

Smartphones and Broadband:

**Tech users see them as complements and very few would
give up their home broadband subscription in favor of
their smartphone**

**John B. Horrigan, PhD
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Summary of Findings

It was only seven years ago that the iPhone was introduced into the U.S. telecommunications market, setting off change in how and where people use the Internet. Since 2007, the smartphone has entered the lexicon of American consumers and many of us have become sophisticated navigators of today's market for information and communications technologies (ICTs). People connect with multiple devices, manage data caps through Wi-Fi (at home and in public places), and use home broadband access and mobile access to expand their digital horizons.

From the perspective of market dynamics, an issue for policymakers and marketers is whether new means of online access serve as substitutes for one another or complements. Do people give up one means of access when a new comes along, the same way pagers and pay phones faded away as cell phones became more ubiquitous and powerful? Or do more ways of communicating and accessing information mean people rely on multiple tools in different ways, the way that TV did not supplant radio?

This report examines the issue of substitutability through a survey of ICT users that asked a series of questions about how they use their smartphones and home broadband subscriptions. The survey finds that ICT users rely on their home broadband subscriptions for many key online applications, and use their smartphones for staying in touch with others. They are also acutely aware of how to manage data consumption in an environment where most are subject to data caps on their smartphone plans.

Tech users see broadband and smartphones as complementary ways to get online.

Very few respondents said they would give up their home broadband connection in favor of their smartphone alone, and most are very intentional in making choices about what connection type to use for different applications.

- An overwhelming majority – 92% – say it is very (63%) or somewhat (29%) unlikely that they would cancel their home broadband connection in favor using their smartphone only for online access.
- Those with smartphones and home broadband favor using their home high-speed subscriptions to look for information or shopping, while they prefer the smartphone to their home broadband subscription for getting in touch with family or friends. Few prefer watching video on their smartphones (as compared to a laptop or tablet computer). Specifically:
 - 89% agree very (63%) or somewhat (26%) strongly that their computer is their preferred means for looking for information about health care or for school work.
 - 83% agree very (56%) or somewhat (29%) strongly that they prefer to use their computer for shopping.
 - 78% agree very (43%) or somewhat (35%) strongly that the smartphone is their preferred way to get hold of a family or friend.
 - Just 29% agree very (11%) or somewhat (28%) strongly that the smartphone is the preferred device for watching online video.

Most smartphone users are subject to data caps and they rely on Wi-Fi – at home and in public places – to manage data caps. They also find their broadband speeds more satisfactory and in line with their expectations than what they experience on their wireless devices.

- More than half of smartphone users (55%) have data caps on their wireless plans and, of those respondents, most (52%) either avoid doing certain activities or wait until they are in range of a Wi-Fi signal to engage in them (such as watching video).
 - Some 49% wait until they can use a Wi-Fi connection to do certain activities on their smartphone.
 - 42% occasionally do not engage in data-intensive activities, such as watching video, out of concern for hitting their monthly data cap.
- Respondents are more likely to say that speeds on their home broadband connections meet their expectations when asked to compare to their wireless smartphone connection speeds.
 - By a 39% to 28% margin, those with smartphones and home high-speed service strongly agree that their home broadband connection speeds is satisfactory compared with their smartphone speeds.
 - By a 35% to 25% margin, those with smartphones and home high-speed services strongly agree that their home broadband speed meets their expectations, as compared with their smartphone speeds.

Public Wi-Fi plays an important role for certain population segments in how they routinely go online.

- One in five (21%) respondents say that they often use the Internet on a public Wi-Fi network, such as a library, coffee shop, community center, or school.; 7% do this often and 14% somewhat often.
- For specific sub-groups:
 - 39% of young adults – between the ages of 18 and 29 – have used public Wi-Fi
 - 30% of African Americans have done this
 - 27% of Latinos have done this
 - 27% of poor Americans – those whose household incomes are under \$25,000 annually – have done this

Introduction

The advent of portable Internet-enabled devices, in conjunction with fourth generation wireless network speeds, has given American consumers new options for Internet access. As more people have subscribed to smartphone service plans, some communications policy stakeholders wonder whether smartphones, especially those that run on 4G wireless networks, can serve as substitutes for home broadband subscriptions.

National surveys reveal very little evidence that people use smartphones as principle access devices in lieu of a home broadband service plan. Recent data released by the Census Bureau from the American Community Survey finds that 73% of households have broadband service, but only 5% use devices such as smartphones exclusively for their Internet access.¹ Other research, based on national telephone surveys, has placed the “smartphone only figure” in the 8% to 10% range and found that the home broadband subscription is the anchor for the online access experience for most people.²

In the survey for this report, nearly two-thirds (65%) of respondents reported that they had a smartphone and 85% have high-speed Internet connections at home. This gives a large portion of the sample – 92% – two ways of going online, which in turn presents a research opportunity to investigate whether they use these online ramps in different ways. This report goes beyond the question of who has “smartphone only” (and not home broadband) access, but explores user behaviors and attitudes. The survey asked people about whether they have data caps, how they deal with them, and the access means they use for different online applications. The results paint a picture of online users who are astute in how they manage their online use when faced the different attributes and constraints that come with home broadband and smartphone subscription plans.

This report is based on a survey of 2,149 online Americans. The survey was conducted by GfK and, with the online frame for the survey, respondents are only those adult Americans with Internet access at home. According to the Census Bureau’s American Communities Survey, in 2013 some 79% of Americans were Internet users, with 73% having broadband at home. Results in this report, therefore, refer to online Americans. In the survey, 1,831 respondents had broadband at home, 2,181 had either broadband or smartphones, and 1,212 had smartphones.

¹ Lee Rainie and D’Vera Cohn, “Census: Computer ownership, internet connection varies widely across U.S.” Pew Research Center, September 19, 2014. Available online at: <http://www.pewresearch.org/fact-tank/2014/09/19/census-computer-ownership-internet-connection-varies-widely-across-u-s/>

² John B. Horrigan, “Adoption of Information and Communications Technologies in the United States: Narrowing Gaps, New Challenges.” Prepared for the Knight Foundation and available online at: http://knightfoundation.org/media/uploads/media_pdfs/DigitalAccessUpdateFeb2014.pdf

I. Smartphones, Data Caps, and Wi-Fi

Smartphone users are well attuned to the limitations that many service providers impose on access. More than half (55%) of smartphone users say that their provider places a limit on the amount of data they can use per month for online access; 38% said they did not have a data cap. Among those who do have a cap on data usage, 80% say they pay an extra fee if they exceed the limit. When asked whether they had their access speed slowed if they exceeded their data limit, just 16% said this would happen, 37% said it would not, and a striking 47% of respondents with a data cap did not know.

Wi-Fi plays a large role in how smartphone users use their devices and deal with data caps. Many smartphone users with a data cap take steps to minimize their use of the data allocation they have, as 42% say that the monthly data cap means they do not do certain online activities, such as streaming music or watching video, because they worry they may exceed their data limit. And half (49%) say they wait to do some online activities (such as watching video) until they can find a Wi-Fi connection. This means that, among the 55% of smartphone users with a data cap, more than half – 52% – have altered their online behavior because of the cap – either by not doing some online activities out of concern for hitting the limit or by waiting until they were within Wi-Fi range.

Another key point about people’s surfing preferences is that American Internet users like Wi-Fi – whether they have broadband, a smartphone, or both. When asked how often they use various methods for going online, 65% of home broadband users say they *very often* use Wi-Fi from a home network configured through their home high-speed subscription. This is far greater than the number of broadband users who use the wireline broadband connection at home (36% use it very often) and broadband users with smartphones – 38% of whom very often go online with their smartphone. The following table shows full results for the question.

Table 1

	Very often	Somewhat often	Not too often	Never
A wireless WiFi network in my home whose signal comes from my home broadband Internet subscription.	65%	15%	8%	11%
My smartphone using its data plan.	38	28	24	8
My home broadband Internet subscription that connects my computer to the Internet using a wire.	36	12	13	36
A public wireless WiFi network, for instance, at a library, coffee shop, community center, or school.	7	14	38	38

Note that 21% of Internet users are at least somewhat reliant on public Wi-Fi, as they go online using public Wi-Fi hotspots very often or somewhat often. However, this number is higher for several groups. For use of Wi-Fi in public areas:

- 39% of young adults – between the ages of 18 and 29 – have used public Wi-Fi

- 30% of African Americans have done this
- 27% of Latinos have done this
- 27% of poor Americans – those whose household incomes are under \$25,000 annually – have done this

For rural Americans, Wi-Fi plays only a small role in how they go online; just 8% of respondents in non-Metro areas use Wi-Fi hotspots to get online.

When asked what device they use most often when using a Wi-Fi connection, 50% of Wi-Fi users said it was their laptop, 25% said it was a smartphone, and 24% said it was a tablet computer.

II. Substitutability of smartphones and broadband

The survey data show that people have clear views about which applications are better suited to different means for going online. Questions probed into people’s preferences for using different online applications, holding a comparison between their home broadband connection and smartphones in mind.

As the table below shows, those with both a home broadband connection and a smartphone prefer to use the former for looking for information, watching video, or shopping, while the latter is used more for staying in touch with others. Nonetheless, a sizable minority (29%) prefer to watch video on their smartphone rather than a device with a larger screen, with 11% strongly agreeing that online video is better viewed on a smartphone and 18% somewhat agreeing with that notion.

Table 2

	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree
When I need information on a specific topic, such as looking for a job, doing school work, or searching for health care information, I prefer using a computer (such as a desktop, laptop, or tablet) that uses my home broadband connection rather than my smartphone.	63%	26%	7%	3%
When I am shopping for a product online, I prefer using a computer (such as a desktop, laptop, or tablet) that uses my home broadband connection rather than my smartphone.	56	29	9	4
If I need to get in touch with a friend or family member, I prefer using my smartphone to a device that uses my home broadband connection.	43	35	14	7
When I want to watch video online, I prefer using my smartphone to a device that uses my home broadband connection.	11	18	32	38

For several segments, there were significant differences in response for preferences for watching online video.

- 40% of younger respondents (between the ages of 18 and 29) are more likely to prefer watching video on smartphones
- 45% of African Americans say they prefer to watch video on a smartphone
- 38% of Latinos saying they prefer to watch video on a smartphone.

III. Speeds on home broadband versus wireless data plans

Consumers' preference for their home broadband connection for bandwidth intensive activities carries over into their views on the relative speeds of their smartphone connection compared to their home broadband connection. The table below demonstrates this and the differences are most striking when looking at the extent to which respondents strongly agree with specific propositions.

Table 3

	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree
Satisfaction with speed				
I am satisfied with the speed of the connection from my home high-speed Internet subscription.	39%	42%	14%	4%
I am satisfied with the speed of the connection I experience on my smartphone.	28	50	17	5
Expectations about speed				
The Internet speed on my home high-speed Internet subscription consistently meets my expectations.	35%	43%	16%	5%
I can always get online at the speed I need using my smartphone.	25	43	14	4

By margins of roughly 10 percentage points, broadband users are more likely than smartphone users to *strongly agree* that they are satisfied with their connection speeds with home broadband versus smartphone speeds. The same is true when queried about the expectations of their home broadband connections in contrast to speeds on their smartphone. It is worth noting that, notwithstanding advances in wireless data speeds, wireless download speeds tend to lag those of home broadband subscriptions. The questions were framed in such a way not to ask respondents to compare speeds, but to compare their perspectives about the speeds of each service, given that wireless speeds will likely to be slower than home broadband speeds for most respondents. The results indicate that within the context of different speeds for smartphones and home broadband subscriptions, respondents have higher levels of satisfaction for home broadband speeds than those available on smartphone plans.

History is an important dimension to bring into discussions about people's views on access speeds. Surveys over the past decade consistently find that people are very satisfied with home broadband connection speeds, notwithstanding (for the most part) ignorance of what the speed is and increasing home broadband speeds over this timeframe. A 2002 survey by the Pew Research Center found that 90% of early broadband adopters said their home Internet service was excellent (40%)

or good (50%).³ A 2010 FCC survey found that 91% of home Internet users were either very (50%) or somewhat (41%) satisfied with their home connection speeds, even if 80% could not specify their home connection speed.⁴

A similar pattern is evident for mobile devices. The same 2010 FCC survey asked people if they were satisfied with the Internet speed they could get on their cell phone. At a time when carriers had not widely deployed 4G wireless networks, 33% of respondents with mobile access were very satisfied with their access speeds and 38% were somewhat satisfied.

Though comparing findings across these surveys over long timeframes requires caution, the findings suggest that consumers are perhaps a bit more discerning today about home broadband speeds than a few years ago. For wireless, handheld Internet access was novel enough in 2010 that people seemed satisfied with the speeds they got, with today's faster speeds largely meeting expectations.

Finally, it is worth noting that respondents' perspectives on home broadband speed do not vary significantly depending on connection type. Among those who identified their home Internet service as a cable company, such as Comcast, Brighthouse, Charter, Cox, or Time Warner Cable, 37% strongly agreed that they were satisfied with the speed of their home Internet connection. Among those with a fiber service, such as FiOS, Google, and the one respondent fiber service in Chattanooga, Tennessee, 35% strongly agreed that they were satisfied with their home connection's speed. Even though the figures slightly lag the average, the differences (given the sample sizes) are not statistically significant.

IV. Smartphones and broadband: Anyone ready to switch?

Given the findings noted above – higher satisfaction with broadband than smartphone speeds and reliance on home broadband service for key applications – it is little surprise that few people want to give up broadband in favor of a smartphone. Those with both a home broadband subscription and a smartphone have little interest in choosing a smartphone exclusively for access over a home broadband subscription. When asked how likely it is that they would cancel a home broadband subscription and *only* rely on their smartphone to access the Internet, here is what people with both services said:

- 63% -- Not likely at all
- 29% -- Not too likely
- 6% -- Somewhat likely
- 1% -- Very likely

³ John B. Horrigan and Lee Rainie, "The Broadband Difference: How online behavior changes with high-speed Internet connections." Pew Research Center, June 2002. Available online at: <http://www.pewinternet.org/2002/06/23/the-broadband-difference-how-online-behavior-changes-with-high-speed-internet-connections/>

⁴ John B. Horrigan and Ellen Satterwhite, "Americans' perspectives on online connection speeds for home and mobile devices." Federal Communications Commission, April 2010. Available online at: https://apps.fcc.gov/edocs_public/attachmatch/DOC-298516A1.doc

In other words, 93% of all American adults with a smartphone and a home broadband subscription are unlikely to do away with their broadband service in favor of their smartphone only. Budget-constrained low-income homes are twice as likely as all respondents to say they might cancel broadband and rely only on their smartphone, but it is still the case that only 14% have considered doing this.

It is also likely that those who rely solely on their smartphone, while foregoing a home broadband subscription, are doing so for economic reasons. The survey asked people without broadband at home and a smartphone why they did not have a broadband subscription. Because the survey was administered to an online panel, these respondents are mainly dial-up users and few in number; only 34 people responded to the question. That is not enough so that their answers have statistical validity and, because the sampling did not reach non-Internet users, it is not a random sample. Nonetheless, the answers are suggestive.

Those with smartphones but not a home broadband subscription were asked the following question: “You said that you have a smartphone but not a home broadband Internet subscription. Please indicate whether any of the following are reasons you do not have broadband at home.” Respondents were also asked a follow-up question to identify the main reason they did not have broadband at home.

- When allowed to cite *multiple reasons*, more than half cited the monthly cost for broadband service and half said their smartphones could do all they need. Roughly one-third cited each of the other three reasons – i.e., they could use the Internet at work, library, or community center, that service in their neighborhood was not adequate, or that they could not afford an Internet access device.
- With respect to the *main reason* they did not have broadband given that they had a smartphone, the monthly cost of broadband was the most frequent response. About half said monthly cost was the main reason to do without broadband at home, about three times the frequency of those who said the main reason was inadequate service in their neighborhood or that their smartphone could do all they needed. Few said access at work or library was the reason or unaffordability of an access device for home broadband.

The small set of “smartphone only” users interviewed in this survey seem to be operating under tight household budgets – which is why they rely on the smartphone rather than a home broadband subscription that may have more utility, but is out of reach financially.

V. Conclusions

American tech users have developed a clear sense of how to navigate across different communication devices. The home broadband connection is an important anchor – really the gateway to how a majority of tech users engage with the Internet. It offers access to the Internet that most often flows through a home wireless network. This lets consumers offload data consumption from smartphones and other devices to Wi-Fi in the home and thus alleviates constraints that most tech users experience from data caps.

Mobile devices such as the smartphone enter the picture as an important complementary path to Internet access. For communicating with family and friends and for the quick fact on-the-go, smartphones deepen people's online habits. Although the research reported here finds smartphones to be a complement to home broadband, this does not make it secondary. Given, however, the presence of data caps, smartphones usefulness grow when people have a home Wi-Fi network that can open the spigot for mobile data use. It grows even more with public Wi-Fi, an important access on-ramp for young people, communities of color, and low-income tech users.

As wonderful as tech users find smartphones, the survey shows that they do not substitute for home broadband connections. A small fraction of tech users would contemplate doing away with their home broadband subscription in favor of a smartphone alone to surf the Internet. Given respondents' lower expectations for very fast access speeds for wireless relative to home high-speed connections, broadband subscriptions in consumers' homes will likely remain at the center of people's online pathways for some time.

Appendix I: Detailed data on access assets for respondents

As this report focuses on technology use among those with broadband at home and smartphones, it is worthwhile understanding access patterns for broadband and smartphones across population segments of likely interest. The table below summarizes the findings of the survey. Note that the figures do not represent access rates for the general population, but rather for the online panel recruited by GfK. The GfK panel is balanced to be representative of the *online* population in the United States.

Table 4: Access by age

	All	18-29	30-44	45-59	60+
Smartphone	65%	86%	80%	60%	37%
Broadband	85	87	85	85	83
Number of respondents	2,287	333	518	646	790

Table 5: Access by race/ethnicity and location

	White	African American	Hispanic	Non-Metro	Metro
Smartphone	62%	63%	74%	52%	68%
Broadband	87	71	83	79	86
Number of respondents	1,734	212	205	359	1,928

Table 6: Access by household income

Household income	Less than \$25,000 per year	Between \$25K & \$50K	Between \$50K & \$75K	Between \$75K & \$100K	Greater than \$100K
Smartphone	40%	51%	62%	68%	77%
Broadband	63%	80%	91%	92%	95%
Number of respondents	433	500	437	315	602

Appendix II: Topline results from the survey

Question numbers are not sequential because not all questions used in the survey were used for analysis in this report

We'd like to ask some questions about the communications services and products you use.

Q1. Do you have a cell phone?

Yes	92%
No	7%

[If Q1=1]

[sp]

Q2 Some cell phones are called "smartphones" because of certain features they have. Is your cell phone a smartphone such as an iPhone, Android, Blackberry or Windows phone, or are you not sure?

Yes, smartphone	65%
No, not a smartphone	33%
Not sure/Don't know	2%

[if q2=1]

[sp]

Q3 Does the company that provides your smartphone service place a limit on the amount of data you can use per month to access the Internet?

Yes	55%
No	38%
Don't know	7%

[IF Q3=1]

Q3a If you use more than the monthly allocation of data on your smartphone, does your service provider: [AMONG THOSE WITH A FEE]

a. Charge you an extra fee that is beyond your monthly service charge?

YES	80%
NO	10%
DK/REF	10%

b. Slow down the speed of your Internet access?

YES	16%
NO	37%
DK/REF	47%

[if Q3=1]

Q3b Does the monthly limit on data ever prevent you from doing certain online activities, such as streaming music from the Internet or watching online video, because you worry you might exceed the limit? [AMONG THOSE WITH A FEE]

Yes	42%
No	53%
Don't know	5%

[if Q2=1]

[sp]

Q3c. Do you wait to do certain activities, such as streaming music from the Internet or watching online video, on your smartphone until you can find a WiFi connection? [AMONG THOSE WITH A FEE]

Yes	49%
No	47%
Don't know	4%

Q12 When you go online, how often do you use the following ways to access the Internet?

a. My home broadband Internet subscription that connects my computer to the Internet using a wire. [if q7=2]

1. Very often	36%
2. Somewhat often	12%
3. Not too often	13%
4. Never	36%

b. My smartphone using its data plan. [if q2=1]

1. Very often	38%
2. Somewhat often	28%
3. Not too often	24%
4. Never	8%

c. A wireless WiFi network in my home whose signal comes from my home broadband Internet subscription. [if q7=2]

1. Very often	65%
2. Somewhat often	15%
3. Not too often	8%
4. Never	11%

d. A public wireless WiFi network, for instance, at a library, coffee shop, community center, or school

- 1. Very often 7%
- 2. Somewhat often 14%
- 3. Not too often 38%
- 4. Never 38%

[IF Q12c=1 OR Q12d=1]

Q12a What device do you use most often when you go online using a WiFi connection?

- a. A laptop computer 50%
- b. A smartphone 25%
- c. A tablet computer, such as an iPad, Android device, or Kindle Fire 24%

[IF Q2=1 AND IF Q7=2 (Have home broadband and a smartphone)]

Q13 Below are several statements about using the Internet on your smartphone and other devices, such as a computer or tablet (like an iPad, Kindle Fire, or Android device), that rely on your home broadband connection. Please indicate whether you agree or disagree.

a. When I want to watch video online, I prefer using my smartphone to a device that uses my home broadband connection.

- 1. Strongly agree 11%
- 2. Somewhat agree 18%
- 3. Somewhat disagree 32%
- 4. Strongly disagree 38%

b. If I need to get in touch with a friend or family member, I prefer using my smartphone to a device that uses my home broadband connection.

- 1. Strongly agree 43%
- 2. Somewhat agree 35%
- 3. Somewhat disagree 14%
- 4. Strongly disagree 7%

c. When I need information on a specific topic, such as looking for a job, doing school work, or searching for health care information, I prefer using a computer (such as a desktop, laptop, or tablet) that uses my home broadband connection rather than my smartphone.

- 1. Strongly agree 63%
- 2. Somewhat agree 26%
- 3. Somewhat disagree 7%
- 4. Strongly disagree 3%

d. When I am shopping for a product online, I prefer using a computer (such as a desktop, laptop, or tablet) that uses my home broadband connection rather than my smartphone.

- 1. Strongly agree 56%
- 2. Somewhat agree 29%
- 3. Somewhat disagree 9%
- 4. Strongly disagree 4%

Q14 Next, you will read some statements about the quality of your Internet connection when you use different ways of getting online. Please indicate whether you agree or disagree.

a. I am satisfied with the speed of the connection I experience on my smartphone. [if q2=1]

- 1. Strongly agree 28%
- 2. Somewhat agree 50%
- 3. Somewhat disagree 17%
- 4. Strongly disagree 5%

b. I am satisfied with the speed of the connection from my home high-speed Internet subscription. [if q7=2]

- 1. Strongly agree 39%
- 2. Somewhat agree 42%
- 3. Somewhat disagree 14%
- 4. Strongly disagree 4%

c. I can always get online at the speed I need using my smartphone. [if q2=1]

- 1. Strongly agree 25%
- 2. Somewhat agree 43%
- 3. Somewhat disagree 24%
- 4. Strongly disagree 7%

d. The Internet speed on my home high-speed Internet subscription consistently meets my expectations. [if q7=2]

- 1. Strongly agree 35%
- 2. Somewhat agree 43%
- 3. Somewhat disagree 16%
- 4. Strongly disagree 5%

[q2=1 and q7=2]

Q15 How likely is it that you would cancel your home broadband subscription and use ONLY your smartphone to access the Internet?

- a. Very likely 1%
- b. Somewhat likely 6%
- c. Not too likely 29%
- d. Not at all likely 63%