

Modeling & Forecasting COVID-19 in NM

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March 8, 2022

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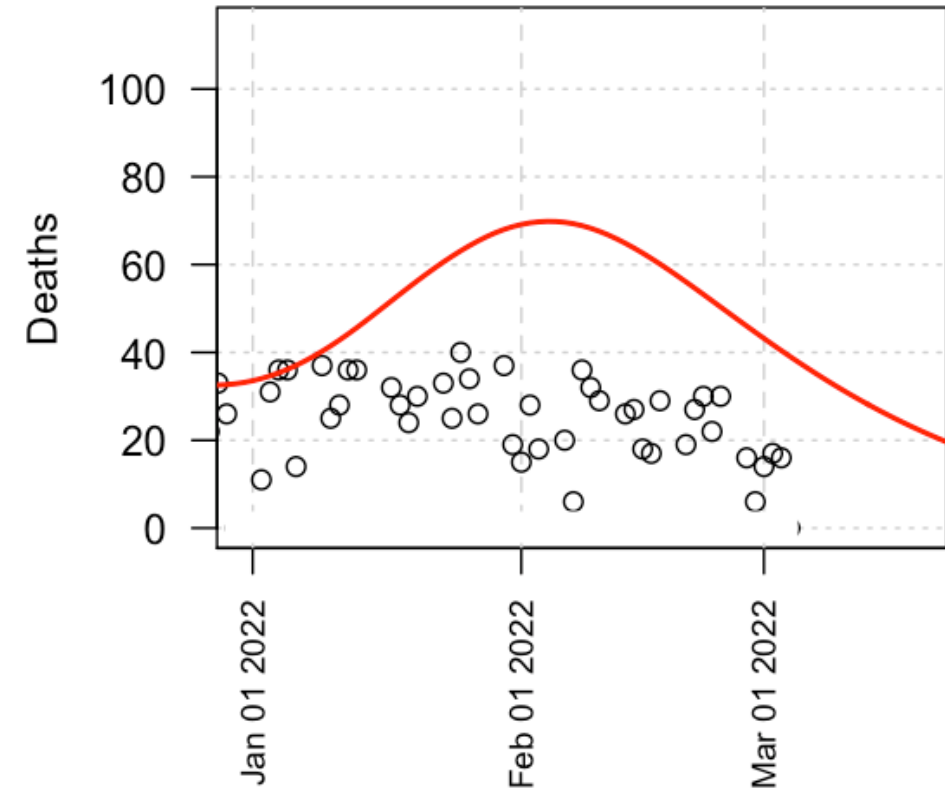
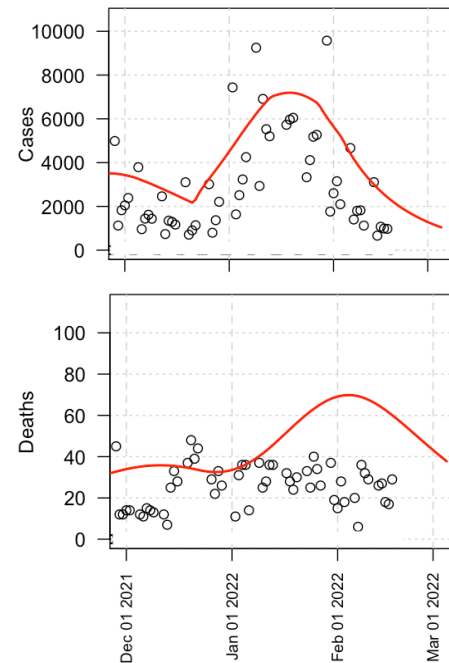
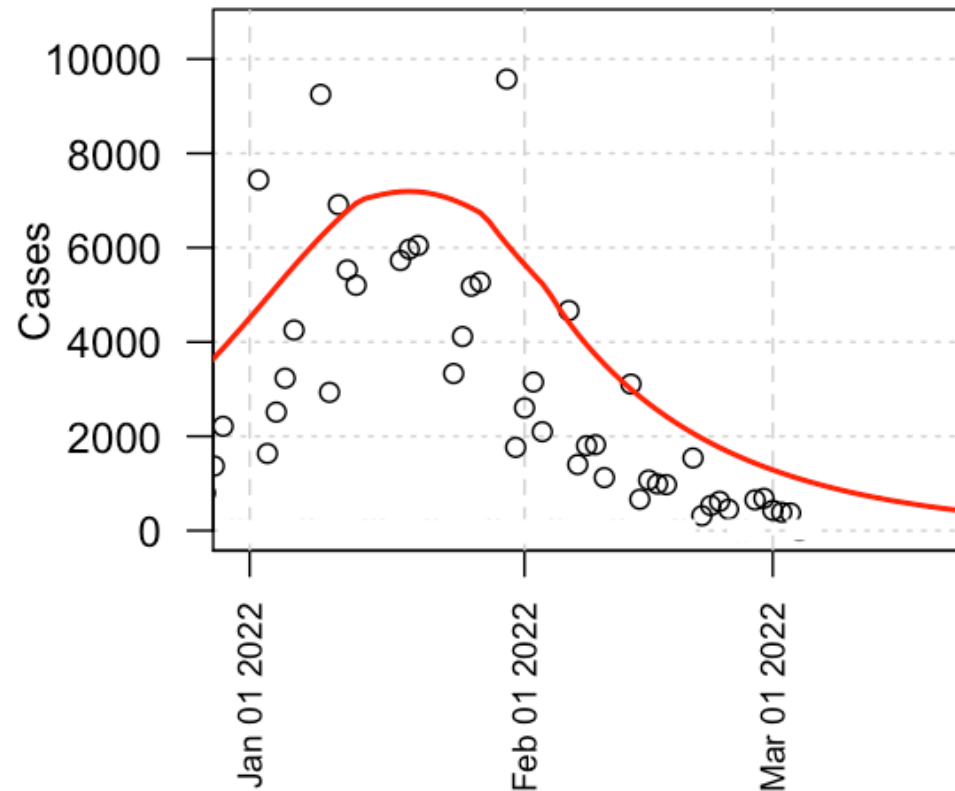
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8 Mar 2022: Epigrad modeling

- NM daily incidence is declining in 31/33 counties. **Drop in the death rate is highly notable (not only the number of deaths).**
- A modest flattening of the rate of incidence-decline is not ruled out by the data. If this flattening is real, it may result from:
 - Reduced utilization of high-quality masks while congregated and indoors, and/or
 - BA.2 variant virus. Watch for possible increases in the *number* of BA.2 cases, not just the proportion.
- Omicron is about as infectious as Delta variant. Virus evolution leading to immune evasion explains the main part of the Omicron wave.
- Immunological diversity from updated vaccines will further improve the situation.
- Situational awareness remains good as of January 2022. No clear evidence currently for antigen testing limiting accurate case counts.

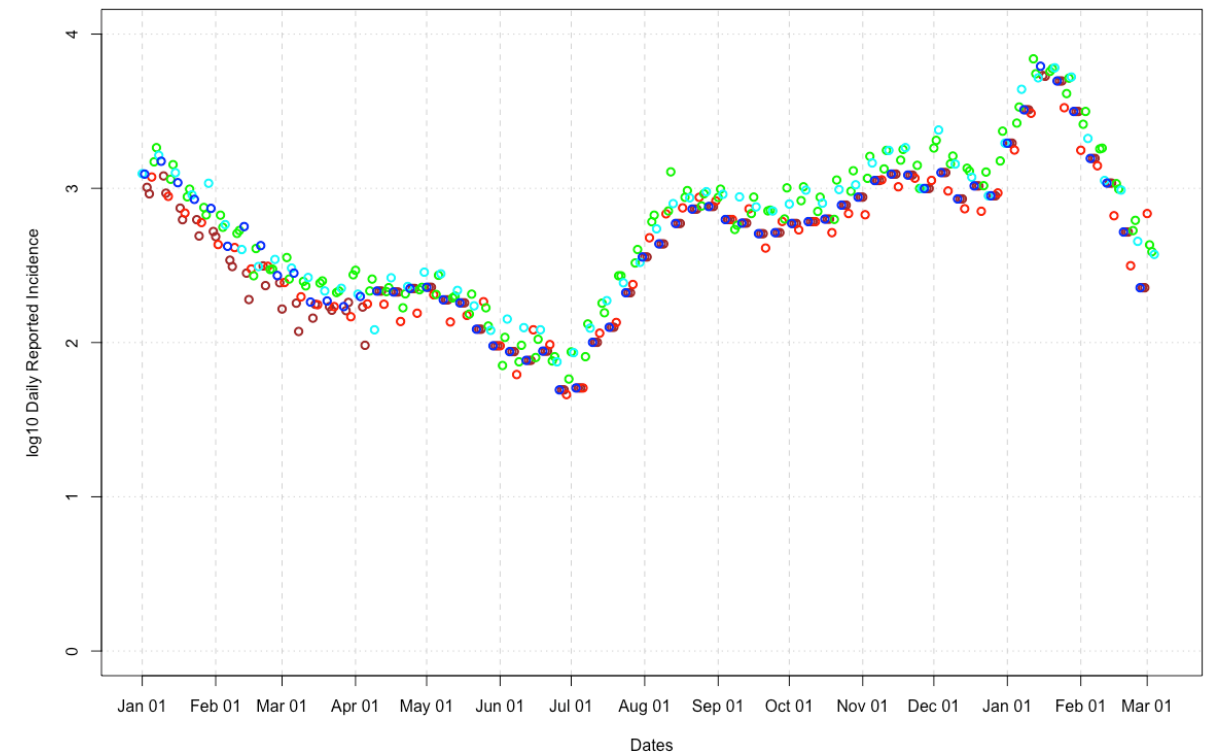
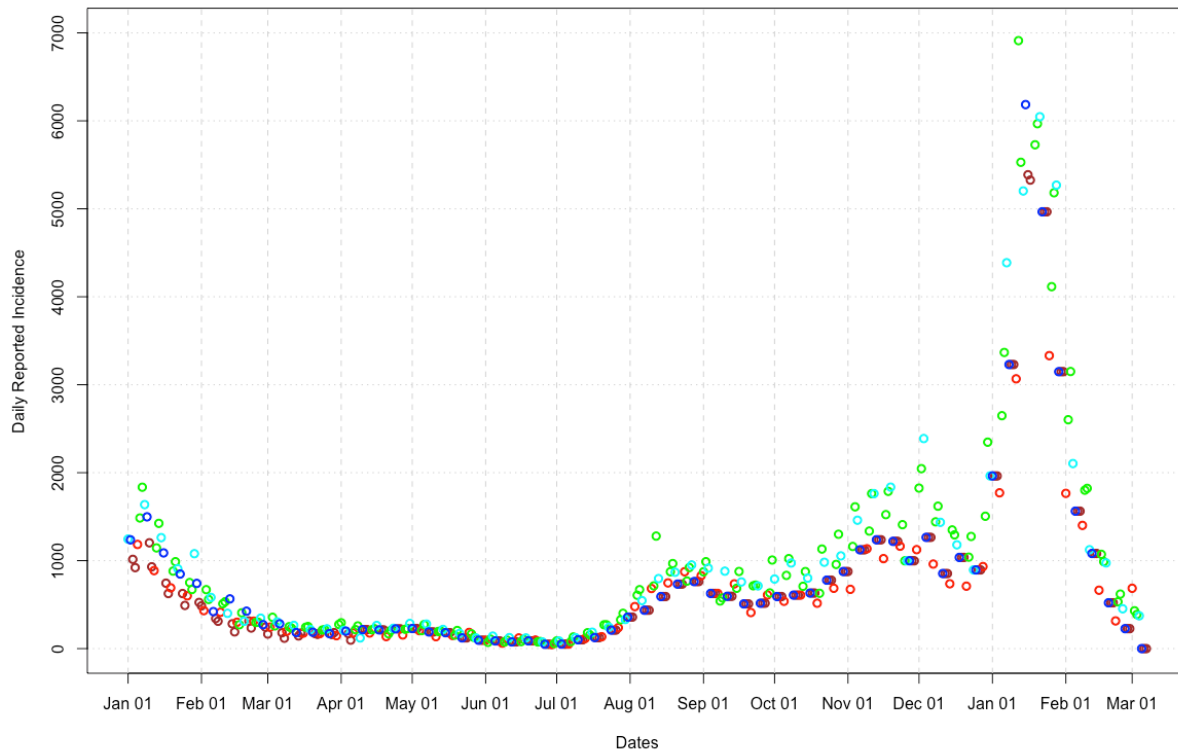


A look at the raw incidence data

- Sunday, Monday
- Tuesday
- Wednesday/Thursday
- Friday
- Saturday

- The reported incidence level is falling.
- Within-weekly variation in NM data indicates reliability.
- Color-coded by-day-of-week decline is large.

The 190 cases in the Lea county correctional facility are removed from data reported on March 26th, 2021. The 1/3 of reported cases that were > 2 weeks prior were removed from March 24th, 2021. Case reported for weekends starting April 10-12th are each divided by 3 to estimate individual day counts.



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

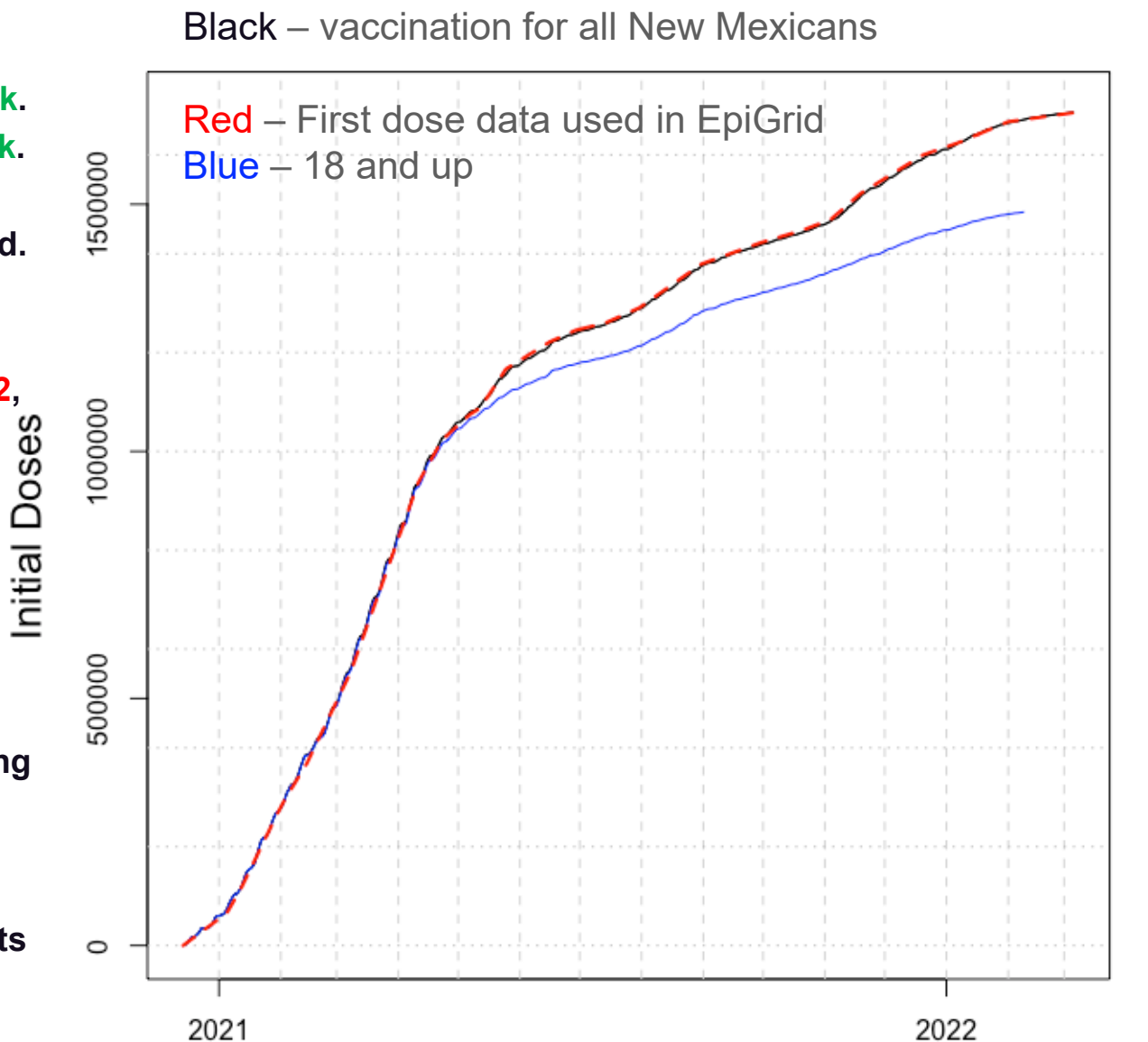
- 1686k first doses are used in modeling (3/8/22).
- 1686k first doses have been administered, **+7k/2**, **+7,10k/2**, **+9k/2**, **+27k**.
- 1431k completed initial vaccine series, **+13k/2**, **+10,14k/2**, **+12k/2**, **+16k**.
- **760k boosters completed**, **+22k/2**, **+20,28k/2**, **+35k/2**, **+31k**.
- ~80.4% of all persons in New Mexico are at least minimally vaccinated.
- ~94.5% of all New Mexicans are eligible (~1981k).
- $78.0/94.5=85.1\%$ of eligible New Mexicans vaccinated.
- 5-11 year-olds: 73k first doses (38.9%, 1.2%/2 **+0%/2**, **+1.1%/2**, **+2.0%/2**, **+1.9%**).

- Vaccination rates have slowed.

- Vaccination with updated antigen (i.e. Omicron) is likely to be highly beneficial to limiting individual and population wide effects.

- Crucial to understand the level of immune evasion against neutralizing antibodies against the next variant *well before the peak of that epidemic is reached*.

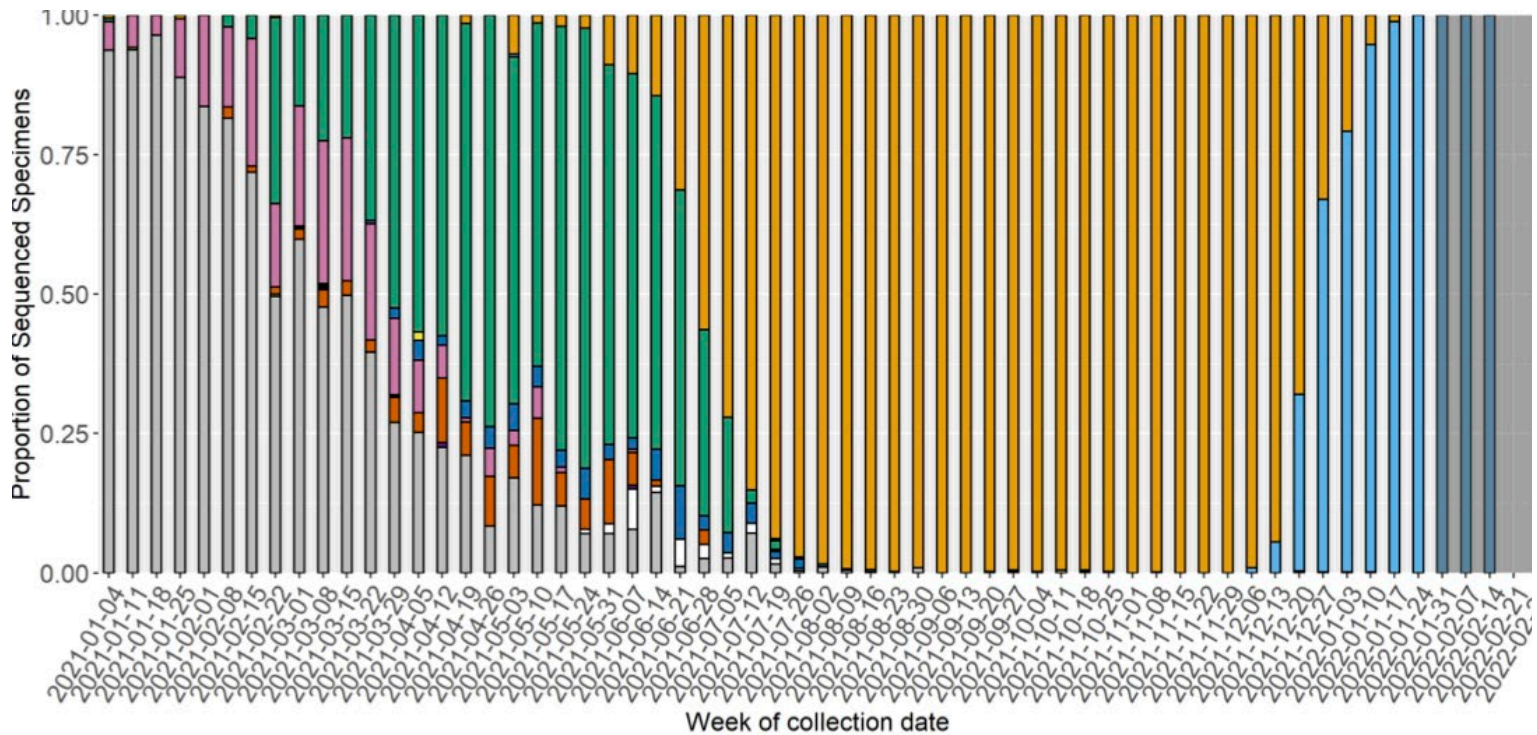
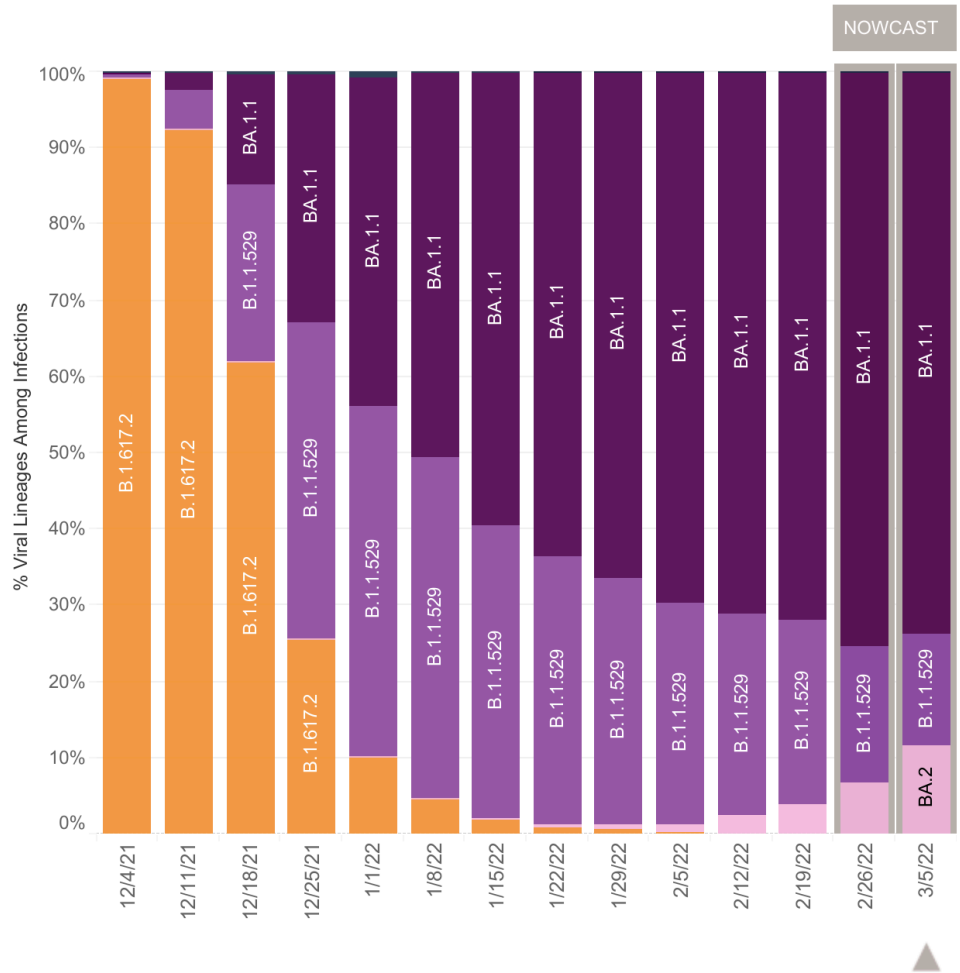
- Monitor low-vaccination & congregated environments (i.e. age cohorts with lower vaccination rates).



Variant Monitoring: Omicron is the current variant

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

- New variants have appeared without evident intermediates. **Global monitoring.**
- *Monitor variant BA.2 for immune evasion and growing number, not just proportion.*
- Approximately 6-12 months is the longest variant-interval: D614G (~3 months), Alpha (~6-9 months), Delta (~6 months), Omicron (~6 months).
- Updated mRNA vaccine from Pfizer likely past March 2022.
- **Priority on getting ahead of SARS-2 with immune diversity in the population. Both B- and T-cell.**

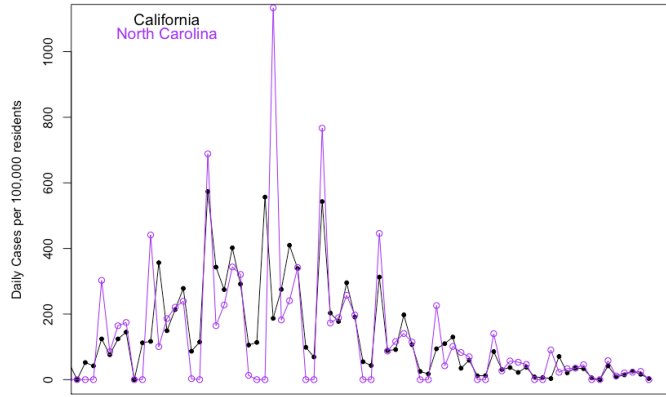
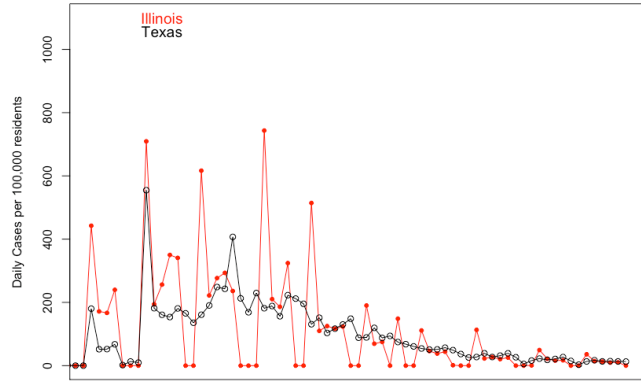
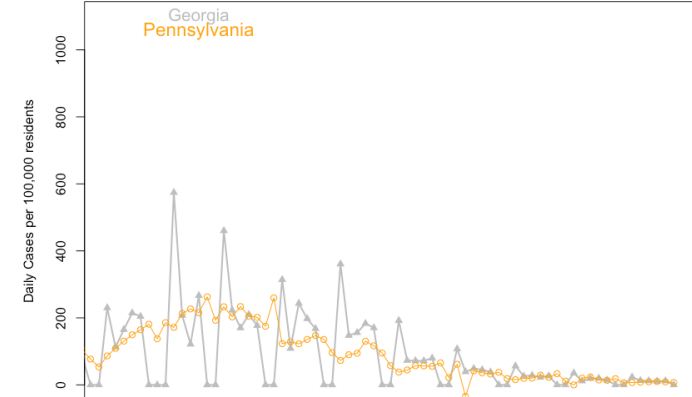
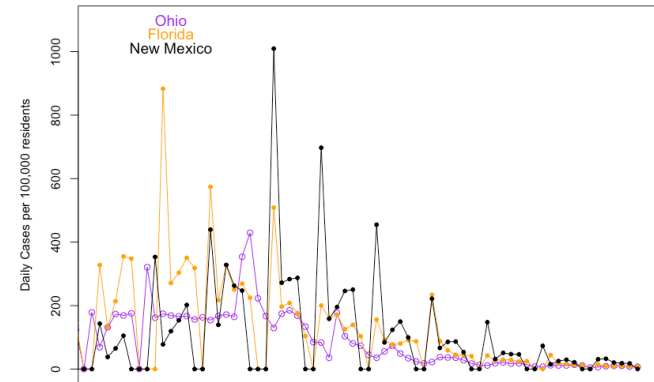
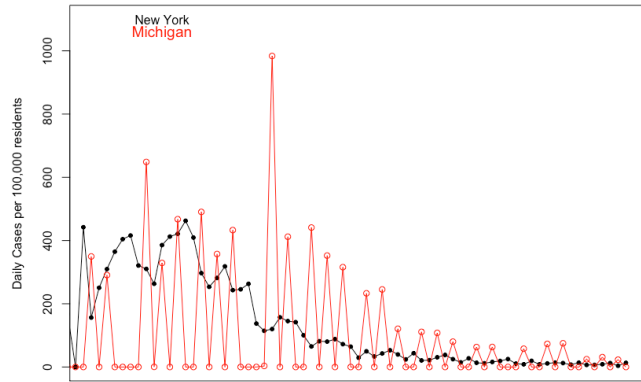


Screenshot-only of CDC variant data, no static image available

Recent By-State Trends: Most Populous 10 States

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

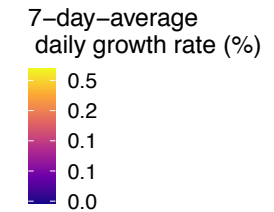
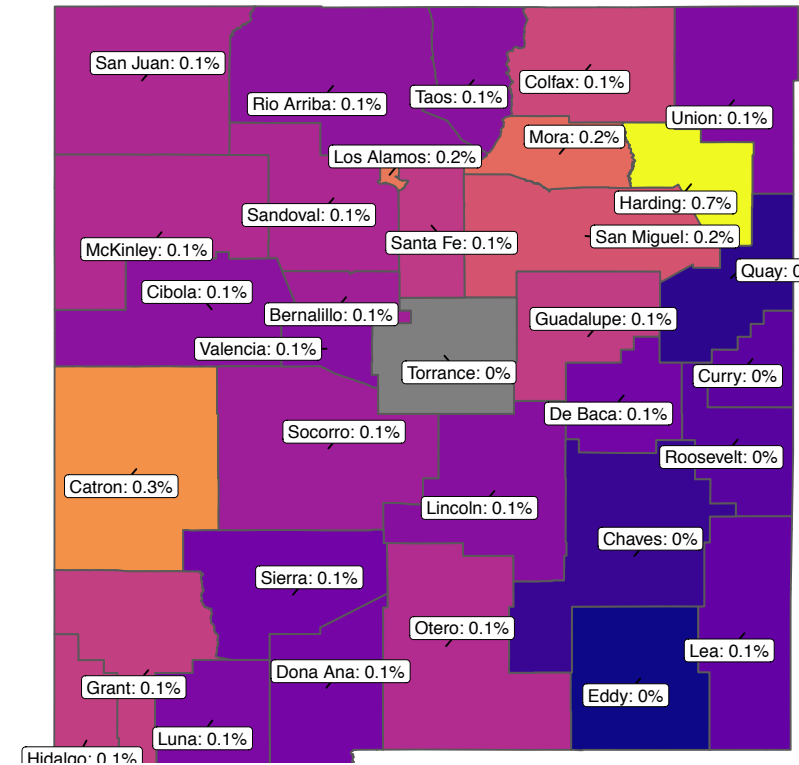
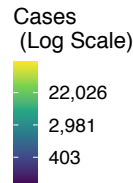
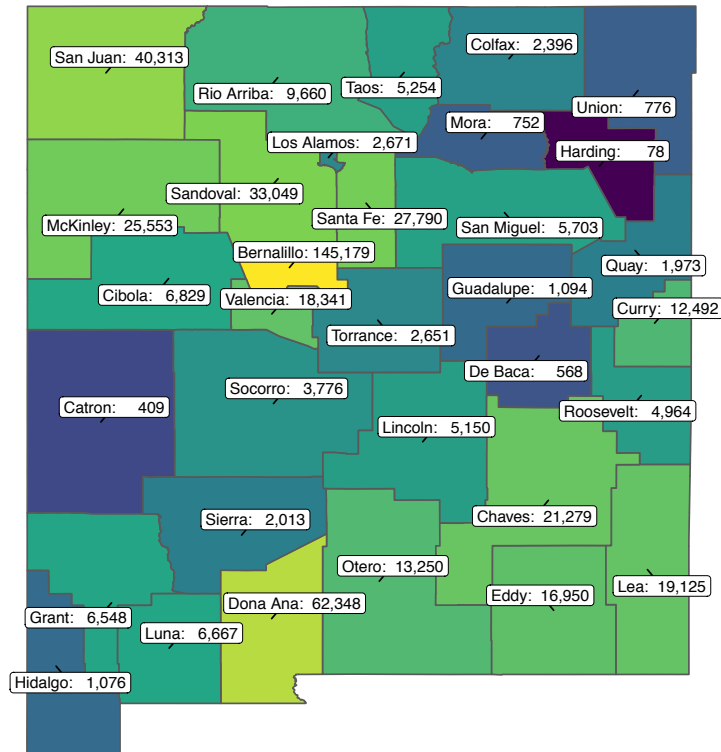
	Cases	Deaths	Daily rates per 100,000 residents averaged
New York	9.25	0.166	February 22 th 2022 thru
Michigan	11.24	0.519	March 7 st 2022.
Ohio	7.93	0.534	
Florida	8.42	0.786	
New Mexico	17.16	0.468	
Illinois	11.86	0.359	
Texas	12.45	0.441	
California	15.79	0.45	
North Carolina	19.6	0.351	
Georgia	10.1	0.591	
Pennsylvania	8.15	0.359	



Cumulative Cases & Daily Growth Rate for NM: March 8

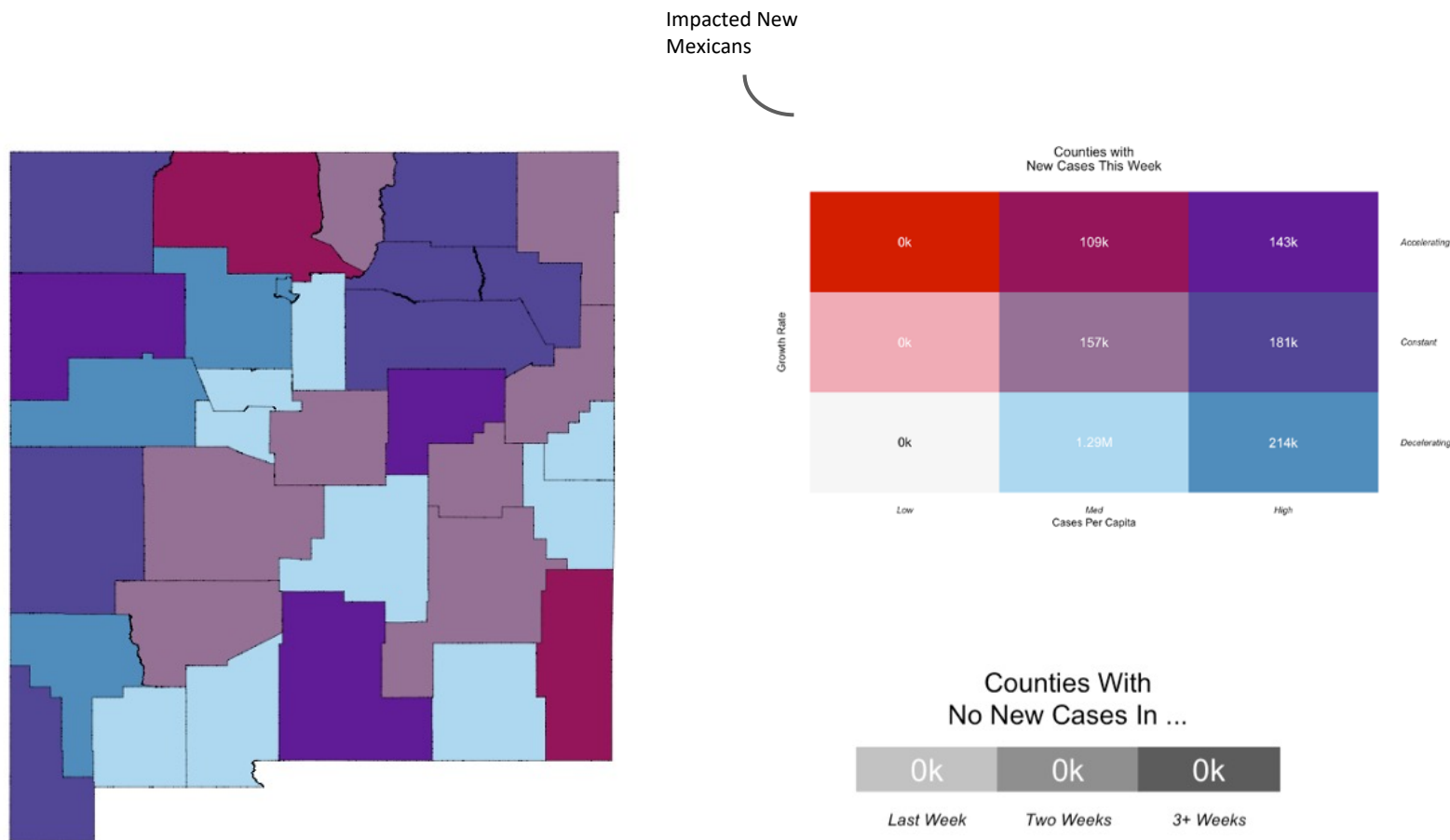
Data Source: JHU <https://github.com/CSSEGISandData/COVID-19>

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*Growth rate is in cumulative cases

Weekly Growth Rate for NM: Another View (Mar 8)



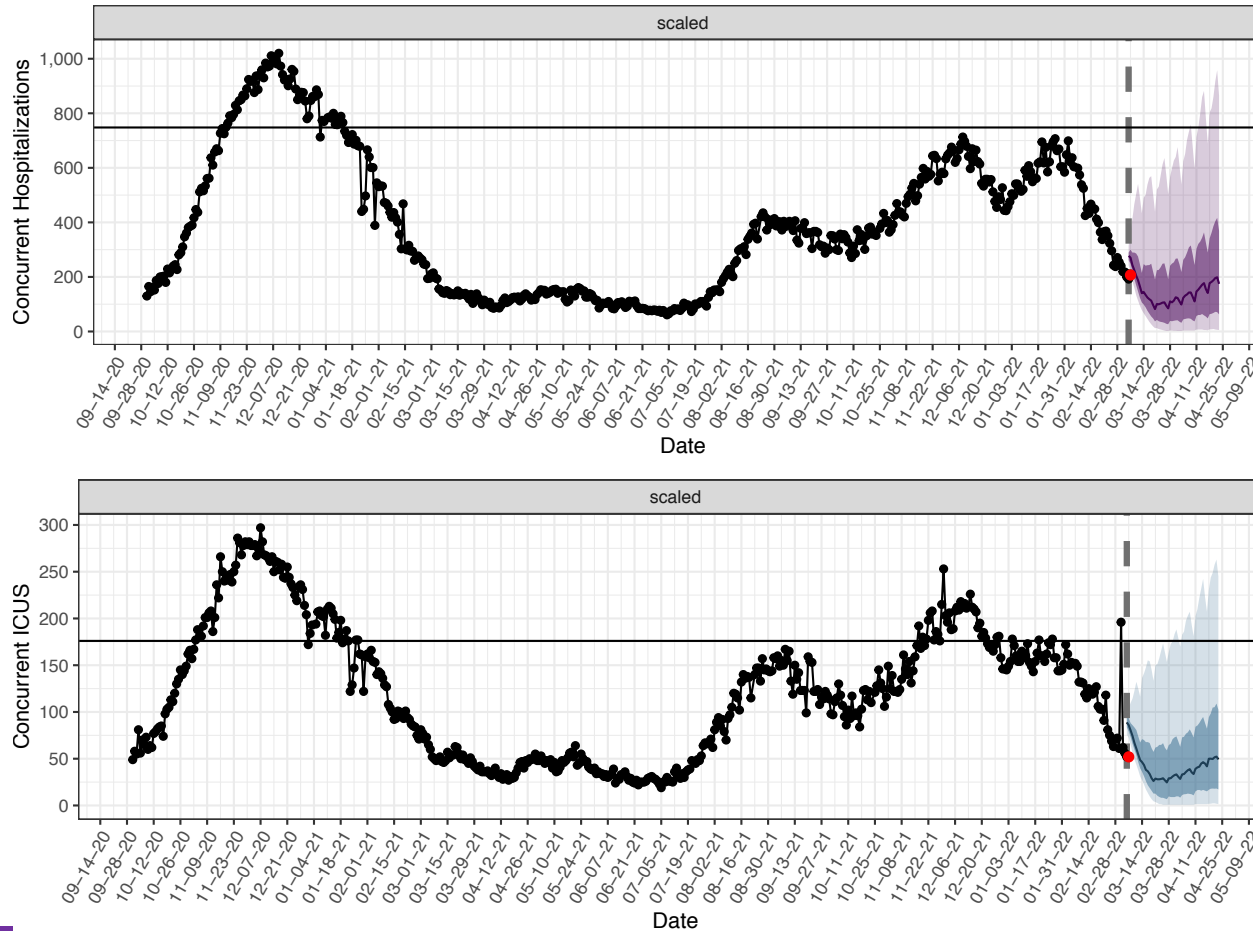
So what?

- 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

Concurrent Hosp & ICU Beds Based on Forecasts – Average Stay of 8 Hosp, 15 Days for ICU/vent & 25% ICU rate



So what?

Model is predicting an decrease in COVID-19 ICU beds needed over the next several weeks