPSA.

Because BEA’s 2011 annual tables were produced prior to the 2013 revisions to the national accounts, they do not capture artistic originals (e.g., movies and music recordings) as investments.⁷ Consequently, “private fixed investment,” in 2011, was zero for motion picture and sound recording commodities.

Key Measures of Arts and Cultural Production

Industry Output and Value Added

Two key measures provided by the ACPSA are “industry output,” and its closely related measure, “value added.”⁸ Industry output is the market value of the goods and services produced by an industry. Value added, alternatively, is gross domestic product by industry.

Industry output includes sales or receipts and other operating income, commodity taxes (e.g., sales and property taxes), and inventory change.⁹ Value added is industry output minus intermediate inputs (i.e., energy, raw materials, semi-finished goods, and purchased services)—i.e., value added is the industry’s contribution to the national GDP.

$$\begin{array}{r} \text{Industry Output} \\ - \text{Energy Costs, Raw Materials, etc.,} \\ \hline \text{Value Added} \end{array}$$

In 2011, industry output for motion picture and sound recording industries was \$103.6 billion. This figure, however, includes the goods and services used by motion pictures and sound recording, but not produced by

⁷ See the text box on artistic originals in Part I, Section 4.

⁸ In the BEA’s annual industry accounts, “industry output” is referred to as “gross output.”

⁹ Inventory change is the difference between last year’s ending inventory and the current year’s inventory.

USE OF MOTION PICTURE AND SOUND RECORDING COMMODITIES, 2011

(Millions of dollars)

Total motion picture and sound recording commodities produced	\$102,936
Uses:	
<i>Intermediate inputs</i>	\$61,167
<i>Final uses</i>	\$41,771
Personal consumption expenditures	\$36,014
Change in private inventories	-\$156
Private fixed investment	—
Exports	\$11,098
Imports	-\$5,185

Source: 2011 Use Table, U.S. Bureau of Economic Analysis

their own labor and capital. The electricity used by the industry was generated by the energy sector. Camera and sound-recording equipment and set lighting were made by the manufacturing sector.

Subtracting these kinds of intermediate costs from industry output yields \$60.2 billion in value added by motion picture and sound recording industries. In other words, using their own labor and capital, motion picture and sound recording industries contributed \$60.2 billion to U.S. GDP in 2011.¹⁰

Employment, Compensation, and Measures of Indirect Production

As part of the ACPSA, the BEA also estimates arts and cultural employment and employment compensation. In 2011, for example, motion pictures and sound recording industries staffed 371,000 (full- and part-time) employees; their compensation totaled \$28.9 billion.¹¹ The ACPSA also includes estimates of “direct” and “total” output, as well as “total commodity output multipliers.” While an in-depth discussion of these measures is beyond the scope of this document, it is worth noting simply that measures of direct and indirect output derive from I-O requirements tables.

¹⁰ Due to disclosure controls, industry output and value added reported in the ACPSA are aggregated. For example, industry output and value added by motion picture and sound recording industries are subsumed within the ACPSA’s industry aggregate titled “information, electronic.” However, industry output and value added for motion picture and sound recording industries can be calculated by combining data from the ACPSA with estimates reported in the Economic Census. For more information, go online to see the NEA’s arts data profile page about the ACPSA.

¹¹ Compensation of employees consists of wages and salaries in cash; wages and salaries in kind (e.g., transit subsidies); and supplements to wages and salaries such as employer contributions to pension, health, and unemployment insurance funds.

The BEA’s structure for measuring employment differs from that used by the BLS’s OES program, which is the subject of Part II of this document. For example, employment measured by the BEA includes self-employed workers, but it excludes estimates by occupation. Please see Part II of this document for more information.

The BEA reports direct and total requirements (the sum of direct and indirect requirements). If final demand for a commodity increases, there will be an increase in output of that commodity—sometimes called the *direct* effect. As producers of this commodity increase their production, there will also be an increase in the output of their suppliers—the *indirect* effect.

To illustrate direct and total requirements, assume that U.S. consumers (a component of final demand) increase their demand for motion picture and sound recording merchandise and services by \$1. In response, as reported in the BEA's 2011 industry requirements table, motion picture and sound recording industries increase their output by \$1.14.

But as motion picture and sound recording industries increase output, their suppliers must increase their production as well. For example, the \$1 increase in consumer demand for motion picture and sound recording merchandise and services leads to a \$0.11 increase in output by “miscellaneous professional, scientific, and technical services” (e.g. electronic communication services, appraisal services), and nearly \$0.02 in production by the legal services industry. The \$1 increase in demand cascades through many industries, reaching \$1.71 in “total industry output requirement.”

USING EXPENDITURES TO MEASURE GROSS OUTPUT OF TAX-EXEMPT ARTS AND CULTURAL INDUSTRIES

Because motion picture and sound recording industries are predominantly for-profit and therefore taxable, measuring their industry output and value added can be accurately measured using revenue or sales. However, relying solely on revenue may understate the value of nonprofit tax-exempt business establishments. These institutions typically offer discounted or free services not captured by revenue or sales.

Consequently, the ACPSA draws on expenditures in addition to revenue to measure industry output and value added for educational services such as fine arts schools, performing arts companies, museums and historical sites, grant-making services, and business and labor organizations such as unions.

Section 3. How Were the ACPSA Commodities and Industries Selected?

The selection of commodities (i.e., goods and services) for the ACPSA, and, consequently, the selection of industries producing arts and cultural commodities, was based on three factors: (1) an overarching definition of arts and cultural commodities; (2) the construction of a basic framework for the account; and (3) examples of arts and cultural statistical frameworks formulated by other countries and international organizations.

This process led to the identification of 64 distinct arts and cultural commodities, shown in Table 3 in this chapter.¹² In addition to performing arts and museum commodities, the ACPSA includes goods and services that span sectors as varied as construction, manufacturing, professional services, and government.

The Definition of Arts and Cultural Commodities

The NEA's Office of Research & Analysis (ORA) collaborated with the BEA to select the detailed commodities to be included in the ACPSA. Commodities, or goods and services, are strongly linked to the industries producing them. For example, motion pictures, as a commodity, were selected for inclusion. The motion picture industry, consequently, became an ACPSA industry.

The first step in selecting commodities and industries for the ACPSA was to consider ORA's proposed definition:

Artistic and cultural commodities are those intended chiefly as a function of creative or cultural engagement, or are intended primarily to facilitate access to such commodities.

The ACPSA, therefore, includes not only commodities whose primary activities are arts and cultural, but also commodities and industries that support the production of arts and culture—i.e., the “creative chain.” For example, the ACPSA includes estimates for “symphony orchestras and chamber music organizations.” To reflect the production cycle of music performance, the ACPSA also includes musical instrument manufacturing, wholesale distribution of music supplies, and musical instrument stores.

As an additional example of the ACPSA's creative chain, consider that the account includes newspaper, periodical, and book publishing. However, printing is often necessary for publishing. Consequently, selected printing commodities and industries are also included as arts and cultural commodities and industries.

Determining the extent of the ACPSA's creative chain was in itself a highly selective, and to some extent, an idiosyncratic process. For example, the ACPSA includes jewelry design and jewelry manufacturing (an industry employing many jewelers and precious stone and metal workers), considered here as craft arts. However, the ties between cultural production and wholesale and retail sales of jewelry were thought to be tenuous and outside the scope of the account. Consequently, jewelry sales were excluded from the ACPSA.¹³

Similarly, the ACPSA includes fashion design, but excludes clothing manufacturing and apparel sales.

¹² Commodities are goods and services such as musical instruments (good) and dance performances (service).

¹³ Wholesale and retail jewelry sales margins are reflected in ACPSA supply, which measures commodities at the purchasers' value.

ACPSA Framework

The process of selecting arts and cultural commodities and industries was also aided by considering the BEA’s provisional framework for the ACPSA. Not all commodities fit neatly into the framework, and the reporting of ACPSA estimates is not organized within its domains.¹⁴ Nevertheless, the framework served as an early tool for choosing ACPSA commodities and industries.

The ACPSA framework is divided into three domains: core; applied arts and design services; and transversal. Each of these domains, in turn, is further partitioned into sub-domains.

Core Domains

A wide variety of ACPSA commodities fit into the following core sub-domains: museums, libraries, and cultural centers; live performance and music; visual arts; written works; and audio-visual and interactive media.

“Museums, libraries, and cultural centers” include museums, libraries and archives (including government-operated libraries), botanical gardens and zoos, and nature parks. The “transversal” ACPSA domain capturing governance also includes museums—specifically, government-operated museums.

Commodities falling under live performance and music include performing arts companies, such as music, dance, and theater groups, as well as goods and services supporting music such as sound recording, the manufacture of musical instruments, and music stores.

The visual arts sub-domain comprises a number of detailed manufacturing commodities representing craft arts. Examples include the manufacture of china and glass, jewelry and silverware, and custom architectural woodwork. The visual arts also contain several retail sales commodities including art dealers, florist shops, and camera and photographic supply stores, as well as commodities supporting the visual arts (i.e., the creative chain) such as lead pencils and art goods and photographic equipment.

CORE DOMAINS				
Museums, libraries, and cultural centers	Live performance and music	Visual arts	Written works	Audio-visual and interactive media
Applied Arts and Design Services Domains		Transversal Domains		
Advertising services	Other design services	Education	Governance, funding, and professional support services	Infrastructure

¹⁴ ACPSA commodities unaligned with the framework include electronic shopping for books and music and rentals of theatrical costumes and equipment.

Publishing (newspaper, periodical, and book), along with its supporting printing activities, make up the core sub-domain labeled “written works”; motion picture production and broadcasting feature prominently in “audio-visual and interactive media.”¹⁵

Applied Arts and Design Services

The applied arts and design services domain features advertising services. In order to emphasize creative production, advertising within the ACPSA excludes public relations, media buying, distribution, and sign painting.¹⁶

This domain also includes architectural services (including historical restoration services) related to arts and cultural structures, as well as all landscape architectural services.¹⁷

Additionally, this domain includes four design services: interior design services; industrial design services; graphic design services; and “other design services” such as jewelry and fur design. The ACPSA also reports estimates for fashion design, a detailed commodity within other design services.

Transversal Domains

There are three transversal ACPSA domains: education; governance, funding, and professional services; and infrastructure. Education includes “educational services,” which is restricted to fine arts, performing arts, and media arts (e.g., graphic design)

¹⁵ The ACPSA excludes sports from its estimates of publishing and broadcasting production.

¹⁶ Media-buying agencies purchase advertising time from media outlets and resell it to advertising agencies.

¹⁷ The first iteration of the ACPSA restricts architectural services to cultural institutional projects, which represent approximately 2 percent of all architectural services. An expanded measure of architectural services will be considered for the revised ACPSA planned for release in the fall of 2014.

departments of colleges and universities (including state colleges and universities), and fine arts schools such as ballet schools and music schools (except academic).

Governance, funding, and professional services feature art promoters and agents, arts-related granting organizations and unions, and government-operated museums and parks. (Non-government museums are included in the ACPSA’s core domain.)

The account’s transversal domain also includes the construction sector—specifically, construction related to new educational facilities such as museums and libraries, as well as selected amusement and recreational structures related to the arts (e.g., theaters, performing arts centers).

International Comparisons

Other arts and cultural satellite accounts have been produced by countries including Colombia, Spain, Finland, and, through its Department of Culture, Media & Sport, the United Kingdom.

Statistical frameworks (i.e., plans or outlines) for measuring arts and culture production have also been undertaken by a number of international organizations, including the World Intellectual Property Organization (WIPO); the Organization for Economic Cooperation and Development (OECD); and the United Nations Conference on Trade and Development (UNCTAD).

By country, or by organization, some accounts or frameworks emphasize *arts and culture*, while others accentuate *creative industries*. (The WIPO model, alternatively, is a copyright-based model.) That distinction, however, is based on perspective. For example, the performing arts, motion picture and sound recording, and publishing are included in most statistical models, whether framed as arts and cultural production or creative production.

Differences between models tend rather to be at the margins. In its seminal document, *Creative Economy Report 2010*, the UNCTAD writes: “There is no ‘right’ or ‘wrong’ model of the creative industries, simply different ways of interpreting the structural characteristics of creative production.”

The design of the ACPSA was guided, in part, by examples set by international models, particularly the arts and cultural frameworks designed by Statistics Canada, the Australian Bureau of Statistics, and the United Nations Educational, Scientific and Cultural Organization (UNESCO).¹⁸ There is broad alignment of the types of production selected for the ACPSA and those included in the international models. For example, the ACPSA and the three international models considered include performing arts, museums and libraries, motion pictures and sound recording, publishing, and architectural and design services.

However, differences tend to appear in the *production* cycles captured by the various models. For example, like the three international models considered here, the ACPSA includes music performance. As part of music’s creative chain, the ACPSA, along with the Australian and UNESCO models, includes the manufacture of musical instruments. The Canadian model does not. The Canadian framework restricts the production of musical instruments to the expenses incurred when performing music groups acquire musical instruments. In other words, under the Canadian model, the manufacture of musical instruments is reflected in the expenses borne by

performing music groups.¹⁹

Differences also appear in fashion and jewelry production. The ACPSA and the Canadian and UNESCO models include fashion design but exclude the manufacture of clothing and the wholesale and retail sales of clothes.²⁰ The Australian model, however, includes each of these in their production cycle of clothing.

The Australian model also includes the full production cycle of jewelry—design, manufacture, and sales. The ACPSA, on the other hand, includes jewelry design and the manufacture of jewelry, but excludes jewelry sales as a commodity. UNESCO does likewise, but the Canadian model is restricted to jewelry design.²¹

The inclusion of computer systems design also varies among the models considered. The ACPSA includes computer systems design, but it is restricted to custom web design and computer applications necessary to support motion picture and sound recording production. The Canadian framework also includes computer systems design, but it is limited to custom web design.

Alternatively, the Australian and UNESCO frameworks include all computer systems design production.

18 As of November 2013, Australian and Canadian satellite accounts were still under development. The Australian and Canadian frameworks discussed in this report may differ from the ultimate satellite accounts of each country.

19 In the ACPSA, expenses incurred by acquiring musical instruments are also reflected in the total production of performing music groups (e.g., symphony orchestras and chamber groups). But musical instruments are intermediate inputs to performing music groups.

20 Fashion and jewelry design are part of “other specialized design” within the ACPSA and the three international models considered.

21 Ibid.

Inclusion of Selected Industries (Yes/No) within the ACPSA and International Models

	U.S. ACPSA	Canada	UNESCO	Australia
Live performance of music	Yes	Yes	Yes	Yes
Manufacture of musical instruments	Yes	No	Yes	Yes
Fashion design	Yes	Yes	Yes	Yes
Clothing manufacturing	No	No	No	Yes
Wholesale/retail sales of clothing	No	No	No	Yes
Jewelry design	Yes	Yes	Yes	Yes
Jewelry manufacturing	Yes	No	Yes	Yes
Jewelry wholesale and retail sales	No	No	No	Yes
Computer systems design	Yes, partially in scope ¹	Yes, partially in scope ²	Yes, fully in scope	Yes, fully in scope

¹ Custom web design and applications supporting motion pictures and sound recording.

² Custom web design.

NESTA'S MAPPING OF THE U.K.'S CREATIVE INDUSTRIES

A number of models have been developed to provide a systematic understanding of the structural characteristics of arts and culture industries. Chief among these are the “concentric circles model” and the “WIPO copyright model.” The concentric circles model, authored by Australian economist David Throsby, argues that the more pronounced the cultural content of a particular good or service, the stronger is the claim for inclusion of the industry reporting it. Within the ACPSA, for example, motion pictures were selected as an arts and cultural commodity. The motion picture industry, consequently, became an ACPSA industry.

The WIPO (World Intellectual Property Organization) model, alternatively, captures industries that produce or distribute copyrighted goods. ACPSA industries matching the WIPO model include advertising, motion pictures, sound recording, publishing, design, and television and radio broadcasting. The ACPSA does not, however, include WIPO-model industries such as the manufacture and sales of toys and consumer electronics.

Recently, a new method of classifying “creative” industries was developed by Nesta, the U.K.’s nonprofit innovation foundation. The Nesta method emphasizes “creative intensity,” which refers to the share of total employment within an industry that is engaged in creative occupations. Within the Nesta model, occupations are scored on a grid of five criteria: (1) process novelty; (2) resistant to mechanization; (3) non-repeating output; (4) creative function in process; and (5) interpretation not transformation. An occupation’s creative intensity is the composite of these scores.

Compared with the ACPSA and other international models, particularly the creative industries defined by the U.K.’s Department of Culture, Media & Sport, which Nesta targeted for its analysis, the Nesta model results in a different set of industries. One difference is printing. Because the occupation of printers did not score highly on Nesta’s grid, printing industries are excluded from its list of creative industries. The ACPSA, alternatively, includes printing associated with newspapers, periodicals, books, and art reproductions.

A more pointed difference is the ACPSA’s inclusion, and Nesta’s exclusion, of florist shops. The decision to include “retail sales, florists” in the ACPSA stemmed from the industry’s principal occupation—floral designers. Data issued by the U.S. Bureau of Labor Statistics show that in 2012 nearly half of the workers employed by florist shops were floral designers, an occupation classified among “art and design workers” within the Standard Occupation Classification (SOC) system.

However, “floral arrangers” earned a low score of two on Nesta’s creative grid. Florist shops, consequently, are excluded from Nesta’s definition of creative industries.

ACPSA Commodities

Table 3 shows the arts and cultural commodities defined by the ACPSA.

Table 3. Commodities Included in the ACPSA

COMMODITY	NOTES
Arts and entertainment	
Theater	
Dance	
Opera	
Symphonies	<i>Includes chamber music groups</i>
Circuses	
Other	<i>Includes other music groups and artists (including jazz, rock, and country bands and performers) and magic shows and carnivals</i>
Independent artists, writers, and performers	
Museums (art)	
Museums (botanical and zoological)	
Museums (children's)	
Museums (historical sites)	
Museums (history)	
Museums (natural history)	
Museums (nature parks)	
Museums (science)	
Museums (other)	
Arts education	
Fine arts	<i>Includes music schools and dance schools</i>
Other	<i>Non-government college and university arts departments and performing arts centers</i>
Information	
Motion picture and video	<i>Includes movie production, post production, and distribution; music video production; movie theaters and film festivals</i>
Sound recording	<i>Record production; sound recording studios; music publishers</i>
Broadcasting	<i>Radio and television broadcasting</i>
Telecommunications	<i>Cable TV production and distribution; includes selected TV show production</i>

COMMODITY	NOTES
Internet publishing and broadcasting	<i>Web broadcasts; Internet game sites; Internet radio</i>
Other information services	<i>News syndicates</i>
Publishing:	
Newspapers and periodicals	
Cards, calendars, and related publishing	
Books:	
Education (K-12)	
Higher education	
Professional	
Scholarly	
All other professional, technical, and scholarly books, in print	
Adult fiction	
Adult nonfiction	
Juvenile fiction	
Juvenile nonfiction	
Religion	
All other adult trade books	
Children's books	
All other books	
Software publishing	<i>Includes video games; photo-processing software; CAD software</i>
Professional services	
Interior design services	
Industrial design services	
Graphic design services	
Fashion design services	
All other design services	<i>Includes jewelry and fur design</i>
Architectural services, historic restoration	<i>Restricted to the architectural designs of cultural structures</i>
All other architectural services	<i>Restricted to the architectural designs of cultural structures</i>
Landscape architectural services	
Computer systems design	<i>Related to motion picture and sound recording applications</i>
Advertising	<i>Excludes public relations agencies; media-buying representatives; material distribution (e.g., fliers); and sign-painting</i>
Photography services	

COMMODITY	NOTES
Photofinishing	<i>Excludes one-hour photo</i>
Other services	
Grant-making and giving services	<i>Arts-related</i>
Unions	<i>Arts-related</i>
Other commodities	
Manufacturing (printing)	<i>Lithographic, gravure, screen, digital printing of magazines, newspapers, calendars, and art works; book printing; letterpress; and binding and pre-press services</i>
Manufacturing (jewelry and silverware)	
Manufacturing (other)	<i>Musical instruments; china and glass; custom architectural woodwork; lead pencils and art goods; basketwork and wickerwork; custom non-upholstered wood furniture; Christmas tree ornaments</i>
Wholesale trade	<i>Photographic equipment; books, magazines, newspapers; musical instruments; music recordings</i>
Retail trade	<i>Art dealers; photographic supply stores; music stores; book stores; florist shops; art supply stores; music and books electronic shopping</i>
Construction	<i>Construction of selected new educational structures, amusement and recreational structures</i>
Government	<i>Selected items for museums; parks; state colleges and universities; and government libraries</i>
Rental and leasing	<i>Wardrobe rental; motion picture and theatrical equipment rental; pre-recorded video tape and disk rental</i>

Section 4. Future ACPSA Products and Frequently Asked Questions

The current ACPSA is the first effort by the federal government to measure and document U.S. arts and cultural production and its effect on the national economy. In FY 2014, the ACPSA is subject to further revisions stemming from the NEA's Office of Research & Analysis in consultation with various stakeholders, including members of the arts community, cultural researchers, and international colleagues who themselves are producing satellite accounts on arts and culture.

The revised ACPSA estimates are planned for release in the fall of 2014.

While the current ACPSA reflects 2002 NAICS (North American Industrial Classification System) codes, the 2014 ACPSA will draw on 2007 definitions of the NAICS. All revisions to the 2014 ACPSA will be carried out for the full time series of 1998-2012. Additionally, the 2014 estimates will include investment from "artistic originals" (see text box below).²²

Moreover, the revised ACPSA will be featured in a fall 2014 article in the BEA's *Survey of Current Business*.

THE CAPITALIZATION OF ENTERTAINMENT, LITERARY, AND OTHER ARTISTIC ORIGINALS

Typically conducted at five-year intervals, comprehensive revisions of the industry economic accounts allow the BEA's estimates to better reflect the evolving nature of the U.S. economy. These revisions also facilitate international comparisons with economic data available from other countries. The most recent of these revisions, scheduled for release in December 2013, will include the "capitalization" of entertainment, literary, and other artistic originals. Under this new treatment, long-lived artwork produced by artists, studios, and publishers will be capitalized; that is, production of long-lived artwork will be treated as an investment, adding to the U.S. capital stock.

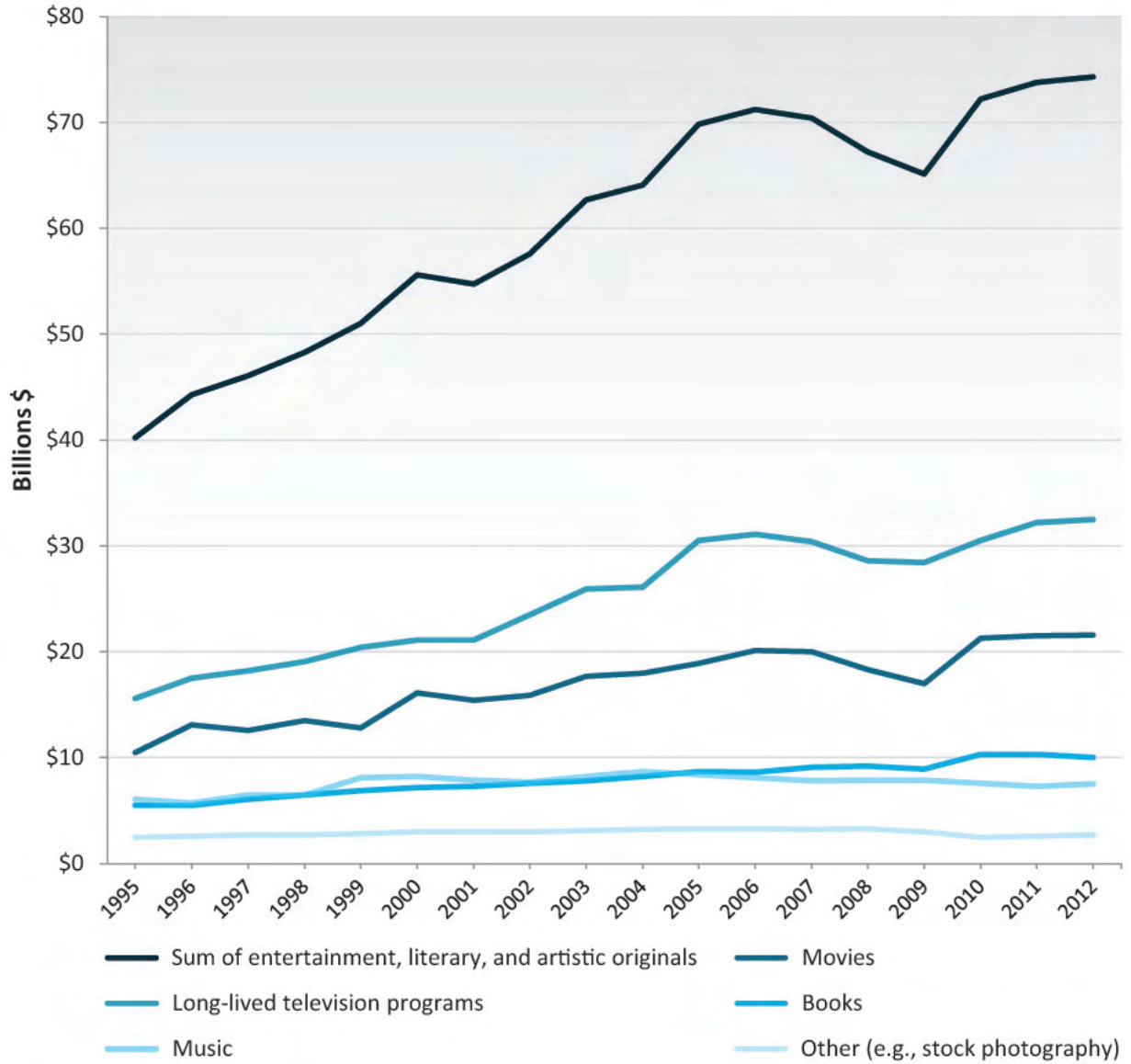
The BEA defines long-lived art works, or artistic originals, as theatrical movies, recorded music, books, television programs, and "miscellaneous artworks" such as play scripts, greeting card designs, and stock photography. Prior to the December 2013 revisions, artistic production costs were treated as current expenses, much like advertising or shipping costs, and therefore had a limited role in the calculation of GDP.

However, artistic originals can continue to earn revenue for decades after production. (They are, therefore, "long-lived.") As noted by the BEA, capitalizing artistic originals is an important step toward fully recognizing the contribution of intellectual property products to economic growth. Recent estimates show that the capitalization of entertainment, literary, and artistic originals added \$73.8 billion to the U.S. economy in 2011.

²² The inclusion of artistic originals as investment spending was part of the BEA's recently released comprehensive revisions to the national income and product accounts. These revisions were not available for the 2013 iteration of the ACPSA.

Capitalization of Entertainment, Literary, and Artistic Originals

Additions to Gross Private Domestic Investment, and to GDP



Source: U.S. Bureau of Economic Analysis

FAQs

What timeframe does the ACPSA reference?

The ACPSA features a full time series of estimates. For the current iteration of the ACPSA, estimates are provided for the years spanning 1998 to 2011. The revised ACPSA, planned for release in the fall of 2014, will contain estimates for 1998 through 2012.

Does the ACPSA include work done by self-employed artists?

Yes. Self-employed workers, or “sole proprietors,” are required to attach a Schedule C (or Schedule C-EZ) to their IRS Form 1040 individual tax return if their work meets certain requirements. First, the primary purpose for engaging in the activity must be for the purpose of generating income or profit. Second, the self-employed work must be done regularly.

If these criteria are met, Schedule C attachments are required of self-employed workers with business income of \$400 over and above expenses.

The Schedule C requires self-employed filers to indicate the industry of their principal business (self-employed workers engaged in more than one business must attach multiple Schedules). The industries listed on the Schedule C are in four-digit NAICS codes. Examples include: “independent artists, writers, and performers” (NAICS 7115); “promoters of performing arts, sports, and similar events” (NAICS 7113); and “agents and managers for artists, athletes, entertainers, and other public figures” (NAICS 7114).

The U.S. Census Bureau calculates “non-employer” statistics using IRS Schedule C filings. In 2011 (the most recent year for which non-employer statistics are available), the bureau reported 987,714 individual proprietorships in “performing arts, spectator sports, and related industries”

(NAICS 711). Of those, 704,356 (more than 70 percent) were “independent artists, writers, and performers.”

The BEA draws on the Census Bureau’s non-employer statistics to calculate NIPAs and industry accounts, including the ACPSA. Notably, the BEA adjusts the non-employer data it uses in its accounts to reflect IRS estimates of Schedule C noncompliance.

Does the ACPSA capture independent musicians who work on contract?

As discussed above, the ACPSA includes production by self-employed workers, including musicians and other artists. Within the NAICS system, freelance musicians are included in NAICS 71113, “musical groups and artists.”

Are there special considerations for tax-exempt arts organizations?

For many of the arts and cultural industries included in the ACPSA, output and value added are based on the industries’ revenues (i.e., sales). However, basing production on the revenue of tax-exempt organizations would likely understate that value. Tax-exempt performing arts groups and museums, for example, often provide special discounted or free services, resulting, naturally, in lower revenue.

To correct for this potential under-estimation, expenditures in addition to revenues are used to measure the production of tax-exempt arts and cultural organizations.

Are there special considerations for museums and museum workers?

Within NAICS, the museum industry (NAICS 71211) excludes college and government-operated museums. Rather, production by colleges and government are represented

by their respective sectors—educational services (NAICS 61) and government, which has no official NAICS code.²³

What is value added?

The value added of an industry, also referred to as the industry’s gross domestic product, is the contribution of a private industry or government sector to overall GDP. Value added equals the difference between an industry’s output and the cost of intermediate inputs such as energy costs and the costs of raw materials, semi-finished goods, and services.

To illustrate, the output of dance companies includes the cost of pointe shoes (the shoes worn by ballet dancers when dancing en pointe). The value added of dance companies excludes the cost of pointe shoes, which were produced by other industries such as shoe manufacturers.

What is final demand?

The ACPSA draws on “inter-industry” or I-O analysis, which, in turn, comprises “make” and “use” tables. The make table shows the production of commodities (i.e., goods and services), while the use table shows the uses of commodities by intermediate and final users, or final demand.

Final demand consists of the transactions that make up the final-expenditure components of GDP: personal consumption expenditures; private fixed investment; change in private inventories; exports and imports; and government. Put simply, final demand measures the amount of arts and cultural production purchased by U.S. households (personal consumption); businesses (private fixed investment and change in private inventories); foreign purchases (exports); and government.

Imports are U.S. purchases of foreign-produced arts and cultural commodities, and are subtracted from GDP.

Are the ACPSA estimates adjusted for inflation?

The current ACPSA estimates, and those planned for release in the fall of 2014, are not adjusted for inflation. Moreover, because the BEA’s process for generating “real” estimates is complex, the agency warns against deflating ACPSA figures by applying broad indexes such as the Gross Domestic Product Deflator or the Consumer Price Index. Attempts to deflate ACPSA estimates will likely result in more distortion than is present in current-dollar ACPSA estimates.

Can I use the ACPSA to generate measures of arts and cultural production for my state or metro area?

Current ACPSA estimates (and the revised ACPSA estimates planned for the fall of 2014) are national calculations and do not reflect regional arts and cultural production. Because the BEA has access to data and methodologies unavailable to the public, national ACPSA estimates cannot be modified by users to capture accurate regional production.

²³ Estimates for the government sector draw heavily from the Census of Governments, which, like the Economic Census, is conducted by the U.S. Census Bureau every five years.

PART II: ACCOUNTING FOR THE NATION'S ARTS AND CULTURAL WORKFORCE

Section 1. Adding Value to the Satellite Account: A New Taxonomy for Arts and Cultural Occupations

A comprehensive measure of arts and cultural production would include not only commodities and industries, but also the work done by arts and cultural workers, regardless of the industries employing them. The ACPSA, for example, measures employment in performing arts industries. In 2012, the performing arts employed 22,500 musicians and singers. However, the ACPSA excludes religious organizations (e.g., churches, synagogues, missions), an industry that employed more than 8,000 musicians in that year.

This section outlines the occupational dimension to arts and cultural production using data from the Occupational Employment Survey (OES), produced by the U.S. Bureau of Labor Statistics (BLS). Unlike the ACPSA, which captures arts and cultural

production by sole proprietors (i.e., non-employers), the OES excludes self-employed workers. It does, nonetheless, provide employment and earnings data for detailed occupations by industry. Consequently, the OES is well-suited to examining arts and cultural workers and the industries in which they are employed.

This section presents three tiers of arts and cultural occupations: (1) core arts and cultural occupations; (2) technical and supporting occupations; and (3) managers working in arts and cultural industries. Including all three tiers of arts and cultural occupations reveals the share of the labor force directly responsible for the production of arts and cultural goods.

Page 37 lists the data tables that accompany Part II of this document.

OCCUPATION EMPLOYMENT STATISTICS

Occupation Employment Statistics (OES) is a collaborative program between the BLS and state workforce agencies. The OES surveys 200,000 non-farm establishments every six months, taking three years to fully collect the sample of 1.2 million establishments. OES data are used to report employment and wage estimates for about 800 occupations at national, state, metropolitan, and non-metropolitan levels.

The OES also reports employment and wage estimates by industry. At the national level, estimates are reported for 450 industries, which are categorized by the North American Industry Classification System (NAICS).

Tier 1. Core Arts and Cultural Occupations

In accordance with the approach used by Statistics Canada, the identification of U.S. arts and cultural occupations was guided by asking if the considered occupation would cease to exist if the tasks and responsibilities of creative work were removed. Answering this question yielded the three tiers of arts and cultural occupations discussed below.

Workers in core arts and cultural occupations are responsible for the creative element of arts and cultural products, whether produced by an arts and cultural industry or not. This tier includes 39 distinct occupations—in 2012, employment in core arts and cultural occupations totaled 1.5 million wage and salary workers, while annual median earnings ranged from \$80,880 for art directors to roughly \$24,000 for floral designers.

Occupations included in Tier 1 span jobs as varied as architects and designers, reporters and photographers, and multimedia artists and jewelry makers. Nearly three out of four occupations on this list are grouped under the major occupation group labeled “arts, design, entertainment, sports, and media occupations,” or major standard occupation code 270000.²⁴ This major occupation group is divided into several broad occupation groups comprising core arts and cultural occupations. Drawing on OES data for wage and salary workers in 2012, core occupations in the major groups are summarized below.

As noted above, the OES excludes self-employed workers from its datasets. Therefore, recognizing that self-employed workers make up a large portion of the U.S. arts workforce, this section uses another data source (the Current Population Survey)

²⁴ Please see Appendix B for a discussion on standard occupation codes.

to estimate the percentage of self-employed workers within each occupational category described below.

Artists and Related Workers (i.e., Visual Artists)

Art directors; craft artists; fine artists; multimedia artists and animators; artists and related workers, all others (e.g., calligraphers, tattoo artists)

Main industries: advertising and public relations; publishing; independent artists, writers, and performers; motion pictures

Art directors make up the greatest number of workers in this occupation group (31,570), while “other artists,” such as calligraphers and tattoo artists, are the smallest (6,850). Art directors are also the best paid, earning an average annual salary of \$80,880 in 2012; earnings are lowest for craft artists, whose annual salaries averaged \$29,600.

Among core arts and cultural workers, artists and related workers hold some of the highest rates of self-employment. In 2010, nearly 60 percent of the artists in this group were self-employed.

The industries employing the greatest numbers of salaried artists and related workers include: advertising and public relations; independent artists, writers, and performers; and motion pictures.²⁵ In 2012, for example, advertising and public relations firms employed 11,110 art directors—more than one-third of all salaried art directors. Of the 29,270 salaried multimedia artists and animators, 9,130 (30 percent) worked in the motion picture industry.

²⁵ The U.S. Census Bureau defines “independent artists, writers, and performers” (NAICS 71151) as freelance individuals primarily engaged in performing in artistic productions, in creating artistic and cultural works, or in providing technical expertise necessary for these productions. The independent artists, writers, and performers shown here refer to business establishments with workers on payrolls.

Designers

Fashion designers; floral designers; graphic designers; interior designers; merchandise displayers and window trimmers; set and exhibit designers; designers, all other (e.g., jewelry and fur designers)

Main industries: specialized design services; publishing; manufacturing; retail sales

In this group, graphic designers number the largest. In 2012, 191,440 salaried graphic designers were employed. Alternatively, set and exhibit designers and designers classified as “other,” (e.g., jewelry and fur designers) make up the smallest number of workers in this group—roughly 8,000 employed in both occupations.

Among design professionals, fashion designers and industrial designers earn the highest annual salaries—\$62,860 and \$59,610, respectively, on average, in 2012.

Like visual artists, high percentages of designers are self-employed—about 30 percent of each design occupation. However, among salaried workers in this group, industries employing the greatest numbers vary by type of designer. Specialized design companies (companies that specialize in graphic, industrial, and fashion design), manufacturing, and publishing industries employ significant numbers of designers. In 2012, for example, publishing industries staffed roughly 25,000 graphic designers (nearly the same number staffed by specialized design companies); florists shops, under retail sales, employed 31,220 floral designers—more than 65 percent of the salaried workers in that occupation.

Performing Artists

Actors; producers and directors; dancers; choreographers; music directors and composers; musicians and singers; other entertainers (e.g., comedians, jugglers, acrobats)

Main industries: performing arts; motion pictures; educational services; broadcasting

In 2012, salaried actors numbered 70,540, and producers and directors numbered 87,010. Employment for salaried dancers and choreographers was lower—11,390 and 7,400, respectively. Musicians and singers totaled 42,100, while music directors and composers were 24,940 in number. In 2012, 16,630 wage and salary workers were employed as “other entertainers.”

Due to disclosure concerns, OES data omit earnings for many of the performing arts occupations in this group. Of those tracked, however, producers and directors earn the highest salaries—annual median earnings of \$71,350 in 2012.

Among performing artists, rates of self-employment range from a high of about 43 percent of musicians and other entertainers, to a low of 9-10 percent of dancers and choreographers.

Not surprisingly, the performing arts industry hires many performing artists. However, motion pictures, schools, broadcasting, and even religious organizations factor in, too. In 2012, for example, almost 80 percent of salaried choreographers were employed by “other private schools,” an industry that includes fine arts and dance schools.

The motion picture industry employs more producers and directors than any other industry—nearly 35,000 in 2012. Ranking a close second, however, is radio and television, which staffed roughly 20,000 producers and directors. And of the 42,100 salaried musicians in 2012, half were

employed by performing arts companies, but another 20 percent were on staff at religious organizations such as churches and synagogues.

In 2012, motion pictures and the performing arts, combined, employed roughly three in five salaried actors. However, a sizable number of actors, 15,400 in 2012, are employed by “accounting, tax preparation, bookkeeping, and payroll services.” This result, seemingly unusual at first glance, reflects theatrical production concerns forming separate companies to carry out their payroll functions, including paying engaged actors.

Announcers

Radio and television announcers; public address system and other public announcers

Main industries: radio and television broadcasting; drinking places (i.e., bars); independent artists, writers, and performers

Although radio and television announcers far outnumber public address and other public announcers (31,340 vs. 8,120), earnings among workers in these occupations are comparable, with radio and television announcers earning an average salary of \$28,020 in 2012, and public address announcers earning \$26,230. Additionally, 35 percent of workers in both occupations are self-employed.

Differences exist, however, in the industries employing the two occupations. Most radio and television broadcasters work in radio, rather than television broadcasting (25,440 announcers in 2012), while most public address system announcers (which includes disc jockeys at weddings, parties, and other public events) work in drinking places, i.e., bars (2,590), and in the industry labeled independent artists, performers, and writers (1,970).

Media Occupations

Broadcast news analysts; reporters and correspondents; editors; writers and authors; photographers

Main industries: newspaper publishers; television broadcasting; photographic services

Of the media occupations included in Tier 1, editors number the largest—99,000 salaried workers in 2012. Next in employment rank are photographers (56,140); reporters and correspondents (45,570); writers and authors (41,990); and broadcast news analysts (5,170).

Editors, writers and authors, and broadcast news analysts all earn roughly \$54,000 to \$55,000, annually, on average, while photographers earn an average of \$28,490. Photographers also have high self-employment rates (almost 63 percent in 2012), compared with self-employment rates of 14-16 percent of reporters and correspondents and of editors.

Among all workers in arts and cultural occupations, writers and authors have the highest self-employment rate—68 percent in 2012.

Among wage and salary media workers, however, newspaper publishing is a main employer. In 2012, newspaper publishers staffed 25,980 reporters and correspondents and 21,760 editors. Although newspaper publishers hire writers and authors (3,550 in 2012), salaried workers in this occupation are also likely to be employed by advertising and public relations firms (6,190), motion picture industries (3,300), and independent artists, writers, and performers (3,060).

In 2012, newspaper publishers staffed 3,480 photographers. However, most salaried photographers (37,560) work in photographic services, which includes portrait and commercial photography studios.

Education and Library Occupations

Art, drama, and music teachers, postsecondary; English language and literature teachers, postsecondary; communications teachers, postsecondary; archivists; curators; audio-visual and multimedia collection specialists; librarians

Main industries: colleges and universities; elementary and secondary schools; government; museums and historical sites

Among this group of core arts and cultural occupations, librarians and postsecondary art and drama teachers number the largest. In 2012, librarian employment totaled 140,280 and college art teachers totaled 92,570.²⁶ Postsecondary art, drama, and music teachers, however, are better paid, earning an annual average of \$62,160 in 2012 compared with average annual earnings of \$55,370 for librarians.

The postsecondary education occupations included here also include English language and literature teachers and communications teachers, and architecture teachers, numbering 72,680, 30,030, and 7,290 workers, respectively, in 2012. In that same year, postsecondary teachers in English and in communications earned between \$60,000 and \$62,000, on average; architecture teachers earned an average annual salary of \$71,610.

In 2012, salaried curators numbered 10,370, while archivists numbered roughly half that number (5,640). Employment among audio-visual and multimedia collection specialists totaled 8,690 in 2012. Average annual earnings for workers in these occupations ranged from \$49,590 for curators and \$47,340 for archivists, to \$43,350 for audio-visual and multimedia collection specialists.

Few workers in education and library occupations are self-employed—virtually no

librarians and only 2.6 percent of curators are self-employed. Rather, governments employ many of the people in these professions. For example, local governments (including public libraries and public elementary and secondary schools) staffed 96,700 librarians, or almost 70 percent of workers in the occupation. Government, state governments to be specific, also employs many curators (1,500 in 2012). However, curators are more commonly employed by museums and historical sites—5,660 in 2012.

Architects

Architects; landscape architects

Main industries: architectural and engineering services; government

Measuring salaried workers, the OES reports 82,720 architects and 15,750 landscape architects in 2012. Annual median earnings for the two occupations were \$73,090 and \$64,180, respectively.

Roughly one-quarter of workers in both occupations are self-employed. But among salaried architects and landscape architects, most work in architectural and engineering services (an industry that includes architectural services firms). In 2012, architectural and engineering services employed 71,160 architects (86 percent of the salaried profession) and 9,090 landscape architects (58 percent of salaried landscape architects).

Agents and Business Managers of Artists, Performers, and Athletes

Main industries: agents and managers for artists, entertainers, athletes, and other public figures; promoters of performing arts, sports, and similar events

Half of all agents and business managers are self-employed. However, the OES reported 11,770 salaried workers in this occupation

²⁶ Includes design and craft teachers and art history professors.

in 2012; their average annual salary was \$63,370.

Most salaried agents and managers of artists, performers, and athletes work in the industry producing their services, “agents and managers for artists, athletes, and other public figures,” or in “promoters of performing arts, sports, and similar events.” In 2012, these two industries employed 7,320 and 1,000 agents and managers, respectively.

Jewelers and Precious Stone and Metal Workers

Jewelers and precious stone and metal workers, a specialized type of craft artist, numbered 22,060 in 2012—their average annual earnings were \$35,350.

Most jewelers and precious stone/metal workers are employed by jewelry, luggage, and leather goods stores (10,700) or by manufacturers of jewelry and silverware (6,930).²⁷

Tier 2. Technical and Supporting Occupations

While the occupations listed in Tier 1 represent the primary source of arts and cultural creativity, the technical and supporting occupations in Tier 2 are required to assemble and distribute arts and cultural products. This tier comprises 23 occupations spanning jobs as varied as library technicians, printers, and forest conservationists. Employment in salaried technical and supporting occupations totaled 715,700 in 2012, and median annual wages for workers in these occupations ranged from a high of \$64,450 (theatrical and performance make-up artists) to a low of \$18,750 (models).

Rates of self-employment fluctuate among technical and supporting occupations. For example, roughly one-third of film and video editors and camera operators are self-employed. Alternatively, self-employment rates are virtually zero among library technicians, costume attendants, and print binders.

The following summarizes the technical and supporting occupations in Tier 2.

Museum and Library Technicians

Main industries: museums; government

Library technicians—100,230 employed in 2012—largely work in local government (i.e., local government libraries) and in local government schools. Museum technicians and conservators—10,430 employed in 2012—generally work in the industry labeled “museums, historical sites, and similar institutions,” and for the federal government.

Workers in both occupations earned median annual salaries of roughly \$30,000 to \$38,000; few library or museum technicians are self-employed.

²⁷ Most OES statistics by occupation are reported at the four-digit industry level. “Jewelry, luggage, and leather goods stores,” NAICS 4483, includes the more detailed industry, “jewelry stores,” NAICS 44831. Most jewelers working in this retail trade industry are likely employed by jewelry stores, rather than by luggage or leather goods stores.

Media and Communication Equipment Workers

Audio and video equipment technicians; broadcast technicians; radio operators; sound engineering technicians; camera operators, television and motion picture; film and video editors

Main industries: motion pictures; broadcasting

Among media and communication equipment workers, audio and video technicians are the most prevalent—54,310 salaried workers in this occupation in 2012. Broadcast technicians, who set up and operate the electronic equipment used to transmit radio and television programs, numbered 31,640. Film and video editors, though fewer in number, are the best paid media and communication equipment workers—in 2012, workers in this occupation earned an annual average of \$51,300.

Motion picture and video industries (NAICS 5121) are a major employer of media and communication equipment workers. In 2012, for example, this industry staffed 13,280 film and video editors and 7,350 audio and video equipment technicians. Broadcasting, too, employs media and communication equipment workers—three out of four salaried broadcast technicians works in the radio and television broadcasting industry (NAICS 5151).

Personal Care and Service Occupations

Motion picture projectionists; costume attendants; makeup artists, theatrical and performance

Main industries: motion pictures; performing arts

In 2012, employment numbered 8,030 motion picture projectionists; 5,660 costume attendants; and 1,950 makeup artists. Although small in number, makeup

artists earn the most among the personal care and service occupations on Tier 2—\$64,450, on average, in 2012; makeup artists are also more likely to be self-employed.

Motion picture and video industries employ 90 percent of motion picture projectionists and more than 50 percent of theatrical and performance makeup artists. Costume attendants also work in motion pictures and videos (about 20 percent of wage and salary attendants), but they are more likely to work for performing arts companies, who staff more than 35 percent of costume attendants.

Installation, Repair, and Maintenance Occupations

Camera and photographic equipment repairers; musical instrument repairers and tuners

Main industries: professional and commercial equipment supplies merchant wholesalers; sporting goods, hobbies, and musical instrument stores; personal and household goods repair and maintenance

Wage and salary employment among camera and photographic equipment repairers and musical instrument repairers and tuners totaled 2,590 and 7,130, respectively, in 2012.

Roughly 13 percent of workers in both occupations are self-employed. Among wage and salary workers, however, camera and photographic equipment repairers generally work in wholesale trade of commercial equipment and supplies (i.e., photographic equipment and supplies). Musical instrument repairers and tuners tend to work in music stores (part of the industry labeled “sporting goods, hobbies, and musical instrument stores”) and personal and household goods repair and maintenance, an industry that includes musical instrument repair shops.

Production Occupations

Printing press operators; print binding and finishing workers; etchers and engravers; pre-press technicians and workers; photographic process workers; molders, shapers, and castors (i.e., manufacturing potters)

Main industries: printing; manufacturing; warehouse clubs and supercenters

The production occupations included in Tier 2 are jobs related to printing, as well as photographic process workers and manufacturing potters. By far, printing press operators number the largest—173,010 in 2012—and are among the better-paid production occupations listed in Tier 2—average annual salary of \$34,690 in 2012. Other printing-related occupations included here are print binding and finishing workers (52,960 employed), etchers and engravers (8,610 employed), and pre-press technicians and workers (41,420 employed).²⁸

With the exception of etchers and engravers, who have a self-employment rate of about 26 percent, few workers in production occupations are self-employed. Printing industries employ many production workers. For example, in 2012, 100,810 printing press operators (almost 60 percent of the profession) worked in the industry labeled “printing and related support activities” (NAICS 323100). The percentage working in printing is even larger (82 percent) among print binding and finishing workers.

Manufacturing potters (i.e., molders, shapers, and castors) are similarly concentrated in the manufacture of nonmetallic mineral products (e.g., clay)—60 percent of the occupation, while photographic processing workers are likely to be employed in general merchandise

stores and in photo-finishing shops. General merchandise stores (e.g., warehouse clubs and supercenters) employed 18,630 photographic processing workers in 2012.

Other Technical and Supporting Occupations

Forest and conservation technicians; models; desktop publishers

Main industries: government; clothing and clothing accessory stores; publishing

Four other occupations round out the list of arts and cultural technical and supporting occupations: forest and conservation workers, tour guides, models, and desktop publishers. Forest and conservation technicians, an occupation category that includes forest rangers, predominately work in government, the federal government, in particular. In 2012, there were 31,720 employed forest and conservation technicians. Of these, 30,220 worked in government—23,460 in federal government. In 2012, annual median earnings for forest and conservation technicians was \$33,920.

In 2012, tour guides numbered nearly 35,500, and many (12,280 in 2012) worked in museums and historical sites.

The OES reports 4,330 employed wage and salary models in 2012; their average annual earnings were \$18,750. Most models work in clothing and clothing accessory stores, though 14.5 percent are self-employed.

Among desktop publishers, 9 percent are self-employed. Salaried desktop publishers, numbering 15,960 in 2012, earned an annual average of \$37,040, and many (5,320 in 2012) work in publishing.

²⁸ “Pre-press technicians and workers” format and proof text and images submitted by designers and clients into finished pages that can be printed. Digital and photo type-setting is part of this work.

Tier 3. Management Occupations

Not specific to arts and cultural industries, but required for their production, are management occupations. Using the OES, Tier 3 combines management occupations and selected industry data to enumerate arts and cultural managers.²⁹

The OES does not provide the level of detail reported in the ACPSA. For example, the ACPSA includes advertising agencies among its arts and cultural commodities and industries. The ACPSA, however, excludes public relations firms, media-buying agents, and direct mail advertising (i.e., coupons and fliers). The finest level of industry detail available from the OES, alternatively, aggregates each of these industries into NAICS 5418, “advertising, public relations, and related services.”

Consequently, the management occupations listed in Tier 3 relate to 16 broadly defined arts and cultural industries. The ACPSA, alternatively, delineates roughly 69 industries. Even so, Tier 3 provides an ample picture of the contributions of arts and cultural managers.

In 2012, the arts and cultural industries presented in Tier 3 employed nearly 153,000 managers. Advertising and public relations (and related services) staffed the greatest number of managers (48,300), followed by newspaper, periodical, book and directory publishers, with 32,310 managers in 2012.³⁰ Combined, these two industries staffed 50 percent of all the managers employed by the arts and cultural industries captured in Tier 3.

Advertising and public relations also employ the best-paid managers included in Tier 3. Among all management workers

in advertising and public relations (and related services), annual earnings averaged \$127,940 in 2012. Notably, this high average was propelled by the industry’s 4,000 marketing managers earning an average of \$134,080 in 2012.

Managers working in television broadcasting and motion picture industries also earned comparatively high salaries—averaging roughly \$118,000 in annual earnings for managers in both industries. Television broadcasting employed 300 marketing managers (earning an average of \$136,930), and motion picture industries staffed 1,090 marketing managers (earning an average of \$132,740).

Managers working in the performing arts and in museums and historical sites, alternatively, are among the lowest paid. In 2012, management earnings in the arts and museums averaged \$73,510 and \$79,740, respectively.

Training and development managers, though few in number, are among the best paid managers working in the performing arts. In 2012, training managers, an occupation that includes the title of “education director,” numbered only 30 in the performing arts. Their earnings, however, averaged \$102,680 in 2012, an amount second only to the earnings reported for the 360 chief executives working in the performing arts, and who earned an average salary of \$157,660.

In 2012, the museums and historical sites industry employed 1,610 “operations and specialty managers,” a management-occupation group that includes managers of computer and information systems, and of finance. With the exception of chief executives, computer and financial managers are the industry’s best paid management workers, earning an annual average of \$95,690 and \$92,710, respectively, in 2012.

²⁹ The managers reported in Tier 3 are represented by SOC code 11-0000, a broad category that includes chief executives, marketing managers, and human resource managers.

³⁰ The ACPSA excludes directory publishers.

Section 2. Locating All Occupations (Arts and Non-Arts) Within Arts and Cultural Industries

Section 1 examined arts and cultural occupations, and their associated industries, in core, technical and supporting, and management categories. This section further sifts through OES data to show the wider occupational range of workers employed in arts and cultural industries. These tabulations show that arts, design, and media occupations rank first in employment in many, but not all, arts and cultural industries.

OES data are used to examine the occupations employed by 12 selected arts and cultural industries. These selections represent some of the main industries within the ACPA. They include: performing arts; independent artists, writers, and performers; museums, historical sites and similar institutions; motion picture and video industries; sound recording; radio and television broadcasting; publishing; specialized design; photographic services; bookstores and news dealers; florists; and jewelry and silverware manufacturers.

Table A is a summary of the top occupation groups employed by the broadly defined arts and cultural industries captured by the OES. Tables B-M show 2012 occupations ranked by number of employees. For example, “arts, design, entertainment, sports, and media occupations” (SOC 27-0000) rank first in employment in 8 of the 12 arts and cultural industries considered. This occupation group contains many of the visual and performing artists, designers, and media occupations (e.g., reporters, photographers, editors) discussed above in Tier 1 and Tier 2 occupations.

However, arts, design, and media occupations are only part of the occupational profile of arts and cultural industries. Workers in computer occupations, food preparation and serving jobs, and office and administrative-

support positions, to name just a few, are also employed by arts and cultural industries.

The following are highlights from Tables B-M.

Performing Arts Companies

- ▶ Arts occupations such as actors and musicians compose the largest number of workers employed by the performing arts industry (56,370 workers in 2012). But the performing arts industry also employs almost 11,000 office and administrative-support occupations (e.g., bookkeepers and secretaries) and nearly 10,000 personal care and service occupations (e.g., ushers and ticket-takers).
- ▶ In 2012, the performing arts employed 8,400 food preparation and serving-related workers (e.g., cooks, bartenders, waitresses).

Independent Artists, Writers, and Performers

- ▶ Arts, design, and media occupations rank first in employment by independent artists, writers, and performers—30,410 workers in 2012. Ranking second and third, however, are office and administrative support positions (7,110 workers) and business and financial operations occupations (2,560 workers).

Museums, Historical Sites, and Similar Institutions

- ▶ Of the selected arts and cultural industries considered here, museums, historical sites, and similar institutions employ workers from the widest variety of jobs—22 different occupation groups in 2012.

- ▶ Service occupations, including tour guides, account for the largest number of jobs in this industry (25,370 jobs), while education and library occupations rank second (20,430).
- ▶ In 2012, museums, historical sites, and similar institutions (e.g., nature parks) employed 7,850 protective service occupations (including fish and game wardens) and 1,860 life, physical, and social science occupations (including zoologists and wildlife biologists).

Motion Picture and Video Industries

- ▶ In addition to employing 146,000 arts and design workers (such as multimedia artists, actors, and producers and directors), motion picture and video industries employed 44,770 food preparation and serving-related workers such as cooks, bartenders, and waitresses.

Sound Recording

- ▶ In 2012, the sound recording industry employed 6,070 workers in arts and design professions such as producers and directors and public relations specialists. However, the industry employed nearly the same number of office and administrative support occupations and business and financial operations occupations. Combined, sound recording industry workers employed in these two occupation groups numbered 6,130 in 2012.

Radio and Television Broadcasting

- ▶ While occupations such as radio and television announcers and reporters number greatly in television and radio broadcasting, this industry also employs 31,330 workers in sales occupations—mainly advertising sales agents.

- ▶ Advertising sales agents and other sales workers employed by the industry earned an average annual salary of \$45,570 in 2012.

Publishing

- ▶ Computer occupations rank first in employment in the publishing industry. In 2012, publishing employed 164,030 workers in this occupation group, software developers and computer support specialists, in particular.
- ▶ The publishing industry's computer workers are also among the best-paid workers in arts and cultural industries, earning a median annual salary of \$85,700 in 2012.

Specialized Design Services

- ▶ Occupations such as designers and art directors make up the majority of workers employed by specialized design businesses. In 2012, however, this industry also employed 18,930 office and administrative support workers, and 8,160 workers in production occupations such as printing workers and assemblers and fabricators.

Photographic Services

- ▶ Workers in arts and design occupations (mostly photographers and designers) are also prevalent in the photographic services industry—40,570 employed in 2012. However, the industry also employs 12,270 office workers and 4,560 production workers—mainly photographic processing workers.
- ▶ Photographers/designers and photographic processing workers employed by the photographic services industry generally earn the same annual wages—\$25,800 and \$25,900, respectively, in 2012.

Book Stores and News Dealers

- ▶ Sales occupations such as retail sales workers and cashiers make up the largest occupation group employed by book stores and news dealers—77,790 workers in 2012.

Florists

- ▶ While 46 percent of all wage and salary workers in florists shops are floral designers, this industry also employs sizable numbers of retail sales workers and transportation workers, such as light truck and delivery-service drivers. In 2012, florist shops employed 15,690 and 12,080 workers in those occupations, respectively.

Jewelry and Silverware Manufacturing

- ▶ Of the 28,820 jewelry and silverware manufacturing workers in 2012, more than half were employed as production workers—namely jewelers and precious stone and metal workers, tool-cutting setters, and assemblers.

KEY DIFFERENCES IN MEASURING EMPLOYMENT: ACPSA VS. OES

Arts and Cultural Production Satellite Account (Source: BEA)

- ▶ The ACPSA includes self-employed workers.
- ▶ The ACPSA distinguishes between all workers employed by a particular industry from workers engaged in the production of arts and cultural commodities. For example, the ACPSA identifies the number of workers employed in creative advertising, a separate count from all workers employed by the advertising industry as a whole.
- ▶ The ACPSA excludes employment by occupation.

Occupation Employment Statistics Program (Source: BLS)

- ▶ The OES Program excludes self-employed workers.
- ▶ The OES reports counts of workers for broad industry categories.
- ▶ The OES contains detailed estimates of employment by occupation.

Section 3. Computing the Monetary Value of Arts and Cultural Volunteers

The ACPSA, following from the national income and product accounts, excludes production by volunteer workers—volunteers are not compensated, so no monetary transaction is recorded. In response to this limitation, this section estimates the value of volunteer hours by arts and cultural volunteers—volunteers with arts and cultural organizations and volunteers performing music and other arts for non-arts groups such as religious organizations.

Although it is difficult to assign a dollar value to volunteer time, the estimates presented here were based on the wages associated with the specific kinds of work performed by arts and cultural volunteers, such as performing office work or fundraising. Based on that method, the NEA Office of Research & Analysis estimates the value of work donated by arts and cultural volunteers at \$13.1 billion in 2012.

Data Sources

In addition to being derived from OES data, the value of arts and cultural volunteer work was estimated using data from the 2012 Volunteer Supplement. The Volunteer Supplement is conducted each September as a supplement to the Current Population Survey, and is sponsored by the U.S. Bureau of Labor Statistics and the Corporation for National and Community Service. The 2012 Volunteer Supplement obtained interviews with 54,000 U.S. housing units. Those interviews, in turn, show that 64.5 million people, ages 16 and older, volunteered through or for an organization at least once between September 2011 and September 2012.

Volunteers with Arts and Cultural Organizations

In 2012, 2.2 million people volunteered 210 million hours with arts and cultural organizations. To value these hours in dollars, it is first necessary to examine the kind of work volunteers perform for arts and cultural organizations.

As shown below, the most common type of work offered by volunteers with arts and cultural organizations is management services, including serving on a board or committee. In 2012, 21.3 percent of volunteers for arts and cultural groups did this type of work. An additional 13 percent perform music and other arts, and nearly the same share, 12.8 percent, do general office work.

Nearly 8 percent of volunteers with arts and cultural organizations tutor or teach, and 5 to 6 percent serve as ushers and greeters or do fundraising. Another 2 percent collect, make, or distribute clothing, crafts, or other goods, and almost 1 percent prepare or serve food. The remaining 31.9 percent perform a variety of duties such as general labor and transportation and other tasks not specified by the Volunteer Supplement.

VOLUNTEERS WITH ARTS AND CULTURAL ORGANIZATIONS

Percent Performing Various Activities, 2012

Management	21.3%
Music and performance	13.0%
General office work	12.8%
Teach	7.7%
Usher or greeter	5.8%
Fundraise	4.8%
Distribute goods	2.1%
Serve food	0.7%

All others¹ 31.9%

¹ Examples include general labor and transportation, providing medical care and protective services, mentoring youth and coaching sports, and other services not specified in the Volunteer Supplement.

Data Source: 2012 Volunteer Supplement, U.S. Census Bureau

The value of work donated by volunteers with arts and cultural organizations was calculated by distributing the total number of hours donated (210 million) in accordance with the share of tasks performed, multiplied by the hourly wage associated with that work.

For example, 21.3 percent of volunteers with arts and cultural groups perform management work. Applying that share to the 210 million hours yields 44.8 million hours. This figure is then multiplied by \$50.57, which reflects the median hourly wage paid to management workers in 2012 (\$45.15), plus an additional 12 percent to capture benefits.³¹ In other words, the management work donated by volunteers with arts and cultural organizations is valued at \$2.3 billion in 2012. Or, as an

³¹ Adding 12 percent to the base median wage is recommended by Independent Sector to incorporate the value of non-wage “fringe” benefits.

alternative interpretation, arts and cultural organizations would need to pay \$2.3 billion for the management services supplied by their volunteers.

This same procedure was applied to the other tasks performed. For example, the wage earned by office clerks was applied to the share of office work hours donated, and wages earned by retail sales people and by food and beverage-serving workers were assigned to the hours tallied for distributing goods and serving food, respectively.

Volunteer hours spent fundraising and ushering were valued at \$27.29 and \$10.09, respectively, to reflect wages earned by workers in these occupations.

A slightly modified treatment, however, was applied to hours spent teaching and “other” tasks, and to hours spent playing music or performing other arts. The OES does not report hourly wages for teachers, and the other tasks performed represent a variety of services such as general labor and transportation and other work not specified by the Volunteer Supplement. The dollar value of hours spent teaching and providing other services was calculated by applying a general wage of \$22.14, which represents the hourly wage earned by all production and non-supervisory workers on payrolls in 2012, and is the value assigned to total volunteer hours by Independent Sector.³²

The OES shows that the median hourly wage earned by musicians and singers was \$23.50 in 2012. It is assumed, however, that the value of the hours spent by volunteers performing music and other arts is somewhat below the wages typically earned by professional musicians. Therefore, the hourly value assigned to this volunteer work is \$9.87—the hourly tenth percentile wage earned by musicians and singers in 2012, plus 12 percent in benefits.

³² The \$22.14 value used by Independent Sector includes the 12-percent benefits premium.

In total, it is estimated that **the national value of volunteer time with arts and cultural organizations was \$5.2 billion in 2012.**

Volunteers Performing Music and Other Arts for Non-Arts and Cultural Groups

In addition to the 2.2 million volunteers with arts and cultural organizations, the 2012 Volunteer Supplement identifies nearly 5.1 million volunteers who perform music and other arts, but for organizations that are not arts or cultural. In fact, volunteers performing music with religious organizations compose the largest share of this group—three million or almost 60 percent of volunteers performing music and other arts for non-arts groups.

Valuing the hours volunteers spend performing music and other arts for non-arts groups was calculated by multiplying the hourly tenth percentile wage earned by musicians and singers, plus 12 percent in benefits, to the 792.2 million hours donated in 2012. By this calculation, **the hours volunteers spent playing music or performing other arts for non-arts groups in 2012 is valued at \$7.8 billion.**

Total Value of Arts and Cultural Volunteers

The total value of time donated by arts and cultural volunteers is the sum of the value of hours donated by volunteers with arts and cultural organizations (\$5.2 billion) and the value of hours by volunteers performing with non-arts groups (\$7.8 billion). As summarized in Table N, **the dollar value of all arts and cultural volunteers is estimated at \$13.1 billion in 2012.**

LIST OF TABLES ACCOMPANYING PART II

(AVAILABLE ON THE ACPA DATA PROFILE PAGE ON THE NEA'S WEBSITE.)

Section 1. Adding Value to the Satellite Account: A New Taxonomy for Arts and Cultural Occupations

- Tier 1. Core Arts and Cultural Occupations, 2012
- Tier 2. Technical and Support Occupations, 2012
- Tier 3. Management Occupations for Arts and Cultural Industries, 2012

Section 2. Locating All Occupations (Arts and Non-Arts) Within Arts and Cultural Industries

Employment by Occupation Group, 2012:
(Occupations are ranked by number of employees.)

- Table A. Top Occupation Groups Employed by Arts and Cultural Industries
- Table B. Performing Arts Companies
- Table C. Independent Artists, Writers, and Performers
- Table D. Museums, Historical Sites, and Similar Institutions
- Table E. Motion Picture and Video Industries
- Table F. Sound Recording
- Table G. Radio and Television Broadcasting
- Table H. Publishing
- Table I. Specialized Design
- Table J. Photographic Services
- Table K. Bookstores and News Dealers
- Table L. Florists
- Table M. Jewelry and Silverware Manufacturing

Section 3. Computing the Monetary Value of Arts and Cultural Workers

- Table N. Estimated Value of Arts and Cultural Volunteers, 2012

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APPENDIX A.

Understanding Industry Classifications

As reported by the U.S. Census Bureau, the North American Industry Classification System (NAICS) is used by federal statistical agencies in classifying business establishments for the collection, tabulation, and presentation of statistical data describing the U.S. economy. The NAICS structure is hierarchical and begins at the two-digit level, which represents the industry sector, and expands to five or six digits of industry classification detail.³³

For example, the performing arts is part of *sector 71*, “arts, entertainment, and recreation” and *subsector 711*, “performing arts, spectator sports, and related industries.” The performing arts is the *industry group* that comprises the industries of theater companies and dinner theaters; dance companies; musical groups and artists; and “other performing arts companies” such as circuses and magic acts.

NAICS CODES FOR PERFORMING ARTS INDUSTRIES

Sector 71: Arts, entertainment, and recreation

Subsector 711: Performing arts, spectator sports, and related industry

Industry group 7111: Performing arts companies

Industry 71111: Theater companies and dinner theaters

Industry 71112: Dance companies

Industry 71113: Musical groups and artists

Industry 71119: Other performing arts companies

³³ The five-digit NAICS code is the level at which there is comparability in code and definitions for most of the NAICS sectors across the three countries participating in NAICS (the United States, Canada, and Mexico). The six-digit level allows for the United States, Canada, and Mexico each to have country-specific detail. A complete and valid NAICS code contains six digits.

Any codes greater than six digits are “NAICS-based codes” and are reported only in the Economic Census.

APPENDIX B.

Illustration of the Standard Occupation Classification System

As reported by the U.S. Bureau of Labor Statistics, the Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers and jobs into occupational categories for the purpose of collecting, calculating, analyzing, or disseminating data.³⁴

The SOC is designed to reflect the current occupational structure of the United States, and it classifies all occupations in which work is performed for pay or profit. The organizing principle of the SOC system is work performed rather than job title, so there are fewer occupation codes in the SOC than jobs in the economy.

The SOC is organized in a tiered system with four levels ranging from major groups to detailed occupations. Under the current, 2010 SOC system there are 23 major groups, broken into 97 minor groups. Each minor group is broken into broad groups, of which there are 461. There are, at the most specified level, 840 detailed occupations.

Major group SOC codes end with “0000,”³⁵ while *minor* groups generally end with “000.” *Broad* occupations end with “0,” and *detailed* occupations end with a number other than 0.

Below is a schematic of SOC codes related to visual artists. It begins with the major group 27-0000, “arts, design, entertainment,

SOC CODES FOR VISUAL ARTS OCCUPATIONS

27-0000 Arts, design, entertainment, sports, and media occupations

27-1000 Art and design workers

27-1010 Artists and related workers

27-1011 Art directors

27-1012 Craft artists

27-1013 Fine artists, including painters, sculptors, and illustrators

27-1014 Multimedia artists and animators

27-1015 Artists and related workers, all others

³⁴ All U.S. federal agencies that publish occupational data for statistical purposes are required to use the SOC to increase data comparability across federal programs.

³⁵ The exceptions are minor groups 15-1100, computer occupations, and 15-5100, printing workers.

sports, and media occupations.” This is followed by the minor group, 27-1000, “art and design workers,” and next by the broad occupation, 27-1010, “artists and related workers.”

The detailed occupations under “artists and related workers” include art directors (27-1011); craft artists (27-1012); fine artists, including painters, sculptors, and illustrators (27-1014); multimedia artists and animators (27-1014); and artists and related workers, all others (27-1015), a residual SOC code that includes calligraphers and tattoo artists.

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APPENDIX D

IIPA Written Submission Regarding *2014 Special 301 Review: Identification of Countries Under Section 182 of the Trade Act of 1974: Request for Public Comment and Announcement of Public Hearing*,
79 Fed. Reg. 420 (Jan. 3, 2014), February 7, 2014, at
<http://www.iipa.com/pdf/2014SPEC301COVERLETTER.pdf>.



February 7, 2014

Submitted via regulations.gov Docket No. USTR-2013-0040

Susan F. Wilson
Director for Intellectual Property and Innovation
Office of the U.S. Trade Representative
600 17th Street, N.W.
Washington, D.C. 20508

Re: IIPA Written Submission Regarding 2014 Special 301 Review: Identification of Countries Under Section 182 of the Trade Act of 1974: Request for Public Comment and Announcement of Public Hearing, 79 Fed. Reg. 420 (Jan. 3, 2014)

Dear Ms. Wilson:

The International Intellectual Property Alliance (IIPA) provides this response to the above-captioned Federal Register Notice that invites “written submissions from the public concerning foreign countries that deny adequate and effective protection of intellectual property rights or deny fair and equitable market access to U.S. persons who rely on intellectual property protection.”

Under Section 182 of the Trade Act of 1974 (Trade Act) as amended (19 U.S.C. 2242), the United States Trade Representative (USTR) is required annually to identify such countries and to “determine which, if any, of these countries to identify as Priority Foreign Countries,” i.e., whether “[a]cts, policies, or practices that are the basis of a country’s identification as a Priority Foreign Country can be subject to the procedures set out in sections 301–305 of the Trade Act.” USTR has also created two additional lists, the Priority Watch List and the Watch List, and places a trading partner on one of those lists if “particular problems exist in that country with respect to IPR protection, enforcement, or market access for persons that rely on intellectual property protection.” The entire process is commonly referred to as the Special 301 review.

IIPA has participated in every Special 301 review since the 1988 Trade Act created this process, providing public comments on acts, practices and policies regarding copyright law, piracy, enforcement and market access in selected foreign countries and territories. In this year’s filing, including this Submission Letter and appendices, IIPA reports on 42 countries/territories noted in the chart in Section C of this Submission Letter, and mentions 4 additional countries in this letter for issues related to bilateral, regional, or multilateral IPR obligations worthy of discussion.

IIPA requests that Ukraine be maintained as a Priority Foreign Country. IIPA also requests that 9 countries appear on the Special 301 Priority Watch List and that 19 countries appear on the Special 301 Watch List. IIPA has also recommended that USTR conduct an Out-of-Cycle Review (OCR) later in 2014 on Italy and Spain. IIPA will also file under separate cover a Notice of Intent to Testify at the February 24, 2014 public hearing on Special 301.



A. THE IIPA'S INTEREST IN THIS FILING AND SPECIAL 301

The IIPA is a private sector coalition, formed in 1984, of trade associations representing U.S. copyright-based industries working to improve international protection and enforcement of copyrighted materials and to open foreign markets closed by piracy and other market access barriers. IIPA's seven member associations represent over 3,200 U.S. companies producing and distributing materials protected by copyright laws throughout the world. These include all types of computer software, including operating systems, systems software such as databases and security packages, business applications, and consumer applications such as games, personal finance, and reference software, free software, open source software, and software as a service; entertainment software including interactive games for videogame consoles, handheld devices, personal computers and the Internet, and educational software; motion pictures, television programming, DVDs and home video and digital representations of audiovisual works; music, records, CDs, and audiocassettes; and fiction and non-fiction books, education instructional and assessment materials, and professional and scholarly journals, databases and software in all formats. Members of the IIPA include [Association of American Publishers](#), [BSA | The Software Alliance](#), [Entertainment Software Association](#), [Independent Film & Television Alliance](#), [Motion Picture Association of America](#), [National Music Publishers' Association](#), and [Recording Industry Association of America](#).

In November 2013, IIPA released the latest update of the comprehensive economic report, *Copyright Industries in the U.S. Economy: The 2013 Report*, prepared by Stephen Siwek of Economists Inc. The study tracks the economic impact and contributions of U.S. industries creating, producing, distributing, broadcasting or exhibiting copyright materials, including computer software, videogames, books, newspapers, periodicals and journals, motion pictures, music, and radio and television programming. For the first time, we reported that the "core" copyright industries added over \$1 trillion in value to the U.S. economy in a single year, accounting for almost 6.5% of the total U.S. gross domestic product (GDP). These industries employed nearly 5.4 million U.S. workers – nearly 5% of the total private employment sector – with jobs paying an average of 33% more than the rest of the workforce. They also grew at an aggregate annual rate of 4.7%, more than twice the rate of growth for the U.S. economy. The core copyright industries accounted for \$142 billion in foreign sales and exports, far more than sectors such as aerospace, agriculture, food, and pharmaceuticals and medicines.¹ The link between copyright protection and economic growth is documented by the World Intellectual Property Organization (WIPO) in its report, *WIPO Studies on the Economic Contribution of Copyright: Overview* (2013), compiling studies employing virtually the same agreed-upon methodology in 40 countries.² Other studies have measured the contribution of certain sectors to national economies,³ or the multiplier effects of reducing piracy on contribution to national GDP, job growth, and tax revenues.⁴

¹See Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 2013 Report*, November 19, 2013. The report and summary can be accessed at http://www.iipa.com/copyright_us_economy.html. Core copyright industries are those whose primary purpose is to create, produce, distribute, or exhibit copyright materials.

²WIPO *Studies on the Economic Contribution of Copyright: Overview* (2013), available at http://www.wipo.int/export/sites/www/copyright/en/performance/pdf/economic_contribution_analysis_2012.pdf, last accessed December 17, 2013. In 2003, WIPO published a guidebook on the economic parameters to develop such studies entitled *Guide on Surveying the Economic Contribution of the Copyright-Based Industries* (WIPO Publication No. 893) (2003), at http://www.wipo.int/export/sites/www/freepublications/en/copyright/893/wipo_pub_893.pdf. The Guide, developed by an experts' group, describes methodologies for measuring the role of copyright industries in domestic economies. These national studies provide the economic underpinnings for efforts to reform copyright law and enforcement and to lower rates of copyright piracy.

³For example, the Motion Picture Association Asia Pacific has issued a series of "Economic Contribution of the Film and Television Industry" studies for India (2010), Indonesia (2012), Japan (2012), South Korea (2012), Thailand (2012), New Zealand (2009, 2012), Australia (2011), and Hong Kong (2009). See Motion Picture Association Asia-Pacific, *Research and Statistics*, at http://mpa-i.org/index.php/research_statistics.

⁴See, e.g., BSA (now BSA | The Software Alliance) and IDC, *Piracy Impact Study: The Economic Benefits of Reducing Software Piracy: Israel*, 2010, at http://portal.bsa.org/piracyimpact2010/cps/cp_israel_english.pdf, and numerous other country studies linked from <http://portal.bsa.org/piracyimpact2010/index.html>.



While these studies amply demonstrate the contribution of copyright-based industries to the economy, they do not reveal the massive costs imposed by overseas piracy and market access barriers to U.S. copyrighted products and services. Content industries are forced to face unfair competition from those who engage in piracy as a high-profit, low risk enterprise. Today, legitimate businesses built on copyright are facing increased threats, as they must compete with the massive proliferation of illegal services unencumbered by costs associated with either producing copyrighted works or obtaining rights to use them. An independent study released by BASCAP (Frontier Economics), *Estimating the Global Economic and Social Impacts of Counterfeiting and Piracy* (February 2011),⁵ estimated the value of digitally pirated music, movies and software (not losses) at \$30-75 billion in 2010, and growing to \$80-240 billion by 2015. Others have issued reports on the economic consequences of piracy for specific industry sectors.⁶ On January 14, 2014, the United Nations Office on Drugs and Crime (UNODC) launched a new global campaign to raise awareness among consumers of the harm being caused by the estimated \$250 billion a year illicit trafficking of counterfeit goods.⁷ Rampant piracy not only damages existing authorized distribution channels, but also impedes the evolution of legitimate new channels for distribution.

B. SUMMARY OF THE IIPA 2014 SPECIAL 301 SUBMISSION

The IIPA 2014 Special 301 Submission provides information intended to assist the U.S. Government in defining plans of action for the year ahead to reduce global piracy levels and to open markets to U.S. materials protected by copyright in the identified countries/territories. Section C of this Submission Letter provides the IIPA recommendations for the 2014 Special 301 lists. Section D summarizes 12 major cross-cutting initiatives and challenges involved in improving copyright law and enforcement and lowering market access barriers to U.S. copyrighted materials. Appendix A to the Submission includes all the country surveys.⁸ Appendix B describes IIPA members' methodologies for estimating the scope of piracy in various countries. Appendix C provides a chart of countries/territories' placement on Special 301 lists by USTR since 1989.⁹

⁵Frontier Economics, *Estimating the Global Economic and Social Impacts of Counterfeiting and Piracy: A Report Commissioned by Business Action to Stop Counterfeiting and Piracy (BASCAP)*, February 2011 (on file with IIPA).

⁶The Motion Picture Association has commissioned studies from IPSOS and Oxford Economics on *Economic Consequences of Movie Piracy: Japan* (2011) and *Economic Consequences of Movie Piracy: Australia* (2011). BSA's most recent study estimating the software piracy rate and commercial value of unlicensed software in more than 100 markets is at www.bsa.org/globalstudy. BSA plans to release an updated study in the second quarter of 2014.

⁷See 'Counterfeit: Don't buy into organized crime' - UNODC launches new outreach campaign on \$250 billion a year counterfeit business, UNODC website, January 14, 2014, at <http://www.unodc.org/counterfeit/>, accessed January 24, 2014. The campaign, *Counterfeit: Don't Buy Into Organized Crime*, informs consumers that buying counterfeit goods could be funding organized criminal groups, puts consumer health and safety at risk, and contributes to other ethical and environmental concerns. See also International Intellectual Property Alliance (IIPA), *Statement of IIPA Hailing United Nations New Campaign "Counterfeits: Don't Buy Into Organized Crime"*, January 14, 2014, at http://www.iipa.com/pressreleases/2014_Jan14_IIPA_Statement_UN_Anti_Counterfeit_Program.PDF.

⁸Country surveys were prepared by counsel to the IIPA, Michael Schlesinger, Amanda Wilson Denton, Eric Schwartz, and Steven Metalitz, and are based on information furnished by IIPA's seven member associations. We thank Pamela Burchette for her contribution in preparing, producing and distributing this submission. The country reports contain information which should not be construed as providing legal advice.

⁹Many of these countries/territories have appeared on a Special 301 list each year since 1989, and are recommended by IIPA to appear there again. A 1994 amendment to Section 182 of the Trade Act, dealing with identification of "priority foreign countries," provides that the U.S. Trade Representative must take into account "the history of intellectual property laws and practices in the foreign country, whether the country has been identified as a priority foreign country previously, and U.S. efforts to obtain adequate and effective intellectual property protection in that country." Uruguay Round Agreements Act Statement of Administrative Action, reprinted in H.R. Doc. No. 103-316, vol. I, at 362 (1994). Under these criteria, these countries/territories named by IIPA are particularly vulnerable.



C. IIPA RECOMMENDATIONS FOR THE 2014 SPECIAL 301 LISTS

This year IIPA has recommended 42 countries/territories: for designation as a Priority Foreign Country, or for placement on the Priority Watch List or Watch List; or noted as Special Mention or Additional Countries for copyright, enforcement, and/or market access-related concerns.

PRIORITY FOREIGN COUNTRY	PRIORITY WATCH LIST	WATCH LIST	OUT-OF-CYCLE REVIEWS	SPECIAL MENTION
Ukraine	Argentina Chile China (306) ¹⁰ Costa Rica India Indonesia Russian Federation Thailand Vietnam	Belarus Brazil Bulgaria Canada Ecuador Greece Israel Kazakhstan Kuwait Mexico Romania Saudi Arabia Switzerland Taiwan Tajikistan Turkey Turkmenistan United Arab Emirates Uzbekistan	Italy Spain	Hong Kong Malaysia Philippines
				ADDITIONAL COUNTRIES
				Albania Bosnia and Herzegovina Estonia Georgia Macedonia Malta Moldova Montenegro
1	9	19	2	11

D. INITIATIVES OR CHALLENGES FOR 2014: REDUCE COPYRIGHT PIRACY, REMOVE MARKET ACCESS BARRIERS, AND STRENGTHEN LAWS

This submission and its appendices aim to define and seek implementation of solutions to significant commercial hurdles faced by the copyright industries of the U.S. The following list of cross-cutting initiatives and challenges summarizes actions governments must execute to reduce copyright piracy, open markets to legitimate U.S. copyright exports, and ensure that adequate legal structures are in place to lower piracy levels.

1. The Need for Deterrent Enforcement Responses to Copyright Piracy

Copyright piracy increasingly occurs in ways more sophisticated than the mere duplication and sale of content on physical media. Piracy also includes:

- the illegal copying, uploading, downloading, making available, communicating, and streaming of copyright materials on the Internet or mobile networks, or contributing to, benefiting from, promoting, or otherwise inducing the same, including, for example, websites or services that often cloak themselves under the

¹⁰The notation "306" refers to monitoring of a country's compliance with trade agreements with the U.S. under Section 306 of the Trade Act.



guise of legitimacy with advertising and payment methods, giving consumers the impression they are authentic;

- the unauthorized use of software or other copyright materials by enterprises or governments;
- the illegal camcording of movies from theaters;
- the illegal photocopying or pirate offset printing of books;
- the illegal public performance, broadcast, or dissemination via cable of audiovisual works or sound recordings; and
- hard-disk loading of software or other copyright materials onto computers, laptops, smart phones, tablets, or other mobile devices without authorization or license.

Related to piracy are activities such as:

- the development, manufacture, distribution, or deployment of (and services related thereto) circumvention technologies, software, devices, or components, including game copiers, mod chips, key codes and cracks, used to access, copy, or otherwise use copyright materials protected by technological protection measures (TPMs);
- the development, manufacture, or distribution of “media boxes” including “HD players,” in which gigabytes or terabytes of storage space can accommodate hundreds of high definition movies and other content, and boxes that can directly link to websites providing illegal downloading or streaming, and to televisions and smart TVs for displaying the unauthorized content;
- the trafficking in counterfeit software packaging, labels, holograms, certificates of authenticity, or documentation; and
- the development, manufacture, or distribution of pay TV decryption technologies, devices, or components; or the unauthorized decryption of, or line-tapping to illegally obtain access to, pay TV signals.

Too often, whether due to lack of political will or inadequate rule of law, countries fail to address piracy effectively. The overarching objectives for the copyright industries therefore remain: 1) to secure globally effective legal frameworks capable of providing deterrent enforcement against copyright piracy; and 2) to ensure that enforcement authorities robustly use these legal frameworks to combat copyright infringement. To do so, countries should:

- dedicate enforcement resources commensurate with the scale of the piracy problem, to provide for “effective action” and “remedies that constitute a deterrent”¹¹ to infringement as the minimum required by the World Trade Organization’s TRIPS Agreement,¹² through civil, administrative, and criminal action, and effective adjudication in the courts;¹³
- train, build capacity, and empower enforcement authorities to investigate and prosecute copyright offenses;
- update laws and enforcement tools to meet the current piracy challenges, including organized crime and cybercrime syndicates;¹⁴

¹¹For effective deterrence, prosecutors and judges (or, where applicable, administrative agencies) should impose penalties that remove the monetary incentives that drive the pirate trade. Small fines do not deter pirates who stand to gain hundreds of thousands to millions of dollars. Recidivism is endemic in many countries. Deterrence requires substantial prison sentences in these cases.

¹²*Agreement on Trade-Related Aspects of Intellectual Property Rights*, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, THE LEGAL TEXTS: THE RESULTS OF THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS 320 (1999), 1869 U.N.T.S. 299, 33 I.L.M. 1197 (1994), Art. 41.

¹³In many countries, specialized IP courts have been established, in addition to special IP or cybercrime investigative units with police and prosecutors. In the most successful examples, such specialized courts or units are making a difference in reducing piracy.

¹⁴Piracy (both online and offline) has been taken over in many countries by organized crime syndicates linked across national boundaries, that control large amounts of capital, and exploit complex distribution networks. The private sector does not possess the tools, nor usually the legal authority, to investigate and fight organized



- direct government agencies, state-owned enterprises, contractors, and educational institutions, to use only legal software, legal copies of textbooks, educational materials, professional and scholarly publications, and other copyright materials, and to ensure their networks or computers are not used for infringing purposes;
- ratify and fully implement the WIPO Copyright Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT) and enforce resulting prohibitions as a means of reducing piracy;
- encourage cooperation by Internet service providers (ISPs) with all content owners, including notice and takedown systems for the hosted environment, and effective and fair mechanisms to deal with repeat infringers, non-hosted infringements, and infringements on foreign websites; and
- enact and enforce measures to make it illegal to use or attempt to use an audiovisual recording device in an exhibition facility to copy or transmit a motion picture, in whole or in part.

2. Internet Piracy

Transformative developments on the Internet and mobile (WAP, 3G, Wi-Fi) networks have created opportunities for faster, more efficient and more cost-effective distribution of information, products and services across the globe. Estimates suggest almost 2.8 billion individuals use the Internet as of 2013, according to the International Telecommunications Union (ITU). ITU estimates almost the same number of mobile and fixed broadband users, due to a surge in mobile broadband connectivity which has almost doubled in the past two years. This connectivity has had a positive transformative effect on many economies, and provides significant opportunities to copyright-intensive industries to build legitimate businesses based on their products and services. Unfortunately, the opportunities are compromised by the challenges of Internet and mobile piracy. According to NetNames, an astonishing 23.8% of all Internet bandwidth in North America, Europe, and the Asia-Pacific was devoted to copyright infringement.¹⁵ A similar 2011 study concluded that nearly half of all infringing activity occurred using BitTorrent, with the rest divided among cyberlockers, peer-to-peer (P2P) downloading and uploading, forums or bulletin boards, and streaming.¹⁶ Research also indicates there is a correlation between shutting down a major suspected piracy service, or improving enforcement legislation, and increases in legitimate distribution of copyright materials.¹⁷

The harm from Internet (and mobile) piracy cannot be overstated. Unauthorized downloading or streaming of a motion picture, for example, often sourced to a single illegal camcording incident, can decimate box office sales and harm subsequent release windows.¹⁸ Online and mobile piracy threatens the viability of licensed platforms, and erodes the capacity of artists, musicians, filmmakers, performers and songwriters to earn a living from their craft. Online piracy of entertainment software continues to be overwhelmingly

crime. In addition, such organized groups or other commercial pirates can become violent, and company representatives and counsel have in some countries experienced threats on their lives, physical intimidation, or attacks leading to injury when doing their jobs to investigate piracy; this has prevented enforcement activity by the private sector in many instances. Governments can step up to this challenge, including by applying their organized crime laws, like Hong Kong's Organized and Serious Crimes Ordinance and the United Kingdom's Serious Crimes Act 2007, to bring enhanced remedies (such as seizure or freezing of assets) to bear against syndicate operations involved in piracy. Since 2000, INTERPOL has recognized the need for national and international enforcement authorities to coordinate their efforts and cooperate with IP right holders to fight IP crimes including piracy.

¹⁵David Price, *Sizing the Piracy Universe*, NetNames, September 2013 (available to registered users).

¹⁶Envisional, *Technical Report: An Estimate of Infringing Use of the Internet*, January 2011 (on file with IIPA).

¹⁷See, e.g., Brett Danaher, Michael D. Smith, Rahul Telang, Siwen Chen, *The Effect of Graduated Response Anti-Piracy Laws on Music Sales: Evidence from an Event Study in France*, January 21, 2012, available at SSRN: <http://ssrn.com/abstract=1989240> or <http://dx.doi.org/10.2139/ssrn.1989240> (increased consumer awareness of HADOPI caused iTunes song and album sales to increase by 22.5% and 25% respectively relative to changes in the control group); Dianna Dilworth, *How to Stop Piracy: Carnegie Mellon Professor Michael Smith at DBW*, January 16, 2013, at http://www.mediabistro.com/appnewser/how-to-stop-piracy-carnegie-mellon-professor-michael-smith-at-dbw_b31162 (Carnegie-Mellon Economist Michael D. Smith indicates his research demonstrates that every 1% reduction in *Megaupload* usage translated into a 2.6-4.1% increase in legitimate digital sales).

¹⁸The motion picture industry's distribution patterns (including theatrical, on-demand, pay-TV, home video, and legitimate online services) have been undermined by the availability of Internet downloads or streaming of their films.



international, as reflected in ESA vendor monitoring of P2P and direct download activity.¹⁹ Book and journal publishers are plagued by sites that provide and deliver unauthorized digital copies of medical and scientific journal articles on an illegal subscription basis, as well as sites that traffic in illegally obtained subscription login credentials, and increasingly face online piracy of trade books (fiction and non-fiction) and academic textbooks. Counterfeit software products remain prevalent on certain auction and e-commerce sites, as well as on professional-looking sites that deceive consumers, selling well-packaged but poor quality counterfeit copies of software.

As one mechanism to bring to light concerns over businesses built on Internet and mobile piracy, the U.S. Government has launched, as part of the “Special 301” process, an “Out-of-Cycle Review of Notorious Markets.” Through this process, the U.S. Government has successfully identified key online and physical marketplaces that are involved in intellectual property rights infringements. IIPA has participated in each Notorious Markets OCR, most recently in October 2013, in which IIPA identified almost 80 notorious online marketplaces, some of the most accessed sites in the world.²⁰ The Notorious Market process has led to positive developments, including: closure of some Internet websites whose businesses were built on illegal conduct; greater cooperation from some previously identified “notorious” and other suspect sites; and the facilitation of licensing agreements for legitimate distribution of creative materials.

To effectively address Internet and mobile piracy, governments must attack both supply and demand. Education and criminal and administrative actions all have a role to play. A sound framework for civil actions, and legislation that creates incentives for network service providers to curb the use of their networks and services for infringing purposes, are also essential. Some of the solutions are quite straightforward. Governments must provide adequate legal frameworks for the protection of copyright online, including provisions that: implement the WCT and WPPT (discussed below); recognize online piracy as a form of cybercrime;²¹ and foster cooperation among stakeholders (including ISPs) in the online supply chain to combat online infringements.²² It is notable that online piracy rates in many of our FTA partners are quite high, including countries like Australia and Singapore which have unacceptably high rates of online piracy—at least for films and music. For free trade agreements to fulfill their promise of fostering legitimate commerce, it is critical that each our trading partners adopt measures to effectively address their serious online piracy problems.

Increasingly, the role of advertising and ad networks in sustaining piracy has come under scrutiny. Some companies have decided to take affirmative steps to terminate such practices.²³ In some cases, advertisers may be unaware that their advertisements appear on sites that facilitate access to infringing content. It is imperative that the ad networks that contract with site operators to feed ads on their sites make

¹⁹For 2013, ESA vendors identified Russia, Brazil, Italy, Ukraine, Spain, and India as the top countries in overall numbers of detected connections to select ESA member titles on public P2P networks.

²⁰IIPA, *IIPA Written Submission Re: 2013 Special 301 Out-of-Cycle Review of Notorious Markets: Request for Public Comments*, 78 Fed. Reg. 57924 (September 20, 2013), 78 Fed. Reg. 60367 (October 1, 2013) (Extending Deadline), October 25, 2013, at http://www.iipa.com/pdf/2013_Oct25_Notorious_Markets.pdf.

²¹Governments should join and implement the Budapest Convention, 23.XI.2001, which contains, in Articles 10 and 11, obligations to “adopt such legislative and other measures as may be necessary to establish as criminal offences under its domestic law the infringement of copyright [and related rights] ... where such acts are committed wilfully, on a commercial scale and by means of a computer system,” and to outlaw intentional aiding and abetting of such crimes.

²²Many governments, particularly in Asia and Europe, have recognized the need for urgent steps to curb online piracy, and while not all approaches are favored by all the content industries equally, the goal is the same: to ensure effective action is available in practice against online piracy. There is consensus that bad actors who cause massive harm or profit from their direct involvement in the online infringing supply chain should be held responsible. There is also general agreement that all stakeholders in the online supply chain, including service providers, should have proper incentives to cooperate to eradicate bad behavior, which has traditionally included notice and takedown, and which at least includes effective and fair mechanisms to deal with repeat infringers and to address infringements in the non-hosted environment. The fact is that momentum is building for workable solutions and all recognize that solutions are required and desirable.

²³See, e.g., Chris Brummitt, *APNewsBreak: Coke, Samsung Pull Vietnam Site Ads*, Associated Press, October 3, 2012, at <http://bigstory.ap.org/article/coke-samsung-pull-ads-vietnam-website-citing-concerns-over-unlicensed-music-downloads> (reporting decisions by Coca-Cola and Samsung to divest from *zing.com* over piracy concerns).



ethical business decisions. We applaud those who have already done so, and urge all the responsible participants in the online advertising ecosystem to act to ensure that such infringing websites do not benefit from their advertising activities.²⁴ Similar choices are being made by payment processors (online services as well as more traditional credit card companies) to halt services to pirate or counterfeit operations.²⁵ Finally, the role of search engines in the copyright value chain needs further scrutiny. As an indication that more needs to be done to establish the right framework for legitimate commerce in copyright materials, the music industry just noted its 100 millionth notice to a major search engine,²⁶ and a study conducted for the motion picture industry suggests that users searching for legal content are more often than not being directed to pirated content online.²⁷

3. Enterprise (Including Government) End-User Piracy of Software and Other Copyright Materials

The unauthorized use of software within enterprises, also referred to as “enterprise end-user software piracy,” remains a highly damaging form of infringement to the software industry. In the most typical examples, a corporate (or governmental) entity either uses pirated software exclusively, or else purchases one or a small number of licensed copies of software and installs the program on multiple computers well beyond the terms of the license. Client-server overuse, another common example of end-user piracy, occurs when more than the licensed number of employees on a network have access to or are using a central copy of a program at the same time, whether over a local area network (LAN) or via the Internet. In whatever way this piracy is carried out, it gives the enterprises involved the productivity benefits that the software provides, while foregoing most or all of the expense of licensed copies of the software, thus giving them an unfair commercial advantage over their competitors who pay for their software. On a macroeconomic level, countries with high piracy rates compete unfairly with countries that have lower rates.²⁸ Sometimes enterprise end-user software piracy is attributable to negligence and poor software asset management (SAM) practices. In many cases, this piracy is undertaken willfully, with management fully aware and supportive of the conduct. Adequate laws prohibiting the unauthorized use of software in a business setting must be enacted and enforced, including, in appropriate cases, through criminal prosecutions,²⁹ in order to reduce software piracy. The adoption of pre-established (statutory) damages for copyright infringement is also needed in many countries to provide predictability, encourage settlements, and provide “remedies which constitute a deterrent to further infringements,” as required by TRIPS Article 41.³⁰

The use of unlicensed software by government agencies remains a serious and widespread problem. Since the government is often a major, and in some cases the largest, buyer of software in many countries, this has a tremendous impact on sales of legitimate software. It also undermines the credibility of government enforcement efforts against software piracy and sets a bad example for private enterprises to follow.

²⁴Interactive Advertising Bureau (IAB), *Standards, Guidelines & Best Practices*, at <http://www.iab.net/guidelines/508676>.

²⁵ For example, the “CD Cheap” case, involving a criminal counterfeiting ring that employed 10,000 slave computers to sell counterfeit software, was shut down when financial institutions closed the merchant accounts of the sites involved, for violations of terms of service prohibiting fraudulent activities.

²⁶Cary Sherman, *Google's 100 Million Notices*, The Hill, January 13, 2014, at <http://thehill.com/blogs/ballot-box/195107-googles-100-million-notices> (noting the music industry had sent its 100 millionth copyright takedown notice to Google in January 2014, without a “demonstrable demotion of sites that receive a high volume of piracy notices”).

²⁷MilwardBrown Digital, *Understanding the Role of Search in Online Piracy*, 2013, at <http://www.mpa.org/resources/38bc8dba-fe31-4a93-a867-97955ab8a357.pdf>. The study found, “[t]he majority of search queries that lead to consumers viewing infringing film or TV content do not contain keywords that indicate specific intent to view this content illegally,” and “58% of queries that consumers use prior to viewing infringing content contain generic or title-specific keywords only, indicating that consumers who may not explicitly intend to watch the content illegally ultimately do so online.”

²⁸For example, China’s 77% PC software piracy rate means that Chinese enterprises competing with U.S. firms pay on average for just over one out of five copies of software they use, while their U.S. counterparts (the US has a 19% PC software piracy rate) pay on average for more than four out of five copies.

²⁹TRIPS Art. 61 requires that this remedy be available against corporate end-user piracy.

³⁰The U.S. has the lowest software piracy rate in the world, due in large part to the deterrent impact of infringers knowing that right holders can avail themselves of statutory damages.



Moreover, the use of unlicensed software creates security vulnerabilities and risks for government agencies. Government software legalization problems arise in many countries, including China, Ukraine, and Korea.

- **China:** The Chinese Government has made numerous bilateral commitments to the U.S. and issued directives to ensure legal software use in government agencies at all levels (central, provincial, municipal, county) and in state-owned enterprises (SOEs). While the Chinese Government has implemented some efforts to legalize software use, it has not been comprehensive and significant problems remain. Fewer efforts have been implemented for the more commercially meaningful SOE sector. We urge the Chinese Government to implement comprehensive legalization programs for government agencies and SOEs that encompasses all types of software, have audit and verification systems, and utilize SAM best practices.
- **Ukraine:** The Ukrainian Government has also made bilateral commitments to the U.S. and issued directives to combat unlicensed software use by the government, but to date has taken woefully inadequate steps toward this result. Ukraine was designated a Priority Foreign Country in 2013 by the U.S. Government for several serious problems, including the “widespread use of infringing software by Ukrainian Government agencies.”
- **Korea:** The Korean Government agreed to obligations on government software legalization in the Korea-U.S. Free Trade Agreement (KORUS); yet there remains a significant problem with several ministries not taking steps to resolve the issue of substantial unlicensed software use.

Comprehensive government software legalization programs that utilize SAM best practices are the best way to address enterprise end-user piracy, both within government agencies, in SOEs (e.g., in China), and in the private sector. Governments should also take steps to ensure that businesses that provide goods and services under government contracts do not use unlicensed software.

End-user piracy is not limited to software but affects other copyright sectors as well. For example, in some government, school and university facilities, photocopy machines are routinely used for commercial-scale book piracy. Use of networks, computers, or other equipment owned by a government or public institution to carry out infringement is particularly objectionable. Governments have an opportunity and responsibility to engage in best practices with respect to the handling of intellectual property issues in the operation of government services, and they should be encouraged to lead by example.

4. **Hard-Disk Loading, Mobile Device Piracy, and “Media Boxes”**

Not all retail piracy involves the sale of illegal copies directly. One example is “hard-disk loading,” performed by unscrupulous computer manufacturers and dealers who install copies of software without authorization from the copyright holder onto the internal hard drive of the personal computers they sell. Similarly, pirates operate stalls or kiosks, or “repair” shops, offering to load unauthorized copyright material onto any device, cell phone, smart phone, tablet, mp3 player, external hard disk, pen, thumb, flash, or USB drive. Others provide an illegal “app” for a smart phone or tablet to illegally download content, especially in countries with significant mobile penetration and mobile broadband. Another relatively recent phenomenon involves the manufacture, distribution, and use of “media boxes” which facilitate massive infringement. These media boxes are generally manufactured in China and exported to overseas markets, particularly throughout Asia. They can be pre-loaded with hundreds of high definition (HD) motion pictures prior to shipment; loaded with content upon delivery; or plugged directly into Internet-enabled TVs, facilitating easy access to remote



online sources of unauthorized entertainment content including music, music videos, karaoke, movies, and TV dramas. Enforcement authorities must take effective action against these forms of piracy, or losses will mount.

5. Circumvention of Technological Protection Measures (TPMs)

Today, more consumers enjoy authorized access to more copyright works in more diverse ways and at more affordable price points than ever before. A major reason for this progress is the widespread use of TPMs to control and manage access to copyright works. Myriad innovative products and services are currently made available in connection with works protected by TPMs, and new business models that depend on such controls are emerging and being extended to new markets constantly. TPMs also ensure that works made available in hard goods, or in the online or mobile environment, are not easily stolen. For example, game consoles contain TPMs so that infringing copies of games cannot be played. DVDs are protected by “content scramble system” (CSS) to prevent second-generation copying and subsequent distribution or play, directly or over the Internet. Pay TV, premium cable and satellite services, and Internet services providing legitimate downloads or streaming of motion pictures similarly employ access and copy controls. Many software packages are licensed with some type of technological protection measure (encryption, passwords, registration numbers). E-Books employ access and copy controls as well.

Unfortunately, just as content owners depend on TPMs to enable new means to disseminate creative content, there are those who build their entire business models around manufacturing and distributing technologies, software, devices, components, or tools (and services related thereto) to fill the demand for gaining unlawful access to the content or copying it. The “mod chip,”³¹ “game copier,”³² and software and technologies used for “soft modding” facilitate piracy on game console platforms, and require strong legal measures and enforcement to make space for the sale of legitimate games. While TPM legal protection, where properly implemented, enables effective enforcement actions against distributors of unlawful circumvention technologies, these efforts are critically undermined by countries that have yet to implement such protections adequately or at all. Countries that lack TPM provisions not only fail to afford domestic protections for legitimate online business models, but also serve as a regional or global source of circumvention devices for those who live in countries where such devices and technologies are prohibited.

6. Illegal Camcording of Theatrical Motion Pictures

One of the greatest concerns to the motion picture industry involves illegal recordings of movies from theaters, especially immediately after a title’s theatrical exhibition window opens. Approximately 90% of newly released movies that are pirated can be traced to use of a digital recording device in a movie theater to record the audiovisual work (whether image or sound or both) from the theater screen and/or sound system. The increase in the severity of this problem in recent years tracks the development of camcorder technology that makes detection difficult and copies nearly perfect. All it takes is one camcorder copy to trigger the mass reproduction and distribution of millions of illegal Internet downloads and bootlegs in global markets just after a film’s theatrical release, and well before it becomes available for legal home entertainment rental or purchase from legitimate suppliers.

³¹There is a global market for modification chips (mod chips) sold on the Internet and in videogame outlets which, when easily installed into a console (by the user or by the pirate retailer) will bypass access controls and allow the play of pirated games.

³²“Game copier” devices also bypass TPMs to allow for uploading, copying, and downloading of games for handheld platforms.



A multifaceted approach is needed including: 1) educating the public about the problems posed to businesses and the consumer by unauthorized camcording; 2) working with the private sector to identify and prevent unauthorized camcording in cinemas; and 3) developing and implementing legal measures to effectively deter unauthorized camcording. In 2013, MPAA identified 819 total illegal recordings of its member company titles from cinemas around the world, including 286 video captures and 533 audio captures. This number does not include the numerous independent or local country films illegally camcorded; producers of these films also suffer gravely from illegal camcording. Anti-camcording legislation – outlawing the possession of an audiovisual recording device in a theater with the intent to copy or transmit all or part of a motion picture – is critical to stopping the rapid increase in camcording. Effective anti-camcording laws have now been adopted in many countries, leading to dramatic drops in the number of pirate titles sourced to those countries' cinemas.³³ The international community is also speaking with one voice on this issue.³⁴

7. Piracy of Books and Journals

The book publishing industry continues to be plagued by large scale unauthorized photocopying of academic, scientific, technical and medical books, principally on and around university campuses; sophisticated infringing offset print versions of books (essentially akin to counterfeiting); and unauthorized translations of popular books. Unauthorized commercial copying of entire textbooks by copy shops on and around university campuses is common, often undertaken on a “copy-on-demand” or “print-to-order” basis (from electronically stored digital files) to avoid stockpiling. Commercial print piracy is prevalent in many developing countries, where unauthorized operations obtain masters or copies of books and run unauthorized editions off a printing press, in English or in unauthorized translations. While many pirated copies are rife with errors or obviously of inferior quality, in some cases sophisticated scanning and printing technologies result in extremely high-quality pirate editions of books, making it difficult for users to distinguish between legitimate and pirate products.

Book and journal piracy calls for aggressive action by law enforcement authorities. Universities and educational institutions (especially those which are state-funded or operated) should do more to promote and adopt appropriate use and copyright policies, in particular the use of legitimate books and journal publications. IIPA urges the U.S. Government to ensure that such acts of piracy are fully covered in all bilateral, regional, and multilateral engagements.

8. Optical Disc Piracy

Hard goods piracy, including optical disc (OD) products,³⁵ continues to inflict losses, especially in markets with low Internet penetration. As large-scale factory production of optical discs has waned, smaller, more agile operations that “burn” music, books and reference publications, video games, movies, and software onto recordable media, has increased. CD-R or DVD-R “stack” bays (of ten or twenty discs when “daisy-chained”) are lightweight and can produce multiple discs in minutes. Producers/vendors set up production or distribution operations in a wide variety of locations, including old factories, warehouses, or “burn to order” shops, often blurring any distinction between retail piracy and pirate production. In response,

³³Examples include Canada and Japan.

³⁴The 21 members of the Asia-Pacific Economic Cooperation (APEC) committed, in November 2011, to “developing and implementing legal measures to effectively deter unauthorized camcording,” as well as working with the private sector and educating the public. *Effective Practices for Addressing Unauthorized Camcording*, 2011/AMM/014app05, adopted at 23rd APEC Ministerial Meeting, Hawaii, United States, November 11, 2011.

³⁵OD include formats such as compact discs (CD), video CDs (VCD), CD-ROMs, CD-Recordables (CD-Rs), digital versatile discs (DVDs), DVD-Recordables (DVD-Rs), universal media discs (UMD), and high-definition formats such as Blu-ray.



programs such as surprise OD production plant or shop inspections and exemplar (sample) disc collection should continue. Where unlicensed or illegal activity is detected, copyright laws or specialized OD laws or regulations should be enforced. As an example of the harm caused, high-quality counterfeit software, DVDs, Blu-ray discs, and box sets of music or audiovisual materials continue to be manufactured in China and find markets throughout Asia, the Middle East, and Africa. Without sustained enforcement actions against these factories or production or distribution hubs, and without prosecution of their owners and financiers, there will be little progress in curtailing this problem.

9. Pay TV Piracy and Signal Theft

The unauthorized broadcast, cablecast or satellite delivery of motion pictures, television content, and music and sound recordings, including the unauthorized retransmission of broadcast signals over the Internet, costs right holders dearly. Other problems include: unauthorized tapping into the lines of legitimate cable TV companies; operators who take broadcast signals by unauthorized means (hacked set-top boxes or “overspill” boxes from neighboring countries), replicating the signal and selling it to consumers without paying for any of the content, a problem of growing severity in several countries in the Caribbean region, as well as Guatemala and Honduras; and rogue pirate TV channels that create their own broadcasts by playing a DVD and airing the signal on their system, a problem re-emerging in Egypt and the broader Middle East and North Africa (MENA) region. In most of these cases, the signals are encrypted, and pirates must circumvent or hack in order to access the content. Regulations and enforcement must therefore focus on prohibiting the trafficking in pay TV or signal theft devices or technologies, the unlawful decryption of encrypted cable or satellite signals, as well as the onward use of the signals already decrypted (whether lawfully or not), without the authorization of the right holder of the content or of the signal. Licensing of broadcasters and cablecasters, and weeding out unlicensed television distributors, can also be helpful in addressing signal theft.

10. Implementation of IPR Provisions in Trade Agreements

The negotiation of multilateral trade agreements (such as the WTO TRIPS Agreement), as well as regional and bilateral free trade agreements (FTAs) or Trade Promotion Agreements (TPAs) over the past two decades, has proven to be of great value to the U.S. economy. These agreements feature enforceable obligations for our trading partners to modernize their copyright law regimes and improve enforcement procedures. These agreements have helped U.S. copyright industries to compete fairly in foreign markets, and have helped our trading partners develop their domestic copyright industries, a true win-win for all parties. In addition to TRIPS implementation, U.S. FTAs or TPAs with 20 countries have entered into force, most recently with Korea, Colombia and Panama in 2012.

The pending negotiations for a Trans-Pacific Partnership (TPP) FTA present an opportunity to expand the benefits of existing FTAs to a broader range of markets around the Pacific Rim. The Government of Japan officially joined the TPP negotiations in 2013, bringing the total number of countries negotiating the agreement to twelve.³⁶ Through TPP, enhanced copyright and enforcement standards, building upon those agreed to by TPP negotiating parties that are also current FTA partners, Australia, Singapore, Chile, and Peru, and found in KORUS, should be extended to other countries in the region. Such an outcome will contribute to U.S. job growth, increase exports, and facilitate continued economic stabilization in line with the Administration’s goals. IIPA also urges USTR to seek through the TPP negotiations opportunities to address the range of market

³⁶TPP negotiating countries now include Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States, and Vietnam.



access impediments identified in various TPP negotiating countries.³⁷ The TPP E-Commerce chapter and market access provisions for services and investment should require TPP negotiating countries not only to eliminate discriminatory taxes and policies, but also to open markets to foreign competition, including in the creative and cultural sectors. We remain hopeful that the TPP negotiations will aid in the elimination of discriminatory barriers as well as bring copyright laws and enforcement regimes into line with evolving global norms.

In addition to implementation issues identified in various country reports in Appendix A, IIPA takes notice of the following countries for issues related to their bilateral, regional, or multilateral obligations in the area of intellectual property rights.

- **Antigua and Barbuda:** In January 2013, the Government of Antigua and Barbuda sought and obtained from the WTO approval to cross-retaliate against U.S. intellectual property rights worth \$21 million a year as a remedy in an unrelated trade dispute. At the opening of the 2014 session of the country's parliament, Governor General Dame Louise Lake-Tack, in her Speech from the Throne, reportedly confirmed that the Government of Antigua and Barbuda was making the "necessary amendments" to revise the country's intellectual property laws "to invoke the WTO-approved sanctions by removing any protection which U.S. intellectual property may have in Antigua and Barbuda."³⁸ IIPA's firm view has not changed, that suspending intellectual property rights is not the right solution, and that state-sanctioned theft is an affront to any society. Should the Government of Antigua and Barbuda determine to move forward in this manner, it would be in violation of its obligations under international instruments not administered by the WTO (e.g., the Berne Convention), and would – by definition – fail to provide adequate and effective IPR protection as required under U.S. trade laws governing unilaterally-granted trade benefits such as those offered under the Caribbean Basin Initiative. In that event, we believe that the U.S. should take appropriate, immediate and robust action to uphold U.S. trade laws.
- **Colombia:** Colombia should be encouraged to take effective steps in 2014 to implement its TPA obligations and to increase the focus of law enforcement officials on needed anti-piracy actions on the streets of Colombia and online. With the January 23, 2013, decision of the Constitutional Court declaring the 2012 amendments to the Copyright Law unenforceable, Colombia is now nearly two years overdue in bringing its copyright law into compliance with the obligations that went into effect with the signing of the TPA in April 2012. We urge Colombia to take the necessary steps to finalize the implementation of the TPA, and in particular to pass copyright amendments restoring the provisions of the 2012 law, and also to address ISP responsibility consistent with the FTA. We look forward to Colombia taking prompt actions that reflect its commitment to building and maintaining a robust and modern intellectual property protection and enforcement regime for Colombian and U.S. creators alike.
- **Korea:** One important aspect of the IP chapter of the KORUS FTA was the commitment Korea made to ensure that its central Government agencies would utilize legitimate software. Software industry representatives have raised concerns about significant under-licensing of software within the Korean Government. Although the Ministry of National Defense has taken steps in the right direction, other Korean Government agencies have to date not taken sufficient action in response to these concerns. For example, auditing appears not to follow best practices in many circumstances and to be nonexistent in others. Korea also fails to provide adequate funding for at least some Korean Government agencies to

³⁷As an example, IIPA notes that Vietnam has some of the most restrictive market access barriers in the world for copyright materials.

³⁸The full text of Governor General Dame Lake-Tack's reported speech is available at http://ab.gov.ag/article_details.php?id=4640&category=38.



purchase the software they actually use. IIPA will be closely monitoring this issue in Korea and will consult closely with the U.S. Government on means to address it.

- **Morocco:** The Moroccan Government agreed to specific government software legalization commitments under the U.S.-Morocco Free Trade Agreement. However, concerns have been raised on behalf of U.S. industry about the failure of the Government to effectively ensure the compliance of certain ministries with these commitments.

11. Implementation of the WCT and WPPT

The WCT and WPPT, in force since 2002, provide a basic legal framework for the protection of online copyright. The WCT now has 91 adherents, while the WPPT has 92. Effective implementation of the global legal minimum standards embodied in the WCT and WPPT is critical in the fight against online piracy, and is a key element of the “adequate and effective” copyright protection that is demanded under the Special 301 program. Implementing the WCT and WPPT includes express protection for reproductions in the online environment, regardless of their duration (i.e., temporary as well as permanent copies capable of being further copied, communicated, or perceived should fall within the exclusive reproduction right). This is important since businesses and consumers can fully exploit copyright materials they receive over a network without ever making a permanent copy. Implementation also includes a treaties-compatible definition of “communication to the public,” including an interactive “making available” right. Finally, implementation includes prohibiting, through civil and criminal remedies the circumvention of TPMs (access and copy controls) and trafficking in circumvention technologies, software, devices, components, and services. A number of key trading partners, including New Zealand and Israel among developed countries, and Thailand among developing countries, have not yet either ratified or fully implemented these treaties. The United States, which was one of the first countries to implement these changes in its laws 15 years ago, should continue to make it a priority to encourage other countries to follow this path.³⁹ In the more than 17 years since the adoption of the WCT and WPPT at WIPO in Geneva, WIPO has taken some steps to encourage its members to join and implement the treaties, but more should be done.

12. Market Access Barriers

The U.S. copyright industries suffer from myriad market access barriers, investment barriers, and discriminatory treatment that make it difficult to compete in some foreign markets on a level playing field. All efforts to crack down on piracy will be unavailing if legitimate products and services cannot be brought into a market to meet consumer demand. Thus, the reduction of market access impediments is a key component of ongoing efforts to combat piracy. Among other forms, the market access barriers include:

- ownership and investment restrictions on copyright-related businesses;
- discriminatory or onerous content review/censorship systems;⁴⁰
- discriminatory restrictions on the ability to fully engage in the business of development, creation, production, distribution, promotion, and publication of copyright materials;

³⁹The United States implemented the WCT and WPPT by enacting Title I of the Digital Millennium Copyright Act of 1998, Pub. L. No. 105-304, 112 Stat. 2860 (1998). The United States deposited instruments of accession for both treaties on September 14, 1999.

⁴⁰In China, for example, entertainment software companies continue to face lengthy delays in the censorship approval process, wiping out the very short viable window for legitimate distribution of their videogame products.



- the maintenance of quotas including screen time and broadcast quotas or complete bans on broadcast of foreign programming or advertising;
- periods during which governments prevent U.S. producers from opening their films, or onerous restrictions on the window for theatrical distribution (including unfairly shortening the run of a theatrical motion picture);
- local print requirements;
- onerous import duties or the improper assessment of duties on an *ad valorem* basis;⁴¹
- government procurement preferences for domestic products or those with locally-owned or locally-developed IP; and
- 1) restrictions on cross-border data flows, or 2) requirements that companies locate servers, data centers or other computing facilities in a country as a condition for market access; both of which impede the development of businesses involving software distributed via cloud computing and other digital services.

Whatever form they take, whenever such market access restrictions impede the entry of legitimate products, they make it easier for pirate operations to fill the void, become *de facto* “exclusive” distributors of the products, and cement strong loyalties with their consumer base that make them even harder to dislodge. U.S. officials should continue to strive to open markets and to eliminate or phase out market access barriers including those identified in this year’s IIPA submission.

E. CONCLUSION

The health and competitiveness of the U.S. economy depends on a thriving copyright sector that creates revenues, jobs, and exports. It is essential to the continued growth and future competitiveness of these industries that our trading partners provide high levels of protection for copyright, more effective policies and tools to enforce that protection, and freer, more open markets. Our country should remain committed to a flexible and innovative response to the constantly evolving threats to copyright worldwide. Special 301 remains one cornerstone of the U.S. response. We urge USTR and the Administration to use the Special 301 review and other trade tools to encourage the countries and territories identified in our recommendations this year to make the political commitments, followed by the necessary actions, to bring real commercial gains to the United States through strengthened copyright and enforcement regimes worldwide.

We look forward to our continued work with USTR and other U.S. agencies on meeting the goals identified in this submission.

Respectfully submitted,

/Steve Metalitz/
/Michael Schlesinger/
/Eric Schwartz/
/Amanda Wilson Denton/

Counsel for
International Intellectual Property Alliance

⁴¹*Ad valorem* duties are based on potential royalties generated from a film rather than the accepted practice of basing duties on the value of the carrier medium (i.e., the physical materials which are being imported).



APPENDIX E

IIPA, IIPA Written Submission Re: 2013 Special 301 Out-of-Cycle Review of Notorious Markets: Request for Public Comments, 78 Fed. Reg. 57924 (September 20, 2013), 78 Fed. Reg. 60367 (October 1, 2013) (Extending Deadline), October 25, 2013, at
http://www.iipa.com/pdf/2013_Oct25_Notorious_Markets.pdf.



October 25, 2013

Filed via www.regulations.gov, Docket No. USTR–2013–0030

Stanford K. McCoy, Esq.

Assistant U.S. Trade Representative for Intellectual Property and Innovation

Office of the U.S. Trade Representative

Washington, DC 20508

Re: **IIPA Written Submission Re: 2013 Special 301 Out-of-Cycle Review of Notorious Markets: Request for Public Comments, 78 Fed. Reg. 57924 (September 20, 2013), 78 Fed. Reg. 60367 (October 1, 2013) (Extending Deadline)**

Dear Mr. McCoy:

In response to the September 20, 2013 Federal Register notice referenced above, the International Intellectual Property Alliance (IIPA)¹ provides the Special 301 Subcommittee with the following written comments to provide examples of Internet and physical “notorious markets” – those “where counterfeit trademark or pirated copyright products are prevalent to such a degree that the market exemplifies the problem of marketplaces that deal in infringing goods and help sustain global piracy and counterfeiting.” We hope our filing will assist the Office of the United States Trade Representative (USTR) in “identifying potential Internet and physical notorious markets that exist outside the United States and that may be included in the 2013 Notorious Markets List.”

We commend USTR for publishing a notorious markets list as an “Out of Cycle Review” separately from the annual Special 301 Report. This list has successfully identified key online and physical marketplaces that are involved in intellectual property rights infringements, and has led to positive developments, including closures of some Internet websites whose businesses were built on illegal conduct; greater cooperation from some previously identified “notorious” and other suspect sites; and the facilitation of licensing agreements for legitimate distribution of creative materials. Particularly noteworthy in the past year are the welcome news that **Xunlei’s GouGou** pirate search engine shut down over piracy concerns (**Xunlei** cancelled a planned IPO

¹ The IIPA is a private sector coalition, formed in 1984, of trade associations representing U.S. copyright-based industries in bilateral and multilateral efforts working to improve international protection and enforcement of copyrighted materials and open up foreign markets closed by piracy and other market access barriers. IIPA’s seven member associations represent over 3,200 U.S. companies producing and distributing materials protected by copyright laws throughout the world—all types of computer software, including business applications software, entertainment software (interactive games for videogame consoles, handheld devices, personal computers and the Internet), and educational software; theatrical films, television programs, DVDs and home video and digital representations of audiovisual works; music, records, CDs, and audiocassettes; and fiction and non-fiction books, education instructional and assessment materials, and professional and scholarly journals, databases and software in all formats. Members of the IIPA include [Association of American Publishers](#), [BSA | The Software Alliance](#), [Entertainment Software Association](#), [Independent Film & Television Alliance](#), [Motion Picture Association of America](#), [National Music Publishers’ Association](#), and [Recording Industry Association of America](#).



in 2012 over piracy concerns), as well as **Isohunt**, which by virtue of a court settlement, agreed to shutter its services as of October 24, 2013.

This year, IIPA highlights the following illustrative list of notorious markets (described in greater detail below). Country references in the online section are based on the most current information available to IIPA.

2013 Notorious Markets (Online) ²	Registrant Country ³	Server Host Location ⁴
vk.com (known as vKontakte)	Hidden	Saint Petersburg, Russia
piratebay.sx	Sweden	Bern, Switzerland
kickass.to	Hidden	Quebec, Canada
torrentz.eu	Hidden	Quebec, Canada ⁷
extratorrent.cc	Seychelles	Mykolayiv, Ukraine
torrentz.cd (torrent.cd)	Hidden	Kharkiv, Ukraine
1337x.org	Hidden	Stockholm, Sweden
torrenthound.com (torrents.net)	Hidden	Stockholm, Sweden
uloz.to	Unknown	Prague, Czech Republic
torrentroom.com	New Zealand	Steinsel, Luxembourg
bittorrent.am	Czech Republic	San Francisco, U.S. ⁴
torrentbit.net	Belize	Kharkiv, Ukraine
sumotorrent	Hidden	Ukraine
eztv.it	U.K.	London, U.K.
t411.me	Belgium	Bucharest, Romania
bitsnoop	Sweden	Hidden
arenabg.com	Hidden	Canada, Bulgaria
rutracker	Hidden	Russia
bt.rutor.org	Sweden	Stockholm, Sweden
todotorrents.com	Hidden	Madrid, Spain
tracker.openbittorrent.com	Hidden	Quebec, Canada
tracker.publicbt.com	Hidden	Rouvais, France ⁸
qvod	China	Changsha, China
xunlei	China	Guangzhou, China

² IIPA draws its data on these sites from industry reporting, as well as Alexa, the web information company, www.alexa.com, Domain Tools LLC, whois.domaintools.com, and www.centralops.net.

³ Registrant (and registrar) data can be difficult to ascertain. In the best cases, publicly traded or legitimate for-profit companies provide transparent information. Many sites employ privacy services (which can be located anywhere in the world; Fundacion Private Whois, for example, located in Panama, serves rutracker, putlocker, 1337x.org, tracker.publicbt.com, and rapidgator.net, and other sites identified in this filing), masking all registrant data. It is not uncommon for others, including many highlighted in this filing, to provide false registrant (or registrar) information. Efforts are underway through ICANN to ensure the accuracy and availability of registrant (and registrar) data.

⁴ Where the city of the server host location is mentioned, this is based on “IP location” information from the sites listed previously, and is believed to be current as of the date of this filing. Hosting country and city data is fluid and may change over time. Also, in some instances, the indication of a city in domain records, e.g., notations for “San Francisco, U.S.,” “London, England,” or “New York, U.S.” does not necessarily reflect the server location information; many sites listed are serviced through CloudFlare, a content delivery network, which may mask the location of the origin server.

⁵ The registrant is believed located in New Zealand but is listed as “On behalf of tubeplus.me owner.”

⁶ The registrant is listed as “AnonyousSpeech” in Tokyo, Japan.

⁷ Based on publicly available information about individual associated with service, it is believed the registrant is from Finland. The registrar is located in Poland.

⁸ The “IP location” of this site is with a firm called Ovh Systems which has been notoriously non-compliance with takedown requests according to industry.



2013 Notorious Markets (Online) ²	Registrant Country ³	Server Host Location ⁴
4shared.com	British Virgin Islands	British Virgin Islands
putlocker.com	Hidden	Manchester, U.K.
zippyshare	Hidden	Rouvais, France ⁸
rapidgator.net	Hidden	Bryansk, Russia
turbobit	Hidden	Frankfurt, Germany
extabit	Hidden	Amsterdam, Netherlands
catshare	Hidden	Rouvais, France ⁸
share-online.biz	Belize	Amsterdam, Netherlands
netload.in	Denmark	Frankfurt, Germany
uploaded.net	Switzerland	U.S., U.K., Netherlands
youwatch.org	Hidden	Stockholm, Sweden
nowvideo.ch	Seychelles	Zurich, Switzerland
xiami.com	China	Hangzhou, China
sina.com.cn	China	San Jose, U.S.
wenku.baidu.com	China	China
docin.com	China	China
ex.ua	Ukraine	Kiev, Ukraine
mp3.zing.vn	Vietnam	Vietnam
primewire.ag	Latvia	Stockholm, Sweden
filmesonlinegratis.net	Hidden	London, England ⁴
free-tv-video-online.me	Belize	New York, U.S. ⁴
megafilmeshd.net	Hidden	San Francisco, U.S. ⁴
movie4k.to	Unknown	British Virgin Islands
seriesyonkis	Spain	Sevilla, Spain
solarmovie.so	Croatia	Quebec, Canada
telona.org	Hidden	Balotesti, Romania
yyests.com	China	Changsha, China
mp3skull.com	Hidden	Rochester, U.S.
watchfreemovies.ch	Ukraine	Bucharest, Romania
tubepius.me	Hidden ⁵	Valencia, Spain
darkwarez.pl	Poland	Zurich, Switzerland
boerse.bz	Hidden	Balotesti, Romania
freshwap.me	Hidden	San Francisco, U.S. ⁴
argentinawarez.com	Sweden	San Francisco, U.S. ⁴
filestube	Poland	Szczecin, Poland
dpstream.net	Hidden	Balotesti, Romania
cuevana.tv	Hidden	Singapore
warez-bb.org	Sweden	Hong Kong
heroturko.org	Hidden	San Francisco, U.S. ⁴
gfxtra.com	Turkey	San Francisco, U.S. ⁴
forum.cgpersia.com	Hidden	Dronten, Netherlands
avaxhome.ws	Belarus	Belgium
usenext.com	Germany	Frankfurt, Germany
discuss.com.hk	Hong Kong	Hong Kong
chipspain.com	Spain	Madrid, Spain
todoconsolas.com	Spain	A Coruna, Spain
gigabytesistemas.com	Spain	Madrid, Spain
moltenwow.com	Hidden	Portland (OR), U.S.



2013 Notorious Markets (Online) ²	Registrant Country ³	Server Host Location ⁴
dispersion-wow.com	Hidden	Bucharest, Romania
wowis.org	Hidden ⁶	Vilnius, Lithuania
alibaba	China	U.S.
paipai	China	Zhengzhou, China
eachnet.com	China	Beijing, China
taobao	China	China

2013 Notorious Markets (Physical)	Country
<ul style="list-style-type: none"> • La Salada and La Saladita (Buenos Aires, branches) • Tepito, Lomas Verdes, Salto del Agua, Bazar Pericoapa, Bazar del Entretenimiento y el Videojuego, Toreo Markets, and Plaza Maeve (Distrito Federal), Mercado San Juan de Dios (Guadalajara), La Fayuca (Guadalajara) • Galeria Pagé (São Paulo), Camelódromo Uruguaiana (Rio De Janeiro), Mercado Popular de Uruguaiana (Rio De Janeiro), Feira Dos Importados/Do Paraguay (Brasília) (Brazil) • Zona Franca de Iquique • San Andrecito • Unilago Zone (Bogotá, various locations) • Zona Libre de Colon • Tri-Border Region • Buynow PC Mall Chain • Hua Qiang Bei Market • Quiapo, Binondo, Baclaran, Makati Cinema Square, Metrowalk, 168 Mall, Divisoria, Juan Luna Plaza, New Divisoria Mall (Metro Manila) • Petaling Street, Chinatown; Holiday Plaza (Kuala Lumpur; Johor Bahru) • Harco Glodok, Mangga Dua Mall, Ambassador Mall/ITC, Ratu Plaza (Jakarta) • 7 Kilometer Open Market and Barabashovo Open Market (Odessa and Kharkov) • Caribbean Gardens & Markets (Victoria) • Greater Toronto Area • Hailong Electronics Shopping Mall (Zhongguancun - 中关村) (Beijing) • Jonesborough Market • Mayak Open Market and Petrovka Open Market • Panthip Plaza, Klong Thom, Saphan Lek, Baan Mor Shopping Area, Patpong and Silom Shopping Areas, Mah Boon Krong (MBK) Center, and Sukhumvit Road • Richie Street, Censor Plaza and Burma Bazaar (Chennai); Bara Bazaar (Kolkata); Chandini Chowk, Palika Bazaar and Sarojini Nagar Market (Delhi); Navyuk Market Ambedkar Road and Nehru Nagar Market (Ghaziabad); Kallapur Market and Laldarwajah (Ahmedabad); Jail Road and Rajwada (Indore); Manish Market, Lamington Road, Dadar Train Station, Andheri Station Market, Borivili Train Station and Thane Station Market (Mumbai) 	<ul style="list-style-type: none"> • Argentina • Mexico • Brazil • Chile • Colombia • Colombia • Panama • Paraguay, Argentina, and Brazil • China • China • The Philippines • Malaysia • Indonesia • Ukraine • Australia • Canada • China • Northern Ireland • Ukraine • Thailand • India



I. INTEREST OF THE IIPA IN THE NOTORIOUS MARKETS LIST

Since 1984, IIPA and its association members, representing industries reliant on copyright – producers and distributors of software, movies, music, videogames, and books and journals for the world – have worked in partnership with the U.S. government to improve the ability of the copyright industries to do business in foreign markets. These efforts have resulted in significant improvements in copyright laws and enforcement around the world and in the lowering of market access barriers and other policies that hinder these industries' ability to compete on a level playing field in global markets. Even with these improvements comes a need to remain focused on enforcing against notorious markets – specific bad actors – where intellectual property rights are not respected and which merit further investigation for intellectual property rights infringements. IIPA considers the notorious markets list as critical to successfully heightening awareness of the extreme harm being caused by those whose business models are built upon providing access to infringing materials, and reemphasizes the continued importance of addressing physical piracy markets where pirates continue to operate with relative impunity.⁹

While IIPA notorious markets recommendations do not single out specific countries, IIPA identifies the country locations known of either the physical business operations, or, in the case of online notorious markets listed, of the registrant or server location to the extent known or suspected. Governments must continue to play a critical role in addressing such notorious market activity, and indeed, have international obligations requiring them to take effective action, including increasing cross-border cooperation.¹⁰ In many instances, several countries may be involved in relation to a single notorious market. Thus, it is incumbent upon governments to consider ways to address such transnational activity. There is a growing list of examples of law enforcement authorities working together across national borders to address copyright piracy that involves cross-border activities, and the situation will be no different with respect to these notorious markets.

The IIPA notorious markets recommendations address many forms of online and physical piracy, but do not identify or capture all challenges the copyright industries face today. For example, the unauthorized use of software – organizational end-user piracy of software – is the principal and most damaging form of piracy to the software industry. In 2011, the software piracy rate worldwide stood at 42%, while the commercial value of unlicensed software stood at \$63.4 billion. Similarly, market access barriers and other discriminatory or preferential policies deny copyright owners fair and equitable opportunities to participate in commerce in copyright materials.¹¹ As another example, one of the greatest concerns to the motion picture industry

⁹ The IIPA notorious markets recommendations are mostly well known markets. In many cases, the notorious markets identified are the subject of ongoing investigations by law enforcement or court adjudications. We also note that in identifying “notorious markets,” IIPA and its members focus on the bad behavior of individuals and enterprises dedicated to promoting piracy, and do not intend to single out any specific technology or type of service used by the infringers (since these technologies can be used for both legitimate and illegitimate purposes).

¹⁰ The case against the notorious market MegaUpload and related websites is an example in which cross border cooperation among the U.S., New Zealand, and other authorities was critical in shutting down those sites which allegedly amassed huge profits from facilitating massive copyright infringement.

¹¹ We do not here recount the kinds of piracy or market access barriers IIPA members face across the globe, but refer the Subcommittee to our many public filings, including our 2013 Special 301 Submission. See International Intellectual Property Alliance, *IIPA Written Submission Regarding 2013 Special 301 Review: Identification of Countries Under Section 182 of the*



involves illegal recordings of movies from theaters, especially immediately after a title's theatrical exhibition window opens. An unauthorized recording may include a video capture, an audio capture, or both. Approximately 90% of newly released movies that are pirated can be traced to thieves who use a digital recording device in a movie theater to steal the audiovisual work (whether image or sound or both) from the theater screen. The increase in the severity of this problem in recent years tracks the development of camcorder technology that makes detection difficult and copies nearly perfect. All it takes is one camcorder copy to trigger the mass reproduction and distribution of millions of illegal Internet downloads and bootlegs in global street markets just hours after a film's theatrical release and well before it becomes available for legal home entertainment rental or purchase from legitimate suppliers.

Addressing IP theft successfully through processes such as USTR's "notorious markets" out-of-cycle review inures to the benefit of the U.S. copyright industries and the U.S. economy as a whole. The latest indicators show that the copyright industries make up a large percentage of value added to GDP; create more and better-paying jobs; and contribute substantially to U.S. foreign sales and exports, outpacing many industry sectors.¹² The degree to which this capability is sustained depends in large part upon the extent to which piracy and market access barriers can be reduced. Notorious markets – egregious examples of open and blatant piracy – play a disproportionate role in harming the copyright industries, and thus, have a disproportionately negative impact on the U.S. economy and on U.S. employment.

Finally, we refer the Subcommittee to the filings of members of the IIPA – the Association of American Publishers, BSA | The Software Alliance, the Entertainment Software Association, the Motion Picture Association of America, and the Recording Industry Association of America, which contain additional examples of notorious markets. The IIPA filing, together with those associations' filings, results in an even more complete list of notorious markets.

II. IIPA RECOMMENDATIONS FOR ONLINE AND PHYSICAL PIRACY “NOTORIOUS MARKETS”

Internet Piracy Notorious Markets

- **vk.com** (known as vKontakte) (Russia) is a Russian social networking site that features search functionality specifically designed and operated to enable members to upload music

Trade Act of 1974: Request for Public Comment and Announcement of Public Hearing Request to Testify at 2013 Special 301 Hearing (7 Fed. Reg. 77178, Dec. 31, 2012), available at <http://www.iipa.com/pdf/2013SPEC301COVERLETTER.pdf>.

¹² The *Copyright Industries in the U.S. Economy: The 2011 Report*, prepared by Stephen Siwek of Economists Incorporated, details the economic impact and contributions of U.S. copyright industries to U.S. Gross Domestic Product (GDP), employment, and trade. The “core” copyright-based industries in the U.S. – those industries whose primary purpose is to create, produce, distribute or exhibit copyright materials, and which include computer software, videogames, books, newspapers, periodicals and journals, motion pictures, recorded music, and radio and television broadcasting – continued to be major contributors to the U.S. economy, accounting for an estimated \$931.8 billion or 6.36% of the U.S. GDP in 2010. These industries provided nearly 5.1 million U.S. jobs, or 4.75% of the entire private sector labor force in 2010, and pay on average over \$78,000, 27% higher than the overall workforce average. Estimated 2010 foreign sales and exports of key sectors of the core copyright industries amounted to \$134 billion, a significant increase over previous years, and more than foreign sales of other major U.S. industry sectors such as aircraft, automobiles, agricultural products, food, and pharmaceuticals. See Steven E. Siwek, *Copyright Industries in the U.S. Economy: The 2011 Report*, November 2, 2011. The entire report as well as summaries can be accessed at http://www.iipa.com/copyright_us_economy.html. An updated copyright industries report is in progress.



and video files, hundreds of thousands of which contain unlicensed copyright works; users then search for and stream such files without permission or license on their computers and mobile devices.¹³

- **ThePirateBay.sx** (Sweden, Switzerland);¹⁴ **Kickass.to** (Canada);¹⁵ **Torrentz.eu** (Canada);¹⁶ **Extratorrent.cc** (Seychelles, Ukraine);¹⁷ **Torrentz.cd** (Ukraine);¹⁸ **1337x.org** (Sweden);¹⁹ **TorrentHound.com** (Sweden);²⁰ **Uloz.to** (Czech Republic); **TorrentRoom.com** (New Zealand, Luxembourg);²¹ **BitTorrent.am** (Czech Republic); **TorrentBit.net** (Belize, Ukraine); **SumoTorrent.com** (Ukraine); **Eztv.it** (United Kingdom);²² **T411.me** (Belgium, Romania);²³ **BitSnoop** (Sweden);²⁴ and **Arenabg.com** (Bulgaria);²⁵ are examples of sites that

¹³ vKontakte is the 20th most visited website in the world, according to Alexa. It is the 2nd most visited site in Russia and the 3rd most visited site in Ukraine. The site was found civilly liable for copyright infringement in early 2012, but this has had no impact on the way vk.com conducts business. No affirmative efforts are taken by the site operators to prevent copyright infringement. According to public filings, London-listed Russian internet company, Mail.ru, holds 39.99% ownership share in the company. In 2013, it was reported that United Capital Partners, US\$3.5 billion fund owned by Ilya Shcherbovich bought a 48 per cent stake. The remaining share is reported to be owned by Pavel Durov, a founder of the site.

¹⁴ ThePirateBay.sx remains ranked as one of the most accessed sites in the world. Alexa ranks the site 76th in the world and the 13th most accessed in Sweden. The site also ranks 33rd most accessed site in Canada and Australia, and the 37th most accessed site in Saudi Arabia. The site ranks extremely high in Spain (52), Brazil (52), Mexico (55), India (58), and the United States (75). ISPs have been cooperative in disabling access to the site upon request in certain countries. However, the operators of the site have practiced evasive tactics to ensure the site remains open for its illegitimate business. ThePirateBay.sx promoted its tenth year as an index website by releasing the PirateBrowser, a self-contained portable web browser with preset bookmarks to BitTorrent websites hosted on the TOR network.

¹⁵ The prior domain of this site, kat.ph, was seized by the IPO of the Philippines. Kickass.to has the meta-description “Search and download new TV shows & TV series, movies, mp3, music and PC/PS2/PSP/Wii/Xbox games absolutely for free.” The site is ranked by Alexa as the 117th most accessed site in the world, ranking 23rd in the Philippines, 26th in Pakistan, 33rd in South Africa, and 42nd in the Netherlands. The site also ranks high in India (51), Australia (53), and Canada (71). The site is notorious for low compliance with takedown notices; the entertainment software industry reports only 7% compliance in 2013.

¹⁶ Canada-based Torrentz.eu is ranked 158th most accessed site in the world according to Alexa. It is one of the most accessed sites in South Asia, including 41st in India and 45th in Pakistan, but also has broad geographic reach, ranking 59th in the Netherlands and 99th in Australia. The site is also highly ranked in Canada (122), Italy (123), and the U.K. (165).

¹⁷ ExtraTorrent.cc claims it is “The World’s Largest BitTorrent System,” and clams on its Facebook page, “The Largest Collections of Movies, Music and Software and Other Torrents Online.” The predecessor site, ExtraTorrent.com, has been the subject of enforcement actions in some jurisdictions, so the site operators changed domains just recently. The site’s users have apparently easily re-routed themselves to the new site since ExtraTorrent.cc remains ranked very high in India, Pakistan, Malaysia, Australia, and the U.K. The predecessor site claimed to offer more than 13 million files with sharing optimized through over 43 million seeder and more than 60 million leechers. Website features included sections highlighting “the most pirated movies,” and “first cams,” which are camcordings of motion pictures currently available only through theatrical distribution.

¹⁸ Torrentz.cd is highly ranked in South Asia, and is another example of a torrent indexing site targeting pirate software and with servers apparently located in Ukraine. Torrent.cd appears to be affiliated and is also ranked relatively high.

¹⁹ 1337x.org remains a very popular site. The site is noted in this filing for a significant drop in compliance with takedown notices in 2012 and 2013. The entertainment software industry reports compliance at less than 10%.

²⁰ TorrentHound.com and apparently affiliated Torrents.net rank relatively high in South Asia, the U.K., and Italy. TorrentHound boasts “4,000 new torrents” each day, while Torrents.net implores users to “Download verified free public torrents, Download movies, games, tv-shows, music, software, anime other torrents.” A third site, Torrentfunk, appears affiliated (with servers in California), and advertises itself as a “fast download search engine,” promising users: “You can find the latest TV shows, Movies, Games, Software and Anime with the most verified torrents right here. Come download them for free now.” The entertainment software industry reports only 2% of all files identified in notices to the site were taken down in 2013.

²¹ TorrentRoom.com is particularly popular in South Africa and parts of Europe.

²² Eztv.it ranks extremely high in Australia (165), Sweden (194), South Africa (198), and the Philippines (229), and also ranks very high in Canada.

²³ T411.me ranks extraordinarily high in France (67th most accessed site), and ranks high in countries in North and West Africa, as well as Switzerland and Canada.

²⁴ While access to BitSnoop has been limited in some jurisdictions, BitSnoop remains ranked extremely high in South Korea (199).



employ or facilitate the use of the BitTorrent file sharing protocol to enable pirated content – including very large files – to be quickly located and downloaded.²⁶

- **Rutracker.org** (Russia);²⁷ **Bt.rutor.org** (Sweden); **Todotorrents.com** (Spain); **Tracker.openbittorrent.com** (Canada); and **Tracker.publicbt.com** (France); are examples of BitTorrent trackers, which are servers that facilitate transfers between peers using the BitTorrent protocol. BitTorrent trackers direct traffic among BitTorrent users, each simultaneously tracking millions of torrents and connecting tens of millions of BitTorrent users with one another. They are used to facilitate the illegal uploading and downloading of millions of unauthorized copies of files.
- **Qvod** (China)²⁸ is a P2P protocol software used by Chinese rogue linking sites to distribute infringing copies of copyright materials. **Xunlei.com** (China),²⁹ while noted above for the closure of the GouGou search engine, unfortunately reemerges as a notorious market candidate due to its proprietary, high speed P2P file sharing system that distributes unauthorized copies of motion picture and television content.
- **4Shared.com** (British Virgin Islands);³⁰ **Putlocker.com** (United Kingdom);³¹ **ZippyShare.com** (France);³² **Rapidgator.net** (Russia);³³ **TurboBit.net** (Germany);³⁴

²⁵ Arenabg.com remains very popular in Bulgaria as the 29th most accessed site in that country despite previous enforcement efforts.

²⁶ It should be noted here that piracy websites have been in the process of migrating to so-called “magnet linking” which has been adopted for the stated purpose of reducing bandwidth and making them even less vulnerable to enforcement. Notwithstanding this change in their infrastructure, the nature and purpose of their operations remains largely the same.

²⁷ Rutracker is one of the most accessed sites in the world, ranking 243rd. It is one of the top 25 sites accessed in Russia, Ukraine, Belarus, Kazakhstan, and Uzbekistan, and ranks high in Lithuania (66), Azerbaijan (174), and even Thailand. The site’s meta-description is in Russian (Крупнейший русскоязычный битторрент трекер. Скачать бесплатно фильмы, музыку, книги, программы) meaning “The largest Russian-language BitTorrent tracker. Download free movies, music, books, software.”

²⁸ QVOD, or “Kuaibo.com,” is actually a P2P protocol and application widely used by Chinese rogue linking sites to distribute infringing copies of copyright materials including movies and television shows. The site thus serves a similar function to cyberlockers. QVOD is a downloadable application and there is no need to return to the site, so Alexa rankings do not reflect the popularity of this rogue market’s services. Many rights holders and licensees in China have identified QVOD and the websites utilizing its network as a primary threat to the stability of legitimate digital distribution in China.

²⁹ Xunlei’s system incorporates the website’s own desktop download manager with file formats unique to the system. Recently, Xunlei’s public service, Kankan, transitioned in format and now streams some authorized motion picture content. However, it also offers a “VIP Offline” service which distributes infringing content for a monthly fee. With this service, infringing content is downloaded by Xunlei from the external source and is stored to its servers for unauthorized on demand viewing.

³⁰ 4shared is ranked as the 150th most visited site in the world according to Alexa. The site ranks 23rd in Indonesia, 26th in Saudi Arabia, and 33rd in Brazil, to give an indication of its geographic scope, but also ranks high in Egypt (51), Thailand (57), Pakistan (88), Iran (95), and India (123). The meta-description for the site is “Online file sharing and storage - 15 GB free web space. Easy registration. File upload progressor. Multiple file transfer. Fast download.” The meta-tags include “photo image music mp3 video sharing.”

³¹ Putlocker.com is now the 314th most visited site in the world according to Alexa. High rankings include Egypt (116), Pakistan (138), Indonesia (168), Mexico (200), Italy (235), Canada (239), Germany (250), and the U.K. (252), showing the site’s extensive geographic reach. Following the takedown of MegaUpload, Putlocker ceased paying uploaders for each viewing of uploads, but users continued to be required to pay \$44.99 a year for premium accounts that enable them to download copies of content or stream it ad-free. Alexa.com has identified about 17,000 websites linking to Putlocker, suggesting that Putlocker is one of the most popular sources of content for linking sites.

³² ZippyShare.com has risen quickly to become the 366th most accessed site in the world. The site boasts extremely high access rates in Indonesia (133), Pakistan (168), Mexico (209), India (266), Brazil (312), as well as Spain, Germany, and the U.K.

³³ Rapidgator.net retains a global Alexa ranking of 450. In August 2013, the site was responsible for hosting more than 542,000 infringing game-related files available for download. The site continues to offer monetary rewards for uploaders, encouraging uploaders to distribute popular content such as unauthorized copies of movies and television programs as widely as possible. Premium subscription plans are available, allowing users to avoid throttled download speeds and data-download limits.



Extabit.com (Netherlands),³⁵ **Catshare.net** (France);³⁶ **Share-online.biz** (Belize, Netherlands);³⁷ **Netload.in** (Denmark, Germany);³⁸ **Uploaded.net** (Switzerland, U.S., United Kingdom, Netherlands);³⁹ **YouWatch.org** (Sweden); **NowVideo.ch** (Seychelles, Switzerland);⁴⁰ and **Xiami** (China),⁴¹ are examples of “one-click hosting sites,” sometimes referred to as cyberlockers, which provide access to large libraries of infringing files for download (hence they are also considered download hubs).

- **Sina.com.cn** (China);⁴² **Wenku.baidu.com** (China);⁴³ and **Docin** (China);⁴⁴ are open online platforms where users can upload and share documents. These services employ “digital coin” systems, whereby coins earned through uploading documents may be used to “purchase” documents for download. All services have ineffective notice and takedown processes for reporting infringements.
- **Ex.ua** (Ukraine);⁴⁵ **Mp3.zing.vn** (Vietnam);⁴⁶ **Primewire.ag** (formerly 1channel.ch) (Latvia, Sweden);⁴⁷ **Filmesonlinegratis.net** (Hidden);⁴⁸ **Free-tv-video-online.me** (Hidden);⁴⁹

³⁴ TurboBit.net is among the most accessed sites in Turkey, Ukraine, Egypt, Mexico, France, and Spain.

³⁵ Extabit, which advertises itself as a “file hosting - exchange service” but provides premium accounts for faster downloading, remains popular in Pakistan, Indonesia, Mexico, India, and Spain. In the summer of 2013, payment provider PayPal stopped handling payments for the company.

³⁶ Catshare.net hosted more than 42,000 links to infringing game content in August 2013. The site operator has refused to act against almost 90% of the links identified in takedown notices by the game industry.

³⁷ Share-online.biz was responsible in August 2013 for hosting over 15,000 infringing game-related files available for download by third parties. Attempts to contact the site operators have reportedly gone unanswered.

³⁸ Netload.in operates in 10 different languages. The site earns revenues by threatening to throttle download speeds and purge files every 30 days for users who do not purchase the \$64.99 annual premium membership.

³⁹ Uploaded.net has a current global Alexa ranking of 223 and is ranked high in Germany (102), Spain (112), Brazil (125), Mexico (132), and France (141). The site is a download hub that incentivizes users to upload large files, such as those associated with television episodes and motion pictures, by paying rewards based on the file size, as well as a percentage of premium account sales referred by the user. Download speeds are throttled for users who do not purchase the \$95.99 annual premium membership. The site continues to offer infringing content with file names clearly associated with illicit filesharing and illicit release groups. The website operates through multiple redundant domains that include Uploaded.to and Ul.to, and appears to have a multinational presence.

⁴⁰ NowVideo.ch is the 89th most accessed site in Italy.

⁴¹ Xiami remains very popular in China, Taiwan, and Hong Kong.

⁴² Sina.com.cn is one of the most accessed sites in the world, being the 4th most visited site in China, and ranking extremely high in Korea (10), Hong Kong (13), Japan (33), Taiwan (44), and the U.S. (360). Sina.com.cn categorizes hosted documents, mostly infringing, according to content (e.g., “educational materials,” “computer science,” “law,” etc.). The process for receiving infringement notices is complicated and Sina.com.cn has been entirely non-responsive to notices sent.

⁴³ Wenku.baidu.com is an affiliate of Baidu.com, which is the most accessed website in China and Korea, and the 5th most accessed site in the world, ranking extremely high in Hong Kong (6), Venezuela (10), Japan (12), Taiwan (18), and the U.S. (139). Wenku.baidu.com is host to many unauthorized publications, including consumer books, textbooks and journal articles, all available for download. While the site appears to operate an online complaint center, the system is complicated as right holders are required to send hard copies of notices. Though publishers have attempted to work within the online reporting system, the infringing links notified are not taken down. Wenku.baidu.com typically takes 7 to 19 days to respond to a takedown notice.

⁴⁴ Docin hosts hundreds of infringing publications, allowing users, after signing in, to review or read online or download documents in a variety of formats. Docin’s online reporting system is largely ineffective, although it does allow for email notifications of infringement. Responses to rights holder notices have been inconsistent. It typically takes Docin 6 days to respond to a notice, which given the volume of infringing material available on the site renders the process largely ineffective.

⁴⁵ Ex.ua remains the 16th most accessed site in Ukraine.

⁴⁶ Mp3.zing.vn, an affiliate site of zing.vn, remains an extremely damaging site in Vietnam for infringing music. Zing.vn ranks as the 5th most visited site in Vietnam, but is also popular in South Korea (635) and Singapore (525), giving it a strong global ranking according to Alexa.

⁴⁷ Primewire.ag is one of the most visited websites in the world to locate links to illicit copies of first run motion picture and television content.



Megafilmeshd.net (Hidden);⁵⁰ **Movie4k.to** (British Virgin Islands, Romania);⁵¹
Seriesyonkis.com (Spain);⁵² **Solarmovie.so** (Croatia, Canada, Latvia);⁵³ **Telona.org**
(Romania);⁵⁴ **Yyets.com** (China);⁵⁵ and **Mp3skull.com** (Russia, U.S.);⁵⁶
Watchfreemovies.ch (Ukraine, Romania);⁵⁷ **Tubeplus.me** (Spain);⁵⁸ **Darkwarez.pl** (Poland,
Switzerland);⁵⁹ **Boerse.bz** (Romania);⁶⁰ **Freshwap.me** (Hidden);⁶¹ **Argentinawarez.com**
(Sweden);⁶² **Filestube** (Poland);⁶³ **DpStream.net** (Romania);⁶⁴ and **Cuevana.tv**
(Singapore);⁶⁵ are linking sites that aggregate, organize and index links to infringing files,
mostly stored on other sites (so-called deep-linking). Linking sites typically organize illegal

⁴⁸ Filmesonlinegratis.net has an Alexa ranking of 94 in Brazil. This popular streaming and linking site has been active since May 2009 and is dedicated to the distribution of national and international television series' and films. Industry reports indicate the server is currently hosted in Romania.

⁴⁹ Free-tv-video-online.me is one of the most visited websites in the world to locate links to illicit copies of first run motion picture and television content. The website's current Alexa ranking is 612. The site is evading domain seizure by registering with a .me domain, and is moving to different hosting providers continuously. Industry reports the site's server host is currently Canada.

⁵⁰ Megafilmeshd.net is a popular streaming linking site that currently offers about 5,000 links to both national and international content including films, television series', and concerts. The site offers updated illegal content in Portuguese, driving its Alexa ranking of 107 in Brazil. Industry reports the site is currently hosted in the Netherlands.

⁵¹ Movie4k.to, formerly Movie2k.to, is a popular streaming and linking site. Users submit links of first run motion picture and television content through this website with tags designating the picture and sound quality. Last year, the operator posted a lengthy statement on the website in response to the shutdown of several infringing websites associated with Kino.to in Germany, claiming copyright laws are outdated. Industry indicates the server has been hosted in Romania with a proxy server out of Europe; other research indicates a link to servers in the British Virgin Islands.

⁵² SeriesYonkis now stands as the 58th most visited site in Spain (up from 93rd in 2012) and remains strong generally in Spanish-speaking countries, including the Dominican Republic (122), Argentina (155), Venezuela (173), Peru (180), as well as Chile, Mexico, and Colombia. It is a dedicated linking/streaming site for infringing first-run movies and television content and advertises itself as such.

⁵³ Solarmovie.so continues to rise in popularity as a source for links to first run motion picture and television streaming content. The website has been reported as hosted in multiple countries including Canada and Latvia.

⁵⁴ Telona.org caters its content to Portuguese speakers in Brazil and Portugal. The site is ranked 683rd in Brazil and high in Portugal for access to illegal (often camcorded) first run motion pictures. The content may be video cammed in one country, and then will have the Portuguese audio captured from a local theatre or will add subtitles.

⁵⁵ Yyets.com is a download and streaming portal popular in China, boasting an Alexa ranking in China of 421. Although many types of content are available, Yyets specializes in providing unauthorized Chinese subtitles for foreign movies and TV shows, many of which are created by volunteers in the Yyets community.

⁵⁶ Mp3skull has shot up in popularity in 2012-2013, now ranking in the top 100 most accessed sites in Pakistan (83) and Indonesia (97), while maintaining high rankings in Nigeria (127), South Africa (214), India (254), and Malaysia (304). The website subtitle "mp3skull.com - free Mp3 Download," reveals the purpose of the site to infringe music copyrights.

⁵⁷ Formerly Ichannel.com and before that, Letmewatchthis.com, this site, which boasts in its meta description "LetMeWatchThis Movies. Watch movies online on LetMeWatchThis - the biggest library of free full movies. Stream content fast and easy. Free Movies Online on LetMeWatchThis," remains popular in regionally diverse countries such as the U.K., Pakistan, Canada, and Malaysia.

⁵⁸ Tubeplus.me advertises itself by enticing users to "Watch all the latest tv shows and blockbuster movies for free as well as a huge archive of past cinema and your favorite series only on tubeplus the world's biggest video streaming website." The site is popular in the U.K., the Netherlands, and Australia, but also ranks highly in Pakistan, Canada, the U.S., and Mexico.

⁵⁹ Darkwarez.pl generates a tremendous amount of traffic by featuring a high volume of links to a wide variety of infringing content. In August 2013, over 143,000 new links to infringing videogames were detected. The harm being caused by the site to game right holders has increased substantially since 2012.

⁶⁰ Despite its server location in Romania, Boerse.bz is in German, and provides tens of thousands of links to infringing games.

⁶¹ The operators of Freshwap.me are believed to participate in uploading of infringing content and posting links to it. Along with affiliated sites Heroturko.me, Downtr.co, Downloading.ws and Allulook4.com, tens of thousands of links to pirated games have been posted.

⁶² Argentinawarez.com is a Spanish language site boasting over eight million users and reportedly providing access to a large variety of infringing files.

⁶³ Filestube is ranked 631st most accessed site in the world, and ranks even higher in Italy, the U.K., India, Mexico, and Germany.

⁶⁴ DpStream.net is very popular in France (89th most accessed site), Belgium (273), Switzerland, and North Africa.

⁶⁵ Cuevana.tv is particularly popular in Spanish-speaking countries including Mexico (175), Argentina (139), and Central and South America, and maintains relative popularity in Spain.



copies by title or genre. Depending on the website, users are commonly presented with the option to either stream the content in a video-on-demand format or download a permanent copy to their computer.

- **Warez-bb.org** (Sweden, Hong Kong);⁶⁶ **Heroturko.org** (Hidden); **Gfxtra.com** (Turkey); **Forum.cgpersia.com** (Netherlands); **Avaxhome.ws** (Belarus, Belgium); **Usenext.com** (Germany);⁶⁷ and **Discuss.com.hk** (Hong Kong);⁶⁸ are examples of “bulletin boards,” blogs, forums, or newsgroups used for posting links to pirate copyright materials available through BitTorrent protocols or via direct download. Software is particularly hard hit by these sites, although in the case of Usenext.com, the pirate content of choice is high-quality Blu-ray rips of major motion pictures.
- **Chipspain.com** (Spain);⁶⁹ **Todoconsolas.com** (Spain);⁷⁰ and **Gigabytesistemas.com** (Spain);⁷¹ are examples of notorious markets that continue to sell hardware devices, such as “mod chips” or “game copiers,” that bypass technological protection measures (TPMs) in game consoles or handheld devices. Such devices and technologies enable the use or copying of unauthorized game software. Sites that sell software used to defeat TPMs (“soft mods”) are also a growing concern. Device or soft mod sites may distribute directly to end users or may furnish raw materials to circumvention services, i.e., online sites or store fronts that install such devices for end users.
- **Molten-wow.com** (registrant hidden, U.S. server);⁷² **Dispersion-wow.com** (Romania);⁷³ and **Wowis.org** (Lithuania);⁷⁴ are examples of unauthorized, third-party, “private” game servers in which users are diverted to play free multi-player games, robbing the legitimate game publishers of revenues from their online games. Establishing and maintaining these unauthorized game servers often involves multiple acts of copyright infringement (copying the game server software and copyrighted materials) as well as the circumvention of TPMs (since the legitimate game architecture contains TPMs to prevent people from using unauthorized servers or to prevent diversion of users to such unauthorized servers).

⁶⁶ Warez-bb.org maintains popularity as self-proclaimed “World’s Best Bulletin Board” and maintains high rankings in regionally diverse countries as Malaysia, Pakistan, Belgium, the U.K., and Australia, among others. The site provides links to significant amounts of infringing content, including 700 new links to infringing videogame files daily. The site also allows for the distribution of hacked or cracked software codes and programs.

⁶⁷ Usenext.com provides a free trial period to users and then subscription plans start as low as US\$11 per month for a 12 month subscription and go up based on the quantity of content downloaded.

⁶⁸ Discuss.com.hk and its sister site Uwants.com are two of Hong Kong’s most popular sites, coming in at 15th and 25th, respectively. Massive numbers of infringing music file links have been detected on these sites.

⁶⁹ Chipspain.com contains a multilingual platform (including global shipping) to sell a variety of circumvention devices for all major game consoles.

⁷⁰ Todoconsolas.com makes available circumvention devices and game copiers to consumers around the world.

⁷¹ Gigabytesistemas.com sells game copiers and mod chips which it also ships globally. The site also offers modification services for consoles.

⁷² Molten-wow.com receives its financing from donations from its over 20,000 users and provides free access to play World of Warcraft without having to pay for the monthly subscription fee established by Blizzard Entertainment.

⁷³ Dispersion-wow.com provides access to more than 65,000 “members” to play Blizzard’s World of Warcraft without paying. The site also offers an unauthorized shop where users can purchase in-game items.

⁷⁴ Wowis.org, while having its servers located in Lithuania, is an Italian-language pirate server offering 28,000 users unauthorized access to play World of Warcraft.



- **Alibaba.com** (China, U.S.); **Paipai.com** (China); **Eachnet.com** (China); and **Taobao** (China);⁷⁵ are examples of B2B or B2C websites. While much of the activity on the B2B sites is legitimate, there are also cases in which sellers and distributors offer counterfeit software products in bulk and high volume. For-profit buyers purchase the counterfeit products and redistribute them through online marketplaces and other websites. Taobao is an example of an extremely popular B2C/auction site. While Taobao had previously been a notorious market, it was removed from that list last year. IIPA appreciates the site owners' proactive approach to working with some right holders to address piracy (and counterfeiting) activities undertaken by third parties on the site. Taobao has entered into several MOUs with right holders. The Motion Picture Association of America reports exemplary cooperation from Taobao. IIPA also appreciates that Taobao has sought to implement an English-language version of its online reporting portal that would be open to all right holders. However, for example, BSA | The Software Alliance continues to express some concerns over listings for pirated software appearing on the site.⁷⁶

Physical Piracy Notorious Markets

- **La Salada** and **La Saladita** (Buenos Aires, Argentina; branches in other cities) are well known as networks of fairs, comprising approximately 20,000 stores hosted just outside of Buenos Aires. They are referred to as South America's biggest mall and biggest black markets, providing access to infringing software, CDs, and DVDs.⁷⁷ The market also has a website for e-commerce sales. The success of La Salada prompted the rise of new markets using the same model, known as La Saladita, and located in several neighborhoods of Buenos Aires. Raids occur periodically but apparently have little effect on the availability of pirate merchandise.
- **Tepito**, **Lomas Verdes**, **Salto del Agua**, **Bazar Pericoapa**, **Bazar del Entretenimiento y el Videojuego**, **Toreo Markets**, and **Plaza Maeve** (Distrito Federal), **Mercado San Juan de Dios** (Guadalajara), **La Fayuca** (Guadalajara) (Mexico) are examples of the widespread and well-entrenched street piracy in Mexico. These informal markets sell pirated and counterfeit goods connected to or purchased from organized crime syndicates.
 - **Tepito** continues to be the center of distribution for pirate copyright materials. It is the site of active trafficking of all kinds of copyright content. The market is known for pirated games, modified consoles and game circumvention devices, such as game copiers. Tepito is an especially harmful market as it is also the location of several burn labs which manufacture counterfeit video games and serve as a distribution center for other markets in the area.

⁷⁵ Taobao is an extremely popular auction site originating out of China, ranking as the 13th most accessed website in the world. It is the 3rd most visited website in China, and ranks extraordinarily high in Korea (7), Hong Kong (7), Venezuela (22), Japan (24), Taiwan (32), and Russia (134).

⁷⁶ BSA reports that the sale of unauthorized software and keys remain extremely popular and ubiquitous on the website. BSA further notes that in 2013 alone BSA has identified nearly 28,000 infringing and unauthorized sales of its members' products on the Taobao platform for which BSA has been unable to submit takedown requests due in part to procedural hurdles. BSA remains in discussions with Taobao with the aim to achieve more effective notice and takedown procedures and other practices for its members.

⁷⁷ La Salada revenues equaled US\$15 billion in 2009, more than the US\$8.5 billion earned by the country's regular shopping centers combined, according to the government statistic agency INDEC.



- **Bazar Pericoapa** is a middle class flea market selling both genuine and pirate/counterfeit goods. Since raiding occurs mainly at night, vendors have learned to move their illegal products out of the market by the end of the day. More recently, the market has become a popular source of downloaded games, modified consoles, and game circumvention devices, such as game copiers.
- **Bazar del Entretenimiento y el Videojuego** is located in a popular shopping area in downtown Mexico City. The sale of pirate and counterfeit goods is still pervasive, and it is suspected, due to the market's proximity to Tepito, that store owners from Tepito own some booths in this market or are responsible for the distribution of items sold. CD/DVD burning towers have been seized in prior raids indicating it is a source of production.
- **Plaza Meave** is a multi-story building in downtown Mexico City which contains numerous shops and outlets that offer for sale pirate and counterfeit goods, including pirate games. Booth owners no longer store their products onsite to avoid seizure during night raids.
- More than one third of **Mercado San Juan de Dios'** approximately 3,000 vendors offer pirate products, including pirate game software in their electronics sections. Despite some pressure from past enforcement actions, piracy has not decreased, in part due to failure to follow through with criminal prosecutions.
- **La Fayuca** is an alternative to Mercado San Juan de Dios for obtaining pirate and counterfeit products (a July 2012 raid resulted in seizures of over 128,000 pirate copies of videogames).

- **Galeria Pagé** (São Paulo), **Camelódromo Uruguaiana** (Rio De Janeiro), **Mercado Popular de Uruguaiana** (Rio De Janeiro), **Feira Dos Importados/Do Paraguay** (Brasília) (Brazil): These markets in some of Brazil's largest cities remain particularly notorious for piracy, including game piracy and console modifications.
 - **Galeria Pagé** is a multi-story shopping complex located in the center of São Paulo, housing over 170 vendors that sell a variety of products. Many shops specialize in electronic products and counterfeit merchandise including pirate videogames, game circumvention devices, and modified consoles.
 - **Camelódromo Uruguaiana** is a large flea market complex stretching out over several blocks in the middle of downtown Rio de Janeiro, with both open and covered sections, featuring over 2,000 stores offering all kinds of goods and merchandise, including clothes, food, and electronics. On any given day, but particularly on weekends, there are dozens of vendors of pirated games, modified consoles, and game copiers. Recent efforts to bring the "Piracy Free City" campaign in Rio de Janeiro have resulted in many raids but no lasting impact on the availability of pirate goods.
 - **Mercado Popular de Uruguaiana** is the largest and most famous shopping market in Rio, set on four street blocks and containing more than 1,500 kiosks, many of which sell counterfeit optical discs.
 - **Feira Dos Importados/Do Paraguay** is a large open flea market covering four main city blocks in the middle of the capital city of Brasilia, featuring more than 2,000 booths and kiosks offering a variety of products but with a heavy concentration on electronics. Pirate games have been sold there for many years. The recent creation of a very active Task Force in Brasilia, combining forces of the Special IP Unit, SEOPS (Secretary of



Public Order), Customs, and the Federal Highway Patrol, is showing promising results, but more needs to be done to clean up this market.

- **Zona Franca de Iquique** (Iquique, Chile) is a center of border trade in Chile, including imports from Asia (China, Hong Kong, and Taiwan reportedly make up 60% of imports into the market), and has become a transshipment point to Argentina, Brazil, Paraguay, Peru, and Bolivia. Its strategic location allows it to be the entrance and exit to products that make trade between the Mercosur, Asia, and Latin America. Trade unfortunately includes illegal importation and smuggling of pirate goods. Blank optical discs are also shipped and transshipped through this point to be burned with pirate content and service South America.
- **San Andrecito** (Colombia, various locations) are shopping centers/markets in various locations in Colombia where contraband is known to be sold. Pirated and counterfeit software has been detected in these markets. Pirate intellectual property, including software, music, and motion pictures are all readily available in these markets and Colombians treat them like mainstream shopping centers despite the fact that vendors are offering illegal products.
- **Unilago Zone** (Bogotá, Colombia). Numerous shops located near the Unilago Technology Center offer pirate and counterfeit computer hardware and software. The illegal shops are interspersed among legitimate resellers, creating an atmosphere that undoubtedly confuses consumers.
- **Zona Libre de Colon** (Panama), located on the Caribbean coast of Panama in the province of Colon, is the continent's largest and world's second largest trade zone, including sales and transshipments of all kinds. The main imports are from Hong Kong, Japan and the United States to countries in South America, Central America, and the Caribbean. Unfortunately, counterfeit and pirate goods as well as pirate optical discs make their way from Asia into the Americas through this trade zone.
- **Tri-Border Region including Ciudad del Este** (Paraguay, Argentina, Brazil) remains a focus of street piracy of copyright content. Most of the product found in this area is manufactured in Asia, notably China. Street vendors are found storing the majority of material in warehouses but only displaying small amounts.
- **Buynow (百脑汇) PC Mall** (China, various locations) is a very large personal computer mall chain in China, operating 22 stores across the country. Buynow PC Malls lease space to sellers of electronics equipment, software, games and accessories and many vendors offer pirated operating systems and other software. Vendors will install the pirate software directly onto their customers' hard disks. Buynow PC Mall also exists as an e-commerce site but it is unclear the extent to which the vendors leasing physical space also make use of this e-commerce platform.
- **HuaQiangBei (华强北) Market** (Shenzhen, China) is a concentrated shopping area in Shenzhen, which contains streets lined by large markets (buildings) each specializing in



commercial electronics, consumer electronics, or fashion. The markets remain the central point from which counterfeit software is distributed to other regions in China and elsewhere. Several criminal counterfeit software cases in China have involved counterfeit distributors operating out of these markets. The Chinese government has performed several sweeps in this market during periodic ‘special enforcement campaigns’, but the situation has not improved in any meaningful way.

- **Quiapo, Binondo, Baclaran, Makati Cinema Square, Metrowalk, 168 Mall, Divisoria, Juan Luna Plaza, and New Divisoria Mall** (Metro Manila, the Philippines) continue to contain retail pirate trade. While Manila’s Quiapo district was removed from USTR’s notorious markets list in 2012, unfortunately, recent raids (including a major raid in August 2013) revealed hundreds of thousands of pirate discs, including pirate and counterfeit software.
- **Petaling Street, Chinatown** (Kuala Lumpur, Malaysia) and **Holiday Plaza** (Johor Bahru, Malaysia)⁷⁸ are examples of numerous Malaysian markets (including night markets) reportedly offering for sale a substantial number of pirate copyright products.
- **Harco Glodok, Mangga Dua Mall, Ambassador Mall/ITC, and Ratu Plaza** (Jakarta, Indonesia) remain active markets in Indonesia for counterfeit copyright goods of all types, including pirate software, games, music, and movies. Many outlets also offer the service of installing pirated material onto computers provided by customers. Enforcement officials remain reluctant to conduct enforcement actions.
- **7 Kilometer Open Market** (Odessa) and **Barabashovo Open Market** (Kharkov) (Ukraine). These Ukrainian markets contain an array of counterfeit products in their more than 40,000 kiosks. Russian-replicated counterfeit movies continue to be sold.
- **Caribbean Gardens & Markets** (Victoria, Australia). Caribbean Gardens and Markets is Australia’s largest underground market operating every Wednesday and Sunday. There are between ten and twenty individual market sellers offering pirate DVDs, together with other sellers offering burned DVDs of recently released titles. The total number of sellers has increased recently due to a lack of enforcement, and police have shown no interest in enforcing the issue despite right holder requests.
- **Greater Toronto Area** (Canada). Despite enforcement including seizures of over one million pirated DVDs from flea markets since 2012, the markets remain a problematic area in 2013. Peel Region flea markets, which are marred by the presence of organized crime, remain the most active.
- **Hailong Electronics Shopping Mall (Zhongguancun - 中关村)** (Beijing, China). Hailong is one of the largest markets in Beijing hosting shops with bundled sales of hard drives loaded with counterfeit movies. Hard drives can be wiped and reloaded with new movies at a very low cost.

⁷⁸ Holiday Plaza in Johor Bahru is a three-story shopping mall located directly across the strait from Singapore.



- **Jonesborough Market** (Northern Ireland). Infamous within the UK and Ireland, this market sits in an isolated area on the border of Northern Ireland and Ireland and is monitored by illegal traders who deploy counter-surveillance measures. Despite enforcement activity in 2012 and 2013, it remains a problematic market and illegal traders often escape across the porous border during raids. Operators of this market have historically strong ties to paramilitary groups and sell an array of counterfeit products, including pirated optical discs.
- **Mayak Open Market** (Donetsk) and **Petrovka Open Market** (Kiev) (Ukraine). While counterfeit products appear to be diminishing following police raids, counterfeit movies are still burned on demand at Mayak's 40 kiosks and Petrovka's 20 kiosks.
- **"Red Zones,"** including **Panthip Plaza, Klong Thom, Saphan Lek, Baan Mor Shopping Area, Patpong and Silom Shopping Areas, Mah Boon Krong (MBK) Center, Sukhumvit Road** (Thailand). These locations in Thailand are notorious for openly selling pirated and counterfeit goods, with the government even designating the areas as "red zones," which are markets targeted for increased raids due to their high piracy and counterfeiting rates, and "yellow zones," which are targets to be aware of for possible piracy activities. Many vendors openly sell pirate and counterfeit goods (as well as engage in other crimes such as the sale of child pornography). The Royal Thai Government has promised on repeated occasions that the Red Zones would be shuttered, and despite some activity by landlords to address their tenants' illegal activities, the markets remain open for business.
- **Richie Street, Censor Plaza and Burma Bazaar** (Chennai); **Bara Bazaar** (Kolkata); **Chandini Chowk, Palika Bazaar and Sarojini Nagar Market** (Delhi); **Navyuk Market Ambedkar Road and Nehru Nagar Market** (Ghaziabad); **Kallapur Market and Laldarwajah** (Ahmedabad); **Jail Road and Rajwada** (Indore); **Manish Market, Lamington Road, Dadar Train Station, Andheri Station Market, Borivili Train Station and Thane Station Market** (Mumbai) (India). These Indian markets with clusters of street vendors attract significant pedestrian traffic and are known for their high volume of pirated DVDs and other counterfeit products.

IIPA appreciates this opportunity to provide input to the Special 301 Subcommittee in this Out-of-Cycle Review regarding notorious markets for copyright piracy.

Respectfully submitted,

Michael Schlesinger
International Intellectual Property Alliance



APPENDIX F

Frontier Economics, *Estimating the Global Economic and Social Impacts of Counterfeiting and Piracy: A Report Commissioned by Business Action to Stop Counterfeiting and Piracy (BASCAP)*, February 2011, at <http://www.iccwbo.org/Advocacy-Codes-and-Rules/BASCAP/BASCAP-Research/Economic-impact/Global-Impacts-Study/>.



An ICC initiative
BASCAP
Business Action to Stop
Counterfeiting and Piracy

Estimating the global economic and social impacts of counterfeiting and piracy

A REPORT COMMISSIONED BY BUSINESS ACTION TO STOP COUNTERFEITING AND PIRACY (BASCAP)

February 2011

Estimating the global economic and social impacts of counterfeiting and piracy

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Foreword

Government efforts to stabilize the economy and stimulate economic growth, trade and employment must include the critical and pervasive role that intellectual property (IP) protection plays in driving, innovation, development and jobs.

The massive infiltration of counterfeit and pirated products, or *IP theft*, creates an enormous drain on the global economy – crowding out billions in legitimate economic activity and facilitating an "underground economy" that deprives governments of revenues for vital public services, forces higher burdens on tax payers, dislocates hundreds of thousands of legitimate jobs and exposes consumers to dangerous and ineffective products.

Reliable information on the scope, scale, costs and impacts of counterfeiting and piracy is critical for helping policymakers to better understand that the trade in fake goods is damaging their economies, threatening the health and safety of their citizens and stifling innovation and creativity. Policymakers with better information on how counterfeiting and piracy undermine IP, innovation, economic growth and employment are better able to make the fight against IP theft a higher public policy priority and take the actions needed to prevent the damage inflicted by counterfeiting and piracy.

In this regard, government efforts to strengthen IP enforcement regimes can more appropriately be considered as investments that pay tangible dividends to economic development and society.

Because counterfeiters and pirates operate outside the law, estimating the extent of counterfeiting and piracy and the harm these activities cause is extremely challenging. Illegal businesses do not report information on their activities to any government agency so measuring their size must be done using indirect methods.

For this reason, Business Action to Stop Counterfeiting and Piracy (BASCAP), an initiative of the International Chamber of Commerce, is commissioning experts (including Frontier for this report) to examine the issue and to develop methodologies for estimating the economic and social impacts of counterfeiting and piracy. No one report or approach will yield a complete picture or provide all the answers, but BASCAP is committed to learning from as many sources of expertise as possible.

BASCAP is a business initiative, created, led and funded by the world business community, specifically brand owners, and organized by the International Chamber of Commerce, to raise public and political awareness about counterfeiting and piracy, encourage government action and promote respect for intellectual property. For more information or to download a copy of this report, visit www.iccwbo.org/bascap

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Counterfeiting and piracy has increased substantially over the last two decades. Today, counterfeit and pirated products can be found in almost every country in the world and in virtually all sectors of the global economy. As policymakers grapple with allocating resources across multiple public policy challenges, better information on the full scope, scale, costs and impacts of counterfeiting and piracy is necessary to ensure that the appropriate resources and prioritization are given to combating counterfeiting and piracy.

Estimates of the level of counterfeiting vary but all estimates agree that counterfeiting represents a multi-billion dollar underground economy with hundreds of billions of dollars of counterfeit product being produced every year.

Building on the OECD's work

Most recently, the OECD endeavoured to address the lack of in-depth systematic evidence on counterfeiting and piracy and provide governments with a reliable, data-based assessment.

The OECD published an extensive report on the subject in 2008¹, and concluded that the value of counterfeited and pirated goods moving through international trade alone equalled \$200 billion annually, a number they updated in 2009 to \$250 billion².

In releasing their findings, the OECD stated,

“This total does not include the value of domestically produced and consumed counterfeit and pirated products and the significant volume of pirated digital products being distributed via the Internet. If these items were added, the total magnitude of counterfeiting and piracy worldwide could well be several hundred billion dollars more.”

In addition the OECD explained that,

Counterfeiting and piracy “can have broader economy-wide effects on trade, foreign investment, employment, innovation, criminality, environment [...] and with respect to governments, counterfeiting and piracy have direct effects on tax revenues and government expenditures.”

Taken together, the OECD report delineated four categories of impact, of which they provided quantitative estimates for only one: Counterfeit and pirated goods moving through international trade.

¹ OECD, The Economic Impact of Counterfeiting and Piracy, 2008 (hereinafter “OECD Report”).

² OECD, Magnitude of Counterfeiting and Piracy of tangible products: An Update, November 2009.

This study seeks to build on the OECD's work, by updating their estimates and more importantly, introducing and examining categories of impacts identified and discussed but not quantified by the OECD report – the value of domestically produced and consumed counterfeit products, the value of digital piracy, and impacts on society, governments and consumers.

- **Category 1: Counterfeit and pirated goods moving through international trade.** We update the OECD's estimate of the value of counterfeit and pirated goods moving through international trade, drawing on new customs seizure data indicating that the incidence of counterfeiting and piracy has increased relative to the 2005-based customs data used in the OECD's 2008 study.
- **Category 2: Value of domestically produced and consumed counterfeit and pirated products.** We develop a methodology, derived from the OECD's modeling work, to generate an estimate of the value of domestic manufacture and consumption of counterfeit and pirate products – thereby capturing an estimated value of fake products that do not cross borders.
- **Category 3: Volume of pirated digital products being distributed via the Internet.** We describe, evaluate and contextualize industry reports and academic studies on the value of digital piracy of recorded music, movies and software. We then use these studies to produce an estimate of the total value of digital piracy that has been calculated using consistent assumptions and methodology across these industries.
- **Category 4: Broader economy-wide effects.** We provide a summary of previous analysis aimed at identifying the broader economy-wide effects of counterfeiting and piracy.

Before discussing our findings, it is important to be clear about the nature and context of the analysis presented in this report. Since counterfeiting operates outside the law, estimating the exact level of counterfeiting and the harm it brings is extremely challenging. The activities of illegal businesses cannot be measured using the same techniques used for legitimate business concerns.

We have therefore used a variety of analytical approaches to reach our estimates, drawing on a range of sources of information and making conservative assumptions. Our methodologies are described in detail, and we are explicit about the assumptions that have been required to reach the estimates we present and their limitations. While the methods used cannot yield precise estimates, the results do offer compelling evidence of the broad global magnitude of counterfeiting and piracy.

Key findings

The following Table 1 compiles the set of findings we refer to as *the complete picture*, drawing together estimates for the total value of counterfeit and pirated products in 2008, along with projections for 2015. Notably, our estimates of impacts on the broader economy only include estimated impacts on the twenty G20 economies and are presently limited to 2008.

Table 1. The Complete Picture. Estimate of the total value of counterfeit and pirated products in 2008 and 2015, and impacts on the broader economy and employment

OECD Category	Estimate in \$ billions (2008)	Estimate in \$ billions (2015)
Internationally traded counterfeit and pirated products	\$285 - \$360	\$770 - \$960
Domestically produced and consumed counterfeit and pirated products	\$140 - \$215	\$370 - \$570
Digitally pirated products	\$30 - \$75	\$80 - \$240
sub total	\$455 - \$650	\$1,220 - \$1,770
Broader economy wide effects ^{†*}	\$125	\$125 +
Employment losses*	2.5 million	2.5 million +

Source: Frontier Economics

[†] Effects on government tax revenues, welfare spending, costs of crime health services, FDI flows

* Estimate limited to G20 economies

Global economic value

We estimate that, based on 2008 data, the total global economic value of counterfeit and pirated products is as much as \$650 billion every year. Table 2 below provides a breakdown of our estimate. It shows that international trade accounts for more than half of counterfeiting and piracy (our updated estimate is \$285 billion to \$360 billion), domestic production and consumption accounts for between \$140 billion and \$215 billion and digitally pirated music, movies and software accounts for between \$30 billion and \$75 billion.

Table 2. Estimate of the total value of counterfeit and pirated products (2008)

OECD Category	Estimate (2008 data)
Internationally traded counterfeit and pirated products	\$285 billion - \$360 billion
Domestically produced and consumed counterfeit and pirated products	\$140 billion - \$215 billion
Digitally pirated products	\$30 billion - \$75 billion
Total	\$455 billion - \$650 billion

Source: Frontier Economics

It is important to note that these estimates are likely to provide a conservative estimate of the impact of counterfeiting and piracy. The estimates of the value of counterfeiting are based on 2008 data (the last year for which complete data was available), and given the rapid increase in counterfeiting and piracy observed between 2005 and 2008, this is likely to under-estimate the level of counterfeiting and piracy beyond 2008. It is for this reason that we have provided estimates to 2015.

It is also important to note that this study, following in the footsteps of the OECD report, has not attempted to estimate business losses associated with counterfeiting and piracy. This is primarily because the likely variations and other difficulties associated with estimating substitution effects across substantially different countries and industries introduces an additional level/degree of variables which could undermine our aim to as accurately as possible characterize the magnitude of counterfeiting and piracy.

Broader economy-wide effects

In addition to their work on economic impacts, the OECD examined – but did not provide quantitative estimates for a range of broader economy-wide effects: *“Counterfeiting and piracy can have broad economy-wide effects on trade, foreign investment, employment, innovation, criminality and the environment. Concerning the microeconomic effects, the sales volume, prices and costs of rights holders are impacted, as are investment, royalties and brand value. For consumers, counterfeit and pirated products may offer cheap alternatives to genuine goods but are usually of inferior quality. For certain types of infringing goods, the health and safety of consumers may be put at significant risk. With respect to governments, counterfeiting and piracy have effects on tax revenues, government expenditures, and, when corruption takes place, the effectiveness of public institutions. (p. 133)*

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These social costs are far from insignificant and merit treatment sufficient to ensure that they are not overlooked when considering the full range of negative impacts resulting from counterfeiting and piracy. In an associated study³ (excerpted in Chapter 3 of this report), Frontier explored the value and impact of these broader economy-wide effects. Notably, this work did not capture all of the thirteen “broader economy wide effect” cost-categories identified by the OECD; we only tackled impact of counterfeiting and piracy on government tax revenues, legitimate employment, increased costs of crime, economic costs on consumer health and safety, and downward pressures on FDI flows. Moreover, the scope of this report was limited to only the 20 countries comprising the “group of 20”, and so will be an under-estimate of the global impact of counterfeiting and piracy. The findings, however, are relevant to this report and serve to complete the picture of the total impacts to “economy and society”.

We found counterfeiting and piracy are estimated to cost G20 governments and consumers over \$125 billion every year:

- of this, the G20 economies lose approximately \$77.5 billion in tax revenues and higher welfare spending, \$25 billion in increased costs of crime, \$18.1 billion in the economic cost of deaths resulting from counterfeiting and another \$125 million for the additional cost of health services to treat injuries caused by dangerous fake products; and
- a number of G20 economies may be missing out on higher FDI as a result of concerns over IPR enforcement. That lost investment could give rise to additional tax losses of more than \$6.25 billion across the G20.

Employment

This report has not considered explicitly the impact of counterfeiting and piracy on employment. However, Frontier's previous study, which focused on the wider social and economic impacts of counterfeiting and piracy found that counterfeiting and piracy has significant negative impacts on employment across the G20 economies. Our previous analysis found that **approximately 2.5 million jobs have been destroyed by counterfeiting and piracy** – alternatively, if counterfeiting and piracy could be eradicated or seriously reduced, up to 2.5 million jobs could be created in the legitimate economies of the G20. It should also be noted that these estimates do not include secondary impacts on employment that may well be experienced by suppliers, retailers and other sectors in the supply chain.

³ Frontier Economics, The Impact of Counterfeiting on Governments and Consumers, December 2009

While it is likely that many of those who lost their jobs have gone on to find reemployment, the personal and family trauma associated with even temporary unemployment should not be lightly discounted. For example, people may quickly get into arrears on mortgages or personal debts, have difficulty paying medical expenses (as benefits are often linked to employment) or be forced to relocate to find alternative employment.

Finally, it is important to note that our previous analysis focused only on the G20 economies and so are likely to under-estimate the negative global impacts of counterfeiting and piracy on employment.

A growing problem – projections to 2015

Based on the OECD's analysis, our work to update the OECD figures and a range of analysis by industry and academics, it would appear that the value and volume of counterfeiting and digital piracy is increasing rapidly. In order to understand the potential impact of this rapid increase, we have developed an estimate of the value of counterfeiting and piracy in 2015. Obviously, estimating what will happen to counterfeiting and piracy is a difficult exercise, and depends on many factors, including developments in the world economy, and action by business and governments to try to counter such activities. Nevertheless, it is helpful to understand what the total magnitude of counterfeiting and piracy would be in 2015, were current growth rates to continue.

The OECD's original report (based on 2005 data) estimates that the value of counterfeit and pirated products in trade equated to \$200 billion. In 2009, the OECD increased this figure to \$250 billion. Updating these trends using 2008 data to reflect increases in trade *and* seizures since 2005, we find that the value of counterfeit and pirated products in trade has increased by up to \$160 billion (to \$360 billion) over this period – this is an increase of around 22% per year. Were counterfeiting and piracy to continue to grow at even the much lower rate of 15% per year, it would imply that traded counterfeit and pirated products could be worth up to **\$960 billion by 2015**. Similar increases for domestic counterfeit production and consumption imply estimates of up to **\$570 billion by 2015**.

The findings also suggest that digital piracy has grown substantially over the last decade, to the point where it now accounts for between 6.5% and 12% of the total value of counterfeit and pirated products consumed. In some sectors, such as music, movies and software, digital piracy accounts for a substantially greater share of the total. It is also likely that digital piracy will continue to grow rapidly over the next decade as internet access grows and ever-faster broadband speeds facilitate illegal downloads and file sharing. Even using a highly conservative assumption, that digital piracy maintains its share of total counterfeiting and piracy, it could account for \$210 billion by 2015. Alternative projections based on internet traffic growth suggest this figure could reach **\$240 billion by 2015**.

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Together these estimates imply that the global value of counterfeit and pirated products could be up to **\$1.77 trillion by 2015**.

Analytical approach

In this report we have sought to build on the work of the OECD to provide up to date estimates of the impact of counterfeiting and piracy in the four categories identified in the OECD's work. In some cases this has involved updating the OECD's analysis with more recent data, whereas in others it has involved developing new analysis, much of which is based on the OECD's analytical approach. The analysis in relation to each of the four impact categories is based on a combination of publicly available data and assumptions.

The publicly available data is from reputable sources such as national governments and the OECD, and is supplemented where necessary with data and analysis from industry associations, businesses and academia. We have based the assumptions used in the analysis on existing data and analysis where possible and have in all cases made the assumptions used as conservative as possible. For instance, in projecting the value of counterfeiting and piracy to 2015, we have assumed growth rates considerably below those observed between 2005 and 2008. The main body of the report sets out in detail the assumptions used in the analysis, the basis of those assumptions, and the impact that they have on our analysis.

It is important to note that the model does not include any multipliers, nor does it attempt to estimate the wider effects that counterfeiting may give rise to in terms of impact on the wider supply chain, investment by firms to prevent counterfeiting and piracy or potentially reduced investment and R&D incentives.

The analysis has been developed so that it can be used by national governments, independent agencies, industry sector associations or any other bodies seeking to identify and examine the costs and impacts of counterfeiting. Over time, we hope that if this approach is implemented by policymakers and other stakeholders at a national level, the reliance on assumptions in developing estimates can be substantially reduced.

Agenda for future research

Looking to the future research agenda, we believe that while it is important to have an understanding of global magnitudes in order to highlight the increasing threat to the global economy, more fine grained and detailed analysis is required on a country by country basis.

Only when the analysis is conducted on a country by country basis, can one identify in detail the negative impacts of counterfeiting and piracy, and the relative costs and benefits of significantly increasing enforcement activities.

Moreover, analysis carried out at the country level is likely to provide better quality, more accurate estimates, due to greater and more robust data. To demonstrate the extent to which the types of approach identified in this report can be applied at a country level, Annexe 1 provides an illustrative assessment of the magnitude of counterfeiting and piracy in the US economy.

Finally, we believe an important next step in the work to identify the impact of counterfeiting and piracy will be to develop a robust methodology for understanding the relationship between the magnitude of counterfeiting and piracy and business losses.

1 Introduction

The OECD published an extensive report on counterfeiting and piracy in 2008⁴. The report, based on 2005 data, found that the value of international trade in counterfeit and pirated goods was at least \$200 billion. In 2009, the OECD updated this figure to \$250 billion⁵.

In releasing their findings, the OECD stated,

“This total [\$250 billion] does not include the value of domestically produced and consumed counterfeit and pirated products and the significant volume of pirated digital products being distributed via the Internet. If these items were added, the total magnitude of counterfeiting and piracy worldwide could well be several hundred billion dollars more.” In addition the OECD explained that counterfeiting and piracy “can have broader economy-wide effects on trade, foreign investment, employment, innovation, criminality, environment [...] and with respect to governments, counterfeiting and piracy have direct effects on tax revenues and government expenditures.” (p.13)

Taken together, the OECD Report delineated four categories of impact, which serve as a roadmap for additional research and a blueprint for this report:

- **Category 1:** Counterfeit and pirated goods moving through international trade;
- **Category 2:** Value of domestically produced and consumed counterfeit and pirated products;
- **Category 3:** Volume of pirated digital products being distributed via the Internet; and
- **Category 4:** Broader economy-wide effects.

The OECD Report provided detailed estimates of only the first category of impact – international trade. The International Chamber of Commerce (ICC), through its BASCAP initiative, commissioned Frontier Economics to build on the OECD’s work to develop estimates of the magnitude of categories 1-3 above. Frontier has previously carried out analysis to estimate the magnitude of category 4 effects, which we provide a summary of later in this report. Additionally, we were asked to develop estimates for the US’ share of counterfeiting and piracy, which appear in Annexe 1 as a model for future work needed at the national level.

⁴ OECD, The Economic Impact of Counterfeiting and Piracy, 2008 (hereinafter “OECD Report”).

⁵ OECD, Magnitude of Counterfeiting and Piracy of tangible products: An Update, November 2009.

Clearly, making estimates for any of the categories of impact identified above is extremely challenging. The activities of illegal businesses cannot be measured using the same techniques used for legitimate business concerns. Legitimate businesses tend to provide the authorities with information about their revenues, unit sales, prices, employment, imports and exports amongst other things. Illegal businesses do not report any such information.

For this reason, we must use indirect methods to estimate the magnitude of counterfeiting and piracy. We have used a variety of methodological and analytical approaches to reach our estimates, drawing on a range of sources of information and making conservative assumptions to reach a total figure for the value of counterfeiting and piracy activity. While the estimates generated using these methods cannot yield the same detailed, high quality measures of activity as those provided for legitimate businesses, they offer an extremely useful approach for gauging the scale of these activities and their impact.

Building on the OECD work, we have focused on developing estimates of the *value* of counterfeiting and piracy for the three impact categories above. To translate these figures into estimates of business losses involves making assumptions about the degree of substitution between counterfeit and pirated products and their legitimate counterparts. This area is fraught with difficulties because robust estimates of substitution rates are difficult to generate and vary from sector to sector. In order to produce credible estimates, we have opted to continue down the path taken by the OECD and focus on estimating the *value* of counterfeiting and piracy rather than attempt to estimate the business losses associated with it. This approach also enables us to eliminate the additional level/degree of variables which could undermine our aim to as accurately as possible characterize the magnitude of the unfair competition for legitimate economic activity and the unchecked growth of an emerging “underground economy”.

Below we provide a high-level overview of the techniques that we have used for our estimates. The findings section that follows provides extensive details for each.

1.1 Methodologies

This section sets out the methodology used to develop measures of value in relation to:

- internationally traded counterfeit and pirated products;
- domestically produced and consumed counterfeit and pirated products; and
- digitally pirated products.

1.1.1 Updating the OECD's estimates of counterfeit and pirated products

Our estimate of the effect of changes in the incidence of counterfeiting and piracy on internationally traded goods is based on information on the ratio of customs seizures to real imports since 2005.

We examine how the ratio of seizures to imports has changed since 2005 and assess the possible drivers of the observed changes. Notably, the more recent data indicates an increase in border seizures. We assess the impact and appropriateness of attributing different proportions of the increase in seizures to increased counterfeiting and piracy activity. These different allocations are applied to the OECD's 2009 figure of \$250 billion (which was based on updated trade values only) to give an updated estimate of the total commercial value of counterfeiting and piracy in international trade.

1.1.2 The domestic manufacture and consumption of counterfeit and pirated products

The approach we have taken to developing an estimate of the value of domestic counterfeiting draws from and builds on the methodology employed by the OECD to reach their estimate of the value of counterfeiting and piracy in world trade. We take the OECD's estimate of the *maximum* proportion of counterfeit products in world trade and make a number of assumptions to translate these estimates into an estimate of the value of domestic counterfeit production and consumption. Specifically, we have taken a three step approach.

- **Step 1:** Calculation of counterfeiting/piracy propensities for each product category in each source economy, drawing on the OECD's original estimates.
- **Step 2:** Identification of the relevant categories of GDP that are likely to be exposed to counterfeit products.
- **Step 3:** Estimation of the value of domestic counterfeiting production and consumption for each country by applying the trade related counterfeiting rates to the relevant components of GDP for each source economy.

Step 3 above makes the assumption that there is a strong relationship between the ratio of counterfeit products in a country's exports and the ratio of counterfeit products in its domestic production⁶. In recognition of the fact that there are likely to be some countries for which this assumption is inappropriate, we have drawn on a range of other sources to understand and vary the assumed

⁶ We are also implicitly assuming that there are no countries that produce counterfeits for domestic production only.

relationship between counterfeiting and piracy in international trade and that of domestic counterfeiting and piracy production and consumption. The sources used include a study by the Japan Patent Office and a study by the State University Graduate School of Economics for the Brand Manufacturers Association in Russia. These studies are used to build an appropriate range for our estimates.

1.1.3 Digital piracy of recorded music, movies and software

Estimating the value of digital piracy in recorded music, movies and software is complex. This report draws on the most recent industry and academic studies to provide the first aggregated estimate of the value of digital piracy across these three critical “copyright-based” industries. In so doing, it builds on the methodologies and findings of the most recent industry studies. Where available, we draw on more recent data to update the industry studies, and use consistent assumptions and methodologies (regardless that the specific industry dynamics are likely to differ) in order to produce digital piracy estimates that are more consistent across the three industries. Estimated values for pirated recorded music, movies and software are considered in turn below and then aggregated.

2 Analysis and Findings

This section sets out the findings from our analysis of the value of counterfeiting and piracy. Specifically, it sets out:

- an update of the OECD's estimate of the value of internationally traded counterfeit and pirated products;
- an estimate, derived from the OECD's methodology, of the value of domestically consumed counterfeit and pirated products; and
- an estimate, based on industry and academic analyses, of the value of digital piracy.

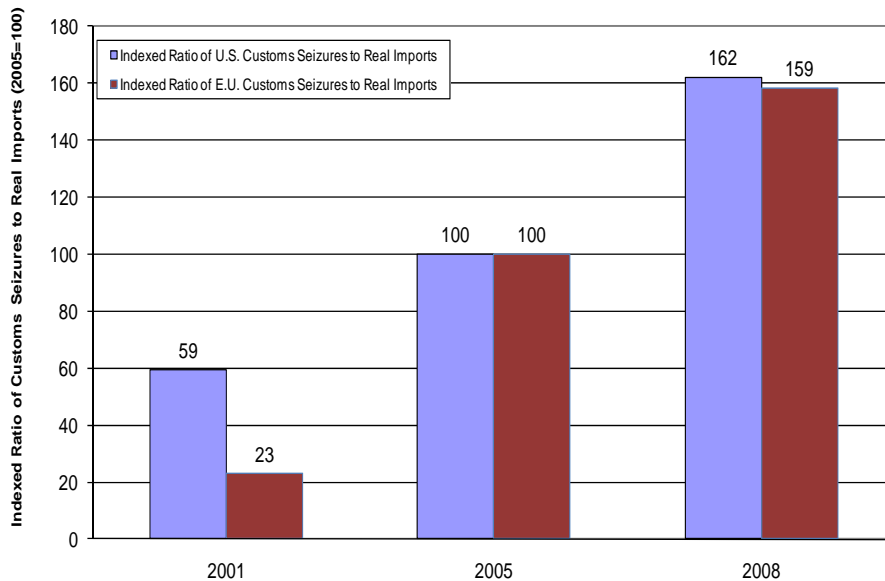
2.1 Internationally traded counterfeit and pirated products

As described in the Introduction, the OECD's original report, based on 2005 data, estimated that the value of counterfeiting and piracy in international trade was \$200 billion. In 2009, the OECD updated their estimate to \$250 billion based on increases in the volume of world trade after 2005.

The research underpinning these estimates by the OECD was extremely thorough, based on survey data collected from custom authorities in 70 countries from 1999 to 2005 and information on world trade from 2005 to 2008. Accordingly, this section only seeks to update this estimate by factoring in more recent data, specifically that which indicates an increased incidence (seizures) of counterfeiting and piracy since 2005.

Data on customs seizures by the US and the EU since 2005 indicate that there has been a sharp increase in seizures relative to international trade volumes between 2005 and 2008. Figure 1 shows an index of the ratio of the number of customs seizures against the real value of imports in the US and the EU for 2001, 2005 and 2008. The index of the ratio is defined to equal 100 in 2005 for the US and the EU. In 2008, the US index equals 162, which indicates that seizures increased 62% relative to US real imports between 2005 and 2008. Similarly, for the EU, seizures increased 59% relative to real imports between 2005 and 2008.

Figure 1
Indexed Ratio of Customs Seizures to Real Imports in the U.S. and the E.U.
(2005=100)



Sources:

U.S.: U.N. ComTrade figures in U.S. dollars deflated by the GDP deflator.

E.U.: Eurostats

There are two potential reasons for the documented increase in seizures:

- an increase in the incidence of counterfeiting and piracy; and/or
- improved scrutiny and enforcement by the US and EU agencies.

Given the significant increase in seizures and the limited time frame for implementation of more rigorous enforcement policies, we believe that a significant proportion of the increase is likely to be due to an increase in the incidence of counterfeiting and piracy in international trade. Moreover, we are not aware of any significant policy shift or increase in resources in either the US or EU that would be likely to result in such an increase through improved detection of seizures.

If the full increase in seizures is assumed to be as a result of an increase in the incidence of counterfeiting and piracy, then a further \$150 billion of counterfeit and pirated goods could be traded globally on an annual basis. A more conservative assumption is that between 25% and 75% of the increase in seizures relative to imports is due to counterfeiting and piracy. This would allow for the possibility that some of the increase is accounted for by operational improvements. On this basis an additional \$37.5 billion to \$112.5 billion of counterfeit and pirated goods could be traded globally on an annual basis.

Combining this with the OECD's updated estimate of \$250 billion leads to an estimate of the value of counterfeiting and piracy in international trade of between **\$287 billion and \$362 billion**.

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2.2 The domestic manufacture and consumption of counterfeit and pirated products

The OECD explicitly stated that an accounting of *domestically* manufactured and consumed counterfeit and pirated products could increase the total value of counterfeiting and piracy significantly. However, they did not attempt to develop an equivalent detailed estimate for this category either as part of their original 2008 study or their 2009 update.

As with estimating the value of internationally traded counterfeit and pirated products, estimating the value of domestically produced and consumed counterfeit products is challenging. It is also not clear from a conceptual perspective how large the domestic manufacture and consumption of counterfeit goods is expected to be relative to the international trade in those goods. Therefore, an analysis of this category begins with an investigation of the decision of whether to import a counterfeit good as opposed to producing it for consumption domestically. This decision lies in the balance of two key factors, profitability and risk:

- **Profitability:** Is it more profitable to produce the good within the country in which you wish to sell it or produce it outside of that country and import it?⁷
- **Risk:** Is there a greater risk (and hence cost) attached to importing the good and potentially having it seized by customs, or producing it within the consuming country and risking local detection (by law enforcement agencies)?

The balance of these two factors is likely to vary significantly depending on the characteristics of the product and also on the country of origin and country of destination for the good. For example, some goods may be relatively amenable to import through customs without detection, but their production might attract significant law enforcement attention in consuming countries. Furthermore, the existence of Free Trade Zones may mitigate some risk associated with export/import in some areas.

A useful approach for estimating domestic production and consumption of counterfeit and pirated products would involve a joint survey of customs agencies and domestic law enforcement agencies. Such an approach would parallel the approach taken by the OECD in estimating the value of counterfeit and pirated goods moving in international trade. However, the scale of work required for this type of exercise is extensive and therefore beyond the scope of this study.

⁷ An assessment of profitability would take into a range of factors including the cost base, manufacturing capability and capacity of different countries.

Instead, to develop an indicative estimate, we have built on the methodology developed by the OECD and used evidence currently available in a range of forms to derive an estimate. In the rest of this section we describe the calculations we have undertaken to derive these estimates. In turn we describe:

- the methodology used to calculate the estimate, including the key assumptions;
- the data sources used to derive the estimate; and
- the results of our simulations.

2.2.1 Methodology

The approach we have taken to developing an estimate of the value of domestic counterfeiting and piracy builds upon the methodology used by the OECD to reach their estimate of the value of counterfeiting and piracy in world trade.

The OECD methodology

The OECD estimate was built on survey evidence collected from custom authorities in 70 countries containing details about the number of interceptions and infringements they had recorded between 1999 and 2005. This information was used to build up a picture of the flows of counterfeit and pirated products originating from a wide range of different source countries. Using this information, the OECD developed two indices to capture flows of counterfeit products in world trade:

- the GTRIC-p index which captures the relative flows of different counterfeit products in world trade; and
- the GTRIC-e index which captures the relative flows of counterfeit products originating from different source economies.

These indices inform us about the relative frequencies with which different types of counterfeit products from different source countries appear in world trade. For example, they tell us that 1.5 times as many counterfeit headgear products (primarily baseball caps) originate from Hong Kong relative to Pakistan. These indices are clearly useful but, to reach an absolute estimate of the value of counterfeit production in world trade they must be combined with an estimate of the absolute value of counterfeits of one product type from one source economy.

As it is extremely difficult to generate an absolute value for any product category or economy, the OECD identified the product category and source economy where counterfeit production was thought to be most pronounced. It used an estimate of the *maximum* likely value of counterfeiting in this category to generate

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counterfeiting rates for all product and source country combinations⁸. Counterfeiting rates were then applied to the value of imports for each importing country to generate the \$200 billion estimate⁹ of the value of counterfeiting and piracy in world trade.

Building on the OECD methodology

To calculate the value of domestic counterfeiting and piracy, we take the OECD's estimates of the proportion of counterfeit and pirated products in world trade as our starting point. We make a number of assumptions to translate these figures into an estimate of the value of domestic counterfeit and pirated production and consumption. Specifically, our methodology follows three steps:

- **Step 1:** Take the simulated counterfeiting propensities for each product category in each source economy estimated and applied by the OECD. We start with the OECD's estimates¹⁰ of the relative propensities of different counterfeit products that originate from each of a range of source countries.
- **Step 2:** Identify the relevant categories of GDP that are likely to be exposed to counterfeit products. Only a limited amount of total economic activity is likely to be exposed to counterfeit activity¹¹. The OECD identified a number of sensitive product categories¹². We map these sensitive product categories to relevant GDP statistics for each source country.
- **Step 3:** Estimate the value of domestic counterfeit and pirated production and consumption for each country. We apply the counterfeiting propensities from step 1 to the categories of GDP identified in step 2 for each source economy¹³. We sum over all source economies to give a global estimate of domestic counterfeit production and consumption.

⁸ As the most counterfeited product and source economy combination, a 10% counterfeiting rate for headgear originating from Hong Kong, China was used as a baseline from which all other counterfeiting rates were calculated.

⁹ Updated to \$250 billion in the 2009 OECD update.

¹⁰ Specifically, the GTRIC matrix developed by the OECD that sets out estimated propensities of counterfeiting by product and source economy.

¹¹ GDP captures more than the production of goods, so while counterfeiting and piracy impacts virtually every product category, only part of GDP is affected.

¹² These were categories of products believed to be exposed to counterfeiting and piracy activity.

¹³ This makes the assumption that there is a strong relationship between the ratio of counterfeit products in a country's exports and the ratio of counterfeit products in its domestic production (we are also implicitly assuming that there are no countries that produce counterfeits for domestic production only). In recognition of the fact that there are likely to be some countries for which this assumption is inappropriate, we have drawn on a range of other sources to understand and vary the assumed relationship between counterfeiting and piracy in international trade and domestic

2.2.2 Data sources

Two main sources of information were used for the calculations outlined above:

- the OECD's estimates of counterfeiting and piracy propensities by product category and source economy; and
- data on GDP in the relevant areas of economic activity for each of the source economies identified by the OECD.

We describe each in turn below.

OECD estimates of counterfeiting and piracy propensities

The OECD provides details of the counterfeiting and piracy propensities that underpin its estimates of counterfeiting activity in world trade in their report¹⁴. Two separate indices are reported, the GTRIC-p index and the GTRIC-e index. The GTRIC-p index provides the counterfeiting baseline factors for each counterfeit-sensitive product category. The GTRIC-e index provides the baseline counterfeiting factors for each source economy. The two indices can be combined to form the GTRIC matrix which provides counterfeiting and piracy propensities by product category and source economy. Mimicking the assumptions made by the OECD, we have used the same baseline counterfeiting rate to calculate the maximum likely counterfeiting rate for each product category and source economy represented within the GTRIC matrix¹⁵.

GDP data

The data on GDP was collected from the UN Statistics Division Statistical Database¹⁶. This database includes gross value added statistics broken down according to the International Standard Industrial Classification of All Economic Activities (ISIC). The breakdown of economic activity presented in the table below is reported consistently for each source economy.

counterfeiting/piracy production and consumption. The sources used include a study by the Japan Patent Office and a study by the State University Graduate School of Economics for the Brand Manufacturers Association in Russia. These studies are used to calculate an appropriate range for our estimates.

¹⁴ OECD, *The Economic Impact of Counterfeiting and Piracy*, 2008 (hereinafter "2008 OECD Piracy Study").

¹⁵ In practice as GDP information was only available at an aggregated product level, we have calculated an import-weighted counterfeiting propensity across all product categories for each source economy.

¹⁶ UN Statistics Division Statistical Databases - National Accounts Main Aggregates - Value added by Economic Activity

Analysis and Findings

Table 3. Breakdown of economic activity

ISIC category	Description of economic activity
ISIC A & B	Agriculture, hunting, forestry, fishing
ISIC C, D & E	Mining, manufacturing, utilities
ISIC D (also reported separately)	Manufacturing
ISIC F	Construction
ISIC G & H	Wholesale, retail trade, restaurants and hotels
ISIC I	Transport, storage and communication
ISIC J, K, L, M, N, O & P	Other activities

The OECD identified 63 sensitive product categories¹⁷: so called because they were likely to contain counterfeit and pirated products. This classification was made using HS chapters, which are relevant to world trade. There is not an exact match between the HS classification and the ISIC classification, which is relevant for classifying GDP, but the majority of sensitive product categories identified by the OECD fall within ISIC D: manufacturing. We used this ISIC category as a proxy for the sensitive product categories contained within GDP. This captures the majority of sensitive products identified by the OECD but it will also include some sub-categories of manufacturing that are not deemed to be sensitive. For this reason, the value of domestic counterfeiting and piracy calculated using this measure is likely to be an upper estimate.

2.2.3 Results and simulations

Using the methodology and data described above and assuming a strong relationship between the ratio of counterfeit products in exports and domestic production, we estimate that the maximum global value of domestic counterfeiting and piracy production and consumption is **\$170 billion**¹⁸.

¹⁷ At the 2 digit HS level.

¹⁸ Rounded to the nearest billion and including an uplift to reflect those source countries where data was unavailable to make accurate estimates.

The above estimate is based on the assumption that the ratio of domestic consumption to exports is consistent across countries. However, this may not always be the case. In particular, an analysis carried out by the Japan Patent Office¹⁹ suggests that the ratio may differ across countries. The Japan Patent Office surveyed Japanese companies regarding their experience involving competition with counterfeit and pirated products when selling in other countries. The survey respondents reported the number of incidents where they had encountered competition from counterfeit and pirated goods. They specifically identified the country where such competition was encountered and also the country where the counterfeit good was produced.

The results of the study suggest that counterfeiting and piracy is, on average, more prevalent in traded products than it is in domestic production and consumption. The study shows that the number of incidents of Japanese firms encountering counterfeit products produced domestically was around half (55%) the number of incidents of Japanese firms encountering counterfeit products imported into the country. However, it is possible to break this figure down further to show that the relationship between domestic counterfeiting and counterfeiting in trade may not be the same in every counterfeit-producing economy. In fact, the results of the study show that:

- in Asia, domestically produced counterfeit products are more likely to be exported to other countries than to be consumed domestically; but
- outside of Asia, domestically produced products are more likely to be consumed domestically than to be exported

Table 4 below shows key estimates calculated using the information contained within the study by the Japan Patent Office. According to the data from this study, of all counterfeit and pirated goods produced within Asia, around a third (34%) are consumed domestically with two thirds (66%) being traded internationally. In contrast, outside of Asia, over half (55%) of counterfeits that are produced are consumed domestically, with the remainder traded internationally. The figure for outside Asia is further supported by a 2008 study²⁰ in Russia. It suggested that between 2004 and 2007, domestic production and consumption of counterfeited goods was more than 150% of imports of counterfeited goods in Russia.

¹⁹ Japan Patent Office, FY2004 Survey Report on Losses Caused By Counterfeiting, March 2005 (hereinafter “Japanese Counterfeiting Study”).

²⁰ “Changing Scale and Pattern of Anti-Counterfeit Measures in Russia’s Consumer Market,” prepared by State University Graduate School of Economics for Brand Manufacturers’ Association (RusBrand), page 20. RusBrand is a partnership of 54 consumer goods manufacturers operating in Russia.

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Table 4. Breakdown of the ratio of domestic and traded counterfeit and pirated products

% of all counterfeit goods produced		
	Consumed domestically	Exported
Asia	34%	66%
Outside of Asia	55%	45%

Using the Japan Patent Office study we have adjusted the domestic counterfeit rates in our calculation to account for the differences between countries inside of Asia and outside of Asia. Applying these differential rates to the relevant source economies leads to an estimate of the value of domestic counterfeiting and piracy production and consumption of **\$110 billion**.

As discussed above, the OECD did not change their estimates of the incidence of counterfeiting and piracy when they reached their \$250 billion estimate of the value of counterfeiting and piracy. As the OECD's simulated propensities of counterfeiting underpin our domestic estimate, changes in the incidence of counterfeiting and piracy will also affect this estimate. If we take account of the likely increased incidence of counterfeiting activity since the OECD work was undertaken, our estimates of the total domestic value of counterfeiting and piracy production and consumption increase to **\$140 - \$215 billion**.

We recognize that there may be additional important variations by country in the propensity for counterfeit products to appear in exports versus domestic production, not currently captured by the studies we have examined. For example, there are likely to be key differences between developing and developed countries. However, there is currently not enough data to allow our estimates to be further refined to take account of such differences. In consequence, the estimate of \$140 to \$215 billion represents our best estimate based on currently available information.

2.3 Digital piracy

Over the last decade there has been a notable increase in digital piracy. The rapid growth in piracy has particularly affected the recorded music, movie and software industries, all of which have suffered significant and rapidly increasing losses as a result of digital piracy. The increase in digital piracy has been driven by two main factors:

- technological advances mean that it is now much easier to illegally reproduce music, movies and software; and
- the growth of the internet and the emergence of online websites that facilitate file sharing and downloading have greatly increased the ability to illegally distribute pirated music, movies and software.

As ever with counterfeiting and piracy, estimating the value of unlicensed digital files available on line is complex. Although they noted the prevalence of digital piracy, the OECD was unable to include an estimate in their 2008 report. Throughout this section we follow the methodology used by the OECD's study – we try to get a robust and consistent picture of the value of digital piracy across the three industries.

We note that the value of unlicensed digital files available on line (hereinafter referred to as commercial value) is largely dependent on estimations of volume and will inevitably be greater than business losses, which depend crucially on the assumed substitution rates. We have focused here on value as a first step in understanding the impact of pirated goods, and to remove from debate the controversy that normally surrounds assumptions regarding substitution rates.

This section draws on the most recent industry and academic studies to provide a consistent aggregated estimate of the value of digital piracy across these three industries. In so doing, we build on the methodologies and findings of the most recent industry studies. Where available, we draw on more recent data to update the industry studies and to improve the consistency of the digital piracy estimates across the three industries. In order to be consistent with the OECD's approach used elsewhere in this report, our approach has been to identify the volume of digital piracy and to place a value on that digital piracy using the average price of legitimately available digital products.

In order to test the robustness of the industry findings, the analysis also considers relevant academic literature to generate a range of estimates for each industry. Estimated values for counterfeited and pirated recorded music, movies and software are considered first individually in turn before being aggregated.

2.3.1 Recorded music

Recorded music sales have diminished significantly over the last decade. According to the International Federation of the Phonographic Industry (IFPI), the annual amount of retail music sales have fallen by almost \$15 billion dollars between 1999 and 2008. While the widespread development of online file sharing sites from 1999 is clearly associated with the decline in sales of CDs, digital piracy has continued to escalate despite considerable industry and consumer education initiatives, the availability of a wide variety of legal online services for consumers, lawsuits and other actions against the most visible file sharing sites.

Analysis and Findings

Unsurprisingly, trying to understand the extent to which digital piracy is driving the substantial sales losses has attracted considerable attention from the music industry and from academics. In this report, we have drawn on the most recent industry figures about legal download prices and the volume of illegal music downloads to generate an estimate of the commercial value of digital music piracy. To test the robustness of these estimates we have also considered the evidence from a range of academic papers on digital piracy.

Drawing these sources together we find that the commercial value of recorded music digital piracy was between **\$17 billion and \$40 billion** in 2008, and was most likely closer to \$40 billion. It is important to note again that these figures provide an estimate of the total value of unlicensed digital files available on line; they are not an estimate of the business losses associated with digital piracy, and should not be interpreted as doing so. The rest of this section sets out the basis of our estimate.

Industry estimates of the value of digital piracy of recorded music

The latest industry study on piracy of recorded music was published by IFPI in July 2006²¹. It estimated that in 2005, 20 billion songs were illegally downloaded on a global basis. This number was based on consumer research in 10 music markets (including the US, Germany, UK and Brazil) as well as a number of third party surveys. In 2008²², IFPI updated its estimate of the number of files illegally shared on a global basis at more than 40 billion. This figure was based on collating two key pieces of information from studies for each of 16 separate countries²³:

- the number of consumers illegally downloading music; and

²¹ International Federation of the Phonographic Industry (“IFPI”), The Recording Industry 2006 Piracy Report: Protecting Creativity in Music, July 2006; (hereinafter “IFPI Piracy Report”), <http://www.ifpi.org/content/library/piracy-report2006.pdf>.

²² International Federation of the Phonographic Industry (“IFPI”), IFPI Digital Music Report 2009: Key Statistics

²³ Canada: CRIA Consumer Study of Radio and Music, Pollara, Feb 2006, US: NPD Group, 2007, Jupiter Research (Denmark, France, Italy, Netherlands, Sweden), 2007/2008, France: GfK research, 2007 + IPSOS research, May 2008, Germany: Brenner-Studie 2008, GfK Consumer Panel, Jan 2008, Italy: Luigi Einaudi Foundation, 2008 + AC Nielsen, 2008, Poland: Gemius Research, ZPAV, Sept 2008, Spain: Estudio Base Sobre la Piratería en la Industria de Contenidos, GfK, June 2008 + Spanish Ministry of Culture Report, Oct 2007, UK: Music Industry Losses Project, Jupiter Research, BPI, 2007 + Music Piracy in GB, IPSOS, BPI, Mar 2006, Australia: AusCERT, Home Users Computer Security Survey 2008 + ARIA 2006 Music Survey, Quantum Research, Legal and Illegal Downloading Behaviour, Jan 2007, Japan: Report on Current Situation of Use of File-Sharing Software, Media Interactive, RIAJ, Dec 2008 + Report on Current Situation of Usage of Illegal Mobile Music Distribution, Nomura Research Institute, RIAJ, Dec 2008, Argentina: Los Argentinos y La Musica, Cuore Research, CAPIF, Nov 2005, Chile: Descarga de Musica por Internet, IPSOS, IFPI, June 2004, Brazil: Estudo de Pirataria, IPSOS, ABPD, May 2007, Mexico: Illegal Music Downloads over the Internet in Mexico, IPSOS, AMPROFON, Sep 2008

- the average number of music files downloaded per month.

Notably, the figure of 40 billion estimated by IFPI may be on the conservative side. It is based on consumer responses, which may be understated. It also relates to illegal music downloads only, thereby excluding mobile piracy and illegal streaming, which appear to be growing areas, especially with the ever increasing download speeds and the advent of 3G, high speed mobile technology²⁴.

Following the OECD value approach, estimating the commercial value of digital piracy of recorded music involves multiplying the estimated volume of illegally downloaded songs by a reasonable commercial price for their legitimate counterparts. Data from the Recording Industry Association of America (RIAA)²⁵ reports average retail prices of a legal single download in the US is approximately \$1.

Using the information on download volumes from IFPI and on retail prices reported by RIAA, we are able to estimate the commercial value of illegal downloads of recorded music. To be conservative, we have assumed that all of the 40 billion illegal downloads in the IFPI data are single, rather than album, downloads²⁶. If these 40 billion illegal downloads per year have an average retail price of \$1, the basic analysis suggests that the commercial value of illegal downloads of recorded music is approximately \$40 billion.

Academic evidence on the value of digital piracy of recorded music

To test the robustness of these estimates we have also considered the evidence from a range of academic papers on digital piracy. We have reviewed the academic literature to generate an alternative estimate of the value of digital piracy, which can be used to frame the data collected by IFPI. While the papers we have identified do not look specifically at the value of digital piracy in this industry, we can use the results from a combination of studies to estimate the likely commercial value of digitally pirated music.

²⁴ IFPI do not currently have estimates of the magnitude of this illegal activity.

²⁵ Recording Industry Association of America (RIAA) 2008 Year-End Shipment Statistics

²⁶ The average retail price for an album is likely to be approximately \$10. Source: Recording Industry Association of America (RIAA) 2008 Year-End Shipment Statistics

Academic findings

- **Liebowitz 2006**²⁷: concludes that file sharing has brought significant harm to the recording industry in the US. The birth of online file sharing mid-1999 and the very large decline in CD album sales that immediately followed provide powerful evidence on their own. Notably, Liebowitz also finds that the two music genres that are less likely to be downloaded in file-sharing systems, classical and jazz, did not participate in the sales decline up to 2004, whereas other genres, more likely to be affected by file sharing (hard rock, rap, alternative, R&B) generally did participate. Liebowitz investigates key alternative explanations for the observed impact on recorded music sales other than file sharing including album prices, income, music quality, markets for substitutes and complements, portability and librarying. He concludes that none of these explanations individually hold much weight.
- **Zentner (2005)**²⁸: finds that counties with higher internet and broadband penetration have experienced larger reductions in music sales, which supports the correlation between the rise in digital piracy and the fall of music industry sales. He also finds evidence that file sharing may explain a change in the composition of legitimate sales by repertoire, with a higher reduction of sales of types of music that are shared more heavily. His analysis, based on data from 1997 to 2002, suggests that, at the average level of internet usage, a country is likely to have experienced a decline in legitimate music sales of up to 24%.
- **Rob and Waldfogel (2006)**²⁹: use individual-level data on album downloads and purchases by 500 college students in the US. They find evidence that each album download reduces purchases by about 0.2 in their sample (a displacement rate of approximately 1 in 5), although possibly by much more. Their data also suggests that downloading reduces the per capita expenditure of the sample (on hit albums released between 1999-2003) from \$126 to \$101 (approx. 20%).

²⁷ Liebowitz, S., (2006) File Sharing: Creative Destruction Or Just Plain Destruction?, *Journal of Law and Economics*, vol. XLIX, The University of Chicago.

²⁸ Zentner, A. (2005). File Sharing and International Sales of Copyrighted Music: An Empirical Analysis with a Panel of Countries. *Topics in Economic Analysis and Policy* 5, 21, pp/ 1-15.

²⁹ Rob, R. and Waldfogel, Joel. (2006). Piracy on the High Cs: Music Downloading, Sales Displacement and Social Welfare in a Sample of College Students. *Journal of Law and Economics*, Vol. 49: Issue: 1, pp. 29-62

- **Michel (2004)**³⁰: uses micro-level data from the Consumer Expenditure Survey, from 1995 to 2003, to examine the impact of Internet file sharing on music sales. He finds that file sharing may explain a reduction in sales of up to 13% for some consumers.
- **Oberholzer-Gee and Strumpf (2007)**³¹: provides the most notable exception to the finding that digital piracy has generated significant losses to the music industry. The study uses a matched sample of downloads and U.S. sales data for a large number of albums. They estimate that the impact of digital piracy on music sales could not have been larger than 0.7% of sales. They hypothesize that there are several other plausible candidates to explain the decline in sales including growing competition from other forms of entertainment such as recorded movies. However, their more recent study³² recognizes that the empirical evidence of the effect of file sharing on sales is mixed and acknowledges that many studies conclude that music piracy can explain as much as 20% of the recent decline in industry sales.

While none of the studies we have considered estimates directly the total commercial value of digital piracy, two key findings emerge from the literature which allow us to derive such an estimate:

- Digital piracy is estimated to have had a significant negative impact on retail music sales. Work by Zentner (see above), for example, suggests that as much as a quarter of the total decline in music sales may be attributable to digital piracy. Applying this to the \$14.8 billion sales decline in 2008, identified by IFPI would suggest industry losses associated with digital piracy of over \$3.5 billion. To put this figure in context, total global retail sales of digital music amounted to \$6.3 billion in 2008, which suggests that digital music sales could have been more than 50% higher in 2008 in the absence of digital piracy. Moreover, the data used in the Zentner study covers the period 1997 to 2002, and so likely under-estimates the impact of digital piracy today, given digital piracy's well documented increase over the last decade.
- Academic estimates suggest that the displacement rate for music sales is between 15% and 20%. This means that every 5-6 illegal downloads

³⁰ Michel, N. J., (2006). The Impact of Digital File Sharing on the Music Industry: An empirical analysis, *Topics in Economic Analysis and Policy*, Vol. 6: No: 1, Article 18.

³¹ Oberholzer-Gee, F. and Strumpf, K. (2007). The Effect of File Sharing on Record Sales: An Empirical Analysis, *Journal of Political Economy*, Vol. 115, pp. 1-42

³² Oberholzer-Gee, F., and Strumpf, K. (2010). File Sharing and Copyright. *NBER Innovation Policy & the Economy* (MIT Press) 10.

displaces a legal sale. Note, this factor is fundamentally different to the work described above, which sought to identify directly the proportion of revenue loss associated with digital piracy. The displacement analysis seeks to identify the extent to which users substitute illegal downloads for music which they would otherwise have purchased legitimately – it therefore seeks to identify sales that were never realized by the music industry due to digital piracy. For example, if this displacement rate were applied to the documented number of downloaded tracks reported by IFPI in 2008, then the academic literature would suggest that unrealized sales attributed to digital piracy equaled approximately \$8 billion. As a result, the two academic approaches suggest a range of losses to the music industry attributable to digital piracy in 2008 -- from \$3.5 billion to \$8 billion in a single year.

As discussed above, and in keeping with the OECD methodology, our focus is however on identifying the total commercial value of digitally pirated music rather than the associated business losses. We therefore need to translate the evidence gathered from the academic studies (loss figures) into a commercial value figure using both the estimates for the proportion of business losses associated with digital piracy and the academic estimates of the likely displacement rate between legal and illegal music downloads.

Starting with the reported sales decline of \$14.8 billion in 2008, if digital piracy could be responsible for 24% of this loss, then this suggests industry losses attributed to digital piracy equaled approximately \$3.5 billion. Using the estimated displacement rates to derive an estimate of value³³ implies a commercial value of unlicensed digital files available on line of \$17 – \$21 billion³⁴.

This estimated range is likely to be conservative and represents the lower bound of the value of digital piracy. This is because many of these studies estimate the effect of digital piracy based on data for the period only up to 2003 and they proxy digital piracy with data on internet penetration. However, average global internet penetration³⁵ has increased significantly, by around 15% per year between 2003 and 2007³⁶. We therefore expect that the commercial value of unlicensed digital files available on line in 2008 is significantly higher.

³³ In line with the studies by Liebowitz (2004) and Rob and Waldfogel (2004). Liebowitz (2004) estimates that between 5 and 6 illegal downloads are likely to be required to replace a single legitimate album purchase. Rob and Waldfogel (2004) also estimate that around 5 illegal downloads are required to replace a single legitimate album purchase.

³⁴ Estimated by multiplying the \$3.5 billion sales decline by 5 and 6 respectively. Note again, that this is not a loss figure, rather it provides an estimate of the value of illegal downloads, using the price of their legitimate counterparts.

³⁵ As measured by internet users per capita.

³⁶ Data taken from Nationmaster.com drawing on information from the CIA World Factbooks for 2003 and 2008

Findings

As noted above, it is extremely difficult to get an accurate estimate of the commercial value of digital piracy of recorded music and no single approach currently provides the answer. For this reason, we have drawn on both the most recent industry figures and the most recent academic literature to provide a range of estimates. We find that the commercial value of unlicensed digital files available on line and attributable to digital piracy is likely to lie somewhere between **\$17 billion and \$40 billion** in 2008, as noted on p. 28 and p. 24, respectively. However, because the lower end of this estimate is based on academic studies that make use of out of date data, we expect that the estimate is likely to lie towards the upper end of this range.

2.4.2 Movies

Digital piracy took slightly longer to become a significant problem in the movie, than in the movie industry. For movies, digital piracy began to become a serious problem from 2003 and was widely associated with the rapid increase in broadband penetration and broadband speed which made downloading movies both feasible and attractive. Without broadband or with a low broadband speed downloading a movie took a long time and appears to have deterred widespread piracy.

Up to now, movie revenues have not suffered as significantly as recorded music revenues. However, there has been a marked slowing in revenue growth rates since 2003, coinciding with the increased penetration of broadband internet. Between 1990 and 2003, global movie industry revenues grew at an average rate of 6.4% per annum³⁷. Between 2003 and 2008 global movie industry revenues grew at an average rate of just 2.6% per annum³⁸.

As before, we have focused on developing an estimate of the *value* of digital piracy of movies, rather than estimating the associated business losses. The most recent estimates for digital piracy in movies are from 2005. We estimate that the commercial value of digital movie piracy was likely to be between **\$10 billion and \$16 billion** in 2005.

These figures are likely to be highly conservative given the significant increase in internet penetration and broadband speeds that has taken place since 2005. Moreover, given the continuing rapid growth in broadband penetration and speed it is highly likely that the value of digitally pirated movies will grow rapidly in the years to come.

The rest of this section provides details of how we have reached this estimate.

³⁷ PriceWaterhouseCoopers

³⁸ *ibid.*

Industry estimate of business losses associated with digital movie piracy

The most recent industry study on the recorded movie industry was published by the Motion Picture Association (MPA) and L.E.K in 2006³⁹. The study involved a major survey effort where 20,600 movie consumers in 22 countries were interviewed. This information was used to estimate:

- the number of pirated units⁴⁰;
- the number of these units that would have been purchased if they had not have been pirated⁴¹; and
- the commercial value of the units that would have been purchased absent piracy⁴².

The results obtained for these 22 countries were extrapolated to 42 additional countries using a regression model⁴³. The study estimated that consumer spending on the movie industry was \$18.2 billion lower in 2005 than it would have been in the absence of *all* counterfeiting and piracy activity. The study estimated that \$7 billion of the estimated consumer spending losses were associated with digital piracy in the form of illegally downloaded movies from the internet.

Translating the loss figures into value figures

The MPA L.E.K. study has gone beyond what we are trying to do in this study, and has estimated substitution rates for digital piracy to arrive at estimates of the losses associated with digital piracy. To allow comparison with music and software, however, we need to transform the business loss estimates from the MPA L.E.K. study into the commercial value of piracy. To do so, we use estimates of the likely substitution rate between legal and illegal movie downloads.

³⁹ The Cost of Movie Piracy, an analysis prepared by L.E.K. for the Motion Picture Association, May 2006, <http://www.mpaa.org/researchStatistics.asp>, (hereinafter “MPA-L.E.K. Study”).

⁴⁰ Based on survey estimates of the movie-watching population, the incidence of piracy in the population of movie-watchers and the number of units pirated.

⁴¹ Based on consumer evidence of substitution rates and their split by window. For example, theatrical, home entertainment (rental), home entertainment (sell-through) and Pay-Per-View/Video-On-Demand.

⁴² Average retail price based on a range of secondary research including Screen Digest, Wilkofsky Gruen, Kagan, Euromonitor and IDC.

⁴³ It is worth noting that the directly researched countries accounted for approximately 95% of the total legitimate market (percentage of consumer spending on feature film) and approximately 80% of the total loss from piracy.

While academic research into the impact of illegal movie downloads is relatively limited, the studies we have found suggest that substitution rates are likely to be relatively high and may lie somewhere between 45% and 67%. This implies that only 1.5 to 2.2 illegal purchases are required to replace a legitimate movie purchase (see the box below for details). This is in line with the findings from a recent study by the UK film council which estimated substitution rates of 53% for movies.

Academic Findings

- **Rob and Waldfogel, (2007)⁴⁴**: estimate the substitution rate between paid and unpaid consumption of movies for a sample of US undergraduate students in 2005. The study estimates that on average 5.2% of the movie consumption of students in the sample is unpaid for. Of this 5.2% unpaid consumption, 3.5% replaces legitimate movie consumption, implying a substitution rate of approximately 67%.

Clearly we need to be careful when applying results from a sample of students as they may not be representative of the total population of illegal movie downloaders. However, we can take some comfort from the MPA L.E.K. finding that a typical downloader is a male aged between 16 and 24. As such the typical downloader may closely resemble the students contained within the Rob and Waldfogel dataset.

- **Rob and Waldfogel, (2006)⁴⁵ and Rob and Waldfogel, (2007)⁴⁶**: As there are so few academic studies on the movie industry, it is worth comparing the results of the study above with a similar study undertaken by Rob and Waldfogel on the music industry in 2006.

For their study of the music industry they found a substitution rate of around 20% between illegal recorded music purchases and legitimate ones. This compares to the substitution rate of around 67% they estimated for their movie sample and implies that the substitution rate for movies may be around three times as high as the substitution rate

⁴⁴ Rob, R. and Waldfogel, Joel. (2006). Piracy on the Silver Screen. *The Journal of Industrial Economics*, Vol. LV: No. 3, pp. 379-395

⁴⁵ Rob, R. and Waldfogel, Joel. (2006). Piracy on the High C's: Music Downloading, Sales Displacement and Social Welfare in a Sample of College Students. *Journal of Law and Economics*, Vol. 49: Issue: 1, pp. 29-62

⁴⁶ Rob, R. and Waldfogel, Joel. (2006). Piracy on the Silver Screen. *The Journal of Industrial Economics*, Vol. LV: No. 3, pp. 379-395

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for recorded music⁴⁷.

Other academic studies of the recorded music industry (described in the music section above) suggest substitution rates of between 15% and 20%. If we assume that the substitution rate for movies is three times higher than for recorded music (in line with the Rob and Waldfogel findings), we find that movie substitution rates could be between 45% and 67% (this implies that between 1.5 and 2.2 illegal movie purchases are required to replace a legitimate movie purchase).

Applying the figures on substitution rates to the \$7 billion loss figure estimated by the MPA L.E.K. study implies a total commercial value of illegal downloads of between \$10 billion and \$16 billion⁴⁸.

Again, we would expect these estimates to be conservative. The \$7 billion loss figure on which they are based was estimated in 2006. The global number of internet users has increased by around 18% per year since 2000⁴⁹. Broadband speeds have also been improving significantly with time, making the illegal download of files of significant size, such as movies, increasingly feasible and attractive. We therefore expect that the commercial value of digital piracy in 2008 could be significantly higher than suggested here.

Findings

As noted above, it is difficult to get an accurate estimate of the commercial value of digital piracy of movies. To construct our estimate we have taken the industry estimates of consumer spending losses associated with digital movie piracy. We have then used estimates of the substitution rates between legal and illegal movie purchases (based on the academic literature) to translate these figures into an estimate of the value of digitally pirated movie products. Based on this evidence, we estimate that the commercial value of digital movie piracy was somewhere between **\$10 billion and \$16 billion** in 2005. We expect that these figures are likely to be conservative given the significant increase in internet penetration and broadband speed in recent years.

2.5.2 Software

The software industry also suffers significantly as a result of piracy in both its physical and digital forms. Most illegal software use occurs in otherwise legal

⁴⁷ Rob and Waldfogel (2007) attribute the differences between music and movies to different costs of obtaining unpaid copies and different total costs of consuming them (largely the cost of time required for downloading and watching or listening to the file).

⁴⁸ Estimated by multiplying the \$7 billion sales decline by 1.5 and 2.2 respectively.

⁴⁹ World Internet Usage Statistics, 2000 to 2010.

businesses that may, for example, buy licenses to install a program on 10 PCs but then install it on 50 or 5,000. This issue of “under-licensing” is the most serious piracy problem for the software industry, and is somewhat unique when compared to the piracy issues of other digital industries. There are also covert criminal enterprises that sell cheap counterfeit copies of software programs online and offline. The internet is among the many means by which unauthorized software can be acquired by consumers and businesses.

Similar to the other forms of digital piracy we have already discussed, estimating the value of *digital* software counterfeiting and piracy is extremely difficult. Although there are numerous academic studies that look at software piracy, there appears to be a lack of academic research on the scale and impact of the problem. However, a number of recent studies by the Business Software Alliance (BSA) and IDC help to shed some light on this challenging area.

In this section we summarize the methodology and results from the work by BSA and IDC, which provide an estimate of the *total* commercial value of software piracy. We then draw on related data collected by BSA which provide a preliminary indication of the contribution of digital piracy to this total⁵⁰.

Our findings suggest that the value of digitally pirated software products is likely to be between **\$1.5 billion and \$19 billion**. We note the size of this range, but anticipate that the true value is likely to be towards the upper end.

An estimate of the value of all software piracy

The Business Software Alliance (BSA) and IDC published a study on piracy of software products in 2008⁵¹. The study estimates the prevalence of *all* software piracy (digital and physical) and the commercial value of that software in the market. The study uses the concept of complementary goods (those that are used together) to estimate the volume of software piracy. The basic principle is that the size of the market for the illegal product can be estimated from understanding the market for another complementary product, personal computers, which are supplied legally. As the complementary product is supplied by legal businesses, new sales and the existing stock of the product can more readily be determined.

⁵⁰ No information available at present allows us to estimate the volume of digitally pirated software illegally installed on computers. We therefore draw on information related to the availability of illegal software on the internet. Specifically, we make use of information on the number of take down notices issued by BSA in relation to suspicious software available on P2P and BitTorrent sites. In so doing, we note the significant issues surrounding the use of this information. Given the vast range of pricing for software programs, estimating an average retail value for illegally downloaded software is also extremely difficult. For that reason, we have used a range of estimates of retail prices to generate our estimates of the commercial value of digital software piracy.

⁵¹ Business Software Alliance (BSA) and IDC, *2008 Piracy Study*, May 2009, (hereinafter, BSA/IDC 2008 Piracy Study.”).

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Specifically, the study estimates the number of pirated software units installed in a given year by understanding the relationship between new sales and the existing stock of personal computers (PC)⁵² and the software installed on these computers.

The study makes use of a range of data sources to determine:

- the amount of PC packaged software installed in a given year⁵³; and
- the amount of packaged software paid for or otherwise legally acquired in a given year⁵⁴.

The difference between the two is the estimated volume of pirated software installed and put into use in a given year⁵⁵. The estimated number of pirated software units in each country is multiplied by an average value that represents a blend of software distribution prices to determine the commercial value of pirated software put into the market in that year. The price used is based on a country-specific matrix of software prices including retail, volume license, OEM, free/open source and a matrix of products including security, office automation, operating systems and more. These matrices are multiplied together to get a final blended software price. In practice, because of the many methods of deploying software, this price is likely to be lower than retail prices one would find in stores.

On this basis, the study estimates that the commercial value of *all* counterfeit and pirated software installed and put into use was \$53 billion in 2008.

⁵² IDC tracks the number of computers in a country quarterly across 105 countries, either in products called “PC Trackers” or as part of custom assignments. The remaining few countries are researched annually for the study.

⁵³ To ascertain the total software installed on PCs, both proprietary “paid for” software and legally acquired free and open source software, IDC conducts an annual survey totalling 6000 consumer responses and 4300 business user responses across a mix of 28 countries. For countries that are not surveyed, IDC relies on a correlation between the number of software units per PC and an emerging market measure published by the International Telecommunications Union called the Information Development Index.

⁵⁴ IDC measures the size of the legitimate and “paid-for” software market each year using data it routinely publishes from about 80 countries as well as 20 or so more countries studied on an annual basis for the purpose of this study.

⁵⁵ The IDC study measures the volume and value of pirated software actually *installed* in a given year. It does not track the availability of pirated software or illegal software that is acquired but not installed. If, for example, a software program was illegally downloaded but not subsequently installed onto the PC, it would *not* be counted by the IDC study.

A preliminary estimate of the value of digital software piracy

For this study, we are specifically interested in the value of digital software piracy rather than total software piracy⁵⁶. We therefore need to estimate how much of the \$53 billion estimated by BSA and IDC is related to digitally acquired software products. In line with the OECD methodology, we therefore need to estimate the volume of digitally pirated products and multiply this volume by a reasonable retail price.

Estimating the volume of illegally downloaded software products is complex. BSA currently collects information on two alternative measures of the volume of illegal activity on the internet:

- the number of BSA member company offerings of illegal software available on various P2P and BitTorrent sites⁵⁷; and
- the volume of downloading of BSA member software available on these P2P and BitTorrent sites.

Neither of these measures accurately reflects the volume of this software illegally installed on computers, nor does it capture the broad availability of pirated software online around the world. The first measure is likely to be an underestimate because it does not reflect the multiple times a single piece of software may be accessed via these sites. On the other hand, the second measure is likely to be an overestimate because not all occurrences of leeching are likely to result in software that is subsequently installed and used⁵⁸.

To be conservative, we have used the volume of suspicious software BSA has identified as being available on P2P and BitTorrent sites to generate our estimates. BSA issued 7.3 million take-down notices for P2P sites and 152,286 take down notices for BitTorrent sites in 2009. This brings the total take down notices issued in 2009 to 7.5 million.

Ascertaining an average retail value for the software title catalogue covered by the take-down notices issued by BSA is also extremely complex. Prices can range from \$50 to more than \$5000 per product depending on the type of product considered. To generate a range of estimates for the value of digital software

⁵⁶ Physical software products which are illegally distributed should be captured within the OECD estimates of international trade and the estimates in this study of domestic counterfeiting and piracy. However, illegal use of software will not be captured by these estimates.

⁵⁷ BSA make use of a number of tools to monitor BitTorrent networks and P2P networks for suspicious activity in countries where scanning is permitted by law. Once BSA has identified offerings of illegal software via various websites and P2P networks it may issue takedown notices to the Internet Service Providers asking them to remove the pirated software.

⁵⁸ The improvement in upload and download speeds for P2P and BitTorrent users associated with having a wide catalogue of software available, make this a particular issue.

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piracy, we have applied estimates of the *average* retail value ranging between \$200 per product (likely to be extremely conservative) and \$2,500 per product.

Combining our assumptions on volume and value imply that the total value of digital software piracy is between **\$1.5 billion and \$19 billion**. The lower end of this estimate is likely to be extremely conservative for the following reasons:

- the volume estimates rely on BSA monitoring activity across only those countries where it is legal to scan for suspicious activity;
- the estimates relate to a selection of BSA member software titles and not the broader universe of pirated software available online;
- the specific piece of software for which a takedown notice has been issued may have been accessed and installed by multiple individuals, so the number of take down notices may significantly underestimate the number of illegal copies installed⁵⁹; and
- given the range of retail prices for illegally downloaded software, an average value of \$200 is likely to be extremely conservative.

We would therefore expect the true value of digital software piracy to lie towards the upper end of this range. However, in the absence of additional evidence to refine our estimate, the range of \$1.5 billion to \$19 billion represents our best current estimate of the commercial value of digital software piracy. Work is ongoing within the industry to try to understand more fully the magnitude of digital piracy.

2.5.3 The total value of digital piracy

This section has brought together information from the most recent industry and academic studies for recorded music, movies and piracy to provide the first aggregated estimate of the value of digital piracy across these three industries. The underlying industry and academic studies have used a range of different techniques, as appropriate to their industries, to generate estimates of the scale and impact of digital piracy.

We have used the information provided within these studies to generate a consistent set of estimates that can be combined to provide an initial estimate of the total value of digital piracy. Our findings suggest that the total value of digital piracy for 2008 is likely to be between \$21.5 billion and \$75 billion. We expect

⁵⁹ On the other hand, it is also possible that for some take-down notices, no illegal software was actually installed.

that the estimates for each of the industries are likely to lie towards the upper end of the ranges presented, which implies that the total value of digital piracy may be closer to \$75 billion than to \$21.5 billion.

Table 5. Global value of digital piracy

	Global value of digital piracy (billions of US dollars)
Digital piracy of recorded music	\$17 billion - \$40 billion
Digital piracy of recorded movies	\$10 billion - \$16 billion
Digital piracy of software	\$1.5 billion - \$19 billion
Total	\$28.5 billion - \$75 billion

3 The broader economy-wide effects of counterfeiting and piracy

This section of the report provides a brief summary of previous analysis carried out by Frontier⁶⁰ in relation to the OECD's Category 4: Broader economy-wide effects. In doing so, we bring together estimates for the four key categories identified in the OECD's report.

The objective of our previous analysis was to develop a simple model based on publicly available data to estimate the cost to governments and consumers of counterfeit products. In other words, these somewhat hard-to-define impacts on governments, consumers and society in general have largely been conveyed through case studies, anecdotes and product or country specific data. Our objective was to tell the story with numbers, by introducing methodologies to give the limited data an empirical foundation.

Counterfeiting clearly impacts legitimate businesses, causing lost sales, lower profits and loss of brand trust and value. However, in an interconnected economy, consumers and governments also suffer. Governments see lower tax revenues and higher spending on welfare, health services and crime prevention. Consumers receive poorer quality products that are unregulated and unsafe. Moreover, as businesses suffers lower income and damaged brands, it may have to cut jobs and reduce investment leading in turn to lower economic growth. These wider economic and social effects of counterfeiting and piracy were the primary focus of our previous analysis. The analysis focused on two countries in detail – the UK and Mexico – and provided illustrative estimates for the G20.

3.1 Key findings

Counterfeiting and piracy are estimated to cost G20 governments and consumers over €100 billion every year.⁶¹ The G20 economies lose approximately €62 billion in tax revenues and higher welfare spending, €20 billion in increased costs of crime, €14.5 billion in the economic cost of deaths resulting from counterfeiting and another €100 million for the additional cost of health services to treat injuries caused by dangerous fake products. Finally, a number of G20 economies may be missing out on higher FDI as a result of concerns over IPR enforcement. That lost investment could give rise to additional tax losses of more than €5 billion across the G20.

⁶⁰ Frontier Economics, The Impact of Counterfeiting on Governments and Consumers, December 2009

⁶¹ Note, the original study was conducted in with a Euro basis and are republished here. Conversions to US\$ at an average exchange rate of 1.25 US\$ to Euro were used for presentation in the Executive Summary and Conclusions of this Report.

Counterfeiting also has a big impact on employment across the G20 economies. Our analysis suggests that approximately 2.5 million jobs have been destroyed by counterfeiting and piracy – alternatively, if counterfeiting and piracy could be eradicated or seriously reduced, up to 2.5 million jobs could be created in the legitimate economies of the G20.

While it is likely that many of those who lost their jobs have gone on to find reemployment, the personal and family trauma associated with even temporary unemployment should not be lightly discounted. For example, people may quickly get into arrears on mortgages or personal debts, have difficulty paying medical expenses (as benefits are often linked to employment) or be forced to move to find alternative employment. Even when workers do find new jobs, they are likely to pay less. Moreover, our estimates suggest that 160,000 workers will fail to find new jobs, with devastating consequences for their personal financial situations and harmful consequences for government as welfare bills rise and taxes fall.

- Counterfeiting and piracy cost the G20 economies approximately €62 billion annually in lost tax revenues and higher welfare spending. This is based on the analysis showing the cost in the UK of €4.1 billion and in Mexico of €1.4 billion.
- For the G20 overall, the economic and social costs of crime increases by more than €20 billion for every 1 % increase in the crime rate caused by the trade in counterfeit and pirated goods. In the UK a 1% increase in crime costs society approximately €1.7 billion, while in Mexico a 1% increase in crime leads to costs of €290 million.
- The economic cost of lives lost to counterfeiting and piracy can add up to €14.5 billion each year across the G20 economies, not including a cost for additional health services caused by dangerous fake products of more than €100 million each year.
- Lost taxes associated with lower FDI could be more than €5 billion per year. This is based on estimates of tax losses for Mexico of over €500 million.
- In the UK 380,000 jobs are destroyed as a result of counterfeiting. 31,000 workers are unlikely to be able to find reemployment. In Mexico 480,000 jobs are destroyed with 26,000 unlikely to find alternative employment.

3.2 **Headline findings – UK**

Applying our methodology to the four sectors (luxury goods, pharmaceuticals, food and beverages and software) in the UK we find that counterfeiting costs the government €500 million in lost taxes and higher welfare payments. This is made

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up of losses in sales tax, corporation tax, excise duty and income tax and by increases in benefit payments.

To extrapolate these findings to the total UK economy, we based our estimate on the fact that these four industries account for 6% of UK GDP. However, we also accounted for the fact that these four sectors may be more prone to counterfeiting than the economy as a whole.⁶² With this as the base, a conservative estimate of the cost for the UK economy as a whole could be in the order of €4.1 billion. For comparison, this is equivalent to 2.5% of total UK government tax receipts.

Another relevant comparison is the fact that €4.1 billion in lost tax revenue and increased welfare spending is more than 1.5 times what the UK currently spends in total on Customs activity. It also represents just less than half the UK's overseas aid commitment in 2010.

Because firms producing legitimate products lose sales to counterfeits, counterfeiting can also lead to job losses. In the short term (less than a year) around 15,000 jobs in the UK in the four sectors are lost due to the impact of counterfeits. The impact of these losses on the government's tax receipts and benefit payments are captured above. Longer term, in an economy with low overall unemployment like the UK, we would expect to see the majority of these workers obtaining employment elsewhere in the economy. Long term unemployment is likely to affect around 1,200 jobs across the four sectors.

It is important to note again that these job losses relate only to the four sectors we have analysed. A conservative estimate for the UK economy as a whole would be in the order of 380,000 jobs lost in the short run, and almost 31,000 permanent job losses.

The links between counterfeiting and other forms of criminal activity are becoming better identified. There is widespread evidence that the huge profits from counterfeiting are used to fund other criminal activities. Obviously, we cannot measure this effect directly. However, even taking the most modest assumption that counterfeiting were to be responsible for raising the UK crime rate by just 1%, the economic and social cost of crime in the UK would increase by €1.7 billion. This figure captures the cost imposed on the criminal justice system as well as other social costs such as the cost of lives lost (homicides) and the cost of insurance and security to protect against crime.

⁶² A simple scaling up from the four sectors to the economy as a whole would suggest a loss to government of approximately €10 billion. To account for the fact that the industries under consideration might be more prone to counterfeiting than the economy as a whole, the loss to government was discounted by 50%.

The €1.7 billion in additional cost represents more than 80% of total expenditures on the courts service in the UK and almost 5% of total expenditure on the criminal justice system in the UK.

In summary, conservative estimates suggest that counterfeiting costs the UK:

- €4.1 billion in lost taxes and higher welfare spending;
- 380,000 jobs in the short term and 31,000 in the long term; and
- €1.7 billion for every 1% increase in crime caused by counterfeiting.

3.3 **Headline findings – Mexico**

In Mexico counterfeiting across the four sectors (luxury goods, pharmaceuticals, food and beverages and software) costs the government approximately €145 million per year. This loss is made up of losses in sales tax, corporation tax, excise duty and income tax.

The four sectors account for approximately 8% of Mexican GDP. On conservative estimates, the total revenue impact for the Mexican government could be in the order of €1.4 billion or 1% of government tax receipts. This is equivalent to 30% of what Mexico spends in pre-primary education or 10% in secondary education.

As with the UK, the impact of counterfeiting also leads to job losses in the short and long term. Across the four industries short term job losses in Mexico are estimated to be approximately 10,000. Longer term jobs losses are estimated to be around 500 for the four industries. Looking at the economy as a whole, short term job losses are likely to exceed 480,000 while in the long term approximately 26,000 jobs are likely to be lost.

As well as losing tax receipts from Mexico-based companies as a result of counterfeiting, the Mexican government may also be missing out on significant tax payments from multinationals that would invest in the Mexican economy if there was stricter IPR enforcement. Technologically intensive sectors are the most likely to lose out on key technology transfer and foreign direct investment.

If better IPR enforcement could create the conditions that would attract foreign direct investment, this would have a clear impact on the output of the Mexican economy and on productivity. Estimates from recent academic work on the determinants of FDI suggest that for developing countries exports could increase by as much as 20% as a result of better IPR enforcement. For Mexico that would suggest an increase in total economic output of 11%. Even if we were to assume that Mexican output increased by only a more modest 2% in technologically intensive sectors, government tax receipts would still increase by around €520 million.

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The cost to the economy and society of crime linked to counterfeiting is also significant in Mexico. If criminal activities linked to counterfeiting were to cause the crime rate to increase by just 1%, the total cost of crime in Mexico would increase by over €290 million.

In summary, conservative estimates suggest that counterfeiting costs Mexico:

- €1.4 billion in lost taxes and higher welfare spending;
- €520 million of tax losses from lost FDI;
- 480,000 jobs in the short term and 26,000 in the long term; and
- €290 million for every 1% increase in crime caused by counterfeiting.

3.4 Illustrative findings - G20

This study has also considered what these findings could imply at a G20 level, deriving assumptions from the more focussed research conducted on the UK and Mexico.

Obviously, more accurate results would be generated by implementing the methodology for each of the G20 countries. However, to illustrate the potential magnitude of the impact on government and consumers, we have extrapolated the findings of our analysis from the UK and Mexico to the G20.

Estimated on this basis, total estimated tax losses and increased expenditure across the member economies of the G20 could be in the order of €14 billion for the four sectors (luxury goods, pharmaceuticals, food and beverages and software) studied. Applying this approach to the G20 economies in their entirety, suggests that each year governments must find approximately €62 billion in order to cover tax losses and higher welfare spending.

Job losses could be around 540,000 in the short term and 34,000 in the longer term for the four sectors analysed. For the G20 economies as a whole short term losses are approximately 2.5 million. Alternatively, if counterfeiting and piracy could be eradicated or seriously reduced, up to 2.5 million jobs could be created in the legitimate economies of the G20. It should also be noted that these estimates do not include secondary impacts on employment that may well be experienced by suppliers, retailers and other sectors in the supply chain.

While it is likely that many of those who lost their jobs have gone on to find reemployment, the personal and family trauma associated with even temporary unemployment should not be lightly discounted. For example, people may quickly get into arrears on mortgages or personal debts, have difficulty paying medical expenses (as benefits are often linked to employment) or be forced to relocate to find alternative employment.

Finally, it is important to note that our previous analysis focused only on the G20 economies and so are likely to under-estimate the negative global impacts of counterfeiting and piracy on employment.

The links between counterfeiting and other criminal activities may also be leading to substantial costs for the G20 governments and their citizens. For the G20 as a whole, the economic and social costs of crime increase by over €20 billion for every 1% increase in the crime rate caused by counterfeiting.

Finally, counterfeit products are unregulated and unsafe. Every year thousands of consumers living and working in countries throughout the G20 suffer accidents and injuries as a result of unregulated counterfeit products. Many, if not most, of these products have been purchased unwittingly by consumers. Unfortunately, 3,000 consumers lose their lives every year as a result of their exposure to dangerous counterfeit products (primarily through counterfeit food and medicines). On conservative assumptions, the economic cost of lives lost to counterfeiting can add up to €14.5 billion each year across the G20 economies.

Accidents and ill-health relating to counterfeiting also put a strain on health services across the G20. While there are few good sources of information on the total incidence of accidents and ill-health caused by counterfeiting, even the most modest assumptions suggests that across the G20 the costs to the health services are likely to exceed €100 million.

For the G20 as a whole therefore our analysis suggests that counterfeiting costs governments and consumers:

- approximately €62 billion annually in lost tax revenues and higher welfare spending;
- approximately 2.5 million jobs across the G20 countries in the short term (less than 1 year);
- €20 billion for every 1 % increase in the crime rate caused by the trade in counterfeit and pirated goods; and
- €14.5 billion each year as a result of the 3,000 deaths linked to counterfeit products, not including a cost for additional health services caused by dangerous fake products of more than €100 million each year.

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The previous chapters of this report have focused on generating estimates of the commercial value of counterfeiting and piracy associated with four categories of impacts delineated in the OECD's 2008 report, namely:

- **Category 1: Counterfeit and pirated goods moving through international trade.** We updated the OECD's estimate of the value of counterfeit and pirated goods moving through international trade, drawing on new customs seizure data indicating that the incidence of counterfeiting and piracy has increased relative to the 2005-based customs data used in the OECD's 2008 study.
- **Category 2: Value of domestically produced and consumed counterfeit and pirated products.** We developed a methodology, derived from the OECD's modeling work, to generate an estimate of the value of domestic manufacture and consumption of counterfeit and pirate products – thereby capturing an estimated value of fake products that do not cross borders.
- **Category 3: Volume of pirated digital products being distributed via the Internet.** We described, evaluated and contextualized industry reports and academic studies on the value of digital piracy of recorded music, movies and software. We then used these studies to produce an estimate of the total value of digital piracy that has been calculated using consistent assumptions and methodology across these industries.
- **Category 4: Broader economy-wide effects.** We provided a summary of previous analysis aimed at identifying the broader economy-wide effects of counterfeiting and piracy.

And, because the value and volume of counterfeiting and digital piracy appears to be increasing rapidly, we have also undertaken to estimate these impacts in 2015. This work is delineated in section 4.3, below.

4.1 Estimates of total value of counterfeit and pirated products

Chapter 2 of this report focused on generating estimates of the commercial value of counterfeiting and piracy in three of the impact categories excluded from the OECD's 2008 report, namely:

- increases in the estimate of counterfeit and pirated products moving through international trade due to increases in the incidence of counterfeiting and piracy since 2005;

- the value of domestic manufacture and consumption of counterfeit and pirated goods (the OECD's \$250 billion figure focuses on counterfeiting in international trade alone, that is fakes seized at border crossings); and
- the value of digital piracy of recorded music, movies and software (not captured in trade statistics).

We have combined our estimates for each of these three areas with the original OECD estimate to generate a total estimate of the value of counterfeiting and piracy for 2008 of between **\$455 billion and \$650 billion**. The breakdown of this estimate is shown in Table 6 below.

Table 6. Estimate of the total value of counterfeit and pirated products (2008)

OECD Category	Estimate
Internationally traded counterfeit and pirated products	\$285 billion - \$360 billion
Domestically produced and consumed counterfeit and pirated products	\$140 billion - \$215 billion
Digitally pirated products	\$30 billion - \$75 billion
Total	\$455 billion - \$650 billion

Source: Frontier Economics

It is important to note that these estimates are likely to provide a conservative estimate of the impact of counterfeiting and piracy. The estimates of the value of counterfeiting are based on 2008 data (the last year for which complete data was available), and given the rapid increase in counterfeiting and piracy observed between 2005 and 2008, is likely to under-estimate the level of counterfeiting and piracy beyond 2008. It is for this reason that we have provided estimates to 2015.

It is also important to note that this study, following in the footsteps of the OECD report, has not attempted to estimate business losses associated with counterfeiting and piracy. This is primarily because the likely variations and other difficulties associated with estimating substitution effects across substantially different countries and industries introduces an additional level/degree of variables which could undermine our aim to as accurately as possible characterize the magnitude of the unfair competition for legitimate economic activity and the unchecked growth of an emerging “underground economy”.

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4.2 Broader economy wide effects of counterfeiting and piracy

In addition to their work on economic impacts, the OECD examined – but did not provide quantitative estimates for a range of broader economy-wide effects: *“Counterfeiting and piracy can have broad economy-wide effects on trade, foreign investment, employment, innovation, criminality and the environment. Concerning the microeconomic effects, the sales volume, prices and costs of rights holders are impacted, as are investment, royalties and brand value. For consumers, counterfeit and pirated products may offer cheap alternatives to genuine goods but are usually of inferior quality. For certain types of infringing goods, the health and safety of consumers may be put at significant risk. With respect to governments, counterfeiting and piracy have effects on tax revenues, government expenditures, and, when corruption takes place, the effectiveness of public institutions. (p. 133)*

These social costs are far from insignificant and merit treatment sufficient to ensure that they are not overlooked when considering the full range of negative impacts resulting from counterfeiting and piracy. In an associated study⁶³ (excerpted in Chapter 3 of this report), Frontier explored the value and impact of these broader economy-wide effects. Notably, this work did not capture all of the thirteen “broader economy wide effect” cost-categories identified by the OECD; we only tackled impact of counterfeiting and piracy on government tax revenues, legitimate employment, increased costs of crime, economic costs on consumer health and safety, and downward pressures on FDI flows. Moreover, the scope of this report was limited to only the 20 countries comprising the “group of 20”, and so will be an under-estimate of the global impact of counterfeiting and piracy. The findings, however, are relevant to this report and serve to complete the picture of the total impacts to “economy and society”. We found:

- **Counterfeiting and piracy are estimated to cost G20 governments and consumers over \$125 billion every year. Of this:**
 - the G20 economies lose approximately \$77.5 billion in tax revenues and higher welfare spending, \$25 billion in increased costs of crime, \$18.1 billion in the economic cost of deaths resulting from counterfeiting and another \$125 million for the additional cost of health services to treat injuries caused by dangerous fake products; and
 - a number of G20 economies may be missing out on higher FDI as a result of concerns over IPR enforcement. That lost investment could give rise to additional tax losses of more than \$6.25 billion across the G20.

⁶³ Frontier Economics, The Impact of Counterfeiting on Governments and Consumers, December 2009

Employment

This report has not considered explicitly the impact of counterfeiting and piracy on employment. However, Frontier's previous study, which focused on the wider social and economic impacts of counterfeiting and piracy found that counterfeiting and piracy has significant negative impacts on employment across the G20 economies. Our previous analysis found that **approximately 2.5 million jobs have been destroyed by counterfeiting and piracy** – alternatively, if counterfeiting and piracy could be eradicated or seriously reduced, up to 2.5 million jobs could be created in the legitimate economies of the G20. It should also be noted that these estimates do not include secondary impacts on employment that may well be experienced by suppliers, retailers and other sectors in the supply chain.

While it is likely that many of those who lost their jobs have gone on to find reemployment, the personal and family trauma associated with even temporary unemployment should not be lightly discounted. For example, people may quickly get into arrears on mortgages or personal debts, have difficulty paying medical expenses (as benefits are often linked to employment) or be forced to relocate to find alternative employment.

Finally, it is important to note that our previous analysis focused only on the G20 economies and so are likely to under-estimate the negative global impacts of counterfeiting and piracy on employment.

4.3 A growing problem – projections to 2015

The estimates provided above indicate the significant scale of counterfeiting and piracy. However, they are based on data from 2008. Given the trend of rapid increases in counterfeit and pirated products, it is instructive to consider an illustration of the extent to which counterfeiting and piracy may continue to grow over the next few years. Specifically, using observed growth rates for the past decade we forecast forward to provide an illustration of the potential magnitude of counterfeiting and piracy in 2015.

Product counterfeiting

The value of counterfeiting and piracy appears to be increasing rapidly over time. The OECD's original estimate was based on 2005 data. Updating this estimate to reflect increases in trade and seizures since 2005, we find that the value of counterfeit and pirated products in trade has increased by up to 22% per year over this period. Even if we assume that this growth rate were to slow considerably, say to 15%, it would still result in a significant increase in the total value of counterfeit and pirated products. Given the methodology used to estimate domestically produced and consumed counterfeiting and piracy, we use

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the same growth rate to estimate the potential level of domestic production and consumption of counterfeit and pirated goods in 2015.

Table 7 shows that if physical production of counterfeit and pirated products were to grow at 15%, then the value of internationally traded and domestically produced and consumed counterfeit and pirated products could be between \$1.14 and \$1.53 trillion in 2015.

Digital piracy

Our findings for 2008 also suggest that digital piracy accounts for between 6.5% and 12% of the total value of counterfeit and pirated products consumed. However, it is worth recalling that digital piracy is a relatively new problem compared to physical piracy (emerging only in the last decade). Against this backdrop, this scale of impact is concerning. It indicates the extent to which the problem has grown over a short period of time. Evidence on digital piracy also suggests that it is a problem that is likely to continue growing quickly over the next few years with increased internet access and broadband speeds.

There are two approaches we can take to projecting digital piracy into the future:

1. The global number of internet users has increased from around 361 million in 2000 to almost 2 billion in 2010⁶⁴, implying a compound annual growth rate of approximately 18% per annum. If digital piracy was to increase at the same rate, it would be expected to have a value of between \$90 and \$240 billion by 2015.
2. Alternatively, if we use the relatively conservative assumption that digital piracy will maintain its total share of counterfeiting and piracy (i.e. growth will not continue to outstrip physical counterfeiting and piracy), we find that by 2015, digital piracy is likely to have a value of between \$80 billion and \$210 billion.

⁶⁴ World Internet Usage Statistics, 2000 to 2010.

Table 7. Estimate of the value of physical counterfeit and pirated products (2015)

OECD Category	Estimate
Internationally traded counterfeit and pirated products	\$770 billion - \$960 billion
Domestically produced and consumed counterfeit and pirated products	\$370 billion - \$570 billion
Digital piracy	\$80 billion - \$240 billion
Broader economy wide effects ^{†*}	\$125 +
Employment losses*	2.5 million +
Total	\$1,220 billion - \$1,770 billion

Source: Frontier Economics

[†] Effects on government tax revenues, welfare spending, costs of crime health services, FDI flows

* Estimate limited to G20 economies

Overall, these estimates imply that the upper bound of the global value of counterfeit and pirated could be **\$1.77 trillion**. According to the IMF forecasts, international GDP is forecast to be over \$80 trillion in 2015.⁶⁵ Considering our estimates for the value of international counterfeited and pirated goods, this suggests that global production of counterfeit and physical products could make up as much as 2% of global GDP.

4.4 The complete picture

The OECD report was seminal in its effort to develop analytical, data-based methodologies for estimating the value of internationally traded counterfeit and pirated products.

Moreover, its delineation of four key categories of economic and social impact are widely understood to represent a more complete picture of the full impact of counterfeiting and piracy on the economy, society and development.

⁶⁵ International Monetary Fund, World Economic Outlook Database, October 2010, <http://www.imf.org/external/pubs/ft/weo/2010/02/weodata/weorept.aspx?sy=2008&ey=2015&scsm=1&ssd=1&sort=country&ds=.&br=1&c=001&s=NGDPD&grp=1&a=1&pr.x=91&pr.y=12>

Conclusions

However, the lack of quantitative analysis of three of these additional impact categories is likely to result in a substantial underestimate of the scope of counterfeiting and piracy.

For these reasons, this report has endeavoured to account for these shortcomings by:

- (1) drawing out the additional impacts left un-quantified in the OECD report;
- (2) introducing methodologies for estimating the magnitude of these additional cost categories;
- (3) projecting forward the magnitude of the problem;
- (4) providing a starting point for future analytical work, to be taken up by OECD, intergovernmental organizations, national governments and/or academia.

By filling in the gaps left by the OECD, we present a more practical and complete picture of the economic and social impacts of counterfeiting and piracy. The following table compiles the set of findings we refer to as *the complete picture*, drawing together estimates for the total value of counterfeit and pirated products in 2008, along with projections for 2015.

Table 8. The Complete Picture. Estimate of the total value of counterfeit and pirated products in 2008 and 2015, and impacts on the broader economy and employment

OECD Category	Estimate in \$ billions (2008)	Estimate in \$ billions (2015)
Internationally traded counterfeit and pirated products	\$285 - \$360	\$770 - \$960
Domestically produced and consumed counterfeit and pirated products	\$140 - \$215	\$370 - \$570
Digitally pirated products	\$30 - \$75	\$80 - \$240
sub total	\$455 - \$650	\$1,220 - \$1,770
Broader economy wide effects ^{†*}	\$125	\$125 +
Employment losses*	2.5 million	2.5 million +

Source: Frontier Economics

[†] Effects on government tax revenues, welfare spending, costs of crime health services, FDI flows

* Estimate limited to G20 economies

Conclusions

Annexe 1: US Analysis and Findings

As noted in the main body of the report, an important next stage in the analysis is to start developing more granular country level estimates of the impact of counterfeiting and piracy. In the annexe below, we provide an illustrative assessment of the value of counterfeiting and piracy in the US, based on the findings from our global analysis.

This section provides estimates of what the global findings set out above imply for the US. We set out preliminary estimates of the share of global counterfeit and pirated goods accounted for by the US. For the purposes of this report, we focus on understanding the US share of *consumption* of counterfeit and pirated goods. It would also be possible to examine the US share of counterfeit and pirated goods *production*, but the consumption-based share is more likely to be relevant to US-based businesses. It is also consistent with the methodologies used to generate the global estimates set out above.

We find that the US consumption-based share of counterfeit and pirated goods is between **\$66 billion and \$100 billion** (based on 2008 data). We find that the US consumes between \$45 billion and \$60 billion of internationally traded counterfeit and pirated products, \$12 billion to \$14 billion domestically produced counterfeit products and between \$9 billion and \$25 billion digitally pirated products.

The rest of this section provides details of how these estimates have been derived.

4.4.1 International trade

Earlier in this report, we estimated that global counterfeit and pirated products in international trade were worth between \$287 and \$363 billion in 2008. In this section we estimate the US share of this figure by taking the US share of total world imports as a proxy for their share of counterfeit and pirated world imports. On this basis, we estimate that the US imports between **\$46 billion and \$58 billion** in pirated and counterfeit products.

A proxy for the US share of global counterfeit and pirated imports

To estimate the US share of internationally traded counterfeit and pirated products we need to understand how many such products are imported into the US. The OECD estimates of internationally traded counterfeit products do not help us in this respect as they are organized by source economy rather than destination economy. This tells us where the counterfeit goods were produced rather than where they were consumed.

To reach a preliminary estimate we have therefore taken the US share of total world imports as a proxy for its share of total counterfeit imports. In 2007, the

US imported approximately \$2 trillion worth of goods, which equates to roughly 16% of total world value of imports. So long as the US propensity to import counterfeit products is broadly equivalent to its overall propensity to import, this provides a reasonable proxy for the US consumption-based share. To be clear, we are not saying that the rate at which the US imports counterfeit and pirated goods is the same as for all other goods. Rather, this assumption implies that, if for every \$100 of world imports the US consumes \$16, then for every \$100 of counterfeit imports the US would also consume \$16 worth.

Findings

Taking 16% of the total value of counterfeit and pirated goods in international trade implies that the US consumes \$46-\$58 billion of internationally traded counterfeit and pirated products. Clearly, if the US has a greater propensity to import counterfeit products than all products in general then this measure will understate the value of counterfeit and pirated goods in the US. We would anticipate that the US may, in fact, have a lower propensity to import counterfeit products than to import all products in general, so the US share is more likely to be at the lower end of the range we have estimated.

4.4.2 Domestic production and consumption

As detailed earlier, we estimated that the global value of domestically produced and consumed counterfeit and pirated products was between \$140 and \$215 billion in 2008. In this section we estimate the US share of this number by extracting the US figures directly implied by our global analysis. On this basis, we find that the US consumes between **\$12 billion and \$14 billion** domestically produced counterfeit and pirated products.

Extracting the US figures implicit in our global analysis

The global estimate of \$140 billion to \$215 billion domestically produced and consumed counterfeit and pirated products was generated by:

- **Step 1:** Taking the simulated counterfeiting propensities for each product category and each source economy estimated by the OECD.
- **Step 2:** Identifying the relevant categories of GDP that are likely to be exposed to counterfeit products for each economy.
- **Step 3:** Estimating the value of domestic counterfeit and pirated production and consumption for each economy by applying the counterfeiting propensities from Step 1 to the categories of GDP identified in Step 2.

This methodology then involved aggregating each of the country-specific estimates to reach a global estimate. This means that we are able to extract the US number directly from the global analysis we undertook. For our global

analysis we also varied the assumption about the link between the propensity for a source economy to export counterfeit and pirated products and its propensity to produce them for local consumption. Specifically, we used evidence from a study by the Japan Patent Office to support the hypothesis that counterfeiting is *less prevalent in trade* than in domestic production and consumption outside of Asia. The range of estimates produced for the US also reflects this variation in assumptions.

Findings

The US figures implied by our global analysis suggest that the US consumes between \$12 and \$14 billion worth of domestically produced and consumed counterfeit products.

4.4.3 Digital piracy

Earlier in this report we provided estimates of the global value of digital piracy. In this section, we look specifically to understand the value of digitally pirated products consumed by the US. We cover recorded music, movies and software in turn.

Recorded music

We estimated that the global value of digitally pirated recorded music was between \$17 and \$40 billion in 2008 but more likely to be towards the upper end of this range. In this section we apply the two alternative approaches used to generate the global estimates to US-specific recorded music figures. On this basis, we find that the US consumes between **\$7 - \$20 billion** worth of digitally pirated recorded music.

Updating industry estimates to be US specific

Our starting point for estimating the global value of digitally pirated recorded music was to take IFPI estimates of the number of illegal music downloads and to multiply these by the commercial value of \$1 per single.

Following the same approach for the US involves estimating the volume of US illegal music downloads and an appropriate value for their legal counterparts. We continue to use the average retail price of a legal single download in the US⁶⁶ as the appropriate measure of value for our analysis. But, it is more difficult to get an accurate estimate of the volume of illegal downloads made by US consumers.

We can proxy the volume of US illegal music downloads by assuming that US consumers account for a similar proportion of legal and illegal music downloads.

⁶⁶ Recording Industry Association of America (RIAA) 2008 Year-End Shipment Statistics

IFPI⁶⁷ estimate that US consumers account for 50% of all music downloads in the legitimate market. If we assume that they also account for a similar proportion of downloads in the illegal market, this implies that around 20 billion songs are illegally downloaded by US consumers⁶⁸.

Using the estimates of US download volumes and the average retail price described above, we estimate that the commercial value of illegal downloads of recorded music is approximately \$20 billion. Again, we have been conservative in our estimate by assuming that all of the 20 billion illegal US downloads are singles⁶⁹.

Using academic studies to generate US specific estimates

- To complement the industry specific analysis set out above, we also drew on a range of academic studies that have examined the issue of digital music piracy. These papers are described in detail in the main digital piracy section above.
- There appears to be an emerging consensus amongst these papers about the impact of digital piracy on the music industry. Specifically, they appear to agree that:
 - digital piracy is responsible for around 24% of the global sales decline that has occurred in the music industry; and
 - between 5 and 6 illegal downloads are required to replace a single legitimate album purchase⁷⁰.

Whilst these studies attempt to measure business losses rather than the value of digital piracy, their findings have implications for the scale of digitally pirated music available. The findings suggest that digital piracy could be responsible for approximately \$1.45 billion (24%) of the \$6 billion sales decline experienced by the US between 1999 and 2008⁷¹. As between 5 and 6 illegal downloads are

⁶⁷ International Federation of the Phonographic Industry (“IFPI”), The Recording Industry 2006 Piracy Report: Protecting Creativity in Music, July 2006; (hereinafter “IFPI Piracy Report”), <http://www.ifpi.org/content/library/piracy-report2006.pdf>.

⁶⁸ 50% of the total 40 billion illegal downloads estimated by IFPI.

⁶⁹ The average retail price for an album is likely to be approximately \$10. Source: Recording Industry Association of America (RIAA) 2008 Year-End Shipment Statistics

⁷⁰ In line with the studies by Leibowitz (2004) and Rob and Waldfogel (2004). Liebowitz (2004) estimates that between 5 and 6 illegal downloads are likely to be required to replace a single legitimate album purchase. Rob and Waldfogel (2004) also estimate that around 5 illegal downloads are required to replace a single legitimate album purchase.

⁷¹ Recording Industry Association of America (RIAA) 2008 Year-End Shipment Statistics

required to replace a single legitimate album purchase⁷², this implies a total commercial value of illegal downloads of between \$7.2 and \$8.6 billion⁷³.

As for our global analysis, we suggest that this estimate is likely to be extremely conservative. Many of the academic studies used here estimate the effect of digital movie piracy based on data for the period up to 2003 and proxy digital piracy with data on internet penetration. The global number of internet users has increased by around 18% per year since 2000⁷⁴. We therefore expect that the commercial value of US digital piracy in 2008 could be significantly higher than suggested here. This could be an area for further investigation in the future.

Findings

As noted in the global estimate section, it is extremely difficult to get an accurate estimate of the commercial value of digital piracy of recorded music and no single approach currently provides the answer. For this reason, we have drawn on industry figures and the academic literature to provide a range of estimates. We find that the US consumed \$7 - \$20 billion digitally pirated recorded music in 2008. However, because the lower end of this estimate is based on academic studies that make use of out-of-date data and do not account for the rapid growth of broad band penetration and mobile technologies, we expect that the estimate is likely to lie towards the upper end of this range.

Movies

We estimated that the commercial value of global digital movie piracy was likely to be between \$10 billion and \$16 billion in 2005. In this section we make use of the US specific estimates of movie business losses from digital piracy to provide an estimate of the US share of this global figure. We find that the US consumed between **\$1.4 billion and \$2 billion** worth of digitally pirated movies in 2005. As for the global figures above, we note that these figures are likely to be extremely conservative.

Industry estimate of US business losses associated with digital movie piracy

The global estimate described above made use of the study published by the Motion Picture Association (MPA) and L.E.K in 2006⁷⁵. This study estimated

⁷² In line with the studies by Leibowitz (2004) and Rob and Waldfogel (2004). Liebowitz (2004) estimates that between 5 and 6 illegal downloads are likely to be required to replace a single legitimate album purchase. Rob and Waldfogel (2004) also estimate that around 5 illegal downloads are required to replace a single legitimate album purchase.

⁷³ Estimated by multiplying the \$1.2 billion sales decline by 5 and 6 respectively.

⁷⁴ World Internet Usage Statistics, 2000 to 2010.

⁷⁵ The Cost of Movie Piracy, an analysis prepared by L.E.K. for the Motion Picture Association, May 2006, <http://www.mpaa.org/researchStatistics.asp>, (hereinafter "MPA-L.E.K. Study").

that there were \$7 billion of estimated consumer spending losses associated with digital piracy in the form of illegally downloaded movies from the internet.

The study also provided a US specific figure for business losses. It found that the US share of the \$7 billion global losses was approximately \$918 million (13% of total global losses).

Translating the loss figures into value figures

As indicated earlier, we need to transform the business loss estimates from the MPA L.E.K. study into a commercial value of digital movie piracy. To do so, we use estimates of the likely substitution rate between legal and illegal movie downloads.

While academic research into the impact of illegal movie downloads is relatively limited, the studies that exist suggest that substitution rates are likely to be relatively high and may lie somewhere between 45% and 67%. This implies that only 1.5 to 2.2 illegal purchases are required to replace a legitimate movie purchase (see the earlier section on digital movie piracy for details). Applying the figures on substitution rates to the \$918 million US loss figure estimated by the MPA L.E.K study implies a total commercial value of US illegal downloads of between \$1.4 billion and \$2 billion⁷⁶.

Findings

We find that the US consumes between **\$1.4 billion and \$2 billion** worth of digitally pirated movies. As for the global estimates above, we would expect these estimates to be conservative. The \$918 million loss figure on which they are based was estimated in 2006. The global number of internet users has increased by around 18% per year since 2000⁷⁷. Broadband speeds have also been improving significantly with time, making the illegal download of files of significant size, such as movies, increasingly feasible and attractive. We therefore expect that the US consumption-based value of digital piracy in 2008 could be significantly higher than suggested here.

Software

Earlier in the report, we estimated that the global value of digitally pirated software products was likely to be between \$1.5 billion and \$19 billion in 2008. By using information on the US share of total software piracy, we have been able to translate this figure into an estimate of the US share of digital software piracy. On this basis, we estimate that the US consumes between **\$320 million and \$3 billion** of digitally pirated software. Again, we note the size of this range, which

⁷⁶ Estimated by multiplying the \$918 million sales decline by 1.5 and 2.2 respectively.

⁷⁷ World Internet Usage Statistics, 2000 to 2010.

are due to the difficulties in estimating this figure, but anticipate that the true value is likely to be towards the upper end.

A preliminary estimate of the value of US digital software piracy

The global estimate made use of information on the number of take down notices issued by BSA and the range of retail values for software products as measures of the volume and value of digital software piracy.

To produce a US specific estimate using the same methodology would require specific information on the number of take down notices related to US consumers and also on US specific retail prices for the relevant software. This information is not currently available.

Our estimate is therefore based on estimating the US share of digitally pirated software by assuming that the US share of digitally pirated software is the same as its share of total pirated software. The study on the piracy of software products published by the Business Software Alliance (BSA) and IDC in 2008⁷⁸ provides us with relevant information on which to base our estimate. It estimates that the commercial value of *all* counterfeit and pirated software was \$53 billion in 2008. The US was estimated to account for approximately \$9.1 billion (17%) of this total. Assuming that the US accounts for 17% of our estimated global figure, we find that the US consumes between \$64 million and \$3 billion of digitally pirated software.

Findings

We estimate that the US consumes between **\$64 million and \$3 billion** of digitally pirated software. However, because of the conservative assumptions behind the lower bound of this estimate (discussed above) we would expect the true value of US digital software piracy to lie towards the upper end of this range.

The total value of US counterfeiting and piracy

In this section of the report we have focused on generating US specific estimates of the value of counterfeiting and piracy. Our estimates cover international trade in counterfeit and pirated goods, domestically produced and consumed goods and digitally pirated products. Overall, we find that the US consumes between **\$66 billion and \$100 billion** worth of counterfeit and pirated products.

⁷⁸ Business Software Alliance (BSA) and IDC, *2008 Piracy Study*, May 2009, (hereinafter, BSA/IDC 2008 Piracy Study.”).

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APPENDIX G

David Price, *Sizing the Piracy Universe*, NetNames, September 2013, at <https://s3.amazonaws.com/www2.itif.org/panelists+powerpoints/2013-netnames-piracy.pdf>.

Sizing the piracy universe

David Price

Director of Piracy Analysis, NetNames

September 2013

1 Executive Summary

1.1 Introduction

This report draws data from a wide range of reliable sources to provide an estimate of the shape and size of the piracy universe. It is based upon an in-depth study of a range of ecosystems commonly used for the distribution of infringing content. Analysis demonstrates the number of unique internet users who employ each infringement method to obtain material as well as the overall proportion of internet bandwidth used by each ecosystem. In addition to original data collection by NetNames, the report draws on supplemental data from leading companies including Sandvine and Cisco.

The report, which has been commissioned by NBCUniversal, was prepared by the Piracy Analysis team at NetNames, formerly known as Envisional. In January 2011, Envisional published the report *An Estimate of Infringing Use of the Internet*, an analysis focused on the use of internet bandwidth for the distribution of infringing content such as pirated films, television, music, and software.¹ This new report includes an extended examination of bandwidth data that updates some of the findings from the 2011 publication. However, it takes a look at a broader range of considerations, including:



- a detailed examination of the number of users involved in a range of major internet ecosystems
- an evaluation of the level of infringement within each ecosystem
- an analysis of trends over time
- a look at business models and revenue generation used by sites that facilitate infringement
- a discussion of the rise of mobile
- and an analysis of the impact of enforcement efforts on infringement.

1.2 Main Findings

1.2.1 The continued growth of infringement

- Internet usage continues to **grow at a rapid pace**; and with it, so does internet-based infringement.
- **The practise of infringement is tenacious and persistent.** Despite some discrete instances of success in limiting infringement, the piracy universe not only persists in attracting more users year on year but hungrily consumes increasing amounts of bandwidth.
- The free and simple availability of copyrighted content through piracy ecosystems continues to drive the popularity of hundreds of web sites, the actions of hundreds of millions of internet users worldwide, and the consumption of thousands of petabytes of internet bandwidth. **Users of piracy ecosystems, the number of internet users who regularly obtain infringing content, and the amount of bandwidth consumed by infringing uses of content all increased significantly between 2010 and 2013.**²
- Even in regions where the legitimate distribution of content is advanced, the number of those involved in infringement has increased, the number of page views devoted to infringement has grown, and the absolute amount

¹ *An Estimate of Infringing Use of the Internet*, 2011, Envisional. Available at: <http://bit.ly/bandwidth-report>

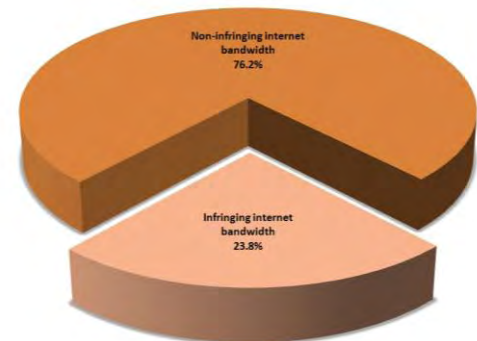
² In this report, the infringing status of pornography is not examined. Any mention of infringement refers only to the infringement of non-pornographic content. As such, 'non-infringing' consumption also includes consumption of pornography.

of bandwidth linked to infringement has risen. This suggests that in addition to encouraging the growth of legitimate sources, additional tools may be required to help content owners prevent infringement.

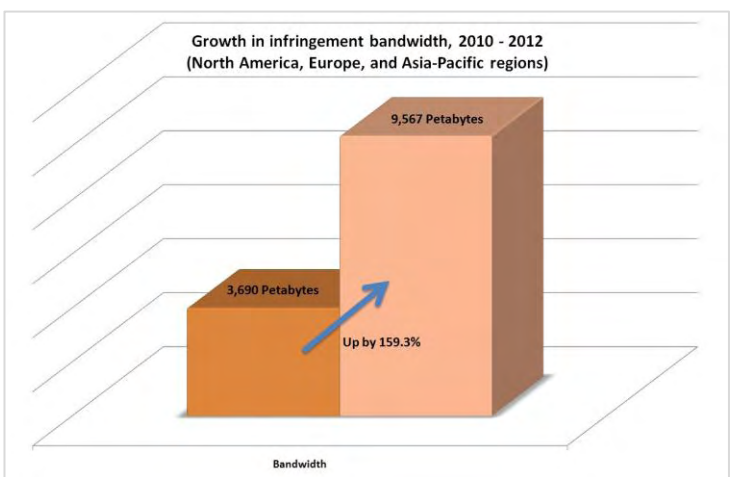
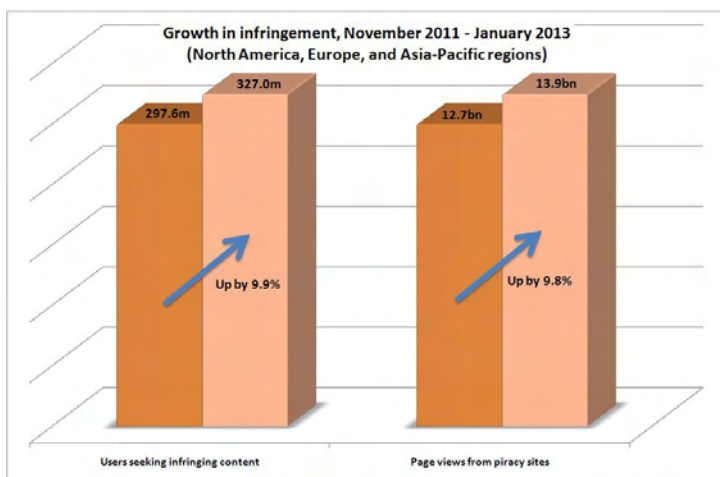
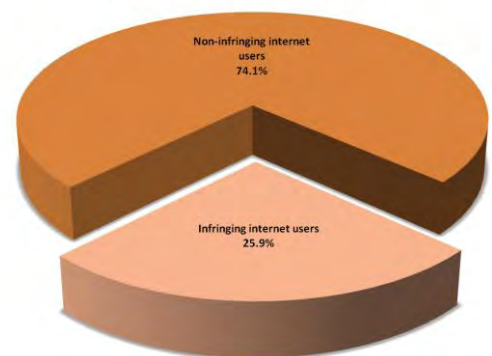
- Each web site included in this analysis was verified by a NetNames analyst as one that is focused on providing infringing content or providing links to infringing content. ‘Focused’ means that the infringing material comprised more than half of all links or all files posted on the site in January 2013.
- Almost every piracy-focused site included in this analysis is owned and run for profit.
- **Worldwide, 432.0m unique internet users explicitly sought infringing content during January 2013.**
- Three key regions – **North America, Europe, and Asia-Pacific** – make up a majority of the internet world, comprising 82.6% of all internet users and 95.1% of all bandwidth consumed. **Focusing on these regions**, an analysis of all ecosystems of the internet commonly used to obtain infringing material (such as bittorrent, video streaming, cyberlockers, and other file sharing networks) found that:

- Absolute **infringing bandwidth use increased by 159.3%** between 2010 and 2012, from 3,690 petabytes to 9,567 petabytes. This figure represents **23.8%** of the total bandwidth used by all internet users, residential and commercial, in these three regions.
- **327.0m unique internet users explicitly sought infringing content** during January 2013 in the three regions. This figure **increased by 9.9%** in the fifteen months from November 2011 and represents **25.9%** of the total internet user population in these three regions (i.e., 1.26 billion internet users).³
- **13.9 billion page views** were recorded on web sites focused on piracy in January 2013. This figure **increased by 9.8%** in the fifteen months from November 2011.

**Infringing internet bandwidth, 2012
(North America, Europe, Asia-Pacific)**



**Infringing internet users, January 2013
(North America, Europe, Asia-Pacific)**

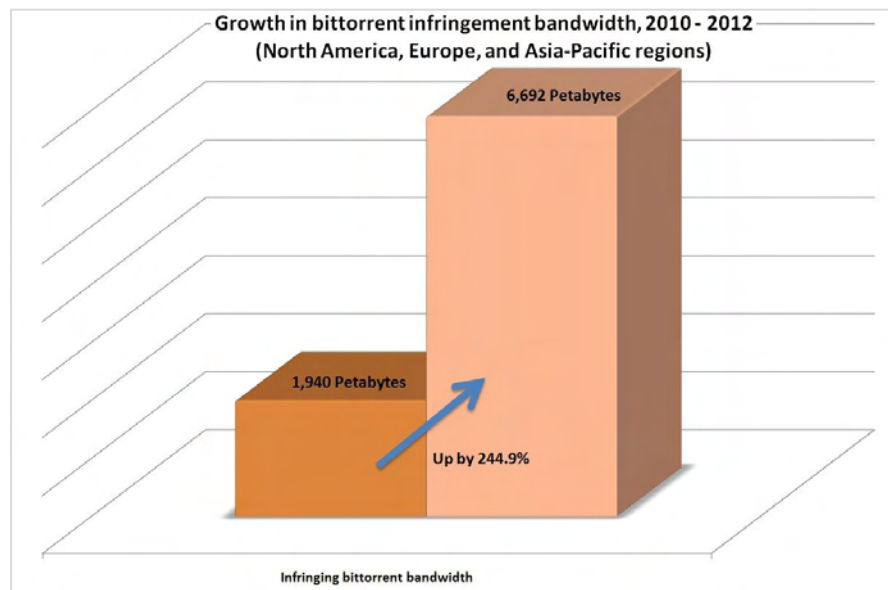
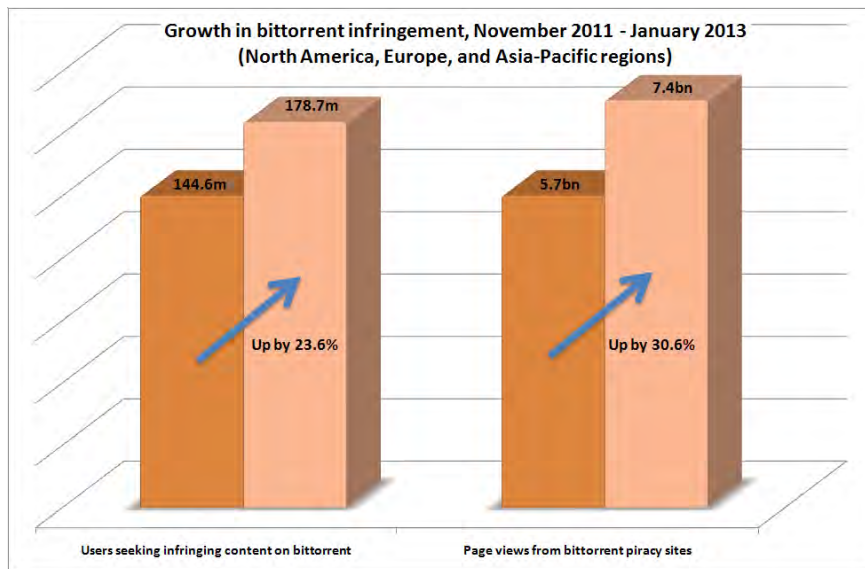


³ comScore derived total internet population includes persons aged 15+ accessing the internet from a home-owned or work-owned computer and excludes mobile devices, internet cafes, libraries, etc.

1.2.2 Infringement ecosystems

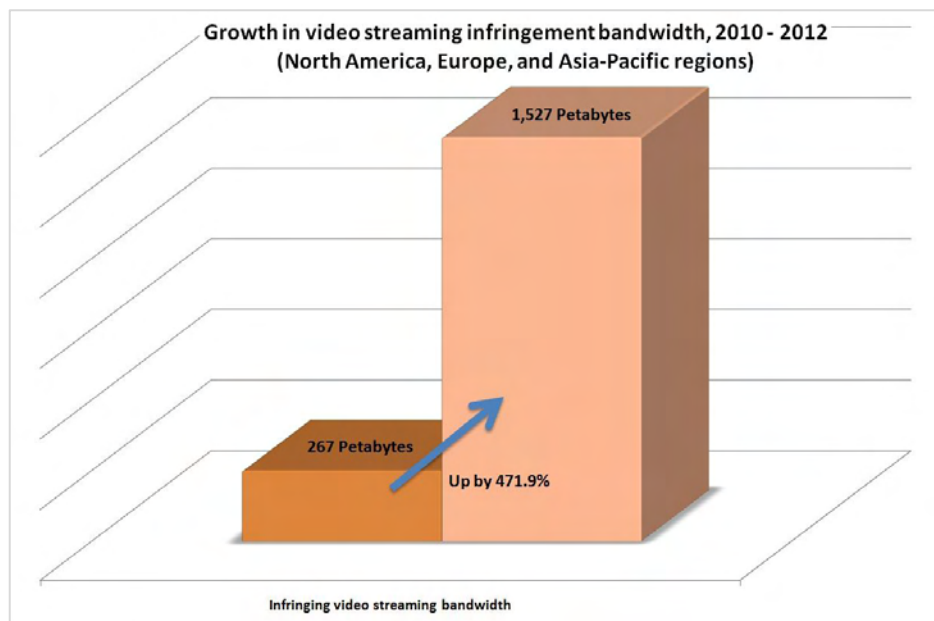
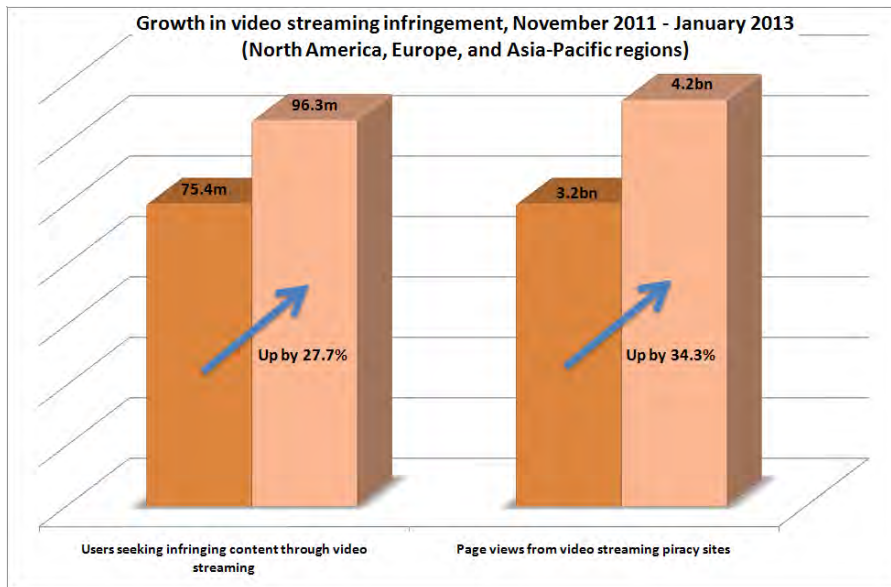
BitTorrent

- Bittorrent is the most popular peer-to-peer file distribution system worldwide. The protocol is one of the highest consumers of internet bandwidth. BitTorrent users search dedicated web portals for torrent files for particular content. Torrent files open in a bittorrent client which then connects users to swarms of other downloaders.
- In three key regions (**North America, Europe, and Asia-Pacific**), the absolute amount of bandwidth consumed by the infringing use of bittorrent comprised 6,692 petabytes of data in 2012, an increase of 244.9% from 2010.
- In the same three regions, infringing use of bittorrent in January 2013 accounted for:
 - 178.7 million unique internet users, an increase of 23.6% from November 2011
 - 7.4 billion page views, an increase of 30.6% from November 2011



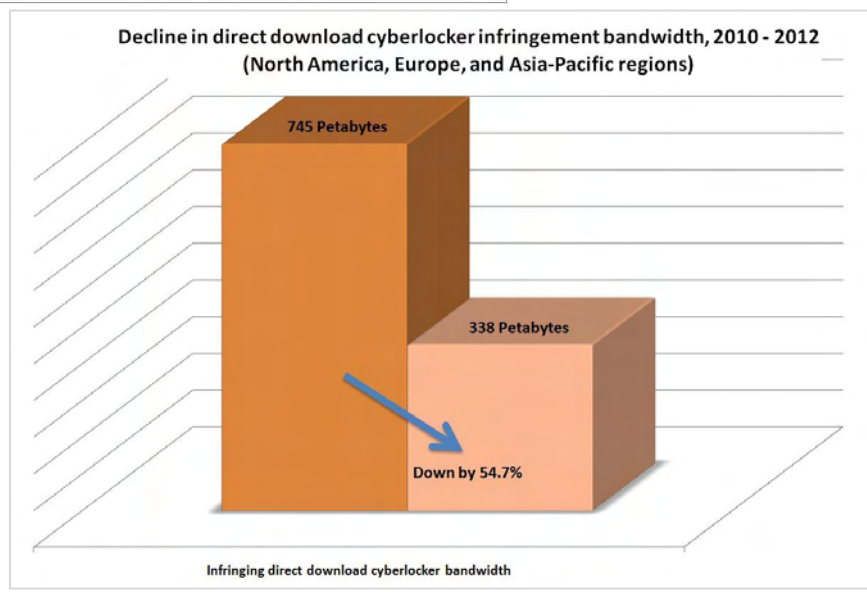
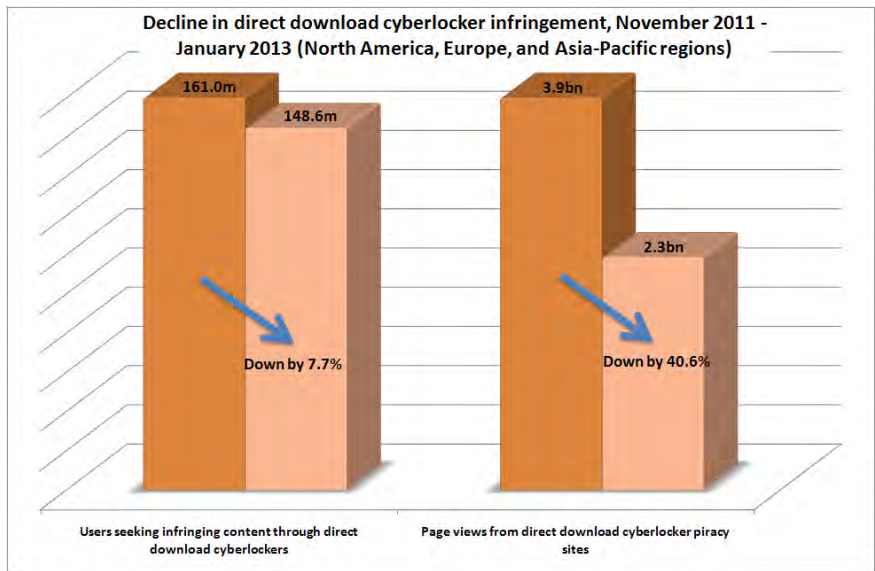
Video streaming

- Infringement through video streaming generally combines video streaming link sites with video hosting sites that are often called video streaming cyberlockers. Users search a link site for the content they desire, then click through the link to a streaming cyberlocker to watch the title.
- In three key regions (**North America, Europe, and Asia-Pacific**), the absolute amount of bandwidth consumed by the infringing use of video streaming comprised 1,527 petabytes of data in 2012, an increase of 471.9% from 2010.
- In the same three regions, infringing use of video streaming in January 2013 accounted for:
 - 96.3 million unique internet users, an increase of 27.7% from November 2011
 - 4.2 billion page views, an increase of 34.3% from November 2011



Direct download cyberlockers

- The user experience of infringement via direct download cyberlockers usually involves visiting a direct download cyberlocker link site to locate links for a piece of content that are followed to a direct download cyberlocker from which files can be downloaded. The direct download cyberlocker ecosystem was affected by the seizure of the MegaUpload site in January 2012 and the subsequent closure of other popular direct download cyberlockers. In three key regions (North America, Europe, and Asia-Pacific), the absolute amount of bandwidth consumed by the infringing use of direct download cyberlockers comprised 338 petabytes of data in 2012, a decrease of 54.7% from 2010.
- In the same three regions (**North America, Europe, and Asia-Pacific**), infringing use of direct download cyberlockers in January 2013 accounted for:
 - 148.6 million unique internet users, a decrease of 7.7% from November 2011
 - 2.3 billion page views, a decrease of 40.6% from November 2011



1.2.3 Ecosystem business models

- Almost every piracy-focused site included in this analysis is **owned and run for profit**. Business models differ slightly within the different ecosystems discussed, but the majority of these sites draw revenue from advertising, with others supplementing this income by offering users premium subscription accounts designed to offer faster access to content.
- **BitTorrent portals** exist almost exclusively on advertising revenue, frequently displaying banner advertisements and pop-up windows for casinos, dating sites, and download services.
- **Video streaming link sites** also tend to display numerous advertisements, some of which are designed to confuse users into believing they lead to legitimate or free video content in an effort to gain advertising traffic or to push malware onto users' devices. Link sites may also gather revenue by uploading content to video streaming host or video streaming cyberlocker sites. These host sites pay uploaders of popular material and those who persuade others to sign up for premium accounts.
- In addition to generating revenue through advertisements, **video streaming host sites or cyberlockers** often promote paid 'premium' accounts that offer users faster, advertisement-free access to content, as well as the ability to download video.
- **Direct download cyberlocker link sites** generate revenue through advertisements. They also enter into income-generating affiliate agreements with cyberlockers: the affiliate is paid when users purchase premium accounts or when users generate significant numbers of downloads from the cyberlocker.
- **Direct download cyberlockers** also feature many advertisements but place a greater focus on encouraging users to sign up for paid 'premium' accounts that offer a faster and simpler download experience for content.

1.3 Distribution and enforcement

Expanding efforts to distribute content legitimately through systems such as Netflix and BBC iPlayer for video, Steam and Origin for games, and Spotify and Pandora for music has helped draw millions of users into legitimate content arenas. At the same time, efforts to restrict infringement through legal action or other methods have been only intermittently successful, limited by the abilities of those involved to use available processes and techniques to adequately tackle the complexities of the internet world and the adaptive nature of infringement, driven by a voracious online appetite for pirated content.

In some regions, legitimate distribution services have significantly altered the online landscape. For instance, Netflix is now responsible for nearly one-third of all downstream peak-time bandwidth in the United States and has nearly 30m active subscribers in the country. Its growth and that of other legitimate streaming sites has helped drive overall levels of bandwidth consumption higher within the US. As a consequence, the relative proportion of bandwidth devoted to piracy has fallen: in North America, the percentage of total downstream bandwidth devoted to infringement fell from 15.7% in 2010 to 11.4% in 2012. Yet this should not be taken as demonstrating an overall drop in levels of infringement in the region. In fact, the actual amount of bandwidth consumed by infringement continued to grow at a rapid pace during this period, increasing by 48.2% in North America between 2010 and 2012. Further, the period from November 2011 to

January 2013 saw the number of users involved in infringement in North America grow by 40.5% from 45.4m to 63.8m. The overall proportion of internet users engaged in infringement rose by more than a third, from 21.6% in November 2011 to 29.6% in January 2013.

This overall increase in infringement in North America is matched by similar findings for other key regions such as Europe and Asia-Pacific. The rise in the number of users involved in infringement, the page views devoted to piracy, and the amount of bandwidth consumed by infringement comes despite the discrete success stemming from the law enforcement operation against MegaUpload which limited the attractiveness and use of direct download cyberlockers. In January 2012, the MegaUpload direct download cyberlocker was closed after an international law enforcement effort. The fallout led to other major direct download cyberlockers also closing or changing their mode of operation. Between November 2011 and January 2013, the number of visitors worldwide to direct download cyberlockers fell by 8.3%; the number of page views dropped by 41.0%; and the amount of bandwidth devoted to direct download cyberlockers fell by 54.7% between 2010 and 2012. Evidence clearly shows a sustained and likely permanent drop in the popularity of direct download cyberlockers following the MegaUpload operation.

The closure of MegaUpload also involved the closure of the streaming cyberlocker MegaVideo, an incident which in turn affected other popular streaming cyberlockers. Yet this disruption did not have a similar permanent impact on infringing use of video streaming as for the direct download cyberlocker ecosystem. Video streaming, both as a legitimate and illegitimate practice, is simple to engage with and deeply embedded in typical user routine. Video streaming bandwidth consumption of all kinds has exploded over the last few years, increasing by over 170% between 2010 and 2012 in North America, Europe, and Asia-Pacific. Infringement through video streaming has increased even more dramatically: the amount of bandwidth devoted to infringing video streaming has grown by more than 470% over the same period, despite the loss of well-known hosts such as MegaVideo.

This demonstrates clearly how quickly online piracy can react to system events such as site closures or seizures. User behaviour is modified, often in moments, shifting from locations or arenas impacted by events to others that offer a comparable spread of infringing content via a similar or different consumption model. The practise of piracy itself morphs to altered circumstances, with use of video streaming and bittorrent escalating as direct download cyberlockers fell away.

The value to content owners of the international law enforcement action against MegaUpload and the effect on the overall direct download cyberlocker ecosystem is undeniable. However, the recovery of video streaming cyberlockers from the same incident and the overall growth in infringing users, page views, and bandwidth consumption by infringing video streaming use demonstrates a need for content owners to have access to tools and methods that allow them to react no less quickly as users and site operators do to changes and transformations in the different piracy ecosystems.

1.4 Methodology

The research presented in this report draws on data from a number of sources. In all cases, data from external sources was used to strengthen and augment original research conducted by NetNames. The selection of sites which comprise the different ecosystems studied in this report are based on the company's experience, knowledge, and monitoring of digital piracy for more than fourteen years.

Information on unique and unduplicated **visitors** and **page views** for sites that fall into each infringement ecosystem are gathered from comScore. comScore figures on *unduplicated* visitors are one of the main sources of information which underpins this report: unduplicated data counts a visitor to, say, ten different bittorrent portals, or to a bittorrent portal and a direct download cyberlocker, once only, ensuring that a unique count of users within and across infringement ecosystems can be prepared.

In all ecosystems studied in this research, a careful account has been made of levels of **non-infringing use**. Discussion of piracy and infringement often provokes emotional and spirited debate. Within such an arena it is important to present a cautious and nuanced account of the different uses of successful and immensely popular technologies such as bittorrent, both for infringement and non-infringement. Using various techniques devised by NetNames, each explained in detail within the report, this research examines the types of content available within each ecosystem and the proportion of that content which is infringing. This information is then combined with data from comScore on the selected sites within each ecosystem to estimate the number of infringing and non-infringing users by employing probability to determine the frequency of infringing activity. These estimates enable this report to provide a figure for unique and unduplicated users who engaged in infringing activity in January 2013, both in each ecosystem separately and as part of the broader single piracy universe. Section 8 of the main report outlines this methodology in detail.

Data on **bandwidth use** was provided by Sandvine⁴ who deploys network management solutions in many countries worldwide. Statistics from Cisco provided information on the growth of data consumption online.

The research provided in this report presents what is believed to be the first attempt to produce an accurate overall size estimate for the online piracy universe. Estimating any activity that comprises a range of user behaviours, motives, and actions can be problematic and is inevitably open to criticism and question. By carefully outlining in the body of the report the methodologies used to produce the conclusions, it is hoped that this research might prompt further study in one of the most fascinating and consistently changing areas of the internet.

⁴ NetNames is very grateful to Sandvine for the company's openness and willingness to provide data for the study.

1.5 Report Structure

Following this summary of the main findings, Section 2 introduces the research in more detail and further outlines the methodologies employed to produce the primary conclusions, discussing issues which may affect the results. Sections 3, 4, 5, and 6 investigate the main internet ecosystems commonly used for infringement: specifically, bittorrent, other file sharing networks, video streaming, and direct download cyberlockers. Each ecosystem is discussed in depth and the approaches used to calculate unique users, proportion of infringement, and bandwidth use are outlined.

Section 7 considers infringement on mobile devices but concludes that further dedicated research is required in this area given the extremely rapid adoption of smartphones and tablets worldwide in recent years.

Section 8 concludes the report, drawing the research together and providing a repeatable framework to estimate the overall size of the piracy universe as it is used for infringement and the proportion of bandwidth consumed by infringing content.

Appendix A contains a list of the web sites used to calculate the data used in many areas of the report. Appendix B contains detailed data on a number of the overall findings on unique visitors, page views, and bandwidth use both on a worldwide and regional basis.

2 Introduction and methodology

2.1 Report goals

This report has two goals, simple to state but potentially difficult to achieve. The first is to accurately estimate the size of the worldwide piracy universe: how many unique internet users regularly engage in infringing activity through ecosystems typically used for piracy like bittorrent, cyberlockers, and video streaming. The second is to examine the amount of bandwidth used for infringement in different regions of the world. This second task broadly repeats but significantly extends research conducted by Envisional for a 2011 public report on infringing bandwidth use.

Each of these tasks is complex and difficult and each requires a range of methodologies if they are to be brought to a satisfactory conclusion. This section of the report introduces the main problems which arise from an attempt to tackle these goals and discusses the different research methodologies, data points, and techniques used to calculate and refine the final conclusions reached.

An introduction to each main infringement ecosystem is followed by a discussion of the main web-based analytics used for measurement. These include an outline of the types of sites chosen for inclusion and the different metrics used from providers such as comScore. The provision of internet bandwidth data from Sandvine and Cisco is also explained.

2.2 Infringement ecosystems

This report analyses piracy or infringing activity within a number of categories. These reflect different ecosystems commonly used to locate, distribute, and consume infringing material. The methodology used to describe the size of each ecosystem in January 2013 is outlined below and discussed in more detail in each section of the report. It is important to note that the figure produced for the total size of each ecosystem **does not represent** the total number of users who use the ecosystem for infringement as some users will not download infringing content or use that ecosystem to obtain pornography only (which is not examined for infringement in this report). The determination of the total number of infringing users in each ecosystem is performed in Section 8 of this report.

In this report, the ecosystems are categorised as follows:

- **BitTorrent**, including analysis of the bittorrent network population, bittorrent client use, visitors to bittorrent portals, and the amount of bandwidth consumed by bittorrent online for infringing purposes. The most suitable metric for analysing the size of the overall bittorrent ecosystem was chosen to be **unduplicated visitors to bittorrent portals during a single month**. In January 2013, this figure was 212.8m for all bittorrent portals that received more than 50,000 unique visitors during the month.

Discounting those visitors who only use bittorrent to obtain non-infringing or pornographic content (see Section 8) results in a final figure of **infringing bittorrent users of 204.9m**.

- **Other file sharing networks**, including analysis of the eDonkey, Ares, and Usenet populations and the amount of infringing bandwidth consumed by each network online. For these file sharing networks, the most suitable metric for analysing the size of each universe was the number of **unique users of clients for each network during a single month**. In January 2013, this figure for eDonkey was 9.3m; for Ares, 66.6m; and for Usenet, 5.0m. Discounting those users who only employ each file sharing network for non-infringing or pornographic content makes a small change to these figures but does not affect the headline total (see Section 8).
- **Video streaming**, including analysis of both video streaming link sites frequently used to locate infringing content and video streaming cyberlocker sites used to host and stream the video content to users, and analysis of the amount of bandwidth consumed by infringing video streaming online. The most suitable metric for analysing the size of the infringing video streaming universe was chosen to be **unduplicated visitors to video streaming link sites during a single month**. In January 2013, this figure was 112.5m for all video streaming link sites which received more than 50,000 unique visitors during the month. Discounting those visitors who only use such sites to obtain non-infringing or pornographic content during the course of a month (see Section 8) results in a final figure of infringing video streaming users of **112.0m**.
- **Cyberlockers**, including analysis of both cyberlocker link sites frequently used to locate infringing content and cyberlocker hosting sites used to store the content ultimately downloaded by users, and analysis of the amount of bandwidth consumed by infringing cyberlocker use online. The most suitable metric for analysing the size of the infringing video streaming universe was chosen to be **unduplicated visitors to cyberlocker host sites during a single month**. In January 2013, this figure was 228.8m for all cyberlocker sites which received more than 50,000 unique visitors during the month. Discounting those visitors who only use such sites to obtain non-infringing or pornographic content (see Section 8) results in a final figure of infringing cyberlocker users of **210.6m**.

The report also briefly discusses activity on mobile devices such as smartphones and tablets. The main processes by which each ecosystem functions are briefly outlined at the start of each section.

2.3 Web site visitor analysis

2.3.1 Site selection

Appendix A lists over six hundred web sites which form the basis of the visitor measurement analytics used in some of the different sections of this report. The sites are taken from a larger database of web sites maintained by NetNames which offer, or have offered in the past, infringing material. Given the constantly

growing and rapidly changing features and extent of the worldwide internet, it is possible – indeed, likely – that an occasional web site which should fall within the auspices of this research has been overlooked. However, NetNames is confident that the largest and most popular sites that facilitate and focus upon infringement are included and that omissions which might occur will do so in the long tail of less visited sites.

Each site included in Appendix A has been verified by a NetNames analyst as being focused on providing infringing content or providing links to infringing content. ‘Focused’ means that the infringing material comprises more than half of all links or all files posted on the site. For instance, previous analysis by NetNames shows that of all content held on ThePirateBay in December 2011, the majority was infringing (ranging from 78.1% for music to 92.9% for television).⁵

Sites are only included in analysis during months in which their operations were focused on offering infringing content. For instance, some of the sites included in Appendix A are no longer in operation or are no longer focused on offering infringing material – these range from the cyberlocker MegaUpload, shut down by US law enforcement in January 2012 to the bittorrent portal Mininova which removed all links to infringing content in November 2009. MegaUpload is therefore included in the analysis of cyberlockers up to and including January 2012; Mininova is included in the analysis of bittorrent portals up to and including November 2009.

In some charts, sites are only included when they comprise one of the twenty most popular sites in a particular category. This calculation is made on a monthly basis and as such, the composition of the top twenty sites may change from one month to the next. Appendix A highlights any site that was part of the top twenty during any month.

The main source of data on web site visitors used within this report comes from comScore. comScore is recognised as the industry leader in measurement of digital activity.

2.3.2 comScore

comScore’s Media Metrix audience measurement service is drawn upon within this research to provide data on unique monthly visitors to a wide range of sites and users of applications of interest. This data is drawn from comScore’s user panels of over 2m individuals in 44 countries, supplemented by census-based measurement systems in 172 countries. The company’s methodology has passed audits from the Media Rating Council and the IAB.

comScore is believed to be accurate in its assessment of sites which have a substantial population but its panel-based approach may be less accurate when considering sites that have a small level of visitors. The company normalises its data according to demographics in each country but it is possible that, say, a small

⁵ *Written report on matters related to the Pirate Bay web site*, December 2011, submitted to the UK High Court.

piracy-focused site in a country where comScore does not have a dedicated panel might be missed. For this reason, only sites with a **minimum of 50,000 unique visitors each month** were included in this research.

While comScore provides a range of analytics on various aspects of the digital world, this project uses the company's data in two main ways, both of which draw on comScore figures for unique monthly visitors to web sites (or unique monthly users of particular software applications such as bittorrent clients).

- **aggregate unique visitors** to a web site or set of web sites. That is, the combined total number of visitors to a site such as thepiratebay.se⁶ or the total number of visitors to thepiratebay.se, torrentz.eu, kat.ph⁷, and other bittorrent portal sites. When calculating visitors to a set of sites, this figure is a simple sum of all the visitors to each web site.
- **unduplicated visitors** to a set of web sites. This extremely useful data point examines the unique universe of users who visit any number of a specific set of sites. For instance, the unduplicated audience for bittorrent portals counts the individual users who visit any bittorrent portal once in a month. Thus a user who visits thepiratebay.se, isohunt.com, kat.ph, and torrentino.com is counted only once in an unduplicated audience figure, not once for each web site they visit. This is in contrast to the aggregate figure which would count that user four times, once for each bittorrent site they visit. The unduplicated data provides a shape to the overall bittorrent universe; it gives a figure that enables understanding of the total number of individual users who turn to bittorrent sites at least once a month to seek content.

As an example of the difference between each of the two data points, comScore estimated that the *unduplicated* number of visitors worldwide to bittorrent portals in January 2013 was 212.8m. That is, 212.8m internet users visited at least one bittorrent portal during January 2013. This compares to an aggregate or combined figure of 555.0m.

The unduplicated figure for visitors to sites within each ecosystem is frequently used in this report as a way to size the boundaries of that ecosystem. Specifically, comScore data is used in short-term, long-term, and regional analysis of the web sites and applications selected by NetNames for inclusion in Sections 3 (bittorrent), 4 (other file sharing), 5 (video streaming), and 6 (cyberlockers) of this report.

Short-term (fifteen month) analysis

- On a monthly basis between **November 2011** and **January 2013**, the number of *aggregate* visitors were recorded to all sites which had **more than 50,000 unique visitors** in each ecosystem category. If a site had 100,000 visitors in December 2012 but 40,000 visitors in January 2013 then it would be included in the calculation for December 2012 but not for January 2013. Analysis also includes sites which may have gone offline during the monitoring period – for instance, bittorrent portal BTJunkie.org closed in January 2012 but visitors to the site are included in the analysis up until the point that it shut down.

⁶ ThePirateBay changed domains to thepiratebay.sx in June 2013.

⁷ KickassTorrents changed domains to kickass.to in June 2013.

- On a monthly basis between **November 2011 and January 2013**, *unduplicated* visitors to all sites which had more than 50,000 unique visitors in each ecosystem category. The same methodology is applied to site selection as for aggregate visitors.
- Short-term analysis also examines the number of **total page views** across all sites from a category which had more than 50,000 unique visitors each month. For instance, there were 1,811,802,000 page views on thepiratebay.se in January 2013. This is compared to total page views from November 2011.

Regional analysis

- comScore data for the distribution of visitors by region of the world is employed to help define popularity for different types of web site.
- The methodology used in this report for the regional breakdown of visitors takes as a starting point the comScore unique monthly visitors to all web sites for a particular category in January 2013 with **more than 50,000 unique visitors** (for instance, thepiratebay.se received 58,962,934 visitors in January 2013 according to comScore). This provides the **same base of sites** as that for the short-term analysis discussed above.
- For each individual site, the number of total monthly unique visitors is then split between five major regions of the world (North America, Europe, Asia-Pacific, Latin America, and Middle East & Africa) according to comScore's World Metrix data for that site for the same month (for thepiratebay.se, this provides figures of 20,106,360 visitors from North America, 16,450,659 from Europe, 11,733,624 visitors from Asia-Pacific, 5,188,738 visitors from Middle East & Africa, and 5,483,553 from Latin America).
- Total aggregate visitors to all sites from each of the five regions are then summed, leading to an overall percentage breakdown of aggregate visitors to a category of sites from each region (so, all visitors from Asia-Pacific to all bittorrent sites). This percentage is then combined with the total *unduplicated* visitors to bittorrent portals to provide a final figure for total unique unduplicated visitors from each region. This provides an estimate for the total universe of e.g. bittorrent users from each region.

Long-term analysis

- On a monthly basis between **July 2009 and January 2013**, aggregate visitors to the twenty sites with most unique monthly visitors in each category – for instance, bittorrent portals – were analysed. Total aggregate visitors were calculated (unduplicated visitor data is not available for this longer period of time). This analysis is limited to twenty sites as long-term data for more than twenty could not be accurately sourced for all ecosystems under analysis.

2.4 Bandwidth data

Data on the use of bandwidth by different services, protocols, and sites was supplied by network monitoring company Sandvine. The data provided by the company covered three major regions of the world: **North America, Europe, and Asia-Pacific**. Data was gathered from a range of ISPs in which Sandvine's equipment

is installed. Detection monitored all traffic passing through the ISP over a sustained period of time and monitoring was performed during the first half of 2012 for Europe and Asia-Pacific and the second half of 2012 for North America. Bandwidth data from Sandvine for 2010 formed the focus of Envisional's 2011 technical report in this area, ensuring consistency in measurement across both pieces of research.

The overall bandwidth figures contained in this report are aggregate data reported by Sandvine for a combination of peak and off-peak use of both downstream and upstream bandwidth. Occasionally, use is made of a figure for downstream or upstream bandwidth only, but the report makes it clear when this occurs.

Sandvine does not have complete coverage of every ISP in a country or region. It is possible that the company's commercial focus means that gathered data will be biased to a particular country where the company has a larger installed base. As with comScore data, variations within countries where Sandvine may not have a commercial presence will not be included in their data collection. The omission of bandwidth data from Latin America and the Middle East and Africa is a regret given the believed differences in internet use between regions; as the Sandvine data used in this report demonstrates, there are significant variations between internet use in the regions covered in this report, for instance, and such difference is just as likely should data be located for bandwidth use in regions not covered in this report. The inability to obtain any complete bandwidth data representative of all regions of the world means that it was not possible to repeat the estimates made in Envisional's January 2011 report and produce a figure for infringing bandwidth use worldwide (estimated at 23.76% of all bandwidth in 2010). Instead, this report provides estimates for infringing bandwidth use in each of the three regions for which data was obtained from Sandvine (North America, Europe, and Asia-Pacific).

Additional data to support the bandwidth analysis contained in of this report was gathered from hardware manufacturer Cisco. Through its Visual Networking Index⁸, Cisco provided an estimate of the overall growth of bandwidth use online between 2010, the point at which data was gathered for the earlier report, and 2012. The company records worldwide consumption of bandwidth growing by 109.0% during this two year period. In North America, overall bandwidth consumption grew by 105.0%; in Europe, 109.6%; and in Asia-Pacific, 111.2%. These are substantial increases over a relatively short period of time but the velocity of increase shows little sign of slowing: Cisco believe internet traffic will triple between 2012 and 2016. Bandwidth consumption also grew per individual internet user between 2010 and 2012.

According to Cisco, all main categories of bandwidth use showed an increase between 2010 and 2012, with video streaming increasing by 59.4% and file sharing by 21.2%. In North America, video streaming consumption rose by 59.3%; in Europe by 70.7%; and in Asia-Pacific by 50.0%. Clearly, the internet as a whole has consistently consumed a greater amount of bandwidth each year. The major categories of bandwidth consumption that are frequently used to obtain infringing content – such as file sharing and video streaming – also continued to grow.

⁸ http://www.cisco.com/en/US/netsol/ns827/networking_solutions_sub_solution.html

Cisco is a hardware manufacturer focused on providing companies with equipment to enable them to better control and utilize data flows through networks. It is, of course, in Cisco's commercial interest to encourage ISPs and hosting providers to believe that internet use and data consumption is increasing as this meets their commercial goals. However, data to support the contention that bandwidth consumption is growing rapidly is available from ISPs and other internet entities, reducing (though not removing) this concern. For instance, TeleGeography estimated that bandwidth growth tripled⁹ between 2010 and 2012 while IDC predicted a growth¹⁰ of 50% year on year from 2010 to 2015.

2.5 Ecosystem structures

The following four sections of this report discuss a range of internet ecosystems typically used by internet users to locate and obtain infringing content: bittorrent (Section 3), other file sharing networks (Section 4), video streaming (Section 5), and direct download cyberlockers (Section 6).

In each section, an introduction highlights the different types of data available to size the number of users within each ecosystem, and the particular metric chosen for that ecosystem is justified. Data from comScore is used to outline the unique population of internet users that inhabit the ecosystem and an outline of historical trends is provided. Analysis of the content typically found in each ecosystem is produced together with an assessment of the proportion of that content which is infringing. **Unless otherwise stated, all figures displayed in charts or quoted in each section relate to visitors who accessed *infringing* content through each ecosystem during January 2013.** That is, non-infringing use of each ecosystem is accounted for and removed from the figures discussed. Section 8 outlines the methodology used to discount users who only access non-infringing use within each ecosystem.

Bandwidth data from Sandvine and Cisco is then employed to demonstrate the overall amount of bandwidth devoted to infringement within that ecosystem. A discussion of business models and revenue generation methods in each web-based ecosystem is also provided.

⁹ <http://www.ispreview.co.uk/index.php/2012/09/international-internet-capacity-growth-falls-as-bandwidth-climbs-to-77tbps.html>

¹⁰ <http://www.ispreview.co.uk/index.php/2012/03/idc-predicts-global-broadband-internet-traffic-to-grow-50-each-year.html>

3 BitTorrent

3.1 Introduction

BitTorrent was created in 2001, initially intended as an efficient method to share large non-infringing files such as distributions of Linux. Quickly co-opted for infringement, the protocol is now recognised as one of the fastest and simplest ways to transfer data between multiple users across the internet. Use of the protocol is heavy worldwide; for instance, data from Sandvine estimates that bittorrent comprised more than 21.7% of all internet traffic in Europe in the first half of 2012 (downstream and upstream), and more in Asia-Pacific.

The use of bittorrent by internet users tends to require two factors:

- a web site or portal such as ThePirateBay (see screenshot) or IsoHunt that offers links to content such as films or music that can be downloaded using a bittorrent client
- a 'swarm' of bittorrent users sharing a particular piece of content to which the bittorrent client can connect

Type	Name (Order by: Uploaded, Size, Uled by, SE, LE)	View: Single / Double	SE	LE
Video (Movies)	Les Miserables - Os Miseráveis - 2012 - Legendado - RMVB Uploaded 02-26 08:53, Size: 764.5 MiB, Uled by Japanjim		61	13
Video (Movies)	Les.Miserables.2012.DVDSOCR.NorSub-philipo Uploaded 02-08 13:52, Size 2.31 GiB, Uled by philipo		188	39
Video (Movies)	Les Miserables 2012 DVDSOCR EDWA Uploaded 02-07 23:59, Size 2.31 GiB, Uled by UltraTorrents		481	72
Video (Highres - Movies)	Les.Miserables.1998.720p.BluRay.x264-EbP Uploaded 02-05 10:03, Size 6.4 GiB, Uled by maximersk		68	20
Video (Movies)	Les Miserables.scr 2012 (Hardcoded Dk subs) Uploaded 01-19 21:46, Size 1.89 GiB, Uled by Realuploads		48	5

The typical bittorrent download generally proceeds along the following lines: a user interested in an infringing copy of, say, the 2012 film *Les Miserables* visits a bittorrent portal site such as ThePirateBay. The user searches for the film title, and then chooses and clicks a link to download a version of the film. This link launches the user's bittorrent client which then enters the 'swarm' or network of bittorrent users actively sharing that film, and begins to download. As soon as the user's client has downloaded any part of the film, it can then share that part with others in the same swarm.

As the data in this section demonstrates, hundreds of millions of internet users employ bittorrent each month to share content and the vast majority of that usage is infringing, downloading pirated films, television episodes, games, software, books, and music. **Of all unique visitors to bittorrent portals in January 2013, it is estimated that 96.28% sought infringing content during the month, a total of 204.9m users.**

Determining universe size

There are four main pieces of data that can help provide an estimate of size for the overall bittorrent ecosystem (not the number of users who actively infringe using bittorrent):

1. Visitors to bittorrent portals in aggregate: internet users who visit a site such as ThePirateBay or KickassTorrents. Visitor analysis is performed over a month and focuses on unique monthly visitors to each site – in aggregate, the total visitors across all bittorrent portals included in this research in January 2013 was 555.0m worldwide.
2. Unduplicated visitors to bittorrent portals: the total number of internet users who visit at least one bittorrent portal at least once during the course of a month. This ensures that a user who may visit

numerous bittorrent portals during a month is counted as a single member of the bittorrent ecosystem. In January 2013, this figure was 212.8m worldwide.

3. The bittorrent user population: NetNames collects data for the number of simultaneous users of bittorrent. This is information which shows the number of active bittorrent users at any single point in time and does not show the number of unique bittorrent users over the course of a month. During the final week of 2012, this figure was 12.2m simultaneous users worldwide.
4. The unduplicated number of unique users of individual bittorrent clients such as uTorrent and Vuze over the course of a month. This data is provided by comScore and in January 2013 was 266.3m worldwide.

The figure for **aggregate portal visitors** (1) counts more than once any user that visits more than a single bittorrent portal during the course of a month. This cannot be an accurate way to provide a unique size for a discrete population. In contrast, data on the **simultaneous network population for bittorrent** (3) provides a snapshot of active users only during isolated points in the month and cannot account for total users across the entire period. This leaves the choice of unduplicated portal visitors or unique client users as the best way to size the overall bittorrent universe.

The figure for unique or **unduplicated bittorrent client users** (4) provides a measure of the number of users who have had a bittorrent client in operation on their computer at some point during the course of a month. As a user cannot upload or download content on bittorrent without a client, this might appear as a suitable candidate for assessing a minimum number of users of the bittorrent universe. However, some users may run a bittorrent client without their knowledge – for example, clients are sometimes installed which load on startup and operate in the background of a computer. It is possible that a portion of users, though likely only a few, are unaware that a bittorrent client is operating on their computer. As a result, it is possible that this figure may overcount active and deliberate bittorrent users. Last, the data for client use is gathered by comScore; while this company's data on web site use has been audited by numerous organisations, it is unknown whether a similar inspection has examined app users.

Using the figure for **unduplicated portal visitors** (2) provides a minimum estimate for bittorrent users who have sought content on bittorrent at some point during a month. This limits the calculation to users who have made a deliberate attempts to access a portal providing links to bittorrent. The use of unduplicated portal visitors also allows consistency with the figures for the video streaming and cyberlocker ecosystems.

Given the above, this report estimates the overall bittorrent universe during January 2013 at **212.8m unique internet users worldwide**. Note that this figure says nothing about whether those users are seeking infringing or non-infringing content on the portals which they visit. The proportion of the bittorrent population who use the ecosystem for infringing reasons is determined using a methodology that is explained in Section 8. **This method determines the total number of bittorrent users who accessed infringing content on bittorrent during January 2013 as 204.9m users worldwide.**

3.2 BitTorrent: portal visitors

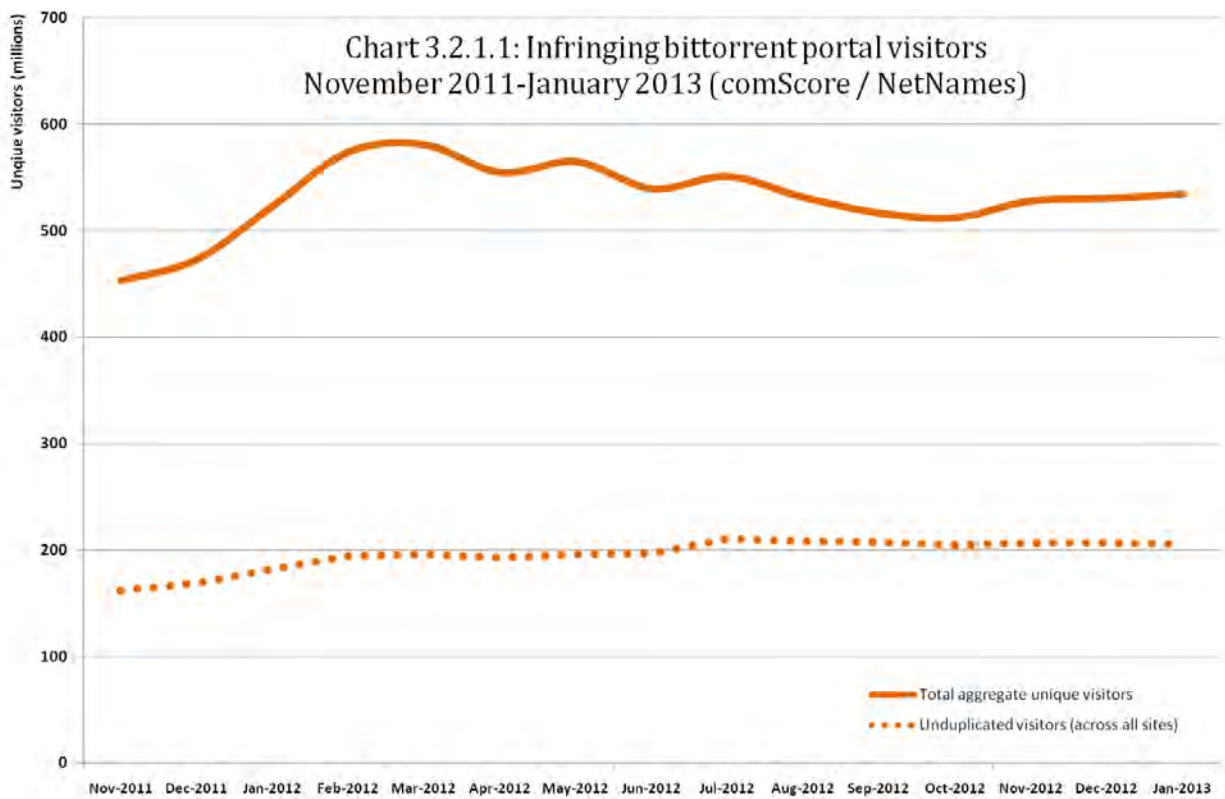
3.2.1 Short-term analysis

Analysis for this report collected over two hundred bittorrent portals that were live in January 2013, as well as data on additional sites that have existed at earlier points. Data was collected for worldwide monthly unique visitors to these sites from comScore for a fifteen month period (November 2011 to January 2013), as well as for those sites that may have been live at some point during this period but were not in January 2013.¹¹ Sites with more than 50,000 unique users each month were used as the basis for this short-term analysis. A longer-term analysis with a smaller sample of sites is found in Section 3.2.3.

This data was in two forms:

- aggregate unique visitors to each portal (internet users who visit each portal in the course of a month)
- unduplicated visitors to *all* portals (all internet users who visit at least one bittorrent site in the course of a month)

The first type of data provides an idea of all visitors to individual sites and gives a sense of scale for the overall use of bittorrent worldwide. The second type of data (unduplicated visitors) better shapes the size of the bittorrent universe by unique users as the figure only counts each visitor to *any* bittorrent portal over the course of a month once (someone who visits ThePirateBay, KickassTorrents, Torrentz, TorrentLeech, and

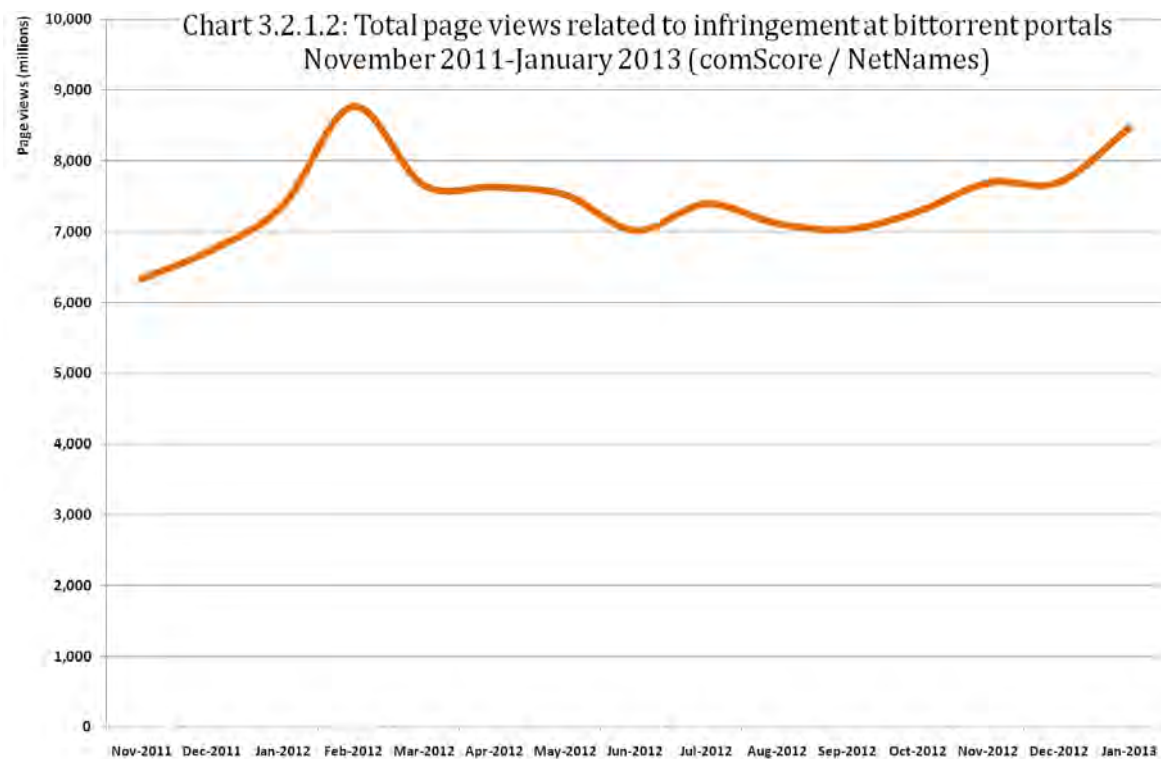


¹¹ For instance, btjunkie.org closed in January 2012. The site will be included in the visitor analysis up to the point that it closed.

IsoHunt in the same month will be noted as a single visitor only). Similar data is used for most other piracy ecosystems studied in this report. All visitor data gathered from comScore is then passed through a methodology which accounts for non-infringing use of the bittorrent ecosystem and is explained in detail in Section 8. **All figures displayed in charts or quoted in this section relate to visitors who accessed infringing content through bittorrent during January 2013.**

Chart 3.2.1.1 above shows both data points for each month from November 2011 to January 2013. Both figures increase over the period, reflecting the similar increase noted in the simultaneous network population seen in Section 3.3 below. The total aggregate infringing bittorrent visitor population increased from 452.8m visitors to 534.3m in January 2013, an increase of 18.0%. Unduplicated infringing bittorrent portal visitors, a more accurate measure of the total infringing bittorrent population, increased from 162.4m to 204.9m visitors in January 2013, an increase of 26.2%. The data means that each unique bittorrent visitor in January 2013 visited 2.6 different bittorrent sites on average during the month.

Data is also available from comScore on the total number of **page views** made across all bittorrent sites which related to infringing content. This also increased in the period shown, from 6.3 billion page views in November 2011 (an average of 40.0 bittorrent portal page views overall per visitor during the month) to 8.5 billion in January 2013 (an average of 41.3 page views per visitor). Page views peak in February 2012 as a consequence of the disruption seen in the cyberlocker ecosystem following the seizure and closure of MegaUpload and MegaVideo. Many cyberlocker users 'tasted' the bittorrent ecosystem during this period, testing new sites while seeking a new and reliable source of infringing material.



3.2.2 Regional breakdown

Chart 3.2.2.1 below shows the distribution and number of visitors to bittorrent portals on a regional basis. comScore data was used to analyse visitors according to five regions: North America; Europe¹²; Asia-Pacific; Latin and Central America; and Middle East and Africa. Analysis examined **unduplicated unique visitors** from January 2013, providing an illustration of those who have visited at least one bittorrent portal during the month from each region. In three key regions – North America, Europe, and Asia-Pacific – bittorrent portals had 178.7m unduplicated unique visitors in January 2013. This is an increase of 23.6% compared to 144.6m visitors in November 2011.

Chart 3.2.2.1: Regional breakdown of visitors to bittorrent portals (comScore / NetNames)

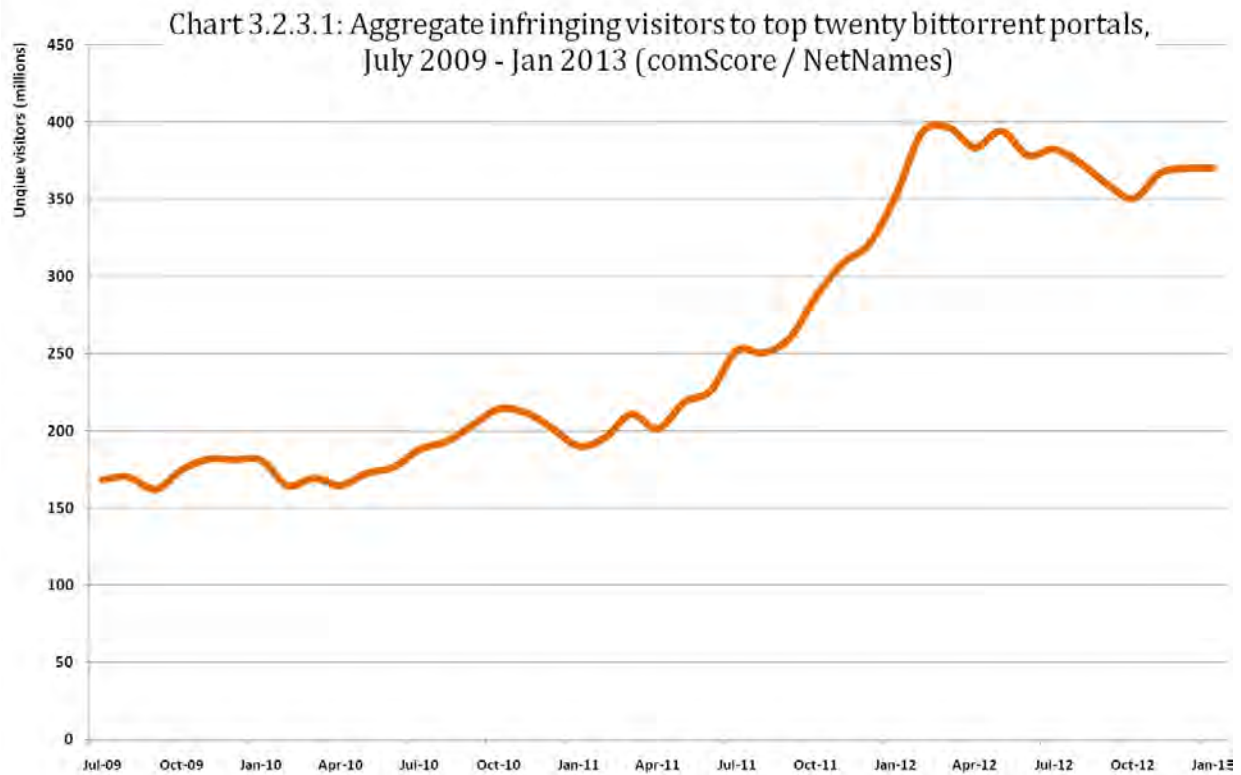


Analysis shows a clear concentration of bittorrent portal visitors in Europe – 47.1% or 96.4m visitors – with Asia-Pacific showing the next largest visitor population of 24.7% or 50.5m. In North America, there were 15.5% or 31.8m unduplicated visitors to bittorrent portals. Data on regional bandwidth use of bittorrent from Sandvine (see Section 3.4 below) broadly reinforces the distribution shown in the chart.

¹² Russia is regarded as part of Europe throughout this report.

3.2.3 Long-term analysis

Chart 3.2.3.1 places visitors to bittorrent portals in a longer-term context and shows that the current position seen in January 2013 is a significant increase on levels of popularity of just a few years ago. In July 2009 (the earliest date for which comScore data is available), comScore recorded 174.8m aggregate and infringing visitors to the most popular twenty bittorrent portals worldwide. By January 2013, this figure stood at 384.4m visitors, an increase of 119.9%.



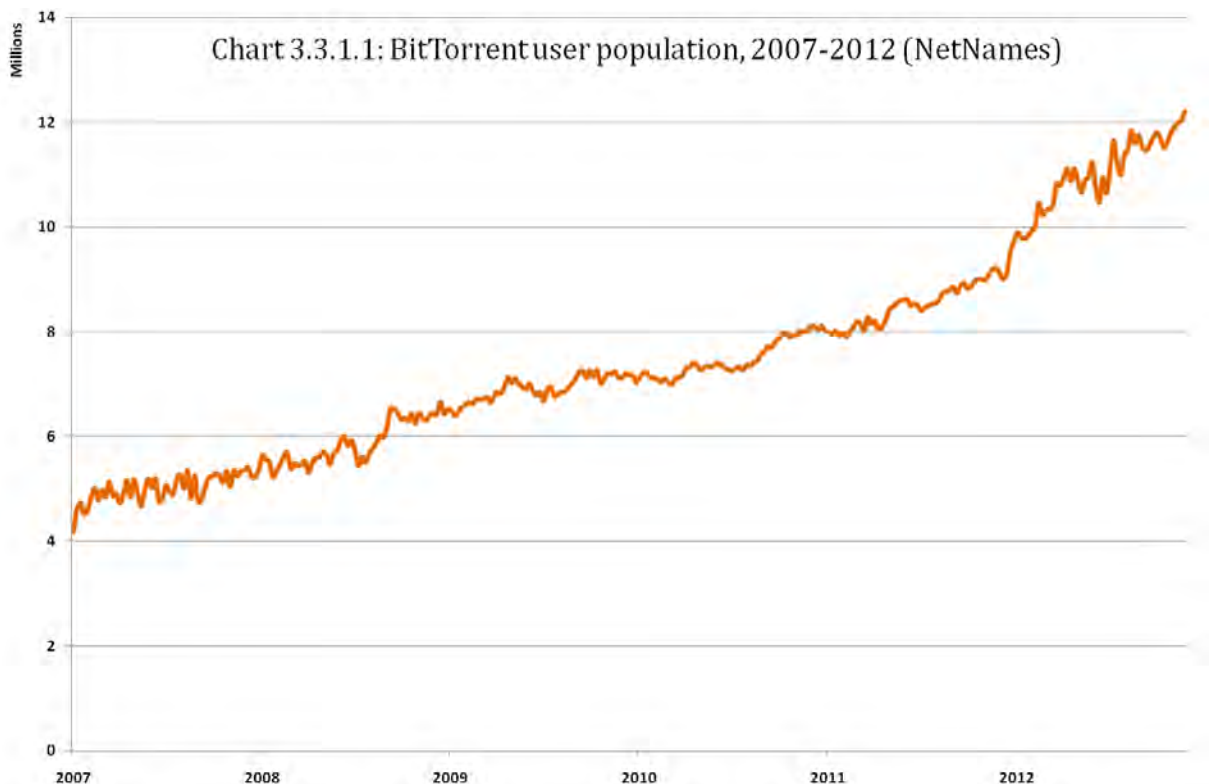
3.3 BitTorrent network population and client use

3.3.1 Network population

Chart 3.3.1.1 below displays the number of simultaneous bittorrent users online at any one time since the beginning of 2007 to the end of 2012. The continued increase in the user population is clear: from 4.2m simultaneous users at the start of January 2007, the network had 12.2m simultaneous users at the end of December 2012, an increase of 191.3% over the six year period. BitTorrent also grew at a faster pace during 2012 than at any other point in its history. To grow from 6m to 9m simultaneous users took almost three and a half years, from the middle of 2008 to the end of 2011. To add a further 3m users to reach 12m simultaneous users took only twelve months, from December 2011 to December 2012.

This recent spurt in the growth of bittorrent users was aided by disruption to other piracy ecosystems (most notably cyberlockers – see Section 6). BitTorrent itself has proved resilient to anti-piracy action in the past. Attempts to degrade the bittorrent experience by uploading fake content to bittorrent portals, sending takedown notices, or issuing warning notices to downloaders (prior to the introduction of graduated response systems) generally had little overall impact. Closures of popular bittorrent sites such as Mininova and Demonoid may have had a short-term impact on regular users of such sites but replacements were quickly located. This was not the case for anti-piracy action aimed at centralised resources on other peer to peer networks such as eDonkey (see section 4 below).

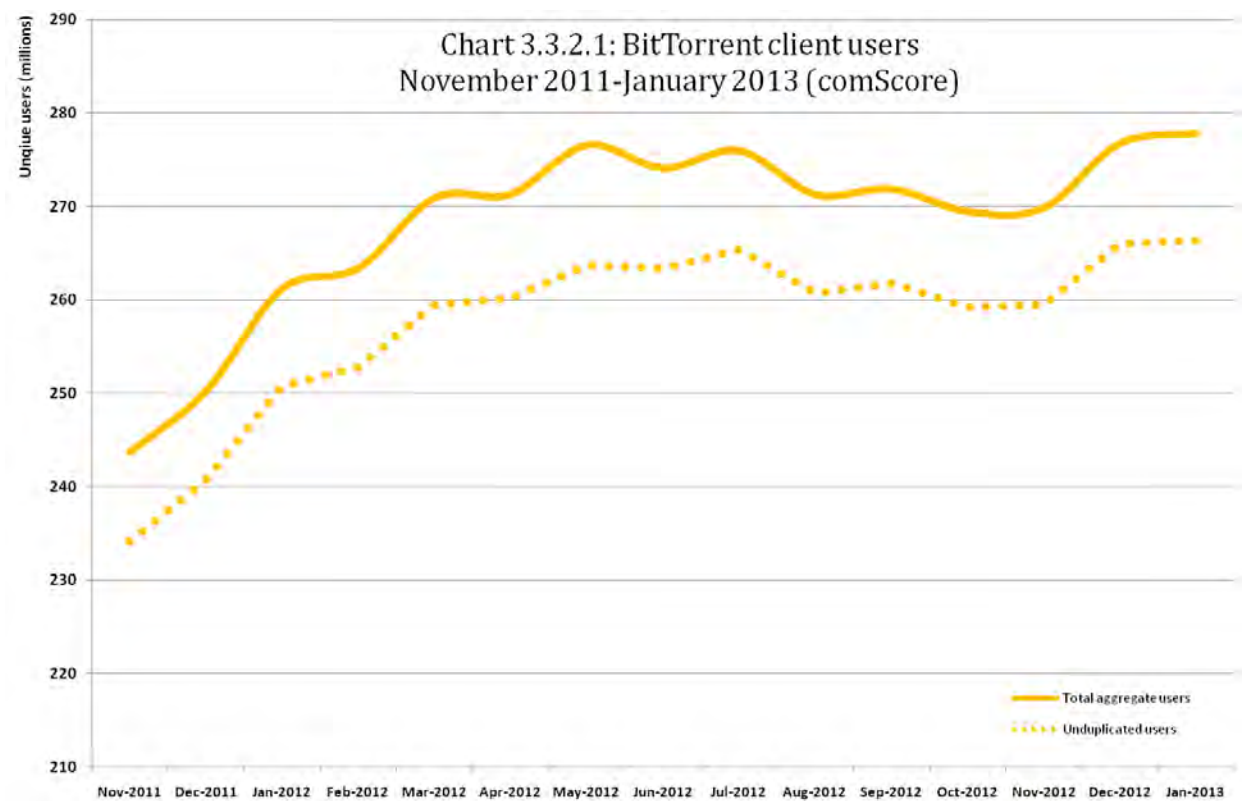
Chart 3.3.1.1 below shows the active users of bittorrent who are downloading or uploading material or part



of a bittorrent swarm of users at any one moment in time. It does not demonstrate the scale of bittorrent use overall which is better illustrated by examining usage data for bittorrent clients (the software tools used to download content via bittorrent) and bittorrent portals (the sites where links to content are located). Note that the figures shown in Chart 3.3.1.1 do not account for non-infringing use of bittorrent and represent a count of the total simultaneous bittorrent population.

3.3.2 BitTorrent client use

Chart 3.3.2.1 below examines use of the most popular bittorrent clients such as uTorrent and Vuze¹³. In January 2013, comScore recorded 277.8m aggregate users of bittorrent clients worldwide (an increase of 14% from 243.7m in November 2011) and 266.3m unduplicated users (an increase of 13.7% from 234.1m in November 2011). There is a much smaller difference between total aggregate users and unduplicated users for bittorrent clients than for bittorrent portals as users tend to employ only a single client. There is little point in having two bittorrent clients running at any one time, though some users may switch clients during a month. In contrast, users frequently visit more than one bittorrent portal to locate content during the course of a month.

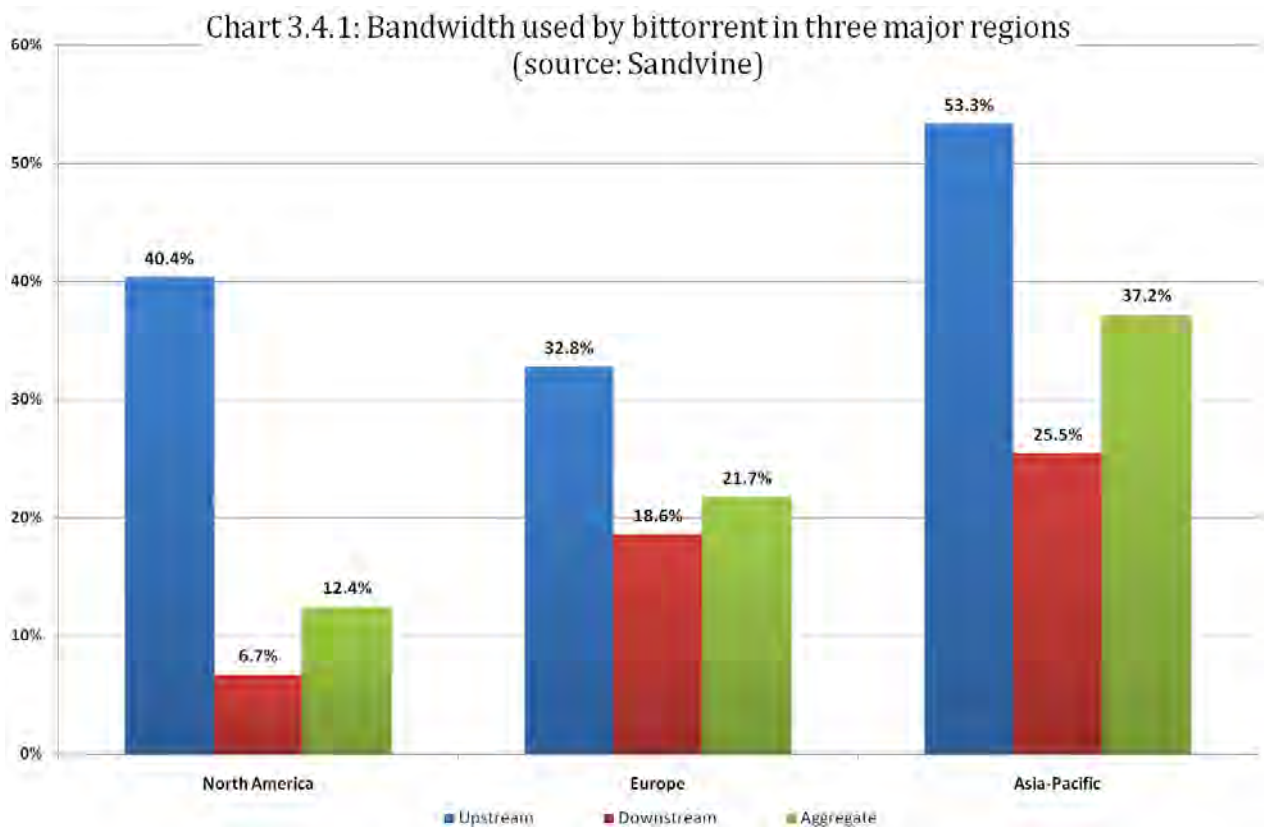


¹³ Data includes nine bittorrent clients: uTorrent, BitTorrent, BitComet, Vuze, FrostWire, BitLord, Shareaza, BitSpirit, and ABC. The figures do not include the popular Chinese download manager Xunlei which is not tracked by comScore. The developers of Xunlei, which includes a bittorrent client as well as using a proprietary protocol for downloads, state that the client has more than 200m unique users each month.

3.4 BitTorrent bandwidth use

The BitTorrent protocol is one of the largest consumers of bandwidth worldwide. In some regions, more internet traffic flows over bittorrent than over any other single protocol. For instance, in the first half of 2012 Sandvine found that bittorrent was responsible for 21.7% of aggregate internet traffic in Europe (both downstream and upstream) and 37.2% in Asia-Pacific – more than YouTube and more than HTTP.

Chart 3.4.1 below shows bittorrent's share of upstream, downstream, and aggregate (overall) bandwidth in each of the three major regions for which data could be obtained from Sandvine – North America, Europe, and Asia-Pacific¹⁴.



As a file sharing application, bittorrent has no equal on the internet. It is this efficient sharing architecture, which lets users upload content to others as soon as they have downloaded even a small portion of an individual file, that is one of the reasons why it dominates the upstream bandwidth category. In all three regions, bittorrent consumes more upstream bandwidth than any other single protocol – and by some distance: in North America, bittorrent is responsible for 40.4% of upstream bandwidth compared to 9.2% for HTTP; in Europe, bittorrent is 32.8% of upstream bandwidth with eDonkey contributing the next largest

¹⁴ Data for North America is from H2 2012; data for Europe and Asia-Pacific is from H1 2012.

amount at 19.9%; and in Asia-Pacific the protocol accounts for more than half of all upstream bandwidth usage at 53.3% with the download manager Xunlei responsible for the next highest amount at 9.7%.

Downstream bandwidth might be considered a more important metric for rightsholders naturally concerned about the levels of infringement which take place over bittorrent as it is a better indicator of how frequently bittorrent is used to obtain infringing material. As the content analysis below demonstrates, bittorrent is overwhelmingly used to distribute infringing files, the largest portion of which is film and television content. In Europe (18.6% of downstream bandwidth) and Asia-Pacific (25.5%), bittorrent is the largest consumer of downstream bandwidth as it is for upstream bandwidth. However, in North America bittorrent's downstream consumption is dwarfed by other applications. Table 3.4.1 below shows the top five consumers of downstream bandwidth in each region.

Table 3.4.1: Top five downstream protocols (Sandvine)

North America		Europe		Asia-Pacific	
Protocol	Percent	Protocol	Percent	Protocol	Percent
Netflix	29.1%	BitTorrent	18.6%	BitTorrent	25.5%
YouTube	14.5%	HTTP	18.4%	YouTube	20.1%
HTTP	13.3%	YouTube	16.5%	HTTP	14.5%
BitTorrent	6.7%	eDonkey	7.7%	PPStream	4.4%
iTunes	3.3%	Flash Video	5.1%	Thunder	3.9%
Others	33.1%	Others	33.8%	Others	31.7%

The only real 'competitor' to bittorrent for the amount of downstream bandwidth consumed worldwide is YouTube which consumes more than twice as much downstream bandwidth as bittorrent in North America and a little less than bittorrent in Europe and Asia-Pacific. YouTube provides both user generated and (mostly) legitimate copyrighted content to users.

It is clear that the downstream landscape in North America is significantly different to the other two regions, dominated by the legitimate video streaming service Netflix which consumes 29.1% of downstream bandwidth in the region. It is also interesting to see that iTunes, another legitimate service, is the fifth placed individual protocol for downstream bandwidth consumption in North America.

No equivalent service to Netflix or iTunes appears in the top five protocols for either Europe or Asia-Pacific. This may be a consequence of the fragmentation of the media landscape within Europe and Asia-Pacific where services like the BBC iPlayer are popular within an individual country but often cannot be accessed by those outside the country. However, there is no indication from other published research that a service like

iPlayer consumes a similar amount of bandwidth to either bittorrent or Netflix within the UK alone and the situation is believed to be similar in other countries. At present, the North American (particularly United States) experience of Netflix is a very successful exception in the legitimate content distribution landscape but one that shows just how popular a well-designed and well-supplied video subscription service can quickly become.

3.5 BitTorrent content analysis

This section of the report examines the particular type of content being shared by users via bittorrent. The aim is to discover what proportion of all bittorrent content is taken up by, for instance, films, music, and games, and how much of that content is unauthorized. Analysis examined 12,500 torrent files in January 2013.¹⁵

Much of the communication on bittorrent takes place with the aid of a central server called a *tracker*. A tracker helps users on bittorrent find those who are already downloading or uploading the file or files in which they are interested. The tracker records the IP addresses of those actively involved in obtaining or distributing a particular file and then shares them with other bittorrent users when requested.¹⁶ Trackers also record data on each **torrent or file** which they track: this data includes the 'hash' of that file (a unique code that identifies that file alone) as well as the number of **seeds** (users holding an entire copy of the file), **leechers** (users in the act of downloading), and (in most cases) total completed **downloads**. Trackers do not tend to record file names.

The largest tracker worldwide is the PublicBT tracker. At the point that this analysis was conducted, it held information on over 3.5m individual torrents. Launched in 2009, the tracker became the most-used tracker for bittorrent swarms during 2010. PublicBT is simple to use, open to any bittorrent user, and free. It has also proved very reliable during its life to date. PublicBT does not cover *every* file available on bittorrent: bittorrent users are free to create torrents using any trackers of their choice and some niche content – such as sport broadcasts or technical ebooks – may be more often found at private trackers which require registration. It is also important to note that there are numerous uses of the bittorrent protocol which would not be recorded by a tracker such as PublicBT. For instance, Facebook, Twitter¹⁷, and eBay¹⁸ deploy bittorrent to update software across their servers and gaming company Valve relies on a custom version of

¹⁵ Data was gathered on every file tracked by the largest public bittorrent tracker worldwide, PublicBT. This data was then used in an attempt to estimate the amount of legitimate against illegitimate and copyrighted content carried by the tracker. On the day of analysis (a weekday in January 2013), PublicBT held information on 3.5m individual torrent swarms.

¹⁶ Trackers are not the only way to obtain IP addresses: bittorrent clients can also communicate through a decentralised network overlay. Additionally, some clients will swap IP addresses of known downloaders or uploaders of a specific file in a transaction known as 'peer exchange', though they must have already managed to locate the other client in the first place. However, trackers are used as the first port of call in almost all torrent downloads and are likely to be the source of a significant proportion of the IP addresses gathered by a client.

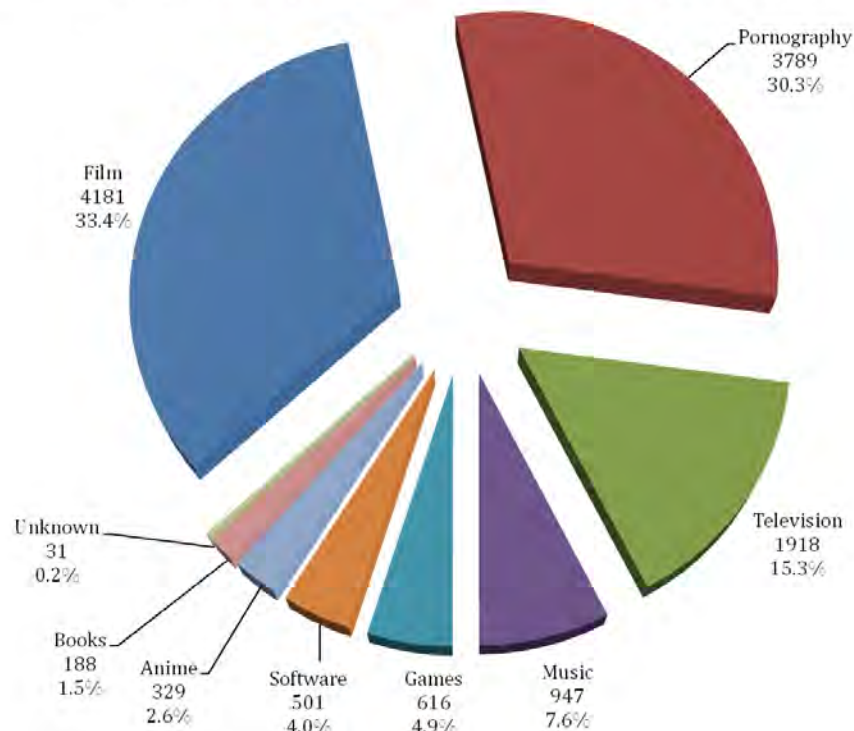
¹⁷ <http://engineering.twitter.com/2010/07/murder-fast-datacenter-code-deploys.html>

¹⁸ <http://www.ebaytechblog.com/2012/01/31/bittorrent-for-package-distribution-in-the-enterprise/>

bittorrent to help distribute content through its Steam service¹⁹. Data on the amount of content which flows through bittorrent within these areas is unavailable. However, many of these uses are intranet distributions of data (updating internal servers, for instance) and hence would not contribute to bandwidth consumption on the wider internet.

A detailed study was made of the 10,000 torrents managed by PublicBT that had the most active downloaders in order to better understand the make-up of the most sought-after content on bittorrent. In addition, a further 2,500 torrents from the long-tail of less popular torrents were also analyzed in order to provide data on the spread of content available on the network. This additional data helps to prevent the analysis of the infringing status of bittorrent files from being overly biased towards those pieces of data most in favor on the network. Chart 3.5.1 illustrates the different types of content located on the tracker.

Chart 3.5.1: Content type of 12,500 torrents, January 2013 (NetNames)



Analysis of these swarms found that three video-based content types – film, pornography, and television – were most popular with bittorrent downloaders. Also, with pornography excluded, **only two identified torrent files out of 12,500 torrents analyzed offered non-infringing content**. None of the most popular 10,000 torrent files were found to offer non-infringing content.

If this ratio of two non-infringing files in every 12,500 (excluding pornography) is extrapolated to all 3.5m files tracked by PublicBT, it means that only 560 files tracked by PublicBT represented non-infringing

¹⁹ Though as the Steam service does not use the bittorrent protocol but a modified version of it, it can be ignored for the sake of this analysis.

content, just 0.015%. Thus out of all non-pornographic files located, **99.97% of content was infringing**. If pornography is included within the calculation – and ignoring the fact that a majority of that pornographic content may be infringing – a total of 69.67% of files were infringing.

This overall figure for unauthorized use of bittorrent can then be combined with the figure provided by Sandvine for total bandwidth consumed by bittorrent in each region to produce statistics for **the amount of bandwidth that is used for the infringing**

Table 3.5.1: Infringing use of bittorrent bandwidth

Region	BitTorrent as percent of bandwidth	Infringing (non-pornography) bandwidth
North America	12.4%	8.7%
Europe	21.7%	15.1%
Asia-Pacific	37.2%	25.9%

(and non pornographic) transmission of content via bittorrent. This is shown in Table 3.5.1.

In North America, **8.7% of all bandwidth** is consumed by unauthorized content on bittorrent (that is not pornography). In Europe, the figure is almost twice as high at 15.1% while Asia-Pacific has the highest figure of the three regions at 25.9%.

3.6 BitTorrent business models

Almost without exception, every bittorrent site analyzed within this research was supported primarily by advertising and operated on a for-profit basis. A few sites – particularly private trackers such as TorrentLeech – also relied on donations from members (though donations often function as payments for additional benefits) but advertising was the principal form of support for bittorrent portals. Typically, sites featured banner advertisements of various shapes and sizes as well as pop-ups and pop-uppers which often launched when a search was made or a link on the site was clicked. The advertisements were often for adult sites, dating services, or online gambling. The screenshot to the right from the site TorrentHound is typical: an advert dressed up as a Facebook friend request led to a site for “Russian dating beauties” while the banner advert on the right hand side led to adult dating site Xdating. A pop-up browser window for a gambling site launched when the user clicked any link on the homepage.

The screenshot shows the homepage of 'torrentHound'. At the top, there's a search bar and a navigation menu. Below that, a Facebook-style friend request from 'Jenni' is displayed. A notification states '2434 new torrents sniffed out in the last 24 hours'. The main content area includes a 'Statistics' section with the following data:

Category	Value
Total Torrents	5,563,691
Total Trackers	8,622
Total Seeds	41,007,649†
Total Leeches	10,750,969†
Total size of all Torrents	12,201.67 Terabytes
Visitors (24 hours, unique)	323,739 (3.75 per second)
Views (24 hours, unique)	0 (0 per second)
Downloads (24 hours, unique)	0 (0 per second)

Below the statistics is a 'Popular Search Terms' section listing various titles like 'the croods', 'Spartacus', 'Justin Timberlake', etc. On the right side, there is a banner advertisement for 'OLDER WOMEN NEED LOVE' featuring a woman's image and the text 'They are often neglected and ignored. Can you give it to them?'.

Some bittorrent sites also generate revenue through affiliate agreements which are often tied to the main function of the site. For instance, Torrentz.eu promoted 'BTGuard', a proxy and VPN service billed as “the only

way to download torrents securely". TorrentReactor advertised its own TorrentPrivacy service, another VPN, and other sites such as Vertor linked to the same service through affiliate links.

Often, torrent sites promoted other sites which ostensibly offered ways to download content – most often films – for a fee, though often led to ‘scam’ download sites or malware-infested applications. Such links were frequently highlighted on the bittorrent site in an attempt to confuse users and obfuscate the real torrent link. For instance, the screenshot below shows a page from torrent site Vertor. There were three download links for a new television episode in the left-hand menu and one link in bold text in the main window. Those marked ‘Download direct’, ‘Free direct download’, and ‘Download – Car SOS...’ redirected the user to a site which automatically launched a software download that, if installed, was supposed to provide access to free television channels but was also bundled with a number of pieces of malware which infected the user’s machine.²⁰ The only link on Vertor which actually led to the correct bittorrent download was marked ‘Download via torrent client’ in the left-hand menu.

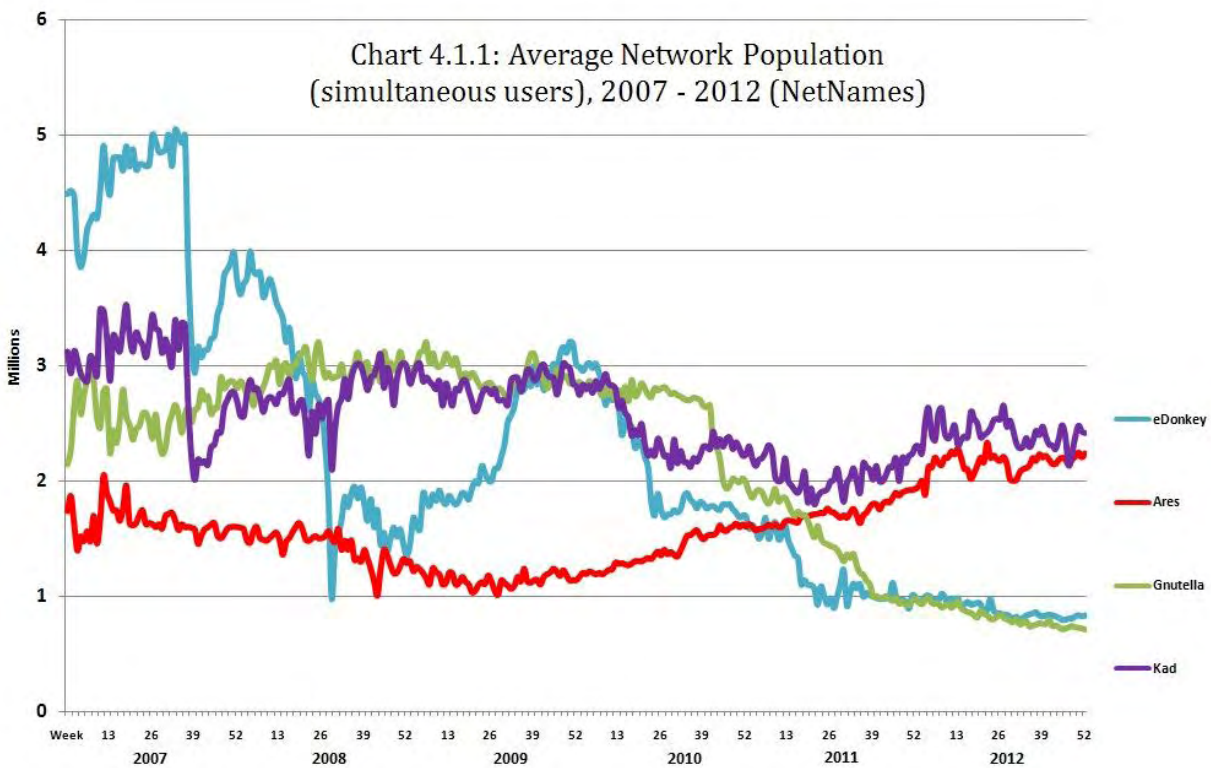
The screenshot shows the Vertor website interface for a torrent titled "Car SOS S01E07 HDTV XviD-AFG torrent". The page features a search bar at the top, navigation tabs for "Movies" and "Unsorted", and a sidebar with download options: "Download direct" (no client needed), "Download via torrent client" (recommended), and "Free direct download". The main content area includes a "Torrent info" section with details like Date (2013-03-24 00:47:25), Category (Movies), Seeds (3), Leeches (3), Full size (378 MB), and Tracker (http://tracker.thepiratebay.org/announce). A prominent "Download – Car SOS S01E07 HDTV XviD-AFG" link is highlighted in green, labeled as "download direct - no client needed". Below this, there is a "Recommended privacy solution" section for "TorrentPrivacy" and a "DOWNLOAD CLIENT" banner with a "50% Discount" offer.

²⁰ See <http://forums.anvisoft.com/viewtopic-45-2137-0.html>, for instance.

4 Other file sharing networks

4.1 Introduction

With the exception of bittorrent, most peer-to-peer networks have declined in use over recent years. The popularity of many peer-to-peer networks has been affected by a degraded user experience, due both to clients which have failed to innovate and, in some cases, to successful anti-piracy action. User numbers have dropped for almost all peer-to-peer networks as Chart 4.1.1 below demonstrates.



At the start of 2007, eDonkey vied with bittorrent as the most popular single peer-to-peer network. Since that date, the network has suffered from a series of anti-piracy operations aimed at important central servers on the network. The sudden dips in 2007 and 2008 reflect these points. More recently, a lack of development of the main client used on the network (eMule) and a much lower number of available servers has seen many users leave the network for a simpler and more user-friendly experience using bittorrent or web-based download ecosystems such as cyberlockers and video streaming. Between the start of 2007 and the end of 2012, the simultaneous eDonkey population declined by 81.4% from 4.5m users to 0.8m.

Kad, a sister network to eDonkey which operates through decentralised means, also suffered from the difficulties that faced the eDonkey network but has survived in slightly better health. Kad has also lost users

during the five year period shown on Chart 4.1.1 but not as many as eDonkey, declining by 22.6% from 3.1m to 2.4m users.

The Gnutella network has recently been hit harder by anti-piracy action than any other network. Legal cases against the owners and developers of the main Gnutella client, LimeWire, eventually led to a ban on distribution of the client and the activation of a 'kill switch' that stopped many versions of LimeWire connecting to Gnutella. The sharp fall in Gnutella users that followed this point in time began midway through 2010 and by the start of 2013, the network was little used. Between the start of 2007 and the end of 2012, Gnutella lost 66.8% of users to fall from 2.1m to 0.7m.

The Ares network is the only one of the four peer-to-peer networks shown on Chart 4.1.1 to stand in a better position at the end of 2012 than it did at the start of 2007. Heavily used in Latin America, use of Ares declined through 2008 and most of 2009 as developer inattention meant users dealing with an increasingly buggy and difficult client. A new version of the client helped return some users to the network and the population stabilised during 2012 at a simultaneous population of around 2.2m users, an increase of 28.9% on the number of users at the start of 2007.

Determining universe size

As with similar data for bittorrent, the populations reported in this section are snapshots of user numbers at one point in time rather than figures demonstrating the total universe of users over the course of a month. Determining the overall size of each network's unique monthly userbase is a more difficult task for peer-to-peer applications which have little reliance on web site portals for content links. While some, but only a few, eDonkey portals still exist, the primary method for locating content on eDonkey, Gnutella, and Ares is by searching within one of the different clients available for each network. Combined with the lack of other relevant data, this means that this report takes estimates of the total eDonkey, Gnutella, and Ares populations from comScore's figures for unique and unduplicated client users for each networks in January 2013. These are shown in Table 4.1.1.

A similar method to that employed for bittorrent is used to estimate the proportion of that population which used each network for infringing use at least once during January 2013. This is explained more fully in Section 8. The calculations found that almost every user of eDonkey and Ares is likely to have obtained infringing content through the networks during January 2013 and so the total infringing populations are almost identical to the unduplicated client users.

Table 4.1.1: Unduplicated client users for each network, January 2013 (comScore)

Network	Client users
eDonkey	9.4m
Gnutella	2.3m
Ares	66.6m

Estimating worldwide use of **Usenet**, the final ecosystem considered in this section, is more complex. comScore records data for users of only one Usenet application, named UseNext. Other pieces of software known to be popular for Usenet access, such as NewsLeecher, Newsbin, and Unison, are not tracked by comScore and commercial providers of Usenet software do not release user figures for unique users or client downloads. Further, visitors to the web sites of Usenet access providers such as Giganews do not correspond to Usenet users as once a user has signed up to a Usenet account, there is usually little need for them to visit the web site of their access provider. comScore recorded 1.3m unique users of the Usenext application during January 2013. Conservatively comparing the popularity of the Usenext web site with those of others and the software's believed share of the Usenet market leads to a deliberately cautious estimate of 5.0m unique Usenet users worldwide. This is very likely an under-estimate but will be used. Any future reports examining this area will attempt to find more accurate and detailed sources for data on the Usenet population. Calculations to estimate the proportion of total users which use Usenet for infringement found that almost all users did so at least once during January 2013 (99.99%).

4.2 eDonkey

In addition to the fall in users of the eDonkey network noted in Section 4.1 above, a decline was also noted in use of two eDonkey clients monitored by comScore. Unique monthly users of eMule and eMule Adunanza²¹ fell from 17.9m in November 2011 to 9.4m in January 2013, a drop of 47.5%.

Sandvine found very low use of eDonkey in North America and Asia-Pacific, particularly when compared to bittorrent: eDonkey accounted for just 0.5% of bandwidth in Asia-Pacific and slightly under 0.4% in North America. However, the protocol still had a significant legacy use in Europe: 10.4% of all bandwidth was recorded as consumed by eDonkey in Europe, slightly less than half of that consumed by bittorrent (21.7%) but still a significant amount (apart from bittorrent, only HTTP and YouTube consumed more bandwidth within Europe).

Analysis of the level of infringing content on eDonkey and Kad used a similar methodology to that employed in earlier research. A series of searches were made for pieces of content which infringe on copyright (new and catalogue film and television titles, games for the PC and consoles, music, books, and so on) and a similar number of searches for content which is legitimately available on file sharing networks (content actively distributed under a Creative Commons license, for instance). The number of complete sources for each piece of named content were then analyzed. Obvious fake files were discounted. The amount of content shared legitimately was low at 0.8% of all files located. This is in line with real-world experience of how eDonkey and Kad are used online.

²¹ An eDonkey client heavily used in Italy.

It is important to note that the methodology above does not include pornographic content of any kind in the searches and such content is widely available on eDonkey. It might be assumed that the level of pornographic files on eDonkey might be similar to that found on bittorrent (30.3%). If this assumption is made, 69.7% of all content on eDonkey is non-pornography and 0.8% of that is non-infringing. This leaves a total of **68.9%** of content on eDonkey and Kad that is infringing and not pornography.

A recent paper by Carra *et al.* found that video content was the most popular when analyzing files located when crawling the Kad network. Of the sixteen most popular keywords found during their research (such as 'avi', 'xvid', 'mp3'), 70.7% of located files related to video content; 17.7% to music content; 6.5% to images; and 5.1% could not be assigned to any particular category of content.²²

The table below shows the amount of bandwidth used by eDonkey in the three different regions analyzed as reported by Sandvine. The overall amount of bandwidth then used for infringing and non-pornographic content in each region on eDonkey is shown, using the assumption that 68.9% of that bandwidth is used for the distribution of infringing content.

Table 4.2.1: Infringing bandwidth use on eDonkey (Sandvine / NetNames)

Region	Overall internet bandwidth used by eDonkey / Kad (Sandvine)	Estimate of internet bandwidth for infringing content (NetNames)
North America	0.4%	0.28%
Europe	10.4%	7.17%
Asia-Pacific	0.5%	0.35%

4.3 Gnutella

Despite the significant drop in Gnutella users over the last two years (comScore recorded a fall of 76.8% in users of the Limewire client between November 2011 and January 2013, from 10m monthly users to 2.3m), the network is still used to locate and download some infringing material. Older versions of Limewire remain able to connect to the Gnutella network and other Gnutella clients do exist. However, the network is now overrun with fake content and malware. Without Limewire's team of developers working to keep the network clean of 'bad' files, distributors of polluted content are now able to take advantage and ensure that their own files are pushed to users.

²² Carra, D., Steiner, M., Michiardi, P., Biersack, E., Effelsberg, W., and Taofik, E., *Characterization and Management of Popular Content in KAD*, Submitted to IEEE Transactions on Parallel and Distributed Systems, 2012. See <http://profs.sci.univr.it/~carra/>.

It is difficult to put a precise figure on the true amount of unauthorized content present on the Gnutella network given the prevalence of spam and malware but research indicates that it remains still non-trivial. However, bandwidth consumption by Gnutella is now extremely low: in Europe and Asia-Pacific, Sandvine measured just 0.01% of bandwidth as consumed by Gnutella and in North America only 0.02%. Given this, it may be safe to assume that the amount of unauthorized content held on Gnutella (that is not pornography) is similar to that found on bittorrent and eDonkey – just over two-thirds²³. Such an assumption will have little influence on a figure for the overall amount of bandwidth used for infringing material even if the decision to equate Gnutella with eDonkey is incorrect.

Table 4.3.1: Infringing bandwidth use from Gnutella (Sandvine / NetNames)

Region	Overall internet bandwidth used by Gnutella (Sandvine)	Overall bandwidth used for infringing content (NetNames)
North America	0.02%	0.014%
Europe	0.01%	0.007%
Asia-Pacific	0.01%	0.007%

4.4 Ares

Ares is a peer-to-peer file sharing network that is primarily used in Latin America and Spain. Due to this specific regional focus, Ares did not appear as a named protocol in the data supplied by Sandvine for this report. The protocol is believed to take up to 8% of downstream traffic in Latin America but significantly less elsewhere in the world. Analysis indicates that the amount of infringing material present on Ares is close to that of other file sharing networks such as eDonkey. comScore data found 66.6m unique unduplicated users of an Ares client during January 2013.

4.5 Usenet

One of the oldest forms of communication on the internet, Usenet today is mainly used for the transmission of files (known as ‘binaries’) rather than text messages. While some ISPs still offer a modicum of Usenet service, this tends to be limited to text-based groups which consume little bandwidth. Users who wish to gain access to the binary groups and the wealth of content they carry – which is commonly unauthorized – must generally pay for a commercial service. According to Alltopia, the amount of content posted to Usenet each day comprised 9.3TB in January 2012. Giganews, one of the most respected Usenet access providers, currently stores over 12 petabytes of Usenet content.

²³ Analysis of search queries made across the Gnutella network by NetNames reinforces this belief.

User figures are difficult to obtain for Usenet, but Sandvine found Usenet's bandwidth consumption to be 0.45% in North America and 0.47% in Europe but just 0.09% in Asia-Pacific – small overall compared to bittorrent and eDonkey but not inconsequential. comScore measure users of one Usenet client, Usenext, which had 1.35m unique monthly users in January 2013, all of which were from Europe. Usenext is believed to be one of the more popular clients used to access Usenet but it is difficult to make an estimate of what proportion of the Usenet population is captured by the Usenext client: it is possible that overall monthly users of Usenet for infringement might total anywhere between 5m and 25m.

Within the Usenet ecosystem, the web site NewsAdmin collects Usenet statistics²⁴ and these clearly demonstrate the popularity of groups which carry files as opposed to those which carry simple messages. For instance, analysis of unique visits over a week-long period in 2012 to the top 100 'binary' (file-carrying) newsgroups against the top 100 text-only newsgroups found that 96.9% of all visits were to the binary groups rather than the text-only groups. Further, the top 100 newsgroups in terms of the size of content posted each day are all binary groups which means that while visits are heavily skewed towards binary groups, the amount of content downloaded (and hence bandwidth consumed) leans even more heavily towards the binary groups.

For this report, analysis was made of the last 20 complete files or messages posted to 50 newsgroups from the most accessed according to NewsAdmin (25 binary, 25 text only), making 1,000 posts in all. Each post was examined for the category of the content posted (for instance, film, pornography, television, book, text, etc) as well as the copyrighted status of this content. The size of each file or post was also recorded and this was then combined with the number of unique accesses recorded by NewsAdmin to the newsgroup in which it was posted to produce an estimate of the amount of bandwidth consumed by that post overall.

Table 4.5.1 below shows the results of this analysis for each category of content. While the 'Other / text only message' category had by far the highest number of individual posts (just over half of all posts including all of those to the text-only newsgroups), this category takes up a tiny amount of overall bandwidth (0.19%) as the standard text post to Usenet is only 2-3kB in size, compared to a collection of posts that might comprise a full film at 740MB and often well over 1GB.

On this analysis, unauthorized copyrighted content consumes 71.8% of all Usenet bandwidth, excluding pornography. With most of the pornography content also likely copyrighted (as with bittorrent, this area was left uninvestigated), the overall figure could be much higher.

²⁴ <http://www.newsadmin.com/usenet.asp>

Table 4.5.1: Content types on Usenet (NetNames)

Content type	Posts found		Copyrighted		Amount of bandwidth	
	#	%	#	%	Total	Copyrighted
Films	142	14.20%	141	99.30%	41.36%	41.07%
Pornography	101	10.10%	n/a	n/a	30.35%	n/a
Television	85	8.50%	85	100.00%	16.18%	14.94%
Music	64	6.40%	59	92.19%	2.01%	5.79%
Games	19	1.90%	19	100.00%	4.87%	5.31%
Software	31	3.10%	22	70.97%	3.12%	2.90%
Books / Audio books	49	4.90%	41	83.67%	1.92%	1.74%
Other / text only post	509	50.90%	0	0.00%	0.19%	0.00%
Total	1,000	100.0%	720	72.0%	100.00%	71.75% (excluding pornography)

Table 4.5.2 below shows the overall figures for amount of bandwidth consumed by the sharing of unauthorized content on Usenet across each of the three major regions studied in this report. This ranges from a low of 0.29% in Asia-Pacific to 1.68% in Europe.

Table 4.5.2: Infringing bandwidth on Usenet (NetNames)

Region	Overall bandwidth used by Usenet (Sandvine)	Overall bandwidth for infringing content (NetNames)
North America	0.42%	0.30%
Europe	0.47%	0.34%
Asia-Pacific	0.09%	0.07%

5 Video streaming

5.1 Introduction

Streaming video has become one of the most popular online activities. Data from Sandvine shows that more internet bandwidth is used for video streaming in North America than for any other activity and much of this is from legitimate video streaming services such as Netflix, YouTube, and Amazon Instant Video.

However, an illicit video streaming ecosystem also exists. This ecosystem mainly consists of two types of site that jointly participate to present infringing video content to visitors. The first type of site provides **links** to content and is typically known as a video streaming link site; the second type of site **hosts** the streaming video, usually displaying it to the user in a Flash-based or HTML5 video player. Video streaming hosts are often called ‘streaming cyberlockers’ as they replicate some of the functions of direct download cyberlockers: a user can upload content but the sites themselves are rarely searchable – instead, a user is provided with a link which can then be shared and circulated online by the user.

For example, a video streaming link site like Movie4k (below) indexes a large range of film and television titles. For each piece of content, the site displays a choice of different video streaming hosts – in the screenshot below, well over forty different streaming hosts for *Despicable Me 2* are available in the left-hand menu. For some of the streams, as the screenshot shows, the video player from the streaming cyberlocker host is embedded in the page, though it can be made full-screen if required.

On other occasions, the links on sites like Movie4k direct the user straight to a video streaming cyberlocker such as StreamCloud (see below) where the video can be played and watched.

There are two advantages to video streaming against a peer to peer download method such as bittorrent. First, videos start to play almost immediately – unlike bittorrent, the user does not need to wait for their download to complete before the content can be viewed. Second, the video streaming process is simple and familiar to almost all internet users. Video players are present on thousands of sites, from YouTube to BBC

The screenshot shows the Movie4k website interface. At the top, there are navigation links for News, Register, FAQ, Contact, and Add a link. Below the navigation is a search bar and a list of categories: Movies, TV shows, and XXX movies. The main content area is titled 'Watch movie' and displays the movie 'Despicable Me 2' with a 'Download "Despicable Me 2" in HD quality!' button. A list of streaming hosts is shown on the left, including StreamCloud, Movshare, Bihshare, Fileluke, PirmShare, XvidStage, Flashx, Divxstage, Nowvideo, Putlocker, Novamov, Sockshare, PromeShare, Moshare, Fileluke, Videolash, Abnvideo, Thefile, Nowvideo, Movdivx, Vidux, UploadC, Vitaden, Flashx, Videowall, Divxstage, Sharex, Zana, Viteq, Nowvideo, Novamov, Promptle, StreamCloud, Movshare, Fileluke, and Videolash. A video player is embedded on the right, showing a scene from the movie. Below the player, there is a 'Premium' button and a message: 'The movie does not play properly? Click here please!'. At the bottom, there is an IMDb rating of 7.80 and a 'REPORT AS OFFLINE' button.

The screenshot shows the StreamCloud website interface. At the top, there are navigation links for Make money, Login, Sign Up, and Forget your password?. Below the navigation is a search bar and a list of categories: Movies, TV shows, and XXX movies. The main content area is titled 'Watch movie' and displays the movie 'Despicable Me 2' with a 'Stream' button. A video player is embedded on the right, showing a scene from the movie. Below the player, there is a 'Premium' button and a message: 'The movie does not play properly? Click here please!'. At the bottom, there is an IMDb rating of 7.80 and a 'REPORT AS OFFLINE' button.

News. There is no need to download a separate client or learn the basics of a new technology.

However, the quality of the video is not usually as high as it is typically when obtained through bittorrent. The user experience is also often degraded by the large number and type of advertisements that are common on many video streaming linking and video streaming sites (see Section 5.6 below).

Determining universe size

Unlike bittorrent and the file sharing networks analysed in Section 4, video streaming is an entirely browser-based operation: link sites and video streaming cyberlocker sites are all web-based entities and there is no need for a user to leave their browser in order to access the streamed video. This fact means that the decision on how to most accurately size the infringing video streaming universe is focused on two choices: between aggregate and unduplicated data; and between choosing visitors to video streaming link sites or visitors to video streaming cyberlocker sites.

For the same reasons as for bittorrent, it is believed that the unduplicated visitors to sites provide the most accurate analysis of a unique universe as this data counts each single video streaming user once only each month rather than on multiple occasions. The choice between link sites and hosting sites is more complicated. Counting video streaming cyberlocker site views might be thought to be the most accurate option but this data is affected by the way in which streamed video is actually accessed by users. For instance, many linking sites embed video players within their own site – as shown with the screenshot for *Despicable Me 2* shown above. In this instance, the user has loaded a page from Movie4K into their browser and this page then embeds and loads the video from the hosting site. In this scenario, comScore tracks only the visit to the linking site. It does not count the embedded video as a ‘visit’ to the streaming cyberlocker site. This issue means that using visitors to streaming video cyberlocker sites that are focused on piracy may miss a portion of the total infringing video streaming audience.

For this reason, this report adopts total unduplicated visitors to video streaming link sites as the best estimate for the video streaming universe. In January 2013, this figure stood at **112.5m** unique and unduplicated internet users as the data below in Section 5.2 illustrates. The proportion of this population who used the video streaming ecosystem for infringement is determined using a methodology that is explained in Section 8 to discount users who *only* accessed non-infringing or pornographic content. **This method determines the total number of video streaming users who accessed infringing content through video streaming link sites during January 2013 to be 112.0m users.**

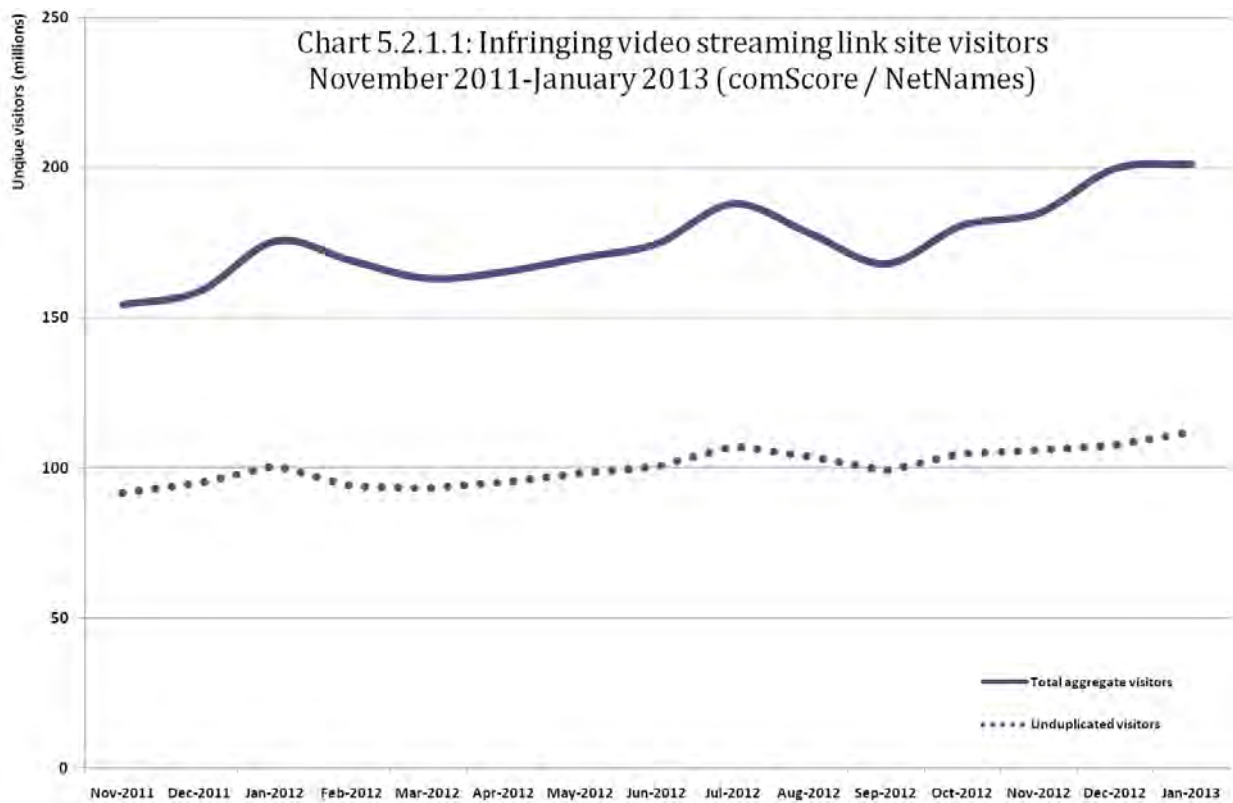
5.2 Video streaming link site visitors

5.2.1 Short-term analysis

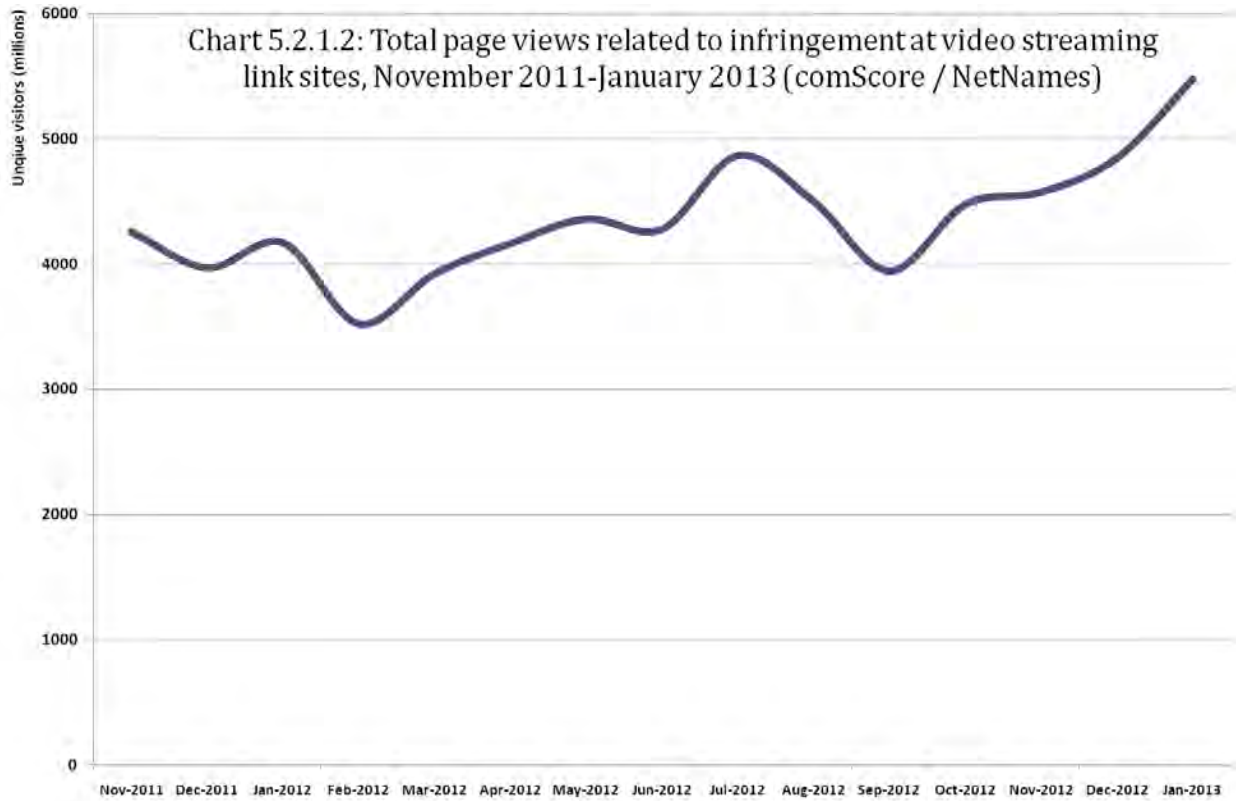
Analysis collected over one hundred video streaming link sites that were live in January 2013 and which had over 50,000 monthly unique visitors each. The most popular site was Movie2k.to with 23.1m unique monthly users. (Movie2k subsequently closed at the end of May 2013). Chart 5.2.1.1 illustrates visitors to these sites from November 2011 to January 2013.

Aggregate infringing visitors to all video streaming link sites totalled 201.1m in January 2013, an increase of 30.4% from 154.2m since November 2011. The figures for unduplicated visitors indicate that this increase was at least partially from users visiting more sites each month: in November 2011, each unique video streaming link site user visited an average of 1.68 sites each month; in January 2013, this figure was 1.80 – a small absolute increase but enough to make a difference. This suggests that users may have found it more difficult to locate working versions of the streaming content in which they were interested and were visiting additional link sites to try and meet their needs.

Unduplicated visitors to the video streaming link sites were 112.0m in January 2013, an increase of 22.2% on 91.6m unduplicated visitors in November 2011. This was around 90m fewer unique users than visited bittorrent portals in January 2013: despite the ease of use of video streaming, the range and quality of content available on bittorrent attracts a significantly larger number of users.



Total **page views** devoted to infringement (shown in Chart 5.2.1.2) across video streaming link sites also increased during this period, from 3.8 billion in November 2011 to 4.9 billion in January 2013, an increase of 28.6%. Page views per user also increased, from 41.8 page views per unduplicated user to 44.0 views.

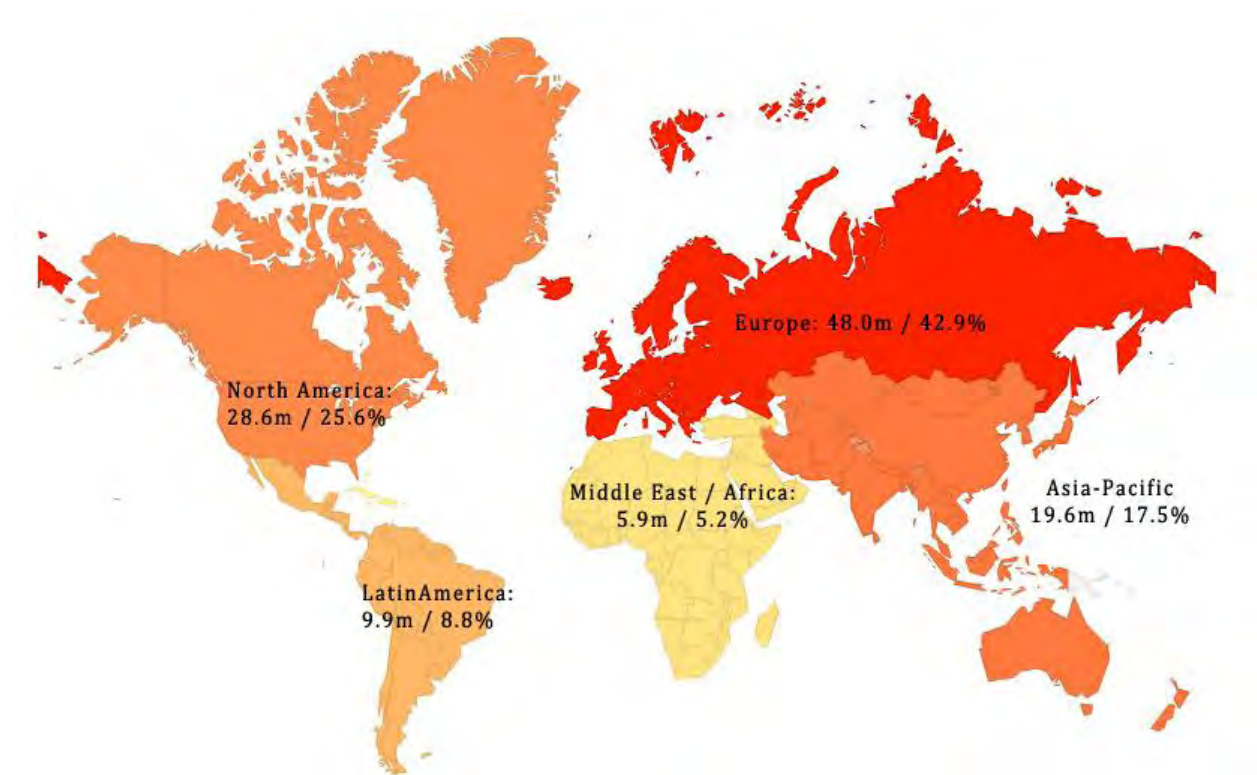


5.2.2 Regional breakdown

As in the section for bittorrent, comScore data was used to analyse visitors according to the same five regions using unduplicated unique visitors from January 2013. Across the three largest regions – North America, Europe, and Asia-Pacific – there were 96.3m unduplicated unique users to video streaming link sites, an increase of 27.7% from 75.4m users in November 2011.

Europe again contributes the highest proportion of visitors to video streaming link sites at 42.9% or 48.0m visitors but there is significant interest in this method of infringement in North America (25.6% or 28.6m) and in Asia-Pacific (17.5% or 19.6m visitors).

Chart 5.2.2.1: Regional breakdown of visitors to video streaming link sites (comScore / NetNames)



5.2.3 Long-term analysis

Chart 5.2.3.1 looks at visitors to the most popular video streaming link sites over a longer time period. comScore data is used to track aggregate visitors to the twenty most popular video streaming link sites from July 2009 and NetNames analysis determined the proportion of these visitors which were infringing (see Section 8).

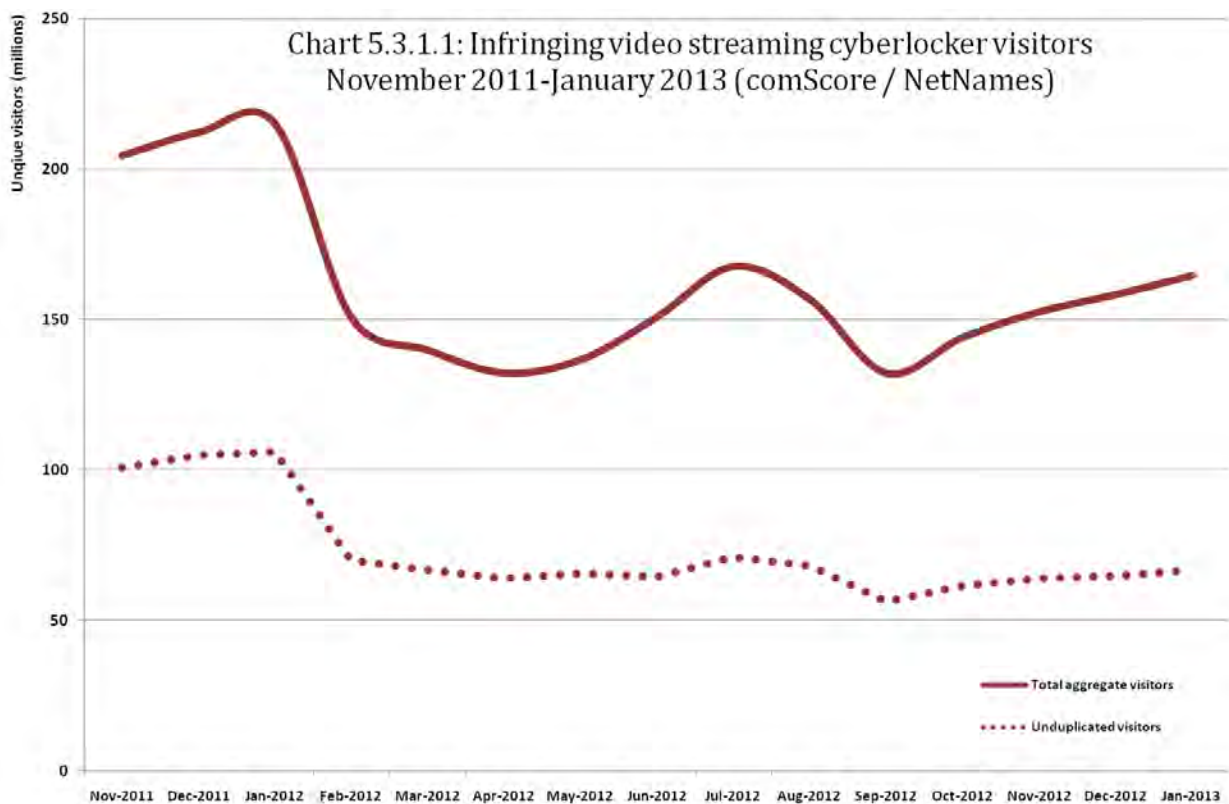
The chart displays 49.8m aggregate visitors to the most popular twenty video streaming link sites worldwide in July 2009. This had increased by 166.5% to 132.7m by January 2013.



5.3 Video streaming cyberlocker sites

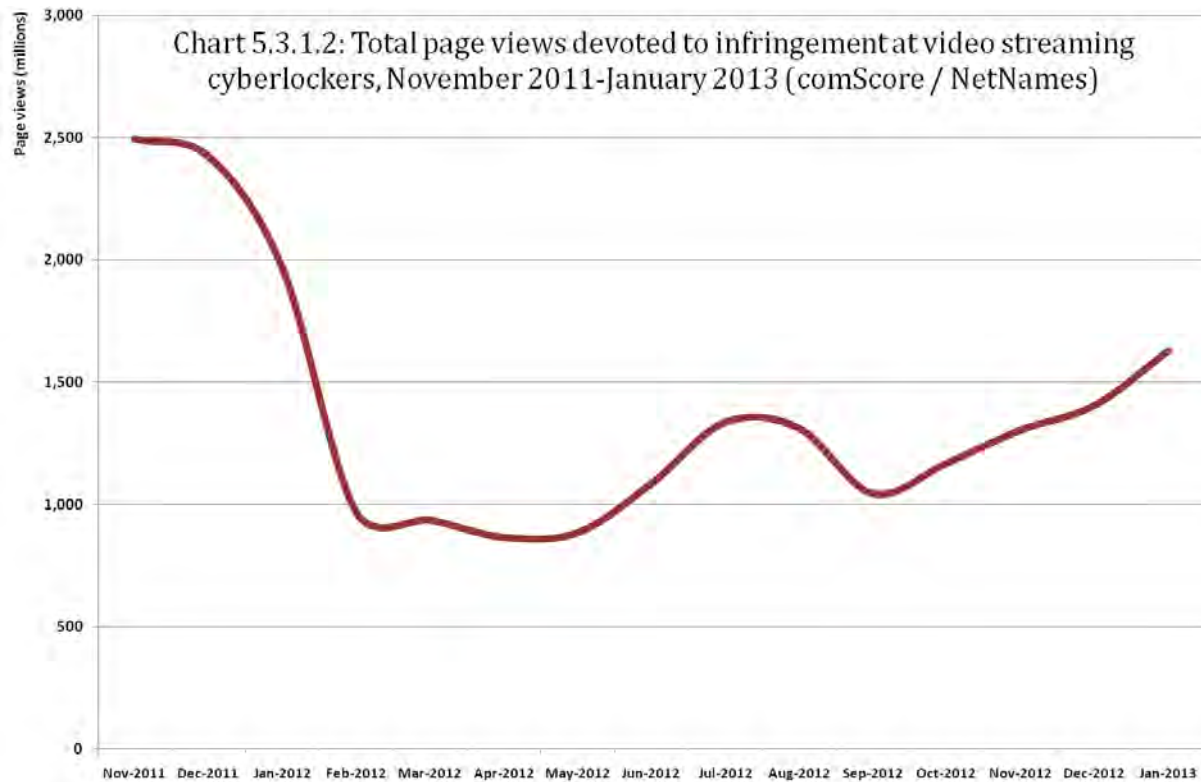
5.3.1 Short-term analysis

Chart 5.3.1.1 below shows an overall decline in visitors to video streaming cyberlocker sites during the period between November 2011 and January 2013. Total infringing aggregate visitors fell by 19.5% from 204.5m users in November 2011 to 164.6m while unduplicated users across all sites fell by 33.8% from 100.7m to 66.7m.



The sharp drop in both aggregate and unduplicated visitors to video streaming cyberlocker sites after January 2012 followed the seizure by US law enforcement of the MegaVideo streaming cyberlocker site in the same operation that closed the MegaUpload direct download cyberlocker. In December 2011, comScore recorded 39.9m unique visitors to MegaVideo and it was the most popular video streaming cyberlocker commonly used for infringing content. The closure of MegaVideo led to further disruption in this ecosystem and other major video streaming cyberlockers such as VideoBB and Videozer also closed. Yet as 2012 progressed, video streaming use showed signs of recovery with visitors attracted to new video streaming cyberlockers such as PutLocker and StreamCloud which offered a good quality streaming experience and wide variety of content. While total visitors to streaming cyberlocker sites in January 2013 remained significantly lower than at the end of 2011, visitor numbers have increased since September 2012 and seem likely to continue to do so without further anti-piracy action against sites in this ecosystem.

Page views to video streaming cyberlocker sites also fell during this period, from 2.5 billion in November 2011 to 1.6 billion in January 2013, a fall of 34.8%. The effect of the loss of MegaVideo and other similar sites in January and February 2012 is illustrated in Chart 5.3.1.2. Again, though, a recovery is noted from September 2012 onwards.



It is interesting to note that the number of unduplicated visitors to video streaming cyberlocker sites (Chart 5.3.1.1) is significantly lower than that for visitors to video streaming *linking* sites (Chart 5.2.1.1): 66.7m for video streaming sites against 112.5m for video streaming linking sites. It might be thought that these figures should be relatively similar as the two types of site often work in concert: a user visits a video streaming linking site to locate a stream for a particular site and is then directed on to a video streaming cyberlocker to watch the content. However, the figures show a much higher level of visitors at the first stage of this process (the link sites) than the second (the streaming).

There may be a number of reasons for this. First, users may simply be unable to find links for the film or television episode they are seeking. Research has shown that the piracy-free window between worldwide theatrical release and first pirated release on the internet has been gradually extended over the last few years to more than a week. It is possible then that some users visit a video streaming linking site anticipating links to a new film only to go away disappointed because a pirated version is not yet available.

Second, the sometimes poor video streaming ecosystem user experience may dissuade some users from continuing – for instance, if they are bombarded with advertisements. Third, and perhaps most important, comScore’s tracking in this area does not account for all streaming activity: for instance, some video streaming link sites directly embed streaming video players in their own pages so that a user does not actually visit the streaming cyberlocker site. In this case, comScore does not record a visit to the streaming site at all.

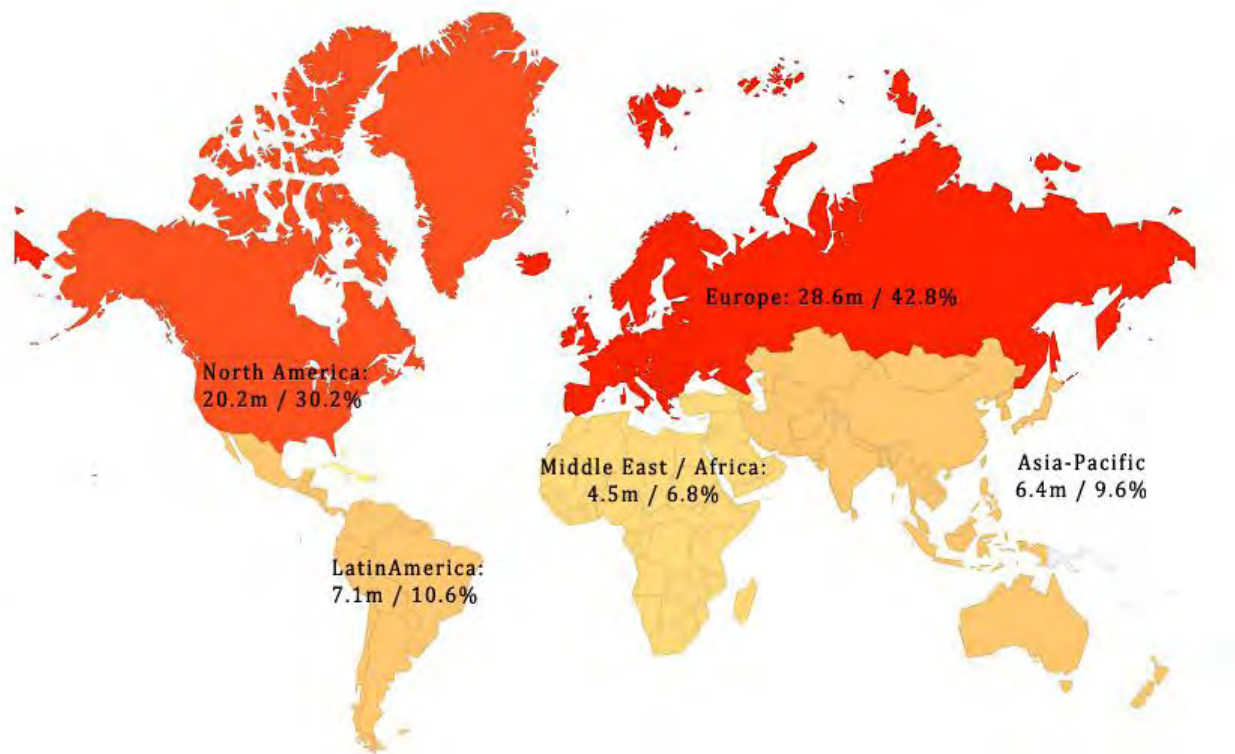
Last, some link sites employ popular video hosts such as YouTube and DailyMotion which are not included in the visitor analysis of streaming hosts above. The proportion of infringing content on major user generated content sites such as YouTube is far outweighed by the amount of benign and legitimate material they hold. Analysis shows that major streaming sites such as YouTube are sometimes used by link sites focused on anime or Indian content rather than Western content such as Hollywood films.

Visitors to video streaming cyberlocker sites tend to visit more such sites each month than visitors to video streaming link sites. On average, a user of piracy-facilitating video streaming cyberlockers visited 2.5 such sites in January 2013 compared to only 1.8 video streaming link sites. Given that visitors to video streaming link sites are highly likely to funnel through to video cyberlocker sites if they locate the video for which they are looking, this is unsurprising and demonstrates the smaller pool of video streaming cyberlocker sites compared to video streaming linking sites. A video streaming cyberlocker requires a more complex, expensive, and bandwidth-heavy hosting infrastructure than a site which simply aggregates links to content held on video streaming cyberlocker sites. Further, hosting infringing content is likely seen by site owners as a riskier operation from a legal standpoint.

5.3.2 Regional breakdown

The regional analysis of video streaming cyberlocker visitors as seen in Chart 5.3.2.1 is broadly similar to that for video streaming link sites: in January 2013, Europe was again the main player at 42.8% or 28.6m visitors, while North America contributed 30.2% or 20.2m visitors.

Chart 5.3.2.1: Regional breakdown of visitors to video streaming sites (comScore / NetNames)



5.3.3 Long-term analysis

comScore recorded 82.8m aggregate visitors to the most popular twenty video streaming cyberlockers worldwide in July 2009. This had increased by 56.5% to 130.2m by January 2013, though this represented a significant decrease on the historical high of 213.8m visitors in January 2012, the month that the very popular MegaVideo video streaming cyberlocker was closed.



5.4 Video streaming infringing bandwidth use

Analysing the overall bandwidth consumption of video streaming as a whole is relatively simple. In North America, Sandvine estimated that 62.3% of all downstream bandwidth was in the category ‘real-time entertainment’ which covers both streaming audio and video, with the latter making up by far the highest proportion. Real-time streaming of content is the fastest growing area of bandwidth use in many regions worldwide and by the end of 2012 had become the largest consumer of downstream bandwidth in North America and Asia-Pacific. However, analysing the *infringing* use of that bandwidth is more difficult.

Table 5.4.1 shows the percentage use of downstream bandwidth by different streaming video protocols which appeared in the top twenty downstream protocols for North America in the second half of 2012. Those marked with an asterisk (Netflix, Hulu, and Ooyala) only offered legitimate content and can be discounted for any attempt to determine infringing bandwidth use. The amount of infringing content consumed on YouTube is likely only very small relative to the amount of bandwidth consumed by the site overall.²⁵

The video streaming cyberlocker sites outlined in Section 5.3 which are commonly used for infringement – such as PutLocker or Streamcloud – use general video protocols such as Flash and RTMP that are listed in Table 5.4.1 but which are also utilised on many sites across the wider internet. Millions of internet locations use protocols to transmit video, most of them offering non-infringing material, from news web sites to small community organisations to commercial enterprises. Separating the non-infringing from the infringing in this environment is difficult and certainly much harder than it might be for bittorrent, for instance, where the type of material that crosses the network can be readily analysed by looking at major trackers and the largest portal sites. While the major video streaming link sites which offer infringing content and the major video streaming cyberlocker sites which tend to host infringing video can be located and the numbers of visitors to such sites analysed (as Sections 5.2 and 5.3 demonstrate), their total contribution to overall streaming video bandwidth is a fraction of that consumed by legitimate streaming.

Table 5.4.1: Bandwidth used by streaming video in North America (Sandvine, 2012)

Protocol	Percent
Netflix *	29.1%
YouTube	14.5%
Flash Video	2.8%
MPEG	2.6%
RTMP	1.6%
Hulu *	1.2%
Ooyala *	0.5%
Shockwave Flash	0.5%
HTTP Live Streaming	0.5%

²⁵ This is not to say that infringing material is not available on YouTube. While many full length movies, television episodes, and other copyrighted content are often detected by YouTube’s ContentID protection system, some copies do slip past the detection methods involved. Also, some content owners may not employ the ContentID system and rely on other methods to detect or locate copyrighted material on the site. However, there are numerous indications that the overall proportion of infringing material on YouTube is a very small slice of a very large overall pie.

Methodology to determine infringing use

In an attempt to determine infringing use of video streaming bandwidth, this report repeats and updates the methodology used in a previous report by Envisional.²⁶ The most accurate approach to the area was deemed to be one which compared the popularity of linking sites used to locate infringing video streaming content with portal sites used to locate infringing material available via bittorrent.

ComScore provides data on the average number of daily visitors to bittorrent portals such as ThePirateBay, IsoHunt, and Torrentz, the main sites from which the vast majority of bittorrent users find links to the pirated content that they ultimately download using the bittorrent protocol, and that then results in the large amount of bittorrent traffic seen in the usage studies. In the same way, users of video streaming sites use portals such as Movie2K and 1Channel to locate links to pirated content they wish to access, clicking through to the video streaming hosts where the content is hosted. By comparing the number of daily visitors to bittorrent portals with the same data for video streaming link sites, a rough estimate of pirated usage may be possible (assuming that the usage pattern of each ecosystem is similar).

For each of the three major regions for which Sandvine provided bandwidth data, the average number of monthly unique video streaming link site visitors between November – January 2013 was compared to the same figure for bittorrent portal visitors. In all three regions, there were more visitors to bittorrent portals than video streaming link sites, though the difference varied between region: in North America, total video streaming link site visitors were 72.2% of total bittorrent portal visitors while in Asia-Pacific the figure was 27.0% of bittorrent portal visitors.

Assuming that the end result of a visit to a bittorrent portal is the same as a visit to a video streaming link portal – that a user locates and downloads or streams the content in which they are interested – then the total data which is then transferred must also be considered in this analysis. The amount of data required to consume a file via a video streaming site is usually significantly less than when downloading a film or television episode from bittorrent. The file size is smaller and the final quality of what the user views is often poorer. This helps reduce the overall bandwidth footprint of each streaming site and thus lower their costs (many video streaming hosts place a limit on the maximum file size that can be uploaded – for example, PutLocker will not allow uploads above 1GB for most users).

Twenty links for recent films posted to a range of video streaming link sites were analysed and the streaming video file to which the link pointed was measured for file size. On average, the streamed video content was 441.3MB in size. The twenty most popular films currently listed on ThePirateBay bittorrent portal were also analysed, with the average file size of these films 1,187.2MB. On this estimate, each film streamed via a video streaming site results in 37.2% of the bandwidth for a film downloaded via bittorrent.

²⁶ *An Estimate of Infringing Use of the Internet*, January 2011.

These figures can then be used to help provide a figure for infringing video streaming for each of the three regions included in this report. Table 5.4.2 below shows the final figure for each of the three regions: 1.8% of all bandwidth in North America is used for infringing video streaming; 2.9% of all bandwidth in Europe; and 2.6% of all bandwidth in Asia-Pacific.

Table 5.4.2: Video streaming bandwidth use calculations

Methodology steps	North America	Europe	Asia-Pacific
A. Amount of all internet traffic measured as video streaming of any kind (less legitimate services such as Netflix – sourced from Sandvine) ²⁷	14.71%	13.63%	18.02%
B. Amount of all internet traffic measured as bittorrent (sourced from Sandvine)	6.71%	18.58%	25.45%
C. Video streaming link site visitors as a percentage of bittorrent portal visitors in each region (see above)	72.21%	41.53%	26.95%
D. Average streamed file size from video streaming link sites (441.3MB) as a percentage of average film file size downloaded via bittorrent (1187.2MB) (see above)	37.17%	37.17%	37.17%
E. Estimated infringing data usage of video streaming link sites as a percentage of all bittorrent internet traffic (C * D)	26.84%	15.44%	10.02%
F. Estimated infringing data usage of video streaming link sites as a percentage of all internet bandwidth in each region (B * E)	1.80%	2.87%	2.55%
G. Estimated infringing data as a percentage of all video streaming bandwidth (less legitimate services) (F / A)	12.24%	21.05%	14.15%

It is also important to mention the contribution of pornography to bandwidth consumption in this area. Streaming video distribution is one of the most popular ways in which users consume pornography online. For instance, figures supplied in April 2012 by the second largest pornography site worldwide, YouPorn, showed that the site served almost 1 petabyte of content each day to internet users with peak traffic of 100 gigabytes per second²⁸, an amount estimated by the site to be 1% of the total amount of data transferred across the internet each day.

With many adult studios extremely concerned about the level of unauthorised distribution of their content on such streaming sites – often in clips rather than full movies²⁹ – a measurement of the amount of unauthorised streaming that takes place via pornography streaming sites would likely put the total level of infringing video

²⁷ This data is taken from Sandvine figures for video streaming bandwidth. Sandvine is able to detect certain legitimate video services – such as Netflix, Hulu, or BBC iPlayer – within the overall category of video streaming. As there is no content on these services which infringe copyright, the proportion of bandwidth consumed by each can be removed from the estimates of infringing video streaming bandwidth before any other calculations take place.

²⁸ <http://www.extremetech.com/computing/123929-just-how-big-are-porn-sites/2>

²⁹ <http://www.lvri.com/business/adult-industry-executives-fret-over-piracy-l-a-condom-ordinance-137635038.html>

streaming much higher. This is not an area where, like bittorrent, adding in pornography would take the amount of infringing content close to 100% of the total level of bandwidth use for that type of distribution – UGC sites like YouTube and DailyMotion and the wide use of video by news sites and others means that there is a significant amount of non-infringing use of streaming video – but there is certainly an amount of infringing video that would be accounted for were it to be included in the figures. However, doing so is beyond the scope of this study.

5.5 China

It is important to separately discuss the video streaming ecosystem in China compared to the rest of the world and to the rest of the Asia-Pacific region. China has a distinct online landscape which makes significant use of a wide range of video streaming protocols, ranging from direct streaming at major UGC sites such as Youku and Tudou to live video streaming apps such as PPS and PPLive to peer to peer based on-demand streaming such as QVOD.

A few years ago, the biggest Chinese UGC sites were frequently used to store and distribute infringing copies of titles belonging to rights holders, particularly from the West. However, state pressure and an increased number of partnerships with legitimate content owners have seen infringing material hugely reduced on sites like Youku and Ku6. The locus of video streaming infringement has shifted to peer to peer based technologies such as QVOD and Baidu Player as well as legacy use of live streaming services like PPS.

comScore recorded 65.9m unique monthly users of the PPS app in January 2013, the video streaming software developed by PPStream. The ppstream.com web site itself (also accessed at pps.tv) received 51.9m unique monthly visitors, the vast majority of which are from China. PPTV.com, the web site for the PPLive video streaming application, received 70.0m unique visitors in January 2013. While visitor numbers can be uncovered for such streaming sites, it is much more difficult to make an accurate estimate on the amount of consumption that is infringing, particularly for domestic Chinese material. Western content can be located on many of these services and despite some of the largest Hollywood studios establishing partnerships with video hosting web sites in China to provide legitimate access to popular films and television, research conducted by NetNames found that pirated material is available. However, the majority of content available through these different Chinese video streaming services such as PPS and PPLive is domestic and untangling the ownership status of this content and attempting to determine whether material has been uploaded legitimately or not is an area which any individual outside China and without an expert knowledge of the Chinese rights landscape would find difficult to accurately assess.

However, previous analysis of the Chinese video streaming landscape by NetNames indicated that the vast majority of use of the QVOD and Baidu Player clients was infringing. There are numerous portal sites in China such as tom365.com which offer links to a wide range of infringing content – both domestic and international

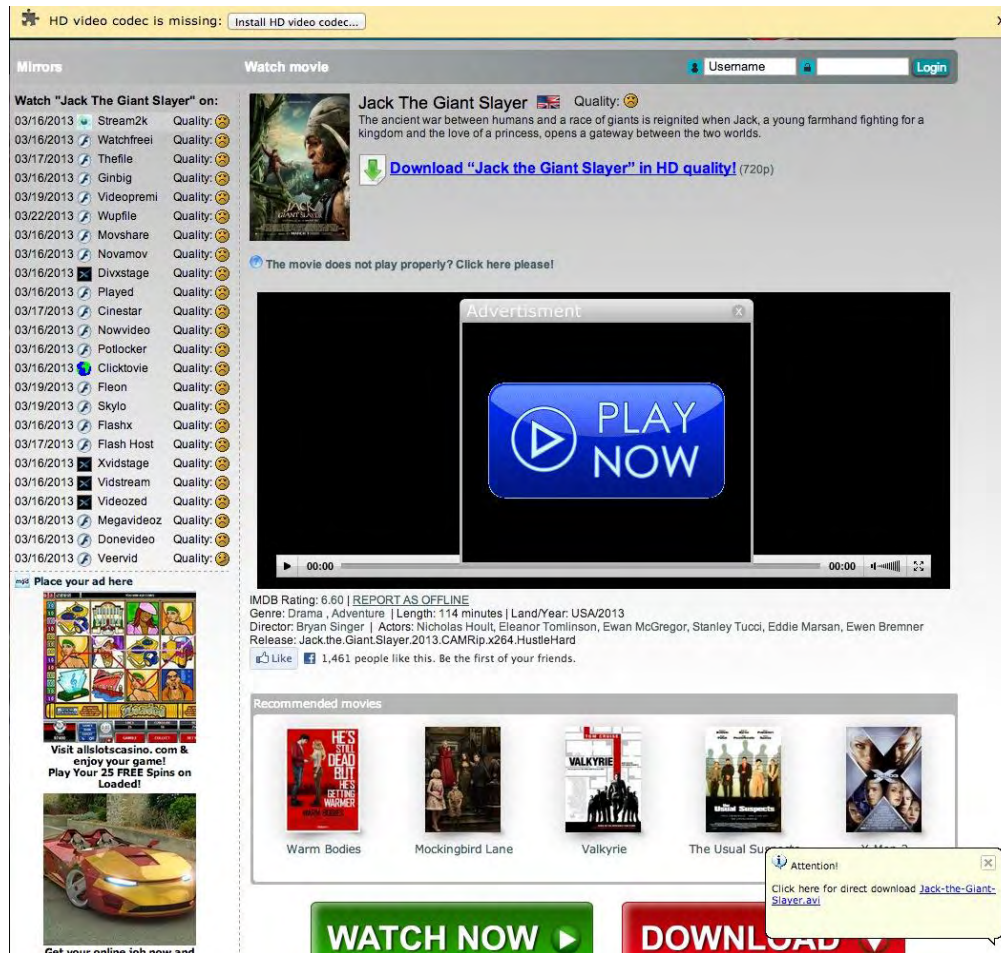
– that can be consumed using QVOD and/or Baidu Player (and many others such as Yyets.com which offer QVOD links amidst numerous other ways of downloading). Indeed, it is rare to find links to material for the two clients that are *not* illegitimate.

Sandvine record 3.9% of all Asia-Pacific bandwidth as consumed by QVOD (the company did not track Baidu Player). In addition, another Chinese streaming video client with a similar usage pattern, Funshion, consumes 1.2% of all bandwidth. Given this data, it would not be foolhardy to assume that between 4-5% of bandwidth in the region is infringing content consumed by users of QVOD and Funshion (with a further unspecified amount of infringing content also consumed by Baidu Player and smaller amounts by live streaming clients such as PPS and PPLive). Taking into account the 2.55% of infringement recorded for video streaming bandwidth for Asia-Pacific in Section 5.4 above, it is estimated that between about 6.55% - 7.55% of all Asia-Pacific bandwidth is taken up with infringing video streaming.

5.6 Business Models

Revenue generation for video streaming link sites and video streaming cyberlockers is based around three areas: online advertising (for both types of sites), affiliate programs (for video streaming link sites), and premium accounts (for video streaming cyberlockers).

Advertising was featured across all video streaming link sites. The screenshot below from Movie2k.to is an example. While Movie2k closed in May 2013, the advertising model used on the site is typical of many video streaming link sites.



The following adverts or affiliate links are found on this page:

- a banner across the top of the screen tells the user that an “HD video codec is missing”, mimicking the style of a browser warning window³⁰. The link leads to what pretends to be a video codec pack but is most likely a piece of malware.

³⁰ <http://support.mozilla.org/en-US/questions/950060>

- a bold blue link tells the user to “Download ‘Jack the Giant Slayer’ in HD quality”, leading to a site that requires a payment to access films and television. Online reports state that the site does not provide what it promises.
- a large blue square across the middle of the video window stating “PLAY NOW”. This link leads to the same site as the previous link.
- below the video, large red and green buttons stating “WATCH NOW” and “DOWNLOAD” which again lead to the same site.
- to the left of the video window, advertisements for an online casino and a ‘work from home’ scheme.
- a dialogue window which states “Click here for direct download Jack-the-Giant-Slayer.avi” which is an affiliate link to a pay-to-download movie site.

Similar advertisements are found on video streaming cyberlocker sites. The screenshot from streaming cyberlocker MovShare shows an adult dating site, two advertisements promoting “Flash Player HD” which are designed to mimic Adobe’s own Flash Player update messages, and a smaller “Download” and “Play now” advert which leads the user to a software download. Clicking on the video window to start the film player pushes a pop-up browser window advertising a gambling site.



Premium accounts

In addition to advertising, many video streaming cyberlocker sites – similar to direct download cyberlockers – also offer paid ‘premium’ or ‘pro’ accounts. These typically remove advertising on streaming cyberlockers and also allow uploaders to streaming sites to add larger files to the sites. Premium accounts commonly cost between \$5 and \$10 per month. The advantages of the PutLocker premium account are listed in the screenshot below for a cost of \$5.99 per month.

\$5.99 1 Month Payment	\$12.99 3 Months Payment	\$24.99 6 Months Payment	\$44.99 1 Year Payment
Pay with Credit Card	Pay with Credit Card	Pay with Credit Card	Pay with Credit Card
Other Methods	Other Methods	Other Methods	Other Methods
bitcoin Checkout Now	bitcoin Checkout Now	bitcoin Checkout Now	bitcoin Checkout Now

Recently, payment processors such as Visa, Mastercard, and PayPal – under pressure from rightsholders and law enforcement – have become less willing to allow streaming cyberlocker hosts like PutLocker to use their payment facilities. Sites have been forced to locate other methods of payment. For instance, PutLocker does allow payment with Visa and Mastercard but through a small and little known payment processor named E-Merchants. The site also offers payment through the decentralised payment mechanism BitCoin and, for users in some countries, premium SMS payments and prepaid bank cards. Recent NetNames research found that each of the ten most popular streaming cyberlockers worldwide offered an average of 8.6 payment methods for premium accounts.³¹

Affiliate schemes

One major difference between the bittorrent ecosystem and that of video streaming cyberlockers (and also direct download cyberlockers) is the use in some instances of affiliate schemes which reward uploaders for the content they add to the hosting site or the number of users which pay for a premium account after

³¹ *And how would Sir care to pay for his cyberlocker membership?*, NetNames Scrutiny article, 7 August 2013.

clicking on a link to an uploader’s file. During 2011, direct download cyberlocker sites such as FileSonic and FileServe offered uploaders in excess of \$40 every time 1,000 users downloaded one of their files or up to 60% of the cost of a premium account. However, affiliate schemes were reduced in number and in generosity following the seizure by law enforcement of MegaUpload and its sister video streaming cyberlocker MegaVideo in January 2012. While MegaUpload did not operate an affiliate or rewards scheme at the time of the seizure, the allegation that such a process encouraged copyright infringement on the site in the past formed one of the main planks of evidence against the owners of the site. During 2012, many video streaming cyberlockers and direct download cyberlockers abandoned affiliate schemes or reduced payouts to uploaders.

Some sites still offer rewards and it is noticeable that sites that have launched since the seizure of the MegaUpload and MegaVideo sites are often more willing to promote a rewards program. In the video streaming ecosystem, for instance, streaming cyberlocker Streamcloud.eu operates a ‘loyalty program’ which pays up to \$40 per 10,000 views of content (or \$4 per 1,000 views) to streams. NowVideo.eu pays up to 60% for each premium account sold.

The screenshot shows the StreamCloud website's 'Loyalty program' page. At the top, there is a navigation bar with links for 'Make money', 'Login', 'Sign Up', and 'Forgot your password?'. Below the navigation bar, the 'Loyalty program' title is displayed. A brief description explains that users can monetize their videos and receive a fixed amount per 10,000 views based on their country's tier. A green button labeled 'Tier countries' is positioned above a table that details the four tiers. The table lists the reward amount for each tier and the countries included in that tier. A 'Signup now' button is located at the bottom of the table.

Tier 1	Tier 2	Tier 3	Tier 4
Reward: \$40 USD *	Reward: \$30 USD *	Reward: \$20 USD *	Reward: \$10 USD *
Countries: Liechtenstein Austria Switzerland United Kingdom France Australia Netherlands Germany Sweden New Zealand Belgium Canada	Countries: Cyprus Luxembourg Italy Bulgaria Denmark Norway Finland Poland Ireland	Countries: Romania Slovakia Israel Russian Federation Portugal Dominican Republic Slovenia Czech Republic Ukraine Croatia Greece	Countries: All others

These programs are generally successful in their aims: by encouraging uploaders to provide content to their site, the video streaming host draws in visitors who will generate advertising revenue and perhaps pay for premium accounts. In turn, the uploaders receive monetary rewards – which further entices them to provide more content. Unsurprisingly, the most popular content is infringing copies of new films and television episodes and so uploaders turn to this type of material to draw in as much profit as possible.

6 Direct download cyberlockers

6.1 Introduction

Direct download cyberlockers offer online storage for user files, providing a link to each file which can be shared with others to facilitate downloads across a wider community (or the entire internet). As with video streaming, the direct download cyberlocker ecosystem typically operates in a two-stage process. First, a user locates a link to a file on a direct download cyberlocker link site. These range from metasearch sites such as FilesTube (see screenshot below) and FileCrop to dedicated forums such as Warez-BB or Peb.pl. Second, the user clicks through to download the file from the direct download cyberlocker hosting site.

As the data below demonstrates, the direct download cyberlocker ecosystem was significantly affected by the seizure of the MegaUpload direct download cyberlocker in January 2012 and the arrests of its main executives. A number of other popular direct download cyberlockers voluntarily closed following the enforcement action against MegaUpload (such as FileSonic and FileServe) and others have since changed their operating style. For instance, many direct download cyberlockers used to offer monetary rewards to the uploaders of the most popular content but after the closure of MegaUpload, the practice has become less common.

The screenshot shows the FilesTube search results page for the query "les miserables 2012". The page features a search bar at the top with the query entered, and a navigation menu on the left with categories like "All sites", "Relevance", and "Any size". The main content area displays search results for "les miserables 2012 download", including a list of related searches, a "Join Our Fan Page on Facebook!" section, and a list of "Most popular topics today". The search results are organized into sections: "Searches related to les miserables 2012", "Les Miserables 2012 DVDSOCR XViD TICKLE TIME", "Les Miserables 2012 DVDRIP XviD", and "Video results for: les miserables 2012". Each result includes a title, source information, and a "Download" button. The "Video results" section includes a video player and a "Watch here" link.

Determining universe size

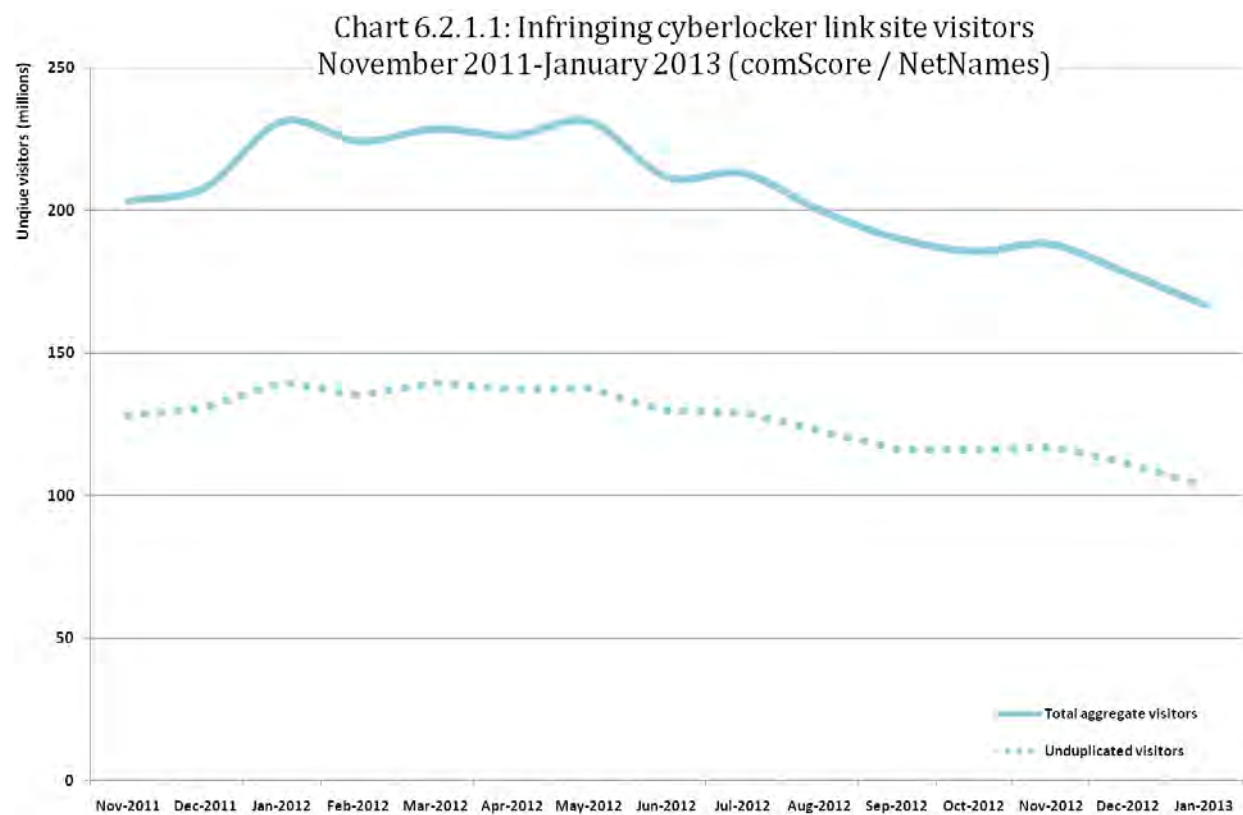
In a similar fashion to video streaming, the direct download cyberlocker ecosystem is browser-based. Assuming that unduplicated visitors are preferred to aggregate users, the primary choice in attempting to determine the size of the direct download cyberlocker universe is between unduplicated users for link sites against those for cyberlocker hosting sites. In this instance, it seems sensible to rely on the figure for visitors to direct download cyberlocker hosting sites – that is, the sites from which users download any content which they seek. This allows the estimate for the direct download cyberlocker universe to incorporate users from the long tail of direct download cyberlocker link sites – for instance, the many blogs or smaller linking sites which do not feature in the list of direct download cyberlocker linking sites analysed in Section 6.2 below.

In January 2013, comScore recorded **228.8m** unique and unduplicated internet users of direct download cyberlocker hosting sites. The proportion of this population who used the direct download cyberlocker ecosystem for infringement is determined using a methodology that is explained in Section 8 to discount users who *only* accessed non-infringing or pornographic content. **This method determines the total number of direct download cyberlocker users who accessed infringing content through direct download cyberlocker sites during January 2013 to be 210.6m users.**

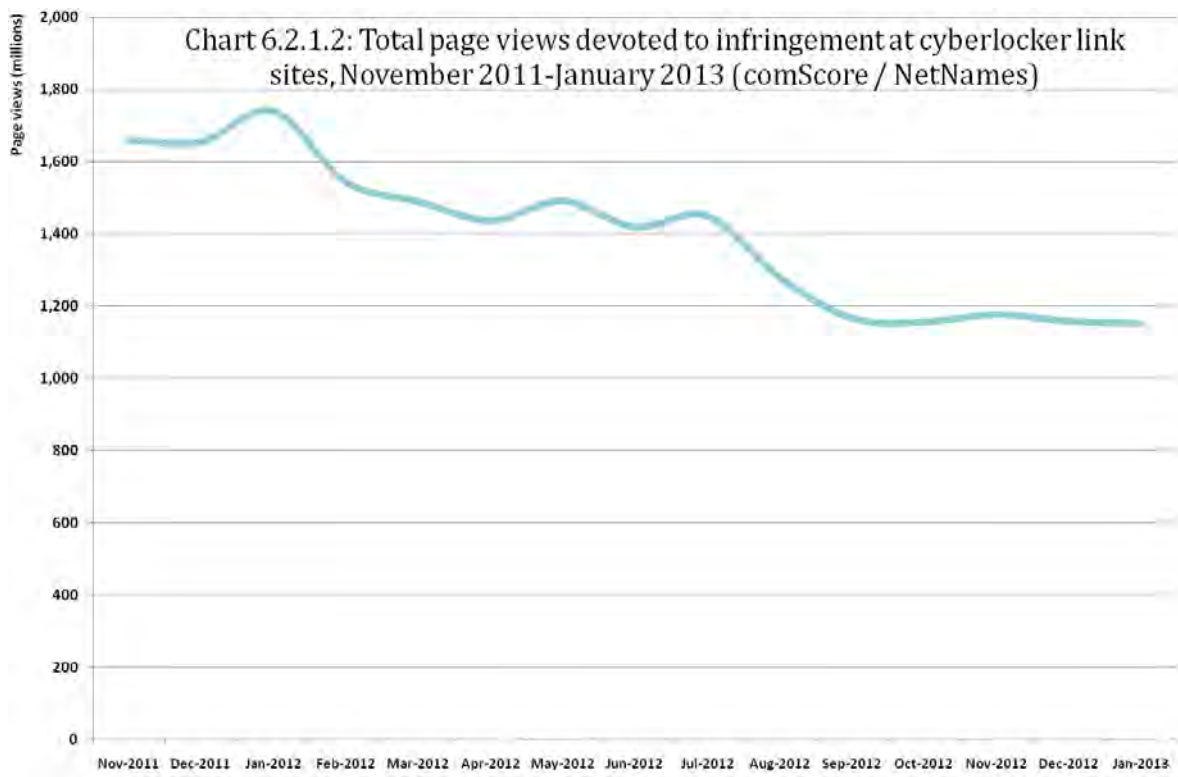
6.2 Direct download cyberlocker link sites

6.2.1 Short-term analysis

Chart 6.2.1.1 below shows the decline in the popularity of direct download cyberlocker link sites since November 2011. The drop is clear for both aggregate visitors and unduplicated visitors, particularly from January 2012 when MegaUpload was seized. Infringing aggregate visitors to direct download cyberlocker link sites dropped by 17.9% in the twelve months following the disappearance of MegaUpload from the internet, from 203.2m to 166.8m. Unduplicated visitors dropped by a slightly higher proportion, falling by 19.2% from 127.9m to 103.4m. In effect, one in five direct download cyberlocker link site users from January 2012 no longer visited any such site in January 2013. The analysis in section 6.3 below suggests an even larger decline in visitors to direct download cyberlockers themselves.



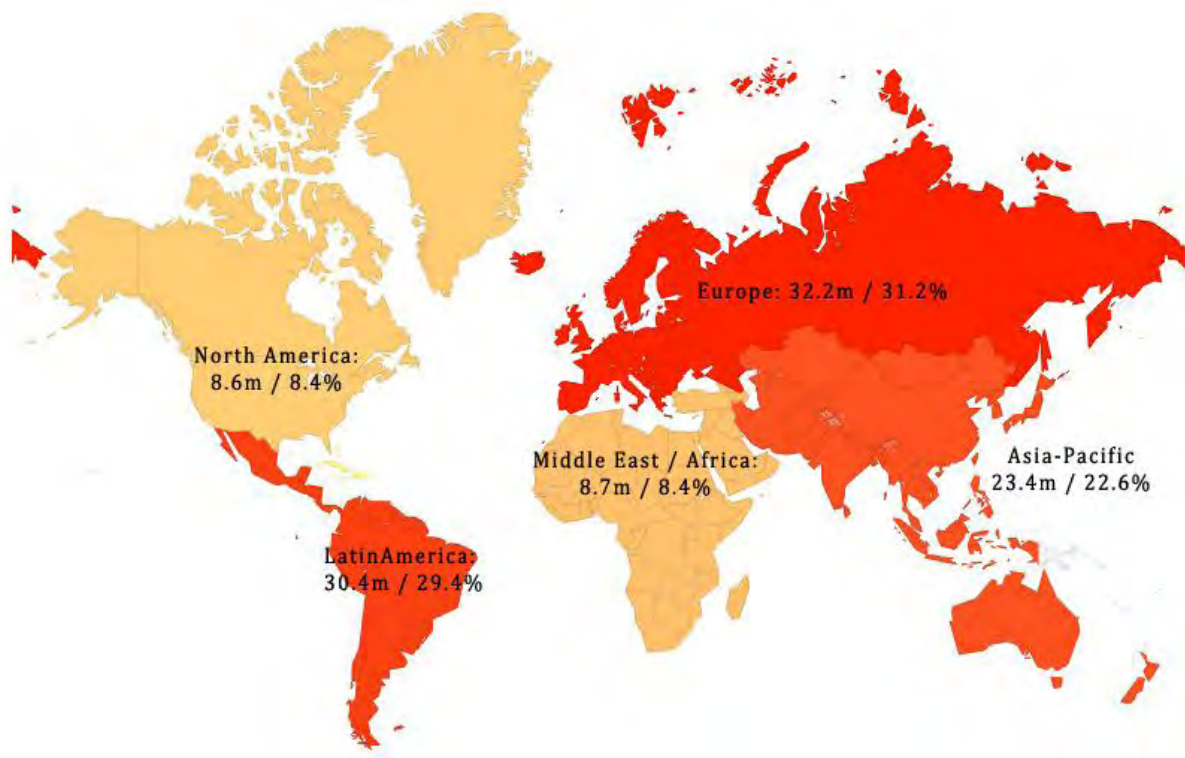
Data from comScore on **total page views** also supports the view of a substantial decline in direct download cyberlocker popularity during this period, as Chart 6.2.1.2 shows. In January 2013, 1.2 billion pages devoted to infringement were viewed across direct download cyberlocker link sites, a large drop of 30.7% compared to 1.7 billion page views in November 2011.



6.2.2 Regional breakdown

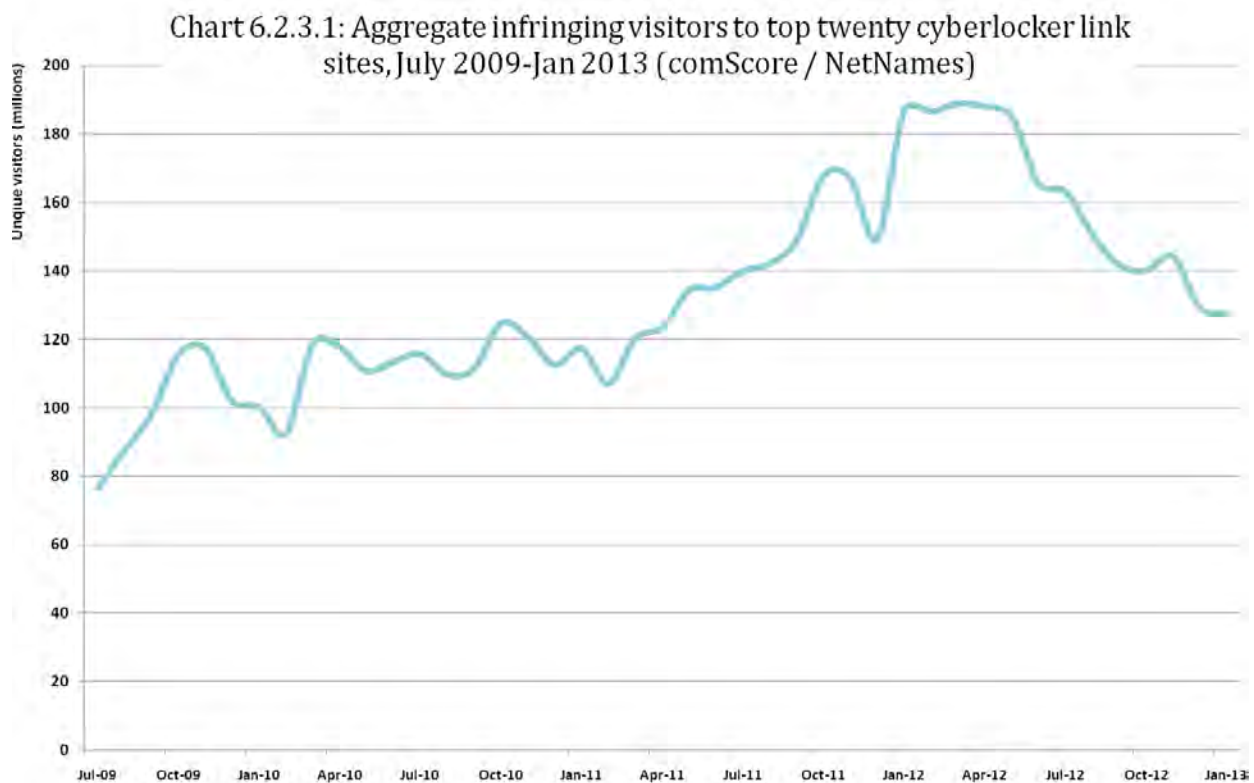
The relative popularity of direct download cyberlocker link sites in both Latin America and Asia-Pacific is notable on Chart 6.2.2.1 below. Latin America contributes almost the same percentage of visitors to direct download cyberlocker link sites as Europe, at 30.4m or 29.4%, helped by the popularity of linking sites such as ArgentinaWarez and GratisPeliculas in the region. Anime linking sites like Anime-Sharing.com and JPddl.com contribute to the large share of visitors to link sites from Asia-Pacific.

Chart 6.2.2.1: Regional breakdown of visitors to cyberlocker link sites (comScore / NetNames)



6.2.3 Long-term analysis

A longer-term view of visitors to direct download cyberlocker link sites (Chart 6.2.3.1) also shows the popularity of such sites declined during 2012 in light of the degradation of the direct download cyberlocker ecosystem caused by the seizure of MegaUpload and the subsequent voluntary closure of other direct download cyberlockers. Until this point, comScore believed that direct download cyberlocker link sites were gradually increasing in popularity.

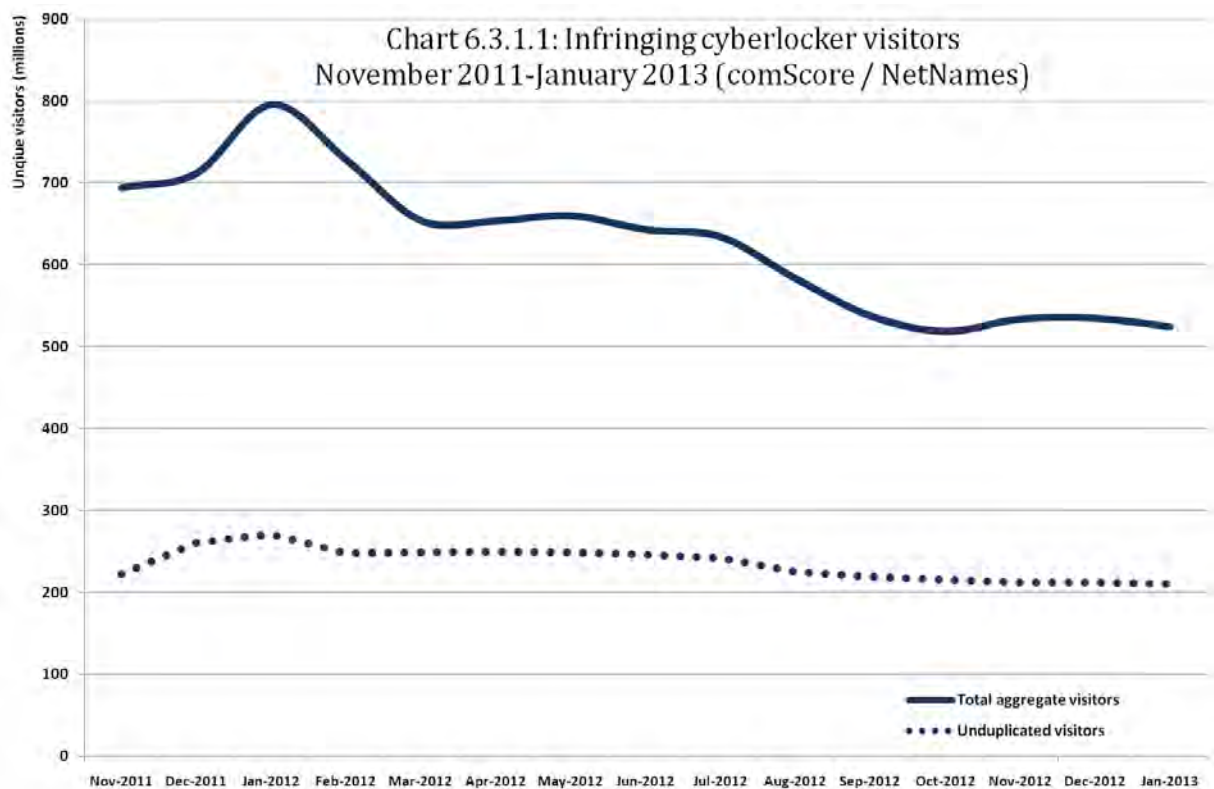


6.3 Cyberlocker visitors

6.3.1 Short-term analysis

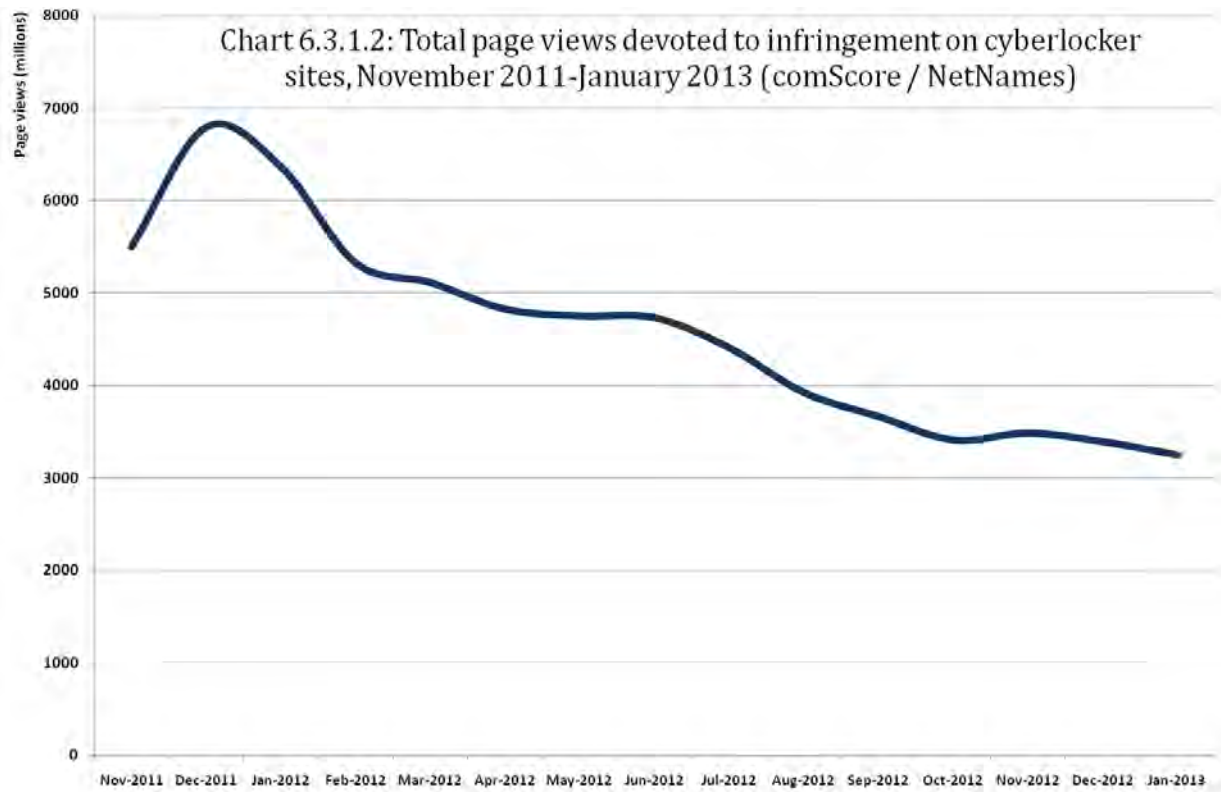
The events of January 2012 had an even larger effect on direct download cyberlockers than on linking sites. The sudden fall in infringing aggregate visitors – and to a smaller extent, in unduplicated visitors – following the MegaUpload seizure in January 2012 is clear in the chart. In the twelve months since January 2012, aggregate unique monthly visitors to direct download cyberlockers fell by 34.1% from 796.0m aggregate unique visitors to 524.2m in January 2013.

Unduplicated visitors, a better measure of the total cyberlocker universe, also fell. In January 2012 there were 271.2m infringing unduplicated visitors to direct download cyberlockers with this total dropping by 22.4% to 210.6m in January 2013.

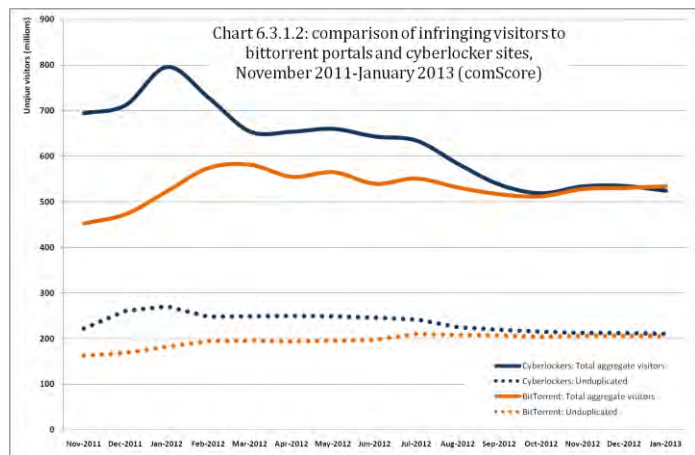


Data for **total page views** devoted to infringement across direct download cyberlockers is also available and is shown in Chart 6.3.1.2. A clear and sustained fall is obvious. In January 2013, a total of 3.2 billion pages devoted to infringement were viewed across all direct download cyberlockers, an average of 15.4 per cyberlocker user (unduplicated users). However, this is a large decrease compared to November 2011 when 5.5 billion pages were viewed across direct download cyberlockers, an average of 24.8 per direct download cyberlocker user. In the opposite situation to bittorrent (see Section 3), there are both fewer infringing direct download cyberlocker users overall and each one of those infringing direct download cyberlocker users is

viewing fewer pages each month, again illustrating the overall decline in direct download cyberlocker use worldwide.



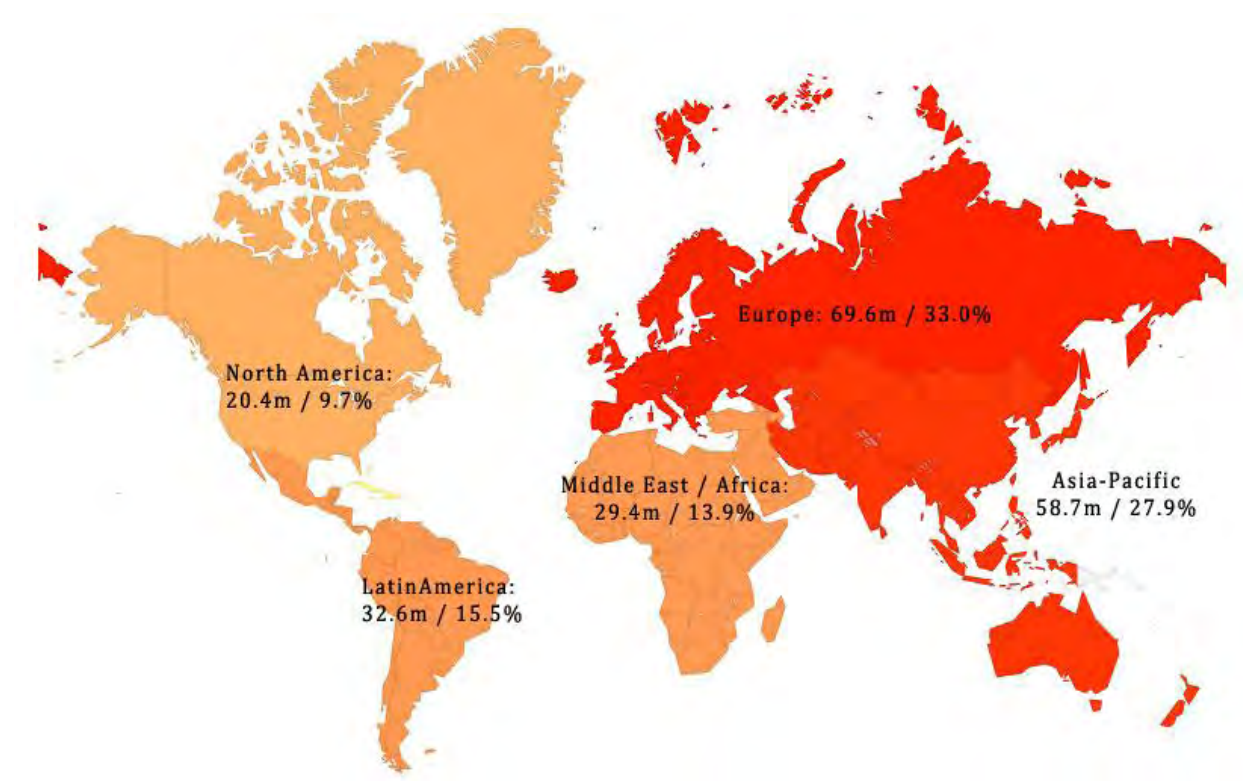
It is also instructive to examine the decline in infringing visitors to direct download cyberlockers shown above against the increase in infringing visitors to bittorrent portals during the same period. The narrowing gap between both aggregate visitors and unduplicated visitors is plain on Chart 6.3.1.2. Analysis indicates that the direct download cyberlocker ecosystem is on a continued decline in use worldwide. Many of those who regularly used direct download cyberlockers appear to have moved to bittorrent since January 2012, making the peer to peer protocol increasingly important in discussions of infringement.



6.3.2 Regional breakdown

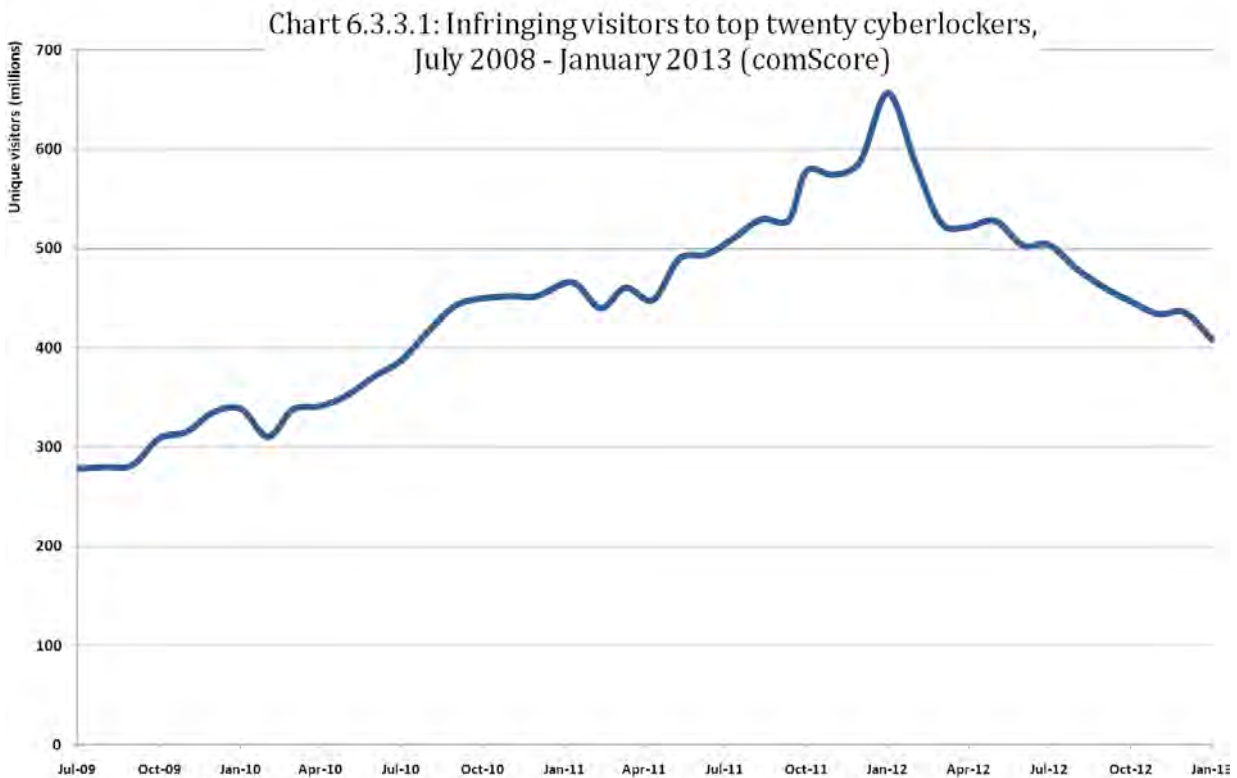
In three major regions – North America, Europe, and Asia-Pacific – visitors to direct download cyberlocker sites comprised 148.6m users in January 2013, a fall of 7.7% from 161.0m in November 2011. The individual regional analysis of direct download cyberlocker sites again shows Europe to be the dominant user of such sites with Asia-Pacific reporting a similar percentage of users as for direct download cyberlocker link sites. However, there is a slightly higher percentage use of direct download cyberlockers compared to direct download cyberlocker link sites from North America and Middle East / Africa and slightly lower for Latin America.

Chart 6.3.2.1: Regional breakdown of visitors to direct download cyberlocker sites (comScore / NetNames)



6.3.3 Long-term analysis

Chart 6.3.3.1 shows unique aggregate visitors to the top twenty direct download cyberlockers according to comScore. The long-term increase in visitors to the peak visible in January 2012 is very clear in this chart. The publicity that surrounded the seizure of the MegaUpload direct download cyberlocker and the need for many users to locate alternatives produced a sharp increase in visitors to direct download cyberlockers during that month. The decline in popularity of direct download cyberlockers in the months following these dramatic events is also illustrated.



6.4 Direct download cyberlocker bandwidth use

Despite the many millions of visitors to direct download cyberlockers and direct download cyberlocker link sites outlined above, bandwidth data indicates that the direct download cyberlocker ecosystem consumes a much smaller amount of overall internet bandwidth than a protocol such as bittorrent.

For instance, Sandvine categorises direct download cyberlocker sites on which infringing content is frequently located and accessed as ‘Storage’ (previously ‘Storage and Backup’) which includes online backup solutions such as Dropbox that are almost never used for the mass distribution of infringing material. This category as a whole – all sites and services, not only direct download cyberlockers – consumes only 1.8% of all bandwidth in North America, 2.9% in Europe, and 0.9% in Asia-Pacific (compared, for example, for 21.7% on aggregate for bittorrent in Europe).

Sandvine provides some limited data on the bandwidth consumed by individual direct download cyberlockers in the three regions where the individual site is responsible for more than 0.01% of overall bandwidth. These are shown in Table 6.4.1 below. This is not an exhaustive list as Sandvine only tracked visits to a select number of direct download cyberlockers. However, given that 4Shared, Rapidshare, and DepositFiles were three of the five most popular direct download cyberlockers during the monitoring period, the data strongly suggests that the total bandwidth consumption of direct download cyberlockers is far lower than bittorrent or video streaming.

Table 6.4.1: Bandwidth consumption of major direct download cyberlockers (Sandvine)

North America		Europe		Asia-Pacific	
Protocol	Percent	Protocol	Percent	Protocol	Percent
4Shared	0.02%	Rapidshare	0.27%	Rapidshare	0.21%
Rapidshare	0.07%	DepositFiles	0.18%	Hotfile	0.13%
Hulkshare	0.01%	Hotfile	0.04%	4Shared	0.09%
		4Shared	0.03%	DepositFiles	0.04%
Estimated bandwidth across all cyberlockers	0.39%	Estimated bandwidth across all cyberlockers	1.90%	Estimated bandwidth across all cyberlockers	1.63%

The low percentages for each of the direct download cyberlockers make it difficult to confidently extrapolate total bandwidth consumption across all direct download cyberlockers in each region but an estimate can be

made based on visitors to each direct download cyberlocker. Using this methodology³², direct download cyberlockers consume 0.39% of all bandwidth in North America, 1.9% in Europe, and 1.6% in Asia-Pacific. Assuming a level of infringing content of 66.6% on cyberlockers (see Section 6.5 below), this means an estimate of infringing direct download cyberlocker bandwidth consumption of 0.26% in North America, 1.27% in Europe, and 1.08% in Asia-Pacific.

6.5 Cyberlocker content analysis

6.5.1 Background

During 2012, NetNames' Discovery Engine technology – an automated internet search, retrieval, and categorisation system – was used to crawl the internet looking for links to files held on nine direct download cyberlockers.³³ Crawling began at major search engines such as Google and used all two letter or longer words from the Dale/Chall simple word list as initial 'seeds'³⁴. Each of these words were sent to search engines in combination with the names of the direct download cyberlockers included in the research. For instance, some sample search terms were 'afternoon 4shared', 'aunt depositfiles', and 'ache mediafire'. This helped ensure that the searches performed were agnostic and unbiased towards any particular type of content.

Each page returned to the Discovery Engine was automatically examined for any links that may be available for any of the nine direct download cyberlockers. Each direct download cyberlocker link was then automatically followed to the direct download cyberlocker and the filenames of the content located on the direct download cyberlocker was recorded. Classification of each file located was then made on the basis of the filename. Files were not downloaded or further analysed. The files were placed into generic categories such as 'film', 'music', 'software', and so on (see table below).

For each direct download cyberlocker, a sample of each category of file was then analysed for its likely copyrighted status (except for those files which could not be identified)³⁵.

³² The methodology takes the figures for bandwidth consumption from Sandvine for the cyberlockers listed in each region and extrapolates total bandwidth consumption based on a comparison of unique visitors to each cyberlocker for January 2013. For instance, the four cyberlockers listed for Europe consumed 0.52% of all bandwidth according to Sandvine. Total unique visitors to these cyberlockers were 27.3% of all cyberlocker visits in Europe. From this, the assumption is made that if 27.3% of cyberlocker visits are responsible for 0.52% of all bandwidth, then 100% of cyberlocker visits will be responsible for $(0.52\%/27.3)*100 = 1.90\%$ of all bandwidth.

³³ The Discovery Engine collected and analysed links between 24th March 2012 and 24th April 2012. Additional analysis of content type and copyrighted status was then performed during May and June 2012.

³⁴ See: <http://rfptemplates.technologyevaluation.com/dale-chall-list-of-3000-simple-words.html>. The list was used in an attempt to provide a neutral starting point for search.

³⁵ At least fifty files from each category were analysed for each cyberlocker for copyrighted status. If the sample of 50 was less than 10% of the total number of files in that category, then 100 files were sampled. If less than 50 files were found for a particular category, all the files would be analysed.

6.5.2 Content analysis results

Table 6.5.2.1 below shows the overall results. The number of files located for each category of content is shown together with the number sampled and, of those, the number which were available commercially and believed to be infringing. In total, 13,614 files were located across the nine direct download cyberlockers. Of these, 2,785 or 20.5% were further analysed and 1,854 or 66.6% were found to be commercially available and therefore likely to be infringing.

The content analysis finds that music is more popular on direct download cyberlockers than on bittorrent. On direct download cyberlockers, 35.2% of all files located were music against a figure of 7.6% amongst the most popular bittorrent files. A large proportion of the music located was single tracks rather than albums which may be one reason for the higher number of music files found as it is typical to find music albums shared on bittorrent rather than single tracks. Film (15.6%) and television episodes (9.7%) were the next most popular content types. There was significantly less pornography located on direct download cyberlockers than on bittorrent.

These results may be affected by the data collection methods involved: for instance, direct download cyberlocker links held on sites which require registration (forums such as Warez-BB, for instance) will not have been uncovered. Further, the word list used for initial seeding will bias the results towards English-language content.

Table 6.5.2.1: Analysis of content held on nine direct download cyberlockers (NetNames)

Type	Number of files	Percent	Sampled	Commercially available	Percentage	Extrapolated commercially available
Book	809	5.9%	263	104	39.4%	319
Film	2,121	15.6%	334	320	95.8%	2,032
Games	558	4.1%	263	188	71.4%	398
Image	651	4.8%	170	0	0.0%	0
Mobile	346	2.5%	238	136	57.3%	198
Music	4,792	35.2%	508	446	87.9%	4,211
Music Video	283	2.1%	195	157	80.7%	228
Unknown / Other	1,074	7.9%	100	0	0.0%	0
Software	825	6.1%	241	139	57.5%	474
TV	1,316	9.7%	276	271	98.0%	1,289
Pornography	842	6.2%	200	95	47.3%	398
	13,614	100.0%	2,785	1,854	66.6%	9,547

In February 2012, Dr Richard Waterman completed research into the content held on the Hotfile direct download cyberlocker as part of a legal case by the MPAA against the owner of the site.³⁶ The study analysed downloads recorded by the direct download cyberlocker for a number of randomly chosen days in January 2011. While this study did not explicitly break down the type of content located, it found that:

approximately 90.2% of all daily downloads of files on Hotfile were downloads of infringing or highly likely infringing content; approximately 5.3% of the downloads of files per day on Hotfile were downloads of non-infringing files; and the remaining approximately 4.5% of the downloads of files per day on Hotfile were downloads of files whose copyright status could not be reliably determined in the time allowed.

The Waterman study analysed downloads of files while the research discussed above focused on availability. However, there is no contradiction between the fact that while the Envisional / NetNames research found that 66.6% of content held on direct download cyberlockers was infringing, the Waterman research found that 90.2% of *downloads* of files held on a typical direct download cyberlocker were of infringing material. Most infringing files are typically more popular than most non-infringing material, leading to higher rates of downloading.

6.6 Business models

The revenue generation models adopted by direct download cyberlockers are similar to those in the video streaming ecosystem: advertising on both linking and hosting sites; premium accounts; and affiliate or rewards schemes. All direct download cyberlockers operated on a for-profit basis.

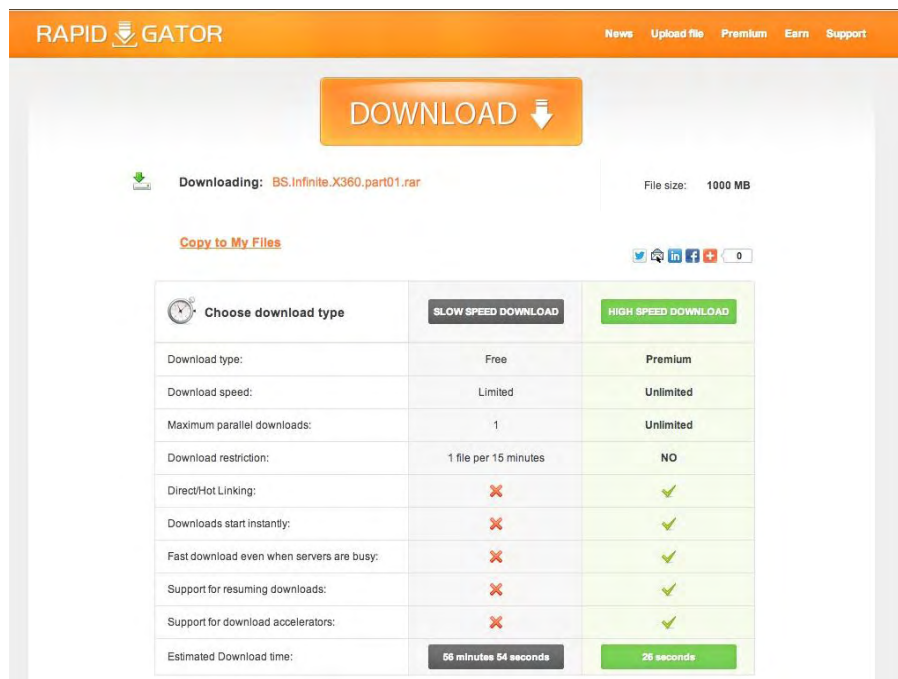
For instance, the screenshot below shows a page from the French language direct download cyberlocker link site Zone-Telechargement which offers links for a download of the game *Bioshock: Infinite* from a number of direct download cyberlocker sites. A banner advert is shown at the top of the page and further advertisements appear further down the page (not shown). When any link is clicked on the page, a pop-up browser window launches that advertises a gambling site. The vast majority of link sites

The screenshot shows the Zone-Telechargement website interface. At the top, there is a search bar and a navigation menu. A prominent banner advert for 'Bioshock Infinite' is displayed in the center, featuring the game's cover art and a call to action: 'Laisser un commentaire ou dire merci (39)'. Below the banner, there are links to download the game from various sources like 'Xbox 360', 'Region Free', and 'LT+ 3.0'. The page also includes a sidebar with categories like 'Films', 'Séries', 'Jeux', and 'Musique'. A pop-up window at the top right offers a chance to win an iPhone 5.

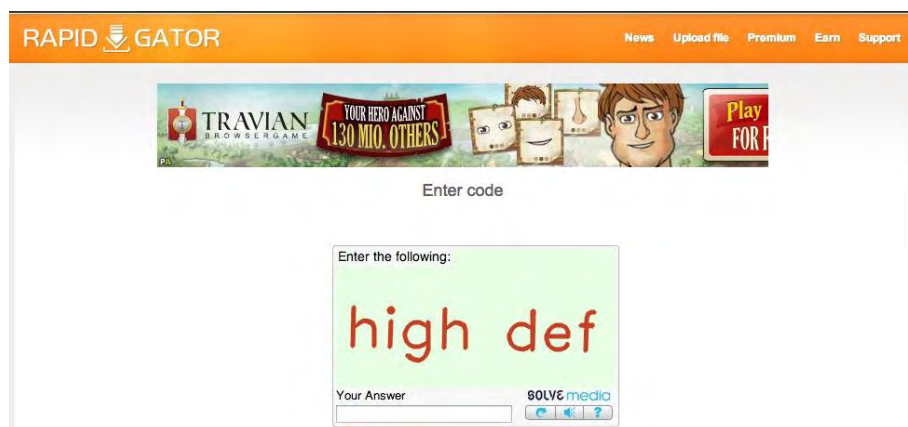
³⁶ A public version of the document entitled 'Declaration Of Dr. Richard Waterman In Support Of Plaintiffs' motion For Summary Judgment Against Defendants Hotfile Corp and Anton Titov' can be found at <http://www.scribd.com/doc/84380009/90-Percent>.

are supported through advertising like this. Very few require any kind of payment before users can access links.

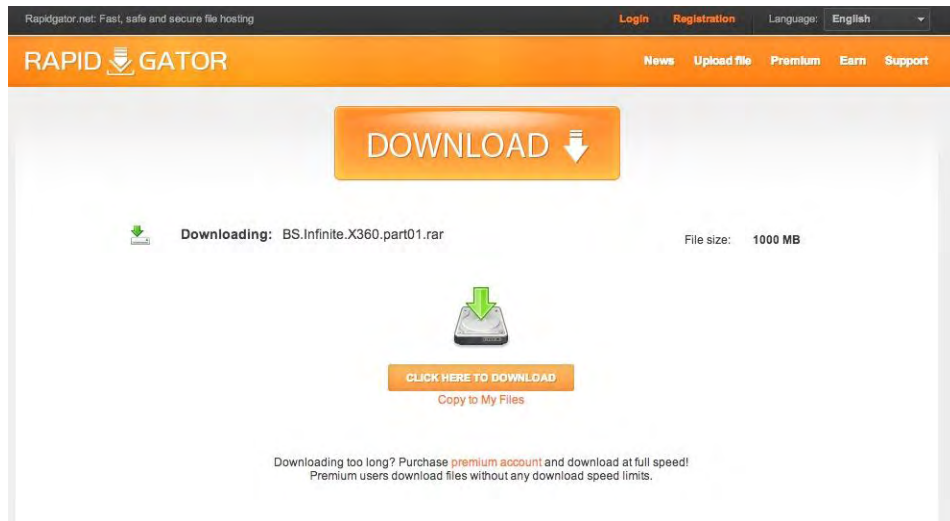
Clicking through to one of the direct download cyberlockers from the links provided on Zone-Telechargement demonstrates the typical advertising-heavy download process for free users. The screenshot below from RapidGator shows two options to the user: a “slow speed download” which is free but has a limited download speed and other restrictions or a “high speed download” available only to premium customers. However, some users will be distracted by the large orange “DOWNLOAD” button at the top of the screen (deliberately designed to mimic RapidGator’s own design) which, when clicked, actually launched a new browser window advertising a dating site.



Choosing the ‘slow speed’ free download link launches another advertisement (for a pornography site) before showing a screen requiring a captcha with an advertisement for an online game.



When the answer to the captcha is submitted, another pop-up advertisement is launched (for another pornography site) before the download of the actual file can be started. When this is clicked, a final pop-up advertisement is shown (for a betting site).



It is possible for users to bypass all of these screens and avoid all of the advertisements by committing to a RapidGator premium account. This is typical operating procedure for direct download cyberlockers: users that purchase a premium account can download multiple files instantly from that site at a higher speed in comparison to non-premium users who have to go through the advertising-supported process. The screenshot below shows the benefits to the user of the RapidGator premium account at a cost of \$12.99 per month.



RapidGator also offers an affiliate program which, similar to that for Streamcloud in the video streaming ecosystem, pays those who upload popular content to the direct download cyberlocker or who persuade other users to pay for premium accounts with the site. RapidGator currently offer \$40 per 1,000 downloads of content (ten times more generous than the \$40 per 10,000 downloads available from Streamcloud) and 50% of the cost of any premium accounts bought.

These offers encourage uploaders to add content that will be attractive to downloaders to the direct download cyberlocker. As with video streaming sites, the most popular content is generally infringing, such as pirated copies of games, films, music, books, and so on. By providing a financial incentive to drive downloaders to their site, direct download cyberlockers can play a vital role in facilitating the distribution and circulation of infringing material.

As noted earlier in this report, the closure of MegaUpload and the arrest of its major executives led to some direct download cyberlockers cancelling any affiliate programs in place (and prompted others that had been amongst the most liberal in their rewards such as FileServe and FileSonic to cease operations completely as public-facing cyberlockers). The ability of uploaders to generate revenue from direct download cyberlockers in this manner was certainly degraded during 2012 but many of the most popular direct download cyberlockers and a significant number of new entrants to the field still offer affiliate schemes. These form a core part of the direct download cyberlocker ecosystem and help ensure that infringing content is distributed around the system as quickly as possible by those seeking to profit from the piracy of copyrighted material.

7 Mobile infringement

7.1 Introduction

The growth of internet-enabled mobile devices across the world in recent years has proceeded at an astonishing pace. Smartphones have been adopted at a faster rate than any other piece of technology in history. More than 50% of the population in the US, Canada, Spain, UK, France, Italy, and Germany owned smartphones at the end of 2012 and this proportion continues to rise. In China, more than 200m smartphones are already in operation and CNNIC predict that this figure will pass 700m in the next three years. A recent report from NPD³⁷ found that smartphones and tablets outnumbered PCs in the US for the first time during Q1 2013.

The availability of new devices changes online consumption habits. For example, 80% of mobile smartphone minutes are consumed by apps rather than the web. comScore has found that in maturing mobile economies, more than one-third (37%) of digital media consumption – films, television, books, and so on – takes place on mobile devices. Usage patterns for mobile devices peak during the morning commute and, particularly for tablet use, in the evening. Some types of device lean more towards one kind of activity than another: more than half of all tablet owners have watched a video or read a book on their device, for instance. Mobile habits also differ according to country. For example, Nielsen data finds mobile music, film, and television consumption high amongst smartphone owners in China and South Korea and YouTube viewing particularly popular in the US. Driven by apps such as Pandora and Spotify, US consumers now spend more time consuming music on mobile devices than on PCs or laptops. However, according to app monitoring company Flurry the majority of time spent on mobile devices is consumed playing games (43%) and using social networks (26%)³⁸.

The bandwidth and speeds available to mobile consumers are also increasing. The US recorded 57m 4G users³⁹ as of March 2013, an increase of 50% from 38m subscribers just five months earlier in December 2012. 4G availability is spreading throughout many other countries, encouraging the consumption of streaming video through services such as Netflix but also through infringing services. Strategy Analytics predict well over one billion 4G subscribers worldwide by 2018⁴⁰.

This is not to paint a picture of a world enamored with smartphones and the mobile internet. The more basic feature phone remains the most popular device in many countries such as India, Russia, and Brazil, where high operating costs and poor mobile infrastructure limit the attraction of sophisticated devices. Yet the

³⁷ *Connected Home Report*, NPD Group, March 2013 (<http://www.connected-intelligence.com/>).

³⁸ <http://blog.flurry.com/bid/92105/Mobile-Apps-We-Interrupt-This-Broadcast>

³⁹ <http://www.4gamericas.org/index.cfm?fuseaction=pressreleasedisplay&pressreleaseid=4542>

⁴⁰ <http://www.strategyanalytics.com/default.aspx?mod=reportabstractviewer&a0=8091>

future is clearly one with increasingly advanced mobile devices using increasingly larger amounts of bandwidth worldwide.

7.2 Infringement on mobile

While methodologies of tracking and monitoring traditional computer-based infringements have developed and matured in the last decade, the mobile space remains an area of relative obscurity. Consumer surveys indicate that mobile devices are heavily used for the consumption of content but there is limited information available on what kinds of content are being consumed and using what methods.

It is possible to make certain assumptions. For instance, more limited storage space on mobile devices compared to traditional computing machines means that *downloading* content – for instance, through bittorrent or from cyberlockers – is less likely to be pursued on mobile devices than an activity which does not result in a completed download, such as streaming music or video. If downloads are sought, users are more likely to pursue smaller sized files and content suited for consumption on a mobile device such as music or books.

Analysis of the most popular apps available on various marketplaces show that streaming appears to be the most popular way to obtain infringing content online. For instance, a search on the Google Play store for “MP3” finds a large number of apps which help the user locate free and in the majority of cases infringing music files online. The app Mp3 Music Download Pro has recorded over 10m installations from Google Play, as has Music Download Paradise. In the UK, the live television streaming app TVCatchUp has recorded over 1m downloads on Android and is frequently listed as one of the most popular iOS apps in the country.

Different mobile operating systems such as iOS and Android can also restrict the ability of developers to produce versions of traditional download-based file sharing clients for mobile devices, while marketplace rules can prevent some apps from appearing at all. For example, while BitTorrent Inc has used its development resources to produce versions of the popular uTorrent and BitTorrent clients for Android, bittorrent clients have so far been banned from Apple’s iOS App Store⁴¹, though some clients are available for jailbroken iOS devices.

7.2.1 China

The suitability of mobile devices for video streaming and the high level of mobile ownership in China (the country is now the largest market for smartphones worldwide) mean that the country is a natural arena for

⁴¹ Apps that allow the remote control of bittorrent clients running on desktop computers are available but not dedicated bittorrent clients which run on the iOS platform.

infringement using smartphones and tablets. Recent research from NetNames into the smartphone market in China – where the Android operating system dominates – found that rogue marketplace stores were common, offering pirated versions of legitimate apps as well as other apps which encouraged the consumption of infringing content.

For instance, the QVOD streaming video client is available for both Android and iOS devices and has recorded over thirty million downloads from different marketplace stores in China. It is used in a very similar way to the desktop client with portal sites offering links to a vast range of infringing material. A mobile version of the Funshion client is also available, as well as clients for PPS and PPLive (though infringement is less common on the latter two clients).

7.3 Bandwidth data

A limited set of bandwidth consumption data for mobile devices was obtained from Sandvine which focused on the North America region only. On average, mobile users consumed 317MB of data per month compared to 51.3GB per month through fixed line connections. The top traffic categories are shown in Table 7.3.1.

One point which immediately stands out from the table is the low proportions of bandwidth consumed by the Filesharing and Storage categories. The former includes applications such as bittorrent and eDonkey and the latter includes sites such as cyberlockers. Only 1.2% of mobile bandwidth is consumed by filesharing (on average, 3.7MB of data per month) including 0.8% of bittorrent use. This compares to 14.6% of all North American bandwidth consumed by file sharing on fixed lines, including 12.4% used by bittorrent. Even less bandwidth is taken up by storage applications (0.6% or an average of 1.7MB per month), though it is unknown how much of this bandwidth is consumed by cyberlockers specifically.

The bulk of mobile bandwidth is consumed by real-time entertainment, just as it is for fixed line connections. However, the make-up of this category is different on mobile devices. On mobile, YouTube dominates in North America, responsible for 25.6% of aggregate bandwidth, compared to Netflix which consumes just 2.4% of all bandwidth (compared to 24.7% on aggregate for fixed line connections). Other specific applications or sites which consume a large proportion amount of mobile bandwidth are Facebook (6.8%) and Pandora streaming radio (5.8%). The two main mobile app stores are also responsible for significant

Table 7.3.1: Mobile bandwidth consumption in North America (Sandvine)

Traffic category	Percent bandwidth
Real-Time Entertainment	51.2%
Web Browsing	15.9%
Tunnelling	9.7%
Social Networking	9.2%
Marketplaces	5.0%
Communications	5.0%
Gaming	1.2%
Administration	1.2%
Filesharing	1.2%
Storage	0.6%

bandwidth consumption: Google Play consumes 2.6% of mobile bandwidth in North America and iTunes a further 1.3%, reflecting the higher use of Android compared to iOS in the North American market⁴².

7.4 Summary

Mobile infringement is an area where further and more detailed research is vital, though that research depends on data availability. This is sorely lacking beyond a general idea of use cases for broad categories of utilisation. The application-based operating systems of Android and iOS provide challenges in monitoring behavior while the large and rapidly growing mobile device installed base is already affecting digital life and will continue to do so. NetNames plans to focus on this area during 2013 and hopes to issue a dedicated report examining infringement on mobile devices in early 2014.

⁴² comScore data records Android with a 53.4% market share amongst smartphones in the US in December 2012 and Apple's iOS with 36.3%. http://www.comscore.com/Insights/Press_Releases/2013/2/comScore_Reports_December_2012_U.S._Smartphone_Subscriber_Market_Share

8 Summary

8.1 Sizing the piracy universe

The first goal of this research was to provide an estimate for the number of internet users worldwide who access infringing content online. This section draws together some of the findings of earlier sections of the report to offer an overall figure for the piracy universe.

The introductory section for each ecosystem which was discussed in Sections 3 to 6 – bittorrent, other file sharing networks, video streaming, and direct download cyberlockers – examined the different sources of data available which might be used to size each ecosystem. The specific figure that will be the base of calculations used in this Section to determine the overall use of each ecosystem for infringement was outlined. For bittorrent, this figure was decided as best represented by the total number of unduplicated visitors to bittorrent portals during January 2013 (212.8m). For the video streaming ecosystem, this figure was taken to be best represented by the total number of unduplicated visitors to video streaming link sites during January 2013 (112.5m). For the direct download cyberlocker ecosystem, the number of unduplicated visitors to cyberlocker sites during January 2013 was decided to be the best representation (228.8m). For the eDonkey, Ares, Gnutella, and Usenet networks, this figure was best represented by unique client users during January 2013 (9.3m for eDonkey, 66.6m for Ares, 2.3m for Gnutella, and 5.0m for Usenet).

As outlined, it is essential to then **account for visitors who use each ecosystem exclusively for non-infringing use** (which in this research includes pornography). This section of the report details the methodology used to account for non-infringing use and to produce a final figure for total infringing users across all ecosystems; that is, the total number of internet users who downloaded or viewed at least one piece of infringing content using at least one of the ecosystems during January 2013. As outlined in the executive summary, this method provides an ultimate worldwide total for the piracy universe in January 2013 of **432.0m internet users**.

8.1.1 Accounting for non-infringing use

Any assessment of internet use that analyses activity within ecosystems that are typically used for piracy purposes must take account of the fact that all online methods for sharing content are also used for non-infringing purposes. For purposes of this report, the term ‘non-infringing’ includes pornography. The main reason for this is that it is significantly more difficult to account for the infringing nature of a pornography film located online than, for instance, a new Hollywood release. As such, all obviously pornographic content encountered during content analysis was placed in the ‘non-infringing’ category.

This is not to suggest that infringement does not affect the adult industry: far from it, many adult studios and web sites which specialise in catering to those seeking pornography have been deeply affected by the online piracy of pornography. However, this research is focused on mainstream copyrighted content rather than adult material. Discounting pornography in this way will inevitably produce a smaller figure for the overall size of the piracy universe but it is believed that this figure will be more reliable as a result.

The content analyses conducted in Sections 3 to 6 of this report showed that on most of the ecosystems analysed, somewhere around two-thirds of all located content was infringing and not pornography – typically infringing versions of films, television, music, games, software, and books. This does not mean that two-thirds of all *downloads* from or two-thirds of all activity within each arena was infringing – or that two-thirds of all users only accessed non-infringing content. Some content is typically far more popular than others and this content is almost always infringing. For instance, the bittorrent content analysis in Section 3 found that films newly released on DVD or Bluray and new television episodes were particularly popular, for example, all of which were found to be infringing. A quick scan of ThePirateBay’s “Top 100” most popular torrents⁴³ at almost any point in time displays a dominance of infringing films and television episodes with tens of thousands of seeds and leechers each, as well as a smaller number of infringing games, music, and software applications. Similarly, Dr Richard Waterman’s analysis of the Hotfile direct download cyberlocker found that 90.2% of downloads from the direct download cyberlocker were of infringing material even though infringing material did not represent that amount of content stored on Hotfile.

Type	Name	View: Single / Double	SE	LE
Video (TV shows)	The Vampire Diaries S04E17 HDTV x264-LOL [etrv]		31291	13040
Video (TV shows)	Greys Anatomy S09E18 HDTV x264-LOL [etrv]		22883	7662
Video (TV shows)	Arrow S01E17 HDTV x264-LOL [etrv]		20642	4206
Video (TV shows)	The Walking Dead S03E14 HDTV x264-ASAP[etrv]		21945	1121
Video (Movies)	The Wicked.2013.DVDRip.XviD.AC3-PTDOWR		12968	9232
Games (PC)	Subway Surfers (2012) (PC)		19854	282
Video (TV shows)	The Big Bang Theory S06E19 HDTV x264-LOL [etrv]		19351	564
Video (TV shows)	Claw S04E17 HDTV x264-LOL [etrv]		13610	5835
Video (TV shows)	Community S04E07 HDTV x264-LOL [etrv]		16025	2257
Video (Movies)	Broken.City.2013.WEBRip.XviD-SHA		8506	10261
Video (Movies)	Revelation Road 2013 BRRip Xvid AC3 UnkOwN		9662	7058
Video (Movies)	Silver.Linings.Playbook.2012.DVDRIP-EDAW2013		14719	1435
Video (Movies)	Django Unchained 2012 DVDRIP X264 AAC-P2P		14417	1392
Video (HD - Movies)	The Hobbit: An Unexpected Journey (2012) 1080p BRRip x264 - YIFY		11178	4351

In addition, internet users frequently visit sites more than once during the course of a month to obtain content: each unique visitor to ThePirateBay visited the site 4.56 times in January 2013, for instance, while the Movie2k video streaming link site was visited 5.73 times by each unique user⁴⁴. Given the large amount of infringing content that is widely available, extremely popular, and heavily promoted on such sites, it might be easy to simply assume that the typical visitor to a bittorrent portal sought some kind of infringing content at least once during January 2013 – but that would be inaccurate. Instead, this report applies probability theory to data collected during this research to quantify the likelihood that a user sought infringing content from a site at least once during January 2013 and hence should be included in the estimate of the total piracy universe.

⁴³ <http://thepiratebay.se/top/all>

⁴⁴ comScore defines ‘visits’ as the number of times a person “accesses content within a Web entity with breaks between access of at least 30 minutes”. See http://www.comscore.com/Insights/Press_Releases/2007/03/comScore_Anounces_Visits_Metric

Probability of a user accessing infringing content

It is possible to use probability theory to work out the likelihood that a visitor to, say, a bittorrent portal will visit that site at least once to obtain infringing content over the course of a month – in this case, January 2013. This calculation uses data on the number of visits to a site made by a unique user during the month.

In order to estimate the number of, say, bittorrent users who accessed infringing content in that month and who should be included in a calculation of the total piracy universe for January 2013, it is necessary to rule out any users who did *not* do so – that is, users who *only* used bittorrent to access non-infringing or pornographic content. In January 2013, comScore recorded that each unique user of ThePirateBay visited the site **4.56 times** over the course of the month. Thus, for a user *not* to be counted in the calculation of the total bittorrent piracy universe, each one of the 4.56 visits made by the average user to ThePirateBay during January 2013 must have resulted in a user obtaining non-infringing or pornographic content. If a user accessed infringing content during any of those visits, then that user is included in the estimate of the total piracy universe.

It is assumed that the probability of each of those visits to the site resulting in the user downloading *non*-infringing content or pornography is 0.3033 – that is, as the percentage of non-infringing or pornographic content found on bittorrent overall is 30.33% (see Section 3.5), the assumption is made that the probability of a visit to ThePirateBay locating non-infringing or pornographic content is 0.3033. For this particular site, this probability actually seems quite high given the popularity of infringing material on the site (as shown in the screenshot above). However, this estimate is used as it provides a practical ceiling for the popularity of non-infringing content and pornography on bittorrent. It also minimises the chance that this report might exaggerate the infringing material available on each ecosystem.

The probability of a user only locating non-infringing or pornographic content is defined as:

$p = n ^ v$, where:

p = probability

n = likelihood of obtaining non-infringing or pornographic content

v = number of visits

As such, a single visit (v) to a bittorrent portal such as ThePirateBay has a likelihood (n) of 0.3033 of resulting in the access of non-infringing or pornographic content. In this case, the overall probability is n^v which is, simply enough, 0.3033.⁴⁵

However, two separate visits by the same user to a bittorrent portal (thus $v=2$) have a probability of n^v or n^2 ($0.3033 * 0.3033$) of resulting in non-infringing or pornographic content, an overall probability of 0.092, a

⁴⁵ Another way of thinking about it is to say that if 10,000 unique users visited ThePirateBay once each during the course of one month, one could expect that 3,033 of them would *only* access non-infringing or pornographic content.

much lower probability than for one visit. Three visits have a probability of n^3 ($0.3033 * 0.3033 * 0.3033 = 0.028$) which is an even lower probability; and so on.

According to comScore, the average user visits ThePirateBay 4.56 times each month, so the calculation is as follows:

$$p = n ^ v$$

$$p = 0.3033 ^ 4.56$$

$$p = 0.0043$$

So, as each visitor to ThePirateBay accessed the site on 4.56 different occasions in January 2013, the probability that each one of those visits resulted in the user accessing non-infringing or pornographic content – and hence, that *none* of those visits resulted in the user accessing infringing content – is $n^{4.56}$ (or $0.3033 ^ 4.56$) = 0.0043.

According to this calculation, **the overall probability of an average user accessing non-infringing or pornographic content only on ThePirateBay during January 2013 is thus 0.0043**. To put it in a more easily understandable way, just under half of one percent (0.43%) of all unique visitors to ThePirateBay over the course of January 2013 accessed *only* non-infringing or pornographic content during the month.⁴⁶ The obvious corollary of this is that **99.57% of unique visitors accessed infringing content through ThePirateBay** at least once during January 2013.

The same calculation was then repeated for each bittorrent portal included in this analysis, using data provided by comScore for the number of visits to each portal by the average user during January 2013 (for instance, the average Isohunt.com user visited the site on 3.03 occasions during the month but the average Rutor.org user visited that site on 7.1 occasions). Across all bittorrent portals included in this analysis, the probability of a user visiting any one site and obtaining *only* non-infringing or pornographic content is 0.0372. This means that a maximum of 3.72% of unique visitors were found to visit portals only for non-infringing or pornographic content during January 2013. The obverse of this is that **96.28% of visitors to the bittorrent portals included in this analysis downloaded at least one piece of infringing content during the month of January 2013**.

The total number of unduplicated bittorrent users was 212.8m in January 2013 (see Section 3). Combining this with the percentage of users who accessed infringing content in the same month provides a final size for the bittorrent piracy universe of **204.9m users** ($212.8 * 96.28\%$).

The same analysis was then performed for each of the other ecosystems commonly used to obtaining infringing content that are considered in this report. For the video streaming and direct download cyberlocker ecosystems, the average number of visits made by each user to each site was combined with the

⁴⁶ Or, to repeat the explanation in the previous footnote, if 10,000 unique users each visited ThePirateBay 4.56 times during the course of one month, one could expect that only 43 of them would *only* access non-infringing or pornographic content on the site during that month.

probability that each visit resulted in the user obtaining non-infringing or pornographic content only. The results showed that in January 2013, 0.41% of users in the video streaming ecosystem and 7.95% of users in the direct download cyberlocker ecosystem visited sites *only* to obtain non-infringing or pornographic material. To put it another way, 99.57% of users in the video streaming ecosystem obtained at least one piece of infringing content during January 2013 and 92.05% of users in the direct download cyberlocker ecosystem obtained at least one piece of infringing content during the same month.

For the eDonkey, Ares, and Usenet ecosystems, the total number of days in which each client was used by a user during January 2013 was combined with the likelihood that each of those usage days would result in the user seeking only non-infringing or pornographic content.

8.1.2 Total piracy universe

Table 8.1.2 below displays the overall results of this analysis. The first column shows the total unduplicated users in each ecosystem before any attempt is made to account for the proportion of users accessing infringing content. The final row of this column shows a total aggregate user population of 635.0m users. However, this does not take account of users who may have used more than one ecosystem during January 2013 – obtained content through bittorrent and through a direct download cyberlocker, for instance. The total **unduplicated population** across all ecosystems – that is, the number of unique individual internet users who used one or more of these ecosystems during January 2013 – is **450.9m**.

Yet as noted above, there is a proportion of these users who used each ecosystem only to access non-infringing or pornographic content during January 2013. Section 8.1.1 was dedicated to showing how this portion of users were calculated. The second column outlines the percentage of infringing content found on each ecosystem. The third column shows the probability that a user of the ecosystem accessed infringing content within that ecosystem in January 2013. The final column shows the total number of users in each ecosystem who accessed infringing content at least once during January 2013 according to the probability calculations outlined above in Section 8.1.1.

Aggregating the total number of infringing users in each ecosystem provides a figure of 608.4m users. However, these users must be unduplicated to account for those involved with more than one ecosystem during January 2013. Assuming the same proportion of unduplicated to aggregate users as for the total users in the first column produces **an estimate of the current piracy universe of 432.0m users** who used at least one piracy method to access infringing content once or more during January 2013.

Table 8.1.2: Total piracy universe (comScore / NetNames)

Ecosystem	Unduplicated users in each ecosystem (m)	Percentage of infringing content found on each ecosystem	Probability of each unique user accessing infringing content at least once in January 2013	Total number of unique users who accessed infringing content (m)
BitTorrent	212.8	69.7%	0.9628	204.9
Video streaming	112.5	90.0%	0.9959	112.0
Direct download cyberlockers	228.8	66.6%	0.9205	210.6
eDonkey	9.3	68.9%	0.9999	9.3
Ares	66.6	68.9%	0.9999	66.6
Usenet	5.0	71.8%	0.9999	5.0
Total	635.0	n/a	n/a	608.4
Unduplicated users *	450.9	n/a	n/a	432.0

Numbers may not add up due to rounding.

* Unduplicated unique visitors / users of: bittorrent portals; eDonkey clients; Ares clients; Usenet clients; video streaming link sites; and direct download cyberlockers.

Notes on the table

- **BitTorrent:** uses comScore data for unduplicated unique bittorrent portal users during January 2013.
- **Video streaming:** uses comScore data for unduplicated unique visitors to video streaming link sites deemed to focus on providing links to infringing content during January 2013. Visitors to video streaming cyberlocker sites (such as PutLocker) are not included as video views from such sites are not always counted by comScore (for instance, if a video hosted on PutLocker is embedded in a link site). The proportion of infringing non-pornographic content available on linking sites is extremely high and close to 100%. To continue with the conservative approach in this area, the figure for the availability of infringing content is discounted by 10% in the low estimate to 90% to more than account for any non-infringing or pornographic material which may be present on such sites.
- **Direct download cyberlockers:** uses comScore data for unduplicated unique visitors to direct download cyberlocker sites during January 2013.
- **eDonkey:** uses comScore data for unduplicated unique users of an eDonkey client during January 2013.
- **Ares:** uses comScore data for unduplicated unique users of an Ares client during January 2013. Formal content analysis was not performed on Ares for this report but previous analysis has found that the network holds infringing and non-pornographic material at a similar proportion to eDonkey.
- **Usenet:** with the Usenext app – one method of access to Usenet – reporting 1.3m unique users each month, a conservative estimate of 5.0m unique Usenet users is employed, though this figure may be as high as 25.0m.

8.1.3 Piracy universe in three major regions

Three regions make up the majority of the internet world: North America, Europe, and Asia-Pacific comprise 82.6% of all internet users according to comScore and 95.1% of all bandwidth consumed according to Cisco. It is possible to outline the distinct size of the piracy universe in each of these three regions.

Table 8.1.3 shows similar data to that portrayed in Table 8.1.2 above for each of these three regions, separately and combined. The left-hand side of the table shows the total unduplicated users in each ecosystem in each region in January 2013 (so for North America, there 33.0m unique and unduplicated bittorrent users compared to 100.1m in Europe).⁴⁷

The right-hand side of the table shows the total number of these unduplicated users who employed each ecosystem to access infringing content. The right-hand side is determined in the same way as the far right-hand column in Table 8.1.2 but using visitor figures for the specific region rather than the worldwide visitor figures.

Table 8.1.3: Piracy universe in three regions (comScore / NetNames)

Ecosystem	Total unduplicated users in each ecosystem (m)				Total number of unique unduplicated users who accessed infringing content (m)			
	North America	Europe	Asia-Pacific	Combined	North America	Europe	Asia-Pacific	Combined
BitTorrent	33.0	100.1	52.4	185.6	31.8	96.4	50.5	178.7
Video streaming	28.8	48.2	19.7	96.7	28.6	48.0	19.6	96.3
Direct download cyberlockers	22.2	75.6	63.8	161.5	20.4	69.5	58.7	148.6
eDonkey	0.3	5.5	2.5	8.3	0.3	5.5	2.5	8.3
Ares	7.8	15.7	0.7	24.3	7.8	15.7	0.7	24.3
Usenet	0.9	3.0	0.5	4.4	0.9	3.0	0.5	4.4
Total	92.9	248.1	139.6	480.7	89.8	238.2	132.5	460.6
Unduplicated users *	66.0	176.2	99.1	341.2	63.7	169.1	94.1	327.0

Numbers may not add up due to rounding.

* Unduplicated unique visitors / users of: bittorrent portals; eDonkey clients; Ares clients; Usenet clients; video streaming link sites; and direct download cyberlockers.

Across the three major regions (North America, Europe, and Asia-Pacific), **327.0m unique and unduplicated internet users were found to access infringing content in January 2013**. Europe provided 51.7% (169.1m) of those users; Asia-Pacific provided 28.8% (94.1m); and North America provided 19.5% (63.7m).

⁴⁷ Regional figures are calculated by examining the regional breakdown of users for each site within each ecosystem for January 2013 according to comScore data.

8.2 Infringing bandwidth use

The second aim of this report was to repeat and enhance upon the ground-breaking research published by Envisional in 2011 into the amount of infringing bandwidth used by different infringement methods. This earlier report estimated that in 2010, 23.8% of worldwide bandwidth and 17.5% of bandwidth in North America was used for infringing purposes. As noted earlier in this report, data limitations meant that it was not possible to repeat the exact calculations that led to the production of a single figure for worldwide infringing consumption of bandwidth.

For this updated research, data was obtained from two main sources: Sandvine provided analysis of specific types of bandwidth consumption within three regions of the world (North America, Europe, and Asia-Pacific) and data was also drawn from Cisco on the overall growth in bandwidth use both worldwide and in different regions of the world.

The Cisco data demonstrated the extent to which the absolute amounts of bandwidth consumed increased between 2010 and 2012 and the extent to which bandwidth consumption increased per individual internet user. Overall bandwidth consumption roughly doubled in this period in all regions of the world as Table 8.2.1 shows. Cisco recorded worldwide consumption of bandwidth growing by 109.0% between 2010 and 2012. In North America, overall bandwidth consumption grew by 105.0%; in Europe, 109.6%; and in Asia-Pacific, 111.2%. These are substantial increases over a relatively short period of time but the velocity of increase shows little sign of slowing. Cisco believes internet traffic will triple between 2012 and 2016, for instance. Bandwidth consumption also grew per individual internet user between 2010 and 2012.

Table 8.2.1 calculates the estimated bandwidth consumption both on an absolute and per internet user basis in these three regions in 2010 and 2012, using data from Cisco on bandwidth use and from the ITU on the internet user population in the different regions.

Table 8.2.1: Bandwidth consumption, 2010-2012 (Cisco / ITU)

	2010			2012			Change 2010-2012	
	Monthly regional bandwidth consumption (petabytes)	Internet users (millions)	Monthly consumption per user (GB)	Monthly regional bandwidth consumption (petabytes)	Internet users (millions)	Monthly consumption per user (GB)	Overall	Per user
Worldwide	20,181.6	1,966.00	10.3	42,188.9	2,497.00	19.5	+109.0%	+ 90.1%
North America	6,987.2	267.65	26.1	14,320.5	273.67	54.9	+105.0%	+ 110.2%
Europe	5,484.2	476.21	11.5	11,496.5	518.51	23.2	+109.6%	+ 101.9%
Asia-Pacific	6,782.1	932.39	7.3	14,322.8	1,076.68	13.9	+111.2%	+ 91.8%

As noted, bandwidth consumption data from Sandvine was used to outline overall bandwidth use in three regions of the world during 2012. Previous sections of this report calculated the level of infringing bandwidth use in each region for each infringement ecosystem. Table 8.2.2 below shows two sets of data. The left-hand side shows the change in the absolute levels of infringing bandwidth consumption for each category as well

as on a per user basis. The right-hand side shows the total amount of infringing bandwidth use in each of the three regions. This ranges from 11.35% in North America to 34.96% in Asia-Pacific.

For North America, the figures shown for the change in infringing bandwidth use Sandvine data for bandwidth for the North American region in both 2010 and 2012. However, it was not possible to collect data from Sandvine for bandwidth use explicitly for Europe and Asia-Pacific in 2010, though it was available for 2012. As such, the figures for the change in bandwidth use between these dates for the Europe and Asia-Pacific regions use worldwide bandwidth figures for 2010 but dedicated figures for each region alone in 2012. As such, the results for bandwidth *change* for Europe and Asia-Pacific are not as reliable as those for North America. This factor does not affect at all the right-hand side of the table which shows total infringing bandwidth use in each region for 2012.

Table 8.2.2: Infringing bandwidth use summary (NetNames / Cisco / Sandvine)

Category	Change in infringing bandwidth use, 2010-2012						Infringing bandwidth percent, 2012 (Sandvine)		
	North America		Europe		Asia-Pacific		North America	Europe	Asia-Pacific
	Absolute	Per user	Absolute	Per user	Absolute	Per user			
BitTorrent	105.1%	100.6%	191.3%	167.6%	403.4%	335.9%	8.70%	15.10%	25.90%
Video streaming	154.2%	148.5%	345.8%	309.4%	925.0%	787.6%	1.80%	2.87%	6.55%
Cyberlockers	-74.5%	-75.1%	-45.5%	-49.9%	-53.3%	-59.6%	0.26%	1.27%	1.08%
eDonkey	-58.9%	-59.5%	767.8%	697.0%	-57.3%	-63.0%	0.28%	7.17%	0.35%
Gnutella	-97.6%	-97.6%	-99.0%	-99.1%	-81.9%	-99.1%	0.01%	0.01%	0.01%
Usenet	-31.0%	-32.5%	-12.9%	-20.0%	-81.9%	-84.4%	0.30%	0.34%	0.07%
Total	48.2%	44.9%	165.4%	143.7%	239.3%	193.8%	11.35%	26.76%	34.96%

The table clearly shows **significant overall increase in the consumption of infringing bandwidth between 2010 and 2012 in all three regions.**

- In North America, the **absolute amount of content consumed via infringement increased by 48.2% overall and by 44.9% per user.** Despite the overall percentage of infringing bandwidth falling from 17.5% in 2010 to 11.35% in the two-year period, **the amount of infringement in North America has risen.**
- In Europe, the amount of infringing bandwidth increased by 165.4% overall and by 143.7% per user. **More than one-quarter of all bandwidth in Europe is consumed by infringing content.**
- In Asia-Pacific, the bandwidth consumed by infringement tripled overall and increased by 239.3%. It also increased by 193.8% per user. **More than one-third of all bandwidth in Asia-Pacific is taken up by the distribution of infringing content.**

BitTorrent and video streaming are the main drivers of increased levels of infringement, with the amount of bandwidth that is consumed by infringing use of bittorrent more than doubling in all three regions of the world between 2010 and 2012, both in absolute terms and per user. This increase is particularly high in Asia-Pacific.

The contribution of video streaming to infringing bandwidth consumption has also increased – by more than a factor of four in Europe and by more than ten times in absolute terms in Asia-Pacific.

The consumption of infringing bandwidth by direct download cyberlockers has dropped across all three regions, likely affected by the closure of the MegaUpload direct download cyberlocker in January 2012 and the consequent disruption to the direct download cyberlocker ecosystem. Gnutella use has fallen to almost nothing while Usenet consumption has also decreased slightly in North America and Europe and significantly in Asia-Pacific.

The eDonkey file sharing network shows a decrease in bandwidth use in North America and Asia-Pacific but a substantial increase in Europe. This large change in eDonkey use in the region does not reflect other data shown in Section 4 which suggests declining popularity of the network worldwide. However, the result may be at least partly explained as an artefact from the previously mentioned use of worldwide data as a base for the comparison of bandwidth for Europe for 2010. Europe is known to be the region in which the heaviest use of eDonkey is conducted and comparing the relatively high use of eDonkey in that region alone for 2012 with overall bandwidth consumption from eDonkey worldwide two years before might obfuscate the true (lower) rate of change.

The decline in the use of the file sharing network Gnutella occurred after legal action against the owners of the LimeWire client was eventually successful in closing the company in 2010. The virtual disappearance of Gnutella as a significant consumer of internet bandwidth during the two year monitoring period demonstrates how abruptly user behaviour can change on the internet.

8.3 Conclusion

This piece of research had two major goals. First, to attempt to accurately size the overall piracy universe online: how many internet users regularly obtain infringing content using the different ecosystems available to them? Second, to repeat and extend previous analysis performed on the bandwidth consumption of infringing content: how much internet bandwidth is consumed by the distribution of infringing material and did that amount increase in the two years since the previous study on this subject?

There are two key conclusions:

- **The piracy universe comprises hundreds of millions of unique internet users. Four hundred and thirty-two million unique internet users worldwide** (and three hundred and twenty-seven million in North America, Europe, and Asia-Pacific) regularly turn to piracy ecosystems to obtain infringing content. Piracy is rampant across the internet, with free copies of films, television episodes, games, music, software, and books consumed through a variety of technical means.
- Second, **levels of infringement are increasing**. Analysis of bandwidth consumption using data from Sandvine and Cisco demonstrates that not only has the overall amount of bandwidth consumed by popular piracy ecosystems such as bittorrent and video streaming increased in the last two years, **but the amount of infringing content consumed by each internet user has risen substantially**.

The practise of infringement is tenacious and persistent. Even in the North American market, where legitimate distribution services such as Netflix and Pandora are in their most mature state, infringement has grown substantially since 2010 in both absolute and per user terms.

There have been some successful attempts to limit infringement. The legal action against the operators of LimeWire, for instance, effectively put an end to the use of Gnutella for widespread infringement, and the multi-national law enforcement operation against MegaUpload and MegaVideo caused significant amounts of disruption within the direct download cyberlocker ecosystem. Yet despite these discrete instances of success, and despite the wide availability in some regions of methods to consume material legitimately, the piracy universe not only persists in attracting more users but hungrily consumes increasing amounts of bandwidth.

9 Appendix A: Selected sites

The sites featured in the following lists are those used to calculate the charts for web site popularity in Sections 3, 5, and 6. Each site featured at least once in the calculation of the aggregate or unduplicated visitor figure for site visitors for comScore data between July 2009 and January 2013. Those sites which featured at least once in the monthly top twenty list used for the long-term comScore analysis are coloured in **red**.

9.1 BitTorrent portals

1337x.org	contorrent.com	gougou.com
9bt.org	cpasbien.com	h33t.com
ahashare.com	cztorrent.net	hdbird.com
arenabg.com	d-addicts.com	hdvnbits.org
baixakifilmetorrent.com.br	demonoid.com (also .me)	iklangratiz.com
baixarfilmestorrentgratis.net	desibbrg.com	ilcorsaronero.info
baixartorrent.net	desitorrents.com	indytorrents.org
banglatorrents.com	divxtotal.com	iptorrents.com
bestxl.com	dmhy.org	isohunt.com
bigtorrent.org	dvdtorrent.ru	kat.ph (also kickasstorrents.com)
bigtorrento.ru	ebookshare.net	katushka.net
bigtorrents.org	elitetorrent.net	kinokopilka.tv
bitfish8.com	etorrent.ru	kinozal.tv
bitnova.info	exdesi.com	ktxp.com
bitreactor.to	extratorrent.com	lasttorrents.org
bitsnoop.com	eztv.it	lien-torrent.com
bitsoup.org	fapis.com	limetorrents.com
bittorrent.am	fast-torrent.org	linkomanija.net
bittrend.com	fast-torrent.ru	lokotorrents.com
bitturk.net	fenopy.eu (also .se , .com)	malaysiabay.org
bitvn.org	file.lu	maroctorrent.net
bt-chat.com	file.sh	mastitorrents.com
btchina.net	films-torrent.ru	megadown.eu
btloft.com	firebit.org	megashara.com
btmee.com	free-torrents.org	megatorrents.org
btmon.com	fulldls.com	mejortorrent.com
btwuji.com	gamestorrents.com	mininova.org
coda.fm	goldenshara.com	mixtapetorrent.com

mnova.eu	sumotorrent.com	torrentleech.org
monova.org	t411.me (also torrent411.com)	torrentman.com
moviesdvdr.com	take.fm	torrento.net
my-hit.ru	tamilcreation.com	torrent-oyun.com
newtorrents.info	tamiltorrents.net	torrentpond.com
nnm-club.ru	tfile.me	torrentportal.com
nowtorrents.com	thepiratebay.se (also .org)	torrentproject.com
nyaa.eu	theunblockedbay.info	torrentr.eu
nyaatorrents.org	tnttorrent.info	torrentreactor.net
omgtorrent.com	todotorrents.com	torrentresource.com
onebigtorrent.org	top-torrent.ws	torrentrg.com
onlytorrents.com	torcache.net	torrentroom.com
opentorrent.ru	torentilo.com	torrents.net
p2pbg.com	torlock.com	torrents.net.ua
picktorrent.com	torrent.cd	torrents.ru
piratbit.net	torrent.to	torrent-shara.net
piratebayuk.co.uk	torrentalot.com	torrentsland.com
pirateproxy.net	torrentbit.net	torrentsmd.com
piraterreverse.info	torrentbox.com	torrentspy.com
pirateshit.com	torrentbutler.eu	torrentszona.com
pornal.biz	torrentcrazy.com	torrentz.eu (also .com)
psychocydd.co.uk	torrentdeluxe.com	torrentzap.com
qkshare.com	torrentdownloads.be	torrtilla.ru
queentorrent.com	torrentdownloads.me (also .net)	tvtorrents.com
rarbg.com	torrent-files.org	unblockedpiratebay.com
rus-torrents.ru	torrent-finder.info	vector.com
rutor.org	torrentfrancais.com	viettorrent.vn
rutracker.org	torrent-francais.com	wahas.com
scrapetorrent.com	torrent-free.ru	x-torrents.org
seedoff.net	torrentfunk.com	yify-torrents.com
seedpeer.me	torrenthound.com	yourbittorrent.com
seventorrents.com	torrentino.com	yyets.net
smartorrent.com	torrentino.ru	zamunda.net
subtorrents.com	torrentino.tv	zoozle.net

9.2 Video streaming link sites

0movies.com	imovies4you.com	playtube.pl
123tamiltv.com	iwannawatch.ch (also .net)	quicksilverscreen.ch (also .com)
1channel.ch (also .com)	joox.net	rajtamil.com
1kino.com	ketnooi.com	rajubutt.com
24kadra.com	kinobomba.net	series.ly
alluc.org	kinolimon.ru	seriesdanko.com
awz.ru	kino-live.org	serieslisting.com
bestkino.su	kinomaniak.tv	seriespepito.com
bharathcinemas.info	kinomatrix.com	seriesyonkis.com
bharatmovies.com	kinox.to	sidereel.com
blinkx.com	letmewatchthis.com	smotri-online.info
cine24.tv	linecinema.org	solarmovie.so (also .eu)
cinebasti.com	maniavid.com	surfthechannel.com
cinemaxx.ru	moovyshoovy.com	taiphimonline.com
cinetube.es	movie25.com	tamiltwist.com
cinetux.org	movie2k.to	teleplus.ru
cinevedika.net	movieberry.com	telly-tv.com
cucirca.com	moviesberg.net	thiruttuvcd.com
cuevana.tv	moviesdatacenter.com	totalmovie.com
cuevana2.tv	movie-stream.to	tubepius.me
delishows.com	my-source.ru	tv-links.co.uk
desifun.co.uk	new-kino.net	tv-links.eu
desirulez.net	ninjavideo.net	tvduck.com
desitvforum.net	oko-kino.ru	tvmuze.com
djluv.in	onlinemoviesfreee.com	tvshack.net (also .bz)
dpstream.net	onlinesfilms.com	tvshow7.eu
duoi.net	onlinewatchmovies.net	video247.tv
fastepisodes.net	peekvid.com	videobull.com
fastpasstv.ms (also .com)	peepat.com	videomasti.net
film4ik.ru	peliculasyonkis.com	viooz.eu
filmin.ru	phim1.biz	vuaphim.net
filmlinks4u.net	phim16.com	watch-free-movie-online.net
film-online.su	phim3s.net	watchfreemovies.ch
free-tv-video-online.me	phim4g.com	watch-freeseries.mu
graboid.com	phim85.com	watch-hindi-movies.com
hindilinks4u.net	phimkfc.com	watch-movies.net
iitv.info	phimnhanh.net	watchseries.li (also .eu)

watchseries-online.eu	xemphimon.com	zerx.ru
watchseriesus.com	xemphimso.com	zmovie.co
watchtvfree.co	xemphimtot.com	zmovie.tv
watchtvshow.info	yaske.net	

9.3 Video streaming hosts

allmyvideos.net	nosvideo.com	vidbull.com
clicktoview.org	novamov.com	vidbux.com
daclips.in	nowvideo.eu	videobb.com
divxstage.eu	played.to	videopremium.net
duckload.com	potlocker.net	videoslasher.com
faststream.in	primeshare.tv	videoweed.es (also .com)
filebox.com	putlocker.com	videozed.net
filego.org	senseless.tv	videozer.com
flashstream.in	sharerepo.com	vidstream.in
flashx.tv	sixshare.com	vidxden.com
gorillavid.in	sockshare.com	vreer.com
loombo.com	stream2k.eu	vureel.com
megavideo.com	streamcloud.eu	watchfreeinhd.com
miloyiski.com	tomwans.com	xtshare.com
moevideos.net	uploadc.com	xvidstage.com
movpod.in	veehd.com	zala.com
movreel.com	veervid.com	zooupload.com
movshare.net	veevr.com	zshare.ma (also .net)

9.4 Direct download cyberlocker link sites

123tamilforum.com	arabseed.com	baixeturbo.org
300mblinks.com	argentinawarez.com	ba-k.com
acheidownload.biz	baguskurniawan.com	bartzmovie.com
amaderforum.com	baixae.com	blog-peliculas.com
anicole.net	baixarfilmescompletos.com	boerse.bz
anime-sharing.com	baixedetudobr.com	bollyrulez.net
apne.tv	baixemuito.com	bollyzone.ch

bppaste.com	general-files.com	musicasparabaixar.org
brasildowns.com.br	getmediafire.net	mygully.com
butorrent.com	golden-ddl.com	nazuka.net
cinebasti.com	gratismusica.org	omelhordatelona.biz
cinetux.org	gratispeliculas.org	ourrelease.org
darkwarez.pl	hackstore.net	oxe7.com
ddlspot.com	hindiserials.tv	peb.pl
derinport.in	hitkino.org	peliculas4.com
descargarfull.com	hnmovies.com	peliculas-latino.net
descargarpelicula2.com	hotfilesearch.com	pobieramy24.pl
divxm.com	icefilms.info	pordescargadirecta.com
dl4all.com	iload.to	raidrush.ws
dl4v.com	irfree.com	rapidlibrary.com
downeu.net	israbox.com	redlist-ultimate.be
downparadise.ws	jpdll.com	rlsbb.com
downtwarez.com	kangwahyu.com	rlslog.net
dpelicula.net	katz.cd	rpds-download.net
dreamkino.net	kino.to	samouchka.net
egydown.com	kinokubik.com	sempregratis.org
esoft.ws	kino-reliz.com	serienjunkies.org
estamosrodando.com	kzshare.com	sharepirate.com
estrenosonline.org	lacuevana.org	skidrowcrack.com
exvagos.com	leecher.to	sos117.com
filecrop.com	leecher.to	taringa.net
filesabc.com	libertyland.tv	tehparadox.com
fileshut.com	lospirateros.net	telechargementz.org
filesonicsearch.com	mamega.com	telecharger-tout.com
filespart.com	marvincity.com.ar	terabit.biz
filestube.com	megadownload.net	tinydl.com
filetram.com	megarapid.net	tinymoviez.com
filmmediafire.com	megasearchupload.com	tipete.com
flmsdown.net	monsterdivx.com	torrentspain.com
forodirecto.com	moova.ru	trackvideo.ru
forumw.org	movie-blog.org	uyirvani.com
forumwizard.net	moviedetector.com	vagos.es
freshwap.me (also .com)	moviespack.com	verpeliculasonline.com
fulldescargasdvd.com	moviespeliculas.net	warez-bb.org
fullpelis.com	moviz.net	waz-warez.org
ganool.com	multifilmchik.ru	yesfilms.org

zasca.com

zonadictoz.org

zone-telechargement.com

9.5 Direct download cyberlockers

180upload.com

filemates.com

muchshare.net

1fichier.com

filenuke.com

multishare.cz

1st-files.com

filepost.com

myupload.dk

2shared.com

filerio.in

netload.in

4shared.com

filesend.net

openfile.ru

albafile.com

filesmelt.com

oron.com

amonshare.com

filesmonster.com

partage-facile.com

asfile.com

filesonic.com

project-free-upload.com

badongo.com

filesserve.com

putshare.com

bayfiles.com

filestock.ru

queenshare.com

billionuploads.com

filestore.to

quickshare.cz

bitshare.com

fileswap.com

rapidgator.net

cramit.in

file-upload.net

rapidshare.com

crocko.com

freakshare.net

rapidshare.de

cyberlocker.ch

fshare.vn

rarefile.net

czshare.com

gigasize.com

rghost.net

datafilehost.com

hellshare.com

rusfolder.com

dataport.cz

hipfile.com

ryushare.com

dbank.com

hitfile.net

secureupload.eu

depositfiles.com

hostuje.net

sendspace.pl

edisk.cz

hotfile.com

sharecash.org

egofiles.com

hulkshare.com

shareflare.net

exoshare.com

ifile.it

share-online.biz

extabit.com

jandown.com

shareplace.com

fastshare.cz

jheberg.net

speedshare.org

fastshare.org

jumbofiles.com

tinyupload.com

faststream.in

leteckaposta.cz

turbobit.net

filebase.to

letitbit.net

ufox.com

filebox.com

limelinx.com

uloz.to

filedownloads.org

load.to

ultramegabit.com

filedropper.com

lumfile.com

ultrashare.net

filefactory.com

mediafire.com

unextfiles.com

fileflyer.com

megashares.com

upgrand.com

filegag.com

megaupload.com

upload.com.ua

filejungle.com

mlfat4arab.com

uploadc.com

uploadcore.com	uptobox.com	wupload.co.uk
uploaded.net	usaupload.net	wupload.com
uploadhero.co	venusfile.com	wyslijto.pl
uploadhero.com	verzend.be	x7.to
uploading.com	vidpe.com	ziddu.com
uploadstation.com	vip-file.com	zippyshare.com
upnito.sk	wrzuc.to	

10 Appendix B: Detailed data

A: Infringing unique visitors: comparison between November 2011 and January 2013

Unique Visitors (millions)	Worldwide		Combined North America, Europe, and Asia-Pacific		North America		Europe		Asia Pacific	
	2013	2011	2013	2011	2013	2011	2013	2011	2013	2011
Total infringing unique visitors	432.00	417.80	326.98	297.63	63.75	45.37	169.14	158.92	94.09	93.34
% Change	3.40%		9.86%		40.49%		6.43%		0.80%	
Total internet audience	1,530.90	1,438.88	1,264.04	1,183.50	215.69	210.48	409.31	378.47	639.04	594.54
% Change	6.40%		6.81%		2.47%		8.15%		7.48%	
Infringing visitors as percent of total internet audience	28.22%	29.04%	25.87%	25.15%	29.56%	21.56%	41.32%	41.99%	14.72%	15.70%
% Change	-2.82%		2.86%		37.10%		-1.59%		-6.22%	
BitTorrent infringing unique visitors	204.88	161.76	178.73	144.58	31.81	22.96	96.42	71.78	50.49	49.84
% Change	26.66%		23.61%		38.54%		34.33%		1.31%	
Video streaming infringing unique visitors	112.00	91.65	96.29	75.40	28.65	18.94	48.03	43.82	19.61	12.64
% Change	22.21%		27.69%		51.28%		9.60%		55.07%	
Direct download cyberlocker infringing unique visitors	210.61	229.62	148.62	160.99	20.39	19.94	69.55	78.20	58.69	62.85
% Change	-8.28%		-7.68%		2.27%		-11.07%		-6.62%	

B: Infringing page views: comparison between November 2011 and January 2013

Page views (billions)	Worldwide		Combined North America, Europe, and Asia-Pacific		North America		Europe		Asia Pacific	
	2013	2011	2013	2011	2013	2011	2013	2011	2013	2011
Total infringing page views	16.64	15.66	13.91	12.67	2.89	2.17	7.17	6.51	3.85	3.98
% Change	6.25%		9.84%		33.25%		10.07%		-3.27%	
Total infringing page views - bittorrent	8.47	6.33	7.39	5.66	1.32	0.90	3.99	2.81	2.09	1.95
% Change	33.82%		30.60%		46.36%		41.92%		7.03%	
Total infringing page views – video streaming	4.93	3.83	4.23	3.15	1.26	0.79	2.11	1.83	0.86	0.53
% Change	28.56%		34.34%		59.16%		15.31%		63.14%	
Total infringing page views – direct download cyberlockers	3.24	5.50	2.29	3.86	0.31	0.48	1.07	1.87	0.90	1.51
% Change	-41.03%		-40.64%		-34.31%		-42.82%		-39.95%	

C: Infringing bandwidth: comparison between 2011 and 2013

Note: regional bandwidth data was only available for North America, Europe, and Asia-Pacific and hence worldwide data could not be produced for many data points.

Bandwidth (petabytes)	Worldwide		Combined North America, Europe, and Asia-Pacific		North America		Europe		Asia Pacific	
	2013	2011	2013	2011	2013	2011	2013	2011	2013	2011
Total Infringing Bandwidth			9,566.7	3,689.6	1626	1,097.1	3,075.8	1,158.7	4,863.6	1,433.2
% Change			159.29%		48.21%		165.45%		239.35%	
Total Internet Bandwidth	42,189	20,181	40,139.8	19,253.5	14,320.5	6,987.2	11,496.5	5,484.2	14,322.8	6782.1
% Change	109.05%		108.48%		104.95%		109.63%		111.19%	
% Infringing of Total Bandwidth		23.70%	23.83%	19.16%	11.35%	15.70%	26.75%	21.13%	33.96%	21.13%
% Change			24.37%		-27.69%		26.63%		60.69%	
BitTorrent Infringing Bandwidth			6,691.5	1,940.2	1,245.9	607.4	1,735.9	595.9	3,709.6	736.9
% Change			244.89%		105.12%		191.31%		403.41%	
Video Streaming Infringing Bandwidth			1,526.9	267	257.8	101.4	329.9	74	938.1	91.5
% Change			471.87%		154.24%		345.81%		925.25%	
Direct Download Cyberlocker Infringing Bandwidth			337.9	745.2	37.2	146.2	146	267.8	154.7	331.1
% Change			-54.66%		-74.56%		-45.48%		-53.28%	
Other (eDonkey, Gnutella, Usenet)			1,010.4	737.2	85.1	242.1	864	221	61.2	273.7
% Growth			37.06%		-64.85%		290.95%		-77.64%	