10 Aug 2021: EpiGrid modeling

- NM daily incidence is rapidly increasing, likely due to B.1.617.2’s high level of contagiousness. Localized low-vaccine outbreaks are transforming into regional/county outbreaks. *This model is unlikely to be pessimistic unless vaccination and/or mitigation improves.*

- NM deaths similar to model.
  - The model does not account for better vaccination of cohorts with higher death rates, nor the compensating effect of B.1.617.2/Δ (Present) and B.1.1.7/α (Past). This implies that disease severity is increasing.
A look at the raw incidence data

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

Cases rates are rising rapidly.

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

New Zealand-level of cases here on this plot
10 August 2021 Vaccine Analysis and Summary

- ~1292k first doses have been administered in NM.
- ~1132k completed vaccine series in NM.
- ~61.6% of all residents in New Mexico are vaccinated.
- Estimating ~389k infections (including unenumerated).
- ~1441k New Mexicans have a history of vaccination and/or infection (68.7%)
- 88% vaccine effectiveness (two doses), 30% (one dose)
- Estimating ~1239k New Mexicans are immune, due to immune erosion (59.1%)
- Net unmitigated reproductive number is nearly unchanged from 2020.
- Burn-out population is lower.
- Erosion of immunity is the critical long-term problem maintain the pandemic. Further immune escape is possible with large epidemics.
- Rapid, complete vaccination before immune escape can worsen is beneficial to the whole population.
Variants

B.1.617.2, “Δ” is the “Indian variant”
B.1.1.7, “α” is the “UK variant”
P.1 is the “Brazilian variant”, others …

Variant replacement with B.1.617.2 is nearly complete. Further mutation is a pre-requisite for increased infectivity.
Note that data from both NM and CDC are >~1 week old.

New Mexico’s data


United States: 4/25/2021 – 7/31/2021
T-80 Mobility – northern counties (data ending)

Increasing:
Stable: Bernalillo, Los Alamos, Sandoval, Santa Fe, Taos, Valencia
Decreasing: McKinley, Rio Arriba, San Juan

- Weekends not shown
- Monday
- Wednesday/Thursday
- Friday (usually higher)
T-80 Mobility – southern counties and Curry (data ending)

Increasing: Dona Ana, Luna
Flat or slight decrease: Chaves, Curry, Eddy, Grant, Lea, Lincoln, Luna, Otero, Roosevelt
Decreasing: Curry, Socorro
What is happening in the rest of the U.S.? The 10 most populous states plus New Mexico

Trend over the last 3 weeks: Increasing: Florida, Georgia, Texas, Illinois, Michigan, New York, California, New Mexico, North Carolina. Recent increases: Ohio, Pennsylvania. Steady: -
There is a relationship between vaccination and cases.

- Lincoln and Eddy Counties are high incidence with low vaccination.
- Sierra county might be an outlier (low)
- Seven counties are not on this plot due to relative isolation and small populations: Catron, De Baca, Guadalupe, Harding, Hidalgo, Mora and Union.
Cases decrease with vaccination (no matter how the vaccination data are plotted)

May 5\textsuperscript{th}, average doses 1 and 2

June 1, 1\textsuperscript{st} dose

June 13, average of doses 1 and 2

May 5\textsuperscript{th} 2nd dose
So what?

We are tracking with worst case. Our model suggests that the number of daily cases is expected to range between 635 and 900 in the next few weeks.
Short- & Long-Term Forecast for NM: Deaths

So what?

Our model suggests that the number of daily deaths is expected to range between 2 to 6 in the next few weeks.
Growth Rate for NM

As of August 8th, the average growth rate in NM is at 0.23% (up from 0.089%)
Cumulative Cases & Daily Growth Rate for NM: Aug 9

So what? Cumulative growth rates are increasing, particularly in the Southeast

*Growth rate is in cumulative cases
Weekly Growth Rate for NM: Another View (Aug 9)

So what?

- Most people in New Mexico are living in a county that is medium per-capita case counts with accelerating growth.
- Dona Ana, Hidalgo, Luna, Otero, Quay, San Miguel, Torrance, Valencia are accelerating quickly.

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
> Additional Regional Forecasts
Central & North Regions Daily Cases Forecast

So what?
The central region is expected to see the most number of cases followed by the northwest and northeast regions, respectively.
So what?
The southwest region is expected to see the most number of cases followed by the southeast region.
> EpiCast Projections
US Projections: Delta + Other variants

- **Best case** (80% VE)
- **Worst case** (50% VE)
- **Middle case**

**New Variants**

**So what?**
- Projections based on current vaccination uptake and cases at the county level for the US
- Impacts vary based on vaccine effectiveness assumptions
- A novel variant “omega” introduced through the arrival of 100 infected (SFO, ATL, NYC)