

# Modeling & Forecasting COVID-19 in NM

Copyright Notice And Disclaimer

April 05, 2022

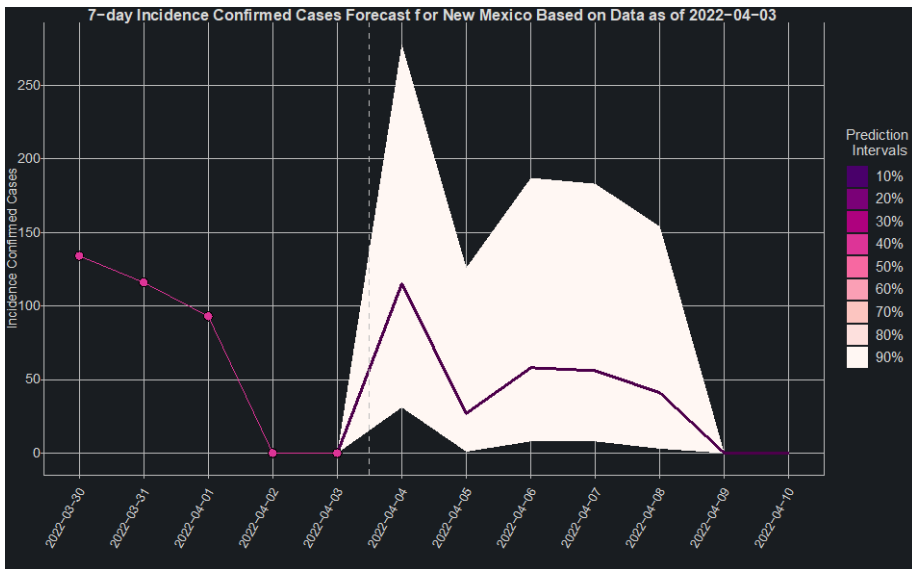
For Scientific and Technical Information Only  
© Copyright Triad National Security, LLC. All Rights Reserved.

For All Information

Unless otherwise indicated, this information has been authored by an employee or employees of the Triad National Security, LLC., operator of the Los Alamos National Laboratory with the U.S. Department of Energy. The U.S. Government has rights to use, reproduce, and distribute this information. The public may copy and use this information without charge, provided that this Notice and any statement of authorship are reproduced on all copies.

While every effort has been made to produce valid data, by using this data, User acknowledges that neither the Government nor Triad makes any warranty, express or implied, of either the accuracy or completeness of this information or assumes any liability or responsibility for the use of this information. Additionally, this information is provided solely for research purposes and is not provided for purposes of offering medical advice. Accordingly, the U.S. Government and Triad are not to be liable to any user for any loss or damage, whether in contract, tort (including negligence), breach of statutory duty, or otherwise, even if foreseeable, arising under or in connection with use of or reliance on the content displayed on this site.

# Short- & Long-Term Forecast for NM: Cases



**6-Week Forecast of Confirmed Cases for New Mexico Based on Data as of 2022-04-03**

Week	Best Case (5th Percentile)	Middle Case (50th Percentile)	Worst Case (95th Percentile)
2022-04-03		517,951*	
2022-04-10	518,003	518,248	518,867
2022-04-17	518,042	518,518	519,768
2022-04-24	518,091	518,827	520,802
2022-05-01	518,145	519,212	522,043
2022-05-08	518,229	519,682	523,464
2022-05-15	518,320	520,268	525,194

\*Last reported confirmed cases count



**6-Week Forecast of Daily Average of Confirmed Cases for New Mexico Based on Data as of 2022-04-03**

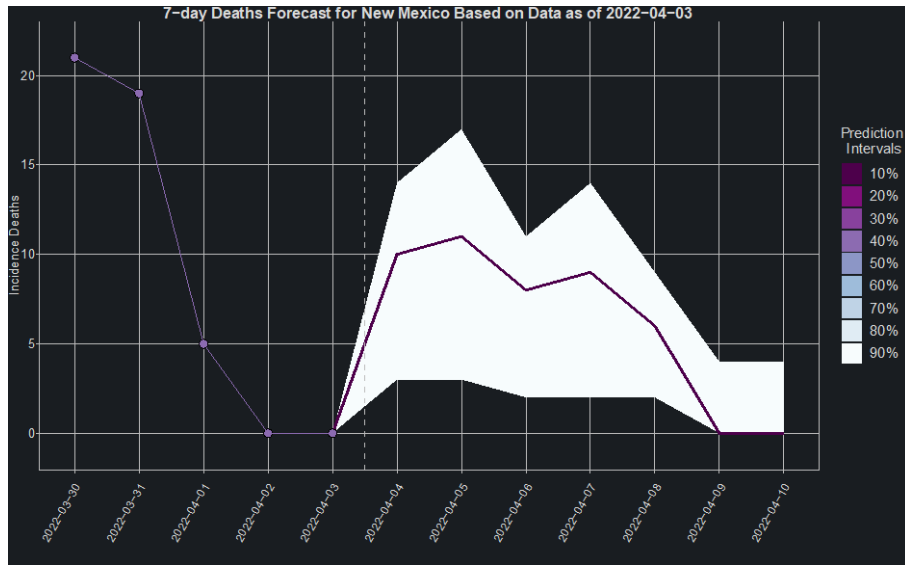
Week End Date	Best Case (5th Percentile)	Middle Case (50th Percentile)	Worst Case (95th Percentile)
2022-04-03		106*	
2022-04-10	7	42	133
2022-04-17	5	39	130
2022-04-24	5	43	150
2022-05-01	6	53	182
2022-05-08	8	65	218
2022-05-15	9	79	261

\*Last reported confirmed cases count

**So what?**

**Our model suggests that the number of daily cases is expected to range between 10 and 260 in the next few weeks**

# Short- & Long-Term Forecast for NM: Deaths



**6-Week Forecast of Deaths for New Mexico Based on Data as of 2022-04-03**

Week	Best Case (5th Percentile)	Middle Case (50th Percentile)	Worst Case (95th Percentile)
2022-04-03		7,279*	
2022-04-10	7,291	7,324	7,344
2022-04-17	7,300	7,360	7,401
2022-04-24	7,307	7,391	7,456
2022-05-01	7,312	7,420	7,510
2022-05-08	7,317	7,449	7,574
2022-05-15	7,323	7,483	7,661

\*Last reported deaths count



**6-Week Forecast of Daily Average of Deaths for New Mexico Based on Data as of 2022-04-03**

Week Start Date	Best Case (5th Percentile)	Middle Case (50th Percentile)	Worst Case (95th Percentile)
2022-04-03		10*	
2022-04-10	2	6	10
2022-04-17	1	5	9
2022-04-24	1	4	9
2022-05-01	1	4	9
2022-05-08	1	4	11
2022-05-15	1	4	14

\*Last reported confirmed deaths

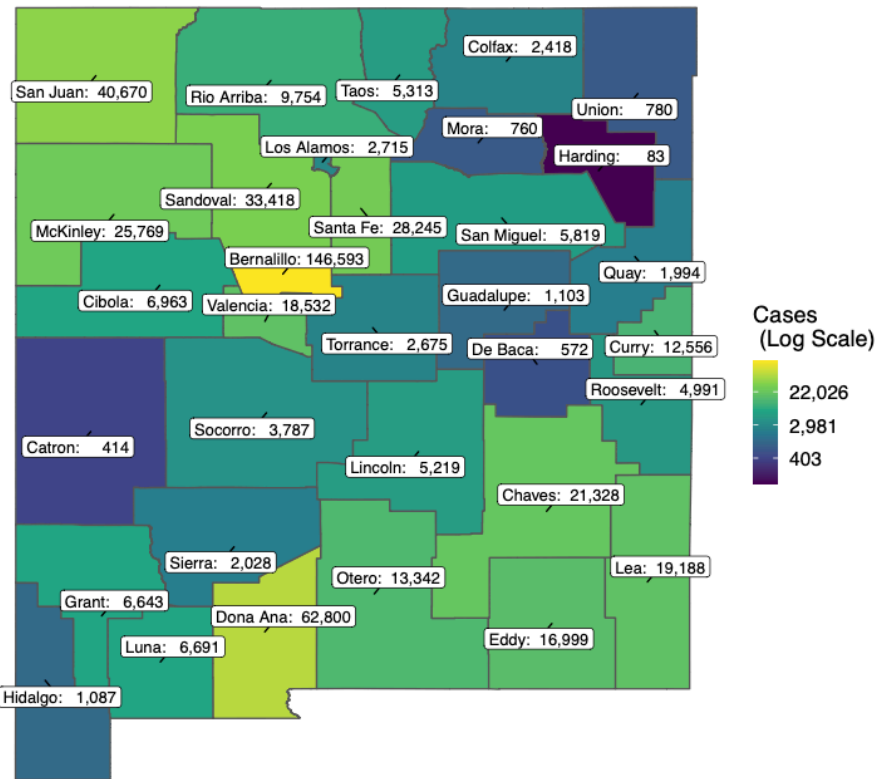
**So what?**

**Our model suggests that the number of daily deaths is expected to range between 1 and 15 in the next few weeks**

# Cumulative Cases & Daily Growth Rate for NM: Apr 4

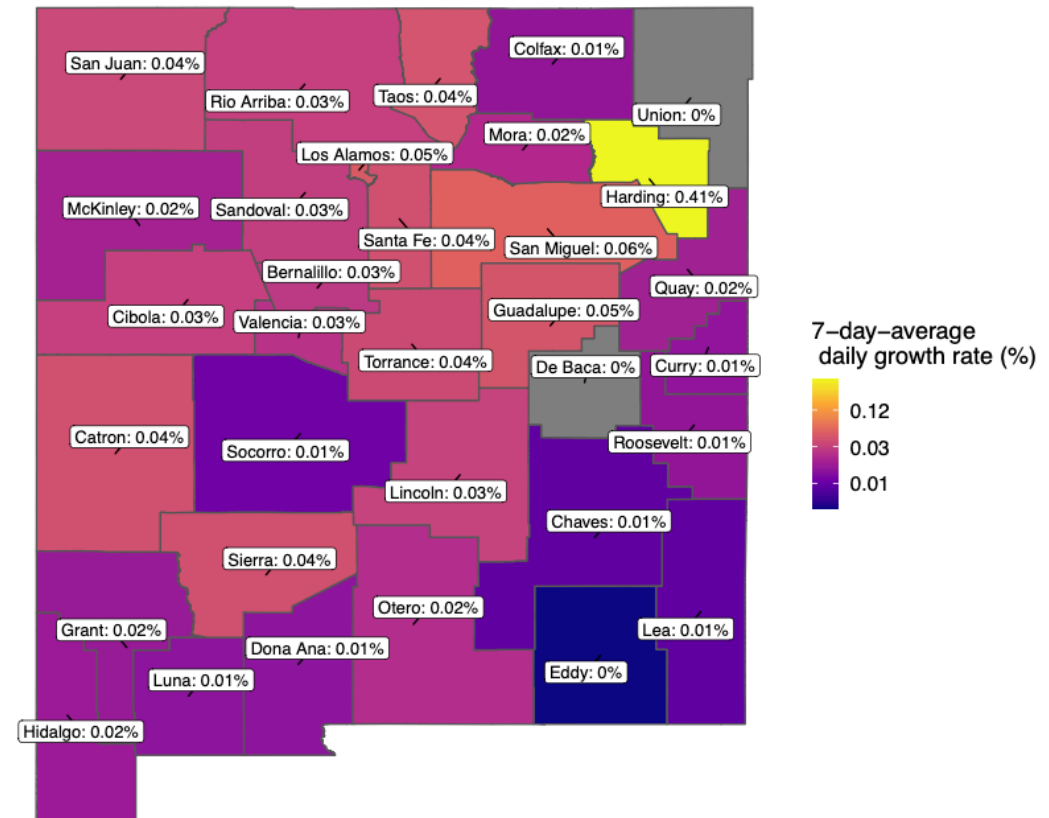
## Cumulative Cases: 2022-04-03

Data Source: JHU <https://github.com/CSSEGISandData/COVID-19>



## County COVID-19 Weekly Growth Rate

Data Source: JHU <https://github.com/CSSEGISandData/COVID-19>



Harding, San Miguel, Los Alamos, and Guadalupe counties have the highest cumulative growth rates.

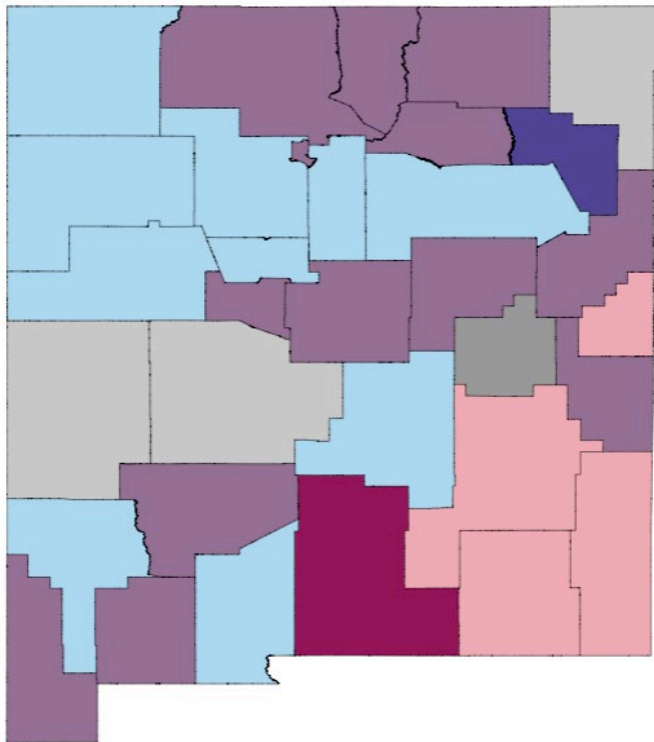
\*Growth rate is in cumulative cases

# Weekly Growth Rate for NM: Another View (Apr 4)

## COVID-19 across New Mexico

A 7-day moving window comparison  
Apr 04, 2022

Impacted New  
Mexicans



Counties with  
New Cases This Week

	0k	66k	0k	Accelerating
Growth Rate	243k	271k	0.5k	Constant
	0k	1.49M	0k	Decelerating
	Low	Med Cases Per Capita	High	

Counties With  
No New Cases In ...

25k	2k	0k
Last Week	Two Weeks	3+ Weeks

## So what?

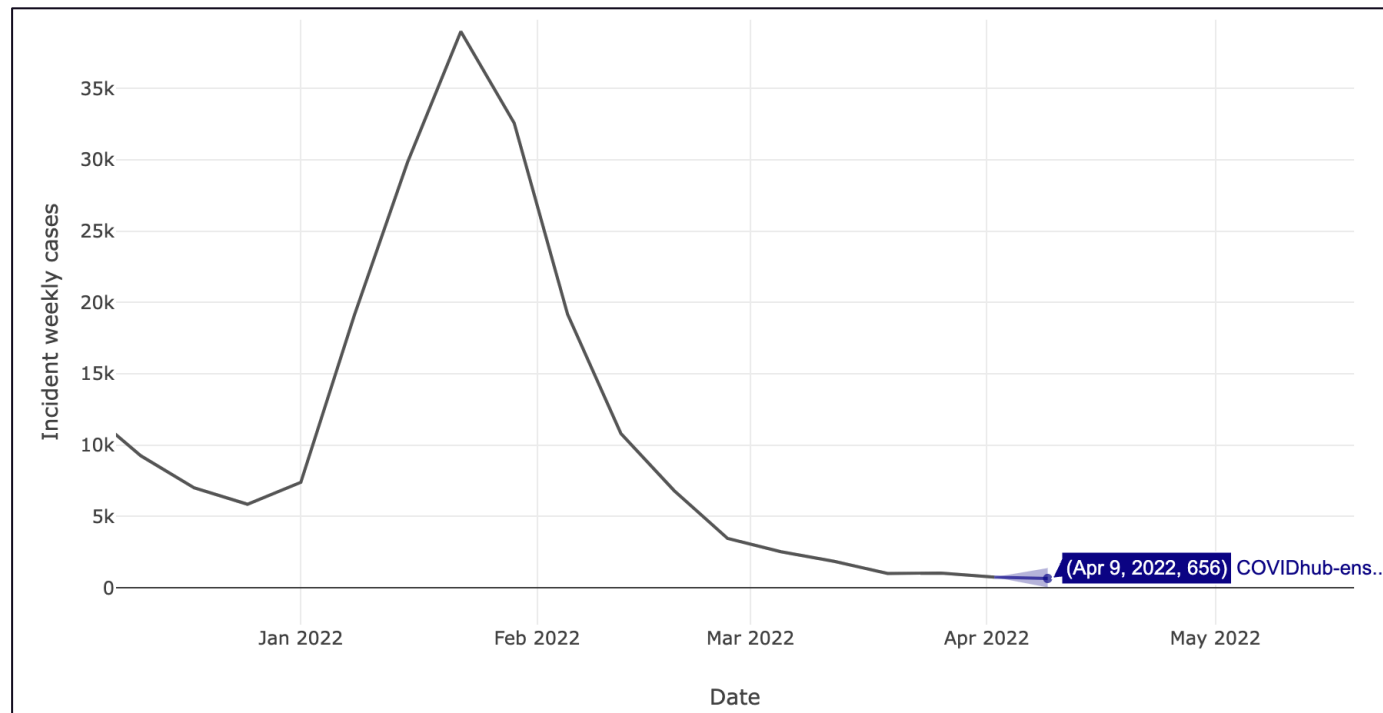
- Most people in New Mexico are living in a county that has **medium per-capita case counts and decelerating**

Number of New Mexicans living in regions with particular combinations of per capita case counts and 7-day growth rates

Low <10 cases/100k per week  
Med 10-99 cases/100k per week  
High >100 cases/100k per week

# Forecast for Incident Weekly Cases in NM

The CDC ForecastHub is predicting a 12% decrease in one week incident cases to 656 (from April 2 at 745)

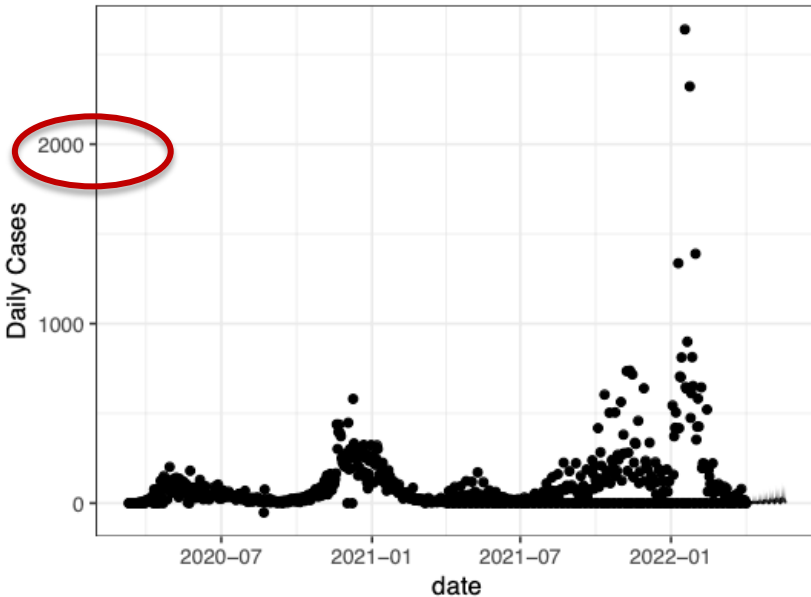


COVIDhub-4\_week\_ensemble prediction, COVID 19 ForecastHub  
<https://viz.covid19forecasthub.org/>

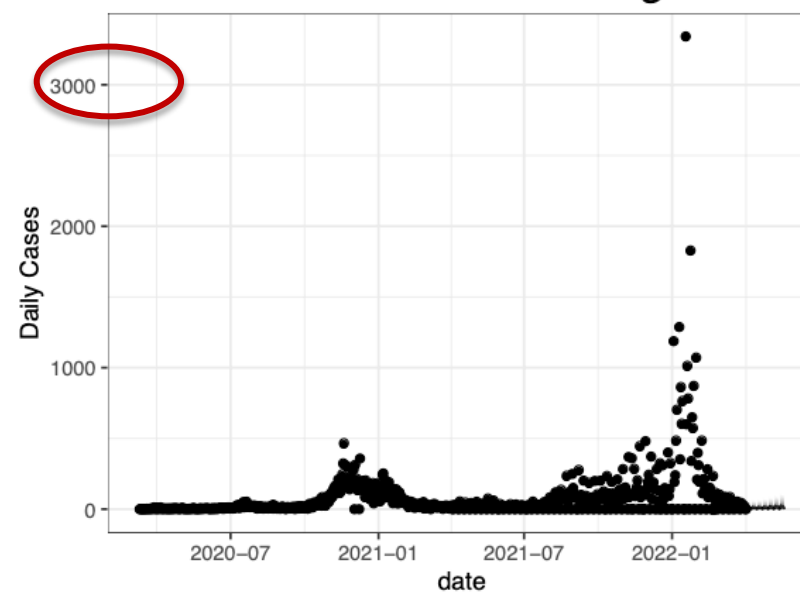
## > **Additional Regional Forecasts**

# Central & North Regions Daily Cases Forecast

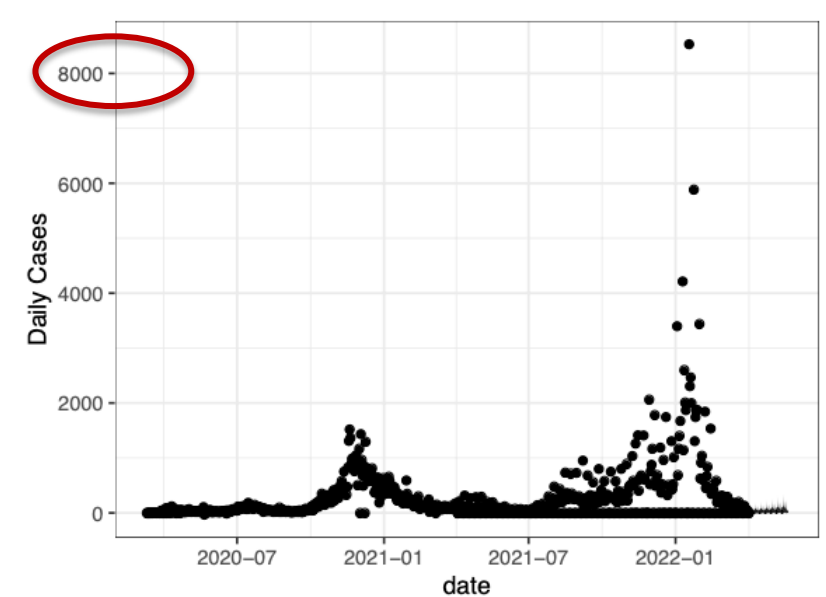
## Northwest



## Northeast



## Central



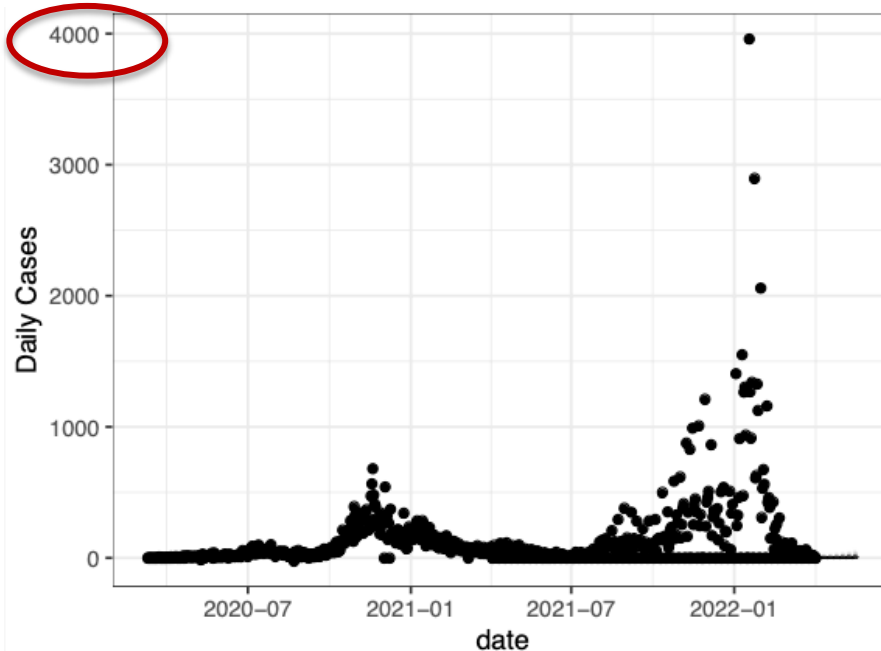
**So what?**

**The Central region is expected to see the most number of cases.  
Cases appear to be plateauing.**

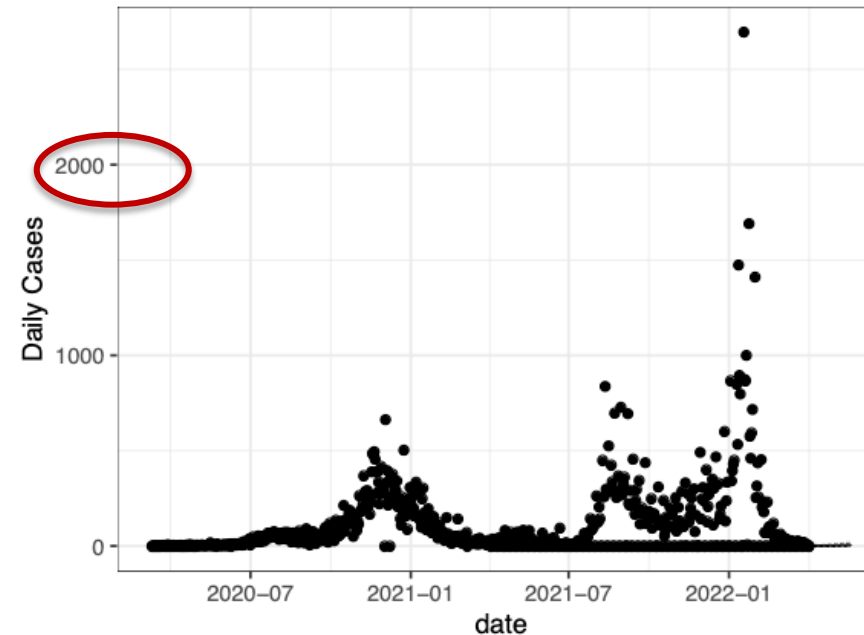


# South Regions Daily Cases Forecast

## Southwest



## Southeast



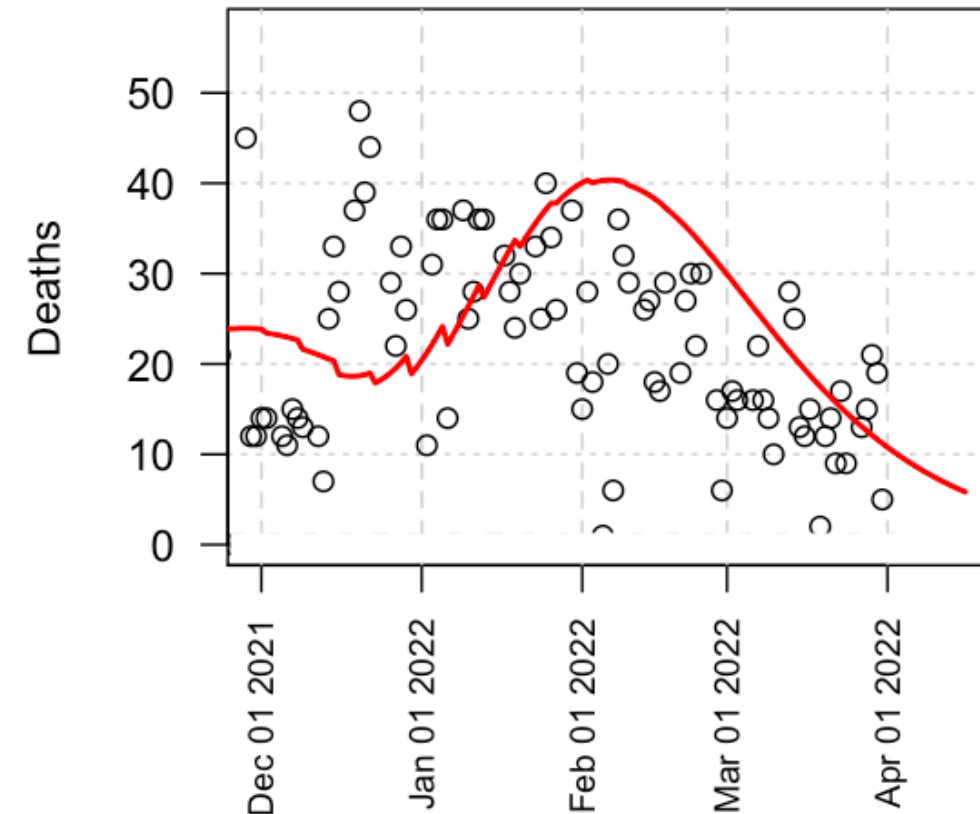
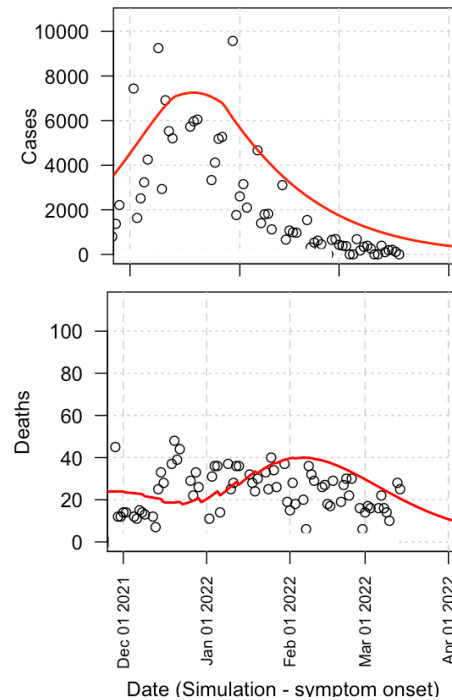
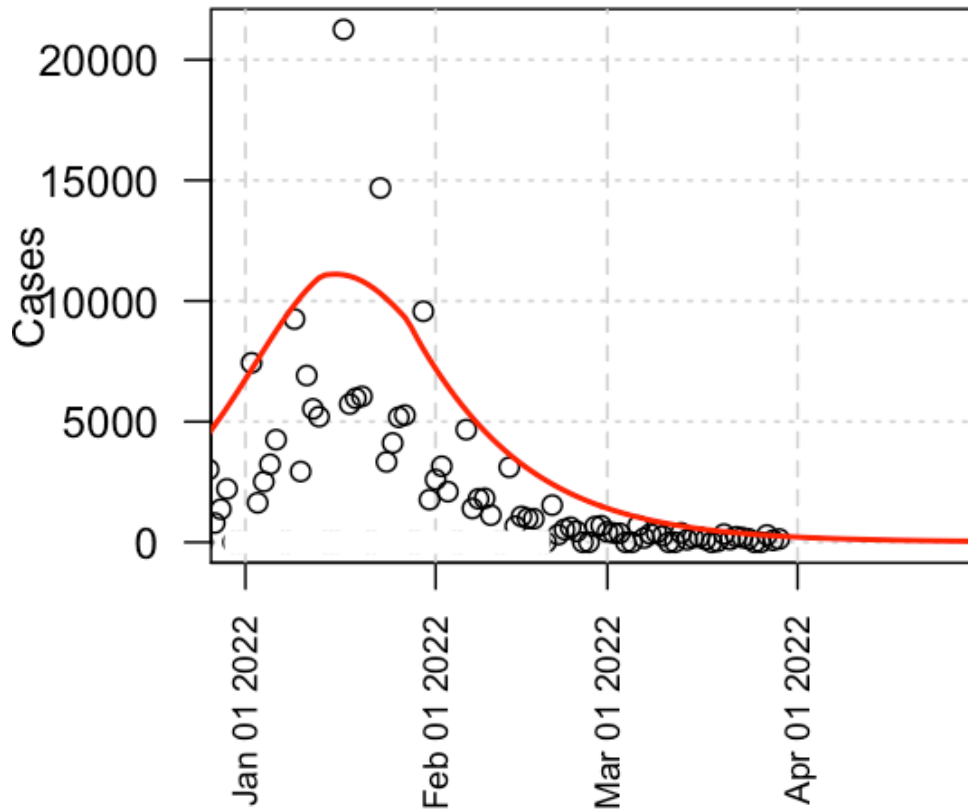
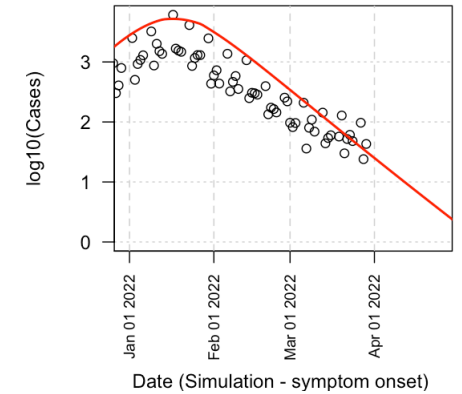
**So what?**

**Both regions have a predicted plateau. The Southwest region is expected to see higher number of cases.**

# 5 Apr 2022: Epigrad modeling

- NM daily incidence continues a modest, but slower decline. About 100 cases/day predicted for next week.
- Drop in the death *rate* to 1/2x is highly notable (not only the number of deaths).
- Omicron is about as infectious as Delta variant. Virus evolution/immune evasion causative of Omicron wave.
- No clear evidence for substantially more immune evasion by BA.2 than by BA.1.
- Immunological diversity from updated vaccines will further improve the situation.
- Situational awareness remained good as of January 2022, possibly to the present time.
- Bernalillo County data highlight the slower decline in daily incidence. Seen in other counties too.

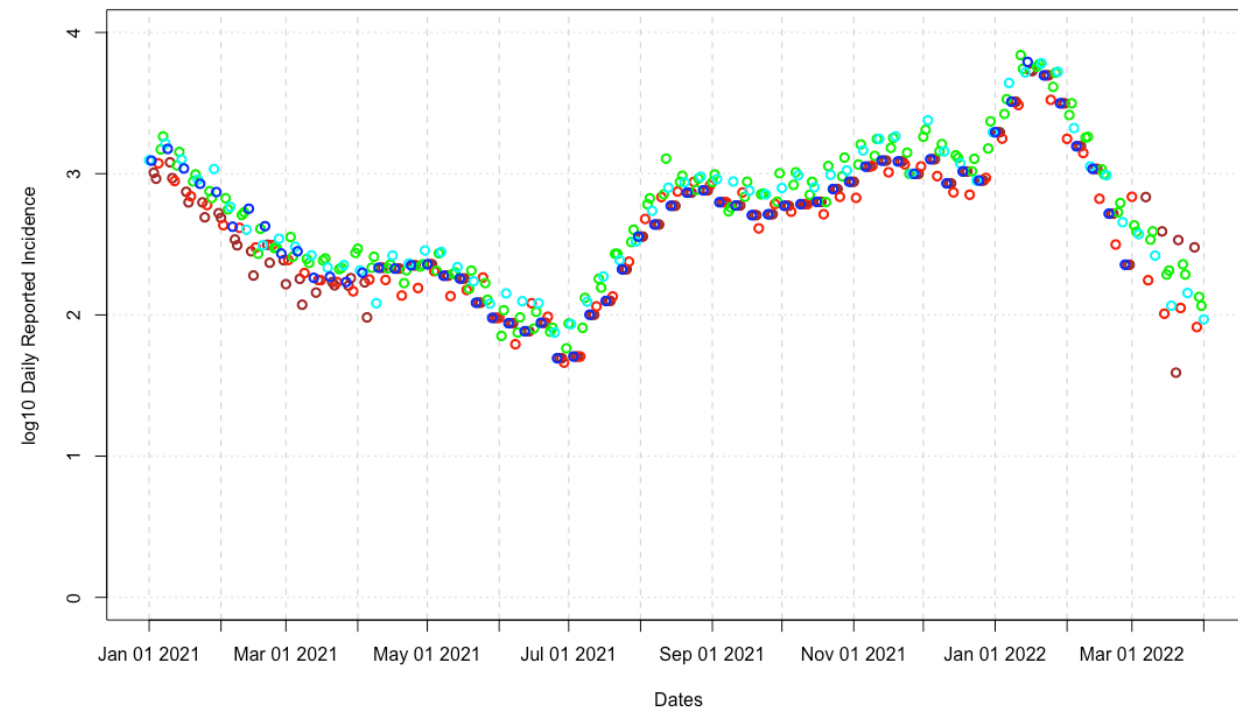
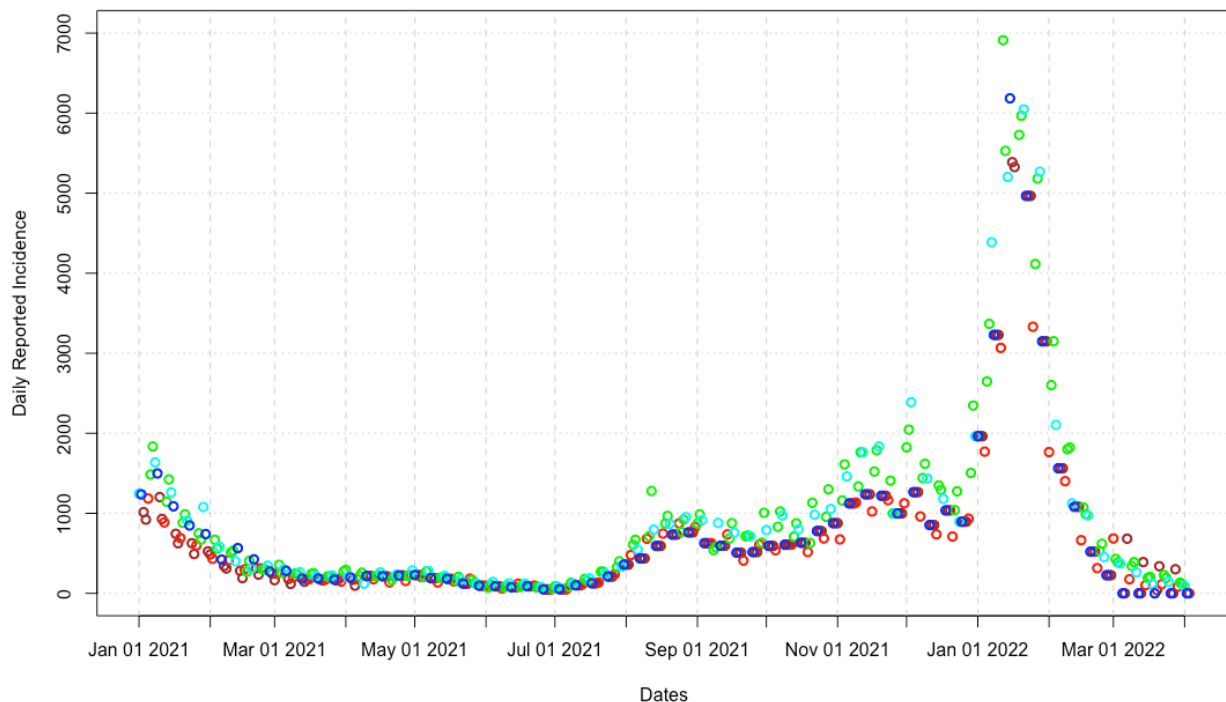
New Mexico\_\_Bernalillo



# A look at the raw incidence data

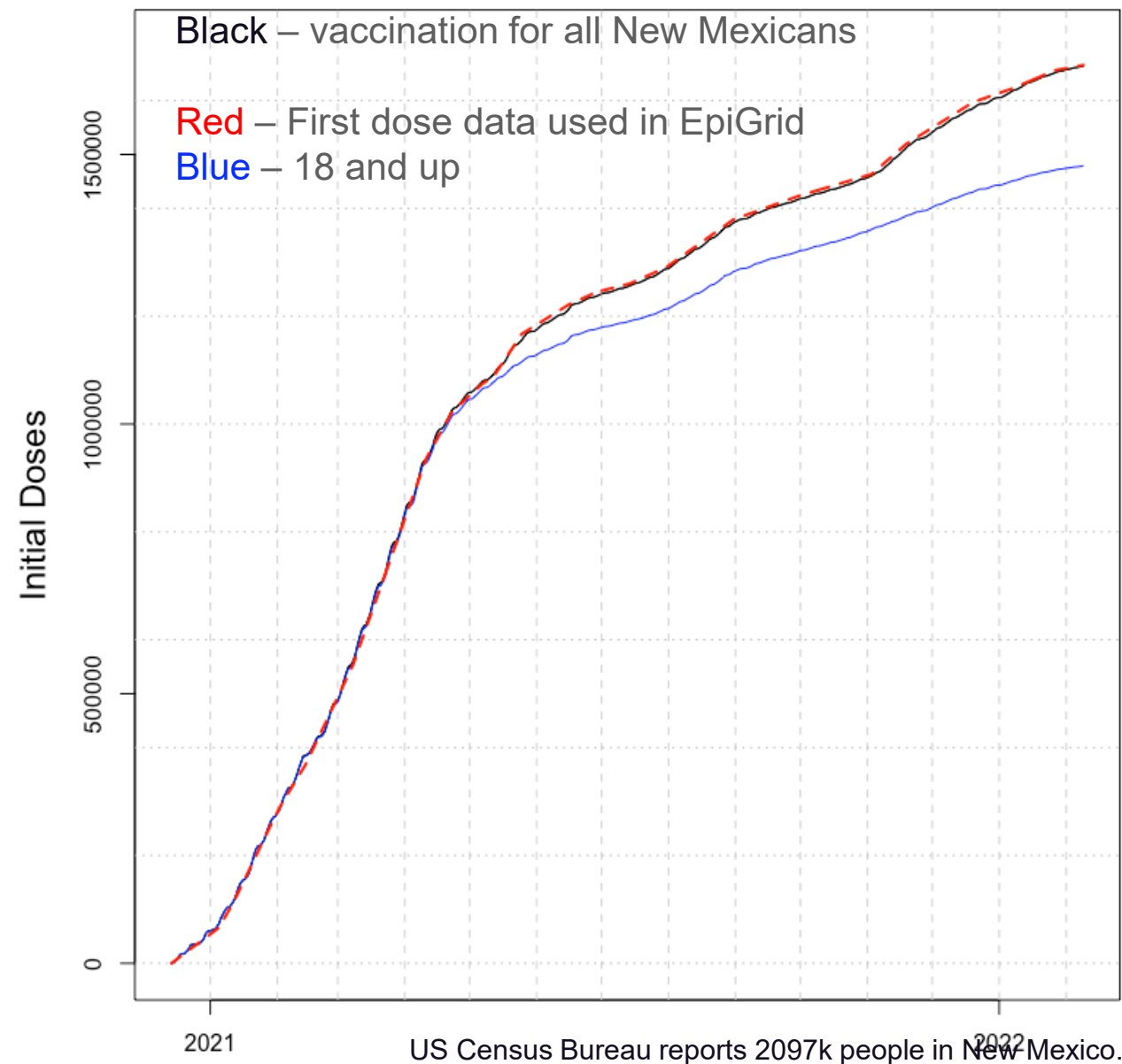
- Sunday, Monday
- Tuesday
- Wednesday/Thursday
- Friday
- Saturday
- The reported incidence continues to fall.
- Within-weekly variation in NM data is showing larger by-day variation. Significance unknown.
- Color-coded by-day-of-week incidence is declining, but has slowed.

The 190 cases in the Lea county correctional facility are removed from data reported on March 26<sup>th</sup>. The 1/3 of reported cases that were > 2 weeks prior were removed from March 24<sup>th</sup>. Case reported for weekends starting April 10-12<sup>th</sup> are each divided by 3 to estimate individual day counts.



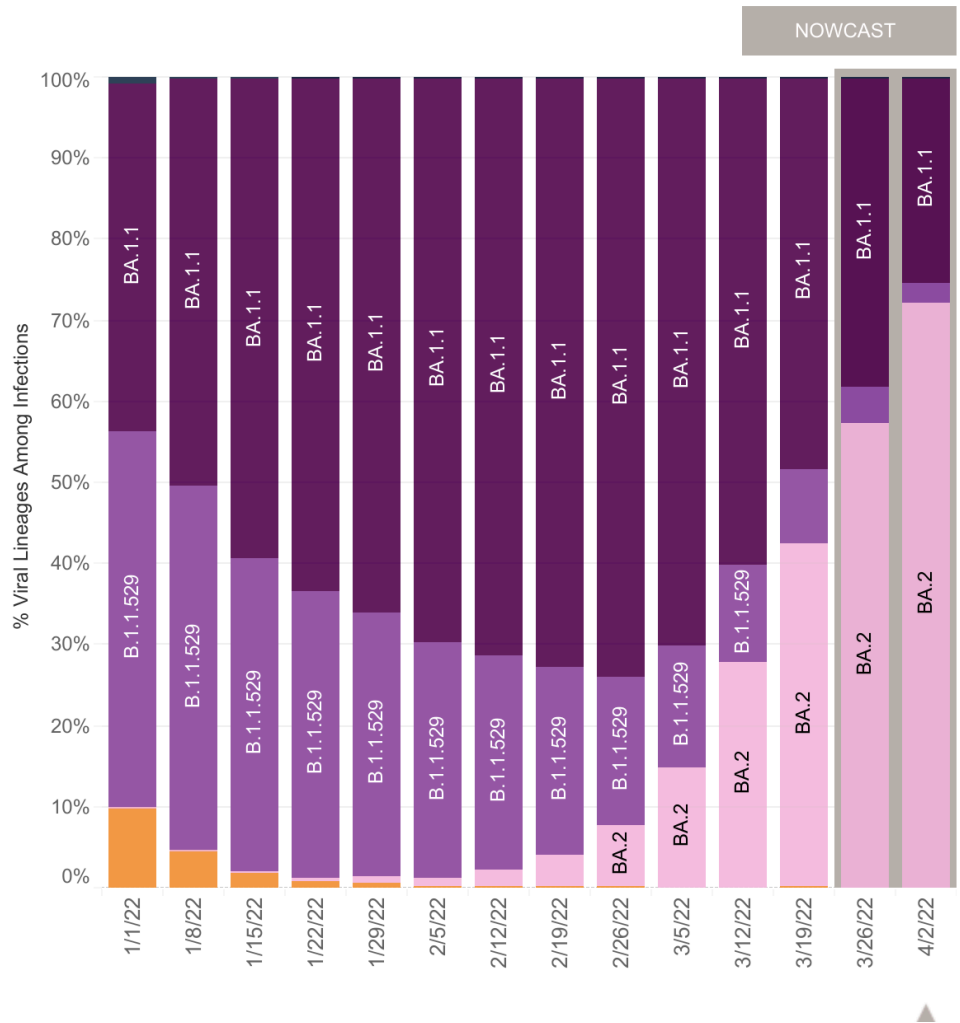
## 8 April 2022 Vaccine Analysis (NM): Vaccinate *before* the next epidemic/wave

- 1688k first doses are used in modeling (3/22/22).
- 1688k first doses have been administered, **+1k/2, +1k/2, +7k/2.**
- 1439k completed initial vaccine series, **+4k/2, +4k/2, +13k/2.**
- 781k boosters completed, **+10k/2, +11k/2, +22k/2.**
- ~80.5% of all persons in New Mexico are base-line vaccinated.
- ~94.5% of all New Mexicans are eligible (~1981k).
- $78.0/94.5=85.2\%$  of eligible New Mexicans vaccinated.
- 5-11 year old vaccinations continue to be slow.
  
- Vaccination is slow. **Expect waning immunity in May 2022.**
- **By-county 3<sup>rd</sup>-dose variation is large.**
  
- Vaccines with updated antigens and more diverse antigen presentation are progressing (pre-phase I).
  
- Crucial to understand the level of immune evasion against neutralizing antibodies *well before the peak of the next SARS-2 epidemic.*
  
- Monitor low-vaccination & congregated environments (i.e. age cohorts with lower vaccination rates).

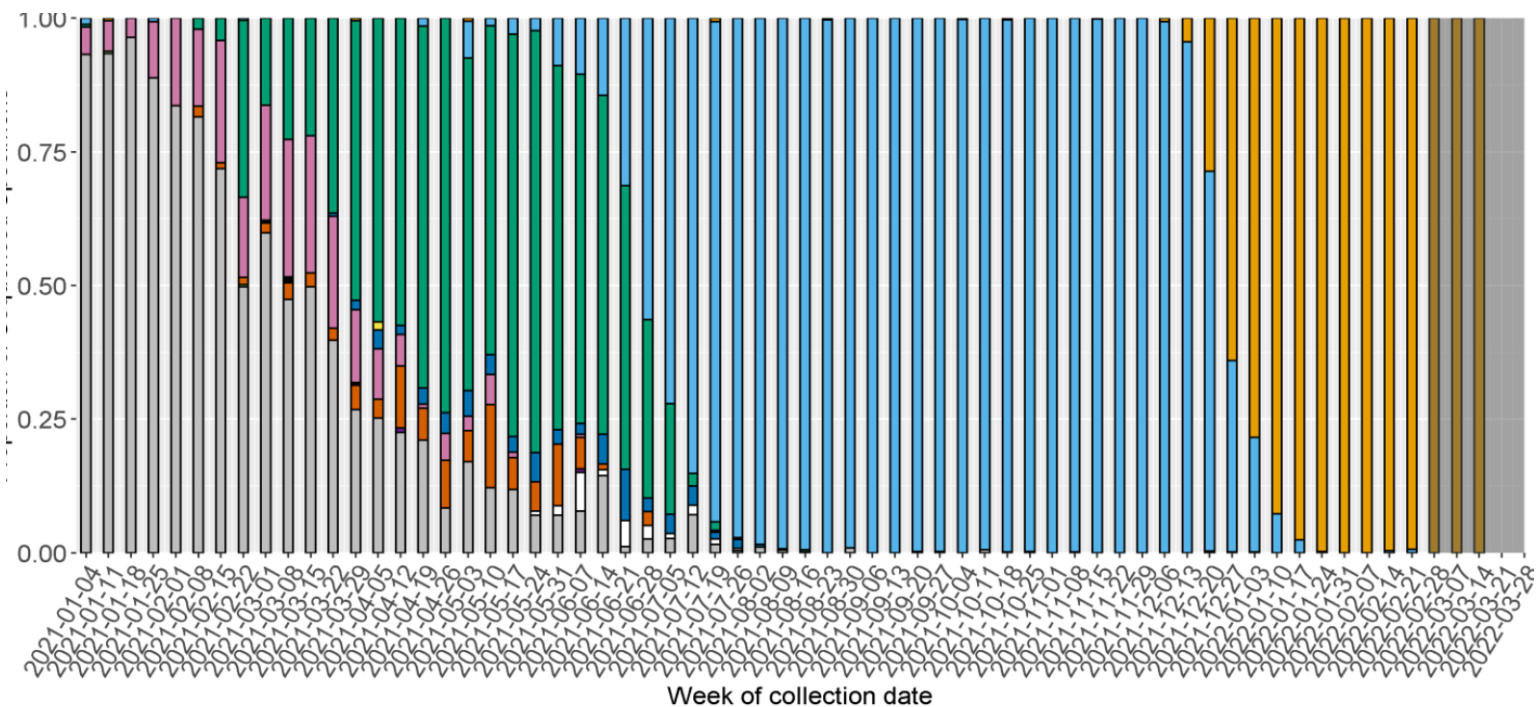


# Variant Monitoring: Omicron is the current variant

<https://www.cdc.gov/covid-data-tracker/#variant-proportions>



- NM data on BA.2 inconclusive for future events, but compatible with no large BA.2 wave.
- Only a modest rise in some US locales even though BA.2 claimed to be a majority of cases: possibly insufficient immune evasion relative to BA.1 to drive a large number of cases. Hospitalizations similarly not climbing rapidly.
- New variants have appeared without evident intermediates. Global and wastewater monitoring.
- Approximately 6-12 months is the longest variant-interval: D614G (~3 months), Alpha (~6-9 months), Delta (~6 months), Omicron (~6 months).



Screenshot-only of CDC variant data, no static image available

# Recent By-State Trends: Most Populous 10 States

Trends over the last 1-3 weeks: *Increasing*: Georgia(\*), New York, *Flat*: Florida, Illinois, Michigan, Ohio, Pennsylvania, Texas. *Declining*: California, New Mexico, N. Carolina.

	Cases	Deaths
New York	15.31	0.048
Michigan	7.7	0.192
Ohio	3.78	0.304
Florida	7.62	0.171
New Mexico	4.93	0.495
Illinois	9.55	0.108
Texas	8.92	0.128
California	7.04	0.133
North Carolina	7.96	0.055
Georgia	19.09	0.359
Pennsylvania	4.22	0.116

Daily rates per 100,000 residents averaged March 23<sup>rd</sup> 2022 thru April 7<sup>st</sup> 2022.

