

Background, Process, & Methodology

Background

About Groundwork Ohio

Groundwork Ohio focuses on the time when children’s experiences and environments most influence their health, development, and life trajectory: from birth to age 5. We work to ensure that every baby, toddler, and young child in Ohio has the resources and opportunities for a strong start.

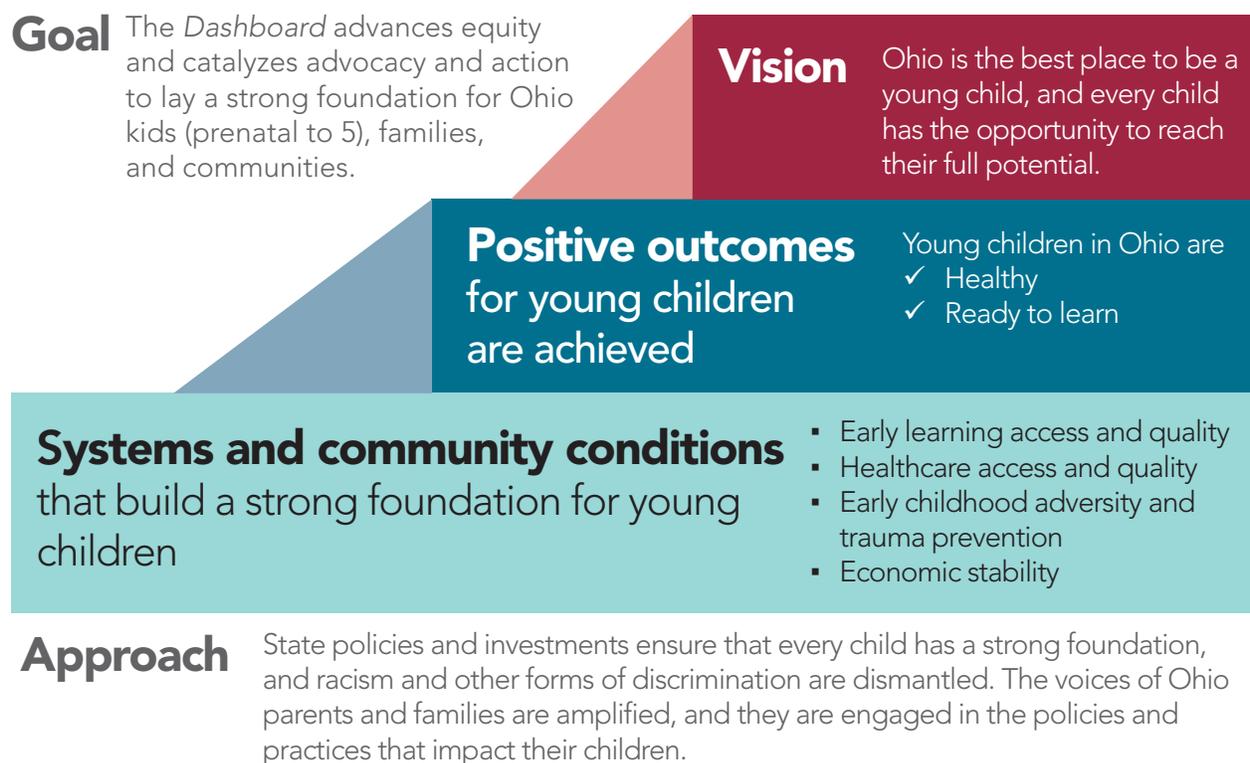
What is the *Early Childhood Dashboard*?

The *2023 Early Childhood Dashboard* is a tool to advance equity and inspire advocacy and action needed to lay a strong foundation for Ohio kids (prenatal to age 5), families, and communities. It is a first-of-its-kind, comprehensive snapshot of

Ohio’s performance on around 60 key metrics that examines the systems, community conditions, and outcomes required to ensure that young children in Ohio are healthy and ready to learn (see figure 1). The *Dashboard* puts data in context by analyzing trends across years, comparing Ohio to the U.S., and highlighting disparities and inequities.

The *2023 Dashboard* was developed in partnership with early childhood experts, families, community organizations, providers, and other early childhood stakeholders at the local, state, and national levels. It builds upon the *Early Childhood Dashboard Preview* released by Groundwork Ohio in March 2022, providing a more thorough examination of the factors and outcomes required to achieve equity and lay a strong foundation for young children.

Figure 1. **Early Childhood Dashboard conceptual framework**



Process

Groundwork Ohio contracted with the **Health Policy Institute of Ohio (HPIO)** to develop the *Early Childhood Dashboard*.

How were metrics selected?

To identify potential metrics for the *Early Childhood Dashboard*, HPIO reviewed a wide range of public and private data sources, including national- and state-based population health surveys; child-focused dashboards, scorecards, and reports; vital statistics; and administrative data from state and federal agencies. Using these sources, HPIO compiled and analyzed a list of 381 early childhood metrics for consideration to include in the *Dashboard*. From this inventory of metrics, Groundwork Ohio and HPIO selected a total of around 60 metrics, grouped into the six conceptual framework domains to include in the *2023 Early Childhood Dashboard* (see figure 1).

Groundwork Ohio and HPIO prioritized the inclusion of metrics in the *2023 Early Childhood Dashboard* that aligned with the conceptual framework (see figure 2) and the following criteria:

- **Relevance:** Metrics address important issues that affect the health and well-being of young children and their families.
- **Source integrity:** Metrics are nationally recognized as valid and reliable, and data is gathered from reputable sources.
- **Face value:** Metrics are easily understood by the public.
- **Alignment:** Metrics align with state plans and other state-level dashboards.
- **Data quality and recency:** Data for the metric is complete and accurate, and the most recent data is from the past three years.
- **Data availability:** Data is available at the state level and can be assessed for long-term trend (change over time), can be compared to performance of the U.S. overall, and can be disaggregated (separated out) to look at disparities and inequities (e.g., for race, ethnicity, household income, and program eligibility criteria).

The *Dashboard* also includes demographic data for young children in Ohio from the U.S. Census Bureau and Ohio Medicaid Assessment Survey (OMAS).

Figure 2. **Early Childhood Dashboard metric information**

Domain	Total metrics	Metrics with trend analysis	Metrics with U.S. comparison	Metrics ranked across the 50 states and D.C.	Metrics disaggregated (i.e., broken out by race/ethnicity, income, disability status, etc.)
Early learning access and quality	10	4	4	1	1
Early childhood adversity and trauma prevention	13	5	5	2	5
Healthcare access and quality	11	9	4	1	3
Economic stability	11	7	8	2	6
Healthy	11	8	7	0	3
Ready to Learn	5	5	2	0	3
Demographic data	5	3	4	0	5

What are the data sources and years for the *Early Childhood Dashboard* metrics?

This *Dashboard* contains data from 33 different sources. Data included are primarily from publicly available sources, while data for 11 metrics were obtained through administrative data requests to the Ohio Department of Education, Ohio Department of Job and Family Services, Ohio Department of Health, Ohio Housing Finance Agency, Ohio Department of Developmental Disabilities, and Ohio Department of Mental Health and Addiction Services.

Early Childhood Dashboard data years vary by metric based on the data source. HPIO compiled the most recent year of data available and a baseline year from the data source. With the exception of a few metrics (see metric limitations on page 5), the baseline year was three years prior to the most recent data year for each metric. Most recent data points included in the *Dashboard* ranged from 2018 to the 2021-2022 school year. For complete information on the metric data sources and years in the *Dashboard*, see the [Data Appendix](#)

Methodology

What types of analyses are included in the *2023 Early Childhood Dashboard*?

The *Early Childhood Dashboard* presents five types of analyses to put data into context:

- **Trend:** Percent change in Ohio's performance from a baseline year to most recent year.
- **Ohio to U.S. comparison:** Percent change in performance between Ohio and the U.S. overall.
- **Ranking:** Ohio's performance rank compared to other states and the District of Columbia.
- **Disparity ratios:** Identifies the magnitude of disparities and inequities across demographic groups, such as by race and ethnicity.

- **County breakouts:** Examines the metric at the county level to identify geographic differences.

Not every type of analysis was performed on each metric due to data availability or changes in metric methodology between years. See methodology limitations on pages 4-5 for more detail.

Methodology for assessing trend

HPIO assessed a metric's trend by examining the percent change between a baseline year and the most recent year. HPIO selected baseline years that were three years from the most recent year of available data. If data was not available three years from the most recent year of availability, then data from two- or four-years prior was selected instead. See the [Data Appendix](#) for metric baseline and most recent years. Trends were only used after verifying with metric documentation that years could be reasonably compared and that no major methodological changes occurred in how the metric was calculated between years.

To calculate trend for each metric with a baseline year value available, the following steps were taken:

- Calculate percent change by subtracting the metric value for the most recent year from the metric value for the baseline year, dividing this difference by the baseline year and multiplying by 100.

$$\text{Percent change} = ((\text{Recent year} - \text{baseline year}) / \text{baseline year}) \times 100$$

- To assess whether trend was improving or worsening, HPIO used the following 3-point classification schemes:
 - For ascending metrics:
 - No change: The change is between -9.9% and 9.9%.
 - Improved: The change is less than -10%.
 - Worsened: The change is greater than 10%.

Ascending vs. descending metrics

To analyze trend and Ohio to U.S. comparisons, a metric is considered ascending if a lower value is identified as better. For example, the percent of Ohio children who live below 100% of the federal poverty line is an ascending metric. A metric is considered descending if a higher value is considered to be better. For example, the percent of Ohio children with six or more well-child visits in the first 15 months of life is a descending metric.

- For descending metrics:
 - No change: The change is between –9.9% and 9.9%.
 - Improved: The change is greater than 10%.
 - Worsened: The change is less than –10%.

Methodology for Ohio to U.S. comparison

HPIO compared Ohio to the U.S. by assessing the percent change between the Ohio value for the most recent year and the U.S. value for the same year.

To calculate the Ohio to U.S. comparison for each metric where U.S. data was available, the following steps were taken:

- Calculate percent change by subtracting the U.S. value from the metric value for the most recent year, dividing this difference by the U.S. value and multiplying by 100.

$$\text{Percent Change} = ((\text{Recent year metric value} - \text{U.S. value}) / \text{U.S. value}) \times 100$$

- To assess whether Ohio’s performance was better or worse than the U.S., HPIO used the following 3-point classification schemes:
 - For ascending metrics:
 - Same: The difference is between –9.9% and 9.9%.
 - Better: The difference is less than –10%.
 - Worse: The difference is greater than 10%.
 - For descending metrics:
 - Same: The difference is between –9.9% and 9.9%.
 - Better: The difference is greater than 10%.
 - Worse: The difference is less than –10%.

Methodology for ranking metrics

HPIO determined Ohio’s ranking compared to all 50 states and D.C. for six of the *Dashboard* metrics. Metric values for each individual state were collected and then ordered. For ascending metrics, the state with the lowest value was ranked first. For descending metrics, the state with the highest value was ranked first.

Methodology for calculating disparity ratios

The magnitude of disparities across population characteristics such as race and ethnicity,

economic disadvantage, and Medicaid status were assessed for 21 metrics using disparity ratios. Disparity ratios were calculated by dividing the outcome (e.g., rate or percent) of comparison groups (i.e., groups that consistently experience worse outcomes and are systematically disadvantaged) by the outcome of the reference group (i.e., the group that most consistently experiences the best outcomes and is systematically advantaged).

For example, the percent of white Ohio children (the reference group) living below the federal poverty line is 15.3%. The percent of Black Ohio children (the comparison group) living below the federal poverty line is 46.0%.

The Black/white disparity ratio in this instance is $46.0/15.3 = 3.0$.

This is interpreted to mean that Black children in Ohio are three times more likely than white children to live below the federal poverty line.

HPIO used the following steps to calculate disparity ratios:

- Divide the metric value for each comparison group by the selected reference group, as described in the example above
- To assess the degree of disparity, HPIO used the following 3-point classification schemes:
 - Little or no disparity: Disparity ratio less than 1.1
 - Moderate disparity: Disparity ratio between 1.1 and 1.9
 - Large disparity: Disparity ratio greater than 2
- For metrics that were descending (higher value is better), the inverse of the disparity ratio was calculated to maintain a consistent directionality and format to the output.

When possible, HPIO disaggregated, or separated, race and ethnicity separately into the following groups: white (non-Hispanic), Black (non-Hispanic), Asian and/or Pacific Islander (non-Hispanic), Native American (non-Hispanic), Multiracial (non-Hispanic), Other (non-Hispanic), and Hispanic. When data was not available to classify based on these groups, different racial and ethnic classifications were used based on the data source and data availability. Metrics were also disaggregated by Ohio county type, where available. The four county groupings, which were

categorized by the Ohio Medicaid Assessment Survey (OMAS), are Metropolitan, Suburban, Rural, non-Appalachian, and Rural Appalachian. Suburban county type was considered the reference group for the calculation of disparity ratios. For a select set of metrics, data values were available across all 88 Ohio counties. The Kindergarten readiness metric was also disaggregated within each county by economic disadvantage. Disparity ratios were calculated in the same manner as other disaggregations. The early childhood mental health providers metric was also broken out by credential status and county.

Methodology limitations

The *Early Childhood Dashboard* includes data from a variety of publicly available sources, as well as data collected from requests to state agencies. It includes survey results, birth records, and administrative data. While care was taken to compile data from credible sources, each source has its own set of limitations, such as self-reported conditions, and potential changes in methodology from year to year.

The main limitation to the selected measures was that all five types of analysis (trend, U.S. comparison, disparity ratio, ranking, and county breakouts) could not be performed for every metric. The following issues contributed to the limitations:

- **Trend:** Some metrics had data without an eligible baseline year. This means that trend could not be calculated for every metric.
- **U.S. comparison:** Not all metrics included in the 2023 *Dashboard* were from national sources or had comparable national data that provided a U.S. data value.
- **Disparity ratios:** Very few data sources allowed for disaggregation of data by ages 0-5 and other demographic categories, such as income or race and ethnicity. In addition, not all sources use mutually exclusive racial and ethnic categories (e.g., Black non-Hispanic and Hispanic, all races) for the disaggregation of data by race and ethnicity. When metrics could be disaggregated by age and another demographic characteristic, the sample sizes of the population groups often became too small, creating data reliability and suppression issues. In these scenarios, data values could not be reported.

Limitations due to the COVID-19 pandemic

The COVID-19 pandemic significantly impacted and delayed collection, analysis, and public release of data over the last three years. The pandemic also impacted the quality and reliability of school system data. Attendance and dropout numbers were skewed, especially among preschool and kindergarten students. This was especially true of the Census Bureau's 2020 American Community Survey data. Due to the experimental nature of the sample weights and overall concerns for quality, 2019 single-year or five-year estimates were used in this *Dashboard*.

The release of 2021 single-year estimates was ongoing at the time of publication, and was not ready in time for the release of this version of the *Dashboard*. Additionally, the 2021 release of the Ohio Medicaid Assessment survey was published several months after internal data collection and analysis had been completed, and so is not represented in this version of the *Dashboard*. The data represented in this document is of the most-recent which was available, and of the highest quality to assess the health and well-being of children in Ohio, ages 0-5.

Metric limitations

- Demographic data was only analyzed for 2017 through 2019 due to data analysis constraints and methodological changes to pre-2017 American Community Survey, Public Use Microdata.
- For several metrics, data was not available for the desired population of focus for the 2023 *Dashboard* (ages 0-5). For these metrics, data was compiled for the age range that was most similar to ages 0-5 and for which data was available:
 - Oral health problems (ages 1-5)
 - Early learning access, Head Start access (ages 3-4)
- Early Learning access is a composite measure comprised of early learning program utilization data from four different sources with varying years and program eligibility requirements. The intent of this metric is to provide a proxy for the level of unmet need for early childhood services for families below 200% of the federal poverty level:
 - Number of families below 200% of the federal poverty level: (2019)

- Number of children in public preschool (October 2021)
- Number of children served under IDEA Part B (2020-2021)
- Number of children in Head Start (2021)
- Number of children in publicly funded child care (July 2022)
- For metrics from surveys where small sample size for the 0-5 population hindered the reliability of estimates and/or population breakouts for disparity ratios, researchers pooled years together. Pooling of years only occurred after verifying with metric documentation that years could be reasonably combined. At least two years were pooled for the following metrics:
 - Daily songs or stories, caregiver: Most recent year combined 2019-20; baseline year combined 2016-17
 - Family resilience: Most recent year combined 2019-20; baseline year combined 2016-17
 - Unsafe neighborhoods: Most recent year combined 2019-20; baseline year combined 2016-17
 - Preventative medical care: Most recent year combined 2019-20; baseline year combined 2016-17
 - Job change due to child care, family members: Most recent year combined 2016-20
 - Food insecurity: Most recent year combined 2016-20
 - Poor maternal mental health: Most recent year combined 2019-20; baseline year combined 2016-17
 - Oral health problems: Most recent year combined 2018-20
- Due to lack of data availability, the following metrics had a baseline year that was two or four years from the most recent year, rather than three:
 - Early learning access (2-year range)
 - Child care affordability (4-year range)
 - Stressful life events or experiences during pregnancy (4-year range)
 - Unmet dental care needs (4-year range)
 - Problems paying bills, pregnant women (4-year range)
 - Fourth grade reading proficiency (4-year range)
 - Eighth grade math proficiency (4-year range)
 - Met early intervention need (2 year range)
 - chronic absenteeism (2 year range)
 - Blood lead test (2 year range)
- Positive social-emotional skills, special needs preschool (2 year range)
- Language, communication and literacy, special needs preschool (2 year range)
- Two different data sources were used to calculate these measures:
 - Protective custody: The numerator is number of kids, ages 0-5, who are in protective custody, from the Ohio Department of Job and Family Services. The denominator is the number of kids ages 0-5 in Ohio, from the American Community Survey Public Use Microdata.
 - Homelessness services: Homelessness services: The numerator is number of kids, ages 0-5, who accessed homelessness services, from Ohio Housing Finance Agency (OFHA). OFHA defines “homeless” as people who lacks a fixed, regular, and adequate nighttime residence (i.e., sleeping on the street or in a shelter). The denominator is number of kids in Ohio, ages 0-5, who were homeless from the U.S. Department of Education, Early Childhood State Profile. The Department of Education has a broader definition of “homeless” that includes people who are doubled up (i.e., living with a friend, couch surfing, etc.). Therefore, the numerator and denominator capture slightly different groups of Ohioans and may overestimate unmet need.
 - Mental health service providers: the numerator is the number of credentialed mental health service providers who serve children, ages 0-5, from the Ohio Department of Mental Health and Addiction Services. The denominator is the number of kids in Ohio, ages 0-5, from the American Community Survey Public Use Microdata.
- The following are metrics with additional limitations that inform their interpretation:
 - Chronic absenteeism. An important change in how the Ohio Department of Education (ODE) calculated chronic absenteeism occurring in 2018. Data from 2017 and earlier is no longer comparable. Trend was calculated for this metric as an exception to the five-year look back threshold described in the methodology. The pandemic has likely also significantly impacted data collection on metrics like chronic absenteeism; however, that impact is not yet fully understood.

HPIO original analysis

For metrics which were not publicly available for the desired age group or demographic disaggregation, HPIO used public use raw data files to construct the following metrics using R statistical software:

Metric	Source	Most Recent Year(s)	Baseline Year(s)
Early learning			
Early learning access	Multiple, see Metric Limitations section	2019	N/A
Childhood adversity and trauma			
Domestic violence	Ohio Medicaid Assessment Survey	2019	2015
Parental incarceration	Ohio Medicaid Assessment Survey	2019	2015
Experiences of racism	Ohio Medicaid Assessment Survey	2019	2015
Adverse childhood experiences	Ohio Medicaid Assessment Survey	2019	2015
Economic stability			
Household broadband access	U.S. Census Bureau, American Community Survey Public Use Microdata	2019	2016
Employment insecurity, parents	U.S. Census Bureau, American Community Survey Public Use Microdata	2019	2016
Food insecurity	Health Resources and Services Administration, National Survey of Children's Health	2016-2020	N/A
Job change due to child care, family members	Health Resources and Services Administration, National Survey of Children's Health	2016-2020	N/A
Housing cost burden	U.S. Census Bureau, American Community Survey Public Use Microdata	2019	2016
Zero vehicle households	U.S. Census Bureau, American Community Survey Public Use Microdata	2019	2016
Healthy			
Oral health problems	Health Resources and Services Administration, National Survey of Children's Health	2018-2020	N/A