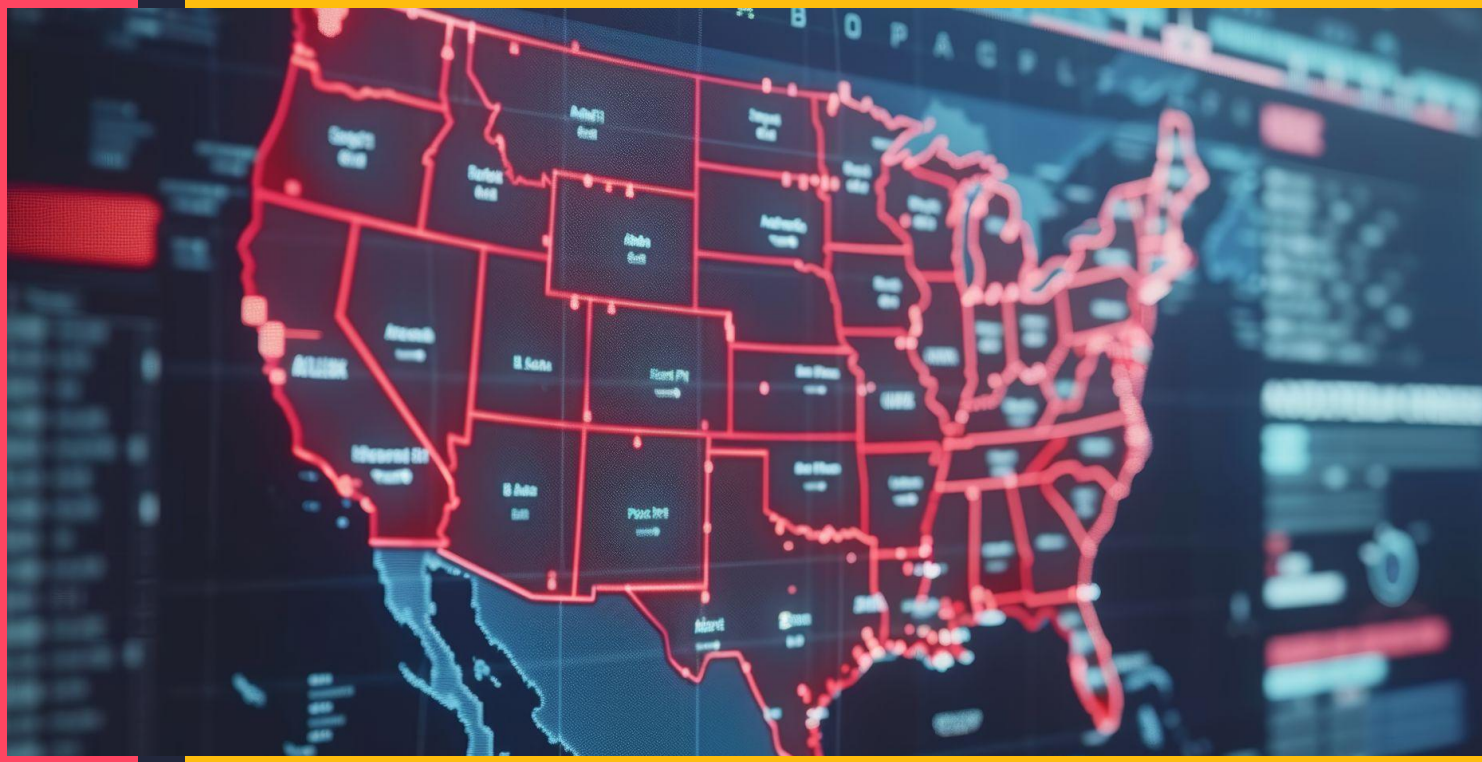
iab.

2025

MEASURING THE DIGITAL ECONOMY

Advertising, Content, Commerce, and Innovation



VOLUME 5

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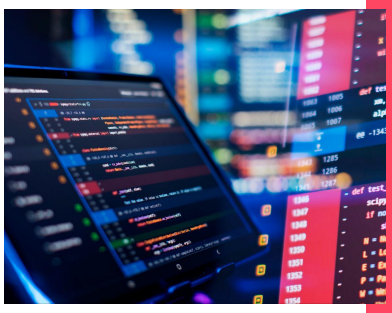

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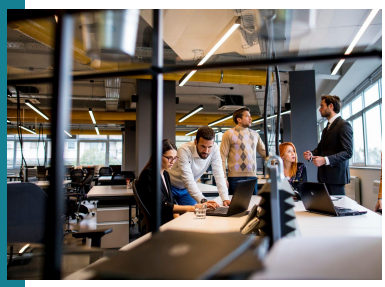

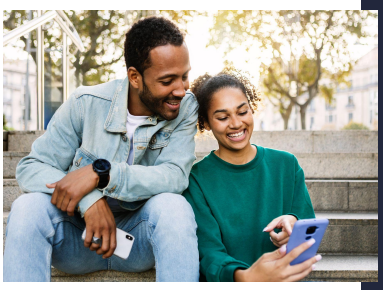

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Appendix

1

Executive Summary

EXECUTIVE SUMMARY

The digital economy consists of all firms that benefit from the data and information flowing through the internet protocol where the effect is to make markets (excludes government info sites). See page 16 for more details.

This is the fifth in a series of reports that measure the economic value of the digital economy, published roughly every four years since 2008.

01

With little sign of slowing down, the digital economy continues to be the fastest growing and leading driver of U.S. GDP growth.

$4.9T

The value of the digital economy, which has doubled over the past four years (2020)*.

18%

The share of the total U.S. GDP represented by the digital economy (vs. 11% in 2020).

2.7x

The annual growth rate at which the digital economy has outpaced the total economy since 2020 (19% vs. 7%).

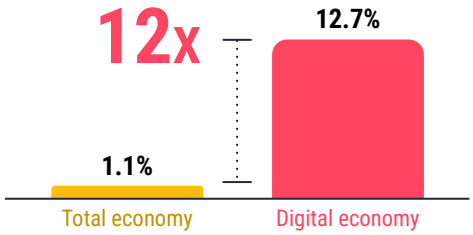
The digital transformation of industries like entertainment, healthcare, and banking–coupled with advancements in mobile, social, cloud, and AI–are driving continued economic growth.

*The last time this study was conducted.

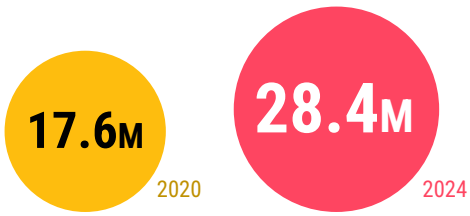
02

The digital economy is the nation's job growth engine as employment in the sector is growing 12x faster than the total U.S. economy overall.

ANNUAL JOB GROWTH RATE
SINCE 2020*



INTERNET-DEPENDENT EMPLOYMENT
OF JOBS



The digital economy now supports 28.4 million U.S. jobs (up from 3 million in 2008), with 11.2 million directly employed and another 17.2 million in supporting sectors such as education, entertainment, banking, retail, and government services.

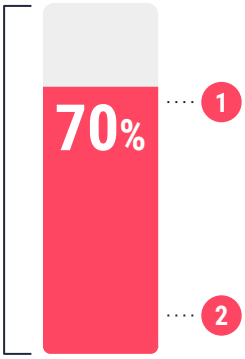
*The last time this study was conducted.

EXECUTIVE SUMMARY CONTINUED

03

Digital job growth since 2020 stems from independent workers and large "integrated" firms, creating a market where individuals thrive within platforms or independently.

TOTAL DIGITAL ECONOMY JOB GROWTH SINCE 2020



1. Digital creators building businesses through content and community (30%)
   +
   Third-party sellers leveraging e-commerce marketplaces (16%)
   +
   Individuals not working for but on platforms like Uber, DoorDash, and Airbnb (8%)
2. "Integrated firms"—large digital firms operating across infrastructure, consumer services, and more–such as Amazon, Meta, Alphabet, etc. (16%)

These independent workers (creators, resellers, etc.) are able to succeed in large part due to the tools, reach, and infrastructure created by the large "integrated" firms (e-commerce and social platforms) which fuel a self-sustaining, democratized digital economy.

04

Creators are the largest and fastest growing job segment within the digital economy and now account for more than 1 out every 10 full-time, internet-dependent jobs.

1.5M
The number of full-time equivalent (FTE) creators in the U.S.

7.5x
The amount that the number of (FTE) creators has grown since 2020*.

5x
The annual growth rate at which the number of (FTE) creators has outpaced the traditional media sector since 2020*.

This remarkable growth stems from three key factors: 1) the shift of ad budgets to digital platforms, streaming services, and online publishers, 2) the ease of creating and distributing digital content, and 3) the rise of a more professionalized creator economy.[1]

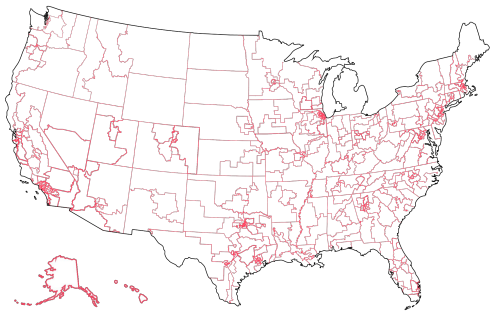
*The last time this study was conducted.

EXECUTIVE SUMMARY CONTINUED

05

The digital economy touches every congressional district in the U.S., making it a vital source of jobs and income in every corner of the country.

MAP OF U.S. CONGRESSIONAL DISTRICTS



435 U.S. Congressional Districts are each home to citizens with internet-dependent jobs.

Silicon Valley and the other top 10 Congressional Districts may have higher concentrations of Internet-dependent employment, but they account for only about one-eighth of all U.S. digital economy jobs.

This underscores the decentralized nature of Internet-dependent jobs and the importance of smaller contributions from many districts.

2

Purpose, Methodology, and Defining the Digital Economy

2.1 Purpose of the Study

This is the fifth study in a series published roughly every four years that is commissioned by the Interactive Advertising Bureau (IAB) to understand the size, scope, and benefits of the digital economy (called, in earlier studies, the "market-making internet") in the United States. It follows the method of four earlier studies also commissioned by IAB, published in 2009, 2012, 2017, and 2021.[2] The methodology is described in Chapter 2.

The specific objectives of this and the earlier studies have been to:

- Define the digital economy
- Determine the employment and value of economic activity enabled by this ecosystem
- Determine its geographic dispersion
- Identify the companies associated with it
- Determine the contribution of advertising to supporting it

In commissioning these studies, IAB has sought to track over time the size of the digital economy relative to the overall U.S. economy, and the contribution that digital advertising and marketing have made to it. The goal has been to build a fact base to measure the contributions of the industry and its underlying technologies and processes to stakeholders–including the public, business leaders, thought leaders, and policy makers–in an unbiased and verifiable manner. IAB and the authors share a common interest in determining the size and scope of the digital economy, the contributions it makes to U.S. gross domestic product (GDP), and the contribution advertising and marketing make in supporting it.

The study estimates the value of the digital economy, expressed first by the employment it generates and second by the contribution it makes to the U.S. GDP. It then explores, in Chapter 3, the part of that value that is due to advertising and marketing. We use the term "advertising" to refer to payments made to digital media by the providers of goods and services or their intermediary agencies for marketing communications services. We refer to "marketing" as all the market-making services that underpin the development, manufacture, distribution, marketing, selling, and delivery of goods and services to consumers.

While this report studies the benefits, not the costs, of the digital economy, we should comment briefly on how the costs are met. As with most infrastructure, the cost of building and maintaining the digital economy is paid for in a variety of ways (although unlike most infrastructure, little is paid for by government). All users pay Internet Service Providers (ISPs) for access to content and services. There are also cases–such as Wikipedia, one of the most visited sites on the internet–that operate on a model of peer content production and foundation funding. Retailers pay e-commerce platforms. Gig economy workers pay service platforms. In addition to these direct payments, investors pay to build out the internet in anticipation of future demand, so a significant part of the internet is paid for by venture investors.

2.2 The Internet Enables the Digital Economy

THE DIGITAL ECONOMY TODAY…

Accounts for:
18% of the U.S. **$28T** gross domestic product

Generates:
28.4M jobs—17.8% of total U.S. non-farm employment[3]

The internet has shaped U.S. economic development more than other general-purpose technologies like printing, railroads, and electrification. Its ability to generate new companies, functions, products, services, and jobs stems from the following **six core attributes of an information-based economy**:

1. **Firms can scale at very low cost.** Once a digital solution to a consumer need has been developed, the cost of serving new users is usually very low. An early instance of the ability to scale at low cost was the social network Facebook.

2. **They can scale very fast relative to the industrial age.** Facebook's customer base grew faster than any product in history before it. Since 2020,* U.S. employment for Walmart grew by over 260%, Comcast by 174%, and IBM by 92%. However, just because firms can scale does not mean they always do. Competition can scale equally rapidly and may exhaust market demand. Nevertheless, information economics helps economies to find, experiment with, and exploit opportunities in months or years, not generations.

3. **It is almost costless to match products to buyers' individual needs.** Provided that privacy laws are complied with, automation can deftly match people to products and services. In advertising today, a typical brand in the U.S. is offered about nine million opportunities to advertise per second.[4] Rapid digital matching is an essential feature of the business models of most consumer services–such as Netflix, Spotify, and Airbnb–and employment services like ZipRecruiter. Years-long trial-and-error methods of market segmentation is being replaced by algorithmic matching that can be built in days and tested and refined in weeks.

4. **Current customers can help a firm match its offerings to new customers by writing reviews.** Customer feedback not only speeds the elimination of inferior products but also identifies differences among products that only experienced consumers are aware of. For example, reviews help match consumers to travel services at Tripadvisor, to entertainment at YouTube, and to consumer goods at Amazon.

5. **Firms build on each other's ideas in the internet ecosystem.** The physical economy thrived on competition, as firms erected barriers to protect their investments in physical assets. The digital economy thrives on interdependence and innovates to bypass monopoly. For example, what seemed to be the natural monopoly of buried cable invited the invention of new ways to transmit signals. Cable distribution of video gave way to streaming by subscription. Then subscription services were complemented by ad-supported services like the Roku Channel, Hulu, and Pluto TV. In 2024, 57% of U.S. households with video streaming capabilities used the ad-supported option.[5] As the opportunity to view digital content has been liberated from the monopoly of cable, video content producers have built on the innovation to create new genres and form factors such as short form video. In doing so, they have found new audiences and new markets in the U.S. and globally.

6. **Reduced cost of innovating digital business models has led to a faster rate of change.** New ideas come to market faster, and established ideas evolve faster. One reason is experimentation. In the physical economy experiments are costly and slow. The information economy makes systematic, controlled experimentation a natural way of working. Our last report, conducted in 2020, shows many instances of accelerated innovation and deployment. For example, the market in insights from web logs that Splunk pioneered has expanded rapidly in the last five years.

*The last time this study was conducted.

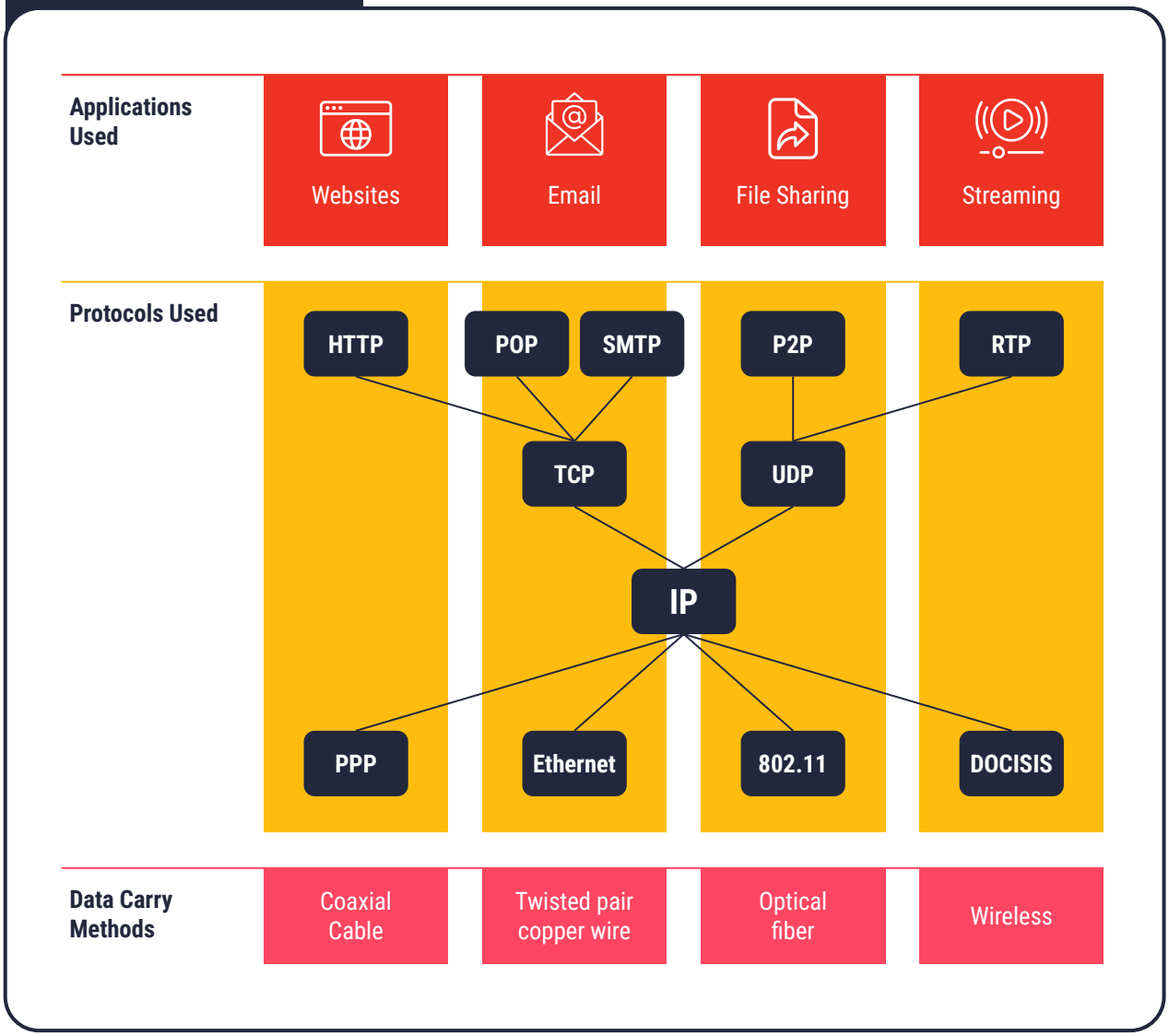
Use of the internet is so pervasive today that credibility requires that it be carefully defined. Therefore, we first define the internet. Then we define the digital economy that runs on the internet, and finally we exclude illegitimate uses.

We distinguish between the internet (our focus) and the web (a subset of our focus). The internet is a global network connecting many millions of computers, server clouds, and databases on a system of cabled and wireless pathways and switches over which data packets are routed under the direction of software to destinations where they are interpreted by hardware and software. Described succinctly, the internet is a digital data delivery service. The web is a protocol that uses this delivery service to carry text, video, and audio data between consumers and websites. Other protocols use the service to carry voice data, to stream music and video, and to send mail. Thus, the web is just one of the protocols that move data around the Internet.

We define the internet as any pathway that uses the internet protocol (IP) software convention. The IP was designed to be separate from, and quite independent of, the higher-level software applications that run on it, creating an open platform that can carry data of any kind, whether written to be read by email, file sharing, video streaming, or website assembly software. The internet was also designed to be separate from many lower-layer physical networks such as coaxial cable, ethernet, telephone networks, cable networks, and wireless networks, without the need to tailor them to particular end uses.

The IP has been such a remarkable economic force because it carries many kinds of data on many physical architectures that, before the internet, needed their own pathways and switching methods. Voice data was carried on phone lines and switched through telephone exchanges. Music data was carried on vinyl discs or plastic tapes and switched by lifting one disc or tape and replacing it with another. Now, as data is digitized, one protocol (the IP) handles all switching. Figure 2.2 illustrates the main kinds of data flow that are switched by the IP. It is just one layer in a stack of protocols to get data from one physical network to one software application, but it is a particularly important layer. The stack has an hourglass shape, so that many kinds of data pass through the IP layer of the stack. In telephony, for example, the IP enables packet switching and is distinct from and independent of voice networks that rely on circuit switching. Thus, the IP links disparate networks carrying digital information, and empirically, it is easily distinguished from other networks that carry analog information, such as voice transmissions.

Figure 2.2 Internet Architecture



The internet is vast, but it has limits. What limits it is—as Robert Cannon has argued[6]—that it can only reach an address if it exists in a unique address space. This address space is defined, and with it the extent of the internet is defined, by the unique set of IP number addresses. The Internet Corporation for Assigned Names and Numbers (ICANN), a non-profit corporation based in California, assigns the IP addresses to large users of data and to internet service providers (ISPs) on behalf of small users including individuals and households. In Chapters 4-6 we examine how markets are made in these addresses.

Having defined the internet, we define the digital economy, which might alternatively be called the market-making internet. Across the five studies in our "Value of the Internet" series, we have selected–from all firms that benefit from data that flows through the IP–only those where the effect is to make markets. This would exclude, for example, government information sites.

We use a six-factor test to include a firm as part of the digital economy, and a three-factor test to exclude it.

INCLUDED

To be included, a firm must meet one or more of these criteria:

- ✓ It sells digital services, such as entertainment or useful information or physical products for offline delivery, to consumers (individuals or firms).
- ✓ It combines free and priced digital services such as freemium software as a service, crowdfunding, or crowdsourcing. Thus Linux, which makes its products available at no charge and goes on to earn revenue from professional support services to users, is included. Similarly, we include internet-based organizations like Microsoft's GitHub because it enables Microsoft's commerce and firms like Dropbox that offer free services but also paid versions.
- ✓ It sells services that, while not necessarily wholly digital, are foundational to digital transactions. It may do so by using offline means to advertise to, recruit, or target customers or prospects on behalf of firms in the digital economy. It may sell systems integration services, expert knowledge, or strategic counsel to digital firms or to the digital divisions of hybrid firms.
- ✓ It offers such digital services or products for free[7] but creates value for consumers so large that either firms bundle the free services with services that are paid for (such as Google offering free services to consumers and selling advertising to brands) or attract donors who want the producer's products to be priced at zero to maximize consumption. A pure example is Wikipedia, which receives donations from the public and from firms like Google. Mixed examples in which donation and commerce are blended include the Apache Software Foundation (which governs the production of widely used free software including Hadoop and the Apache HTTP Server among many others), the Mozilla Foundation (maker of Firefox), RedHat (acquired in 2018 by IBM), Ubuntu (a Linux distro), and SUSE.
- ✓ It operates physical infrastructure foundational to the digital economy, such as data transmission and data processing hardware, foundational software including operating systems, and information technology services.*
- ✓ It designs or manufactures dedicated hardware or software for infrastructure such as microprocessors and servers.*

**We take steps here to guard against the risk of double-counting if, for example, we count the revenue from the manufacture and sale of servers when they are sold to cloud computing firms and the downstream revenue from the sale of cloud services.*

EXCLUDED

Firms are excluded from our definition of the digital economy if:

- ✗ They are public services including national, state, and local government services such as defense, policing, public schooling, and non-market medical services.
- ✗ They are related to production of unpriced public goods such as academic research.
- ✗ They are internet services internal to the operation of a firm that do not make markets with third parties. For example, when a firm uses the internet to manage the travel and entertainment expenses of its employees (in contrast to hiring a vendor to do it) or to manage its own enterprise vehicle fleet management, it is excluded from the market-making internet.

Purely physical-world or analog processes are excluded from the Internet ecosystem, such as the human elements of personal selling. But in an increasingly data-driven world managed with generative artificial intelligence (GenAI), many physical-world market-making is supplemented by data. When a firm in the system does both analog and digital work, we include the digital work and exclude the analog work.

This report puts a value only on the legitimate digital economy. There are some illegitimate uses, and they play no part in our valuation.[8]

Finally, we explain the digital ecosystem. Ownership of the network is highly dispersed across many firms, government agencies, and open-source entities. We use the qualifier "ecosystem" to refer to the aggregation of businesses that depend on and co-evolve with the internet infrastructure.

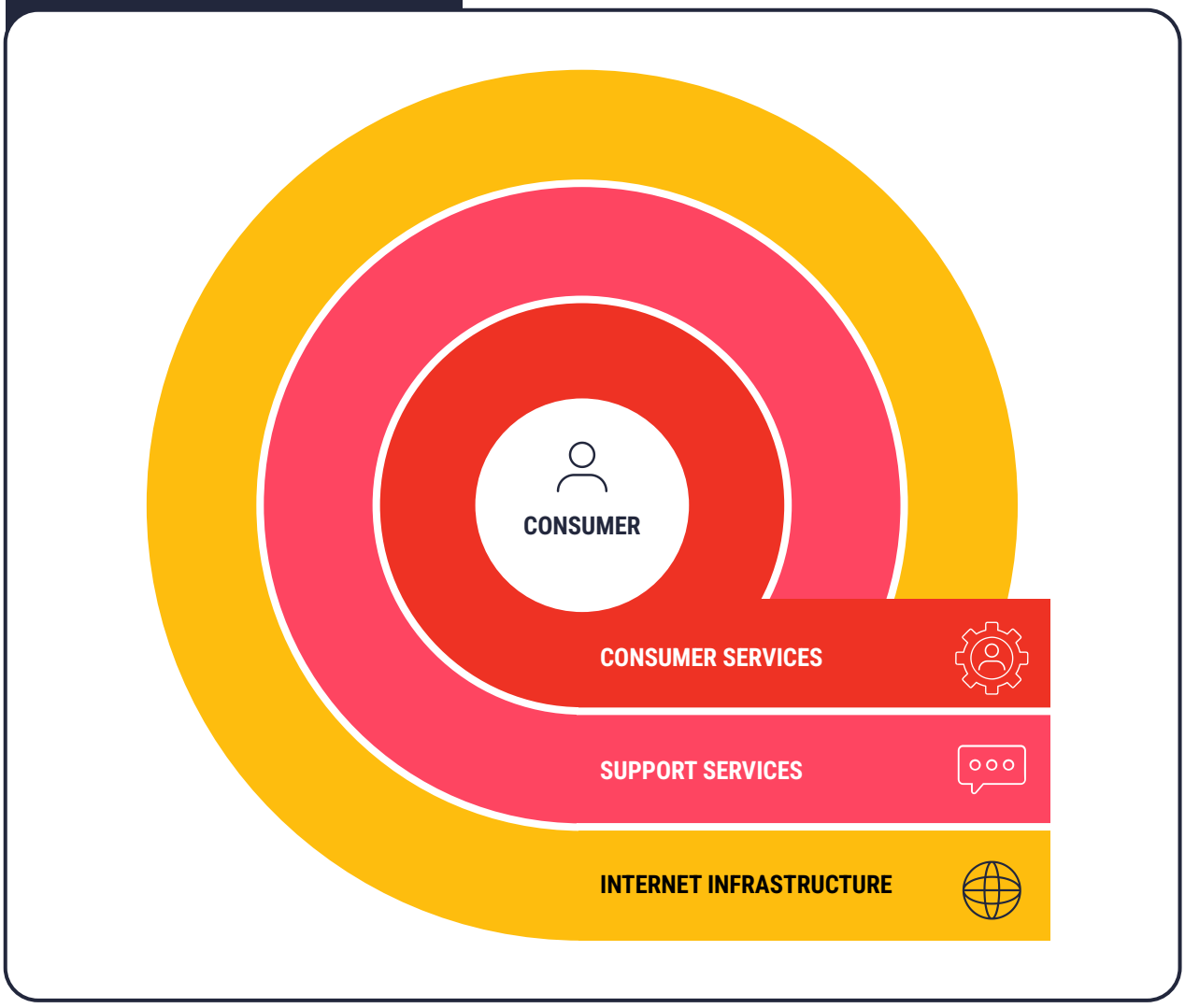
One question the study seeks to explore is the extent of the ecosystem's reliance on advertising and marketing to support it. Advertising can be read narrowly as payments by advertisers to publishers, following the precedent established in the pre-internet world. In that world, "advertising" did not cover advertising on so-called "owned" media, such as displays on the sides of a firm's trucks and buildings, because they were not material. However, in the digital economy, this distinction underplays one of the important economic consequences of the internet. The marketing effects of the internet ecosystem, particularly those of owned and earned media, are very substantial. Payments to publishers do not measure all that the internet does to make the markets that create the economy. Nor does the conventional use of the term "advertising"—as marketing communication distributed on legacy print, electronic, or outdoor media—adequately capture the range of market-making activity the internet has enabled.

The internet, in sum, serves many legitimate commercial purposes besides advertising in the narrow sense of the word. Websites can serve as storefronts, as point-of-purchase stimuli, as tools for conducting research online for offline purchase, and as a way to transact online based on offline search. Websites can aggregate consumer reviews. Consumers can see products promoted and buy them in a single visit. They can download digital products and consume them online. They can share news about their purchases, share their opinions, and review products and services on social media. They can verify ownership by using non-fungible tokens (NFTs), a blockchain-based system to back claims on collectible digital products and assets. Enabling these purposes are what is envisaged by the term market-making digital ecosystem.

2.3 Structure of the Internet

Our earlier studies described the origins of the market-making internet about 30 years ago, and we will not repeat that material here. Greenstein (2015) has an excellent and more extensive account.[9] Our earlier material, however, accounts for our chapter structure. As the digital economy grew, a three-layer structure focused on the customer has emerged. There is a layer of infrastructure, a layer of support functions, and a layer of consumer services, which consumers either buy or receive for free.

Figure 2.3 Structure of the Internet 2024



2.4 Methodology

It has been observed that traditional approaches to measuring the value of the digital economy fail because much of the value received from its content–such as search, maps, encyclopedias, and so on–is free to the consumer.[10] Our approach is to count employment. In equilibrium, if value is created, labor is employed to create it in proportion to the value.

BOTTOM-UP

Bottom-Up Employment-Based Methodology

Given our emphasis on employment not enterprise revenue, the main goal of this report is to estimate how many jobs in the U.S. economy exist because of the digital ecosystem. We set that goal because it measures the size of the internet, it measures its growth across these studies, and it is a vital input into public policies that shape the internet. The internet exists because of past policy actions. Policy applies abstract principles, but it works because it has real consequences for concrete firms. We want the credibility of the method used in this report to rest on facts that can be traced to specific firms and their strategies. Where possible, we did not want conclusions to be derived from abstracted theory or unacknowledged inference.

We want, to the extent possible, to name the firms that create these jobs. We relied not on reports of the U.S. Census Bureau and the U.S. Bureau of Labor Statistics, which are built from anonymized surveys of firms and are bound to protect the identities of responding firms, but instead (where we could) on what firms told the U.S. Securities and Exchange Commission in public filings. Inevitably there were gaps. Private firms, for example, make few or no public filings. To fill these gaps, we relied on evidence from ZoomInfo, S&P Capital IQ, Statista, and other sources.

The method takes, as a starting point, a list of several hundred large firms that operate, either solely or substantially, on the internet. The list covers firms we have studied in past editions of this report and firms in new sectors. We take their total revenue and employment, in most cases, from U.S. public filings, or in a few exceptions, from foreign filings or commercial services. We then estimate the proportion of revenue and employment attributable to internet-related activities in the U.S. The method is precise with respect to the firms studied but uses documented judgment with respect to their internet-relevant employment and U.S. revenue. Next, we form these firms into sectors, and in each sector, we identify smaller firms. We also estimate the number of people working in large and mid-sized general enterprises who perform work on the internet but are not otherwise counted in the internet ecosystem. Finally, we count self-employed workers such as sellers on Etsy, individual sellers on eBay, on-demand economy workers, creator economy workers, and freelance individuals doing coding, content creation, and other services for websites, drawing on and citing a large number of proprietary studies and sources.

For each person directly employed in a particular sector of the internet ecosystem, other people work in sectors that supply the sector or that benefit from retail and service sector spending by these workers. The focal sector also helps to support taxation-dependent areas of the economy, such as government and public sector workers who are employed in federal, state, and municipal services; education; and the military. This indirect employment, computed by applying employment multipliers to the sector's employment, arises from supplier effects, re-spending effects, and government employment effects. The U.S. Bureau of Labor Statistics publishes statistics on industry employment requirements, which enable calculation of the labor inputs into a sector. Sectors differ in the size of their multipliers. Bivens[11] computes indirect employment that ranges from 372 indirect jobs for every 100 jobs in durables manufacturing to 163 indirect jobs for every 100 jobs in business services. These estimates are inclusive of capital service usage. We then apply a fully burdened labor cost (comprised of wages and salaries, the cost of benefits, onboarding, management overhead, vacation time, and facilities costs) to these employees.

TOP-DOWN

Top-Down Employment-Based Approach

A second goal is to assign internet employment to congressional districts. Here, we cannot work with named firms as we did in the previous section because the firms do not report how their jobs are distributed across the country. Instead, we relied on the U.S. Census Bureau's County Business Patterns (CBP) dataset, which gives the number of employees per county for each establishment in each of the codes of the 2022 North American Industry Classification System (NAICS).

From the U.S. Census Bureau's databases, we identified NAICS codes with significant internet-related employment. As the U.S. Census Bureau protects the confidentiality of respondent firms, the top-down estimate of employment did not agree perfectly with the bottom-up method, although it was a good measure of the geographic distribution of employment. Most of the discrepancy was due to categories of employment such as content creators and solo merchants trading on e-commerce sites that were not mapped by NAICS codes. Therefore, we allocated the difference between the top-down and bottom-up employment totals in proportion to county populations.

3

Advertising's Role in the Digital Economy

3.1 Advertising's Role in the Digital Economy

Advertising has played a significant role in supporting the development and expansion of the internet since its early days. It continues to sustain and power job creation in both the legacy and emerging sectors of the digital economy. Overall, three-quarters (75%) of all advertising in the United States, or $298B total spending (per Magna, March 2025)[12], is transmitted on the Internet. The firms and technologies that enable this spending–ad agencies, ad networks, ad exchanges, data firms, and measurement firms, as well as publishers, platforms, self-employed web programmers, designers, writers, and digital creators–are responsible for millions of jobs in the U.S., which we examine more thoroughly in Chapters 5-7.

3.1.1 Key Advertising Developments and Innovations in the Digital Economy

Since our last study, conducted in 2020, the internet advertising economy has experienced many significant developments and innovations.

Below are **four of the most notable, recent innovations** shaping the internet advertising economy:

1. **The Emergence of Commerce Media**
2. **The Growth of Connected Television** (CTV)
3. **The Continued Surge of the Creator Economy**
4. **Sectors Addressing Recent Restrictions on Personal Data Use**

1 The Emergence of Commerce Media

The rise of e-commerce, accelerated by the pandemic, has intersected with retailers seeking to diversify into high-margin opportunities and advertisers aiming to leverage advanced metrics like closed-loop reporting and incrementality to better target, attract, and personalize messaging for previously unreachable audiences. This convergence has given rise to what is being called "commerce media".

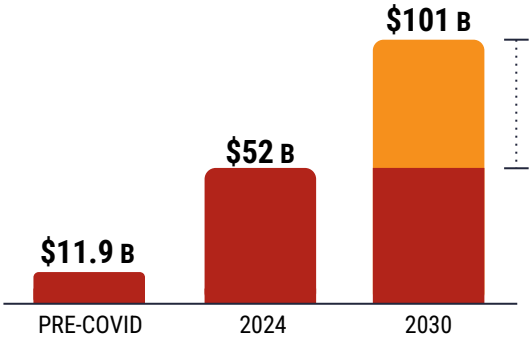
Commerce media utilizes first-party data sourced from transactions, loyalty programs, and CRM systems to identify and target specific audiences. It offers a solution for ad buyers to gain deeper insights into consumer behavior, enabling them to understand how advertising influences purchasing decisions.

As a result, commerce media has quickly emerged as an integral part of the omnichannel playbook and has been one of the fastest growing U.S. advertising channels over the last few years.

COMMERCE MEDIA AD SPEND*...

has surged more than **4x** over the past 5 years

accounts for **13%** of total ad spend



Over the next five years, it's projected to double again, capturing nearly **1 in every 5** ad dollars

*Data is based on eMarketer's Retail Media Ad Spending Forecast, March 2025[13]

Commerce media is not new. Prior to the internet, this type of advertising was commonly known as trade marketing, a channel through which individual brands could promote their products in a retail outlet.

But digital media transformed the practice. Amazon was the first to implement it in 2012, followed by Walmart and Target. It now spans various sectors, including grocery chains such as Kroger and Albertsons, specialty retailers such as Home Depot and Lowe's, as well as in banking/fintech with Chase and PayPal, and travel with Marriott and United Airlines.

Now, there are projected to be

250+ **commerce media networks globally**[14]

80+ **in the U.S.**[15]

Among the top 100 retailers in the U.S.,

80% have either **started building** or are **working** with third-party providers **to develop their commerce media networks**

With the evolution of in-store commerce media, the continued expansion of other types of retailers launching initiatives, and the emerging partnerships between retailers and CTV streaming companies, commerce media is one of the most active sectors within the digital advertising ecosystem.

2 The Growth of Connected Television (CTV)

Connected TV, (or "CTV") refers to "TV-like", internet-delivered content, typically long-form and delivered via a Smart TV or OTT device, via subscription or non-subscription streaming video services. Some content may be distributed in mobile or desktop environments as well.

CTV began as an ad-free experience supported mainly by consumer subscriptions, but has now become substantially ad-supported. The largest of the streamers, Netflix, was subscription-only from 2007 until 2022, when it introduced an ad-supported option. Now over half of all new sign-ups for Netflix choose the ad-supported version.[16] The launch of ads on Amazon Prime Video in 2024 created a significant amount of new inventory and a reach of over 115 million U.S. viewers.[17]

Streamers such as Disney, Paramount, Warner Bros. Discovery, and NBCUniversal also offer ad-supported plans. They give consumers additional options while providing the companies higher margins than the subscription side of their business.[18] What was once exclusively an ad-free experience now has half of streamers offering an ad-supported product, either for free or for a reduced fee.[19]

CTV offers a wide array of content to consumers, as well as new opportunities for advertisers, thanks to precise geographic targeting capabilities and the introduction of new ad products aimed at small to medium-sized businesses (SMBs).

We discuss a sampling of these new CTV-enabled advertising initiatives in Chapter 6, including Comcast's launch of "Universal Ads," a self-serve advertising product for SMBs that facilitates the purchase of ads across a variety of streaming content providers ranging from A+E and AMC to Fox, Roku, and others. This lowers the barriers for SMBs who had previously been left out of TV advertising opportunities due to cost and operational barriers.

Over the last few years, CTV has been one of the fastest growing channels in terms of ad spend. It exceeded $20B for the first time in 2023 and grew another 16% in 2024.[20]

CTV is projected to grow 13% in 2025 to **$26.6 B**

2-3x *faster than total media overall*

In 2024, CTV had two significant developments: the launching of self-serve, programmatic activation platforms on behalf of the major steaming companies, as well as the streaming of major live events which historically had been home to the linear TV networks.

In 2024, CTV streaming companies including Disney, Paramount, and Roku launched self-serve, programmatic ad platforms, enabling ad buyers to activate their media campaigns in the seamless way they've been doing for years on search and social platforms. This, combined with the growing use of Generative AI to streamline the creation of high-quality advertising, is making it easier for SMBs to tap the "TV" space via streaming. As a result, the market is evolving toward a more democratized and competitive landscape, where brands of all sizes have greater access and opportunity to deliver messaging on the largest screen in the home.

2024 was also the year CTV streaming "went live." The most watched content on television, the NFL, now appears in a few instances exclusively on streaming platforms. For the first time in the history of the broadcast, the Oscars ceremony was streamed live outside of the pay TV ecosystem. In 2025, every single event/show on Nielsen's 2024 most watched list will be available in a stand-alone streamer.

CTV as an advertising platform will continue to grow as consumers continue to adopt the channel in place of linear TV, as audience addressability and measurement evolve, and as the largest and most popular live TV events continue to be featured alongside the high-quality on-demand content the CTV streaming platforms continue to produce.

3 The Continued Surge of the Creator Economy

It has been 20 years since YouTube launched and ended up becoming a key platform for creator content, and 15 years since the term 'YouTuber' entered the media vocabulary. Today, digital creator media is in a clear position of dominance as creators thrive across not just on YouTube but on TikTok, Instagram, Pinterest, Snapchat, Twitch as well as the podcasting ecosystem. In fact, The New Yorker referred to 2024 as "The Year Creators Took Over", conceding that while legacy media continues to have a following and influence "…it has nowhere near the power it once had to control or define the cultural narrative."[21]

Our analysis of the contribution of digital creators to the economy supports this view.

Our **figures for the creator economy** in this report are

7.5x larger

than what we estimated in our last study, conducted in 2020

We believe such exceptional growth is due to a number of factors, including the virtually, barrier-free nature of digital content creation (e.g., via smartphone cameras, video-editing software, GenAI, etc.) and distribution in a landscape free of gatekeepers, the formalization and industrialization of the larger creator economy, and the closer relationships being formed between digital creators and digital audiences.

Considered together, these factors form the foundation of the well documented shift of ad dollars away from legacy media to platforms, streamers, and digital publishers. Additional details on the data points and assumptions made to arrive at our creator economy estimates can be found in Chapter 6 of this report.

Digital creators are inarguably front and center, occupying positions as important as–if not more important than–many of their counterparts from the world of traditional media. To be sure, the 2024 U.S. election was often referred to as "the podcast election," due to the critical role that long form conversations with candidates played in influencing how citizens cast their votes.

More recently, for the 2025 Super Bowl, the NFL provided 150 digital creators with unrestricted access to create their own unfiltered coverage of the massive media event. They "broadcasted" directly from their digital devices to their follower bases in the millions. In aggregate, the prioritization of digital coverage of the big game led to metrics such as the #SuperBowl hashtag generating 2 billion views during game week and team hashtags more than quintupling Super Bowl viewership, despite it being the most viewed Super Bowl in history.[22]

When asked about the importance of the digital advertising ecosystem to digital creators, a leading analyst noted, "digital advertising in general is critical for the creator economy because what we call creators–almost all starting out at a small scale–are primarily operating in digital environments because those environments best accommodate creators whether large or small. Because digital environments can aggregate advertising budgets from multiple advertisers, digital advertising is then able to support those advertisers at a massive cumulative scale."[23] In turn, it benefits brands as well. In Q1 of 2025, Unilever's new CEO, Fernando Fernandez, in outlining his goals for the brand stated that "…our spend on social [media] will move from 30% to 50% of our total spend. We will work with 20 times more influencers."

*The last time this study was conducted.

We see evidence of continued growth and promise in this sector, based on such signals as venture capitalists, platforms, and ad agencies viewing creators as early-stage startups in which to invest and/or leverage.

Recent examples include:

Spotter

Amazon's investment in Spotter, a company that offers investment, software, and professional services to digital creators and over the past 5 years has **paid out close to $1 B to creators.**[24]

Publicis' **$500 M** acquisition of influencer marketing company Influential[25]

razorfish

Razorfish North America's Creator CoLab initiative, through which **digital creators are brought on as employees** so that marketing programs **reflect trends as they happen** and speak to audiences authentically.[26]

PSG

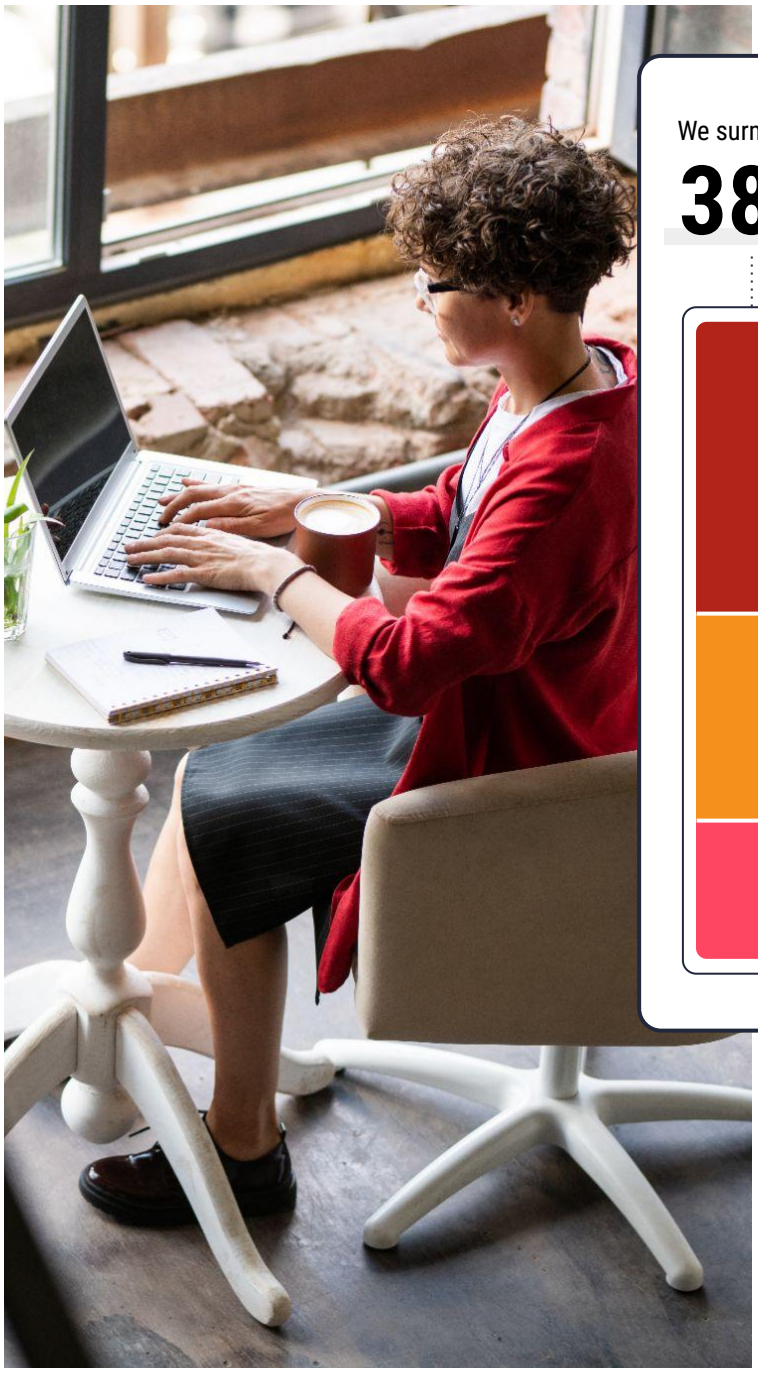
PSG Equity invested **$150 M** in the creator platform Uscreen so that creators can scale up from cottage industries to media businesses with streaming deals across a variety of channels and devices.[27]

Early-stage VC company Slow Ventures launched a **$60 M** Creator Fund that offers **seed capital of $1M to $3M to digital creators** in exchange for a 10% equity stake in their business.[28]

4 Sectors Addressing Recent Restrictions on Personal Data Use

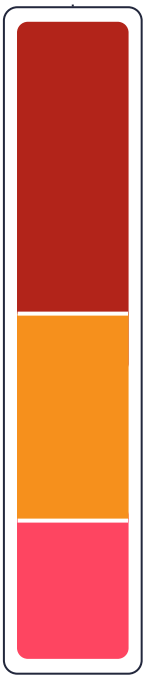
As mentioned, one of the most significant developments in the digital advertising industry since 2020 has been the combination of new state-level data privacy laws and browser updates aimed at protecting consumer data, together creating an environment with fewer signals available for marketers to track user activity and measure performance.

This has prompted many in the ad industry—including brands, advertising agencies, publishers, and the measurement, tracking, and programmatic companies that support them—to develop and adopt new, privacy-compliant methods for understanding audiences and measuring campaign effectiveness in the absence of previously available data.



We surmise that this has contributed to

38K **new or increased staffing** across three sectors in the industry.



17.3K jobs
Data Collaboration and ID Management firms

12.2K jobs
Audience Measurement firms

8.2K jobs
Privacy and Regulatory Compliance Management firms

4

Infrastructure

Internet data flows on an infrastructure of transmission (long distance) and connection (short distance), storage and data analysis. We analyze the firms of the infrastructure in five categories: long range data transmission firms, shorter range connectivity firms, data centers, firms that manufacture hardware, and most recently, firms that build artificial intelligence (AI) models.

4.1 Background to the Evolution of the Infrastructure

Upon the commercialization of the internet in the 1990s, many telecommunications firms pursued the data transmission opportunity by investing heavily to lay fiber optic cable across the continents and oceans separating them.

However, they found it difficult to be as profitable as the firms that made and sold internet content. Some of them integrated into content businesses, hoping that their control of transmission would allow them to offer better service, but they were blocked in 2009 when net neutrality was imposed by the Federal Communications Commission and all data carriers were required to treat all internet content equally with respect to price and speed. In 2018, the net neutrality principle was reversed by the Trump administration. Then in 2024, under the Biden administration, a vote for reinstatement faced legal challenges and was ultimately struck down by the U.S. Court of Appeals. As a result, broadband is now classified as an "information service." Whether there are advantages to integration across transmission, connectivity, and provision of consumer services is still a question on which firms are divided. We analyze in this chapter the firms operating principally as infrastructure providers. Firms that have chosen to integrate vertically are analyzed as Integrated Firms in Chapter 7.

The internet was originally built on a trunk and branch form, the trunk made up of long-haul transmission lines and branches to distribute data to users. Transmission trunks had few customers to bill, while distribution branches had many. Transmission therefore depended on collaboration among firms, and the largest firms, termed the tier 1 peers, did not (and still don't) charge each other for transporting their traffic, an arrangement known as settlement-free peering. Connection firms were (and to an extent still are) firms organized by connection technology, particularly cable, phone, and wireless. A single subscriber could have relationships with several dedicated distributors, such as a cable subscription, a wireless subscription to a mobile phone, and occasionally a subscription to link an automobile to the internet.

We mapped three parts of infrastructure–transmission, distribution, and hardware–onto three kinds of employers: 1) the big telecommunications firms (telcos) handling transmission; 2) cable operators, smaller telcos, and wireless operators handling distribution; and 3) the manufacturers making hardware and equipment.

More recently this tidy mapping has been challenged by new patterns of transmission. To complement and often to displace the backbone-and-branch pattern, there were content delivery networks and data centers known colloquially as the "Cloud." They moved data not simply linearly, but in a more demand-responsive pattern, sometimes described as storing data at the edge of the network.

FOUR FACTORS WERE AT WORK IN THIS EVOLUTION:

1. First, as consumers sought more than one way to connect to the internet, it was attractive for connectivity firms to organize by customer and geography, not by technology. Cable operators offered voice-over IP phone service as well as wireless and cable modem internet connectivity. Telcos entered the wireless and optical fiber markets and largely displaced internet connectivity over copper wire. The opening up of millimeter wave spectrum created the possibility for wireless systems to carry large volumes of data. Several of the transmission firms now have significant connectivity businesses.

2. Second, consumers began to use data in volumes too great for the backbone to handle with transit-free peering. High-bandwidth content producers such as Netflix, YouTube, and Facebook as well as services such as Salesforce, Adobe, Electronic Arts, Square, Splunk, Peloton, and Dropbox created an economy of edge supply and demand.

3. Third, telcos encountered competition in the form of content delivery networks (CDNs), some owned by Google, Facebook, or Amazon, and others by independents such as Akamai, Cloudflare, Limelight, and Firstly. They built clusters of servers near concentrations of end users and complemented linear transmission.

4. Finally, generative artificial intelligence model building has intensified the need for processing of data at the edge.

As a result, very little of the internet's data travels from content creators to consumers on the backbone today. Instead, this data moves on the edge of the network, from data suppliers to distribution nodes and on to homes. In this report we use the term CDNs to refer to firms that supply these edge flows. The largest data processors, such as Amazon, Google, and Facebook, own their own server farms and, along with independents like Akamai, locate at points of high retransmission demand.

With these developments in mind, we anchor our account of infrastructure firms on the original trunk-and-branch model and adjust to account for the evolution.

4.2 Transmission and Connection

Tier 1 ISPs are networks that, despite the evolving structure, still make up the backbone of the internet. They connect to other networks at internet exchange points. If one connects to another that it recognizes as also a tier 1 ISP, there is no charge to pass on the traffic under the principle described earlier as settlement-free peering. If this prior arrangement does not exist, the charge can be substantial. Therefore, between the backbone and the end user, other firms have emerged. We analyze them in section 4.2.2.

4.2.1 Tier 1 Transmission Providers

These firms provide high speed internet access, ethernet transport, and colocation services over long distances. Each of these firms controls one or more autonomous system numbers (ASNs), each defining a collection of connected Internet Protocol routing prefixes that give them control over internet routing policy. All of them provide settlement-free peering, meaning that they are networks that can reach every other network on the internet without paying for transit.

Verizon is the largest U.S. tier 1 provider. Its revenues are almost entirely internet-dependent, and international revenues are not material. From 2024 SEC filings,[29] we conclude that its revenue is $134.8B and its employment is 99,600. As all its subscribers are in the U.S., we assume that all its employees, even those not based in the U.S., contribute to U.S. economic activity. As of September 2024, Verizon has announced its intention to acquire Frontier (see next section) to grow its subscriber base and its fiber footprint. As the transaction is not yet complete, we analyze the firms separately.

AT&T is the second-largest U.S. tier 1 provider. Our analysis relies on its 2024 SEC 10-K filings[30], and excludes WarnerMedia, Vrio, Xandr and Playdemic, which are discontinued operations. The filings report income from U.S. customers as 96.8% of the $122B of total income. Of the four reporting segments–mobility, video, broadband, and business wireline–we assume all but 5% is internet-dependent. We conclude that U.S. internet-related revenue is $112B. AT&T reports global employment of 149,900, and we ascribe 137,000 to the U.S. in line with revenue.

Next in size is **Lumen Technologies**, formerly CenturyLink, which in 2017 acquired Level 3 Communications.[31] It's 10-K to the SEC[32] reports that global employment is 28,000, of whom 3,700 are employed outside of the U.S. Revenue is reported as $14,600M, and we assume the proportion that is U.S.-based is the same as the U.S.-based employment, that is 86.8%.

Zayo, based in Boulder, Colorado, has a tier 1 fiber network in North America and Europe with settlement-free peering with all other tier 1 providers. It grew by acquisition and took itself private in 2020. Its website reports U.S.-based employment of 2,500, which is 76% of global employment. Although private, we estimate global revenue is $2.6B, and we take its U.S. revenue to be in proportion to U.S. employment.[33]

GTT Communications operates a fiber network in the U.S. and Europe, as well as subsea cables, earning more than 50% of its annual revenue outside the U.S.[34] In 2021, the New York Stock Exchange delisted GTT's shares after the company failed to file quarterly and annual results. It now trades on the over-the-counter market. Since delisting, no publicly reported data has been available. However, one source gives global revenue as $1.5B and global employment as 3,229.[35] We report U.S. revenue as half of GTT's global revenue, and basing U.S. employment on a workforce productivity rate similar to Cogent's, we report employment as 1,700.

Cogent Communications operates in North America, Europe, Asia-Pacific, and Latin America. It closed on the acquisition of Sprint Communications in May 2023. It earns $771M of its $940M global revenue in the U.S., where 1,693 of its 1,947 employees are based.[36]

Much of the revenue of these firms is earned for services other than tier 1 transit. We do not attempt to assign the diverse sources of revenue to other tables. If they provide tier 1 service, we count them here.

Table 4.2.1 Tier 1 Transmission Providers

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
verizon	$ 134,800	99,600
AT&T	$ 112,000	137,000
LUMEN	$ 12,700	24,300
zayo	$ 2,000	2,500
gtt	$ 750	1,700
cogent	$ 771	1,693
TOTAL	**$ 263,021**	**266,793**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

4.2.2 Short Range Connectivity (ISPs)

As data storage has transitioned from central storage on a firm's own servers to distributed storage on data centers, short-range connectivity (the ISP role) has become much more important. This evolution has been driven by growth in the quantity of data generated in business and personal life, by the declining cost of server storage, and by the demand for redundancy in data storage. Storage has moved from a fixed cost to an outsourced variable cost.

Connectivity firms provide some transmission, and transmission firms offer connectivity, so there is a degree of arbitrariness in the distinction we are making between the two, but it rests on this distinction between their business models: transmission firms are rewarded mainly for linking to the global backbone, while connectivity firms earn revenue by linking the internet to end users.

This distinction can be seen in the difference in strategy of two of the nation's largest ISPs, AT&T and Comcast. AT&T has concentrated on data transmission, particularly in 5G and fiber infrastructure, and we analyze it in the Tier 1 Transmission Provider section even though it is a large ISP as well. Comcast has diversified into television content production and distribution, and we analyze it in the chapter on integrated firms. While it has announced its intent to move its portfolio of NBCUniversal's cable television networks into a new publicly traded company (SpinCo), presumably to eventually divest them, Comcast retains a substantial holding in content, such as broadcast TV, sports, movies, and theme parks.

More generally, the ISPs monetize the link between the internet and end users by delivering cable television, voice, and wireless telephony or internet services such as email and spam protection on their pipes. Cable and fiber signals are transmitted on coaxial cables, and increasingly, on fiber-optic cables. With head-end modification, coaxial cables installed for phone service can transmit in both directions, have ample capacity to carry data, and are capable of bi-directional carriage of signals as well as the transmission of large amounts of data. Others in this category connect wirelessly on mobile carriers and via satellites.

T-Mobile US provides wireless voice, messaging, and data services in the U.S. under the T-Mobile and Metro by T-Mobile brands. It resulted from mergers with Sprint and MetroPCS, with investments by Deutsche Telecom and Softbank, and a listing on the NASDAQ. Revenues are $78.6B,[37] and employment in the U.S. is 71,000.

Charter Communications is the third largest ISP in the U.S., after Comcast and AT&T, with revenues of $54.6B and employment of 101,100.[38] Under the brand name Spectrum, it sells to 32 million end users in 41 U.S. states. We estimate internet revenue and employment based on SEC 10-K filings. All revenues are in service of U.S. customers, with their international needs met in a collaboration with Verizon.

Cox Communications is a subsidiary of Cox Enterprises. The largest division of Cox Enterprises, it is a private broadband company serving seven million homes and businesses in 18 states. Revenue, all in the U.S., is estimated at $11B, with 20,000 employees.[39]

Altice USA serves 5 million customers across 21 states. Its 2023 10-K/A filing[40] gives revenue of $9,299B, and we adjust to $9,237B for 2024 to reflect the revenue trajectory. We estimate employment in line with comparable firms at 18,500.

Windstream Holdings is a privately held, but management reports revenue of $4B,[41] and we estimate employment at 8,000.

Telephone and Data Systems Inc. delivers telecommunications services through two brands, TDS Telecom and U.S. Cellular, operating entirely in the U.S. Our estimates are drawn from its 2024 10K filing.[42]

Echostar Corporation offers pay-TV, retail wireless, 5G network deployment, and broadband and satellite services under the brand names Dish, Sling for TV, and Hughesnet for satellite internet. Its SEC 10-K filing[43] reports that its North American revenue was $16.670B, and we attribute 90% of that to the U.S. It reports employment of 15,300, of which 600 are international.

Frontier Communications offers broadband internet, digital television, and computer technical support to residential and business customers in 25 states. It reports[44] $5,751B revenues and employment of 13,300, all in the U.S.

We estimate an "all other" category of 10% of these totals to account for smaller regional ISPs such as Viasat and Consolidated Communications.

Table 4.2.2 Short Range Connectivity (ISPs)

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
T-Mobile	$ 78,600	71,000
Charter Communications	$ 54,600	101,100
EchoStar	$ 15,003	14,700
Cox	$ 11,000	20,000
altice	$ 9,237	18,500
Frontier	$ 5,751	13,300
TDS	$ 5,160	8,800
windstream	$ 4,000	8,000
ALL OTHER	$ 18,335	25,540
TOTAL	**$ 201,686**	**280,940**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

4.3 Hardware

Even though IT hardware does not directly use the IP protocol (as for example internet service providers do), some hardware is built for no reason other than to enable its use. For that reason, we treat the firms that make this hardware as part of the digital economy.

In some cases, the hardware is sold to end users, but in other cases it is sold to downstream manufacturers who sell on to end users. In the latter cases, to avoid double-counting we do not count the revenue.

Thus, all of Intel's products are sold to downstream firms, principally by Dell, Lenovo and HP, so all of its U.S. revenue of $40,128B and employment of 80,000 is excluded from this study. All of Broadcom's U.S. sales to data centers, networking, software, broadband, wireless, and storage clients are downstream and captured in their respective industries, so all of its U.S. revenue of $6,975B and its employment of 9,500 are excluded from this study. All of Advanced Micro Devices' revenue of $7.837B and employment of 26,000, while internet related, are excluded from this study.

However, we do include in the digital economy at least a part of the revenue and employment of some large hardware manufacturers: first, manufacturers of consumer products–such as mobile devices, personal computers, connected TVs, networked media appliances–and second, manufacturers of components that are incorporated in their own consumer products–such as servers, chips, devices, routers and switches–not sold to third-party manufacturers, so that double-counting is not an issue. In the last decade, with the growth in data centers, the cloud, streaming, and messaging, as well as the shift from linear to a networked digital transmission, there has been a substantial increase in the number and size of these candidate firms. The challenge we face is to divide the revenue of these firms into the part that enables the use of the internet and the part that does not, while also avoiding double-counting.

U.S.-based employment in this sector is often engaged in product design, software, marketing, sales, and service rather than manufacturing, as the U.S. has lost employment to Asian factories. The CHIPS and Science Act of 2022, however, has created incentives for domestic fabrication.

Two of the largest U.S. hardware manufacturers are not reported on in this chapter. Apple, whose hardware component would make them the largest in the sector, is in the section on integrated firms. IBM is in the next chapter because they now do more work in system design and consulting than in manufacturing.

Dell Technologies On a close reading of Dell's Form 10-K,[45] we assess that all employment and revenue is related to products that exist for no reason other than to enable the use of the internet, and a negligible proportion is sold on as components of final market products: all of its $48B client solutions sales are branded end products, and most of its infrastructure solutions sales of $33B are branded. The company reports that 50% of revenue is earned in the U.S. and we apply the same ratio to its employment total of 120,000 to estimate 60,000 U.S. employees.

Cisco Systems describes its business in its 10-K[46] as designing and selling "a broad range of technologies that power the Internet." It develops, manufactures, and sells networking hardware, software, telecommunications equipment, and related services. We assess all employment and revenue as internet related. The 10-K gives the most recent year's revenue as $56.998B and ascribes 58.7% to the Americas. We take 90% of that to be U.S.-based, or $30,112B. The company reports a workforce of 40,492 in the U.S. A negligible proportion of Cisco's sales are to end consumers (for example Cisco home Wi-Fi routers), but Cisco reports that a significant portion of Cisco's revenue comes from "product" sales, which are components used in customer products, with this proportion often representing around half of their total revenue. We assign half of the revenue and 46% of the employment to Cisco's digital economy contribution.

Nvidia has a central position at the leading edge of internet infrastructure. It designs and supplies graphics processing units, application programming interfaces, system-on-a-chip units for the mobile computing and automotive markets, and artificial intelligence hardware and software used in edge-to-cloud computing. Its 10-K filing[47] lists 2024 global revenue as $60,922B, of which 44% is in the U.S., and employment as 29,600, of which we take 50% to be U.S.-based. However, most of these sales are to downstream firms. The only products that Nvidia sells to end users are the GeForce range of online gaming laptops and chips used in the cloud-based game streaming service GeForce NOW. The gaming division generates $13.5B, of which we ascribe $5B to U.S. end user purchases and 1,200 people to end user employment.

Qualcomm develops and commercializes foundational technologies for the wireless industry, most of which is part of the internet economy. Its SEC 10-K report[48] is of limited value because it reports global revenue as $35.8B but U.S. revenue as only $1.3B. This is because it assigns income to the country to which products are shipped irrespective of where the economic benefit accrues. For example, China revenues could include revenues related to shipments of integrated circuits for a company that is headquartered in South Korea but manufactures devices in China, which devices are then sold to consumers in Europe and/or the U.S.. And because it is a "fabless" manufacturer (it designs and sells hardware whose manufacture it outsources), reported employment is uninformative. We therefore rely on the locus of employment. Its 2024 employment of 50,000 is distributed across 36 countries, with 12,000 in the headquarters, San Diego, according to its 10-K filing. With 27 regional U.S. offices,[49] we estimate U.S. employment beyond San Diego at 20,000 and apply the proportion of global employment that is U.S.-based (64%) to global revenue to conclude that U.S. revenue is $23B. How much of this revenue and employment is captured downstream? We conclude most, because only the following products are sold for end use: smart home devices, such as garage door controls and property security systems; silicon and software platforms used in Bluetooth-enabled speakers, soundbars, and home theater systems; and industrial handheld scanners. We take 5% of revenue and employment as incremental.

Hewlett Packard Enterprise earns its revenue from hardware for enterprise computing, storage, networking, and IT services, as well as from network security. It allows its customers to capture, analyze, and act upon data from edge to cloud. We treat all revenue as internet related and none as duplicative of downstream revenues. From its October 2023 10-K,[50] we conclude that U.S. revenue is $10.369B and worldwide employment is 62,000. As U.S. revenue is 36% of global revenue, but employment is skewed to the U.S. by its head office workforce, we take U.S. employment to be 28,000.

Ericsson, based in Sweden, sells infrastructure, software, and services in information and communications technology for telecommunications service providers and enterprises, including, among others, 3G, 4G, and 5G equipment and Internet Protocol (IP) and optical transport systems. Since its divestment of power cable operations, all revenue is earned in the internet ecosystem and none is duplicative of downstream revenues. It reports U.S. revenue of $5.7B and U.S. employment of 10,373.[51]

Next, we review a group of audio and video hardware manufacturers that have begun to integrate internet-dependent streaming software with some of their hardware products: Samsung, LG, Roku, Sonos, and Vizio. This integration of hardware with platforms supplies consumers' growing interest in free ad-supported TV (FAST).

Samsung is a large South Korean hardware manufacturer that reports its revenue in four segments. We take two of them, visual display and mobile experience, as relevant to the digital economy and exclude the other two, memory devices and display panels. In some of the products that we treat as relevant hardware, it has added the Samsung TV Plus streaming service. This step integrates hardware with streaming software. Thus, smart TVs and Galaxy mobile devices–and more recently non-Samsung TVs via an app and some smart refrigerators–are now hardware products that enable FAST access. Viewers in the U.S. can receive 400 free (ad-supported) live channels and thousands of television shows and movies on demand. These two revenue segments earned $119.74B globally in 2023.[52] We treat these two segments as the main part of Samsung's participation in the digital economy. We apply the reported 35% of sales in the Americas and 85% of these sales as U.S. sales to derive U.S. internet-dependent revenue as $35.6B. We apply the same proportion to non-Korean employment of 152,350 to estimate U.S. employment at 45,200.

LG Electronics is a large South Korean multinational within the LG Group conglomerate. LG Electronics' global revenue is $63B, and its global workforce is 74,000. It reports revenue in five segments, of which we take only Home Entertainment to be part of the digital economy since LG closed its mobile communications segment. The main products in this segment are home theaters and sound systems, on which it has added more than 300 FAST networks, featuring not only newer brands like Food 52, but also entire channels focused on Baywatch and Johnny Carson. Of the $63B total revenue,[53] $16B is earned in the Americas. Assuming 90% is U.S., therefore, $14.4B is earned in the U.S. Global home entertainment revenue is $10.75B, and therefore we estimate U.S. home entertainment revenue to be $2.46B. Assuming employment is proportional to revenue, the U.S. home entertainment workforce is 2,890.

Roku was long associated with streaming devices, but now its biggest business segment is platforms, with its own ad-supported streaming service, The Roku Channel, at its center. To further integrate its offerings, Roku expanded its line of Roku-branded TVs with the Roku Pro Series for U.S. customers in 2024. Its 10-K for 2023 reports $3.485B net revenue,[54] and eMarketer estimates $2.19B in its U.S. CTV ad revenue.[55] The 10-K does not break out revenue by geography but states that "most revenue" is U.S. Therefore, we assume 75% is U.S.-based, which is consistent with the ratio of platform segment revenue vs. device revenue (86% vs. 14% respectively) reported in the 10-K. Our U.S. employment estimate uses the same ratio.

Vizio is a pioneer in free programming and lower priced hardware subsidized by data-optimized advertising and performance measurement. The company has been among the top sellers of smart TVs in the U.S. for many years and most recently ranked as the third most popular TV hardware brand in the U.S. after Samsung and LG.[56] The company's WatchFree+ streaming service offers over 300 ad-supported free channels across genres such as comedy, children's, sports, travel, and history as well as a combination of live streaming and on demand viewing. Although Walmart acquired Vizio, the transaction did not close until December 2024; therefore, we analyze them separately. Vizio's 10-K[57] reports $1.68B in revenue, broken down as $1.08B hardware and $598M "Platform +" revenue, which refers to the proprietary Smart TV OS that powers the integrated entertainment offerings on the hardware and to Inscape, the data and intelligence software. As Vizio ceased selling in Canada and Mexico several years ago and is only starting to be seen again recently in Canada via Walmart, we assume all revenue is U.S. Employment is reported to be 900 U.S.

Sonos is a networked audio system that enables high quality audio streams from over 100 content partners to be streamed in multiple locations through internet-connected smart speakers and soundbars.[58] It also offers services such as Sonos Radio, which integrates with over 60,000 broadcast outlets globally and can be accessed for free through an ad-supported version or ad-free for a monthly subscription. Via its 10-K,[59] we take 90% of reported Americas segment revenue to be U.S. segment revenue. The U.S. headcount is reported as 1,235.

There are many smaller data hardware manufacturers. Western Digital and Seagate Technology manufacture data storage devices. Juniper Networks makes infrastructure hardware and software for large-scale networks for cloud computing. Others include NetApp, Commscope, SuperMicro, and Avaya. We assume that the products of these firms are captured in downstream firm sales.

Table 4.3 Hardware

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
DELL Technologies	$ 44,212	60,000
SAMSUNG	$ 35,600	45,200
CISCO	$ 15,056	18,581
Hewlett Packard Enterprise	$ 10,369	28,000
ERICSSON	$ 5,700	10,373
NVIDIA	$ 5,000	1,200
Roku	$ 2,614	2,363
LG Electronics	$ 2,460	2,890
VIZIO	$ 1,680	900
Qualcomm	$ 1,150	1,600
SONOS	$ 905	1,235
TOTAL	**$ 124,746**	**172,342**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

4.4 Data Centers and Content Delivery Networks

Data Centers, together with **Content Delivery Networks,** complement transmission and connectivity to deliver digital content to millions of concurrent users around the world. The functions of data centers are threefold:

1. **Storage of Data:**

   Primary Role: Data centers hold data across numerous servers. These data include customer information and business applications, video content, and transaction data. The data are stored on hard drives, solid-state drives, and network-attached storage devices.

   Backup and Redundancy: Data centers implement data redundancy and backup solutions to ensure business continuity data in the event of hardware failure.

2 **Processing and Computing:**

Servers: Beyond merely storing data, data centers house servers that perform the processing and computing tasks necessary for running applications, databases, and other software that businesses and consumers rely on.

Cloud Computing: Data centers support cloud services, providing client firms with scalable computing resources that can be accessed over the internet. These resources are used for running applications, data analytics, artificial intelligence, and more.

3 **Switching and Networking:**

Routers, switches, and firewalls manage the flow of data both within a data center and, more important, between it and external networks, including the internet, acting as hubs for data exchange.

Operators of Data Centers include Amazon Web Services; Microsoft Azure and Google Cloud, which are analyzed in the chapter on Integrated Firms; and Equinix analyzed here.

Content Delivery Networks (CDNs) work in tandem with data centers to enhance their speed, reliability, security, and efficiency. Where Data Centers are centralized, CDNs are highly dispersed. They focus on efficiently delivering content rather than processing it. While data centers are commonly the originating servers where primary content and data are stored, CDNs cache this content on edge servers, closer to users. When content is updated or new content is created, a CDN pulls it from its originating data center to update the CDN cache.

By offloading traffic from the originating data centers, CDNs reduce latency (the delay between when a user calls for data and when it arrives) by shortening the distance the data must travel. This is especially important for time-sensitive applications, such as streaming video or online gaming. They also reduce the load on central resources and allow them to focus on more complex processing tasks, such as dynamic content generation or backend operations. They enhance security, particularly protection against denial-of-service attacks and encryption to secure data in transit.

The largest CDNs–Amazon CloudFront, Microsoft Azure CDN, and Google Cloud CDN–are analyzed in the Integrated Firms chapter. Telcos, too, including Verizon Media Platform, are major CDNs, as is Netflix's Open Connect, all of which are accounted for elsewhere.

Equinix operates 260 data centers in 71 markets, and its SEC filings[60] ascribe revenue of $3.617B and 5,953 employees to the Americas. We assign all but 5% of the Americas revenue and employment to the U.S.

Akamai links servers in 130 countries to deliver content globally with embedded security. From its 2024 10-K,[61] it attributes $1.969B of its $3.8B revenue to the U.S. and reports its U.S. workforce as 4,100.

Digital Realty Trust (including Dupont Fabros) is a portfolio of 309 owned and leased data centers. Its U.S. revenue is $2.836B, and it reports employment in the Americas of 1,518,[62] of whom effectively all are in the U.S. as there are only two properties in Canada and one in Mexico.

Rackspace Technology is a is an end-to-end, hybrid, multicloud and AI solutions company that designs, builds, and operates its customers' cloud environments. Its public filings give annual revenues in the U.S. at $2.035B,[63] and employment in North America at 2,300, of whom 95% are assumed to be based in the U.S.

Firm sizes in this sector of the digital economy show an unusual range, from the tech giants to small firms such as CacheFy, CDN 77, and Edgio, because there are opportunities for new entrants as firms migrate to the cloud and new storage and security solutions are developed. We estimate that the "all other" category accounts for $3B in revenue and employs about 6,000 people.

Table 4.4 Data Centers and Content Delivery Networks

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
EQUINIX	$ 3,436	5,655
DIGITAL REALTY	$ 2,836	1,518
rackspace technology	$ 2,035	2,185
Akamai	$ 1,969	4,100
ALL OTHER	$ 3,000	6,000
TOTAL	**$ 13,276**	**19,458**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

4.5 Generative Artificial Intelligence

In general, we identify only firms in the sector whose annual revenues are greater than $100M–even when future prospects may be greater, attracting strong venture interest and showing signs of rapid growth. This is a study of what the digital economy is today, not what it may become. Thus, for example, blockchain firms did not appear in these studies until 2020, even though the first modern blockchain was launched in January 2009, because revenues and employment were not significant until then.

Generative AI presents a challenge to this philosophy: while its firms collectively account for a trivial portion of the digital economy's revenue and employment, they account for a very large part of infrastructure investment. These new infrastructure elements include extremely large clusters of graphics processing units, about three times the size of the largest data centers, dedicated to training predictive models on exceptionally large datasets. It is clear that many investors are acting as if these clusters will soon be integral to digital revenue and employment across the entire digital economy. We therefore report on the sector despite its small revenue, if only as a placeholder for future reports.

As an aside, one way that generative AI impacts the value of the digital economy is by creating a new revenue stream in which creators and publishers license their content for training AI models. This effect is captured in the creator and publisher sectors.

In this section, we do not review the generative AI revenues of Google, Microsoft or Meta (covered in the Integrated Firms chapter), IBM (covered in the Support Services chapter), or Nvidia (covered in the Hardware section of this chapter).

OpenAI is a privately held corporation with a substantial minority investment by Microsoft. The release of its first commercial product, ChatGPT, in November 2022 sparked widespread public interest in the generative AI category. The company has a series of large language models branded as ChatGPT, text-to-image models branded as Dall-E, and a text to video model branded as Sora. Its annual revenue has been projected to be on track for $3.4B in 2024,[64] but we use the more conservative number of $1.6B for the year ended 2023.[65] Employment as of August 2024 is estimated at 3,400.[66]

Scale AI had revenues of $400M in the first half of 2024 and is expected to achieve a run rate of $1.4B by year end.[67] We assume revenue of $500M for this study.

Anthropic reports that it is on track to achieve an $850M annualized revenue run rate by the end of 2024.[68] A run rate at year end is not comparable to the metric we use generally in this report, which is revenue for a trailing 12-month period. Given that growth is likely accelerating quite rapidly, we assume trailing revenue for 2024 will be $300M. Employment is estimated at around 650.

CoreWeave has a favored relationship with Nvidia, renting access to its chips and enabling CoreWeave to generate revenue of $465M[69] by training third-party models. Its largest client is Microsoft, despite the ostensible competition presented by Azure. It is estimated to employ 550 people.[70] It has forecast revenue of $8B in 2025.[71]

Stability.ai, best known for its Stable Diffusion image generator, is estimated to have earned approximately $100M in 2023 with 197 employees.[72]

xAI has built what it claims is the world's largest data center, where it is training new versions of Grok, its AI model. One of its revenue sources is the X Premium subscription available on the social platform X, of which the Grok chatbot is a part. Another is a tool that developers can use to build applications with Grok. It has told investors that it is on track to earn $100M in 2024.[73] Employment is estimated from comparable firms.

Hugging Face is a collaboration platform for AI developers that monetizes by charging for access to its AI cluster. Its current revenue is estimated at $50M and employment at 150.

Perplexity is the first consumer-focused AI search product supported by advertising. Its annual revenue was reported to be $50M,[74] and we estimate employment in line with Anthropic and Stability.ai at 2.1 employees per $1M of revenue.

The "all other" category includes companies with significant venture investment but very little revenue, such as Cohere, Retell.ai, AffinityAI, Guidde, and Inflection AI.

Table 4.5 Generative Artificial Intelligence Firms

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
OpenAI	$ 1,600	3,400
scale	$ 500	600
CoreWeave	$ 465	550
ANTHROP\C	$ 300	650
stability.ai	$ 100	197
xAI	$ 100	300
Hugging Face	$ 50	150
perplexity	$ 50	105
ALL OTHER	$ 500	600
TOTAL	**$ 3,665**	**6,552**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5

Support Services

A very substantial industry performs a range of services useful either to the digital infrastructure or to digital consumer services. Some of these enterprises are small: one-person outfits or small private firms. Others are very large firms designed to serve global clients. In this chapter, we track services that support specific sectors, such as software, marketing, finance, online learning, travel, e-commerce and shipping, or general enterprise support and consulting.

5.1 Domain Registry and Web Hosting Services

The address space of the internet is generated by the non-profit ICANN, but distributing them has been delegated to private companies. While distributing internet addresses is not itself very profitable, the distributors have added a range of specialized services such as web hosting, email hosting, build-your-own website services, and others, which accounts for much of the growth in domain registry employment and revenue. In recent years, hosting for publishers on Wordpress and for game developers operating on Minecraft and Roblox have added to the demand for specialized hosting.

Google and Amazon hold a large share of the web hosting industry. One analyst reported in 2022 that they held 31% combined global share,[75] while another reported last year a figure of 43%.[76] These firms are covered in the Integrated Firms chapter.

GoDaddy is the largest of the independent (non-integrated) firms. It reports in its 10-K[77] that U.S. revenue is $2.875B of the global $4.254B. It reports that its 6,621 employees are based in the U.S. and Europe. While 68% of revenue originates in the U.S., we take it as likely that more of its employment is in the U.S. We estimate that 75% of employment is in the U.S.

Newfold Digital is a private company, a roll-up of various domain name registrars and web hosting. It was formed in 2021 by the merger of the Endurance International Group with another web hosting firm, Web.com. In 2022, it added MarkMonitor, an enterprise-level provider of domain management solutions. Revenue in 2023 was about $1.3B, and global employment was 4,220[78]. It operates in 17 countries, so we estimate U.S. employment at 1,500.

Verisign is the major player in ".com" domain name distribution. Its 10-K[79] reports 67% of its revenues as generated in the U.S., and 93% of its employment of 908 are there as well.

Squarespace combines web design tools and hosting with registry sales. Its 10-K[80] reports 2024 revenue, primarily from subscriptions, as $1.012B, of which $726M is in the U.S. Global employment is 1,749, of which 1,530 are in the U.S.

Cloudflare reports global revenue of $1.297B in its 10-K,[81] of which 52% is earned in the U.S. Of its 3,682 employees globally, 2,090 work in the U.S. Its range of services includes cybersecurity to protect against attacks on websites.

Wix is a leading global SaaS website builder platform. Because it is based in Israel, it files a 20F report[82] to the U.S. SEC. It lists 611 of its 4,600 employees as U.S.-based, so we take U.S. revenue to be in that proportion to global revenue of $1.73B, or $230M.

United Internet Group is a German web hosting, domain registry, and applications company that operates in several continental European countries, the UK, and North America through subsidiaries that include 1&1, Versatel, Fasthosts, and Ionos. Global revenue is $6.914B, and employment is 11,000.[83] Ionos is the key subsidiary for United Internet's U.S. operations, and based on its size, we estimate the group's U.S. revenue at $200M and employment at 2,000.

This sector has low barriers to entry, and although approximately a third is concentrated in the hands of tech giants, there is a long tail of small firms that is quite substantial in aggregate. We therefore make an allowance for "all other" firms, including Weebly (owned by Square), OVHCloud, Hostgator, Hostinger, Bluehost, and Hetzer Online among others.

Table 5.1 Domain Registry and Web Hosting Services

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
GoDaddy	$ 2,875	4,966
newfold digital	$ 1,300	1,500
VERISIGN	$ 995	844
SQUARESPACE	$ 726	1,530
CLOUDFLARE	$ 674	2,090
WIX	$ 230	611
united internet	$ 200	2,000
ALL OTHER	$ 10,000	18,000
TOTAL	**$ 17,000**	**31,541**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.2 Enterprise IT Management

These firms serve the largest enterprise clients. They assist them in modernizing their IT infrastructures, optimizing business processes, and leveraging data and technology to achieve digital transformation. They match the footprints of their offices to the globally dispersed offices of the clients. Many originated long before the internet, performing the complex, multi-year systems integration projects once needed to install software.

The Cloud has largely eliminated the need for these projects. A survey by Public First defines Cloud services as "the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing." It observes that "Instead of buying, owning and maintaining their own data centers and servers, organizations can now acquire technology such as computing power, storage, databases, and other services on an as-needed basis from an external cloud provider through the Internet."[84]

Most of the firms in this section have used their long relationships with the enterprise clients and deep understanding of their business needs to evolve to become consultants on digital transformation. Often they have broadened their points of client contact from corporate IT departments to divisions such as marketing and operations departments. They compete with smaller firms with narrower offerings and develop specialized divisions, such as IBM's Watsonx and Accenture's Song marketing design divisions.

To estimate the proportion of the revenues of these firms that are due to the internet required careful separation of internet IT services from services that are independent of the internet and of market-making support from operational support. We relied where possible on segment information reported in Form 10-K filings and where not on analogies with firms where filings or interviews gave us a basis for the distinction. We excluded firms and divisions of firms that serve government or military and defense clients.

IBM has, over the past two decades, exited legacy businesses such as computer and peripheral manufacturing to focus on supporting client digital transformation with hybrid cloud, consulting, data and artificial intelligence, and automation offerings. The December 2023 annual report[85] shows global revenue of $61.86B, of which $25.309B is from U.S. operations. We exclude an estimated 10% of revenue from governments[86] and military clients. U.S. employment is estimated by applying the same proportion to global employment of 282,200.

Oracle today earns much of its revenue as a cloud computing training site and host for AI developers such as OpenAI, Microsoft, Nvidia, and xAI on its 162 data centers. It also continues to sell in its historic market, databases, having transitioned from on-premises software to a cloud-first company. From these core services, it extends to middleware (by which software developers can adapt software to their specific application) and application software targeted at specific industries such as healthcare, financial services, and government sectors. In 2024, it announced the closure of its marketing division, Oracle Data Cloud. Most of its employment and revenue fit within this report's definition of the digital economy except for the part attributable to government and military sectors. The 10-K[87] reports global revenues of $53B earned in three segments: cloud/licensing, hardware, and services. The first accounts for 84% and is our focus. Cloud/licensing revenues in the Americas amount to $28.196B, of which we assume 90%, or $25.376B, is earned in the U.S. and 85% of that is in market-making sectors as we define them. The U.S. workforce is 58,000, and we take 84% in the focal sector and 85% as belonging to the digital economy.

Accenture provides a broad range of information technology services and solutions to many industries, including communications, media and technology, financial services, health and public service, consumer products, and resources. Not all of the services performed, or of the industries served, belong in the digital economy as we define it. Its 10-K[88] reports global revenue of $64.1B and global employment of 733,000. This employment number is very large because it includes outsourcing centers in low wage regions supplying technology labor in such areas as content moderation and back-office work. Indeed, it is reported that it employs 350,000 in India alone.[89] We assume a U.S. workforce of 75,000.[90] The 10-K reports North American revenue of $30.3B, of which we take 95%, or $28.785B, to be U.S. revenue. We take 60% of this revenue to be sourced from the market-making digital economy. About one-third of it is accounted for by the $8.5B revenue of Accenture Song (formerly Accenture Interactive). We take the same proportion of the U.S. workforce to be related to the market-making digital economy.

Deloitte is a global professional services firm. Its U.S. revenues are $33.05B, within which one of its divisions, Deloitte Consulting, generates 54%, or $17.8B.[91] This division accounts for substantially all of the firm's internet-related work but also does work that we do not treat as internet-related. We take 60%, or $10.68B, to be sourced from the market-making digital economy, which includes $6.2B performed by Deloitte Digital, its digital agency.[92] We assume U.S. internet-related employment follows the same ratio of its U.S. workforce of 172,809 as revenue does, or 54% of 60%.

Adobe is focused on global enterprise customer communications and engagement, all relevant to the digital economy. Among its most future-focused products is Adobe Firefly, a generative AI tool that helps creatives generate images, ideate, and communicate. Adobe's 10-K[93] reports global revenue of $19.409B, of which 60% is in the Americas, including Mexico and Canada. We take U.S. revenue to be 90% of Americas revenue, or $10.480B. Of a global workforce of 29,945, it reports that 50%, or 14,973, is based in the U.S.

Cognizant was established in 1994 in Chennai, India, as an in-house technology unit of Dun & Bradstreet, became a public subsidiary of IMS Health, and then became an independent IT transformation and business program consultant. From its 2023 10-K,[94] North American revenues are $14,243B, which are 74% of global revenues. With operations in Mexico and Canada, we take U.S. revenues to be 90% of North American revenues. We estimate that 70% of its U.S. revenue is relevant to this study. Its North American workforce of 40,500 is just 12% of its global workforce because it employs 254,000 people in India. Again, we assume 90% is in the U.S. and 70% is in relevant categories.

Insight Enterprises is an Arizona global technology company that has evolved from IT hardware sales to broad-based IT consulting and sales. North American sales were reported in the most recent 10-K[95] as $7.055B. There is no Mexican operation, so we take U.S. sales to be 90%, or $6.35B, and employment to be 90% of North American employment of 11,019.

Capgemini, a French-headquartered company that is focused on information and technology consulting, files a universal registration document but not a 10-K. It reports 2023 revenue of €22.5B ($24.92B)[96] and claims 29% ($7.227B) is earned in North America. We take the Applications and Technology sector of the business (62% of revenue) to be the digital economy portion of revenue and employment. U.S. employment is reported as 16,465,[97] and we take 62% to be the digital economy portion.

OpenText is a Canadian corporation focused on enterprise information management. It files a 10-K form[98] with the U.S. SEC, from which we draw the following: Americas revenue in 2024 was $3,342M, and Americas employment was 8,300 of global employment of 22,900. U.S. employment is not reported, but considering the recent acquisition of U.S.-based Micro Focus, we estimate U.S. employment at 6,000.

Atos Syntel is based in France and does not report a 10-K. However, its full year 2023 press release[99] indicates that Americas revenue is €2.441B of its global revenue of €10.693B. We take 85% of the U.S. dollar equivalent of Americas revenue. It reports global workforce as 95,140. Sources claim 10,000 as the U.S. workforce[100] but, knowing that the firm performs substantial lower-skill services for its clients, we use the number of 5,000 in line with the revenue-to-workforce ratio of competitors.

CGI Technologies and Solutions is an enterprise IT consultant, helping clients to accelerate digital transformation. It is the U.S. subsidiary of a Canadian parent and does not file with the SEC. We rely on its Fiscal 2023 Report.[101] Total revenue is $12.591B, of which U.S. revenue is 31%. Of that, 36% is earned for services to the federal government and 6% to health clients, which we exclude. Therefore, we take relevant revenue to be $2.264B. By comparison with competitors, we estimate U.S. employment to be 10,000.

The merger of the enterprise services division of HP with Computer Sciences Corporation created **DXC Technologies** in 2017. It is a global IT services provider, helping clients run systems and operations with an extensively offshore workforce. Of the most recent annual revenue reported in its 10-K[102] of $13.667B, 29%, or $3.909B, is earned in the U.S., but we estimate that while most is data-related, no more than 50% relates to market-making. The 10-K gives employment as 130,000, of which we assume 2,700 are U.S.-based, in line with competitors.

Germany-based **SAP** provides enterprise resource planning software services, much of it cloud-based, but more of its revenue comes from efficient management of business operations than market-making. It reports to the SEC on Form 20F,[103] an annual filing for non-U.S. and non-Canadian companies. This report gives total revenue of €33.8B, of which Americas revenue is €12.762B. Of that, 80% is in the U.S. Of the U.S.-based revenue, we assign only 10% to market-making. Global employment is 107,602, and U.S. employment is 24,299. We take 12% of the U.S. employment as relevant to this study.

Unisys is an American multinational information technology services and consulting company. Its 10-K[104] reports global revenue of $2.02B, with $889M earned in the U.S. It reports global employment of 16,500, with 2,600 in the U.S.

We believe there are few enterprise IT consultants smaller than any listed here, but we allow for a contingency of 7,500 employees.

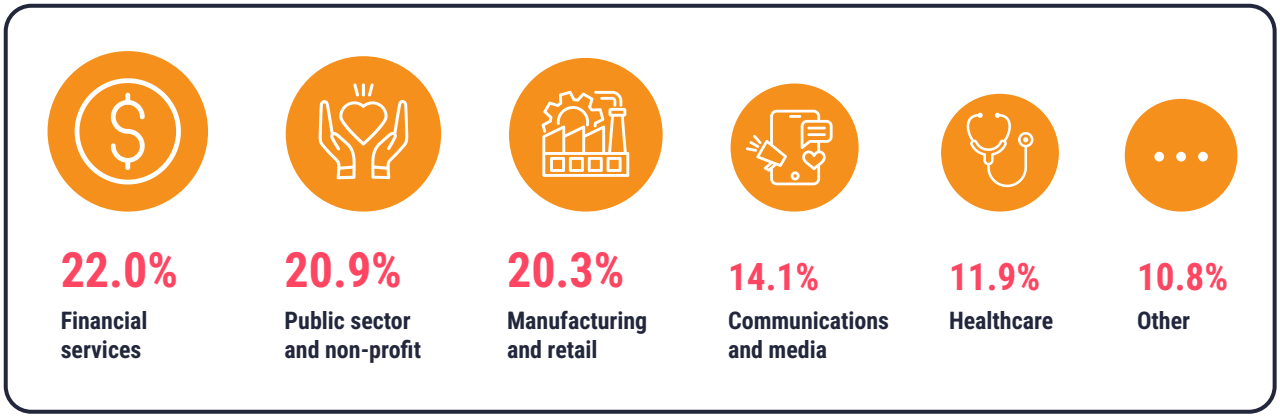
Table 5.2 Enterprise IT Management

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
IBM	$ 22,778	103,911
ORACLE	$ 21,570	41,412
accenture	$ 17,271	45,000
Deloitte.	$ 10,680	55,990
Adobe	$ 10,480	14,973
cognizant	$ 8,973	25,515
Insight	$ 6,350	9,917
Capgemini	$ 4,481	10,208
opentext	$ 3,342	6,000
CGI	$ 2,264	10,000
Atos	$ 2,199	5,000
DXC TECHNOLOGY	$ 1,954	2,700
SAP	$ 1,429	2,430
unisys	$ 889	2,600
ALL OTHER	$ 4,000	7,500
TOTAL	**$ 118,660**	**343,156**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.3 Specialized IT Management

The U.S. is home to many smaller vendors supplying IT systems to the internet economy beyond the large firms serving large enterprises enumerated above. An analyst's report[105] estimated that the revenues of the entire IT vendor and consultant industry were about $710B. We estimate that the vendor component of this number is about $450B. This study identified the largest vendors in the industry in section 5.2 and calculated that they generated U.S. internet-relevant revenues of $106.5B. Deducting their revenues from $450B, we are left with $344B which needs to be divided between internet-related work and other work. **The following client sectors have been identified:**



We exclude the public sector, based on our definition in Chapter 3 of the market-making internet ecosystem. We then reclassify the five sectors into nine specialized sectors that support activities covered in Chapter 6.

5.3.1 Operating Systems and Server Management

An operating system supplies the foundational software layer for interaction between a digital device's hardware and software components, managing resources on behalf of the device and coordinating tasks on behalf of the user. Server software manages interaction between a computer server and connected clients.

Firms treated elsewhere in this report are responsible for many of the most widely used operating systems, particularly Google's Android, Apple's iOS, watchOS and MacOS, Microsoft's Windows, IBM's AIX and Red Hat, HP's HP-UX and Oracle's Solaris. They are therefore not accounted for here. In contrast to these proprietary operating systems, there are several open-source computer operating systems descended from Unix via Linux.

Linux was developed by Linus Torvalds in 1991 to be a free, open-source operating system. It remains open-source, but it allows firms to create and commercialize so-called 'distributions' of Linux by combining various open-source components to form a complete operating system for a particular purpose.

Linux Foundation is a non-profit hub to protect and support Linux developments and distributions. Its annual revenue is $75M, and it employs 760 people on 6 continents. We assign half to the U.S. Linux distributions include:

Fedora Project with revenue of $550M and employment of about 1,000.

Ubuntu, owned by Canonical, with revenue of $750M and a workforce of 1,500. We assign a third to the U.S.

Suse, an open-source software company headquartered in Luxembourg. Its openSUSE is a Linux distribution. Its annual revenue is $658M[106] and employment is 2,300. we estimate U.S. revenue at 45% of global revenue and U.S. employment at 37% of global employment.[107]

Other notable open-source projects, though not Linux distributions, include:

Apache Software Foundation, a 501(c)3 charity that exists to coordinate development of free and open-source cross-platform web server software. Its software communicates between a site visitor's device and a website's server, and it is used by about 30% of all websites. It is funded by donations and corporate sponsors. Its annual revenue is $2.313B and its employed workforce is 3,400.[108] It benefits from the work of 8,200 volunteers which we take to be economic contributors. We assume two-thirds of revenue and workers are U.S.-based.

F5 Networks, which through its subsidiary Nginx, competes with Apache. We report revenue and employment of F5 from its 10-K filing.[109] Global revenue is $2.8B with employment of 6,524. U.S. revenue is $1,487B, and U.S. employment is 3,196.

Mozilla Foundation, a mission-driven non-profit with several for-profit subsidiaries. Its web browser, Firefox, earns revenue from payments made when it refers its traffic to Google, Baidu, Yandex, and others. Its audited financial statements[110] report global revenue of $593,516B. Global employment is 1,800 – 62% is in the U.S.[111]

Berkeley Software Distribution, a discontinued UNIX-derived operating system. Its open-source descendants include FreeBSD, OpenBSD, NetBSD, and DragonFly BSD. We estimate their U.S. revenues at $30M and employment at 200.

Table 5.3.1 Operating Systems and Server Management

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
APACHE SOFTWARE FOUNDATION	$ 1,527	7,656
f5	$ 1,487	3,196
ubuntu	$ 750	1,500
fedora	$ 550	1,000
moz://a	$ 368	1,116
SUSE	$ 293	851
THE LINUX FOUNDATION	$ 38	380
* BSD	$ 30	200
ALL OTHER	$ 500	1,500
TOTAL	**$ 5,543**	**17,399**

* FreeBSD, OpenBSD, NetBSD, and DragonFly BSD

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.3.2 Privacy and Regulatory Compliance Management

In the face of increasing regulation of the use of personal data such as the GDPR and DMA in Europe, and State privacy laws in the U.S., these firms offer software to deliver services such as privacy, security, data governance, and consent management either broadly or for specific vertical industries. The firms are small, but numerous, and not all operate across the full spectrum of these services.

Most have broad industry applicability, catering to sectors such as technology, finance, healthcare, and retail, but some are specialized. **Mediastream** serves media and entertainment companies that need to protect digital content and manage digital rights, but not compliance. **Boltive** specializes in advertising technology, blocking unauthorized trackers and managing data flows. **Didomi,** headquartered in France, is positioned for e-commerce, mobile apps, and digital businesses. Only one of these firms (**Workiva**) is a public company so, for most, revenue and employment information must be inferred from a variety of sources. Four are longer established and larger than the rest. We do not report **Segment** here, although it appears to be comparable in size to the largest four, because its employment is covered by the entry on its parent, **Twilio**.

Workiva reports on its 10-K filing[112] that its global revenue in 2024 was $630M, revenue from the Americas was $559M, and 93% of that was from the U.S. Of total reported employment we take the U.S. employment to be in the same proportion as revenue.

OneTrust has 2024 revenue of about $500M[113] and global employment of 2,600[114] of which we assign 1,800 to the U.S.

Ping Identity has revenue of about $350M[115] and employment of 1,000.

Collibra has revenue of about $285M[116] and we estimate employment at 700.

OneIdentity through its subsidiary OneLogin manages client privacy. Its revenue is reported to be $111.7M.[117]

BigID is reported to have revenue of $84M.[118]

TrustArc is reported to have revenue of $78M.[119]

We estimate “all other” firms in this category to include Securit.ai, Osno, WireWheel (now part of Osano), Privitar (a subsidiary of Informatica), Enzuzo, Vera, Didomi, Data Grail, Boltive, Ketch, Sourcepoint, Transcend, RadarFirst, Privado, Truyo, Clarip and MediaStream have aggregate revenue of $500M, and employment of 1,500.

Table 5.3.2 Privacy and Regulatory Compliance Management

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Workiva	$ 520	2,084
onetrust	$ 500	1,800
PingIdentity.	$ 350	1,000
Collibra	$ 285	700
ONE IDENTITY	$ 112	616
BigID	$ 84	240
TrustArc	$ 78	240
ALL OTHER	$ 500	1,500
TOTAL	**$ 2,429**	**8,180**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.3.3 Business Intelligence and Data Management

Business intelligence (BI) deals with the extraction of managerial insight from data internal to an enterprise, in contrast to competitive intelligence whose data are external. We combine BI with Data Management to reflect the fact that some firms captured here combine insight with big data infrastructure, data integration, and data security. As the source data for BI is drawn from the internal operating and financial systems of the firm and can be stored in and transmitted among local intranet systems, it is reasonable to ask why BI firms are relevant to this study of the internet ecosystem. If the firm used its own proprietary processes, the activity would not be a market-making activity and would not fit. But the firms analyzed here are all support services for customer firms, so they meet that test from Chapter 3. Further, even though their products work with data internal to the customers, the data travel on intranets (including ethernet) that rely on the internet protocol to travel internally and to cross network boundaries.

A pattern over the last decade has been for successful BI vendors to be acquired and to become part of the offering of consumer-facing or integrated firms covered elsewhere in this report (Tableau to Salesforce, Amiato to Amazon, Hortonworks to Cloudera, Cognos to IBM, Splunk to Cisco and Looker to Google). Nevertheless, there are independent BI and data management firms to be covered here.

Snowflake is a cloud platform for data warehousing and analytics. The company's 2024 public filings[120] report $2,166M U.S. revenues of global $2,666M for 2024. We apply this ratio of 81% to its global employment of 7,004, to derive U.S. employment of 5,687.

Cloud Software Group was formed by two private equity partners to combine Tibco, a BI firm, with Citrix, a network data security firm, and other software products, to enter an eight-year strategic alliance with Microsoft to bring AI and Azure cloud services to its clients. Though a private company, its global annual revenue is reported to be $3.5B and its employment 12,000.[121] By comparison with other large firms in this category, we estimate that 50% of revenue and employment are in the U.S.

Databricks offers a unified platform for Data and AI and has forged strategic partnerships with such large firms as Microsoft, Amazon, and Tableau. It is not public. Its 2024 revenue was $2.4B[122] of which we estimate half, or $1.2B,[122] is from the U.S. We also attribute half of its workforce of 9,300,[123] or 4,650 employees, to the U.S.

Teradata is a cloud data warehouse platform integrating the data of its enterprise clients and enabling real-time business intelligence. The company's 10-K public filings[125] report $973M of global revenues of $1.83B as U.S.-based and 30% of global headcount of 6,500, or 1,950, as U.S.-based.

Palantir performs big data integration, analytics, and intelligence for enterprise and government clients. Only the enterprise employment and revenue are relevant to this study. The 10-K[126] reports total revenue of $2.225B of which 45% is from enterprise customers and 62% from U.S. customers. We assume that U.S. enterprise revenue is the product of these two ratios, or $621M. Of global employment of 3,735, the 10-K reports that 65% are from the U.S. and we assume 45% work on enterprise (non-governmental) customers, or 1,092.

Cloudera describes itself as offering its clients data lakes, or Hadoop-based data repositories, for reporting, visualization and analytics. It is a private company. Its revenue is estimated to be $869M and employment 2,728.[127] It earned 60% of its global revenue in the U.S., and we assume that 65% of its employment is U.S.-based.

Rubrik is a data security and cloud data management company, public as of April 2024. Its global revenue is $733M in the twelve months to mid-2024, and its employment is 3,100.[128] Its 10-Q reports U.S. revenue as 69% of total revenue and 54% of employment in the U.S.

Qlik is a data integration, analytics, and artificial intelligence platform. It was taken private in 2016, so its revenue and employment are taken from estimates. As a company founded in Sweden and strong in the EU, we assume U.S. revenues and employment are about 50% of global revenue of $650M and employment of 2,500.[129]

Alteryx focuses on data preparation, blending, and advanced analytics with an emphasis on ease of use for non-technical users. Its 10-K reports[130] global revenue of $970M and U.S. revenue of $691M, and employment in U.S. plus Canada to be 68% of global employment of 2,300. We take U.S. employment to be 90% of U.S. plus Canada.

Varonis, though nominally a data security company, uses metadata from client IT infrastructure to perform BI analyses. Its North American employees are 1,700[131] (assume 1,600 in the U.S) of a global employment count of 2,233. Of its 2024 global revenue of $499.16M[132] we take the U.S. revenue to be proportional to employment, or $357.66M.

Domo offers a cloud-based data experience platform that digitally connects everyone at an organization to real-time data and insights. It reports global revenue on its 2024 10-K of $258M and U.S. revenue of 79%, or $203M. It reports its U.S. employment as 740.

The "all other" segment includes Sisense, an Israeli company with a global revenue of $140M, LogRhythm at $120M, and Moogsoft at $105M. Our estimate is for a total of $1,000M revenue and 1,200 employees.

Table 5.3.3 Business Intelligence and Data Management

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
snowflake	$ 2,166	5,687
cloud SOFTWARE GROUP	$ 1,750	6,000
databricks	$ 1,200	4,650
teradata.	$ 973	1,950
alteryx	$ 691	1,408
Palantir	$ 621	1,092
CLOUDERA	$ 521	1,773
rubrik	$ 506	1,674
VARONIS	$ 357	1,600
Qlik	$ 325	1,250
DOMO	$ 203	740
ALL OTHER	$ 1,000	1,500
TOTAL	**$ 10,313**	**29,324**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.3.4 Customer Relationship Management

Customer relationship management (CRM) software and services help firms manage interactions between the firm and its customers and prospects. The sector includes customer data platform (CDP) software to store digital customer data for use in programmatic advertising. CRM tends to be a tool used by sales teams and CDP by digital marketers, but there is overlap in functionality and some firms in this segment do both. Industry trade associations suggest that the CRM sector has revenues of about $48B and CDP about $2.3B as of 2023.[133] About 30% of this revenue goes to large firms covered elsewhere (Oracle, SAP, and Microsoft).

Salesforce, though primarily a CRM company, has expanded its scope of services. It has a platform offering that unifies a client's data, artificial intelligence, customer relationship management, development, security and compliance. It has a Slack offering that digitally connects people, technology and business processes. It reports[134] global revenue of $34,857M, and Americas revenue to be 23,289M. It reports U.S. revenue to be 93% of this latter number, or $21,659M. Of the 72,682 employees, it reports 51% are in the United States.

Twilio combines a customer data management platform with a framework to build your own CRM platform. It reports[135] U.S. revenue of $2,757M and U.S. employment of 3,530, both about half of Twilio's global numbers.

Sinch is a cloud customer communications platform headquartered in Sweden. Sinch acquired Atlanta-based Inteliquent in early 2020, after which Atlanta served as the company's U.S. hub. Its global revenue is reported in annual filings[136] to be $2.72B, and its employment is 4,231. It attributes 58% of revenue and 34% of employees to North America, and we take U.S. to be 90% of North America.

Concentrix acquired, in 2018, the assets of Convergys, a company that sold customer management and information management products, and now offers enterprise customer experience (CX) services globally. Subsequently it acquired the European software company Marnix, owner of Webhelp, a CX company, and sold under the trade name "Concentrix + Webhelp" until 2024, when it was renamed simply Concentrix. It characterizes itself as a leader in the shift from traditional Customer Relationship Management, which it says is focused on a portion of the customer lifecycle, to CX, which supports the entirety of it. Concentrix has global revenue of $7.1B,[137] but attributes only 18%, or $1.280B of it in the U.S. Global employment is 440,000 across 70 countries, which is out of line with the revenue to employment ratio of all others in the category. We assume that this is because it relies more heavily on human interaction. For example, it reports that 70,000 work for contact centers in the Philippines and India. U.S. employment is not reported, but we assume, given the reliance on outsourced work, that it is a smaller proportion that the revenue proportion, and assume 40,000.

Thryv, with roots in Yellow Pages, targets small business customers and offers products besides CRM, but we list it here because the range of services, generating new business leads, managing SMB customer relationships, and running day-to-day operations, have CRM as the common thread. Global revenue is reported[138] as $917M. The U.S. component is $764M. We estimate that $360M of that is print, and is excluded, leaving relevant revenue of $404M. The company reports 3,049 employees and we take U.S. employment to be proportionate to revenue.

CSG International manages customer relationships primarily on behalf of the telecommunications industry, particularly Charter and Comcast. It reports[139] global revenue of $1.2B, of which $1B is earned in the Americas, principally in the U.S. Of its 6,000 employees, 38% are located in the Americas.

Verint offers an automated customer experience suite. Its 10-K[140] reports U.S. revenue of $580M, which is 63% of its global income. Its global employment is 4,300, and we take 63% of that as U.S. employment.

GoTo is a rebranding of LogMeIn. It is a SaaS and cloud-based provider of remote work tools for collaboration, customer engagement and IT management. Revenue in 2023 was $1.26B with 3,500 employees.[141] Based on its performance prior to being taken private, we estimate that half of revenue and employment is in the U.S.

Zendesk was acquired in 2022 by a consortium of private equity firms. In 2024 it announced it would acquire Ultimate, a provider of service automation, to add AI to its customer experience suite. As a private company it does not report revenue or employment but estimates place its revenue in 2024 at $2.65B[142] and employment at 6,600.[143] Prior to being taken private, the company reported that 48% of revenue was from outside the U.S., and we apply this proportion to current revenue and employment.

Genesys Cloud Services sells customer experience and call center technology to mid-sized and large businesses. It has been private since 2012 but reported annual revenue of more than $2B in 2023 with 6,000 employees,[144] earning 45% from outside the U.S.

HubSpot is global mid-market CRM supplier, offering marketing, sales, service, and content management software to its clients. It reports on its 10-K filing[145] that 53% of its revenue of $2.17B is generated in the U.S. It reports employment of 4,971 in the Americas, and we assume that 87% is in the U.S.

Sprinklr claims to unify customer-facing functions from customer service to marketing including social media channels. Its 10-K report[146] identifies global revenue of $732M and employment of 3869, of which U.S. revenue is $407M and employment is 787.

Freshworks reports in its 10-K[147] global revenue of $596M, of which U.S. revenue is $235M. Of its total employment of 4,900, we estimate U.S. employment is 500.

The industry has a number of smaller firms that include Keap, Harte Hanks, Kustomer, and Bigin, so based on our estimate of total industry size we allow $2B in revenue and 4,000 in employment for firms smaller than those enumerated individually.

Table 5.3.4 Customer Relationship Management

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
salesforce	$ 21,659	37,068
twilio	$ 2,757	3,530
sinch	$ 1,420	1,295
Zendesk	$ 1,378	3,432
concentrix	$ 1,281	40,000
HubSpot	$ 1,150	4,325
GENESYS	$ 1,100	3,300
csg	$ 1,000	2,280
VERINT	$ 580	2,740
thryv	$ 404	1,343
GoTo	$ 630	1,750
sprinklr	$407	787
freshworks	$235	500
ALL OTHER	$ 2,000	4,000
TOTAL	**$ 36,001**	**106,350**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.3.5 Project and Workflow Management

This sector provides software, often delivered on the Cloud, to manage the documents and business operations of end users. While the firms analyzed in 5.3 are mostly sold to businesses, two in this category (Dropbox and Canva) sell to both businesses and end users. Some products in the category, such as Adobe's DocumentCloud, Microsoft's OneDrive and Google Drive, are covered elsewhere.

Box serves businesses needing secure file sharing and content management for unstructured data blueprints, wireframes, videos, documents, proprietary formats and PDFs. It serves two-thirds of companies in the Fortune 500. Its Form 10-K[148] reports $1,038M in U.S. revenue and employment as 1,785.[149]

Dropbox has 18 million clients and customers worldwide, who use it to allow individuals and teams to share files. Its 10K filing[150] reports that revenue of $1,419M, a little over half of its global revenue, originates in the U.S., and reports employment in the U.S. as 2,226.

Zoho Corporation is a privately held Indian multinational technology company best known for the Zoho online office suite which allows sales, marketing, and customer support teams to coordinate with each other. Of global revenue of $1B, 45.8% is earned in the U.S.[151] There is little information on how many of the firm's large workforce of about 15,000 people work in the U.S., so we apply the same ratio of employees to revenue as competitors.

Pegasystems is a workflow automation vendor. Its 10-K[152] reports global revenue of $590M, and U.S. employment of 1,313, which is 44% of global employment. We apply that ratio to revenue to obtain a U.S. revenue estimate.

Canva is an Australian privately held online graphic design platform used to create, store and manage visual content for social media, videos, posters, websites, and other media. It has an estimated 170 million users globally. Globally, revenue is estimated at $2B and employment at 4,500.[153] Similarweb reports that the U.S. sends Canva 13.85% of its traffic, and absent better information we apply this proportion to revenue and employment.

Odoo is a privately held Belgian company that sells business management software to help companies coordinate management of their operations. Global revenue is estimated at $650M[154] with about one-quarter earned in the U.S. We estimate U.S. employment by the same method as used for Zoho.

There are a small number of smaller companies, including Spideroak One, WeTransfer and pChord, so we allow for a small "all other" revenue and employment.

Table 5.3.5 Project and Workflow Management

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Dropbox	$ 1,419	2,226
box	$ 1,038	1,785
ZOHO	$ 458	746
Canva	$ 277	623
PEGA	$ 259	1,313
odoo	$ 190	300
ALL OTHER	$ 1,000	2,000
TOTAL	**$ 4,641**	**8,993**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.3.6 Network Security Management

This segment comprises firms that create software that aims for security on online networks. We combine two segments, security for enterprises and security for consumer devices, in this section. Significant players in this industry analyzed elsewhere are Cisco, Google, and Microsoft.

Gen Digital, formerly Symantec and Norton Lifelock, owns a portfolio of security, privacy and identity protection. Brands that include Norton, Avast, LifeLock, Avira, AVG, ReputationDefender and CCleaner. Its 2024 10-K filing[155] reports global revenue of $3.812B, of which Americas revenue is $2,493B and we take 90% to be U.S. revenue. It reports that about 1,000 of its workforce of 3,400 are located in the U.S.

Trellix is a privately held seller of consumer security products. It was created in 2022 by the merger of McAfee Enterprise with the smaller FireEye. We infer the size of Trellix from the 2021 filings of McAfee,[156] which reported global revenue of $1,920B and employment of 2,260 of whom 44% were in the Americas. Absent evidence of changes in its market share, we take U.S. revenue of Trellix to be $1B and 1,000 employees. It is part of the portfolio of the Symphony Technology Group, a private equity company with substantial internet-dependent holdings, including SurveyMonkey and RSA Security formerly part of Dell.

Fortinet supplies firewalls, endpoint security and intrusion detection systems. Its most recent reported income[157] was $5,305M globally and $2,175M in the Americas, of which we attribute $1,958M to the U.S. Of global employment of 13,568, it attributes 30% or 4,070 to the U.S.

Proofpoint supplies email security, identity threat defense, data loss prevention, electronic discovery, and email archiving. In 2021, with global revenues of $1.05B and employment of 3,600 (88% in U.S.), it was acquired by a private equity firm and delisted. It appears[158] that neither revenue nor employment have grown materially since the acquisition.

In the "all other" category, we allow for several firms based outside of the U.S. generating U.S. revenues not large enough to call for individual enumeration (Kaspersky Labs in Russia, and Trend Micro in Japan) and a long tail of smaller firms including Barracuda Networks and Gigamon. We estimate that U.S. employment of these smaller firms add about 30% to the individually enumerated firms' U.S. revenues and employment.

Table 5.3.6 Network Security Management

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Gen	$ 2,244	1,000
FORTINET	$ 1,958	4,070
Trellix	$ 1,000	1,000
proofpoint.	$ 924	3,168
ALL OTHER	$ 2,000	3,000
TOTAL	**$ 8,126**	**12,238**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.3.7 Human Resources Management

Keeping organizations running smoothly, from HR functions such as payroll and benefits to recruiting and employee wellness and personal development programs, is another sector that has become increasingly internet-dependent. The software running such systems has come to be known as human capital management (HCM). Whether delivered on private company intranets or on the open internet, the underlying technologies used are the same, namely the TCP/IP internet protocol suite. In the last few years many enterprise software tools have moved from a company's internal IT networks to the cloud, in turn simplifying functions such as software and security updates. This shift to the cloud also provides benefits to small and medium-sized businesses, as enterprise software solutions can be accessed in an 'a la carte' fashion, through SaaS structures, and at a fraction of the cost of single price enterprise software solutions. The firms listed below operate according to one or both of two models, professional employer organization, which operate as employer of record or co-employer for administrative purposes, and human resources outsourcing, which refers to third-party service provision.

The market forces defining this sector in recent years include automation, globalization, remote work, and outsourcing. Along with these phenomena have come cloud-based software that integrates AI tools such as machine learning and deep learning to optimize functions ranging from talent recruitment and management to salary benchmarks and pay equity. Several large firms that operate in this space, such as Intuit, SAP, Oracle, and Microsoft, are accounted for in other sections of this report.

ADP offers payroll and human resources services, such as the Data Cloud workforce analytics solution for business insights, Skills Graph proprietary data structure based on more than 30 million employee records and 50 million resumes, and Model-Based Benchmark that uses deep learning models to identify patterns from payroll records. We assume all company revenue is internet-dependent. Its 2024 SEC filing[159] reports global revenue of $19.202B and global employment of 64,000. Since 2022, however, ADP has not separated U.S. earnings from global earnings. We therefore calculated U.S. revenue and employment for the last three years in which it was reported. Finding it stable at between 87% and 88%, we applied a ratio of 87.5% to 2024 revenue and employment.

Insperity is a professional employer organization operating in the U.S., Canada and the UK. Its SEC 10-K filing[160] gives worldwide revenue as $6,486M and employment as 4,400, with 92.77% U.S.-based.

Paychex delivers HCM to small and medium businesses across the U.S. and parts of Europe. Its annual SEC filing for 2024[161] reports revenue of $5,278M and employment of 16,500, primarily in the U.S. It has 44 offices in the U.S. and, in Europe, just two. We take 96% of revenue and employment to be within the U.S.

Workday sells applications for human capital management, financial management, spend management, planning, and analytics. Its 2024 10-K[162] reports global revenue of $7.259B and global employment of 18,800. Of the latter, 65% is reported as U.S.-based. We apply the same ratio to estimate U.S. revenue.

UKG, or Ultimate Kronos Group, was formed in 2020 by the merger of Ultimate Software and Kronos Incorporated. It is unlisted, but its global revenue is estimated at $3.6B[163] and its employment at 12,000. Based on the company's reporting of a global distribution of clients[164] and industry benchmarks we assign half of employee headcount, or 6,000 employees, and a similar proportion of revenues to the U.S.

Paycom provides cloud-based HCM services delivered as SaaS across the employment lifecycle, from recruitment to retirement. Its 2024 10-K filing[165] reports annual revenue of $1,694M and employment of 7,300, the majority of whom are in its headquarters in Oklahoma City. The company serves clients with a U.S. employer identity number no matter where their employees reside, but we assume that effectively all its revenue and employment are U.S.-based.

Paylocity is a cloud-based provider of HCM and payroll software based in Schaumburg, IL. Its 10-K filing[166] reports revenue of $1,403M and employment of 6,400, all in the U.S.

Dayforce, formerly Ceridian, operates globally. Its 10-K filing[167] reports global revenue of $1.5B, of which $990M is in the U.S. Its North American employment is 4,563 of which we take 90% to be U.S.-based.

Cornerstone OnDemand was public until 2021 when it was acquired by Clearlake Capital.[168] We infer revenue of $740M and employment of 3,000 based on its last public filing.

In the "all other" line, we allow for such firms as Gusto, Ellucian, BambooHR, Zenefits, and Intrro.

Table 5.3.7 Human Resources Management

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
ADP	$ 16,802	56,000
Insperity	$ 6,017	4,082
PAYCHEX	$ 5,066	15,840
workday.	$ 4,718	12,220
UKG	$ 1,800	6,000
paycom	$ 1,694	7,300
paylocity	$ 1,403	6,400
dayforce	$ 990	4,107
cornerstone	$ 740	3,000
ALL OTHER	$ 2,000	6,000
TOTAL	**$ 41,230**	**120,949**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.3.8 Healthcare Management

The healthcare IT solutions sector has been reshaped, particularly in the last five years, by big data analytics, and the widespread adoption of electronic health records. The industry sectors within the focus of this study are electronic health records, computerized provider order entry systems, electronic prescribing systems, medical imaging information systems, clinical information systems, tele-healthcare, and healthcare customer relationship management.[169]

In addition to the firms analyzed here, there are major health data initiatives in firms analyzed elsewhere in this report: Oracle (which acquired Cerner in 2021), IBM (Watson Health), SAP, Accenture, Siemens Healthineers and Google Verily.

UnitedHealth Group had annual revenue of $400.3B in 2024.[170] It owns OptumInsight, which connects health care IT systems with services, analytics and platforms, and within which electronic health records are housed. This division is very large, offering many services that are not internet-dependent, such as revenue cycle management, analytics, and decision support, all of which integrate with EHR systems but aren't standalone EHR products such as those from Epic. The company's public filings do not report at the level of granularity needed to identify U.S. revenues or employment. We infer that the ratios are similar to GE Healthcare's. Of the 2024 OptumInsight revenues of $18.8B, we estimate $4B is in internet-dependent communication services in the U.S. and employment is 12,000.

Philips Healthcare is a subsidiary of Philips, the Dutch electronics firm. Its connected care unit is most relevant to this study. It reports U.S. revenue in 2024 of $3.39B[171] and we take U.S. employment to be 9,500.

Epic Systems is a privately held medical records provider, the most widely used system in the U.S. for connecting providers and patients to their records, with a market share of 38% and 2023 revenue of $3.6B.[172] It employs 14,000 people globally although the majority are based in the U.S. There is little information to use to infer the geographic concentration, so we inspected the SEC filing of Cerner in 2021, the last year before that company was taken private by Oracle. In that year Cerner reported 70% of its revenue and employment was earned in the U.S. and we apply this ratio to Epic.

Teladoc Health is a platform company that provides virtual medical care for non-emergency illnesses. It can be used by people needing healthcare services to consult with a doctor by phone or video. It has two reporting segments, Integrated Care and Betterhelp. The first serves employers, health plans, hospitals and health systems, insurance and financial services companies on a B2B basis. The second sells directly to individuals. Revenue was $2.6B in the most recent 10-K filing,[173] of which 86% was earned in the United States. Employment was 5,600, of which 63% were in the U.S.

GE Healthcare completed its spin-off from General Electric on January 4, 2023. Of the total global revenue of $19.6B,[174] we estimate that its IT revenue, principally patient monitoring services and imaging transmission, accounts for $4.9B globally. U.S. revenue is approximately 39% of the total, and we apply this ratio to the IT revenue. We estimate employment by taking the same ratio of its global employment of 51,000.

Veradigm is a healthcare technology company that provides electronic health record technology and practice management to hospitals, physician practices, and other healthcare providers. The company was formerly known as Allscripts. It was delisted in February 2024 after failing to meet financial reporting requirements due to a software problem. We base our analysis on its most recent annual filing[175] which is likely sufficiently descriptive of revenue and employment for our purposes. Of global revenue of $1,503M, $1,433M is attributed to the U.S., and of 8,000 employees, 60% are attributed to the U.S.

There is a long tail to this industry, where much innovation in software and cloud services is taking place. Examples of smaller companies are InterSystems, Meditech, eMD, NextGen Healthcare, and AthenaHealth. We allow for $5B and 15,000 employees to account for these smaller companies.

Table 5.3.8 Healthcare Management

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
UNITEDHEALTH GROUP	$ 4,000	12,000
PHILIPS Healthcare	$ 3,390	9,500
Epic	$ 2,520	9,800
Teladoc HEALTH	$ 2,238	3,528
GE HealthCare	$ 1,929	5,045
veradigm.	$ 1,433	4,800
ALL OTHER	$ 5,000	15,000
TOTAL	**$ 20,510**	**59,673**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.3.9 Blockchain and Cryptocurrency Management

A blockchain is a database of information that is shared and updated across a network of computers with no central authority, known as a distributed ledger. Posted to the ledger is a cumulative list of event records that, once posted, cannot be changed.

This sector is young, and its shape as an industry is still emerging. We treat it somewhat differently than other sectors. In particular, we distinguish between firms that build and operate the ledgers (treated in this chapter) and firms who put the ledgers to use (for example, distributed across Fintech firms in the next chapter.) The firms that build ledgers have not been segmented by industry as clearly as in more mature sectors. Nevertheless the industries that put distributed ledgers to use include:

Finance and Banking: Cryptocurrencies such as Blockchain and Ethereum are used for myriad end-user purposes. Financial institutions, including Ripple, use blockchain for cross-border transactions. International trade finance applications have struggled: neither Marco Polo nor Wetrade have survived.

Supply Chain and Logistics: Blockchains ensure transparency, authenticity, auditability and traceability as products are moved. Companies like IBM have developed blockchain solutions for supply chain tracking (e.g., IBM Food Trust which provides transparency in food sourcing and safety.)

Healthcare: Patient data can be secured on blockchains. Pharmaceutical products can be protected against counterfeiting.

Real Estate: Property transactions and land title management are potential applications.

Energy: Platforms like Power Ledger and WePower facilitate decentralized energy trading. Issuing and trading of renewable energy certificates can be registered on blockchains.

Insurance: Etherisc is a blockchain platform that uses smart contracts for decentralized insurance solutions.

Entertainment and Media: Blockchain is used for digital rights management of intellectual property rights, including royalty distribution. Examples are Choon and MediaChain. Audius uses blockchain to create a decentralized music streaming platform for creators.

Gaming: Blockchain is used to verify ownership of digital assets in games, such as non-fungible tokens (NFTs). Games like Axie Infinity and platforms like Enjin allow players to trade, sell, or buy blockchain-verified in-game items. Blockchain supports decentralized virtual economies within games, allowing players to transfer in-game value out of a game.

Telecommunications: Blockchain helps telecommunications companies manage international roaming agreements and microtransactions. Telefonica and Deutsche Telekom have applications in trial.

Automotive: VINchain and CarVertical offer blockchain-based vehicle history recording. Blockchain is also being explored for decentralized ride-sharing: Arcade City offers the ability for drivers and passengers to interact without intermediaries.

The firms that build and operate the ledgers are used to issue, trade, or track three kinds of crypto asset:

Cryptocurrencies: These digital assets are issued by firms so that their clients can use them as mediums of exchange, stores of value, or units of measurement.

Smart Contracts: Agreements among transactors can be posted to a blockchain without the need for a trusted intermediary to enforce, and with automatic modification of agreement terms on the occurrence of specific events.

Tokens: Assets, whether digital or physical and including art and other collectibles can be represented by tokens posted to a blockchain as irrevocable digital evidence of ownership and authenticity.

As with some other emerging industries, in particular the creator sector, there are self-employed workers in the sector (here developers and miners) and firms that serve crypto consumers:

Developers: A crypto developer builds and programs the software that supports each cryptocurrency, contract or token. A report on self-employed developers[176] finds that there are 19,600 of them worldwide, of whom 5,096 are in the U.S. They work on more than 200 crypto ecosystems, the largest being Ethereum, Polygon and Solana. At the report's average remuneration of $112,000, they contribute $0.5B to the digital economy. There are, in addition, many developers employed by firms. The majority work for firms analyzed elsewhere in this report, such as IBM, Microsoft, Google, Accenture, Deloitte, PayPal and even Ford Motor Company.[177] But there are smaller firms such as Chainlink Labs (400 developers worldwide), Vegavid (100), Consensys (500) and Chainyard (100). It is reasonable to add the U.S. employment of developers to the self-employed total and conclude that this sector employs 12,000 people and contributes $1.2B to the digital economy.

Miners: The task of miners is to validate blockchain records to maintain the ledger's integrity. They do so either by time- and energy-consuming computation or by committing a stake to a chain. Because the first method is computationally intensive and requires specialized computers, and the second commits capital, miners work in pools. Examples of pools are Foundry USA and China-based AntPool (which perform 60% of Bitcoin mining[178]). Publicly traded mining stocks include[179] Cryptominer (revenue $502M), Mara (formerly Marathon Digital Holdings ($388M with 162 employees worldwide) and Riot Platforms ($209M with 534 employees), and account for 30% of the market. A reasonable inference, based on review of venture fund portfolios, is that the sector is much smaller than the developer sector. We allow for U.S. employment of 3,000 people and revenue of $400M.

CRYPTO SUPPORT FIRMS

No crypto support companies other than Binance and Coinbase file public financial statements. We rely on databases that report on private companies, Pitchbook, Mergent and Growjo, and on news reporting. The largest category of support firms is a group of exchanges, whose function is to let customers buy, sell, and trade cryptocurrencies. The largest are Binance, Coinbase, and Kraken.

Binance: With global revenue of $12B and 7,000 employees at its peak, an ongoing SEC lawsuit has been a setback to operations. There is likely $1B of U.S. revenue and 1,000 U.S. employees in 2024.[180]

Coinbase has global revenue of $3.4B and employment of 3,416.[181] It has no headquarters, but its 10-K[182] reports $2.726B as U.S. revenue. We take 75% of global employment as U.S. employment, to account for international workers at this "remote first" company.

Kraken claims global revenue of $1.5B[183] and employment of 2,600[184] but there is no reliable basis for determining U.S. presence so we allow 50% for both.

There are a number of startups working on crypto software and platform development. One of the longer-established of them, Monad Labs, is estimated to have revenue of $4.3M and employment of 60.[185] Others, such as Farcaster, Lightspark, Dynamic, Eigenlayer and Layerzero are even smaller.

We conclude that in 2024, while there is employment in firms selling blockchain solutions to end users as discussed in Chapter 6, blockchain management is not (yet) a significant source of employment.

Table 5.3.9 Blockchain and Cryptocurrency Management

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Developers	$ 1,200	12,000
Miners	$ 400	3,000
CRYPTO EXCHANGES		
coinbase	$ 2,726	2,560
BINANCE	$ 1,000	1,000
kraken	$ 750	1,300
Crypto software and platform developers	$ 20	200
TOTAL	**$ 6,096**	**20,060**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.4 Marketing Support

Three-quarters (75%) of all advertising in the United States, or $298B total spending (per MAGNA, March 2025)[186] is transmitted on the Internet. The firms and technologies that enable this spending–advertising agencies, ad networks and exchanges, data and analytics companies, and measurement firms, as well as self-employed web programmers, designers, writers, and social influencers–are examined in this section. Also examined are the self-employed web programmers, designers, writers, and social influencers that support digital advertising.

5.4.1 Full-Service Advertising Agencies

Full-service agencies help clients with many services that are not internet-dependent, for example those related to analog/linear media, direct mail, and PR. We analyze their revenues with these services excluded. Many full-service agencies are owned by agency holding companies.

Among the agency holding companies there are five dominant firms, each with many subsidiaries whose functions range from media planning and buying to research, public relations, digital advertising, and direct marketing: Publicis Groupe, Interpublic Group of Companies (IPG), WPP, Omnicom Group, and Dentsu. Although Omnicom Group is set to acquire IPG, it won't close until late-2025, so we report them separately.

Beyond these five firms we record an "all other" category of 23 independent full-service agencies measured by their U.S. revenues. This group includes **Horizon Media Holdings**, parent company of Horizon Media, Horizon Next, Night Market, One Horizon, and others, with global digital and analog revenue of $473M[187] and employment of 2,352 of which we estimate that 70% is U.S.-based and 65% is digital. This group also includes 22 firms reported by AdAge DataCenter, that include for example Havas and Stagwell.

In addition to these 28 there are the three digital agencies referred to above and named in the Enterprise IT Management section. These agencies, **Accenture Song**, **Deloitte Digital**, and IBM's **IX**'s revenue, are subsumed within the entries on Accenture, Deloitte, and IBM. Their U.S. ad revenues, according to AdAge DataCenter, are $8,500M, $6,222M, and $2,476M, respectively, making them some of the largest advertising groups in the U.S. In all cases the work is almost exclusively digital.

Except as noted, data is drawn from the AdAge Datacenter.

WPP, based in London, is currently the largest agency holding company by global revenue, though its U.S. share is lower than the other agency holding companies. Its integrated networks and media agencies include AKQA, EssenceMediacom, Grey, GroupM, Mindshare, Ogilvy, VML, and Wavemaker, while it also owns other subsidiaries specializing in areas such as data and insights, public relations and affairs, brand consulting, production, and health and wellness. The company reports $18.464B in global revenue,[188] of which AdAge Datacenter reports $6.452B is U.S. revenue. It reports that its business is 69% digital, so we take U.S. internet-dependent revenue to be $4,451B. Global employment is 114,173, and we estimate U.S. digital employment to be approximately 27,522, based on the proportion of revenue generated in the U.S.

Publicis Groupe is the holding company of Publicis Communications, Publicis Media, Publicis Sapient, and Publicis Health. Its annual report cites global revenue of $16.0B and global employment of 103,295 for 2024. Its U.S. revenue from all sources is $9,074M and employment is 29,979.[189] The company reports that one-third of its revenue comes from its entirely internet-dependent data and tech business, which includes Epsilon and Publicis Sapient, while much of the remaining two-thirds also relies on the internet. We apply WPP's proportion of 69% digital to this latter two-thirds of the mix, and 100% to the data and tech business. As such, Publicis' revenue is likely about 79% digital, or $7,168M. We project employment in line with this revenue share.

Omnicom Group is the holding company for The DAS Group's marketing services, Omnicom Media Group's media agencies, Flywheel's digital commerce platform, and Omnicom Advertising Group's creative agencies. Its U.S. revenue is $7,472M of a global $14,692M. We assume that of the U.S. revenue, the digital component is approximately 65% as Omnicom's work skews slightly less digital than WPP whose business is 69% digital. Global employment is 75,900. Of these, 31,300 work in the Americas and 90% in the U.S. and approximately 65% work on internet-related assignments.

The **Interpublic Group of Companies** (IPG) is the holding company of media, data, and engagement solutions IPG Mediabrands and Axciom, integrated advertising and creativity led solutions McCann WorldGroup and IPG Health, and specialized communications and experiential solutions Weber Shandwick and Golin, among many others. Of its global revenue of $10,889M, $7,033M is earned in the U.S. We assume that of its global employment of 57,400, the same proportion is U.S.-based. We assume 65% of both are internet-dependent as it skews slightly less digital than WPP whose business is 69% digital.

Dentsu, based in Japan, principally has six brands: Dentsu Creative, Carat, dentsu X, iProspect, Merkle, and Tag. Its global revenue is $9,308M, of which $2,202M is earned in the U.S. It employs 71,000 people worldwide and we take U.S. digital employment to be in the proportion of revenue. Similar to Omnicom Group and IPG, we assume its digital business is 65% of all business.

Of the 23 "all other" full-service agencies, U.S. revenue is $15,511M. We assume the share attributable to internet-dependent work is about the same as for the top companies, or 65%, and the ratio of revenue to employment is the same.

Table 5.4.1 Full-Service Advertising Agencies*

	2024 U.S. Internet Revenue ($M)**	2024 U.S. Internet Employees
PUBLICIS GROUPE	$ 7,168	23,681
OmnicomGroup	$ 4,852	18,252
IPG	$ 4,571	24,098
WPP	$ 4,451	27,522
dentsu	$ 1,431	10,917
NEXT 23 AGENCIES	$ 10,082	46,939
TOTAL	**$ 32,555**	**151,409**

* Please note that our methodology for breaking out companies individually requires that they have $100M+ annual revenue.
**Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.4.2 Smaller and Specialized Advertising Agencies

In addition to the full-service advertising agencies, cited above, the AdAge Database reports 373 other agencies, some that are subsidiaries of the full-service agencies but many that are not affiliated with those full-service agencies.

These include:

Multi-Service Ad Agencies: We identified 104 multi-service advertising agencies, whose average annual revenue was $4M and average employment was 112. The largest is RRD Marketing Solutions with U.S. revenue of $1,377M, and the second is Innocean USA ($422M).

Digital Ad Agencies: We identified 31 digitally-focused agencies whose average revenue was $49.9M and average employment was 232. The largest is Amsive ($229M).

Healthcare Agencies: We identified 11 healthcare-focused agencies whose average revenue was $108M and average employment was 505. The largest is Real Chemistry ($555M).

Promotion/Experiential Agencies: The proportion of digital economy work performed by this group is low. The largest is Advantage Solutions with U.S. revenue of $1,085M and 20,000 jobs, but the scope of work (supplementing retail sales, marketing teams, and in-store promotion) places it, and most of the category, beyond the scope of this report. We identified 11 promotion agencies whose average relevant revenue per firm was $51.9M and average employment was 243.

Media Agencies: We identified 7 independent media-focused agencies. We anchored on Lockard and Wechler and with U.S. revenue of $28.2M and employment, given by Pitchbook, as 98. Applying this rate of job productivity to the average relevant revenue for the category of $22M yielded average employment of 88.

Table 5.4.2 Smaller and Specialized Ad Agencies

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Multi-service ad agencies	$ 2,497	11,608
Digital ad agencies	$ 1,548	7,196
Healthcare agencies	$ 1,195	5,564
Promotion/ experiential agencies	$ 570	2,671
Media agencies	$ 154	617
TOTAL	**$ 5,964**	**27,656**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.4.3 Ad Tech

This section examines the technologies that enables the buying, selling, and measurement of online advertising inventory. The general term for these technologies is “ad tech”. Among the technologies that exist under the umbrella of ad tech are ad networks, ad exchanges, demand-side platforms (DSPs), supply-side platforms (SSPs), data management platforms (DMPs), customer data platforms (CDPs), ad servers, ad verification platforms, etc.

Such digital tools and virtual marketplaces are necessary in the online environment where billions of ad placement opportunities emerge each minute and the scale can only be handled by sophisticated segmentation, targeting technologies, and real-time bidding systems.

In this section we individually analyze the top ad tech firms that are not part of larger firms reported elsewhere in this report, such as Amazon, Google, Microsoft, Oracle, and Salesforce as well as agency holding companies IPG and Publicis Groupe as they own Acxiom and Epsilon, respectively.

In addition to these top firms, this sector functions as an R&D incubator. Many companies are launched and then acquired or merged. We include in an “all other” section such firms as Index Exchange, InMobi, Kargo, and OpenX, as well as Acast, Audioboom, and Libsyn which provide ad tech for podcasts.

AppLovin works with app and game developers to market, monetize, and publish their apps through its mobile platforms, placing in-app advertising and analyzing performance. Its most recent 10-K filing[190] reports global revenue of $3,283M, of which 58% is earned in the U.S., and total employment of 1,745, of which 51% is earned in the U.S.

The Trade Desk is a self-service demand-side platform (DSP), used to execute data-driven digital advertising campaigns, integrated across ad formats and channels including connected television. Its primary clients are advertising agencies and advertisers. It has announced its intention to begin supply-side operations by launching Ventura, a streaming TV operating system. It reports to the SEC on a 10-K form[191] which discloses that global revenue in 2024 was $2,445M and global workforce was 3,522, of which 64% was in North America. We estimate 90% of North America's employment was in the U.S. (2,028), the remainder in Canada, and estimate U.S. revenue to be in proportion to U.S. employment ($1.408B).

Taboola is a combination content discovery platform and ad tech platform. Taboola describes itself as "a search engine, but in reverse...instead of expecting people to search for information, we recommend information to people." The firm's 2024 SEC filings report $1.76B in global revenues, of which $838M, or 47%, are attributed to the U.S. We apply this ratio to the company's reported global headcount of 2,000 to arrive at our estimate of 949 as the number of U.S. employees.[192]

Criteo is a France-based global digital marketing firm, supporting clients with advertising placed in retail media and performance media. It files a 10K report with the U.S. SEC,[193] from which we learn that at year-end 2024 the company reported $1.93b in global revenue for 2024, of which $802m, or 41.5% is attributed to the U.S. We use the same ratio for our estimate of U.S. headcount as 1,457.

Magnite (formerly Rubicon Project) is a platform to automate the purchase and sale of digital advertising inventory across the buy- and sell-sides of the digital ad industry. Its 10-K report[194] gives revenue as $620M ($462M in the U.S.) and global employment as 911. We estimate U.S. employment in proportion to revenue.

Mediaocean is a privately held adtech company that owns and operates Prisma, an industry system of record for media management and finance, Protected by Mediaocean, an ad verification solution, and Flashtalking, an ad server and creative personalization platform. In February 2025 it acquired Innovid. Its revenue prior to the Innovid acquisition is estimated at $400M and employment 1,200.[195]

DoubleVerify is a public company performing digital ad verification and media quality authentication for advertisers. Its 10-K filing[196] reports global revenue of $573M and 640 of a total of 1,101 employees based in the U.S. To estimate U.S. revenue we apply the ratio of U.S. to global employment to global revenue.

Integral Ad Science is a media measurement and optimization platform that operates 17 offices in 12 countries, with its headquarters located in NYC. It became a public company in 2021. The latest annual filing reports $530M in annual revenue of which 68% is attributable to The Americas segment, of which we estimate 80%, or $290M, is U.S. revenue. We apply the same ratio to employees to arrive at our estimate of 494 internet-dependent employees in the U.S.[197]

Viant is a demand-side platform (DSP) that specializes in digital marketing solutions adapted to the third-party-cookieless environment. $289M in 2024 revenue is reported in the company's annual filing along with 376 employees in 10 offices in North America. As geographic segments are not broken out we estimate 90% of revenue and employment as U.S. at $260M and 338 respectively.[198]

Outbrain is a company often associated with paid placements appearing on information and lifestyle websites with links to content featured on sites, hence why it is sometimes referred to as a content discovery platform. Overall, it is an omnichannel digital advertising business with global revenues approaching $1B. With its key offerings across the open web, apps, and connected TVs (CTVs), Outbrain serves Fortune 500 companies as well as small-to-medium-sized businesses. In February of 2025 Outbrain completed the acquisition of Teads, providing greater reach and scale for both companies. The latest SEC filing reports $249M in U.S. revenue and 234 U.S. employees.[199]

PubMatic is a programmatic ad tech company that provides a holistic tech solution for publishers to maximize yield. The company's SEC filings indicate global revenue of $291M in 2024 of which $176M is identified as U.S. Global employment is reported as 1,049 and U.S. at 319.[200]

Perion's ad tech platform serves agencies, brands, and retailers, across the web as well as in digital out-of-home (DOOH), connected TV (CTV) and commerce media/retail media. The company reported $498M in global revenue for FY 2024[201] of which we assume one-third ($164M) is U.S., benchmarked against others in this category for proportions of U.S. to global revenue. Perion's website states 173 of its employees are U.S. based.[202]

NextRoll serves direct-to-consumer brands with display ads, social ads, and behavioral email. It also offers a business account marketing tool. It is a private company but indicates annual revenue of about $200M. It employs 526[203] people in offices in San Francisco, Dublin, New York, and Sydney. We assume U.S. revenue and employment is 70% of the totals.

Based on our identification of a large cohort of sub-$100M revenue companies in the industry, a generous allowance has been made for "all other" firms, They include: Accelerant, GroceryTV, Kargo, Kochava, OpenX, RTB House, Smartly (founded in Finland with U.S. offices in NYC, Chicago, and San Francisco), and Yieldmo, all of which are privately held and have estimated revenues between approximately $5M and $20M according to the Mergent Intellect database. Effectv is owned by Comcast, which we account for elsewhere in the study, and Ampersand is owned by Comcast, Charter, and Cox, all covered in the relevant sections of this report.

Table 5.4.3 Ad Tech*

	2024 U.S. Internet Revenue ($M)**	2024 U.S. Internet Employees
APPLOVIN	$ 1,904	890
theTradeDesk	$ 1,408	2,028
Taboola	$ 838	949
CRITEO	$ 802	1,457
Magnite	$ 462	679
mediaocean	$ 400	1,200
DoubleVerify	$ 337	640
IAS INTEGRAL AD SCIENCE	$ 290	494
VIANT.	$ 260	338
Outbrain	$ 249	234
PubMatic	$ 176	319
PERION	$ 164	173
NextRoll	$ 140	368
ALL OTHER	$ 2,000	5,000
TOTAL	**$ 9,430**	**14,769**

* Please note that our methodology for breaking out companies individually requires that they generate a minimum of $100M+ in annual revenue. Although there are hundreds of firms in the ad tech industry, the minimum threshold is why they are not listed separately here.
**Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.4.4 Audience Measurement

The companies analyzed in this section focus on market research and audience measurement. While some of this work is not internet-dependent, much of it is, and we identify only the revenue and employment of the latter.

Nielsen Holdings is a privately held media audience measurement firm that is synonymous with television ratings. It is the successor to a media measurement and consumer trends measurement company of the same name after its Global Connect business unit was divested to Advent International in 2021. Much of Nielsen Holdings' work relies on internet connectivity. Its software uses the internet to collect and retrieve data from client content such as websites and advertisements, and devices such as mobile apps, video players, and smart TVs.

In the year following the divestiture of Global Connect, Nielsen Holdings reported revenues of $3.5B.[204] Although it no longer reports revenues, if we assume growth of 3 to 5 percent per year in line with industry trends, its 2024 revenue is $3.9B. We assume that 90% of this revenue is internet-dependent to account for its telephone surveying of radio and cross-media consumption. Employment in the U.S. was reported as 6,200 people in 2021,[205] and we apply the same discount to allow for work that is not dependent on the internet.

Qualtrics is an experience management company that was owned by SAP between 2018 and 2023 and was acquired by private equity firm Silver Lake in 2023. There is no public filing available for the company, but news reports and enterprise databases indicate annual revenue of $1.46B and 3,455 employees. The company is headquartered in Provo, Utah with 10 additional U.S. offices and 11 international offices. Based on benchmarks for U.S. headquartered firms with international offices we assume half of the company's revenue and headcount is U.S. based, for a total of $730M in U.S. revenue and 1,728 U.S. employees.

Quantcast is a global company whose focus is real-time audience measurement and insights, driven by AI. Quantcast is privately held but an industry analyst[206] reports global revenue at $750M. Absent public information, and given similar business models, we follow Momentive's ratios for U.S. share and employment.

Momentive is an online survey company doing business as SurveyMonkey. It is a pioneer in online surveys and market research using the freemium model (basic features for free with additional features at different payment tiers). It became private in 2023 following acquisition by a private equity firm. The last reported revenue was $480.9M in 2022,[207] with 65% coming from the U.S., and U.S. employment of 892, and growth of 6%. We project two years of growth at that rate to obtain revenue of $540M ($351M in the U.S.) and U.S. employment of 1,283.

Comscore is a public company that compiles audience data across mobile devices, computers, televisions, and movie screens, for planning, transacting, and evaluating media across platforms. With a data footprint that combines digital, linear TV, over-the-top and theatrical viewership, Comscore allows media buyers and sellers to quantify multi-screen behavior. Its 10-K filing[208] reports $356M in revenue for 2024, and identified $38M of this amount as being outside the U.S., resulting in $318M in U.S. revenue. U.S. employment is estimated at 637, based on the official report of 1,200 global employees of which 59% are located in North America. We assume 90% of North American employees as U.S. based, using our general benchmark for this calculation.

The audience measurement sector, like the ad tech sector, is one where the scale of R&D and innovation is significant. Our "all other" category includes smaller audience measurement providers such as iSpot and VideoAmp and SaaS survey providers such as Alchemer (formerly SurveyGizmo), Hotjar, and SoGoSurvey, which are estimated to have annual revenues significantly below the $100M threshold we apply in our analysis throughout this study. We also note that firms that offer survey tools as part of a CRM/marketing automation package (e.g., Mailchimp and Qualtrics/SAP) are accounted for in the sections of this report devoted to an analysis of their core business.

Table 5.4.4 Audience Measurement

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Nielsen	$ 3,510	5,580
qualtrics XM	$ 730	1,728
Quantcast	$ 487	1,780
momentive	$ 351	1,283
comscore	$ 318	637
ALL OTHER	$ 300	1,200
TOTAL	**$ 5,696**	**12,208**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.4.5 Data Collaboration and ID Management

These firms are data collaboration and identity management platforms that help marketers combine their own online and offline customer data with third-party data as well as consumers to manage their identity online. They enable companies to centralize this information and create enriched customer profiles that can be used across various advertising platforms. Some began as credit reporting agencies, and others are data brokers, data clean rooms, and identity solutions.

In this section we individually analyze the top data collaboration and identity management firms that are not part of larger firms reported elsewhere in this report, such as Amazon (AWS Clean Rooms), Dentsu (Merkle's Merkury), Google (Ads Data Hub), LiveRamp (Habu, SafeHaven), and The Trade Desk (UID 2.0).

Experian is headquartered in Dublin, Ireland and listed on the London Stock Exchange. It is a data broker and a global information services company that collects, analyzes, and sells large volumes of consumer information, in particular credit data. Building substantially from its credit services, it sells decision analytic and marketing assistance, including device and browser fingerprinting and targeting. Its annual report[209] shows its North American revenue as $4,659M of global $7,097M (of which we assume U.S. revenue is 90% or $4,193M of North American) but does not distinguish credit services from other data services. We assume that half of their U.S. revenue ($2,330M) is relevant to our study. The firm employs 23,000 people in 32 countries, and we take U.S. relevant employment to be 7,551.

TransUnion is a global information and insights company that provides marketers and consumers with identity resolution and protection. It reports its financial results in two reportable segments: U.S. Markets and International. Within U.S. Markets, a significant vertical market is Financial Services, much of which is not within this report's scope. For its two other verticals—Emerging Verticals and a suite of services called Customer Interactive—we infer that a greater portion of the revenue and employment is relevant. The 2024 10-K[210] reports that Emerging Verticals and Customer Interactive generate combined revenue of $1,804M of the enterprise's total of $4,184M. Transunion reports a workforce of 13,400 across 30 countries and we take U.S. employment in the relevant verticals to be in proportion to the U.S. revenue share, 5,765.

Equifax, in its SEC 10-K filing,[211] reports total income of $5,681M in three segments. The Workforce Solutions segment consists of employment and income verification services, unemployment claims management and other workflow data services, and are not core to our study. The International segment is also not included in the study. However, U.S. Information Solutions ($1,893zm) is more relevant because it depends on transactions and assists clients in acquiring new customers, cross-selling to existing customers and managing portfolio risk, though some, like sales of batch credit are excluded. We assume a large share, $1,600M, belongs in the study. Of the firm's total workforce of 14,700, it reports that 2,300 work in U.S. Information solutions. We take the same proportion of these 2,300 as $1,600M represents of $1,893M, or 1,944 employees.

LiveRamp operates a platform and data marketplace that enables clients to combine, manage, and activate customer and prospect data across various marketing channels and platforms. It reports 2024 revenue of $659.7M[212] from a single operating segment and employment of 1,370. It does not report non-U.S. revenue or employment, but we infer from the 10K that about 10% of both is non-U.S.

There is a small "all other" group that includes HighTouch and Throttle, so we allow 5% for this long tail.

Table 5.4.5 Data Collaboration and ID Management

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
experian.	$ 2,330	7,551
TransUnion	$ 1,804	5,765
EQUIFAX	$ 1,600	1,944
/LiveRamp	$ 594	1,234
ALL OTHER	$ 316	825
TOTAL	**$ 6,644**	**17,319**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.4.6 Designers and Programmers

This section estimates the number of self-employed web and app developers, designers, and programmers whose work is not captured elsewhere in our study. Because they are self-employed, we do not count them in the employment of firms.

To find them we used the U.S. Bureau of Labor Statistics' Occupational Outlook Handbook's database,[213] searching for internet-related occupations with relatively high proportions of self-employment, but not occupations likely to be performed by creators (which is an occupation not measured by the BLS) such as writers, authors, bloggers, and newsletter writers. We found three relevant categories: graphic designers, web developers and digital designers, and web and digital interface designers.

The BLS reports 267,200 graphic designers, of whom 18% or 48,096 are self-employed. We take a nominal 10% to be digital (but not web or app) designers. The BLS reports 128,600 web developers and digital interface designers, of whom 10% are self-employed. It reports 94,100 web developers, of whom 8% are self-employed. We compute the contribution of these workers based on annual income of $68,030.[214]

Table 5.4.6 Designers and Programmers

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Web and digital interface designers	$ 877	12,900
Web developers	$ 512	7,528
Graphic designers	$ 327	4,810
TOTAL	**$ 1,716**	**25,238**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.5 Shipping

There can be no doubt that the growth of e-commerce has led to substantial growth in employment in parcel shipping. But it is extremely hard to say what part of this is due to the internet. All large shippers (FedEx, UPS, USPS, and Amazon Delivery Partners, a network of small shipper firms) report growth in online order delivery. But there is no reliable way to divide employment to fulfill orders placed online from employment for other shipments.

Our approach is as follows. We take the results of the U.S. Census Bureau's survey of annual e-commerce sales revenue since 2016 and grow the employment in shipping from that year to the present at the rate of e-commerce growth. We apply the same rate of revenue per employee as in prior studies.

Table 5.5 Shipping

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Shippers delivering online purchases	$ 95,911	1,119,000

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

5.6 General Enterprise Activity

Beginning with the 2008 study, we started tracking general enterprise omitted employment—that is, employees of large corporations that are not part of the digital economy, but who perform work such as web design and maintenance. To study this somewhat shapeless sector, we performed detailed enumeration on about 260 firms and about 50 rolled-up firm groups and self-employed groups, out of the approximately six million firms in the U.S. large enough to have a payroll. Granted, many have no internet employees and others make internet duties a part-time responsibility of one person, but in 2008 we pegged general enterprise employment relating to the internet at 100,000 people and in subsequent years we grew this number at the rate of internet growth. Continuing that method, we estimate that general enterprise employment has grown to 1,200,000 in 2024.

Table 5.6 General Enterprise Activity

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
General Enterprise Activity	$ 81,600	1,200,000

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6

Consumer Services

In this chapter we map and measure employers and self-employed professionals who are responsible for the apps, websites, online tools, and streaming services, used for shopping, entertainment, news, etc. as well as for utilitarian services such as online banking and payment.

6.1 Consumer Services

One way to classify firms and individuals into categories is by medium (e.g. audio and video), technology, or by genre (e.g. music, games, movies). But in the digital economy such boundaries are easy to breach as firms frequently move across them. In the four years that have elapsed since our last study (2020 to 2024) there have been many noteworthy developments, particularly in the category of consumer content:

Amazon Prime Video and Netflix introduced advertising supported versions of their previously subscription-only businesses that offer consumers lower priced plans in exchange for advertising insertions. Regarding Netflix, it's been estimated that over 55% of new subscribers are signing up for the ad-supported tier.[215]

YouTube is now among the most popular video streaming destinations, attracting more viewers than Netflix, Amazon Prime Video, Disney+, and traditional television.[216]

The growth of free ad-supported streaming television (FAST) channels continues, with close to 2,000 available in the U.S. and an estimated 33% of the U.S. population, or over 111 million people choosing free ad-supported streaming TV.[217] As household budgets adjusted to high inflation, people turned to the cost-savings made possible by FAST channels such as **The Roku Channel, Tubi, Pluto TV, Vizio Watch Free+ and Samsung TV Plus.**

In streaming audio, **Spotify** has grown from 345 million in 2020 when this study was last conducted to 675 million users,[218] opening up global markets for music, podcasts, and audio books, a boon to creators and authors both emerging and established.

Reddit, the internet's home for niche interests and AMAs (Ask Me Anything) question-and-answer events, has more than doubled its monthly active users (MAUs) from the time of our last study to reach 1.2 billion.[219] With a combination premium subscription / ad supported model, the company has rolled out innovative new advertising products such as its Reddit Pro dashboard, provided free of charge to brands and publishers so they can monitor mentions, comments, and consumer sentiment and craft their response strategies accordingly.[220]

Creators have taken a large share of the production of content from media companies. We estimated in our last study that in 2020 while millions of people created some content worthy of the attention of an audience, there were the equivalent of about 200,000 people in the U.S. earning at the national average income. Today, we estimate that number to be 1,500,000.

What follows is a breakdown of the main sectors of digitally delivered consumer services.

6.1.1 Digital First Properties, Websites and Publishers

These firms are distinguished from media companies that predated the digital era, which we call legacy publishers. We analyze them in two categories: the first are primarily text-based digital publishers of websites and apps and the second are audio-based digital publishers, or podcasting companies. For the text-based companies, users may navigate to them by going directly to a URL, such as large industry specific sites, e.g. Zillow.com, or people may be served their content in podcast feeds or recommendations from algorithms or friends, family, etc. Other sites may be encountered in response to a search query.

Digital publishing is a fluid sector with few barriers to entry. Morning Brew, for instance, began as a PDF with business news emailed by a student to others from a college dorm at the University of Michigan and ten years later is home to 19 digital publishing brands that cover business, marketing, retail, healthcare, personal finance, and more, as well as 7 podcasts. As of 2024 the company has 6 million subscribers, employs about 250 people in the U.S. and has estimated revenues of $70M.[221]

Newer entrants in digital publishing include 404 Media, an investigative journalism site focused on business, technology, and consumer rights that is owned by its journalists. It became profitable in early 2024, just six months after going live.[222] Its business model is comprised of advertising, sponsorships, subscriptions, merchandise sales, and an online "tip jar."[223] Some of the publishers enumerated in this section are the result of small mergers while others are large scale aggregations. For example, RedVentures owns LonelyPlanet.com, Bankrate.com and others, while Vox Media is home to a variety of digital brands from websites and apps to podcasts. Niche publishers such as the The Knot, for all things wedding related, and TrueCar for the automotive industry also appear in this section.

While there are thousands of digital-first publishers in the U.S., this section individually enumerates only the top eighteen publishers based on revenue. It then adds 20% of the total to account for medium size digital publishers.[224] Publishers smaller than medium-sized are analyzed in the Creator Economy section of this chapter. There we account for a long tail of small digital publishers, often one-person projects, involved in such activities as online video, online audio, online music, and online writing, using platforms such as Substack, Beehiiv, Medium, and Patreon.

Highlights in this sector include:

The acquisition by Dotdash (owned by **IAC**) of Meredith Corporation's National Media Group resulting in the formation of Dotdash Meredith.[225] This brought together information and lifestyle sites such as Brides, Investopedia, Entertainment Weekly, and Simply Recipes, among others, under the holding company's umbrella of dozens of digital brands.

As one of the earliest internet brands, **Yahoo!**'s origins go back more than 30 years. A company involved in search, advertising, and content discoverability, the company's current brands include category leaders such as Yahoo! Finance, Yahoo! Sports, and Yahoo! Entertainment, and college sports site Rivals. It also operates Yahoo DSP (demand-side platform). Yahoo! has changed hands a number of times over the years and its current ownership is Apollo Global Management (90%) and Verizon (10%).[226] For our estimate, we take 90% of the global headcount reported by Pitchbook as U.S. employment and apply a productivity per worker of a comparable firm in the category (IAC). We then reduce both by 10% to account for the portion of the company already covered in our entry on Verizon to arrive at our estimate of 7,560 U.S. employees and $3.478B in U.S. revenue.

Reddit's dramatic growth in audience, revenue, and product development in its first year as a publicly traded company. With annual global revenues of over $1B, profitability was achieved for the first time in the company's 20 years, the result of daily active users increasing 47% year over year to close to 100 million while ad revenue increasing by 56%.[226] Reddit also introduced Reddit Pro Trends, a new suite of tools for marketers that helps them track conversations and emerging trends in real time, and has acquired 4 AI-focused startups in the past two years to contribute to their internal audience insights, analysis, and advertising tools.[227]

Ziff Davis' acquisition of technology news site CNet in August of 2024.[228] Home to popular online brands such as Mashable, Lifehacker, Downdetector, and EverydayHealth, business segments also include shopping and gaming services as well as B2B and B2C digital tools and services.

Red Ventures, the South Carolina-based firm, has been aggregating digital media companies and pursuing a business strategy of "high intent SEO" by bidding on the some of the most popular keywords and phrases online and serving up highly relevant content in return, thereby attracting and retaining audiences for their advertising-supported sites such as Bankrate.com, BestColleges.com, LonelyPlanet.com, and MyMove.com. Red Ventures' portfolio of sites is said to reach close to 2 out of 3 Americans.[229]

Penske Media's 2023 investment of $100M in Vox Media,[230] a company known for popular digital brands such as The Verge, Vulture, and Curbed, and a podcast network that generates 36 million monthly downloads with shows such as Pivot, Today Explained, Decoder and The Cut. Together the company's digital products and services reach over 130 million people monthly and generate over 2 billion monthly views.[231]

Zillow, the online real estate marketplace known for its proprietary 'Zestimates' of home values, even inspired the HGTV reality show 'Zillow Gone Wild' in 2024.[232] It has seen decreased revenues since our last study but continues to be a high value and profitable company thanks to its diversified business model that includes a new construction marketplace, advertising revenue, and the sale of marketing and business solutions for the real estate industry.

Craigslist, the listings site that founder Craig Newmark started strictly as an email circulated amongst friends and co-workers in 1995 moved to the open web the following year, offering free buy and sell ads to anyone with an internet connection. The business model evolved to a pay tier for a handful of categories such as commercial real estate and apartment rentals in select cities, and annual revenues are now close to $700M globally. With just 50 employees, the revenue per employee for Craigslist is approximately $14M, making it one of the most profitable internet companies ever.

Buzzfeed, though continuing to face decreasing revenues, remains one of the top digital networks in the U.S. via its brands Buzzfeed.com, Huffington Post, and Tasty. In 2023, its audiences across 7 countries consumed over 300 million hours of content and $500M in attributable transactions. Buzzfeed's diversified business model consists of digital advertising across its portfolio of sites, branded content created expressly for clients, licensing of content, and affiliate marketplace revenue which derives from commissions earned for driving traffic to third-party retailers.[233] In early 2025, Buzzfeed announced plans to start its own social media platform, with a goal of bringing "some joy and fun back to the internet with content that gives you a little buzz, helps you relax, have a good time, and connect with your friends."[234]

Table 6.1.1 Digital First Properties, Websites and Publishers

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
IAC[236]	$ 3,798	8,265
yahoo![237]	$ 3,478	7,560
CoStar Group[238]	$ 1,986	5,291
Zillow[239]	$ 1,945	6,263
yelp[240]	$ 1,263	4,272
Internet Brands[241]	$ 1,193	5,000
ADVANCE[242]	$ 1,150	5,000
Ziff Davis[243]	$ 840	2,520
ancestry[244]	$ 660	858
craigslist[245]	$ 622	50
VOXMEDIA[246]	$ 510	1,727
tkww THE KNOT WORLDWIDE[247]	$ 264	610
axel springer[248]	$ 250	410
BuzzFeed[249]	$ 226	611
RED VENTURES[250]	$ 177	119
TrueCar[251]	$ 159	324
leaf GROUP[252]	$ 126	173
PMC[253]	$ 126	207
WIKIMEDIA FOUNDATION[254]	$ 59	231
ALL OTHER	$ 3,036	8,356
TOTAL	**$ 21,868**	**57,847**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.1.2 Podcast Production Companies

The podcast industry has matured significantly since 2020 when this study was last conducted. On Apple Podcasts alone, there are now about 100 million podcast episodes available to listeners, representing a doubling of volume since 2021.[255] Some are produced by small teams and require only basic production techniques, while others are produced by teams made up of researchers, writers, one or more producers, editors and/or sound designer, and a showrunner. These larger shows may have budgets in the tens of thousands per episode and attract substantial advertising. Magellan AI reports that advertisers spent an average of $329K per month on podcasts ranking in the top 500 in Q4 2024 alone.[256]

This section analyzes the output of the largest of the digital-first podcast production companies, while noting that others are owned by legacy publishers (e.g. iHeart Media, Paramount, Disney, Amazon, The New York Times), and are accounted for in the next section, with the exception of Amazon, which is analyzed in our section on "Integrated Firms".

Highlights in this sector include:

We analyze the largest of the independent podcast production companies in the U.S. such as **The Daily Wire, Barstool Sports, and Crooked Media**. They produce popular series that receive millions of downloads per month, e.g. The Ben Shapiro Show (The Daily Wire), Pardon My Take (Barstool Sports), and Pod Save America (Crooked Media).

There are an estimated several hundred U.S. podcast production companies with some publishing a single show, while others, such as the iHeart Audience Network, publishes thousands.[257] Smaller independent podcast production companies (e.g. The Free Press, Audiochuck, Scicomm Media) are accounted for in the "all other" portion of this section.

Not all podcasts are audio only. In fact, some of the most popular podcasts are accessed as videos on YouTube. As of 2024, YouTube was the top site for podcast consumption in the U.S. with 31% market share, followed by Spotify (27%) and Apple Podcasts (15%).[258] YouTube is included in the "Integrated Firms" section under parent company Alphabet.

Table 6.1.2 Podcast Production Companies

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
BARSTOOL SPORTS[259]	$ 250	430
DAILY WIRE+[260]	$ 220	200
CROOKED[261]	$ 27	100
ALL OTHER[262]	$ 503	773
TOTAL	**$ 1,000**	**1,503**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.1.3 Legacy Publishers Online

This section reports the digital activities of some of the largest and best-known U.S. publishers and broadcaster such as The New York Times, Fox Corporation, Bloomberg, and newly branded entities such as Paramount Global, formerly ViacomCBS. They are the legacy media organizations that have maintained strong positions in the dynamic media marketplace by adjusting their products, services, and business models to the digital environment. Some of these publishers have finessed the shift from print to online, as is the case with the New York Times, which has expanded beyond news to become an entertainment and lifestyle brand.

Others have built upon their film and/or TV businesses to embrace digital creation, production, and distribution. Nielsen reports that over 40% of time spent by Americans watching TV is now online,[263] compared to 25% at the time of our last study four years ago,[264] and this increase in time spent on video consumption online is reflected accordingly in our estimates below.

Digital Out of Home (DOOH) is a fast growing advertising revenue source overall and for companies such as Clear Channel Outdoor, Lamar and Outfront. The DOOH category refers to the digital billboards and screens seen in public spaces, transit stations, and retail and themed environments. Updates can be made in real time and content is dynamic, with many firms having developed proprietary data and analytics platforms for planning and optimizing outdoor advertising.

Highlights in this sector include:

The continuing shift to viewing that used to be thought of as "television", (delivered over the air or through cable or satellite), by many of the legacy firms analyzed in this category, to viewing via streaming, often by way of direct to consumer offerings e.g. Disney+, Paramount+, Peacock, etc.

ViacomCBS officially changed its name to **Paramount Global** in 2022[265] and touts a portfolio bringing together premium and ad-supported media properties including CBS, MTV, BET, Comedy Central, Paramount+, Pluto TV (FAST) and Paramount Pictures, along with production, distribution, and advertising solutions.

Disney's growth of its AVOD (Advertising-based Video On Demand) offerings, which were mentioed as 60% of all new subscribers and 37% of subscribers in the U.S.[266] The company also reported 112 million Americans watch the ad-supported tiers on its Disney+, Hulu, and ESPN+ offerings.[267]

The New York Times' 2022 acquisitions of the popular word game Wordle and sports site The Athletic,[268] which has since replaced the Times' sports department. In doing so the Times has added millions of new digital users, increased its subscriber and retention rate, and bolstered its revenue base overall which now includes categories such as games, cooking, and product reviews/recommendations (e.g., Wirecutter) as well as audio subscriptions and podcasts.

Gannett, best known as the publisher of USA Today shows itself to also be a highly diversified media company, with reach at the local level through publications such as the Detroit Free Press, The Indianapolis Star, The Columbus Dispatch, and The El Paso Times, as a result of its merger with GateHouse Media/New Media Investment Group in 2019. In total the group operates about 200 daily and 175 weekly newspapers with both online and offline presences, and is able to offer data-driven, digital advertising solutions to small, medium, and large markets across the U.S.[269]

Sony Corporation of America's continued diversification with segments including games, music, movies, and a new segment (Imaging and Sensing Solutions) that derives revenue from IP in real-time rendering, AI-based technologies, and machine learning systems. The company also owns the popular direct-to-consumer streaming video service Crunchyroll that provides anime and "manga" programming to over 200 territories worldwide. Sony is an investor in Epic Games and Discord, with a reported 5% and 1.4% share of those companies respectively.[270]

News Corp is a highly diversified global media company, with assets ranging from news media (e.g. Dow Jones and Company's Wall Street Journal, New York Post, Barron's, MarketWatch), to subscription video services (e.g. Australia's Foxtel and Kayo), to book publishing (e.g. Harper Collins) and digital tools and services for the real estate industry (e.g. Move, Realtor.com, UpNest). The company's most recent SEC filing[271] reports U.S. and Canadian revenues as 40% of total revenues, of which we take 90% as U.S. We apply this formula and a formula for separating digital from non-digital based on media consumption patterns[272] to arrive at our estimates of the company's U.S. digital revenue as $1.476B. We apply the same formula on global employment of 23,900 to arrive at our estimate of U.S. internet-dependent employment of 3,498.

Of note, is the existence of the U.S. public media system which includes the principal public television and radio broadcasters, PBS and NPR, and collectively reaches nearly 99% of the U.S. population with free programming and services also including digital (sites, apps, podcasts). Key sources of financial support include federal funding, donations, and underwriting. Revenues are included in the “all other” line item in table 6.1.3.

In addition to the firms identified above, there are smaller firms that we include which are based on an analysis from the October 2, 2024 edition of the Madison & Wall newsletter[273] that breaks out the Top 50 sellers of advertising in the U.S.

These firms are **Gray, Scripps, Tegna, Cumulus Media, Sinclair, Clear Channel Outdoor, Outfront,** and **Lamar**. We assign percentages for digital based on a total U.S. advertising market size of $397B[274] and, when not explicitly reported in a company’s SEC filings, we benchmark using the share of digital ad spend vs. broadcast spend reported by media analyst Evan Shapiro, also in Q4 2024.[275] We benchmark employment using an average productivity per employee for the smallest firms in the publisher sector. But it is not only consumer offerings that can contribute to firms’ bottom line in the digital space. A new revenue stream for many publishers is coming from licensing deals for the training of Large Language Models (LLMs) used in Generative AI. Amidst industry-wide declines in news organizations, legacy publishers such as Thomson Reuters reported a 10% revenue increase in their news segment in 2023 owing largely to a Generative AI licensing deal.[276] Others such as News Corp and AP (Associated Press) have entered into licensing arrangements with Open AI reported to be in the tens to hundreds of millions.[277]

Note that we account for the digital revenues of CNN.com, ABC.com, MSNBC.com, and other legacy publishers online as follows:

- As of 2022 CNN has been owned primarily by WBD and therefore is accounted for in that entry.
- ABC is owned by Disney, so we cover their digital revenues under that heading.
- MSNBC is owned by NBCUniversal, a subsidiary of Comcast, and is accounted for in that entry.

Table 6.1.3 Legacy Publishers Online

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
SONY [278]	$ 26,220	36,612
WARNER BROS. DISCOVERY [279]	$ 12,900	7,671
Disney [280]	$ 11,600	21,710
Paramount [281]	$ 8,610	10,009
HEARST [282]	$ 6,000	10,000
FOX [283]	$ 5,410	3,947
Bloomberg [284]	$ 4,125	6,275
News Corp	$ 1,476	3,498
The New York Times	$ 1,304	3,894
GANNETT [285]	$ 966	3,600
Televisa Univision [286]	$ 890	1,330
LAMAR OUTDOOR ADVERTISING [287]	$ 586	2,726
OUTFRONT [288]	$ 553	2,572
Nexstar MEDIA GROUP, INC. [289]	$ 395	590
Clear Channel Outdoor [290]	$ 385	1,791
THOMSON REUTERS [291]	$ 385	578
The Washington Post [292]	$ 262	1,947
TEGNA	$ 212	986
gray [293]	$ 212	986
SINCLAIR BROADCAST GROUP [294]	$ 173	805
AMC NETWORKS [295]	$ 128	137
SCRIPPS [296]	$ 111	516
ALL OTHER [297]	$ 8,370	12,333
TOTAL	**$ 91,273**	**134,513**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.1.4 Streaming Music and Audio

Digitally delivered audio has continued to grow rapidly as millions of Americans have integrated music, podcasts, and audiobooks into their media habits. With 91% smartphone penetration in the U.S. and the increased uptake of connected devices, there exists an ease of use and convenience that has pushed online consumption of audio to its highest point ever, with over three-quarters of people over the age of 12 in the U.S. accessing online audio monthly.[298]

On Spotify alone, consumers can choose from more than 100 million songs, 350,000 audiobooks and 6.5 million podcasts.[299] A platform distributing the leading edge of music is SoundCloud, home to one of the world's largest communities of independent music creators with over 40 million creator accounts and over 140 million registered users.[300]

Highlights in this sector include:

Profitability was achieved at **Spotify** and **SoundCloud**, demonstrating the viability of digital music distribution as a business for both emerging musicians, the primary users of SoundCloud, and more established artists who use Spotify as a key distribution channel.[301]

At **iHeartMedia**, revenues in the company's digital audio segment (music and podcasts) increased 9% year over year.[302]

On the subscription front, a study conducted by research firm Kantar in mid 2024 showed that the biggest impediment to signing up to a premium subscription-based streaming service is the cost – 42% of those surveyed indicated that it was the burden of regular monthly payments that kept them from doing so.[303]

Along with the shift to digital-on-demand audio, the ecosystem of companies providing services and tools to creators has also expanded. New tech stacks for production, distribution, analytics, and direct-to-fan relationships abound, with apps such as BandLab, Soundtrap, and Music Maker Jam helping artists bypass the expenses and hierarchies of studios and labels by enabling recording, editing, mixing, collaboration, and/or sharing, all from one's phone. Other new tools for creators offer such features as real time performance information on their uploads, e.g. listening statistics, chart position, direct communication with listeners, and data on where and how people are finding creators' content.

Rounding out the other large players in this segment are **Sirius XM** and **Audacy** (formerly Entercom). Note that the audio activities of firms such as Apple, Amazon, and Alphabet are reflected in the analyses of these companies in the 'Integrated Firms' section of the report. Tidal is accounted for under its fintech parent company Block.

Table 6.1.4 Streaming Music and Audio

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Spotify[304]	$ 4,863	5,142
SiriusXM[305]	$ 2,113	1,340
iHeartMEDIA[306]	$ 1,069	678
Audacy[307]	$ 333	211
CUMULUS MEDIA[308]	$ 146	131
SOUNDCLOUD[309]	$ 106	165
ALL OTHER[310]	$ 863	1,343
TOTAL	**$ 9,493**	**9,010**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.2 Gaming

What began as an industry that sold game cartridges and discs in boxes at retail stores has morphed into one that is almost entirely digital and internet-dependent. In line with this shift, business models have adjusted to accommodate the technological affordances of the digital environment.

Highlights in this sector include:

Significant ownership changes in this sector include *Grand Theft Auto* parent company **Take-Two Interactive's** acquisition of mobile game company Zynga in early 2022, and Microsoft's 2023 acquisition of Activision Blizzard, home of top titles such as *World of Warcraft* and *Call of Duty*.

The growing trend of 'live service games' such as *League of Legends* and *Final Fantasy 14* that build on the dynamism of the global gaming community with ongoing updates that keep players engaged for extended gaming sessions and also keep them coming back to try out newly added features.

In a recent survey of game developers, over half reported that they were employing the digital premium model in which basic gameplay was offered either free of charge or at a reduced rate and revenues were generated by premium features that players could access according to their preferences.[311]

Online games continue to offer different modes of gameplay available at a variety of price points to suit players' budgets, interests, and level of expertise. While some games are free to download with revenues generated from premium features and updates, others are available on a subscription basis, while others are supported by in game advertising, product placement, and branded stores and features.

In the case of **Epic Games**, best known for its massive hit title Fortnite, an additional revenue stream comes through licensing and royalties from games made that use Unreal Engine, its real-time 3D tool for creating detailed, photorealistic environments for games, TV, and movies, and more recently for sophisticated animations used in the architecture and automotive industries.[312]

In the case of online game platform **Roblox**, a big part of its technology roadmap has been to become a significant player in e-commerce. Recently this revenue source has been propelled through its partnership with Shopify.[313] Players could buy virtual goods for many years within Roblox, but the Shopify partnership has enabled physical goods show up at players' doors. The additional commerce and affiliate fees flowing through the platform will also provide a new revenue stream. This merging of the physical with the digital in the context of shopping is among the latest manifestations of Roblox's metaverse strategy which was put into play with features such as video chat that "aims to combine the interactions of apps like Zoom and FaceTime with the creative energy of a video game environment"[314] and concerts featuring artists such as Lizzo, Lil Nas X, Twenty One Pilots and DJ David Guetta. In March 2024, a developer on the Roblox platform also introduced a short video clip competitor to TikTok called "Clip It" which racked up over a billion views in 6 months.[315]

Though the innovations in technology and game play have moved along at a brisk pace in this sector, the last few years have been challenging for workers in the game industry, with global layoffs increasing from 8,500 in 2022 to 14,600 in 2024.[316] This large number of layoffs has been attributed to a variety of factors including overhiring during the pandemic and the workforce reductions that have resulted from mergers and acquisitions.

In this section we analyze the largest of the video game companies and platforms. Note that the substantial game-related activities of Microsoft, Google, and Amazon are accounted for in the "Integrated Firms" section of this report while Sony is accounted for in the "Legacy Publishers Online" section. Among the firms analyzed separately in this section are the largest players that make up the bulk of the market and new companies that have gained traction more recently. Those firms include **Valve,** home of the Steam platform that has seen over 40 million simultaneously logged on players.[317] Note that in our estimate below, Valve is an outlier for the level of revenue relative to employee headcount, an estimate corroborated by multiple industry sources. The company's own employee handbook even boasts that "our profitability per employee is higher than that of Google or Amazon or Microsoft."[318]

We have also separately analyzed **Roblox**, estimated to have 380 million monthly active users, nearly 3 million developers contributing to the platform,[319] and payouts to the developer community of over $200M per quarter in 2024.[320] Roblox's scale of players, transactions, and developer payouts has led to a game company with a GDP similar to that of some countries.[321]

To account for the small to mid-sized game companies making up the rest of this sector, we consulted the membership of the game industry's Entertainment Software Association (ESA),[322] and other industry resources and reviewed a sampling of member companies, both headquartered in the U.S. and abroad, with U.S. locations. Those with U.S. locations include Capcom, Krafton, Square Enix, and Nexon.

There are other major game companies such as **Activision Blizzard** which is covered in our analysis of parent company Microsoft, as well as **Sony Interactive** and **Warner Brothers** which are accounted for in the "Legacy Publishers Online" section. In addition, the mobile gaming market is large, dominated by the likes of **Supercell** and **Niantic**.

All of these firms are factored into the figure for the "all other" portion of the calculation, which we estimate to be $17B and 19,488 workers.

Table 6.2 Gaming

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
VALVE [323]	$ 3,340	600
TAKE TWO INTERACTIVE [324]	$ 3,135	4,541
EPIC GAMES [325]	$ 2,919	2,079
Electronic Arts [326]	$ 2,373	4,658
ROBLOX [327]	$ 1,707	2,357
UBISOFT [328]	$ 1,057	1,538
RIOT GAMES [329]	$ 600	1,424
Nintendo [330]	$ 592	727
ALL OTHER	$ 17,000	19,488
TOTAL	**$ 32,723**	**37,412**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.3 Streaming and Online Video

As mentioned at the beginning of this chapter, it can be challenging to assign companies to categories in the digital economy. The streaming and online video sector is a particularly striking example of the challenge. When one person thinks of online video they may think of YouTube or Instagram Reels. Another may think of live streams on Twitch or the endless scroll of TikTok. Still others may think primarily of the professionally produced content of Netflix, Hulu, or Amazon Prime Video.

Whereas it would have been extremely unlikely for a retailer in the "brick and mortar" world to also have been in the entertainment industry, in the case of Amazon, the merging of the two has seemed more natural. Both are digital services delivered at scale to global markets and crossing the boundary from retail to entertainment which became part of a technology roadmap, rather than a radical departure. In the pre-digital world, it would have seemed anything but natural, for example, to Sears compete with 20th Century Fox, yet in the context of online enterprises it's not an overreach.

Amazon's extension from e-commerce to entertainment are but one point of interest in this sector. One might also argue that it's highly unusual for what began as a search company (Google) to now be running one of the largest global streaming providers (YouTube), which now has a significantly larger share of U.S. streaming viewers than Netflix, and more than Disney, Amazon Prime Video, and Peacock combined.[331]

Because of the ways in which industries have been taking shape in the digital environment, the overwhelming majority of video streamers live under the umbrellas of other corporate entities. For example, in the case of YouTube the parent company is Alphabet, for Instagram it's Meta, for Twitch and Amazon Prime Video it's Amazon, for Max (formerly HBO Max) it's Warner Bros. Discovery. Adding another twist to the mix, as of 2024, Spotify has had over 300,000 video podcasts on offer[332] and the company is also said to be pursuing non-exclusive deals with video creators, including those already successful on YouTube, with reports of the size of the deals being in the millions.[333]

The parent companies of these streamers of short form, long form, and/or live video are covered in multiple locations in this report, e.g. Twitch, Amazon Prime Video, and Instagram are covered in the "Integrated Firms" section where Amazon and Meta reside, and the streaming activities of the likes of Paramount Global and Warner Bros. Discovery can be found in the section on Legacy Publishers Online. In the case of OEM (Original Equipment Manufacturers) in the CTV (Connected TV) space that have built-in streaming services (e.g. Samsung's Samsung TV Plus, Vizio's WatchFree, LG's LG Channels), those are accounted for in the section of this report on Hardware.

Therefore, in this section we individually analyze only two firms: **Netflix** and **Vimeo**, and direct readers to the analyses of the parent companies of the other firms in this space that also provide online video to consumers. We also note that even **Vimeo**, spun out as a separate company from parent company IAC in 2021, does not slot into this category with complete precision. Though it is a site for online video consumption, it is now primarily a place for producers and creators to share, post, and monetize. Its suite of video tools include hosting, editing, collaboration software, analytics, and privacy and security compliance. According to its website, it is used by "287+ million creatives, entrepreneurs, and businesses."[334]

Netflix is a dominant streamer in professionally created video content, with over 300 million paying subscribers globally and an annual content spend of approximately $16B.[335] From viewers' perspective the biggest changes to Netflix's offerings since our last study has been the addition of gaming and live programming such as sports, awards shows, and comedy specials. Operationally, the biggest change has been the introduction of an ad supported tier in November 2022. This new plan offered a lower priced monthly plan in exchange for viewing commercials. In the U.S. there are over 84 million paying Netflix subscribers[336] and an additional 13 million homes that have opted for the lower priced ad-supported plan.[337] By Q4 2024, 55% of new customer sign-ups to Netflix for the plan that includes ads, an increase from 40% in the previous year.[338]

In terms of ad revenue, analysts suggest the figure likely sits at approximately $1B annually, a doubling year over year, and representing approximately 5.7% of total revenues.[339] Netflix is also in the process of building its own ad tech stack, which should further enhance its measurement ability, its appeal to brand marketers, and its profit margins.[340]

Table 6.3 Streaming and Online Video

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
NETFLIX [341]	$ 13,386	8,100
vimeo [342]	$ 179	620
TOTAL	**$ 13,565**	**8,720**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.4 Learning and Education

Online learning, whether in the form of university accredited courses, micro-credentials, or pastimes such as language learning, provides flexibility and low-cost options for learners who may otherwise not have the opportunities to upgrade their skills. In the U.S., over 53% of college students enrolled in at least one online course in the last academic year, representing a cohort of approximately 10 million online learners.[343]

Learning online has become a vast category in the internet landscape, encompassing both content and services/tools. On the content side, we find everything from language learning apps to a' la carte classes for everyone from hobbyists to people looking to upgrade specific skills to learners who can take advantage of college courses offered online or in a hybrid physical/digital form (e.g. Coursera). On the services and tools side, we have seen educational technologies built to include web and mobile applications, livestreams, collaborative tools, on demand 'bite size' learning, virtual classrooms, immersive interactive environments, and AI powered features that provide brainstorming, feedback, and chat capabilities to students on an individual basis.

In this section we analyze the largest of the digital first learning firms, such as Kajabi, the platform that has matched tens of thousands of course creators to tens of millions of learners, and the not-for-profit, free, online learning platform Khan Academy, with its over 165 million users across 190 countries and educational materials made available in more than 50 languages.[344]

We also analyze the sector of Learning Management Systems (LMS), internet-delivered software solutions used at schools, colleges, and universities which automate the learning process for educational institutions, teachers, and students and make learning materials, tools, and resources available 24/7. The top 4 companies in this space represent over 90% of the market in North America, with **Canvas** (50%), **Brightspace** (20%), **Blackboard** (12%), and **Moodle** (9%).[345] The remainder of the market is made up of smaller firms such as Populi and Sakai. Some of these firms are publicly traded while others are privately held. We therefore provide an estimate for the sector based on a combination of publicly available financial filings and industry reports.

Lastly, we provide an aggregate figure to account for the online learning offerings of "brick and mortar" colleges and universities in the U.S. Note that YouTube, itself a major destination for on demand learning online, is accounted for in under Alphabet in the "Integrated Firms" chapter.

Highlights in this sector include:

Platforms such as **Kajabi** that enable the creation, distribution, marketing, and sale of courses and digital products with as much as 100% of product and service revenue going to creators providing billions in revenue to their tens of thousands of creators.[346]

Online tutoring platforms (e.g. **VarsityTutors.com**) that provide live and asynchronous online learning, often with AI-powered customized assistance, homework help, and test prep to students around the world is a growing sector within this category.

Duolingo, the world's leading platform for mobile language learning, has grown to over 100 million monthly active users[347] for its app that offers a gamified approach to learning with interactive quizzes, algorithmic recommendations, competitions among random groups of learners, and personalized feedback.

Udacity, the educational technology platform that provides practitioner-level learning to tens of millions of tech professionals is acquired by Accenture.[348] It is accounted for in our section called "Enterprise IT consultants."

The table below provides our individual analyses of the major digital first learning providers and their U.S.-based revenue and employment. We allow an additional 10% in revenue and employment to account for the long tail in this sector.

In the "all other" category we roll up companies with under $100M in U.S., such as Kajabi, CourseHero, Brainscape, Kahoot, 360Learning, Quizlet, and others. We estimate the "all other" category to be 10% of the sector.

Table 6.4 Learning and Education

	2024 U.S. Internet Revenue ($M)**	2024 U.S. Internet Employees
Apollo Education Group[349]	$ 1,050	3,203
Chegg[350]	$ 616	839
coursera[351]	$ 341	648
duolingo[352]	$ 280	360
skillsoft[353]	$ 277	1,159
udemy[354]	$ 263	722
OUTSCHOOL[355]	$ 218	1,088
HealthStream[356]	$ 184	712
nerdy[357]	$ 178	450
LMS *[358]	$ 897	2,400
Aggregate of College and Universities online programs[359]	$ 5,000	11,364
ALL OTHER	$ 1,861	4,589
TOTAL	**$ 11,165**	**27,534**

* Learning Management Systems Roll Up (e.g. Canvas, Blackboard, Brightspace, Moodle)
**Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.5 Health and Wellness

Tens of millions of Americans turn to their mobile devices to help them live healthier and more balanced lives, accessing apps for fitness tracking, meditation, nutrition tips, and stress reduction. Most of these apps are available by subscription only, though some such as the fitness app Strava have an ad-supported free version.

Noom offers a nutrition and weight management app. It is a private company, so reliable revenue data is limited, but there are reports of $750M of revenue and 1,300 employees, with 50% in the U.S.[360]

Calm, a meditation app, was founded in 2012. While there have been some reports of revenue as high as $596M in past years, a layoff of 20% of 400 employees in 2022 supports reports that revenue is now about $300M and employment is 310,[361] of which 60% are U.S.-based.

Headspace offers meditation, adult sleeping, exercise routines and music playlists and recently merged with Ginger, a mental health platform. It too has experienced declining revenue since 2022.[362] We estimate revenue to be $195M and for employment we follow Noom's profile, with the same proportion of U.S. activity.

Business-of-Apps[363] suggests an estimate for "all other" firms, such as Flit, and BetterMe for fitness, BetterSleep for sleep monitoring, and ThinkUp for daily affirmations. As these firms are generally privately held our estimates for worker productivity to revenue are anchored on comparables in the software sector.[364]

Table 6.5 Health and Wellness

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
NOOM	$ 375	650
Calm	$ 180	186
headspace	$ 98	100
ALL OTHER	$ 295	300
TOTAL	**$ 948**	**1,236**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.6 Product and Service Retailing

6.6.1 E-commerce

E-commerce is the largest sub-sector of the U.S. digital economy by revenue[365] and the second largest by employment. In 2024 it grew at more than double the rate of physical retail sales (7.5% compared to 2.6% year over year) and its share of all retail has grown rapidly since 2019 from 15.4% to 22.7% share of all retail in 2024.[366] In the four years since our last report, employment grew from 902,000 in 2020 to 1.24 million in 2024. There will be a natural ceiling to its share, as some retail sectors cannot digitize (such as gasoline) and others have been more resistant to digitizing such as automotive. Food and health services are other sectors slower to move to e-commerce.

We have relied on three data sources to analyze e-commerce. The U.S. Census Bureau's mandatory survey of U.S. retailing among consumers, the research firm Digital Commerce 360's annual report on global e-commerce sales by the top 500 firms, and some public firms' reports on U.S. e-commerce sales in their SEC filings.

Four notable e-commerce firms are not reported here. Those are Amazon, Apple, and Alphabet which are reported in the Integrated Firms chapter, and Dell which is reported in the Hardware section of the Infrastructure chapter.

- **Amazon** would have ranked first on the list of U.S. e-commerce sellers if they had been included here, with U.S. sales from its online stores about $247B and service payments from U.S. sales on its Marketplace likely about $156B (the exact number is not reported.)
- **Apple** would have ranked third. Its 10-K does not break out online/mobile/app revenue but an industry source estimates 15-20% of its sales are online,[367] giving an estimate of U.S. e-commerce revenue of $34.1B.
- **Dell** is placed in the top 20 U.S. e-commerce firms by Digital Commerce 360 based on global revenues, which suggests U.S sales are likely about $4B.
- **Alphabet** sells such products as Nest, Fitbit, Chromecast, Pixel Phones, and Hubs, plus Google Shopping and Google Pay, but its e-commerce sales do not rank it in the top 20 so we assume it to be $3B.

Among those include here, **Walmart**'s global e-commerce revenue according to Digital Commerce 360 is $123B. We estimate its U.S. e-commerce to be slightly more than proportional to its U.S. commerce and its global e-commerce, at $95B. U.S. should over-index on e-commerce because Walmart's U.S. e-commerce is innovating faster with same-day pickup, delivery, and Walmart+ membership program. Absent reporting on online employment, we use an average of similar companies' employment to support e-commerce, indexed up to reflect staffing in the U.S. to build out global expansion.

Because **The Home Depot** does not report online employment, our estimate is benchmarked against percentages reported for competitor Lowe's, which is 8%.[368] For our employment estimate we take the aggregate figure of 451,500 U.S. workers and assume, as per competitors, that 60% are full time and assume that the number servicing the online business is in the proportion of online sales to total sales.

For **Best Buy**, online sales are not reported separate from all retail in SEC filings. We therefore anchor on Digital Commerce 360's estimate of $12.6B for global e-commerce revenue and attribute approximately 85% or $10.7B to the U.S. We use the employment per dollar of comparable retailers to estimate online employment.

Wayfair's public filings indicate that substantially all revenues are e-commerce and the U.S. segment is 87% of global revenues.[369] Digital Commerce 360 gives global ecommerce as $11.B, so we estimate U.S. online sales to be $10.3B and use the same proportion to calculate U.S. internet-dependent employment.

Staples is no longer a public company, so we anchor on Digital Commerce 360's estimate of global e-commerce of $10.3B and attribute approximately 80% to the U.S.

Qurate (formerly Liberty Interactive) owns QVC and HSN (whose U.S. operations are reported as QXH), online retailer Zulily, and five apparel and home product brands known as Cornerstone Brands. All of Zulily's reported revenue of $1.6B is taken as U.S. internet revenue, but much of QXH is video commerce. The company reports 56% of global revenue as e-commerce, so we apply this ratio to QXH. We assign a fraction of global employment of 22,200 in the proportion of online to all revenue.

Per Digital Commerce 360 and some SEC filings, global (not U.S.) revenues of U.S.-based firms 21 to 500 is estimated at $305.6B. A few of the remaining companies are large, for example eBay,[370] Etsy, and Target, but sizes fall away rapidly and so we assume that, for these firms, global revenue is very close to U.S. revenue.

We estimate the revenue for firms ranked below the top 500 to be 20% of the revenue generated by firms ranked 21st through 500th, which amounts to $60.1B. We then estimate employment by applying the ratio of employment to sales for the individually analyzed firms to the two groups of companies.

Table 6.6.1 E-commerce

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
** amazon	Reported in the Integrated Firms chapter	
Walmart	$ 95,000	164,853
** Apple	Reported in the Integrated Firms chapter	
The Home Depot	$ 21,100	45,314
TARGET	$ 18,700	20,802
Kroger	$ 18,000	31,235
Costco Wholesale	$ 16,800	29,153
chewy	$ 11,500	19,167
Lowe's	$ 11,300	21,882
Best Buy	$ 10,700	89,526
wayfair	$ 10,300	13,542
Walgreens	$ 8,300	15,878
Staples	$ 8,200	17,167
Fanatics	$ 7,200	15,458
macy's	$ 7,200	12,668
NIKE	$ 7,100	13,977
qurate RETAIL, INC.	$ 6,900	10,800
Albertsons	$ 6,100	10,585
WILLIAMS SONOMA	$ 5,900	10,238
** DELL Technologies	Reported in the Hardware section	
Companies 21 to 500	$ 305,638	552,945
All other internet retailers	$ 60,100	103,996
TOTAL* **	**$ 636,038**	**1,199,186**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.
** Reported in other sections – shown here for reference; *** Total excl. Amazon, Apple, Dell, Alphabet

6.6.2 E-commerce Sellers

While the previous section (6.6.1) estimated the jobs needed to run e-commerce platforms, this section estimates the jobs occupied by the people who sell on the platforms.

Individual sellers and small companies use platforms, such as Amazon, eBay, and Etsy, to reach customers, and the revenue they generate net of cost of goods contributes to national GDP. As the average seller earns less than the national average wage, we adjust the number of sellers to the Social Security Administration's full-time equivalent.

Amazon sellers: Amazon's Marketplace sellers range from large firms like Pattern, with 1,700 employees and global revenue of more than $1.4B,[371] to many thousands of hobbyists who earn very little.

Amazon does not report either the number of third-party sellers on its platform nor their revenue. It does report on its 10-K filing[372] that third-party seller fees, which includes commissions and any related fulfillment and shipping fees, AWS sales, advertising services, Amazon Prime membership fees, and certain digital media content subscriptions, were just over $365B in 2024. From this number, one analyst[373] estimates that third-party sellers earned $156.1B on gross merchandise value (GMV) of $480B. If 55% of GMV originates in the U.S., as is the case for Amazon's own products, then U.S. third-party seller GMV was $264B. An aggregator of Amazon Marketplace statistics[374] reports that there are 1.114 million active sellers (individual and organizations) in the U.S., which would give U.S. GMV per seller as $237,000 per year. Deducting seller fees, advertising and fulfillment to Amazon of 40% of GMV[375] and assuming the margin on sales is 20%,[376] we estimate the average net revenue of a third-party seller to be $28,440 per year or 43% of a FTE worker, so that the 1.114 million sellers are equivalent to 475,600 people working at the FTE rate. It follows from this logic that total seller revenue is $31.682M.

Shopify sellers: Shopify claims "millions" of online stores in 175 countries, with a U.S. GMV of 45% of the reported global $292.28B GMV, or $131.5B.[377] Some of the stores are dormant or inactive or are platforms for entrepreneurial experimentation. Others are large (117 merchants are in the U.S. top 2,000) suggesting a small core of high-contributing merchants and a long tail of individual sellers. On the long tail, to produce FTE earnings of $66,622 (the Social Security Administration's (SSA) average wage), each solo Shopify seller must pay fees of $49 plus 2.9% + 30 cents per order.[378] Assuming the same 20% gross margin as Amazon and annual fees of about $10,000, each seller must generate an annual GMV of $343,000. Applying a Pareto distribution to Shopify's U.S. GMV, we conclude that the number of individual Shopify sellers is 250,470, and at net revenue per seller of $66,622, the total is $16,687B.

eBay sellers: The company reports[379] that global GMV in 2024 was $73B of which U.S. revenue was 48%. U.S. sellers' net receipts, after 60% cost of goods, commission of 13.25% and shipping, is estimated at $9.3B. Given 18.1 million eBay sellers, of which 31% or 5.6 million are in the U.S.,[380] we estimate net receipts per seller at $1,661 and the FTE of 5.6 million sellers is 139,660 sellers.

Etsy sellers: In 2024 Etsy had 6.2 million active sellers, with 60% or 3.72 million in the U.S., and gross merchandise value of $11.6B[381] inclusive of Etsy transaction fees of 6.5%. Although Etsy products are usually made by the seller and seldom have a cost of goods, we allow approximately 50% of GMV for cost of materials so that receipts net of transaction fees globally are $5.042B and $3.025B in the U.S. We conclude that net revenue per seller is $813 or 1.2% of a FTE income, and the Etsy sellers are therefore equivalent to a force of 45,380 earning the FTE wage.

Craigslist sellers: The revenue earned by Craigslist has dropped from its peak of $1B in 2018 to $694M this year due to intensified competition from Facebook Marketplace and local buying and selling sites such as NextDoor and OfferUp.[382] Although Craigslist does not report seller revenue, the revenue earned by Craigslist sellers has likely declined at the same rate. Because Craigslist does not charge to list many of the items sold on its site, we assume that its attractiveness to sellers is in proportion to site visitors. In January 2025 the site had 142 million visits, most from the U.S.,[383] compared to 392 million for Etsy.[384] Assuming revenue per visitor is similar to Etsy's, we take Craigslist sellers to be 36% of Etsy sellers in number and revenue.

We allow 10% for "all other" sellers to account for small, specialized seller platforms, and an allowance for people who use e-commerce software such as WooCommerce, Magento and BigCommerce without relying on a platform to match them to buyers. For example, a suburban garden club adopted the WooCommerce payment and inventory display features to migrate its annual sale of shrubs to local residents from in-person to online.

Table 6.6.2 E-commerce Sellers

SELLERS:	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
amazon	$ 31,682	475,600
shopify	$ 16,687	250,470
ebay	$ 9,300	139,700
Etsy	$ 3,025	45,380
craigslist	$ 1,089	16,337
ALL OTHER	$ 6,007	90,153
TOTAL	**$ 67,790**	**1,017,640**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.6.3 E-commerce Management Software

With an e-commerce market in the U.S. that represents $1.2T in annual sales,[385] the opportunity is clearly there for entrepreneurs to launch online businesses and scale them efficiently as e-commerce grows. In the case of Amazon, the company has a proprietary tech stack that helps retailers and marketplace sellers operate their online stores under the Amazon umbrella. For those online businesses wishing to sell from their own website, e-commerce management software provides the technical backbone to facilitate everything from the front-end customer experience to the back-end, server-side systems that manage inventory, orders, customer information, payment gateways, and more. This section describes and enumerates the providers of e-commerce management software for solo entrepreneurs to small, mid, and large scale businesses.

Note that e-commerce management software such as the SAP Commerce Cloud, Salesforce Commerce for B2B and B2C, Oracle Commerce, and Magento (Adobe) are accounted for in the "Enterprise IT" section of this report and the popular e-commerce solutions provided by Wix and Squarespace are accounted for in the "Domain Registry" section. Amazon is handled in our section on "Integrated Firms".

Highlights of this sector include:

Shopify, the highest profile and most widely used dedicated e-commerce software provider in the U.S. holds a 30% market share[386] and has close to 3 million online stores that are reported to have generated $1T in sales.[387] Shopify is the category leader as a result of its ease of use, attractive design templates, integration with multiple online and offline sites, and an ecosystem of over 13,000 apps. The company's annual report states $7.06B in global revenue of which $4.65B is attributed to the U.S.[388] Its U.S. revenue has more than doubled since 2020 when this study was last conducted.

In 2021, **Lightspeed** became one of the largest players in e-commerce software upon acquiring Ecwid,[389] a global e-commerce platform that was then integrated it into its own cloud-based system used by SMBs around the world. Lightspeed delivers e-commerce solutions ranging from point of sale to payments, analytics and a full suite of back-office operations. The company's annual report states $909M in global revenue of which $617M (68%) is U.S. revenue.[390] 3,000 global employees are reported, but as the company is headquartered in Canada and only 1 of 12 locations are in the U.S., we assume just 15% of employees are U.S. based and therefore attribute 450 employees to their U.S. headcount.

WooCommerce provides a different door into e-commerce business, namely through an open source e-commerce plugin that integrates seamlessly with WordPress and requires virtually no technical knowledge to use. WordPress is one of the earliest self-publishing platforms on the web and is behind close to half of the world's websites,[391] receiving approximately 20 billion monthly page views.[392] WooCommerce is now the choice of millions of SMBs around the world and is the e-commerce engine behind approximately one-fourth of all online stores globally, just under half of which are based in the U.S.[393] Automattic is the parent company of WooCommerce along with well-known digital brands such as Longreads, Pocket Casts, and Tumblr, accounted for in the relevant sections of this report. As Automattic is a privately held company we rely on press and industry reports and category benchmarks for our estimates of U.S. revenue and employment in the table that follows.

Now 15 years old and a Nasdaq listed company since 2020, **Big Commerce** is a SaaS (Software as a Service) platform that makes it easy for merchants to launch an e-commerce business complete with branded e-commerce sites that are integrated with catalog management, design, payments, shipping, accounting, and virtually every aspect of an e-commerce based business, whether B2B or B2C. It has doubled its U.S. revenue since 2020 when this study was last conducted.

Table 6.6.3 E-commerce Management Software

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
shopify[394]	$ 4,650	2,739
lightspeed[395]	$ 617	450
BIGCOMMERCE[396]	$ 237	934
WOOCOMMERCE	$ 153	138
ALL OTHER	$ 566	426
TOTAL	**$ 6,223**	**4,687**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.6.4 Travel

In this section we analyze the companies that provide internet-based travel services to U.S. consumers, a market that now makes up approximately 70% of travel and tourism activity.[397]

Using sites and apps such as Kayak, CheapFlights.com, and Trivago, people are able to do their own travel research, comparison price shop, book flights, rental cars, hotels, and activities, as well as read and write reviews about their experience. Innovations in this sector include the growing use of AI-powered technologies for customer service and recommendations and the use of AR (augmented reality) and VR (virtual reality).

Our analysis includes the large OTAs (Online Travel Agencies), e.g. **Expedia**, **Booking.com**, and **Tripadvisor**, as well as the direct bookings that take place on hotels' and airlines' own sites and apps. The latter have been steadily on the increase as convenience for consumers comes at a price for hotels and airlines, with OTAs receiving commissions of 15% to 30% on transactions originating on their sites[398] thus leading to higher prices for consumers. The OTAs drive much of the demand for hotels and airlines, but if hotels and airlines can reduce their dependency on OTAs for customer acquisition, there's a greater likelihood of stabilized prices for consumers.

Seattle-based **Expedia Group** is the parent company of such well known online travel brands as Expedia, Orbitz, Travelocity, Hotels.com, Hotwire, CheapTickets.com, Vrbo.com, and Trivago. **Booking.com**, headquartered in the Netherlands with worldwide offices, own and operates a variety of popular online brands including Priceline, Kayak, Agoda, CheapFlights, and OpenTable. Rounding out the largest of the OTAs is **Tripadvisor**, home to its own popular review and booking site, in addition to Viator, FlipKey, Holiday Lettings, TheFork, and others. Note that while Airbnb can be viewed as a competitor here, they are accounted for in the section that analyzes platform businesses other than retailers (e.g. Airbnb, Uber, etc.).

The large companies mentioned above represent the lion's share of activity in this sector with the long tail of companies that tend to service niches in travel estimated to be over 400.[399] Examples of such firms include Adrenaline.com for adventure travel, Floatspace for aquatic travel, and BringFido for pet friendly destinations. Such firms are accounted for in the "all other" portion of our analysis that represent approximately 19% of the OTA market.[400] We apply the productivity ratio from Booking.com, a comparable firm in the category, to arrive at our employment estimate for the long tail of the OTA market.

To calculate the revenue derived from non-OTA direct booking of travel through airlines' websites and apps we consulted the annual reports of the top four U.S. airlines (American, Southwest, Delta, and United) that account for 68% of the U.S. air travel market.[401] We made deductions for non-passenger revenues, such as cargo fees, and noted the percentage of bookings attributed to direct digital channels that were reported. Based on both industry sources and the annual reports we reviewed, the industry standard for direct bookings is approximately 60%[402] with Southwest Airlines as the outlier as 83% of fares are booked directly through the app or website. We then extrapolated the total revenues of U.S. air travel to arrive at our estimate of $26.7B in direct bookings to U.S. airlines and 28,123 FTE (Full Time Equivalent) employees using benchmarks provided by the IATA (International Air Transport Association). Our estimate of internet-dependent employment accounts for employees associated with maintaining reservation apps, online customer service, and back-office booking and payment systems.

For the hotel industry we use a similar method by applying the reported average for direct hotel booking of 29%[403] to the U.S. revenue estimate of $110.6B[404] and applying the same productivity ratio used for the airline industry to arrive at our FTE estimate of 14,076 for direct hotel booking personnel in the U.S. for the "all other" category.

We also analyze the providers of real time inventory of flight seats, hotel rooms, and rental cars to the travel industry. The sector is known as GDS or Global Distribution Systems. The largest GDS firms are **Sabre**, **Amadeus**, and **Travelport** (including Apollo, Worldspan and Galileo).

Table 6.6.4 Online Travel Services

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Expedia[405]	$ 8,147	10,859
Booking.com[406]	$ 2,327	3,100
Tripadvisor[407]	$ 1,198	967
Direct booking via hotels' own sites and apps	$ 53,900	14,076
Direct booking via airlines' own sites and apps	$ 107,687	30,408
ALL OTHER[408] OTAs and Airlines	$ 2,218	2,956
TRAVEL INDUSTRY SUPPORT SOFTWARE		
amadeus[409]	$ 2,294	2,764
Sabre[410]	$ 1,439	1,736
TRAVELPORT[411]	$ 1,190	1,434
ALL OTHER	$ 492	593
TOTAL	**$ 180,892**	**68,893**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.6.5 Ticketing

Like many digital businesses, online ticketing started out as an online sales channel for what was largely a hard copy world in which tickets were sold through call centers or at physical box offices. Over time, however, additional features have been added to online ticket selling systems, such as dynamic pricing and inventory optimization so that as few tickets as possible go unsold. In the words of a CEO of one of the companies analyzed in this section: "In five years, if we all build this right, then there's no reason for a seat to be empty at a live event."[412] Enhanced customer experience is another recent add-on to online ticketing, such as a recent partnership between one vendor and a ride sharing platform that offers discounted ride packages to and from venues, seamlessly delivered within the app.[413]

The main sales channel for event tickets is online, with two major marketplaces: the primary market, in which customers buy their tickets from the event's official ticket vendor(s), and the secondary, or resale market where individuals buy and sell tickets purchased from a primary market vendor. These secondary market platforms enable secure transactions for consumers who otherwise would be relegated to buying event tickets through non-secure transaction channels such as replying to posts on marketplaces.

Highlights in this sector include:

Secondary market ticket seller **StubHub**, formerly subsidiary of eBay, changes ownership to Viagogo, a privately held company based in Europe and the U.K.

Eventbrite, a self-service platform that makes it possible for anyone to create a physical or virtual event and sell tickets to it online, sees a huge uptick since 2020 when this study was last conducted. Consistent with the post pandemic recovery in the event business in general, Eventbrite's U.S. revenues have more than tripled since 2021 with employment levels growing substantially to handle the increased volume of activity.

The new prominence of reseller **Vivid Seats**, a secure platform that offers resale tickets from professional ticket resellers and pre-screened individual resellers.[414]

The "all other" category includes online ticket companies such as AXS, eTix, ShowClix, TicketWeb, Tickets.com, Ticketbud, Ticketleap, Ticketspice, and Eventzilla and is calculated at 10% to account for the long tail in a market sector dominated by the largest few players.

Table 6.6.5 Ticketing

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
ticketmaster [415]	$ 2,250	4,940
VIVIDSEATS [416]	$ 570	691
StubHub [417]	$ 280	660
Eventbrite [418]	$ 242	433
TicketNetwork [419]	$ 112	330
SEAT GEEK [420]	$ 80	236
ALL OTHER	$ 353	729
TOTAL	**$ 3,887**	**8,019**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.7 Fintech, Financial Services Support, Digital Payments and Digital Currencies

In analyzing the financial services industry, which encompasses banks, credit issuing firms, enterprise software for the finance sector, and the digital first fintech sector, we found ourselves dealing with a unique market segment in a number of ways.

First, financial services firms are not necessarily wholly internet-dependent market makers. They sometimes perform functions that operate on proprietary data platforms such as asset management, administration, and assessment of credit risk for mortgage and other loans. Second, the provision of financial services may also be wholly internet-dependent, as is the case with digital only 'Neobanks', such as **Chime, Revolut**, and **Varo**, that perform all functions, from customer acquisition to delivery of banking services, completely online and offer customer-centric features such as no requirement for a monthly minimum balance, no-fee overdraft, and select fee-free services. And third, in fintech, companies can serve not only B2B and/or B2C segments, but also what is referred to as B2B2C, in which fintech firms have a B2B relationship with a bank, offering banks white-labelled or licensed digital solutions, and those solutions are in turn offered to end customers of the bank.[421] This practice is also sometimes referred to as Banking-as-a-Service (or BaaS) building on the modularity and flexibility of SaaS offerings that have existed for decades, with Salesforce's subscription-based CRM platform introduced in 1999 said to be the earliest example.[422]

For these reasons our analysis of firms in this section includes those that provide enterprise B2B solutions (e.g. **Fiserv**), those that provide both B2B and B2C services (e.g. **PayPal**), and those that work in the B2B2C space, such as **Stripe** and **Square**. It is also worth noting that firms often move between these models in order to accommodate shifting market needs and to diversify their revenue base. We also include in this sector a group of software firms that provide a range of front-end, mid-, and back-end services to financial institutions. Among these firms are Envestnet, a cloud-based provider of software, AI, and data analytics services to banks and wealth management firms.

To estimate the contribution of the financial services sector to markets made and sustained online, we first analyzed the digital activities of the top four banks in the U.S. (**Citigroup, J.P. Morgan Chase, Wells Fargo, Bank of America**), inclusive of their credit card activities, which together represent 20% of all U.S. banking activity.[423] Using industry reports we then made calculations for an "all other" category to account for the remaining 80% of U.S. banks and their digital activities, again including credit cards, and deducted offshore customer service personnel for all. Legacy banks need to make considerable technology investments in order to keep pace with the offerings of digital first banks and fintech companies, and also do so to find cost and productivity efficiencies. Bain has estimated that digital first financial services companies enjoy a cost savings of approximately 60% to 70% over legacy banks and can also serve two to three times as many customers per employee.[424] Therefore we take an average of the productivity level per employee of the digital first banks and apply it to the digital banking portion of our estimates for the legacy banks calculations and apply that ratio to arrive at our adjusted estimate.

We then move on to our consideration of fintech, including products such as digital currencies, investment and trading, lending and loans, BNPL (Buy Now Pay Later), P2P payments, and digital first banks. We take it to be the case that **fintech, digital currency,** and **blockchain** firms are wholly internet-dependent, and so we report their entire U.S. revenues and employment.

In 2020 when this study was last conducted, the most common form of banking in the U.S. was online banking. It has since been surpassed by mobile banking, with ATMs, bank tellers, and telephone banking decreasing each year.[425] Growth in the industries supporting the marketplace of digital currencies such as **Bitcoin** and **Ethereum** have been steady in 2024, in comparison to 2020 when this study was last conducted, with large financial institutions now offering products such as cryptocurrency ETFs and crypto wallets.[426]

Innovations shared across all the subcategories of financial services include Open Banking, through which client information can be securely accessed by 3rd parties through APIs, thus expanding services to individuals beyond their primary banking institution, real time payments for improved personal and enterprise financial management, streamlined international remittances, and decentralized finance solutions that provide peer-to-peer financial transactions by way of mechanisms such as public blockchains.

Note that the fintech revenues of companies such as Alphabet and Apple are accounted for in the "Integrated Firms" section of this report. Also worth noting is that apps such as **Klarna,** that are popular with Americans are headquartered abroad with all employees primarily in Europe with customer service and marketing increasingly conducted using AI, are not included in the study as no revenue remains in the U.S. and there may be an immaterial amount of U.S. employment at best.

Highlights in this sector include:

Chime becomes the largest fully fledged digital bank in the U.S., serving over 22 million Americans, half of which use it as their primary financial service.[427]

Payment service **Square**, known for its small white reader that can be attached to a smartphone and turn the device into a point of sale (POS) system for selling goods and services anytime, anywhere, is now under the umbrella of Block, which also owns Cash App, streaming company TIDAL, and the DeFi (Decentralized Finance) open source ecosystem.

Stripe, whose platform processes online and credit card payments for businesses including Roblox, Figma, and Uber, reached the milestone of $1T in TPV (Total Payment Volume), equivalent to about 1% of global GDP.

Affirm, which started out as an app-based way for consumers to obtain loans at point of sale, with creditworthiness determined in real time, branches out into offerings such as customer acquisition tools for merchants and product level data and insights.

For our fintech, digital payments, and digital currencies section in the table below we performed an individual analysis of the top U.S.-based fintech firms, and then aggregated the revenue and employment for the long tail of this sector, reported to be made up of approximately 9,825 firms in the U.S.,[428] the best known of which include **Plaid**, **Lending Club**, and **Ripple.**

Table 6.7 Fintech, Financial Services Support, Digital Payments and Digital Currencies

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
BANKING AND CREDIT CARDS		
4 Largest Banks[429]	$ 82,705	72,367
Banks (ALL OTHER)	$ 330,818	289,469
FINTECH, DIGITAL PAYMENTS, AND DIGITAL CURRENCIES		
Square[430]	$ 20,417	9,739
PayPal[431]	$ 17,253	15,776
fiserv.[432]	$ 16,229	25,200
stripe[433]	$ 7,000	3,339
SS&C[434]	$ 3,097	8,476
INTUIT[435]	$ 2,386	1,820
affirm[436]	$ 2,226	2,006
SoFi[437]	$ 2,028	3,212
Robinhood[438]	$ 1,679	3,299
chime[439]	$ 1,300	1,300
ENVESTNET[440]	$ 1,223	1,836
FINASTRA[441]	$ 950	2,500
ACI Worldwide[442]	$ 518	1,142
Q2[443]	$ 466	1,659
Bottomline[444]	$ 382	798
meridianlink[445]	$ 304	676
cantaloupe[446]	$ 116	154
ALL OTHER	$ 7,760	7,857
TOTAL	**$ 498,857**	**452,625**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.8 Platforms (excluding Retailers)

While in the e-commerce section we analyze the retail platforms that consumers use to shop and purchase items ranging from clothing to home furnishings to health and beauty products, etc., this section analyzes the platforms that directly connect buyers with various services such as ride sharing, food delivery, employment, housing, vacation rentals, etc.

6.8.1 Platform Companies (excluding Retailers)

Platform businesses such as Uber, Airbnb, Fiverr, and Instacart have created new markets and jobs such as drivers, hosts, delivery people, service providers, and freelancers, and have given consumers options previously unavailable.

This section breaks out the in-house employment of platform-based businesses operating in the non-retail sector (Uber, Airbnb, Fiverr, etc.). Estimates for the platform-based employment of individuals using these platforms to earn additional income appear separately in section 6.8.2 of this report.

Highlights in this sector include:

Uber, which has grown from its original business of on-demand rides to include food delivery, courier services, and even freight transport. Their latest annual public filing report characterizes their business not merely as ride sharing but as "power(ing) movement from Point A to Point B."[447] That said, Uber continues to hold a dominant share in the ride-sharing market in the U.S., with approximately three-fourths market share while the remaining one-fourth is held by **Lyft**.[448]

In addition to Uber's business segments of mobility, delivery, and freight, the platform has become a "commerce media network", enabling advertising for food and beverage brands, among others, in its Uber Eats app, or restaurants in the main Uber app. The advertising component is reported to bring in approximately $1B in annual revenue.[449]

Similarly, digital grocery delivery and infrastructure company **Instacart** has grown its advertising platform, Instacart Ads, which offers its network of 1,500+ partners the opportunity to leverage billions of data points analyzed daily to generate shopper insights to assist customers with product discovery, offers, and discounts.[450]

Dutch multinational Just Eat Takeaway's acquisition of **Grubhub** (along with global brands including Just Eat Takeaway.com, SkipTheDishes, and others) helped it become the world's largest online food delivery company outside of China, and the 3rd largest in the U.S., with 8% market share. In late 2024, it was sold to food delivery startup Wonder. Competitor **DoorDash** dominates this market in the U.S. with 67% market share, followed by **Uber Eats** with 23% market share.[451]

Airbnb has reached 5 million hosts worldwide and over 2 billion guest stays since the company's inception in 2007. On top of its always expanding suite of services and experiences for guests, the platform now employs over 2,000 engineers to handle the complexity and scale of operating the business, e.g., adding AI and machine learning for early fraud detection[452] (note that competitors to Airbnb such as Booking.com, Vrbo.com, and Sonder are covered in the section on online travel—they are analyzed individually via their parent company or accounted for in the "all other" portion of the calculation).

Built on the same principles as Airbnb, i.e., not leaving an asset idle when it could be used to create supplementary income, **Turo** is the world's largest car sharing marketplace. It has 170,000 hosts and 3.5 million active users in the U.S., the U.K., Canada, Australia, and France and reached $880M in annual global revenue in the past year.

In the post-pandemic, remote work ecosystem, platforms that connect businesses with freelancers, in fields ranging from business consulting, accounting, and contract law to logo design, app development, and video and audio production have seen significant growth, reporting several billions annually in Gross Services Value (GSV). Among the most popular of these platforms are **Upwork** and **Fiverr**. Smaller freelance work platforms such as Toptal, FlexJobs, and Guru are accounted for in our "all other" estimate in this section.

We also note that **TaskRabbit,** a platform company that connects handypersons with homeowners has been owned by Ikea since 2017. Its revenue is estimated to be less than $100M annually[453] and is therefore accounted for in our "all other" category, and the estimated 200,000 'taskers' worldwide[454] that provide freelance labor for the company are included in the section of this study on platform employment.

Table 6.8.1 Platform Companies (excluding Retailers)

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Uber [455]	$ 18,620	18,240
DOORDASH [456]	$ 7,781	14,475
lyft [457]	$ 4,316	2,651
airbnb [458]	$ 4,290	2,987
instacart [459]	$ 2,936	2,704
GRUBHUB [460]	$ 1,250	990
TURO [461]	$ 581	614
Upwork [462]	$ 333	792
fiverr. [463]	$ 178	78
ALL OTHER [464]	$ 3,970	4,292
TOTAL	**$ 44,255**	**47,823**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.8.2 Independent Workers on Platforms (excluding Retailers)

In the previous section, we presented an estimate of full-time, in-house employees for the companies mentioned. These employees occupy diverse positions throughout the organizations, including roles in engineering, marketing, sales, management, and human resources.

Now, in this section, we estimate the number of individuals who work using these platforms, rather than being directly employed by the companies themselves. For instance, we distinguish between Uber's corporate employees and independent Uber drivers.

Some of these individuals leverage these platforms for full-time work while others for part-time work. Since this study estimates the number of full time, internet-dependent workers, we adjust these estimates for full time equivalent (FTE) employment using the SSA's (Social Security Administration) average wage of $66,622.[465]

As flexible, platform-based work has become more prevalent in the U.S., its significance in national labor statistics has increased. Although there have been attempts to quantify the number of these individual workers, the approaches and results have been quite different. For example:

> In 2023 a group of economists at The University of Chicago used tax data to estimate that over 5 million people in the U.S. engage in some form of internet platform mediated work,[466] colloquially termed the "gig economy". This includes those who may use platforms for a few hours of work a month as well as those who use platforms for their primary source of income.

> Also in 2023, the U.S. Census published estimates based on federal household surveys examining digital entrepreneurship and participation in platform-based work which found close to half a million platform workers in the U.S.[467]

Although a number of third-party reports on freelance workers and related economic impacts in the U.S. have also been released, they have not evaluated services performed in terms of internet dependency.[468] They did, however, point to helpful findings such as:

- 49% of independent workers who engage in this type of work do so for under 20 hours per week.
- Only 3% rely on this as their primary source of income.
- This type of work not surprisingly skews heavily toward those under 40, with 52% of Gen Z and 44% of Millennials said to be performing some kind of freelance/ independent work.

For our employment estimates in this sector we created a combination bottom-up and top-down methodology that blends reporting from platforms' financial filings with third party research reports and informal community-based discussions among gig workers.[469] We then applied this methodology to our analysis of workers for the most common platform-based businesses in the U.S., and then added an "all other" category to account for workers on smaller platforms to arrive at our full-time equivalent estimate.

As part of our estimate, we used the following platforms and categories:

- Airbnb hosts
- GitHub contributors
- Amazon Flex drivers
- Food delivery workers (e.g. Doordash, Grubhub, etc.)
- Fiverr freelancers
- Instacart shoppers
- Online course instructors
- Online therapists
- TaskRabbit 'taskers'
- Uber and Lyft drivers (Uber includes Uber Eats and Uber Direct)
- Upwork, Freelancer.Com et al workers
- "All others"

The sources consulted, such as annual reports, SEC 10k filings, and available industry data, tended to report the total number of workers who use the platforms, not U.S.-based workers. In most cases, they are part-time workers, sometimes working a handful of hours per week, and some weeks working no hours. We therefore make an adjustment, as we have done in other sections, to convert to full-time equivalent (FTE) employment.

We base the ratio of FTE per worker on our reviews of public source documents and online discussion boards in which information on platform-based employment is shared. We estimate using $66,622 per annum for FTEs based on the Social Security Administration's average wage index.[470] Average earnings per platform are based on estimates from a study by Earnest.com, a fintech lender that serves gig economy workers,[471] and further calculations and assumptions are detailed in the footnotes for each category below.

For **online course instructors**, we infer from a single teaching platform, Udemy, to form a benchmark. In its SEC filings Udemy reports 75,000 instructors in more than 75 languages that earned $208M in 2023.[472] We calculate the mean earnings per instructor at $231 per annum, a figure that is consistent with reports on community forums for online instructors.[473] We then apply that figure to the global market we estimate to be four times the size of Udemy, with main competitors being Thinkific, LearnWorlds, Teachable and Skillshare.

In the case of GitHub, people who contribute code to GitHub are not paid by GitHub's owner, Microsoft. Many contribute altruistically to the open-source repository, but some of the millions who contribute globally each year, are invited by companies who use GitHub to work on open-source projects. In fact, GitHub runs a matching service called GitHub Sponsors on which coders and sponsoring firms can find one another. After investigation, we conclude that contributors are not independent workers and are therefore captured in section 5.5.6 of this report (Designers and Programmers,) or contributing incidental to regular employment.

For **online therapists**, we anchor our estimates on the dominant platforms in this sector, BetterHelp and Talkspace, which is based on a review of their public filings. In the case of BetterHelp, the revenues for the parent company Teladoc is accounted for in our section on Healthcare Management, along with smaller firms working in both B2B and B2C online therapy.

We base our estimate of the total number of workers engaged in online therapy in the U.S. with BetterHelp and Talkspace representing two-thirds of the market at 40,000 and 6,000 online therapists respectively. We estimate the smaller niche services in online therapy such as Little Otter for children and LGBTQ Therapy Space along with smaller companies such as Brightside, Thrive Talk, and Calmerry that make up the other one-third of the market.

We calculate mean earnings by first deducting the platform's take rate from revenues reported in SEC filings (when available), as well as from industry reports and online discussions among practitioners on sites such as Reddit and Quora. Due to cross border and cross state line licensing issues that apply to providers of therapy services, we assume the majority of therapists are U.S. based. We repeat this method for other categories of platform workers and express earnings as both a percentage of an FTE (Full Time Equivalent) worker using the national average wage index figure of $66,622 per annum and also convert the figure to FTEs.

We have consulted the annual report of **Upwork**,[474] a platform for people with a variety of professional skills from writing to software to data analysis to accounting. Upwork does not report the number of freelancers matched to jobs in the U.S., but it does report that its U.S. revenue in 2024 was 66% of its global Gross Service Volume of $4.1B. This implies that U.S. freelancers earn 66% of $4.1B, or $2.7B annually. Upwork is different from other platforms in this category in that its workers tend to be more skilled and earn at about $25 per hour or $52,000 per year but work tends to be intermittent either by choice or necessity, and we take the effective earnings to be 60% of $52,000. On these assumptions the number of U.S. workers is 86,500 or full time equivalent of 40,500.

For **Instacart**, we start with the 600,000 shoppers that they report having.[475] We then calculate the average (mean) earnings per shopper to be $341 per week. We compare this figure against earnings data from similar delivery services to ensure accuracy. We then convert our total earnings estimate into Full-Time Equivalent (FTE) workers. This allows for a more standardized comparison with other companies that may use different employment models. This method provides a more accurate representation of Instacart's workforce in terms of full-time labor equivalents, rather than just the raw number of shoppers.

We repeat this method for the major food delivery apps, **Doordash** and **Grubhub**, and note that Uber Eats and Uber Delivery is accounted for in our general calculations for Uber in this section.

Regarding **Amazon** and its drivers, there are two types:

1. The 279,000 Delivery Service Partner (DSP) drivers[476] employed by fleet operators that have benefits and full-time work. We account for them in the Support Services chapter in the 'shippers delivering online purchases" section since they're not independent workers.
2. There are also Amazon "Flex" drivers–part time contractors that we account for here.

Amazon does not report the number of active U.S. Amazon Flex drivers, only that the app has been downloaded 2.9 million times in the U.S. Because the working conditions can be difficult and Flex drivers frequently clamour for healthcare and safety improvements, we question how long the downloader of the app drives before finding other work meeting their needs. Therefore, we assume that one-third of downloads result in a year's work, and that Flex drivers work at 40% capacity based on Reddit discussions and reports of average monthly earnings of $1,273 for 2024.[477] We take approximately 40% of the estimated effective workforce of 970,000, or 386,000 people.

Lastly, an "all other" allowance of 10% has been made for self-employed workers on smaller niche-oriented platforms such as Dolly for on demand moving, Rover for pet walking and sitting, and Qwick for event and hospitality staffing. We gave them a per person revenue of $3,500 per year, the average for platforms like DoorDash, Grubhub, and Fiverr.

Table 6.8.2 Independent Workers on Platforms (excluding Retailers)

	Average Annual Earnings	% of FTE Workers	Workers	2024 U.S. Internet Revenue*	2024 U.S. FTE Workers
airbnb	$ 11,088	16.64%	2,170,000	$ 24,061	361,156
Uber	$ 4,368	6.56%	2,984,000	$ 13,034	195,643
Amazon Flex Drivers	$ 15,276	22.93%	386,000	$ 5,897	88,507
lyft	$ 4,524	6.79%	1,199,000	$ 5,424	81,419
DOORDASH	$ 2,748	4.12%	1,500,000	$ 4,122	61,871
Upwork	$ 40,510	60.81%	86,500	$ 2,698	40,500
instacart	$ 4,092	6.14%	572,400	$ 2,342	35,157
Online Therapists	$ 13,750	20.64%	62,100	$ 854	12,817
taskrabbit	$ 4,560	6.84%	100,000	$ 456	6,845
Online Course Instructors	$ 2,772	4.16%	120,000	$ 333	4,993
fiverr.	$ 1,236	1.86%	190,000	$ 235	3,525
GRUBHUB	$ 3,600	5.40%	65,000	$ 234	3,512
ALL OTHER	$ 1,085	1.63%	94,350	$ 596	58,959
TOTAL				**$ 60,286**	**954,904**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.9 Creator Economy

There are now hundreds of millions of creators around the world using platforms such as YouTube, Instagram, TikTok, Twitch, Snapchat, Pinterest, Soundcloud, Spotify, and other sites and apps to reach audiences both niche and broad with content that has proven itself to be not just entertaining and informative but often preferable to the fare of big budget, professional producers and distributors. Analysts find that while corporate media revenue in the traditional media sector is growing at about 5% per annum, the creator media revenue growth is now five times that rate.[478]

Digital media content made by creators has existed for the better part of 20 years, with inflection points along the way such as free-to-use blogging platforms, the gatekeeper-free environment of YouTube which has an innovative ad revenue share program with creators, and the social media platforms which brought with them new short form media content, and peer to peer distribution to complement global distribution.

Digital creators find audiences without going through a development or greenlighting process mediated by broadcasters or studios, the standard procedure in legacy media environments. This means content can be created relatively inexpensively, can be uploaded frequently (often several times a day), and can have an immediacy and responsiveness to audiences and contexts that legacy media generally cannot match. An infrastructure that supports this bottom-up industry allows self-motivated, entrepreneurial individuals go direct to their audiences, just as the infrastructure that supports e-commerce firms also lets individuals sell their goods online without a physical retail presence or an affiliation with a large brand.

The ecosystem of performers, platforms, apps, and tools that make up the creator economy continues to evolve. Author Kyle Chayka declared 2024 as "the year creators took over" in The New Yorker.[479] Chayka points to creators' ability to now be able to do everything from meaningfully impact politics—the 2024 U.S. election was often referred to as 'the podcast election"—and to even push the outer bounds of Netflix's live streaming capabilities when YouTuber Jake Paul took on boxing legend Mike Tyson in a live match that attracted over 60 million concurrent streams.

The marketing and advertising industries have taken notice of the prodigious growth in this sector. For example, in 2024 Publicis acquired Influential, an agency that represents more than 3.5 million creators and 90% of global creators and influencers with followings of 1 million or more,[480] while Stagwell acquired the influencer agency Leaders.[481] In the field of large-scale, often brand-partnered tours, it is worth noting that Live Nation in late 2024 acquired a majority stake in Timeline, a talent management firm with a focus on influencers and creators.[482]

In our last study conducted in 2020, we relied on four studies to conclude that, because most of the millions of people in the U.S. creating online content earned very little or nothing, their economic impact was equivalent to about 200,000 people earning at the level of the U.S. national average wage at that time, $55,000 per annum. We concluded, therefore, that individual creators' cut of the creator media industry was about $11B.

Since then, three other informative studies have appeared which we reference to estimate the number of creators that earn a full-time equivalent (FTE) income of $66,622 per annum, the national average wage at the time of this study. (If a creator earns less than the FTE, they count as less than one person working in the digital economy, and if more than the FTE, they count as more than one person.)

The three studies we considered are the following. Below is a summary of our analysis of their methodologies; for the full analysis, please refer to the appendix.

1. Goldman Sachs estimated that in 2023 the global creator economy was worth $250B and would grow to $480B in 2027.[483] Their study found that there are 50 million global creators, but only 4% (~2 million), earned over $100,000 annually, making them professional creators. These 2 million professionals account for a large majority of the $250B total—if we assume they earn $110,000 each, that equals $220B which leaves earnings of only $625 a year each for the remaining 48 million creators. No methodology supporting their estimates was provided.[484]
2. Doug Shapiro, author of "The Mediator" and BCG Senior Advisor, defines creators as independent content producers with direct consumer relationships via platforms.[485] His approach encompasses a wide range of global platforms, including social networks, patronage sites, gaming platforms, livestreaming services, music streamers, writing platforms, and influencer marketing. He calculates revenue sharing between creators and platforms, which varies significantly across categories. By summing the creator's share of revenue from each platform, Shapiro estimates the global creator economy revenue at $250B in 2023, matching Goldman Sachs' figure. However, his method does not provide employment estimates.
3. Richard Florida of the University of Toronto and Creative Class Group defines creators as individuals with over 1,000 followers on their primary social media platform who create and share original content (he excludes game creators, streamers, writers on Substack, etc.).[486] Using a "funnel approach" survey method with Meta's assistance, Florida sampled nearly 10,000 creators across 20 countries and an additional 207 "large creators" with over 100,000 followers. For the U.S. in 2023, the study estimates 38.7 million creators, including 1.47 million "large creators." The average earnings are $13,600 for regular creators (with 41% earning zero) and $41,100 for large creators, resulting in an overall average of $14,685 per creator. This method calculates the total creator economy size at $555B, more than double the estimates of Goldman Sachs and Shapiro. However, the study's methodology, particularly its reliance on primary platform followers and funnel sampling, raises questions about its representativeness.

As a result, our estimates rely more on the Goldman Sachs and Shapiro reports. From the Goldman Sachs report, we take the 1 million "professional" creators earning $100,000 a year (plus a tiny fraction more to account for the long tail of low-earning creators), and adjust it to the equivalent number of full-time equivalent earners to yield a creator population of 1.5 million.

This FTE figure is more than seven times what we estimated in our last study and believe such an exceptional level of growth is due to a number of factors, among them: the well documented shift of ad dollars from legacy media to platforms, streamers, and digital publishers, the virtually barrier-free nature of digital content creation and distribution in a landscape free of gatekeepers, and the formalization and industrialization of the creator economy discussed in Chapter 2: Advertising's Role in the Digital Economy.

Table 6.9 Creator Economy

	Aggregate Revenue*	Number of FTE Jobs
Digital Creators	$ 99,933	1,500,000
Creator Tools and Services Firms	$ 829	9,208
TOTAL	**$ 100,762**	**1,509,208**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.10 Social Networks and Services

6.10.1 Social Media Sites (excluding those owned by Integrated Firms–see chapter 7)

As mentioned previously in this report, due to to the nature and evolution of the digital economy, firms are now able to span multiple categories or service "layers". We categorize and define those that do so as "Integrated Firms." Meta is once such firm and therefore appears in that chapter as opposed to appearing here where most people would associate them since their social media sites, Facebook and Instagram, have over 3 billion and 2 billion global users, respectively.[487]

In this section we analyze the social media sites that are focused exclusively on their consumer offering, i.e. TikTok, Snapchat, Pinterest, X (previously Twitter), and Discord. We also perform an analysis to account for the smaller firms operating in the social media space, among them BlueSky, MeWe, Dribbble, Tumblr, and Triller, each estimated to have revenue in the single to double-digit millions. They are therefore accounted for in the "all other" category.

Highlights in this sector include:

TikTok has become well known for its highly-personalized, "neverending" feed of short-form digital videos. Time spent on the app is two to three times higher than that of rival platforms such as Facebook, Instagram, and Snapchat, depending on the demographic. 18 to 24 year olds in the U.S. log on average 76 minutes per day on TikTok, and even those in the 45 to 54 year old demographic are spending an average of 45 minutes swiping through TikTok videos on a daily basis.[488] It is now a key site for music discovery and music career launching, in addition to the place many users go for everything from fashion, comedy, sports, health and fitness tips, and even news. Since parent company Bytedance is China-based, we rely on industry reports to arrive at our estimate of $8.75B in U.S. revenue for the year.

Snap, best known for pioneering vanishing messages app Snapchat, reported $4.6B in global revenue in 2023,[489] an increase of $2.1B from 2020 when this study was last conducted, with just under 60% of revenues attributable to the U.S. It now competes with both TikTok and Instagram and unveiled a major multi-tab redesign, including a suite of AI features, in the Fall of 2024. It also added a paid version called "Snap+" which doubled its subscribers year over year.[490]

Pinterest, which brings together visual search with social and e-commerce features, reports over 500 million MAUs (monthly active users), with Gen Z accounting for more than 40% of its user base.[491] Advertising and shopping are well-suited to the platform as purchase intent is high for many users who turn to the platform to go from inspiration to transaction.

X (previously Twitter) was a publicly traded company until late 2022 when it was taken private and rebranded as **X**. X's current U.S. revenue represents over 50% of global earnings though only approximately 15% of users are U.S. based.[492]

Discord started out as a way for gamers to communicate with each other and is now used for group chat in all types of online communities and even in some business environments. It is estimated that over one-third of Gen Z in the U.S. (those between the ages of 13 and 25) use Discord. Industry sources report over 500 million registered users and 200 million MAUs (monthly active users) using its 19 million active servers, some of the largest of which are the Fortnite and Minecraft Discord servers, each with over a million members. In total there are estimated to be 4 billion minutes of conversation logged daily across the platform.[493]

Table 6.10.1 Social Media Sites (excluding those owned by Integrated Firms)

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
TikTok[494]	$ 8,750	11,400
SnapChat[495]	$ 2,653	3,051
Pinterest[496]	$ 2,206	2,942
[497]	$ 1,750	990
Discord[498]	$ 288	870
nextdoor[499]	$ 206	535
ALL OTHER	$ 793	985
TOTAL	**$ 16,646**	**20,773**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.10.2 Online Dating

Online dating was one of the earliest and most popular businesses on the Internet, going as far back as the mid 1990s. And few things speak to the ability of the internet to cater to niches like the online dating industry. It started with geographical dating markets 30 years ago and has expanded to serve specialized interest-based communities such as vegetarians, single parents, sports and fitness enthusiasts, members of specific religious groups, people with specific political affiliations, and even a specialized dating app for social media influencers.

As a result of aggregation, this sector is highly concentrated, dominated by **Match Group** (Match.com, Tinder, Hinge, OKCupid, Plenty of Fish, Meetic, and others) which represents about half of the market.[500] The other half of the market is made up of **eHarmony**, aggregators such as **Spark Networks**, which specializes in demographic specific and faith-based dating apps (e.g. Silver Singles, Christian Mingle, and JDate), **Bumble**, which differentiates itself as a feminist dating app, "empowering women to make the first move by giving them the ability to control the conversation,"[501] and smaller sites and apps such as Coffee Meets Bagel, Her, Happn, and Raya. We account for the long tail of dating apps and sites in our "all other" category. Our figures are based on an estimate of the global dating app/site industry having revenues of $5.3B.[502] Industry benchmarks indicate that the U.S. represents half the global market. With the largest firms analyzed accounting for $2.363B of this amount, we can estimate the long tail as representing $337M in U.S. revenue. We use an average revenue per employee for the smaller firms.[503]

Highlights of this sector include:

Match Group's global revenues grow to over $3B, with the U.S. representing $1.5B of that revenue. Its largest brands are Tinder, which represent 58% of revenue, and Hinge, accounting for 12%.[504]

Female-founded **Bumble** has grown to global revenues of over $1B and U.S. revenues of $597M.[505] It has also expanded to include sub-apps such as Bumble For Friends, Badoo, and Fruitz, and now reaches over 40 million users on a monthly basis.

Spark Networks (Elite Singles, Silver Singles, Zoosk, Christian Mingle, JDate, JSwipe, etc.) was acquired by MGG Investment Group. As it is privately held so we rely on industry and press reports to arrive at our revenue and employment estimates.

Table 6.10.2 Online Dating

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
Match Group[506]	$ 1,541	1,510
Bumble[507]	$ 597	220
eharmony[508]	$ 119	90
spark networks[509]	$ 106	100
ALL OTHER	$ 337	936
TOTAL	**$ 2,700**	**2,856**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

6.11 Employment Services

This category covers websites where individuals go to find employment, whether full time, part time or contract-based, and where companies and recruiters go to find workers. Online job hunting and recruiting in the U.S. is estimated to be made up of about 2,000 firms,[510] though there are just a handful of dominant players that make up the majority of the market.

The largest firms in this sector are also among the oldest. The Dutch multinational **Randstad** started out as a human resources consulting firm in 1960 and is now home to some of the largest online job search and recruitment firms, delivered via brands such as Spherion, Technisource, and Office Professionals. Similarly, **Recruit Holdings**, headquartered in Japan, has been in existence since 1960 with brands including Indeed.com, Glassdoor, Staffmark, and Simply Hired.

Regarding the smaller firms in this sector, revenues of the 20th largest firm in this space are just 5% of the largest player. We can therefore infer a very long tail of firms with sub-$100M in revenues, which is our threshold for individual analysis in this study. Among those online employment brands in the long tail are those aimed at niche markets, such as USAJobs for federal government employment, Archinect for jobs in architecture and construction, IT Job Pro for information technology professionals, K12JobSpot for teachers, along with hundreds and hundreds of specialized sites for jobs in journalism, data science, tourism and hospitality, engineers, and even babysitters.

Firms in this sector have a variety of business models and approaches, such as aggregating multiple sites, specializing in niches or verticals, charging for listings or premium placement that in turn make services free to use for job seekers, and more recently, deploying AI and big data analytics techniques to optimize matching between employers and potential hires. As the larger firms in this space also offer services in the Human Resources industry, some of their competitors are accounted for in the section of the Support Services chapter entitled “Human Resources Management”. We also note that **LinkedIn**, a dominant firm in online job search and recruitment, is not included in our estimates in the table that follows as it appears in the “Integrated Firms “section of this report, analyzed within its parent company, Microsoft.

Highlights in this sector include:

In late 2024, parent company **Randstad** combined two notable job search and staffing firms **Monster.com** and **CareerBuilder**, into a single brand.[511] Note, however, that as the merger had been in process at the time of this report, we continue to account for Monster.com separately.[512]

Tokyo-headquartered **Recruit Holdings Inc.**, parent company of Indeed.com, Glassdoor, etc., now has over 200 subsidiaries, with a number of its most well-known brands headquartered in the U.S., as are some lesser known brands such as RGF Staffing. The firm offers both B2B and B2C solutions, from online job search for individuals to HR technologies for firms and a media solutions segment that includes services such as pay for performance advertising for corporate recruitment.

ZipRecruiter, founded in 2010 and known for being a pioneer in the incorporation of AI to optimize the job searching and candidate-matching process, went public since this study was last conducted in 2020. The company now reports $646M in annual revenue of which 98% is stated as U.S. based.[513]

Table 6.11 Employment Services

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
* randstad [514]	$ 3,924	6,647
RECRUIT [515]	$ 3,912	8,552
ZipRecruiter [516]	$ 633	1,142
MONSTER [517]	$ 211	422
ALL OTHER [518]	$ 1,236	2,332
TOTAL	**$ 9,916**	**19,095**

* Randstad (CareerBuilder et al.)

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

7

Integrated Firms

Through this point in the report, all the employment created by the internet has fit into one of the following unilateral categories or "layers": Infrastructure, Support Services, and Consumer Services. In this chapter we delineate "Integrated Firms", i.e., those that span multiple categories or layers. The firms included in this section are among the world's wealthiest and largest. They are Amazon, Apple, Alphabet, Microsoft, Comcast, and Meta.

7.1 Integrated Firms

Regarding a few firms that could be considered Integrated but have NOT been categorized here:

EXCLUDED

- ✕ **Netflix, Walmart, Instacart, and Spotify:** Although they do operate ad tech stacks covered in the Support Services category, we see them as merely in-housing and optimizing the ad-supported portions of their core businesses.
- ✕ **AT&T and Verizon:** They have curtailed expansion into Consumer Services and are divesting from that layer. We have included Comcast however as it combines activities in the Infrastructure layer and is not backing away from its activities into the content production and distribution layers.

The number of Integrated Firms is not fixed. In fact, it may be inevitable, given the low cost of exploiting complementary data sources and data tools, that as firms grow, many of them will expand across the layer boundaries.

Amazon: Most known for its e-commerce business, Amazon has other lines of business from consumer goods and services to enterprise goods and services, from cloud infrastructure to film and TV production and distribution. This is one of the things that makes Amazon unique among the platforms.

Amazon's other lines of business include Amazon Prime Video for movie and TV streaming, MGM Studios for entertainment production, Amazon Music for music streaming, Audible for audiobooks and podcasts, Twitch for gaming and livestreaming, Zappos for shoes, Whole Foods for premium groceries, smart devices such as Alexa and Kindle, and a variety of online properties such as Goodreads and IMDB. Amazon also has its own line of private label products, an affiliate marketing program that provides commissions for links that appear on third-party videos and websites, and a marketplace for third-party sellers. There is also its advertising business through which products are promoted on its site and app as well as AWS (Amazon Web Services) that powers the data operations of 1.5 million firms globally, among them Netflix, Adobe, Airbnb, Salesforce, and LinkedIn.

In early 2025, Amazon introduced a new advertising product called "Amazon Retail Ad Service," referred to by some as a "RMN-in-a-box" because it allows retailers who do not have their own retail media networks to access and operate one through Amazon's technology. Industry insiders have noted that this new digital product offers high margins to retailers, particularly SMBs, and allows them to better leverage their first-party data. Others have noted that this product is less likely to be attractive to the largest retailers, for whom there is less upside to sharing their data with the e-commerce giant.[519]

Of $638B in global revenue reported in the company's most recent annual public filings,[520] $247B is attributed to its online stores, $21B to its physical stores, $156B to third-party seller services, $56B to advertising, $44B to subscriptions, $108B to AWS, and $5B to a category called "Other" which includes line items such as licensed video content, health care services, and co-branded credit cards. All of this revenue is relevant to our study with the exception of the physical stores revenue as it's defined as "product sales where our customers physically select items in a store [whereas] sales to customers who order goods online for delivery or pickup at our physical stores are included in 'online stores'." $438B, or 69%, of the global revenue of $638B was identified as U.S. revenue. We apply that ratio to the $21B global revenue for physical stores and subtract that from the total U.S. $438B revenue to arrive at $423B U.S. internet-dependent revenue. U.S. employment is estimated at 1.1 million, making Amazon the second-largest employer in the country, following Walmart at 1.6 million.

Apple: From its early days as a high-end desktop hardware company for a very specific market niche, Apple is now a diversified company with a full range of digital economy hardware and accessories (iPhones, iPads, Mac desktops and laptops, wearables such as earbuds and watches, and smart speakers), but, more relevant to its inclusion in the Integrated Firms section, it has digital services (advertising; cloud services; apps; music, video, and book downloads or rentals; podcasts; cashless payments; game and cloud storage subscriptions; and pay services such as premium fitness, news, music, warranties, subscriptions, payment tools, and film or TV content.) The products segment makes up 75% of its global revenue of $391B, while its services segment makes up the other 25%.[521]

The company has become so successful in hardware that it now commands the largest segment of the U.S. smartphone market with a 56% share. It has been holding more or less steady in this spot for the past few years, with Android in second place at 47% of the U.S. market and the remaining less than 1% of the market occupied by Microsoft and RIM/Blackberry.[522] In terms of advertising, Apple's revenue is smaller than the other integrated firms, in the range of $7B to $8B.[523]

Our estimates for Apple's U.S revenue and employees are derived from its latest SEC filings.[524]

Alphabet: The parent company of Google, Alphabet's corporate structure is organized into 3 segments in its public filings:[525] Google Services, Google Cloud, and a category they call "Other Bets."

Google Services include Ads, Search, Maps, Gmail, Chrome, Android, devices including the Pixel family, and YouTube. The business model for the company's consumer services is primarily advertising based with some having premium tiers (e.g., additional storage on Gmail can be purchased for a nominal monthly fee) and some offering subscriptions that provide ad-free services (e.g., YouTube premium is the ad-free version of the popular streaming service and is available for a monthly fee). Global revenues for the Google Services segment are reported as $272.5B, broken down as $237.8B to Google advertising and $34.6B to Google subscriptions, platforms, and devices. The company reports 47% of its revenues are attributable to the U.S. market, and we apply that proportion to all income categories.

Google Cloud is the second segment. It includes AI infrastructure and Gemini, a consumer-facing AI tool. Its platform revenues are mostly from subscription and consumption-based fees. Google Cloud users have access to a scalable infrastructure for their business needs, including built in cybersecurity and data and analytics and collaboration tools such as Google Workspace. Global revenues for the Cloud segment are $38B and we attribute 47% to the U.S.

Rounding out Alphabet's financial reporting is its "Other Bets" category, which its SEC filings define as products and services "…using technology to try to solve big problems that affect a wide variety of industries from improving transportation and health technology to exploring solutions to address climate change." Other Bets are reported as bringing in $1.5B in global revenue of which we attribute 47% to the U.S.

U.S. employment estimates are calculated using the same ratio for revenue attributable to the U.S. as reported in company public filings.

Microsoft: The company that began as a provider of software for some of the earliest personal computers has proven itself to be incredibly resilient through decades of monumental shifts in the digital economy. One of the world's most valuable companies with a market cap in the trillions, Microsoft now has interests in operating systems, productivity tools, content production, advertising, hardware, code repositories, voice over IP, games, enterprise cloud, and social networking for business.

Financial highlights from the fiscal year ending June 30th, 2024 include a 23% increase in Microsoft Cloud revenue, a 12% increase in search and news advertising revenue (excluding "TAC" also known as traffic acquisition costs), and 9% increase in LinkedIn revenue. Recent milestones include the acquisition of gaming giant Activision Blizzard in 2023 and a multi-billion-dollar investment in OpenAI, the artificial intelligence lab behind ChatGPT. Note that ad revenue of $12.5B represents 5% of the company's annual revenues, with approximately half of this amount attributable to the U.S. market.[526]

Meta is the parent company of a suite of software products that is used by 3.2B people around the world each day. In its SEC filings, Meta uses the designation "Family of Apps" to refer to these products, namely Facebook, Messenger, Instagram, Threads, and WhatsApp. Per its year-end 2023 filings, daily usage of the Family of Apps is up 8% year over year and revenue from it is up 16% in the same period.

Out of Meta's $135B in global revenue (fiscal year 2023), $132B is advertising revenue, of which U.S. revenue is $49.8B. The remaining 2% of company revenues are derived from two other sources: Enterprise features within WhatsApp, such as developers' fees for the use of the WhatsApp payment system, and the company's Reality Labs segment, which produces hardware for virtual reality, augmented reality, and mixed reality, and software and content for wearables.[527] There is a AI division that is not yet producing revenue, within which is its Llama AI tool.

Global headcount is reported as 67,317. We attribute 41% of this figure to the U.S., using the proportion of U.S. to global revenue and accounting for administrative and management personnel at the U.S. headquarters.

Comcast: While historically an internet infrastructure firm and the largest internet service provider (ISP) in the U.S.,[528] Comcast's corporate interests now span connectivity, media content production and distribution, ad tech, and even a line of business in theme parks and resorts.

Comcast is best known as the ISP for 64 million residential and business customers in the U.S.[529] It also owns NBCUniversal, the parent company of broadcast channels NBC, Telemundo, TeleXitos, and Cozi TV, movie production studio Universal Pictures, animation studios Dreamworks Animation, Illumination, and Universal Animation, streaming service Peacock, the cable channel and app Bravo, and the ad tech company FreeWheel.[530] It has spun off most of its cable channels: USA Network, CNBC, MSNBC, E!, SYFY, and Golf Channel and some businesses, Fandango, Rotten Tomatoes, GolfNow, and Sports Engine, into a new company called SpinCo.

In early 2025 Comcast announced plans to launch "Universal Ads", a self-serve advertising platform specifically for SMBs—a sector that has historically been left out of television advertising due to the costs of working with agencies, minimum spend levels required, and high production costs. Universal Ads brings together a free self-service ad buying tool with AI-enabled creative, and inventory on the streaming video content that reaches over 90%[531] of households in the U.S.: NBCUniversal, Xumo, A+E, AMC, DirecTV, Fox, Paramount, Roku, Televisa, and Warner Bros. Discovery. Additional media partners are expected become part of the platform later in the year.[532]

Comcast's business segment revenue breaks down as follows:

Residential Connectivity: $71.7B Media: $20.7B	Business Connectivity: $9.23B	Theme Parks and Resorts: $8.5B Studios: $8.3B	Corporate and Other: $2.5B Headquarters and Other: $39B

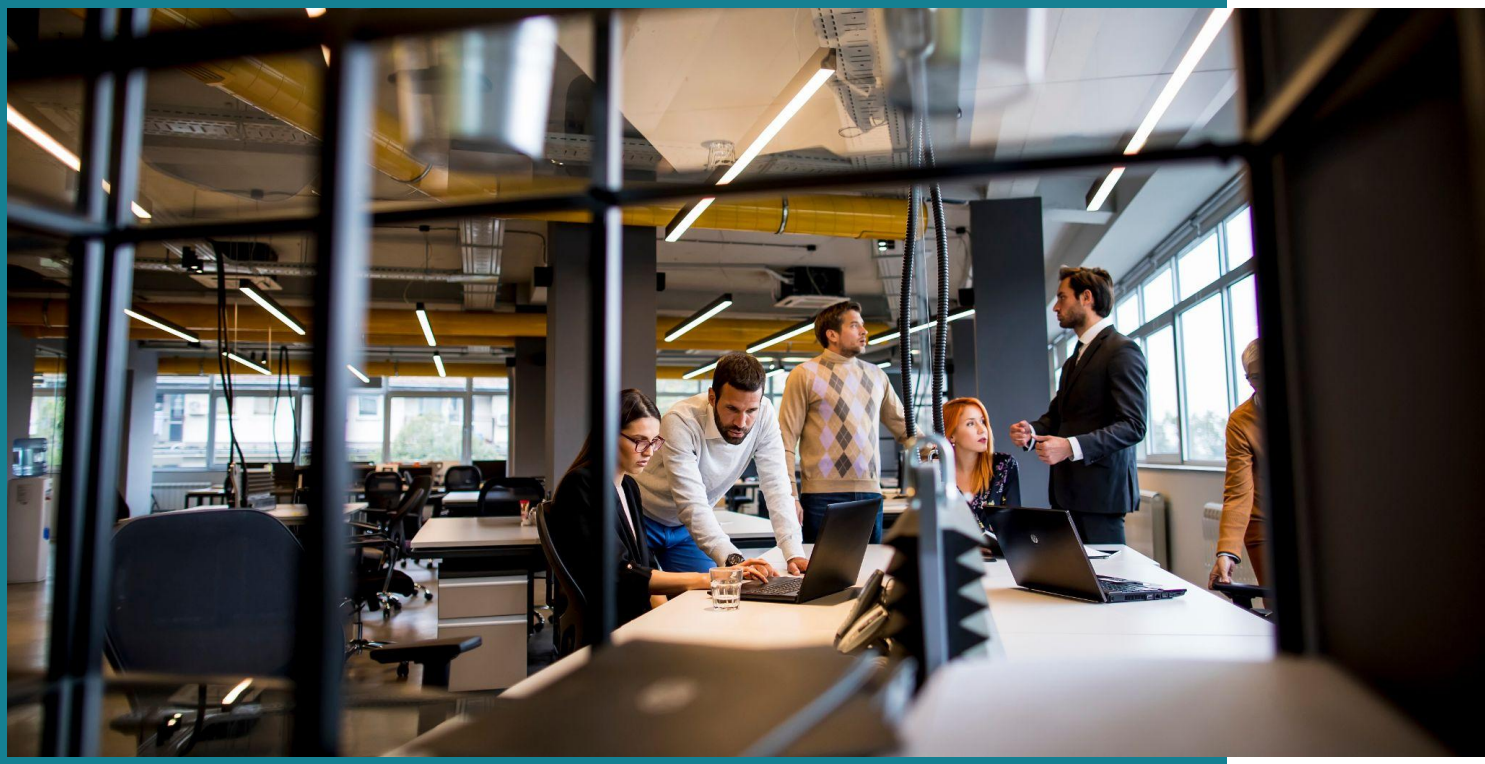
Total global revenue in 2024 is $159.9B. For our estimate of U.S. revenues, we apply the proportion of U.S. to global revenue of 77.6% cited in the SEC filings to the following: The sum of all residential and business connectivity as internet-dependent revenue, 66% of media revenue as internet-dependent,[533] 66% of studios revenue,[534] and none of the theme park and resort revenue. For employment we use the ratio of U.S. to global employment stated in the SEC filings and then apply the internet-dependent ratios as above.

Table 7.1 Integrated Firms

	2024 U.S. Internet Revenue ($M)*	2024 U.S. Internet Employees
amazon	$ 423,449	1,100,000
Apple	$ 142,000	82,000
Alphabet	$ 128,100	85,776
Microsoft	$ 124,700	126,000
COMCAST	$ 84,212	116,349
Meta	$ 49,780	27,622
TOTAL	**$ 952,241**	**1,537,747**

*Note: Data is based on the most recent publicly available information when this table was prepared; some figures may predate 2024.

8



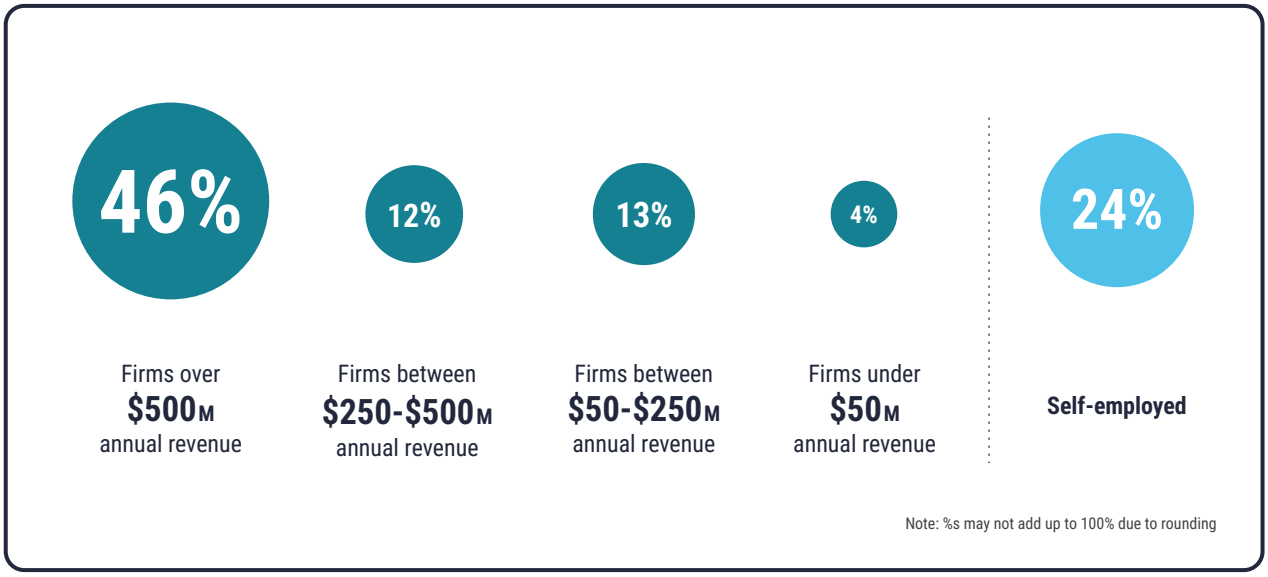
Internet-Dependent Jobs and Contribution to GDP

Employment is the yardstick by which the digital economy's contribution is measured in this study. In this chapter, we first sum up employment (including self-employment) and use it to estimate the digital economy sector's gross domestic product (GDP). Second, we show how jobs are distributed across the U.S. by allocating jobs to the nation's congressional districts.

8.1 Employment

The previous four chapters determined that the digital economy was responsible for employment and self-employment of 11,192,800 people, compared to 6,949,400 people in 2020. We conclude that the compound annual growth in jobs from the end of 2020 to the end of 2024 was 12.7% per year, 12 times larger than the growth in jobs of the U.S. civilian workforce over the same period of 1.1%.

These 11.2 million jobs were distributed across firms and self-employment as follows:



Each job in the digital economy supports indirect employment, made up of people who work in sectors that service the needs of the jobholder, such as schooling, entertainment, banking, insurance, and retail, paying taxes that support employment in federal, state, and municipal government services, education, and the military. This indirect employment arises from supplier effects, re-spending effects, and government employment effects.

It is standard practice to apply a multiplier to the direct employment to account for the indirect employment that would be lost if the direct employment did not exist. The U.S. Bureau of Labor Statistics (BLS) publishes statistics on industry employment requirements, which enable calculation of these multipliers. Sectors differ in the size of their multipliers. Bivens[535] has computed indirect employment multipliers that range from 372 indirect jobs for every 100 jobs in durables manufacturing to 163 indirect jobs for every 100 jobs in business services. These estimates are inclusive of capital service usage. Hann, Viswanathan, and Koh[536] used a range of multipliers from 2.4 to 3.4 in their analysis of the Facebook app economy, while Mandel used 0.5 in his report on the app economy. We have chosen a conservative multiplier of 1.54, the ratio used in our earlier reports. **Thus, we estimate that the combination of direct (11.19M) and indirect employment (17.24M) due to the internet ecosystem is 28.43M.**

8.2 Internet Sector GDP

A nation's GDP is the aggregate of incomes received by residents, both individual and corporate, as direct payment for current services to production, plus return on capital. The national GDP can be decomposed into sector GDPs, which measure the economic activity of each sector. We do not have all the inputs needed to do a precise calculation of the digital economy's sector GDP. However, we can produce a reasonable approximation if we treat the sector's employment as an indicator of the sector GDP.

To do so, we take the U.S. GDP at the midpoint of 2023 to 2024 from annual International Monetary Fund reports[537] to be $27.77T, and we take national employment at the midpoint of 2023 and 2024 to be 161.61 million.[538] We then estimate the sector GDP of the digital sector by multiplying national GDP in mid-2024 by the ratio of the sector's direct and derived employment (28.43 million) to total number of employed persons in the U.S.

This method yields an estimate for the digital sector GDP of $4.89T or 18% of national GDP. These estimates compare as follows to our earlier estimates:

Table 8.2: National and Digital Sector GDP

	2008	2012	2016	2020	2024
Digital Sector Employment	3.05 M	5.10 M	10.38 M	17.65 M	28.43 M
National GDP	$ 14.71 T	$ 16.20 T	$ 18.68 T	$ 21.42 T	$ 27.77 T
Digital Sector GDP	$ 0.30 T	$ 0.53 T	$ 1.12 T	$ 2.45 T	$ 4.89 T
Annual growth in national GDP		3%	2%	3%	7%
Annual growth in digital sector GDP		16%	20%	22%	19%
Digital GDP as percent of national GDP	2%	3%	6%	11%	18%

Note: The national GDP growth rate over the four years leading up to 2024 was affected by a decrease of 2.2% in 2020 due to the global pandemic and a subsequent accelerated recovery in response to federal government recovery spending.

8.3 Distribution of Jobs Across U.S. Congressional Districts

To estimate the distribution of digital economy jobs by congressional district, we rely mainly on the top-down method, as described in the methodology section. We do not use the bottom-up method, which counts firms, because all we know of the location of firms from that method is the locations of their headquarters, a poor measure of where they create jobs.

U.S. Federal statistical agencies use the North American Industry Classification System (NAICS) to categorize business establishments for the purpose of collecting, analyzing, and publishing data. By detailed review of NAICS definitions, we concluded that 17 of the most recent (2022) codes contain most of the employment in the internet ecosystem.

We then used the U.S. Census Bureau's County Business Patterns (CBP) dataset to determine the counties in which the employees in those NAICS codes worked. The CBP reports the number of employees in each NAICS code for each county, as listed in the Census Bureau's Business Register, a database of business establishments. It excludes among others private households with self-employed individuals as discussed below.

We used the following NAICS codes and employment from the 2022 classification:

Table 8.3 NAICS Codes and Employment

NAICS Code	Description	Number of Establishments	Employment
492000	Couriers, messengers inc. grocery delivery e.g. Doordash	16,148	1,161,500
541511	Computer systems design and related services	64,784	954,632
511210	Software publishers	15,784	823,976
541512	Computer systems design services	56,287	771,275
454110	Electronic Shopping and mail order houses	54,331	750,585
524114	Direct health and medical insurance carriers	4,739	395,889
519	Other information services	11,907	384,765
519130	Internet publishing and broadcasting and web search portals	8,286	343,810
517312	Wireless telecom carriers except satellite	24,724	251,926
541810	Advertising agencies	14,416	193,655
522320	Financial transactions processing	4,124	161,146
334413	Semiconductor and related device manufacturing	594	90,840
812990	All other personal services e.g. Taskrabbit	21,582	74,801
33411	Computer and peripheral equipment manufacturing	333	21,454
541830	Media buying agencies	624	19,535
485300	On-demand passenger transportation	2,550	17,369
51741	Satellite telecommunications	258	6,492
		301,471	**6,423,650**

Our top-down estimate of 6.42 million internet-dependent employees is less than our bottom-up estimate of 11.19 million employees. There were two reasons:

1. **First**, as noted above, self-employed individuals in private households were not counted. These individuals include individual sellers on platforms like Etsy and Craigslist, many of the 1.5 million creators, most Airbnb hosts, online therapists and course instructors, and drivers on ride-hailing services.

2. **Second,** we modeled internet-dependent employment for only NAICS industries with a meaningful level of internet activity. Had we used all of them, because small numbers of establishments are suppressed in a county to preserve privacy, small errors in estimation would have accumulated to become a large error in the final answer. In the bottom-up methodology there are errors too, but the errors are random and therefore self-correcting. In the top-down methodology, the errors increase as the fraction of internet employment in the NAICS sectors decreases.

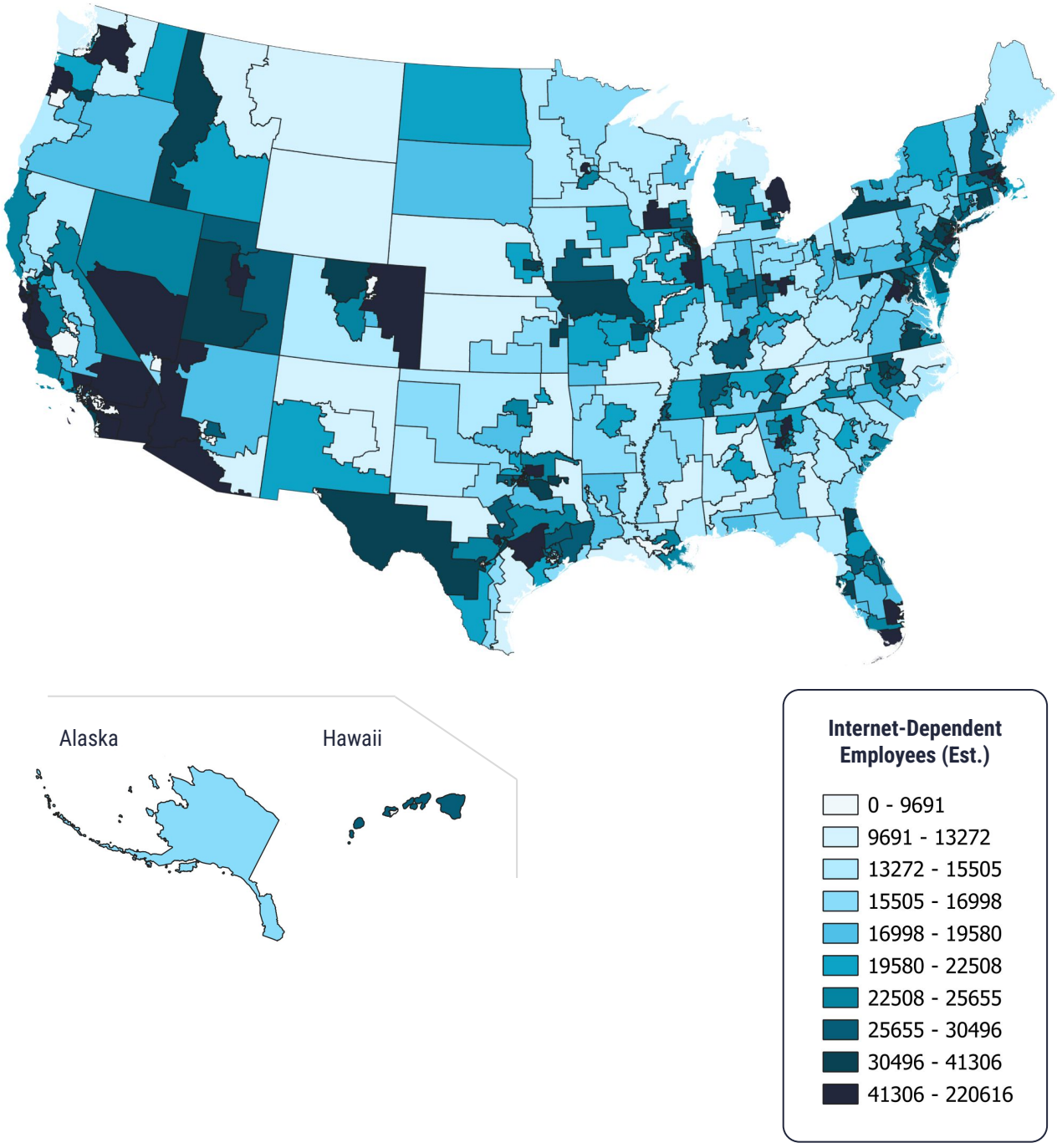
Therefore, to reconcile this study's estimate of digital employment with the employment obtained from the selected NAICS codes, we allocated the difference between the two estimates across counties in proportion to the population of each county.

The resulting digital economy county employment was then converted to congressional district employment by a consultant who maintains a translation table between counties and congressional districts. The result was used to estimate and map employment by congressional district.

These maps were generated from the table beginning on page 130.

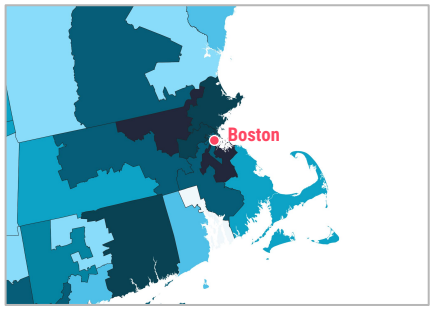
Density of Internet-Dependent Jobs per Congressional District: Total U.S. (Estimated)

The maps and the table show how widely the internet economy is spread across the U.S. Despite the popular impression that Silicon Valley is the "home" of the internet, Silicon Valley and the others that make up the top 10 congressional districts had only about only one-eighth of digital employment, and nearly 30% of the jobs were spread across the lighter 50% of congressional districts. No district had fewer than approximately 718 jobs dependent on the digital economy, because infrastructure workers were widely dispersed and so were people selling or creating on the internet.

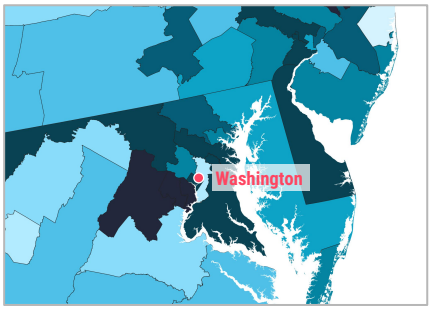


Density of Internet-Dependent Jobs per Congressional District: Heavy Employment Regions (Estimated)

Boston Region



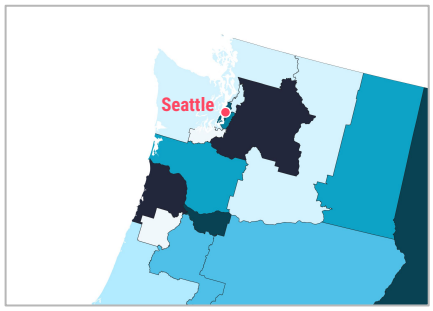
Wash. D.C. Region



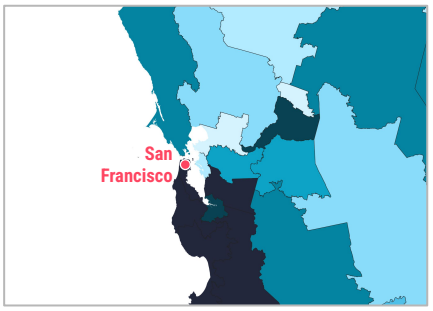
L.A. Region

New York Region

Pacific Northwest Region



Silicon Valley Region



Internet-Dependent Employees (Est.)

- 0 - 9691
- 9691 - 13272
- 13272 - 15505
- 15505 - 16998
- 16998 - 19580
- 19580 - 22508
- 22508 - 25655
- 25655 - 30496
- 30496 - 41306
- 41306 - 220616

Distribution of Jobs

State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
Alabama	AL	CD #1	740,825	**15,931**	2.15%
	AL	CD #2	709,207	**12,086**	1.70%
	AL	CD #3	729,934	**13,225**	1.81%
	AL	CD #4	720,250	**11,413**	1.58%
	AL	CD #5	759,262	**21,783**	2.87%
	AL	CD #6	727,467	**19,651**	2.70%
	AL	CD #7	721,523	**14,986**	2.08%
Alaska	AK	CD At Large	733,406	**16,612**	2.27%
Arizona	AZ	CD #1	804,256	**28,848**	3.59%
	AZ	CD #2	833,298	**17,535**	2.10%
	AZ	CD #3	814,391	**3,678**	0.45%
	AZ	CD #4	814,381	**3,201**	0.39%
	AZ	CD #5	857,744	**4,294**	0.50%
	AZ	CD #6	813,933	**9,847**	1.21%
	AZ	CD #7	811,832	**78,366**	9.65%
	AZ	CD #8	800,203	**10,354**	1.29%
	AZ	CD #9	881,306	**63,742**	7.23%
Arkansas	AR	CD #1	752,628	**15,030**	2.00%
	AR	CD #2	774,027	**21,488**	2.78%
	AR	CD #3	797,092	**16,796**	2.11%
	AR	CD #4	743,985	**15,892**	2.14%
California	CA	CD #1	755,464	**13,791**	1.83%
	CA	CD #2	743,918	**23,320**	3.13%
	CA	CD #3	788,130	**23,100**	2.93%
	CA	CD #4	761,543	**16,549**	2.17%
	CA	CD #5	782,849	**16,130**	2.06%
	CA	CD #6	747,786	**12,231**	1.64%
	CA	CD #7	762,568	**31,603**	4.14%
	CA	CD #8	752,009	**12,153**	1.62%

Distribution of Jobs

California

State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
CA	CD #9	770,568	**20,895**	2.71%
CA	CD #10	746,449	**22,024**	2.95%
CA	CD #11	701,735	**193,997**	27.65%
CA	CD #12	734,171	**15,258**	2.08%
CA	CD #13	784,322	**23,602**	3.01%
CA	CD #14	725,962	**65,512**	9.02%
CA	CD #15	721,009	**62,956**	8.73%
CA	CD #16	748,899	**182,856**	24.42%
CA	CD #17	744,019	**37,743**	5.07%
CA	CD #18	743,048	**189,419**	25.49%
CA	CD #19	725,878	**67,299**	9.27%
CA	CD #20	794,847	**19,552**	2.46%
CA	CD #21	749,912	**2,293**	0.31%
CA	CD #22	774,942	**8,029**	1.04%
CA	CD #23	768,047	**93,493**	12.17%
CA	CD #24	761,285	**23,296**	3.06%
CA	CD #25	779,900	**47,601**	6.10%
CA	CD #26	739,517	**20,649**	2.79%
CA	CD #27	736,850	**114,965**	15.60%
CA	CD #28	746,863	**44,946**	6.02%
CA	CD #29	719,359	**9,691**	1.35%
CA	CD #30	745,825	**13,485**	1.81%
CA	CD #31	717,084	**15,783**	2.20%
CA	CD #32	760,602	**28,821**	3.79%
CA	CD #33	763,598	**718**	0.09%
CA	CD #34	714,948	**3,741**	0.52%
CA	CD #35	749,769	**2,311**	0.31%
CA	CD #36	742,266	**14,513**	1.96%
CA	CD #37	735,660	**3,946**	0.54%

Distribution of Jobs

State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
California	CA	CD #38	723,495	**11,638**	1.61%
	CA	CD #39	767,217	**1,895**	0.25%
	CA	CD #40	755,867	**43,396**	5.74%
	CA	CD #41	811,664	**8,907**	1.10%
	CA	CD #42	711,011	**49,245**	6.93%
	CA	CD #43	716,670	**5,403**	0.75%
	CA	CD #44	737,874	**8,696**	1.18%
	CA	CD #45	737,224	**12,452**	1.69%
	CA	CD #46	746,079	**9,407**	1.26%
	CA	CD #47	754,022	**35,546**	4.71%
	CA	CD #48	740,583	**100,106**	13.52%
	CA	CD #49	751,418	**34,086**	4.54%
	CA	CD #50	781,251	**12,332**	1.58%
	CA	CD #51	748,700	**5,716**	0.76%
	CA	CD #52	740,517	**4,278**	0.58%
Colorado	CO	CD #1	722,087	**41,198**	5.71%
	CO	CD #2	721,783	**34,167**	4.73%
	CO	CD #3	730,686	**13,727**	1.88%
	CO	CD #4	767,791	**62,844**	8.19%
	CO	CD #5	737,347	**18,349**	2.49%
	CO	CD #6	730,351	**8,745**	1.20%
	CO	CD #7	726,989	**24,153**	3.32%
	CO	CD #8	740,576	**6,135**	0.83%
Connecticut	CT	CD #1	716,454	**16,010**	2.23%
	CT	CD #2	730,400	**32,342**	4.43%
	CT	CD #3	726,058	**18,219**	2.51%
	CT	CD #4	721,814	**27,029**	3.74%
	CT	CD #5	722,450	**24,820**	3.44%
Delaware	DE	CD At Large	1,031,890	**35,551**	3.45%

Distribution of Jobs

State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
District of Columbia				
DC	CD At Large	678,972	**39,835**	5.87%
Florida				
FL	CD #1	803,679	**17,751**	2.21%
FL	CD #2	799,012	**15,933**	1.99%
FL	CD #3	807,523	**15,111**	1.87%
FL	CD #4	811,996	**34,418**	4.24%
FL	CD #5	837,211	**18,778**	2.24%
FL	CD #6	821,498	**22,337**	2.72%
FL	CD #7	802,027	**26,758**	3.34%
FL	CD #8	817,216	**26,179**	3.20%
FL	CD #9	842,005	**25,158**	2.99%
FL	CD #10	784,303	**17,588**	2.24%
FL	CD #11	843,676	**29,843**	3.54%
FL	CD #12	843,806	**15,416**	1.83%
FL	CD #13	767,679	**33,154**	4.32%
FL	CD #14	784,928	**23,013**	2.93%
FL	CD #15	828,431	**20,249**	2.44%
FL	CD #16	850,603	**31,997**	3.76%
FL	CD #17	851,634	**17,526**	2.06%
FL	CD #18	853,391	**18,025**	2.11%
FL	CD #19	809,197	**18,891**	2.33%
FL	CD #20	803,297	**68,234**	8.49%
FL	CD #21	820,276	**19,306**	2.35%
FL	CD #22	773,713	**5,833**	0.75%
FL	CD #23	780,374	**9,643**	1.24%
FL	CD #24	772,726	**6,404**	0.83%
FL	CD #25	779,002	**11,365**	1.46%
FL	CD #26	809,482	**23,832**	2.94%
FL	CD #27	746,930	**9,586**	1.28%
FL	CD #28	765,111	**49,939**	6.53%

Distribution of Jobs

State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
Georgia	GA	CD #1	799,549	**16,624**	2.08%
	GA	CD #2	757,219	**18,476**	2.44%
	GA	CD #3	793,606	**17,241**	2.17%
	GA	CD #4	764,860	**34,999**	4.58%
	GA	CD #5	760,504	**33,502**	4.41%
	GA	CD #6	779,901	**68,920**	8.84%
	GA	CD #7	805,468	**43,492**	5.40%
	GA	CD #8	778,270	**13,067**	1.68%
	GA	CD #9	809,758	**22,434**	2.77%
	GA	CD #10	828,279	**16,998**	2.05%
	GA	CD #11	789,608	**23,045**	2.92%
	GA	CD #12	779,898	**15,374**	1.97%
	GA	CD #13	790,505	**22,817**	2.89%
	GA	CD #14	791,802	**19,541**	2.47%
Hawaii	HI	CD #1	723,269	**3,723**	0.51%
	HI	CD #2	711,869	**27,597**	3.88%
Idaho	ID	CD #1	1,008,961	**36,489**	3.62%
	ID	CD #2	955,765	**20,299**	2.12%
Illinois	IL	CD #1	751,575	**31,238**	4.16%
	IL	CD #2	720,502	**49,973**	6.94%
	IL	CD #3	720,148	**26,708**	3.71%
	IL	CD #4	704,764	**22,508**	3.19%
	IL	CD #5	754,102	**31,859**	4.22%
	IL	CD #6	725,829	**46,336**	6.38%
	IL	CD #7	732,352	**17,256**	2.36%
	IL	CD #8	730,604	**35,582**	4.87%
	IL	CD #9	742,949	**23,370**	3.15%
	IL	CD #10	746,076	**30,321**	4.06%
	IL	CD #11	761,048	**25,362**	3.33%

Distribution of Jobs	State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
Illinois	IL	CD #12	749,426	**15,765**	2.10%
	IL	CD #13	725,183	**8,330**	1.15%
	IL	CD #14	755,370	**11,691**	1.55%
	IL	CD #15	745,893	**19,646**	2.63%
	IL	CD #16	755,171	**21,123**	2.80%
	IL	CD #17	728,697	**12,907**	1.77%
Indiana	IN	CD #1	757,933	**12,777**	1.69%
	IN	CD #2	750,086	**16,219**	2.16%
	IN	CD #3	764,836	**17,076**	2.23%
	IN	CD #4	778,072	**21,728**	2.79%
	IN	CD #5	781,999	**25,181**	3.22%
	IN	CD #6	764,477	**27,383**	3.58%
	IN	CD #7	747,195	**39,240**	5.25%
	IN	CD #8	756,642	**14,418**	1.91%
	IN	CD #9	760,959	**17,472**	2.30%
Iowa	IA	CD #1	798,244	**15,172**	1.90%
	IA	CD #2	791,219	**21,823**	2.76%
	IA	CD #3	821,239	**25,772**	3.14%
	IA	CD #4	796,302	**14,340**	1.80%
Kansas	KS	CD #1	726,249	**12,099**	1.67%
	KS	CD #2	725,930	**16,528**	2.28%
	KS	CD #3	749,221	**40,240**	5.37%
	KS	CD #4	739,147	**16,098**	2.18%
Kentucky	KY	CD #1	750,693	**13,460**	1.79%
	KY	CD #2	775,707	**29,096**	3.75%
	KY	CD #3	733,409	**54,416**	7.42%
	KY	CD #4	768,776	**20,751**	2.70%
	KY	CD #5	738,681	**12,064**	1.63%
	KY	CD #6	758,888	**18,417**	2.43%

Distribution of Jobs	State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
Louisiana	LA	CD #1	772,148	**25,080**	3.25%
	LA	CD #2	756,033	**7,264**	0.96%
	LA	CD #3	763,836	**12,949**	1.70%
	LA	CD #4	766,693	**17,843**	2.33%
	LA	CD #5	770,518	**14,521**	1.88%
	LA	CD #6	744,521	**14,311**	1.92%
Maine	ME	CD #1	700,340	**19,373**	2.77%
	ME	CD #2	695,382	**13,599**	1.96%
Maryland	MD	CD #1	782,957	**22,100**	2.82%
	MD	CD #2	767,891	**25,996**	3.39%
	MD	CD #3	778,152	**39,357**	5.06%
	MD	CD #4	723,299	**13,970**	1.93%
	MD	CD #5	812,172	**38,086**	4.69%
	MD	CD #6	799,719	**35,809**	4.48%
	MD	CD #7	744,512	**24,427**	3.28%
	MD	CD #8	771,551	**24,386**	3.16%
Massachusetts	MA	CD #1	767,012	**20,303**	2.65%
	MA	CD #2	798,884	**27,566**	3.45%
	MA	CD #3	767,022	**62,402**	8.14%
	MA	CD #4	783,039	**26,819**	3.42%
	MA	CD #5	776,923	**40,081**	5.16%
	MA	CD #6	785,015	**33,498**	4.27%
	MA	CD #7	744,098	**26,812**	3.60%
	MA	CD #8	791,775	**54,613**	6.90%
	MA	CD #9	787,631	**22,408**	2.84%
Michigan	MI	CD #1	786,329	**13,272**	1.69%
	MI	CD #2	791,423	**22,775**	2.88%
	MI	CD #3	771,917	**13,376**	1.73%
	MI	CD #4	777,277	**9,096**	1.17%

Distribution of Jobs	State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
Michigan	MI	CD #5	775,722	**15,721**	2.03%
	MI	CD #6	764,009	**38,346**	5.02%
	MI	CD #7	781,761	**21,898**	2.80%
	MI	CD #8	766,628	**13,960**	1.82%
	MI	CD #9	769,261	**44,949**	5.84%
	MI	CD #10	769,945	**8,764**	1.14%
	MI	CD #11	769,154	**22,579**	2.94%
	MI	CD #12	740,559	**15,166**	2.05%
	MI	CD #13	773,276	**20,717**	2.68%
Minnesota	MN	CD #1	713,000	**14,766**	2.07%
	MN	CD #2	733,289	**23,776**	3.24%
	MN	CD #3	699,786	**64,081**	9.16%
	MN	CD #4	699,739	**17,639**	2.52%
	MN	CD #5	702,050	**16,052**	2.29%
	MN	CD #6	747,036	**14,337**	1.92%
	MN	CD #7	715,239	**13,280**	1.86%
	MN	CD #8	727,776	**15,769**	2.17%
Mississippi	MS	CD #1	745,641	**15,696**	2.11%
	MS	CD #2	701,580	**15,695**	2.24%
	MS	CD #3	740,675	**12,308**	1.66%
	MS	CD #4	751,794	**13,449**	1.79%
Missouri	MO	CD #1	741,792	**26,239**	3.54%
	MO	CD #2	764,420	**37,330**	4.88%
	MO	CD #3	781,181	**20,581**	2.63%
	MO	CD #4	788,949	**19,696**	2.50%
	MO	CD #5	760,843	**16,843**	2.21%
	MO	CD #6	785,446	**33,376**	4.25%
	MO	CD #7	790,923	**18,310**	2.32%
	MO	CD #8	782,602	**11,907**	1.52%

Distribution of Jobs	State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
Montana	MT	CD #1	576,553	**13,162**	2.28%
	MT	CD #2	556,259	**11,127**	2.00%
Nebraska	NE	CD #1	659,725	**19,864**	3.01%
	NE	CD #2	664,285	**36,515**	5.50%
	NE	CD #3	654,369	**10,596**	1.62%
Nevada	NV	CD #1	788,277	**8,230**	1.04%
	NV	CD #2	793,631	**23,815**	3.00%
	NV	CD #3	796,395	**16,326**	2.05%
	NV	CD #4	815,873	**42,187**	5.17%
New Hampshire	NH	CD #1	697,780	**15,568**	2.23%
	NH	CD #2	704,274	**26,641**	3.78%
New Jersey	NJ	CD #1	777,528	**18,800**	2.42%
	NJ	CD #2	786,799	**23,154**	2.94%
	NJ	CD #3	782,374	**28,831**	3.69%
	NJ	CD #4	795,843	**13,189**	1.66%
	NJ	CD #5	767,729	**31,506**	4.10%
	NJ	CD #6	766,057	**42,092**	5.49%
	NJ	CD #7	778,678	**32,435**	4.17%
	NJ	CD #8	749,983	**24,886**	3.32%
	NJ	CD #9	770,658	**14,648**	1.90%
	NJ	CD #10	768,591	**16,757**	2.18%
	NJ	CD #11	775,849	**31,011**	4.00%
	NJ	CD #12	770,752	**68,688**	8.91%
New Mexico	NM	CD #1	705,390	**11,101**	1.57%
	NM	CD #2	710,078	**20,269**	2.85%
	NM	CD #3	698,903	**12,663**	1.81%
New York	NY	CD #1	785,088	**29,943**	3.81%
	NY	CD #2	773,417	**11,384**	1.47%
	NY	CD #3	754,728	**23,324**	3.09%

Distribution of Jobs	State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
New York	NY	CD #4	767,277	**15,350**	2.00%
	NY	CD #5	737,913	**29,432**	3.99%
	NY	CD #6	694,433	**6,843**	0.99%
	NY	CD #7	719,150	**9,790**	1.36%
	NY	CD #8	740,586	**28,520**	3.85%
	NY	CD #9	725,955	**9,655**	1.33%
	NY	CD #10	718,911	**78,730**	10.95%
	NY	CD #11	753,280	**23,402**	3.11%
	NY	CD #12	734,996	**110,501**	15.03%
	NY	CD #13	726,044	**96,952**	13.35%
	NY	CD #14	741,997	**18,806**	2.53%
	NY	CD #15	715,444	**9,199**	1.29%
	NY	CD #16	774,594	**9,138**	1.18%
	NY	CD #17	773,479	**29,700**	3.84%
	NY	CD #18	779,218	**16,601**	2.13%
	NY	CD #19	776,512	**16,940**	2.18%
	NY	CD #20	778,522	**21,278**	2.73%
	NY	CD #21	771,032	**19,950**	2.59%
	NY	CD #22	759,800	**19,377**	2.55%
	NY	CD #23	762,500	**30,775**	4.04%
	NY	CD #24	764,963	**17,034**	2.23%
	NY	CD #25	766,786	**23,239**	3.03%
	NY	CD #26	774,591	**5,258**	0.68%
North Carolina	NC	CD #1	746,458	**11,525**	1.54%
	NC	CD #2	775,561	**26,506**	3.42%
	NC	CD #3	771,798	**13,907**	1.80%
	NC	CD #4	783,628	**38,870**	4.96%
	NC	CD #5	746,549	**15,038**	2.01%
	NC	CD #6	779,442	**14,207**	1.82%

Distribution of Jobs	State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
North Carolina	NC	CD #7	791,823	**18,385**	2.32%
	NC	CD #8	773,839	**19,557**	2.53%
	NC	CD #9	765,429	**22,873**	2.99%
	NC	CD #10	778,760	**16,389**	2.10%
	NC	CD #11	765,771	**14,547**	1.90%
	NC	CD #12	762,879	**21,741**	2.85%
	NC	CD #13	808,879	**27,143**	3.36%
	NC	CD #14	784,675	**23,616**	3.01%
North Dakota	ND	CD At Large	783,926	**22,228**	2.84%
Ohio	OH	CD #1	796,831	**22,844**	2.87%
	OH	CD #2	787,945	**13,470**	1.71%
	OH	CD #3	784,597	**25,033**	3.19%
	OH	CD #4	803,311	**15,528**	1.93%
	OH	CD #5	790,574	**16,009**	2.02%
	OH	CD #6	773,456	**17,358**	2.24%
	OH	CD #7	769,701	**15,897**	2.07%
	OH	CD #8	786,259	**26,366**	3.35%
	OH	CD #9	776,106	**16,478**	2.12%
	OH	CD #10	784,462	**27,815**	3.55%
	OH	CD #11	772,345	**41,306**	5.35%
	OH	CD #12	804,132	**15,060**	1.87%
	OH	CD #13	781,848	**20,806**	2.66%
	OH	CD #14	784,185	**13,741**	1.75%
	OH	CD #15	790,183	**42,142**	5.33%
Oklahoma	OK	CD #1	812,132	**20,674**	2.55%
	OK	CD #2	811,280	**13,097**	1.61%
	OK	CD #3	803,437	**15,256**	1.90%
	OK	CD #4	808,026	**17,092**	2.12%
	OK	CD #5	818,949	**24,851**	3.03%

Distribution of Jobs

State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
Oregon	OR	CD #1	710,371	**46,056**	6.48%
	OR	CD #2	704,844	**18,279**	2.59%
	OR	CD #3	681,430	**38,847**	5.70%
	OR	CD #4	710,184	**13,344**	1.88%
	OR	CD #5	709,945	**19,580**	2.76%
	OR	CD #6	716,584	**8,591**	1.20%
Pennsylvania	PA	CD #1	763,720	**24,726**	3.24%
	PA	CD #2	713,964	**26,471**	3.71%
	PA	CD #3	768,800	**21,487**	2.79%
	PA	CD #4	781,948	**32,337**	4.14%
	PA	CD #5	757,986	**37,024**	4.88%
	PA	CD #6	777,885	**25,655**	3.30%
	PA	CD #7	778,593	**25,971**	3.34%
	PA	CD #8	764,570	**16,121**	2.11%
	PA	CD #9	765,968	**18,912**	2.47%
	PA	CD #10	781,862	**28,106**	3.59%
	PA	CD #11	773,134	**21,501**	2.78%
	PA	CD #12	752,466	**23,697**	3.15%
	PA	CD #13	765,875	**17,146**	2.24%
	PA	CD #14	753,602	**17,834**	2.37%
	PA	CD #15	750,180	**15,642**	2.09%
	PA	CD #16	761,148	**16,602**	2.18%
	PA	CD #17	749,982	**40,216**	5.36%
Rhode Island	RI	CD #1	536,470	**9,659**	1.80%
	RI	CD #2	559,492	**19,439**	3.47%
South Carolina	SC	CD #1	776,842	**22,621**	2.91%
	SC	CD #2	755,004	**20,519**	2.72%
	SC	CD #3	768,137	**14,698**	1.91%
	SC	CD #4	767,156	**19,660**	2.56%

Distribution of Jobs	State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
South Carolina	SC	CD #5	771,387	**16,391**	2.12%
	SC	CD #6	755,258	**16,475**	2.18%
	SC	CD #7	779,771	**13,509**	1.73%
South Dakota	SD	CD At Large	919,318	**19,417**	2.11%
Tennessee	TN	CD #1	788,014	**12,534**	1.59%
	TN	CD #2	806,407	**20,052**	2.49%
	TN	CD #3	798,804	**26,508**	3.32%
	TN	CD #4	808,625	**16,202**	2.00%
	TN	CD #5	793,338	**24,491**	3.09%
	TN	CD #6	796,534	**19,614**	2.46%
	TN	CD #7	813,590	**27,832**	3.42%
	TN	CD #8	773,599	**21,139**	2.73%
	TN	CD #9	747,578	**28,933**	3.87%
Texas	TX	CD #1	785,535	**13,198**	1.68%
	TX	CD #2	839,055	**27,072**	3.23%
	TX	CD #3	872,647	**65,886**	7.55%
	TX	CD #4	845,835	**22,543**	2.67%
	TX	CD #5	827,361	**37,068**	4.48%
	TX	CD #6	814,151	**19,433**	2.39%
	TX	CD #7	809,564	**6,830**	0.84%
	TX	CD #8	868,181	**28,681**	3.30%
	TX	CD #9	764,812	**10,824**	1.42%
	TX	CD #10	817,807	**58,905**	7.20%
	TX	CD #11	790,592	**11,108**	1.41%
	TX	CD #12	849,835	**29,217**	3.44%
	TX	CD #13	790,888	**16,957**	2.14%
	TX	CD #14	778,849	**16,527**	2.12%
	TX	CD #15	799,844	**16,422**	2.05%
	TX	CD #16	766,538	**5,542**	0.72%

Distribution of Jobs	State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
Texas	TX	CD #17	800,590	**24,353**	3.04%
	TX	CD #18	788,066	**17,209**	2.18%
	TX	CD #19	771,186	**14,866**	1.93%
	TX	CD #20	768,443	**7,373**	0.96%
	TX	CD #21	839,290	**24,422**	2.91%
	TX	CD #22	852,846	**21,982**	2.58%
	TX	CD #23	786,734	**37,535**	4.77%
	TX	CD #24	784,279	**29,163**	3.72%
	TX	CD #25	813,686	**16,291**	2.00%
	TX	CD #26	854,717	**19,827**	2.32%
	TX	CD #27	779,431	**12,707**	1.63%
	TX	CD #28	799,580	**21,406**	2.68%
	TX	CD #29	740,677	**15,505**	2.09%
	TX	CD #30	772,920	**64,023**	8.28%
	TX	CD #31	868,119	**29,594**	3.41%
	TX	CD #32	762,001	**24,552**	3.22%
	TX	CD #33	734,551	**26,931**	3.67%
	TX	CD #34	778,323	**10,979**	1.41%
	TX	CD #35	834,055	**39,110**	4.69%
	TX	CD #36	789,655	**25,937**	3.28%
	TX	CD #37	765,870	**25,140**	3.28%
	TX	CD #38	796,788	**23,028**	2.89%
Utah	UT	CD #1	855,830	**26,194**	3.06%
	UT	CD #2	857,385	**36,142**	4.22%
	UT	CD #3	818,995	**26,892**	3.28%
	UT	CD #4	885,524	**52,258**	5.90%
Vermont	VT	CD At Large	647,464	**16,098**	2.49%
Virginia	VA	CD #1	814,127	**18,975**	2.33%
	VA	CD #2	789,864	**23,060**	2.92%

Distribution of Jobs	State	Congressional District (CD)	CD Population	Internet-Dependent Jobs (Est.)	Internet Jobs Relative to CD's Population
Virginia	VA	CD #3	773,212	**18,018**	2.33%
	VA	CD #4	796,240	**32,006**	4.02%
	VA	CD #5	798,327	**17,833**	2.23%
	VA	CD #6	794,509	**19,437**	2.45%
	VA	CD #7	814,164	**16,017**	1.97%
	VA	CD #8	769,124	**66,986**	8.71%
	VA	CD #9	776,692	**13,841**	1.78%
	VA	CD #10	805,856	**63,661**	7.90%
	VA	CD #11	783,583	**86,476**	11.04%
Washington	WA	CD #1	786,950	**11,716**	1.49%
	WA	CD #2	781,299	**13,150**	1.68%
	WA	CD #3	792,906	**21,506**	2.71%
	WA	CD #4	786,057	**12,306**	1.57%
	WA	CD #5	788,598	**19,803**	2.51%
	WA	CD #6	785,859	**13,097**	1.67%
	WA	CD #7	773,546	**27,272**	3.53%
	WA	CD #8	778,099	**220,616**	28.35%
	WA	CD #9	765,854	**22,974**	3.00%
	WA	CD #10	773,712	**7,365**	0.95%
West Virginia	WV	CD #1	866,374	**15,431**	1.78%
	WV	CD #2	903,697	**16,900**	1.87%
Wisconsin	WI	CD #1	730,388	**30,496**	4.18%
	WI	CD #2	747,345	**43,065**	5.76%
	WI	CD #3	739,552	**14,557**	1.97%
	WI	CD #4	719,795	**13,141**	1.83%
	WI	CD #5	746,152	**22,252**	2.98%
	WI	CD #6	738,802	**13,062**	1.77%
	WI	CD #7	747,209	**15,417**	2.06%
	WI	CD #8	741,712	**18,300**	2.47%
Wyoming	WY	CD At Large	584,057	**12,600**	2.16%

9

Appendix

Detailed Methodology for the Creator Economy Estimates

Below is our comprehensive review of the three studies which we reference in Section 6.9 to estimate the number of creators that earn a full-time equivalent (FTE) income of $66,622 per annum, the national average wage at the time of this study. (If a creator earns less than the FTE, they count as less than one person working in the digital economy, and if more than the FTE, they count as more than one person.)

1. Goldman Sachs estimated that in 2023 the global creator economy was worth $250B and would grow to $480B in 2027.[539] The study found that there are 50 million global creators, but only 4%, or roughly 2 million, earned over $100,000 annually, making them professional creators. These 2 million professionals earn almost all the $250B, as we see if we assume they earn $110,000 each, because $110,000 x 2 million is $220B, leaving earnings of only $625 a year each for the remaining 48 million creators. No methodology supporting their estimates was provided.[540] If we assume the U.S. market is 50% of the global market, their estimates of $125B of revenue and 25 million U.S. creators in 2023, with 1 million of them big earners, is much larger than ours of four years ago. That suggests that either that our 2020 conclusions were conservative or that the industry has grown very fast. Two other studies, whose methodologies were transparent, help us to decide which of these possibilities is more likely.

2. Doug Shapiro, author of "The Mediator" and BCG Senior Advisor, has laid out a method that reaches a result similar to Goldman Sachs'.[541] He defines creators as independent individuals (the largest supported by teams as big as 250 but most working alone) who create content on a self-directed basis, with a direct relationship with consumers via a platform, whose content is monetized, whether by the creator, by the platform, or by both. The platforms are a globally comprehensive list of social networks from Instagram to Douyin (China) to VK (Russia), patronage sites such as Patreon, gaming sites such as Steam and Weibo (China), livestreaming sites such as Twitch and Douyu (China), music streamers such as Spotify, writing platforms such as Substack, and a seventh, which he calls 'Influencer Marketing'. Although this seventh category is not a platform per se, and in fact its members operate on all the other six categories, he identifies it separately because it taps a revenue stream (brand deals) not tapped by other creators. Next, he estimates how revenue, whether from advertising, subscription or transactions, is shared between creators and their platforms, ranging from 100% to creators on Substack and Influencer accounts, to 5 to 10% for games creators on platforms like Google Play and iOS. He then sums the creator share of the reported or estimated revenue from each platform and account and arrives at a global total revenue of $250B in 2023, exactly the Goldman Sachs global estimate. He does not attempt to generate an employment estimate.

3. Richard Florida of the University of Toronto and Creative Class Group defines a creator as someone with more than 1,000 followers on their primary platform, who creates and shares original content via social media (apparently excluding five of the platforms in Shapiro's study, and therefore excludes game creators, streamers, writers on Substack, and so on.)[542] The study first surveyed a sample generated by Meta, using a "funnel approach" that yielded almost 10,000 creators across 20 countries (about 1,000 in the U.S.). It then surveyed 208 so-called large creators who had more than 100,000 followers on their primary platform. (We question the decision to rely on followers on a primary platform as a measure of a creator's economic importance. Sophisticated creators may produce longer-form content for one platform, shorter form content for a second, and meme-length content for a third. Their earnings may not be linear with their primary platform number. Nevertheless for our purposes the decision is not a problem. We question the wisdom of funnel sampling because it does not yield a representative sample of the population of creators.) Extrapolating the survey results to the U.S. population suggests that there were 38.7 million people in the U.S. in 2023 meeting the Florida definition of a creator. From Figure 3 in the Florida report, we can infer that 1.47 million of them have over 100,000 primary followers, which Florida calls large creators, and 37.2 million have fewer.

From Figure 24 of Florida's field survey, we can infer the earnings distribution by taking the midpoint of each earnings range as the annual earnings of the corresponding number of people. The following table concludes that the Florida report finds mean earnings for regular creators are about $13,600 per annum, with 41% of them earning zero. The mean earnings for large creators, those with over 100,000 followers, are $41,100 per annum.

Combining the two kinds of creator, the Florida report finds that there are 37.8 million creators earning an average of $14,685 per annum. The 37.8 million people earn as much as 8.53 million people earning at the U.S. FTE rate. The size of the creator economy is $555B by this method, more than twice the estimates of Goldman Sachs and Shapiro.

Because this study, as noted above, does not build its survey results from a representative sample of creators, we have more confidence in the first two reports.

		Of 37,229,400 creators:			Of 1,470,000 large creators:		
Distribution of earnings range ($)	**Distribution of earnings means**	**Proportion of creators earning at the mean**	**Earnings**	**No. of creators (millions)**	**Proportion of creators earning at the mean**	**Earnings**	**No. of creators (millions)**
Zero	$0	0.41	$0.00	15,418,236	0.12	$0.00	174,654
1 to 500	$250	0.05	$12.50	1,880,273	0.04	$10.00	58,218
500 to 1K	$750	0.08	$60.00	3,008,436	0.03	$22.50	43,663
1K to 5K	$3,000	0.09	$270.00	3,384,491	0.12	$360.00	174,654
5K to 10K	$7,500	0.08	$600.00	3,008,436	0.11	$825.00	160,099
10K to 50K	$25,000	0.18	$4,500.00	6,768,982	0.22	$5,500.00	320,198
50K to 100K	$75,000	0.08	$6,000.00	3,008,436	0.18	$13,500.00	261,980
100K +	$110,000	0.02	$2,200.00	752,109	0.19	$20,900.00	276,535
Mean annual earnings from work as a creator			**$13,642.50**			**$41,117.50**	

As a result, our estimates rely more on the Goldman Sachs and Shapiro reports. From the Goldman Sachs report, we take the 1 million "professional" creators earning $100,000 a year (plus a tiny fraction more to account for the long tail of low-earning creators), and adjust it to the equivalent number of full-time equivalent earners to yield a creator population of 1.5 million. See Table 6.9 Creator Economy.

ABOUT THE AUTHORS

John Deighton

John Deighton is the Harold M. Brierley Professor of Business Administration Emeritus at Harvard Business School (HBS), where he has taught since 1994. He has authored about 50 HBS cases, covering companies that include Oracle, Acxiom, WPP, Hilton Hotels, CVS, and Sony. He was the founding editor of the Journal of Interactive Marketing, past editor of the Journal of Consumer Research, the Executive Director of the Marketing Science Institute, and a Director of the Berkman-Klein Center for Internet and Society at Harvard University. Professor Deighton has held teaching and research appointments at University of Chicago, University of Oxford, University of Cambridge, Duke University, the University of Tokyo, Dartmouth College, Cornell Tech and the University of Cape Town. Since 2008 he has led studies to measure the economic impact of the internet in the US, of which this report is the 5th in the series.

Leora Kornfeld

Leora Kornfeld is a media and technology researcher, writer, and consultant whose professional career began in commercial and public broadcasting. Since 2012 she has served as senior research analyst and co-author on this series of studies that examines the economic value of the internet ecosystem. She has also co-authored over two dozen Harvard Business School cases on companies including YouTube, Sony Music, Coca-Cola, and Ford. These were among the earliest academic studies of what has come to be known as the creator economy. Her other published work has examined digital disintermediation in the media and entertainment industries and the next phase of the data economy. She holds an M.A. in Media & Communications from the University of London, Goldsmiths College and an undergraduate degree from the University of British Columbia.

ABOUT IAB

Interactive Advertising Bureau (IAB)

The Interactive Advertising Bureau empowers the media and marketing industries to thrive in the digital economy. Its membership comprises more than 700 leading media companies, brands, agencies, and the technology firms responsible for selling, delivering, and optimizing digital ad marketing campaigns. The trade group fields critical research on interactive advertising, while also educating brands, agencies, and the wider business community on the importance of digital marketing. In affiliation with the IAB Tech Lab, IAB develops technical standards and solutions. IAB is committed to professional development and elevating the knowledge, skills, expertise, and collaboration of the workforce across the industry. Through the work of its public policy office in Washington, D.C., the trade association advocates for its members and promotes the value of the interactive advertising industry to legislators and policymakers. Founded in 1996, IAB is headquartered in New York City.

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214 U.S. Bureau of Labor Statistics, Income Before Taxes: Self-Employment Income by Occupation: Self-Employed Workers [CXU.S.FEMPINCLB1202M], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CXU.S.FEMPINCLB1202M, January 9, 2025.

215 https://www.adexchanger.com/tv/more-than-half-of-netflix-subscribers-now-sign-up-for-ads/

216 https://www.nytimes.com/2024/07/30/technology/youtube-streaming-tv.html

217 https://www.mediaplaynews.com/e-marketer-fast-us-viewership-to-surpass-111-million-this-year/?hilite=FAST+U.S.

218 https://ads.spotify.com/en-US/news-and-insights/spotify-fourth-quarter-earnings-2024/

219 https://www.statista.com/forecasts/1309791/reddit-mau-worldwide

220 https://digiday.com/media/publishers-share-tips-for-experimenting-with-reddit/

221 https://www.amediaoperator.com/news/morning-brew-already-has-what-it-needs-for-double-digit-growth-new-ceo/ Note that the company sold a majority stake to Axel Springer in 2020 for $75M.

222 https://www.niemanlab.org/2024/02/six-months-in-journalist-owned-tech-publication-404-media-is-profitable/

223 https://www.404media.co/welcome-to-404-media/

224 For the long tail of digital publishers we consulted https://www.poynter.org/business-work/2024/local-indy-news-publishers-face-new-challenges/ which references https://www.lionpublishers.com/about/ an organization that supports local largely independent news publishers and estimates approximately 500 such organizations in the U.S. which we account for in our 'All Other' category.

225 https://www.prnewswire.com/news-releases/iacs-dotdash-announces-close-of-meredith-transaction-301435581.html

226 https://www.yahooinc.com/press/apollo-funds-complete-acquisition-of-yahoo

227 https://nymag.com/intelligencer/article/reddit-traffic-google-search-growth.html

228 https://digiday.com/media-buying/reddit-debuts-new-tools-for-tracking-trends-and-advertising-amas

229 https://www.theverge.com/2024/8/6/24214374/cnet-zeff-davis-acquisition-digital-media-100-million

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230 https://www.growth-memo.com/p/red-ventures

231 https://www.vanityfair.com/news/2023/02/penske-vox-media

232 https://corp.voxmedia.com

233 https://www.npr.org/2024/05/04/1248711088/zillow-gone-wild-tv-series-hgtv-max-instagram

234 Via 10-K filing at https://investors.buzzfeed.com/static-files/752507b6-276d-4bf9-9384-56becf6af2d0

235 https://www.hollywoodreporter.com/business/business-news/jonah-peretti-tiktok-meta-buzzfeed-social-media-1236132267/

236 From IAC 10-K at https://ir.iac.com/static-files/c2fcabae-bddd-477f-b445-c5c8984e02c6 U.S.revenue is reported as $3.798B of global revenue of $4.365B. We apply that ratio of 87% to the global employee headcount of 9,500 to arrive at our estimate of 8,265 for U.S.employees.

237 https://pitchbook.com/profiles/company/11741-77

238 CoStar group provides online marketplaces for the real estate industry under various brands (Rent.com, Homes.com, ApartmentFinder.com etc). From the 10-K filing at https://investors.costargroup.com/static-files/ac43156d-e799-4559-b464-9f96b83a1c77 global and North American revenues are reported and we assume 90% of North American revenues, or $2,16B, for annual revenue. We then deduct $170M in revenue for the company's lease management division to arrive at $1.9B in U.S. revenue. Employment count is reported as 86% US, or 5,291.

239 Via Annual Report/10-K: https://s24.q4cdn.com/723050407/files/doc_financials/2023/ar/zillow-group-inc-_annual_report_2023.pdf

240 Yelp 10-K filing at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001345016/eea8ade7-1139-4df8-ad3a-398d3f7c41d2.pdf reports U.S.as 99% of global advertising revenue. Global reported as $1.276B and calculated at 99% is $1.263B. Global employment reported as 4,713 and we assumed 90%, or 4,242 is US.

241 Internet Brands is a privately held company that owns online brands such as WebMD, Medscape, Fodor's, Flyertalk, and CarsDirect. Reports of its revenue, obtained on industry tracking sites Zippia and ZoomInfo, range from $785M to $1.6B so to be cautious we take the halfway point of $1.193B as annual revenue. Linkedin reports 5,000+ employees at https://www.linkedin.com/company/internet-brands which, for the revenue level and calculation on the basis of revenue per employee, is consistent with others in this category.

242 Privately held company, as of mid 2021Advance Publications owns Condé Nast, publisher of Wired, Vogue, The New Yorker, and others. Estimated global revenue is $2.49B reported at https://www.statista.com/companies/o/25375771/advance-publications-inc, of which we assume 2/3, or $1.64B is US. Using the industry benchmark of 70% of all advertising is digital we arrive at our estimate of $1.15B for U.S.internet dependent revenue. We ascribe 5,000 U.S.internet dependent employees to the company, which is consistent with competitors in this category.

243 Global employees reported as 4200 at https://www.macrotrends.net/stocks/charts/ZD/ziff-davis/number-of-employees. 10-K:https://d18rn0p25nwr6d.cloudfront.net/CIK-0001084048/616ff0d9-6d61-4c68-8cf1-5b493ba38d9b.pdf which states $1.4B in annual revenue The company operates globally, with the majority of its offices in the U.S. We therefore assume 60% of revenue and employment is U.S. based.

244 Private company (now owned by Blackstone Group) therefore limited public information is available. We make our estimates based on figures reported at https://www.ancestry.com/corporate/about-ancestry/company-facts and assume 2/3 of revenue and employees are U.S. based. Estimates of global annual revenue are $1 billion, 1300 global employees, and 9 global offices with 2 in the U.S. – Lehi, Utah and San Francisco,

245 As a private company we rely on reports such as https://www.statista.com/statistics/1337173/craigslist-revenue/ for our estimates. $694M in annual global revenue is reported, 50 employees, and 89.66% of traffic is reported to originate in the U.S. at https://www.semrush.com/website/craigslist.org/overview/ and we adjust revenue accordingly. All employees are based in the U.S.

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246 Revenue and headcount estimated from reports at: https://www.theinformation.com/articles/revenue-declines-for-vox-media-bustle-in-2023-reflects-wider-media-struggles?rc=z8qlce. 2022 revenue, and profitability, reported at $600-$650M at: https://www.niemanlab.org/reading/vox-media-is-reportedly-profitable-with-annual-revenue-of-600-650-million-in-2022/. 15% revenue decline for 2023 reported at: https://www.theinformation.com/articles/revenue-declines-for-vox-media-bustle-in-2023-reflects-wider-media-struggles?rc=z8qlce . Therefore for a modest estimate we take the lower reported number of $600M and reduce by 15% to arrive at our estimate of $510M

247 The company operates online brands such as The Knot, WeddingWire, Bodas.net, Hitched, The Bump, The Bash, WeddingPro, and Matrimonio.com. 6 of the 9 company locations are U.S. based. $400M in revenue reported at https://qz.com/insider-q-a-how-wedding-planners-are-adjusting-for-gen-1851148169. Other info at: https://www.theknotww.com/about-us/. We assume 2/3 of revenue is U.S. and estimate U.S. employment as the average of ratios for similar businesses in this category (i.e. Leaf and TrueCar) which is consistent with estimates for Buzzfeed, another firm analyzed in this category.

248 $100-$200M annual revenue for Business Insider is estimated at: https://www.similarweb.com/company/businessinsider.com/#overview 500-1000 employees for Business Insider reported at: https://www.owler.com/company/businessinsider . We assume $150M in annual revenue and estimate employment at a rate consistent with firms with similar revenue in this section such as TrueCar, Leaf, and Buzzfeed. For Politico, acquired by Axel Springer in 2021, revenue reported as $200M at: https://www.ft.com/content/a7bea99e-a43c-4f3b-9ed2-47fd5883c4d8 of which half is 'pro' subscription accounts, therefore we assume $100M and calculate employment using the formula stated above.

249 10-K filing at https://investors.buzzfeed.com/static-files/752507b6-276d-4bf9-9384-56becf6af2d0 states U.S. revenue across all segments as $226MTotal headcount reported as 925 employees across 7 countries, of which we assume 2/3 is U.S.

250 Privately held therefore our figures rely on the Mergent database of non-public companies

251 As reported in 10-K filing at: https://app.quotemedia.com/data/downloadFiling?webmasterId=101533&ref=318090349&type=HTML&symbol=TRUE&cdn=a5cdf2eb2a774df8279ff0088f5ff890&companyName=TrueCar+Inc.&formType=10-K&dateFiled=2024-02-22

252 Owner is Graham Holdings Company, a diversified holding company with business segments including education, television broadcasting–online, podcast, print and local TV news, manufacturing, home health and hospice care, and automotive dealerships. Via 10-K filing at: https://www.ghco.com/node/19096/html : In June 2021 the Company acquired Leaf Group Ltd. (Leaf), a consumer internet company with brands such as Well+Good, Livestrong.com, MyPlate, Society 6, and Hunker. The company also owns digital marketing and insights company Code3 and the City Cast network of daily local news podcasts and newsletters in Chicago, Denver, Houston, Salt Lake City, Pittsburgh, D.C., Madison, Portland, Philadelphia, Las Vegas and Boise. We estimate $126M in revenue and 173 F/T employees are attributed to these segments based on information reported in the holding company's 10-K.

253 Penske Media Corporation is privately held with brands including Variety, Rolling Stone, The Hollywood Reporter, Billboard, WWD, SHE Media, Robb Report, Deadline, Sportico, BGR, ARTnews, Fairchild Media, Vibe, IndieWire, Dirt, Gold Derby and Spy.com. Global revenue of $251.3 is reported at: https://www.zoominfo.com/c/penske-media-corporation/347966955 and we estimate U.S.portion at 50% and U.S.headcount using the formula described for other privately held firms in this category.

254 $180M revenue estimated at https://www.statista.com/statistics/1311370/wikimedia-foundation-annual-funding/ and 700 staff reported at https://wikimediafoundation.org/about/#:~:text=More%20than%20700%20staff%20and,communities%2C%20donors%2C%20and%20readers. We assume 1/3 of both estimates as U.S.

255 https://www.thepodcasthost.com/listening/podcast-industry-stats/

256 Magellan AI Quarterly benchmark report Q4 2024 Edition https://www.magellan.ai/research/quarterly-benchmark-report

257 http://analytics.podtrac.com/podcast-publisher-rankings

258 https://www.edisonresearch.com/youtube-is-the-preferred-podcast-listening-service/

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259 Barstool Sports $250 million in annual revenue reported at https://fortune.com/2024/02/01/barstool-sports-ceo-erika-badan-dave-portnoy/. Press reports and sites such as Lead IQ and RocketReach estimate 430 employees.

260 The Daily Wire's annual revenue is estimated at $220 million (of which 10% is said to be affiliate/eCommerce revenue) at https://www.axios.com/2024/05/28/daily-wire-commerce-revenue-2023. 200 employees are estimated in various press reports and at Lead IQ.

261 Crooked Media's annual revenue is estimated to be $27M and headcount is estimated at 100 at https://growjo.com/company/Crooked_Media

262 The top 3 firms account for $497M in revenue. We estimate another $503M for the 'All Other/ category and assume that the remaining $8B of the $9B market in the U.S.reported at https://www.grandviewresearch.com/horizon/outlook/podcasting-market/united-states is accounted for the in the large firms analyzed in sections of this report such as Digital First Publishers, Legacy Publishers Online, Online Music/Audio, and Integrated Firms.

263 https://www.nielsen.com/data-center/the-gauge/

264 https://www.nielsen.com/insights/2020/the-nielsen-total-audience-report-august-2020/

265 https://ir.paramount.com/news-releases/news-release-details/viacomcbs-unveils-new-company-name-global-content-slate-and

266 https://www.indiewire.com/news/business/bob-iger-accidentally-reveals-disney-avod-subscriber-numbers-1235065797/

267 https://www.cnbc.com/2025/01/08/disney-monthly-active-users-ad-supported-content.html

268 https://nytco-assets.nytimes.com/2023/03/The-New-York-Times-Company-2022-Annual-Report.pdf

269 https://www.npr.org/2023/04/10/1169014791/news-us-newspaper-latest-gannet-media#:~:text=According%20to%20reporting%20from%20Nieman,reduction%20of%20171%20in%20total.

270 https://asia.nikkei.com/Business/Media-Entertainment/Sony-to-pump-1bn-more-into-Fortnite-developer-Epic-Games2 and https://sonyinteractive.com/en/news/blog/announcing-playstations-new-partnership-with-discord/

271 https://investors.newscorp.com/static-files/be3452aa-d9f0-4389-af51-fb3619c37b79

272 https://www.emarketer.com/content/linear-tv-still-reigns-advertising-time

273 https://madisonandwall.substack.com

274 https://www.statista.com/outlook/amo/advertising/united-states#ad-spending

275 https://eshap.substack.com/p/settling-the-score

276 https://www.thomsonreuters.com/en/press-releases/2024/february/thomson-reuters-reports-fourth-quarter-and-full-year-2023-results.html

277 https://www.cbinsights.com/research/ai-content-licensing-deals/

278 Sony annual revenue of $86B reported at: https://www.nasdaq.com/market-activity/stocks/sony/financials Sony's sales by business segment reported at: https://www.statista.com/statistics/297533/sony-sales-worldwide-by-business-segment/. We take half of global revenues as U.S. and assign percentages that are internet dependent as follows: 100% of game segment revenue to arrive at $14.25B US, 72% of music segment revenue based on the industry breakdown at https://www.statista.com/statistics/263109/global-digital-music-revenue/ to arrive at $4B US, 80% of Sony Pictures revenue as internet dependent, covering streaming, transactional video on demand, and licensing to digital properties to arrive at $5B US, and 90% of Imaging and Sensing Solutions (i.e.. AI, real time rendering, machine learning technologies) to arrive at $4.95B for this segment. Total U.S.internet dependent revenue sums to $26.2B and we apply the category average for productivity per employee to arrive at our estimate.

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279 From 2023 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001437107/e00b505b-835d-4ddf-94c1-8055ab0d236f.pdf : $8.7B of $41.3B of all revenue is advertising (21%), U.S. is $28B out of $41B in revenue (68.3%) DTC segment of streaming and premium TV = $10.12B, Studios Segment is $12.2B, and Networks Segments is $21.2B, $548M of DTC is advertising within streaming and premium segments Therefore we make the following assumptions: $374M is U.S.digital advertising revenue. Using the Nielsen Gauge proportion of digital viewing as our guideline we take 41% of the Networks revenue to arrive at our global internet dependent revenue estimate of $8.7B and we take 68.3% of this figure as U.S.derived to arrive at our U.S.internet dependent estimate of $5.94B. We take 68.3% of the global DTC segment as U.S.to arrive at our U.S.internet dependent estimate of $6.96B. Therefore our total for U.S.internet dependent revenue is $12.9B. 18,709 U.S.employees stated in 10-K (35,300 employees of which 53% are in the US) and we take 41% as internet-dependent to arrive at our estimate of 7,671.

280 To arrive at our estimate we consulted the 10-K at https://thewaltdisneycompany.com/app/uploads/2024/02/2023-Annual-Report.pdf where we examined the company's 3 segments (Media and Entertainment, Sports, and Experiences. The 10-K states that the Americas segment represents $31.4B of Media and Entertainment segment's $40.6B of revenue, of which assume 60% as U.S., or $18.8B. Also reported is revenue of $16B of the Sports segment's total of $17.1B as Americas, of which we assume 60% or $9.6B is U.S. Advertising (not broken down between digital and broadcast) is reported as $11.5B globally. Using the 60% ratio from above for the U.S. calculation and the Nielsen ratio of 41% of for digital consumption we estimate U.S.internet-dependent revenue as $11.6B and estimate that U.S.digital advertising as $2.19B. We then apply the ratio of $11.6B (our estimate for U.S.internet dependent revenue) as a proportion of global revenue of $88.9B to arrive at our estimate of 21,710 of 167,000 global employees are U.S. based and internet-dependent.

281 Paramount Global is the owner of CBS, MTV, BET, Comedy Central, Paramount+, Pluto TV, and Paramount Pictures, along with production, distribution, and advertising solutions. The 10-K report at https://ir.paramount.com/static-files/8f57f855-11bb-496d-9916-91ff88cb537b states $30,154B in annual revenue of which $10,890 is advertising and $11.5B is affiliate and subscription revenues. We apply the Nielsen Gauge ratio of 41% of time spent by Americans watching TV online at https://www.nielsen.com/data-center/the-gauge/ to the $10.89B in general advertising revenue to arrive at our digital advertising revenue estimate of $4.46B.Using the same logic we estimate an additional $4.15B for internet-dependent revenue from affiliate and subscription revenues as itemized in the Form 10-K to arrive at our total U.S.internet dependent figure of $8.61B. We take 41% of U.S. employees (reported at 24,412) to arrive at our U.S.internet dependent employment estimate of 10,009.

282 Via https://www.hearst.com/about we learn that Hearst has a diverse portfolio of holdings, a number of which are not media related (e.g. financial services and transportation industry businesses). Their media holdings include: ownership in cable television networks such as A&E, HISTORY, Lifetime and ESPN; 35 television stations; 24 daily and 52 weekly newspapers; digital services businesses; and more than 200 magazines around the world. We estimate 50% of $12B annual revenue estimated at:https://www.statista.com/statistics/537714/hearst-corporation-revenue/ and 20,000 employees estimated at: https://www.ibisworld.com/us/company/hearst-communications-inc/409349/#:~:text=Hearst%20Communications%20is%20a%20private,with%20an%20estimated%2020%2C000%20employees as U.S.internet-dependent revenue to arrive at our figures of $6B and 10,000 employees.

283 The most recent Fox Corporation 10-K reports $13.98B in revenues of which 52% were affiliate fees, 39% were advertising, and 9% from other operating activities. Using Nielsen's reported estimate of 38.7% of TV viewing being online at mid 2024 https://www.nielsen.com/news-center/2023/nielsens-state-of-play-report-delivers-new-insights-as-streamings-next-evolution-brings-content-discovery-challenges-for-viewers/) we compute 38.7 of revenues of $13.98 billion as internet-dependent, to arrive at our estimate of $5.4B and use the same ratio for estimating U.S.internet-dependent employees of 3,947. As the firm operates primarily in the US, we assume all revenue may be attributed to the US.

284 Privately held company therefore no 10-k filing. Our estimates are based on reports at: https://www.statista.com/statistics/1387634/bloomberg-lp-revenue/ and https://www.forbes.com/companies/bloomberg/ and https://www.adweek.com/media/bloomberg-media-nets-41-digital-ad-bump-as-it-expands-overseas/. Our percentage of U.S.relative to global revenue is 50%, based on averages across many firms operating globally. Our percentage of U.S. internet revenue is based on an estimate of 2/3 of all advertising being attributed to digital in 2023/2024, with the estimate being averaged from sources such as https://www.statista.com/statistics/375008/share-digital-ad-spend-worldwide/ and media analyst Brian Wieser's estimates and forecasts reported on June 7, 2024 in industry trade publication Adweek at https://www.adweek.com/agencies/3-key-takeaways-from-brian-wiesers-2024-us-ad-growth-forecast// Employees calculated accordingly.

285 Via the Gannett 10-K filing we find that a) digital advertising and marketing services and b) digital only subscription are responsible for $810 million and $156 million in revenues for the year respectively, for a total of $966 million in digital revenue. Employee headcount is stated as 10,000, with 2,800 outside the U.S.and we take 50% of those in the U.S.as internet-dependent to arrive at our estimate of 3,600.

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286 Via https://s29.q4cdn.com/983326523/files/doc_financials/2023/q4/FINAL-UCI-2023-Year-End-Reporting-Package-4-4-24.pdf U.S. advertising revenue is reported as $1.78B which we calculate as half being internet-dependent, lower than the industry average to factor in the lower internet penetration for the demographic. To calculate estimate of U.S.internet dependent employment we employ the ratio of revenue to employment from our last study and arrive at 1,330.

287 Lamar 10-K at https://ir.lamar.com/static-files/4398283b-8629-45ec-8768-a4ee8fedc20e reports that DOOH (Digital Out of House) is on average across cities about 1.75% of their outdoor advertising revenue, which amounts to $36.75M of $2.1B in total revenue. As they also operate in Canada we take 90% for the U.S. DOOH revenue to arrive at our estimate of $33M.

288 Outfront 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001579877/793adcc8-45e2-4c44-aad0-32455b5fb467.pdf reports digital billboard revenues in the U.S. of $553M (out of total digital revenues of $588M, with the remainder originating in Canada)

289 Via 10-K filing: "As of January 2024, we [Nexstar] owned, operated, programmed or provided sales and other services to 201 full power television stations and one AM radio station, including those owned by VIEs, in 117 markets in 40 states and the District of Columbia. The stations are affiliates of ABC, NBC, FOX, CBS, The CW, MNTV and other broadcast television networks. Form 10-K at https://www.sec.gov/Archives/edgar/data/1142417/000095017024021979/nxst-20231231.htm#item_7_management_discussion_and_analysi reports $395M in digital advertising, representing 8% of total company revenues of $4.9B. We assume all as U.S.based. We use the ratio of employment to revenue for comparable firms such as Televisa Univision to arrive at our U.S.internet dependent employment estimate.

290 Annual report at https://d1io3yog0oux5.cloudfront.net/_82d76bba97e3d1064de90265f070d081/clearchanneloutdoor/db/2307/21695/annual_report/546967+CCOH+2023+AR+Final+BMK.pdf states $1.1B in U.S. revenue, of which 35% is digital.

291 Our estimate is based on reports of 2023 revenue at https://www.thomsonreuters.com/en/press-releases/2024/february/thomson-reuters-reports-fourth-quarter-and-full-year-2023-results.html. Reuters segment for 2023 is stated as $769 million, of which we assume half is U.S. and all is internet dependent. Employment estimates are based on ratios for comparable businesses such as Bloomberg.

292 As a privately held company revenue and employment estimates are not made available. Therefore we anchor our estimates for The Washington Post's digital revenue as being 2/3 of The New York Times digital revenue and employment.

293 Via 10-K at https://graytv.gcs-web.com/static-files/554ab5c7-456b-4033-bb07-6df0e015e966

294 Via 10-K at https://s3.amazonaws.com/sec.irpass.cc/2732/0001971213-24-000011.pdf

295 Our estimate is based on AMC Networks 10-K at https://investors.amcnetworks.com/static-files/713e6128-d835-4543-bac9-a873436b081e and reporting at https://investors.amcnetworks.com/news-releases/news-release-details/amc-networks-inc-reports-second-quarter-2024-results that indicate U.S revenue is $2.37B out of total revenue of $2.71B, or 85%. We apply this ratio of 85% to the report of $150M for streaming revenues to arrive at our estimate of $127.5M for U.S. streaming revenues. We carry over the ratio for U.S. internet-dependent employees from our last study to arrive at our estimate of 137.

296 Via 10-K at https://ir.scripps.com/static-files/d73ba0a7-e38f-4174-8949-c8aaa4082076

297 To calculate the long tail of this sector we consulted statistics from the Local News Initiative Database. In addition to the large publishers accounted for in the table below, our estimate for the long tail of news and information publishers that publish on a daily or weekly basis, online and/or offline in the U.S. is 1,219. These news publishers are owned by firms ranging Tribune/Media News Group to Lee Enterprises, referenced elsewhere in this study, and also the firms such as Paxton Media Group, Adams Publishing Group, and Cherry Road Media. We estimate that the individually analyzed legacy media publishers in this section represent 90% of sector revenues and that the long tail accounts for 10%.

298 https://www.edisonresearch.com/the-infinite-dial-2024/

299 https://investors.spotify.com/about/

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300 https://www.businessofapps.com/data/soundcloud-statistics/

301 https://www.musicbusinessworldwide.com/spotify-chasing-annual-profitability-soundclouds-already-there/

302 https://investors.iheartmedia.com/news/news-details/2024/iHeartMedia-Inc.-Reports-Results-for-2024-Second-Quarter/

303 https://www.kantar.com/company-news/streaming-services-see-yoy-growth-with-music

304 To calculate our estimate, we converted with $13.4B Euros in global revenue to $14.56B USD. We take 26.5% as North America, as per our last study and using a GDP calculation, we take 88% of North American revenues as U.S. to arrive at $4.86B. We use the ratio of revenue to employees from our last study to estimate of U.S. employment.

305 As Sirius XM delivers its services via satellite we count only the internet dependent revenues reported for Pandora in the 10-K at https://investor.siriusxm.com/sec-filings/annual-reports/content/0000908937-24-000008/0000908937-24-000008.pdf. There, Pandora revenues are reported as $2.13B, of which $1.59B is advertising and $524M is subscription revenue. We apply the ratio of Pandora revenue of $2.13B to total reported revenue of $8.95B (i.e. 23.6%) to total number of employees reported to estimate 1,340 for U.S. internet dependent employees.

306 From the 10-K filing at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001400891/d7e979ad-736f-402f-8da9-c5b45dd3079e.pdf Total revenues reported as $3.751B, of which $1.069B is reported for the Digital Audio Group segment, i.e. 28.5% of revenues are digital. For the employment estimate we assume the same ratio of revenue to employees as Sirius XM, a comparable in this category.

307 Via 10-K filing at https://www.sec.gov/Archives/edgar/data/1067837/000162828024012758/aud-20231231.htm total revenues of $1.169B are reported. Using the ration of digital to broadcast revenues from a competitor in this sector, iHeart Media, we assign 28.5% of revenues to digital and estimate internet dependent employees using the revenue to employment ratios of iHeart as well.

308 Via earnings release at https://www.cumulusmedia.com/wp-content/uploads/2024/02/CMLS-2023.12.31-Earnings-Release-FINAL-VERSION-2.27.2024-a8hHBZk.pdf

309 SoundCloud is a Berlin headquartered company with additional offices in London, Cardiff, and New York, as stated at https://craft.co/soundcloud/locations. The company is reported to have generated €288 million revenue in 2023 at https://www.businessofapps.com/data/soundcloud-statistics/. We convert the amount in Euros to arrive at $320M for global revenue and attribute 33% of revenue and to the U.S. to arrive at our estimate of $106M. Employment estimate is derived from LinkedIn at https://www.linkedin.com/company/soundcloud/about where 201-500 is stated as company headcount, of which we assume the high-end figure, consistent with other estimates found online, and assign 33% of that figure, or 165, to the U.S.

310 This category includes private firms that online research indicates have revenues ranging from approximately $5-10Mto the $100M threshold used throughout the study. We assume the longtail for this sector at 10% of our category estimate and then estimate employment for those firms in the 'All Other' portion at the ratio of SoundCloud, a digital first platform in this category.

311 https://www.statista.com/statistics/1183087/game-developers-business-models/

312 https://www.unrealengine.com/en-US/faq

313 https://www.modernretail.co/technology/how-robloxs-shopify-partnership-lays-the-groundwork-for-e-commerce-in-the-metaverse/

314 https://www.wired.com/story/gadget-lab-podcast-611/

315 https://www.digitalmusicnews.com/2024/11/06/robloxs-tiktok-competitor-clip-it-gets-over-1-billion-views

316 https://publish.obsidian.md/vg-layoffs/Archive/2024

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317 https://gameworldobserver.com/2024/07/01/steam-new-record-37-million-concurrent-users

318 https://gameworldobserver.com/2024/07/15/valve-salaries-number-of-employees-2021-court-leak

319 https://playtoday.co/blog/stats/roblox-statistics/

320 https://backlinko.com/roblox-users

321 https://create.roblox.com/docs/production/earning-on-roblox

322 Source: https://www.theesa.com/about-esa/#membership

323 As Valve is famously secretive about releasing public numbers, we relied on sources such as LinkedIn and industry press and reports. LinkedIn at https://www.linkedin.com/company/valve-corporation/about/ shows approximately 1500 worldwide employees and industry news publication at https://arstechnica.com/gaming/2024/07/valve-runs-its-massive-pc-gaming-ecosystem-with-only-about-350-employees/ suggests $6.5 billion of revenue in 2021, to which we apply an annual growth rate of 8.76% as reported at https://www.statista.com/outlook/dmo/digital-media/video-games/worldwide to arrive at $8.36B for the 2024 global revenue estimate. For the U.S. revenue estimate we carry over the ratio from our last study (40%) to arrive at our U.S. revenue estimate of $3.34B and calculate U.S. employment accordingly to arrive at our estimate of 600.

324 Via company 10-K filing at https://taketwointeractivesoftwareinc.gcs-web.com/static-files/cfb24c4d-d28a-4a43-87b8-eee861221297: U.S.revenue is $3,279B. We take 95.6% as internet dependent, based on the company's reporting of that ratio of digital to non-digital revenue. U.S.employment is reported as 4,750 of which we also take 95.6% as internet dependent to arrive at our estimate of 4,541 U.S.internet-dependent workers.

325 Global revenue estimate is $5.8B via https://www.statista.com/statistics/1234106/epic-games-annual-revenue/ and global headcount is reported as 4,358 at https://www.statista.com/statistics/1234218/epic-games-employees/ The company website reports main offices in U.S. and a total of more than 50 globally. We assume half of company revenue and employment is in the U.S., using benchmarks from other comparable firms in this category.

326 Via EA 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0000712515/0f2f8087-0ebd-460f-a3c7-0ac2b8f14f1c.pdf: Global revenue of $7.65B of which $672M is 'packaged goods', or non-digital. The rest of the revenue is downloads, licensing, subscriptions, in game purchases, and advertising. Therefore digital revenue is $6.98B. Also reported are 13,700 global employees of which 66% are located internationally. We therefore estimate 34% of the digital revenue and employee headcount as U.S.and internet dependent to arrive at our estimate.

327 Via Roblox 10-K at: https://d18rn0p25nwr6d.cloudfront.net/CIK-0001315098/c1bca0ff-1074-4472-abc1-77b3a54198c2.pdf $2.799B in global revenue is reported. We carry over the proportion of U.S.to global revenue from our last study (61%) to arrive at our estimate of U.S.internet dependent revenue of $1.707B. 10-K reports 2,457 full time employees of which approximately 100 are located outside the U.S. making our estimate of U.S.internet dependent employees 2,357.

328 Via Ubisoft annual report at https://staticctf.ubisoft.com/8aefmxkxpxwl/AwOkNohhzmR1qBmQ4Nj4h/096beaa470c05f39f77417742e4d25b8/Ubisoft_FY24_Earnings_PR_English_final.pdf. To begin, we converted annual global revenues of 2.321B Euros to USD at a rate of 1.11 on 9/13/24 to arrive at $2,576B USD. The annual report states that 86% of revenues are digital so we take 86% of the USD amount above to arrive at $2,216B for global digital revenues. The report states 53% of revenues are North American, which comes to $1,174B, and we take 90% of that figure to arrive at $1,057B for the U.S.digital/internet dependent component. To arrive at our estimate of 1,538 for U.S.internet dependent employees we apply the ratio used for a comparable firm in this category, Take Two Interactive.

329 The most recent employee headcount figure reported by the company is 4000+, sourced at: https://www.riotgames.com/en/2022-riot-games-impact-report; A number of sites such as Zippia.com and https://levvvel.com/riot-games-statistics/ report annual revenues of $1.5B. According to the company's own website there are 20 global offices, 5 of which are in the U.S., including the HQ in Los Angeles. In early 2024 Riot laid off 11% of its workforce and we adjust the report of 4,000 employees to 3,560. For our estimate of U.S. revenues and employment we assume 40%, using competitor Valve as a benchmark.

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330 Via Nintendo annual report at: https://www.nintendo.co.jp/ir/pdf/2024/annual2403e.pdf $592M is reported as U.S.revenue. As a Japan headquartered company, we take 10% of global reported headcount of 7,274, or 727 as U.S.employees, which is in line with the ratio from the last study and with comparable firms in this category.

331 https://www.nielsen.com/data-center/the-gauge/

332 https://newsroom.spotify.com/2024-11-13/spotify-unveils-uninterrupted-video-podcasts-audience-driven-payments-and-the-new-spotify-for-creators-platform/

333 https://www.tubefilter.com/2024/09/13/spotify-wants-to-pay-youtubers-millions-for-their-videos/

334 As stated at www.vimeo.com

335 Via Netflix Q4 2024 earnings report

336 https://www.statista.com/statistics/250937/quarterly-number-of-netflix-streaming-subscribers-in-the-us/

337 https://www.emarketer.com/content/5-charts-netflix-ad-progress-growth-viewership-gen-z-penetration

338 Via Netflix Q4 2024 earnings report

339 https://www.emarketer.com/content/5-charts-netflix-ad-progress-growth-viewership-gen-z-penetration

340 https://www.emarketer.com/content/netflix-nearly-doubles-ad-supported-users-plans-new-ad-tech-platform

341 Via Netflix 10-K at: https://d18rn0p25nwr6d.cloudfront.net/CIK-0001065280/c5e64982-659f-4726-97c9-c57767c3bec3.pdf. The company reported $33.7B in global revenues of which $14.8B is U.S. and Canada. We take 90% of $14.8B as U.S. to arrive at our figure of $13.38B. For employees, the 10-K states 9000 in Canada and the U.S. and we again apply 90% to the U.S. to arrive at our figure of 1800.

342 Via Vimeo 10-K at https://investors.vimeo.com/static-files/f9ecee5d-fbaf-454b-a39a-67ae9b59ca00 U.S. revenue is reported as 43% of global revenues of $417.2M, or $179M. Global employment is reported as 1070, of which 459 are located outside of the U.S.

343 https://nces.ed.gov/ipeds/TrendGenerator/app/build-table/2/42?rid=6&cid=85 and https://www.forbes.com/advisor/education/online-colleges/online-learning-stats/

344 With $53 M in annual revenue reported at https://projects.propublica.org/nonprofits/organizations/261544963, Khan Academy falls below our revenue threshold for separate inclusion in the table below but is accounted for in our 'All Other' category.

345 https://onedtech.philhillaa.com/p/state-of-lms-market-us-canada-year-end-2023

346 Kajabi is an example of one such platform with a cumulative $5B paid out to course creators to 2024. Note that it is accounted for in the 'All Other' portion of our estimates. https://kajabi.com/news/kajabi-creators-reach-landmark-milestone-of-5-billion-in-total-earnings

347 https://investors.duolingo.com/news-releases/news-release-details/duolingo-hits-100m-maus-reports-59-dau-growth-and-41-revenue

348 https://newsroom.accenture.com/news/2024/accenture-to-acquire-edtech-leader-udacity-to-accelerate-capabilities-of-accenture-learnvantage

349 Apollo was acquired by a private equity group in 2017 therefore no public filings are available. Resources such as Pitchbook and Zippia estimate revenues at $2.1B and employee headcount at 28,000. In addition to University of Phoenix, the firm also owns BPP Holdings in the United Kingdom, University for the Arts, Sciences, and Communication in Santiago, Chile, and Universidad Latinoamericana in Mexico. Therefore we estimate half of revenue and headcount to be U.S. and internet-dependent. We anchor our employment estimate on a comparable firm in this category.

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350 Via 10-K at: https://d18rn0p25nwr6d.cloudfront.net/CIK-0001364954/680bfe93-a346-4734-a4d0-3070efd11364.pdf Chegg is an American education technology company based in Santa Clara, California. It provides homework help, digital and physical textbook rentals with AI powered, individualized services. $616M in U.S.revenue and 839 U.S.employees reported.

351 10-K https://d18rn0p25nwr6d.cloudfront.net/CIK-0001651562/3aef2ca7-a2ff-4ccf-93a7-fcf0ecff772b.pdf $636M of which $341M is U.S.(54%) and 1,295 global employees of which we assume half (648) as U.S.

352 Via 10-K at https://investors.duolingo.com/static-files/5d8aed34-97e5-4ab1-8050-7a7d40f2bb39 : $622M in global revenue and 45% of revenue is US, therefore $280M. 720 employees of which we assume half are in the U.S. Note that company also reports that in FY 2023 approximately 9.4% of our total revenues were derived from advertising (Approximately $58M).

353 10-K at https://investor.skillsoft.com/sec-filings/annual-reports/content/0001437749-24-012054/0001437749-24-012054.pdf reports $553M in revenue and 2,318 employees of which we assume 50% of both as U.S.

354 10-K at https://investors.udemy.com/static-files/30e9c091-18a9-47c1-a98d-ac56246e2267 reports $292M in N. American revenue of which we assume 90% is U.S. ($263M). U.S.revenue amounts to 36% of company revenues. Company reports 1443 employees and is headquartered in San Francisco. We assume half are U.S. based (722).

355 Private company, therefore we relied on an online report at: https://growjo.com/company/Outschool#google_vignette which suggests $330M in revenue and 1,649 employees. We assume 2/3 as U.S. to arrive at our estimates of $218M in revenue and 1,088 employees.

356 10-K at https://ir.healthstream.com/static-files/a353e89e-c814-41e1-9c11-3fd30bee0dbc reports that the company operates its online training platform for medical professionals in US, Canada, Australia, and New Zealand. Therefore we assume 2/3 of the reported $279M in revenue is U.S. ($184M). Employee headcount for HQ in Nashville is reported as 1,079 and we assume 2/3 are directly involved in internet-dependent revenue.

357 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001819404/d75dce74-9cd5-43df-9f0a-2a1bac3c30ae.pdf reports $139M in revenue and 500 employees of which we assume 90% of both are US, therefore we assume $178M in revenue and 450 employees

358 We anchor our estimate on the 10-K filing of Canvas parent company Instructure Holdings at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001841804/806d9e1d-b269-4c8a-9ce1-9beedb6c502a.pdf which reports that 80% of their revenue is U.S. ($423M of $530M) and U.S. 1,132, which represents average revenue per employee of $374K. We extrapolate the total market revenue and employment based on Canvas accounting for 47% of the market.

359 Industry reports from firms such as Holon IQ, Zion Market Research, and Grand View Research suggest $5B in annual revenue from the online learning programs of the large U.S. universities. We estimate the related employment using benchmarks from this category.

360 https://leadiq.com/c/noom/5a1d988d2300005e00873b1b#:~:text=As%20of%20January%202025%2C%20Noom%20has%20approximately%201.3K%20employees,s%20employee%20directory%20with%20LeadIQ.

361 https://www.businessofapps.com/data/calm-statistics/

362 https://www.businessofapps.com/data/headspace-statistics/

363 https://www.businessofapps.com/data/wellness-app-market/

364 We apply a productivity per worker of $598,500 based on an average of 2 comparable sectors from Chapter 5: Project and Workflow Management and Network Security, and calculate the number of works for Health & Wellness sector accordingly.

365 https://www.census.gov/retail/ecommerce.html

366 https://www.digitalcommerce360.com/article/us-ecommerce-sales/

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367 https://ecommercedb.com/store/apple.com

368 Source: Fortune, August 19, 2020.

369 https://www.sec.gov/Archives/edgar/data/1616707/000161670724000054/w-20240930.htm

370 https://www.sec.gov/ix?doc=/Archives/edgar/data/1065088/000106508825000037/ebay-20241231.htm#i9890a45b21e5472dbc635cb3d1b72cb0_46

371 https://pattern.com/about/our-story

372 https://d18rn0p25nwr6d.cloudfront.net/CIK-0001018724/e42c2068-bad5-4ab6-ae57-36ff8b2aeffd.pdf

373 https://www.marketplacepulse.com/articles/amazon-steers-third-party-seller-share-to-all-time-high#:~:text=According%20to%20Amazon's%20latest%20earnings%20report%2C%20third%2Dparty,2024%2C%20representing%2024.48%%20of%20Amazon's%20total%20revenue.&text=On%20the%20current%20trajectory%2C%20third%2Dparty%20service%20fees,a%20significant%20milestone%20in%20an%20evolving%20strategy.

374 Contimod.com https://www.contimod.com/amazon-seller-statistics/#amazon-seller-revenue-statistics

375 https://www.forbes.com/sites/pamdanziger/2021/02/05/amazons-third-party-marketplace-is-its-cash-cow-not-aws/

376 Jungle Scout

377 https://www.digitalcommerce360.com/article/shopify-revenue-gmv/

378 https://linkmybooks.com/blog/shopify-fees

379 https://investors.ebayinc.com/investor-news/press-release-details/2024/eBay-Inc.-Reports-Fourth-Quarter-and-Full-Year-2023-Results/default.aspx#:~:text=GMV%20was%20$73.2%20billion%2C%20down%201%%20on,$2.3%20billion%2C%20or%20$4.24%20per%20diluted%20share.

380 https://www.3dsellers.com/ebay-statistics#ebay-sellers-statictics

381 https://www.marketplacepulse.com/stats/etsy-number-of-active-sellers

382 Source: https://aimgroup.com/2021/02/11/craigslist-traffic-revenue-fell-radically-in-2020/

383 https://www.statista.com/statistics/1559543/monthly-web-visits-to-craigslist/

384 https://www.semrush.com/website/etsy.com/overview/

385 https://www.census.gov/retail/ecommerce.html

386 https://www.statista.com/statistics/950591/united-states-ecommerce-platforms-market-share/

387 https://www.cloudways.com/blog/top-ecommerce-platforms/

388 https://s27.q4cdn.com/572064924/files/doc_financials/2023/ar/f9969259-3407-4da0-b900-1bd5ec143135.pdf

389 https://www.lightspeedhq.com/news/lightspeed-announces-closing-of-ecwid-acquisition/

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390 Via Annual Report at https://s28.q4cdn.com/517092977/files/doc_financials/2024/ar/Annual-Report-FY24-Eng.pdf

391 https://techcrunch.com/2021/10/19/automattic-tc1-origin/

392 https://wordpress.com/about/

393 https://codexpert.io/woocommerce-statistics/; https://barn2.com/blog/woocommerce-stats/

394 Via 10-K at https://s27.q4cdn.com/572064924/files/doc_financials/2023/ar/f9969259-3407-4da0-b900-1bd5ec143135.pdf

395 10-K at https://investors.bigcommerce.com/static-files/a0717196-3095-4082-b3e7-bffd865a3a6e reports U.S. revenue of $237M and U.S. employment of 934.

396 Automattic annual revenue of $710M and employee headcount of 4,072 is reported at https://getlatka.com/companies/automattic Annual GMV (Gross Merchandise Volume) of WooCommerce is reported as approximately $12B on various sites. With 44% of WooCommerce sites located in the U.S.we adjust the figure to $5.28B for GMV in the U.S. and calculate U.S.revenue using the platform's fees of 2.9% our estimate for WooCommerce U.S. revenue is $153M. To calculate U.S. workers we benchmark against the average revenue per employee of comparables in the category.

397 https://www.statista.com/statistics/934995/revenue-of-leading-otas-worldwide/

398 https://hoteltechreport.com/news/otas-problems

399 https://www.xola.com/articles/what-is-an-online-travel-agency-a-complete-guide-to-the-best-travel-and-tourism-otas-2/

400 Booking.com, Expedia, and Tripadvisor are estimated to represent 81% of the OTA market (See https://research.skift.com/report/booking-vs-expedia-a-50-chart-factbook/ and https://6sense.com/tech/reservation-and-online-booking/tripadvisor-market-share therefore the 'All Other' segment of this market represents about 19% of the total market.

401 https://www.statista.com/statistics/250577/domestic-market-share-of-leading-us-airlines/

402 https://research.skift.com/report/direct-bookings-vs-otas-analyzing-the-shift-in-u-s-travel-booking-trends/

403 https://www.phocuswire.com/h2c-study-hotel-online-bookings-digitalization

404 https://www.statista.com/outlook/mmo/travel-tourism/hotels/united-states

405 From Expedia 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001324424/1d1b7ef4-fd87-4efa-a8fd-f728746142d1.pdf U.S.revenue is reported as $8.147B, out of global revenue of $12.839B, therefore 63.5% of revenue is US. We apply this ratio to the 17,100 global employees reported to arrive at our estimate of 10,859 internet dependent workers in the US.

406 Booking Holdings annual report at https://s201.q4cdn.com/865305287/files/doc_financials/2024/ar/2024-proxy-statement-and-annual-report.pdf states $2.327B in U.S.revenue and 3,100 U.S.employees

407 Tripadvisor 10-K at https://ir.tripadvisor.com/static-files/8f4f6323-f00f-4c69-ae50-4232d3cf9ba9 reports U.S.revenue of $1.198B out of total global revenue of $1.788B, thus U.S.revenues are 67% of total revenues. U.S.employees reported at 34% of global headcount at 967.

408 Booking.com, Expedia, and Tripadvisor are estimated to represent 81% of OTA activity therefore the 'All Other' segment is calculated at 19%.

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409 Via Amadeus annual corporate report at https://corporate.amadeus.com/documents/en/resources/corporate-information/corporate-documents/global-reports/2023/pdfs/1-amadeus-profile-and-corporate-performance.pdf ;To account for the fact that Amadeus is an EU-headquartered company with substantial presences in Asia, Africa, and South America in addition to the EU we reduce the category benchmark ratio of U.S.to global revenue to 40%. Note that global revenues of $5.441B Euros were converted to $5.736B USD at rate available on11/15/24.

410 Via Sabre 10-K at https://investors.sabre.com/static-files/549ee571-1b0f-4d55-ab79-0a8d60bb412d

411 Acquired by private equity therefore we rely on revenue reported at https://www.statista.com/statistics/501874/travelport-revenue and apply the same ratios as we did for the main competitor in the category, Sabre, in order to arrive at our estimate.

412 SeatGeek CEO Jack Groetzinger via https://seatgeek.ca/about

413 One example of such a service is the partnership between online ticket vendor AXS and ride sharing platform Lyft https://www.digitalmusicnews.com/2024/10/08/axs-partners-lyft-concerts-travel/

414 https://support.vividseats.com/support/solutions/articles/1000210292-how-does-vivid-seats-obtain-tickets-for-resale-how-about-tickets-to-sold-out-events-

415 Ticketmaster ticketing revenue of $2.96B reported in parent company Live Nation10-K at https://investors.livenationentertainment.com/sec-filings/annual-reports/content/0001335258-24-000017/0001335258-24-000017.pdf . 80% of revenue is assumed to be U.S. as reported at :https://usesignhouse.com/blog/ticketmaster-stats/ Linkedin reports global employee count of 6,500 at https://www.linkedin.com/company/ticketmaster . We assume 80% are U.S. based, anchored on revenue by geographic segment and that 95% of sales are via the website or app, with the remaining 5% taking place through call centers or physical outlets and apply the same ratios for our U.S. internet dependent employment estimate.

416 Vivid Seats 10-K at https://investors.vividseats.com/node/9386/html reports $713M in revenue of which we assume 80% is U.S., in line with benchmarks for this sectory. The company reports 3 U.S. offices, one in Toronto and another in Tokyo and we assume 90% of the reported 768 employees are U.S. based.

417 $350M in global revenue reported at https://www.livemint.com/market/ipo/stubhub-ebitda-is-said-to-be-350-million-ahead-of-planned-ipo-11718041812815.html. We assume 80% of revenue is U.S. based, consistent with Ticketmaster's ratios. We assume 660 U.S. internet dependent employees based on sources such as https://www.signalhire.com/companies/stubhub/employees

418 Numbers are sourced from the company's10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001475115/d192f490-533d-446c-9608-3f37d222f8d2.pdf which reports $242.1M in U.S. revenue and 433 full time employees in the U.S.

419 Privately held so we rely on public sources for our estimates. Multiple sources report annual revenues of approximately $170M, of which we assume 2/3 is U.S. and the company has offices on 4 continents. We also attribute 2/3 of estimated employee headcount of 500 as U.S.

420 We base our estimate on a variety of sources such as https://www.businesswire.com/news/home/20220414005244/en/SeatGeek-Announces-Record-Fourth-Quarter-and-Fiscal-2021-Financial-Results and https://www.zippia.com/seatgeek-careers-1397824/revenue/ to arrive at our estimate of $100M or total global revenue of which we assume 80% is U.S. and estimate employment using the same ratios.

421 https://www.fintechtris.com/blog/business-models-in-fintech-b2c-b2b-b2b2c Also note the presence of additional strategies such as B2B2B and B2B2X in this space, as explained here: https://www.znode.com/insights/details/znode-insights/the-guide-to-b2b2x-ecommerce

422 https://www.bigcommerce.com/blog/history-of-saas/

423 Market concentration in this sector derived from proprietary research database.

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424 https://www.bain.com/insights/digital-attacker-banks-time-has-come/

425 https://www.forbes.com/advisor/banking/banking-trends-and-statistics/

426 https://www.grandviewresearch.com/industry-analysis/us-cryptocurrency-market-report

427 https://www.businessofapps.com/data/chime-statistics/

428 https://www.statista.com/statistics/893954/number-fintech-startups-by-region/ 13,100 fintech companies in North and South America, of which we conservatively estimate ¾ are based in the U.S., or 9,825 firms, using GDP ratios as our guideline.

429 To arrive at this estimate we first consulted the 10-K filings of the 4 largest U.S. banks. Additional research indicated that a significant part of bank revenue and employment is not internet-dependent, coming rom capital market services (sales and trading, underwriting and merger and acquisition services) which are not strongly internet-dependent. Across the four largest banks, retail banking accounts for most of the internet activity, at about 33% (https://www.mckinsey.com/industries/financial-services/our-insights/global-banking-annual-review). Of retail banking 75% is conducted on mobile and online digital channels (https://www.bankrate.com/banking/digital-banking-trends-and-statistics/?tpt=a#digital-trends). Of the largest digital retail banks, 80% of retail banking revenue is earned in the U.S. (https://www.newyorkfed.org/medialibrary/media/research/epr/07v13n3/0712hirt.pdf) Therefore we use the product of these ratios, 20% of their revenue, as internet-dependent. The same formulas are applied to the 'All Other' segment of banks in the U.S.

430 Via Block 10-K https://d18rn0p25nwr6d.cloudfront.net/CIK-0001512673/63ef9bfd-ab0a-4964-b168-892424569b3b.pdf U.S. revenues of $20.417B are reported, constituting 93% of global revenues. Revenues are divided into 4 categories: Transactions, Subscriptions & Services, Hardware, and Bitcoin. Note that music streaming service TIDAL's revenues are reported within the Subscriptions & Services segment and not broken out separately. We take ¾ of headcount as U.S. to account for employees located in international offices in Canada, Australia, New Zealand, Ireland, Norway, UK, and Japan.

431 Via PayPal 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001633917/49d5864b-6d04-4c8f-9691-846c1f4e2b1c.pdf we note that U.S.revenue is $17.253B, or 58% of global revenue. We use the same ratio of 58% to arrive at our U.S.employment estimate.

432 Via Fiserv 10-K at: https://investors.fiserv.com/sec-filings/annual-reports?form_type=10-K&year=##document-3652-0000798354-24-000037-2 reports $19.093B of which 85% is U.S. and 42,000 worldwide employees located in the U.S., Canada; Europe, Middle East and Africa; Latin America; and Asia Pacific. We therefore apply a ratio of 60% to U.S. employees, based on the large U.S. revenue base, and the larger headcount required for head office and servicing the largest client base.

433 No public filings available as the company is privately held therefore we rely on the annual letter at https://assets.stripeassets.com/fzn2n1nzq965/1gMd12owbzJaSe4Y560OEJ/0e7a27759e1b3070c5179ded5b94f525/Stripe_2023_annual_letter_enGB.pdf and sites such as https://sacra.com/c/stripe/ for details and estimates. $14B is the annual global revenue estimate that appears in multiple reports and we assume half of revenue is U.S. Our employment estimate is anchored on comparables in this category.

434 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001402436/0b2b6c53-930d-4dc3-8439-2ada87a0f6f9.pdf reports $4.488B in software revenue out of total firm revenue of $5.503B (i.e. 81.5%) The U.S. is reported as 69% of revenue, so we apply that ratio to the software revenue to arrive at our estimate of $3.097B for U.S. internet dependent revenues. For employment we take the global number of 26,000 and reduce it by the international headcount of 15,600 to arrive at the U.S. headcount of 10,400. We then apply the 81.5% ratio to arrive at our U.S. internet dependent employment estimate of 8,476.

435 10-K at https://investors.intuit.com/sec-filings/all-sec-filings/content/0000896878-23-000034/intu-20230731.htm reports $16.3B in revenue and that 92% of revenue is reported as U.S. Relevant to our study is the 11% of the revenue attributed to Credit Karma ($1.793B) and $800M attributed to Mailchimp. We take 92% of those figures ($1.65B and $736M) to arrive at our U.S. revenue estimate. The company reports 18,200 employees in 10 countries and we estimate 10% of them are relevant to the Credit Karma and Mailchimp business segments.

436 Via 10-K at: https://investors.affirm.com/static-files/a829bc03-568c-42bb-9b73-1a7851b090b8 $2.26B U.S.revenue is reported and 2,006 U.S. employees

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437 SoFi 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001818874/a31f2915-31bf-45ae-99cf-18f3c0138869.pdf reports $2.028B of U.S.revenue and 3,212, or 73% of its workforce, as located in the U.S.

438 Robinhood 10-K at: https://d18rn0p25nwr6d.cloudfront.net/CIK-0001783879/78bc4a0f-d3b2-452e-8ac1-27f366e46bd4.pdf reports $1.865B in revenue but does not offer a breakdown by geographical segment. Benchmarking from other firms in this category we assume 90%, or $1.679B, is U.S. For employment the 10-K reports 3,666 full time workers, of which we also assume 90%, or 3,299, are based in the U.S.

439 Privately held so we rely on reports such as this: https://www.businessofapps.com/data/chime-statistics/

440 Via 10-K at: https://investor.envestnet.com/sec-filings/annual-reports/content/0001337619-24-000005/0001337619-24-000005.pdf U.S.revenue is reported as $1.223B and U.S.employees as 54% of 3400, or 1,836

441 Finastra (privately held) reports on Finastra.com that revenue is $1.98 billion, and we take 50% to be US.

442 From its 10-K we take 61% of PaaS and SaaS revenue to be US, and 80% of reported Americas employment to be US.

443 From 10-K U.S.employment is 67% of global employment, and we apply the same percentage to global revenue of $696 million.

444 From Growjo

445 From 10-K

446 From 10-K, we take 86% of revenue is internet-dependent and apply the same proportion to global employment of 359.

447 https://www.sec.gov/ix?doc=/Archives/edgar/data/1543151/000154315124000012/uber-20231231.htm

448 https://secondmeasure.com/datapoints/rideshare-industry-overview/

449 https://www.adexchanger.com/marketers/ubers-evolution-shows-how-retail-media-will-get-more-complicated-and-lucrative/

450 https://investors.instacart.com/static-files/4571dd21-e7b0-4086-b19e-f55e71a216e6

451 https://secondmeasure.com/datapoints/food-delivery-services-grubhub-uber-eats-doordash-postmates/

452 https://d18rn0p25nwr6d.cloudfront.net/CIK-0001559720/312a8de0-4be0-4a09-a442-e5fa3ffea0a6.pdf

453 https://leadiq.com/c/taskrabbit/5a1d8819240000240061e8f8

454 https://www.washingtonpost.com/technology/2022/05/25/taskrabbit-remote-work/

455 Uber 10-K at https://www.sec.gov/ix?doc=/Archives/edgar/data/1543151/000154315124000012/uber-20231231.htm reports $18.6B in U.S. revenue, representing half of global revenues. Global headcount is reported at 30,400 of which we assume 60% is U.S., to arrive at around estimate of 18,240 U.S. internet dependent employees.

456 DoorDash 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001792789/22478833-4051-473e-9a9d-048e0c200bfa.pdf reports $7.78B U.S. revenue (out of $8.635B global revenue), therefore 90.1% of revenue is U.S. based and internet dependent. As the 10-K states that in addition to the HQ, "…we also lease office, retail, warehouse, and distribution facilities in multiple locations in the U.S. and internationally" we assume 75% of the workforce (reported to be 19,300 worldwide) is U.S. based and internet dependent in order to account for multiple internal locations.

457 Via 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001759509/d576a7f4-780c-4f39-86a6-aa54b03fa2ec.pdf Lyft reports it has no material revenue outside of the U.S., despite having offices and/or operations in Canada, Mexico, Ukraine, Germany, and Belarus. We therefore attribute 98% of reported revenue to the U.S. and estimate that 90% of the company's employees are U.S.-based.

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458 Airbnb 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001559720/312a8de0-4be0-4a09-a442-e5fa3ffea0a6.pdf reports U.S. revenue as $4.290B, or 43.25% of global revenue of $9.917B. Also reported are 6.907 global employees and an 11,000 person global team of community support personnel to assist guests and hosts as issues arise. We apply the ratio of 43.25% to these figures to arrive at our employment estimate.

459 Instacart 10-K at https://investors.instacart.com/static-files/4571dd21-e7b0-4086-b19e-f55e71a216e6 reports that U.S. revenue is $2.936B of global revenue of $3.042B, or 96.5% of all revenue. Employees are reported as 3,380 worldwide. With 4 offices in the US, 1 in Canada, 1 in Shanghai, and 1 in Australia, we attribute 80% of employment to the U.S. to arrive at our estimate.

460 Via Just Eat Takeaway Annual Report at https://s3.eu-central-1.amazonaws.com/takeaway-corporatewebsite-dev/Annual-Report-2023.pdf reports $10B Euros in North American GTV (Gross Transaction Value) for the U.S. and Canada, of which we take 90%, or $9B Euros to be U.S. We then take the reports of net revenue and gross revenue reported in competitor DoorDash's10-K and apply that ratio of 12.9% to the GTV and convert to USD to arrive at our estimate. We then apply the U.S. ratio of revenue to employees (3,000 reported at https://about.grubhub.com/about-us/our-team/) to arrive at our estimate of 990 U.S. internet dependent workers.

461 Via SEC IPO documents at https://www.sec.gov/Archives/edgar/data/1514587/000162828024008965/turoinc-sx1a9.htm, $879.7M in annual revenue and 931 employees are reported. We assume 2/3 of both as attributable to the U.S.

462 Upwork at 10-K at https://investors.upwork.com/static-files/5613edfc-b0c4-4359-a27a-a72cd02f3eb1 reports 3 geographical regions (U.S., India, Philippines), and a 'Rest of World' category for its Talent segment. In its Client segment it reports only the U.S. and 'Rest of World'. The Talent revenue for the U.S. is $96 M and the Client revenue for the U.S. is $237M for a total of $333M in U.S. revenue. The company reports a 'limited physical presence' outside of the U.S. therefore we assume 95% of its 880 employees are U.S. based.

463 For Fiverr we relied on a number of sources, i.e. https://www.statista.com/statistics/1454749/fiverr-revenue-by-geographic-area, https://investors.fiverr.com/news-releases/news-release-details/fiverr-announces-fourth-quarter-and-full-year-2023-results and https://backlinko.com/fiverr-users in order to report $178.1M in U.S. revenue and 775 employees. HQ is in Israel, with additional offices in New York, Cyprus, Germany, and Ukraine. We therefore attribute 10% of employment to U.S.

464 All Other is calculated at 10% of firms analyzed in this section

465 https://www.ssa.gov/oact/cola/AWI.html

466 https://bfi.uchicago.edu/wp-content/uploads/2023/05/BFI_WP_2023-69.pdf

467 https://www.census.gov/content/dam/Census/library/working-papers/2023/demo/sehsd-wp2023-13.pdf

468 Studies and data sets consulted include Library of Congress resources on gig economy work at https://guides.loc.gov/gig-economy/statistical-data, EPI (Economic Policy Institute) analysis of gig workers at https://www.epi.org/publication/gig-worker-survey/, ADP Research's work on the gig Workforce at https://www.adp.com/-/media/adp/resourcehub/pdf/adpri/illuminating-the-shadow-workforce-by-adp-research-institute.ashx , Flex Association's economic impact report on rideshare and food delivery apps and app workers at https://www.flexassociation.org/wp-content/uploads/2024/03/Flex-Economic-Impact-Report-2024.pdf, Fiverr's 2024 freelance economy impact report at https://npm-assets.fiverrcdn.com/assets/@fiverr/freelance_impact_perseus/freelance-economy-2024.383cbc1.pdf, Ruul's freelance worker report at https://ruul.io/2023-freelance-economy-report, Upwork's freelance forward report at https://www.upwork.com/research/freelance-forward-2023-research-report, and https://zety.com/blog/workers-on-gig-economy

469 Among the third-party research reports and data consulted were Fiverr's Freelance Economic Impact Report at https://www.fiverr.com/freelance-impact, Uber's Economic Impacts in the U.S. report at https://drive.google.com/file/d/1P6HMbPc8T91Y8NlYyFGv8NQS9g4ckAq9/view, Upwork's research on the freelance worker economy conducted by Edelman Intelligence in 2020 at https://www.upwork.com/documents/freelance-forward-2020, and Earnest.com's Sharing Economy Wage Data at https://www.earnest.com/blog/sharing-economy-income-data/. Informal category specific discussions on sites such as Reddit and Quora were also reviewed.

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470 Source: https://www.ssa.gov/oact/cola/AWI.html

471 https://finance.yahoo.com/news/much-renting-home-airbnb-2022-192143308.html

472 https://investors.udemy.com/static-files/a8e017e8-b30b-419a-aad4-dc2af8e7c5f7

473 For example an average of $100-$300 per annum is cited at https://freshlearn.com/blog/udemy-good-for-instructors/

474 https://investors.upwork.com/static-files/5613edfc-b0c4-4359-a27a-a72cd02f3eb1

475 https://www.instacart.com/company/impact

476 AboutAmazon.com September 2023

477 For example https://gridwise.io/everything-you-need-to-know-about-amazon-flex and https://www.reddit.com/r/AmazonFlexDrivers/comments/19545e7/how_much_did_you_earn_from_flex_in_2023/. We also consulted sources such as https://www.amazondelivers.jobs/about/driver-jobs/ and https://logistics.amazon.com/marketing/financials.

478 Figure 8 in https://dougshapiro.medium.com/the-relentless-inevitable-march-of-the-creator-economy-26b22c905ee6

479 https://www.newyorker.com/culture/2024-in-review/the-year-creators-took-over

480 https://www.marketingdive.com/news/publicis-groupe-acquires-influential-influencer-marketing/722520/

481 https://www.prnewswire.com/news-releases/stagwell-stgw-acquires-leaders-bolstering-global-influencer-marketing-capabilities-with-ai-302204706.html

482 https://www.musicbusinessworldwide.com/live-nation-just-majority-acquired-a-hollywood-influencer-management-company-heres-why-that-matters/

483 https://www.goldmansachs.com/insights/articles/the-creator-economy-could-approach-half-a-trillion-dollars-by-2027

484 Indirect and induced economic impact are measures used to capture economic activity up and down the supply chain in an industry sector as well as the ripple effects of spending on e.g. household goods by individuals in the supply chain.

485 Doug Shapiro, “The Relentless, Inevitable March of the Creator Economy.” Medium, December 1, 2024.

486 Richard Florida and the Creative Class Group, “The Creator Revolution: Results from a Global Survey,” December 2024.

487 https://d18rn0p25nwr6d.cloudfront.net/CIK-0001326801/c7318154-f6ae-4866-89fa-f0c589f2ee3d.pdf and https://sproutsocial.com/insights/instagram-stats/

488 https://www.emarketer.com/content/social-time-spent-by-generation-2024

489 https://d18rn0p25nwr6d.cloudfront.net/CIK-0001564408/0dadfe63-2f5e-41e4-8029-6374d3e6e620.pdf

490 https://www.barrons.com/articles/snap-snapchat-stock-price-earnings-2700e2ab

491 https://business.pinterest.com/audience/

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492 https://www.businessofapps.com/data/twitter-statistics/

493 Privately held company therefore we rely on publicly available reports such as those at https://backlinko.com/discord-users and https://www.businessofapps.com/data/discord-statistics/ for our estimates.

494 Estimates of TikTok U.S. ad revenue derived from https://www.statista.com/statistics/1302319/tiktok-ad-revenue-us/ (Estimate of $8.75B for 2023 and $11.01B for 2024; to be consistent with other full year figures in the report we use the 2023 figure.); Madison and Wall January 2025; U.S. office locations include Los Angeles, New York, and San Jose, with 4,000 employees reported at the latter at https://restofworld.org/2024/tiktok-chinese-us-ban/;Total estimate for U.S. employees is 11,400 as reported at https://www.agorapulse.com/blog/tiktok-statistics/

495 Via Snap 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001564408/0dadfe63-2f5e-41e4-8029-6374d3e6e620.pdf $2.95B, or 64% is reported as North American revenue of which we attribute 90% to the U.S. to arrive at our estimate of $2.653B. For employment we use the same formula, working back from 5,289 global employees to arrive at our U.S. estimate of 3,051 employees.

496 Via 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001506293/7d9f1edb-1106-4267-a056-fcb1c304ca79.pdf $3.005B in global revenues are reported of which $2.206B are calculated as U.S. (73.3%). We use the same proportion of U.S.to global revenues to arrive at our estimate of 2,942 U.S. employees.

497 As a private company we rely on press reports for our estimates, such as those at https://www.businessofapps.com/data/twitter-statistics/ that report $1.75B of $3.4B of annual revenue as U.S. (51.4%). For our employment calculation we work back from reports of Twitter headcount of 7500 reported at https://www.cnbc.com/2023/01/20/twitter-is-down-to-fewer-than-550-full-time-engineers.html and reduce it by the 6,000 laid off after the Musk acquisition and attribute 60% of the remainder to the U.S. based on reports of 20 global offices of which 10 are located in the U.S. reported at https://www.glassdoor.ca/Location/All-X-Office-Locations-E100569.htm

498 Privately held company therefore we rely on publicly available reports such as those at https://backlinko.com/discord-users and https://www.businessofapps.com/data/discord-statistics/ for our estimates. The business model for the platform is for its premium service Nitro. We attribute 50% of global revenues of $575M to the U.S. and all employees (870) to the U.S. based on a review of the company website's careers section which indicates U.S. offices only and remote work across a variety of U.S. states for select positions within the company.

499 Via 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001846069/b41eeab1-105c-4cd7-b064-d614b1ea4b02.pdf $206M in U.S.revenue is reported. Global headcount is 594 across offices in several countries, though U.S.traffic and revenue constitute 80% and 95% of traffic and revenue respectively. Therefore we attribute 90% of employees to the U.S.

500 A proprietary industry database with industry reports states 46% as Match Group's market share, while this site states 52% ($2.8B of a $5.3B market) https://www.businessofapps.com/data/dating-app-market/

501 https://bumble.com/en-us/help/what-is--bumble

502 https://www.businessofapps.com/data/dating-app-market/

503 As the firms analyzed for the long tail are privately held we rely on sites such as Zoominfo, Growjo, Getlatka, and Pitchbook for the figures used.

504 Via Match 10-K at: https://d18rn0p25nwr6d.cloudfront.net/CIK-0000891103/a7b81f3d-f1e2-43b2-b815-ff008215b695.pdf

505 Via 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001830043/cfb37770-6f84-4e85-a74c-95e8e32d3871.pdf

506 Via 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0000891103/a7b81f3d-f1e2-43b2-b815-ff008215b695.pdf

507 Via 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001830043/cfb37770-6f84-4e85-a74c-95e8e32d3871.pdf. Note that even though 49.75% of its revenues are U.S, based 82% of Bumble's employees are located outside the U.S.

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508 eHarmony is privately held so we rely on public and industry figures such as those available on LinkedIn and in assorted press reports that suggest annual revenue range from $200-$275M so we take the half way point of $238M and assume half is U.S.($119M) using comparables in this category. Source for revenue estimate via proprietary research on dating industry in the U.S. and reports such as https://businessplus.ie/tech/tinder-fifth-lucrative-dating-app

509 Revenue and employment estimates were sourced as follows: $213M in annual revenue reported at https://www.zoominfo.com/c/spark-networks-inc/89686316 . LinkedIn reported employee headcount in the 201-500 range at https://www.linkedin.com/company/spark-networks and we estimate 200 global employees based on comparables in this sector and take 50% of revenue and employment for U.S.

510 https://www.ibisworld.com/united-states/market-research-reports/online-recruitment-sites-industry/

511 https://www.staffingindustry.com/news/global-daily-news/monster-combining-careerbuilder-0#:~:text=Existing%20CareerBuilder%20investors%2C%20including%20Apollo,Company%20and%20McClatchy%20Interactive%20West.

512 As revenue for Monster.com is reported separately at https://www.staffingindustry.com/news/global-daily-news/monster-combining-careerbuilder we can provide more granularity by including it as a separate entry and we deduct the U.S.revenue and headcount from our Randstad tally to avoid double counting.

513 https://d18rn0p25nwr6d.cloudfront.net/CIK-0001617553/23cda176-0a49-4e6e-bc8a-8b0d67c936a5.pdf

514 Randstad annual report at https://www.randstad.com/s3fs-media/rscom/public/2024-02/Randstad_annual_report_2023_0.pdf states $25.4B Euros in annual revenue, converted to $26.7B USD on 11/26/24. We carry over the ratio of U.S.to global revenue and employees from our previous study to arrive at our U.S. estimates.

515 Recruit Holdings annual revenue of $23.5 billion is reported at https://www.macrotrends.net/stocks/charts/RCRRF/recruit-holdings/revenue and 51,373 global employees are reported at https://recruit-holdings.com/en/about/profile/. We carry forward the ratio of U.S. revenue and employment from our previous study to arrive at our U.S. estimates.

516 Via 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0001617553/23cda176-0a49-4e6e-bc8a-8b0d67c936a5.pdf The company has 1,000 employees across the US, the UK, Canada, and Israel, with U.S.locations identified as Palo Alto, Santa Monica, and Phoenix. Using the category average revenue per employee for the sector we estimate that 1,142 employees are U.S. based.

517 Source for revenue is https://www.staffingindustry.com/news/global-daily-news/monster-combining-careerbuilder. We apply the category average for revenue per employee to arrive at our estimate for headcount.

518 As Randstad is reported to account for 29% of total industry revenue per IBIS World, we multiply their U.S.revenue by 3.45 to arrive at our total sector and 'All Other' estimate and apply average revenue per employee for the category to arrive at our headcount estimate. We note that this estimate for the total U.S.size of this sector is consistent with that reported at https://www.ibisworld.com/united-states/market-research-reports/online-recruitment-sites-industry/ and deduct $4.35B for our estimate of Linkedin's U.S.revenue as we account for it in the Integrated Firms section under parent company Microsoft.

519 https://mikeshields.substack.com/p/amazon-dangles-retail-media-in-a and https://www.marketingdive.com/news/amazon-launches-retail-ad-service-ecommerce-CES-2025/737028/

520 https://d18rn0p25nwr6d.cloudfront.net/CIK-0001018724/e42c2068-bad5-4ab6-ae57-36ff8b2aeffd.pdf

521 Via 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0000320193/c87043b9-5d89-4717-9f49-c4f9663d0061.pdf

522 https://www.statista.com/statistics/266572/market-share-held-by-smartphone-platforms-in-the-united-states/

523 https://www.statista.com/statistics/1330127/apple-ad-revenue-worldwide/

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524 Via 10-K at https://d18rn0p25nwr6d.cloudfront.net/CIK-0000320193/c87043b9-5d89-4717-9f49-c4f9663d0061.pdf

525 Via 10-K at https://alpharesearch.io/platform/share?filingId=0001652044-24-000022

526 Via 10-K at https://microsoft.gcs-web.com/node/32871/html

527 Via 10-K at: https://d18rn0p25nwr6d.cloudfront.net/CIK-0001326801/c7318154-f6ae-4866-89fa-f0c589f2ee3d.pdf

528 www.statista.com/statistics/217348/US-broadband-internet-subscribers-by-cable-provider/

529 https://corporate.comcast.com/our-network#:~:text=Our%20next%2Dgeneration%20network%20is,average%20broadband%20customer%20every%20month.

530 Via 10-K at: https://www.cmcsa.com/static-files/fabc4151-d6cd-4480-bf15-43a5dfd96290

531 https://www.adweek.com/convergent-tv/comcast-universal-ads-advertisers-should-know/

532 https://www.cnbc.com/2025/01/06/comcast-universal-ads-platform.html

533 We anchor our estimate on eMarketer's reported ratio of 66% as the percentage of U.S. TVs that are CTV and therefore receiving digitally streamed programming. Source: https://www.emarketer.com/content/data-drop-5-charts-on-ctv-users-by-device

534 We anchor our estimate on a 2024 Harris Poll on consumer preferences that reported that 34% of U.S. adults prefer to watch movies in theaters as opposed to waiting for streaming. We therefore attribute 66% of studio revenue as internet dependent.

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