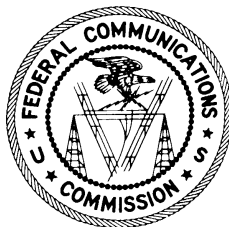


Internet Access Services: Status as of June 30, 2017

Industry Analysis and Technology Division
Wireline Competition Bureau
November 2018



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TABLE OF CONTENTS

SECTION 1: OVERVIEW & HIGHLIGHTS	1
Introduction	1
Total Connections	2
Figure 1 Fixed and Mobile Connections by Speed 2014-2017	2
Connections by Speed	3
Figure 2(a) Distribution of Fixed Connections by Downstream Speed.....	3
Figure 2(b) Distribution of Fixed Connections by Upstream Speed	4
Figure 3 Fixed Connections by Speed 2014-2017	5
Number of Providers by Census Block	6
Figure 4 Percentages of Developed Census Blocks in which Providers Report Deployment of Residential Fixed Broadband.....	6
Internet Access Subscribership	7
Figure 5 Fixed Connections 2002-2017	7
Other Report Highlights	8
SECTION 2: SUMMARY STATISTICS - THE NATION	10
SECTION 3: SUMMARY STATISTICS - THE STATES	28
SECTION 4: SUMMARY STATISTICS - COUNTIES AND CENSUS TRACTS	38
SECTION 5: CORRELATION RESULTS - DEMOGRAPHIC MEASURES	48
Technical Notes	56
Glossary	59

SECTION 1: OVERVIEW & HIGHLIGHTS

Introduction

This report summarizes information about Internet access connections in the United States as of June 30, 2017 as collected by FCC Form 477. For purposes of this report, Internet access *connections* are those in service, over 200 kilobits per second (kbps) in at least one direction, and reported to the FCC through Form 477.¹

The report includes data on total and residential Internet access connections by downstream and upstream speed, by technology, by geography, and over time. Section 2 of the report presents nationwide statistics, Section 3 provides state-level data, and Section 4 includes data on the subscribership differences among counties and census tracts.² In addition, Section 5 of the report includes an analysis of the correlations between subscribership ratios and various demographic measures.³ Maps depicting the number of fixed connections per 1,000 households by census tract are available online at <https://www.fcc.gov/reports-research/reports/internet-access-services-reports/internet-access-services-reports>.

¹ See the Technical Notes and Glossary at the end of this report for more-detailed information about the Form 477 data collection and the meaning of terms used in this report. Note that the Form 477 data for the June 30, 2014 filing period were not subject to typical quality checks. See *Internet Access Services: Status as of December 31, 2014* (March 2016) at 2, available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-338630A1.pdf. In addition, the figures on mobile broadband subscribership by speed tier (formerly Figures 4(a), 4(b), and 12) have been removed to maintain firm confidentiality.

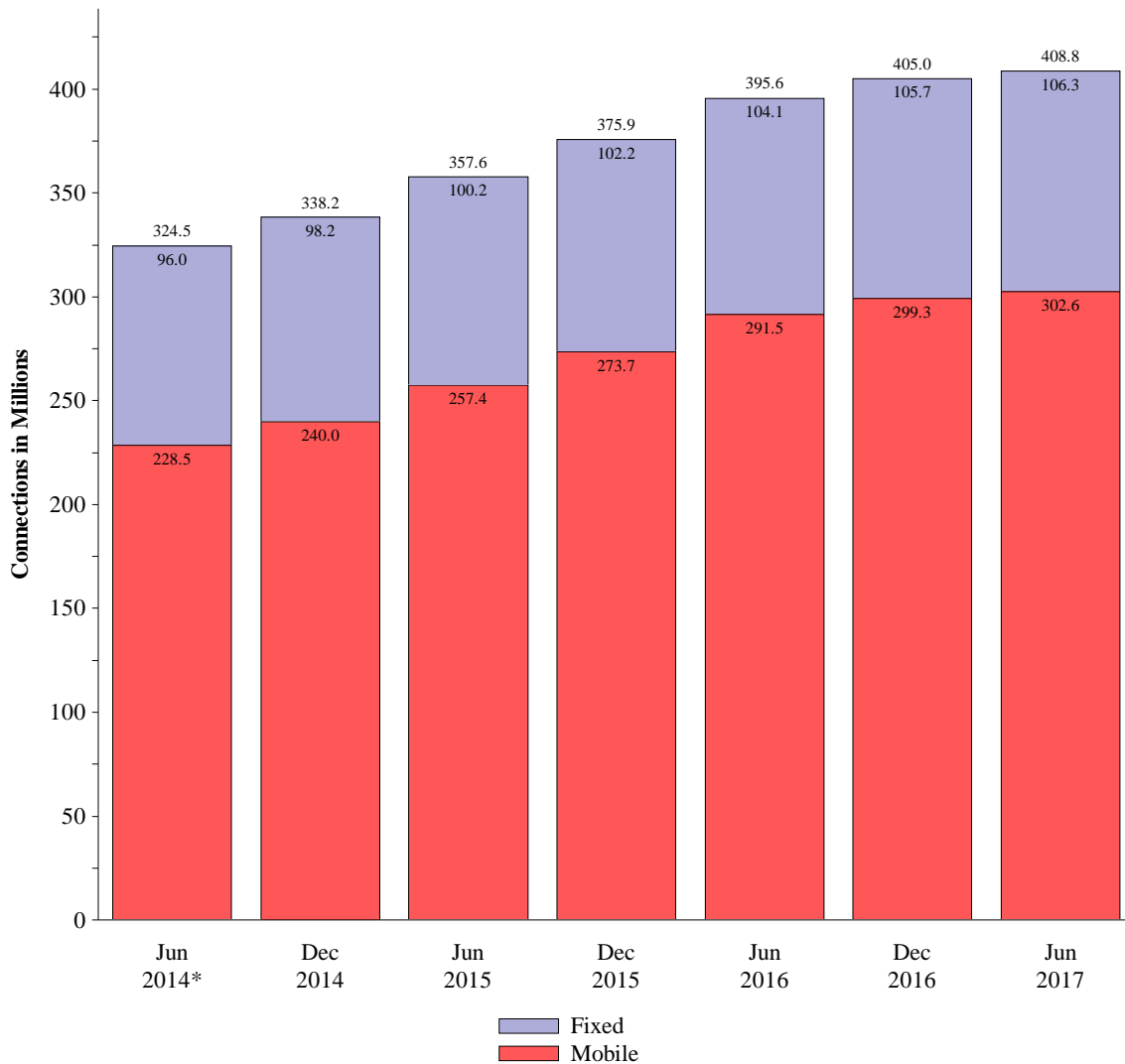
² The Commission began collecting census tract-level data for data as of December 31, 2008. See *High-Speed Services for Internet Access: Status as of December 31, 2008* (February 2010) at 1-4, available at <http://www.fcc.gov/encyclopedia/high-speed-services-internet-access-reports> (*December 2008 High-Speed Report*).

³ Publicly-available data that are too voluminous to include in this report are available online at <https://www.fcc.gov/general/fcc-form-477-additional-data>.

Total Connections

- As shown in Figure 1, total Internet connections increased by about 3% between June 2016 and June 2017 to 409 million. Mobile Internet connections increased about 4% year-over-year to 303 million in June 2017, while fixed connections grew to 106 million – up about 2% from June 2016.
- Mobile Internet connections have been revised upward since our last report. For example, 299 million connections are reported here as of year-end 2016, up from 270 million (10.7%) in our last report. The revision is largely due to better reporting of subscriptions sold through mobile virtual network operators (MVNOs). We estimate the number of mobile Internet connections remains underreported by as much as 5% through June 2017.

Figure 1
Fixed and Mobile Connections 2014-2017



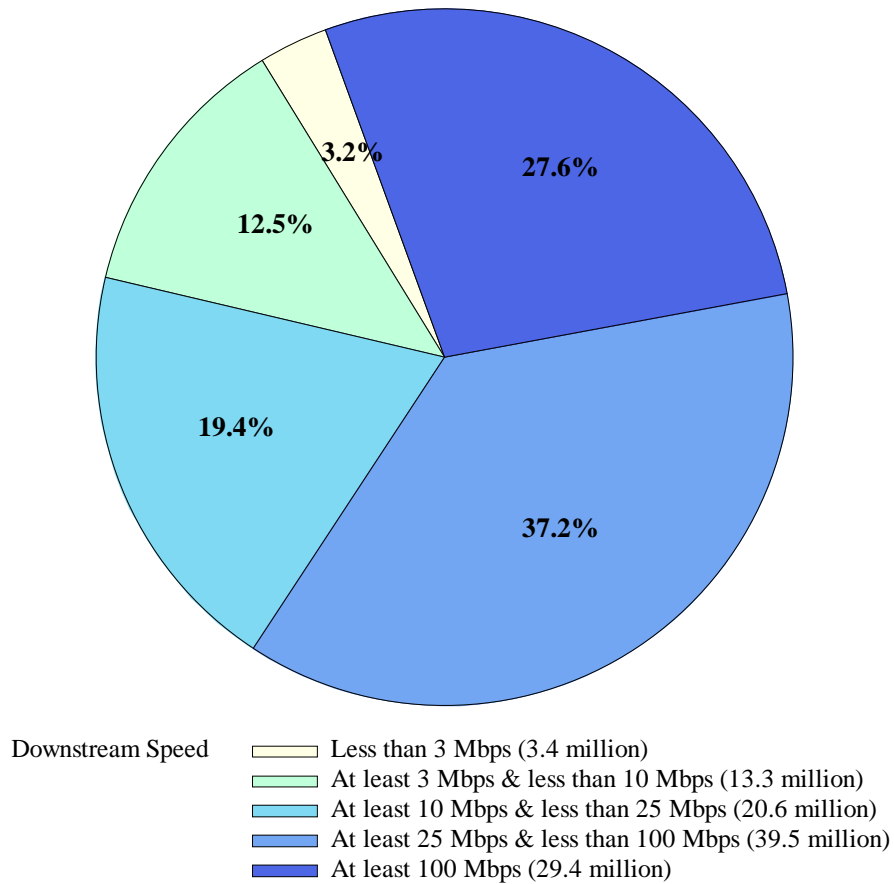
* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals elsewhere in this report due to rounding. Connections include both residential and business connections.

Connections by Speed

Fixed connections – downstream speeds. Figure 2(a) illustrates how the 106 million fixed connections reported for June 2017 were distributed across the five groups of *downstream speeds* defined by breakpoints at 3 Mbps, 10 Mbps, 25 Mbps, and 100 Mbps.

Figure 2(a)
Distribution of Fixed Connections (106.3 million) by Downstream Speed
as of June 30, 2017

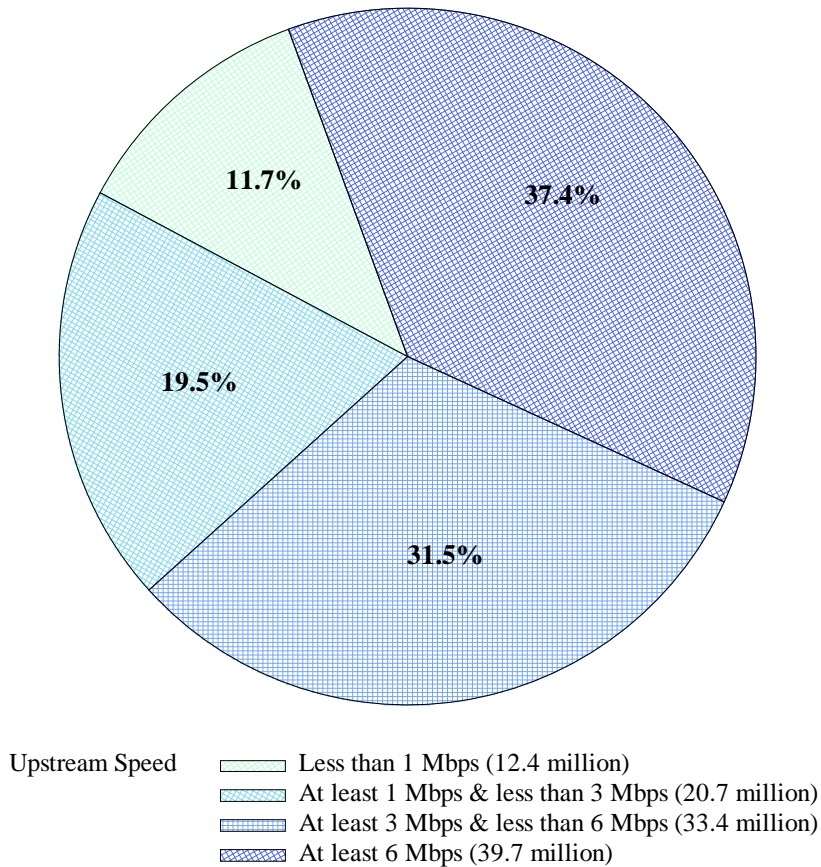


- In June 2017, 3% of fixed connections (or 3 million connections) were slower than 3 Mbps downstream, 13% (or 13 million connections) were at least 3 Mbps downstream but slower than 10 Mbps, 19% (or 21 million connections) were at least 10 Mbps downstream but slower than 25 Mbps, 37% (or 40 million connections) were at least 25 Mbps downstream but slower than 100 Mbps, and 28% (or 29 million connections) were at least 100 Mbps.⁴

⁴ See Figure 9.

Fixed connections – upstream speeds. Figure 2(b) illustrates how the 106 million fixed connections reported for June 2017 were distributed across the four groups of *upstream speeds* defined by breakpoints at 1 Mbps, 3 Mbps, and 6 Mbps.

Figure 2(b)
Distribution of Fixed Connections (106.3 million) by Upstream Speed
as of June 30, 2017

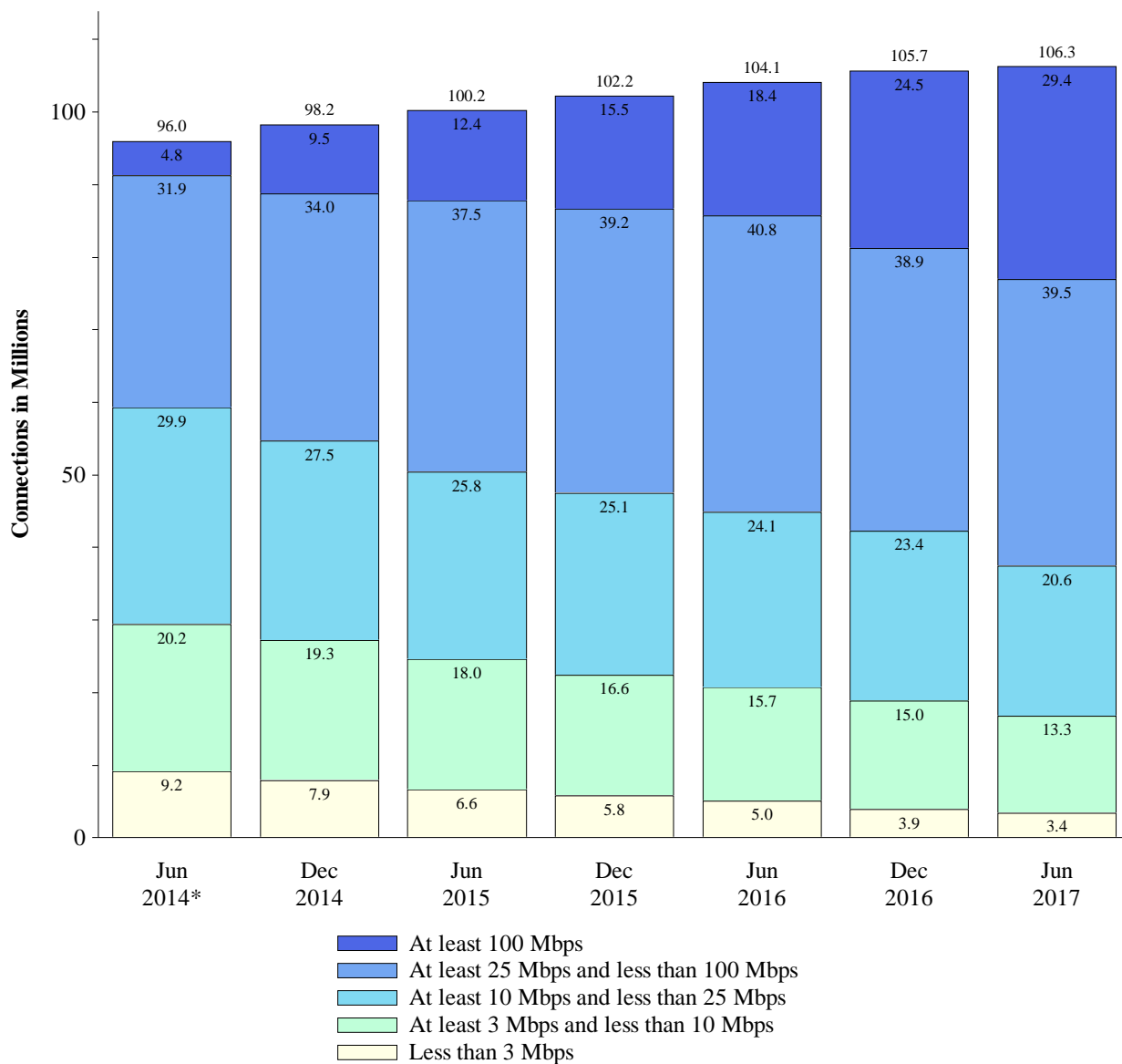


- In June 2017, 12% of fixed connections (or 12 million connections) were slower than 1 Mbps upstream, 20% (or 21 million connections) were at least 1 Mbps upstream but slower than 3 Mbps, 32% (or 33 million connections) were at least 3 Mbps upstream but slower than 6 Mbps, and 37% (or 40 million connections) were at least 6 Mbps upstream.⁵

Fixed connections by downstream speed over time. Figure 3 illustrates how the composition of total fixed Internet connections by different speed groups has changed from 2014 to 2017.

⁵ *Ibid.*

Figure 3
Fixed Connections by Downstream Speed 2014-2017



* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

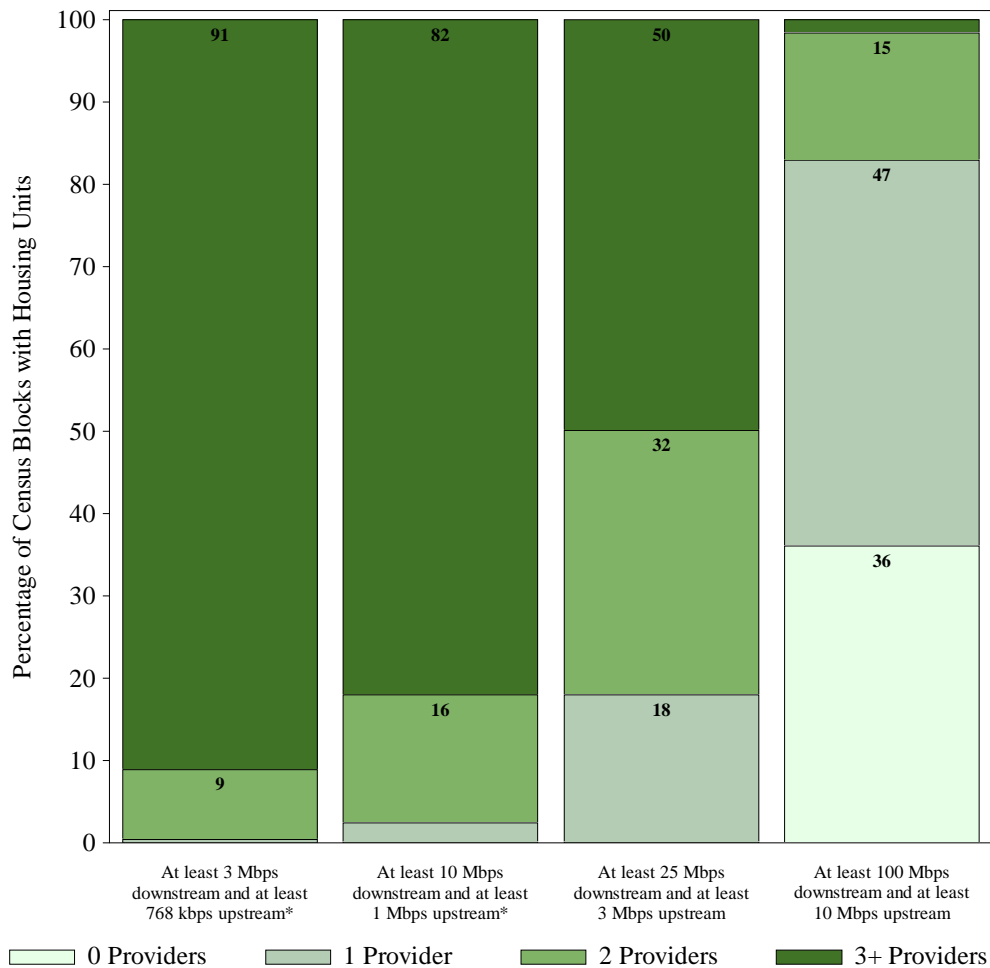
The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals elsewhere in this report due to rounding. Connections include both residential and business connections.

- The percentage of fixed connections with a downstream speed of at least 25 Mbps has grown from 38% (or 37 million connections) in June 2014 to 65% (or 69 million connections) in June 2017. Over the same period, the percentage of fixed connections with slower downstream speeds of less than 3 Mbps has decreased from 9% (or 9 million connections) in June 2014 to 3% (or 3 million connections) in June 2017.

Number of Providers by Census Block

In Figure 4, we show the percentage of “developed” census blocks – blocks that contain housing units – with zero, one, two, or three or more fixed broadband providers offering residential Internet access service at different speeds in June 2017. This information is taken from the block-level Form 477 fixed broadband deployment data that the Commission began collecting in 2014.⁶ A provider that reports offering service in a particular census block may not offer service, or service at that speed, to all locations in the census block. Accordingly, the number of providers shown in Figure 4 does not necessarily reflect the number of choices available to a particular household and does not purport to measure competition.

Figure 4
Percentages of Developed Census Blocks in which Providers Reported the Deployment of Residential Fixed Broadband as of June 30, 2017



* Satellite service providers report offering Internet access at bandwidths of at least 10 Mbps downstream and 1 Mbps upstream in 99.8% of developed census blocks

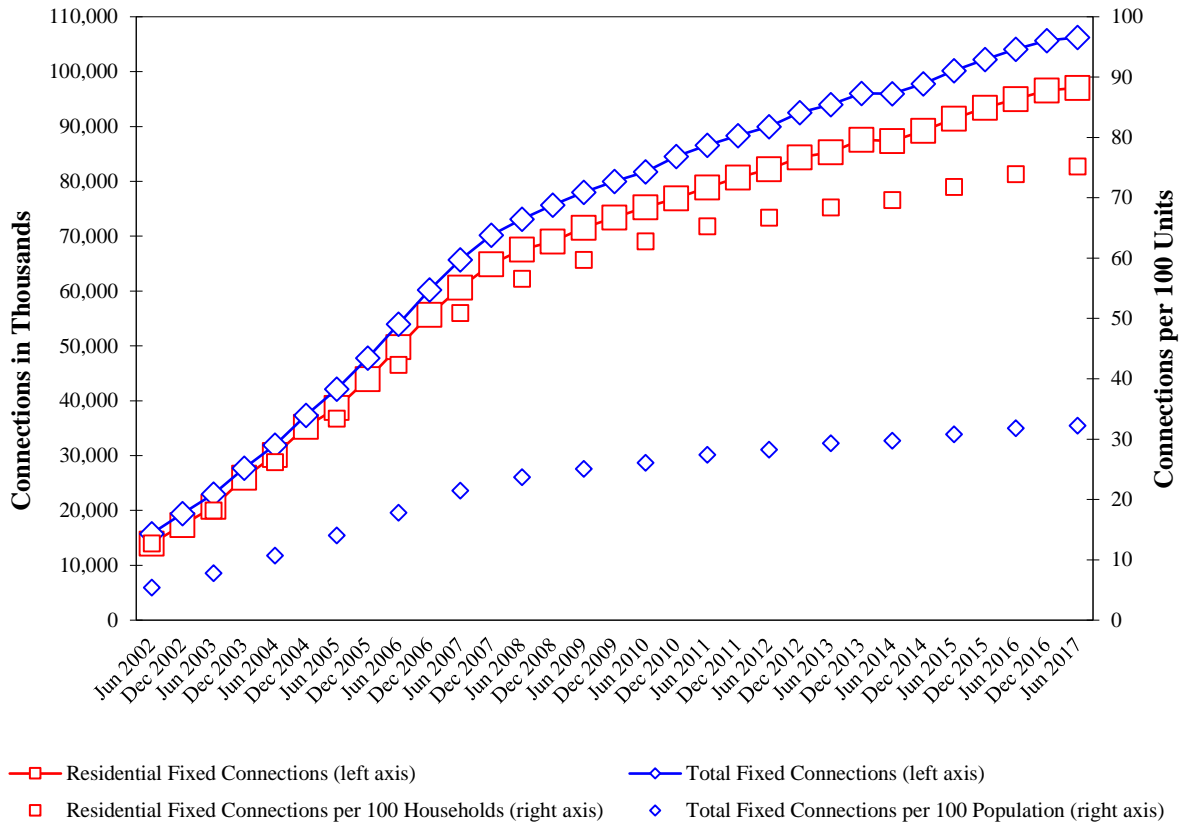
Column figures may not sum to 100% due to rounding. Developed census blocks are those with housing units based on the 2010 census.

⁶ Download these data and explore the interactive map at <https://broadbandmap.fcc.gov/#/>.

Internet Access Subscribership

Figure 5 illustrates the number of total and residential fixed Internet access connections (connections over 200 kbps in at least one direction except mobile wireless connections), as well as the number of total fixed connections per 100 persons and the number of residential fixed connections per 100 households, since 2002.⁷

Figure 5
Fixed Connections 2002-2017
 (Connections over 200 kbps in at least one direction)



- Between June 2007 and June 2017, total (business and residential) fixed connections grew from 66 million connections to 106 million connections – at a compound annual growth rate of 5% per year.⁸

⁷ For data through December 2004, only those providers with at least 250 connections in a state were required to report. Historical fixed-location connection counts not included in this report may be found in *June 2008 High-Speed Report* at Tables 1 and 3, available in Excel format at <https://www.fcc.gov/general/reports-high-speed-services-internet-access>.

⁸ The compound annual growth rate (CAGR) is a smoothed rate of growth calculated in three steps: divide the ending value by the beginning value; raise the result of that division to a power equal to one divided by the number of years in the period (in this case, 10 years, so the power is 1/10); subtract the number one from the result of the second step.

- Over the same ten-year period, residential fixed connections grew from 61 million connections to 97 million connections – also at a compound annual growth rate of 5% per year.
- From June 2007 to June 2017, the number of residential fixed connections per 100 U.S. households increased from 51 to 75.⁹

Other Report Highlights

Typical speeds

- The median downstream speed of all reported fixed connections was 50 Mbps and the median upstream speed was 5 Mbps. For residential fixed connections, the median downstream speed was 50 Mbps and the median upstream speed was 5 Mbps.

Residential connections

- Residential fixed Internet access connections increased by about 2% between June 2016 and June 2017, to 97 million. *See* Figure 7.
- Residential (non-business) mobile wireless Internet access connections on mobile devices with data plans for full Internet access increased by 4%, to 256 million, between June 2016 and June 2017. *See* Figure 7.
- Approximately 83% of residential fixed connections had a speed of at least 10 Mbps downstream and 1 Mbps upstream in June 2017, while 66% had a speed of at least 25 Mbps downstream and 3 Mbps upstream. About 29% percent of all residential fixed connections had a downstream speed of at least 100 Mbps. *See* Figures 10 and 27.
- As a national average in June 2017, there were 68 residential fixed connections with speeds of at least 10 Mbps downstream and 1 Mbps upstream per 100 households; 54 residential fixed connections with speeds of at least 25 Mbps downstream and 3 Mbps upstream per 100 households; and 18 residential fixed connections with speeds of at least 100 Mbps downstream and 10 Mbps upstream per 100 households.¹⁰ *See* Figure 32.

⁹ We calculate residential fixed connections per 100 *households* using, in the denominator, U.S. household estimates from the Census Bureau’s Current Population Survey (CPS) for July of each year and, for Puerto Rico and the other inhabited island areas, Census 2010 households for 2010 and later years and Census 2000 households for the earlier years. (The CPS also estimates U.S. households for March and November of each year.) Figure 5 also shows total (business and residential) fixed connections per 100 *population*, which we calculate using U.S. Census Bureau population estimates for the United States and Puerto Rico – which are as of July 1 each year – and, for the remaining inhabited island areas, Census 2010 population for 2010 and later years and Census 2000 population for the earlier years. This statistic incorporates connections to business locations into a comparison to persons. (We note that the ratio of accurately-measured residential fixed connections to population has a maximum value for any given country and point in time – the value when every household is connected – if we assume that no household would have more than one fixed connection to its premises. For the United States in June, for example, the maximum value would be 39 because there were about 129 million households in the United States and inhabited insular areas and a population of about 329 million according to the sources used for Figure 5.)

¹⁰ Increases over time in the ratio of residential fixed connections to households indicate that increasing shares of households are connected at home. The ratio is somewhat different from the “take rate” of offered service (which may also be called an “adoption rate”) because some households may be located in areas where no fixed-location service is offered. These methodological differences are discussed in greater detail in *Inquiry Concerning the*

Census tract and county shares of households with reportable connections

- We estimate the share of households with fixed Internet access connections in individual census tracts and counties as of June 30, 2017.¹¹ We continue to observe substantial variation among these estimates. *See* Figures 37 and 39.

Household subscribership rates and demographics

- The report includes charts that illustrate correlations between household subscribership rates and demographic measures. We update charts based on income, household density, education, age, and race. The data indicate that some demographic variables are correlated with Internet access subscribership rates. *See* Figures 44-50.

Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, Amended by the Broadband Data Improvement Act, GN Docket No.11-121, Eighth Broadband Progress Report, 27 FCC Rcd 10342, 10386, para. 94 (2012).

¹¹ For both census tracts and counties, we continue to find estimates above 100% for the share of households with fixed Internet access connections. *See* p. 57 for more information.

**SECTION 2
SUMMARY STATISTICS: THE NATION**

Table of Contents

Figure 6	Connections over 200 kbps in at Least One Direction 2013-2017	12
Figure 7	Residential Connections over 200 kbps in at Least One Direction 2013-2017	12
Figure 8	Residential Fixed Connections by Speed 2013-2017	13
Figure 9	Distribution of Fixed Connections over 200 kbps in at Least One Direction as of June 30, 2017	14
Figure 10	Distribution of Residential Fixed Connections over 200 kbps in at Least One Direction as of June 30, 2017.....	15
Figure 11	Connections over 200 kbps in at Least One Direction by Technology 2013-2017.....	16
Figure 12	Connections by Technology as of June 30, 2017	16
Figure 13	Residential Connections over 200 kbps in at Least One Direction by Technology 2013-2017	17
Figure 14	Residential Connections by Technology as of June 30, 2017	17
Figure 15	Fixed Connections at Least 3 Mbps Downstream and 768 kbps Upstream by Technology 2013-2017.....	18
Figure 16	Residential Fixed Connections at Least 3 Mbps Downstream and 768 kbps Upstream by Technology 2013-2017	18
Figure 17	Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology 2014-2017.....	19
Figure 18	Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology as of June 30, 2017	19
Figure 19	Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology 2014-2017	20
Figure 20	Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology as of June 30, 2017.....	20
Figure 21	Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology 2014-2017.....	21
Figure 22	Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology as of June 30, 2017	21
Figure 23	Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology 2014-2017.....	22
Figure 24	Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology as of June 30, 2017	22
Figure 25	Residential Fixed Connections over 200 kbps in at Least One Direction by Technology 2013-2017 (Shares of Selected Technologies)	23

Figure 26	Residential Fixed Connections over 200 kbps in at Least One Direction by Technology 2013-2017 (Net Adds for Selected Technologies)	23
Figure 27	Residential Fixed Connections by Technology as of June 30, 2017 (Shares of Selected Technologies for Selected Speeds)	24
Figure 28	Fixed Connections by Downstream Speed Tier and Technology as of June 30, 2017	25
Figure 29	Residential Fixed Connections by Downstream Speed Tier and Technology as of June 30, 2017	26
Figure 30	Nationwide Number of Providers of Connections over 200 kbps in at Least One Direction by Technology 2013-2017	27
Figure 31	Nationwide Number of Providers of Connections over 200 kbps in at Least One Direction - Selected Technologies 2013-2017	27

Figure 6
Connections over 200 kbps in at Least One Direction 2013-2017
(In thousands)

<i>Technology</i>	2013		2014		2015		2016		2017
	<i>Jun</i>	<i>Dec</i>	<i>Jun*</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun</i>
Total	284,692	293,397	324,471	338,202	357,613	375,895	395,603	404,960	408,816
Total Fixed	93,986	96,032	95,982	98,245	100,179	102,216	104,087	105,704	106,254
Mobile Wireless	190,706	197,365	228,489	239,957	257,434	273,679	291,516	299,256	302,562

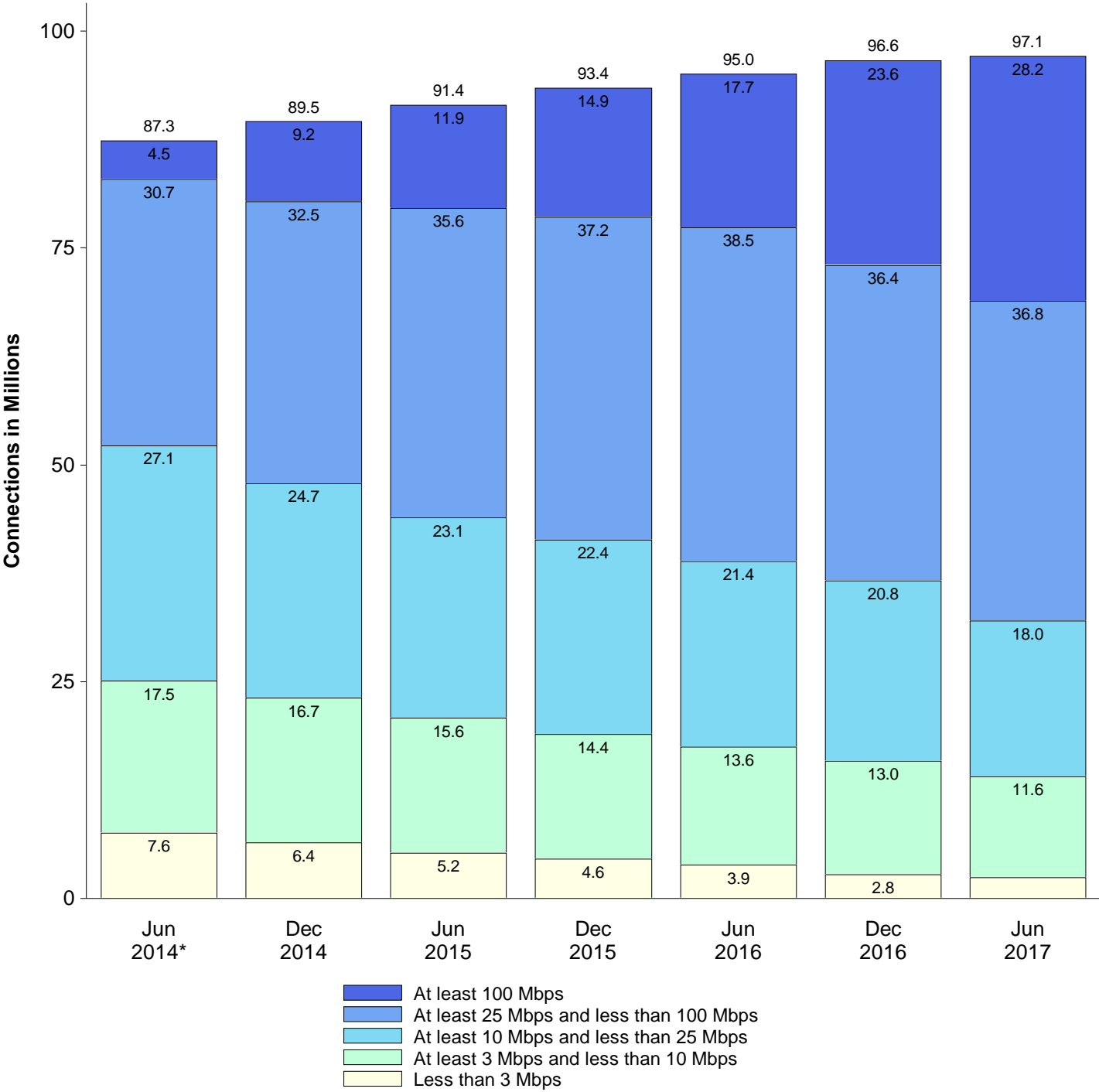
Figure 7
Residential Connections over 200 kbps in at Least One Direction 2013-2017
(In thousands)

<i>Technology</i>	2013		2014		2015		2016		2017
	<i>Jun</i>	<i>Dec</i>	<i>Jun*</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun</i>	<i>Dec</i>	<i>Jun</i>
Total	235,273	246,797	277,551	290,696	306,292	322,557	341,537	349,597	353,057
Total Fixed	85,277	87,599	87,345	89,530	91,439	93,434	95,001	96,597	97,071
Mobile Wireless	149,996	159,197	190,205	201,166	214,853	229,122	246,537	253,000	255,986

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals elsewhere in this report due to rounding.

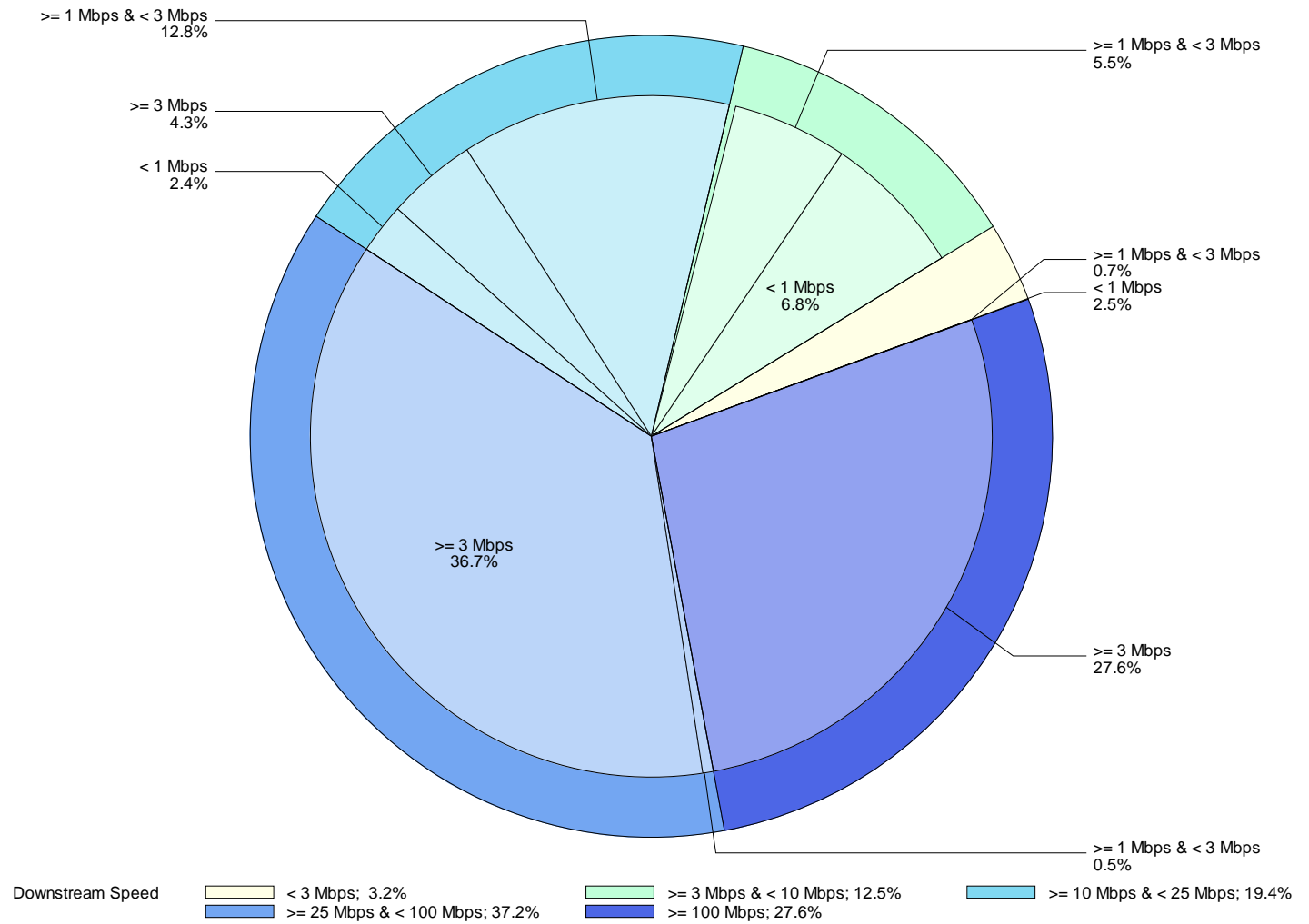
Figure 8
Residential Fixed Connections by Downstream Speed 2014-2017



* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals elsewhere in this report due to rounding.

Figure 9
Distribution of Fixed Connections over 200 kbps in at Least One Direction
as of June 30, 2017



Note: Inner circle (light shading) represents upstream speeds.

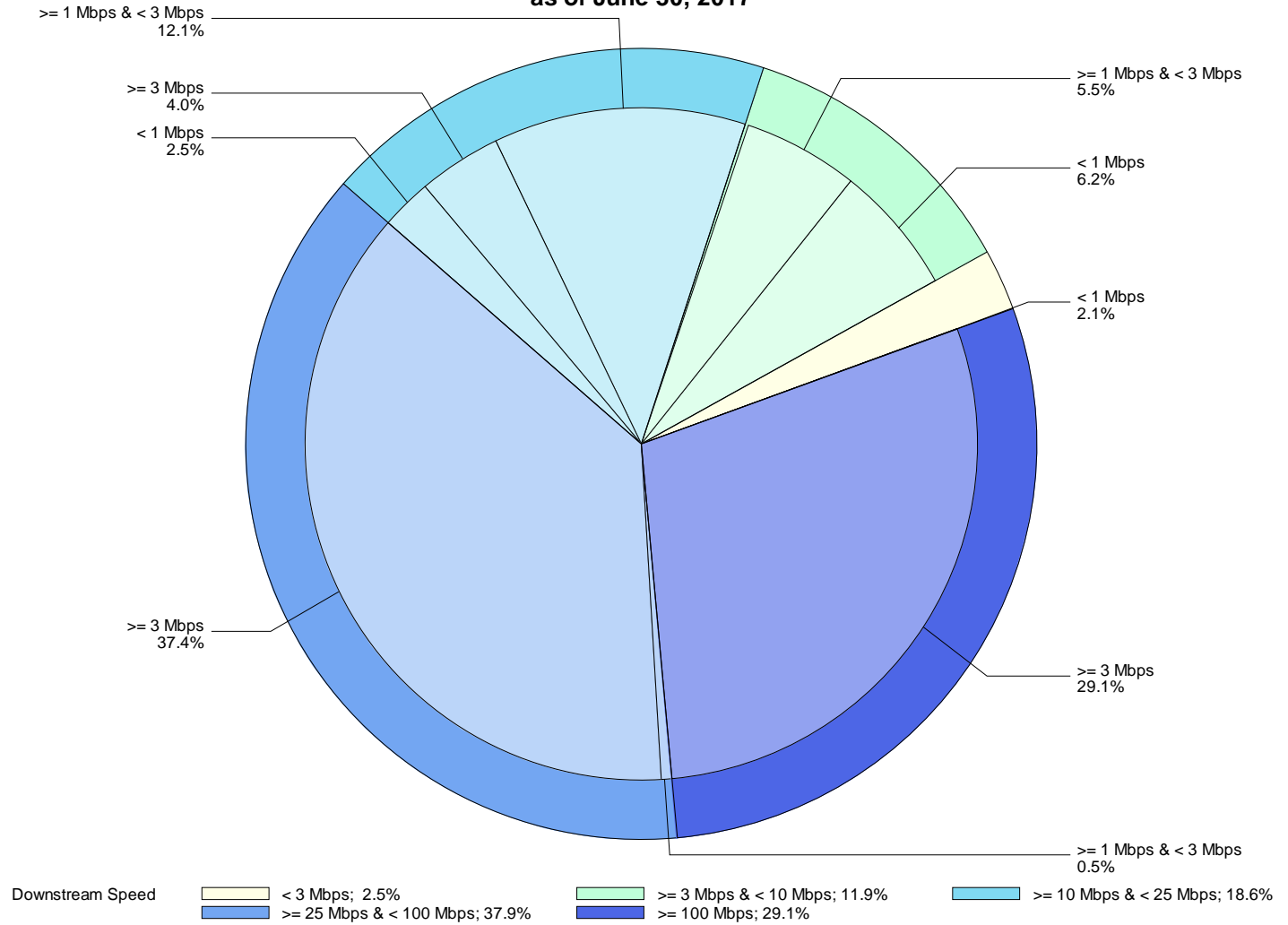
Fixed Connections over 200 kbps in at Least One Direction (in thousands)

Upstream Speed	Downstream Speed					Total
	Less than 3 Mbps	At least 3 Mbps and less than 10 Mbps	At least 10 Mbps and less than 25 Mbps	At least 25 Mbps and less than 100 Mbps	At least 100 Mbps	
Less than 1 Mbps	2,625	7,218	2,536	#	#	12,379
At least 1 Mbps & Less than 3 Mbps	785	5,792	13,581	538	6	20,702
At least 3 Mbps	9	322	4,528	38,958	29,356	73,173
Total	3,418	13,332	20,645	39,496	29,362	106,254

Percentages						
Less than 1 Mbps	2.5	6.8	2.4	0.0	0.0	11.7
At least 1 Mbps & Less than 3 Mbps	0.7	5.5	12.8	0.5	0.0	19.5
At least 3 Mbps	0.0	0.3	4.3	36.7	27.6	68.9
Total	3.2	12.5	19.4	37.2	27.6	100.0

Note: Figures may not sum to totals due to rounding. # = Rounds to zero.
 Source: FCC Form 477.

Figure 10
Distribution of Residential Fixed Connections over 200 kbps in at Least One Direction
as of June 30, 2017



Note: Inner circle (light shading) represents upstream speeds.

Residential Fixed Connections over 200 kbps in at Least One Direction (in thousands)

Upstream Speed	Downstream Speed					Total
	Less than 3 Mbps	At least 3 Mbps and less than 10 Mbps	At least 10 Mbps and less than 25 Mbps	At least 25 Mbps and less than 100 Mbps	At least 100 Mbps	
Less than 1 Mbps	2,052	6,045	2,379	#	0	10,476
At least 1 Mbps & Less than 3 Mbps	382	5,381	11,772	494	5	18,034
At least 3 Mbps	8	153	3,880	36,276	28,244	68,561
Total	2,441	11,579	18,031	36,770	28,249	97,071

Percentages						
Less than 1 Mbps	2.1	6.2	2.5	0.0	0.0	10.8
At least 1 Mbps & Less than 3 Mbps	0.4	5.5	12.1	0.5	0.0	18.6
At least 3 Mbps	0.0	0.2	4.0	37.4	29.1	70.6
Total	2.5	11.9	18.6	37.9	29.1	100.0

Note: Figures may not sum to totals due to rounding. # = Rounds to zero.
 Source: FCC Form 477.

Figure 11
Connections over 200 kbps in at Least One Direction by Technology 2013-2017
(In thousands)

Technology	2013		2014		2015		2016		2017
	Jun	Dec	Jun*	Dec	Jun	Dec	Jun	Dec	Jun
Total	284,692	293,397	324,471	338,202	357,613	375,895	395,603	404,960	408,816
Total Fixed	93,986	96,032	95,982	98,245	100,179	102,216	104,087	105,704	106,254
aDSL	30,657	30,690	29,870	29,533	29,351	28,134	27,488	26,527	25,506
sDSL	117	108	96	72	77	60	55	42	44
Other Wireline ¹	769	772	792	773	706	694	674	655	668
Cable Modem	52,760	54,009	54,011	55,785	57,244	59,706	61,456	63,325	64,059
FTTP ²	7,250	7,745	8,312	9,077	9,688	10,498	11,143	12,053	12,906
Satellite	1,623	1,849	1,964	2,006	2,058	2,071	2,079	1,864	1,826
Fixed Wireless	810	858	935	999	1,056	1,054	1,192	1,238	1,245
Mobile Wireless	190,706	197,365	228,489	239,957	257,434	273,679	291,516	299,256	302,562

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

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Figure 12
Connections by Technology as of June 30, 2017

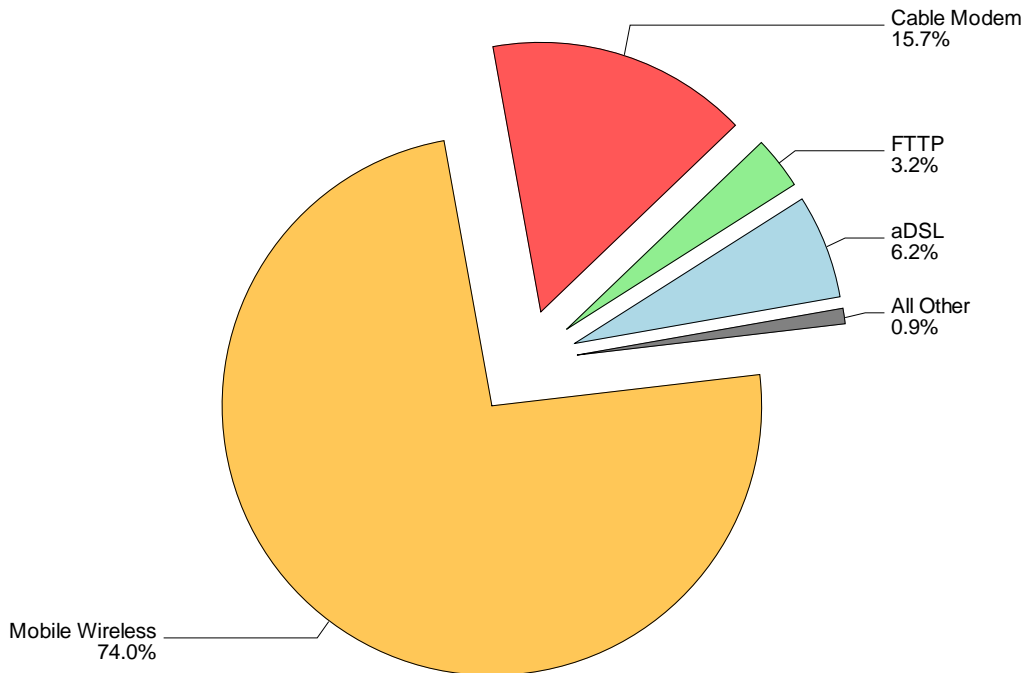


Figure 13
Residential Connections over 200 kbps in at Least One Direction by Technology 2013-2017
(In thousands)

Technology	2013		2014		2015		2016		2017
	Jun	Dec	Jun*	Dec	Jun	Dec	Jun	Dec	Jun
Total	235,273	246,797	277,551	290,696	306,292	322,557	341,537	349,597	353,057
Total Fixed	85,277	87,599	87,345	89,530	91,439	93,434	95,001	96,597	97,071
aDSL	26,869	27,248	26,675	26,442	26,157	25,139	24,486	23,691	22,775
sDSL	43	39	30	19	18	16	10	8	12
Other Wireline ¹	22	22	57	59	59	54	51	32	74
Cable Modem	49,494	50,709	50,389	52,061	53,544	55,799	57,358	59,145	59,687
FTTP ²	6,732	7,176	7,605	8,262	8,842	9,592	10,140	10,956	11,776
Satellite	1,407	1,643	1,760	1,803	1,875	1,891	1,897	1,676	1,637
Fixed Wireless	710	763	829	884	944	943	1,059	1,089	1,111
Mobile Wireless	149,996	159,197	190,205	201,166	214,853	229,122	246,537	253,000	255,986

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

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Figure 14
Residential Connections by Technology as of June 30, 2017

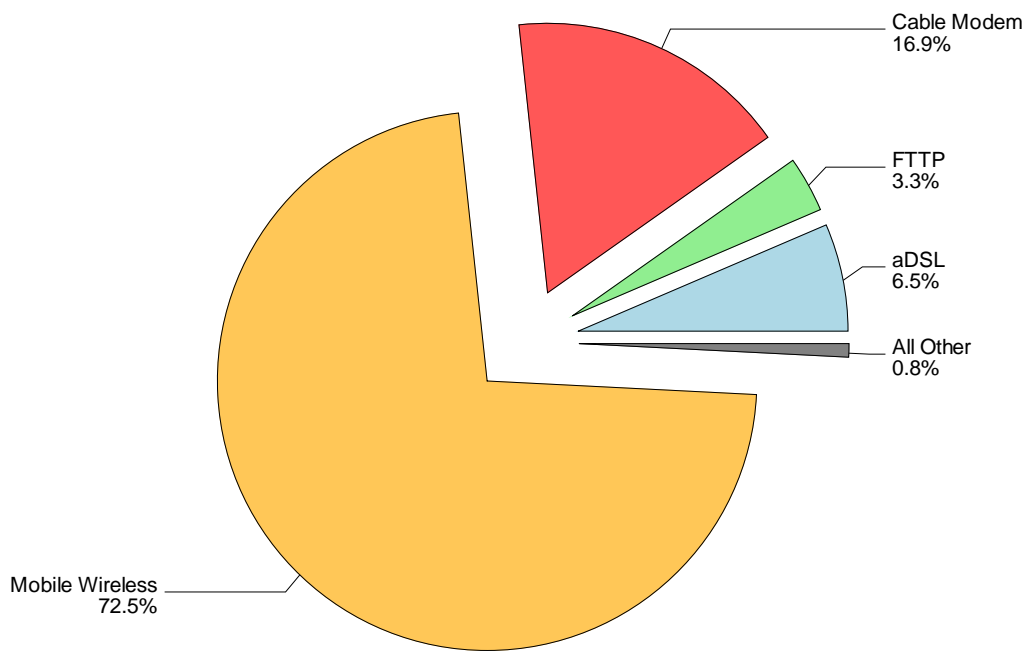


Figure 15
Fixed Connections at Least 3 Mbps Downstream and 768 kbps Upstream by Technology 2013-2017
(In thousands)

Technology	2013		2014		2015		2016		2017
	Jun	Dec	Jun*	Dec	Jun	Dec	Jun	Dec	Jun
Total	68,673	78,175	78,981	83,872	89,011	92,356	95,516	98,750	100,098
aDSL	14,233	18,540	17,246	18,557	20,947	20,744	21,147	21,042	20,621
sDSL	34	36	33	28	24	20	20	20	24
Other Wireline ¹	284	308	310	308	297	330	336	328	355
Cable Modem	46,014	50,236	51,304	53,853	55,819	58,423	60,343	62,855	63,719
FTTP ²	6,981	7,486	8,111	8,974	9,552	10,383	11,030	11,953	12,813
Satellite	791	1,181	1,424	1,558	1,690	1,744	1,775	1,609	1,586
Fixed Wireless	337	388	553	594	681	712	865	943	981

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

= Rounds to zero.

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals due to rounding.

Figure 16
Residential Fixed Connections at Least 3 Mbps Downstream and 768 kbps Upstream by Technology 2013-2017
(In thousands)

Technology	2013		2014		2015		2016		2017
	Jun	Dec	Jun*	Dec	Jun	Dec	Jun	Dec	Jun
Total	63,342	72,476	73,042	77,540	82,320	85,439	88,197	91,248	92,354
aDSL	12,666	16,715	15,673	16,867	18,988	18,866	19,207	19,133	18,719
sDSL	13	13	7	2	1	2	2	3	7
Other Wireline ¹	21	20	45	50	45	47	49	31	73
Cable Modem	43,061	47,258	47,924	50,308	52,254	54,650	56,353	58,784	59,410
FTTP ²	6,504	6,958	7,491	8,246	8,750	9,512	10,063	10,883	11,704
Satellite	788	1,177	1,419	1,552	1,682	1,734	1,764	1,596	1,571
Fixed Wireless	289	335	483	516	599	628	759	820	870

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

= Rounds to zero.

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals due to rounding.

Figure 17
Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology 2014-2017
(In thousands)

Technology	2014		2015		2016		2017
	Jun*	Dec	Jun	Dec	Jun	Dec	Jun
Total	63,823	68,238	72,713	76,939	80,458	84,108	86,967
aDSL	7,561	8,560	9,471	9,799	10,349	10,810	11,321
sDSL	9	6	9	8	8	10	14
Other Wireline ¹	169	186	182	203	210	217	253
Cable Modem	47,296	49,837	52,658	55,710	57,951	60,349	61,704
FTTP ²	7,601	8,320	8,874	9,575	10,142	11,000	11,884
Satellite	1,016	1,136	1,298	1,393	1,467	1,342	1,373
Fixed Wireless	170	193	221	252	330	379	418

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

= Rounds to zero.

Figure 18
Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream
by Technology as of June 30, 2017

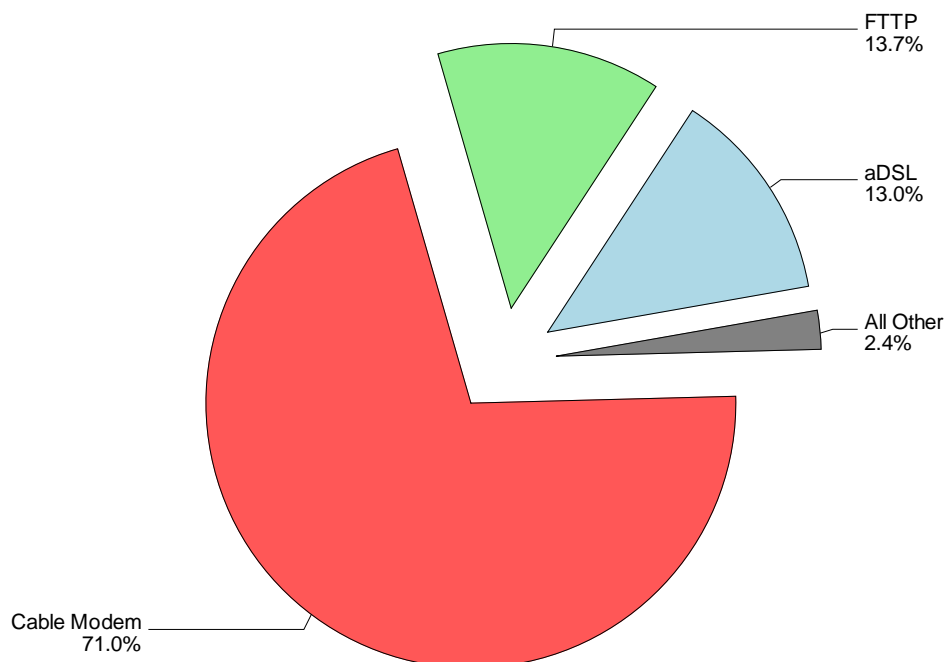


Figure 19
Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream
by Technology 2014-2017
(In thousands)

Technology	2014		2015		2016		2017
	Jun*	Dec	Jun	Dec	Jun	Dec	Jun
Total	59,729	63,732	67,898	71,784	74,840	78,197	80,671
aDSL	7,025	7,970	8,743	9,069	9,526	9,963	10,415
sDSL	3	#	#	1	2	2	6
Other Wireline ¹	33	36	38	43	47	30	71
Cable Modem	44,480	46,772	49,487	52,294	54,274	56,538	57,617
FTTP ²	7,032	7,653	8,144	8,776	9,248	10,004	10,835
Satellite	1,014	1,133	1,293	1,386	1,460	1,333	1,362
Fixed Wireless	142	167	191	213	283	327	365

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

= Rounds to zero.

Figure 20
Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream
by Technology as of June 30, 2017

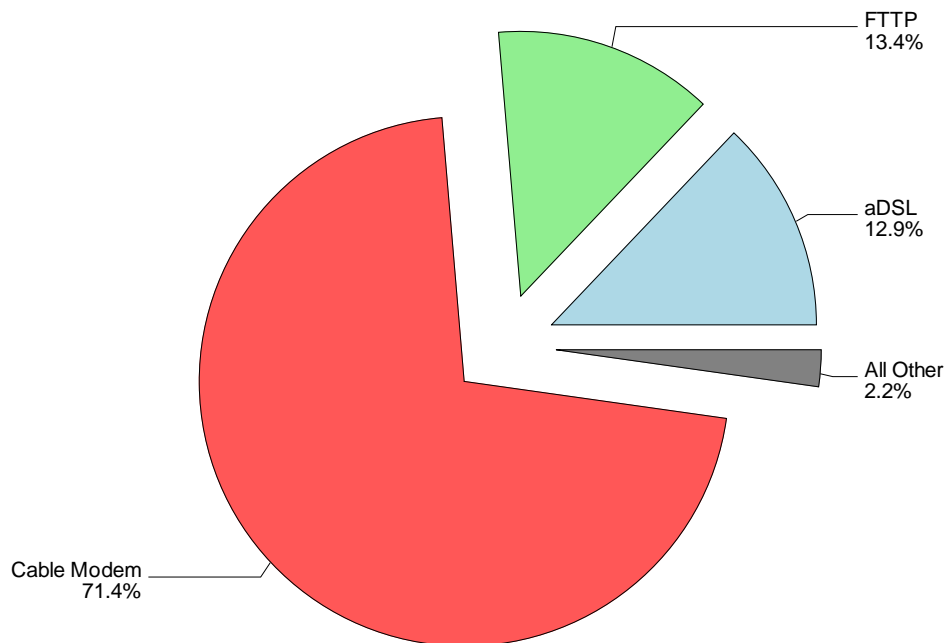


Figure 21
Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology 2014-2017
(In thousands)

Technology	2014		2015		2016		2017
	Jun+	Dec	Jun	Dec	Jun	Dec	Jun
Total	35,924	42,713	48,784	54,335	58,753	62,906	68,041
aDSL	421	587	762	938	1,239	1,476	2,530
sDSL	2	1	1	*	*	*	*
Other Wireline ¹	114	125	125	141	158	170	207
Cable Modem	30,769	36,383	40,979	45,530	48,696	51,740	54,829
FTTP ²	4,600	5,589	6,871	7,691	8,608	9,449	10,374
Satellite	#	#	#	*	*	*	*
Fixed Wireless	19	28	47	55	72	91	120

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

+ The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

* = Data withheld to maintain firm confidentiality.

= Rounds to zero.

Figure 22
Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream
by Technology as of June 30, 2017

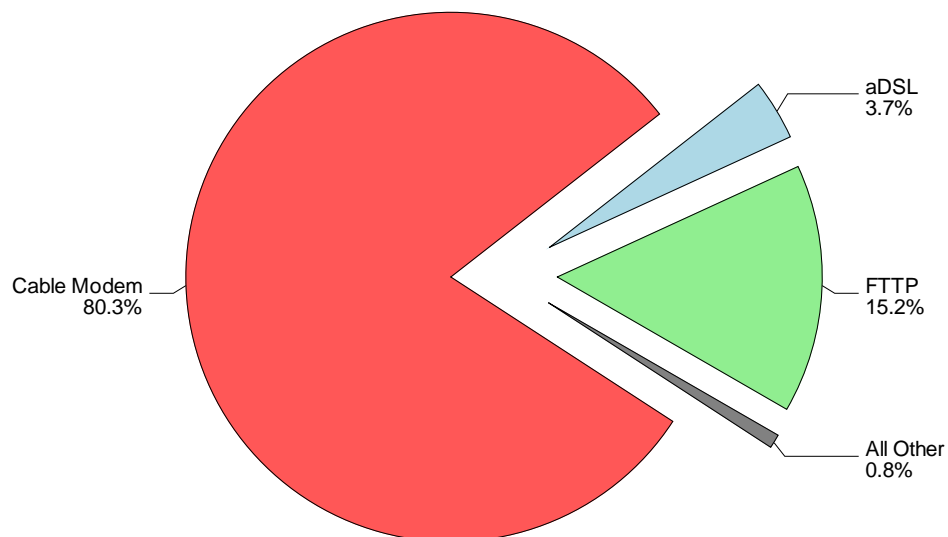


Figure 23
Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream
by Technology 2014-2017
(In thousands)

Technology	2014		2015		2016		2017
	Jun+	Dec	Jun	Dec	Jun	Dec	Jun
Total	34,437	40,916	46,532	51,788	55,694	59,463	64,253
aDSL	397	556	727	897	1,173	1,408	2,418
sDSL	#	#	#	*	*	*	*
Other Wireline ¹	22	26	26	31	41	27	67
Cable Modem	29,806	35,202	39,416	43,746	46,527	49,300	52,154
FTTP ²	4,198	5,111	6,323	7,089	7,916	8,674	9,532
Satellite	0	0	0	*	*	*	*
Fixed Wireless	14	22	40	46	57	75	101

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

+ The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

* = Data withheld to maintain firm confidentiality.

= Rounds to zero.

Figure 24
Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream
by Technology as of June 30, 2017

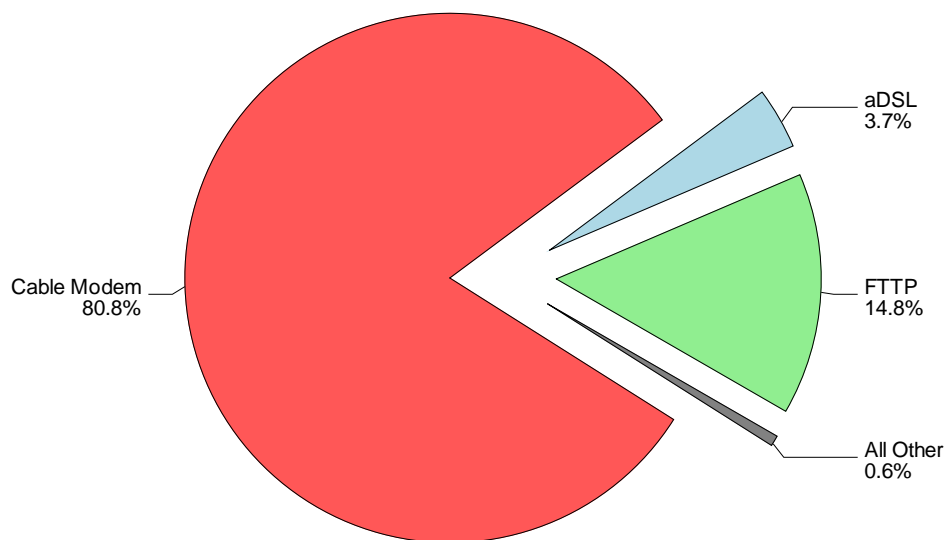
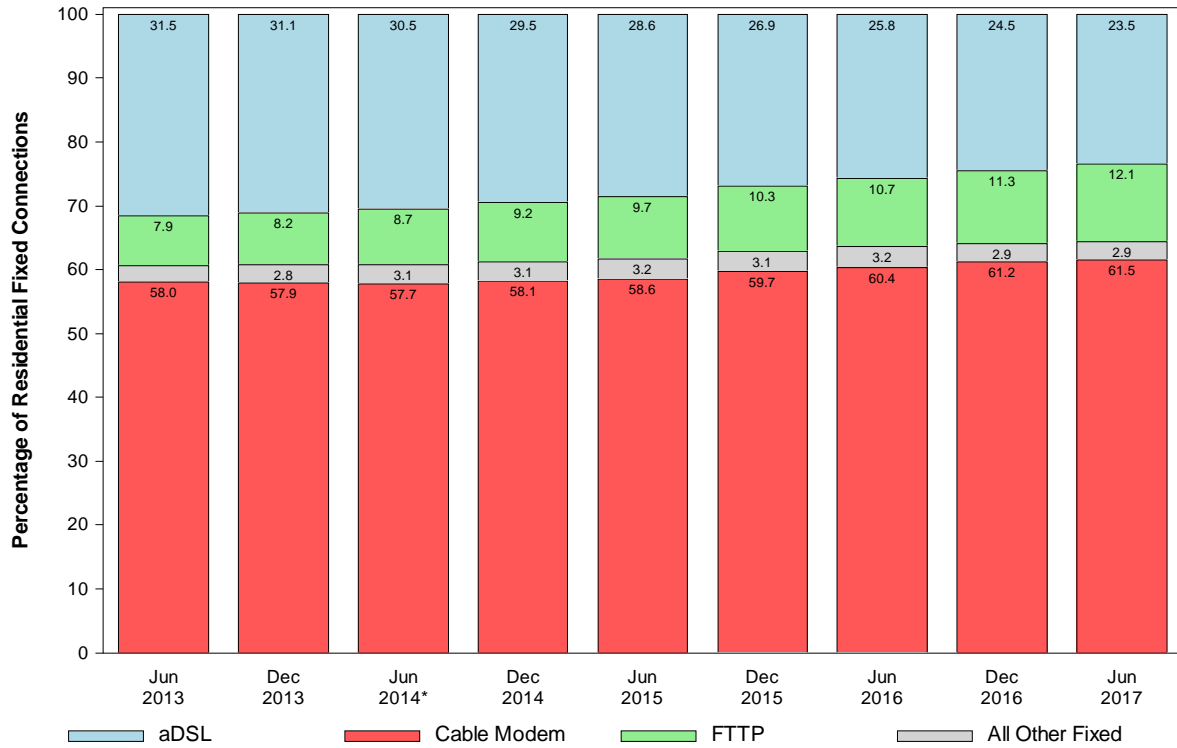


Figure 25
Residential Fixed Connections over 200 kbps in at Least One Direction 2013-2017
 (Shares of selected technologies)



* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised. Figures may not sum to totals due to rounding.

Figure 26
Residential Fixed Connections over 200 kbps in at Least One Direction 2013-2017
 (Net adds for selected technologies)

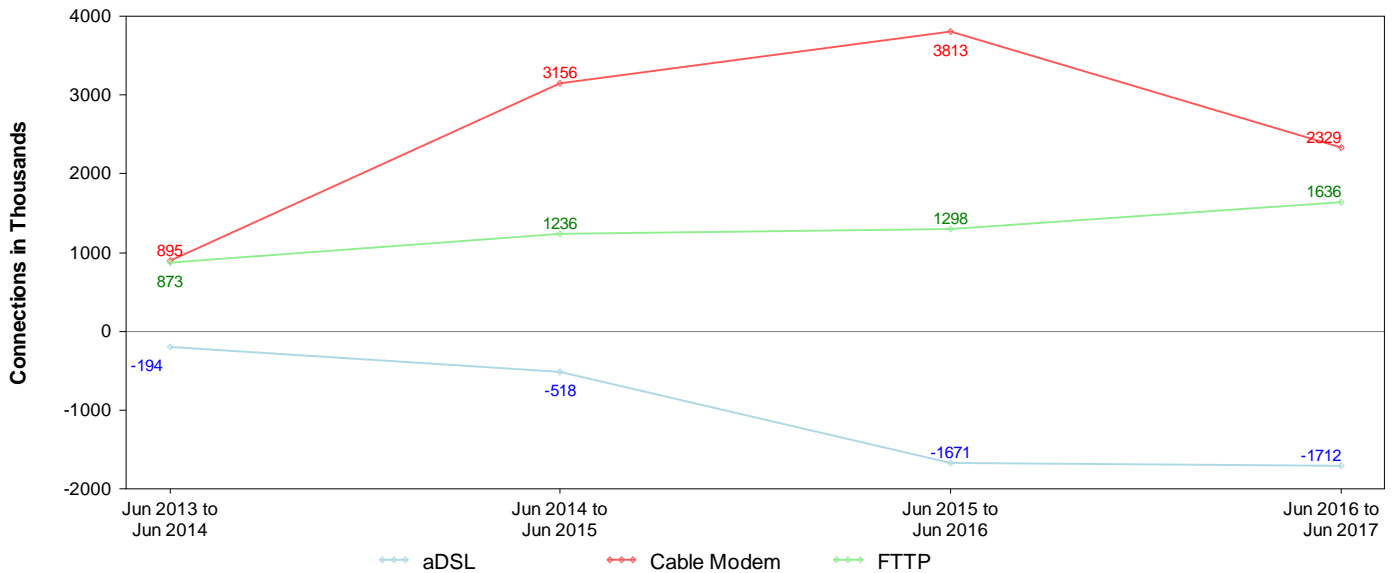


Figure 27
Residential Fixed Connections by Technology as of June 30, 2017
(Shares of selected technologies for selected speeds, connections in thousands)

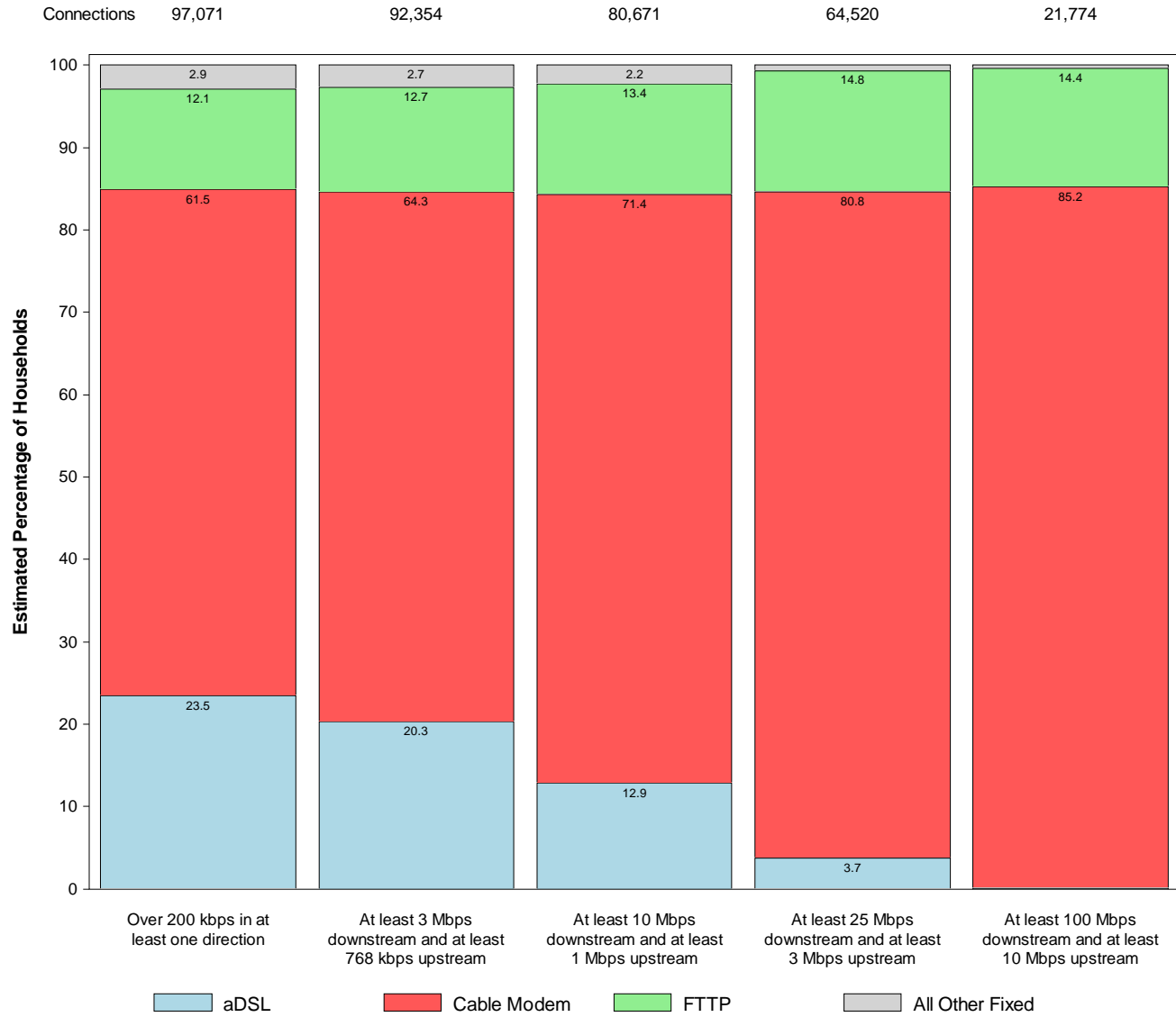


Figure 28
Fixed Connections by Downstream Speed Tier and Technology as of June 30, 2017
(In thousands)

Technology	Downstream Speed						Total
	Less than 1.5 Mbps	At least 1.5 Mbps and less than 3 Mbps	At least 3 Mbps and less than 10 Mbps	At least 10 Mbps and less than 25 Mbps	At least 25 Mbps and less than 100 Mbps	At least 100 Mbps	
aDSL	856	1,569	9,622	10,571	2,870	18	25,506
sDSL	12	8	10	10	*	*	44
Other Wireline ¹	47	263	105	46	32	175	668
Cable Modem	67	79	2,148	6,793	29,314	25,659	64,059
FTTP	27	36	622	1,807	6,934	3,479	12,906
Satellite	205	32	216	1,124	*	*	1,826
Fixed Wireless	78	140	608	295	94	29	1,245
Total	1,292	2,127	13,332	20,645	39,496	29,362	106,254

Percentages							
aDSL	0.8	1.5	9.1	9.9	2.7	0.0	24.0
sDSL	0.0	0.0	0.0	0.0	*	*	0.0
Other Wireline ¹	0.0	0.2	0.1	0.0	0.0	0.2	0.6
Cable Modem	0.1	0.1	2.0	6.4	27.6	24.1	60.3
FTTP	0.0	0.0	0.6	1.7	6.5	3.3	12.1
Satellite	0.2	0.0	0.2	1.1	*	*	1.7
Fixed Wireless	0.1	0.1	0.6	0.3	0.1	0.0	1.2
Total	1.2	2.0	12.5	19.4	37.2	27.6	100.0

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

= Rounds to Zero.

* = Data withheld to maintain firm confidentiality.

Note: Figures may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 29
Residential Fixed Connections by Downstream Speed Tier and Technology as of June 30, 2017
(In thousands)

Technology	Downstream Speed						Total
	Less than 1.5 Mbps	At least 1.5 Mbps and less than 3 Mbps	At least 3 Mbps and less than 10 Mbps	At least 10 Mbps and less than 25 Mbps	At least 25 Mbps and less than 100 Mbps	At least 100 Mbps	
aDSL	755	1,268	8,347	9,654	2,733	17	22,775
sDSL	4	1	1	4	*	*	12
Other Wireline ¹	#	1	2	3	6	61	74
Cable Modem	60	45	1,905	5,392	27,275	25,009	59,687
FTTP	17	27	565	1,600	6,426	3,141	11,776
Satellite	54	9	211	1,116	*	*	1,637
Fixed Wireless	70	128	548	262	82	22	1,111
Total	961	1,480	11,579	18,031	36,770	28,249	97,071

Percentages							
aDSL	0.8	1.3	8.6	9.9	2.8	0.0	23.5
sDSL	0.0	0.0	0.0	0.0	0.0	*	0.0
Other Wireline ¹	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Cable Modem	0.1	0.0	2.0	5.6	28.1	25.8	61.5
FTTP	0.0	0.0	0.6	1.6	6.6	3.2	12.1
Satellite	0.1	0.0	0.2	1.1	*	*	1.7
Fixed Wireless	0.1	0.1	0.6	0.3	0.1	0.0	1.1
Total	1.0	1.5	11.9	18.6	37.9	29.1	100.0

¹ Power Line and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

= Rounds to Zero.

* = Data withheld to maintain firm confidentiality.

Note: Figures may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 30
Nationwide Number of Providers of Connections over 200 kbps in at Least One Direction
by Technology 2013-2017

Technology	2013		2014		2015		2016		2017
	Jun	Dec	Jun+	Dec	Jun	Dec	Jun	Dec	Jun
aDSL	852	851	793	793	792	778	769	774	769
sDSL	246	239	192	187	177	180	172	161	162
Other Wireline ¹	246	245	270	245	240	250	244	236	243
Cable Modem	403	407	394	402	393	392	388	385	383
FTTP	692	744	879	910	931	990	1,016	1,067	1,103
Satellite	5	5	16	14	10	10	6	6	5
Fixed Wireless	771	825	872	923	949	983	1,026	1,069	1,094
Mobile Wireless	79	77	91	98	100	96	99	97	97
Power Line and Other ¹	0	*	-	-	-	-	-	-	-
Total	1,714	1,773	1,816	1,873	1,882	1,918	1,956	2,000	2,029

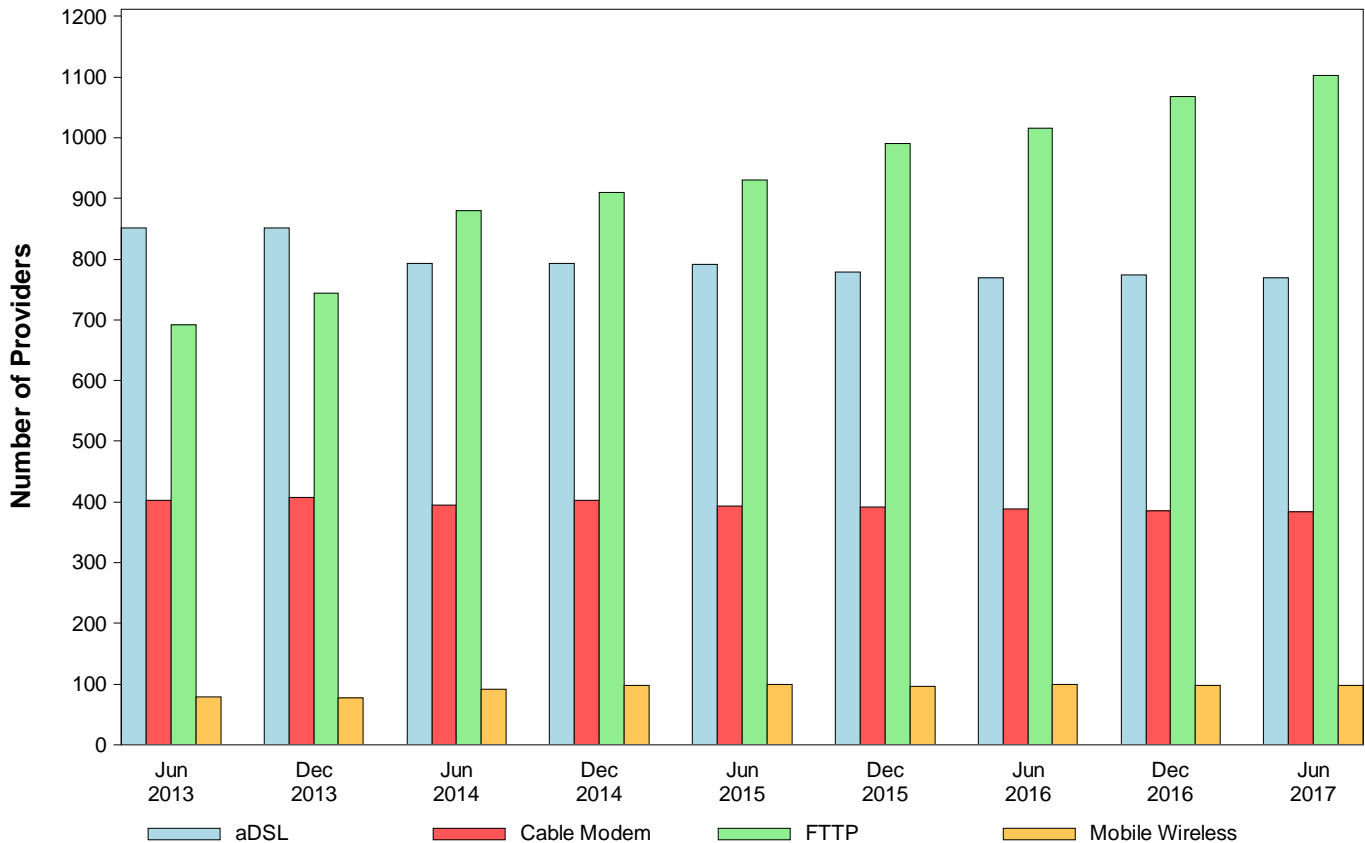
¹ For this Figure, the categories Power Line and All Other were combined with Other Wireline from June 2014 forward.

+ The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).

Multiple Form 477 filers within a holding company structure count as one provider. * = 1-3 providers.

The Commission approved changes to the Form 477 in June 2013 that affect the data beginning in June 2014 (see Technical Notes). Some previously-published data may have been revised.

Figure 31
Nationwide Number of Providers of Connections over 200 kbps in at Least One Direction
Selected Technologies 2013-2017



SECTION 3
SUMMARY STATISTICS: THE STATES

Table of Contents

Figure 32	Residential Fixed Connections and Households by State as of June 30, 2017	29
Figure 33	Connections by Type of End User by State as of June 30, 2017	31
Figure 34	Connections by Technology by State as of June 30, 2017	32
Figure 35	Percentage of Fixed Connections by Downstream Speed by State as of June 30, 2017	34
Figure 36	Providers of Connections by Technology by State as of June 30, 2017	36

Figure 32
Residential Fixed Connections and Households by State as of June 30, 2017
(Connections and households, in thousands)

State	Households	At least 200 kbps in at least One Direction		At least 10 Mbps Down and 1 Mbps Up		At least 25 Mbps Down and 3 Mbps Up		At least 100 Mbps Down and 10 Mbps Up	
		Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio
Alabama	1,851	1,305	0.70	1,003	0.54	719	0.39	82	0.04
Alaska	250	207	0.83	154	0.61	*	*	*	*
American Samoa	10	*	*	0	0.00	0	0.00	0	0.00
Arizona	2,449	2,034	0.83	1,552	0.63	1,283	0.52	435	0.18
Arkansas	1,141	746	0.65	522	0.46	315	0.28	65	0.06
California	12,807	11,109	0.87	9,651	0.75	7,674	0.60	3,542	0.28
Colorado	2,052	1,826	0.89	1,402	0.68	1,288	0.63	491	0.24
Connecticut	1,355	1,195	0.88	1,058	0.78	860	0.63	311	0.23
Delaware	348	326	0.94	308	0.88	296	0.85	104	0.30
District of Columbia	277	238	0.86	217	0.78	206	0.75	*	*
Florida	7,393	6,874	0.93	6,042	0.82	4,861	0.66	1,454	0.20
Georgia	3,612	2,935	0.81	2,397	0.66	1,791	0.50	372	0.10
Guam	42	*	*	*	*	*	*	0	0.00
Hawaii	452	405	0.90	400	0.89	*	*	*	*
Idaho	596	483	0.81	276	0.46	213	0.36	18	0.03
Illinois	4,802	3,751	0.78	3,184	0.66	2,448	0.51	495	0.10
Indiana	2,514	1,878	0.75	1,473	0.59	1,069	0.43	234	0.09
Iowa	1,243	933	0.75	627	0.50	503	0.40	133	0.11
Kansas	1,116	874	0.78	668	0.60	448	0.40	200	0.18
Kentucky	1,718	1,235	0.72	884	0.51	560	0.33	211	0.12
Louisiana	1,731	1,234	0.71	988	0.57	684	0.39	172	0.10
Maine	551	484	0.88	354	0.64	203	0.37	13	0.02
Maryland	2,177	1,901	0.87	1,761	0.81	1,644	0.76	572	0.26
Massachusetts	2,559	2,314	0.90	2,154	0.84	2,067	0.81	746	0.29
Michigan	3,860	2,990	0.77	2,537	0.66	1,989	0.52	230	0.06
Minnesota	2,135	1,723	0.81	1,287	0.60	1,130	0.53	274	0.13
Mississippi	1,099	659	0.60	474	0.43	274	0.25	36	0.03
Missouri	2,372	1,772	0.75	1,320	0.56	944	0.40	264	0.11
Montana	413	329	0.80	222	0.54	191	0.46	11	0.03
Nebraska	742	581	0.78	431	0.58	319	0.43	61	0.08

Figure 32 - Continued
Residential Fixed Connections and Households by State as of June 30, 2017
(Connections and households, in thousands)

State	Households	At least 200 kbps in at least One Direction		At least 10 Mbps Down and 1 Mbps Up		At least 25 Mbps Down and 3 Mbps Up		At least 100 Mbps Down and 10 Mbps Up	
		Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio
Nevada	1,031	891	0.86	740	0.72	580	0.56	*	*
New Hampshire	521	484	0.93	414	0.79	373	0.72	135	0.26
New Jersey	3,195	2,945	0.92	2,792	0.87	2,696	0.84	1,076	0.34
New Mexico	763	548	0.72	332	0.43	288	0.38	80	0.10
New York	7,266	6,189	0.85	5,726	0.79	5,038	0.69	2,076	0.29
North Carolina	3,815	3,062	0.80	2,369	0.62	1,981	0.52	1,108	0.29
North Dakota	305	246	0.81	215	0.70	172	0.56	31	0.10
Northern Mariana Isl	16	*	*	*	*	*	*	0	0.00
Ohio	4,601	3,573	0.78	2,880	0.63	1,764	0.38	277	0.06
Oklahoma	1,462	1,014	0.69	741	0.51	477	0.33	140	0.10
Oregon	1,546	1,304	0.84	1,045	0.68	922	0.60	265	0.17
Pennsylvania	4,962	4,031	0.81	3,397	0.68	3,010	0.61	1,155	0.23
Puerto Rico	1,237	*	*	*	*	*	*	*	*
Rhode Island	410	363	0.88	349	0.85	314	0.76	*	*
South Carolina	1,839	1,436	0.78	1,181	0.64	731	0.40	100	0.05
South Dakota	334	259	0.78	220	0.66	188	0.56	17	0.05
Tennessee	2,522	1,865	0.74	1,576	0.62	1,207	0.48	292	0.12
Texas	9,290	7,320	0.79	6,131	0.66	4,368	0.47	2,072	0.22
Utah	918	792	0.86	601	0.65	525	0.57	214	0.23
Vermont	257	242	0.94	171	0.67	135	0.53	53	0.21
Virgin Islands	43	27	0.62	*	*	*	*	*	*
Virginia	3,090	2,534	0.82	2,204	0.71	1,967	0.64	708	0.23
Washington	2,697	2,390	0.89	1,950	0.72	1,786	0.66	682	0.25
West Virginia	739	530	0.72	373	0.50	296	0.40	72	0.10
Wisconsin	2,310	1,820	0.79	1,435	0.62	950	0.41	27	0.01
Wyoming	227	177	0.78	128	0.57	105	0.46	1	0.00
Total	119,064	97,071	0.82	80,671	0.68	64,520	0.54	21,774	0.18

= Rounds to Zero; * = Data withheld to maintain firm confidentiality.

Note: Figures may not sum to totals due to rounding.

Sources: FCC Form 477 (Connections); 2012-2016 5-year estimates; Census 2010.

Figure 33
Connections by Type of End User by State as of June 30, 2017
(Connections over 200 kbps in at least one direction, in thousands)

State	Connections		Percentages		Total
	Residential	Business	Residential	Business	
Alabama	5,228	647	89.0	11.0	5,875
Alaska	786	118	87.0	13.0	904
American Samoa	*	*	*	*	*
Arizona	6,865	1,023	87.0	13.0	7,888
Arkansas	3,010	425	87.6	12.4	3,435
California	43,461	8,099	84.3	15.7	51,560
Colorado	6,035	916	86.8	13.2	6,951
Connecticut	4,019	691	85.3	14.7	4,710
Delaware	1,047	153	87.3	12.7	1,200
District of Columbia	941	480	66.2	33.8	1,421
Florida	22,842	3,862	85.5	14.5	26,704
Georgia	11,125	1,618	87.3	12.7	12,744
Guam	179	40	81.5	18.5	219
Hawaii	1,653	205	89.0	11.0	1,858
Idaho	1,688	240	87.6	12.4	1,927
Illinois	13,958	2,297	85.9	14.1	16,255
Indiana	6,770	890	88.4	11.6	7,660
Iowa	3,203	524	85.9	14.1	3,727
Kansas	4,176	474	89.8	10.2	4,651
Kentucky	4,873	569	89.5	10.5	5,442
Louisiana	4,981	661	88.3	11.7	5,642
Maine	1,497	207	87.9	12.1	1,704
Maryland	6,796	1,027	86.9	13.1	7,823
Massachusetts	8,054	1,258	86.5	13.5	9,313
Michigan	10,562	1,701	86.1	13.9	12,263
Minnesota	5,939	973	85.9	14.1	6,912
Mississippi	3,029	318	90.5	9.5	3,347
Missouri	6,322	990	86.5	13.5	7,312
Montana	1,120	138	89.0	11.0	1,257
Nebraska	1,905	356	84.3	15.7	2,261
Nevada	3,200	400	88.9	11.1	3,600
New Hampshire	1,468	213	87.3	12.7	1,682
New Jersey	10,223	1,762	85.3	14.7	11,985
New Mexico	2,031	257	88.8	11.2	2,287
New York	23,058	3,745	86.0	14.0	26,803
North Carolina	10,447	1,570	86.9	13.1	12,017
North Dakota	823	130	86.4	13.6	953
Northern Mariana Isl	*	*	*	*	*
Ohio	12,504	1,782	87.5	12.5	14,286
Oklahoma	3,872	565	87.3	12.7	4,437
Oregon	4,445	671	86.9	13.1	5,116
Pennsylvania	13,973	2,015	87.4	12.6	15,989
Puerto Rico	3,392	263	92.8	7.2	3,655
Rhode Island	1,108	176	86.3	13.7	1,283
South Carolina	5,045	656	88.5	11.5	5,701
South Dakota	915	110	89.3	10.7	1,025
Tennessee	6,987	1,021	87.3	12.7	8,008
Texas	28,736	4,948	85.3	14.7	33,684
Utah	2,871	464	86.1	13.9	3,335
Vermont	705	125	85.0	15.0	830
Virgin Islands	105	12	90.0	10.0	117
Virginia	8,604	1,499	85.2	14.8	10,103
Washington	8,189	1,225	87.0	13.0	9,414
West Virginia	1,654	186	89.9	10.1	1,841
Wisconsin	5,877	963	85.9	14.1	6,840
Wyoming	662	77	89.6	10.4	739
Total	353,057	55,758	86.4	13.6	408,816

= Rounds to Zero.

* = Data withheld to maintain firm confidentiality.

Figures may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 34
Connections by Technology by State as of June 30, 2017
(Connections over 200 kbps in at least one direction, in thousands)

<i>State</i>	<i>ADSL</i>	<i>SDSL</i>	<i>Other Wireline¹</i>	<i>Cable Modem</i>	<i>Fiber</i>	<i>Satellite</i>	<i>Fixed Wireless</i>	<i>Mobile Wireless</i>	<i>Total</i>
Alabama	517	#	*	726	124	*	6	4,432	5,875
Alaska	79	#	2	*	5	*	11	662	904
American Samoa	*	*	0	*	*	0	*	*	*
Arizona	554	#	*	1,418	146	*	35	5,693	7,888
Arkansas	351	#	*	387	25	*	7	2,614	3,435
California	3,337	7	*	7,621	897	*	92	39,372	51,560
Colorado	*	1	19	1,201	221	*	57	4,957	6,951
Connecticut	*	#	4	963	10	*	#	3,397	4,710
Delaware	*	*	3	218	*	*	*	846	1,200
District of Columbia	32	*	7	*	57	*	*	1,145	1,421
Florida	1,665	#	*	4,941	762	*	11	19,195	26,704
Georgia	1,031	#	*	1,805	304	*	3	9,515	12,744
Guam	*	0	*	*	*	0	0	179	219
Hawaii	*	*	1	*	31	*	2	1,417	1,858
Idaho	175	#	*	209	79	*	50	1,399	1,927
Illinois	1,225	1	*	2,602	125	*	73	12,154	16,255
Indiana	681	#	*	1,076	188	*	41	5,619	7,660
Iowa	295	1	*	474	177	*	42	2,707	3,727
Kansas	252	#	*	472	168	*	40	3,696	4,651
Kentucky	442	#	*	719	116	*	19	4,105	5,442
Louisiana	423	#	*	788	84	*	6	4,278	5,642
Maine	130	1	*	369	10	*	6	1,173	1,704
Maryland	*	#	16	1,076	*	*	5	5,755	7,823
Massachusetts	*	#	21	1,852	*	*	3	6,774	9,313
Michigan	870	3	*	2,192	42	*	48	9,008	12,263
Minnesota	509	3	*	1,088	208	*	29	5,035	6,912
Mississippi	339	*	3	312	26	*	2	2,610	3,347
Missouri	711	#	*	888	210	*	40	5,383	7,312
Montana	106	#	*	199	26	*	23	889	1,257
Nebraska	153	#	*	393	58	*	25	1,624	2,261

Figure 34 - Continued
Connections by Technology by State as of June 30, 2017
(Connections over 200 kbps in at least one direction, in thousands)

<i>State</i>	<i>ADSL</i>	<i>SDSL</i>	<i>Other Wireline¹</i>	<i>Cable Modem</i>	<i>Fiber</i>	<i>Satellite</i>	<i>Fixed Wireless</i>	<i>Mobile Wireless</i>	<i>Total</i>
Nevada	233	#	6	*	18	*	16	2,626	3,600
New Hampshire	79	#	*	422	27	*	#	1,143	1,682
New Jersey	184	#	27	2,072	*	*	1	8,733	11,985
New Mexico	243	#	*	281	39	*	22	1,686	2,287
New York	459	2	38	4,699	*	*	5	19,982	26,803
North Carolina	904	1	*	2,074	266	*	7	8,689	12,017
North Dakota	46	#	*	144	80	*	5	675	953
Northern Mariana Isl	*	0	0	*	*	0	0	*	*
Ohio	1,122	#	*	2,406	203	*	42	10,450	14,286
Oklahoma	381	#	*	577	57	*	48	3,321	4,437
Oregon	265	#	*	915	182	*	24	3,689	5,116
Pennsylvania	638	#	27	2,768	*	*	8	11,575	15,989
Puerto Rico	*	0	*	*	7	*	8	2,943	3,655
Rhode Island	*	*	2	*	*	*	*	888	1,283
South Carolina	467	#	*	921	125	*	2	4,143	5,701
South Dakota	47	*	#	167	55	*	10	739	1,025
Tennessee	557	#	*	1,152	262	*	11	5,958	8,008
Texas	2,442	2	*	4,096	1,055	*	187	25,673	33,684
Utah	175	#	*	473	156	*	50	2,471	3,335
Vermont	120	*	3	141	22	*	1	537	830
Virgin Islands	*	0	*	*	*	*	*	*	117
Virginia	311	#	*	1,452	883	*	17	7,333	10,103
Washington	457	#	*	1,792	238	*	30	6,821	9,414
West Virginia	*	*	1	354	10	*	2	1,258	1,841
Wisconsin	640	9	5	*	87	*	41	4,863	6,840
Wyoming	52	#	*	108	10	*	21	540	739
Total	25,506	44	668	64,059	12,906	1,826	1,245	302,562	408,816

¹ PowerLine and Other are summarized with Other Wireline to maintain firm confidentiality. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

= Rounds to Zero.

* = Data withheld to maintain firm confidentiality.

Figures may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 35
Percentage of Fixed Connections by Downstream Speed by State as of June 30, 2017

State	% over 200 kbps Downstream	% at least 3 Mbps Downstream	Over 200 kbps Upstream and		
			% at least 10 Mbps Downstream	% at least 25 Mbps Downstream	% at least 100 Mbps Downstream
Alabama	99.4	94.2	78.6	53.8	11.1
Alaska	98.0	90.1	74.2	53.5	39.4
American Samoa	*	*	*	*	*
Arizona	99.8	96.9	85.8	62.3	24.6
Arkansas	99.4	93.6	73.5	43.1	11.4
California	99.7	97.5	85.0	66.4	38.1
Colorado	99.8	95.7	87.5	68.6	43.1
Connecticut	99.5	99.0	87.3	69.6	35.9
Delaware	99.9	98.5	93.2	87.8	48.3
District of Columbia	99.9	97.5	88.2	81.6	48.7
Florida	99.6	97.7	89.9	69.4	20.6
Georgia	99.3	96.2	81.9	59.9	13.4
Guam	*	*	*	*	*
Hawaii	100.0	99.7	97.6	86.9	47.7
Idaho	99.6	94.5	71.8	43.9	26.1
Illinois	99.7	97.5	84.1	63.2	16.2
Indiana	99.4	96.7	79.5	55.2	12.2
Iowa	99.6	93.7	74.9	53.0	15.2
Kansas	99.7	95.2	77.2	49.4	22.9
Kentucky	99.1	94.6	72.1	45.0	16.6
Louisiana	99.3	95.0	80.1	54.9	14.8
Maine	99.0	95.1	72.0	40.7	2.6
Maryland	99.8	98.1	91.1	83.9	42.3
Massachusetts	99.9	98.4	91.9	84.6	49.1
Michigan	99.4	97.2	84.1	64.4	8.3
Minnesota	99.7	95.6	82.8	64.3	26.9
Mississippi	99.1	92.6	72.6	42.6	14.5
Missouri	99.5	94.8	78.6	53.2	37.8
Montana	99.7	91.9	73.6	58.0	4.3
Nebraska	99.7	96.5	77.6	54.1	11.5

Figure 35 - Continued
Percentage of Fixed Connections by Downstream Speed by State as of June 30, 2017

State	Over 200 kbps Upstream and				
	% over 200 kbps Downstream	% at least 3 Mbps Downstream	% at least 10 Mbps Downstream	% at least 25 Mbps Downstream	% at least 100 Mbps Downstream
Nevada	99.9	98.1	88.0	65.9	18.9
New Hampshire	99.1	96.2	84.0	72.0	45.7
New Jersey	99.8	98.5	94.0	89.3	45.4
New Mexico	99.7	92.9	75.2	51.3	28.9
New York	99.7	98.5	91.0	79.5	31.9
North Carolina	99.3	96.3	81.0	63.0	34.4
North Dakota	99.9	97.1	88.1	71.6	18.3
Northern Mariana Isl	*	*	*	*	*
Ohio	99.8	97.1	80.6	48.3	8.5
Oklahoma	99.6	96.6	73.3	46.4	16.7
Oregon	99.8	96.1	85.7	68.8	35.2
Pennsylvania	99.7	96.9	84.9	73.1	41.4
Puerto Rico	100.0	83.3	52.3	29.6	1.0
Rhode Island	99.6	98.8	94.5	84.5	30.9
South Carolina	99.5	96.2	82.6	50.6	8.7
South Dakota	99.7	97.1	86.4	72.2	7.5
Tennessee	99.5	96.5	84.7	63.3	15.9
Texas	99.8	97.4	83.3	58.1	31.9
Utah	99.9	97.0	84.9	65.4	40.1
Vermont	98.8	85.4	66.7	48.8	32.6
Virgin Islands	100.0	81.6	46.3	*	*
Virginia	99.4	97.0	87.0	75.1	34.8
Washington	99.6	96.5	86.8	72.0	47.4
West Virginia	99.0	97.3	69.2	54.1	27.3
Wisconsin	99.1	95.4	81.0	51.6	3.4
Wyoming	99.7	93.1	78.1	58.7	1.3
Total	99.6	96.8	84.2	64.8	27.6

Figure 36
Providers of Connections by Technology by State as of June 30, 2017
(Connections over 200 kbps in at least one direction, in thousands)

<i>State</i>	<i>ADSL</i>	<i>SDSL</i>	<i>Other Wireline¹</i>	<i>Cable Modem</i>	<i>Fiber</i>	<i>Satellite</i>	<i>Fixed Wireless</i>	<i>Mobile Wireless</i>	<i>Total</i>
Alabama	24	8	*	19	41	*	25	6	92
Alaska	13	4	13	*	10	*	16	8	40
American Samoa	*	*	0	*	*	0	*	*	*
Arizona	21	4	*	16	38	*	47	7	104
Arkansas	25	6	*	17	35	*	22	5	79
California	38	17	*	29	62	*	102	6	187
Colorado	*	9	32	19	54	*	55	9	131
Connecticut	*	7	20	10	23	*	4	4	42
Delaware	*	*	14	6	*	*	*	4	29
District of Columbia	8	*	18	*	24	*	*	4	39
Florida	23	11	*	24	64	*	29	5	117
Georgia	29	6	*	34	82	*	23	4	126
Guam	*	0	*	*	*	0	0	4	4
Hawaii	*	*	7	*	12	*	5	5	24
Idaho	25	5	*	19	36	*	37	10	80
Illinois	57	9	*	19	89	*	79	8	184
Indiana	40	6	*	12	60	*	61	5	121
Iowa	100	21	*	46	144	*	92	34	236
Kansas	29	11	*	28	60	*	55	9	119
Kentucky	21	6	*	30	46	*	31	7	104
Louisiana	16	6	*	18	39	*	13	5	69
Maine	17	7	*	9	24	*	9	5	43
Maryland	*	8	25	16	*	*	18	5	74
Massachusetts	*	6	27	11	*	*	19	5	71
Michigan	34	10	*	25	60	*	43	6	125
Minnesota	46	9	*	22	71	*	47	5	128
Mississippi	18	*	23	16	22	*	12	5	63
Missouri	40	11	*	19	57	*	70	8	148
Montana	21	5	*	8	29	*	26	7	63
Nebraska	30	4	*	20	50	*	38	9	92

Figure 36 - Continued
Providers of Connections by Technology by State as of June 30, 2017
(Connections over 200 kbps in at least one direction, in thousands)

<i>State</i>	<i>ADSL</i>	<i>SDSL</i>	<i>Other Wireline¹</i>	<i>Cable Modem</i>	<i>Fiber</i>	<i>Satellite</i>	<i>Fixed Wireless</i>	<i>Mobile Wireless</i>	<i>Total</i>
Nevada	17	7	26	*	30	*	22	7	70
New Hampshire	13	8	*	6	23	*	5	6	42
New Jersey	16	8	36	12	*	*	11	4	70
New Mexico	21	7	*	10	27	*	27	8	71
New York	38	10	35	21	*	*	31	7	113
North Carolina	26	8	*	24	55	*	22	6	101
North Dakota	24	9	*	8	30	*	15	6	48
Northern Mariana Isl	*	0	0	*	*	0	0	*	*
Ohio	37	6	*	31	64	*	55	4	141
Oklahoma	39	9	*	12	49	*	45	12	110
Oregon	42	10	*	18	55	*	46	6	110
Pennsylvania	30	8	31	27	*	*	28	8	115
Puerto Rico	*	0	*	*	7	*	7	5	16
Rhode Island	*	*	11	*	*	*	*	4	25
South Carolina	19	4	*	16	32	*	9	6	55
South Dakota	23	*	12	6	34	*	20	8	70
Tennessee	23	7	*	23	45	*	31	7	102
Texas	67	19	*	38	110	*	138	9	246
Utah	20	4	*	12	28	*	27	9	72
Vermont	11	*	12	5	19	*	4	6	34
Virgin Islands	*	0	*	*	*	*	*	*	8
Virginia	27	11	*	19	60	*	34	6	111
Washington	26	8	*	24	56	*	58	6	122
West Virginia	*	*	14	17	19	*	14	6	56
Wisconsin	48	9	30	*	64	*	46	6	129
Wyoming	16	5	*	6	18	*	27	8	52
Total	769	162	243	383	1,103	5	1,094	97	2,029

¹ Power Line and Other are summarized with Other Wireline. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

= Rounds to Zero.

* = Data withheld to maintain firm confidentiality.

Figures may not sum to totals due to rounding.

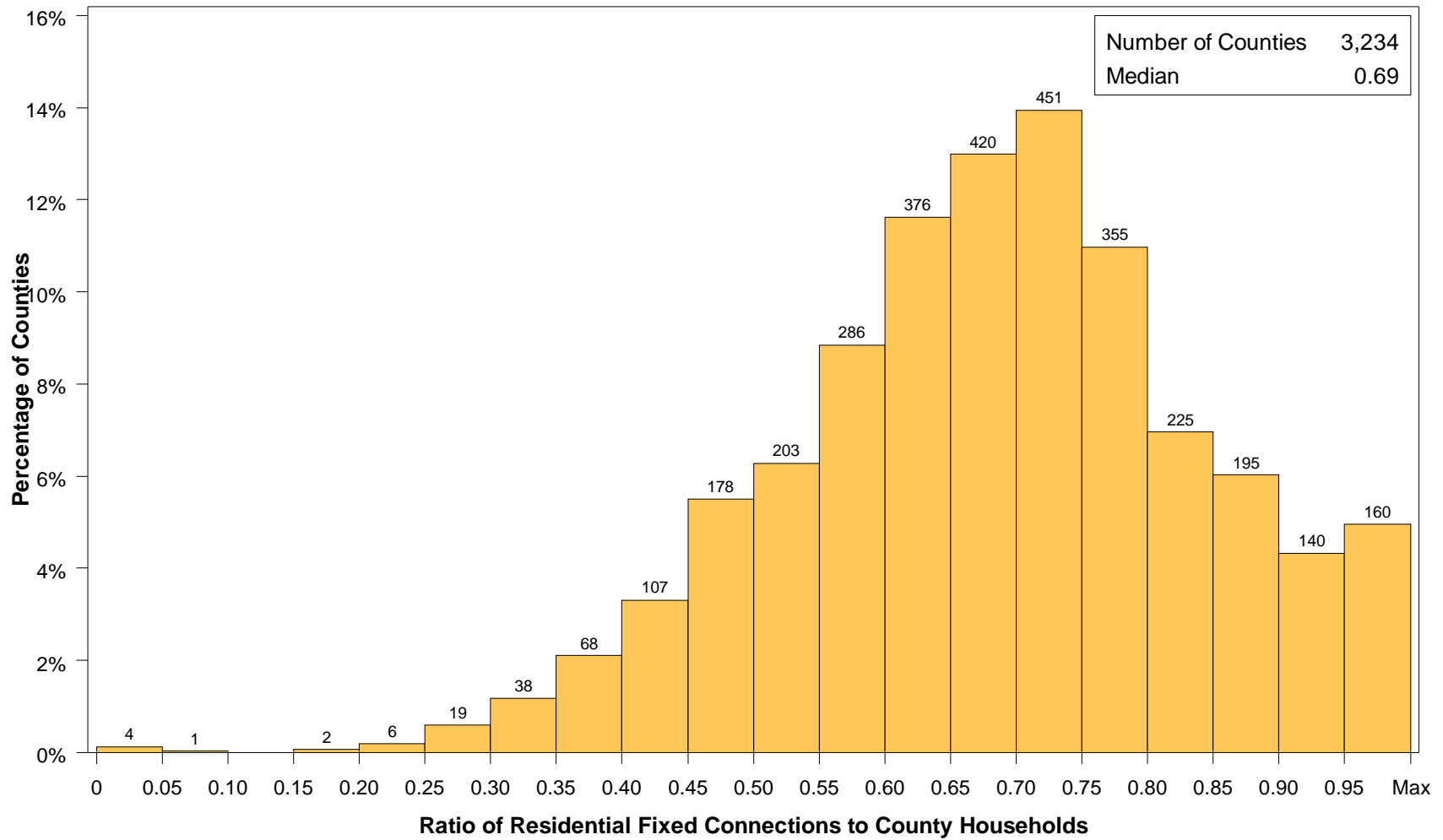
Source: FCC Form 477.

SECTION 4
SUMMARY STATISTICS: COUNTIES AND CENSUS TRACTS

Table of Contents

Figure 37	Distribution of Counties by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households as of June 30, 2017	39
Figure 38	Distribution of Counties by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households by Technology as of June 30, 2017	40
Figure 39	Distribution of Census Tracts by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households as of June 30, 2017	41
Figure 40	Distribution of Census Tracts by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households by Technology as of June 30, 2017	42
Figure 41	Percentage of Developed Census Blocks with Residential Fixed Connections by Technology as of June 30, 2017	43
Figure 42	Distribution of Counties by Ratio of Residential Fixed Connections to County Households by State as of June 30, 2017	44
Figure 43	Distribution of Census Tracts by Ratio of Residential Fixed Connections to Tract Households by State as of June 30, 2017	46

Figure 37
Distribution of Counties by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households as of June 30, 2017



Note: Ratios over 1 were set to 1. See Technical Notes at the end of the report.
 Sources: FCC Form 477; 2012-2016 ACS 5-year estimates; and Census 2010.

Figure 38
Distribution of Counties by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households by Technology as of June 30, 2017

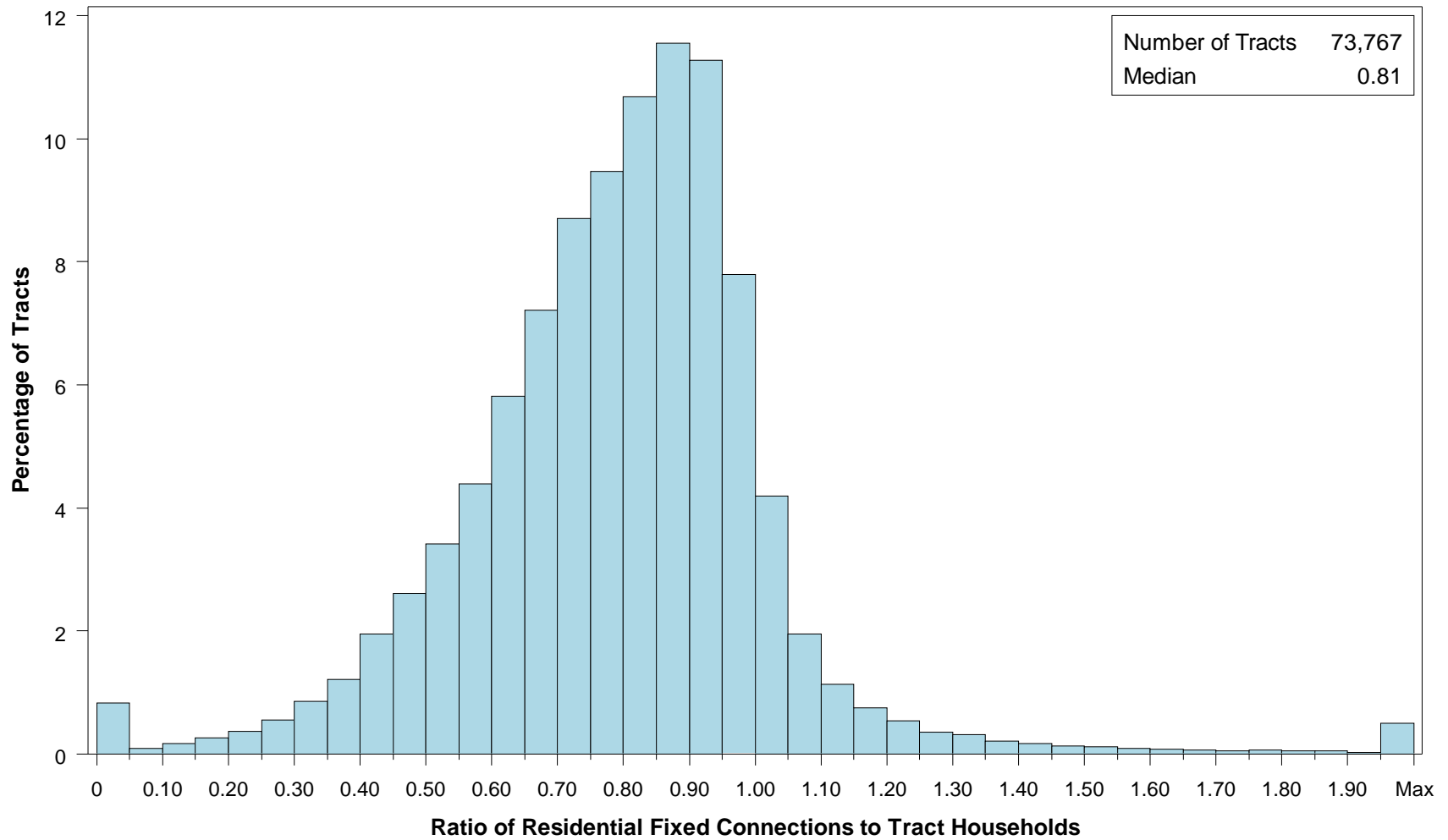
<i>Technology</i>	<i>Ratio of Residential Fixed Connections to County Households</i>										<i>100% or more</i>
	<i>Zero</i>	<i>Greater than 0 and no more than 5%</i>	<i>Greater than 5 and no more than 10%</i>	<i>Greater than 10 and no more than 20%</i>	<i>Greater than 20 and no more than 30%</i>	<i>Greater than 30 and no more than 40%</i>	<i>Greater than 40 and no more than 50%</i>	<i>Greater than 50 and no more than 60%</i>	<i>Greater than 60 and no more than 80%</i>	<i>Greater than 80 and no more than 100%</i>	
aDSL	1.1	5.6	6.2	26.4	29.8	17.3	8.5	3.0	1.6	0.2	0.2
sDSL	89.6	10.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Wireline	91.6	8.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	13.2	7.0	6.2	13.8	13.7	14.3	11.6	10.9	7.8	1.1	0.3
FTTP	22.8	47.8	8.1	8.8	4.2	2.8	2.2	1.4	1.7	0.1	0.0
Satellite	1.3	67.1	21.7	8.9	0.8	0.1	0.0	0.0	0.0	0.1	0.0
Fixed Wireless	27.0	52.4	10.7	7.0	1.9	0.6	0.3	0.0	0.0	0.0	0.1
Total	0.1	0.0	0.0	0.1	0.8	3.3	8.8	15.1	49.5	19.2	3.1

¹ Power Line and Other are summarized with Other Wireline. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

Note: Figures may not sum to totals due to rounding.

Sources: FCC Form 477; 2012-2016 ACS 5-year estimates; and Census 2010.

Figure 39
Distribution of Census Tracts by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households as of June 30, 2017



Note: Ratios over 2 were set to 2. See Technical Notes at the end of the report.
 Sources: FCC Form 477; 2012-2016 ACS 5-year estimates; and Census 2010.

Figure 40
Distribution of Census Tracts by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households by Technology as of June 30, 2017

<i>Technology</i>	<i>Ratio of Residential Fixed Connections to Tract Households</i>										<i>100% or more</i>
	<i>Zero</i>	<i>Greater than 0 and no more than 5%</i>	<i>Greater than 5 and no more than 10%</i>	<i>Greater than 10 and no more than 20%</i>	<i>Greater than 20 and no more than 30%</i>	<i>Greater than 30 and no more than 40%</i>	<i>Greater than 40 and no more than 50%</i>	<i>Greater than 50 and no more than 60%</i>	<i>Greater than 60 and no more than 80%</i>	<i>Greater than 80 and no more than 100%</i>	
aDSL	2.0	19.2	12.7	24.8	20.1	12.2	5.3	2.1	1.2	0.2	0.2
sDSL	98.5	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Wireline	98.4	1.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	5.2	2.7	1.7	4.0	7.1	12.5	17.6	18.9	22.7	5.7	1.7
FTTP	50.1	17.4	5.6	8.1	5.3	4.6	3.9	2.6	2.0	0.3	0.1
Satellite	32.2	58.6	5.0	3.1	0.7	0.2	0.1	0.0	0.0	0.0	0.0
Fixed Wireless	74.8	19.4	2.6	2.0	0.7	0.3	0.1	0.1	0.0	0.0	0.0
Total	0.8	0.1	0.1	0.4	0.9	2.1	4.6	7.8	31.2	41.3	10.8

¹ Power Line and Other are summarized with Other Wireline. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

Note: Figures may not sum to totals due to rounding.

Sources: FCC Form 477; 2012-2016 ACS 5-year estimates; and Census 2010.

Figure 41
Percentage of Developed Census Blocks with Residential Fixed Service by Technology as of June 30, 2017
(Internet Access Service over 200 kbps in at least one direction)

<i>Technology</i>	<i>Number of Providers</i>							
	<i>Zero</i>	<i>One</i>	<i>Two</i>	<i>Three</i>	<i>Four</i>	<i>Five</i>	<i>Six</i>	<i>Seven or More</i>
aDSL	24.9	71.4	3.5	0.1	0.0	0.0	0.0	0.0
sDSL	99.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0
Other Wireline ¹	99.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	55.1	42.6	2.1	0.2	0.0	0.0	0.0	0.0
FTTP	79.6	19.8	0.6	0.0	0.0	0.0	0.0	0.0
Satellite	0.0	0.1	2.7	97.1	0.0	0.0	0.0	0.0
Fixed Wireless	56.9	26.6	11.8	4.0	0.7	0.1	0.0	0.0
aDSL and/or Cable Modem and/or FTTP	13.9	43.1	36.9	5.5	0.5	0.0	0.0	0.0
Any Technology	0.0	0.1	0.3	6.2	18.0	41.5	21.7	12.3

¹ Power Line and Other are summarized with Other Wireline. See Technical Notes at the end of the report for a description of Form 477 technology categories and other reporting requirements.

Note: Figures may not sum to totals due to rounding. The number of providers in a census block does not necessarily reflect the number of choices available to a particular household, and does not purport to measure competition. Providers may list a census block on Form 477 if service can be provided to at least one location in the block. Developed census blocks are those with housing units based on the 2010 census.

Sources: FCC Form 477 and Census 2010.

Figure 42
Distribution of Counties by Ratio of Residential Fixed Connections to County Households by State as of June 30, 2017
(Connections over 200 kbps in at least one direction)

State	Counties	Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households										
		Zero	Greater than 0 and no more than 5%	Greater than 5 and no more than 10%	Greater than 10 and no more than 20%	Greater than 20 and no more than 30%	Greater than 30 and no more than 40%	Greater than 40 and no more than 50%	Greater than 50 and no more than 60%	Greater than 60 and no more than 80%	Greater than 80 and no more than 100%	100% or more
Alabama	67	0	0	0	0	0	3	16	20	23	5	0
Alaska	29	0	0	0	0	1	3	3	0	12	7	3
American Samoa	5	2	0	0	0	2	0	1	0	0	0	0
Arizona	15	0	0	0	0	0	0	2	0	10	3	0
Arkansas	75	0	0	0	0	0	6	27	23	18	1	0
California	58	0	0	0	0	0	0	0	0	20	35	3
Colorado	64	0	0	0	0	2	2	2	6	22	18	12
Connecticut	8	0	0	0	0	0	0	0	0	0	8	0
Delaware	3	0	0	0	0	0	0	0	0	0	2	1
District of Columbia	1	0	0	0	0	0	0	0	0	0	1	0
Florida	67	0	0	0	0	0	0	0	8	17	27	15
Georgia	159	0	0	0	1	2	9	21	29	58	32	7
Guam	1	0	0	0	0	0	0	0	0	0	1	0
Hawaii	5	1	0	0	0	0	0	0	0	1	3	0
Idaho	44	0	0	0	0	0	0	0	4	26	11	3
Illinois	102	0	0	0	0	2	7	10	17	55	11	0
Indiana	92	0	0	0	0	1	5	5	17	53	11	0
Iowa	99	0	0	0	0	0	0	0	9	82	7	1
Kansas	105	0	0	0	0	0	0	3	16	70	16	0
Kentucky	120	0	0	0	0	1	2	11	26	73	7	0
Louisiana	64	0	0	0	0	1	9	13	7	28	6	0
Maine	16	0	0	0	0	0	0	0	0	6	9	1
Maryland	24	0	0	0	0	0	0	0	1	6	16	1
Massachusetts	14	0	0	0	0	0	0	0	0	2	9	3
Michigan	83	0	0	0	0	0	0	3	9	52	18	1
Minnesota	87	0	0	0	0	1	0	1	3	63	19	0
Mississippi	82	0	0	1	0	1	16	32	16	13	3	0
Missouri	115	0	0	0	0	3	5	11	22	63	10	1
Montana	56	0	0	0	0	0	0	0	5	34	16	1
Nebraska	93	0	0	0	0	0	2	9	19	59	4	0

Figure 42 - Continued
Distribution of Counties by Ratio of Residential Fixed Connections to County Households by State as of June 30, 2017
(Connections over 200 kbps in at least one direction)

State	Counties	Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households										
		Zero	Greater than 0 and no more than 5%	Greater than 5 and no more than 10%	Greater than 10 and no more than 20%	Greater than 20 and no more than 30%	Greater than 30 and no more than 40%	Greater than 40 and no more than 50%	Greater than 50 and no more than 60%	Greater than 60 and no more than 80%	Greater than 80 and no more than 100%	100% or more
Nevada	17	0	0	0	0	1	1	0	3	8	4	0
New Hampshire	10	0	0	0	0	0	0	0	0	1	7	2
New Jersey	21	0	0	0	0	0	0	0	0	2	17	2
New Mexico	33	0	0	0	0	1	2	3	5	19	2	1
New York	62	0	0	0	0	0	0	0	0	38	20	4
North Carolina	100	0	0	0	0	0	0	0	14	54	26	6
North Dakota	53	0	0	0	0	0	0	0	6	32	15	0
Northern Mariana Isl	4	1	0	0	0	0	1	2	0	0	0	0
Ohio	88	0	0	0	0	0	0	3	9	59	17	0
Oklahoma	77	0	0	0	0	1	5	11	27	31	2	0
Oregon	36	0	0	0	0	0	0	1	2	16	16	1
Pennsylvania	67	0	0	0	0	0	0	0	0	42	22	3
Puerto Rico	78	0	0	0	0	2	12	23	31	10	0	0
Rhode Island	5	0	0	0	0	0	0	0	0	0	4	1
South Carolina	46	0	0	0	0	0	0	8	11	20	5	2
South Dakota	66	0	0	0	0	0	0	5	5	45	10	1
Tennessee	95	0	0	0	0	0	2	8	26	49	9	1
Texas	254	0	0	0	0	1	8	33	62	113	33	4
Utah	29	0	0	0	0	0	0	0	1	12	10	6
Vermont	14	0	0	0	0	0	0	0	0	3	7	4
Virgin Islands	3	0	0	0	0	0	0	0	1	1	0	1
Virginia	134	0	0	0	1	1	6	15	19	59	31	2
Washington	39	0	0	0	0	0	0	1	2	15	20	1
West Virginia	55	0	0	0	0	1	0	2	4	41	7	0
Wisconsin	72	0	0	0	0	0	0	0	1	50	18	3
Wyoming	23	0	0	0	0	0	0	0	3	16	3	1
Total	3,234	4	0	1	2	25	106	285	489	1602	621	99

Note: Figures may not sum to totals due to rounding. See Technical Notes at the end of the report.

Sources: FCC Form 477; 2012-2016 ACS 5-year estimates (Households for U.S. and District of Columbia); Census 2010 (Households for Puerto Rico, American Samoa, Guam, Northern Mariana Islands and U.S. Virgin Islands).

Figure 43
Distribution of Census Tracts by Ratio of Residential Fixed Connections to Tract Households by State as of June 30, 2017
(Connections over 200 kbps in at least one direction)

State	Tracts	Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households										100% or more
		Zero	Greater than 0 and no more than 5%	Greater than 5 and no more than 10%	Greater than 10 and no more than 20%	Greater than 20 and no more than 30%	Greater than 30 and no more than 40%	Greater than 40 and no more than 50%	Greater than 50 and no more than 60%	Greater than 60 and no more than 80%	Greater than 80 and no more than 100%	
Alabama	1,179	4	0	1	4	18	88	155	194	418	233	64
Alaska	167	3	0	0	2	7	3	4	9	51	73	15
American Samoa	18	2	0	0	1	6	6	1	0	0	1	1
Arizona	1,526	14	7	7	14	11	25	53	119	415	595	266
Arkansas	686	1	0	0	10	15	65	116	135	213	105	26
California	8,036	56	2	7	8	19	52	101	292	2,064	4,576	859
Colorado	1,249	14	1	0	1	3	10	24	41	306	627	222
Connecticut	829	2	0	0	0	2	1	7	36	151	507	123
Delaware	215	1	0	0	0	1	0	2	10	52	102	47
District of Columbia	179	0	0	0	0	0	2	1	13	58	77	28
Florida	4,199	40	0	0	2	4	20	80	161	881	1,878	1,133
Georgia	1,964	11	2	0	5	12	73	138	190	589	698	246
Guam	56	7	2	2	3	0	2	4	3	11	8	14
Hawaii	326	14	0	0	3	3	5	5	11	63	156	66
Idaho	298	0	0	1	0	2	3	5	17	137	112	21
Illinois	3,121	6	1	0	11	34	60	193	299	1,107	1,257	153
Indiana	1,508	4	2	0	6	22	37	107	200	633	424	73
Iowa	825	3	0	0	1	0	4	21	76	516	182	22
Kansas	770	11	0	0	0	1	9	35	98	319	232	65
Kentucky	1,115	10	1	1	11	13	32	79	167	468	302	31
Louisiana	1,136	12	1	0	6	27	71	107	153	409	309	41
Maine	351	0	0	0	0	0	0	1	10	127	152	61
Maryland	1,394	9	0	0	0	0	17	37	68	285	800	178
Massachusetts	1,471	11	1	0	0	2	2	15	32	298	899	211
Michigan	2,767	28	1	1	13	39	108	207	247	815	1,142	166
Minnesota	1,335	4	0	0	3	4	6	30	60	560	591	77
Mississippi	661	4	0	1	1	29	97	141	113	182	81	12
Missouri	1,393	5	0	0	11	21	46	112	179	478	456	85
Montana	271	2	0	0	1	0	2	6	20	112	108	20
Nebraska	532	4	0	0	0	0	6	23	44	250	160	45

Figure 43 - Continued
Distribution of Census Tracts by Ratio of Residential Fixed Connections to Tract Households by State as of June 30, 2017
(Connections over 200 kbps in at least one direction)

State	Tracts	Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households										
		Zero	Greater than 0 and no more than 5%	Greater than 5 and no more than 10%	Greater than 10 and no more than 20%	Greater than 20 and no more than 30%	Greater than 30 and no more than 40%	Greater than 40 and no more than 50%	Greater than 50 and no more than 60%	Greater than 60 and no more than 80%	Greater than 80 and no more than 100%	100% or more
Nevada	683	5	0	2	2	5	7	16	44	171	315	116
New Hampshire	294	2	0	0	0	0	0	2	3	43	182	62
New Jersey	2,004	11	0	0	1	1	4	8	25	368	1,223	363
New Mexico	499	2	3	2	7	13	12	38	60	209	127	26
New York	4,900	71	1	1	16	11	19	68	170	1,542	2,408	593
North Carolina	2,183	21	1	0	0	5	16	72	207	856	796	209
North Dakota	205	0	0	0	0	0	0	6	15	115	48	21
Northern Mariana Isl	22	2	0	0	0	2	7	3	6	2	0	0
Ohio	2,946	6	0	0	3	12	49	164	304	1,202	1,074	132
Oklahoma	1,046	2	2	2	11	32	49	135	180	350	205	78
Oregon	827	2	0	0	0	0	6	15	33	232	465	74
Pennsylvania	3,217	20	1	0	3	10	9	53	173	1,310	1,412	226
Puerto Rico	903	22	24	34	103	149	139	146	74	78	36	98
Rhode Island	241	1	0	0	0	0	0	1	1	57	149	32
South Carolina	1,097	11	0	0	1	11	33	96	131	376	318	120
South Dakota	222	0	0	1	1	0	4	9	12	117	66	12
Tennessee	1,497	21	1	0	7	22	53	113	215	572	401	92
Texas	5,253	43	0	2	24	77	190	424	707	1,572	1,575	639
Utah	588	4	2	2	1	0	0	4	8	181	322	64
Vermont	184	1	0	0	0	0	1	0	0	37	93	52
Virgin Islands	29	0	0	0	1	2	1	5	7	8	2	3
Virginia	1,895	23	0	0	6	16	52	90	160	453	850	245
Washington	1,446	2	1	0	0	5	6	23	30	281	870	228
West Virginia	484	0	1	2	3	6	11	34	66	216	118	27
Wisconsin	1,393	3	1	0	2	3	5	42	98	642	545	52
Wyoming	132	1	0	0	0	1	1	4	10	62	47	6
Total	73,767	558	59	69	309	678	1,526	3,381	5,736	23,020	30,490	7,941

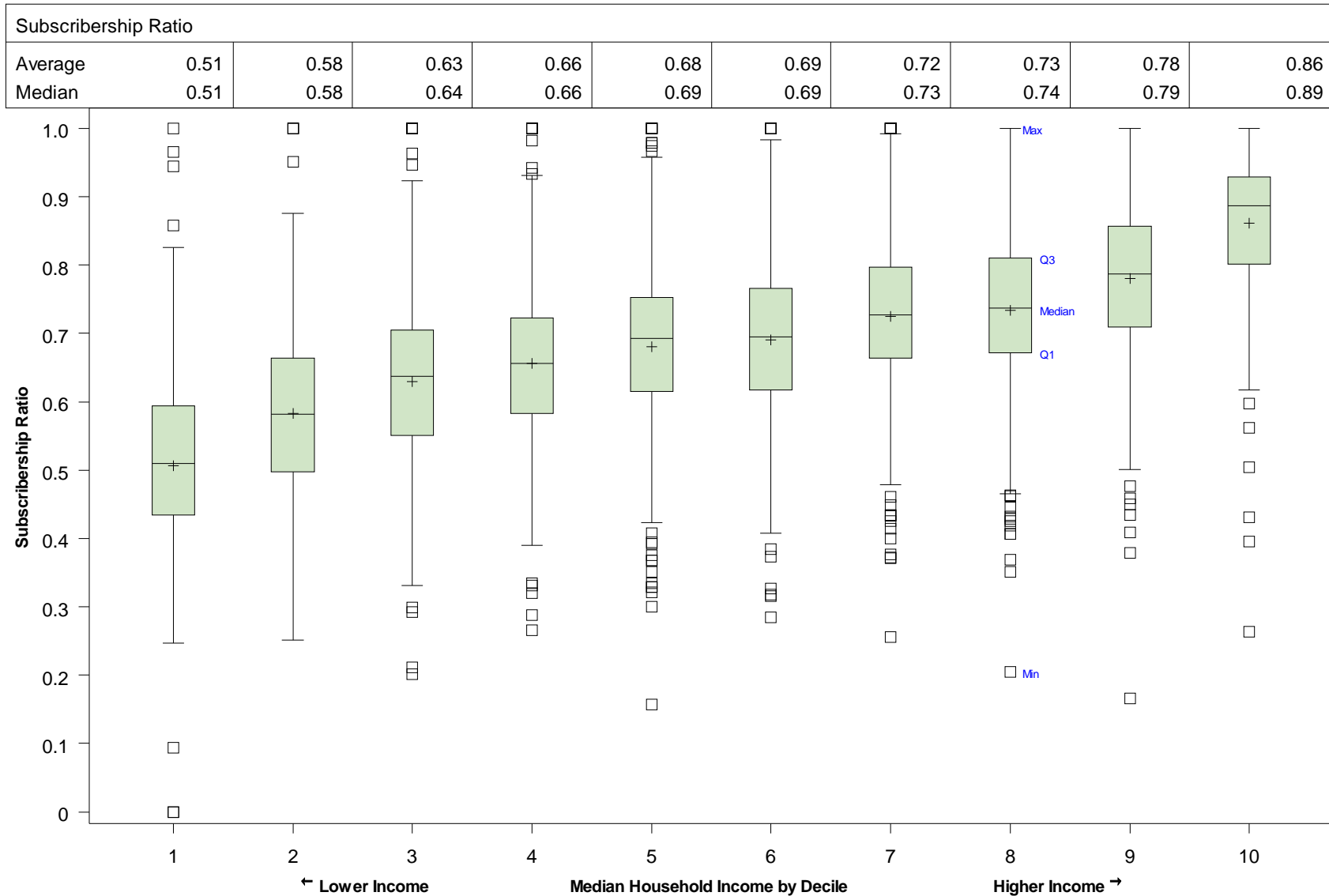
Note: Figures may not sum to totals due to rounding. See Technical Notes at the end of the report.
Sources: FCC Form 477; 2012-2016 ACS 5-year estimates (Households for U.S. and District of Columbia); Census 2010 (Households for Puerto Rico, American Samoa, Guam, Northern Mariana Islands and U.S. Virgin Islands).

SECTION 5
CORRELATED RESULTS: DEMOGRAPHIC MEASURES

Table of Contents

Figure 44	Subscribership Ratio Distributions by Income Deciles as of June 30, 2017	49
Figure 45	Subscribership Ratio Distributions by Density Deciles as of June 30, 2017.....	50
Figure 46	Subscribership Ratio Distributions by Share of Population with a College Degree (in Deciles) as of June 30, 2017.....	51
Figure 47	Subscribership Ratio Distributions by Average Age of County Population (in Deciles) as of June 30, 2017.....	52
Figure 48	Subscribership Ratio Distributions by Share of White Alone (in Deciles) as of June 30, 2017.....	53
Figure 49	Subscribership Ratios by Technology and Tract Household Density as of June 30, 2017.....	54
Figure 50	Average Subscribership Ratios by Income and Household Density as of June 30, 2017.....	55

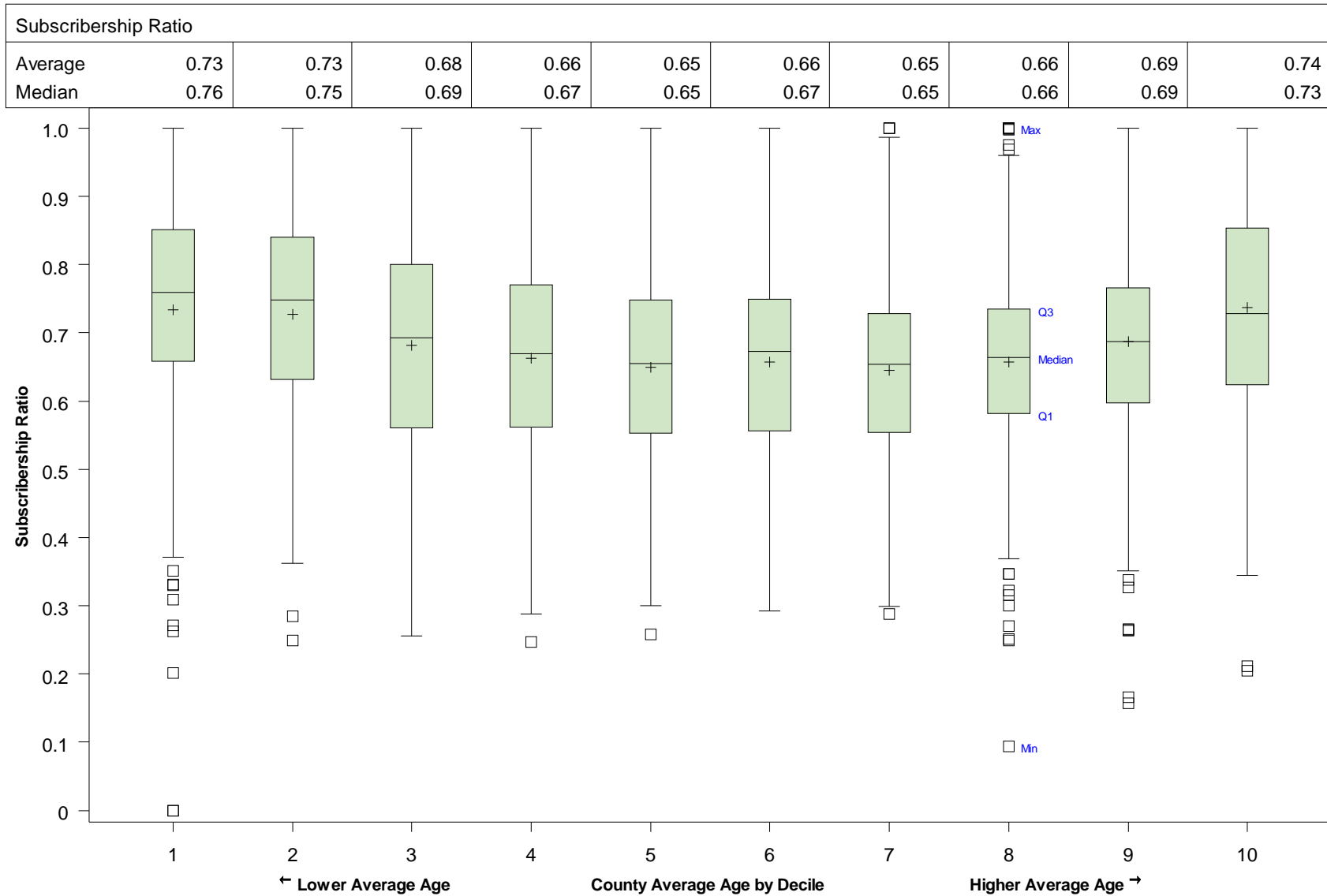
Figure 44
Subscribership Ratio Distributions by Income Deciles as of June 30, 2017



Note: Each box plot shows the distribution of residential subscribership to connections over 200 kbps in at least one direction for counties in the income decile. Some of the features are labeled, but note also that + denotes the position of the average residential subscribership ratio taken across all counties in the decile; ⊥ is the minimum observation above $Q1-1.5(Q3-Q1)$; T is the maximum observation below $Q3+1.5(Q3-Q1)$; and □ is any data point beyond $Q1-1.5(Q3-Q1)$ or $Q3+1.5(Q3-Q1)$. Ratios greater than 1 were set to 1.

Sources: FCC Form 477; 2012-2016 ACS 5-year Estimates; Census 2010.

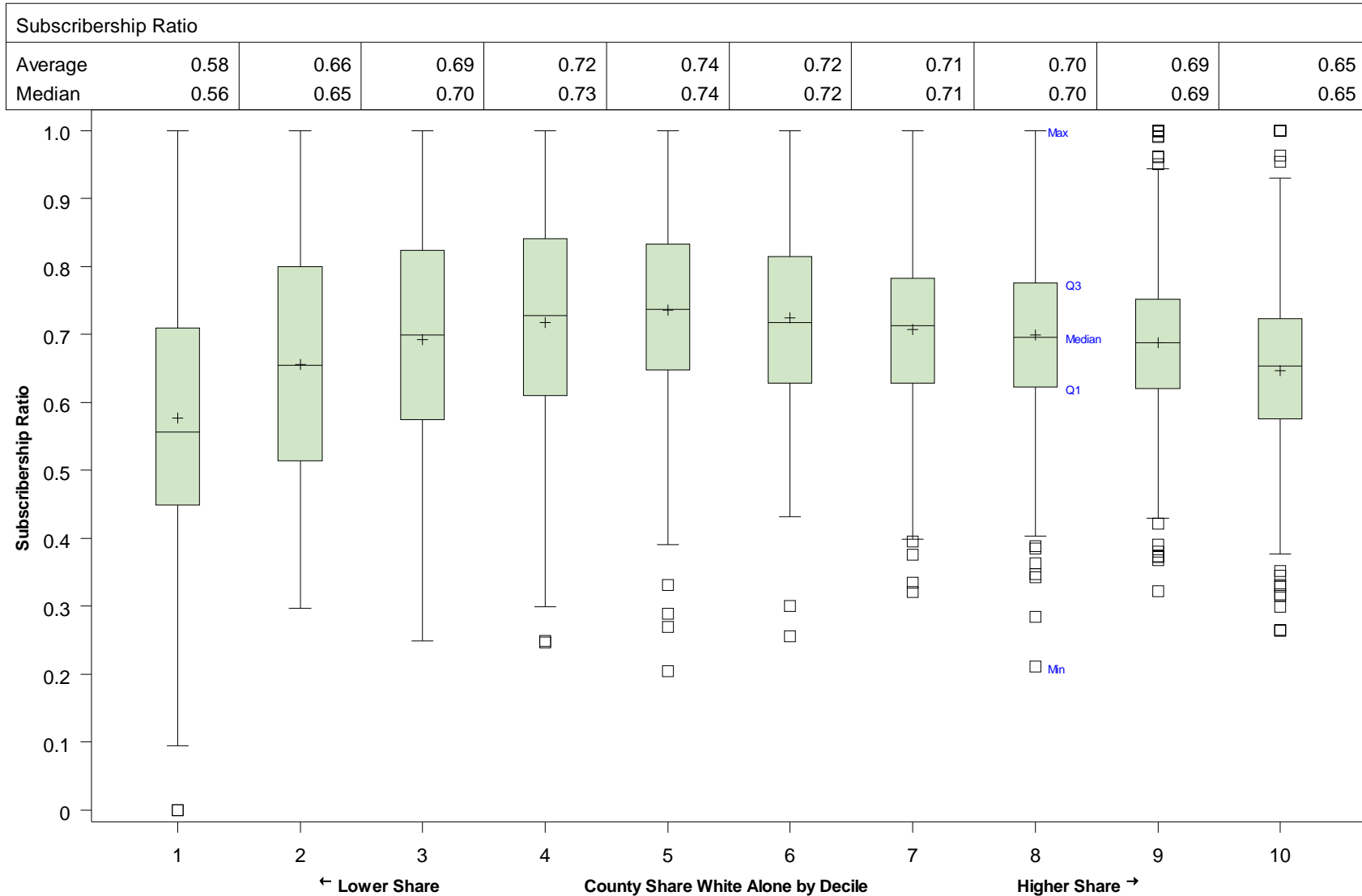
Figure 47
Subscribership Ratio Distributions by Average Age of County Population (in Deciles) as of June 30, 2017



Note: Each box plot shows the distribution of residential subscribership to connections over 200 kbps in at least one direction for counties in the average age decile. Some of the features are labeled, but note also that + denotes the position of the average residential subscribership ratio taken across all counties in the decile; ⊥ is the minimum observation above $Q1-1.5(Q3-Q1)$; T is the maximum observation below $Q3+1.5(Q3-Q1)$; and □ is a data point beyond $Q1-1.5(Q3-Q1)$ or $Q3+1.5(Q3-Q1)$. Ratios greater than 1 were set to 1.

Sources: FCC Form 477; 2012-2016 ACS 5-year Estimates; Census 2010.

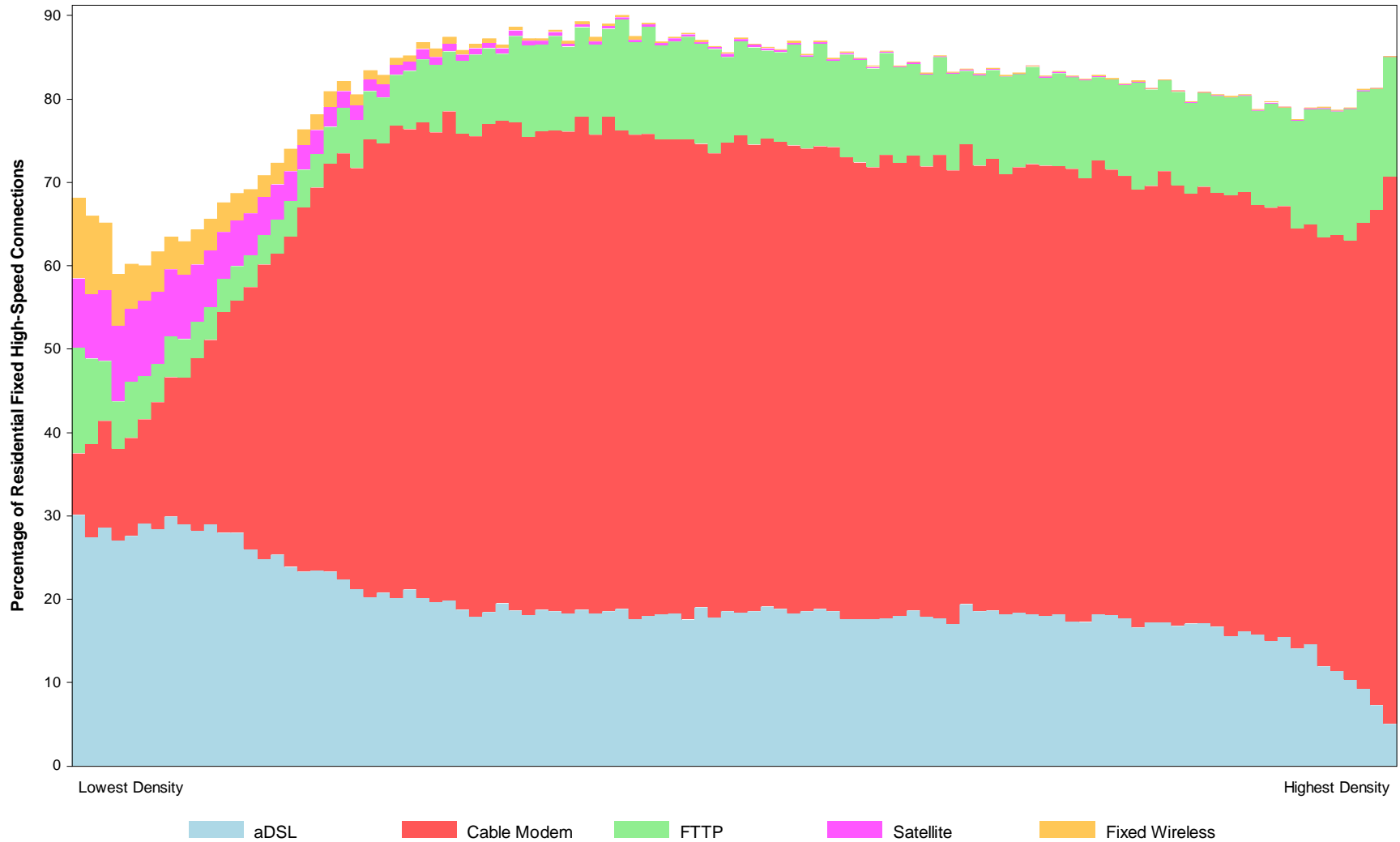
Figure 48
Subscribership Ratio Distributions by Share White Alone (in Deciles) as of June 30, 2017



Note: Each box plot shows the distribution of residential subscribership to connections over 200 kbps in at least one direction for counties in each race decile. Counties were grouped into deciles based on the share of the county population that reported their race as white alone. Some of the features are labeled, but note also that + denotes the position of the average residential subscribership ratio taken across all counties in the decile; ⊥ is the minimum observation above $Q1-1.5(Q3-Q1)$; T is the maximum observation below $Q3+1.5(Q3-Q1)$; and □ is a data point beyond $Q1-1.5(Q3-Q1)$ or $Q3+1.5(Q3-Q1)$. Ratios greater than 1 were set to 1.

Sources: FCC Form 477; 2012-2016 ACS 5-year Estimates; Census 2010.

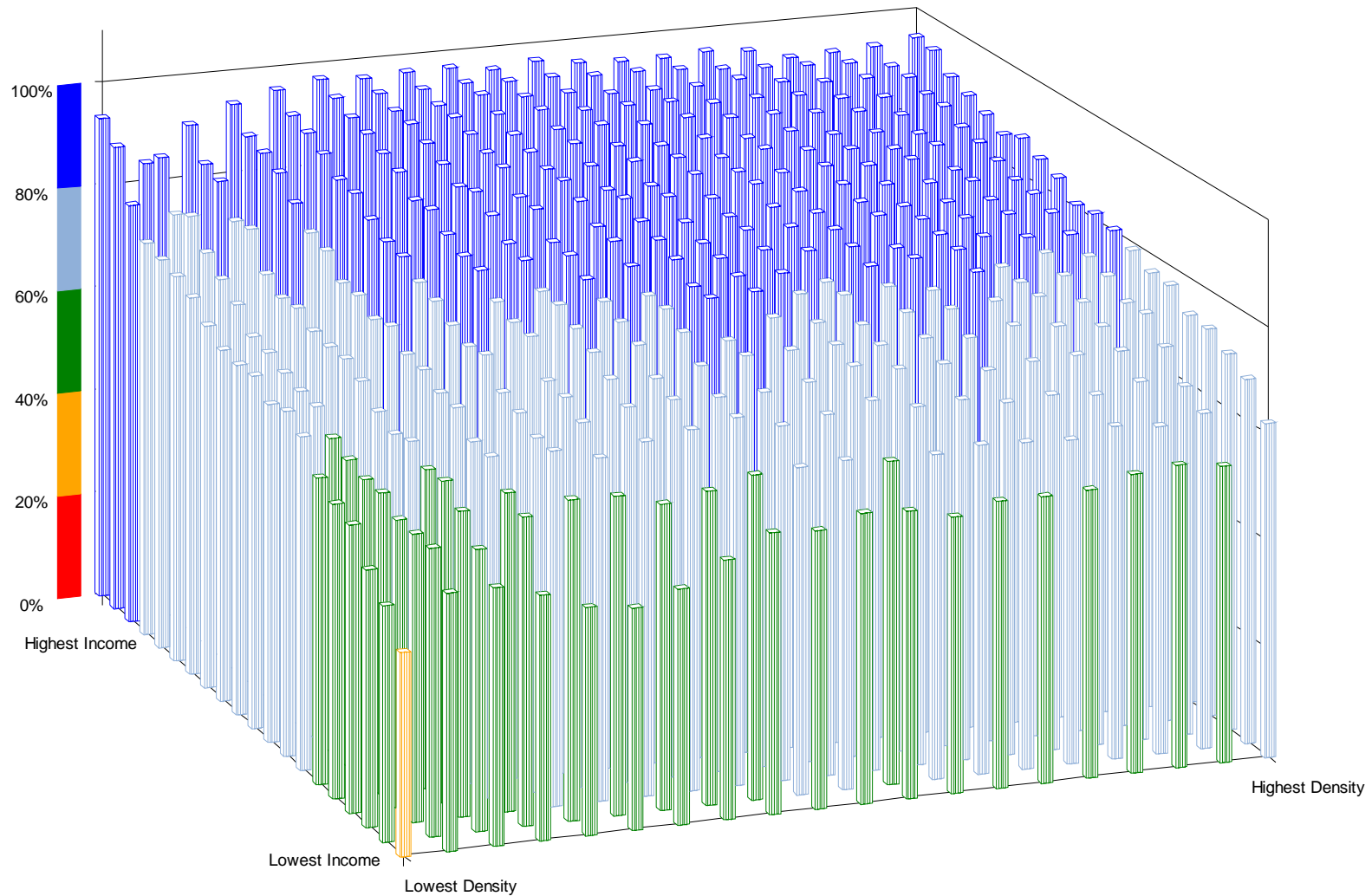
Figure 49
Subscribership Ratios by Technology and Tract Household Density as of June 30, 2017
(Residential fixed connections over 200 kbps in at least one direction)



This chart shows subscribership ratios by technology and household density. Tracts were grouped into 100 density percentiles based on households per square mile, calculated as the ratio of estimated tract households to tract land area from the Census Bureau. For each percentile, the height of the bar represents the household-weighted average ratio of residential fixed connections to households across tracts in the percentile.

Sources: FCC Form 477; 2012-2016 ACS 5-year estimates; and Census 2010.

Figure 50
Average Subscribership Ratios by Income and Household Density as of June 30, 2017
(Residential fixed connections over 200 kbps in at least one direction by Tract)



This chart shows subscribership ratios by household density and income quantiles. Tracts were grouped into 400 density/income quantiles based on households per square mile, calculated as the ratio of estimated tract households to tract land area, and median household income. For each quantile, the height of the grid represents the household-weighted average ratio of residential fixed connections to households across tracts in the decile.

Sources: FCC Form 477; 2012-2016 ACS 5-year estimates; and Census 2010.

Technical Notes

General

The information presented in this report is based on data from FCC Form 477. Through Form 477, facilities-based broadband providers submit information to the FCC about where they offer and have subscribers to Internet access services over 200 kilobits per second (kbps) in at least one direction. In June 2013, the Commission adopted several changes to Form 477.¹ Detailed information about those changes and about the Form 477 reporting requirements in general is available at www.fcc.gov/form477. Due to technical difficulties in 2014 with the redesigned Form 477 filing interface, the filing deadline for Form 477 data as of June 30, 2014 was moved to December 11, 2014. Because of that delay, the Commission staff were not able to perform their typical process of identifying anomalies or errors in the data, following up with filers, and requesting updates to the data where appropriate – a process which usually generates a significant number of corrections and hence a more accurate Form 477 data set.

Form 477 collects information about *Internet access connections in service* to end-user locations that are advertised to deliver information to and/or from the end user – that is, in at least one direction – at transfer rates (speeds) above 200 kilobits per second (kbps). Information is collected about the number of connections by the advertised speeds associated with each product subscribed to in the relevant geographic area, census tracts for fixed and states for mobile. Fixed providers report connections by the maximum advertised upload and download speeds, while mobile providers report connections by minimum advertised upload and download speeds. Fixed connections are further categorized by the technology employed by the part of the connection that terminates at the end-user location. Wherever a *number of providers* is cited in this report, multiple Form 477 filers within a holding company structure count as one provider.

“End users” are residential, business, institutional, or government entities who use services for their own purposes and who do not resell such services to other entities. *Facilities-based providers* report information about connections they provide directly to their own end-user customers and also connections that they provide to Internet Service Providers for resale to end users. For Form 477 purposes, the facilities-based provider of a connection is the entity that owns the portion of the physical facility that terminates at the end-user location, obtains an unbundled network element (UNE), special access line, or other leased facility that terminates at the end-user location and provisions/equips it as a connection that transfers information at rates over 200 kbps in at least one direction, or provisions/equips a wireless channel that transfers information at rates over 200 kbps in at least one direction to the end-user location over licensed spectrum or over spectrum that the provider uses on an unlicensed basis.

The mutually exclusive Form 477 *technology categories* are: asymmetric Digital Subscriber Line (aDSL in this report); symmetric Digital Subscriber Line (sDSL); other copper wireline; cable modem; optical carrier / fiber to the end user; satellite; terrestrial fixed wireless (using licensed or unlicensed spectrum); mobile wireless; and all other (which is included to capture deployment of additional technologies over time). In the Form 477 data collection, aDSL-based services delivered over fiber-to-the-node architecture are reported in the aDSL category. The other wireline category comprises T1/DS1, T3/DS3, and other copper-based connections, not elsewhere categorized, that deliver *Internet access* service at the end-user

¹ *Modernizing the FCC Form 477 Data Program*, WC Docket No. 11-10, Report and Order, 28 FCC Rcd 9887 (2013). See also *High-Speed Services for Internet Access: Status as of December 31, 2014* (March 2016) at 1-2, available at <https://www.fcc.gov/reports-research/reports/internet-access-services-reports/internet-access-services-reports>.

location. Ethernet connections delivering Internet access service are reported in the other wireline category if the connection terminates over copper and in the FTTP category if the connection terminates over fiber. Connections deployed over hybrid fiber-coax (HFC) architecture are reported in the cable modem category. Wireless ISPs (WISPs) report in the fixed wireless category if providing service to dispersed, fixed end-user locations and report in the mobile wireless category if providing a commercial service that can be received at any location within a service footprint. Wireless local area networks (such as Wi-Fi hotspots) that only enable local distribution and sharing of a premises connection are not included, although the shared premises connection is included.

Numbers of connections presented in this report are not adjusted for the number of persons at a single end-user location who have access to, or who use, the Internet access services delivered over the connection to that location.

Numbers of residential connections are estimated based on the total connections and percentage-residential connections information reported on Form 477.

Census tracts

Since the collection of data as of December 31, 2008, facilities-based providers of reportable fixed-location Internet access connections have been reporting connection counts at the census tract level of detail. Facilities-based mobile wireless providers report connection counts by state rather than census tract.

The census tract-level data summarized in this report were collected for tracts in the 2010 decennial census. For the purposes of this report, there are 73,767 census tracts because we exclude census tracts delineated specifically to cover large bodies of water.

About 110 of the census tracts have population but no households because the population resides in group living quarters. For the purpose of estimating residential subscribership rates by census tract, we assume these census tracts have no reportable *residential* Internet access service because persons residing in group quarters would have Internet access over a business connection provided to the operator of the group quarters. Therefore, these census tracts are included in the “zero” column.

Ratios of residential fixed-location connections to households that exceed 100%

We estimate the share of households with fixed-location connections in individual census tracts by taking the ratio of the reported number of fixed-location residential service connections to the estimated number of households. We continue to find “outlier” estimates at or above 100% and to find that the number of outliers is substantially reduced when estimates are made for individual counties rather than for individual census tracts.

Possible explanations of ratios at or above 100% include: (1) geocoding misallocations of service locations to census tracts; (2) proper allocation of connections to the county level by some filers, but improper allocation of all connections to a single tract in the county; (3) possible overestimation of residential connections in service plans for which the customer base is primarily residential; and (4) connections at seasonally or occasionally occupied housing units, such as vacation homes, while the household is counted elsewhere. The numbers of households in census tracts that were used to generate the estimated ratios are themselves estimates (from Census 2011-2015 ACS 5-year estimates), which could have an independent effect.

Maps showing residential subscribership rates by census tract

The two maps based on estimated Internet access connections over 200 kbps in at least one direction per 1,000 households (that is, estimated household subscribership rates) exclude all connections identified as business connections and necessarily exclude residential mobile wireless connections (which are reported for the state but not for individual census tracts).

Glossary

Term	Definition
aDSL	Asymmetric Digital Subscriber Line: A digital local loop typically using copper facilities and providing greater bandwidth in one direction than the other.
Cable modem service	A service which offers customers access to the Internet over a cable system.
Downstream speed	Speed of transmission from the Internet to the end user.
End users	Residential, business, institutional, or government entities who use services for their own purposes and who do not resell such services to other entities.
Facilities-based provider	Entity that owns the portion of the physical facility that terminates at the end-user location, obtains an unbundled network element (UNE), special access line, or other leased facility that terminates at the end-user location and provisions/equips it as a connection that transfers information at rates over 200 kbps in at least one direction, or provisions/equips a wireless channel that transfers information at rates over 200 kbps in at least one direction to the end-user location over licensed spectrum or over spectrum that the provider uses on an unlicensed basis.
Fixed wireless	A radio communication service between specified fixed points.
Fixed technologies	All technologies other than terrestrial mobile wireless.
FTTH or FTTP	Fiber to the Home (Premises): A network access architecture in which optical fiber is deployed all the way to the customer's home (premises).
Internet access service	Service that provides end users access to the Internet.
ISPs	Internet Service Providers: Companies or organizations that provide Internet access service (see above).
Mobile wireless service	A radio communication service between mobile and fixed stations, or between mobile stations.
Mobile wireless provider	Provider of mobile wireless service (see above).
Other wireline	All copper-wire based technologies other than DSL technologies; Ethernet over copper and T-1 are examples.
Power line	Internet access service delivered over electric power transmission lines.
Satellite communications	A telecommunications service provided via one or more satellite relays and their associated uplinks and downlinks.
sDSL	Symmetric Digital Subscriber Line: DSL technology that provides equal bandwidth for both uploads and downloads.
Speed tiers	Sub-groupings defined by ranges of upstream speeds and downstream speeds.
Upstream speed	Speed of transmission from the end user to the Internet.
Wi-Fi hotspot	Wireless Fidelity: Generic term referring to any type of IEEE 802.11 wireless network. A hotspot is a small geographic area in which users

	can gain access to a Wi-Fi network which in turn connects to the Internet.
Wireless service	Telephone, Internet, data, and other services provided to customers through the transmission of signals over networks of radio towers.
Wireless service provider	Provider of wireless service (see above).
WISP	Wireless ISP: A company that provides end users with wireless access to the Internet, most commonly by using radio spectrum designated for unlicensed use.

Customer Response

Publication: *Internet Access Services: Status as of June 30, 2017*

You can help us provide the best possible information to the public by completing this form and returning it to the Industry Analysis and Technology Division of the FCC's Wireline Competition Bureau.

1. Please check the category that best describes you:

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- current telecommunications carrier
- potential telecommunications carrier
- business customer evaluating vendors/service options
- consultant, law firm, lobbyist
- other business customer
- academic/student
- residential customer
- FCC employee
- other federal government employee
- state or local government employee
- Other (please specify)

2. Please rate the report: Excellent Good Satisfactory Poor No opinion

Data accuracy	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)
Data presentation	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)
Timeliness of data	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)
Completeness of data	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)
Text clarity	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)
Completeness of text	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)	(<input type="checkbox"/>)

3. Overall, how do you rate this report? Excellent Good Satisfactory Poor No opinion

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4. How can this report be improved?

5. May we contact you to discuss possible improvements?

Name:

Telephone #:

To discuss the information in this report, contact: 202-418-0940 or for users of TTY equipment, call 202-418-0484		
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