

# MI COVID RESPONSE DATA AND MODELING UPDATE

**NOTE:** All data as of March 27 unless otherwise noted

March 30, 2021

# Executive summary

**Percent Positivity** is up 224% and **Case Rates** are up 196% since previous low on Feb 19. Positivity (11.3%, ↑3.9%) and case rates (301.0, ↑99.2) have increased for five weeks

Michigan has the **3<sup>rd</sup> highest number of cases (↑3)**, and **3<sup>rd</sup> highest case rate (↑2)** in the last 7 days (source: CDC COVID Data Tracker)

**Percent of inpatient beds occupied by individuals with COVID** has increased 108% since the Feb 28 low to 8.1% (↑2.6%). Trends for COVID hospitalizations are increasing for three weeks

Michigan has the **4<sup>th</sup> highest inpatient bed utilization (↑7)**, and the **4<sup>th</sup> highest adult ICU bed utilization (↑4)** (source: US HHS Protect)

**Deaths** have increased 24% since Mar 9 low. There were 113(↑15) between Mar 14 and Mar 20, and the **Death Rate** is 1.6 deaths per million residents (↑0.2)

Michigan has the **15<sup>th</sup> highest number of deaths (↓1)**, and **T26<sup>th</sup> highest death rate (↑1)** in the last 7 days (source: CDC COVID Data Tracker)

The 7-day average **state testing rate** has increased slightly to 3,252.7 tests/million/day (↑129.0). **Daily diagnostic tests (PCR)** is 32.2K per day (↑0.8K), and the **weekly average for PCR and antigen tests** conducted in Michigan is 49.3K (↑5.5K).

4.2 million **COVID-19 vaccine** doses reported to MDHHS, 33% of Michigan population 16+ has at least one dose

# Comparison across states: Summary

What we see today:

- 26 states are seeing increasing 1 week case trends ( $\geq 10\%$ ) (up vs. 18 last week)
- 17 states are seeing weekly increases ( $\geq 10\%$ ) in new COVID hospital admissions (up vs. 10)
- New York, New Jersey, DC, Michigan and Maryland have highest per capita hospitalized patient numbers.
- Midwest (case data from CDC):
  - Wisconsin is small increase in hospitalizations (49/M) and small increase in cases (81/100k last 7d)
  - Indiana with small increase in hospitalizations (97/M), and small increase in cases (91/100k last 7d)
  - Illinois showing small increase in hospitalizations (108/M), increase in cases (126/100k last 7d)
  - Ohio with stable hospitalizations (78/M) and small increase in cases (102/100k last 7d)
  - Michigan showing increase in hospitalizations (178/M) and significant increase in cases (327/100k last 7d)

# COVID-19 Spread

Statewide positivity has increased to 11.3%, and is increasing in all MERC regions

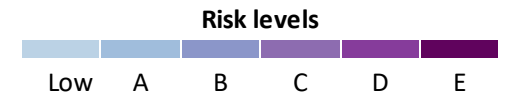
- Six MERC regions are now above 10% (Risk Level C)
- Increasing trends at the state and regional levels are also seen at the county level

Case rates (301.0 cases/million) have also increased in the state

- 196% increase from mid-February low
- All eight MERC regions have increased to greater than 150 cases/million
- Increases are seen among all age groups, races, and ethnicities
- Variant is in Michigan: increased vigilance in use of masks, physical distancing, and increase testing
  - 10,579 cases with the B.1.1.7 variant have been identified in the US (↑4,189), 1,340 confirmed in Michigan (↑356)
- Number of active outbreaks is up 14% from previous week
  - Reported school outbreaks have increased since last week (207 to 248) and all settings

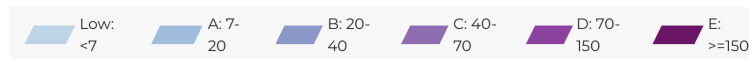
# Confirmed and probable case indicators

Table Date: 3/27/2021 (7 days from date table was produced: 3/20/2021)



	Overall Risk Level	Absolute Cases (per million)	CDC Case Trend	Average Percent Positivity	Positivity Trend	Tests (per million)	% IP Beds Occupied by COVID-19 Cases	% Occupied IP Beds Trend	Absolute Deaths (per million)	Death Trend
Detroit	E	342.1	elevated incidence growth	11.8	Increase - 5wk	3588.5	9.3	Increase - 4wk	1.6	Increase - 1wk
Grand Rapids	E	199.2	elevated incidence growth	9.7	Increase - 4wk	2762.9	4.6	Increase - 1wk	1.4	<20 wkly deaths
Kalamazoo	E	286.2	elevated incidence growth	11.9	Increase - 3wk	2664.7	7.8	Increase - 3wk	1.0	<20 wkly deaths
Saginaw	E	283.0	elevated incidence growth	12.8	Increase - 4wk	2364.0	6.3	Increase - 1wk	2.1	<20 wkly deaths
Lansing	E	307.3	elevated incidence growth	11.2	Increase - 3wk	2951.1	10.5	Increase - 1wk	1.9	<20 wkly deaths
Traverse City	E	312.5	elevated incidence growth	13.0	Increase - 5wk	2113.6	7.0	Increase - 4wk	1.6	<20 wkly deaths
Jackson	E	287.9	elevated incidence growth	12.1	Increase - 2wk	3323.4	8.6	Increase - 2wk	2.4	<20 wkly deaths
Upper Peninsula	E	164.1	elevated incidence growth	4.1	Increase - 3wk	2799.8	1.9	Increase - 1wk	1.9	<20 wkly deaths
Michigan	E	301.0	elevated incidence growth	11.3	Increase - 5wk	3252.7	8.1	Increase - 3wk	1.6	Increase - 1wk

**Cases**

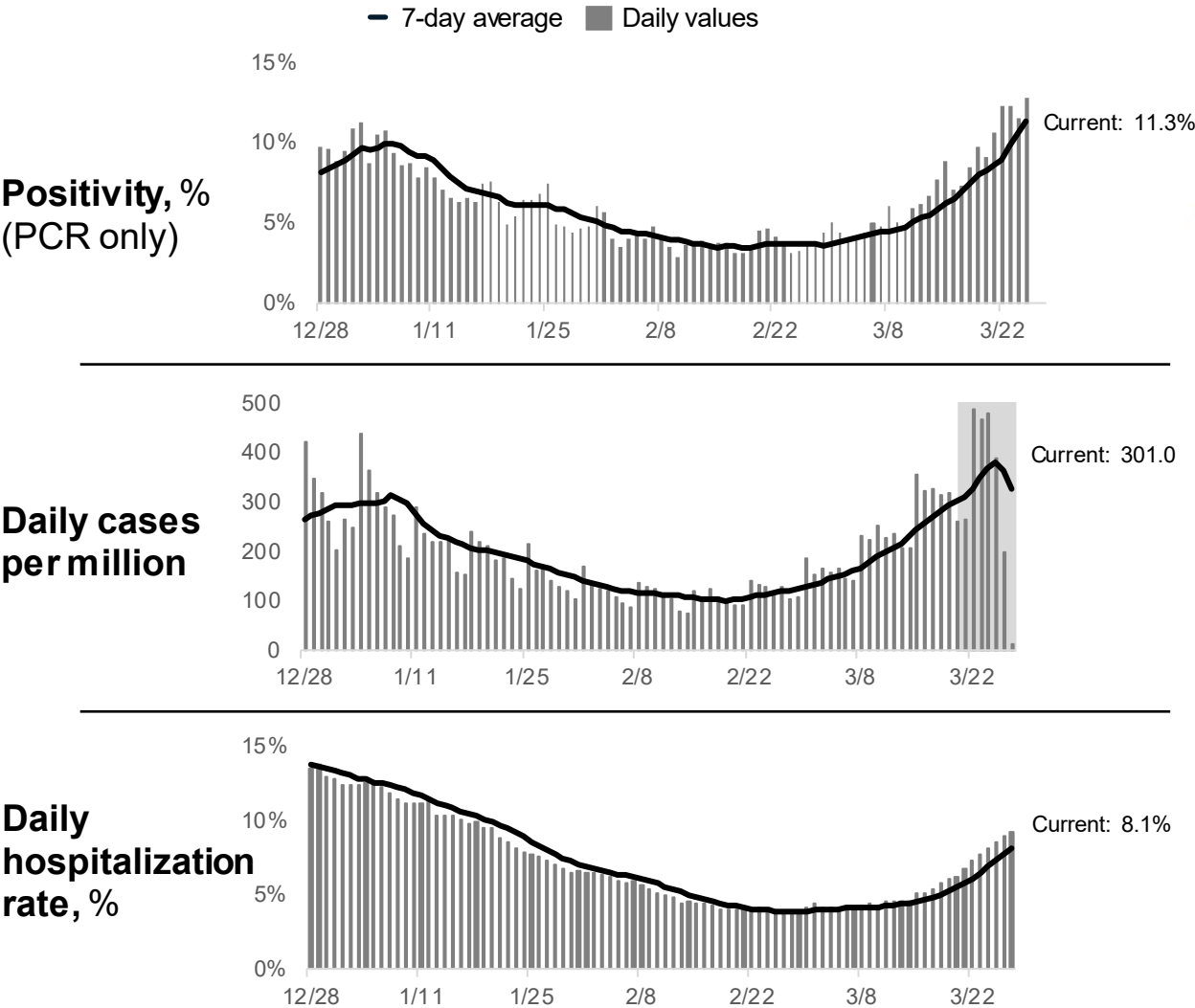


**Positivity**



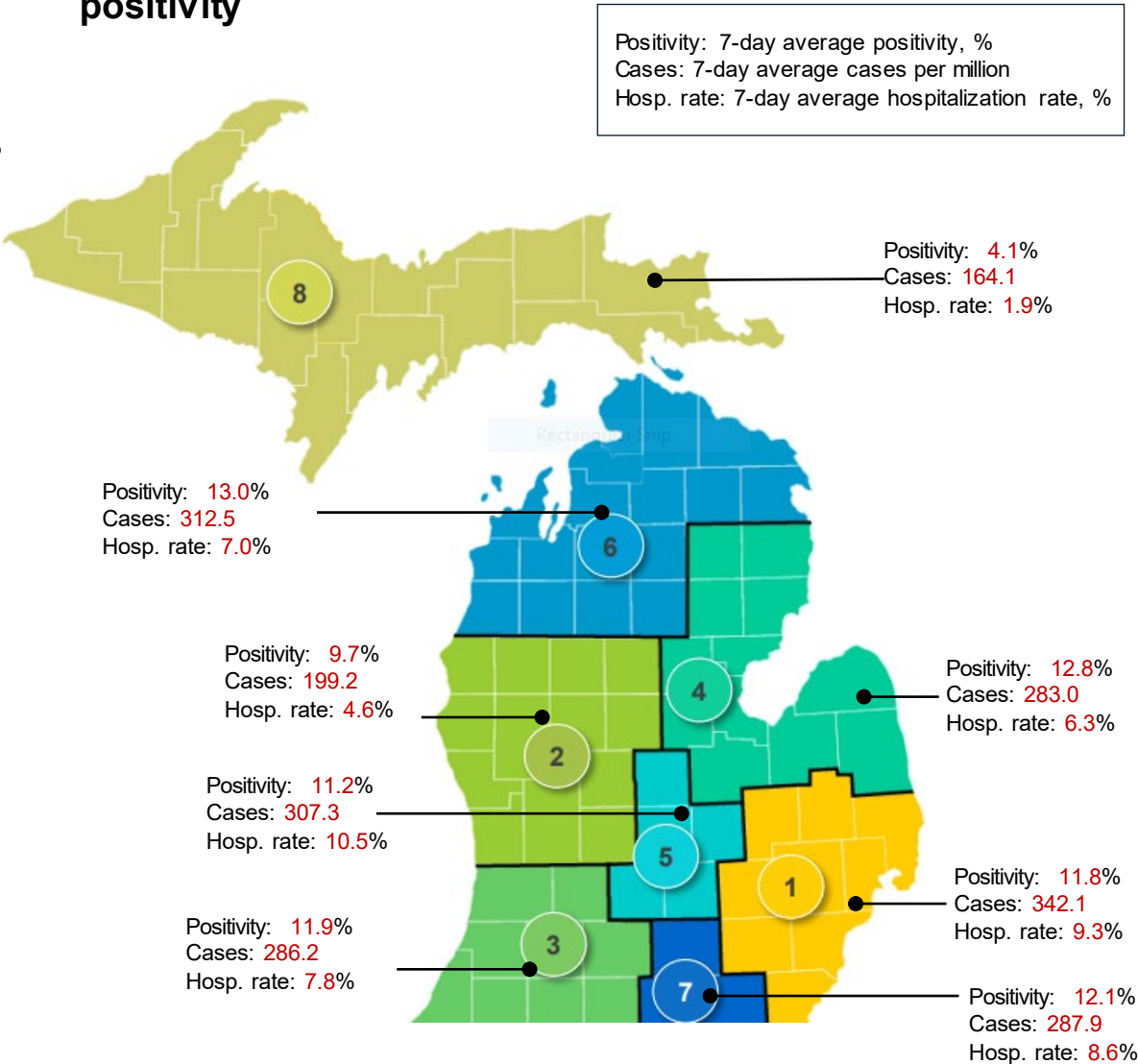
# Recent statewide trends

## Statewide trends

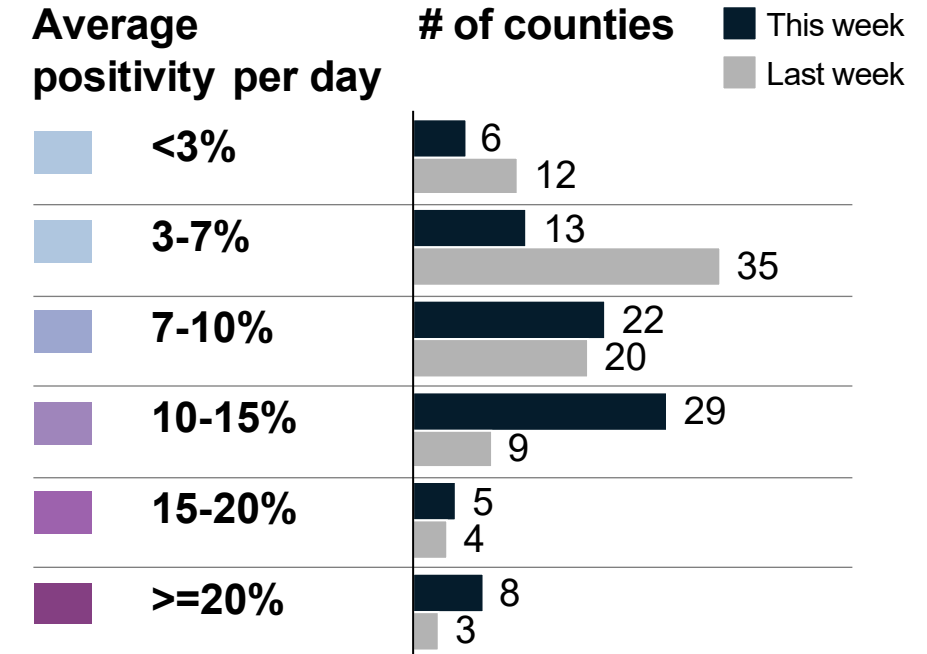
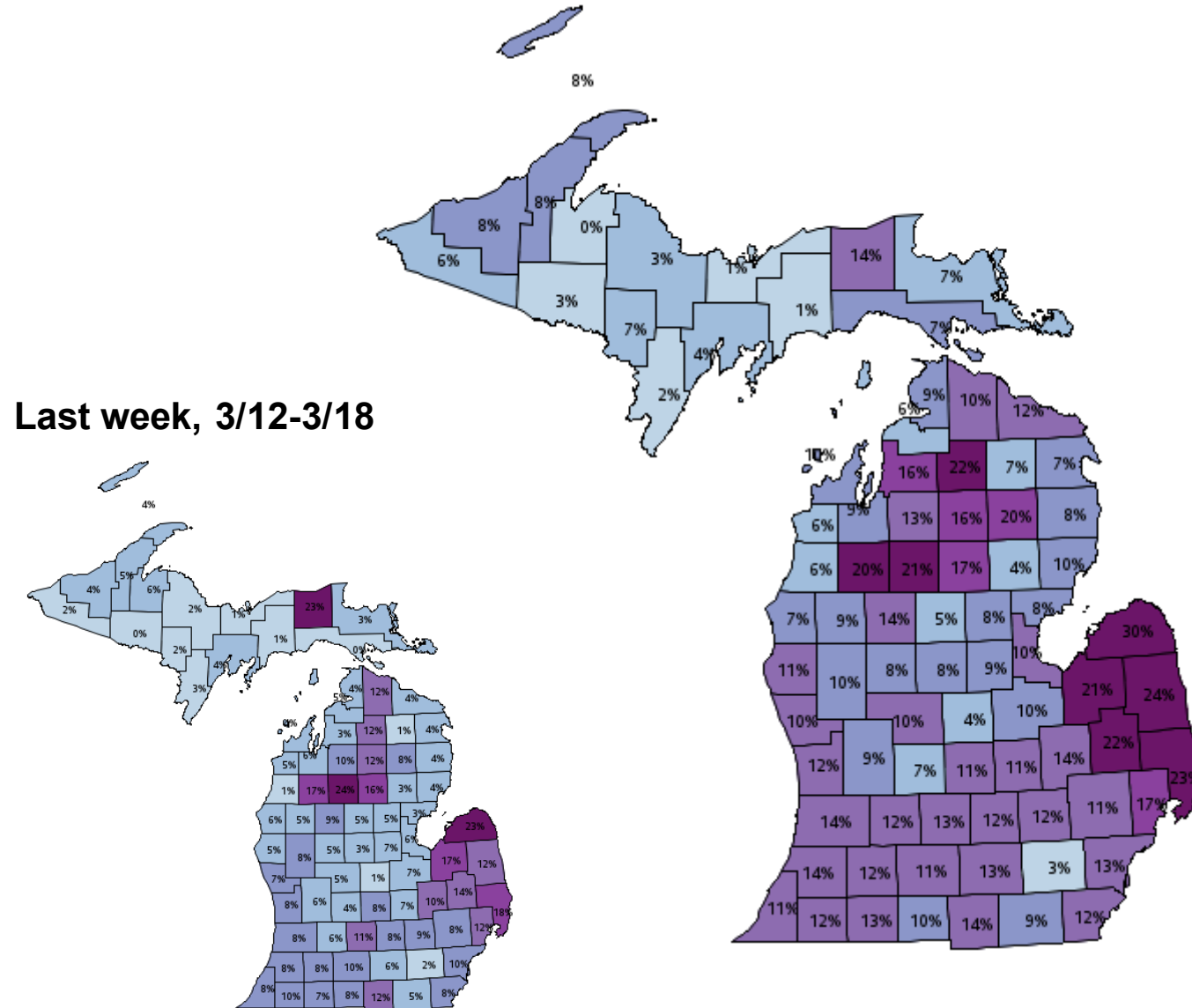


Source: <https://mistartmap.info/>

## Regional breakdown: Cases, hospitalization rate, and positivity



# Positivity by county, 3/19-3/25



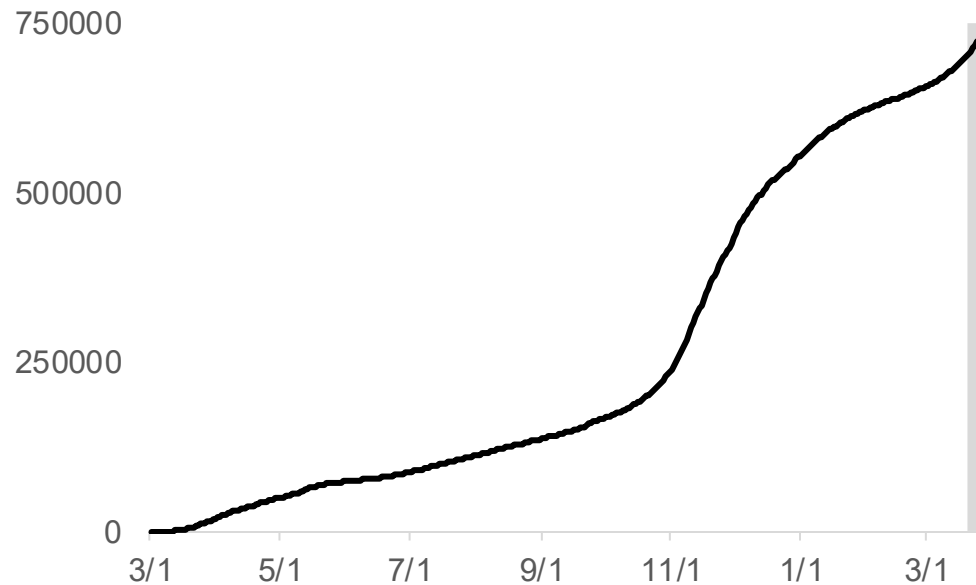
## Updates since last week:

42 of 83 counties saw double digit positivity in the last week (26 county increase)

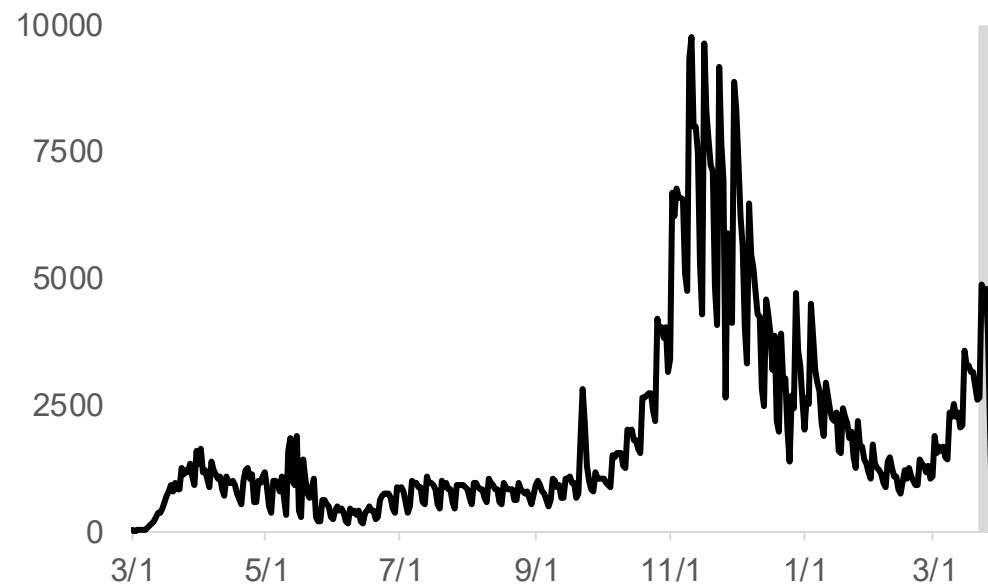
64 of 83 counties saw positivity > 7% in the last week (28 county increase)

# COVID-19 cases by onset date: State of Michigan

**Cumulative confirmed and probable cases** by date of onset of symptoms



**New confirmed and probable cases** by date of onset of symptoms



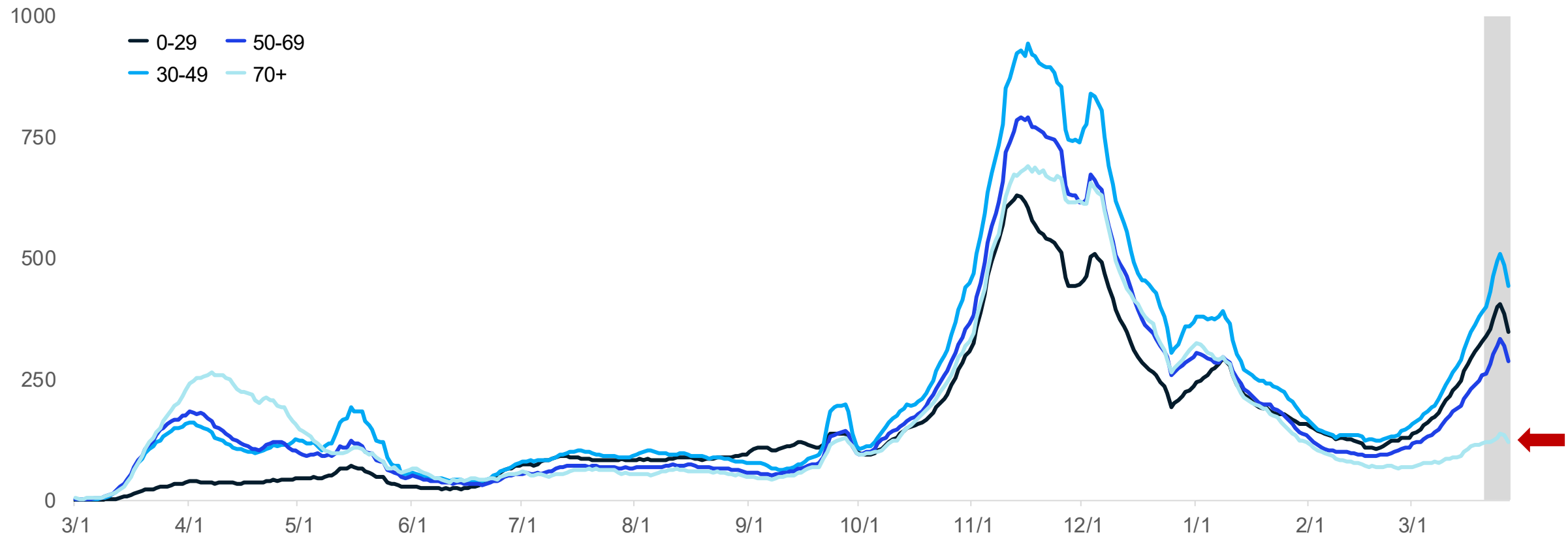
## Updates since last week:

- Cases have increased for over five weeks
- Statewide case rate is at risk level E (above 150 cases/million)
- There are over 3,500 new cases per day



# Age group: average new daily cases

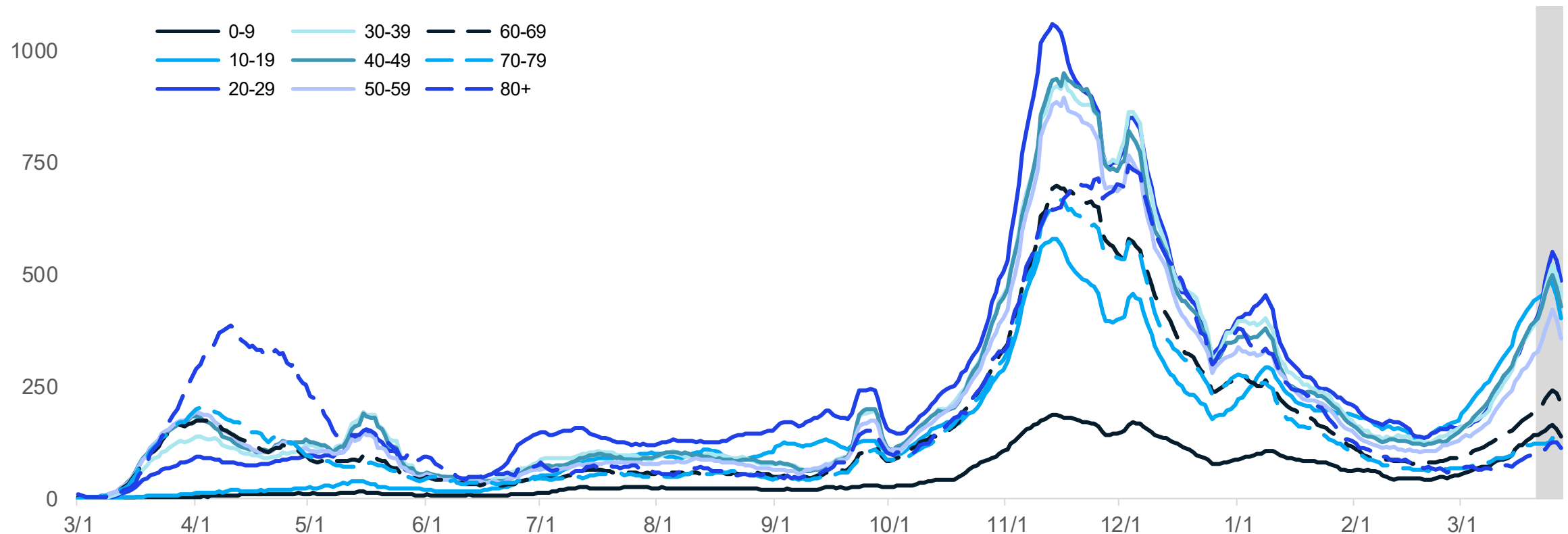
Daily new confirmed and probable cases per million by age group (7-day rolling average)



- Case rates are increasing at a faster pace for those under 70
- Cases per million is highest among the 30–49-year-olds, followed by 0-29-year-olds

# Age group: average new daily cases

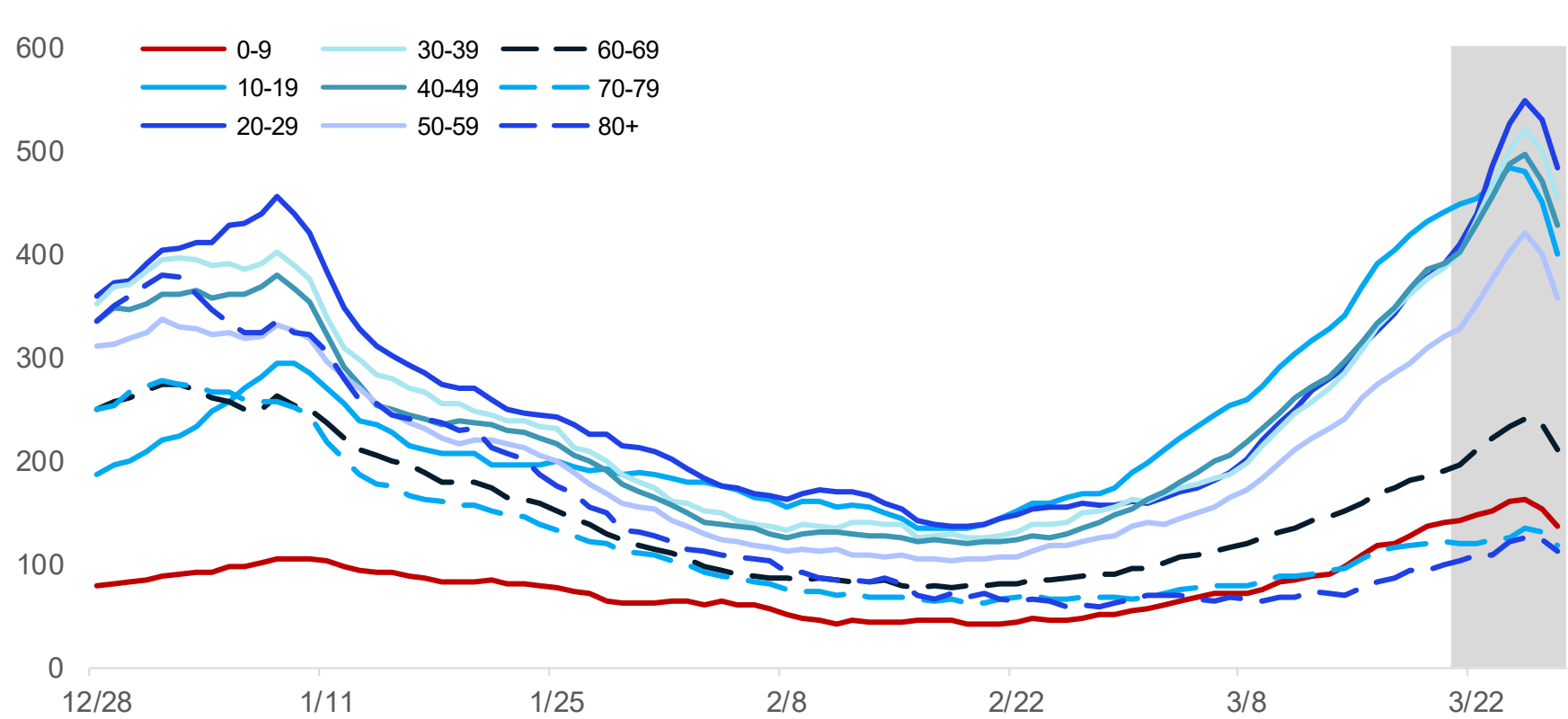
Daily new confirmed and probable cases per million by age group (7-day rolling average)



- All age groups by decade are increasing
- Those aged 10-19 have the highest case rate and but other groups are catching up
- Other ages groups with notable increases over the past week are 20-29, 30-39, 40-49, and 50-59

# Age group: average new daily cases

Daily new confirmed and probable cases per million by age group (7-day rolling average)



Age Group	One Week % Change (#)	% Change since 2/19* (#)
0-9	54% (57)	230% (113)
10-19	34% (141)	227% (384)
20-29	40% (153)	187% (351)
30-39	44% (142)	209% (318)
40-49	39% (130)	225% (320)
50-59	38% (120)	206% (292)
60-69	30% (57)	141% (143)
70-79	30% (21)	93% (45)
80+	37% (11)	45% (13)
Total¶	38% (833)	194% (1,978)

\* Lowest 7-day avg. following winter surge

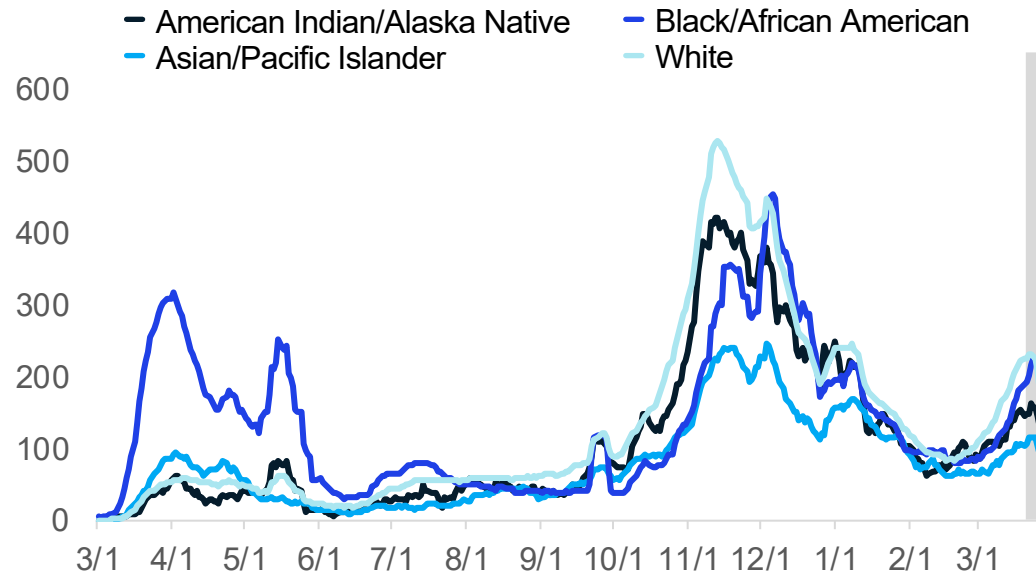
¶ Total may not reflect state due to missing age data

- Those aged 0-9 have seen 230% increase in case rates since Feb 19, the highest percent rise of any age group
- Those aged 10-19 have seen an average of 384 additional cases per day since Feb 19, the largest number for any age group
- All age groups have seen ≥ 30% increase in cases over the past week

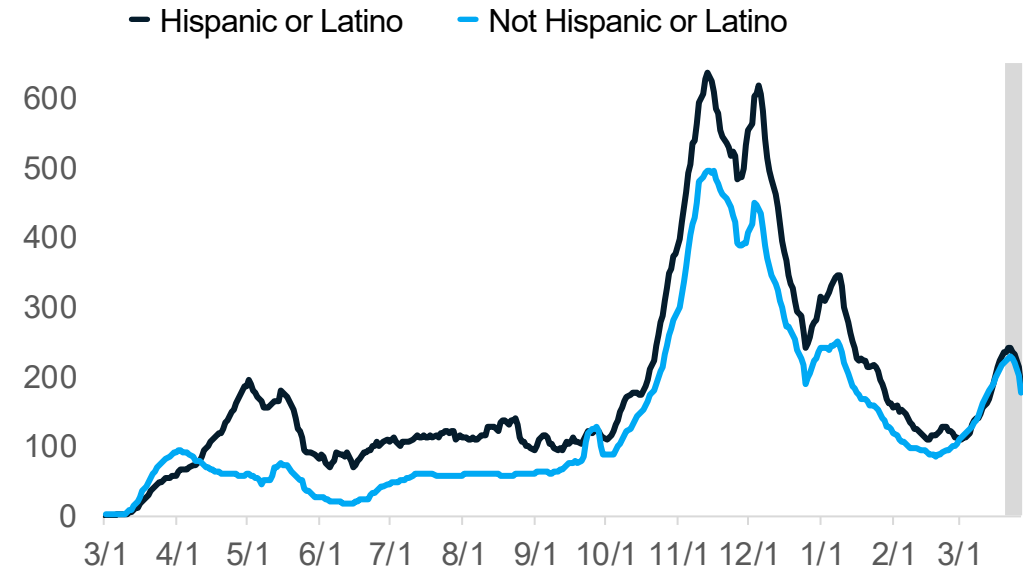
Note: Case information sourced from MDHHS and reflects date of onset of symptoms  
Source: MDHHS – Michigan Disease Surveillance System

# Average daily new cases per million people by race and ethnicity

**Daily new confirmed and probable cases per million (7 day rolling average) by race category**



**Daily new confirmed and probable cases per million (7 day rolling average) by ethnicity category**

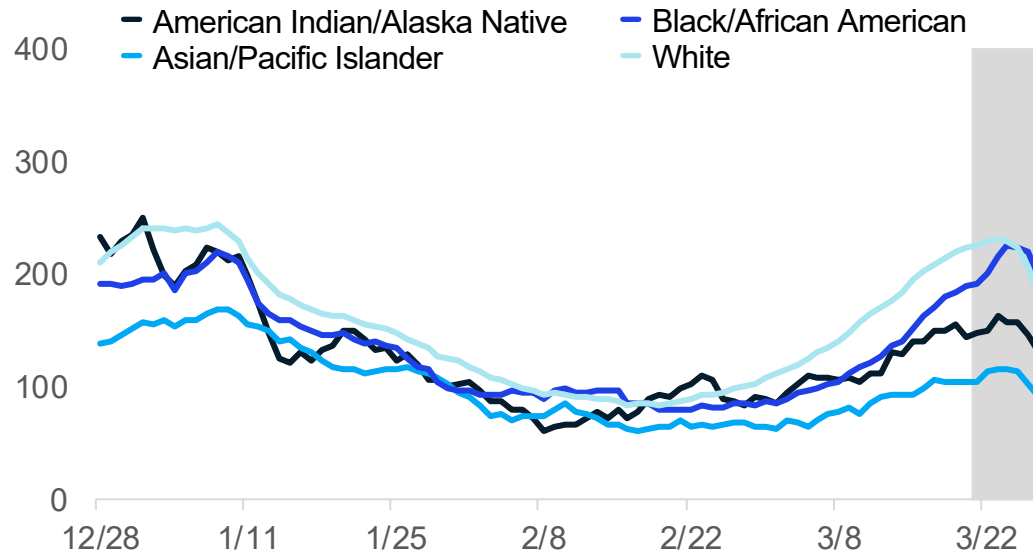


## Updates since last week:

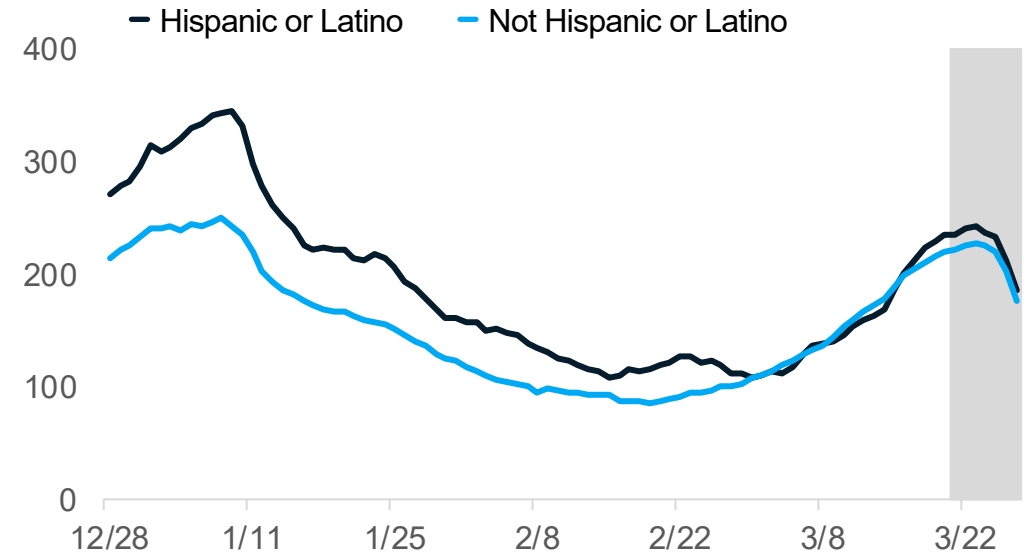
- Cases per million are now increasing for all races and ethnicities
- In the past 30 days, 32% of all cases represent unknown, multiple, or other races (26% of race is unknown, ↑4%)
- In the past 30 days, 30% of all cases have an unknown ethnicity reported (↑4 %)

# Average daily new cases per million people by race and ethnicity

**Daily new confirmed and probable cases per million (7 day rolling average) by race category**



**Daily new confirmed and probable cases per million (7 day rolling average) by ethnicity category**



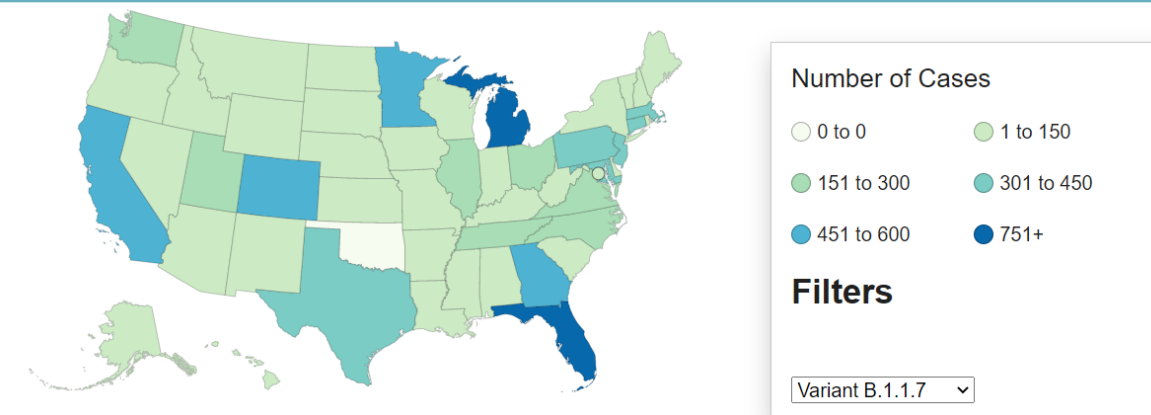
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- Cases per million are now increasing for all races and ethnicities
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- In the past 30 days, 30% of all cases have an unknown ethnicity reported (↑4%)

# Identified COVID-19 Cases Caused by All Variants of Concern in US and Michigan

## Emergent B.1.1.7 Variant Cases in the United States

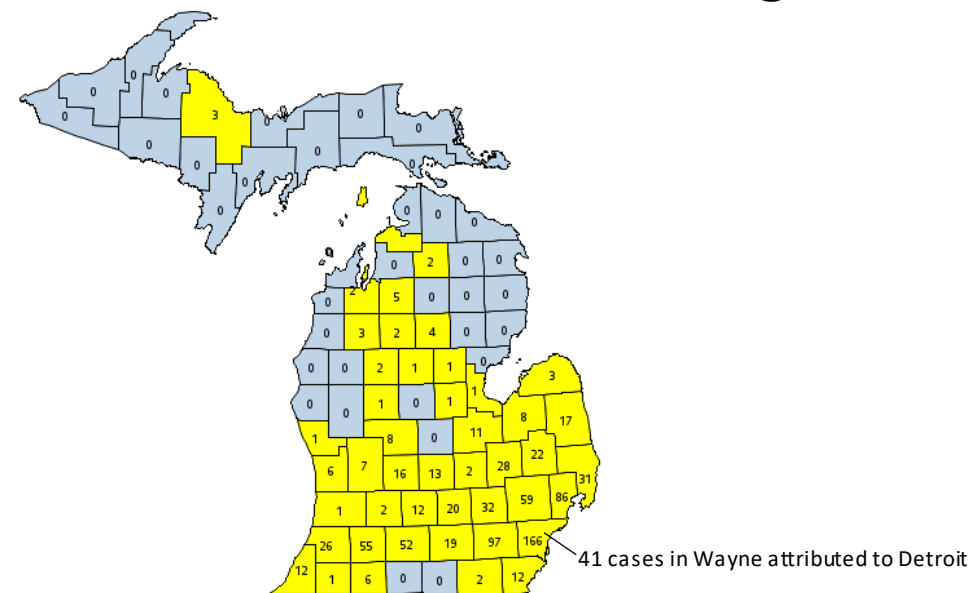
Cases of Variants of Concern in the United States\*\*



Territories **AS** **GU** **MH** **FM** **MP** **PW** **PR** **VI**

Variant	Reported Cases in US	Number of Jurisdictions Reporting
B.1.1.7	10579	51 (↔)
B.1.351	288	30 (↑3)
P.1	118	22 (↑4)

## Emergent Variants of Cases in Michigan



Variant	Reported Cases in MI	Number of Counties Reporting Cases
B.1.1.7	1340*	46
B.1.351	6	5
P.1	0	0

\* 474 cases within MDOC; 4 cases currently out of state or county unknown

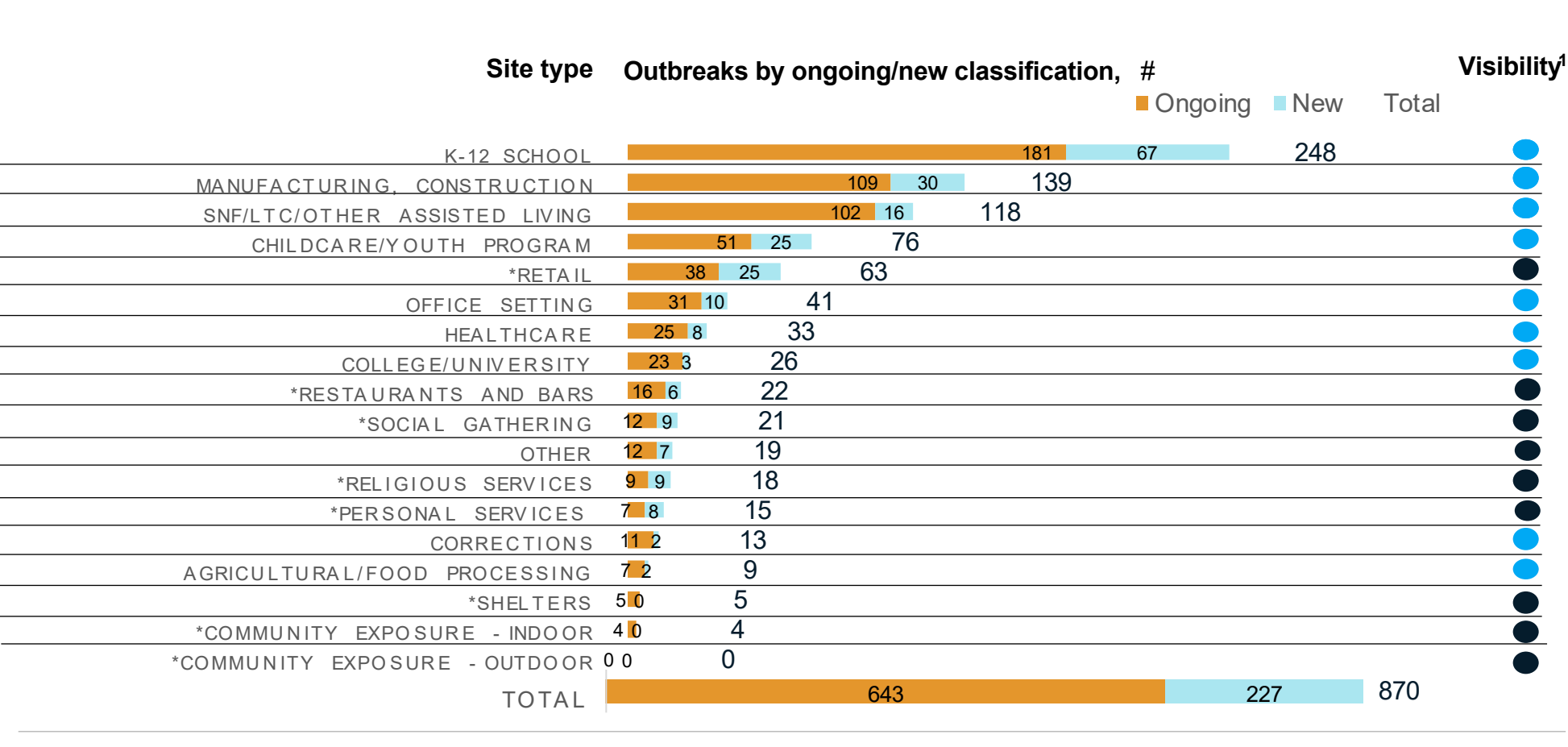
Data last updated March 28, 2021

Source: <https://www.cdc.gov/coronavirus/2019-ncov/transmission/variant-cases.html> and Michigan Disease Surveillance System (MDSS)

# Number of outbreak investigations by site type, week ending Mar 25

Pre-decisional, for discussion only      Draft

- Easier to identify outbreak
- Harder to identify outbreak



Total number of active outbreaks is up 14% from previous week

Following K-12 (67), the greatest number of new outbreaks were reported in manufacturing/ construction (30), childcare/youth programs (25), retail (25), and SNF/LTC (16).

LHDs reported new outbreaks in all settings except shelters, and indoor and outdoor community exposures.

1. Based on a setting's level of control and the extent of time patrons/residentsspend in the particular setting, different settingshave differing levels of ability to ascertain whether a case derived from that setting

NOTE: Many factors, including the lack of ability to conduct effective contact tracing in certain settings, may result in significant underreporting of outbreaks. This chart does not provide a complete picture of outbreaks in Michigan and the absence of identified outbreaks in a particular setting in no way provides evidence that, in fact, that setting is not having outbreaks.

Source: LHD Weekly Sitreps

# K-12 school outbreaks, recent and ongoing, week ending Mar 25

Number of reported outbreaks increased since last week (207 to 248) including increases in High Schools (126 to 144), Middle/Jr High (39 to 50), and Pre K-Elementary (36 to 48). Only Administrative remained the same (6 to 6).

Region	Number of reported cases,#	# Ongoing - Excluding New	# New	Number of outbreaks	Range of cases per outbreak
Region 1	308	57		44	2-58
Region 2n	228	77		64	2-28
Region 2s	122	35		29	2-20
Region 3	378	110		39	2-53
Region 5	144	33		30	2-24
Region 6	132	60		14	2-42
Region 7	130	45		26	2-23
Region 8	14	3		2	2-15
Total	1,456	420		248	2-58

Grade level	Number of reported cases,#	# Ongoing - Excluding New	# New	Number of outbreaks	Range of cases per outbreak
Pre-school - elem.	170	59		48	2-32
Jr. high/middle school	274	69		50	2-58
High school	1,001	290		144	2-53
Administrative	11	2		6	2-3
Total	1,456	420		248	2-58

Many factors, including the lack of ability to conduct effective contact tracing in certain settings, may result in significant underreporting of outbreaks. This chart does not provide a complete picture of outbreaks in Michigan and the absence of identified outbreaks in a particular setting in no way provides evidence that, in fact, that setting is not having outbreaks.  
Source: LHD Weekly Sitreps



# COVID-19 and Healthcare Capacity and COVID Severity

Hospitalizations and ICU utilization are increasing

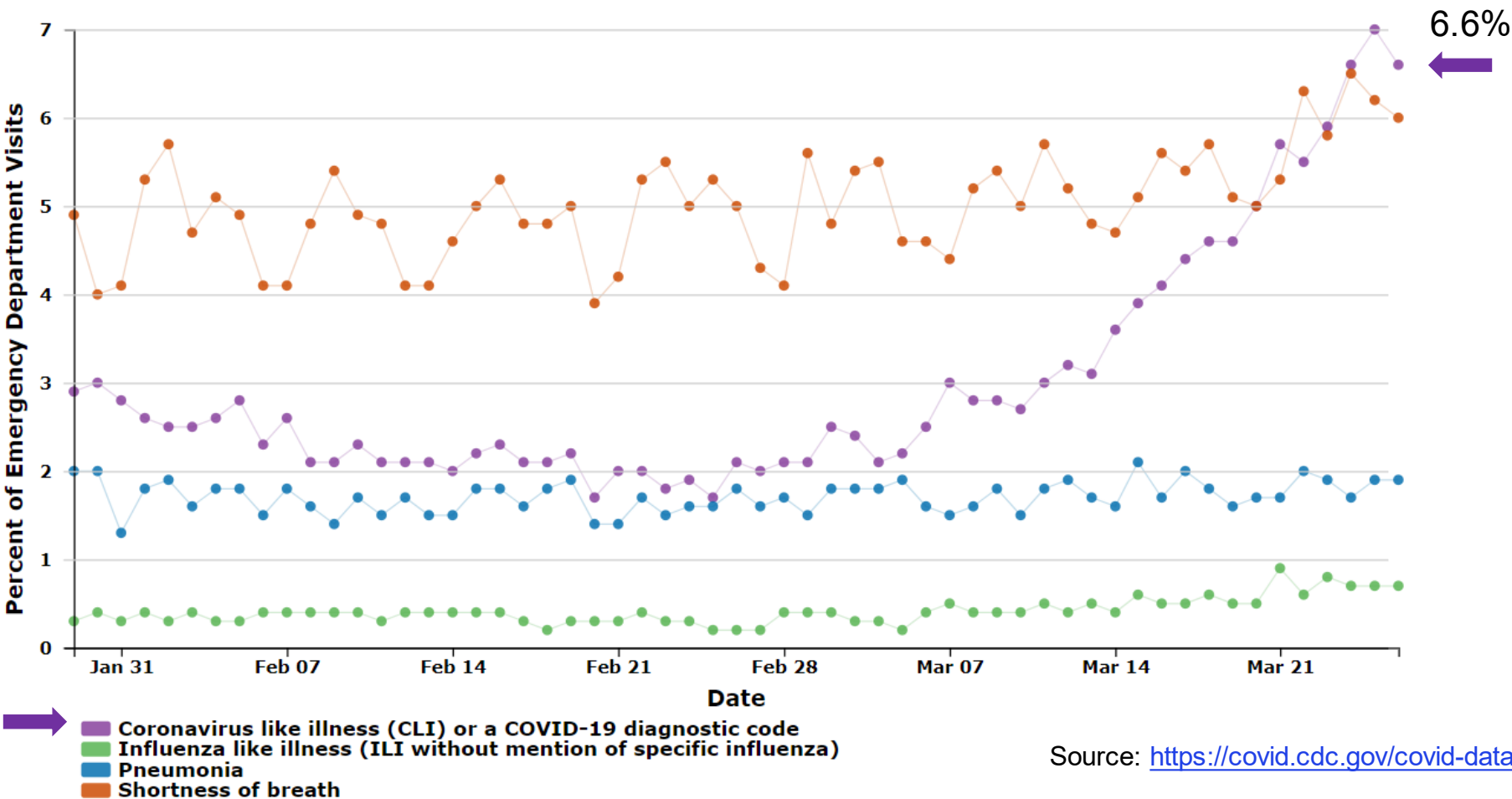
- COVID-like illness (CLI) has increased to 6.6%
- Hospital admissions are increases for all age groups but are highest for those 50-59 years
- Hospitalizations up ~51% since last week (fifth consecutive week)
- All regions are showing increasing hospitalization trends this week
- Volume of COVID-19 patients in intensive care (ICU) has increased 43% since last week (accelerated growth)

Deaths trends have shifted and are now increasing to 1.6 deaths per million

- Deaths are a lagging indicator of cases and hospitalization
- 24% increase since the March 9 low
- Proportion of deaths among those 60+ is slowly declining

# Michigan Trends in Emergency Department Visits for COVID-19-Like Illness (CLI)

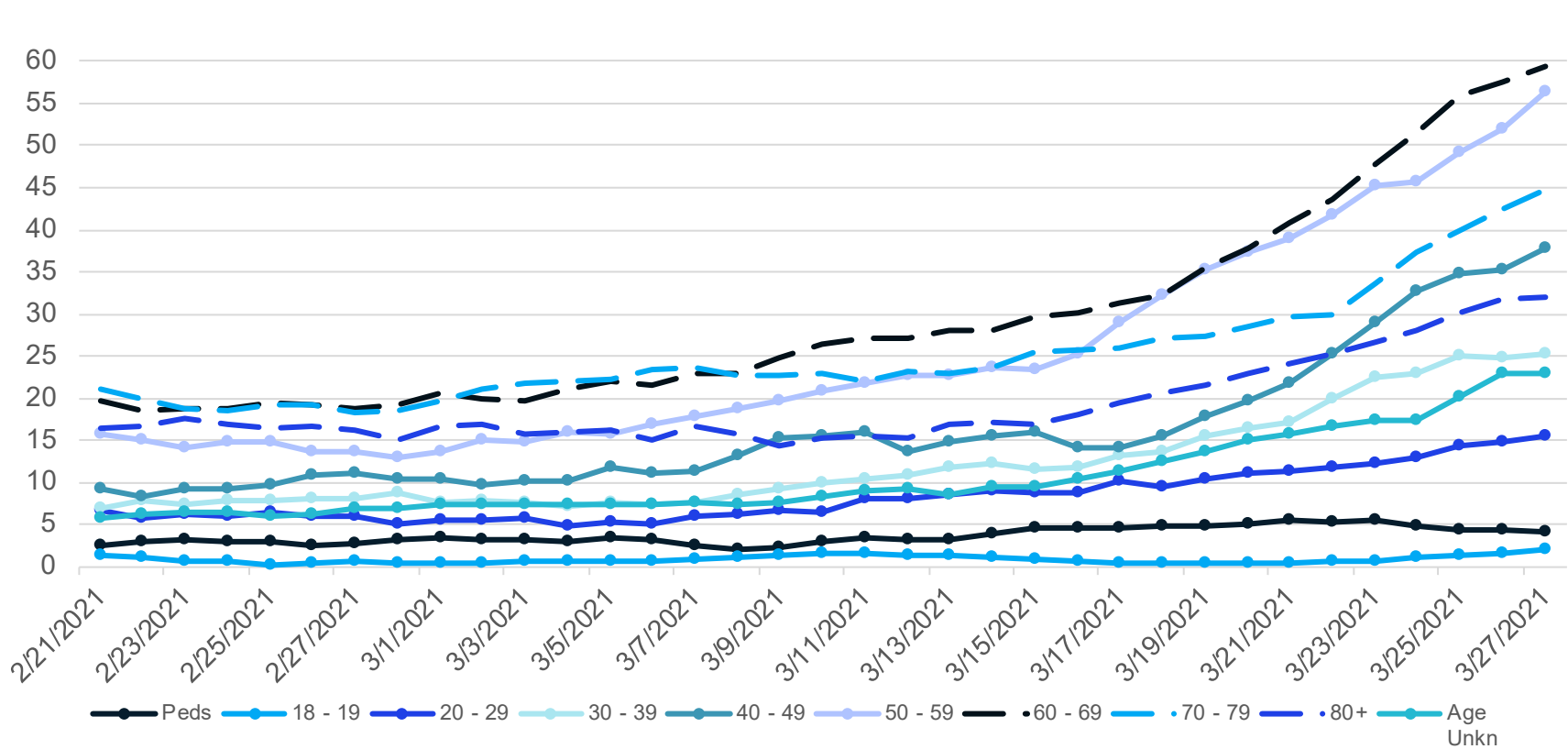
Percentage of ED visits by syndrome in Michigan: COVID-19-Like Illness, Shortness of Breath, Pneumonia, and Influenza-Like Illness



Source: <https://covid.cdc.gov/covid-data-tracker/#ed-visits>

# Average Hospital Admissions by Age

Confirmed COVID-19 Hospital Admissions by Age Group - Statewide Rolling Weekly Average



Age Group	One Week % Change (#)	% Change since 2/28* (#)
Peds	-38% (-2.0)	0% (0.0)
18-19	275% (1.6)	400% (1.7)
20-29	57% (6.7)	261% (13.4)
30-39	51% (10.1)	246% (21.4)
40-49	55% (13.7)	278% (28.6)
50-59	59% (24.4)	409% (53.1)
60-69	42% (18.6)	223% (43.0)
70-79	73% (22.0)	182% (33.6)
80+	38% (9.6)	129% (19.6)
Total	51% (112)	230% (231.4)

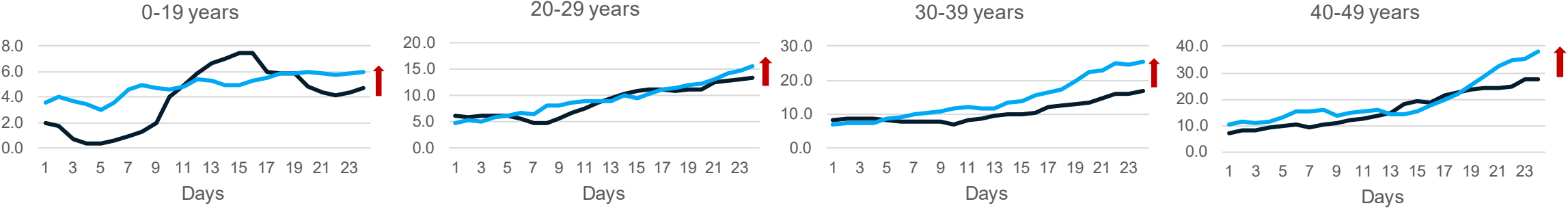
\* Lowest 7-day avg. hospital admissions following winter surge

- The number of hospital admissions is increasing in most age groups
- Over the past week, those 50-59 have seen the greatest increase in avg. daily hospital admissions and percent change
- Since Feb 28 low, those 50-59 have seen the greatest increase in avg. daily hospital admissions and percent change

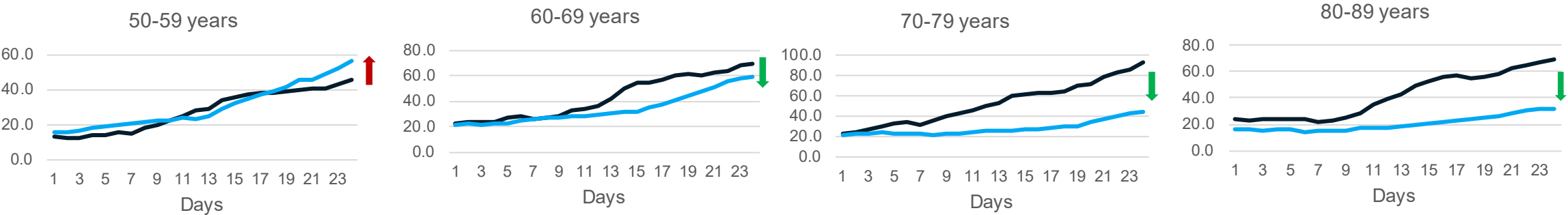
# Hospital Admission Comparison of Winter and Spring Surges

- Second (Winter) Surge (Oct 18 – Nov 10)
- Third (Spring) Surge (Mar 4 – Mar 24)

## Number of 7-day Rolling Average Hospital Admissions for Younger Ages



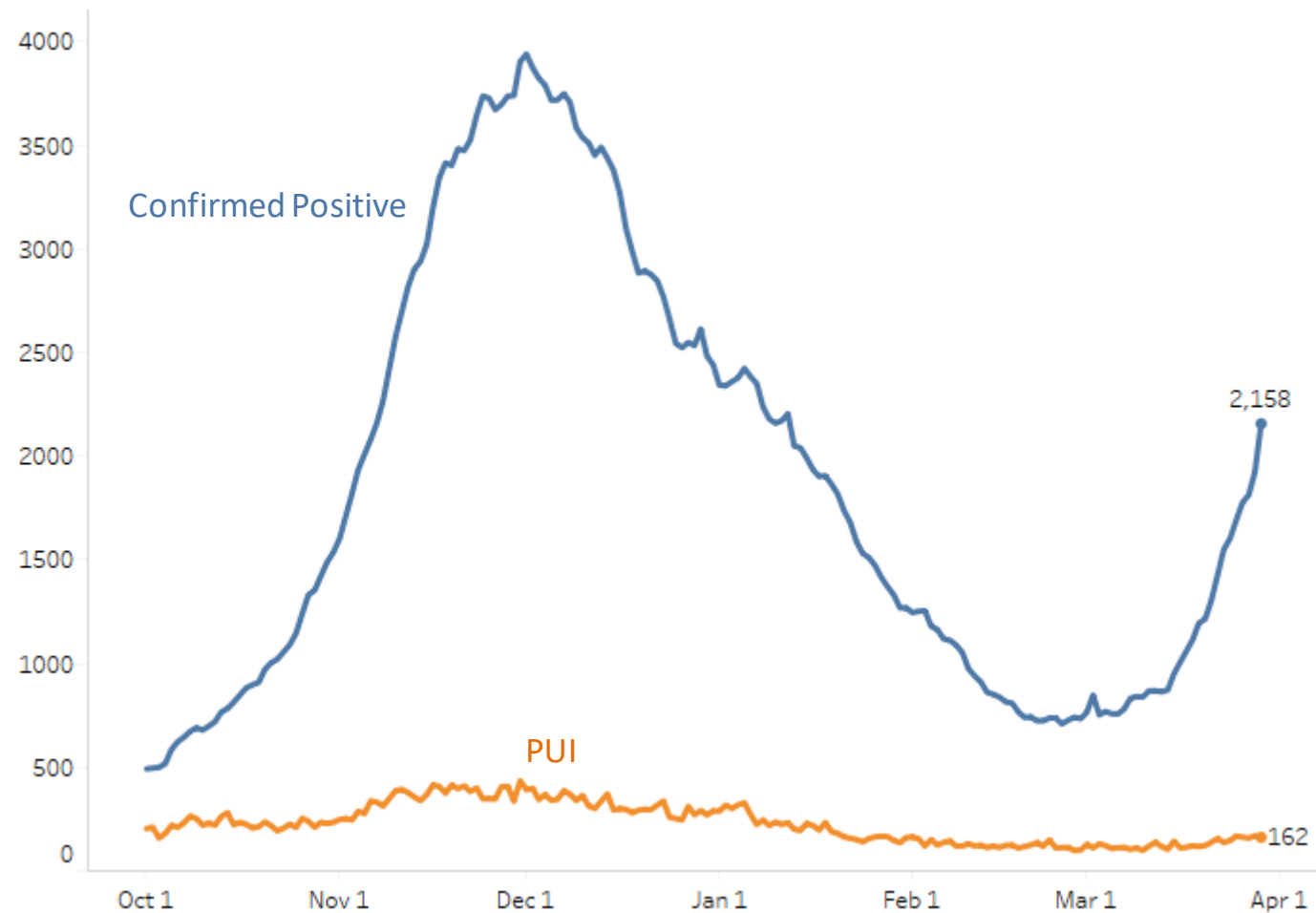
## Number of 7-day Rolling Average Hospital Admissions for Older Ages



Note: differences in Y-axis values

# Statewide Hospitalization Trends: Total COVID+ Census

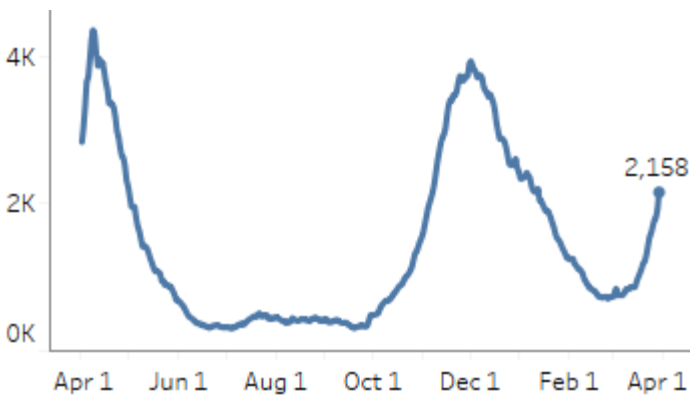
Hospitalization Trends 10/1/2020– 3/29/2021  
Confirmed Positive & Persons Under Investigation (PUI)



COVID+ census in hospitals continues to increase rapidly. This week is up 51% from the previous week (vs. 50% increase last week over previous week).

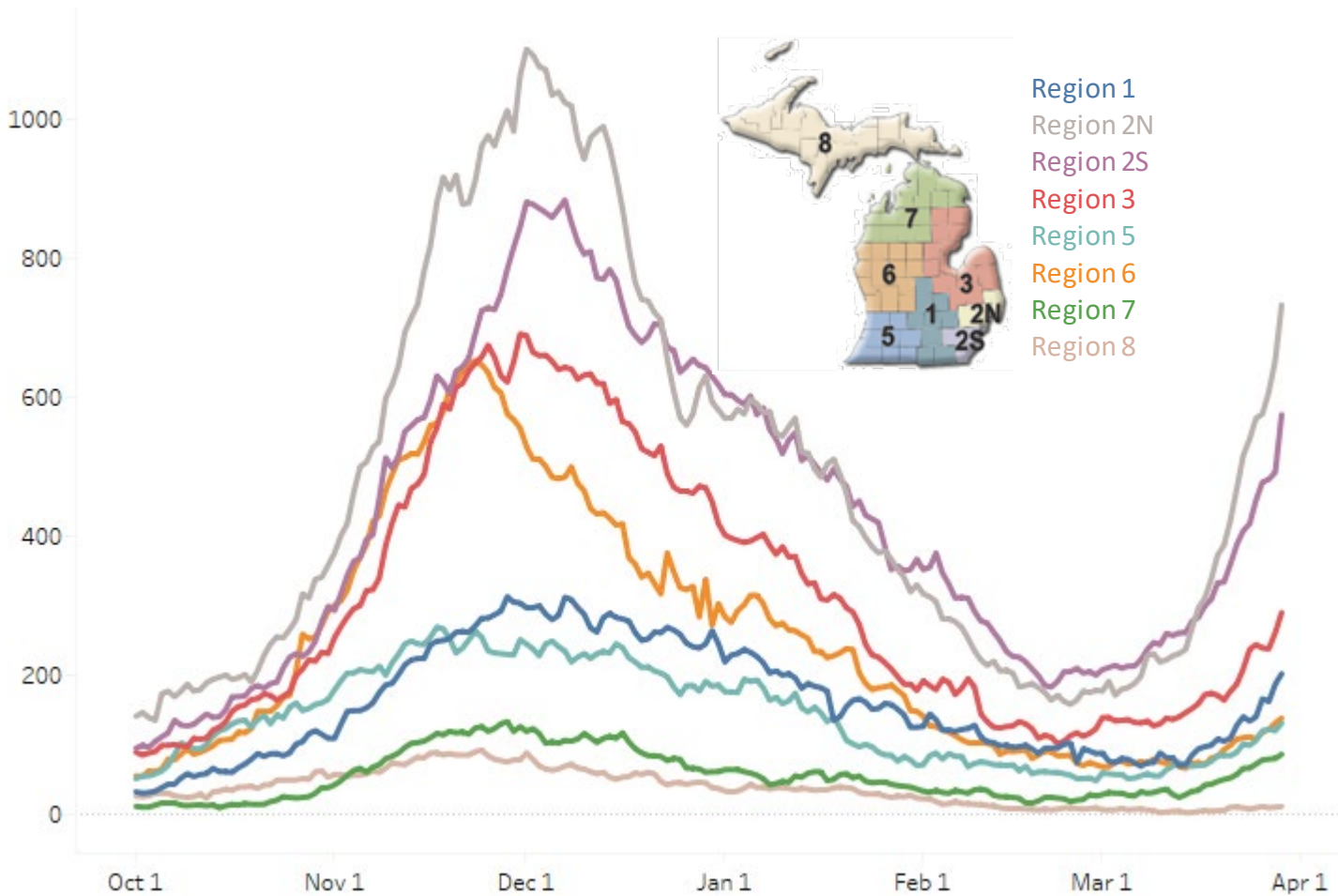
Hospitalizations are doubling every 12-14 days.

Hospitalized COVID Positive Long Term Trend (beginning March 2020)



# Statewide Hospitalization Trends: Regional COVID+ Census

Hospitalization Trends 10/1/2020– 3/29/2021  
Confirmed Positive by Region



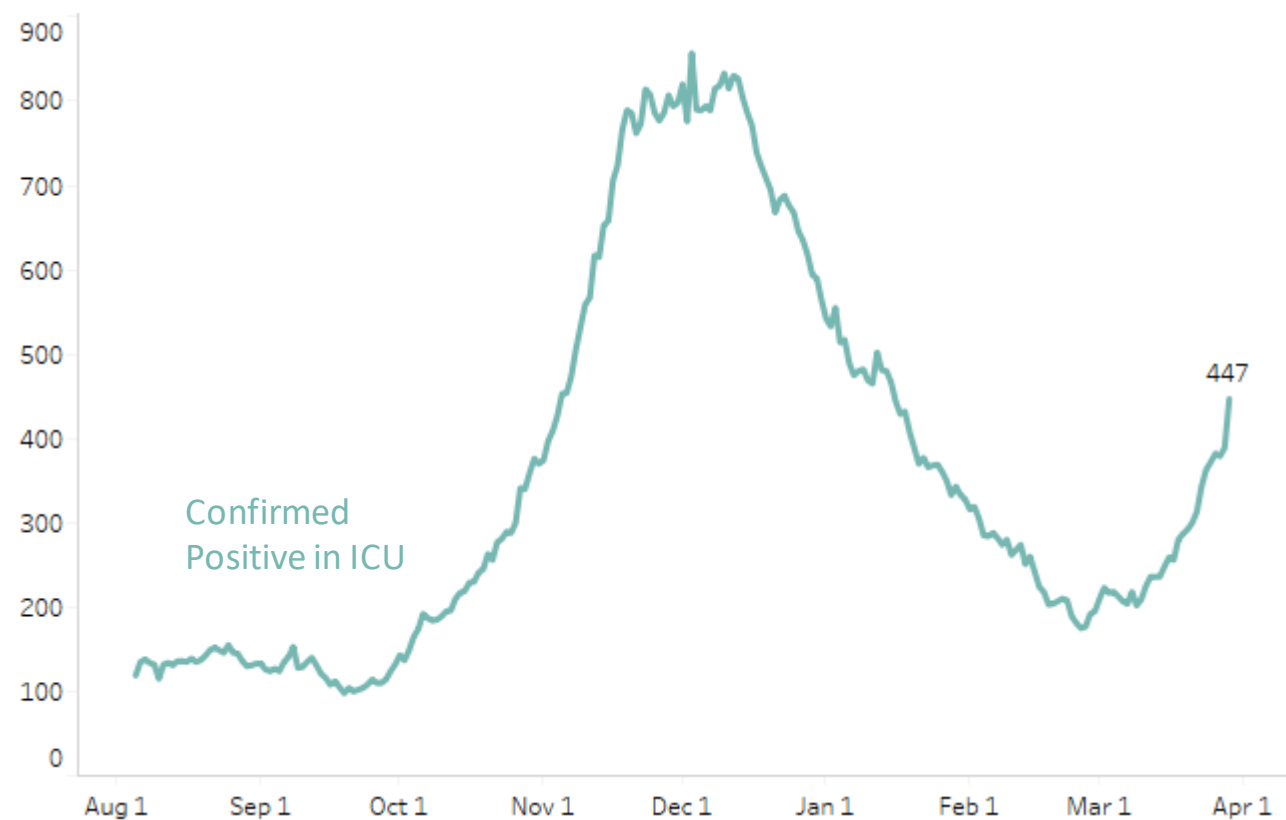
All regions are showing increasing hospitalization trends this week. 3 Regions are >200/M and Region 2N is > 300/MM hospitalized.

Six regions are above 100 hospitalized per million of the population.

Region	COVID+ Hospitalizations (% Δ from last week)	COVID+ Hospitalizations / MM
Region 1	201 (+58%)	186/M
Region 2N	731 (+56%)	330/M
Region 2S	564 (+46%)	254/M
Region 3	287 (+54%)	253/M
Region 5	130 (+48%)	136/M
Region 6	136 (+27%)	93/M
Region 7	85 (+52%)	170/M
Region 8	10 (+11%)	32/M

# Statewide Hospitalization Trends: ICU COVID+ Census

Hospitalization Trends 8/1/2020 – 3/29/2021  
Confirmed Positive in ICUs



Overall, volume of COVID+ patients in ICUs has increased 43% from last week. Growth this week is accelerating vs. last week.

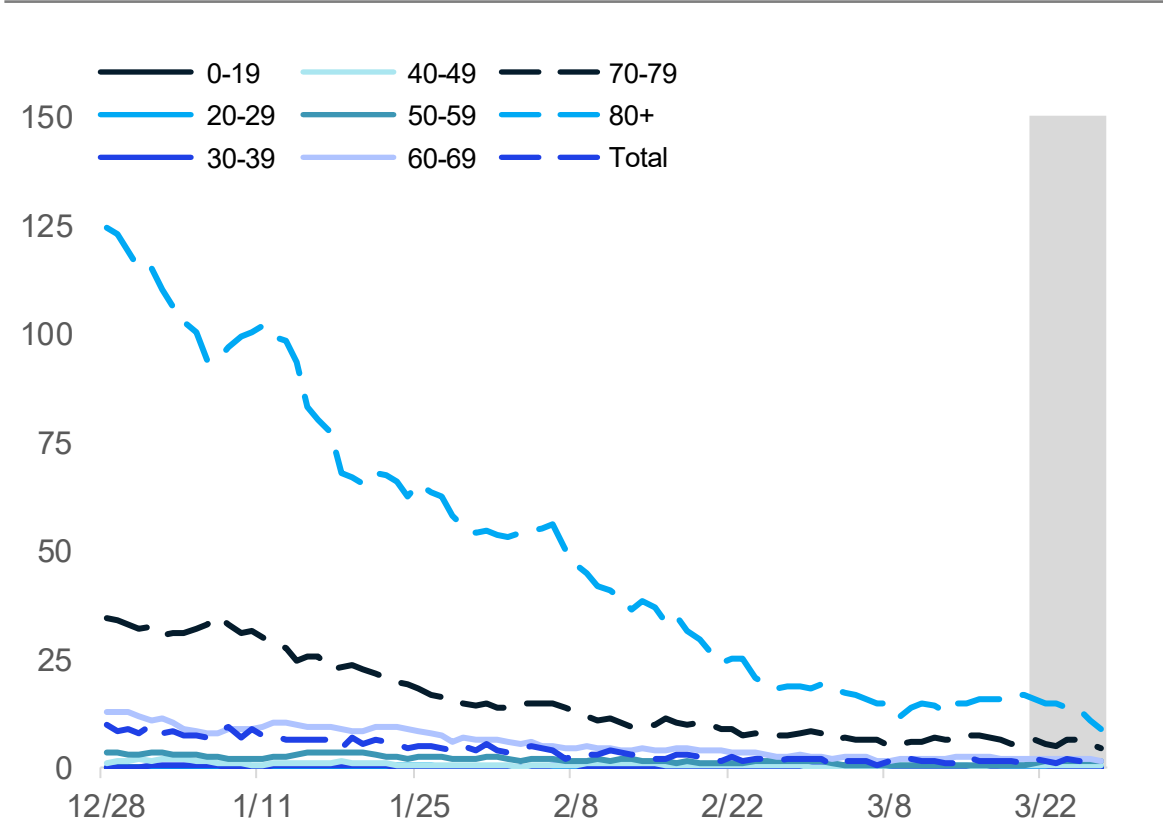
All regions have increasing COVID+ in ICU census, except region 8. Four regions are >20 percent ICU beds occupied with COVID patients.

Region	Adult COVID+ in ICU	Adult ICU Occupancy	% of Adult ICU beds COVID+
Region 1	27	85%	14%
Region 2N	117	78%	20%
Region 2S	114	79%	15%
Region 3	74	86%	21%
Region 5	34	81%	22%
Region 6	42	67%	17%
Region 7	36	74%	20%
Region 8	3	41%	5%

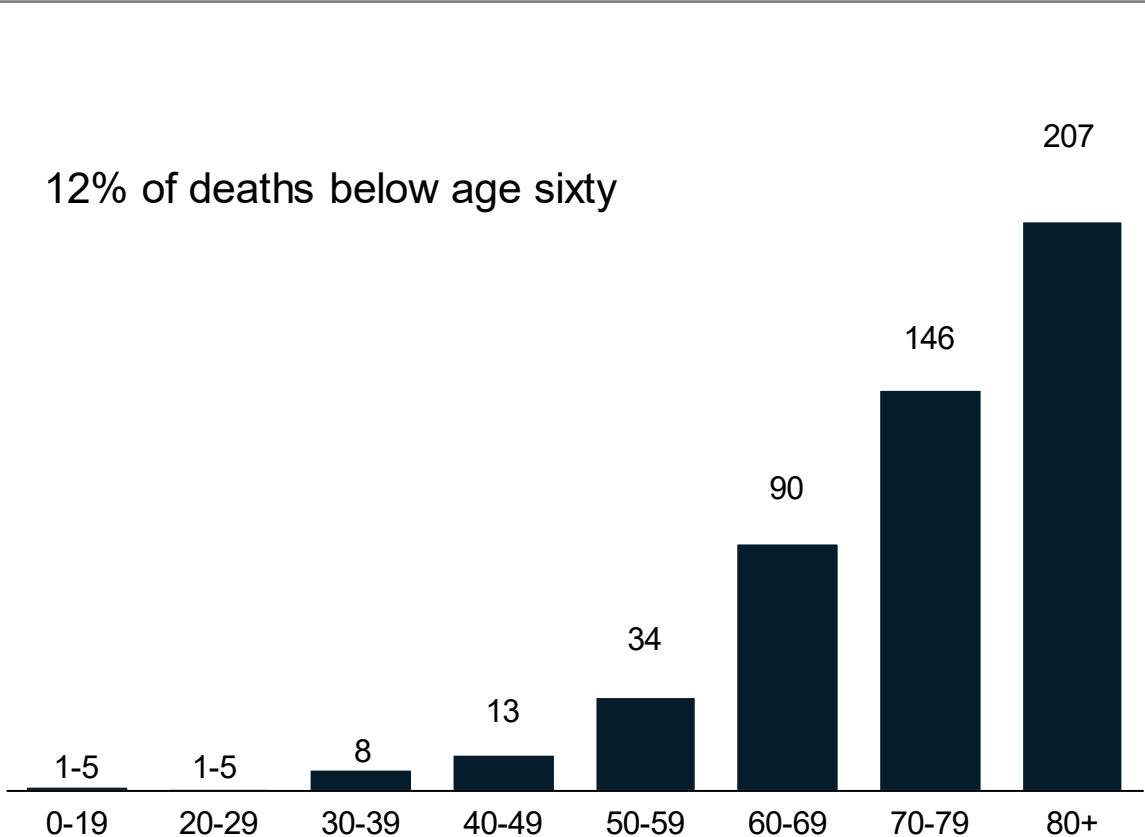
Hospital bed capacity updated as of 3/29

# Average and total new deaths, by age group

Daily confirmed and probable deaths per million by age group (7 day rolling average)



Total confirmed and probable deaths by age group (past 30 days, ending 3/20/2021)



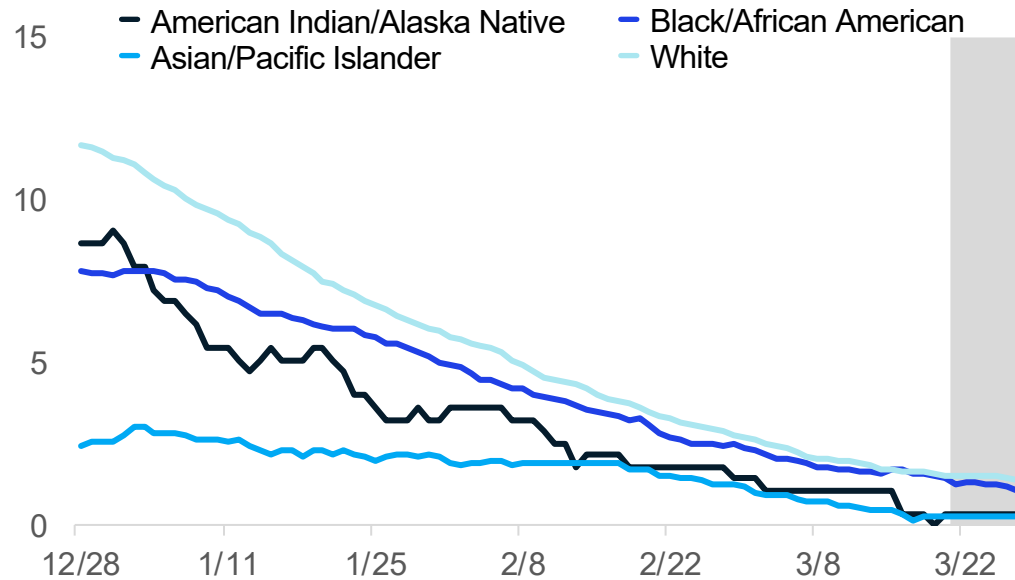
Note: Death information sourced from MDHHS and reflects date of death of confirmed and probable cases.

Source: MDHHS – Michigan Disease Surveillance System

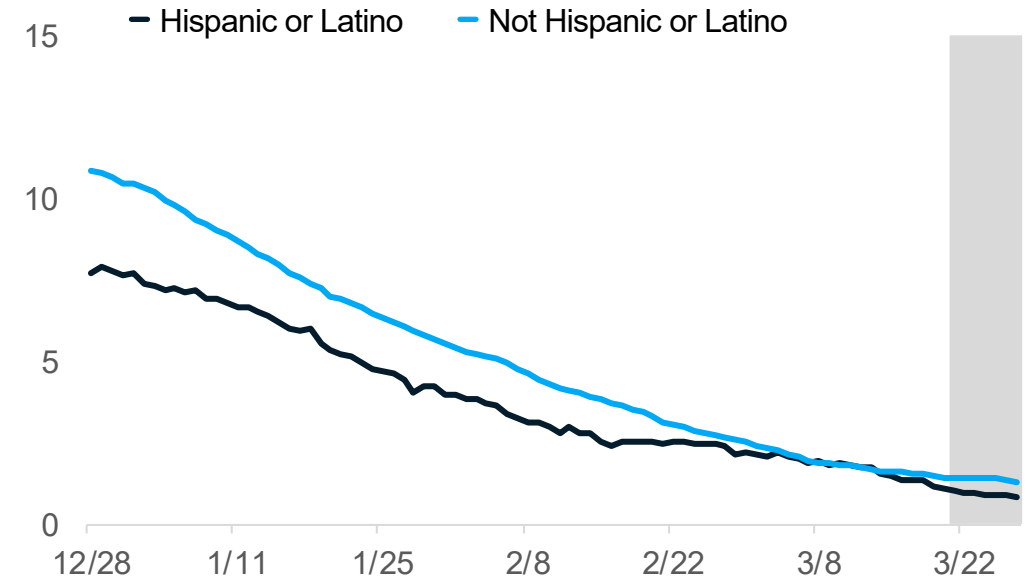


# 30-day rolling average daily deaths per million people by race and ethnicity

## Average daily deaths per million people by race



## Average daily deaths per million people by ethnicity



### Updates since last week:

- Deaths are a lagging indicator of cases, and death rates are increasing among racial and ethnic groups
- Whites and Blacks have the most reported deaths per capita while Hispanic/Latinos and Non-Hispanic Latino are about the same
- Deaths are not adjusted for confounders (e.g., age, sex, comorbidities)

# How is public health capacity?

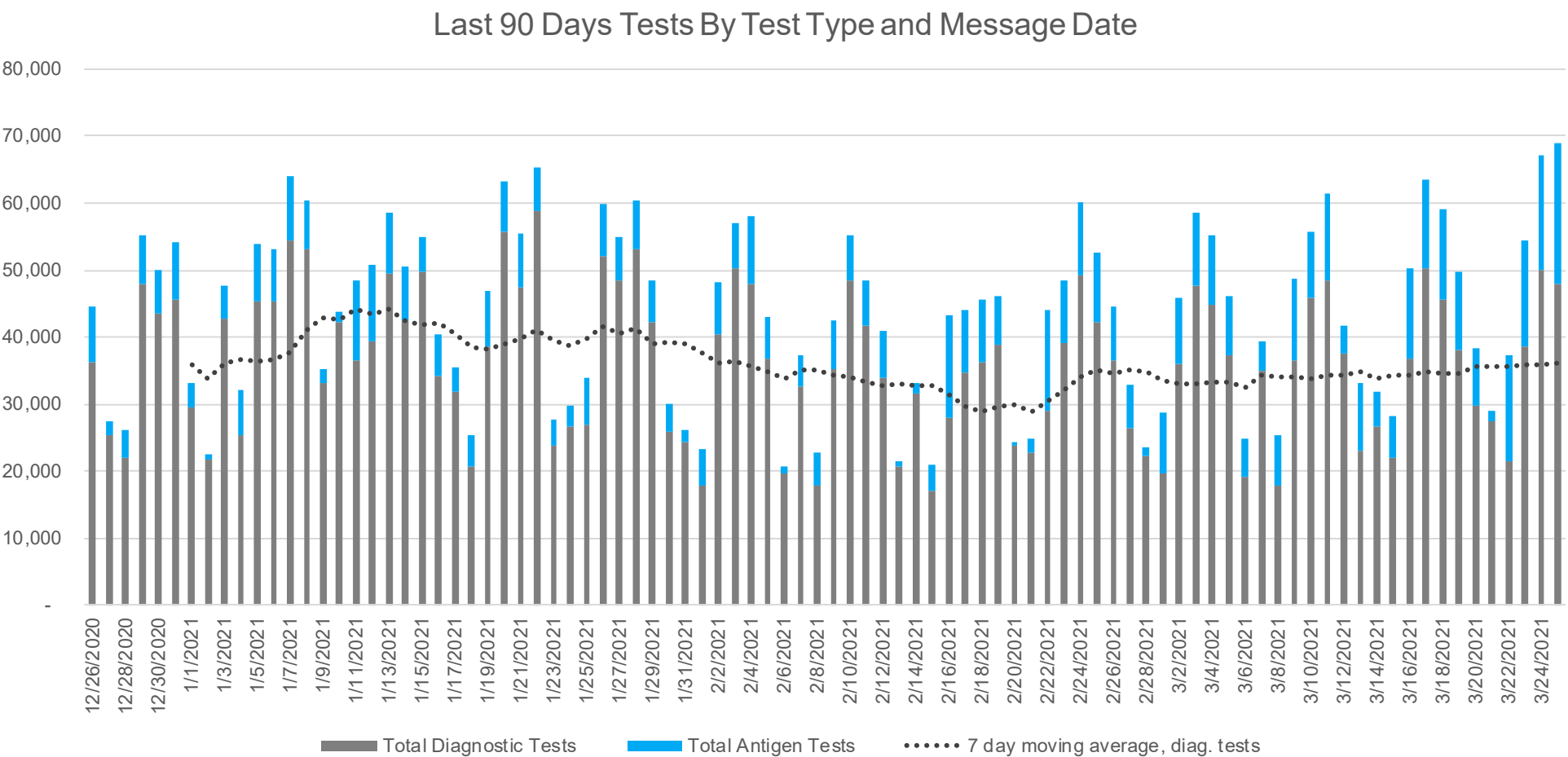
Diagnostic testing volume (PCR and antigen) has increased slowly from last week

- PCR testing increased slightly since last week
- Percent of antigen tests have increased

Cases identified for investigations has sharply increased

- Proportion of completed interviews decreased from prior week (although number of investigations has increased)
- Consistent low proportion of cases interviewed with a source of known infection (indicating community acquisition)
  - As cases have increased, the percent of interviews attempted has declined
- Consistent low proportion of those quarantining when their symptoms begin (indicating no effective halt in community transmission)

# Daily diagnostic tests, by message date



## Weekly Update

- 49,308 rolling 7-day average daily diagnostic tests reported to MDHHS (PCR + Ag) (↑)
- 36,216 average daily PCR tests (↑)
- 26.6% are antigen tests over the past week (↑)
- 11.3% positivity in PCR tests (↑)
- 4.7% positivity in antigen tests (↑)

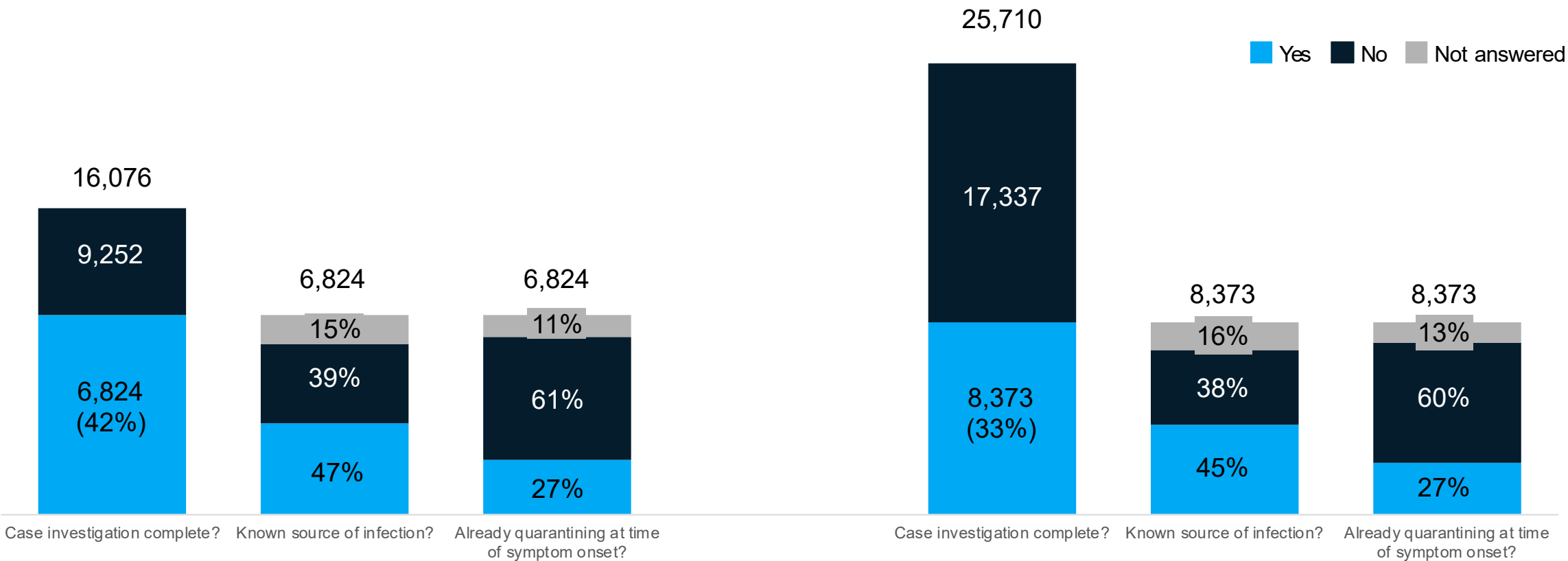
# New Case Investigation Metrics (Statewide)

New Communicable Disease metrics decreased since last week:

- 45% of investigated cases having a known source (47% last week, 45% week prior)
- 27% of investigated cases noting that they were quarantining before symptoms (27% last week)

03/13-03/19 Case report form information

03/20-03/26 Case report form information



# COVID-19 Vaccination

## National Comparisons

- 10<sup>th</sup> for number with first dose
- 9<sup>th</sup> for number fully vaccinated

## Vaccine Coverage

- More than 4.2 million doses reported to MDHHS
- 33.1% of MI residents have initiated COVID vaccination series and 19.6% have completed their series
- Over 1.5 million people have completed their vaccination series, including 49.2% of people aged 65 or older

## Addressing vaccine disparities

- Race data becoming more complete: 30 missing race information
- Coverage was highest among those of Non-Hispanic Asian, Native Hawaiian, or Pacific Islander descent
- Racial/ethnic disparities smaller in 65 years and older age group

Case rates are lower in age groups with higher vaccination coverage

# Vaccine Distribution & Administration 20 Most Populous States (3/27/21 data)

10<sup>th</sup> for number with first dose  
9th for number fully vaccinated

	Total Doses Delivered	Number with 1+ Dose	% with 1+ Dose	Number Fully Vaccinated	% Fully Vaccinated
1	California	California	Massachusetts	California	Massachusetts
2	Texas	Texas	New Jersey	Texas	Wisconsin
3	Florida	Florida	Wisconsin	Florida	New Jersey
4	New York	New York	Pennsylvania	New York	Washington
5	Pennsylvania	Pennsylvania	New York	Pennsylvania	Arizona
6	Illinois	Illinois	Maryland	Illinois	Indiana
7	Ohio	Ohio	Illinois	Ohio	Ohio
8	North Carolina	North Carolina	California	North Carolina	<b>Michigan (26)</b>
9	Georgia	New Jersey	Virginia	<b>Michigan</b>	Maryland
10	<b>Michigan</b>	<b>Michigan</b>	Washington	New Jersey	Virginia
11	New Jersey	Virginia	Arizona	Virginia	Illinois
12	Virginia	Georgia	North Carolina	Georgia	Pennsylvania
13	Washington	Massachusetts	Ohio	Washington	North Carolina
14	Arizona	Washington	<b>Michigan (34)</b>	Massachusetts	California
15	Massachusetts	Arizona	Florida	Arizona	Florida
16	Tennessee	Maryland	Missouri	Indiana	New York
17	Maryland	Wisconsin	Indiana	Wisconsin	Missouri
18	Indiana	Indiana	Texas	Maryland	Tennessee
19	Missouri	Tennessee	Tennessee	Tennessee	Texas
20	Wisconsin	Missouri	Georgia	Missouri	Georgia

## Doses Shipped and Administered

33.1% of MI residents have initiated COVID vaccination series and 19.6% have completed their series.  
Over 1.5 million people have completed their vaccination series

	Enrolled Providers	Doses Shipped	Total Doses Administered			1 <sup>st</sup> Dose Coverage, 16+	2 <sup>nd</sup> Dose Coverage, 16+
Data as of	3/28/21	3/30/21	3/29/21	1 <sup>st</sup> Dose	2 <sup>nd</sup> Dose	3/29/21	3/29/21
Michigan Distributed	2,944	4,571,345	4,207,102	2,697,468	1,509,634	33.1	19.6
Federal Programs		426,160					
Total Distribution		4,997,505					

More than 500K doses administered last week  
7 weeks administering more than 300,000 doses/week  
Over 102,000 doses administered in a single day.

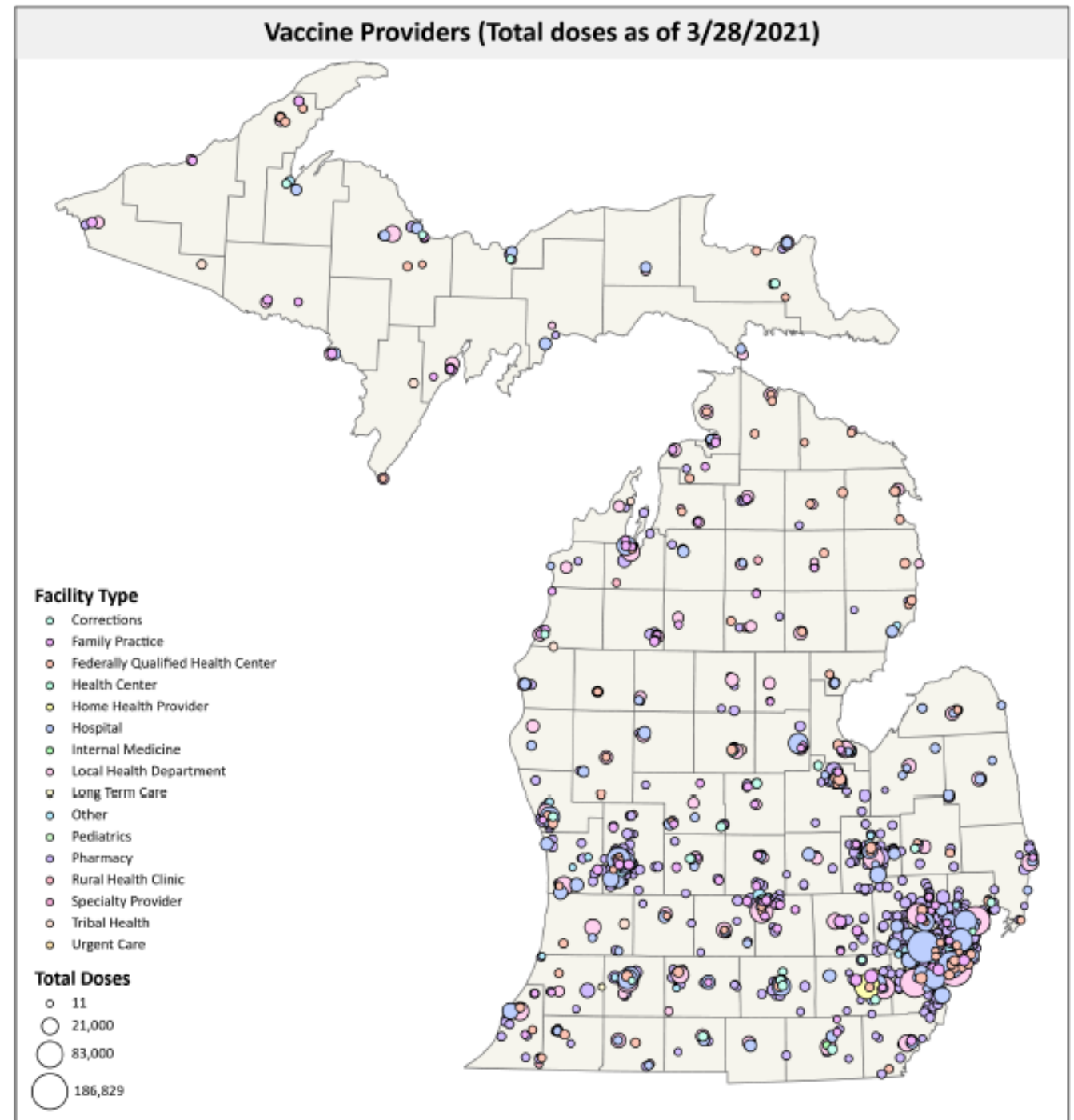
# Administration by shipment location

Doses most frequently administered by:

- Local public health
- Hospitals
- Pharmacies

Notes:

- Size of circle represents number of doses
- Placement represents address of provider, not necessarily address of administration
- Does not represent federal partner locations

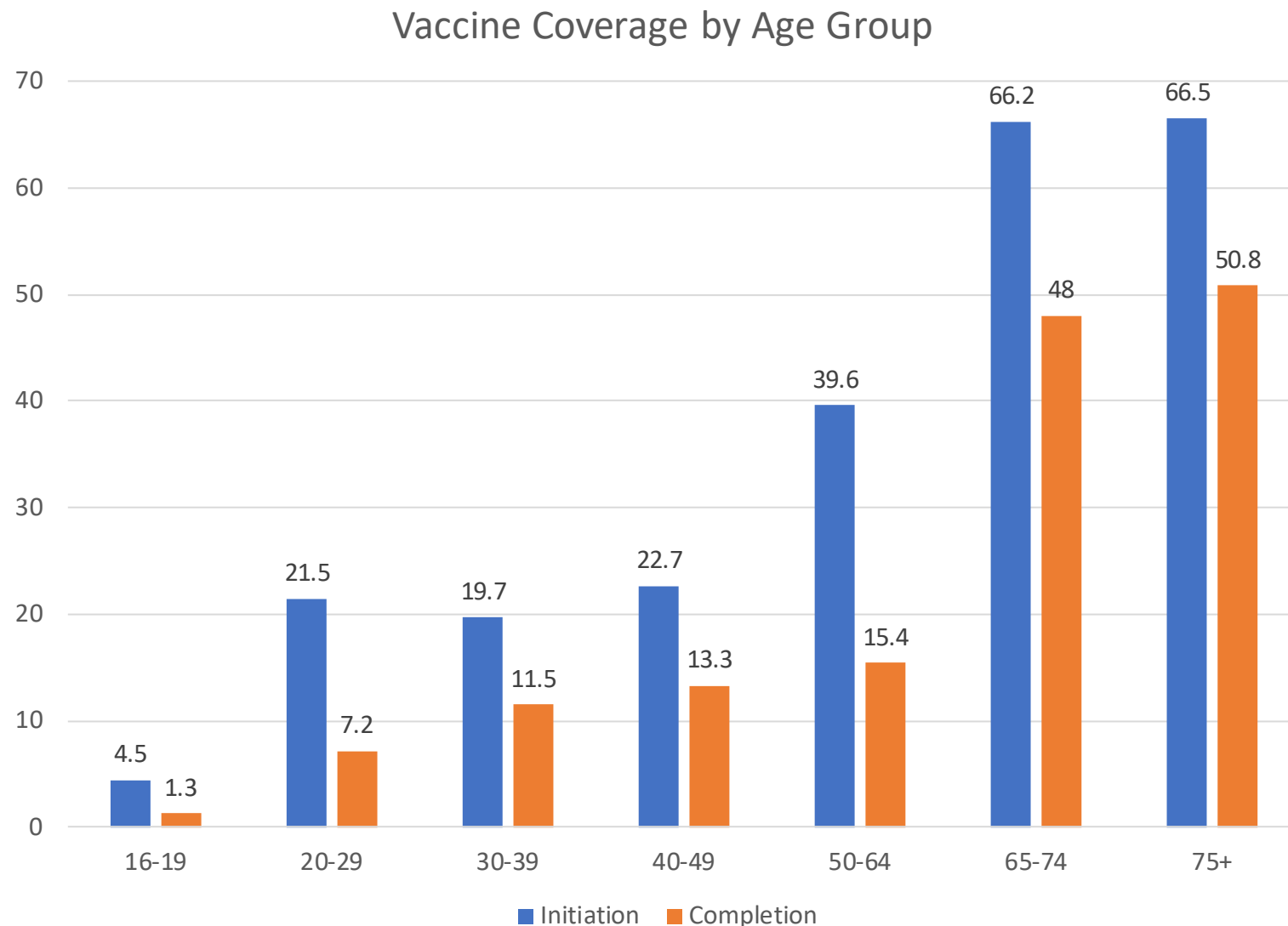




# Vaccination by Age Group (3/29/21 data)

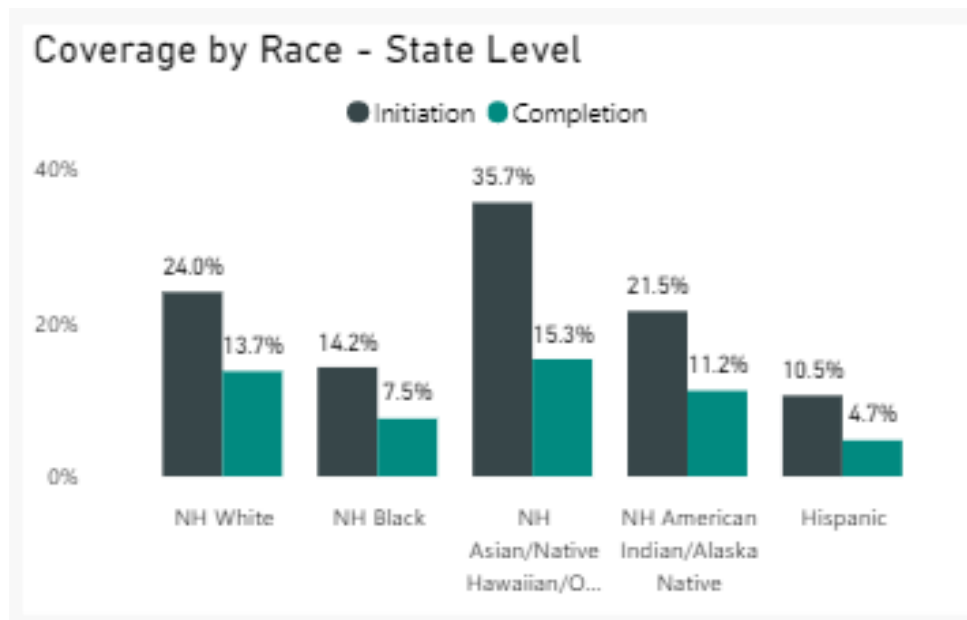
Two thirds of people aged 65 or older (1,107,740) have received one or more doses of vaccine

49.2% of people aged 65 or older have completed their vaccine series

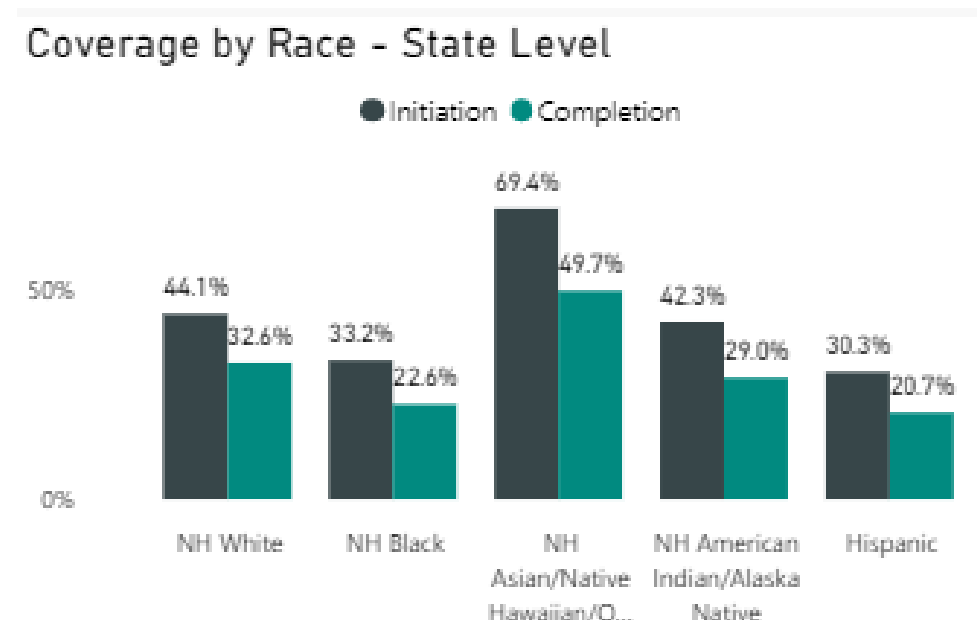


# Coverage by Race: State Level

## 16 and older



## 65 and older



30% data missing or unknown

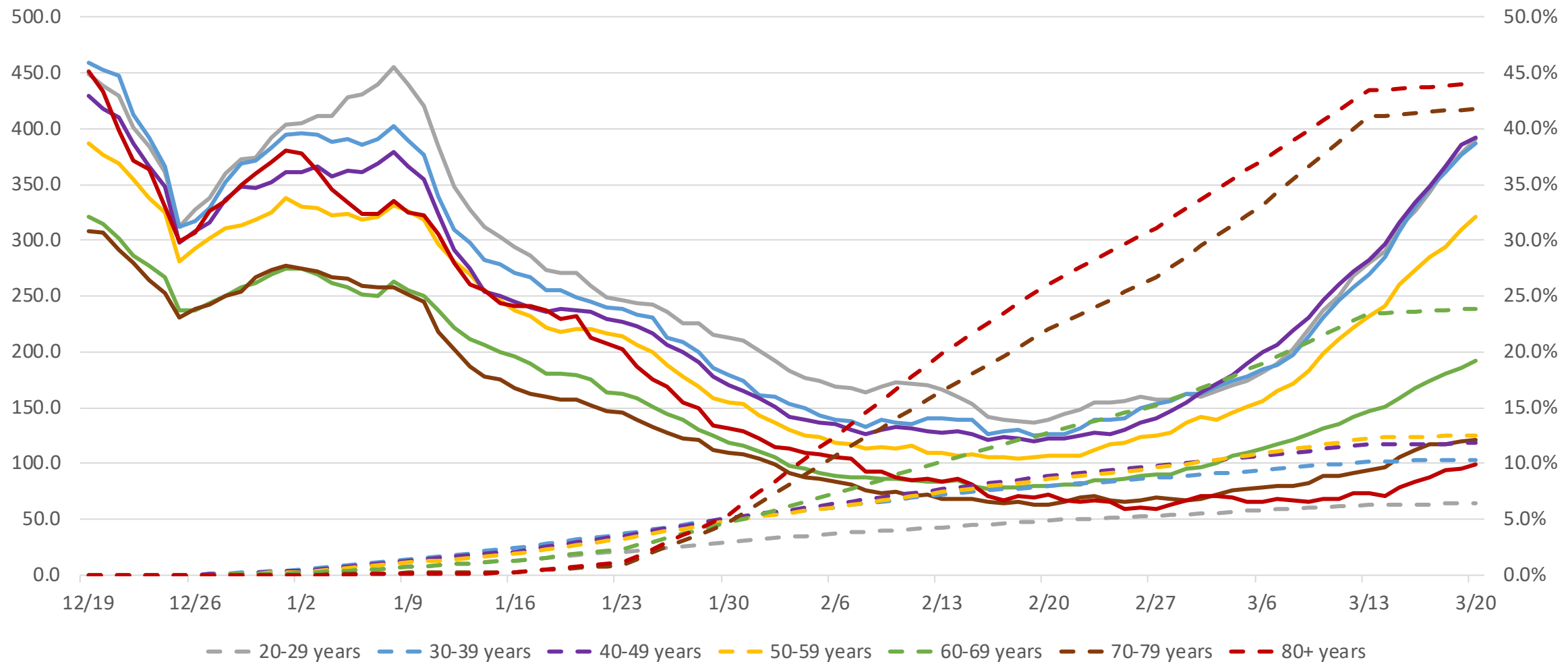
Coverage was highest among those of Asian, Native Hawaiian or Pacific Islander Race (35.7), White Race (24%), then American Indian (21.5%), Black or African American (14.2%), and Hispanic (10.5%) ethnicity

Initial Coverage disparities are seen in 65+ age group showed the same disparity, but the differences in initial coverage percents between Non-Hispanic White individuals and Non-Hispanic Black or Hispanic individuals were smaller.

# Comparing Vaccine Coverage and Case Rate Trends (Dec 19 – Mar 20)

Solid lines – case rates per million

Dashed lines – vaccine coverage (%)

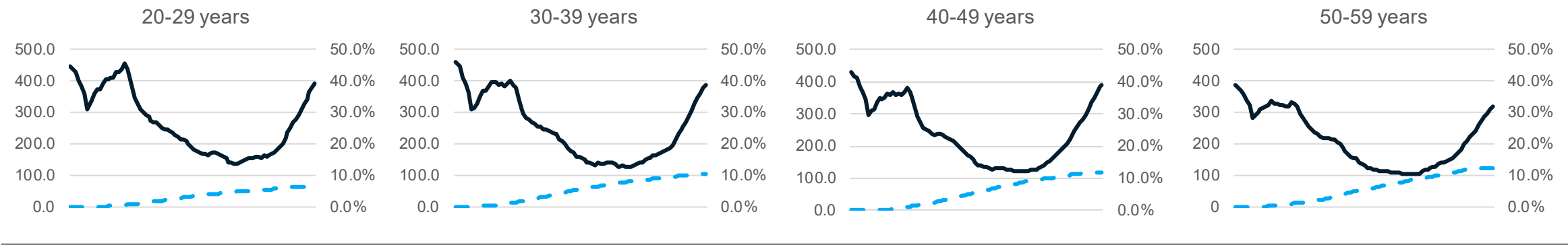


Source: Michigan Disease Surveillance System (MDSS) and Immunization Program

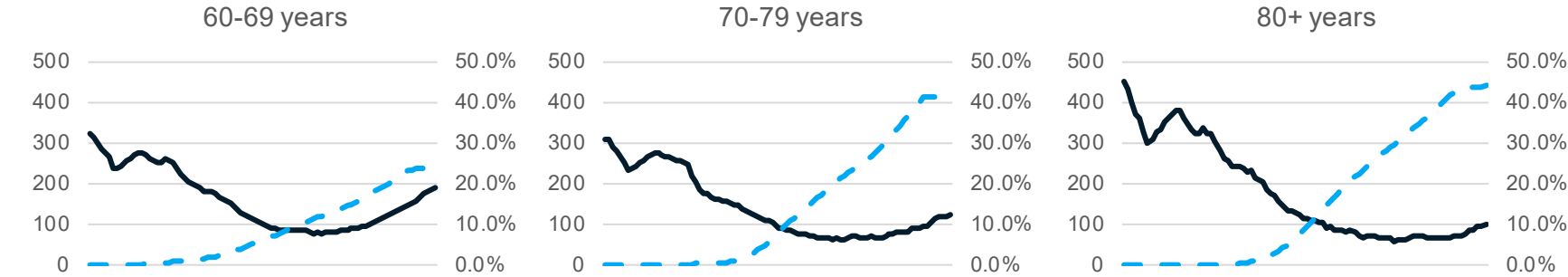
# Comparing Vaccine Coverage and Case Rate Trends (Dec 19 – Mar 20)

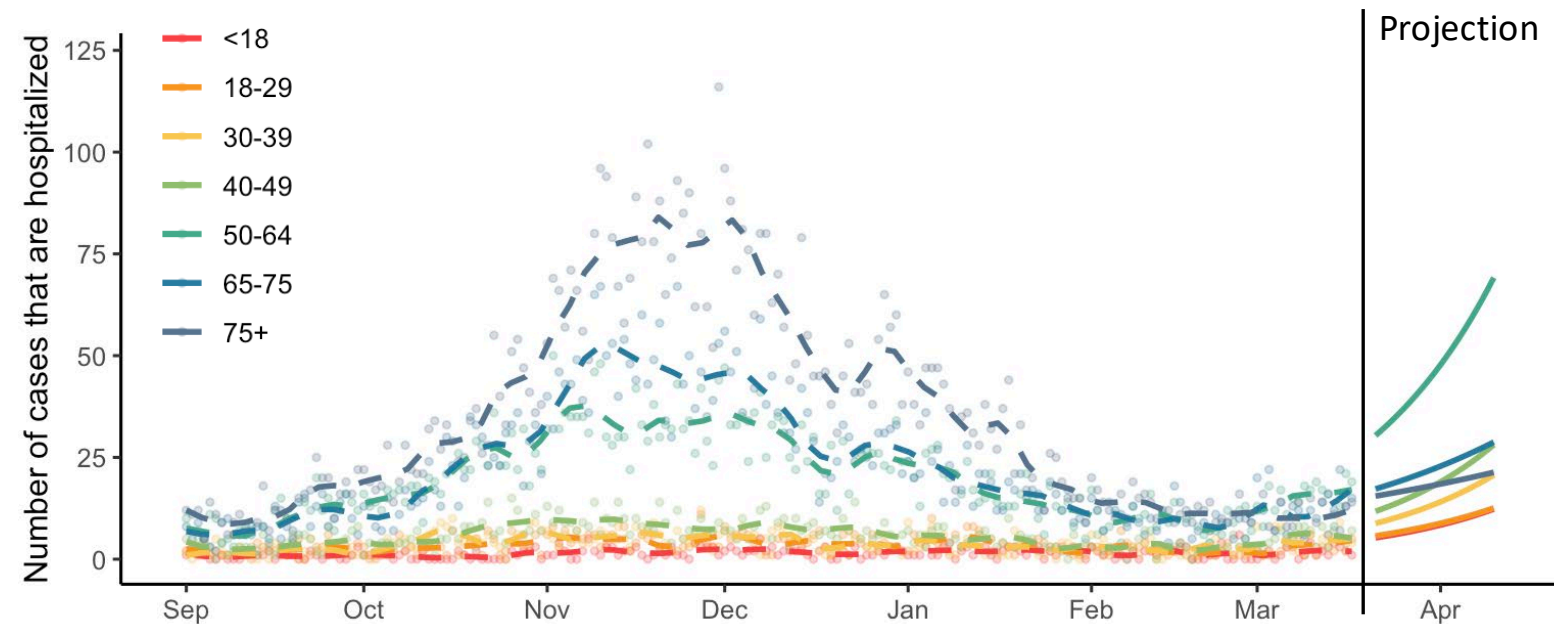
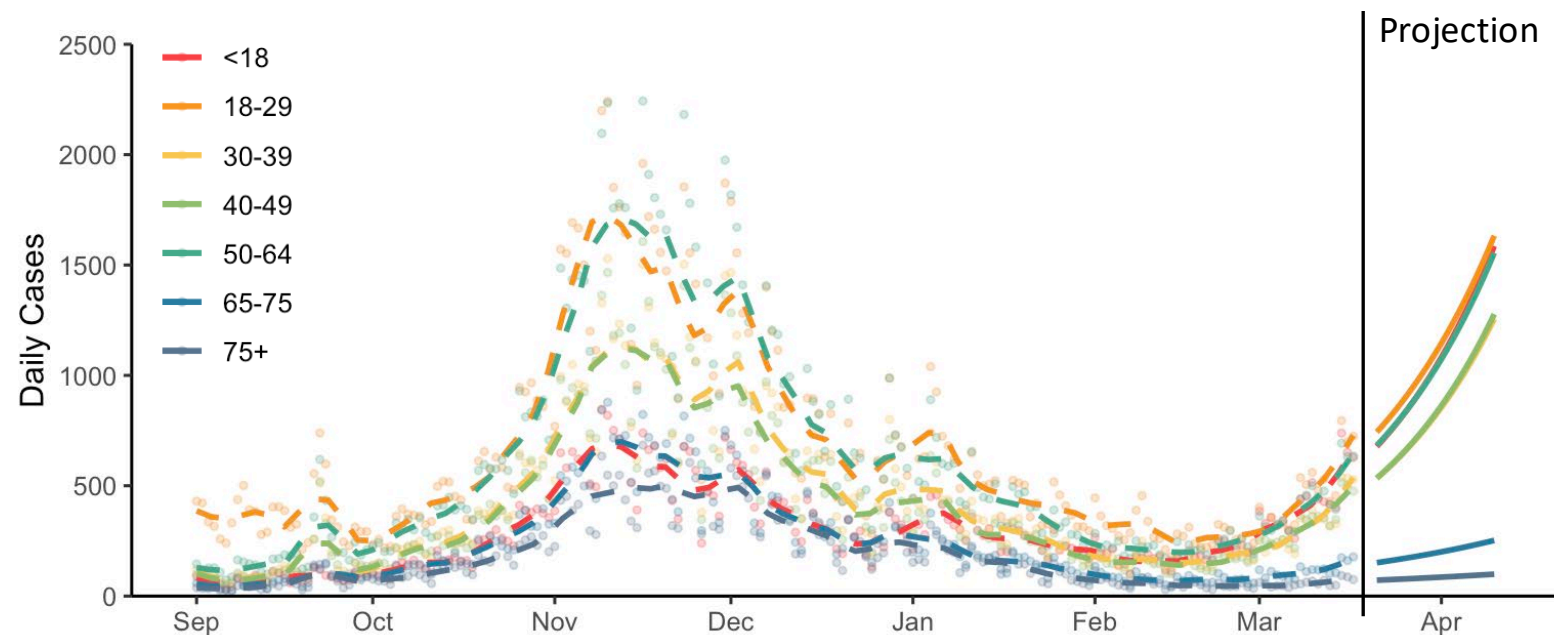
- Case Rates per Million (7 -day rolling average)
- - Vaccine Coverage (%)

## Vaccine Coverage and Case Rates for Younger Ages



## Vaccine Coverage and Case Rates for Older Ages





# Potential for hospitalization increases over coming weeks

- 50-64 year old age group could see highest increases in hospitalizations
- Exponential growth projections for daily cases by age groups, based 2/15 – 3/27 data
- Based on percent of cases hospitalized for each age group (averaged since summer), project numbers of hospitalizations over the coming weeks
- Note:
  - MDSS data on percent of cases hospitalized may be incomplete
  - Does not account for delay from case onset to hospitalization

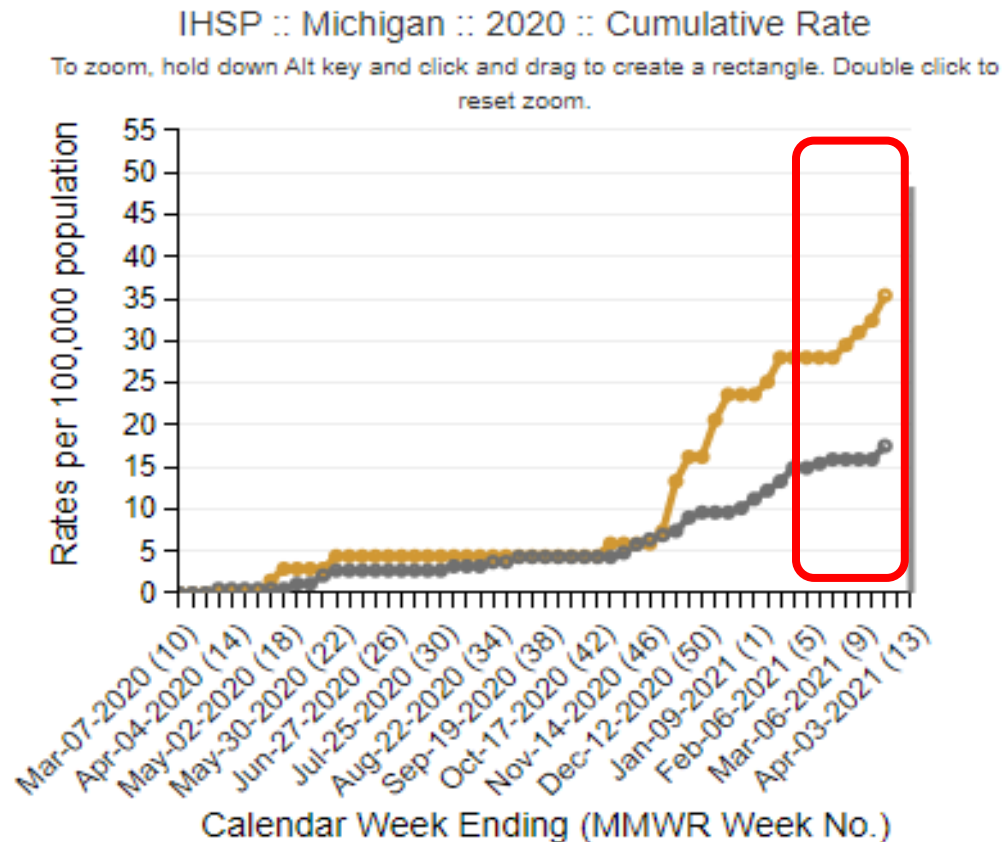
Source: MDSS data

# Cumulative Pediatric Hospitalizations per 100,000 (CDC)

Pediatric Hospitalizations increasing at a faster pace in Michigan compared to the U.S.

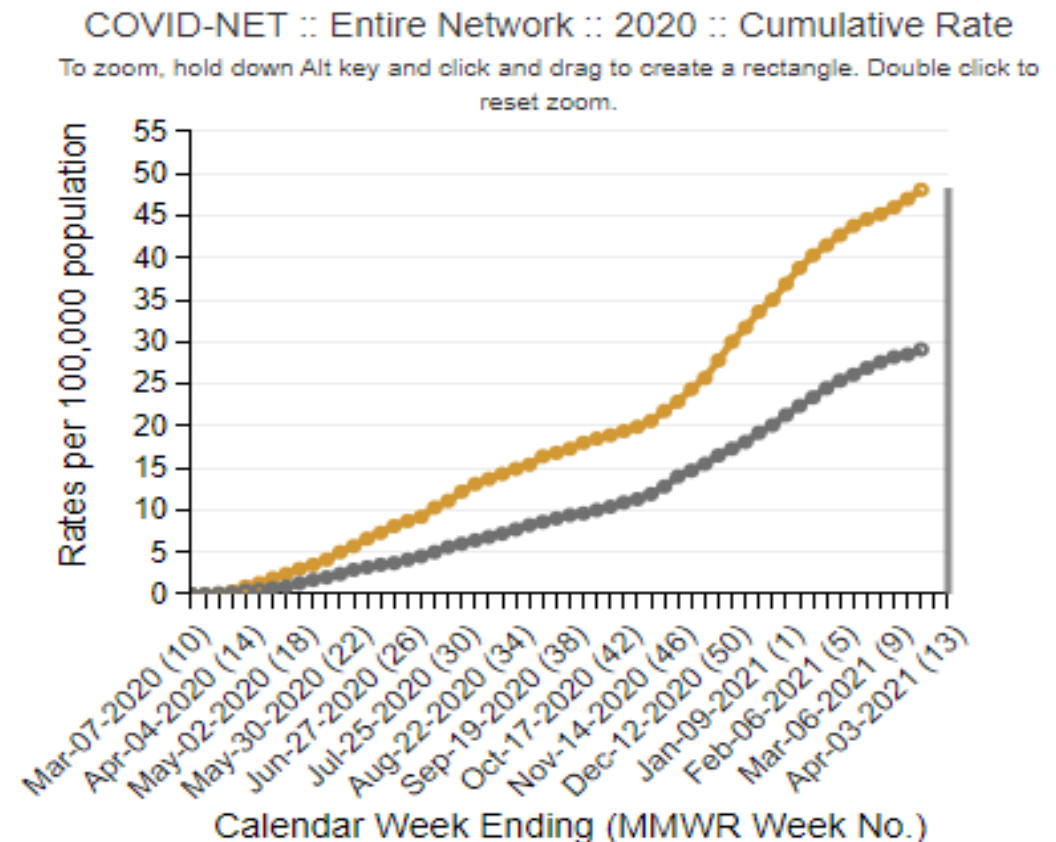
## Michigan Pediatric Hospitalizations

— 0-4 yr  
— 5-17 yr



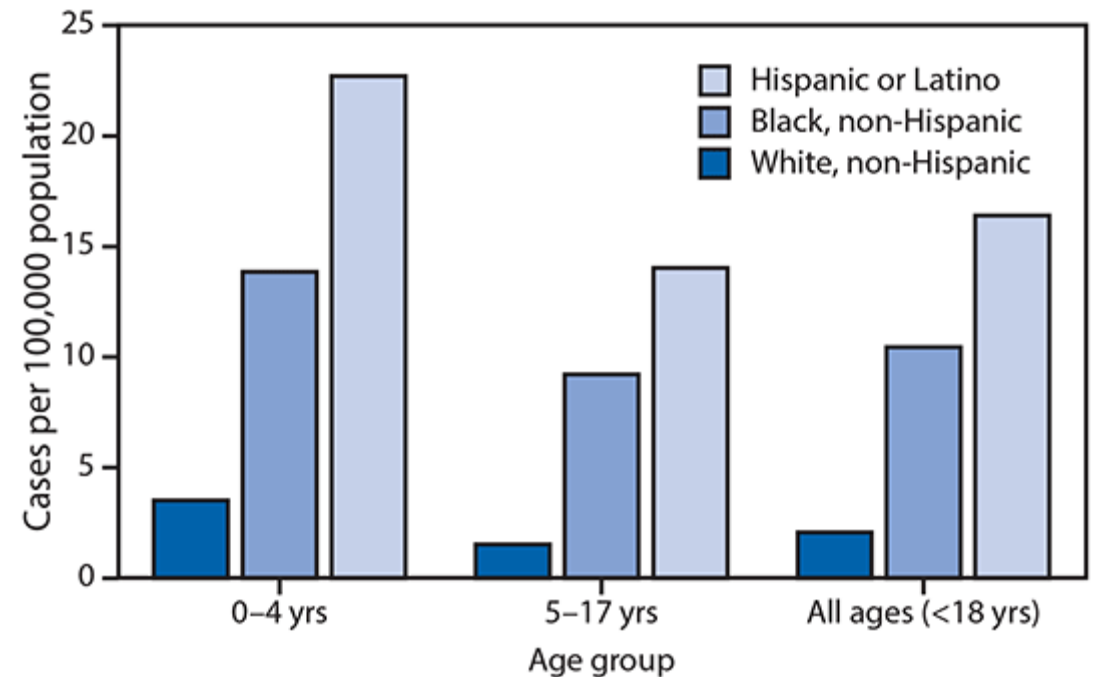
## U.S. Pediatric Hospitalizations

— 0-4 yr  
— 5-17 yr



# Racial Disparities in Pediatric Hospitalization Rates

According to national CDC estimates from the summer, black and Hispanic or Latino children are disproportionately affected by severe COVID-19 leading to hospitalization.

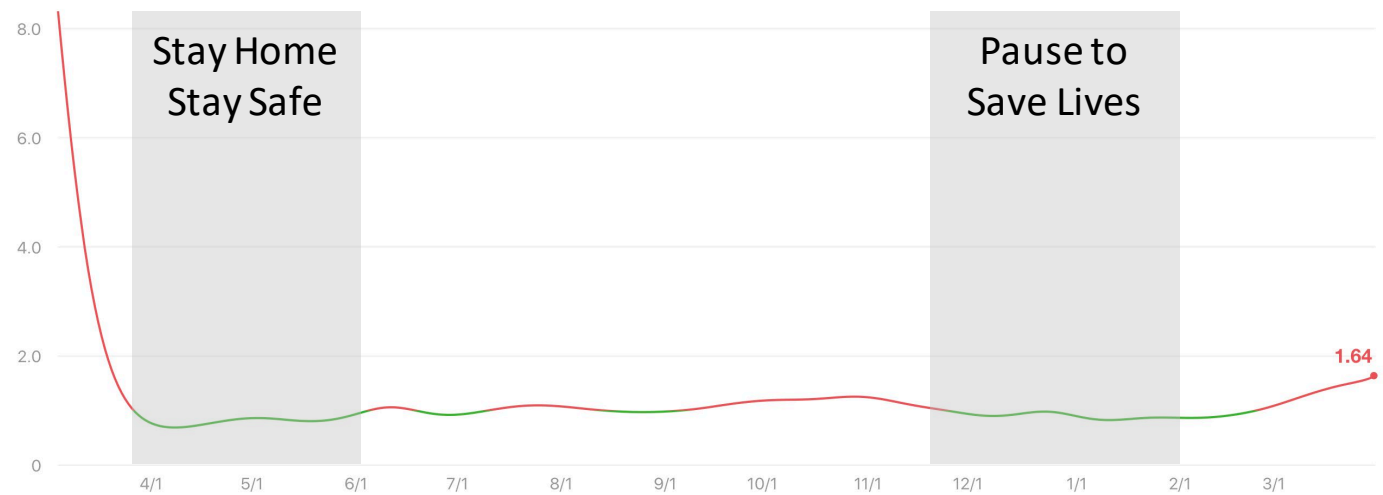


Kim L, et al. Hospitalization Rates and Characteristics of Children Aged <18 Years Hospitalized with Laboratory-Confirmed COVID-19 – COVID-NET, 14 States, March 1-July25, 2020. MMWR. August 14, 2020 / 69(32);1081-1088.

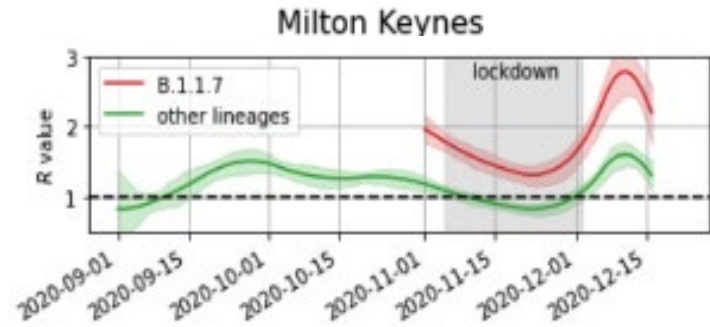
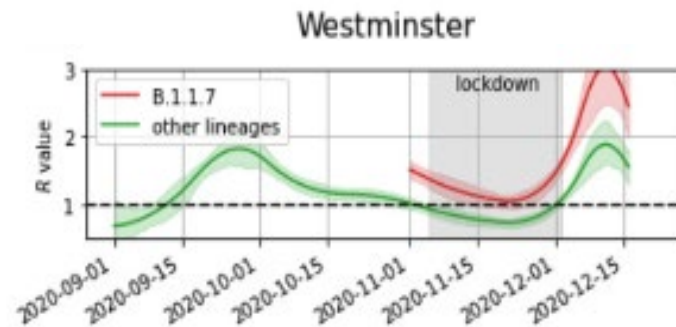
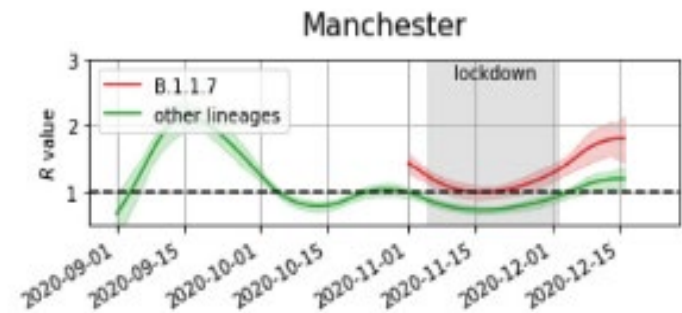
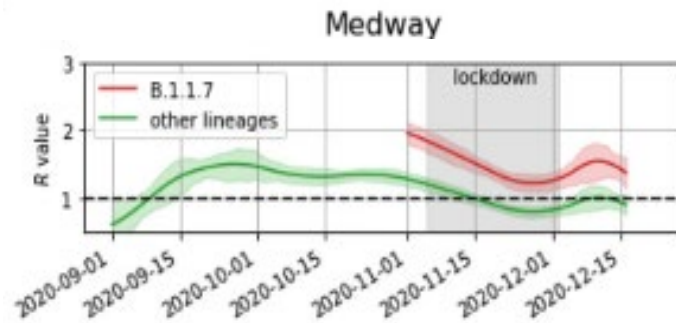
<https://www.cdc.gov/mmwr/volumes/69/wr/mm6932e3.htm>



Interventions have previously reduced  $R_t$  in Michigan (Source: covidestim.org)



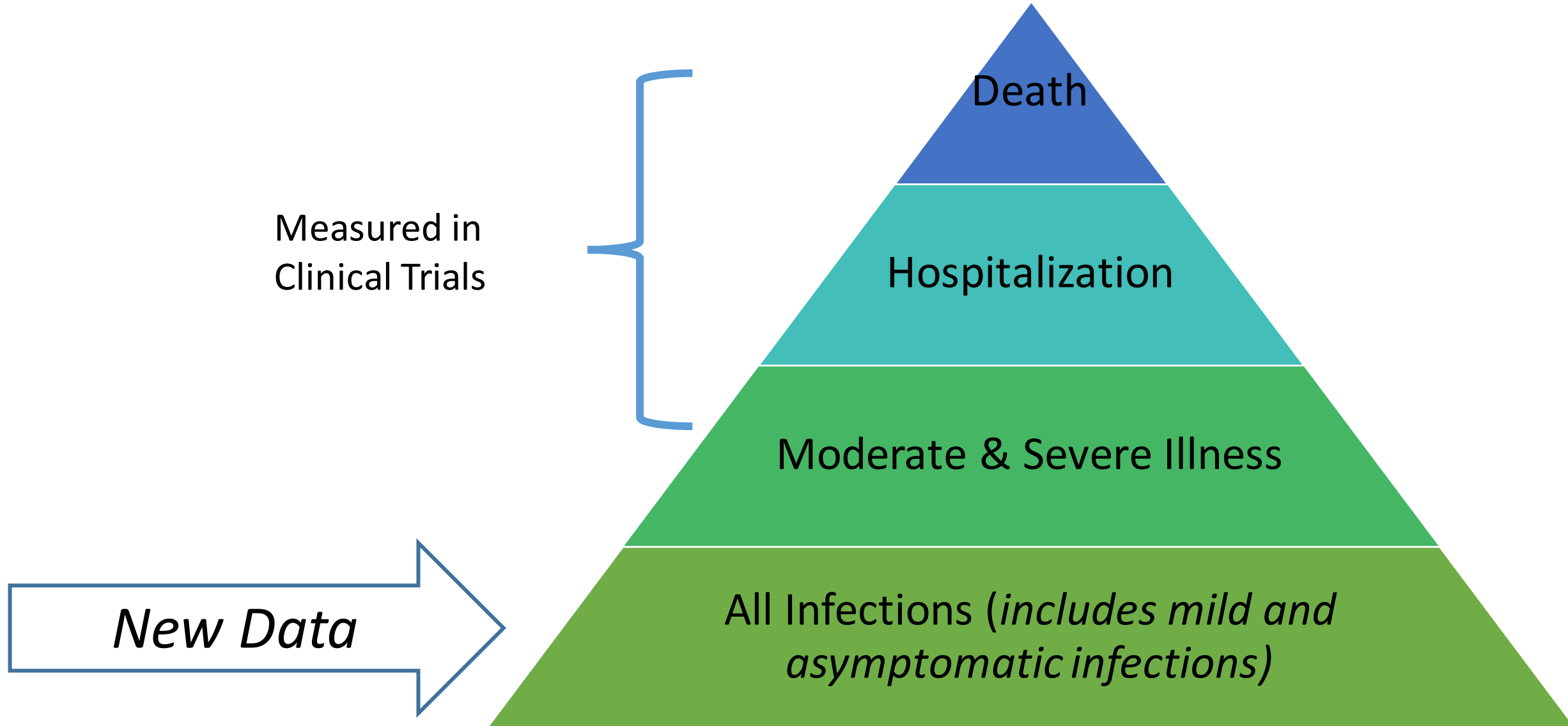
UK: B.1.1.7 variant (red) had higher  $R_t$  during restrictions and rapid increase when restrictions lifted.



**Source:** Vöhringer et al. Lineage-specific growth of SARS-CoV-2 B.1.1.7 during the English national lockdown  
<https://virological.org/t/lineage-specific-growth-of-sars-cov-2-b-1-1-7-during-the-english-national-lockdown/575>



# COVID-19 Vaccines prevent...



# mRNA COVID-19 vaccines are highly effective in preventing infections in real-world conditions



Nearly 4,000\* health care personnel, first responders, and essential workers were tested weekly for the virus that causes COVID-19



Those who were fully vaccinated<sup>†</sup> were **90% less likely** to get infected

\* Effectiveness of Pfizer-BioNTech and Moderna mRNA vaccines among 3,950 study participants in eight U.S. locations from December 14, 2020, to March 13, 2021. Participants self-collected specimens weekly regardless of symptoms and collected additional specimens if they became sick.

<sup>†</sup> Fully vaccinated = 2 weeks after 2nd dose

- Vaccine prevented 90% of all infections, including those that were asymptomatic.
- Partial vaccination (one dose of Pfizer or Moderna vaccine) prevented 80% of all infections.