# METHODOLOGY

Who is the Health Policy Institute of Ohio?

Founded in 2003 by a group of health foundations, the Health Policy Institute of Ohio partners with state policymakers and other stakeholders engaged in the policymaking process to advance evidence-informed policies that improve health, achieve equity, and lead to sustainable healthcare spending in Ohio. The intended outcome of HPIO's work is that Ohio is a model of health, well-being and economic vitality. HPIO provides leadership and expertise through policy research and analysis; assessment and planning; and program and policy evaluation.

What is the *Health Value Dashboard?*

The biennial *Health Value Dashboard* is a tool to track Ohio's progress towards health value — a composite measure of Ohio's performance on population health outcomes and healthcare spending. The *Dashboard* examines Ohio's performance relative to other states and D.C., tracks change over time, identifies and explores health disparities and inequities in Ohio, highlighting evidence-informed strategies that can be implemented to improve Ohio's performance. The *Dashboard* is based on the Pathway to Improved Health Value conceptual framework. The framework defines health value as the combination of improved population health outcomes and sustainable healthcare spending and outlines the systems and environments that affect health. The framework highlights the need for equitable, effective and efficient systems and optimal environments to achieve improved health value. The *Dashboard* tracks Ohio's performance across all seven domains(population health, healthcare spending, access to care, healthcare system, public health and prevention, social and economic environment and physical environment) of the conceptual framework.

Pathway to improved health value: A conceptual framework
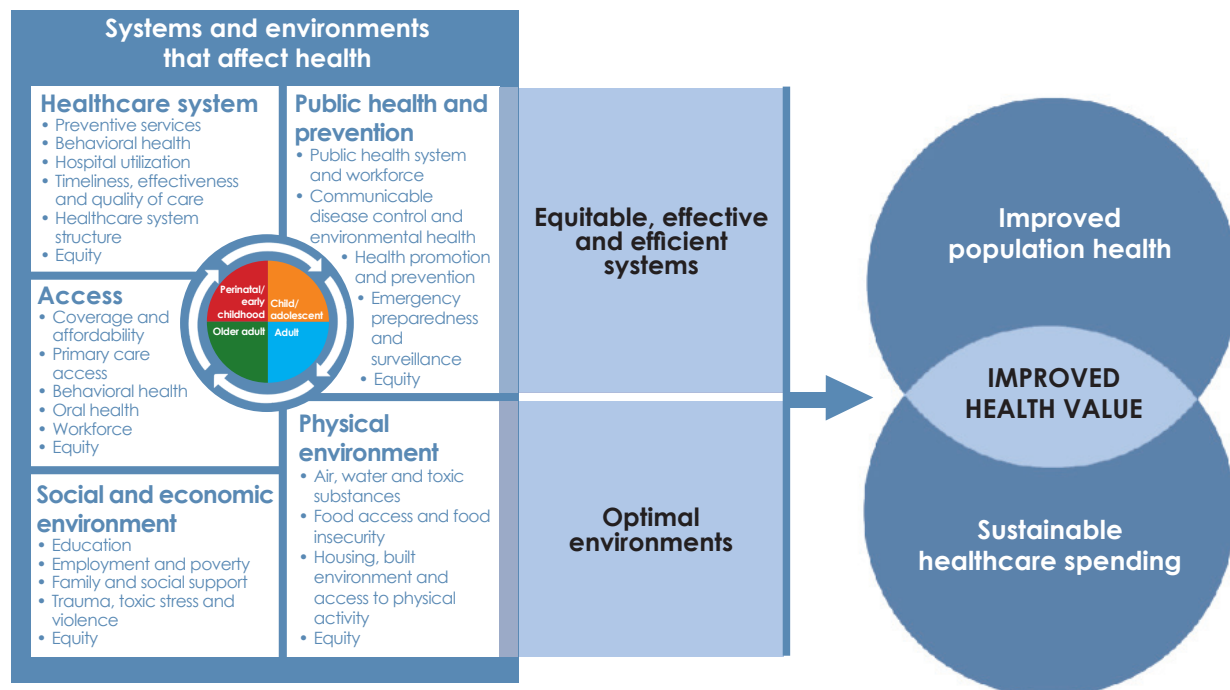
World Health Organization definition of health: Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

What makes the HPIO *Health Value Dashboard* different?

The *Health Value Dashboard* builds upon existing national scorecards and rankings by:

- Focusing on healthcare spending
- Including a comprehensive set of the drivers of health
- Providing information at-a-glance along with detailed analysis

What is different in the 2023 *Health Value Dashboard?*

HPIO released the first edition of the *Dashboard* in December 2014 and has made improvements to each following edition of the *Dashboard*, including the addition of equity profiles in the 2017 *Dashboard*. In some cases, metrics were modified, removed or replaced due to changes in the data description or source or to ensure we are using the most relevant, timely and publicly available source. Most metrics in the ranked domains of the 2023 edition (93%) are the same or similar to the 2021 edition. Of 110 metrics in the 2023 *Dashboard*, 96 are the same or similar, 6 are revised and 8 are new or replacements for metrics that were modified, discontinued or not updated by the source used for the 2021 *Dashboard*.

The 2023 *Dashboard*:

- **Maintains consistency** in methodology for ranking and trend
- **Adds new equity profile content,** including a progress toward equity section and an LGBTQ+ profile
- **Adds two COVID-19 metrics,** COVID-19 mortality in the population health domain and COVID-19 vaccinations in the public health and prevention domain
- **Adds four new metrics to address drivers of healthcare spending,** which are included in the healthcare system structure sub-domain of the healthcare system domain

Health Value Dashboard process

Stakeholder engagement

Since 2013, HPIO has convened the **Health Value Dashboard Advisory Group** (formerly called the Health Measurement Advisory Group) to advise on the development of and revisions to the *Health Value Dashboard*. The Advisory Group includes stakeholders from public and private organizations across a wide array of sectors throughout Ohio.

In 2017, HPIO formed a workgroup to advise on the development of the equity profiles. This group evolved into the permanent HPIO **Equity Advisory Group** .

In 2023, HPIO convened the *Health Value Dashboard* and Equity Advisory Groups to provide input on messaging of *Dashboard* key findings and to assist with dissemination of the *Dashboard* to state policymakers and other stakeholders.

HPIO contracted with researchers at the Voinovich School of Leadership and Public Affairs at Ohio University to assist in data analysis and ranking.

Metric selection

In preparation for the 2023 *Dashboard*, HPIO reviewed the list of metrics from the 2021 edition to determine if any changes were needed. HPIO maintained consistency in metrics across editions of the *Dashboard* as much as possible, and identified any changes to be made if better data had emerged or a source became unavailable.

A total of 110 metrics, grouped into 7 domains and 28 subdomains, are included in the 2023 *Dashboard* ranked domains. Forty-two metrics were analyzed as part of the equity component of the *Dashboard*.

Metrics displayed in 2023 *Dashboard* ranked domains

Domain	Total metrics	Ranked metrics	Metrics with trend analysis
Population health	16	16	14
Healthcare spending	14	14	14
Access to care	14	14	14
Healthcare system	18	17	15
Public health and prevention	21	19	17
Social and economic environment	15	15	15
Physical environment	12	11	10
TOTALS	110	106	99

Metrics assessed for health disparities and inequities

Race and ethnicity	Education and/or income	Disability status	LGBTQ+
31	17	13	13

Note: This table includes all metrics in the *Dashboard* equity profile appendix. Not all measures included in the appendix were included on the equity profiles on pages 17-24 of the 2023 *Dashboard*.

To select metrics for the inaugural 2014 edition of the *Dashboard,* HPIO reviewed existing scorecards and data initiatives, such as America's Health Rankings, County Health Rankings and the Commonwealth Fund State Scorecard. *Health Value Dashboard* Advisory Group metric workgroup members then selected approximately 15 metrics per domain based upon a set of specific criteria, such as availability of state-level data, alignment with state and national initiatives, data quality and relevance. (See the 2014 *Dashboard* for a complete list of criteria.) These criteria, as well as relevance to the COVID-19 pandemic and other current events, continued to guide decisions on metric changes that were made to later editions of the *Dashboard*.

Data sources and years
Most *Dashboard* data is compiled from publicly available sources, including national population health surveys, vital statistics and administrative data from state and federal agencies. The 2023 *Dashboard* includes data from 77 distinct sources across the ranked domains and equity profiles. For this reason, the data years vary by metric. When available, researchers analyzed the three most recently available years of data. At least two years of data was available for 99 out of 110 metrics, allowing for trend analysis. Most baseline data was from 2010-2019 and most recent data was from 2020-2022. For complete metric information, see the **Excel appendices**.

Data gaps and limitations
The *Dashboard* includes data from a variety of publicly available sources, including surveys, vital statistics and administrative and claims data. It is important to keep in mind that each of these sources has its own limitations, such as reliance upon self-reported conditions or behaviors and changes in methodology from year to year. Other data gaps and limitations are outlined below.

Data lag: Metrics in the *Dashboard* are primarily from publicly available sources, such as government surveys or birth and death records. There is typically a lag of one to three years between the time this information is collected and when it is released. At times, data may predate implementation of an important policy change that could impact performance on a metric.

Data on disparities and inequities: Data disaggregated by race and ethnicity, education level, income level, disability status, gender identity and sexual orientation are not consistently collected or reported across sources and metrics. For example, some metrics are available with data disaggregated by race and ethnicity, but not by income, education, disability status, gender identity or sexual orientation. As a result, there are more metrics disaggregated by race and ethnicity in the *Dashboard* equity profiles than by other factors.

Other limitations for assessing health disparities and inequities include:
- **Lack of data to identify other groups that experience disparities and inequities.** For example, questions regarding geography, immigration or veteran status are not consistently asked on many national and state surveys, making it difficult to assess the health needs of many Ohioans.
- **Data suppression.** Due to small numbers, data values for groups with small sample sizes in survey and administrative data are often suppressed and are not used in analyses.
- **Aggregation of data for groups with smaller populations.** Aggregated data can mask health disparities, particularly for subpopulations. Asian Americans, for example, tend to perform well as a whole on many health indicators. However, data on southeast Asians and immigrant or refugee populations from Asia, such as Bhutanese-Nepali refugees, suggest these subpopulations experience poorer health outcomes.
- **Differences in categorizing demographic data.** When displaying data on racial and ethnic disparities or other population characteristics, categorizations from the primary source are displayed in the **equity Excel appendix**. For example, one source may use the category African-American/Black (which would include non-Hispanic and Hispanic individuals), while another source may use the category Black, non- Hispanic. Similarly, there is variation across metrics in how education level, income level, disability status, gender identity and sexual orientation are described. To the extent possible, comparable groupings across metrics were made. A limitation that arises from this variation in reporting is that when Hispanic (all races) is compared to white (including Hispanic) in the Equity profile, there is an unavoidable population of overlap.

Change over time: Meaningful changes from baseline to most recent year were identified by comparing a state's absolute change for a metric to the standard deviation of the metric's distribution among all states over the years of data being analyzed (trend methodology is provided on page 6). The statistical significance of change over time was not analyzed.

Impact of COVID-19 pandemic on data reporting and quality.
HPIO compiled the most recently available data for the *Dashboard*. In most cases (75% of metrics), the most recent data presented in the domain profiles is from 2020 or later, meaning that it captured the pandemic or post-pandemic time period. However, some data was only available for 2019 or earlier. The table below describes the number of metrics in the *Dashboard*, by recency of data (for most recent year) and by domain:

	2020 or later	2019 or earlier	Mixed (pooled year data sources that include 2019 and/or earlier and 2020 and/or later)
TOTAL	83	20	7
Population health	15	1	0
Healthcare spending	13	1	0
Access to care	12	1	1
Healthcare system	11	6	1
Public health and prevention	16	5	0
Social and economic environment	9	2	4
Physical environment	7	4	1

The COVID-19 pandemic had a significant impact on data collection, reporting and quality, especially for survey data.[1] In the case of the American Community Survey, 2020 single-year population estimates were unstable due to disruptions in collection from the COVID-19 pandemic.[2] Thus, only data from 2021 single-year and 2020 or 2021 five-year estimates were included in the Dashboard. Additionally, data collection for the National Survey on Drug Use and Health (NSDUH) was halted in March 2020 due to restrictions on public interaction, and estimates reported publicly for 2019-2020 data years were retracted and not published in the 2023 version of the Dashboard. [3]

HPIO reported only the highest-quality publicly available measures, reporting older data if more recent years were poor quality or unreliable.

Health Value Dashboard methodology

Ranking methodology

The ranking methodology used in the 2023 *Dashboard* relies on the following descriptive statistics and analyses:
- **Mean** – the sum of all data values in a distribution divided by the number of data values in the distribution. The mean is also referred to as the average.
- **Standard deviation** – a measure that reflects how much variation there is between a distribution's mean and all data values in the distribution. A small standard deviation indicates that values are tightly grouped, and a large standard deviation indicates that values are widely dispersed.
- **z-score** – a measure that reflects the degree of difference between a data value and the distribution's mean. The z-score is the difference between the data value and the distribution's mean divided by the distribution's standard deviation. In other words, the z-score is the number of standard deviations a data value is from the distribution's mean.
- **Percentile ranks** – the proportion of scores in a distribution that a specific score exceeds or to which it is equal (see chart).

Top quartile	Second quartile	Third quartile	Bottom quartile

Metric ranking

To rank states for each metric, HPIO and researchers followed these steps:
1. Calculate the mean and standard deviation of all state values for the most recent year
2. Convert each state's data value for the most recent year into a z-score
3. Construct a percentile rank for each state
4. Order percentile ranks in the desired direction for a metric and assign each state a metric rank

Subdomain ranking

To calculate subdomain ranks, researchers followed these steps:
1. Convert values for all metrics in the subdomain into z-scores using the procedure outlined above
2. Sum z-scores for all metrics for each state
3. Use the summed z-scores to construct a percentile rank for each state
4. Order percentile ranks and assign each state a rank for the subdomain

Domain ranking

To calculate domain ranks, researchers followed these steps:
1. Convert values for all metrics in the domain into z-scores using the procedure outlined above
2. Sum z-scores for all metrics for each state
3. Use the summed z-scores to construct a percentile rank for each state
4. Order percentile ranks and assign each state a rank for the domain

Health value ranking

To calculate health value rank, researchers followed these steps:
1. Sum z-scores for all metrics from the population health and healthcare spending domains
2. Use the weighted, summed z-scores to construct a percentile rank for each state
3. Order percentile ranks and assign each state a rank for the domain

Missing states

Metrics with missing data for more than 10 states were not ranked. States that were missing were not included in the rank of the domain or subdomain. In the 2023 *Dashboard*, 33% of measures were missing data for one or more states. This level of missingness is higher than previous years, with only 6% of measures missing data for one or more states in the 2021 Dashboard. Because more states were missing from the ranked metrics, in the 2023 *Dashboard*, HPIO includes a "out of XX states" indicator for transparency. For example, Florida was missing data from the adult depression metric, so Ohio's rank is reported out of 50 instead of out of 51. Due to this constrain, some metrics, domains or subdomains may appear to rank higher or lower only because they were missing data from one or more states, and may have ranked differently had data been collected and reported. Therefore, caution is advised in comparing rankings in the 2023 *Dashboard* directly with previous editions.

Trend methodology

The method to identify meaningful change from baseline to most recent year is consistent with the approach used in the Commonwealth Fund's Scorecard on State Health System Performance.

To calculate trend for each metric, researchers followed these steps:
1. Calculate the standard deviation of the metric's distribution among all states over the years of data being analyzed. For most metrics, the three most recent years of data were analyzed, but trend was calculated when at least two years of data were available. When data used pooled years, HPIO did not use overlapping pooled years to assess trend.
2. Calculate the absolute change between Ohio's value for the most recent year and the baseline year by subtracting the baseline year value from the current year value.
3. To analyze trend, compare Ohio's absolute change to the standard deviation using the following 5-point classification scheme:
   - No change: the change is within 0.5 standard deviations
   - Moderately improved: the change is between +0.5 and +1.0 standard deviations
   - Greatly improved: the change is more than +1.0 standard deviations
   - Moderately worsened: the change is between -0.5 and -1.0 standard deviations
   - Greatly worsened: the change is more than -1.0 standard deviations

Methodology for assessing health disparities and inequities

Disparities and inequities were assessed for a set of 42 metrics by race, ethnicity, education level, income level, disability status, gender identity and/or sexual orientation through disparity ratios. Disparity ratios were calculated by dividing the rate of the comparison group (groups that consistently experience worse outcomes and are systematically disadvantaged) to the rate of the reference group (the group that most consistently experiences the best outcomes and is systematically advantaged). For example, the unemployment rate for Black Ohioans (comparison group) is 10.6%. The unemployment rate for white Ohioans (reference group) is 4.3%.

The Black/white disparity ratio for unemployment is 10.6%/4.3% = 2.5

This means that the unemployment rate for Black Ohioans is 2.5 times higher than the unemployment rate for white Ohioans

Unemployment	2.5

Disparity ratio thresholds were assigned based on Healthy People 2020 criteria. Disparity ratios of less than 1.10 were considered to be little to no disparity. Disparity ratios greater than or equal to 1.10 and less than 2 were considered to be moderate. Disparity ratios greater than or equal to 2 were considered to be large. Metrics with disparity ratios greater than or equal to 1.10 are displayed on the equity profiles in the *Dashboard*. For data and disparity ratios for all measures assessed see the **equity appendix**.

Data was not always available for every population group (e.g. there were more metrics with data disaggregated by race and ethnicity than any other population group).

Classification of people into groups based on race, ethnicity, educational attainment, income, disability status, sexual orientation and gender identity is not consistent across sources. For example, some sources report data based on race and ethnicity (e.g., white, non-Hispanic; Black, non-Hispanic) and others report race only. Consequently, all groups were simplified to common levels outlined below (for more information see the **equity appendix**):

- Race = Non-Hispanic white/white, non-Hispanic Black/Black, Hispanic and Asian
- Income = Highest income group, lowest income group (thresholds established by data available for the metric)
- Educational attainment = Less than high school, Bachelor's degree or higher
- Disability status = With a disability, without a disability
- Sexual orientation= Heterosexual (straight), Gay, Lesbian, or Bisexual
- Gender identity = Cisgender, Transgender

Measuring estimated impact if disparities were eliminated

The *Dashboard* also includes a calculation to answer the question: How many individuals of a comparison group (i.e., systematically disadvantaged group) would have had a better outcome if the prevalence/exposure rate for that group were the same as the reference group (i.e., systematically advantaged group)?

Workforce ← **70,117** fewer Black Ohioans would be unemployed
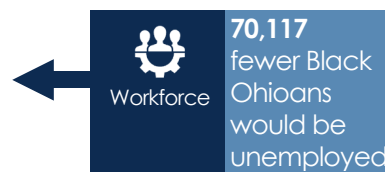
The population size for the comparison and reference groups were compiled from the Public Use Microdata Sample (PUMS) of the American Community Survey 5-year estimates or total population numbers from the sources of the measures. See below for an example of unemployment among Black Ohioans:

number currently affected = rate of the outcome in the comparison group * total population of the comparison group
117,974 = 10.6% *1,112,966

The number of individuals in the comparison group who would be affected if the prevalence in that group were the same as the reference group was calculated as follows:

number potentially affected = rate of the outcome in the reference group * total population of the comparison group
47,858 = 4.3% * 1,112,966

The number of Ohioans impacted if the disparity were eliminated is then calculated:

Number of Ohioans impacted = number currently affected – number potentially affected
70,117 = 117,974 - 47,858

Notes

1. *Issue Paper: Impact of the COVID-19 Pandemic on Major HHS Data Systems,* Assistant Secretary for Planning and Evaluation Office of Science and Data Policy, 2021. **https://aspe.hhs.gov/sites/default/files/2021-08/impact-of-pandemic-on-major-hhs-data-systems.pdf**
2. Villa Ross, Ceci A., Shin, Hyon B., Marlay, Matthew C., *Pandemic Impact on 2020 American Community Survey 1-Year Data*, United States Census Bureau, 2021. **https://www.census.gov/newsroom/blogs/random-samplings/2021/10/pandemic-impact-on-2020-acs-1-year-data.html**
3. *State Data Tables and Reports From the 2019-2020, NSDUH*, Substance Abuse and Mental Health Services Administration, 2022. **https://www.samhsa.gov/data/nsduh/state-reports-NSDUH-2020**