

Modeling & Forecasting COVID-19 in NM

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July 13, 2021

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For All Information

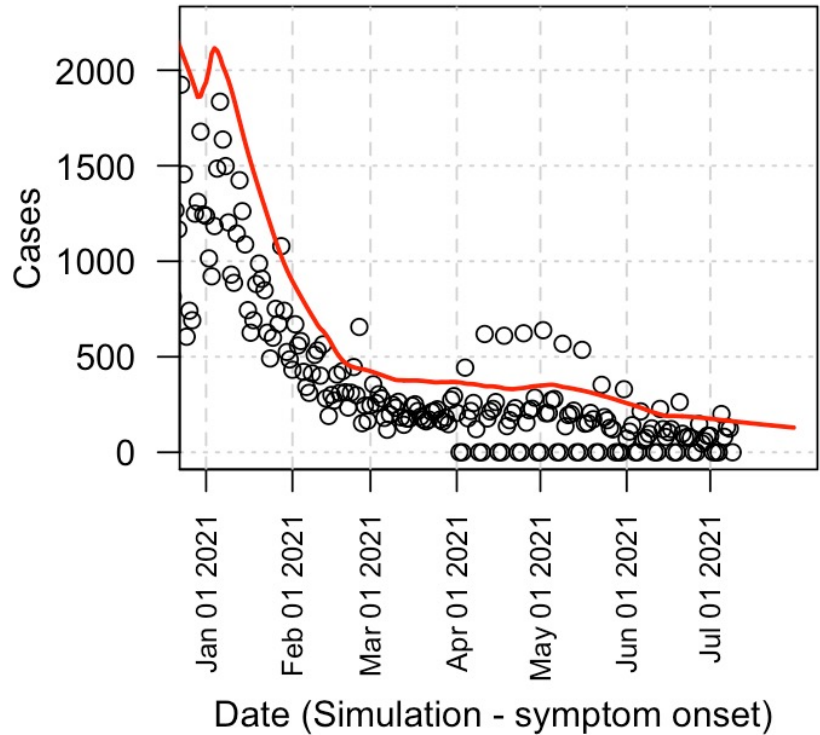
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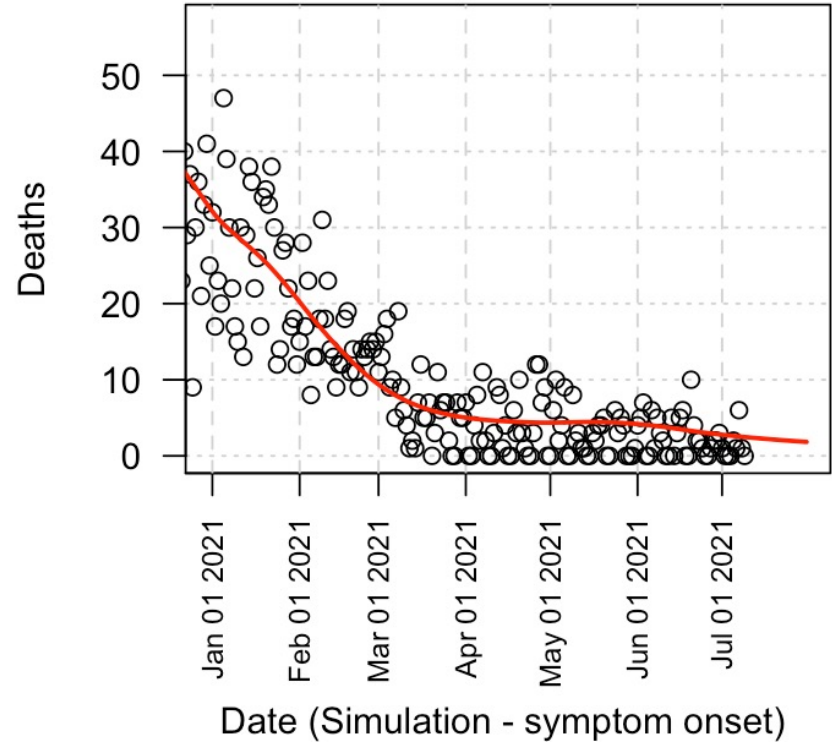
13 Jul 2021: EpiGrid modeling

- NM daily incidence is slowly increasing. Without localized outbreaks, NM would be low or slowly declining. This model may be too optimistic: Outbreaks may be starting in some more populated areas.
- NM deaths similar to model.
 - The model does not account for better vaccination of cohorts with higher death rates, nor the compensating effect of B.1.1.7 and P.1 being major variants.

United States__New Mexico

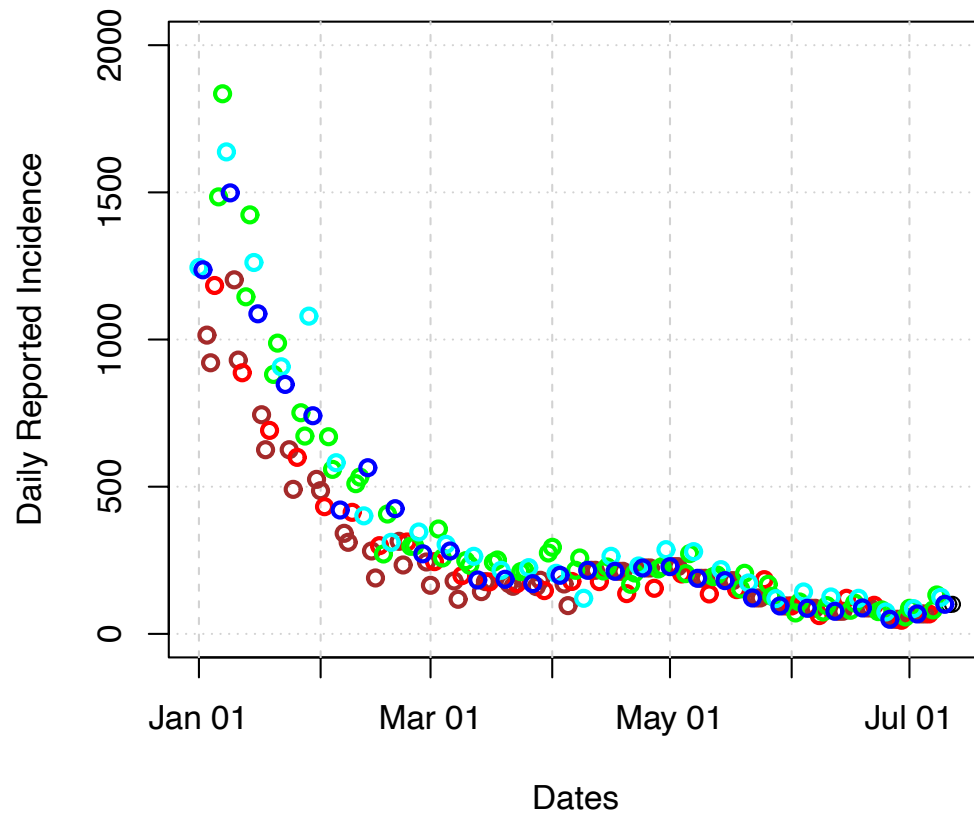


United States__New Mexico



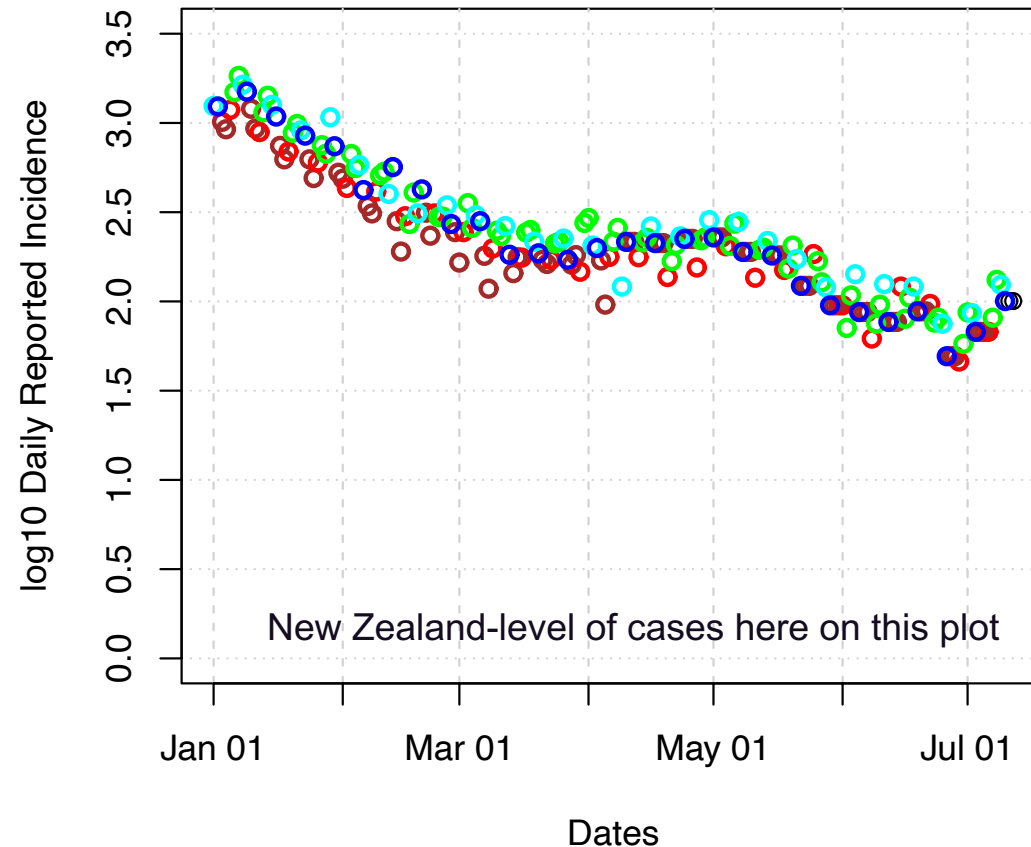
A look at the raw incidence data

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



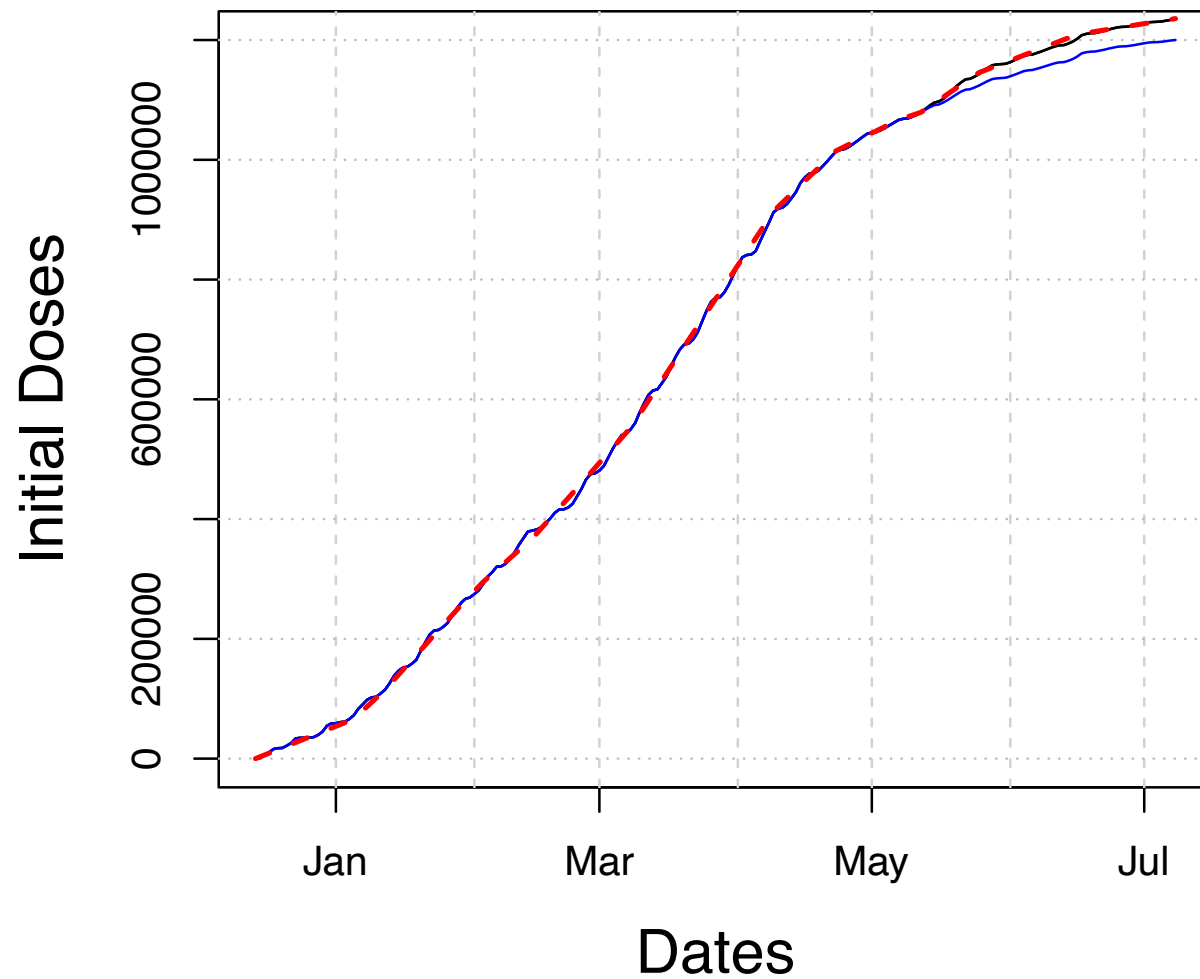
Cases rates are fluctuating.

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.



1 Jun 2021 Model (Mechanistic) – more details and information

- ~1,165,000 first doses have been administered in NM (Federal and State).



Black – vaccination for all New Mexicans
Blue – vaccination for New Mexicans 16+
Red – First dose data used in EpiGrid.

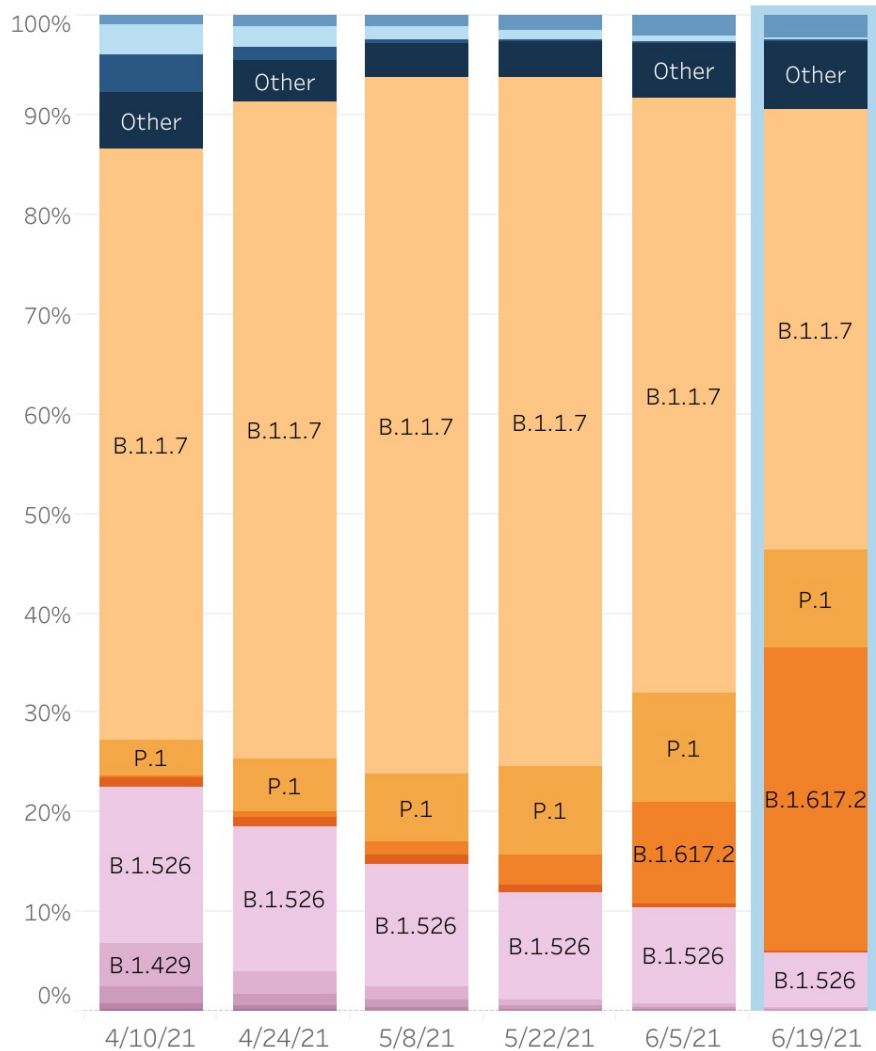
Daily reported cases in El Paso are no longer dropping.

Variants

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

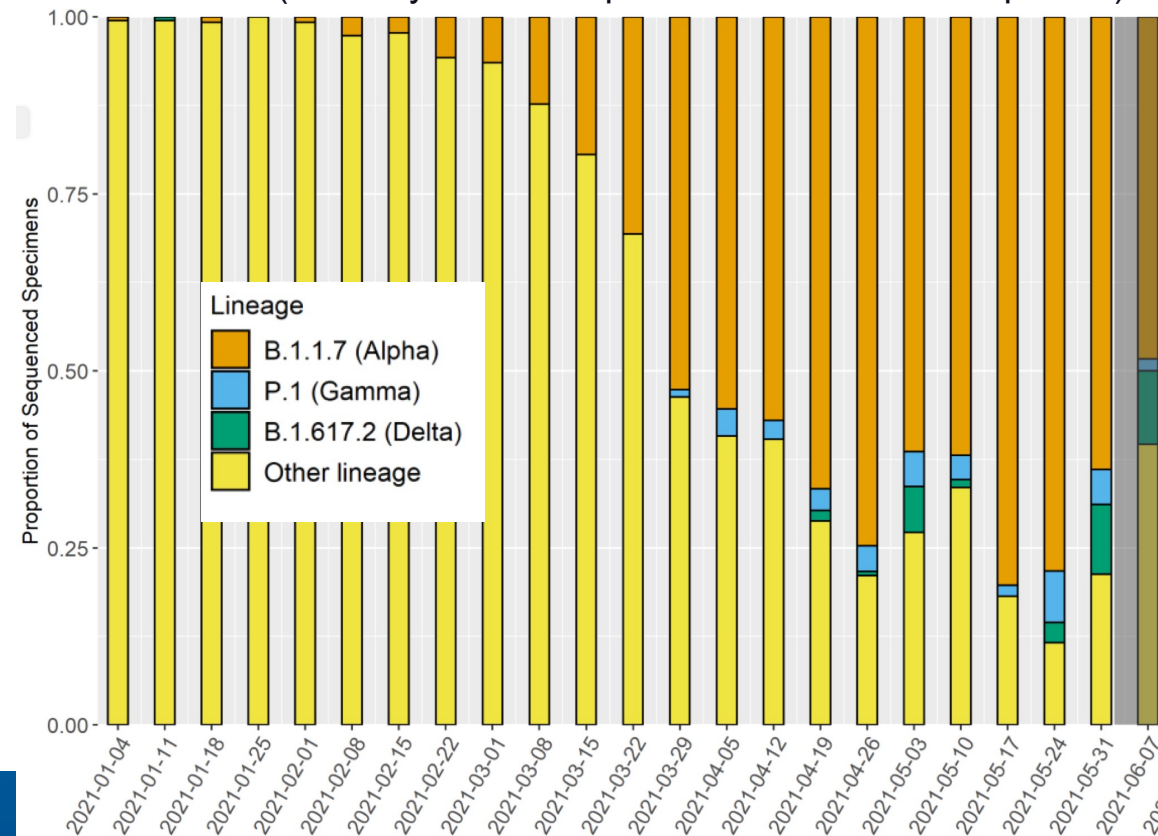
B.1.1.7 is “UK variant”
 P.1 is “Brazilian variant”
 B.1.617.2 is “Indian variant”
 - probably even more contagious than B.1.1.7.

Note that data from both NM and CDC are about a month old.



New Mexico data

(P-1 may be over represented at some time points.)



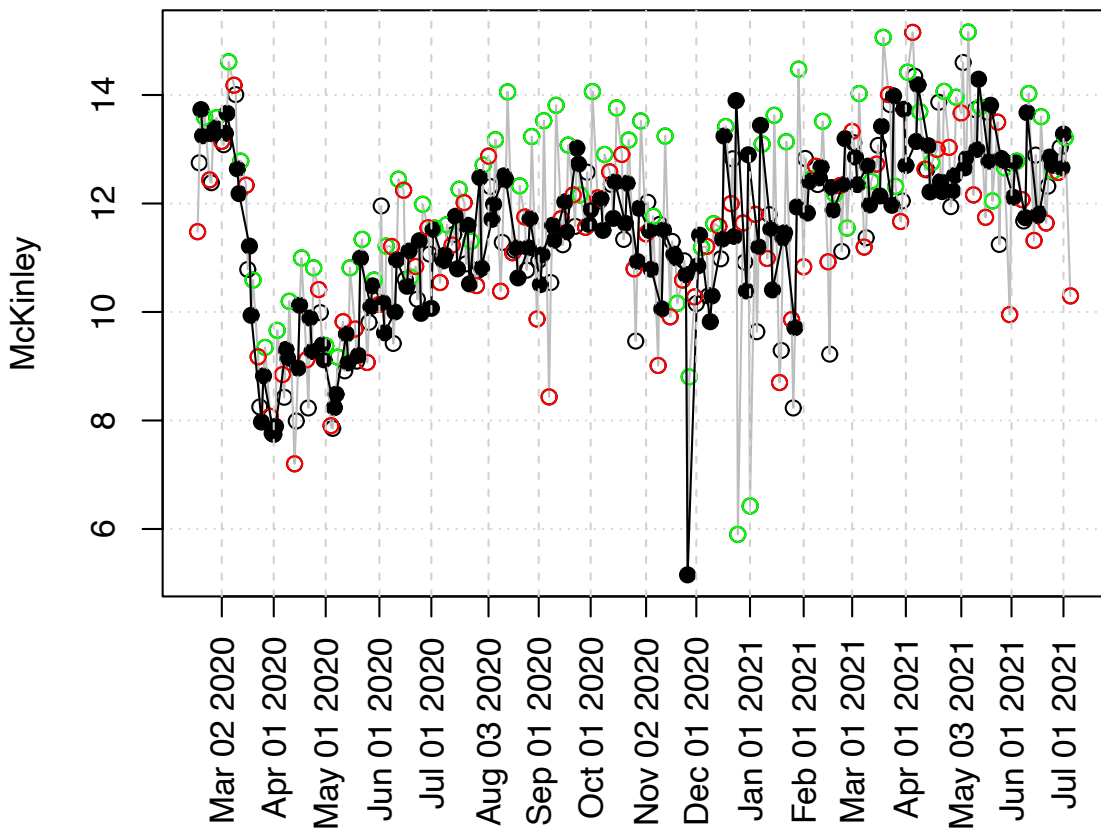
T-80 Mobility – northern counties (data only)

Increasing: Los Alamos, Santa Fe, Taos, Valencia

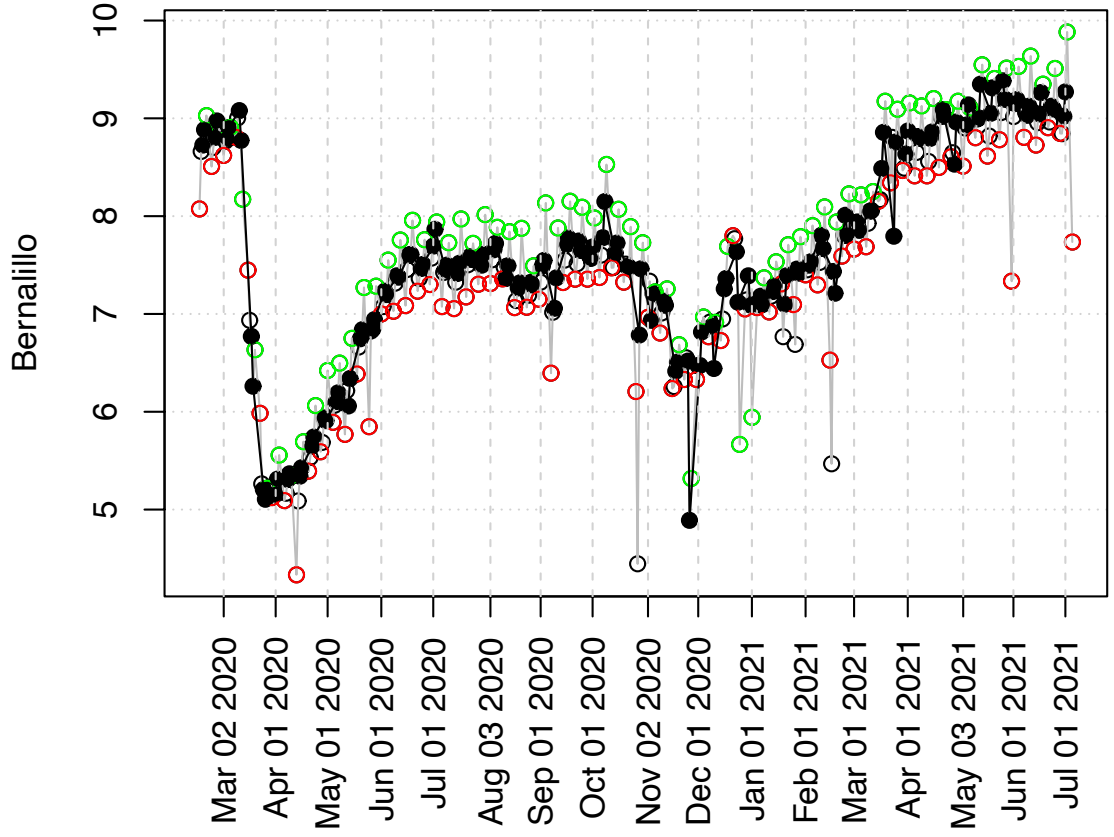
Stable: Bernalillo, Los Alamos, McKinley, Rio Arriba, Sandoval, San Juan, Taos

- Weekends not shown
- Monday
- Wednesday/Thursday
- Friday (usually higher)

McKinley



Bernalillo



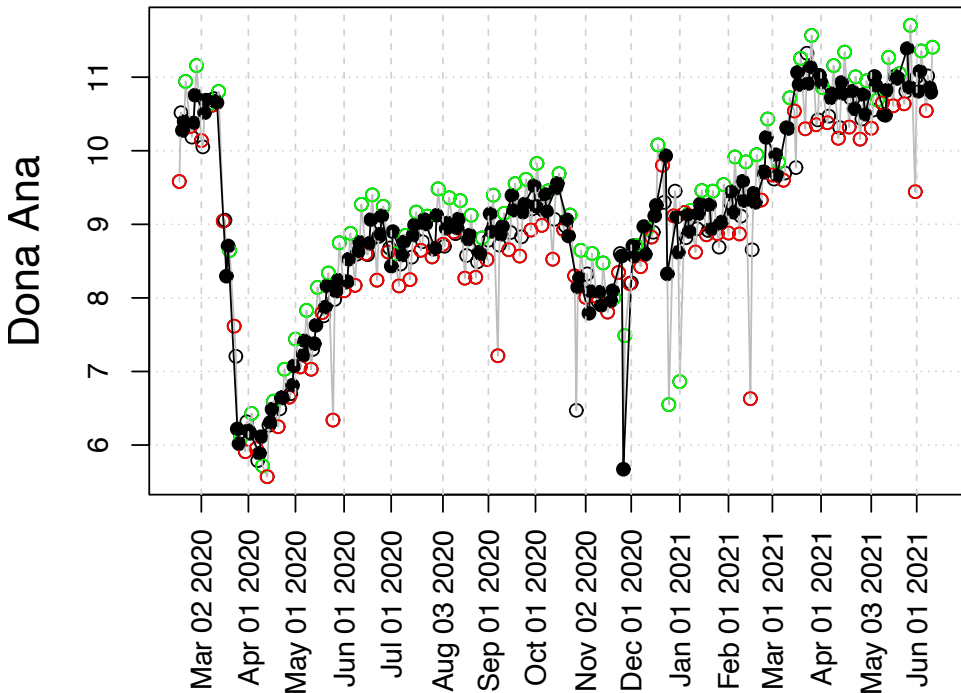
T-80 Mobility – southern counties and Curry (data only)

Increasing: Socorro, Taos

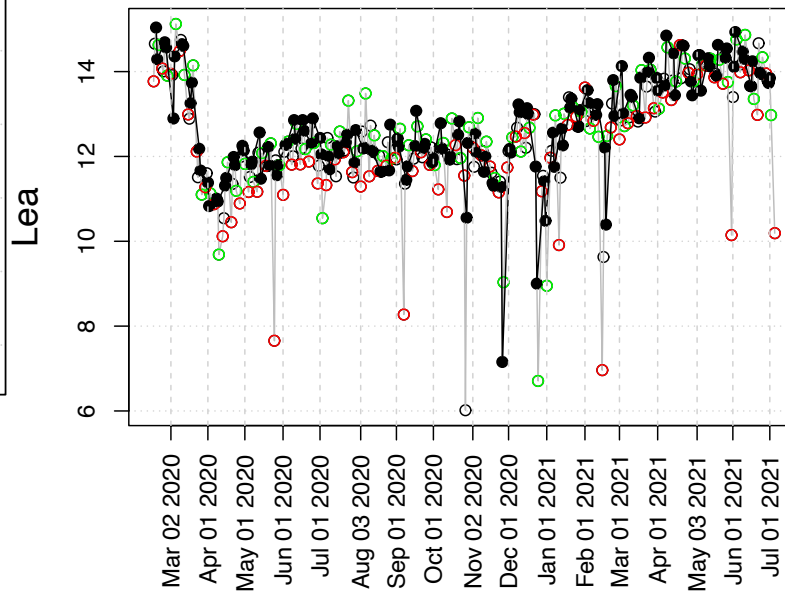
Flat or slight decrease: Chaves, Curry, Dona Ana, Eddy, Lea, Lincoln Luna, Otero

Decreasing: Curry, Grant, Luna, Roosevelt

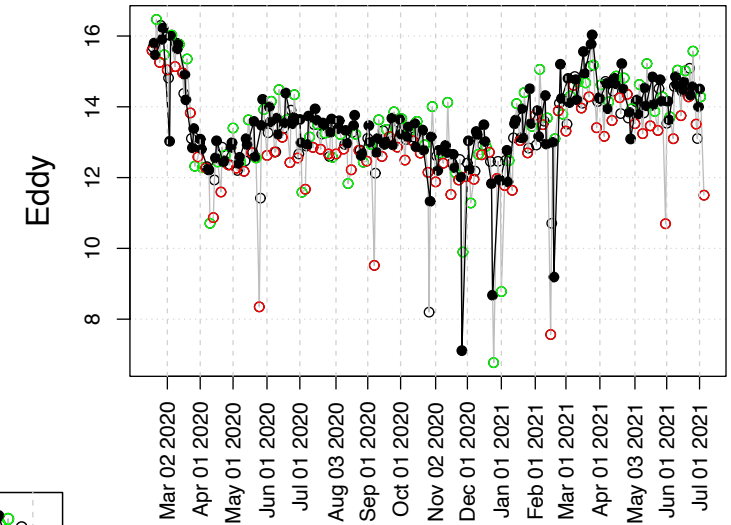
Dona Ana



Lea



Eddy



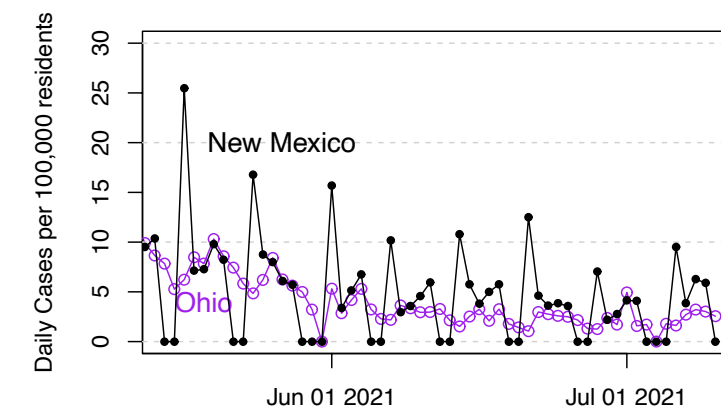
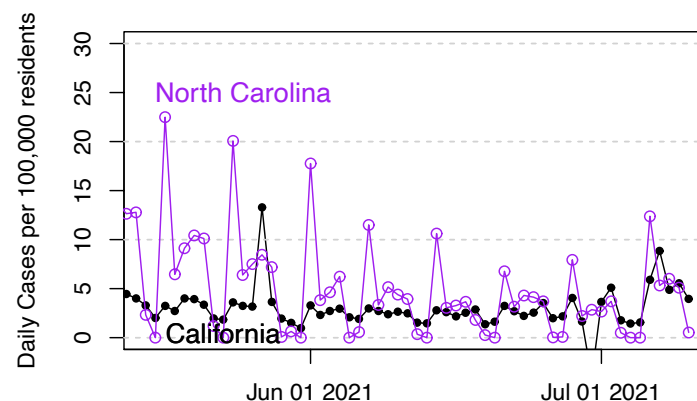
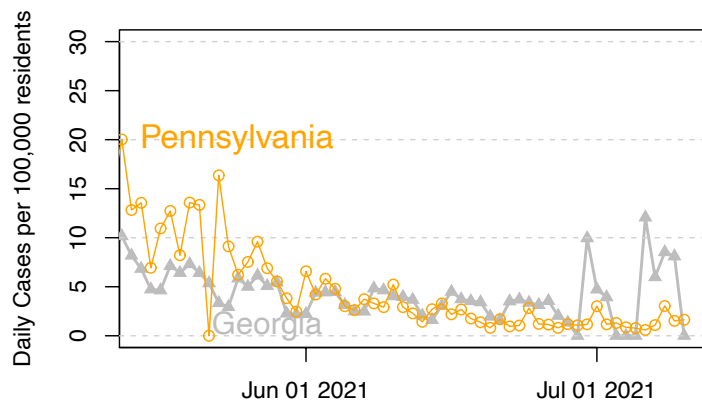
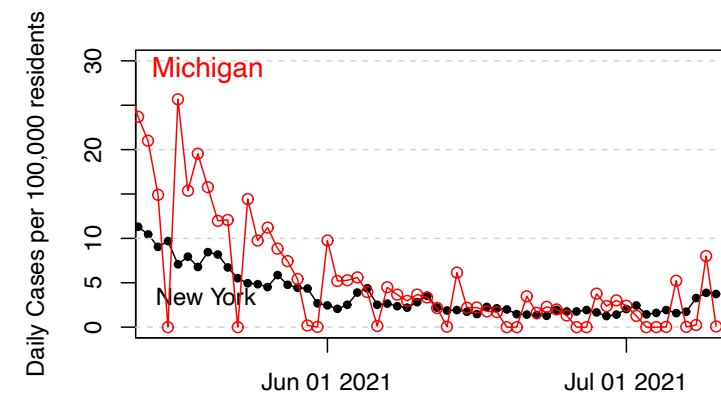
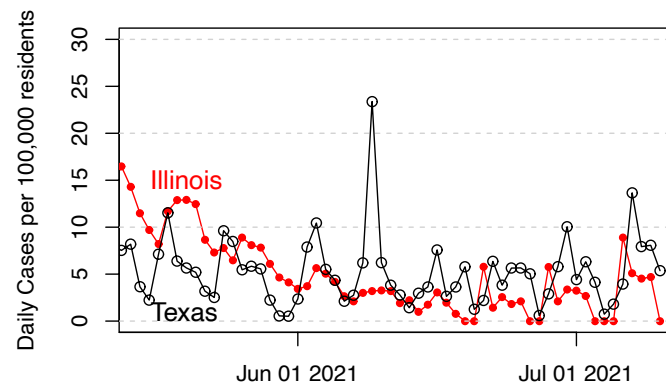
- Weekends NOT shown
- Monday
- Wednesday/Thursday
- Friday (usually higher)

What is happening in the rest of the U.S.? The 10 most populous states plus New Mexico

Trend over last 3 weeks: **Increasing:** Florida, Georgia, Illinois, Michigan, New York, Texas, **Recent increases:** California, New Mexico, North Carolina. **Steady:** Ohio, Pennsylvania

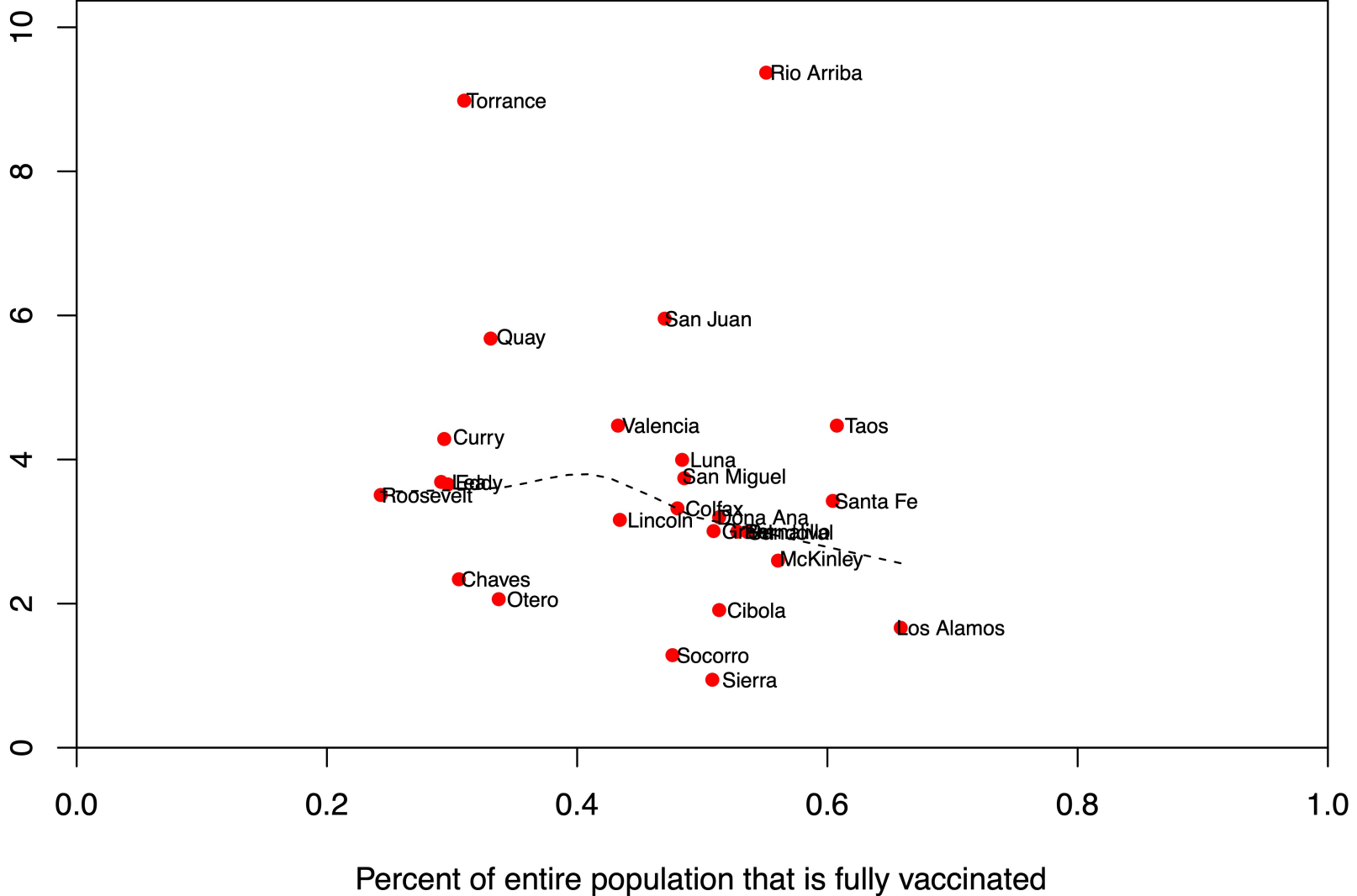
State	Cases	Deaths
Florida	15.46	0.11
Texas	5.93	0.07
Georgia	4.96	0.06
California	4.59	0.08
North Carolina	4.19	0.07
New Mexico	3.64	0.07
Illinois	3.32	0.07
New York	2.53	0.03
Ohio	2.13	0.04
Michigan	1.95	0.07
Pennsylvania	1.36	0.04

Daily rates per 100,000 residents averaged July 4th thru July 10th 2021.



mean cases per day per 100k population 2021-05-30 - 2021-07-11

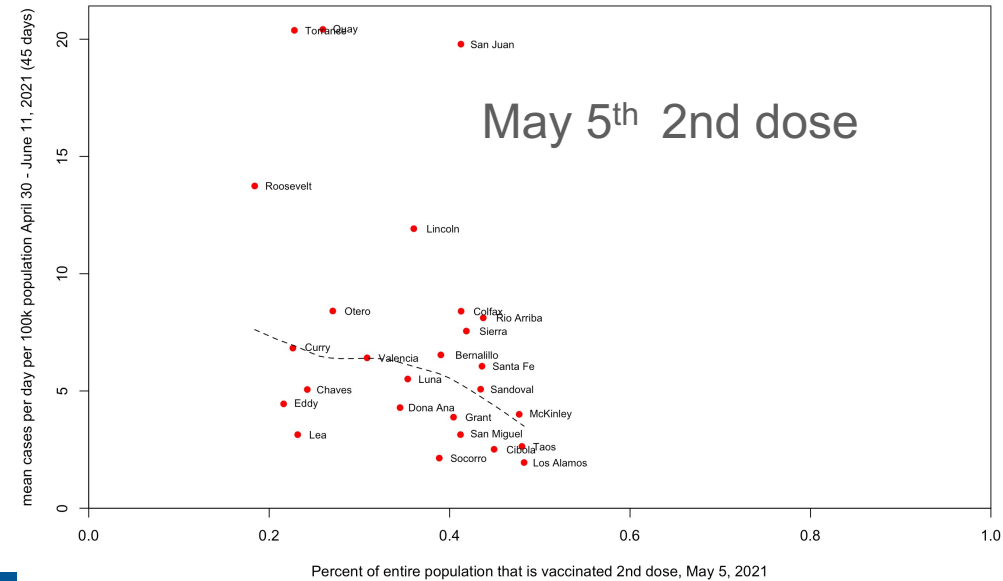
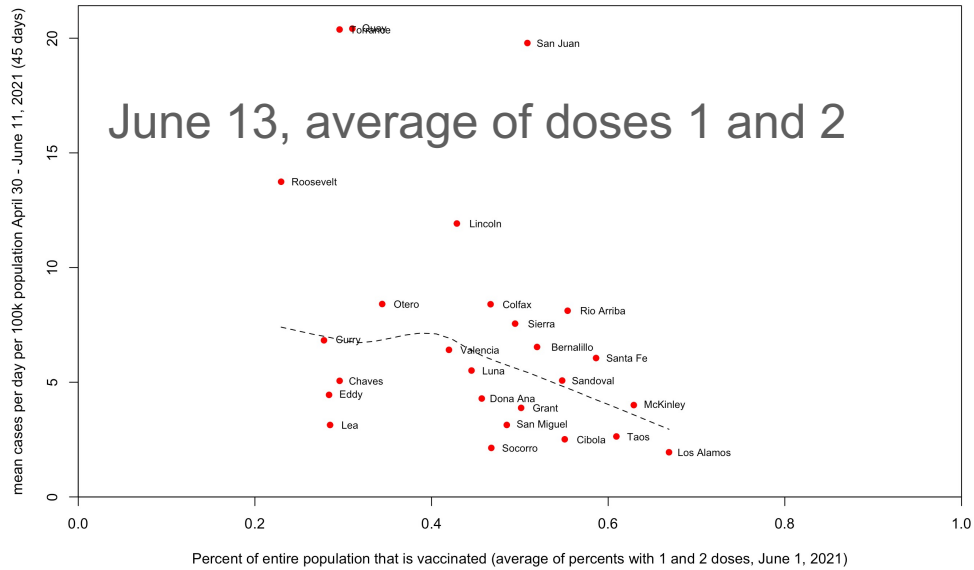
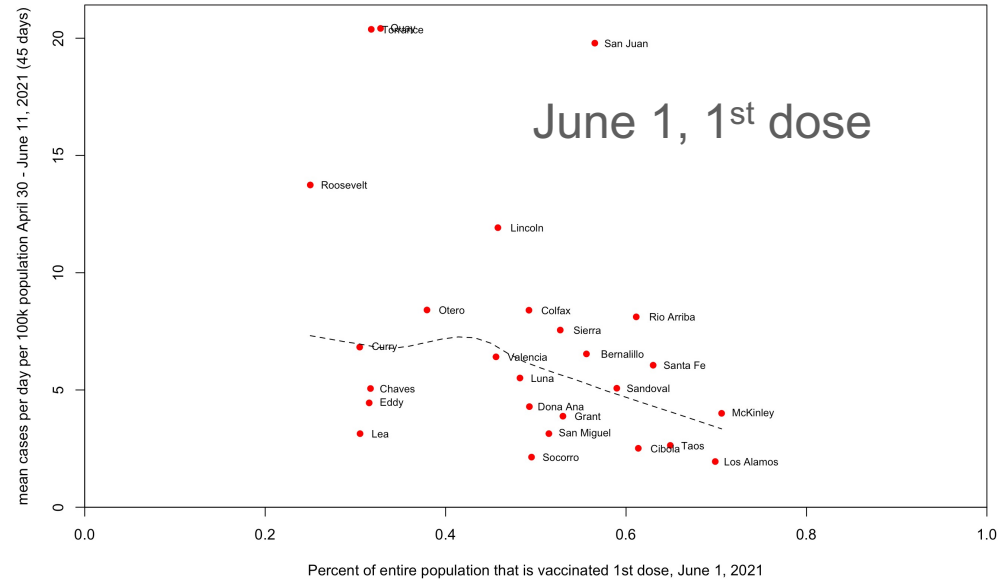
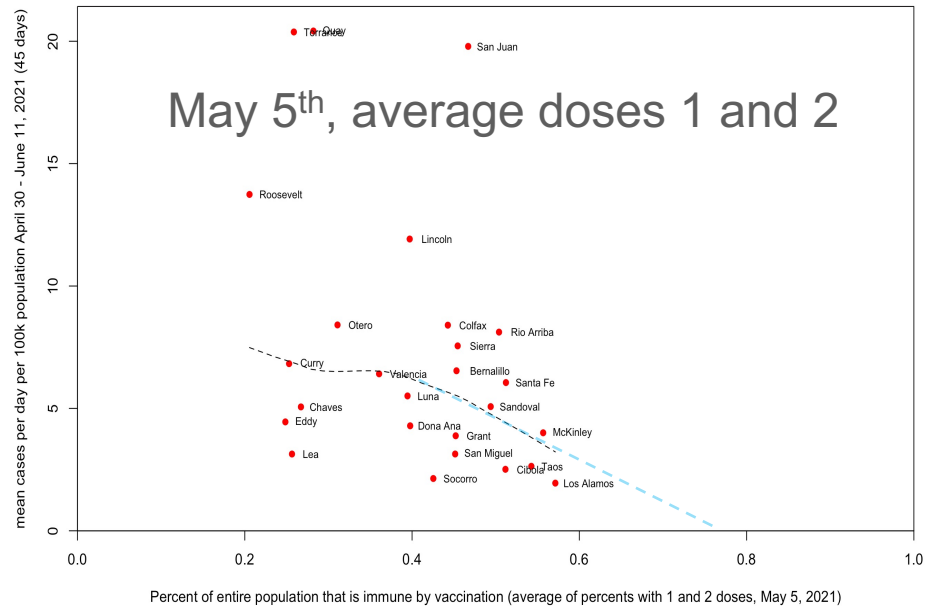
Cases plotted versus vaccination by county



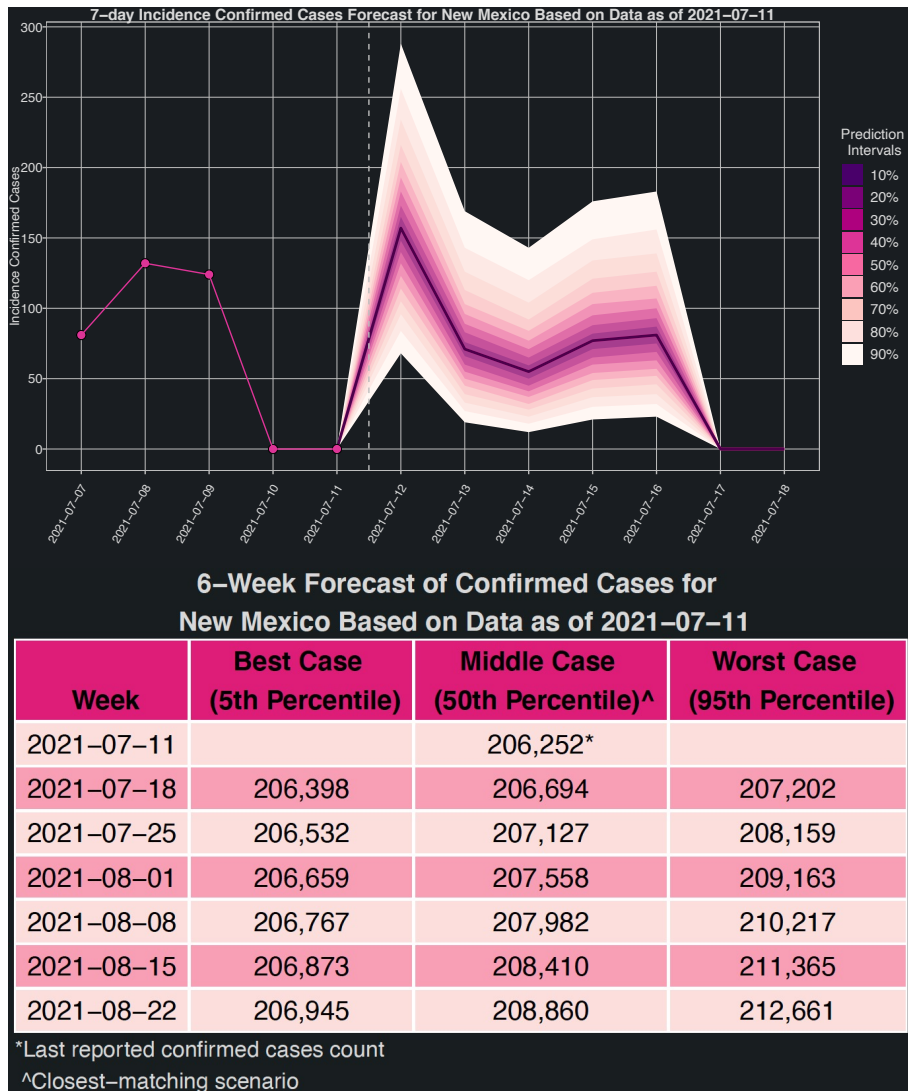
There is a relationship between vaccination and cases.

- Rio Arriba county is an outlier.
- Sierra county might be an outlier
 - Could people be going to Texas for vaccination?
- Is there behavioral “over compensation” among unvaccinated individuals?
- Seven counties are not on this plot due to relative isolation and small populations: Catron, De Baca, Guadalupe, Harding, Hidalgo, Mora and Union.

Cases decrease with vaccination (no matter how the vaccination data are plotted)



Short- & Long-Term Forecast for NM: Cases



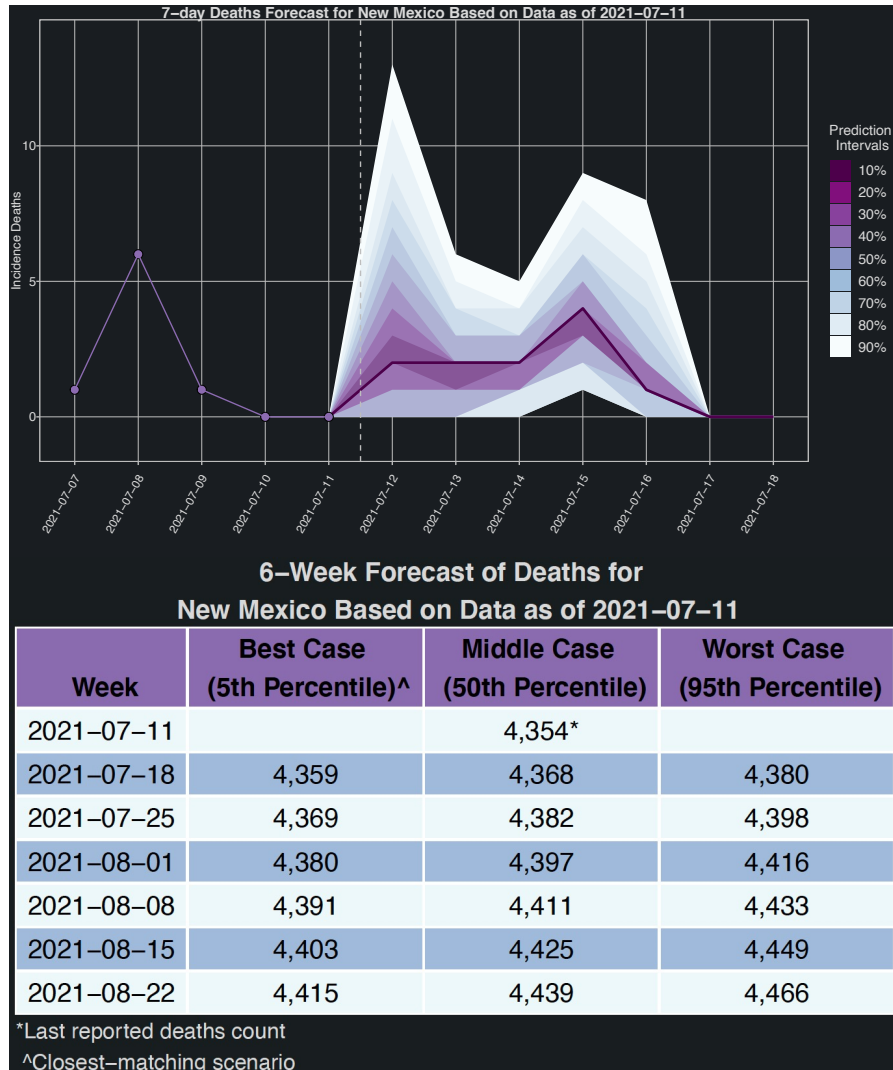
6-Week Forecast of Daily Average of Confirmed Cases for New Mexico Based on Data as of 2021-07-11

Week End Date	Best Case (5th Percentile)	Middle Case (50th Percentile)^	Worst Case (95th Percentile)
2021-07-11		77*	
2021-07-18	20	63	137

*Last reported confirmed cases count
^Closest-matching scenario

So what?
The daily number of cases are expected to range between 20 and 137

Short- & Long-Term Forecast for NM: Deaths



6-Week Forecast of Daily Average of Deaths for New Mexico Based on Data as of 2021-07-11

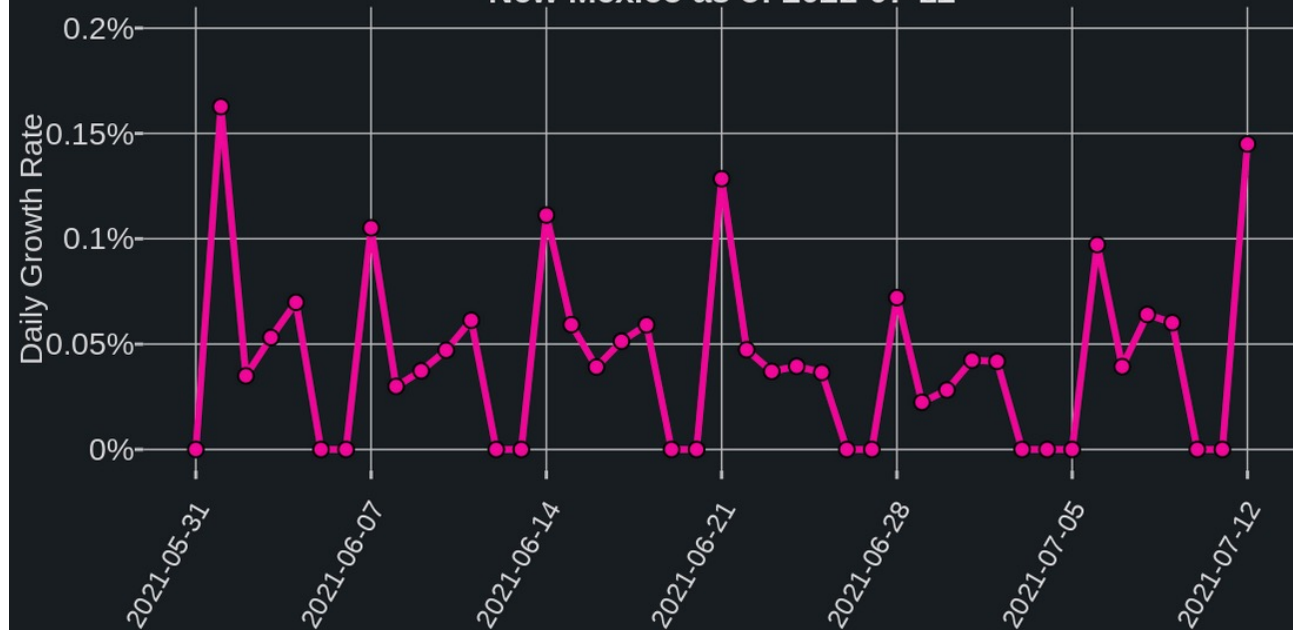
Week Start Date	Best Case (5th Percentile)^	Middle Case (50th Percentile)	Worst Case (95th Percentile)
2021-07-11		1*	
2021-07-18	0	2	6

*Last reported confirmed deaths
^Closest-matching scenario

So what?
The daily number of deaths are expected to range between 0 and 6 in the next few weeks

Growth Rate for NM

Daily Growth Rate for the Past Six Weeks in New Mexico as of 2021-07-12



6-Week Forecast of the Average Weekly Growth Rate for New Mexico Based on Data as of 2021-07-12

Week	Best Case (5th Percentile)	Middle Case (50th Percentile) [^]	Worst Case (95th Percentile)
2021-07-12		0.058%*	
2021-07-19	0.0096%	0.031%	0.071%
2021-07-26	0.011%	0.036%	0.079%
2021-08-02	0.013%	0.040%	0.088%
2021-08-09	0.013%	0.046%	0.099%
2021-08-16	0.012%	0.051%	0.11%
2021-08-23	0.012%	0.053%	0.13%

*Last weekly mean daily growth rate

[^]Closest-matching scenario

So what?

As of July 13th, the average growth rate in NM is at 0.058% (up as two weeks ago)

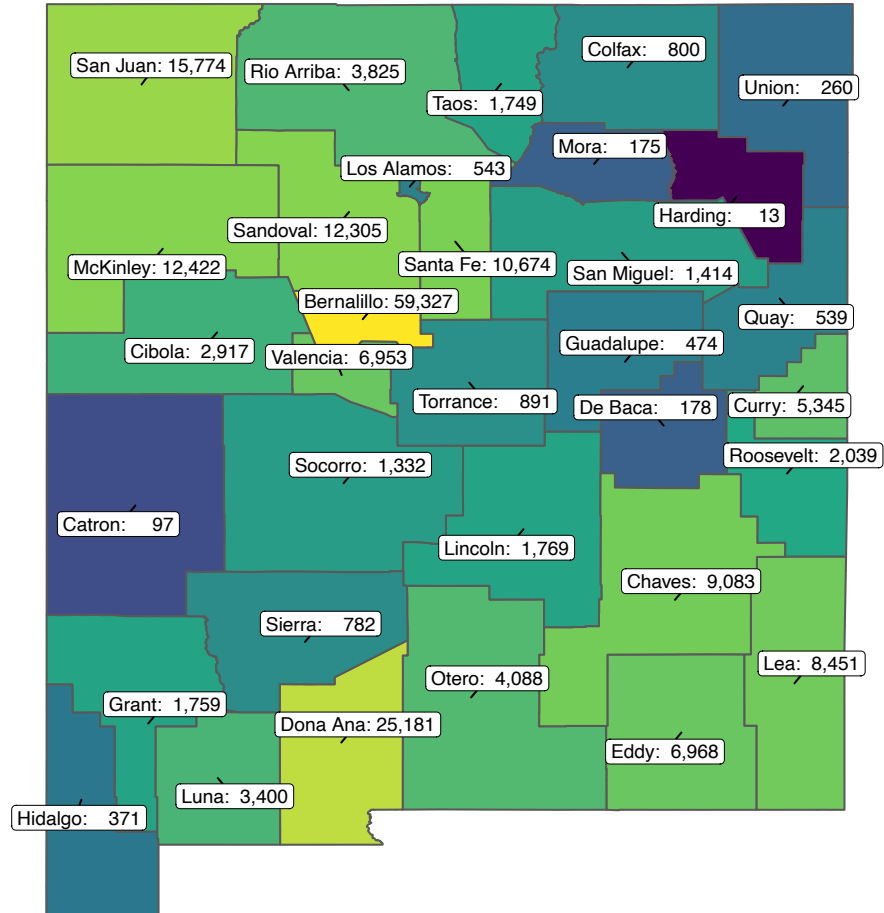
Cumulative Cases & Daily Growth Rate for NM: June 14

Cumulative Cases: 2021-07-11

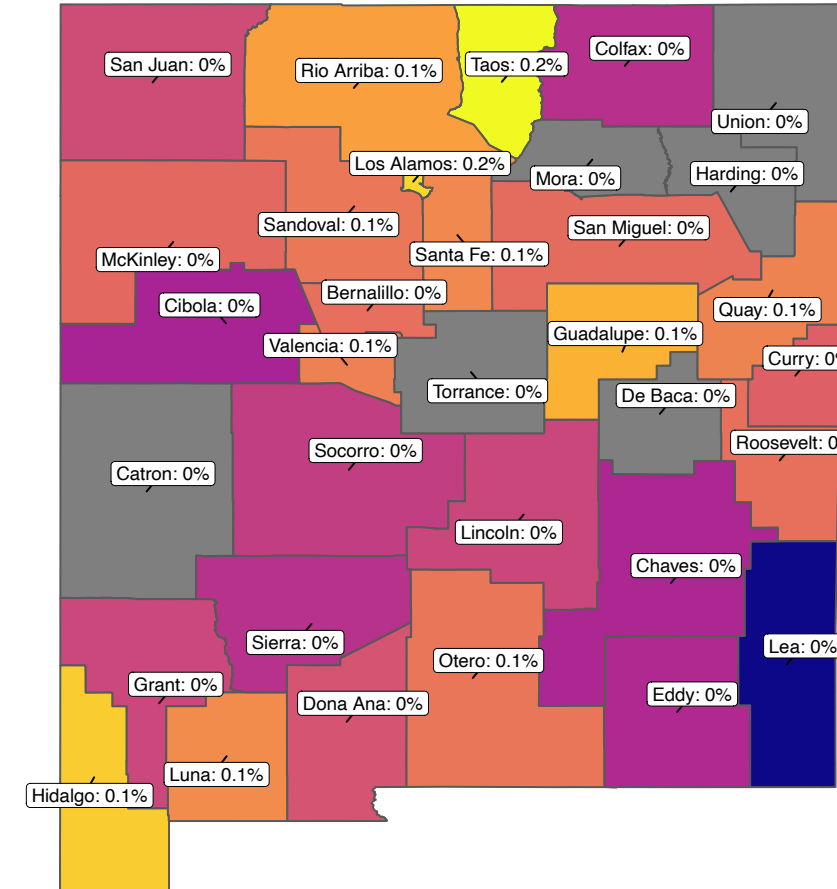
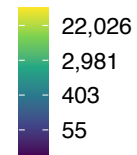
Data Source: JHU <https://github.com/CSSEGISandData/COVID-19>

County COVID-19 Weekly Growth Rate

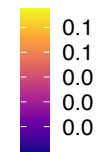
Data Source: JHU <https://github.com/CSSEGISandData/COVID-19>



Cases (Log Scale)



7-day-average daily growth rate (%)

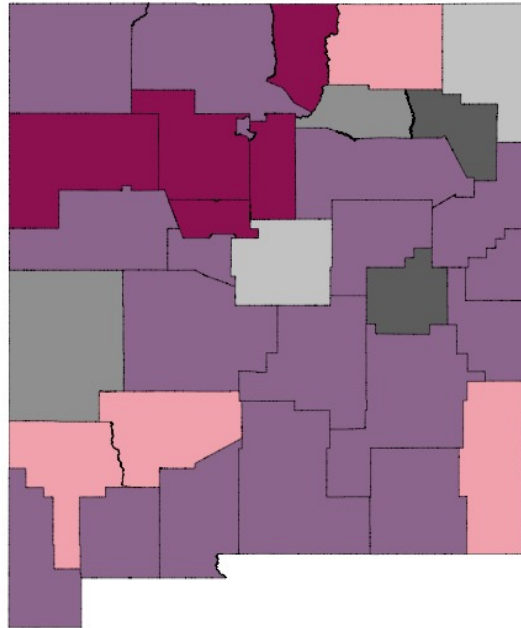


*Growth rate is in cumulative cases

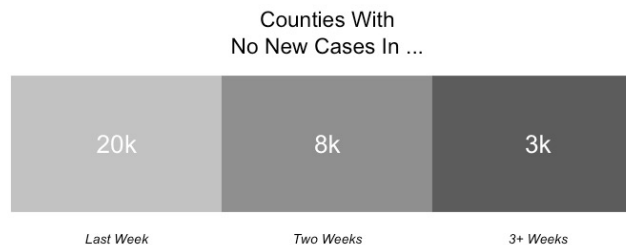
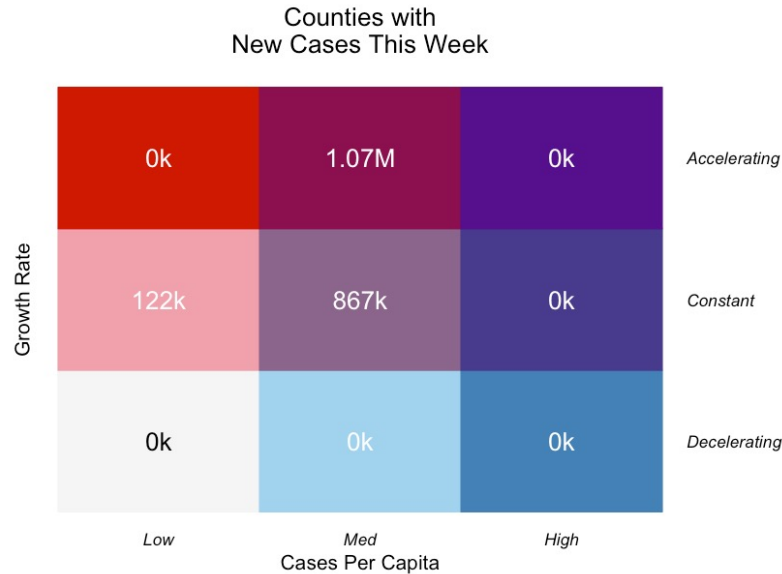
Weekly Growth Rate for NM: Another View (July 12)

COVID-19 across New Mexico

A 7-day moving window comparison
Jul 12, 2021



Impacted New
Mexicans



So what?

- Most people in New Mexico are living in a county that is **medium per-capita case counts with a constant growth**
- Bernalillo, Chaves, Curry, McKinley, and Taos are accelerating

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