

Ottawa County COVID-19 Epidemiology

October 13, 2021

Data as of October 9, 2021, unless otherwise indicated

Executive Summary

- **The US is seeing a decrease in cases, while Michigan continues to increase**
- **Ottawa community transmission may be increasing**
 - Positivity increased over the last 2 weeks from 12% to 14%. The goal is to be less than 8%*.
 - Weekly case counts in Ottawa increased 22%, from 739 two weeks ago to 902 last week.
 - Cases among children increased about 44%, from 135 two weeks ago to 194 last week.
- **Ottawa area and regional hospitals are seeing more COVID-19 patients**
 - In Ottawa County, 11% of all available beds are occupied by COVID-19 patients.**
 - About 19% of Ottawa County ICU beds are occupied by COVID-19 patients.**
 - Weekly hospital census for children with COVID-19 remains elevated.
 - Staffing is a challenge for many health systems.
- **Pediatric hospitalizations across the US are improving, but some areas continue to see high hospitalization rates in children, including states in the Midwest**
- **Over 61% of eligible Ottawa County residents are completely vaccinated**

*After further analysis of Ottawa County case rate data, positivity data, and CDC Community Transmission Levels, on October 8, 2021 the Ottawa County Department of Public Health (OCDPH) relaxed one of the criteria that may be used to rescind the current school mask order. The criterion that set a threshold of a CDC Community Transmission Level of Low for 7 consecutive days was changed to a threshold of Moderate for 14 consecutive days.

**Some hospitals in Ottawa County immediately transfer acutely ill adults or children to regional hospitals that offer a higher level of care. This practice may reduce the proportion of beds occupied by COVID-19 patients in Ottawa and increase bed occupancy in urban centers with large hospitals, such as Kent County.

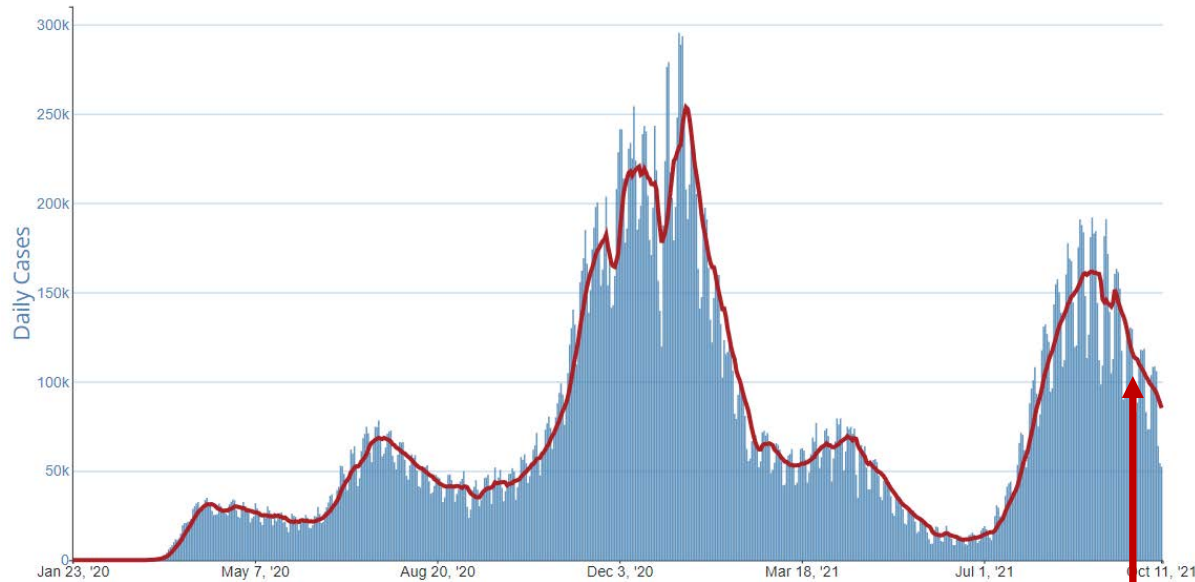
Ottawa County Metrics by Week

Metric	Goal	Week Ending				
		11-Sep-21	18-Sep-21	25-Sep-21	2-Oct-21	9-Oct-21
Positivity (All Ages)	<8%	13.5%	11.8%	11.0%	12.0%	14.0%
Weekly Cases (All Ages)	<147	643	712	764	739	902
Weekly Cases in Children (0-17 years of age)	NA	148	166	148	135	194
Total COVID-19 Hospitalizations (All Ages)	0	17	28	17	16	8
Total Deaths (All Ages)	0	6	6	4	7	4
CDC Risk Transmission Level	Moderate	High	High	High	High	High

Case Trends in the USA and Michigan

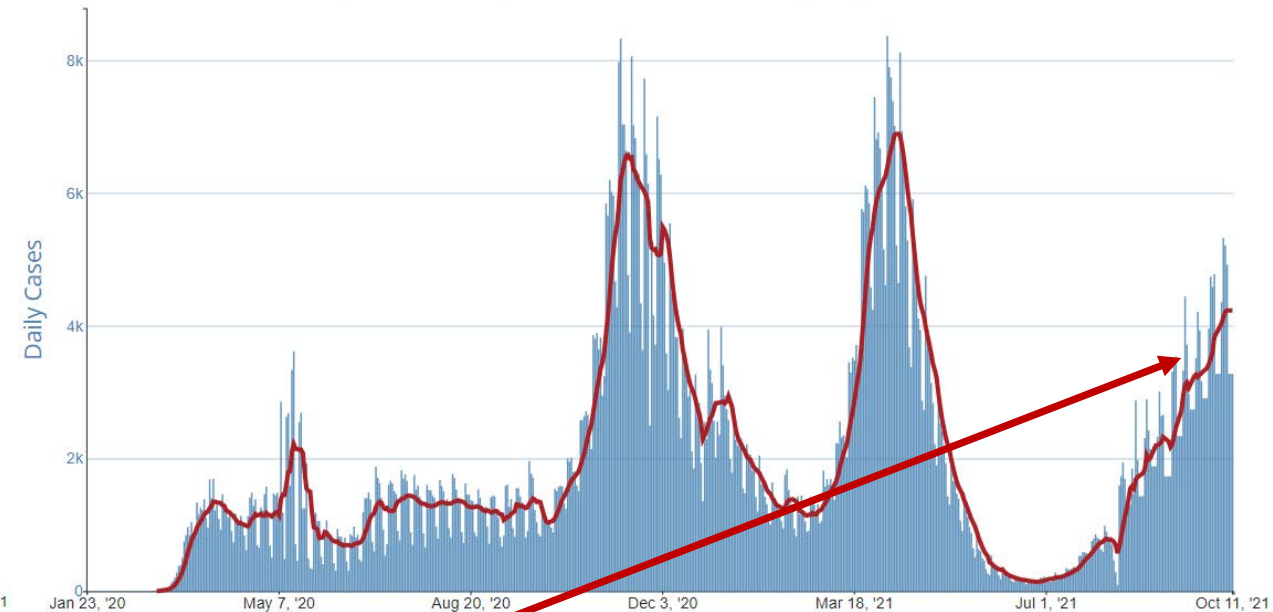
USA

Daily Trends in Number of COVID-19 Cases in The United States Reported to CDC



Michigan

Daily Trends in Number of COVID-19 Cases in Michigan Reported to CDC

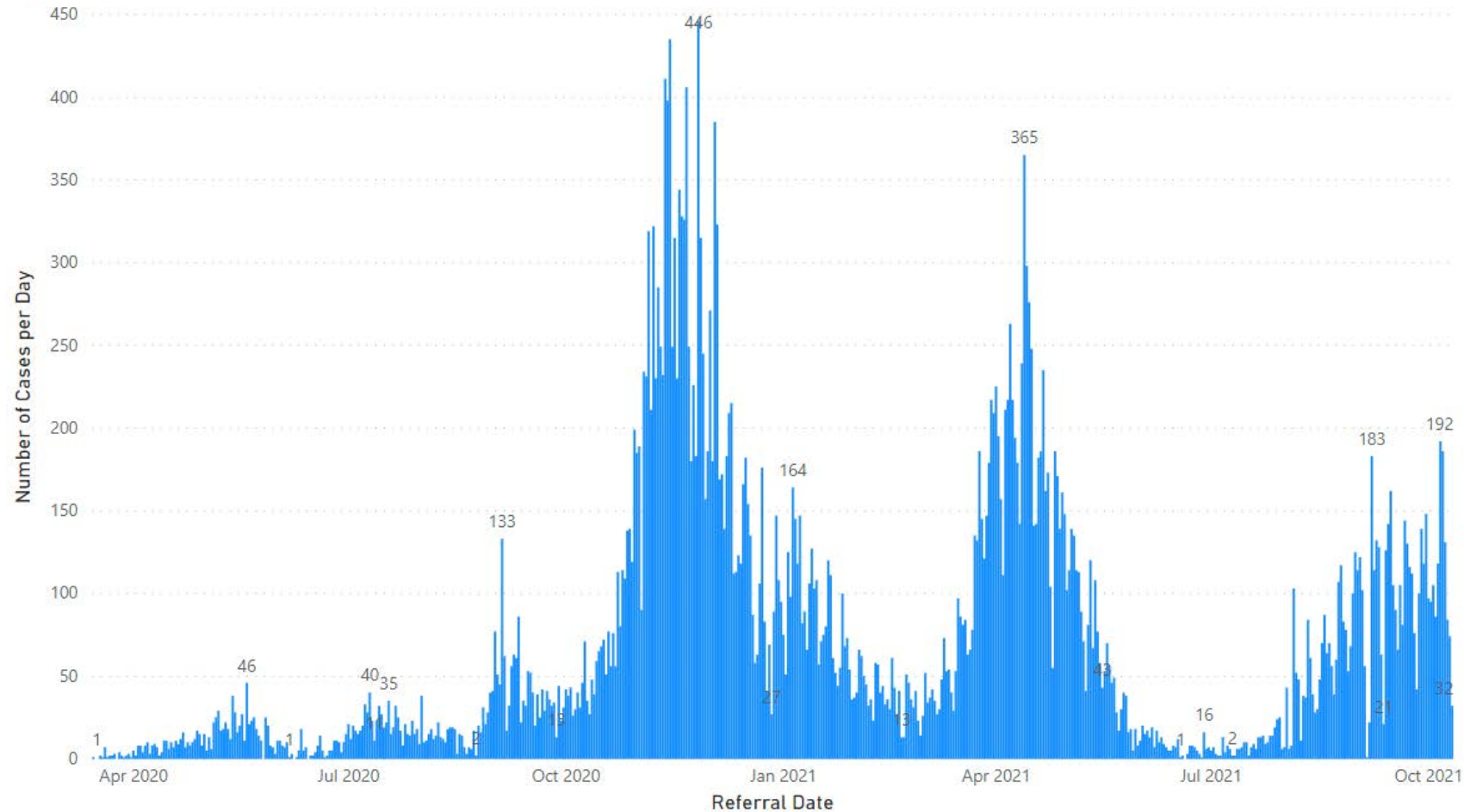


The US is decreasing while Michigan continues trending up.

Case Trends in Ottawa County

COVID-19 Cases by Day, Ottawa County, March 15, 2020 – October 11, 2021

Epidemiological Curve



Total Number of Cases
39,306

Currently the 7-day average is **127 cases per day**, above the roughly 102 cases per day seen at this time last week. From week to week, cases increased 22% through the last 2 full weeks.

Note: Through the Fall of 2021, reports from local stores of a large grocery chain and a national pharmacy chain indicate that supplies of at-home COVID-19 tests are sold out in 1-2 days, suggesting high demand. Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in an artificially deflated number of cases. Additionally, OCDPH has received reports of parents refusing COVID-19 testing for their children ill with respiratory symptoms, which may further deflate case data.

Source: Michigan Department of Health and Human Services, Michigan Disease Surveillance System

USA & MI

Spread

Children

Hospitalizations

Vaccinations

Variants

Risk Levels

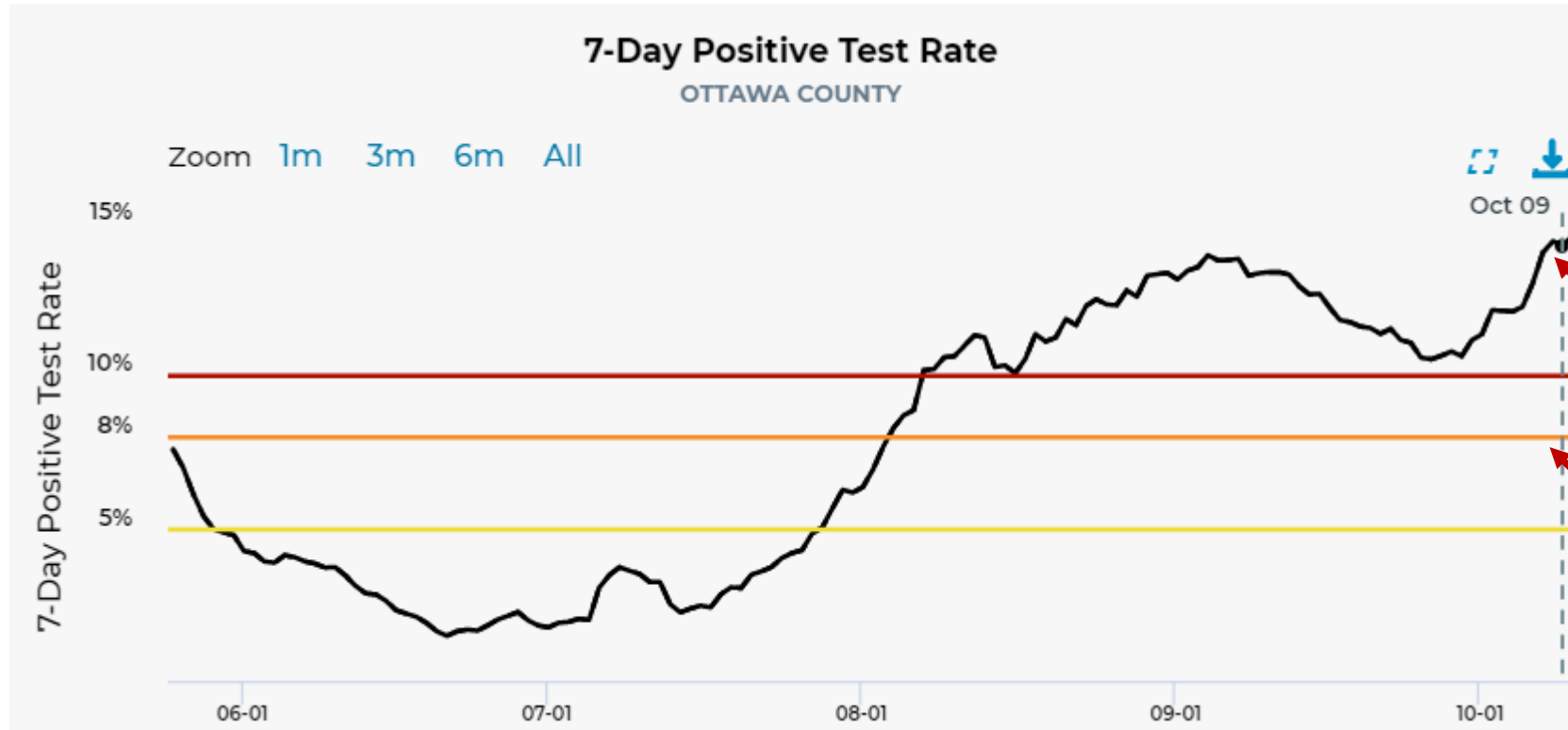
Other

Media

Science
Roundup

Test Positivity in Ottawa County

COVID-19 Cases by Day, Ottawa County, June 1, 2021 – October 9, 2021



Test positivity increased to 14% as of October 9, 2021.

The goal is to have less than 8% of tests coming back positive.

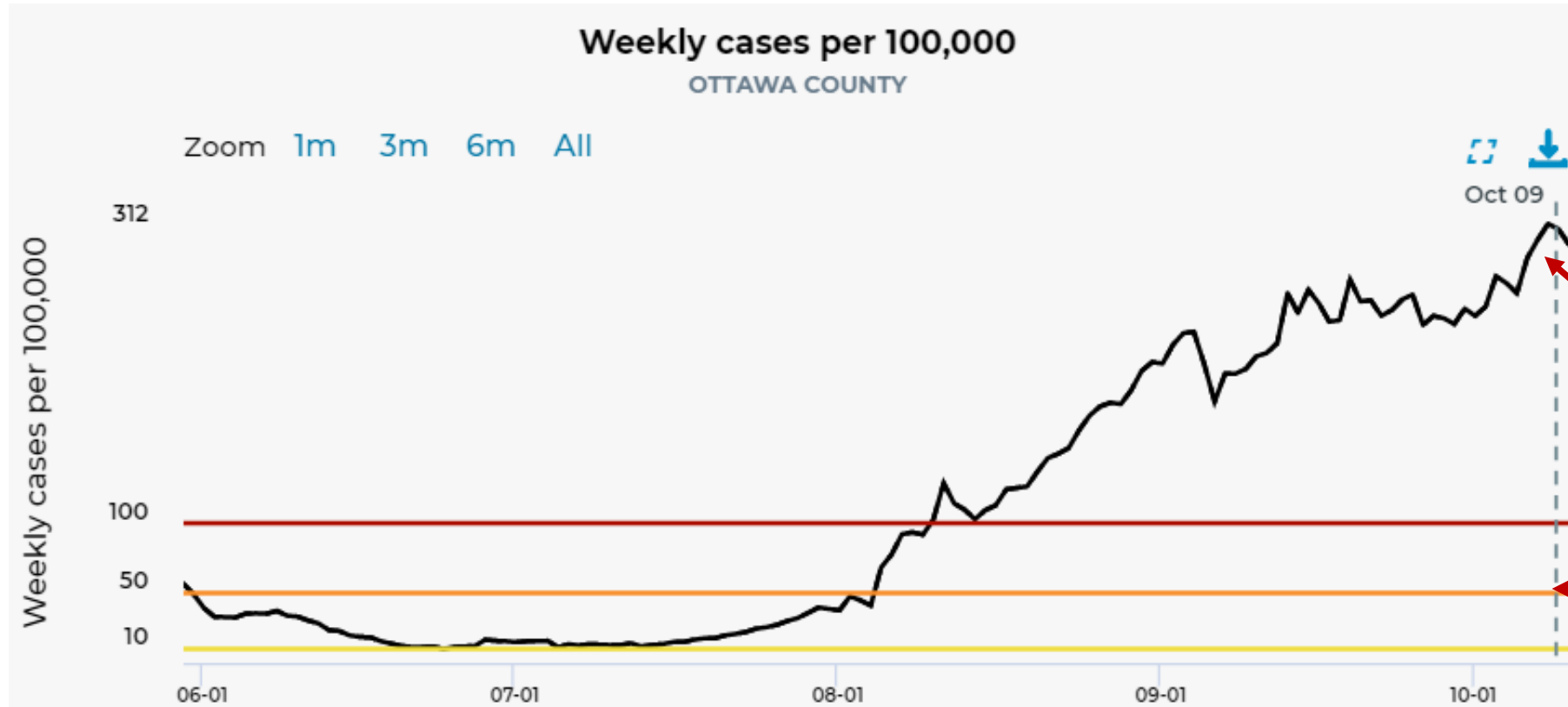


Note: Testing in Ottawa County has increased since mid-July 2021: [Testing Results | Ottawa County Covid-19 Case Summary Data \(arcgis.com\)](#)

Source: <https://www.mistartmap.info/cdc-indicators?area=county%3Aottawa>

Case Rates in Ottawa County – All Ages

COVID-19 Cases by Day, Ottawa County, June 1, 2021 – October 9, 2021



Case rates increased to over 300 cases per week per 100,000 population.

The goal is to have less than 50 cases per week per 100,000 population. In Ottawa County, this would be about 21 cases per day or less.

Risk Thresholds (Cases per 100,000)



Low: <10



Moderate 10-49



Substantial 50-99



High >=100

Source: <https://www.mistartmap.info/cdc-indicators?area=county%3Aottawa>

USA & MI

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Risk Levels

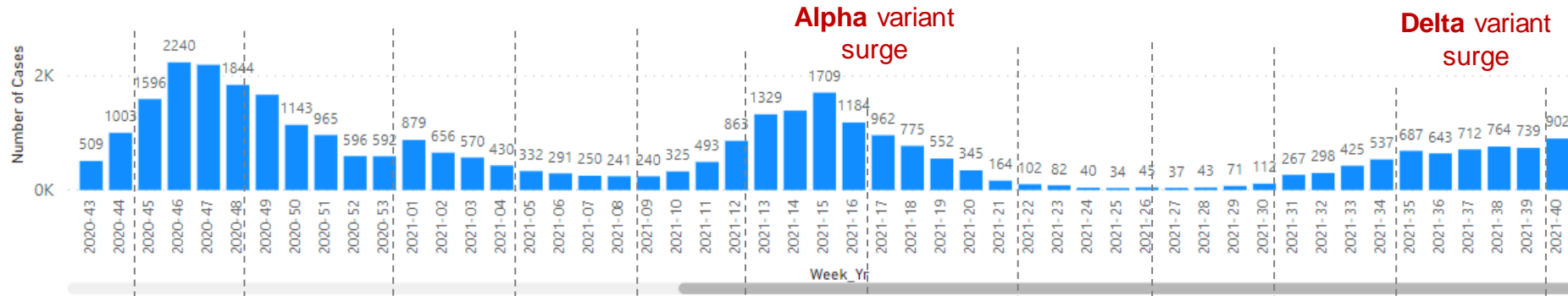
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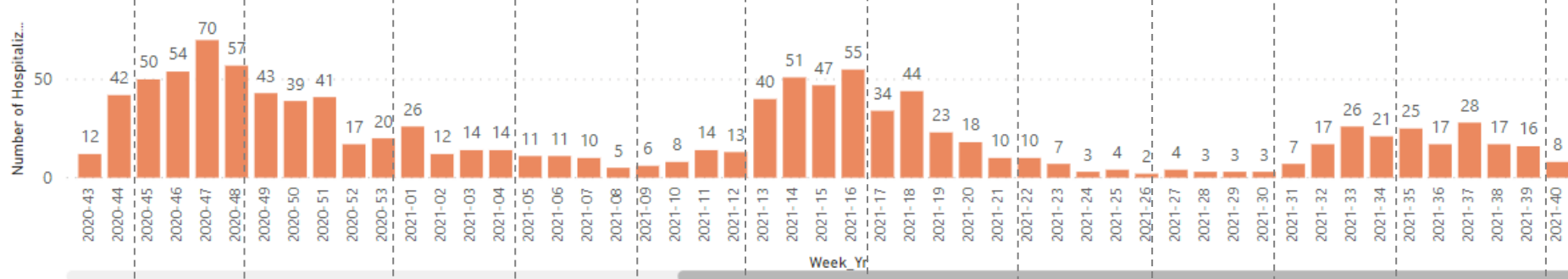
Ottawa County - Cases, Hospitalizations, & Deaths by Week, All Ages

New Cases By Week of Referral



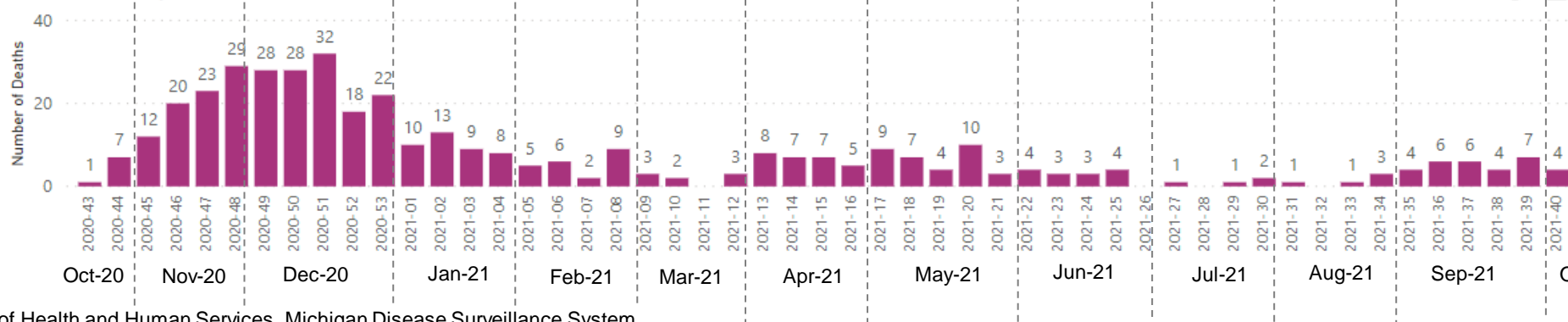
The weekly number of **cases** increased 22% last week.

New Hospitalizations by Week of Admission



The weekly number of **hospitalizations** has been relatively stable with an average of about 17 cases hospitalized each week over the last month.

New Deaths by Week of Death



Weekly COVID-19 **deaths** remain lower than previous waves.

Hospitalizations and deaths in recent weeks may increase as data is updated.

Hospitalizations are likely **underestimated** because:

- (i) Hospitalization status is obtained only by manual review, and
- (ii) Hospitalization may occur after public health interview.

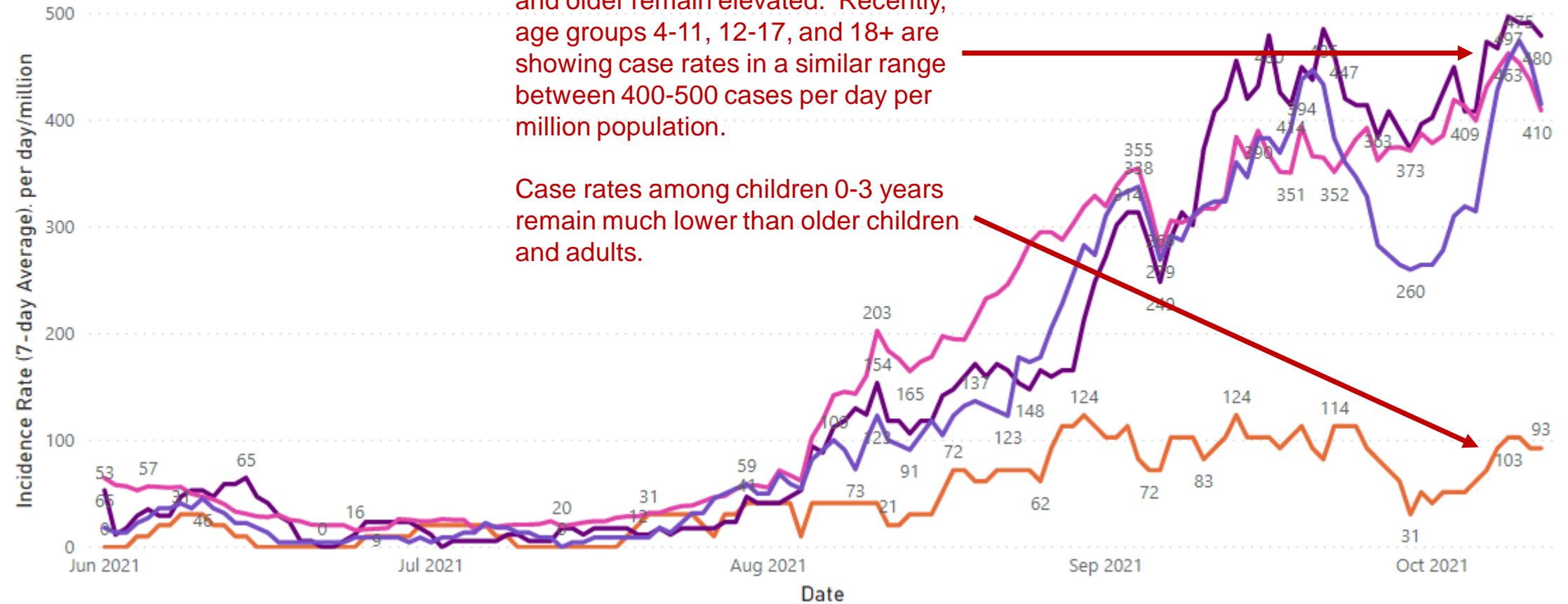
Source: Michigan Department of Health and Human Services, Michigan Disease Surveillance System

Ottawa County - Case Rate Trends – by Age

COVID-19 Case Rates by Age, includes School-Aged, June 2021 – October 11, 2021

Incidence Rate (7-day Average)

rategroup ● 0-3 ● 12-17 ● 18+ ● 4-11



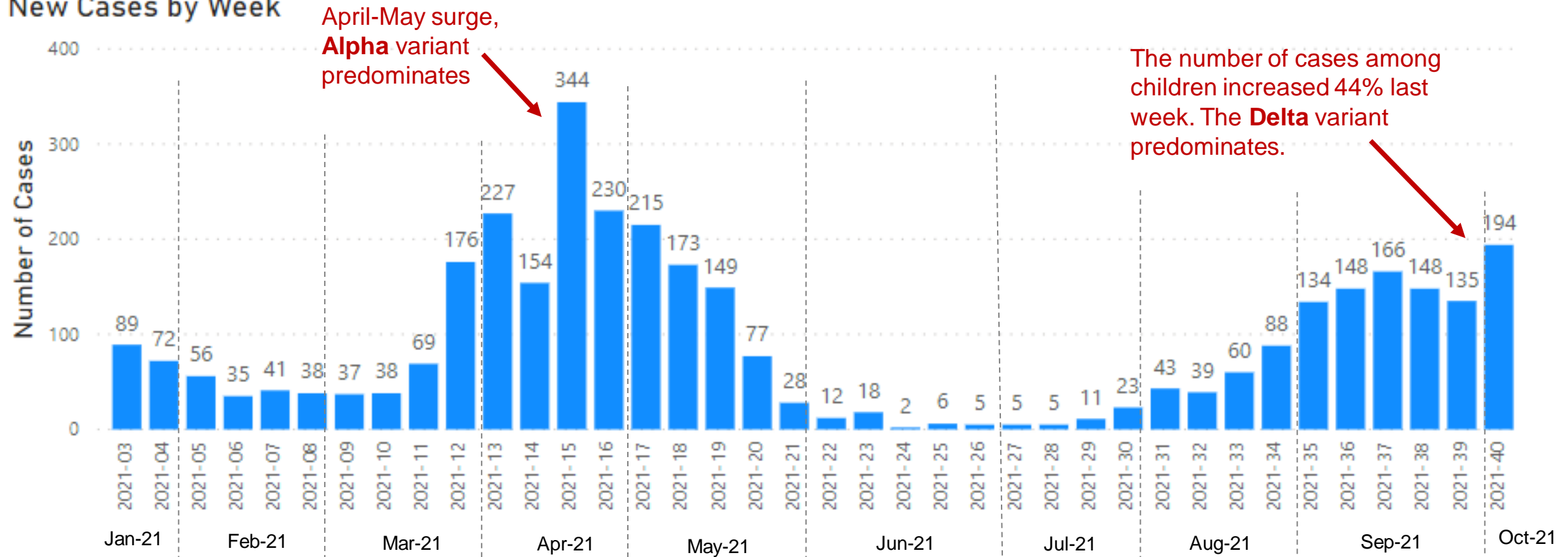
Source: Michigan Department of Health and Human Services, Michigan Disease Surveillance System

Data as of October 11, 2021

Ottawa County Weekly Case Counts – Children (0-17)

COVID-19 Cases Among Minors (0-17 years), by Week, January 2021 – October 9, 2021

New Cases by Week



Source: Michigan Department of Health and Human Services, Michigan Disease Surveillance System

Ottawa County Weekly Case Counts and % Change, by Age

Week Ending	Adults (18+)		Children (0-17 years)		Total	
	Number	% Change from Previous Week	Number	% Change from Previous Week	Number	% Change from Previous Week
3-Jul-21	40		5		45	
10-Jul-21	32	-20%	5	0%	37	-18%
17-Jul-21	38	19%	5	0%	43	16%
24-Jul-21	60	58%	11	120%	71	65%
31-Jul-21	89	48%	23	109%	112	58%
7-Aug-21	224	152%	43	87%	267	138%
14-Aug-21	259	16%	39	-9%	298	12%
21-Aug-21	365	41%	60	54%	425	43%
28-Aug-21	449	23%	88	47%	537	26%
4-Sep-21	553	23%	134	52%	687	28%
11-Sep-21	495	-10%	148	10%	643	-6%
18-Sep-21	546	10%	166	12%	712	11%
25-Sep-21	616	13%	148	-11%	764	7%
2-Oct-21	604	-2%	135	-9%	739	-3%
9-Oct-21	708	17%	194	44%	902	22%

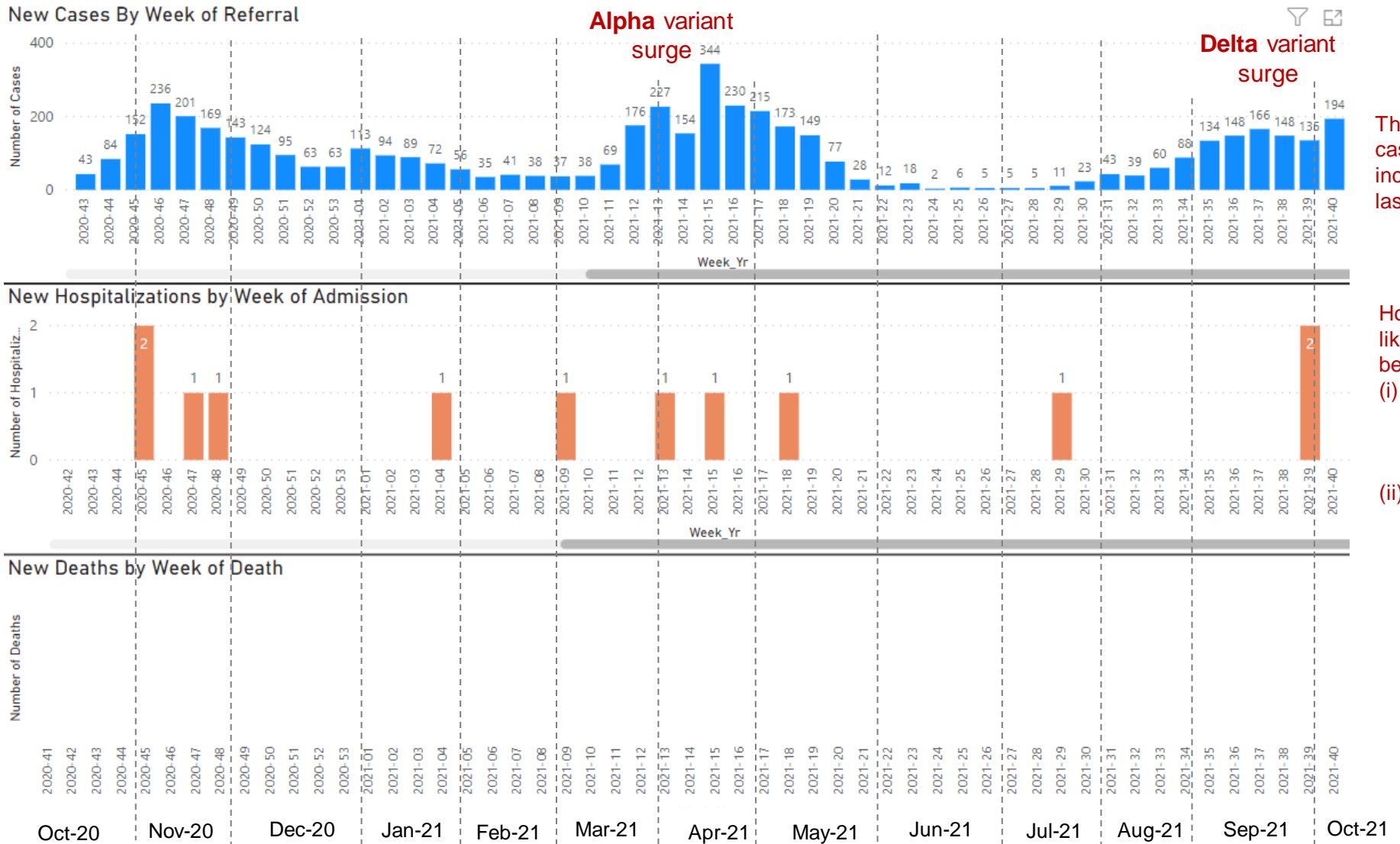
Adults

Children

Cases among children increased 44% last week, and cases in adults increased 17%.

Source: Michigan Department of Health and Human Services, Michigan Disease Surveillance System

Ottawa County - Cases, Hospitalizations, & Deaths by Week Among Children (0-17 years)



The weekly number of cases among children increased 44% in the last 2 full weeks.

Hospitalizations are likely **underestimated** because:

- (i) Hospitalization status is obtained only by manual review, and
- (ii) Hospitalization may occur after public health interview.

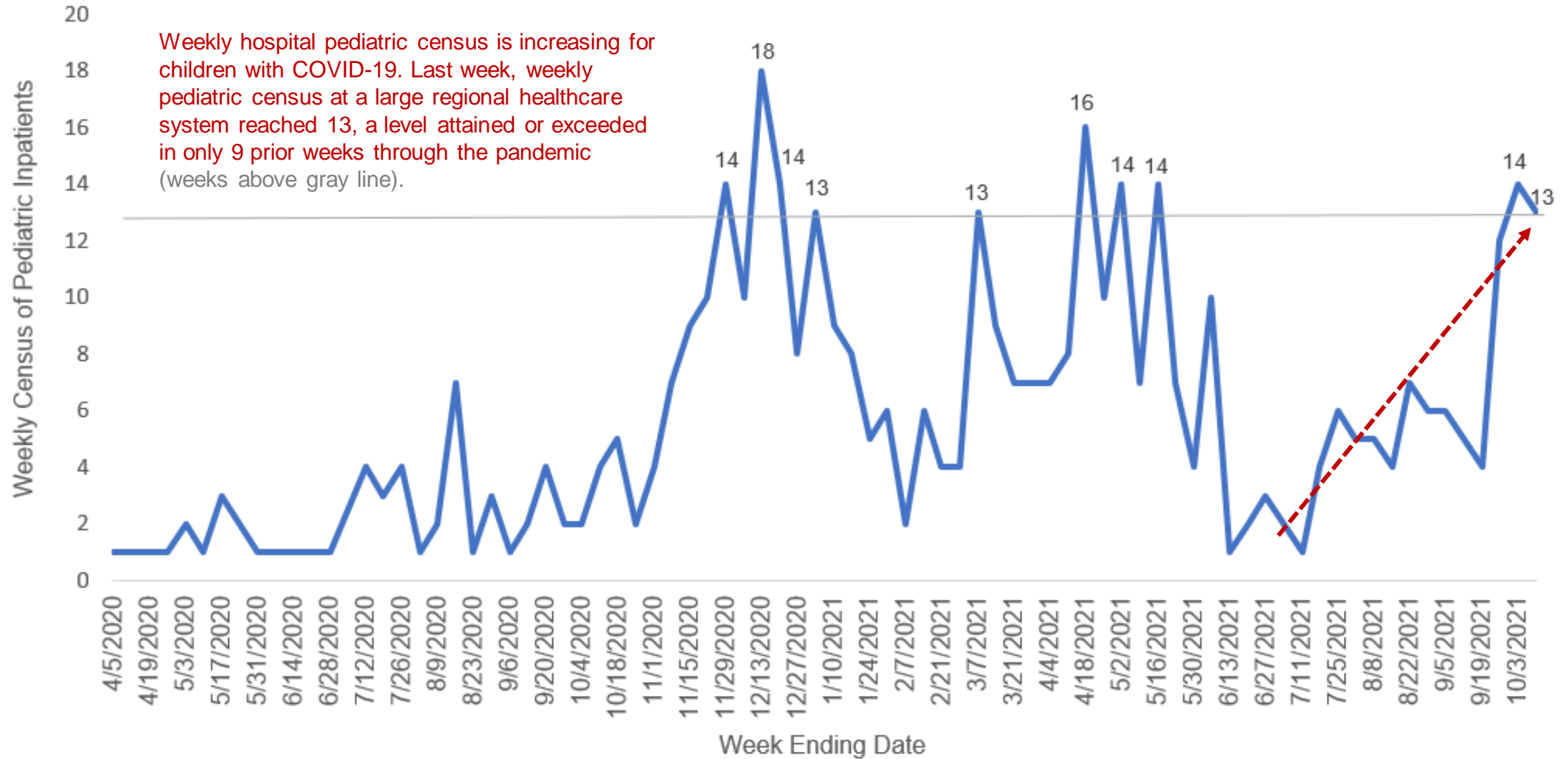
Through the 2020-2021 school year nearly all school-aged children were in environments with:

- universal masking
- cohorting
- online learning
- social distancing
- mandatory quarantine for all close contacts
- testing (for high school athletes)

These mitigation strategies likely reduced case counts and hospitalizations among children.

Source: Michigan Department of Health and Human Services, Michigan Disease Surveillance System

Weekly Hospital Pediatric Census – A Regional Healthcare System



Note: Data above includes persons younger than 18 years of age with confirmed COVID-19 hospitalized at a large regional healthcare system. Patients may be listed in more than one week. Data may change as information is updated.

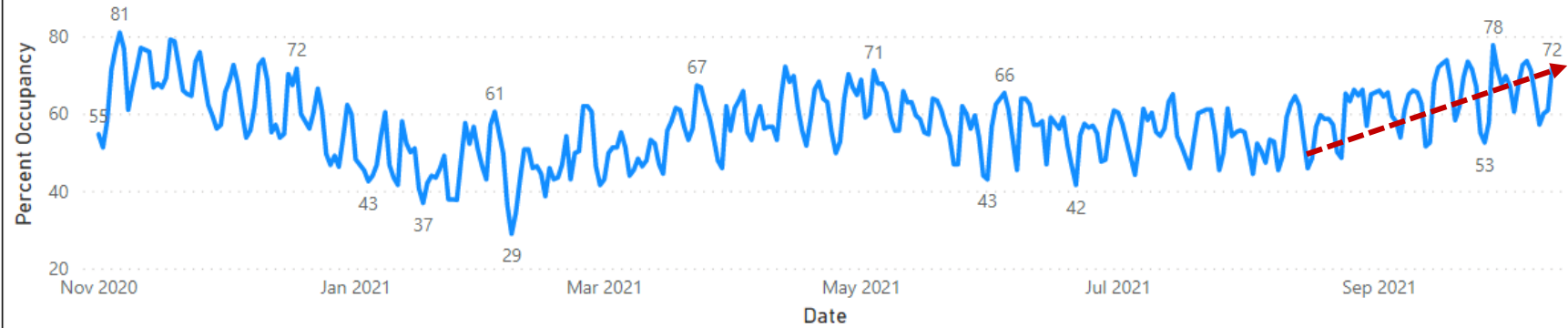
Data through October 10, 2021

Ottawa County Hospital Capacity – All Beds

Total Inpatient Bed Occupancy (All Patients, COVID and Non-COVID)

Percent Occupancy by Date and County

County ● Ottawa



Total hospital bed occupancy is increasing. The proportion of beds occupied by COVID-19 patients is **increasing**.

COVID Inpatient Bed Occupancy (COVID Patients Only, Confirmed and Suspected)

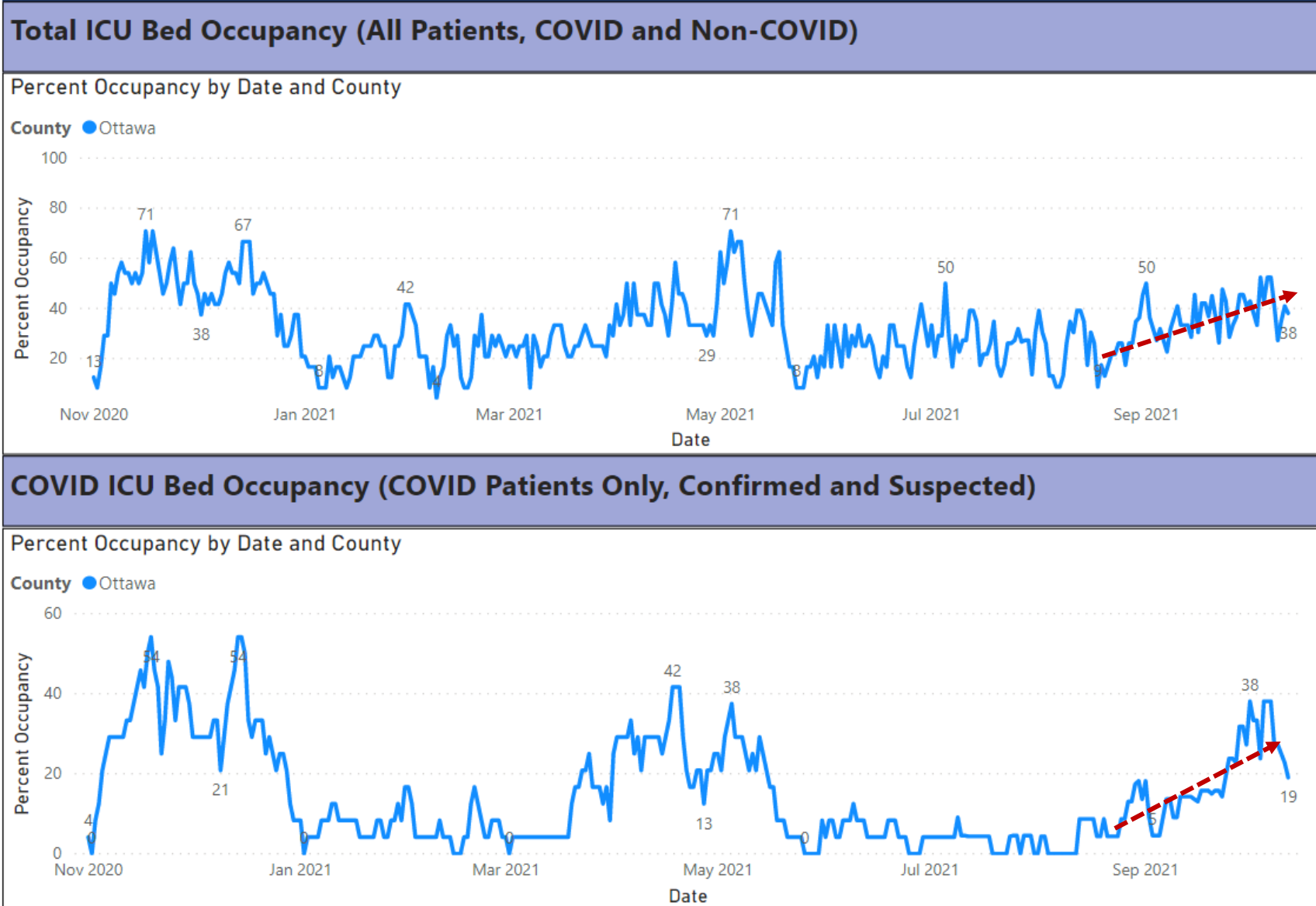
Percent Occupancy by Date and County

County ● Ottawa



Currently **11%** of all inpatient beds are occupied by COVID-19 patients.

Ottawa County Hospital Capacity – ICU Beds



Overall ICU bed occupancy is showing **increases**.

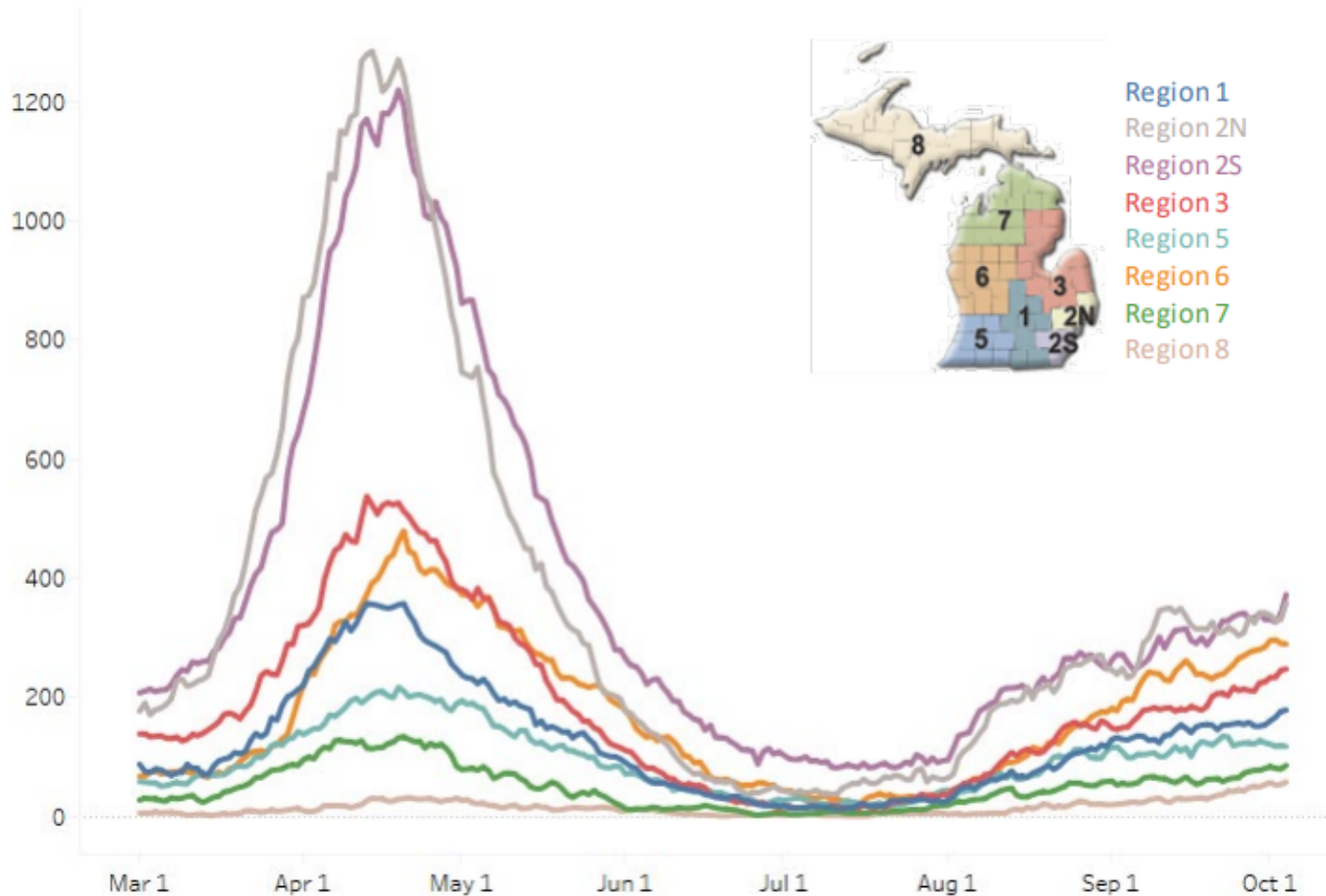
The proportion of ICU beds occupied by COVID patients is **currently 19%**.

Source: EMResources

Data through October 12, 2021

Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 3/1/2021 – 10/4/2021
Confirmed Positive by Region



The hospital census of COVID+ patients has increased in each region, except Region 5.

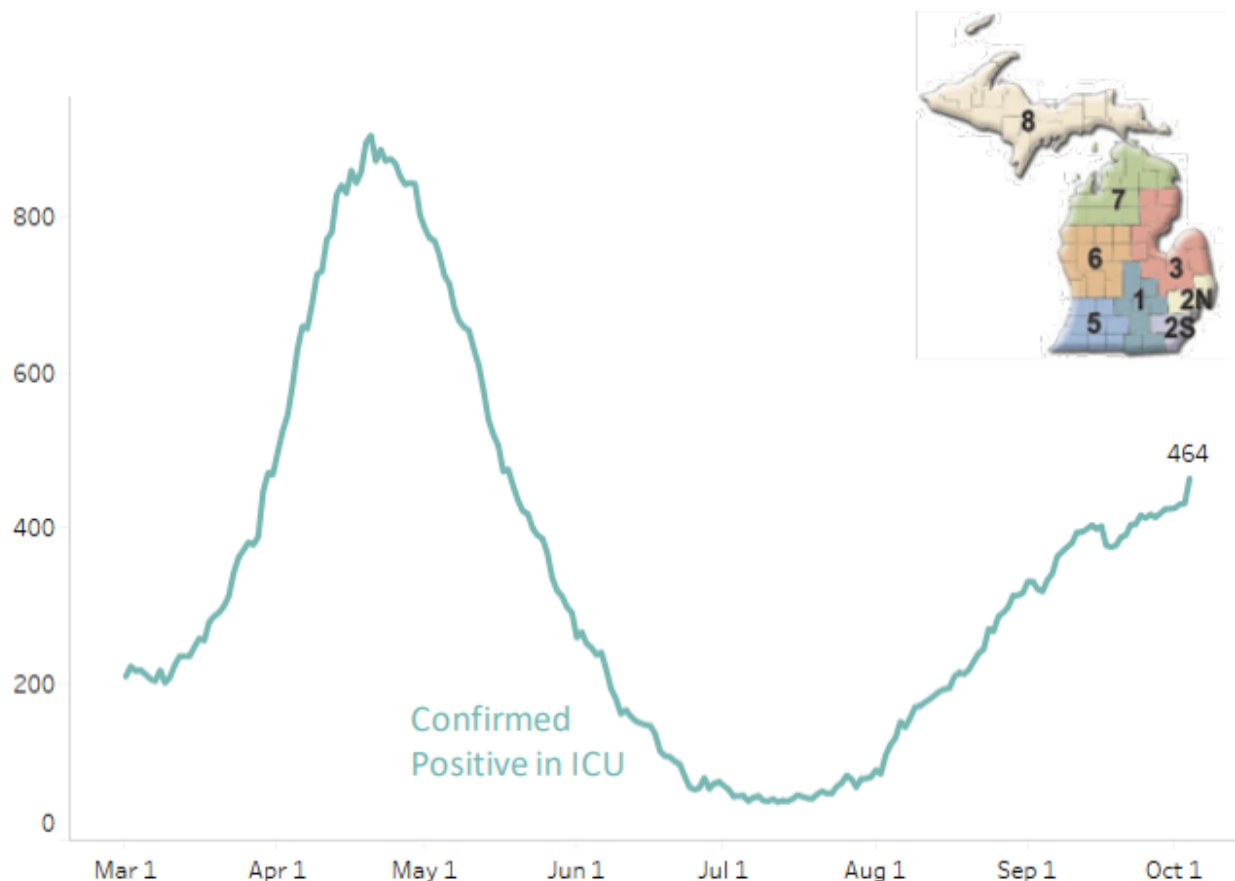
All regions, except Region 5, now have above 150/M population hospitalized. Region 3 has greater than 200 hospitalized/M population.

Region	COVID+ Hospitalizations (% Δ from last week)	COVID+ Hospitalizations / MM
Region 1	178 (13%)	165/M
Region 2N	358 (8%)	162/M
Region 2S	372 (12%)	167/M
Region 3	247 (17%)	218/M
Region 5	117 (-5%)	123/M
Region 6	289 (5%)	197/M
Region 7	85 (13%)	170/M
Region 8	57 (19%)	183/M

Source: MDHHS Data and Modelling https://www.michigan.gov/documents/coronavirus/20211005_Data_and_modeling_update_vMEDIA_737659_7.pdf

Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 3/1/2021 – 10/4/2021
Confirmed Positive in ICUs



Overall, the census of COVID+ patients in ICUs has increased by 12% from last week, with increases in every region.

Regions 1 and 3 have ICU occupancy at 90%.

Regions 1 and 6 have 30% or greater of adult ICU beds filled with COVID+ patients.

Region	Adult COVID+ in ICU (% Δ from last week)	Adult ICU Occupancy	% of Adult ICU beds COVID+
Region 1	52 (11%)	90%	30%
Region 2N	95 (17%)	72%	17%
Region 2S	89 (6%)	80%	13%
Region 3	63 (19%)	90%	18%
Region 5	34 (10%)	75%	19%
Region 6	81 (11%)	80%	34%
Region 7	35 (6%)	83%	24%
Region 8	15 (36%)	65%	24%

Source: MDHHS Data and Modelling https://www.michigan.gov/documents/coronavirus/20211005_Data_and_modeling_update_vMEDIA_737659_7.pdf

Pediatric Hospitalization Rates – USA, Georgia, Michigan

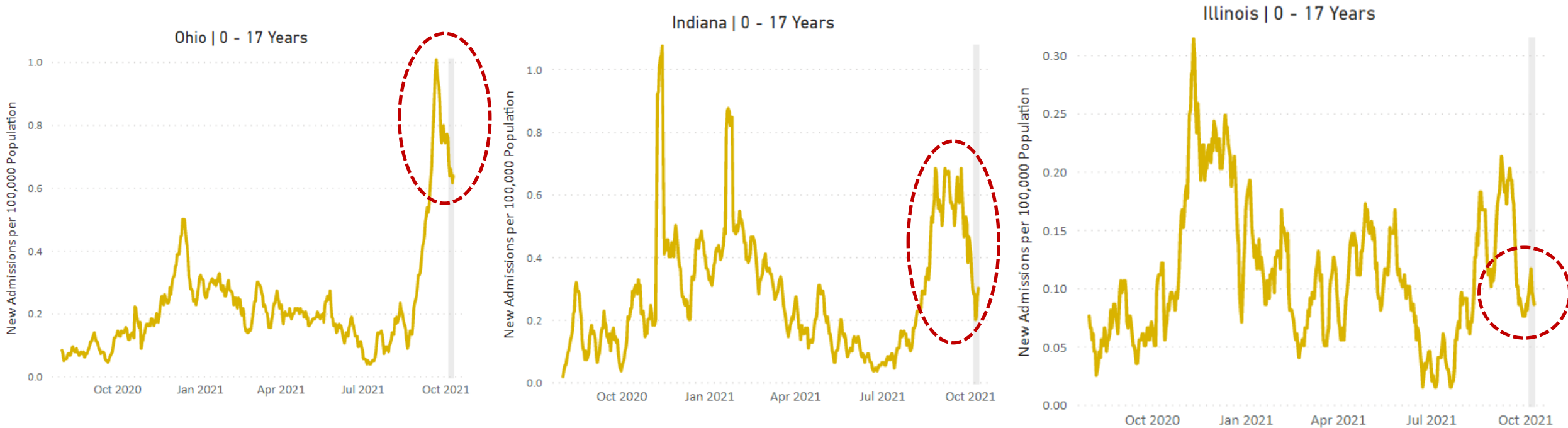


Pediatric hospitalization rates across the United States and most southern states (such as Georgia) are decreasing. Michigan currently has lower pediatric hospitalization rates than past waves, but rates continue to increase.

Source: <https://covid.cdc.gov/covid-data-tracker/#new-hospital-admissions>

Accessed October 13, 2021

Pediatric Hospitalization Rates – Select Midwest States



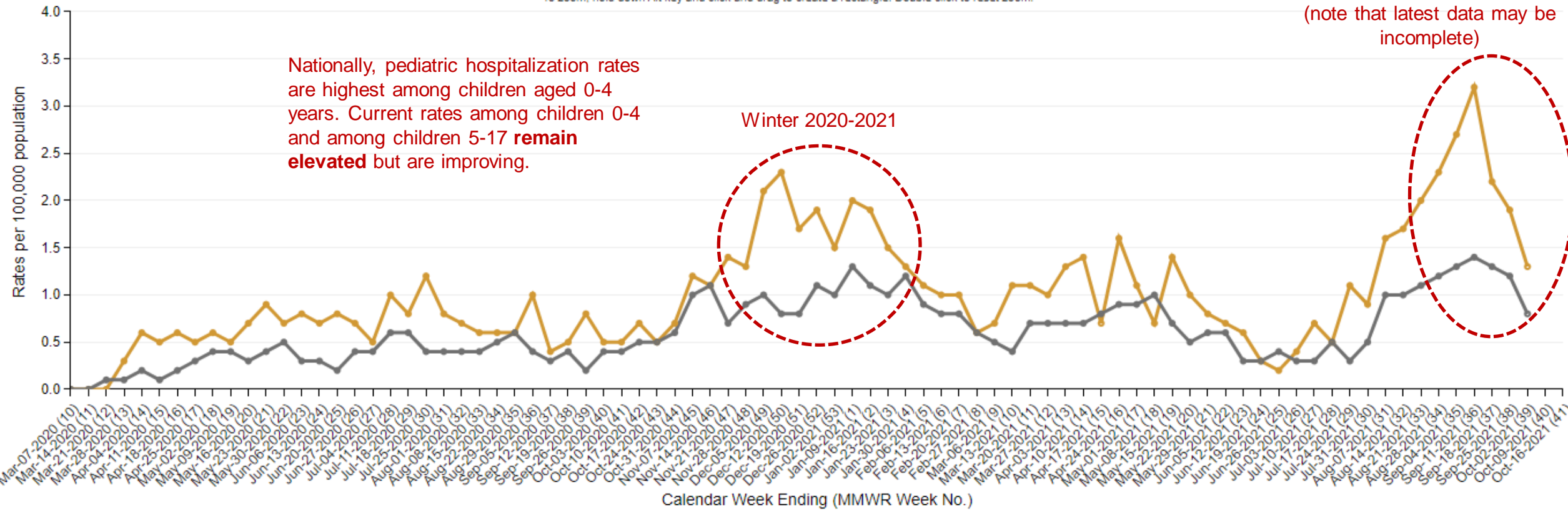
Pediatric hospitalization rates in some states across the Midwest are elevated. Ohio continues experiencing a substantial surge, while Indiana and Illinois continue to show improving pediatric hospitalization rates.

Source: <https://covid.cdc.gov/covid-data-tracker/#new-hospital-admissions>

Accessed October 13, 2021

Pediatric Hospitalization Rates by Age Group – USA

COVID-NET :: Entire Network :: 2020-21 :: Weekly Rate
 To zoom, hold down Alt key and click and drag to create a rectangle. Double click to reset zoom.



Nationally, pediatric hospitalization rates are highest among children aged 0-4 years. Current rates among children 0-4 and among children 5-17 remain elevated but are improving.

Winter 2020-21

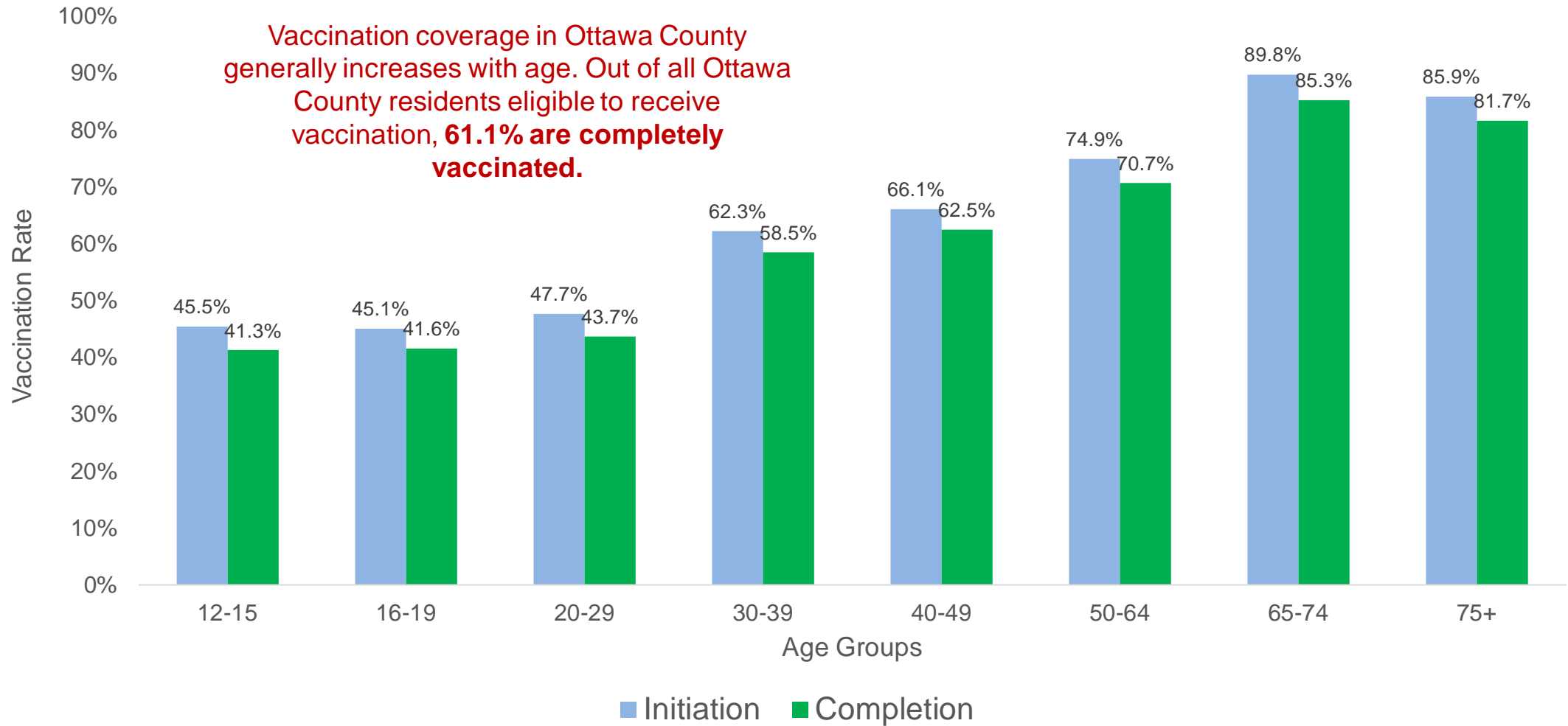
Most recent data (note that latest data may be incomplete)

The Coronavirus Disease 2019 (COVID-19)-Associated Hospitalization Surveillance Network (COVID-NET) hospitalization data are preliminary and subject to change as more data become available. In particular, case counts and rates for recent hospital admissions are subject to lag. As data are received each week, prior case counts and rates are updated accordingly. COVID-NET conducts population-based surveillance for laboratory-confirmed COVID-19-associated hospitalizations in children (less than 18 years of age) and adults. COVID-NET covers nearly 100 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) and four Influenza Hospitalization Surveillance Project (IHSP) states (IA, MI, OH, and UT). Incidence rates (per 100,000 population) are calculated using the National Center for Health Statistics' (NCHS) vintage 2019 bridged-race postcensal population estimates for the counties included in the surveillance catchment area. The rates provided are likely to be underestimated as COVID-19 hospitalizations might be missed due to test availability and provider or facility testing practices.

Source: <https://covid.cdc.gov/covid-data-tracker/#covidnet-hospitalization-network>

Accessed October 13, 2021

Vaccination Coverage by Age



Note: The previously posted vaccination rate goal of 70% was removed from this illustration. As more transmissible COVID-19 variants emerge, vaccination rates higher than 70% are likely needed to slow COVID-19 transmission in the community.

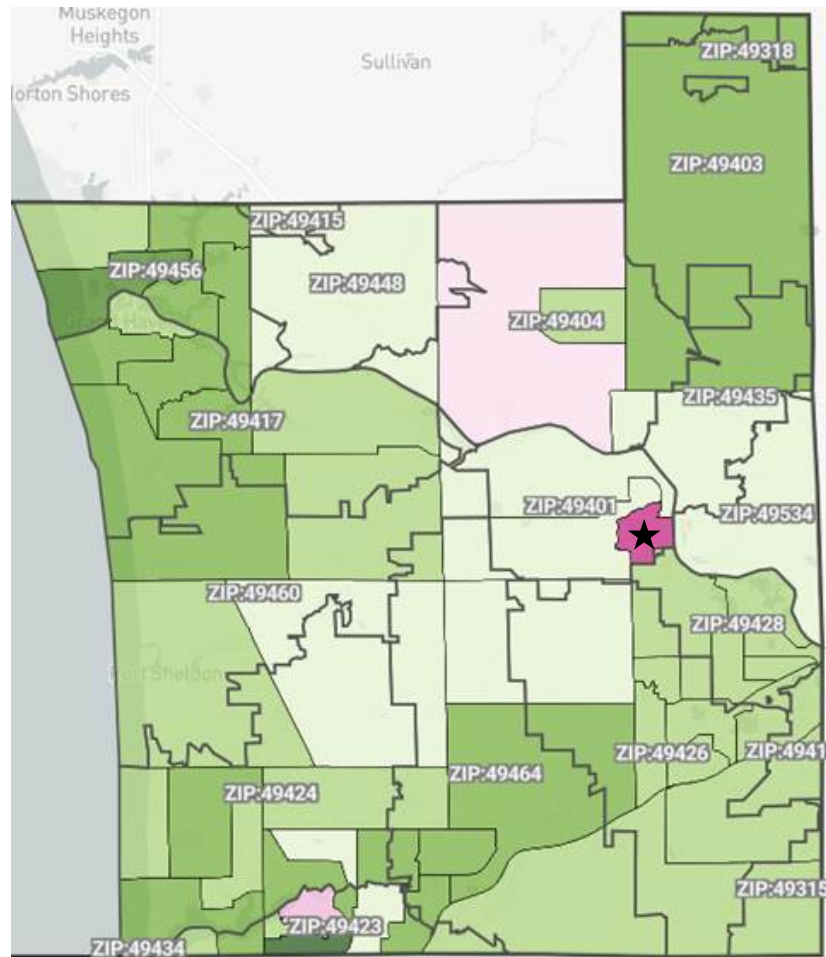
Source: https://www.michigan.gov/coronavirus/0,9753,7-406-98178_103214_103272-547150--,00.html

Data through October 12, 2021

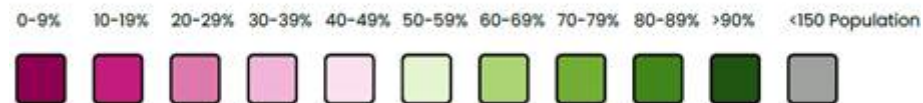
Vaccination Coverage by Place of Residence

Fully vaccinated: % Ages 16+ years

Vaccination rates vary across Ottawa County, but most areas have at least 50% of the population aged 16+ completely vaccinated.



Color coded by: Fully Vaccinated (% Ages 16+)



★ The vaccination rate for this census tract is likely underestimated because census estimates in this tract may be inflated by seasonal students at a large university.

Source: MI-Lighthouse Internal Dashboard

Cumulative Cases by Vaccination Status, Ottawa County, January 15, 2021 – October 9, 2021

Fully Vaccinated People (149,777)		
Cases	Hospitalizations	Deaths
Percent of Cases in People Not Fully Vaccinated (17,298 / 19,157) 90.3%	Percent of Hospitalizations in People Not Fully Vaccinated (567 / 663) 85.5%	Percent of Deaths in People Not Fully Vaccinated (112 / 140) 80.0%
Total Cases Not Fully Vaccinated 17,298	Total Hospitalized Not Fully Vaccinated 567	Total Deaths Not Fully Vaccinated 112
Total Breakthrough Cases 1,859	Total Breakthrough Hospitalizations 96	Total Breakthrough Deaths 28
Percent of Fully Vaccinated People who Developed COVID-19 (1,859 / 149,777) 1.241%	Percent of Fully Vaccinated People who were Hospitalized for COVID-19 (96 / 149,777) 0.064%	Percent of Fully Vaccinated People who Died of COVID-19 (28 / 149,777) 0.019%
Percent of Cases who were Fully Vaccinated (1,859 / 19,157) 9.7%	Percent of Hospitalizations who were Fully Vaccinated (96 / 663) 14.5%	Percent of Deaths who were Fully Vaccinated (28 / 140) 20.0%
Total Cases 19,157	Total Hospitalizations 663	Total Deaths 140

Sources:
Michigan Department of Health and Human Services, Michigan Disease Surveillance System
MDHHS COVID-19 Dashboard: https://www.michigan.gov/coronavirus/0,9753,7-406-98178_103214_103272-547150--,00.html

Variants – Wastewater Sampling – Holland/Zeeland

Sample Date	Site	Wuhan (parental)	Alpha	Beta	Gamma	Delta	Epsilon
7/15/2021	North Holland	N	N	N	N	N	Y
7/16/2021	Zeeland	N	N	N	N	Y	N
7/21/2021	North Holland	Y	N	Y	N	N	Y
7/21/2021	Zeeland	N	N	N	N	Y	N
7/21/2021	North Holland	N	N	N	N	Y	N
7/27/2021	Zeeland	N	N	N	N	Y	N
7/29/2021	North Holland	N	N	N	N	N	N
7/30/2021	Zeeland	Y	N	N	N	Y	Y
8/2/2021	North Holland	Y	N	Y	N	N	N
8/3/2021	Zeeland	N	N	N	N	Y	N
8/5/2021	North Holland	N	N	N	N	Y	Y
8/6/2021	Zeeland	N	N	N	N	Y	Y
8/9/2021	North Holland	N	N	N	N	N	N
8/10/2021	Zeeland	N	N	N	N	Y	N
8/12/2021	North Holland	N	N	N	N	N	N
8/13/2021	Zeeland	Y	N	N	N	Y	N
8/16/2021	North Holland	N	N	N	N	Y	N
8/17/2021	Zeeland	N	N	N	N	Y	N
8/19/2021	North Holland	N	N	N	N	N	N
8/20/2021	Zeeland	N	N	N	N	Y	N
8/23/2021	North Holland	Y	N	N	N	Y	N
8/24/2021	Zeeland	N	N	N	N	Y	N
8/26/2021	North Holland	Y	Y	N	N	Y	N
8/27/2021	Zeeland	N	N	N	N	Y	N
8/31/2021	Zeeland	Y	N	N	N	Y	N
9/2/2021	North Holland	Y	N	N	N	N	N
9/3/2021	Zeeland	N	N	N	N	Y	N
9/6/2021	North Holland	Y	N	N	N	Y	N
9/7/2021	Zeeland	N	N	N	N	N	N
9/9/2021	North Holland	N	N	N	N	Y	N
9/10/2021	Zeeland	N	N	N	N	Y	N
9/14/2021	Zeeland	N	N	N	N	Y	N
9/16/2021	North Holland	N	N	N	N	N	N
9/21/2021	Zeeland	N	N	N	N	Y	N
9/22/2021	North Holland	N	N	N	N	N	N
9/23/2021	Zeeland	N	N	N	N	Y	N
9/26/2021	North Holland	Y	N	N	N	Y	N
9/29/2021	North Holland	N	N	N	N	Y	N
9/30/2021	Zeeland	N	N	N	N	Y	N
10/3/2021	North Holland	Y	N	N	N	Y	N
10/4/2021	Zeeland	N	N	N	N	Y	N

Y = Detected
N = Not Detected

The **Delta** variant was consistently detected in Holland and Zeeland wastewater samples through all of September 2021, with no other variants detected in that same time frame. This data indicate that Delta remains the dominant variant in Ottawa County.

Source: Hope College Global Water Research Institute as part of the MDHHS SEWER-Network, Aaron Best, Ph.D. (best@hope.edu)

CDC Community Risk Transmission Levels & Metrics

Indicator - If the two indicators suggest different transmission levels, the higher level is selected	Low Transmission Blue	Moderate Transmission Yellow	Substantial Transmission Orange	High Transmission Red
Total new cases per 100,000 persons in the past 7 days	0-9.99	10-49.99	50-99.99	≥ 100
Percentage of NAATs ¹ that are positive during the past 7 days	0-4.99%	5-7.99%	8-9.99%	≥ 10.0%

Ottawa's goal is to be in the Moderate category*

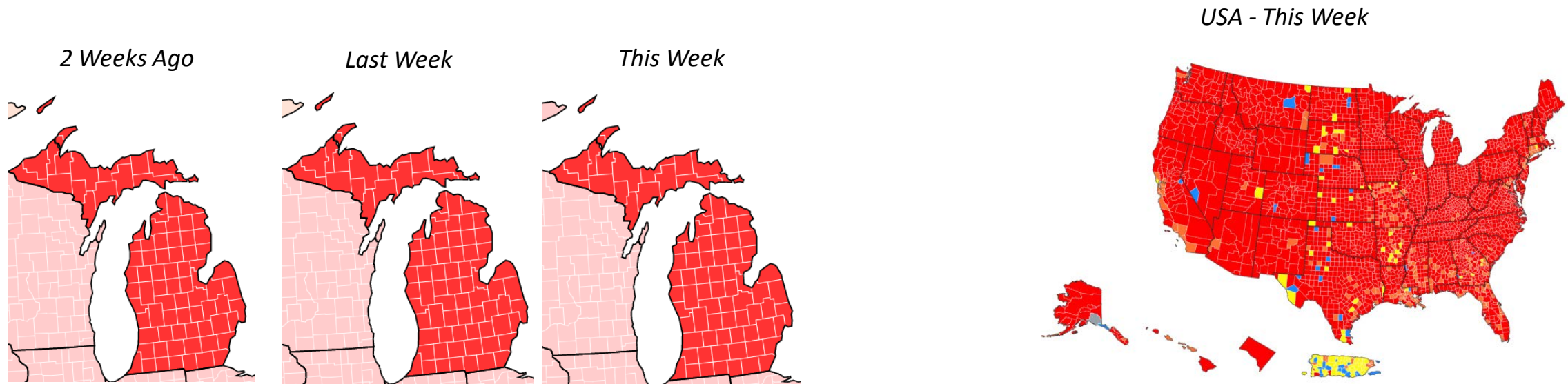
Ottawa is in the High category right now

*After further analysis of Ottawa County case rate data, positivity data, and CDC Community Transmission Levels, on October 8, 2021 the Ottawa County Department of Public Health (OCDPH) relaxed one of the criteria that may be used to rescind the current school mask order. The criterion that set a threshold of a CDC Community Transmission Level of Low for 7 consecutive days was changed to a threshold of Moderate for 14 consecutive days.

Source: <https://covid.cdc.gov/covid-data-tracker/#county-view>

CDC Community Transmission Risk Levels – Ottawa County

- Current Risk Level in Ottawa – **HIGH** (for last 8+ weeks)
- Current Data:
 - Positivity = 14.23%
 - Case Rate = 301.89 cases per week per 100,000



Source: <https://covid.cdc.gov/covid-data-tracker/#county-view>

Data as of October 13, 2021

USA & MI

Spread

Children

Hospitalizations

Vaccinations

Variants

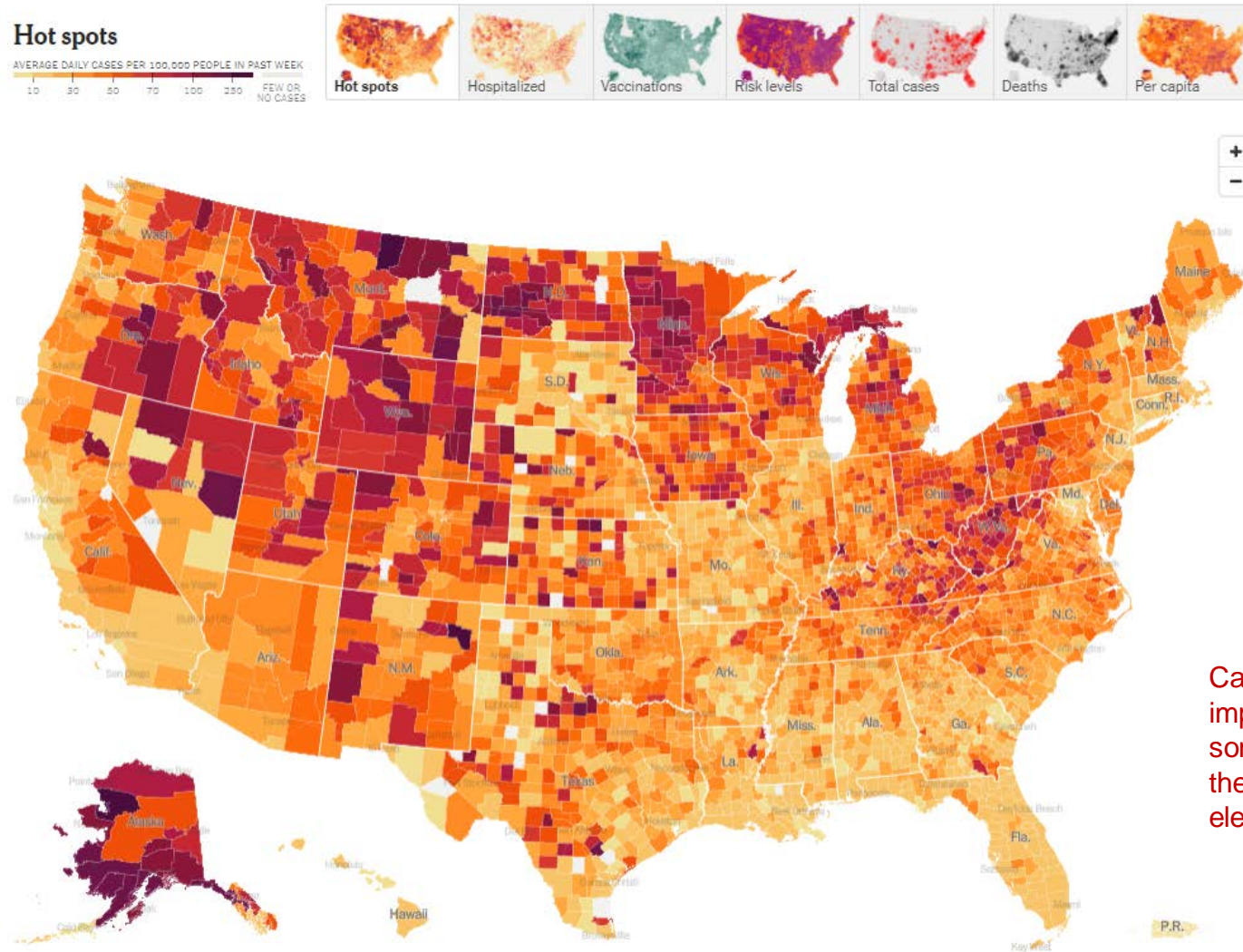
Risk Levels

Other

Media

Science
Roundup

COVID-19 Case Rates by County Across the US



Source: <https://www.nytimes.com/interactive/2021/us/covid-cases.html>

Accessed October 13, 2021

USA & MI

Spread

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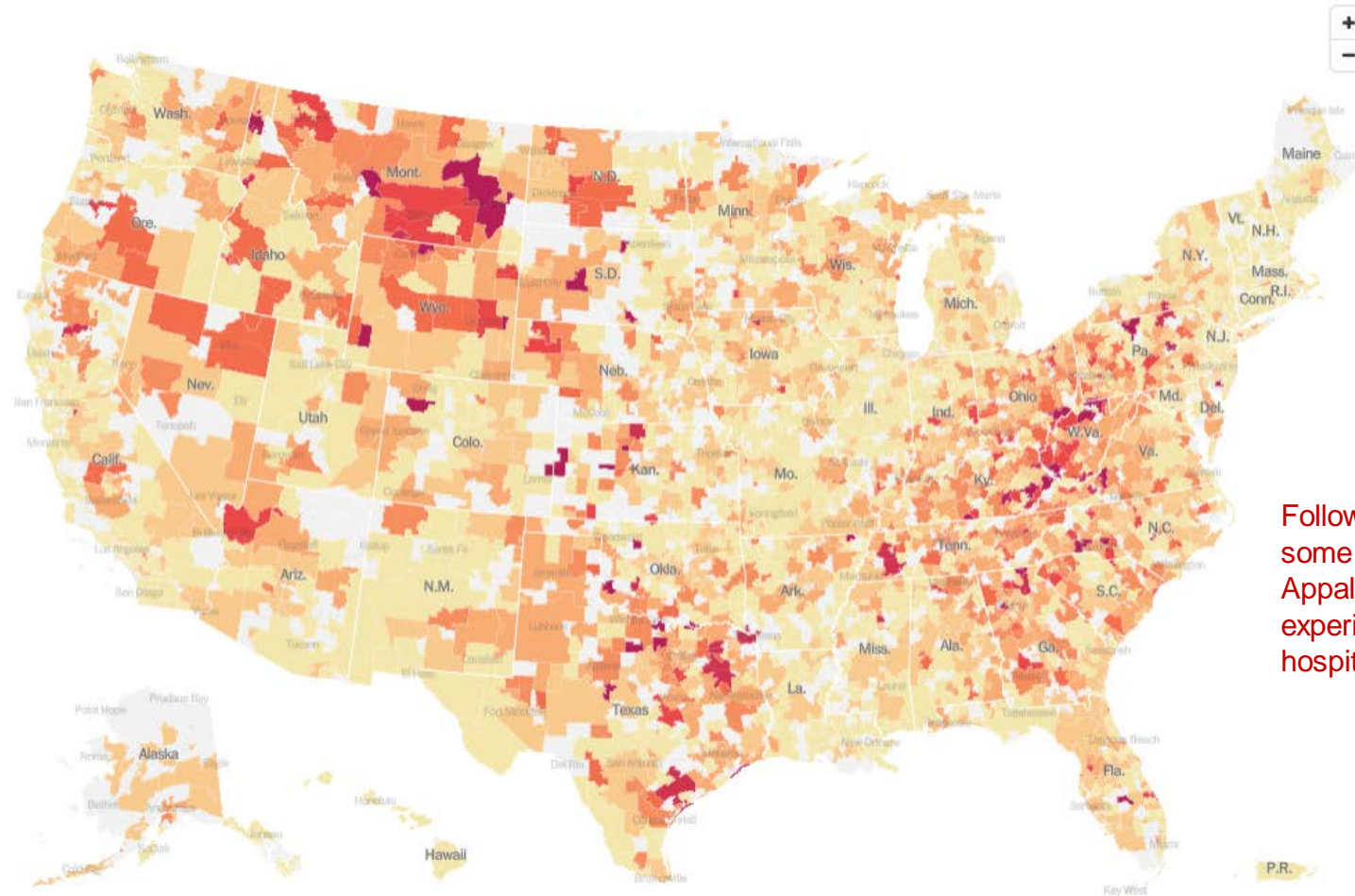
Risk Levels

Other

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Roundup

COVID-19 Hospitalization Rates by County Across the US



Following a surge in cases, some Southern, Western, and Appalachian states are also experiencing higher rates of hospitalization.

Source: <https://www.nytimes.com/interactive/2021/us/covid-cases.html>

Accessed October 13, 2021

States and Michigan Counties with School Masking Requirements

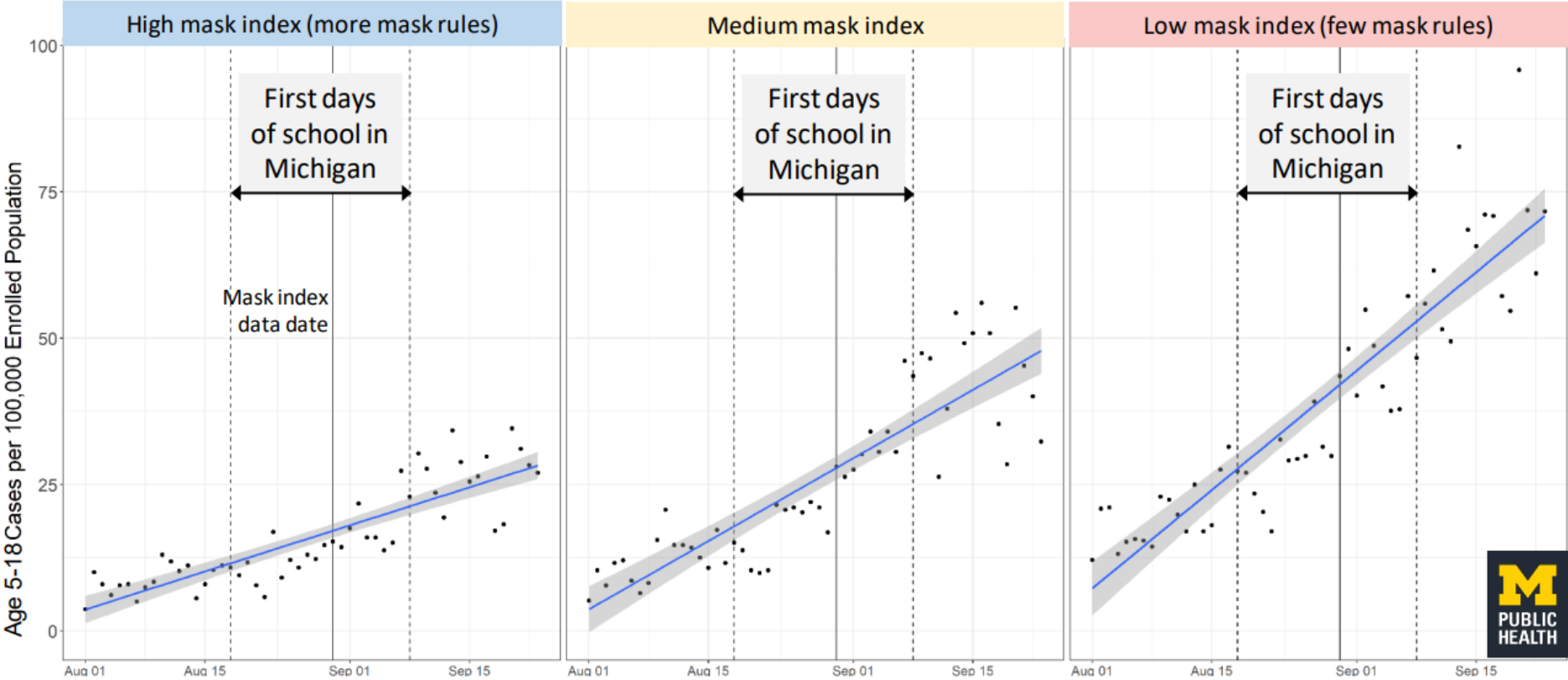
- **States/Districts (18):** California, Connecticut, Delaware, Hawaii, Illinois, Louisiana, Maryland, Massachusetts, New Mexico, New Jersey, New York, Nevada, Oregon, Pennsylvania, Rhode Island, Virginia, Washington, & Washington D.C.
- **Michigan Counties (15):**
 - **PreK/K-6:** Kalamazoo, Kent, Marquette, Ottawa
 - **K-12:** Antrim, Benzie, Charlevoix, Emmet, Genesee, Ingham, Leelanau, Oakland, Otsego, Washtenaw, and Wayne
- **Recently Rescinded County Mask Mandates (6):**
 - Allegan, Barry, Berrien, Eaton, Iron, Dickinson

Notes: List may not be comprehensive; this week Kentucky was removed and Maryland was added to the list of States/Districts with school masking requirements.

MDHHS Evaluation Shows Higher Case Rates in School Districts with Fewer Mask Rules

Districts with fewer mask rules during back-to-school saw higher case rates and faster case rises

High mask index = mask required for all grades; Medium = partial mask req. (tiered, some grades, based on vax status, staff only); Low = None or unknown. See Appendix for details. Blue line & shaded region is a linear trend fit. Data Sources: MDSS/MDHHS case data as of 10/1/2021 geocoded to school district, EOG School District Mask Policy Tracker as of 8/30/2021. Note: Cases are among all 5-18 year olds, population is the school-enrolled population.



Source: https://www.michigan.gov/documents/coronavirus/20211005_Data_and_modeling_update_vMEDIA_737659_7.pdf

COVID-19 News Headlines

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Public Interest

At-home COVID tests are hard to come by, but supply is expected to double soon

Updated: Oct. 08, 2021, 2:54 p.m. | Published: Oct. 08, 2021, 2:54 p.m.

<https://www.mlive.com/public-interest/2021/10/at-home-covid-tests-are-hard-to-come-by-but-supply-is-expected-to-double-soon.html>

COVID-19

Friday's update: Daily case count continues to rise in Michigan, Ottawa County

By Tribune Staff Oct 8, 2021 Updated Oct 8, 2021

https://www.grandhaventribune.com/news/health_care/fridays-update-daily-case-count-continues-to-rise-in-michigan-ottawa-county/article_e80f8f86-285e-11ec-aeb9-dfc4c25ce630.html

Around 90 percent of GVSU students, staff compliant with vaccine requirement

Mitchell Boatman The Holland Sentinel

Published 7:30 a.m. ET Oct. 6, 2021

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<https://www.hollandsentinel.com/story/news/education/2021/10/06/around-90-percent-gvsu-community-compliant-vaccine-requirement/6008192001/>

CORONAVIRUS

Dozens quarantined at Ottawa Co. Jail after 6 positive COVID-19 tests

<https://www.woodtv.com/health/coronavirus/dozens-quarantined-at-ottawa-co-jail-after-6-positive-covid-19-tests/>

HEALTH

Drugmakers seek FDA emergency authorization for molnupiravir, antiviral pill to treat COVID-19: Latest updates

Celina Tebor and John Bacon USA TODAY

Published 6:00 a.m. ET Oct. 11, 2021 | Updated 2:57 p.m. ET Oct. 11, 2021

<https://www.usatoday.com/story/news/health/2021/10/11/covid-vaccinations-molnupiravir-antiviral-pill-cases/6083682001/>

USA & MI

Spread

Children

Hospitalizations

Vaccinations

Variants

Risk Levels


Other

Media

Science Roundup

Science Roundup

Association of pre-existing comorbidities with mortality and disease severity among 167,500 individuals with COVID-19 in Canada: A population-based cohort study

Erjia Ge, Yanhong Li, Shishi Wu, Elisa Candido, Xiaolin Wei 

Published: October 5, 2021 • <https://doi.org/10.1371/journal.pone.0258154>

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0258154>

ORIGINAL ARTICLE

Waning of BNT162b2 Vaccine Protection against SARS-CoV-2 Infection in Qatar

Hiam Chemaitelly, M.Sc., Patrick Tang, M.D., Ph.D., Mohammad R. Hasan, Ph.D., Sawsan AlMukdad, M.Sc., Hadi M. Yassine, Ph.D., Fatiha M. Benslimane, Ph.D., Hebah A. Al Khatib, Ph.D., Peter Coyle, M.D., Houssein H. Ayoub, Ph.D., Zaina Al Kanaani, Ph.D., Einas Al Kuwari, M.D., Andrew Jeremijenko, M.D., *et al.*

<https://www.nejm.org/doi/full/10.1056/NEJMoa2114114>

Evaluation of the relative virulence of novel SARS-CoV-2 variants: a retrospective cohort study in Ontario, Canada

David N. Fisman MD MPH, Ashleigh R. Tuite PhD MPH

<https://www.cmaj.ca/content/cmaj/early/2021/10/04/cmaj.211248.full.pdf>

← A large study out of Canada identified common comorbidities that increase risk of COVID-19 severity and mortality. More comorbidities increased risk, with solid organ transplant, dementia, chronic kidney disease among the higher risk conditions.

← A study published in the New England Journal of Medicine out of Qatar found that vaccine protection against infection may wane over time, but protection against hospitalization and death remain high.

← A preprint study out of Ontario Canada found that novel variants of concern, including Delta, increased the risk of hospitalization, ICU admission, and death.