Burden of COVID-19 on Milwaukee County children

Milwaukee County COVID-19 Epidemiology Intel Team

This report was updated on December 10, 2020 and includes data through December 8, 2020. Note that data for recent weeks may be under-reported due to pending test results.

This report focuses on children ages 0-18; however, maps include only those 0-17 due to a lack of availability of population (denominator) data for those age 18 alone. We include individuals of age 18 as some of this age are enrolled in K-12 schools.

COVID-19 summary statistics for Milwaukee County children aged 18 and under

Overall Summary Statistics: Milwaukee County children aged 18 and under
March 1 - December 8

	Milwaukee County	City of Milwaukee	Suburbs
Total tests performed	54,841	33,234	21,607
Percent positive of all tests performed	13.7%	14.8%	11.9%
Number of confirmed cases	9,808	6,607	3,201
Number of hospitalizations	124	100	24
Number of deaths	0	0	0
Case fatality rate	0.0%	0.0%	0.0%

Weekly Summary Statistics: Milwaukee County children aged 18 and under
December 2 - December 8

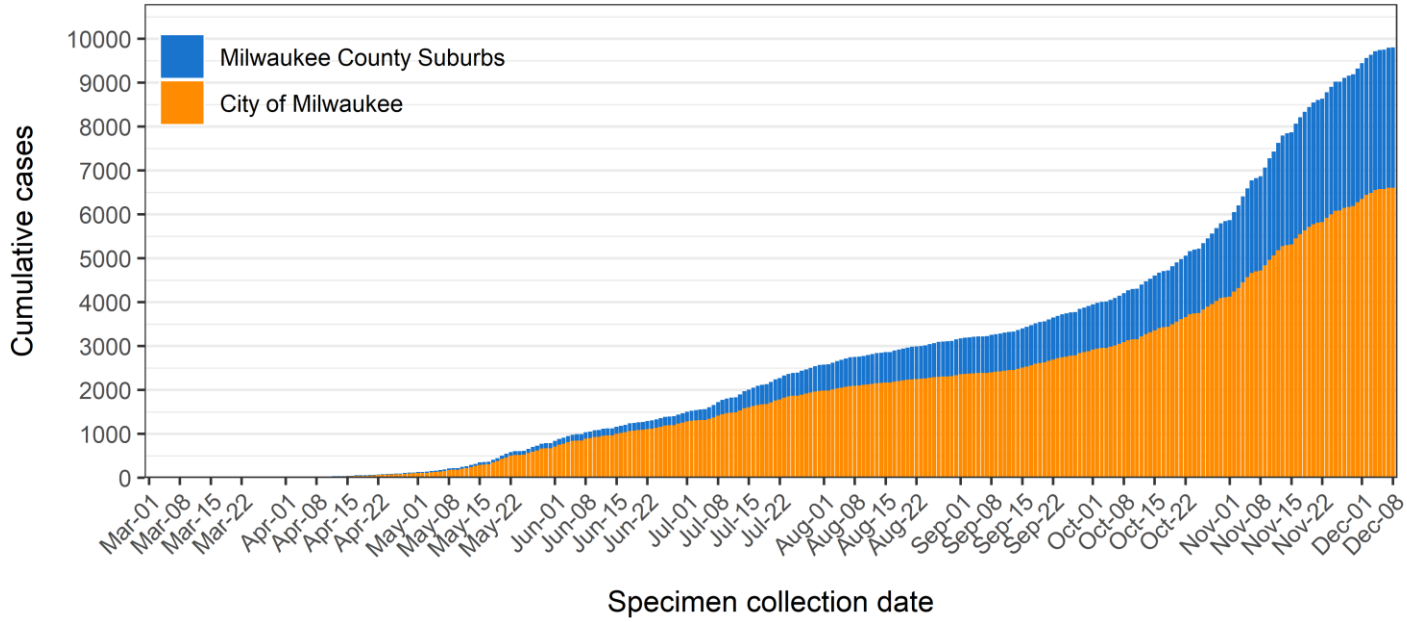
	Milwaukee County	City of Milwaukee	Suburbs
Total tests performed	1,984	1,282	702
Percent positive of all tests performed	17.4%	18.8%	15.0%
Number of confirmed cases	362	254	108
Number of hospitalizations	2	1	1
Number of deaths	0	0	0

Cases over time for Milwaukee County children aged 18 and under

There are now a total of 9808 cases among children ages 0-18 in Milwaukee County, with the first confirmed case on March 17. Over the last week, we observed 362 new confirmed cases, including 254 in the City of Milwaukee and 108 in the suburban jurisdictions. **Figure 1** shows the cumulative cases among children in the city and the suburbs. **Figure 2a** shows the daily incidence of new cases (bars) and the average daily incidence within the last 7 days (line), which provides a smoothing effect to enhance visualization, for both the city and the county. This figure was re-produced for ages 17 and under, **Figure 2b**, to look at trends without the contribution of 18 year olds who are a mixture of current high school students and graduates. To indicate a potential reporting delay, we shade the last seven days of data and exclude those days from the trend line.

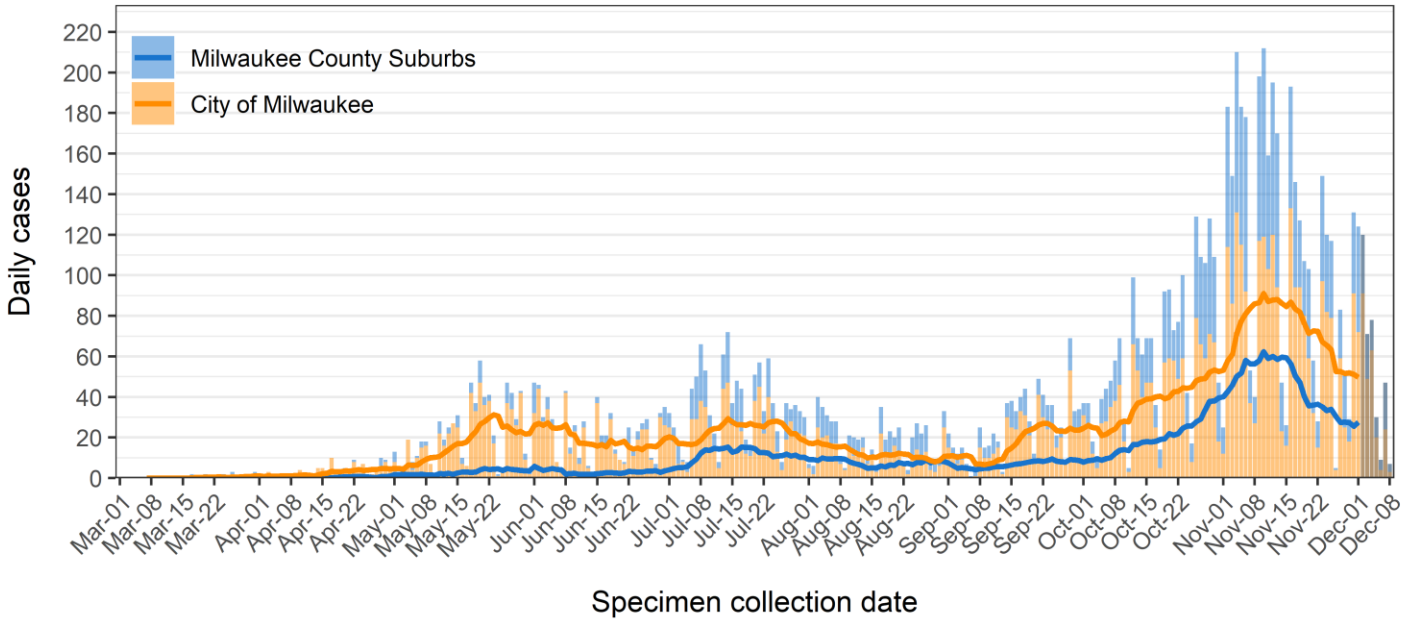
Over the last week we have seen a plateau in the daily case count among children in Milwaukee County. The highest daily case count since the beginning of the epidemic occurred on November 10, with 212 cases in the county overall. The highest daily case count over the entire period in the city occurred on November 16 with 133 cases confirmed, while the highest daily case count in the suburbs occurred on November 10 with 93 cases confirmed.

Figure 1: Cumulative cases in Milwaukee County children aged 18 and under



Data source: Wisconsin Electronic Disease Surveillance System (WEDSS)
Created by the Milwaukee County COVID-19 Epidemiology Intel Team

Figure 2a: Daily cases in Milwaukee County children aged 18 and under



Data source: Wisconsin Electronic Disease Surveillance System (WEDSS)
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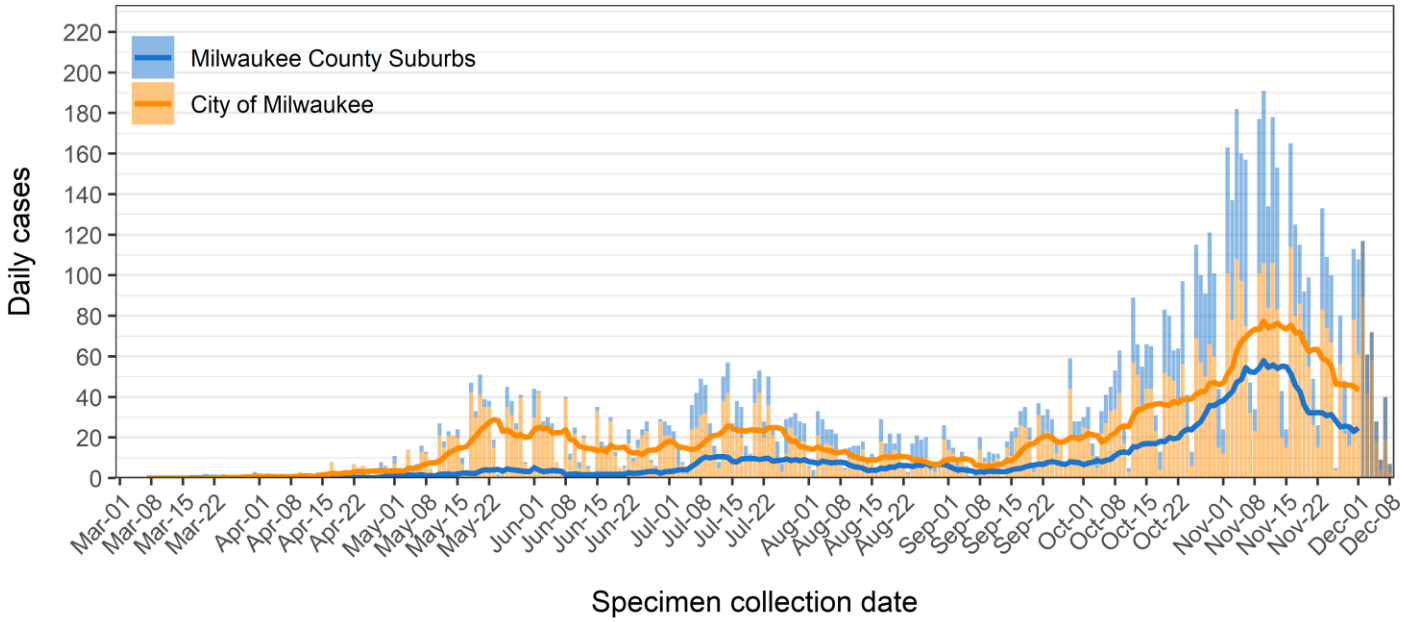
Figure 2b: Daily cases in Milwaukee County children aged 17 and under



Data source: Wisconsin Electronic Disease Surveillance System (WEDSS)
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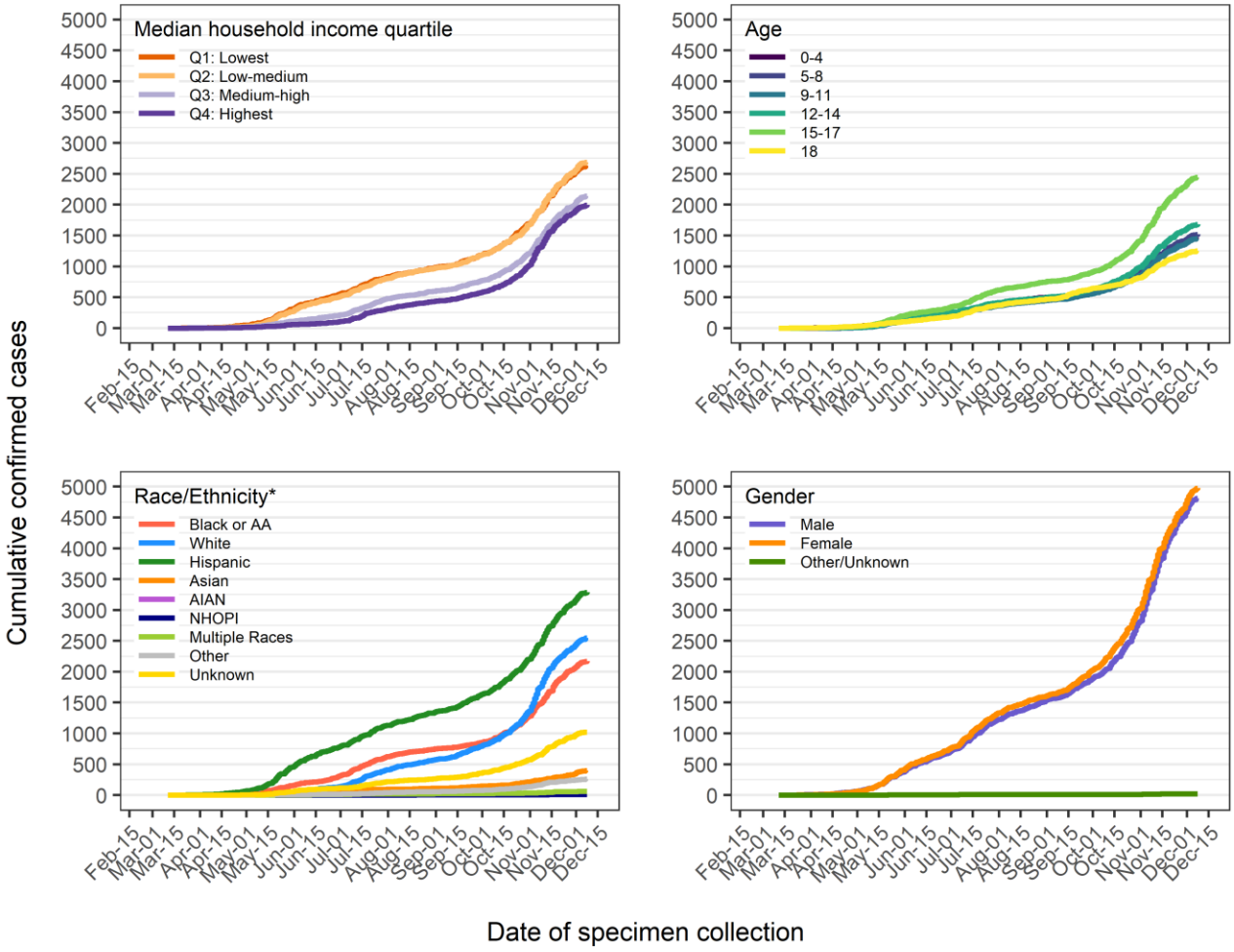
Demographic patterns in Milwaukee County cases aged 18 and under

COVID-19 cases among children vary by demographic characteristics. **Figure 3** shows cumulative case plots including confirmed positive cases with an available specimen collection date, plotted by census block group (CBG) median household income, sex, age, and race/ethnicity groups. Most diagnosed cases fall within the ages of 15-17 with 2445 cases, with confirmed cases among other age groups each much lower. Of all confirmed cases, 49.0% are male and 50.7% are female. The largest number of cases have been diagnosed among the Hispanic population (N = 3285), followed by non-Hispanic Whites (N = 2549), and then the Black/AA population (N = 2170). The lower two quartiles of median household income ($0 - $35,833, and $35,834 to $50,096) have a larger number of cases than the higher two quartiles ($50,097 to $68,393, and $68,394 to $250,001), with the fewest cases identified among the highest income group. Over the last week, we have observed increases particularly among those ages 15-17 and those who are Hispanic, Black/AA, or non-Hispanic White.

Figure 3: Cumulative confirmed cases in Milwaukee County children aged 18 and under



Data source: Wisconsin Electronic Disease Surveillance System (WEDSS)
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**Race and ethnicity were combined into one variable where the Hispanic category includes Hispanics of any race.*
AIAN stands for American Indian or Alaska Native and NHOPI stands for Native Hawaiian or Other Pacific Islander.

Hospitalized cases in Milwaukee County children aged 18 and under

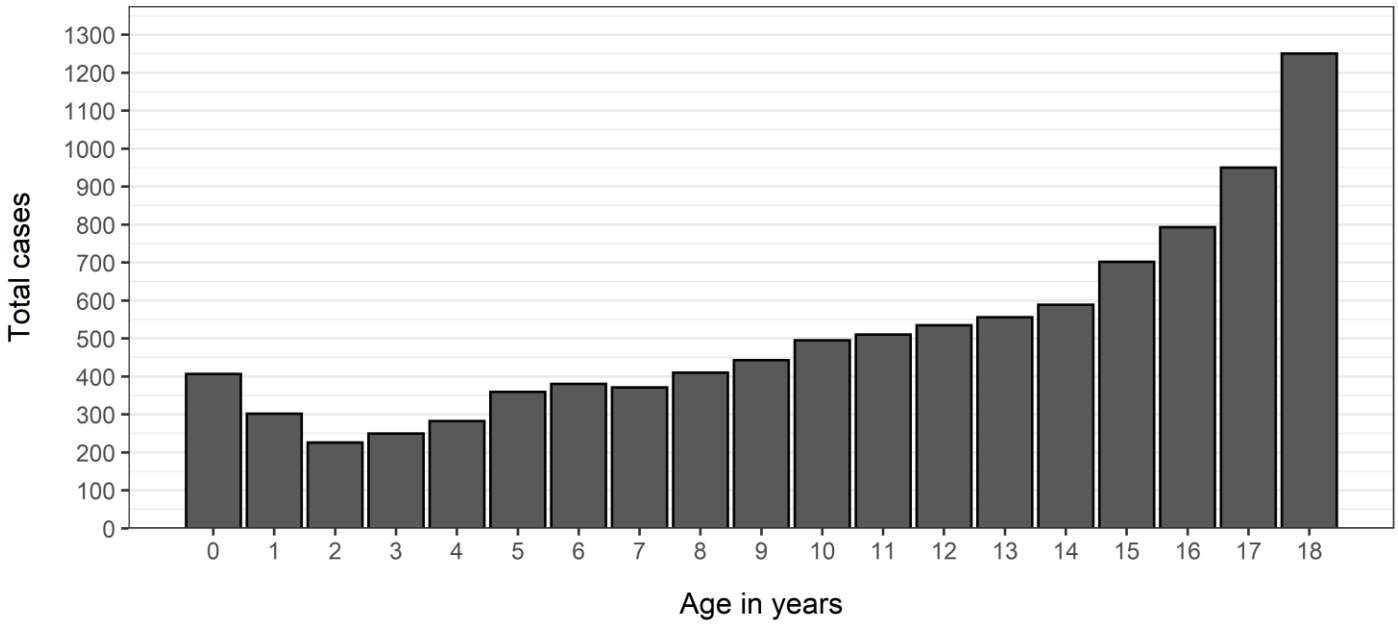
A total of 124 children ages 18 and younger have been hospitalized due to COVID-19 in Milwaukee County. The average age of hospitalized children is 9.5, ranging from infants through 18-year-olds. Hospitalizations are greater among males at 53.2%. Fully 50.0% of hospitalizations have occurred among Black/AA children, with 31.5% among Hispanic/Latinx children. Only 12.9% of hospitalizations are among non-Hispanic Whites.

Variable	Hospitalized cases (N = 124)
Age	
Mean (SD)	9.50 (6.93)
Median [Q1, Q3]	11.50 [1.75, 16.00]
Min, Max	0.00, 18.00
Age categories	
0-4	43 (34.7 %)
5-8	11 (8.9 %)
9-11	<10
12-14	15 (12.1 %)
15-17	35 (28.2 %)
18	12 (9.7 %)
Gender	
Female	58 (46.8 %)
Male	66 (53.2 %)
Race/Ethnicity	
Black or AA	62 (50.0 %)
White	16 (12.9 %)
Hispanic	39 (31.5 %)
Asian	<10
Unknown	<10

Total cases and tested individuals through December 8, 2020 by year of age

Age is a considerable factor in confirmed cases among children. As shown in **Figure 4**, overall, confirmed cases increase with age. It is notable that 406 cases have been diagnosed among those less than 1 year old. As shown in **Figure 5**, the distribution of confirmed cases mirrors the distribution of testing among children, with many more tests conducted among older teenagers, particularly those aged 18, as compared to the younger age groups.

Figure 4: Total confirmed cases by age among Milwaukee County children



Data source: Wisconsin Electronic Disease Surveillance System (WEDSS)
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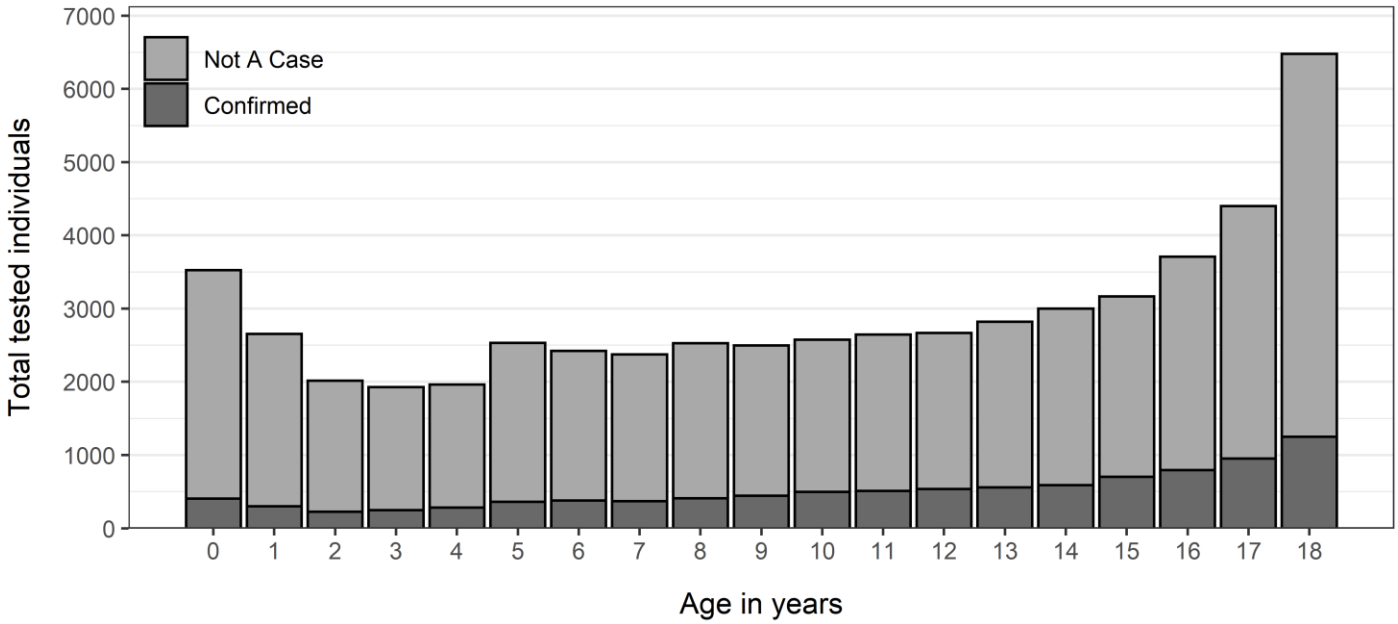
Figure 5: Total tested children by age in Milwaukee County



Data source: Wisconsin Electronic Disease Surveillance System (WEDSS)
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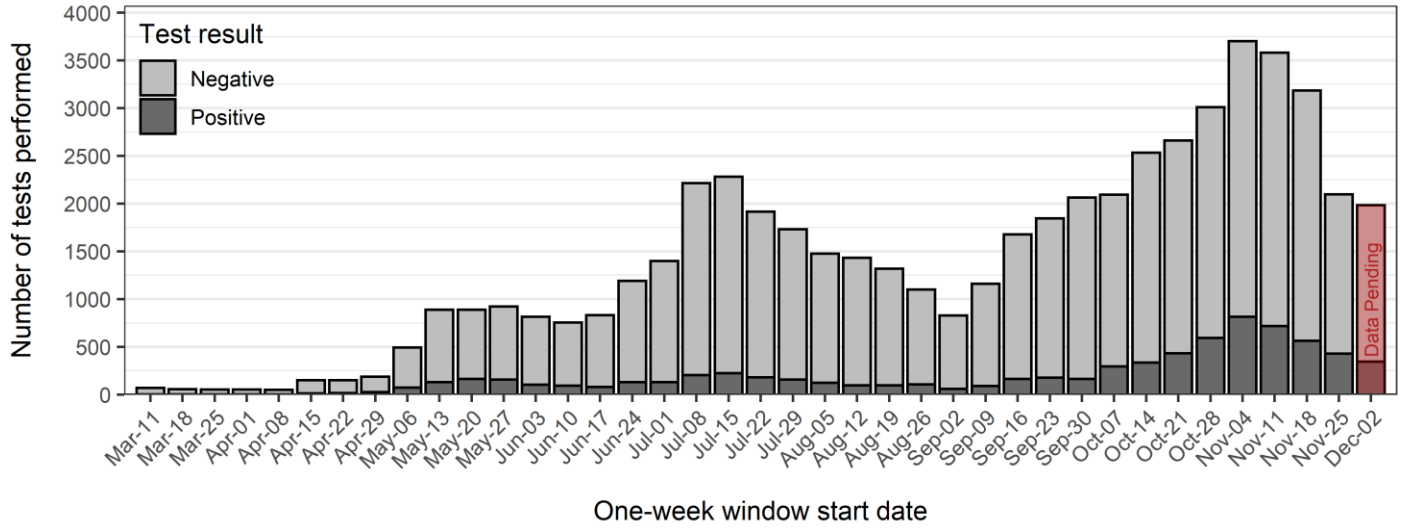
Total tests through December 8, 2020 for children aged 18 and under

Testing for the novel coronavirus is an important public health response to limiting the spread of the infection. Testing capacity was limited in Milwaukee County and across the country earlier in the epidemic, but then increased. Since the first case of COVID-19 was diagnosed in a child in Milwaukee County on March 17, a total of 54841 COVID-19 tests have been performed among children ages 0-18, with 47341 negative results and 7500 positive results. This represents a positive test rate of 13.7% since the beginning of the epidemic.

As shown in **Figure 6**, very few tests were conducted among children earlier in the epidemic; it is likely that COVID-19 cases among children were not identified. Testing among children increased to peak in early July and then declined, with increased testing beginning in September. Testing was low during the week of Thanksgiving. As shown in **Figure 7**, the 14-day trend in percent positive tests among children shows no significant change. Percent positive should be interpreted in the context of potential data delays given the large numbers of tests conducted in recent weeks, and considering that data entry for positive tests is prioritized.

Figure 6: Number of tests per week among Milwaukee County children 18 and under



Data source: Wisconsin Electronic Disease Surveillance System (WEDSS)
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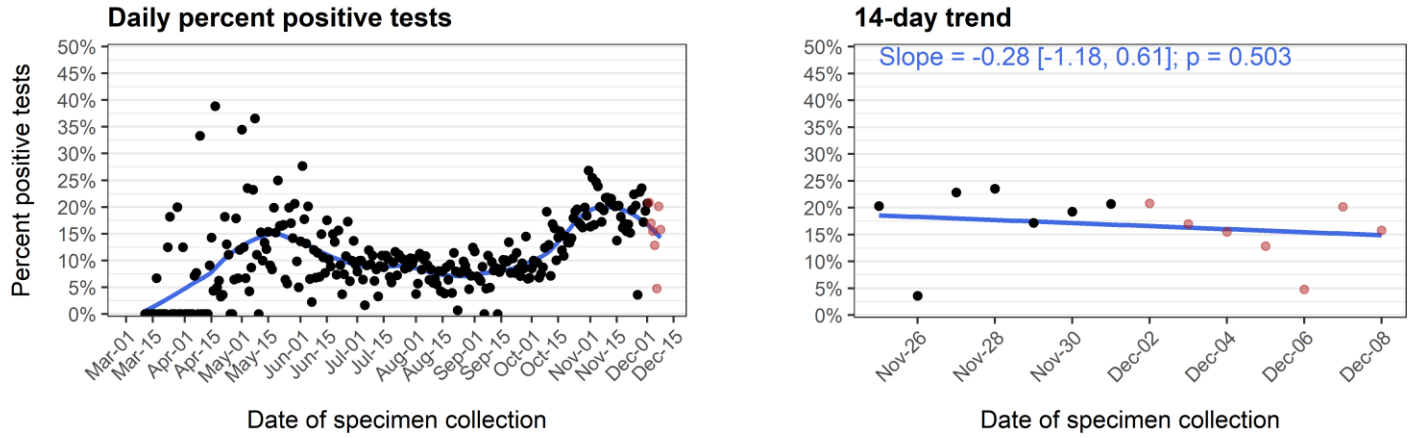
Figure 7: Percent positive tests among Milwaukee County children aged 18 and under



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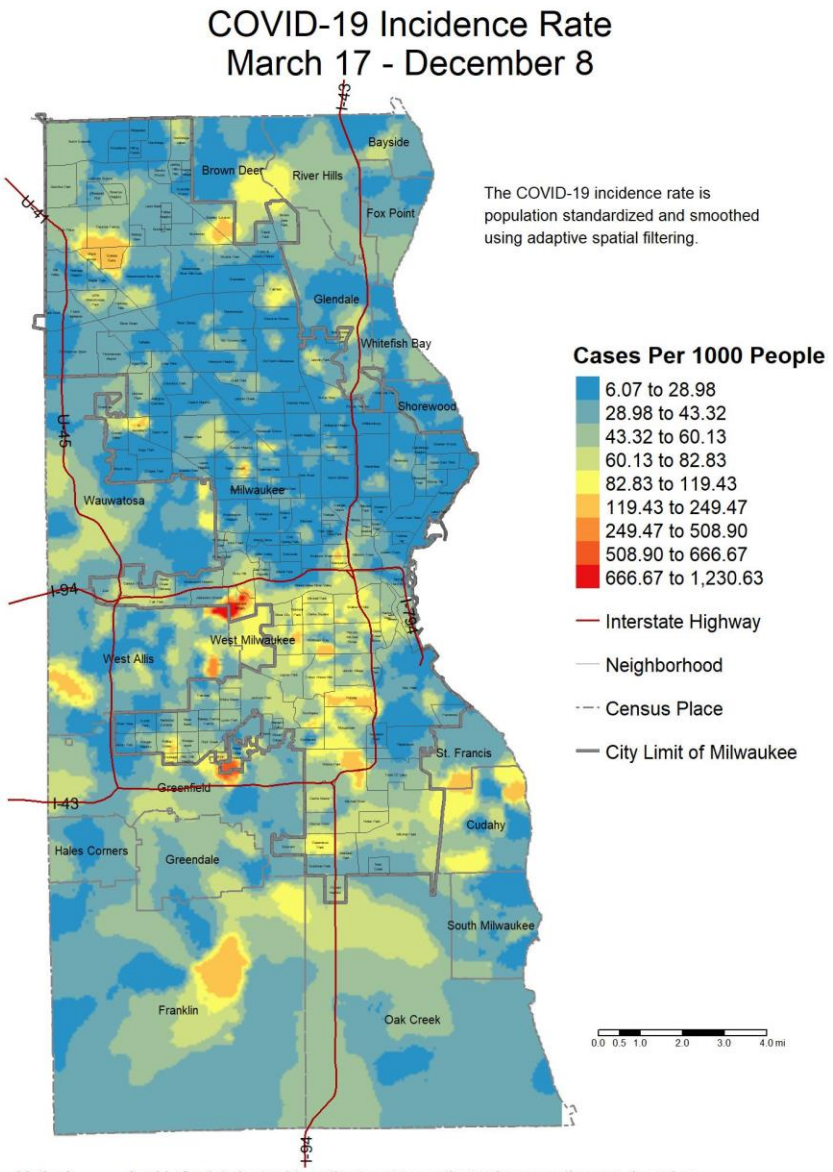
Spatial patterns of COVID-19 in Milwaukee County children

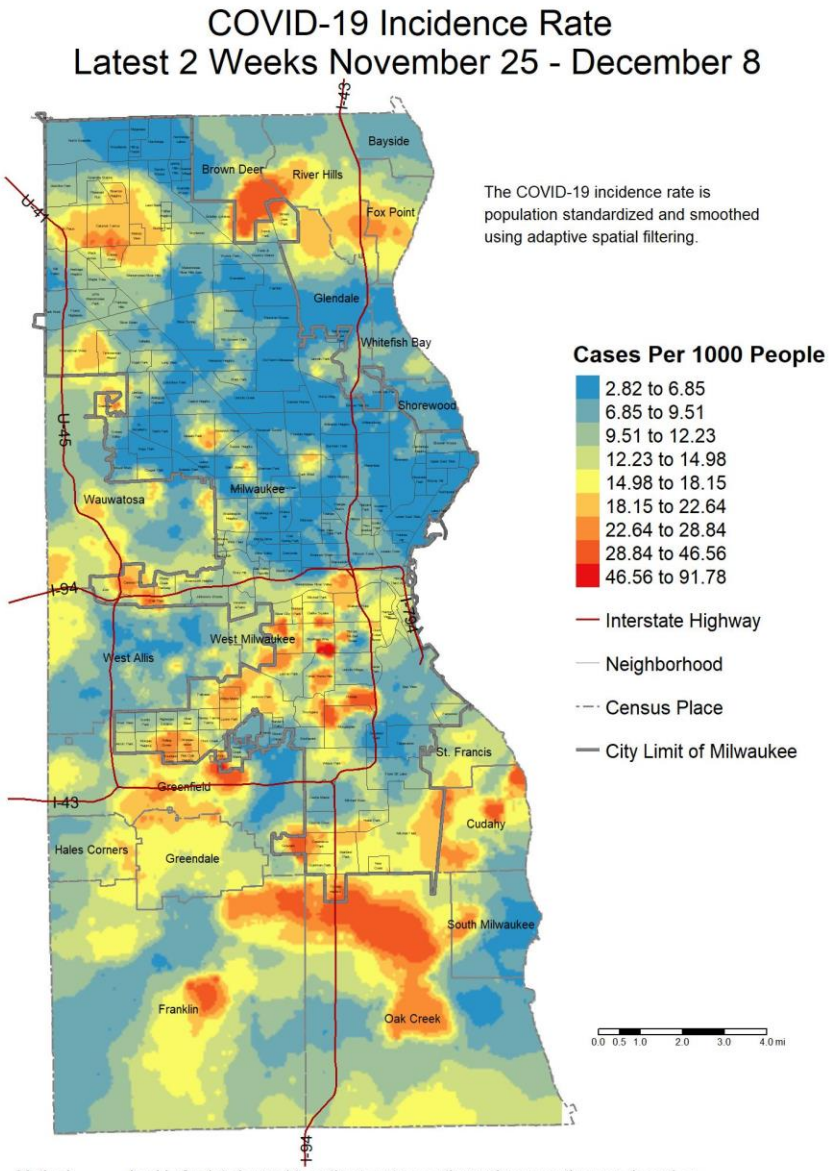
COVID-19 spread is spatially patterned. **Map 1** below illustrates the cumulative burden (all confirmed cases) of COVID-19 in Milwaukee County children. **Map 2** shows cases confirmed in children over the last two weeks. **Map 3** depicts the percentage of tests that were confirmed positive. **Map 4** shows cumulative COVID-19 related hospitalizations among children. All are crude rate maps created using census block group level COVID-19 data from WEDSS and population data from the US Census. The maps are smoothed to protect confidentiality and ensure that rates are stable while still providing geographic detail. High rates are depicted in red with lower rates depicted in blue.

Map 1: All confirmed cases of COVID-19 in children aged 0-17



Method: A grid of points is used to estimate rates continuously across the map, based on the nearest cases with a minimum of 10 confirmed cases included.
Data Sources: Wisconsin Electronic Disease Surveillance System (WEDSS) (incidence data)
2018 American Community Survey (population data)
City of Milwaukee Map Milwaukee Portal (neighborhood boundaries)
Census Bureau TIGER/Line Shapefiles (census place boundaries)
Created by the Milwaukee County Covid-19 Epidemiology Intel Team

Map 2: Confirmed cases of COVID-19 over the last two weeks in children aged 0-17



Method: A grid of points is used to estimate rates continuously across the map, based on the nearest cases with a minimum of 10 confirmed cases included.
Data Sources: Wisconsin Electronic Disease Surveillance System (WEDSS) (incidence data)
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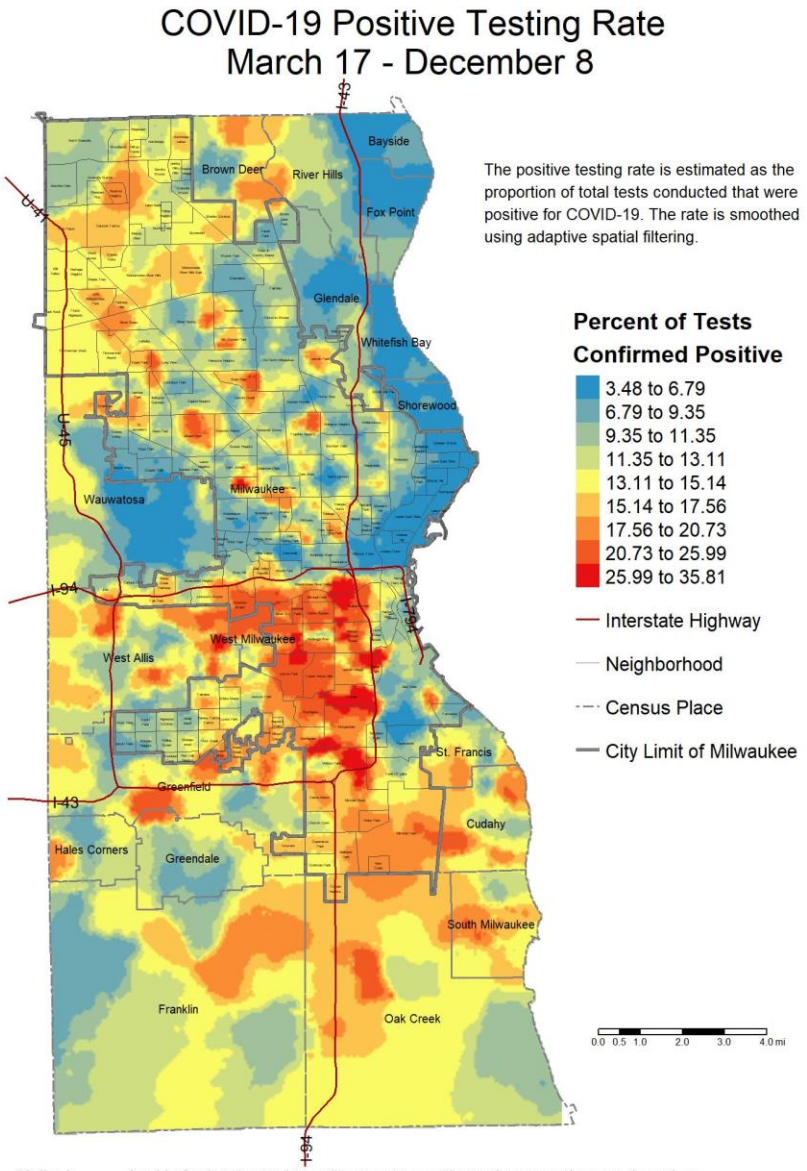
Map 3: Percentage of tests that were confirmed positive in children aged 0-17



Method: A grid of points is used to estimate rates continuously across the map, based on the nearest cases with a minimum of 15 positive tests included.
Data Sources: Wisconsin Electronic Disease Surveillance System (WEDSS) (incidence data)
2018 American Community Survey (population data)
City of Milwaukee Map Milwaukee Portal (neighborhood boundaries)
Census Bureau TIGER/Line Shapefiles (census place boundaries)
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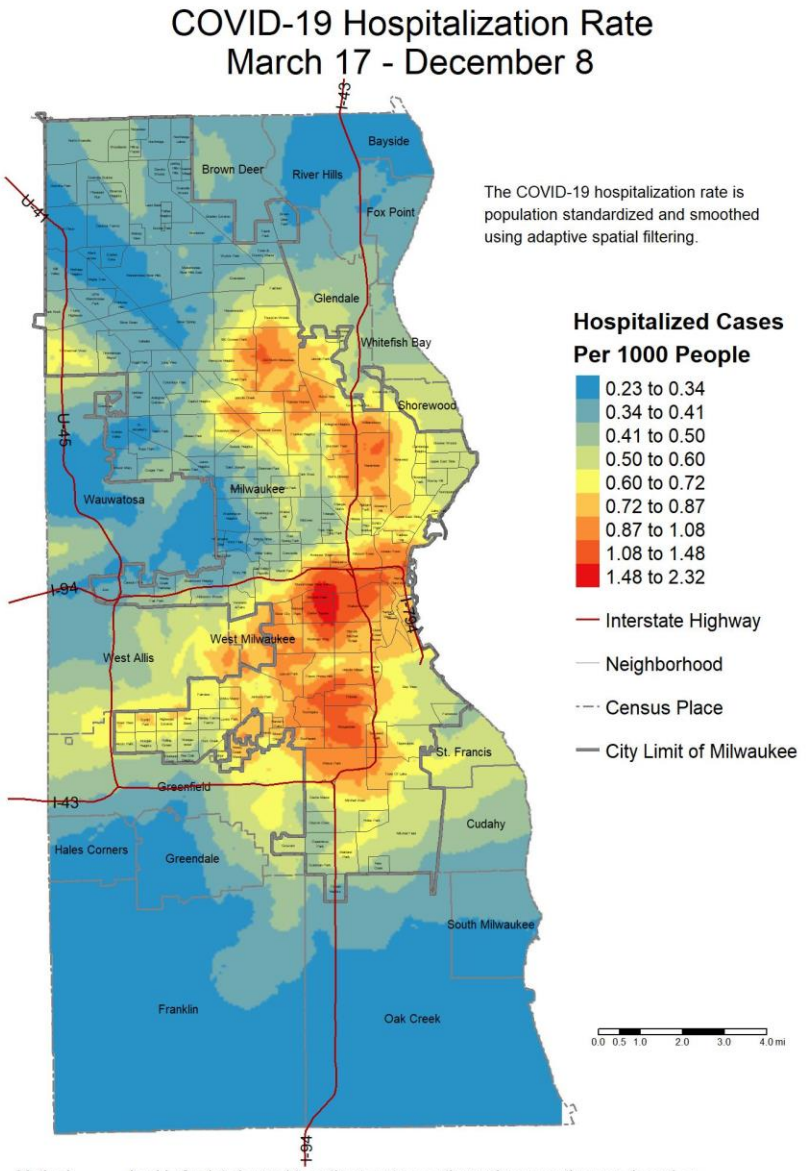
Map 4: COVID-19 related hospitalizations in children aged 0-17



Method: A grid of points is used to estimate rates continuously across the map, based on the nearest cases with a minimum of 10 hospitalized cases included.
Data Sources: Wisconsin Electronic Disease Surveillance System (WEDSS) (incidence data)
2018 American Community Survey (population data)
City of Milwaukee Map Milwaukee Portal (neighborhood boundaries)
Census Bureau TIGER/Line Shapefiles (census place boundaries)
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Data Sources & Acknowledgments

This report was created by faculty and staff in the Medical College of Wisconsin (MCW) Institute for Health and Equity (IHE) in partnership with representatives from local health departments and faculty from the University of Wisconsin-Milwaukee Zilber School of Public Health. Data sources include the Wisconsin Electronic Disease Surveillance System (WEDSS), the US Census Bureau, the Milwaukee County Medical Examiner's office, the Emergency Medicine Resource, and publicly available data obtained from local health and emergency response agencies. Data from the Wisconsin Electronic Data Surveillance System (WEDSS) summarized for the week includes data from December 2, 2020 through December 8, 2020. This work was funded by the Advancing a Healthier Wisconsin Endowment at the Medical College of Wisconsin.

Contact Information

For additional questions on this report, please contact Darren Rausch, Health Officer/Director, Greenfield Health Department, and Lead, Milwaukee County COVID-19 Epidemiology Intel Team: Darren.Rausch@greenfieldwi.us or (414) 329-5275.