



Internet Association

# MEASURING THE U.S. INTERNET SECTOR

STEPHEN E. SIWEK  
ECONOMISTS INCORPORATED

## ABOUT STEPHEN SIWEK

Stephen E. Siwek is a Principal at Economists Incorporate, a premier economic consulting firm in the fields of law and economics, public policy, and business strategy. While at Economists Incorporated, Mr. Siwek has co-authored *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 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. Economists Incorporated is located at 2121 K St, N.W., Washington, DC 20037.  
[www.ei.com](http://www.ei.com).

## ABOUT THE INTERNET ASSOCIATION

The Internet Association, the unified voice of the Internet economy, represents the interests of leading Internet companies including Airbnb, Amazon, Auction.com, Coinbase, Dropbox, eBay, Etsy, Expedia, Facebook, Fanduel, Gilt, Google, Groupon, Handy, IAC, Intuit, LinkedIn, Lyft, Monster Worldwide, Netflix, Pandora, PayPal, Pinterest, Practice Fusion, Rackspace, reddit, Salesforce.com, Sidecar, Snapchat, SurveyMonkey, TripAdvisor, Twitter, Uber Technologies, Inc., Yahoo!, Yelp, Zenefits, and Zynga. The Internet Association is dedicated to advancing public policy solutions to strengthen and protect Internet freedom, foster innovation and economic growth, and empower users.  
[www.InternetAssociation.org](http://www.InternetAssociation.org).

# TABLE OF CONTENTS

1.0 Executive Summary.....	4
2.0 Introduction .....	9
2.1 The Internet.....	9
2.2 Growth in Internet User Demand .....	10
2.3 Internet Companies .....	10
2.4 Measuring Industries .....	12
2.5 The North America Industry Classification System .....	13
2.6 Example: NAICS 519130 .....	13
3.0 Product Line Receipts .....	15
3.1 Flagged Product Line Receipts .....	16
3.2 Internet Activities .....	17
3.3 Applying Flagged Results to NAICS Industries .....	19
4.0 E-Commerce Activities .....	20
4.1 Selected Services Industries .....	22
4.2 Internet Sector Receipts .....	22
5.0 Input-Output Models .....	23
5.1 RIMS II .....	24
5.2 Variance Among Multipliers.....	24
5.3 Weighted Multipliers by State .....	25
5.4 Multipliers and Contributions .....	25
6.0 Combining the Internet Industries.....	38
6.1 Value Added (2007-2012) .....	38
6.2 Value Not Fully Captured in GDP .....	39
6.3 Employment (2007-2012) .....	39
6.4 Employee Earnings .....	44
6.5 Earnings per Employee .....	45
7.0 Comparing the Internet Industries.....	47
7.1 Value Added (2007-2012) .....	47
7.2 Employment (2007-2012) .....	47
7.3 Employee Compensation (2007-2012) .....	47
7.4 Value Added (2014).....	47
Acknowledgements .....	71

# 1.0

## EXECUTIVE SUMMARY

In 1998, Paul Krugman predicted that “the growth of the Internet will slow drastically. By 2005 or so, it will become clear that the Internet’s impact on the economy has been no greater than the fax machine’s.”<sup>1</sup> It was a fun and provocative prediction for Time’s 100th anniversary – but even Dr. Krugman would probably agree that his prediction has fallen flat.

Since 2005, the Internet has developed into a major vector for growth in the U.S. economy that has eclipsed the performance of many other more established sectors.

Today, more than three billion people, equivalent to 43 percent of the world’s population, use the Internet worldwide.<sup>2</sup> And this report finds that, in the U.S., 92 percent of the population – 299 million people – use the Internet for myriad reasons.

The world’s leading retailer in terms of market value has only three physical stores, and with a valuation of \$247.6 billion, Amazon’s market cap is larger than the second-largest retailer (Wal-Mart) by approximately \$14 billion.<sup>3</sup>

Likewise, Lyft, Uber, and Sidecar have positively disrupted the transportation sector without owning cars, busses, or other modes of transportation. Lyft operates in more than 65 cities worldwide, and Uber has expanded to more than 300 cities in more than 50 countries.<sup>4, 5</sup>

And, of course, Google, Facebook, Twitter, Pinterest, and Snapchat are continuing to revolutionize the way we share and interact with people across the globe. Who would have thought that an 11 year-old

company would already be connecting over a billion people around the world each day, allowing everyone from big businesses to small mom and pop shops to reach an increasingly global set of customers and acquaintances? Yet, this is exactly what Facebook provides to the world.

And this is just the tip of the iceberg. Over three million people in North America watched the release of Netflix’s first theatrical film, *Beasts of No Nation*, in its first two weeks – not in a theater, but in the comfort of their homes with their families.<sup>6</sup> More than 15 million people tuned in to view an NFL game played in London in 2015, all of them doing so via the

---

43%	92%
People use the Internet worldwide	People use the Internet in the U.S.

---

Internet. Yahoo!’s live stream of the game averaged 2.36 million viewers during the contest.<sup>7</sup> Expedia has helped users book close to 200 million room nights at over 271,000 properties around the world.<sup>8</sup> On Ebay, over 155 million active buyers are able to choose from 800 million listings in almost every language.<sup>9</sup> Boasting a global network of more than 400 million members in over 200 countries, LinkedIn itself has 9,200 employees in over 30 cities around the world.<sup>10</sup>

The Internet has become so ubiquitous in everyday life that its actual impact across the entire economy is difficult to capture. This report, however, attempts to

<sup>1</sup> <http://www.businessinsider.com/paul-krugman-responds-to-Internet-quote-2013-12>

<sup>2</sup> [http://www.itu.int/net/pressoffice/press\\_releases/2015/17.aspx](http://www.itu.int/net/pressoffice/press_releases/2015/17.aspx)

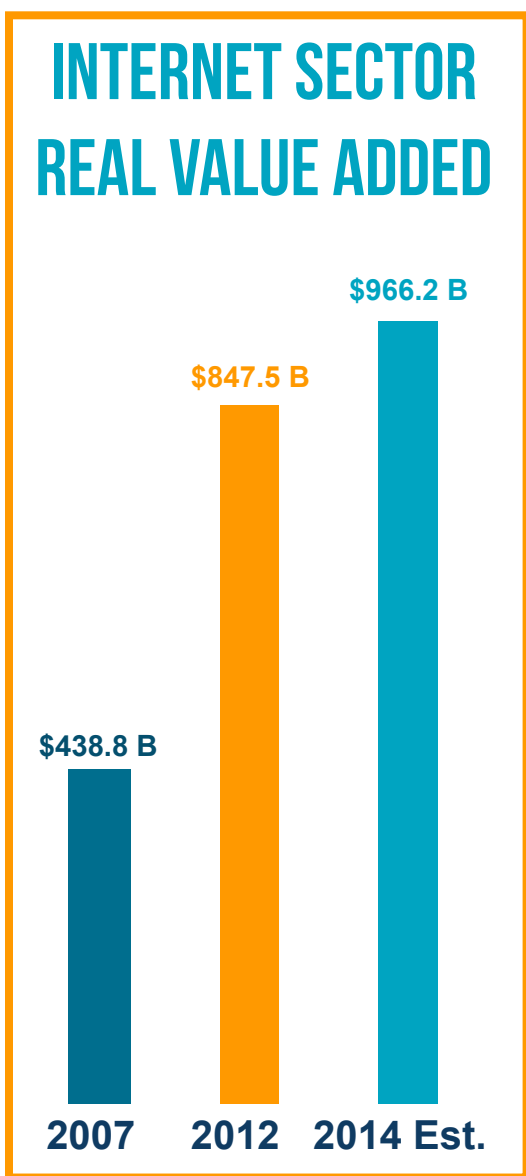
<sup>3</sup> <http://www.bloomberg.com/news/articles/2015-07-23/amazon-surpasses-wal-mart-as-biggest-retailer-by-market-value>

<sup>4</sup> <http://blog.lyft.com/posts/thepowerofthepassenger>

<sup>5</sup> <http://www.wsj.com/articles/uber-valued-at-more-than-50-billion-1438367457?alg=y>

do just that. In this study, the economic value of the Internet, a value abstractly understood by consumers, has been conservatively estimated and a tangible value has been assigned to it. To determine this value, the report identifies Internet industry activities, from traditional industry classifications (such as NAICS) combines them and compares these totals to other major national industries using U.S. Census information such as “Product Line Receipts.”

The data demonstrate that the Internet sector both directly and indirectly benefits not only the daily lives of its millions of consumers, but also the overall health of the U.S. economy, specifically by increasing GDP, industry growth, employment, consumer surplus, and employment earnings. This study serves as a noteworthy advancement in the field, as it demonstrates the true impact of the Internet’s economic value – and indicates that the sector reaches beyond what was previously measured.



## FINDING #1:

**Not only does the Internet sector add significant value to the U.S. economy, particularly in terms of its contributions to GDP, but it does so on a scale that surpasses many sectors typically thought of as economic powerhouses.**

The Internet sector directly contributes to U.S. real GDP – and does so at steadily increasing rates over time. For instance, Internet industries were estimated to be responsible for six percent (\$966.2B) of real GDP in 2014. These levels more than double Internet industries’ real contributions from seven years earlier. In 2012, Internet industries contributed more to nominal GDP than a number of other major industries, including construction, computer and electronic products, broadcasting and telecommunications, and accommodation and food services.

The Internet sector also enhances nominal GDP calculations. From 2007 to 2012, Internet industries increased their nominal value added to the economy by approximately 110.4 percent. Health care and social assistance, the industry with the second highest increase in value-added from 2007 to 2012 increased by 24.5 percent, almost 86 percentage points less than the Internet sector.

The Internet sector is a significant vector for growth in our economy. Internet industries serve as the sector of the economy that has generated large increases in nominal value added to the U.S. economy from 2007 to 2012. The Internet sector surpasses chemical products (23.56 percent), accommodation and food services (11.41 percent), computer and electronic products (11.18 percent), private industries (11.13 percent), finance and insurance (8.19 percent), information-communications-technology producing industries (7.92 percent), and information (5.58 percent).

<sup>6</sup> <http://deadline.com/2015/10/netflix-ted-sarandos-beasts-of-no-nation-3-million-viewers-idris-elba-cary-fukunaga-1201594344/>

<sup>7</sup> <http://money.cnn.com/2015/10/26/media/nfl-yahoo-live-stream-results/>

<sup>8</sup> <http://www.expediainc.com/about/>

<sup>9</sup> <https://www.ebayinc.com/stories/news/ebay-corporate-fact-sheet/>

<sup>10</sup> <https://press.linkedin.com/about-linkedin>

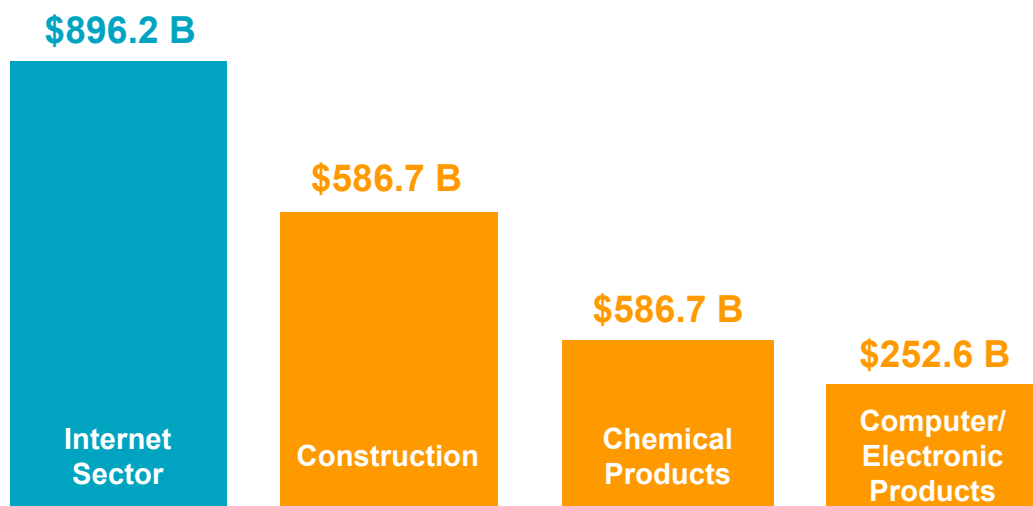
## FINDING #2:

**This substantial increase in Internet sector value added clearly reflects the ubiquitous presence of the Internet throughout the U.S. economy.**

As noted in this report, Internet industries comprise “tens of thousands of interconnected networks run by service providers, individual companies, universities, governments and others.” For the purposes of this study, Internet industries include data processing, hosting and related services, Wired Telecommunications carriers, wireless telecommunications carriers, all Other Telecommunications, Internet publishing and broadcasting and web search portals, and computer systems design and related services. These industries use the Internet in a variety of ways, including website design and maintenance, video and audio streaming, and more.

The majority of the world’s leading Internet companies in terms of revenue and total number of employees come from the United States, including four out of the top five, namely Amazon, Google, eBay, and Facebook.

### COMPARING THE INTERNET SECTOR TO OTHER INDUSTRIES

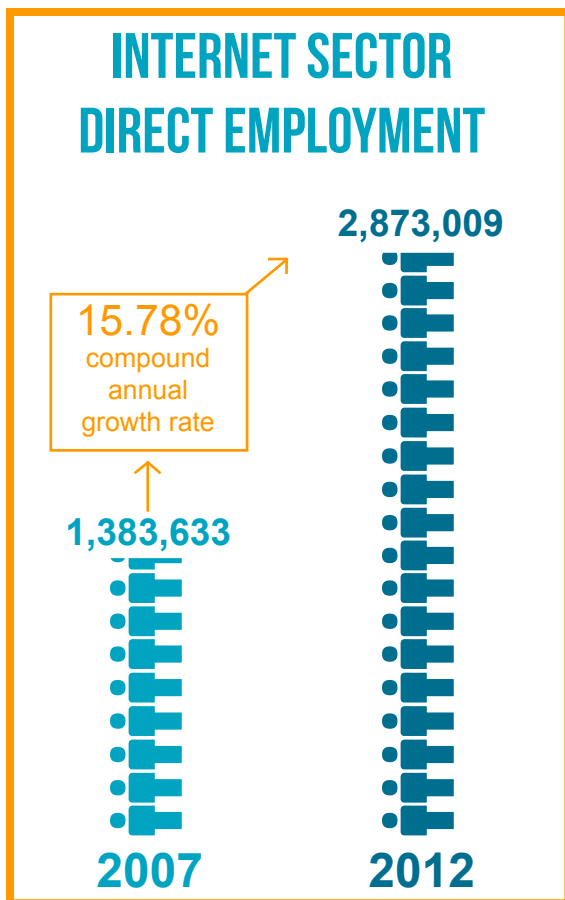


Data shown from 2012 - See Also: Table F-1

## FINDING #3:

**As Internet activity and industries develop, employment opportunities increase.**

Increased Internet activity and connection between industries, companies, and people generates more employment opportunities for the everyday American. This study finds that Internet industry employment has increased rapidly since 2007.



For instance, in 2007, 1,383,633 workers were employed directly by Internet sector companies. By 2012, that number of employed workers rose to 2,873,009. This amounts to a 107.6 percent increase over the five-year span, or a compound annual growth rate of 15.78 percent from 2008 to 2012. It should be noted that these numbers do not include indirect jobs.

During the same time period, the percent of workers in the overall economy who were employed by Internet sector companies increased from 0.96 percent in 2007 to 2.05 percent in 2012. In other words, the Internet sector increased its total U.S. employment share from 2007 to 2012 by 113.3 percent - over seven times more than the second highest increase in employment share for an industry (healthcare and social assistance).

The study also finds that Internet sector employment has increased even as employment in many other major sectors of the economy has declined. While direct Internet industry employment increased from 2007 to 2012, other U.S. industries experienced declines in direct employment, including construction (26.86 percent decrease), computer and electronic products (14.22 percent decrease), transportation and warehousing (3.68 percent decrease), and finance and insurance (4.98 percent decrease).

### FINDING #4:

## The Internet sector benefits the health of the overall economy by delivering higher employee earnings and consumer surplus.

Internet industries provide employees with significantly higher than average wages. Total employee earnings in Internet industries more than doubled from 2007 to 2012. In 2012, the Internet sector posted higher direct employee earnings than three critical industries: computer electronic products, chemical products, and broadcasting and telecommunications. Employee compensation as a share of the U.S. total increased by 90.17 percent: from 1.39 percent in 2007 to 2.65 percent in 2012. Only three other industries increased their employee compensation share: health care and social assistance, accommodation and food services, and information-communications-technology-producing industries.

Internet sector's higher wages also apply to earnings per direct employee, as this measure of compensation provided by Internet industries exceeds the national average. In 2012, workers directly employed by Internet sector companies earned an average compensation of \$79,515 per

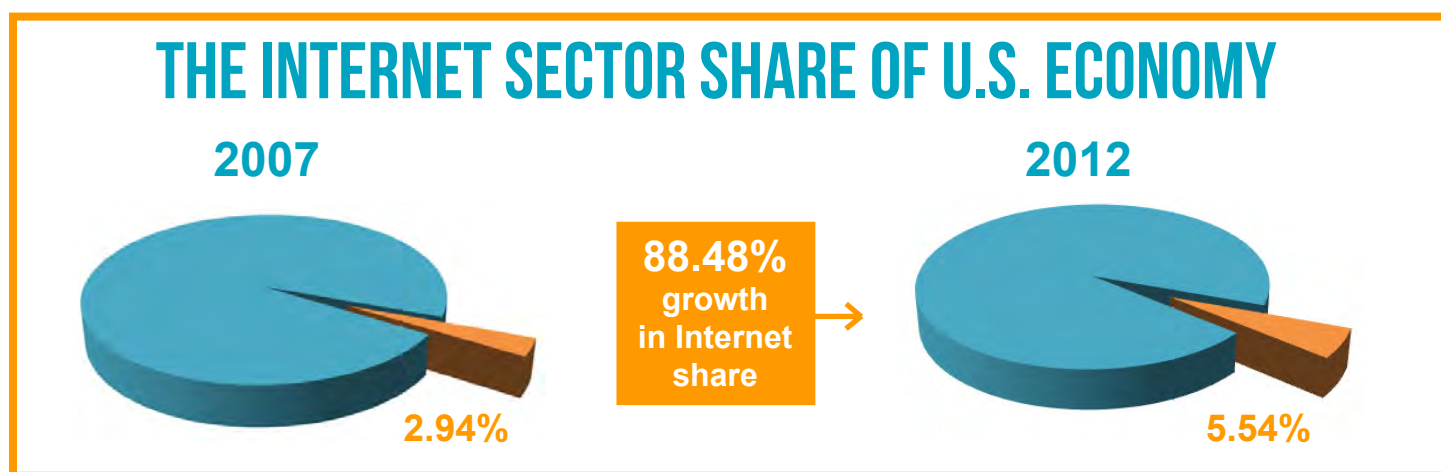
---

Internet industries provide employees with significantly higher than average wages.

---

year. For all U.S. workers, however, earnings per employee were \$61,547. Workers directly employed in the Internet sector commanded a wage premium of more than \$17,900 year in 2012.

Internet industries not only benefit the national economy and its employees; consumers clearly benefit from its services, as well. As argued by McKinsey and the Boston Consulting Group in their studies, “*Internet Matters: The Net’s Sweeping Impact on Growth, Jobs and Prosperity*”<sup>11</sup> and “*The Internet Economy in the G-20 - The \$4.2 Trillion Growth Opportunity*,”<sup>12</sup> the Internet provides users with consumer surplus outweighing the amount spent in fees associated with acquiring or maintaining Internet access. In other words, the Internet helps improve market efficiencies by reducing transaction, search and opportunity costs – in addition to information asymmetry - for consumers. This allows new Internet-enabled companies, industries and services to derive the most helpful benefits for consumers. In the long run, Internet-enabled companies and businesses locate new customers while also helping customers save time, money, and energy in their daily lives.



## CONCLUSION

As the data suggest, the Internet sector provides far-reaching direct and indirect benefits to the U.S. economy. It surpasses other major industries in terms of its value added, industry growth, employment and employment growth, and consumer surplus. It should be noted that this study was conducted conservatively, only taking into account industries that directly and substantially rely on the Internet. For this reason, the study likely understates all Internet-driven economic benefits that accrue to the U.S. economy. In other words, industries that benefit from using the Internet, but do not rely on it substantially and directly, are not taken into account in the findings presented here.

However, it is apparent that, even without analyzing indirect Internet-driven effects on the economy, the Internet generates an even greater impact on the U.S. economy than previously measured. As economists, legislators, and Internet stakeholders work to craft pro-Internet policies supportive of continued growth and expansion in this industry, these findings are an important reminder that the benefits driven by Internet growth are crucial contributors to the health of the U.S. economy as a whole. The Internet sector is clearly essential to maintaining economic growth in coming years.

<sup>11</sup> McKinsey & Company. *Internet Matters: The Net’s Sweeping Impact on Growth, Jobs and Prosperity*.

<sup>12</sup> The Boston Consulting Group. *The Internet Economy in the G-20 - The \$4.2 Trillion Growth Opportunity*.



# 2.0 INTRODUCTION

The industries examined here are based on a U.S. industry classification system known as the North American Industry Classification System or (NAICS). NAICS is a classification scheme that groups establishments into industries based on the similarity of their production processes.<sup>13</sup> Unfortunately, in its current form, NAICS does not classify any U.S. industries as “Internet Industries.” Within the scope of particular NAICS industries, however, it is possible to identify activities that reflect the fundamental processes of the Internet. The Internet itself is “a loose association of thousands of networks and millions of computers across the world that all work together to share information.”<sup>14</sup> These networks and computers make use of “protocols” to send and receive data to and from the next computer along the network. In conjunction with critical network facilities, protocols define the production processes of the Internet.<sup>15</sup>

---

Industries that create and/or rely on the features and scope of the Internet provide significant value added to GDP

---

While the NAICS system does not classify any industries as “Internet Industries,” it does include numerous descriptions, examples, and cross references of industries whose functions include specific capabilities of the Internet. These sources have been reviewed and organized in this document.

In addition to industry descriptions, examples, and cross-references, this study also relies on industry-specific tabulations known as “Product Line” Receipts. Product Line Receipts are published by the Census Bureau on a five year schedule. For purposes of this study, Product Line Receipts for the years 2007

and 2012 provided critical details as to the nature of the products and services that the NAICS industries actually sold. These data in particular were useful in cases where some part of a NAICS industry could readily be classified as an Internet Industry while another part of the same NAICS industry could not be so classified.

On the basis of these data, it is apparent that the industries that create and/or rely on the features and scope of the Internet provide significant value added to GDP. These industries also generate an increasing number of direct and indirect jobs, as well as real growth in value added and employee compensation levels that are far higher than the U.S. average.

## 2.1 THE INTERNET

The Internet is a “global system of interconnected computer networks that use the Internet protocol suite (TCP/IP).”<sup>16</sup> TCP/IP permits the Internet to function as an “open” system in which every network can connect to every other network. The Internet is “run” by non-profit membership organizations that work together to meet the needs of all stakeholders. Because of its technological features and its form of organization, the Internet has largely been self-regulating.

A variety of companies and industries collaborate so that the Internet can function as it does. Many of these companies provide services to Internet businesses

---

Because of its technological features and its form of organization, the Internet has largely been self-regulating.

---

<sup>13</sup> See Executive Office of the President, Office of Management and Budget, *North American Industry Classification System, United States 2012*, page 18.

<sup>14</sup> <http://homepages.luc.edu/dfelici/Internet.html>.

<sup>15</sup> The Internet relies on two primary network protocols to carry the bulk of Internet traffic. These are Transport Control Protocol/Internet Protocol (TCP/IP) and User Datagram Protocol/Internet Protocol (UDP/IP).

who are seeking to communicate with and market to customers worldwide. Other Internet companies serve retail customers directly and provide industry-specific services and information to those users. Another set of Internet providers furnish “backbone” facilities to other carriers so that even the largest Internet networks have sufficient capacity to serve both new and existing users.

The global Internet now consists of tens of thousands of interconnected networks run by service providers, individual companies, universities, governments, and others.<sup>17</sup> The Internet connects millions of computers in more than 190 countries.<sup>18</sup> Since its formation, the Internet has achieved what can only be described as staggering rates of growth.

There is little question that the Internet provides myriad economic benefits to the U.S. economy. The purpose of this study is to measure those economic contributions with some specificity. As part of this effort, the economic value of the Internet will be quantified using statistical definitions, methods, and data that are currently employed by the U.S. Census Bureau and the U.S. Bureau of Economic Analysis (BEA).

## 2.2 GROWTH IN INTERNET USER DEMAND

According to public sources in 2015, the total number of Internet users in the United States exceeded 300 million.<sup>19</sup> Since 2006, the number of Internet users in the U.S. has risen by approximately 100 million. In 2015, the total population of the United States was estimated at 325 million. Taken together, these figures imply a U.S. Internet user penetration rate of 92%.

In global terms, the U.S. is home to 4.45% of the world’s population and 9.58% of the world’s Internet users.<sup>20</sup> On the basis of Internet users, the United States is the 2nd ranked nation in the world.<sup>21</sup> Since 2008, China has emerged as the highest ranked country in the

---

Since 2006, the number of Internet users  
in the U.S. has risen by approximately

**100 MILLION**

---

world as measured by Internet user counts. In 2014, the number of Internet users in China was reported as approximately 640 million.<sup>22</sup> In that year, China’s share of the world’s population was 19.24% and 21.97% of the world’s Internet user population.

## 2.3 INTERNET COMPANIES

Not surprisingly, the world’s number one and number two ranked countries for Internet users also serve as the national home markets for many large and well known Internet companies. Table A-1 reproduces a published list of the “Twenty-one Largest Internet Companies” in 2014. The table includes well-known U.S. Internet firms such as Amazon, Google, eBay, and Facebook. The table also lists China-based Internet firms such as Tencent, JD.com, Baidu and NetEase. At least in the West, these Chinese companies are generally not as well-known as their U.S. competitors.<sup>23</sup> Of the twenty-one companies mentioned in Table A-1, 13 are U.S. based firms and five are headquartered in China. Of the remaining three companies, Japan, the United Kingdom, and Russia each serve as the home market for one of the firms listed in Table A-1.

<sup>16</sup> <https://www.google.com/>

<sup>17</sup> <http://www.Internetsociety.org/Internet/how-it-works>

<sup>18</sup> [www.webopedia.com](http://www.webopedia.com)

<sup>19</sup> <http://www.InternetLiveStats.com/InternetUsers/UnitedStates>

<sup>20</sup> <http://www.InternetLiveStats.com/InternetUsers>

<sup>21</sup> Id.

<sup>22</sup> Id.

<sup>23</sup> The list in Table A-1 also includes Alibaba, a large China-based Internet firm that is somewhat better known in the U.S. and in other western countries.

**TABLE A-1**  
**TWENTY ONE LARGEST INTERNET COMPANIES (2014)**

COMPANY	INDUSTRY	REVENUE (\$B)	EMPLOYEES	COUNTRY
Amazon	E-Commerce	\$88.99	154,100	United States
Google	Search	\$66.01	53,600	United States
eBay	E-Commerce	\$17.90	34,600	United States
Tencent	Social	\$12.89	25,517	China
Facebook	Social	\$12.47	9,199	United States
Alibaba	E-Commerce	\$8.57	26,000	China
Priceline.com	Travel	\$8.44	12,700	United States
Expedia, Inc.	Travel	\$5.76	14,570	United States
Rakuten	E-Commerce	\$5.60	10,867	Japan
JD.com	E-Commerce	\$5.60	62,061	China
Netflix	Web portal	\$5.50	2,189	United States
Baidu	Search	\$5.21	34,600	China
Yahoo!	Web portal	\$4.62	12,300	United States
Salesforce.com	Cloud computing	\$4.07	13,300	United States
Groupon	E-Commerce	\$3.20	10,000	United States
LinkedIn	Social	\$2.21	6,800	United States
NetEase	Online Services	\$2.00	7,690	China
Twitter	Social	\$1.41	3,600	United States
ASOS.com	E-Commerce	\$1.40	7,500	United Kingdom
TripAdvisor	Travel	\$1.24	2,793	United States
Yandex	Search	\$0.90	5,514	Russia
<b>TOTAL</b>		<b>\$263.99</b>	<b>509,500</b>	

Source: [https://en.wikipedia.org/wiki/List\\_of\\_largest\\_Internet\\_companies](https://en.wikipedia.org/wiki/List_of_largest_Internet_companies)

TABLE A-1		
TOTALS BY INDUSTRY	REVENUE (\$B)	EMPLOYEES
E-Commerce	\$131.26	305,128
Search	\$72.12	93,714
Social	\$28.98	45,116
Travel	\$15.44	30,063
Web Portal	\$10.12	14,489
Cloud Computing	\$4.07	13,300
Online Services	\$2.00	7,690

The twenty-one companies in Table A-1 reported combined revenues of \$264 billion in 2014. In the same year, these firms employed more than 509,000 workers. These figures reflect only the number of workers directly employed at each of the listed Internet firms.

In the lower section of Table A-1, the twenty-one companies were aggregated on the basis of “industry.” The industry categories listed in the table were used to divide the largest Internet firms into seven different areas of concentration. In terms of revenue, the two largest “industries” were E-Commerce (\$131.3B) and Search (\$72.1B). The firms in these two groups directly employed 305,000 workers (E-Commerce) and 94,000 workers (Search).

## 2.4 MEASURING INDUSTRIES

The revenue data compiled in Table A-1 is typical of the aggregate statistics reported for Internet firms in the financial press and by security analysts and researchers. Revenue data for the largest firms in an “industry” provides a rough measure of how firms compare and how one can assess the likely market value of securities offered for sale by an individual company. However, if one intends to analyze a statistically based and well-defined industry, the figures in Table A-1 are not sufficient for the job.

Even the very largest firms do not comprise one hundred percent of the industries in which they operate. Many industries include both large companies and a “fringe” of much smaller firms that may have different histories, strategies or sources of competitive advantage. Indeed, by definition, these fringe companies would not appear on any list of the twenty one largest Internet companies in the world.

Another measurement issue relates to the importance of standardization. In Table A-1, seven different firms are said to operate in the E-Commerce industry. However, the revenues reported for any of these firms may also have included (or excluded) ancillary revenues earned in industries other than the

E-Commerce industry. Moreover, each firm’s reported E-Commerce revenues may not have followed consistent definitions or accounting conventions with respect to the collection and reporting of revenue data. Such issues would also seem to arise in the development of industry-wide employment, industry employee earnings, and other comparable metrics.

A third limitation arising from the use of firm-specific data results from the fact that measurements used by economists to compare industries are not typically presented among the metrics that firms report in their financial statements and annual reports to stockholders. More typically, as noted subsequently in this report, economists measure the economic contributions of an industry by calculating that industry’s “value added.”<sup>24</sup> By contrast, public companies do not generally report industry-wide estimates of value added in their financial statements and reports.

One final difficulty that arises from the use of firm-specific data has to do with the measurement of “indirect” employment and employee earnings. In order to produce more goods and services a firm might rely principally on its own “direct” employees to manage and facilitate the production process. Such a firm, seeking to increase its production, could attempt to hire additional “direct” workers in order to satisfy the increased demand for the firm’s products. However, the same firm might also choose to purchase more inputs from other firms in order to meet its increased demand. The increased inputs purchased from other firms could require the hiring of additional workers at the other firms’ facilities. These additional workers are indirect employees.

In this study, efforts will be made to measure both the direct employment and the indirect employment that Internet industries add to the economy as a whole. These two measures, taken together, provide a view of the total employment generated by the Internet industries. By contrast, the employment figures reported in the financial statements of a company do not include indirect employment figures at all.

<sup>24</sup> Value added is a standard measure that reflects the economic contributions made by an industry to the economy as a whole. Such contributions flow from the industry’s use of labor, capital and government resources. The sum of the value added by all industries to the U.S. economy is equal to U.S. gross domestic product (“GDP”). 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 U.S. government’s national income and product accounting data.

## 2.5 THE NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM

In most developed countries, government statistical agencies have primary responsibilities over the collection, compilation and publishing of industry-specific data. These agencies use surveys and other statistical tools to measure the economic contributions made by individual industries to the nation's economy. In the United States, industry classification procedures are developed and implemented using the North American Industry Classification System or (NAICS).<sup>25</sup>

NAICS is “an industry classification system that groups establishments into industries based on the similarity of their production processes. There are 20 sectors and 1,065 industries in the 2012 NAICS United States.”<sup>26</sup> In the United States, NAICS was developed in order to replace the former classification system known as the U.S. Standard Industrial Classification (SIC). In July of 1994, the Office of Management and Budget (OMB) announced the development of the core concepts and principles upon which NAICS measurements would be based.

With regard to newly emerging industries, OMB stated that “the system will give special attention to developing production-oriented classifications for (a) new and emerging industries, (b) service industries in general, and (c) industries engaged in the production of advanced technologies.”<sup>27</sup>

The structure of NAICS is hierarchical. The first two digits of the structure “designate the NAICS sectors that represent general categories of economic activities.”<sup>28</sup> Within NAICS, the third digit designates an industry sub-sector, the fourth digit designates an industry group, the fifth digit designates a NAICS industry, and the sixth digit designates a national industry. An example of a NAICS industry hierarchy is reproduced in Table A-2.

## 2.6 EXAMPLE: NAICS 519130

NAICS provides definitions for all industries that have been classified within the NAICS structure. These definitions can be quite detailed. For example, the definition used to identify establishments that are classified in NAICS 519130 “Internet Publishing and Broadcasting and Web Search Results” spans more than ten lines in the NAICS U.S. 2012. This industry definition in its entirety is reproduced in Table A-3.

TABLE A-2  
NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS)

Sector	2 - Digit	Sector 51
Sub-Sector	3 - Digit	Subsector 511
Industry Group	4 - Digit	Group 5111
NAICS Industry	5 - Digit	NAICS 51111
National Industry	6 - Digit	NAICS 511110

\* A zero as the sixth digit generally indicates that the NAICS industry and the National (U.S.) Industry are the same. **Source:** Executive Office of the President. Office of Management and Budget, United States, 2012.

<sup>25</sup> In the NAICS system, the United States coordinates its industry classification policies with those of Canada and Mexico. Because of this effort, statistical measures across North America are generally consistent with the national classifications that are employed domestically in each of the three nations.

<sup>26</sup> Executive Office of the President, Office of Management and Budget, *North American Industry Classification System*, United States, 2012, page 18. (Hereinafter cited as NAICS U.S. 2012)

<sup>27</sup> July 26, 1994, **Federal Register** notice (59 FR 38092-38096).

<sup>28</sup> See NAICS US 2012, page 22.



In addition to industry definitions, the NAICS system includes examples of the types of businesses that have been classified within a particular NAICS code in the past. For instance, in Table A-3, the following types of businesses were listed as examples of firms whose activities have been classified within NAICS 519130: Internet book publishers, Internet sports sites, Internet entertainment sites, Internet video broadcast sites, Internet game sites, Internet news publisher sites, Internet periodical publishers, Internet radio stations, Internet search portals, and Internet search web sites.

**TABLE A-3**  
**NAICS INDUSTRY EXAMPLE: NAICS 519130**

<b>I. Name:</b>	Internet Publishing and Broadcasting and Web Search Portals
<b>II. Definition:</b>	This industry comprises establishments primarily engaged in (1) publishing and/or broadcasting content on the Internet exclusively or (2) operating Web sites that use a search engine to generate and maintain extensive databases of Internet use, Internet addresses and content in an easily recognizable format (and known as Web search portals). The publishing and broadcasting establishments in this industry do not provide traditional (non-Internet) versions of the content that they publish or broadcast. They provide textual, audio, and/or video content of general or specific interest on the Internet exclusively. Establishments known as Web Search Portals often provide additional Internet services, such as e-mail connections to other Web sites, auctions, news, and other limited content, and serve as a home base for Internet users.
<b>III. Examples:</b>	<ul style="list-style-type: none"> <li>Internet book publishers</li> <li>Internet periodical publishers</li> <li>Internet sports sites</li> <li>Internet radio stations</li> <li>Internet entertainment sites</li> <li>Internet search portals</li> <li>Internet video broadcast sites</li> <li>Web search portals</li> <li>Internet game sites</li> <li>Internet search web sites</li> <li>Internet news publishers</li> </ul>
<b>IV. Cross References:</b>	<p>Establishments primarily engaged in -- (Selected)</p> <p>Providing wired broadband Internet access using own operated telecommunications infrastructure - are classified in Industry 517110. Wired Telecommunications Carriers. Providing streaming services on content owned by others -- are classified in U.S. Industry 517919. All Other Telecommunications.</p>

**Source:** Executive Office of the President, Office of Management and Budget, North American Industry Classification System, United States, 2012. pages 686-687.

Based on these examples, it seems clear that many types of Internet web site businesses are contained in NAICS 519130. However, Table A-3 also lists cross references to other business categories that differ from NAICS 519130. : A review of the selected cross references shown in Table A-3 reveals, for example, that “providing streaming services on content owned by others –are classified in U.S. NAICS 517919, All Other Telecommunications.”<sup>29</sup>

By conducting a detailed review and analysis of industry definitions, examples and cross references, it is possible to identify individual NAICS industries that contain Internet activities and functions. For purposes of this study, the NAICS industries that likely include Internet activities are listed in Table A-4.<sup>30</sup>

**TABLE A-4**  
**NAICS INDUSTRY CLASSIFICATIONS THAT INCLUDE INTERNET ACTIVITIES**

NAICS CODE	INDUSTRY TITLE
<b>Product Line Receipts</b>	
518210	Data processing, hosting and related services
5171	Wired Telecommunications carriers
5172	Wireless telecommunications carriers (except satellite)
517919	All Other Telecommunications
51913	Internet publishing and broadcasting and Web Search Portals
54151	Computer Systems Design and related services
<b>E-Commerce Retail</b>	
45411	Electronic shopping
454112	Electronic auction
<b>Selected Services</b>	
Various	Selected Services - E-Commerce

**Source:** United States Census, American Fact Finder.

# 3.0 PRODUCT LINE RECEIPTS

As noted above, the data reported in Table A-3 can be used to identify the Internet and Internet-related activities that are contained in NAICS code 519130. This particular NAICS code (Internet Publishing and Broadcasting and Web Search Portals) appears to include a substantial number of Internet

establishments. However, other NAICS industries, such as All Other Telecommunications (NAICS 517919), also appear to contain substantial Internet examples and cross references. Is it fair then to ask which of these two industries is likely to contain more Internet activities and which will contain less?

<sup>29</sup> See NAICS US 2012, pages 686-687.  
<sup>30</sup> The six NAICS industries listed in the top section of Table A-4 generally exclude industries that rely on E-Commerce retail and selected service revenues. The economic effects of E-Commerce retail and selected service revenues are quantified in later sections of this analysis.

Unfortunately, the NAICS definitions, examples, and cross-references do not quantify the amount of economic activity within a particular NAICS code that specifically reflects Internet concerns. Fortunately, however, in addition to NAICS industry definitions, examples, and cross references, there is one further reference source that can be particularly useful in this type of analysis. In the NAICS system, this additional reference source is known as Product Line Receipts.

Product Line Receipts are published every five years by the U.S. Census. The most recent publication of Product Line Receipts contained annual receipts by NAICS code for 2012. Product Line Receipts were also publicly reported in 2007. For each individual NAICS code, Product Line Receipts include industry totals for 2007 and 2012. Using Product Line Receipts, the industry receipts for each of the six NAICS codes previously shown in Table A-4 are reported in Table B-1. On a combined basis, these six

industries generated \$817 billion in receipts in 2007. By 2012, the six industries listed in Table B-1 reported aggregate receipts of \$1.049 trillion.

For purposes of this study, it is significant that the details provided in Product Line Receipts are not limited to each industry's total receipts. In fact, Product Line Receipts are fairly comprehensive. They include, in dollar terms, the receipts generated by many individual product lines within each NAICS industry.

In Appendix One the Product Line Receipts reported for each of the six industries previously cited in this study are reproduced in their entirety. One of those NAICS industries (Wired Telecommunications) will also be used as an example of what Product Line Receipts are and how they appear in U.S. Census publications. As shown in Appendix One, Page 2, the Wired Telecommunications industry in aggregate had total receipts of \$285.1B in 2012. However, in the same document, these aggregate receipts were then divided into 31 separate Product Lines. These Product Lines include Carrier Services and Internet Backbone (\$16.6B), Basic Fixed Local Telephone Services (\$35.9B), and Basic Fixed Long Distance Telephony – Outbound (\$16.1B).

**TABLE B-1  
NAICS INDUSTRIES  
TOTAL RECEIPTS (\$ BILLIONS)**

NAICS	2012	2007
518210	\$104.2	\$66.7
5171	\$285.1	\$290.8
5172	\$226.0	\$170.6
517919	\$14.4	\$13.5
51913	\$86.9	\$31.1
54151	\$332.2	\$244.4
<b>TOTAL RECEIPTS</b>	<b>\$1,048.7</b>	<b>\$817.0</b>

**Source:** United States Census, American Fact Finder.

### 3.1 FLAGGED PRODUCT LINE RECEIPTS

The details provided in Product Line Receipts can be used to determine the proportion of total Product Line Receipts that can reasonably be characterized as Internet receipts for each relevant NAICS account. For each of the selected NAICS industries, all Product Lines Receipts were evaluated in order to identify which Product Lines could reasonably be considered as a component of the Internet. All Product Lines that qualified as reflecting Internet activities were then "Flagged" with an x. For each selected NAICS code, the receipts associated with all Flagged Product Lines were also totaled.



**TABLE B-2**  
**NAICS INDUSTRIES: EXAMPLES OF FLAGGED ACTIVITIES BY NAICS CODE (2012)**

<b>NAICS 518210*</b> <b>Data processing, hosting and related services</b>	<b>NAICS 5171*</b> <b>Wired Telecommunications carriers</b>
Application service provisioning, with or without integration of related services	Carrier services and Internet backbone services (Include network access services to other telecommunication carriers.)
Website hosting services, with or without integration of related services	Internet telephony
Data storage services	Internet access services - Broadband (i.e., always-on)
Video and audio streaming services	Internet access services - Narrowband (i.e., dial-up)
Other data processing or IT infrastructure provisioning services	
Internet access services - Broadband (i.e., always-on)	
Internet access services - Narrowband (i.e., dial-up)	
Custom application design and development services	

\*See Appendix One, Charts 1-2.

As shown in Appendix One, chart 2, the total Product Line Receipts generated by the Wired Telecommunications industry (NAICS 5171) reached \$285.1B in 2012. After review of the thirty-one individual Product Line Receipts that made up this industry total, it was determined that receipts from only four (of 31) Product Lines should be flagged as Internet receipts. In 2012, these four Flagged product lines generated combined receipts of \$83.9B. On a combined basis, the Flagged Product Lines were responsible for 29.4% of the total Product Line Receipts earned by the U.S. Wired Telecommunications industry (NAICS 5171) in 2012.

## 3.2 INTERNET ACTIVITIES

In this study, the Product Line flagging process was designed 1) to identify Internet Product Lines and 2) to quantify, in terms of receipts, the economic importance of those Product Lines going forward. The analysis focused directly on activities that were Internet-driven. Examples of flagged Internet activities that were reported in two different NAICS industries are provided in Table B-2.

In NAICS 518210, the following Internet activities were flagged: application service provisioning,<sup>31</sup> website hosting services, video and audio streaming, Internet access services, and certain customer application design and development services. These flagged activities comprised 45.5% of the total receipts earned in NAICS 518210 in 2012.<sup>32</sup> In NAICS 5171, as shown in Table B-2, the flagging process identified only three types of Internet

<sup>31</sup> Based on discussions with U.S. statistical agencies, application service provisioning as described above is more widely known as "cloud" computing.

<sup>32</sup> See Appendix One, chart 1.

activities. These activities were carrier and Internet backbone services, Internet telephony, and Internet access services. These activities made up 29.4% of the total receipts reported for NAICS 5171 in 2012.<sup>33</sup>

The Product Line Receipts that were flagged for all six NAICS industry codes are provided in Appendix One. The tables in Appendix One include total receipts and brief descriptions of each Product Line considered in the overall analysis. Within the Product Line reports, certain Internet activities appear in multiple NAICS. For example, Product Line Receipts associated with the provision of Internet access services in 2012 were reported in five of the six NAICS industries under study. These five NAICS industries were: 518210,

5171, 5172, 517919, and 54151.<sup>34</sup> While each of these NAICS industries reported Product Line Receipts, the two largest industry providers of Internet access services were Wired Telecommunications carriers (NAICS 5171) and Wireless Telecommunications carriers (NAICS 5172).

The flagging process also listed website hosting services (with or without integration of related services) in three NAICS industries in 2002. These industries were 518210, 51913 and 54151. In terms of Product Line Receipts, the website hosting activities attributed to NAICS 518210 were the most significant. Internet telephony activities were also included in three NAICS industries in 2002.

**TABLE B-3  
NAICS INDUSTRIES  
SUMMARY OF FLAGGED RECEIPTS (\$ BILLIONS)  
2012**

NAICS	DESCRIPTION	FLAGGED RECEIPTS
518210	Data processing, hosting, and related services	\$47.5
5171	Wired Telecommunications carriers	\$83.9
5172	Wireless Telecommunications carriers (except satellite)	\$24.8
517919	All Other Telecommunications	\$10.1
51913	Internet publishing and broadcasting and web search portals	\$73.2
54151	Computer systems design and related services	\$112.6
<b>TOTAL RECEIPTS:</b>		<b>\$352.1</b>

**Source:** United States Census, American Fact Finder.

<sup>33</sup> See Appendix One, chart 2.

<sup>34</sup> See Appendix One, charts 1 through 6.

**TABLE B-4**  
**NAICS INDUSTRIES**  
**SUMMARY OF FLAGGED RECEIPTS (\$ BILLIONS)**  
**2007**

NAICS	DESCRIPTION	FLAGGED RECEIPTS
518210	Data processing, hosting, and related services	\$20.2
5171	Wired Telecommunications carriers	\$66.7
5172	Wireless telecommunications carriers (except satellite)	\$5.4
517919	All Other Telecommunications	\$6.3
51913	Internet publishing and broadcasting and web search portals	\$30.0
54151	Computer systems design and related services	\$91.5
TOTAL RECEIPTS:		\$220.2

**Source:** United States Census, American Fact Finder.

### 3.3 APPLYING FLAGGED RESULTS TO NAICS INDUSTRIES

The flagging process, as described above, was applied to six different NAICS industries in the years 2012 and 2007. Summaries for these six industries are listed in Table B-3 (for 2012) and Table B-4 (for 2007) .

As shown in Table B-3, the total Product Line Receipts earned by the combined six NAICS industries in 2012 were reported by the U.S. Census as \$350.2B. Five years earlier, the total Product Line Receipts for the same six NAICS industries had been listed as \$218.3B (See Table B-4). Thus over the five year period of 2007-2012, the Internet activities identified in six NAICS industries increased by \$131.9B. In percentage terms, the Product Line Receipts that were flagged as Internet activities grew by 60% over the years 2007-2012.

# 4.0 E-COMMERCE ACTIVITIES

The Internet Product Line reports described above do not consistently classify all of the receipts generated by Internet industries in the United States. In particular, the Product Line data reproduced in Appendix One did not include receipts earned by Business-to-Consumer (“B-to-C”) businesses that actively participate in the economy as E-Commerce retailers. Nevertheless, the firms that provide E-Commerce retail services continue to make important contributions to U.S. economy as a whole.

As shown in Table C-1, U.S. E-Commerce retail sales in the United States reached \$228.6B in 2012. Five years earlier (in 2007) U.S. E-Commerce retail sales were only \$136.2B. Significantly, these E-Commerce values reflect Business-to-Consumer (B-to-C) retail sales only. The E-Commerce retail sales in Table C-1 exclude both manufacturing E-Commerce (B-to-B) sales and merchant wholesale E-Commerce revenues. For this reason, the figures

in Tables C-1 may understate the actual importance of all E-Commerce for the U.S economy as a whole. In another sense, however, the figures in Table C-1 may overstate the size of E-Commerce sales in the United States. The values in Table C-1 include both E-Commerce retail sales and retail revenue earned by non-Internet mail order businesses. Traditional mail order businesses generate substantial revenues from the promotion of products in mail order catalogues and by direct mail. These mail order firms typically comprise one segment of total U.S. “non-store” retailers. However, these firms do not generally rely on Internet services as a fundamental component of their business operations. If mail order establishments are not part of the Internet economy, their receipts must be excluded from the Internet industry calculations presented here.

As shown in Table C-2, mail order businesses in the U.S. have experienced a limited contraction in sales

**TABLE C-1**  
**U.S. E-Commerce Sales**  
**Total Retail Only\***  
**(\$ Billions)**

QUARTER	2012	2007
1 <sup>ST</sup>	\$54.6	\$31.9
2 <sup>ND</sup>	\$55.7	\$33.5
3 <sup>RD</sup>	\$57.8	\$34.7
4 <sup>TH</sup>	\$60.4	\$36.1
<b>SUBTOTAL:</b>	<b>\$228.6</b>	<b>\$136.2</b>

\*Figures reflect B-to-C sales only. Figures exclude manufacturing E-Commerce and merchant wholesale E-Commerce.

**TABLE C-2**  
**U.S. E-Commerce Sales**  
**Adjust Retail to Exclude Mail Order Sales**  
**(\$ Billions)**

	2012	2007
Retail Sales (E-Commerce)	\$228.6	\$136.2
Mail Order Sales	\$71.0	\$71.0*
<b>NET RETAIL SALES E-COMMERCE</b>	<b>\$157.6</b>	<b>\$65.2</b>

\*IBIS World, Mail Order in the US: Market Research Report, Industry Revenue = 71.0 B, “The Mail Order Industry has experienced slight contraction over the past five years”

over the past five years. The mail order industry's annual sales per year have remained relatively fixed at approximately \$71.0B. As shown in Table C-2, these mail order sales are subtracted from the E-Commerce retail sales described above. This calculation results in net E-Commerce retail sales of \$157.6B in 2012. This value has increased by \$92.4B since 2007.

In the analyses presented in this report, it is generally the case that estimates of value added, employment, and other measures are determined on the basis of industry receipts earned in a particular year. In this instance, however, E-Commerce retail sales provide an exception to the general practice followed elsewhere. E-Commerce retail sales reflect a sharing of revenues as between the E-Commerce provider and the ultimate seller of the product in question. In this study, we separate the shared revenues earned by the E-Commerce providers from the shared

**TABLE C-3**  
**U.S. E-Commerce Sales**  
**Adjusted Gross Margins (\$ Billions)**

	<b>2012</b>	<b>2007</b>
<b>Net Retail Sales E-Commerce</b>	\$157.6	\$65.2
<b>Gross Margin for Non-Store Retailers (Percent)</b>	37.1%	38.1%
<b>Gross Margin for Net Retail E-Commerce</b>	<b>\$58.5</b>	<b>\$24.8</b>

\*U.S. Census Bureau, Annual Retail Trade Survey, "Estimated Annual Gross Margin as a Percent of U.S. Retail Firms by Kind of Business"

**TABLE C-4**  
**U.S. Selected Services E-Commerce Revenue**  
**(\$ Billions)**

	<b>2012</b>	<b>2007</b>
<b>Total Selected Services Revenue</b>	\$366.3	\$124.1
<b>Less: Non-Internet Publishing</b>	(\$30.5)	(\$18.6)
<b>Less: Internet industries Telecommunications*</b>	(\$10.1)	(\$3.4)
<b>        Data Processing and Related*</b>	(\$10.3)	(\$3.5)
<b>        Computer Systems Design</b>	(\$9.5)	(\$4.6)
<b>NET SELECTED SERVICES REVENUE</b>	<b>\$305.8</b>	<b>\$94.0</b>

\*2007 values for E-Commerce Telecommunication and data processing and related were not available. Values are estimated as proportional to ratio of total selected industries for 2012/2007.

**Source:** U.S. Census Bureau, 2007 and 2012 Service Annual Survey.

revenues earned by the product's ultimate creators. For this reason, we value E-Commerce sales as consisting solely of the gross margins earned on the total E-Commerce sales in a given year. As shown in Table C-3, gross margins for non-store retailers average approximately 37-38% of retail. At those margins, E-Commerce retail sales in 2007 were about \$24.8 Billion, rising to \$58.5 Billion in 2012.

## 4.1 SELECTED SERVICES INDUSTRIES

In its E-Stats reports, the U.S. Census compiles sales figures for a number of E-Commerce classifications including E-Commerce retail sales as described above.<sup>35</sup> E-Commerce retail is one of two E-Stat categories that are components of the total B-to-C E-Commerce subsector. The other B-to-C classification recognized by the Census Bureau is entitled "Selected Services Industries." In 2007, E-Commerce revenues for the Selected Services Industries stood at \$124B.<sup>36</sup> By 2012, E-Commerce revenues for the same industries had risen to \$366.3B.<sup>37</sup>

For purposes of this analysis, the E-Commerce revenues cited above cannot be used without additional adjustments. The additional adjustments employed here are set out in Table C-4.

The U.S. Census Bureau provides reports that disaggregate the annual value of Selected Services E-Commerce revenues into the underlying industries that rely on these services. For example, in 2012, total E-Commerce revenues from Selected Services reached \$366.3B.<sup>38</sup> Of this amount, the Information sector was responsible for \$66.7B or 18.2%. However, the Information sector also includes an industry sub-sector entitled "Publishing industries (except Internet)." In this example, total Selected Services E-Commerce revenues must be reduced to remove non-Internet revenues from the U.S. publishing industries in total. As shown in Table C-4, in 2012, this adjustment reduced Selected Services E-Commerce revenues by \$30.5B.

Further adjustments were made to account for the possibility that some portion of reported E-Commerce Selected Services revenues may have already been counted elsewhere in this analysis. For example, in 2012, total Selected Services E-Commerce revenue included the following sub-sector revenues: Telecommunications = \$10.1B, Data processing and related industries = \$10.3B, and Computer System Design = \$9.5B. As shown in Table C-4, these industry revenues have been entirely removed from the overall E-Commerce calculations. These adjustments served to reduce total Selected Services E-Commerce revenue by \$30B in 2012. The total value of Selected Services E-Commerce revenues in 2012 (net of these adjustments) was \$305.8B. By comparison, the adjusted value of Selected Services E-Commerce revenue in 2007 was only \$94.0B. Taken together, these figures imply growth in these revenue categories by \$211.8B over the period 2007 through 2012.

## 4.2 INTERNET SECTOR RECEIPTS

At this point in the analysis, one can estimate total Internet Industry revenues as described in previous sections of this report. These industry totals are presented in Table C-5. They include revenues from both "flagged" Product Line Receipts and from B-to-C E-Commerce retail sales and services.

As shown in Table C-5, total Internet industry revenues increased from \$339.1B in 2007 to \$716.4B in 2012. These totals include revenues from the six NAICS industry Product Line reports and from retail and selected services E-Commerce revenues. In the next section of this report, these figures will be used as inputs to the RIMS II modeling system in order to derive Internet industry value-added, employment (both total and direct), and employee earnings (both total and direct).

<sup>35</sup> See U.S. Department of Commerce, Economic and Statistics Administration, U.S. Census Bureau, E-Stats, Reports for various years.

<sup>36</sup> U.S. Census Bureau, E-Stats, May 28, 2009, page 2.

<sup>37</sup> U.S. Census Bureau, U.S. Shipments, Sales, Revenues and E-Commerce, Value of Shipments, Sales or Revenues

<sup>38</sup> See U.S. Census, *U.S. Selected Services Revenue – Total and E-Commerce: 2012 and 2011*.

**TABLE C-5**  
**U.S. Revenue For Internet and Related Industries**  
**(\$ Billions)**

INDUSTRIES	NAICS	2012	2007
Data processing, hosting, and related services	518210	\$47.5	\$20.2
Wired Telecommunications carriers	5171	\$83.9	\$66.7
Wireless telecommunications carriers (except satellite)	5172	\$24.8	\$5.4
All Other Telecommunications	517919	\$10.1	\$6.3
Internet publishing and broadcasting and web search portals	51913	\$73.2	\$30.0
Computer systems design and related services	54151	\$112.6	\$91.5
<b>SUBTOTAL:</b>		<b>\$352.1</b>	<b>\$220.2</b>
Retail E-Commerce		\$58.5	\$24.8
Selected Services		\$305.8	\$94.0
<b>GRAND TOTAL:</b>		<b>\$716.4</b>	<b>\$339.1</b>

## 5.0 INPUT-OUTPUT MODELS

In 1973, Economist Wassily Leontief won the Nobel Prize “for the development of the input output method and for its application to important economic problems.”<sup>39</sup> Leontief’s work led directly to the creation of detailed input-output “models” that would make regional planning and budgeting far more effective and reliable than it had been in the past.

Input-Output models describe the “interconnectedness of the industries, households and government entities in an area....the output of an industry will appear as the input of other industries.”<sup>40</sup> Such models describe transactions between the region of interest and the rest of the world. “Regional” models typically consider the impact of an assumed change in Final Demand on the value added, employment, and employee earnings for a city, county, metropolitan statistical area or state.

Input-Output models are frequently used to estimate industry-specific “multipliers.” Multipliers are indexes that measure “the total effect or impact of an increase in demand on employment and income.”<sup>41</sup> Multipliers that are commonly used in regional analyses include output multipliers, value added multipliers, employment

<sup>39</sup> Statement on the Award of the Nobel Prize in Economics to Wassily Leontief, 1973.

<sup>40</sup> Economic Modeling Specialists Inc. (2006), *Practical Input-Output Modeling for Regional Development*.

<sup>41</sup> Id.



multipliers, and employee earnings multipliers. Final Demand multipliers for output frequently provide the underlying basis from which all other multipliers can be derived.

## 5.1 RIMS II

In the 1970's, the U.S. Bureau of Economic Analysis (BEA) developed a method for measuring regional multipliers for U.S. cities, counties, metropolitan statistical areas, and states. This method, known initially as RIMS, was subsequently overtaken by the development of RIMS II.<sup>42</sup> Researchers now make use of RIMS II by purchasing multipliers directly from the BEA. There are five multiplier types that are currently available from BEA. These five are: "Final Demand" multipliers for output, earnings, and employment, and "Direct Effect" multipliers for earnings and for employment.<sup>43</sup> These multipliers measure the economic impact of a change in Final Demand, in earnings, or in employment in a region's economy.

Typically, users of RIMS II are seeking to measure the expected increases in output, employment, and employee earnings that will result from a specified change in Final Demand in a particular region. However, in some RIMS II studies users employ RIMS II to measure an industry's total economic contribution to a given region. This type of "contribution" analysis may begin with an effort to determine the total value of an industry's output. The total output can then be applied against any of the four Final Demand multipliers in order to estimate an industry's overall economic activity.

In this type of analysis, both industry-specific and region-specific multipliers must be acquired from BEA. The BEA makes available certain RIMS II equivalent industries for which it will calculate multipliers in RIMS II. The BEA can provide multipliers for any industry on its list of 406 separate industry codes. In this study, the industry codes that were acquired from BEA include the following

NAICS industries: Telecommunications 517000; Internet and other information services 51A000; Computer systems design and related services 541511, 541512; and other computer-related services 54151A.

As regards regional considerations, BEA will provide multipliers up to the state level but not beyond. If one chose to use state-specific multipliers, the resulting values for output, value-added, employment, and earnings would likely be lower than the values produced in a hypothetical set of U.S. multipliers. In contrast to national multipliers, state-by state multipliers are inherently conservative. Such multipliers do not account for the additional output, value added, employment, and earnings that would be produced in adjoining states. For these reasons, state-specific multipliers are used in the RIMS II calculations that are described in the remainder of this report.

## 5.2 VARIANCE AMONG MULTIPLIERS

As noted above, the values developed in this report are based in part on RIMS II multipliers that are state-specific. Because these multipliers are state-specific, the value of each multiplier varies even within the same product. The RIMS II multipliers for output, earnings, employment, and value added by state were acquired from BEA as part of this project. Multipliers were also obtained for other NAICS industries included NAICS 541511 – custom computer programming services.<sup>44</sup>

The state-by-state lists of multipliers provided by BEA for NAICS 541511 shows large variances from one state to the next. For example, the Final Demand Output multiplier for California was 2.4207. By contrast, the Final Demand Output multiplier was only 1.8309 for Delaware, 1.7365 for Iowa, and 1.729 for Nebraska. Similar lists of other state multipliers for NAICS 541511 also vary dramatically across states. The fact that state multiplier values

<sup>42</sup> See Daniel H. Garrnik, "Differential Regional Multiplier Models," *Journal of Regional Science*, February 10, 1970 and Ronald L. Drake, "A Short Cut to Estimates of Regional Input-Output Multipliers," *International Regional Science Review* 1, (Fall 1976).

<sup>43</sup> See "RIMS II Multipliers for Output, Earnings and Employment," page 3.

<sup>44</sup> See Series 2002 U.S. Benchmark I-O data and 2010 Regional Data, *Table 3.5 Total Multipliers*, Industry 541512. Computer systems design services (Type II).



differ across states should come as no surprise. States are themselves quite diverse when measured by geographic size, population, climate, education, income, and myriad other social and cultural 5.3 Weighted Multipliers by State.

## 5.3 WEIGHTED MULTIPLIERS BY STATE

In Appendix Two, as noted above, industry employment data was used to determine, by industry, the lists of states needed to reach cumulative state employment at or above 60 percent of the total workers employed in that industry nationally. In some cases, such as NAICS 51913, this process required only four states.<sup>45</sup> In other instances (such as NAICS 51821) no fewer than 12 states were needed to meet the U.S. target value.<sup>46</sup> Nevertheless, with these data in hand, it became possible to determine state-by-state weightings for all of the NAICS industries considered in this study.

For each NAICS industry, the same states that were previously identified in Appendix Two, charts 1 through 6 are used again in the multiplier averaging process. As shown in Appendix Two, charts 7 through 12, state-by-state multipliers for each NAICS industry can be determined for each of four types of Final Demand multipliers in order to measure output, value added, employment, and earnings.

## 5.4 MULTIPLIERS AND CONTRIBUTIONS

The analyses used to determine the actual average industry contributions presented in this study are provided in Tables D-1 through D-12. The data in Tables D-1 through D-6 provides contributions for six NAICS industries during 2012.

The following industries are analyzed in Tables D-1 through D-6: NAICS 51821 – Data processing and related, NAICS 5171 Wired Telecommunications, NAICS 5172 Wireless telecommunications, NAICS 717919 All Other Telecommunications, NAICS 51913 Internet publishing and Web Search Portals, and NAICS 54151 Computer System Design and related services. For each industry, the Tables list the states that collectively employ 60% of the total U.S. employment in each industry. The Tables also provide the weighting factors used for each state such that the total for each industry will reach the 60% threshold.

The state weightings described above are then combined to form national weighting factors for each industry.<sup>47</sup> For example, in Table D-1, weighting factors and RIMS II multipliers are shown for NAICS 51821 in 12 states. Table D-1 also lists state-by-state contributions. As shown in the top level box in Table D-1, these state-by-state values are combined to produce “national” contribution values for each industry. In Table D-1, these contribution values include: Gross output, Employee earnings, Employment, and Value added.

As shown in Table D-1, the contribution values estimated in 2012 for NAICS 51821 are: Gross output = \$93,434 million, Employee earnings = \$20,163 million, Employment = 424,330, and Value added = \$53,209 million. The data in Table D-1 also includes estimates of Direct employment (122,470 million) and Direct employee earnings (\$7,983 million).

The data reported in Tables D-7 through D-12 show industry contributions for the same six NAICS industries as reported in Tables D-1 through D-6. In the latter tables, however, the data reflect industry contributions made in 2007.

<sup>45</sup> See Appendix Two, chart 5.

<sup>46</sup> See Appendix Two, chart 1.

<sup>47</sup> As noted earlier in this report, the U.S. BEA no longer provides true national multipliers in RIMS II. The RIMS II values used here are state multipliers that have been weighted by state employment levels for each industry under study. This weighting process produces average multipliers that are conservatively lower than one would expect using true national multipliers.

**TABLE D-1**  
**NAICS 51821 DATA PROCESSING AND RELATED SERVICES (\$ Billions)**

**Total Receipts (2012) (\$1,000,000): \$47,481**

Texas 18.9%			California 13.3%		Florida 11.1%		New York 9.5%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.0448	\$97,088	2.0596	\$97,791	1.8698	\$88,779	1.8268	\$86,737
Earnings	0.4602	\$21,851	0.4700	\$22,316	0.4192	\$19,904	0.3600	\$17,093
Employment	9.7644	463,619	9.1453	434,224	10.0814	478,670	6.5824	312,536
Value-Added	1.1604	\$55,096	1.1743	\$55,756	1.0779	\$51,179	1.0475	\$49,736
North Carolina 7.1%			Missouri 6.8%		Virginia 6.5%		Pennsylvania 5.9%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.8749	\$89,021	1.8654	\$88,570	1.8599	\$88,309	1.9163	\$90,987
Earnings	0.4075	\$19,348	0.3521	\$16,718	0.3660	\$17,378	0.4037	\$19,168
Employment	9.5834	455,025	7.7557	368,245	7.4205	352,329	8.3426	396,111
Value-Added	1.0606	\$50,358	1.0553	\$50,106	1.0597	\$50,315	1.0824	\$51,393
Illinois 5.5%			Wisconsin 5.3%		Colorado 5.1%		New Jersey 5.0%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.9806	\$94,040	1.6540	\$78,533	2.0158	\$95,711	1.9549	\$92,820
Earnings	0.4380	\$20,796	0.3532	\$16,770	0.4582	\$21,756	0.4076	\$19,353
Employment	8.8497	420,188	8.5948	408,085	9.3497	443,929	7.7622	368,553
Value-Added	1.1239	\$53,363	0.9326	\$44,280	1.1535	\$54,769	1.1188	\$53,121

Weighted U.S. Estimated Total		Direct Employment			Direct Employee Earnings		
Final Demand	Estimated U.S. Total	Final Demand Total Employment	Direct Effect Multiplier	Direct Employment	Final Demand Total Earnings	Direct Effect Multiplier	Direct Employee Earnings
Gross Output	\$93,434						
Employee Earnings	\$20,163						
Employment	424,330	424,330	3.46	122,470	20,163	2.53	7,983
Value-Added	\$53,209						

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**TABLE D-2**  
**NAICS 5171 WIRED TELECOMMUNICATIONS CARRIERS**

**Total Receipts (2012) (\$1,000,000): \$83,937**

Texas 15.2%			Florida 11.7%		New York 11.2%		California 10.3%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.0448	\$171,634	1.8698	\$156,945	1.8268	\$153,336	2.0596	\$172,877
Earnings	0.4602	\$38,628	0.4192	\$35,186	0.3600	\$30,217	0.4700	\$39,450
Employment	9.7644	819,595	10.0814	846,203	6.5824	552,507	9.1453	767,629
Value-Added	1.1604	\$97,401	1.0779	\$90,476	1.0475	\$87,924	1.1743	\$98,567
Georgia 8.0%			New Jersey 7.8%		Pennsylvania 7.0%		Illinois 6.8%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.9922	\$167,219	1.9549	\$164,089	1.9163	\$160,849	1.9806	\$166,246
Earnings	0.4428	\$37,167	0.4076	\$34,213	0.4037	\$33,885	0.4380	\$36,764
Employment	9.2602	777,274	7.7622	651,536	8.3426	700,253	8.8497	742,818
Value-Added	1.1389	\$95,596	1.1188	\$93,909	1.0824	\$90,853	1.1239	\$94,337
Virginia 6.5%			Colorado 5.7%		Ohio 5.5%		North Carolina 4.7%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.8599	\$156,115	2.0158	\$169,200	1.8399	\$154,436	1.8749	\$157,374
Earnings	0.3660	\$30,721	0.4582	\$38,460	0.3921	\$32,912	0.4075	\$34,204
Employment	7.4205	622,855	9.3497	784,786	8.9970	755,182	9.5834	804,402
Value-Added	1.0597	\$88,948	1.1535	\$96,821	1.0352	\$86,892	1.0606	\$89,024

Weighted U.S. Estimated Total		Direct Employment			Direct Employee Earnings		
Final Demand	Estimated U.S. Total	Final Demand Total Employment	Direct Effect Multiplier	Direct Employment	Final Demand Total Earnings	Direct Effect Multiplier	Direct Employee Earnings
Gross Output	\$163,239						
Employee Earnings	\$35,440						
Employment	739,281	739,281	3.52	209,756	35,440	2.54	13,965
Value-Added	\$93,050						

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**TABLE D-3**  
**NAICS 5172 WIRELESS TELECOMMUNICATIONS CARRIERS:**

**Total Receipts (2012) (\$1,000,000): \$24,794**

Texas 21.7%			California 18.5%		Georgia 12.0%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.0448	\$50,699	2.0596	\$51,066	1.9922	\$49,395
Earnings	0.4602	\$11,410	0.4700	\$11,653	0.4428	\$10,979
Employment	9.7644	242,099	9.1453	226,749	9.2602	229,598
Value-Added	1.1604	\$28,771	1.1743	\$29,116	1.1389	\$28,238
Washington 12.0%			Florida 9.6%		Illinois 8.8%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.8207	\$45,142	1.8698	\$46,360	1.9806	\$49,107
Earnings	0.3880	\$9,620	0.4192	\$10,394	0.4380	\$10,860
Employment	7.8292	194,117	10.0814	249,958	8.8497	219,420
Value-Added	1.0352	\$25,667	1.0779	\$26,725	1.1239	\$27,866
Missouri 8.1%			North Carolina 4.9%		New Mexico 4.3%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.8654	\$46,251	1.8749	\$46,486	1.6608	\$41,178
Earnings	0.3521	\$8,730	0.4075	\$10,104	0.3503	\$8,685
Employment	7.7557	192,295	9.5834	237,611	8.8488	219,397
Value-Added	1.0553	\$26,165	1.0606	\$26,297	0.9421	\$23,358

Weighted U.S. Estimated Total		Direct Employment			Direct Employee Earnings		
Final Demand	Estimated U.S. Total	Final Demand Total Employment	Direct Effect Multiplier	Direct Employment	Final Demand Total Earnings	Direct Effect Multiplier	Direct Employee Earnings
Gross Output	\$48,406						
Employee Earnings	\$10,643						
Employment	225,505	225,505	3.53	63,796	10,643	2.55	4,179
Value-Added	\$27,555						

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**TABLE D-4**  
**NAICS 517919 ALL OTHER TELECOMMUNICATIONS**

**Total Receipts (2012) (\$1,000,000): \$10,116**

California 25.5%			Virginia 15.6%		Georgia 15.1%		New York 15.0%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.0596	\$20,834	1.8599	\$18,814	1.9922	\$20,153	1.8268	\$18,479
Earnings	0.4700	\$4,754	0.3660	\$3,702	0.4428	\$4,479	0.3600	\$3,642
Employment	9.1453	92,511	7.4205	75,064	9.2602	93,674	6.5824	66,586
Value-Added	1.1743	\$11,879	1.0597	\$10,720	1.1389	\$11,521	1.0475	\$10,596
Texas 13.5%			Ohio 8.1%		New Jersey 7.2%			
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total		
Output	2.0448	\$20,685	1.8399	\$18,612	1.9549	\$19,775		
Earnings	0.4602	\$4,655	0.3921	\$3,966	0.4076	\$4,123		
Employment	9.7644	98,774	8.9970	91,011	7.7622	78,520		
Value-Added	1.1604	\$11,738	1.0352	\$10,472	1.1188	\$11,317		
Weighted U.S. Estimated Total		Direct Employment			Direct Employee Earnings			
Final Demand	Estimated U.S. Total	Final Demand Total Employment		Direct Effect Multiplier	Direct Employment	Final Demand Total Earnings	Direct Effect Multiplier	Direct Employee Earnings
Gross Output	\$19,787							
Employee Earnings	\$4,259							
Employment	85,797	85,797		3.62	23,730	4,259	2.56	1,664
Value-Added	\$11,278							

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**TABLE D-5**  
**NAICS 51913 INTERNET PUBLISHING AND WEB SEARCH PORTALS**

**Total Receipts (2012) (\$1,000,000): \$73,230**

	<b>California 60.1%</b>		<b>New York 20.5%</b>		<b>Massachusetts 10.1%</b>		<b>Illinois 9.4%</b>	
<b>Final Demand</b>	<b>Multiplier</b>	<b>Estimated U.S. Total</b>	<b>Multiplier</b>	<b>Estimated U.S. Total</b>	<b>Multiplier</b>	<b>Estimated U.S. Total</b>	<b>Multiplier</b>	<b>Estimated U.S. Total</b>
<i>Output</i>	2.4207	\$177,268	2.0679	\$151,433	2.2377	\$163,867	2.4422	\$178,843
<i>Earnings</i>	0.9110	\$66,713	0.6823	\$49,965	0.8018	\$58,716	0.8905	\$65,212
<i>Employment</i>	16.2008	1,186,389	11.5632	846,776	13.8018	1,010,709	16.2705	1,191,493
<i>Value-Added</i>	1.4278	\$104,558	1.2314	\$90,176	1.3320	\$97,543	1.4338	\$104,998

<b>Weighted U.S. Estimated Total</b>		<b>Direct Employment</b>			<b>Direct Employee Earnings</b>		
<b>Final Demand</b>	<b>Estimated U.S. Total</b>	<b>Final Demand Total Employment</b>	<b>Direct Effect Multiplier</b>	<b>Direct Employment</b>	<b>Final Demand Total Earnings</b>	<b>Direct Effect Multiplier</b>	<b>Direct Employee Earnings</b>
Gross Output	\$170,779						
Employee Earnings	\$62,339						
Employment	1,099,665	1,099,665	2.85	386,427	62,339	1.86	33,537
Value-Added	\$100,949						

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**Note:** Monetary values are in millions of U.S. dollars.

**TABLE D-6**  
**NAICS 54151 COMPUTER SYSTEMS DESIGN AND RELATED SERVICES**

**Total Receipts (2012) (\$1,000,000): \$112,569**

California 23.3%			Virginia 15.1%		Texas 12.4%		New York 9.6%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.4207	\$272,496	2.1460	\$241,574	2.4622	\$277,168	2.0679	\$232,782
Earnings	0.9110	\$102,551	0.7331	\$82,525	0.9154	\$103,046	0.6823	\$76,806
Employment	16.2008	1,823,712	13.7373	1,546,398	17.7848	2,002,022	11.5632	1,301,661
Value-Added	1.4278	\$160,726	1.2722	\$143,211	1.4465	\$162,831	1.2314	\$138,618
Maryland 6.8%			Florida 6.8%		Illinois 6.8%		New Jersey 6.7%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.1354	\$240,380	2.2721	\$255,769	2.4422	\$274,917	2.3420	\$263,637
Earnings	0.7411	\$83,425	0.8712	\$98,070	0.8905	\$100,243	0.8120	\$91,406
Employment	13.3165	1,499,029	18.2302	2,052,160	16.2705	1,831,558	14.3405	1,614,300
Value-Added	1.2757	\$143,605	1.3652	\$153,680	1.4338	\$161,402	1.3915	\$156,640
Massachusetts 6.5%			Pennsylvania 6.0%					
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total				
Output	2.2377	\$251,896	2.3082	\$259,832				
Earnings	0.8018	\$90,258	0.8213	\$92,453				
Employment	13.8018	1,553,659	15.9897	1,799,949				
Value-Added	1.3320	\$149,942	1.3492	\$151,878				
Weighted U.S. Estimated Total		Direct Employment			Direct Employee Earnings			
Final Demand	Estimated U.S. Total	Final Demand Total Employment		Direct Effect Multiplier	Direct Employment	Final Demand Total Earnings	Direct Effect Multiplier	Direct Employee Earnings
Gross Output	\$261,013							
Employee Earnings	\$94,006							
Employment	1,730,401	1,730,401		2.86	605,917	94,006	1.84	50,954
Value-Added	\$154,444							

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**Note:** Monetary values are in millions of U.S. dollars.

**TABLE D-7**  
**NAICS 51821 DATA PROCESSING AND RELATED SERVICES**

**Total Receipts (2007) (\$1,000,000): \$20,232**

Texas 18.9%			California 13.3%		Florida 11.1%		New York 9.5%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.0448	\$41,371	2.0596	\$41,671	1.8698	\$37,831	1.8268	\$36,961
Earnings	0.4602	\$9,311	0.4700	\$9,509	0.4192	\$8,481	0.3600	\$7,284
Employment	9.7644	197,558	9.1453	185,032	10.0814	203,971	6.5824	133,178
Value-Added	1.1604	\$23,478	1.1743	\$23,759	1.0779	\$21,809	1.0475	\$21,193
North Carolina 7.1%			Missouri 6.8%		Wisconsin 5.3%		Pennsylvania 5.9%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.8749	\$37,934	1.8654	\$37,742	1.8599	\$37,630	1.9163	\$38,771
Earnings	0.4075	\$8,245	0.3521	\$7,124	0.3660	\$7,405	0.4037	\$8,168
Employment	9.5834	193,896	7.7557	156,917	7.4205	150,135	8.3426	168,791
Value-Added	1.0606	\$21,459	1.0553	\$21,351	1.0597	\$21,440	1.0824	\$21,900
Illinois 5.5%			Wisconsin 5.3%		Colorado 5.1%		New Jersey 5.0%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.9806	\$40,072	1.6540	\$33,464	2.0158	\$40,785	1.9549	\$39,552
Earnings	0.4380	\$8,862	0.3532	\$7,146	0.4582	\$9,271	0.4076	\$8,247
Employment	8.8497	179,051	8.5948	173,894	9.3497	189,167	7.7622	157,048
Value-Added	1.1239	\$22,739	0.9326	\$18,869	1.1535	\$23,338	1.1188	\$22,636

Weighted U.S. Estimated Total		Direct Employment			Direct Employee Earnings		
Final Demand	Estimated U.S. Total	Final Demand Total Employment	Direct Effect Multiplier	Direct Employment	Final Demand Total Earnings	Direct Effect Multiplier	Direct Employee Earnings
Gross Output	\$39,814						
Employee Earnings	\$8,592						
Employment	180,816	180,816	3.46	52,187	8,592	2.53	3,402
Value-Added	\$22,674						

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**Note:** Monetary values are in millions of U.S. dollars.



**TABLE D-8**  
**NAICS 5171 WIRED TELECOMMUNICATIONS CARRIERS**

**Total Receipts (2007) (\$1,000,000): \$66,744**

Texas 15.2%			Florida 11.7%		New York 11.2%		California 10.3%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.0448	\$136,477	1.8698	\$124,797	1.8268	\$121,927	2.0596	\$137,465
Earnings	0.4602	\$30,715	0.4192	\$27,979	0.3600	\$24,028	0.4700	\$31,370
Employment	9.7644	651,712	10.0814	672,869	6.5824	439,333	9.1453	610,391
Value-Added	1.1604	\$77,449	1.0779	\$71,943	1.0475	\$69,914	1.1743	\$78,377
Georgia 8.0%			New Jersey 7.8%		Pennsylvania 7.0%		Illinois 6.3%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.9922	\$132,967	1.9549	\$130,477	1.9163	\$127,901	1.9806	\$132,192
Earnings	0.4428	\$29,554	0.4076	\$27,205	0.4037	\$26,944	0.4380	\$29,234
Employment	9.2602	618,059	7.7622	518,077	8.3426	556,815	8.8497	590,661
Value-Added	1.1389	\$76,014	1.1188	\$74,673	1.0824	\$72,243	1.1239	\$75,013
Virginia 6.0%			Colorado 5.7%		Ohio 5.5%		North Carolina 4.7%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.8599	\$124,136	2.0158	\$134,542	1.8399	\$122,802	1.8749	\$125,138
Earnings	0.3660	\$24,428	0.4582	\$30,582	0.3921	\$26,170	0.4075	\$27,198
Employment	7.4205	495,271	9.3497	624,033	8.9970	600,493	9.5834	639,631
Value-Added	1.0597	\$70,728	1.1535	\$76,989	1.0352	\$69,093	1.0606	\$70,788

Weighted U.S. Estimated Total		Direct Employment			Direct Employee Earnings		
Final Demand	Estimated U.S. Total	Final Demand Total Employment	Direct Effect Multiplier	Direct Employment	Final Demand Total Earnings	Direct Effect Multiplier	Direct Employee Earnings
Gross Output	\$129,802						
Employee Earnings	\$28,181						
Employment	587,849	587,849	3.52	166,791	28,181	2.54	11,105
Value-Added	\$73,990						

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**Note:** Monetary values are in millions of U.S. dollars.

**TABLE D-9**  
**NAICS 5172 WIRELESS TELECOMMUNICATIONS CARRIERS**

**Total Receipts (2007) (\$1,000,000): \$5,406**

Texas 21.7%						
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.0448	\$136,477	1.8698	\$124,797	1.8268	\$121,927
Earnings	0.4602	\$30,715	0.4192	\$27,979	0.3600	\$24,028
Employment	9.7644	651,712	10.0814	672,869	6.5824	439,333
Value-Added	1.1604	\$77,449	1.0779	\$71,943	1.0475	\$69,914
Washington 12.0%						
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.0596	\$137,465	1.9922	\$132,967	1.9549	\$130,477
Earnings	0.4700	\$31,370	0.4428	\$29,554	0.4076	\$27,205
Employment	9.1453	610,391	9.2602	618,059	7.7622	518,077
Value-Added	1.1743	\$78,377	1.1389	\$76,014	1.1188	\$74,673
Florida 9.6%						
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.9163	\$127,901	1.9806	\$132,192	1.6608	\$8,978
Earnings	0.4037	\$26,944	0.4380	\$29,234	0.3503	\$1,894
Employment	8.3426	556,815	8.8497	590,661	8.8488	47,833
Value-Added	1.0824	\$72,243	1.1239	\$75,013	0.9421	\$5,093
Illinois 8.8%						
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.9163	\$127,901	1.9806	\$132,192	1.6608	\$8,978
Earnings	0.4037	\$26,944	0.4380	\$29,234	0.3503	\$1,894
Employment	8.3426	556,815	8.8497	590,661	8.8488	47,833
Value-Added	1.0824	\$72,243	1.1239	\$75,013	0.9421	\$5,093
Missouri 8.1%						
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.9163	\$127,901	1.9806	\$132,192	1.6608	\$8,978
Earnings	0.4037	\$26,944	0.4380	\$29,234	0.3503	\$1,894
Employment	8.3426	556,815	8.8497	590,661	8.8488	47,833
Value-Added	1.0824	\$72,243	1.1239	\$75,013	0.9421	\$5,093
North Carolina 4.9%						
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.9163	\$127,901	1.9806	\$132,192	1.6608	\$8,978
Earnings	0.4037	\$26,944	0.4380	\$29,234	0.3503	\$1,894
Employment	8.3426	556,815	8.8497	590,661	8.8488	47,833
Value-Added	1.0824	\$72,243	1.1239	\$75,013	0.9421	\$5,093
New Mexico 4.3%						
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	1.9163	\$127,901	1.9806	\$132,192	1.6608	\$8,978
Earnings	0.4037	\$26,944	0.4380	\$29,234	0.3503	\$1,894
Employment	8.3426	556,815	8.8497	590,661	8.8488	47,833
Value-Added	1.0824	\$72,243	1.1239	\$75,013	0.9421	\$5,093

Weighted U.S. Estimated Total		Direct Employment			Direct Employee Earnings		
Final Demand	Estimated U.S. Total	Final Demand Total Employment	Direct Effect Multiplier	Direct Employment	Final Demand Total Earnings	Direct Effect Multiplier	Direct Employee Earnings
Gross Output	\$10,554						
Employee Earnings	\$2,320						
Employment	49,165	49,165	3.53	13,909	2,320	2.55	911
Value-Added	\$6,007						

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**Note:** Monetary values are in millions of U.S. dollars.

**TABLE D-10**  
**NAICS 517919 ALL OTHER TELECOMMUNICATIONS**

**Total Receipts (2007) (\$1,000,000): \$6,301**

California 25.5%			Virginia 15.6%		Georgia 15.1%		New York 15.0%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.0596	\$12,978	1.8599	\$11,719	1.9922	\$12,553	1.8268	\$11,511
Earnings	0.4700	\$2,962	0.3660	\$2,306	0.4428	\$2,790	0.3600	\$2,268
Employment	9.1453	57,626	7.4205	46,757	9.2602	58,350	6.5824	41,477
Value-Added	1.1743	\$7,399	1.0597	\$6,677	1.1389	\$7,176	1.0475	\$6,600
Texas 13.5%			Ohio 8.1%		New Jersey 7.2%			
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total		
Output	2.0448	\$12,885	1.8399	\$11,593	1.9549	\$12,318		
Earnings	0.4602	\$2,900	0.3921	\$2,471	0.4076	\$2,568		
Employment	9.7644	61,527	8.9970	56,691	7.7622	48,911		
Value-Added	1.1604	\$7,312	1.0352	\$6,523	1.1188	\$7,050		

Weighted U.S. Estimated Total		Direct Employment			Direct Employee Earnings		
Final Demand	Estimated U.S. Total	Final Demand Total Employment	Direct Effect Multiplier	Direct Employment	Final Demand Total Earnings	Direct Effect Multiplier	Direct Employee Earnings
Gross Output	\$12,325						
Employee Earnings	\$2,653						
Employment	53,443	53,443	3.62	14,781	2,653	2.56	1,037
Value-Added	\$7,025						

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**Note:** Monetary values are in millions of U.S. dollars.

**TABLE D-11**  
**NAICS 51913 INTERNET PUBLISHING AND WEB SEARCH PORTALS**

**Total Receipts (2007) (\$1,000,000): \$30,029**

	California 60.1%		New York 20.5%		Massachusetts 10.1%		Illinois 9.4%	
<b>Final Demand</b>	<b>Multiplier</b>	<b>Estimated U.S. Total</b>	<b>Multiplier</b>	<b>Estimated U.S. Total</b>	<b>Multiplier</b>	<b>Estimated U.S. Total</b>	<b>Multiplier</b>	<b>Estimated U.S. Total</b>
<i>Output</i>	2.4207	\$72,692	2.0679	\$62,098	2.2377	\$67,197	2.4422	\$73,338
<i>Earnings</i>	0.9110	\$27,357	0.6823	\$20,489	0.8018	\$24,078	0.8905	\$26,741
<i>Employment</i>	16.2008	486,499	11.5632	347,235	13.8018	414,459	16.2705	488,592
<i>Value-Added</i>	1.4278	\$42,876	1.2314	\$36,978	1.3320	\$39,999	1.4338	\$43,056

Weighted U.S. Estimated Total		Direct Employment			Direct Employee Earnings		
<b>Final Demand</b>	<b>Estimated U.S. Total</b>	<b>Final Demand Total Employment</b>	<b>Direct Effect Multiplier</b>	<b>Direct Employment</b>	<b>Final Demand Total Earnings</b>	<b>Direct Effect Multiplier</b>	<b>Direct Employee Earnings</b>
Gross Output	\$70,031						
Employee Earnings	\$25,563						
Employment	450,937	450,937	2.85	158,461	25,563	1.86	13,752
Value-Added	\$41,396						

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**Note:** Monetary values are in millions of U.S. dollars.

**TABLE D-12**  
**NAICS 54151 COMPUTER SYSTEMS DESIGN AND RELATED SERVICES**

**Total Receipts (2007) (\$1,000,000): \$91,533**

California 23.3%			Virginia 15.1%		Texas 12.4%		New York 9.6%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.4207	\$221,573	2.1460	\$196,429	2.4622	\$225,371	2.0679	\$189,280
Earnings	0.9110	\$83,386	0.7331	\$67,103	0.9154	\$83,789	0.6823	\$62,453
Employment	16.2008	1,482,900	13.7373	1,257,410	17.7848	1,627,888	11.5632	1,058,409
Value-Added	1.4278	\$130,690	1.2722	\$116,448	1.4465	\$132,402	1.2314	\$112,713
Maryland 6.8%			Florida 6.8%		Illinois 6.8%		New Jersey 6.7%	
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total
Output	2.1354	\$195,459	2.2721	\$207,971	2.4422	\$223,541	2.3420	\$214,369
Earnings	0.7411	\$67,835	0.8712	\$79,743	0.8905	\$81,510	0.8120	\$74,324
Employment	13.3165	1,218,893	18.2302	1,668,656	16.2705	1,489,280	14.3405	1,312,622
Value-Added	1.2757	\$116,768	1.3652	\$124,960	1.4338	\$131,239	1.3915	\$127,368
Massachusetts 6.5%			Pennsylvania 6.0%					
Final Demand	Multiplier	Estimated U.S. Total	Multiplier	Estimated U.S. Total				
Output	2.2377	\$204,822	2.3082	\$211,275				
Earnings	0.8018	\$73,391	0.8213	\$75,176				
Employment	13.8018	1,263,314	15.9897	1,463,578				
Value-Added	1.3320	\$121,921	1.3492	\$123,496				
Weighted U.S. Estimated Total		Direct Employment			Direct Employee Earnings			
Final Demand	Estimated U.S. Total	Final Demand Total Employment		Direct Effect Multiplier	Direct Employment	Final Demand Total Earnings	Direct Effect Multiplier	Direct Employee Earnings
Gross Output	\$212,235							
Employee Earnings	\$76,438							
Employment	1,407,027	1,407,027		2.86	492,684	76,438	1.84	41,432
Value-Added	\$125,582							

**Source:** U.S. Bureau of Economic Analysis, RIMS II Type II Multipliers; U.S. Bureau of Labor Statistics, 2012 Quarterly Census of Employment and Wages, <https://www.census.gov/services/>

**Note:** Monetary values are in millions of U.S. dollars.

# 6.0 COMBINING THE INTERNET INDUSTRIES

In this analysis, the economic contributions of the Internet industries have been estimated using government statistics, Product Line Receipts, and industry multipliers from the RIMS II input-output model. Using these sources, it was possible to measure economic contributions separately for each distinct Internet industry. Up to this point however, there have been no estimates of the economic contributions generated by the combined U.S. Internet industries as a whole. In this section of the report, a variety of combined Internet industry contributions will be presented.

## 6.1 VALUE ADDED (2007 – 2012)

As noted in footnote nine of this report, value added measures the economic contributions that flow from an industry's use of labor, capital, and government resources. Value added is particularly well known in that the sum of value added by all industries in the U.S. economy is equal to U.S. GDP.

In Table E-1 and E-2, the values added to the U.S. economy by the combined Internet industries are presented for the years 2007 and 2012.

In 2012, (Table E-2) the value added by these combined industries is shown as \$896.2B. This total reflects the sum of value added by the six NAICS industries plus the value added by the retail E-Commerce industries and the selected service industries. The tables also provide implied multipliers for the Internet industries under study. The tables demonstrate how industry multipliers from the RIMS II model provided the means by which industry receipts were converted to industry value added.

**TABLE E-1  
VALUE ADDED BY NAICS 2007  
(\$ BILLIONS)**

NAICS	RECEIPTS	VALUE-ADDED	IMPLIED MULTIPLIER
518210	\$20.2	\$22.7	1.1207
5171	\$66.7	\$74.0	1.1086
5172	\$5.4	\$6.0	1.1113
517919	\$6.3	\$7.0	1.1149
51913	\$30.0	\$41.4	1.3785
54151	\$91.5	\$125.6	1.3720
<b>SUBTOTAL</b>	<b>\$220.2</b>	<b>\$276.7</b>	<b>1.2562</b>
<b>Apply to Retail E-Commerce:</b>			<b>\$31.2</b>
\$24.8B x 1.2562 =			
<b>Apply to Selected Series:</b>			<b>\$118.1</b>
\$94B x 1.2562 =			
<b>GRAND TOTAL</b>		<b>\$425.91</b>	

## 6.2 VALUE NOT FULLY CAPTURED IN GDP

The Internet industries that are analyzed in the report generate a variety of activities that contribute to U.S. GDP. These activities include the provisioning of Internet backbone facilities, data storage, Internet access, Internet telephony, cloud computing, search activities, social media, Internet advertising, and E-Commerce. On a combined basis, these activities generate U.S. value added in excess of \$900B annually. But even this total underrates the true value of the Internet industries, particularly to U.S. households and consumers.

In 2011, Deloitte Access Economics published a study of digital technology in Australia. This study, "The Connected Continent," was updated in 2015 in a second report entitled "The Connected Continent II." Among other issues, this study focused on Internet benefits in Australia. These reports also provided insights for understanding Internet benefits in the U.S., as well.

In the first Deloitte study, the authors identified four Internet activities whose benefits to Australian households likely had not been fully captured in the main sections of the Deloitte report. These activities were search, variety, convenience, and recreation. In each activity, Deloitte considered the extent to which the Internet has increased choice or improved efficiency in the provision of new services to households. A key point raised by Deloitte was the following: "These benefits are not fully reflected in GDP because the price households pay for access is substantially smaller than the benefits that they receive."<sup>48</sup> In other words, the Deloitte researchers determined that the consumer surplus flowing to Internet households from the capabilities and features of the Internet significantly exceeded the payments made by consumers to purchase Internet access.

In its second report, Deloitte again provided estimates of the consumer value of search, variety, convenience, and recreation. The authors stated that "The estimated value to the Australian economy that accrues to households from accessing the Internet is \$75 Billion in 2013-2014."<sup>49</sup>

**TABLE E-2**  
**VALUE ADDED BY NAICS 2012 (\$ BILLIONS)**

NAICS	RECEIPTS	VALUE-ADDED	IMPLIED MULTIPLIER
518210	\$47.5	\$53.2	1.1207
5171	\$83.9	\$93.1	1.1086
5172	\$24.8	\$27.6	1.1113
517919	\$10.1	\$11.3	1.1149
51913	\$73.2	\$100.9	1.3785
54151	\$112.6	\$154.4	1.3720
<b>SUBTOTAL</b>	<b>\$352.1</b>	<b>\$440.5</b>	<b>1.2509</b>
<b>Apply to Retail E-Commerce:</b>			
\$58.5B x 1.2509 =		<b>\$73.2</b>	
<b>Apply to Selected Series:</b>			
\$305.8B x 1.2509 =		<b>\$382.5</b>	
<b>GRAND TOTAL</b>		<b>\$896.20</b>	

## 6.3 EMPLOYMENT (2007-2012)

Employment data for the combined Internet industries in 2007 is provided in Tables E-3 and E-4. In Table E-3, the number of workers directly employed by the Internet industries in 2007 is reported as 1,383,633. For the same year, total Internet industry employment (direct plus indirect employment) is shown in Table E-4 as 4,201,386 workers.

Employment data for the Internet industries in 2012 is reported at Tables E-5 and E-6. Direct Internet industry employment in 2012 is reported as 2,873,009 workers. These figures suggest that in the five year period 2007 through 2012, direct employment more than doubled. In the same year, total Internet industry employment rose to 8,758,783, an increase of more than 4.5 million workers since 2007.

<sup>48</sup> See Page 24 of "The Connected Continent"

<sup>49</sup> See Page 35 of "The Connected Continent II"

**TABLE E-3  
DIRECT EMPLOYMENT BY NAICS 2007 (\$ BILLIONS)**

NAICS	RECEIPTS	DIRECT EMPLOYMENT	IMPLIED MULTIPLIER
518210	\$20.2	52,187	2.5794
5171	\$66.7	166,791	2.4990
5172	\$5.4	13,909	2.5730
517919	\$6.3	14,781	2.3458
51913	\$30.0	158,461	5.2769
54151	\$91.5	492,684	5.3826
<b>SUBTOTAL</b>	<b>\$220.2</b>	<b>898,813</b>	<b>4.0810</b>
Apply to Retail E-Commerce: \$24.8B x 4.0810 =		<b>101,208</b>	
Apply to Selected Series: \$94B x 4.0810 =		<b>383,612</b>	
<b>GRAND TOTAL</b>		<b>1,383,633</b>	

**TABLE E-4  
TOTAL EMPLOYMENT BY NAICS 2007 (\$ BILLIONS)**

NAICS	RECEIPTS	DIRECT EMPLOYMENT	IMPLIED MULTIPLIER
518210	\$20.2	180,816	8.9369
5171	\$66.7	587,849	8.8076
5172	\$5.4	49,165	9.0951
517919	\$6.3	53,443	8.4815
51913	\$30.0	450,937	15.0165
54151	\$91.5	1,407,027	15.3719
<b>SUBTOTAL</b>	<b>\$220.2</b>	<b>2,729,236</b>	<b>12.3918</b>
Apply to Retail E-Commerce: \$24.8B x 12.3918 =		<b>307,318</b>	
Apply to Selected Series: \$94B x 12.3918 =		<b>1,164,833</b>	
<b>GRAND TOTAL</b>		<b>4,201,386</b>	



**TABLE E-5  
DIRECT EMPLOYMENT BY NAICS 2012 (\$ BILLIONS)**

NAICS	RECEIPTS	DIRECT EMPLOYMENT	IMPLIED MULTIPLIER
518210	\$47.5	122,470	2.5794
5171	\$83.9	209,756	2.4990
5172	\$24.8	63,796	2.5730
517919	\$10.1	23,730	2.3458
51913	\$73.2	386,427	5.2769
54151	\$112.6	605,917	5.3826
<b>SUBTOTAL</b>	<b>\$352.1</b>	<b>1,412,096</b>	<b>4.0102</b>
Apply to Retail E-Commerce: \$58.5B x 4.0102 =		<b>234,596</b>	
Apply to Selected Series: \$305.8B x 4.0102 =		<b>1,226,317</b>	
<b>GRAND TOTAL</b>		<b>2,873,009</b>	

**TABLE E-6  
TOTAL EMPLOYMENT BY NAICS 2012 (\$ BILLIONS)**

NAICS	RECEIPTS	DIRECT EMPLOYMENT	IMPLIED MULTIPLIER
518210	\$47.5	424,330	8.9369
5171	\$83.9	739,281	8.8076
5172	\$24.8	225,505	9.0951
517919	\$10.1	85,797	8.4815
51913	\$73.2	1,099,665	15.0165
54151	\$112.6	1,730,401	15.3719
<b>SUBTOTAL</b>	<b>\$352.1</b>	<b>4,304,979</b>	<b>12.2256</b>
Apply to Retail E-Commerce: \$58.5B x 12.2256 =		<b>715,200</b>	
Apply to Selected Series: \$305.8B x 12.2256 =		<b>3,738,603</b>	
<b>GRAND TOTAL</b>		<b>8,758,783</b>	

**TABLE E-7**  
**DIRECT EMPLOYEE EARNINGS BY NAICS 2007 (\$ BILLIONS)**

NAICS	RECEIPTS	EMPLOYEE EARNINGS	IMPLIED MULTIPLIER
518210	\$20.2	\$3.4	0.1681
5171	\$66.7	\$11.1	0.1664
5172	\$5.4	\$0.9	0.1685
517919	\$6.3	\$1.0	0.1645
51913	\$30.0	\$13.8	0.4580
54151	\$91.5	\$41.4	0.4526
<b>SUBTOTAL</b>	<b>\$220.2</b>	<b>\$71.6</b>	<b>0.3253</b>
Apply to Retail E-Commerce: \$24.8B x 0.3253 =		<b>\$8.1 B</b>	
Apply to Selected Series: \$94B x 0.3253 =		<b>\$30.6 B</b>	
<b>GRAND TOTAL</b>		<b>\$110.3</b>	

**TABLE E-8**  
**EMPLOYEE EARNINGS BY NAICS 2007 (\$ BILLIONS)**

NAICS	RECEIPTS	EMPLOYEE EARNINGS	IMPLIED MULTIPLIER
518210	\$20.2	\$8.6	0.4247
5171	\$66.7	\$28.2	0.4222
5172	\$5.4	\$2.3	0.4293
517919	\$6.3	\$2.7	0.4211
51913	\$30.0	\$25.6	0.8513
54151	\$91.5	\$76.4	0.8351
<b>SUBTOTAL</b>	<b>\$220.2</b>	<b>\$143.7</b>	<b>0.6527</b>
Apply to Retail E-Commerce: \$24.8B x 0.6527 =		<b>\$16.2 B</b>	
Apply to Selected Series: \$94B x 0.6527 =		<b>\$61.4 B</b>	
<b>GRAND TOTAL</b>		<b>\$221.3</b>	

**TABLE E-9**  
**DIRECT EMPLOYEE EARNINGS BY NAICS 2012 (\$ BILLIONS)**

NAICS	RECEIPTS	EMPLOYEE EARNINGS	IMPLIED MULTIPLIER
518210	\$47.5	\$8.0	0.1681
5171	\$83.9	\$14.0	0.1664
5172	\$24.8	\$4.2	0.1685
517919	\$10.1	\$1.7	0.1645
51913	\$73.2	\$33.5	0.4580
54151	\$112.6	\$51.0	0.4526
<b>SUBTOTAL</b>	<b>\$352.1</b>	<b>\$112.3</b>	<b>0.3189</b>
Apply to Retail E-Commerce: \$58.5B x 0.3189 =		<b>\$18.7 B</b>	
Apply to Selected Series: \$305.8B x 0.3189 =		<b>\$97.5 B</b>	
<b>GRAND TOTAL</b>		<b>\$228.4</b>	

**TABLE E-10**  
**EMPLOYEE EARNINGS BY NAICS 2012 (\$ BILLIONS)**

NAICS	RECEIPTS	EMPLOYEE EARNINGS	IMPLIED MULTIPLIER
518210	\$47.5	\$20.2	0.4247
5171	\$83.9	\$35.4	0.4222
5172	\$24.8	\$10.6	0.4293
517919	\$10.1	\$4.3	0.4211
51913	\$73.2	\$62.3	0.8513
54151	\$112.6	\$94.0	0.8351
<b>SUBTOTAL</b>	<b>\$352.1</b>	<b>\$226.8</b>	<b>0.6442</b>
Apply to Retail E-Commerce: \$58.5B x 0.6442 =		<b>\$37.7 B</b>	
Apply to Selected Series: \$305.8B x 0.6442 =		<b>\$197.0 B</b>	
<b>GRAND TOTAL</b>		<b>\$461.5</b>	

In terms of aggregate employee earnings, figures for direct and total earnings are provided in Tables E-7, E-8, E-9, and E-10. As shown in Table E-7, direct employee earnings for the Internet industries was \$110.3B in 2007. In the same year, total employee earnings reached \$221.3B (See Table E-8).

## 6.4 EMPLOYEE EARNINGS

Employment earning figures for 2012 are reported in Table E-9 and E-10. As shown in Table E-9, direct employee earnings in 2012 reached \$228.4B, a figure that more than doubles the direct employee earnings figures shown previously for 2007. In 2012, total employee earnings for the Internet industries were \$461.5B. This figure exceeded the 2007 value for employee earnings by more than \$233B.

**TABLE E-11**  
**DIRECT EARNINGS PER EMPLOYEE 2007 (\$ BILLIONS)**

NAICS	RECEIPTS	DIRECT EMPLOYMENT	DIRECT EARNINGS PER EMPLOYEE
518210	\$3.4	52,187	\$65,186.3
5171	\$11.1	166,791	\$66,579.3
5172	\$0.9	13,909	\$65,505.4
517919	\$1.0	14,781	\$70,126.3
51913	\$13.8	158,461	\$86,786.9
54151	\$41.4	492,684	\$84,094.2
<b>RETAIL E-COMMERCE</b>	<b>\$8.1</b>	<b>101,208</b>	<b>\$79,703.5</b>
<b>SELECTED SERIES</b>	<b>\$30.6</b>	<b>383,612</b>	<b>\$79,703.5</b>
<b>TOTAL PER EMPLOYEE:</b>	<b>\$110.3</b>	<b>1,383,633</b>	<b>\$79,703.5</b>

**TABLE E-12**  
**TOTAL EARNINGS PER EMPLOYEE 2007 (\$ BILLIONS)**

<b>NAICS</b>	<b>TOTAL EARNINGS (\$ BILLIONS)</b>	<b>TOTAL EMPLOYMENT</b>	<b>TOTAL EARNINGS PER EMPLOYEE</b>
518210	\$8.6	180,816	\$47,517.1
5171	\$28.2	587,849	\$47,938.5
5172	\$2.3	49,165	\$47,196.0
517919	\$2.7	53,443	\$49,643.3
51913	\$25.6	450,937	\$56,688.8
54151	\$76.4	1,407,027	\$54,326.0
<b>RETAIL E-COMMERCE:</b>	<b>\$16.2</b>	<b>307,318</b>	<b>\$52,669.3</b>
<b>SELECTED SERIES:</b>	<b>\$61.4</b>	<b>1,164,833</b>	<b>\$52,669.3</b>
<b>TOTAL PER EMPLOYEE:</b>	<b>\$221.3</b>	<b>4,201,386</b>	<b>\$52,669.3</b>

## 6.5 EARNINGS PER EMPLOYEE

The Internet Industry figures on employee earnings can also be used to derive estimates of employee earnings per employee. Internet Industry values for earnings per employee in 2007 are shown in Tables E-11 and E-12. As shown in Table E-11, employee earnings per direct employee were \$79,704 in 2007.

In 2007, total earnings per employee (direct employees plus Indirect employees) in the Internet industries were \$52,669 (see Table E-12). In 2012, total earnings per employee essentially remained flat at \$52,695 (see Table E-14).

In 2012, the average compensation per direct employee in the Internet industries was \$79,515, a value nearly equal to the 2007 average reported above.

**TABLE E-13**  
**DIRECT EARNINGS PER EMPLOYEE 2012 (\$ BILLIONS)**

NAICS	DIRECT EARNINGS (\$ BILLIONS)	DIRECT EMPLOYMENT	DIRECT EARNINGS PER EMPLOYEE
518210	\$8.0	122,470	\$65,186.3
5171	\$14.0	209,756	\$66,579.3
5172	\$4.2	63,796	\$65,505.4
517919	\$1.7	23,730	\$70,126.3
51913	\$33.5	386,427	\$86,786.9
54151	\$51.0	605,917	\$84,094.2
<b>RETAIL E-COMMERCE:</b>	<b>\$18.7</b>	<b>307,318</b>	<b>\$79,515.0</b>
<b>SELECTED SERIES:</b>	<b>\$97.5</b>	<b>1,226,317</b>	<b>\$79,515.0</b>
<b>TOTAL PER EMPLOYEE:</b>	<b>\$228.4</b>	<b>2,873,009</b>	<b>\$79,515.0</b>

**TABLE E-14**  
**TOTAL EARNINGS PER EMPLOYEE 2012 (\$ BILLIONS)**

NAICS	TOTAL EARNINGS (\$ BILLIONS)	TOTAL EMPLOYMENT	TOTAL EARNINGS PER EMPLOYEE
518210	\$20.2	424,330	\$47,517.1
5171	\$35.4	739,281	\$47,938.5
5172	\$10.6	225,505	\$47,196.0
517919	\$4.3	85,797	\$49,643.3
51913	\$62.3	1,099,665	\$56,688.8
54151	\$94.0	1,730,401	\$54,326.0
<b>RETAIL E-COMMERCE:</b>	<b>\$37.7</b>	<b>715,200</b>	<b>\$52,694.7</b>
<b>SELECTED SERIES:</b>	<b>\$197.0</b>	<b>3,738,603</b>	<b>\$52,694.7</b>
<b>TOTAL PER EMPLOYEE:</b>	<b>\$461.5</b>	<b>8,758,783</b>	<b>\$52,694.7</b>

# 7.0

## COMPARING THE INTERNET INDUSTRIES

In this analysis, the economic contributions of the Internet industries have been compared to that of other industries. This analysis uses the contribution figures calculated in the above section and compares them to the parallel calculations provided in government data. Additionally, the growth rate in the Internet industry from 2007 to 2012 is compared to that of other industries for each of the contribution metrics.

### 7.1 VALUE ADDED (2007 – 2012)

As stated earlier in this report, the sum of value added by all industries in the U.S. economy is equal to U.S. GDP. Tables F-1 and F-2 compare the value added to the U.S. economy by the Internet industries and by other major industries in 2007 and 2012, both in absolute terms and as a share of U.S. GDP.

### 7.2 EMPLOYMENT (2007-2012)

Table F-3 and F-4 compare employment levels in the Internet industries to other major U.S. industries. As shown in Table F-3, Internet industry employment experienced over 107% growth from 2007 to 2012, while the total U.S. employment level shrunk by 2.6% in the same period. These tables reference the calculations from Tables E-3 and E-5.

### 7.3 EMPLOYEE COMPENSATION (2007-2012)

Tables F-5 and F-6 compare the direct employee earnings calculated in Tables E-7 and E-9 to compensation in other industries. As is the case for employment, compensation grew in the Internet industries by over 107%, as compared to just under 9% for the nation as a whole. Table F-7 uses the employment and compensation metrics for the relevant industries to determine compensation per employee in 2012. Compensation per employee in Internet industries is almost 130% of compensation per employee across all U.S. industries.

Table F-8 analyzes the growth in Retail E-Commerce. This segment of the Internet industries has increased by over a third in just three years.

### 7.4 VALUE ADDED (2014)

Tables F-9 through F-11 examine value added in 2014. As growth in the Internet industries is driven by both E-Commerce and non-E-Commerce growth, it is assumed that growth in E-Commerce sales will continue in 2014. Non-E-Commerce sales are assumed to remain fixed at 2012 levels.



**TABLE F-1**  
**INDUSTRY COMPARISONS NOMINAL VALUE-ADDED (\$ BILLIONS)**

INDUSTRY	2007	2012	% CHANGE FROM 2007 TO 2012
Internet Industries	\$425.9	\$896.2	110.42%
Private Industries	\$12,572.4	\$13,972.0	11.13%
Construction	\$715.0	\$586.7	-17.95%
Computer and Electronic products	\$227.2	\$252.6	11.18%
Chemical Products	\$276.4	\$341.5	23.56%
Transportation and Warehousing	\$409.6	\$464.1	13.31%
Information	\$702.4	\$741.6	5.58%
Broadcasting and Telecommunications	\$373.8	\$368.8	-1.34%
Finance and Insurance	\$1,040.5	\$1,125.8	8.19%
Health Care and Social Assistance	\$925.9	\$1,152.3	24.45%
Accommodation and Food Services	\$394.5	\$439.5	11.41%
Information-communications- technology-producing Industries	\$851.7	\$919.1	7.92%
<b>U.S. TOTAL:</b>	<b>\$14,477.6</b>	<b>\$16,163.2</b>	<b>11.64%</b>

**TABLE F-2**  
**INDUSTRY COMPARISONS NOMINAL VALUE-ADDED SHARE OF U.S. TOTAL (\$ BILLIONS)**

INDUSTRY	2007	2012	% CHANGE FROM 2007 TO 2012
Internet Industries	2.94%	5.54%	88.48%
Private Industries	86.84%	86.44%	-0.46%
Construction	4.94%	3.63%	-26.50%
Computer and Electronic products	1.57%	1.56%	-0.42%
Chemical Products	1.91%	2.11%	10.68%
Transportation and Warehousing	2.83%	2.87%	1.50%
Information	4.85%	4.59%	-5.43%
Broadcasting and Telecommunications	2.58%	2.28%	-11.63%
Finance and Insurance	7.19%	6.97%	-3.09%
Health Care and Social Assistance	6.40%	7.13%	11.47%
Accommodation and Food Services	2.72%	2.72%	-0.21%
Information-communications- technology-producing Industries	5.88%	5.69%	-3.34%
<b>U.S. TOTAL:</b>	<b>14,478</b>	<b>16,163</b>	<b>11.64%</b>

**Source:** U.S. Bureau of Economic Analysis, Gross Domestic Product- (GDP)-by-Industry Data, [http://www.bea.gov/industry/gdpbyind\\_data.htm](http://www.bea.gov/industry/gdpbyind_data.htm)

**TABLE F-3**  
**INDUSTRY COMPARISONS EMPLOYMENT (THOUSANDS)**

INDUSTRY	2007	2012	% CHANGE FROM 2007 TO 2012
Internet Industries	1,384	2,873	107.6%
Private Industries	119,259	115,588	-3.08%
Construction	7,893	5,773	-26.86%
Computer and Electronic products	1,273	1,092	-14.22%
Chemical Products	859	788	-8.27%
Transportation and Warehousing	4,591	4,422	-3.68%
Information	3,041	2,700	-11.21%
Broadcasting and Telecommunications	1,358	1,142	-15.91%
Finance and Insurance	6,159	5,852	-4.98%
Health Care and Social Assistance	15,523	17,411	12.16%
Accommodation and Food Services	11,535	11,848	2.71%
Information-communications- technology-producing Industries	N/A	N/A	N/A
<b>U.S. TOTAL:</b>	<b>143,774</b>	<b>139,973</b>	<b>-2.64%</b>

**TABLE F-4**  
**INDUSTRY COMPARISONS EMPLOYMENT SHARE OF U.S. TOTAL (THOUSANDS)**

INDUSTRY	2007	2012	% CHANGE FROM 2007 TO 2012
Internet Industries	0.96%	2.05%	113.3%
Private Industries	82.9%	82.6%	-0.45%
Construction	5.5%	4.1%	-24.87%
Computer and Electronic products	0.9%	0.8%	-11.89%
Chemical Products	0.6%	0.6%	-5.77%
Transportation and Warehousing	3.2%	3.2%	-1.07%
Information	2.1%	1.9%	-8.80%
Broadcasting and Telecommunications	0.9%	0.8%	-13.62%
Finance and Insurance	4.3%	4.2%	-2.40%
Health Care and Social Assistance	10.8%	12.4%	15.21%
Accommodation and Food Services	8.0%	8.5%	5.50%
Information-communications- technology-producing Industries	N/A	N/A	N/A
<b>U.S. TOTAL:</b>	<b>143,774</b>	<b>139,973</b>	<b>-2.64%</b>

**Source:** U.S. Bureau of Economic Analysis, Gross Domestic Product- (GDP)-by-Industry Data, [http://www.bea.gov/industry/gdpbyind\\_data.htm](http://www.bea.gov/industry/gdpbyind_data.htm)

**TABLE F-5**  
**INDUSTRY COMPARISONS EMPLOYEE COMPENSATION (\$ BILLIONS)**

INDUSTRY	2007	2012	% CHANGE FROM 2007 TO 2012
Internet Industries	\$110.3	\$228.4	107.15%
Private Industries	\$6,367.8	\$6,871.9	7.92%
Construction	\$439.8	\$368.3	-16.25%
Computer and Electronic products	\$131.8	\$130.8	-0.77%
Chemical Products	\$85.7	\$89.8	4.74%
Transportation and Warehousing	\$255.8	\$274.8	7.42%
Information	\$260.4	\$271.4	4.20%
Broadcasting and Telecommunications	\$117.1	\$111.1	-5.10%
Finance and Insurance	\$618.2	\$631.1	2.09%
Health Care and Social Assistance	\$775.1	\$957.5	23.53%
Accommodation and Food Services	\$247.7	\$280.7	13.33%
Information-communications- technology-producing Industries	\$419.7	\$469.9	11.97%
<b>U.S. TOTAL:</b>	<b>\$7,908.8</b>	<b>\$8,614.9</b>	<b>8.93%</b>

**TABLE F-6**  
**INDUSTRY COMPARISONS EMPLOYEE COMPENSATION SHARE OF U.S. TOTAL (\$ BILLIONS)**

INDUSTRY	2007	2012	% CHANGE FROM 2007 TO 2012
Internet Industries	1.39%	2.65%	90.17%
Private Industries	80.52%	79.77%	-0.93%
Construction	5.56%	4.28%	-23.11%
Computer and Electronic products	1.67%	1.52%	-8.91%
Chemical Products	1.08%	1.04%	-3.84%
Transportation and Warehousing	3.23%	3.19%	-1.39%
Information	3.29%	3.15%	-4.34%
Broadcasting and Telecommunications	1.48%	1.29%	-12.87%
Finance and Insurance	7.82%	7.33%	-6.28%
Health Care and Social Assistance	9.80%	11.11%	13.41%
Accommodation and Food Services	3.13%	3.26%	4.04%
Information-communications- technology-producing Industries	5.31%	5.45%	2.79%
<b>U.S. TOTAL:</b>	<b>\$7,908.8</b>	<b>\$8,614.9</b>	<b>8.93%</b>

**Source:** U.S. Bureau of Economic Analysis, Gross Domestic Product- (GDP)-by-Industry Data, [http://www.bea.gov/industry/gdpbyind\\_data.htm](http://www.bea.gov/industry/gdpbyind_data.htm)

**TABLE F-7**  
**INDUSTRY COMPARISONS COMPENSATION PER EMPLOYEE 2012**

INDUSTRY	2012	RATIO OF INTERNET TO OTHER INDUSTRY
Internet Industries	\$79,515	--
Private Industries	\$59,452	1.34
Construction	\$63,799	1.25
Computer and Electronic products	\$119,798	0.66
Chemical Products	\$113,947	0.70
Transportation and Warehousing	\$62,143	1.28
Information	\$100,509	0.79
Broadcasting and Telecommunications	\$97,319	0.82
Finance and Insurance	\$107,850	0.74
Health Care and Social Assistance	\$54,996	1.45
Accommodation and Food Services	\$23,694	3.36
Information-communications-technology-producing Industries	N/A	N/A
<b>U.S. TOTAL:</b>	<b>\$61,547</b>	<b>1.29</b>

**Source:** U.S. Bureau of Economic Analysis, Gross Domestic Product- (GDP)-by-Industry Data, [http://www.bea.gov/industry/gdpbyind\\_data.htm](http://www.bea.gov/industry/gdpbyind_data.htm)

**TABLE F-8**  
**RETAIL E-COMMERCE SALES**  
**2012-2014 (\$ BILLIONS)**

<b>2012</b>	<b>\$226.9</b>
<b>2013</b>	<b>\$264.3</b>
<b>2014</b>	<b>\$304.9</b>
<b>PERCENTAGE CHANGE</b>	
<b>2012-2014: 1.3438</b>	

**Source:** <https://www.Internetretailer.com/2015/02/17/us-annual-e-retail-sales-surpass-300-billion-first-ti>

**TABLE F-9**  
**PROJECTION OF INTERNET VALUE-ADDED TO 2014**  
**(\$ BILLIONS)**

1. Total E-Commerce Value-Added in 2012*	\$455.7 B
2. Apply Retail E-Commerce Growth	1.3438
3. Project E-Commerce Value-Added to 2014	\$612.4 B
4. Add Back Non-E-Commerce Value-Added from 2012	\$440.5 B
5. Total Internet Industries Value-Added in 2014	\$1,052.9 B

\*Sum of retail E-Commerce (Net) Value-Added plus Select Services Value-Added.

TABLE F-10

## INDUSTRY COMPARISONS NOMINAL VALUE-ADDED AND VALUE-ADDED SHARE (\$ BILLIONS)

INDUSTRY	VALUE-ADDED 2014	VALUE-ADDED SHARE 2014
Internet Industries	\$1,052.9	6.04%
Private Industries	\$15,175.3	87.12%
Construction	\$652.7	3.75%
Computer and Electronic products	--	--
Chemical Products	--	--
Transportation and Warehousing	\$506.2	2.91%
Information	\$808.0	4.64%
Broadcasting and Telecommunications	--	--
Finance and Insurance	\$1,261.3	7.24%
Health Care and Social Assistance	\$1,244.3	7.14%
Accommodation and Food Services	\$482.5	2.77%
Information-communications-technology-producing Industries	--	--
<b>U.S. TOTAL:</b>	<b>\$17,418.9</b>	<b>100.00%</b>

**Source:** U.S. Bureau of Economic Analysis, Gross Domestic Product- (GDP)-by-Industry Data, [http://www.bea.gov/industry/gdpbyind\\_data.htm](http://www.bea.gov/industry/gdpbyind_data.htm); Table F-9.

TABLE F-11

## INTERNET INDUSTRIES INTERNET VALUE-ADDED IN REAL TERMS (\$ BILLIONS)

	2007	2012	2014
<b>INDUSTRY</b>			
Real	\$904.2	\$881.9	\$930.5
Nominal	\$877.6	\$932.6	\$1,014.0
Real/Nominal	1.030	0.946	0.918
<b>INTERNET INDUSTRIES</b>			
Apply to Internet Industries	\$425.9	\$896.2	\$1,052.9
Nominal Value-Added	x 1.030	x 0.946	x 0.918
<b>U.S. TOTAL:</b>	<b>\$438.8</b>	<b>\$847.5</b>	<b>\$966.2</b>

# APPENDIX 1

**CHART 1- DATA PROCESSING, HOSTING, AND RELATED SERVICES, NAICS 518210  
PRODUCT LINE SUMMARY - 2012**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		104,154,032
System software publishing		194,116
Application software publishing		1,349,074
Information technology (IT) technical consulting services		2,664,781
Application service provisioning, with or without integration of related services	x	24,801,123
Business process management services, including financial, human resources, supply-chain, customer relations, and vertical markets management		19,195,716
Website hosting services, with or without integration of related services	x	10,481,419
Collocation services		1,744,371
Data storage services	x	1,786,299
Data management services		9,754,258
Video and audio streaming services	x	4,331,771
Other data processing or IT infrastructure provisioning services	x	2,907,379
Internet access services - Broadband (i.e., always-on)	x	182,355
Internet access services - Narrowband (i.e., dial-up)	x	2,942
Information and document transformation services		1,734,053
Custom application design and development services	x	2,987,223
Network design and development services		315,454
Computer systems design, development, and integration services		572,104
IT infrastructure and network management services		2,588,483
Information technology (IT) technical support services		9,464,560
Resale of merchandise		1,665,546
All other receipts		5,431,005

Flagged Receipts (\$1000)	47,480,511	45.6%
Total Receipts (\$1000)	104,154,032	

**Source:** United States Census, American Fact Finder.

**CHART 2- WIRED TELECOMMUNICATIONS CARRIERS, NAICS 5171**  
**PRODUCT LINE SUMMARY - 2012**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		285,080,373
Carrier services and Internet backbone services (Include network access services to other telecommunication carriers.)	x	16,673,870
Basic fixed local telephony services (Include subscriber line services to end user.)		35,924,152
Calling features - Fixed telephony (Include call waiting, caller ID, voice mail, etc.)		1,507,594
Basic fixed long distance telephony - Outbound		16,080,648
Basic fixed long distance telephony - Inbound		128,036
Basic fixed all distance telephony (Include both local and long distance calls.)		2,615,722
Private network services		18,969,339
Mobile local telephony (Include cellular, PCS, ESMR technology, and satellite services.)		137,815
Calling features - Mobile telephony		23,380
Mobile long distance telephony (Include cellular, PCS, ESMR technology, and satellite services.)		29,769
Mobile all distance telephony		147,033
Messaging (paging) services		2,482
Mobile dispatch services (RCC)		243
Specialized wireless services		5,645
Internet telephony	x	8,518,387
Other Telecommunications services		1,814,025
Cable and other - Multichannel programming distribution services (analog and digital)		92,643,761
Air time - Program distribution networks (Include local, regional, and national.)		3,645,913
Installation services for telecommunications equipment		484,141
Advertising space in directories		98,531
Repair and maintenance services for telecommunications equipment		698,970
Internet access services - Broadband (i.e., always-on)	x	58,652,474
Internet access services - Narrowband (i.e., dial-up)	x	92,311
Installation services for connections to program distribution networks		996,386
Other program distribution related services		1,937,115
Network design and development services		79,508
Licensing of rights to use intellectual property		28,743
Rental or lease of goods and/or equipment		8,940,336
Resale of merchandise		2,007,625
All other receipts		12,196,419

Flagged Receipts (\$1,000)	83,937,042	29.4%
Total Receipts (\$1,000)	285,080,373	

**Source:** United States Census, American Fact Finder.



**CHART 3- WIRELESS TELECOMMUNICATIONS CARRIERS (EXCEPT SATELLITE), NAICS 5172  
PRODUCT LINE SUMMARY - 2012**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		226,010,084
Carrier services and Internet backbone services (Include network access services to other telecommunication carriers.)	x	529,741
Basic fixed local telephony services (Include subscriber line services to end user.)		29,420
Basic fixed long distance telephony - Outbound		3,202
Basic fixed all distance telephony (Include both local and long distance calls.)		10,927
Private network services		62,142
Mobile local telephony (Include cellular, PCS, ESMR technology, and satellite services.)		54,985,551
Calling features - Mobile telephony		219,034
Mobile long distance telephony (Include cellular, PCS, ESMR technology, and satellite services.)		3,192,334
Mobile all distance telephony		92,269,034
Messaging (paging) services		10,475,821
Mobile dispatch services (RCC)		12,311
Specialized wireless services		241,398
Internet telephony	x	318,381
Other Telecommunications services		31,330
Cable and other - Multichannel programming distribution services (analog and digital)		8,464
Installation services for telecommunications equipment		8,016,197
Advertising space in directories		327
Repair and maintenance services for telecommunications equipment		1,394,114
Internet access services - Broadband (i.e., always-on)	x	23,944,751
Internet access services - Narrowband (i.e., dial-up)	x	1,147
Network design and development services		36,781
Rental or lease of goods and/or equipment		192,302
Resale of merchandise		8,321,492
All other receipts		21,711,620

Flagged Receipts (\$1,000)	24,794,020	11.0%
Total Receipts (\$1,000)	226,010,084	

**Source:** United States Census, American Fact Finder.

**CHART 4- ALL OTHER TELECOMMUNICATIONS, NAICS 517919**  
**PRODUCT LINE SUMMARY - 2012**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		14,372,603
Carrier services and Internet backbone services (Include network access services to other telecommunication carriers.)	x	4,569,782
Basic fixed local telephony services (Include subscriber line services to end user.)		677,634
Calling features - Fixed telephony (Include call waiting, caller ID, voice mail, etc.)		206,833
Basic fixed long distance telephony - Outbound		15,263
Basic fixed long distance telephony - Inbound		1,977
Basic fixed all distance telephony (Include both local and long distance calls.)		50,100
Private network services		171,823
Mobile local telephony (Include cellular, PCS, ESMR technology, and satellite services.)		42,775
Calling features - Mobile telephony		717
Mobile long distance telephony (Include cellular, PCS, ESMR technology, and satellite services.)		49,925
Messaging (paging) services		39,293
Mobile dispatch services (RCC)		3,339
Specialized wireless services		359,492
Internet telephony	x	3,328,381
Other Telecommunications services		1,147,089
Cable and other - Multichannel programming distribution services (analog and digital)		9,782
Installation services for telecommunications equipment		132,975
Advertising space in directories		437,155
Repair and maintenance services for telecommunications equipment		92,246
Internet access services - Broadband (i.e., always-on)	x	231,426
Internet access services - Narrowband (i.e., dial-up)	x	1,986,129
Other program distribution related services		3,970
Network design and development services		427,200
Licensing of rights to use intellectual property		38,597
Rental or lease of goods and/or equipment		48,671
Resale of merchandise		237,122
All other receipts		60,273

Flagged Receipts (\$1,000)	10,115,718	70.4%
Total Receipts (\$1,000)	14,372,603	

**Source:** United States Census, American Fact Finder.

**CHART 5- INTERNET PUBLISHING AND BROADCASTING AND WEB SEARCH PORTALS, NAICS 51913  
PRODUCT LINE SUMMARY - 2012**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		86,853,040
Website hosting services, with or without integration of related services	x	484,848
Internet access services - Broadband (i.e., always-on)	x	2,240
Publishing - Subscriptions and sales - Print		1,006,580
Publishing - Subscriptions and sales - Internet publishing and broadcasting	x	26,974,478
Publishing - Subscriptions and sales - Electronic and other media	x	927,189
Publishing - Sale of advertising space - Print		110,105
Publishing - Sale of advertising space - Internet	x	44,841,504
Publishing - Sale of advertising space - Electronic and other media		47,724
Rental or sale of mailing lists		27,502
Licensing of rights to use intellectual property		3,634,166
Resale of merchandise		747,151
All other receipts		8,049,437

Flagged Receipts (\$1,000)	73,230,259	84.3%
Total Receipts (\$1,000)	86,853,040	

**Source:** United States Census, American Fact Finder.

**CHART 6- COMPUTER SYSTEMS DESIGN AND RELATED SERVICES, NAICS 54151**  
**PRODUCT LINE SUMMARY - 2012**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		66,651,853
System software publishing		83,925
Application software publishing		1,498,401
Information technology (IT) technical consulting services		983,192
Application service provisioning	x	11,626,828
Business process management services		21,341,123
Internet telephony	x	9,494
Internet access services	x	71,476
Website hosting services	x	4,510,154
Collocation services		706,227
Data storage services	x	1,399,796
Data management services		7,771,623
Video & audio streaming services	x	880,156
Other IT infrastructure provisioning services		3,389,977
Information and document transformation services		2,191,520
Custom computer application design & development services	x	1,734,534
Network design & development services		292,333
Computer systems design, development, & integration services		519,011
IT infrastructure (computer) & network management services		1,166,809
Information technology (IT) technical support services		4,113,818
Resale of merchandise		1,055,319
All other operating receipts		1,306,137
Resale of merchandise		11,909,782
All other receipts		6,481,450
Licensing of rights to use intellectual property		38,597
Rental or lease of goods and/or equipment		48,671
Resale of merchandise		237,122
All other receipts		60,273
Rental or lease of goods and/or equipment		8,940,336
Resale of merchandise		2,007,625
All other receipts		12,196,419

Flagged Receipts (\$1,000)	112,569,277	33.9%
Total Receipts (\$1,000)	332,245,901	

**Source:** United States Census, American Fact Finder.

**CHART 7- DATA PROCESSING, HOSTING, AND RELATED SERVICES, NAICS 518210**  
**PRODUCT LINE SUMMARY - 2007**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		66,651,853
System software publishing		83,925
Application software publishing		1,498,401
Information technology (IT) technical consulting services		983,192
Application service provisioning	x	11,626,828
Business process management services		21,341,123
Internet telephony	x	9,494
Internet access services	x	71,476
Website hosting services	x	4,510,154
Collocation services		706,227
Data storage services	x	1,399,796
Data management services		7,771,623
Video & audio streaming services	x	880,156
Other IT infrastructure provisioning services		3,389,977
Information and document transformation services		2,191,520
Custom computer application design & development services	x	1,734,534
Network design & development services		292,333
Computer systems design, development, & integration services		519,011
IT infrastructure (computer) & network management services		1,166,809
Information technology (IT) technical support services		4,113,818
Resale of merchandise		1,055,319
All other operating receipts		1,306,137

Flagged Receipts (\$1,000)	20,232,438	30.4%
Total Receipts (\$1,000)	66,651,853	

**Source:** United States Census, American Fact Finder.

**CHART 8- WIRED TELECOMMUNICATIONS CARRIERS, NAICS 5171**  
**PRODUCT LINE SUMMARY - 2007**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		290,781,042
Carrier services & Internet backbone services	x	31,962,132
Basic fixed local telephony services		57,523,274
Calling features - Fixed telephony		1,321,567
Basic fixed long distance telephony - Outbound		29,014,728
Basic fixed long distance telephony - Inbound		1,757,581
Basic fixed all distance telephony		2,830,780
Private network services		23,705,900
Mobile local telephony (Inc cell, PCS, ESMR tech, & satellite)		110,215
Calling features - Mobile telephony		9,328
Mobile long distance telephony		29,118
Mobile all distance telephony		18,586
Messaging (paging) services		8,975
Specialized wireless services		3,524
Internet telephony	x	3,073,901
Other Telecommunications services		1,346,249
Internet access services	x	31,707,606
Multichannel programming distribution services (analog & digital)		64,478,603
Air time - Program distribution networks (Inc local/reg/national)		4,639,516
Installation services for telecommunications equipment		6,463,826
Advertising space in directories		245,930
Repair & maintenance services for telecommunications equipment		345,515
Installation svcs for connections to prog distribution networks		874,001
Other program distribution related services		253,002
Network design & development services		37,530
Licensing of rights to use intellectual property		18,990
Rental or lease of goods and/or equipment		1,756,044
Resale of merchandise		3,811,707
All other operating receipts		23,432,914

Flagged Receipts (\$1,000)	66,743,639	23.0%
Total Receipts (\$1,000)	290,781,042	

**Source:** United States Census, American Fact Finder.

**CHART 9- WIRELESS TELECOMMUNICATIONS CARRIERS (EXCEPT SATELLITE), NAICS 5172**  
**PRODUCT LINE SUMMARY - 2007**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		170,583,541
Carrier services & Internet backbone services	x	1,431,521
Basic fixed local telephony services		1,068,381
Calling features - Fixed telephony		265,244
Basic fixed long distance telephony - Outbound		25,875
Basic fixed long distance telephony - Inbound		1,031
Basic fixed all distance telephony		264,850
Private network services		619,690
Mobile local telephony (Inc cell, PCS, ESMR tech, & satellite)		55,318,167
Calling features - Mobile telephony		137,260
Mobile long distance telephony		2,979,766
Mobile all distance telephony		64,694,971
Messaging (paging) services		782,043
Mobile dispatch services (RCC)		32,167
Specialized wireless services		74,251
Internet telephony	x	25,957
Other Telecommunications services		1,096,338
Internet access services	x	3,948,110
Multichannel programming distribution services (analog & digital)		15,131
Installation services for telecommunications equipment		24,047
Advertising space in directories		18,720
Repair & maintenance services for telecommunications equipment		947,942
Installation srvc for connections to prog distribution networks		93,073
Network design & development services		16,727
Licensing of rights to use intellectual property		3,811
Rental or lease of goods and/or equipment		312,646
Resale of merchandise		10,407,293
All other operating receipts		25,978,006

Flagged Receipts (\$1,000)	5,405,588	3.2%
Total Receipts (\$1,000)	170,583,541	

**Source:** United States Census, American Fact Finder.



**CHART 10- ALL OTHER TELECOMMUNICATIONS, NAICS 517919**  
**PRODUCT LINE SUMMARY - 2007**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		13,456,150
Carrier services & Internet backbone services	x	53,805
Basic fixed local telephony services		44,567
Calling features - Fixed telephony		5,390
Basic fixed long distance telephony - Outbound		1,642
Basic fixed long distance telephony - Inbound		505
Basic fixed all distance telephony		22,522
Private network services		2,230,660
Mobile long distance telephony		251,170
Messaging (paging) services		1,843
Specialized wireless services		85,669
Internet telephony	x	1,129,258
Other Telecommunications services		1,288,608
Internet access services	x	5,118,062
Multichannel programming distribution services (analog & digital)		7,652
Air time - Program distribution networks (Inc local/reg/national)		1,752
Installation services for telecommunications equipment		71,173
Advertising space in directories		750
Repair & maintenance services for telecommunications equipment		62,186
Installation svcs for connections to prog distribution networks		81,004
Other program distribution related services		6,513
Network design & development services		11,153
Licensing of rights to use intellectual property		50,218
Rental or lease of goods and/or equipment		1,079,253
Resale of merchandise		130,185
All other operating receipts		1,720,553

Flagged Receipts (\$1,000)	6,301,125	46.8%
Total Receipts (\$1,000)	13,456,150	

**Source:** United States Census, American Fact Finder.

**CHART 11- INTERNET PUBLISHING AND BROADCASTING AND WEB SEARCH PORTALS, NAICS 51913  
PRODUCT LINE SUMMARY - 2007**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		31,094,247
Website hosting services	x	19,372
Print publishing - Subscriptions & sales		36,326
Internet publishing & broadcasting - Subscriptions & sales	x	10,153,491
Electronic & other media publishing - Subscriptions & sales	x	795,657
Print publishing - Sale of advertising space		2,668
Internet publishing - Sale of advertising space	x	19,060,824
Electronic & other media publishing - Sale of advertising space		80,242
Rental or sale of mailing lists		16,989
Licensing of rights to use intellectual property		710,547
Resale of merchandise		55,068
All other operating receipts		163,063

Flagged Receipts (\$1,000)	30,029,344	96.6%
Total Receipts (\$1,000)	31,094,247	

**Source:** United States Census, American Fact Finder.

**CHART 12- COMPUTER SYSTEMS DESIGN AND RELATED SERVICES, NAICS 54151**  
**PRODUCT LINE SUMMARY - 2007**

PRODUCT DESCRIPTION	FLAGGED PRODUCT	"TOTAL RECEIPTS (\$1000)"
Industry total		244,389,132
Electronic & precision equipment repair		84,945
Temporary staffing services		2,395,194
System software publishing		107,047
Application software publishing		612,014
Information technology (IT) technical consulting services		11,713,165
Application service provisioning	x	1,719,757
Business process management services		2,880,154
Internet access services	x	108,813
Website hosting services	x	734,474
Data storage services	x	435,369
Data management services		1,191,454
Custom computer application design & development services	x	63,142,395
Network design & development services		8,587,761
Computer systems design, development, & integration services		88,680,466
Video & audio streaming services	x	10,259,800
IT infrastructure (computer) & network management services	x	14,693,800
Information technology (IT) technical support services		24,787,634
Licensing right to reproduce/distribute comp sw prot by copyright		286,621
Rental & leasing of computer hardware		100,465
Information technology (IT) related training services		925,871
Data analysis services	x	438,131
Engineering services		1,108,523
Resale of merchandise		5,153,868
All other operating receipts		4,240,931

Flagged Receipts (\$1,000)	91,532,539	37.5%
Total Receipts (\$1,000)	244,389,132	

**Source:** United States Census, American Fact Finder.

# APPENDIX 2

**CHART 1- ANNUAL AVERAGE EMPLOYMENT BY STATE  
NAICS 51821, DATA PROCESSING AND RELATED SERVICES**

STATE	ANNUAL AVERAGE EMPLOYMENT	PERCENTAGE OF TOTAL	CUMULATIVE SHARE OF TOTAL
Texas	29,578	11.14%	11.1%
California	23,489	8.84%	20.0%
Florida	17,336	6.53%	26.5%
New York	14,313	5.39%	31.9%
North Carolina	11,027	4.15%	36.1%
Missouri	10,718	4.04%	40.1%
Virginia	10,384	3.91%	44.0%
Pennsylvania	9,252	3.48%	47.5%
Illinois	9,131	3.44%	50.9%
Arizona	8,301	3.13%	54.0%
Wisconsin	8,195	3.09%	57.1%
Colorado	8,150	3.07%	60.2%

**Source:** U.S. Bureau of Labor Statistics, 2013 Quarterly Census of Employment and Wages.

**CHART 2- ANNUAL AVERAGE EMPLOYMENT BY STATE  
NAICS 5171, WIRED TELECOMMUNICATIONS CARRIERS**

STATE	ANNUAL AVERAGE EMPLOYMENT	PERCENTAGE OF TOTAL	CUMULATIVE SHARE OF TOTAL
California	58,997	9.79%	9.8%
Texas	56,311	9.35%	19.1%
Florida	41,521	6.89%	26.0%
New York	39,154	6.50%	32.5%
Georgia	29,045	4.82%	37.4%
New Jersey	27,098	4.50%	41.9%
Pennsylvania	24,390	4.05%	45.9%
Illinois	23,891	3.97%	49.9%
Colorado	20,814	3.46%	53.3%
Virginia	20,555	3.41%	56.7%
Ohio	20,154	3.35%	60.1%

**Source:** U.S. Bureau of Labor Statistics, 2013 Quarterly Census of Employment and Wages.

**CHART 3- ANNUAL AVERAGE EMPLOYMENT BY STATE  
NAICS 5172, WIRELESS TELECOMMUNICATIONS CARRIERS**

STATE	ANNUAL AVERAGE EMPLOYMENT	PERCENTAGE OF TOTAL	CUMULATIVE SHARE OF TOTAL
Texas	19,787	13.28%	13.3%
California	18,544	12.44%	25.7%
Georgia	11,900	7.99%	33.7%
Washington	10,164	6.82%	40.5%
Illinois	8,191	5.50%	46.0%
Florida	7,357	4.94%	51.0%
Missouri	7,323	4.91%	55.9%
North Carolina	4,749	3.19%	59.1%
New Mexico	4,184	2.81%	61.9%

**Source:** U.S. Bureau of Labor Statistics, 2013 Quarterly Census of Employment and Wages.

**CHART 4- ANNUAL AVERAGE EMPLOYMENT BY STATE  
NAICS 517919, ALL OTHER TELECOMMUNICATIONS**

STATE	ANNUAL AVERAGE EMPLOYMENT	PERCENTAGE OF TOTAL	CUMULATIVE SHARE OF TOTAL
California	3,685	15.3%	15.3%
Colorado	3,054	12.6%	27.9%
Georgia	2,796	11.6%	39.5%
New York	1,840	7.6%	47.1%
Virginia	1,767	7.3%	54.4%
Texas	1,486	6.2%	60.6%

**Source:** U.S. Bureau of Labor Statistics, 2013 Quarterly Census of Employment and Wages.

**CHART 5- ANNUAL AVERAGE EMPLOYMENT BY STATE  
NAICS 51913, INTERNET PUBLISHING AND WEB SEARCH PORTALS**

STATE	ANNUAL AVERAGE EMPLOYMENT	PERCENTAGE OF TOTAL	CUMULATIVE SHARE OF TOTAL
California	56,158	39.84%	39.8%
New York	17,845	12.66%	52.5%
Massachusetts	7,694	5.46%	58.0%
Washington	7,670	5.44%	63.4%

**Source:** U.S. Bureau of Labor Statistics, 2013 Quarterly Census of Employment and Wages.

**CHART 6- ANNUAL AVERAGE EMPLOYMENT BY STATE  
NAICS 54151, COMPUTER SYSTEMS DESIGN AND RELATED SERVICES**

STATE	ANNUAL AVERAGE EMPLOYMENT	PERCENTAGE OF TOTAL	CUMULATIVE SHARE OF TOTAL
California	241,873	14.22%	14.2%
Virginia	147,091	8.65%	22.9%
Texas	133,540	7.85%	30.7%
New York	97,639	5.74%	36.5%
Illinois	71,759	4.22%	40.7%
Florida	69,627	4.09%	44.8%
Massachusetts	68,932	4.05%	48.8%
Maryland	68,125	4.01%	52.8%
New Jersey	68,102	4.00%	56.8%
Pennsylvania	61,881	3.64%	60.5%

**Source:** U.S. Bureau of Labor Statistics, 2013 Quarterly Census of Employment and Wages.

**CHART 7- ANNUAL AVERAGE EMPLOYMENT BY STATE  
NAICS 51821, DATA PROCESSING AND RELATED SERVICES**

STATE	VALUE-ADDED	OUTPUT	EARNINGS	EMPLOYMENT
Texas	1.1604	2.0448	0.4602	9.7644
California	1.1743	2.0596	0.4700	9.1453
Florida	1.0779	1.8698	0.4192	10.0814
New York	1.0475	1.8268	0.3600	6.5824
North Carolina	1.0606	1.8749	0.4075	9.5834
Missouri	1.0553	1.8654	0.3521	7.7557
Virginia	1.0597	1.8599	0.3660	7.4205
Pennsylvania	1.0824	1.9163	0.4037	8.3426
Illinois	1.1239	1.9806	0.4380	8.8497
Arizona	1.0396	1.8046	0.3998	9.4194
Wisconsin	0.9326	1.6540	0.3532	8.5948
Colorado	1.1535	2.0158	0.4582	9.3497

**Source:** U.S. Bureau of Economic Analysis, RIMS II Multipliers.

**CHART 8- ANNUAL AVERAGE EMPLOYMENT BY STATE  
NAICS 5171, WIRED TELECOMMUNICATIONS CARRIERS**

STATE	VALUE-ADDED	OUTPUT	EARNINGS	EMPLOYMENT
California	1.1743	2.0596	0.4700	9.1453
Texas	1.1604	2.0448	0.4602	9.7644
Florida	1.0779	1.8698	0.4192	10.0814
New York	1.0475	1.8268	0.3600	6.5824
Georgia	1.1389	1.9922	0.4428	9.2602
New Jersey	1.1188	1.9549	0.4076	7.7622
Pennsylvania	1.0824	1.9163	0.4037	8.3426
Illinois	1.1239	1.9806	0.4380	8.8497
Colorado	1.1535	2.0158	0.4582	9.3497
Virginia	1.0597	1.8599	0.3660	7.4205
Ohio	1.0352	1.8399	0.3921	8.9970

**Source:** U.S. Bureau of Economic Analysis, RIMS II Multipliers.



**CHART 9- RIMS II DATA BY STATE  
NAICS 5172, WIRELESS TELECOMMUNICATIONS CARRIERS**

STATE	VALUE-ADDED	OUTPUT	EARNINGS	EMPLOYMENT
Texas	1.1604	2.0448	0.4602	9.7644
California	1.1743	2.0596	0.4700	9.1453
Georgia	1.1389	1.9922	0.4428	9.2602
Washington	1.0352	1.8207	0.3880	7.8292
Illinois	1.1239	1.9806	0.4380	8.8497
Florida	1.0779	1.8698	0.4192	10.0814
Missouri	1.0553	1.8654	0.3521	7.7557
North Carolina	1.0606	1.8749	0.4075	9.5834
New Mexico	0.9421	1.6608	0.3503	8.8488

**Source:** U.S. Bureau of Economic Analysis, RIMS II Multipliers.

**CHART 10- RIMS II DATA BY STATE  
NAICS 517919, ALL OTHER TELECOMMUNICATIONS**

STATE	VALUE-ADDED	OUTPUT	EARNINGS	EMPLOYMENT
California	1.1743	2.0596	0.4700	9.1453
Colorado	1.1535	2.0158	0.4582	9.3497
Georgia	1.1389	1.9922	0.4428	9.2602
New York	1.0475	1.8268	0.3600	6.5824
Virginia	1.0597	1.8599	0.3660	7.4205
Texas	1.1604	2.0448	0.4602	9.7644

**Source:** U.S. Bureau of Economic Analysis, RIMS II Multipliers.

**CHART 11- RIMS II DATA BY STATE  
NAICS 51913, INTERNET PUBLISHING AND WEB SEARCH PORTALS**

STATE	VALUE-ADDED	OUTPUT	EARNINGS	EMPLOYMENT
California	1.4278	2.4207	0.9110	16.2008
New York	1.2314	2.0679	0.6823	11.5632
Massachusetts	1.3320	2.2377	0.8018	13.8018
Washington	1.2909	2.1860	0.8291	15.7547

**Source:** U.S. Bureau of Economic Analysis, RIMS II Multipliers.

**CHART 12- RIMS II DATA BY STATE**  
**NAICS 54151, COMPUTER SYSTEMS DESIGN AND RELATED SERVICES**

STATE	VALUE-ADDED	OUTPUT	EARNINGS	EMPLOYMENT
California	1.4278	2.4207	0.9110	16.2008
Virginia	1.2722	2.1460	0.7331	13.7373
Texas	1.4465	2.4622	0.9154	17.7848
New York	1.2314	2.0679	0.6823	11.5632
Illinois	1.4338	2.4422	0.8905	16.2705
Florida	1.3652	2.2721	0.8712	18.2302
Massachusetts	1.3320	2.2377	0.8018	13.8018
Maryland	1.2757	2.1354	0.7411	13.3165
New Jersey	1.3915	2.3420	0.8120	14.3405
Pennsylvania	1.3492	2.3082	0.8213	15.9897

**Source:** U.S. Bureau of Economic Analysis, RIMS II Multipliers.

**CHART 13- NAICS INDUSTRIES**  
**NAICS INDUSTRY CODE AND RIMS II NAICS CODE**

NAICS INDUSTRY	RIMS II NAICS EQUIVALENT
518210	517000
5171	517000
5172	517000
517919	517000
51913	541512
54151	541512



# Internet Association

## ACKNOWLEDGEMENTS

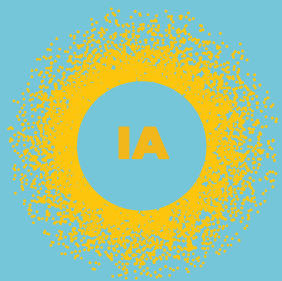
Economists Incorporated is grateful to the Internet Association for their support and assistance in drafting this report. In particular, we would like to thank Abigail Slater of the Internet Association for her guidance throughout this process.

Stephen E. Siwek is a Principal at Economists Incorporated, 2121 K St, N.W., Washington, DC 20037, [www.ei.com](http://www.ei.com). Economists Incorporated is a premier economic consulting firm in the fields of law and economics, public policy and business strategy. While at Economists Incorporated, Mr. Siwek has co-authored *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 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.

Our research assistant, Patricia Muething, performed much of the computer work that was used throughout this report.

## CONTACT US:

[News@InternetAssociation.org](mailto:News@InternetAssociation.org)  
[www.InternetAssociation.org](http://www.InternetAssociation.org)  
1.202.803.5783



Internet Association

# MEMBERS

