

Methodology - Rural Child Well-being Dashboards

Prepared for: Save the Children US

Prepared by: Tekja

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1. Dashboard content

The dashboards include:

- **A set of indicator pages with dot plots**, one chart per indicator, representing state-level rural and non-rural averages for the 49 states included (see section "Geographic coverage and exclusions"). Each row is a state; a red dot shows the rural value, a black dot shows the non-rural value, and the line between them is the gap. The national rural average is pinned at the top of the chart and drawn as a vertical reference line. Readers can re-sort the chart by the size of the rural / non-rural gap, and highlight states where the rural average is lower (or, depending on the indicator's direction, higher) than the non-rural average. The highlight toggle is not offered for indicators with no better/worse direction (Race & Ethnicity, Disability, % of population under 18 / under 5, vehicle access). This data has been created by Tekja from tract-level (and school-district-level) source data. See sections "State-level averages" and "National averages".
- **A set of state pages**, each with:
 - **A choropleth map of the state's rural areas**. Most indicators are mapped by census tract; the education indicators (test scores, score trends, chronic absenteeism) are mapped by school district. Only rural tracts / districts are shaded with data colours; non-rural areas are pale grey, and rural areas with no data for the selected indicator are light grey. This reflects the original tract- and district-level data. See section "Map colour bands".
 - **A "Full State Statistics" table** showing, for every indicator: the rural average, the rural count (shown as "N/A" for indicators without one), the state rank, the non-rural average, and the whole-state average. This data has been created by Tekja from the original tract- and district-level data. See sections "State-level averages" and "Ranking".
- **A rural lookup tool**, where users can enter a zip code, or search for a public school, to find out whether it is classified as rural. See section "The rural lookup tool".
- **A home page** with a national map of rural areas per the HRSA FORHP definition (additionally highlighting rural communities where more than 20% of children live in poverty), and entry points to the indicator pages.

2. The rural definition

The dashboards use the Health Resources and Services Administration (HRSA) Federal Office of Rural Health Policy (FORHP) rural definition, applied at the census-tract level.

Unlike the county-level definitions of rural that are commonly used, the FORHP definition distinguishes rural from non-rural places at the community (census tract) level. As a result, the dashboards include rural communities — particularly rural pockets in large metropolitan counties in the West — that county-level rural data sources leave out.

One single set of rural census tracts drives every rural classification in the product:

- the shaded areas on the maps (state pages and home page);
- the rural / non-rural split behind every average, count, and rank;
- the zip-code lookup (a zip code is classified rural if its geographic centroid falls inside a rural tract);
- the school lookup (a school is classified rural if its NCES coordinates fall inside a rural tract).

This guarantees that the map, the statistics, and the lookup tool can never disagree with one another.

3. Data variables

The table below summarises the variables used in the dashboards. "Type" determines how a value is displayed (% , score, count, or a binary yes/no classification). "Geography" is the unit the underlying data is published at, and therefore the unit drawn on the maps.

Bucket	Indicator	Type	Geography	Year
Income & Poverty	Median family income	score (\$)	tract	2020–2024
Income & Poverty	% of children under 18 living in poverty	%	tract	2020–2024
Income & Poverty	% of communities that are social and economic opportunity deserts ("child deserts")	binary	tract	2023
Food assistance & security	% of children eligible for USDA free and reduced-price meals	%	tract	2025
Food assistance & security	% of population who are food insecure	%	tract	2023
Food assistance & security	% of households with children under 18 enrolled in SNAP in past 12 months	%	tract	2020–2024
Childcare cost & access	Childcare centers per child under five within a 30-minute drive	count	tract	2025
Childcare cost & access	% of income spent on center-based childcare	%	tract	2022
Childcare cost & access	% of income spent on family childcare	%	tract	2022
Education (youth & adults)	% of adults 25+ with a bachelor's degree	%	tract	2020–2024
Education (youth & adults)	% of adults 25+ with a high school diploma or associate degree (no bachelor's)	%	tract	2020–2024
Education (youth & adults)	% of youth 16–19 who have dropped out of school	%	tract	2020–2024
Education (children)	% of communities that are education opportunity deserts	binary	tract	2023
Education (children)	Test score grade level relative to actual grade level — math	score	school district	2022–2025

Education (children)	Test score grade level relative to actual grade level — reading & language arts	score	school district	2022-2025
Education (children)	Test score grade level among 3rd graders — math	score	school district	2024
Education (children)	Test score grade level among 3rd graders — reading & language arts	score	school district	2024
Education (children)	Trend in 3rd–8th grade math scores	score	school district	2022-2025
Education (children)	Trend in 3rd–8th grade reading & language arts scores	score	school district	2022-2025
Education (children)	% of children (K-12) absent 10%+ of instructional days	%	school district	2025
Job access	% of communities that are job deserts	binary	tract	—
Housing & transportation	% of household income spent on home energy	%	tract	2022
Housing & transportation	% of household income spent on housing	%	tract	2022
Housing & transportation	% of household income spent on transportation	%	tract	2022
Housing & transportation	% of households with at least one vehicle	%	tract	2020–2024
Disaster vulnerability	% of population with three or more factors increasing disaster vulnerability	%	tract	2024
Disaster vulnerability	Exposure to natural hazards (index)	score	tract	2023
Disaster vulnerability	Social vulnerability (index)	score	tract	2018–2022
Broadband access	% of households with broadband access (25 Mbps down / 3 Mbps up)	%	tract	2025
Race & Ethnicity	% of children who are American Indian and Alaska Native	%	tract	2020–2024
Race & Ethnicity	% of children who are Black / African American	%	tract	2020–2024
Race & Ethnicity	% of children who are Hispanic / Latino	%	tract	2020–2024
Race & Ethnicity	% of children who are non-Hispanic White	%	tract	2020–2024
Disability	% of children with disabilities	%	tract	2020–2024
Children	% of population under 18	%	tract	2020–2024
Children	% of population under 5	%	tract	2020–2024

Principal sources: American Community Survey (2020–2024 5-year estimates, via Social Explorer), FCC National Broadband Map, USDA Food and Nutrition Service, U.S. Department of Labor Women's Bureau (National Database of Childcare Prices), Stanford Education Data Archive, Return to Learn Tracker, diversitydatakids.org (Child Opportunity Index, Brandeis University), Center for Neighborhood Technology (Housing + Transportation Index), U.S. Department of Energy (LEAD), CDC (Social Vulnerability Index), U.S. Census Bureau (Community Resilience Estimates), Homeland Infrastructure Foundation-Level Data, and the National Center for Disaster Preparedness at Columbia Climate School (Natural Hazards Index). The full per-variable source,

year, and suggested citation are shown in the source popover next to every chart and Full State Statistics table row on the dashboards.

Binary "desert" classifications

Three indicators are yes/no classifications of communities rather than measured values:

- Child desert (social and economic opportunity desert): a tract in the lowest national quintile of the Child Opportunity Index Social & Economic domain score (i.e. a national percentile rank of 20 or below).
- Education opportunity desert: a tract in the lowest national quintile of the Child Opportunity Index Education domain score.
- Job desert: a tract in the lowest national quintile of the Job Access Score (an index based on access to jobs and a variety of employment types).

For these indicators, the state figures shown are the share of rural (or non-rural) tracts classified as a desert — an unweighted percentage of communities, not of children (see section "State-level averages").

4. Geographic coverage and exclusions

The dashboards include **49 states**. The following are not included in any map, chart, or calculation (including national averages):

- **Washington, D.C.** — it contains no rural census tracts;
- **Rhode Island** — excluded for insufficient rural coverage: this edition's source data contains only 6 rural census tracts for the state, too few to support meaningful rural averages, and the rural-tract map layer does not include Rhode Island;
- **Puerto Rico and the territories** — not part of the source dataset.

Every rank displayed on the dashboards carries a footnote noting the exclusion (in the key-statistics panel: "Excludes Rhode Island and Washington DC"; in the Full State Statistics table: "State count does not include Rhode Island or Washington DC").

In addition, a small number of state × indicator combinations are suppressed where too little data was reported — see section "Handling missing data".

5. State-level averages

Tract-level (and school-district-level) values are aggregated into three figures per state and indicator: the rural average (across the state's rural tracts/districts only), the non-rural average (across the remainder), and the whole-state average (across all tracts/districts).

All three are computed the same way: a weighted average of the tract (or district) values, where the weight is chosen per indicator to match what the indicator describes. The general formula is:

$$\text{Weighted average} = \Sigma (\text{value of tract } i \times \text{weight of tract } i) \div \Sigma (\text{weight of tract } i)$$

summed over the rural tracts (for the rural average), the non-rural tracts (non-rural average), or all tracts (state average).

Illustrative example — four rural tracts, child-poverty rate weighted by number of children under 18:

Tract	% children in poverty	Children under 18 (weight)	value × weight
A	10.0	500	5,000
B	30.0	1,500	45,000
C	20.0	1,000	20,000
D	25.0	2,000	50,000
Total		5,000	120,000

Rural average = $120,000 \div 5,000 = \mathbf{24.0\%}$. Note that this is not the simple mean of the four rates (21.25%): tracts where more children live count for more, so the figure describes the situation of the average rural *child*, not the average rural *tract*.

Weighting basis per indicator

Indicator(s)	Weight
Child poverty, free/reduced-price meals, food insecurity, SNAP households, school dropout, race & ethnicity of children, children with disabilities	Children under 18 in the tract
Childcare cost (center-based and family)	Children under 5 in the tract
Median family income, % adults with bachelor's / high-school diploma, energy burden, housing cost, transportation cost, broadband access, % population under 18 / under 5	Total tract population (including adults)
Vehicle access	Households in the tract
Chronic absenteeism	School-district enrollment
Test scores and score trends (Stanford Education Data Archive)	Statistical precision (inverse-variance, $1/SE^2$) — districts whose estimates are more reliable count for more
Deserts (child, education opportunity, job), childcare centers per child within 30 min, community resilience, natural hazards index, social vulnerability index	Unweighted — every tract with data counts equally

Special cases

- Deserts (binary indicators): the state figure is the unweighted share of communities (tracts) classified as a desert. It is not a share of children, and a "number of children affected" cannot be read off it directly.
- Median family income: the state figure is a population-weighted average of tract-level medians. It is a close approximation of typical family income, but not an exact statewide median.
- Test scores and trends: the state figure is the typical district performance, precision-weighted. It is not a per-student average and is not enrollment-weighted.
- Unweighted indices (natural hazards, social vulnerability, community resilience): every tract counts equally; the figure describes the typical rural place, not the typical rural resident.

6. National averages

The "National rural average" shown at the top of every dot plot (and the corresponding non-rural and national figures) uses exactly the same weighted-average method, applied to the full pool of rural (or non-rural) tracts/districts across the 49 included states. Rhode Island and Washington, D.C. are excluded, consistently with the state figures.

Because the same per-tract weights are used, the national figure is mathematically identical to a weighted average of the 49 state averages (weighted by each state's total weight). It is not a simple mean of the state values: populous states count for more, so the figure describes the average rural child (or resident, household, or district — per the indicator's weighting basis) in America.

7. Counts

Alongside percentages, the dashboards show rural counts where the source data supports them — for example, the number of rural children living in poverty in a state. Counts are simple sums of the tract-level counts across the state's rural tracts. They are shown in the Full State Statistics table and used in chart tooltips; no weighting is involved.

Counts are not available for every indicator (e.g. index scores and rates whose sources do not publish tract counts); where unavailable, no count is displayed.

8. Handling missing data

Not every tract or district reports every indicator. Missing data is handled in three layers:

1. **Within the averages.** Tracts/districts with no value for an indicator are excluded from that indicator's weighted average, and the weights are drawn from the remaining tracts only (the denominator shrinks accordingly — equivalent to the worked example in the 2024 methodology, where rows without a value were removed before computing the weighted average).
2. **Suppression below 50% coverage.** For every state × indicator combination, we track the share of rural (and, separately, non-rural) tracts or districts that reported a value. If **fewer than 50%** reported:
 - the corresponding average is **not shown** — the table cell reads "N/A" and the state's rank is withheld;
 - the state is **hidden from that indicator's dot plot**;
 - on the state page, a note explains that the average is not shown because fewer than 50% of the state's tracts (or districts) reported the indicator — while the **map still shows** the tracts that did report.
3. **On the maps.** Rural tracts/districts with no value for the selected indicator are shown in **light grey** ("no data"), distinct from the **pale grey** used for non-rural areas. The map legend labels both.

9. Ranking

The Full State Statistics table ranks each state by its **rural average** for the indicator.

- **Rank #1 always marks the state where rural areas fare worst on that indicator** — the state of greatest need. The ranking direction therefore depends on the indicator: for child poverty, rank #1 is the highest rate; for median income or broadband access, rank #1 is the lowest value. The direction for every indicator is recorded in the master variables file ("Ranking system": ascending = lowest value ranks first, used where higher is better; descending = highest value ranks first, used where higher is worse).
- **The denominator is per-indicator.** Ranks are displayed as "#N /D" (e.g. "#12 /49"), where D is the number of states with a publishable rural average for that indicator. D is 49 where all included states have data, and ranges down to 39 for indicators with more limited coverage (e.g. some test-score measures). This replaces the fixed "/49" of earlier drafts so that a rank is never read against states that have no data.
- **The Race & Ethnicity variables are not ranked** — there is no better/worse direction to rank them on.
- Every rank carries a footnote noting the Rhode Island / Washington DC exclusion (see section "Geographic coverage and exclusions" for the exact wording in each location); suppressed combinations (see section "Handling missing data") show "N/A".

Ranking direction per indicator:

Indicator	Rank #1 =
Child poverty, free/reduced-price meals, food insecurity, SNAP households, childcare cost (both), school dropout, chronic absenteeism, energy / housing / transportation cost burden, disaster vulnerability (all three), deserts (all three), children with disabilities, % under 18, % under 5	Highest value (worst)
Median family income, childcare centers per child, adult educational attainment (both), test scores and trends (all six), vehicle access, broadband access	Lowest value (worst)
Race & ethnicity (all four)	Not ranked

10. Map colour bands

The state-page choropleths use three banding schemes, chosen per indicator. All bands are pre-computed in the data pipeline and shipped with the site, so every user sees identical maps.

Sequential indicators (most indicators)

Bands are calculated **per state, across that state's rural tracts/districts only** — colours compare each community *within its own state*, not against the rest of the country. As in the 2024 edition, we use **quartiles** rather than Jenks natural breaks: quartiles are easier for a general audience to read ("this tract is in the top quarter of the state") and are more robust when samples are small.

- The state's rural communities are split into **four equal-count groups** (quartiles): palest for the lowest quarter, deepest for the highest.
- Quartiles are computed **unweighted** over the tracts — on the map, every community with data counts equally, regardless of population. (The averages elsewhere on the page use each indicator's own weighting basis; the two are computed separately and answer different questions.)
- **Small-sample fallbacks:** a state needs at least **20** rural tracts/districts with data to get four bands. With fewer than 20, the map falls back to a **two-band split at the median**; with fewer than **4**, no bands are shown at all.

Diverging indicators (test-score trends)

The two score-trend indicators (math and reading & language arts trends) use a diverging scale centred on the national median across all rural school districts. The same band set is used in every state, so colours are comparable across the country. Districts above the median shade red, districts below shade teal; the band edges step outward from the median at the quartile, decile, and 1st/99th-percentile distances, so the deepest colours mark districts furthest from typical in either direction.

Binary indicators (deserts)

The three desert indicators are yes/no classifications (see section 3): a community is either shaded as a desert (deepest red) or as not a desert (palest), using the national bottom-quintile definitions. There are no value bands.

11. The rural lookup tool

The lookup tool answers "is my area / my school rural?" using the **same rural-tract layer as the rest of the dashboard**:

- **Zip codes:** each zip code is represented by its geographic centroid — the Census Bureau's official internal point for the ZCTA (from the U.S. Census Bureau 2024 ZCTA Gazetteer). A zip code is classified rural if its centroid falls inside a rural census tract (point-in-polygon test against the FORHP rural-tract layer). One caveat: a zip code can straddle rural and non-rural tracts; the centroid test assigns it to the side its geographic centre falls on, which matches what the user sees on the map.
- **Schools:** public schools come from the National Center for Education Statistics (NCES, 2024 directory, via the Urban Institute Education Data Portal). A school is classified rural if its NCES coordinates fall inside a rural census tract — the same test as for zip codes. The school's NCES locale code (city / suburb / town / rural) is displayed as supplementary context but does not drive the classification.

12. Sources and citations

Every chart and Full State Statistics table row carries a source popover showing the indicator's definition, source, year, and a suggested citation, drawn from the master variables file. The state-page maps instead carry a "How to read this map" explainer covering the rural definition, the colour bands, and the two grey categories. A "Cite this page" note on the indicator pages, state pages, and home page provides the recommended citation format for the dashboards themselves.

13. What changed since the 2024 methodology

For readers familiar with the January 2024 methodology document, the substantive changes are:

1. **Weighting.** In 2024, demographic percentages were computed as ratios of summed counts, and index scores used a single population-density weighting factor. The 2026 edition computes every average as a weighted mean of community-level values, with the weight chosen per indicator (children, young children, total population, households, enrollment, or statistical precision), and leaves place-level indices unweighted.
2. **New geography for education data.** Test scores, score trends, and chronic absenteeism which are reported and mapped at school-district level rather than tract level.

3. **Coverage rule.** The 2024 edition annotated averages "calculated on a limited amount of tracts". The 2026 edition applies a hard rule: below 50% reporting coverage, the average is suppressed outright (and the state is hidden from the dot plot), the map shows the communities that did report.
4. **Per-indicator rank denominators.** Ranks are shown out of the number of states with data for that indicator (39–49).
5. **Rhode Island.** Still excluded for insufficient rural coverage: the 2026 source data contains only 6 rural tracts for Rhode Island, and no Rhode Island rural-tract map layer was supplied (in 2024 it was excluded for having a single rural tract).
6. **Map bands.** Still state-level quartiles for most indicators, now with explicit small-sample fallbacks (median split under 20 communities; no bands under 4), plus a nationally-comparable diverging scale for score trends and binary shading for deserts.
7. **A unified rural classification.** Maps, statistics, the zip-code lookup, and the school lookup all derive from one rural-tract layer.