W. Capra CONSULTING GROUP

Analysis of COVID-19 Trends in the United States

W. Capra Data Analytics Team

June 11, 2020

Contents

Introduction

Across the globe, the COVID-19 pandemic has quickly changed business landscapes across all verticals in unprecedented fashions. Cases and deaths are accelerating, as well as business closures and job losses. In an effort to keep W. Capra, our clients, and other external partners up-to-date on the latest trends across the United States, we publish this report on state-by-state COVID-19 data trends. Our goal is to identify:

- How states' handlings of COVID-19 develop over time
- Which states are approaching "containment," and
- What environmental, regulatory, and cultural factors drive containment

As we look at state-by-state analyses, there are many factors to keep in mind, such as population density, success at social distancing, healthcare networks, lock-down dates, weather, etc. All of these appear to have some effect on the transmission and successful containment of the disease.

Trends we consider to be important indicators as to how the pandemic is affecting states:

- Testing Volume and Capacity: Indicates the accessibility of testing and the state's ability to meet testing demand
- Case Velocity: Number of new cases reported each day
- Death Velocity: Number of new deaths reported each day
- Positive Case Rate: Percentage of tests performed that end in a positive result. Testing rates are skewed towards symptomatic patients due to testing policies. This helps to express success of controlling the transmission of the disease
- Disease Death Rate: Percentage of positive cases that lead to death. This is driven by the performance of healthcare systems and the general health of underlying population.
- Case Acceleration: Change in Case Velocity. If Case Acceleration is positive, a state is reporting a greater number of new cases day over day. If negative, Case Velocity is decreasing, and the state is reporting a lesser number of new cases day over day.
- Death Acceleration: Change in Death Velocity. If Death Acceleration is positive, a state is reporting a greater number of new deaths day over day. If negative, Death Velocity is decreasing, and the state is reporting a lesser number of new deaths day over day.

Disclaimer

The W. Capra Data Analytics Team is comprised of data scientists and analysts. We are not medical professionals nor policy makers. As such, this report is not to be construed as providing guidance. We are data-driven professionals that are interested in seeing how we can leverage data to understand the trajectory of states in the COVID-19 pandemic. As such, we advise that you make your own assessment as to actions to take based on this information. Please carefully consider local laws and follow the advice of medical professionals and policy makers at local and national levels.

Data Sources

Data has been gathered from the following sources. The most recent observations are from June 10. In general, the numbers seen here lag behind The New York Times and John Hopkins University, which are automated trackers. Instead, The COVID Tracking Project manually gathers and double checks all data to "emphasize accuracy and context over speed". Because of this, case and death counts are about 5% smaller here than what you see reported by other automated sources.

- The COVID Tracking Project, https://covidtracking.com/

- New York Times COVID Data, https://github.com/nytimes/covid-19-data
- COVID-19 Community Mobility Reports, Google, https://www.google.com/covid19/mobility/
- Annual Estimates of the Resident Population for Counties in the United States, U.S. Census Bureau, https://www.census.gov/data/datasets/time-series/demo/popest/2010s-counties-total.html#par_textimage_739801612
- Normalized Maximum Heatmap by Sergy Bryl', https://analyzecore.com/2020/05/04/the-spread-of-covid-19-across-countries-visualization-with-r/

Benchmarks

We understand that states are experiencing and will pass through various states of their handling of the pandemic. Obviously, positive outcomes for states occur as new daily cases and deaths begin to drop; this is commonly referred to as the "peak" for a particular region. However, we are also interested in tracking the acceleration rates of cases and deaths. We see that consistent reduction in acceleration is an early indicator of positive outcomes. From global trends, we expect velocity and acceleration rates (both new cases and deaths) to follow a trend similar to the one depicted in Figure 1.

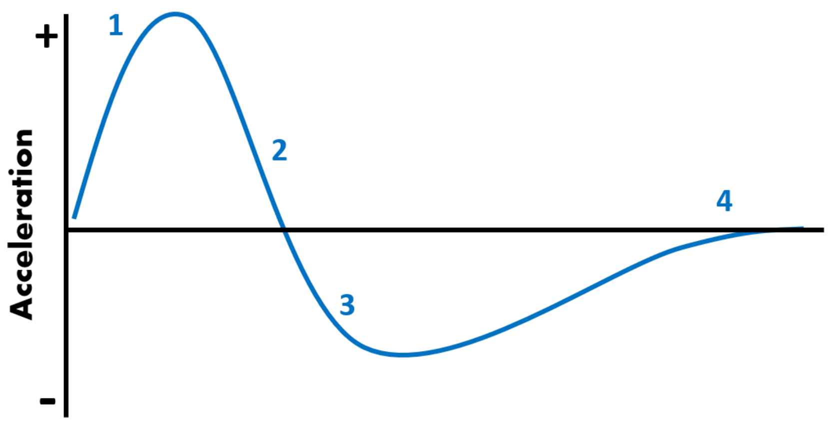


Figure 1: Acceleration Curve

- 1 - Exponential Stage: New daily cases and deaths are increasing. Velocity and acceleration are positive.
- 2 - Linear Stage: New daily cases and deaths are flat. Velocity is positive while acceleration is approaching zero.
- 3 - Improvement Stage: New daily cases and deaths are decreasing. Velocity is decreasing while acceleration is negative.
- 4 - Containment Stage: Zero or few new daily cases and deaths. Velocity is near zero, while acceleration is slightly negative or zero.

Later in the report we will take a closer look at measuring and ranking accelerations. First, let's take a look at some basic rates across the country to help form the foundations of how to look at and discuss COVID-19.

Analysis

Testing Rates

Inconsistent testing data reinforces that testing is still not being performed at the paces desired by most states. The ability to test wide populations quickly will be crucial to not only achieving containment but also maintaining it. Initial decelerations of cases and deaths is good sign; however, until states have the capacity to test people at the appropriate scales, states will continue to be at risk of resurgences in COVID-19 cases/deaths.

Currently, 6.57% of the entire US population has been tested. This is rather small from a sampling perspective, but not too far off from the rest of the world. Keep in mind that this is measuring number of tests administered, so it is likely that the true population rate is lower as some individuals have been tested more than once. The distribution of these tests is also very unevenly distributed.

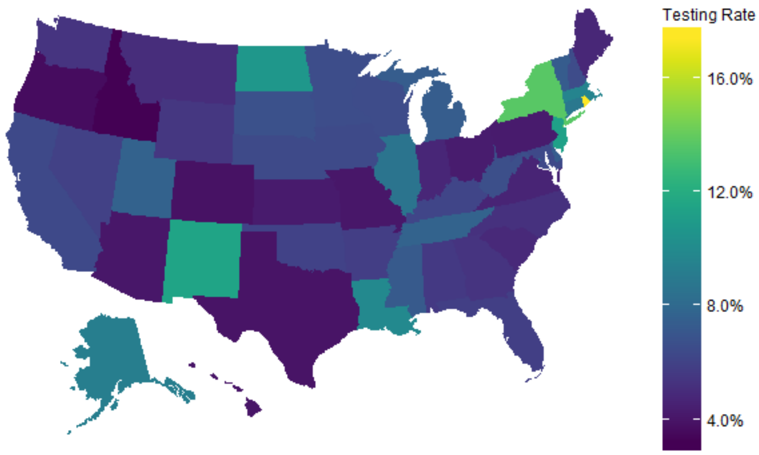


Figure 2: Testing Rates

Positive Case Rates

Case rates, or the rate of tests which are positive for COVID-19, vary across the US and have reached higher than 45%. A large driver behind this is self-quarantine directives: Patients with symptoms were told to stay home as long as the symptoms are manageable. Once severe enough, patients were told to see a doctor and get a test. The true rate is probably much lower, but because we cannot test every individual at this time, this is an unknown. However, testing has increased significantly over the past few weeks, opening up capacity for most people (including asymptomatic patients and healthy individuals) to get tested. This has lowered the positive case rate down.

In the heatmap below (Figure 3), we can see that NY, NJ and CT have high positive test rates. This aligns with macro-level trends as this region represents the US “epicenter,” where population density is quite high and transmission rates tend to be higher as well.

Disease Death Rates

The Disease Death Rate, or the Case Fatality Rate, is currently 5.4% for the United States. It tends to be higher for populations with comorbidities and advanced ages. In the heatmap below (Figure 4), there are a few interesting points. MI is currently experiencing the highest rate, 9.1%, the worst hit county being Wayne at 12.3%. WA used to have a higher death rate as the disease progressed through elderly populations early on, but has since spread more evenly across other age groups.

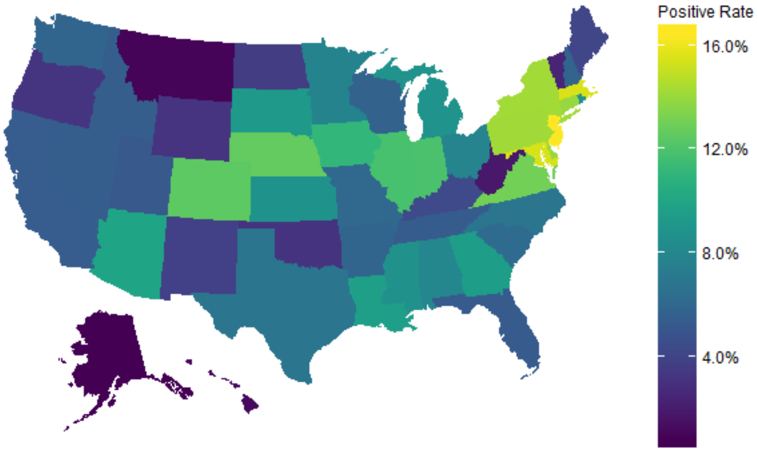


Figure 3: Positive Rates

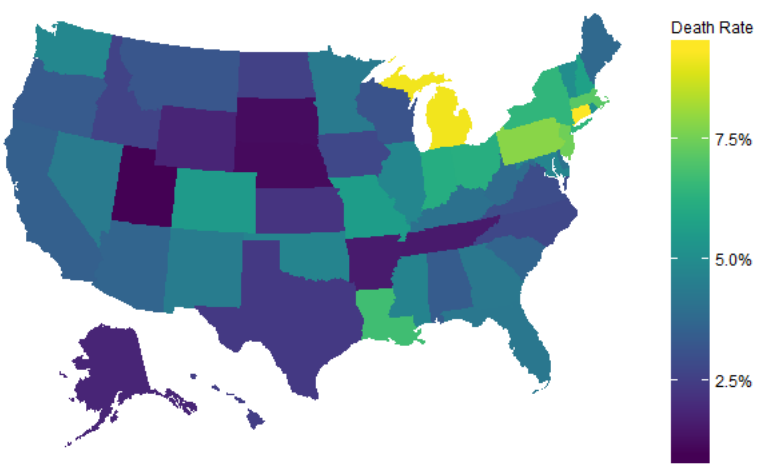


Figure 4: Death Rates

Measuring Acceleration

The rate at which new observations are growing each day represents the acceleration metrics. We use this to measure states' progressions along the disease growth curve, and these metrics will help flag states that are starting to slow in growth and reverse course towards containment. To measure acceleration, we first need to smooth out the data as reporting on tests, cases, and deaths is not linear. It is common for states to see large daily swings in tests, cases, and velocities that are caused by a variety of unknown forces. To solve for this issue, we apply Weighted Moving Averages ("WMA") velocities and accelerations. The smoothing period for velocity and acceleration WMA is set to seven (7) days to smooth out weekly reporting differences in the data. Here is an example on how the WMA approach changes the trend for NY.

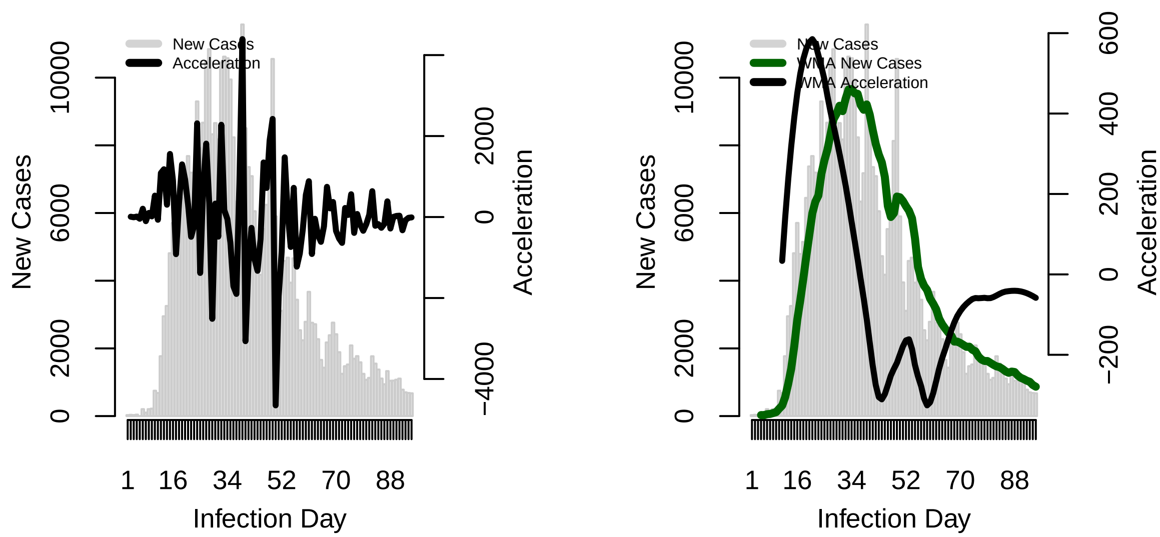
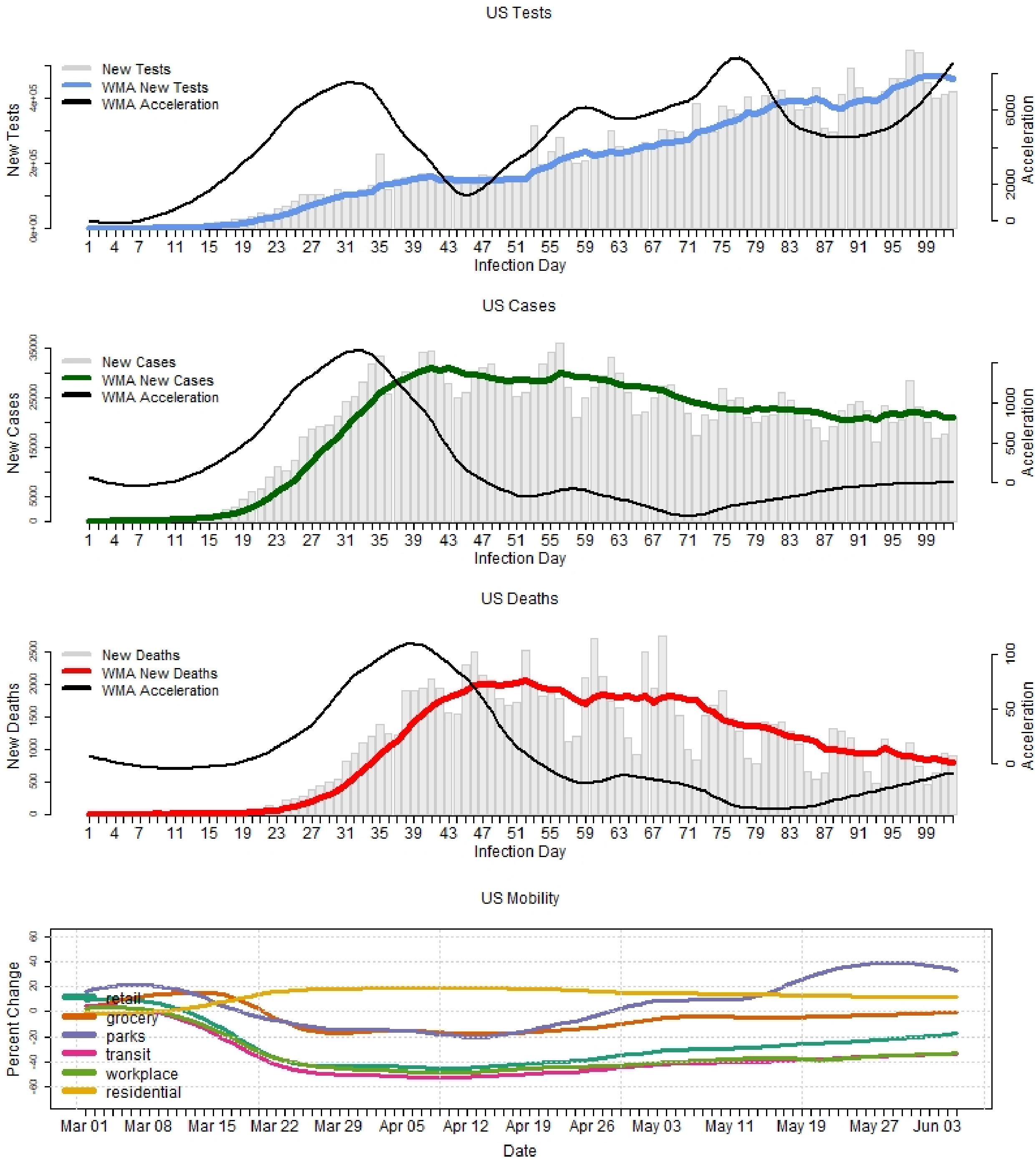


Figure 5: Noisy Data vs. Weighted Moving Average for NY case data

Acceleration in the United States

As a whole, the United States ("US") appears to have peaked in terms of cases with a new cases slowly dropping over the past two months, with deaths following close behind. One healthy trend here is that testing is starting to accelerate again, while cases are still dropping. There is a lag time between testing and receiving results (and secondly, when the case gets reported), but we want to see significant growth in tests with cases growing at a slower rate. With testing capacity opening up, the health care system has started testing asymptomatic patients and healthy individuals. This gives us a better picture of what is happening across the population, and more confidence in different rate measurements.

US



State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
US	21467820	1991527	106870	9.3	5.4	20931	889

Figure 6: United Sates Acceleration and Mobility Data

Acceleration charts for all states for tests, cases, and deaths can be found in the appendix.

State Comparisons

We now compare the velocity and accelerations of tests, cases, and deaths on a per-capita basis using 100,000 to normalize. The following graphs show the outliers for each category after plotting both the velocity and acceleration of the most recent observation. Velocity is a weighted moving average of new daily observations, while acceleration is the rate of change of the velocity. We would expect states to follow this path: going from the origin to top-right (Stage 1 of Figure 1), then to top-left as acceleration turns negative (Stage 2 and 3), and back down to the origin as the velocity of new observations shrinks to zero (Stage 4).

Testing

With testing, states are currently split between increasing and decreasing capacity. A few states that are accelerating in cases are now seeing drops in testing, which is potentially dangerous. This includes AK, SC, MS, and TN.

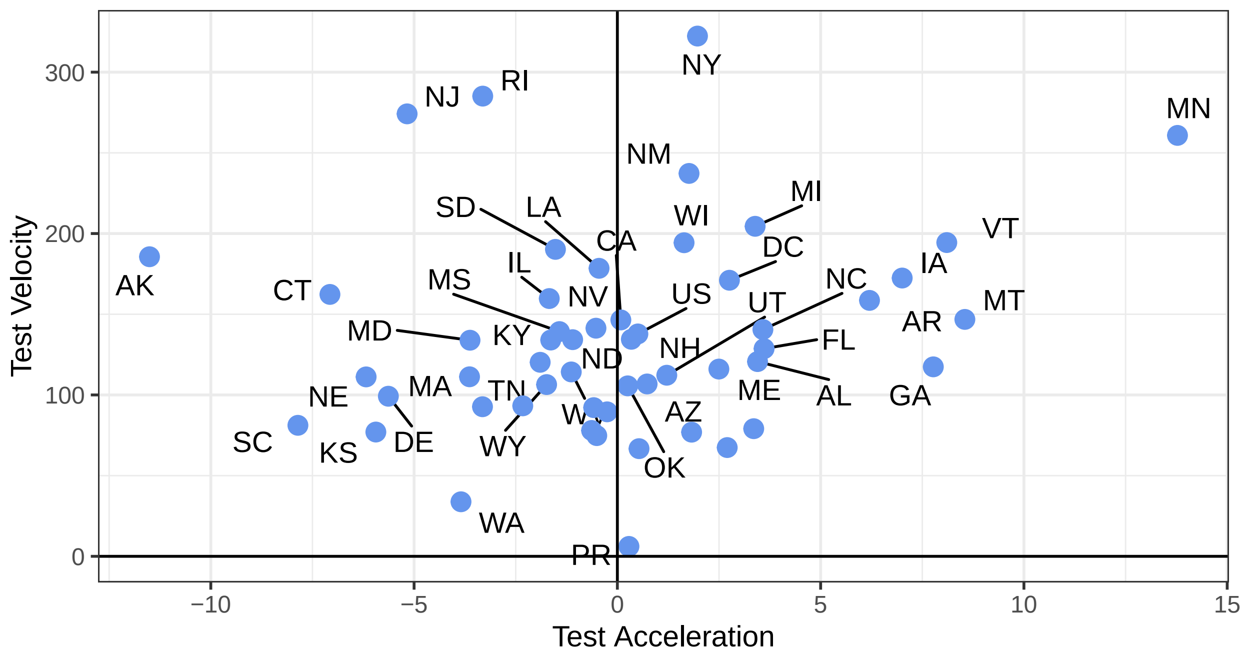


Figure 7: Test Acceleration and Velocity

Cases

For cases, New England and some Midwest states stand out as quickly entering an improving phase, indicating that they are starting to get things under control. MA, MD, NJ, NY, and other states are decelerating in terms of cases, while AR, AZ, UT, SC and NC are starting to accelerate again. In fact, many southern states are seeing their cases accelerate. With the surge in testing over the past month, we expect to see new cases accelerate for some states.

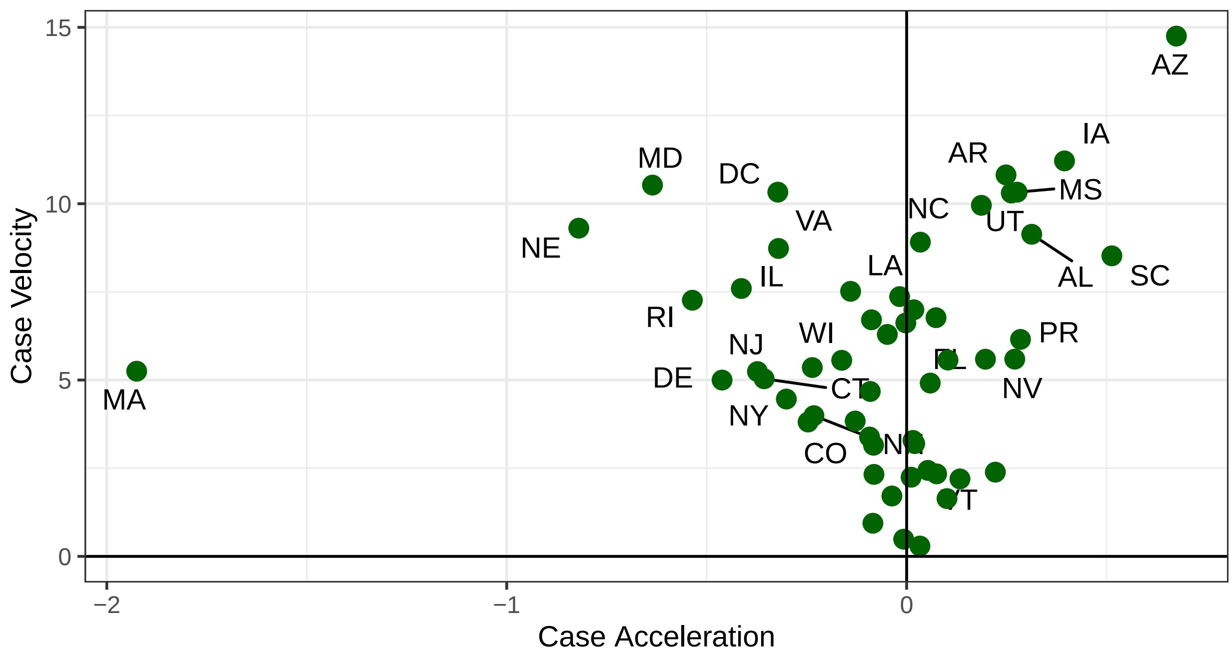


Figure 8: Case Acceleration and Velocity

Deaths

A majority of states are experiencing a rapid deceleration in deaths, but with recent increases of cases in certain states, we expect some accelerate slightly.

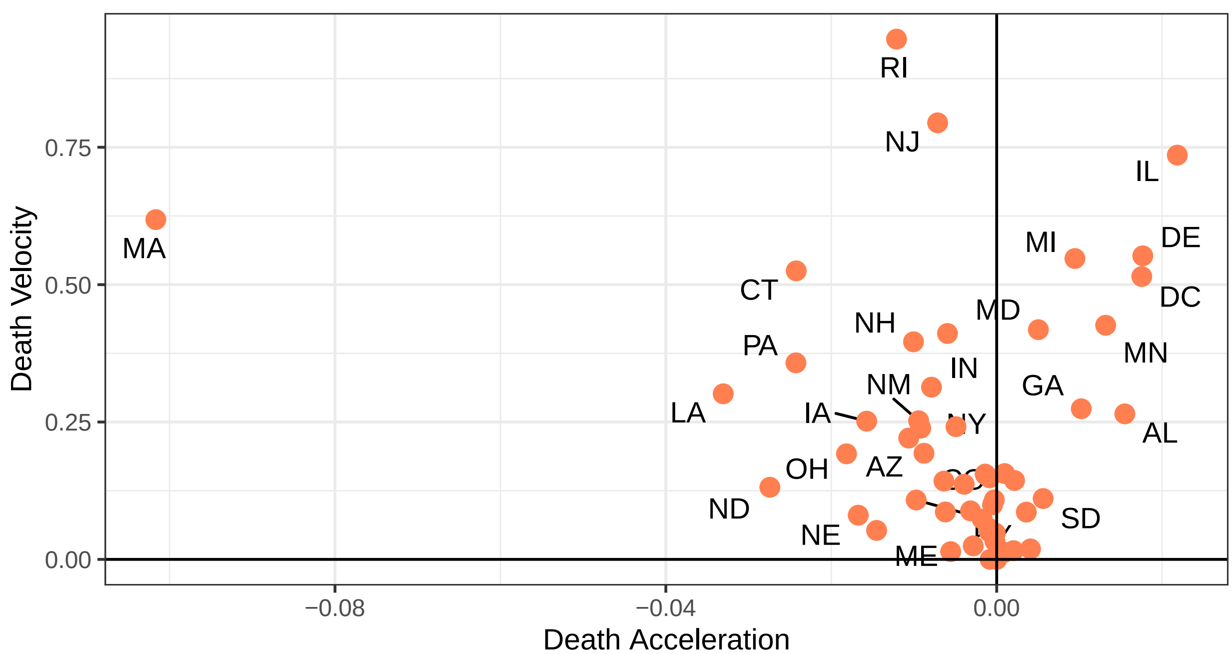


Figure 9: Death Acceleration and Velocity

We can now assign states to each stage of the acceleration curve using new cases. The main driver for assigning these categories is per-capita WMA acceleration, taking into account the history of acceleration for each state:

- Exponential: Acceleration is positive. If acceleration nearing zero, acceleration must be at maximum (or else is considered "Linear")
- Linear: Acceleration is positive but nearing zero. Acceleration is not at its maximum (or else is considered "Exponential")
- Improving: Acceleration is negative.
- Containment: Acceleration is near zero, is not the minimum or maximum, and must have low velocity (i.e. New Cases have peaked).

From this, we can see some macro trends. The Midwest is starting to enter the Improving stage after some quick exponential growth, while New England has been improving for a while. A majority of states are in the Linear or Improving stage as new daily cases are either flat or decreasing. Many southern states (including AZ, TX, UT, FL, and others) have reverted back to exponential growth as they have recently seen new daily cases growing. However, a few southern states are doing better. LA is improving while GA is still flat in new daily cases. New daily cases in NY, NJ and other New England states have been falling for months now, and have reached early containment.

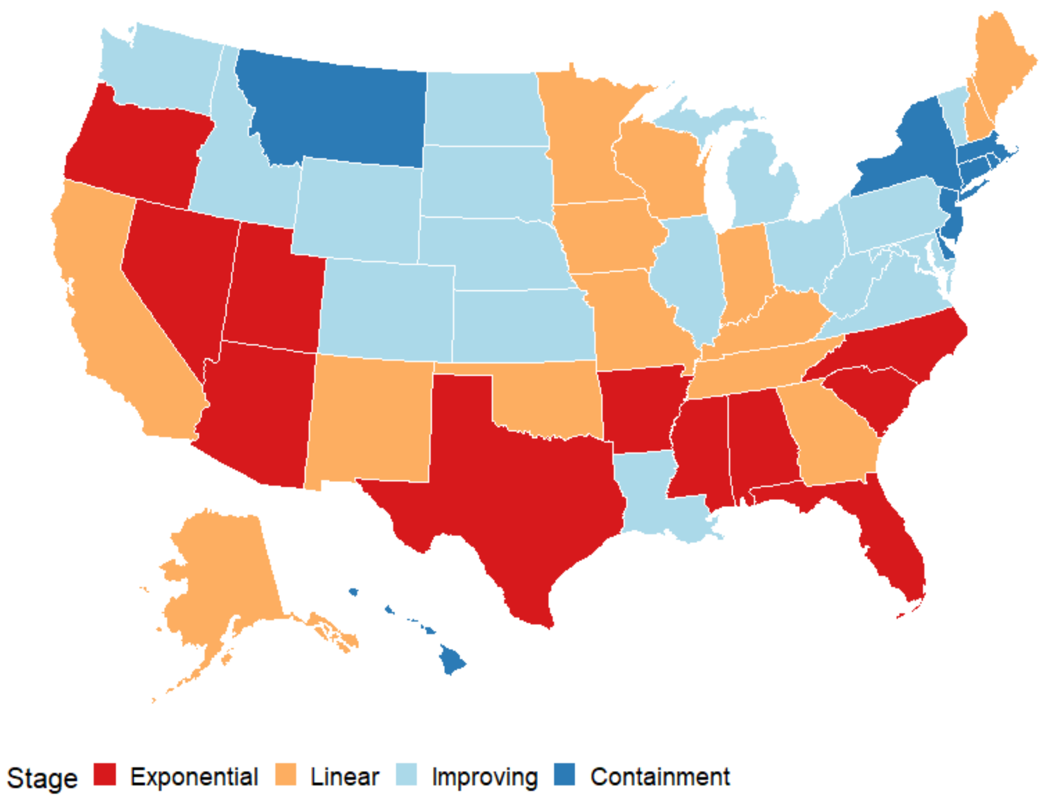


Figure 10: Case Acceleration Stage by State

Another helpful tool for determining progression is to normalize Case Velocity against the maximum seen in each state (Figure 11). In the following plot we compare the last 100 days for all states, ranked by how recently they saw a max in their WMA Case Velocity. States like VT and LA hit their maximum in early April, and have quickly improved. States with lots of red and orange tiles are still struggling to move away from the maximum. The United States overall, which has stayed relatively flat since hitting the maximum around April 15th is one example. CA is rather high on this plot, indicating that they are close to the maximum in daily new cases, but because of the slow acceleration due to flatten-the-curve policies, they are assigned to the Linear stage for now.

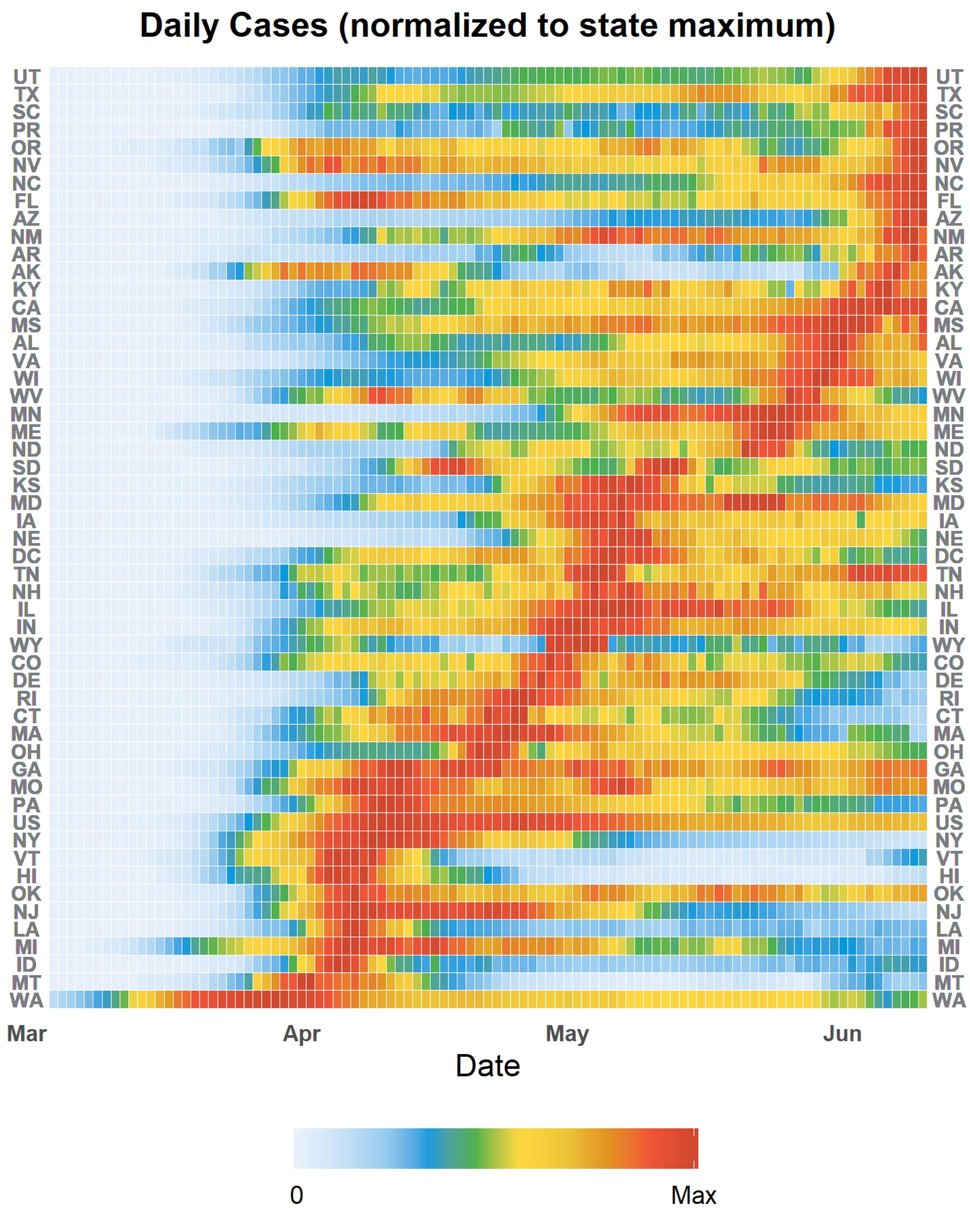


Figure 11: Case Velocity Normalized to Max

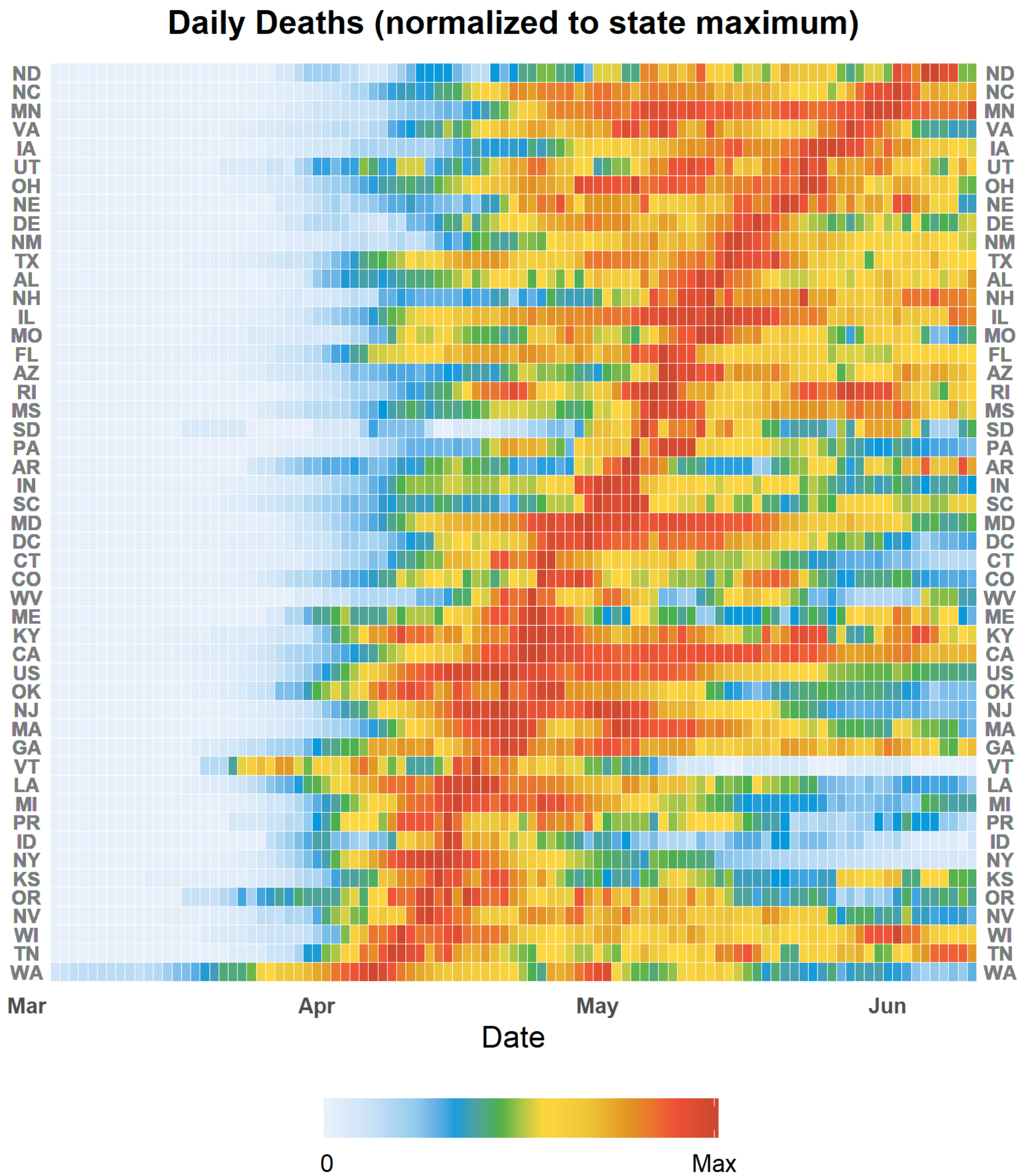


Figure 12: Death Velocity Normalized to Max

Second Wave Potentials

A topic often discussed is if (and when) we will see a second wave of new COVID-19 cases later this summer or fall. We can use this data to look for the warning signs that a second wave is already underway. The heat tiles for cases seen above is a great visual tool for finding this, and some stick out right away, such as FL, TN and AK. These are states that hit their maximum in daily new cases many weeks ago, but are starting to accelerate again after a period of deceleration.

County Comparisons

Here is our first look at county data. The table lists the top 100 counties in terms of case load. Unfortunately, we do not have access to testing data yet, so we can only see cases and deaths. Wayne, MI and Hartford, CT stand out as having the highest death rates. The county map visual points to what we saw in the state stage map: Many New England and Midwestern counties are starting to see a lot of containment, while many southern counties are starting to struggle with growing cases loads.

Metrics as of 2020-06-11

State	County	Cases	Deaths	Death Rate (%)	Stage
AZ	Maricopa	14374	504	3.5	1
CA	Los Angeles	65822	2707	4.1	2
CA	Riverside	9590	365	3.8	1
CA	San Diego	8792	312	3.5	2
CA	Orange	7786	185	2.4	2
CA	San Bernardino	6417	224	3.5	2
CA	Alameda	4006	110	2.7	2
CO	Denver	6176	349	5.7	3
CO	Arapahoe	4687	329	7.0	3
CO	Adams	3627	140	3.9	3
CT	Fairfield	16108	1319	8.2	4
CT	New Haven	11875	1016	8.6	4
CT	Hartford	10859	1291	11.9	4
DE	Sussex	4361	149	3.4	4
DE	New Castle	4125	185	4.5	3
FL	Miami-Dade	19979	774	3.9	1
FL	Broward	8035	346	4.3	1
FL	Palm Beach	7516	388	5.2	1
GA	Fulton	4925	272	5.5	3
GA	Gwinnett	4692	143	3.0	1
GA	DeKalb	4120	135	3.3	3
IA	Polk	4868	151	3.1	3
IL	Cook	83271	4010	4.8	3
IL	Lake	8890	356	4.0	4
IL	DuPage	8223	411	5.0	4
IL	Kane	6956	221	3.2	3
IL	Will	5961	295	4.9	3
IN	Marion	10559	676	6.4	4
IN	Lake	4040	232	5.7	3
LA	Jefferson	7940	462	5.8	4
LA	Orleans	7247	513	7.1	4
LA	East Baton Rouge	4023	252	6.3	3
MA	Middlesex	22845	1720	7.5	4
MA	Suffolk	19067	935	4.9	4
MA	Essex	15271	1016	6.7	4
MA	Worcester	11803	834	7.1	4
MA	Norfolk	8753	870	9.9	4
MA	Plymouth	8404	603	7.2	4
MA	Bristol	7728	481	6.2	4
MA	Hampden	6380	625	9.8	4
MD	Prince George's	17178	607	3.5	3
MD	Montgomery	13007	667	5.1	3
MD	Baltimore	6871	398	5.8	3

State	County	Cases	Deaths	Death Rate (%)	Stage
MD	Baltimore city	6363	287	4.5	2
MD	Anne Arundel	4318	186	4.3	3
MI	Wayne	21533	2651	12.3	1
MI	Oakland	11255	1056	9.4	1
MI	Macomb	6997	873	12.5	4
MI	Kent	4225	107	2.5	2
MN	Hennepin	9567	686	7.2	3
MN	Ramsey	3626	164	4.5	3
NC	Mecklenburg	5744	115	2.0	2
NE	Douglas	5316	49	0.9	3
NJ	Hudson	18607	1235	6.6	4
NJ	Bergen	18573	1628	8.8	4
NJ	Essex	18151	1722	9.5	4
NJ	Passaic	16492	977	5.9	4
NJ	Union	16302	1100	6.7	4
NJ	Middlesex	16251	1053	6.5	4
NJ	Ocean	9059	787	8.7	4
NJ	Monmouth	8512	650	7.6	4
NJ	Mercer	7204	509	7.1	4
NJ	Camden	6849	381	5.6	4
NJ	Morris	6605	626	9.5	4
NJ	Burlington	4808	334	6.9	4
NJ	Somerset	4679	430	9.2	4
NV	Clark	7804	365	4.7	1
NY	New York City	212469	21396	10.1	4
NY	Nassau	40980	2650	6.5	4
NY	Suffolk	40426	1988	4.9	4
NY	Westchester	34034	1527	4.5	4
NY	Rockland	13353	465	3.5	4
NY	Orange	10548	387	3.7	4
NY	Erie	6595	560	8.5	3
NY	Dutchess	4016	154	3.8	4
OH	Franklin	6667	303	4.5	2
OH	Cuyahoga	4939	287	5.8	3
PA	Philadelphia	23822	1436	6.0	4
PA	Montgomery	7672	740	9.6	3
PA	Delaware	6789	652	9.6	4
PA	Bucks	5304	532	10.0	4
PA	Berks	4236	334	7.9	4
PA	Lehigh	3890	253	6.5	4
PA	Lancaster	3554	320	9.0	1
RI	Providence	11959	637	5.3	1
TN	Davidson	6412	80	1.2	1
TN	Shelby	6125	135	2.2	2
TX	Harris	15238	262	1.7	2
TX	Dallas	12645	271	2.1	1
TX	Tarrant	6433	184	2.9	1
TX	Travis	3976	99	2.5	1
TX	Bexar	3525	80	2.3	1
TX	El Paso	3512	93	2.6	1
UT	Salt Lake	6437	85	1.3	2
VA	Fairfax	12695	416	3.3	3

State	County	Cases	Deaths	Death Rate (%)	Stage
VA	Prince William	6336	119	1.9	3
WA	King	8538	582	6.8	4
WA	Yakima	5009	104	2.1	1
WA	Snohomish	3524	154	4.4	4
WI	Milwaukee	9001	331	3.7	3

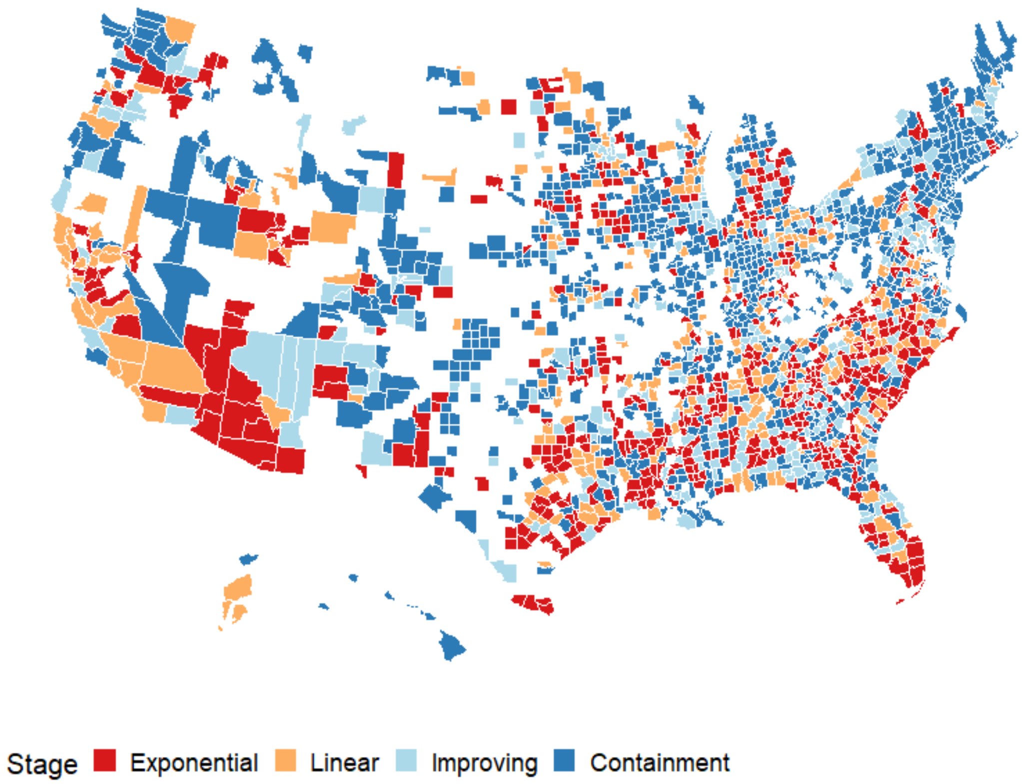


Figure 13: Case Acceleration Stage by County

Conclusions

- Overall, the United States continues to see a drop in New Cases and New Deaths, while testing continues to accelerate. However, the drop in daily new cases is beginning to slow and flatten out again as portions of the country are struggling to keep disease spread under control. Particularly, southern states are beginning to struggle and experiencing significant case growth while northern states are continuing to improve. With all the recent protests happening across the country and many states removing lockdown restrictions, we expect to see cases grow momentarily.

- Early indications from New Case Velocity and Acceleration following the initial US "peak" are that the deceleration of new cases will take place over a much longer period of time than the rapid acceleration of new cases that led to the "peak." In simpler terms, it appears that the recovery following the initial "peak" will take significantly longer than the duration of the Exponential Growth and Linear Growth stages. This trend is in line with what other countries across the world experienced with COVID-19.

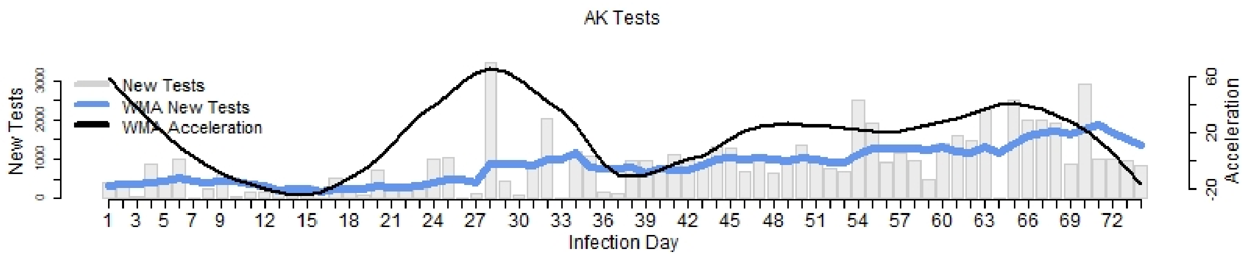
- In terms of new cases, the majority of states are currently in Stage 2 (Linear Growth) and Stage 3 (Improving). Several states, particularly in New England and the Midwest, have entered or are soon to enter Stage 3 (Improving), as their New Case Accelerations have fallen below zero. A growing group of states have reached Stage 4 (Containment) based on our definition. This includes New York, New Jersey, Hawaii, Montana, Massachusetts, Rhode Island, Connecticut, and Delaware. Many southern states have reverted to Stage 1 (Exponential Growth), including Arizona, Texas, Florida, North and South Carolina, and others. On the West Coast, Oregon is also experiencing case acceleration and in Stage 1.
- A few states are showing signs of a Second Wave of new cases; including Florida, Alaska, and Tennessee.
- Georgia, Florida and Texas were a few of the first populous states to re-open their economies two weeks ago. Georgia has been flat in terms of new daily cases for many weeks, while Texas recently saw a new maximum in new daily cases and Florida is starting to accelerate again.

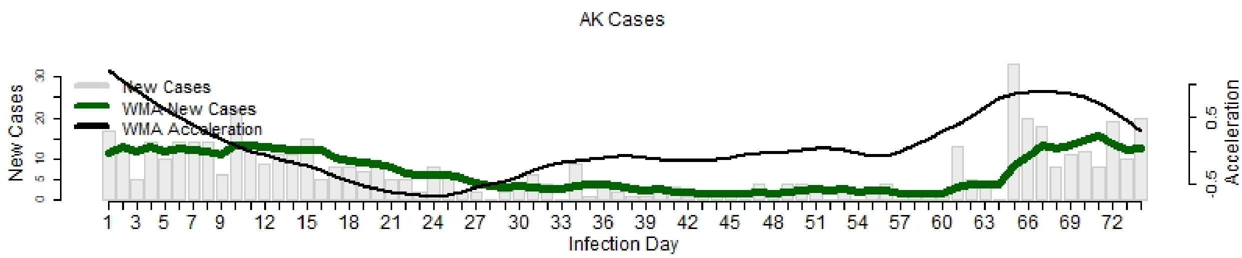
Appendix

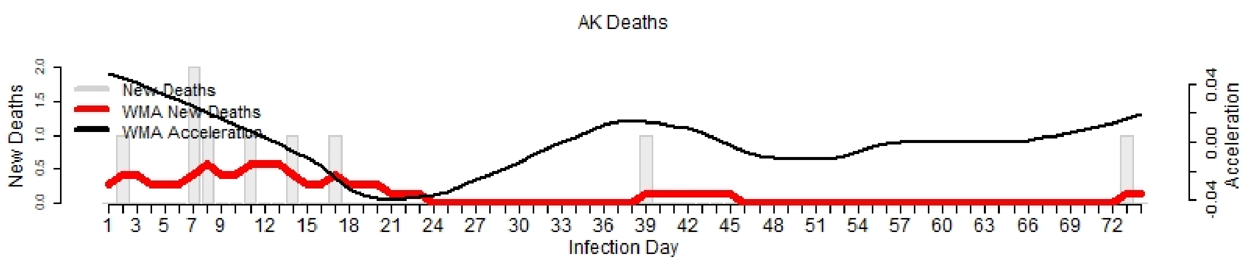
State Data

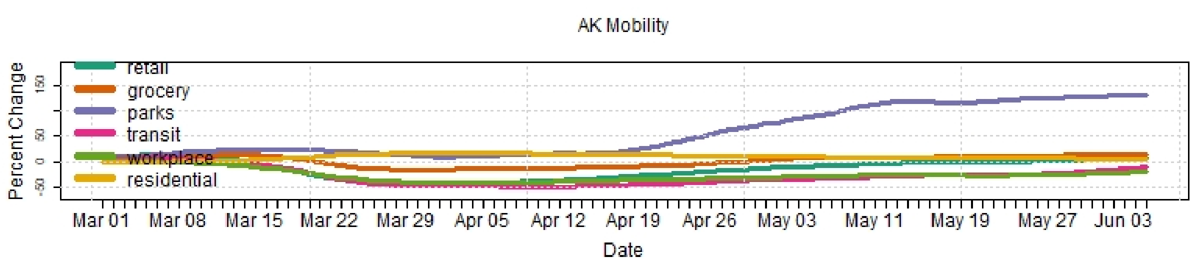
The following graphs show how new tests, cases, and deaths are changing from day to day. They are smoothed using a Weighted Moving Averaged of 7 days for the velocity and 7 days for the acceleration. The fourth plot shows change in mobility from pre-COVID to today. This data expresses how movement in each state have decreased or increased post-COVID. In general, traffic is down across the board except for the Parks and Residential categories. Finally, we show the most recent cumulative and differenced data for each state.

AK





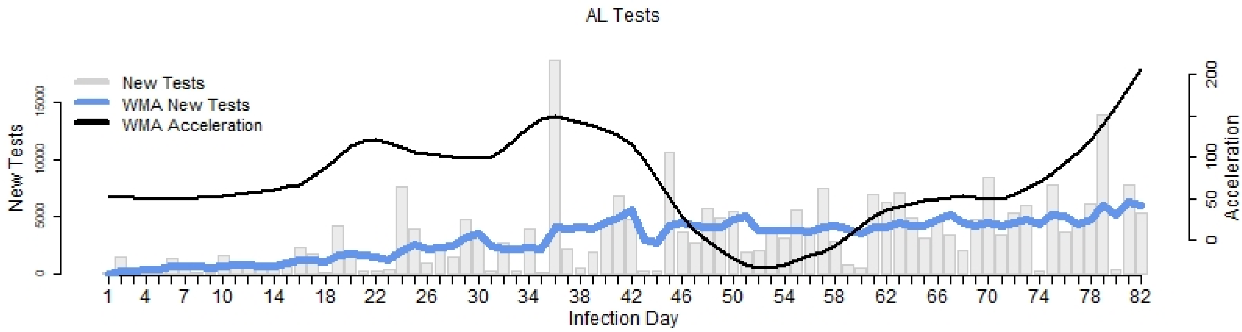


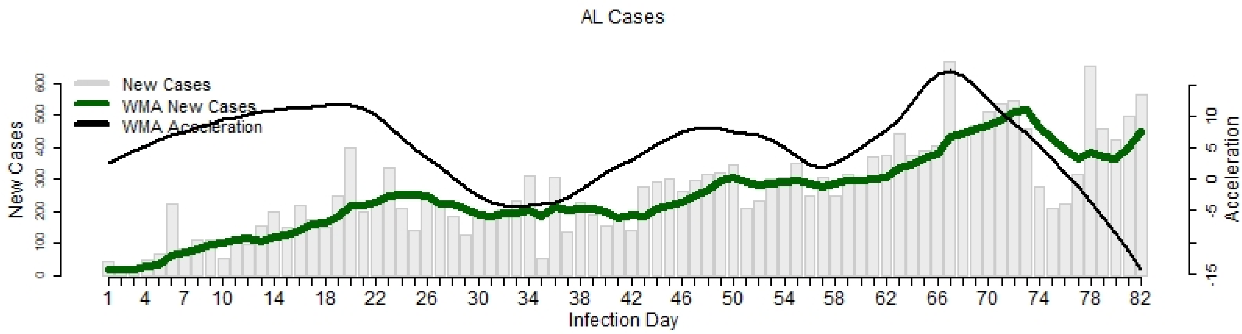


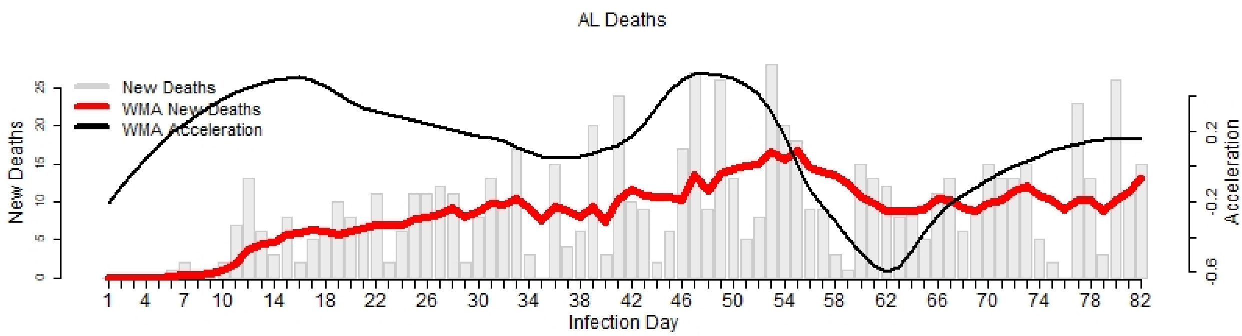
Metrics as of 2020-06-11

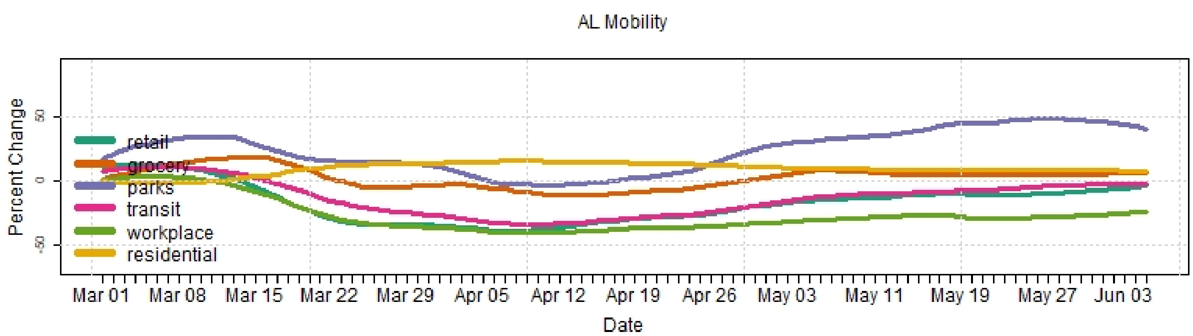
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
AK	67720	593	11	0.9	1.9	20	0

AL





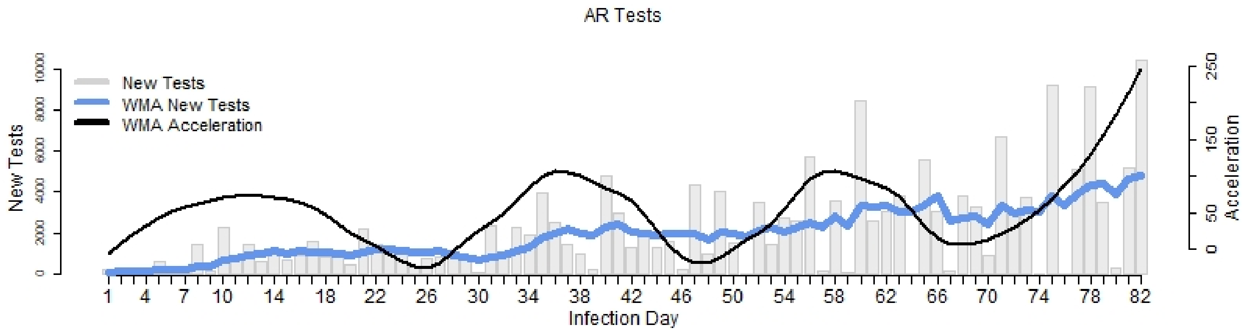


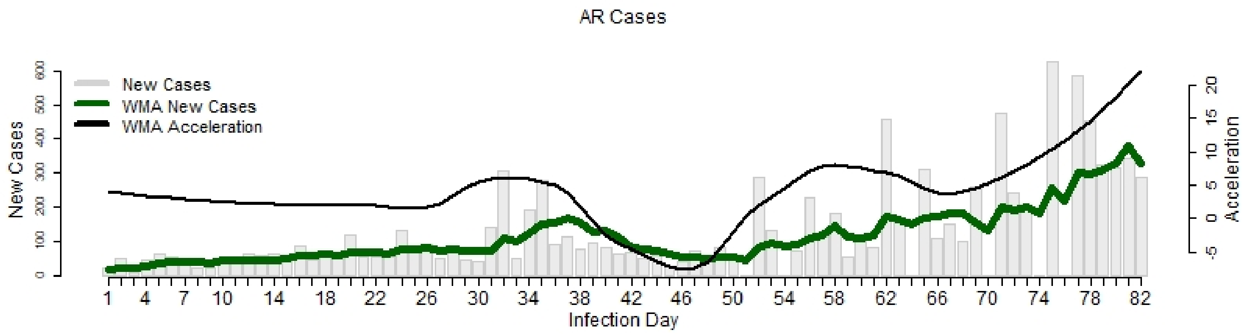


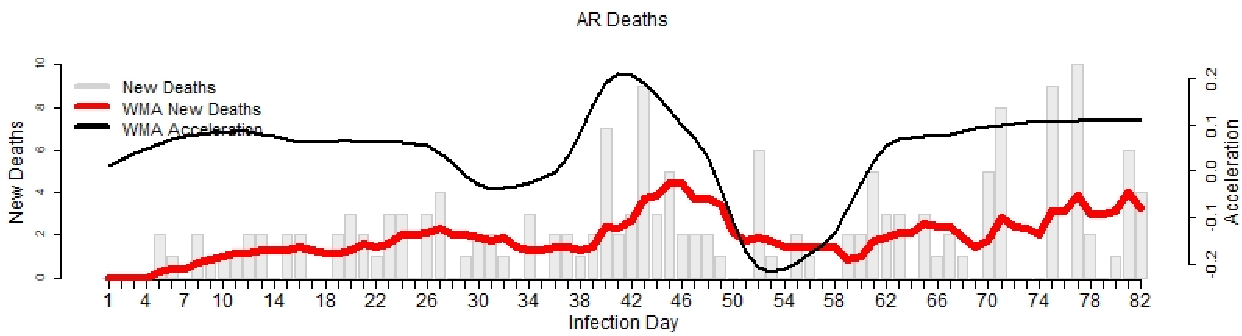
Metrics as of 2020-06-11

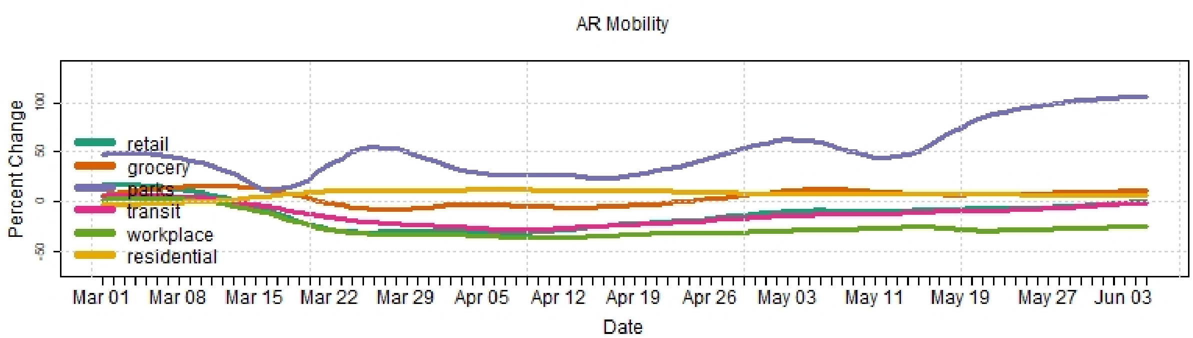
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
AL	273057	21989	744	8.1	3.4	567	15

AR







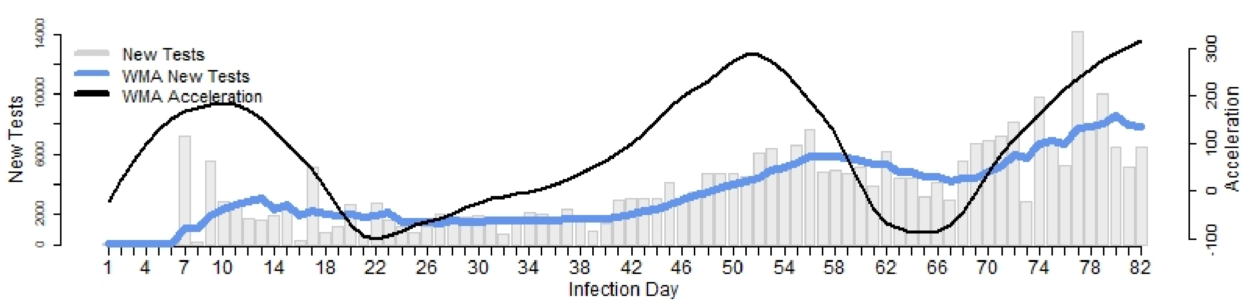


Metrics as of 2020-06-11

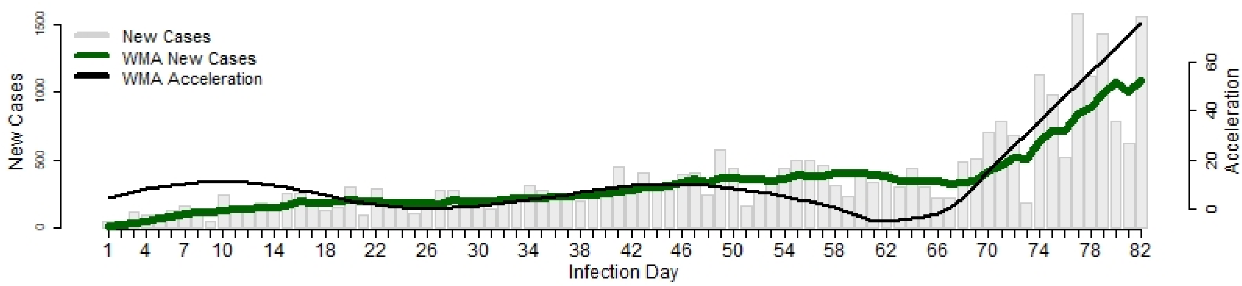
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
AR	176217	10368	165	5.9	1.6	288	4

AZ

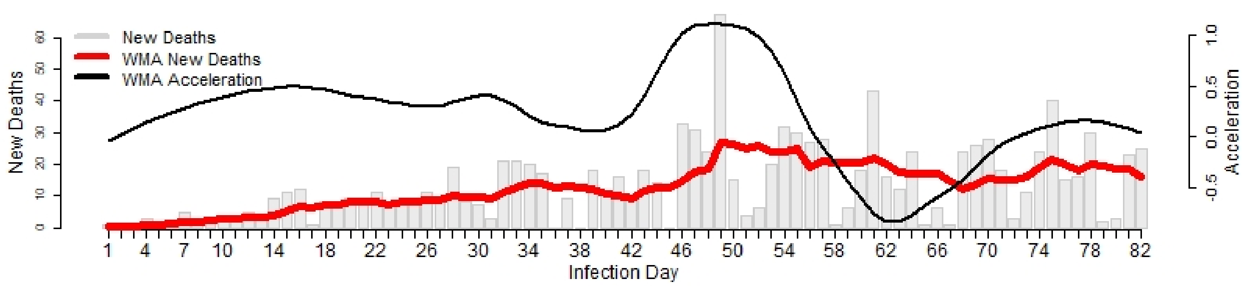
AZ Tests



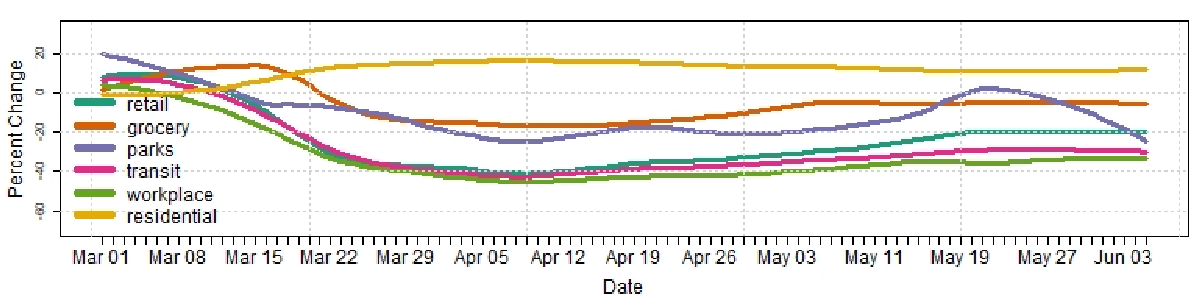
AZ Cases



AZ Deaths



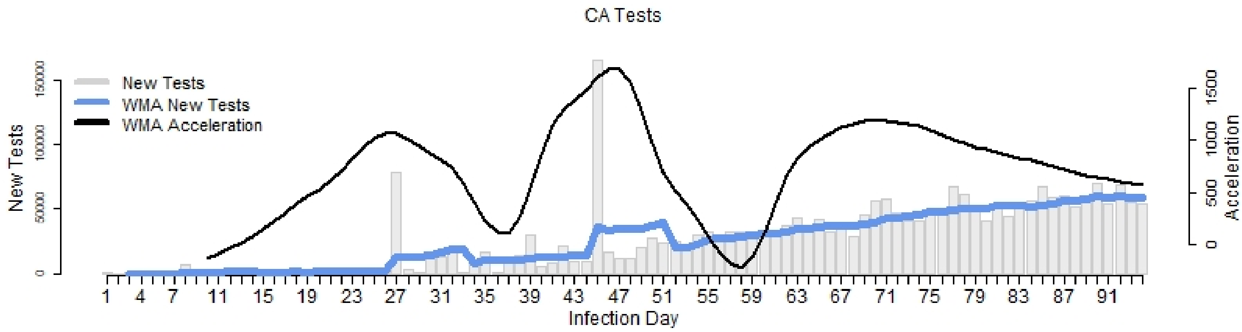
AZ Mobility

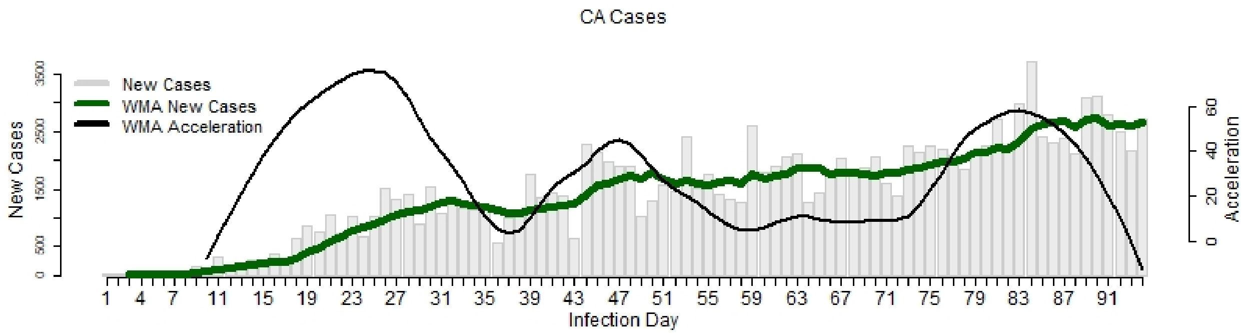


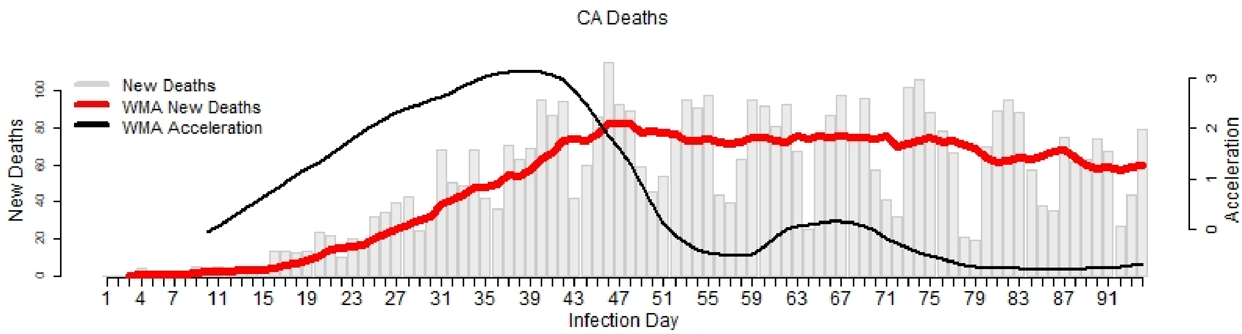
Metrics as of 2020-06-11

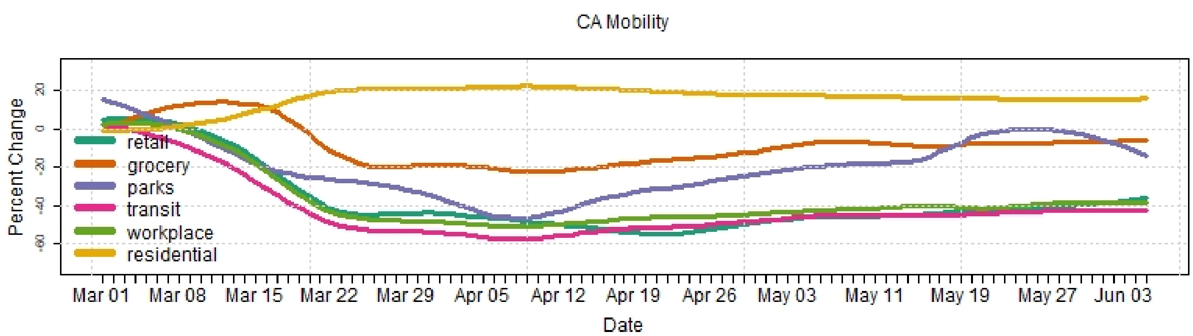
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
AZ	299687	29852	1095	10	3.7	1556	25

CA





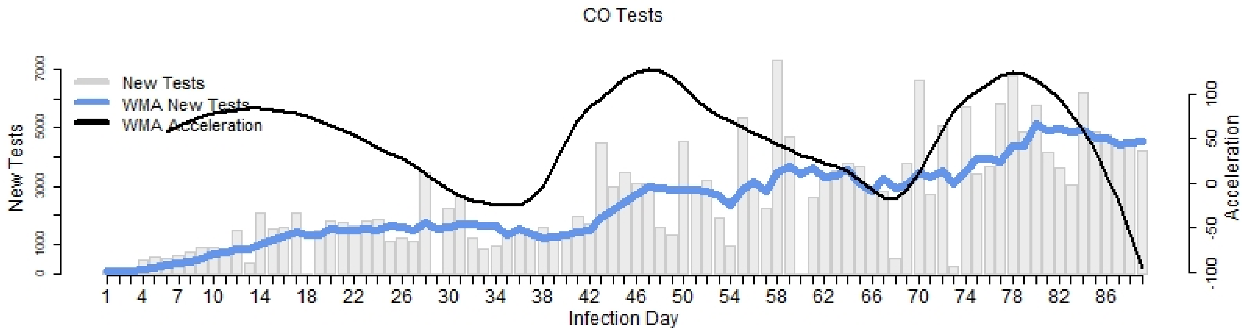


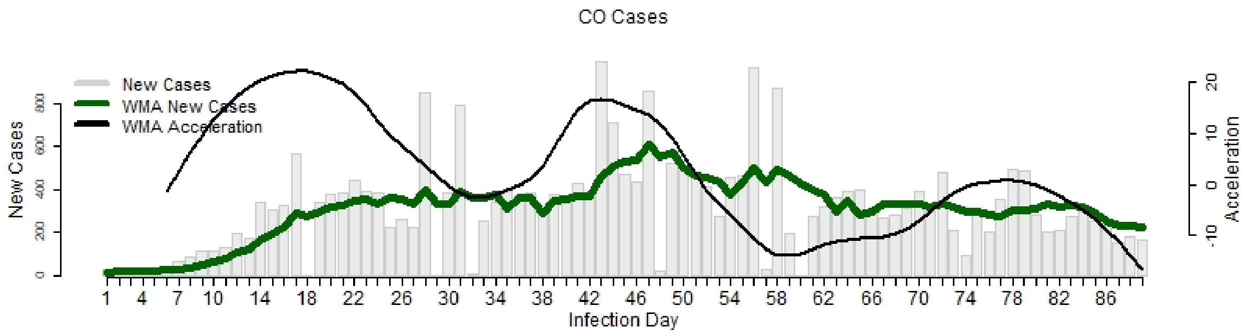


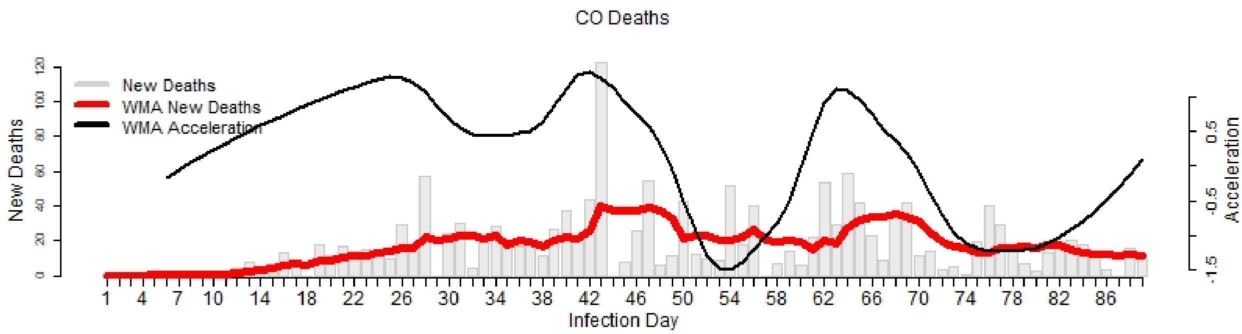
Metrics as of 2020-06-11

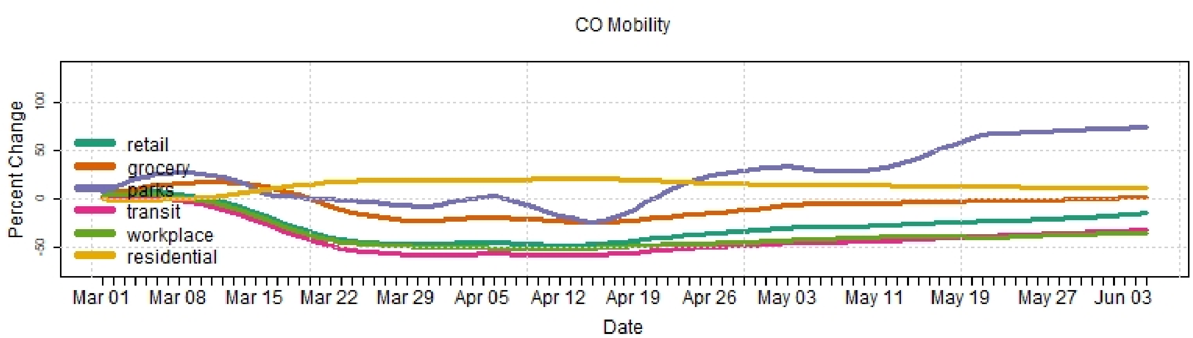
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
CA	2540798	136191	4776	5.4	3.5	2702	79

CO





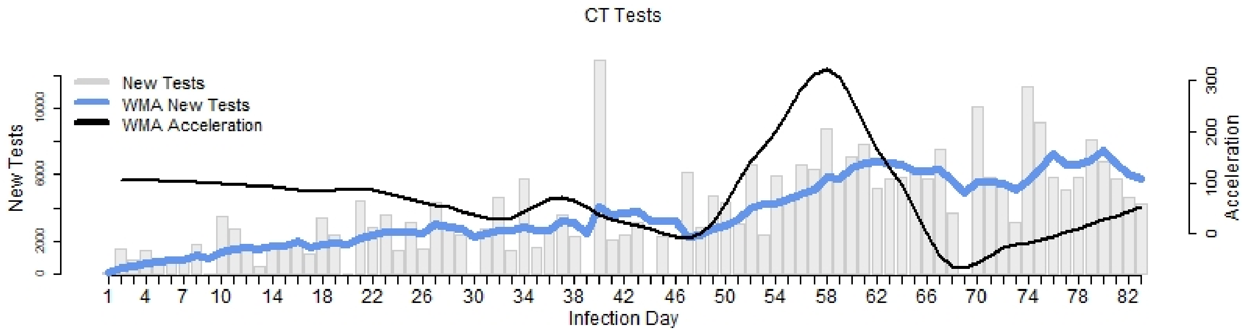


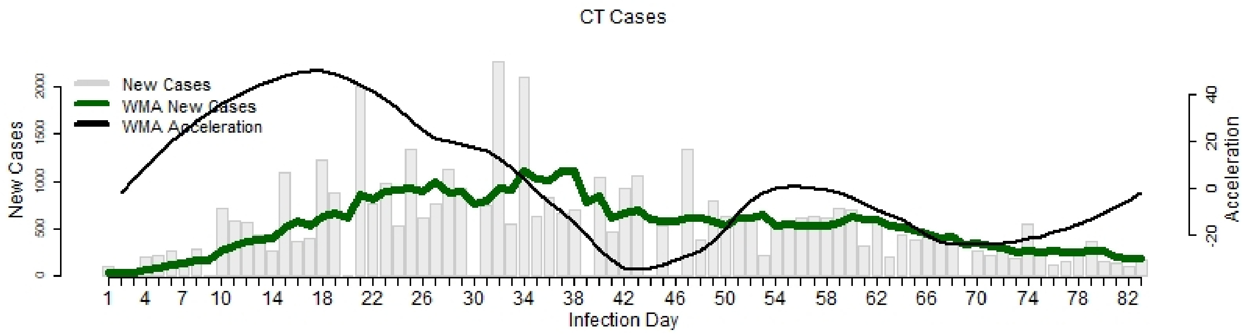


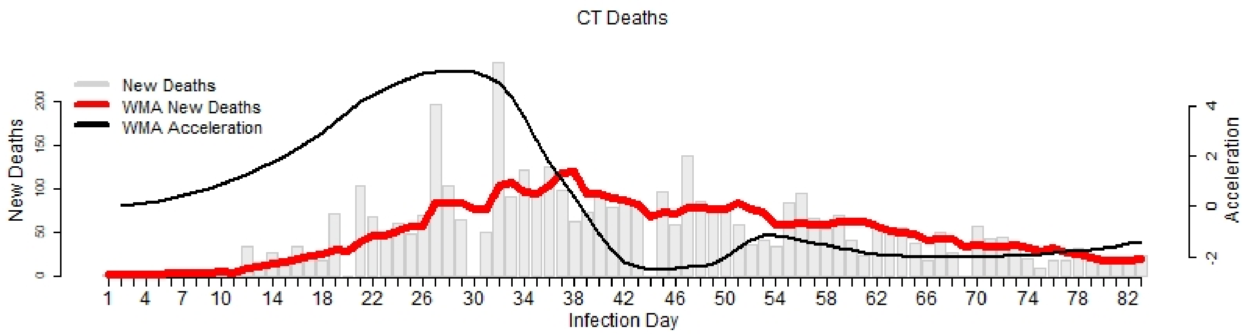
Metrics as of 2020-06-11

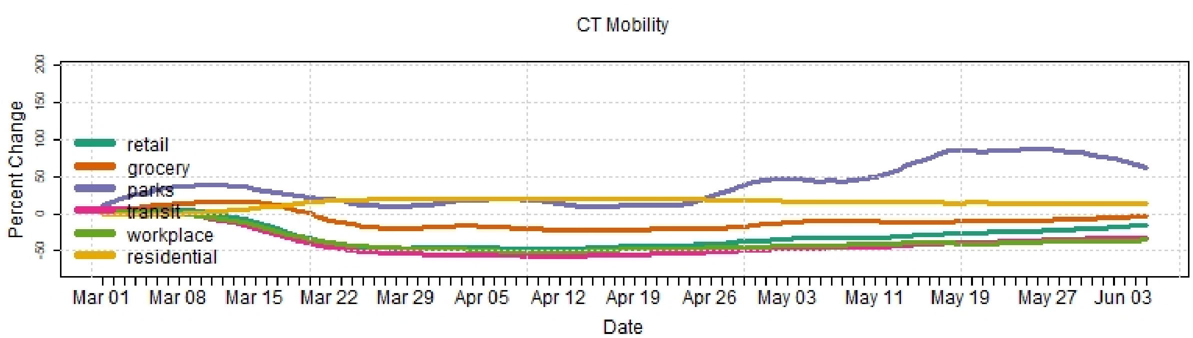
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
CO	226094	28347	1553	12.5	5.5	164	10

CT







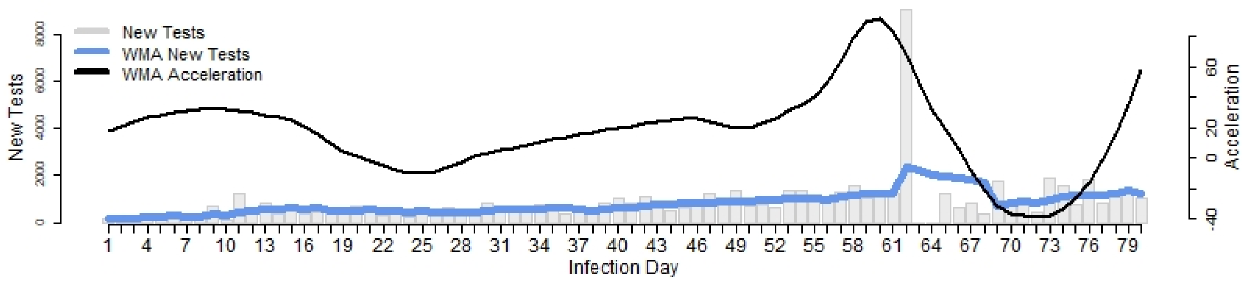


Metrics as of 2020-06-11

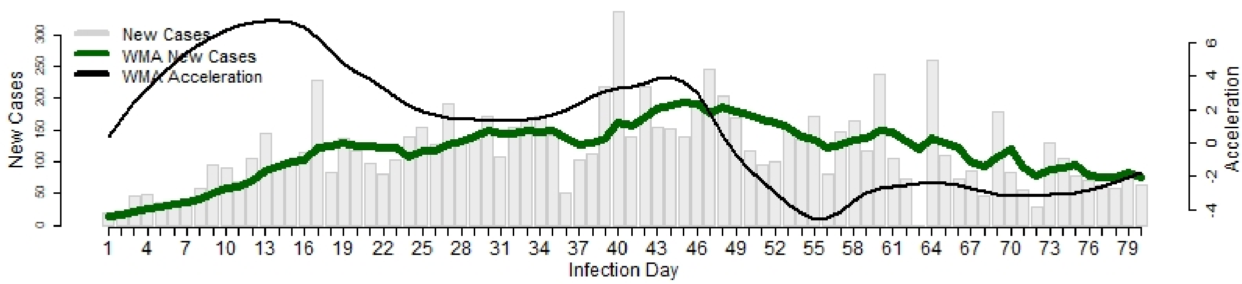
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
CT	316913	44347	4120	14	9.3	168	23

DC

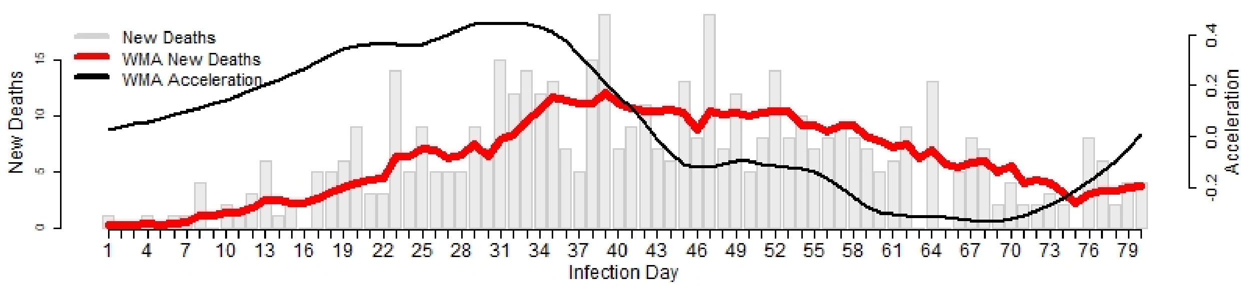
DC Tests



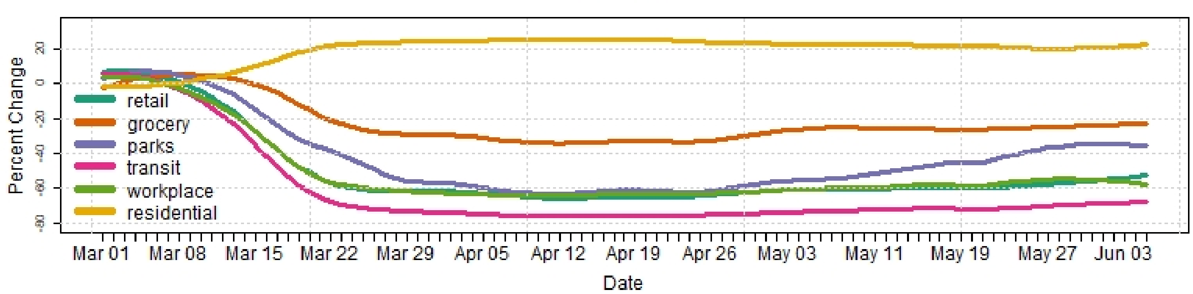
DC Cases



DC Deaths



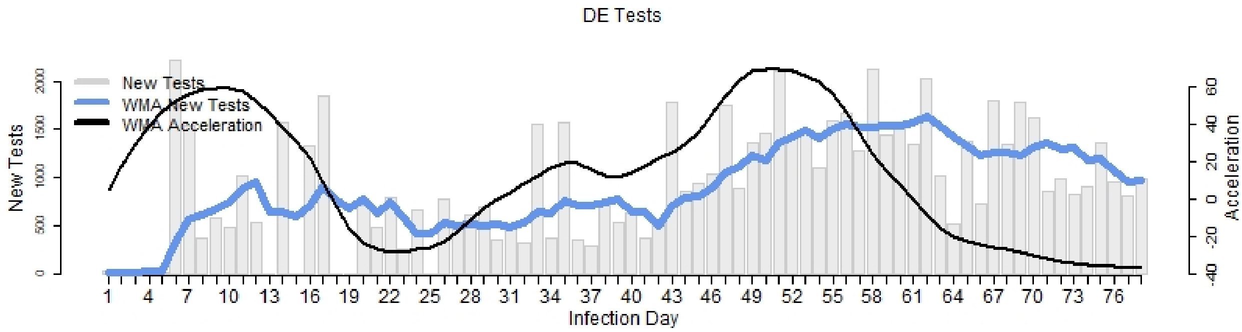
DC Mobility

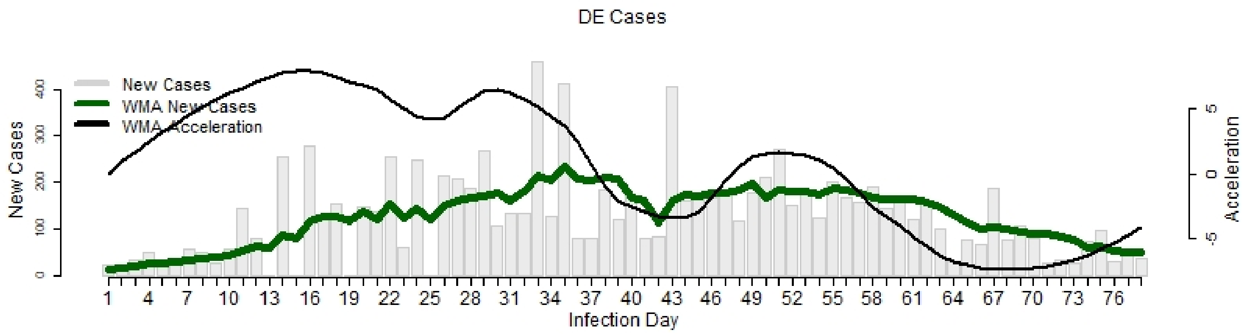


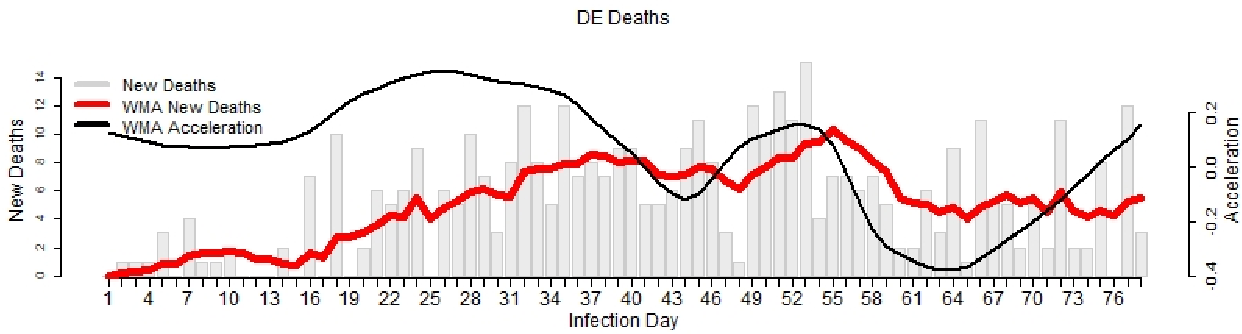
Metrics as of 2020-06-11

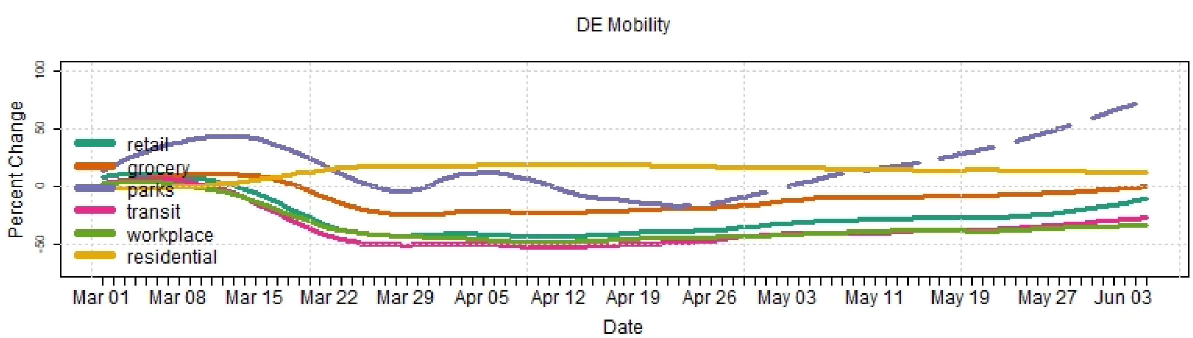
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
DC	58192	9537	499	16.4	5.2	63	4

DE





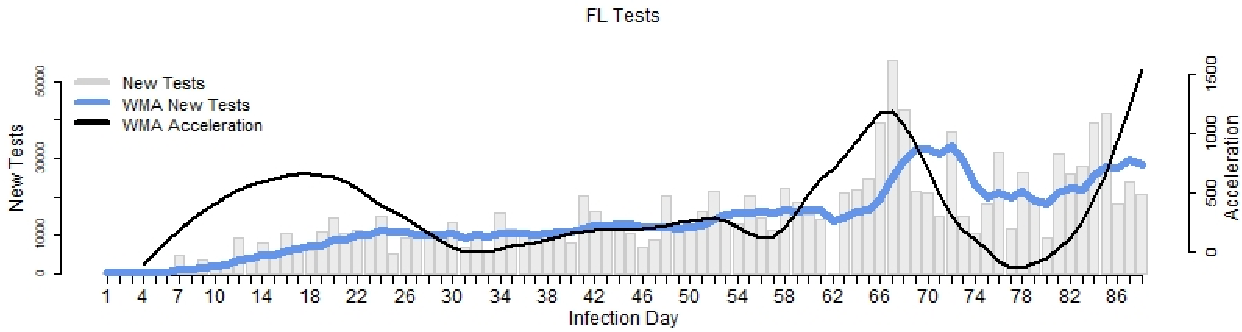


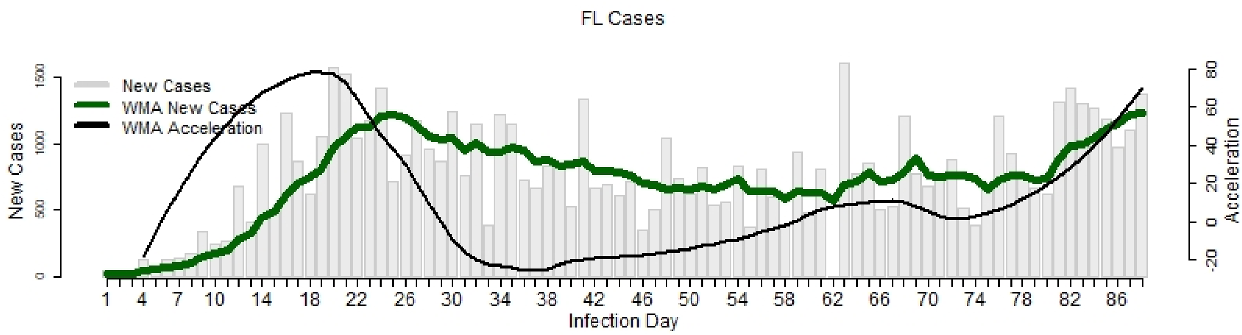


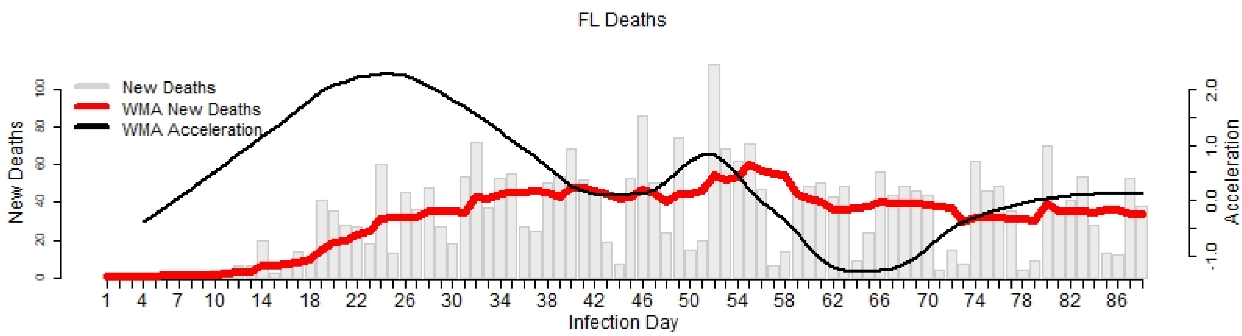
Metrics as of 2020-06-11

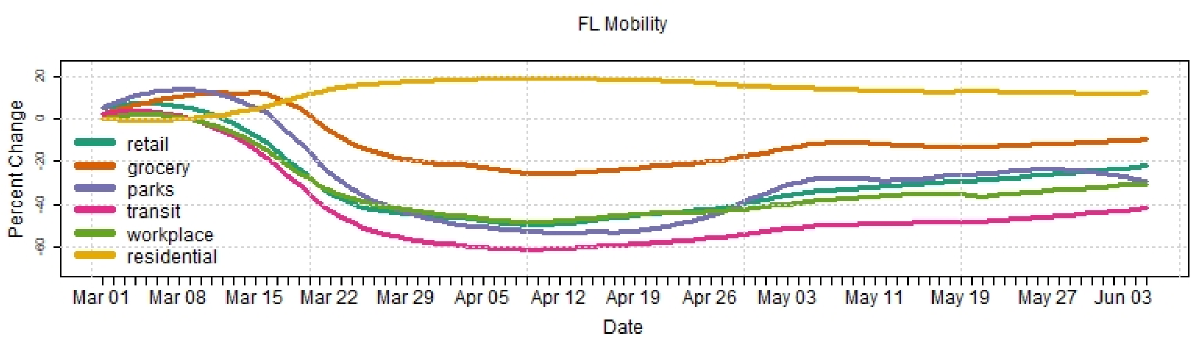
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
DE	71745	10056	413	14	4.1	36	3

FL







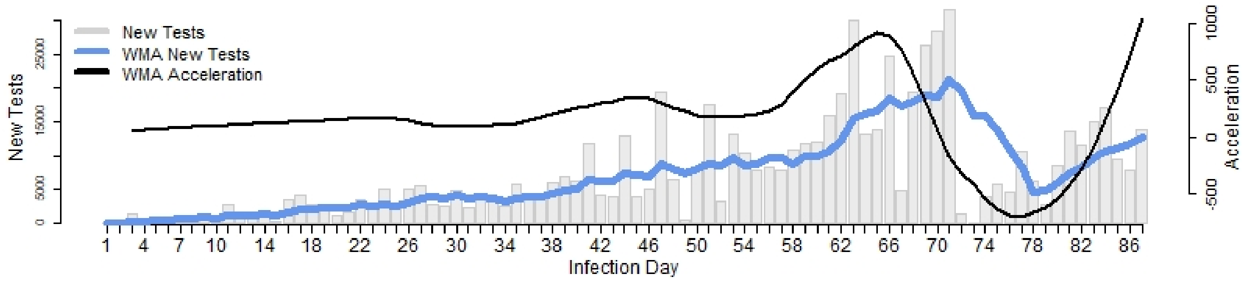


Metrics as of 2020-06-11

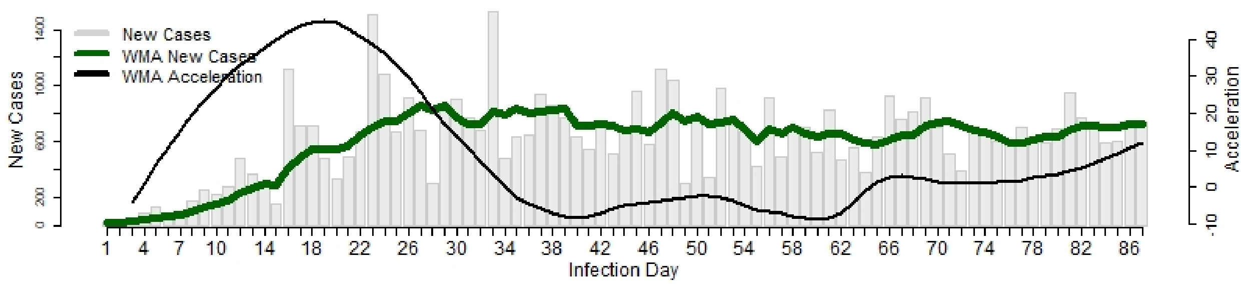
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
FL	1279023	67371	2889	5.3	4.3	1371	38

GA

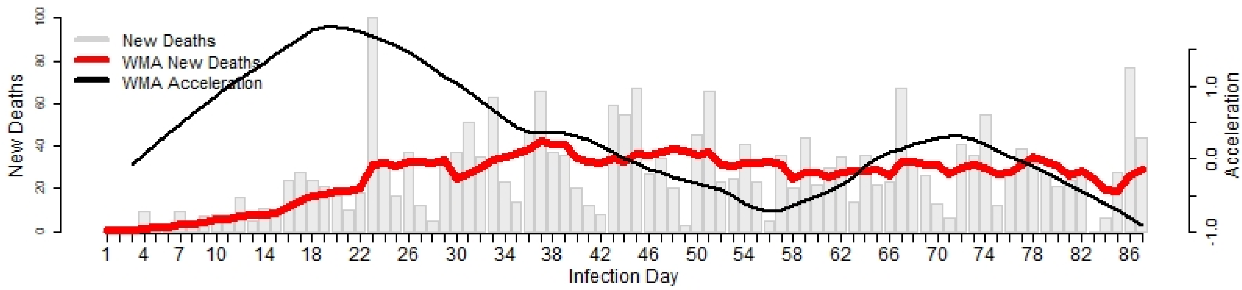
GA Tests



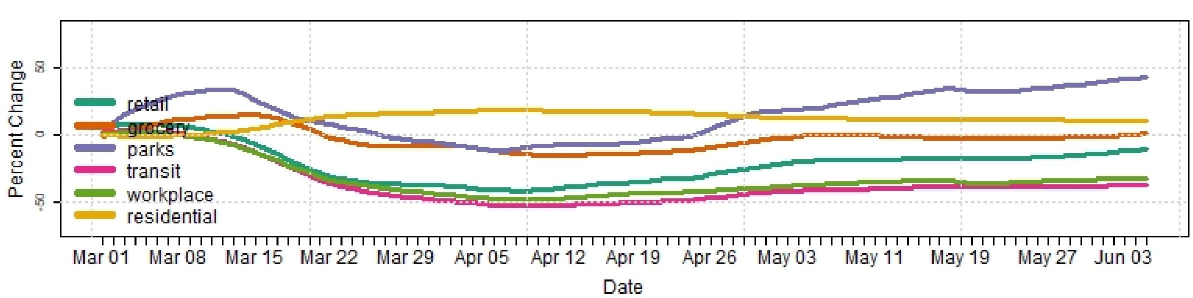
GA Cases



GA Deaths



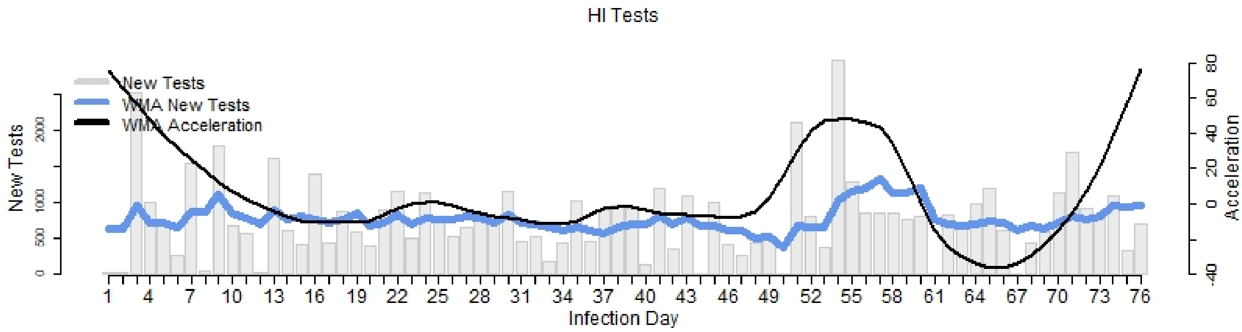
GA Mobility

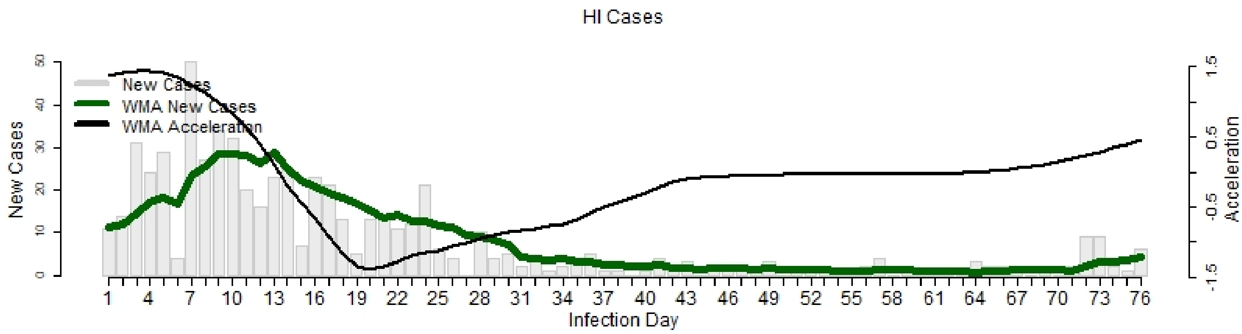


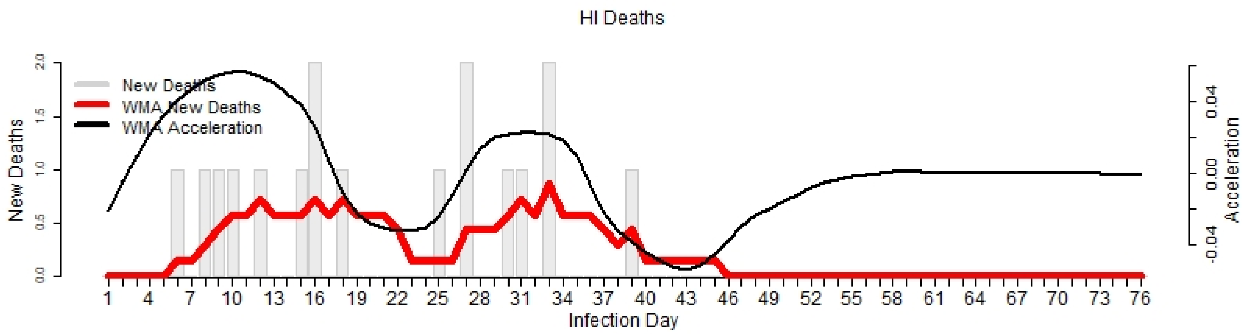
Metrics as of 2020-06-11

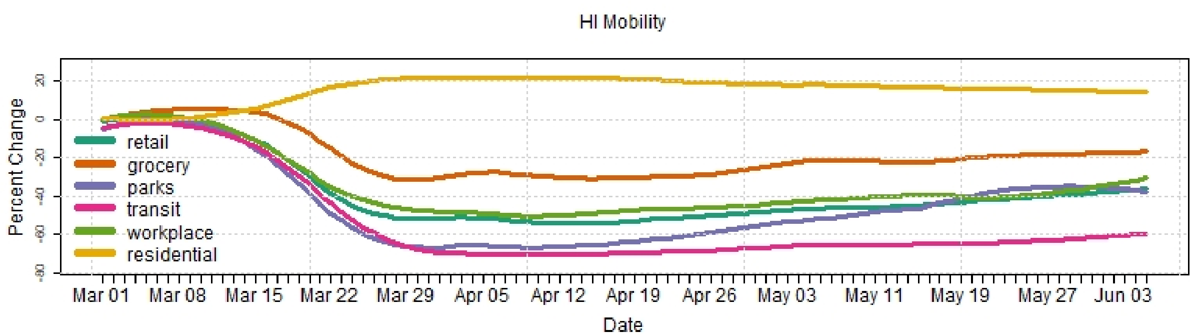
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
GA	570955	53980	2329	9.5	4.3	731	44

HI





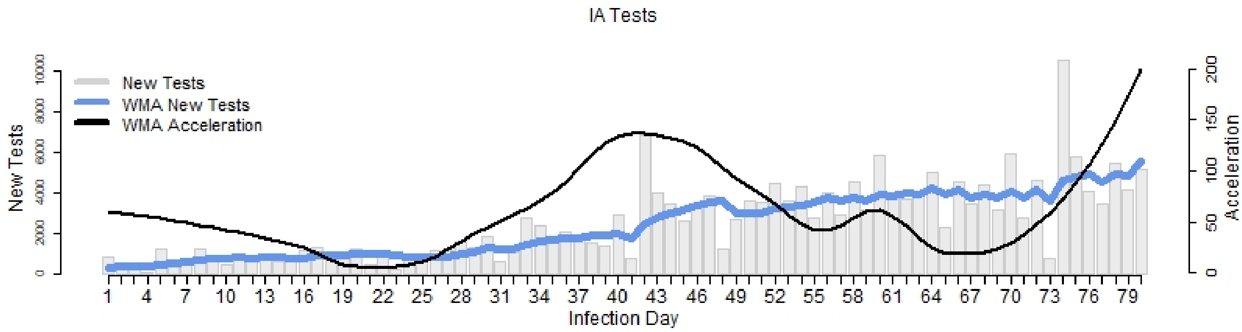


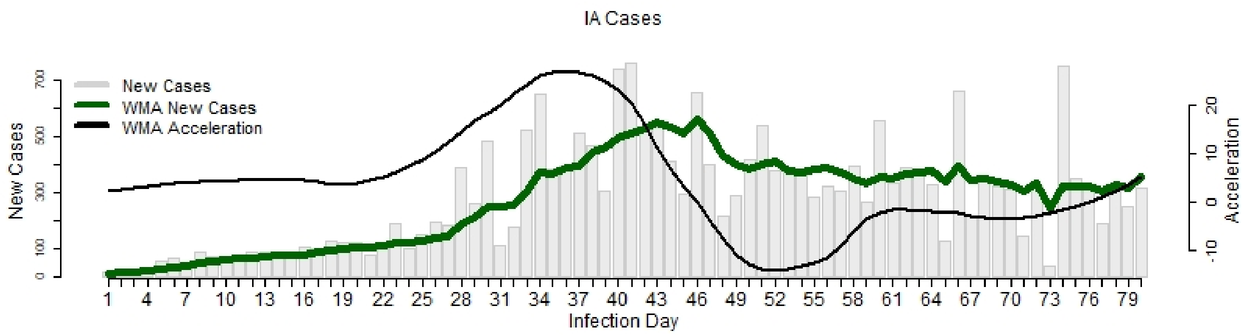


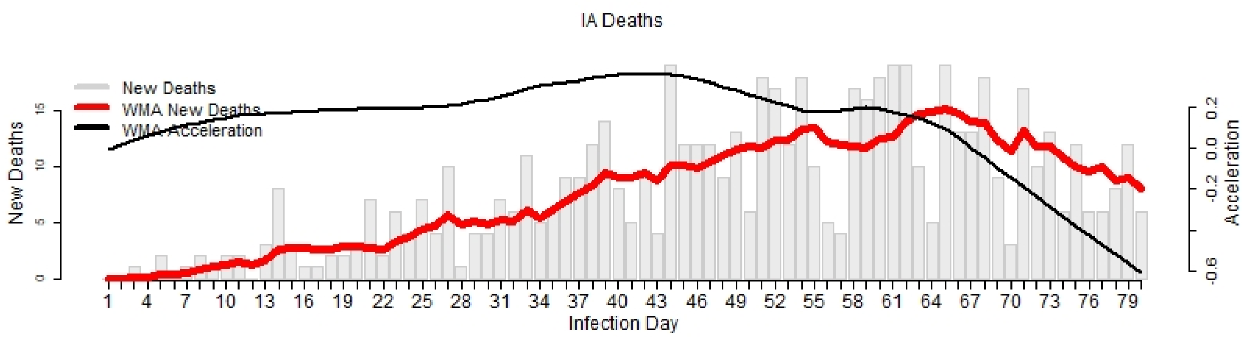
Metrics as of 2020-06-11

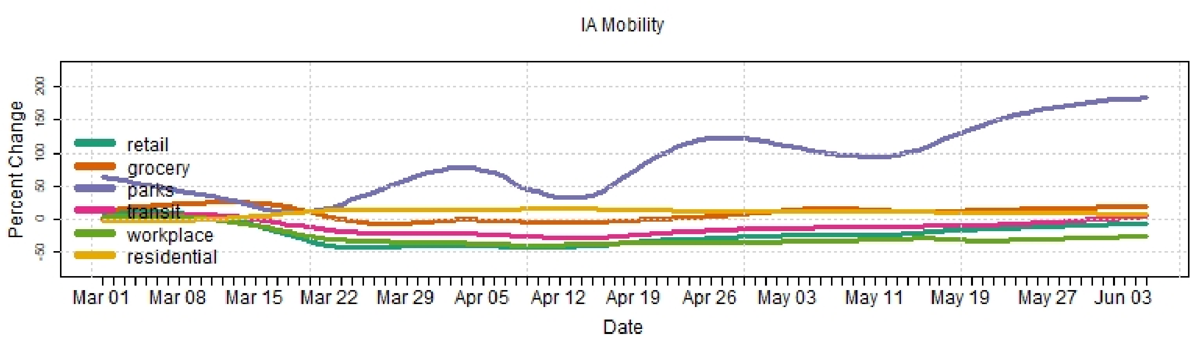
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
HI	56173	682	17	1.2	2.5	6	0

IA





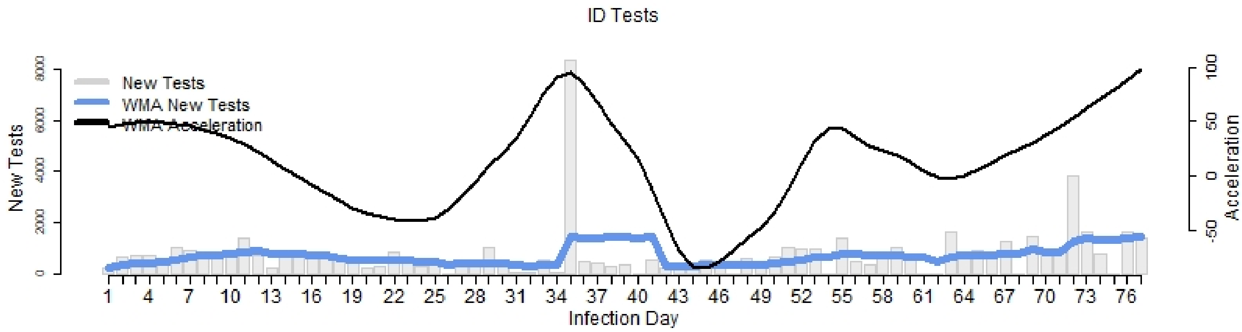


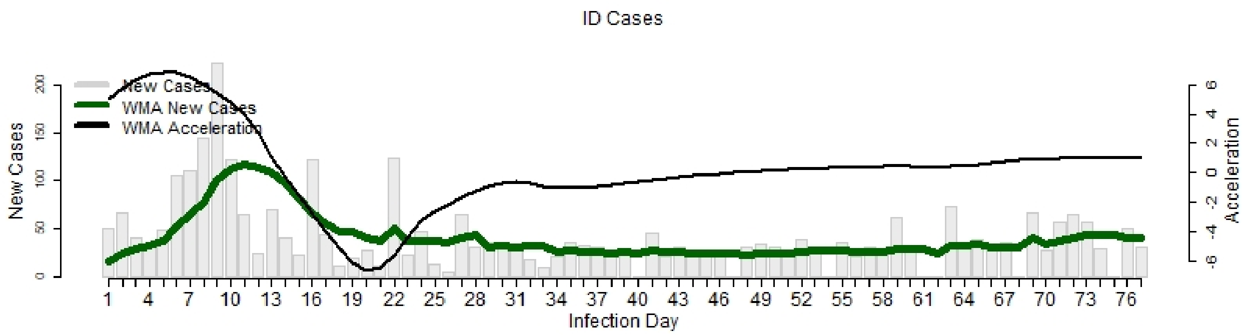


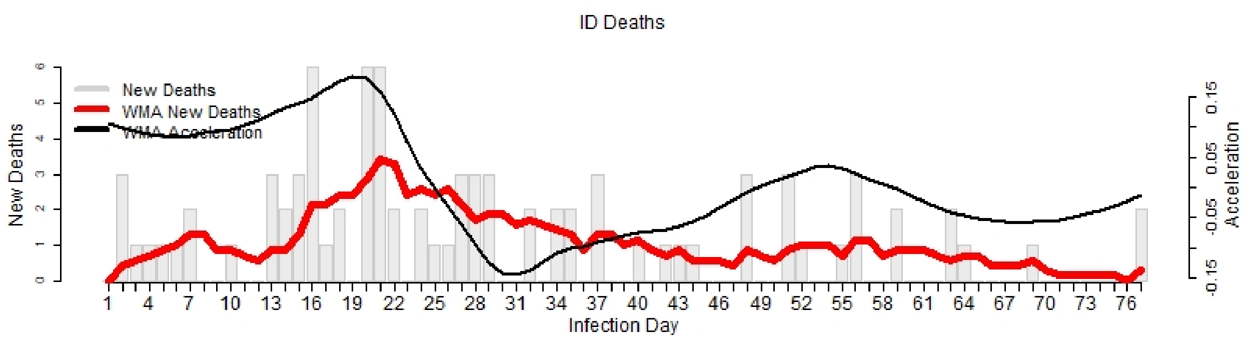
Metrics as of 2020-06-11

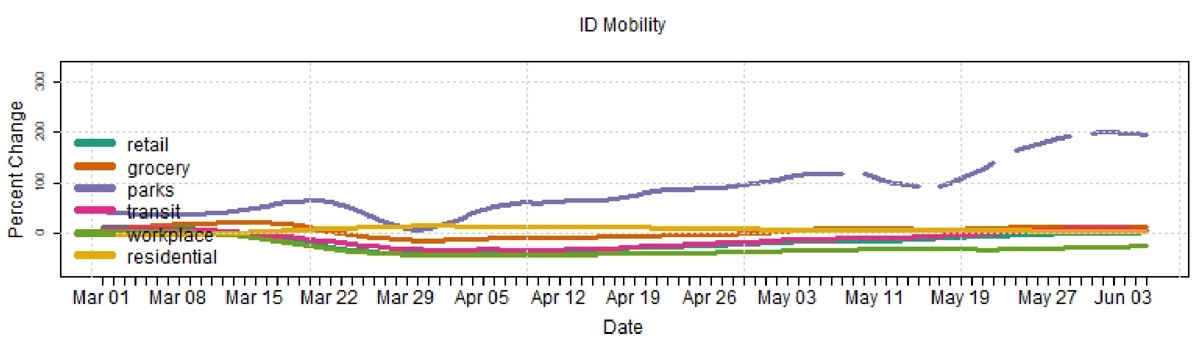
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
IA	202829	22551	630	11.1	2.8	315	6

ID





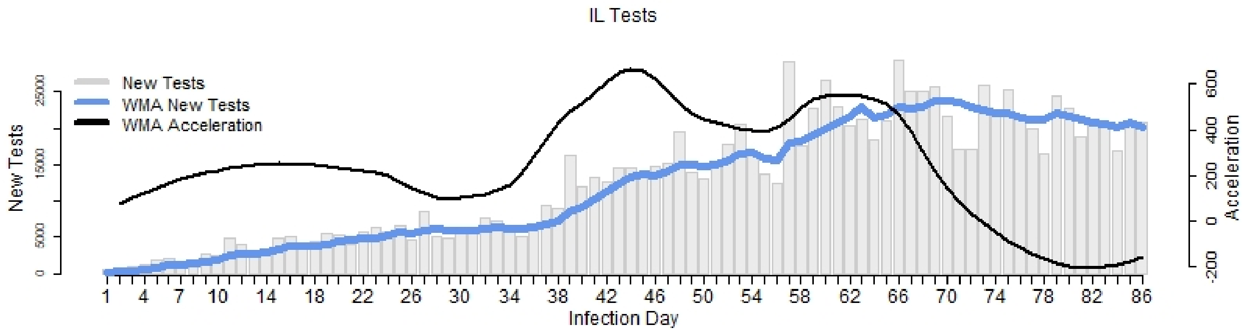


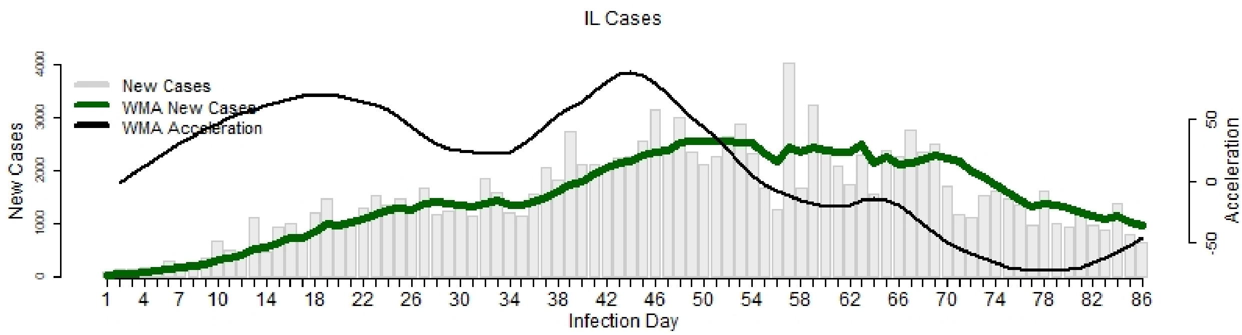


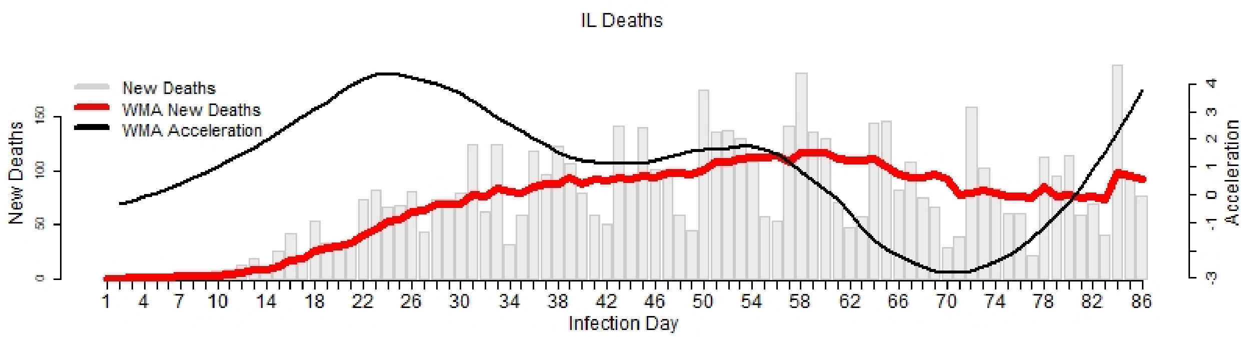
Metrics as of 2020-06-11

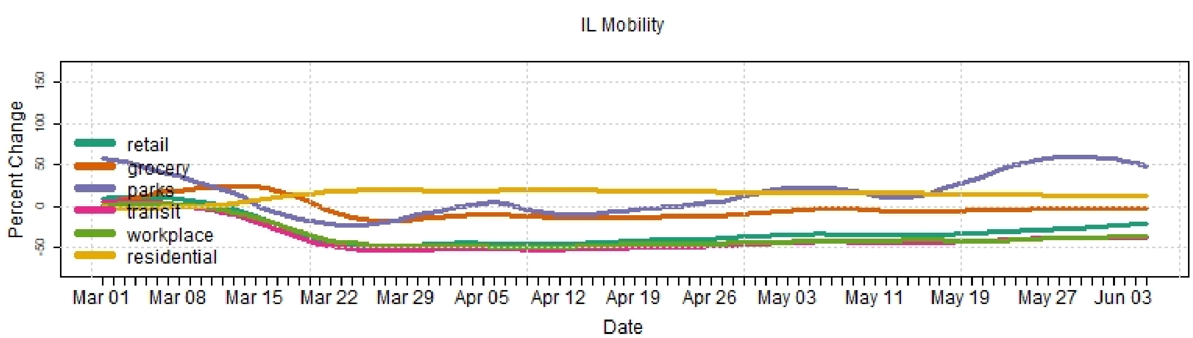
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
ID	59052	3220	85	5.5	2.6	31	2

IL







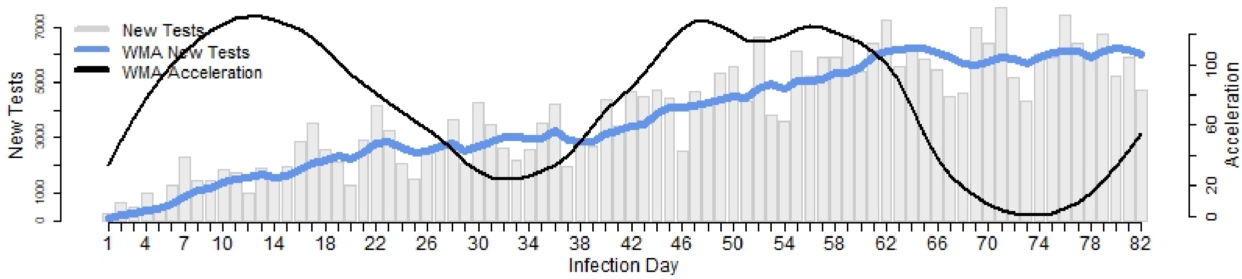


Metrics as of 2020-06-11

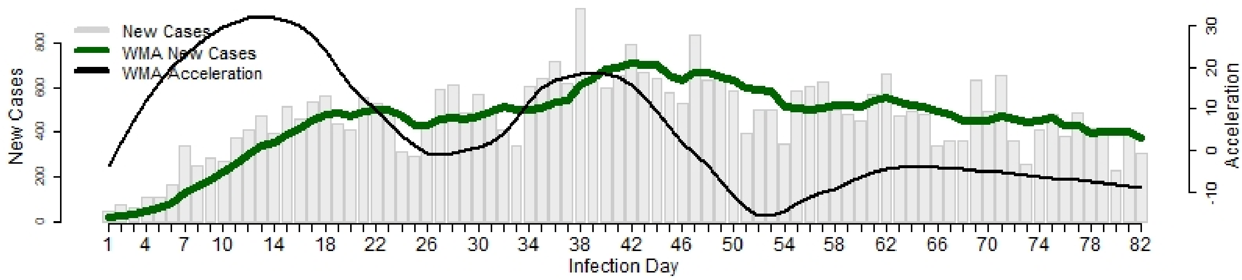
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
IL	1100726	130561	6273	11.9	4.8	625	77

IN

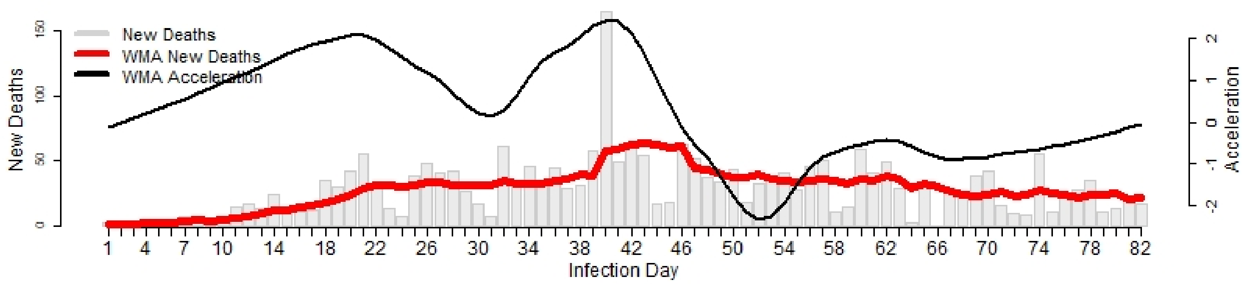
IN Tests



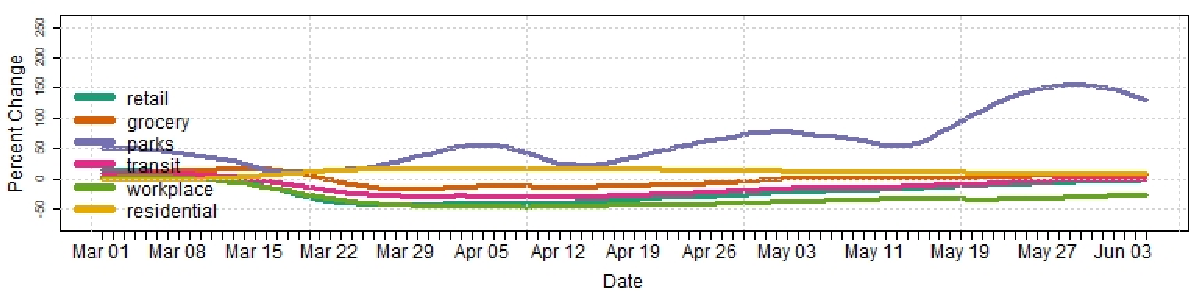
IN Cases



IN Deaths



IN Mobility

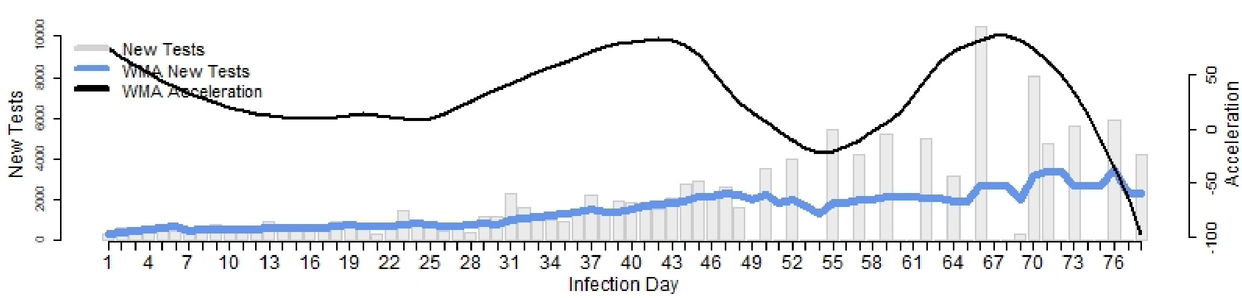


Metrics as of 2020-06-11

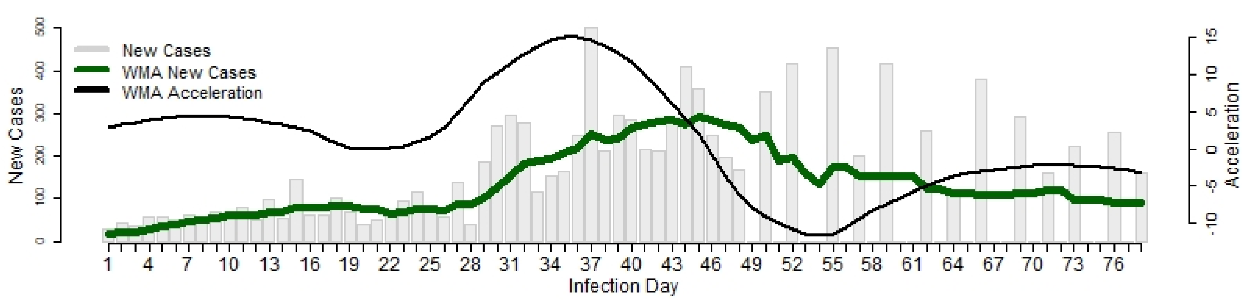
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
IN	320094	38337	2355	12	6.1	304	16

KS

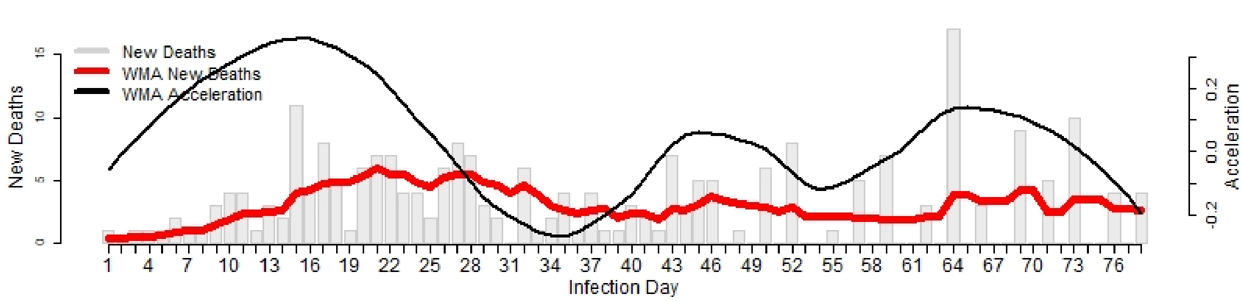
KS Tests



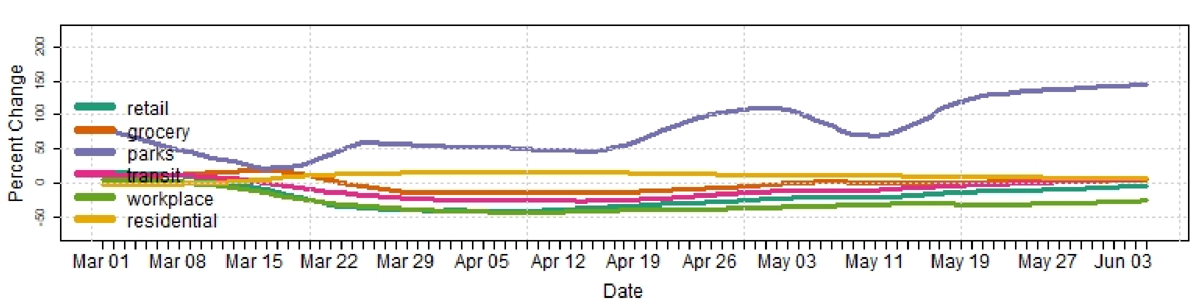
KS Cases



KS Deaths



KS Mobility

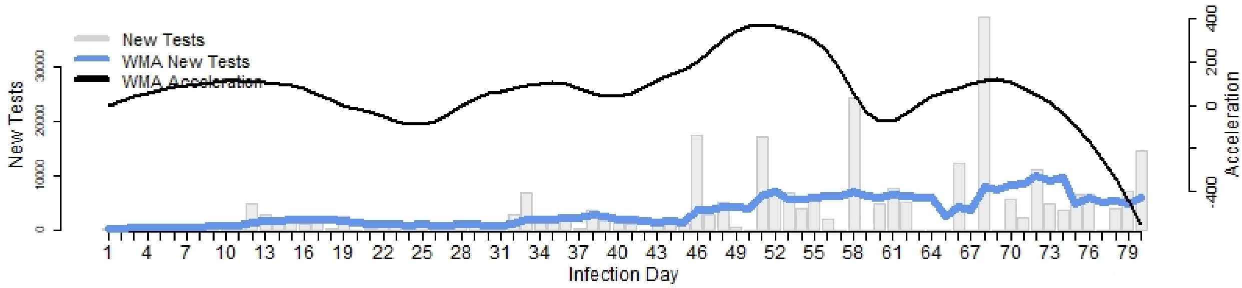


Metrics as of 2020-06-11

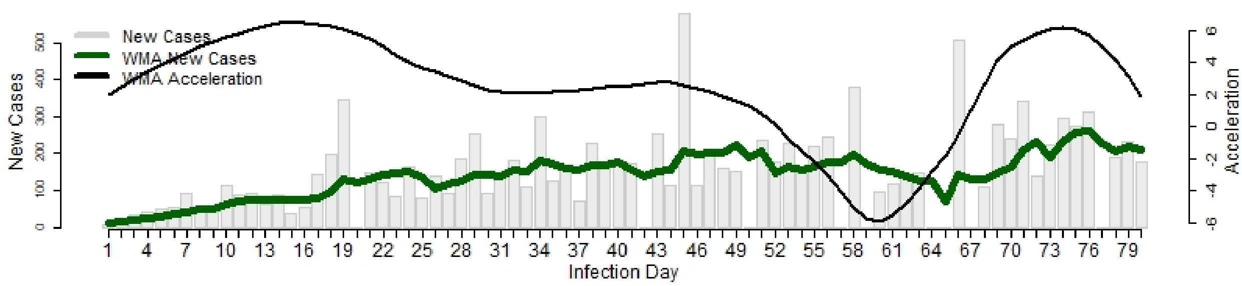
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
KS	123742	10812	240	8.7	2.2	162	4

KY

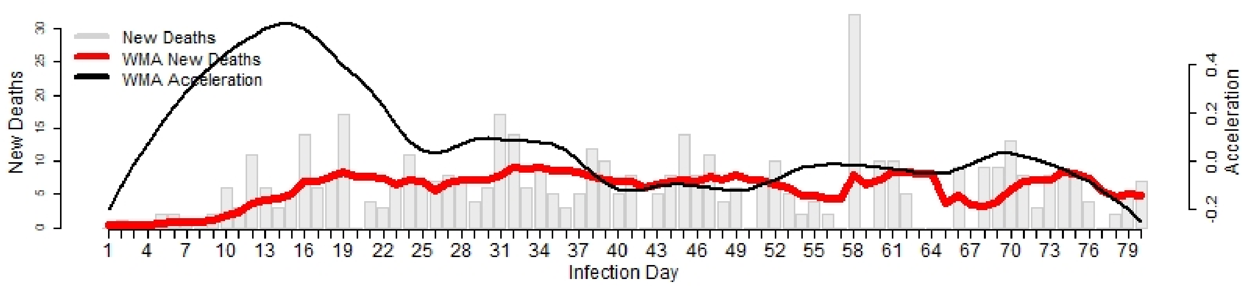
KY Tests



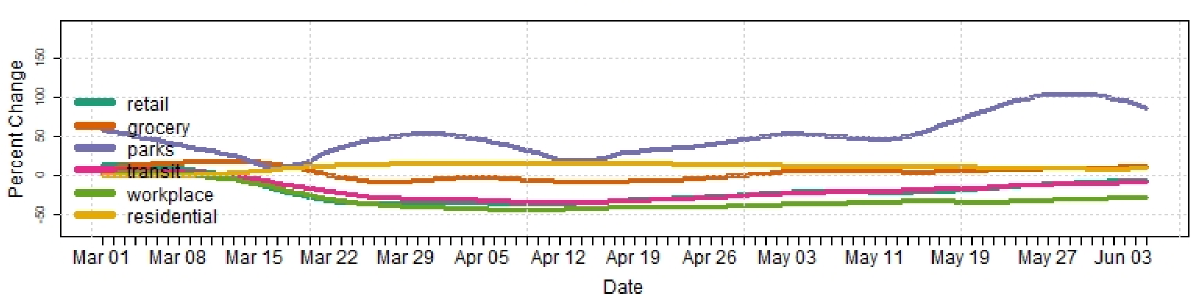
KY Cases



KY Deaths



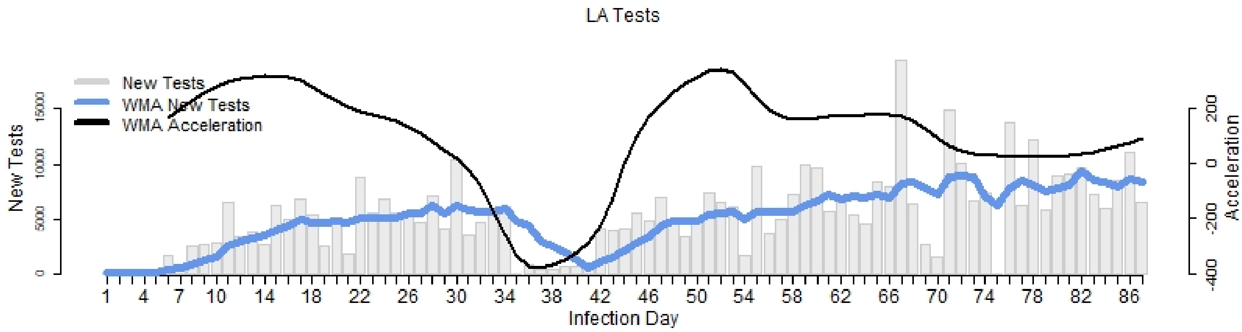
KY Mobility

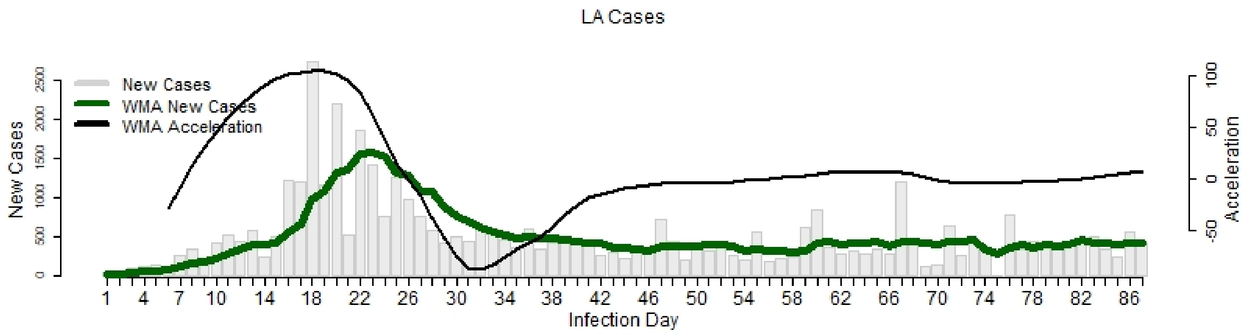


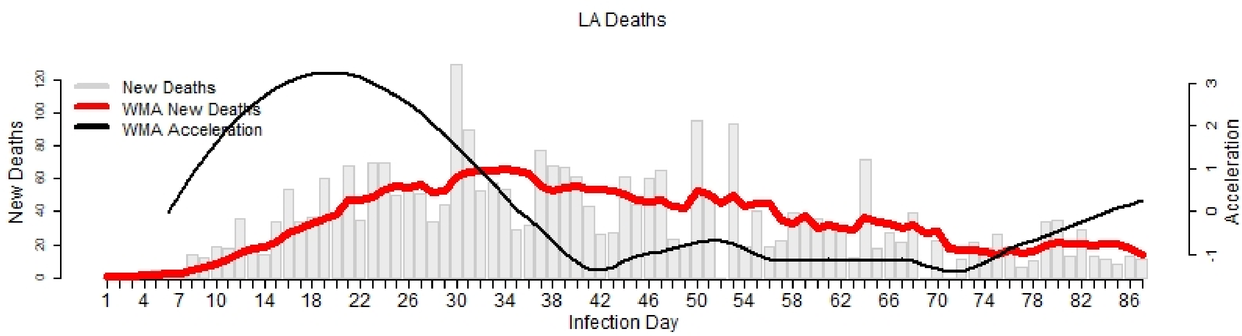
Metrics as of 2020-06-11

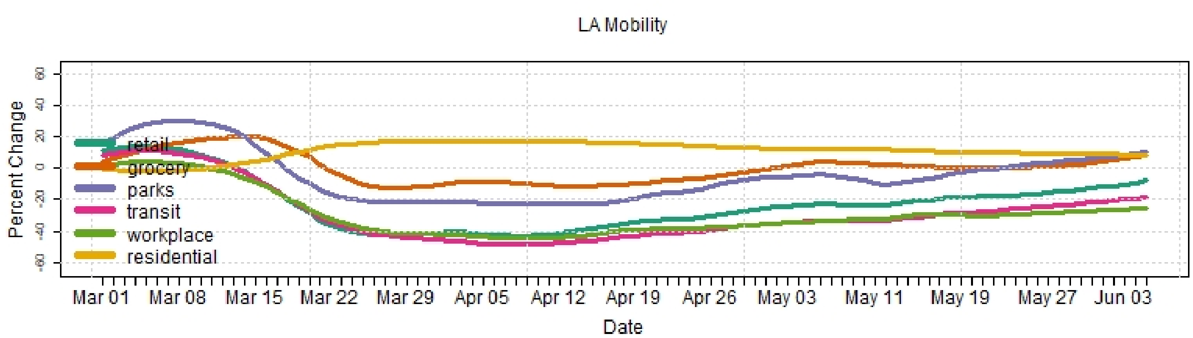
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
KY	274414	11883	484	4.3	4.1	175	7

LA





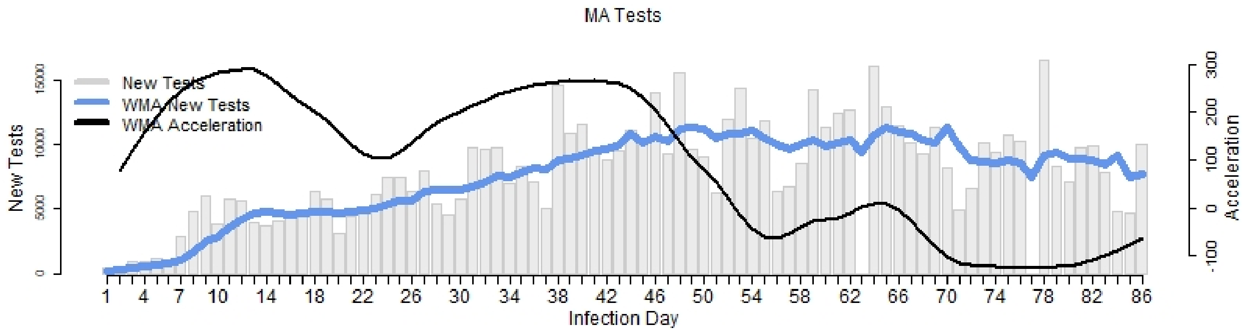


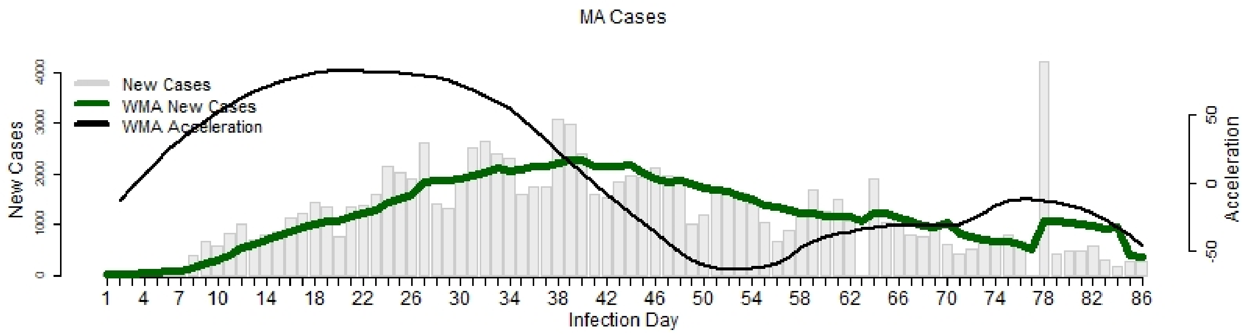


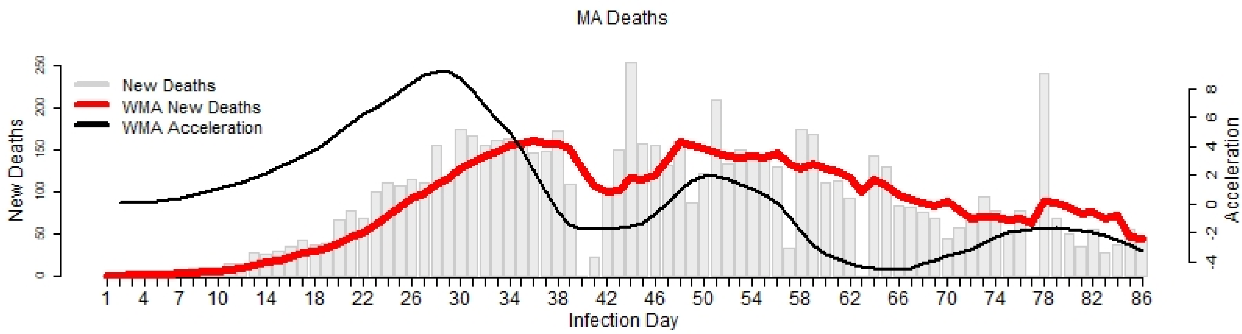
Metrics as of 2020-06-11

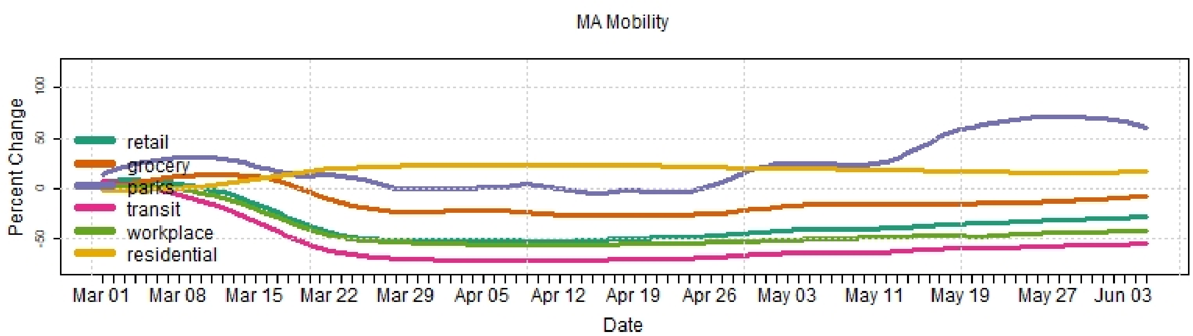
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
LA	460120	44030	2968	9.6	6.7	418	11

MA





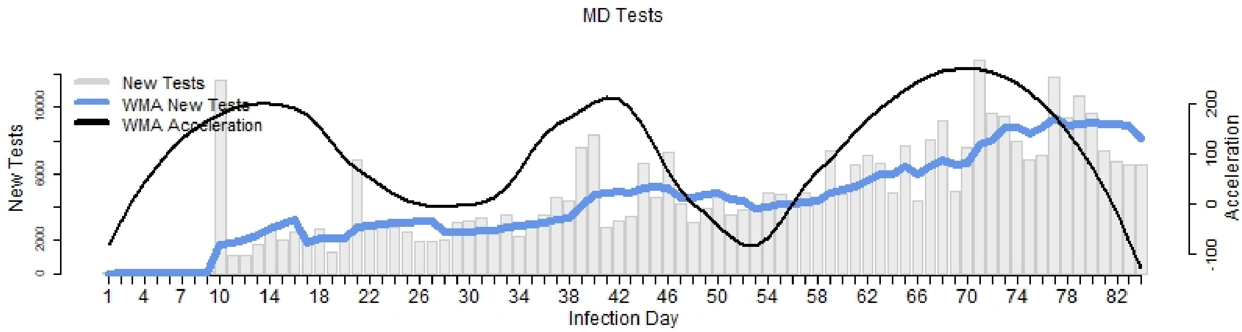


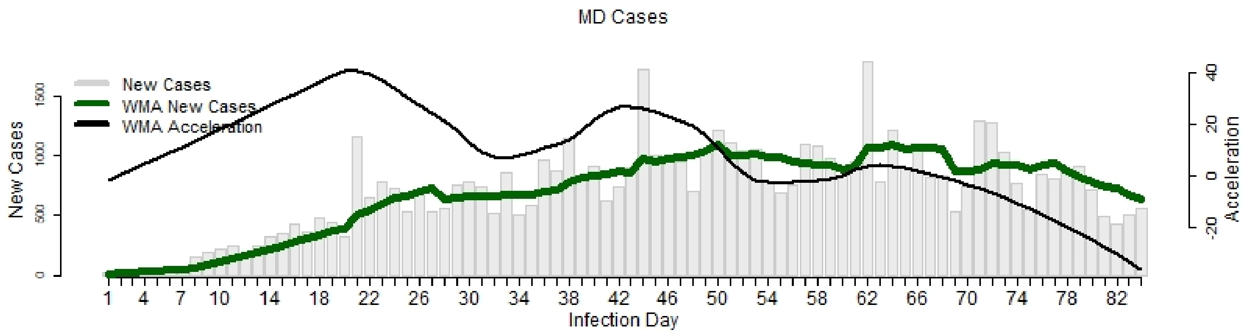


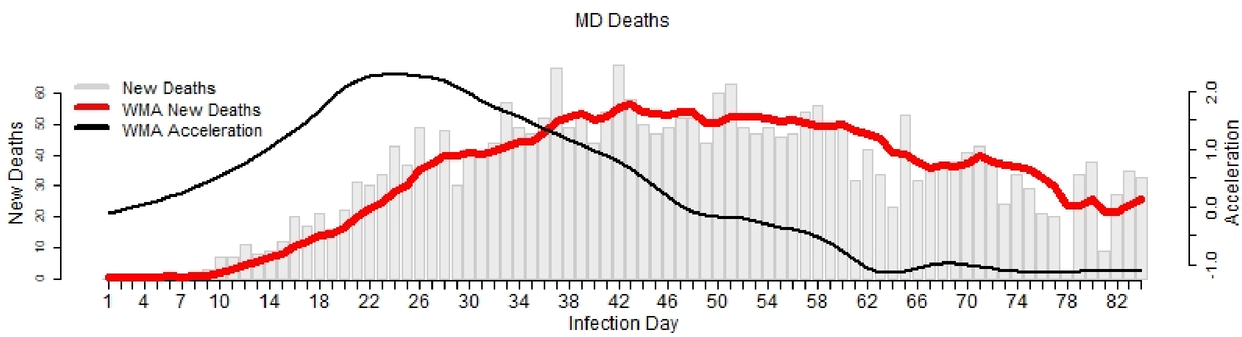
Metrics as of 2020-06-11

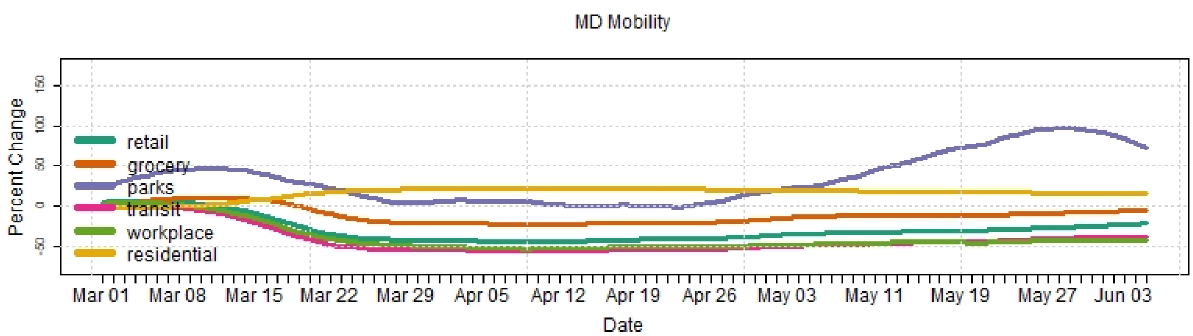
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
MA	672090	104156	7454	15.5	7.2	267	46

MD





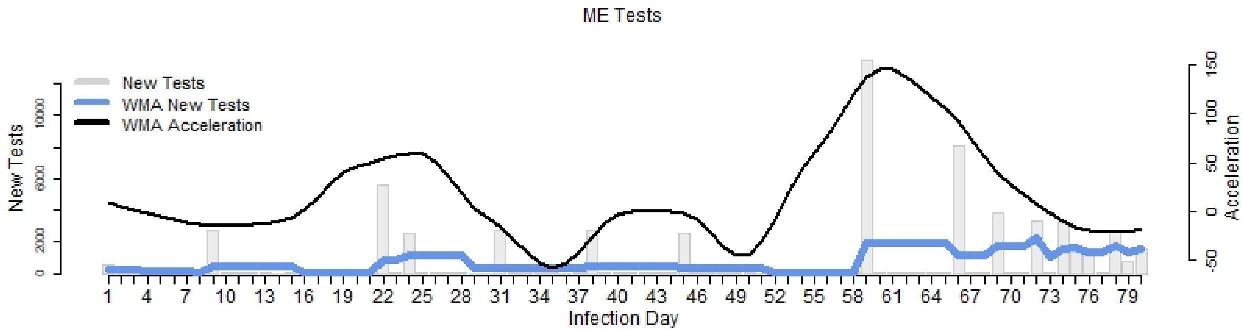


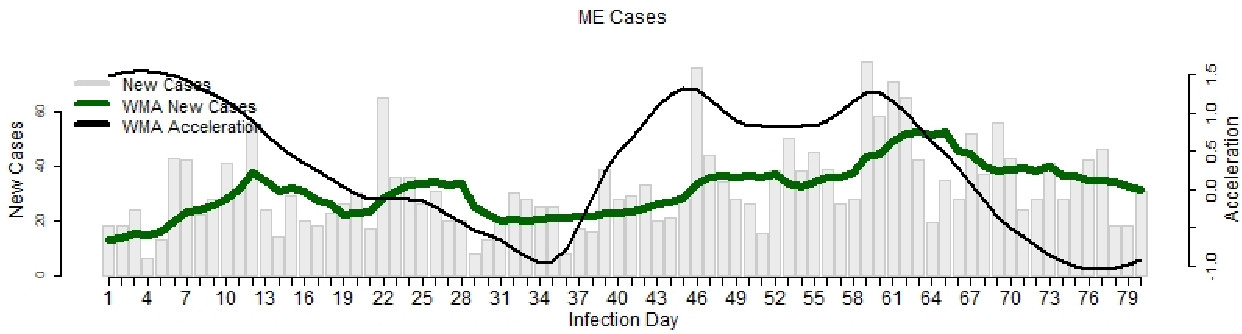


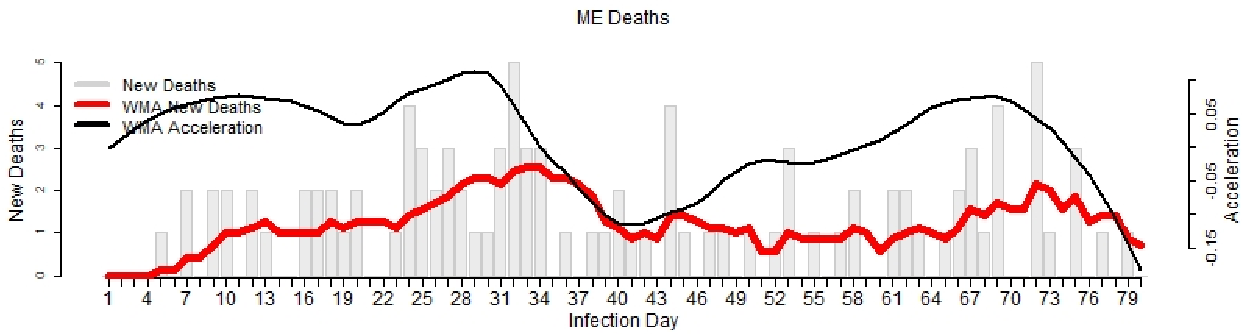
Metrics as of 2020-06-11

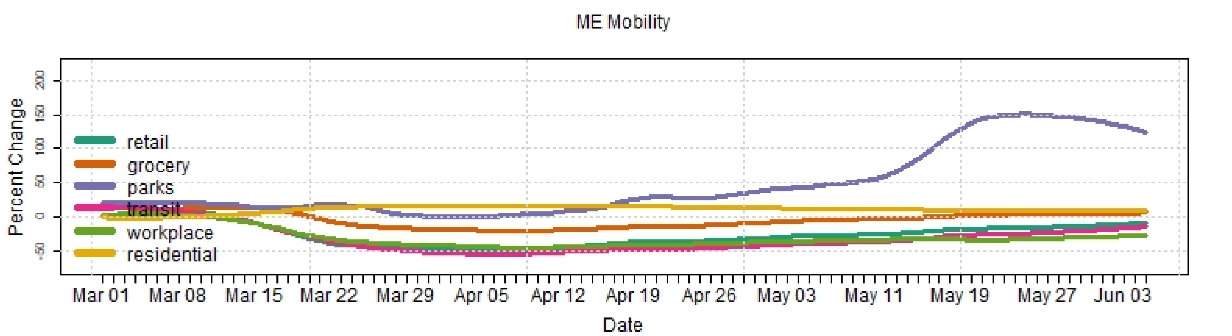
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
MD	384642	59465	2844	15.5	4.8	561	33

ME







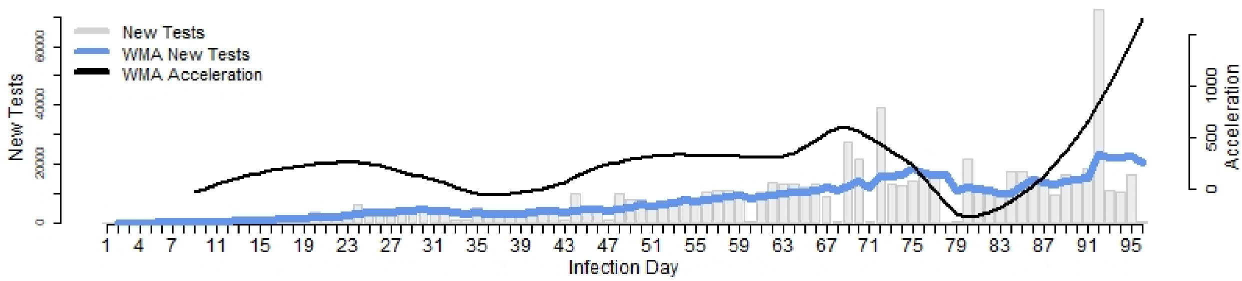


Metrics as of 2020-06-11

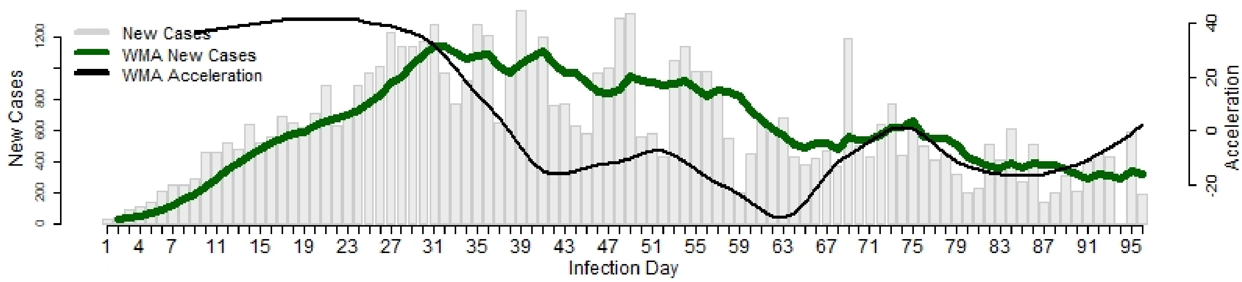
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
ME	63940	2637	100	4.1	3.8	31	0

MI

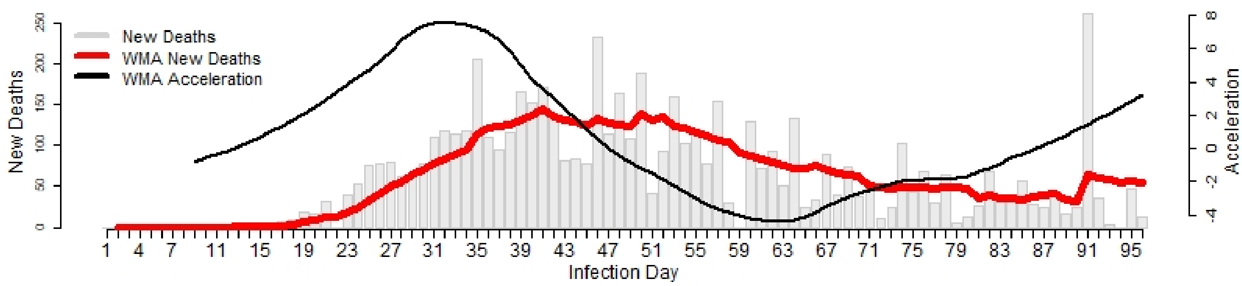
MI Tests



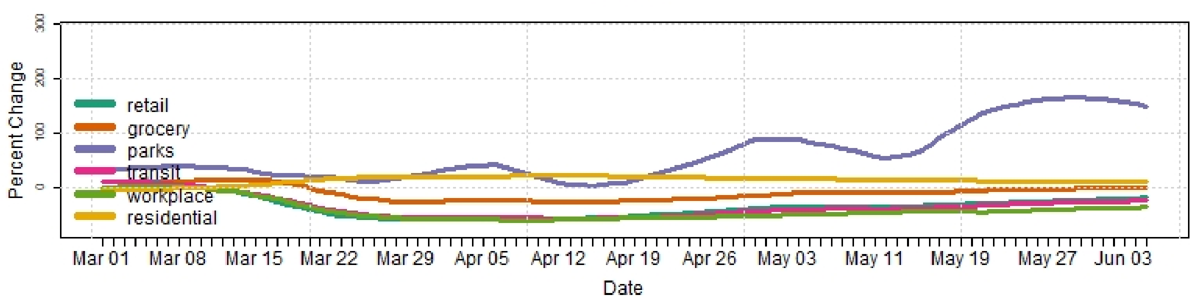
MI Cases



MI Deaths



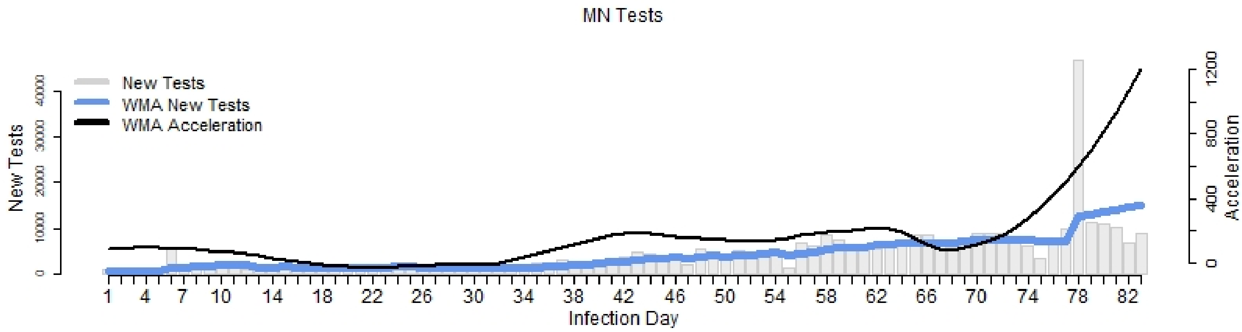
MI Mobility

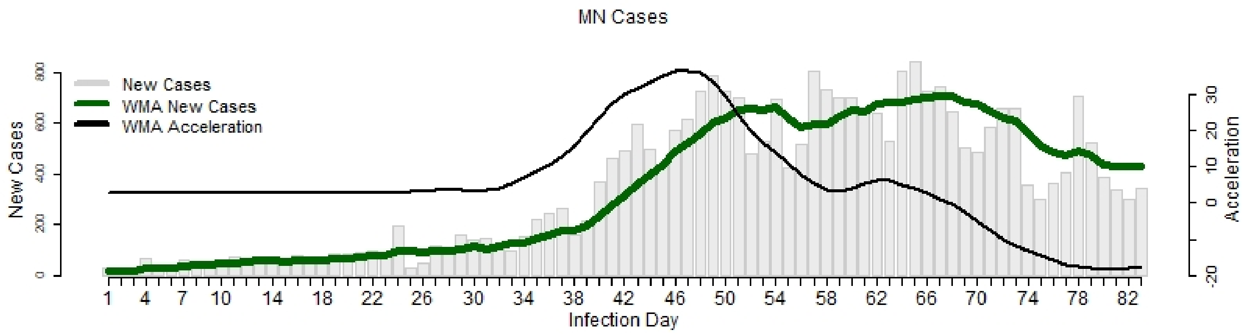


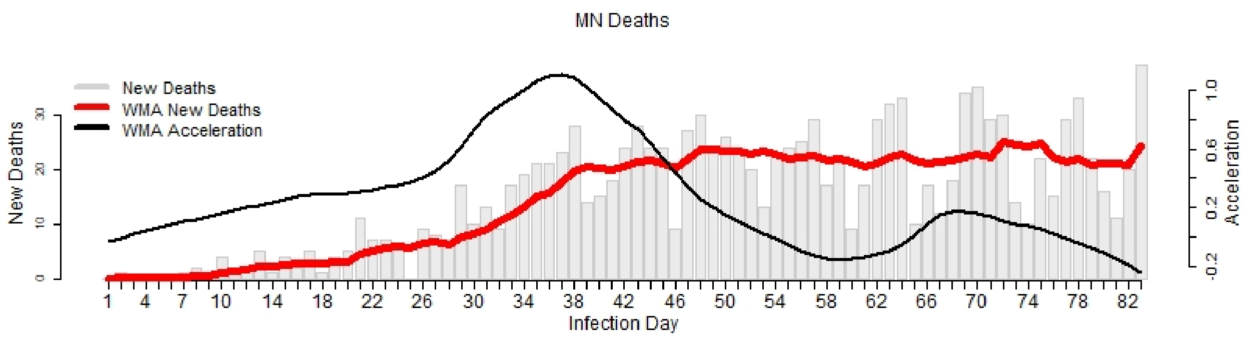
Metrics as of 2020-06-11

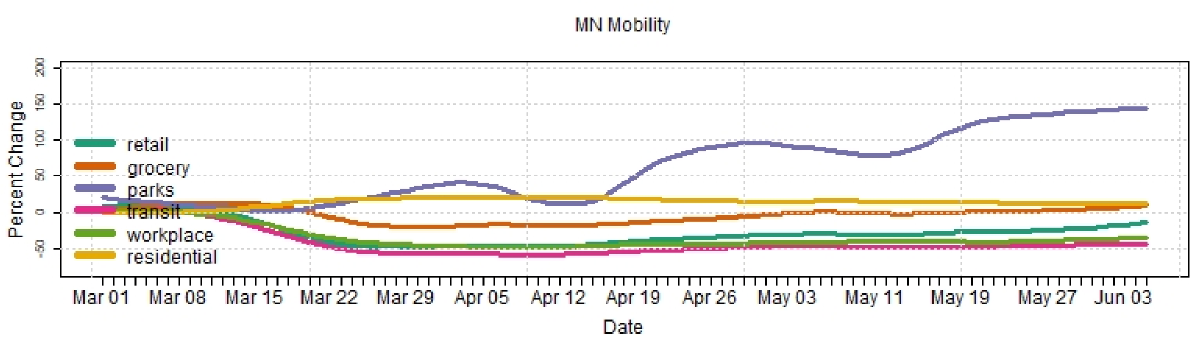
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
MI	737335	65182	5955	8.8	9.1	184	12

MN





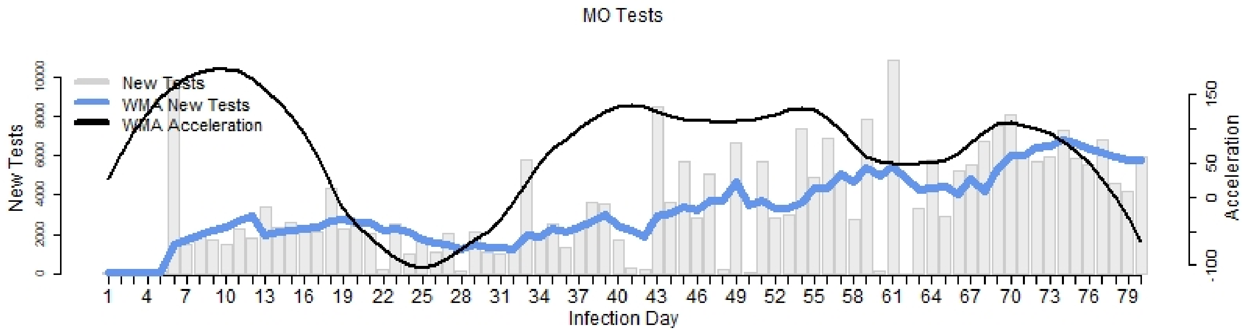


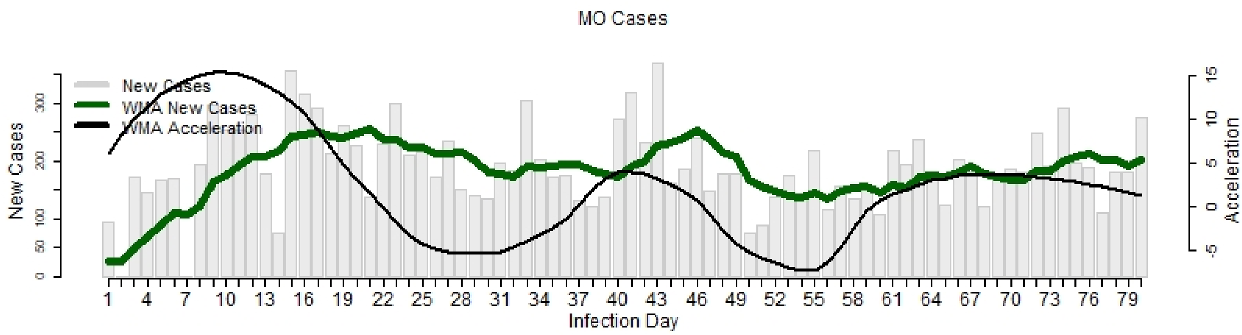


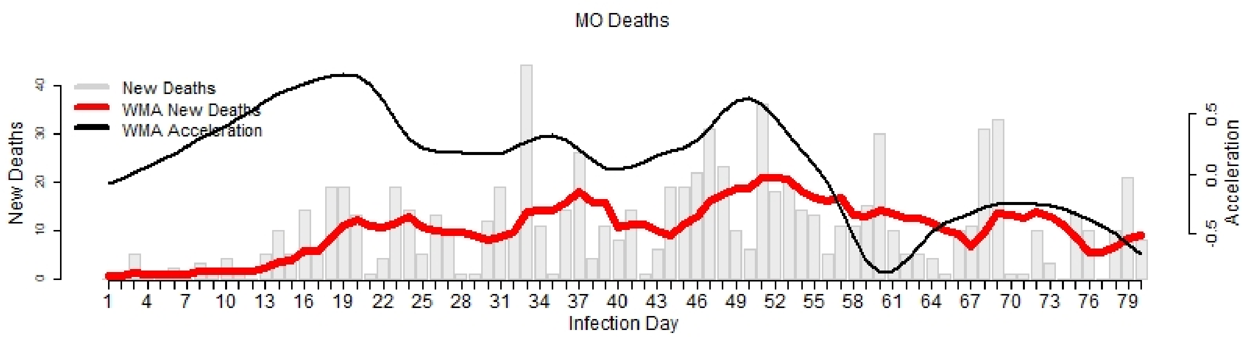
Metrics as of 2020-06-11

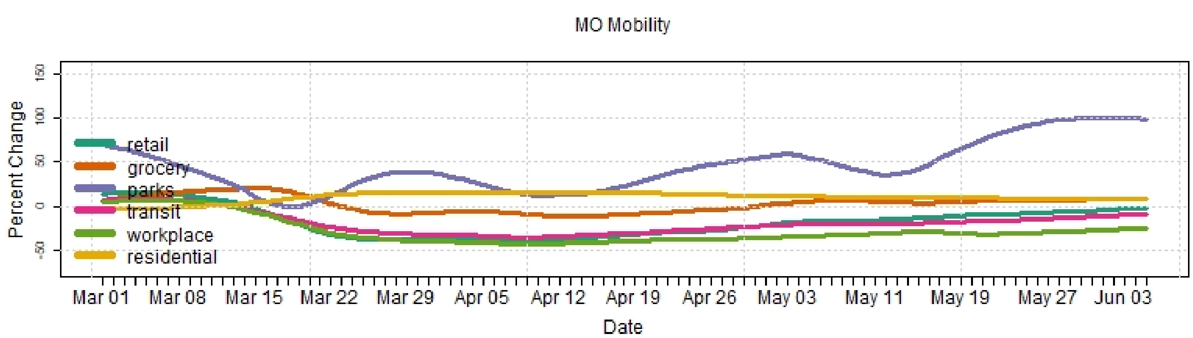
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
MN	369795	28869	1267	7.8	4.4	346	39

MO





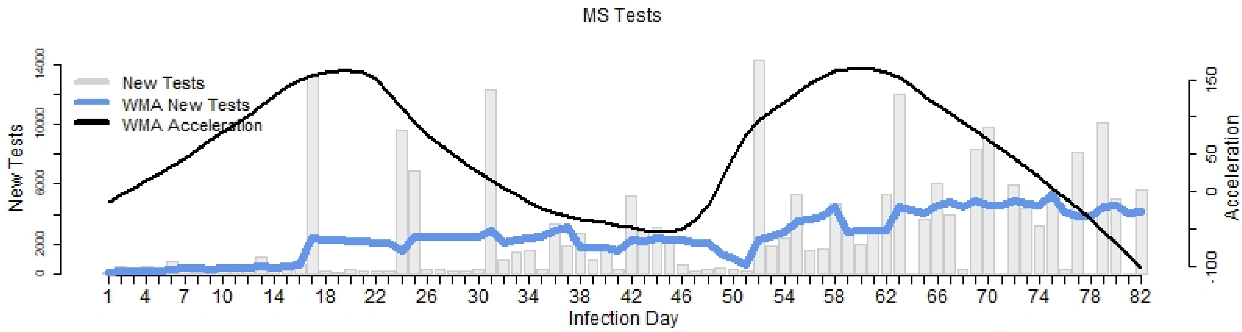


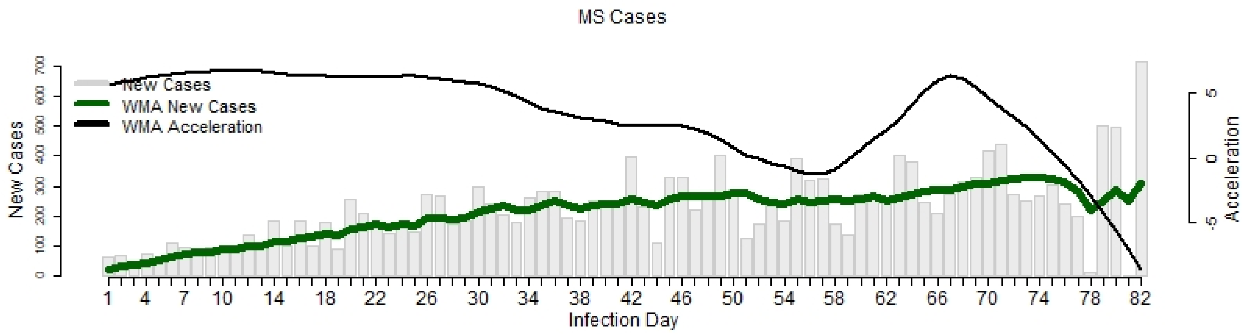


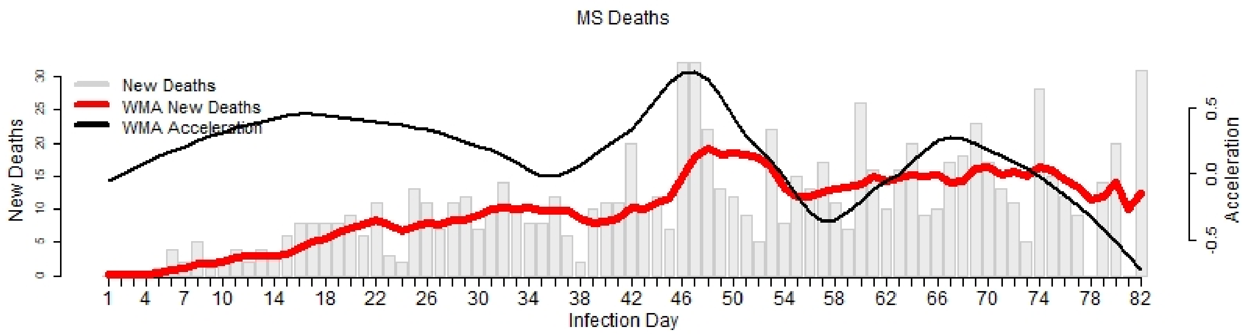
Metrics as of 2020-06-11

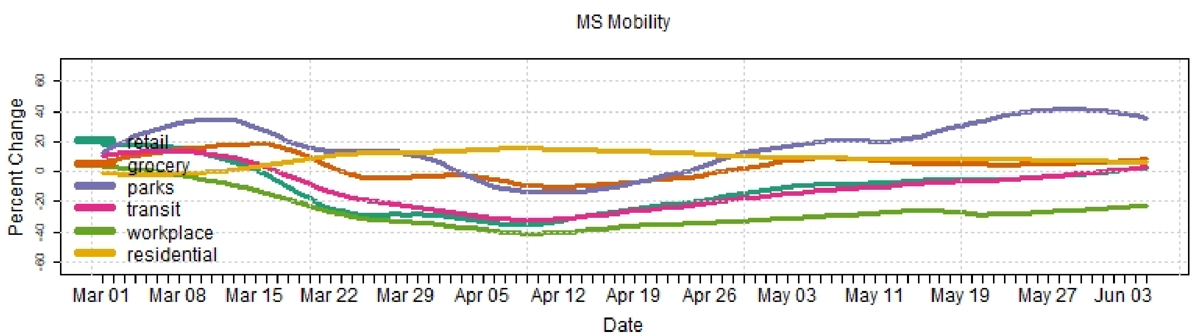
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
MO	251629	15187	848	6	5.6	274	8

MS





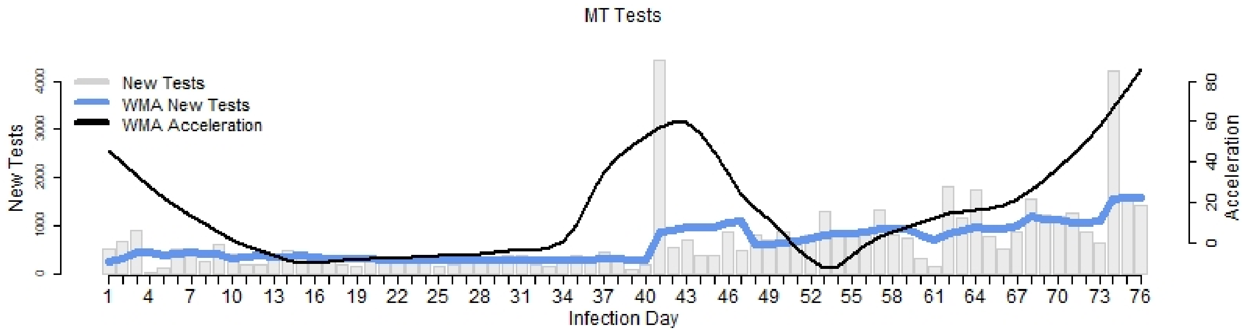


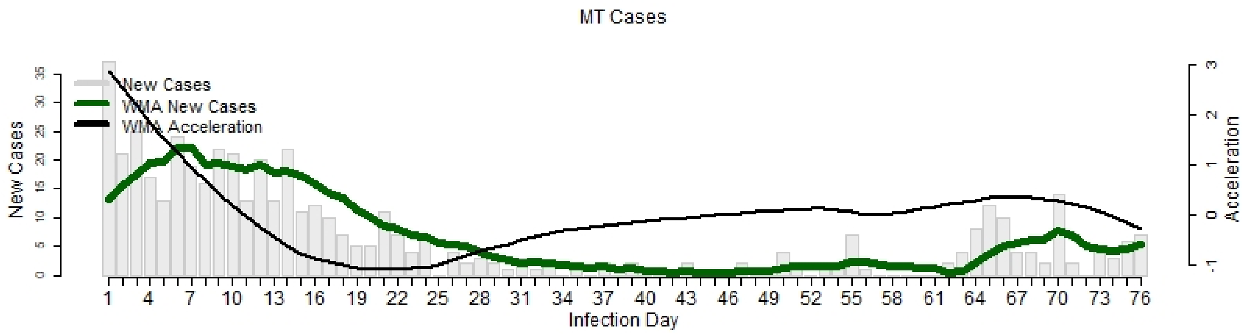


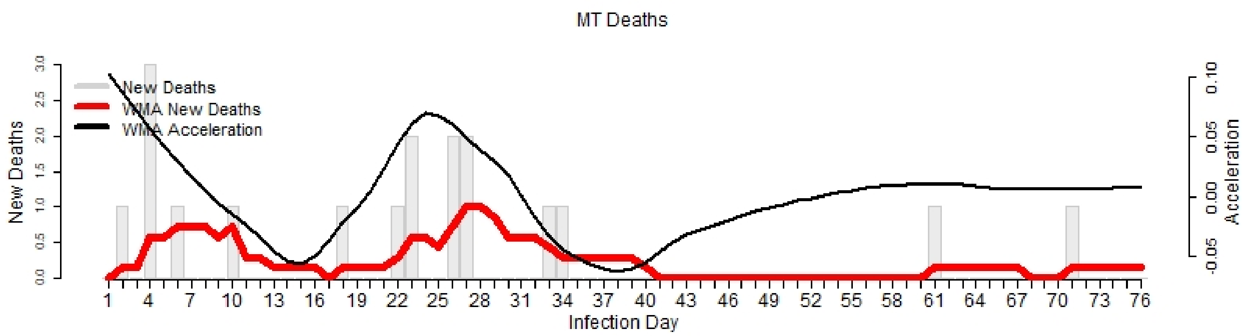
Metrics as of 2020-06-11

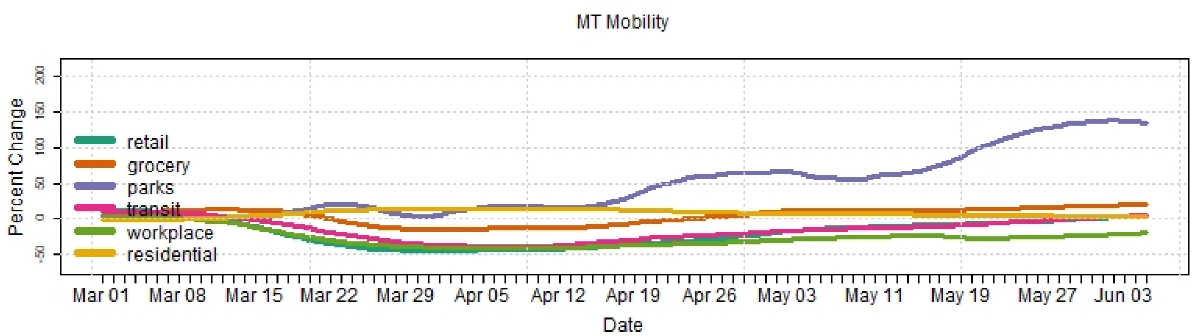
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
MS	213885	18483	868	8.6	4.7	715	31

MT







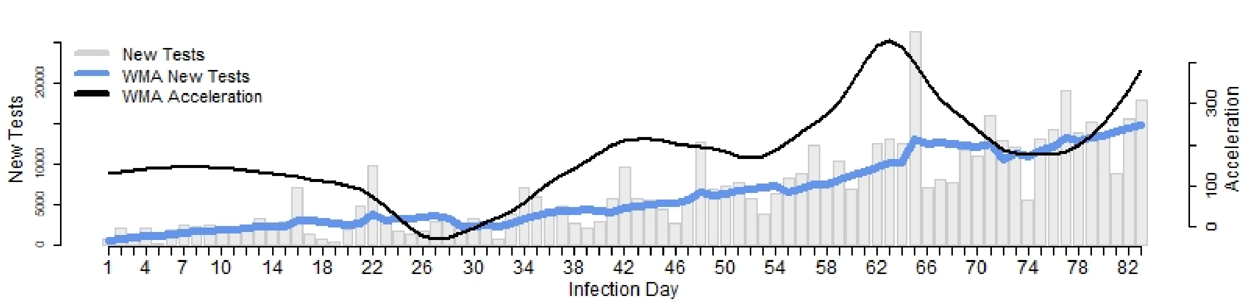


Metrics as of 2020-06-11

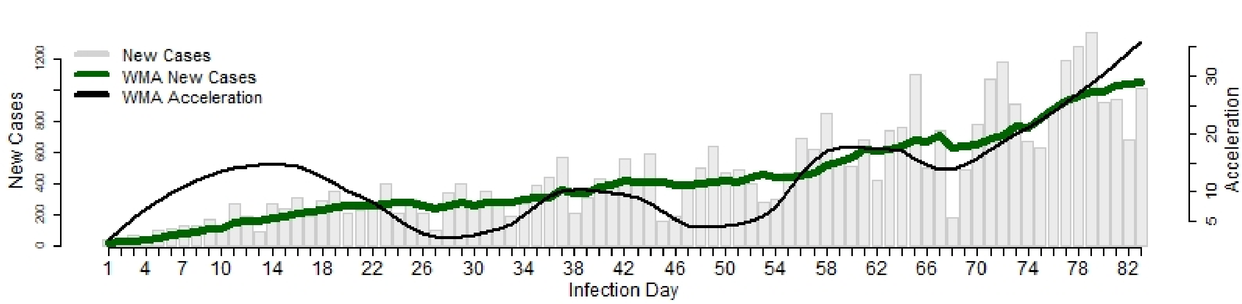
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
MT	54616	561	18	1	3.2	7	0

NC

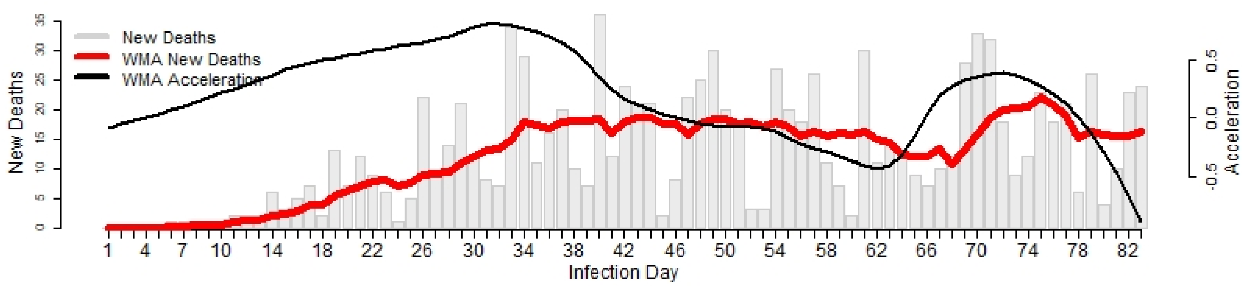
NC Tests



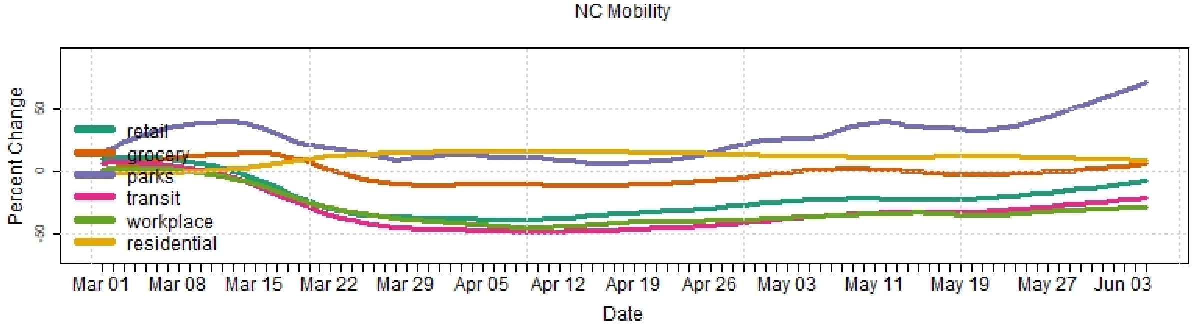
NC Cases



NC Deaths



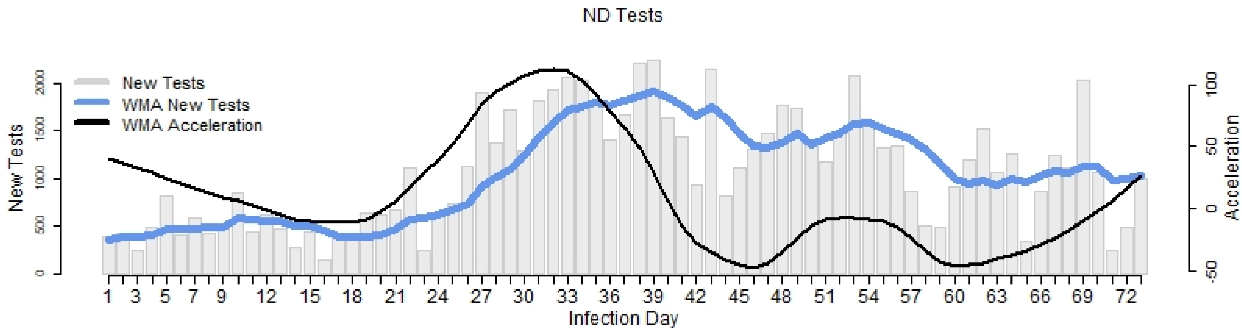
NC Mobility

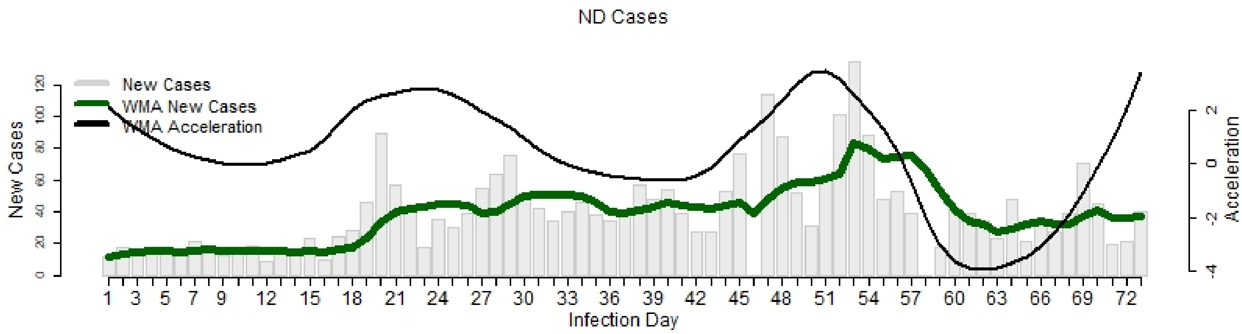


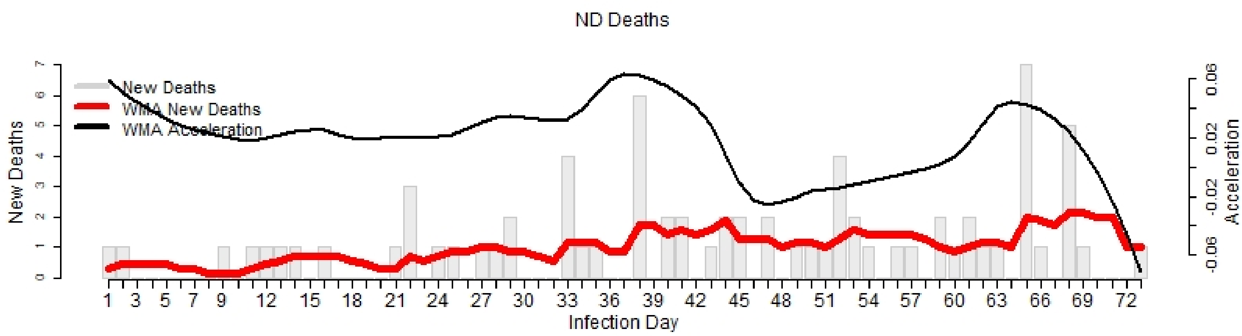
Metrics as of 2020-06-11

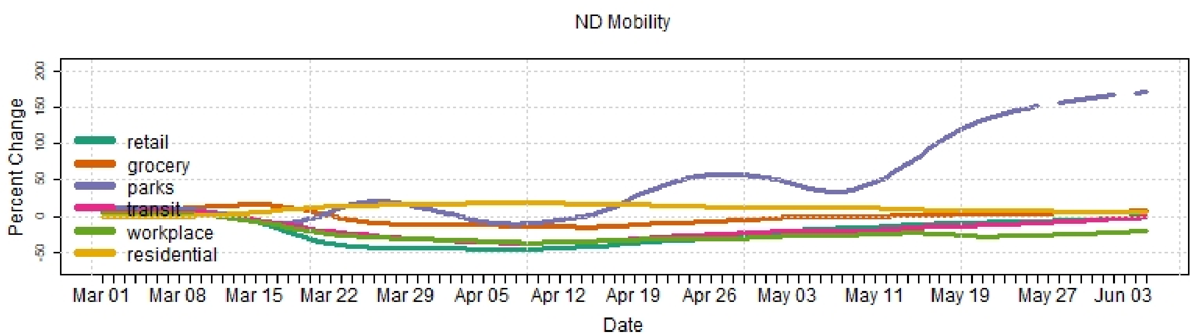
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
NC	553650	38171	1053	6.9	2.8	1011	24

ND





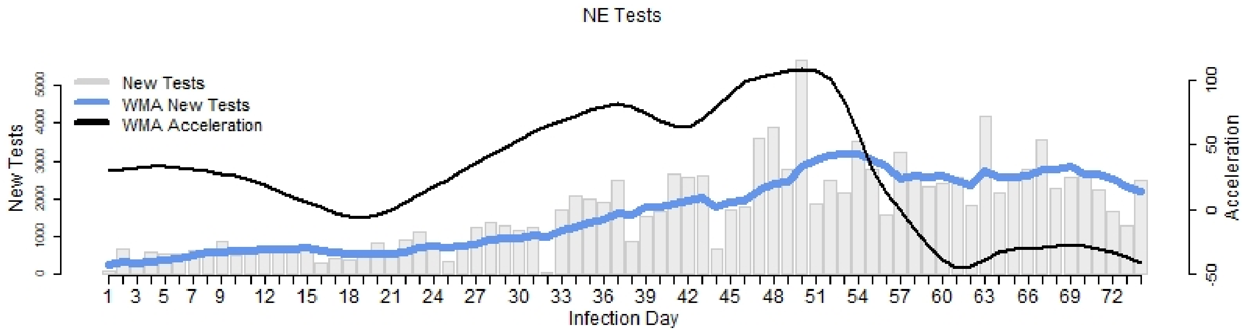


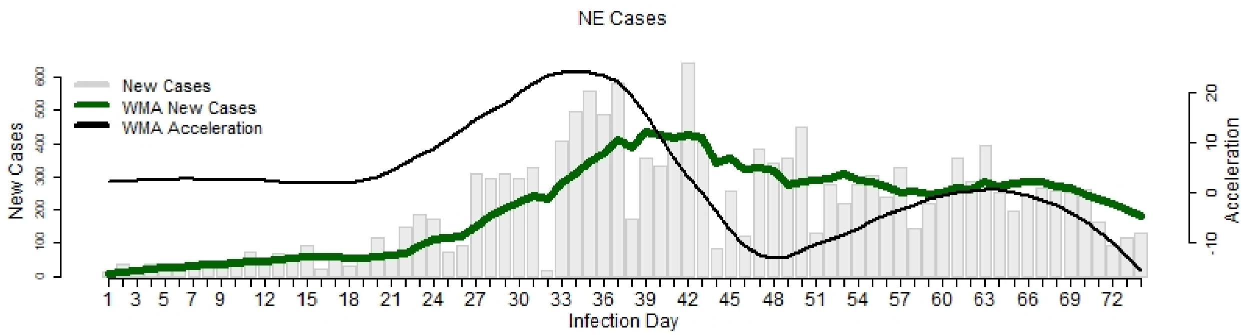


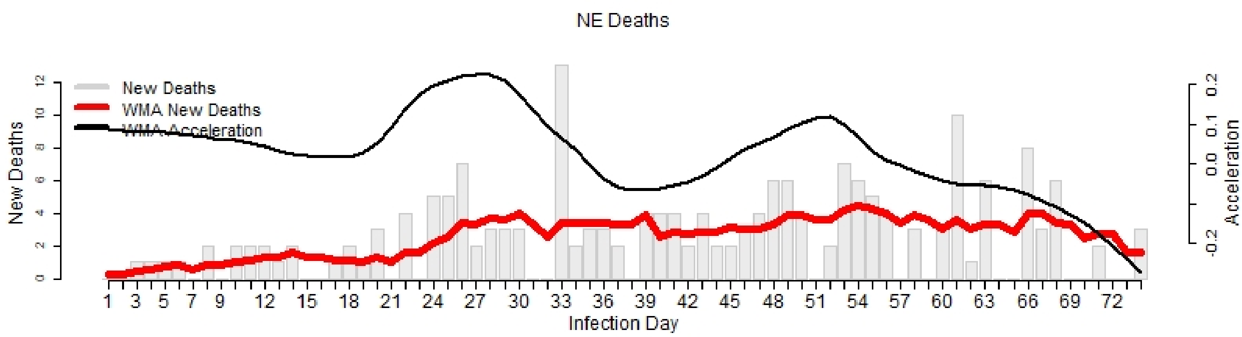
Metrics as of 2020-06-11

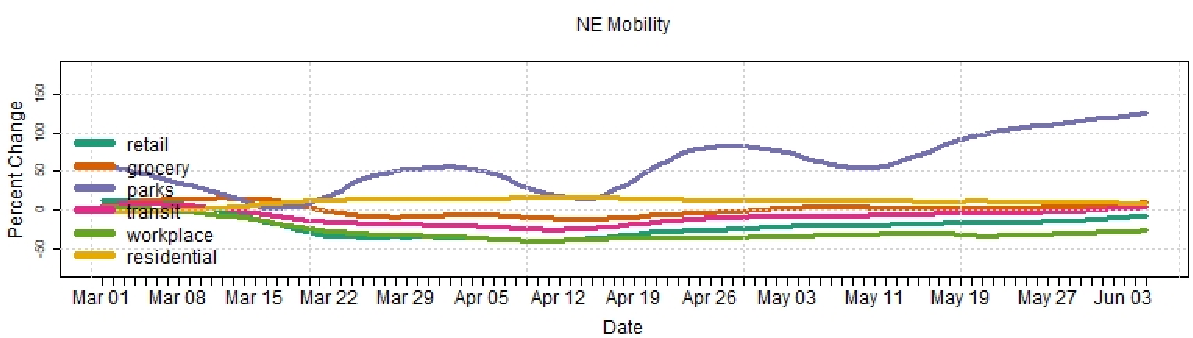
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
ND	81660	2941	76	3.6	2.6	40	1

NE





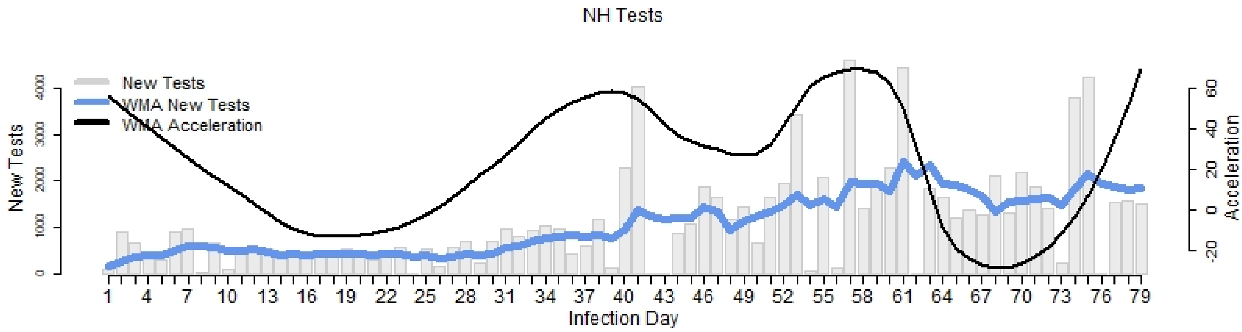


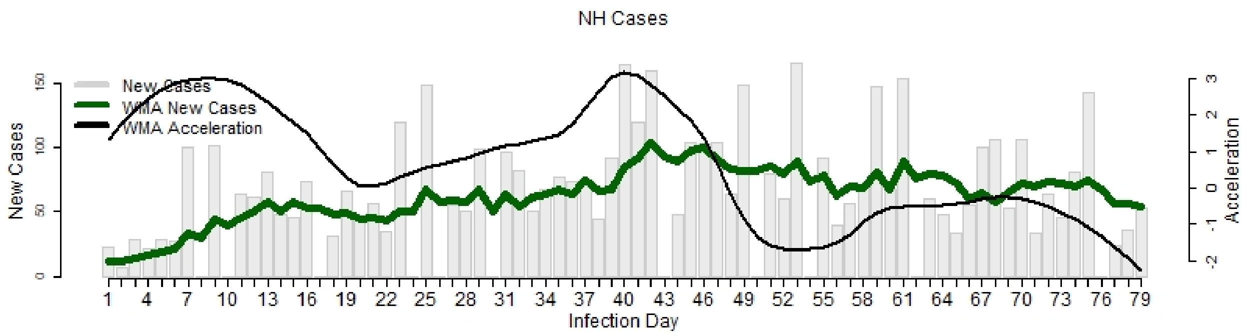


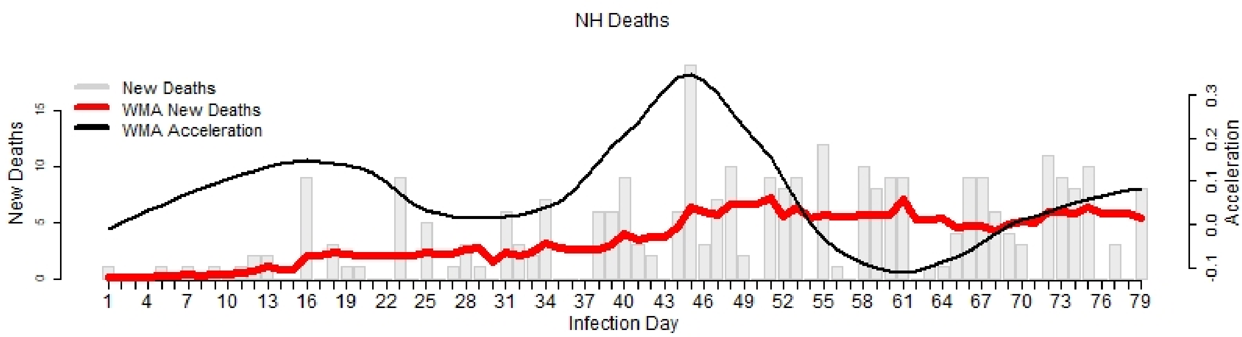
Metrics as of 2020-06-11

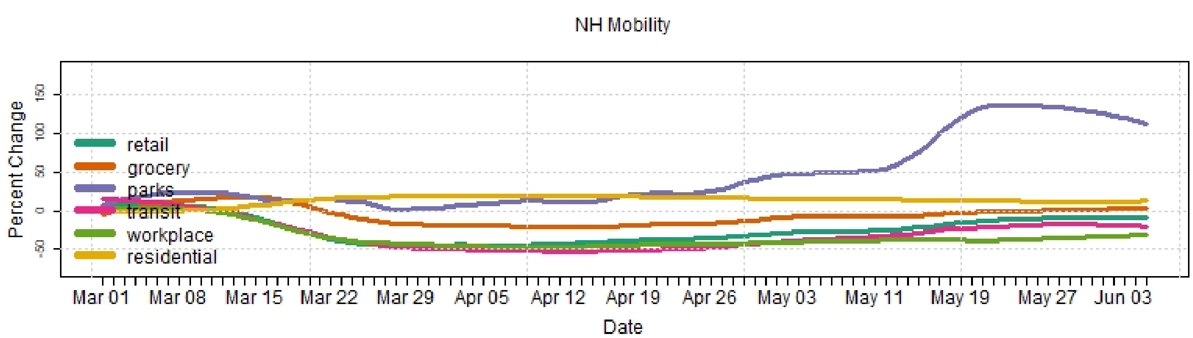
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
NE	125162	15883	191	12.7	1.2	131	3

NH





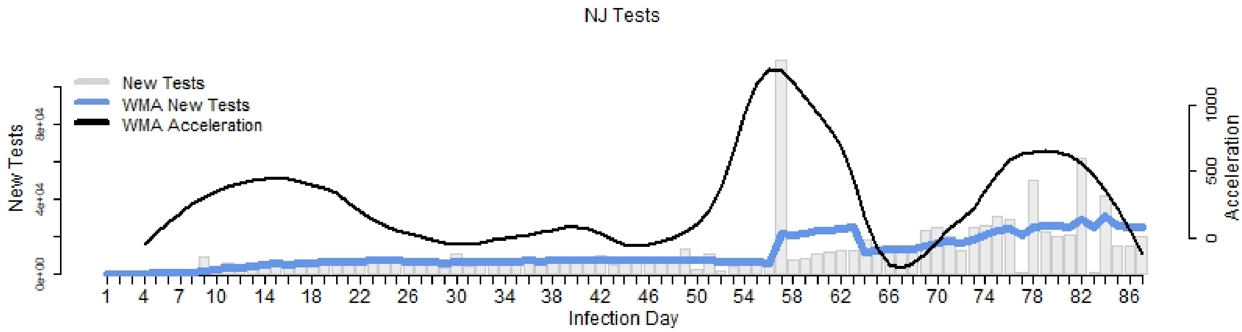


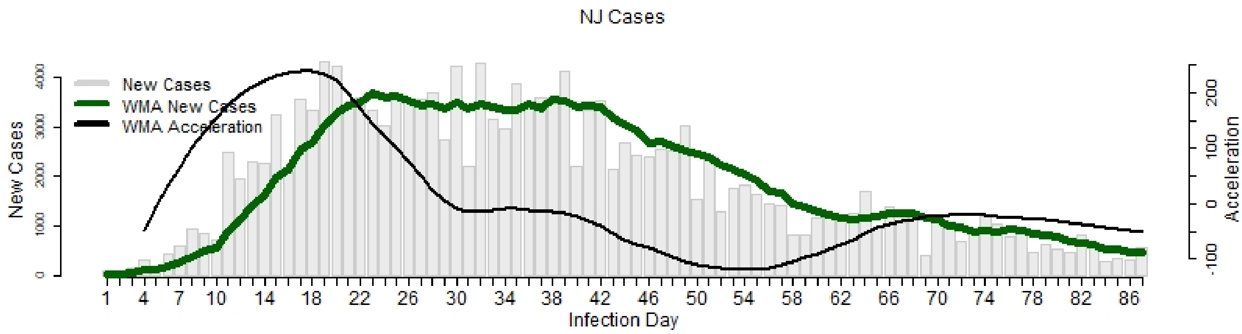


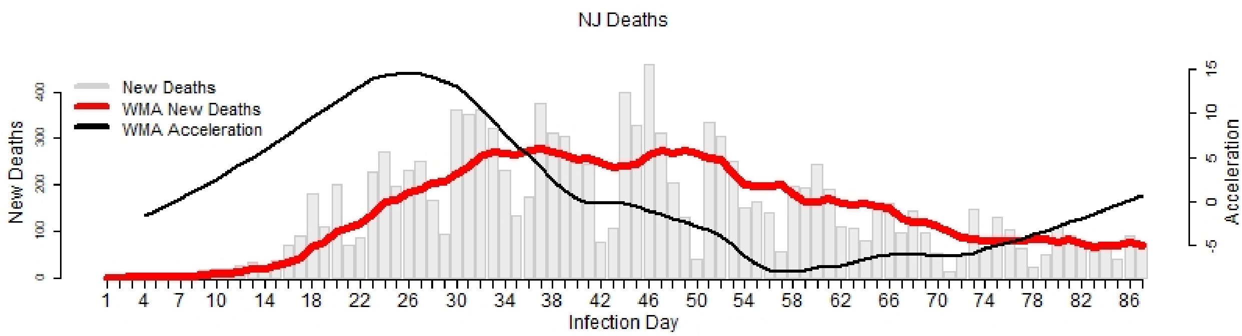
Metrics as of 2020-06-11

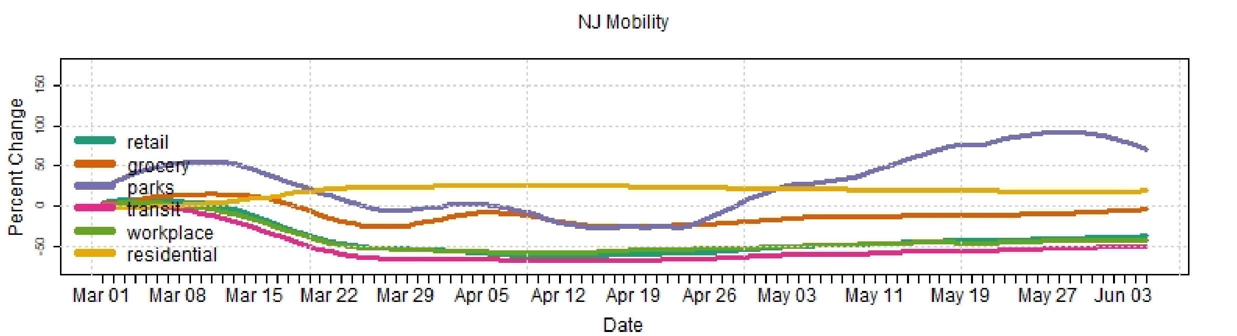
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
NH	88647	5132	294	5.8	5.7	53	8

NJ





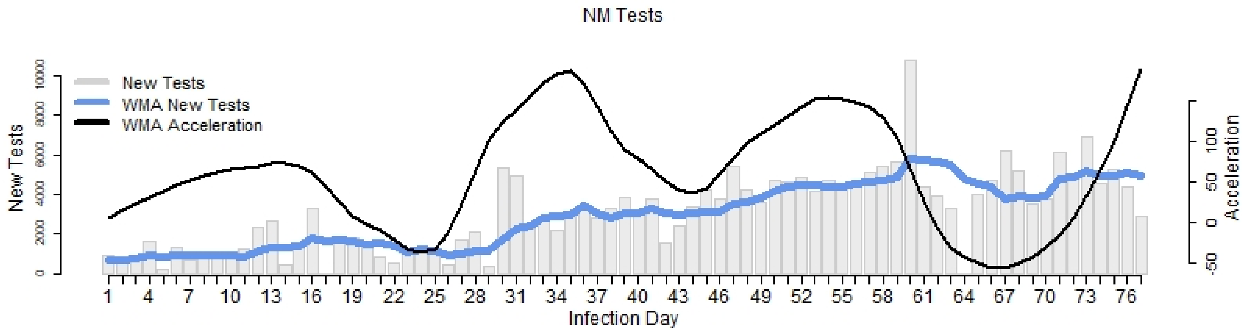


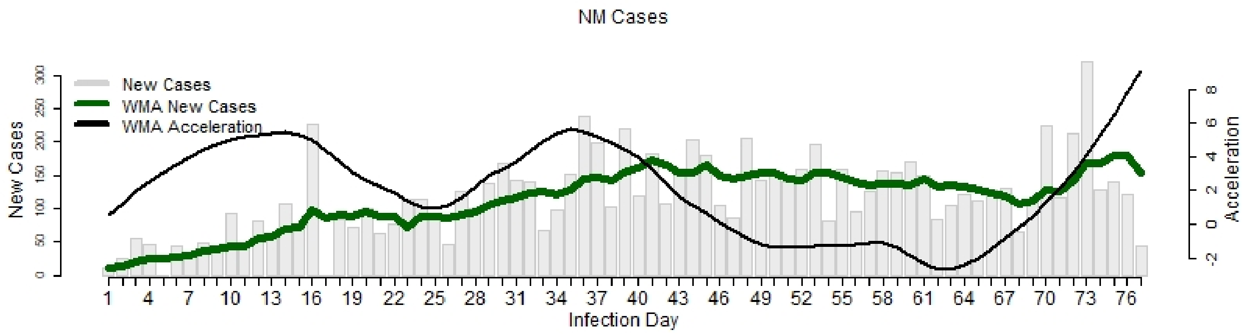


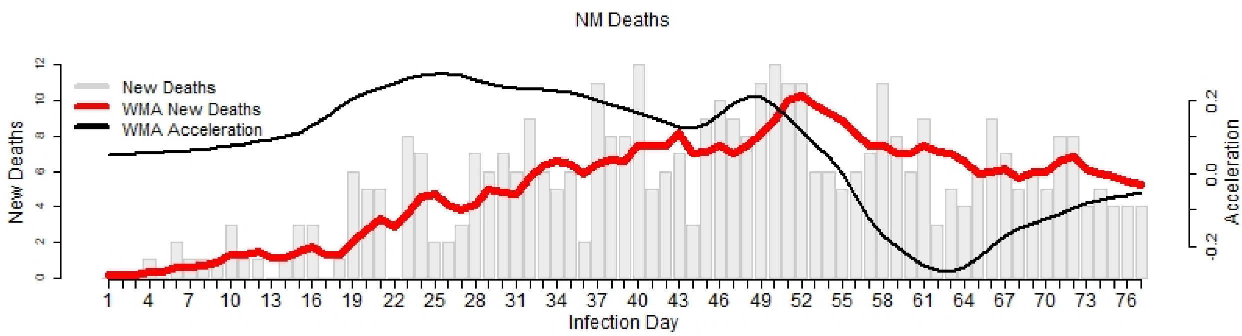
Metrics as of 2020-06-11

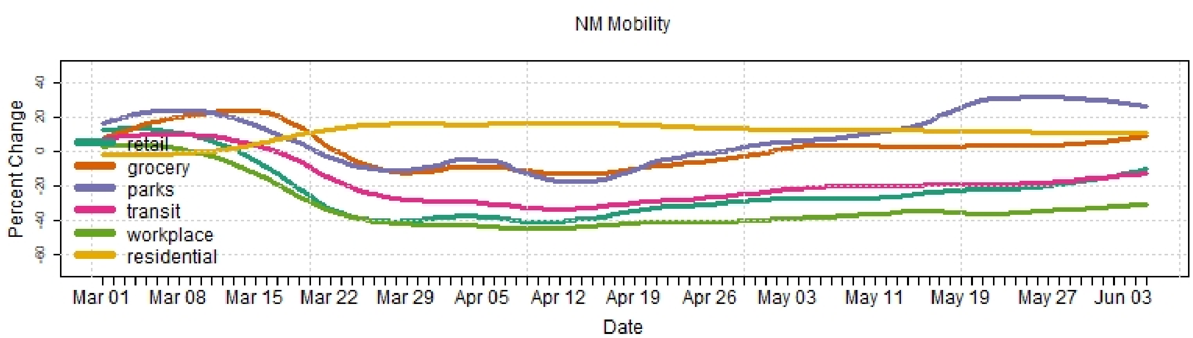
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
NJ	1008934	165346	12377	16.4	7.5	550	74

NM





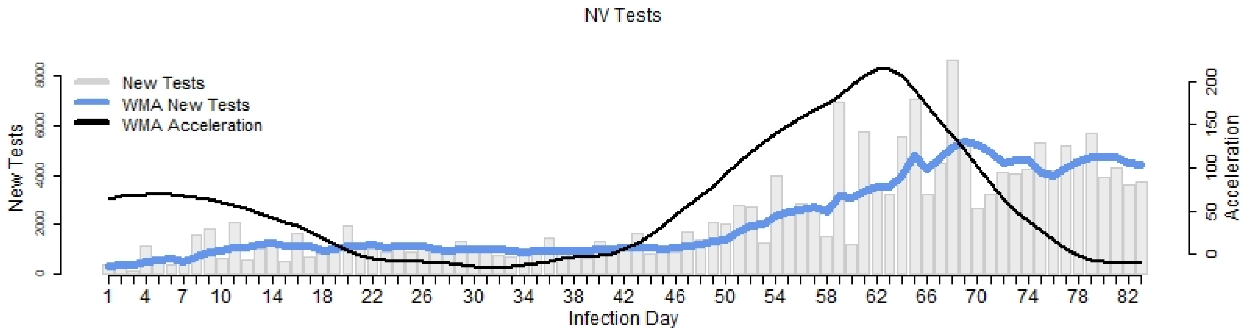


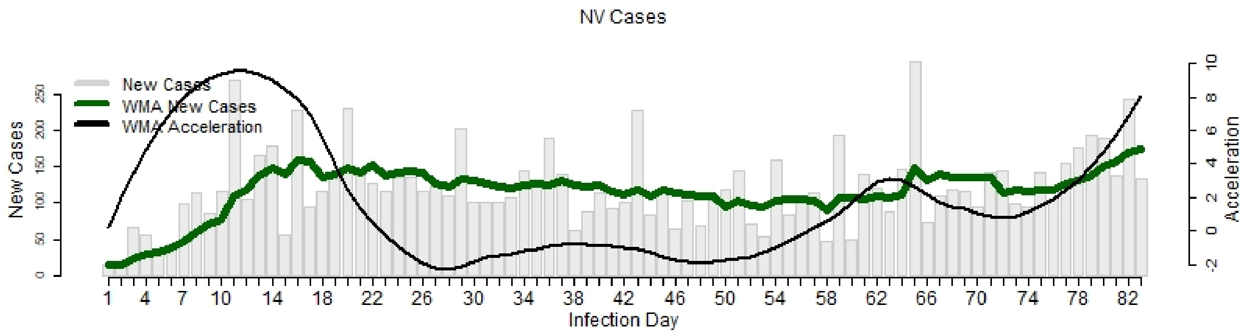


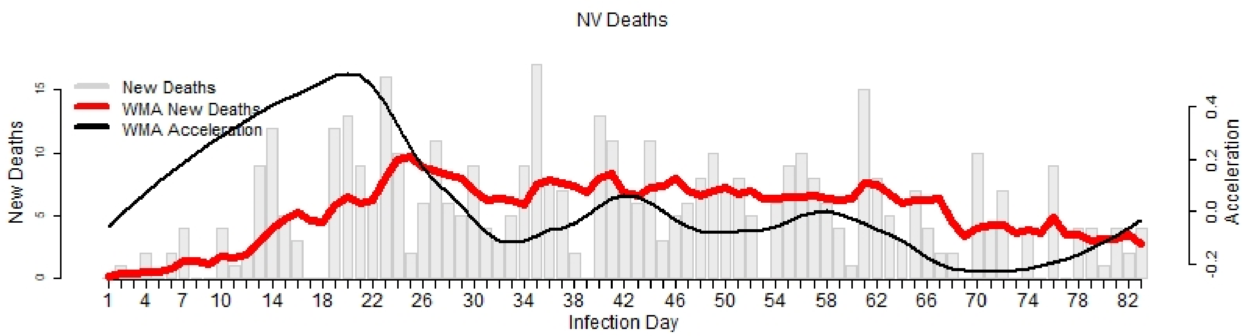
Metrics as of 2020-06-11

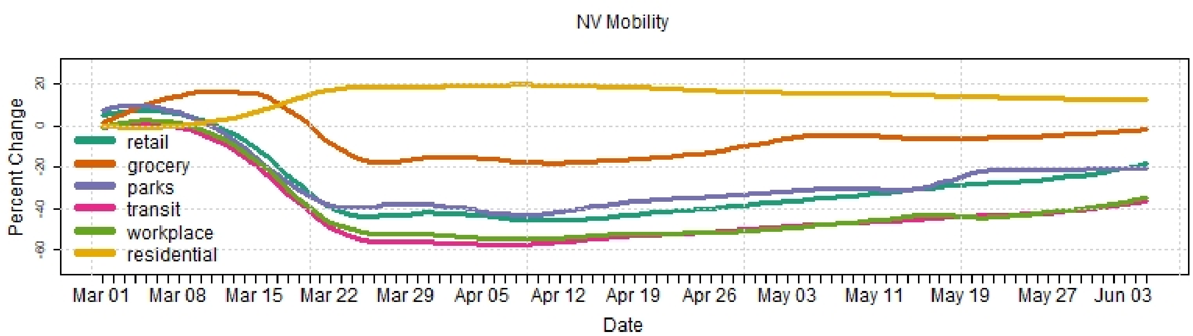
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
NM	241657	9105	404	3.8	4.4	43	4

NV





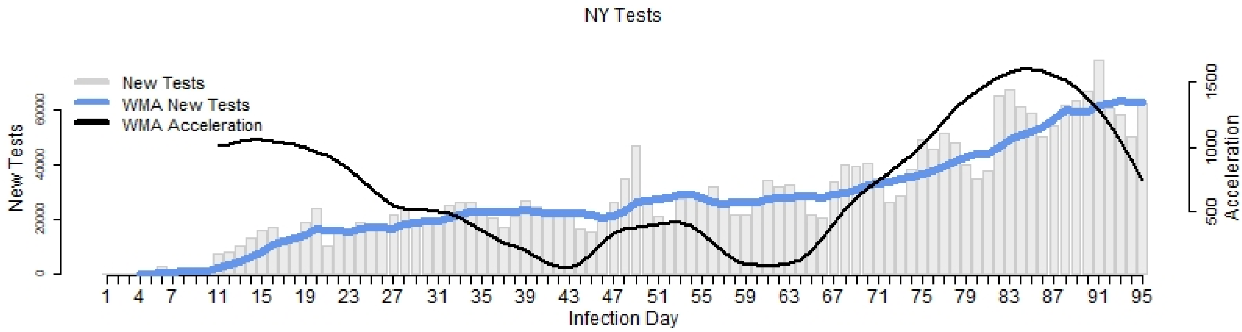


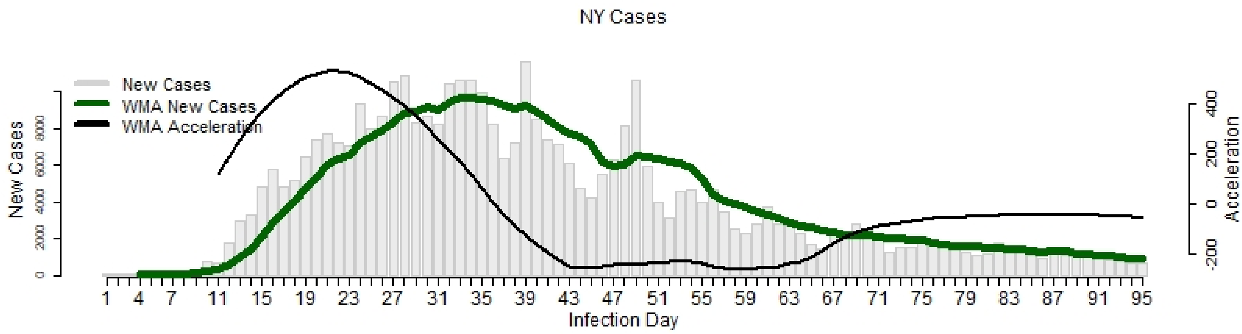


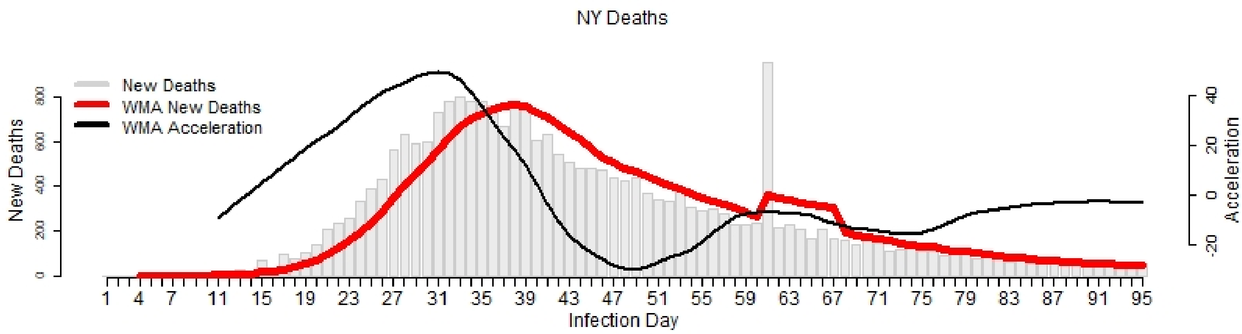
Metrics as of 2020-06-11

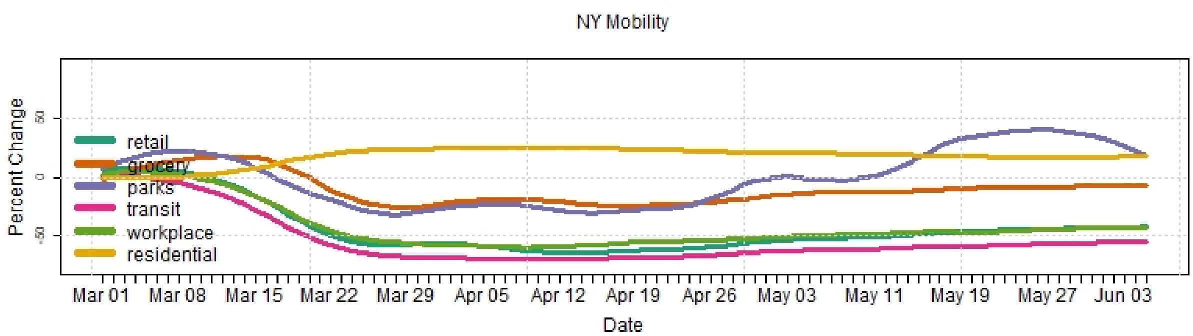
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
NV	187323	10164	448	5.4	4.4	134	4

NY





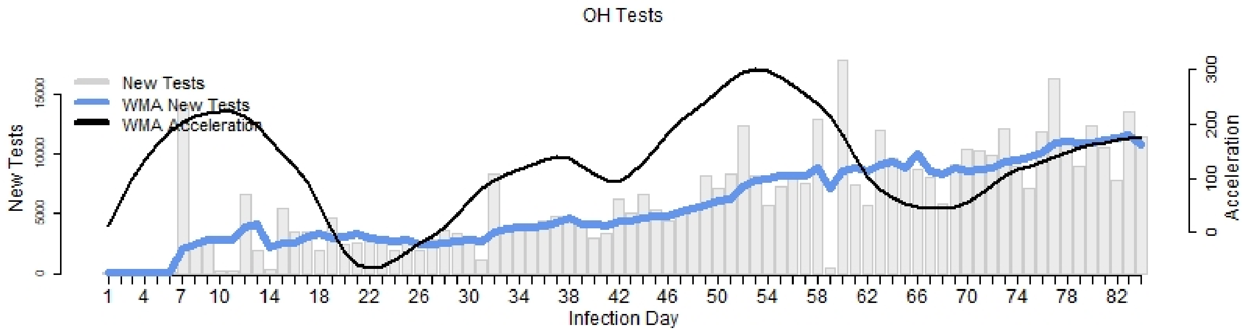


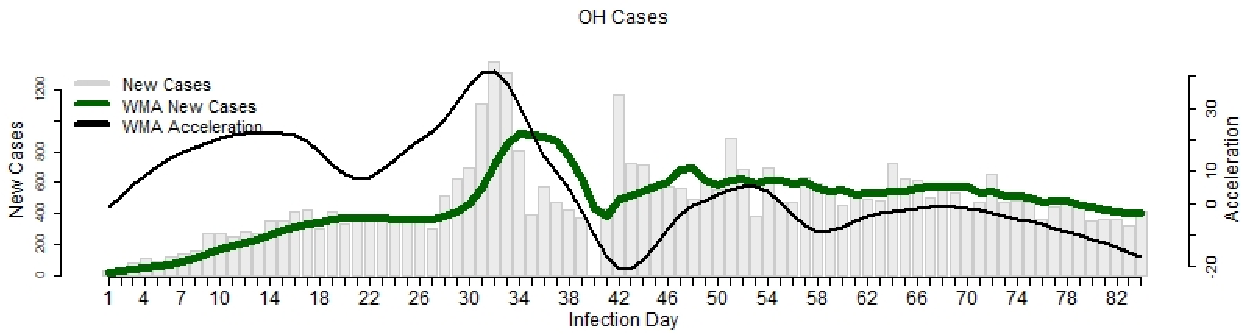


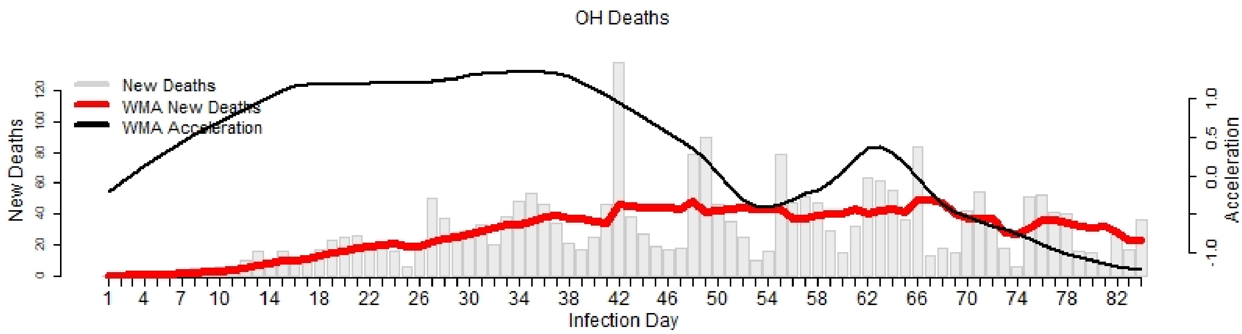
Metrics as of 2020-06-11

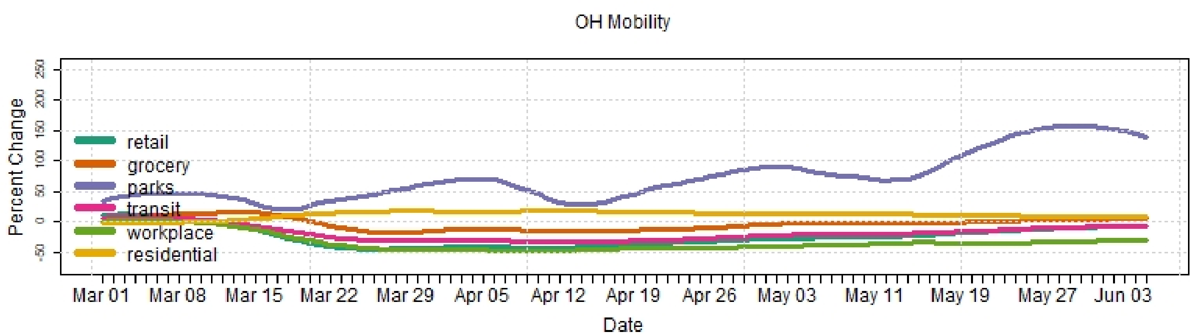
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
NY	2668166	380156	24404	14.2	6.4	674	56

OH





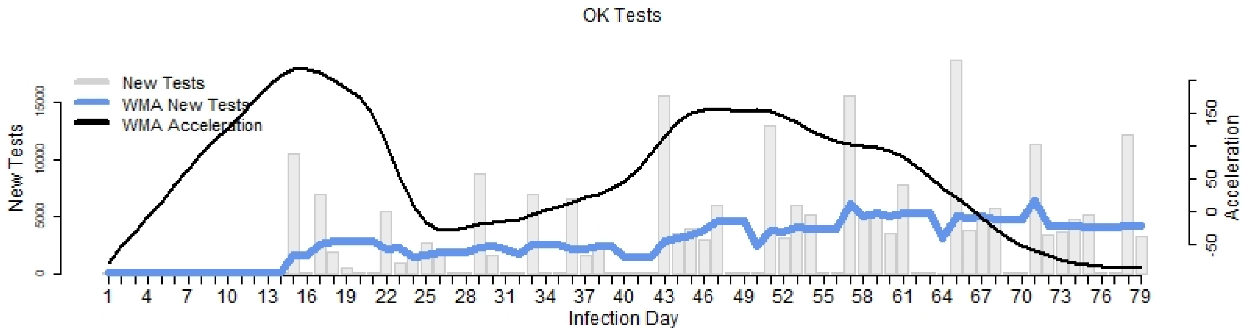


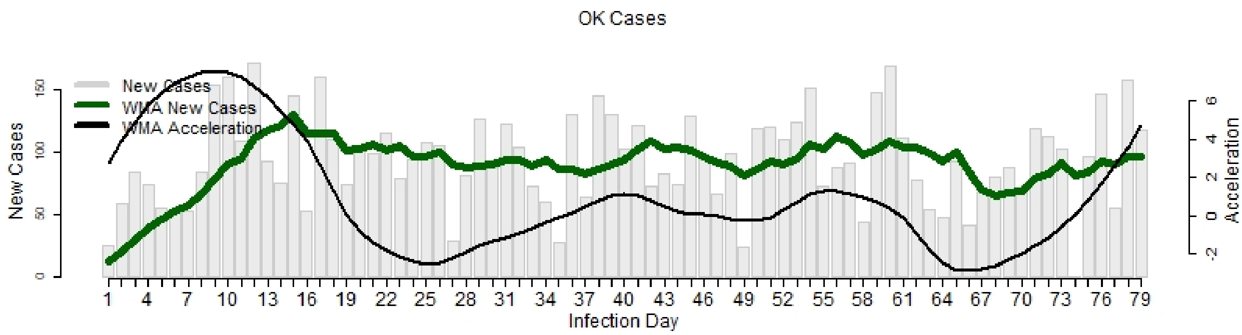


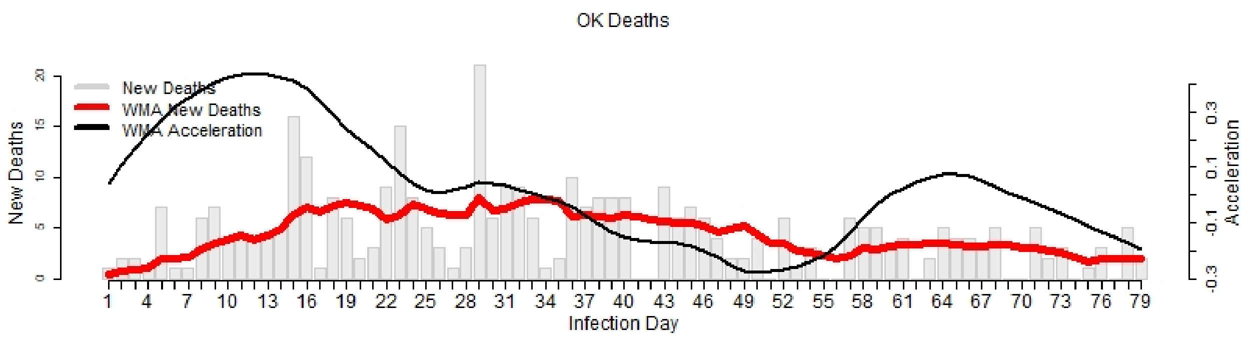
Metrics as of 2020-06-11

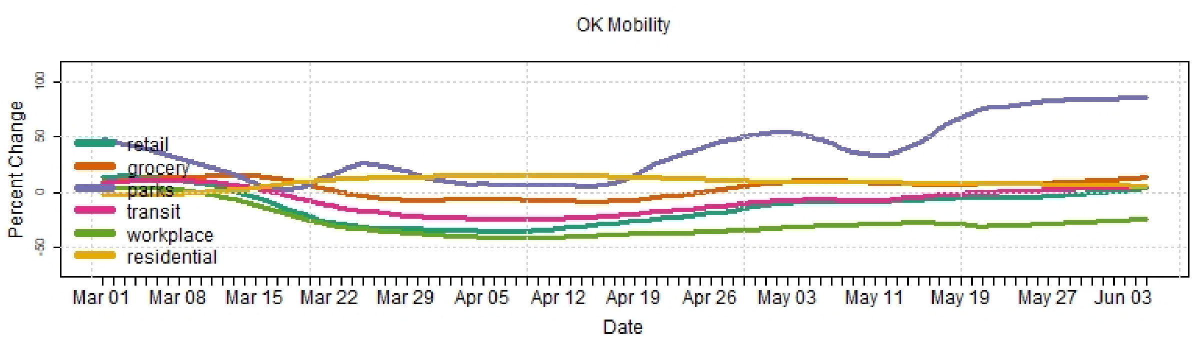
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
OH	501884	39575	2457	7.9	6.2	413	36

OK





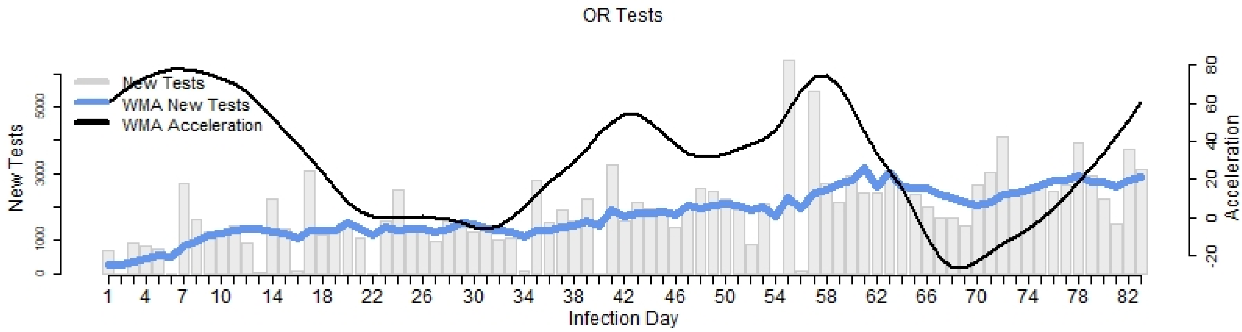


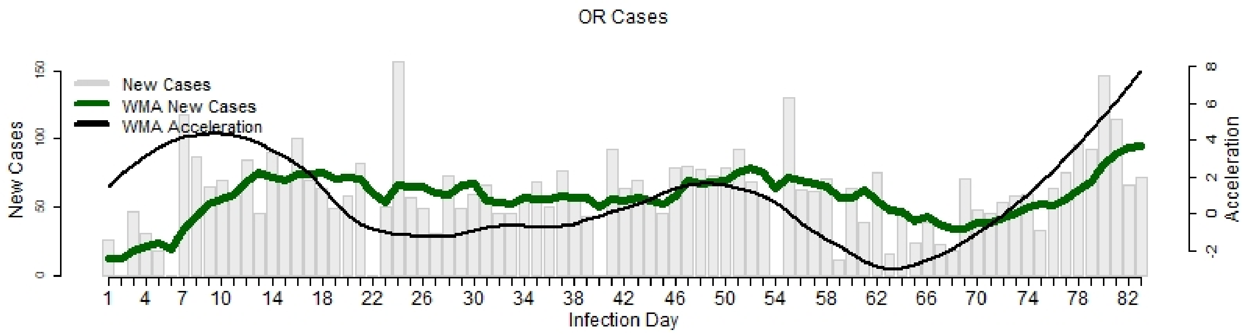


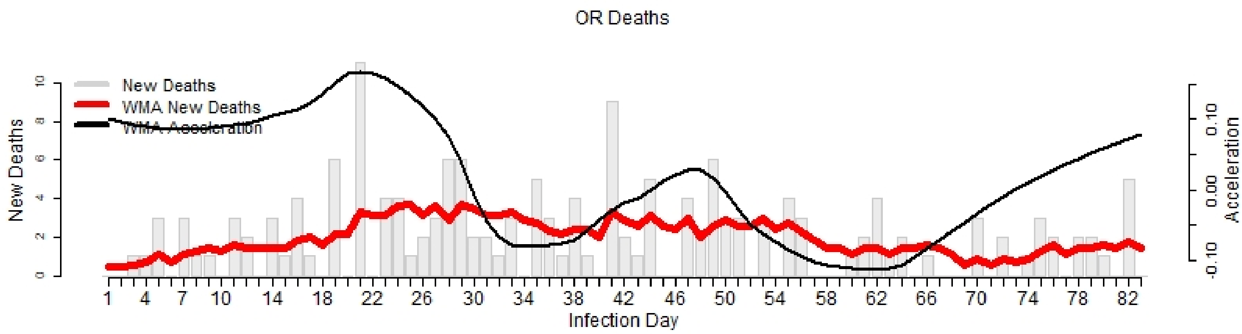
Metrics as of 2020-06-11

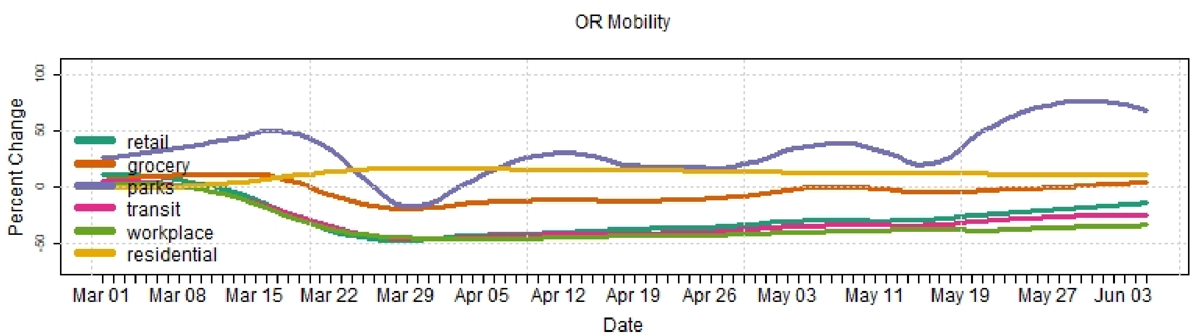
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
OK	237297	7480	355	3.2	4.7	117	2

OR





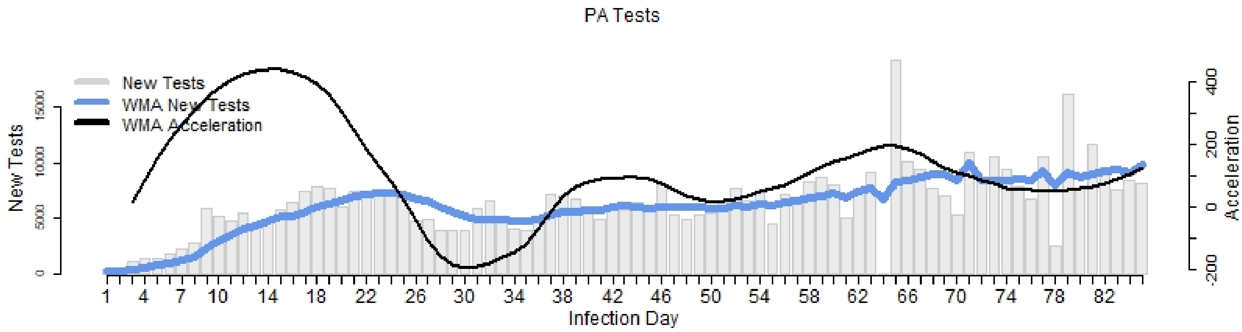


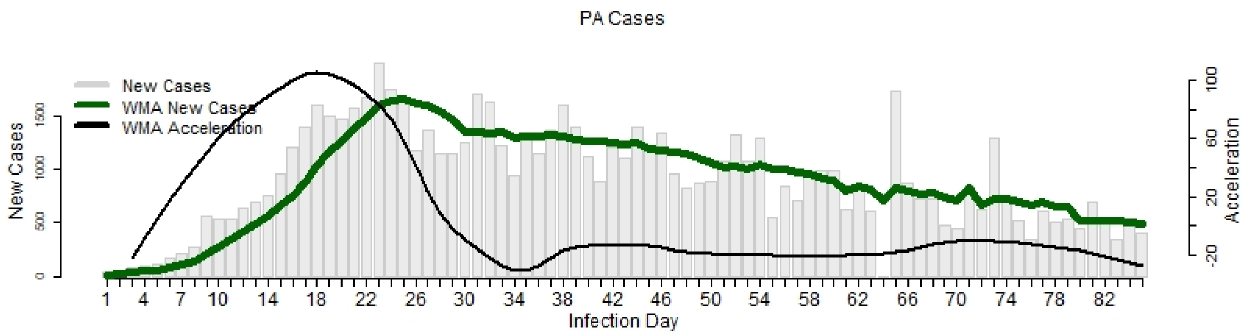


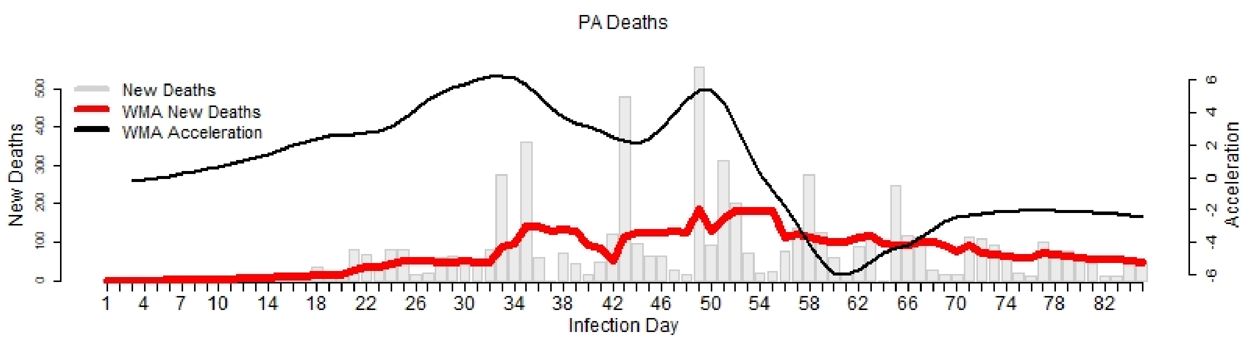
Metrics as of 2020-06-11

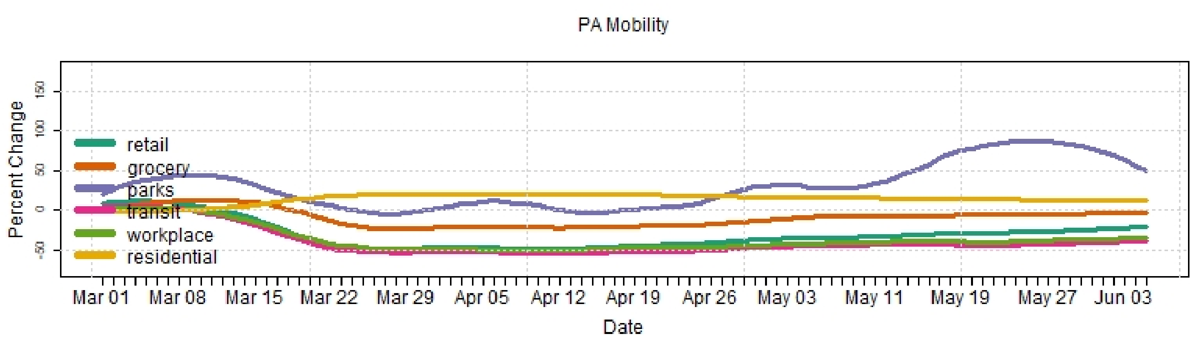
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
OR	156758	5060	169	3.2	3.3	72	0

PA





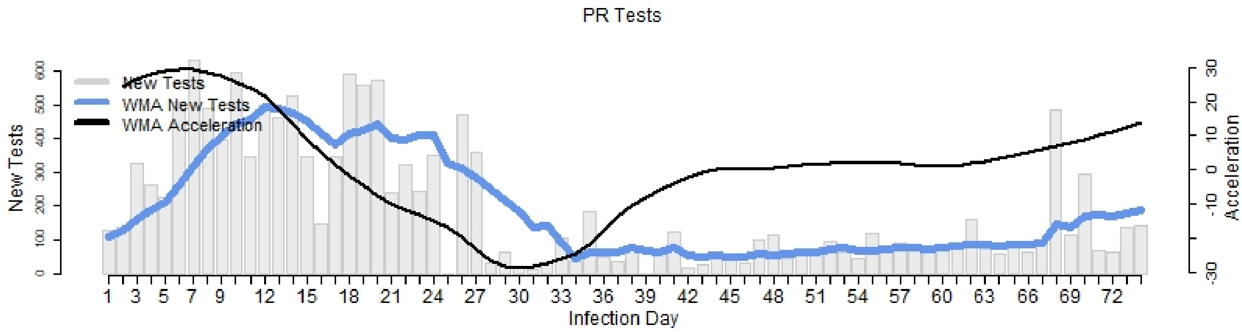


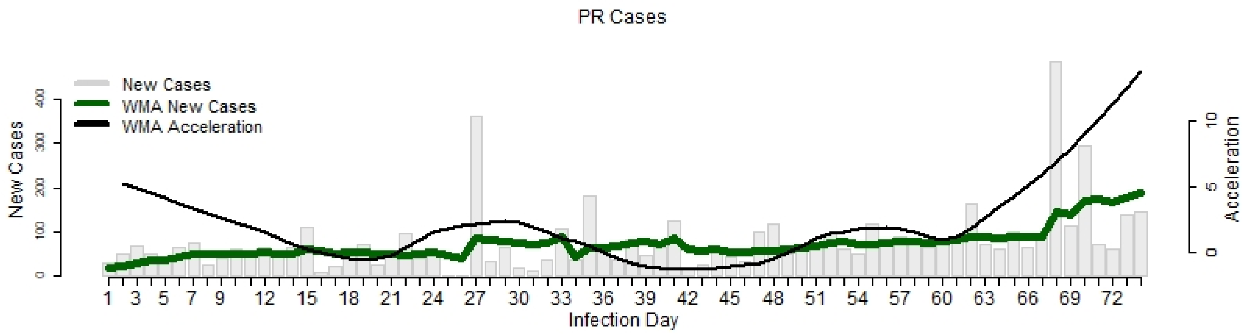


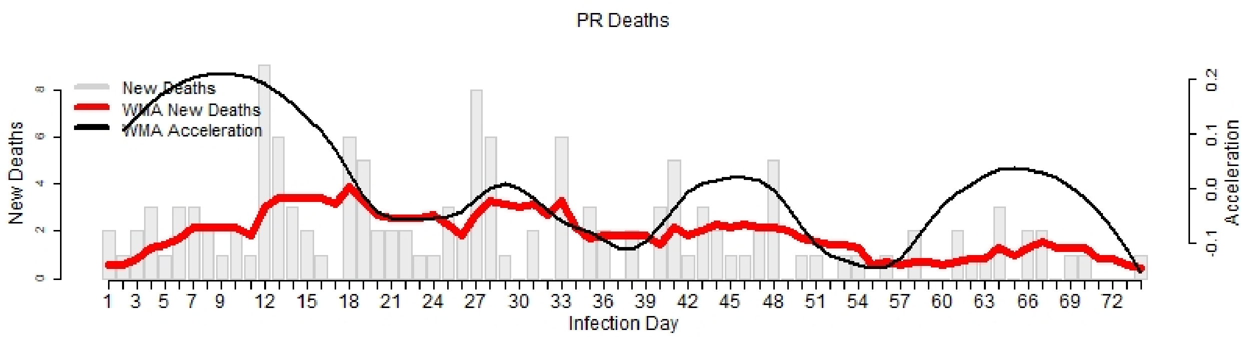
Metrics as of 2020-06-11

State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
PA	544430	77466	6062	14.2	7.8	410	48

PR



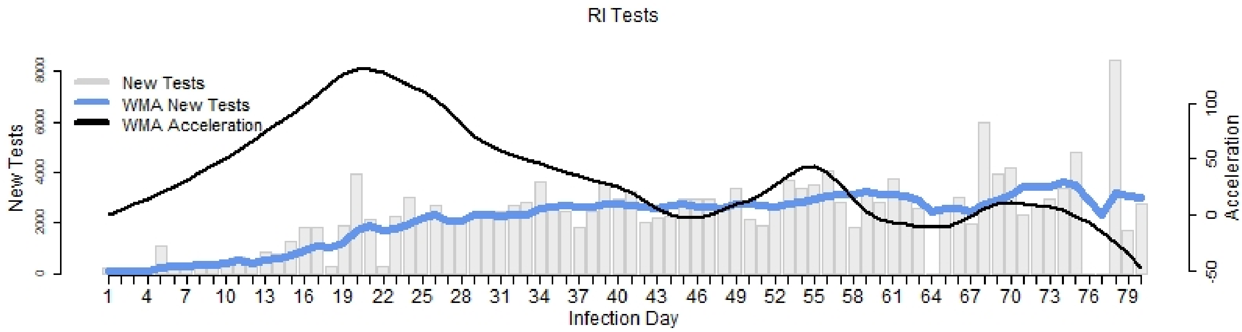


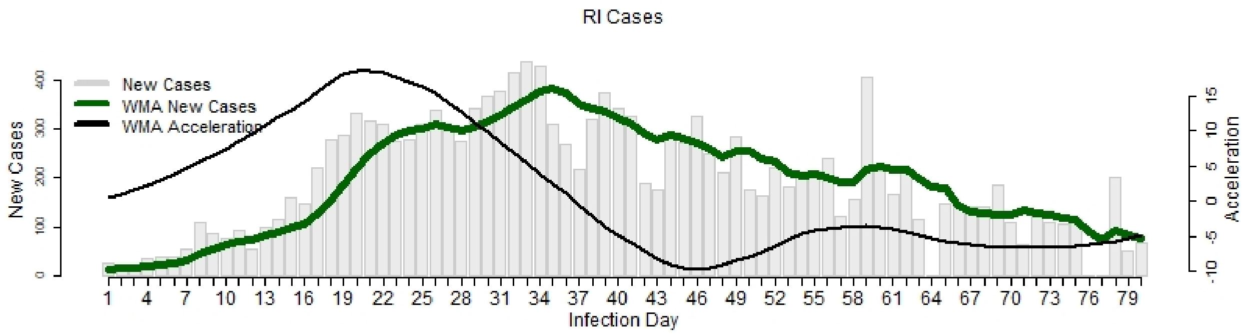


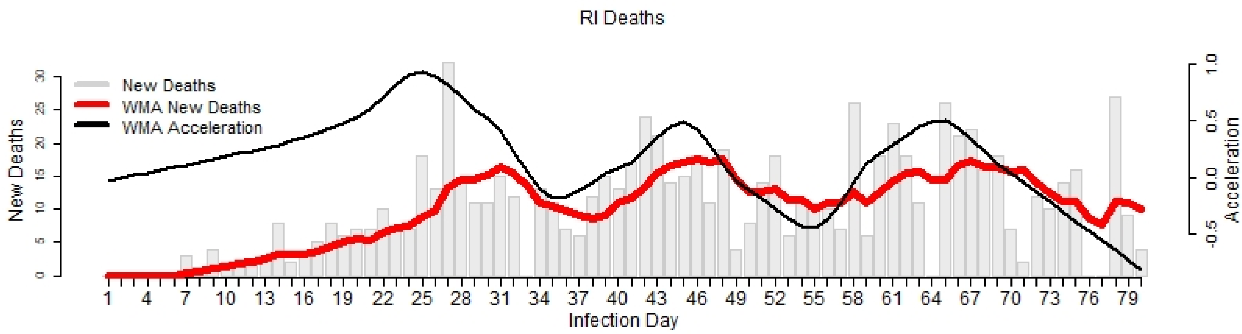
Metrics as of 2020-06-11

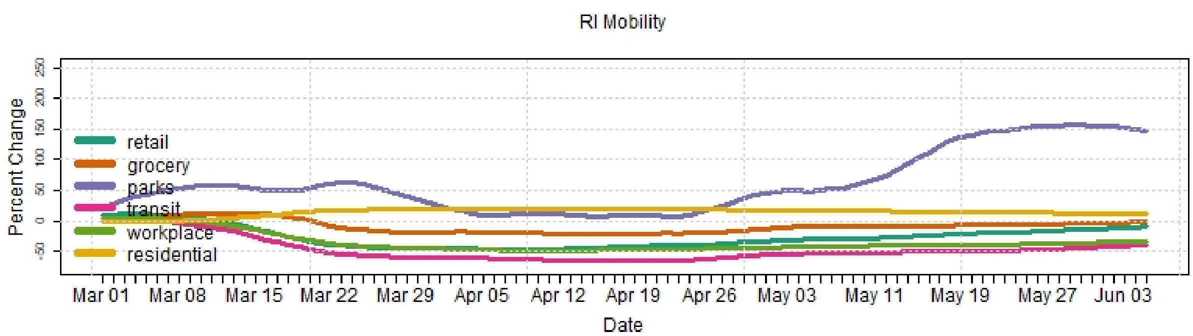
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
PR	5329	5329	143	100	2.7	144	1

RI





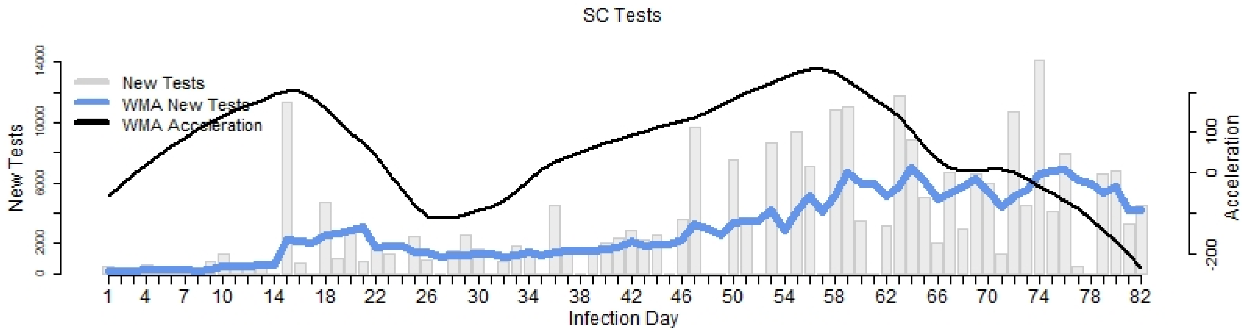


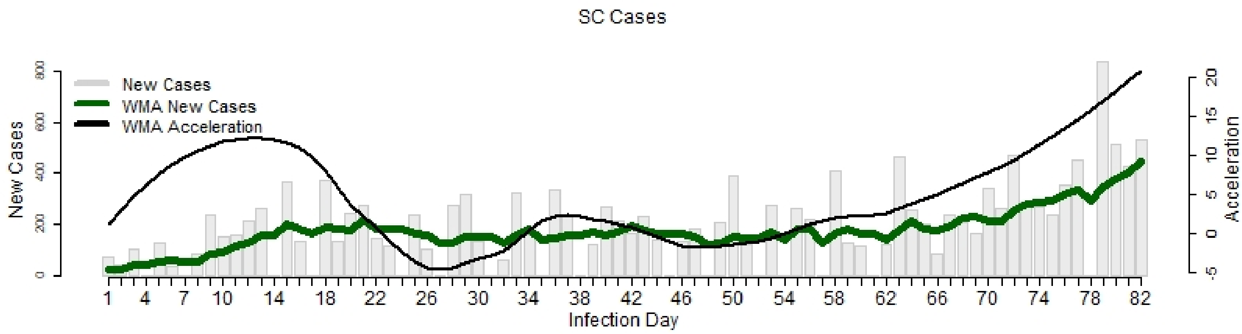


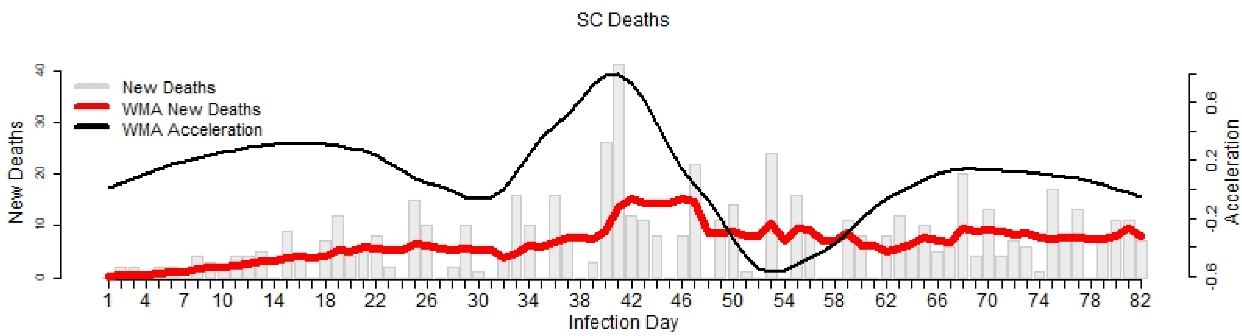
Metrics as of 2020-06-11

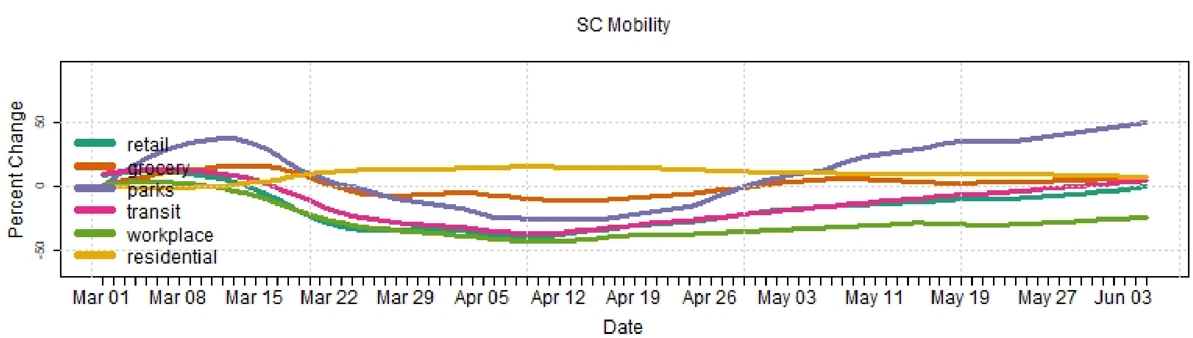
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
RI	183622	15756	812	8.6	5.2	65	4

SC







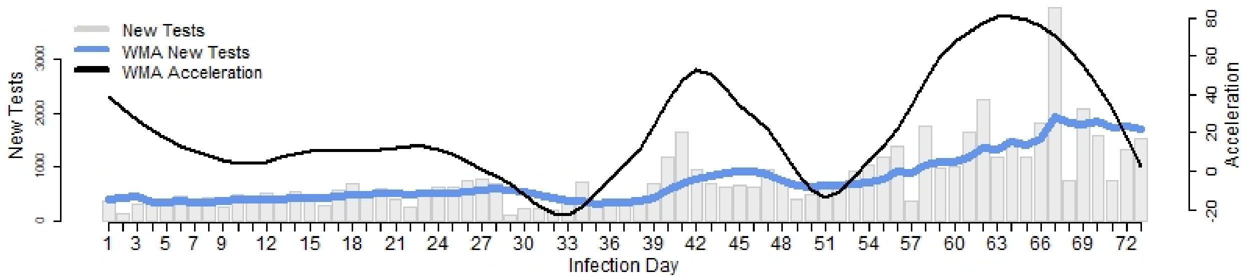


Metrics as of 2020-06-11

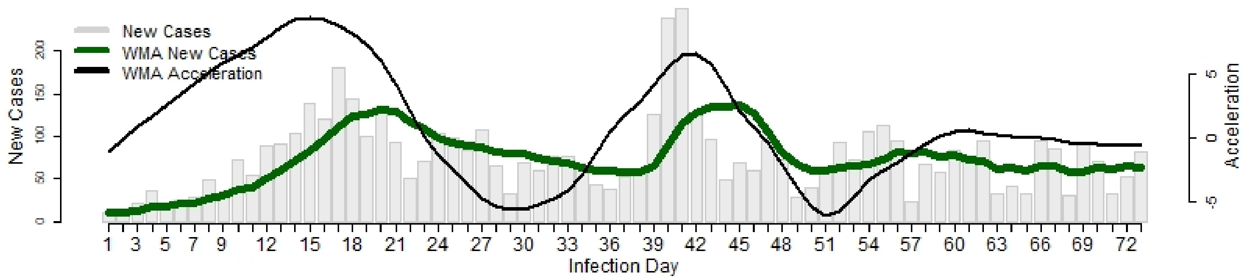
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
SC	252532	15759	575	6.2	3.6	531	7

SD

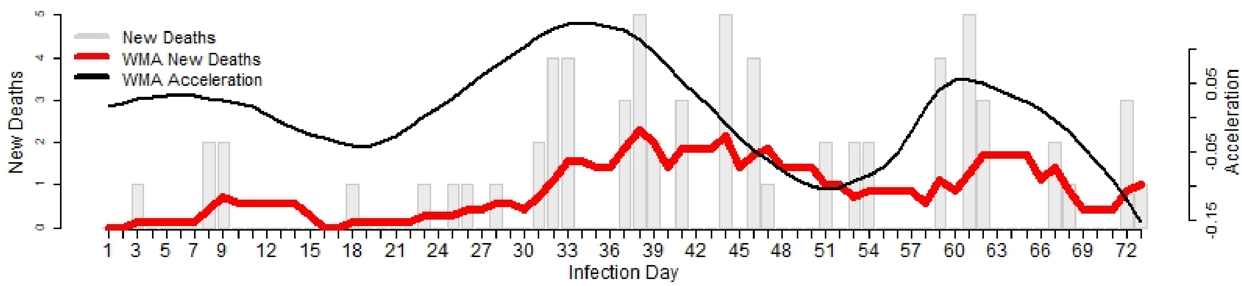
SD Tests



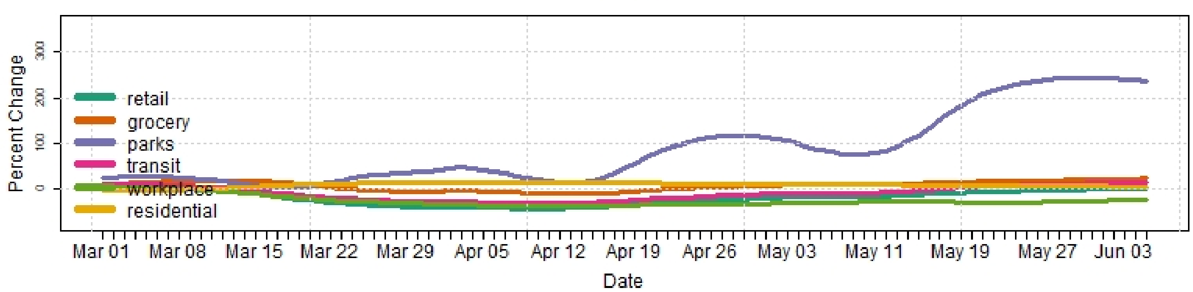
SD Cases



SD Deaths



SD Mobility

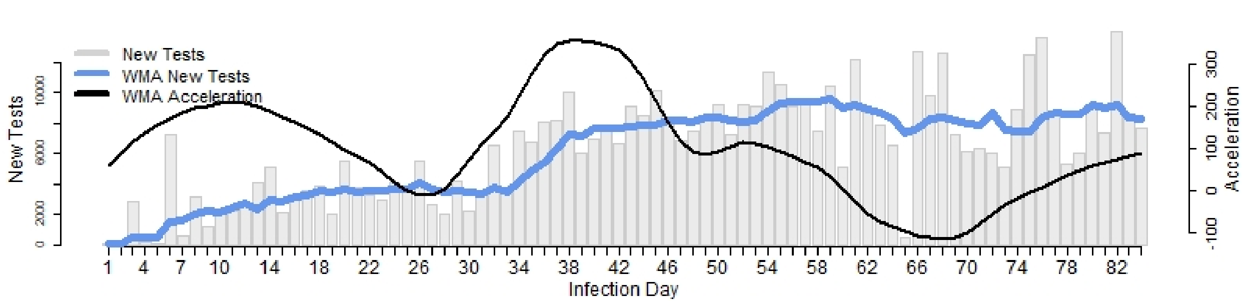


Metrics as of 2020-06-11

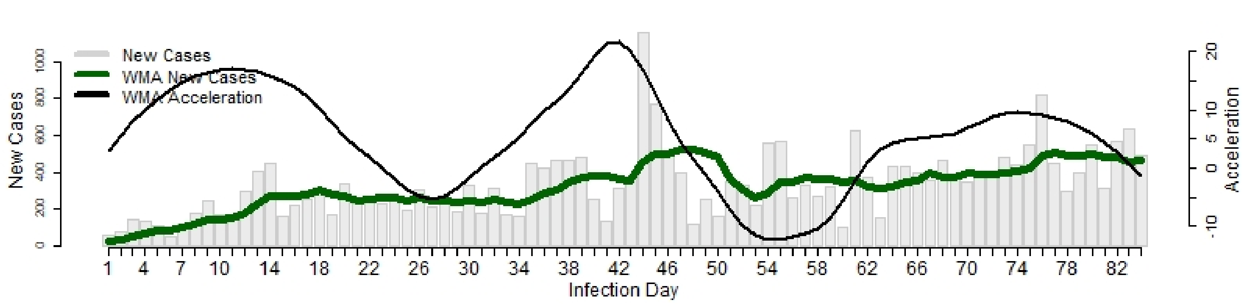
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
SD	60685	5604	69	9.2	1.2	81	1

TN

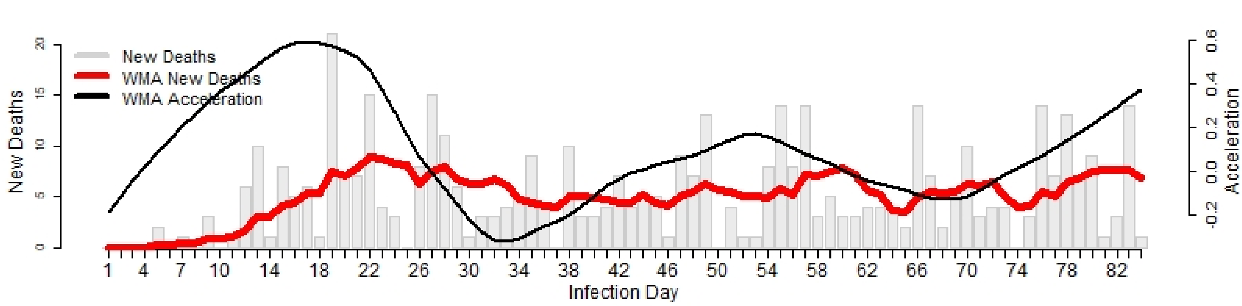
TN Tests



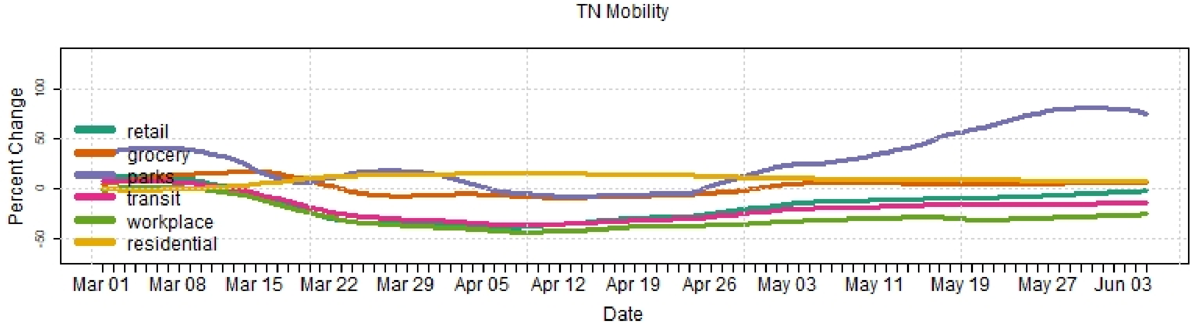
TN Cases



TN Deaths



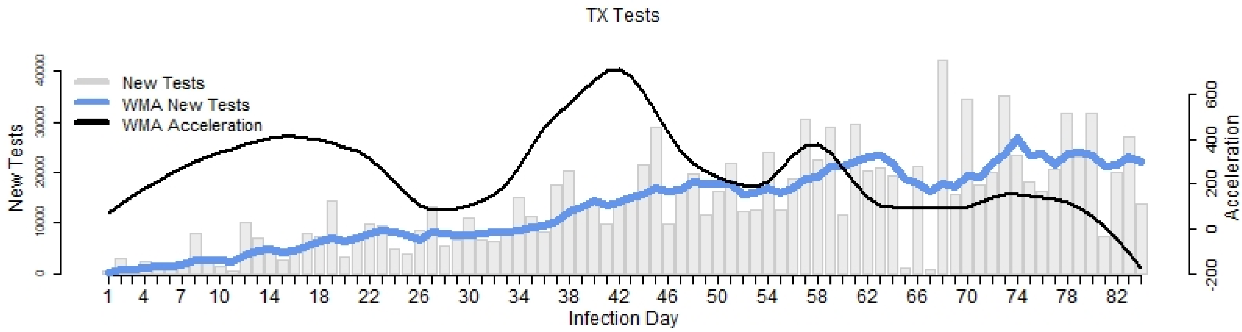
TN Mobility

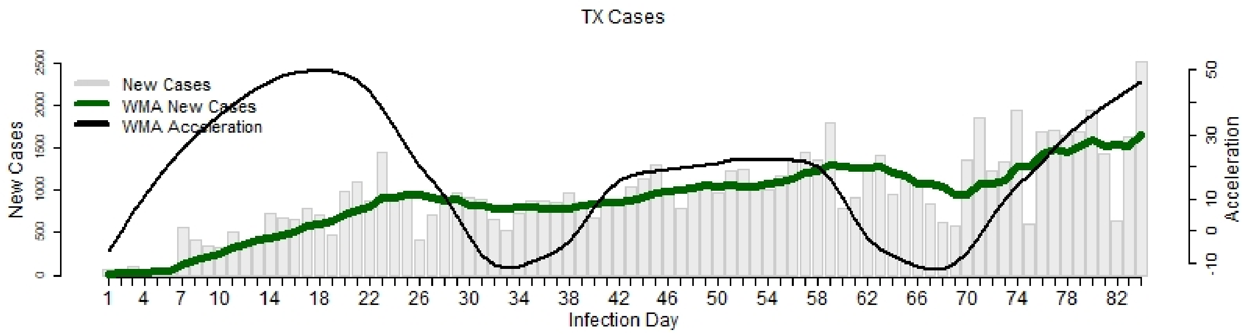


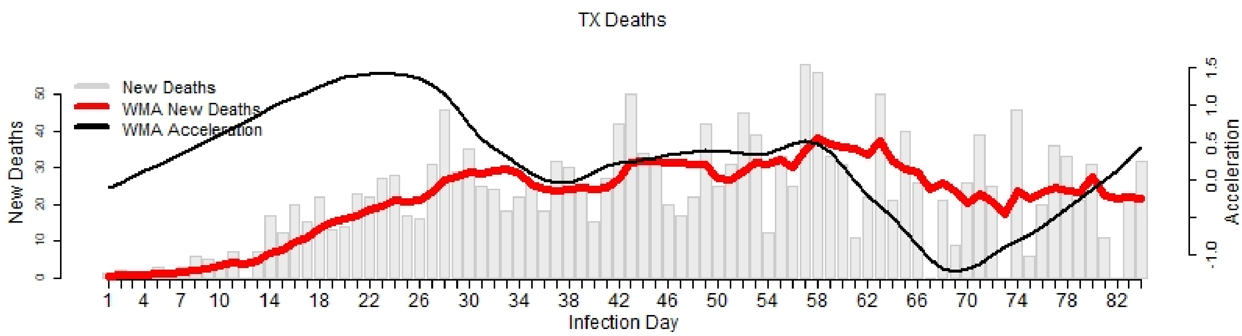
Metrics as of 2020-06-11

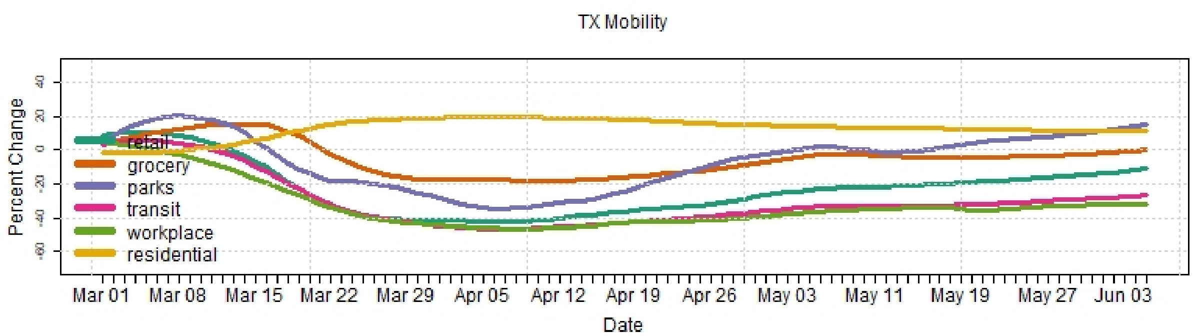
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
TN	528827	28061	436	5.3	1.6	486	1

TX







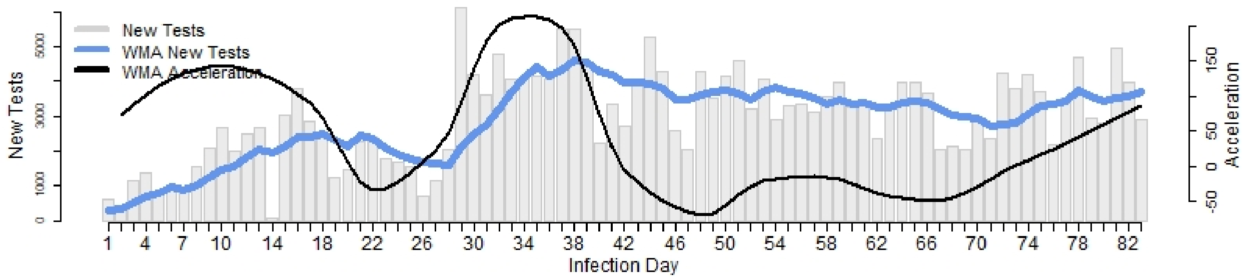


Metrics as of 2020-06-11

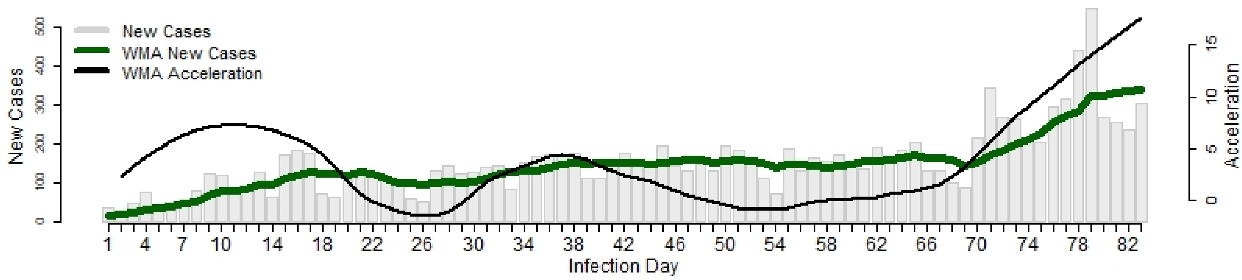
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
TX	1161087	79757	1885	6.9	2.4	2504	32

UT

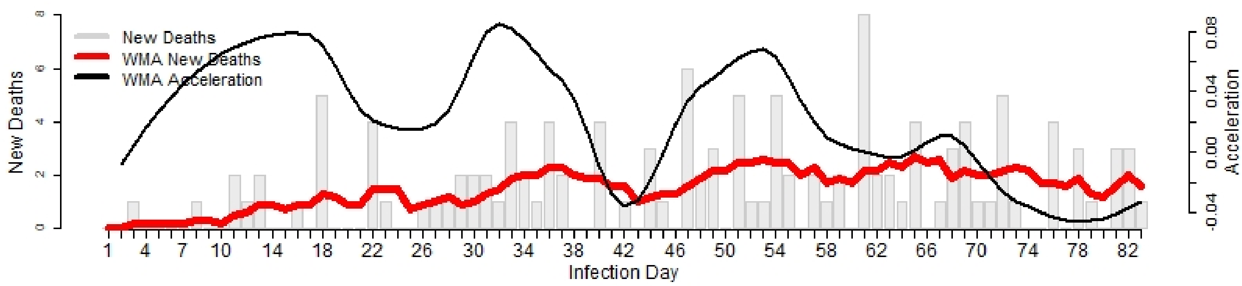
UT Tests



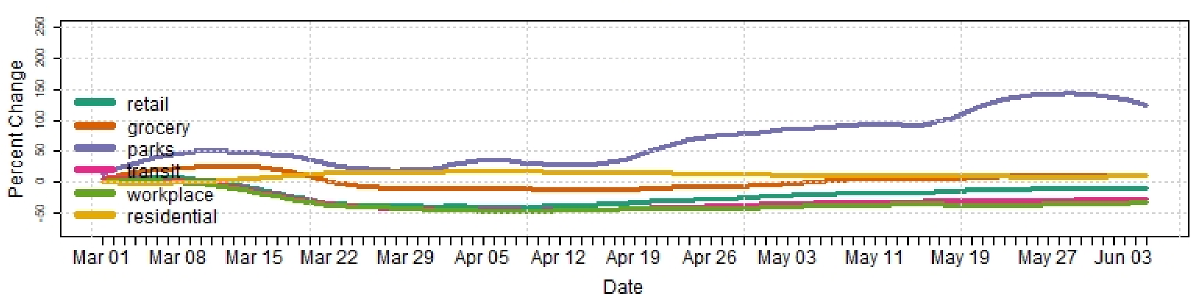
UT Cases



UT Deaths



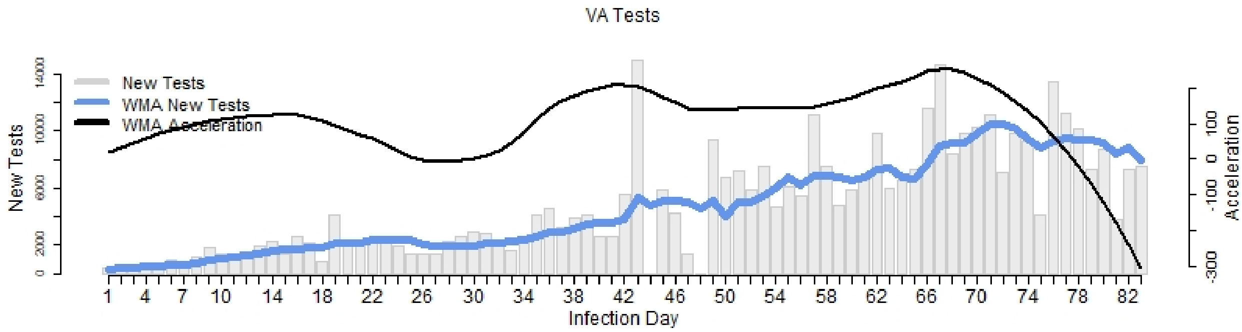
UT Mobility

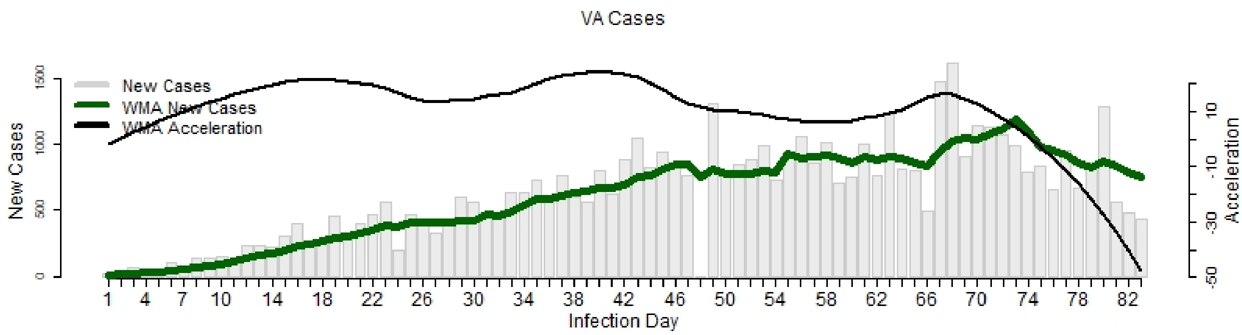


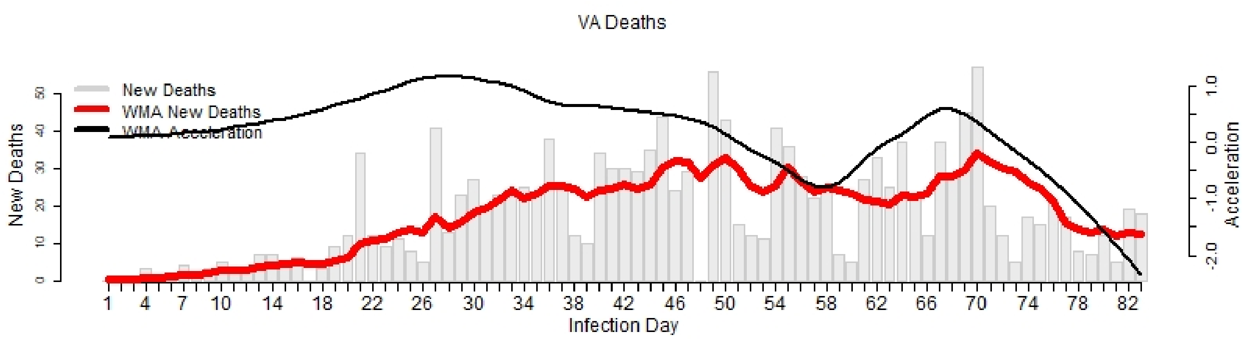
Metrics as of 2020-06-11

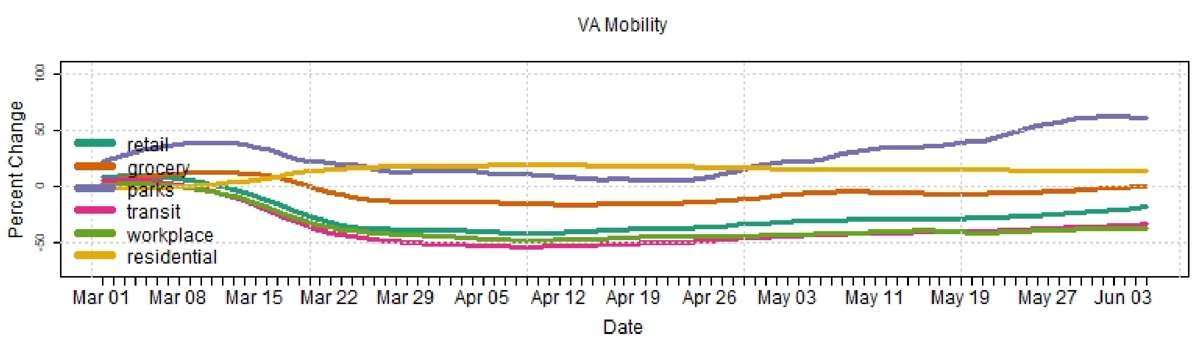
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
UT	249760	12864	128	5.2	1	305	1

VA





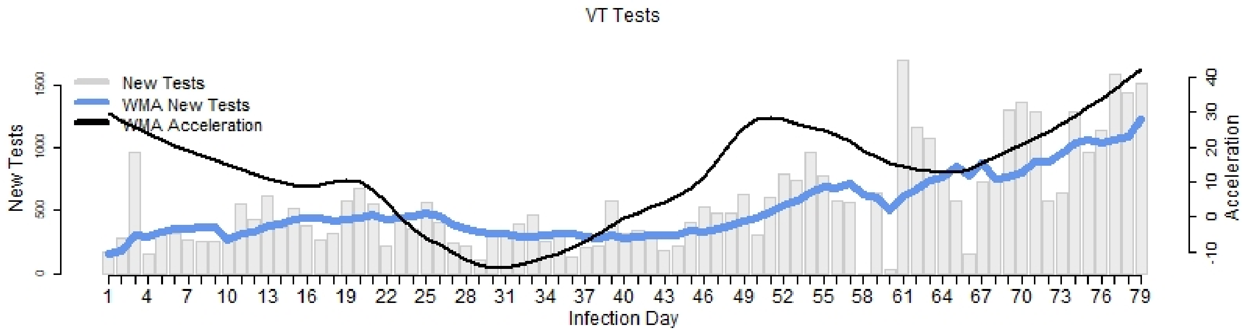


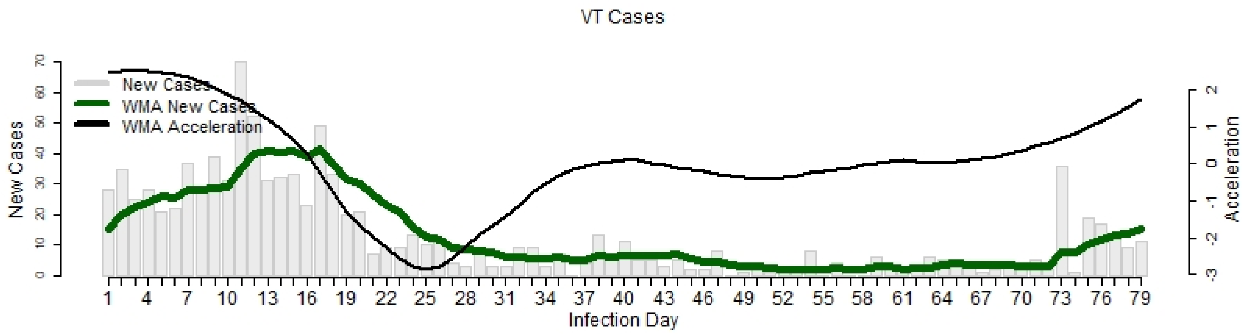


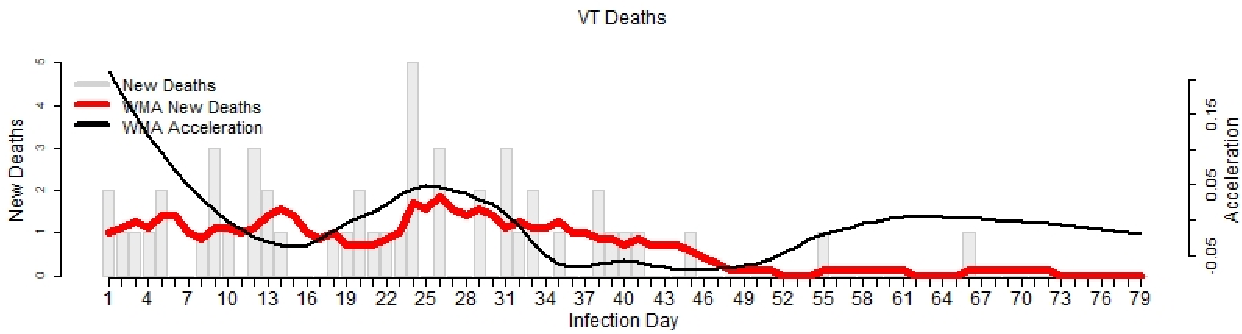
Metrics as of 2020-06-11

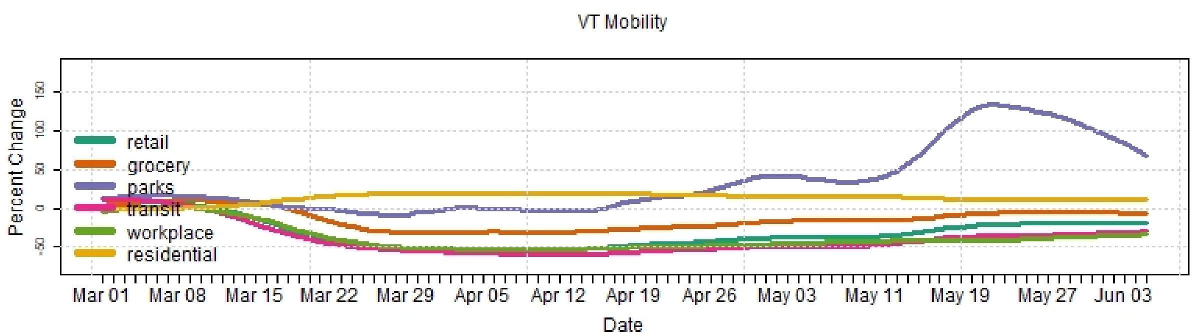
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
VA	398364	52177	1514	13.1	2.9	439	18

VT





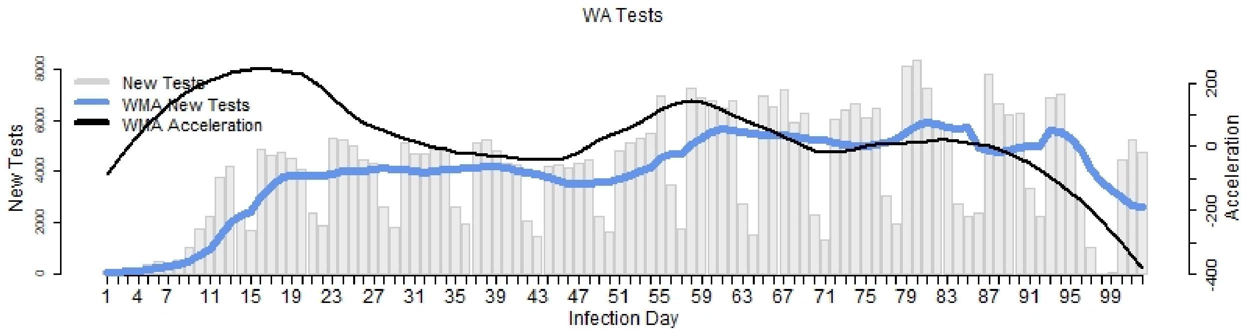


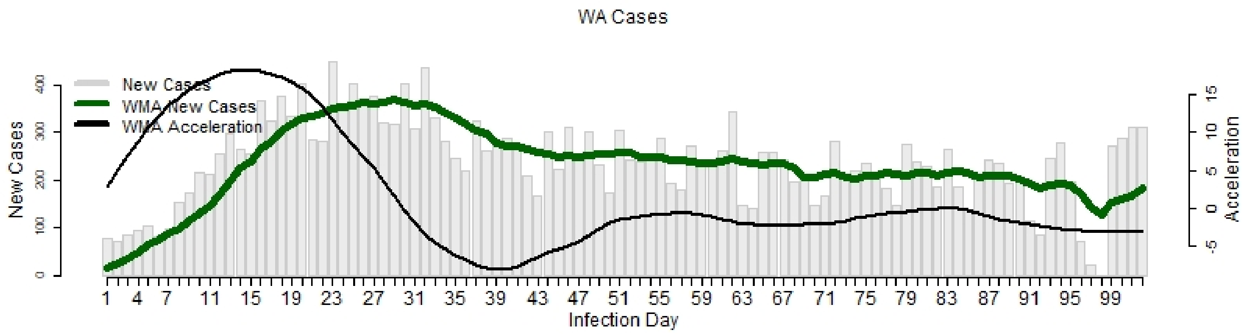


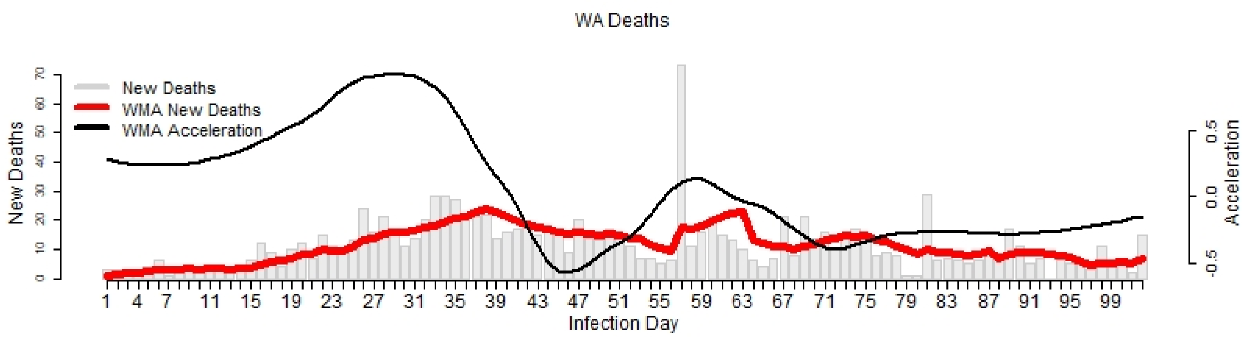
Metrics as of 2020-06-11

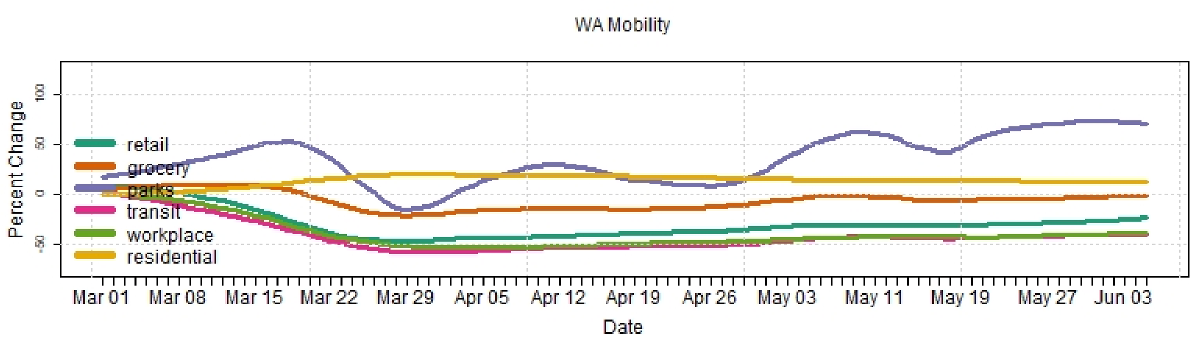
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
VT	45742	1095	55	2.4	5	11	0

WA





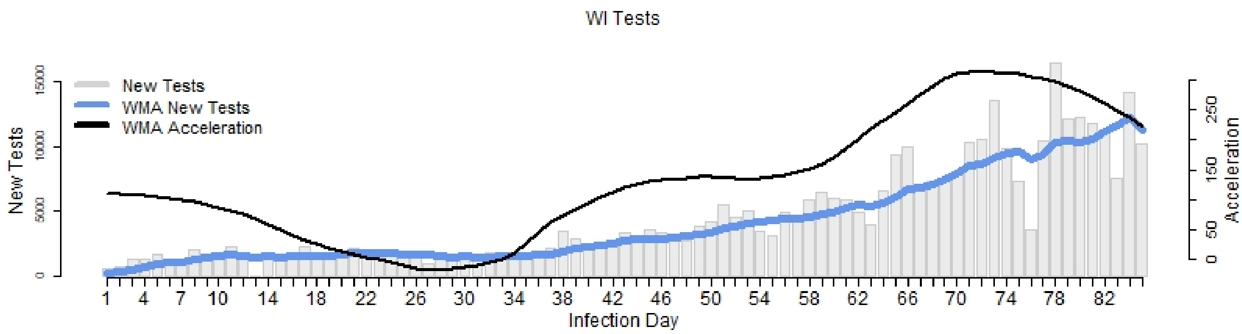


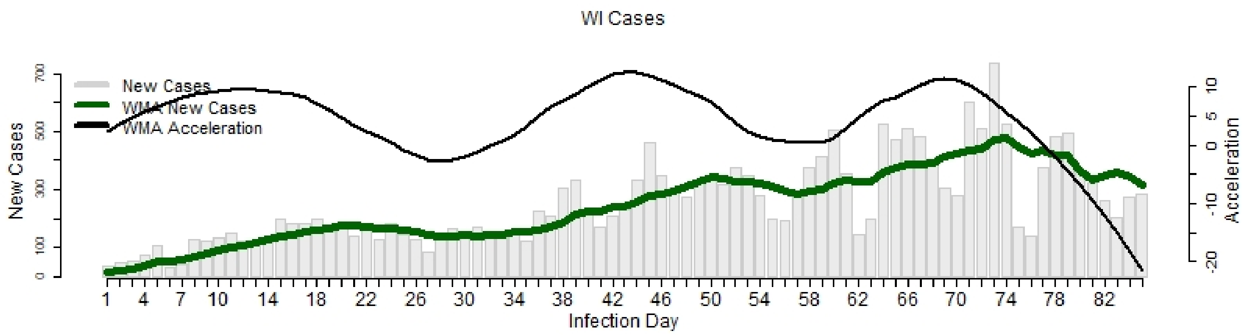


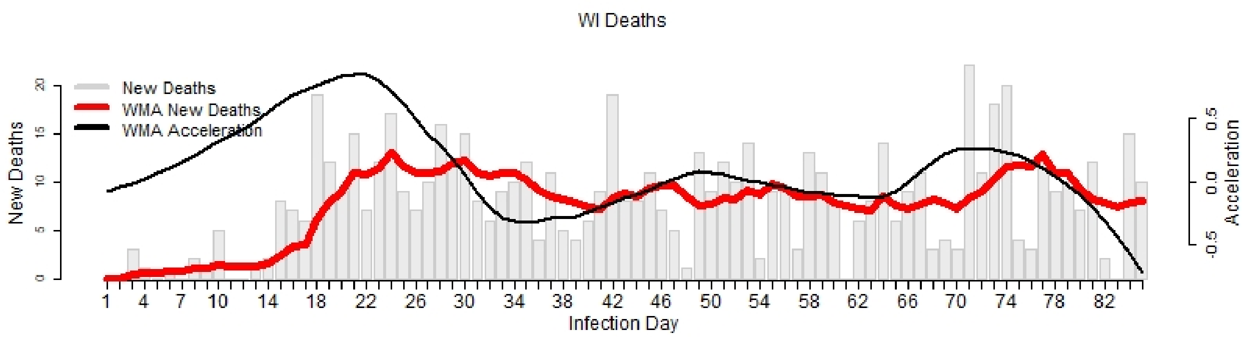
Metrics as of 2020-06-11

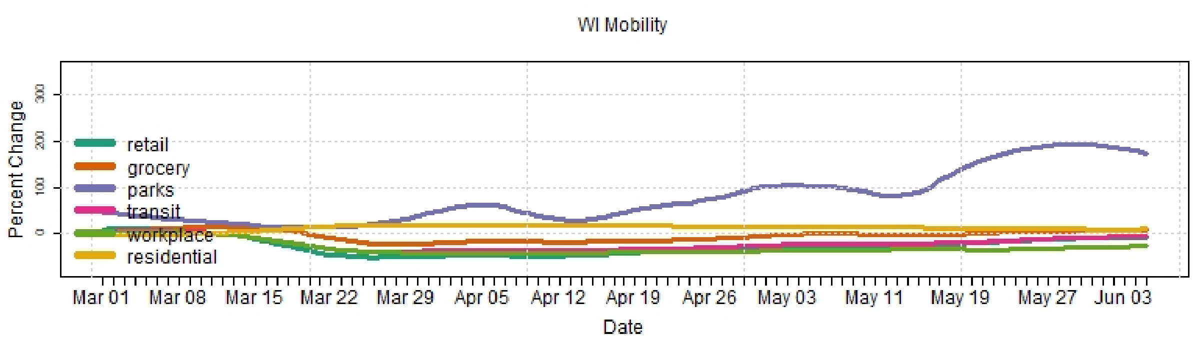
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
WA	415054	24354	1176	5.9	4.8	313	15

WI





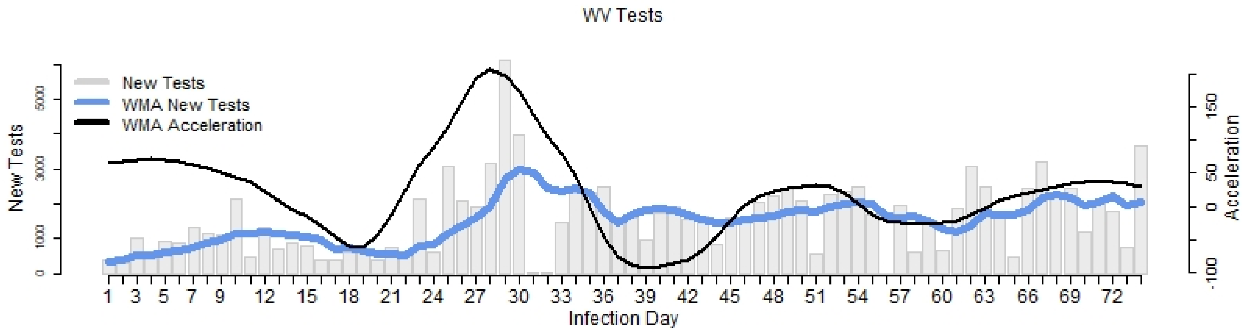


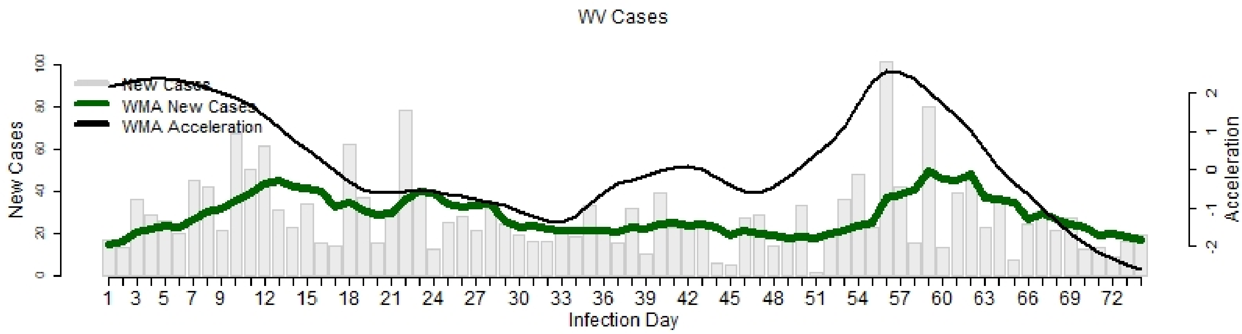


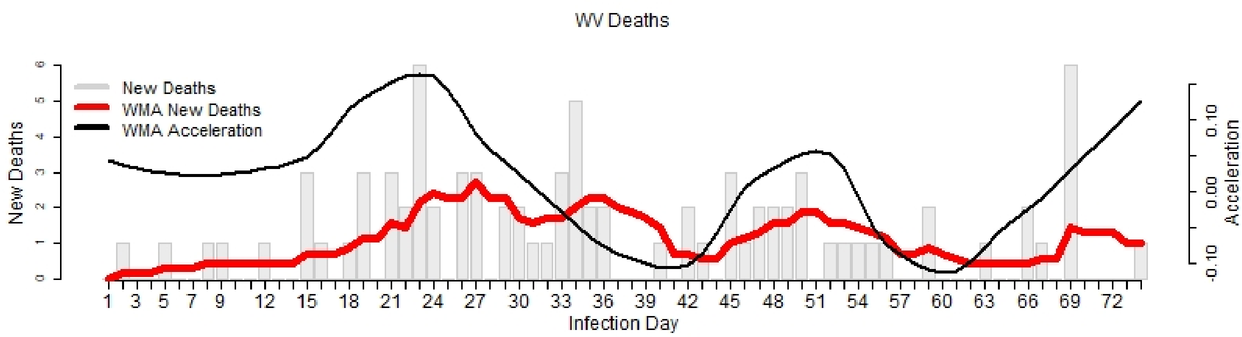
Metrics as of 2020-06-11

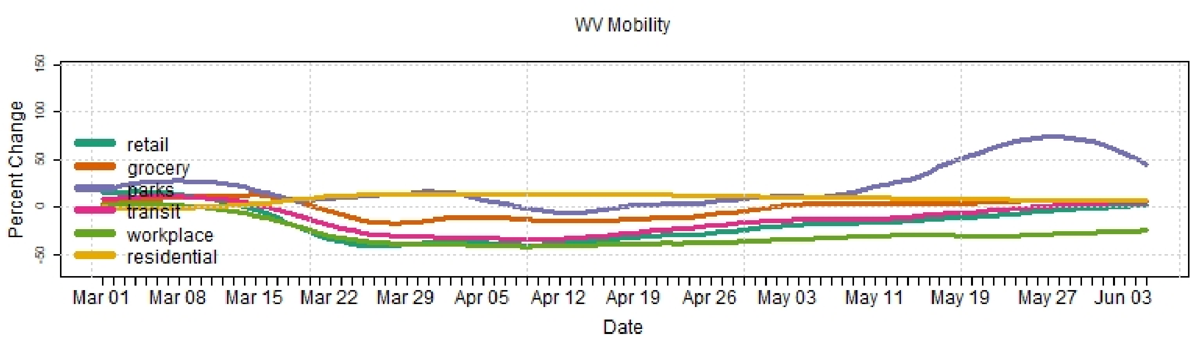
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
WI	378705	21593	671	5.7	3.1	285	10

WV





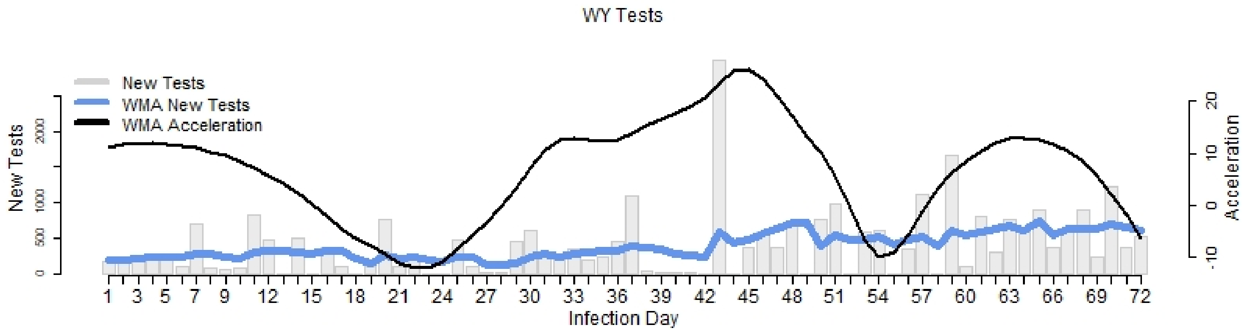


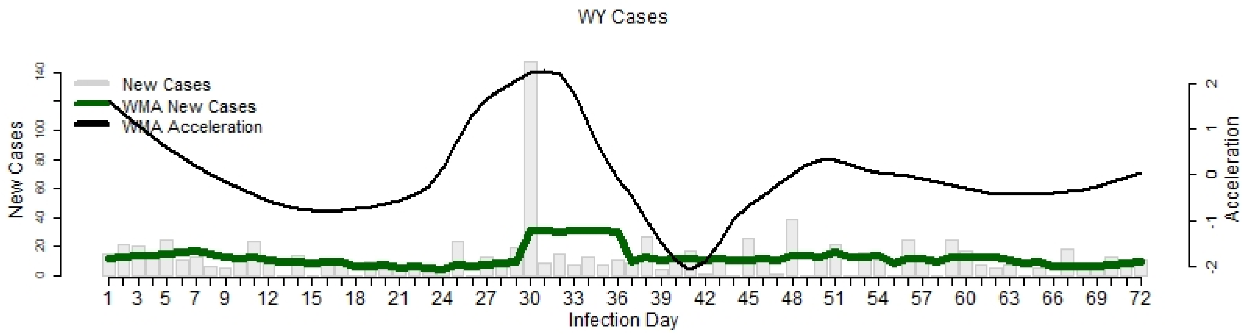


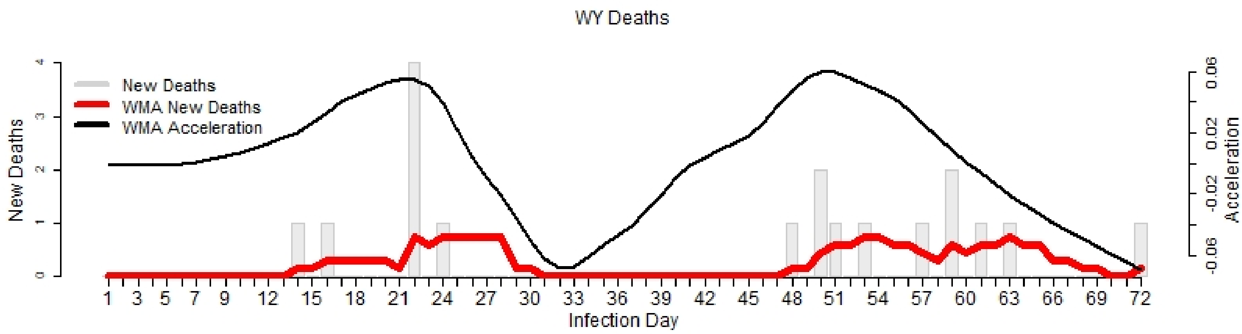
Metrics as of 2020-06-11

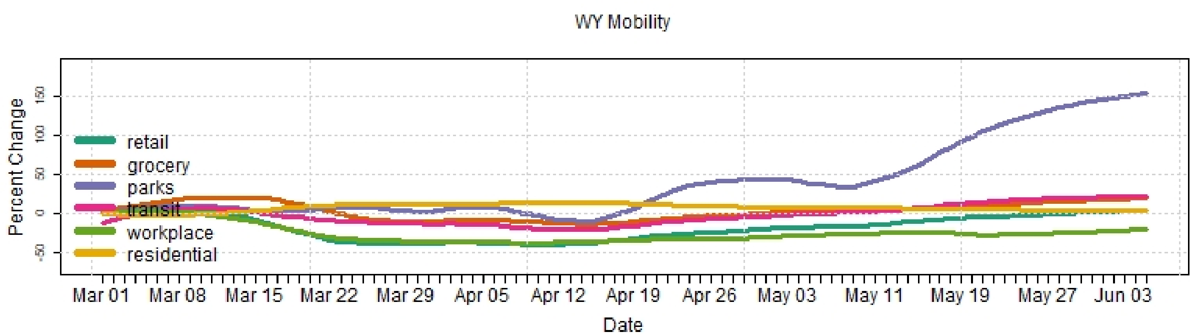
State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
WV	117990	2188	85	1.9	3.9	19	1

WY









Metrics as of 2020-06-11

State	Tests	Positive	Deaths	Pos Rate (%)	Death Rate (%)	New Cases	New Deaths
WY	30852	980	18	3.2	1.8	10	1