Modeling & Forecasting COVID-19 in NM

April 19, 2022

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Our model suggests that the number of daily cases is expected to range between 15 and 350 in the next few weeks.
So what?

Our model suggests that the number of daily deaths is expected to range between 2 and 25 in the next few weeks.
Los Alamos, Cibola, and Curry counties have the highest cumulative growth rates.

*Growth rate is in cumulative cases
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

So what?
- Most people in New Mexico are living in a county that has medium per-capita case counts and accelerating.

Los Alamos National Laboratory
The CDC ForecastHub is predicting a 7% decrease in one week incident cases to 827 (from April 16 at 892)

COVIDhub-4_week_ensemble prediction, COVID 19 ForecastHub
https://viz.covid19forecasthub.org/
> Additional Regional Forecasts
So what?
The Central region is expected to see the most number of cases. Cases appear to be plateauing.
South Regions Daily Cases Forecast

So what?
Both regions have a predicted plateau. The Southwest region is expected to see higher number of cases.
19 Apr 2022: Epigrid modeling

- NM daily incidence is likely rising. Drop in the death rate to 1/2x is highly notable, as well as the increase in the number of deaths.
- No clear evidence for substantially more immune evasion by BA.2 than by BA.1.
- Reduced indoor masking in congregated settings is likely playing a role in the current epidemic.
- Updated vaccine immunogens may be necessary to lower the rate of serious medical outcomes by late 2022.
- Situational awareness was good in January 2022. Current data of high value for adaptive mitigation.
- Delayed or incomplete vaccination confers a significant risk of adverse outcomes.
A look at the raw incidence data

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

- The reported incidence is now rising slowly, or possibly flat, ignoring within-week variation.
- Color-coded by-day-of-week incidence provides visual first evidence of rising incidence.
- Within-weekly variation in NM data is resolved. It was partly an analysis artifact, now corrected.

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, 2021 are each divided by 3 to estimate individual day counts.
19 April 2022 Vaccine Analysis (NM): currently starting an epidemic/wave

- 1693k first doses are used in modeling (4/19/22).
- 1693k first doses have been administered, +5k/2, +1k/2, +1k/2.
- 1444k completed initial vaccine series, +5k/2, +4k/2, +4k/2.
- 850k boosters completed, +69k/2, +10k/2, +11k/2.
- 56k fourth doses completed, +56k/2
- ~80.7% of all persons in New Mexico are base-line vaccinated.
- ~94.5% of all New Mexicans are eligible (~1981k).
- 80.7/94.5=85.4% of eligible New Mexicans vaccinated.
- 5-11 year old vaccinations continue to be slow.

- Vaccination is mixed. Rate of doses 3 and 4 uptake is good, but
- 794k * ~1/3 = >200k eligible for dose 4, but not yet inoculated.
- 594k eligible for dose 3 who have not yet received it.
- Conclusion: Expect waning immunity in May 2022, and
- By-county 3rd-dose variation is large; likely to give large by-county variations in population-level severity.

- Vaccines with updated antigens likely of high utility by late 2022.
Variant Monitoring: Omicron is the current variant

- A slow rise in US incidence while BA.2 is already a majority requires a smaller role for immune evasion.
- NM data on BA.2 inconclusive for immune evasion driving the epidemic.
- Case growth rates (~2x/month) are slower than BA.2 replacement rate (~2x/week). These rates are early rates, before “saturation” of the replacement.
- 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). Short interval for BA.2?

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

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:** California, Florida, Georgia, Illinois, Michigan, New Mexico, New York, N. Carolina, Ohio, Pennsylvania, **Flat:** Texas. **Declining:**

<table>
<thead>
<tr>
<th>States</th>
<th>Cases</th>
<th>Deaths</th>
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</thead>
<tbody>
<tr>
<td>New York</td>
<td>29.59</td>
<td>0.043</td>
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<tr>
<td>Michigan</td>
<td>19.26</td>
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<td>Pennsylvania</td>
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Daily rates per 100,000 residents averaged April 11th 2022 thru April 17th 2022.