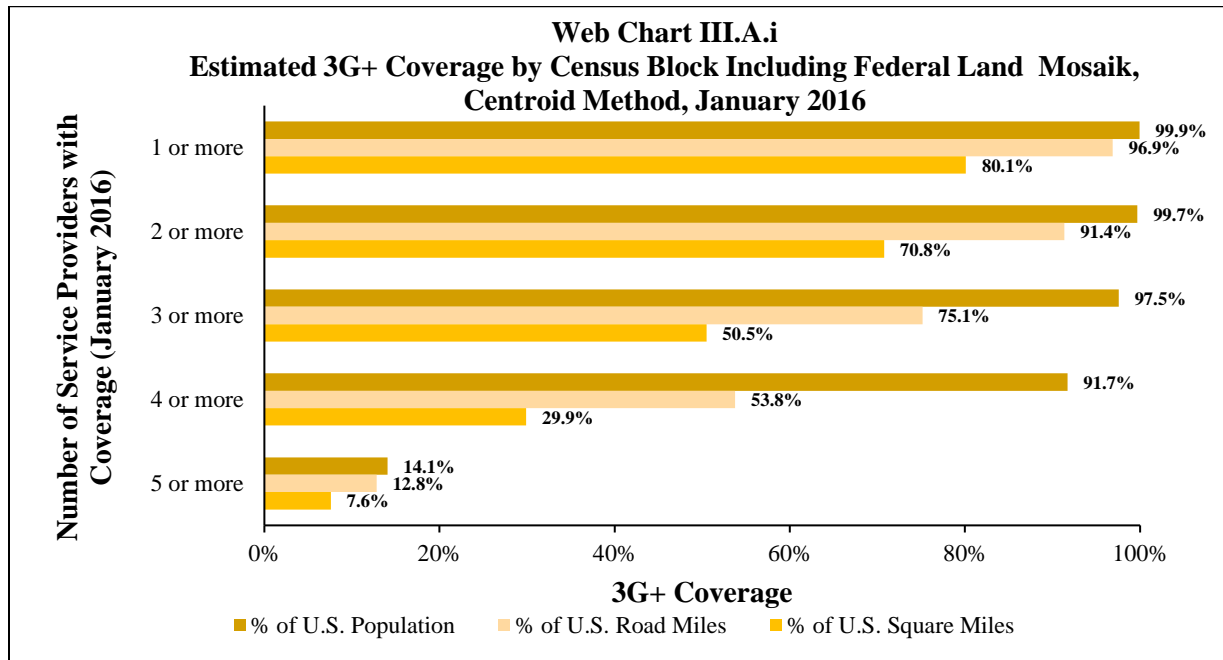


WEB APPENDIX TO SECTION III: OVERALL MOBILE WIRELESS INDUSTRY METRICS

3G+ COVERAGE

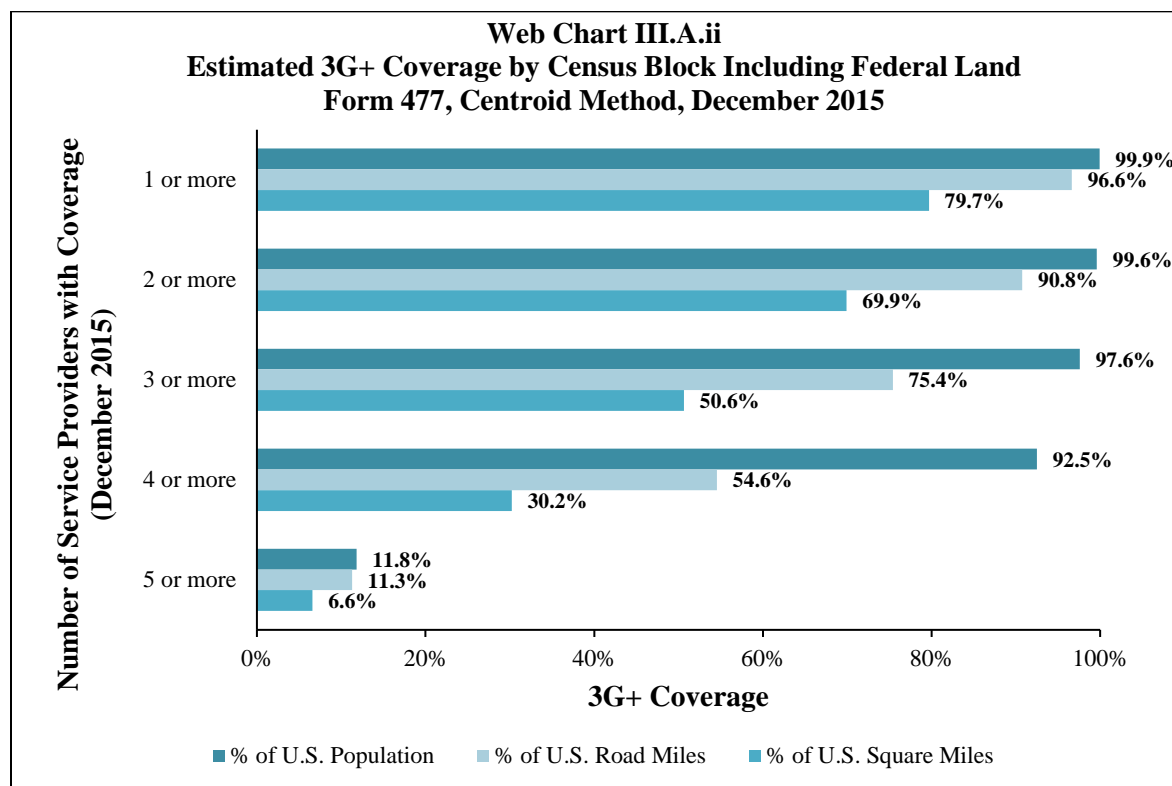


Source: Based on centroid analysis of January 2016 Mosaik and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.

Web Table III.A.i
Estimated 3G+ Coverage by Census Block Including Federal Land
Mosaik, Centroid Method, January 2016

# of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total US POPs	Square Miles Contained in Those Blocks	% of Total US Square Miles	Road Miles Contained in Those Blocks	% of Total US Road Miles
<i>US Total (actual)</i>	10,609,302	312,471,320	100.0%	3,550,852	100.0%	6,817,734	100.0%
1 or more	10,485,829	312,242,848	99.9%	2,844,641	80.1%	6,604,837	96.9%
2 or more	10,254,633	311,456,392	99.7%	2,512,722	70.8%	6,228,797	91.4%
3 or more	9,356,080	304,795,268	97.5%	1,793,046	50.5%	5,123,506	75.1%
4 or more	7,760,171	286,538,760	91.7%	1,061,430	29.9%	3,664,625	53.8%
5 or more	1,691,997	43,987,948	14.1%	269,403	7.6%	874,546	12.8%

Source: Based on centroid analysis of January 2016 Mosaik and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. Coverage calculations based on Mosaik data, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.



Source: Based on centroid analysis of December 2015 Form 477 and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.

Web Table III.A.ii
Estimated 3G+ Coverage by Census Block Including Federal Land
Form 477, Centroid Method, December 2015

# of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total US POPs	Square Miles Contained in Those Blocks	% of Total US Square Miles	Road Miles Contained in Those Blocks	% of Total US Road Miles
<i>US Total (actual)</i>	10,609,302	312,471,320	100.0%	3,550,852	100.0%	6,817,734	100.0%
1 or more	10,477,873	312,245,828	99.9%	2,829,913	79.7%	6,588,052	96.6%
2 or more	10,218,792	311,272,388	99.6%	2,483,152	69.9%	6,188,006	90.8%
3 or more	9,368,170	304,902,600	97.6%	1,798,450	50.6%	5,141,204	75.4%
4 or more	7,854,840	289,016,576	92.5%	1,073,546	30.2%	3,720,452	54.6%
5 or more	1,491,643	36,953,034	11.8%	233,985	6.6%	768,686	11.3%

Source: Based on centroid analysis of December 2015 Form 477 and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.

Web Table III.A.iii
Estimated 3G+ Coverage by Census Block Excluding Federal Land
Mosaik, Centroid Method, January 2016

# of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total US POPs	Square Miles Contained in Those Blocks	% of Total US Square Miles	Road Miles Contained in Those Blocks	% of Total US Road Miles
<i>US Total (actual)</i>	9,969,315	307,208,956	100.0%	2,441,456	100.0%	5,890,295	100.0%
1 or more	9,911,670	307,070,612	100.0%	2,228,101	91.3%	5,808,271	98.6%
2 or more	9,760,445	306,439,232	99.7%	2,077,386	85.1%	5,603,380	95.1%
3 or more	9,006,102	300,273,800	97.7%	1,591,754	65.2%	4,776,729	81.1%
4 or more	7,532,213	282,713,800	92.0%	988,434	40.5%	3,499,005	59.4%
5 or more	1,638,365	43,164,795	14.1%	256,250	10.5%	839,340	14.2%

Source: Based on centroid analysis of January 2016 Mosaik and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.

Web Table III.A.iv
Estimated 3G+ Coverage by Census Block Excluding Federal Land
Form 477, Centroid Method, December 2015

# of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total US POPs	Square Miles Contained in Those Blocks	% of Total US Square Miles	Road Miles Contained in Those Blocks	% of Total US Road Miles
<i>US Total (actual)</i>	9,969,315	307,208,956	100.0%	2,441,456	100.0%	5,890,295	100.0%
1 or more	9,906,708	307,068,876	100.0%	2,223,515	91.1%	5,799,333	98.5%
2 or more	9,731,173	306,262,224	99.7%	2,059,582	84.4%	5,575,149	94.6%
3 or more	9,011,647	300,348,468	97.8%	1,595,278	65.3%	4,787,119	81.3%
4 or more	7,620,398	285,155,296	92.8%	997,940	40.9%	3,548,145	60.2%
5 or more	1,443,364	36,282,392	11.8%	222,116	9.1%	735,507	12.5%

Source: Based on centroid analysis of December 2015 Form 477 and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.

Web Table III.A.v
Estimated 3G+ Coverage in Rural Areas by Census Block Including Federal Land
Mosaik, Centroid Method, January 2016

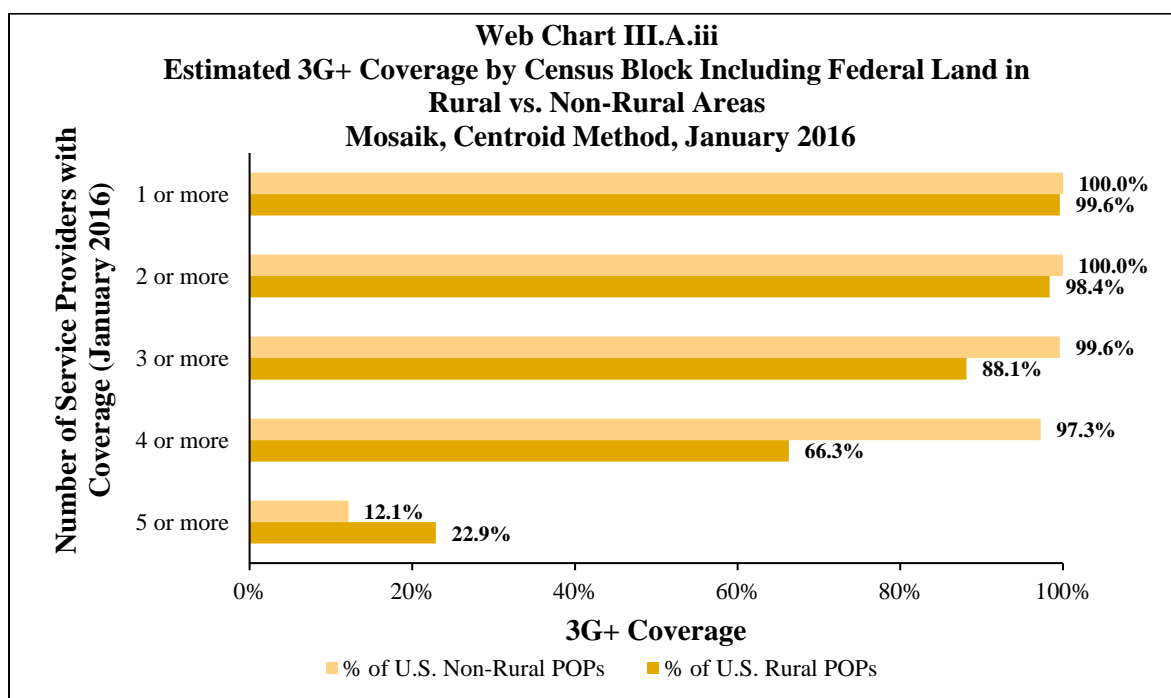
# of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total Rural US POPs	Square Miles Contained in Those Blocks	% of Total Rural US Square Miles	Road Miles Contained in Those Blocks	% of Total Rural US Road Miles
<i>US Total (actual)</i>	4,937,330	56,094,552	100.0%	2,987,281	100.0%	4,518,876	100.0%
1 or more	4,820,470	55,884,032	99.6%	2,292,026	76.7%	4,315,608	95.5%
2 or more	4,604,547	55,182,632	98.4%	1,976,086	66.1%	3,958,734	87.6%
3 or more	3,786,154	49,446,180	88.1%	1,305,252	43.7%	2,931,971	64.9%
4 or more	2,487,565	37,194,904	66.3%	663,266	22.2%	1,688,812	37.4%
5 or more	840,091	12,852,384	22.9%	189,208	6.3%	522,241	11.6%

Source: Based on centroid analysis of January 2016 Mosaik and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.

Web Table III.A.vi
Estimated 3G+ Coverage in Non-Rural Areas by Census Block Including Federal Land
Mosaik, Centroid Method, January 2016

# of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total Non-Rural US POPs	Square Miles Contained in Those Blocks	% of Total Non-Rural US Square Miles	Road Miles Contained in Those Blocks	% of Total Non-Rural US Road Miles
<i>US Total (actual)</i>	5,671,972	256,376,768	100.0%	563,570	100.0%	2,298,858	100.0%
1 or more	5,665,359	256,358,816	100.0%	552,615	98.1%	2,289,229	99.6%
2 or more	5,650,086	256,273,760	100.0%	536,636	95.2%	2,270,063	98.7%
3 or more	5,569,926	255,349,088	99.6%	487,794	86.6%	2,191,535	95.3%
4 or more	5,272,606	249,343,856	97.3%	398,165	70.7%	1,975,813	85.9%
5 or more	851,906	31,135,564	12.1%	80,195	14.2%	352,305	15.3%

Source: Based on centroid analysis of January 2016 Mosaik and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.



Source: Based on centroid analysis of January 2016 Mosaik and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.

Web Table III.A.vii
Estimated 3G+ Coverage in Rural Areas by Census Block Including Federal Land
Form 477, Centroid Method, December 2015

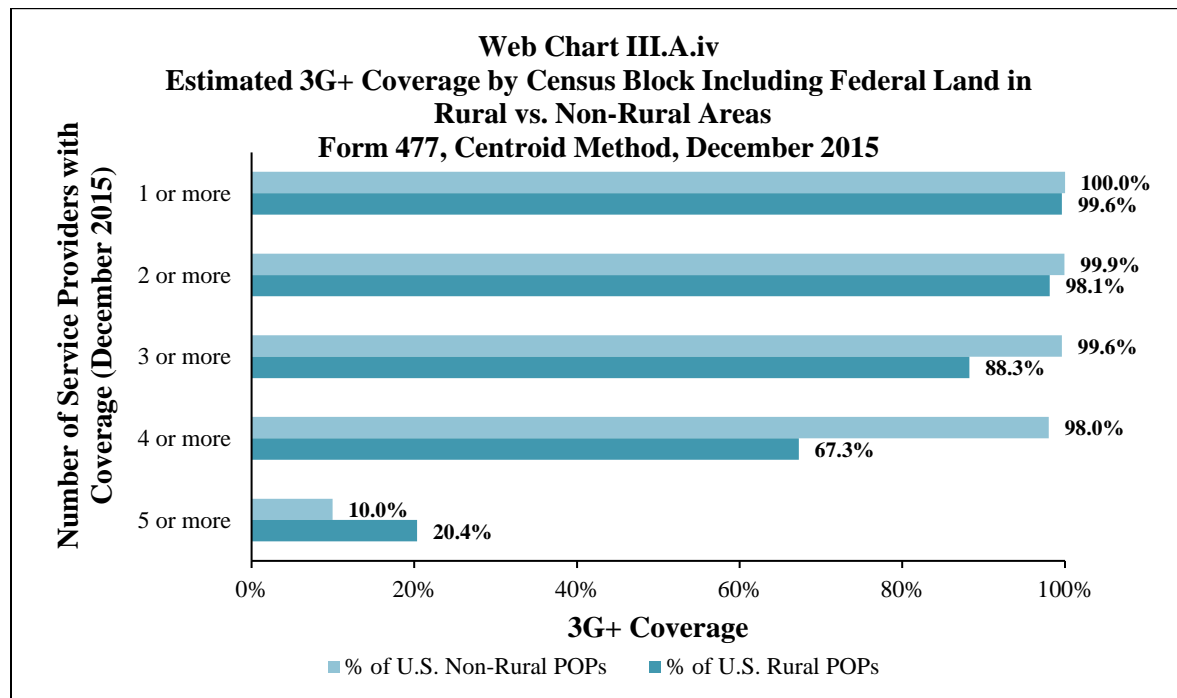
# of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total Rural US POPs	Square Miles Contained in Those Blocks	% of Total Rural US Square Miles	Road Miles Contained in Those Blocks	% of Total Rural US Road Miles
<i>US Total (actual)</i>	4,937,330	56,094,552	100.0%	2,987,281	100.0%	4,518,876	100.0%
1 or more	4,812,729	55,889,220	99.6%	2,277,447	76.2%	4,299,513	95.1%
2 or more	4,573,175	55,049,412	98.1%	1,947,966	65.2%	3,920,657	86.8%
3 or more	3,796,860	49,509,576	88.3%	1,308,754	43.8%	2,946,611	65.2%
4 or more	2,505,300	37,751,264	67.3%	657,024	22.0%	1,694,452	37.5%
5 or more	755,217	11,420,686	20.4%	164,025	5.5%	463,191	10.3%

Source: Based on centroid analysis of December 2015 Form 477 and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.

Web Table III.A.viii
Estimated 3G+ Coverage in Non-Rural Areas by Census Block Including Federal Land
Form 477, Centroid, December 2015

Number of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total Non-Rural US POPs	Square Miles Contained in Those Blocks	% of Total Non-Rural US Square Miles	Road Miles Contained in Those Blocks	% of Total Non-Rural US Road Miles
<i>US Total (actual)</i>	5,671,972	256,376,768	100.0%	563,570	100.0%	2,298,858	100.0%
1 or more	5,665,144	256,356,608	100.0%	552,466	98.0%	2,288,540	99.6%
2 or more	5,645,617	256,222,976	99.9%	535,187	95.0%	2,267,350	98.6%
3 or more	5,571,310	255,393,024	99.6%	489,697	86.9%	2,194,593	95.5%
4 or more	5,349,540	251,265,312	98.0%	416,522	73.9%	2,026,000	88.1%
5 or more	736,426	25,532,348	10.0%	69,960	12.4%	305,494	13.3%

Source: Based on centroid analysis of December 2015 Form 477 and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.



Source: Based on centroid analysis of December 2015 Form 477 and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage. The 3G/4G technologies included are the following: EVDO, EVDO Rev A, WCDMA/HSPA, HSPA+, LTE, and mobile WiMAX.

**OVERALL MOBILE WIRELESS COVERAGE
AND LTE COVERAGE, EXCLUDING FEDERAL LAND**

Web Table III.A.ix
Estimated Overall Wireless Coverage by Census Block Excluding Federal Land
Mosaik, Centroid Method, January 2016

# of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total US POPs	Square Miles Contained in Those Blocks	% of Total US Square Miles	Road Miles Contained in Those Blocks	% of Total US Road Miles
<i>US Total (actual)</i>	9,969,315	307,208,960	100.0%	2,441,456	100.0%	5,890,295	100.0%
1 or more	9,920,677	307,113,696	100.0%	2,247,388	92.1%	5,820,201	98.8%
2 or more	9,790,622	306,565,568	99.8%	2,111,300	86.5%	5,645,521	95.8%
3 or more	9,188,707	301,972,640	98.3%	1,703,627	69.8%	4,973,566	84.4%
4 or more	7,866,236	286,836,160	93.4%	1,117,030	45.8%	3,780,561	64.2%
5 or more	2,246,655	60,434,344	19.7%	361,439	14.8%	1,162,577	19.7%

Source: Based on centroid analysis of January 2016 Mosaik and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage.

Web Table III.A.x
Estimated Overall Wireless Coverage by Census Block Excluding Federal Land
Form 477, Centroid Method, December 2015

# of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total US POPs	Square Miles Contained in Those Blocks	% of Total US Square Miles	Road Miles Contained in Those Blocks	% of Total US Road Miles
<i>US Total (actual)</i>	9,969,315	307,208,960	100.0%	2,441,456	100.0%	5,890,295	100.0%
1 or more	9,917,244	307,102,240	100.0%	2,237,406	91.6%	5,812,652	98.7%
2 or more	9,768,943	306,423,264	99.7%	2,090,203	85.6%	5,619,550	95.4%
3 or more	9,132,271	301,321,792	98.1%	1,673,438	68.5%	4,920,684	83.5%
4 or more	7,858,037	287,737,568	93.7%	1,097,720	45.0%	3,760,124	63.8%
5 or more	1,726,518	42,774,928	13.9%	292,187	12.0%	914,405	15.5%

Source: Based on centroid analysis of December 2015 Form 477 and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage.

Web Table III.A.xi
Estimated LTE Coverage by Census Block Excluding Federal Land
Mosaik, Centroid Method, January 2016

# of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total US POPs	Square Miles Contained in Those Blocks	% of Total US Square Miles	Road Miles Contained in Those Blocks	% of Total US Road Miles
<i>US Total (actual)</i>	9,969,315	307,208,960	100.0%	2,441,456	100.0%	5,890,295	100.0%
1 or more	9,799,425	306,577,728	99.8%	2,110,980	86.5%	5,654,052	96.0%
2 or more	9,363,173	303,977,632	98.9%	1,768,419	72.4%	5,125,265	87.0%
3 or more	8,313,369	293,913,248	95.7%	1,263,219	51.7%	4,143,834	70.4%
4 or more	6,547,247	268,010,320	87.2%	697,489	28.6%	2,786,492	47.3%
5 or more	1,014,803	28,984,212	9.4%	134,609	5.5%	483,675	8.2%

Source: Based on centroid analysis of January 2016 Mosaik and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage.

Web Table III.A.xii
Estimated LTE Coverage by Census Block Excluding Federal Land
Form 477, Centroid Method, December 2015

# of Providers with Coverage in a Block	Number of Blocks	POPs Contained in Those Blocks	% of Total US POPs	Square Miles Contained in Those Blocks	% of Total US Square Miles	Road Miles Contained in Those Blocks	% of Total US Road Miles
<i>US Total (actual)</i>	9,969,315	307,208,960	100.0%	2,441,456	100.0%	5,890,295	100.0%
1 or more	9,769,128	306,459,616	99.8%	2,087,404	85.5%	5,622,813	95.5%
2 or more	9,356,559	303,932,960	98.9%	1,768,260	72.4%	5,123,065	87.0%
3 or more	8,446,404	295,497,280	96.2%	1,301,821	53.3%	4,234,441	71.9%
4 or more	6,898,092	274,900,224	89.5%	778,689	31.9%	3,015,104	51.2%
5 or more	939,801	25,314,042	8.2%	126,284	5.2%	450,810	7.7%

Source: Based on centroid analysis of December 2015 Form 477 and 2010 Census data. It is important to note that the number of service providers in a census block represent network coverage only. Network coverage does not necessarily reflect the number of service providers from which any particular individual or household in a given area may choose. These coverage calculations, while useful for measuring developments in mobile coverage, have certain limitations that likely result in an overstatement of the extent of mobile coverage.

Web Table III.A.xiii
Estimated LTE Coverage by Census Block *Excluding* Federal Land
Form 477, Actual Area Coverage Method, December 2015

# of Providers with Coverage in a Block	Covered POPs	% of Total US POPs	Covered Square Miles	% of Total US Square Miles	Covered Road Miles	% of Total US Road Miles
<i>US Total (actual)</i>	307,208,956	100.0%	2,441,456	100.0%	5,890,295	100.0%
1 or more	305,970,336	99.6%	2,077,268	85.1%	5,603,895	95.1%
2 or more	303,355,264	98.7%	1,754,465	71.9%	5,100,022	86.6%
3 or more	294,879,424	96.0%	1,293,245	53.0%	4,215,587	71.6%
4 or more	274,175,648	89.2%	772,980	31.7%	2,999,743	50.9%
5 or more	25,254,366	8.2%	124,676	5.1%	447,559	7.6%

Source: Based on actual area coverage analysis of December 2015 Form 477 and 2010 Census data. Unlike the Centroid methodology where each block is either covered or not, the actual area methodology acknowledges many blocks are only partially covered. As it is unclear which of these blocks should be considered covered or not, we decline from reporting the number of blocks covered in these results.