

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of

Restoring Internet Freedom

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WC Docket No. 17-108

REPLY COMMENTS OF INTERNET INNOVATION ALLIANCE

Rick Boucher
Bruce Mehlman
Jamal Simmons
Internet Innovation Alliance
P.O. Box 19231
Washington, D.C. 20036
(866) 970-8647

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EXECUTIVE SUMMARY

We strongly favor overturning the classification of broadband as a Title II service in the *Title II Order*,¹ restoring the classification of broadband as an information service – a status that propelled the exponential growth of broadband and the Internet for nearly two decades – and enacting legislation to protect open Internet rules. The Commission has wisely proposed a step that will, we believe, advance investment and innovation and once again enable the flourishing of broadband freed of unnecessary regulations that are inappropriate to the broadband ecosystem. A survey commissioned in response to the Commission’s questions in Paragraphs 27 and 28 of the NPRM on consumers’ actual use of the Internet reaffirms the Commission’s sense that broadband is, by definition, an information service. Reclassification of broadband in the *Title II Order* has hurt investment in broadband networks and hurt innovation in the broadband ecosystem. The Commission’s “predictive judgment” that “restoring broadband Internet access service to a Title I service will increase investment” is, we believe, justified by experience, given the explosion of broadband investment and access under the Commission’s classification of broadband as an information service for nearly two decades. Regulatory uncertainty deters investment. Regulatory certainty encourages investment. Light-touch regulation, with regulatory certainty, offers the best environment for investment to flourish. Further, regulations designed for an era of copper wires and a national monopoly of one service (telephone) are immediately suspect as a basis for regulation of technologies and various competing communications service platforms that would have been inconceivable in the 1930s. Finally, we reiterate our call for Congress to pass bipartisan legislation to ensure permanently an open Internet that protects consumers, innovation, and investment in the nation’s high-speed broadband networks.

¹*In the Matter of Protecting and Promoting the Open Internet*, WC Docket No. 14-28, Report and Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd 5601 (2015) (hereinafter, *Title II Order*).

I. CONSUMERS' ACTUAL USE OF THE INTERNET

The Internet Innovation Alliance² respectfully submits these reply comments in response to the Further Notice of Proposed Rulemaking in the above-captioned matter.³ We strongly favor overturning the classification of broadband as a Title II service in the *Title II Order*⁴ and restoring the classification of broadband as an information service, a status which propelled the exponential growth of broadband and the Internet for nearly two decades. The Commission has wisely proposed a step that will, we believe, advance investment and innovation and once again enable the flourishing of broadband freed of unnecessary regulations that are inappropriate to the broadband ecosystem.

We know that Americans value the Internet highly. The task of public policy is to ensure that a proper regulatory balance spurs innovation and increases the Internet's value for users. Our position is clear: we favor an open Internet, including core network neutrality requirements that assure the ability of Internet users to access the content of their choosing without interference from Internet Service Providers (ISPs) and others in the Internet ecosystem. Edge providers rely on these guarantees to reach their customers, and ISPs have fully incorporated these principles into their business operations. Monopoly-style regulation from the days of rotary phones is both unneeded to ensure an open Internet and highly inappropriate in today's competitive, innovative broadband marketplace. The Hundt, Kennard, Powell, Martin, and (hereinafter "NPRM").

² The Internet Innovation Alliance is a broad-based coalition of business and non-profit organizations that aims to ensure every American, regardless of race, income or geography, has access to the critical tool that is broadband Internet. The IIA seeks to promote public policies that support equal opportunity for universal broadband availability and adoption so that everyone, everywhere can seize the benefits of the Internet from education to health care, employment to community building, civic engagement and more. Available at <http://www.internetinnovation.org/>.

³ Notice of Proposed Rulemaking, *In the Matter of Restoring Internet Freedom*, WC Docket No. 17-108 (May 23, 2017), available at <https://www.fcc.gov/document/restoring-internet-freedom-notice-proposed-rulemaking>

⁴*In the Matter of Protecting and Promoting the Open Internet*, WC Docket No. 14-28, Report and Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd 5601 (2015) (hereinafter, *Title II Order*).

Genachowski Commissions were each correct when they declared and/or affirmed broadband as an information service, and the Commission was wrong when it later made the decision to place it under Title II. The long-standing bipartisan agreement in favor of light-touch regulation fueled the explosive growth of the internet. Returning to that framework will offer many benefits to American consumers by encouraging investment in broadband networks, which will also create jobs and spur economic growth.

Leaving aside the heated rhetoric that too often continues to characterize this policy debate, the fundamental issue in this proceeding is quite simple: is broadband an “information service” as defined by the Telecommunications Act, or is it a Title II telecommunications service that should be governed (in reality, regulated) by monopoly-style rules? Put more simply, what is the essence of broadband access to the Internet? Is it, as the Commission held for almost 20 years, principally to obtain information, or is it something different?

The statute regarding the definition of an “information service”⁵ is clear. We believe that broadband qualifies easily under the statute as an information service and in fact does so in *each* particular element of that statute. Broadband providers offer the capability “for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications [.]” In reality, broadband providers offer each of these capabilities (plural), and while the statute permits a service to be classified as an information service if it offers any one of these functions (note the use of the disjunctive “or”), in today’s broadband Internet, ISPs offer all of them. Broadband therefore qualifies as an information service under *each* of the tests in the statute.

In Paragraphs 27 and 28 of the NPRM, the Commission invited comment to refine its understanding of how consumers actually use the Internet, specifically with regard to the

⁵47 U.S.C. §153(24).

statutory definition of the “capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications.”⁶ The inquiry covers a wide variety of information, from user-generated information such as address books and photographs to the websites of newspapers, third parties, and other Internet users (such as blogs). The Commission seeks to test the proposition that “[i]n short, broadband Internet access service appears to offer its users the “capability” to perform each and every one of the functions listed in the definition—and accordingly appears to be an information service by definition.”⁷

Similarly, in Paragraph 28, the Commission reaffirmed its recognition from the *Cable Modem Order*⁸ that “broadband Internet users often used services from third parties: ‘[S]ubscribers, by ‘click-through’ access, may obtain many functions from companies with whom the cable operator has not even a contractual relationship.’”⁹ This description could include users bypassing the ISPs’ proprietary content and services (such as email) to obtain these services from third parties such as content providers and email services. The *Cable Modem Order* reaffirmed the proper classification of broadband as an information service, and even the *Title II Order* reaffirmed this understanding of how consumers through Internet access reach third parties unaffiliated with the ISP. The Commission now seeks “comment on how consumers are using broadband Internet access service today” to test its supposition that offering “Internet access is precisely what makes the service capable of ‘generating, acquiring, storing,

⁶ 47 U.S.C. § 153(24).

⁷ NPRM, ¶27.

⁸ *In the Matter of Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities* (GN Docket No. 00-185) *Internet Over Cable Declaratory Ruling, Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities* (CS Docket No. 02-52), *Declaratory Ruling and Notice of Proposed Rulemaking*, FCC 02-77 (Feb. 17, 2002), available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-02-77A1.pdf

⁹ NPRM, ¶28.

transforming, processing, retrieving, utilizing, or making available information’ to consumers
[.]”¹⁰

Testing some core assumptions that reflect work in support of prior rulemakings in 2002 and 2013¹¹ makes good sense. Given the rapid advances in innovation that characterized the long period in which broadband was classified as an information service, it is clear that how consumers interact with broadband and use the Internet has changed dramatically in the intervening years, particularly since the 2002 inquiry in preparation for the *Cable Modem Order*.

During the initial comment period, relatively few commenters responded directly to the Commission’s questions in Paragraphs 27 and 28. For instance, a group of commenters writes that because in their view “information service” and “telecommunications service” are “overlapping,” therefore “the FCC has discretion to identify the service as one or the other.”¹² Commenters Public Knowledge and Common Cause claim that the Commission’s definition in Paragraph 27 is an “unprecedented and illogical interpretation of ‘information service’ as defined in the Communications Act,” on the ground that “[a]ny telecommunications network may be used to reach sources of information.”¹³ They also argue that “by the logic the Commission follows in para. 27 of the NPRM, the Title II telecommunications lines a consumer uses to access a dial-up ISP, and then the entire internet, would be information services since they, just like a broadband connection, allow an internet user to “store and utilize information online.”¹⁴ In response to this astonishing statement, we argue instead that moving Americans’ Internet

¹⁰ NPRM, ¶28 (internal footnote omitted)

¹¹ NPRM, ¶28 (internal footnotes omitted)

¹² Comments of American Association of Law Libraries, American Library Association, Chief Officers of State Library Agencies, available at <https://ecfsapi.fcc.gov/file/10717218515721/AALL%20ALA%20ACRL%20COSLA%20Comments%20July%202017.pdf>, at 24 (citing to NPRM, ¶27).

¹³ Comments of Public Knowledge and Common Cause, <https://ecfsapi.fcc.gov/file/107180046918671/final%20final.pdf>, at 27, 28.

¹⁴ Id. fn. 98.

connections from dial-up to faster broadband was *precisely* among the goals of the Hundt Commission when it first declared broadband to be an information service.

Rather than inviting a simple declaration of one's position on the *Title II Order*, therefore, the Commission's questions in these paragraphs offer a useful opportunity to obtain current data on how consumers use the Internet and how that use relates to the Commission's assumptions in the NPRM. In response, we commissioned a study by CivicScience,¹⁵ an online market research and data analysis firm, which resulted in a sample of slightly over 10,000 U.S. adults.¹⁶ The survey addressed a number of issues designed to be directly responsive to the Commission's inquiries.

Principally, in response to the FCC's inquiries, the survey sought information on what consumers do frequently or occasionally online (responses included social media; uploading photos, writing blog posts; selling and/or purchasing items online; reviewing restaurants and making reservations; using mapping services for directions; reading and/or watching news, sports or other content; using online search engines; researching products, services, or activities; storing address books, music, or other items; editing and saving documents, spreadsheets, or photos; using online translation services; booking travel or events, and "none of these.")

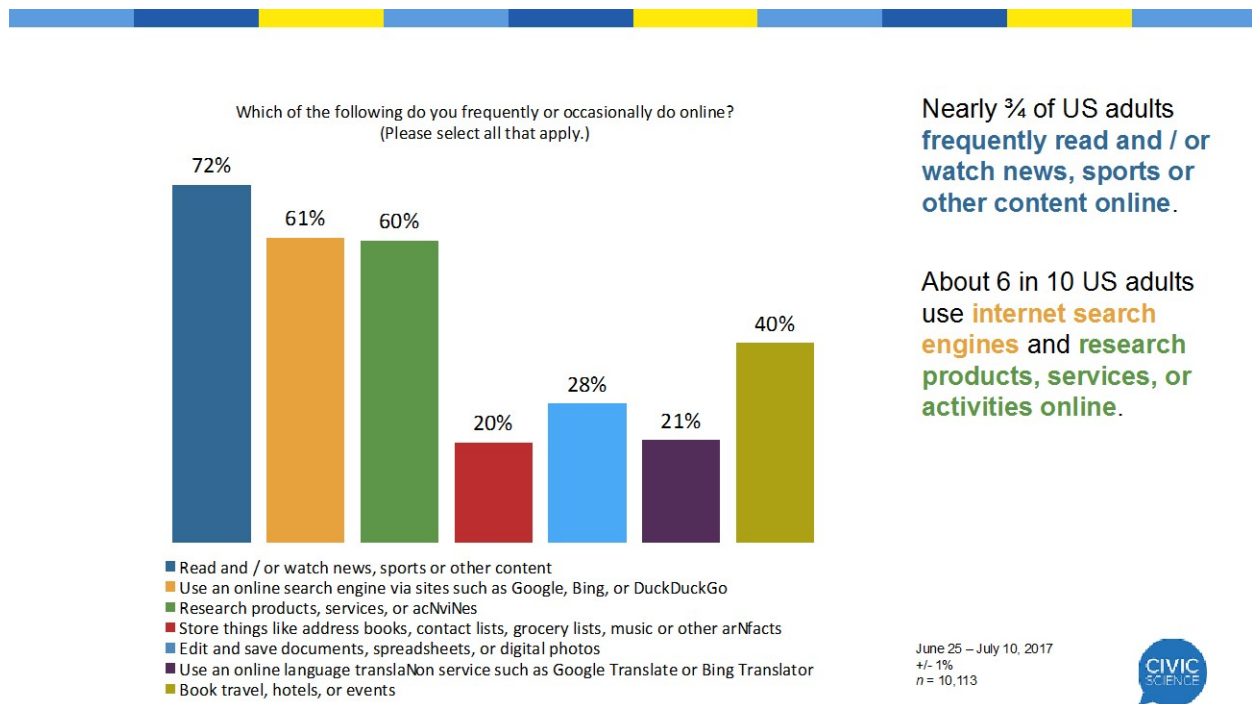
The results clearly show that most consumers use the Internet to get information and that the Commission is therefore correct in its intuition that broadband Internet access is an information service.

¹⁵ CivicScience is an online market research firm located in Pittsburgh, Pennsylvania that runs micro-survey polling applications embedded within a website's native content experience to serve a short set of poll questions to respondents across hundreds of diverse websites. The company uses a quota-based sampling methodology, which ensures that respondent groups are precisely representative of the U.S. population by demography and geography. The poll response data is aggregated within their proprietary database and, using proprietary data-mining algorithms, they have the capability to surface insights in real-time while maintaining the privacy of the respondents. CivicScience's methodology, platform, and data have been independently validated.

¹⁶ The survey is attached as Appendix 1. It was conducted between June 25 and July 10, 2017.

In response to the Commission’s questions in Paragraph 27 on what consumers do online, the survey found (Exhibits 1, 3) that the most popular internet activities among U.S. adults are checking or posting on social media (48%), purchasing items online (52%), and using mapping services for directions (44%). Other popular activities include uploading photos 28%, reviewing restaurants and making reservations (21%), selling items online 8%, and writing blog posts (4%). Beyond these activities, nearly three-quarters (72%) of US adults frequently read or watch news, sports, or other content online. About six in ten (61%) use Internet search engines and research products, services or activities online. Booking travel, hotels, or events was reported by 40%. Twenty percent store information such as address books, contact lists, grocery lists, and

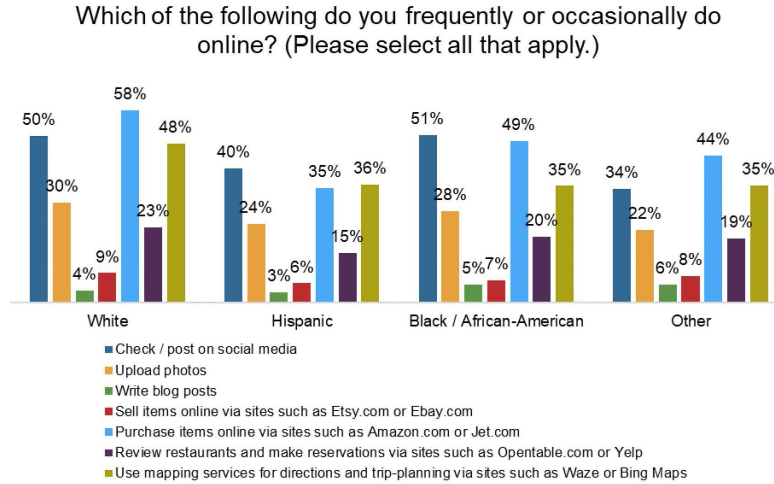
EXHIBIT 1



music; 28% edit and save documents, spreadsheets, or digital photos; and 21% use an online translation service.

It’s clear that Americans use the Internet – a lot – to obtain information. Looking at these results more deeply, throughout many communities of American society (Exhibit 2),

EXHIBIT 2

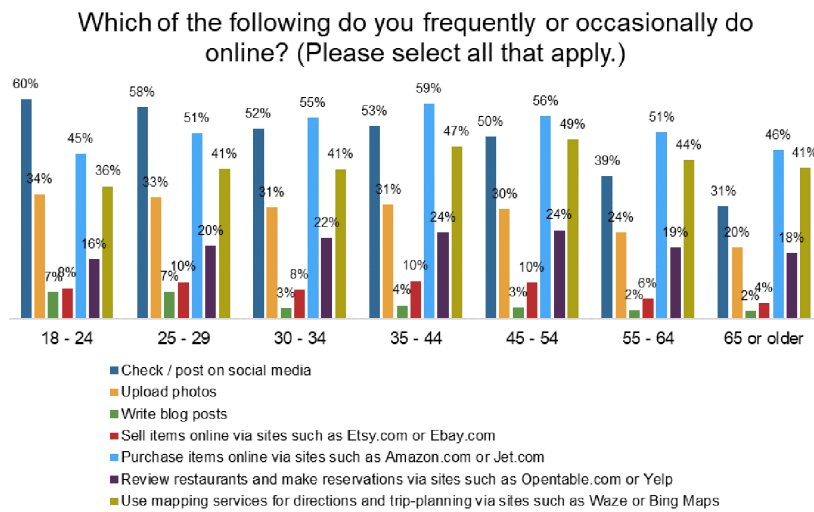


June 25 – July 10, 2017
 +/- 1%
 n = 9,789



shows that even with some relatively small distinctions, Americans throughout the nation use the Internet for similar purposes – purposes that are emphatically consistent with the FCC’s determination that broadband is an information service.

EXHIBIT 3

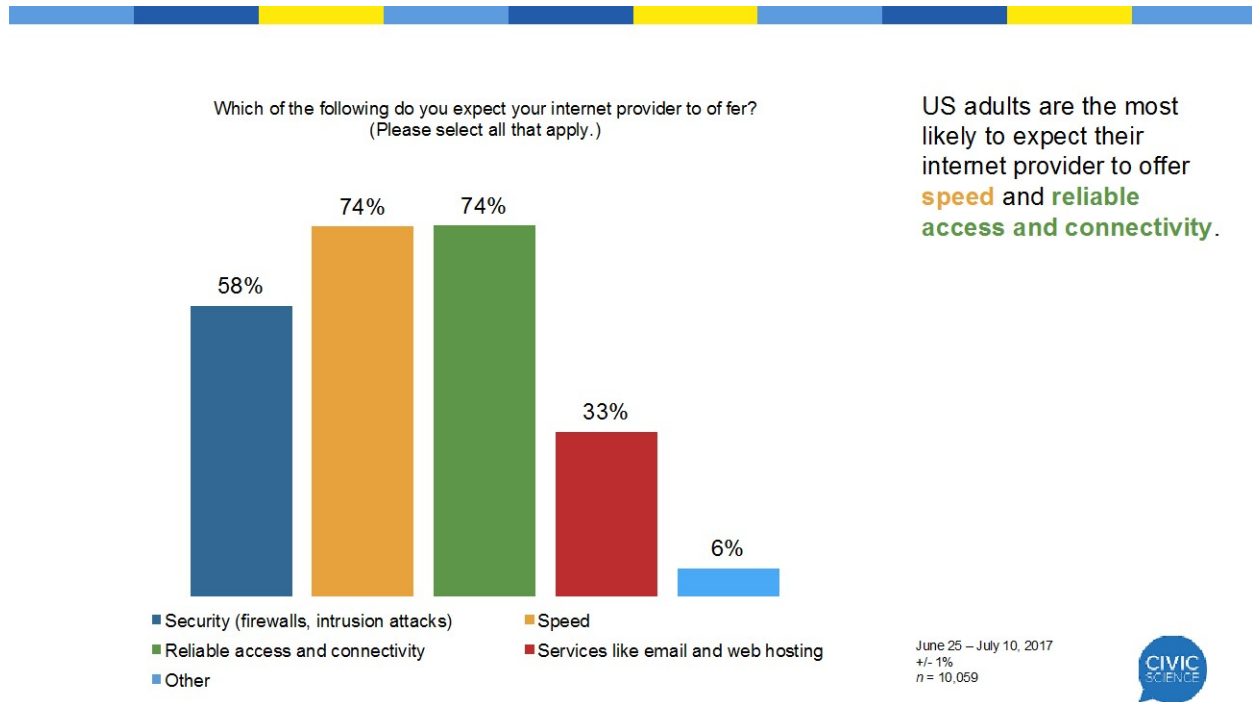


June 25 – July 10, 2017
 +/- 1%
 n = 9,789



Next, in response to the Commission’s inquiries in Paragraph 28, the survey revealed that U.S. adults are the most likely to expect their Internet provider to offer speed and reliable access and connectivity (each at 74%). Security comes next at 58%, and services such as email and web hosting follow at 34%, with 6% citing “other” (Exhibit 4).

EXHIBIT 4



Finally, the survey revealed that the Commission is correct in its supposition about consumers using “click-through” access to gain services online; only 14% of U.S. adults use their Internet provider’s email service. Gmail is the most popular email service, used primarily by 38% of U.S. adults, followed by 21% accessing either Yahoo! or AOL, 13% using Hotmail or Outlook, 10% “other,” while 4% only use a work email account.

Taken together, the responses to this empirical survey make clear the Commission’s understanding and assumptions of how consumers use the Internet *and* that Internet access is “precisely what makes the service capable of ‘generating, acquiring, storing, transforming,

processing, retrieving, utilizing, or making available information’ to consumers [.]”¹⁷ The survey results reaffirm that the Commission is correct in its conclusion that broadband Internet access is an information service, not a Title II service, by definition.

II. INVESTMENT IN INTERNET INFRASTRUCTURE

In the NPRM, the Commission stated that among its goals is “to restore the market-based policies necessary to preserve the future of Internet Freedom, and to reverse the decline in infrastructure investment, innovation, and options for consumers put into motion by the FCC in 2015.”¹⁸ The Commission also seeks comment on the question of whether “the regulatory certainty of maintaining the same regulatory environment for approximately three decades (since the *Computer Inquiries*) fosters additional investment or innovative business models to benefit consumers?”¹⁹ We strongly agree with both the Commission’s aim of increasing investment and the Commission’s view that reversing the *Title II Order* will provide a stronger context for investment in Internet infrastructure.

To begin, it is important to understand how consumers reach information over the Internet. Our consumer survey shows that over four in ten (42%) of U.S. adults use home broadband most often; while 36% access the Internet their smartphones, 9% use DSL, 4% satellite, and 8% report other types of access (Exhibit 5). Happily, only 3% of U.S. adults use much slower dial-up services most often.²⁰

¹⁷ NPRM, ¶27.

¹⁸ NPRM, ¶5.

¹⁹ NPRM, ¶39 (internal footnote omitted)

²⁰ See Appendix A.

EXHIBIT 5

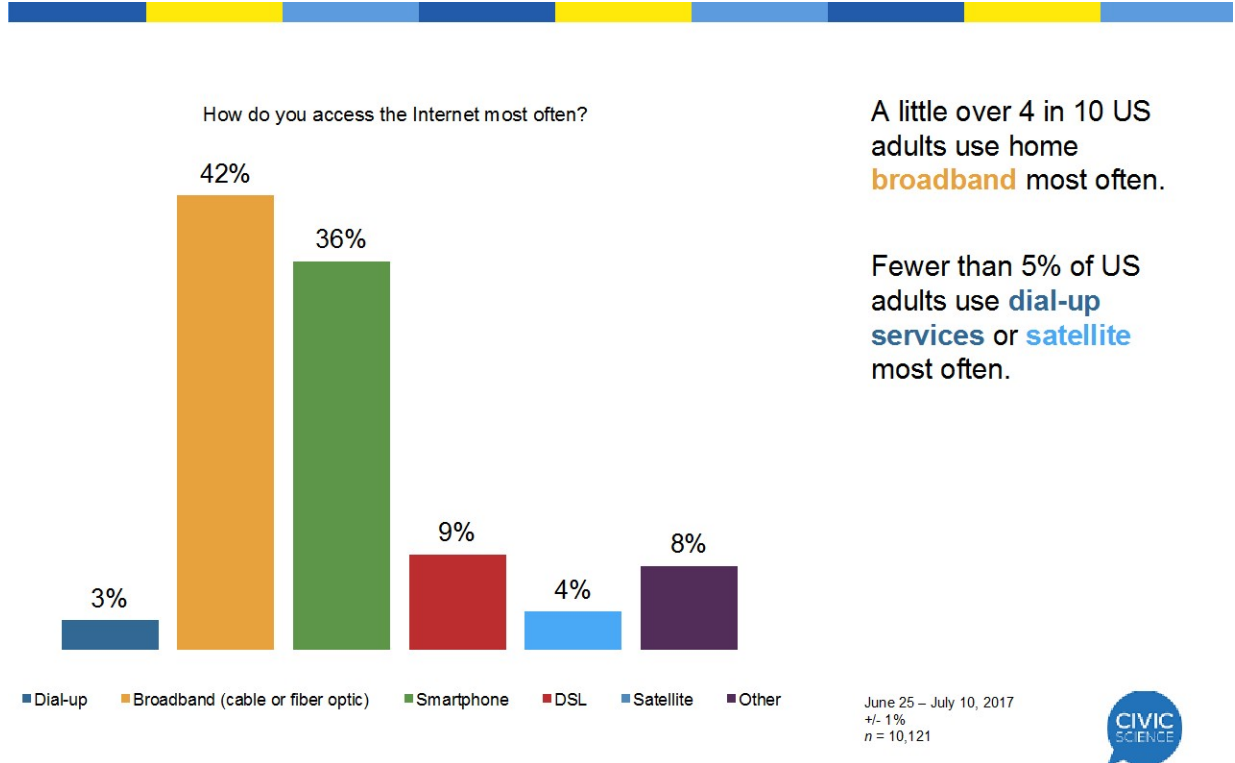


Exhibit 5 makes the case crystal clear: We believe these data demonstrate that nearly twenty years of regulating broadband as an information service has enabled greater investment that has ultimately led to faster and more reliable Internet connections. The Commission’s policy of treating broadband as an information service succeeded, in large part, by encouraging investment. It is impossible to reach many popular video-rich applications on today’s Internet using dial-up access over copper-based telephone lines because of the need for higher speeds and lower latency;²¹ unsurprisingly, therefore, dial-up has rapidly disappeared from American life, which again reinforces the Commission’s conclusion that broadband is an information service.

²¹ For instance, Netflix recommends certain Internet connection speeds on their website, beginning with 0.5 Megabits per second as the “Required broadband connection speed” and rising from there to 1.5Mbps (“Recommended broadband connection speed”), 3.0 Mbps (“Recommended for SD quality”), 5.0 Mbps (“Recommended for HD quality”), and 25 Mbps (“Recommended for Ultra HD quality”). With the theoretical limit of dial-up service speed at 56kbps, dial-up does not come close to allowing streaming video.

Similarly, earlier this year a reporter signed up for dial-up service as experiment (Brad Jones, “What’s it Like to Use AOL Dial-up Internet in 2017?” Digital Trends, Apr. 1, 2017, available at <https://www.digitaltrends.com/cool-tech/aol-dial-up-a-relic-of-the-past/> “AOL Desktop attempted to load a

A. THE REGULATORY PROCESS AND LEVELS OF INVESTMENT

In these brief comments, we will not take the analysis so far back as the Commission does in the NPRM, but nevertheless, let us begin at *a* beginning, if not the beginning. In his capacity as head of the Commission's National Broadband Plan task force, former FCC official Blair Levin determined that it would take up to \$350 billion of investment²² to meet the Nation's high-speed broadband needs.

Levin's estimate was not only a prescient figure but a clarion call to regulators and all concerned with rapid deployment of broadband, a process that continues today as the Nation begins its introduction and transition to 5G high-speed wireless broadband network service. It was clear to virtually all observers – and certainly to the Commission that adopted the National Broadband Plan – that the lion's share of investment capital at that level could come only from the private sector, not from government.

welcome screen, which caused the software to throw a major tantrum about a DNS error that spanned two separate windows. At this point, all I had done was click New Window, so I started to infer that this wasn't going to be the most stable browsing experience. Later, I would try and run a test on how long it took for this welcome screen to load. I stopped my timer at two minutes, with the task complete. However, clicking New Tab made the page load instantly, albeit with some images missing. As I wondered how to factor this into my testing, the software crashed, and I was forced to call upon Task Manager. I persevered, and decided to load Google. It took around 30 seconds to load the search engine to a usable state, and around 45 seconds to load everything, including superficial components like the Google logo. It took a whopping one minute and 15 seconds for Google to carry out a search for 'Digital Trends,' and the results prompted a freeze that only Task Manager could fix." *See also* (from 2011) Dan Grabham, "24 hours back on 56K dial-up: what's it like?," *techradar*, April 22, 2011, available at <http://www.techradar.com/news/world-of-tech/internet/24-hours-back-on-56k-dial-up-what-s-it-like-945695/> "Skype logged in without issues, though it didn't connect a video call when I tried it – somewhat understandably – and you'd struggle to even make a Skype voice call on dial-up. Windows Live Messenger didn't even bother to log in automatically.

So I went through the usual services I check every morning. First Twitter – I started TweetDeck. The columns looked to be refreshing for absolutely ages and took over a minute to appear. At the same time (more fool me) I tried to load Facebook – which didn't load at all. TweetDeck then loaded a solitary tweet while still attempting to refresh the other two columns.

Giving up, I decided to look at Twitter on the web. Unfortunately the website didn't even work properly. Loading <https://twitter.com> was staggeringly slow and it didn't even bother to log me in automatically as it does usually. Either this is some security thing as I'm using a different connection on this PC, or I'm pretty second class as a dial-up user. . . . One of the main problems I had with dial-up while trying to do work is that I use Google all the time to look up various stats and other information. I was surprised that Google searches took an age to appear – Google Instant didn't work, while non-text search results like the images and videos didn't really appear! I was surprised that Google doesn't seem to adapt for slower connections as I thought it might – aside from the lack of Google Instant the page looked identical.")²² Marguerite Reardon, FCC discusses barriers to national broadband plan, *CNET.com*, Nov. 18, 2009), available at <https://www.cnet.com/news/fcc-discusses-barriers-to-national-broadband-plan/>

Similarly, it is axiomatic that private investors will invest only where they can reasonably envision a positive return on their investment. Thus, to meet the growing demand for ubiquitous nationwide high-speed broadband deployment, IIA and others joined to support the view, shared by previous Democratic and Republican commissions alike, that government should advance only those broadband policies that actively *promote and encourage*, rather than deter, private investment.

The Commission's action in the *Title II Order* marked a sharp reversal from that long-held policy. But a basic and simple fact remains: private investors seek the highest rates of return on the capital they invest, and the regulatory uncertainties created by the *Title II Order* have caused investors to retrench.

Many factors influence the aggregate levels of investment in any industry, including broadband.²³ But in a regulated industry – in particular, an industry that had grown dramatically under light-touch regulation and is now subjected to a much heavier hand of regulation and burdensome requirements that were designed for a much older technology and are inappropriate for the technology of today – it stands to reason that investors' confidence in broadband as an industry would be questioned. This result from the *Title II Order* was a far cry from the brimming optimism and can-do spirit that accompanied the National Broadband Plan. Rather than a debate over how to maximize investment and broadband deployment, the debate in recent years has too often turned into questions of how much regulation may be applied before investors, actual or potential, notice or flee.

²³ “[M]any factors influence their [network operators’] capital outlays including the demand for services, capacity needs and enhancements, and regulatory considerations. It is the mix of these varied factors that determines the final outcome, and these inputs may exert conflicting forces on investment incentives.” Dr. George S. Ford, “Net Neutrality, Reclassification and Investment: A Counterfactual Analysis,” Phoenix Center Perspectives 17-02; Apr. 25, 2017, available at <http://www.phoenix-center.org/perspectives/Perspective17-02Final.pdf> at 2.

This attempt to pluck feathers from the goose that lays the golden eggs has led to results predictable for anyone familiar with the story.²⁴ Indeed, recent studies confirm the important link between intensity of regulation and levels of investment.

One foundational piece is the work of Thomas A. Hazlett and Joshua D. Wright that examined the Commission’s own suppositions in adopting the *Title II Order* in an effort to provide straightforward economic assessments of the key empirical assertions that the FCC made when it attempted to advance the case for Title II rules[.]”²⁵ The authors conclude that the FCC’s economic premises in adopting common carriage regulations for broadband ISPs were seriously flawed. As they write, the *Title II Order* “does not include references to any empirical studies that evaluate, let alone establish, the empirical propositions that the agency advances as justification for new Title II rules. Listing circumstances in which firms may possibly resort to vertical foreclosure is not the same as offering evidence that it has happened, will happen in the future, or would be successfully countered by rules designed to offset the anticipated action.”²⁶

More broadly, the authors examine the Commission’s four empirical claims regarding investment in the *Title II Order* and find that “each of the claims is dubious” and “provide no plausible case for Title II regulation of U.S. broadband networks.”²⁷ For instance, simply adjusting rates of investment to account for inflation weakens the Commission’s reliance on the 2011-2013 figures of capital investment as evidence that Chairman Genachowski’s *Open Internet Order* (which itself did not impose Title II regulations) did not harm overall investment. The authors use extreme caution in deriving conclusions from the data but note that “[t]he best

²⁴ See *Aesop’s Fables*, No. 87

²⁵ Thomas A. Hazlett and Joshua D. Wright, *The Effect of Regulation on Broadband Markets: Evaluating the Empirical Evidence in the FCC’s 2015 “Open Internet” Order*; George Mason University Law & Economics Research Paper Series 16-41; *Review of Industrial Organization*, forthcoming; available at <https://ssrn.com/abstract=2859570>, at 21

²⁶ *Id.* at 5.

²⁷ *Id.* at 6, 7

that can be said for the FCC’s analysis is that it is unconvincing. Even the bare bones framework that is adopted by the FCC shows no positive reaction of ISP capex following the 2010 net neutrality rules.”²⁸ Similar flaws exist in the Commission’s 2015 analysis of investment in mobile services²⁹ and to the other arguments used in support of the *Title II Order*.

How would that forgone investment have been used? How many more Americans would now enjoy faster broadband speeds, including even more Americans accessing the Internet under the Commission’s revised definition of broadband at 25Mbps?³⁰ How many more rural Americans, disabled Americans, or elderly Americans would have better and faster access to the broadband Internet? The questions are tantalizing but the answers must remain unknown, given the Commission’s unwise action in 2015.³¹

Yet those answers are important, because foregone investment has real and observable social costs as well as economic costs. Entrepreneurs face higher start-up costs, particularly in areas with slower speeds and fewer broadband choices. Diverse communities and communities of color may have received poorer quality of broadband or delays in buildouts.

Nor should the reality of this foregone investment be surprising: the Commission does not operate in a vacuum, and investors, no less than companies, Congress, and the general public, watch its actions closely and its intentions perhaps even more closely. Investors react rationally to the prospect of forthcoming regulation and make decisions on where they believe they may

²⁸ Id. at 8-9.

²⁹ Id. at 10.

³⁰ See, e.g., Fed. Comms. Comm’n, 2016 Broadband Progress Report, available at <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2016-broadband-progress-report>

³¹ See Comment of NCTA – The Internet & Television Association, available at [https://ecfsapi.fcc.gov/file/10717113350969/NCTA%20NN%20Comments%20\(7-17-17\)%20-%20FINAL.pdf](https://ecfsapi.fcc.gov/file/10717113350969/NCTA%20NN%20Comments%20(7-17-17)%20-%20FINAL.pdf), at 32: “With respect to investment, for example, one study published in May found that foregone investment in 2016 alone due to Title II amounted to well over \$5 billion. The study followed the trend line of overall broadband capital expenditures (“capex”) from 2003 to the adoption of the Title II Order in 2015, and found that, in absence of regulation under Title II, the industry likely would have invested approximately \$78 billion in 2016 expanding and improving its BIAS offerings. Instead, actual broadband capex in 2016 was only \$72.7 billion [.]”, citing to Michael Horney, Broadband Investment Slowed by \$5.6 Billion Since Open Internet Order (May 5, 2017), available at <http://freestatefoundation.blogspot.com/2017/05/broadband-investment-slowed-by-56.html>.

find the highest and most secure rates of return on that investment. From this perspective, the *Title II Order* clearly hurt investment in broadband infrastructure.

Other studies have produced similar results.³² With respect to investment in wireless broadband, Dr. Anna-Maria Kovacs has argued³³ that

[f]rom 2014 to 2016, the three years during which the FCC considered and then implemented Title II regulation for wireless providers, annual wireless capital investment first stumbled and then fell radically, tumbling to \$26.4 billion in 2016. The cumulative decline in annual capex during those three years was \$6.8 billion, or around 20 percent, with \$5.6 billion of that in 2016, the first full year of Title II implementation for wireless broadband. Wireless capital investment declined not only in absolute terms but as a percent of revenue and per subscriber.

Again, the negative effect on investment is correlated with the *Title II Order* (including the sharp debate that preceded it), rather than the Genachowski *Open Internet Order* of 2010; in fact, “[from 2011 to 2013], annual wireless capital investment grew from \$24.9 billion in 2010 to \$33.1 billion in 2013, an increase of \$8.3 billion or 33 percent” – in other words, investment grew after the Commission reaffirmed that broadband was an information service and declined once it was classified as a Title II service.

Absent the effect of regulation, this fall in investment makes little sense. As Dr. Kovacs notes, “[w]hat makes the decrease in capital investment even more striking is that it occurred during a period of phenomenal traffic growth. In 2013, America’s wireless networks carried 3.2 trillion megabytes of data traffic. In 2016, they carried 13.7 trillion megabytes of data traffic, a

³² See, e.g., Hal Singer, *2016 Broadband Capex Survey: Tracking Investment in the Title II Era* (Mar. 1, 2016) <https://haljsinger.wordpress.com/2017/03/01/2016-broadband-capex-survey-tracking-investment-in-the-title-ii-era/> (finding an overall decline of 5.6% of broadband capex investment from 2014 to 2016).

³³ Anna-Maria Kovacs, “Has Title II Regulation Stifled Wireless Investment? Here’s What the Number [sic] Say,” *Wireless Week*, June 15, 2017, available at <https://www.wirelessweek.com/article/2017/06/has-title-ii-regulation-stifled-wireless-investment-heres-what-number-say>

(In 2013, capital investment was 18 percent of revenues but by 2016 it had fallen to 14 percent. Additionally, capital investment per subscriber was \$98.74 in 2013, but by 2016 it was down to \$66.67, a stunning decline of nearly a third (32 percent).”).

data-traffic increase of 325 percent over three years.”³⁴ This decline in investment therefore poses real threats to easy access to the network at fast speeds; only a revival of growth in wireless capital investment will be able to keep pace with growing demand for high-speed mobile services and applications.

Europe presents a sobering reminder of the negative consequences of onerous broadband regulation on actual investment. “Europe has relied on regulations that treat broadband as a public utility with broad network unbundling requirements [.]”³⁵ As Fred Campbell noted over two years ago, at the time the Commission was considering the adoption of the *Title II Order*, “[b]y every relevant measure of broadband capacity, the US is ahead of Europe, with greater levels of broadband deployment, competition and access to the fastest wireless and next-generation wired facilities.”³⁶ At that time, using constant metrics U.S. mobile operators had invested twice as much in their networks as EU mobile operators (\$30 billion to \$15 billion); and wireline providers had invested over twice as much (\$39 billion to \$16 billion). Professor Christopher Yoo reached similar conclusions in a 2014 paper noting that the U.S. had better coverage for next-generation networks, more 4G wireless, higher investment per household, and lower prices at lower-speed broadband tiers (with higher bandwidth use at higher tiers for U.S. Internet users).³⁷ The conclusion is clear: monopoly style regulation, whether here or in Europe, depresses investment.

³⁴ Id.

³⁵ Christopher S. Yoo, “U.S. V. European Broadband Deployment: What Do the Data Say?,” June 2014, available at <https://www.law.upenn.edu/live/files/3353-us-vs-european-broadband-deployment-summary>

³⁶ Fred Campbell, “Impact of ‘Title II’ Regulation on Communications Investment,” Mar. 16, 2015, available at <https://internetinnovation.org/special-reports/impact-of-title-ii-regulation-on-communications-investment/>

³⁷ Yoo, op cit. n. 35.

B. THE CAPITAL MARKETS, THE ECONOMY, AND BROADBAND INVESTMENT

The Commission's role in this proceeding is to determine whether reclassification as an information service will increase investment and thus benefit consumers and the broadband ecosystem. We also argue, however, that returning broadband to information services status will have strong benefits for the economy as a whole, *beyond* broadband and the limited scope of the Commission's regulated industries.

Overall net domestic investment by business as a percentage of U.S. Gross Domestic Product stands at historically low levels, around 4%.³⁸ More recently, in the first quarter of 2017, spurred by the potential prospect of lower regulation and tax reform, business investment overall grew at an annualized rate of 9.4%. Any action, such as adoption of the NPRM, that would create greater market certainty and thus spur investment, is good for the economy as a whole. Actions such as the *Title II Order* that discourage investment likewise weaken the economy. The Commission should not minimize broadband's impact on the economy, job creation, and its role in enhancing our nation's global economic competitiveness.³⁹

³⁸ U.S. Department of Commerce, Bureau of Economic Analysis, investment data available at <https://www.bea.gov/iTable/iTable.cfm?ReqID=9&step=1#reqid=9&step=3&isuri=1&903=1> see also <https://www.bloomberg.com/news/articles/2017-04-29/fed-s-low-and-slow-strategy-tested-by-business-spending-pickup> (“Business spending has been the great laggard of the expansion”).

³⁹ We wrote last year in a different proceeding that “Scholars have noted that the fortunes of broadband rise and fall with levels of private investment and that, as the Commission agrees, broadband is now indispensable for economic development. One study, which we were proud to sponsor, noted that “[i]n 2014, the U.S. broadband/ICT sector produced \$1,019.2 billion in value added for the American economy, equal to 5.9 percent of U.S. GDP of \$17,420.7 billion in 2014. This . . . likely understates the sector's full contribution by undervaluing technological improvements. The use of U.S. broadband/ICT goods and services by U.S. private industries, and the information sector (and government), contributed an additional \$692.0 billion in output in 2014, equal to 2.7 percent of their combined output and 4.0 percent of GDP. Including the government sector, the use of U.S. broadband/ICT goods and services by other industries and sectors contributed \$843.3 billion in output in 2014, equal to 2.9 percent of their combined output and 4.8 percent of GDP.” (citing to Kevin A. Hassett and Robert J. Shapiro, *The Impact of Broadband and Related Information and Communications Technologies On the American Economy* (Mar. 23 2016), available at http://internetinnovation.org/images/misc_content/Report_on_the_Economic_Impact_of_Broadband_-_Hassett-Shapiro_-_Rev_-_March_23_2016.pdf, at 1.) Tariff Investigation Order and Further Notice of Proposed Rulemaking, In the Matter of Business Data Services in an Internet Protocol Environment, Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans, Special Access Rates for Price Cap Local Exchange Carriers, AT&T Corp. Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services; WC Docket No. 16-143, WC Docket No. 15-247,

More to the point regarding the Commission's jurisdiction, actions that weaken the economy also weaken the entire broadband Internet ecosystem. Recognizing the ever-increasing impact of broadband on the U.S. economy, the Commission has not hesitated to forbear from regulation to avoid a negative economic impact. Notably, in the *Triennial Review Order* in 2003,⁴⁰ the Commission wisely decided to forbear regulation of new fiber and packet switched facilities and services investment, a decision that promoted incentives essential for a boom of new investment and growth in the Internet ecosystem.⁴¹

We cited earlier Dr. Kovacs' study on the impact of the *Title II Order* on wireless capital investment. She continues her analysis by noting that "[t]his decline in capital investment is not sustainable without damaging a sector on which the economy increasingly relies."⁴² Citing the work of Dr. Michael Mandel of the Progressive Policy Institute, she notes that "estimated app-economy jobs have grown at a compound annual rate of 30 percent per year in the last five years, while overall U.S. job growth was only 1.6 percent."⁴³ Only with continued investment in wireless can the app economy continue to grow and to provide jobs at these extremely high levels.

As we wrote in 2016,⁴⁴ "[s]urely, however, the Commission need not wait for a recession or a sharp decline in the market capitalization of those American companies providing

WC Docket No. 05-25 RM-10593; Reply Comments of Internet Innovation Alliance, Aug. 9, 2016, available at <https://ecfsapi.fcc.gov/file/1080975610247/IIA%20-%20BDS%20REPLY%20COMMENTS%20-%20FINAL.pdf>

⁴⁰ 18 FCC Rcd 16978 (2003) (Triennial Review Order).

⁴¹ Kovacs, op. cit, n. 33.

⁴² Id.

⁴³ Id.

⁴⁴ Tariff Investigation Order and Further Notice of Proposed Rulemaking, In the Matter of Business Data Services in an Internet Protocol Environment, Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans, Special Access Rates for Price Cap Local Exchange Carriers, AT&T Corp. Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services; WC Docket No. 16-143, WC Docket No. 15-247, WC Docket No. 05-25 RM-10593; Reply Comments of Internet Innovation Alliance, Aug. 9, 2016, available <https://ecfsapi.fcc.gov/file/1080975610247/IIA%20-%20BDS%20REPLY%20COMMENTS%20-%20FINAL.pdf>.

investment in telecommunications and broadband services to forbear from regulation where strong evidence exists of a competitive market. The smarter course of action is to allow competitive markets to continue to generate and allocate that investment.” That counsel still holds true.

The question of investment in internet infrastructure cannot be narrowly defined in such a way as to suggest that any investment means that the *Title II Order* did not harm investment. The Commission did not ban investment in internet infrastructure in 2015, it merely discouraged and burdened it, in our view unnecessarily and without cause. We believe that the *Order* has direct costs to the Nation in terms of economic growth, in our competitiveness against other advanced economies, and perhaps most directly to the communities and consumers who did not receive these investments as quickly or as expansively as they could – and should have. Even some investors who favor broadband as an industry have chosen to direct their investments across borders, outside the United States, in part because of the worse regulatory environment in the United States following the Order.

Too often, proponents of the *Title II Order* ignore those costs, pointing to any continued investment as a supposed justification for the *Order*. That view is seriously misplaced and displays a surprising (and to some degree shocking) poverty of imagination regarding the exciting potential for 21st century innovation associated with heightened broadband investment and the pressing need to ensure that all Americans have ready access to competitive, high-speed, high-quality broadband services.

One economist sums it up well: “The relevant question for public policy is not whether capital expenditures rise or fall, but rather whether such expenditures are below the level they would have been “but for” the regulatory intervention.”⁴⁵

The answer to the Commission’s question in Paragraph 39 is therefore a resounding “yes.” If the Nation wishes to maximize investment in broadband, and believes that investments in broadband benefit consumers, then the light-touch regulatory regime that the Commission adopted for most of the Internet’s history and proposes to restore now is the best way to promote that goal. The history of three decades of investment in Internet infrastructure may be quickly summed up in the following principles:

- Regulatory uncertainty deters investment.
- Regulatory certainty encourages investment.
- Light-touch regulation, with regulatory certainty, offers the best environment for investment to flourish.

We believe these statements are generally applicable to regulated industries but have special meaning as to broadband investment. Capital markets are crowded with companies and innovators seeking capital for their ideas and plans for expansion. The increasing centrality of the internet to American life does not remove internet infrastructure investment from this analysis and the discipline of capital markets, but rather reinforces the need to ensure that these investments, so necessary for the prosperity and growth of *other* industries as well as telecommunications, are maintained at the highest possible levels.

The Commission’s “predictive judgment”⁴⁶ that “restoring broadband Internet access service to a Title I service will increase investment” is, we believe, justified by experience. By reversing the *Title II Order*, the NPRM, once adopted, will mark an important step forward. The

⁴⁵ George S. Ford, Net Neutrality, Reclassification and Investment: A Further Analysis,” Phoenix Center Perspectives 17-03; May 16, 2017, available at <http://www.phoenix-center.org/perspectives/Perspective17-03Final.pdf> 4.(arguing that the threat of reclassification reduced telecommunications investment).

⁴⁶ NPRM, ¶46.

Order is not the only factor affecting broadband investment, but it is clearly a substantial factor. Restoring broadband's information service classification should restore the regulatory environment necessary for boosting investment to the maximum extent possible – and, at the same time, delivering strong benefits to the economy as a whole.

Those benefits accrue as well in terms of consumers' own broadband Internet experience. Light-touch regulation fueled investment, and it did so in a fair environment for consumers. Some proponents of the *Title II Order* seem to portray the nearly two decades of Title I information service regulation as akin to the Wild West.⁴⁷ This is simply not accurate. Broadband network operators have, with rare exceptions swiftly corrected, operated under the framework of fundamental principles that constitute true “net neutrality”: no blocking, no discriminatory throttling, no censorship, and transparency. History has shown that ISPs have operated with few instances of violations of these principles. At least since 2005 – and, in reality, before that –the exponential growth of broadband networks occurred within the bounds of those wise principles. These principles protected consumers in the past; we are confident they will do so again once broadband is restored to the status of an information service.

In short, the combination of Title I regulation encouraging investment and the FCC's principles for an open Internet have worked together to promote investment. That wise policy should be restored as the NPRM proposes.

⁴⁷ See, e.g., Comments of INCOMPAS, available at [http://www.incompas.org/files/INCOMPAS-RIF%20Comments%20WC%20Docket%20No.%2017-108%20\(July%2017,%202017\).pdf](http://www.incompas.org/files/INCOMPAS-RIF%20Comments%20WC%20Docket%20No.%2017-108%20(July%2017,%202017).pdf), at 1: “the Commission now asks the public to take a chance on a different concept of the Internet—one where gatekeepers that control access to the Internet, and not exclusively the users of the Internet, can determine the fate of networked content, applications, devices, and services. This proposal turns its back on the historical role of the Commission to protect the public's ability to connect without permission.”

III. INNOVATION WITH BROADBAND AS AN INFORMATION SERVICE

We have long been concerned about how Internet regulation impacts both investment and innovation. In Paragraph 46 of the NPRM, the Commission asks whether “increased regulation of broadband adversely impacted broadband investment and innovation [.]” In Paragraph 49, the Commission “seek[s] comment more broadly on the effects on innovation of regulatory uncertainty.”

We begin from the point – seemingly obvious to us – that regulations designed for an era of copper wires and a national monopoly of one service (telephone) are immediately suspect as a basis for regulation of technologies and various competing communications service platforms that would have been inconceivable in the 1930s. In virtually any other context, we strongly suspect that technology entrepreneurs and companies would chafe at this type of old-fashioned regulatory model being applied to technology of any sort.

Title II is simply part of a statute enacted by Congress in response to specific conditions in the telecommunications market in the United States at the time, decades before computing and the high-speed broadband Internet. Reclassifying broadband as an information service would not repeal the antitrust statutes. It would not repeal common law obligations that network operators have to their customers. It would not even repeal Title II itself. Returning broadband to information services status is entirely consistent with the simultaneous adoption of strong open Internet requirements. All moving to Title I would do is restore the regulatory environment under which the Internet grew and flourished – an Internet ecosystem characterized by significant, even exponential levels of innovation.

We pause to note the irony that several current supporters of the *Title II Order*⁴⁸ have themselves benefited greatly from the light-touch rules that prevailed until 2015 and, unlike others, are not bound by the *Order*. Indeed, the explosion of broadband investment and access under the Commission’s classification of broadband as an information service for nearly two decades was the genesis of many of these companies’ success. Absent that explosion of access, they would have struggled to gain rapid market share and their business models would have suffered.

We are happy to celebrate the many innovations that edge providers, app developers, smartphone designers, and many others have made to the Internet ecosystem. We also attribute the rapid growth in this innovation in large measure to the foresight of both the Commission (and Congress) in determining that the Internet is an information service rather than a Title II service. As Senator Wyden warned in 1998, “suddenly subject[ing] some or all information providers to telephone regulation seriously would chill the growth and development of advanced services, to

⁴⁸ See, e.g., Internet Association, “Internet Association Calls For Enforceable Net Neutrality Rules On Day of Action,” IA News, Jul. 10, 2017, available at <https://internetassociation.org/internet-association-calls-enforceable-net-neutrality-rules-day-action/> (“Net Neutrality is fundamental to the continued success of the internet. The internet is a place where the best ideas, products, and services can compete on an even playing field. Without strong, enforceable net neutrality rules in place, innovation online will be stifled, consumers will have fewer and worse choices across the web, and the next generation of ground-breaking websites and apps will never come to be.”); (Twitter) Lauren Culbertson, “Join the Fight for #NetNeutrality,” Jul. 11, 2017 available at https://blog.twitter.com/official/en_us/topics/company/2017/Join-the-Fight-for-NetNeutrality.html (“The Open Internet rules put in place by the FCC in 2015 are based upon a solid legal framework that has been sustained by the courts. The FCC Net Neutrality rules effectively safeguard the open Internet as an engine of innovation and investment and as a global platform for free expression.”); Mark Zuckerberg of Facebook wrote in a Facebook post on July 12 that “Right now, the FCC has rules in place to make sure the internet continues to be an open platform for everyone. At Facebook, we strongly support those rules.” (available at <https://m.facebook.com/zuck/posts/10103878724831141>)

Further, during the day of action on July 12, both Amazon and Google directed people to the Internet Association’s site (Google limited this to those who had signed up for public policy updates).

the detriment of our economic and educational well-being.”⁴⁹ That judgment was correct and remains correct – and the Nation should not simply declare that we have reached an adequate level of development of advanced services now, not least because of the growth of the “app economy,” edge providers, and others who have benefited directly from the investments made by others in developing and deploying broadband networks. Of the myriad ways in which classification of broadband as an information service heightens innovation, we will highlight only two.

A. BROADBAND NETWORKS DRIVE INNOVATION

Indeed, this would be a particularly poor time to declare that the nation should somehow be satisfied with reduced rates of deployment of advanced services, as wireless network operators are actively (and at great expense) preparing for the shift to new high-speed 5G wireless broadband network technology and services with ultra-high data rates and reliability.⁵⁰

While earlier network shifts have been transformational in delivering faster speeds (which in turn enable consumers to do more and access more information through broadband), 5G will also be transformational in *how* the network functions. This is particularly true for the increasingly rapid adoption of devices connected to networks through the Internet of Things.⁵¹ According to recently agreed International Telecommunications Union specifications, 5G networks will be capable of ultra-low 1ms latency and able to support 1 million connected

⁴⁹ Letter from Senators John Ashcroft, Wendell Ford, John Kerry, Spencer Abraham, and Ron Wyden to the Honorable William E. Kennard, Chairman, FCC, at 1 (Mar. 23, 1998), *available at* <http://bit.ly/2qAlmqL>, quoted in NPRM, Statement of Chairman Ajit Pai.

⁵⁰ <https://www.fcc.gov/5G>.

⁵¹ One important example is telematics for connected cars, a major aspect of Internet of Things deployment. “Wells Fargo Senior Analyst Jennifer Fritzsche noted penetration in the U.S. telematics market is still under 20 percent.” Diana Goovaerts, “Wells Fargo: Telematics Penetration Under 20%, Leaving Plenty of Room for AT&T, Verizon to Grow,” *Wireless Week*, Mar. 29, 2017 *available at* <https://www.wirelessweek.com/news/2017/03/wells-fargo-telematics-penetration-under-20-leaving-plenty-room-t-verizon-grow>.

devices per square kilometer, as well as at least 20Gbps downlink speeds and 10Gbps uplink.⁵² Not only does the Internet of Things – which transmits *information* from connected devices – provide further evidence that broadband is an information service, but it follows naturally that this type of innovation will require extremely high levels of private investment.⁵³ As noted above, the reclassification of broadband to its traditional status as an information service will encourage higher levels of private investment.

B. BROADBAND SPEEDS DRIVE INNOVATION

As our survey demonstrates, at the top of the features that customers value most from ISPs is speed of access to the Internet. It is useful, therefore, to analyze the effect of the *Title II Order* on broadband speeds.

Data show that the rate of improvement in broadband speeds slowed when the Commission adopted the Title II classification. Using Akamai’s peak connection speeds from Akamai’s State of the Internet report, Richard Bennett shows⁵⁴ that the best two years in improvement in speeds were 2012 and 2013, when the Commission’s 2010 Open Internet Order was under court review. The two years immediately following each of the Commission’s orders, 2011 (the relevant year as the *Open Internet Order* was adopted in December 2010) and 2015, saw the steepest declines. Speeds rose in subsequent years once it became clear that the Genachowski *Open Internet Order* did not constitute a drag on innovation, unlike the FCC’s title

⁵² Sebastian Anthony, 5G Specs Announces: 20Gbps download, 1ms latency, 1M devices per square km, ArsTechnica, Feb. 24, 2017, available at <https://arstechnica.com/information-technology/2017/02/5g-imt-2020-specs/>.

⁵³ “Cisco VNI, in its February 2016 mobile forecast highlights, indicated it expects U.S. mobile internet-protocol traffic to more than quadruple in the next five years. Such growth will require a full transition from fourth generation to fifth generation wireless technology, with an enormous increase in the number of cell sites and in fiber backhaul from those cell sites.” Kovacs, *op. cit.*, n. 40.

⁵⁴ Richard Bennett, “Open Internet Orders Degrade Internet Improvement,” High Tech Forum, June 19, 2017, available at <http://hightechforum.org/open-internet-orders-degrade-internet-improvement/>

II reclassification, which caused “a drag on the rate of broadband improvement in the US.” Reversing the *Title II Order* will, one may safely assume, have a positive effect on network speeds. At a time when only over one-fifth of connections meet the Commission’s current 25Mbps definition of “broadband,”⁵⁵ the need to improve Internet connection speeds for many Americans is a strong argument in favor of reclassification of broadband as an information service.

IV. CONCLUSION

The conclusions are clear and justify the Commission’s views expressed in the NPRM. Reclassification of broadband under Title II has hurt consumers. The *Title II Order* has hurt investment. It has hurt innovation. Those reasons alone would be enough to justify reclassification of broadband as an information service, reversing (but not erasing) the misguided policy experiment of the last two years. Even more fundamentally, however, the Commission is correct in its assumption that consumers use the broadband Internet to access information. By the plain language of the statute, justified by consumer experience, the broadband Internet fits squarely within the definition of an information service. We urge the Commission to act promptly, restoring the correct legal understanding of the broadband Internet, reviving the bipartisan common-sense agreement under which the Internet grew and flourished, and opening the way to the next generations of investment and innovation. Beyond this, and with no disrespect to the Commission’s important work in this proceeding, we reiterate our call for Congress to pass bipartisan legislation to ensure permanently an open Internet that protects consumers, innovation, and investment in the Nation’s high-speed broadband networks.

⁵⁵ Wendy Davis, “U.S. Web Connections Pick Up Speed, But Most Are Slower Than 'Broadband'”, MediaPost, June 2, 2017, available at <https://www.mediapost.com/publications/article/302243/us-web-connections-pick-up-speed-but-most-are-s.html>

APPENDIX 1



Internet Behaviors and Attitudes Project

Commissioned by the Internet Innovation Alliance

August 30, 2017





IIA |Internet Behaviors and Attitudes Project

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I-PROJECT BACKGROUND AND METHODOLOGY OVERVIEW

Introduction and Project Objectives

CivicScience was enlisted by the Internet Innovation Alliance (IIA) in June of 2017 to conduct an objective, large-scale study of U.S. consumers and their online behaviors, means of Internet and email access, and Internet service expectations. CivicScience designed a questionnaire and sampling approach designed to achieve a high-confidence, representative view of the online U.S. adult population, with sufficient sample sizes to ensure statistically-significant cross-tabulation by key demographic, geographic, and psychographic respondent profile attributes. Data contained in this report reflect consumer responses for the period of June 25 through July 10, 2017.

Summary Findings

Americans rely on the Internet today for a broad number and type of activities, services, and overall information access. Of the fourteen general activity areas analyzed in this study, all but two are regularly or occasionally engaged in by 20% or more of the online U.S. population. Half are engaged in by 40% of the population or more. While there is some notable variability by demographic and geographic subgroup, namely age, race, and residential area, the incidence rate of these activities is consistent within a few percentage points across most groups.

Similarly, in our analysis of means of Internet access, email services, and Internet service expectations, we see relatively consistent patterns of usage and sentiment across the full U.S. population and the subpopulations studied. As expected, older, minority, and rural respondents exhibit differences from other communities in terms of how they access the Internet and the services they use. Still, each of these groups uses an array of Internet services through high-speed access either via their phones, tablets, or desktop/laptop devices. Finally, it is evident that American web users – across subgroups - have growing expectations of Internet Service Providers, placing a premium on reliability and speed.

About CivicScience

CivicScience is a polling and market research company, founded in 2007 and based in Pittsburgh, Pennsylvania. The company combines a proven web-based survey technique to achieve large, representative samples of the U.S. population, with a proprietary database technology to perform sophisticated computations and insight discovery within the company's large respondent dataset.



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CivicScience provides syndicated and custom data, software, and related services to an array of private sector and non-profit customers, across numerous industries and fields of science. CivicScience is expressly non-partisan and otherwise unaffiliated with any organizations or political entities which would influence research design, analysis, or recommendations.

About the Methodology

CivicScience administers a daily syndicated and custom ‘omnibus’ tracking survey, delivered to respondents in small increments over a large and diverse network of 1st-party and 3rd-party web and mobile applications. Individual sessions are brief, convenient, and engaging for the respondents – as compared to traditional, long-form telephone and online panel surveys. As a result, CivicScience overcomes declining response rates, which have plagued traditional survey methodologies in recent years, particularly among notoriously-hard-to-reach subpopulations like Millennials and minorities.

CivicScience respondents participate voluntarily, in order to see results and/or to voice their opinion, with no financial or other extrinsic reward. This voluntary, non-compensated participation significantly reduces known respondent biases associated with reward-based panels or paid survey modes.

Although respondents only answer a small number of randomized questions in a given session, CivicScience attaches subsequent responses to a unique, anonymous digital identifier to track respondents longitudinally, build respondent profiles, and enable cross-tabulation. All respondent attributes, including demographics, are directly reported via survey responses, with the exception of geo-location, which is ascertained via Internet Protocol (IP) Address look-up.

(A more detailed explanation of CivicScience’s methodology, including links to related white papers, independent assessment, and scientific references is available by emailing info@internetinnovation.org).

About This Study

To achieve the project objectives, CivicScience designed a five-question (*) survey delivered in one-question increments to a random quota-based sample of a minimum of 10,000 online U.S. adult respondents aged 18 and older. Quotas were established to build a respondent population matched precisely to the full U.S. population based on 2010 U.S. Census statistics for age, gender, and U.S. region. For the key demographic subpopulations (**/**) analyzed in



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this report, CivicScience performed basic and minimal reweighting to ensure precise alignment with Census norms. All questions and samples produced a margin of error of less than +/- 1%.

Note 1: Internet Activities Question*

The first question in this report focuses on various activities Americans perform while online. Given that potential web activities are virtually limitless, we narrowed the answer options to a diverse and encompassing list of common activities; however, they are by no means fully exhaustive. Even with this narrower selection, we were left with 14 possible choices. In our experience, questions with an unwieldy number of answer options (8 or more) yield lower response (or higher drop-out) rates, potentially creating latent biases in the remaining sample. To guard against this risk, we opted to break the question into two separate check-box questions, each with 7 possible options.

*Note 2**: Cross-Tabulation Sample Sizes*

Due to the nature of the CivicScience collection methodology, not all attributes are known about every respondent in our sample at any given time. For example, some respondents may have encountered our Internet Activities question prior to having answered profile questions about their residential area. For the purposes of this study, cross-tabulation tables only included respondents who had answered those key demographic questions AND the project research questions, within the study timeframe. As such, cross-tab sample sizes for the Residential Area question is smaller than our top-line samples, but still statistically-significant in scale and representativeness.

*Note 3***: Cross-Tabulations Analyzed*

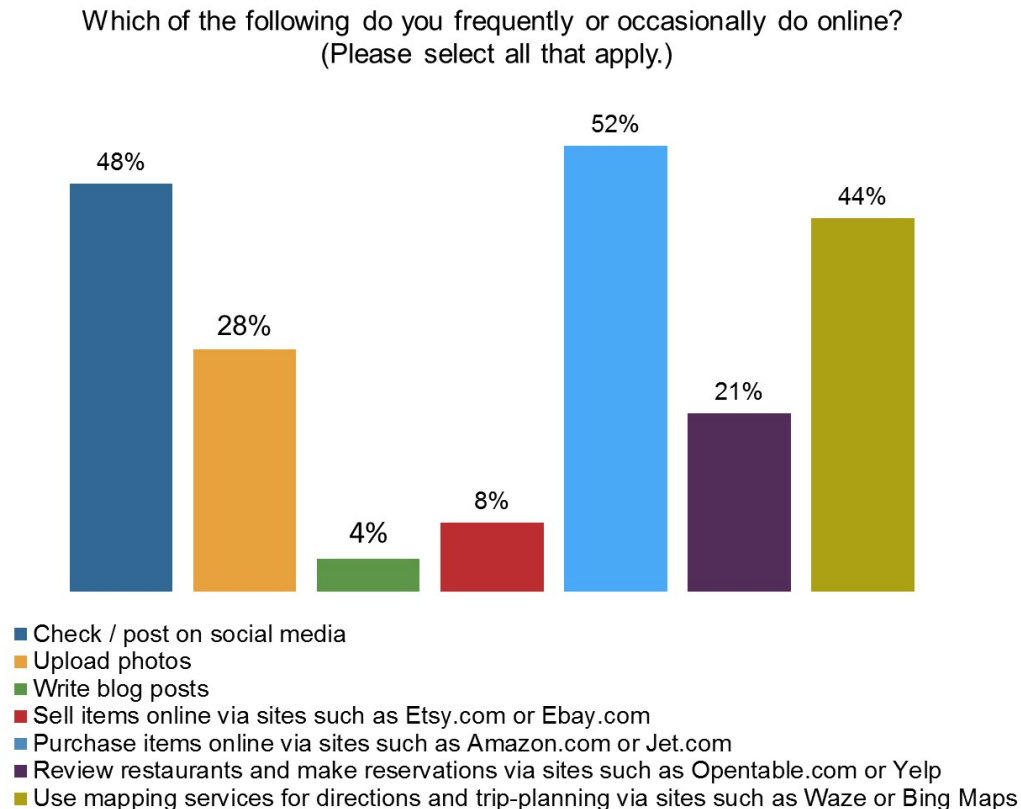
CivicScience maintains extensive demographic and psychographic profiles of the respondents who have answered our survey questions over time. For the purposes of this report, we focused on subpopulations where variability in Internet usage, means of access, and expectations were notable – namely respondent Age, Race, and Residential Area. We do not discuss Gender, for instance, where we found little relevant variability; however, those data are available upon request.



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II- TOPLINE RESULTS AND KEY DEMOGRAPHIC CROSS-TABS

Question 1 (Internet Activities 1) – Topline Results



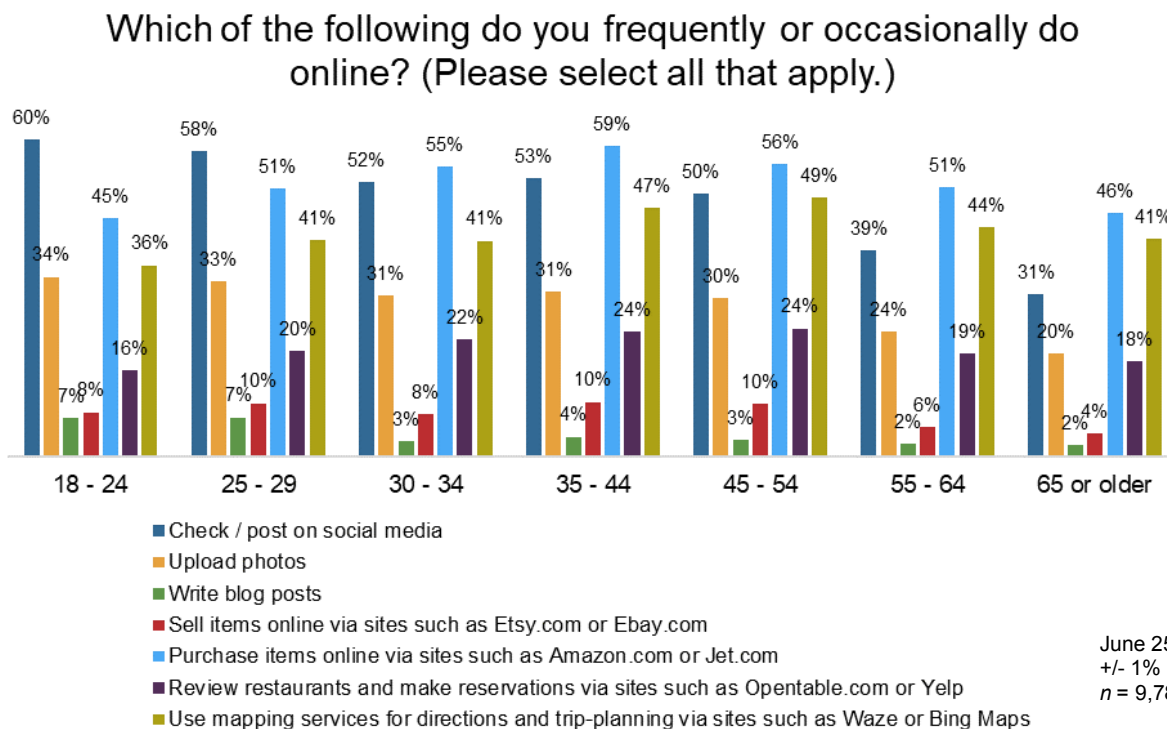
Question 1 (Internet Activities 1) – Topline Results Summary

Among this subset of activities studied, five are performed “regularly or occasionally” by at least 21% of respondents. Shopping online, using social media, and relying on mapping or navigation services rank the highest in overall usage. Writing blog posts and selling items (as opposed to buying) online remain relatively small in incidence rate; though at 4% to 8% of the online U.S. population, respectively, represent as many as 8 to 16 million Americans.



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Question 1 (Internet Activities 1) – Age Cross-Tab



Question 1 (Internet Activities 1) – Age Cross-Tab Summary

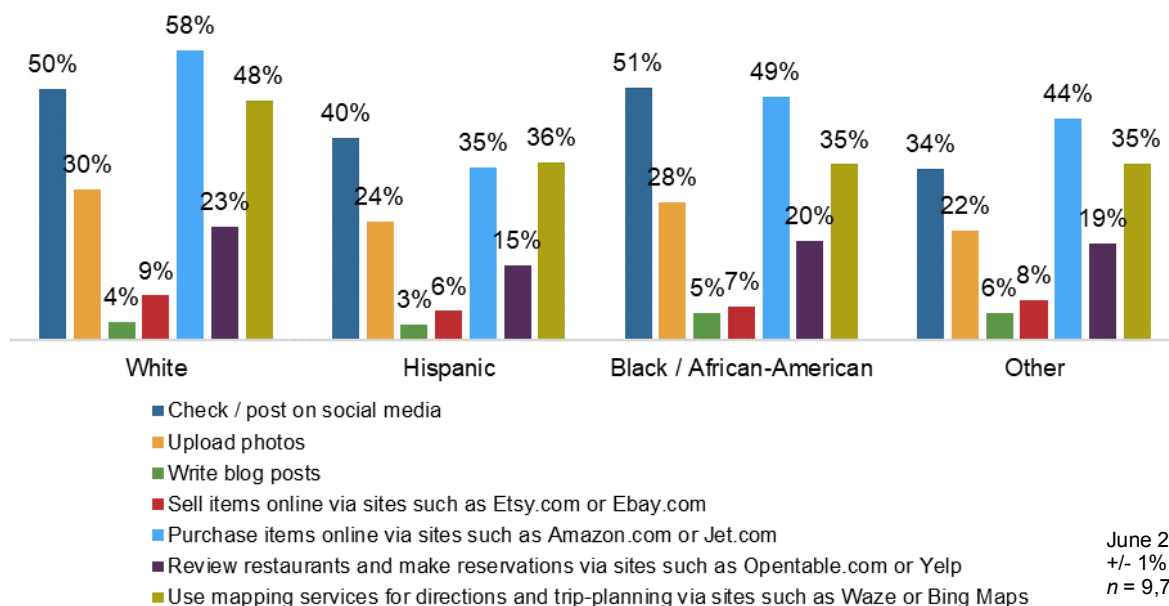
The age-related skews in these results follow an intuitive pattern, with three out of seven activities seeing decreasing frequency among increasingly older age cohorts. Social media usage, uploading photos, and blogging all peak in usage among the youngest respondents and decline steadily among older groups. For the other four options, we notice a rough ‘bell curve’ with online shopping, online selling, restaurant reviews and reservations, and online mapping services. Each of these reaches their highest incidence rates among older Millennial and GenX respondents, while less common among the youngest and oldest cohorts.



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Question 1 (Internet Activities 1) – Race Cross-Tab Results

Which of the following do you frequently or occasionally do online? (Please select all that apply.)



Question 1 (Internet Activities 1) – Race Cross-Tab Summary

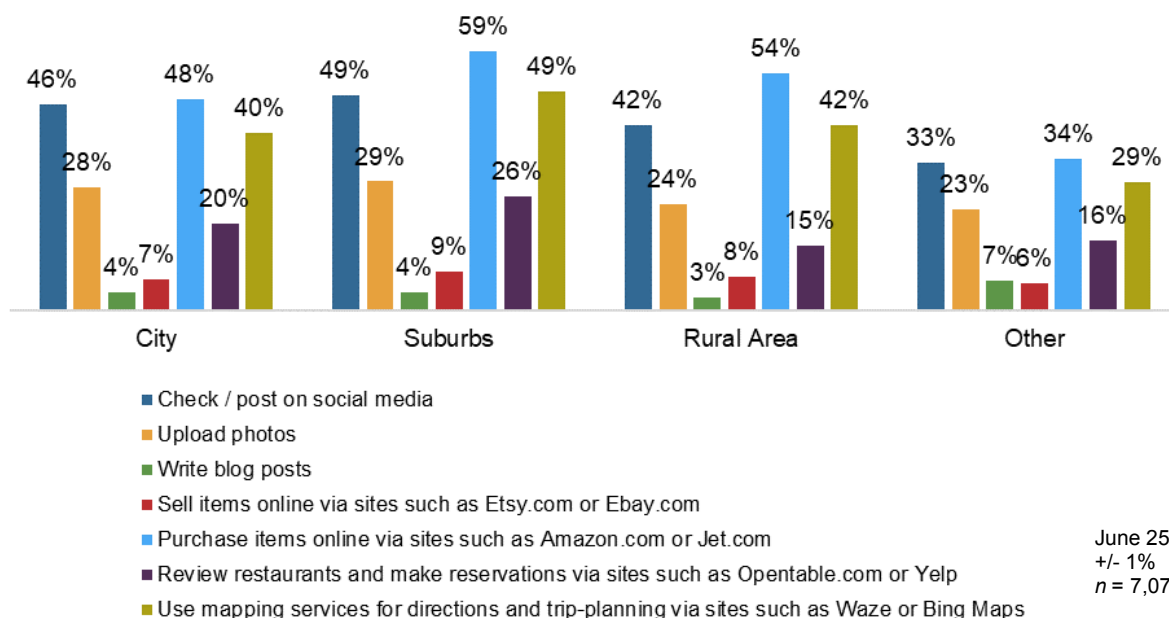
Variability by race among these activities is minimal, primarily reflecting higher overall web usage among Whites and a current, temporal downturn in web usage among Hispanics, concurrent with depressed Hispanic consumer behavior resulting from the U.S. socio-political landscape. The lower usage rates of mapping services among Hispanics and Blacks is closely correlated to a similar finding among city/urban dwellers evidenced in the next section, as those minority groups are more likely to live in urban areas where distance driving is less common. Social media activity is highest among Blacks, while online commerce, both buying and selling, over-indexes most among whites.



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Question 1 (Internet Activities 1) – Residential Area Cross-Tab Results

Which of the following do you frequently or occasionally do online? (Please select all that apply.)



Question 1 (Internet Activities 1) – Residential Area Cross-Tab Summary

Variances in these online activities among respondents in different types of residential areas are the subtlest of our three, highlighted cross-tabs. Social media usage, uploading photos, online selling, mapping services, and blogging vary by only a couple percentage points among our three main groups (City, Suburbs, and Rural). Online shopping is lowest among city residents where, presumably, physical stores are more readily available. Restaurant review and reservation services are lowest in usage among rural respondents, naturally, where the volume of restaurants and restaurant traffic is likewise lowest.

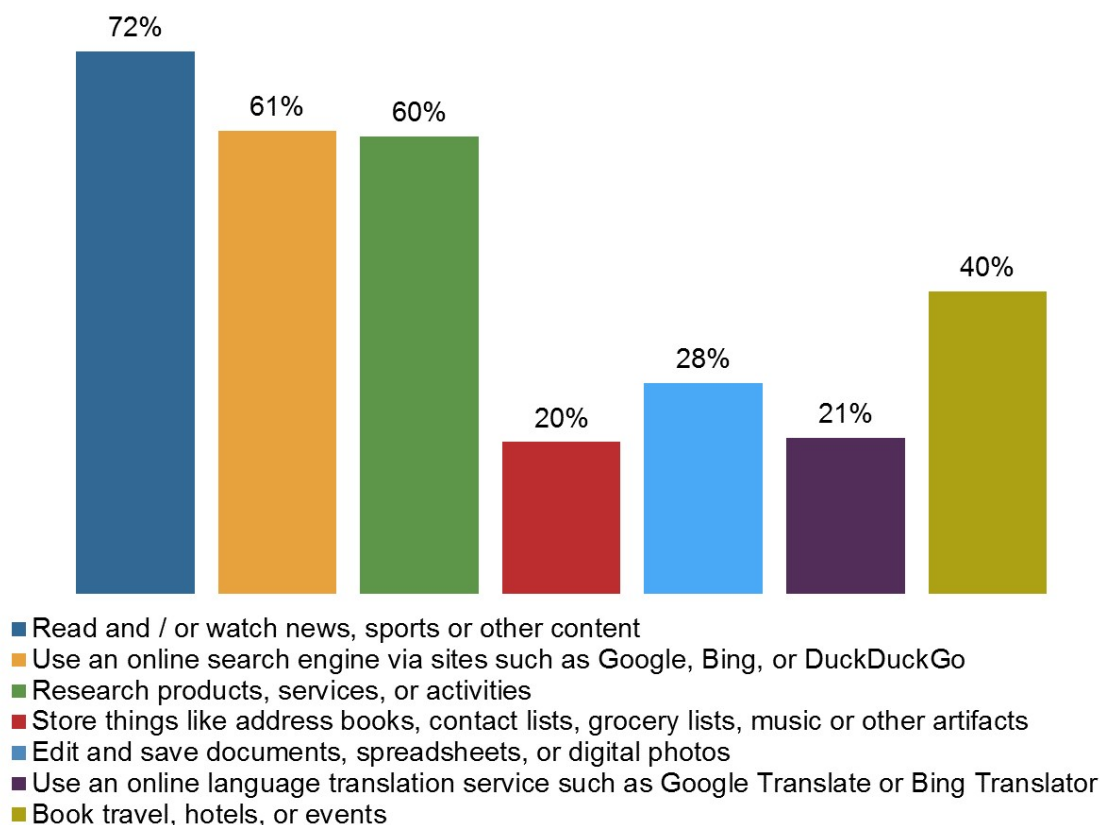
(Note: When analyzing Residential Area, the “Other” group constitutes 3% of all respondents and includes people who live on military bases, college campuses, and other non-traditional areas. Given the small numbers this group represents, we give them minimal attention in our analysis).



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Question 2 (Internet Activities 2) – Topline Results

Which of the following do you frequently or occasionally do online?
(Please select all that apply.)



June 25 – July 10,
+/- 1%
n = 10,113

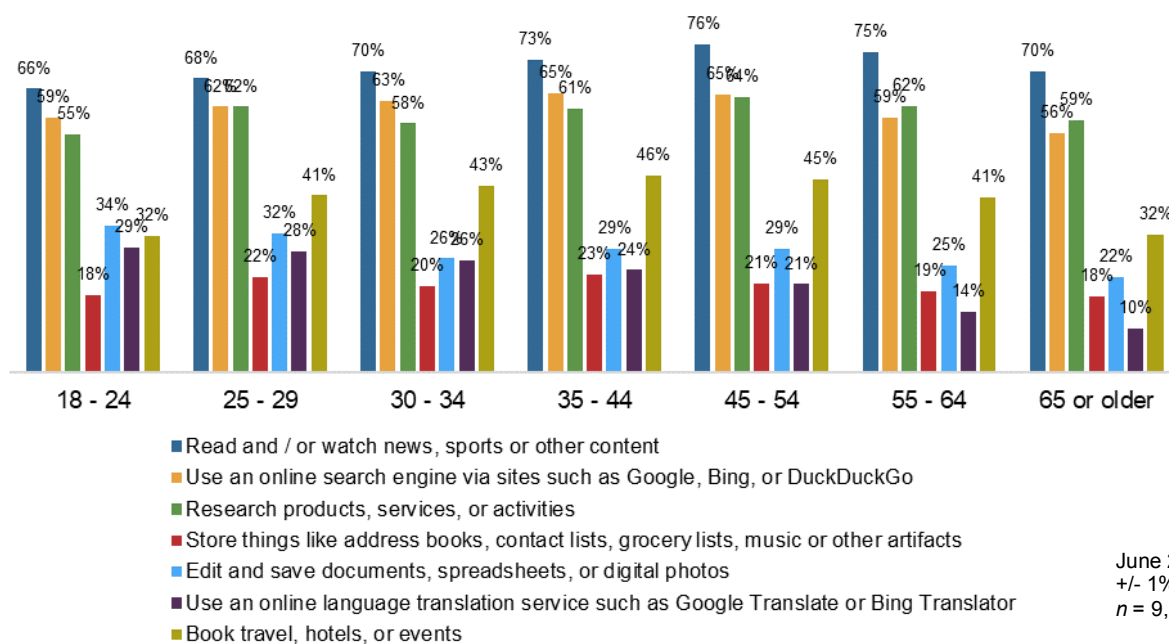
Question 2 (Internet Activities 2) – Topline Results Summary

Among this subset of activities studied, three are performed “regularly or occasionally” by at least 60% of respondents, while all are prevalent among 20% or more. Reading content is safely the most common activity between both Question 1 and 2, while web searching and research rank second and third respectively. Overall, at least 1 in 5 online adults engages in one or more of these activities on a regular or occasional basis.

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Question 2 (Internet Activities 2) – Age Cross-Tab Results

Which of the following do you frequently or occasionally do online? (Please select all that apply.)



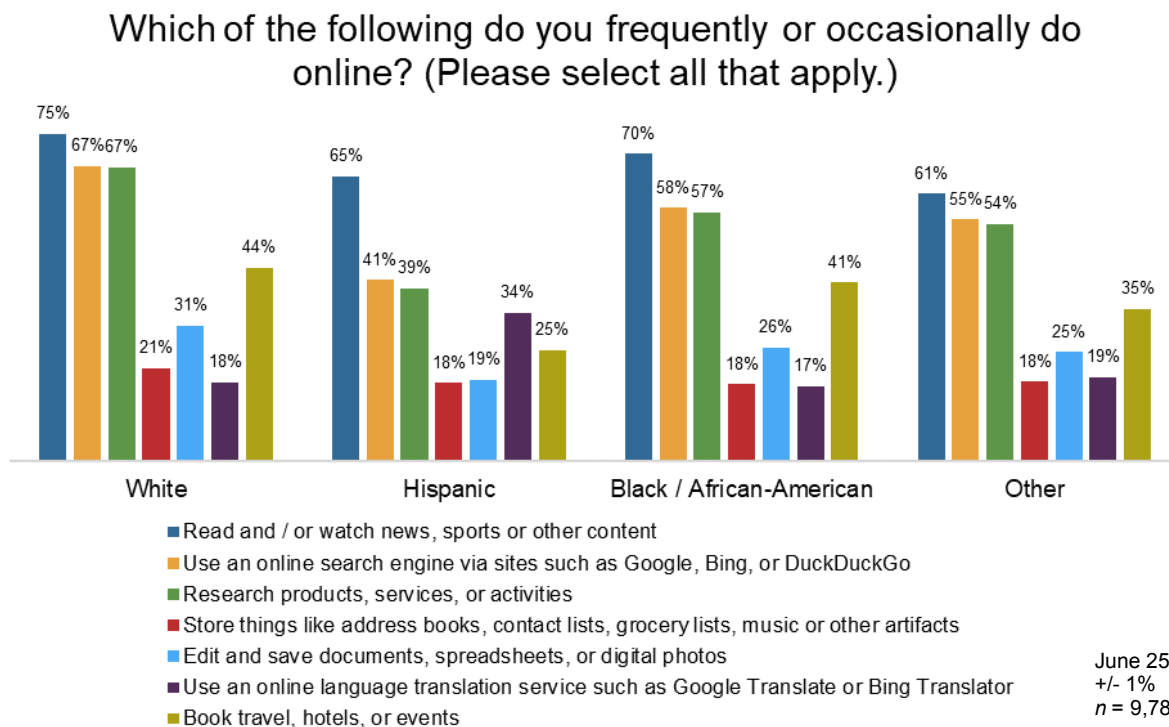
Question 2 (Internet Activities 2) – Age Cross-Tab Summary

Here we see a slightly different pattern from the age figures associated with our first selection of Internet activities. A subtle bell curve is evident for reading online content and booking travel, with those activities peaking among GenX respondents. Usage rates of editing/saving documents and other digital assets, as well as online language translation services, correlate inversely with age, peaking among our youngest respondents, and bottoming out among the oldest. Not seen in our first question, however, are activities like product research and list/artifact storage that vary by no more than 5 percentage points across all age groups.



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Question 2 (Internet Activities 2) – Race Cross-Tab Results



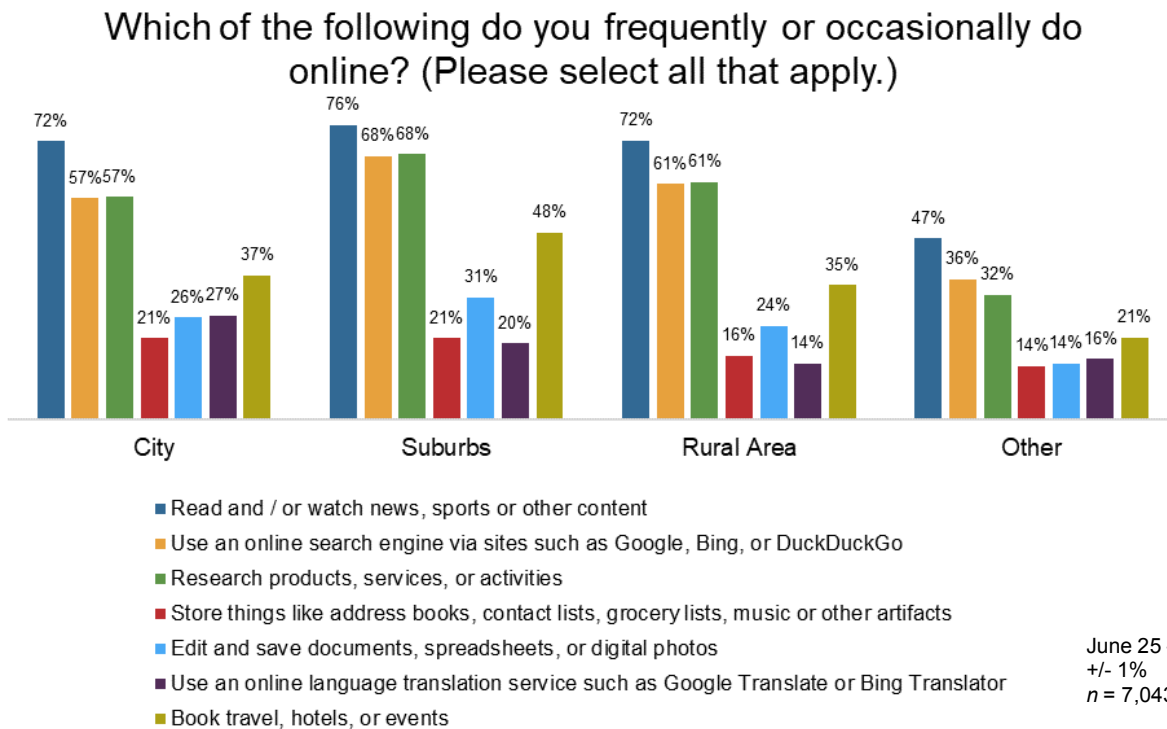
Question 2 (Internet Activities 2) – Race Cross-Tab Summary

Like with our age numbers, this list of activities shows only subtle variance among the different race groups. The most evident disparity is, again, with our Hispanic respondents, where we see overall lower usage for every activity but online translation services, which is an intuitive finding. Overall, Whites exhibit the highest rate of online usage in most categories, but only surpass Blacks by single-digit points in all categories but product research, where the gap is 10 points. Storing of lists/artifacts shows the most parity across all groups.



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Question 2 (Internet Activities 2) – Residential Area



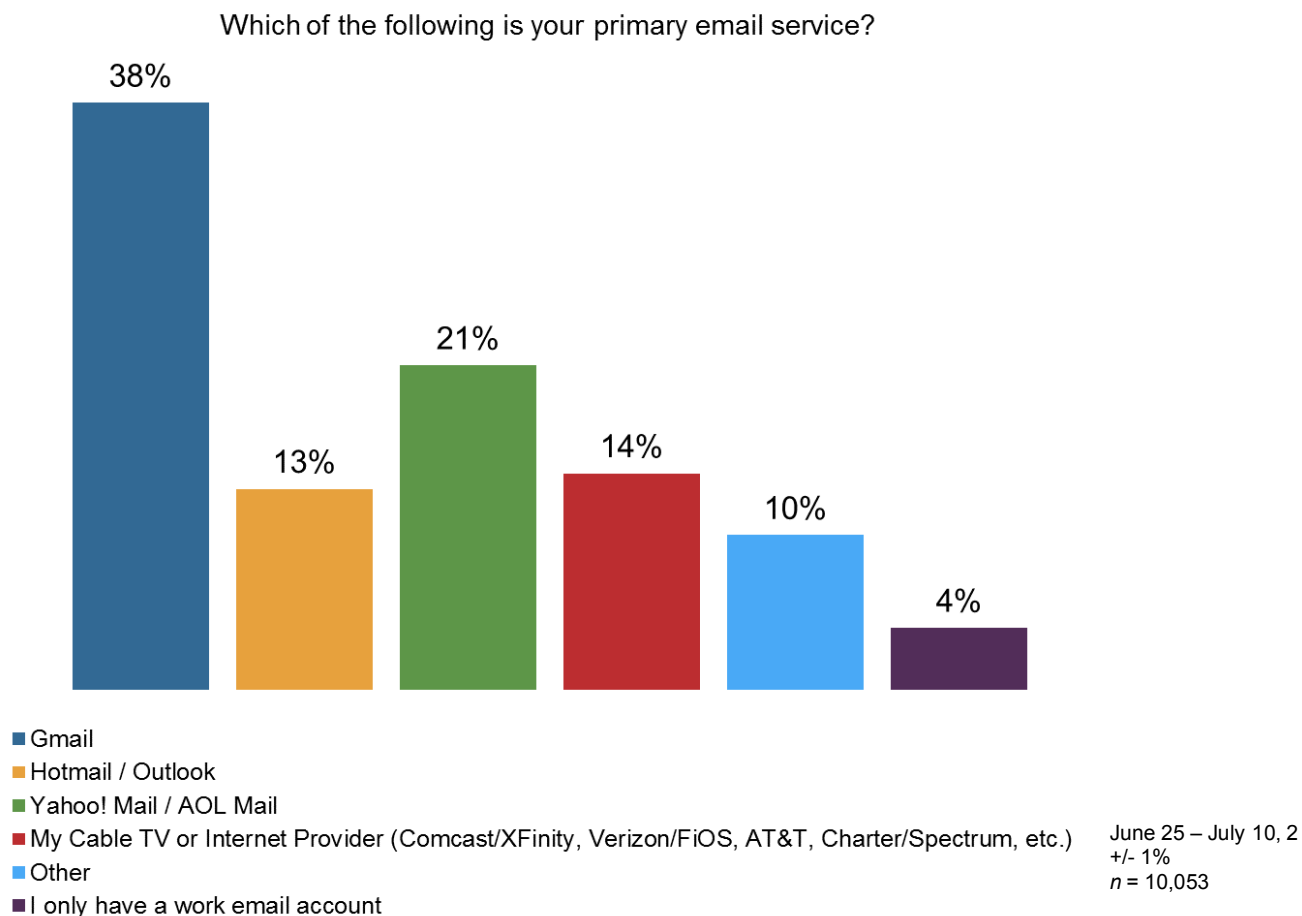
Question 2 (Internet Activities 2) – Residential Area Cross-Tab Summary

Here we see more subtle variances by subgroup, with suburb-dwellers demonstrating highest overall usage patterns for every activity but online translation services. Rural respondents are the least likely to use online travel services, translation, document/photo storage and editing, and list/artifact storage. City dwellers are the least likely of three main groups to use online search or product research services, though these activities are still popular among a clear majority of this urban subgroup.



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Question 3 (Primary Email Service) – Topline Results



Question 3 (Primary Email Service) – Topline Results Summary

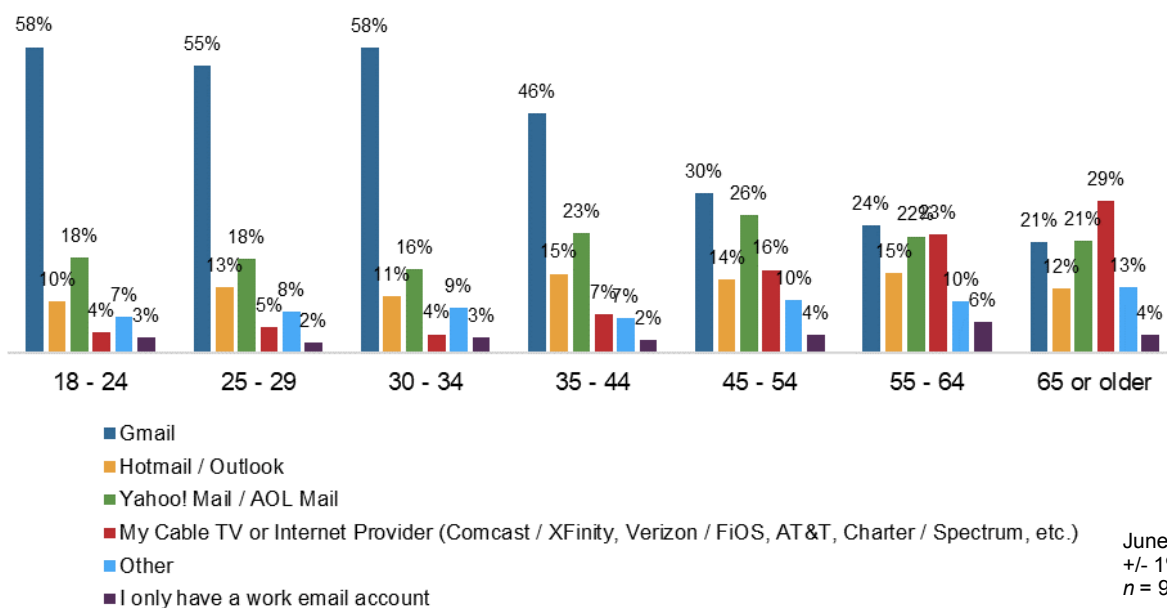
This result is fairly self-explanatory. Gmail is the clear leader in share among respondents, with AOL/Yahoo coming in a distant second. Cable TV and Internet Providers run neck-and-neck with Hotmail/Outlook, with 10% of respondents citing “Other.” Four percent of online adults only have an email account provided by their place of employment.



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Question 3 (Primary Email Service) – Age Cross-Tab Results

Which of the following is your primary email service?



Question 3 (Primary Email Service) – Age Cross-Tab Summary

Most evident in these results is the extent to which Gmail is the dominant provider among a majority of respondents under age 35, falling consistently among older groups. 65 and older Americans are the only group of all we studied, where Gmail is not the leading service.

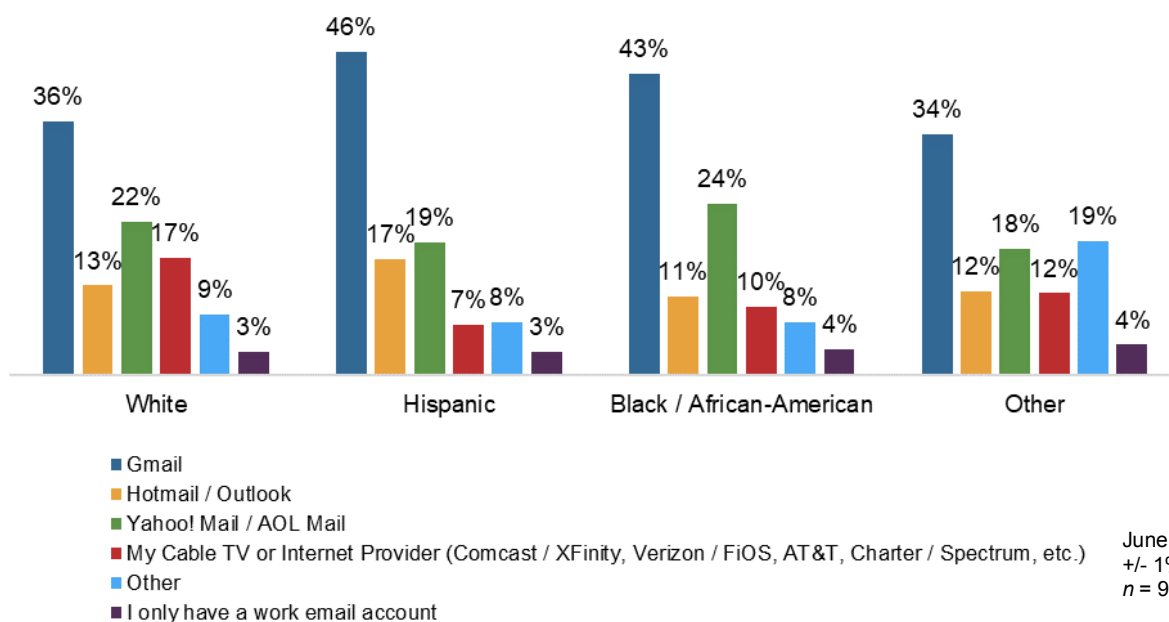
Cable/ISP-derived email services are most prominent among this oldest subgroup, declining steadily among increasingly younger respondents. Yahoo/AOL follow our slight bell curve, peaking among older GenXers. Hotmail/Outlook and “Other” show no clear pattern but also fall within a narrow percentage band across all groups.



IIA |Internet Behaviors and Attitudes Project

Question 3 (Primary Email Service) – Race Cross-Tab Results

Which of the following is your primary email service?



Question 3 (Primary Email Service) – Race Cross-Tab Summary

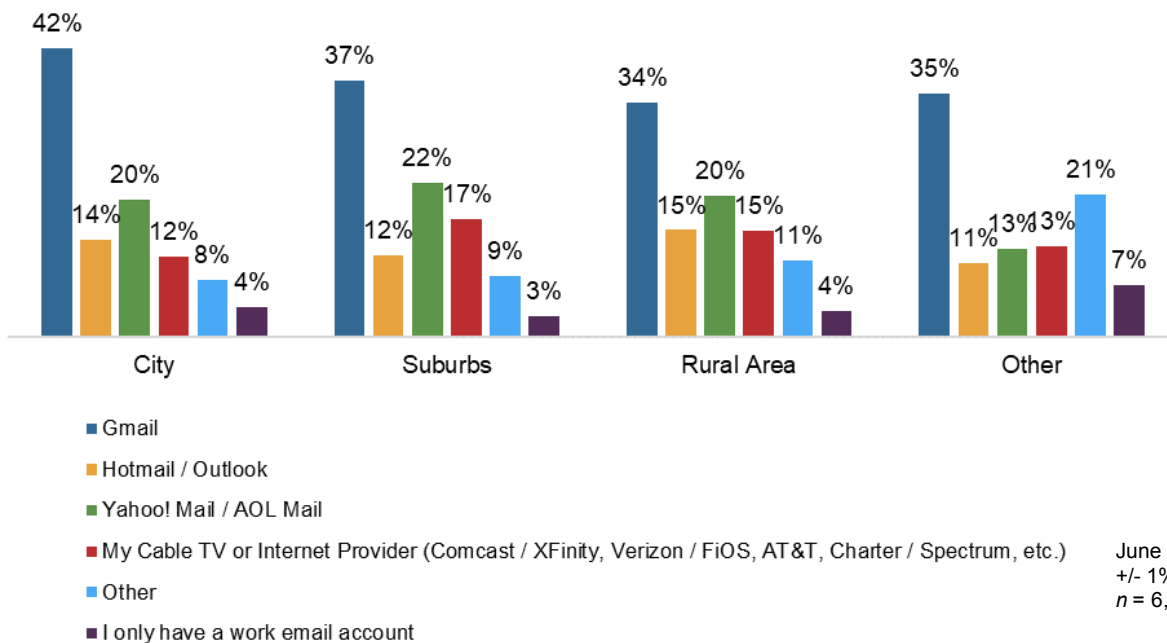
Gmail remains the clear leader among all race groups, peaking among Hispanics and Blacks. Yahoo/AOL see their highest penetration among Blacks; Hotmail/Outlook among Hispanics; and Cable/ISP among Whites. The rate of work-account-only is consistently small across all groups.



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Question 3 (Primary Email Service) – Residential Area Cross-Tab Results

Which of the following is your primary email service?



Question 3 (Primary Email Service) – Residential Area Cross-Tab Summary

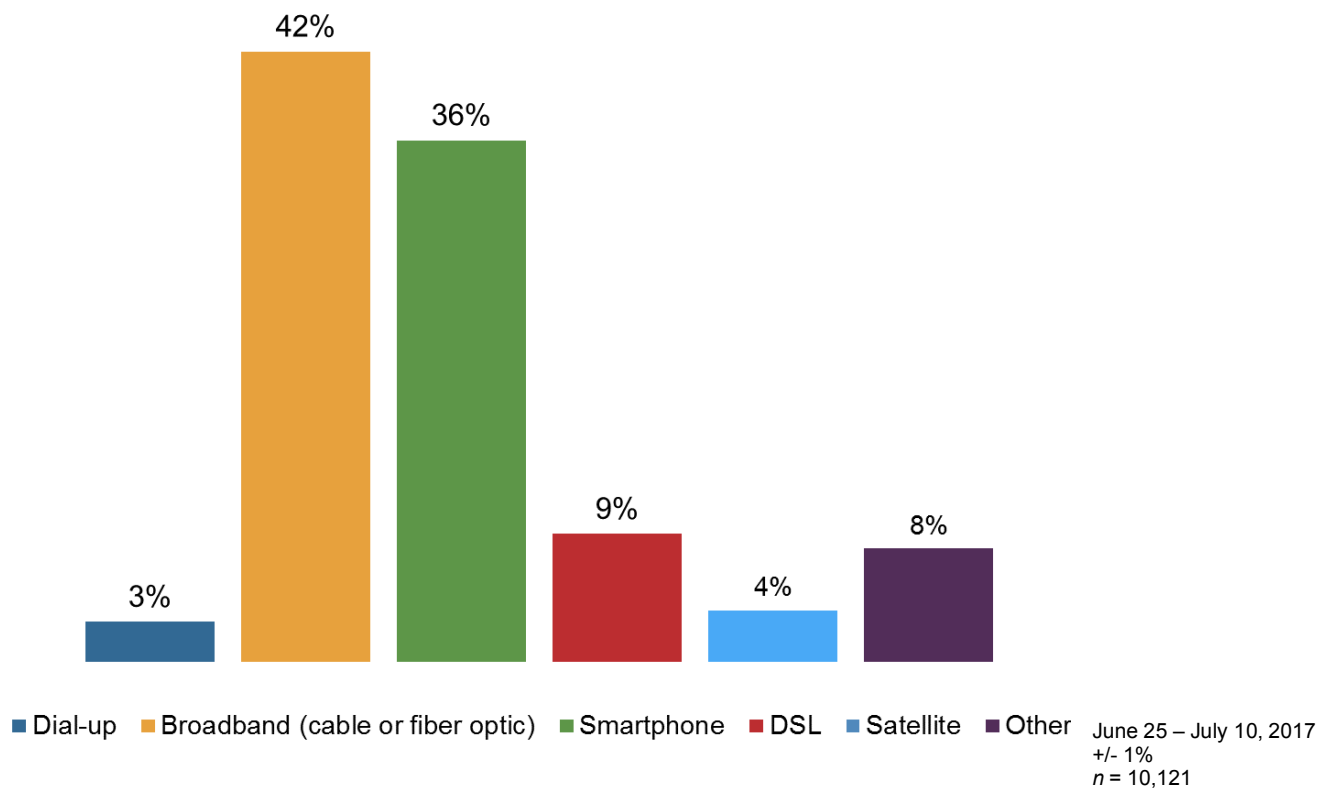
These numbers follow expected patterns based on our earlier race and age proxies. Gmail peaks in popularity among city residents – similar to the ratio we saw among Blacks and Hispanics. Cable/ISP services peak in suburban and rural areas, while Yahoo/AOL and Hotmail/Outlook show only minimal variance across the three main groups.



IIA | Internet Behaviors and Attitudes Project

Question 4 (Internet Access) – Topline Results

How do you access the Internet most often?



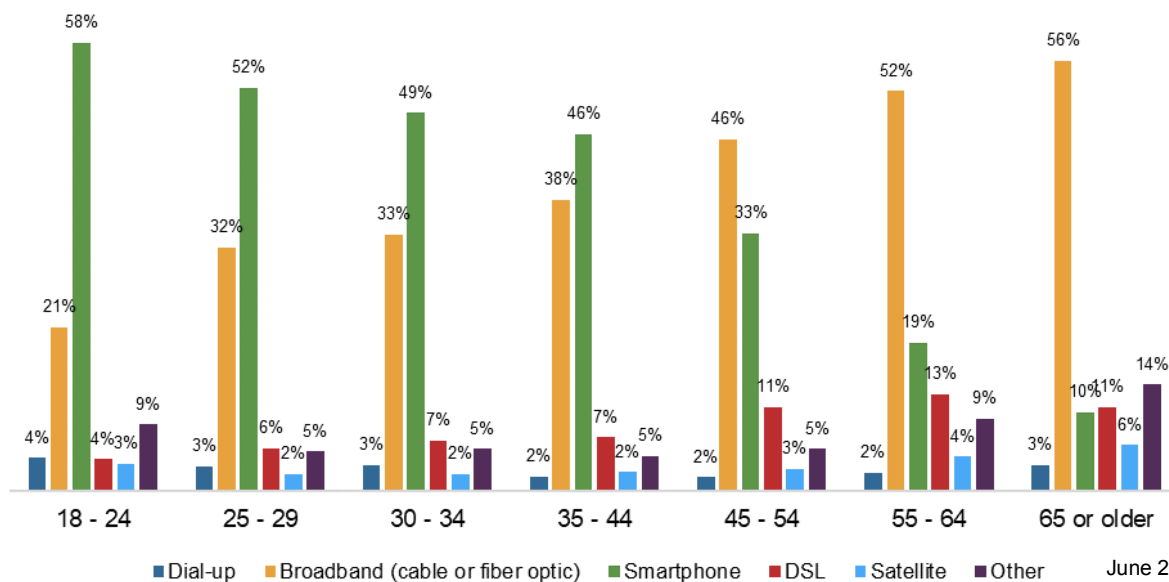
Question 4 (Internet Access) – Topline Results Summary

We crafted this question and answer options this way, anticipating that a large number of respondents – particularly older ones – may not know exactly how they access the web. We believe that this accounts for the majority of respondents who answered “Other.” Overall, we see that broadband, DSL, and satellite comprise 55% of all respondents. 36% of respondents access the web primarily by way of their smartphone, with many of those likely relying on wireless access via broadband, DSL, or satellite. Dial-up remains alive with just 3% of online Americans.

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Question 4 (Internet Access) – Age Cross-Tab Results

How do you access the Internet most often?



June 25 – July 10, 2017
+/- 1%
n = 9,711

Question 4 (Internet Access) – Age Cross-Tab Summary

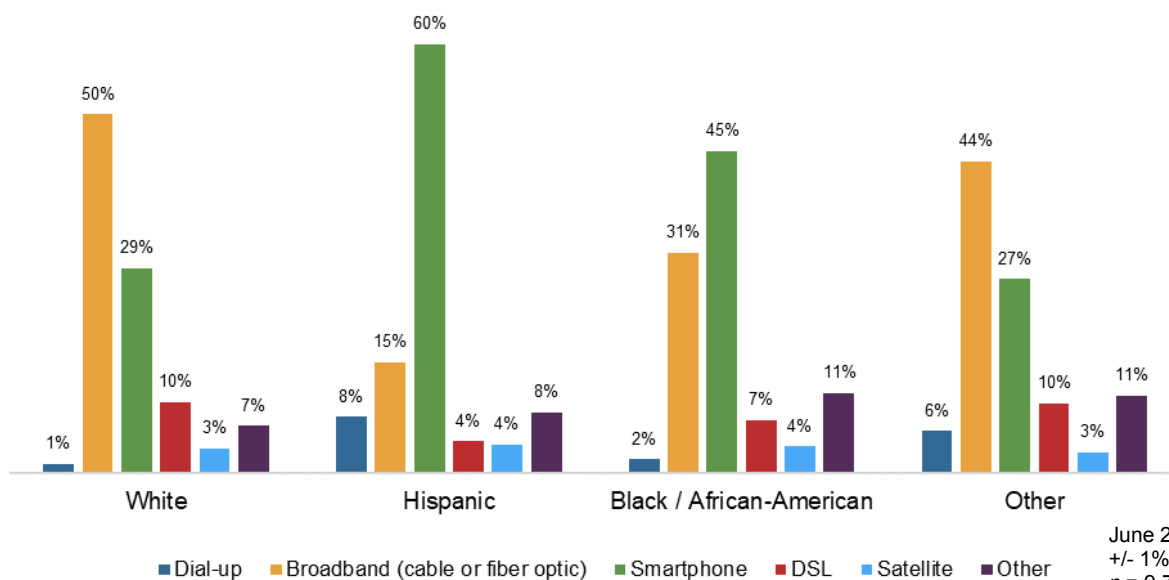
These results highlight two very clear trends: Smartphone reliance peaks among the youngest respondents, decreasing steadily among increasingly older age cohorts. In fact, smartphone reliance among 18 to 24-year-olds is over five times higher than that of respondents aged 65 and older. Conversely, broadband reliance is a virtual mirror image. DSL is most prevalent among older GenX and Baby Boomer respondents, while dial-up and satellite are distributed fairly evenly across all groups.



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Question 4 (Internet Access) – Race Cross-Tab Results

How do you access the Internet most often?



Question 4 (Internet Access) – Race Cross-Tab Summary

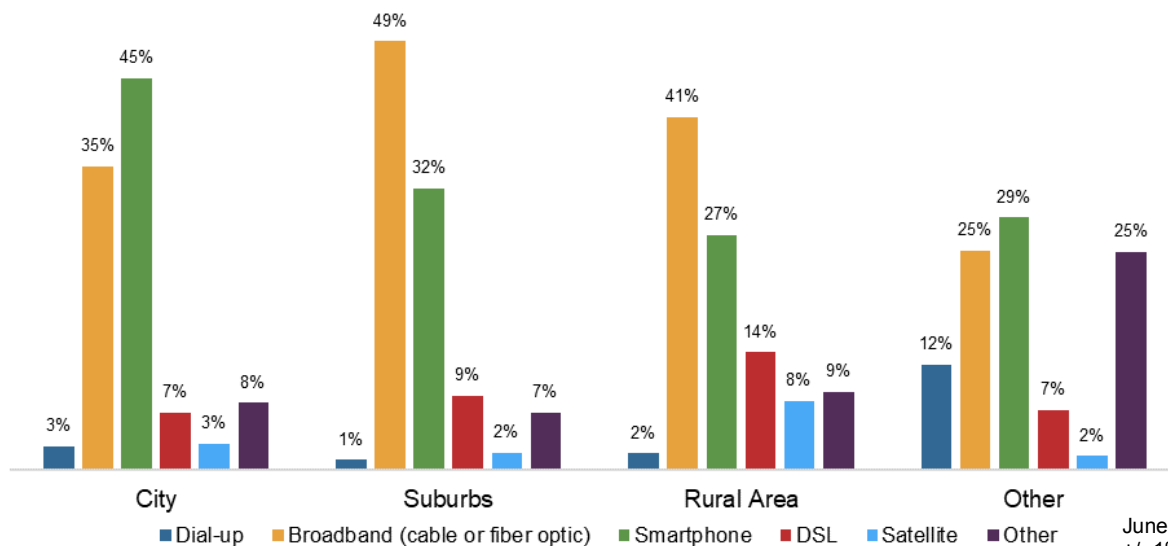
Hispanic and Black respondents, like the younger age cohorts in the earlier chart, rely on smartphones for web access at a significantly higher rate than other groups. The disparity between smartphone and broadband access among Hispanics is particularly pronounced. Dial-up also ranks highest among Hispanics but still at only 8% of the population.



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Question 4 (Internet Access) – Residential Area Cross-Tab Results

How do you access the Internet most often?



June 25 – July 10, 2017
+/- 1%
n = 6,873

Question 4 (Internet Access) – Residential Area Cross-Tab Summary

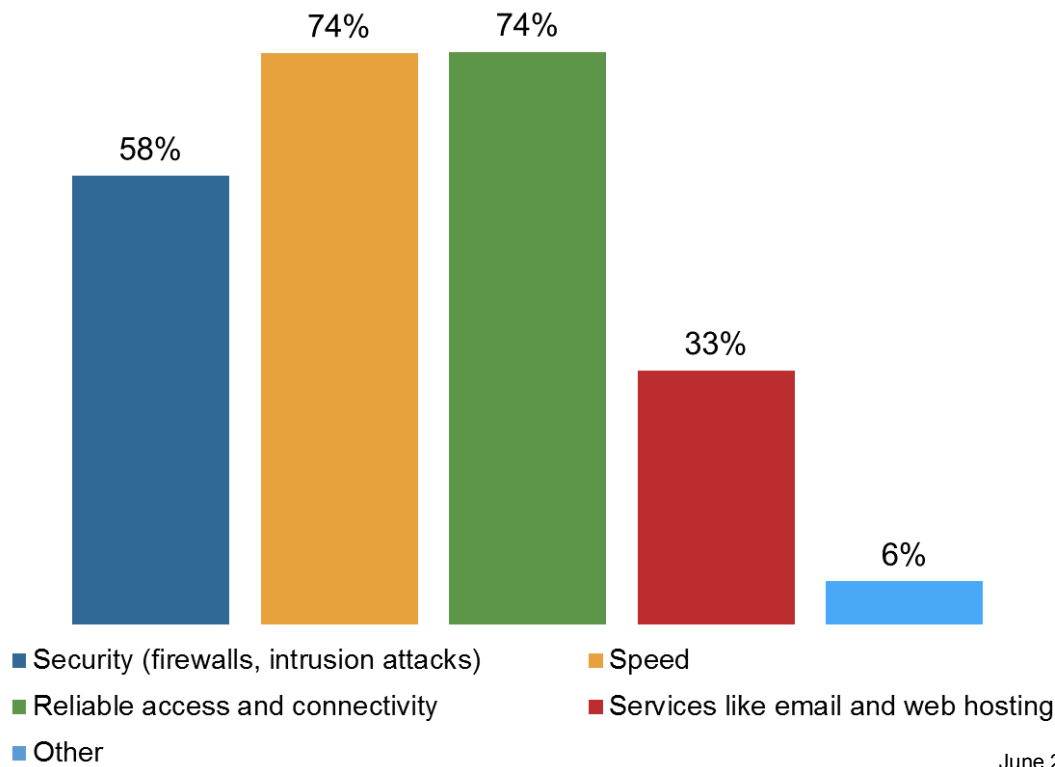
City dwellers and “Others” report higher usage of smartphones to access the Internet than other means, while broadband is dominant among suburban and rural dwellers. As expected, satellite and DSL are more common means of accessing the web among rural respondents.



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Question 5 (ISP Expectations) – Topline Results

Which of the following do you expect your internet provider to offer?
(Please select all that apply.)



June 25 – July 10, 2017
+/- 1%
n = 10,059

Question 5 (ISP Expectations) – Topline Results Summary

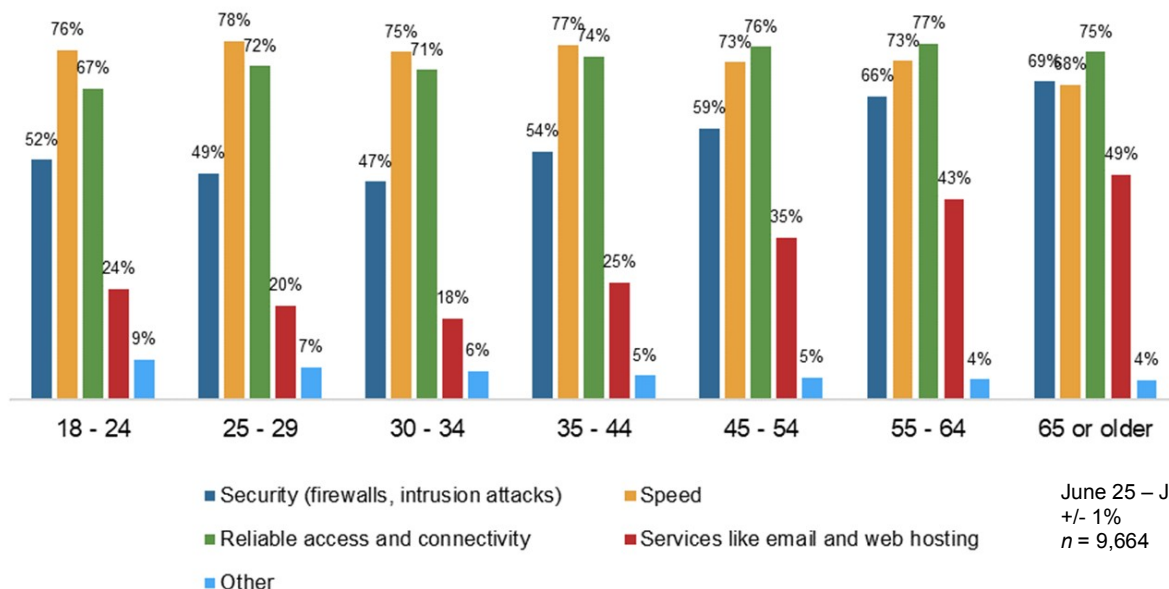
A large majority of consumers expect both speed and reliability from their Internet service provider (ISP), while over half expect their ISP to provide security and protection from intrusion attacks. One-third of consumers believe ISPs should provide email and web hosting services.



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Question 5 (ISP Expectations) – Age Cross-Tab Results

Which of the following do you expect your internet provider to offer?
(Please select all that apply.)



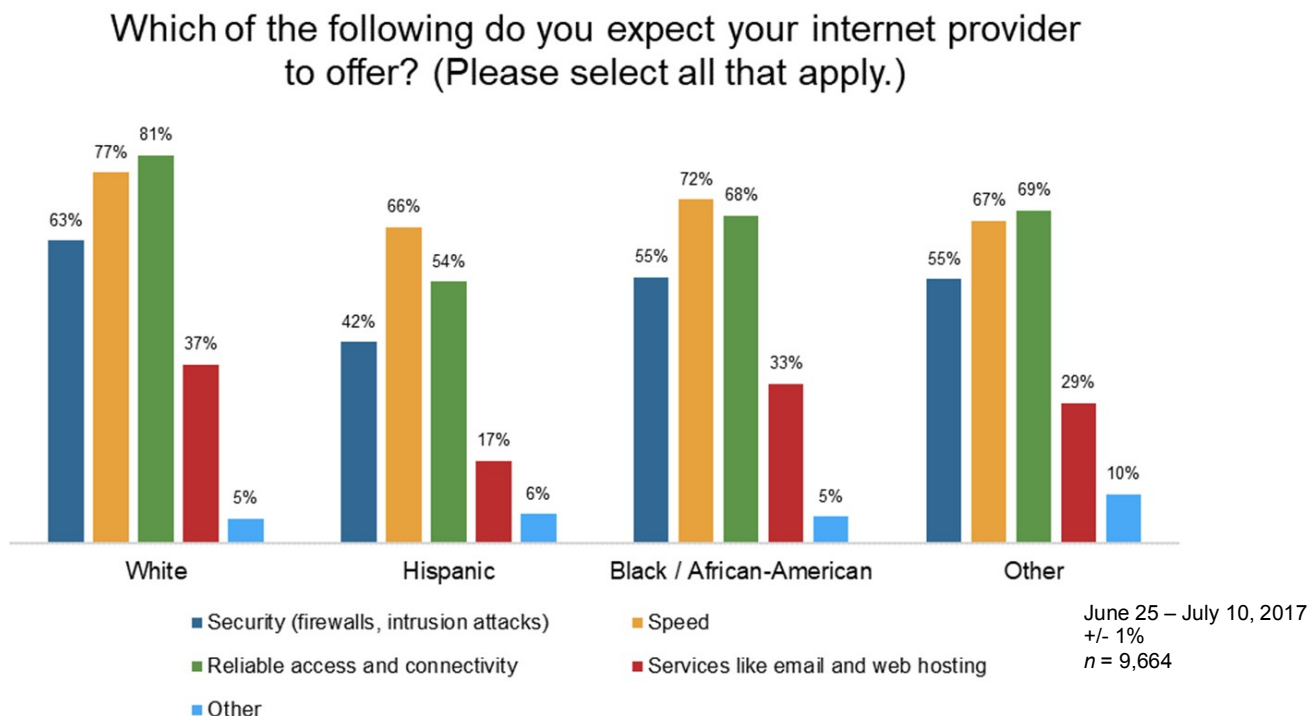
Question 5 (ISP Expectations) – Age Cross-Tab Summary

These numbers remain very consistent across age cohorts. Older age groups are more likely than the others to expect their ISP to provide email and web hosting services, as well as security. The youngest age group is the most likely to expect “Other” services from their ISP.



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Question 5 (ISP Expectations) – Race Cross-Tab Results



Question 5 (ISP Expectations) – Race Cross-Tab Summary

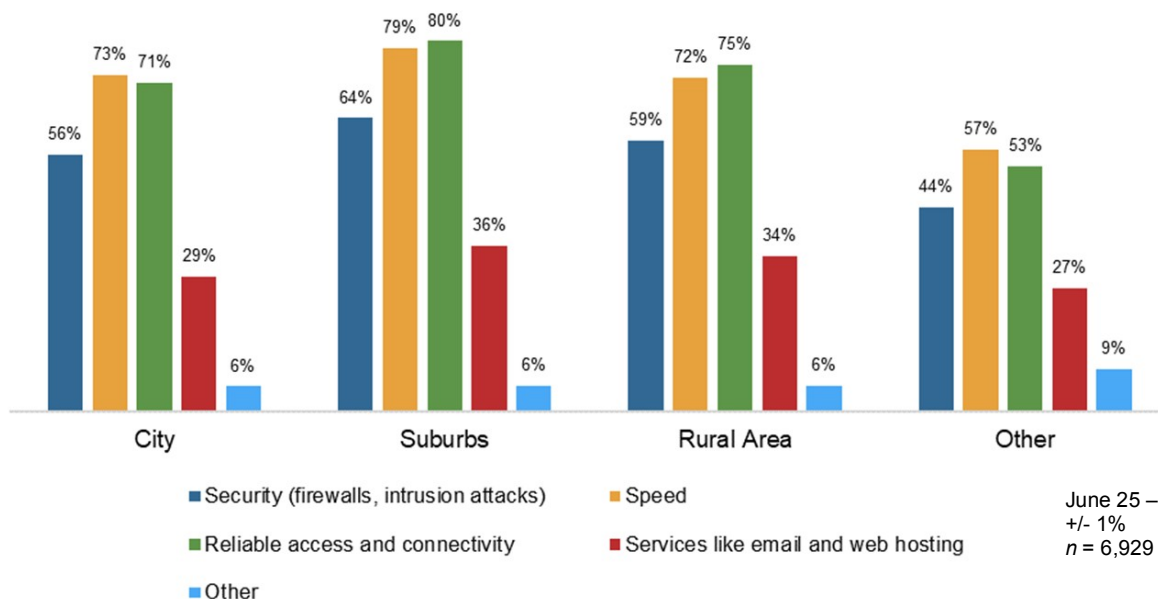
Again, these numbers are relatively consistent across groups. White respondents have the highest overall expectations of their ISP. Hispanics demonstrate the lowest expectations when it comes to security and other services like email and web hosting.



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Question 5 (ISP Expectations) – Residential Area Cross-Tab Results

Which of the following do you expect your internet provider to offer? (Please select all that apply.)



Question 5 (ISP Expectations) – Residential Area Cross-Tab Summary

Here we see that suburban respondents show the highest overall expectations for their ISP, with a very slight decline among rural and urban respondents. Urban respondents are the least likely to expect their ISP to provide email and web hosting services. The numbers are remarkably similar among all groups, otherwise.



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III-CONCLUSION

The data collected for this project represent a straight-forward and unsurprising view of Americans' online habits and attitudes. As one would expect, the Internet is broad in its reach and applications, while consumers have heightened their expectations of Internet services and service providers. Although behaviors and attitudes vary among consumers of different age, race, and residential area cohorts, they follow predictable patterns and, overall, demonstrate more commonalities than departures.

CONTACT: John Dick, CEO, CivicScience
jdick@civicscience.com
(P) 412-559-9032
6101 Penn Ave
Pittsburgh, PA 15206