Modeling & Forecasting COVID-19 in NM

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October 6, 2020

Short- & Long-Term Forecast for NM: Cases

7-day Cumulative Confirmed Cases Forecast for New Mexico Based on Data as of 2020-10-04
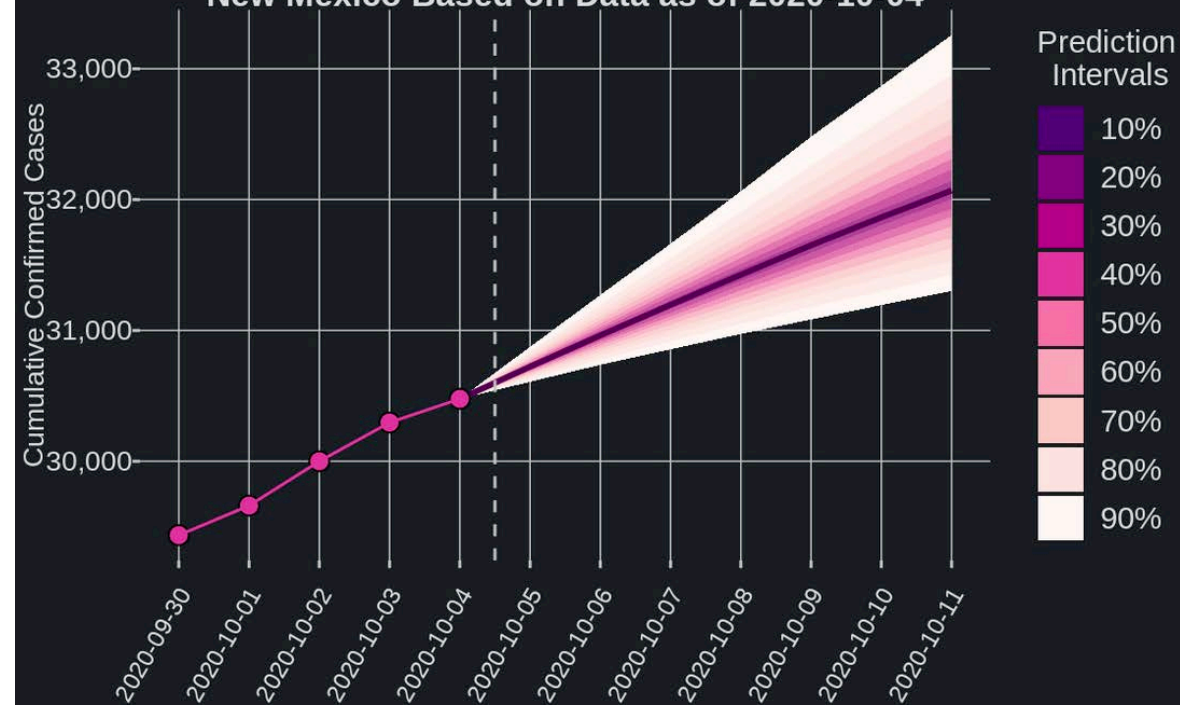
6-Week Forecast of Confirmed Cases for New Mexico Based on Data as of 2020-10-04

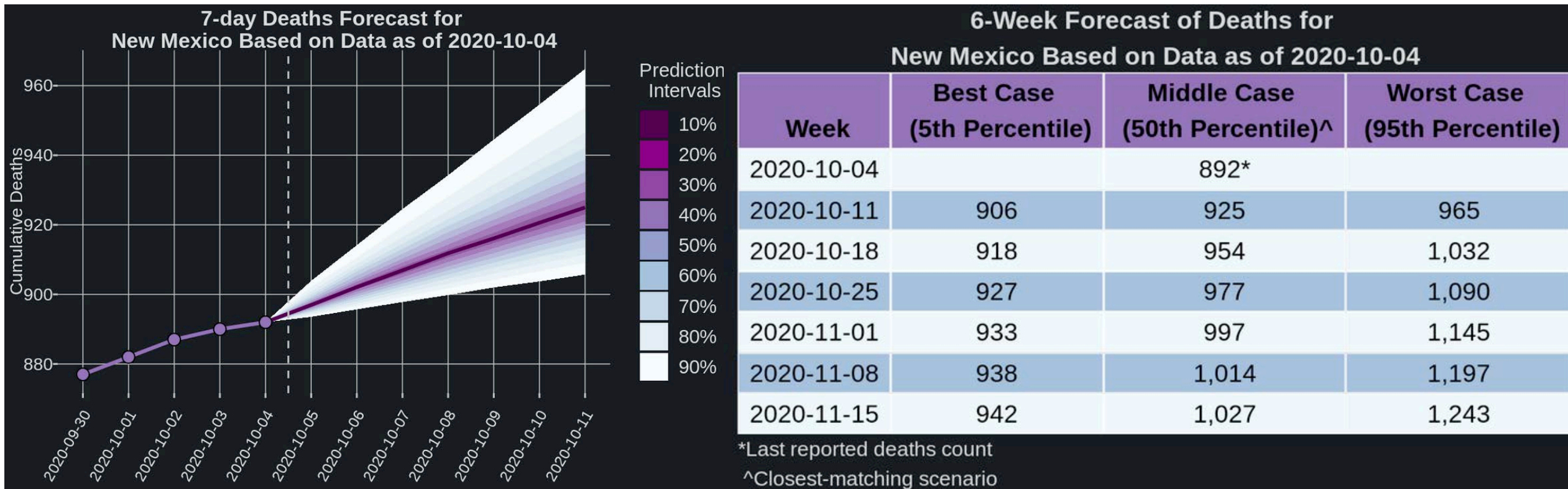| Week	Best Case (5th Percentile)	Middle Case (50th Percentile)	Worst Case (95th Percentile)^
2020-10-04		30,477*	
2020-10-11	31,302	32,069	33,258
2020-10-18	31,910	33,409	35,989
2020-10-25	32,370	34,530	38,468
2020-11-01	32,735	35,412	40,811
2020-11-08	32,978	36,151	43,029
2020-11-15	33,171	36,802	44,946

*Last reported confirmed cases count
^Closest-matching scenario

So what?
The number of cases are expected to continue to grow slowly
Our forecasts are currently tracking with the worst case scenario

Short- & Long-Term Forecast for NM: Deaths

7-day Deaths Forecast for New Mexico Based on Data as of 2020-10-04

Prediction Intervals
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%

6-Week Forecast of Deaths for New Mexico Based on Data as of 2020-10-04

| Week	Best Case (5th Percentile)	Middle Case (50th Percentile)^	Worst Case (95th Percentile)
2020-10-04		892*	
2020-10-11	906	925	965
2020-10-18	918	954	1,032
2020-10-25	927	977	1,090
2020-11-01	933	997	1,145
2020-11-08	938	1,014	1,197
2020-11-15	942	1,027	1,243

*Last reported deaths count
^Closest-matching scenario

So what?
The number of deaths are expected to continue to grow slowly
Our forecasts are tracking with the middle case scenario

Growth Rate for NM

Daily Growth Rate for the Past Six Weeks in New Mexico as of 2020-10-04

6-Week Forecast of the Average Weekly Growth Rate for New Mexico Based on Data as of 2020-10-04

| Week	Best Case (5th Percentile)	Middle Case (50th Percentile)	Worst Case (95th Percentile)^
2020-10-04		0.79%*	
2020-10-11	0.38%	0.73%	1.3%
2020-10-18	0.28%	0.59%	1.1%
2020-10-25	0.20%	0.47%	0.96%
2020-11-01	0.16%	0.36%	0.85%
2020-11-08	0.11%	0.30%	0.76%
2020-11-15	0.083%	0.26%	0.62%

*Last weekly mean daily growth rate
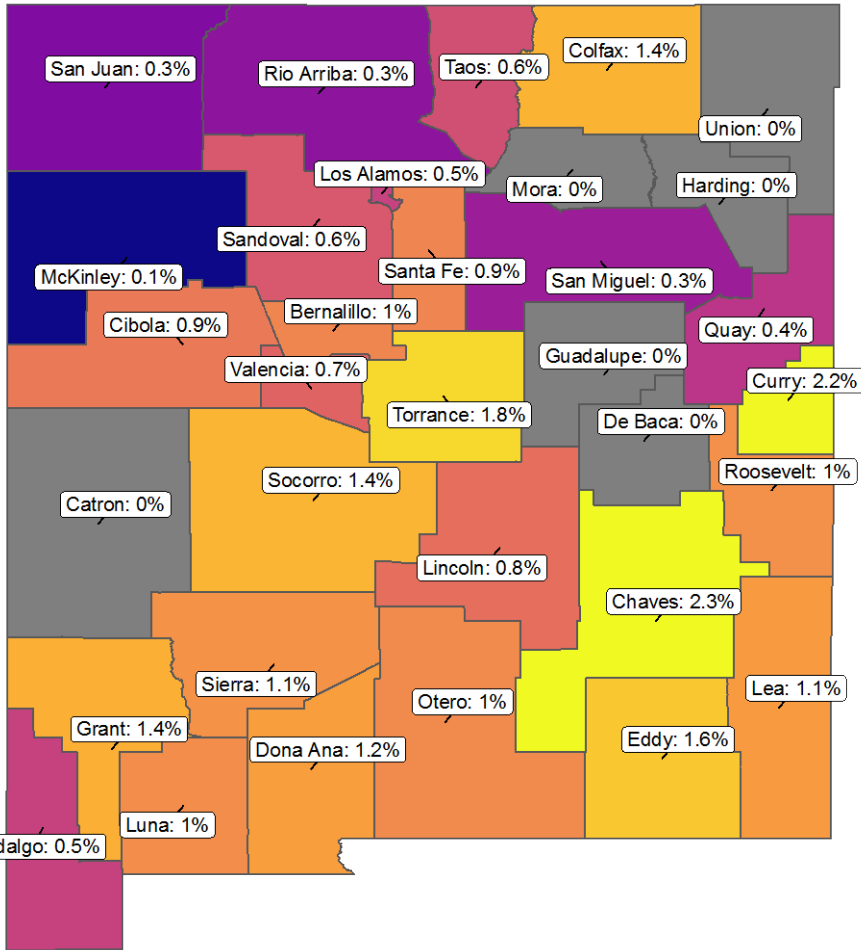^Closest-matching scenario

So what?

As of October 6th, the average growth rate in NM is at 0.79% (up from 0.64%)

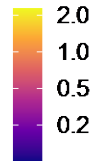# > Regional Forecasts, Growth Rates, & Hospitalizations

Cumulative Cases & Growth Rate for NM: Aug 10
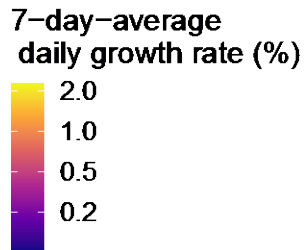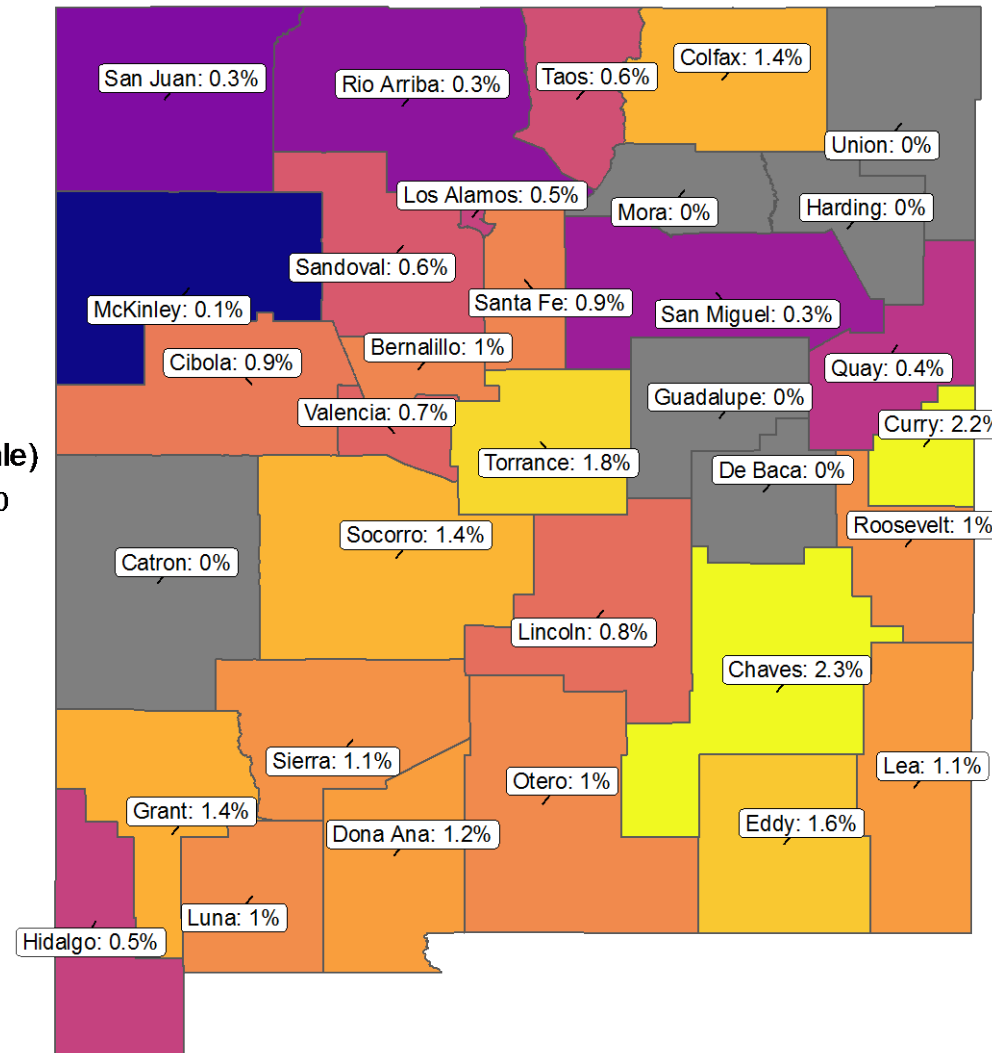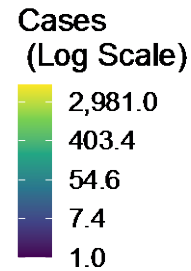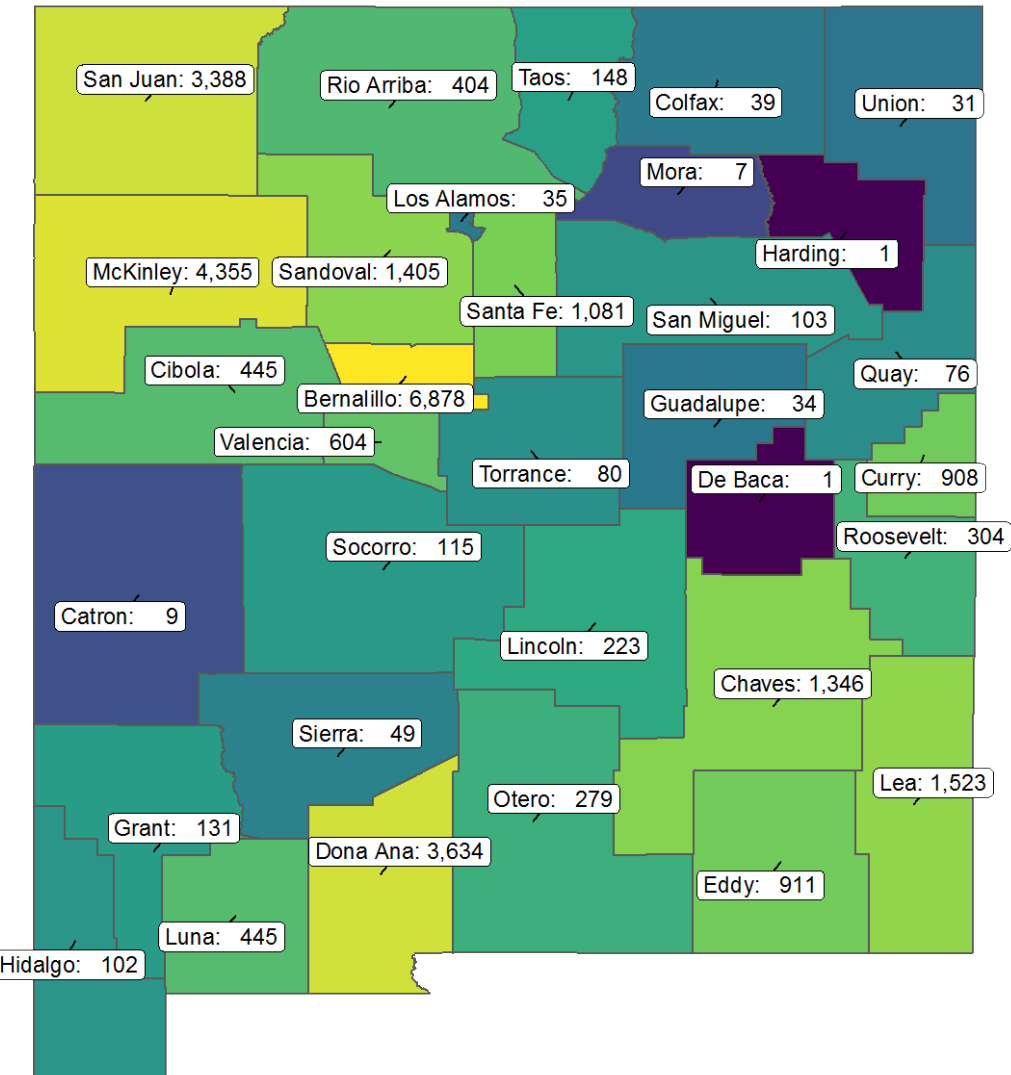
Growth Rate for NM Sept 21

Hidalgo 0.5% =
Union 0.0% =
Catron 0.0%=
Mora 0.0% =
Los Alamos 0.5% ↓
Quay 0.4% =
DeBaca 0.0% =
Roosevelt 1.0% =
Socorro 1.4% ↓
Colfax 1.4% ↓

*arrows if more than 0.5% difference from last Monday's analysis

County	Daily Growth Rate	Change
San Juan	0.3%	=
Rio Arriba	0.3%	=
Sierra	1.1%	↓
McKinley	0.1%	=
Sandoval	0.6%	=
Santa Fe	0.9%	=
Cibola	0.9%	=
Bernalillo	1.0%	=
Valencia	0.7%	=
Torrance	1.8%	=
Lincoln	0.8%	↓
San Miguel	0.3%	↓
Chaves	2.3%	↑
Dona Ana	1.2%	=
Otero	1.0%	=
Lea	1.1%	=
Eddy	1.6%	↓
Curry	2.2%	↑
Grant	1.4%	=
Luna	1.0%	↑
Taos	0.6%	↓

COVID-19 across New Mexico
A 7-day moving window comparison
October 5, 2020
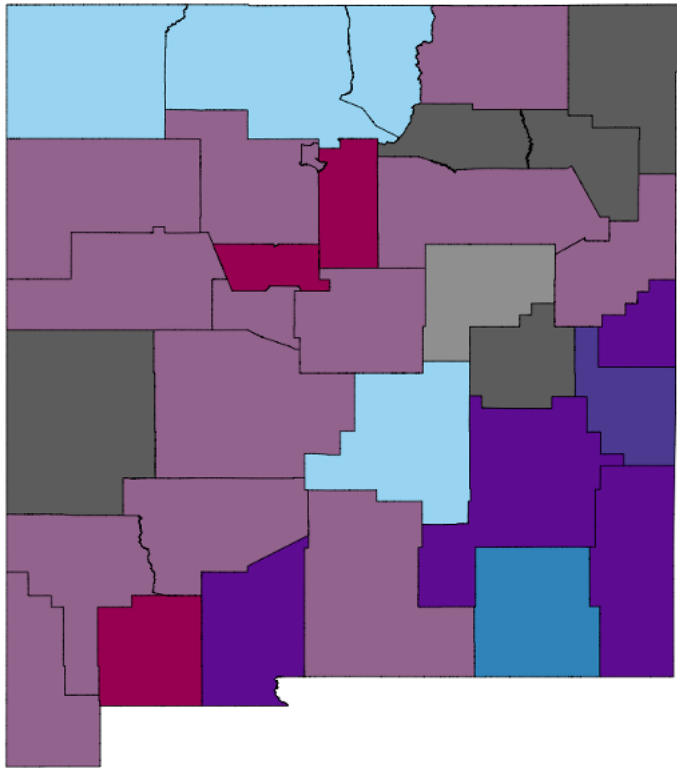
Impacted New Mexicans

Counties with New Cases This Week

Growth Rate

	Low	Med	High	
	0k	850k	401k	Accelerating
	0k	526k	19k	Constant
	0k	219k	57k	Decelerating

Cases Per Capita

Counties With No New Cases In ...

Last Week	Two Weeks	3+ Weeks
0k	4.4k	15k

Number of New Mexicans living in regions with combinations of per capita case counts and growth rates

Low <10 cases/100k
Med   10-99 cases/100k
High   >100 cases/100k

So what?

- Most New Mexicans live in a county with accelerating growth
- <u>Curry, Lea, Chavez, and Dona Ana</u> have high per-capita case counts and are accelerating
- Bernalillo, Santa Fe, and Luna are accelerating with medium case counts

Concurrent Hosp & ICU Beds Based on Forecasts – Average Stay of 8 Hosp, 15 Days for ICU/vent & 25% ICU rate
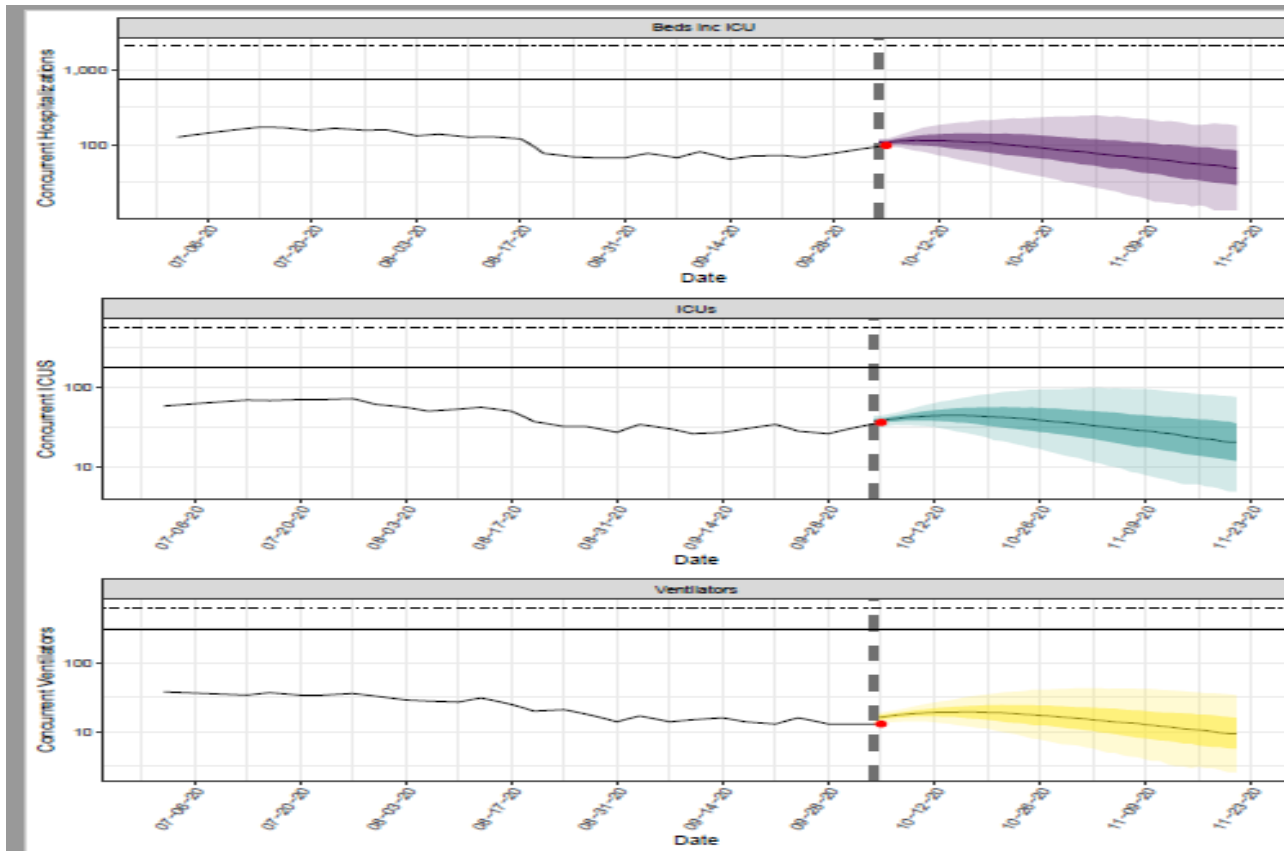
Concurrent COVID-19 ICUs beds

Week	Qu. 5% (best case)	Qu. 50% (median)	Qu. 95% (worst case)
10/11	32	42	59
10/18	24	42	79
10/25	16	39	92
11/1	11	33	97
11/8	7	28	94
11/15	5	23	82

"Scaled" Scenario

So what?

- Forecasts for COVID-19 hospitalizations and ICU beds are below capacity, ICUs are expected to INCREASE over the next two weeks

6 Oct 2020

- Statewide transmission increases for indoor dining and labor day (~5%): Aug. 29th PHO includes 25% indoor dining

- Large additional Transmission increases:
  - Bernalillo and Dona Ana > 30%

- Some counties ~10% additional transmission increases, but many rural counties have no excess transmission.

- TX transmission increases ~25: loosening of restrictions on Sept. 22.
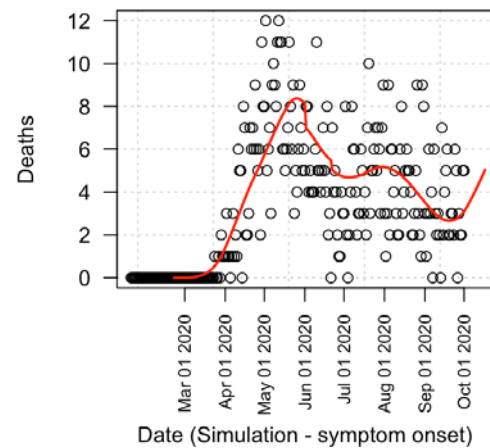

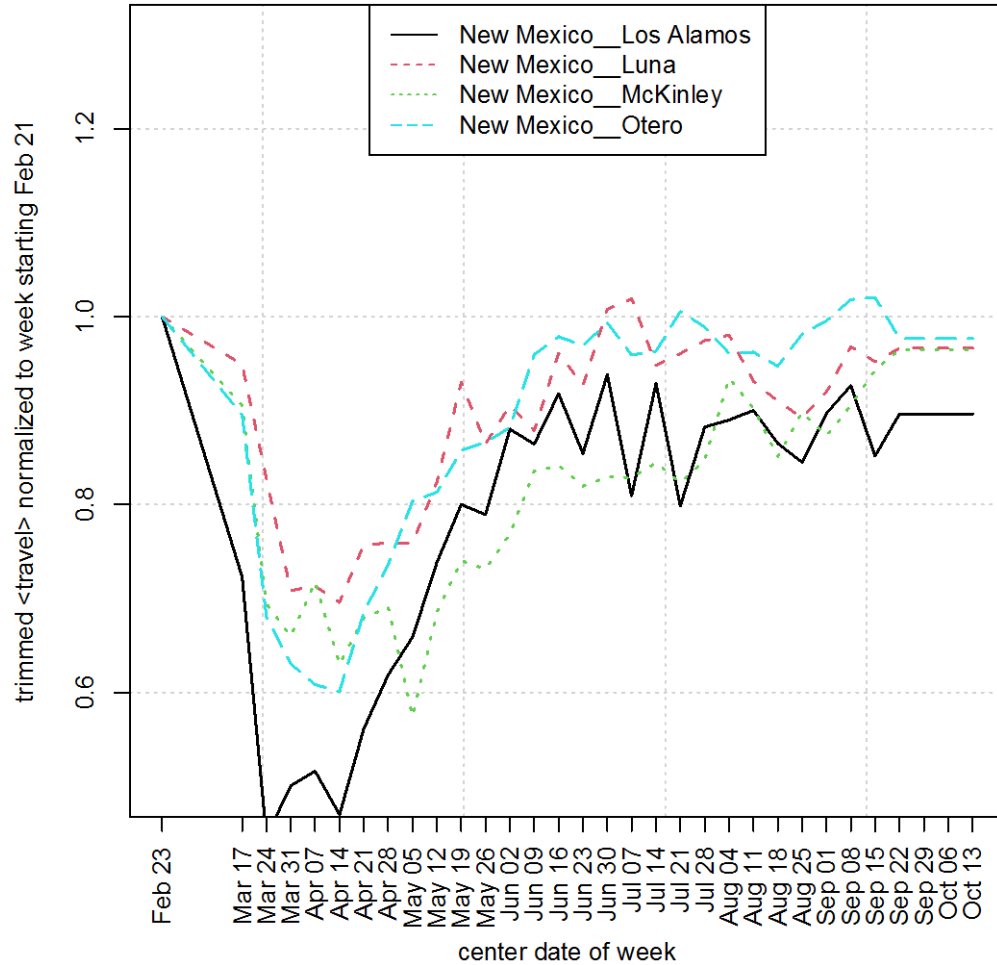log10 Cumulative cases, wk 34, 2020-10-18
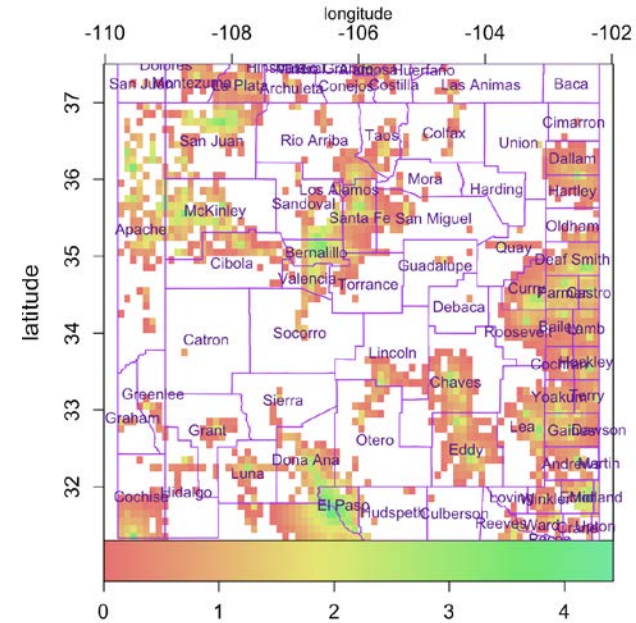
log10 Incidence, wk 34, 2020-10-18
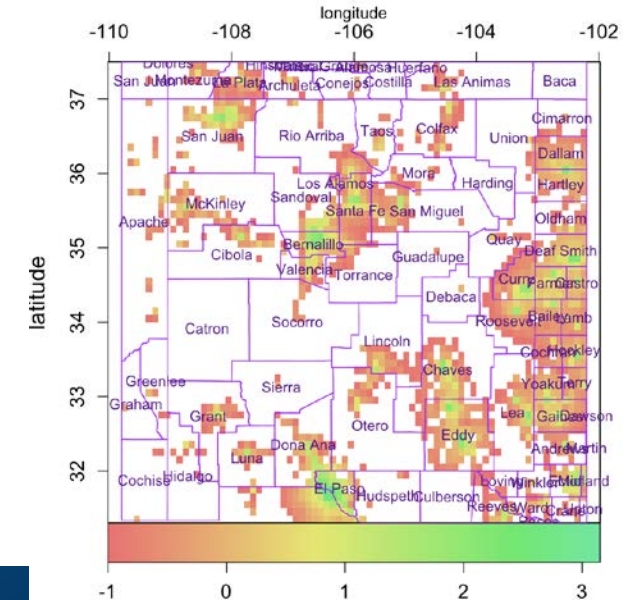
United States__New Mexico
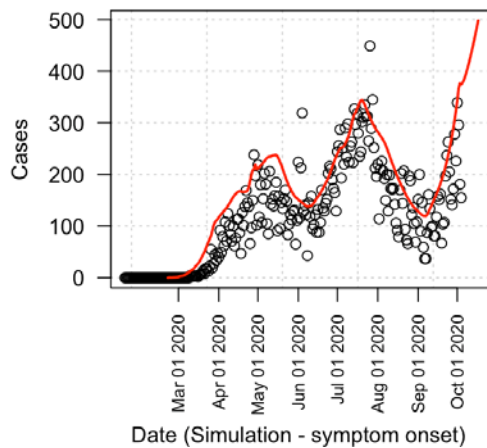
United States__New Mexico

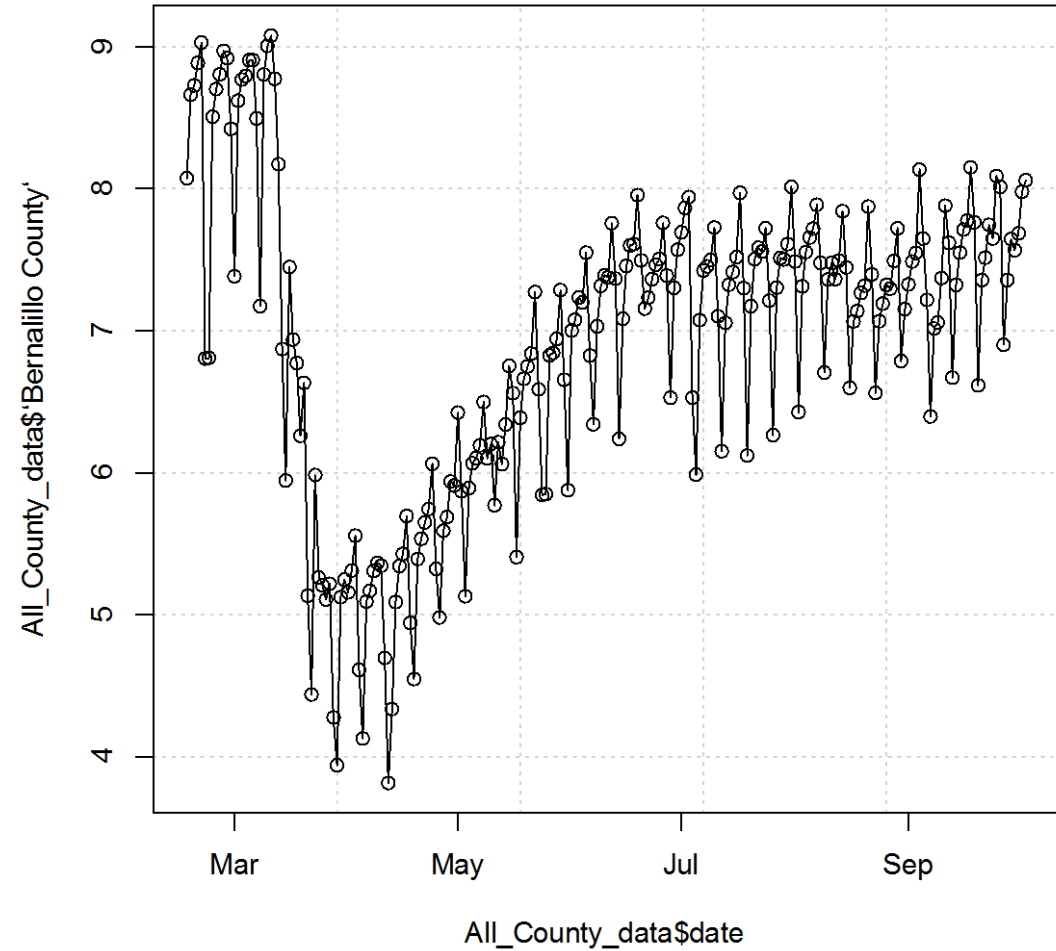# Mobility (T80, Feb – Sept, 2020): **Sandoval transmission rising anyway?**
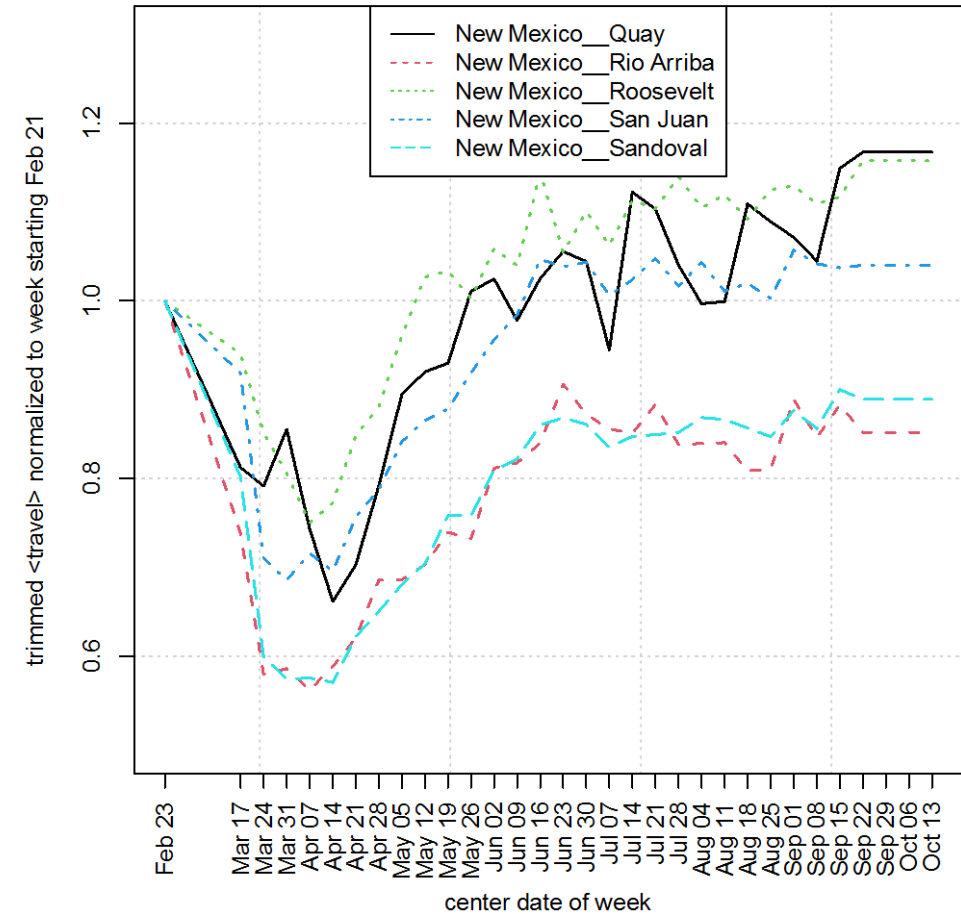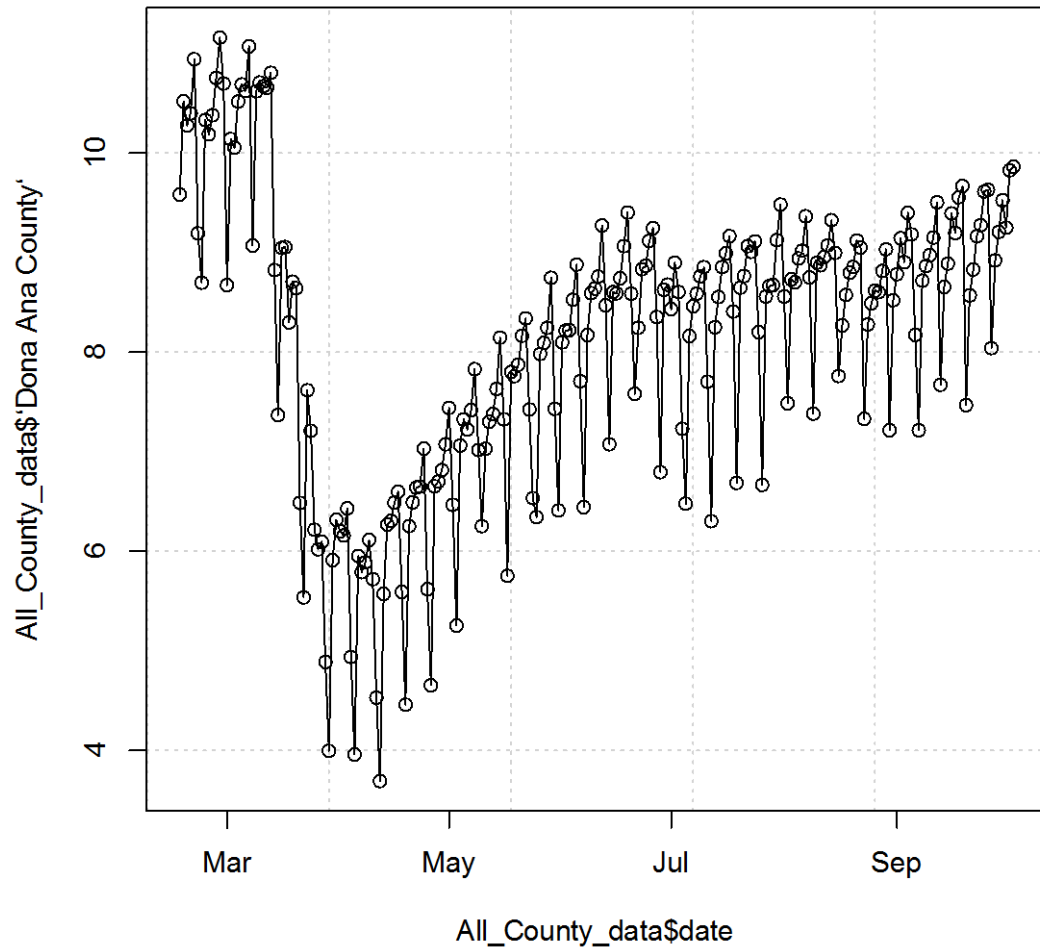
Mobility is up or increasing in urban counties

Santa Fe
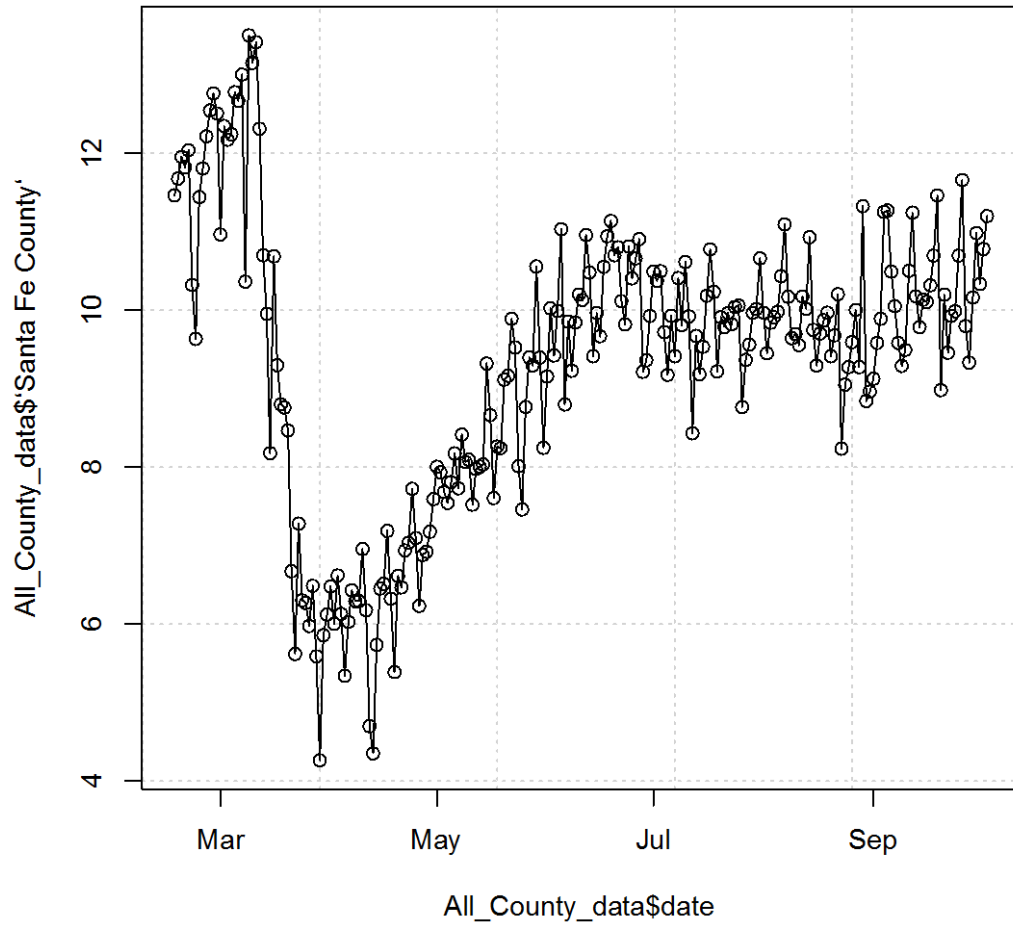
Bernalillo
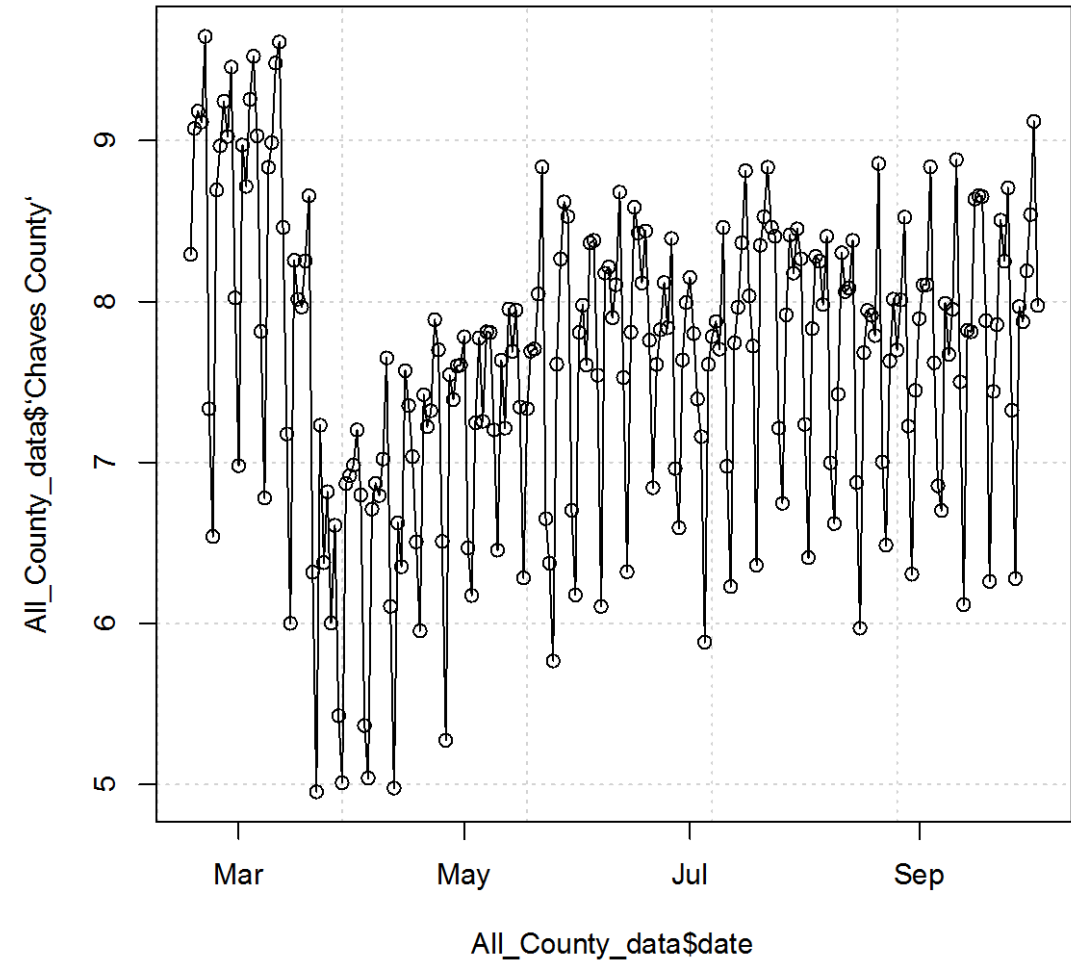
# Mobility is increasing in urban but not rural counties (e.g. Rio Arriba, Lea also not increasing)

Situational Awareness: Heterogeneity, mostly urban vs. rural

- Dona Ana and Bernalillo appear to be the main drivers of the current State-wide increases in incidence (daily cases). Not tied *simply* to increased T80 mobility. Probably dragging other counties to higher daily incidence as their epidemics spread.

- The Southeast still has high case counts; Chaves and Eddy have higher transmission relative to mobility than other non-urban counties in the state. Some rural/frontier counties normalized over the summer and have risen recently, while Chaves and Eddy remained high.

- Case-contact tracing appears to still be functioning reasonably well in the recent past and is a significant factor in limiting growth in the daily incidence, esp. outside Bernalillo and Dona Ana. The case-contacting situation in Bernalillo is not clear in this model.

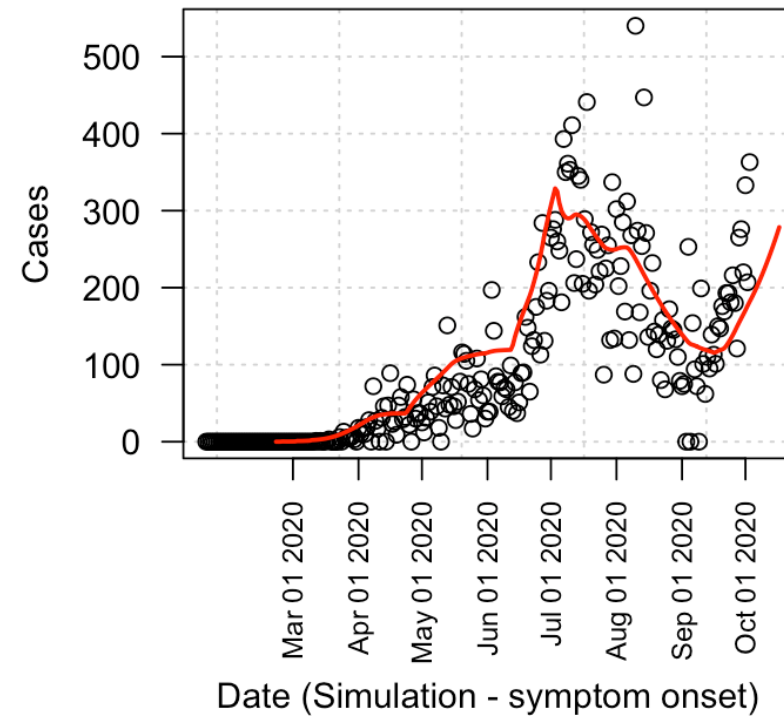- We cannot rule out the possibility that infection control is deteriorating in Santa Fe.
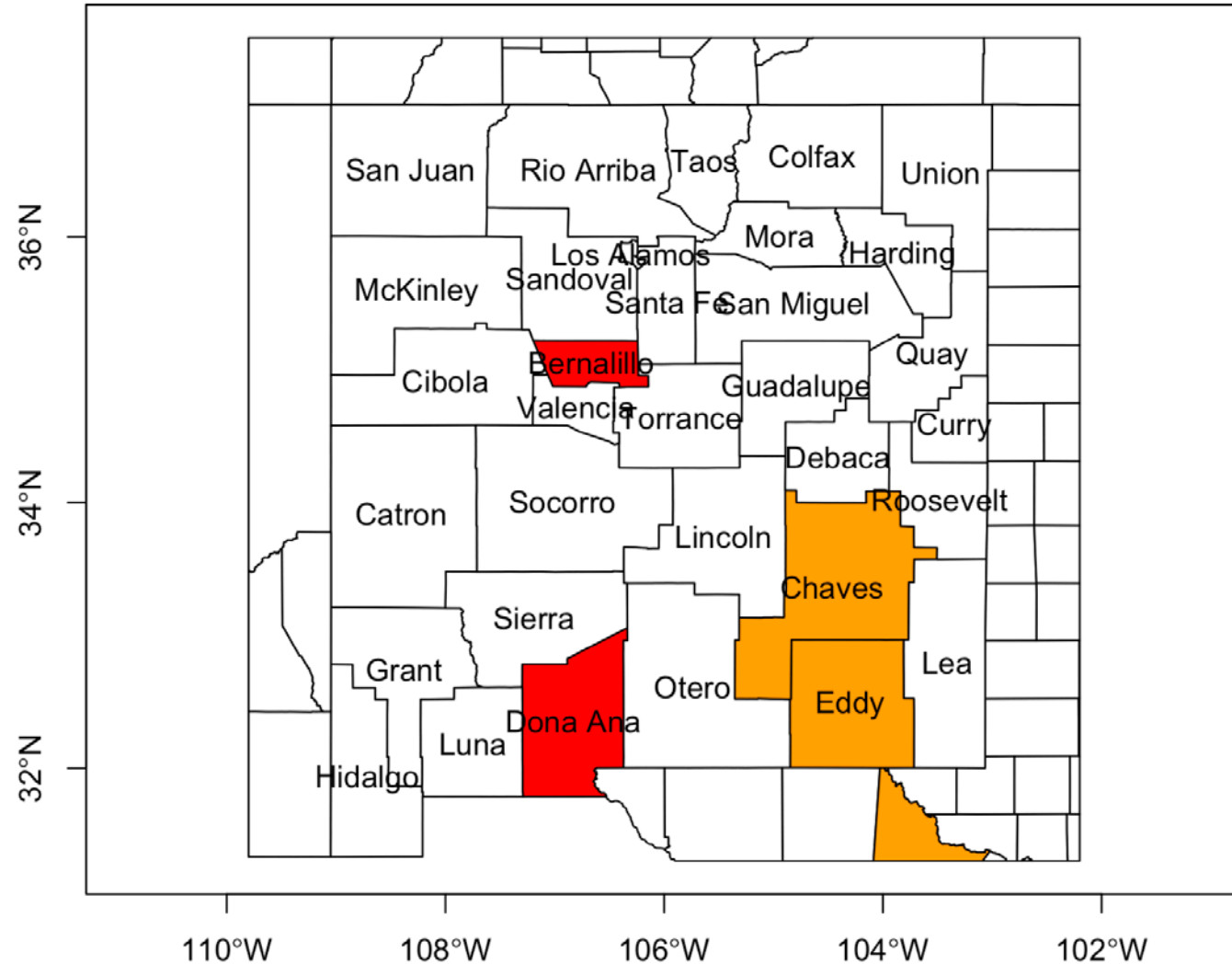
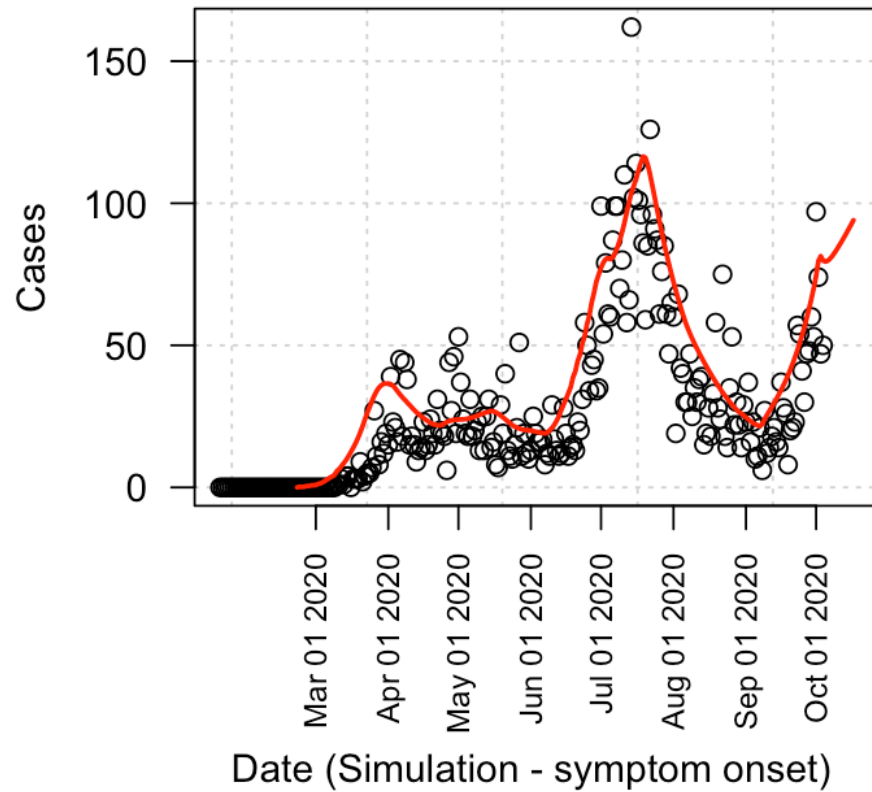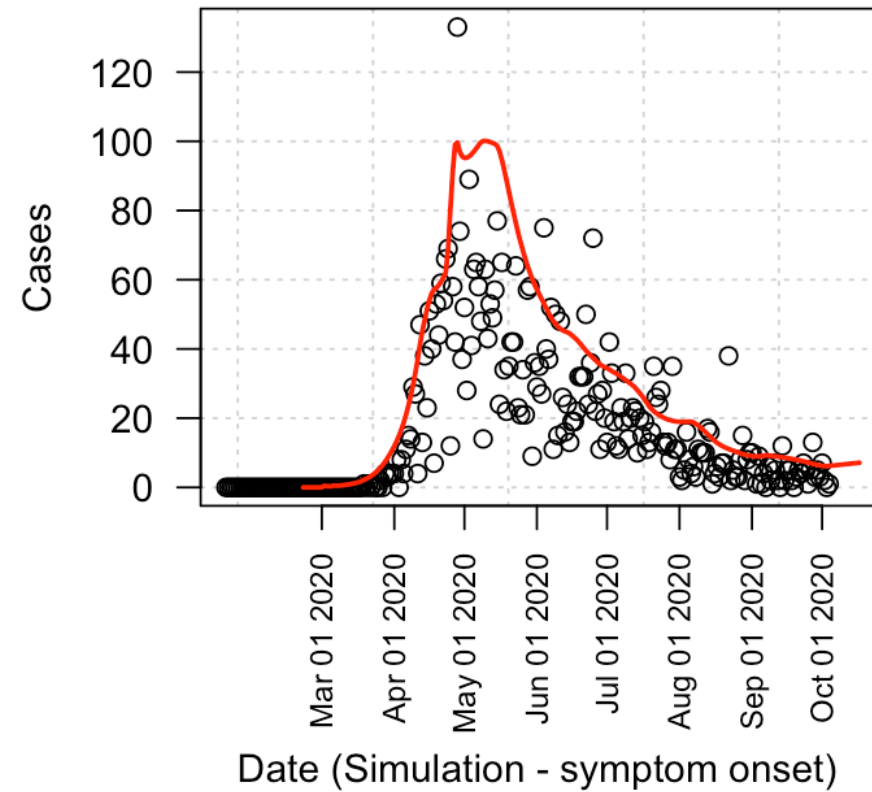# Cases appear to be rising in border counties of importance
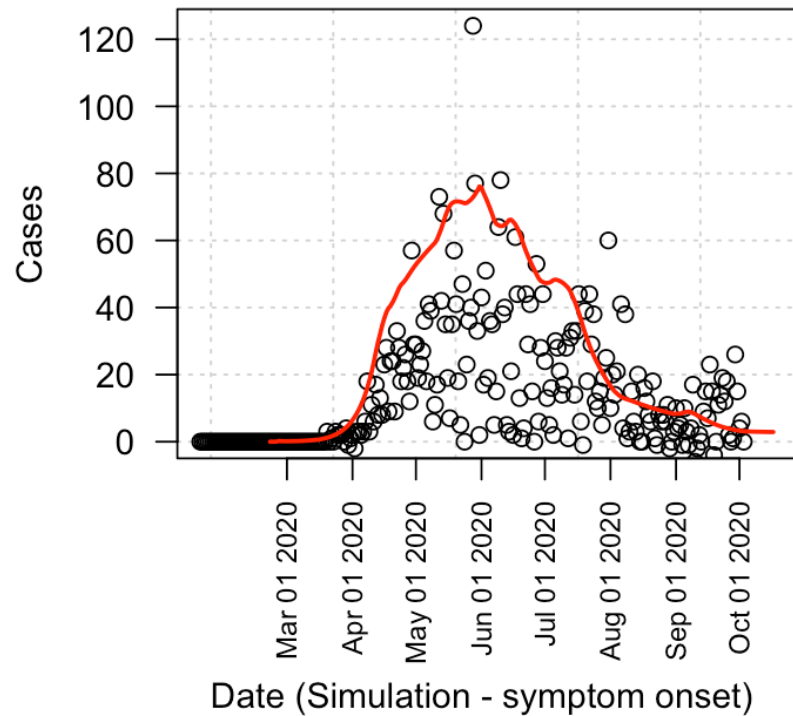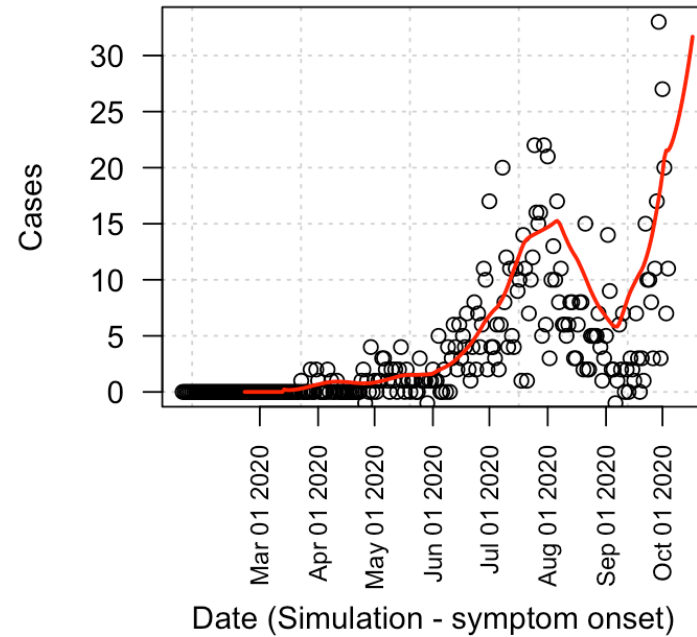
Diversity across the state

A few other counties

New Mexico__Lea
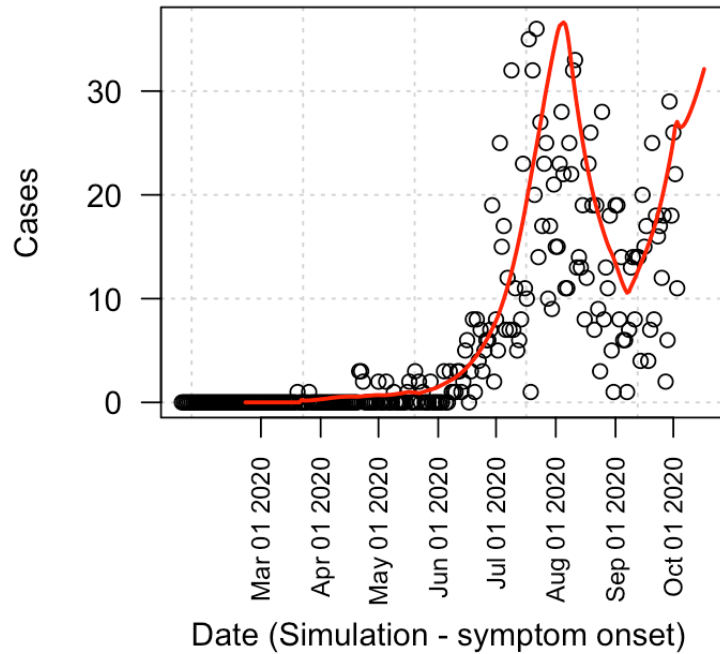
New Mexico__Curry

New Mexico__Chaves