

Modeling & Forecasting COVID-19 in NM

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February 22, 2022

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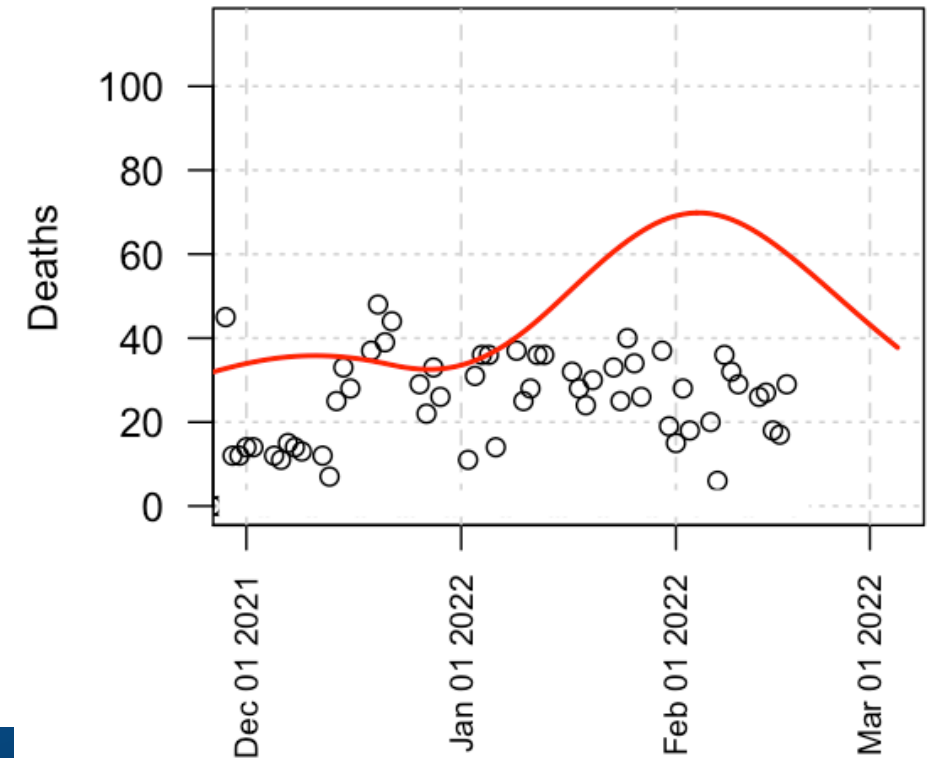
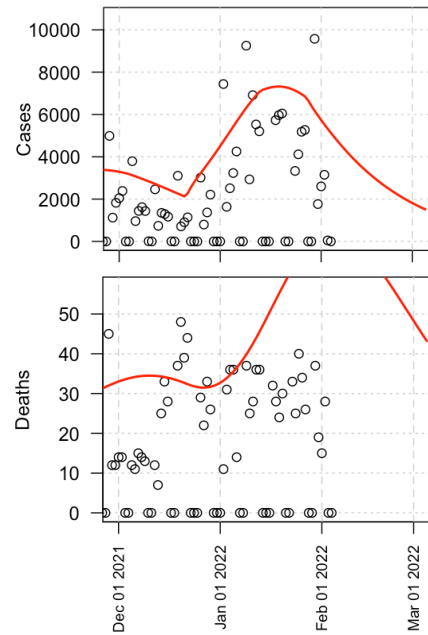
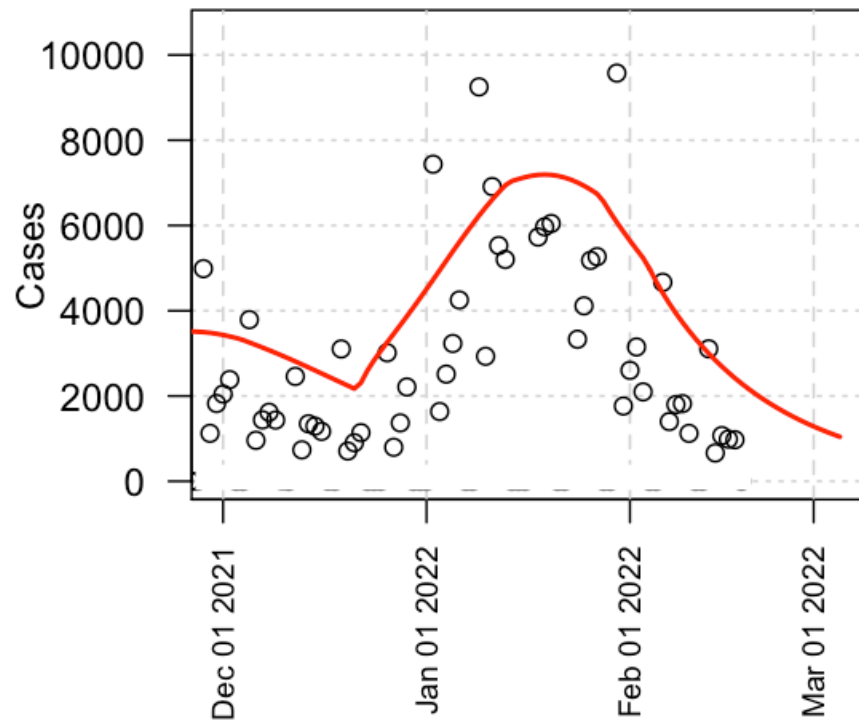
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22 Feb 2022: Epigrad modeling

- NM daily incidence continues to decline.
- Omicron variant epidemic has been driven by viral evolution away from existing immunity.
- Autumn epidemic/wave was waning immunity, distinct causation from the earlier Delta epidemic.
- Boosting was substantially lowering case rates, and severe outcomes. Boosting occurring more slowly now.
- **Improvements in the case fatality rate are largely due to improved vaccination status.**
- Omicron is about as infectious as Delta variant. Virus evolution leading to immune evasion explains the main part of the rise in cases.
- Immunological diversity from updated vaccines will incrementally improve the situation. Starting in perhaps March 2022.
- New pharmaceuticals will improve the situation when available in large quantities.
- Drug administration is time-sensitive: Rapid contact-tracing is beneficial for early treatment.

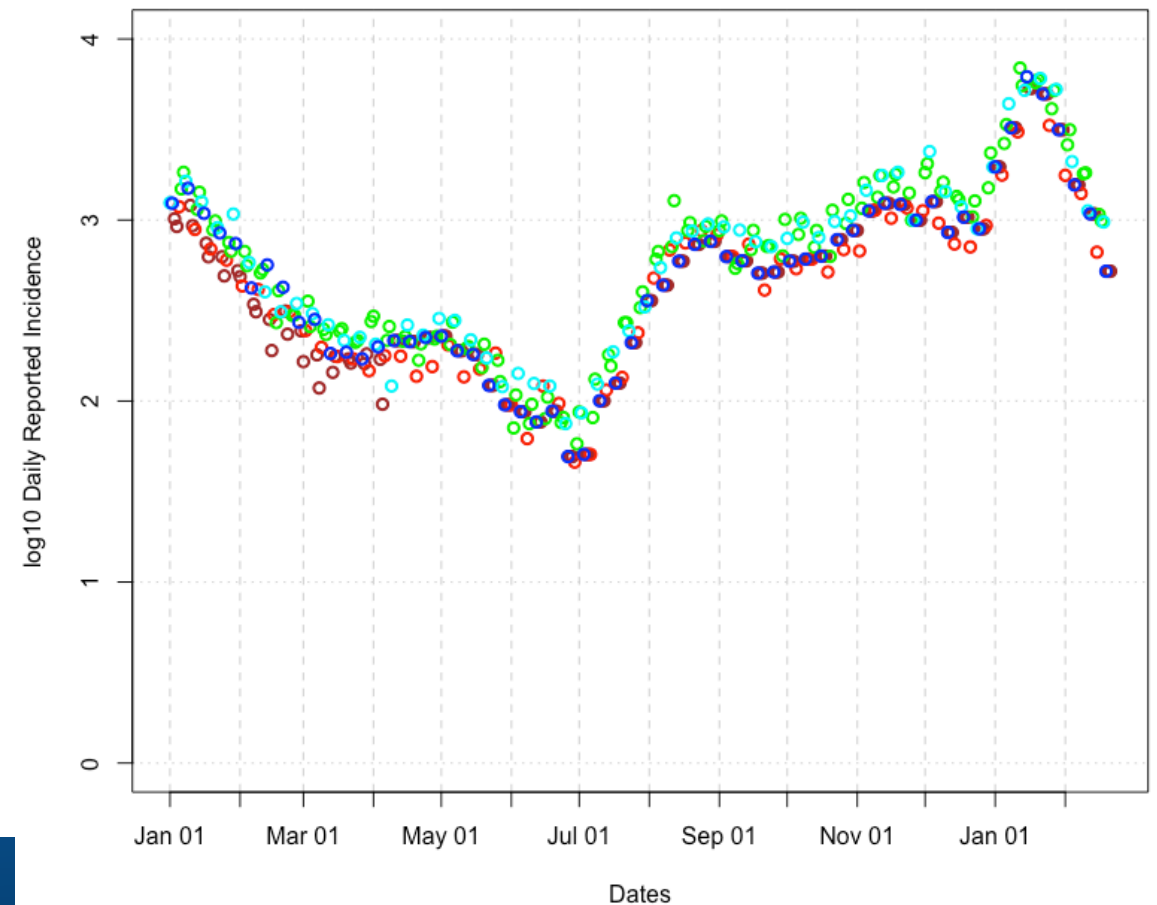
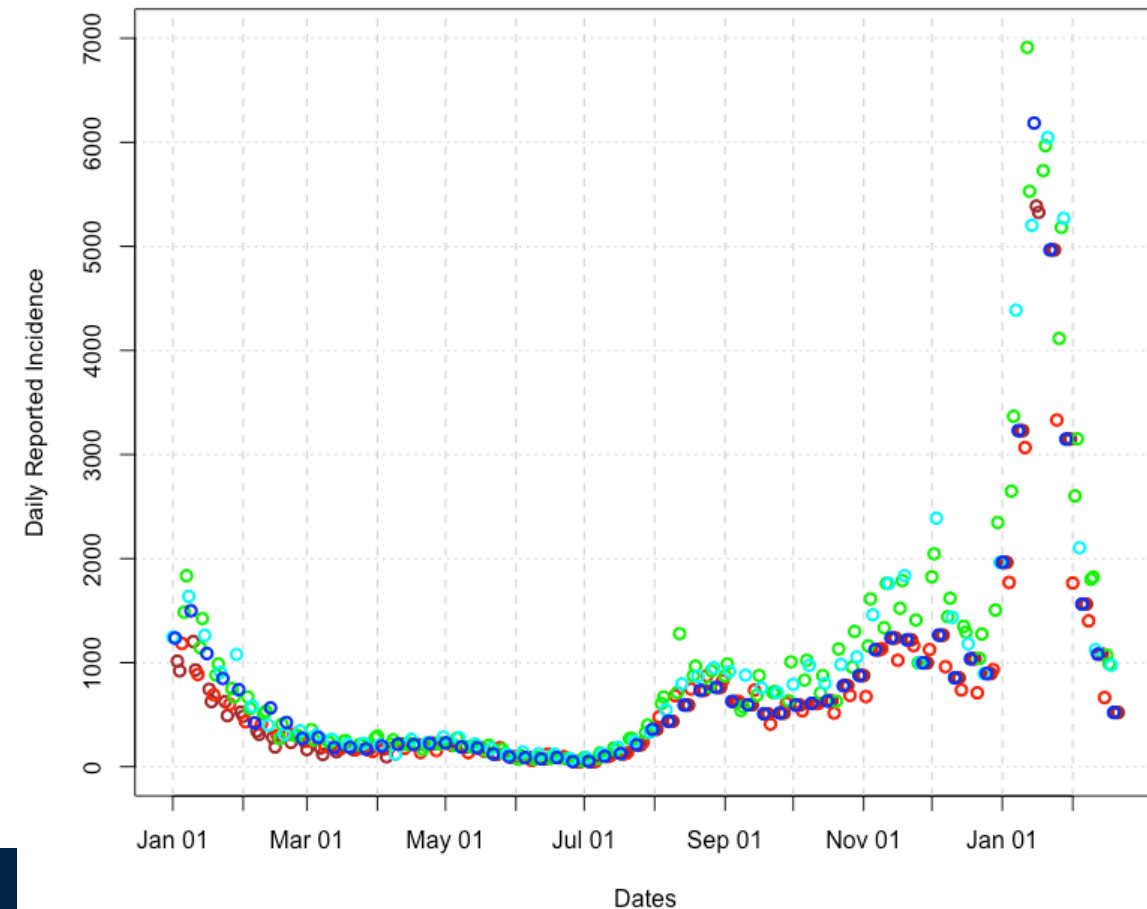


A look at the raw incidence data

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

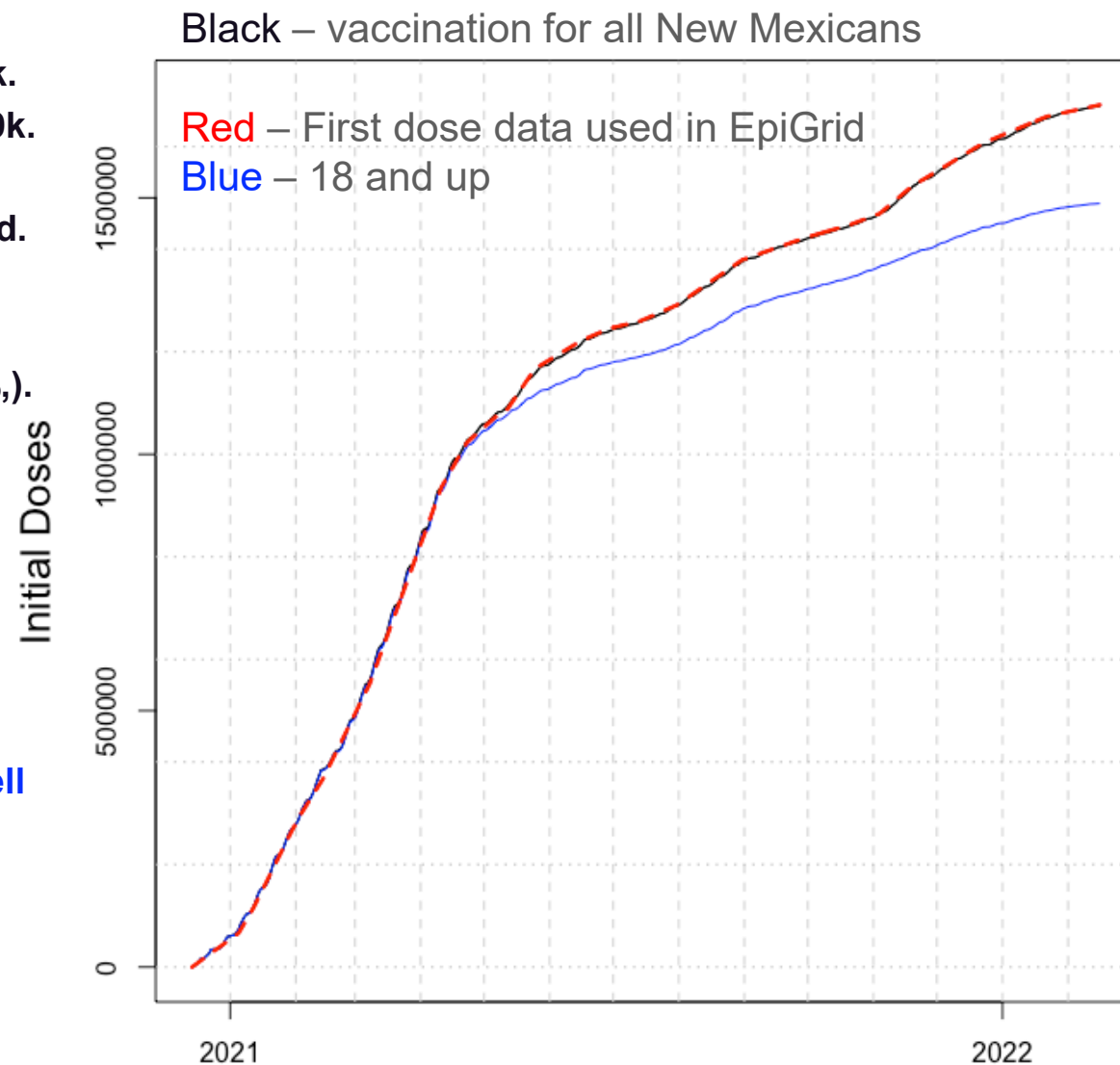
- The reported incidence level is falling.
- Within-weekly variation is visible in NM data.
- Color-coded by-day-of-week decline is large.

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



(18/22) February 2022 Vaccine Analysis (NM): Vaccinate *before* the next epidemic/wave

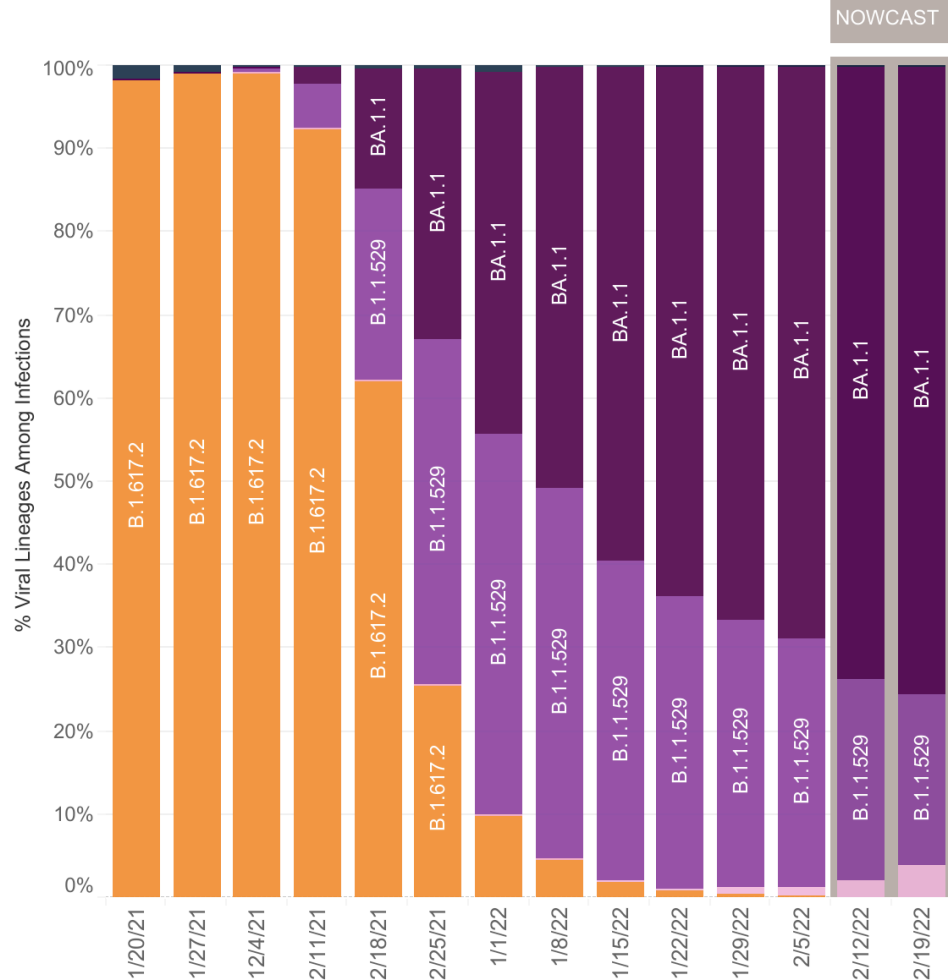
- 1682k first doses are used in modeling (2/22/22).
- 1679k first doses have been administered, **+7,10k/2**, **+9k/2**, **+27k**, **+13k**.
- 1418k completed initial vaccine series, **+10,14/2**, **+12k/2**, **+16k**, **+9k**, **+9k**.
- **~738k boosters completed**, **+20,28/2**, **+35k/2**, **+31k**, **+35k**, **+33k**.
- ~80.1% of all persons in New Mexico are at least minimally vaccinated.
- ~94.5% of all New Mexicans are eligible (~1981k).
- $78.0/94.5=84.7\%$ of eligible New Mexicans vaccinated.
- 5-11 year-olds: 72k first doses (**37.7%** **+0%/2**, **+1.1%/2**, **+2.0%/2**, **+1.9%**).
- ~410k unvaccinated New Mexicans. Many have been infected.
- ~261k incompletely vaccinated New Mexicans.
- Likely >270k New Mexicans are relatively unprotected.
- 50% VE against Omicron for initial series >450k susceptible, less serious outcomes.
- 75% VE boosted against Omicron, >130k, less serious.
- ~230k at higher risk for serious outcome (Omicron). This is ~11% of the population relatively naïve to SARS-CoV-2 (excepting distant T-cell responses).
- >~635k at lower risk for serious outcome (Omicron) and who are susceptible to infection.
- ~1240k functionally immune (Omicron, for now only).
- These population levels of protection depend on the viral-variant.



US Census Bureau reports 2097k people in New Mexico.

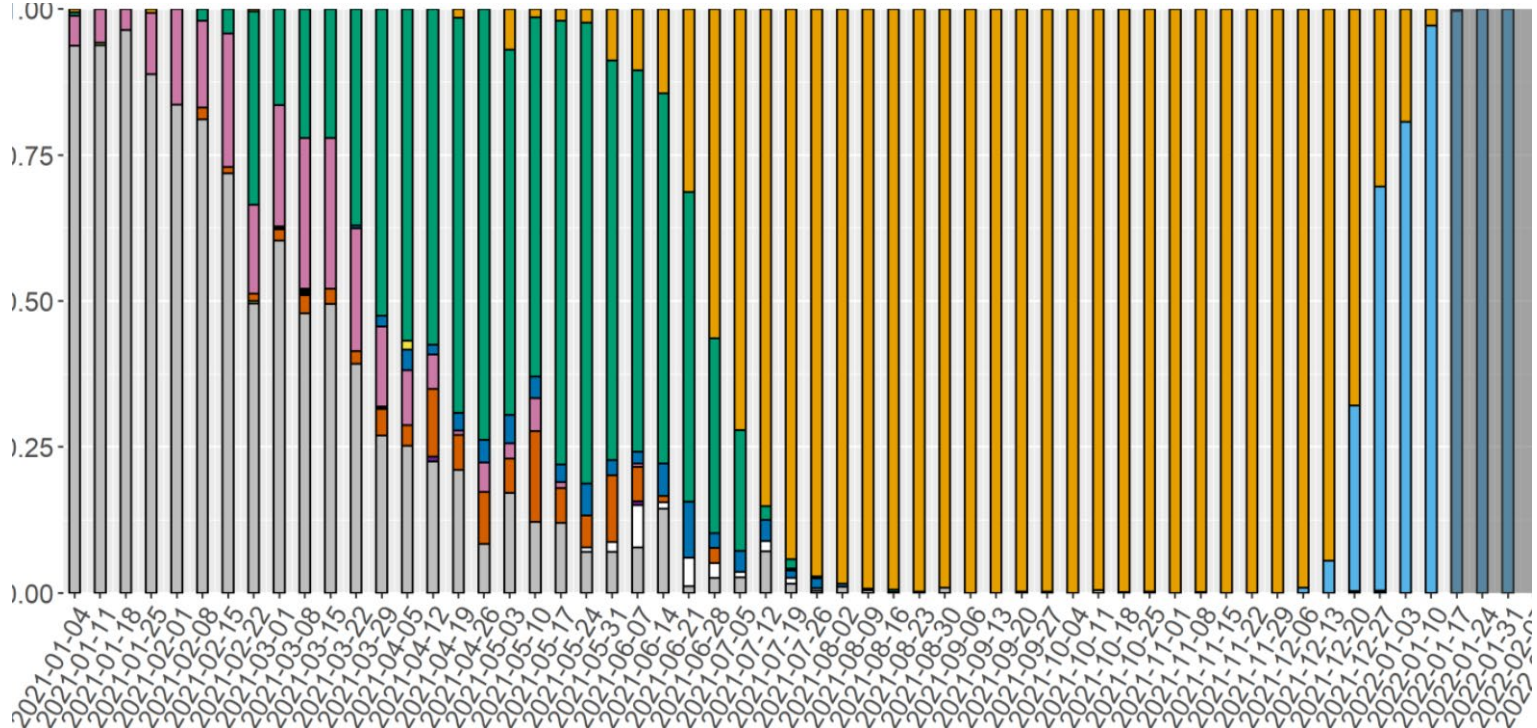
Variant Monitoring: Omicron is the current variant

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



NOWCAST

- New variants have appeared without evident intermediates. **Global monitoring.**
- CDC notes B.1.1.529 variant BA.1.1 as being ~75%. Possibly minor epi-changes?
- NM sensitive to BA.1 variants?
- **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 virus 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	17.59	1.055	February 8 th 2022 thru
Michigan	18.04	1.132	February 21 st 2022.
Ohio	15.95	1.299	
Florida	25.33	0.394	
New Mexico	46.2	0.774	
Illinois	29.85	1.039	
Texas	30.88	0.413	
California	33.65	0.291	
North Carolina	46.2	0.387	
Georgia	22.77	0.452	
Pennsylvania	22.71	0.977	

