

Broadband for Everyone Means Higher Earnings Nationwide

Expanding broadband access and consumer cost-reduction subsidies is a cost-effective way to reduce child poverty. In fact, it can easily pay for itself.

By Steven S. Ross / *Broadband Communities*

In this issue (see p. 28), I explore the relationship between child poverty and lack of broadband access. Counties in the bottom half of **BROADBAND COMMUNITIES'** broadband rankings have 4 to 5 percentage points higher poverty rates and 2 percentage points lower high school graduation rates than those in the top half. That translates to about 3 million more children in poverty at any one time and almost 100,000 fewer high school graduates annually.

In rural counties, the issue often is lack of any broadband access. In urban counties, the issue is more about price than availability. For hard-pressed parents, housing, food and clothing must come before broadband. That's especially so in urban areas, where housing often requires more than half of family income. The motivation is different for society; 100,000 adults earning \$50,000 annually add \$5 billion to the nation's economy. Without a high school diploma, those adults add half that figure. Over a 30- to 40-year working lifetime, the difference to the economy is close to a trillion dollars.

Put another way, a small part of the annual \$2.5 billion in new national income from each annual cohort of graduates easily amortizes construction of \$200 billion in new broadband deployments – enough to bring broadband to everyone. It would be fiber for most of the 15 million premises that lack access now, with maybe 2 million deep-rural households served by low-Earth-orbit satellites.

Broadband is not a poverty cure, but it is part of the cure. It is also relatively easy to implement – a rare example of helping solve a problem by throwing money at it. In the long term, this helps reduce the nation's poverty rate by perhaps 10 to 20 percent. It reduces stress and increases hope for the poverty-stricken, and as COVID-19 lockdowns demonstrate, it would make the economy more resilient. Paying upfront to make people more productive is also less expensive than subsidizing them later.

If the child poverty indicators for each state equaled those for the county in that state best served by broadband, there would be 3.5 million fewer food-insecure children, 130,000 fewer babies born annually to adolescents, and 15,000 fewer child deaths. According to a report from the nonprofit organization Save the Children,

- **The number of children struggling with hunger would fall by a quarter (26 percent).** In California, there would be 470,000 fewer hungry children and in Texas, 460,000 fewer. Child food insecurity would drop by 35 percent in Michigan, North Dakota and West Virginia. It would drop 36 percent in Kentucky, 37 percent in Tennessee and 41 percent in Virginia.
- **The number of babies born to teenagers would be reduced by more than 70 percent.** In Texas, there would be 19,000 fewer each year and in California, 11,000 fewer. Eliminating inequities in Maryland, New Jersey and Wisconsin would lead to 85 percent fewer teen births. The reduction would be 88 percent in Georgia and 94 percent in Virginia.
- **More than two of every five child deaths (44 percent) would be prevented.** Some of the greatest gains would be made in Georgia, Iowa, Missouri, Rhode Island and Tennessee, where death rates of children under age 18 would fall by 60 percent or more. Closing survival gaps would mean 1,400 fewer deaths per year in Texas and 1,700 fewer deaths in California.

BROADBAND COMMUNITIES' conclusions are rough estimates. There is no firm data on the number of children in rural premises that lack access. We know that at least 2 million premises (and possibly far more) with schoolchildren are benefiting from free broadband access during COVID-19. We also know the FCC is reforming its data system, but the reform is aimed at premises, not people. We know that immediate food and shelter needs eclipse broadband needs.

But we also know that major carriers have become major content providers, and that the unregulated content business will be more profitable with more connected customers. We know that states have begun loosening restrictions on public deployments and adding their own funds to subsidize public and private deployments. Congressional staffers are aiming at substantial new subsidies for student access and for new deployments.

It's time for the federal government to do more, and there are bills in Congress to do just that. Save the children. ❖

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Lack of Broadband Access Linked to Childhood Poverty

There's a new reason to provide more funds for broadband deployments, and a new tool for deployers to target the counties most in need – especially in rural areas.

By Steven S. Ross / *Broadband Communities*

Lack of good broadband access is a strong predictor of childhood poverty. That's the finding of **BROADBAND COMMUNITIES'** recent analysis combining county-level broadband data it has collected since 2010 with comprehensive, county-level poverty data compiled by the nonprofit organization Save the Children. We looked at overall poverty rankings, and, with sensitivities heightened because of the current need for distance learning, we also analyzed high school graduation patterns.

As Table 1 shows, childhood poverty almost inevitably increases as broadband access worsens. The top half of counties, ranked by broadband access relative to other counties in their states, have a child poverty rate of about 18 percent, and the bottom half have a child poverty rate of more than 21 percent. The gap grows in states that restrict communities from building their own broadband systems where commercial carriers cannot or will not do so (Table 2). In the bottom half of all counties in those states, child poverty related to broadband grows to more than 24 percent. The lowest-ranked counties are at 31 percent.

Rural counties bear the brunt of the bad news, especially when they are at the bottom of the broadband rankings. The top rural counties in "restriction" states have a child poverty rate of 13 percent. The bottom counties have a rate of 30 percent (Table 4).

All data in this article refers to a pre-COVID United States, but broadband disparities now

are even worse than they were at the start of 2020 given work-from-home and distance-learning demands brought on by the pandemic. In urban areas where access is available but not always affordable, providers usually have made it available free or at low cost during the COVID-19 lockdown. Almost half of all rural homes have no broadband at any price.

At the time this goes to press, there are numerous new and revitalized efforts at the local, state and federal levels of government to close the broadband gap. The efforts cannot come soon enough, even though beginning in 2018, the federal government alone earmarked about \$3 billion in new federal grants and loans for broadband deployments (up from only \$40 million available in 2017). About a third of those funds already have been awarded this year by the USDA or soon will be. Later this year, the FCC will begin awarding another \$2 billion per year for 10 years to subsidize operations in least-served areas.

DOES LACK OF BROADBAND INCREASE CHILD POVERTY?

Showing a link between child poverty and lack of broadband is relatively simple, but determining which causes which is more difficult. **BROADBAND COMMUNITIES** has studied the broadband gap since 2014. Almost all of our analyses reveal that restricting governmental entities that build or threaten to build their own

networks when other entities cannot or will not do so heightens disparities.

For instance, **BROADBAND COMMUNITIES** data shows that rural counties in restriction states have lost population at three times the annual rate of non-restriction states since 2010, even though the restriction states have higher population growth overall. That means rural restriction-state counties have experienced population losses of about 1 percent versus 0.3 percent in non-restriction states. Those rates of population loss, which did slow starting in 2017, have helped determine the direction of causality. At least a quarter, and as much as half, of all rural population loss since 2010 was caused by lack of adequate – or any – broadband access.

BROADBAND COMMUNITIES has reported that median family income also declines with lack of good broadband, but the direction of causality is not as clear as it is with

The top half of counties in terms of broadband coverage have a child poverty rate of about 18 percent, and the bottom half of counties have a child poverty rate of more than 21 percent.

population loss, largely because the families that are most poverty-stricken and most in need of employment tend to migrate to urban areas, effectively raising the median income for the areas they left.

Because of the difficulty in showing that inadequate broadband depresses median income, I expected to have the same difficulty showing that it increases child poverty. As Tables 2 and 3 show, however, there is clear indication of a poverty disparity between restriction and non-restriction states, especially in the most underserved 10 percent of

counties in each state. In other words, child poverty is even worse in unserved counties of the states where municipalities cannot build their own broadband networks. This suggests that inadequate broadband is the causal factor.

This evidence exists despite the fact that Save the Children gathered only enough data to fully rank 2,617 of the 3,143 counties in the United States.

BROADBAND COMMUNITIES can and does rank data from all 3,143 counties.

Save the Children graciously supplied all data it was able to gather

Table 1. Data for all U.S. counties	Total population	Number of children aged 0-18	Percentage of population that is children	Number of children in poverty	Percentage of children in poverty	Number of children who take more than four years to complete high school	Percentage of children who take more than four years to complete high school
County with best broadband in state	32,351,828	9,017,487	28%	1,621,091	18%	1,617,662	18%
Top 10% of counties in state in terms of broadband coverage	103,044,965	28,381,691	28%	4,969,785	18%	3,882,820	14%
Top half of counties in state in terms of broadband coverage	130,365,072	35,688,465	27%	6,408,608	18%	4,790,390	13%
Bottom half of counties in state in terms of broadband coverage	44,329,897	11,847,475	27%	2,479,423	21%	1,426,183	12%
Bottom 10% of counties in terms of broadband coverage	4,067,908	1,096,641	27%	260,223	24%	117,777	11%
County with the poorest broadband coverage in state	1,322,720	338,959	26%	70,434	21%	44,274	13%

Table 1. Higher broadband ratings tend to correlate with lower poverty ratings. We suspect the correlation would be even stronger if we accounted for unaffordability in urban areas; Congress and the FCC had to make special provisions to gain online access for home schooling. In the table, categories do not overlap. The “County with best broadband in state” is not included in the “Top 10% of counties in state in terms of broadband coverage,” and those two categories are not included in the “Top (or Bottom) half of counties in state in terms of broadband coverage.” When there are fewer than 10 counties in a state, there may not be a “Top (or Bottom) 10% of counties in state in terms of broadband coverage” ranking.

for the 3,143 counties anyway, even though it could not make the information available on its website's interactive mapping tool.

OTHER INSIGHTS FROM SAVE THE CHILDREN DATA

Combining the **BROADBAND COMMUNITIES** and Save the Children datasets offers insights in the aggregate, even when the data is incomplete. For instance, **BROADBAND COMMUNITIES** ranks all counties against others in each state with regard to broadband access. Comparing the 50 counties on the bottom of the **BROADBAND COMMUNITIES** state lists with Save the Children's list shows that the 21 that Save the Children could evaluate were

marked by childhood poverty as well as poor broadband. Four were ranked at the bottom of their state by Save the Children, another 10 were in the bottom half, and only seven were in the top half – most just barely (Table 8).

Thus, although Save the Children had enough data to rank 83 percent of all U.S. counties overall, it could rank only 40 percent of the counties at the bottom of **BROADBAND COMMUNITIES'** state lists. More than 1.3 million people, including more than 300,000 children, live in those 50 counties, according to U.S. census data (Table 1). But Save the Children could be sure that only 70,000 of the children (21 percent) live in poverty. Given the missing data and results from counties

that can be tracked, the real proportion is probably 30 percent or more – another 30,000.

Save the Children also reported that 13 percent of children in those counties had not finished high school in the regulation four years. Nationally, most kids who don't complete high school in four years never earn a standard high school diploma. In these counties, because it is far easier to track graduates than dropouts, it is likely that almost none of the missing 30,000 earned a degree, so closer to 25 percent of all children never earn a high-school diploma.

The shortcomings in the data are more obvious in the aggregate. In this case, Table 1 also shows the data for

(Continued on p. 36)

METHODOLOGY

Because I work with full national datasets, the results using conventional statistical methods are almost always, by definition, statistically significant. But they still are subject to systematic statistical bias I might not detect. As a diligent journalist, I double-check by contacting affected stakeholders.

I also use well-tested but less conventional methods, especially Bayesian statistics, to confirm results. Bayesian techniques require a starting point, aka a "prior." When users can't generate one, modern software supplies starting points. The Bayesian checks suggest that the odds my conclusions are correct are quite good – eight and usually nine out of 10. Even when I forced the priors somewhat, the odds did not get worse than five to one. That certainty could affect risk decisions by potential broadband deployers.

The last full census was in 2010. The 2020 census was still in progress in August. Data are not likely to be released until winter 2021 at the earliest. Intermediate surveys are taken to help guide industry, commerce and demographic researchers. But they are not complete, especially in rural areas, and they rely on the most recent full census as a starting point. So data quality, though excellent for many purposes, deteriorates as the decade progresses. The most recent partial national sampling was in 2018.

Starting in 2018, massive tax cuts and trillion-dollar federal deficits combined with big changes in immigration and trade policies created new and unprecedented trends in demographics and the economy. The detailed effects of that won't be clear

until the 2020 full census results are released next year.

BROADBAND COMMUNITIES' population base was 2013 for the data tables. This article uses 2018 population data double-checked with 2010 complete census data and the 2013 survey. The earlier data are slightly more reliable for rural areas. The later data are slightly better for urban areas, mainly because urban growth rates have been higher than rural population declines. The Bayesian calculations take this into account when defining the odds noted above.

Save the Children child poverty indicators such as death, teen pregnancy and hunger – the latest nationally available – are based mainly on data gathered by federal agencies in 2019 for the previous year – 2018. For this article, the data on percentage of children (aged 0–18, that is, until they reach their 19th birthday) living in poverty comes from the U.S. Census Bureau 2018 Small Area Income and Poverty Estimates (SAIPE) Program.

The dropout data is derived from the public high school four-year adjusted cohort graduation rate (ACGR) covering the 2016–17 school year. The ACGR is calculated as the number of students who graduate in four years with a regular high school diploma, divided by the number of students who form the adjusted cohort for the graduating class. From the beginning of high school, students who enter a grade for the first time form a cohort that is adjusted by each school district (there are about 17,000 in the United States) by adding students who subsequently transfer into the cohort and subtracting any students who subsequently transfer out, immigrate to another country or die.

Table 2. Data for Restriction States; All counties	Total population	Number of children aged 0-18	Percentage of population that is children	Number of children in poverty	Percentage of children in poverty	Number of children who take more than four years to complete high school	Percentage of children who take more than four years to complete high school
County with best broadband in state	13,201,029	3,750,743	28%	661,606	18%	611,876	16%
Top 10% of counties in state in terms of broadband coverage	50,875,536	14,320,063	28%	2,549,329	18%	1,840,612	13%
Top half of counties in state in terms of broadband coverage	63,056,865	17,243,241	27%	3,262,938	19%	2,181,225	13%
Bottom half of counties in state in terms of broadband coverage	18,182,620	4,799,784	26%	1,077,672	22%	570,892	12%
Bottom 10% of counties in terms of broadband coverage	1,983,252	510,248	26%	123,787	24%	53,741	11%
County with the poorest broadband coverage in state	86,209	19,694	23%	6,148	31%	2,535	13%

Table 2. All counties in states that restrict community-owned government-deployed broadband. In the table, categories do not overlap. The “County with best broadband in state” is not included in the “Top 10% of counties in state in terms of broadband coverage,” and those two categories are not included in the “Top (or Bottom) half of counties in state in terms of broadband coverage.” When there are fewer than 10 counties in a state, there may not be a “Top (or Bottom) 10% of counties in state in terms of broadband coverage” ranking.

Table 3. Data for Non-Restriction States: All Counties	Total population	Number of children aged 0-18	Percentage of population that is children	Number of children in poverty	Percentage of children in poverty	Number of children who take more than four years to complete high school	Percentage of children who take more than four years to complete high school
County with best broadband in state	19,150,799	5,266,744	28%	959,485	18%	1,005,786	19%
Top 10% of counties in state in terms of broadband coverage	52,169,429	14,061,628	27%	2,420,456	17%	2,042,208	15%
Top half of counties in state in terms of broadband coverage	67,308,207	18,445,224	27%	3,145,670	17%	2,609,165	14%
Bottom half of counties in state in terms of broadband coverage	26,147,277	7,047,691	27%	1,401,751	20%	855,292	12%
Bottom 10% of counties in terms of broadband coverage	2,084,656	586,393	28%	136,436	23%	64,036	11%
County with the poorest broadband coverage in state	1,236,511	319,265	26%	64,286	20%	41,739	13%

Table 3. All counties in states that do not restrict community-owned government-deployed broadband. In the table, categories do not overlap. The “County with best broadband in state” is not included in the “Top 10% of counties in state in terms of broadband coverage,” and those two categories are not included in the “Top (or Bottom) half of counties in state in terms of broadband coverage.” When there are fewer than 10 counties in a state, there may not be a “Top (or Bottom) 10% of counties in state in terms of broadband coverage” ranking.

ECONOMIC DEVELOPMENT

Table 4. Data for restriction states: All rural counties	Total population	Number of children aged 0-18	Percentage of population that is children	Number of children in poverty	Percentage of children in poverty	Number of children who take more than four years to complete high school	Percentage of children who take more than four years to complete high school
County with best broadband in state	80,654	19,599	24%	2,548	13%	1,809	9%
Top 10% of counties in state in terms of broadband coverage	805,198	229,753	29%	42,446	18%	24,220	11%
Top half of counties in state in terms of broadband coverage	10,457,952	2,846,742	27%	650,748	23%	316,375	11%
Bottom half of counties in state in terms of broadband coverage	10,320,606	2,796,779	27%	687,521	25%	319,410	11%
Bottom 10% of counties in terms of broadband coverage	1,604,155	410,015	26%	103,475	25%	40,669	10%
County with the poorest broadband coverage in state	86,209	19,694	23%	6,148	31%	2,535	13%

Table 4. Rural counties in states that restrict community-owned government-deployed broadband. In the table, categories do not overlap. The “County with best broadband in state” is not included in the “Top 10% of counties in state in terms of broadband coverage,” and those two categories are not included in the “Top (or Bottom) half of counties in state in terms of broadband coverage.” When there are fewer than 10 counties in a state, there may not be a “Top (or Bottom) 10% of counties in state in terms of broadband coverage” ranking.

Table 5. Data for non-restriction states: All rural counties	Total population	Number of children aged 0-18	Percentage of population that is children	Number of children in poverty	Percentage of children in poverty	Number of children who take more than four years to complete high school	Percentage of children who take more than four years to complete high school
County with best broadband in state	46,677	11,891	25%	1,669	14%	2,100	18%
Top 10% of counties in state in terms of broadband coverage	961,378	271,956	28%	52,758	19%	38,821	14%
Top half of counties in state in terms of broadband coverage	10,034,467	2,823,264	28%	590,458	21%	352,531	12%
Bottom half of counties in state in terms of broadband coverage	10,796,941	2,848,531	26%	673,854	24%	376,022	13%
Bottom 10% of counties in terms of broadband coverage	1,564,590	438,787	28%	101,383	23%	48,699	11%
County with the poorest broadband coverage in state	331,162	95,966	29%	28,959	30%	15,938	17%

Table 5. Rural counties in states that do not restrict community-owned government-deployed broadband. In the table, categories do not overlap. The “County with best broadband in state” is not included in the “Top 10% of counties in state in terms of broadband coverage,” and those two categories are not included in the “Top (or Bottom) half of counties in state in terms of broadband coverage.” When there are fewer than 10 counties in a state, there may not be a “Top (or Bottom) 10% of counties in state in terms of broadband coverage” ranking.



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ECONOMIC DEVELOPMENT

Table 6. Data for restriction states: All metro counties	Total population	Number of children aged 0-18	Percentage of population that is children	Number of children in poverty	Percentage of children in poverty	Number of children who take more than four years to complete high school	Percentage of children who take more than four years to complete high school
County with best broadband in state	13,120,375	3,731,144	28%	659,058	18%	610,067	16%
Top 10% of counties in state in terms of broadband coverage	50,070,338	14,090,310	28%	2,506,883	18%	1,816,392	13%
Top half of counties in state in terms of broadband coverage	52,598,913	14,396,499	27%	2,612,190	18%	1,864,850	13%
Bottom half of counties in state in terms of broadband coverage	7,862,014	2,003,005	25%	390,151	19%	251,482	13%
Bottom 10% of counties in terms of broadband coverage	379,097	100,233	26%	20,312	20%	13,072	13%
County with the poorest broadband coverage in state	–	–	–	–	–	–	–

Table 6. Metropolitan counties in states that restrict community-owned government-deployed broadband. In the table, categories do not overlap. The “County with best broadband in state” is not included in the “Top 10% of counties in state in terms of broadband coverage,” and those two categories are not included in the “Top (or Bottom) half of counties in state in terms of broadband coverage.” When there are fewer than 10 counties in a state, there may not be a “Top (or Bottom) 10% of counties in state in terms of broadband coverage” ranking.

Table 7. Data for non-restriction states: All metro counties	Total population	Number of children aged 0-18	Percentage of population that is children	Number of children in poverty	Percentage of children in poverty	Number of children who take more than four years to complete high school	Percentage of children who take more than four years to complete high school
County with best broadband in state	19,104,122	5,254,853	28%	957,816	18%	1,003,686	19%
Top 10% of counties in state in terms of broadband coverage	51,208,051	13,789,672	27%	2,367,698	17%	2,003,387	15%
Top half of counties in state in terms of broadband coverage	57,273,740	15,621,960	27%	2,555,212	16%	2,256,634	14%
Bottom half of counties in state in terms of broadband coverage	15,350,336	4,199,160	27%	727,897	17%	479,270	11%
Bottom 10% of counties in terms of broadband coverage	520,066	147,606	28%	35,053	24%	15,337	10%
County with the poorest broadband coverage in state	905,349	223,299	25%	35,327	16%	25,801	12%

Table 7. Metropolitan counties in states that do not restrict community-owned government-deployed broadband. In the table, categories do not overlap. The “County with best broadband in state” is not included in the “Top 10% of counties in state in terms of broadband coverage,” and those two categories are not included in the “Top (or Bottom) half of counties in state in terms of broadband coverage.” When there are fewer than 10 counties in a state, there may not be a “Top (or Bottom) 10% of counties in state in terms of broadband coverage” ranking.

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ECONOMIC DEVELOPMENT

State	County	Save the Children Rank	Number of counties in state ranked by Save the Children	Restriction state?
Alabama	Greene	65	67	Yes
Alaska	Yakutat	D	13	
Arizona	Apache	14	15	
Arkansas	Calhoun	D	69	Yes
California	Alpine	D	54	
Colorado	Mineral	D	41	Yes
Connecticut	New London	5	8	
Delaware	Kent	1	3	
Florida	Dixie	43	66	Yes
Georgia	Webster	D	140	
Hawaii	Kalawao	D	4	
Idaho	Clark	D	33	
Illinois	Schuyler	D	92	
Indiana	Switzerland	66	89	
Iowa	Adams	D	87	
Kansas	Greeley	D	57	
Kentucky	Robertson	D	113	
Louisiana	Tensas	D	62	Yes
Maine	Franklin	5	13	
Maryland	Queen Anne's	3	24	
Massachusetts	Berkshire	9	12	
Michigan	Lake	76	76	Yes
Minnesota	Cook	D	72	Yes
Mississippi	Issaquena	D	80	
Missouri	Worth	36	103	Yes

State	County	Save the Children Rank	Number of counties in state ranked by Save the Children	Restriction state?
Montana	Petroleum	D	28	
Nebraska	Blaine	D	36	Yes
Nevada	Eureka	D	11	Yes
New Hampshire	Belknap	3	10	
New Jersey	Cumberland	21	21	
New Mexico	Harding	D	26	
New York	Hamilton	D	61	
North Carolina	Hyde	D	95	Yes
North Dakota	Billings	D	12	
Ohio	Monroe	75	88	
Oklahoma	Cimarron	D	59	
Oregon	Wheeler	D	31	
Pennsylvania	Cameron	D	64	Yes
Rhode Island	Washington	2	5	
South Carolina	Greenwood	33	46	Yes
South Dakota	Buffalo	D	30	
Tennessee	Lake	88	90	Yes
Texas	Loving	D	189	Yes
Utah	Daggett	D	23	Yes
Vermont	Lamoille	7	12	
Virginia	Highland	D	115	Yes
Washington	Ferry	34	34	Yes
West Virginia	Calhoun	37	49	
Wisconsin	Menominee	69	69	Yes
Wyoming	Niobrara	D	19	

Table 8. Counties ranked at the bottom of their state by **BROADBAND COMMUNITIES**, compared with ranking by Save the Children. D indicates insufficient data for Save the Children ranking. Save the Children ranked only seven of the 50 counties in the top half.

(Continued from p. 30)

the best-served broadband counties in each state. In general, of course, they are comparatively rich and urban. They have total populations of more than 42 million, including 9 million children. More than 1.6 million are in poverty (18 percent), and 18 percent fail to graduate from high school on time. In urban areas, it also is easier for those who take more than four years to eventually graduate.

Without the comparison made

possible by combining the two sets of data, it might appear that wealthy urban districts have a higher high school dropout rate (calculated in tables as percent of all children) than poor rural districts. I often see those kinds of mistakes riddling papers by academic economists who use only income data, thereby poisoning the arguments against more broadband aid.

It is unclear what the effect of COVID lockdowns will do to

graduation rates going forward. We could see lockdowns and disruptions into spring 2021, in part because vaccines are not being tested on children yet, so a vaccine likely won't be available to them at least until spring. COVID lockdowns did not heavily impact rural counties this spring; graduation ceremonies were stunted, but kids graduated, according to data I was able to collect. The federal government has not posted 2019 data.

EXPLORING SAVE THE CHILDREN DATA

The complete Save the Children report can be downloaded here: www.savethechildren.org/content/dam/usa/reports/advocacy/us-childhood-report-2020.pdf. It notes that the United States, despite having the world's largest economy, ranks 43rd of 180 countries on helping children reach their full potential. The United States lagged behind most of Europe even before flubbing the handling of the COVID-19 pandemic.

There are also huge differences within the United States, as noted previously. When it comes to nurturing children, New Jersey and Massachusetts are at the top and Louisiana is at the bottom. There are also startling differences within states. The interactive map and database at www.savethechildren.org/us/about-us/resource-library/us-childhood-report can be searched at the county level for all 2,617 counties that had enough available data to directly rank.

According to Save the Children, rural child poverty rates are worse than urban rates in 41 of the 47 states with at least some areas designated as rural. Across the United States, almost 84 percent of the counties where the most children struggle with hunger are rural and high poverty.

The United States, despite having the world's largest economy, ranks 43rd of 180 countries on helping children reach their full potential.

This article uses the overall child poverty rate Save the Children uses. **BROADBAND COMMUNITIES** notes high school performance separately, however, because broadband availability has a direct influence on that number – an influence that is now even greater because of distance-learning needs during the COVID-19 pandemic. Children in the worst-performing counties, even within the same state, are as much as 14 times more likely to drop out of school or repeat grades. For instance, in Madison Parish, Louisiana, 60 percent of children do not finish high school in four years. In Lincoln Parish, Louisiana, only 4 percent of children fail to graduate on time.

Some other results of poverty are truly eye-opening. More than half of counties where the most children die are rural and high-poverty. In fact, children in the most disadvantaged counties die at rates up to five times those of children in the highest-ranked

counties. Virginia is normally thought of as being quite wealthy. But York County there has a child death rate of 27 per 100,000, whereas in Petersburg, a poorer independent city in the state, the rate is 128 per 100,000.

Child hunger rates can vary by a factor of three. In Kentucky, 12 percent of children in Oldham County are at risk of hunger. Shocking enough. But that rate is below the national average and low compared with 30 percent of children in Kentucky's Clay County.

Broadband can bring these counties more and better jobs, more and better schooling and more and better health care – including mental health care. ❖

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CONFOUNDERS: ISSUES THAT CAN INVALIDATE AN ANALYSIS

- **Chicken-and-egg.** Is child poverty increasing (in part) because of poor broadband, or is poor broadband the result of lousy business cases because of poverty? Or is it the result of “outside” influences, unknown or unexplored?
- **States have very different ways of organizing themselves into counties.** Texas alone has almost 10 percent of all U.S. counties.
- **States vary in other ways.** States have different geographies, population densities, distributions and temporary economic advantages (new oil discoveries, retiree attraction, etc.). In addition, states with restrictions on municipal broadband have different kinds of restrictions, enacted at different times. Different states and communities calculate key educational performance data differently. New York City public schools understate the problem because they do not include students as dropouts if they were not in the system by 9th grade.
- **25 Mbps download, 3 Mbps upload speed is the FCC's threshold for “broadband.”** That level is somewhat arbitrary, however.
- **Variance on X-Axis.** National Broadband Map data is flaky and tends to overestimate actual access.
- **Take-rate variance.** Even in counties with great 25 Mbps access, less than half of households with supposed access bought it in 2018. Still, this is more than double the 17 percent of 2014. Take rate is far higher and churn far lower in rural areas and in urban neighborhoods with school-age children. Anecdotally, COVID-19 has strengthened that effect.