



Public Health
Prevent. Promote. Protect.

COVID-19 Lake County Community Health Needs Assessment Addendum



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1. Introduction

Following the release of the 2019 Lake County Community Health Needs Assessment (CHNA) and resulting 2020-2022 Lake County Community Health Improvement Plan (CHIP) designed to address identified local needs, 2020 brought with it a new and unforeseen challenge: the global 2019 Novel Coronavirus (COVID-19) pandemic. Although not part of the 2019 CHNA or 2020-2022 CHIP, the CHIP Workgroup felt the magnitude of the health impacts of this global crisis locally warranted closer examination. Therefore this addendum to the 2019 Lake County CHNA focuses on the burden of COVID-19 on Lake County residents, its disparate impact on certain communities, and the threats and opportunities as viewed by Lake County's leadership.

2. Lake County COVID-19 Cases, Hospitalizations, and Deaths

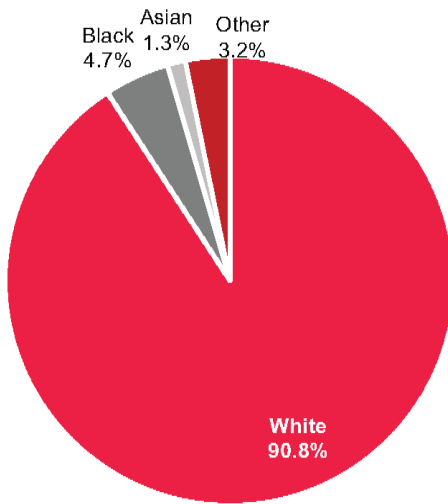
The data for the subsequent analysis was obtained from the Ohio Disease Reporting System Data Extract from February 18, 2021. For comparison, Lake County population data is based on the 2019 American Community Survey Population Estimates. The following were the parameters for inclusion in the analysis:

- The case must be a resident of Lake County
- The case must meet the current definition of a Confirmed or Probable Case, per the Ohio Infectious Disease Control Manual
- For cases, the Event Date (earliest known date associated with a case – either date of symptom onset as reported in case interview or date that specimen of positive test was taken if symptom onset date is not known or case is asymptomatic) must be on or before December 31, 2020.
- For hospitalizations, the Admission date must be on or before December 31, 2020.
- For deaths, the date of death is on or before December 31, 2020 and the case was determined and documented to have been from COVID-19.

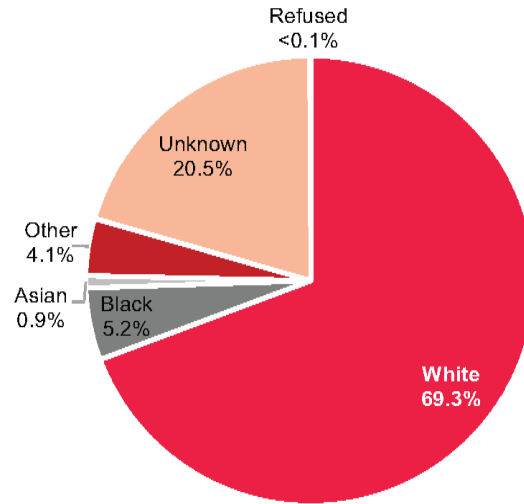
1. Racial Disparities

The following pie charts depict the racial composition of the Lake County population vs. Lake County's 2020 COVID-19 cases, hospitalizations, and deaths. While the percentage of cases among racial minorities in Lake County appear to be similar to the proportion of the population, a larger proportion of COVID-19 hospitalizations and deaths are observed among African Americans.

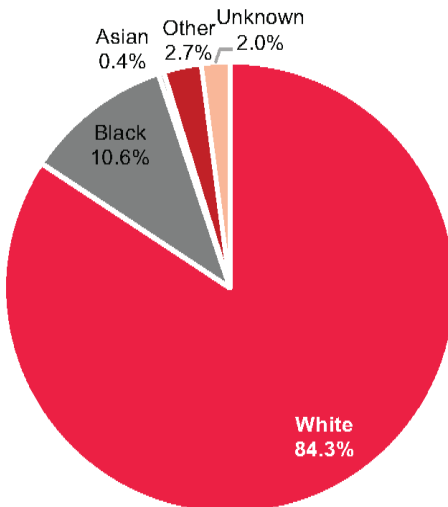
Lake County Population by Race



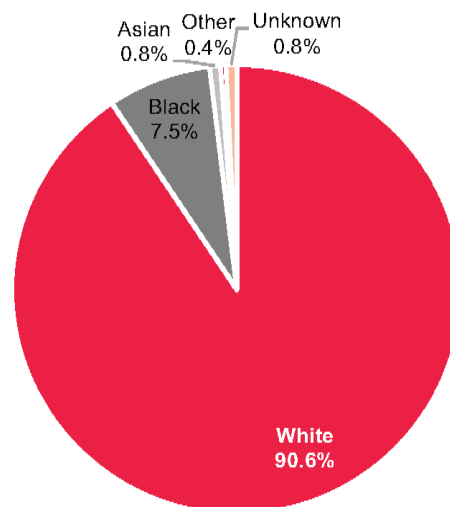
Lake County COVID-19 Cases by Race



Lake County COVID-19 Hospitalizations by Race



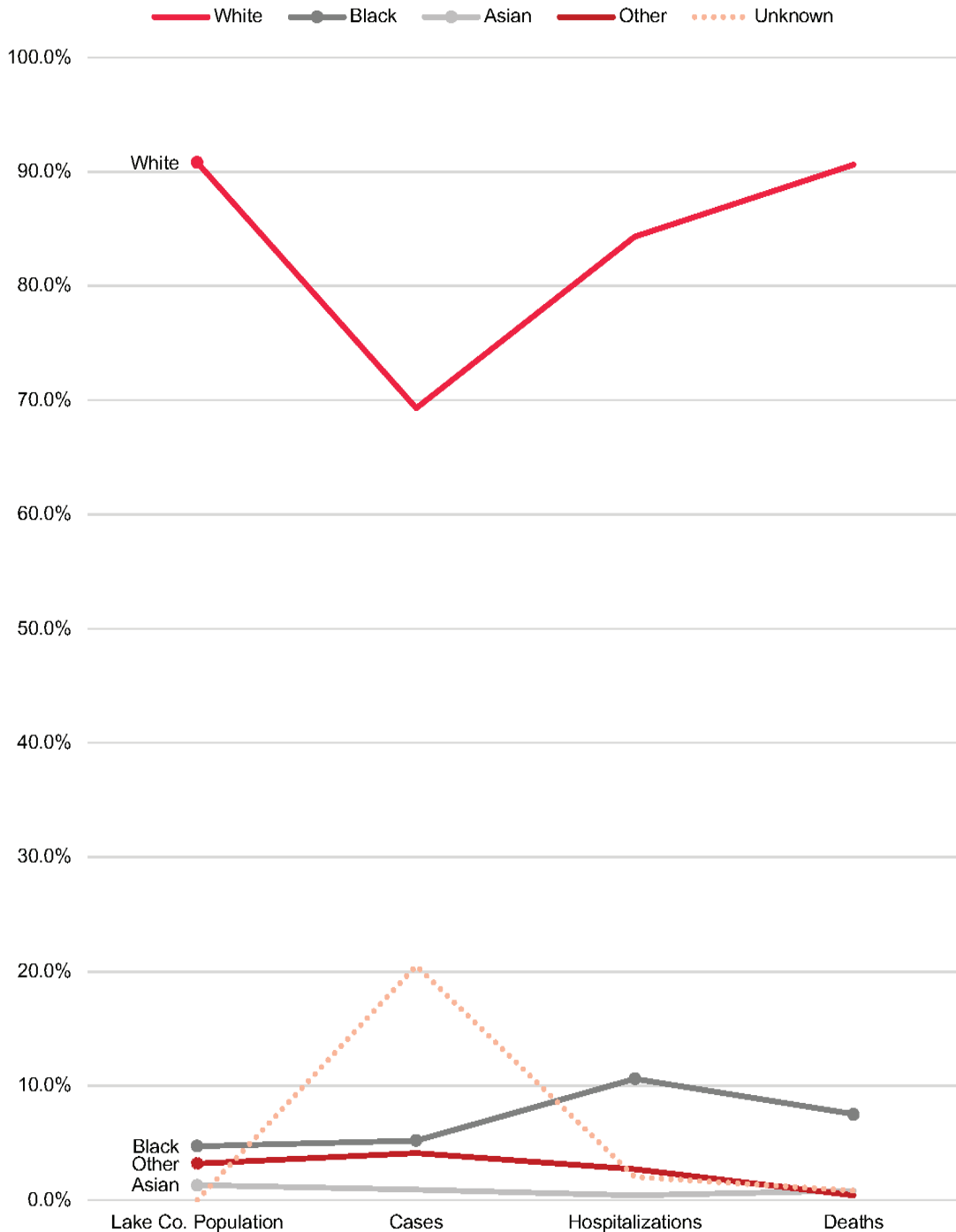
Lake County COVID-19 Deaths by Race



1. Racial Disparities

In the following graph, the percentage of the Lake County population composed of each racial group is compared to the percentage of cases, hospitalizations, and deaths among that racial group. Again, higher rates of hospitalization and death are evident among Lake County's African American population.

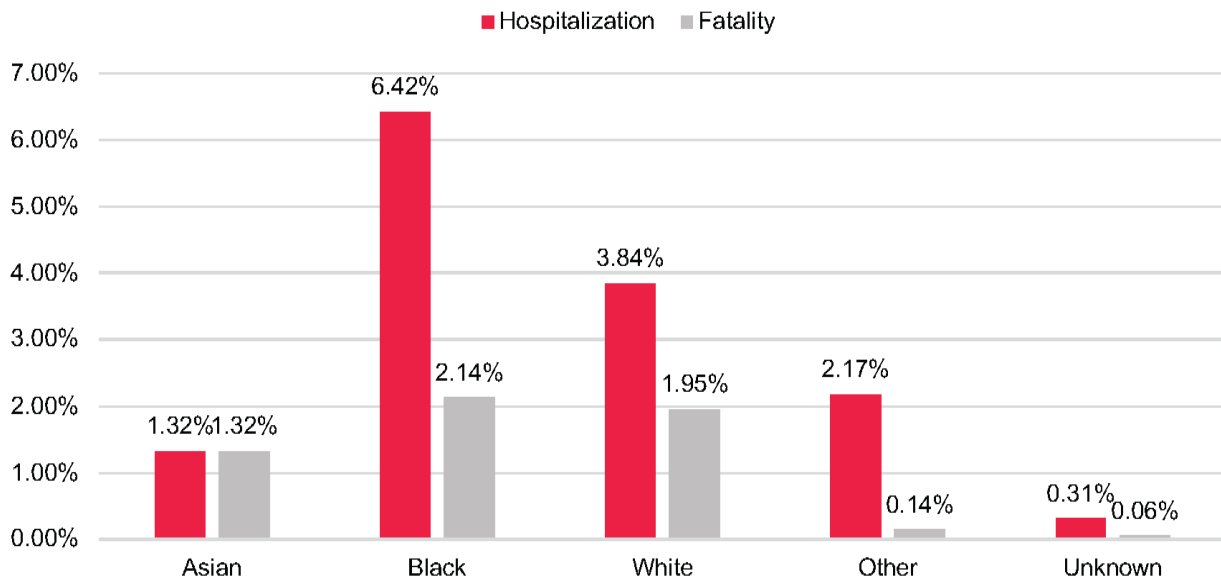
Racial Demographics for Lake County Population vs. COVID-19 Cases, Hospitalizations, and Deaths



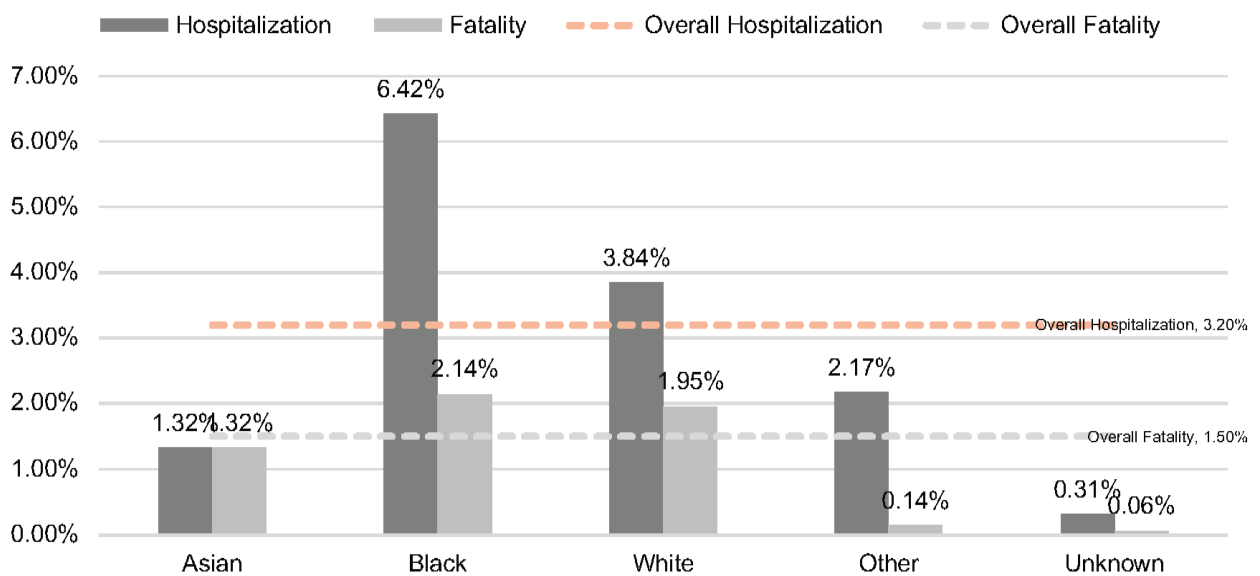
1. Racial Disparities

The following graph displays the rate of hospitalizations and deaths among Lake County COVID-19 cases (not the overall population) by race. For comparison, the overall hospitalization rate and fatality rate among Lake County COVID-19 cases is included. While rates were higher for both hospitalization and death among both Caucasians and African Americans than the overall rates, the increases were more pronounced among African Americans.

Hospitalization and Fatality Rates Among Cases by Race



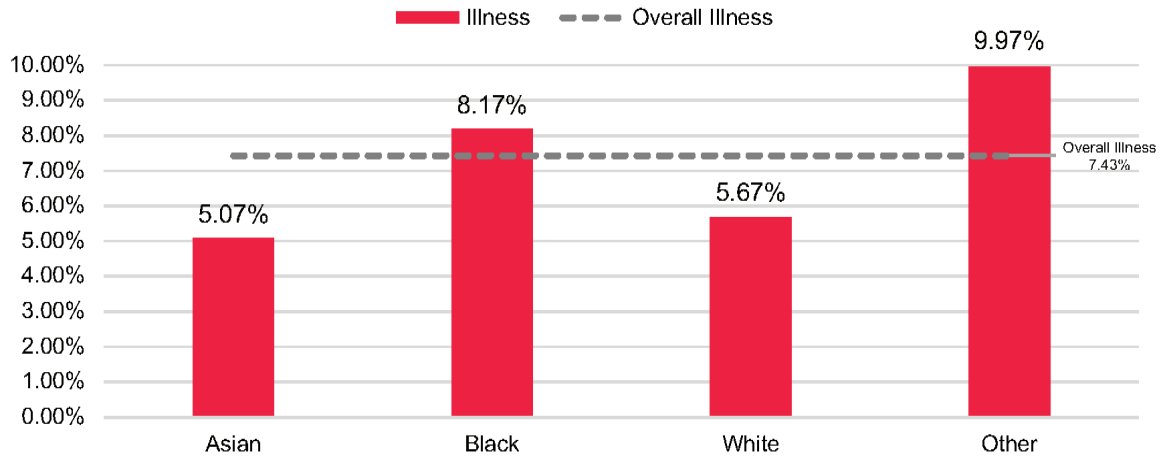
Hospitalization and Fatality Rates Among Cases by Race



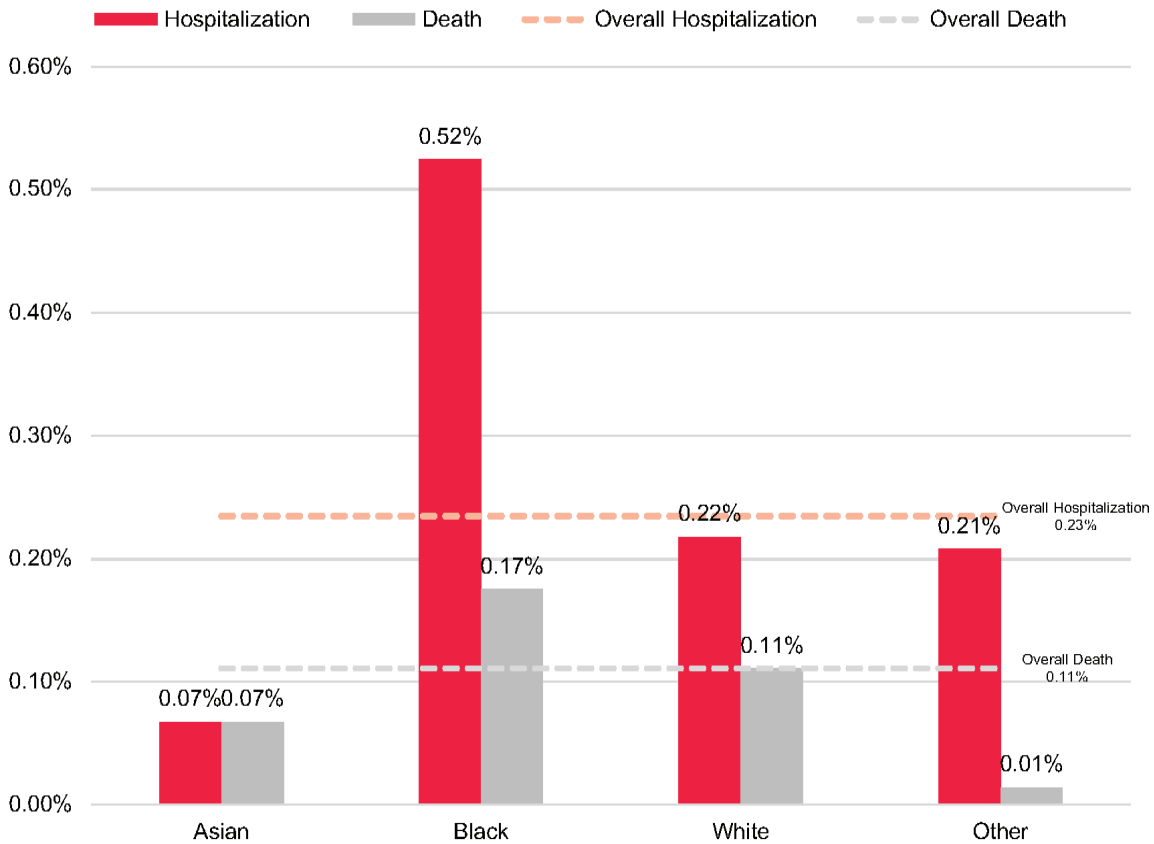
1. Racial Disparities

Rates of illness, hospitalization, and death among each racial group in Lake County are displayed in the following graph. For comparison, the overall rates of illness, hospitalization, and death among all Lake County residents are added. The only racial group to exceed the overall rates of illness, hospitalization, and death is African Americans.

Percentage of Lake County Residents by Race Impacted by COVID-19 Illness



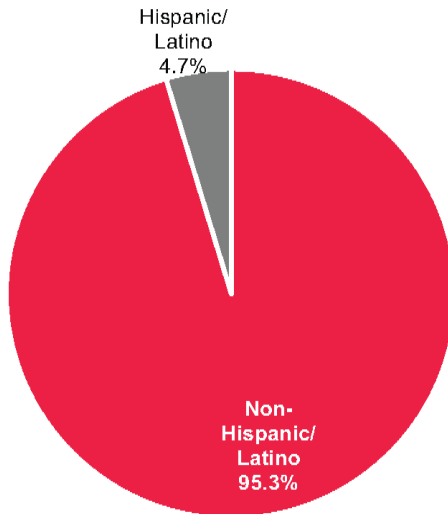
Percentage of Lake County Residents by Race Impacted by COVID-19 Hospitalization and Fatality



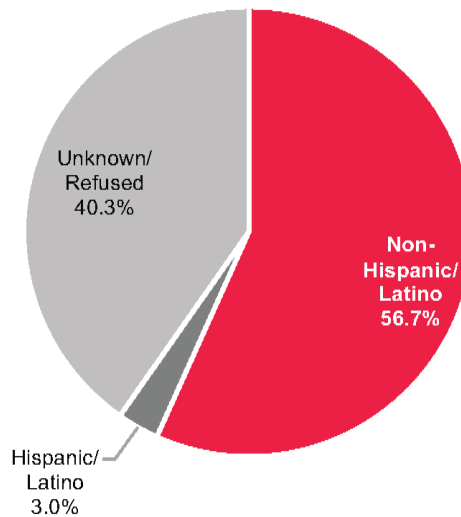
2. Ethnic Disparities

The following pie charts depict the ethnic composition of the Lake County population vs. Lake County's 2020 COVID-19 cases, hospitalizations, and deaths. While it appears that proportions of COVID-19 illness, hospitalization, and death among Lake County's Hispanic residents are slightly lower than the percentage of residents in Lake County who are Hispanic, the large number of cases and hospitalizations with Unknown or Refused ethnicity make it difficult to discern potential disparities.

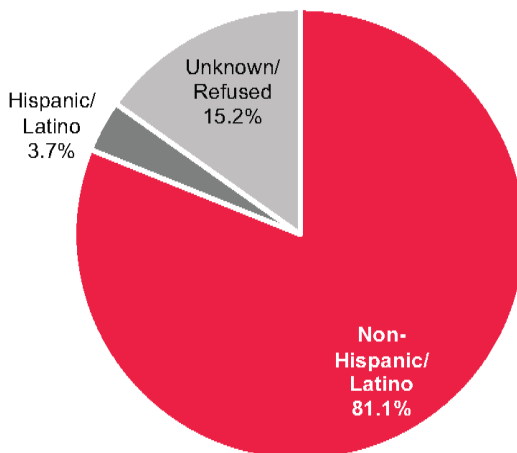
Lake County Population by Ethnicity



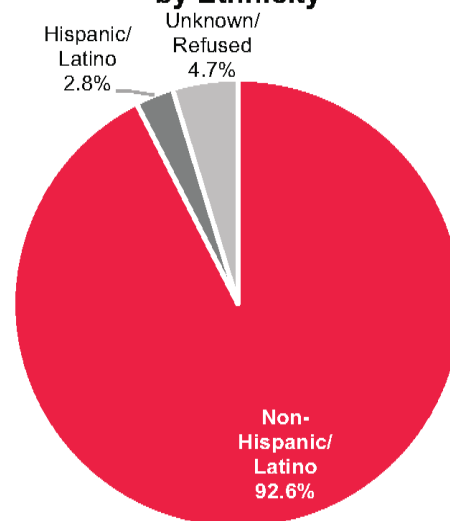
Lake County COVID-19 Cases by Ethnicity



Lake County COVID-19 Hospitalizations by Ethnicity

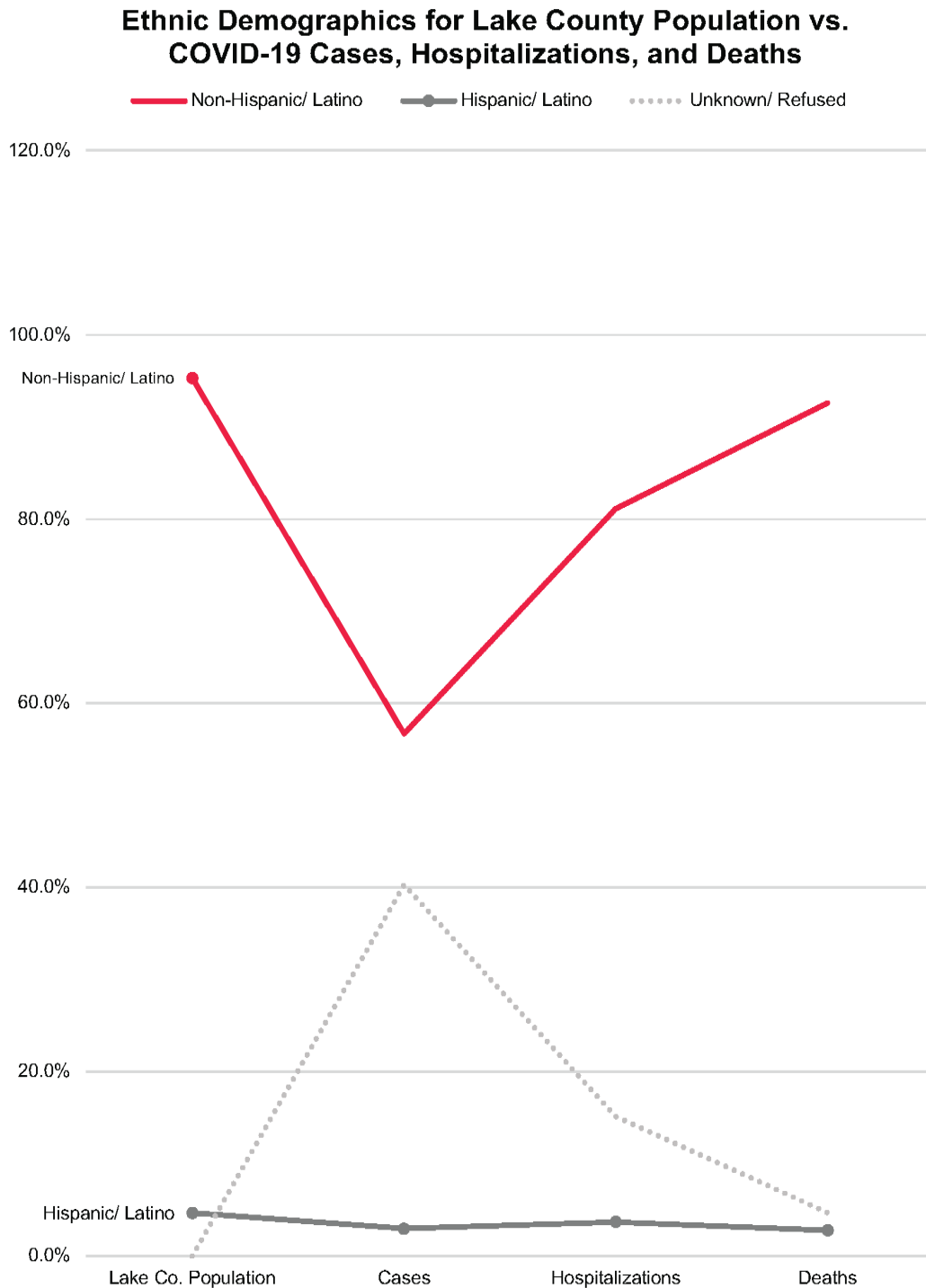


Lake County COVID-19 Deaths by Ethnicity



2. Ethnic Disparities

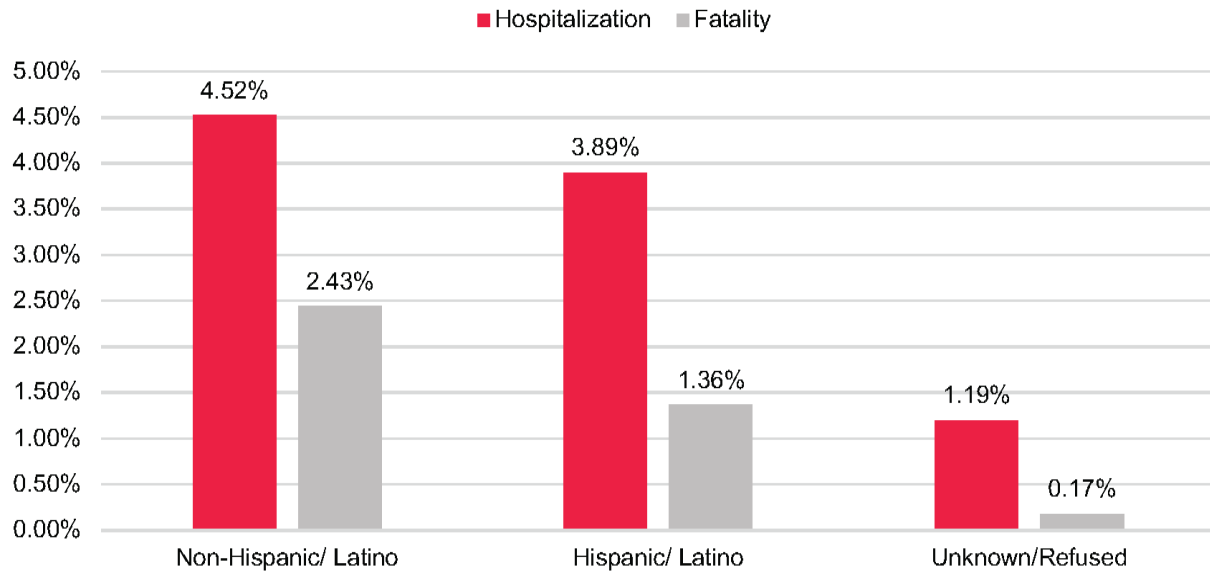
In the following graph, the percentage of the Lake County population composed of each ethnic group is compared to the percentage of cases, hospitalizations, and deaths among that racial group. Again, the high rate of unknown/refused responses may mask potential disparities.



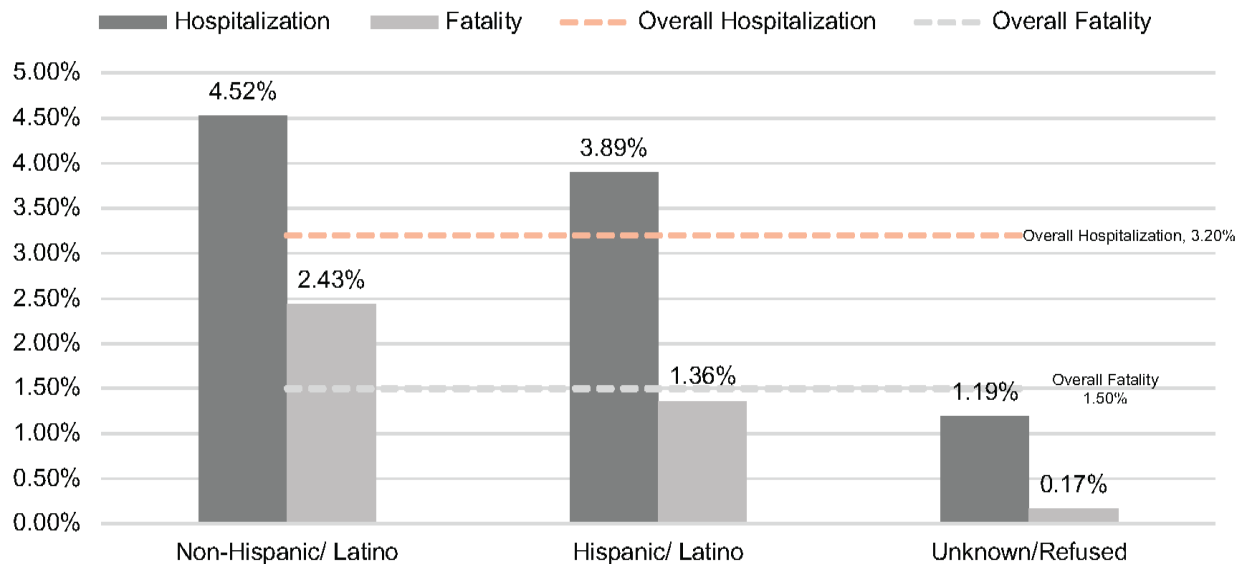
2. Ethnic Disparities

The following graph displays the rate of hospitalizations and deaths among Lake County COVID-19 cases (not the overall population of Lake County) by ethnicity. For comparison, the overall hospitalization rate and fatality rate among Lake County COVID-19 cases is included. While rates were higher for hospitalization among both Hispanic and Non-Hispanic residents, the death rate seems to be elevated for Non-Hispanic residents.

Hospitalization and Fatality Rates Among Cases by Ethnicity



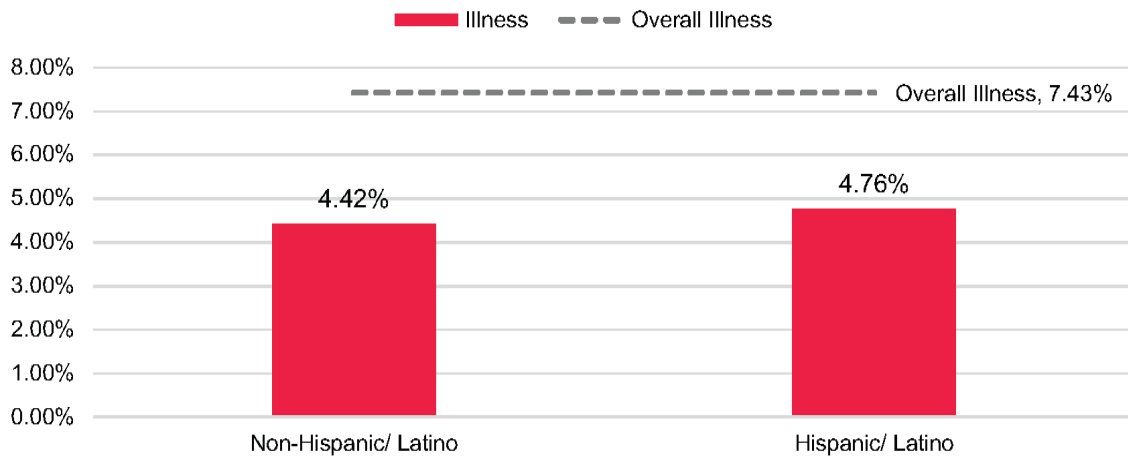
Hospitalization and Fatality Rates Among Cases by Ethnicity



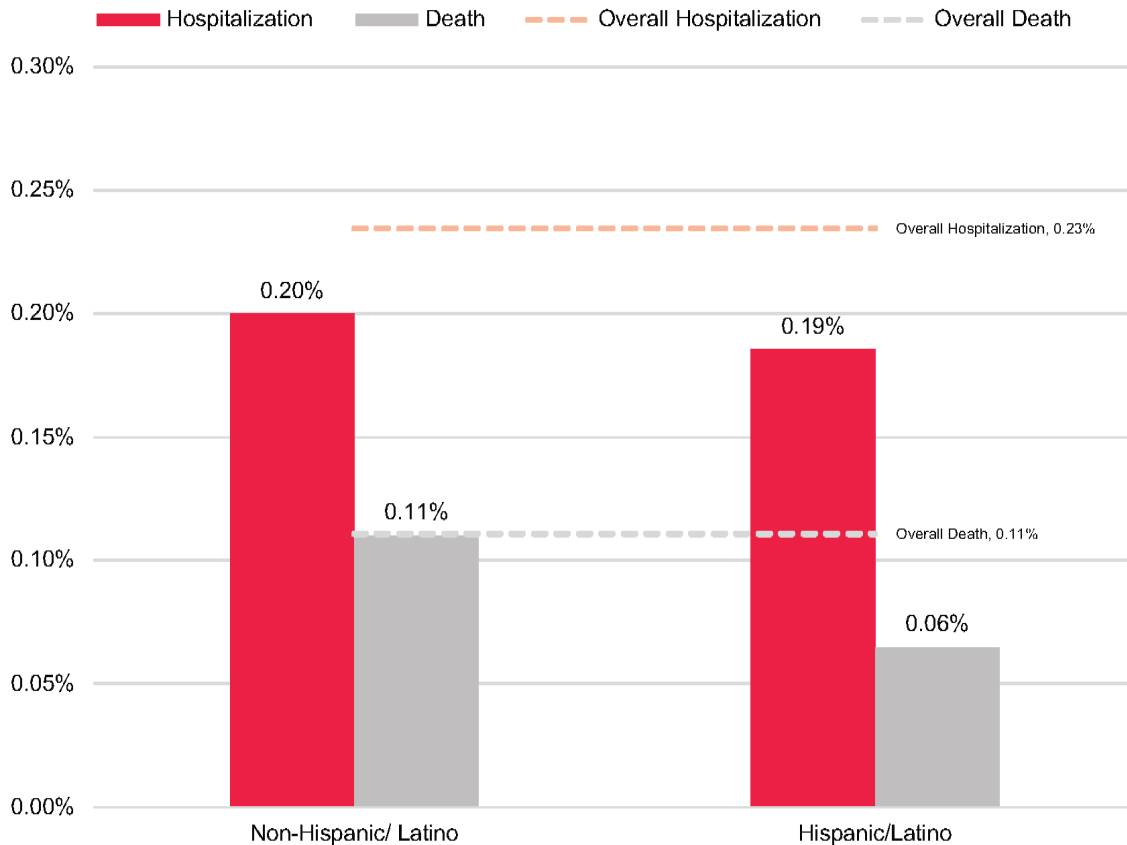
2. Ethnic Disparities

Rates of illness, hospitalization, and death among each ethnic group in Lake County are displayed in the following graph. For comparison, the overall rates of illness, hospitalization, and death among all Lake County residents are added.

Percentage of Lake County Residents by Ethnicity Impacted by COVID-19 Illness



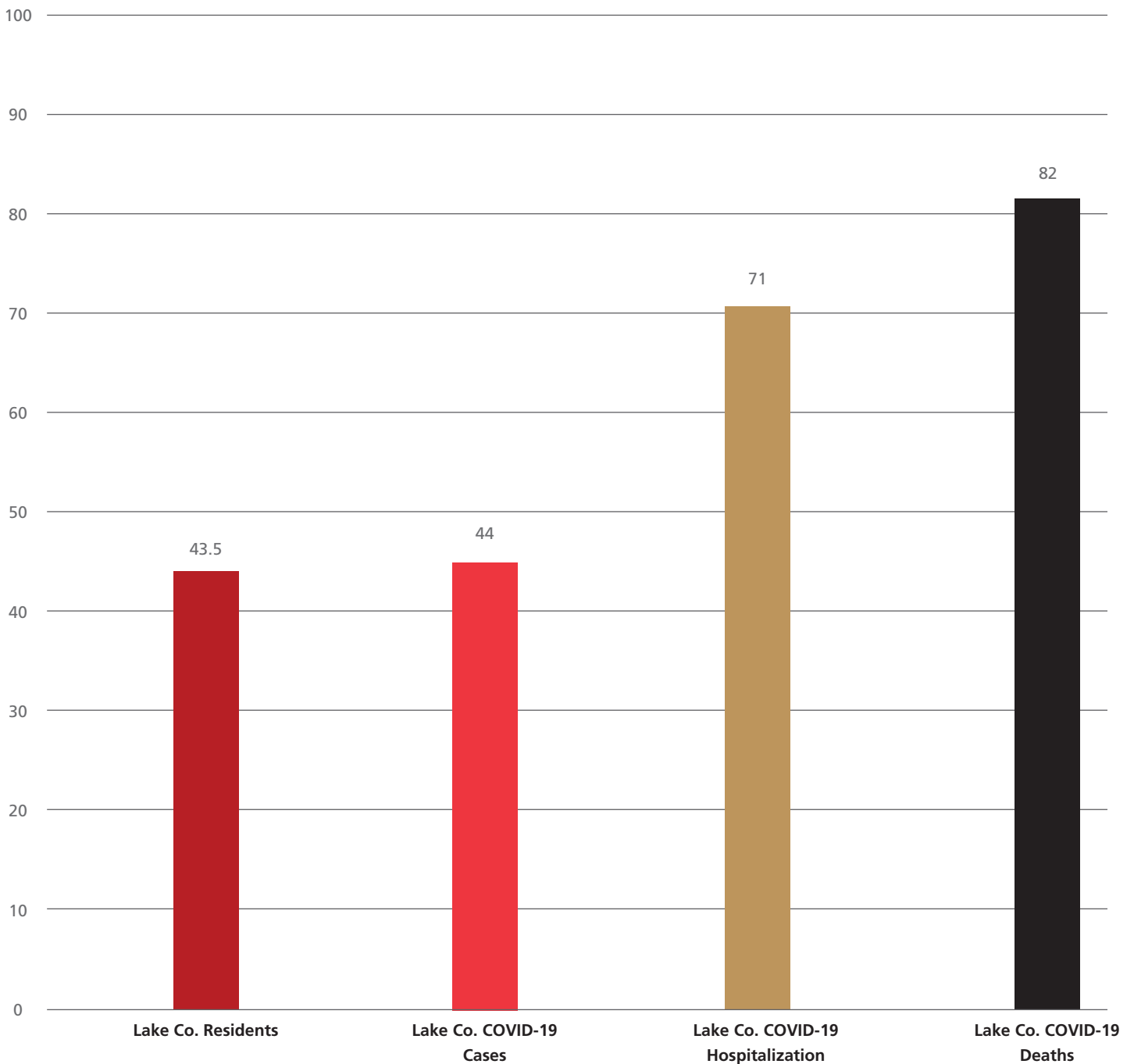
Percentage of Lake County Residents by Ethnicity Impacted by COVID-19 Hospitalization and Fatality



3. Age Disparities

COVID-19 is known to more seriously affect older populations. The median age of Lake County residents is compared with the median age for cases, hospitalizations and deaths. While the median age of cases is similar to the Lake County population, the median age for hospitalization and death from COVID-19 in Lake County are much higher.

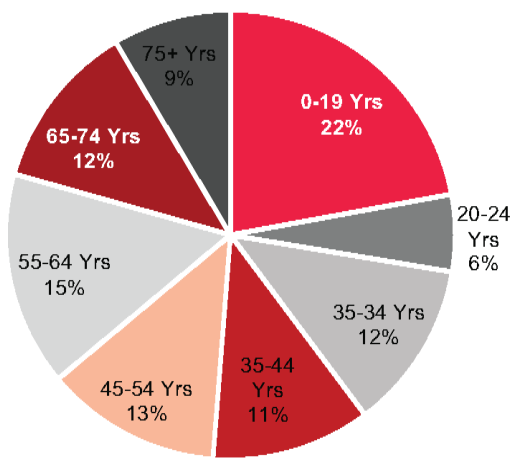
Age Disparities Median Age



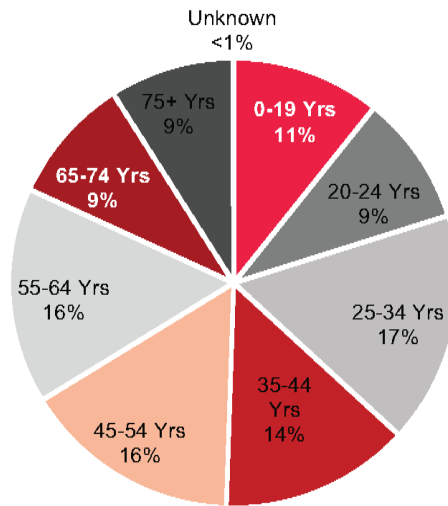
3. Age Disparities

The following pie charts depict the age composition of the Lake County population vs. Lake County's 2020 COVID-19 cases, hospitalizations, and deaths. While the percentage of cases among racial minorities in Lake County appear to be similar to the proportion of the population, a larger proportion of COVID-19 hospitalizations and deaths are observed among African Americans.

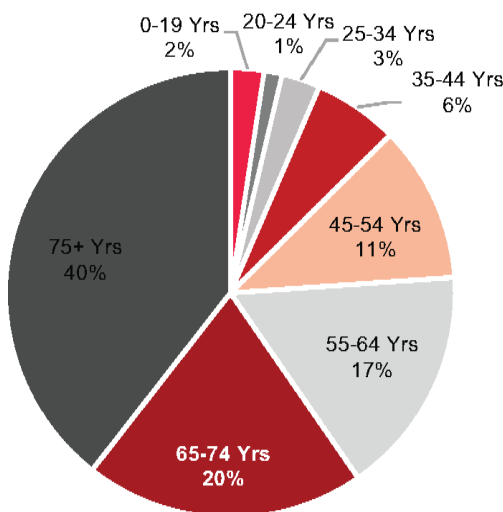
Lake County Population by Age



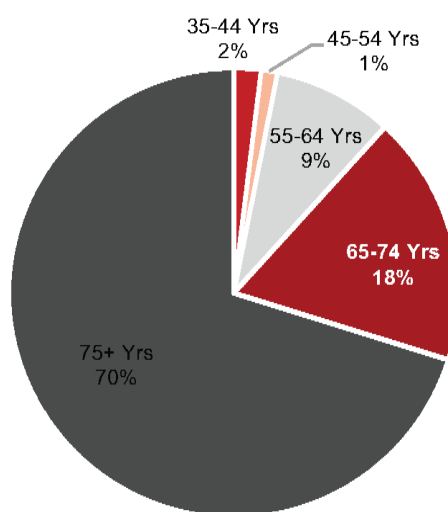
Lake County COVID-19 Cases by Age



Lake County COVID-19 Hospitalizations by Age



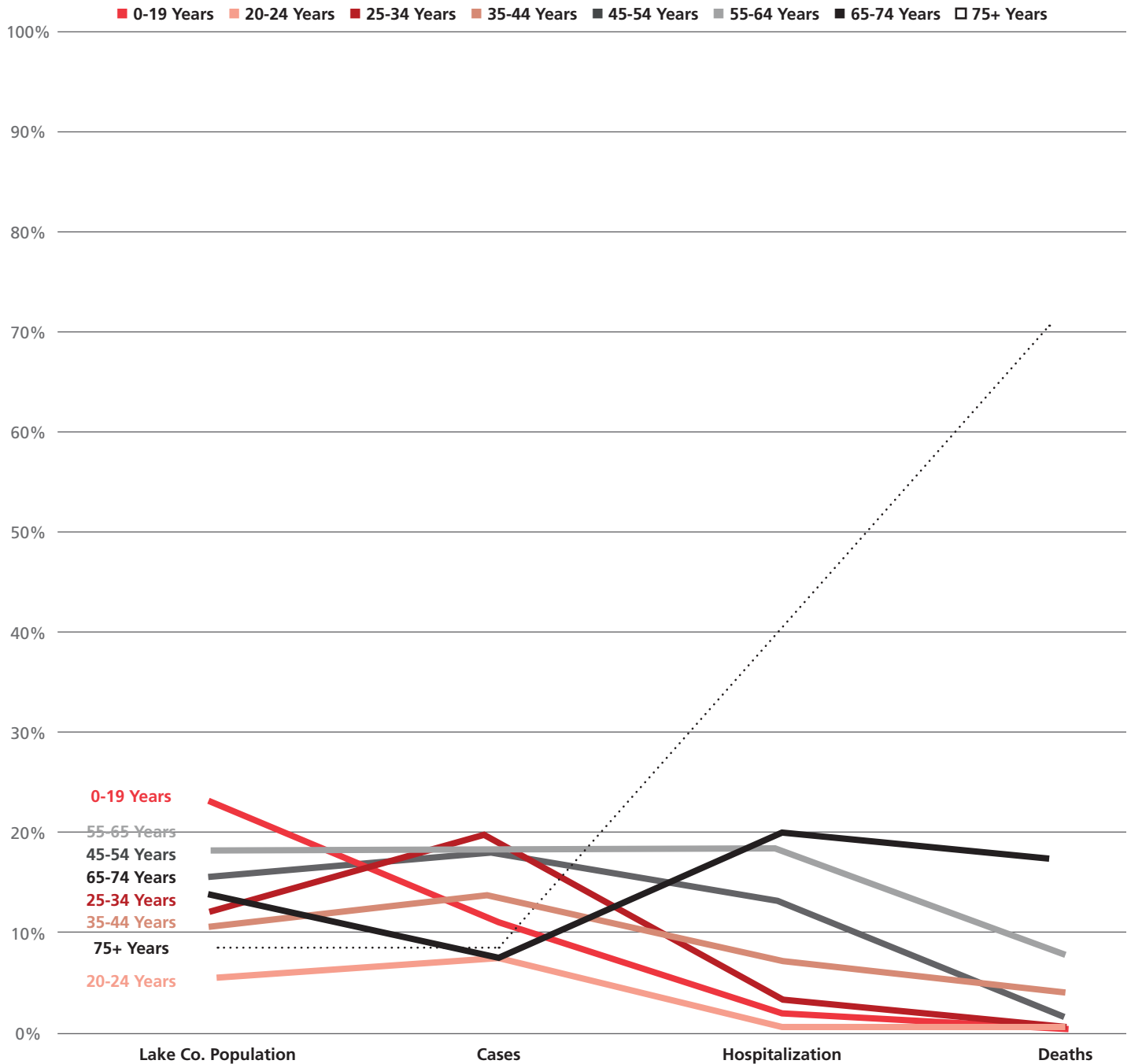
Lake County COVID-19 Deaths by Age



3. Age Disparities

In the following graph, the percentage of the Lake County population composed of age group is compared to the percentage of cases, hospitalizations, and deaths among that age group. Note the increased rates of hospitalization and death relative to the population for those in the 65-74 age group, and the dramatically increased rates of hospitalization and death for those in the 75+ age group.

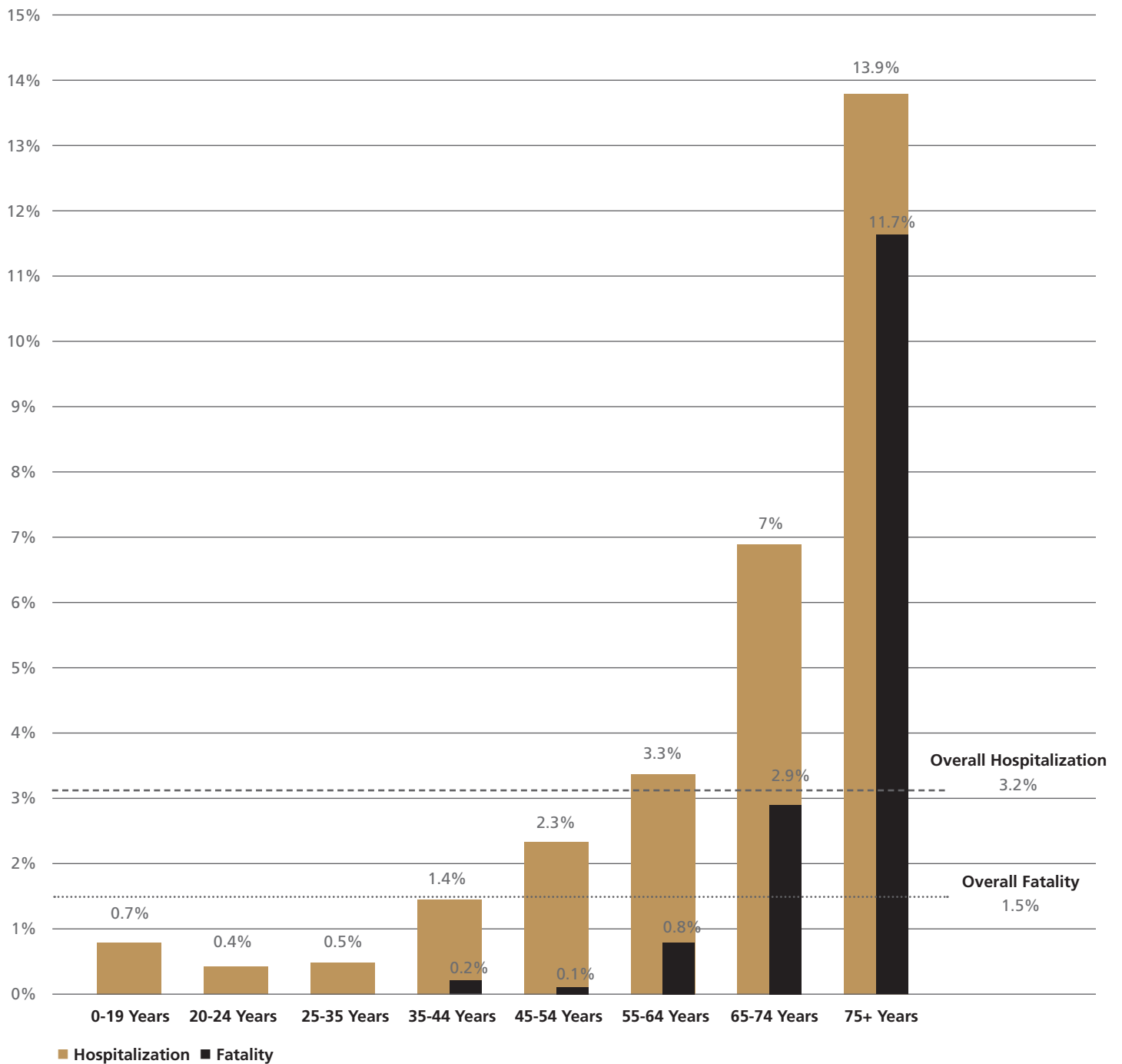
Age Demographics for Lake County Population vs. COVID-19 Cases, Hospitalizations and Deaths



3. Age Disparities

The following graph displays the rate of hospitalizations and deaths among Lake County COVID-19 cases (not the overall population) by age. For comparison, the overall hospitalization rate and fatality rate among Lake County COVID-19 cases is included. The rates for hospitalization among those over 55 exceed the overall rate, and more so with increased age. A similar trend is seen for fatality rates in those 65 and over.

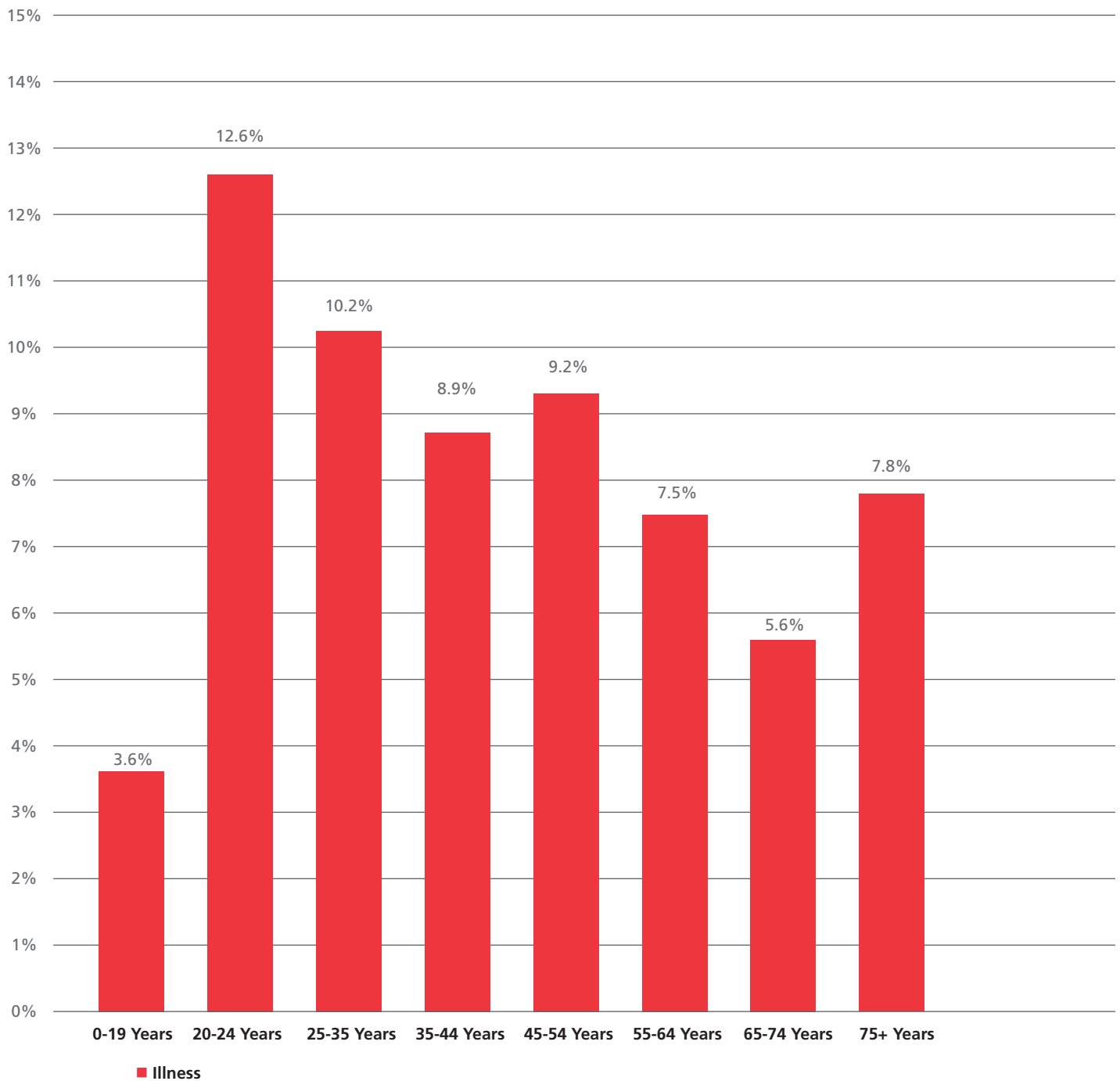
Hospitalization and Fatality Rates Among Lake County COVID-19 Cases by Age



3. Age Disparities

The graph below shows the percentage of residents in each age group who have been diagnosed with COVID-19.

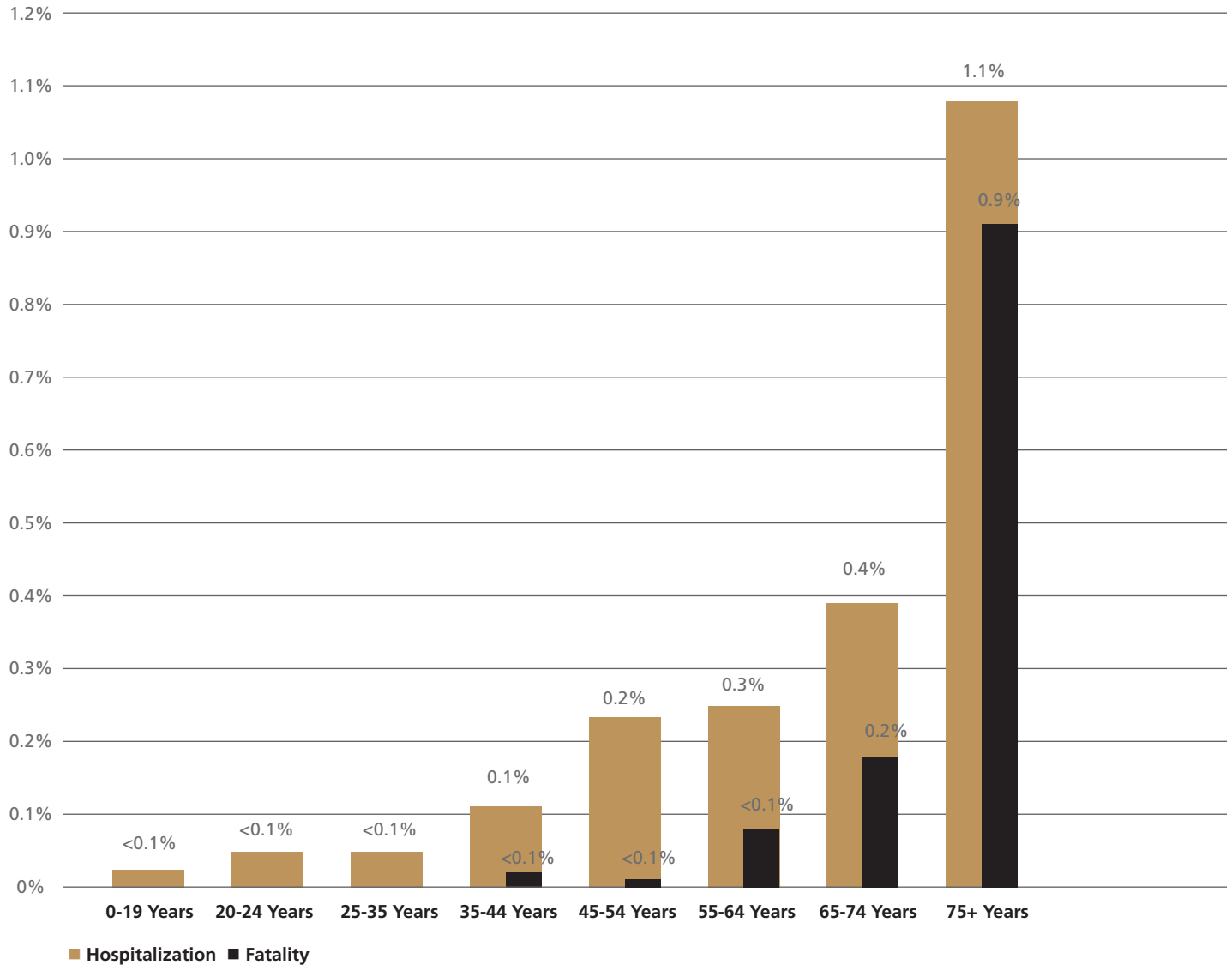
Percentage of Lake County Residents by Age Impacted by COVID-19 Illness



3. Age Disparities

The graph below shows the percentage of residents in each age group impacted by hospitalization and death from COVID-19.

Percentage of Lake County Residents by Age Impacted by COVID-19 Hospitalization and Fatality (by Population)



4. Disparities by Health Conditions/Monthly Trends

COVID-19 is known to more severely impact those with certain underlying medical conditions. Several of these higher-risk conditions, identified during COVID-19 case interviews, were highlighted as priority health concerns in the 2019 CHNA. The number of COVID-19 cases reporting each condition is provided, as well as rates of hospitalization, length of hospital stay, ICU admission rate, and fatality rate among those with these conditions versus the same rates among all identified COVID-19 cases.

DISPARITIES BY LAKE COUNTY PRIORITY HEALTH CONDITIONS

Priority health issues in 2019 CHIP/CHA examined as pre-existing health conditions in COVID data:



High Blood Pressure (HTN)



Diabetes



Obesity



Heart



Tobacco – Current/Former



Alzheimer's/Dementia



Substance abuse?

→ Small N (<10), no analysis performed

Condition	Cases	Hospitalization Rate		Days Hospitalized	ICU Admission Rate		Fatality Rate	
	#	#	%	Avg.	#	%	#	%
All COVID-19 Cases	17,095	541	3.2%	6.75	77	0.5%	255	1.5%
COVID-19 Cases with:								
HTN/HBP	375	38	10.1%	10.07	7	1.9%	12	3.2%
Diabetes	510	114	22.4%	6.78	26	5.1%	36	7.1%
Obesity*	48	9	18.8%	8.0	1	2.1%	4	8.3%
Heart Condition**	734	155	21.1%	7.18	39	5.3%	96	13.1%
Current Smoker	368	17	4.6%	6.0	2	0.5%	5	1.4%
Former Smoker	1,287	87	6.8%	5.03	16	1.2%	19	1.5%
Alzheimer's/Dementia	57	10	17.5%	2.33	1	1.8%	22	38.6%

*Reported obesity, morbid obesity, or overweight in case interview. Not specifically asked.

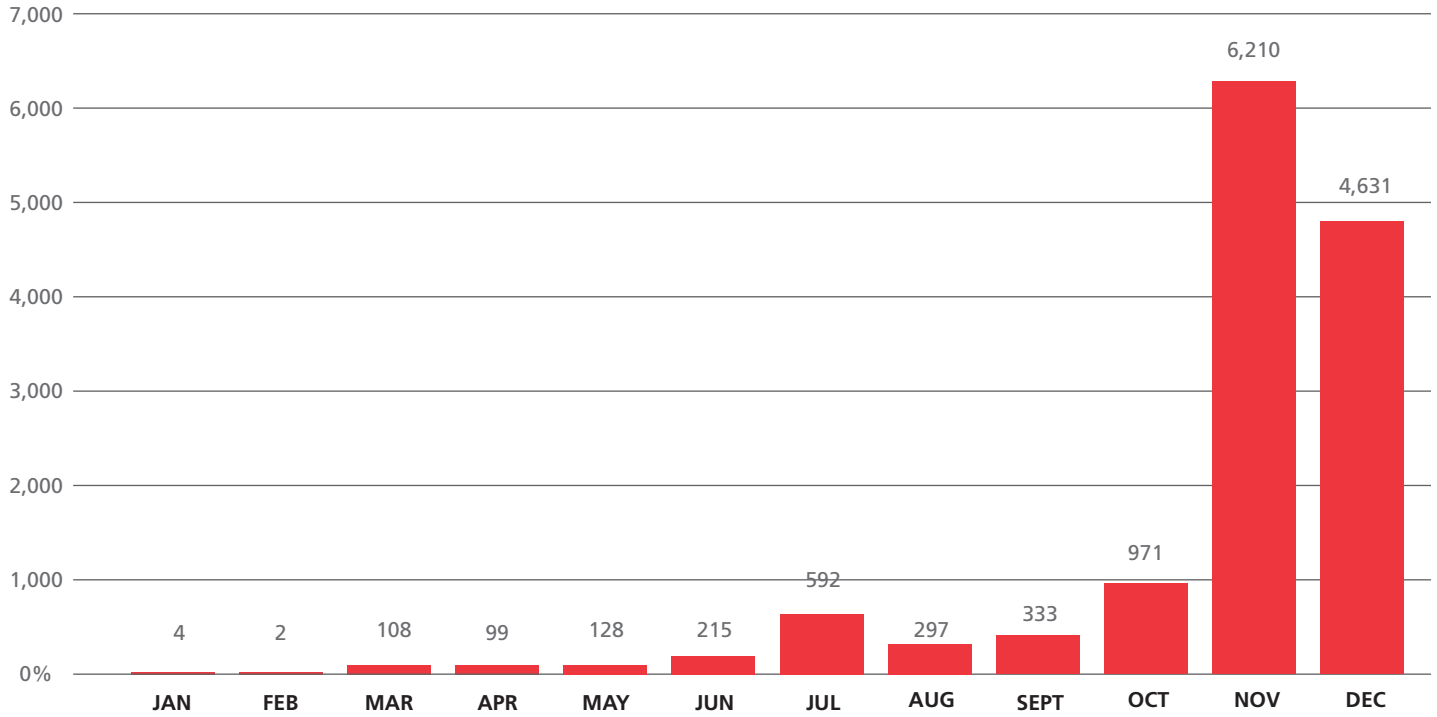
**Classified as Cardiovascular in ODRS.

4. Disparities by Health Conditions/Monthly Trends

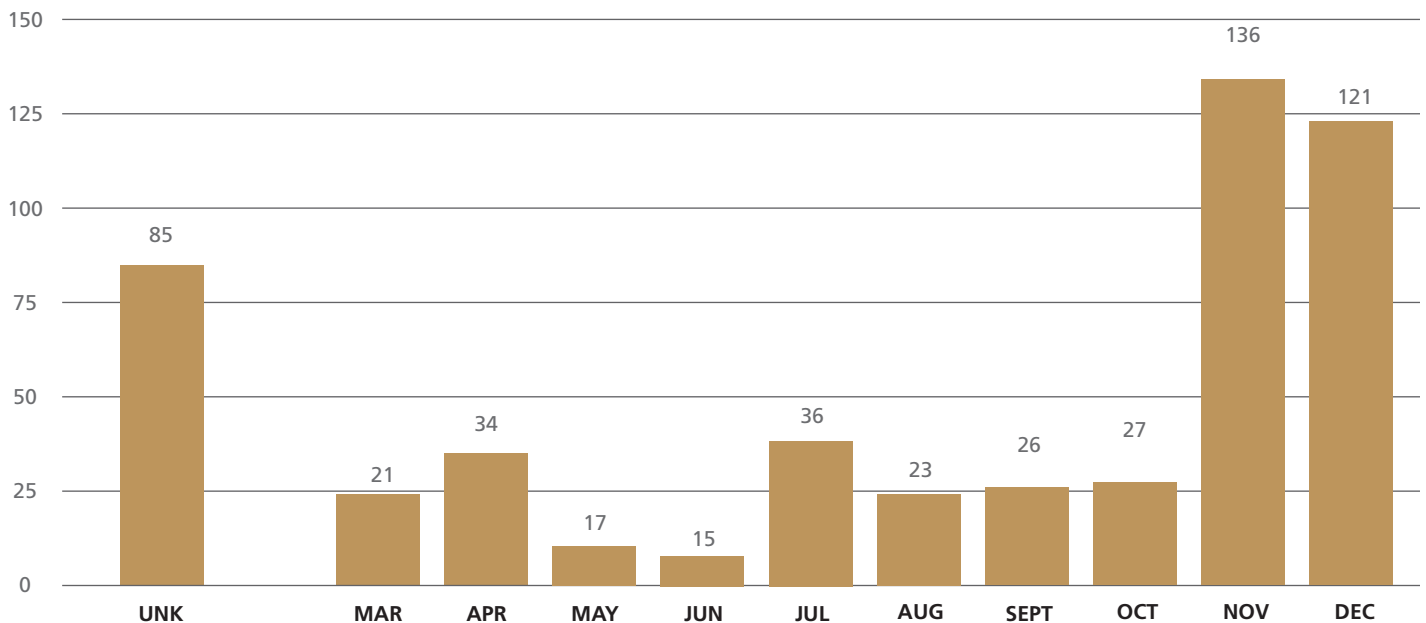
The following graphs display the monthly counts of COVID-19 cases and hospitalizations, respectively, for 2020.

MONTHLY TRENDS

COVID-19 Cases by Month



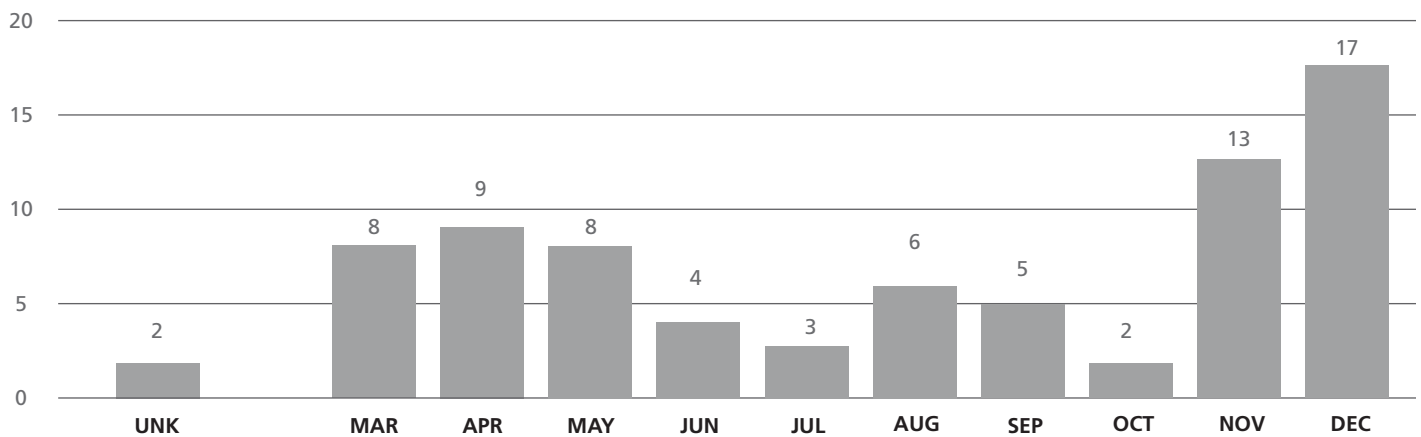
COVID-19 Hospitalizations by Month



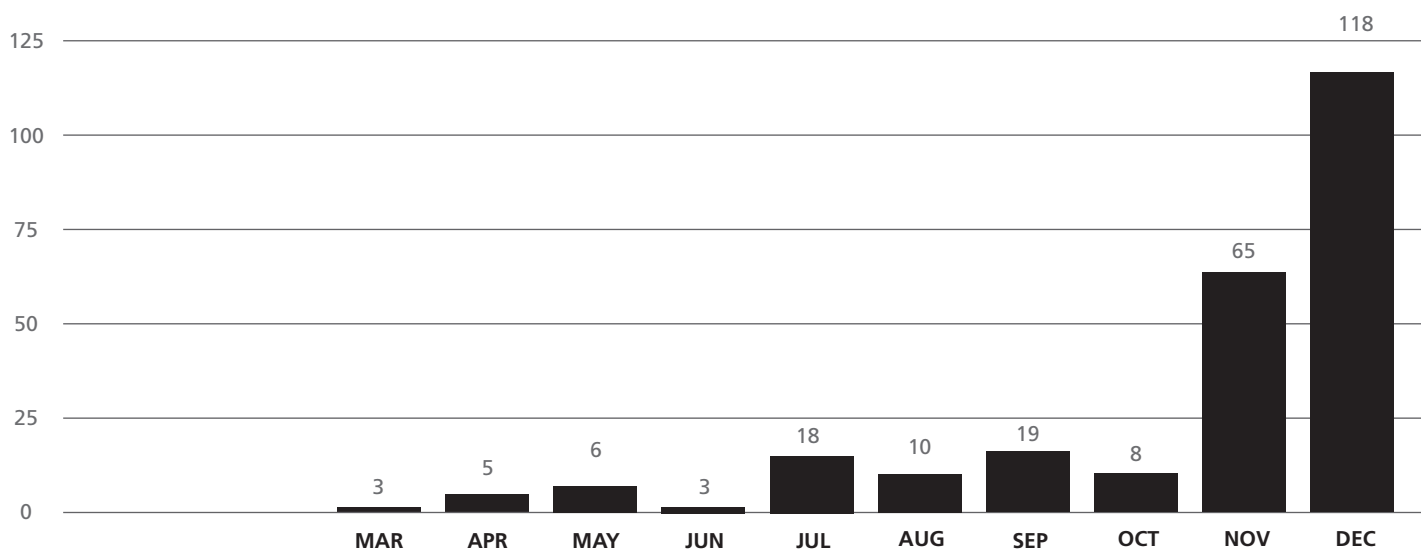
4. Disparities by Health Conditions/Monthly Trends

The following graphs display the monthly counts of ICU admissions and deaths from COVID-19, respectively, for 2020.

COVID-19 ICU Admissions by Month



Fatalities from COVID-19 by Month



5. Geographical/Economic Disparities

Geographical, social, and economic characteristics have all had a profound impact on the COVID-19 pandemic's lasting impact. Population density, for example, has had a considerable impact on COVID-19 transmissibility (Afshordi et al. 2020, Guha et al. 2020, Rajan et al. 2020) and is a reliable predictor of cumulative infection (Wong and Li 2020), despite mediating factors such as private transportation and median household income (Sy et al. 2021). There is also evidence that racial and ethnic minority populations have been disproportionately affected by COVID-19 (Golestaneh et al. 2020, Tai et al. 2021), and may be increasingly prone to greater COVID-19 spread when residing in a population-dense environment (Wong and Li 2020). While lower socioeconomic status has historically been linked to insufficient access to care and poorer health outcomes (Nayak et al. 2020), greater socioeconomic vulnerability, as identified by the Centers for Disease Control and Prevention Social Vulnerability Index (CDC 2020), has recently been associated with increased COVID-19-related mortality (Nayak et al. 2020), as well as greater COVID-19 infection rates (Neelon et al. 2021) and lower COVID-19 vaccination coverage, even as vaccine eligibility, supply, and availability expand (Barry et al. 2021). These national findings are important to consider locally as longitudinal data are analyzed to inform ongoing Lake County COVID-19 mitigation and vaccination efforts.

In Lake County, cumulative COVID-19 cases reported in 2020 were largely clustered around the Northwestern and Central portions of the county, and closely aligned to the elevated SVI census tracts in those corresponding areas. Painesville census tracts 2049 and 2042 were characterized by the highest SVI scores in Lake County, with scores of 0.8771 and 0.8631, respectively. These scores indicate that the population living in census tracts 2049 and 2042 are more socioeconomically vulnerable than 88% and 86% of all census tracts in the United States. Nearly 87% of cumulative 2020 COVID-19 cases were reported during the months of October, November, and December, and more than half of these cases occurred among residents residing in Mentor (22%), Painesville Township and City (17%), and Willoughby (12%).

Despite relatively robust population totals, the following political subdivisions did not experience the clustering of cases experienced in the aforementioned Northwestern and Central portions of Lake County:

Willoughby Hills

Waite Hill

Kirtland

Kirtland Hills

Concord Township

Leroy Township

Perry Township

Perry Village

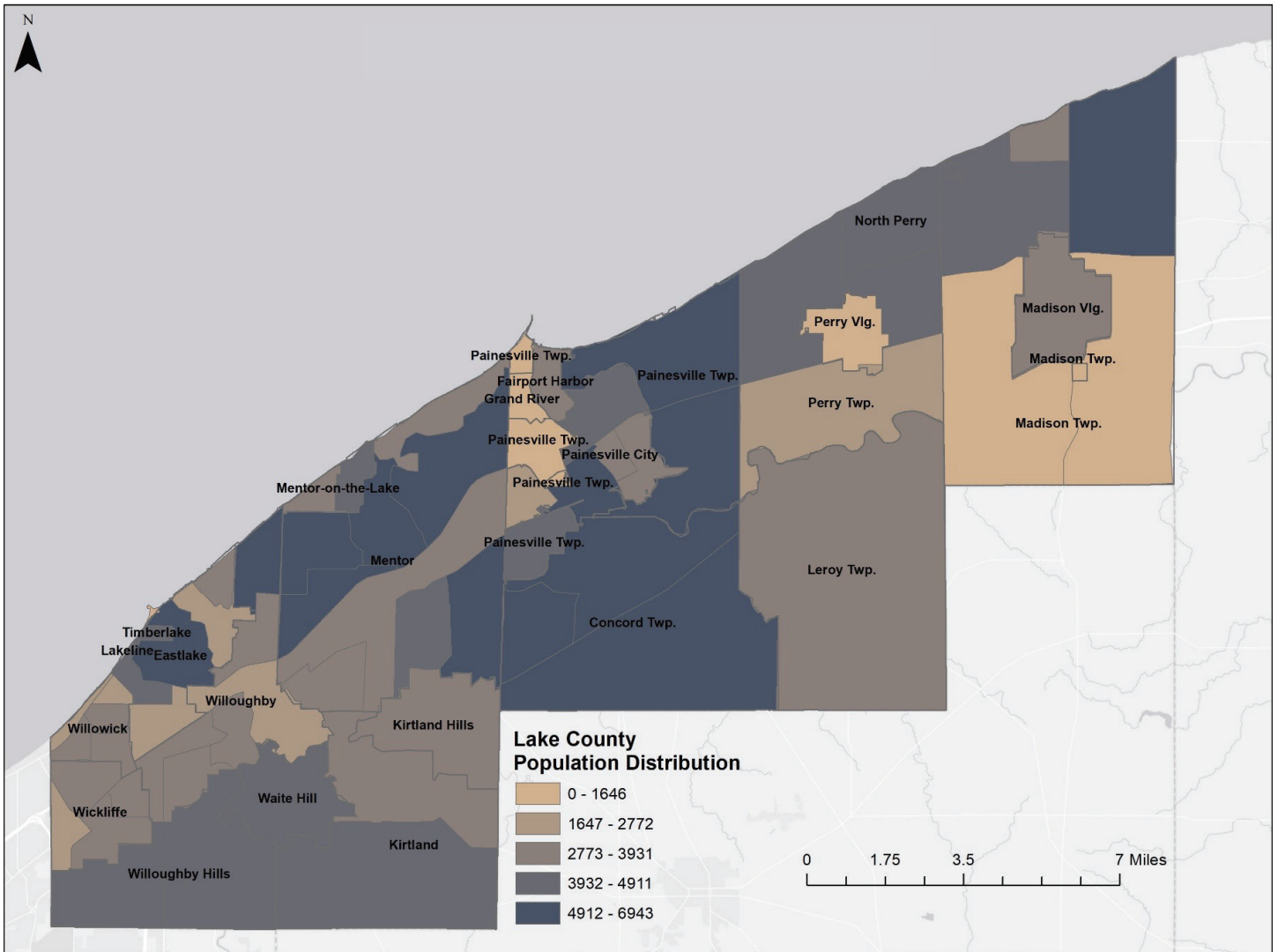
North Perry

Madison Township

Madison Village

6. Lake County Maps

Lake County Population Distribution 2018

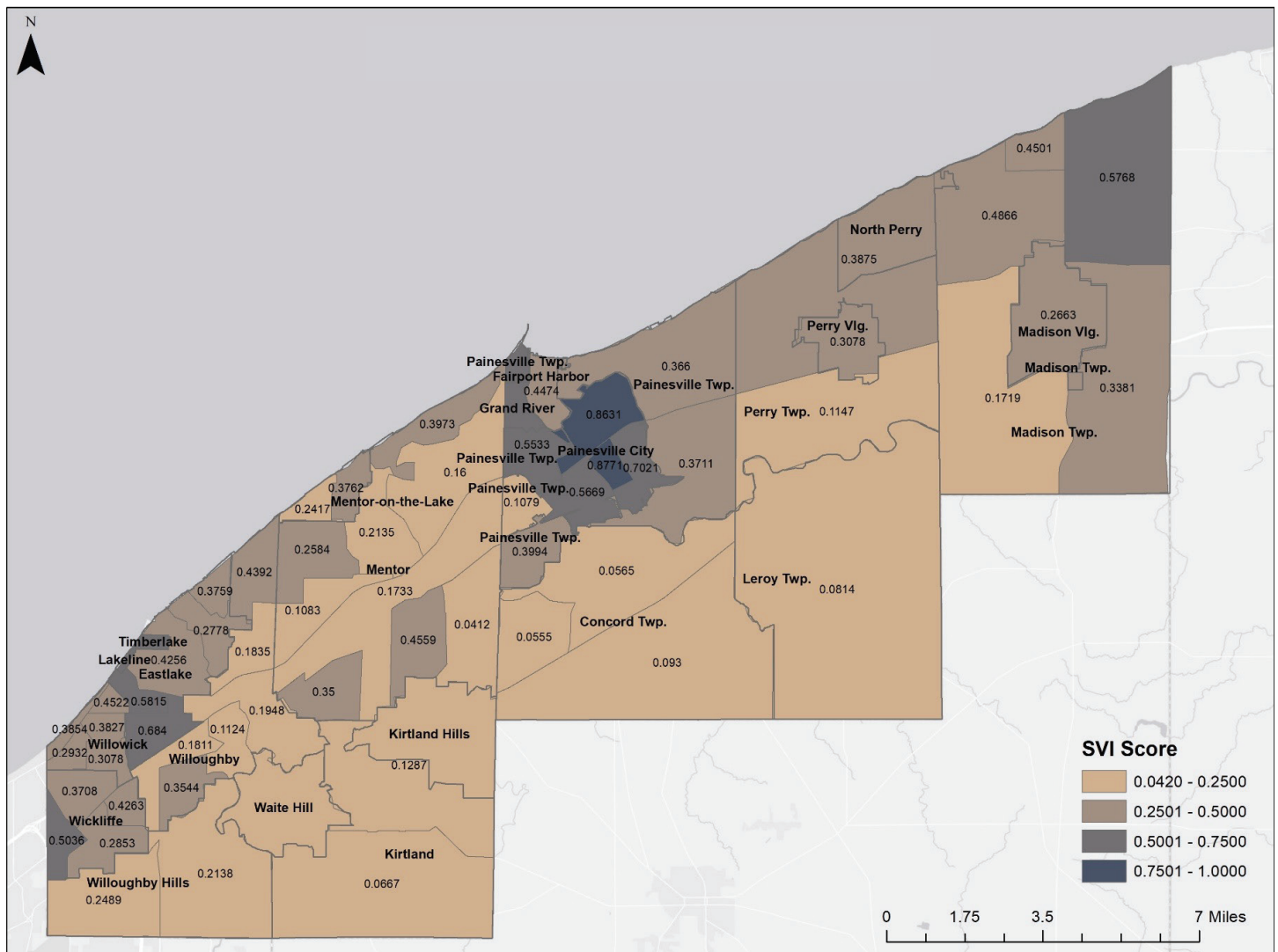


6. Lake County Maps

Social vulnerability refers to the potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss.

The Centers for Disease Control and Prevention (CDC)/ Agency for Toxic Substances and Disease Registry (ATSDR) Social Vulnerability Index (CDC/ATSDR SVI) uses 15 U.S. census variables to help local officials identify communities that may need support before, during, or after disasters. SVI uses a scale from 0 (lower vulnerability) to 1 (higher vulnerability). The map below shows 2018 SVI scores by census tract for Lake County.

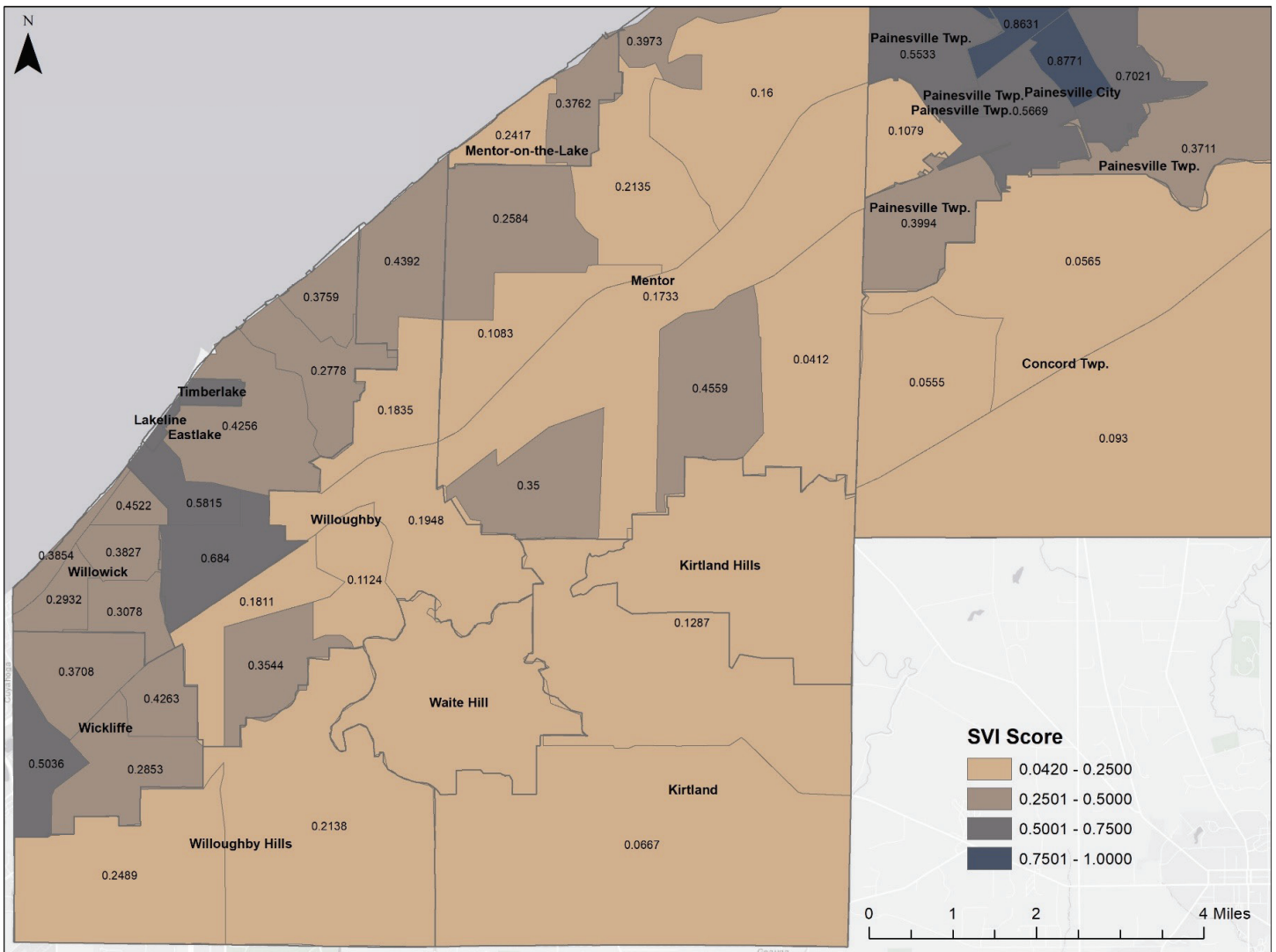
Lake County Social Vulnerability Index 2018



6. Lake County Maps

The map below shows 2018 SVI scores by census tract for western Lake County.

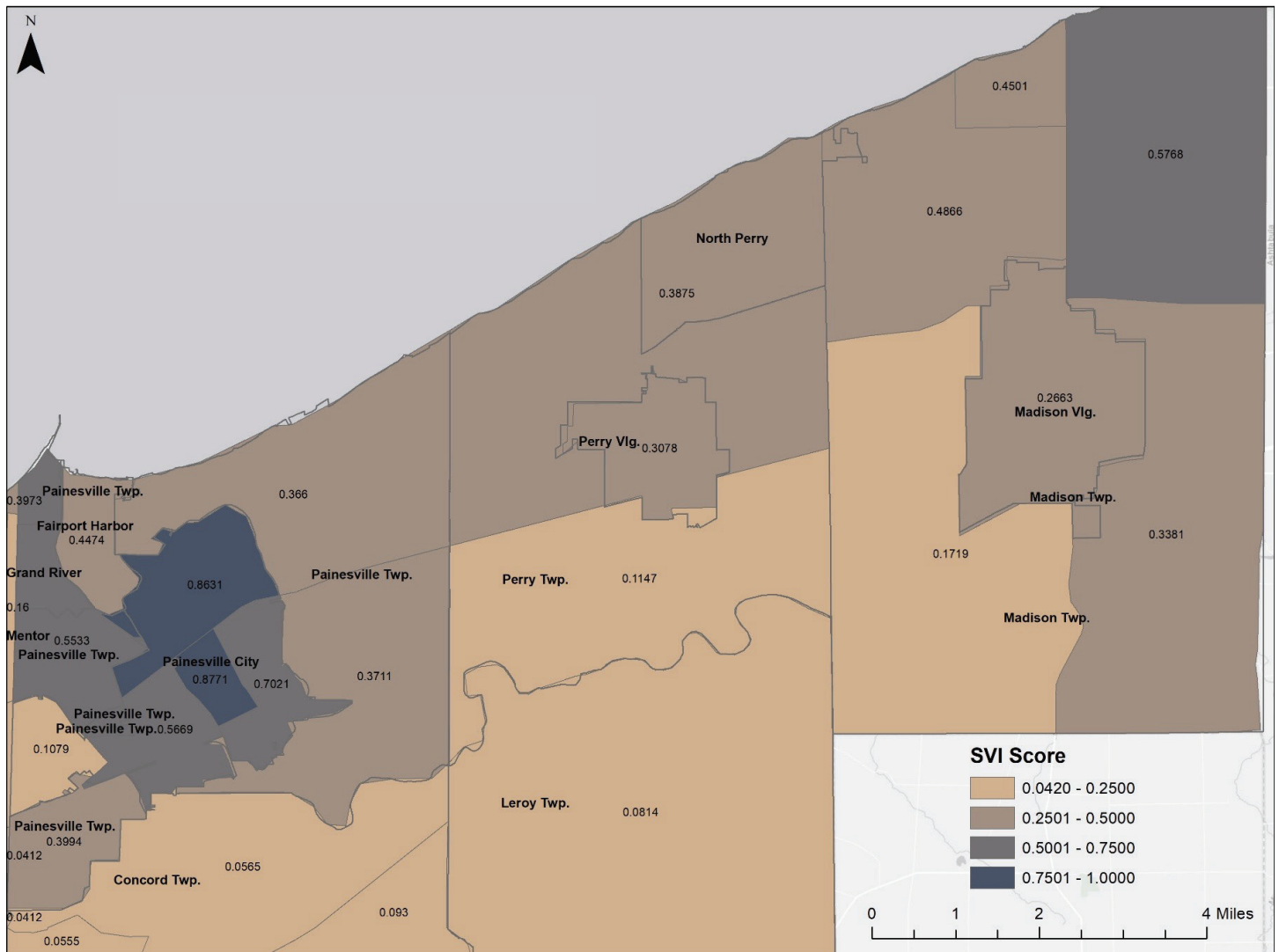
Lake County Social Vulnerability Index 2018



6. Lake County Maps

The map below shows SVI scores by census tract for eastern Lake County.

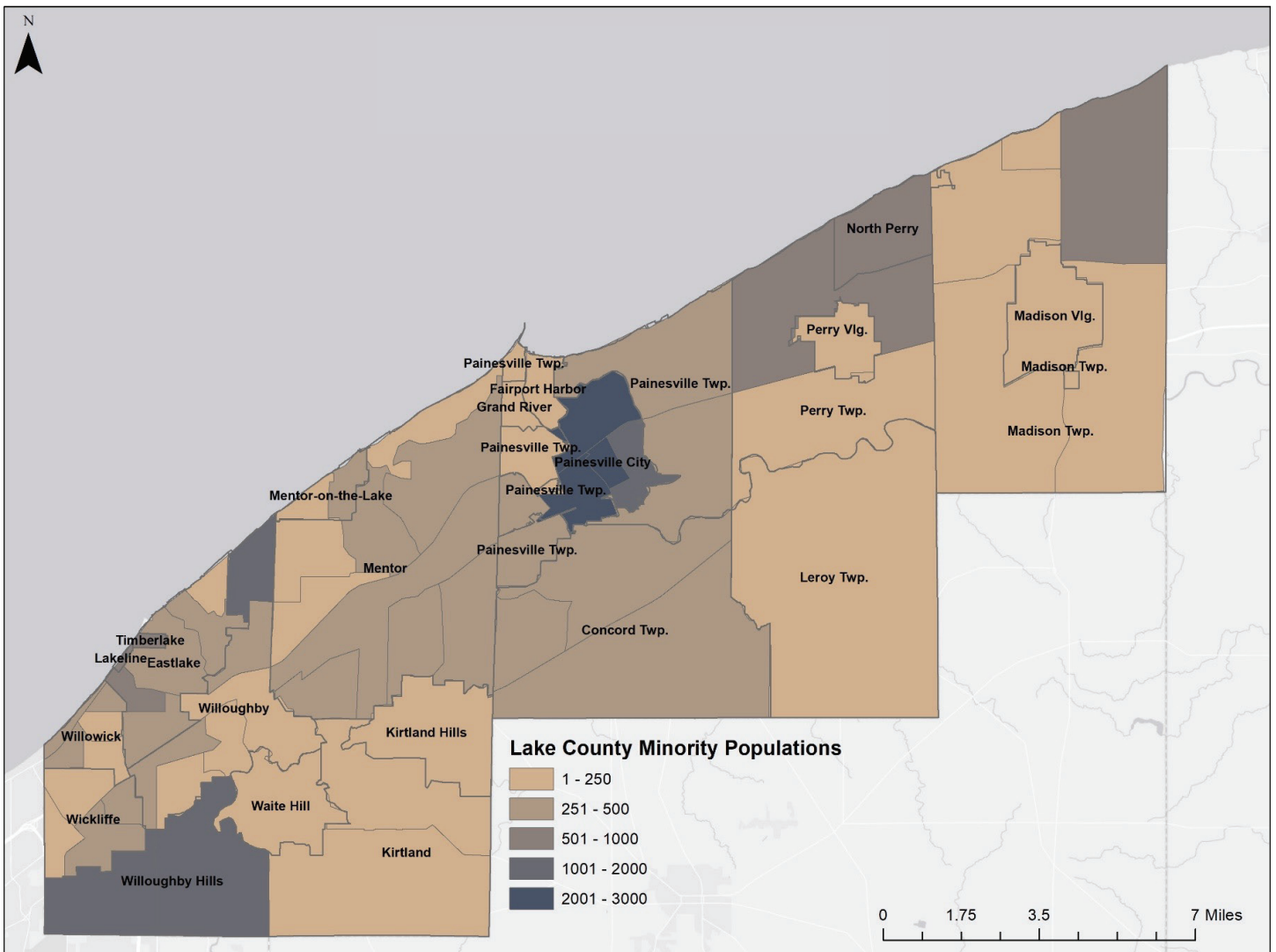
Lake County Social Vulnerability Index 2018



6. Lake County Maps

The map below shows areas with higher numbers of minorities.

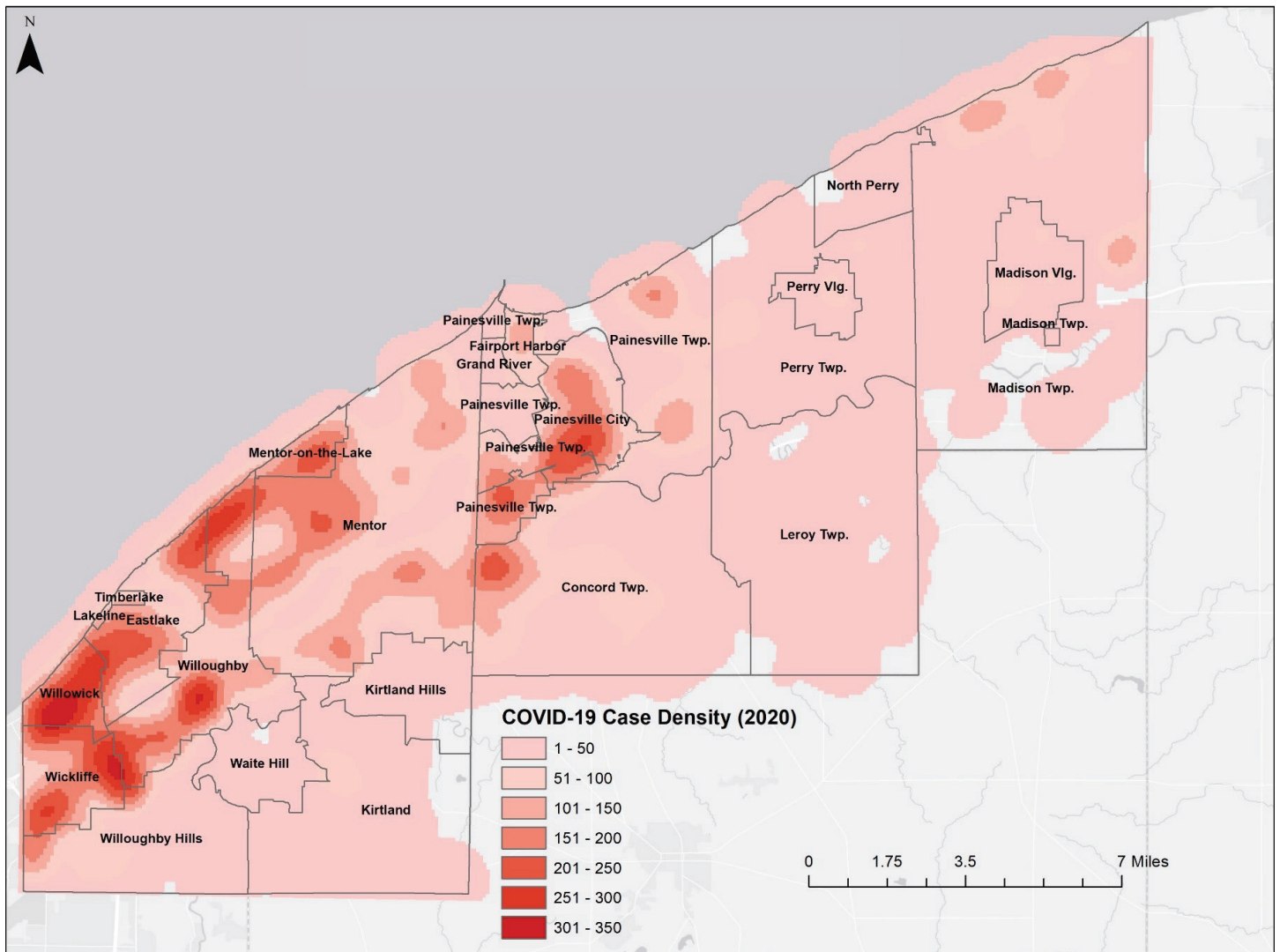
Lake County Minority Populations 2018



6. Lake County Maps

The following map shows the density of COVID-19 cases among Lake County residents in 2020.

Lake County COVID-19 Case Density 2020



7. References

Forces of Change Assessment

On December 1 and December 16, 2020, Lake County General Health District conducted a Forces of Change Assessment, in order to identify ways in which the COVID-19 pandemic may affect the health of Lake County residents, as well as the delivery of public health services (Table 1). A total of 21 community partners, representing 14 local community partner agencies, one federal partner agency, and the Lake County General Health District Board of Health, participated across the two sessions.

Table 1. Lake County COVID-19 Forces of Change Assessment Results

Force (Trend, Factor, Event)	Threats	Opportunities
COVID-19	Mental Health: Increased isolation will not go away with vaccine; kids may need extra help; people are generally angry from being cooped up; lasting changes; residents and employees are suffering; lack of social growth opportunities for children; new paranoias; senior isolation. Physical Health: Long-term effects of COVID are unknown; people are not seeking healthcare for other issues.	Something to calm people down; financially supplementing social and/or summer opportunities; getting back to community spirit and support; ability to trust neighbors; new relationships and collaborations have been formed between organizations and businesses; reduction in overlap of services amongst nonprofits; keep communication efforts open; "in this together" = community-based campaigns.
	Financial Concerns: Residents cannot pay rent; landlords can't improve properties without rent payments.	Faith-based communities can provide leadership.
	Healthcare Gaps: Chronic disease, preventative care, and adverse childhood exposures to stressful situations.	
	Technology Challenges: Lacking infrastructure and devices.	Municipalities providing broadband as a utility.
	Lack of Trusted Information Sources	Advertise availability of EMA reverse 911.
	Increased Uninsured: Considerable pandemic-related job loss.	
	Politicized Issue	Change in leadership may lead to increased funding priorities.
	Food Insecurity, Homelessness, and Relapse: Lead to other behavioral health and chronic disease concerns; lack of trust in healthcare information and government agencies; loss of municipality funding.	Telehealth effective in maintaining access for behavioral health patients; new understanding of public health - can leverage opportunity.

7. References

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