

This brief provides an overview of the relationship between education and health. In 2017, the Health Policy Institute of Ohio will release a series of fact sheets discussing specific policy recommendations to improve health and educational outcomes in Ohio.

Health and education are areas of significant focus for Ohio policymakers, representing the largest shares of Ohio's biennial budget for state fiscal years (SFY) 2016-2017 (See Figure 1).<sup>1</sup> Among the 971 bills introduced in the 131st General Assembly between Jan. 1, 2015 and Nov. 4, 2016, 42 percent were related to health and/or education.<sup>2</sup>

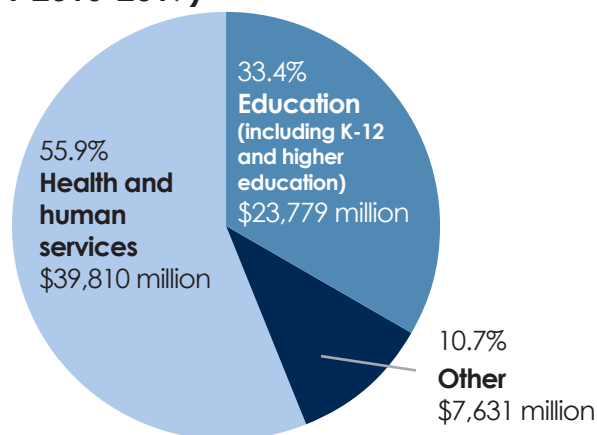
### The relationship between education and health

There is widespread agreement that factors outside of the healthcare system influence health. Research consistently shows a strong relationship between educational attainment and health, even after accounting for factors such as income, race, ethnicity and access to health care.<sup>3</sup>

People with more education live in healthier communities, practice healthier behaviors, have better health outcomes and live longer than those with less education.<sup>4</sup> At age 25, college graduates in the U.S. can expect to live nine years longer than adults without a high school diploma, a gap that has been widening since the 1960s.<sup>5</sup>

Chronic conditions, such as arthritis, diabetes, heart disease, hypertension and lung diseases, are more prevalent and tend to be more severe among individuals with lower levels of education.<sup>6</sup> Consequently, individuals with less education are more likely to generate higher healthcare spending in the long run.<sup>7</sup>

Figure 1. Ohio biennial budget appropriations (SFY 2016-2017)



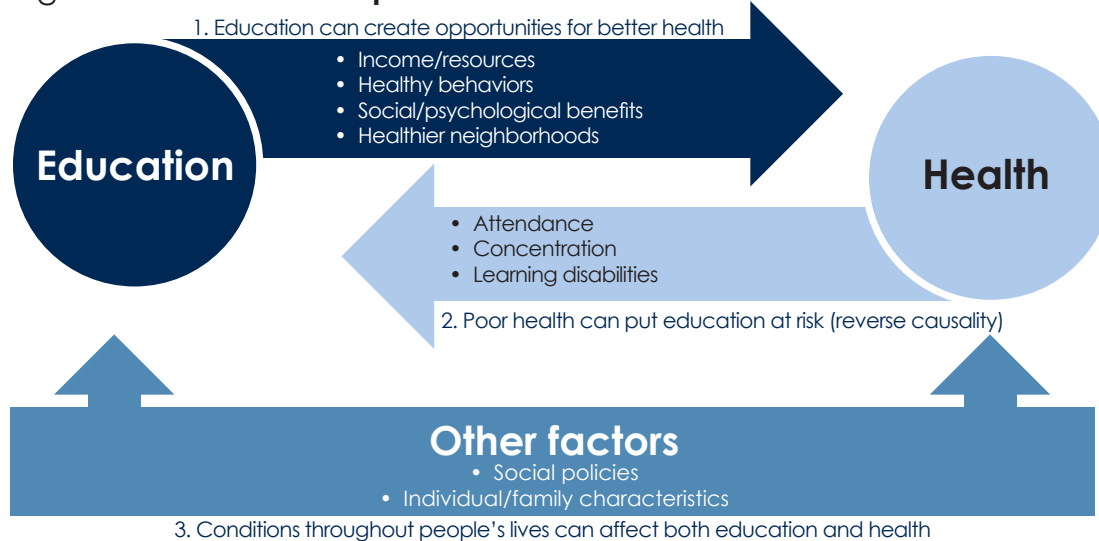
**Note:** Includes total state and federal general revenue fund appropriations

**Source:** Ohio Legislative Service Commission Budget in Brief (House Bill 64 – As Enacted)

Researchers have identified three primary ways in which education and health are connected:

1. Education can create opportunities for better health
2. Poor health can hinder educational performance and attainment
3. Other independent factors, such as income, geography, stress and parenting, can influence both health and education<sup>8</sup>

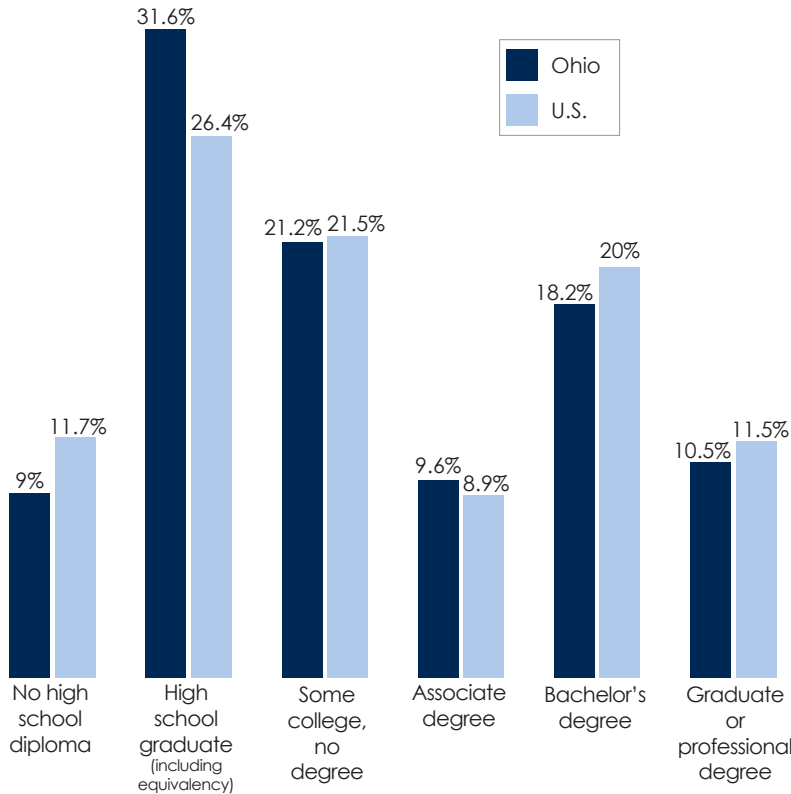
Figure 2. The relationship between education and health



**Source:** Adapted from Virginia Commonwealth University. *Why Education Matters to Health: Exploring the Causes*. Feb. 13, 2015

Figure 3. **Educational attainment in Ohio and the U.S. (2014)**

Highest level of educational attainment for adults ages 25-64



Source: U.S. Census Bureau, 2014 American Community Survey, as reported by the Lumina Foundation

Understanding the two-way relationship between education and health shown in Figure 2 can help policymakers develop effective policies and allocate resources to maximize improvements across both sectors.

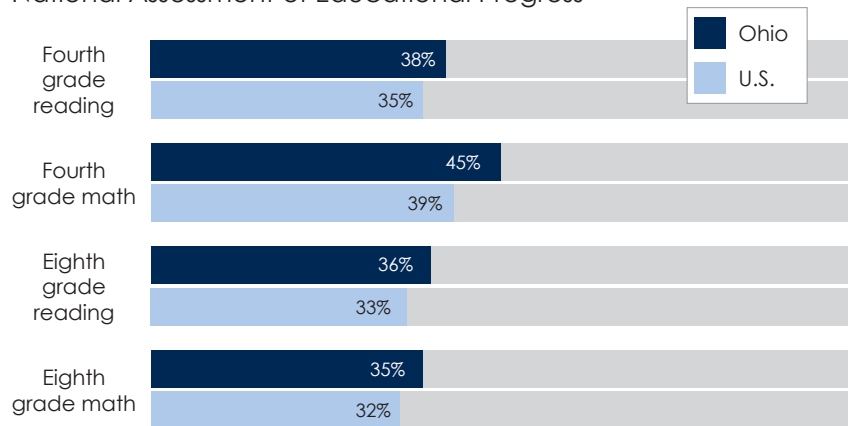
### Overview: Health status and educational attainment in Ohio

Ohio has room for improvement in both education and health outcomes. In 2014, nine percent of Ohio adults ages 25-64 did not have a high school diploma. Another 31.6 percent had no education beyond a high school diploma or equivalent (See Figure 3).<sup>9</sup>

On a 2015 national assessment, 36 percent of Ohio eighth graders scored at or above a proficient level in reading, and only 35 percent performed at or above proficiency in math (See Figure 4).<sup>10</sup> Because

Figure 4. **Student educational outcomes in Ohio and the U.S. (2015)**

Percent of students scoring at or above proficiency on the National Assessment of Educational Progress



Source: The Nation's Report Card State Profiles. Institute of Education Sciences National Center for Education Statistics

eighth grade reading and math success tends to predict high school graduation and college enrollment, these relatively low performance levels suggest Ohio may struggle to create a highly-skilled and globally-competitive workforce.<sup>11</sup>

Figure 5. Ohio health indicators

	Ohio	Year of most recent data	Ohio's rank among 50 states and D.C.*
<b>Infant mortality.</b> Number of infant deaths per 1,000 live births (within 1 year) <sup>12</sup>	7.2	2015	39**
<b>Youth all tobacco use.</b> Percent of youth ages 12-17 who used cigarettes, smokeless tobacco, cigars or pipe tobacco during the past 30 days <sup>13</sup>	9.4%	2013-2014	37
<b>Hospital admissions for pediatric asthma.</b> Hospital admissions for asthma, per 100,000 children ages 2-17 <sup>14</sup>	124.8	2013	31
<b>Adult smoking.</b> Percent of population age 18 and older that are current smokers <sup>15</sup>	21.6%	2015	43
<b>Adult diabetes.</b> Percent of adults who have been told by a health professional that they have diabetes <sup>16</sup>	11.0%	2015	35
<b>Adult depression.</b> Percent of adults who have ever been told they have depression <sup>17</sup>	19.6%	2015	30
<b>Life expectancy.</b> Life expectancy at birth based on current mortality rates <sup>18</sup>	77.8	2010	37

\* Rank of 1 is the best and 51 is the worst  
 \*\* Rank is based on 2014, the most recent year for which data is available for other states

Ohio also has considerable room for improvement with regard to health outcomes and behaviors. Figure 5 shows Ohio's rank relative to other states on several key health indicators.

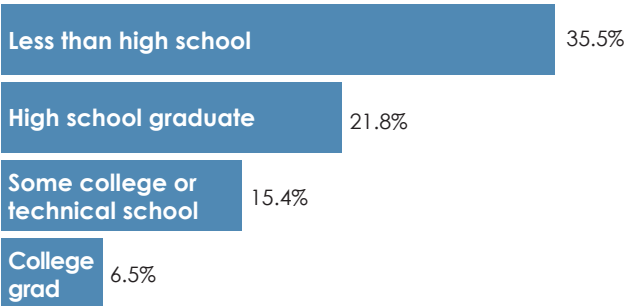
**Differences in health by level of educational attainment**

In 2015, 35.5 percent of Ohio adults with less than a high school diploma rated their health as fair or poor, compared to only 6.5 percent of college graduates (See Figure 6).<sup>19</sup>

Chronic conditions are more prevalent among those with less education. In 2015, 35 percent of Ohio adults without a high school diploma reported having one or more chronic conditions,

Figure 6. Ohioans reporting fair or poor health (2015)

Percent of Ohio adults ages 25 and older reporting fair or poor health, by educational attainment



Source: SHADAC analysis of the Behavioral Risk Factor Surveillance Survey, as compiled by the RWJF DataHub

compared to 18.2 percent of college graduates (See Figure 7 on page 4).<sup>20</sup>

**Gaps in health and educational achievement**

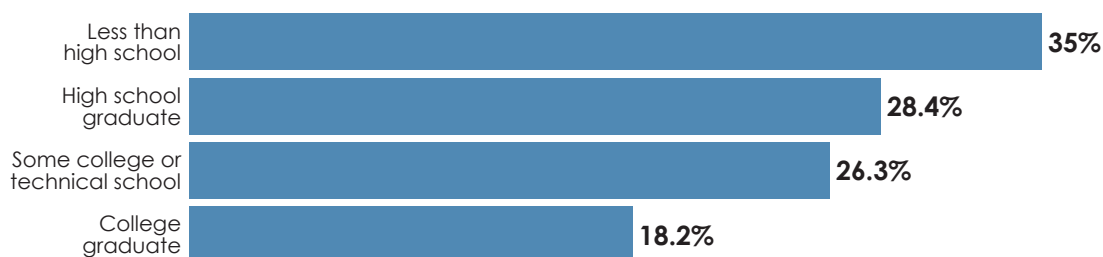
Groups with poorer health outcomes and those with lower educational achievement often overlap.<sup>21</sup> For example, there are considerable differences in fourth-grade reading performance between racial, ethnic and income groups in the state, with economically disadvantaged and African-American students performing far below the overall Ohio rates.<sup>22</sup> These groups also generally have poorer health outcomes. Ohio's 2016 State Health Assessment found that African-American Ohioans were much more likely than any other racial and ethnic group to experience obesity, low birth weight, diabetes, hypertension, child asthma and HIV. Among individuals with low incomes, diabetes, obesity, hypertension and tobacco use were more common.<sup>23</sup>

**How does education impact health outcomes?**

Those with greater educational attainment are more likely to be employed and to have jobs that pay higher salaries and offer better benefits, such as comprehensive health insurance, paid leave and retirement savings.<sup>24</sup> These economic resources can pave the way to better health through the ability to live in healthy communities, improved access to health care, increased opportunities to make healthy choices and other factors.

Figure 7. **Adult chronic disease prevalence in Ohio and the U.S. (2015)**

Percent of Ohio and U.S. adults who report having one or more of the following chronic conditions: diabetes, cardiovascular disease, heart attack, stroke and asthma, by educational attainment



Source: SHADAC analysis of the Behavioral Risk Factor Surveillance Survey, as compiled by the RWJF DataHub

## What children gain through education

The knowledge and skills children obtain in school extend far beyond reading, math, writing and science. Children develop foundational cognitive skills such as:

- Attention
- Memory
- Auditory and visual processing
- Logic and reasoning<sup>25</sup>

Education also enables children to develop non-cognitive skills, which are very important to future success and well-being. Examples of non-cognitive skills include:

- Communication and social skills
- Critical thinking
- Motivation
- Perseverance
- Self-discipline
- Self-efficacy<sup>26</sup>

Education gives individuals the tools and capacity to solve problems that are progressively more difficult, complex and subtle, which enhances problem-solving skills and confidence. It also teaches people that their own choices and actions shape what happens to them. Education can therefore enhance one's potential to respond to events and challenges in life.<sup>27</sup>

## Healthy communities

People with higher levels of education generally have more financial resources and often live in healthier community environments. These individuals are more likely to have stable housing free from toxic hazards, such as lead and mold. They are also more likely to live in safe neighborhoods with more opportunities for physical activity, better access to healthy foods and more social support. Social support involves having high-quality relationships, such as close friendships and a stable, supportive marriage and family. Research has shown that those with higher levels of social support tend to experience better physical and mental health outcomes.<sup>28</sup>

## Access to health care

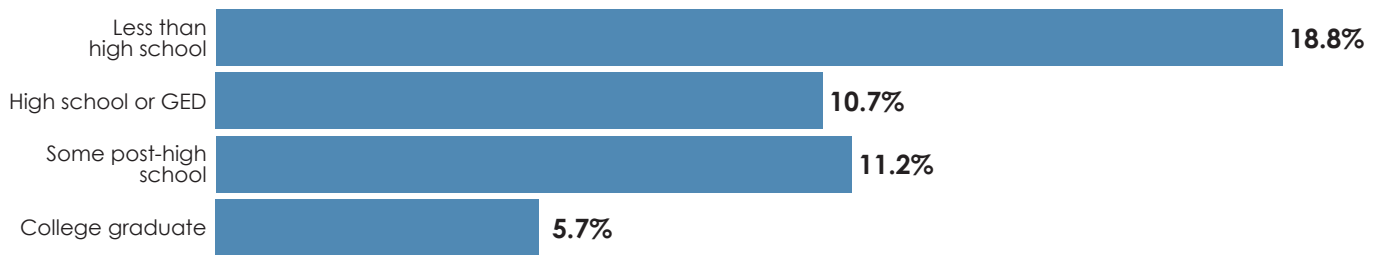
People with higher educational attainment generally have more financial resources and are able to obtain jobs that offer health insurance. As a result, they are more likely to utilize medical services due to their ability to afford co-payments, deductibles and premiums. They are also more likely to receive preventive care (e.g., screenings, immunizations).<sup>29</sup> In 2015, only 5.7 percent of college graduates in Ohio reported that they were unable to see a doctor within the last 12 months due to cost, compared to 18.8 percent of those without a high school diploma (See Figure 8 on page 5).<sup>30</sup>

## Health literacy and health behaviors

Those with higher educational attainment are also more likely to understand information about health and health care – often referred to as “health literacy.”<sup>31</sup> For instance, the knowledge and skills gained through education can lead to a better ability to navigate the complex healthcare system. Those with more education are more likely to understand their health needs, be able to communicate effectively with providers, follow complex treatment instructions and more successfully manage chronic conditions.<sup>32</sup>

Figure 8. **Ohioans unable to see a doctor due to cost (2015)**

Percent of Ohio adults who went without care because of cost in the past year, by educational attainment



**Source:** Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance Survey

People with higher health literacy are also more likely to practice health-promoting behaviors such as eating well, engaging in regular physical activity and refraining from smoking and other unhealthy behaviors.<sup>33</sup>

Education about health, provided in a school setting, is one way to improve health literacy. It provides students with an opportunity to learn about health and health risks and to develop communication and social skills such as resisting social pressures, which can decrease risky behaviors.<sup>34</sup>

### Other factors

People with lower educational attainment are more likely to experience stress due to poverty, difficult working conditions, dangerous neighborhoods, unstable housing and other factors. Unhealthy behaviors may be used as coping mechanisms. Also, the behavioral norms within one's social network and community environment may lead individuals to either adopt or refrain from negative behaviors.<sup>35</sup>

### How does health impact educational outcomes?

Health problems can be barriers to academic success and educational achievement. Physically and emotionally healthy, active and well-nourished children are more likely to achieve academic success because they generally have better school attendance and are better able to focus and learn while in school.<sup>36</sup>

### Attendance and absenteeism

Students who regularly attend school earn higher grades, score higher on standardized tests and are more likely to graduate.<sup>37</sup> Health conditions can

negatively impact school attendance. For instance, children with chronic conditions such as asthma tend to miss more school days than their peers, especially when these conditions are not properly treated or managed. Oral health problems, teen pregnancy, mental health conditions and school violence concerns are other examples of health-related issues that often cause children to miss significant amounts of school.<sup>38</sup> Children who are chronically absent (i.e., miss at least 10 percent of school days per year for any reason) risk falling behind their peers academically, especially in their first few years of schooling.<sup>39</sup> Additionally, chronic absenteeism has been found to be one of the strongest predictors of a student dropping out of high school.<sup>40</sup>

### Health-related learning obstacles

Certain health conditions, by their very nature, can interfere with a student's ability to learn while in school and hinder academic success. For instance, students with untreated vision or hearing impairments may struggle to keep up in class. Children with hyperactivity or attention deficit disorders are likely to have trouble concentrating in class and on homework, making educational achievement more difficult.<sup>41</sup>

There are many other health-related factors that can cause distractions and impact a student's ability to concentrate in class, such as:

- Pain or discomfort from physical health conditions
- Constant hunger
- Insufficient sleep
- Elements of the physical environment of the school (e.g., lead in drinking water, asthma and allergy triggers, temperature of the building, access to natural light)
- Untreated mental health conditions such as anxiety or depression
- Threats of bullying or physical violence<sup>42</sup>

## School engagement

Many of the factors listed above are also likely to impact the extent to which students are engaged in school and motivated to learn. Children who are struggling academically due to an inability to see the chalkboard or to concentrate in class because they are hungry or scared for their safety, for example, are likely to be less engaged. This, in turn, may decrease motivation to work hard in class or to attend school, which could lead to disciplinary problems or dropping out of school altogether. School engagement and school connectedness (i.e., the extent to which students feel that adults and peers at school care about them) are also key determinants of academic achievement and educational attainment.<sup>43</sup>

## Factors that impact both education and health outcomes

There are many other factors – often related to poverty and other aspects of the social and economic environment – that can affect both education and health outcomes.

## Pregnancy and early childhood

Prenatal health and a child's first few years

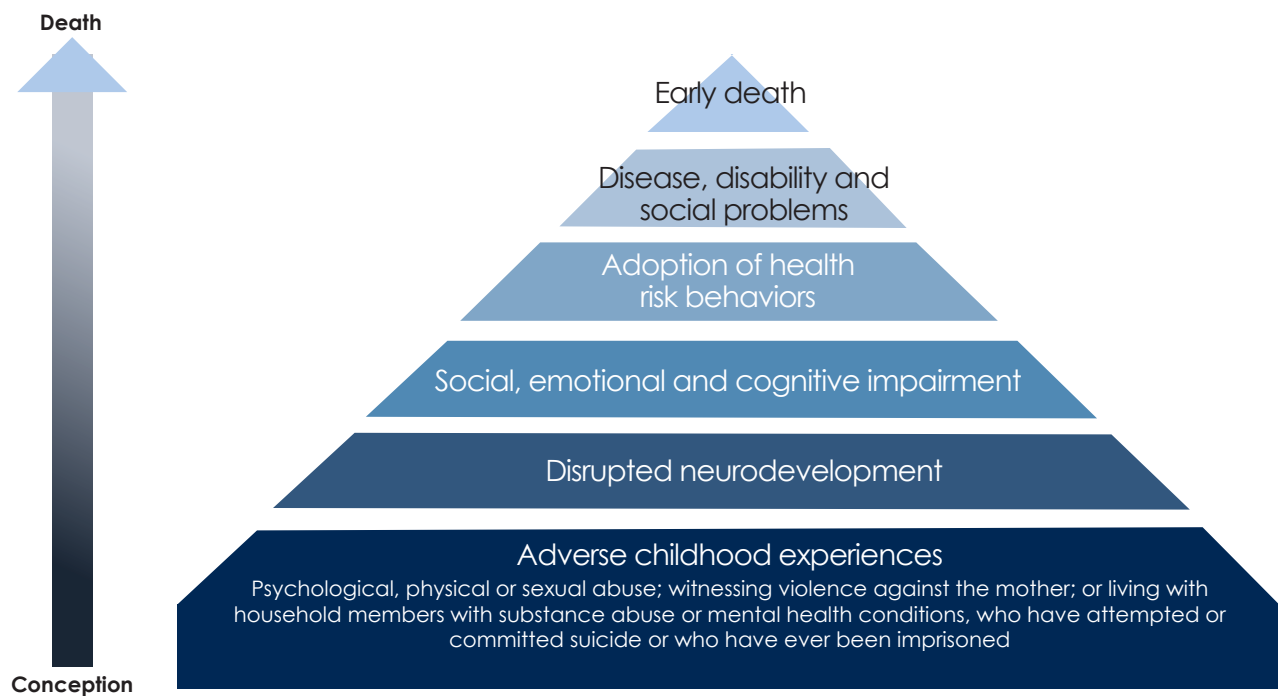
of life are critically important for brain development.<sup>44</sup> Children born to mothers with low educational attainment are more likely to be born prematurely or with low birth weight, both of which are strong predictors of future health problems and have been found to have harmful effects on educational success.<sup>45</sup> Other factors, such as child malnutrition and exposure to toxins like lead can also impact physical and cognitive development.<sup>46</sup>

Research has consistently found early childhood experiences and home life to be strong determinants of future educational success and health outcomes. The nature of the parent-child relationship is a very important contributor to emotional development. Positive interactions stimulate healthy brain development.<sup>47</sup>

## Chronic stress and trauma

Long-term stress can be damaging to health across the life course. Exposure to chronic stress at a young age and adverse childhood experiences (ACEs), such as those listed in Figure 9, can have considerable impacts on educational performance and achievement, as well as health behaviors and health outcomes.

Figure 9. Influence of adverse childhood experiences (ACEs)



**Source:** Adapted from Felitti, Vincent J. et al. "Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study." *American Journal of Preventive Medicine* 14, no. 4 (1988): 245-258

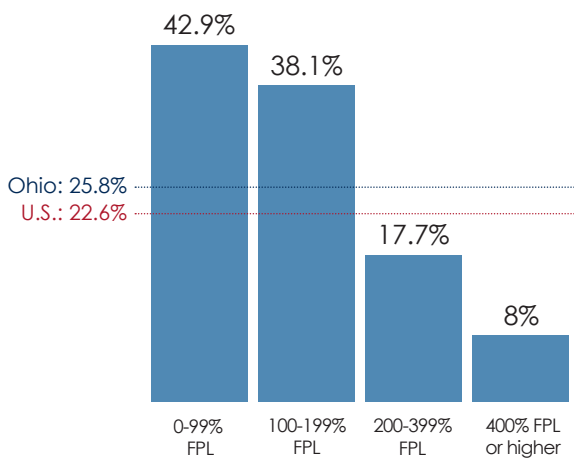
When a child lives in a stressful environment and/or experiences traumatic events, this can cause harmful biological changes that lead to poor physical and mental health, as well as lifelong cognitive limitations and behavioral problems, which can significantly hinder educational success.<sup>48</sup>

There is strong evidence that when a child is exposed to ACEs, he or she has a much greater likelihood of developing risky or unhealthy behaviors such as alcoholism, drug abuse, smoking, physical inactivity and having a high number of sexual partners across the lifetime. It also increases the probability of developing many different health conditions including depression, heart disease, cancer, chronic lung disease and liver disease (See Figure 9 on page 6). Exposure to multiple ACEs intensifies these risks.<sup>49</sup>

Figure 10 shows that children living in families with low incomes are more likely to have experienced two or more ACEs.<sup>50</sup>

### Figure 10. Adverse childhood experiences among Ohio children (2011-2012)

Percent of children who have experienced two or more adverse experiences, by income



Source: National Survey of Children's Health, as compiled by the Data Resource Center for Child and Adolescent Health (2011/2012)

## Policy implications

Despite the importance of education and health and the extent to which they are linked, there is currently not much collaboration between the health and education policy sectors in Ohio. However, there are signs that this may be changing. For instance, in October 2016, the Senate Health and Human Services and the Senate Education Committees held a joint informational hearing to discuss investments in early childhood.

Given the many connections between education and health, policymakers should:

- Prioritize evidence-informed policies with both education and health benefits, such as establishing school-based health centers in low-income communities
- Consider the impacts of education policies on health outcomes, such as school district decisions to reduce recess time and/or decrease physical education requirements or to establish safe routes for students to walk or bike to school
- Consider the impacts of health policies on education outcomes such as Medicaid policies to reimburse for health services provided to low-income children in schools
- Ensure that all Ohio students receive comprehensive, age-appropriate and consistent health information in K-12 education
- Explore ways that the Ohio Department of Education can incorporate health-promoting provisions into the state plan required under the Every Student Succeeds Act
- Encourage stronger partnerships and greater collaboration between the education and health sectors at the state level including:
  - The Ohio Department of Education and health-related agencies such as the Ohio Department of Health, Ohio Department of Medicaid and Ohio Department of Mental Health and Addiction Services
  - Health and education legislative committees including the Joint Medicaid Oversight Committee and the Joint Education Oversight Committee
- At the local level, incentivize health organizations such as local health departments, hospitals and alcohol, drug addiction and mental health (ADAMH) boards to partner with school districts

***In 2017, HPIO will release a series of fact sheets discussing specific policy recommendations to improve health and educational outcomes in Ohio.***

For more information, see our “Intersections between education and health” online resource page, which will be continually updated throughout 2017.

## Notes

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