

Internet Access Services: Status as of June 30, 2021

Industry Analysis Division
Office of Economics & Analytics
August 2023



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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, 2021 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/internet-access-services-reports>.

¹ See the Technical Notes and Glossary at the end of this report for more-detailed information about the FCC Form 477 data collection and the meaning of terms used in this report.

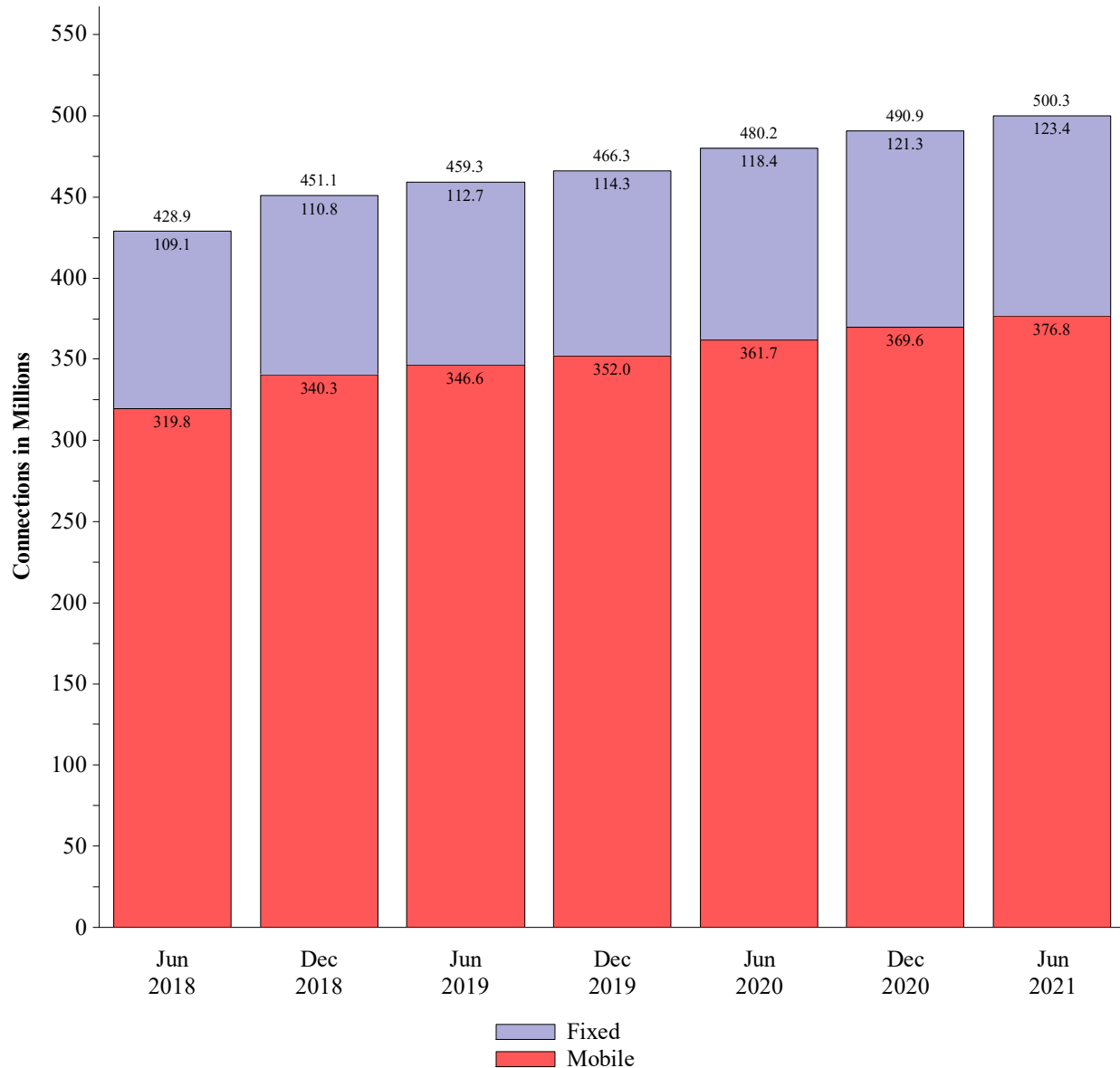
² The Commission began collecting census tract-level data for data as of December 31, 2008. *See High-Speed Services for Internet Access: Status as of December 31, 2008* (February 2010) at 1-4, available at <http://www.fcc.gov/encyclopedia/high-speed-services-internet-access-reports> (December 2008 High-Speed 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 4.2% between June 2020 and June 2021 to 500 million. Mobile Internet connections increased 4.2% year-over-year to 377 million in June 2021, while fixed connections grew to 123 million – up about 4.2% from June 2020.

Figure 1
Fixed and Mobile Connections 2018-2021



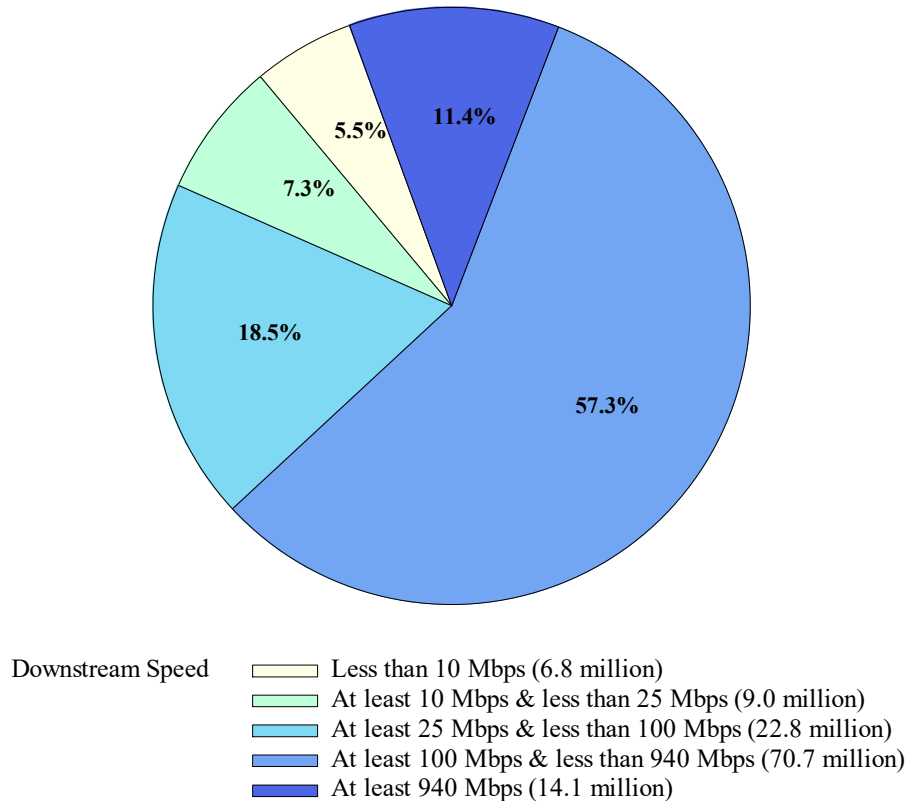
Note: Some previously-published data may have been revised. Numbers may not sum to totals due to rounding. Connections include both residential and business connections. We believe mobile Internet connections remain underreported by as much as 2% through June 2018 due to inadequate accounting of connections sold by downstream mobile virtual network operators (MVNOs).

Source: FCC Form 477.

Connections by Speed

Fixed connections – downstream speeds. Figure 2(a) illustrates how the 123 million fixed connections reported for June 2021 were distributed across the five groups of *downstream speeds* defined by breakpoints at 10 Mbps, 25 Mbps, 100 Mbps, and 940 Mbps. See Figure 9 for more detail.

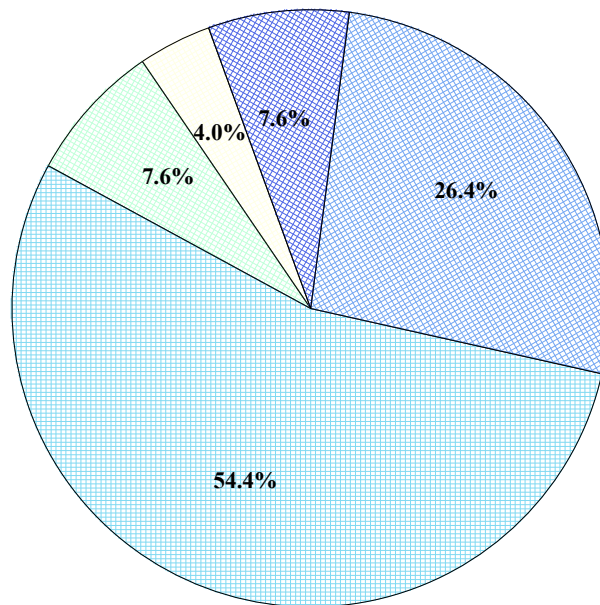
Figure 2(a)
Distribution of Fixed Connections (123.4 million) by Downstream Speed
as of June 30, 2021



Note: Numbers may not sum to total due to rounding.
Source: FCC Form 477.

Fixed connections – upstream speeds. Figure 2(b) illustrates how the 123 million fixed connections reported for June 2021 were distributed across the five groups of *upstream speeds* defined by breakpoints at 1 Mbps, 3 Mbps, 20 Mbps, and 500 Mbps. See Figure 9 for more detail.

Figure 2(b)
Distribution of Fixed Connections (123.4 million) by Upstream Speed
as of June 30, 2021

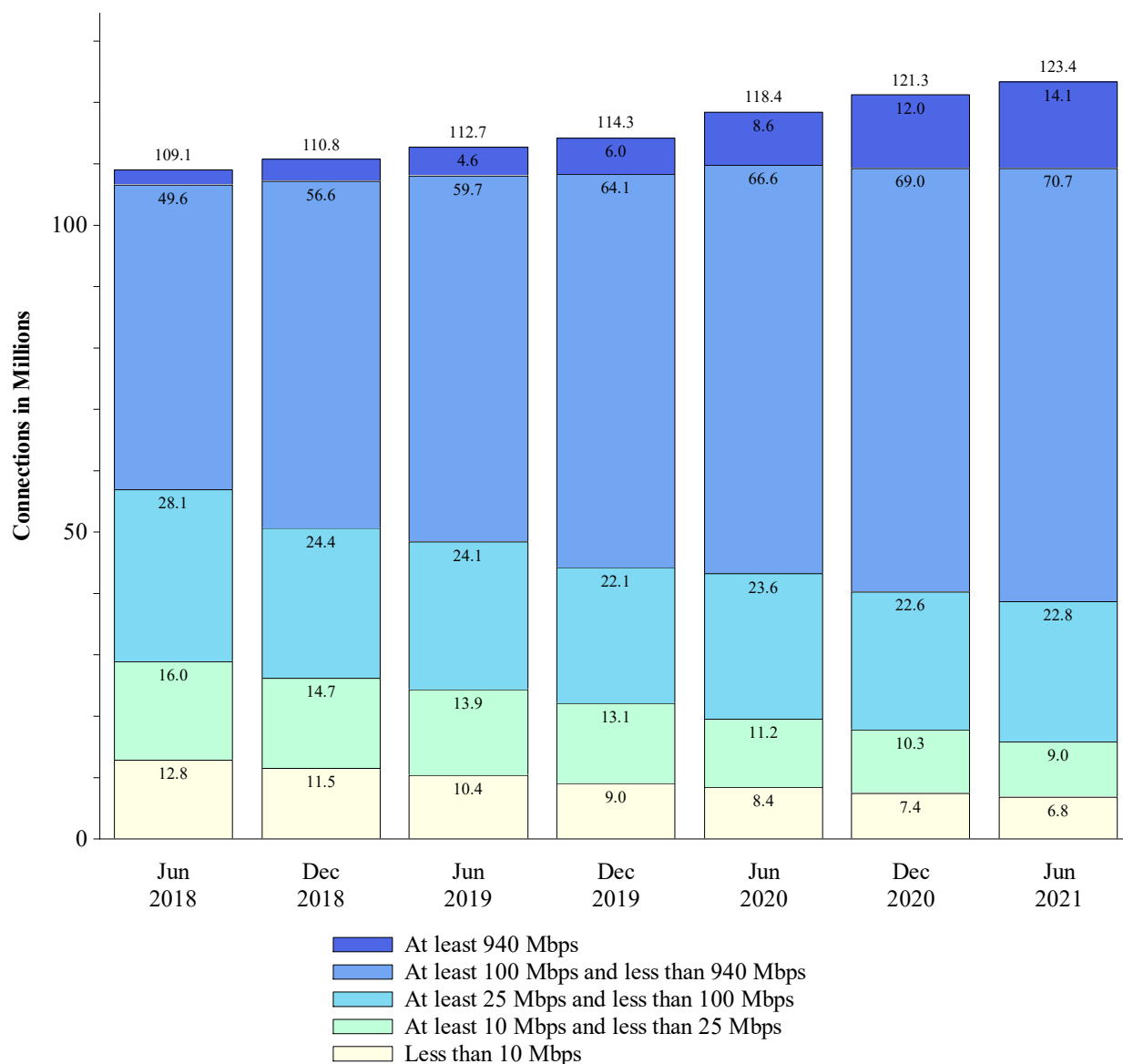


Upstream Speed	Less than 1 Mbps (4.9 million)
	At least 1 Mbps & less than 3 Mbps (9.3 million)
	At least 3 Mbps & less than 20 Mbps (67.2 million)
	At least 20 Mbps & less than 500 Mbps (32.6 million)
	At least 500 Mbps (9.4 million)

Note: Numbers may not sum to total due to rounding.
Source: FCC Form 477.

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 2018 to 2021.

Figure 3
Fixed Connections by Downstream Speed 2018-2021



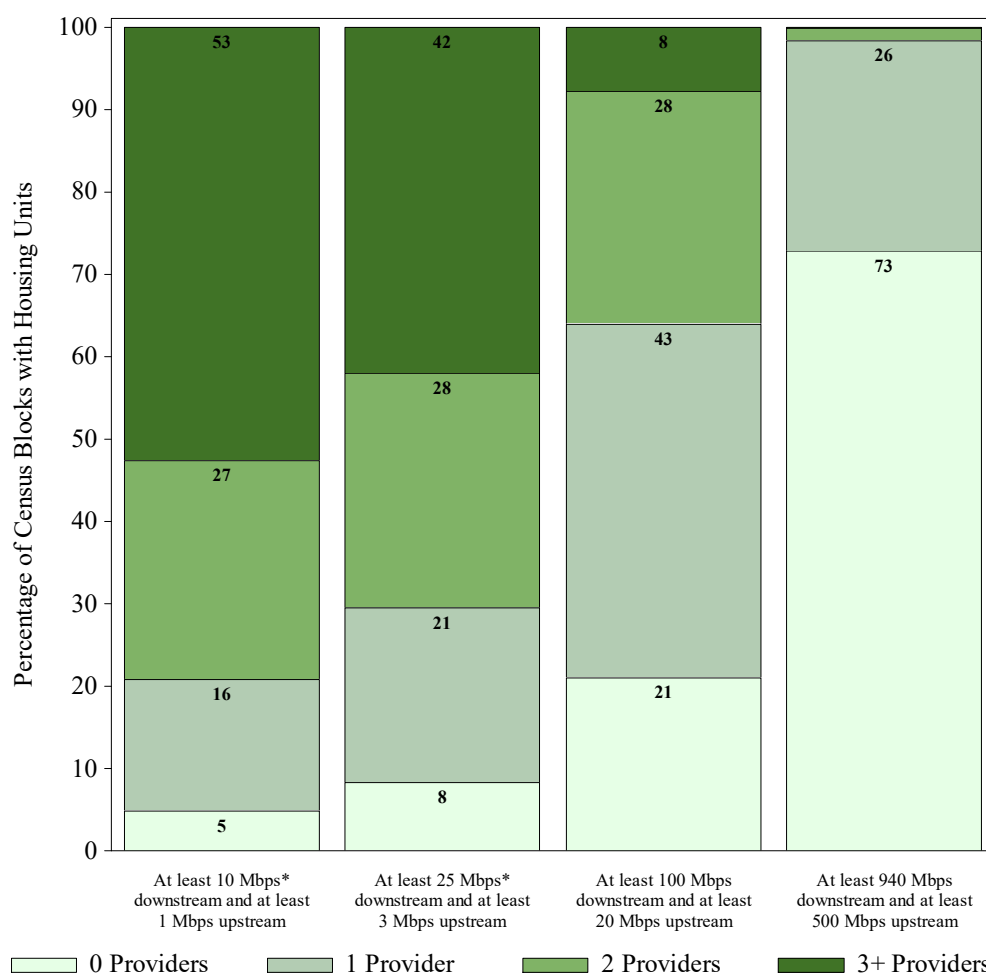
Note: Some previously-published data may have been revised. Numbers may not sum to totals due to rounding. Connections include both residential and business connections.
Source: FCC Form 477.

- The percentage of fixed connections with a downstream speed of at least 100 Mbps has grown from 48% (or 52 million connections) in June 2018 to 69% (or 85 million connections) in June 2021. Over the same period, the percentage of fixed connections with downstream speeds of less than 10 Mbps has decreased from 12% (or 13 million connections) in June 2018 to about 6% (or about 7 million connections) in June 2021.

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 2021. This information is taken from the block-level FCC 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, 2021



* Satellite service providers are excluded from 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.

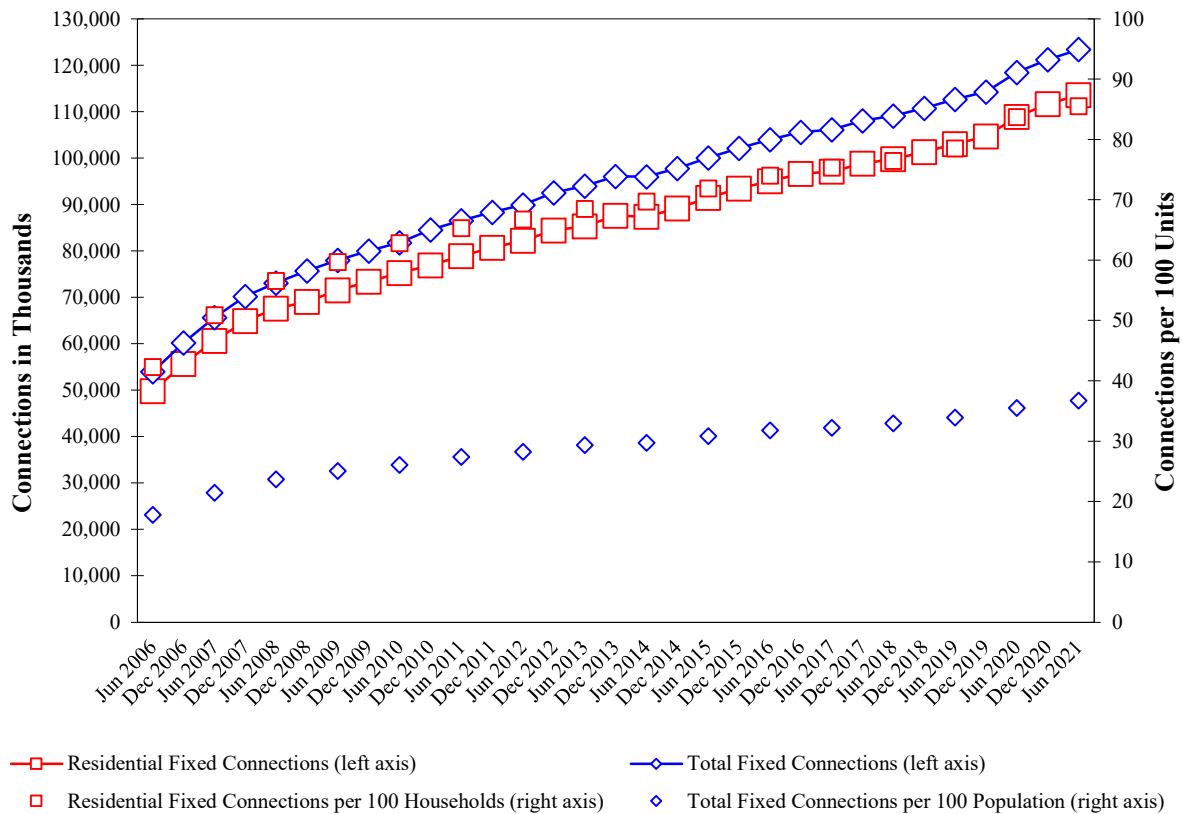
Note: Numbers may sum to totals due to rounding. Developed census blocks are those with housing units based on the 2010 census.
Source: FCC Form 477.

⁴ Download these data and explore the interactive map at <https://broadband477map.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 2006.

Figure 5
Fixed Connections 2006-2021
(Connections over 200 kbps in at least one direction)



- Between June 2011 and June 2021, total (business and residential) fixed connections grew from 87 million connections to 123 million connections – at a compound annual growth rate of 4% per year.⁵
- Over the same ten-year period, residential fixed connections grew from 79 million connections to 114 million connections – also at a compound annual growth rate of 4% per year.

⁵ The compound annual growth rate (CAGR) is a smoothed rate of growth calculated in three steps: (1) divide the ending value by the beginning value; (2) 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); (3) subtract the number one from the result of the second step.

- From June 2011 to June 2021, the number of residential fixed connections per 100 U.S. households increased from 65 to 86.⁶

Other Report Highlights

Typical speeds

- The median downstream speed of all reported fixed connections was 200 Mbps and the median upstream speed was 10 Mbps. For residential fixed connections, the median downstream speed was 200 Mbps and the median upstream speed was 10 Mbps.

Residential connections

- Residential fixed Internet access connections increased by about 4.3% between June 2020 and June 2021, to about 114 million. *See* Figure 7.
- Residential (non-business) mobile wireless Internet access connections on mobile devices with data plans for full Internet access increased by about 2.5%, to 302 million, between June 2020 and June 2021. *See* Figure 7.
- Approximately 94% of residential fixed connections had a speed of at least 10 Mbps downstream and 1 Mbps upstream in June 2021, while 87% had a speed of at least 25 Mbps downstream and 3 Mbps upstream. About 70% percent of all residential fixed connections had a downstream speed of at least 100 Mbps. *See* Figures 10 and 29.
- As a national average in June 2021, there were about 86 residential fixed connections with speeds of at least 10 Mbps downstream and 1 Mbps upstream per 100 households; 79 residential fixed connections with speeds of at least 25 Mbps downstream and 3 Mbps upstream per 100 households; and 28 residential fixed connections with speeds of at least 100 Mbps downstream and 20 Mbps upstream per 100 households.⁷ *See* Figure 34.

⁶ 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 40 because there were about 133 million households in the United States and inhabited insular areas and a population of about 336 million according to the sources used for Figure 5.)

⁷ 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, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*,

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, 2021.⁸ We continue to observe substantial variation among these estimates. *See* Figures 39 and 41.

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 46-51.

Amended by the Broadband Data Improvement Act, GN Docket No.11-121, Eighth Broadband Progress Report, 27 FCC Rcd 10342, 10386, para. 94 (2012).

⁸ 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 2017-2021
(in thousands)

<i>Technology</i>	<i>2017</i>		<i>2018</i>		<i>2019</i>		<i>2020</i>		<i>2021</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	408,692	420,838	428,864	451,062	459,327	466,302	480,185	490,888	500,261
Total Fixed	106,130	108,065	109,087	110,784	112,725	114,291	118,449	121,250	123,425
Mobile Wireless	302,562	312,773	319,776	340,278	346,603	352,012	361,737	369,638	376,835

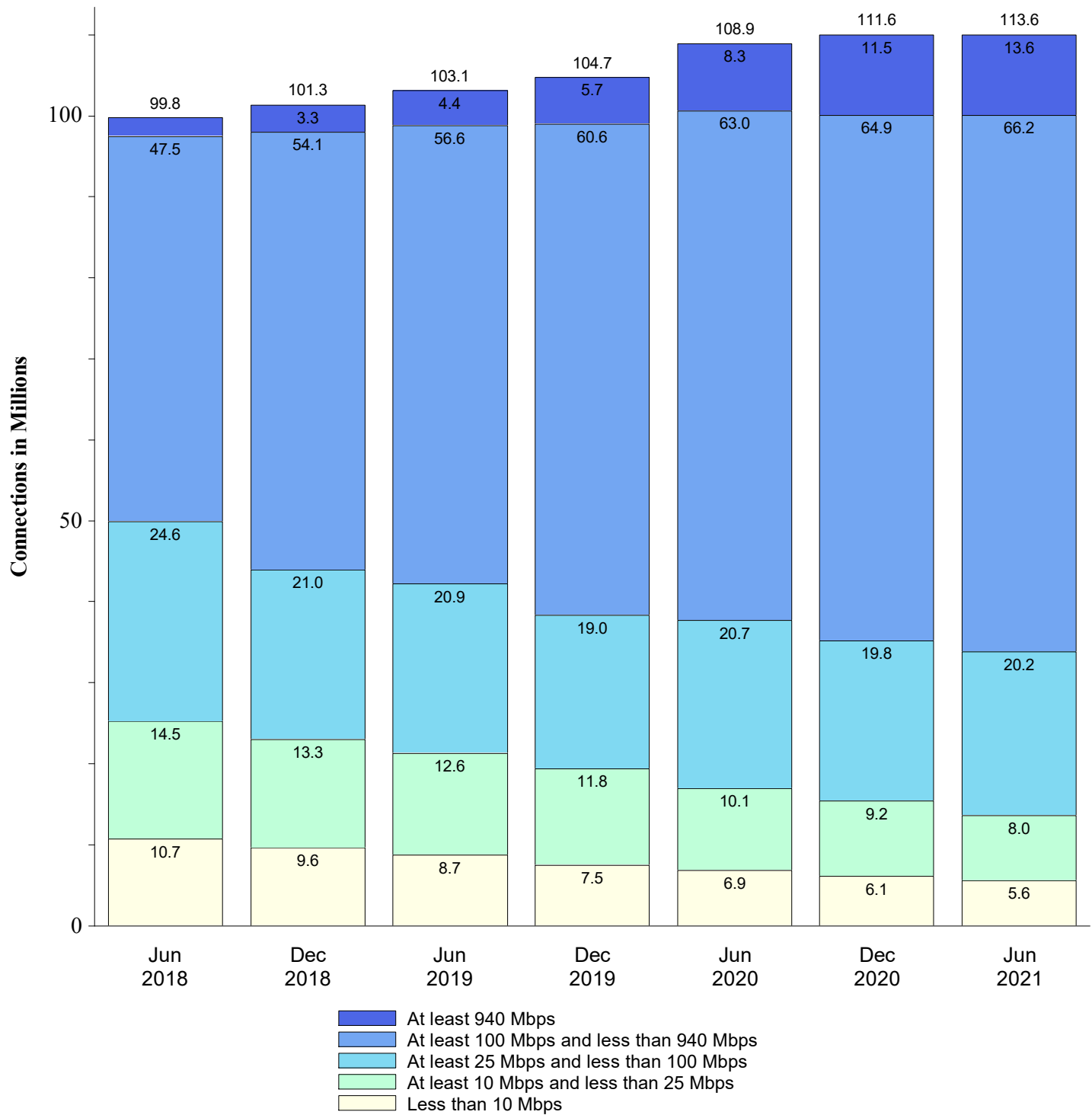
Some previously-published data may have been revised. Numbers may not sum to totals due to rounding.
Source: FCC Form 477.

Figure 7
Residential Connections over 200 kbps in at Least One Direction 2017-2021
(in thousands)

<i>Technology</i>	<i>2017</i>		<i>2018</i>		<i>2019</i>		<i>2020</i>		<i>2021</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	341,094	351,966	358,867	378,286	383,605	388,344	403,212	407,652	415,260
Total Fixed	97,071	98,845	99,758	101,348	103,118	104,703	108,909	111,621	113,581
Mobile Wireless	244,022	253,121	259,109	276,938	280,486	283,641	294,303	296,031	301,679

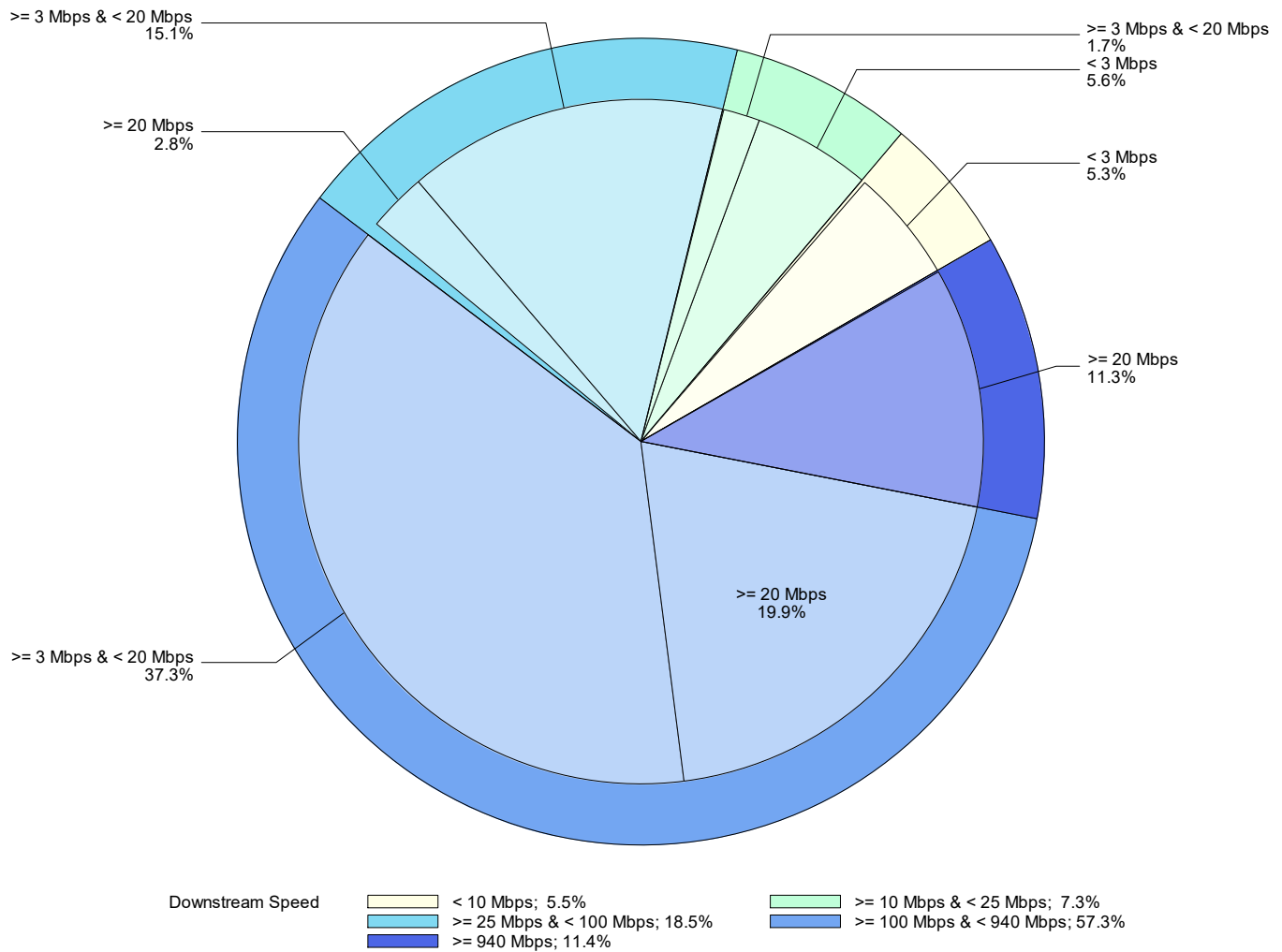
Some previously-published data may have been revised. Numbers may not sum to totals due to rounding.
Source: FCC Form 477.

Figure 8
Residential Fixed Connections by Downstream Speed 2018-2021



Note: Numbers may not sum to totals due to rounding.
 Source: FCC Form 477.

Figure 9
Distribution of Fixed Connections over 200 kbps in at Least One Direction
as of June 30, 2021



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

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

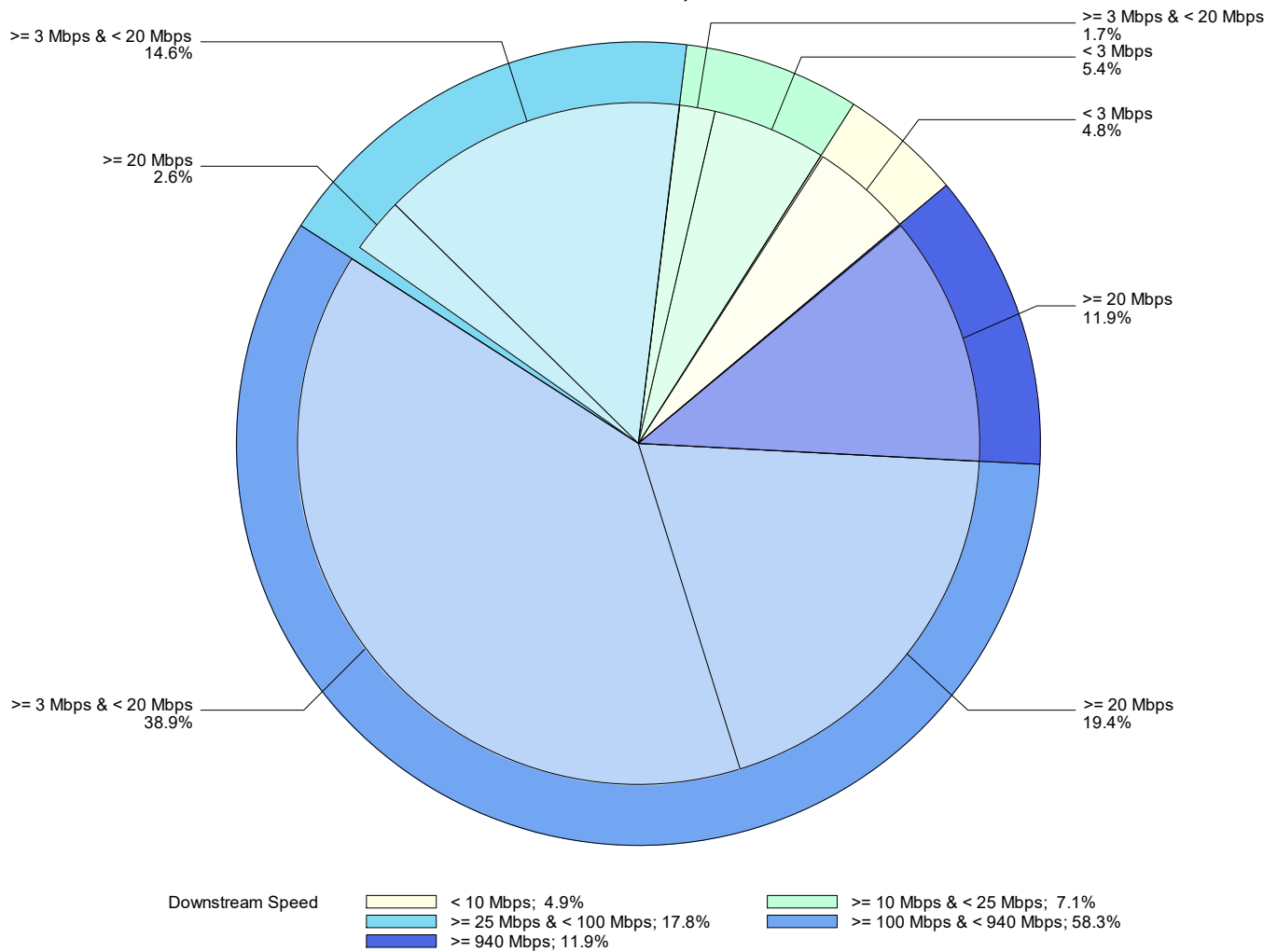
Upstream Speed	Downstream Speed					Total
	Less than 10 Mbps	At least 10 Mbps and less than 25 Mbps	At least 25 Mbps and less than 100 Mbps	At least 100 Mbps and less than 940 Mbps	At least 940 Mbps	
Less than 3 Mbps	6,578	6,857	784	11	#	14,229
At least 3 Mbps & Less than 20 Mbps	211	2,122	18,647	46,083	90	67,152
At least 20 Mbps	5	65	3,412	24,593	13,970	42,044
Total	6,793	9,043	22,842	70,687	14,061	123,425

Percentages

Less than 3 Mbps	5.3	5.6	0.6	0.0	0.0	11.5
At least 3 Mbps & Less than 20 Mbps	0.2	1.7	15.1	37.3	0.1	54.4
At least 20 Mbps	0.0	0.1	2.8	19.9	11.3	34.1
Total	5.5	7.3	18.5	57.3	11.4	100.0

Note: Numbers 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, 2021



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 10 Mbps	At least 10 Mbps and less than 25 Mbps	At least 25 Mbps and less than 100 Mbps	At least 100 Mbps and less than 940 Mbps	At least 940 Mbps	
Less than 3 Mbps	5,445	6,106	722	11	#	12,284
At least 3 Mbps & Less than 20 Mbps	123	1,894	16,552	44,215	88	62,870
At least 20 Mbps	3	24	2,944	21,989	13,467	38,427
Total	5,571	8,024	20,218	66,215	13,554	113,581

Percentages

Less than 3 Mbps	4.8	5.4	0.6	0.0	0.0	10.8
At least 3 Mbps & Less than 20 Mbps	0.1	1.7	14.6	38.9	0.1	55.4
At least 20 Mbps	0.0	0.0	2.6	19.4	11.9	33.8
Total	4.9	7.1	17.8	58.3	11.9	100.0

Note: Numbers 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 2017-2021
(in thousands)

Technology	2017		2018		2019		2020		2021
	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	408,692	420,838	428,864	451,062	459,327	466,302	480,185	490,888	500,261
Total Fixed	106,130	108,065	109,087	110,784	112,725	114,291	118,449	121,250	123,425
aDSL	25,505	24,193	23,074	22,377	21,163	20,214	19,639	18,786	18,085
sDSL	44	28	28	20	17	16	19	13	18
Other Wireline ¹	619	581	558	557	501	525	516	527	517
Cable Modem	64,060	66,196	67,165	68,882	70,750	72,516	75,986	77,909	79,330
FTTP ²	12,831	13,890	14,889	15,492	16,748	17,376	18,443	19,945	21,120
Satellite	1,826	1,872	1,939	1,971	1,984	1,975	1,993	1,931	1,910
Fixed Wireless	1,245	1,306	1,434	1,485	1,561	1,669	1,853	2,140	2,445
Mobile Wireless	302,562	312,773	319,776	340,278	346,603	352,012	361,737	369,638	376,835

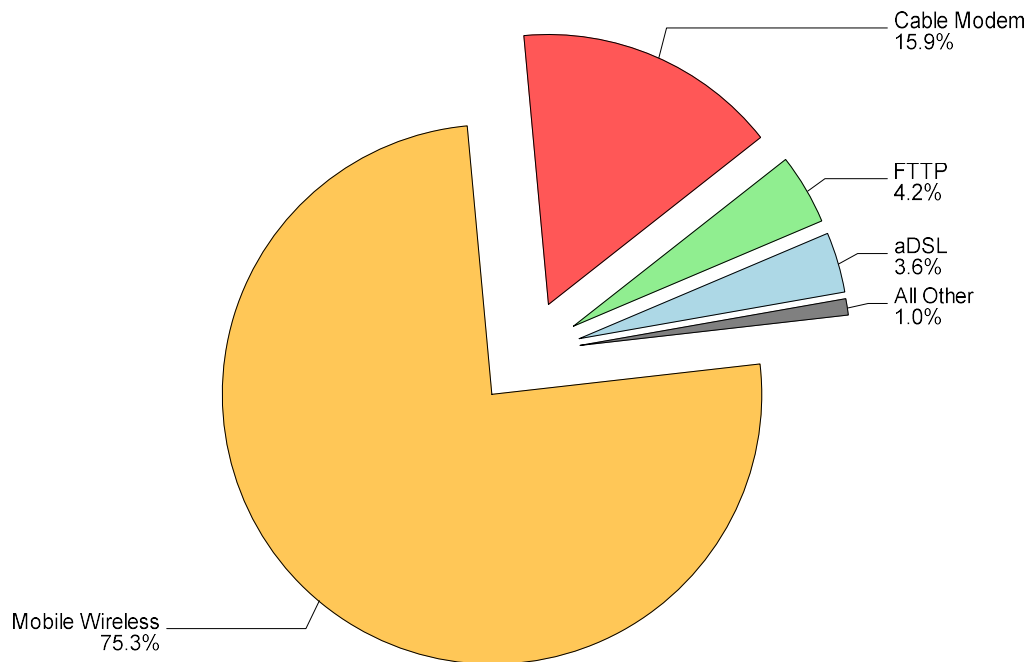
¹ Power Line and Other are summarized with Other Wireline for confidentiality reasons. See Technical Notes at the end of the report for a description of FCC Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

Note: Some previously-published data may have been revised. Numbers may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 12
Connections by Technology as of June 30, 2021



Source: FCC Form 477.

Figure 13
Residential Connections over 200 kbps in at Least One Direction by Technology 2017-2021
(in thousands)

Technology	2017		2018		2019		2020		2021
	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	341,094	351,966	358,867	378,286	383,605	388,344	403,212	407,652	415,260
Total Fixed	97,071	98,845	99,758	101,348	103,118	104,703	108,909	111,621	113,581
aDSL	22,774	21,653	20,671	20,126	18,976	18,159	17,647	16,920	16,278
sDSL	12	9	9	4	4	5	7	3	4
Other Wireline ¹	74	67	74	76	62	74	64	59	63
Cable Modem	59,687	61,567	62,320	63,813	65,457	67,141	70,710	72,543	73,844
FTTP ²	11,776	12,702	13,663	14,205	15,410	16,011	16,971	18,384	19,414
Satellite	1,637	1,688	1,751	1,787	1,805	1,795	1,815	1,752	1,728
Fixed Wireless	1,112	1,158	1,270	1,338	1,405	1,520	1,694	1,958	2,251
Mobile Wireless	244,022	253,121	259,109	276,938	280,486	283,641	294,303	296,031	301,679

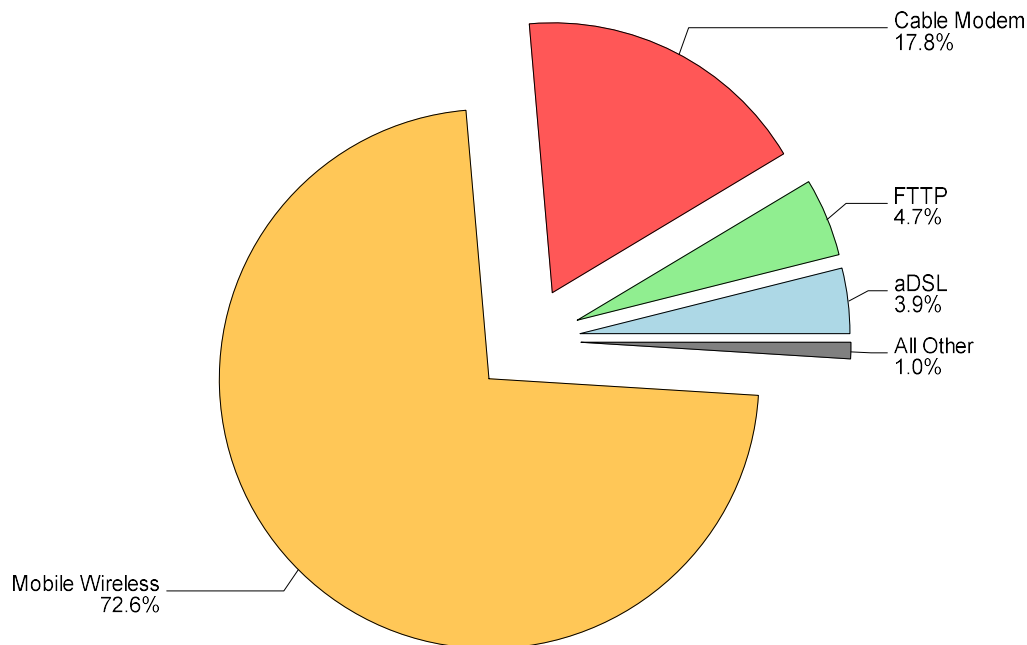
¹ Power Line and Other are summarized with Other Wireline for confidentiality reasons. See Technical Notes at the end of the report for a description of FCC Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

Note: Some previously-published data may have been revised. Numbers may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 14
Residential Connections by Technology as of June 30, 2021



Source: FCC Form 477.

Figure 15
Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology 2017-2021
(in thousands)

Technology	2017		2018		2019		2020		2021
	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	86,886	90,609	94,071	97,302	100,464	103,595	109,159	112,445	115,772
aDSL	11,321	11,598	11,822	12,038	11,829	11,704	12,421	11,760	12,017
sDSL	14	9	11	6	5	5	8	4	7
Other Wireline ¹	246	262	271	292	261	301	307	323	323
Cable Modem	61,704	63,978	65,808	67,716	69,704	71,934	75,391	77,513	79,035
FTTP ²	11,811	12,869	13,898	14,815	16,078	16,854	17,993	19,555	20,813
Satellite	1,373	1,402	1,595	1,677	1,726	1,737	1,778	1,727	1,717
Fixed Wireless	418	491	666	759	861	1,059	1,263	1,564	1,860

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

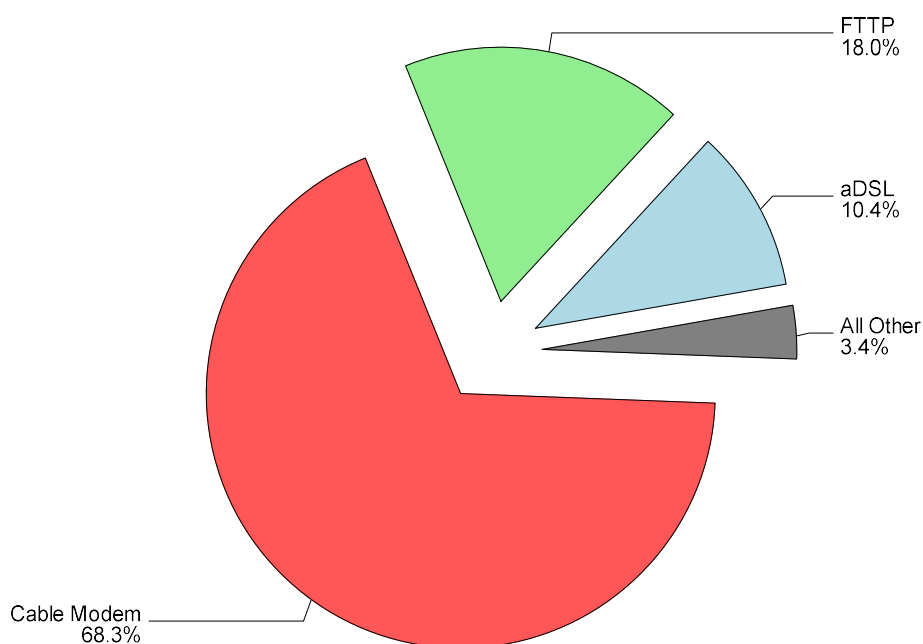
² Fiber to the premises.

= Rounds to zero.

Note: Some previously-published data may have been revised. Numbers may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 16
Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream
by Technology as of June 30, 2021



Source: FCC Form 477.

Figure 17**Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology 2017-2021**
(in thousands)

Technology	2017		2018		2019		2020		2021
	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	80,671	84,163	86,973	89,873	92,698	95,649	101,201	104,199	107,212
aDSL	10,415	10,657	10,862	11,073	10,812	10,682	11,374	10,761	11,003
sDSL	6	5	6	2	1	2	4	1	2
Other Wireline ¹	71	64	65	68	58	70	61	56	61
Cable Modem	57,617	59,864	61,142	62,810	64,556	66,691	70,299	72,215	73,611
FTTP ²	10,835	11,762	12,741	13,589	14,800	15,536	16,566	18,042	19,145
Satellite	1,362	1,387	1,575	1,655	1,702	1,708	1,745	1,691	1,676
Fixed Wireless	365	425	582	676	768	960	1,151	1,433	1,714

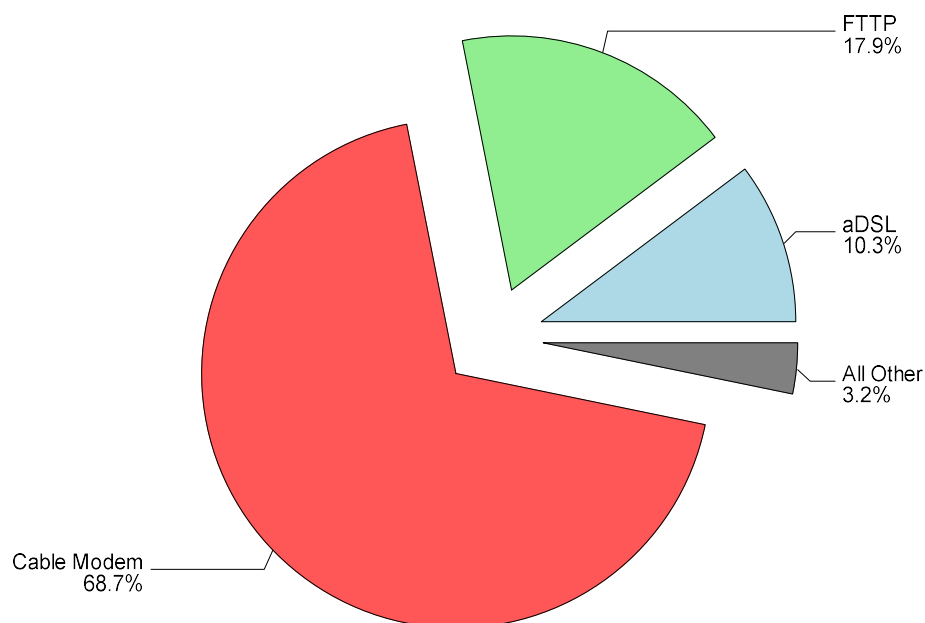
¹ Power Line and Other are summarized with Other Wireline for confidentiality reasons. See Technical Notes at the end of the report for a description of FCC Form 477 technology categories and other reporting requirements.

² Fiber to the premises.

= Rounds to zero.

Note: Some previously-published data may have been revised. Numbers may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 18**Residential Fixed Connections at Least 10 Mbps Downstream and 1 Mbps Upstream by Technology as of June 30, 2021**

Source: FCC Form 477.

Figure 19
Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology 2017-2021
(in thousands)

Technology	2017		2018		2019		2020		2021
	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	68,280	73,875	78,952	82,965	86,744	90,471	96,984	101,630	106,794
aDSL	2,530	3,586	4,298	4,988	5,233	5,523	5,910	6,237	6,397
sDSL	*	*	*	*	*	*	*	*	2
Other Wireline ¹	203	219	203	228	220	263	273	286	288
Cable Modem	54,829	57,870	60,859	62,880	64,938	67,171	71,856	74,169	77,502
FTTP ²	10,344	11,489	12,568	13,605	14,902	15,866	17,076	18,840	20,171
Satellite	*	*	*	*	*	*	*	*	1,328
Fixed Wireless	120	143	224	267	325	449	571	804	1,105

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

² Fiber to the premises.

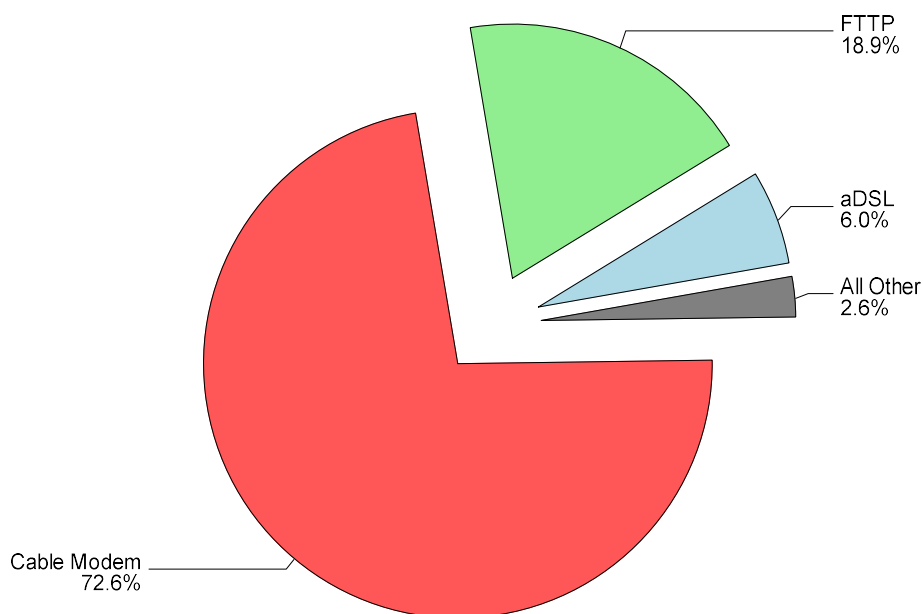
* = Data withheld for confidentiality reasons.

= Rounds to zero.

Note: Some previously-published data may have been revised. Numbers may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 20
Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream
by Technology as of June 30, 2021



Source: FCC Form 477.

Figure 21
Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream by Technology 2017-2021
(in thousands)

Technology	2017		2018		2019		2020		2021
	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	64,520	69,447	73,288	76,873	80,256	83,725	90,170	94,451	99,254
aDSL	2,418	3,410	4,068	4,712	4,911	5,168	5,538	5,871	6,008
sDSL	*	*	*	*	*	*	*	*	1
Other Wireline ¹	67	59	54	61	53	64	56	51	58
Cable Modem	52,154	54,748	56,620	58,342	60,125	62,231	67,017	69,098	72,268
FTTP ²	9,532	10,553	11,570	12,546	13,780	14,690	15,781	17,445	18,615
Satellite	*	*	*	*	*	*	*	*	1,288
Fixed Wireless	101	119	193	234	283	400	512	727	1,015

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

² Fiber to the premises.

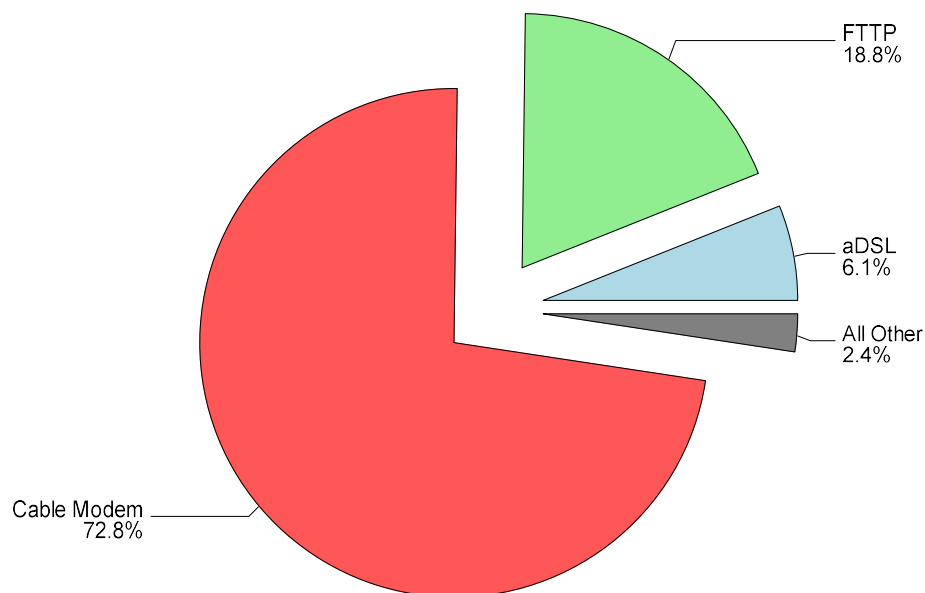
* = Data withheld for confidentiality reasons.

= Rounds to zero.

Note: Some previously-published data may have been revised. Numbers may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 22
Residential Fixed Connections at Least 25 Mbps Downstream and 3 Mbps Upstream
by Technology as of June 30, 2021



Source: FCC Form 477.

Figure 23
Fixed Connections at Least 100 Mbps Downstream and 20 Mbps Upstream by Technology 2017-2021
(in thousands)

Technology	2017		2018		2019		2020		2021
	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	9,676	12,148	14,619	18,750	22,217	25,603	29,554	34,493	38,563
aDSL	16	47	59	207	387	569	658	774	867
sDSL	1	1	1	1	#	*	*	*	*
Other Wireline ¹	174	192	174	196	178	211	213	217	218
Cable Modem	6,055	7,149	8,352	9,466	11,426	13,088	15,496	18,420	20,924
FTTP ²	3,403	4,729	5,976	8,815	10,146	11,634	13,071	14,933	16,373
Satellite	0	0	0	0	0	*	*	*	*
Fixed Wireless	28	30	56	65	79	101	116	143	180

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

² Fiber to the premises.

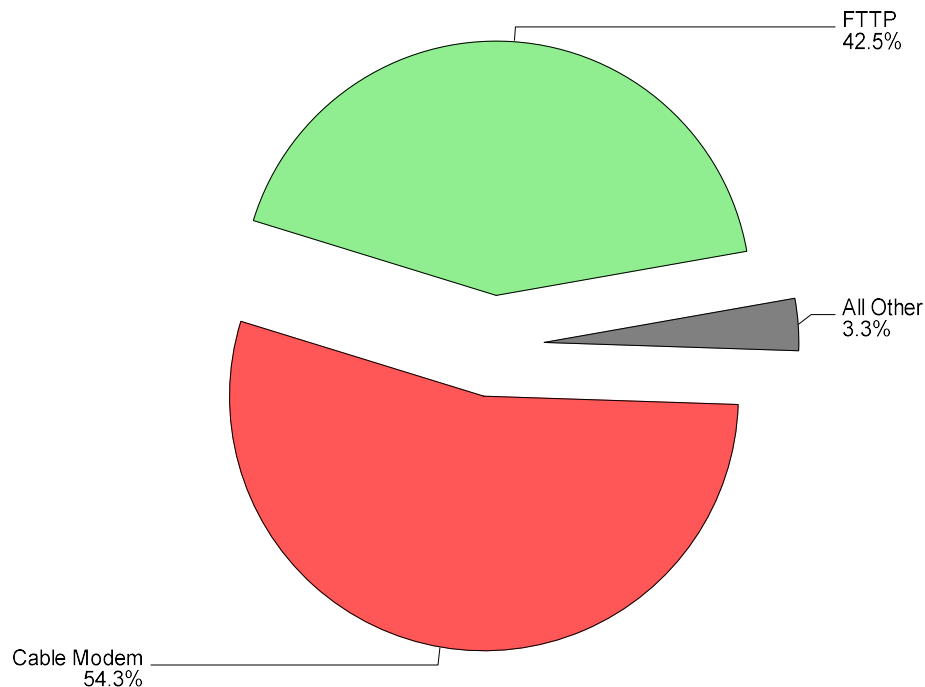
* = Data withheld for confidentiality reasons.

= Rounds to zero.

Note: Some previously-published data may have been revised. Numbers may not sum to totals due to rounding.

Source: FCC Form 477.

Figure 24
Fixed Connections at Least 100 Mbps Downstream and 20 Mbps Upstream
by Technology as of June 30, 2021



Source: FCC Form 477.

Figure 25
Residential Fixed Connections at Least 100 Mbps Downstream and 20 Mbps Upstream by Technology 2017-2021
(in thousands)

Technology	2017		2018		2019		2020		2021
	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
Total	8,879	11,030	13,171	17,101	20,322	23,469	27,164	31,773	35,456
aDSL	15	42	53	194	344	512	594	733	820
sDSL	#	#	#	#	#	*	*	*	*
Other Wireline ¹	61	53	46	47	27	36	27	20	21
Cable Modem	5,695	6,591	7,491	8,512	10,312	11,883	14,157	16,843	19,128
FTTP ²	3,089	4,324	5,534	8,292	9,574	10,952	12,288	14,055	15,329
Satellite	0	0	0	0	0	*	*	*	*
Fixed Wireless	20	20	47	56	65	86	98	118	158

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

² Fiber to the premises.

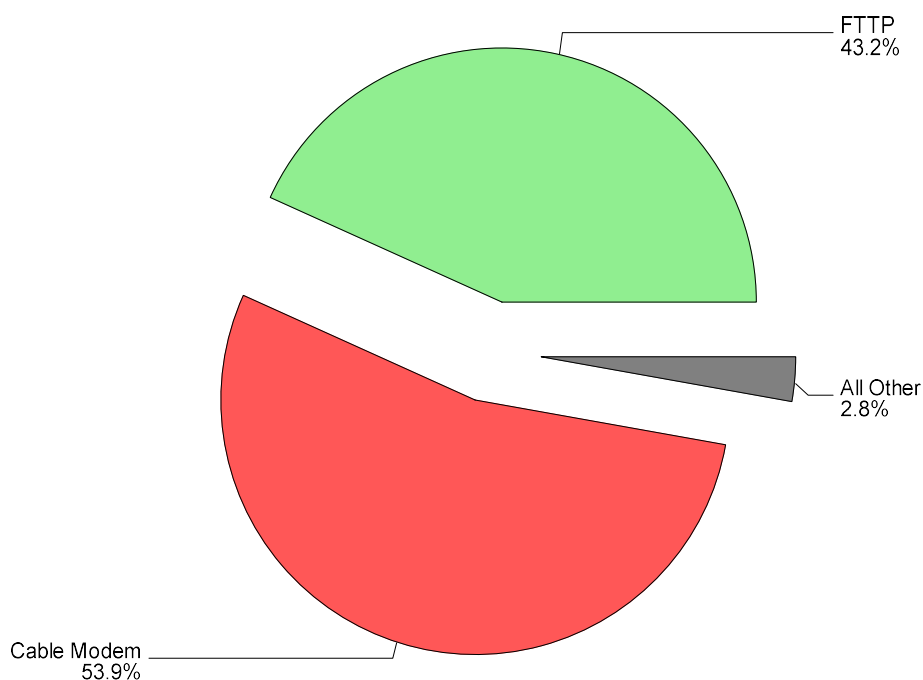
* = Data withheld for confidentiality reasons.

= Rounds to zero.

Note: Some previously-published data may have been revised. Numbers may not sum to totals due to rounding.

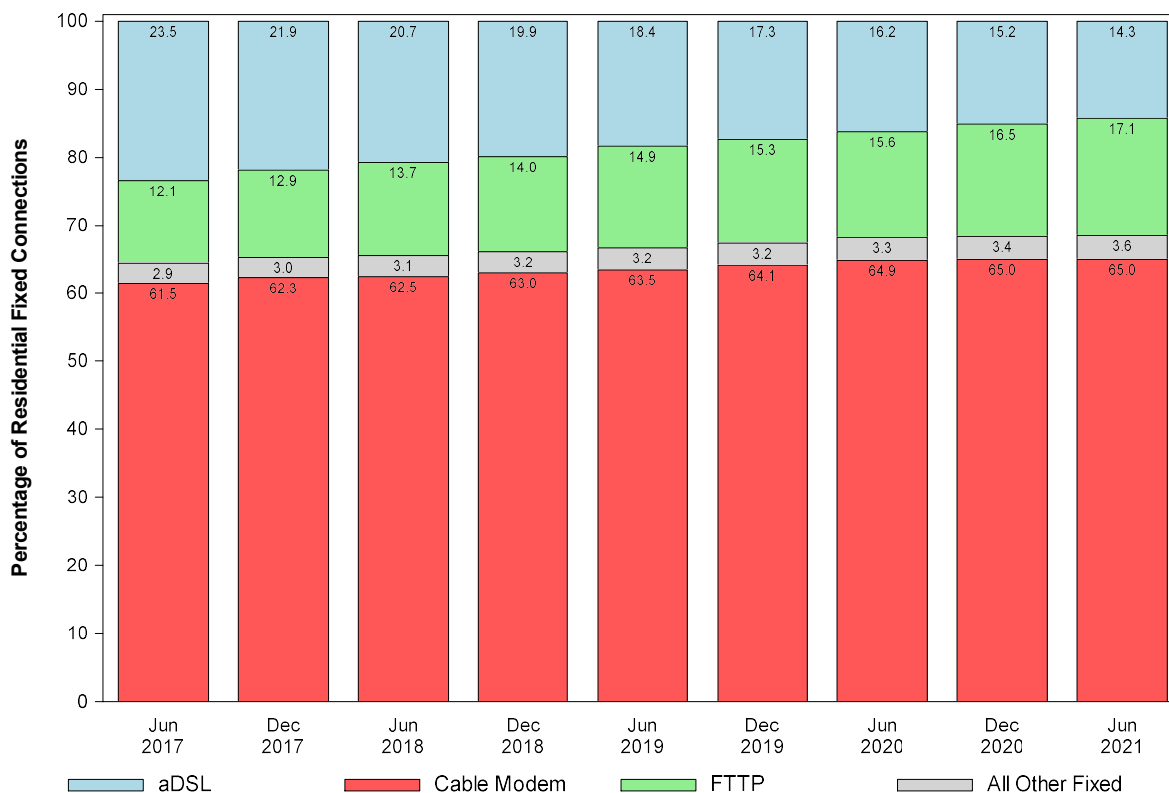
Source: FCC Form 477.

Figure 26
Residential Fixed Connections at Least 100 Mbps Downstream and 20 Mbps Upstream
by Technology as of June 30, 2021



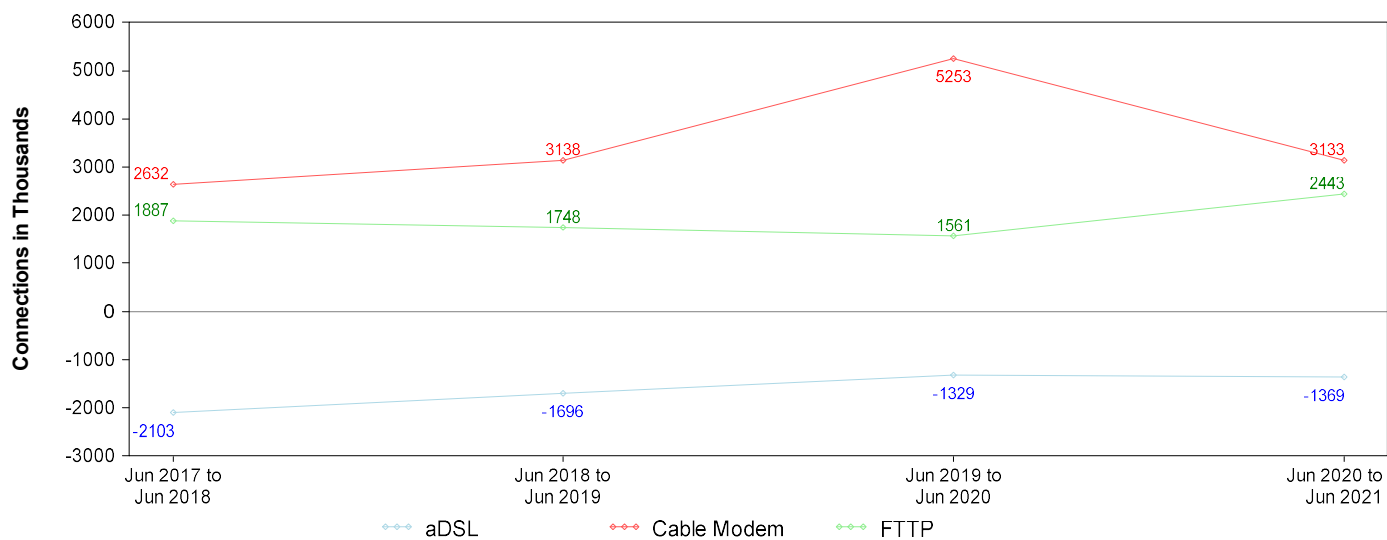
Source: FCC Form 477.

Figure 27
Residential Fixed Connections over 200 kbps in at Least One Direction 2017-2021
 (Shares of selected technologies)



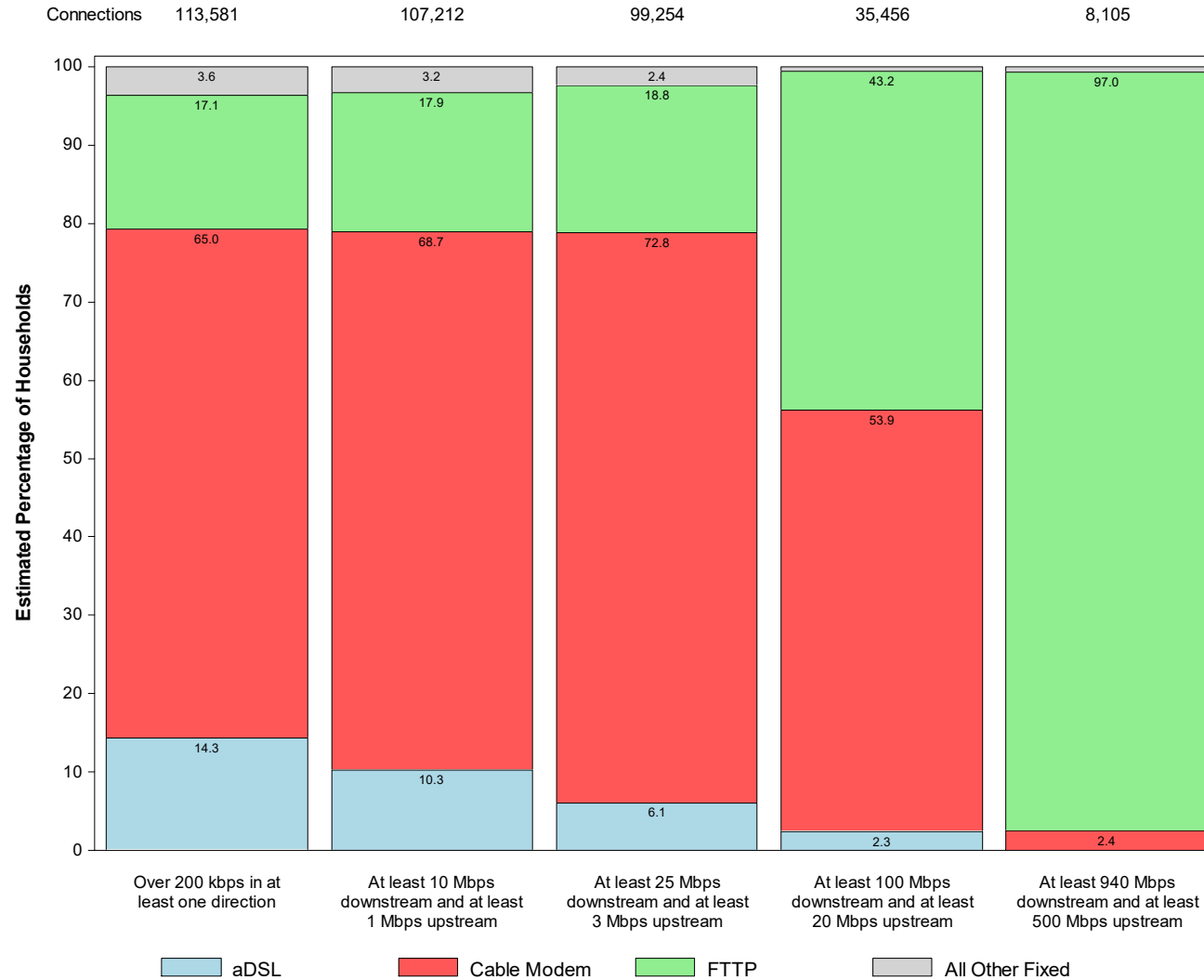
Note: Some previously-published data may have been revised. Numbers may not sum to totals due to rounding.
 Source: FCC Form 477.

Figure 28
Residential Fixed Connections over 200 kbps in at Least One Direction 2017-2021
 (Net adds for selected technologies)



Source: FCC Form 477.

Figure 29
Residential Fixed Connections by Technology as of June 30, 2021
(Shares of selected technologies for selected speeds, connections in thousands)



Note: Numbers may not sum to totals due to rounding.
Source: FCC Form 477.

Figure 30
Fixed Connections by Downstream Speed Tier and Technology as of June 30, 2021
(in thousands)

Technology	Downstream Speed						Total
	Less than 4 Mbps	At least 4 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 and less than 940 Mbps	At least 940 Mbps	
aDSL	2,246	2,980	5,886	5,894	1,079	#	18,085
sDSL	*	2	*	*	*	*	18
Other Wireline ¹	164	31	31	42	223	27	517
Cable Modem	171	116	1,376	11,277	60,721	5,670	79,330
FTTP	98	199	610	3,458	8,442	8,314	21,120
Satellite	*	36	*	*	*	0	1,910
Fixed Wireless	213	372	746	919	145	51	2,445
Total	3,059	3,735	9,043	22,842	70,687	14,061	123,425

Percentages							
aDSL	1.8	2.4	4.8	4.8	0.9	0.0	14.7
sDSL	*	0.0	*	*	*	*	0.0
Other Wireline ¹	0.1	0.0	0.0	0.0	0.2	0.0	0.4
Cable Modem	0.1	0.1	1.1	9.1	49.2	4.6	64.3
FTTP	0.1	0.2	0.5	2.8	6.8	6.7	17.1
Satellite	*	0.0	*	*	*	0.0	1.5
Fixed Wireless	0.2	0.3	0.6	0.7	0.1	0.0	2.0
Total	2.5	3.0	7.3	18.5	57.3	11.4	100.0

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

= Rounds to Zero.

* = Data withheld for confidentiality reasons.

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

Source: FCC Form 477.

Figure 31
Residential Fixed Connections by Downstream Speed Tier and Technology as of June 30, 2021
(in thousands)

Technology	Downstream Speed						Total
	Less than 4 Mbps	At least 4 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 and less than 940 Mbps	At least 940 Mbps	
aDSL	1,882	2,611	5,249	5,519	1,017	#	16,278
sDSL	*	#	*	*	*	*	4
Other Wireline ¹	1	1	3	6	29	23	63
Cable Modem	150	75	1,193	9,643	57,305	5,479	73,844
FTTP	81	179	500	2,984	7,660	8,009	19,414
Satellite	*	*	*	*	*	0	1,728
Fixed Wireless	190	347	690	852	128	43	2,251
Total	2,324	3,247	8,024	20,218	66,215	13,554	113,581

Percentages							
aDSL	1.7	2.3	4.6	4.9	0.9	0.0	14.3
sDSL	*	0.0	*	*	*	*	0.0
Other Wireline ¹	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cable Modem	0.1	0.1	1.1	8.5	50.5	4.8	65.0
FTTP	0.1	0.2	0.4	2.6	6.7	7.1	17.1
Satellite	*	*	*	*	*	0.0	1.5
Fixed Wireless	0.2	0.3	0.6	0.8	0.1	0.0	2.0
Total	2.0	2.9	7.1	17.8	58.3	11.9	100.0

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

= Rounds to Zero.

* = Data withheld for confidentiality reasons.

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

Source: FCC Form 477.

Figure 32
Nationwide Number of Providers of Connections over 200 kbps in at Least One Direction
by Technology 2017-2021

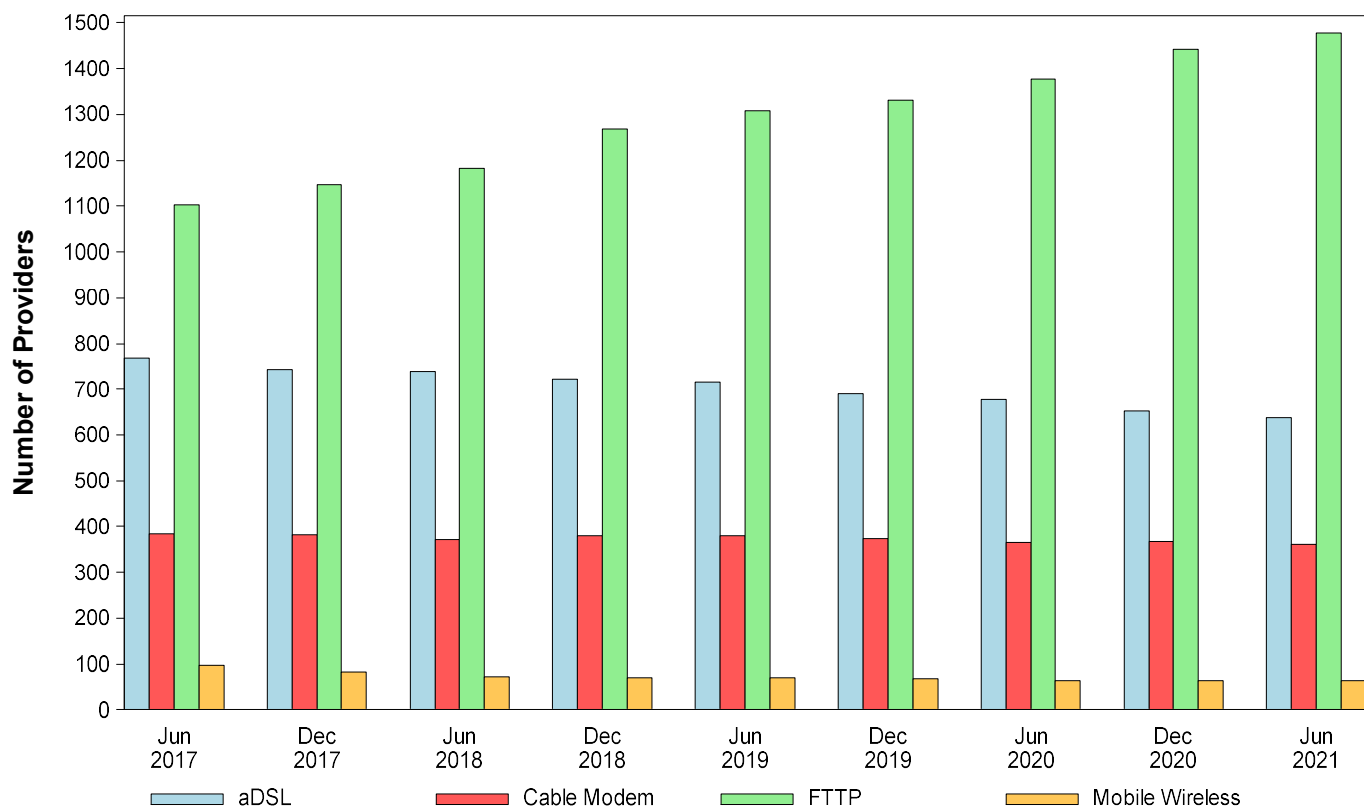
Technology	2017		2018		2019		2020		2021
	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun
aDSL	768	743	738	721	715	691	677	653	638
sDSL	161	150	136	127	123	121	118	106	102
Other Wireline ¹	243	235	249	243	222	211	215	209	203
Cable Modem	384	383	372	381	381	373	365	368	362
FTTP	1,103	1,147	1,183	1,269	1,309	1,330	1,377	1,441	1,477
Satellite	5	6	6	6	6	5	5	6	6
Fixed Wireless	1,095	1,160	1,188	1,239	1,248	1,280	1,312	1,396	1,383
Mobile Wireless	98	83	73	71	70	67	64	64	63
Total	2,030	2,090	2,129	2,215	2,223	2,247	2,279	2,381	2,392

¹ Power Line and Other are summarized with Other Wireline for confidentiality reasons.

Note: Multiple FCC Form 477 filers within a holding company structure count as one provider. Some previously-published data may have been revised.

Source: FCC Form 477.

Figure 33
Nationwide Number of Providers of Connections over 200 kbps in at Least One Direction
Selected Technologies 2017-2021



Source: FCC Form 477.

SECTION 3
SUMMARY STATISTICS: THE STATES

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Figure 34
Residential Fixed Connections and Households by State as of June 30, 2021
(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 20 Mbps Up		At least 940 Mbps Down and 500 Mbps Up	
		Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio
Alabama	1,903	1,577	0.83	1,429	0.75	1,267	0.67	433	0.23	112	0.06
Alaska	261	232	0.89	213	0.82	158	0.61	*	*	*	*
American Samoa	10	*	*	*	*	*	*	0	0.00	0	0.00
Arizona	2,684	2,465	0.92	2,323	0.87	2,113	0.79	475	0.18	*	*
Arkansas	1,158	925	0.80	806	0.70	683	0.59	254	0.22	53	0.05
California	13,218	12,483	0.94	11,974	0.91	11,204	0.85	3,251	0.25	550	0.04
Colorado	2,228	2,150	0.97	2,048	0.92	1,893	0.85	414	0.19	118	0.05
Connecticut	1,397	1,332	0.95	1,279	0.92	1,141	0.82	377	0.27	28	0.02
Delaware	381	391	1.03	383	1.01	381	1.00	129	0.34	*	*
District of Columbia	310	283	0.91	276	0.89	274	0.88	118	0.38	*	*
Florida	8,157	8,133	1.00	7,809	0.96	7,445	0.91	2,756	0.34	390	0.05
Georgia	3,885	3,522	0.91	3,308	0.85	3,046	0.78	1,322	0.34	350	0.09
Guam	42	*	*	*	*	*	*	0	0.00	0	0.00
Hawaii	478	494	1.03	481	1.01	*	*	*	*	*	*
Idaho	657	597	0.91	529	0.80	411	0.62	176	0.27	23	0.04
Illinois	4,930	4,238	0.86	4,015	0.81	3,690	0.75	1,386	0.28	129	0.03
Indiana	2,623	2,245	0.86	2,064	0.79	1,875	0.71	718	0.27	125	0.05
Iowa	1,276	1,075	0.84	966	0.76	839	0.66	317	0.25	32	0.03
Kansas	1,140	988	0.87	914	0.80	812	0.71	301	0.26	111	0.10
Kentucky	1,749	1,506	0.86	1,375	0.79	1,225	0.70	439	0.25	71	0.04
Louisiana	1,749	1,453	0.83	1,337	0.76	1,185	0.68	381	0.22	75	0.04
Maine	571	584	1.02	532	0.93	452	0.79	54	0.10	1	0.00
Maryland	2,294	2,166	0.94	2,117	0.92	2,083	0.91	875	0.38	*	*
Massachusetts	2,714	2,556	0.94	2,498	0.92	2,476	0.91	731	0.27	*	*
Michigan	3,977	3,507	0.88	3,308	0.83	3,072	0.77	858	0.22	72	0.02
Minnesota	2,229	1,999	0.90	1,855	0.83	1,673	0.75	378	0.17	54	0.02
Mississippi	1,109	841	0.76	738	0.67	593	0.53	224	0.20	76	0.07
Missouri	2,434	2,073	0.85	1,852	0.76	1,626	0.67	669	0.27	183	0.08
Montana	436	394	0.90	349	0.80	295	0.68	50	0.11	7	0.02
Nebraska	767	666	0.87	624	0.81	561	0.73	177	0.23	30	0.04

Figure 34 - Continued
Residential Fixed Connections and Households by State as of June 30, 2021
(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 20 Mbps Up		At least 940 Mbps Down and 500 Mbps Up	
		Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio	Connections	Subscribership Ratio
Nevada	1,142	1,084	0.95	1,032	0.90	969	0.85	238	0.21	36	0.03
New Hampshire	541	569	1.05	544	1.01	513	0.95	128	0.24	5	0.01
New Jersey	3,397	3,214	0.95	3,161	0.93	3,123	0.92	1,843	0.54	*	*
New Mexico	798	697	0.87	609	0.76	514	0.64	80	0.10	7	0.01
New York	7,530	6,766	0.90	6,649	0.88	6,380	0.85	3,662	0.49	930	0.12
North Carolina	4,035	3,844	0.95	3,525	0.87	3,310	0.82	1,186	0.29	285	0.07
North Dakota	317	281	0.89	273	0.86	261	0.83	127	0.40	5	0.01
Northern Mariana Isl	16	*	*	*	*	*	*	0	0.00	0	0.00
Ohio	4,754	4,208	0.89	3,941	0.83	3,543	0.75	898	0.19	86	0.02
Oklahoma	1,504	1,201	0.80	1,088	0.72	955	0.63	323	0.21	84	0.06
Oregon	1,658	1,539	0.93	1,436	0.87	1,329	0.80	287	0.17	63	0.04
Pennsylvania	5,148	4,622	0.90	4,347	0.84	4,227	0.82	1,372	0.27	*	*
Puerto Rico	1,197	692	0.58	612	0.51	385	0.32	128	0.11	6	0.00
Rhode Island	427	401	0.94	399	0.93	396	0.93	200	0.47	*	*
South Carolina	1,976	1,851	0.94	1,747	0.88	1,592	0.81	601	0.30	79	0.04
South Dakota	346	306	0.88	298	0.86	282	0.81	96	0.28	1	0.00
Tennessee	2,665	2,319	0.87	2,189	0.82	2,030	0.76	891	0.33	235	0.09
Texas	10,239	9,179	0.90	8,773	0.86	8,031	0.78	3,490	0.34	967	0.09
Utah	1,034	975	0.94	928	0.90	850	0.82	248	0.24	73	0.07
Vermont	263	268	1.02	235	0.89	196	0.75	38	0.14	13	0.05
Virgin Islands	43	*	*	*	*	*	*	*	*	*	*
Virginia	3,249	2,908	0.90	2,746	0.85	2,672	0.82	1,070	0.33	*	*
Washington	2,932	2,802	0.96	2,614	0.89	2,436	0.83	509	0.17	126	0.04
West Virginia	711	562	0.79	462	0.65	392	0.55	130	0.18	2	0.00
Wisconsin	2,402	2,123	0.88	1,941	0.81	1,710	0.71	359	0.15	48	0.02
Wyoming	231	213	0.92	194	0.84	174	0.76	22	0.10	2	0.01
Total	125,319	113,581	0.91	107,212	0.86	99,254	0.79	35,456	0.28	8,105	0.06

= Rounds to Zero; * = Data withheld for confidentiality reasons.

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

Sources: FCC Form 477 (Connections); 2017-2021 ACS 5-year estimates; Census 2010.

Figure 35
Connections by Type of End User by State as of June 30, 2021
 (Connections over 200 kbps in at least one direction, in thousands)

State	Connections		Percentages		Total
	Residential	Business	Residential	Business	
Alabama	5,784	1,434	80.1	19.9	7,218
Alaska	890	143	86.2	13.8	1,033
American Samoa	*	*	*	*	*
Arizona	8,856	1,551	85.1	14.9	10,407
Arkansas	3,379	865	79.6	20.4	4,244
California	51,430	9,805	84.0	16.0	61,234
Colorado	7,181	1,533	82.4	17.6	8,715
Connecticut	4,742	933	83.6	16.4	5,676
Delaware	1,283	261	83.1	16.9	1,543
District of Columbia	1,083	635	63.0	37.0	1,718
Florida	28,632	4,973	85.2	14.8	33,605
Georgia	13,137	3,075	81.0	19.0	16,211
Guam	*	*	*	*	*
Hawaii	1,841	368	83.4	16.6	2,208
Idaho	2,093	412	83.6	16.4	2,506
Illinois	15,994	3,404	82.5	17.5	19,398
Indiana	7,804	1,645	82.6	17.4	9,449
Iowa	3,636	819	81.6	18.4	4,455
Kansas	3,469	730	82.6	17.4	4,199
Kentucky	5,146	955	84.3	15.7	6,101
Louisiana	5,805	1,061	84.5	15.5	6,866
Maine	1,545	466	76.8	23.2	2,011
Maryland	7,986	1,436	84.8	15.2	9,421
Massachusetts	8,823	1,830	82.8	17.2	10,653
Michigan	12,233	2,513	83.0	17.0	14,746
Minnesota	6,791	1,483	82.1	17.9	8,273
Mississippi	3,494	682	83.7	16.3	4,176
Missouri	7,356	1,504	83.0	17.0	8,860
Montana	1,193	343	77.7	22.3	1,537
Nebraska	2,204	603	78.5	21.5	2,807
Nevada	4,042	602	87.0	13.0	4,644
New Hampshire	1,654	428	79.4	20.6	2,082
New Jersey	12,111	2,233	84.4	15.6	14,344
New Mexico	2,571	486	84.1	15.9	3,056
New York	25,886	5,776	81.8	18.2	31,662
North Carolina	12,393	2,931	80.9	19.1	15,324
North Dakota	883	238	78.8	21.2	1,121
Northern Mariana Isl	*	*	*	*	*
Ohio	14,356	3,136	82.1	17.9	17,491
Oklahoma	4,728	877	84.4	15.6	5,605
Oregon	5,179	1,125	82.2	17.8	6,304
Pennsylvania	15,601	3,432	82.0	18.0	19,033
Puerto Rico	3,857	282	93.2	6.8	4,139
Rhode Island	1,391	298	82.4	17.6	1,689
South Carolina	6,016	1,366	81.5	18.5	7,382
South Dakota	967	262	78.7	21.3	1,229
Tennessee	8,161	1,937	80.8	19.2	10,098
Texas	37,685	6,469	85.3	14.7	44,154
Utah	3,599	791	82.0	18.0	4,391
Vermont	715	240	74.9	25.1	955
Virgin Islands	110	13	89.4	10.6	123
Virginia	10,399	2,518	80.5	19.5	12,917
Washington	9,573	1,948	83.1	16.9	11,521
West Virginia	1,959	355	84.6	15.4	2,314
Wisconsin	6,731	1,478	82.0	18.0	8,208
Wyoming	681	181	79.0	21.0	862
Total	415,260	85,000	83.0	17.0	500,261

= Rounds to Zero.

* = Data withheld for confidentiality reasons.

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

Source: FCC Form 477.

Figure 36
Connections by Technology by State as of June 30, 2021
(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	382	*	4	981	270	*	15	5,504	7,218
Alaska	66	#	8	*	14	*	19	763	1,033
American Samoa	0	0	0	*	*	0	*	*	*
Arizona	547	*	11	1,757	201	*	80	7,769	10,407
Arkansas	315	*	2	468	155	*	16	3,238	4,244
California	2,117	4	79	9,459	1,622	129	227	47,598	61,234
Colorado	*	#	17	1,567	226	*	104	6,386	8,715
Connecticut	*	*	2	1,167	51	*	*	4,224	5,676
Delaware	*	*	*	279	*	*	2	*	1,543
District of Columbia	*	*	6	*	*	*	6	1,399	1,718
Florida	1,122	*	19	6,182	1,364	*	42	24,795	33,605
Georgia	768	#	*	2,253	722	*	23	12,368	16,211
Guam	*	0	*	*	*	0	*	*	*
Hawaii	*	*	1	*	70	*	2	1,662	2,208
Idaho	206	#	*	290	66	*	65	1,856	2,506
Illinois	854	1	10	3,194	352	44	127	14,816	19,398
Indiana	470	#	3	1,410	424	47	67	7,027	9,449
Iowa	262	#	*	518	296	*	63	3,285	4,455
Kansas	187	#	*	541	270	*	55	3,126	4,199
Kentucky	334	*	2	915	315	*	27	4,472	6,101
Louisiana	345	*	3	946	208	*	22	5,284	6,866
Maine	105	1	3	490	23	11	9	1,368	2,011
Maryland	*	*	16	1,333	*	16	12	7,083	9,421
Massachusetts	70	#	17	2,105	570	6	23	7,862	10,653
Michigan	635	1	5	2,768	206	85	77	10,968	14,746
Minnesota	427	1	*	1,340	301	*	58	6,112	8,273
Mississippi	309	*	9	402	129	*	18	3,243	4,176
Missouri	525	#	*	1,137	432	*	69	6,619	8,860
Montana	91	*	2	249	45	*	35	1,097	1,537
Nebraska	125	#	2	402	145	9	44	2,080	2,807

Figure 36 - Continued
Connections by Technology by State as of June 30, 2021
 (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	154	#	5	*	108	*	42	3,473	4,644
New Hampshire	54	#	*	515	45	*	4	1,455	2,082
New Jersey	80	*	24	2,239	*	10	6	10,825	14,344
New Mexico	219	#	4	424	53	19	38	2,300	3,056
New York	205	1	36	5,116	1,994	44	24	24,243	31,662
North Carolina	613	#	8	2,777	641	77	33	11,176	15,324
North Dakota	27	*	1	172	110	*	4	804	1,121
Northern Mariana Isl	*	0	0	*	*	0	*	*	*
Ohio	771	*	8	3,156	453	*	85	12,970	17,491
Oklahoma	317	#	2	667	232	50	63	4,275	5,605
Oregon	208	#	14	1,141	241	31	41	4,628	6,304
Pennsylvania	391	#	24	3,407	1,110	40	33	14,027	19,033
Puerto Rico	*	0	2	*	80	*	55	3,389	4,139
Rhode Island	*	*	*	*	*	*	1	*	1,689
South Carolina	339	*	3	1,273	331	*	14	5,385	7,382
South Dakota	34	*	#	200	86	*	12	891	1,229
Tennessee	375	#	4	1,437	617	56	27	7,582	10,098
Texas	1,569	1	*	5,620	2,193	*	355	34,188	44,154
Utah	151	#	7	614	209	7	75	3,328	4,391
Vermont	77	*	3	176	37	*	4	653	955
Virgin Islands	*	0	0	*	*	*	*	87	123
Virginia	206	#	20	1,747	1,071	80	40	9,753	12,917
Washington	389	#	47	2,188	282	46	61	8,507	11,521
West Virginia	*	*	1	394	16	30	9	1,701	2,314
Wisconsin	488	*	3	*	239	*	59	5,912	8,208
Wyoming	42	*	1	130	17	*	39	625	862
Total	18,085	18	517	79,330	21,120	1,910	2,445	376,835	500,261

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

= Rounds to Zero.

* = Data withheld for confidentiality reasons.

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

Source: FCC Form 477.

Figure 37
Percentage of Fixed Connections by Downstream Speed by State as of June 30, 2021

State	% over 200 kbps Downstream	% at least 10 Mbps Downstream	Over 200 kbps Upstream and		
			% at least 25 Mbps Downstream	% at least 100 Mbps Downstream	% at least 940 Mbps Downstream
Alabama	99.8	91.8	81.5	62.6	8.8
Alaska	99.8	89.5	67.9	*	*
American Samoa	*	*	*	*	*
Arizona	99.8	94.6	86.3	60.2	11.6
Arkansas	99.8	89.4	74.5	44.3	9.5
California	99.8	95.1	88.6	70.5	10.0
Colorado	99.9	95.7	88.2	66.4	14.9
Connecticut	99.7	95.2	86.2	74.2	7.9
Delaware	99.9	97.4	96.7	81.6	21.8
District of Columbia	100.0	95.6	94.4	78.8	22.7
Florida	99.8	96.7	91.6	71.4	7.9
Georgia	99.6	93.7	86.4	65.5	13.8
Guam	*	*	*	*	*
Hawaii	100.0	96.1	*	*	*
Idaho	99.9	90.0	70.2	49.9	6.7
Illinois	99.8	94.4	86.7	64.2	8.4
Indiana	99.6	92.5	83.3	60.1	8.6
Iowa	99.4	91.2	79.1	54.1	9.7
Kansas	99.8	93.1	81.5	55.6	14.3
Kentucky	99.6	91.3	81.9	62.6	5.8
Louisiana	99.8	92.4	82.0	56.3	9.9
Maine	99.2	89.5	78.2	66.1	2.0
Maryland	99.9	96.9	95.2	79.2	24.3
Massachusetts	100.0	97.1	96.0	84.8	17.9
Michigan	99.5	94.0	87.2	66.5	5.4
Minnesota	99.8	93.8	84.5	62.1	7.9
Mississippi	99.7	87.9	71.5	44.2	12.1
Missouri	99.6	91.5	79.3	61.6	10.9
Montana	99.9	90.7	76.0	55.9	2.3
Nebraska	99.6	94.0	84.4	61.3	8.2

Figure 37 - Continued
Percentage of Fixed Connections by Downstream Speed by State as of June 30, 2021

State	% over 200 kbps Downstream	% at least 10 Mbps Downstream	Over 200 kbps Upstream and		
			% at least 25 Mbps Downstream	% at least 100 Mbps Downstream	% at least 940 Mbps Downstream
Nevada	100.0	96.2	90.2	66.6	12.4
New Hampshire	99.5	93.9	89.6	79.6	9.9
New Jersey	99.8	97.8	96.3	85.5	22.4
New Mexico	99.9	89.2	75.3	48.2	5.8
New York	99.8	97.5	93.5	83.9	13.9
North Carolina	99.4	93.4	86.1	72.8	8.1
North Dakota	99.9	97.2	91.8	73.3	6.4
Northern Mariana Isl	*	*	*	*	*
Ohio	99.8	94.0	84.0	67.5	3.7
Oklahoma	99.6	90.7	78.7	54.2	12.6
Oregon	99.9	94.1	86.4	66.9	11.1
Pennsylvania	99.8	94.3	91.2	73.1	15.7
Puerto Rico	100.0	87.1	57.9	27.1	1.1
Rhode Island	99.6	98.6	97.7	81.8	26.6
South Carolina	99.8	94.6	86.0	70.7	5.8
South Dakota	99.8	97.6	92.3	64.6	5.6
Tennessee	99.7	94.4	87.5	68.0	13.0
Texas	99.9	95.6	87.2	67.8	14.5
Utah	100.0	95.4	86.9	65.5	15.4
Vermont	99.4	85.5	74.7	60.8	9.6
Virgin Islands	*	*	*	*	*
Virginia	99.5	94.5	90.8	73.8	21.9
Washington	99.8	94.2	87.0	69.7	14.3
West Virginia	97.8	81.6	69.7	53.1	6.6
Wisconsin	99.2	92.8	80.9	64.3	2.9
Wyoming	99.9	92.3	82.6	55.1	1.5
Total	99.7	94.5	87.2	68.7	11.4

Source: FCC Form 477.

Figure 38
Providers of Connections by Technology by State as of June 30, 2021
(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	*	14	19	48	*	31	6	87
Alaska	16	4	8	*	19	*	18	10	40
American Samoa	0	0	0	*	*	0	*	*	*
Arizona	21	*	18	16	51	*	56	6	104
Arkansas	23	*	11	16	56	*	35	5	93
California	31	14	43	34	93	4	135	5	223
Colorado	*	7	19	17	81	*	75	9	144
Connecticut	*	*	10	10	24	*	*	4	37
Delaware	*	*	*	5	*	*	5	*	32
District of Columbia	*	*	12	*	*	*	10	4	40
Florida	17	*	26	19	80	*	46	6	126
Georgia	26	4	*	27	92	*	32	5	123
Guam	*	0	*	*	*	0	*	*	*
Hawaii	*	*	9	*	12	*	9	5	25
Idaho	24	4	*	18	42	*	42	8	75
Illinois	49	7	33	22	103	4	98	6	184
Indiana	36	4	24	15	84	4	74	4	135
Iowa	67	12	*	41	185	*	92	5	238
Kansas	28	6	*	24	76	*	79	9	136
Kentucky	17	*	13	29	61	*	33	7	109
Louisiana	13	*	16	16	40	*	28	6	77
Maine	12	6	10	8	22	4	19	4	46
Maryland	*	*	16	17	*	4	28	5	81
Massachusetts	8	4	16	13	39	4	21	4	64
Michigan	28	6	24	27	83	4	68	7	141
Minnesota	37	7	*	22	93	*	66	5	138
Mississippi	14	*	11	12	42	*	18	5	72
Missouri	31	5	*	19	84	*	86	7	153
Montana	18	*	12	8	40	*	40	6	70
Nebraska	26	5	11	21	62	4	55	6	102

Figure 38 - Continued
Providers of Connections by Technology by State as of June 30, 2021
(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	5	14	*	46	*	36	5	82
New Hampshire	9	4	*	6	25	*	11	4	39
New Jersey	10	*	22	10	*	4	12	4	65
New Mexico	19	4	12	11	40	4	44	6	75
New York	29	4	27	22	83	4	32	4	119
North Carolina	21	4	20	26	64	4	36	6	103
North Dakota	18	*	9	9	36	*	14	6	53
Northern Mariana Isl	*	0	0	*	*	0	*	*	*
Ohio	35	*	24	34	92	*	76	4	169
Oklahoma	33	4	13	13	62	4	56	9	114
Oregon	33	5	21	17	68	4	55	5	114
Pennsylvania	22	5	23	28	71	4	44	7	135
Puerto Rico	*	0	4	*	16	*	30	4	39
Rhode Island	*	*	*	*	*	*	5	*	27
South Carolina	18	*	14	16	44	*	19	6	67
South Dakota	18	*	11	9	47	*	30	6	81
Tennessee	20	4	20	20	80	4	39	6	122
Texas	64	7	*	31	145	*	181	10	283
Utah	21	4	17	12	40	4	40	8	74
Vermont	8	*	8	4	23	*	12	5	37
Virgin Islands	*	0	0	*	*	*	*	4	6
Virginia	20	5	22	19	84	4	47	6	123
Washington	23	5	30	27	80	4	59	6	123
West Virginia	*	*	9	17	33	4	23	6	70
Wisconsin	39	*	21	*	81	*	58	6	122
Wyoming	14	*	8	7	27	*	24	8	52
Total	638	102	203	362	1,477	6	1,383	63	2,392

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

= Rounds to Zero.

* = Data withheld for confidentiality reasons.

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

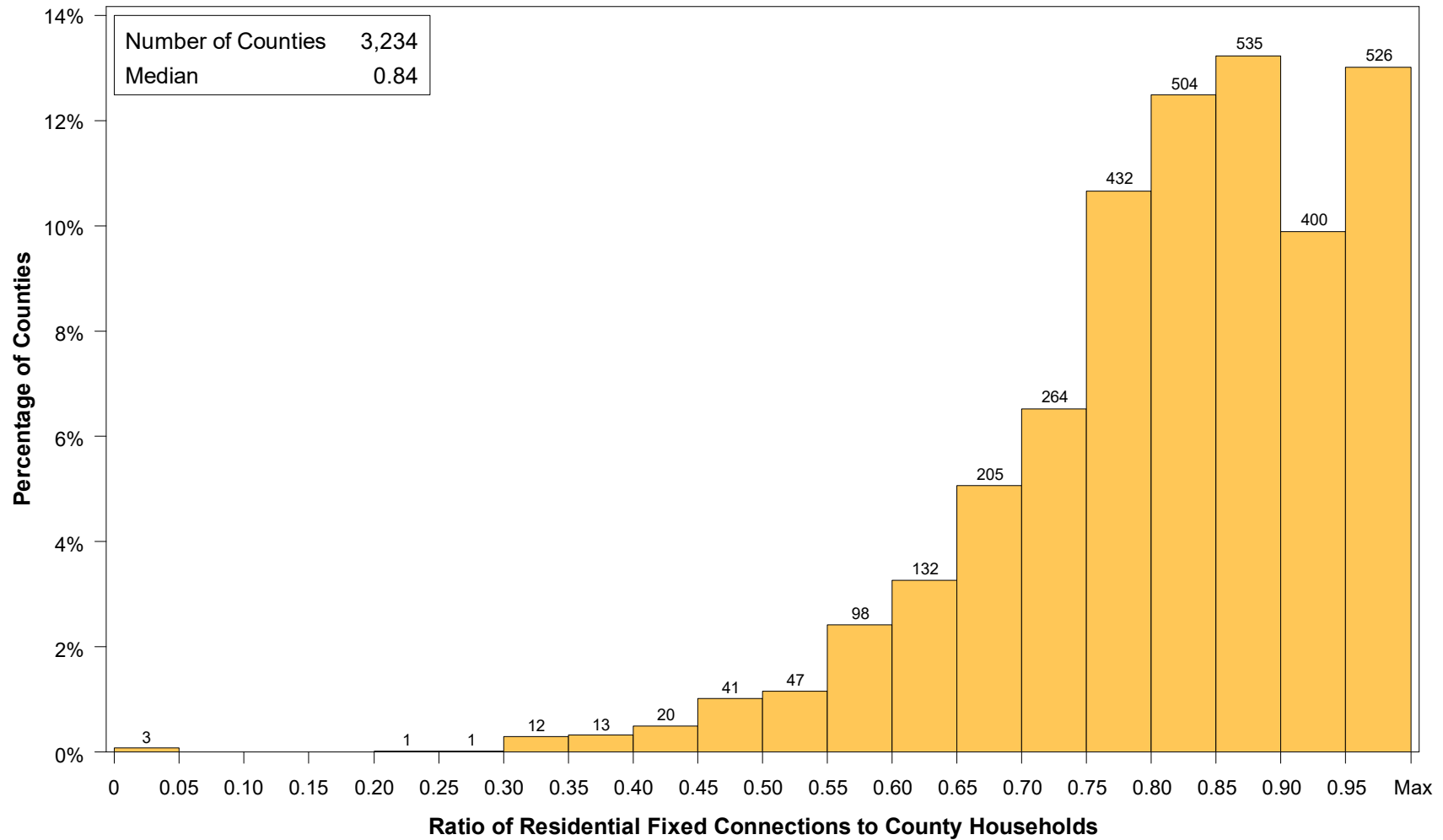
Source: FCC Form 477.

SECTION 4
SUMMARY STATISTICS: COUNTIES AND CENSUS TRACTS

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Figure 39
Distribution of Counties by Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households as of June 30, 2021



Note: Ratios over 1 were set to 1. See Technical Notes at the end of the report.
 Sources: FCC Form 477; 2017-2021 ACS 5-year estimates; and Census 2010.

Figure 40
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, 2021

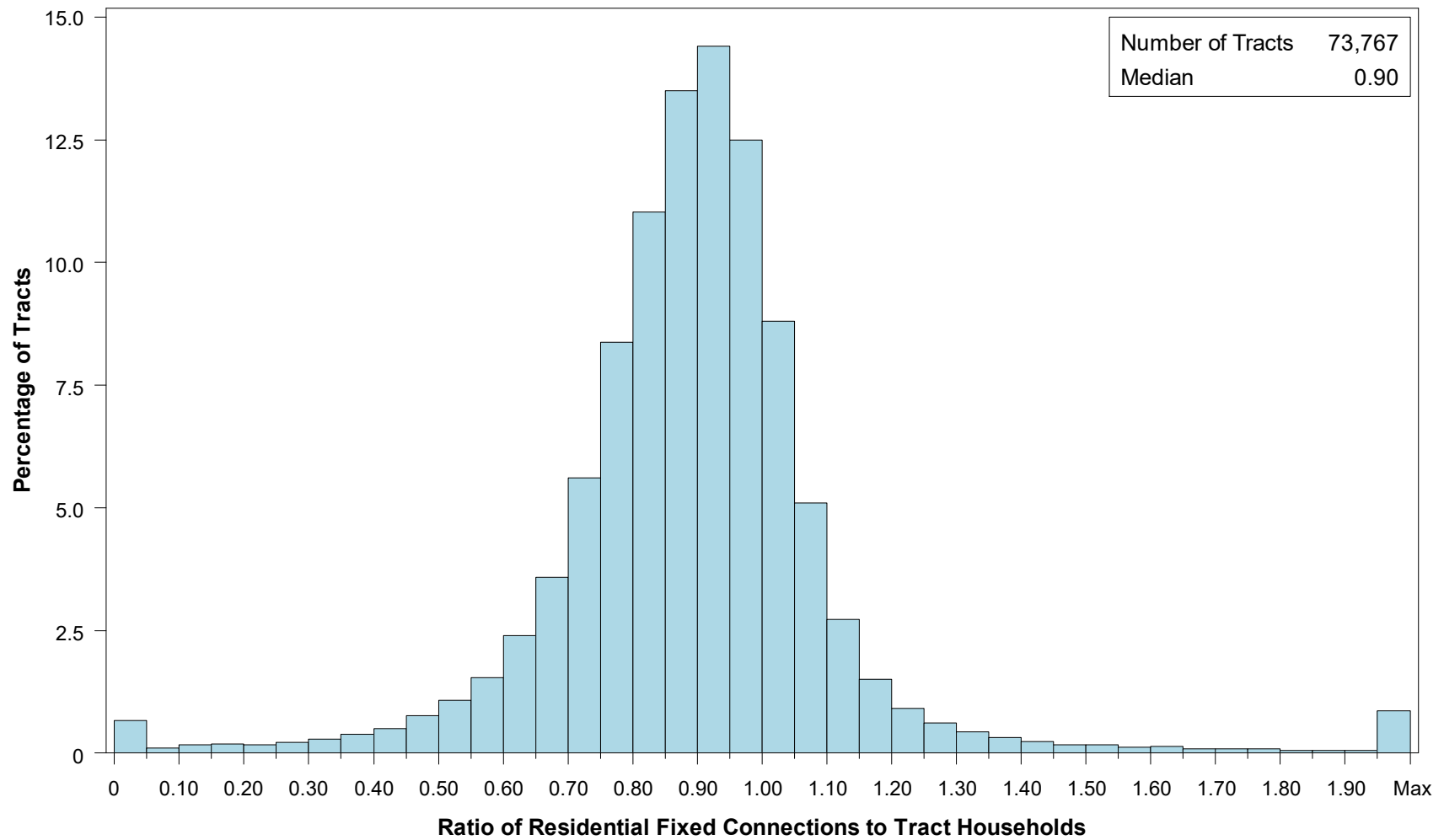
<i>Technology</i>	<i>Ratio of Residential Fixed Connections to County Households</i>										<i>100% or more</i>
	<i>Zero</i>	<i>Greater than 0 and no more than 5%</i>	<i>Greater than 5 and no more than 10%</i>	<i>Greater than 10 and no more than 20%</i>	<i>Greater than 20 and no more than 30%</i>	<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	2.0	10.5	13.0	29.9	21.0	12.2	5.8	3.1	2.0	0.4	0.3
sDSL	94.7	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Wireline ¹	94.4	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	11.1	5.4	5.0	10.6	12.4	10.9	11.8	11.4	16.9	3.5	1.0
FTTP	8.1	38.4	13.4	15.0	7.8	5.1	3.8	2.6	3.6	1.9	0.2
Satellite	0.4	65.0	21.4	11.0	1.6	0.4	0.1	0.1	0.0	0.0	0.0
Fixed Wireless	2.8	63.8	15.8	10.8	3.9	1.8	0.5	0.2	0.2	0.0	0.1
Total	0.1	0.0	0.0	0.0	0.1	0.8	1.9	4.5	31.9	51.6	9.2

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

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

Sources: FCC Form 477; 2017-2021 ACS 5-year estimates; and Census 2010.

Figure 41
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, 2021



Note: Ratios over 2 were set to 2. See Technical Notes at the end of the report.
 Sources: FCC Form 477; 2017-2021 ACS 5-year estimates; and Census 2010.

Figure 42
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, 2021

<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	5.6	29.5	16.3	24.6	13.7	5.1	2.4	1.3	1.0	0.2	0.2
sDSL	99.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Wireline ¹	99.1	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	4.2	2.6	1.4	3.1	4.1	6.9	11.6	16.1	32.8	13.6	3.4
FTTP	26.4	24.3	8.5	11.9	8.9	6.9	5.4	3.5	3.2	0.8	0.3
Satellite	29.4	60.6	5.3	3.5	0.8	0.2	0.1	0.0	0.0	0.0	0.0
Fixed Wireless	13.7	76.9	3.8	3.1	1.2	0.6	0.3	0.2	0.1	0.0	0.1
Total	0.6	0.1	0.1	0.4	0.4	0.7	1.3	2.6	20.0	51.5	22.5

¹ Power Line and Other are summarized with Other Wireline. See Technical Notes at the end of the report for a description of FCC Form 477 technology categories and other reporting requirements.
Note: Numbers may not sum to totals due to rounding.
Sources: FCC Form 477; 2017-2021 ACS 5-year estimates; and Census 2010.

Figure 43
Percentage of Developed Census Blocks with Residential Fixed Service by Technology as of June 30, 2021
 (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	24.1	74.0	1.8	0.0	0.0	0.0	0.0	0.0
sDSL	99.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Other Wireline ¹	99.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Cable Modem	32.7	63.0	4.2	0.1	0.0	0.0	0.0	0.0
FTTP	67.7	29.0	3.2	0.1	0.0	0.0	0.0	0.0
Satellite	0.0	0.1	1.0	78.2	20.6	0.0	0.0	0.0
Fixed Wireless	26.7	34.7	20.6	11.3	4.7	1.5	0.4	0.1
aDSL and/or Cable Modem and/or FTTP	9.4	24.2	56.1	9.6	0.6	0.1	0.0	0.0
Any Technology	0.0	0.1	0.0	2.6	9.7	21.1	27.1	39.3

¹ Power Line and Other are summarized with Other Wireline. See Technical Notes at the end of the report for a description of FCC Form 477 technology categories and other reporting requirements.
 Note: Numbers 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 FCC 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 44
Distribution of Counties by Ratio of Residential Fixed Connections to County Households by State as of June 30, 2021
(Connections over 200 kbps in at least one direction)

Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households												
State	Counties	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	0	0	8	33	26	0
Alaska	29	0	0	0	0	1	0	1	2	4	14	7
American Samoa	5	2	0	0	0	0	0	2	0	1	0	0
Arizona	15	0	0	0	0	0	0	0	0	3	11	1
Arkansas	75	0	0	0	0	0	0	2	8	48	16	1
California	58	0	0	0	0	0	0	1	0	2	48	7
Colorado	64	0	0	0	0	0	1	2	1	14	28	18
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	1	1	14	28	23
Georgia	159	0	0	0	0	0	1	4	11	66	63	14
Guam	1	0	0	0	0	0	0	0	0	0	1	0
Hawaii	5	0	0	0	0	0	0	0	0	0	2	3
Idaho	44	0	0	0	0	0	0	1	2	13	19	9
Illinois	102	0	0	0	0	0	0	2	6	52	41	1
Indiana	92	0	0	0	0	0	0	0	1	45	46	0
Iowa	99	0	0	0	0	0	0	0	0	38	60	1
Kansas	105	0	0	0	0	0	0	0	2	47	53	3
Kentucky	120	0	0	0	0	0	0	0	7	44	68	1
Louisiana	64	0	0	0	0	0	2	3	6	32	21	0
Maine	16	0	0	0	0	0	0	0	0	0	7	9
Maryland	24	0	0	0	0	0	0	0	0	3	20	1
Massachusetts	14	0	0	0	0	0	0	0	0	0	11	3
Michigan	83	0	0	0	0	0	0	1	0	18	52	12
Minnesota	87	0	0	0	0	0	0	1	0	10	68	8
Mississippi	82	0	0	0	0	0	1	4	22	44	10	1
Missouri	115	0	0	0	0	0	0	4	5	47	54	5
Montana	56	0	0	0	0	0	0	0	0	14	34	8
Nebraska	93	0	0	0	0	0	0	1	2	41	47	2

Figure 44 - Continued
Distribution of Counties by Ratio of Residential Fixed Connections to County Households by State as of June 30, 2021
(Connections over 200 kbps in at least one direction)

Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to County Households												
State	Counties	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	0	0	2	1	3	10	1
New Hampshire	10	0	0	0	0	0	0	0	0	0	5	5
New Jersey	21	0	0	0	0	0	0	0	0	0	18	3
New Mexico	33	0	0	0	0	0	0	1	0	10	16	6
New York	62	0	0	0	0	0	0	1	0	4	47	10
North Carolina	100	0	0	0	0	0	0	1	1	19	56	23
North Dakota	53	0	0	0	0	0	0	0	0	5	41	7
Northern Mariana Isl	4	1	0	0	0	0	1	0	2	0	0	0
Ohio	88	0	0	0	0	0	0	1	1	22	63	1
Oklahoma	77	0	0	0	0	0	0	4	9	46	18	0
Oregon	36	0	0	0	0	0	0	0	1	9	22	4
Pennsylvania	67	0	0	0	0	0	0	0	0	7	52	8
Puerto Rico	78	0	0	0	0	1	15	17	19	24	2	0
Rhode Island	5	0	0	0	0	0	0	0	0	0	3	2
South Carolina	46	0	0	0	0	0	0	0	2	19	21	4
South Dakota	66	0	0	0	0	0	1	0	0	13	51	1
Tennessee	95	0	0	0	0	0	0	0	1	41	51	2
Texas	254	0	0	0	0	0	1	0	15	96	118	24
Utah	29	0	0	0	0	0	0	0	0	1	15	13
Vermont	14	0	0	0	0	0	0	0	0	0	7	7
Virgin Islands	3	0	0	0	0	0	0	0	0	2	1	0
Virginia	134	0	0	0	0	0	1	4	6	42	72	9
Washington	39	0	0	0	0	0	0	0	1	6	25	7
West Virginia	55	0	0	0	0	0	1	0	1	21	28	4
Wisconsin	72	0	0	0	0	0	0	0	0	8	52	12
Wyoming	23	0	0	0	0	0	0	0	1	2	16	4
Total	3,234	3	0	0	0	2	25	61	145	1033	1669	296

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

Sources: FCC Form 477; 2017-2021 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 45
Distribution of Census Tracts by Ratio of Residential Fixed Connections to Tract Households by State as of June 30, 2021
(Connections over 200 kbps in at least one direction)

Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households												
State	Tracts	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	1,179	0	0	1	0	4	19	45	88	366	507	149
Alaska	167	1	0	0	2	2	4	2	10	31	82	33
American Samoa	18	2	0	0	0	0	3	6	4	1	1	1
Arizona	1,526	9	1	3	6	7	16	16	41	298	696	433
Arkansas	686	1	0	0	0	1	8	38	66	274	240	58
California	8,036	48	12	1	10	12	21	45	76	804	4,759	2,248
Colorado	1,249	9	0	0	2	1	3	8	19	138	687	382
Connecticut	829	3	0	0	1	0	0	1	3	76	452	293
Delaware	215	1	0	0	0	0	1	0	0	30	108	75
District of Columbia	179	0	0	0	2	0	0	0	6	31	101	39
Florida	4,199	30	3	3	3	6	9	20	73	529	1,759	1,764
Georgia	1,964	6	0	2	1	5	13	28	77	458	901	473
Guam	56	8	10	1	4	2	1	5	6	2	6	11
Hawaii	326	9	1	0	2	0	2	2	2	32	137	139
Idaho	298	0	0	0	0	2	2	3	14	68	149	60
Illinois	3,121	4	0	0	4	5	16	42	98	871	1,712	369
Indiana	1,508	5	1	0	4	0	7	18	56	438	780	199
Iowa	825	3	0	0	0	1	1	6	17	310	429	58
Kansas	770	6	0	1	1	4	3	7	25	223	387	113
Kentucky	1,115	5	0	3	1	3	8	22	35	309	578	151
Louisiana	1,136	8	1	1	6	3	13	40	81	366	457	160
Maine	351	0	0	0	0	0	0	0	1	28	175	147
Maryland	1,394	6	1	1	1	2	3	11	15	194	780	380
Massachusetts	1,471	12	1	2	1	0	6	5	11	206	872	355
Michigan	2,767	24	2	1	9	12	23	33	75	552	1,539	497
Minnesota	1,335	4	0	0	0	0	4	4	15	278	820	210
Mississippi	661	4	0	0	1	4	12	37	104	233	211	55
Missouri	1,393	2	0	0	4	5	12	31	62	396	684	197
Montana	271	1	0	0	0	0	1	1	5	64	149	50
Nebraska	532	2	0	1	1	0	0	2	7	148	305	66

Figure 45 - Continued
Distribution of Census Tracts by Ratio of Residential Fixed Connections to Tract Households by State as of June 30, 2021
(Connections over 200 kbps in at least one direction)

Ratio of Residential Fixed Connections over 200 kbps in at Least One Direction to Tract Households												
State	Tracts	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	4	0	1	0	0	0	11	11	95	339	222
New Hampshire	294	2	0	0	0	0	0	0	1	7	142	142
New Jersey	2,004	9	1	0	2	3	6	9	13	249	1,135	577
New Mexico	499	1	0	1	4	2	10	8	18	141	225	89
New York	4,900	70	2	5	21	13	18	22	55	1,057	2,636	1,001
North Carolina	2,183	15	1	0	1	4	9	17	29	361	1,037	709
North Dakota	205	0	0	0	0	0	0	2	1	50	118	34
Northern Mariana Isl	22	2	0	0	0	1	6	4	2	3	3	1
Ohio	2,946	5	0	0	5	4	14	25	59	653	1,783	398
Oklahoma	1,046	0	3	1	3	9	20	48	87	369	395	111
Oregon	827	2	1	0	0	2	0	7	6	102	511	196
Pennsylvania	3,217	18	2	3	4	4	8	14	45	610	1,962	547
Puerto Rico	903	14	8	38	133	123	126	116	82	81	49	133
Rhode Island	241	0	0	1	0	0	0	1	2	23	151	63
South Carolina	1,097	9	0	0	1	6	7	14	51	271	437	301
South Dakota	222	0	0	0	2	0	0	2	4	54	134	26
Tennessee	1,497	12	1	0	1	2	9	26	39	432	751	224
Texas	5,253	31	3	1	7	11	24	68	207	1,350	2,359	1,192
Utah	588	1	2	0	1	1	1	5	6	74	301	196
Vermont	184	1	0	0	0	0	0	1	2	4	99	77
Virgin Islands	29	0	0	0	1	0	3	1	4	12	5	3
Virginia	1,895	17	3	1	2	6	18	34	56	358	992	408
Washington	1,446	2	0	1	1	2	2	4	8	114	858	454
West Virginia	484	0	1	3	4	10	5	13	31	163	182	72
Wisconsin	1,393	3	1	0	1	1	2	5	10	339	825	206
Wyoming	132	1	0	1	0	0	0	1	2	18	80	29
Total	73,767	432	62	78	260	285	499	936	1,923	14,744	37,972	16,576

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

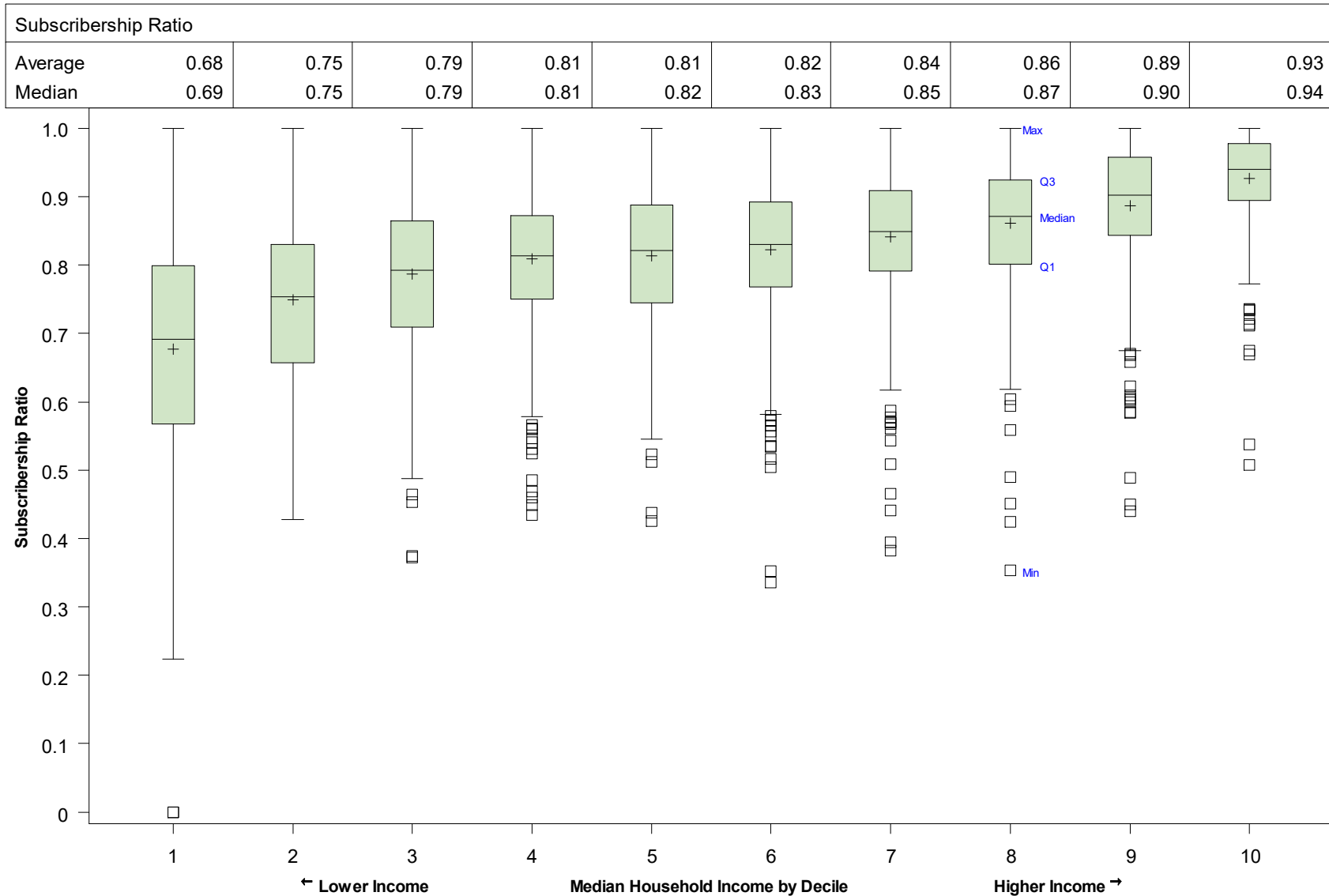
Sources: FCC Form 477; 2017-2021 ACS 5-year estimates (Households for U.S. and District of Columbia); Census 2010 (Households for Puerto Rico, American Samoa, Guam, Northern Mariana Islands and U.S. Virgin Islands).

SECTION 5
CORRELATED RESULTS: DEMOGRAPHIC MEASURES

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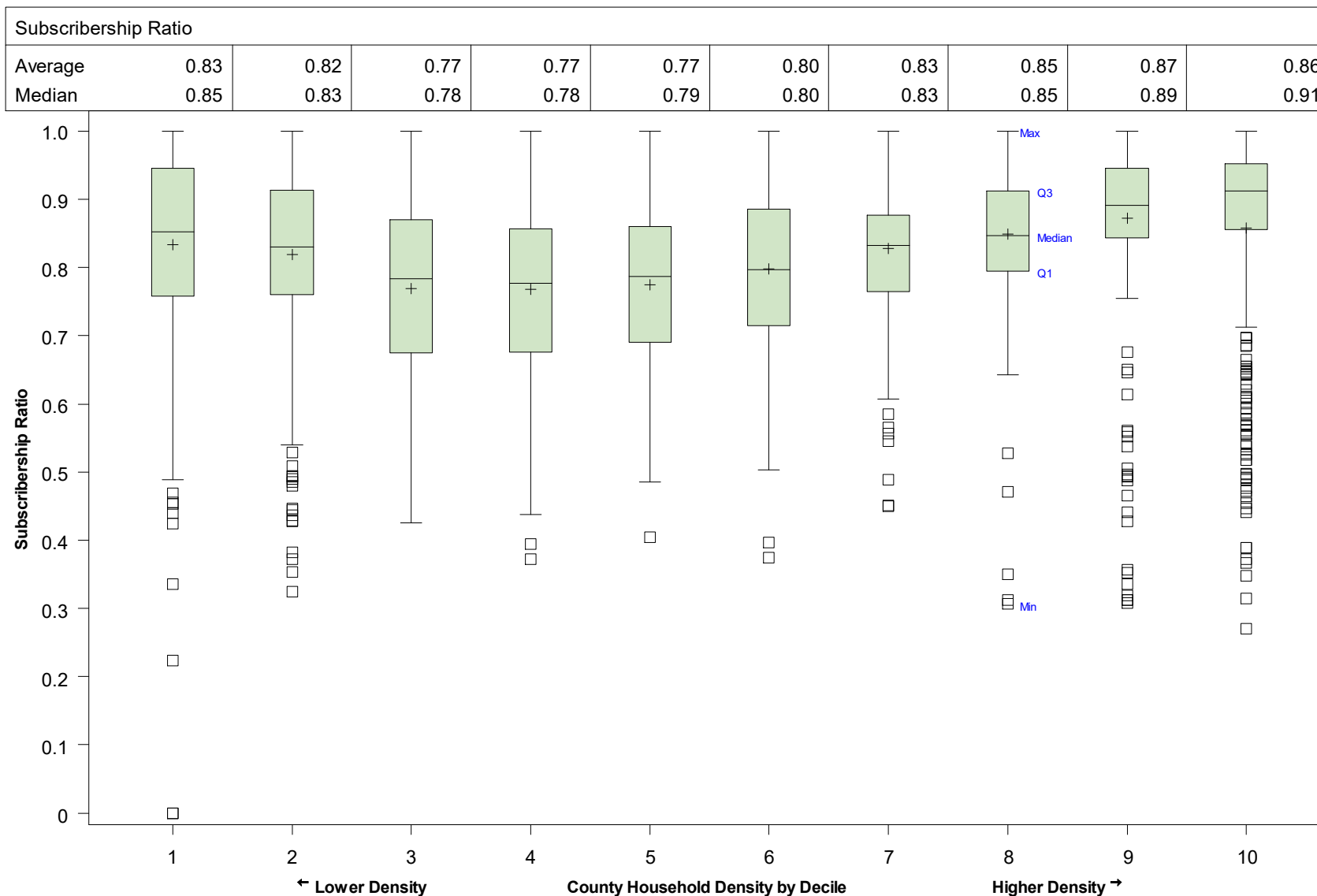
Figure 46
Subscribership Ratio Distributions by Income Deciles as of June 30, 2021



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; \perp is the minimum observation above $Q1-1.5(Q3-Q1)$; T is the maximum observation below $Q3+1.5(Q3-Q1)$; and \square 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; 2017-2021 ACS 5-year Estimates; Census 2010.

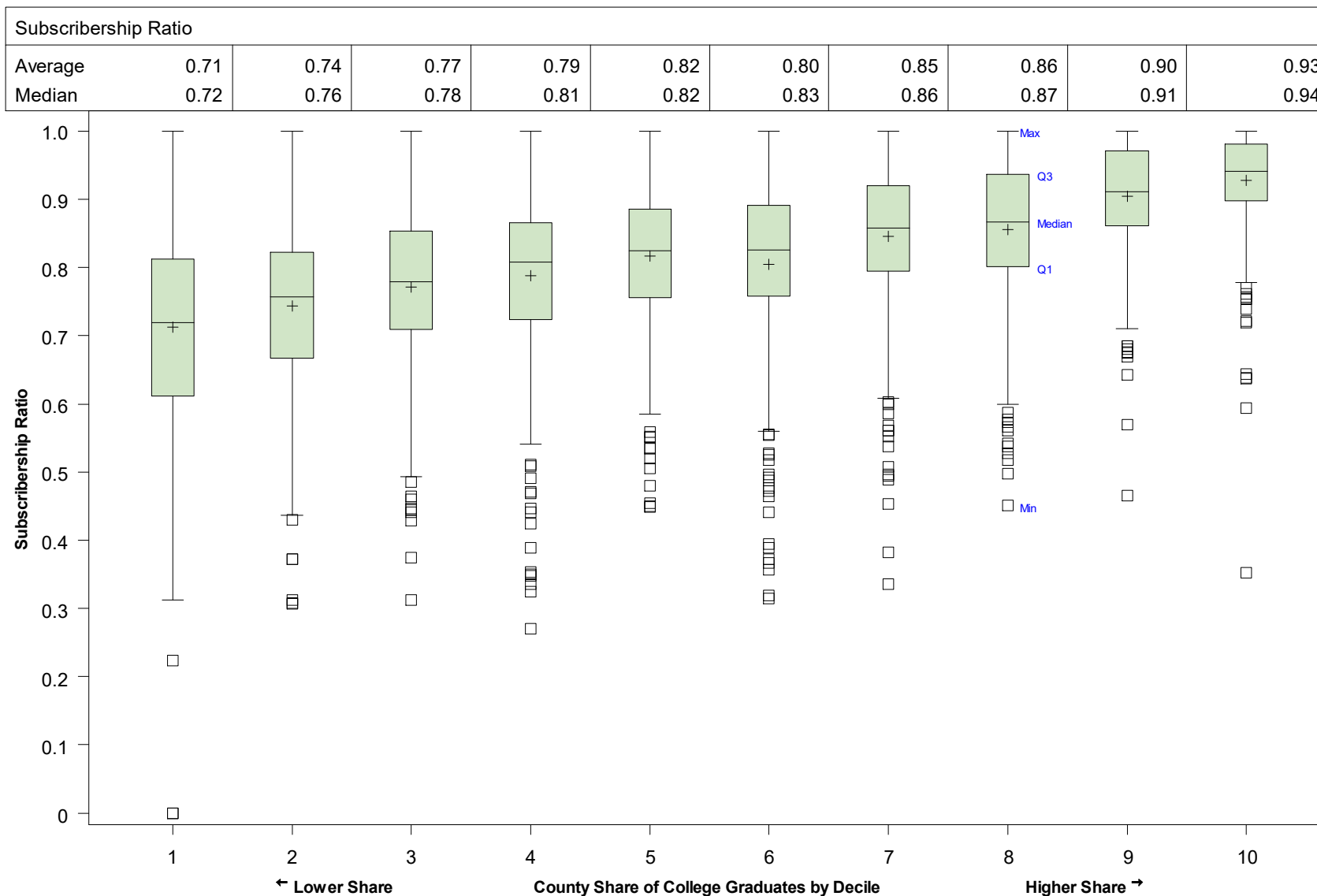
Figure 47
Subscribership Ratio Distributions by Density Deciles as of June 30, 2021



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; 2017-2021 ACS 5-year Estimates; Census 2010.

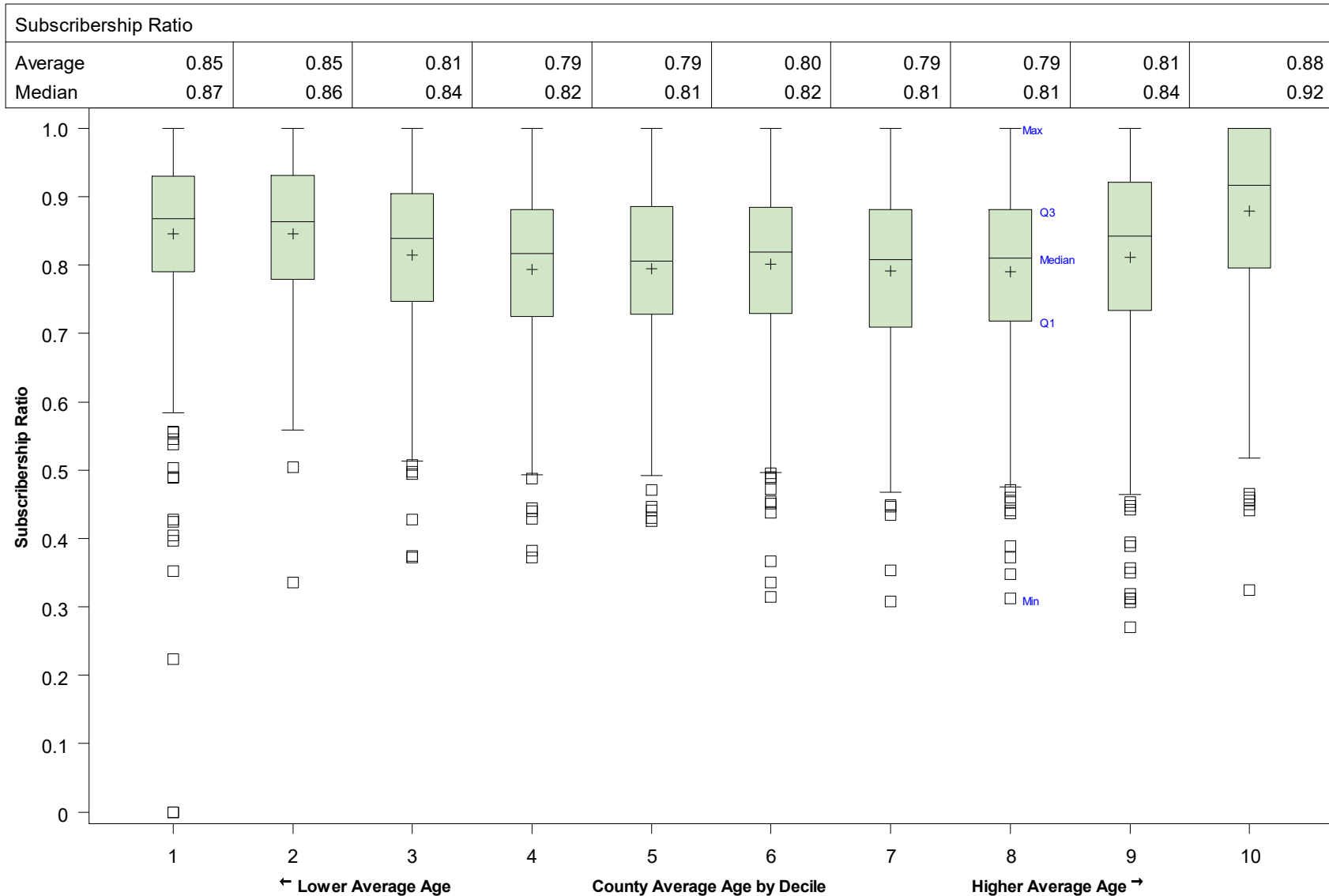
Figure 48
Subscribership Ratio Distributions by Share of Population with a College Degree (in Deciles) as of June 30, 2021



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; \perp is the minimum observation above $Q1-1.5(Q3-Q1)$; T is the maximum observation below $Q3+1.5(Q3-Q1)$; and \square 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; 2017-2021 ACS 5-year Estimates; Census 2010.

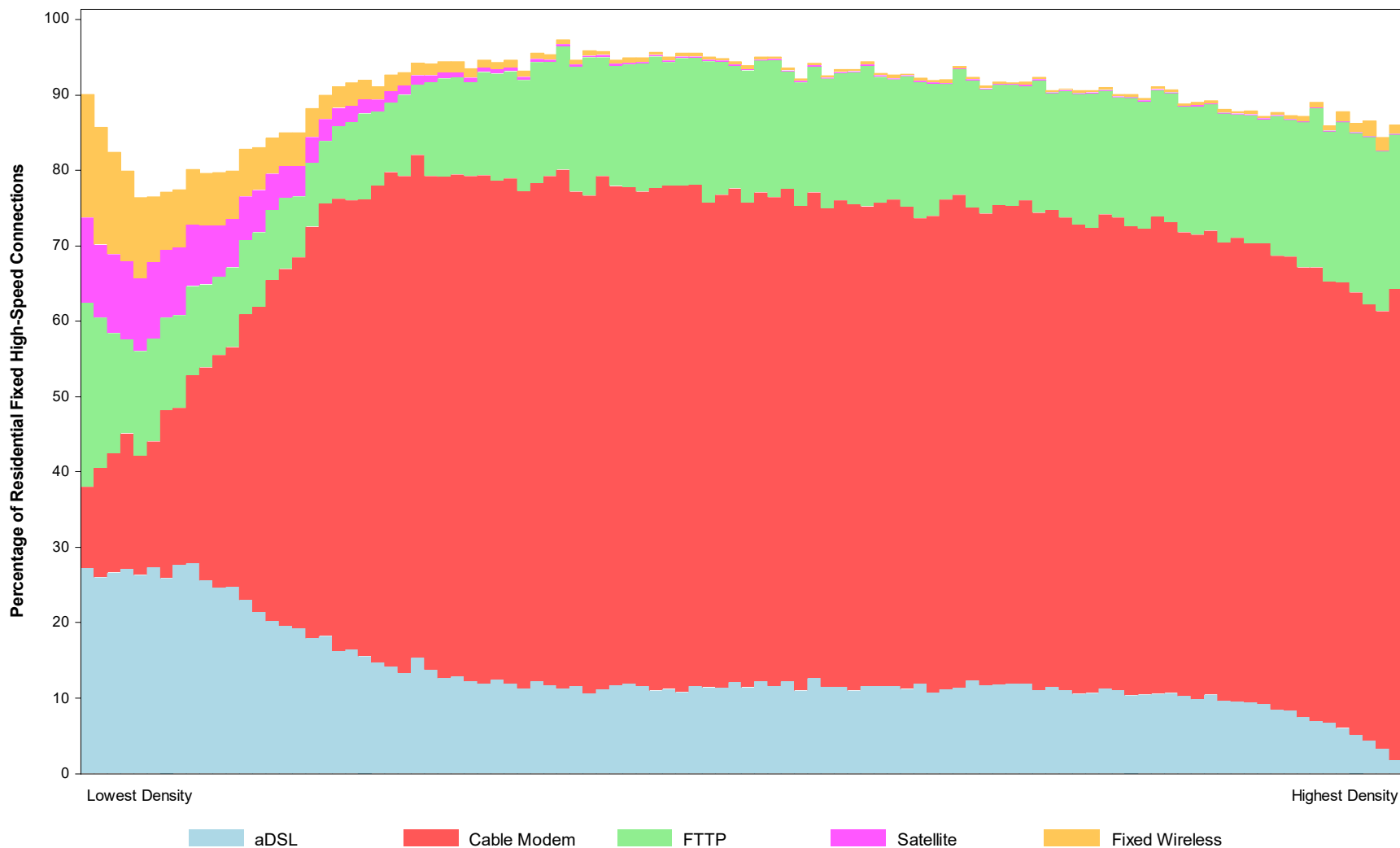
Figure 49
Subscribership Ratio Distributions by Average Age of County Population (in Deciles) as of June 30, 2021



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; 2017-2021 ACS 5-year Estimates; Census 2010.

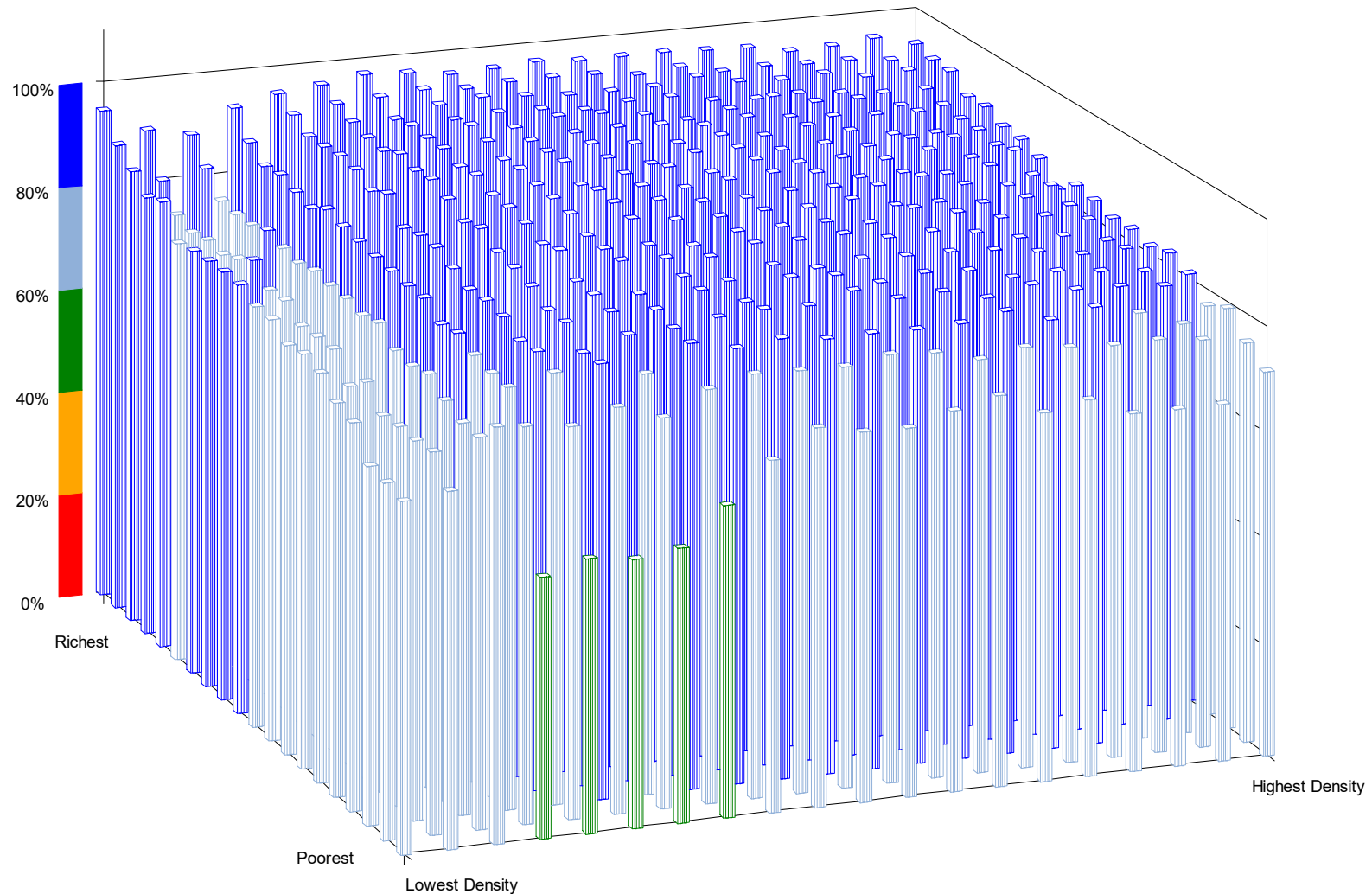
Figure 50
Subscriber Ratios by Technology and Tract Household Density as of June 30, 2021
(Residential fixed connections over 200 kbps in at least one direction)



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; 2017-2021 ACS 5-year estimates; and Census 2010.

Figure 51
Average Subscribership Ratios by Income and Household Density as of June 30, 2021
(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; 2017-2021 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 FCC 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 FCC Form 477.⁹ Detailed information about those changes and about the FCC Form 477 reporting requirements in general is available at www.fcc.gov/form477.

In March 2020, Congress passed the Broadband Data Act which required the Commission to collect broadband availability data at a more granular level than what was historically reported through FCC Form 477.¹⁰ As a result, starting in June 2022, broadband availability data have been collected through the Broadband Data Collection (BDC) while subscription data continues to be reported through FCC Form 477. To ensure consistency across the two data collections, several minor changes were made to the FCC Form 477 reporting requirements beginning with filings as of June 30, 2022. Complete reporting requirements for both, the BDC and FCC Form 477, can be found here: www.fcc.gov/BroadbandData/filers. The inaugural BDC filing window for data as of June 30, 2022 was closed on September 1, 2022. Subscription data collected as part of the BDC will be incorporated into this report beginning with the June 30, 2022 edition.

FCC 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 FCC 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 FCC 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

⁹ *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>.

¹⁰ Broadband Deployment Accuracy and Technological Availability Act, Pub. L. No. 116-130, 134 Stat. 228 (2020) (codified at 47 U.S.C. §§ 641-646) (Broadband DATA Act or Act).

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 FCC 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 FCC 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 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 FCC 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 2017-2021 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.