Six Month Summary

May through
October 2021

This research project is supported in part by the Society of Actuaries

COVID -19 Data

- Using data from Johns Hopkins and the CDC, we calculate two statistics:
  - **Infection Level** - The rate of new cases in each state and the U.S. per 100,000 people
  - **Daily New Infection Rate [NIR]** - Rolling average of an individual day's rate of new infections compared to the previous two weeks

- From September 2020 to April 2021, the COVID-19 data was compared to mitigation observations that we collected and displayed in weekly monthly and multi month reports.
- From May 2021 to October 2021, we continued to prepare and publish brief weekly reports summarizing just the COVID-19 data from the CDC.
- **This six month report is the final report in that COVID-19 only series.**

US COVID Status at a Glance

	May	June	July	August	September	October
Total Cases	33.3M	33.7M	35M	39.2M	43.5M	46M
New Cases	0.9M	0.4M	1.3M	4.2M	4.3M	2.5M
Total Deaths	594,582	604,685	613,154	640,065	697,848	745,665
New Deaths	18,353	10,103	8,469	26,911	57,783	47,817

- These six months saw the COVID Pandemic in the U.S. going from almost under control in June to raging out of control in August and September to moderating again in October. Unfortunately, this is a pattern that we have seen before.
- Distribution of vaccines slowed considerably by the summer and the Delta variant raged among the unvaccinated and a smaller number of breakthrough cases.

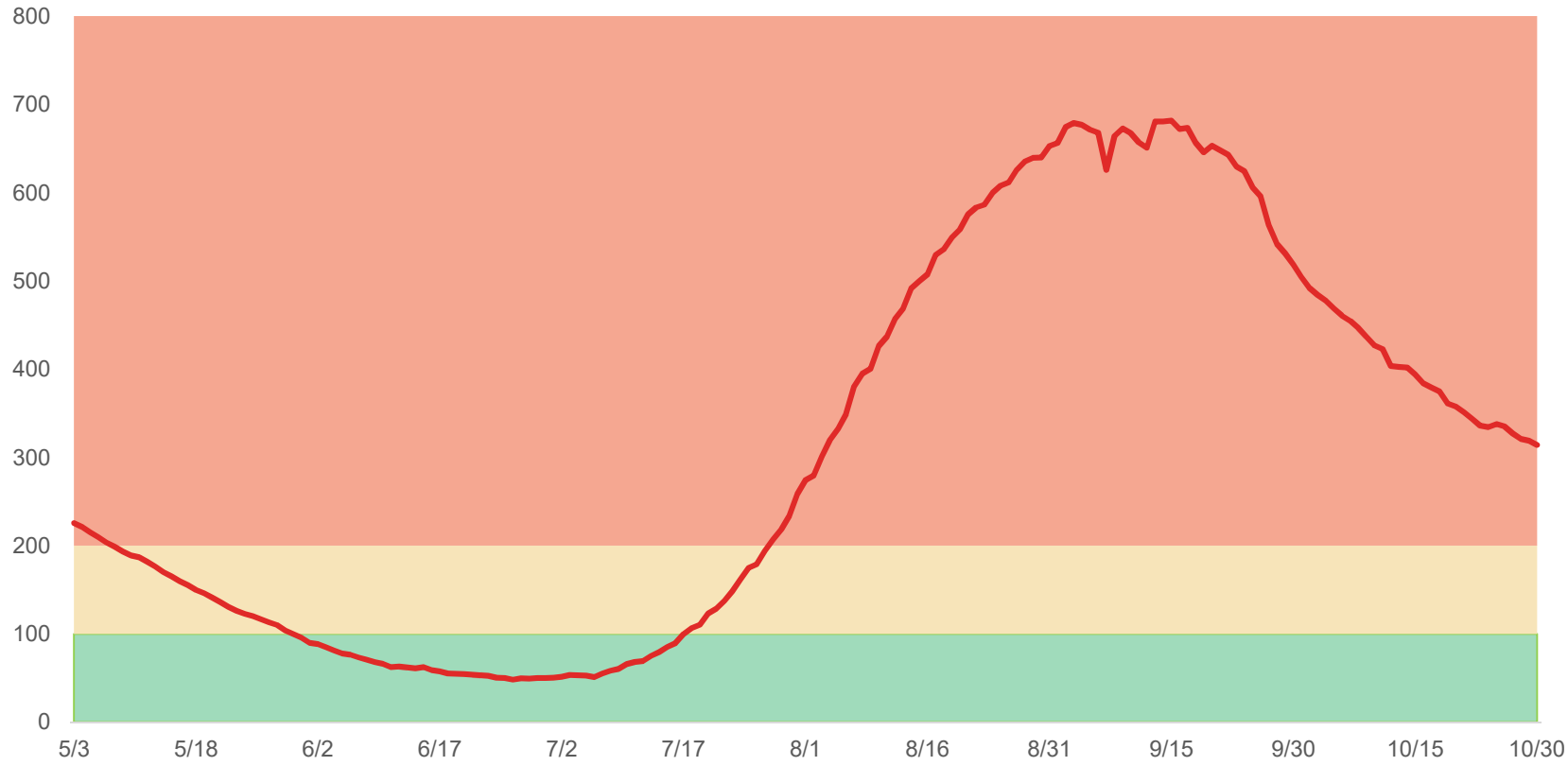
U.S. COVID Status at a Glance

	May	June	July	August	September	October
Average U.S. Infection Level*	162	62	113	492	642	395
Change in Infection Level*	(112)	(100)	50	379	150	(247)
Average U.S. NIR	5.4%	6.5%	10.9%	8.5%	6.7%	6.4%
Change in NIR	-1.5%	1.1%	4.5%	-2.4%	-1.9%	-0.3%

- The infection level fell to an average of 62 per 100,000 in June only to rise ten fold to 642 in September.
- The spike was also reflected in a jump of NIR to over 10% in July, continuing at 8.5% in August. May/June and September/October averages were all below the No Growth level of 7.14%.

*Per 100,000 population

Infection Level in US
(New Cases per 100,000 People)



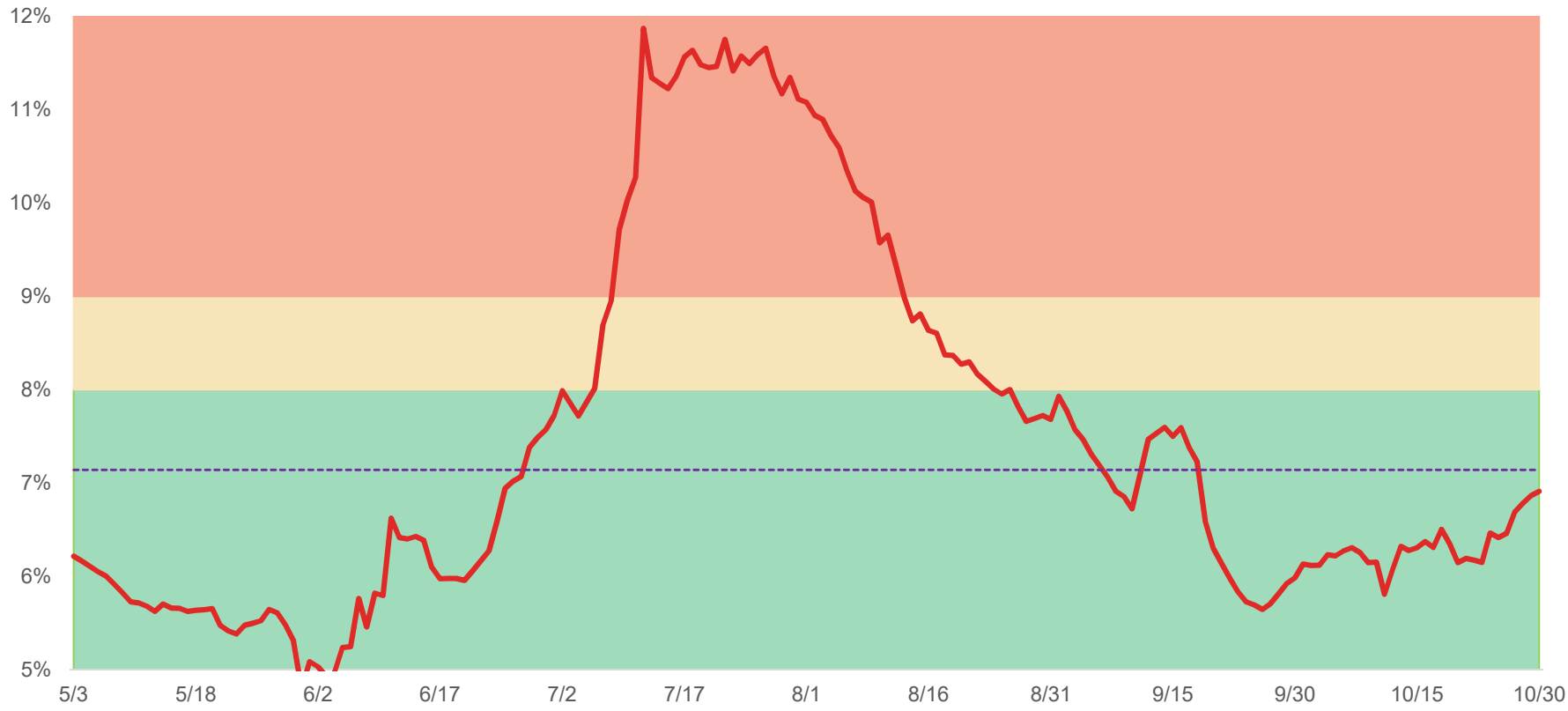
Based on the sum of new cases over previous 14 days. Data indicates most infections last about 14 days.*

Vaccinations drove the Infection Level to a very low level in early July with the population showing signs of nearing herd immunity. Throughout July and August, the Delta variant raged mostly through the unvaccinated populations driving major increases in infection levels.

*Source: Health.Com Article "How Long Does Coronavirus Last"

Daily New Infection Rate in US [NIR]

(percentage of last two week's cases, rolling 7-day average)



No Growth Level: If new infections in the US remain below 7.14%, the number of cases of COVID will shrink over time in the US.

NIR exceeded 11% and fell below 5% over this six-month period. NIR, which often signals a change in direction of the Infections level changes, started increasing sharply in mid-July. NIR has been below the No Growth line (7.14%) since early September, but is again rising up towards that level which may be a signal of a cessation of decreases in the Infection Level.

*Source: Health.Com Article "How Long Does Coronavirus Last"

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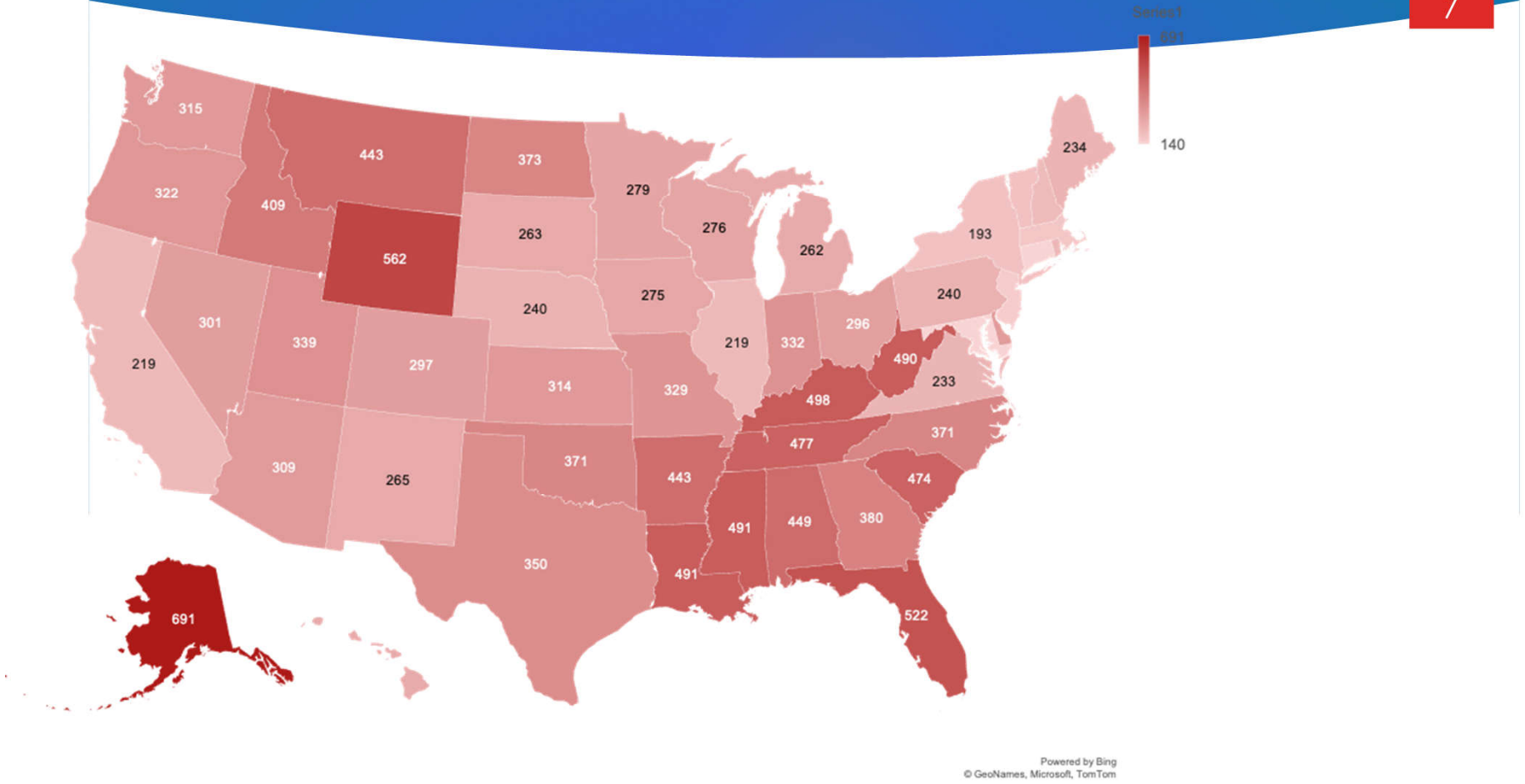
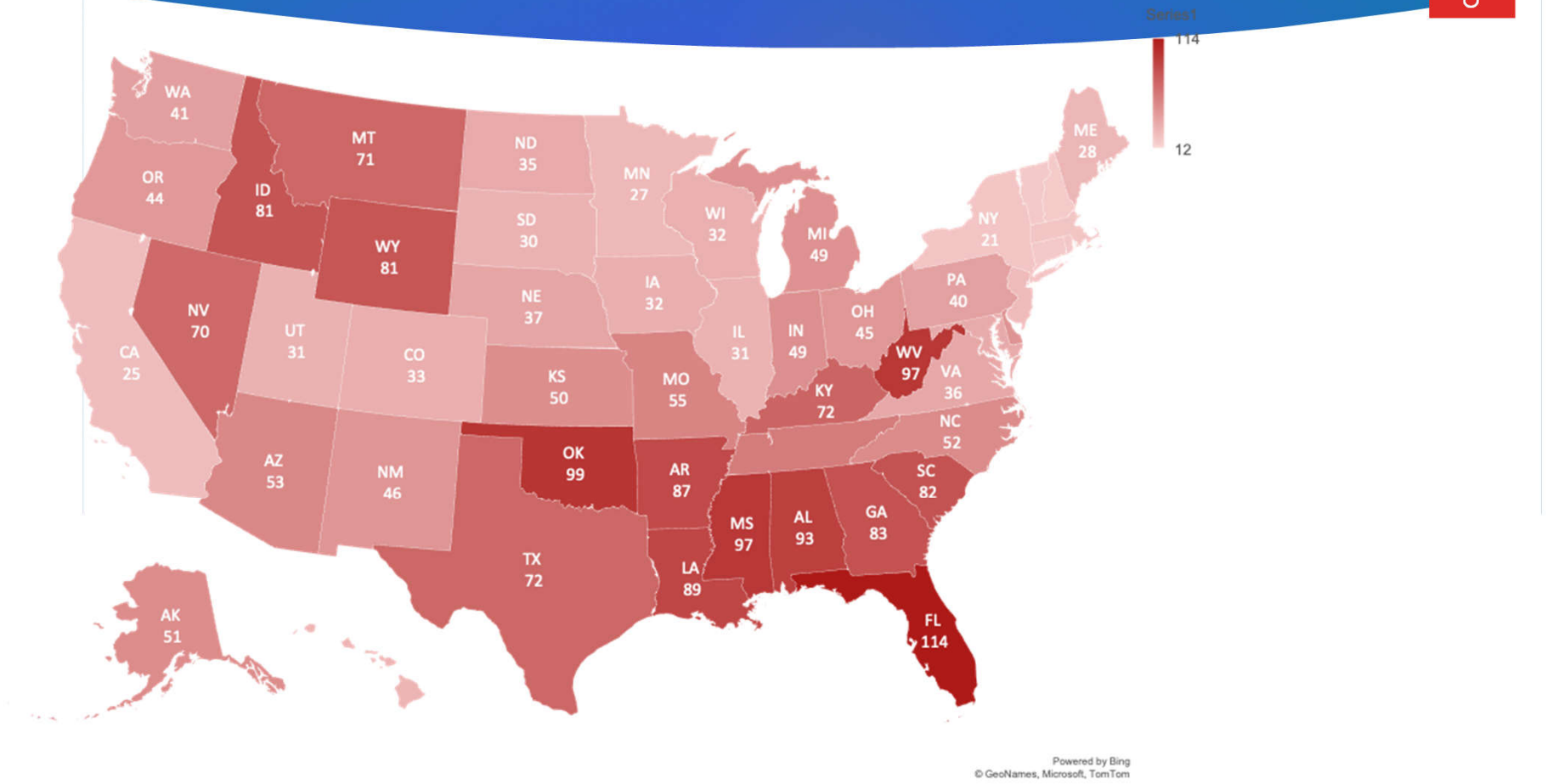
Average Infection Level per 100,000
May - October 2021



New COVID-19 Deaths per 100,000
May - October 2021



Six Months Highest States
COVID Deaths and Infection Level

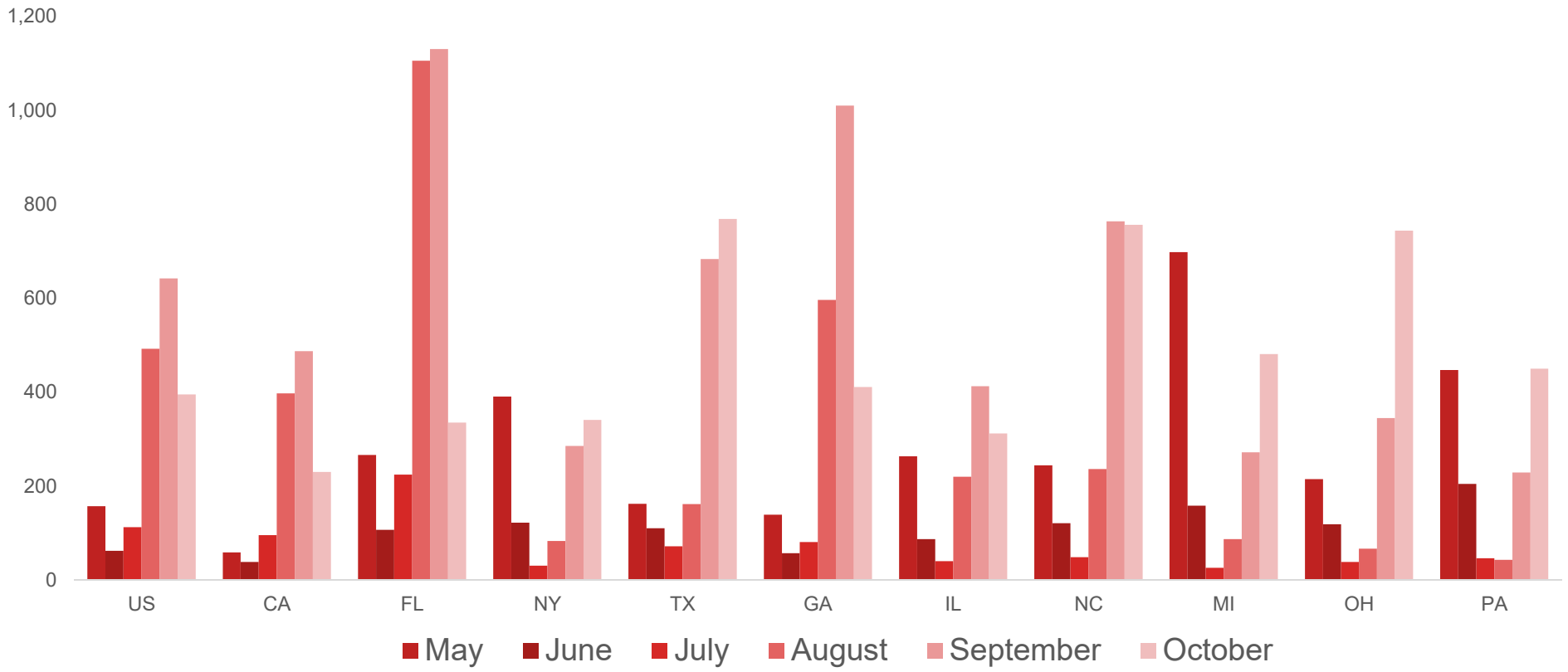
		New Deaths Per 100k	Average Infection Level	
	U.S. National Average	51.1		310
1	Florida	113.6	Alaska	691.0
2	Oklahoma	99.0	Wyoming	561.8
3	West Virginia	97.3	Florida	522.5
4	Mississippi	97.0	Kentucky	498.0
5	Alabama	93.0	Mississippi	491.4
6	Louisiana	89.3	Louisiana	491.2
7	Arkansas	87.3	West Virginia	490.3
8	Georgia	82.7	Tennessee	477.5
9	South Carolina	82.3	South Carolina	473.8
10	Idaho	81.0	Alabama	448.7
11	Wyoming	80.8	Arkansas	443.5
12	Kentucky	72.4	Montana	443.1
13	Texas	71.7	Idaho	409.0
14	Montana	71.4	Georgia	380.3
15	Nevada	69.7	North Dakota	373.4
16	Tennessee	59.9	North Carolina	371.2
17	Missouri	55.4	Oklahoma	370.6

Six Months Lowest States
COVID Deaths and Infection Level

		New Deaths Per 100k	Average Infection Level	
	U.S. National Average	51.1		310
35	Iowa	31.8	Michigan	262.5
36	Wisconsin	31.6	Hawaii	261.2
37	Utah	30.7	Pennsylvania	239.8
38	Illinois	30.5	Nebraska	239.5
39	South Dakota	30.2	Maine	234.1
40	Hawaii	29.0	Virginia	232.7
41	Maine	28.1	Rhode Island	223.1
42	Minnesota	27.3	California	218.8
43	New Jersey	26.0	Illinois	218.7
44	California	24.9	New Hampshire	211.9
45	New York	20.6	New York	193.2
46	Massachusetts	19.7	Vermont	192.4
47	Rhode Island	18.8	District of Columbia	183.4
48	Connecticut	18.5	Massachusetts	178.4
49	Vermont	18.3	New Jersey	165.4
50	New Hampshire	17.5	Maryland	141.7
51	District of Columbia	12.3	Connecticut	140.4

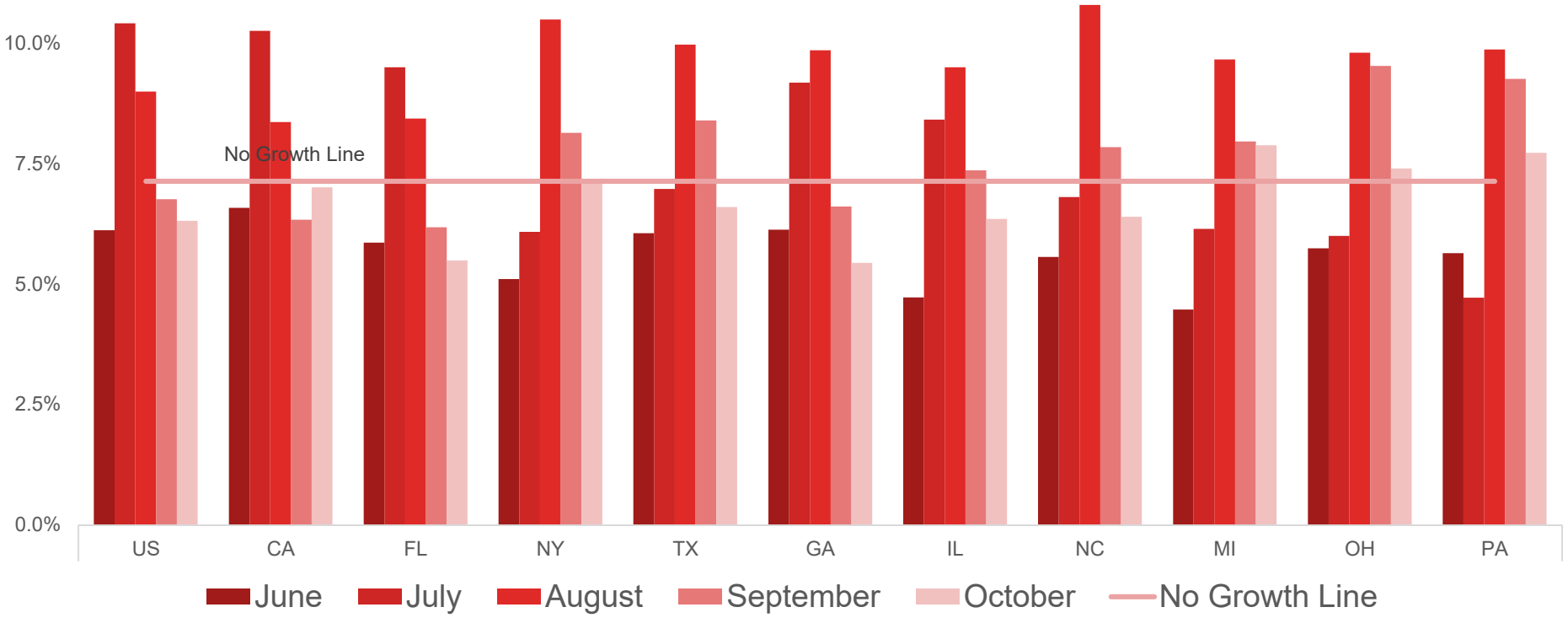
Infection Level in 10 Most Populous States

(Monthly Averages)

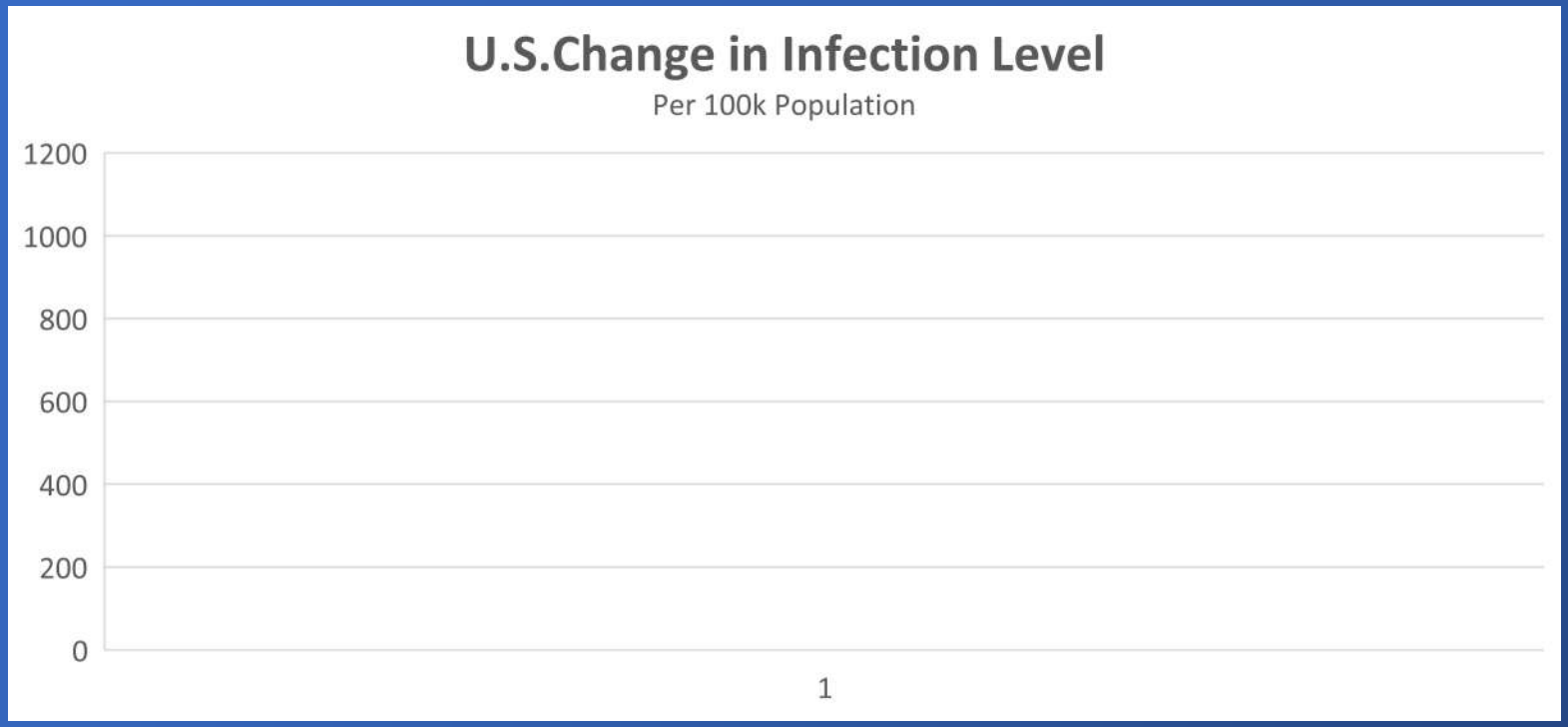


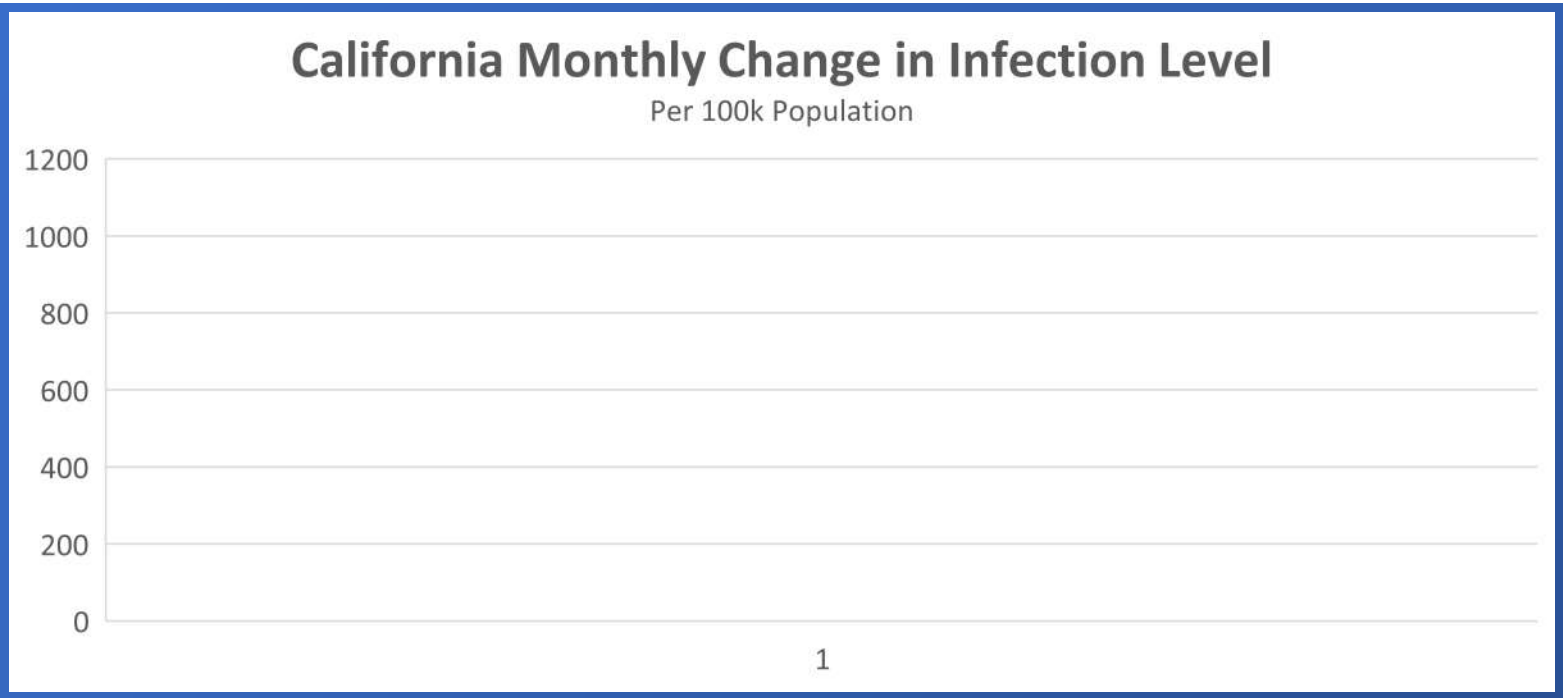
- The Infection Level has shown the same pattern of falling and rising in the ten largest states as with the total U.S. with some variations in timing.
- Six of these ten states had infection levels that exceeded 500 per 100,000 at some point in the six months. Only Florida exceeded 1000 per 100,000 (1.0%)

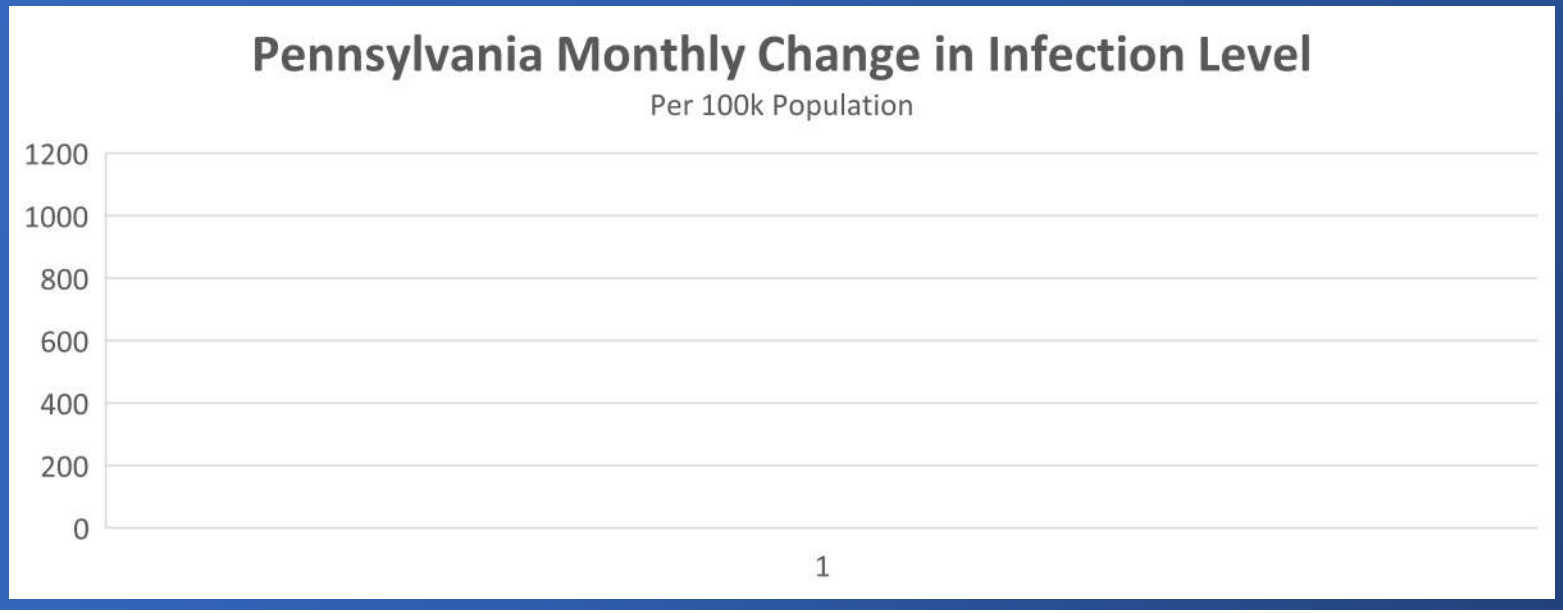
NIR in 10 Most Populous States
(Monthly Averages)

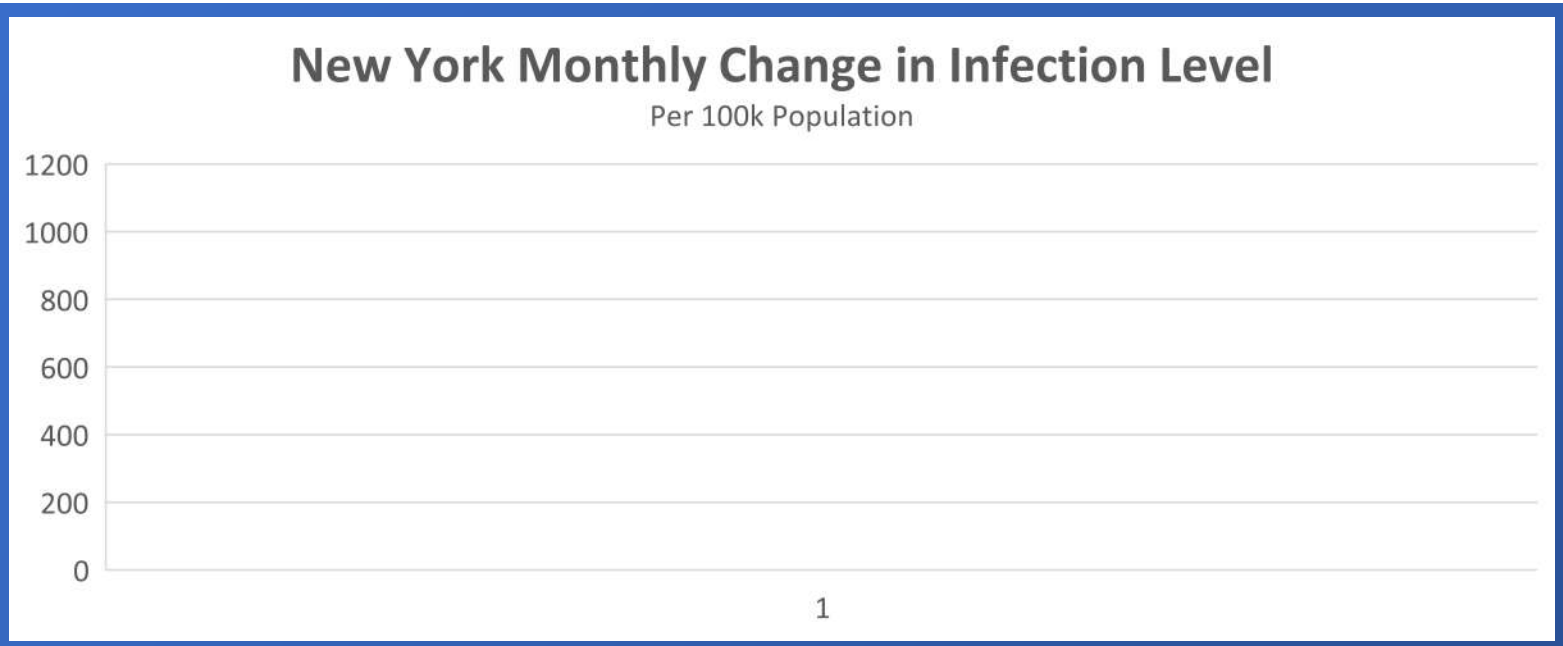


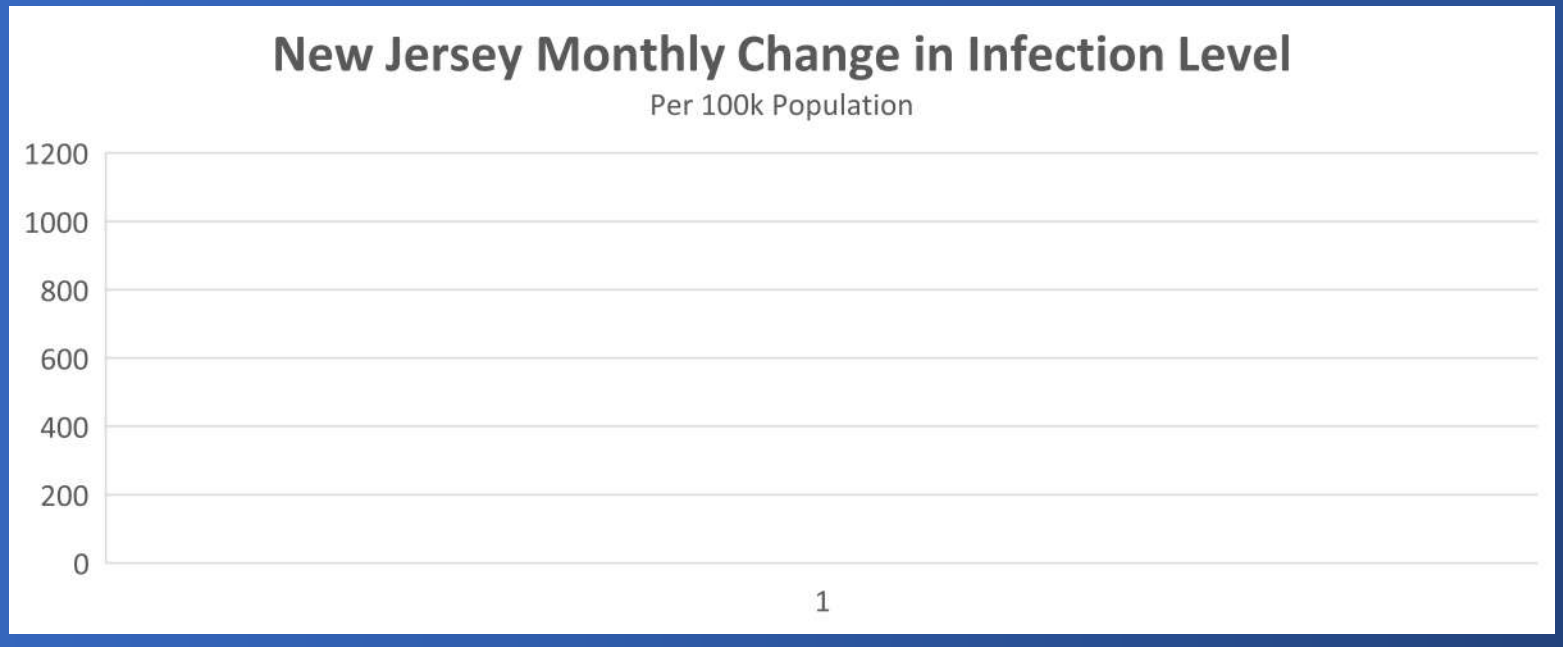
- All ten states and the national average were below the No Growth level in June and also approached or exceeded a 10% NIR in July.
- Five of these ten states had an NIR average well below 7% in October. The other five states are below 8%.

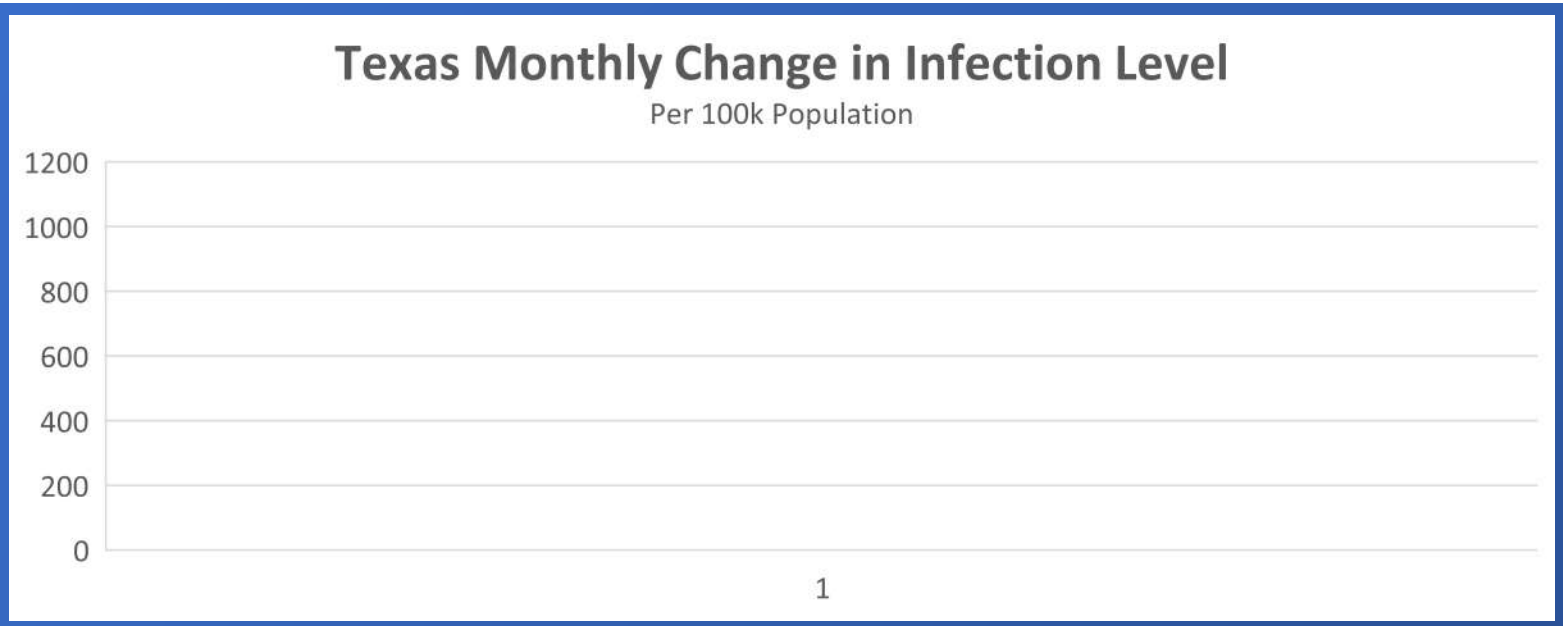

U.S.Change in Infection Level
Per 100k Population
1200
1000
800
600
400
200
0
1

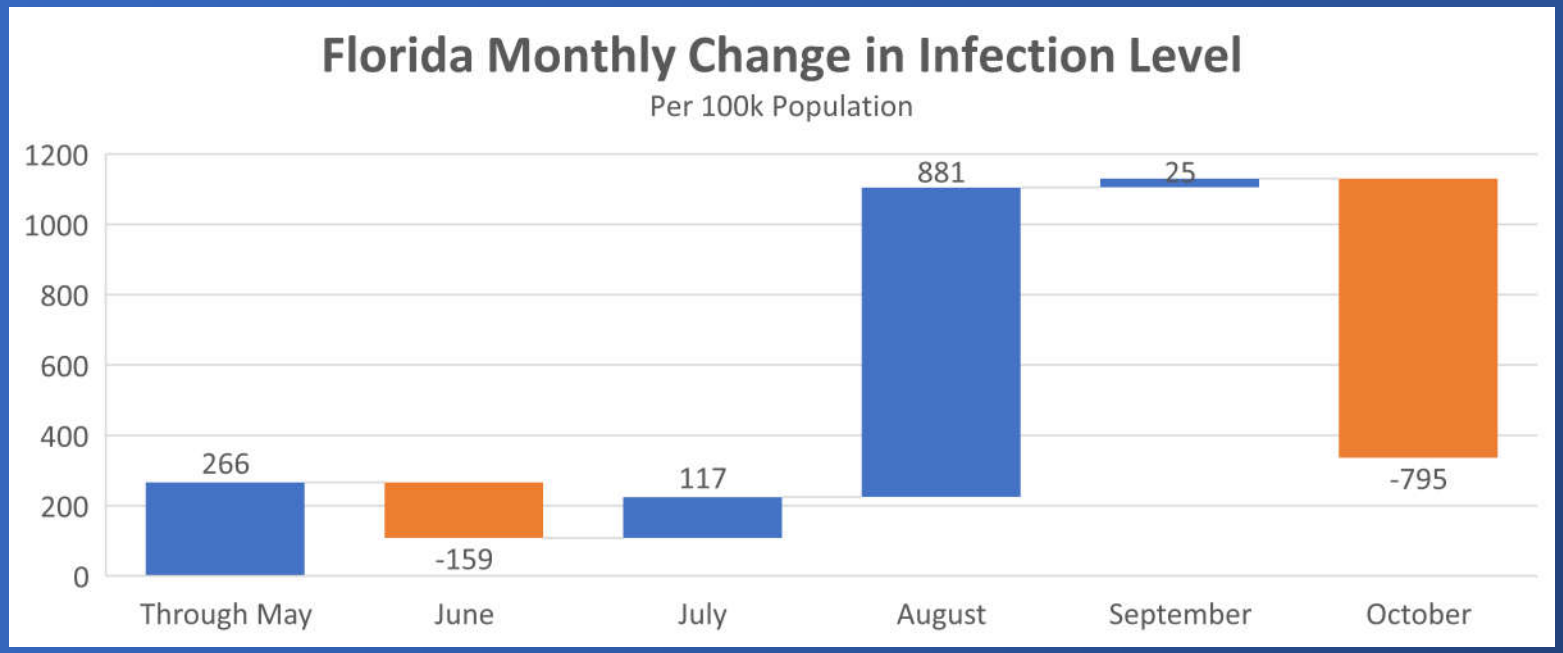

California Monthly Change in Infection Level
Per 100k Population
1200
1000
800
600
400
200
0
1


Pennsylvania Monthly Change in Infection Level
Per 100k Population
1200
1000
800
600
400
200
0
1


New York Monthly Change in Infection Level
Per 100k Population
1200
1000
800
600
400
200
0
1


New Jersey Monthly Change in Infection Level
Per 100k Population
1200
1000
800
600
400
200
0
1


Texas Monthly Change in Infection Level
Per 100k Population
1200
1000
800
600
400
200
0
1


Florida Monthly Change in Infection Level
Per 100k Population
1200
1000
800
600
400
200
0
266
-159
117
881
25
-795
Through May
June
July
August
September
October

COVID Monitoring

This report relies upon data from public sources for the analysis. No attempt has been made to independently verify the accuracy of this data. CMMP does not represent or otherwise guarantee the accuracy or completeness of such data nor assume responsibility for the result of any error or omission in the data or other materials gathered from any source in the preparation of this analysis.

There are many uncertainties inherent in this analysis. Future outcomes may vary considerably from past reports, especially as this is an emerging situation and there have been frequent corrections made to the data as more becomes known to the data providers.

CMMP does not recommend making decisions based solely on the information contained in this analysis. Rather, this analysis should be viewed as a supplement to other information, including specific mitigation practices, claims experience, and financial situation. Independent professional advisors should be consulted with respect to the issues and conclusions presented herein and their possible application.

This analysis is not intended to be a complete actuarial communication, and as such is not intended to be relied upon. A complete communication can be provided upon request.