Population Health Vital Statistics Brief:

COVID-19 Pandemic Summary, 2020

The *Population Health Vital Statistics Data Brief* series was created to provide regular updates to the 2016 Community Health Assessment and to provide the community with additional important information about population health. For more information on the Community Health Assessment and to access other reports in the *Vital Statistics Data Brief* series, please visit scph.org/assessments-reports

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The Arrival and Spread of COVID-19 in Summit County

The first known case of COVID-19 in Summit County was reported in early March, 2020. By the end of the first month, the county had 130 known cases. By the end of April, that rate had grown nearly 500%, to nearly 650 cases. Through a combination of the state's stay-at-home order, school and business closures, and the public's willingness to adopt mask wearing, hand washing, and social distancing, the rate of growth was cut in half during the following month. Known COVID-19 cases grew by only 228% from April to May, but stayed well below that rate in every month until the big surge that began in November (see Figure 1).

Even with the precautionary measures the community put in place, cases grew at fast enough pace to increase the county's COVID-19 total from 130 in March to about 28,000 by the end of 2020 (Figure 2). Those 28,000 cases represent more than 5% of Summit County's total 2019 population of 541,013. As will be discussed in more detail on a later page, the number of cases we know about is probably far lower than the actual number of cases in the community.
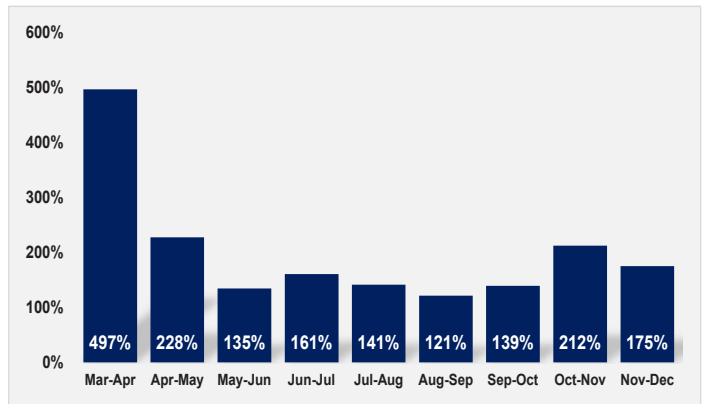
Link to SCPH data dash-boards

Figure 1: Month-to-Month COVID-19 Growth Rates, 2020 Source: Ohio Disease Reporting System (ODRS), Summit County Public Health (SCPH)
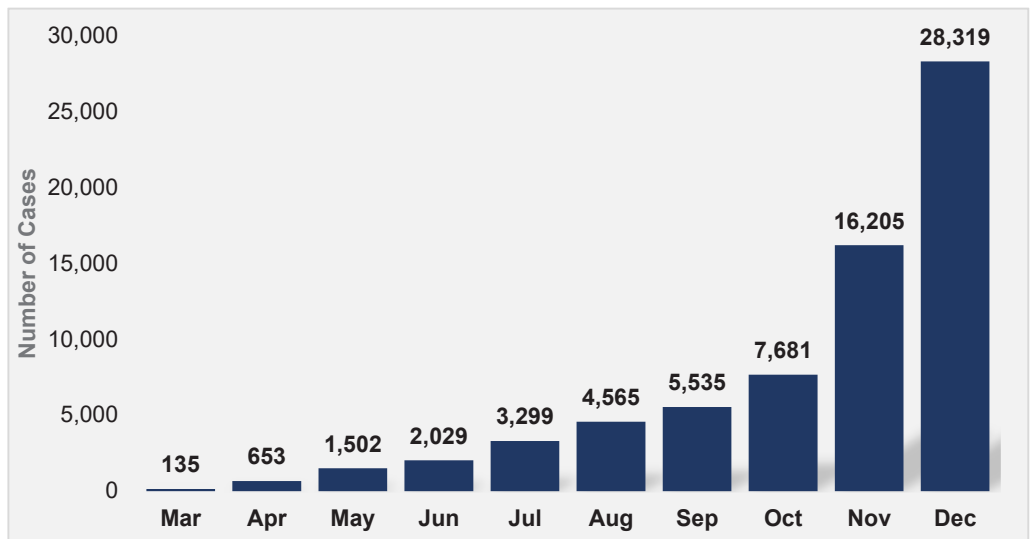

Figure 2: Cumulative Growth in COVID-19 Positive Cases in Summit County, March - December 2020
Source: Ohio Disease Reporting System (ODRS), Summit County Public Health (SCPH)

Mapping The Spread of COVID-19 In Summit County

March - April 2020: In the earliest days of the pandemic, the highest concentrations of COVID-19 cases were in long-term care facilities, though community spread was occurring throughout the county as seen here. It was during this time that the governor's stay-at-home order was issued (see Map 1).

May - July 2020: In spring and early summer, new cases began to drop in long-term care facilities, and community spread was reduced. By then, the stay-at-home order was lifted and masks and social distancing were instituted, helping to hold down infection rates. However, cases were still concentrating in a handful of places around the county, especially in and around North Akron (see Map 2).

August - October 2020: By late summer and early fall, a second wave of community spread appeared, despite the mask mandate issued on July 23. North Akron remained the area of the county with the most total cases. Meanwhile, other fast-growing areas began to pop up, especially in the east central and northern parts of the county (see Map 3).
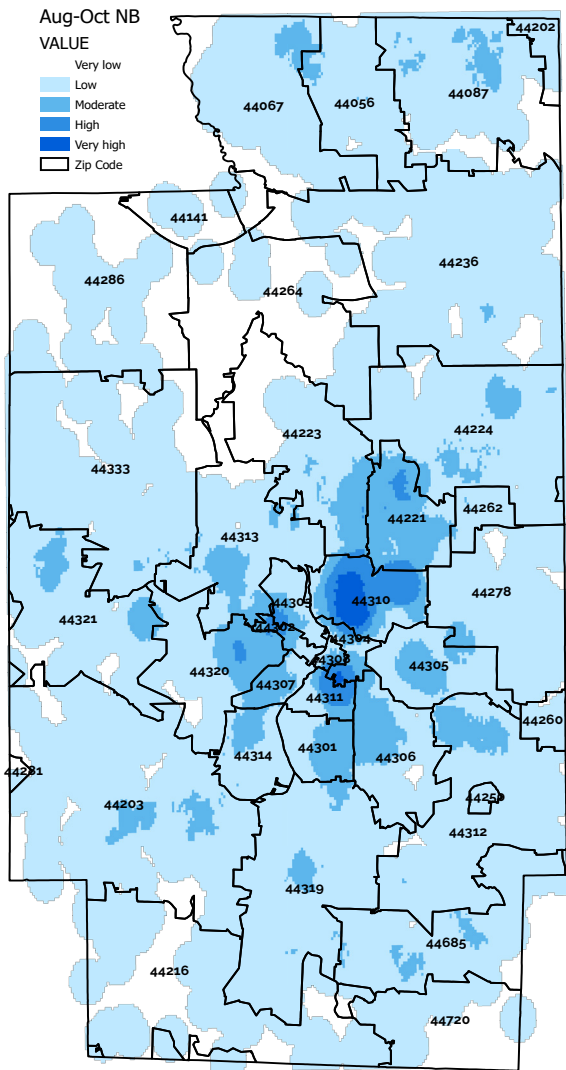
November - December 2020: By November, it was clear that a third wave of infections was underway and accelerating. Case counts began to skyrocket, with expansion occurring in all the places in which it began in earlier weeks (see Map 4).
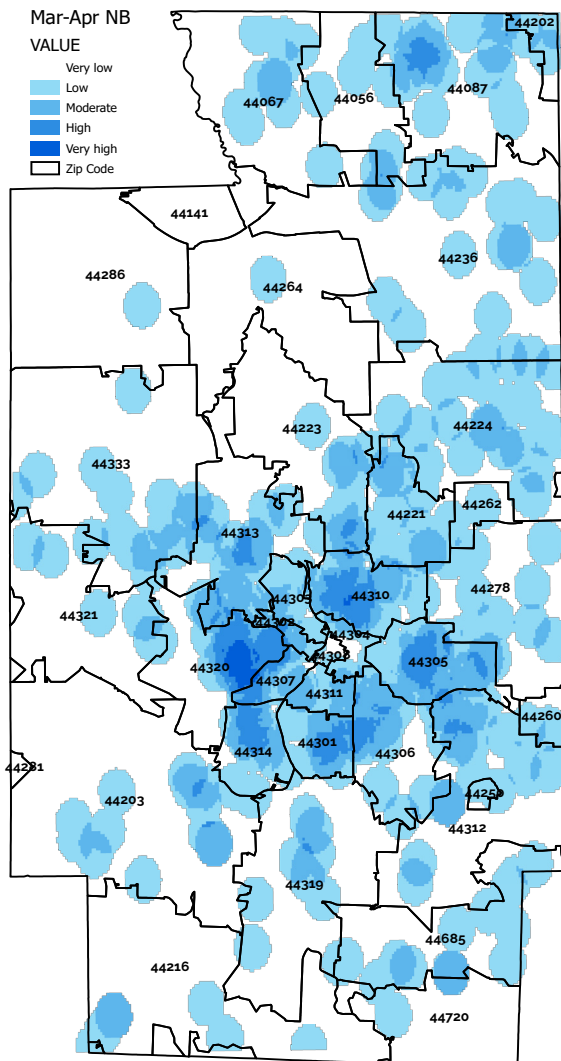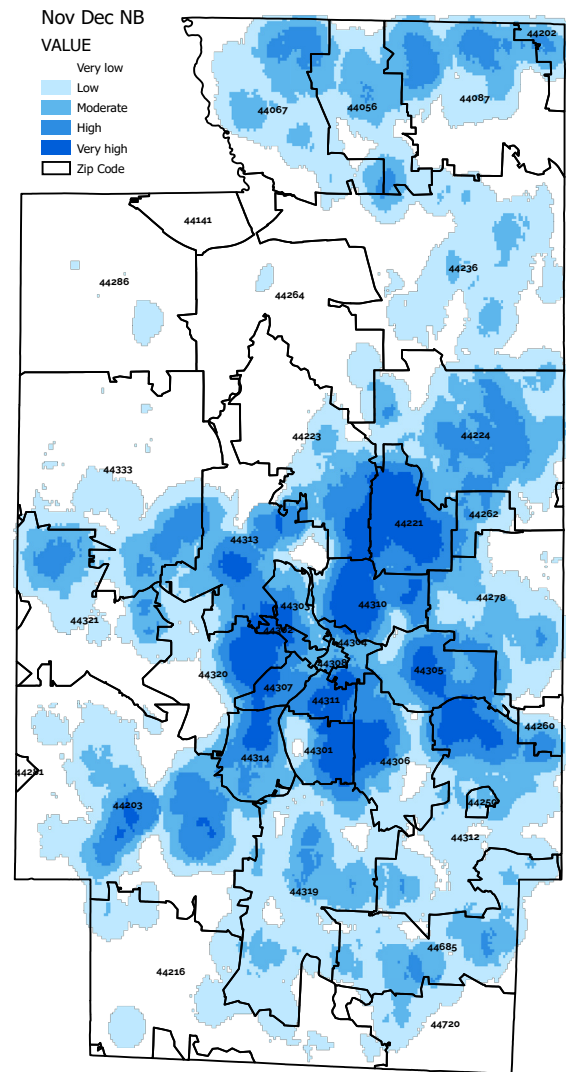
Map 1: *Non-Long-Term Care COVID-19 Cases, Mar 13 - Apr 30, 2020*
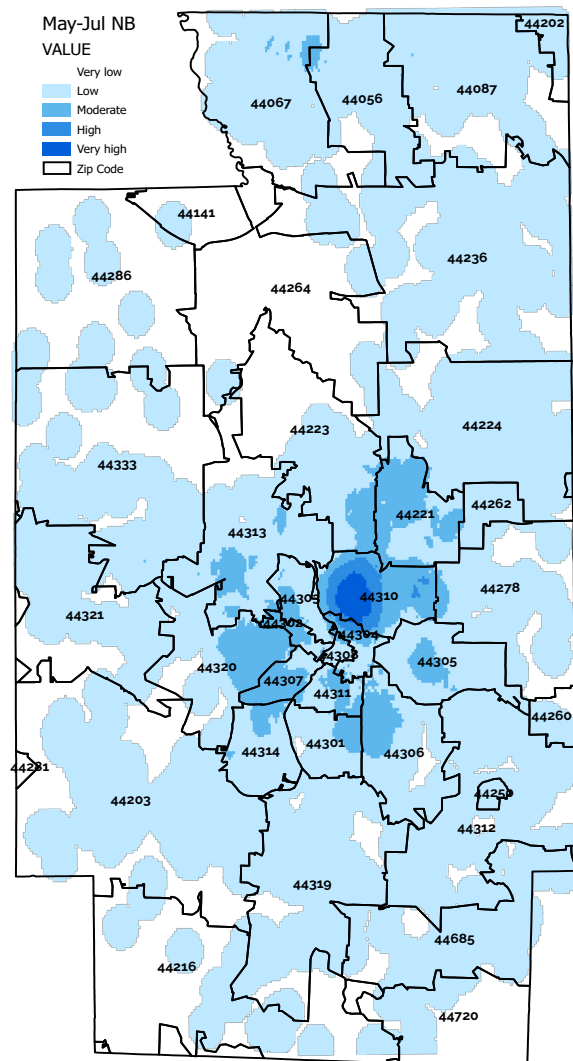
Map 2: *Non-Long-Term Care COVID-19 Cases, May 1 - Jul 31, 2020*

Map 3: *Non-Long-Term Care COVID-19 Cases, Aug 1 - Oct 31, 2020*

Map 4: *Non-Long-Term Care COVID-19 Cases, Nov 1 - Dec 31, 2020*

Figures 3 and 4 show the progression of both cases and deaths due to COVID-19 over the course of 2020. By year's end, 28,000 cases and at least 663 deaths were attributed to COVID-19.

More than half of those deaths (about 52%, or 344 people) took place during the rapid growth in cases in November and December 2020.
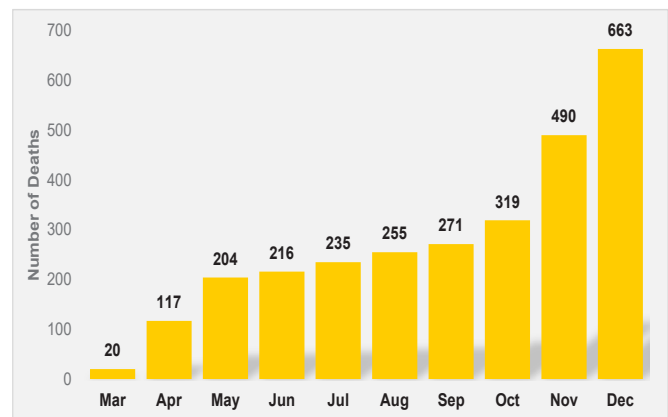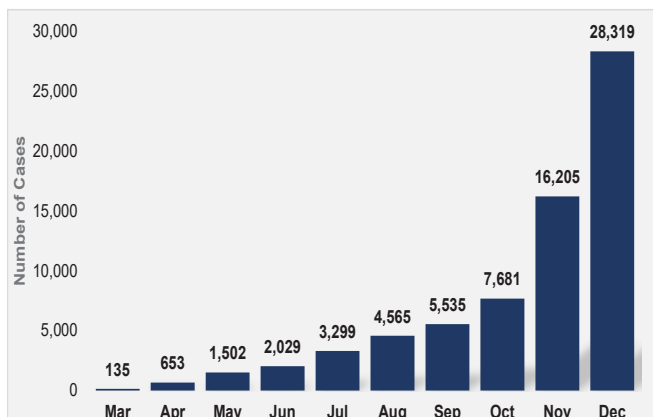
Figures 3 and 4 Cumulative Number of COVID-19 Cases (Figure 3) and Deaths (Figure 4), March 1 - December 31, 2020 Source: Ohio Disease Reporting System (ODRS), Summit County Public Health (SCPH)

A Word About COVID-19 Data: Counting COVID-19 cases sounds like it should be easy; just add up everyone who tests positive and report that number. In reality, trying to put hard numbers on COVID-19 is much more complicated than it sounds. The fact is, nobody knows the true number of people who have had COVID-19. The CDC estimates that only about 1 in 5 COVID-19 positive cases, 1 in 4 cases with symptoms, and 1 in 2 hospitalizations actually get reported. The CDC estimates that by the end of 2020 a total of about 83 million people have been actually been infected, 70 million of whom had symptoms. Of those, about 4 million have likely been hospitalized.[1] Using these estimates, 140,000 Summit County residents may have actually had COVID-19, 46,000 of whom would have had symptoms, and as many as 6,000 may have been hospitalized.

There are many challenges to accurate COVID-19 reporting. People who are sick don't always see a doctor, and doctors can sometimes mistake a COVID-19 infection for something else. Overworked staff at all levels sometimes don't report results when or how they should. People without symptoms won't likely be tested. There still aren't enough tests for everyone who needs them, and tests can return false negatives.

There are also technological challenges; hospital computer systems can be incompatible with state systems, smaller medical practices often rely on paper and fax machines; state and local health departments may not have the resources to field modern reporting systems. Sometimes, automatic computer updates either don't run when scheduled or don't run at all. These and other such problems lead to delays in reporting at all levels, incorrect reporting, and revised totals when errors and omissions are corrected, and missing data is added.

The result of all these challenges is that the numbers being reported at the federal, state, and local levels will never be as firm, as current, or as final as we all want them to be. Those of us who analyze these numbers try to be as accurate as possible, but members of the public who rely on COVID-19 data should be aware of both the strengths and the limitations of the numbers they're seeing and what they actually show.

[1] https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/burden.html

COVID-19 Demographics

Age of COVID-19 Cases: The median age of all COVID-19 cases is currently 42 years of age. Seniors account for 19% of the cases but 88% of the deaths, while adults account for 74% of the cases but only 12% of the deaths.
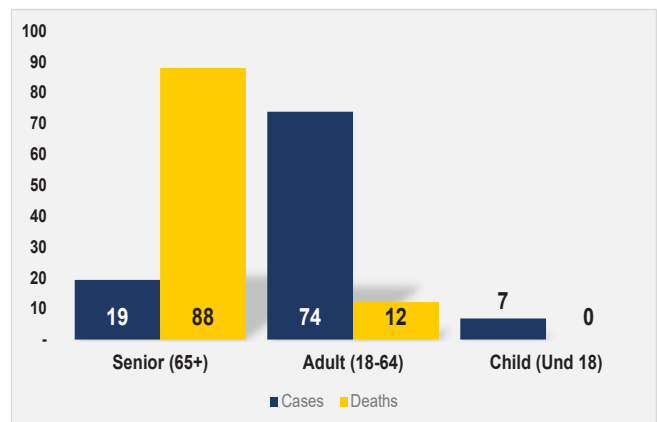

Figure 5: Percent of COVID-19 Cases by Age Source: ODRS, SCPH

Gender of COVID-19 Cases: There are more females than males among all cases (55% to 45%), while deaths due to COVID-19 are evenly split.
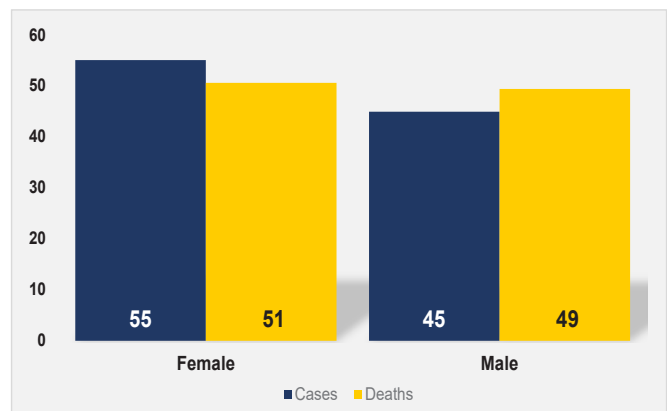

Figure 6 Percent of Cases and Deaths by Gender Source: ODRS, SCPH

Race of COVID-19 Cases: Whites make up 61% of total cases and 82% of the deaths. Black cases and deaths are about evenly split, while Asians account for 6% of the cases but 2% of the deaths. While race will be discussed in more detail later on, it is important to note here that the percentages of deaths by race isn't the whole story. The disproportionate death-to-case ratio for whites is due at least in part to the fact that White cases tend to be older (median age 47), while Asian cases account for a smaller percentage of deaths than cases is because Asian cases tend to be younger (median age 37). For reasons that will be clear later, Blacks (median case age of 42) suffer disproportionately from COVID-19.
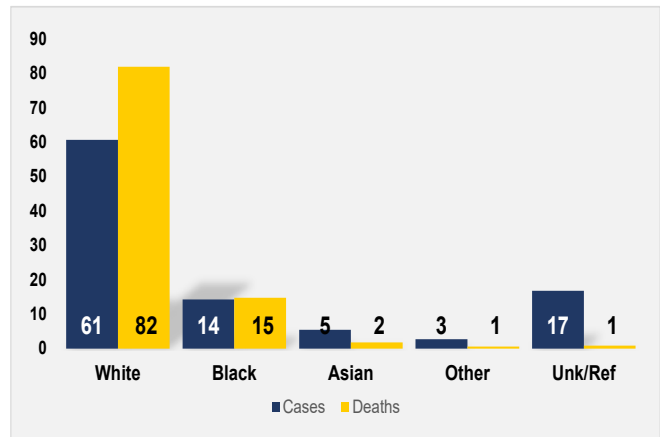
Figure 7: Percent of COVID-19 Cases and Deaths by Race Source: ODRS, SCPH

Note: Race data in ODRS was missing for 17% of cases. The percentages for each race were based only on cases where race is known: White (73%); Black (17%); Asian (7%); Other (3%).

Ethnicity of COVID-19 Cases: Hispanics make up about 2% of total COVID-19 cases and 1% of the deaths.
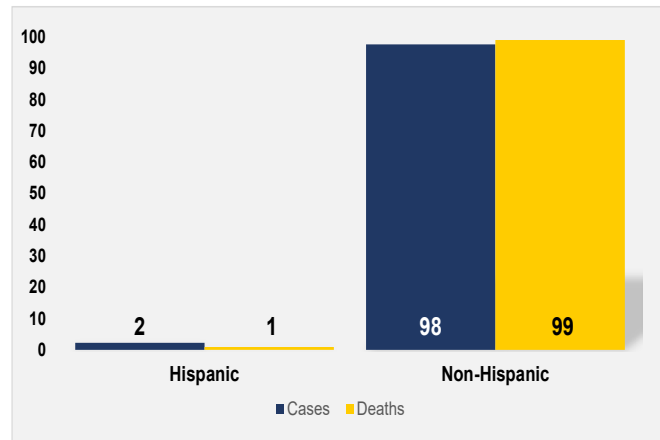
Figure 8: Percent of COVID-19 Cases and Deaths by Ethnicity (percent of those with ethnicity known) Source: ODRS, SCPH

Long-Term Care (LTC): Owing to the generally advanced age and health status of those living in LTC facilities such as assisted living or nursing homes, known LTC residents make up only 7% of cases but 60% of the total deaths due to COVID-19.

Note: LTC status in ODRS was missing for a large proportion of cases (66%). Data for Figure 9 includes only confirmed LTC cases, with confirmed non-LTC and unknown cases combined to calculate the percentage living in an LTC. The percentages for LTC residence based only on cases where that status is known is Lives in LTC (23%) / Does not live in LTC (77%).

Figure 9: Percent of COVID-19 Cases and Deaths by Long-Term Care Status (LTC) Source: ODRS, SCPH

COVID-19 Hospitalizations: About one-in-ten COVID-19 positive cases were known to be hospitalized. About 2,500 Summ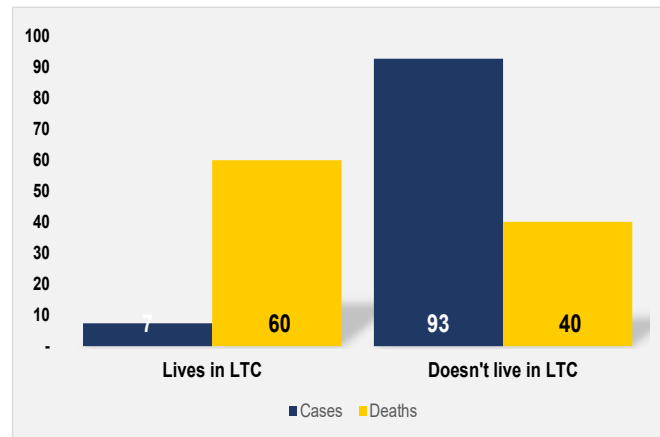it County residents with COVID-19 were hospitalized in 2020. About 2% of those hospitalizations (40) were children. Adults and seniors made up 41% and 57% of hospitalizations, respectively. The average hospital stay was 4 days for children, 6 days for adults and 7 days for seniors.

Note: Hospitalizations in ODRS were missing in 49% of cases. Figure 10 includes only confirmed hospitalizations, with confirmed non-hospitalizations and unknowns combined to calculate the percentage hospitalized. The hospitalized percentage based only on cases where that status is known is 21%.

Figure 10: Percent of COVID-19 Cases by Hospitalization Status Source: ODRS, SCPH

The impact of pre-existing conditions: One-in-five (19%) COVID-19 cases who had a pre-existing health condition were hospitalized.* Only 5% of those without a pre-existing condition were hospitalized.

Five percent of children with at least one pre-existing condition were hospitalized. These figures rose to 13% for adults and 33% for seniors.

* Pre-existing health conditions include people with chronic lung disease, diabetes, cardiovascular disease, chronic kidney disease, chronic liver disease, a compromised immune system or a neurologic disorder, or was either a current or former smoker.

Figure 11: Percent of COVID-19 Cases Who Were Hospitalized, By Pre-Existing Condition Source: ODRS, SCPH

Intensive Care Status: About a fifth of hospitalized cases wound up in the intensive care unit (ICU). Nearly 51% of those in ICU died of COVID-19.

Nearly half of those who were in ICU were also placed on a ventilator (43%) at some point in their stay. The median length of being on a ventilator was 7 days. The shortest ventilation time was 1 day, while the longest was 46 days. As mentioned earlier, the fatality rate for all COVID-19 cases is about 3%. For those in ICU (and not on a ventilator), the fatality rate is 33%. For those who were in ICU and on a ventilator, the fatality rate is 49%.
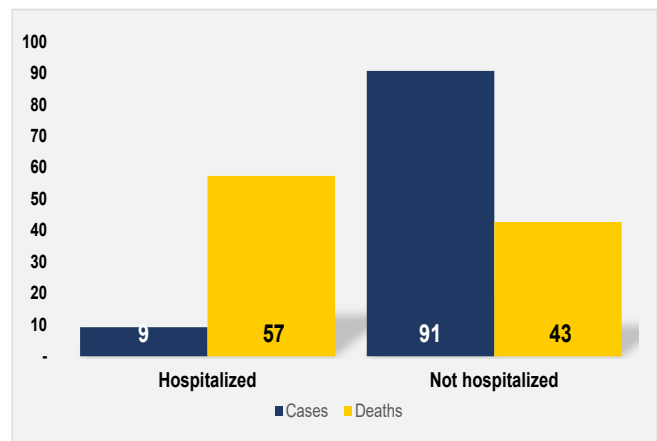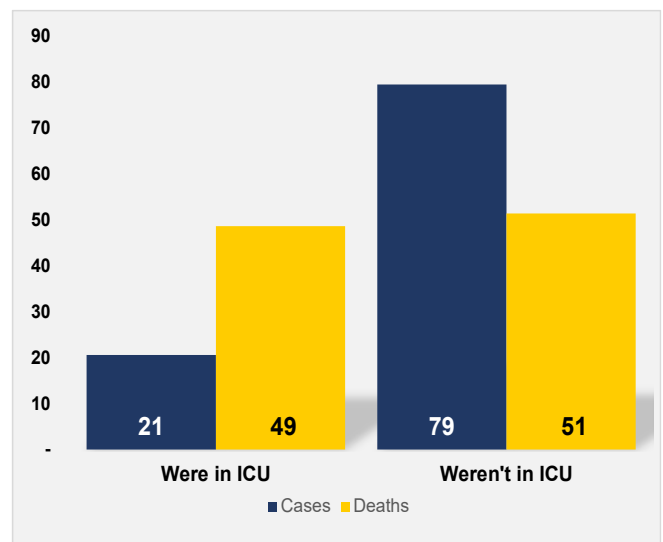

Figure 12 Percent of COVID-19 Cases and Deaths by Intensive Care Unit Status Source: ODRS, SCPH

COVID-19 Symptoms: About 13% of those testing positive were found to be asymptomatic (see Figure 13).

Figure 14 shows the most common symptoms for those that had them. The five most common symptoms for those with COVID-19 were headache (59%), cough (54%), muscle aches and the loss of taste and/or smell (47% each), and runny nose (44%).

Of the 11,000 cases with data on the presence of symptoms, more than two-thirds (71%) had six or fewer of the symptoms listed in Figure 14. Of the remaining third of cases, 21% had between seven and nine of these symptoms, while 7% had 10 or more. Four individuals reported having all 15 of the symptoms listed in Figure 14.
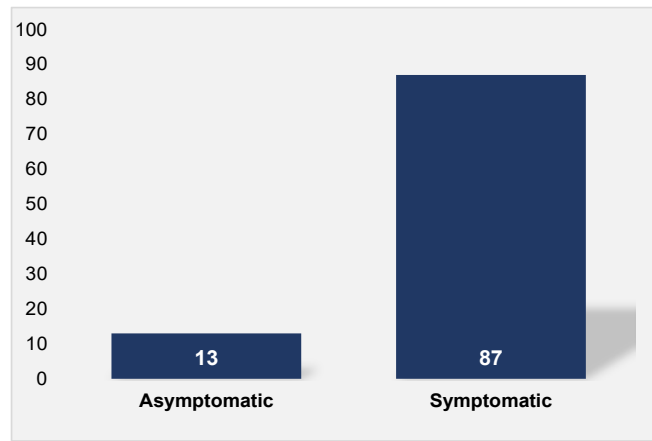
Figure 13: Percent of COVID-19 Cases With Symptoms Source: ODRS, SCPH
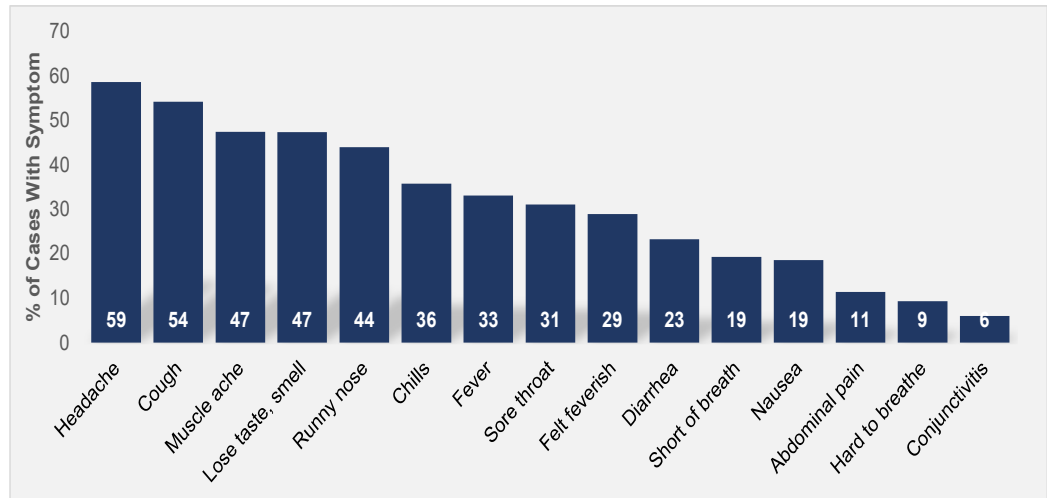
Figure 14: Percent of COVID-19 Cases With Each Symptom (Note: These figures will not add up to 100 percent because people can have multiple symptoms Source: ODRS, SCPH

For the 1,200 COVID-19 cases who have both an illness onset and a symptom resolution date, the average length of time being sick with COVID-19 was 7 days. As Figure 15 shows, that varied by age group, with seniors being sick the longest on average and children being sick the shortest amount of time.

Figure 15: COVID-19 Average Days of Illness, by Age Group Source: ODRS, SCPH

The Impact of COVID-19 on Population Health

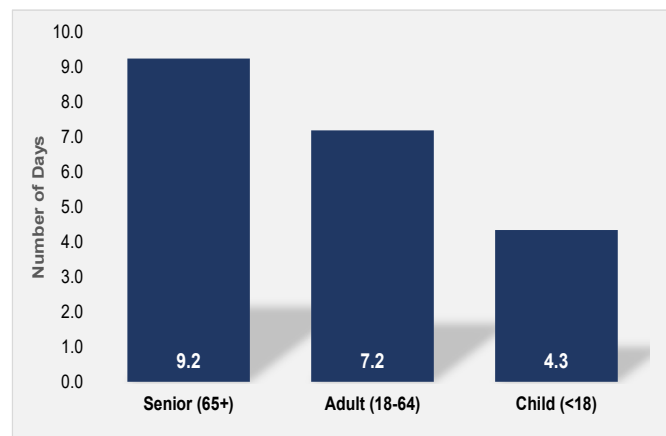| Rank	Under 5	5 - 14	15 - 24	25 - 34	35 - 44	45 - 54	55 - 64	65 - 74	75 - 84	85 & over
1	Accidents	Homicide	Accidents	Accidents	Accidents	Heart disease	Cancer	Cancer	Cancer	Heart disease
2	Congenital / chromosomal abnormalities	Accidents	Homicide	Homicide	Cancer	Cancer	Heart disease	Heart disease	Heart disease	Alzheimer's disease
3	Perinatal conditions	Cancer	Suicide	Suicide	Heart disease	Accidents	Accidents	COVID-19	COVID-19	Cancer
4	Acute lower respiratory	Heart disease	Congenital / chromosomal abnormalities	Heart disease	Suicide	Chronic liver disease	Chronic lower respiratory	Chronic lower respiratory	Chronic lower respiratory	COVID-19
5	--	--	Diabetes	Influenza / pneumonia	Diabetes	Stroke	Chronic liver disease	Diabetes	Alzheimer's disease	Stroke
6	--	--	Cancer	Chronic lower respiratory	Homicide	Chronic lower respiratory	Stroke	Stroke	Stroke	Chronic lower respiratory
7	--	--	Heart disease	Stroke	COVID-19	Suicide	COVID-19	Chronic liver disease	Diabetes	Hypertension / renal disease
8	--	--	--	Cancer	Kidney disease	Septicemia	Diabetes	Accidents	Accidents	Diabetes
9	--	--	--	Congenital / chromosomal abnormalities	Chronic liver disease	Diabetes	Suicide	Septicemia	Parkinson's disease	Accidents
10	--	--	--	Circulatory diseases	Stroke	COVID-19	Septicemia	Kidney disease	Kidney disease	Kidney disease

Figure 16: Ten Leading Causes of Death Ranked For 10 Different Age Groups, 2020   Source: ODH Death Certificate Data, Centers for Disease Control and Prevention.

Figure 16 shows the top 10 leading causes of death in 2020 for each of 10 age groups for people in Summit County. The tremendous impact of COVID-19 is clear from looking at the table. In just one year, the disease became a top 10 cause of death for Summit County residents age 35 and older. For seniors, COVID-19 is a top 3 or top 4 cause of death, ranking just behind cancer and heart disease for those age 65-84, and behind only heart disease, Alzheimer's disease, and cancer for those 85 and older.

## The Impact of COVID-19 on Population Health (continued)

The graphic at right shows another take on the impact of COVID-19 on population health. While a fairly small number of people in Summit County are known to have tested positive for COVID-19, that number still amounts to 5% of the total population. And, if CDC estimates of the number of unknown cases are accurate, the cases we know about are just the tip of the iceberg.

About 9% of those who have been infected will be hospitalized. One-fifth of those hospitalized will be transferred to an ICU. Nearly half of those in an ICU will be have to be ventilated. Nearly half of those who are ventilated will ultimately die of COVID-19. Their deaths are in addition to the 578 people who died of COVID-19 in 2020 who were either not hospitalized, not in an ICU, or not ventilated. That's a total of 682 COVID-19 deaths in 2020, or about 13 people per week.

Nine percent of patients being hospitalized may sound small. But for those who are hospitalized, the risks for serious or life threatening complications rises quickly.

It's also important to mention that many of those who recover don't recover completely, at least not right away. That's especially true of those who survive being ventilated. According to the CDC, COVID-19 damages many parts of the body, leading to long-term symptoms like fatigue, shortness of breath, cough, joint pain, chest pain, difficulty thinking and concentrating, depression, muscle pain, headache, intermittent fever, and heart palpitations. No one yet knows how many people have long-term complications, or how long their symptoms will last.

By the end of 2020
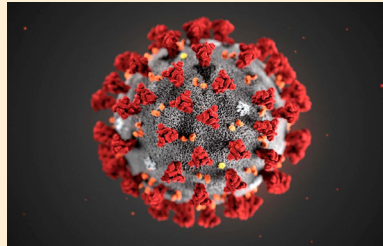
5%
of Summit County's population had COVID-19
(**28,319 people**)

9%
of people with COVID-19 were hospitalized
(**2,522 out of 28,319 people with COVID-19**)

20%
of those hospitalized went to an ICU
(**504 out of 2,522 hospitalized patients**)

43%
of COVID-19 patients in ICU were ventilated
(**215 out of 504 patients in ICU**)

48%
of people who were ventilated died of COVID-19
(**104 out of 215 ventilated patients**)

The Impact of COVID-19 on the Labor Market in Summit County

Type of Industry	1st Quarter 2019	2nd Quarter 2019	3rd Quarter 2019	4th Quarter 2019	1st Quarter 2020	2nd Quarter 2020	1q-19 to 1q-20	2q-19 to 2q-20	1q-19 to 1q-20	2q-19 to 2q-20	Avg. Annual Earnings	Private sector rank
Total employment	261,310	267,018	266,518	267,626	262,673	234,267	1,363	(32,751)	1%	-12%	$50,422	--
Private Sector	235,068	240,948	241,410	241,007	236,327	210,158	1,259	(30,790)	1%	-13%	$50,080	--
Agriculture, forestry, fishing and hunting	45	72	71	95	112	129	67	57	149%	79%	$24,384	17
Mining	130	126	121	121	110	109	(20)	(17)	-15%	-13%	$72,522	5
Utilities	1,020	1,011	1,034	1,042	1,069	1,074	49	63	5%	6%	$97,886	2
Construction	10,559	12,390	13,162	12,101	10,776	10,707	217	(1,683)	2%	-14%	$61,579	8
Manufacturing	29,204	29,165	29,002	28,889	28,296	25,584	(908)	(3,581)	-3%	-12%	$57,122	9
Wholesale trade	13,302	13,348	13,404	13,349	12,974	12,045	(328)	(1,303)	-2%	-10%	$67,363	7
Retail trade	28,844	29,150	28,874	29,830	28,881	26,110	37	(3,040)	0%	-10%	$32,309	14
Transportation and warehousing	9,541	9,781	10,054	10,826	11,162	11,326	1,621	1,545	17%	16%	$45,742	11
Information	3,942	4,046	4,000	4,079	4,117	3,912	175	(134)	4%	-3%	$73,242	4
Finance and insurance	9,840	9,957	9,933	9,886	10,018	9,745	178	(212)	2%	-2%	$75,569	3
Real estate and rental and leasing	2,812	2,869	2,927	2,988	2,890	2,565	78	(304)	3%	-11%	$45,602	12
Professional and technical services	13,628	13,579	13,568	13,588	13,500	12,655	(128)	(924)	-1%	-7%	$70,354	6
Mgt. of companies and enterprises	13,965	13,853	13,797	13,649	13,619	12,061	(346)	(1,792)	-2%	-13%	$104,180	1
Administrative and waste services	15,539	16,468	16,558	16,216	15,084	13,493	(455)	(2,975)	-3%	-18%	$31,951	15
Educational services *	3,737	3,771	3,659	3,794	3,678	2,960	(59)	(811)	-2%	-22%	$29,591	16
Health care and social assistance	44,314	45,168	44,906	45,244	45,340	41,922	1,026	(3,246)	2%	-7%	$49,997	10
Arts, entertainment, and recreation *	4,257	4,680	4,811	4,286	4,303	2,468	46	(2,212)	1%	-47%	$22,000	18
Accommodation and food services *	22,547	23,479	23,411	22,932	22,348	15,117	(199)	(8,362)	-1%	-36%	$16,511	19
Other services, except public admin. *	7,842	8,035	8,116	8,092	8,052	6,179	210	(1,856)	3%	-23%	$32,623	13
State & Local Government	26,242	26,070	25,108	26,619	26,346	24,109	104	(1,961)	0%	-8%	$53,570	--
State Government	22,142	4,219	4,028	4,253	4,028	3,773	(18,114)	(446)	-82%	-11%	$64,016	--
Local Government	4,100	21,851	21,080	22,366	22,318	20,336	18,218	(1,515)	444%	-7%	$51,584	--
Federal Government	1,895	1,928	1,946	1,946	1,931	1,944	36	16	2%	1%	$68,240	--
Four hardest-hit sectors *	38,383	39,965	39,997	39,104	38,381	26,724	(2)	(13,241)	0%	-33%	$25,181	--

Figure 17: Employment and Job Losses, 2019-2020 by Quarter Source: *Ohio Bureau of Labor Market Information, U.S. Bureau of Labor Statistics Quarterly Census of Employment & Wages*

Figure 17 shows the change in jobs by sector in Summit County by quarter from 2019 to 2020. In the 1st quarter of 2020, the total number of jobs grew by about 1,300 (between the 1st quarter of 2019 and the first quarter of 2020). By the 2nd quarter of 2020 the impact of COVID-19 was clear. Nearly 33,000 jobs were lost in Summit County between the 2nd quarter of 2019 and the 2nd quarter of 2020.

While nearly all sectors suffered, job losses hit four major sectors harder than the rest of the labor market. *Arts, Entertainment, and Recreation* along with *Accomodation and Food Service, Educational services* and *Other Services* lost a total of more than 13,000 jobs; about 40% of all the jobs lost. Making matters worse, these were among the lowest-paying jobs available, with 11,000 of the lost jobs paying just $25,000 or less. It is important to note that these figures are only for employees; they do not include the impact on business owners who had to close because of the spread of the virus.

COVID-19 Racial Disparities

While COVID-19 is effecting every part of our communty, it has a greater impact on racial minorities than Whites. This highlights the ongoing inequities in resources, opportunities, and the quality of and access to health care in minority communities.

Testing Positive for COVID-19:

Figure 15 shows COVID-19 incidence and death rates by race. Whites had a lower rate of COVID-19 infections (4,885 cases per 100,000) than both Blacks (5,791 per 100,000) and Asians (8,665 per 100,000).

Several factors contribute to higher infection rates among some racial groups, including the physical health of different populations, the environmental conditions in which they live and work, and economic factors such as education, employment, income, and access to health care.

Being Hospitalized for COVID-19:

Disparities seen in COVID-19 hospitalizations follow the same pattern as for people who test positive for the disease. Whites have the lowest age-adjusted hospitalization rates (325.0 per 100,000), while Blacks ranked second (820.2 per 100,000) and Asians had the highest hospitalization rates (975.3 per 100,000).

Dying from COVID-19:

Unfortunately, the racial disparities seen in both infections and hospitalizations continue for fatality rates. While Blacks ranked second of the three broad racial groups for both infections and hospitalizations, they ranked highest when it comes to age-adjusted death rates. Asians as a group have the lowest age-adjusted death rates.
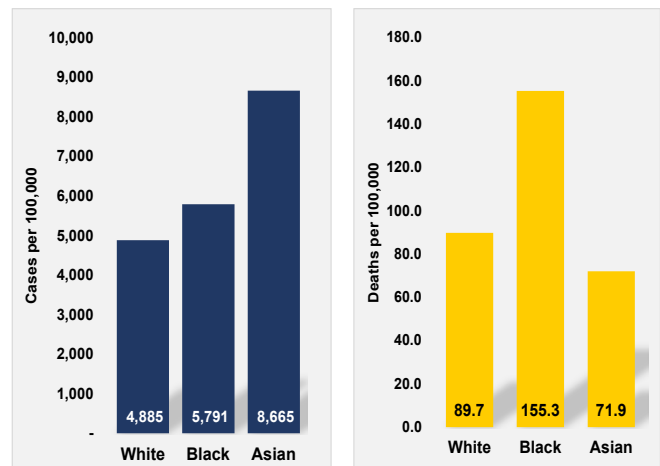
Figures 18a and b: Age-Adjusted Incidence (blue) and Death Rates (gold) per 100,000 Population, COVID-19 by Race Source: ODH, SCPH

Why the higher rates for Blacks? One possible explanation is that Blacks with COVID-19 are more likely to have pre-existing health conditions. Figure 19 shows the percentage of Black and White adults with COVID-19 who reported having one or more pre-existing health conditions. More than half (54%) of Black adults with COVID-19 reported having at least one pre-existing condition, while only 39% of whites reported the same (see Figure 19). Half or nearly half of Black adults with COVID-19 reported having a cardiovascular disease, a chronic lung disease, or diabetes. The percentages for Whites with COVID-19 with these conditions were 38%, 44%, and 36%, respectively. In addition, Black adults with COVID-19 were also more likely than Whites to report having either chronic renal disease or of being a current smoker.

Another set of contributing factors are the differences in types of employment between White and Black workers. Black workers, for example, are 2.6 times more likely to be employed in healthcare support occupations, 1.5 times more likely to be in food preparation or serving occupations, and 1.6 times more likely to be in production, transportation, or material moving occupations than Whites in Summit County.[1] These occupations generally involve more

[1] Source: 2019 American Community Survey (ACS). The size of the Asian population in Summit County wasn't large enough for the ACS to generate Asian estimates for these detailed occupations.
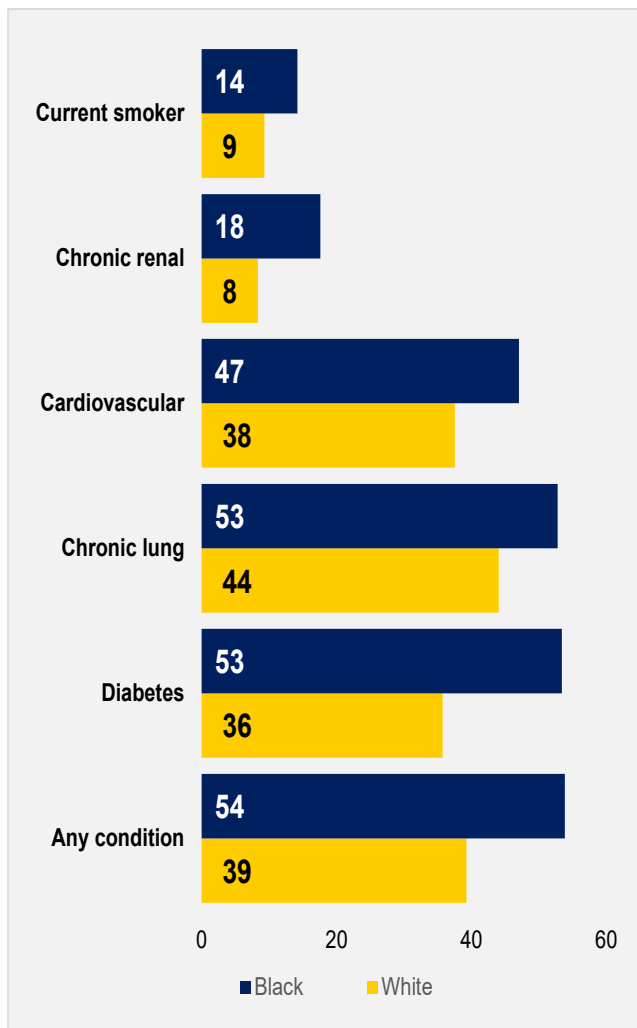
Figure 19: Percent of Adults With COVID-19 and Selected Pre-Existing Conditions, by Race *Source: ODH, SCPH*

person-to-person contact and close quarters work than many other professions, and fewer, if any, opportunities to work at home. This exposes employees in these sectors to greater chances for infection. Recent research has highlighted the likely impact of working in these professions for racial and ethnic minorities especially.[2]

The role of race in population health nationwide has become clearer in recent years. Stark differences can be seen in Summit County and across the nation in health outcomes by race that are strongly influenced by social, economic and environmental factors, as well as broader

[2] Hawkins D. Differential occupational risk for COVID19 and other infection exposure according to race and ethnicity. Am J Ind Med. 2020;1–4. https://doi.org/10.1002/ajim.23145

societal issues such as institutionalized racism. Such factors help create and sustain the health disparities by race that we see.

Race and Social Vulnerability: There is also a well-known link between race and place. Racial and ethnic minorities who live in vulnerable neighborhoods tend to have worse health than those who live in neighborhoods with better socioeconomic conditions.

In order to better understand the conditions that contribute to health disparities, the CDC developed a Social Vulnerability Index. As the CDC explains, "...the degree to which a community exhibits certain social conditions, including high poverty, low percentage of vehicle access, or crowded households, may affect that community's ability to prevent human suffering and financial loss in the event of disaster. These factors describe a community's social vulnerability."

The Index tracks four measures of vulnerability for each census tract in the nation using 15 indicators of health and social conditions. These measures and indicators are shown in Figure 20 below. Maps 5, 6 and 7 show where COVID-19 cases are concentrated for Whites, Blacks and Asians in Summit County. For Blacks and Asians, all of
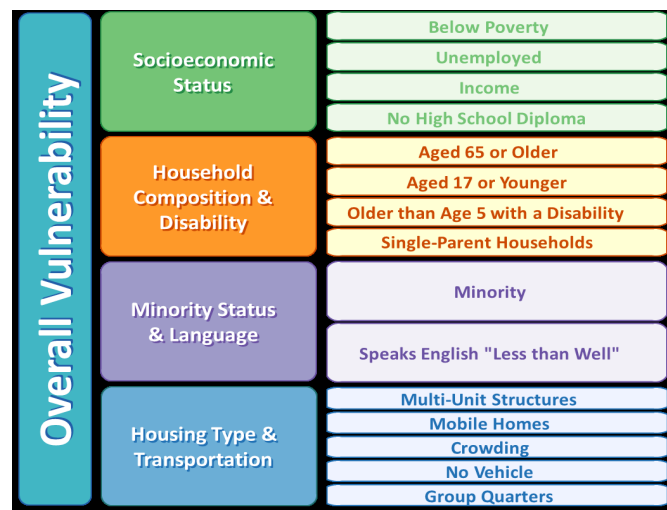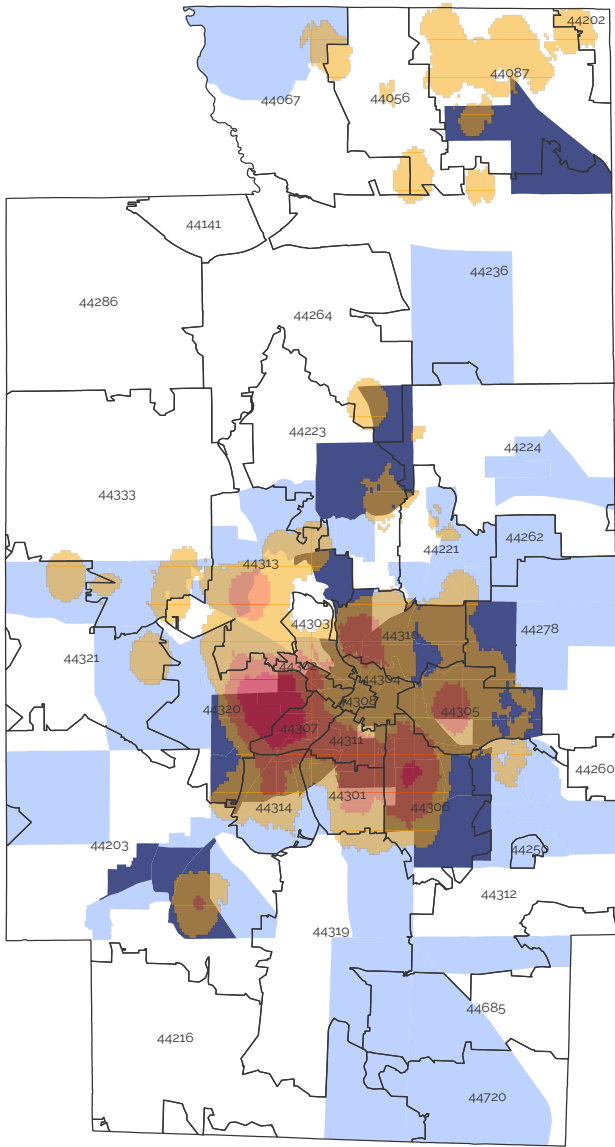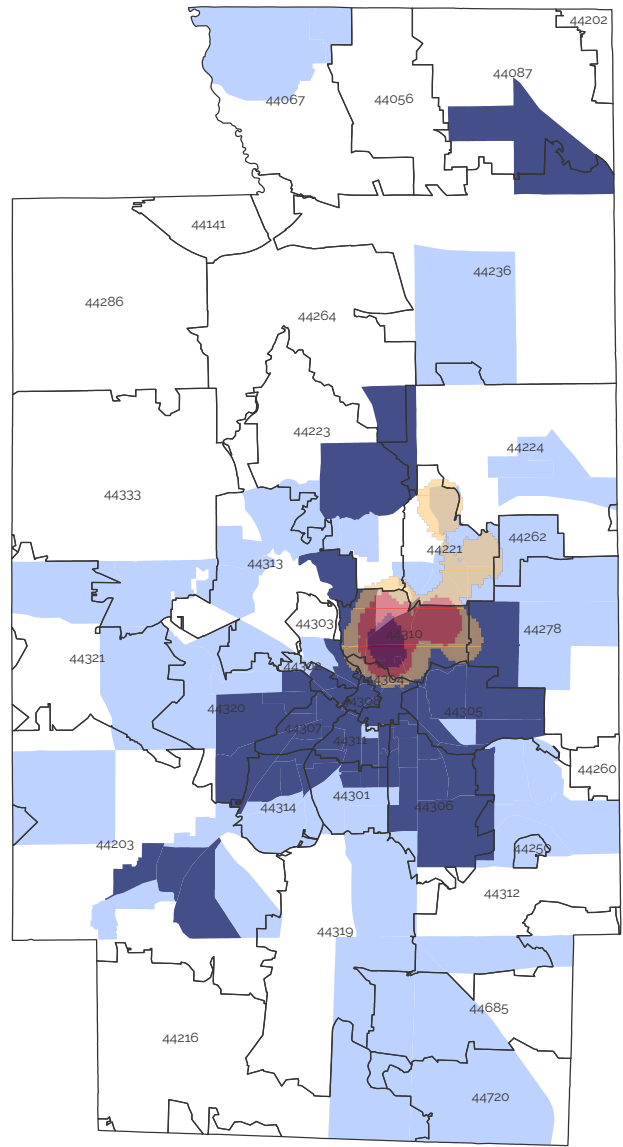

Figure 20: The Social Vulnerability Index *Source: CDC*

Map 5 (left): *Density Map of Black COVID-19 Cases and Social Vulnerability Index by Census Tract*

Map 6 (right): *Density Map of Asian COVID-19 Cases and Social Vulnerability Index by Census Tract*

COVID-19 density (Black)

VALUE

Very low density
Low density
High density
Very high density

Social Vulnerability Index

By census tract

Low vulnerability
Moderate vulnerability
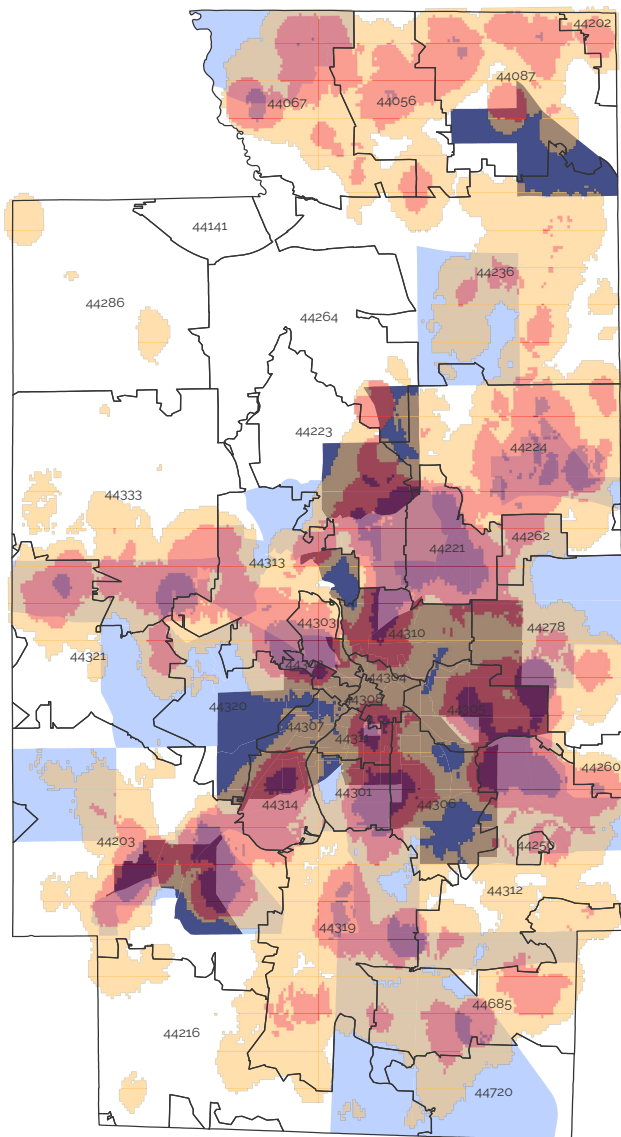High vulnerability
Zip Code

COVID-19 density (Asian)

VALUE

Very low density
Low density
High density
Very high density

Social Vulnerability Index

By census tract

Low vulnerability
Moderate vulnerability
High vulnerability
Zip Code

Map 7 (left): *Density Map of White COVID-19 Cases and Social Vulnerability Index by Census Tract*

COVID-19 density (White)
VALUE

- Very low density
- Low density
- High density
- Very high density

Social Vulnerability Index
By census tract

- Low vulnerability
- Moderate vulnerability
- High vulnerability
- Zip Code

the heaviest concentrations of COVID-19 cases are located in those dark blue areas of the map which have the highest social vulnerability, In the case of whites, several areas of higher density COVID-19 concentrations also show up in those highest social vulnerability areas. However, there are many other areas of high-density COVID-19 concentration for whites that are in much less socially vulnerability areas of the county.

What does this mean? Most whites with COVID-19 (82%) live in areas of the county that face fewer socioeconomic challenges, with higher levels of income, education, and employment; homes that are in better condition, with easier access to transportation and many other advantages. These neighborhoods have very few problems like run down housing (that can cause lead poisoning and asthma), or air and water pollution that can contribute to cancer, asthma and other respiratory illnesses. These and other poor environmental conditions weaken people's health and make them more vulnerable to infectious diseases such as COVID-19, especially when combined with socioeconomic disadvantages. In other words, most whites have access to resources in the places they live that make it easier for them to cope with the hardships that a crisis like COVID-19 creates.

The remaining one-in-five whites with COVID-19 (18%) live in one of the areas of high social vulnerability that do not have the same access to resources and good environmental conditions.

The same can be said about the more than half of Blacks (56%) and Asians (58%) with COVID-19. They, too, live in areas with high social vulnerability; areas that can make coping with COVID-19 and other health crises even harder than it already is.