



Health Value Dashboard

A closer look at outdoor air pollution and health

February 16, 2023

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HEALTH VALUE DASHBOARD™

A closer look at outdoor air pollution and health

Clean air and water, safe places to walk outside and access to healthy food are examples of physical environment conditions that affect the health and well-being of Ohioans. This policy brief focuses on the importance of clean air and the many effects that air quality has on health throughout a person's life. State and local leaders in Ohio can do more to improve air quality through policy change.

Outdoor air quality is included in the Health Policy Institute of Ohio's (HPIO) Health Value Dashboard™. In the Dashboard, Ohio ranked 46th on this metric, meaning that most other states have cleaner outdoor air.

This policy brief provides additional information on the outdoor air quality metric in the Dashboard, including how:

- Air pollution affects health outcomes
- Recent policy changes may affect air pollution
- Outdoor air quality can be improved in Ohio

How does outdoor air quality affect health?

Analysis of Dashboard data finds that the physical environment, which includes outdoor air quality, has a much stronger correlation with the overall health of a state than access to care or healthcare system performance. Figure 1 shows the strength of the relationship between domains in the Dashboard and population health, indicating that the physical environment (including outdoor air quality) is strongly connected to a state's overall health, only surpassed by public health and prevention.

Figure 1. The effect of the physical environment on population health

Strength of relationship between state performance on 2021 Health Value Dashboard domains and population health

Key
Size of circle = strength of correlation (refers to correlation coefficient)

- Strong ($r > 0.75$)
- Moderate ($r = 0.5-0.75$)
- Weak ($r < 0.5$)

Source: HPIO 2021 Health Value Dashboard analysis

3 key findings for policymakers

1. Improving outdoor air quality will lead to better maternal and infant health, less chronic disease and other improved outcomes for Ohioans.
2. Ohio has implemented policies that both advance and harm efforts to reduce pollution and improve air quality.
3. Policymakers have opportunities to improve air quality through policy changes in the transportation, energy and regional planning sectors.



VISION

Ohio is a model of health, well-being and economic vitality

MISSION

To advance evidence-informed policies that improve health, achieve equity, and lead to sustainable healthcare spending in Ohio.



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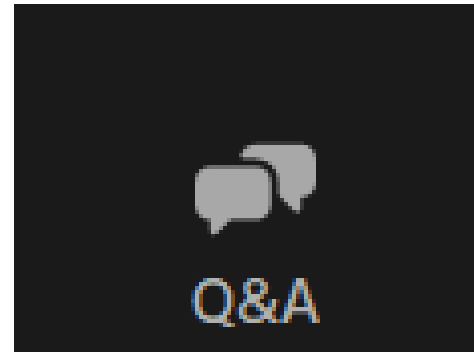
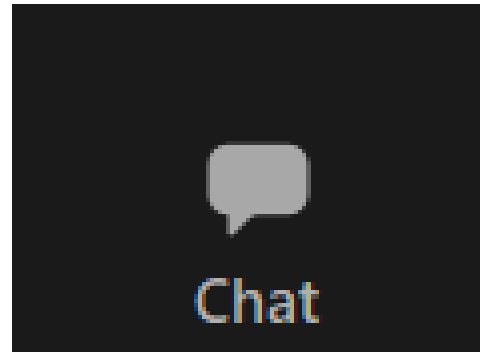
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3 key findings for policymakers

1. **Improving outdoor air quality** will lead to better maternal and infant health, less chronic disease and other improved outcomes for Ohioans.
2. **Ohio has implemented policies** that both advance and harm efforts to reduce pollution and improve air quality.
3. **Policymakers have opportunities** to improve air quality through policy changes in the transportation, energy and regional planning sectors.

Figure 1. **The effect of the physical environment on population health**

Strength of relationship between state performance on 2021 *Health Value Dashboard* domains and population health



Source: HPIO 2021 *Health Value Dashboard* analysis



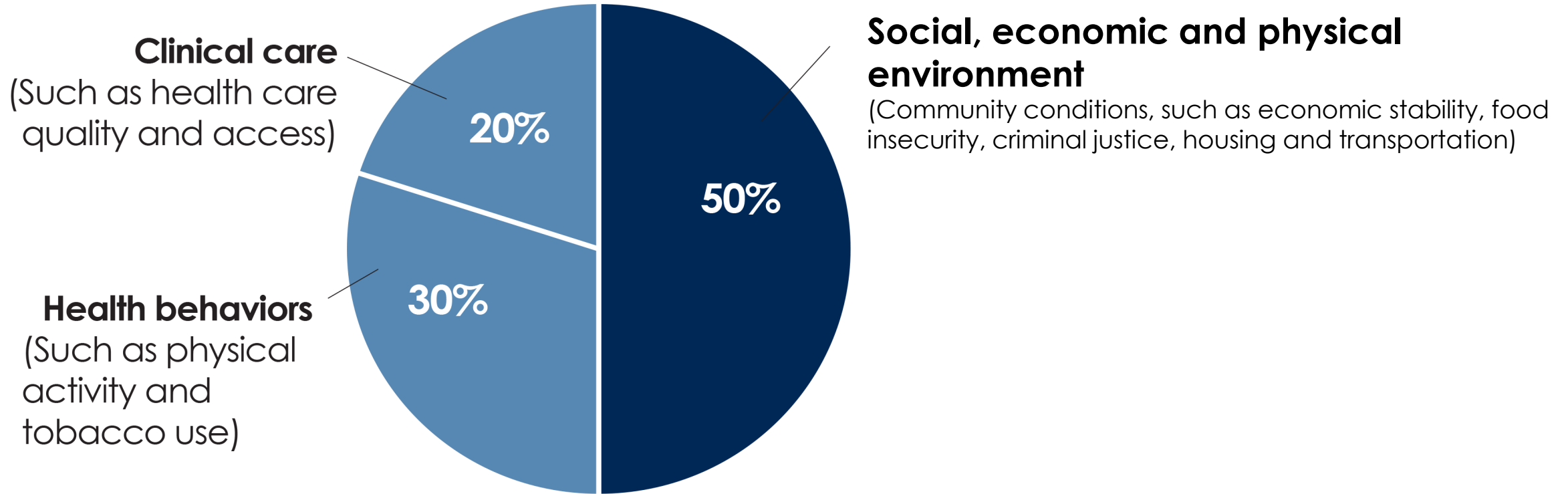
EAST

NO
PARKING

CAUTION
CHILDREN

NO
PARKING
THIS
SIDE

Modifiable factors that impact health

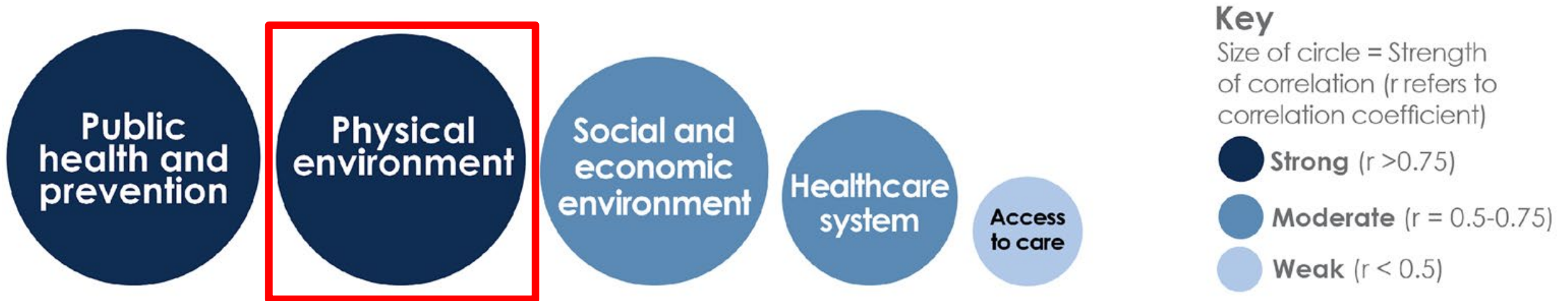


All Ohioans should have a fair opportunity to achieve optimal health

Source: Booske, Bridget C. et. Al. *County Health Rankings Working Paper: Different Perspectives for Assigning Weights to Determinants of Health*. University of Wisconsin Public Health Institute, 2010.

The effect of the physical environment on population health

Strength of relationship between state performance on 2021 Health Value Dashboard domains and population health



Source: Health Policy Institute of Ohio brief, "A closer look at outdoor air pollution and health." Data from HPIO 2021 *Health Value Dashboard* analysis.

Health value in Ohio



Population health



Healthcare spending

Outdoor air quality



**Ohio's outdoor air
quality rank**
(2021 Health Value Dashboard)

Types of air pollution

- Nitrous oxides
- Sulfur dioxide
- Carbon monoxide
- Carbon dioxide
- Ground-level ozone (smog)
- Lead
- Particulate matter

Sources of air pollution

Mobile sources

Cars, buses, planes, trucks

Stationary source

Power plants, industrial sites

Area sources

Agriculture, cities

Natural sources

Wildfires, dust

3 key findings for policymakers

- **Improving outdoor air quality** will lead to better maternal and infant health, less chronic disease and other improved outcomes from Ohioans.
- **Ohio has implemented policies** that both advance and harm efforts to reduce pollution and improve air quality.
- **Policymakers have opportunities** to improve air quality through policy changes in the transportation, energy and regional planning sectors.

Key finding #1

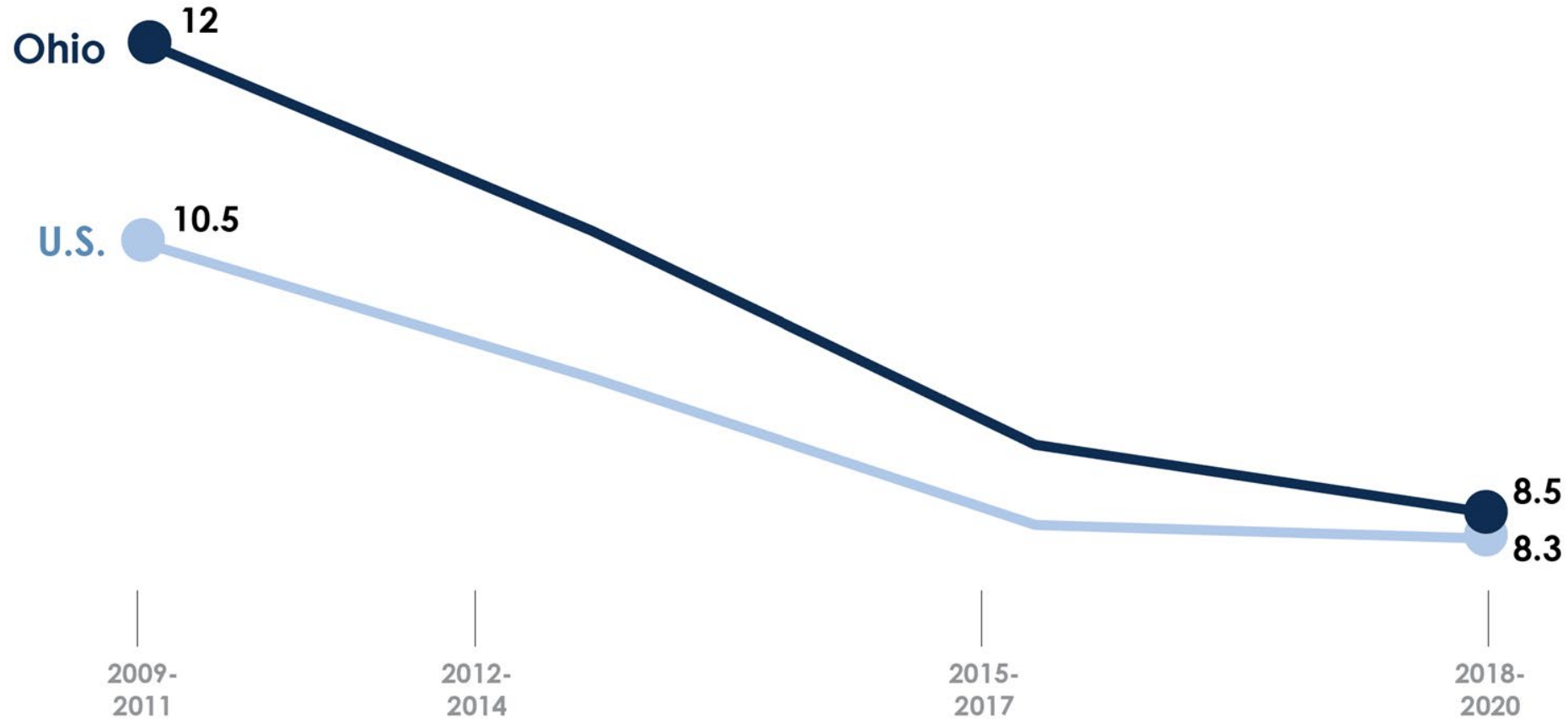
Improving air quality
will lead to improved
outcomes

Effects of outdoor air quality on health

- **Maternal and infant health**, such as decreased maternal lung function and inhibited fetal development
- **Lung conditions**, including increased rates of asthma and COPD and increased risk of COVID-19
- **Heart conditions**, such as increased rate of ischemic heart disease
- **Cancers**, including increased risk of lung, bronchial and other cancers
- **Cognitive conditions**, including increased risk of dementia

Outdoor air pollution in Ohio

Average exposure of the general public to PM2.5 pollution, measured in micrograms per cubic meter, 2009 to 2020



Source: Health Policy Institute of Ohio brief, "A closer look at outdoor air pollution and health." Data from U.S. Environmental Protection Agency, United Health Foundation as compiled by America's Health Ranking.

Ohio's performance on pollution metrics

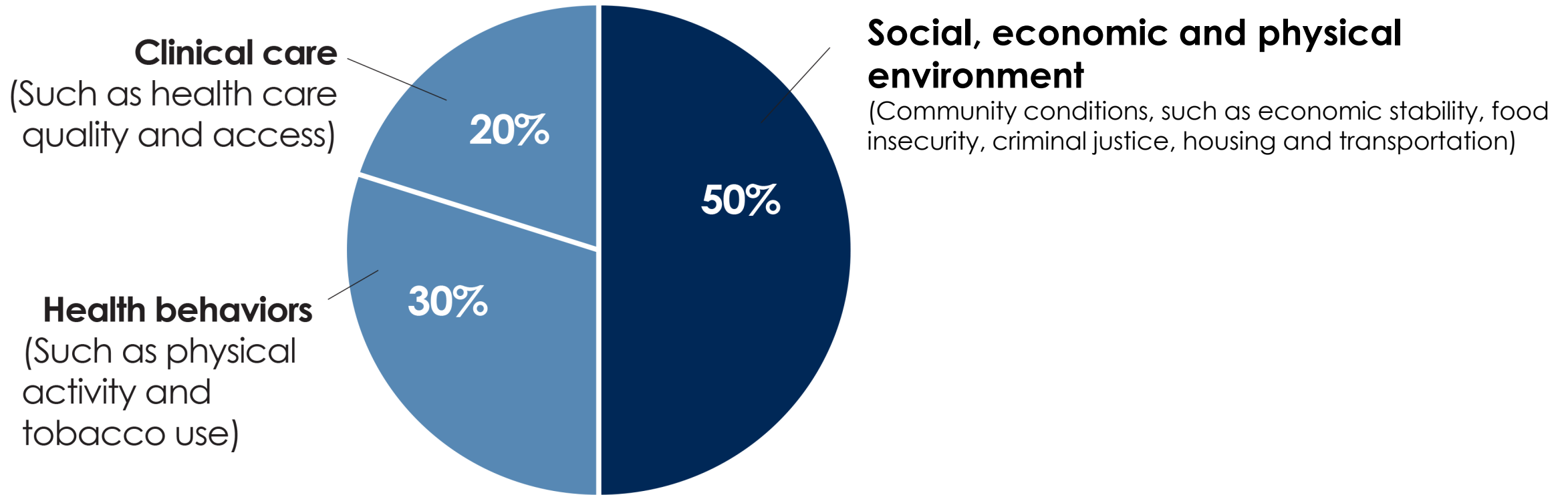
Metric	Ohio's rank
Outdoor air quality. Average exposure of the general public to particulate matter of 2.5 microns or less in size (PM2.5) (2017-2019)	46
Toxic pollutants (Risk-Screening Environmental Indicators score). Composite score that accounts for the size of toxic chemical releases, the fate and transport of chemicals through the environment, the size and location of the exposed population and the chemical's toxicity that is only meaningful in comparison to other RSEI scores (2018)	48
Alternative commute modes. Percent of trips to work via bicycle, walking or mass transit (combined) (2019)	30
Long commute, driving alone. Percent of commuters, among those who commute to work by car, truck, or van, alone, who drive longer than 30 minutes to work each day (2019)	17



Source: Health Policy Institute of Ohio brief, "A closer look at outdoor air pollution and health." Data from 2021 Health Value Dashboard



Modifiable factors that impact health



Clinical care
(Such as health care quality and access)

Health behaviors
(Such as physical activity and tobacco use)

Social, economic and physical environment

(Community conditions, such as economic stability, food insecurity, criminal justice, housing and transportation)

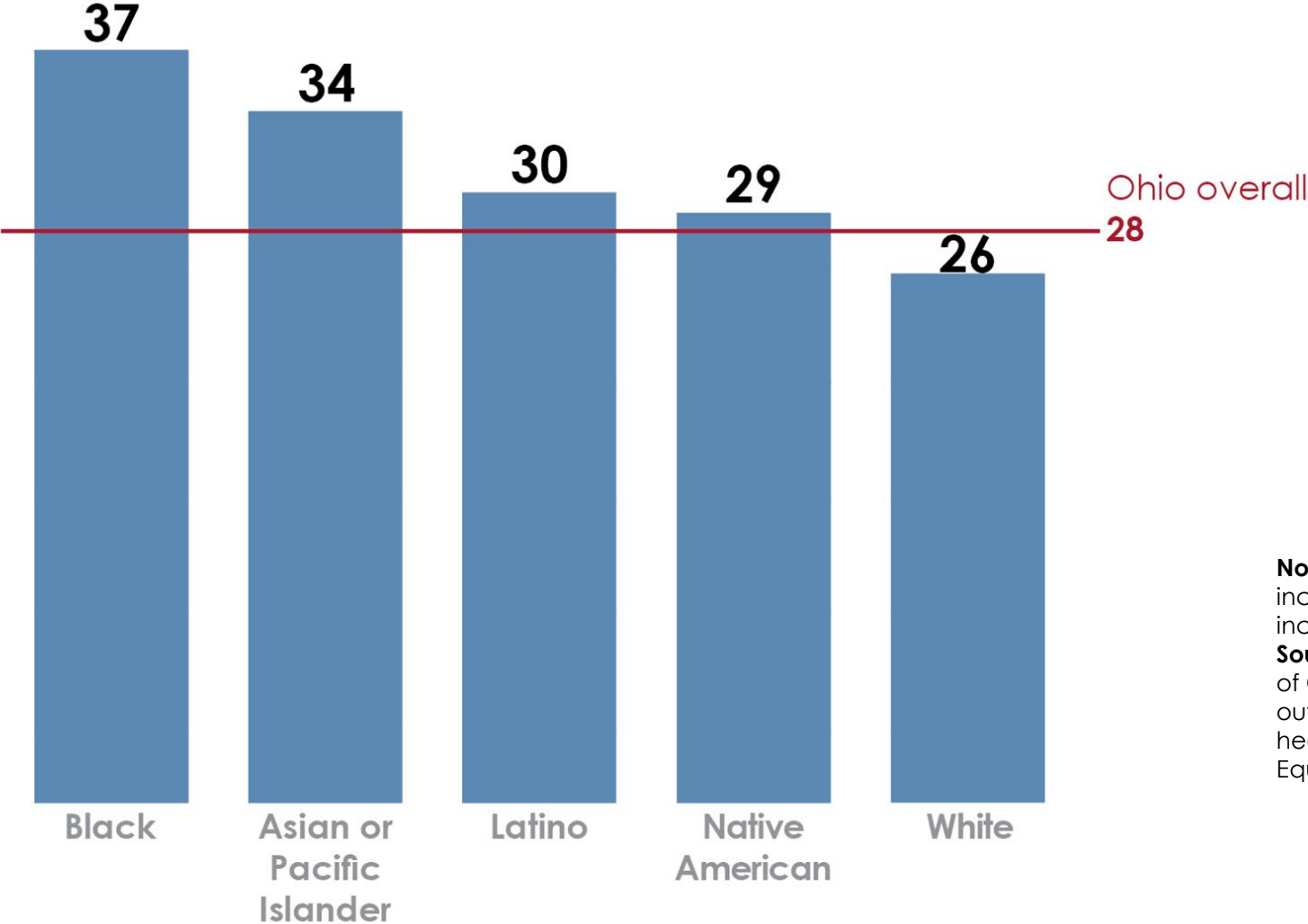
Underlying drivers of inequity

Racism and other forms of discrimination (i.e., ableism, ageism, sexism, xenophobia, homophobia, etc.), trauma, exposure to violence, toxic stress, stigma

Source: Booske, Bridget C. et. Al. *County Health Rankings Working Paper: Different Perspectives for Assigning Weights to Determinants of Health*. University of Wisconsin Public Health Institute, 2010.

Air pollution exposure, by race or ethnicity

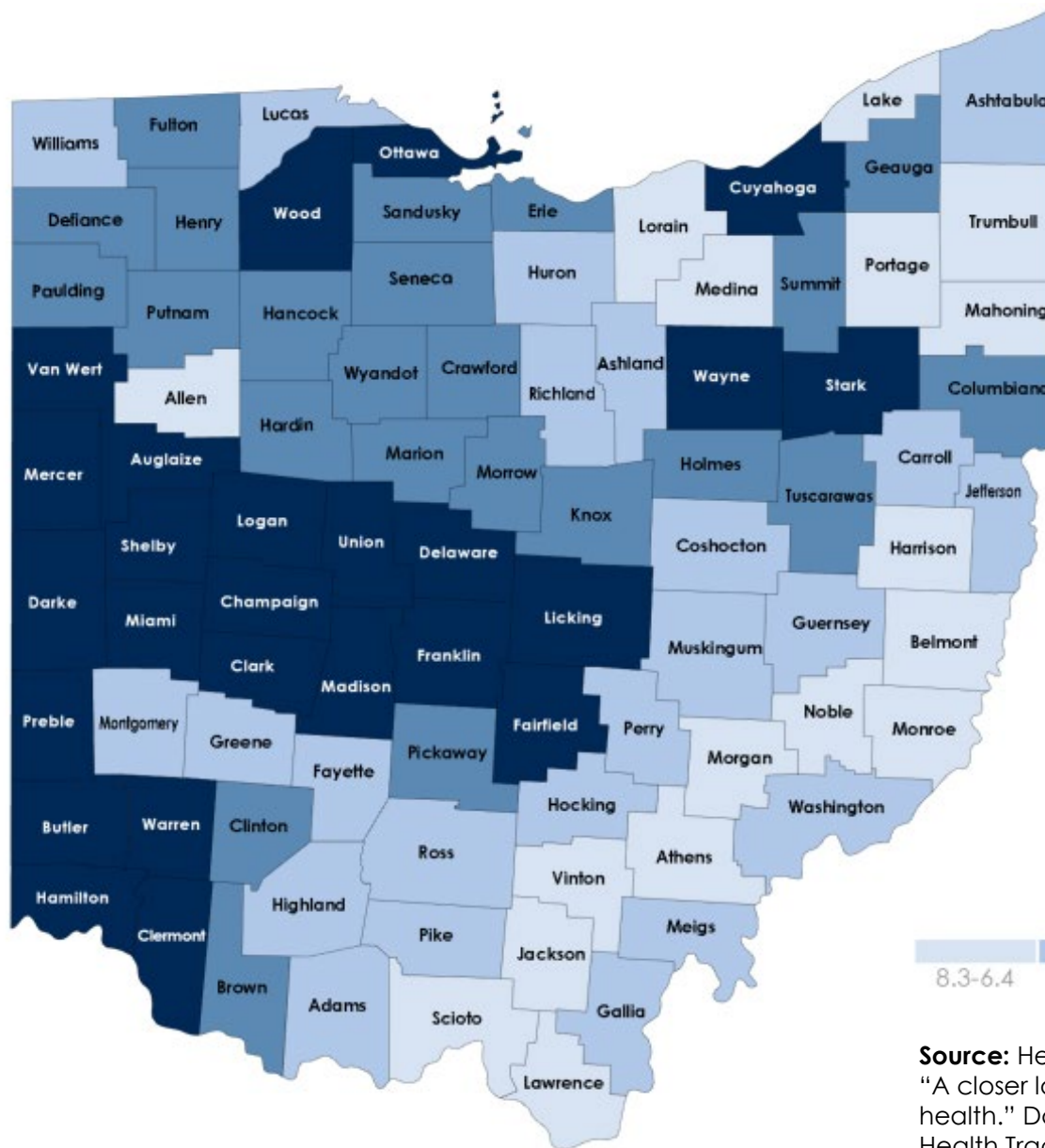
Index of exposure to air pollutants based on a national scale where 1 is lowest risk and 100 is highest risk compared to census tracts nationwide, in Ohio, 2019



Note: Exposure to air pollutants includes pollutants that increase risk of cancer
Source: Health Policy Institute of Ohio brief, "A closer look at outdoor air pollution and health." Data from National Equity Atlas

Average daily density of PM_{2.5}

by county, Ohio, 2018



Ohio overall: 9.0

Counties with highest

Hamilton — 12.2

Cuyahoga — 11.1

Butler — 10.9

Clark — 10.4

Warren — 10.4

Counties with lowest

Lawrence — 6.4

Athens — 6.9

Lake — 7.0

Scioto — 7.1

Portage — 7.3



Source: Health Policy Institute of Ohio brief, "A closer look at outdoor air pollution and health." Data from Environmental Public Health Tracking Network, as compiled by County Health Rankings

Other Ohioans affected by air pollution



Children



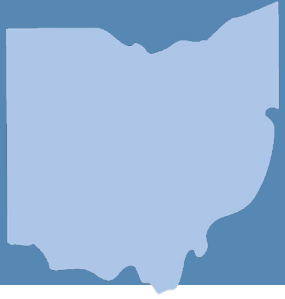
Older Ohioans and
Ohioans with pre-
existing conditions



Ohioans with
low incomes

Key finding #2

Ohio has implemented policies that both advance and harm efforts to reduce pollution and improve air quality



Example policy changes:

State government

House Bill 6 (133rd)

- Reduced Ohio's renewable energy benchmark for power plants and electric service companies
- Reduced energy efficiency standards
- Subsidized two coal-fired power plants

Senate Bill 52 (134th)

Allows local governments to block the development of renewable energy plants



Example policy changes: State government

Dept. of Transportation

Received \$100M in federal funding to develop electric vehicle charging infrastructure over the next five years

Ohio Environmental Protection Agency

Receiving \$75M from the Volkswagen settlement to fund projects that reduce nitrogen oxides emissions from diesel vehicles and equipment



Example policy changes:

Local governments

Public transportation

Stark County Regional Transportation Authority added 10 hydrogen fuel cell-powered buses to its fleet and opened a hydrogen fuel facility in 2018

Idle-free policies

The Mid-Ohio Regional Planning Commission has helped over 100 local governments, schools and businesses develop an idle-free policy

Key finding #3

Policymakers have opportunities to improve air quality through policy changes



Example policy options:

State government

Policy option

Adjust the alternative energy portfolio to its original schedule and set long-term targets for renewable energy

Example

Maine statute requires that 40% of Maine's energy load be satisfied by renewable energy by 2030



Example policy options:

Local government

Policy option

Increase presence of and access to green spaces and parks; areas that have historically lacked access should be prioritized

Example

- The City of Westerville set a desired outcome in their Community Plan for each resident to be within a half mile of a public park or trail
- By 2018, 89% of households were within a half mile



Example policy options:

Local government

Policy option

Incorporate the “Complete Streets” concept in roadway and other transportation infrastructure projects at all project phases

Example

Cincinnati passed an ordinance in Nov. 2022 adopting Complete Streets policy for all project phases of new and existing roadways within the city



Ways to influence policy

- Write letters, emails or make phone calls
- Provide district specific data
- Provide analysis of a bill
- Provide testimony at a legislative hearing
- Provide a one-page fact sheet
- Organize community partners to visit key policymakers
- Invite policymakers to visits your organization or speak at a meeting you host

QUESTIONS?



CONTACT INFORMATION

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