



**HANCOCK PUBLIC HEALTH**

# **HANCOCK COUNTY 2021 HEALTH EQUITIES REPORT**



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# 2021 HEALTH EQUITIES REPORT

## Hancock County, Ohio

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### **Compiled and Prepared By:**

Jessica Shrake, MPH  
CDCF Epidemiologist  
Supporting Hancock Public Health

Jessica Shrake obtained her Bachelor of Science from The Ohio State University in May 2018, and her Master's in Public Health from The Ohio State University in May 2020. She started her role as a Contract Epidemiologist/Biostatistician at Hancock Public Health through a partnership with the CDC Foundation in December 2021. Jessica's role at Hancock Public Health is data visualization, dashboard creation, data analysis, and disease surveillance.

Hannah Plumley, MPH  
Epidemiologist  
Hancock Public Health

Hannah Plumley obtained her Bachelor of Science from Bowling Green State University in 2011 and her Master's in Public Health from Kent State University in 2020. She started in her role as Epidemiologist and Emergency Response Coordinator at Hancock Public Health in 2020. Hannah's role at Hancock Public Health is instrumental in disease investigation, surveillance, and outbreak mitigation.

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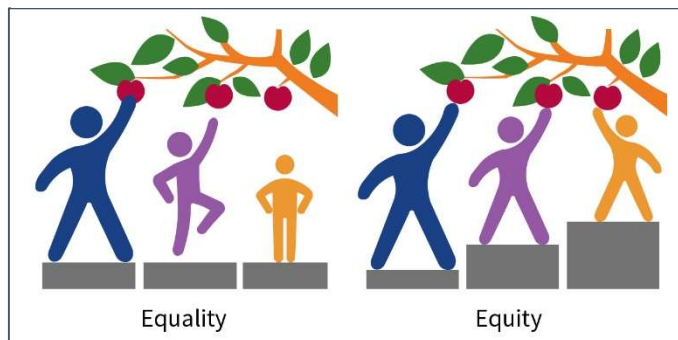
## Introduction

Every decade, the U.S. Department of Health and Human Services' Office of Disease Prevention and Health Promotion release their Healthy People objectives for the next 10 years. According to Healthy People 2030 (HP 2030), their goal is to identify “public health priorities to help individuals, organizations, and communities across the United States improve health and well-being”<sup>1</sup>. HP 2030 outlines multiple areas for improvement and consideration, focusing on health equity, health literacy, and social determinants of health. Items contained in each area may overlap into other areas, as many aspects of individual and public health are intertwined. While HP 2030 tends to focus on the United States, it is encouraged to use the objectives set in each Healthy People report within local communities. Local health departments, organizations, foundations, and other local partners can use these objectives to set their own goals for their communities and determine what priorities exist in their geographic region. One way to do this is through a health equities report.

A health equities report looks at how resources are distributed throughout the geographic region (i.e. Hancock County), and how that may impact individual and community-level health. For this report, census tract level data was utilized. Census tracts are “small, relatively permanent statistical subdivisions of a county”<sup>2</sup>. Each census tract's population is between 1,200 and 8,000, with an average around 4,000. Each county's census tracts are uniquely numbered. If a census tract's population gets above 8,000, it is divided. If the original tract was numbered 1, it will be divided into tracts 1.01 and 1.02. This way, it is easy to track where population growth is occurring.

By observing how resources are distributed among the different census tracts, health officials are able to see where disparities lie. In those areas, different interventions and programs can be implemented to help improve the health of individuals living there. The following report will be looking at different areas of interest, some of which are included in or align with the objectives set in HP 2030, mostly in regard to social determinants of health.

Figure 1: Equality vs Equity



Source: <https://www.somervision2040.com/equity/>

## What is Health Equity?

According to the CDC health equity is, “the state in which everyone has a fair and just opportunity to attain their highest level of health”<sup>3</sup>. In order to achieve this, various roadblocks need to be removed. These include (but are not limited) to the following: access to quality healthcare services, access to healthy food, economic barriers, social barriers, and health disparities. Ideally, when all barriers are removed, all individuals and communities have an equal opportunity to achieve their full health potential.

<sup>1</sup> (U.S. Department of Health and Human Services, n.d.-a)

<sup>2</sup> (Geographic Products Branch U.S. Census Bureau, n.d.)

<sup>3</sup> (CDC National Center for HIV, 2022)

## What are Health Disparities?

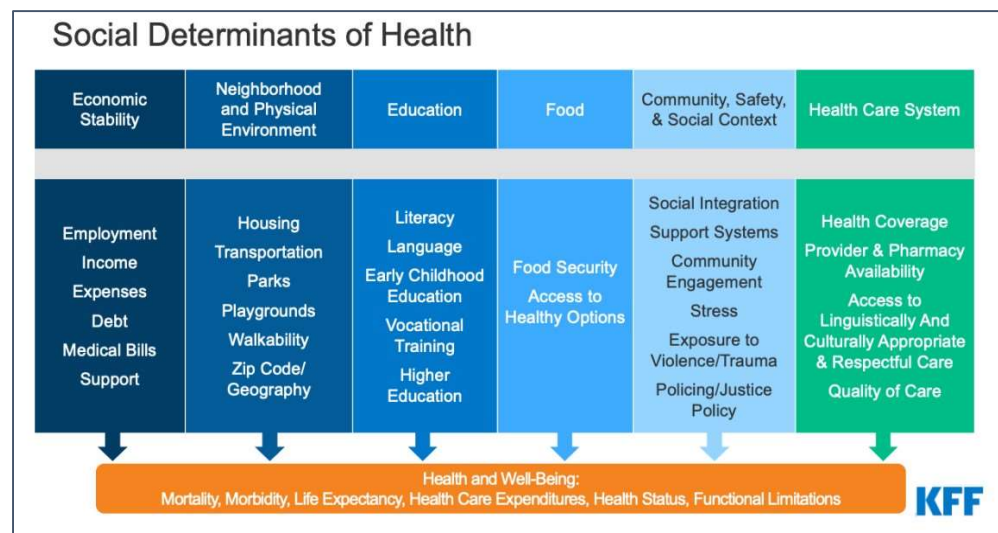
In order to better understand health disparities, it is helpful to look at each word on its own. According to Merriam-Webster, health is defined as “the condition of being sound in body, mind, or spirit; the general condition of the body”.<sup>4</sup> Disparity is defined as, “a noticeable and usually significant difference or dissimilarity”.<sup>5</sup> These two words together are used to point out stark differences in individual or community level health. Health is referring to all health aspects, mental, physical, and emotional. For example, if a different geographic area or demographic is experiencing large differences in heart disease than another, there is a disparity present. Once the underlying cause is determined, it can be addressed. Ideally, once addressed, both groups will have the equal opportunity to live their lives to the fullest health potential.

## What are Social Determinants of Health?

Throughout this report, there will be references to social determinants of health (SDOH). HP 2030 defines SDOH as, “the conditions in the environment where people are born, live, learn, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks”.<sup>6</sup> Basically, these are the permanent or temporary aspects of an individual or community that affect their overall health. Some examples of permanent SDOH are race, age, sex, or genetics. These are things that individuals cannot alter. Alternatively, factors like physical activity level, smoking habits, access to resources, and various environmental exposures can be improved through individual and community-level interventions. So, to bring SDOH, health disparities, and health equity together, SDOH are analyzed to help determine

where disparities are, and what can be improved. From there, interventions, resources, and programs can be implemented to help reduce disparities. Doing so improves the health equity of a community or geographic area.

Figure 2: Social Determinants of Health



Source: <https://www.kff.org/coronavirus-covid-19/issue-brief/tracking-social-determinants-of-health-during-the-covid-19-pandemic/>

<sup>4</sup> (Merriam-Webster, n.d.-b)

<sup>5</sup> (Merriam-Webster, n.d.-a)

<sup>6</sup> (U.S. Department of Health and Human Services, n.d.-b)



## Overview of Findings: Does Hancock County, Ohio Have Any Disparities?

When looking at what disparities are present in Hancock County, 9/12 (75%) categories show a significant difference between census tracts. Below are the categories in order of the greatest noted difference to the least:

1. **Percent of residents living below the poverty line:** Census tract 9.02 has 35.50% of residents living below the federal poverty line. Census tract 9.01 had the next highest percent with 20.4%, followed by census tract 1 with 19.4%. The lowest was in census tract 3.01 at 2.10%.
2. **Percent of residents spending 30% or more of their income on housing or rent:** Census tract 9.02 has 39.52% of residents spending 30% or more of their income on housing or rent. Census tract 2 had the next highest percent with 29.54%. The lowest percent was in census tract 12 at 11.68%.
3. **High School graduation rate:** Census tract 9.01 has the lowest high school graduation rate of 83.90%. The highest was in both census tracts 2 and 3.01 at 96.40%.
4. **Percent of residents participating in food assistance programs:** 26.70% of residents in census tract 9.02 participate in a food assistance program (e.g., food stamps, SNAP). The next highest participation rate was seen in census tract 9.01 with 18.0%. The lowest participation was in census tract 2 at 1.30%.
5. **Age-adjusted mortality rate:** The highest age-adjusted mortality rate was in census tract 9.02 at 6,069.99 deaths per 100,000 population. The lowest rate was in census tract 3.02 at 2,150.17 deaths per 100,000 population.
6. **Percent of residents that are unemployed:** The highest unemployment rate was in census tract 9.02 with 9.00% of residents being unemployed. Census tract 9.01 saw the next highest unemployment rate at 6.30%. The lowest rate was in census tract 3.01 with 0.60%.
7. **Age at Death:** The lowest average age at death was in census tract 9.02 at 62.83-years. The highest average age at death was in census tract 2 at 82.41-years.
8. **Median household income:** Census tract 9.02 has the lowest median household income of \$29,652. The next lowest income was seen in census tract 5 with \$39,597. The highest was in census tract 3.01 at \$88,250.
9. **Percent of residents with access to a broadband internet service:** Census tract 1 had the lowest percent of residents with access to a broadband internet service, at 78.40% of residents.

## Overview and History of Hancock County, Ohio<sup>7</sup>

Hancock County, Ohio was officially established on April 1, 1820, and named after John Hancock, signer of the Declaration of Independence. By January 21, 1828, Hancock County had enough residents to govern itself, and it was voted that Hancock County could leave the jurisdiction of Wood County and be distinct. At its start, Hancock County was 585 square miles. As counties were formed around it, Hancock County's borders shifted slightly, supplying land to those new counties. This is what creates the unique indents in Hancock County's southeast corner. Today, the county is approximately 531 square miles. The majority of the county is rural, with only 1.4% of the land being considered urban.

### Hancock County, Ohio Demographics<sup>8</sup>

**Population:** 75,765

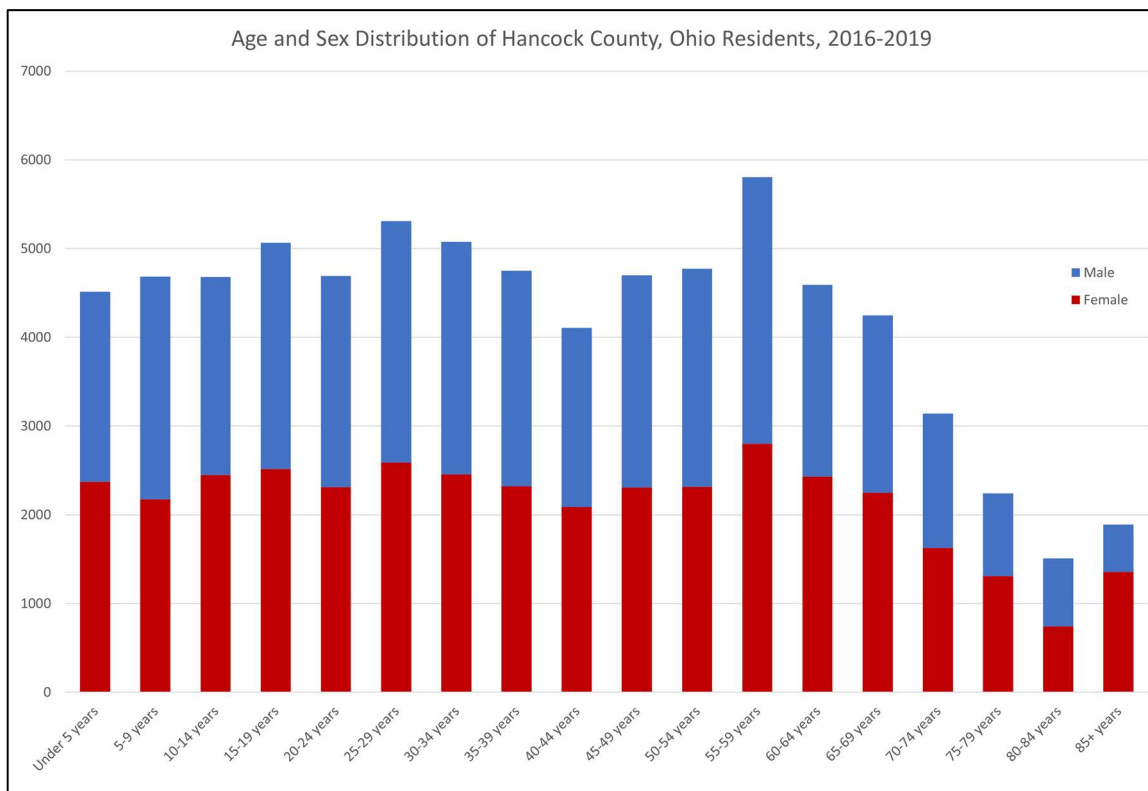
**Population Density:** 142.7 people per square mile

#### Race and Ethnicity of Residents:

- White/Caucasian: 69,893 (92.2%)
- Black/African American: 1,824 (2.4%)
- American Indian & Alaska Native: 76 (0.1%)
- Asian: 1,581 (2.1%)
- Native Hawaiian & Pacific Islander: 0 (0%)
- Hispanic/Latino: 4,304 (5.7%)
- Not Hispanic/Latino: 71,461 (94.3%)

### Top Cities & Villages

Findlay	McComb
Fostoria	Mount Blanchard
Arcadia	Mount Cory
Arlington	Rawson
Bluffton	Van Buren
Benton Ridge	Vanlue
Jenera	



<sup>7</sup> (Brown et al., 1886)

<sup>8</sup> (United States Census Bureau, 2020)

## Economic Stability

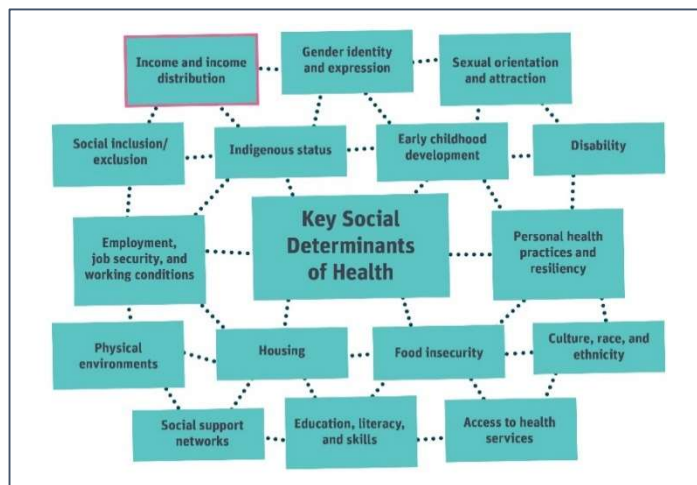
Economic stability is composed of multiple factors. These include but are not limited to the following: an individual's household income, poverty status, employment status, and cost of housing/rent. An individual can be impacted by one or more of these factors. Each of these can influence another, creating a compounding effect. For example, having a lower household income may also place someone below the poverty level. Being unemployed may also affect an individual's income or how much of their income is going towards their housing/rent.

Economic stability also influences other aspects related to individual and community-level health. For example, an individual's income can impact their ability to afford healthy, nutritious food. It is well established that those who live at or below the federal poverty level experience greater food insecurity and ability to afford healthy food choices.<sup>9,10,11</sup>

Secondly, being or becoming unemployed can result in an individual losing health insurance.<sup>12,13,14</sup> Doing so affects their ability to seek out medical care. Unemployment can also cause an increase in stress levels, mental health issues, and chronic disease (ex. high blood pressure).<sup>15,16</sup>

Lastly, an individual's income can impact their ability to pay for safe, quality housing. Aspects of safe, quality housing include the following: air quality, plenty of room for each individual in the home, ADA compliant spaces, reduced exposure to carbon monoxide or lead, working HVAC, and quality infrastructure (i.e. city plumbing).<sup>17</sup> Individuals paying more than 30% of their income on housing or rent are considered "cost-burdened" by the U.S. Department of Housing and Urban Development.<sup>18</sup> Having to spend more on housing and rent, limits the amount of money available for food, healthcare, transportation, and multiple other variables linked to overall health and quality of life.

Figure 3: Key Social Determinants of Health



Source: <https://www.phsd.ca/resources/research-statistics/health-statistics/opportunities-for-health-for-all-a-focus-on-income/>

<sup>9</sup> (Feeding America, 2018)

<sup>10</sup> (United States Department of Agriculture Economic Research Service, 2022)

<sup>11</sup> (Coleman-Jensen et al., 2017)

<sup>12</sup> (Office of Disease Prevention and Health Promotion, 2020)

<sup>13</sup> (Bivens & Zipperer, 2020)

<sup>14</sup> (Antonisse & Garfield, 2018)

<sup>15</sup> (Norström et al., 2019)

<sup>16</sup> (Howley, 2020)

<sup>17</sup> (Office of Disease Prevention and Health Promotion, n.d.-b)

<sup>18</sup> (U.S. Department of Housing and Urban Development Office of Policy Development and Research, 2014)

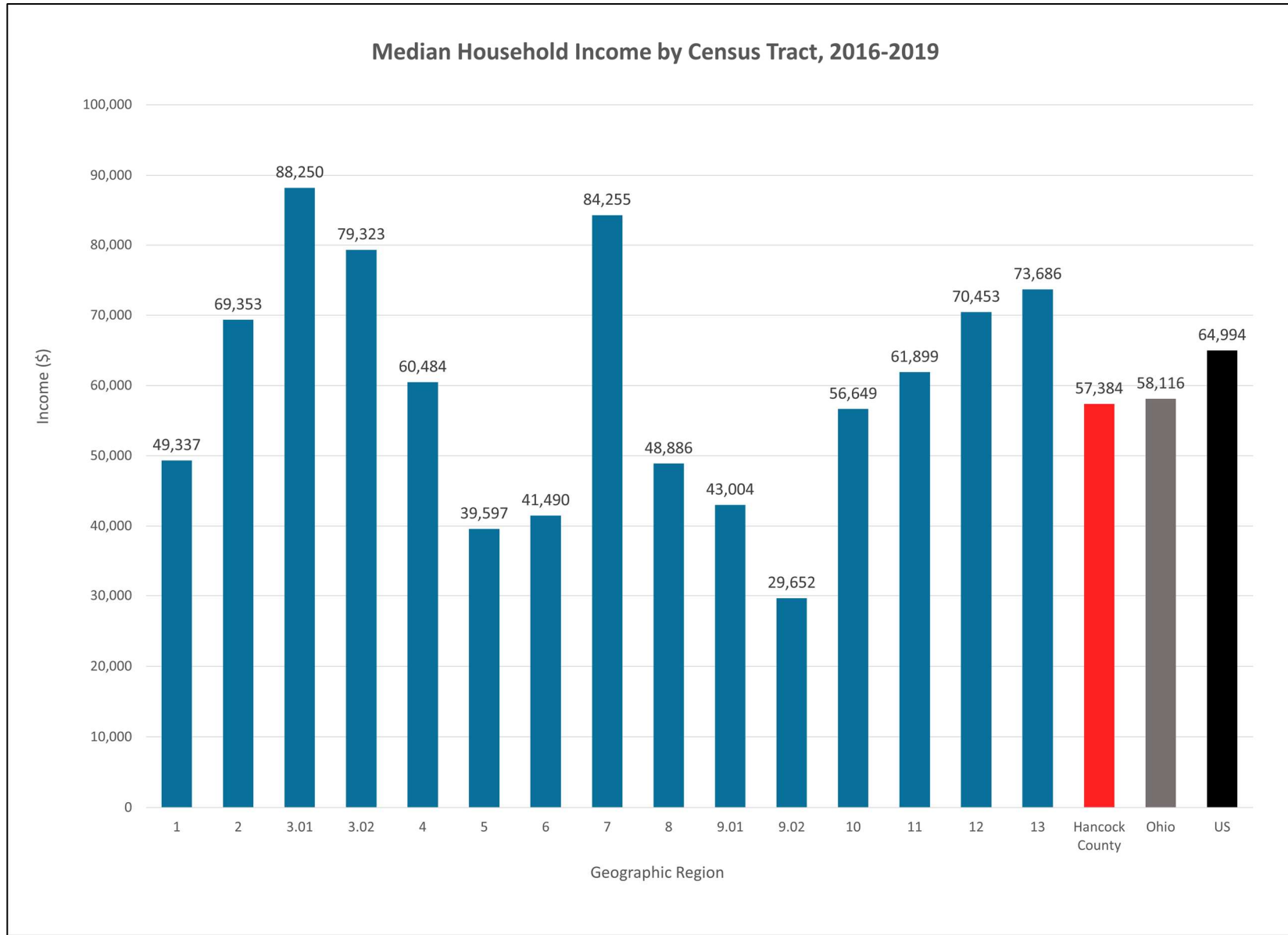
## **Summary of findings**

The median household income for Hancock County residents is \$57,384, which is just below that for the state of Ohio and the United States. Census tract 9.02 has the lowest median household income at \$29,652. At \$88,250, census tract 3.01 had the highest median household income.

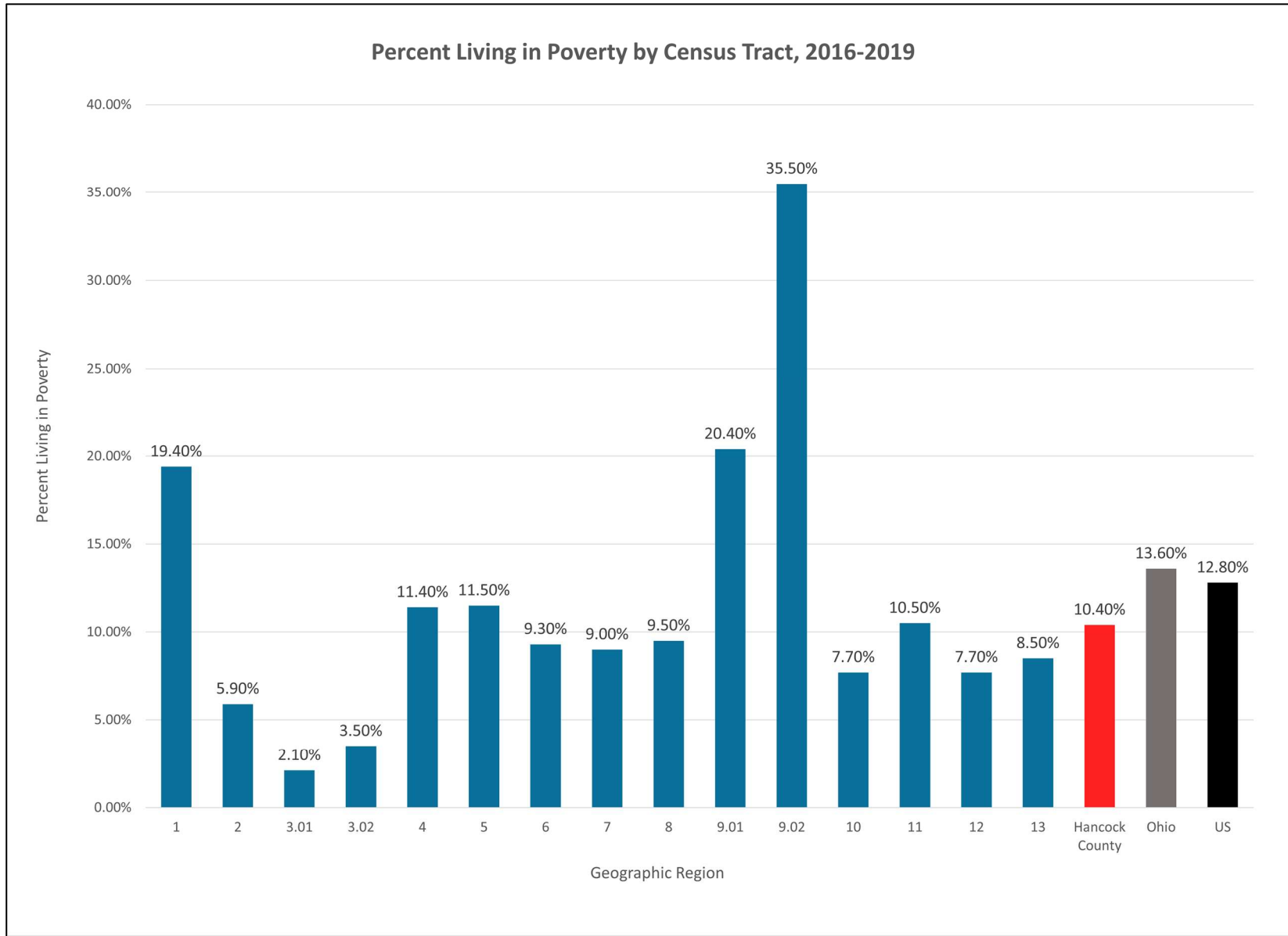
This is mirrored when looking at percent poverty and unemployment rates by census tract. Census tract 9.02 had the highest rates of residents living in poverty and unemployment with 35.50% and 9.00%, respectively. Census tract 3.01 has the lowest of these values with 2.10% of residents living in poverty and 0.60% unemployment.

When looking at the percent of residents that are spending 30% or more of their income on housing (mortgage or renting), census tract 9.02 has the highest percent (39.52%), and census tract 12 has the lowest (11.68%)

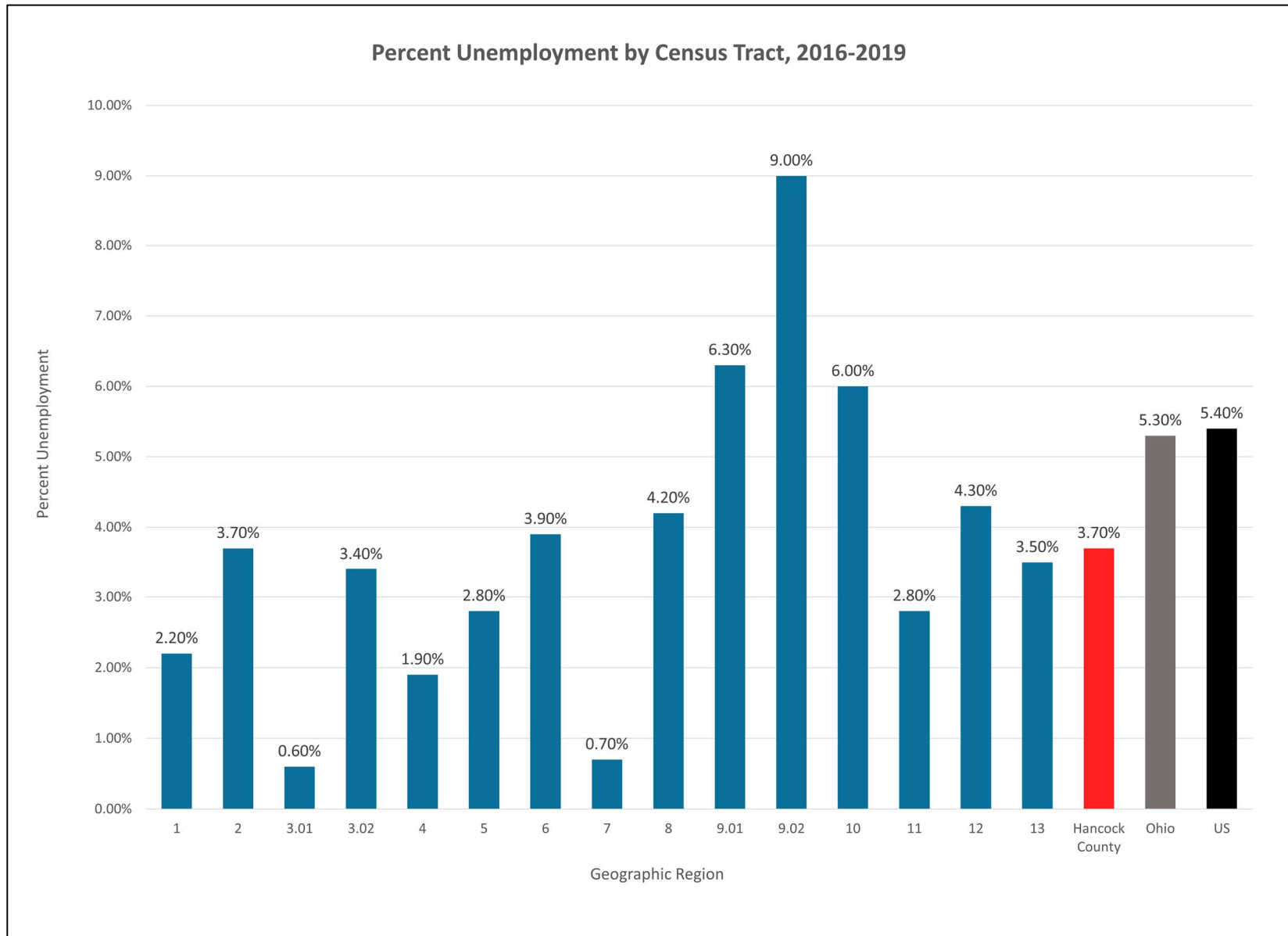
Median Household Income of Hancock County, Ohio Resident by Census Tract, 2016-2019



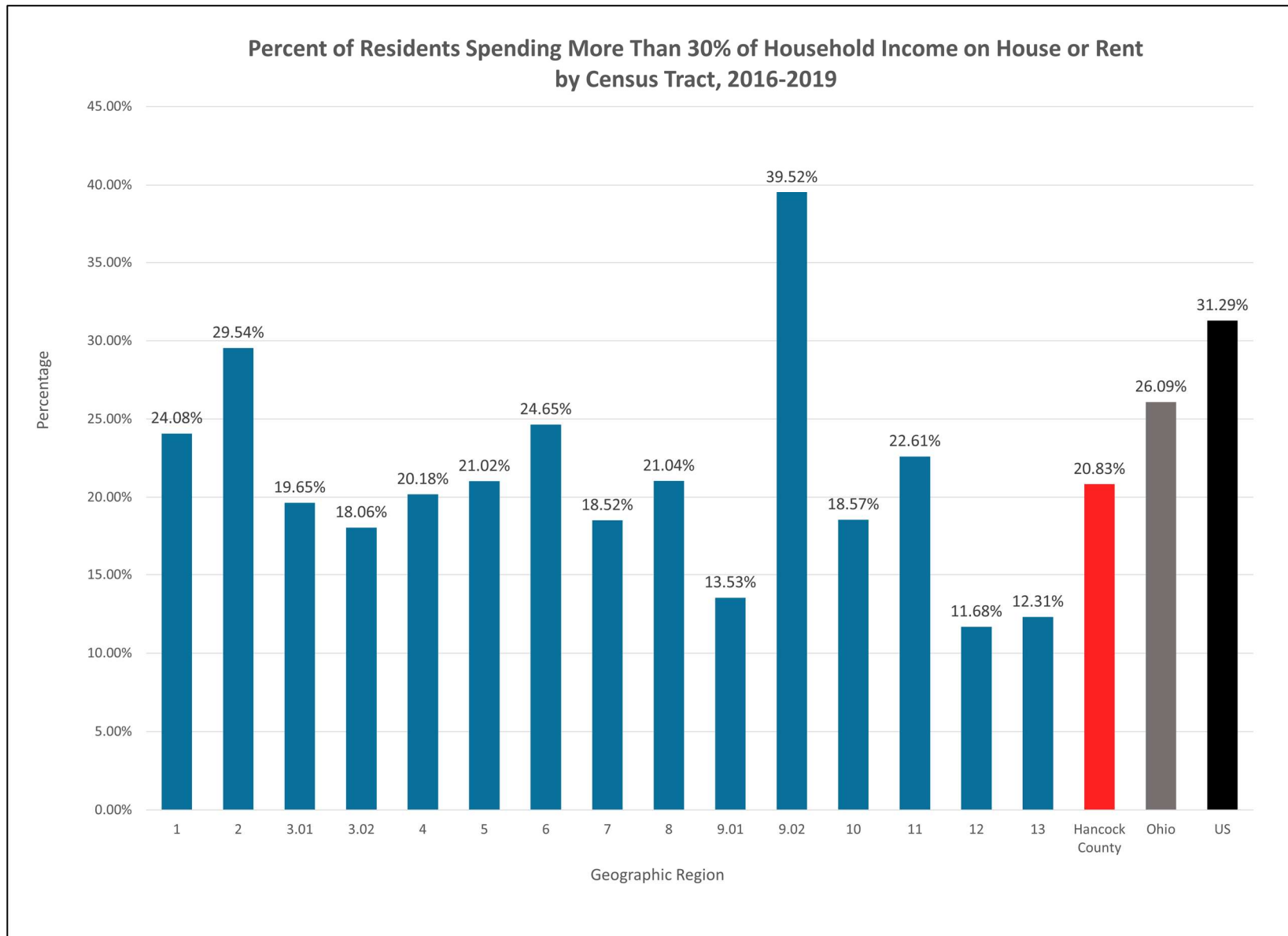
Percent of Hancock County, Ohio Residents Living at or Below the Poverty Line, by Census Tract, 2016-2019



Percent of Hancock County, Ohio Residents That Are Unemployed, by Census Tract, 2016-2019



Percent of Hancock County, Ohio Residents That Spend 30% or More of Their Income on Rent or Housing, by Census Tract, 2016-2019





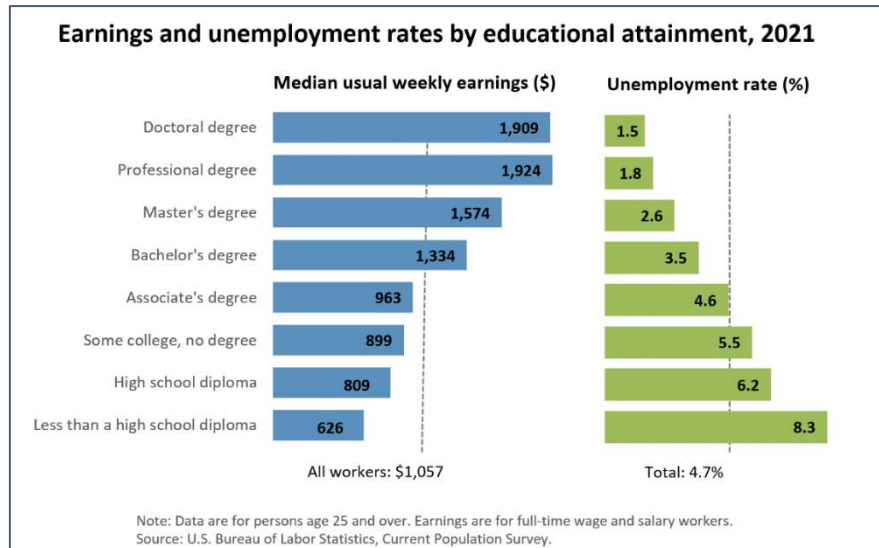
## Education Access and Quality

Access to a quality education sets individuals up for success far into life. It can impact their ability to gain employment, their income level, their social network, and even their health. Education plays a role in a person’s overall health by supplying them the foundation they need to improve their health literacy.<sup>19,20</sup> By better understanding the information provided to them by their doctor or healthcare provider, they can make better health-related decisions for themselves. Additionally, higher education levels are linked to higher paying and longer-lasting professions; many of which provide health insurance and other related benefits.<sup>21,22</sup> These allow individuals the freedom to seek healthcare when needed and get quality care. Additionally, as those with higher education tend to have higher incomes, they have the potential to afford better housing. Areas with quality housing tend to have more access to green space, improved walkability, and easier access to transportation.<sup>23,24</sup> This improves their ability to exercise, get to and from work, stores, or doctor’s appointments.

Figure 4: Earnings and Unemployment Rates by Educational Attainment

### Summary of findings

In Hancock County, 93.10% of residents 25 years of age and older have received a high school diploma or higher in their lifetime. Census tract 7 had the highest rate with 96.10%. Census tract 9.01 had the lowest with 83.90%. This is the only census tract whose high school graduation rate is lower than the county, state, and national average.



Source: <https://www.bls.gov/emp/tables/unemployment-earnings->

There is more variety seen when looking at Hancock County residents aged 25 and older who have obtained at least a bachelor’s degree. On average, 27.60% of Hancock County residents have at least a bachelor’s degree, Ohio has 28.90%, and the U.S. has 32.90%. The lowest percent was seen in census tract 1 with 14.40% of residents having at least a bachelor’s degree. The highest was seen in census tract 7 with 46.10%.

<sup>19</sup> (Virginia Commonwealth University Center on Society and Health, 2015)

<sup>20</sup> (Tulane University School of Public Health and Tropical Medicine, 2021)

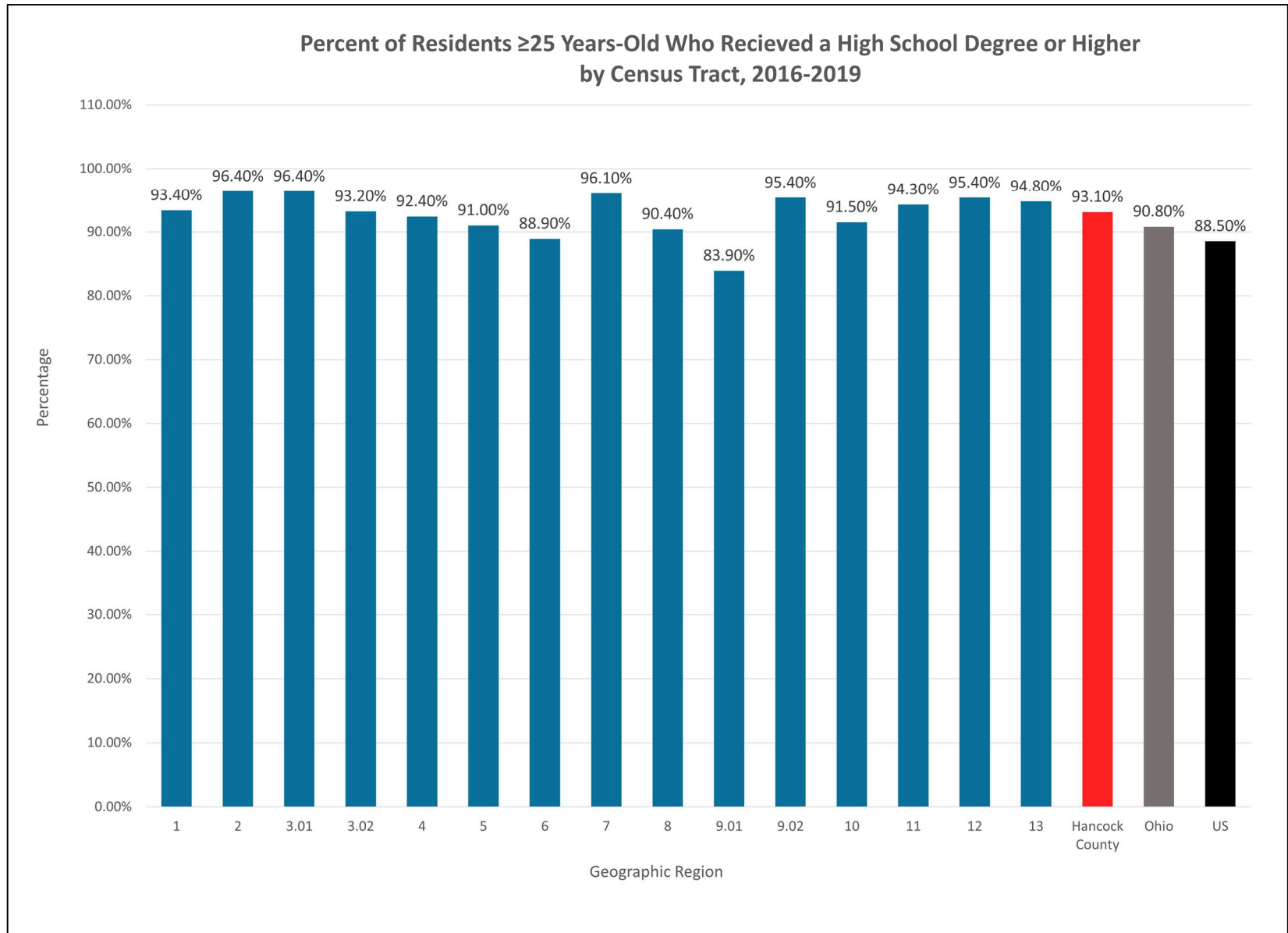
<sup>21</sup> (Zajacova & Lawrence, 2018)

<sup>22</sup> (University of Massachusetts Global, n.d.)

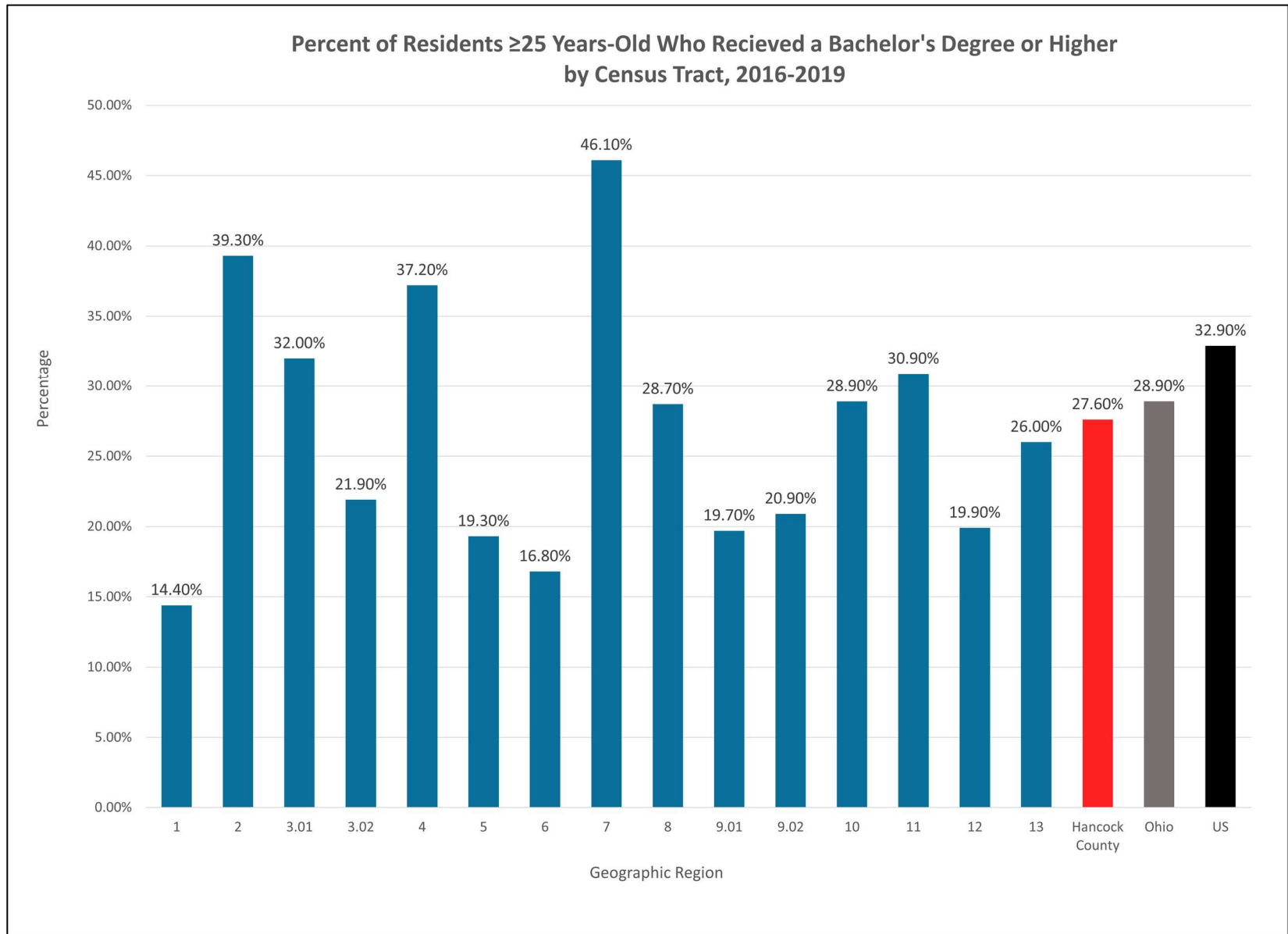
<sup>23</sup> (Klein, 2014)

<sup>24</sup> (Virginia Commonwealth University & Center on Society and Health, 2015)

Percent of Hancock County, Ohio Residents That Have Graduated High School, by Census Tract, 2016-2019



Percent of Hancock County, Ohio Residents Who Have Graduated from College, by Census Tract, 2016-2019



## Health Care Access and Quality

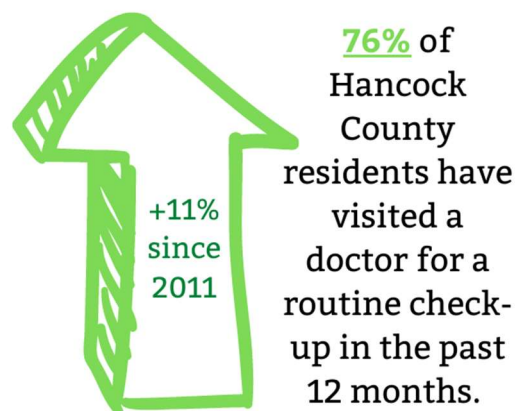
Health care access is defined as one’s ability to “obtain healthcare services such as prevention, diagnosis, treatment, and management of diseases, illness, disorders, and other health-impacting conditions”.<sup>25</sup> It is important that these services be affordable, accurate, completed by competent medical professionals, and be convenient for the patient. Factors that prevent access to health care services are being uninsured, distance to a physician/hospital, cost of copays or prescriptions, inability to make own appointments (low health literacy, low computer literacy, language barrier, etc), individual cannot take time off work or find affordable childcare, etc.<sup>25</sup>

The ability to access quality health care services can impact an individual's quality of life and health outcomes. For example, regularly visiting a physician allows an individual to be screened for various risk factors like high blood pressure, high cholesterol, or high A1C. There are also screenings that can be done to help catch diseases or conditions early on or before they even start.<sup>26</sup> Examples of these procedures are prostate exams, PAP smears, mammograms, and colonoscopies. Medical professionals are also able to complete other preventive measures like vaccines, development checks for young children, and prenatal exams for expectant mothers. These can help prevent diseases, disabilities, or complications from developing later in that person’s health journey.

Lastly, health care access also includes a person’s ability to seek treatment when desired. This could be medical, emotional, or psychological. Therefore, when analyzing the accessibility within a community, it’s important to determine the options available to residents, distance to the location(s), and types of services provided. This can be done through a ratio of the population to the number of physicians, looking at the percent of residents who are uninsured, and the percent of the population that has undergone various screening procedures (e.g. mammography) in the appropriate interval of time.<sup>26</sup>

### Summary of findings

When looking at the percent of Hancock County residents who are uninsured, the average is 4.20%. The census tract with the lowest number of uninsured residents is 3.01, with 1.00%. Comparatively, census tracts 9.02 and 10 are tied for the highest percent with 6.40%. While that value may seem high when compared to other areas in the county, most Hancock County census tracts have lower percentages than the county average of 6.20%. All are less than the national average of 8.70%.



Source: Hancock County Community Health Assessment, 2021

<sup>25</sup> (University of Missouri School of Medicine, n.d.)

<sup>26</sup> (Office of Disease Prevention and Health Promotion, n.d.-a)

### Healthcare Providers by Type and Census Tract

Below is a table displaying the number of healthcare providers by facility type and census tract. The majority (99/125, 79.20%) of providers are centered around Findlay, Ohio (census tracts 4-11). Specialists (n=27), dentists (n=17), pharmacies (n=15), and counseling/therapy offices (n=12) are the most common healthcare facilities found in Hancock County.

Healthcare Provider Type	1	2	3.01	3.02	4	5	6	7	8	9.01	9.02	10	11	12	13	Grand Total
Counseling/Therapy					1	2	1	1	2		5					12
Dentist	1	1		1		1	2	3	1		1	4	2			17
Diagnostics/Imaging		3										2				5
ER/Urgent Care						1					1					2
Family Practice	1	1		1		1	1	1			1	3			1	11
Health Department							1									1
Holistic Health									1		3					4
Hospice		1										1				2
Hospital												1				1
Midwife	1															1
OBGYN	2	1						1				5	2			11
Pharmacy	2	1			1	2	4				1	1	2	1		15
Psychiatrist							1	1				1				3
Rehabilitation					1		2	1								4
Specialist		6		1	1		1		1	2		14	1			27
Specialty Therapy		1					4					2				7
Surgery												2				2
<b>Grand Total</b>	<b>7</b>	<b>15</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>7</b>	<b>17</b>	<b>8</b>	<b>5</b>	<b>2</b>	<b>12</b>	<b>36</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>125</b>

## Substance Use Treatment

Since 2016, Hancock Public Health (HPH) has offered harm reduction services to individuals battling substance use disorder. **In 2020, HPH started a Bloodborne Infectious Disease Prevention Program (BIDPP), featuring a syringe service program. BIDPP is now known as the Safeworks Syringe Service.** HPH works with other community groups and organizations to provide information, connection to treatment services, naloxone kits, training, and peer support. Below are some charts and infographics about the work and impact of the program.

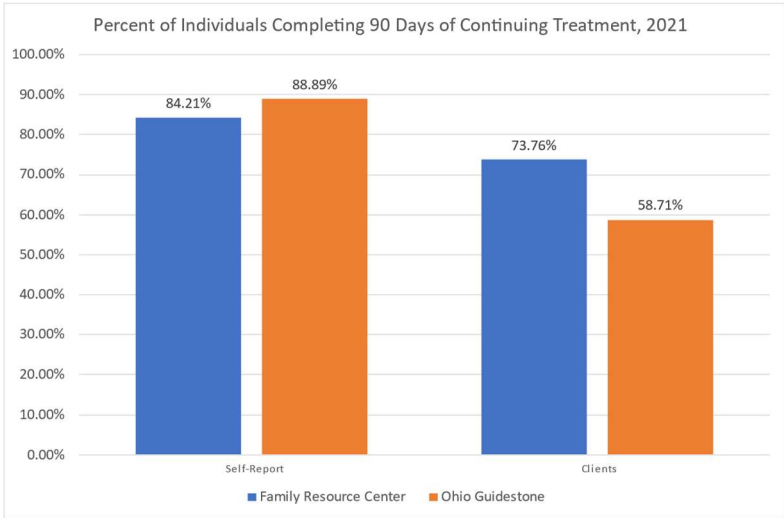
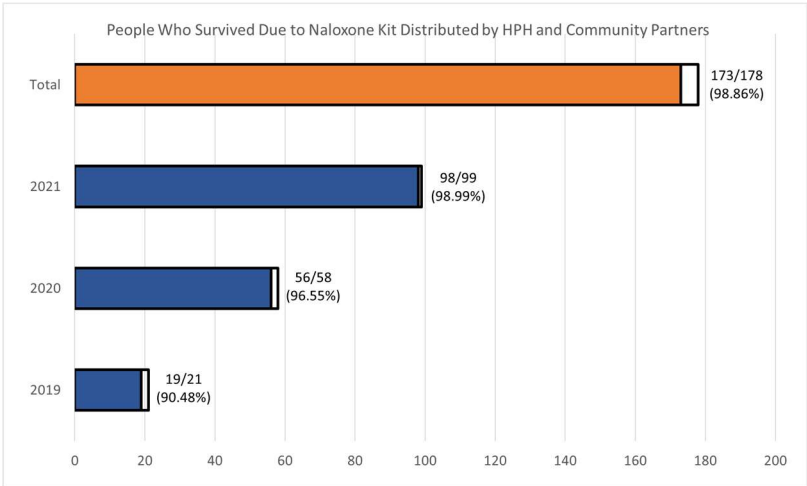
In 2021, **378** overdose reversals were reported by BIDPP participants

**103** individuals have attended the Hancock Public Health Harm Reduction Program since its start

In 2021, **943** naloxone kits were distributed by BIDPP

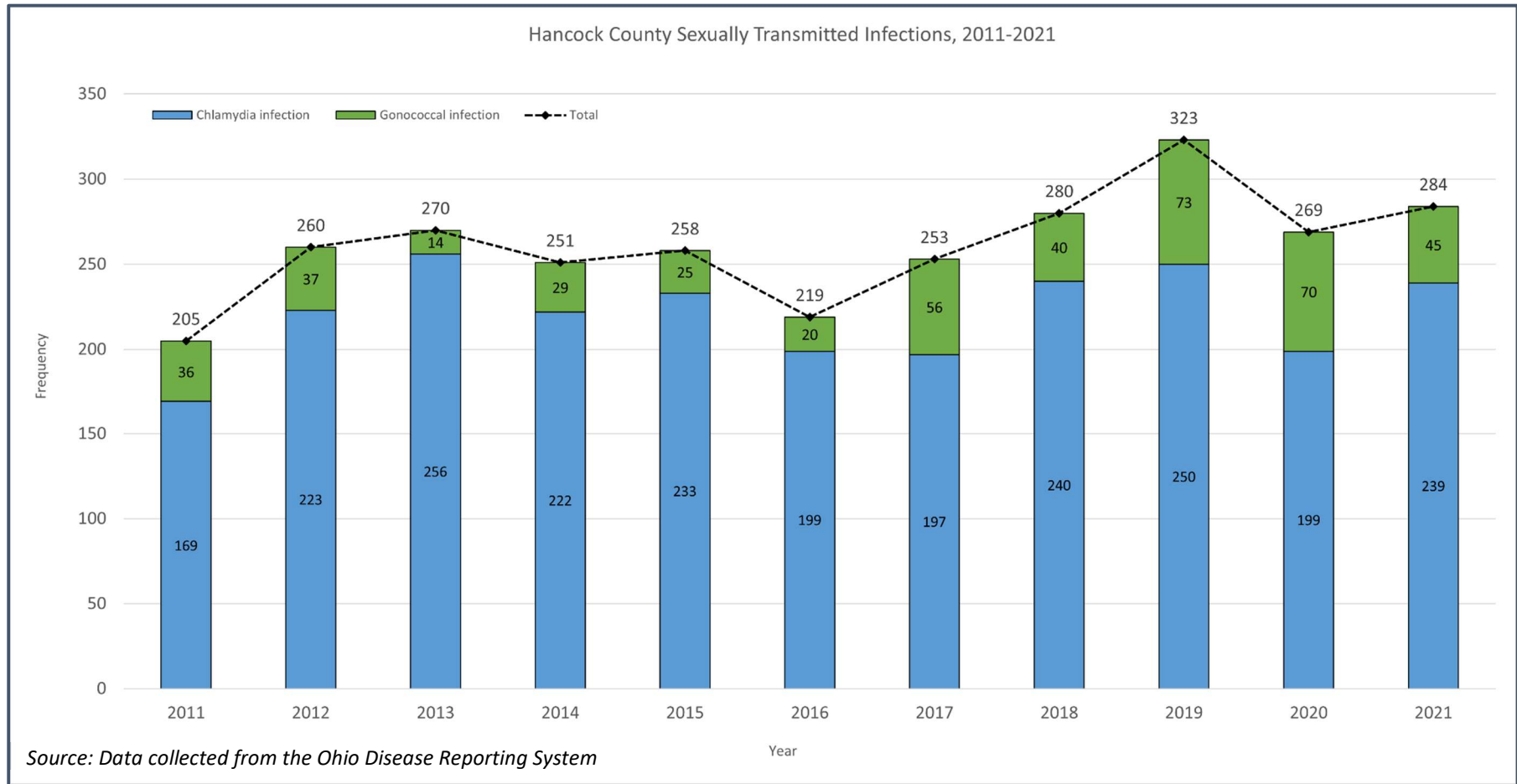
**1,191/1,248 (95.43%)** of distributed naloxone kits by HPH and community partners (years 2019-2021) were for individual use

In 2021, **257** individuals were supported by the Focus Peer Recovery Program

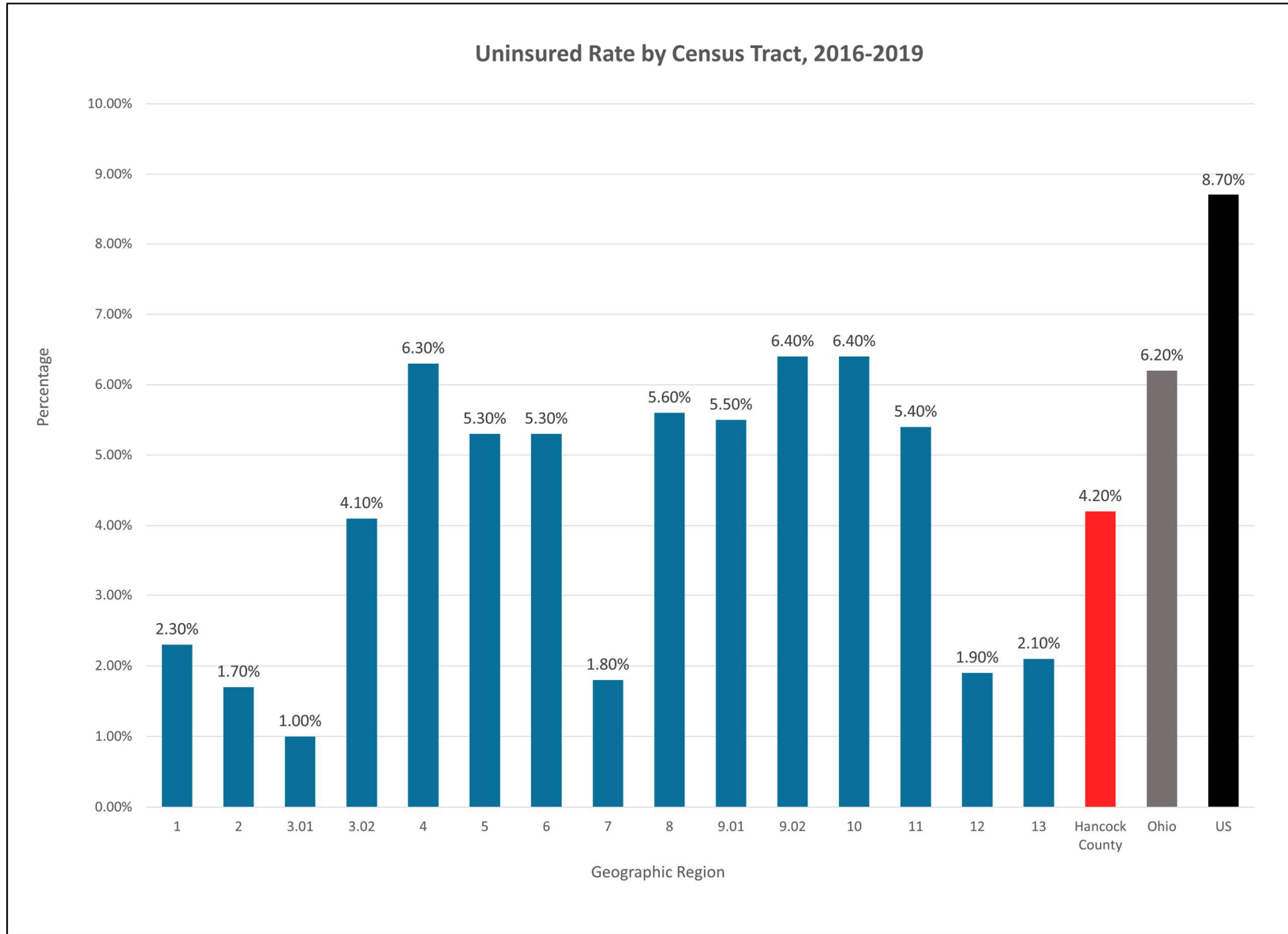


## Sexually Transmitted Infections

Below is a graph displaying the number of diagnosed sexually transmitted disease in Hancock County. From 2011-2021, the majority (99.9%) of sexually transmitted infections were caused by chlamydia and gonorrhea. There were four syphilis cases reported from 2011-2021.



Percent of Hancock County, Ohio Residents That Are Uninsured, By Census Tract, 2016-2019



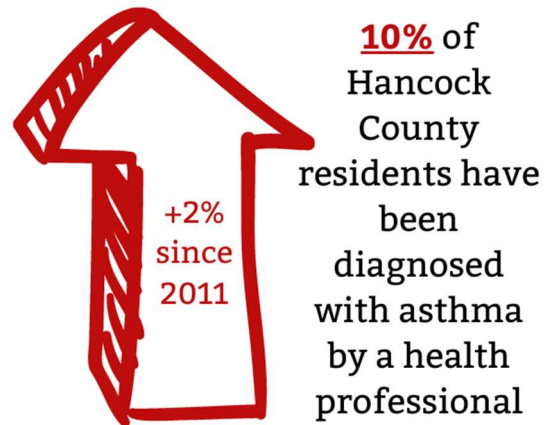


## Neighborhood and Built Environment

Beyond genetics and healthy life practices, where an individual lives can also have an impact on their health and quality of life. One aspect that is affected is the air quality. Decreased air quality is linked to increased rates of asthma, cancer, and neurological disorders.<sup>27</sup> Air quality is affected by the number of factories, traffic, and general air pollution. Also, the amount of second-hand smoke can influence someone's overall health. Even a small amount of second-hand smoke can lead to an increased risk of stroke, heart disease, respiratory illness, and cancer.<sup>28</sup> Therefore, when looking at community health, it's beneficial to analyze smoking rates and trends in the area.

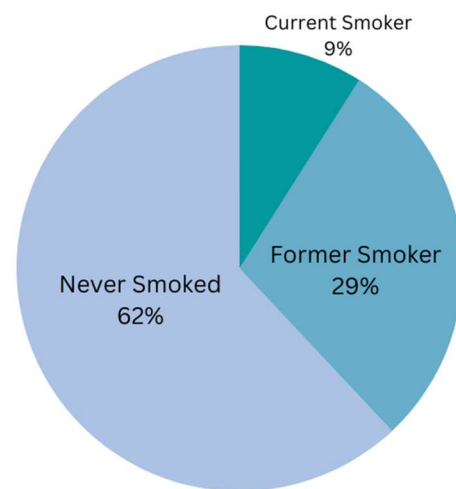
Water quality is also a neighborhood component that affects health. If living in an area with poor or outdated water infrastructure, there is the possibility of water contamination. Water can be contaminated with lead, copper, chemicals, or bacteria.<sup>29</sup> This not only impacts the drinking quality, it also affects individuals' ability to practice safe hygiene, cooking, recreation, and use in agriculture.<sup>29</sup>

Tied to housing and the environment where someone lives, is their ability to safely access green space. Access to green space enables people to exercise through walking, running, or through sports. Green space has also been shown to improve mental and emotional health.<sup>30,31</sup> These factors decrease mental illness, cardiovascular disease, and respiratory illness in a community.<sup>32</sup> Appendix I contains a map of walkability scores from the Environmental Protection Agency. These scores show how easy it is to navigate a community solely by walking. This index is based on access to transportation, density of intersections, land use (different employment types, business/household mix). Typically, rural areas tend to receive lower scores and urban areas receive higher scores. This index paired with known green space areas, can help illustrate how easy it is for residents to engage in outdoor physical activity where they live.



Source: Hancock County Community Health Assessment, 2021

Figure 5: Smoking Status of Hancock County Residents, 2021



Source: Hancock County Community Health Assessment, 2021

<sup>27</sup> (National Institute of Environmental Health Sciences, 2022)

<sup>28</sup> (Centers for Disease Control and Prevention, 2021)

<sup>29</sup> (Wahrman, 2017)

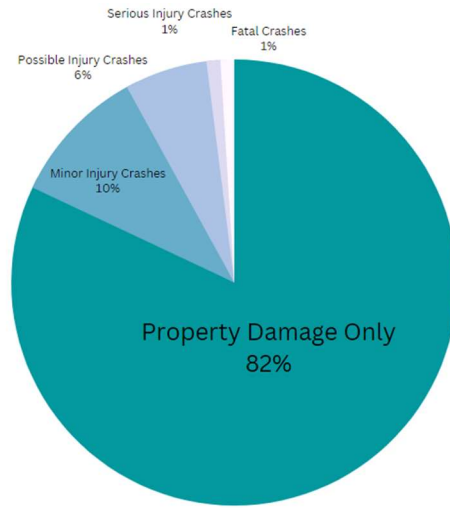
<sup>30</sup> (Cohen-Cline et al., 2015)

<sup>31</sup> (McCormick, 2017)

<sup>32</sup> (Slater et al., 2020)

Another component of community health is ability to access transportation. Transportation is important as it affects individuals' ability to access medical care, food, work, and education. While private transportation (personal cars or bikes) is important, access to public transportation is also vital. Mass, public transport includes bus routes, metros, and railways. Use of public transportation helps individuals with disabilities, younger and older adults who cannot drive, and those without a personal vehicle to live normal lives. Public transportation can also decrease the number of motor vehicle accidents and injuries reported in the community.<sup>33,34</sup> This is due to reducing the number of drivers and vehicles on the road, especially at high traffic times (e.g., rush hour). Reducing the number of vehicles on the roadway also reduces the amount of pollution caused by car exhaust, which helps improve air quality.<sup>34</sup>

Figure 6: Breakdown of 2,092 Motor Vehicle Incidents in Hancock County, 2021



Source: Hancock County Annual Report, 2021

A final component is access to broadband internet. As the world becomes increasingly digital, access to broadband internet gives individuals access to many resources. One example is the use of telehealth appointments with doctors. This is beneficial to individuals who may not have access to transportation or quality care in their area. Through telehealth appointments, they are able to access the care they need without having to leave their home.<sup>35</sup> Additionally, individuals are able to access education and educational resources without having to travel to those locations.<sup>35,36</sup> Both scenarios allow individuals to improve themselves, their health, and eventual health outcomes.



### Summary of findings

For this section, “access to broadband internet” was the only variable available by census tract. Census tract 1 had the lowest percent of residents with access to broadband internet at 78.4%. The highest percent of residents with access was in census tract 4 with 93.1%. The county average was 87.1%, the state’s was 84.9%, and the U.S. average was 85.5%.

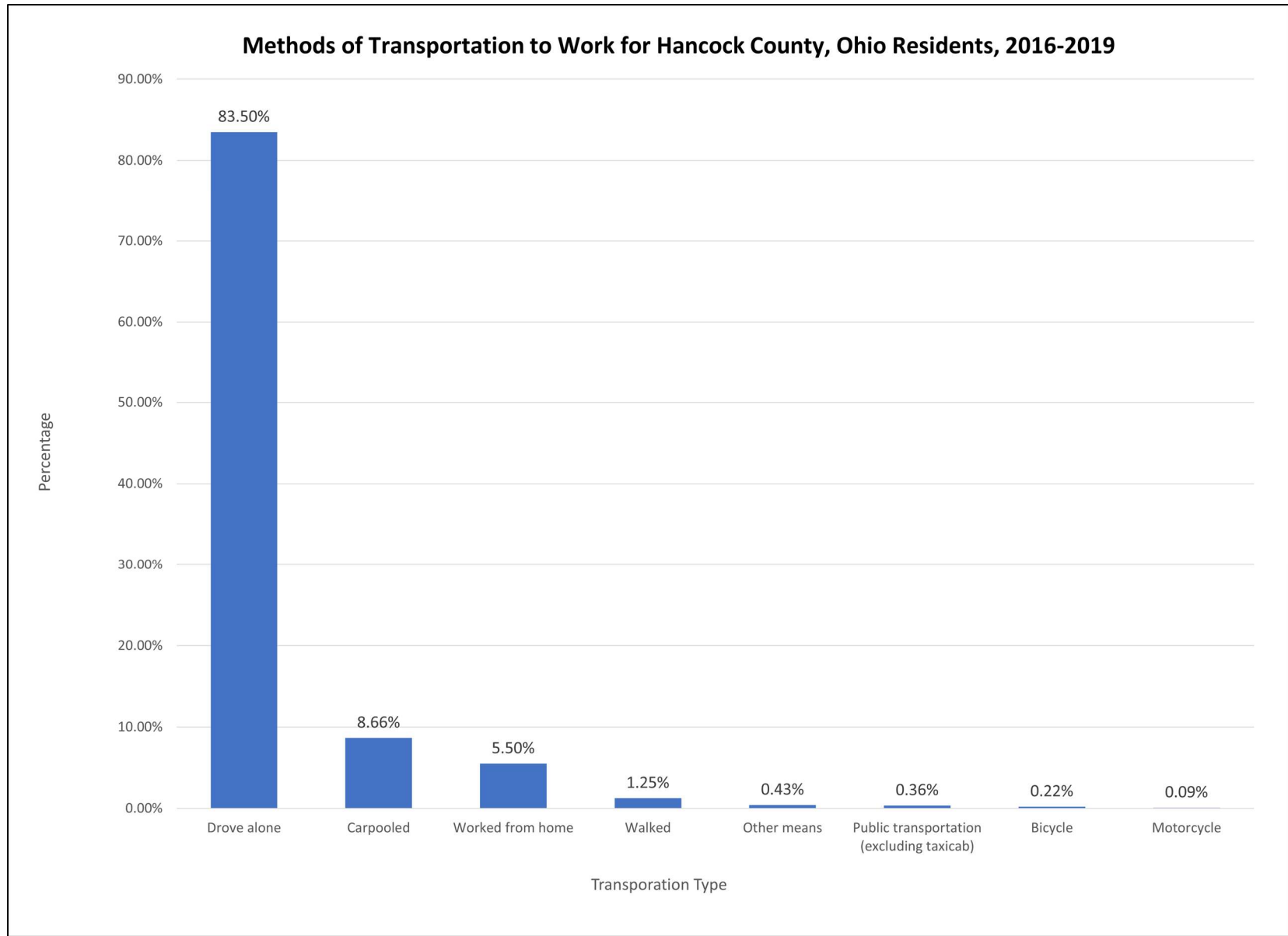
<sup>33</sup> (Melton, 2017)

<sup>34</sup> (Centers for Disease Control and Prevention Office of the Associate Director for Policy and Strategy, 2018)

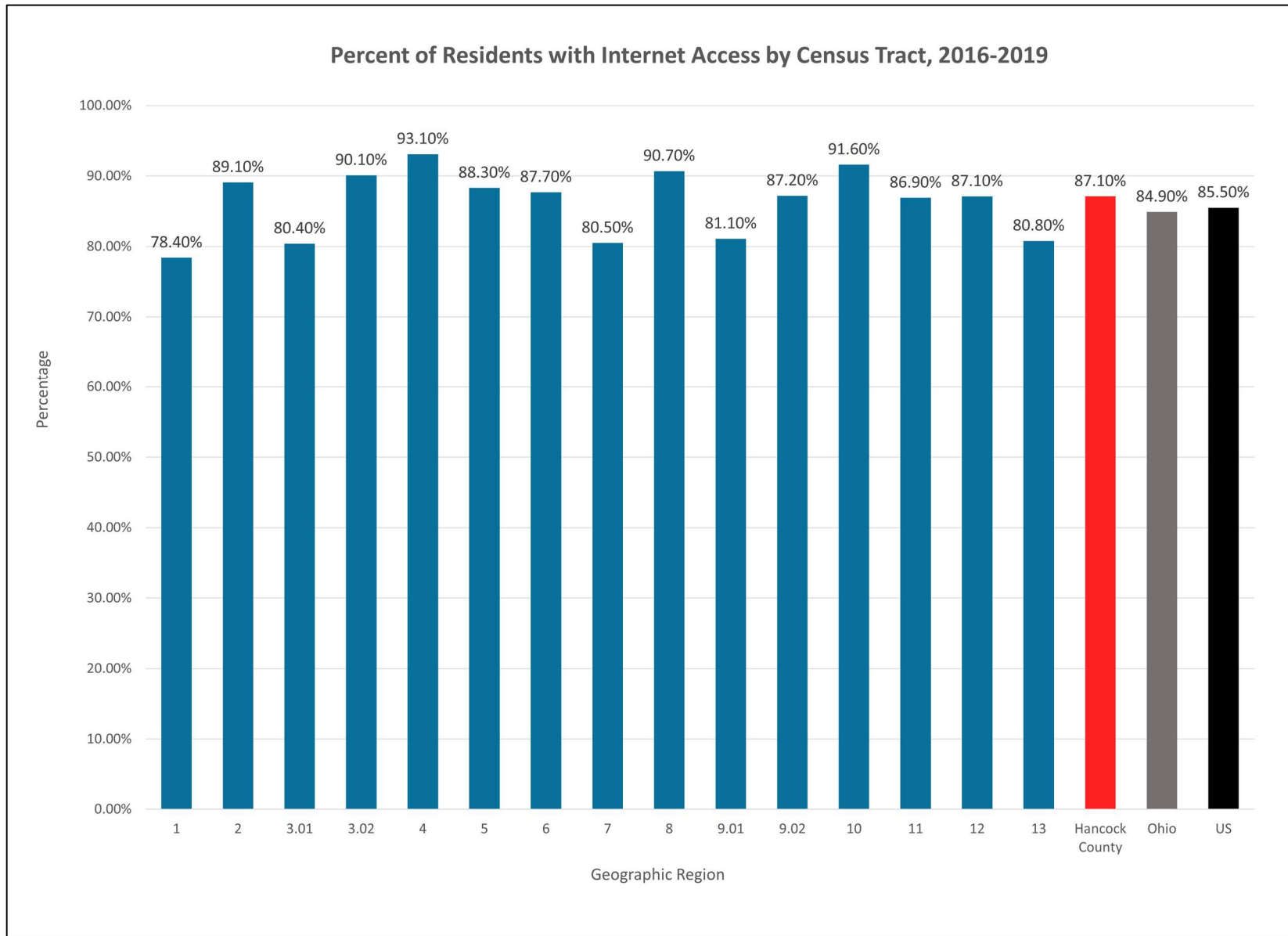
<sup>35</sup> (Amin et al., 2020)

<sup>36</sup> (Tomer et al., 2020)

Methods of Transportation to Work for Hancock County, Ohio Residents, 2016-2019



Percent of Hancock County, Ohio Residents Who Have Access to Broadband Internet, by Census Tract, 2016-2019



## Social and Community Context

The social environment and community that an individual is raised and lives in can have a large impact on their health quality and outcome. This category is different from the category of neighborhoods and built environments. This category looks at the connections between people and how they interact with the world. The section “Neighborhoods and Built Environment” is simply looking at the location a person is living in. While that is influential on a person, how they interact with the environment and other community members is also important. When looking at social and community context, some factors that are important to analyze are:

- Adverse Childhood Events (ACEs)
- Prevalence of Anxiety, Depression, and other mental illnesses
- Percent of individuals with disabilities
- Percent of individuals participating in the SNAP or food stamp programs
- Percent of students participating in the free and reduced school lunch program
- Prevalence of food deserts in or around the community.
- Average age at death for community residents

**14% of Hancock County adults have experienced 4 or more adverse childhood experiences in their lifetime.**

*Source: Hancock County Community Health Assessment, 2021*

These variables cover a broad area of an individual’s life, health influencers, and health outcomes. For example, ACEs relate to experiences someone has at a young age. ACEs can include, but aren’t limited to violence in the house, witnessing substance use, parents separating, or a household member being in jail.<sup>37</sup> While the potential for negative outcomes increases with each ACE a child experiences, even one can put children at a higher risk of heart disease and depression as they age.<sup>38</sup> This reason is also why it is important to track the amount of mental illness seen in both

the adults and children in the community. Also tracked is the number of individuals with physical disabilities. This is especially important when reviewing access to transportation, accessibility, and affordable ADA-compliant housing in the community. Census Bureau data collected for this report groups all individuals reporting a hearing, visual, cognitive, ambulatory, or self-care disability into one category.

Also important, is the ability for an individual to access fresh, healthy food. For some, this is only possible through participation in the Supplemental Nutrition and Assistance Program (SNAP), food assistance, or free and reduced school lunch program (for school-aged students). The SNAP program is available to individuals who are low-income, unemployed, elderly, disabled, homeless, or receiving other public assistance.<sup>39</sup> This program only allows them to purchase healthy food, plants, or seeds with which to grow their own food. Looking at the number of individuals participating in this program is useful in understanding the amount of food insecurity prevalent in the community. However, this program has a financial cutoff at 150% of the poverty line. Some families make just above this cutoff and still experience food insecurity. Therefore, participation in the K-12 United States Department of

<sup>37</sup> (Wisner, 2022)

<sup>38</sup> (Centers for Disease Control and Prevention, 2022)

<sup>39</sup> (United States Department of Agriculture Food and Nutrition Service, 2019)

Agriculture's Free and Reduced-Price School Meal program can be used as an additional indicator of food insecurity. As of the 2022-2023 school year, families making anywhere from 130-185% of the federal poverty line can be eligible.<sup>40</sup> Schools must follow strict nutritional guidelines when preparing meals for students. According to the Ohio Department of Education, all school lunches must include 1% or fat-free milk (flavored or unflavored), whole grains, fresh fruits and vegetables, and have low sodium, fat, and sugar content.<sup>41,42</sup> For this report, data for the 2019 school year was utilized. This was due to the free and reduced policy being waived during the COVID-19 pandemic. As a result, many schools did not report their free and reduced program participation in school years 2020 and 2021.

A final note relating to food insecurity is the number and location of food deserts in an area. For an area to be classified as a food desert, it must meet two conditions set by the USDA. The first is being low-income, the second is being low-access. To be low income, the poverty rate in the area should be 20% or higher.<sup>43</sup> Low-access is defined as 500+ people (or a third of the population) being located more than 1 mile in urban settings (or 10 miles in rural settings) from a supermarket or grocery store.<sup>43</sup>

Lastly, average age at death should be considered. Average age at death is influenced by factors like infant mortality, overdose fatalities, suicides, access to healthcare, and access to healthy food.<sup>44</sup> For this reason, average age at death can be a good indicator of the general health and quality of the health in an area. With average age at death, age-adjusted mortality rate is also analyzed. If a certain area has an older or younger average population, it can affect the average age at death.<sup>45</sup> For example, the average age in a census tract with more nursing or retirement homes may be higher than those that do not have these facilities. Since more elderly individuals pass away in those census tracts, it may appear like life expectancy in those census tracts is higher than others. Secondly, adjustment is done to account for different population sizes in each census tract. This is done as areas with higher populations may appear to have higher mortality rates.<sup>45</sup> By standardizing the ages using a reference population, it is possible to compare mortality rates in each census tract equally.

### **Summary of findings**

During analysis, some stark differences between census tracts were noted. When looking at percentage of residents who have at least one disability, census tract 6 had the highest percent at 17.4%. This is 2.3 times higher than the lowest percent (7.5%) seen in census tract 13. Additional census tracts with relatively high percentages were tracts 3.01 (17.3%), 1 (16.6%), 11 (16.4%), and 5 (15.7%).

Second, the percent of residents participating in the SNAP or food stamp programs was highest in census tract 9.02 with 26.7%. This percent is 20.5 times higher than the lowest percent (1.30%) seen in tract 2. The next highest percent was seen in census tract 9.01 (18.0%).

Thirdly, all schools in Hancock County were geocoded to determine which census tract they belonged to. From there, participation rates were gathered from the Ohio Department of Education website.<sup>46</sup> The highest participation was seen in census tract 5 with 58.24%. The next highest participation was seen in

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<sup>40</sup> (United Department of Agriculture Food and Nutrition Service, 2022)

<sup>41</sup> (Ohio Department of Health, 2022)

<sup>42</sup> (United Department of Agriculture Food and Nutrition Service, 2022)

<sup>43</sup> (Dutko et al., 2012)

<sup>44</sup> (Wallace, 2018)

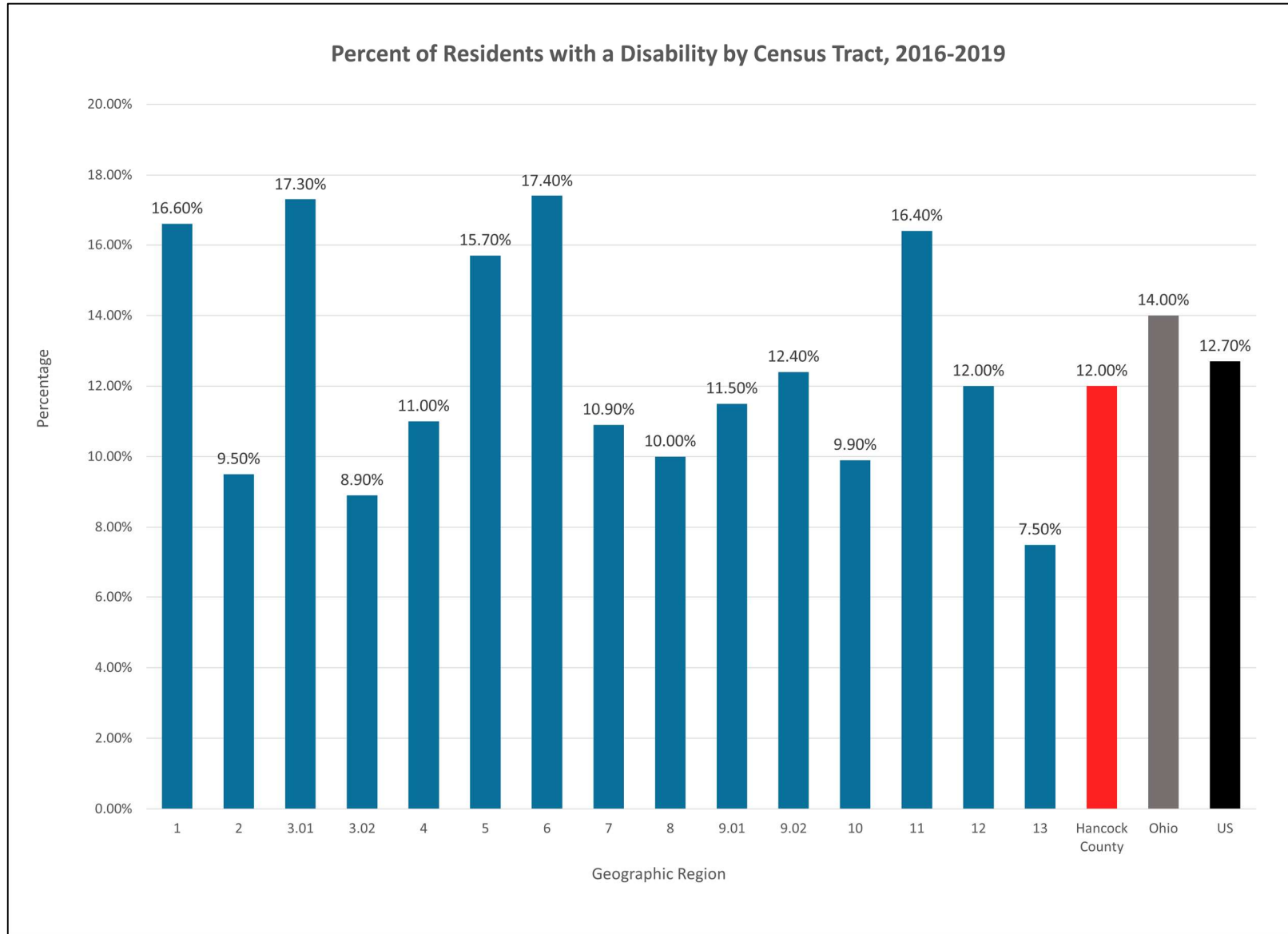
<sup>45</sup> (Centers for Disease Control and Prevention, 2012)

census tract 4 with 43.75%. These are respectively 2.38 and 1.8 times higher than the lowest percent (24.48%) in census tract 7.

In Hancock County four census tracts are considered food deserts: 5, 6, 9.01, 9.02 (note that the map in Appendix I represents 9.01 and 9.02 as one tract since the data utilized is from 2018, prior to the 2020 split). Census tracts 5 and 6 are low-income and low-access for all distances (1/2-1 mile in an urban setting, and 10-20 miles in a rural setting). Census tract 9.01 and 9.02 are low-income and low-access for ½ mile (urban) and 10 miles (rural).

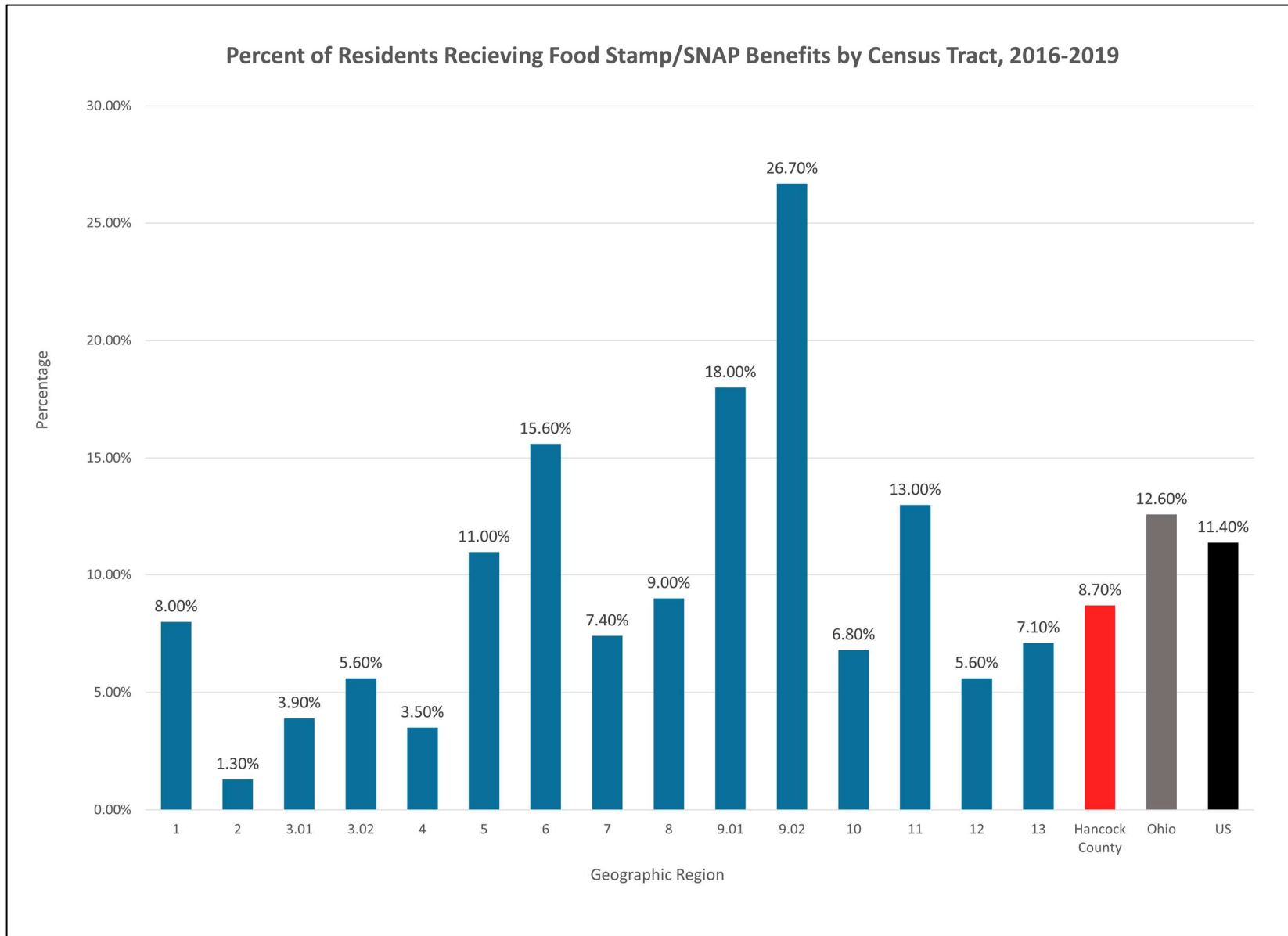
Lastly age at death was lowest in census tracts 9.02, 8, and 9.01 at 62.83, 66.42, and 68.30 years, respectively. Census tract 2 had the highest age at death at 82.41 years of age. The highest age-adjusted mortality rate was in census tract 9.01 with 6,069.99 deaths per 100,000. The lowest age-adjusted mortality rate was in census tract 3.02 with 2,150.17 deaths per 100, 000.

Percent of Hancock County, Ohio Residents Who Have At Least One Disability, by Census Tract, 2016-2019





Percent of Hancock County, Ohio Residents Participating in SNAP and Food Stamp Programs, by Census Tract, 2016-2019



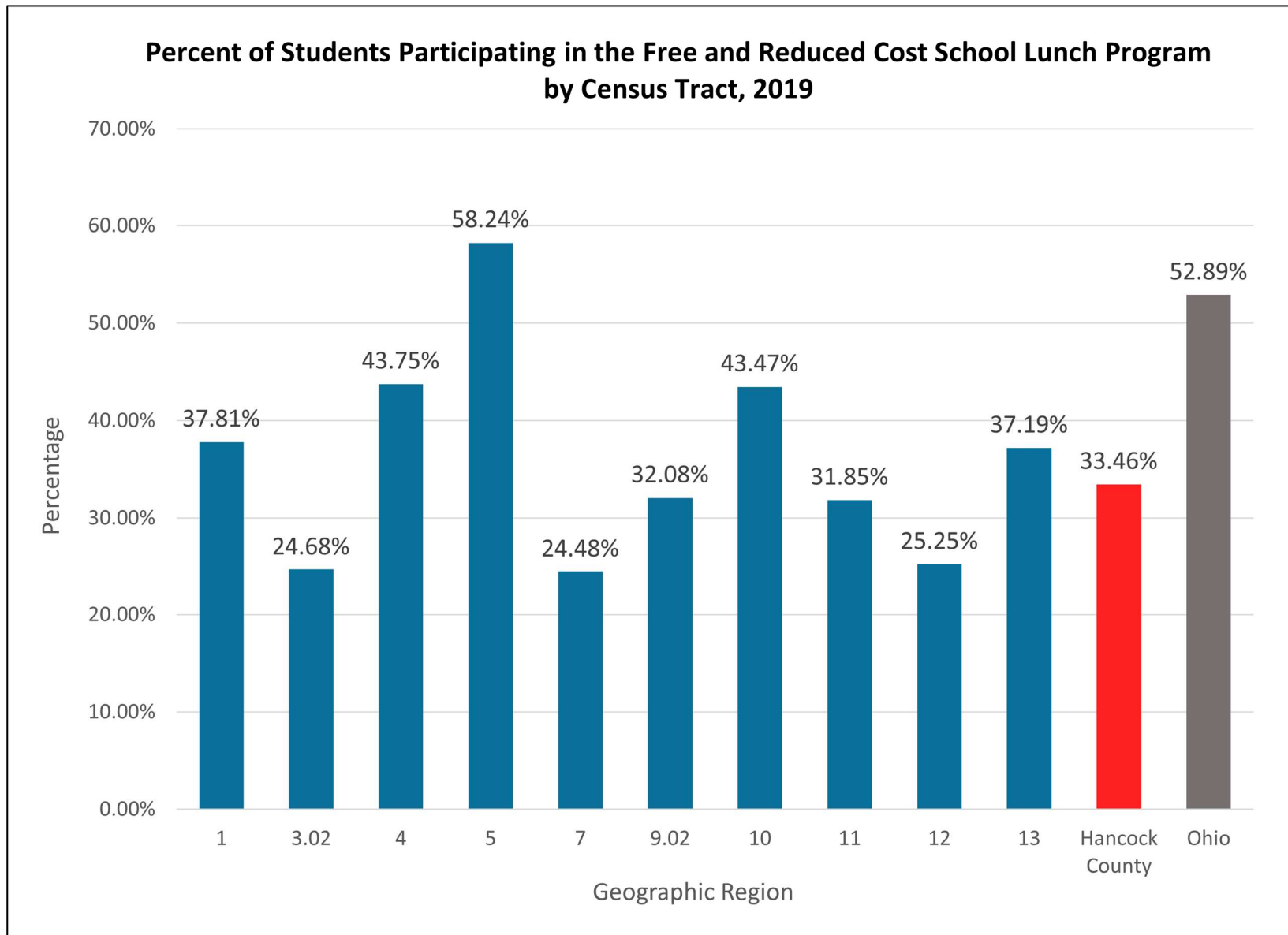
## Free and Reduced-Price Lunch Participation in Hancock County Schools, 2019

School participation for the 2019 school year was obtained from the Ohio Department of Education (ODE).<sup>46</sup> List of school names was obtained from ODE and from Hancock Public Health school contact list. Not all schools reported participation and are marked as “no data available”.

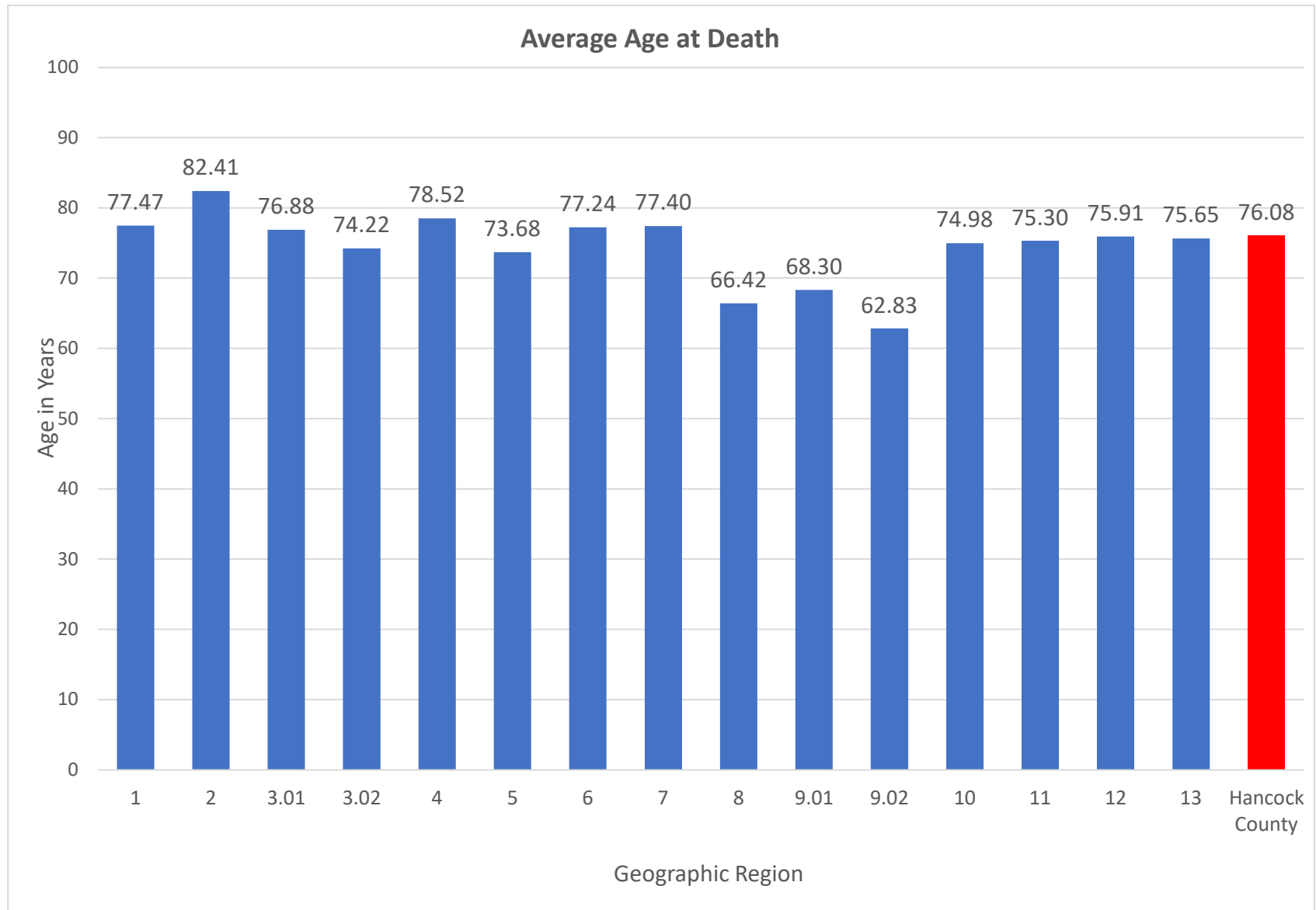
School Name	District	Census Tract	Percent Free and Reduced-Price Lunch Participation
Arcadia Elementary School	Arcadia Local	1	No Data Available
Arcadia Middle/High School	Arcadia Local	1	37.81%
Arcadia Middle School	Arcadia Local	1	No Data Available
Hancock County Alternative Opportunity Center	McComb Local	3.01	38.46%
Van Buren High School	Van Buren Local	3.02	14.22%
Van Buren Middle School	Van Buren Local	3.02	No Data Available
McComb Local Elementary School	McComb Local	3.02	32.92%
McComb Local Jr/Sr High School	McComb Local	3.02	No Data Available
Liberty-Benton Elementary School	Liberty-Benton Local	3.02	23.99%
Liberty-Benton High School	Liberty-Benton Local	3.02	18.22%
Liberty-Benton Middle School	Liberty-Benton Local	3.02	20.29%
Northview Primary School	Findlay City	4	40.06%
Bigelow Hill Elementary School	Findlay City	4	56.08%
Washington Preschool	Findlay City	4	35.12%
Glenwood Middle School	Findlay City	5	43.39%
Findlay City Schools Preschool/Jacobs Elementary	Findlay City	5	73.08%
Wilson Vance Elementary School	Findlay City	7	23.84%
St Michael the Archangel School	Findlay City	7	5.84%
Hancock County Board Of MRDD	Findlay City	7	43.75%
Trojan Academy Blended/Findlay Learning Center	Findlay City	9.02	42.37%
Millstream Career Center	Findlay City	9.02	No Data Available
Findlay High School	Findlay City	9.02	21.78%
Findlay Digital Academy	Findlay City	10	No Data Available
Lincoln Elementary School	Findlay City	10	60.87%
Donnell Middle School	Findlay City	10	32.20%
Chamberlin Hill Elementary School	Findlay City	10	37.35%
Jefferson Primary School	Findlay City	11	34.05%
Whittier Primary School	Findlay City	11	29.65%
Riverdale Elementary School	Riverdale Local	12	No Data Available
Riverdale Jr/High School	Riverdale Local	12	33.46%
Van Buren Elementary School	Van Buren Local	12	15.28%
Vanlue Elementary School	Vanlue Local	12	No Data Available
Vanlue High School	Vanlue Local	12	33.88%
Arlington Local Elementary School	Arlington Local	12	No Data Available
Arlington Local High School	Arlington Local	12	18.36%
Cory-Rawson Elementary School	Cory-Rawson Local	13	No Data Available
Cory-Rawson High School	Cory-Rawson Local	13	37.19%

<sup>46</sup> (Ohio Department of Education, 2022)

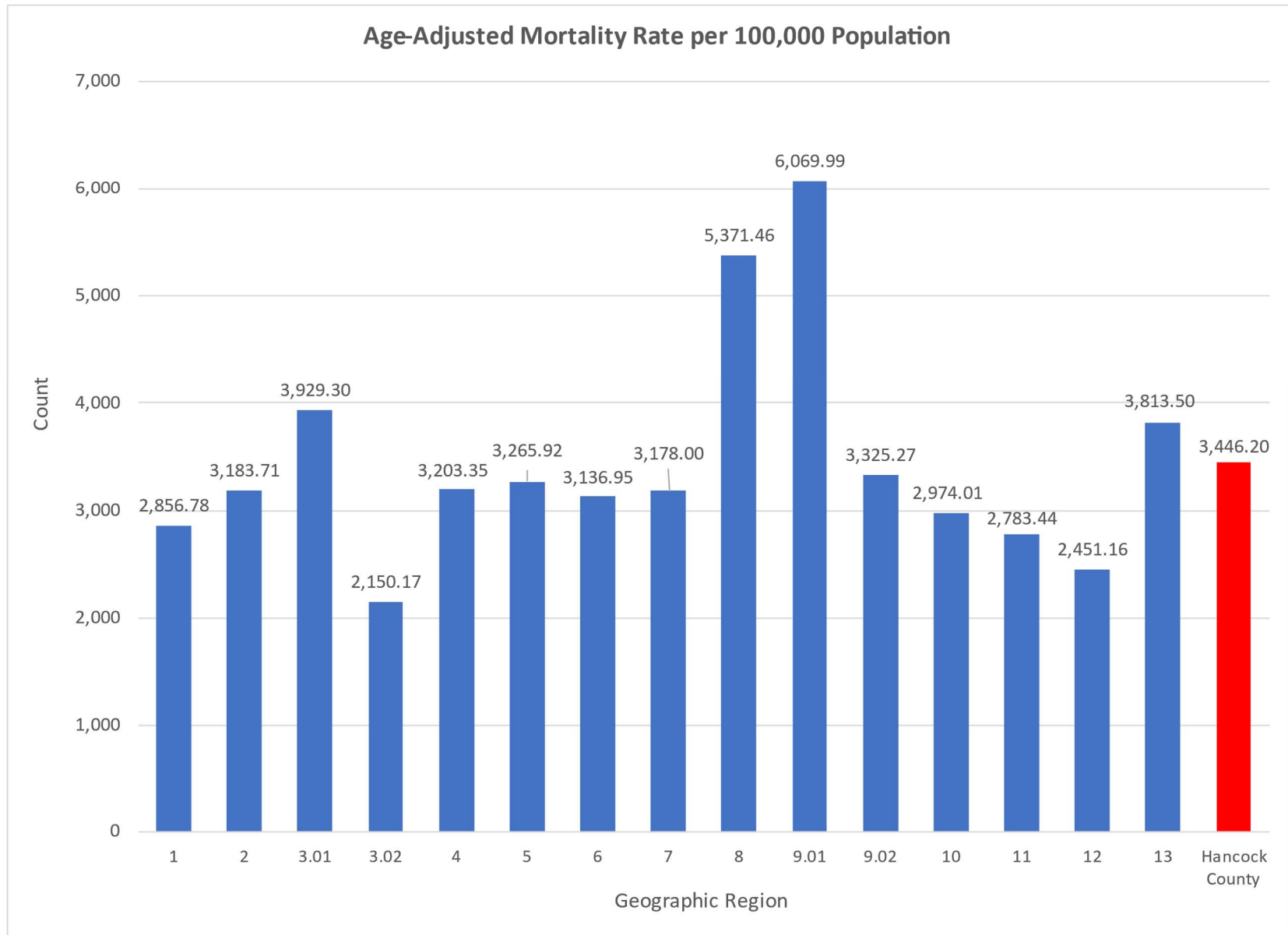
Percent of Students Participating in the Free and Reduced Cost School Lunch Program, by Census Tract, 2016-2019



## Average Age at Death



Age-Adjusted Mortality Rate



## Conclusion

### Top 5 Disparities Noted in Report

1. Percent of residents living below the poverty line (p. 11)
2. Percent of residents spending 30% or more of their income on housing or rent (p. 11)
3. High School graduation rate (p. 17)
4. Percent of residents participating in food assistance programs (p. 29-31)
5. Age-adjusted mortality rate (p. 29-31)

### Top 5 Census Tracts Affected by Disparities

1. Census Tract 9.01
2. Census Tract 9.02
3. Census Tract 5
4. Census Tract 6
5. Census Tract 8

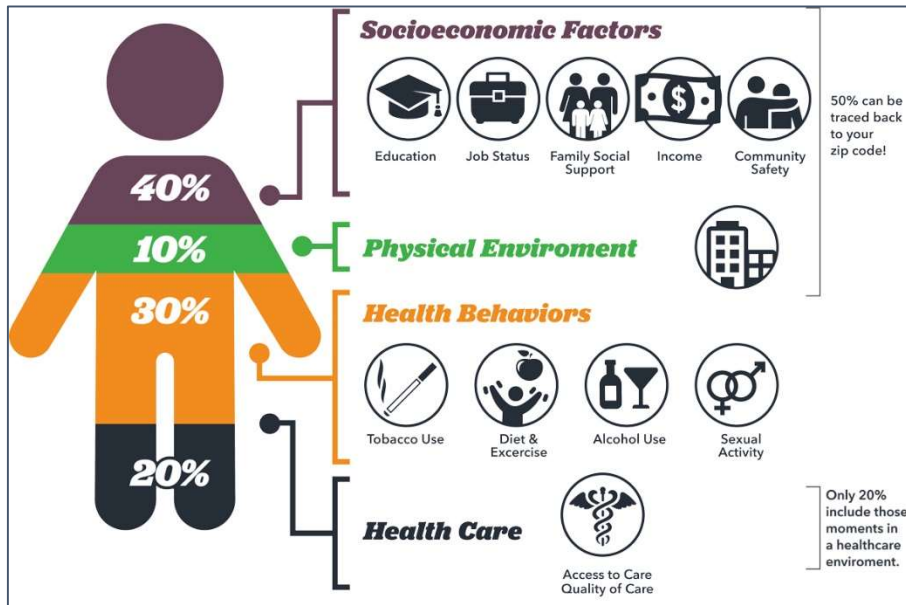
The observations noted in this report are consistent with findings in other reports. One report is the Centers for Disease Control and Prevention's Social Vulnerability Index (refer to Appendix I). This analyzes geographic areas based on key factors related to health equity and social determinants of health. This report highlights census tract 9 (Census Tract 9 was split into 9.01 and 9.02 in 2020), 1, 5, and 6 as the census tracts with the highest Social Vulnerability Index.

### How Do These Disparities Impact the Health of the Individual and Community?

Many social determinants of health are interconnected, and the effects of one can impact multiple health outcomes. For example, individuals that do not graduate high school have a harder time gaining employment. Most employers offer benefits (e.g., health insurance) to full-time employees, which increases their access to care and ability to afford care. The ability to access and afford healthcare allows this individual to be screened for certain chronic disease markers, like high blood pressure, blood glucose tests, etc. This may prevent those diseases or ones related to them from developing, resulting in a longer, healthier life. This is just one example of how one change can make a big difference for an individual's life.

Sometimes these issues can affect one geographic region over others. This could be due to lack of education, resources, access, or transportation. Analyzing these factors at a county level may lead to disparities being obscured. By looking at these by census tract, it allows health departments and other community resources to know where to focus their efforts. The data compiled and analyzed in a report like this is useful when developing interventions and when applying for grants to fund those interventions.

Figure 7: What Affects Your Health?

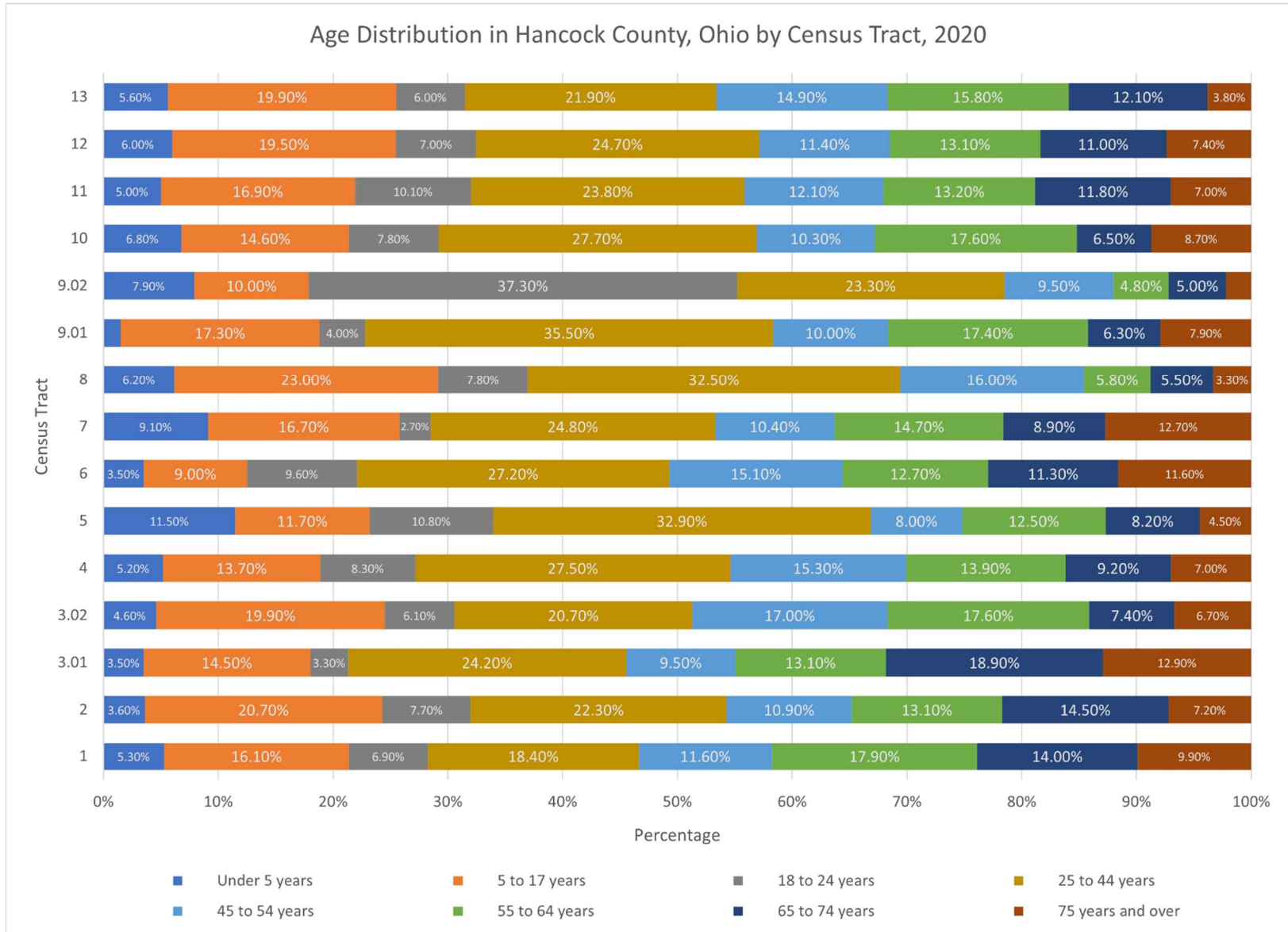


Source: <https://noahhelps.org/sdoh/>

Are There Any Possible Causes for the Disparities Identified in this Report?

- Census tracts 9.01, 9.02, and 6 historically are very impoverished areas, and contain most of the government/low-income (Section 8, HUD, etc) housing for the county. This may account for the lower income, higher poverty, higher unemployment rates, higher food stamp/SNAP participation, higher uninsured rates, lower average age at death, and higher mortality rates.
- Census tract 9.01 and 9.02 contain older homes and are home to the University of Findlay; leading to a transient student population. Census tract 9.02 also has the highest number of 18-24-year-olds, with 37.30% of the tract population being composed of this age group. In addition, census tract 9.02 has the lowest median age, at 22.6-years-old. The younger population in 9.02 may contribute to the disparities seen in this area.
- Census tract 3.01 is very rural, with low to no close access to resources. While overall this census tract did not display the high need of other areas, it does have the third highest age-adjusted mortality rate for the county. It also has the second highest percent of residents with a disability. The low access to healthcare and higher uninsured rate in this area may be a factor.
- Census tracts 5 and 6 are comprised of mainly industrial areas and mobile homes. This may contribute to the lower income and higher percent of residents spending 30% of their income on housing.

Age Distribution in Hancock County, Ohio by Census Tract, 2020





Median Age of Hancock County, Ohio Residents by Census Tract, 2020

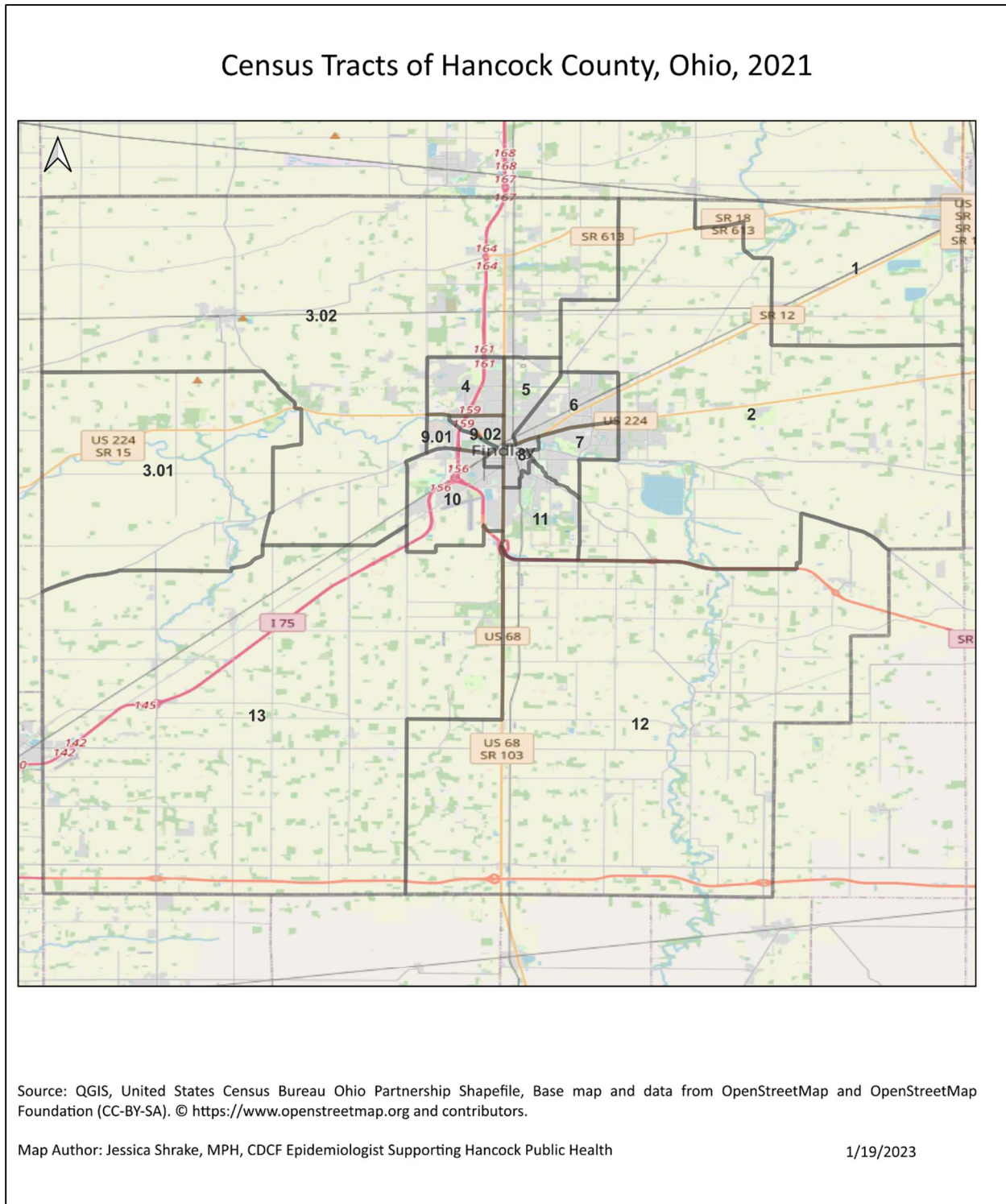


## Actions to Reduce Identified Health Disparities?

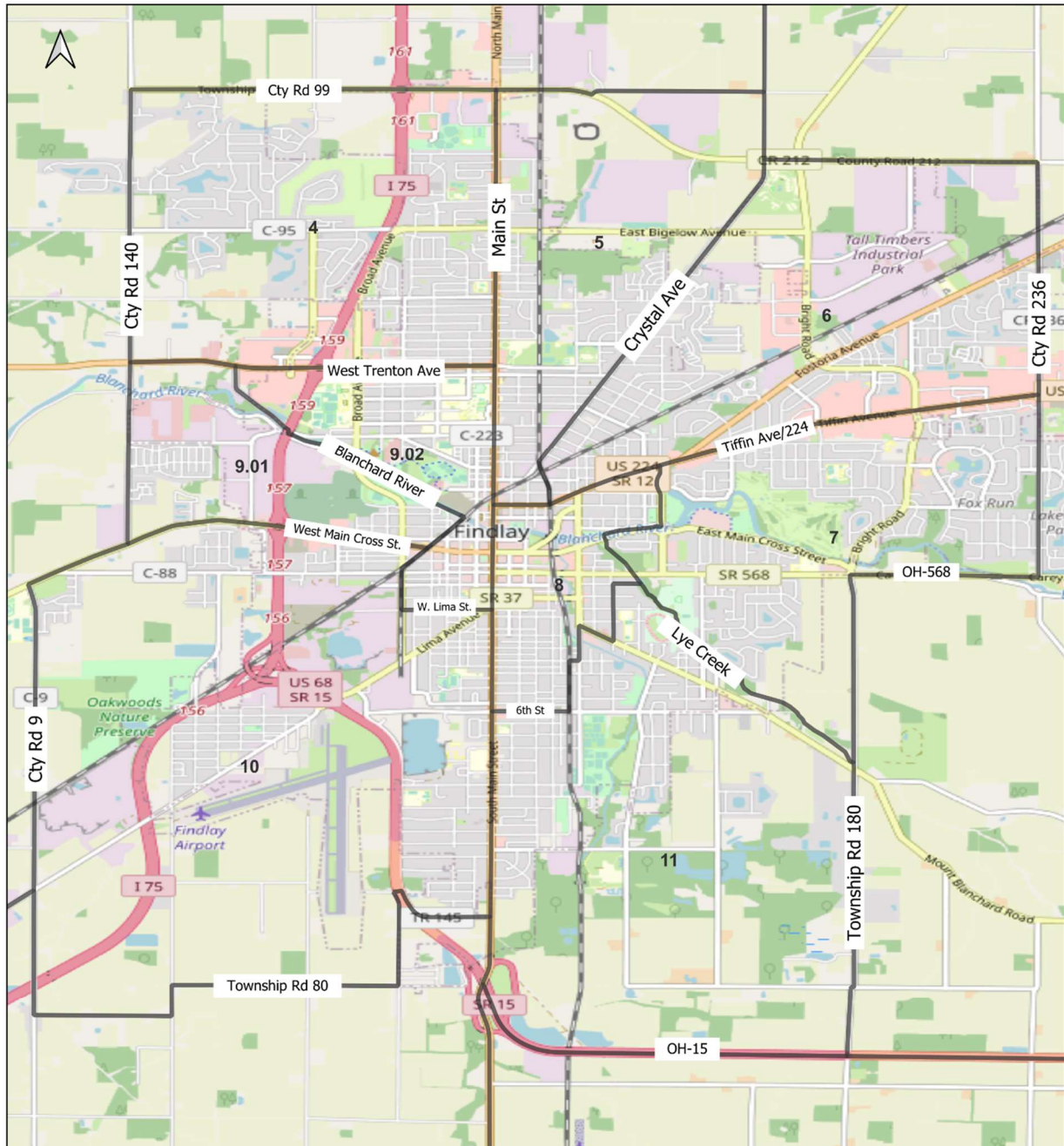
- Increase Community Awareness of disparities as problems with solutions.
- Implement a dual strategy of universal and targeted intervention rooted in evidence-based practices to reduce disparities.
- Allocating resources in proportion to need as identified in this report.
- Utilize the mobile health clinic to provide healthcare access to underserved areas
  - Provide low-cost vaccination clinics around the county.
  - Partner with the university to offer low-cost services.
- Unemployment and uninsured rates are correlated, as individuals usually receive insurance through their workplace. Therefore, for those that are unemployed it is important to connect them with resources to obtain healthcare and insurance. Below are some ways to achieve that:
  - Hire community health workers/navigators to enroll eligible individuals in Medicaid and Medicare. Community health workers can also educate individuals on what resources and options are available to them and connect them to those. Additionally, they can transport individuals to appointments. All around, they would provide a “start to finish” support to those who need assistance.
  - HPH can offer low-cost IDs, birth certificates, and other personal documents that may be necessary for employment or assistance programs.
- Continue work with local farmer’s markets to accept SNAP/EBT as payment.
- Work with food bank and local physicians to target high-need areas and provide “food prescriptions” for those with high blood pressure and diabetes. It may also be beneficial to have mobile food pantries around the county, especially in high-need areas.
- Work with local organizations and groups to provide community gardens. This would also require hiring or asking for volunteer gardening experts to provide information and classes on gardening.

# Appendix I: Maps of Hancock County

## Map of Census Tracts in Hancock County, Ohio, 2021



### Census Tracts of Findlay, Ohio, 2021

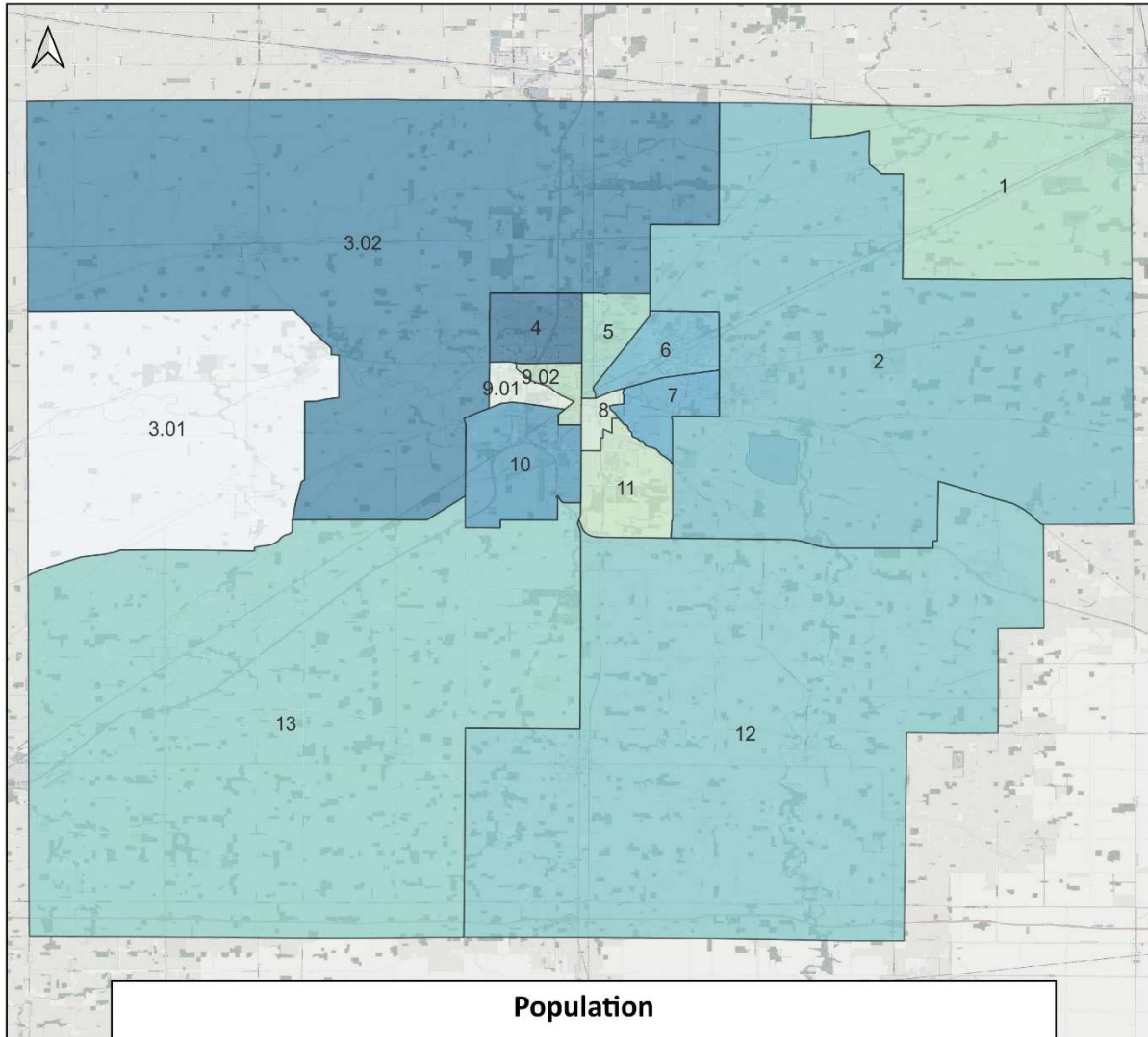


Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

1/19/2023

### Population Distribution in Hancock County, Ohio, by Census Tract



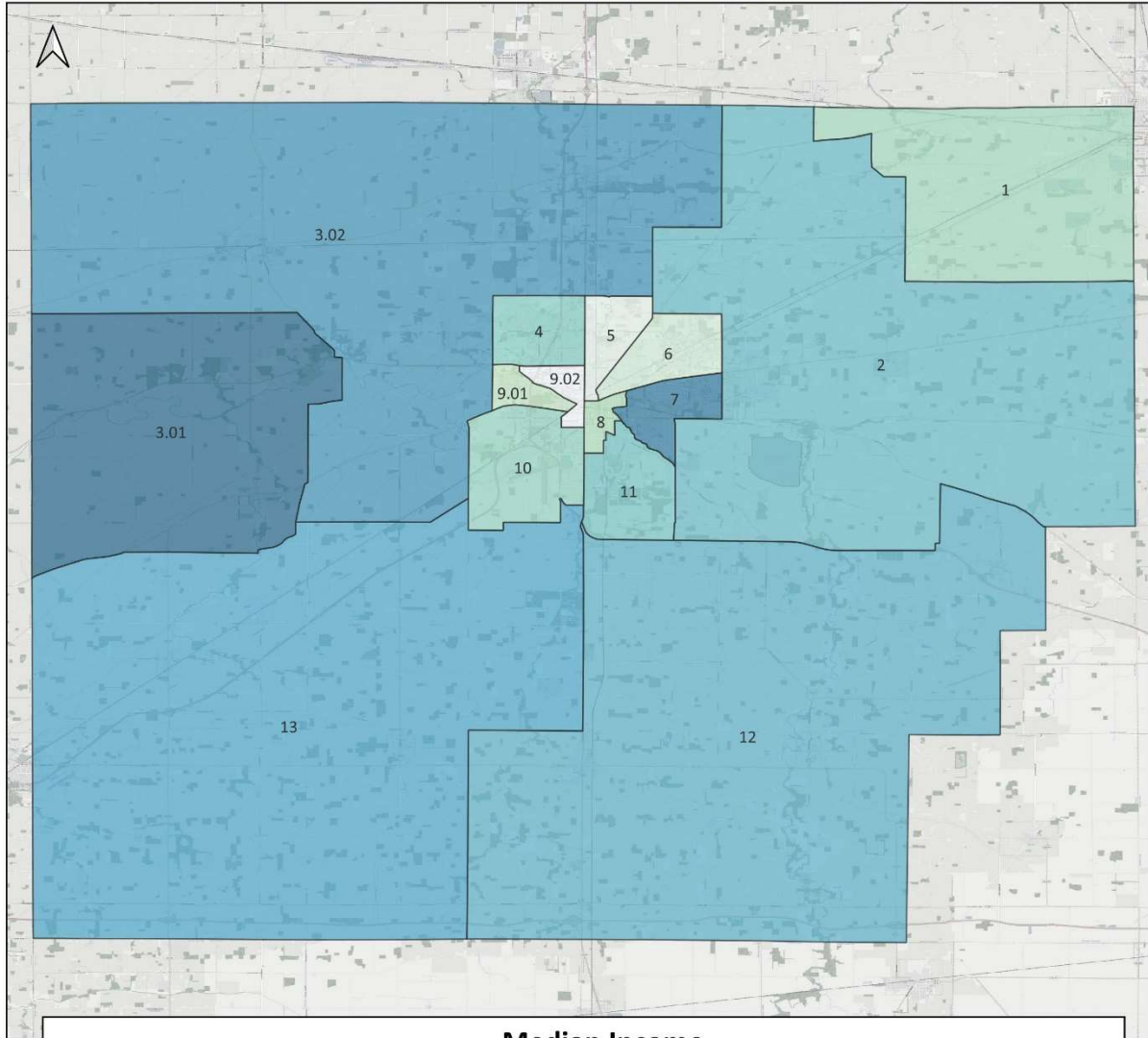
Population			
1,251 - 3.01	4,315 - 9.02	5,919 - 12	6,423 - 10
1,551 - 9.01	4,316 - 1	6,304 - 2	6,895 - 3.02
4,033 - 8	5,260 - 5	6,363 - 6	7,333 - 4
4,083 - 11	5,327 - 13	6,392 - 7	

Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

07/20/2022

### Household Median Income in Hancock County, Ohio by Census Tract



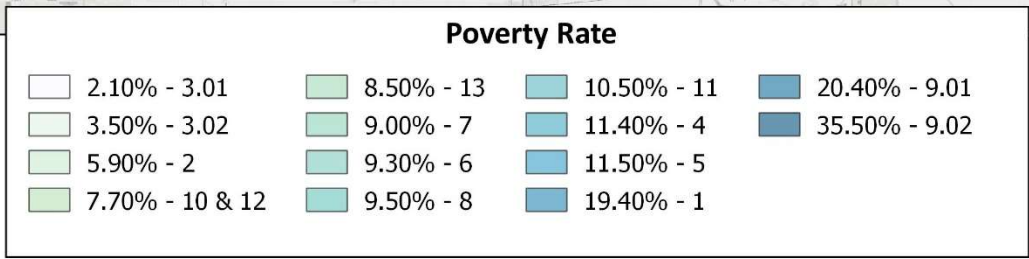
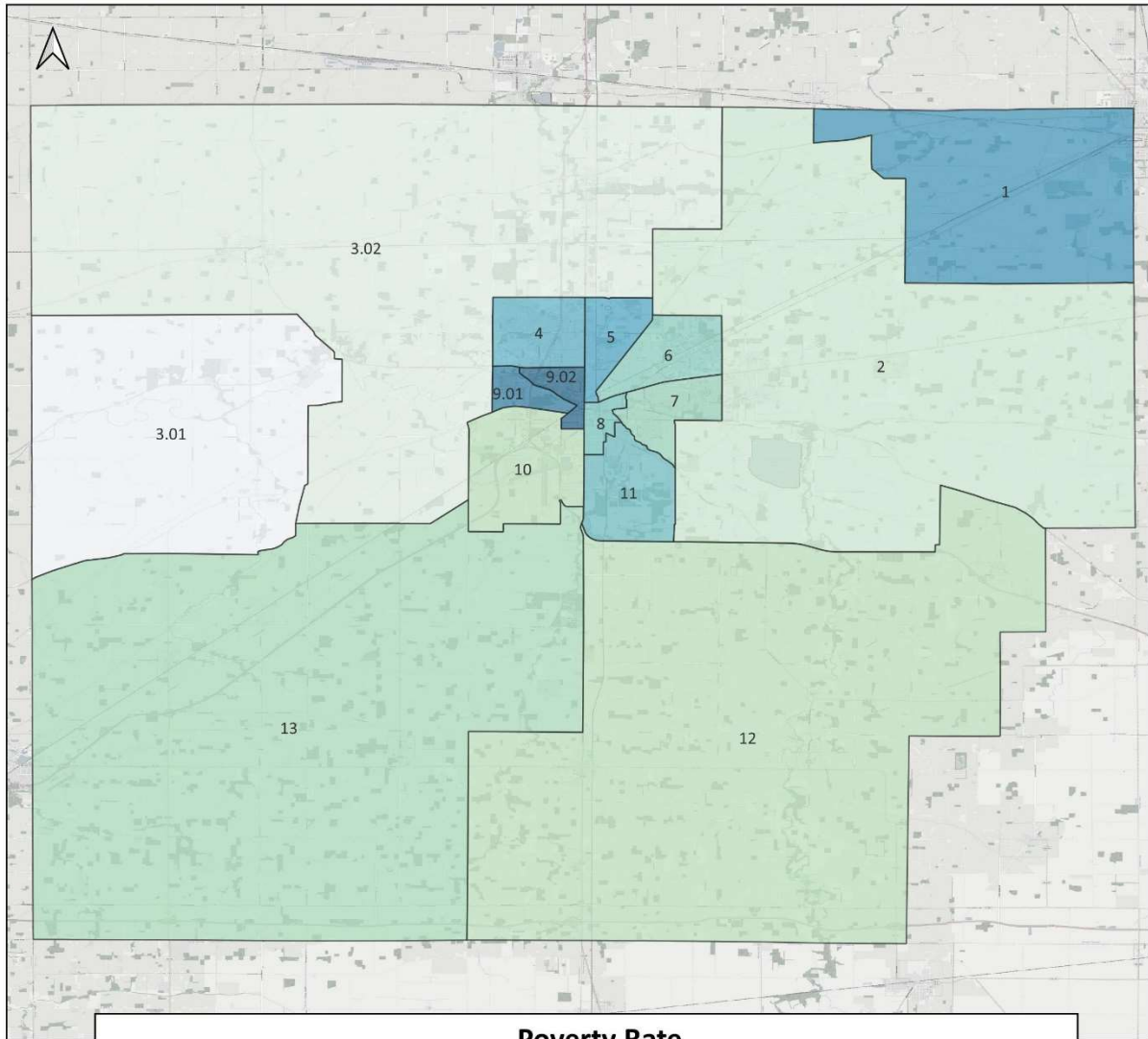
Median Income			
\$29,652.00 - 9.02	\$48,886.00 - 8	\$61,899.00 - 11	\$79,323.00 - 3.02
\$39,597.00 - 5	\$49,337.00 - 1	\$69,353.00 - 2	\$84,255.00 - 7
\$41,490.00 - 6	\$56,649.00 - 10	\$70,453.00 - 12	\$88,250.00 - 3.01
\$43,004.00 - 9.01	\$60,484.00 - 4	\$73,686.00 - 13	

Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

07/20/2022

### Poverty Rate in Hancock County, Ohio by Census Tract

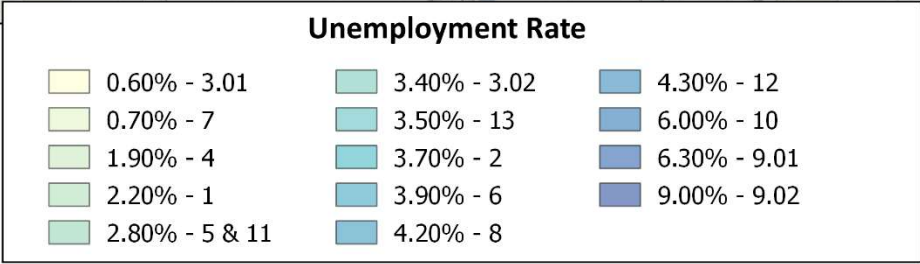
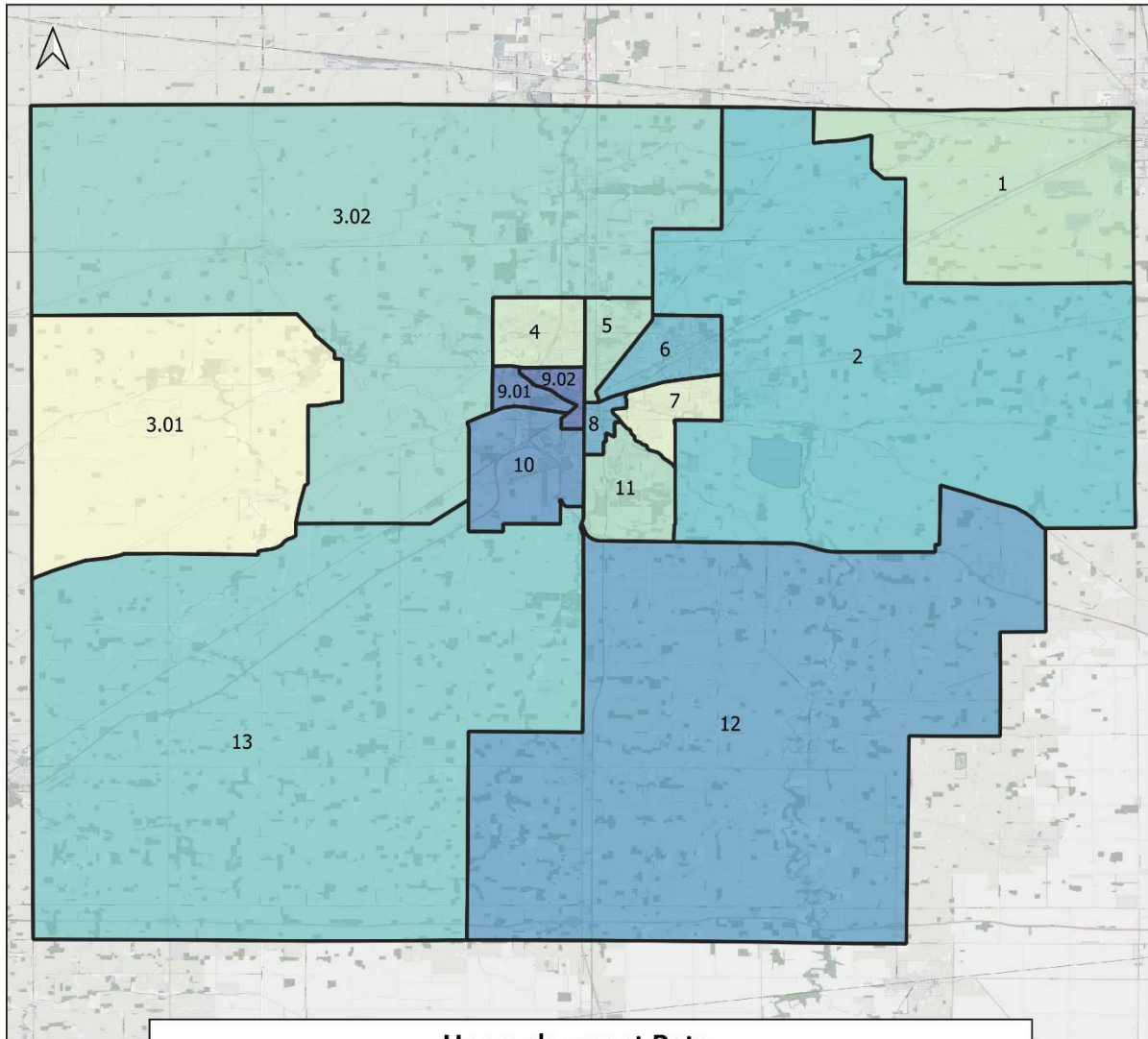


Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

07/21/2022

### Unemployment Rate in Hancock County, Ohio, by Census Tract, 2021



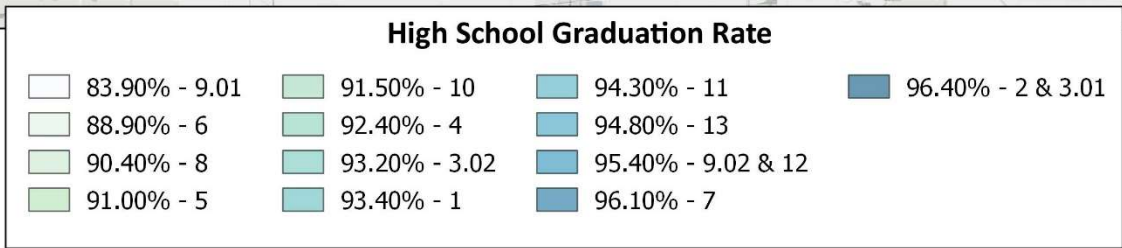
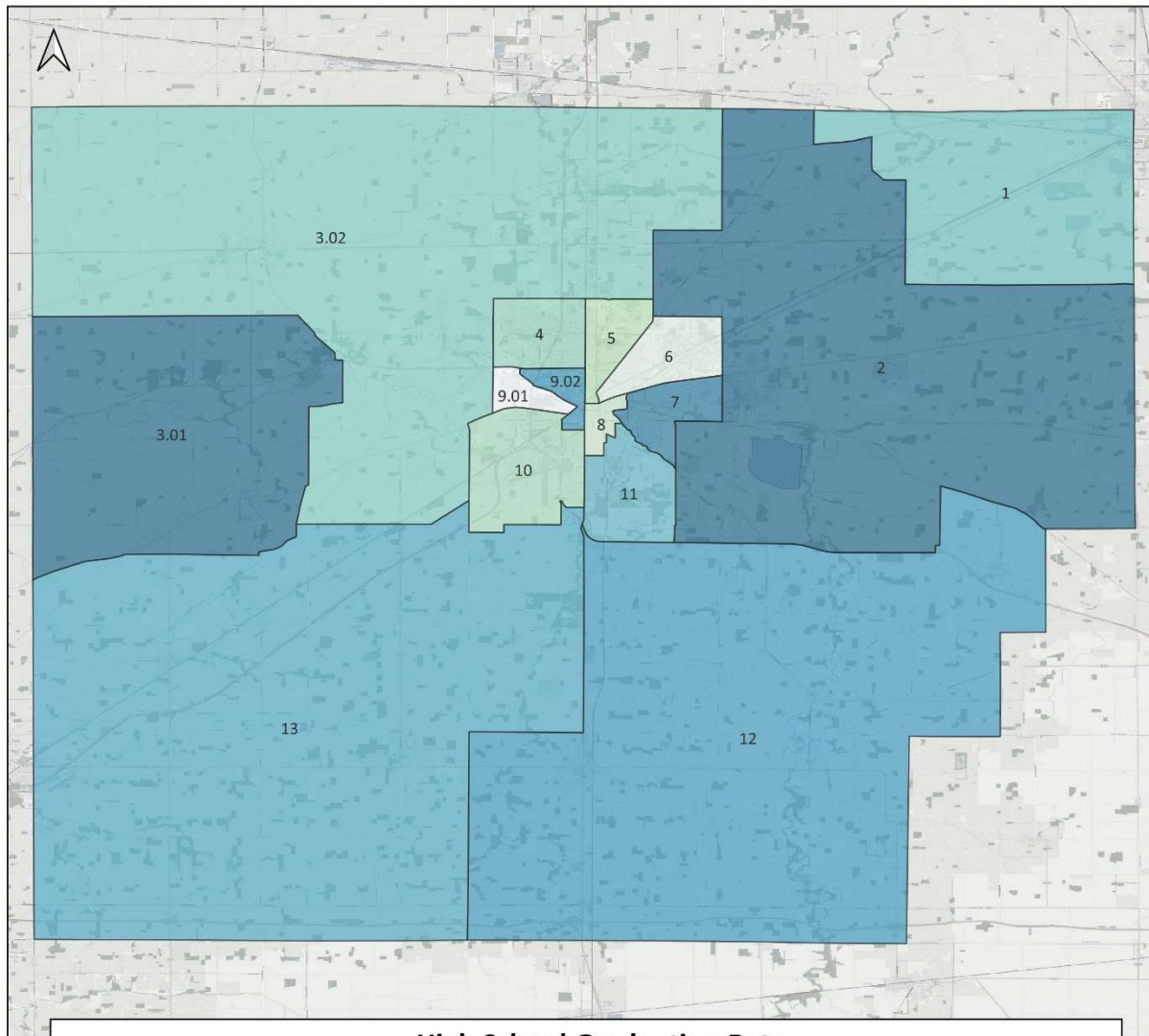
Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

12/22/2022



### High School Graduation Rate in Hancock County, Ohio by Census Tract

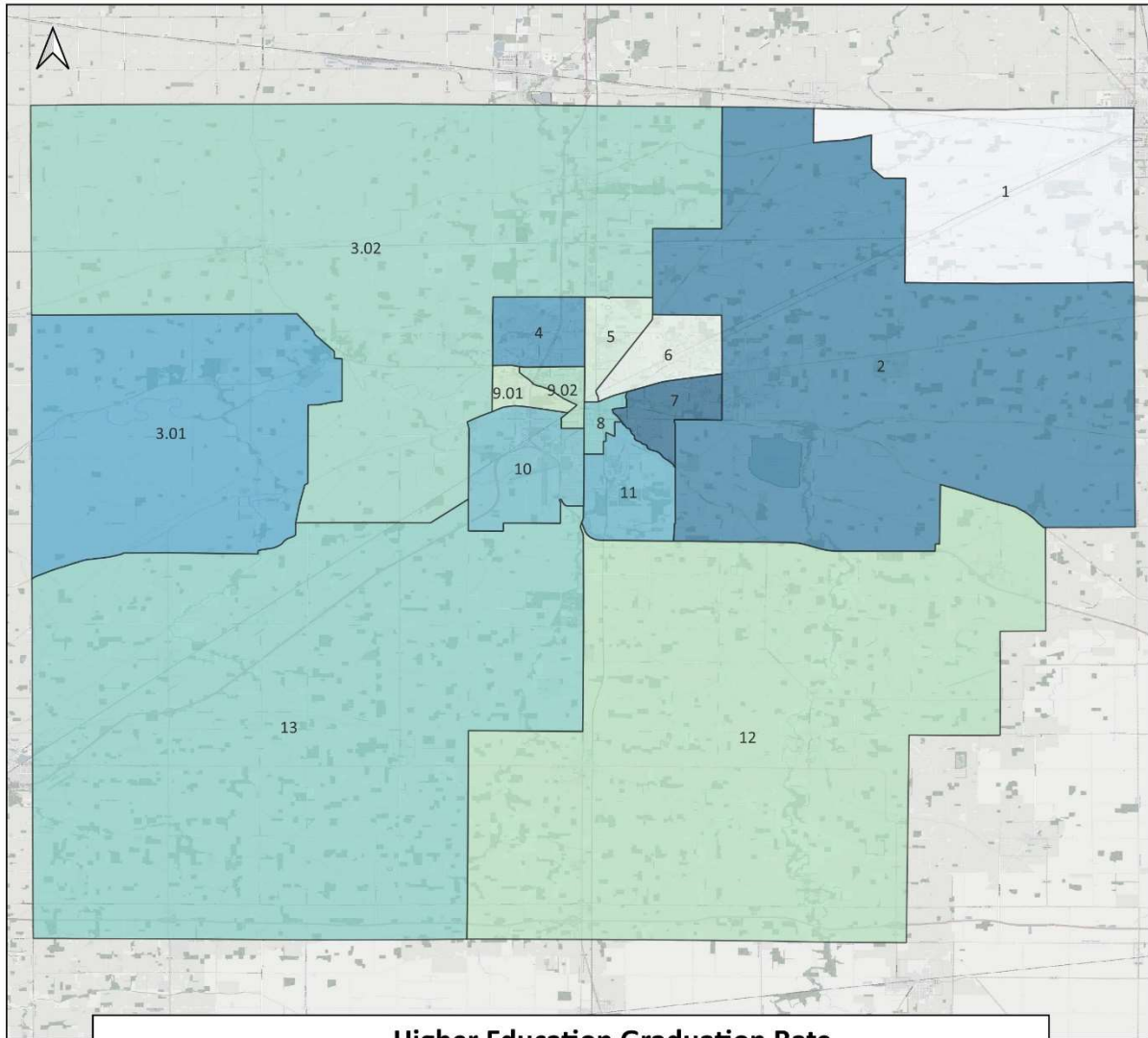


Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

07/20/2022

### Higher Education Graduation Rate in Hancock County, Ohio by Census Tract



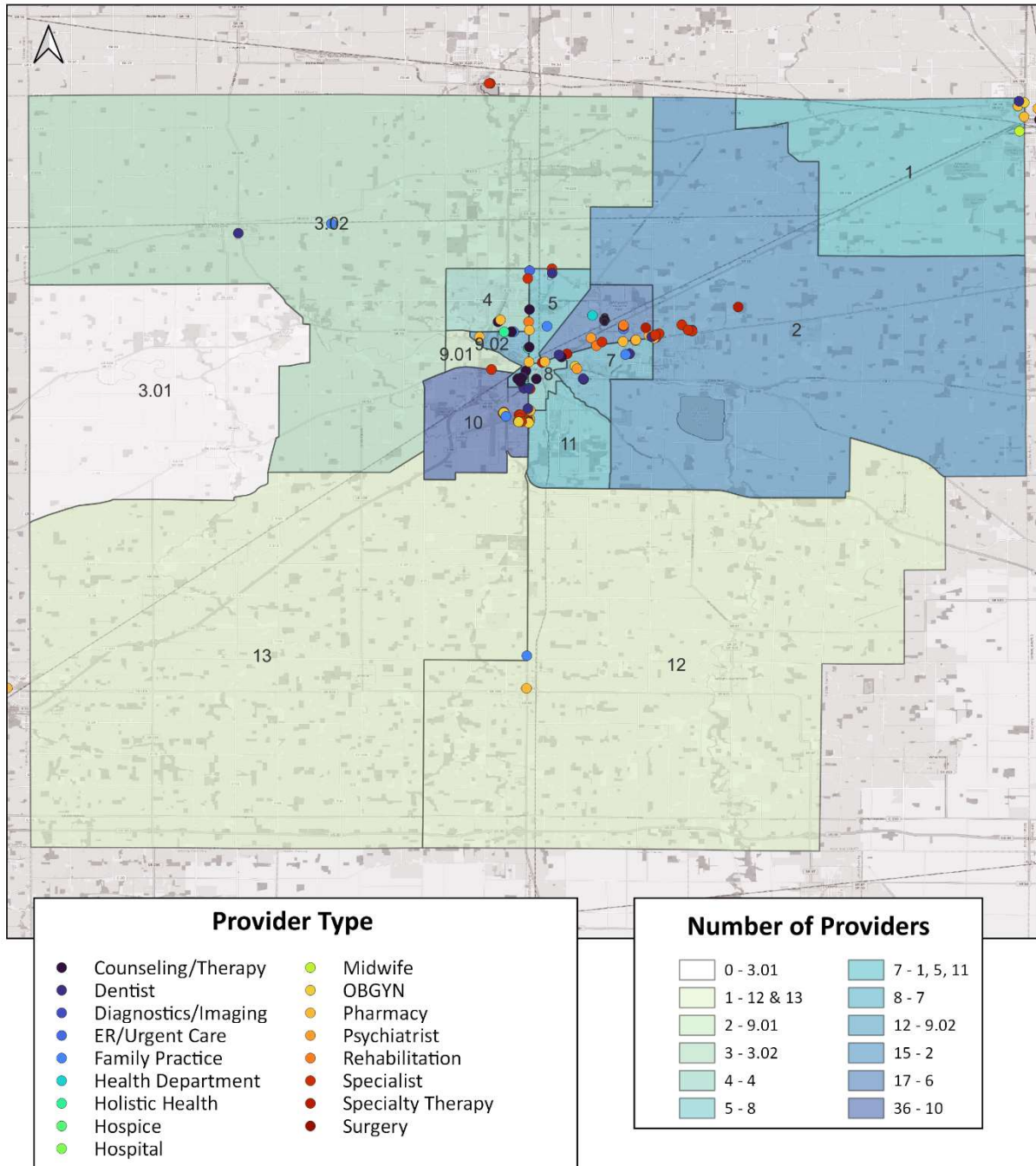
Higher Education Graduation Rate			
14.40% - 1	19.90% - 12	28.70% - 8	37.20% - 4
16.80% - 6	20.90% - 9.02	28.90% - 10	39.30% - 2
19.30% - 5	21.90% - 3.02	30.90% - 11	46.10% - 7
19.70% - 9.01	26.00% - 13	32.00% - 3.01	

Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

07/21/2022

### Health Care Providers in Hancock County, Ohio by Census Tract and Provider Type

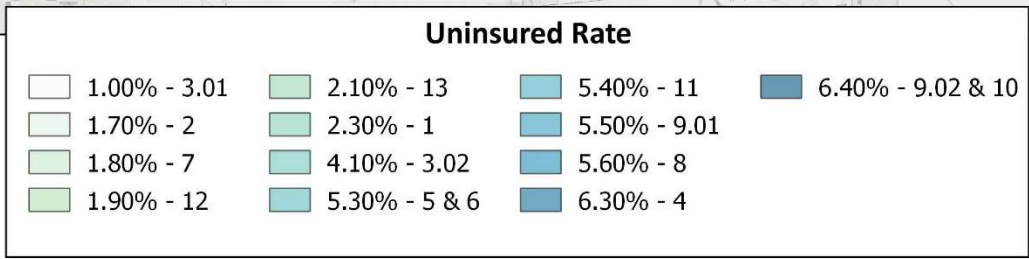
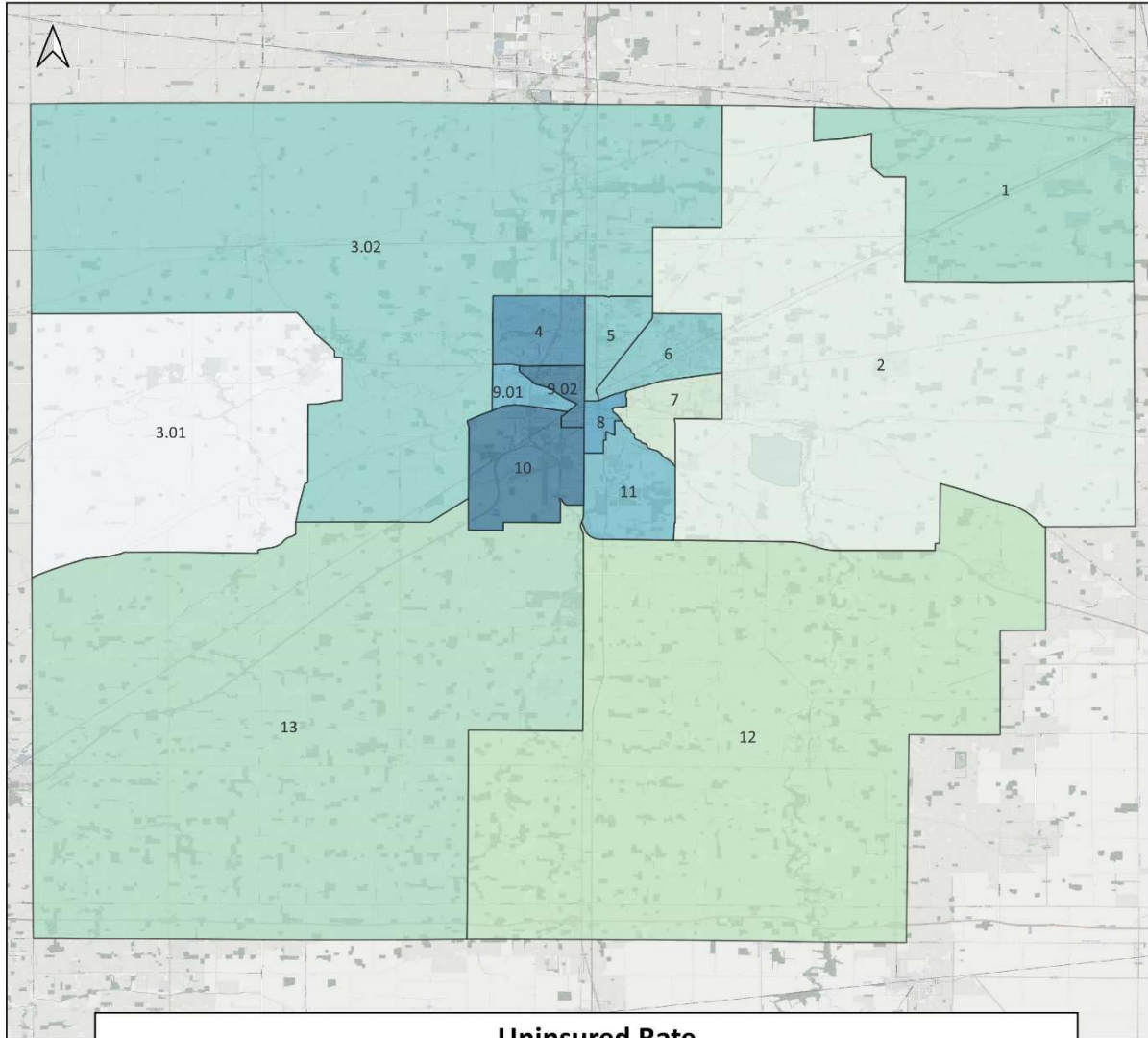


Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

12/20/2022

### Uninsured Rate in Hancock County, Ohio by Census Tract

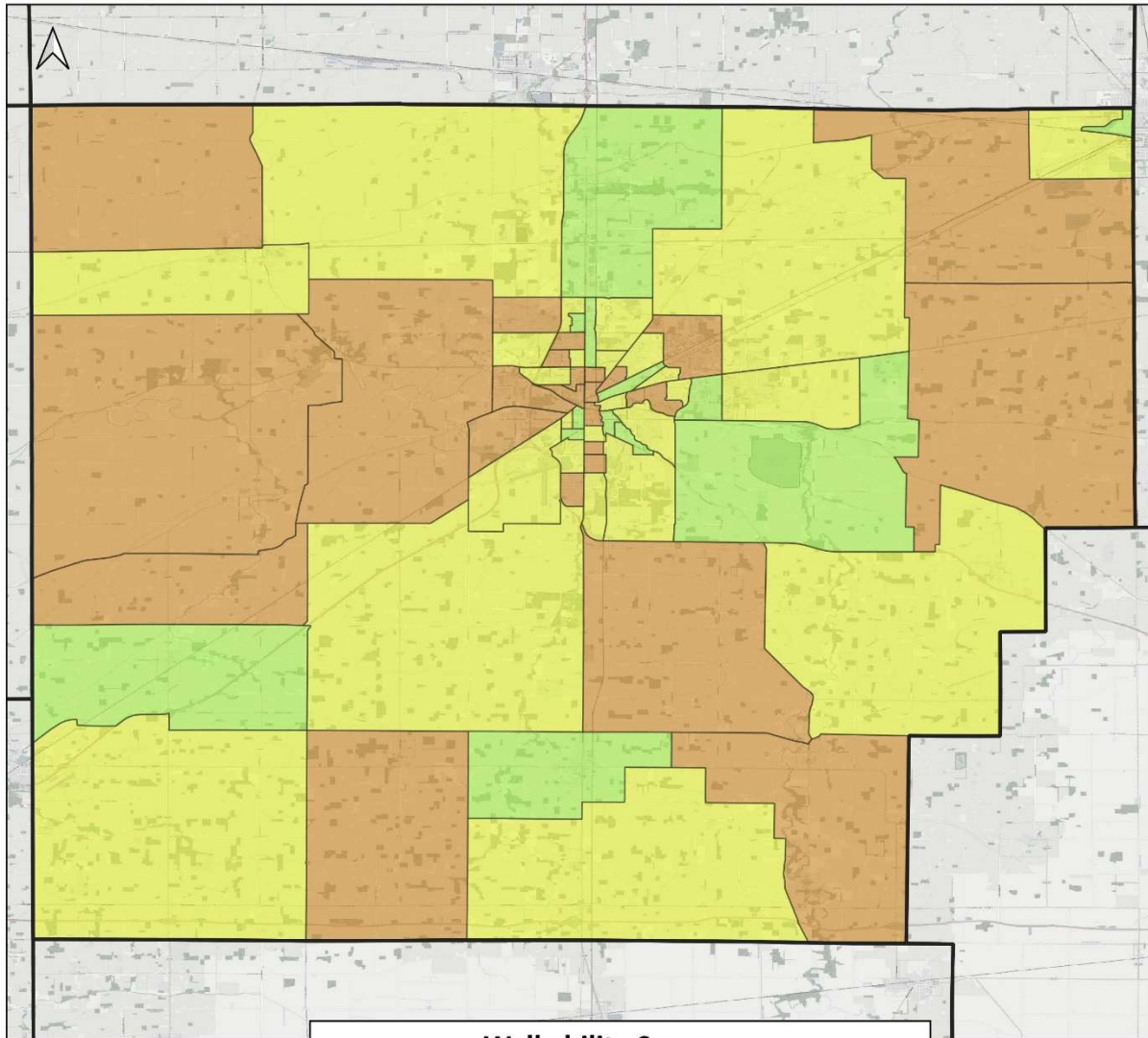






Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

07/21/2022

### Environmental Protection Agency (EPA) Walkability Index Scores in Hancock County, Ohio Block Groups, 2021



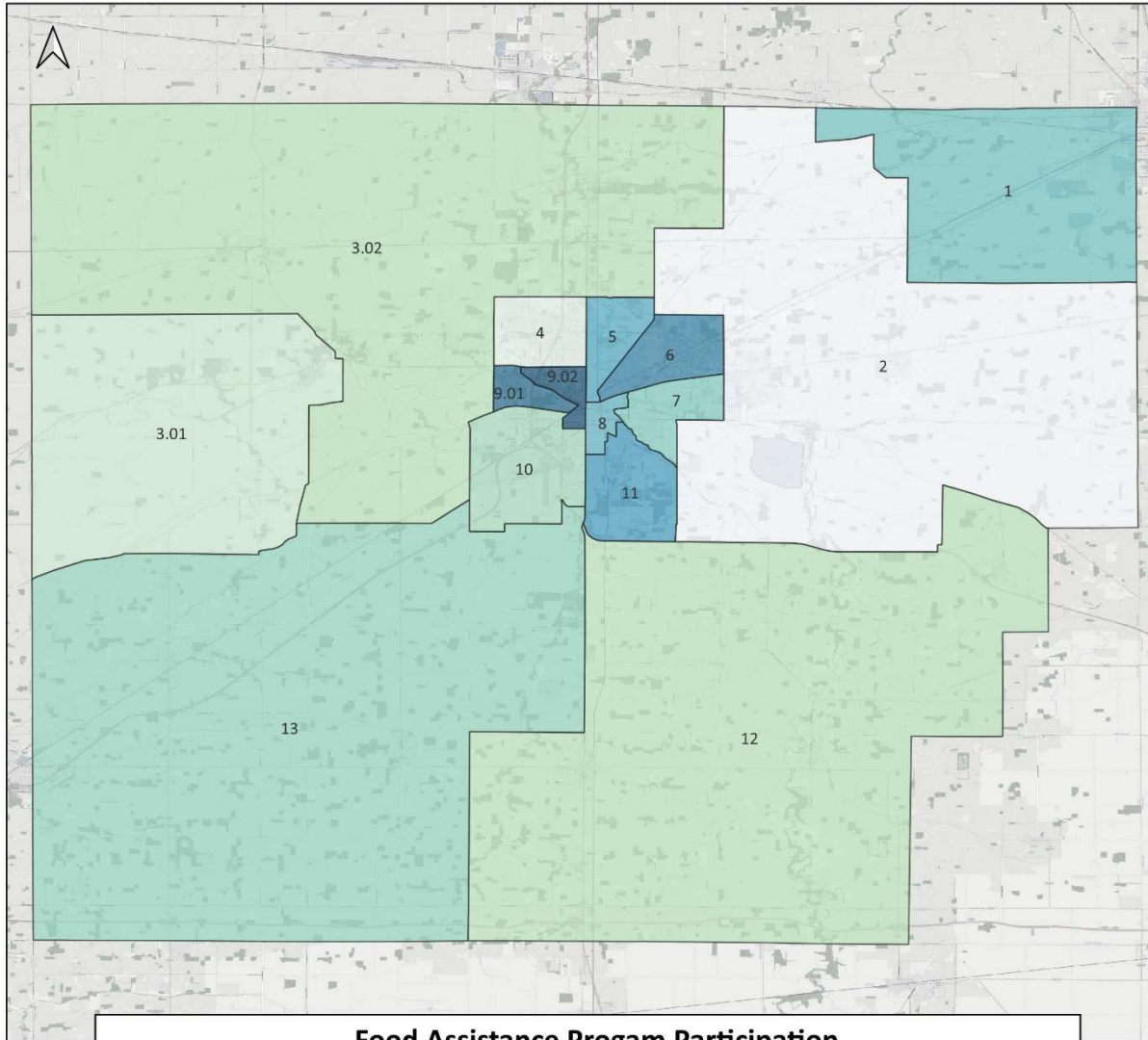
Walkability Score	
	Least Walkable - 18/62 block groups
	Below Average Walkable - 38/62 block groups
	Above Average Walkable - 6/62 block groups
	Most Walkable - 0/62 block groups

Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

10/4/2022

## Food Assistance Program Participation in Hancock County, Ohio by Census Tract



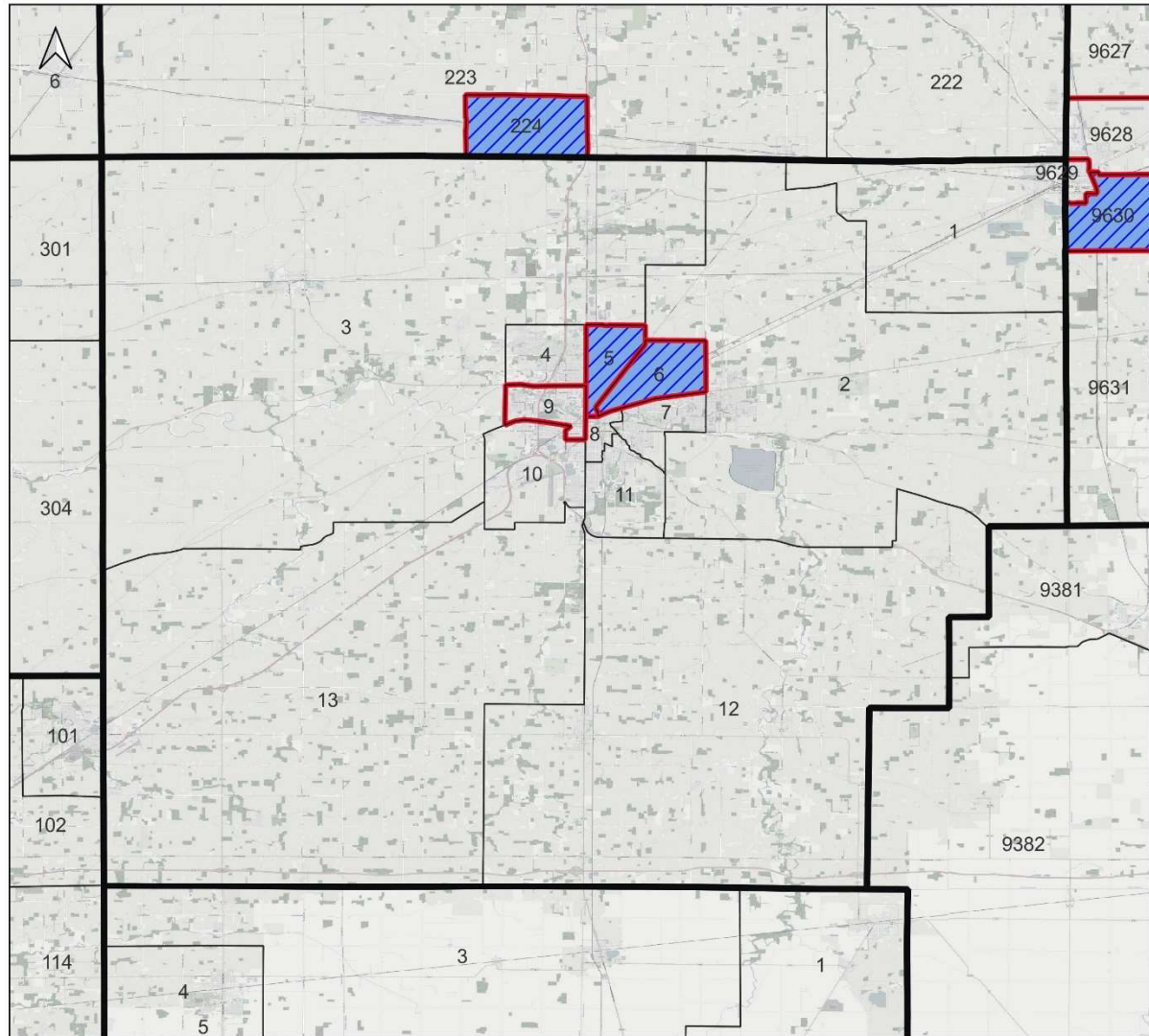
□ 1.30% - 2	□ 6.80% - 10	□ 9.00% - 8	□ 18.00% - 9.01
□ 3.50% - 4	□ 7.10% - 13	□ 11.00% - 5	□ 26.70% - 9.02
□ 3.90% - 3.01	□ 7.40% - 7	□ 13.00% - 11	
□ 5.60% - 3.02 & 12	□ 8.00% - 1	□ 15.60% - 6	

Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

07/21/2022

### USDA Identified Food Deserts In and Around Hancock County, Ohio by Census Tract, 2019



**Food Desert Classifications**

- LI & LA at 1/2 mile (urban) and 10 miles (rural)
- LI & LA at 1 mile (urban) and 10 miles (rural)
- LI & LA at 1 mile (urban) and 20 miles (rural)

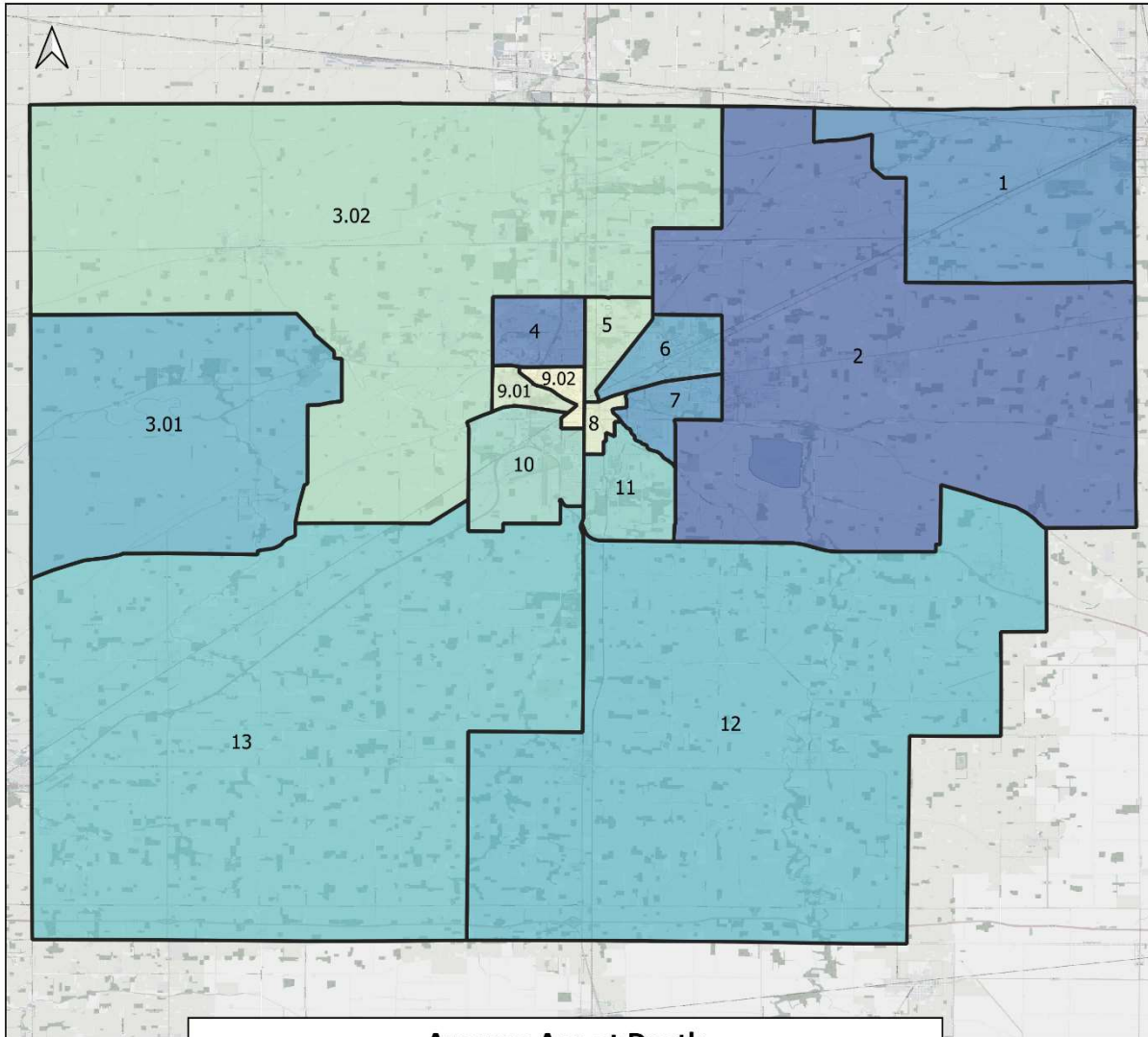
LI=Low-Income      LA=Low-Access






























Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

9/27/2022

### Average Age at Death in Hancock County, Ohio, by Census Tract, 2021



Average Age at Death		
	62.83 - 9.02	
	66.42 - 8	
	68.30 - 9.01	
	73.68 - 5	
	74.22 - 3.02	
	74.98 - 10	
	75.30 - 11	
	75.65 - 13	
	75.91 - 12	
	76.88 - 3.01	
	77.24 - 6	
	77.40 - 7	
	77.47 - 1	
	78.52 - 4	
	82.41 - 2	

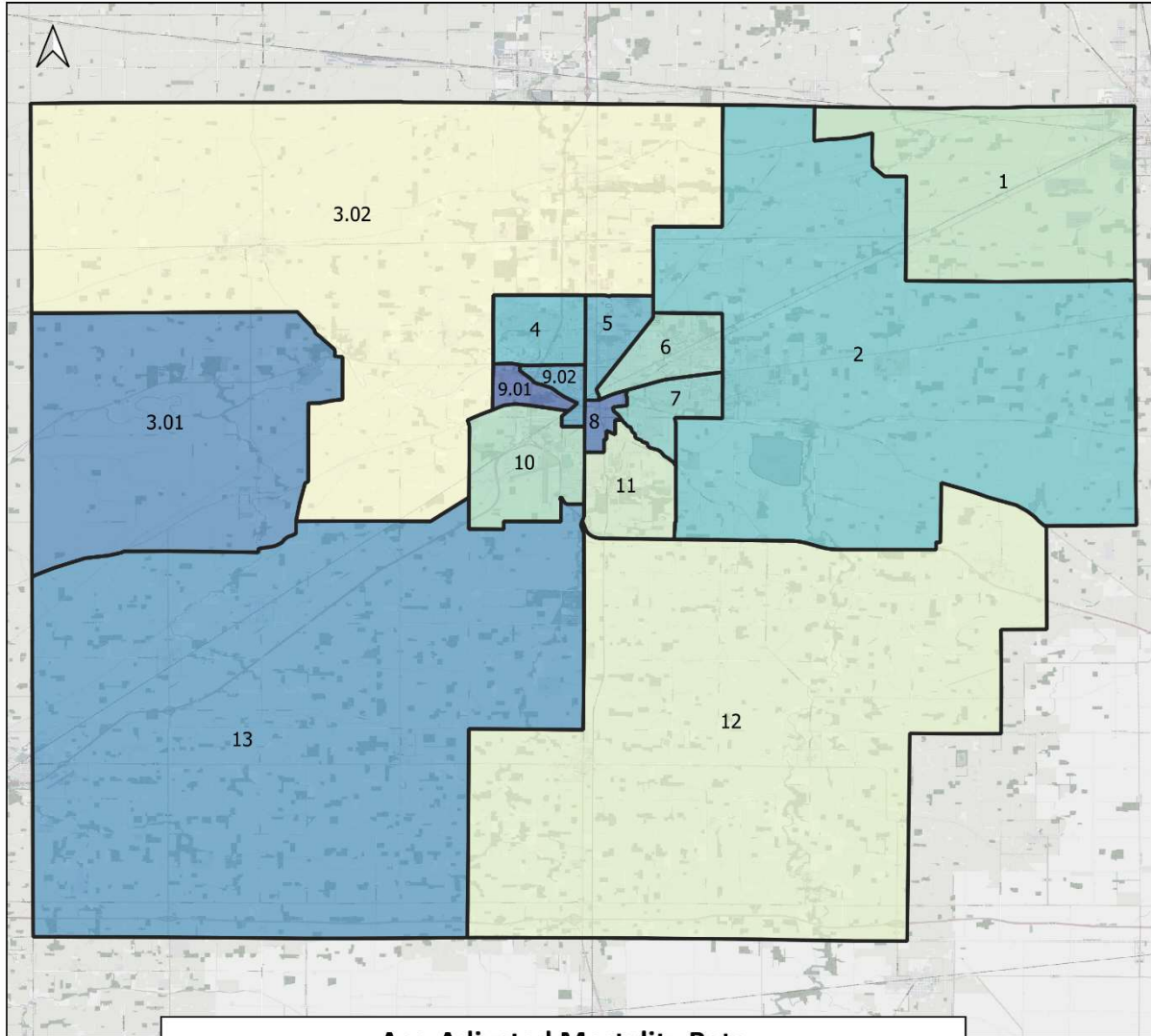
Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

12/22/2022



### Age-Adjusted Mortality Rate in Hancock County, Ohio, by Census Tract, 2021



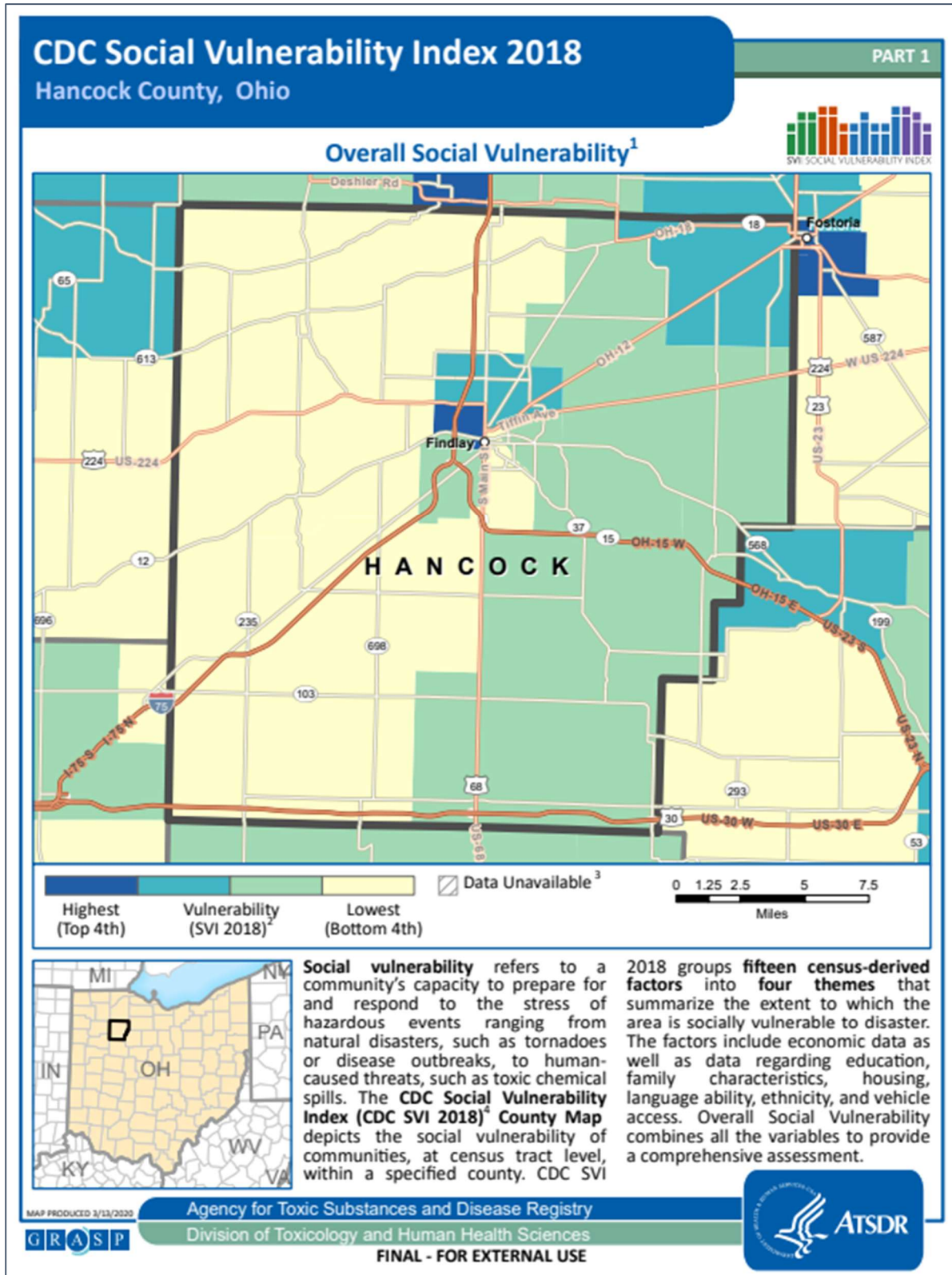
Age-Adjusted Mortality Rate		
2150.17 - 3.02	3136.95 - 6	3325.27 - 9.02
2451.16 - 12	3178.00 - 7	3813.50 - 13
2783.44 - 11	3183.71 - 2	3929.30 - 3.01
2856.78 - 1	3203.35 - 4	5371.46 - 8
2974.01 - 10	3265.92 - 5	6069.99 - 9.01

Source: QGIS, United States Census Bureau Ohio Partnership Shapefile, Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.

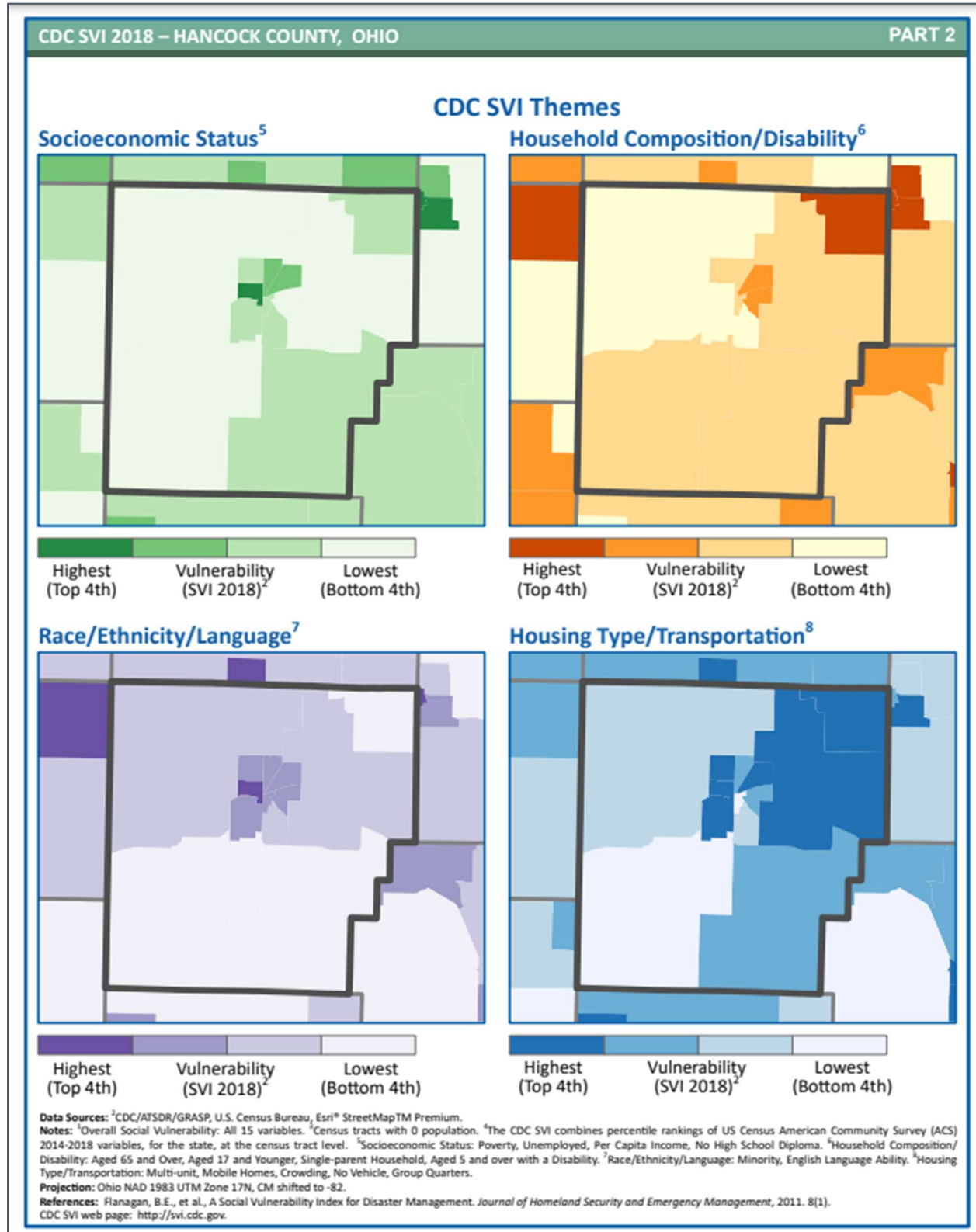
Map Author: Jessica Shrake, MPH, CDCF Epidemiologist Supporting Hancock Public Health

12/22/2022

Centers for Disease Control and Prevention Social Vulnerability Index (2018) for Hancock County, OH by Census Tract



Centers for Disease Control and Prevention Social Vulnerability Index (2018) for Hancock County, OH by Census Tract and Theme



## Appendix II: Census Tract Rankings

Table 1: Rankings Sorted in Ascending Order

Census Tract	Income	Percent Poverty	Percent Unemployment	High School Graduation	Higher Education Graduation	Food Assistance Program Participation	Percent Uninsured	Average Age at Death	Age-Adjusted Mortality Rate	Spending 30% of Income	Access to Internet	Percent Disabled	Total Score
9.01	4	2	2	1	4	2	5	3	1	3	5	8	40
9.02	1	1	1	11	6	1	1	1	5	15	8	6	57
5	2	4	10	4	3	5	7	4	6	9	10	5	69
6	3	8	6	2	2	3	7	11	10	13	9	1	75
8	5	7	5	3	9	6	4	2	2	10	13	11	77
1	6	3	12	8	1	7	10	13	12	12	1	3	88
10	7	11	3	5	10	10	1	6	11	6	14	12	96
11	9	6	10	9	11	4	6	7	13	11	6	4	96
13	12	10	8	10	8	9	11	8	4	2	4	15	101
12	11	11	4	11	5	11	12	9	14	1	7	7	103
4	8	5	13	6	13	14	3	14	7	8	15	9	115
3.02	13	14	9	7	7	11	9	5	15	4	12	14	120
3.01	15	15	15	14	12	13	15	10	3	7	2	2	123
7	14	9	14	13	15	8	13	12	9	5	3	10	125
2	10	13	7	14	14	15	14	15	8	14	11	13	148

Table 2: Rankings Sorted by Census Tract in Ascending Order

Census Tract	Income	Percent Poverty	Percent Unemployment	High School Graduation	Higher Education Graduation	Food Assistance Program Participation	Percent Uninsured	Average Age at Death	Age-Adjusted Mortality Rate	Spending 30% of Income	Access to Internet	Percent Disabled	Total Score
1	6	3	12	8	1	7	10	13	12	12	1	3	88
2	10	13	7	14	14	15	14	15	8	14	11	13	148
3.01	15	15	15	14	12	13	15	10	3	7	2	2	123
3.02	13	14	9	7	7	11	9	5	15	4	12	14	120
4	8	5	13	6	13	14	3	14	7	8	15	9	115
5	2	4	10	4	3	5	7	4	6	9	10	5	69
6	3	8	6	2	2	3	7	11	10	13	9	1	75
7	14	9	14	13	15	8	13	12	9	5	3	10	125
8	5	7	5	3	9	6	4	2	2	10	13	11	77
9.01	4	2	2	1	4	2	5	3	1	3	5	8	40
9.02	1	1	1	11	6	1	1	1	5	15	8	6	57
10	7	11	3	5	10	10	1	6	11	6	14	12	96
11	9	6	10	9	11	4	6	7	13	11	6	4	96
12	11	11	4	11	5	11	12	9	14	1	7	7	103
13	12	10	8	10	8	9	11	8	4	2	4	15	101

## Appendix III: Methodology & Limitations

### Maps

Choropleth maps were created using QGIS Desktop version 3.22.5. The shapefile for Hancock County was obtained from the United States Census Bureau 2022 Boundary and Annexation Survey Partnership Shapefiles.<sup>47</sup> Census tract level data for each variable was entered into a comma-separated values file using Excel Desktop version 2206. Census tract data was joined to the shapefile in QGIS based on the census tract name. Addresses for healthcare providers were acquired through the list available on the Blanchard Valley Health System website<sup>48</sup> and a Google Maps search of the county. Addresses were stored in a comma-separated values file in Excel. Addresses were geocoded and plotted in QGIS using the MMQGIS: Geocode CSV with Web Service plug-in.

### Data Collection and Analysis

Census tract level data was extracted from the United States Census Bureau.<sup>49</sup> Filters were set to only include data tables for all census tracts inside Hancock County, Ohio. The American Community Survey (ACS) 5-Year Estimates Data Profiles for 2020 were the data source. The 2020 5-Year Estimates contains data for the years 2016-2019. Data from the following ACS 5-Year Estimates were used for this report: DP02, DP03, DP04, and DP05, S2201 S0101, B08301. Data was entered into an Excel table by census tract. Observations under each variable were ranked using Excel formula RANK.EQ. The least desired outcome was assigned score 1 and the most desired outcome was assigned score 10. The census tracts with the lowest scores should be studied further to determine if and where there are any disparities. In addition to census tract level analysis, specific areas of interest were also identified at the county level. These were taken from the 2021 Hancock County Health Assessment and 2021 Hancock County Annual Report. Areas of interest pertain to each of the five categories contained in this report.

Student participation in the free and reduced-price meal school program for the 2019 school year was obtained from the Ohio Department of Education's Data for Free and Reduced-Price Meal Eligibility website.<sup>46</sup> School addresses were geocoded to obtain census tract location using Geocodio<sup>50</sup>. Data was entered into an Excel spreadsheet in Excel Desktop version 2206. To obtain census tract, county, and state participation, PivotTables were used to average the participation rates.

### Calculations

#### Average age at death

Average age at death was calculated for each census tract and for all of Hancock County. Average age at death was calculated using the following equation:

$$\text{Average Age at Death} = \frac{\sum(\text{Age in years at time of death})}{\sum(\text{deaths within geographical region})}$$

---

<sup>47</sup> (United States Census Bureau, 2022)

<sup>48</sup> (Blanchard Valley Health System, 2022)

<sup>49</sup> (United States Census Bureau, n.d.)

<sup>50</sup> (Hassle-Free Geocoding - Geocodio, n.d.)

Essentially, the age in years at the time of an individual's death was summed. This sum was then divided by the total number of deceased individuals in the geographical region (i.e. the census tract or Hancock County). The resulting value is the average age at death.

### Age-adjusted mortality rates

When comparing different geographical regions, it can be difficult to use the frequency or count. It is typically better to compare them using rates or percentages. These account for differences in population, as a larger population may have more of a certain outcome than a smaller population (i.e. deaths). Another way to compare two areas is by standardizing the data using a reference population. For this calculation, the 2020 U.S. standard population was used. The resulting rates are the hypothetical values that would be observed if each geographical region had the same age distribution as the U.S. population in 2020. The age-adjusted mortality rate was calculated using the following equation:

$$\text{Age-Adjusted Mortality Rate} = \left( \left( \frac{\text{Number of deaths in an age group}}{\text{Total population in an age group}} \right) \times 100,000 \right) \times \text{Age distribution of the standard population}$$

The number of deaths per age group was divided by the total number of individuals in that age group. That value was then multiplied by 100,000, producing the age-specific mortality rate. This rate was then multiplied by the age distribution of the US population in 2020 to get the standardized rate. Rates for each age group were summed to get the total number of age-adjusted deaths for each geographical region.

### Limitations

There were a couple limitations that were encountered during the writing of this report. First, was the use of secondary data. Secondary data is any that was collected by a different entity or third party. This means there is no control over the questions asked or survey methods used. This type of data is the most common, as conducting a survey is expensive and requires increased labor. Since secondary data was used, not all data was available at a census tract level. This means that interventions will not be able to be implemented at the census tract level. Instead, they will be set at the county level. Overall, efforts will be focused in areas of higher need. Doing so will help reduce disparities, even if a targeted approach cannot be implemented due to lack of data. Second, is that the most recent data available is from 2019. The American Community Survey 5-year estimates compiled by the United States Census Bureau is published every year. However, the 2020 publication contains data for 2016-2019, 2019 contains years 2015-2018, and so on. Therefore, it is hard to acquire the most recent and up to date information for Hancock County. Even with that limitation, this data is useful. The data is able to be displayed by census tract, county, state, and country, and does not let any year-to-year outliers influence the analysis. This is beneficial when trying to compare values to other geographic areas using the same variables.

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