Modeling & Forecasting COVID-19 in NM

March 8, 2022

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8 Mar 2022: Epigrid 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

- 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

- 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.

<table>
<thead>
<tr>
<th>States</th>
<th>Cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>9.25</td>
<td>0.166</td>
</tr>
<tr>
<td>Michigan</td>
<td>11.24</td>
<td>0.519</td>
</tr>
<tr>
<td>Ohio</td>
<td>7.93</td>
<td>0.534</td>
</tr>
<tr>
<td>Florida</td>
<td>8.42</td>
<td>0.786</td>
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<tr>
<td>New Mexico</td>
<td>17.16</td>
<td>0.468</td>
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<tr>
<td>Illinois</td>
<td>11.86</td>
<td>0.359</td>
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<tr>
<td>Texas</td>
<td>12.45</td>
<td>0.441</td>
</tr>
<tr>
<td>California</td>
<td>15.79</td>
<td>0.45</td>
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<tr>
<td>North Carolina</td>
<td>19.6</td>
<td>0.351</td>
</tr>
<tr>
<td>Georgia</td>
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<td>0.591</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>8.15</td>
<td>0.359</td>
</tr>
</tbody>
</table>

Daily rates per 100,000 residents averaged February 22th 2022 thru March 7th 2022.
Cumulative Cases & Daily Growth Rate for NM: March 8

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

*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 growth rates.

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