Modeling & Forecasting COVID-19 in NM

February 8, 2022
Cumulative Cases & Daily Growth Rate for NM: Feb 8

Harding, Mora and Roosevelt counties have the highest cumulative growth rates.

*Growth rate is in cumulative cases
So what?

- Most people in New Mexico are living in a county that has high 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
The CDC ForecastHub is predicting a 68% decrease in incident weekly cases to 16,041K (from Jan 29 at 32,579K).
8 Feb 2022: Epigrid modeling

- NM daily incidence is declining. Viral evolution away from existing immunity lead to the Omicron variant epidemic.
- Boosting is lowering case rates, and severe outcomes.
- Improvements in the case fatality rate are largely due to improved vaccination status.
- Some reduction in disease severity due to viral evolution is possible, but is not established or proven by these data.
- Omicron is about as infectious as Delta variant. Virus evolution leading to immune evasion explains of the main part of the rise in cases.
- Indoor masking remains critical to moderating all consequence. Respirator use instead of cloth masks will further mitigate consequences.
- New pharmaceuticals will improve the situation when available in large quantities.
- Drug administration is time-sensitive: Rapid contact-tracing is beneficial for early treatment.
- Immunological diversity from updated vaccines will incrementally improve the situation. Starting in perhaps March 2022.
A look at the raw incidence data

- The reported incidence level is falling fast.
- 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.
7 February 2022 Vaccine Analysis (NM)

- 1672k first doses are used in modeling.
- 1672k first doses have been administered, +9k/2, +27k, +13k, +12k.
- 1408k completed initial vaccine series, +12k/2, +16k, +9k, +9k.
- ~718k boosters completed, +35k/2, +31k, +35k, +33k.
- ~79.7% of all persons in New Mexico are at least minimally vaccinated.
- ~94.5% of all New Mexicans are eligible (~1981k).
- 78.0/94.5=84.4% of eligible New Mexicans vaccinated.
- 5-11 year-olds: 69k first doses (36.6% +2.0%/2, +1.9%, +1.9%, +1.9%).
- ~426k unvaccinated New Mexicans. Many have been infected.
- ~266k incompletely vaccinated New Mexicans.
- Likely >275k New Mexicans are relatively unprotected.
- 50% VE against Omicron for initial series >500k susceptible, less serious outcomes.
- 75% VE boosted against Omicron, >140k, less serious.
- ~250k at higher risk for serious outcome (Omicron). This is ~12% of the population relatively naïve to SARS-CoV-2 (excepting distant T-cell responses).
- >~670k at lower risk for serious outcome (Omicron) and who are susceptible to infection.
- ~1205k 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

- New variants have appeared without evident intermediates. Global monitoring.
- NM small-number statistics in NM, likely all B.1.1.529 (Omicron).
- Extremely rapid rise; faster than Δ. Viral evolution / immune evasion played a major role.
- Possible shorter foot-to-head time of NM epidemic suggests help from vaccination.
- 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 in March 2022? Less than 6 months “since Omicron”

https://www.cdc.gov/covid-data-tracker/#variant-proportions
Recent By-State Trends: Most Populous 10 States: True incidence?

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>State</th>
<th>Cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>38.77</td>
<td>0.66</td>
</tr>
<tr>
<td>Michigan</td>
<td>85.58</td>
<td>0.966</td>
</tr>
<tr>
<td>Ohio</td>
<td>45.16</td>
<td>1.398</td>
</tr>
<tr>
<td>Florida</td>
<td>83.33</td>
<td>0.862</td>
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<tr>
<td>New Mexico</td>
<td>116.33</td>
<td>0.672</td>
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<tr>
<td>Illinois</td>
<td>69</td>
<td>0.816</td>
</tr>
<tr>
<td>Texas</td>
<td>88.72</td>
<td>0.65</td>
</tr>
<tr>
<td>California</td>
<td>123.88</td>
<td>0.456</td>
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<tr>
<td>North Carolina</td>
<td>129.25</td>
<td>0.67</td>
</tr>
<tr>
<td>Georgia</td>
<td>69.81</td>
<td>0.678</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>53.55</td>
<td>1.089</td>
</tr>
</tbody>
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Daily rates per 100,000 residents averaged January 25th 2022 thru February 7th 2022.