

Estimating participation in the Affordable Connectivity Program (ACP)

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Since the launch of the Affordable Connectivity Program (ACP) in January 2022, there has been a great deal of interest in estimating how many eligible households are taking advantage of this new program that helps connect low-income Americans to broadband. ACP offers a support of up to \$30 per month to qualifying households, which raises to \$75 in designated Tribal lands. Eligibility for ACP is based on two criteria: a) household income at or below 200% of the Federal Poverty Level (FPL); or b) participation by a household member in a designated assistance program such as SNAP, Medicaid, SSI, WIC, Pell Grant, and the National School Lunch Program, among others.¹

In theory, estimating the ACP participation rate would be a rather simple calculation of the ratio between the number of households enrolled in the program (which USAC provides at the zipcode level) and the number of eligible households. However, given the program's broad eligibility criteria it is far from trivial to estimate precisely how many households are eligible to receive the benefit. A convenient shortcut is to use only the income-based criteria (household income at or below 200% of the FPL). The main advantage is that income-to-poverty ratios are available at the zipcode level from the American Community Survey (ACS), thus allowing matching with USAC enrollment data at the lowest possible level of spatial aggregation. The implicit assumption being made is that the number of households that qualify based on participation in assistance programs but not on an income basis will be relatively small.

This assumption is tested in Table A1. Using the most recent ACS 5-year microdata (2016-2020), the table compares the number of ACP-eligible households using the income criteria only (column B) to the number of eligible households using the more accurate combination of program-based and income-based criteria (column D). Due to limitations in the ACS questionnaire, column D captures participation in a limited set of federal assistance programs that include: 1) Medicaid, Medical Assistance, or any kind of government-assistance plan for those with low incomes or a disability; 2) Supplemental Nutrition Assistance Program (SNAP); 3) public assistance income over the past 12 months; and 4) Supplemental Security Income (SSI).² The methodology for estimating eligibility is discussed further in the Annex.

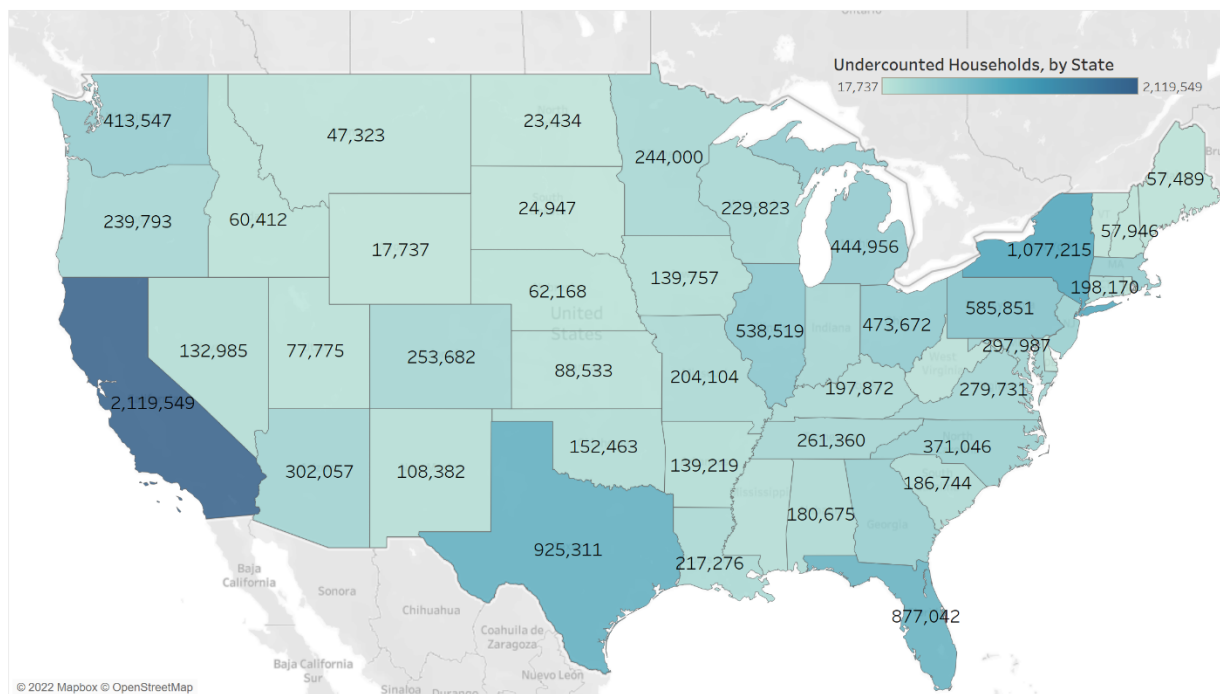
¹ Households also qualify if they meet the eligibility criteria to enroll in an existing affordable Internet program offered by an ISP that participates in ACP. However, the eligibility criteria used by ISPs are generally based on a combination of the two other criteria discussed above.

² Note this does not include other programs that would qualify a household for ACP benefits, such as NSLP and Pell Grants. The numbers in column D (Table A1) are therefore a lower-bound estimate of the true number of eligible households.

As shown, there are considerable differences depending on the criteria used. At the national level, using the criteria that more closely approximates ACP eligibility rules in column D (income plus program participation) yields an estimate of about 49.2M eligible households. In comparison, using the income criteria alone yields about 34.9M households, an undercount of about 14.3M households, or about 29% of the eligible households. Expressed in terms of percentage of eligible households, the income-only criteria estimates that about 28% of U.S. households are eligible for ACP, when the true number is closer to 40%.

Interestingly, the undercount from estimates using income only varies widely across states. For example, in states such as California and Massachusetts the income-only criteria will undercount about 40% of the households, whereas in states such as Texas and Alabama the undercount will be closer to 20%. While further research is needed, a preliminary hypothesis is that this is largely explained by differences in state rules for Medicaid eligibility. Under the Affordable Care Act of 2010, states were given significant discretion to expand Medicaid coverage. In states that broadened Medicaid eligibility (which tend to be Democratic-leaning states) one can expect to find more households that do not qualify for ACP on an income basis but are eligible based on Medicaid participation.³ Figure 1 maps the number of eligible households by state that are undercounted using the income criteria only.

Figure 1: Number of undercounted ACP-eligible households using income criteria only

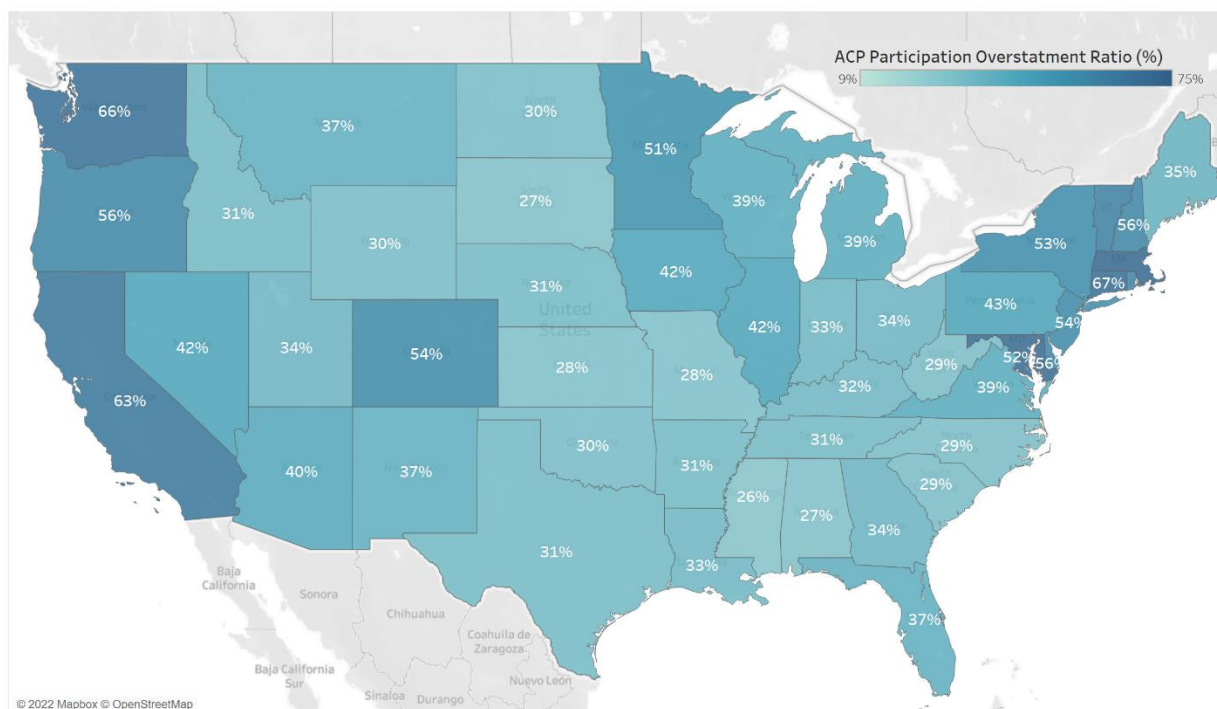


Source: ACS 5-year 2016-2020.
 Note: an interactive map is available [here](#).

³ For information about Medicaid expansion across states see <https://www.kff.org/medicaid/issue-brief/status-of-state-medicaid-expansion-decisions-interactive-map>.

As expected, different estimations about the number of ACP-eligible households will result in different participation rate estimates. As shown in Table A2, estimates based on income only significantly overestimate ACP participation. At the national level, the overestimation is about 12 p.p. (41% vs. 29%), and the difference is larger in states where a larger share of households qualify based on program participation but not on income alone. The ratio between the two estimates provides an indicator of the overestimation that results from using the income criteria only. For example, at the national level the participation overestimation would be about 41% ($41/29=1.41$). Figure 2 maps the participation rate overestimation by state.

Figure 2: Participation rate overestimation using income criteria only



Source: USAC and ACS 5-year 2016-2020.

Note: an interactive map is available [here](#).

At the same time, estimating the number of ACP-eligible households using the program criteria in combination with the income criteria is only possible at the PUMA (Public Use Microdata Areas) level.⁴ USAC enrollment data at the zipcode level thus needs to be aggregated to PUMAs, resulting in significant loss in geographical granularity in the analysis of ACP participation.⁵ A potential solution is to use an adjustment factor to income-only eligibility estimates at the zipcode level based on the state-level difference between the two estimation criteria.

⁴ PUMAs are Census-designated areas that contain at least 100,000 residents.

⁵ There are 41,683 zipcodes in the U.S. but only 2,378 PUMAs.

Take the example of Alabama: at the state level, income-only estimates undercount eligibility by about 181,000 households, or about 21% of the eligible households (Table A1). Using the ratio between the two criteria in Table A1 (column D/column B), one could create a state-specific adjustment factor that is applied to zipcode-level eligibility estimates. In the Alabama case this would $852,711/672,036=1.27$.⁶ Note this adjustment rate is equal to the ratio presented in the last column in Table A2. The proposed solution is far from perfect as it assumes uniform geographical distribution of the undercounted households within states. Replicating this analysis at the PUMA level within each state would increase precision of the proposed adjustment rate.

About the project

This policy brief is part of the Measuring the Effectiveness of Digital Inclusion Approaches (MEDIA) project, a research program that seeks to analyze existing broadband inclusion initiatives and provide evidence-based recommendations on how best to connect low-income households to broadband on a sustainable basis. The program is supported by The Pew Charitable Trusts, and includes the California Emerging Technology Fund (CETF) as a key research partner. The views expressed herein are those of the author(s) and do not necessarily reflect the views of The Pew Charitable Trusts or the California Emerging Technology Fund.

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⁶ Following this example, if a zipcode in Alabama is estimated to have 10,000 ACP-eligible households (using the income-only criteria), the adjusted estimated would be 12,700. This adjusted estimate is then combined with USAC enrollment data in the same zipcode to calculate the ACP participation rate.

ANNEXES

Table A1: Two different estimates of ACP household eligibility (income only and income plus assistance programs) by state.

State	Total HHs (A)	Eligible HHs income only (B)	Eligibility rate income only (B/A)	Eligible HHs income+ program (D)	Eligibility rate income + program (D/A)	Undercounted HHs (D-B) (E)	Undercounted HHs in % of eligible (E/D)
AL	1,887,999	672,036	35.6%	852,711	45.2%	180,675	21.2%
AK	255,094	52,469	20.6%	87,479	34.3%	35,010	40.0%
AZ	2,642,116	763,545	28.9%	1,065,602	40.3%	302,057	28.3%
AR	1,170,217	444,606	38.0%	583,825	49.9%	139,219	23.8%
CA	13,096,792	3,366,673	25.7%	5,486,222	41.9%	2,119,549	38.6%
CO	2,136,770	465,998	21.8%	719,680	33.7%	253,682	35.2%
CT	1,385,001	297,858	21.5%	496,028	35.8%	198,170	40.0%
DE	370,791	87,816	23.7%	136,819	36.9%	49,003	35.8%
DC	288,157	63,227	21.9%	96,210	33.4%	32,983	34.3%
FL	7,927,404	2,401,185	30.3%	3,278,227	41.4%	877,042	26.8%
GA	3,829,004	1,160,507	30.3%	1,550,463	40.5%	389,956	25.2%
HI	467,606	94,798	20.3%	165,718	35.4%	70,920	42.8%
ID	648,968	196,475	30.3%	256,887	39.6%	60,412	23.5%
IL	4,882,828	1,282,464	26.3%	1,820,983	37.3%	538,519	29.6%
IN	2,602,084	760,446	29.2%	1,013,905	39.0%	253,459	25.0%
IA	1,273,566	332,981	26.1%	472,738	37.1%	139,757	29.6%
KS	1,141,594	314,166	27.5%	402,699	35.3%	88,533	22.0%
KY	1,747,488	609,475	34.9%	807,347	46.2%	197,872	24.5%
LA	1,751,197	656,599	37.5%	873,875	49.9%	217,276	24.9%
ME	569,324	162,073	28.5%	219,562	38.6%	57,489	26.2%
MD	2,229,928	430,068	19.3%	728,055	32.6%	297,987	40.9%
MA	2,646,103	579,696	21.9%	987,582	37.3%	407,886	41.3%
MI	3,978,986	1,148,470	28.9%	1,593,426	40.0%	444,956	27.9%
MN	2,207,251	474,626	21.5%	718,626	32.6%	244,000	34.0%
MS	1,116,300	453,979	40.7%	570,792	51.1%	116,813	20.5%
MO	2,439,507	730,489	29.9%	934,593	38.3%	204,104	21.8%
MT	435,868	129,630	29.7%	176,953	40.6%	47,323	26.7%
NE	766,390	197,362	25.8%	259,530	33.9%	62,168	24.0%
NV	1,129,697	318,747	28.2%	451,732	40.0%	132,985	29.4%
NH	538,957	103,993	19.3%	161,939	30.0%	57,946	35.8%
NJ	3,271,336	701,125	21.4%	1,077,516	32.9%	376,391	34.9%
NM	792,348	294,104	37.1%	402,486	50.8%	108,382	26.9%
NY	7,415,020	2,028,927	27.4%	3,106,142	41.9%	1,077,215	34.7%
NC	4,030,262	1,262,048	31.3%	1,633,094	40.5%	371,046	22.7%
ND	320,742	79,389	24.8%	102,823	32.1%	23,434	22.8%

State	Total HHs (A)	Eligible HHs income only (B)	Eligibility rate income only (B/A)	Eligible HHs income+ program (D)	Eligibility rate income + program (D/A)	Undercounted HHs (D-B) (E)	Undercounted HHs in % of eligible (E/D)
OH	4,715,186	1,387,969	29.4%	1,861,641	39.5%	473,672	25.4%
OK	1,492,843	509,022	34.1%	661,485	44.3%	152,463	23.0%
OR	1,642,172	429,750	26.2%	669,543	40.8%	239,793	35.8%
PA	5,105,058	1,376,532	27.0%	1,962,383	38.4%	585,851	29.9%
PR	1,205,018	868,664	72.1%	946,316	78.5%	77,652	8.2%
RI	414,706	105,954	25.5%	163,983	39.5%	58,029	35.4%
SC	1,960,901	636,518	32.5%	823,262	42.0%	186,744	22.7%
SD	347,619	92,124	26.5%	117,071	33.7%	24,947	21.3%
TN	2,638,430	849,359	32.2%	1,110,719	42.1%	261,360	23.5%
TX	9,903,058	2,951,070	29.8%	3,876,381	39.1%	925,311	23.9%
UT	1,003,124	231,078	23.0%	308,853	30.8%	77,775	25.2%
VT	262,566	68,313	26.0%	108,370	41.3%	40,057	37.0%
VA	3,183,454	717,082	22.5%	996,813	31.3%	279,731	28.1%
WA	2,905,054	623,677	21.5%	1,037,224	35.7%	413,547	39.9%
WV	734,136	274,918	37.4%	355,287	48.4%	80,369	22.6%
WI	2,377,006	594,582	25.0%	824,405	34.7%	229,823	27.9%
WY	233,055	59,203	25.4%	76,940	33.0%	17,737	23.1%
Total (000s)	123,516	34,894	28.3%	49,193	39.8%	14,299	29.1%

Source: ACS 5-year 2016-2020.

Table 2: Two different estimates of ACP participation rates (income only and income plus assistance programs) by state.

State	ACP enrollment (October 10, 2022)	Participation rate: income only (A)	Participation rate: income +program (B)	Difference in p.p. (A-B)	Ratio (A/B)
AL	274,498	40.8%	32.2%	8.7%	1.27
AK	11,924	22.7%	13.6%	9.1%	1.67
AZ	314,154	41.1%	29.5%	11.7%	1.40
AR	132,856	29.9%	22.8%	7.1%	1.31
CA	1,723,664	51.2%	31.4%	19.8%	1.63
CO	164,331	35.3%	22.8%	12.4%	1.54
CT	124,202	41.7%	25.0%	16.7%	1.67
DE	29,191	33.2%	21.3%	11.9%	1.56
DC	42,947	67.9%	44.6%	23.3%	1.52
FL	1,002,766	41.8%	30.6%	11.2%	1.37
GA	500,420	43.1%	32.3%	10.8%	1.34
HI	33,963	35.8%	20.5%	15.3%	1.75
ID	26,491	13.5%	10.3%	3.2%	1.31
IL	435,542	34.0%	23.9%	10.0%	1.42

State	ACP enrollment (October 10, 2022)	Participation rate: income only (A)	Participation rate: income +program (B)	Difference in p.p. (A-B)	Ratio (A/B)
IN	272,140	35.8%	26.8%	8.9%	1.33
IA	71,252	21.4%	15.1%	6.3%	1.42
KS	76,746	24.4%	19.1%	5.4%	1.28
KY	295,820	48.5%	36.6%	11.9%	1.32
LA	327,799	49.9%	37.5%	12.4%	1.33
ME	57,085	35.2%	26.0%	9.2%	1.35
MD	170,435	39.6%	23.4%	16.2%	1.69
MA	230,278	39.7%	23.3%	16.4%	1.70
MI	499,762	43.5%	31.4%	12.2%	1.39
MN	155,321	32.7%	21.6%	11.1%	1.51
MS	162,758	35.9%	28.5%	7.3%	1.26
MO	234,665	32.1%	25.1%	7.0%	1.28
MT	30,338	23.4%	17.1%	6.3%	1.37
NE	56,465	28.6%	21.8%	6.9%	1.31
NV	157,627	49.5%	34.9%	14.6%	1.42
NH	25,302	24.3%	15.6%	8.7%	1.56
NJ	185,330	26.4%	17.2%	9.2%	1.54
NM	138,858	47.2%	34.5%	12.7%	1.37
NY	1,020,408	50.3%	32.9%	17.4%	1.53
NC	576,499	45.7%	35.3%	10.4%	1.29
ND	8,947	11.3%	8.7%	2.6%	1.30
OH	739,711	53.3%	39.7%	13.6%	1.34
OK	213,353	41.9%	32.3%	9.7%	1.30
OR	137,839	32.1%	20.6%	11.5%	1.56
PA	494,299	35.9%	25.2%	10.7%	1.43
PR	511,966	58.9%	54.1%	4.8%	1.09
RI	42,912	40.5%	26.2%	14.3%	1.55
SC	266,064	41.8%	32.3%	9.5%	1.29
SD	13,832	15.0%	11.8%	3.2%	1.27
TN	289,857	34.1%	26.1%	8.0%	1.31
TX	1,079,134	36.6%	27.8%	8.7%	1.31
UT	43,808	19.0%	14.2%	4.8%	1.34
VT	15,804	23.1%	14.6%	8.6%	1.59
VA	275,958	38.5%	27.7%	10.8%	1.39
WA	224,431	36.0%	21.6%	14.3%	1.66
WV	79,674	29.0%	22.4%	6.6%	1.29
WI	269,592	45.3%	32.7%	12.6%	1.39
WY	11,786	19.9%	15.3%	4.6%	1.30
Total	14,280,804	40.9%	29.0%	11.9%	1.41

Source: USAC and ACS 5-year 2016-2020.

Methodology

To estimate the number of ACP-eligible households, we replicate USAC's methodology to calculate Lifeline eligibility, which uses microdata (PUMS files) from the American Community Survey (ACS). However there are two important differences in our methodology.

To identify eligibility on the basis of participation in federal support programs, four variables are used, three from the individual-level files (HINS4, PAP, SSIP) and one from the household-level files (FS). The variables are:

- Medicaid, Medical Assistance, or any kind of government-assistance plan for those with low incomes or a disability (HINS4)
- Yearly food stamp/Supplemental Nutrition Assistance Program recipients (FS)
- Public assistance income over the past 12 months (any amount) (PAP)
- Supplemental Security Income over past 12 months (any amount) (SSIP)

However, a key difference in our calculations is that a household is considered eligible if any household member participates in the designated assistance programs. By contrast, USAC's eligibility calculations are based on responses from the householder (head of household) only. This is however inconsistent with program eligibility guidelines for Lifeline as well as ACP.

A second difference is that rather than using the ACS variable that indicates a household's income-to-poverty ratio (POVPIP), we create a new variable to determine income-based eligibility, as follows: first, we use the ACS income adjustment factor to calculate household income for year 2020; second, based on the number of household members, we determine the income-to-poverty ratio for the household, using the federal poverty guidelines for year 2020. The advantage of this procedure is that it standardizes income-to-poverty ratios to the most recent year in the 5-year ACS survey (in this case, it standardizes 2016-2020 data to year 2020).

The ACS household weight variable (WGTP) is used to estimate the total number of eligible households. People living in group quarters are excluded from the calculations.
