

A Cyber Economy: The Transactional Value of the Internet in Rural America

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FOUNDATION FOR
RURAL SERVICE

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Executive Summary

Every day, consumers use the internet for a wide variety of purposes—news, weather, web surfing, social networking, listening to music, watching videos, etc.

In early August 2017, *iGR* fielded a survey of U.S. consumers that was designed to provide insight into two questions:

- How frequently do U.S. consumers use the internet for various transactional purposes—shopping, checking their bank accounts and investments, paying bills, etc.?
- To what degree do those transactions end up driving actual spending?

From the survey data, and a great deal of secondary research, *iGR* then built a model to answer those two questions. It should also be noted that while the model aimed to estimate relative volumes and economic values of transactions, it does not attempt or purport to estimate the relative utilization each kind of transaction makes of underlying networks. Put another way, the survey and the resulting paper focus on economic activity enabled by internet access, and not the engineering associated with providing such access or any differences in utilization or network costs attributable to various activities or transactions.

One of the overall goals of this study was to learn how usage differed, if at all, between those living in urban and rural regions. In short, the answer is “not much.”

In addition, however, to answering the two questions above, the survey and this resulting white paper provide insight as well into two related questions:

- What is the estimated dollar amount that can be attributed to internet-based transactions?
- With respect to U.S. urban and rural markets, where does that economic activity occur?

Key Findings

iGR's survey of U.S. consumers and the model that arose from it found that:

1. Internet usage among urban and rural consumers was largely similar.
2. Rural consumers are responsible for more than 10.8 billion internet-driven transactions annually out of a total of 69.9 billion annual internet-driven transactions, representing 15% of all internet-driven transactions.
3. Internet-driven transactions drive nearly 50% of United States gross domestic product (GDP) or \$9.6 trillion annually. These transactions are estimated to grow to over 65% by 2022 to \$14 trillion annually.

4. The estimated value of rural online transactions is nearly \$1.4 trillion—14% of all internet-driven transactions, or 7% of the U.S. nominal GDP.

What Is Rural?

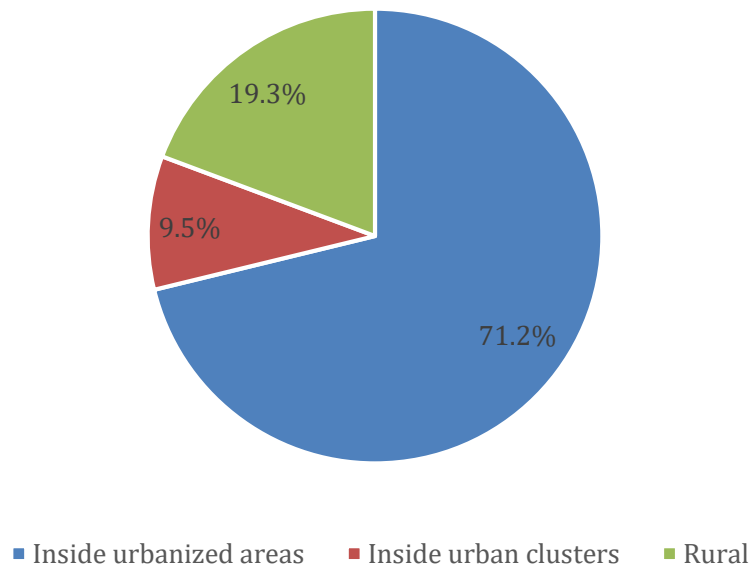
Before delving into the data gleaned from the survey, any discussion of the value proposition and activity enabled by rural connectivity must address a threshold question: What is rural?

The U.S. Census Bureau (USCB) defines rural as “all population, housing and territory not included within an urbanized area or urban cluster.” An Urbanized Area consists of 50,000 or more people; an Urban Cluster consists of at least 2,500 and fewer than 50,000 people.

In *Defining Rural at the U.S. Census Bureau*, a paper published in December 2016, the USCB explains its classifications and how they arrived at those definitions. According to that paper, in 2010 there were 486 urbanized areas and 3,087 urban clusters in the United States.

Figure 1 shows that urbanized areas contained 71.2% of the population, while 9.5% were within urban clusters. The rural areas of the U.S. contained 19.3% of the population.

Figure 1: Total U.S. Population by Urbanized Area, Urban Clusters and Rural



Source: Defining Rural at the U.S. Census Bureau, 2016

The USCB paper also states that urban areas and urban clusters occupy approximately 3% of the country’s land area.

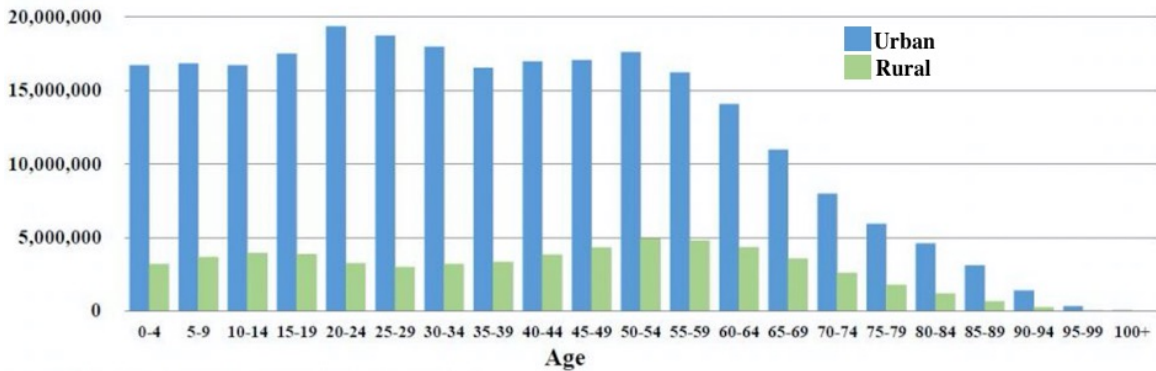
In August 2017, iGR distributed a web-based survey to more than 1,200 randomly selected U.S. consumers. Note that the survey questions asked respondents to self-report where they lived: urban, suburban or rural. (iGR selected these

classifications to align with the USCB’s definitions.) *iGR* obtained survey responses from 400 U.S. consumers in each of three categories: urban, suburban and rural. *iGR* matched the USCB’s definitions for urbanized areas, inside urban clusters and rural to respondents’ self-classification as urban, suburban and rural, respectively. Note, too, that by definition this web survey did not reach those without some form of internet access.

When analyzing the survey data for the analysis in this paper, *iGR* then weighted the sample by the USCB’s urban versus rural splits and then by age within those regions per the chart shown below. The USCB’s system was used because it ties neatly back into the USCB’s population data. And, in all of the U.S. consumer studies that *iGR* has previously completed, age has consistently tracked most tightly with broadband and cellular usage.

Figure 2 illustrates the weighting scheme that *iGR* used when analyzing the survey data. Note two graphs are shown. The Y-axis shows the number of people in the U.S. while the X-axis shows the age range of the population. The chart shows that nearly 20 million 20-to-24-year-olds live in urban regions while approximately 3 million in that same age range live in rural regions.

Figure 2: Age Distribution of U.S. Population by Urban and Rural



Source: U.S. Census Bureau, 2011-2015 American Community Survey, 5-year Estimates

iGR converted the above numbers into percentages by region and age, and then applied those percentages to the survey data. Weighting the survey respondents against the urban and rural U.S. population helped ensure that the survey data was representative and would therefore be relevant when analyzed.

Key Survey Findings

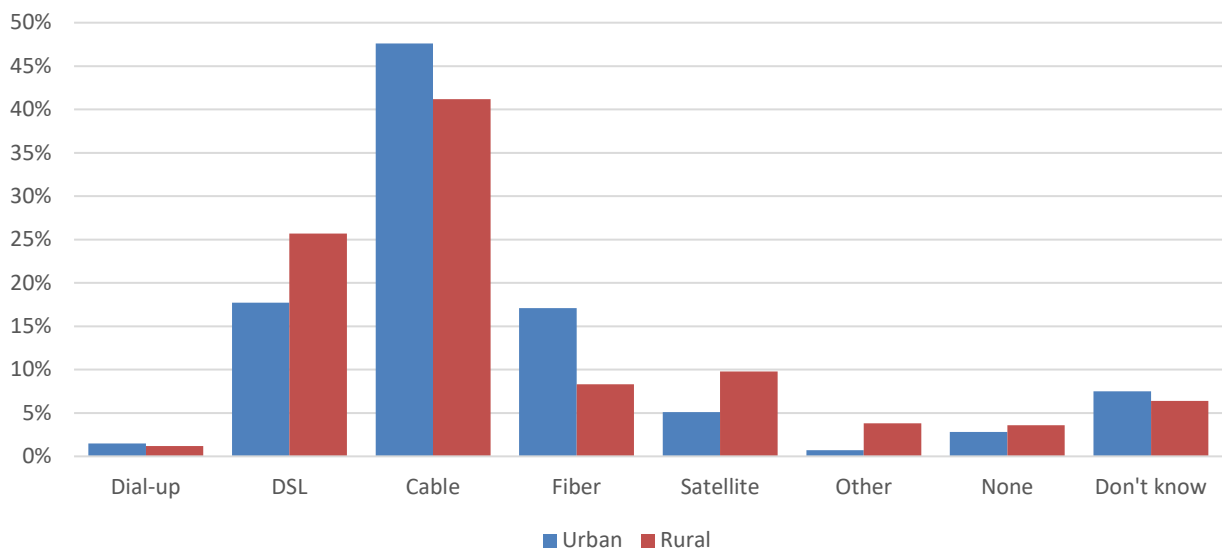
As stated earlier, the survey was designed to provide insight into how frequently U.S. consumers use the internet for various transactional purposes and to what degree do those transactions end up driving actual spending. The survey thus focused specifically on economic activity enabled by internet access, and not on questions related to internet network utilization attributable to various activities or transactions. One of the overall goals of the study was to learn how internet usage and online activities differed, if at all, between those living in urban and rural regions.

To that end, the survey asked several questions regarding internet usage. While the emphasis was on the frequency and nature of internet usage, the type of device and nature of the internet connection itself were also captured.

For example, Figure 3 shows the prevalence and type of internet access among the urban and rural respondents. It does not show internet penetration in the urban and rural markets. Note that this chart (and all subsequent ones) reflect weighted data, so the totals may not add to 100%.

DSL, satellite and “other” types of internet access are far more common among rural respondents than urbanites. Although some fiber deployment has been achieved in rural areas to be sure, large-scale fiber buildouts of course reach many more consumers in population-dense regions/markets. The “other” response most typically refers to wireless internet access through wireless internet service providers (ISPs).

Figure 3: Type of Internet Access at Home Among Consumers

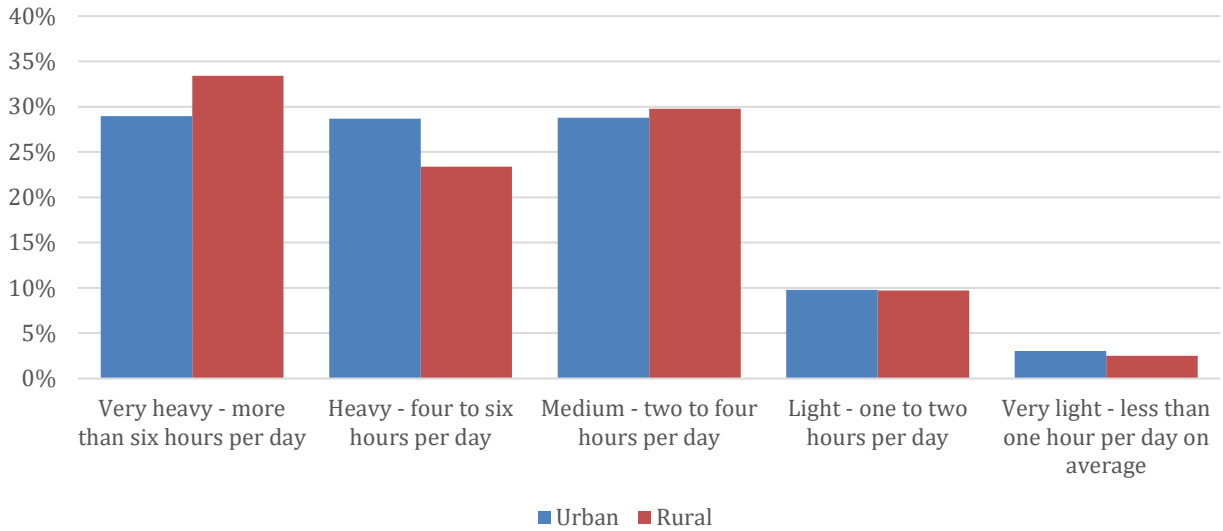


Source: iGR, 2017

Regardless of type of access, 96% of urban respondents with internet access in their homes said they also had Wi-Fi in their homes. Ninety-seven percent of rural respondents with internet access in their homes said that they had Wi-Fi in their homes.

Figure 4 shows that internet usage is essentially the same among the two populations, as well. On average, urban consumers use the internet 4.5 hours per day. Rural consumers use the internet about 4.6 hours per day.

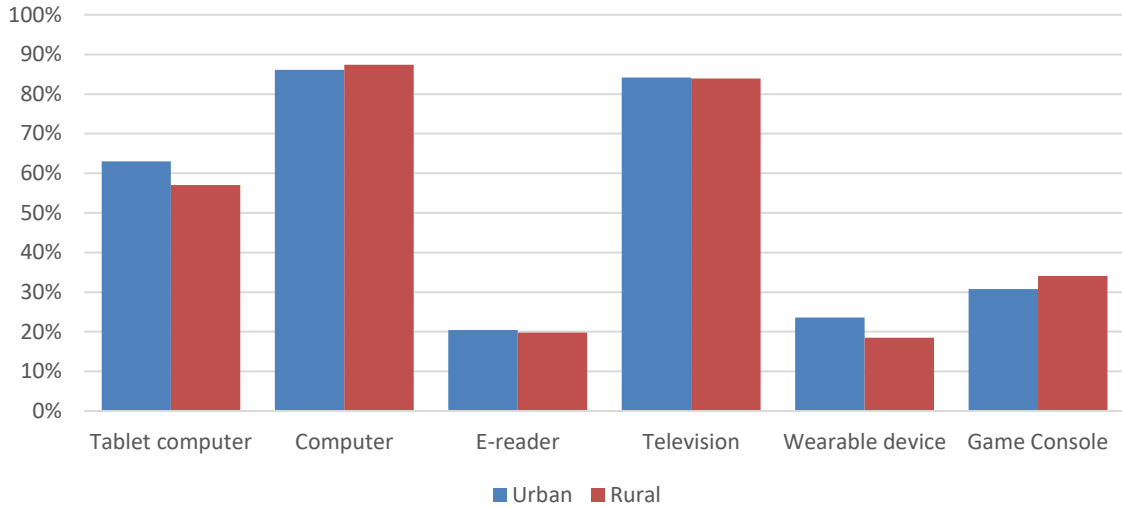
Figure 4: Average Consumer Internet Usage Levels



Source: IGR, 2017

On a percentage basis, device usage was virtually identical among both rural and urban respondents. Note that the computer category includes laptops, Chromebooks, etc.

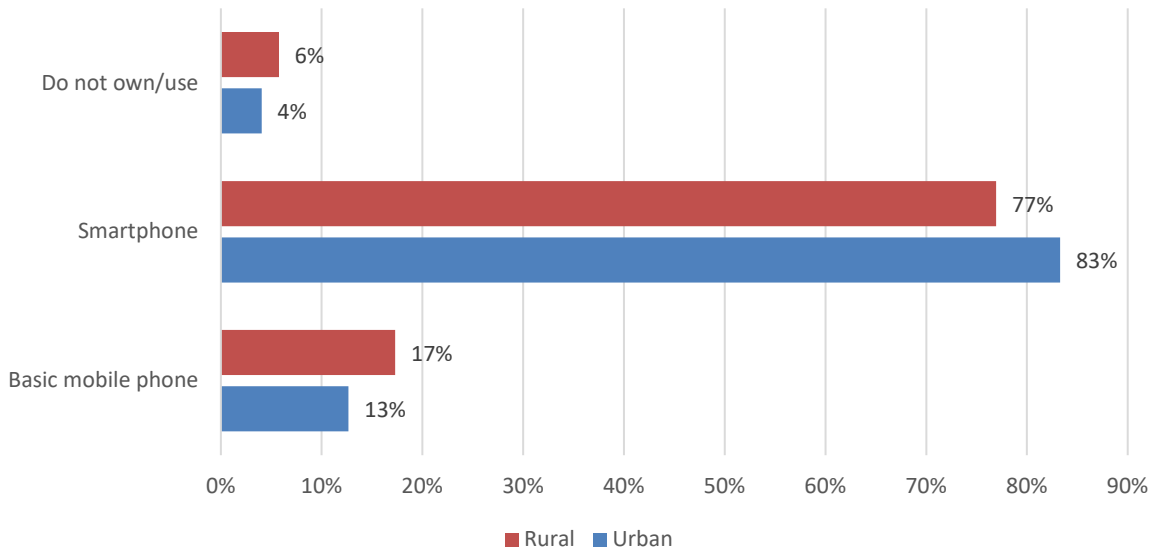
Figure 5: Consumer Household Device Usage



Source: iGR, 2017

Figure 6 shows cellular phone usage among the respondents. Smartphone usage is 6.4% higher among urbanites than smartphone usage among rural respondents. Basic mobile phone use is 4.6% higher among rural respondents than urbanites.

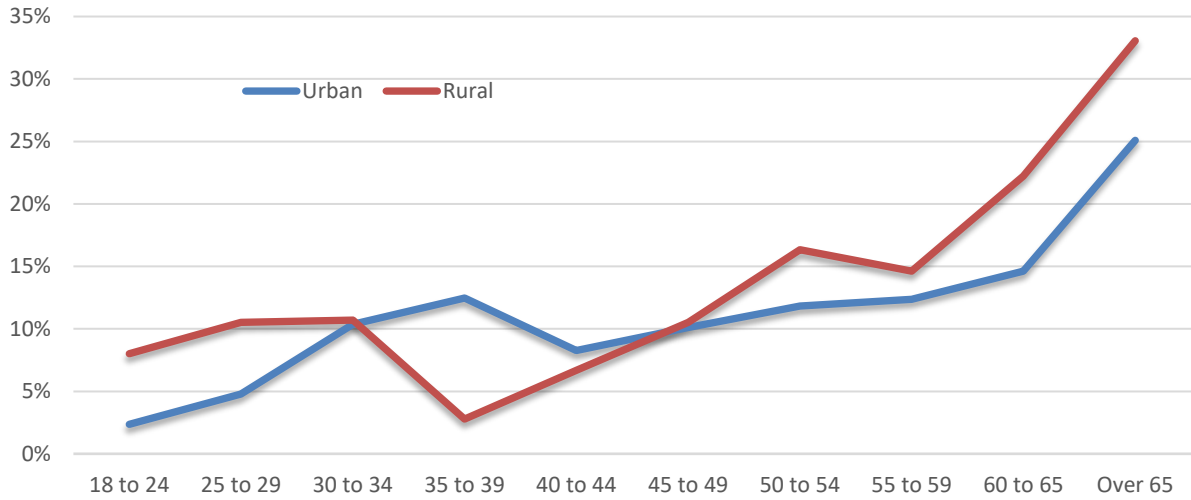
Figure 6: Consumer Smartphone vs. Non-smartphone Usage



Source: iGR, 2017

Figure 7 shows basic mobile phone usage among rural and urban respondents. Note the relationship between increasing age and higher levels of basic phone usage—except for a sharp drop among rural respondents aged 35 to 39. This dip means that smartphone adoption is relatively higher within that bracket.

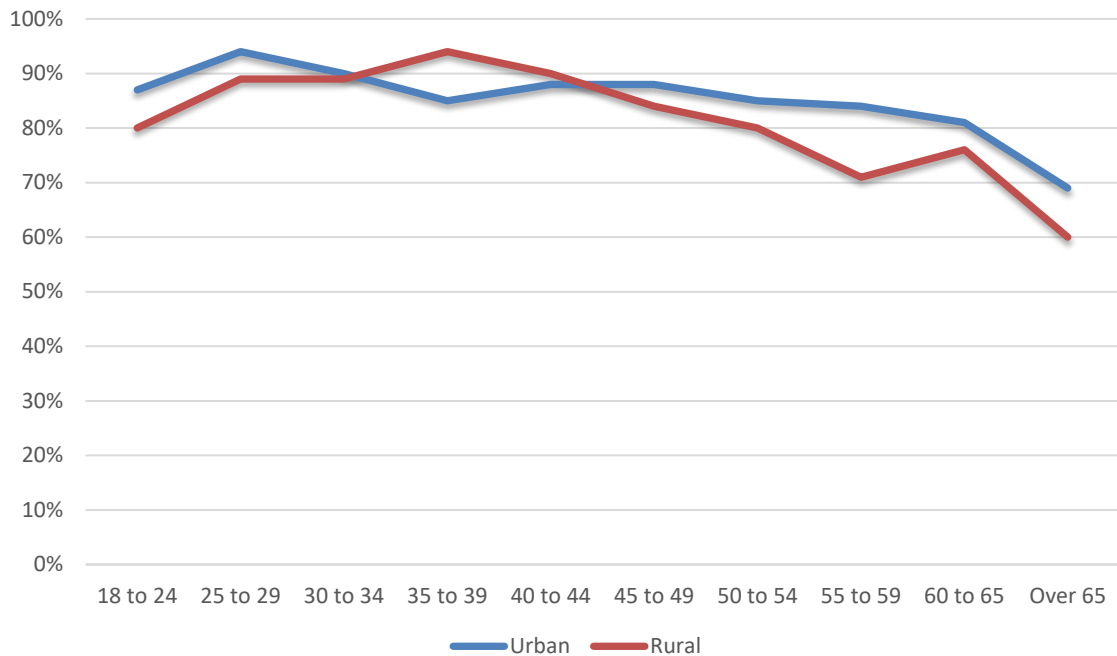
Figure 7: Basic Mobile Phone Usage, Urban vs. Rural Consumers



Source: iGR, 2017

Figure 8 shows smartphone usage among rural and urban respondents. Note the relationship between younger age groups and higher levels of smartphone usage.

Figure 8: Consumer Smartphone Usage, Urban vs. Rural



Source: iGR, 2017

The key point here is that there appear to be relatively minor differences between urban and rural consumers' use of smartphones. That said, the data does suggest

that basic mobile phones are more prevalent among older individuals residing in rural and urban markets.

In summary, *iGR* survey data suggest that urban and rural populations in the United States use:

- Essentially the same types of broadband access, with urbanites tending to have greater access to fiber and cable-based services than rural consumers.
- In-home Wi-Fi at basically the same rate. This specifically refers to Wi-Fi used in the home and not to Wi-Fi that may be available in public-use venues and/or private establishments such as coffee shops.
- The same devices, with possible exception of wearables.
- Smartphones at nearly the same rate.
- The internet for approximately the same amount of time per day.

Internet Transaction Activity

Categories

Beyond the basics of internet and device use, *iGR* surveyed U.S. consumers about their activities across multiple end-use categories. These are the categories around which *iGR* built its internet transactions volume and value model.

- Automotive: Includes new cars purchased, dealer service and non-dealer service.
- Utilities and Communications: Utilities, landline phone, TV, internet and cellular services.
- Home Services: Includes computer and electronics repair and installation, home improvement and/or repair, cleaning, plumbing and electrical services.
- Products: The purchase of physical goods, including electronic-only (games, ebooks, apps, etc.).
- Over the Top (OTT) Video: Includes the most common streaming services, but excludes those services that are free or advertising-based.
- Financial: Includes banking and investments.
- Grocery, Takeout and Reservations: Includes internet-driven transactions in these three areas.
- Health Care: Includes the average frequency of doctor visits, including primary care physicians, specialists, dentists, pediatricians and eye doctors.
- Travel: Includes flights, hotels (and the like), rental cars and ride-sharing services. Note that much of the latter occurs at an extremely high volume, but mainly within cities.

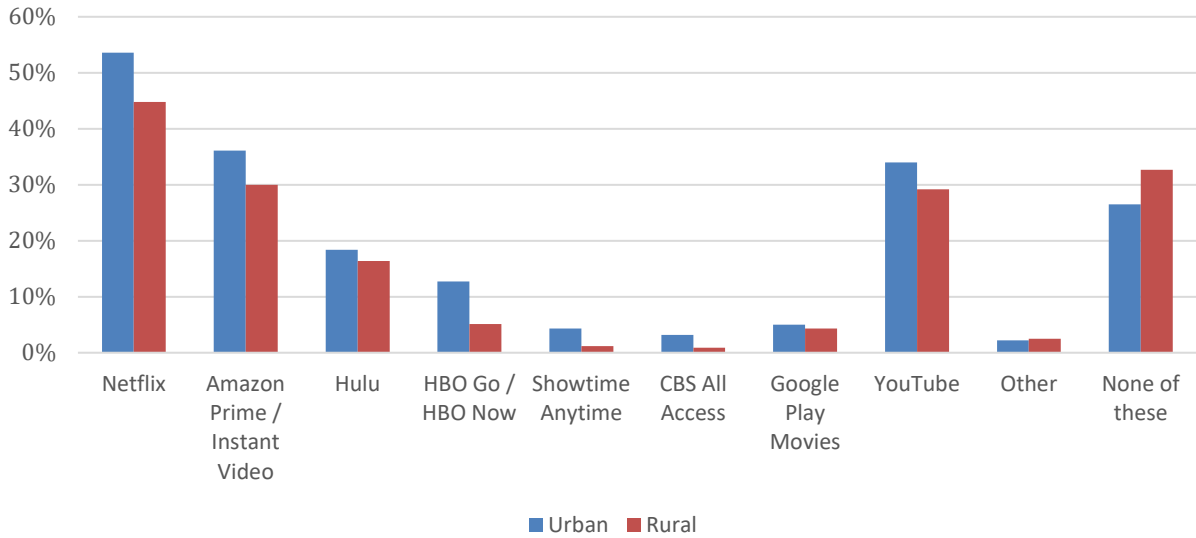
Note that *iGR* supplemented the survey data with information from secondary sources (examples of which are provided later).

Some Differences Between Rural and Urban Consumers

As stated previously, one of the survey's goals was to discover any potential differences in internet usage between those living in urban versus rural markets.

The following figure illustrates how OTT video use is slightly higher in urban markets than in rural ones. OTT refers to services such as Netflix, Hulu and Amazon Prime Video, among others.

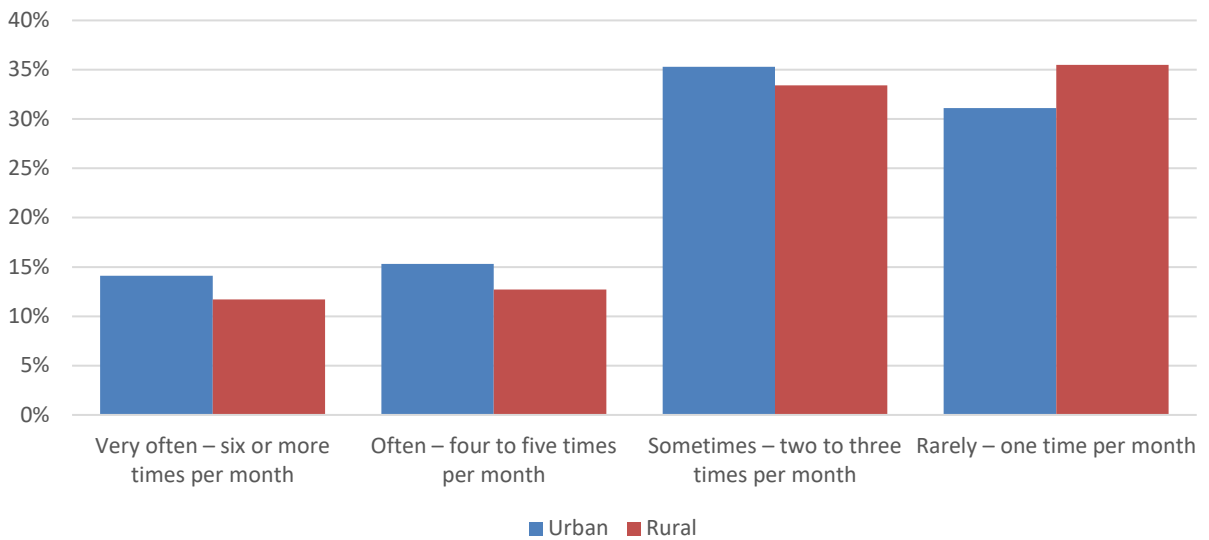
Figure 9: OTT Video Usage by Consumers, Urban vs. Rural



Source: iGR, 2017

Figure 10 illustrates how those in urban areas tend to more frequently purchase products online than those in rural markets. The different product categories include everything from home goods to furniture, clothing, beauty and health products, to books and games. Across all of those different product categories, urban respondents order products online 3.75 times per month. Rural respondents average 3.5 times per month.

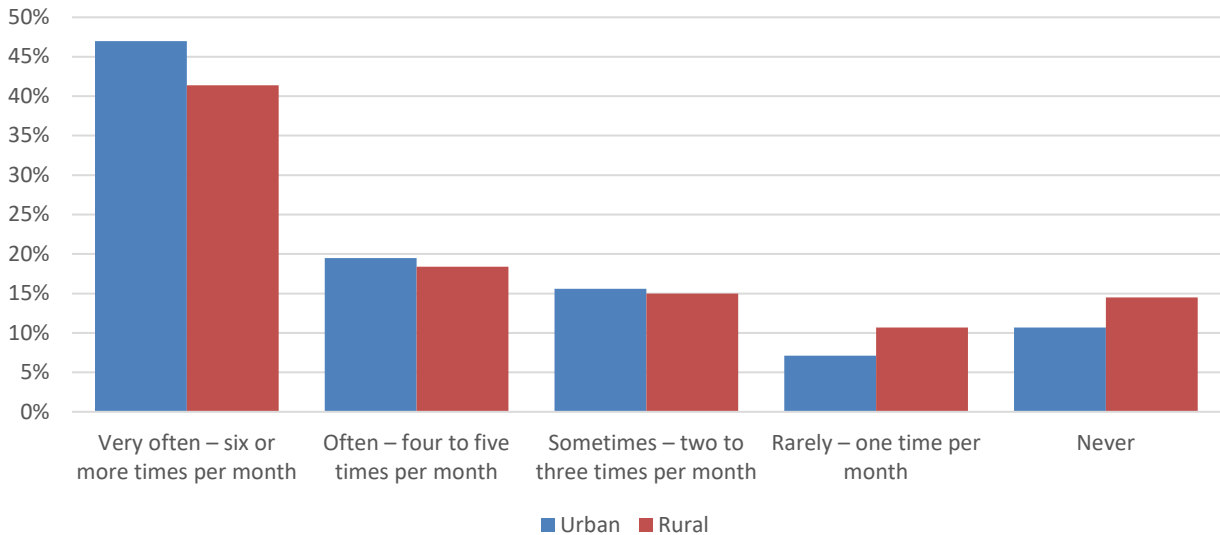
Figure 10: Frequency of Online Product Purchases by Consumers



Source: iGR, 2017

Figure 11 shows how often the respondents manage/access/view their bank accounts online. Again, note the similarity in the frequency of urban and rural usage. There is a 6% difference between urban and rural at the high end and a 4% difference at the low end. On average, urban respondents accessed their bank account online approximately 4.66 times per month. Rural respondents did so 4.44 times per month.

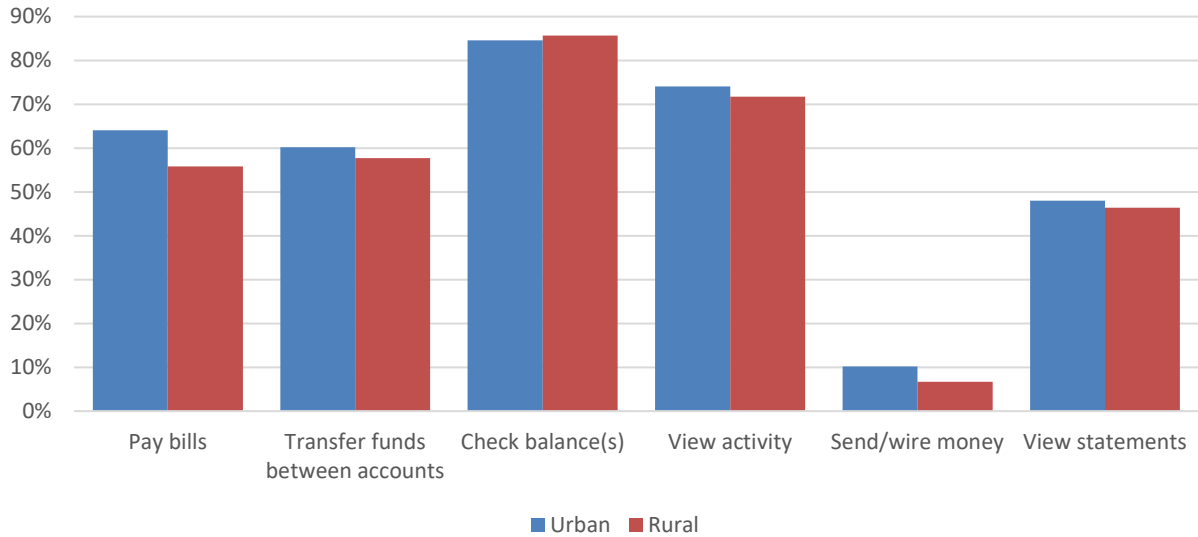
Figure 11: Frequency of Accessing Bank Account Online by Consumers



Source: iGR, 2017

As Figure 12 shows, consumers are engaged in a variety of activities when they log into their bank accounts. For example, the most common activity is simply checking the balance, followed by viewing activity on the account.

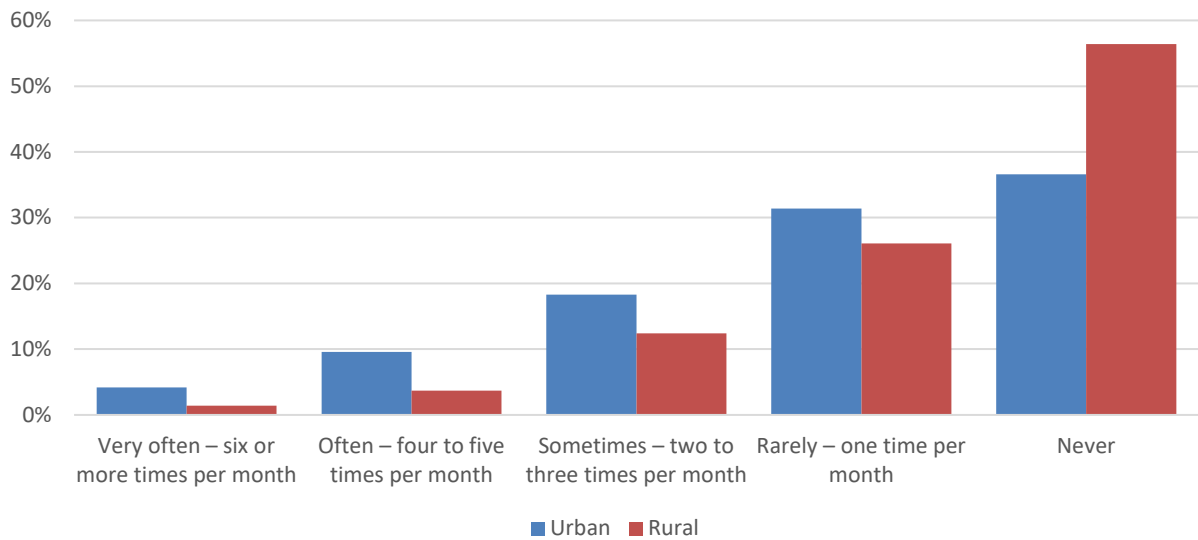
Figure 12: Most Common Activities When Accessing Bank Account Online by Consumers



Source: iGR, 2017

As Figure 13 shows, rural respondents appeared to order takeout food online significantly less often than urban respondents. On average rural respondents ordered takeout approximately three times per year, while urban respondents ordered out approximately 27 times per year. Note that these numbers only refer to online transactions. A phone call to the local pizza place is not included.

Figure 13: Frequency of Ordering Takeout Food Online by Consumers



Source: iGR, 2017

Transactions Volume

Much of what consumers do on the internet never involves an actual purchase—checking bank statements, researching weekend getaways, checking the news or looking at cars. Some of these activities may lead to transactions, of course, but not all of them. For example, most people research cars online before walking into a dealership. They may even contact dealers via email for initial information or to set up an appointment, but rarely is a car purchase transaction conducted entirely online.

Internet Transactions: Methodology

In order to estimate the volume of all internet transactions that involved the actual procurement of goods or services by a consumer, *iGR* started with the U.S. population aged 18 or older. The assumption was that few under 18 have the ability to make unsupervised internet purchases. And, in many cases, purchases are made for those individuals by their parents/guardians. *iGR* then split that population by urban and rural based on the USCB's data (as shown in Figure 1).

Based on the census data, *iGR* used the following population estimates in its model:

- More than 198 million urban consumers, aged 18 and older; and
- More than 47 million rural consumers, aged 18 and older.

Approximately four times as many consumers reside in urban markets. This disparity skews both the volume of internet-based transactions and the value of those transactions toward the urban market.

To estimate the volume of internet purchase transactions, *iGR* built a model that incorporated its consumer survey data as well as multiple secondary sources such as the Bureau of Transportation Statistics (BTS), the Centers for Disease Control and Prevention (CDC), the Federal Reserve, the SEC filings for Google, Facebook, eBay and PayPal, Apple, Amazon, Wal-Mart, Netflix, Nordstrom, Macy's, Hertz, Avis, American Airlines, Delta, United, Hilton, Hyatt, and others.

The model:

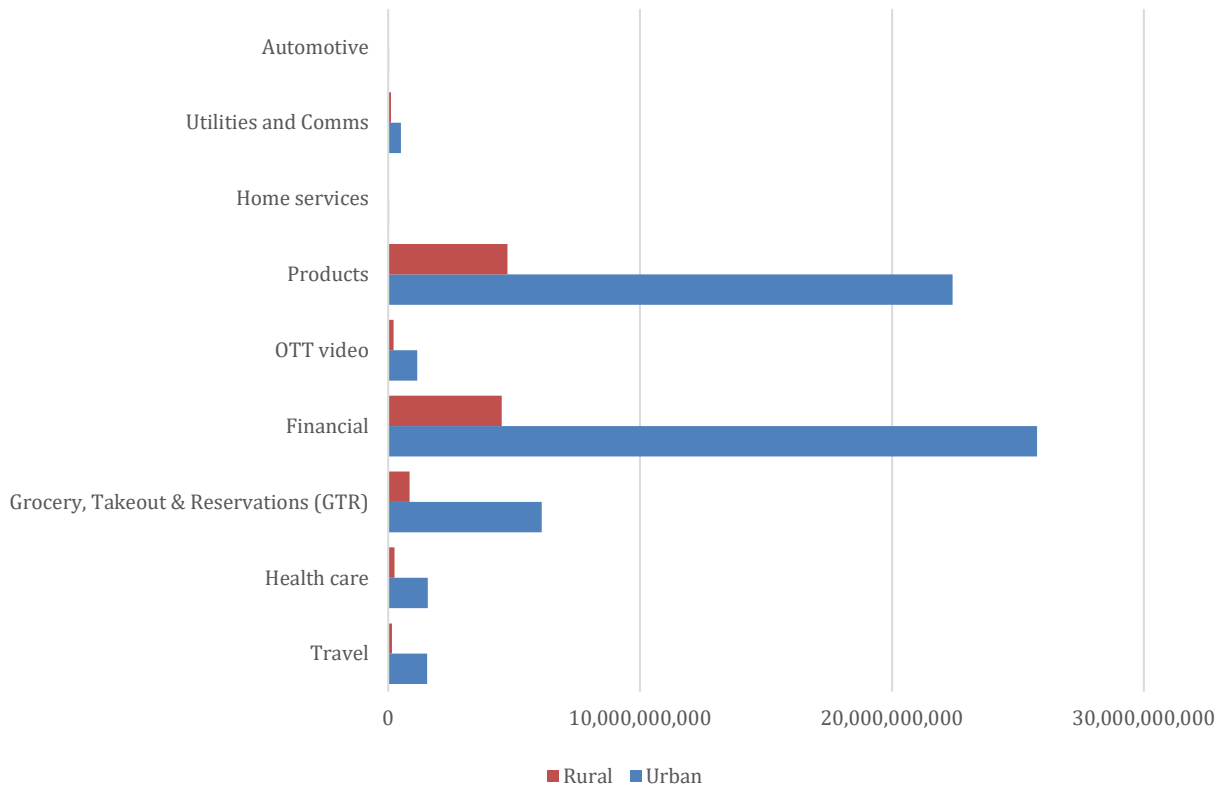
- Estimated the frequency of given activities based both on survey data and secondary research and includes, for example, product purchasing, travel, investments, doctor visits, home services used, entertainment services used, etc.
- Cross-checked the survey-generated estimates against available secondary sources. For example, the BTS provides a great deal of information about travel in the United States. SEC filings also provide a wealth of information on how often consumers use given services. The Federal Reserve has published

reports on how frequently credit cards, debit cards, checks and Automated Clearing House transfers occur.

- Estimated the degree to which those transactions happen online as well as the devices on which consumers typically engage in those transactions. The essential division was between smartphones and desktop/laptop/tablet computers. As an example, the model estimates hotels booked online but it does not include reservations booked via phone call or a third-party (company or travel agent). The model focuses on the volume and value of online consumer-initiated transactions.
- Estimated the value of those transactions where applicable as described further below. For example, an individual may check their bank balance four times per month, but only transfer funds once per month. Other transactions, like bill payments, are regular. The model focused on the value of transactions that happen online. If a check is mailed in to pay for a cellular phone bill, neither that transaction nor its value is included in this model. Note that funds transfers between consumers are counted in this model, but inter-bank transfers and the like are not. This model only estimates the online procurement of goods and/or services by consumers.
- Split the transactions by device type—smartphone versus desktop, laptop or tablet computer. This split was as much based on the data gathered in the survey conducted for this report as it was on *iGR*'s past research on consumer behavior.

The model then summed the total volume of all transactions in each category. The following chart (Figure 14) shows this result. Recall that these are only transactions that are “driven” by the internet. And note that the model estimated all online transactions, including those that did not result in sales. An example of the latter would be an individual who checks their bank account balance online.

Figure 14: Total Volume of Online Consumer Transactions by Category and Urban vs. Rural¹



Source: iGR, 2017

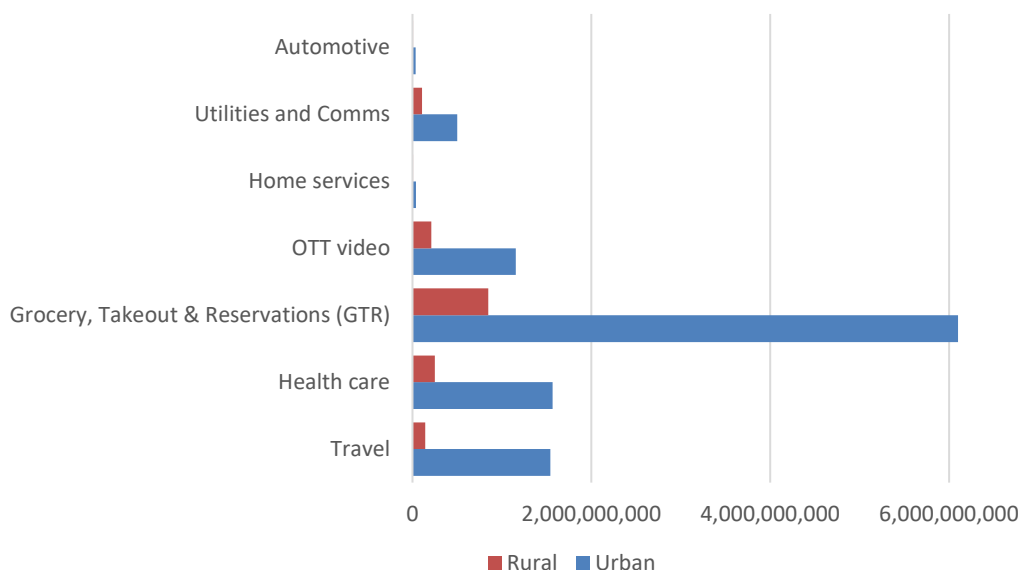
Note that the size of the financial transactions and the number of products purchased online far outpace other data on Figure 14. The problem is that the volume and value of financial transactions vary enormously, from a bank transfer for \$1 million down to a relatively small transfer. As consumers use more and more mobile payments on smartphones, the range widens, and it is important to note too that that financial institutions complete a large number of transactions that may be for very large amounts but are not necessarily indicative of the “average user’s” use of online access for transactions.

Similarly, large numbers of products are purchased online for varying amounts, from a few dollars up to many thousands (for example, for a car or boat auction on eBay).

To isolate the effect of such potentially skewing financial and product transactions on the chart and provide some greater perspective on the relative volumes of other transactions, Figure 14a shows the same data without the financial and product sectors.

¹ Note that the scale on Figure 14 is in billions of transactions—10 billion up to 30 billion transactions.

Figure 14a: Total Volume of Online Consumer Transactions by Category and Urban vs. Rural (Select Data)²



Source: iGR, 2017

Recall that the urban population has a slightly higher frequency of ordering products online, checking their bank accounts and investments online and ordering takeout food online, as compared to the rural population. This slightly higher per-consumer frequency combined with the much larger population of the urban region results in a multiplier effect that drives the urban volume of transactions much higher. And again, recall that the model only estimates **online** consumer transactions.²

Table 1 and Figure 15 show the total number of transactions split by device type and urban and rural markets. The majority of transactions in both rural and urban markets still occur on desktops, laptops and/or tablet computers. Also, the percentage of transactions in the urban market are approximately 84.5% with the balance (15.5%) occurring in rural markets. This split³ approximately tracks with the population split between the two regions.

² It should also be noted that, while the model estimates relative volume of transactions, it does **not** estimate the relative utilization each kind of transaction makes of the underlying network. For example, an online subscription to a video streaming service might cost \$10 per month—thus registering as 12 transactions worth \$10 each or 1 transaction worth \$120, depending upon the specific payment arrangement. The volume and value of such a transaction would be dwarfed of course by the scale of financial transactions that occur many times per day and can register in the millions of dollars or more, even as the transaction involving video streaming might then trigger network utilization that far outpaces any demands placed on underlying networks by an amalgamated number of financial transactions. Said another way, this study looks to the absolute value of transactions and their number as conducted online, but does **not** purport to reflect relative reliance on underlying networks and relative scope of data consumption and utilization on such networks.

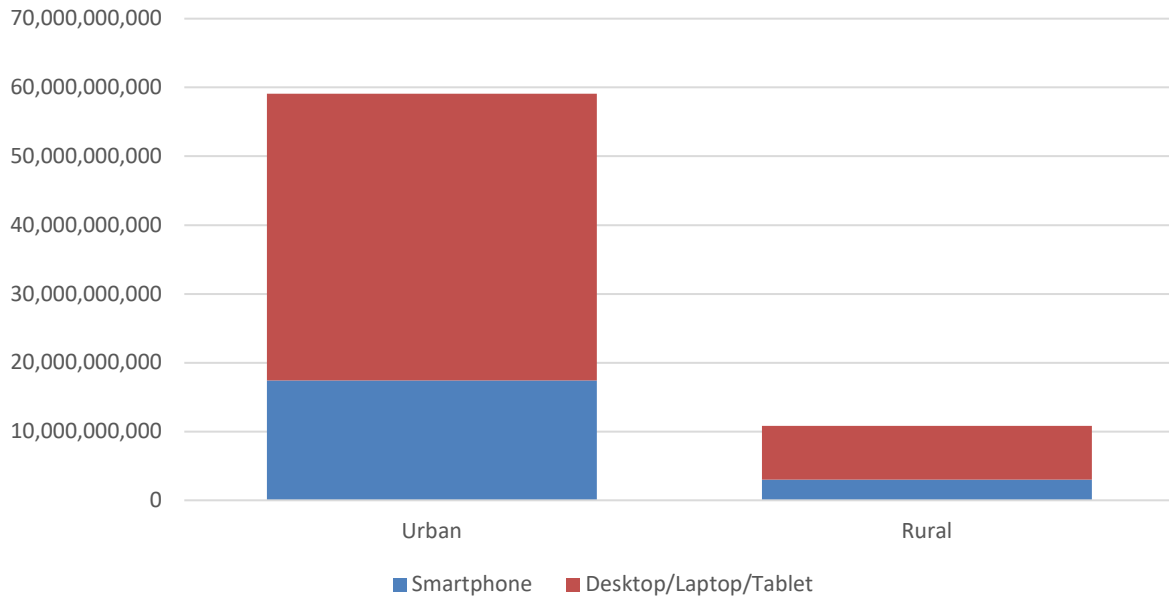
³ Note that the scale on Figure 14a is in billions of transactions—1 billion up to 6 billion transactions

Table 1: Total Online Consumer Transactions by Device and Urban vs. Rural (Billions)

	Urban	Rural	Total
Smartphone	17.42	3.02	20.44
Desktop/Laptop/Tablet	41.69	7.79	49.48
Total	59.11	10.81	69.91

Source: iGR, 2017

Figure 15: Total Online Consumer Transactions by Device and Urban vs. Rural⁴



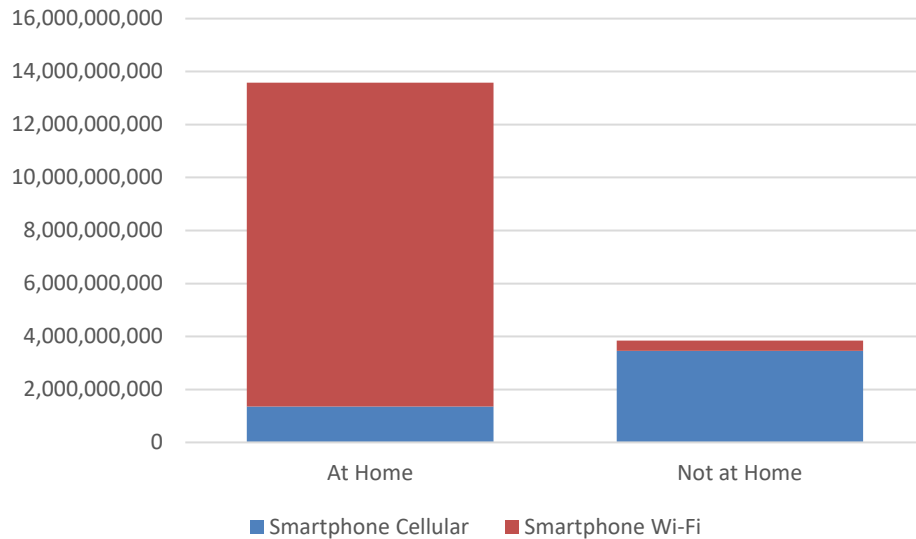
Source: iGR, 2017

It is worth commenting that many smartphone transactions occur via Wi-Fi rather than via the cellular network. As an example, larger files (some games, mobile operating system updates, video downloads, etc.) typically occur on Wi-Fi because the bandwidth consumed does not count against the user's monthly cellular data cap (if they have a limited data plan).

Figure 16 shows an estimate for the number of urban smartphone transactions split by network type (cellular versus Wi-Fi) and by location (at home versus not at home). Approximately 13.6 billion urban smartphone transactions occur at home. Of those, approximately 12.2 billion (78%) occur over Wi-Fi.

⁴ Note that the scale on Figure 15 is in billions of transactions – 10 billion up to 60 billion transactions

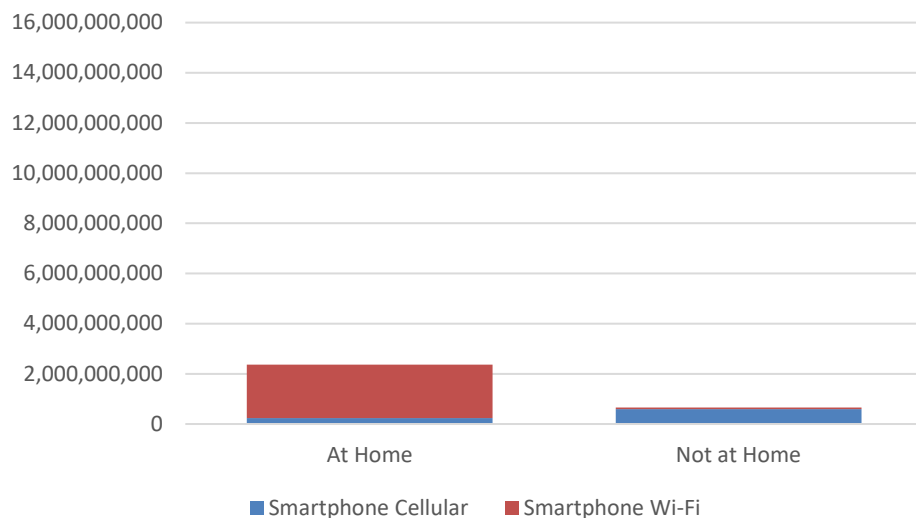
Figure 16: Number of Smartphone Consumer Transactions by Network and Locale, Urban⁵



Source: iGR, 2017

The following chart shows the same estimate as above but for rural smartphone transactions. Approximately 2.4 billion rural smartphone transactions occur at home. Of those, approximately 2.1 billion (78.3%) happen over Wi-Fi.

Figure 17: Number of Smartphone Consumer Transactions by Network and Locale, Rural⁵



Source: iGR, 2017⁵

⁵ Note that the scale on Figures 16 and 17 are in billions of transactions—2 billion up to 16 billion transactions.

Value of Internet Transactions

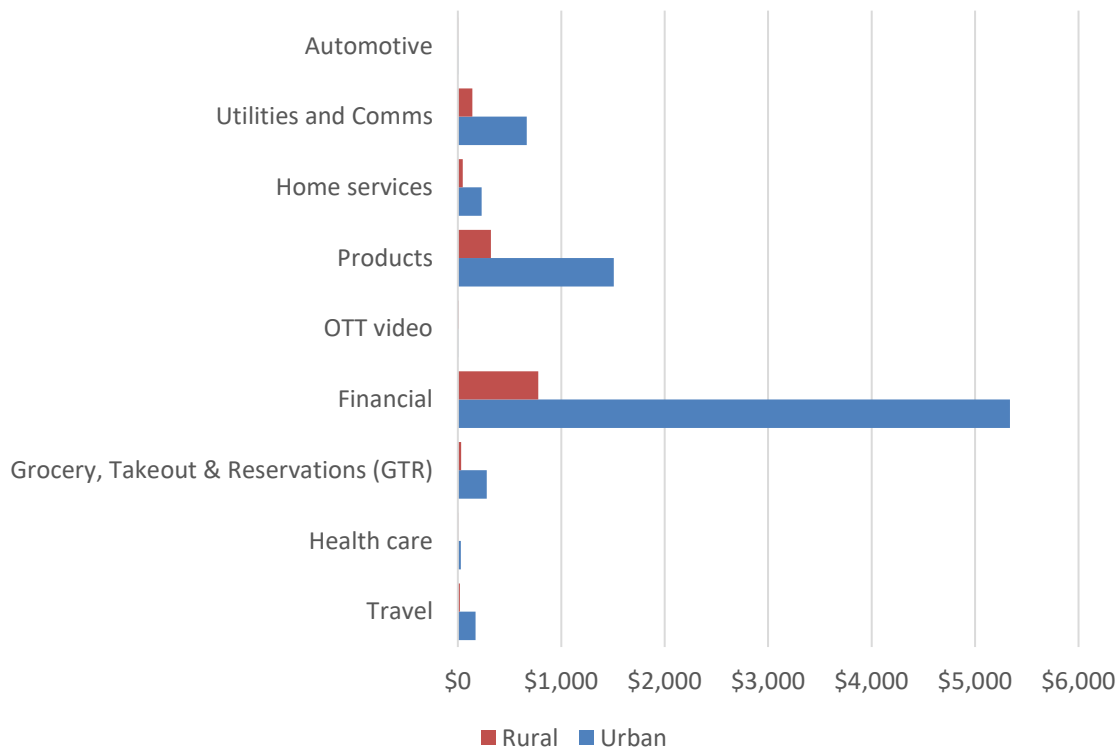
As shown in the preceding sections, not all internet-driven transactions result in purchases, bills paid or investments made. Using the survey data, *iGR* estimated the subset of online transactions that resulted in dollars expended by the consumers.

In many cases *iGR* relied on industry and/or U.S. government estimates for average prices. For example:

- For hotels, *iGR* assumed an average room price of \$123.97 based on statements made by Wyndham in its 2016 Annual Report.
- For flights, *iGR* assumed an average price of \$358.89 for a U.S. domestic itinerary based on data provided by the BTS.
- With respect to health care costs, *iGR* used the CDC estimate for out-of-pocket expenses per person per year (\$1,053.27). Obviously, health care costs more than that, but those costs are paid for by various other sources. *iGR*'s model focuses on the consumer's direct dollar outlay.
- For financial transactions, *iGR* leveraged information published by the Federal Reserve.
- For OTT video services—Netflix, Amazon Prime Video, etc.—*iGR* relied on publicly available rates and/or the companies' SEC filings, where possible.

The following chart shows the value of the internet-driven transactions. The per-transaction values in the Financial category were much higher than the per-transaction values in the other categories (Automotive, Products, etc.). This drove the total dollar values much higher than the other categories. Note that the scale is billions of dollars (e.g., \$2,000 billion = \$2 trillion).

Figure 18: Total Value of Online Consumer Transactions by Category and Urban vs. Rural, in Billions of Dollars⁶



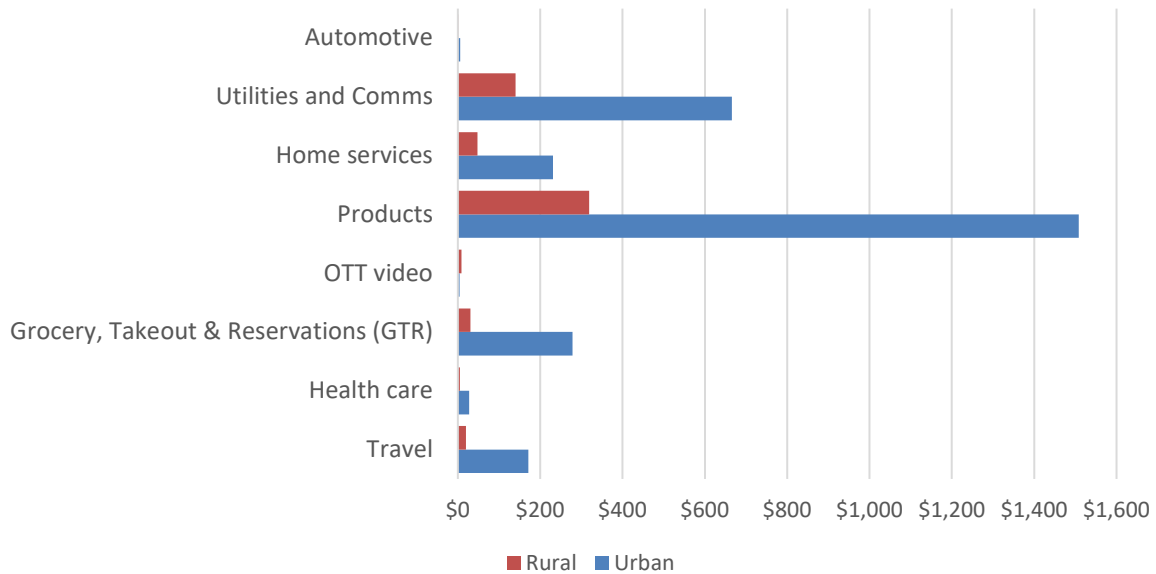
Source: IGR, 2017

Much like Figure 14, Figure 18 is skewed by the sizable value of the financial transactions conducted online, especially by large financial institutions that may transfer large amounts in just a few transactions that are not necessarily reflective of the “average user’s” use of online access for transactional activity.

To help isolate the value of the financial transactions that potentially skew the chart and the scale and to instead provide some greater perspective on the relative values of other kinds of transactions, Figure 18a shows the same data without the financial sector.

⁶ Note that the scale on Figure 18 is in trillions of dollars—\$1 trillion (thousand billion) up to \$6 trillion

Figure 18a: Total Value of Online Consumer Transactions by Category and Urban vs⁷. Rural, in Billions of Dollars (select data)⁶



Source: iGR, 2017

Table 2 and Figure 19 show the total value of transactions split by device type and urban and rural markets. Obviously, the disparity in value between rural and urban markets results from the different level of transactions and, ultimately, the population difference. The percentage value of transactions in the urban market is approximately 85.9% with the balance (14.1%) occurring in rural markets.

The important point to remember is that aside from a few key categories with high levels of transactions, there are relatively few differences in how urban and rural consumers use the internet.

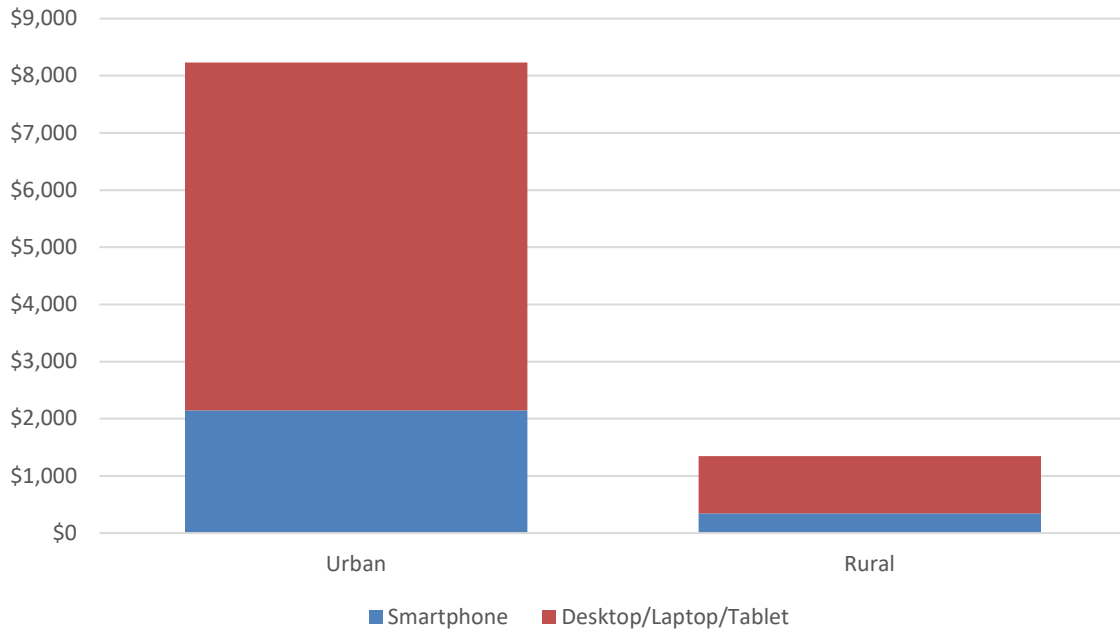
Table 2: Total Value of Online Consumer Transactions Driven by Device and Urban vs. Rural

	Urban	Rural	Total
Smartphone	\$2,145.56	\$341.74	\$2,487.31
Desktop/Laptop/Tablet	\$6,084.69	\$1,006.88	\$7,091.57
Total	\$8,230.25	\$1,348.62	\$9,578.88

Source: iGR, 2017

⁷ Note that the scale on Figure 18a is in trillions of dollars—\$1 trillion (thousand billion) up to \$1.6 trillion. See also footnote 2 for an explanation of what these values capture and do not purport to reflect.

Figure 19: Total Value of Online Consumer Transactions Driven by Device and Urban vs. Rural, in Billions of Dollars⁸



Source: iGR, 2017

For context, the estimated GDP in 2017 is \$19.28 trillion (in nominal/current dollars). iGR’s estimate for the total value of all U.S. consumer, internet-driven transactions therefore equals 49.8% of GDP.

Table 3 shows these same values on a per capita basis. Note that the population numbers of the respective urban and rural regions were used to calculate the per person internet-driven transaction value. The values shown are the annual estimated value of online transactions driven by use of the given device.

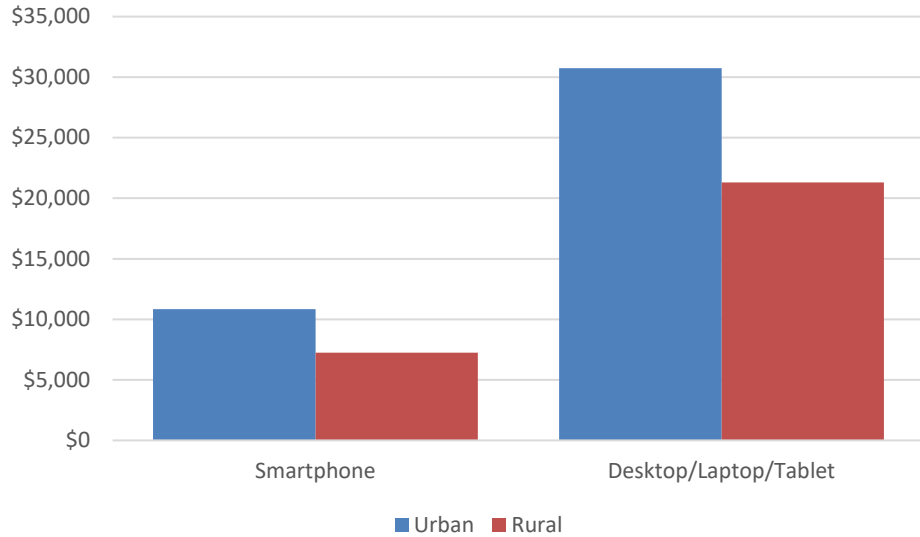
Table 3: Annual Per Person Internet-driven Transaction Value by Device, Urban vs. Rural

	Urban	Rural
Total Population (18+)	198,017,880	47,230,565
Annual Smartphone Transaction Value (per person)	\$10,835	\$7,236
Annual Desktop/Laptop/Tablet Transaction Value (per person)	\$30,728	\$21,318

Source: iGR, 2017

⁸ Note that the scale on Figure 19 is in trillions of dollars – \$1 trillion (thousand billion) up to \$9 trillion

Figure 20: Per Person Internet-driven Transaction Value by Device, Urban vs. Rural



Source: iGR, 2017

Table 4 shows the average per-transaction value driven by device type.

Table 4: Average Value Driven per Online Consumer Transaction by Device Type, Urban and Rural

	Urban	Rural
Average value driven per smartphone transaction	\$123.18	\$113.15
Average value driven per desktop/laptop/tablet transaction	\$145.95	\$129.31

Source: iGR, 2017

Internet Transaction Forecast

To create its forecast for internet-driven transactions volume and value, *iGR* first grew nominal GDP by 2% per year through 2022 and forecast U.S. population at a compound annual growth rate (CAGR) of 0.8%. The growth rates used for both the GDP and U.S. population forecasts are conservative relative to the historical trends.

Table 5: Nominal GDP Forecast and U.S. Population Forecast, 2017–2022

	2017	2018	2019	2020	2021	2022	CAGR
GDP in billions of current U.S. dollars	\$19,227	\$19,611	\$20,003	\$20,404	\$20,812	\$21,228	2.0%
U.S. Population forecast (millions)	326.63	329.26	331.88	334.50	337.11	339.71	0.8%

Source: *iGR*, 2017

iGR next calculated the number of online transactions per person as the following table shows. *iGR* assumed a gradual increase in transactions per person over the next five years to 300 online transactions per person per year.

We assume this increase because the internet is already pervasive and usage of it increases every year. With each year, it becomes increasingly easier to do everything online. For example, online grocery shopping is something that is rarely done today, but in several years' time may become common particularly assuming Amazon's acquisition of Whole Foods is a reliable predictor.

Table 6: Internet-driven Consumer Transactions Forecast, 2017–2022

	2017	2018	2019	2020	2021	2022	CAGR
Transactions per person per year	214	229	245	262	281	300	7.0%
Total internet-driven transactions (billions)	69.90	75.40	81.31	87.64	94.73	101.91	7.8%

Source: *iGR*, 2017

Using table 4, *iGR* next calculated the current average economic activity per online transaction—\$137.01. *iGR* held that value constant through the forecast

period. It is possible to make convincing arguments as to why that per transaction value would:

- Increase, even though the volume of transactions also increases. Consumers do more online, but they also begin spending more per transaction online—bigger ticket items, etc.
- Decrease over the forecast period as consumers start doing more “micro” transactions online. This would help drive down the average spending per transaction at a faster rate.

It is entirely possible that both of the above will end up being true, which would mean that it is also possible for the downward and upward pressure on price per transaction to cancel out. Also note that as online-driven spending increases, *iGR* believes that “offline” spending as a percentage of total spending will decrease—essentially the continuation of the current trend that is perhaps exemplified by Amazon’s effect on sales at brick and mortar stores.

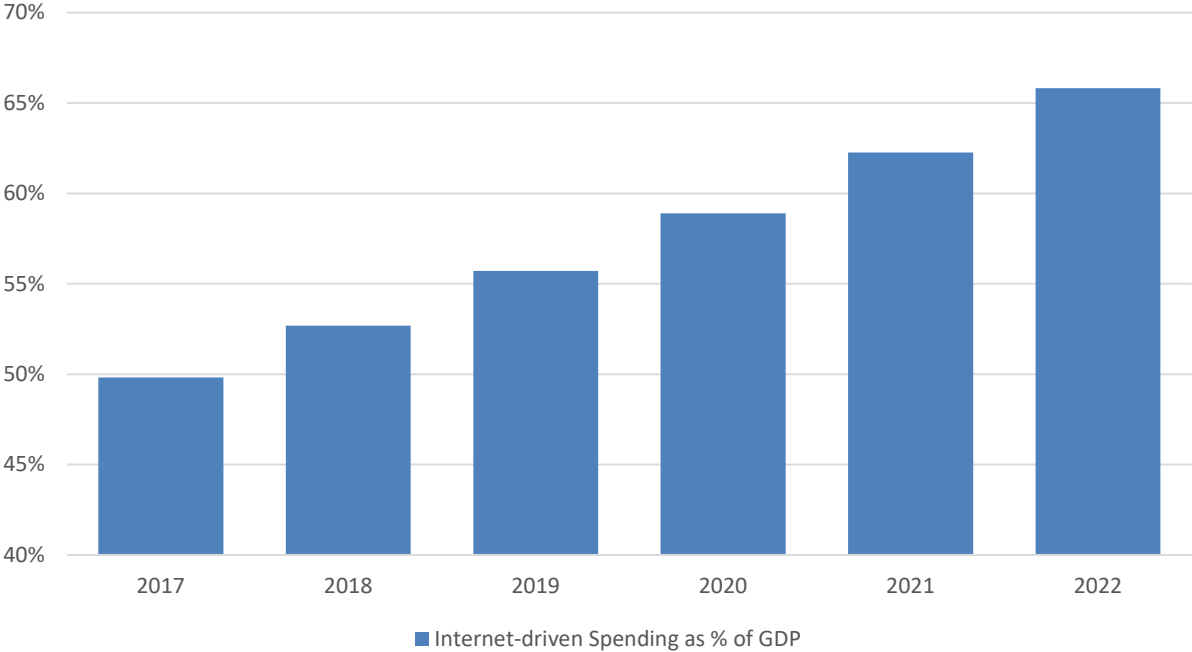
As a result, *iGR* kept the per-transaction value estimate flat for the forecast period.

Table 7: Internet-driven Consumer Transactions Spending Forecast, 2017–2022

	2017	2018	2019	2020	2021	2022	CAGR
Internet spending per transaction	\$137.01	\$137.01	\$137.01	\$137.01	\$137.01	\$137.01	0.0%
Internet-driven spending (trillions)	\$9.58	\$10.33	\$11.14	\$12.02	\$12.96	\$13.97	7.8%
Internet-driven spending as % of GDP	49.8%	52.7%	55.7%	58.9%	62.3%	65.8%	

Source: *iGR*, 2017

Figure 21: Internet-driven Consumer Transactions Spending as % of GDP Forecast, 2017–2022



Source: iGR, 2017

Key Findings

This white paper has demonstrated that there are minor differences between how urban and rural consumers use the internet. Additionally, there are relatively minor differences in urban versus rural adoption of technology and services.

This white paper also presented a model for estimating the frequency of online transactions and the value they generate in terms of consumer spending. The difference in the number of transactions and spending is primarily related to the population difference between urban and rural America.

iGR's survey of U.S. consumers and the model that arose from it found that:

1. Internet usage among urban and rural consumers was largely similar.
2. Rural consumers are responsible for more than 10.8 billion internet-driven transactions annually out of a total of 69.9 billion annual internet-driven transactions. Put another way, rural consumer internet-driven transactions amount to approximately 15.5% of all consumer, internet-driven transactions.
3. The estimated value of those rural online transactions is nearly \$1.4 trillion—or 7% of the U.S.'s nominal gross domestic product (GDP).

Methodology

iGR relied on the following sources when writing this white paper:

- Survey of more than 1,200 U.S. consumers.
- *iGR*'s primary research, reports and forecasts. *iGR* has completed eight U.S. consumer surveys in the past four years.
- Secondary research, including data and statistics from the USCB, BTS, CDC, and Federal Reserve. *iGR* also leveraged SEC filings as well as news and statistics reported by reputable industry outlets.
- The USCB categories of urban, urbanized area and rural were cited from *Defining Rural at the U.S. Census Bureau, December 2016*.

Disclaimer

The opinions expressed in this white paper are those of *iGR* and do not reflect the opinions of the companies or organizations referenced in this paper. All research was conducted exclusively and independently by *iGR*.

About *iGR*

iGR is a market strategy consultancy focused on the wireless and mobile communications industry. Founded by Iain Gillott, one of the wireless industry's leading analysts, we research and analyze the impact new wireless and mobile technologies will have on the industry, on vendors' competitive positioning, and on our clients' strategic business plans.

A more complete profile of the company can be found at <http://www.iGR-inc.com/>.

About the Foundation for Rural Service

The Foundation for Rural Service (FRS) is a 501(c)(3) nonprofit organization based in Arlington, Va., that seeks to sustain and enhance quality of life in America by advancing an understanding of rural issues. Established by NTCA-The Rural Broadband Association in 1994, FRS believes that America is a stronger, more unified nation when all of its communities have access to affordable, quality communications services.

For FRS, the success of rural America is not just a rural issue but a national imperative.