

Ottawa County COVID-19 Epidemiology

March 24, 2022

Data as of March 19, 2022, unless otherwise indicated

Executive Summary

Transmission in Michigan and the US remains low

Ottawa community transmission levels remain low

- This past week positivity remained stable at 5.1%, compared to 4.9% seen two weeks ago.
- Weekly case counts decreased 8% (-24% two weeks ago), from 131 two weeks ago to 121 last week.
- Cases among children decreased 23% (-21% two weeks ago), from 26 two weeks ago to 20 last week.
- The Omicron variant remains the predominate local strain; the first Omicron subvariant BA.2 reported in Ottawa County was detected in a clinical sample collected March 6, 2022.

Ottawa-area and regional hospitals have improved capacity

- In Ottawa County, 5% of all available beds and 7% of all ICU beds are occupied by COVID-19 patients.*
- No Ottawa-area hospitals employed Emergency Department diversion over the last six weeks.
- All Ottawa hospitals have returned to usual care strategies.
- No Ottawa-area hospitals reported critical staffing challenges over the last five weeks.

Pediatric hospitalization rates in the US and in Michigan are improving

- Regional pediatric hospitalization census fell to the pandemic average two weeks ago and remained low this past week.
- Of Ottawa County residents aged 5+, 62.6% have completed at least their primary vaccination series.

^{*}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

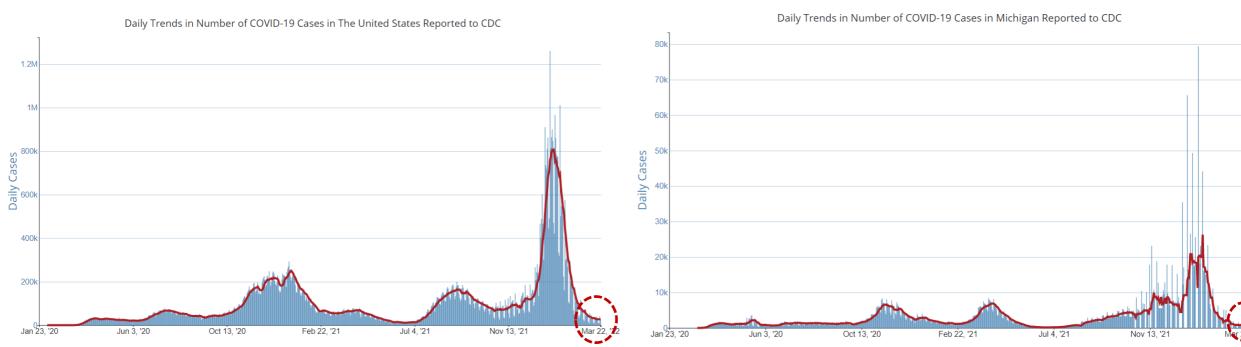
		Week Ending				
Metric	Goal	19-Feb-22	26-Feb-22	5-Mar-22	12-Mar-22	19-Mar-22
Positivity (All Ages)	NA	14.1%	9.5%	6.3%	4.9%	5.1%
Weekly Cases (All Ages)	<592	470	302	172	131	121
Weekly Cases in Children (0-17 years of age)	NA	89	62	33	26	20
Total Deaths (All Ages)	0	6	6	4	1	0
CDC COVID-19 Community Level (New)	Low	-	-	Low	Low	Low

Please note that with updated CDC Community Risk Transmission levels, metrics and/or metric thresholds/goals may change.

Case Trends in the USA and Michigan

USA

Michigan



Daily case counts in the US and Michigan remain much lower than previous times in the pandemic.

Note: Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in an artificially deflated number of cases.

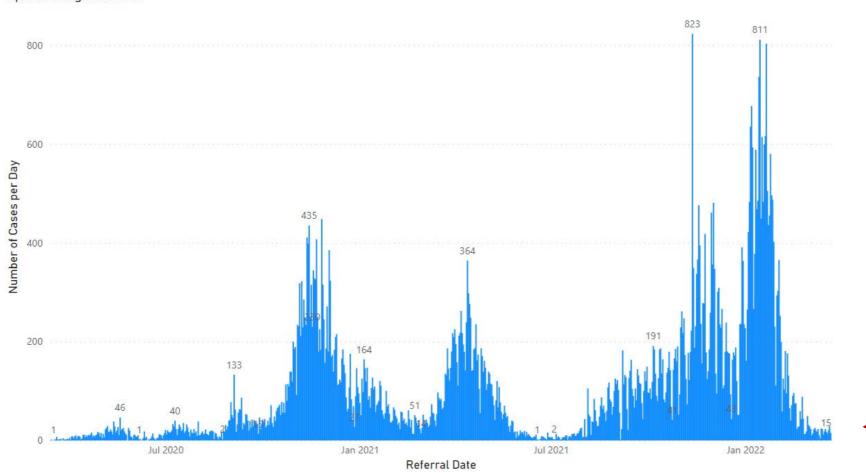
Source: https://covid.cdc.gov/covid-data-tracker/#trends_dailycases

Data through March 22, 2022
Science

Case Trends in Ottawa County

COVID-19 Cases by Day, Ottawa County, March 15, 2020 – March 23, 2022

Epidemiological Curve



Total Number of Cases

74,508

Currently the 7-day average is 19 cases per day, similar to the 19 cases per day seen at last week at this time.

Notes: 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, On November 12, 2021, MDHHS updated their database resulting in a backlog of cases being reported in one day.

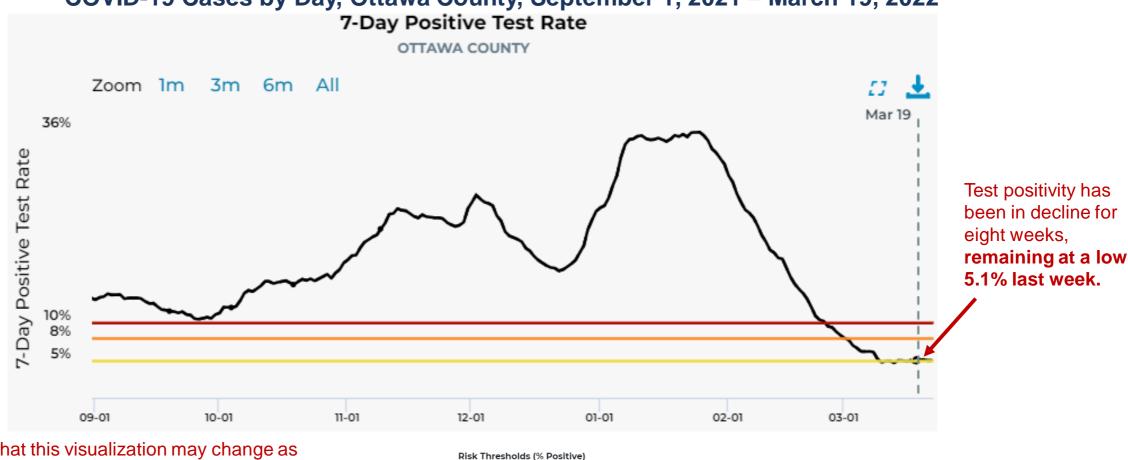
Variants

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

Science Roundup

Test Positivity in Ottawa County

COVID-19 Cases by Day, Ottawa County, September 1, 2021 - March 19, 2022



Please note that this visualization may change as CDC Community Transmission levels, metrics and/or metric thresholds/goals change.

Low: <5%

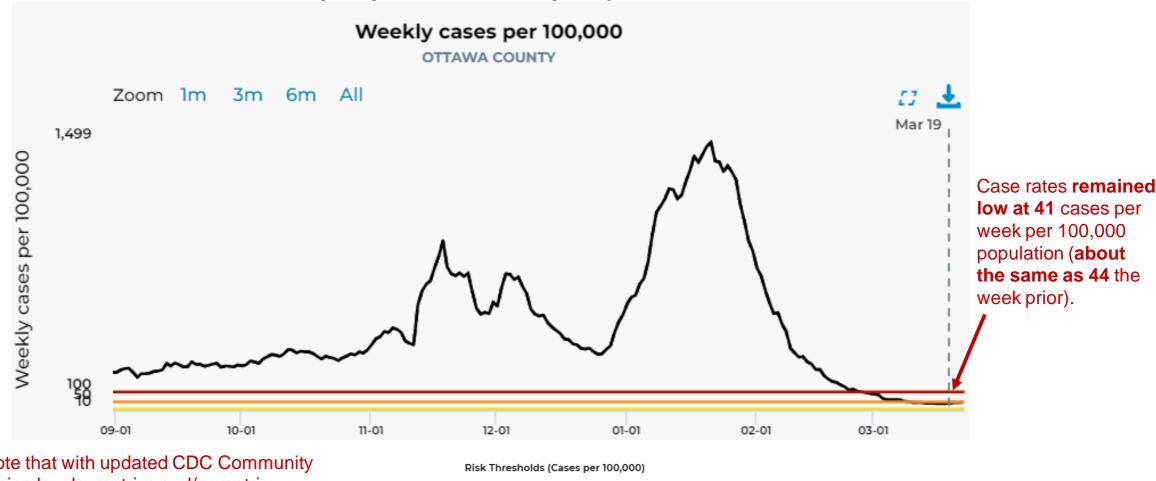
Variants

Note: Testing in Ottawa County has declined over the last 4 weeks, peaking at nearly 5,000 tests in week (week 6) and declining to about 1,800 tests last week (week 10): Testing Results | Ottawa County Covid-19 Case Summary Data (arcgis.com) & https://www.mistartmap.info/mism-indicators?area=county%3Aottawa. Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in an artificially deflated number of cases.

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

Case Rates in Ottawa County – All Ages

COVID-19 Cases by Day, Ottawa County, September 1, 2021 – March 19, 2022



Please note that with updated CDC Community Transmission levels, metrics and/or metric thresholds/goals may change.

Variants

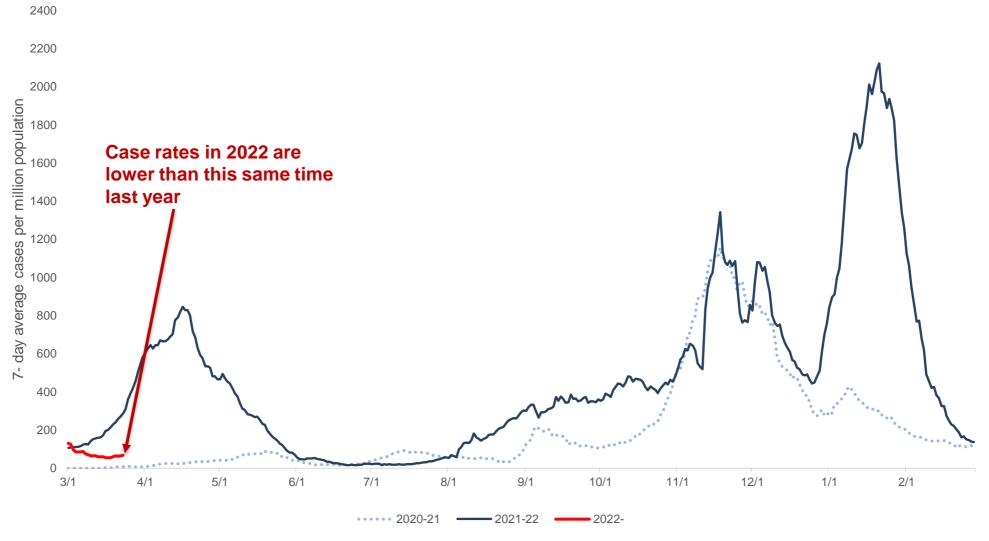
Note: Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated case rates.

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

Science Roundup

USA & MI

Ottawa County Time Trends – Annual Comparison of Case Rates

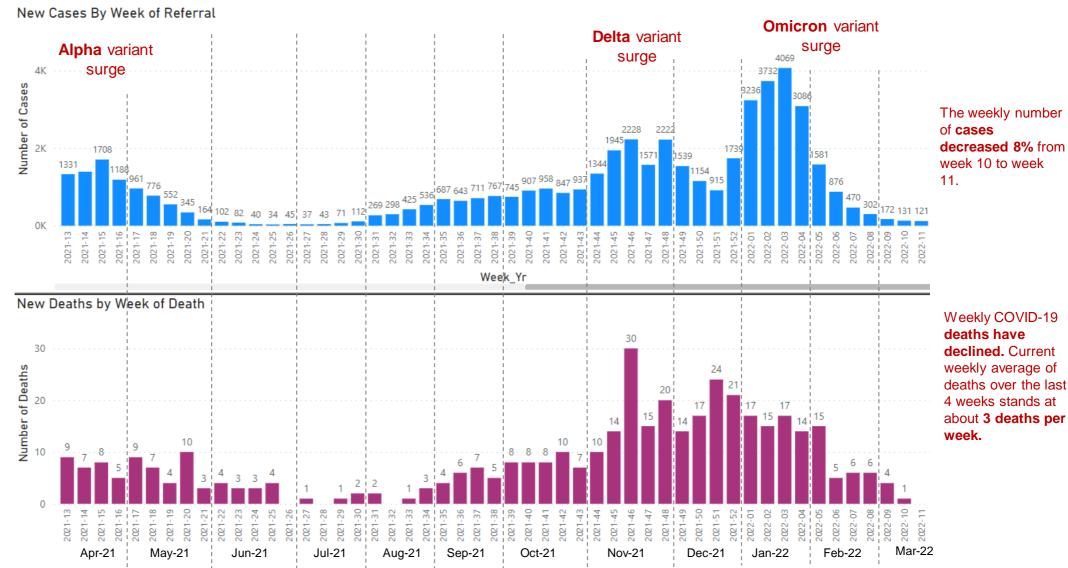


Note: Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated case rates.

Source: Internal Data

Data through March 23, 2022

Ottawa County - Cases & Deaths by Week, All Ages



Variants

Note: Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated number of cases. Source: Michigan Department of Health and Human Services, Michigan Disease Surveillance System

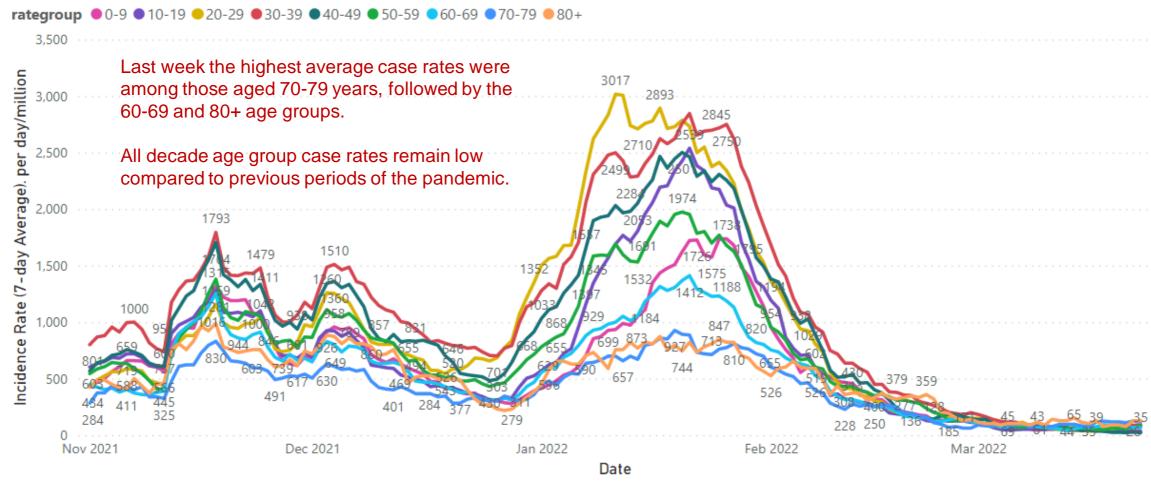
Science Roundup

USA & MI

Ottawa County - Case Rate Trends - by Age Decade

COVID-19 Case Rates by Age, November 2021 – March 23, 2022

Incidence Rate (7-day Average)



Note: Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated case rates.

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

Science Roundup

Variants

Ottawa County - Case Rate Trends - by Age Decade

Daily new confirmed and probable cases per day per million by age group (daily average per week)

Week 11 (March 13, 2022 – March 19, 2022)

Please note that low case counts may make case rates unstable, reducing reliability. Be cautious using this data to inform decisions.

Age Decade (Years)	Average Daily Cases	Average Daily Case Rate	One Week % Rate Change
0-9	1.7	46.4	-20%
10-19	1.6	35.5	-42%
20-29	2.0	44.2	-7%
30-39	2.3	63.9	15%
40-49	0.9	25.9	-65%
50-59	2.1	61.4	0%
60-69	2.9	87.8	67%
70-79	2.4	117.7	31%
+08	0.9	77.3	-40%

Age groups with highest average case rates last week:

- 1. 70-79
- 2. 60-69
- 3. 80+

Age groups with largest week-over-week <u>increase</u> in case rates:

- 1. 60-69
- 2. 70-79
- 3. 30-39

Notes: Average daily cases is calculated by summing the weekly total number of cases and dividing by seven. Cases counted in weeks of interest reflect referral date. Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated case rates.

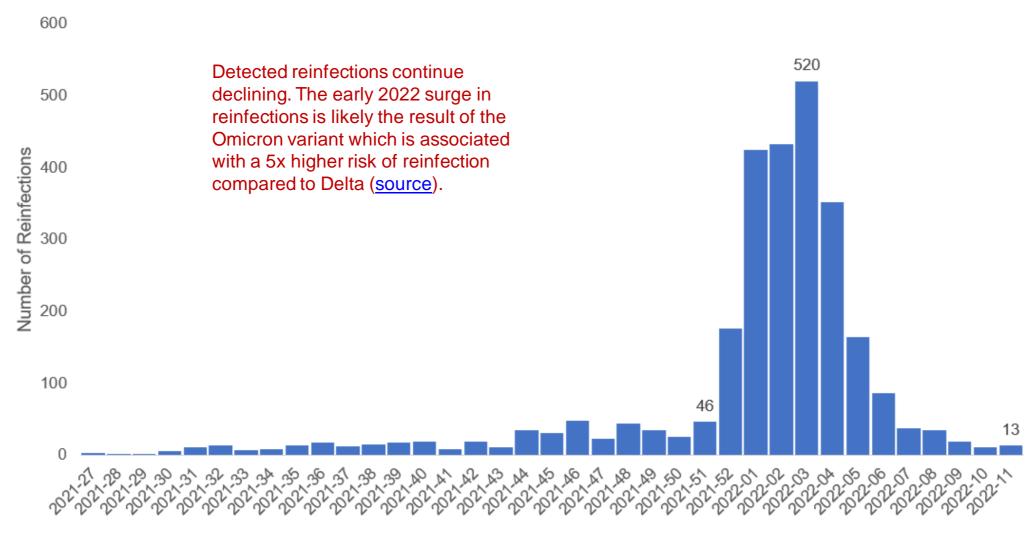
Source: Michigan Department of Health and Human Services, Michigan Disease Surveillance System; CDC Wonder 2020 population

Data as March 23, 2

in and Flaman Gervices, when gan bisease our vemance by stem, obb vv shaer 2020 popul

Data as March 23, 2022

Ottawa County – Reinfections by Week



Notes: *For the purposes of this slide a reinfection is considered any Ottawa County resident who was reported two or more times as a confirmed or probable case, with at least 90 days between each referral date. This definition utilizes only cases reported to public health. The gold-standard for determining reinfection includes the variant detected in each infection; comprehensive data on the variant detected are not available for most cases. Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated case counts.

Variants

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

Data as of March 23, 2022

Ottawa County Weekly Case Counts and % Change, by Age

	Adul	ts (18+)	Children (Children (0-17 years)		otal
Week Ending	Number	% Change from Previous Week	Number	% Change from Previous Week	Number	% Change from Previous Week
4-Dec-21	1771	44%	450	32%	2221	41%
11-Dec-21	1236	-30%	302	-33%	1538	-31%
18-Dec-21	940	-24%	214	-29%	1154	-25%
25-Dec-21	766	-19%	149	-30%	915	-21%
1-Jan-22	1525	99%	214	44%	1739	90%
8-Jan-22	2791	83%	443	107%	3234	86%
15-Jan-22	3094	11%	636	44%	3730	15%
22-Jan-22	3146	2%	923	45%	4069	9%
29-Jan-22	2412	-23%	674	-27%	3086	-24%
5-Feb-22	1304	-46%	277	-59%	1581	-49%
12-Feb-22	693	-47%	183	-34%	876	-45%
19-Feb-22	381	-45%	89	-51%	470	-46%
26-Feb-22	240	-37%	62	-30%	302	-36%
5-Mar-22	139	-42%	33	-47%	172	-43%
12-Mar-22	105	-24%	26	- <u>21%</u>	131	-24%
19-Mar-22	101	(-4%)	20	-23%	121	-8%

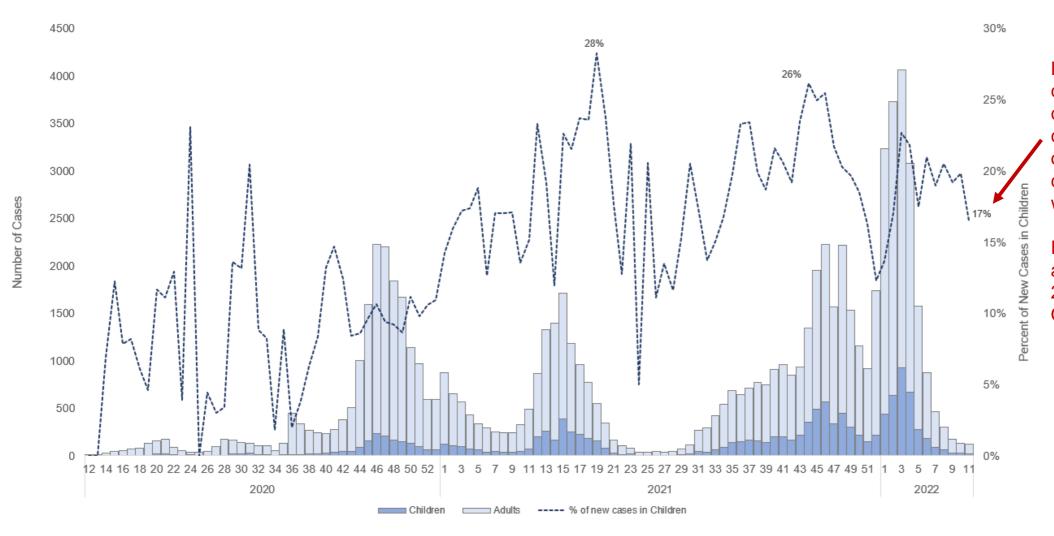
Weekly case counts among children decreased 23% last week, and cases in adults decreased 4%.

Adults Children

Note: Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated case counts. **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

Ottawa County Weekly Case Counts and % in Children (0-17)



During Week 10 in 2022, children made up 17% of cases reported, elevated compared to other times of the pandemic, but consistent with recent weeks.

For comparison, children aged 0-17 make up about 23.5% of the population in Ottawa County.

Note: Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated case counts. Source: Michigan Department of Health and Human Services, Michigan Disease Surveillance System; CDC Wonder 2020

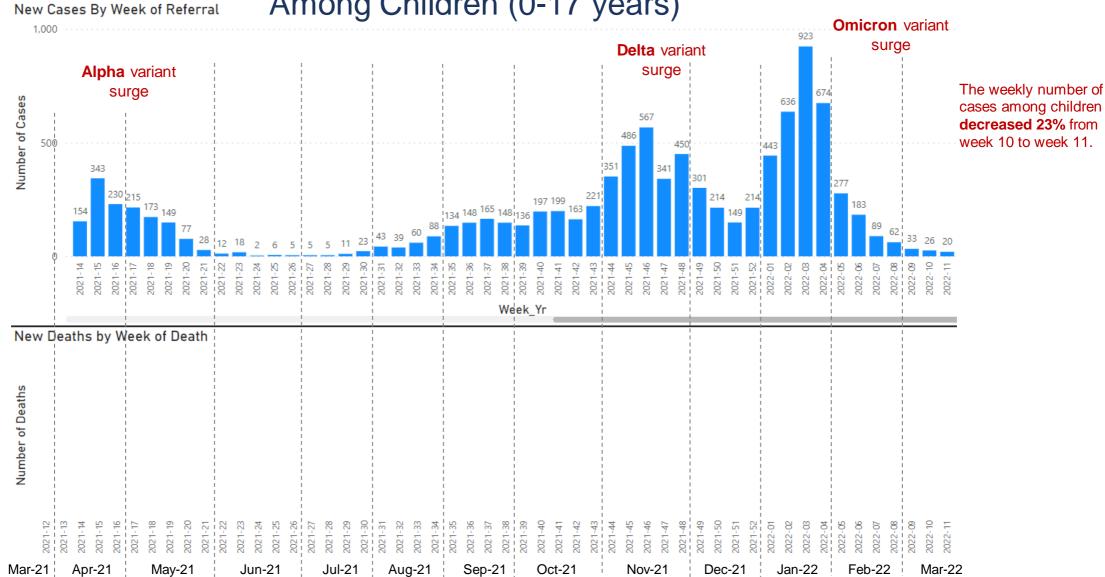
Data through Week 11, 2022

Vaccinations

Other

USA & MI

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



Note: Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated case counts. **Source:** Michigan Department of Health and Human Services, Michigan Disease Surveillance System

USA & MI Spread Children Hospitalizations Vaccinations Variants Risk Levels

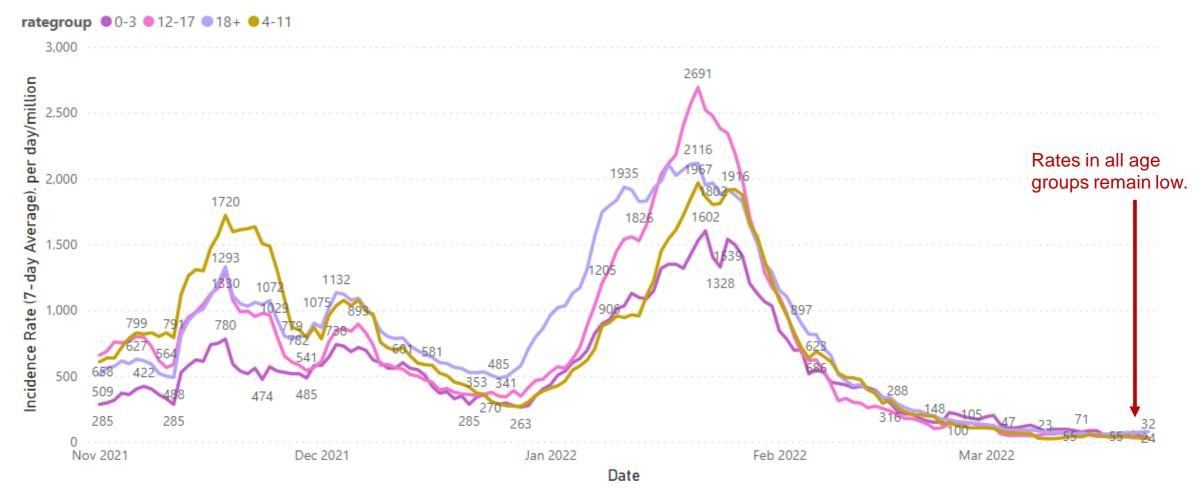
Other

Media

Ottawa County - Case Rate Trends - by Age

COVID-19 Case Rates by Age, includes School-Aged, November 2021 – March 23, 2022

Incidence Rate (7-day Average)



Note: Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated case rates. Source: Michigan Department of Health and Human Services, Michigan Disease Surveillance System

> Science Roundup

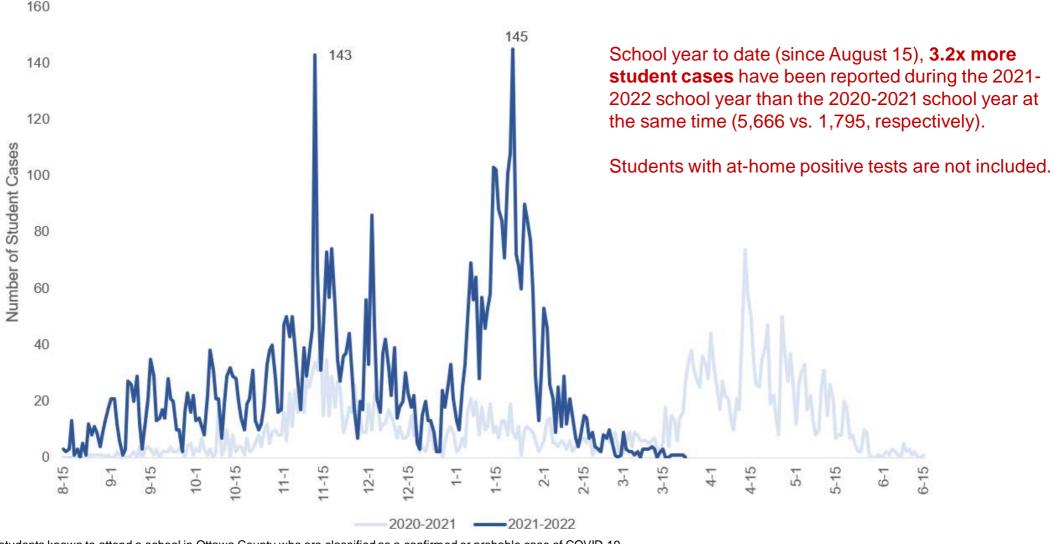
Spread

USA & MI

Vaccinations

Risk Levels

Ottawa County Cases in PreK-12 School Students



Variants

Method: Includes PreK-12 students known to attend a school in Ottawa County who are classified as a confirmed or probable case of COVID-19.

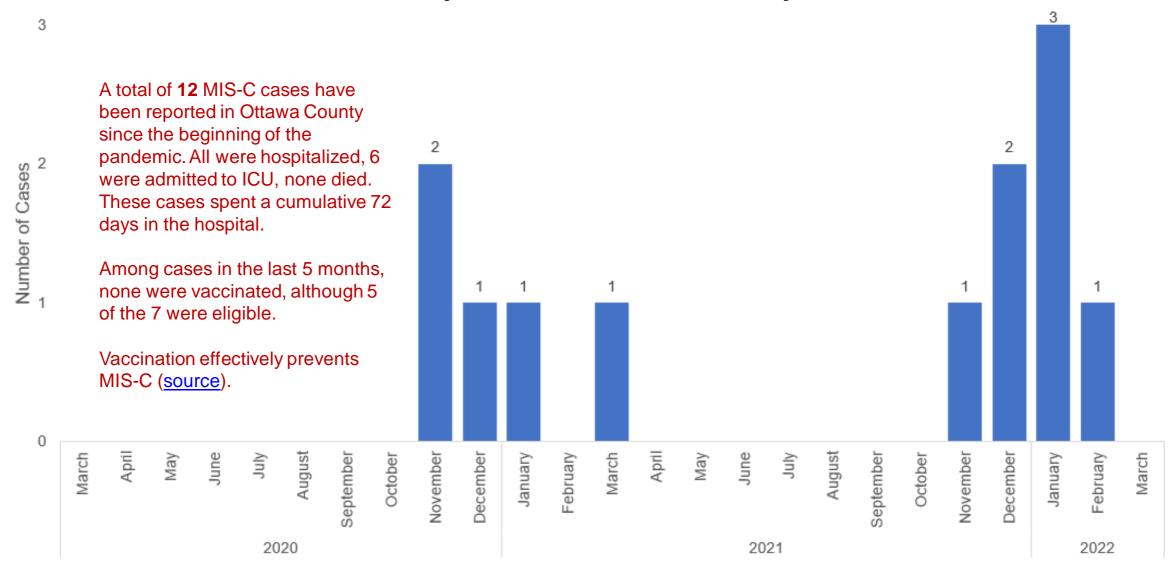
Note: Data may change as information is updated and methods are refined. Cases reported in 2022 will likely increase. The peak of 143 cases reported on November 12, 2021 is the result of a database update by MDHHS that reported a backlog of cases from the previous days. Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated case counts.

Source: Michigan Department of Health and Human Services, Michigan Disease Surveillance System; Internal data systems

Children

Data through March 23, 2022

Ottawa County MIS-C* Cases by Month



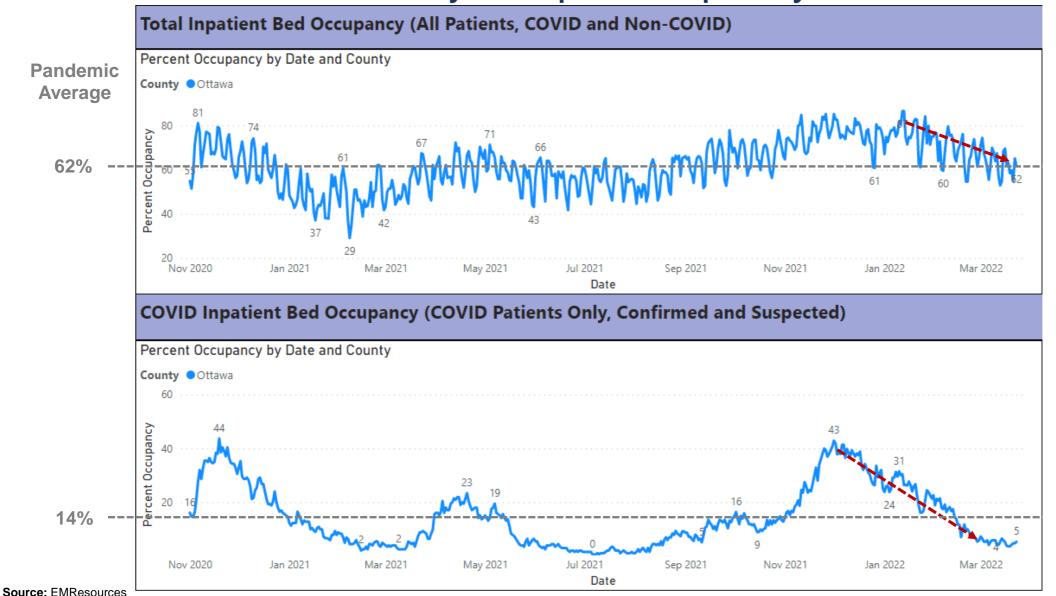
Variants

Notes: Includes confirmed and probable cases.

*MIS-C is a rare but serious condition affecting children, associated with recent COVID-19 infection. For more details on MIS-C please visit: https://www.cdc.gov/mis/index.html

Data through March 16, 2022

Ottawa County Hospital Capacity – All Beds



Vaccinations

Total hospital bed occupancy remains at the pandemic average.

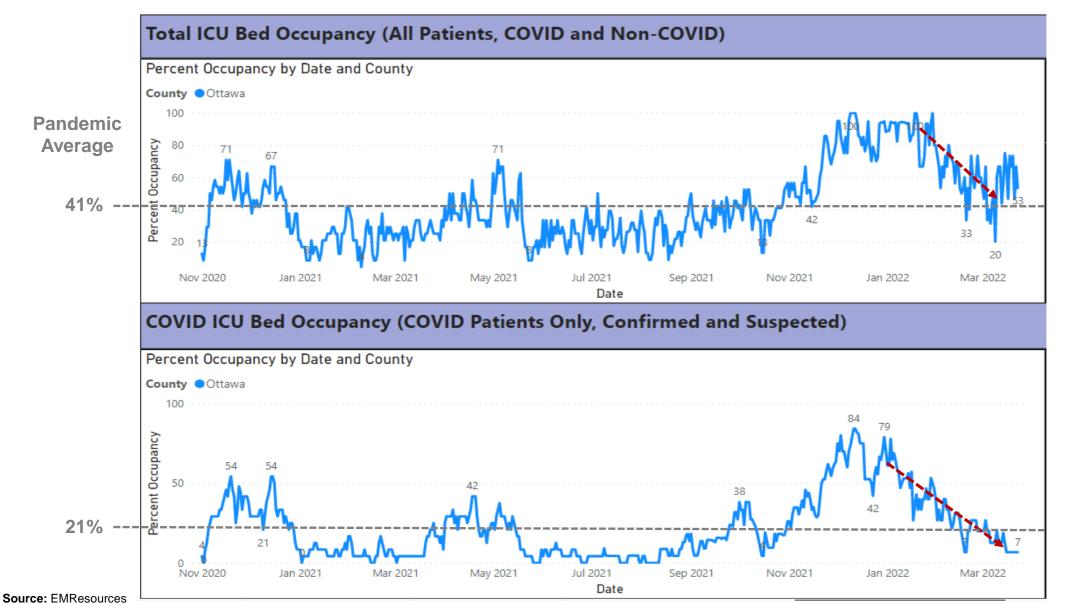
Currently **5%** of all inpatient beds are occupied by COVID-19 patients. The proportion of beds occupied by COVID-19 patients is in a downtrend, after peaking in early December 2021.

Data through March 23, 2022

Media

Risk Levels

Ottawa County Hospital Capacity – ICU Beds



Overall ICU bed occupancy is 53%, higher than the pandemic average.

The proportion of ICU beds occupied by COVID-19 patients is below the pandemic average. Currently, 7% of all ICU beds are occupied by COVID-19 patients.

Data through March 23, 2022

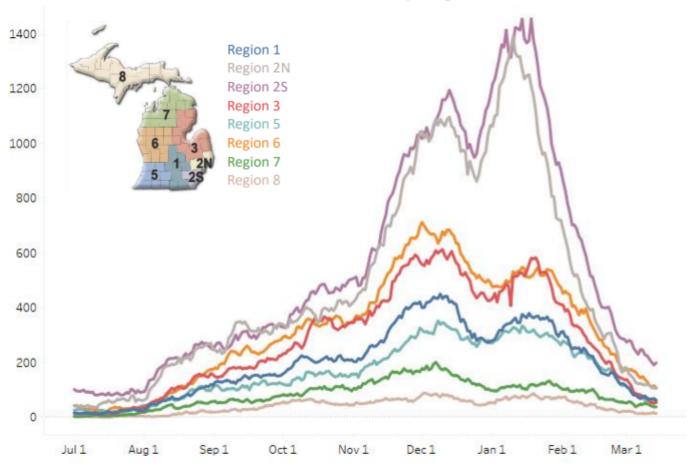
Variants

Other

Spread

Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 7/1/2021 – 3/14/2022 Confirmed Positive by Region



This week hospitalizations have decreased or remained flat in all regions.

All regions have fewer than 90/Million population hospitalized with COVID.

Region	COVID+ Hospitalizations (% Δ from last week)	COVID+ Hospitalizations / MM
Region 1	62 (-9%)	57/M
Region 2N	105 (-15%)	47/M
Region 2S	199 (-19%)	89/M
Region 3	54 (-34%)	48/M
Region 5	61 (-23%)	64/M
Region 6	108 (-25%)	74/M
Region 7	38 (-21%)	76/M
Region 8	14 (0%)	45/M

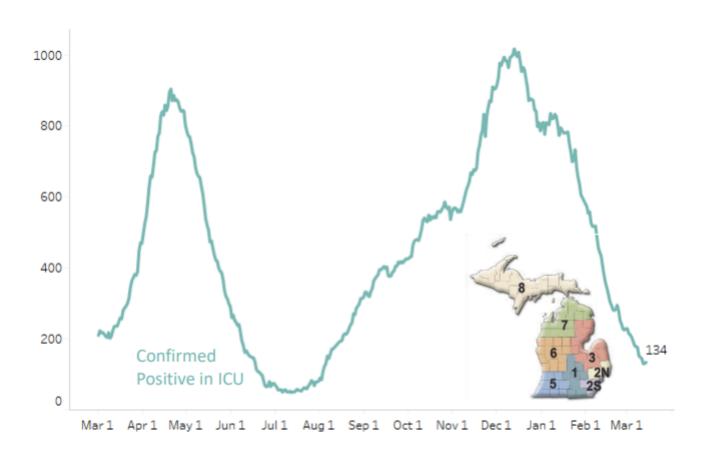
Source: MDHHS Data and Modelling: https://www.michigan.gov/documents/coronavirus/20220316_MI_COVID_RESPONSE_DATA_AND_MODELING_UPDATE_750015_7.pdf

Vaccinations

Risk Levels

Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 3/1/2021 – 3/14/2022 Confirmed Positive in ICUs



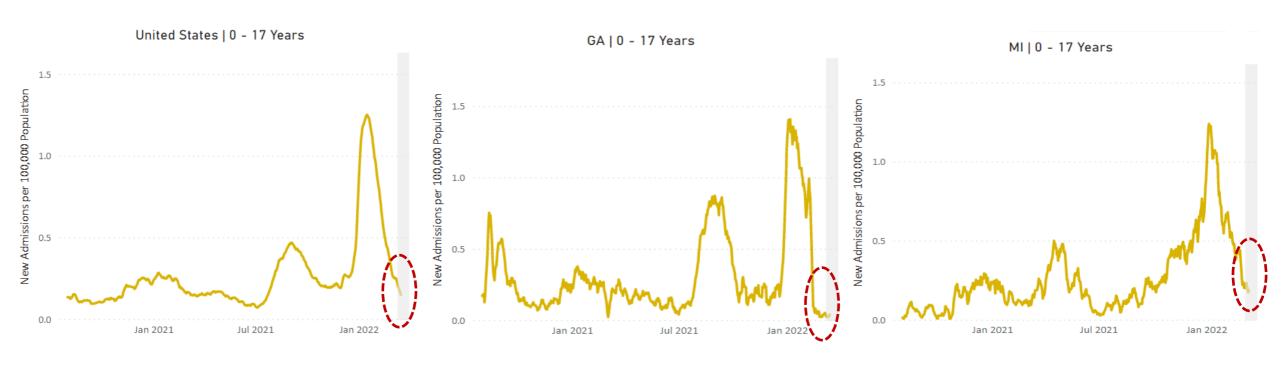
Overall, the volume of COVID+ patients in ICUs has decreased by 25% from last week (previous week was down by 22%). All regions show decreasing trends in ICU census except Region 8, which has increased by 2 patients overall.

All regions have 11% or fewer of ICU beds filled with COVID+ patients.

Region	Adult COVID+ in ICU (% Δ from last week)	ICU Occupancy	% of ICU beds COVID+
Region 1	11 (-21%)	70%	6%
Region 2N	13 (-38%)	65%	2%
Region 2S	51 (-20%)	74%	7%
Region 3	14 (-30%)	87%	5%
Region 5	8 (-27%)	64%	5%
Region 6	20 (-33%)	71%	8%
Region 7	14 (-18%)	71%	11%
Region 8	3 (200%)	58%	5%

Source: MDHHS Data and Modelling: https://www.michigan.gov/documents/coronavirus/20220316_MI_COVID_RESPONSE_DATA_AND_MODELING_UPDATE_750015_7.pdf

Pediatric Hospitalization Rates – USA, Georgia, Michigan



Pediatric hospitalization rates across the US, in Georgia, and in Michigan **show continued improvement**.

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

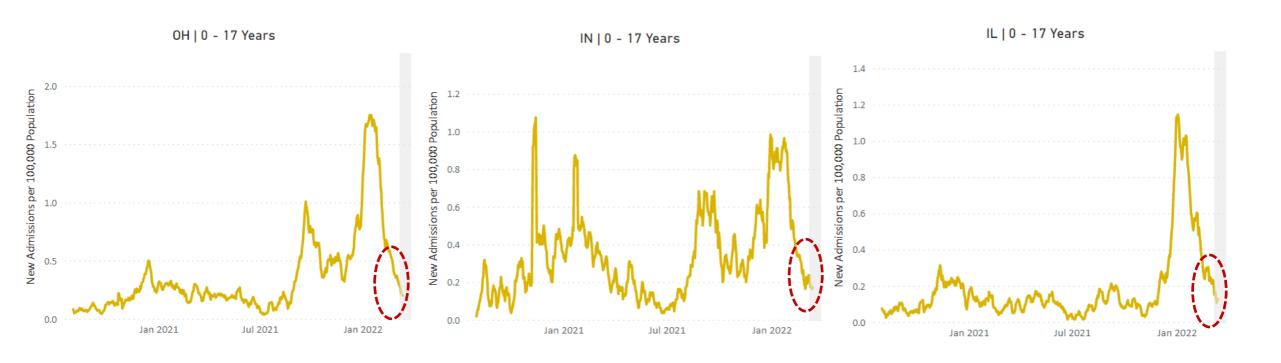
Accessed March 24, 2022

Science

Roundup

Vaccinations

Pediatric Hospitalization Rates – Select Midwest States



Ohio, Indiana, and Illinois are all showing improving pediatric hospitalization rates.

Variants

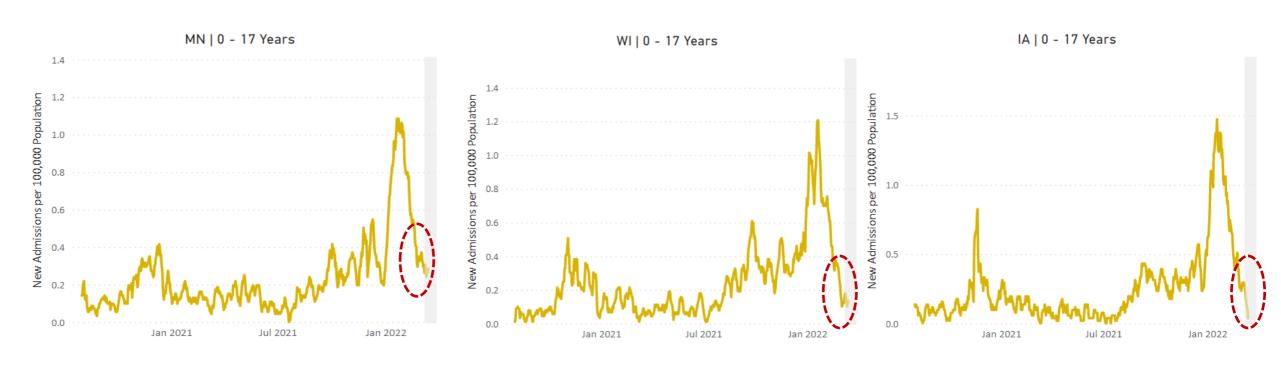
Source: https://covid.cdc.gov/covid-data-tracker/#new-hospital-admissions

Accessed March 24, 2022

Science

Roundup

Pediatric Hospitalization Rates – Select Midwest States



Pediatric hospitalization rates in Minnesota, Wisconsin, and Iowa are declining.

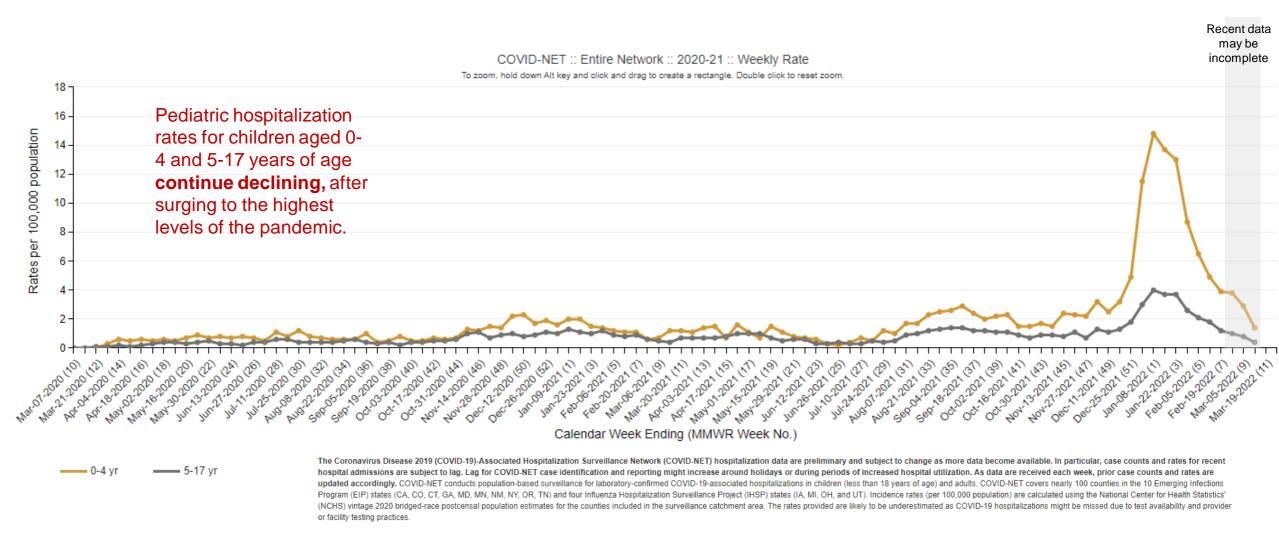
Source: https://covid.cdc.gov/covid-data-tracker/#new-hospital-admissions

Accessed March 24, 2022

Science

Roundup

Pediatric Hospitalization Rates by Age Group – USA



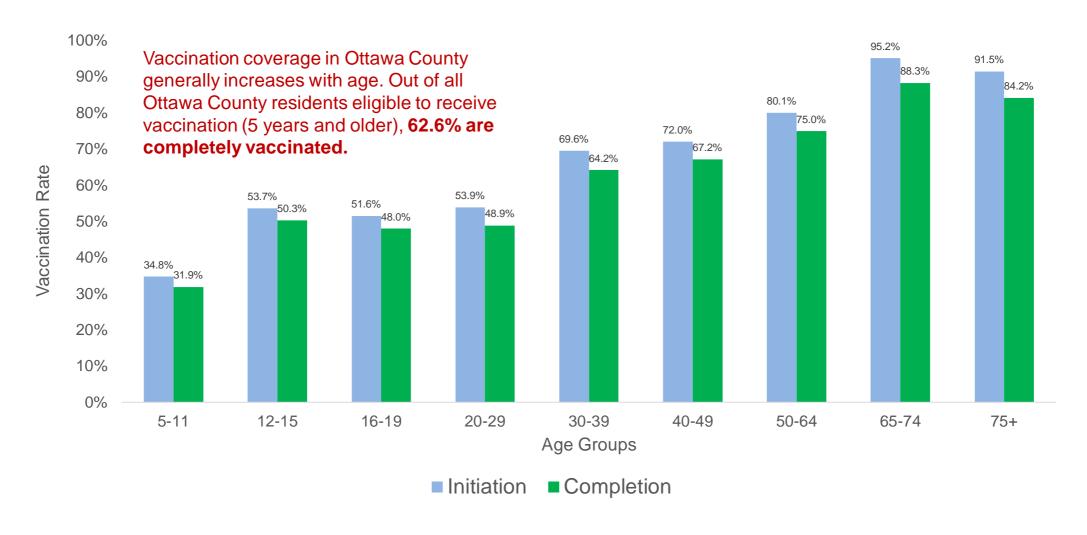
Starting MMWR week 48, MD data are temporarily removed from weekly rate calculations.

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

Accessed March 24, 2022

Science Roundup

Vaccination Coverage by Age



Notes:

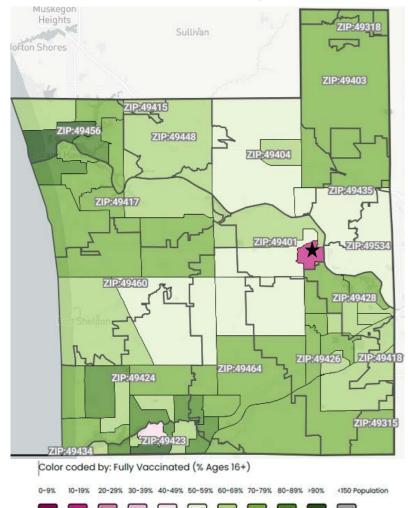
Completion is the percentage of people receiving at least 2 doses of Pfizer or Moderna or 1 dose of J&J.

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

Data through March 22, 2022

Vaccination Coverage by Place of Residence

Fully vaccinated: % Ages 16+ years

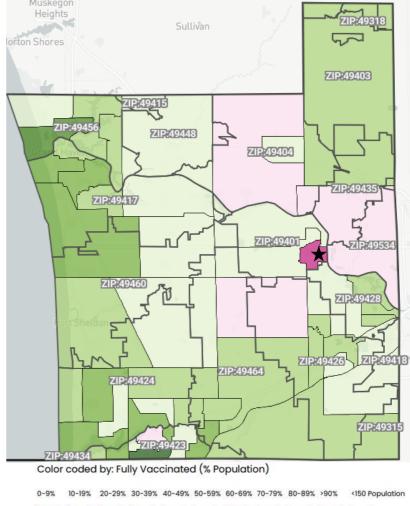


Vaccination rates vary across Ottawa County, but most areas have at least 50% of the population aged 16+ completely vaccinated (left).

When considering the entire population (not just those aged 16+), there are pockets of the county with much higher and much lower vaccination rates (right).

★ 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.

Fully vaccinated: % Total Population



Other

Source: MI-Lighthouse Internal Dashboard

USA & MI

Data as of March 15, 2022

Cumulative Cases by Vaccination Status, Ottawa County, January 15, 2021 – March 19, 2022

Fully Vaccinated People (171,317)			
Cases	Deaths		
Percent of Cases in People Not Fully Vaccinated (35,979 / 54,313) 66.2%	Percent of Deaths in People Not Fully Vaccinated (285 / 433) 65.8%		
Total Cases Not Fully Vaccinated 35,979	Total Deaths Not Fully Vaccinated 285		
Total Breakthrough Cases 18,334	Total Breakthrough Deaths 148		
Percent of Fully Vaccinated People who Developed COVID-19 (18,334 / 171,317) 10.7%	Percent of Fully Vaccinated People who Died of COVID-19 (148 / 171,317) 0.09%		
Percent of Cases who were Fully Vaccinated (18,334 / 54,313) 33.8%	Percent of Deaths who were Fully Vaccinated (148 / 433) 34.2%		
Total Cases 54,313	Total Deaths 433		

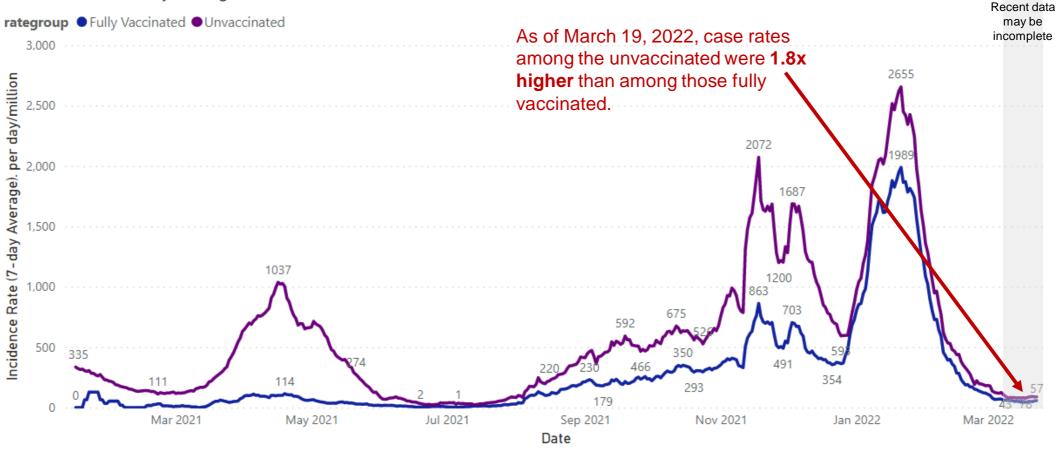
Sources:

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

Science Roundup

Ottawa County COVID-19 Vaccination Breakthrough Case Trends

Incidence Rate (7-day Average)



Method:

Daily case counts were obtained from the MDSS and summarized by referral date. Cases were compared to data from the State of Michigan immunization database to confirm COVID-19 vaccination status. Counts of persons completely vaccinated in Ottawa County were compiled from the Michigan COVID-19 vaccination dashboard. The total population denominator was obtained from CDC Wonder; the 2019 population estimate was used. Daily COVID-19 case rates were calculated and averaged over the previous 7 days; a rate of cases per day per million population was used. Cases ineligible for vaccination are included in this data. On December 22, 2021 this figure was updated to compare fully vaccinated and unvaccinated persons, to align more closely with CDC data; partially vaccinated persons were excluded. Fully vaccinated is defined as 2 or more doses of an mRNA vaccination or at least one dose of J&J.

Note: Use of at home tests likely reduces the number of positive tests reported to Public Health, resulting in artificially deflated case rates.

Variants

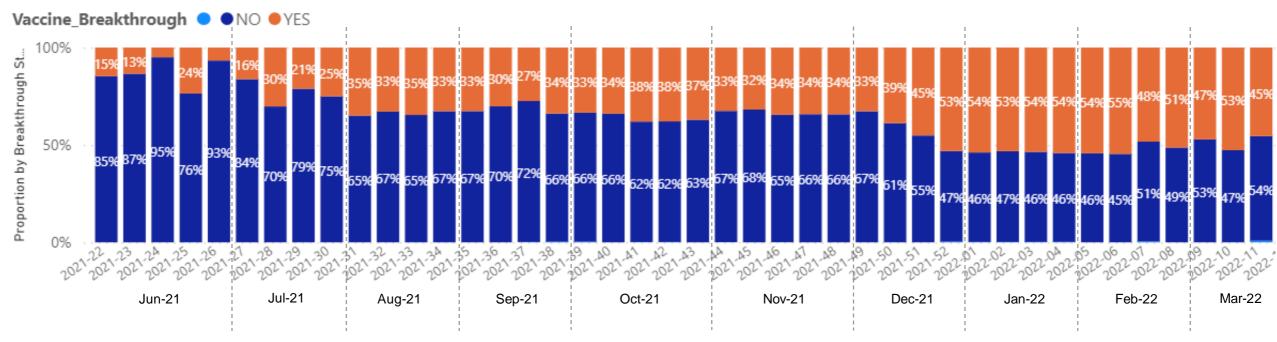
Sources:

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

Science Roundup

Ottawa County COVID-19 Vaccination Breakthrough Case Trends By Week

Breakthrough Proportions by Week



Through the Delta wave, which was most pronounced August through early December of 2021, about 34% of all cases reported to public heath were breakthrough cases. At the end of 2021 and into 2022, the proportion of vaccine breakthrough cases increased to roughly 51% of cases reported each week. Weekly breakthrough rates observed in Ottawa County are similar to other geographies reporting this same data.

Variants

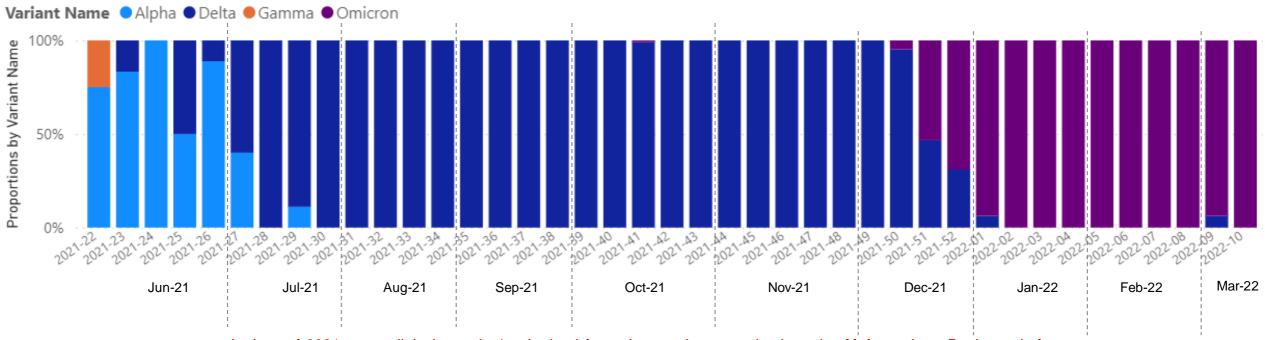
Source:

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

Science Roundup

Variants – Clinical Samples from Ottawa County Residents

Variant Proportions by Week



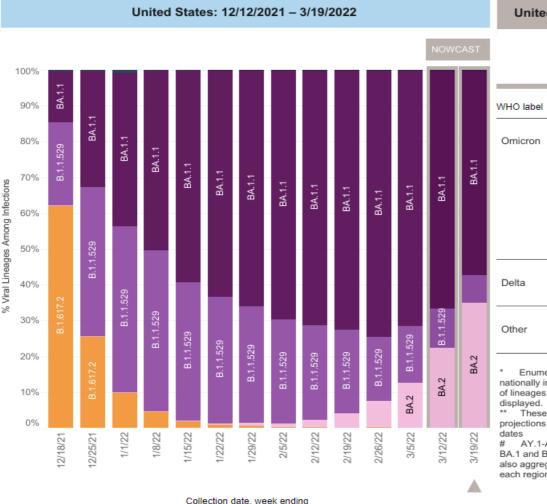
In June of 2021, most clinical samples* submitted for variant testing came back as the **Alpha** variant. By the end of July 2021, all clinical samples tested were returned as the **Delta** variant. From late July through early December 2021 all clinical samples submitted for variant testing came back positive for the **Delta** variant. In mid-December 2021, the first **Omicron** positive samples were collected in an Ottawa County resident, and **Omicron** continues to be detected into 2022.

Variants

Science Roundup

^{*} Swabs from Ottawa County residents that tested positive for COVID-19 by PCR; only a small proportion of all COVID-19 positive tests are tested for variants. **Source:** Michigan Department of Health and Human Services, Michigan Disease Surveillance System

Variants – Clinical Samples from Across the USA



United States: 3/13/2022 - 3/19/2022 NOWCAST

USA



Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one week period. "Other" represents the aggregation of lineages which are circulating <1% nationally during all weeks

The **Omicron** variant is estimated to account for close to 100% of all clinical samples collected in the United States the week ending March 19, 2022.

Omicron subvariants are also circulating, but their impact on transmission in near-term is unknown.

Source: CDC: https://covid.cdc.gov/covid-data-tracker/#variant-proportions

Spread

USA & MI

Accessed March 24, 2022

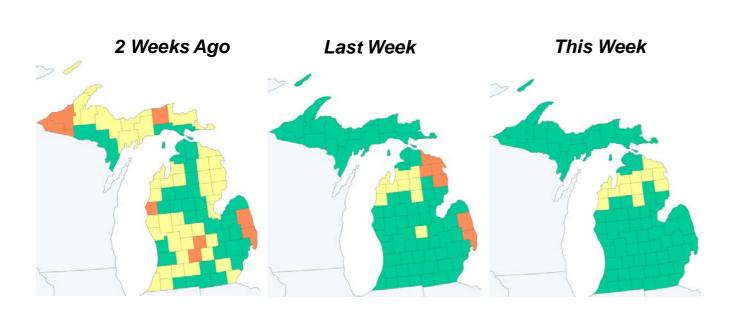
Variants

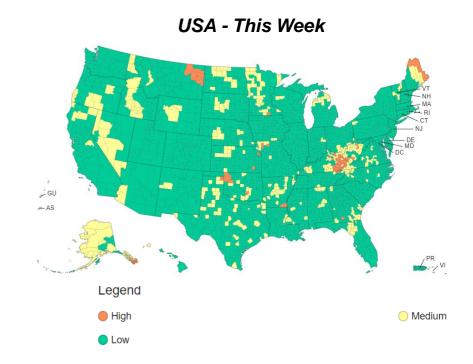
^{**} These data include Nowcast estimates, which are modeled projections that may differ from weighted estimates generated at later

AY.1-AY.133 and their sublineages are aggregated with B.1.617.2. BA.1 and BA.3 are aggregated with B.1.1.529. For regional data, BA.1.1 is also aggregated with B.1.1.529, as it currently cannot be reliably called in each region.

(NEW) CDC Community Risk Levels – Ottawa County

- Current Risk Level in Ottawa LOW
- Current Data:
 - Case Rate (per 100k pop 7-day total) = 39.75
 - COVID-19 Hospital Admissions (per 100K pop 7-day total) = 2.0
 - COVID Inpatient Hospital Bed Utilization (7-day average) = 4.3%





Source: https://www.cdc.gov/coronavirus/2019-ncov/your-health/covid-by-county.html

Data updated by CDC on March 17, 2022

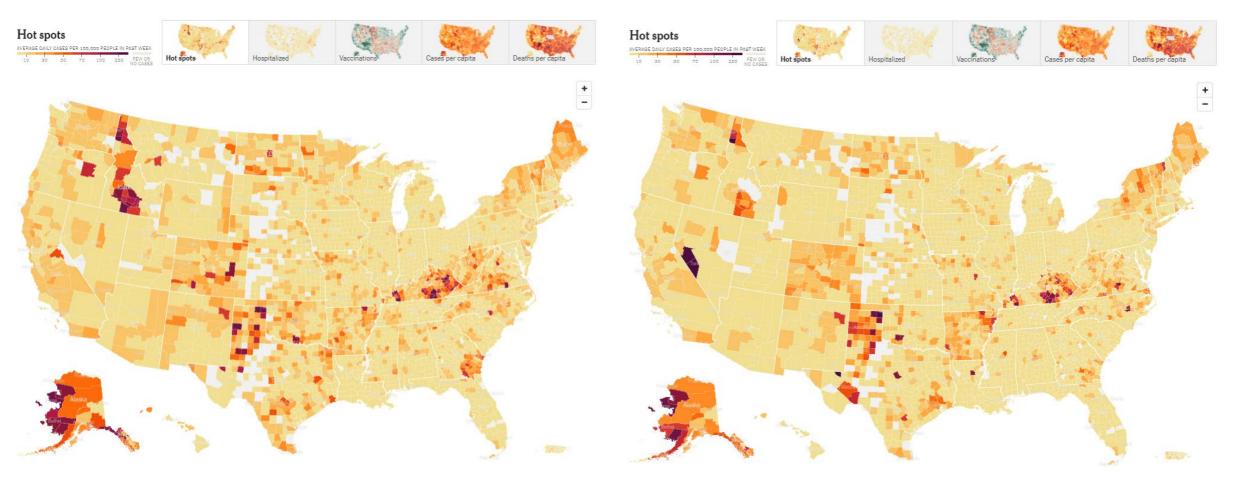
Other Media Science Roundup

Variants

Risk Levels

COVID-19 Case Rates by County Across the US

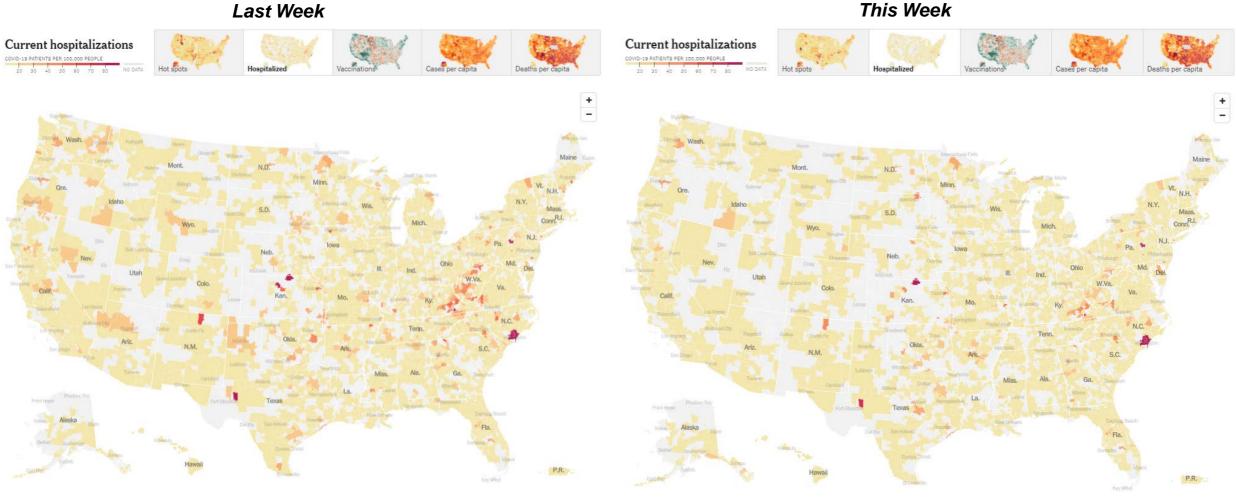
This Week Last Week



Case rates continue to improve across most of the nation.

Source: https://www.nytimes.com/interactive/2021/us/covid-cases.html Accessed March 24, 2022

COVID-19 Hospitalization Rates by County Across the US



Hospitalization rates continue to improve across the nation.

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

Status of School Mask Rules

Place	Status	Tentative Rescind Date	
State			
California	Rescinded	-	
Connecticut	Rescinded	-	
Delaware	Rescinded	-	
Hawaii	In place	March 25, 2022	
Illinois	Rescinded	-	
Maryland	Rescinded	-	
Massachusetts	Rescinded	-	
New Mexico	Rescinded	-	
New Jersey	Rescinded	-	
New York	Rescinded	-	
Nevada	Rescinded	-	
Oregon	Rescinded	-	
Rhode Island	Rescinded	-	
Washington	Rescinded	-	
Washington D.C.	Rescinded	-	
Michigan County			
No Counties with Mask Rules in Place			
Ottawa School District			
No School Districts with Mask Rules in Place			

Note: List may not be comprehensive or up-to-date.

As of March 24, 2022

Variants

Science

Roundup

COVID-19 News Headlines

Fewer than 700 COVID-19 patients in Michigan hospitals as 7-day average of new cases remains at lowest level since summer

https://www.mlive.com/public-interest/2022/03/fewer-than-700-covid-19-patients-in-michigan-hospitals-as-7-day-average-of-new-cases-remains-at-lowest-level-since-summer.html

'Ample room for uncertainty': As COVID-19 cases rise again in Europe, could US see the same?

https://www.usatoday.com/story/news/nation/2022/03/13/covid-cases-rising-europe/7026697001/

Other

USA & MI

Science Roundup

Durability of SARS-CoV-2 Antibodies From Natural Infection in Children and Adolescents FREE

https://publications.aap.org/pediatrics/article/doi/10.1542/peds.2021-055505/185412/Durability-of-SARS-CoV-2-Antibodies-From-Natural

A small study published in Pediatrics found that children infected with COVID-19 retained evidence antibodies for at least 6 months. Through the study, more than 50% participants had no evidence of infection, suggesting that vaccination continues to be an important form of protection for children.

Myocarditis Following a Third BNT162b2 Vaccination **Dose in Military Recruits in Israel**

https://jamanetwork.com/journals/jama/fullarticle/2790421

An Israeli study found that risk of myocarditis after 3rd dose of Pfizer vaccine was low among male military recruits – 6-11 cases per 100,000 vaccinations given (in the 2 weeks after 3rd dose).

Effectiveness of mRNA Vaccination in Preventing COVID-19-Associated Invasive Mechanical Ventilation and Death — United States, March 2021– January 2022

https://www.cdc.gov/mmwr/volumes/71/wr/mm7112e1.htm?s cid=mm7112e1 w

A CDC-published case-control study that included over 7,000 case patients found that adults who received 2 or 3 doses of mRNA vaccine were 90% less likely to be placed on invasive mechanical ventilation or die compared to adults who were not vaccinated.

> Science Roundup

Variants

Risk Levels