Modeling & Forecasting COVID-19 in NM

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Short- & Long-Term Forecast for NM: Cases

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So what?

Our model suggests that the number of daily cases is expected to range between 35 and 490 in the next few weeks.
So what?

Our model suggests that the number of daily deaths is expected to range between 1 and 11 in the next few weeks.
Cumulative Cases & Daily Growth Rate for NM: May 1

Harding, Los Alamos, Cibola, and Santa Fe counties have the highest cumulative growth rates.

County COVID-19 Weekly Growth Rate

*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 growth.
> Additional Regional Forecasts
Central & North Regions Daily Cases Forecast

Northwest

Northeast

Central

So what?
The Central region is expected to see the most number of cases. Cases appear to be plateauing.
So what?

Both regions have a predicted plateau. The Southwest region is expected to see higher number of cases.
Hospitalization Forecast
Concurrent Hosp & ICU Beds Based on Forecasts – Average Stay of 8 Hosp, 15 Days for ICU/vent & 25% ICU rate

Concurrent COVID-19 ICU beds

<table>
<thead>
<tr>
<th>Week</th>
<th>Qu. 5% (best case)</th>
<th>Qu. 50% (median)</th>
<th>Qu. 95% (worst case)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8/22</td>
<td>4</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>5/15/22</td>
<td>2</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>5/22/22</td>
<td>1</td>
<td>6</td>
<td>17</td>
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<td>18</td>
</tr>
<tr>
<td>6/5/22</td>
<td>1</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>6/12/22</td>
<td>1</td>
<td>8</td>
<td>23</td>
</tr>
</tbody>
</table>

“So what?”

Model is predicting a plateau in COVID-19 ICU beds needed over the next several weeks.
Concurrent Hosp & ICU Beds Based on Forecasts – Average Stay of 8 Hosp, 15 Days for ICU/vent & 25% ICU rate

So what?

Med-surge general bed needs are predicted to plateau overall during the next 3 weeks
3 May 2022: Epigrid modeling

- NM daily incidence is rising. Drop in the death rate to 1/2x is notable.
- Modest immune evasion by BA.2.12.1 relative to BA.1 likely important.
- Waning immunity is also likely significant to the current rise in daily incidence.
- Reduced indoor masking facilitates community spread.
- Use of high-quality, well-fitted N95s enhances stopping transmission of covid. Hospital data can be evaluated to show the effect.
- Disease severity in individuals lacking robust immune history from vaccination can be more serious than unvaccinated.

Incidence, wk 114, 2022-05-01
A look at the raw incidence data

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

- The reported incidence is now rising.
- Color-coded by-day-of-week incidence is rising.

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.
• 1753k first doses are used in modeling (4/26/22).
• 1753k first doses have been administered,
• 1479k completed initial vaccine series, +35k/2, +5k/2, +4k/2.
• 805k boosters completed
• 78k fourth doses completed
• 5-11 year old vaccinations continue to be slow.

• 805k * ~1/3 = >200k eligible for dose 4, but not yet inoculated.
• ~600k eligible for dose 3 who have not yet received it.
• Conclusion: Expect waning immunity in May 2022
  • Effect on infection rate likely
  • Effect on severity is possible
• 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 before late 2022.

US Census Bureau reports 2097k people in New Mexico.

Red – First dose data used in EpiGrid
Blue – 18 and up
Variant Monitoring: Omicron is the current variant

- Viral variant BA.2.12.1 may be moderately more evasive than BA.1 and BA.2
- NM data is consistent with BA.2.12.1 being evasive and contributing to growth.
- Case growth rates (~2x/month) are slower than BA.1
- Unlikely prior variants that appeared without evident intermediates, BA.2.12.1 is a derivative variant.
- Approximately 6-12 months is the longest variant-interval: D614G (~3 months), Alpha (~6-9 months), Delta (~6 months), Omicron BA.1 (~6 months). BA.2.12.1 May be only a 4 months interval.

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

<table>
<thead>
<tr>
<th>States</th>
<th>Cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>36.66</td>
<td>0.09</td>
</tr>
<tr>
<td>Michigan</td>
<td>20.7</td>
<td>0.096</td>
</tr>
<tr>
<td>Ohio</td>
<td>10.65</td>
<td>0.083</td>
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<tr>
<td>Florida</td>
<td>17.24</td>
<td>0.077</td>
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<tr>
<td>New Mexico</td>
<td>8.9</td>
<td>0.387</td>
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<tr>
<td>Illinois</td>
<td>28.0</td>
<td>0.044</td>
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<tr>
<td>Texas</td>
<td>7.67</td>
<td>0.047</td>
</tr>
<tr>
<td>California</td>
<td>15.78</td>
<td>0.118</td>
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<tr>
<td>North Carolina</td>
<td>15.72</td>
<td>0.056</td>
</tr>
<tr>
<td>Georgia</td>
<td>7.53</td>
<td>0.174</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>14.77</td>
<td>0.084</td>
</tr>
</tbody>
</table>

Daily rates per 100,000 residents averaged April 18\textsuperscript{th} 2022 thru May 2\textsuperscript{st} 2022.