22 Feb 2022: Epigrid 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

- 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.
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, +710k/2, +9k/2, +27k, +13k.
- 1418k completed initial vaccine series, +1014k/2, +12k/2, +16k, +9k, +9k.
- ~738k boosters completed, +2028k/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

- 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.

https://www.cdc.gov/covid-data-tracker/#variant-proportions
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>State</th>
<th>Cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>17.59</td>
<td>1.055</td>
</tr>
<tr>
<td>Michigan</td>
<td>18.04</td>
<td>1.132</td>
</tr>
<tr>
<td>Ohio</td>
<td>15.95</td>
<td>1.299</td>
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<tr>
<td>Florida</td>
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<td>0.394</td>
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<td>New Mexico</td>
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<tr>
<td>North Carolina</td>
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<td>0.452</td>
</tr>
<tr>
<td>Georgia</td>
<td>22.71</td>
<td>0.977</td>
</tr>
</tbody>
</table>

Daily rates per 100,000 residents averaged February 8th 2022 thru February 21st 2022.