Internet Association

Understanding The Value Of The Internet

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1. Introduction

Your first memories of the internet are likely outdated. How we participate online; how we interact with platforms; how we think about the internet – they have all changed dramatically and nearly universally for users.

The internet has grown and evolved into its present form because people find immense value in using it – and yet policymakers are now discussing transformational changes to the regulatory and policy landscape without understanding that value.

We do have some measures of the size and scope of the internet economy. The internet contributed $1 trillion to Gross Domestic Product (GDP) and three million jobs to the U.S. economy in 2014, based on IA's estimates. These figures are substantial, but they also oversimplify the true value that the internet provides to its users.

That "true value" has been much harder for policymakers to quantify and, so, we conduct conversations about the internet's role and impact in society with incomplete information. We debate the theoretical undercounting of digital platforms' contributions to productivity growth, but we are unaware that one third of Americans earn an extra $50-$75 (in the median) in extra income every month from the internet. We talk about policies designed for a monolith, but without individuals fully considered.

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If we only look from a distance at national measures, we will miss the more important intricacies of how we use the internet in our day-to-day lives and we will miss the true value of the internet: we tend to focus on the macro scale, measures like GDP contributions, revenue, and employment. These are important statistics to know, but they're loud and dominate policy roundtables, white papers, and other policy conversations to the point of drowning out discussions on how the internet impacts everyday life. They distract us from understanding how typical households and individuals commonly utilize the internet. We need to look at those interactions, the mundane and repetitive ones, to understand the internet's true value.

The goal of this paper is to fill in the value proposition of the internet. Over the past several years, IA has built out new datasets and methodologies to measure, track, and understand the internet's role in society. IA has applied that work to reports and other research,[1] but only now do we have a fuller picture of how and why the internet creates value for individuals. IA now dives into that picture, providing the details that have been missing for years.

The most important conclusion from this work is that we must understand that individuals help to create and derive value directly from the internet sector -- which makes it unlike any other sector of the economy. The internet is not simply a collection of several dozen corporations and their employees, in other words. The internet sector and the digital economy built upon it are the result of billions of internet users interacting and capitalizing on new information, tools, and data to create value for themselves. Subsequently, internet policy does not just impact internet companies – it impacts individuals' and households' ability to use one of the most crucial tools in the 21st century economy.

The internet is a collective endeavor. The interactions taking place on the internet, and the value those interactions create for individuals involved in them, rely on the ability to actively engage, verify, and transact with confidence. They work precisely because of the unique features of online platforms – key features like user reviews to inform the purchase of products and services and company guarantee programs that protect those purchases. They work because individuals enjoy the freedom to determine which platforms they engage with and what information they share, all according to their personal preferences for convenience, security, and privacy. The individualization of such a massive ecosystem is revolutionary and we must be careful to recognize that changes to the policy infrastructure of the internet will dramatically impact every individual's personal internet ecosystem.

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[1] All of which you can find at: https://internetassociation.org/publications/

This paper examines how individuals create and derive value from the internet, utilizing new data to provide previously unknown insights. The paper looks at several aspects of value that include: online expenditure, consumer surplus, user well-being, and online income. In doing so, IA more closely details how Americans use the internet as a tool to safeguard their livelihoods, pursue their passions, and connect with the world.

2. Alternative Approaches To Value

2.1 Resources Well-Spent

Our time is scarce and valuable. Nobody likes to waste it. How we use our time is, therefore, one of the clearest indications of what we value in life. And our expenditure of time online helps demonstrate the internet clearly provides each of us some sort of value beyond national GDP growth.

But what does that mean? Well, we can start with a couple of simple statistics. For example, in 2018, nine out of every 10 adults and 98 percent of adults aged 18-50 used the internet.[2] Those help answer *who* uses the internet (i.e. everyone), but I argue the more important question is, *how* do we use the internet. Or better yet, how do we spend our time and money online?

The depth of internet usage is one critical aspect to understanding its value to individuals. In the fourth quarter of 2018, the average adult spent just under three hours online every day for personal use (i.e. not for work) – 2 hours and 55 minutes. That was actually a slight downtick from Q3 2018 when the average person spent 3 hours and 2 minutes of their personal time online each day.[3]

Specific usage patterns will vary, but a typical example can illustrate how the average person might use the internet on a given day. Think of yourself. You may start your day with the weather and news while eating breakfast. Your commute might include streaming a podcast or album or maybe an online game. Lunch is out with colleagues and might require a few email checks on some home repairs during the conversation. Your commute home might include some of last night's baseball game and, because you can do free online research through search engines, you can skip the stop at your local library. Throw in a recipe for dinner, some personal finance management on your phone, and a half-hour of your favorite new streaming show and we're already to get close to that three-hour mark.

The value (monetary or otherwise) derived from those three hours, however, are harder to measure. Do we count how many streaming episodes you have watched as value? What about dog videos? Are they worth more or less than cat videos to you?

More fundamentally, a typical person on a typical day would not simply waste 175 minutes of their precious personal time, online or otherwise. The fact that individuals spend around three hours on online activity, consistent through every quarter of 2018, proves the value of the internet at a basic level.

The key is to stop thinking in terms of consumption and start thinking in terms of efficiency. The internet doesn't exclusively steal time away from other aspects of your lives; it allows you to *reclaim* previously wasted or underutilized time.

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In the 'typical' example above, much of the personal time spent online is actually *reclaimed time*. The internet enables activity during periods and in situations where you previously had to sit passively. Commuting is the clearest example. The Census Bureau measured that the average commute time in the U.S. in 2017 was 26.4 minutes one way.[4] That's nearly an hour each day where you were largely limited to passive activity (or none at all) even just 10 years ago. Today you may brush up on French lessons ahead of a trip to Quebec, shop for a birthday gift, or watch some silly dog (cat) videos to relax a bit.

In less abstract terms, IA has measured the typical monthly online expenditure for personal use at

[2] Pew Research Center. "Internet/Broadband Fact Sheet." February 5, 2018. Available at: https://www.pewinternet.org/fact-sheet/internet-broadband/

[3] Internet Association. "IA Industry Indicators – Q2 2019." Data for Q4 2018. Available at: https://internetassociation.org/publications/ia-industry-indicators-q4-2018/

[4] Census Bureau. American FactFinder. 2013-2017 American Community Survey 5-Year Estimates.

between approximately $90-$95 on average.[5] Those dollar values provide a more tangible reference point for the value of the internet to an individual. The time and money together equate to about $0.017 per minute ($90 divided by 30 days divided by 180 minutes). Rounding up to an even $0.02 (two cents) for simplicity, we can start to more clearly see the opportunity cost the average person gives up for their time online. It's approximately 180 minutes a day at $0.02 per minute.[6]

Now consider specifically the 180 minutes of the day in which you use the internet and think of what you accomplish during that time compared to just 10 years ago. At $0.02 per minute and multiplied by average personal internet usage each day, that equates to about $3.60 per day.[7] Let's assume that expenditure is a representation of value. If we multiply by every adult in the U.S. over the course of a year, the internet provides American's up to about $326 billion worth of *reclaimed time*. And for many of us, those previously wasted minutes are simply priceless.

> *...the internet provides American's up to about $326 billion worth of* ***reclaimed*** *time.*

2.2 Hidden Value

We choose to spend money and time in a variety of ways for a variety of services and goods online. But most are voluntary expenses and, while we can measure our expenditures, they do not tell the whole story of how we value the internet. You're free (both literally and figuratively) to access nearly anything you want on the internet (once you're actually online).

This leads us to another critical question for understanding the internet's value. What would we pay? Or, more precisely, what would we give up to keep the functionality the internet provides us?

Economists term this sort of hidden value as *consumer surplus*. Consumer surplus is essentially a way to measure the well-being gained by consumers and can be applied to measure non-transactional activity. Consumer surplus formally represents the difference between what an individual is willing to pay for a particular thing versus what that individual actually pays. If you're willing to pay $10 for a pizza, but only pay $8, then you have a consumer surplus of $2.

Consumer surplus has traditionally been difficult to measure. Researchers have found internet services particularly troublesome for this statistic because most internet activity involves no transactions to provide market reference points (while pizza might cost $10, Wikipedia is free).[8] We may pay for a subscription here and there and that $90-$95 on average per month per person will show up in our traditional productivity metrics like GDP (because there are transactions). But traditional metrics can largely miss many other internet applications: search, social media, mapping applications, etc.

Hardly anyone would disagree that individuals derive some value from free online search or real-time driving directions. The difficulty is in quantifying that value. There has been some recent research on this subject, however. Just this year Brynjolfsson, Collis, and Eggers released new insights on the consumer surplus provided by the internet through massive online choice experiments. The results are revealing.[9]

Their findings point to massive value provided by the internet to consumers. They measure the annual consumer surplus in 2017 of various, typical internet activity as follows:[10]

- → Search engines: $17,530
- → Email: $8,414
- → Maps: $3,648
- → Video: $1,173
- → E-commerce: $842
- → Social media: $322
- → Messaging: $155
- → Music: $168

[5] Ibid.

[6] It's worth pointing out here that the cost is mostly (entirely) voluntary and changeable from month to month.

[7] For context Hal Varian measured the value of the time Google saved its users in 2013. He found the average adult worker saved the equivalent of about $500 per year in time or about $1.37 per day (Varian, Hal. 2013. "Economic Value of Google." Presentation. Available at: http://assets.en.oreilly.com/1/event/57/The%20Economic%20Impact%20of%20Google%20Presentation.pdf)

[8] Brynjolfsson E, Collis A, Eggers F. (2019). "Using massive online choice experiments to measure changes in well-being." PNAS Latest Articles. Economic Sciences. Available at: www.pnas.org/cgi/doi/10.1073/pnas.1815663116.

[9] Ibid.

[10] Ibid.

Those figures combined total just over $32,000 per year. In other words, the average person gains a value equivalent to approximately $32,000 per year from the free services on the internet. That translates to approximately $7.9 trillion in extra value when applied to all U.S. adults.

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There are some caveats. The researchers did not distinguish between personal use and professional use, for example. Respondents in the research indeed cited the use of online services for work, which helps to explain the high number. Individuals logically will pay more for something if it is essential to their job. It is also logical that employers would potentially help shoulder some of the potential financial burden and that the services may currently be paying for some business-specific service (implying some – but certainly not all – of the value is captured by GDP).

However, we can isolate the value specifically of personal usage from these online services to estimate a 'cleaner' additional value of the internet. If we work roughly 9 hours per day[11] (assuming you use the internet at work) and we use the internet for personal use 3 hours per day. Roughly 25 percent of the consumer surplus generated would be from non-commercial, personal use. That portion is just under $2 trillion per year, which would equate to approximately 9.7 percent of GDP. And remember, the most recent measure we have is that the internet contributed approximately $1 trillion to GDP as of 2014. Or if we consider the amount of actual money spent online per month per adult ($95), then the consumer surplus of the internet provides value worth 28 times the amount of actual expenditure.[12]

Some researchers have suggested a new, alternative version of GDP to capture the precise amount of welfare derived by the internet (and other mis-measured goods and services).[13] IA will let productivity experts debate that issue. The most important thing is simply to recognize the unmeasured inherent value from the internet doesn't show up in top line stats.

2.3 The Pursuit Of Hobbies

Most people would disagree that value can only be measured by dollar signs. So, this portion of the paper focuses on time and what people do with their reclaimed time specifically.

The internet doesn't just provide value through the services it offers, it also facilitates the value of other activities through the resources it hosts. The internet is not simply a provider of value, but also a facilitator of value.

Approximately 108 million – 43.5 percent – of U.S. adults use the internet to pursue passion projects and hobbies online.[14] Out of those 108 million, 37.3 percent cite the internet as being essential to the pursuit of that passion/hobby.[15] That equates to approximately 40 million people who would otherwise be unable to participate in their hobby/passion/activity of choice without the internet.

A sizeable portion of the U.S. uses the extra time they've acquired thanks to the internet to pursue things that they love and enjoy. And a sizeable portion of those, approximately 16 percent of all U.S. adults,[16] could not do so without the tools, resources, and support found on the internet.

The internet enables individuals to overcome geographic separation and a lack of information to find and sell the things that bring them joy.

One of the most unique aspects of this facilitatory role is the internet's ability to better match up supply

[11] We use nine hours, rather than eight hours, to help simplify the illustrative calculations

[12] Taking the approximate $32,000 in consumer surplus per person per year and dividing by the approximately $95 per person per month in online expenditures, annualized to $1,140.

[13] See Brynjolfsson E, Collis A, Diewert WE, Eggers F, Fox KJ. (2019). "GDP-B: Accounting for the value of new and free goods in the digital economy." NBER Working Paper (National Bureau of Economic Research, Cambridge, MA).

[14] Internet Association. 2019. "IA Industry Indicators (Data for Q4 2018)." Internet Association. Available at: https://internetassociation.org/publications/category/industry-data/

[15] Ibid.

[16] 40 million divided by 250 million. Those people mentioned in the previous paragraph who could not pursue their passion projects without the internet (about 40 million people) as a share of all U.S. adults (about 250 million people).

and demand at a micro level. The internet enables individuals to overcome geographic separation and a lack of information to find and sell the things that bring them joy. In doing so, it also provides a greater likelihood of financial reward to individuals pursuing passion projects. Take, for example, an amateur clockmaker from 30 years ago and today. The only one real differences are that the clockmaker today can sell the handcrafted timepieces on numerous internet platforms like eBay, Etsy, and others or find online communities of clock makers with which to exchange ideas and socialize.[17] She may not make a lot of money and she would make the clocks even if she couldn't sell a single one. However, the internet now adds the potential for her to occasionally sell pieces to amateur clock collectors in other states and countries while learning from others.

Most individuals do not think of hobbies and passion projects in terms of money. They don't measure the value of their self-published novel or their knitting in terms of how much money they spent or made on it. The true value of such things is immeasurable – how do you put a figure on the pursuit of a lifelong goal to build clocks? All we can say with accuracy is that tens of millions of Americans do find value via the internet in these pursuits. And tens of millions of Americans would not be able to pursue them without the internet.

2.4 The Pursuit Of Income

But for those who crave numbers, IA can also help us understand how the internet directly contributes to peoples' bottom lines, including, but not exclusively, through hobbies for some people. To do this, we have to first move away from old notions of work. if we stop thinking about "jobs" and start thinking about earning income, and then apply that framework to the internet and we can begin to discuss online income positions (OIPs).

IA released groundbreaking research in 2017 on the prevalence of OIPs, showing that there were approximately 24 million of them in the U.S. in 2017 among IA's member companies alone.[18] These are not individuals (i.e. people), but positions and any person could have several OIPs. While OIPs capture the sharing economy, they also can show us much more much more. Each OIP allows an individual to earn money online from internet-enabled activities that range from answering surveys to selling vintage comic books to cleaning houses.

IA can now supplement this earlier research on the prevalence of OIPs with further information on the value of OIPs. Approximately 33 percent of U.S. adults – about 82 million people – earned income online in May 2019.[19] Another 7 percent of U.S. adults wanted to earn income, but were unable.[2021] That's about 17 million people.[22]

> *Approximately 33 percent of U.S. adults – about 82 million people – earned income online in May 2019.*

Among those earning an income online, they made approximately $1,190 on average in May 2019. The median is lower at approximately $75 and the range was $2 - $92,000 indicating there are some individuals who earn significant amounts of income online. In total, that equates to an additional approximately $97.4 billion of income to those individuals and for the U.S. economy.[23]

That is real, tangible money in Americans' pockets. Even using the median figure, which is likely more representative, it means that the internet *itself* is providing real value in the day-to-day pursuits of our lives - an extra $75 a month. If we place this in the context of our personal online expenditures alone, then the median amount of online income earned equates to about 78-83 percent of the money an average person spends online each month (again, $90-$95 per month). For some it may be enough to fund the pursuit of their passion project. For others it may be enough to order take out once or twice a

[17] For example, see: https://www.awci.com

[18] Hooton, Christopher. 2017. "America's online 'jobs': conceptualizations, measurements, and influencing factors." *Business Economics.* (2017) 52:227–249.

[19] Internet Association. "IA Industry Indicators – Jobs (May 2019 data)." Internet Association. Available at: https://internetassociation.org/publications/category/industry-data/

[20] Ibid.

[21] An example of someone trying to earn money online, but being unable to is an individual who tries to sell two tickets to a concert that they become unable to attend last minute.

[22] Remember, IA's previous research only counted OIPs at its relevant member companies. Hence, the discrepancy.

[23] For context, Etsy (an IA member) has estimated the economic output of their online sellers at $5.4 billion produced from 1.5 million jobs. Etsy. 2019. "Economic Impact of U.S. Etsy Sellers." Online. Available at: https://dashboards.mysidewalk.com/etsy-economic-impact-1532038450/home

month. For everyone, it is an important source of extra income and value.

3. Discussion

There are some that use the term "alternative safety net" to describe elements of the internet.[24] The term is meant to denote some of the value that the internet offers and is a clever way of illustrating some of the less obvious ways in which it does.

IA argues, however, the term is too restrictive. An individual can certainly supplement income when needed as an alternative to public welfare programs or relatives (i.e. the public safety net), but that is only part of the picture and certainly not the intended use of the internet, which was originally designed to serve as a collaboration and communication system for researchers.[25] There is also the added sense of security in various aspects of our lives – the value of being able to see who is approaching your home's front door from your desk at work via your phone or confirming a contractor's Better Business Bureau ranking instantaneously online before hiring them.

> *...the internet provides us with confidence and tools to mitigate the everyday errands and stresses of our lives.*

Perhaps most importantly, the internet provides us with confidence and tools to mitigate the everyday errands and stresses of our lives. We know we have the ability to book a dog walker last minute if a cousin unexpectedly arrives in town and wants to meet for dinner. We know that we can provide precise location details using an app if our car breaks down and we need roadside assistance – and even submit the insurance claim before while we wait. These aspects of life have always cost us in terms of time, money, and stress. The internet now enables users to reduce those costs, bringing new forms of value that have been harder to conceptualize and measure.

In reality, the internet has created a new class of services that lay the foundations of modern-day convenience and that facilitate the countless activities we pursue, both online and offline. In this way, the internet has created a form of *personalized infrastructure* that has revolutionized the pursuit and maintenance of our very well-being. The same way roads and rail enable commuting to work, the internet enables the pursuit of things that make you efficient, stable, and happy, even in the most mundane or quotidian aspects of our lives. It provides a personalized infrastructure to pursue the things that bring us joy and relieve stress, one that is completely customizable at any time and without barriers to entry or exit. And so, as our lives change and evolve, so too can we change aspects of how we utilize the internet to create and derive value.

> *IA has found that users typically prefer 'traditional' services only when they are less familiar with their online alternatives.*

This value proposition also does not merely apply to new services and tools; it also applies to older activities. Across a range of categories, IA has found that users typically prefer 'traditional' services only when they are less familiar with their online alternatives.[26] From short-term rentals versus hotels to online dating versus in-person meetups, individuals with less exposure to internet platforms tend to prefer 'traditional' services, while those with more exposure tend to either prefer internet-based services or at least value them equally, with different uses for different situations. In this sense, there is still a lot of potential value that remains untapped.

Consider how much effort you put into planning your driving route on vacation today versus 15 years ago. How does your backup plan for when you lose a shift at work compare today to 10 years ago? How easy is it for you to work from home when your child wakes up ill today versus five years ago? How willing are you to go back to those old situations?

Value is a difficult thing to measure. Most people assume that economists study and deal with money, but in reality we deal with utility or value. Money is a convenient stand-in for value because it offers a standardized way to measure how a person values

[24] Oyer, Paul. 2016. "THE INDEPENDENT WORKFORCE IN AMERICA: The Economics of an Increasingly Flexible Labor Market." Upwork. Available at: https://s3-us-west-1.amazonaws.com/adquiro-content-prod/documents/paul_oyer_the_independent_workforce_in_america.pdf

[25] https://www.internethalloffame.org/inductees/tim-berners-lee

[26] Internet Association. IA Industry Indicators. Available at: https://internetassociation.org/publications/category/industry-data/

something, but it is far from perfect and certainly not an all-encompassing metric. Value hides and moves, it varies from person to person and moment to moment. The internet has completely thrown off many of our old notions of what is and is not valuable. Most importantly, it has ushered in a new era of how we are able to create and find that value from minute to minute, day to day.

4. Conclusion

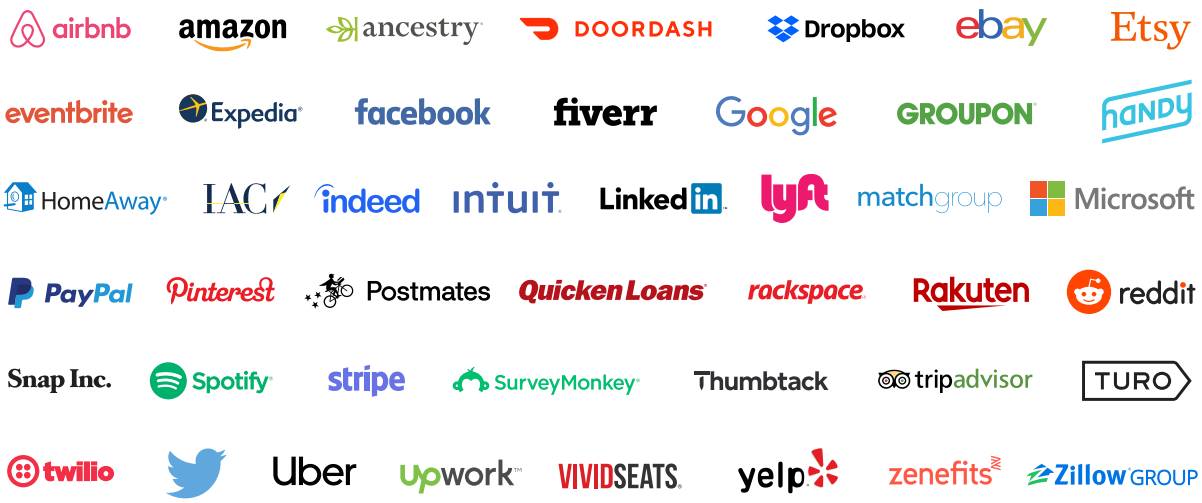
People use the internet because of its functionality. The internet has and continues to transform processes, dislodging entrenched interests and stagnant ideas. In doing so, the internet has created immense value that has made it an indispensable part of our lives and a powerhouse economic sector. As I like to say (to the chagrin of bureaucrats everywhere), *process is the most important product of tech.*

The problem is that our ways of measuring the economy are not really applicable to much of what the internet offers or what we value.

Gross Domestic Product measures production, but not well-being. Employment measures work participation, but not happiness. Revenue measures business performance, but not impact.

Gross Domestic Product measures production, but not well-being. Employment measures work participation, but not happiness. Revenue measures business performance, but not impact. The number of websites and apps people visit provides volume, but we still don't fully understand how and where they provide us value.

The current paper has offered some alternative metrics and thoughts on how we may start thinking about the internet's value. It's far from comprehensive, but will hopefully change some of our thinking and get a new conversation started. Most importantly, it may demonstrate to stakeholders that policies impacting the internet also impact every individual's ability to catch up on the news, relax at home after work, manage their finances, and pursue their passions.



We are the unified voice of the internet economy

www.internetassociation.org

Internet Association is the only trade association that exclusively represents leading global internet companies on matters of public policy. Our mission is to foster innovation, promote economic growth, and empower people through the free and open internet. We believe the internet creates unprecedented benefits for society, and as the voice of the world's leading internet companies, Internet Association works to ensure legislators, consumers, and other stakeholders understand these benefits.