RACE FOR RESULTS

INDEX METHODOLOGY

2017 POLICY REPORT | KIDS COUNT

COMPARING CHILDREN'S SUCCESS ACROSS AND WITHIN STATES

THE ANNIE E. CASEY FOUNDATION

For more than 25 years, the Annie E. Casey Foundation has used the data-based advocacy of KIDS COUNT to raise the visibility of children's issues and to inform decision making at the state and local levels. Building on this work and the efforts of other groups nationwide that are using indicator analysis to contribute to positive change for children, we developed the Race for Results Index in 2014 to better measure the barriers to opportunity facing children due to race and ethnicity.

The Foundation began with the aspirational goal that all children should grow up in economically successful families, live in supportive communities and meet developmental, health and educational milestones. In an effort to capture the complex set of factors that influence a child's success, we chose to develop a composite index that would allow comparisons across racial and ethnic groups at the national level and within and across states.

The selection of indicators in the Race for Results Index was heavily informed by research from the Brookings Institution's Social Genome Project, which connects key indicators to the likelihood of a young person becoming middle class by middle age, and by the research that shows that children do best in supportive families and communities. The 12 indicators selected reflect different dimensions of child well-being and cover different stages of development, from birth to young adulthood. The indicators establish a positive frame, focusing on aspirational goals and the key pathways to success for children and youth in different age groups.

We have developed the 2017 edition of the index with one noteworthy change.

The way that the high school students graduating on time indicator is calculated and measured for the index was changed. In the 2014 report, we derived this indicator from the Averaged Freshman Graduation Rate (AFGR). For the 2017 report, we measure this indicator using data derived from the Adjusted Cohort Graduation Rate (ACGR). We changed the data source because the ACGR has now become the "gold standard" for graduation-rate reporting. It was designed to be more accurate and uniform across states, and it is the number that the U.S. Department of Education uses to report graduation rates.

THE FOLLOWING 12 MEASURES MAKE UP THE INDEX:

- Babies born at normal birthweight
- Children ages 3 to 5 enrolled in nursery school, preschool or kindergarten
- Fourth graders who scored at or above proficient in reading
- Eighth graders who scored at or above proficient in math
- High school students graduating on time
- Females ages 15 to 19 who delay childbearing until adulthood
- Young adults ages 19 to 26 who are in school or working
- Young adults ages 25 to 29 who have completed an associate's degree or higher
- Children birth to 17 who live with a householder who has at least a high school diploma
- Children birth to 17 who live in two-parent families
- Children birth to 17 who live in families with incomes at or above 200 percent of poverty
- Children birth to 17 who live in low-poverty areas (poverty <20 percent)

In selecting indicators to include in the index, one of the most important considerations was the availability of data for various racial and ethnic groups. For purposes of this analysis, all racial and ethnic groups are mutually exclusive. All data for racial groups are reported for non-Hispanics only, based on the U.S. Office of Management and Budget's guidelines:[1]

- African American
- American Indian
- Asian and Pacific Islander
- Latino
- White
- Two or More Races

Due to the relatively small size of the population and constraints on several of the data sets, Asian and Pacific Islander children were combined into one group. There are no state-level indices for children and youth of two or more races because insufficient data were available to allow meaningful comparisons on all 12 measures (missing data for babies born at normal birthweight, high school students graduating on time and females ages 15 to 19 who delay childbearing until adulthood). However, we present national estimates for children and youth of two or more races for the nine individual indicators with available data.

Developing a Racial and Ethnic Index of Well-Being

There was considerable discussion about the appropriate method that should be used to construct the racial and ethnic index. Staff from the Annie E. Casey Foundation and Population Reference Bureau (PRB) did an extensive literature review, held several internal meetings and consulted with expert advisors before selecting the final methodology. We initially considered constructing index values by comparing the well-being of children in different racial and ethnic groups against the national average. However, the national average does not provide a very compelling comparison point or benchmark for measuring success. We also considered constructing a simple average of the 12 indicators of well-being. But this method proved to be problematic because of the wide-ranging values across the different measures. In the end, we chose to replicate the method used to construct the annual KIDS COUNT Index, which is based on standardized scores.

The *KIDS COUNT Data Book* includes an index derived from standard scores (or z-scores) based on 50-state averages and standard deviations for 16 indicators of well-being. PRB staff created a modified version of the KIDS COUNT Index by calculating index scores for each racial and ethnic group in each state. For each variable, standard scores were derived by subtracting the mean state value (across 50 states and five racial and ethnic groups) from the observed estimate for a given state and racial and ethnic group and dividing the result by the standard deviation for that distribution of estimates, as shown in the following formula:

$$z_{sr} = \frac{x_{sr} - \mu}{Ó}$$

In this formula, z represents the z-score for a given state (s) and racial and ethnic group (r), and x represents the estimate of child well-being for a given state (s) and racial and ethnic group (r). The Greek letter mu represents the mean across the 250 state values (50 states * 5 racial and ethnic groups), and the Greek letter sigma represents the standard deviation.

Standardization is useful for this because although all the indicators are expressed as percentages the range of values across the 12 measures is very different. For example, the percentage of African-American babies born at normal birthweight is highest in North Dakota at 93 percent, just nine percentage points higher than the share in Alabama and Mississippi, which tied for the lowest rate at 84 percent. But the highest percentage of African-American eighth graders who scored at or above proficient in math (22 percent in Massachusetts) is more than four times the lowest rates (5 percent in Alabama and Michigan). By standardizing these variables and putting them on the same scale, we are able to capture this state-level variation and account for the fact that percentage values have different meanings across indicators.

The main drawback of using standard scores is that the resulting index values are difficult to interpret. Therefore, to show the differences in values across racial and ethnic groups and states, we converted these z-scores to a scale ranging from zero to 1,000, using the following formula:

$$f_{sr} = \left(\frac{z_{sr} - z_{min}}{z_{max} - z_{min}}\right) * 1{,}000$$

In this formula, f represents the final index value for a given indicator, state (s) and racial and ethnic group (r), while z represents the z-score calculated in the previous formula for a given state (s) and racial and ethnic group (r). Z_{min} and Z_{max} represent the smallest and largest z-scores, respectively, across all racial and ethnic groups and states for a given indicator. Index values are put on a scale ranging from zero to 1,000. We used a scale from zero to 1,000 (instead of zero to 100) so that people would not misinterpret the index values as percentages. Lower values represent worse outcomes for children, while higher values represent more positive outcomes for children.

We then constructed national index values by weighting the state-level index values for each racial and ethnic group based on the share of the national population under 18 in that group in each state.

Missing Data and Data Suppression

Missing data pose a potential problem because if data are missing for even one indicator for a given state and racial and ethnic group, then we are unable to construct complete summary index values for that state and group. This issue is most likely to affect states with smaller populations and fewer racial and ethnic groups. For example, it would not be possible to produce reliable estimates for Latino children in Maine for all 12 indicators of well-being.

We present state-level index values for Latinos and the following non-Hispanic racial groups: African Americans, American Indians, Asians and Pacific Islanders and whites. However, state-level index values for these groups are not displayed if four or more of the 12 estimates in the index are deemed to be unreliable. We present national-level index values for these same racial and ethnic groups. National and state index values are not calculated for those who identified as two or more races because too many estimates are missing to construct reliable index values.

Multiyear estimates were used where possible to boost the sample size and increase data reliability. Seven of the 12 indicators are based on three- and five-year estimates from the American Community Survey (six indicators were developed using three-year estimates and five-year estimates were used for children who live in low-poverty areas).

EVALUATING SURVEY DATA

Nine of the 12 indicators are based on survey data and therefore have some degree of error.

The following is a list of those nine indicators and their respective data source:

National Center for Education Statistics, National Assessment of Educational Progress (NAEP)

- Fourth graders who scored at or above proficient in reading
- Eighth graders who scored at or above proficient in math

United States Census Bureau, American Community Survey (ACS)

- Children ages 3 to 5 enrolled in nursery school, preschool or kindergarten
- Young adults ages 19 to 26 who are in school or working
- Young adults ages 25 to 29 who have completed an associate's degree or higher
- Children birth to 17 who live with a householder who has at least a high school diploma
- Children birth to 17 who live in two-parent families
- Children birth to 17 who live in families with incomes at or above 200 percent of poverty
- Children birth to 17 who live in low-poverty areas (poverty <20 percent)

Since all the indicators in this index are expressed as percentages, we use the coefficient of variation (CV) to determine whether an estimate should be suppressed. The CV is calculated using the following formula:

$$CV_{sr} = \frac{SE_{sr}}{x_{sr}} * 100$$

In this formula, the coefficient of variation (*CV*) for each state (*s*) and racial and ethnic group (*r*) is calculated by dividing the standard error (*SE*) of the estimate by the estimate itself and multiplying the result by 100. An estimate with a small CV is considered more reliable when compared with an estimate with a larger CV. There are no strict rules for an exact cutoff point for a reliable CV. Generally, smaller CVs are better. The Centers for Disease Control and Prevention reviewed the criteria for data suppression used by 22 of the 23 major data systems (*Healthy People 2010 Criteria for Data Suppression*) and found that 30 percent is a common CV level used to suppress estimates. Thirty percent is the threshold we used in our analysis to suppress unreliable estimates.

ADMINISTRATIVE DATA

The remaining three indicators are collected from administrative data sources:

National Center for Health Statistics, National Vital Statistics System — Final Birth Data

- Babies born at normal birthweight
- Females ages 15 to 19 who delay childbearing until adulthood

National Center for Education Statistics, Common Core of Data (CCD)

- High school students graduating on time

Because these three measures are based on administrative data and theoretically comprise the entire population of their respective groups, results are not statistically evaluated to determine the reliability. However, in accordance with guidelines established by the National Center for Health Statistics, we suppress all data that are based on fewer than 20 events. Also in accordance with those guidelines, we suppress results where the inverse of the number of events is fewer than 20. For example, in a given state where 205 of the total 220 babies born were of normal birthweight, the result would be suppressed since the remaining 15 were low birthweight and do not meet the threshold of 20. Results from the Common Core of Data are not subject to these guidelines, although all the results did meet these criteria.

Limitations

Comparisons should not be made to results from the *2014 Race for Results* report. We do not recommend comparing the Race for Results Index scores over time for the following reasons:

1. **Changes in the indicators:** Between the 2014 and 2017 reports, as previously discussed, we changed the indicator that measures the percentage of high school students graduating on time. The Adjusted Cohort Graduation Rate (ACGR) now replaces the Averaged Freshman Graduation Rate (AFGR). Although the ACGR and the AFGR measure a similar outcome — the share of high school students who graduate within four years — the methods for calculating each measure are quite different. This means that the reported percentages of students graduating on time and states' relative graduation-rate ranking may vary across the two measures. These types of differences can result in states having a different index score because of the methodology change rather than due to any meaningful changes in how children are faring within and across states. Accurate discussions of year-to-year variations in index scores must be the result of changes that can only be attributed to shifts in how children are faring.
2. **Measurement error:** Data disaggregated by race and ethnicity will have more measurement error than data examining all children. Additionally, changes in racial and ethnic disparities tend to move slowly. To accurately attribute changes in index scores to changes in racial gaps, we need to rule out the possibility of measurement error. The best way to do this is to have a long-time span between comparison points. For most indicators in the index, the gap between data periods is three or fewer years. This is not a long enough time trend to help us rule out measurement error.
3. **Index construction/use of the total variance:** There are many components to creating the index scores (results for 12 indicators that are then transformed two different ways prior to being combined into a total index score). This means when an index score changes across time, it is difficult to understand what caused the change. For example, in the first transformation, the indicators are re-scaled using the total variance for that indicator for the United States. A year-to-year change in the total variance would lead to a change in index scores that may have nothing to do with meaningful changes in children's well-being. We then use the gap between the best performing state and race combination and the worst performing state and race combination to re-scale the indicators on a scale of zero to 1,000 (where zero is doing poorly compared with other states, 500 is about

average and 1,000 is doing the best). Because this scale is fixed, all scores will always be on a zero to 1,000 scale and year-to-year numerical changes on this scale could be due to myriad reasons (e.g., a change in the gap between the best and worst state or race combination on a single indicator) that may not have much meaning for how the well-being for a particular racial or ethnic group changed.

THERE ARE TWO COMPARISONS ACROSS TIME THAT CAN BE MADE.

1. **Within racial and ethnic groups across states:** Comparisons to how a state ranked for a racial and ethnic group relative to other states can be made, as well as describing how that order has changed over time. Because of the nature of rankings, it is not usually possible to pinpoint why a state's rank changed from one specific rank to another.
2. **Racial and ethnic disparities within states:** Users can compare the gap between racial and ethnic groups within a state across time (e.g., comparing non-Hispanic blacks and non-Hispanic whites within a state). Users can note whether those gaps have changed markedly from the 2014 report to the 2017 report. No change to relatively small changes mean that things have stayed more or less the same, but a really large change signals that something shifted in that state across time.

OTHER LIMITATIONS

Because we needed to include data that were comparably collected in every state and included a large enough sample to provide valid estimates for the five largest racial groups, we were unable to incorporate some key components that impact a child's successful transition into adulthood. For example, we were not able to find data that met our criteria to measure a young person's involvement in the juvenile justice system — an indicator that disproportionately impacts children of color's chances of success. In addition to limited data availability, the data included in the Race for Results Index are not longitudinal. Therefore, we are able to paint a picture of a point in time for groups of children, but cannot see how indicators build on each other from birth into middle age to actually track a child's trajectory over time. Finally, we did our best to suppress estimates that were deemed unreliable, but there might be instances — especially in smaller states with fewer racial and ethnic groups — where published estimates are volatile.

1. Office of Management and Budget. (1997). *Revisions to the standards for the classification of federal data on race and ethnicity*. Retrieved from www.whitehouse.gov/omb/fedreg_1997standards

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