

Internet Access Services: Status as of June 30, 2018

Industry Analysis Division
Office of Economics & Analytics
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SECTION 1: OVERVIEW & HIGHLIGHTS

Introduction

This report summarizes information about Internet access connections in the United States as of June 30, 2018 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.

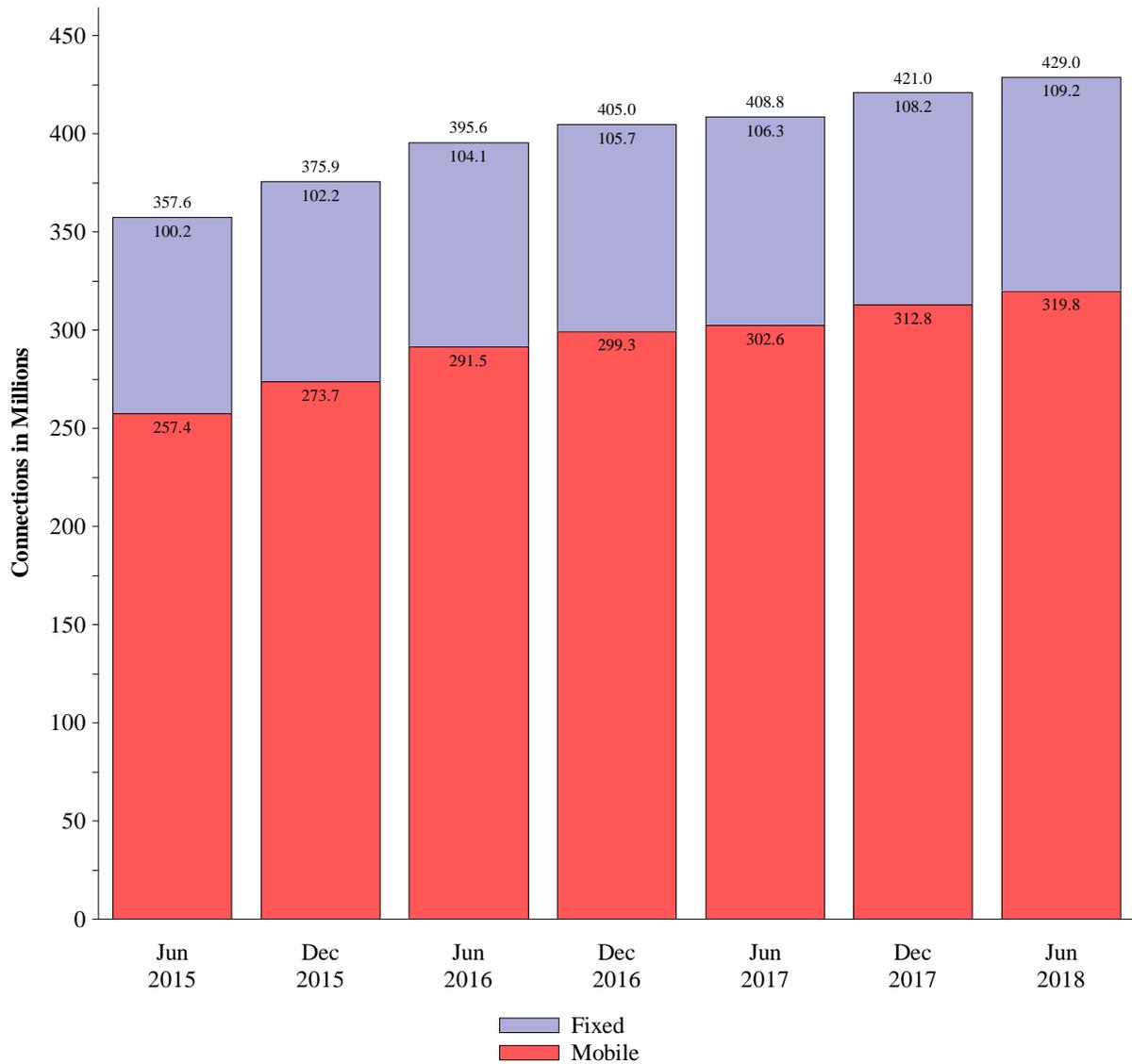
² The Commission began collecting census tract-level data for data as of December 31, 2008. See *High-Speed Services for Internet Access: Status as of December 31, 2008* (February 2010) at 1-4, available at <http://www.fcc.gov/encyclopedia/high-speed-services-internet-access-reports> (*December 2008 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 4.9% between June 2017 and June 2018 to 429 million. Mobile Internet connections increased 5.7% year-over-year to 320 million in June 2018, while fixed connections grew to 109 million – up about 2.8% from June 2017.
- We believe mobile Internet connections remain underreported by as much as 2% through June 2018 due to inadequate accounting of connections sold by downstream mobile virtual network operators (MVNOs).

Figure 1
Fixed and Mobile Connections 2015-2018

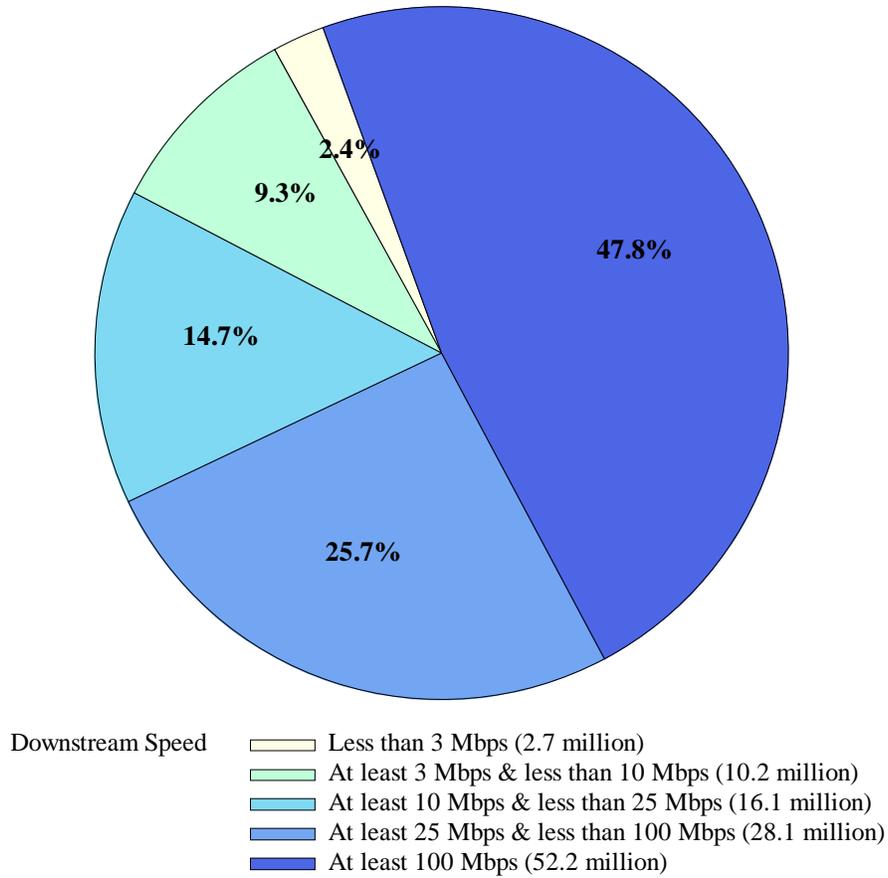


Some previously-published data may have been revised. Figures may not sum to totals elsewhere in this report due to rounding. Connections include both residential and business connections.

Connections by Speed

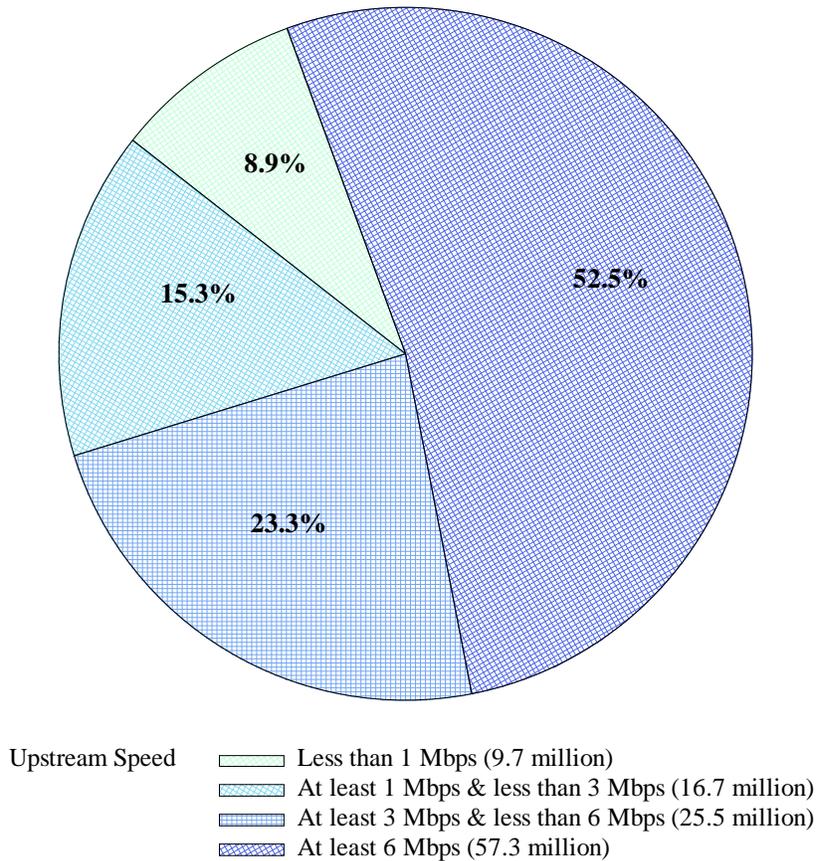
Fixed connections – downstream speeds. Figure 2(a) illustrates how the 109 million fixed connections reported for June 2018 were distributed across the five groups of *downstream speeds* defined by breakpoints at 3 Mbps, 10 Mbps, 25 Mbps, and 100 Mbps. See Figure 9 for more detail.

Figure 2(a)
Distribution of Fixed Connections (109.2 million) by Downstream Speed
as of June 30, 2018



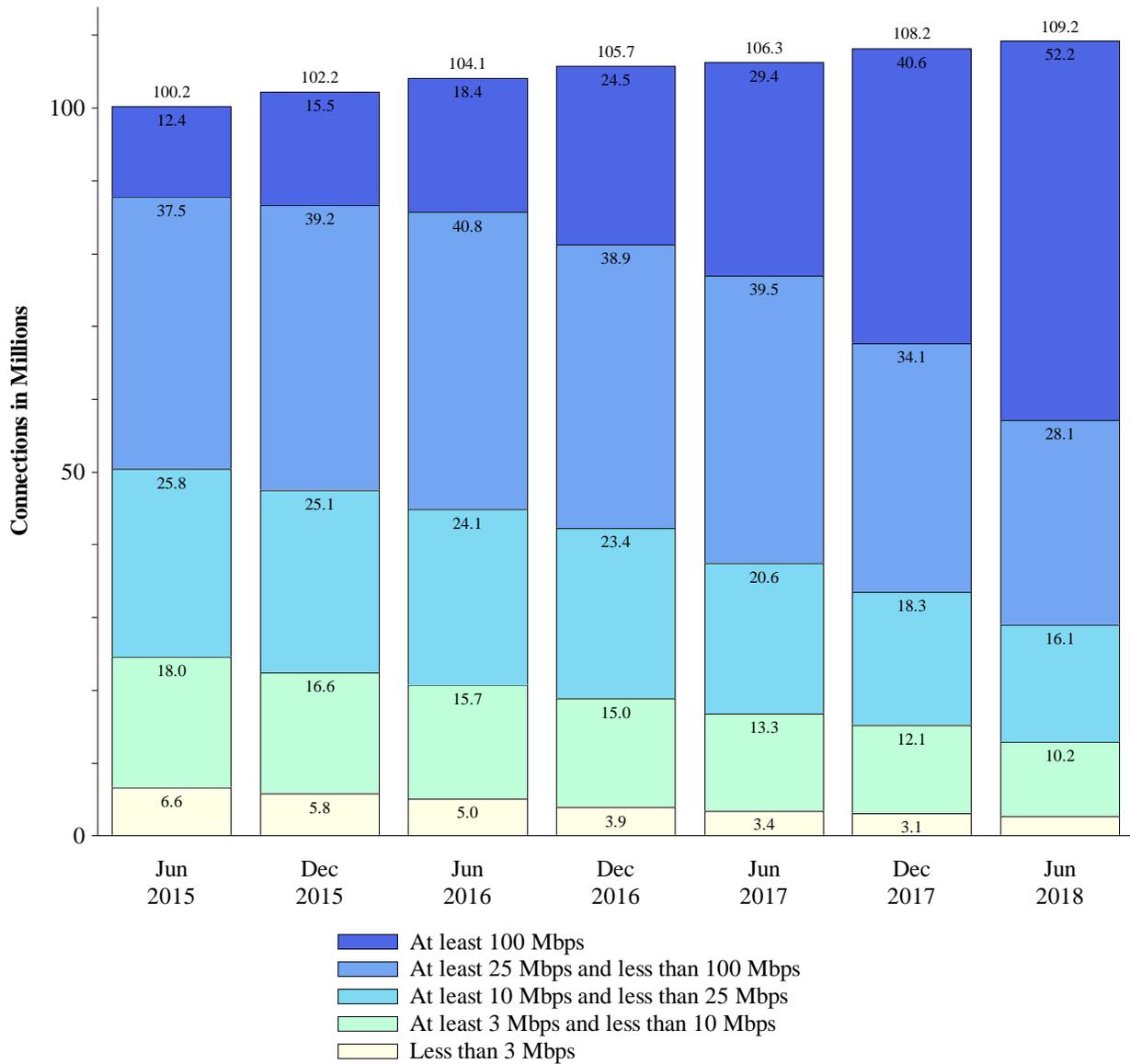
Fixed connections – upstream speeds. Figure 2(b) illustrates how the 109 million fixed connections reported for June 2018 were distributed across the four groups of *upstream speeds* defined by breakpoints at 1 Mbps, 3 Mbps, and 6 Mbps. See Figure 9 for more detail.

Figure 2(b)
Distribution of Fixed Connections (109.2 million) by Upstream Speed
as of June 30, 2018



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 2015 to 2018.

Figure 3
Fixed Connections by Downstream Speed 2015-2018



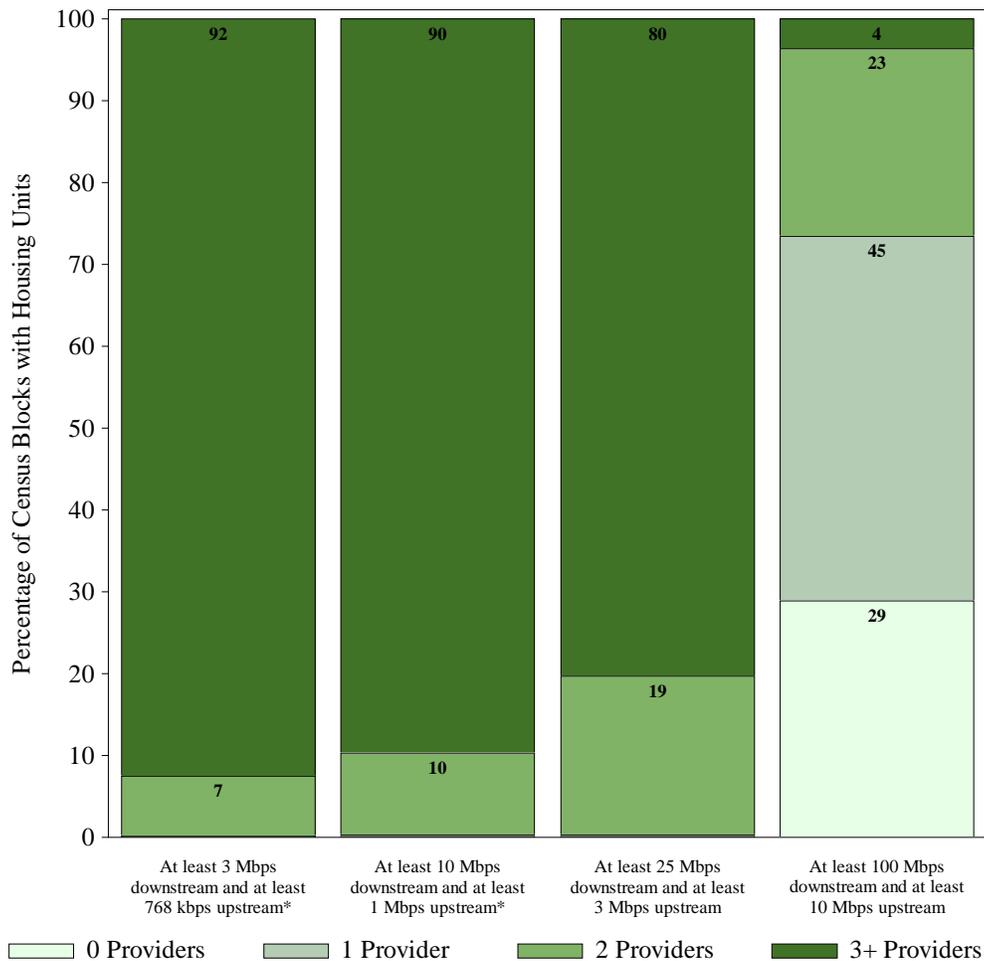
Some previously-published data may have been revised. Figures may not sum to totals elsewhere in this report due to rounding. Connections include both residential and business connections.

- The percentage of fixed connections with a downstream speed of at least 25 Mbps has grown from 50% (or 50 million connections) in June 2015 to 74% (or 80 million connections) in June 2018. Over the same period, the percentage of fixed connections with downstream speeds of less than 3 Mbps has decreased from 7% (or 7 million connections) in June 2015 to 2.4% (or about 2.6 million connections) in June 2018.

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 2018. This information is taken from the block-level Form 477 fixed broadband deployment data that the Commission began collecting in 2014.⁴ 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, 2018



* Satellite service providers are included in this analysis. Satellite service providers report offering Internet access at bandwidths of at least 25 Mbps downstream and 3 Mbps upstream in 99.8% of developed census blocks.

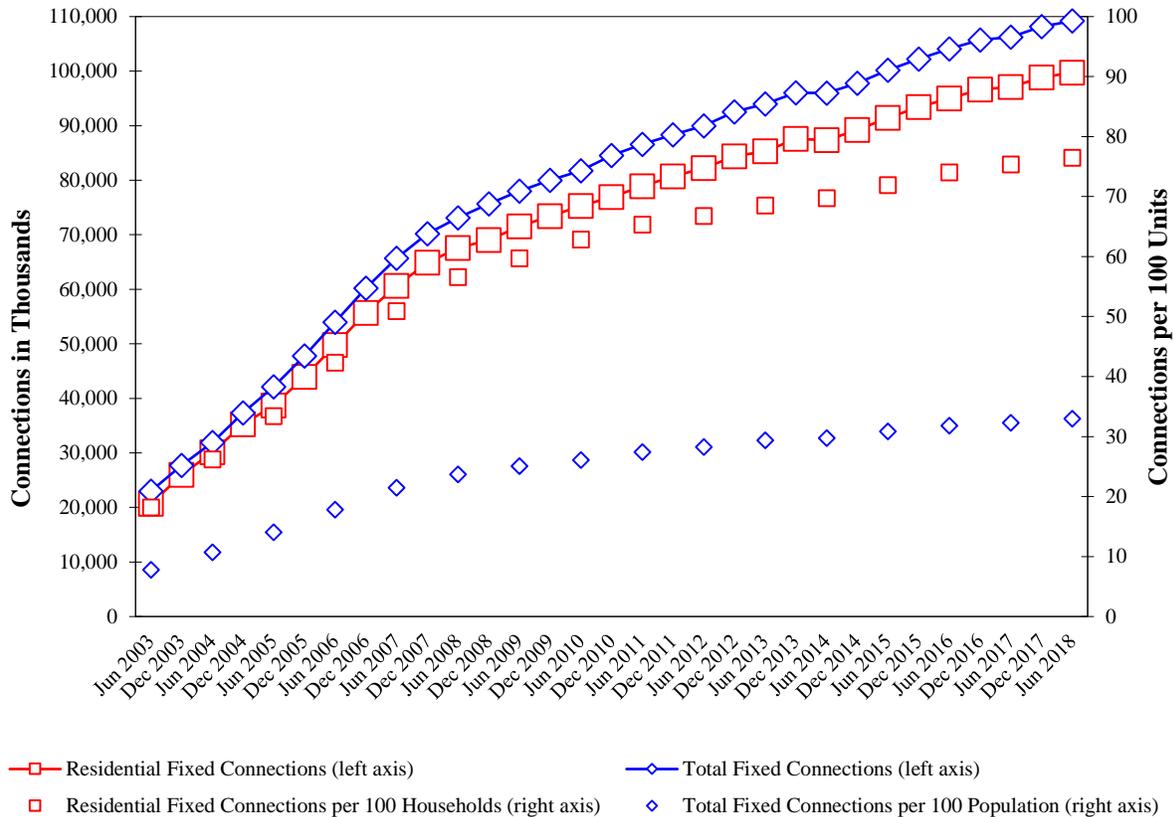
Column figures may not sum to 100% due to rounding. Developed census blocks are those with housing units based on the 2010 census.

⁴ 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 2003.⁵

Figure 5
Fixed Connections 2003-2018
 (Connections over 200 kbps in at least one direction)



- Between June 2008 and June 2018, total (business and residential) fixed connections grew from 73 million connections to 109 million connections – at a compound annual growth rate of 4% per year.⁶

⁵ 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>.

⁶ 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 68 million connections to 100 million connections – also at a compound annual growth rate of 4% per year.
- From June 2008 to June 2018, the number of residential fixed connections per 100 U.S. households increased from 57 to 76.⁷

Other Report Highlights

Typical speeds

- The median downstream speed of all reported fixed connections was 75 Mbps and the median upstream speed was 10 Mbps. For residential fixed connections, the median downstream speed was 90 Mbps and the median upstream speed was 10 Mbps.

Residential connections

- Residential fixed Internet access connections increased by about 3% between June 2017 and June 2018, to ~100 million. *See Figure 7.*
- Residential (non-business) mobile wireless Internet access connections on mobile devices with data plans for full Internet access increased by 6%, to 260 million, between June 2017 and June 2018. *See Figure 7.*
- Approximately 87% of residential fixed connections had a speed of at least 10 Mbps downstream and 1 Mbps upstream in June 2018, while 73% had a speed of at least 25 Mbps downstream and 3 Mbps upstream. About 44% 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 2018, there were 72 residential fixed connections with speeds of at least 10 Mbps downstream and 1 Mbps upstream per 100 households; 61 residential fixed connections with speeds of at least 25 Mbps downstream and 3 Mbps upstream per 100 households; and 36 residential fixed connections with speeds of at least 100 Mbps downstream and 10 Mbps upstream per 100 households.⁸ *See Figure 32.*

⁷ 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.)

⁸ 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 Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*,

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, 2018.⁹ 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 and age. The data indicate that some demographic variables are correlated with Internet access subscribership rates. *See* Figures 44-49.

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).

⁹ 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

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Figure 6
Connections over 200 kbps in at Least One Direction 2014-2018
(In thousands)

<i>Technology</i>	<i>2014</i>		<i>2015</i>		<i>2016</i>		<i>2017</i>		<i>2018</i>
	<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	324,471	338,202	357,613	375,895	395,604	404,971	408,816	420,973	428,983
Total Fixed	95,982	98,245	100,179	102,216	104,088	105,715	106,254	108,200	109,207
Mobile Wireless	228,489	239,957	257,434	273,679	291,516	299,256	302,562	312,773	319,776

Figure 7
Residential Connections over 200 kbps in at Least One Direction 2014-2018
(In thousands)

<i>Technology</i>	<i>2014</i>		<i>2015</i>		<i>2016</i>		<i>2017</i>		<i>2018</i>
	<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	277,551	290,696	306,292	322,557	330,987	337,978	341,094	351,964	358,851
Total Fixed	87,345	89,530	91,439	93,434	95,001	96,607	97,072	98,843	99,742
Mobile Wireless	190,205	201,166	214,853	229,122	235,985	241,371	244,022	253,121	259,109

* The June 2014 data have not been subjected to the typical quality checks (see Technical Notes).
Some previously published data may have been revised. Figures may not sum to totals due to rounding.

Figure 8
Residential Fixed Connections by Downstream Speed 2015-2018

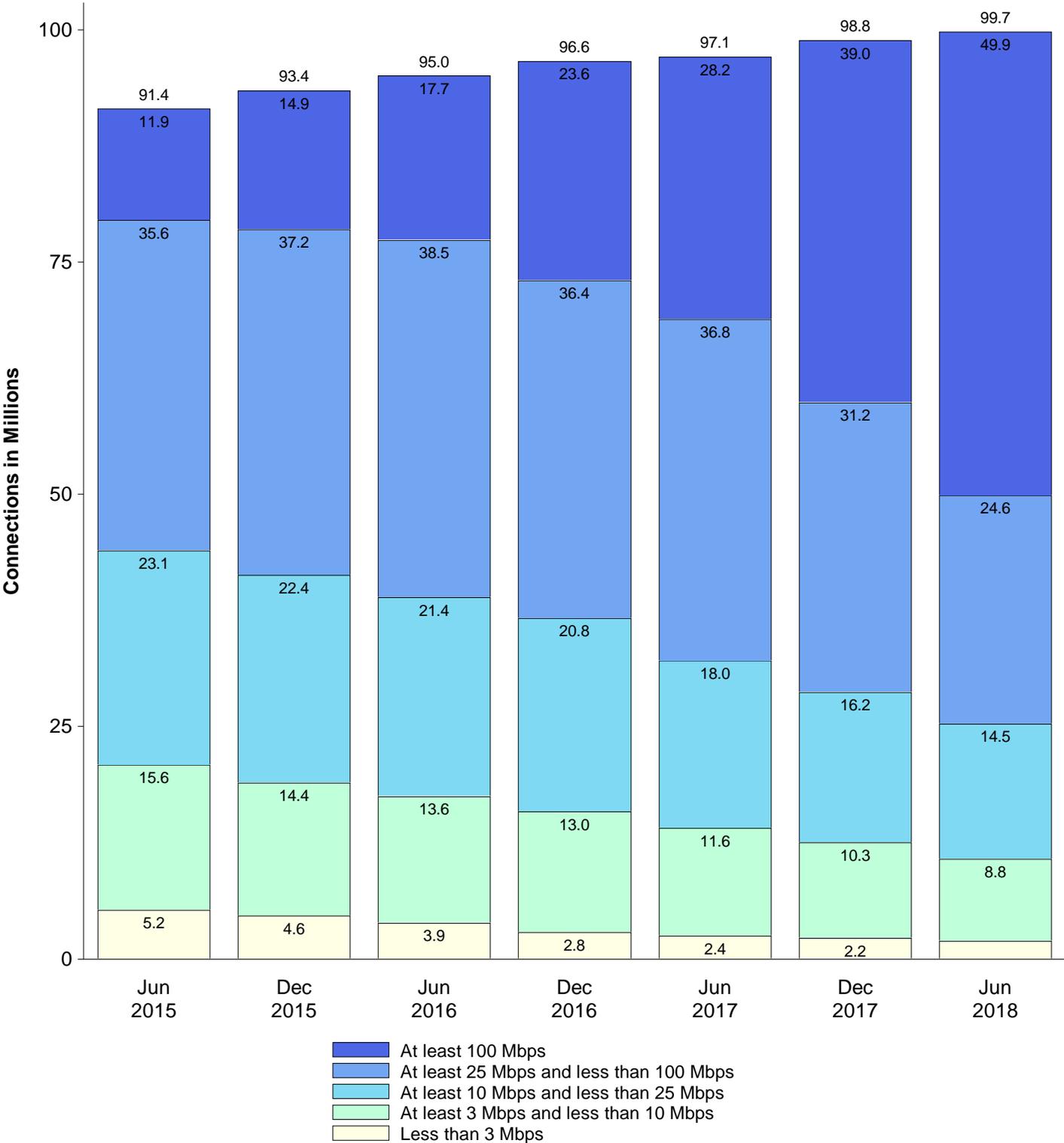
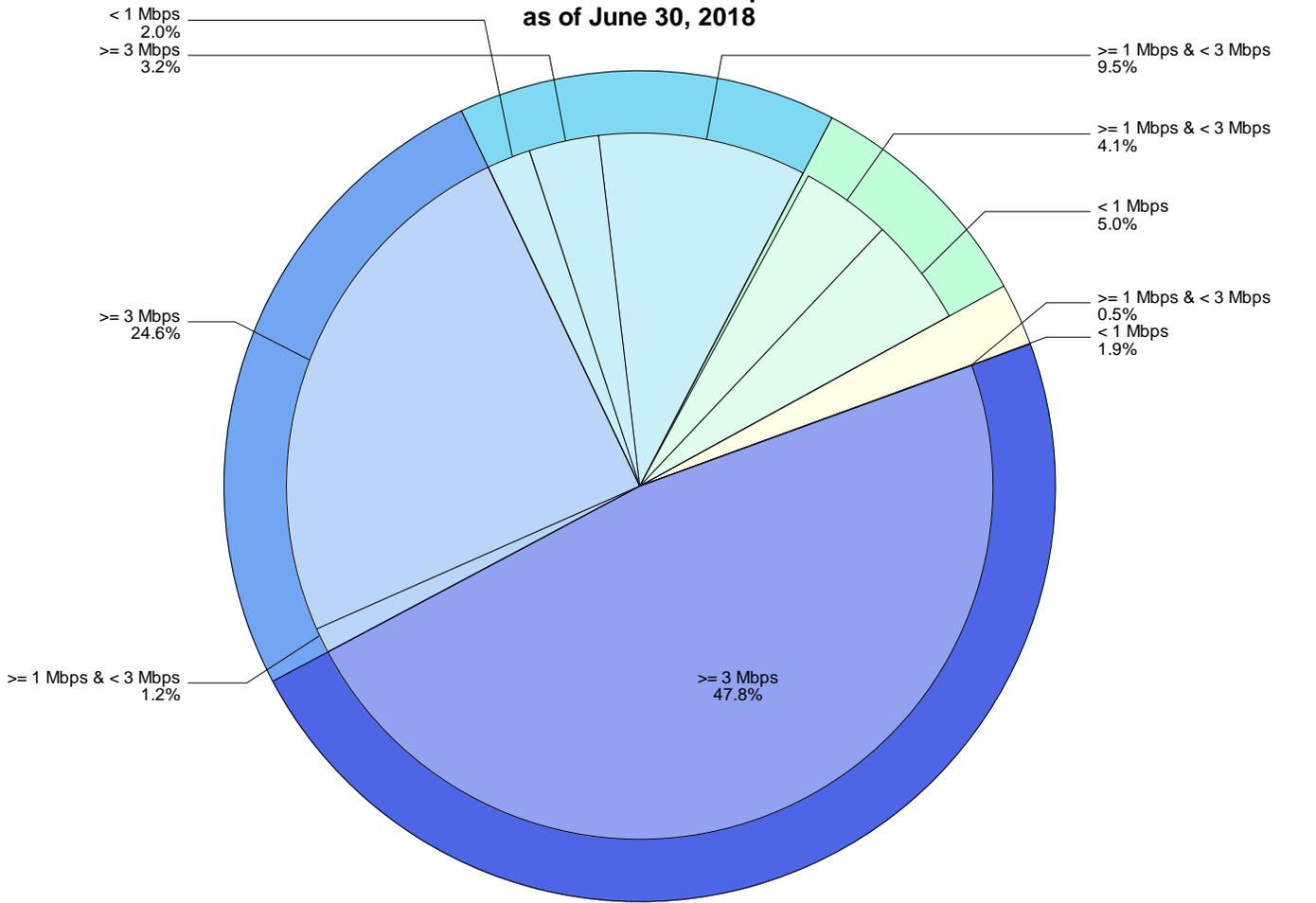


Figure 9
Distribution of Fixed Connections over 200 kbps in at Least One Direction
as of June 30, 2018



Downstream Speed < 3 Mbps; 2.4% >= 3 Mbps & < 10 Mbps; 9.3% >= 10 Mbps & < 25 Mbps; 14.7%
 >= 25 Mbps & < 100 Mbps; 25.7% >= 100 Mbps; 47.8%

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

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

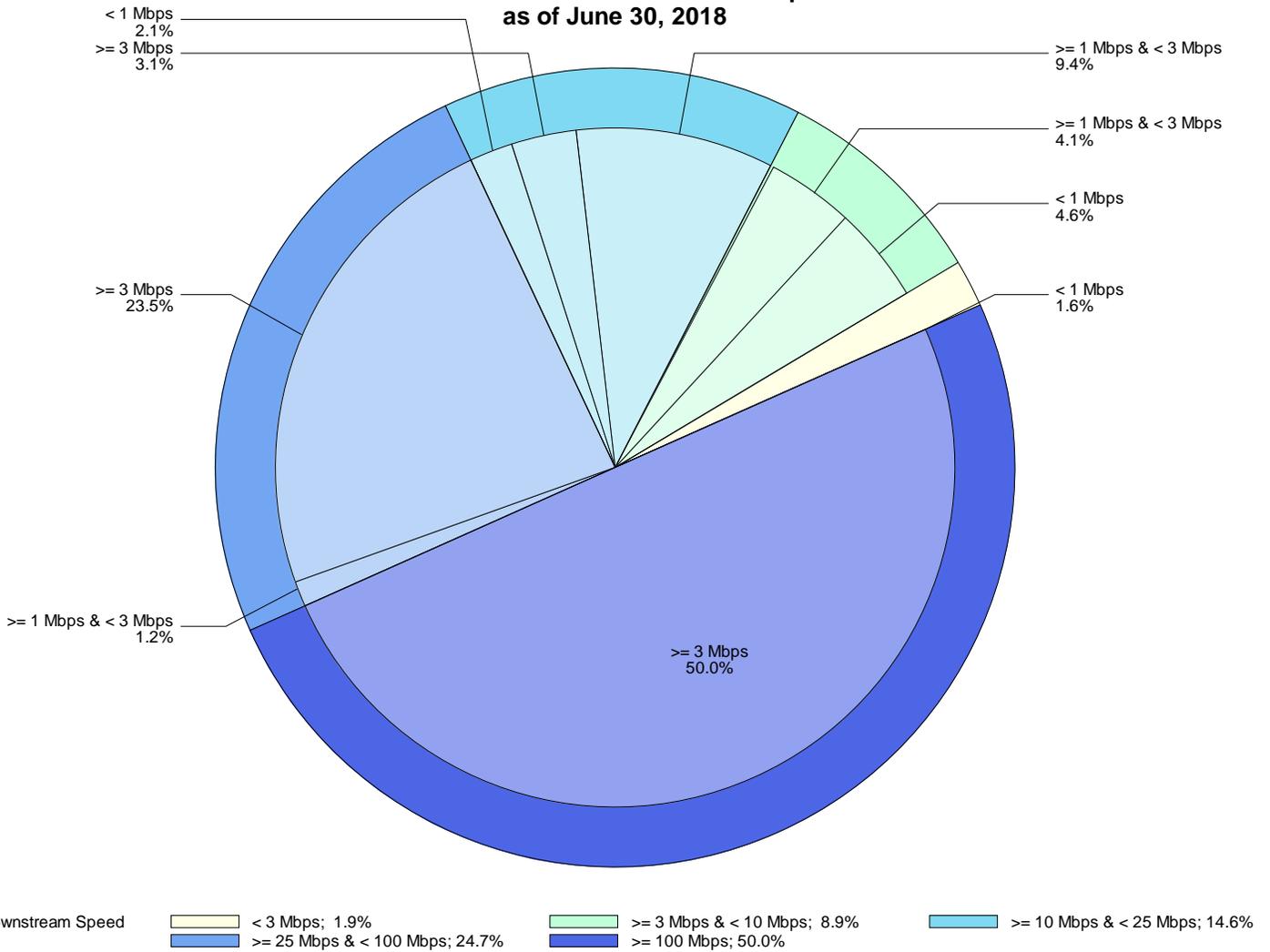
Upstream Speed	Downstream Speed					Total
	Less than 3 Mbps	At least 3 Mbps and less than 10 Mbps	At least 10 Mbps and less than 25 Mbps	At least 25 Mbps and less than 100 Mbps	At least 100 Mbps	
Less than 1 Mbps	2,095	5,411	2,179	#	#	9,685
At least 1 Mbps & Less than 3 Mbps	571	4,506	10,391	1,265	6	16,739
At least 3 Mbps	3	293	3,492	26,832	52,162	82,783
Total	2,669	10,210	16,062	28,098	52,168	109,207

Percentages

Less than 1 Mbps	1.9	5.0	2.0	0.0	0.0	8.9
At least 1 Mbps & Less than 3 Mbps	0.5	4.1	9.5	1.2	0.0	15.3
At least 3 Mbps	0.0	0.3	3.2	24.6	47.8	75.8
Total	2.4	9.3	14.7	25.7	47.8	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, 2018



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	1,610	4,563	2,047	#	#	8,219
At least 1 Mbps & Less than 3 Mbps	292	4,119	9,380	1,201	5	14,998
At least 3 Mbps	2	150	3,089	23,434	49,849	76,525
Total	1,904	8,832	14,516	24,635	49,854	99,742

Percentages

Less than 1 Mbps	1.6	4.6	2.1	0.0	0.0	8.2
At least 1 Mbps & Less than 3 Mbps	0.3	4.1	9.4	1.2	0.0	15.0
At least 3 Mbps	0.0	0.2	3.1	23.5	50.0	76.7
Total	1.9	8.9	14.6	24.7	50.0	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 2014-2018
(In thousands)

Technology	2014		2015		2016		2017		2018
	Jun*	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	324,471	338,202	357,613	375,895	395,604	404,971	408,816	420,973	428,983
Total Fixed	95,982	98,245	100,179	102,216	104,088	105,715	106,254	108,200	109,207
aDSL	29,870	29,533	29,351	28,134	27,488	26,527	25,506	24,193	23,072
sDSL	96	72	77	60	55	42	44	28	28
Other Wireline ¹	792	773	706	694	674	655	668	630	610
Cable Modem	54,011	55,785	57,244	59,706	61,456	63,325	64,060	66,196	67,163
FTTP ²	8,312	9,077	9,688	10,498	11,143	12,053	12,906	13,978	14,982
Satellite	1,964	2,006	2,058	2,071	2,079	1,864	1,826	1,872	1,939
Fixed Wireless	935	999	1,056	1,054	1,192	1,250	1,245	1,304	1,414
Mobile Wireless	228,489	239,957	257,434	273,679	291,516	299,256	302,562	312,773	319,776

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).

Some previously published data may have been revised. Figures may not sum to totals due to rounding.

Figure 12
Connections by Technology as of June 30, 2018

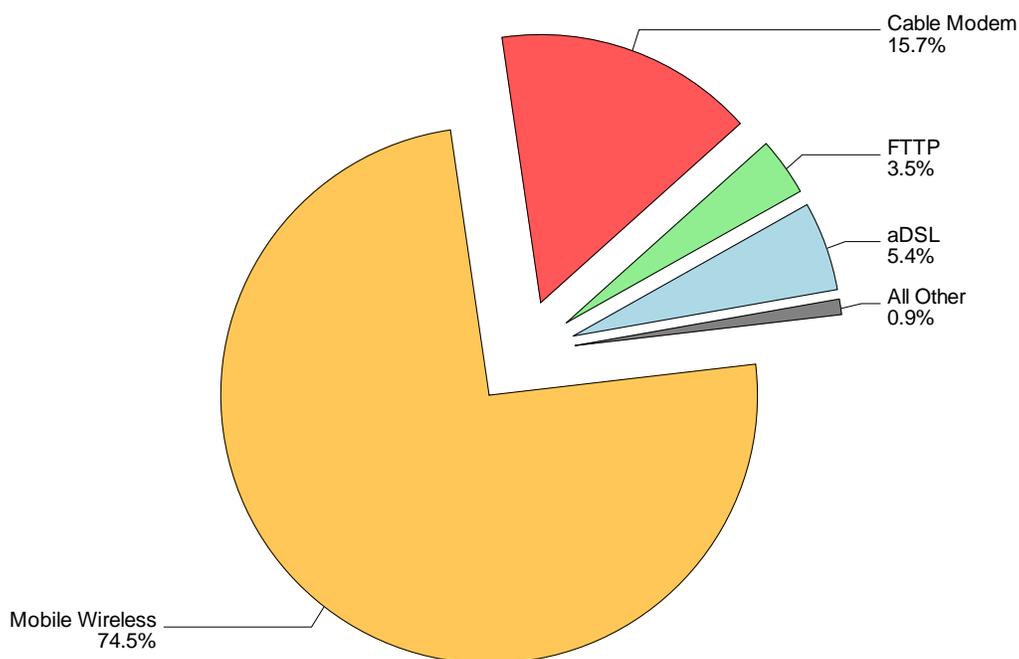


Figure 13
Residential Connections over 200 kbps in at Least One Direction by Technology 2014-2018
(In thousands)

Technology	2014		2015		2016		2017		2018
	Jun*	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	277,551	290,696	306,292	322,557	330,987	337,978	341,094	351,964	358,851
Total Fixed	87,345	89,530	91,439	93,434	95,001	96,607	97,072	98,843	99,742
aDSL	26,675	26,442	26,157	25,139	24,486	23,691	22,775	21,653	20,670
sDSL	30	19	18	16	10	8	12	9	9
Other Wireline ¹	57	59	59	54	51	32	74	67	74
Cable Modem	50,389	52,061	53,544	55,799	57,358	59,145	59,687	61,567	62,318
FTTP ²	7,605	8,262	8,842	9,592	10,140	10,956	11,776	12,702	13,661
Satellite	1,760	1,803	1,875	1,891	1,897	1,676	1,637	1,688	1,751
Fixed Wireless	829	884	944	943	1,059	1,099	1,111	1,156	1,260
Mobile Wireless	190,205	201,166	214,853	229,122	235,985	241,371	244,022	253,121	259,109

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, 2018

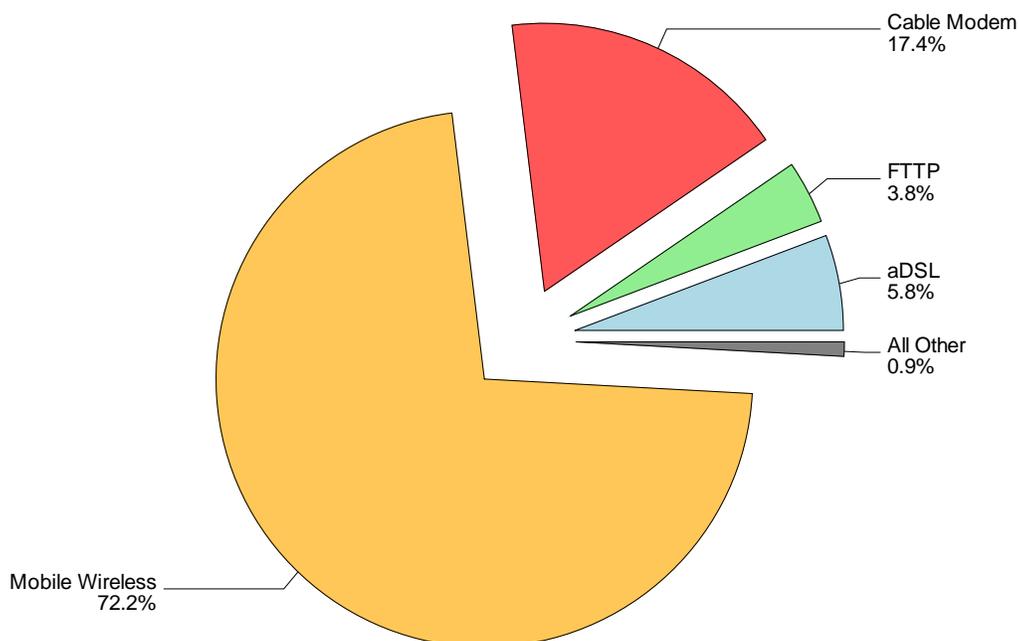


Figure 15
Fixed Connections at Least 3 Mbps Downstream and 768 kbps Upstream by Technology 2014-2018
(In thousands)

<i>Technology</i>	<i>2014</i>		<i>2015</i>		<i>2016</i>		<i>2017</i>		<i>2018</i>
	<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	78,981	83,872	89,011	92,356	95,517	98,761	100,098	102,047	104,054
aDSL	17,246	18,557	20,947	20,744	21,147	21,042	20,621	19,257	18,874
sDSL	33	28	24	20	20	20	24	16	17
Other Wireline ¹	310	308	297	330	336	328	355	369	376
Cable Modem	51,304	53,853	55,819	58,423	60,343	62,855	63,719	65,906	66,959
FTTP ²	8,111	8,974	9,552	10,383	11,030	11,953	12,813	13,870	14,889
Satellite	1,424	1,558	1,690	1,744	1,775	1,609	1,586	1,563	1,722
Fixed Wireless	553	594	681	712	865	954	981	1,065	1,216

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.

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 2014-2018
(In thousands)

<i>Technology</i>	<i>2014</i>		<i>2015</i>		<i>2016</i>		<i>2017</i>		<i>2018</i>
	<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	73,042	77,540	82,320	85,439	88,198	91,258	92,355	93,987	95,741
aDSL	15,673	16,867	18,988	18,866	19,207	19,133	18,719	17,480	17,127
sDSL	7	2	1	2	2	2	7	6	6
Other Wireline ¹	45	50	45	47	49	31	73	66	72
Cable Modem	47,924	50,308	52,254	54,650	56,353	58,784	59,411	61,335	62,165
FTTP ²	7,491	8,246	8,750	9,512	10,063	10,883	11,704	12,616	13,588
Satellite	1,419	1,552	1,682	1,734	1,764	1,596	1,571	1,545	1,700
Fixed Wireless	483	516	599	628	759	830	870	940	1,082

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.

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 2014-2018
(In thousands)

Technology	2014		2015		2016		2017		2018
	Jun*	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	63,823	68,238	72,713	76,939	80,458	84,112	86,967	90,703	94,148
aDSL	7,561	8,560	9,471	9,799	10,349	10,810	11,321	11,595	11,817
sDSL	9	6	9	8	8	10	14	9	11
Other Wireline ¹	169	186	182	203	210	217	253	273	282
Cable Modem	47,296	49,837	52,658	55,710	57,951	60,349	61,704	63,978	65,807
FTTP ²	7,601	8,320	8,874	9,575	10,143	11,001	11,884	12,954	13,988
Satellite	1,016	1,136	1,298	1,393	1,467	1,342	1,373	1,402	1,595
Fixed Wireless	170	193	221	252	330	383	418	492	649

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.
Some previously published data may have been revised. Figures may not sum to totals due to rounding.

Figure 18
Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream
by Technology as of June 30, 2018

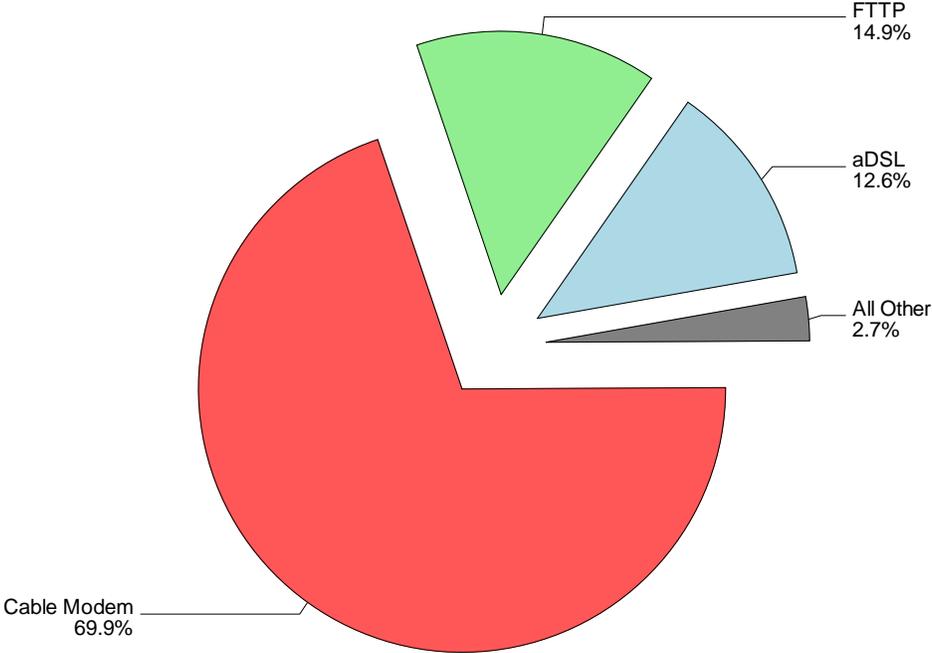


Figure 19
Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream
by Technology 2014-2018
(In thousands)

Technology	2014		2015		2016		2017		2018
	Jun*	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	59,729	63,732	67,898	71,784	74,841	78,202	80,671	84,164	86,959
aDSL	7,025	7,970	8,743	9,069	9,526	9,963	10,415	10,657	10,859
sDSL	3	#	#	1	2	2	6	5	6
Other Wireline ¹	33	36	38	43	47	30	71	64	65
Cable Modem	44,480	46,772	49,487	52,294	54,274	56,538	57,617	59,864	61,141
FTTP ²	7,032	7,653	8,144	8,776	9,248	10,004	10,835	11,762	12,739
Satellite	1,014	1,133	1,293	1,386	1,460	1,333	1,362	1,387	1,575
Fixed Wireless	142	167	191	213	283	332	365	426	574

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.

Some previously published data may have been revised. Figures may not sum to totals due to rounding.

Figure 20
Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream
by Technology as of June 30, 2018

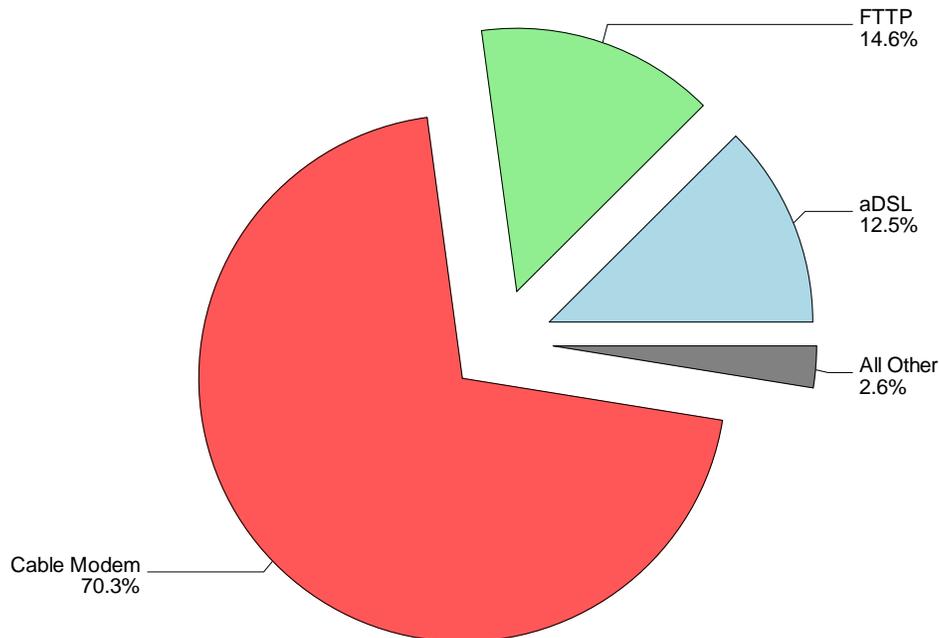


Figure 21
Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology 2014-2018
(In thousands)

Technology	2014		2015		2016		2017		2018
	Jun+	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	35,924	42,713	48,784	54,335	58,753	62,907	68,041	73,331	78,175
aDSL	421	587	762	938	1,239	1,476	2,530	3,586	4,297
sDSL	2	1	1	*	*	*	*	*	*
Other Wireline ¹	114	125	125	141	158	170	207	224	209
Cable Modem	30,769	36,383	40,979	45,530	48,696	51,740	54,829	57,870	60,858
FTTP ²	4,600	5,589	6,871	7,691	8,609	9,449	10,374	11,525	12,609
Satellite	#	#	#	*	*	*	*	*	*
Fixed Wireless	19	28	47	55	72	92	120	146	222

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.

Some previously published data may have been revised. Figures may not sum to totals due to rounding.

Figure 22
Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream
by Technology as of June 30, 2018

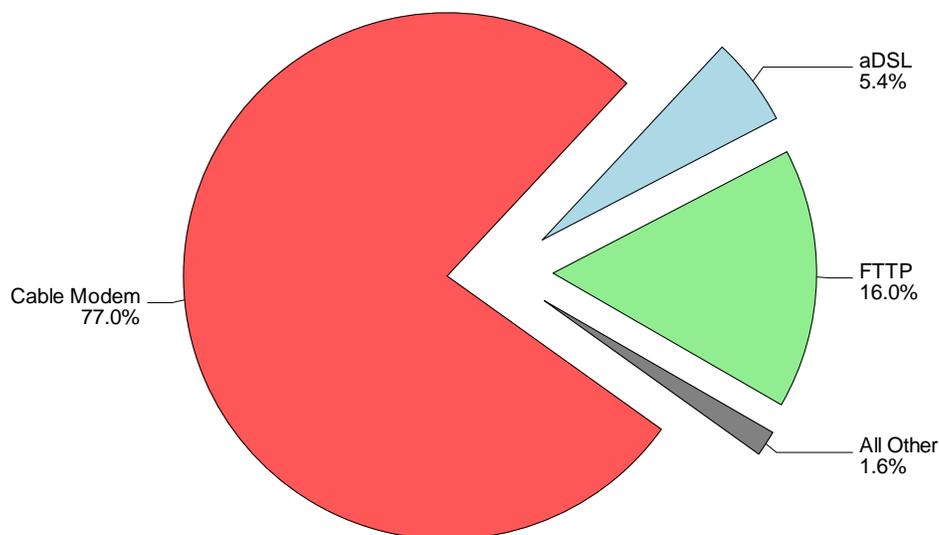


Figure 23
Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream
by Technology 2014-2018
(In thousands)

Technology	2014		2015		2016		2017		2018
	Jun+	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	34,437	40,916	46,532	51,788	55,694	59,463	64,253	68,871	72,480
aDSL	397	556	727	897	1,173	1,408	2,418	3,410	4,067
sDSL	#	#	#	*	*	*	*	*	*
Other Wireline ¹	22	26	26	31	41	27	67	59	54
Cable Modem	29,806	35,202	39,416	43,746	46,527	49,300	52,154	54,748	56,619
FTTP ²	4,198	5,111	6,323	7,089	7,916	8,674	9,532	10,553	11,569
Satellite	0	0	0	*	*	*	*	*	*
Fixed Wireless	14	22	40	46	57	75	101	121	192

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.

Some previously published data may have been revised. Figures may not sum to totals due to rounding.

Figure 24
Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream
by Technology as of June 30, 2018

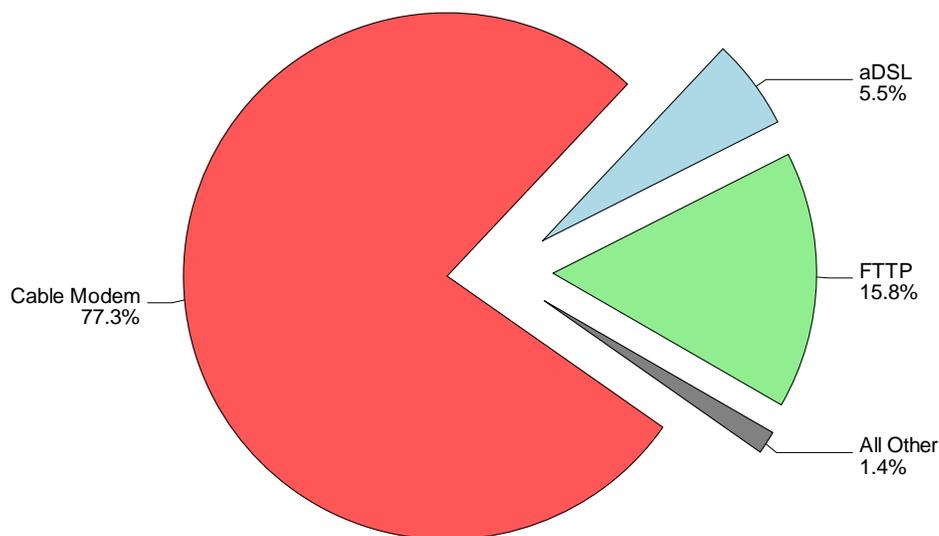
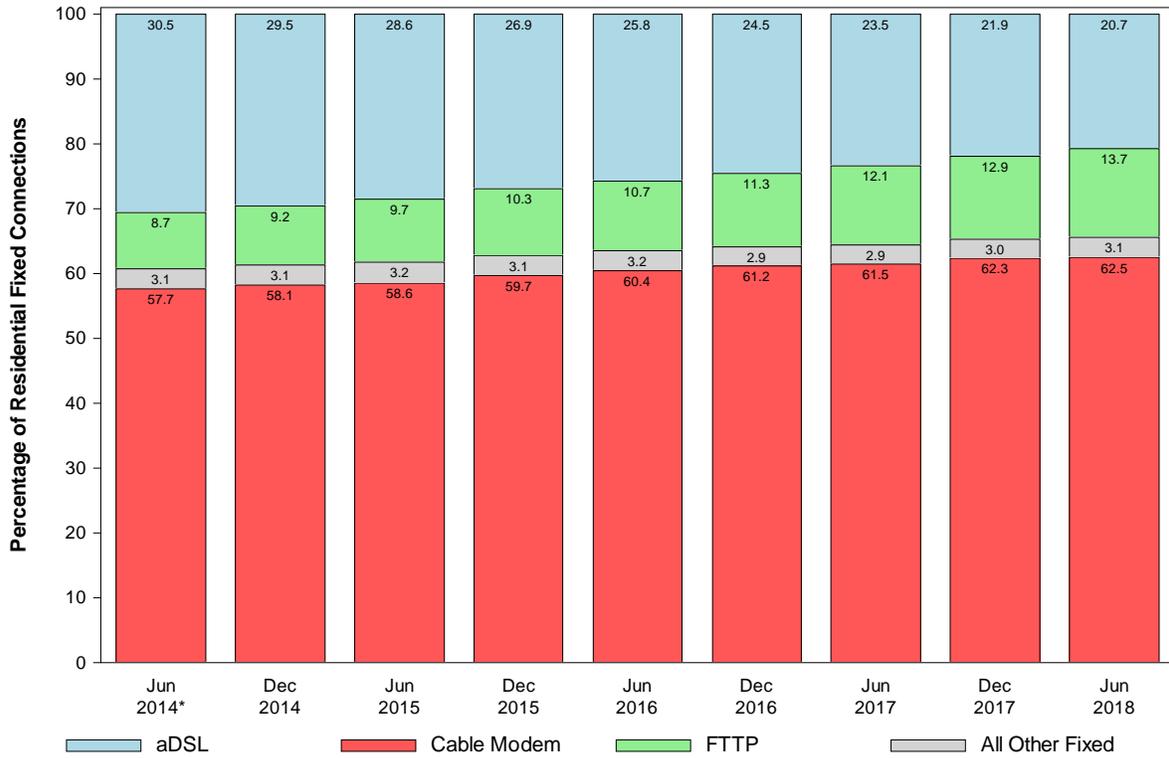


Figure 25
Residential Fixed Connections over 200 kbps in at Least One Direction 2014-2018
 (Shares of selected technologies)



* The June 2014 data have not been subjected to the typical quality checks (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 2014-2018
 (Net adds for selected technologies)

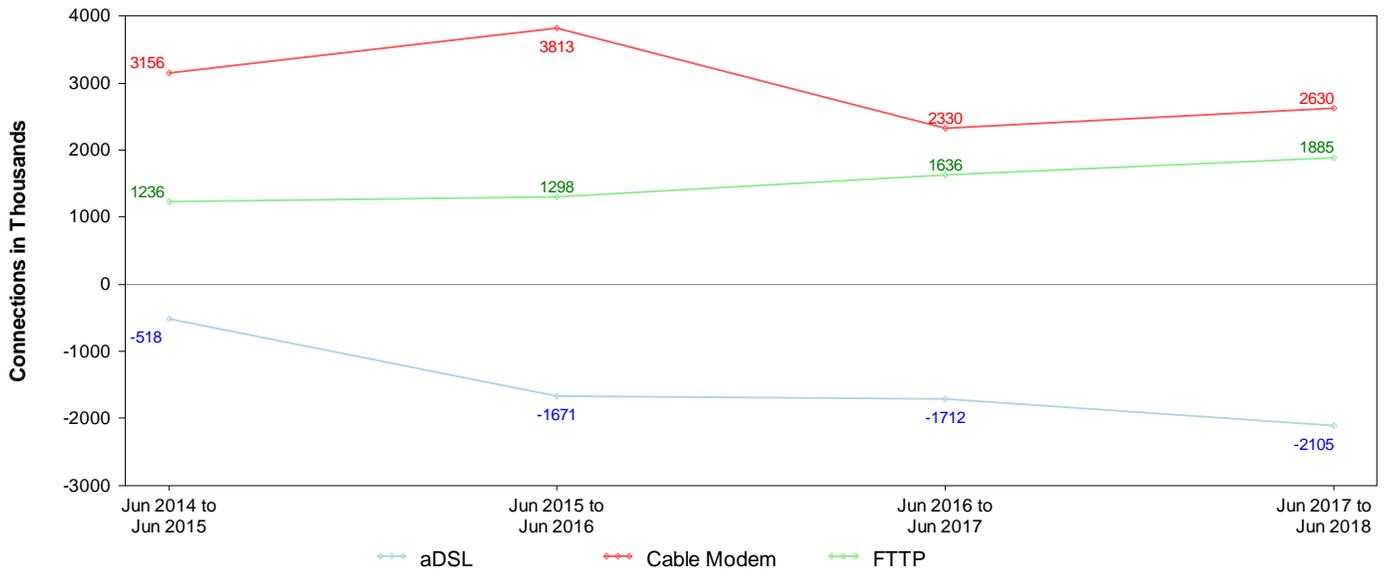


Figure 27
Residential Fixed Connections by Technology as of June 30, 2018
(Shares of selected technologies for selected speeds, connections in thousands)

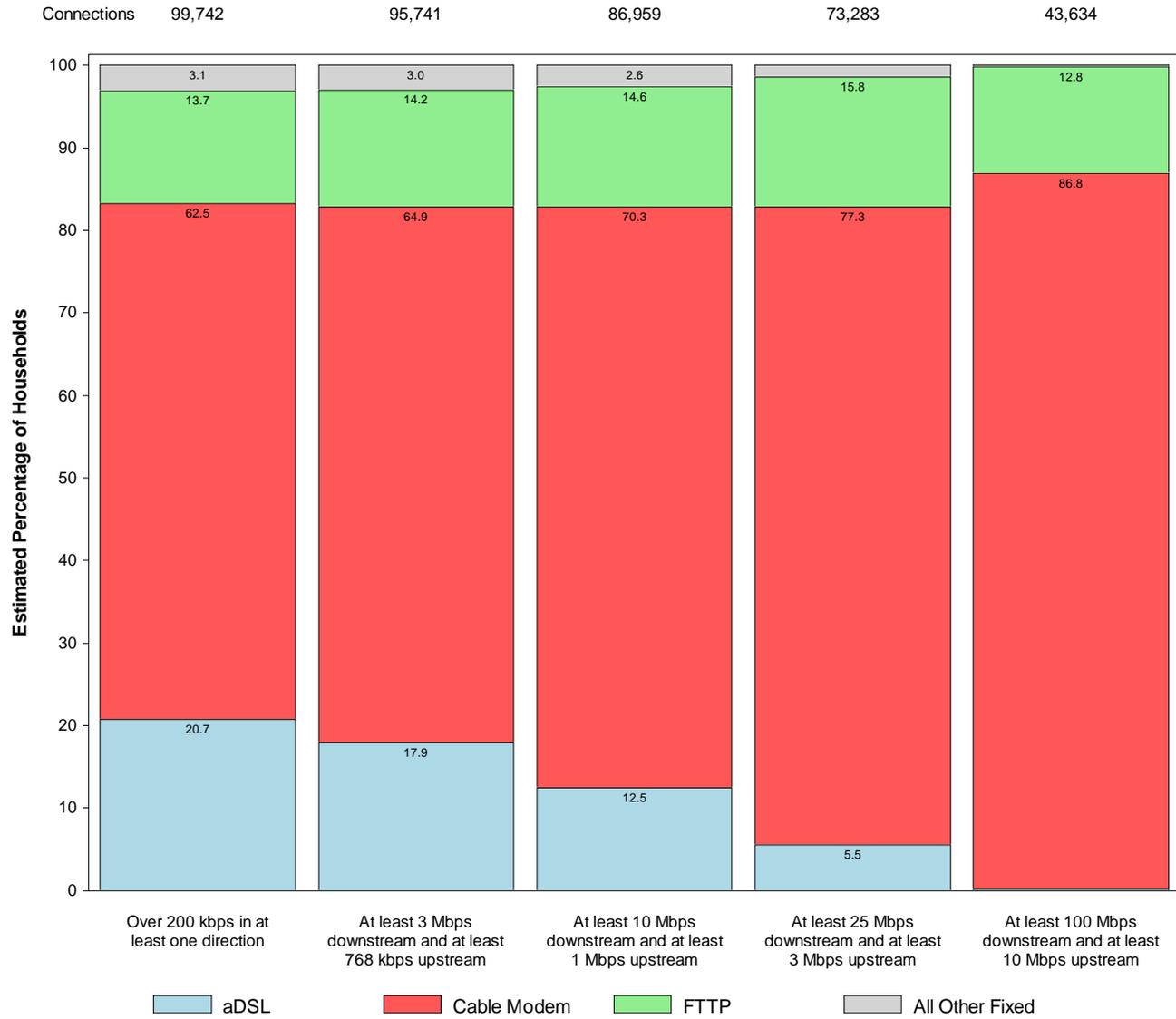


Figure 28
Fixed Connections by Downstream Speed Tier and Technology as of June 30, 2018
(In thousands)

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	638	1,242	7,564	8,768	4,749	111	23,072
sDSL	5	6	6	7	*	*	28
Other Wireline ¹	29	203	96	71	34	178	610
Cable Modem	44	56	1,222	4,319	15,797	45,724	67,163
FTTP	42	32	585	1,679	6,549	6,094	14,982
Satellite	190	23	131	799	*	*	1,939
Fixed Wireless	53	105	607	418	172	59	1,414
Total	1,001	1,668	10,210	16,062	28,098	52,168	109,207

Percentages							
aDSL	0.6	1.1	6.9	8.0	4.3	0.1	21.1
sDSL	0.0	0.0	0.0	0.0	*	*	0.0
Other Wireline ¹	0.0	0.2	0.1	0.1	0.0	0.2	0.6
Cable Modem	0.0	0.1	1.1	4.0	14.5	41.9	61.5
FTTP	0.0	0.0	0.5	1.5	6.0	5.6	13.7
Satellite	0.2	0.0	0.1	0.7	*	*	1.8
Fixed Wireless	0.0	0.1	0.6	0.4	0.2	0.1	1.3
Total	0.9	1.5	9.3	14.7	25.7	47.8	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, 2018
(In thousands)

<i>Technology</i>	<i>Downstream Speed</i>						<i>Total</i>
	<i>Less than 1.5 Mbps</i>	<i>At least 1.5 Mbps and less than 3 Mbps</i>	<i>At least 3 Mbps and less than 10 Mbps</i>	<i>At least 10 Mbps and less than 25 Mbps</i>	<i>At least 25 Mbps and less than 100 Mbps</i>	<i>At least 100 Mbps</i>	
aDSL	566	1,020	6,539	7,954	4,492	98	20,670
sDSL	2	1	1	4	*	*	9
Other Wireline ¹	#	1	7	11	9	46	74
Cable Modem	38	29	1,078	3,909	13,207	44,057	62,318
FTTP	32	25	536	1,470	5,996	5,602	13,661
Satellite	42	7	126	794	*	*	1,751
Fixed Wireless	46	94	546	375	149	50	1,260
Total	726	1,178	8,832	14,516	24,635	49,854	99,742

<i>Percentages</i>							
aDSL	0.6	1.0	6.6	8.0	4.5	0.1	20.7
sDSL	0.0	0.0	0.0	0.0	*	*	0.0
Other Wireline ¹	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cable Modem	0.0	0.0	1.1	3.9	13.2	44.2	62.5
FTTP	0.0	0.0	0.5	1.5	6.0	5.6	13.7
Satellite	0.0	0.0	0.1	0.8	*	*	1.8
Fixed Wireless	0.0	0.1	0.5	0.4	0.1	0.1	1.3
Total	0.7	1.2	8.9	14.6	24.7	50.0	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.

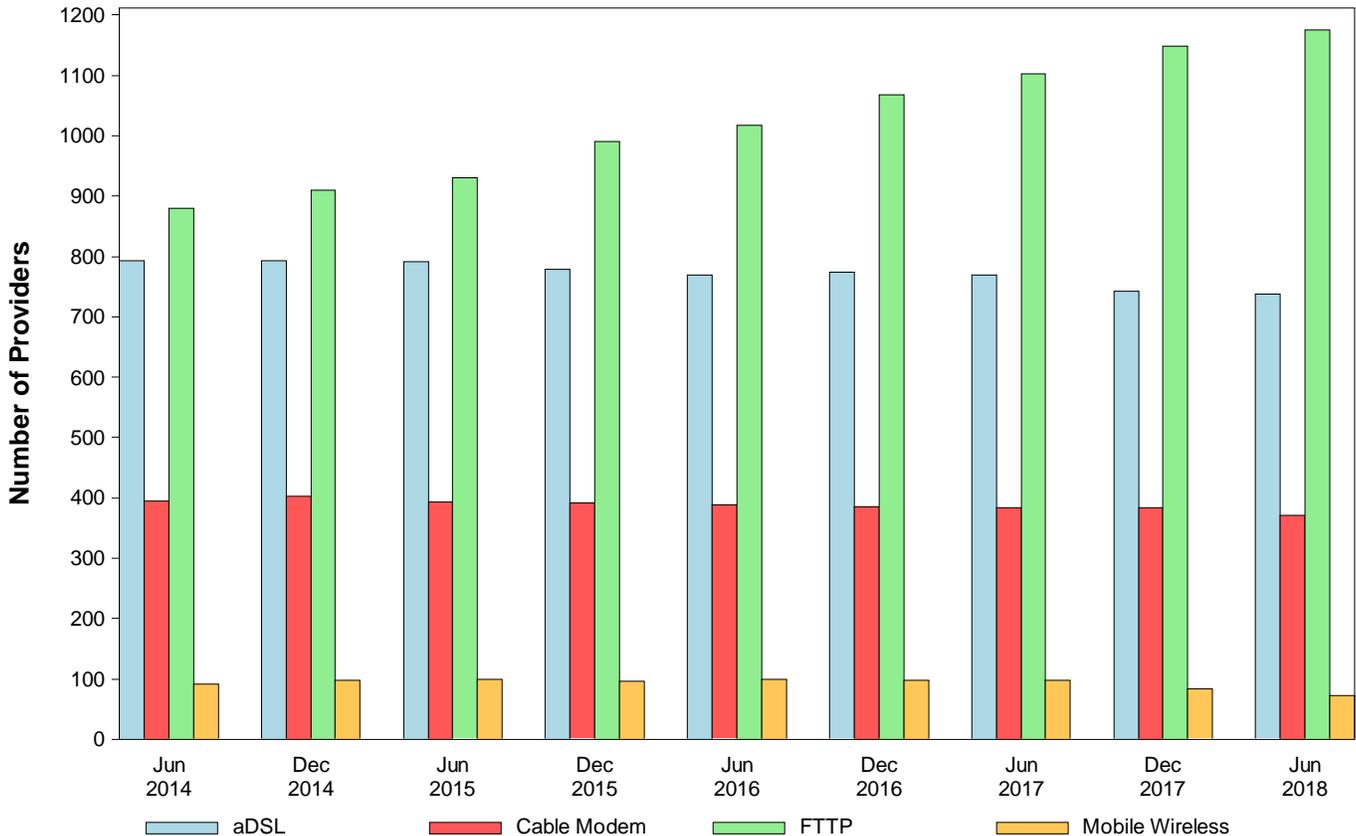
Source: FCC Form 477.

Figure 30
Nationwide Number of Providers of Connections over 200 kbps in at Least One Direction
by Technology 2014-2018

Technology	2014		2015		2016		2017		2018
	Jun+	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
aDSL	793	793	792	778	769	774	769	743	738
sDSL	192	187	177	180	171	160	161	150	136
Other Wireline ¹	270	245	240	250	244	236	243	235	249
Cable Modem	394	402	393	392	388	385	384	383	371
FTTP	879	910	931	990	1,017	1,067	1,103	1,148	1,176
Satellite	16	14	10	10	6	6	5	6	6
Fixed Wireless	872	922	948	982	1,026	1,070	1,094	1,157	1,176
Mobile Wireless	91	98	100	96	99	98	98	83	73
Total	1,816	1,872	1,881	1,917	1,956	2,000	2,030	2,087	2,113

¹ For this Figure, the categories Power Line and All Other were combined with Other Wireline.
+ 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.
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 2014-2018



SECTION 3
SUMMARY STATISTICS: THE STATES

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Figure 32
Residential Fixed Connections and Households by State as of June 30, 2018
(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	1,860	1,351	0.73	1,099	0.59	850	0.46	477	0.26
Alaska	253	201	0.79	166	0.65	123	0.48	*	*
American Samoa	10	*	*	0	0.00	0	0.00	0	0.00
Arizona	2,524	2,116	0.84	1,753	0.69	1,505	0.60	1,007	0.40
Arkansas	1,152	783	0.68	606	0.53	407	0.35	187	0.16
California	12,965	11,331	0.87	10,241	0.79	8,678	0.67	5,173	0.40
Colorado	2,113	1,897	0.90	1,555	0.74	1,415	0.67	602	0.28
Connecticut	1,367	1,208	0.88	1,108	0.81	919	0.67	538	0.39
Delaware	358	336	0.94	321	0.90	310	0.87	132	0.37
District of Columbia	281	246	0.87	231	0.82	220	0.78	*	*
Florida	7,622	6,853	0.90	6,253	0.82	5,273	0.69	3,782	0.50
Georgia	3,709	3,039	0.82	2,631	0.71	2,067	0.56	1,376	0.37
Guam	42	*	*	*	*	*	*	0	0.00
Hawaii	457	422	0.92	419	0.92	*	*	*	*
Idaho	618	508	0.82	331	0.54	256	0.41	60	0.10
Illinois	4,830	3,853	0.80	3,400	0.70	2,693	0.56	1,849	0.38
Indiana	2,554	1,951	0.76	1,630	0.64	1,266	0.50	870	0.34
Iowa	1,257	949	0.76	700	0.56	572	0.45	222	0.18
Kansas	1,125	888	0.79	738	0.66	548	0.49	355	0.32
Kentucky	1,729	1,295	0.75	1,032	0.60	753	0.44	534	0.31
Louisiana	1,736	1,280	0.74	1,096	0.63	846	0.49	529	0.30
Maine	557	510	0.92	397	0.71	290	0.52	195	0.35
Maryland	2,193	1,925	0.88	1,830	0.83	1,716	0.78	733	0.33
Massachusetts	2,602	2,351	0.90	2,227	0.86	2,147	0.83	982	0.38
Michigan	3,910	3,057	0.78	2,685	0.69	2,203	0.56	1,370	0.35
Minnesota	2,168	1,756	0.81	1,397	0.64	1,217	0.56	512	0.24
Mississippi	1,106	694	0.63	537	0.49	344	0.31	155	0.14
Missouri	2,396	1,815	0.76	1,446	0.60	1,119	0.47	627	0.26
Montana	423	336	0.79	249	0.59	210	0.50	*	*
Nebraska	754	589	0.78	481	0.64	392	0.52	275	0.36

Figure 32 - Continued
Residential Fixed Connections and Households by State as of June 30, 2018
(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	1,076	927	0.86	834	0.78	703	0.65	516	0.48
New Hampshire	528	498	0.94	442	0.84	401	0.76	176	0.33
New Jersey	3,213	2,986	0.93	2,870	0.89	2,775	0.86	1,651	0.51
New Mexico	776	568	0.73	382	0.49	319	0.41	100	0.13
New York	7,317	6,334	0.87	5,971	0.82	5,511	0.75	4,034	0.55
North Carolina	3,919	3,309	0.84	2,767	0.71	2,413	0.62	1,736	0.44
North Dakota	315	256	0.81	232	0.74	205	0.65	152	0.48
Northern Mariana Isl	16	*	*	*	*	*	*	0	0.00
Ohio	4,654	3,707	0.80	3,184	0.68	2,409	0.52	1,554	0.33
Oklahoma	1,475	1,043	0.71	829	0.56	621	0.42	369	0.25
Oregon	1,592	1,330	0.84	1,117	0.70	994	0.62	415	0.26
Pennsylvania	5,025	4,088	0.81	3,626	0.72	3,246	0.65	1,454	0.29
Puerto Rico	1,205	592	0.49	299	0.25	213	0.18	*	*
Rhode Island	411	367	0.89	362	0.88	340	0.83	*	*
South Carolina	1,895	1,547	0.82	1,342	0.71	1,003	0.53	631	0.33
South Dakota	342	266	0.78	238	0.70	212	0.62	142	0.42
Tennessee	2,567	1,945	0.76	1,704	0.66	1,375	0.54	920	0.36
Texas	9,553	7,695	0.81	6,793	0.71	5,442	0.57	3,187	0.33
Utah	958	836	0.87	687	0.72	595	0.62	251	0.26
Vermont	260	230	0.89	173	0.67	141	0.54	61	0.23
Virgin Islands	43	*	*	*	*	*	*	*	*
Virginia	3,128	2,593	0.83	2,336	0.75	2,143	0.68	1,137	0.36
Washington	2,800	2,457	0.88	2,099	0.75	1,902	0.68	880	0.31
West Virginia	735	544	0.74	407	0.55	324	0.44	155	0.21
Wisconsin	2,343	1,825	0.78	1,515	0.65	1,154	0.49	644	0.27
Wyoming	231	180	0.78	139	0.60	120	0.52	*	*
Total	121,046	99,742	0.82	86,959	0.72	73,283	0.61	43,634	0.36

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

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

Sources: FCC Form 477 (Connections); 2014-2018 ACS 5-year estimates; Census 2010.

Figure 33
Connections by Type of End User by State as of June 30, 2018
(Connections over 200 kbps in at least one direction, in thousands)

State	Connections		Percentages		Total
	Residential	Business	Residential	Business	
Alabama	5,082	1,126	81.9	18.1	6,209
Alaska	862	125	87.4	12.6	987
American Samoa	*	*	*	*	*
Arizona	7,085	1,289	84.6	15.4	8,374
Arkansas	2,838	760	78.9	21.1	3,597
California	45,888	7,417	86.1	13.9	53,304
Colorado	6,114	1,195	83.7	16.3	7,309
Connecticut	4,031	911	81.6	18.4	4,942
Delaware	1,058	200	84.1	15.9	1,259
District of Columbia	950	509	65.1	34.9	1,458
Florida	23,892	4,233	84.9	15.1	28,125
Georgia	11,071	2,459	81.8	18.2	13,530
Guam	183	49	79.0	21.0	232
Hawaii	1,665	282	85.5	14.5	1,947
Idaho	1,713	348	83.1	16.9	2,060
Illinois	14,031	2,865	83.0	17.0	16,896
Indiana	6,659	1,402	82.6	17.4	8,061
Iowa	3,109	733	80.9	19.1	3,843
Kansas	4,465	686	86.7	13.3	5,152
Kentucky	4,757	791	85.7	14.3	5,547
Louisiana	4,999	896	84.8	15.2	5,895
Maine	1,394	404	77.5	22.5	1,798
Maryland	6,924	1,219	85.0	15.0	8,143
Massachusetts	8,226	1,534	84.3	15.7	9,760
Michigan	10,445	2,374	81.5	18.5	12,819
Minnesota	5,913	1,326	81.7	18.3	7,239
Mississippi	2,960	542	84.5	15.5	3,502
Missouri	6,282	1,339	82.4	17.6	7,621
Montana	1,039	277	79.0	21.0	1,316
Nebraska	1,855	532	77.7	22.3	2,387
Nevada	3,271	550	85.6	14.4	3,822
New Hampshire	1,464	349	80.8	19.2	1,812
New Jersey	10,395	1,997	83.9	16.1	12,392
New Mexico	2,058	369	84.8	15.2	2,426
New York	23,922	4,260	84.9	15.1	28,181
North Carolina	10,513	2,351	81.7	18.3	12,864
North Dakota	796	209	79.2	20.8	1,005
Northern Mariana Isl	*	*	*	*	*
Ohio	12,371	2,713	82.0	18.0	15,084
Oklahoma	3,913	741	84.1	15.9	4,654
Oregon	4,459	926	82.8	17.2	5,384
Pennsylvania	13,772	2,819	83.0	17.0	16,591
Puerto Rico	3,623	313	92.0	8.0	3,936
Rhode Island	1,113	223	83.3	16.7	1,337
South Carolina	5,005	1,098	82.0	18.0	6,103
South Dakota	845	231	78.5	21.5	1,076
Tennessee	6,886	1,613	81.0	19.0	8,499
Texas	30,291	5,331	85.0	15.0	35,622
Utah	2,982	610	83.0	17.0	3,592
Vermont	658	173	79.2	20.8	831
Virgin Islands	127	13	90.5	9.5	140
Virginia	8,510	2,114	80.1	19.9	10,624
Washington	8,272	1,579	84.0	16.0	9,851
West Virginia	1,594	289	84.6	15.4	1,883
Wisconsin	5,796	1,272	82.0	18.0	7,067
Wyoming	619	149	80.6	19.4	768
Total	358,851	70,132	83.7	16.3	428,983

= 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, 2018
(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	481	#	*	791	134	*	6	4,728	6,209
Alaska	77	#	2	*	5	*	9	752	987
American Samoa	*	*	0	*	*	0	*	*	*
Arizona	530	*	12	1,505	156	*	44	6,092	8,374
Arkansas	337	#	*	417	47	*	8	2,736	3,597
California	2,940	3	*	8,006	1,155	*	122	40,865	53,304
Colorado	*	#	18	1,299	218	*	74	5,240	7,309
Connecticut	*	*	4	999	16	*	#	3,615	4,942
Delaware	*	*	3	228	*	*	*	894	1,259
District of Columbia	*	*	6	*	*	*	*	1,176	1,458
Florida	1,496	#	*	4,963	892	*	18	20,639	28,125
Georgia	947	#	*	1,883	416	*	5	10,192	13,530
Guam	*	0	0	*	*	0	0	190	232
Hawaii	*	*	1	*	*	*	2	1,491	1,947
Idaho	168	#	*	224	90	*	51	1,506	2,060
Illinois	1,142	1	*	2,721	204	*	83	12,672	16,896
Indiana	614	*	6	1,157	247	*	42	5,944	8,061
Iowa	272	#	*	484	204	*	44	2,804	3,843
Kansas	239	#	*	472	191	*	40	4,186	5,152
Kentucky	404	*	4	779	164	*	19	4,138	5,547
Louisiana	399	*	5	823	121	*	6	4,485	5,895
Maine	125	1	*	405	14	*	6	1,234	1,798
Maryland	*	#	16	1,118	*	*	6	6,050	8,143
Massachusetts	*	#	22	1,906	*	*	5	7,180	9,760
Michigan	821	2	*	2,261	92	*	45	9,503	12,819
Minnesota	473	2	*	1,146	223	*	31	5,326	7,239
Mississippi	336	#	*	325	47	*	3	2,731	3,502
Missouri	647	#	*	932	271	*	44	5,645	7,621
Montana	99	*	2	*	30	*	23	939	1,316
Nebraska	144	#	*	396	67	*	30	1,738	2,387

Figure 34 - Continued
Connections by Technology by State as of June 30, 2018
(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	209	#	6	*	30	*	21	2,810	3,822
New Hampshire	72	#	*	440	31	*	1	1,259	1,812
New Jersey	146	*	27	2,116	*	*	#	9,097	12,392
New Mexico	223	#	*	304	49	*	28	1,803	2,426
New York	407	*	40	4,871	1,621	*	6	21,178	28,181
North Carolina	799	#	*	2,327	382	*	8	9,266	12,864
North Dakota	38	1	*	153	88	*	4	717	1,005
Northern Mariana Isl	*	*	*	*	*	0	0	*	*
Ohio	1,010	*	13	2,621	278	*	46	11,065	15,084
Oklahoma	363	#	*	591	91	*	50	3,502	4,654
Oregon	234	#	*	966	191	*	26	3,926	5,384
Pennsylvania	538	#	28	2,886	*	*	6	12,105	16,591
Puerto Rico	*	0	*	*	7	*	10	3,280	3,936
Rhode Island	*	*	2	*	*	*	*	936	1,337
South Carolina	434	#	*	1,024	170	*	4	4,426	6,103
South Dakota	42	*	#	173	63	*	10	781	1,076
Tennessee	516	#	*	1,192	342	*	13	6,367	8,499
Texas	2,133	#	*	4,400	1,407	*	225	27,205	35,622
Utah	160	#	*	507	176	*	55	2,684	3,592
Vermont	87	*	3	143	26	*	1	568	831
Virgin Islands	*	0	*	*	*	*	*	*	140
Virginia	284	#	*	1,506	921	*	18	7,781	10,624
Washington	420	#	*	1,883	242	*	37	7,189	9,851
West Virginia	*	*	1	367	11	*	3	1,285	1,883
Wisconsin	602	7	5	*	126	*	34	5,079	7,067
Wyoming	47	*	1	111	12	*	24	563	768
Total	23,072	28	610	67,163	14,982	1,939	1,414	319,776	428,983

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.

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, 2018

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
Alabama	99.6	95.7	83.1	64.2	35.3
Alaska	98.6	93.2	80.9	58.8	42.3
American Samoa	*	*	*	*	*
Arizona	99.8	97.7	90.8	70.9	49.9
Arkansas	99.6	95.2	80.4	54.1	26.1
California	99.8	98.1	89.1	74.9	51.2
Colorado	99.8	96.9	90.5	74.4	47.6
Connecticut	99.6	99.3	90.5	75.3	56.7
Delaware	99.9	98.9	94.7	91.4	56.8
District of Columbia	99.9	98.2	91.5	86.8	61.8
Florida	99.7	98.3	92.8	79.2	52.6
Georgia	99.4	97.0	86.9	70.1	43.3
Guam	*	*	*	*	*
Hawaii	100.0	99.9	98.8	90.7	59.4
Idaho	99.6	95.8	78.3	50.9	34.5
Illinois	99.8	98.0	87.6	72.1	46.3
Indiana	99.5	97.6	84.4	66.6	42.9
Iowa	99.7	95.3	81.0	61.1	24.0
Kansas	99.8	96.9	84.1	60.2	39.0
Kentucky	99.3	95.9	80.5	59.2	39.9
Louisiana	99.5	96.0	85.7	66.2	40.7
Maine	99.2	94.3	76.9	56.1	38.7
Maryland	99.9	98.7	93.7	88.2	52.1
Massachusetts	99.9	98.7	93.6	90.2	60.8
Michigan	99.5	97.9	87.4	73.6	42.9
Minnesota	99.8	96.9	86.4	69.5	39.0
Mississippi	99.3	94.1	77.8	53.0	29.5
Missouri	99.6	96.2	83.1	62.4	36.5
Montana	99.7	94.0	79.9	62.5	29.4
Nebraska	99.7	97.2	85.0	66.5	45.5

Figure 35 - Continued
Percentage of Fixed Connections by Downstream Speed by State as of June 30, 2018

State	<i>Over 200 kbps Upstream and</i>				
	<i>% over 200 kbps Downstream</i>	<i>% at least 3 Mbps Downstream</i>	<i>% at least 10 Mbps Downstream</i>	<i>% at least 25 Mbps Downstream</i>	<i>% at least 100 Mbps Downstream</i>
Nevada	99.9	98.6	93.0	77.4	52.9
New Hampshire	99.3	95.7	87.1	78.8	54.6
New Jersey	99.8	98.8	95.4	91.9	64.6
New Mexico	99.8	94.8	80.4	57.1	30.8
New York	99.6	98.7	93.0	85.5	62.1
North Carolina	99.4	97.2	86.5	72.4	51.5
North Dakota	99.9	98.0	91.6	79.8	59.5
Northern Mariana Isl	*	*	*	*	*
Ohio	99.8	97.7	86.0	64.8	41.7
Oklahoma	99.7	97.1	79.9	58.5	36.8
Oregon	99.8	97.1	88.9	75.1	45.7
Pennsylvania	99.8	97.7	89.1	79.4	48.9
Puerto Rico	99.9	87.0	53.3	34.8	13.2
Rhode Island	99.7	98.9	97.5	91.1	58.3
South Carolina	99.7	97.3	87.2	66.6	40.9
South Dakota	99.7	97.9	90.8	79.3	50.3
Tennessee	99.6	97.3	87.9	72.1	45.8
Texas	99.8	98.1	88.1	70.1	45.6
Utah	99.9	98.0	89.2	71.5	43.0
Vermont	98.9	91.3	73.9	60.7	42.7
Virgin Islands	99.9	98.9	62.0	*	*
Virginia	99.5	97.6	90.0	81.3	50.7
Washington	99.6	97.3	89.9	77.2	54.1
West Virginia	98.6	97.3	73.9	58.9	37.4
Wisconsin	99.3	96.5	85.0	63.3	35.0
Wyoming	99.7	94.5	81.7	65.5	25.1
Total	99.7	97.6	88.2	73.5	47.8

Figure 36
Providers of Connections by Technology by State as of June 30, 2018
(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	4	*	20	41	*	22	7	84
Alaska	13	4	12	*	12	*	15	8	38
American Samoa	*	*	0	*	*	0	*	*	*
Arizona	24	*	26	14	41	*	45	6	105
Arkansas	24	4	*	21	40	*	21	5	81
California	35	11	*	29	84	*	115	5	202
Colorado	*	7	25	15	63	*	67	9	140
Connecticut	*	*	14	8	20	*	7	4	38
Delaware	*	*	9	6	*	*	*	4	26
District of Columbia	*	*	12	*	*	*	*	4	37
Florida	22	7	*	24	69	*	37	6	115
Georgia	25	4	*	30	84	*	26	5	127
Guam	*	0	0	*	*	0	0	4	4
Hawaii	*	*	8	*	*	*	5	5	25
Idaho	23	4	*	19	38	*	39	9	76
Illinois	52	7	*	19	95	*	94	6	193
Indiana	37	*	24	13	67	*	61	5	116
Iowa	95	15	*	42	154	*	91	9	232
Kansas	26	9	*	27	62	*	55	9	114
Kentucky	19	*	12	28	43	*	31	8	97
Louisiana	15	*	23	20	37	*	17	6	71
Maine	12	6	*	9	18	*	9	5	37
Maryland	*	5	18	15	*	*	18	5	69
Massachusetts	*	4	17	10	*	*	23	5	66
Michigan	33	8	*	25	66	*	49	6	130
Minnesota	44	8	*	21	78	*	47	5	122
Mississippi	18	4	*	15	28	*	13	6	59
Missouri	36	9	*	17	68	*	72	7	144
Montana	21	*	17	*	31	*	29	7	62
Nebraska	31	4	*	21	55	*	50	7	106

Figure 36 - Continued
Providers of Connections by Technology by State as of June 30, 2018
(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	15	7	17	*	32	*	26	5	71
New Hampshire	9	5	*	5	20	*	5	6	34
New Jersey	11	*	29	11	*	*	16	4	70
New Mexico	19	5	*	10	30	*	34	8	71
New York	33	*	30	20	65	*	30	7	113
North Carolina	21	6	*	25	57	*	22	6	97
North Dakota	22	8	*	9	31	*	14	6	47
Northern Mariana Isl	*	*	*	*	*	0	0	*	*
Ohio	32	*	30	32	66	*	63	4	149
Oklahoma	38	8	*	14	54	*	51	12	114
Oregon	41	9	*	16	57	*	44	6	100
Pennsylvania	25	6	25	25	*	*	26	8	105
Puerto Rico	*	0	*	*	6	*	7	5	17
Rhode Island	*	*	7	*	*	*	*	4	23
South Carolina	18	4	*	17	34	*	16	6	56
South Dakota	22	*	15	8	32	*	20	8	70
Tennessee	22	4	*	23	61	*	36	7	114
Texas	64	16	*	34	127	*	158	10	269
Utah	18	4	*	12	28	*	34	9	71
Vermont	10	*	6	6	19	*	4	6	31
Virgin Islands	*	0	*	*	*	*	*	*	7
Virginia	24	6	*	19	64	*	40	7	111
Washington	26	6	*	22	61	*	52	6	113
West Virginia	*	*	10	16	22	*	15	6	55
Wisconsin	43	8	24	*	68	*	45	6	117
Wyoming	14	*	11	7	17	*	26	8	50
Total	738	136	249	371	1,176	6	1,176	73	2,113

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.

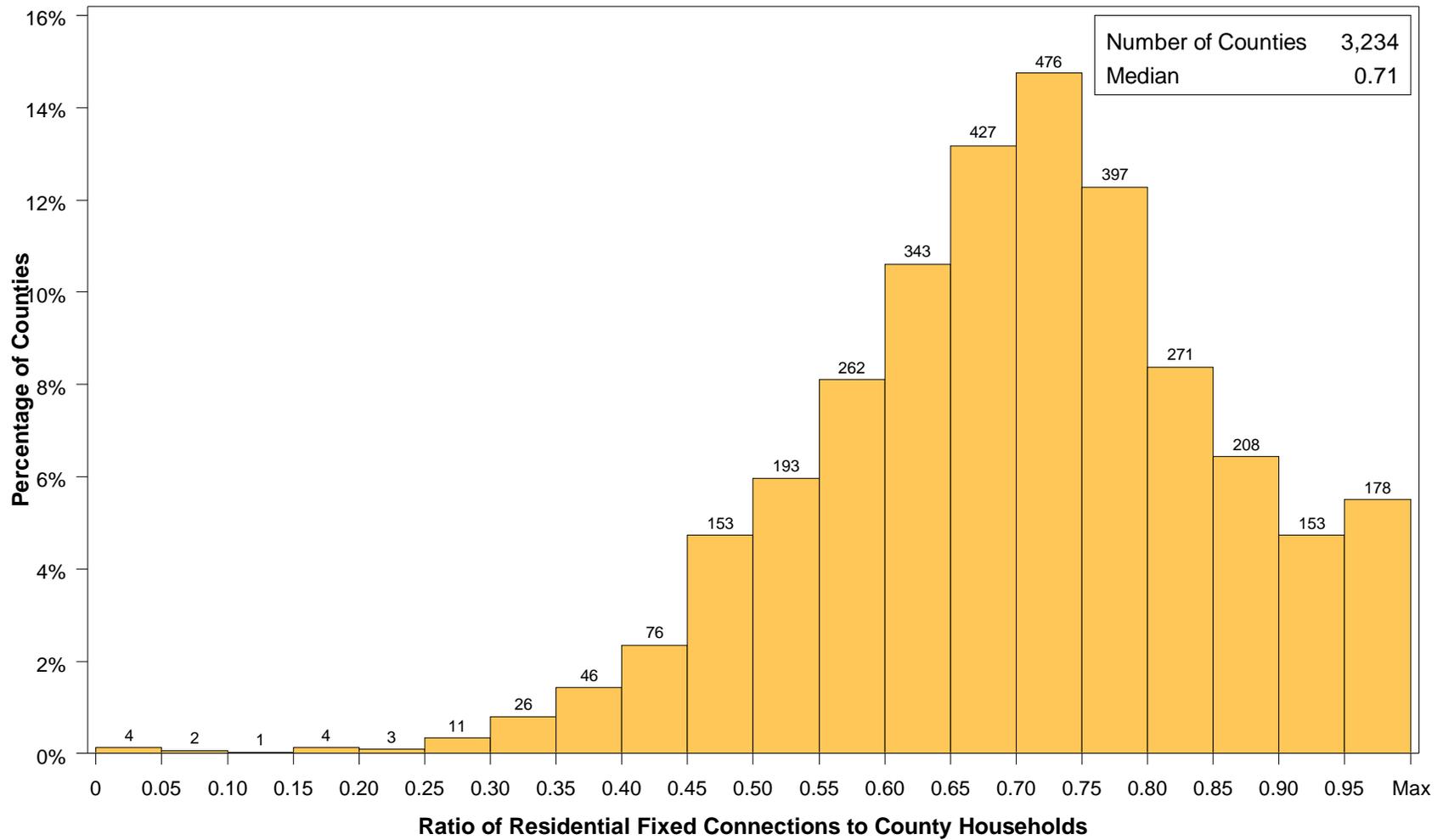
Source: FCC Form 477.

SECTION 4
SUMMARY STATISTICS: COUNTIES AND CENSUS TRACTS

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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, 2018



Note: Ratios over 1 were set to 1. See Technical Notes at the end of the report.
 Sources: FCC Form 477; 2014-2018 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, 2018

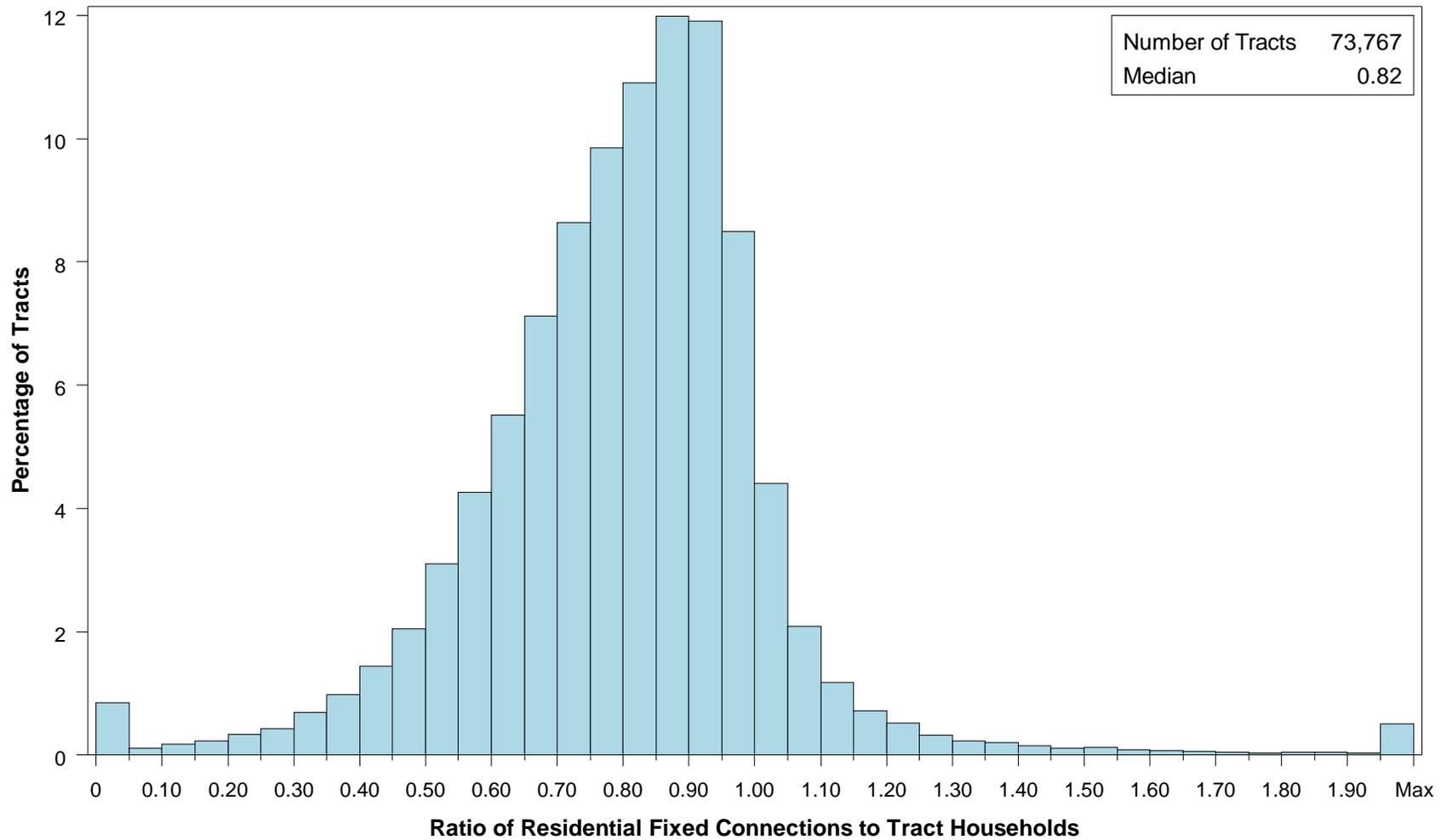
<i>Technology</i>	<i>Ratio of Residential Fixed Connections to County Households</i>										<i>100% or more</i>
	<i>Zero</i>	<i>Greater than 0 and no more than 5%</i>	<i>Greater than 5 and no more than 10%</i>	<i>Greater than 10 and no more than 20%</i>	<i>Greater than 20 and no more than 30%</i>	<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	1.3	6.4	8.1	28.4	28.6	15.6	7.2	2.7	1.4	0.2	0.2
sDSL	93.8	6.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Wireline	91.9	7.7	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	11.7	6.3	6.1	14.1	14.1	13.0	12.1	12.4	8.6	1.2	0.4
FTTP	23.7	42.4	9.6	9.8	4.9	3.2	2.4	1.9	1.9	0.2	0.0
Satellite	1.1	65.0	22.6	10.0	1.0	0.2	0.0	0.0	0.0	0.0	0.0
Fixed Wireless	20.4	56.8	11.9	7.5	2.1	0.8	0.3	0.0	0.1	0.0	0.1
Total	0.1	0.0	0.1	0.2	0.4	2.2	7.1	14.1	50.8	21.5	3.6

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; 2014-2018 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, 2018



Note: Ratios over 2 were set to 2. See Technical Notes at the end of the report.
 Sources: FCC Form 477; 2014-2018 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, 2018

<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	2.6	22.3	14.2	25.4	18.4	10.0	4.1	1.6	0.9	0.2	0.2
sDSL	99.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Wireline	98.7	1.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	4.7	2.7	1.7	3.9	6.3	11.6	16.9	19.4	24.5	6.6	1.7
FTTP	41.5	20.3	6.9	10.1	6.4	5.4	4.2	2.7	2.1	0.3	0.1
Satellite	35.4	54.9	5.1	3.2	0.9	0.3	0.1	0.0	0.0	0.0	0.0
Fixed Wireless	72.8	20.9	2.7	2.2	0.8	0.3	0.1	0.1	0.0	0.0	0.0
Total	0.8	0.1	0.1	0.4	0.8	1.7	3.5	7.3	31.2	43.4	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; 2014-2018 ACS 5-year estimates; and Census 2010.

Figure 41
Percentage of Developed Census Blocks with Residential Fixed Service by Technology as of June 30, 2018
(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	24.0	73.2	2.7	0.1	0.0	0.0	0.0	0.0
sDSL	99.4	0.6	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	66.9	31.5	1.5	0.0	0.0	0.0	0.0	0.0
FTTP	77.8	21.4	0.8	0.0	0.0	0.0	0.0	0.0
Satellite	0.0	0.1	0.9	98.9	0.0	0.0	0.0	0.0
Fixed Wireless	59.6	26.8	9.9	3.3	0.5	0.0	0.0	0.0
aDSL and/or Cable Modem and/or FTTP	14.3	52.0	29.7	3.8	0.2	0.0	0.0	0.0
Any Technology	0.0	0.1	0.2	5.7	18.4	43.7	21.8	10.2

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, 2018
(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	11	18	29	6	0
Alaska	29	0	0	0	1	0	2	4	0	10	9	3
American Samoa	5	2	0	0	0	1	1	1	0	0	0	0
Arizona	15	0	0	0	0	0	0	0	2	7	6	0
Arkansas	75	0	0	0	0	0	3	20	28	22	2	0
California	58	0	0	0	0	0	0	0	0	18	37	3
Colorado	64	0	0	0	0	0	1	2	5	21	22	13
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	7	19	31	10
Georgia	159	0	0	0	1	2	7	17	32	59	35	6
Guam	1	0	0	0	0	0	0	0	0	0	1	0
Hawaii	5	1	0	0	0	0	0	0	0	1	1	2
Idaho	44	0	0	0	0	0	0	0	2	25	13	4
Illinois	102	0	0	0	0	0	1	3	15	69	14	0
Indiana	92	0	0	0	0	0	0	1	15	65	11	0
Iowa	99	0	0	0	0	0	0	1	9	83	5	1
Kansas	105	0	0	0	0	0	1	2	11	76	15	0
Kentucky	120	0	0	0	0	1	1	10	19	75	14	0
Louisiana	64	0	0	0	0	0	4	11	14	28	7	0
Maine	16	0	0	0	0	0	0	0	0	5	6	5
Maryland	24	0	0	0	0	0	0	0	1	8	14	1
Massachusetts	14	0	0	0	0	0	0	0	0	1	10	3
Michigan	83	0	0	0	0	0	0	3	7	53	16	4
Minnesota	87	0	0	0	1	0	0	0	2	61	22	1
Mississippi	82	0	0	0	1	0	11	27	26	13	4	0
Missouri	115	0	0	0	0	1	2	16	25	59	11	1
Montana	56	0	0	0	0	0	0	3	4	32	15	2
Nebraska	93	0	0	0	0	0	2	7	13	68	3	0

Figure 42 - Continued
Distribution of Counties by Ratio of Residential Fixed Connections to County Households by State as of June 30, 2018
(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	0	1	2	9	4	0
New Hampshire	10	0	0	0	0	0	0	0	0	0	7	3
New Jersey	21	0	0	0	0	0	0	0	0	0	19	2
New Mexico	33	0	0	2	0	2	0	2	6	17	3	1
New York	62	0	0	0	0	0	0	0	0	31	27	4
North Carolina	100	0	0	0	0	0	0	1	11	47	34	7
North Dakota	53	0	0	0	0	0	0	0	3	34	15	1
Northern Mariana Isl	4	1	0	0	0	0	0	3	0	0	0	0
Ohio	88	0	0	0	0	0	0	2	5	61	20	0
Oklahoma	77	0	0	0	0	0	4	11	26	34	2	0
Oregon	36	0	0	0	0	0	0	1	1	16	17	1
Pennsylvania	67	0	0	0	0	0	0	1	2	39	22	3
Puerto Rico	78	0	0	0	0	4	17	26	26	5	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	4	13	18	9	2
South Dakota	66	0	0	0	0	0	0	4	4	46	11	1
Tennessee	95	0	0	0	0	0	0	6	21	58	10	0
Texas	254	0	0	0	0	1	5	14	58	122	42	12
Utah	29	0	0	0	0	0	0	0	1	11	12	5
Vermont	14	0	0	0	0	0	0	0	0	3	9	2
Virgin Islands	3	0	0	0	0	0	0	0	0	2	0	1
Virginia	134	0	0	0	1	0	7	11	14	66	32	3
Washington	39	0	0	0	0	0	0	1	2	13	22	1
West Virginia	55	0	0	0	0	1	0	1	3	43	7	0
Wisconsin	72	0	0	0	0	0	0	0	1	46	21	4
Wyoming	23	0	0	0	0	0	0	1	1	15	5	1
Total	3,234	4	0	2	5	14	72	229	455	1643	695	115

Note: Figures may not sum to totals due to rounding. See Technical Notes at the end of the report.
Sources: FCC Form 477; 2014-2018 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, 2018
(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	5	0	0	3	19	66	117	195	435	282	57
Alaska	167	1	0	0	3	5	4	6	11	54	68	15
American Samoa	18	2	0	0	3	5	5	1	0	0	1	1
Arizona	1,526	15	5	8	12	9	27	40	114	417	615	264
Arkansas	686	1	0	0	4	11	61	87	141	222	130	29
California	8,036	55	3	4	8	21	49	88	281	1,908	4,696	923
Colorado	1,249	14	1	0	0	1	4	18	35	299	665	212
Connecticut	829	2	0	0	1	0	2	9	24	154	518	119
Delaware	215	1	0	0	0	1	0	1	9	50	104	49
District of Columbia	179	1	0	0	0	0	1	1	10	60	78	28
Florida	4,199	40	1	3	4	12	27	77	176	998	1,910	951
Georgia	1,964	11	2	0	2	15	58	107	205	590	738	236
Guam	56	6	0	2	3	2	6	3	2	9	6	17
Hawaii	326	15	0	0	3	2	2	9	10	60	130	95
Idaho	298	1	0	0	1	2	2	5	20	123	118	26
Illinois	3,121	6	1	0	3	8	33	112	321	1,162	1,301	174
Indiana	1,508	4	1	1	3	7	19	87	171	673	465	77
Iowa	825	3	0	0	1	1	1	25	63	515	196	20
Kansas	770	10	0	0	0	1	5	27	79	336	268	44
Kentucky	1,115	10	1	0	8	11	27	54	134	461	368	41
Louisiana	1,136	12	1	0	4	15	47	87	164	413	343	50
Maine	351	0	0	0	0	0	0	0	5	98	172	76
Maryland	1,394	9	0	0	0	1	10	36	72	272	811	183
Massachusetts	1,471	13	0	0	2	1	2	4	36	302	919	192
Michigan	2,767	29	1	1	11	27	90	173	282	831	1,141	181
Minnesota	1,335	4	0	0	2	5	4	34	47	554	619	66
Mississippi	661	4	0	0	3	20	72	125	130	189	93	25
Missouri	1,393	4	0	0	6	12	41	99	189	470	493	79
Montana	271	2	0	0	1	0	6	7	16	118	98	23
Nebraska	532	4	0	0	0	0	3	14	45	265	170	31

Figure 43 - Continued
Distribution of Census Tracts by Ratio of Residential Fixed Connections to Tract Households by State as of June 30, 2018
(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	1	3	3	5	15	40	173	331	107
New Hampshire	294	2	0	0	0	0	0	1	2	41	178	70
New Jersey	2,004	10	0	0	1	1	2	4	19	353	1,218	396
New Mexico	499	3	5	2	3	16	15	29	61	192	143	30
New York	4,900	80	1	2	10	15	18	37	134	1,454	2,495	654
North Carolina	2,183	19	1	0	1	2	10	45	150	749	889	317
North Dakota	205	0	0	0	0	0	0	5	8	115	61	16
Northern Mariana Isl	22	2	0	0	0	2	6	6	1	5	0	0
Ohio	2,946	7	0	0	2	9	30	79	271	1,189	1,215	144
Oklahoma	1,046	0	0	4	11	25	48	105	173	376	230	74
Oregon	827	2	0	0	0	0	4	17	26	271	453	54
Pennsylvania	3,217	22	0	0	6	9	19	52	155	1,286	1,459	209
Puerto Rico	903	21	30	48	140	150	143	123	64	55	30	99
Rhode Island	241	1	0	0	0	0	0	1	2	48	156	33
South Carolina	1,097	13	0	0	0	8	18	78	110	387	344	139
South Dakota	222	0	0	0	1	0	4	9	12	120	67	9
Tennessee	1,497	21	1	0	4	13	45	92	206	572	446	97
Texas	5,253	40	1	1	12	53	120	286	636	1,713	1,769	622
Utah	588	4	2	3	0	0	0	6	14	140	346	73
Vermont	184	1	0	0	0	0	1	0	1	55	94	32
Virgin Islands	29	0	0	0	0	1	1	3	3	10	4	7
Virginia	1,895	22	0	0	7	16	38	79	144	465	881	243
Washington	1,446	2	1	0	0	2	9	12	36	295	921	168
West Virginia	484	0	1	1	2	3	13	27	56	210	139	32
Wisconsin	1,393	3	1	2	12	18	10	27	94	622	539	65
Wyoming	132	1	0	0	0	1	2	4	9	52	54	9
Total	73,767	565	61	83	306	561	1,235	2,595	5,414	22,986	31,978	7,983

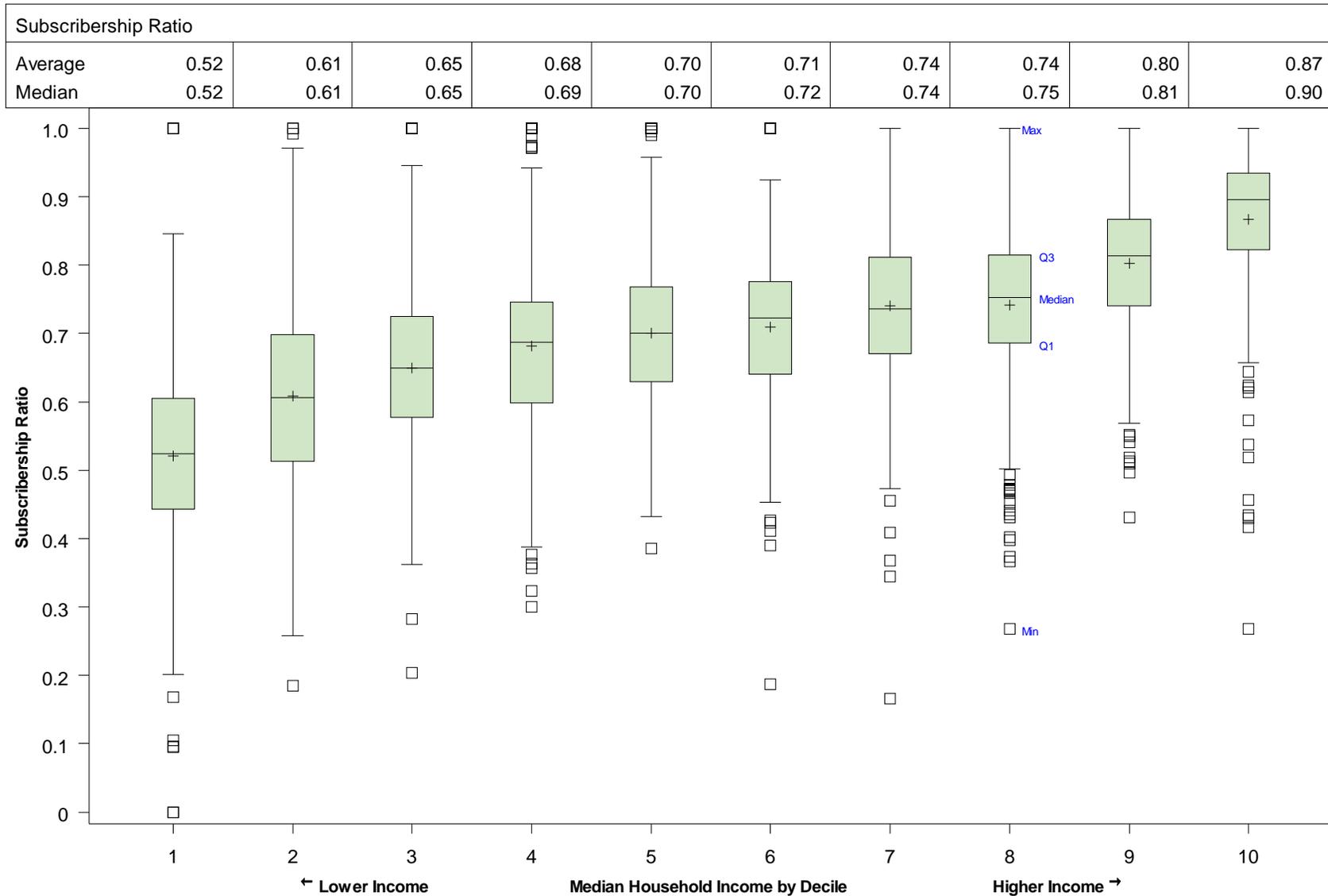
Note: Figures may not sum to totals due to rounding. See Technical Notes at the end of the report.
Sources: FCC Form 477; 2014-2018 ACS 5-year estimates (Households for U.S. and District of Columbia); Census 2010 (Households for Puerto Rico, American Samoa, Guam, Northern Mariana Islands and U.S. Virgin Islands).

SECTION 5
CORRELATED RESULTS: DEMOGRAPHIC MEASURES

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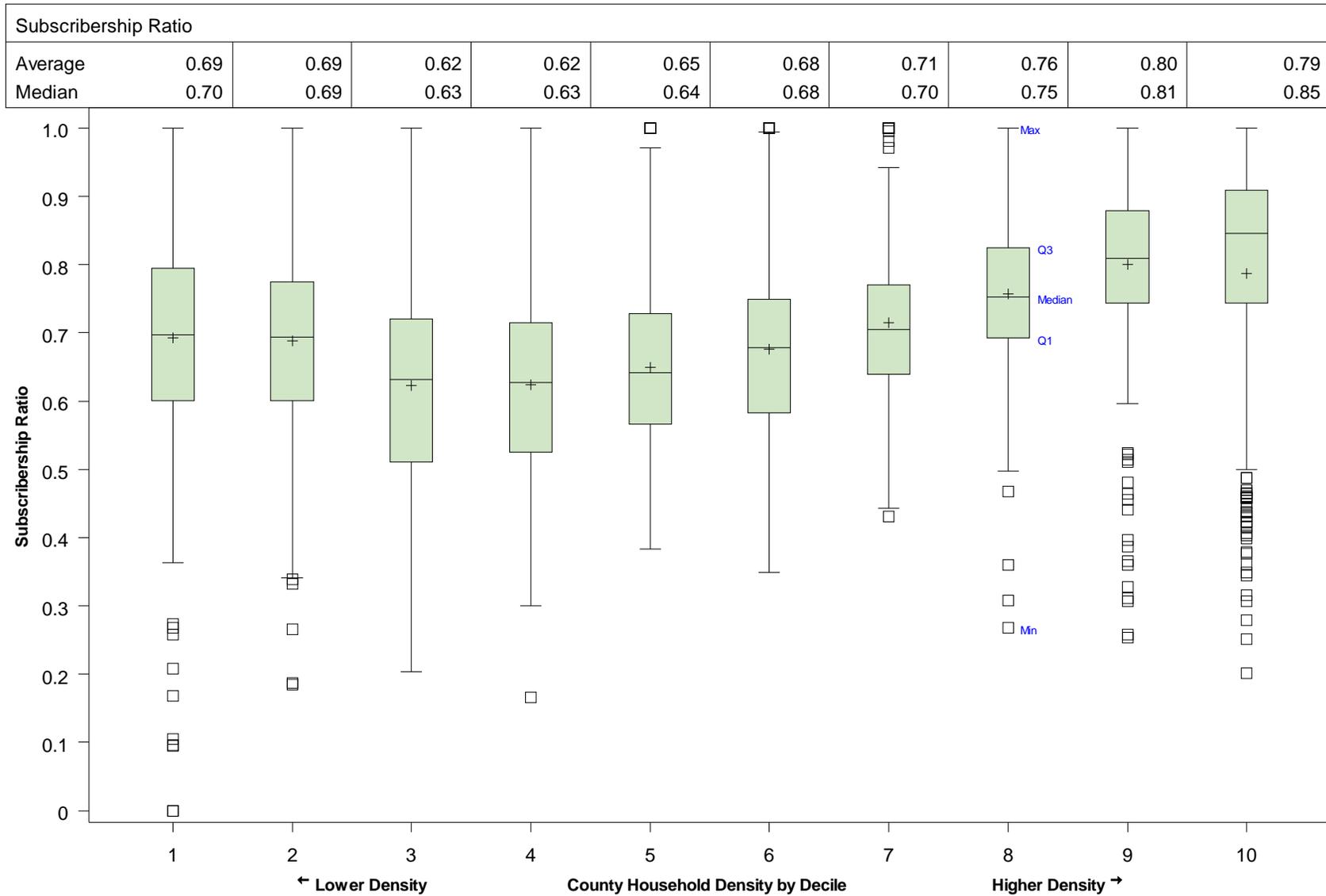
Figure 44
Subscribership Ratio Distributions by Income Deciles as of June 30, 2018



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; 2014-2018 ACS 5-year Estimates; Census 2010.

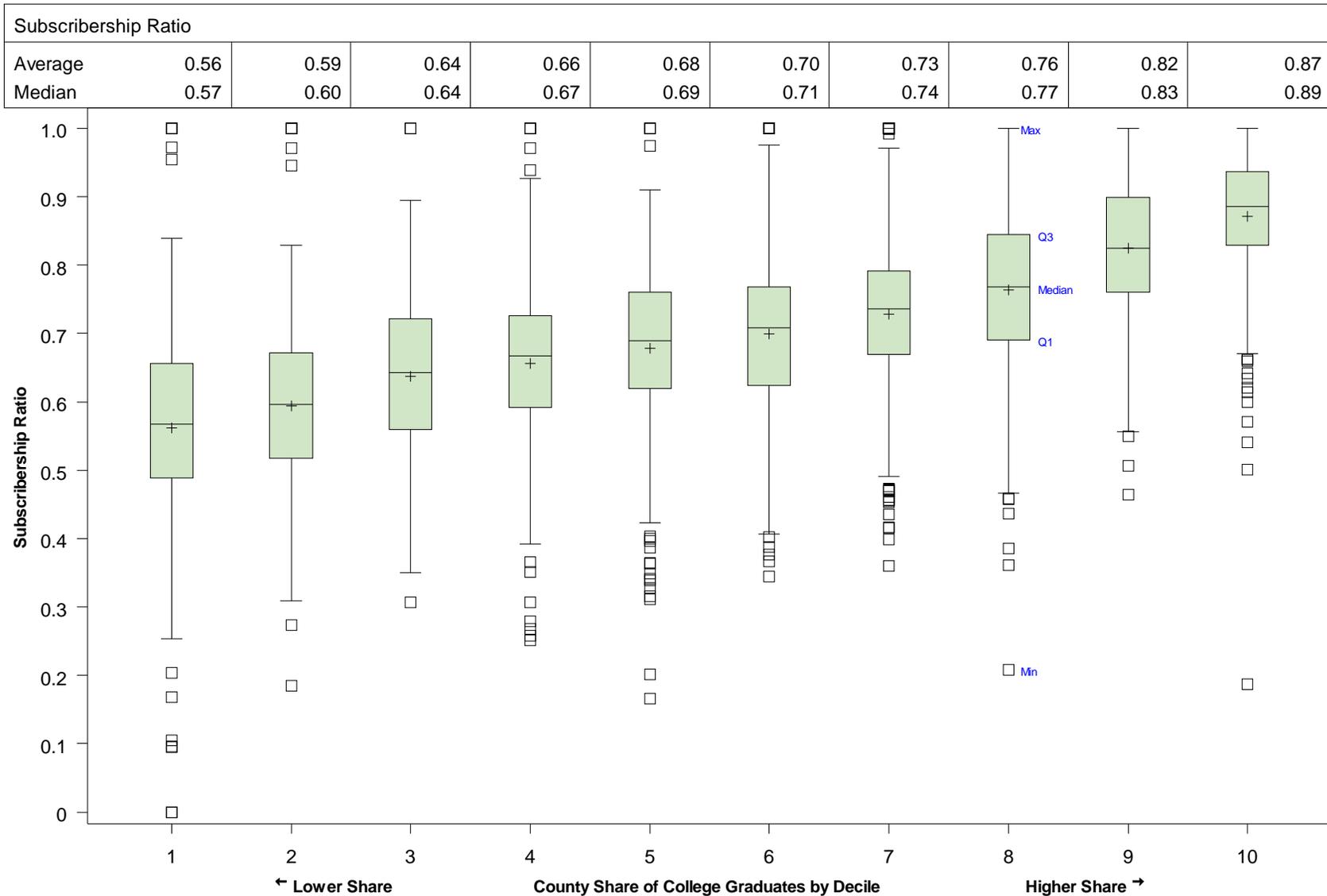
Figure 45
Subscribership Ratio Distributions by Density Deciles as of June 30, 2018



Note: Each box plot shows the distribution of residential subscribership to connections over 200 kbps in at least one direction for counties in the density 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; 2014-2018 ACS 5-year Estimates; Census 2010.

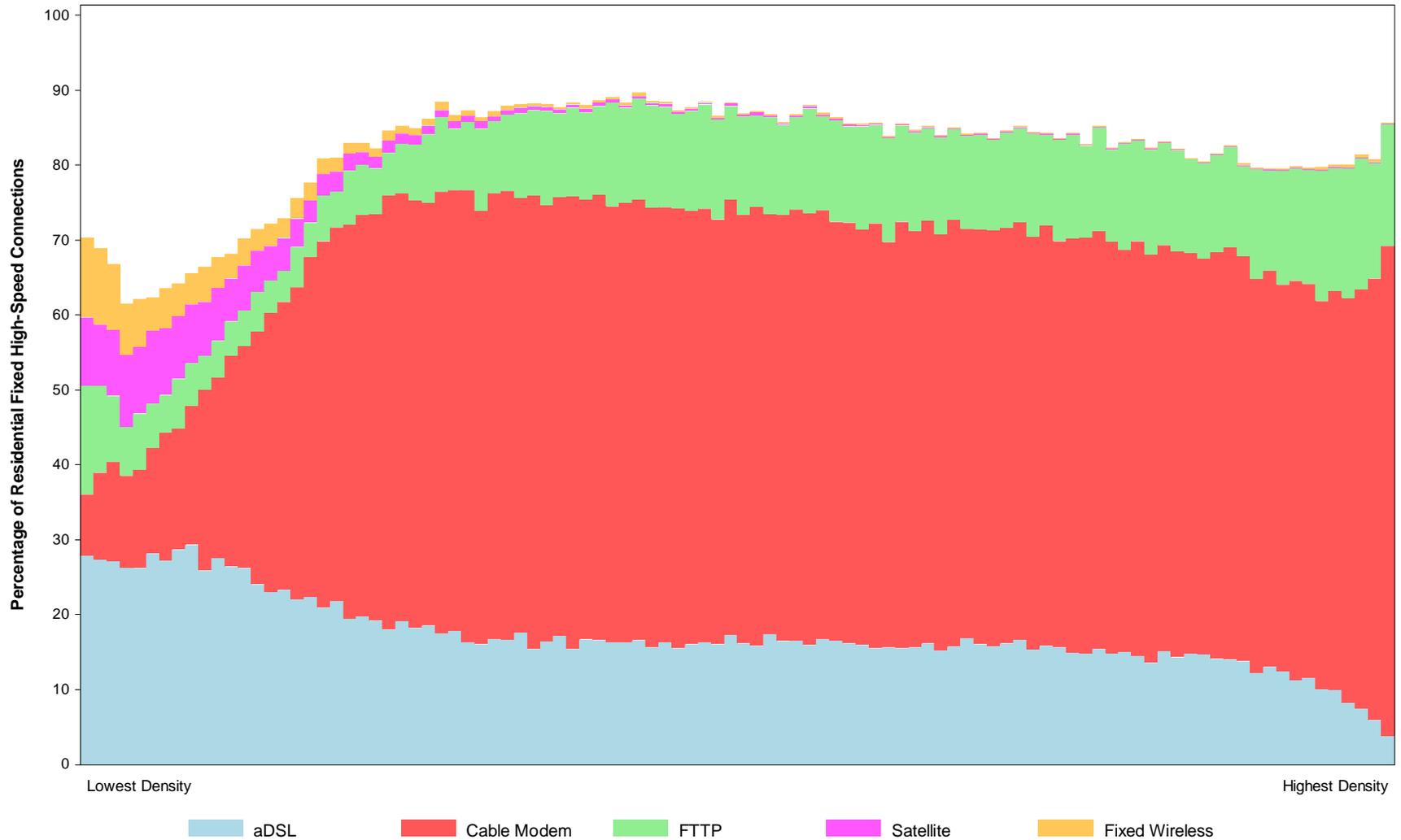
Figure 46
Subscribership Ratio Distributions by Share of Population with a College Degree (in Deciles) as of June 30, 2018



Note: Each box plot shows the distribution of residential subscribership to connections over 200 kbps in at least one direction for counties in the share 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; 2014-2018 ACS 5-year Estimates; Census 2010.

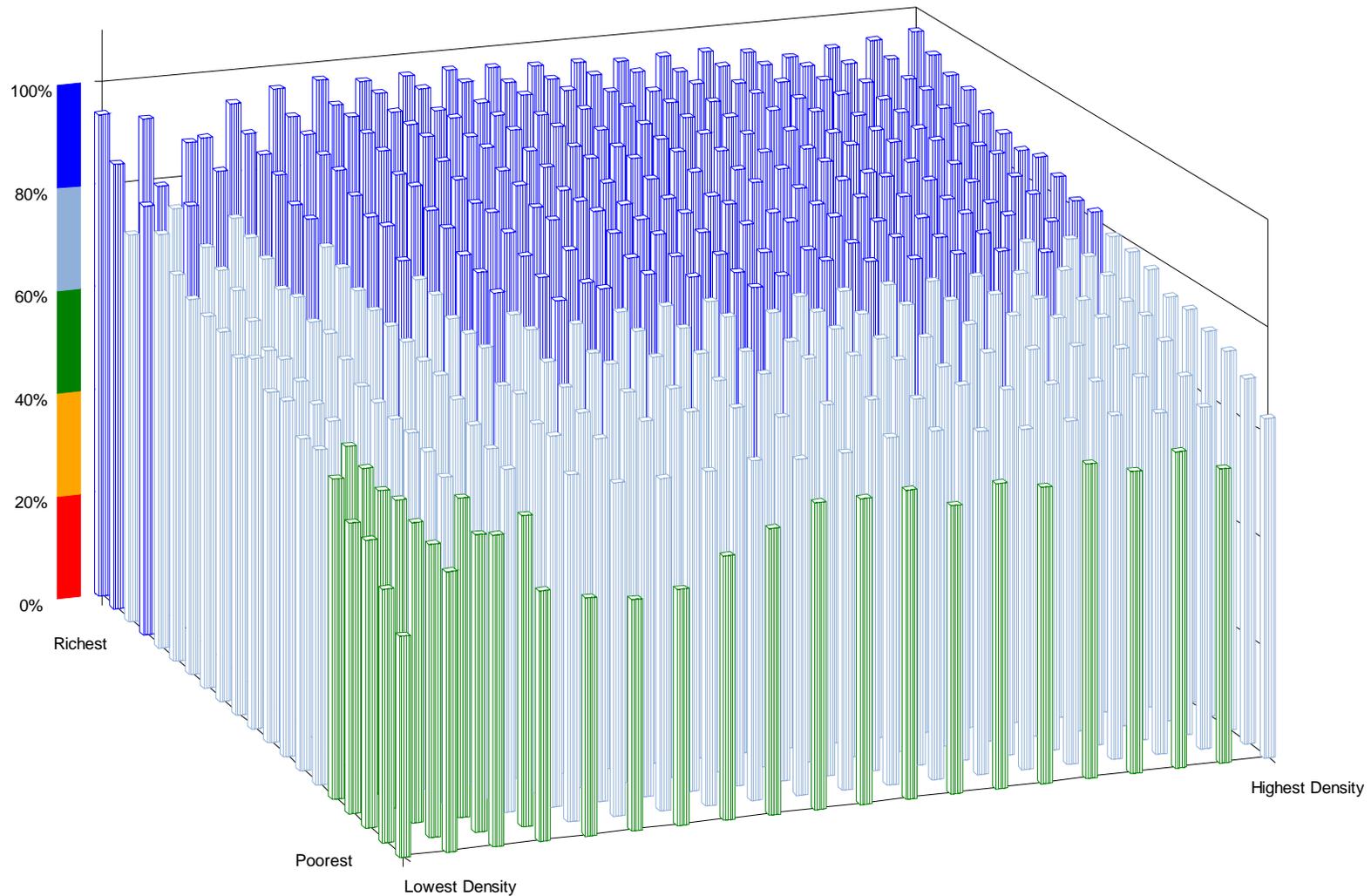
Figure 48
Subscribership Ratios by Technology and Tract Household Density as of June 30, 2018
(Residential fixed connections over 200 kbps in at least one direction)



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; 2014-2018 ACS 5-year estimates; and Census 2010.

Figure 49
Average Subscribership Ratios by Income and Household Density as of June 30, 2018
(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; 2014-2018 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, 2018*

You can help us provide the best possible information to the public by completing this form and returning it to the Industry Analysis Division of the FCC's Office of Economics and Analytics.

1. Please check the category that best describes you:

- press
- current telecommunications carrier
- potential telecommunications carrier
- business customer evaluating vendors/service options
- consultant, law firm, lobbyist
- other business customer
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- residential customer
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2. Please rate the report: Excellent Good Satisfactory Poor No opinion

Data accuracy	(<input type="checkbox"/>)				
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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?

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