

COVID-19 Dashboard

Issue # 71
Wednesday, June 10, 2020

Measure	Desired Change	Yesterday in the U.S.
Number of Tests	Increase	433,000 on Tuesday
Test-Positivity Rate	Decline	4.2% test-positive past 2 days; 4.5% for past 7 days
Number of Cases	Plateau	New Cases down 6.6% week-over-week (after adjusting for accounting changes)
Deaths % of Total Cases	Decline	5.6%
Number of Deaths / 1M Population	Plateau	344.9
Recoveries : Death	Increase	6.91

- Surveillance of the virus continues to be strong in the United States: test volume on Tuesday was 433,000, with a 4.2% test-positive rate (only June 1 saw a lower rate, 4.0%). Only Arizona (12.7% has a rate > 10% - the upper bound suggested by WHO as necessary for strong surveillance. Thirty-two states are < 5%; eight states, including New York and New Jersey, are < 2%
- Despite media-fueled concern about rising infections resulting from relaxed restrictions, it does not seem to be the case generally for the United States. Indeed, adjusting for accounting changes made by Michigan and New York last week, new cases are down 6.6% week-over-week
- Case growth over the past 5 days is highest in Arizona (4.5%), Arkansas (3.7%), South Carolina (3.2%), Utah (3.0%) and North Carolina (3.0%). All other states reported case growth of <= 2.3% for this 5-day period
- Hospitalization rates are a concern in selected states:
 - Several states are at 90% or more of their peak number of hospitalized COVID patients: Alabama, Arizona, Arkansas, Kentucky, North Carolina, South Carolina and Utah
 - Among states at 50% or more of their peak, those with the highest 7-day increase in hospitalized patients: Utah (45% increase in past 7 days), Arkansas (43%), South Carolina (27%), Arizona (23%) and Texas (23%). While a few other states are experiencing increased hospitalizations over the past week, these states are at less than 1/2 their peak hospitalizations
 - On the positive side, hospitalizations in New York, New Jersey and Connecticut are all down by more than 25% week-over-week; more than 60% in the past 4 weeks; and, are at <33% of their peak
- Deaths in the United States again exceeded 1,000 yesterday; the death rate per case, however, continues to be < 5.6%
- Internationally, the United Kingdom surpassed Spain and now ranks 4th in total cases

COUNTRY-BY-COUNTRY INFORMATION

Countries Included

"Strategic Guidance in an Era of Unprecedented Change"

- In Mid-March, we began tracking the twenty countries with the most coronavirus cases; in mid-April, we expanded it to the thirty countries with the most cases
- We now have visibility to all 213 countries and 2 conveyances that have at least 1 coronavirus case
- Case and death information is sourced from the [worldometers.info](https://www.worldometers.info), the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University and the New York Times, each of which are accessed daily; analysis by Health Industry Advisor LLC

Country-by-Country Comparative Statistics

"Strategic Guidance in an Era of Unprecedented Change"

Top 30 Countries By Total Cases
As of June 9

Country	Total Cases	Rank	Cases per 1M Population	Rank2	Deaths	Rank3	Death Rate	Rank4	Deaths per 1 Million Population	Rank5	5-day Moving Average Case Growth Rate	Rank6	Tests per 1M Population - Past 7 Days	Rank7	New Daily Infections Per 1M Population (5-Day M.A.)	Rank8
USA	2,045,549	(1)	6,182	(5)	114,148	(1)	5.6%	(11)	345.0	(8)	1.2%	(19)	1,526	(6)	73.4	(8)
Brazil	742,084	(2)	3,493	(13)	38,497	(3)	5.2%	(13)	181.2	(11)	3.8%	(7)	47	(26)	118.8	(4)
Russia	485,253	(3)	3,325	(14)	6,142	(13)	1.3%	(25)	42.1	(18)	1.9%	(13)	2,059	(3)	60.5	(9)
UK	289,140	(4)	4,260	(10)	40,883	(2)	14.1%	(4)	602.4	(2)	0.5%	(23)	2,642	(2)	22.0	(17)
Spain	289,046	(5)	6,182	(5)	27,136	(6)	9.4%	(8)	580.4	(3)	0.1%	(29)	1,227	(8)	5.6	(27)
India	274,780	(6)	199	(29)	7,719	(12)	2.8%	(19)	5.6	(28)	3.9%	(5)	98	(22)	7.0	(25)
Italy	235,561	(7)	3,896	(12)	34,043	(4)	14.5%	(3)	563.0	(4)	0.1%	(28)	842	(12)	5.1	(28)
Peru	203,736	(8)	6,184	(4)	5,738	(15)	2.8%	(18)	174.2	(12)	2.1%	(12)	584	(15)	124.7	(3)
Germany	186,516	(9)	2,227	(20)	8,831	(9)	4.7%	(15)	105.4	(15)	0.2%	(27)	675	(13)	3.8	(29)
Iran	175,927	(10)	2,096	(21)	8,425	(10)	4.8%	(14)	100.4	(16)	1.4%	(18)	259	(19)	27.8	(15)
Turkey	172,114	(11)	2,042	(22)	4,729	(16)	2.7%	(20)	56.1	(17)	0.6%	(22)	528	(17)	11.2	(24)
France	154,591	(12)	2,369	(19)	29,296	(5)	19.0%	(1)	448.9	(6)	0.3%	(25)	0	(29)	6.6	(26)
Chile	142,759	(13)	7,472	(2)	2,283	(20)	1.6%	(23)	119.5	(13)	3.8%	(6)	1,000	(9)	256.1	(2)
Mexico	120,102	(14)	932	(23)	14,053	(7)	11.7%	(6)	109.1	(14)	3.5%	(9)	69	(25)	29.3	(14)
Saudi Arabia	108,571	(15)	3,122	(15)	783	(26)	0.7%	(26)	22.5	(22)	3.1%	(10)	589	(14)	88.6	(6)
Pakistan	108,317	(16)	491	(26)	2,172	(21)	2.0%	(22)	9.8	(26)	4.9%	(2)	99	(21)	20.9	(18)
Canada	96,653	(17)	2,562	(17)	7,897	(11)	8.2%	(10)	209.3	(10)	0.6%	(21)	876	(11)	15.5	(20)
China	83,043	(18)	58	(30)	4,634	(18)	5.6%	(12)	3.2	(30)	0.0%	(30)	0	(27)	0.0	(30)
Qatar	71,879	(19)	25,600	(1)	62	(29)	0.1%	(29)	22.1	(23)	2.4%	(11)	1,727	(5)	579.7	(1)
Bangladesh	71,675	(20)	435	(27)	975	(25)	1.4%	(24)	5.9	(27)	4.5%	(3)	80	(23)	17.1	(19)
Belgium	59,437	(21)	5,130	(8)	9,619	(8)	16.2%	(2)	830.2	(1)	0.2%	(26)	913	(10)	11.6	(22)
South Africa	52,991	(22)	894	(24)	1,162	(24)	2.2%	(21)	19.6	(24)	5.4%	(1)	497	(18)	41.2	(12)
Belarus	50,265	(23)	5,319	(7)	282	(28)	0.6%	(28)	29.8	(19)	1.8%	(15)	1,228	(7)	90.7	(5)
Netherlands	47,903	(24)	2,796	(16)	6,031	(14)	12.6%	(5)	352.0	(7)	0.4%	(24)	539	(16)	11.2	(23)
Sweden	45,924	(25)	4,549	(9)	4,717	(17)	10.3%	(7)	467.2	(5)	1.9%	(14)	0	(30)	80.1	(7)
Ecuador	43,917	(26)	2,492	(18)	3,690	(19)	8.4%	(9)	209.3	(9)	1.4%	(17)	76	(24)	33.5	(13)
Colombia	42,078	(27)	827	(25)	1,372	(22)	3.3%	(17)	27.0	(21)	3.7%	(8)	232	(20)	27.4	(16)
UAE	39,904	(28)	4,038	(11)	283	(27)	0.7%	(27)	28.6	(20)	1.5%	(16)	5,652	(1)	58.4	(10)
Singapore	38,514	(29)	6,586	(3)	25	(30)	0.1%	(30)	4.3	(29)	0.8%	(20)	1,802	(4)	54.4	(11)
Egypt	36,829	(30)	360	(28)	1,306	(23)	3.5%	(16)	12.8	(25)	4.3%	(4)	0	(27)	13.8	(21)

Note: China does not report test volumes

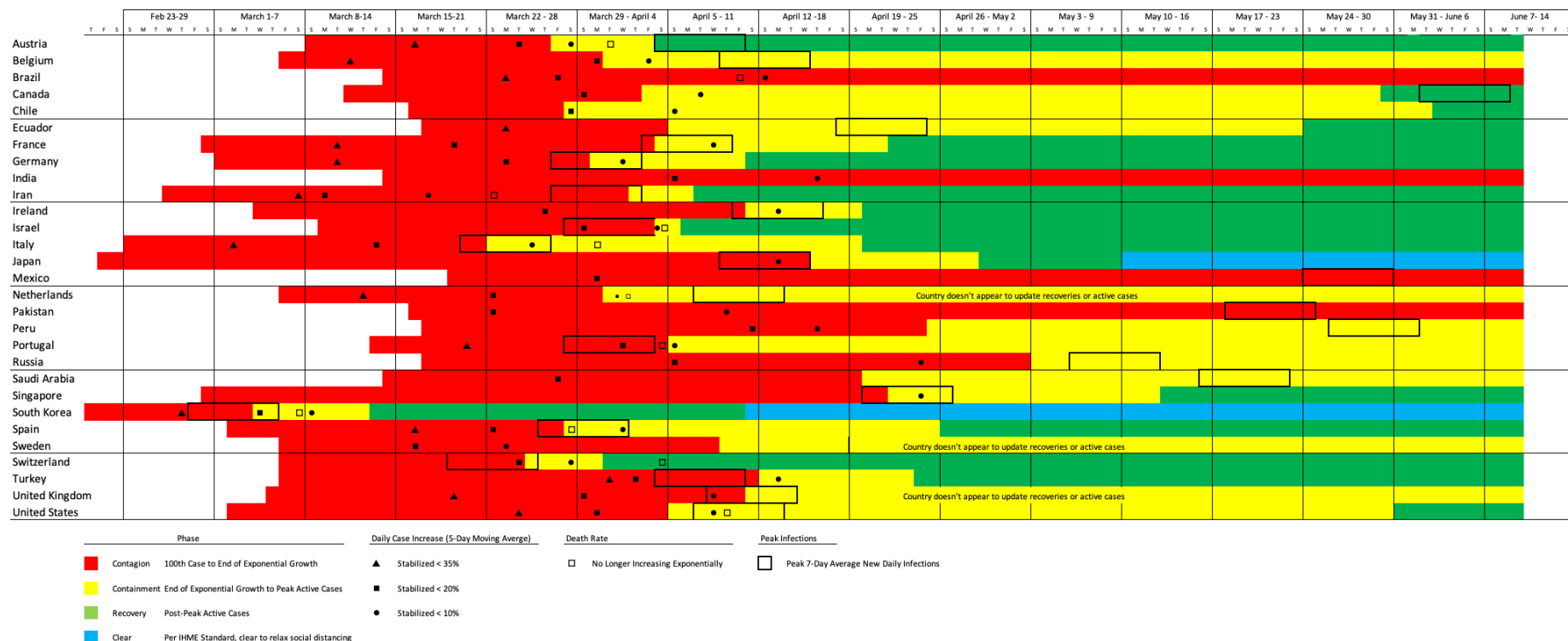
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VIRUS PROGRESSION BY COUNTRY

Country-by-Country Virus Progression – Original 30 Hardest-Hit Countries

“Strategic Guidance in an Era of Unprecedented Change”

This graphic illustrates when the country first recorded 100 total cases (start of the “contagion” phase); when growth stopped following an exponential pattern (start of the “containment” phase); and, when peak total cases were recorded (start of the “recovery” phase). It uses symbols to indicate when average daily case growth rates fell (and were sustained) below certain benchmarks, as well as when deaths stopped growing exponentially.



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Country-By-Country Listing of Countries By Total Cases

"Strategic Guidance in an Era of Unprecedented Change"

Countries making large upward movements are highlighted

When we first expanded our tracking to 30 countries in mid-April, they represented the most countries with cases in the world. Since that time, Austria, Israel, Japan and South Korea have dropped in the rankings. Among the countries that have moved up:

- Afghanistan
- Argentina
- Bangladesh
- Belarus
- Columbia
- Denmark
- Dominican Republic
- Indonesia
- Kuwait
- Poland
- Qatar
- Panama
- Philippines
- Romania
- South Africa
- UAE
- Ukraine

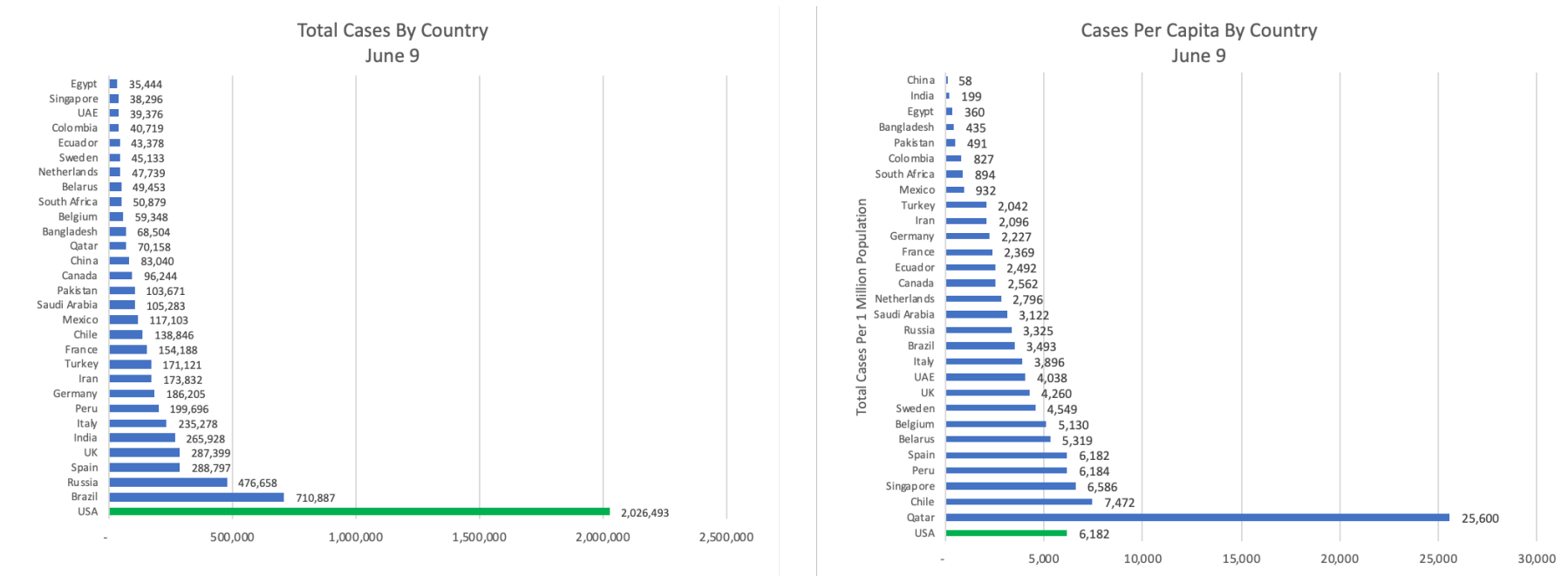
The original 30 still account for 86.2% of all cases worldwide.

Total Cases								
Rank	Country	9-Jun	Rank	Country	6-May	Rank	Country	27-Apr
1	USA	2,045,549	1	USA	1,263,092	1	USA	1,010,356
2	Brazil	742,084	2	Spain	253,682	2	Spain	229,422
3	Russia	485,253	3	Italy	214,457	3	Italy	199,414
4	UK	289,140	4	UK	201,101	4	France	128,339
5	Spain	289,046	5	France	174,191	5	Germany	158,758
6	India	274,780	6	Germany	168,162	6	UK	157,149
7	Italy	235,561	7	Russia	165,929	7	Turkey	112,261
8	Peru	203,736	8	Turkey	131,744	8	Iran	91,472
9	Germany	186,516	9	Brazil	126,611	9	Russia	87,147
10	Iran	175,927	10	Iran	101,650	10	China	82,830
11	Turkey	172,114	11	China	82,883	11	Brazil	66,501
12	France	154,591	12	Canada	63,496	12	Canada	48,500
13	Chile	142,759	13	Peru	54,817	13	Belgium	46,687
14	Mexico	120,102	14	India	52,987	14	Netherlands	38,245
15	Saudi Arabia	108,571	15	Belgium	50,781	15	India	29,451
16	Pakistan	108,317	16	Netherlands	41,319	16	Switzerland	29,164
17	Canada	96,653	17	Saudi Arabia	31,938	17	Peru	28,669
18	China	83,043	18	Switzerland	30,060	18	Portugal	24,070
21	Belgium	59,437	19	Ecuador	29,420	19	Ecuador	23,240
24	Netherlands	47,903	20	Portugal	26,182	20	Ireland	19,648
25	Sweden	45,924	21	Mexico	26,025	21	Sweden	18,926
26	Ecuador	43,917	22	Sweden	23,918	22	Saudi Arabia	18,811
29	Singapore	38,514	23	Pakistan	23,214	23	Israel	15,555
31	Portugal	35,306	24	Chile	23,048	24	Austria	15,274
34	Switzerland	30,988	25	Ireland	22,248	25	Mexico	14,677
37	Ireland	25,215	26	Singapore	20,198	26	Singapore	14,423
44	Israel	18,180	29	Israel	16,310	27	Pakistan	13,915
46	Japan	17,210	31	Austria	15,684	28	Chile	13,813
47	Austria	16,979	32	Japan	15,253	29	Japan	13,614
56	S. Korea	11,852	38	S. Korea	10,806	35	South Korea	10,738
	Others	1,005,665		Others	356,176		Others	301,446
	World	7,310,832			3,817,382		World	3,062,515
30 countries' share		86.2%			90.7%			90.2%

Country-by-Country Cases & Cases Per Capita

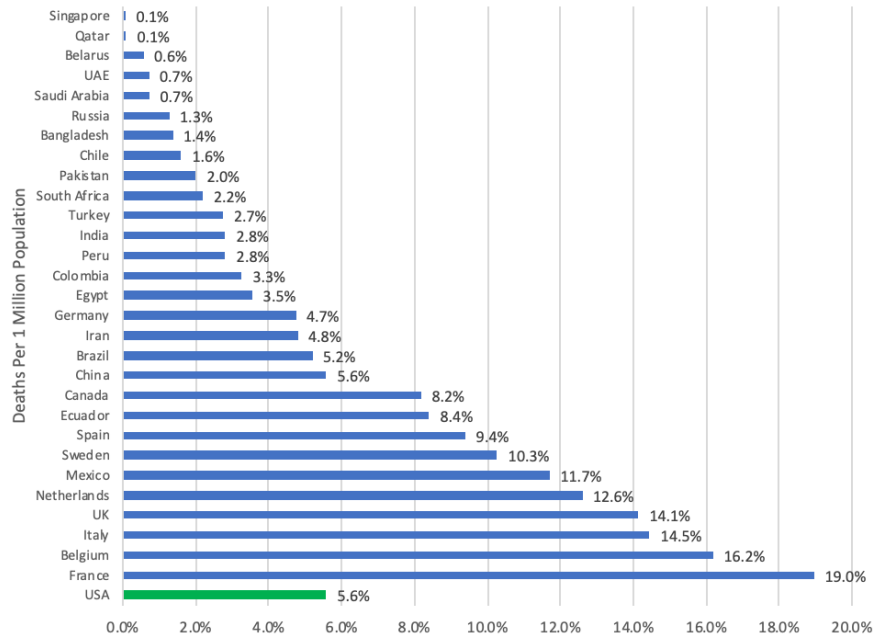
"Strategic Guidance in an Era of Unprecedented Change"

Countries Ranked 1-30 In Total Cases

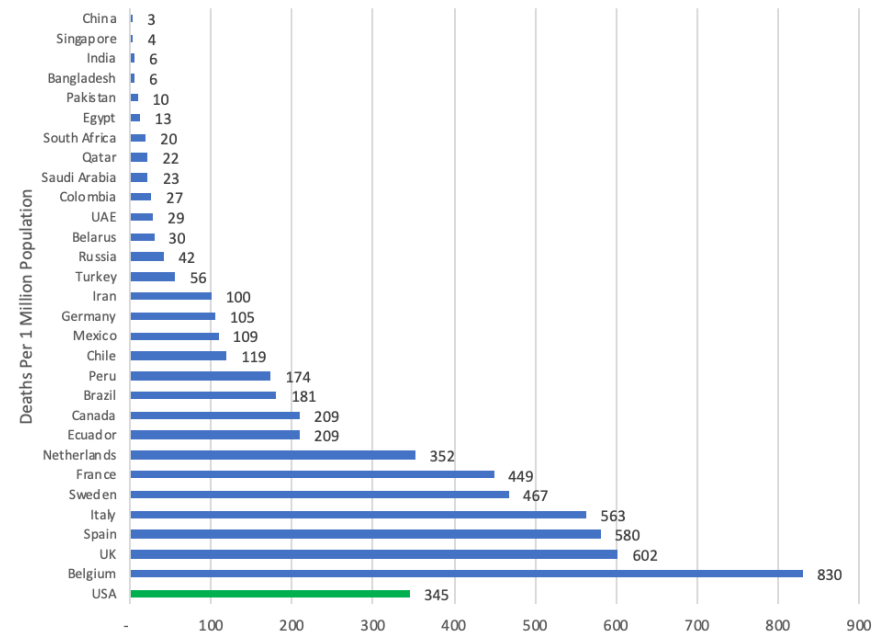


Countries Ranked 1-30 In Total Cases

Death Rate By Country
June 9

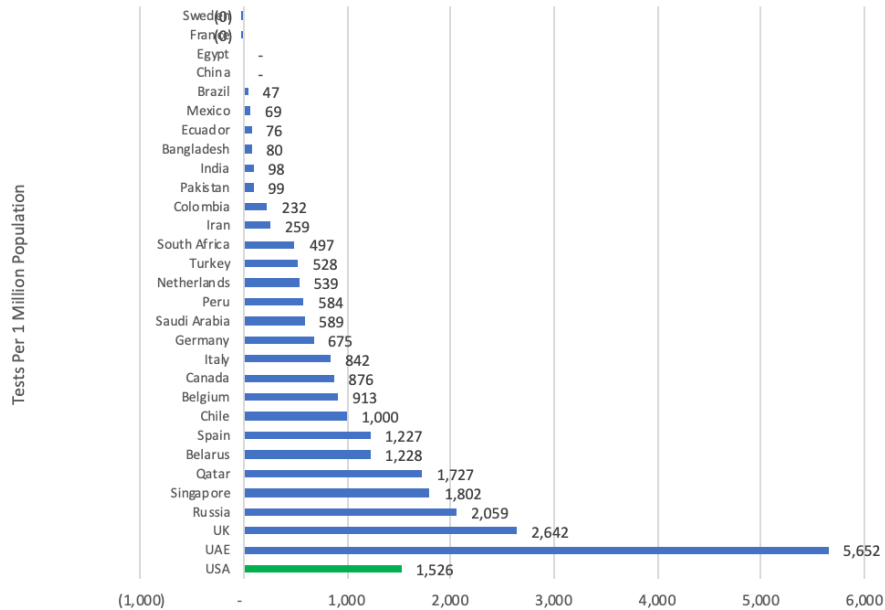


Deaths Per Capita By Country
June 9



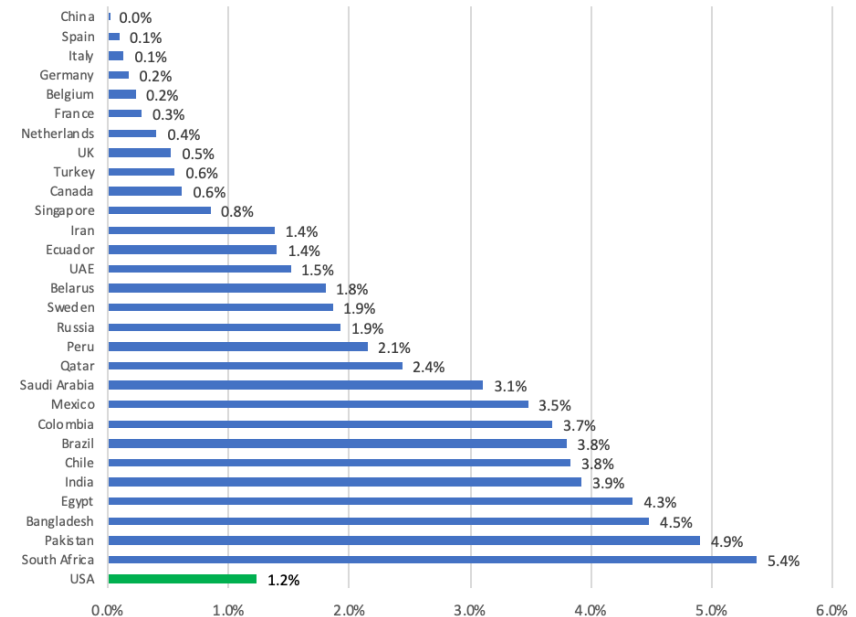
Countries Ranked 1-30 In Total Cases

Tests Per Capita By Country
June 9



Daily Tests Per Capita For Past Week

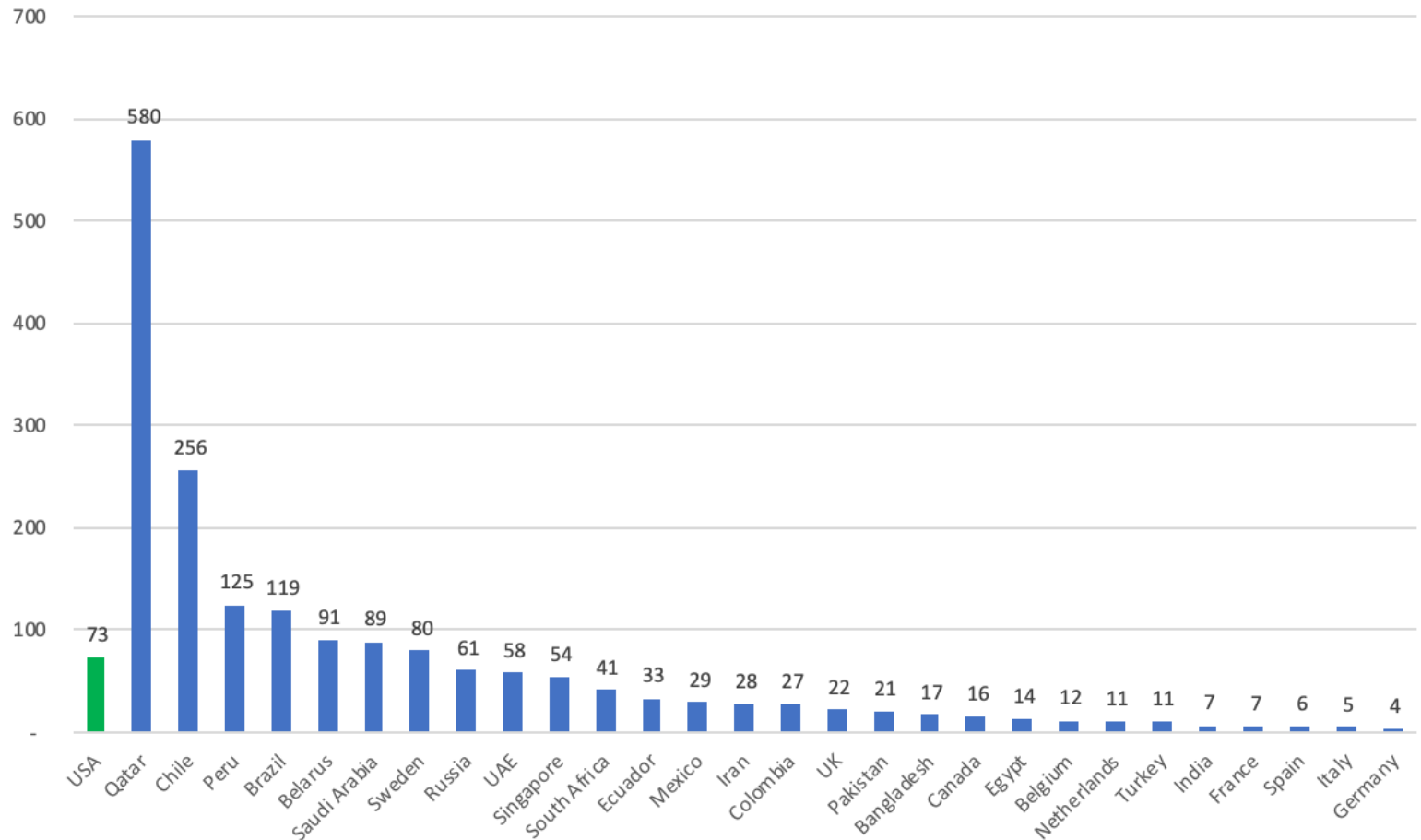
Daily Case Growth Rate By Country
June 2 - 9



Daily Case Growth – 5-Day Moving Average

Country-by-Country New Daily Infection Rates

New Daily Infection Rates Per 1 Million Population By Country
June 2 - 9



UNITED STATES & STATE-BY-STATE INFORMATION

"Strategic Guidance in an Era of Unprecedented Change"

State	Total Cases	Rank	Cases per 1M Population	Rank2	Deaths	Rank3	Death Rate	Rank4	Deaths per 1 Million Population	Rank5	5-day Moving Average Case Growth Rate	Rank6	Tests per 1M Population Past 7 days	Rank7	New Daily Cases Per 1M Population (5-Day M.A.)	Rank8
Alabama	21,422	(24)	4,369.0	(22)	729	(25)	3.4%	(33)	148.7	(24)	2.4%	(6)	1,280	(26)	78.7	(14)
Alaska	573	(50)	783.3	(49)	11	(51)	1.9%	(45)	15.0	(50)	2.2%	(7)	2,087	(8)	16.8	(47)
Arizona	28,296	(20)	3,887.5	(26)	1,070	(20)	3.8%	(30)	147.0	(25)	4.5%	(1)	1,087	(33)	138.3	(1)
Arkansas	10,080	(34)	3,340.2	(34)	161	(40)	1.6%	(47)	53.3	(43)	3.7%	(2)	1,541	(16)	107.1	(5)
California	137,034	(3)	3,468.1	(32)	4,772	(7)	3.5%	(32)	120.8	(29)	2.2%	(9)	1,499	(17)	69.0	(21)
Colorado	28,347	(19)	4,922.4	(21)	1,553	(16)	5.5%	(12)	269.7	(15)	0.7%	(43)	778	(47)	38.7	(38)
Connecticut	44,179	(13)	12,391.4	(6)	4,097	(8)	9.3%	(1)	1,149.1	(3)	0.4%	(49)	1,685	(13)	48.1	(33)
Delaware	10,020	(36)	10,290.0	(7)	410	(33)	4.1%	(26)	421.0	(12)	0.6%	(46)	982	(40)	49.1	(31)
District Of Columbia	9,474	(37)	13,424.0	(5)	495	(29)	5.2%	(13)	701.4	(6)	0.8%	(41)	1,913	(10)	119.0	(3)
Florida	66,000	(8)	3,072.9	(37)	2,769	(11)	4.2%	(25)	128.9	(28)	1.9%	(14)	1,387	(21)	56.9	(27)
Georgia	53,249	(11)	5,015.2	(20)	2,285	(14)	4.3%	(24)	215.2	(18)	1.3%	(23)	1,115	(31)	67.8	(22)
Hawaii	682	(49)	481.7	(51)	17	(50)	2.5%	(41)	12.0	(51)	0.8%	(40)	661	(50)	2.9	(51)
Idaho	3,220	(43)	1,796.8	(44)	85	(43)	2.6%	(40)	47.4	(44)	1.1%	(30)	761	(48)	22.9	(44)
Illinois	129,212	(4)	10,196.8	(8)	6,018	(5)	4.7%	(20)	474.9	(10)	0.7%	(44)	1,637	(14)	71.7	(20)
Indiana	38,033	(16)	5,649.4	(18)	2,339	(13)	6.1%	(9)	347.4	(13)	1.1%	(31)	922	(42)	59.3	(25)
Iowa	22,238	(23)	7,048.3	(12)	626	(27)	2.8%	(39)	198.4	(20)	1.3%	(22)	1,541	(15)	100.6	(8)
Kansas	10,747	(33)	3,688.9	(29)	238	(37)	2.2%	(44)	81.7	(38)	1.0%	(35)	794	(45)	32.2	(41)
Kentucky	11,708	(32)	2,620.6	(40)	477	(30)	4.1%	(27)	106.8	(32)	1.8%	(15)	1,045	(36)	48.7	(32)
Louisiana	43,612	(14)	9,381.4	(10)	2,962	(9)	6.8%	(7)	637.2	(7)	1.0%	(37)	1,860	(11)	88.0	(13)
Maine	2,606	(45)	1,938.7	(42)	100	(42)	3.8%	(29)	74.4	(40)	1.3%	(25)	1,005	(38)	24.3	(42)
Maryland	58,904	(10)	9,743.2	(9)	2,811	(10)	4.8%	(17)	465.0	(11)	1.1%	(29)	1,471	(18)	111.7	(4)
Massachusetts	103,889	(5)	14,949.1	(3)	7,408	(3)	7.1%	(6)	1,066.0	(4)	0.4%	(50)	1,081	(34)	56.0	(28)
Michigan	64,998	(9)	6,508.4	(13)	5,943	(6)	9.1%	(2)	595.1	(8)	2.2%	(8)	2,287	(6)	104.0	(7)
Minnesota	28,523	(18)	5,057.6	(19)	1,228	(18)	4.3%	(23)	217.7	(16)	1.7%	(18)	2,590	(4)	76.4	(17)
Mississippi	18,109	(26)	6,084.7	(16)	847	(23)	4.7%	(18)	284.6	(14)	1.8%	(16)	1,378	(22)	100.3	(9)

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"Strategic Guidance in an Era of Unprecedented Change"

State	Total Cases	Rank	Cases per 1M Population	Rank2	Deaths	Rank3	Death Rate	Rank4	Deaths per 1 Million Population	Rank5	5-day Moving Average Case Growth Rate	Rank6	Tests per 1M Population Past 7 days	Rank7	New Daily Cases Per 1M Population (5-Day M.A.)	Rank8
Missouri	15,450	(29)	2,517.3	(41)	855	(22)	5.5%	(11)	139.3	(27)	1.2%	(26)	937	(41)	34.5	(39)
Montana	554	(51)	518.3	(50)	18	(48)	3.2%	(35)	16.8	(49)	0.6%	(47)	1,467	(19)	4.1	(50)
Nebraska	15,883	(27)	8,210.8	(11)	191	(38)	1.2%	(50)	98.7	(34)	1.0%	(36)	1,202	(28)	93.9	(11)
Nevada	10,030	(35)	3,256.3	(36)	444	(31)	4.4%	(22)	144.1	(26)	2.0%	(12)	1,461	(20)	55.7	(29)
New Hampshire	5,132	(41)	3,774.3	(28)	294	(36)	5.7%	(10)	216.2	(17)	1.0%	(34)	1,343	(24)	40.2	(36)
New Jersey	167,192	(2)	18,823.3	(2)	12,369	(2)	7.4%	(5)	1,392.6	(2)	0.3%	(51)	2,763	(3)	65.1	(24)
New Mexico	9,105	(38)	4,342.3	(23)	404	(34)	4.4%	(21)	192.7	(21)	1.7%	(17)	2,431	(5)	73.6	(18)
New York	400,660	(1)	20,595.7	(1)	30,603	(1)	7.6%	(3)	1,573.1	(1)	0.9%	(39)	3,217	(1)	137.7	(2)
North Carolina	37,226	(17)	3,549.4	(31)	1,068	(21)	2.9%	(38)	101.8	(33)	3.0%	(5)	1,373	(23)	98.1	(10)
North Dakota	2,901	(44)	3,806.8	(27)	72	(45)	2.5%	(42)	94.5	(35)	1.4%	(20)	1,316	(25)	47.8	(34)
Ohio	39,190	(15)	3,352.7	(33)	2,429	(12)	6.2%	(8)	207.8	(19)	0.9%	(38)	984	(39)	34.2	(40)
Oklahoma	7,363	(39)	1,860.8	(43)	353	(35)	4.8%	(16)	89.2	(36)	1.3%	(24)	1,061	(35)	24.2	(43)
Oregon	4,988	(42)	1,182.6	(48)	169	(39)	3.4%	(34)	40.1	(46)	2.2%	(10)	657	(51)	22.1	(45)
Pennsylvania	80,961	(6)	6,324.1	(14)	6,086	(4)	7.5%	(4)	475.4	(9)	0.6%	(45)	708	(49)	40.6	(35)
Rhode Island	15,691	(28)	14,811.8	(4)	808	(24)	5.1%	(14)	762.7	(5)	0.5%	(48)	2,876	(2)	78.1	(15)
South Carolina	15,228	(30)	2,957.6	(38)	568	(28)	3.7%	(31)	110.3	(31)	3.2%	(3)	810	(44)	78.1	(16)
South Dakota	5,523	(40)	6,243.1	(15)	68	(46)	1.2%	(49)	76.9	(39)	1.0%	(33)	1,988	(9)	73.6	(19)
Tennessee	27,575	(21)	4,035.5	(24)	435	(32)	1.6%	(48)	63.7	(42)	1.9%	(13)	1,235	(27)	66.9	(23)
Texas	78,997	(7)	2,724.4	(39)	1,892	(15)	2.4%	(43)	65.3	(41)	2.1%	(11)	794	(46)	54.3	(30)
Utah	12,559	(31)	3,917.4	(25)	127	(41)	1.0%	(51)	39.6	(47)	3.0%	(4)	1,117	(30)	105.0	(6)
Vermont	1,084	(47)	1,737.2	(45)	55	(47)	5.1%	(15)	88.1	(37)	1.1%	(28)	1,742	(12)	22.0	(46)
Virginia	51,738	(12)	6,061.5	(17)	1,496	(17)	2.9%	(37)	175.3	(22)	1.6%	(19)	1,037	(37)	92.0	(12)
Washington	25,310	(22)	3,323.7	(35)	1,181	(19)	4.7%	(19)	155.1	(23)	1.2%	(27)	845	(43)	40.2	(37)
West Virginia	2,179	(46)	1,219.3	(47)	84	(44)	3.9%	(28)	47.0	(45)	0.7%	(42)	1,103	(32)	9.8	(49)
Wisconsin	21,308	(25)	3,659.6	(30)	661	(26)	3.1%	(36)	113.5	(30)	1.4%	(21)	2,107	(7)	58.7	(26)
Wyoming	970	(48)	1,676.0	(46)	17	(50)	1.8%	(46)	29.4	(48)	1.0%	(32)	1,134	(29)	14.3	(48)
United States	2,045,549		6,179.9		114,148		5.6%		329.7		1.2%		1,418		67.3	

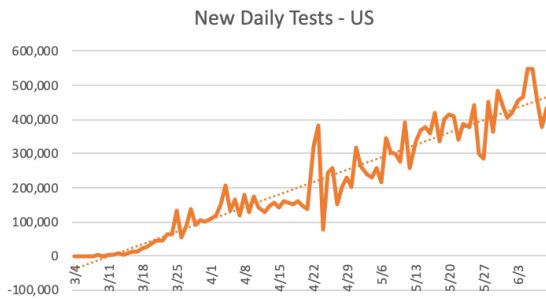
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United States Overall Statistics

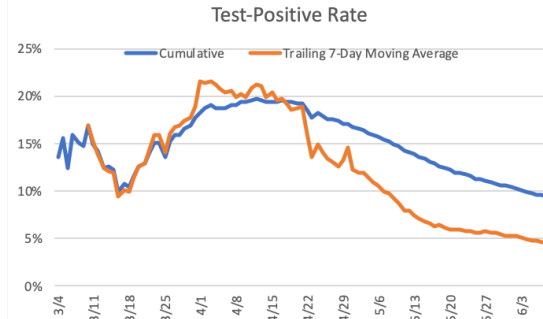
New York and Michigan made accounting adjustments to the case totals on June 5. These had the effect of adding 8.7 new daily infections per million to the US totals. Data here has not been adjusted to account for these accounting changes

"Strategic Guidance in an Era of Unprecedented Change"

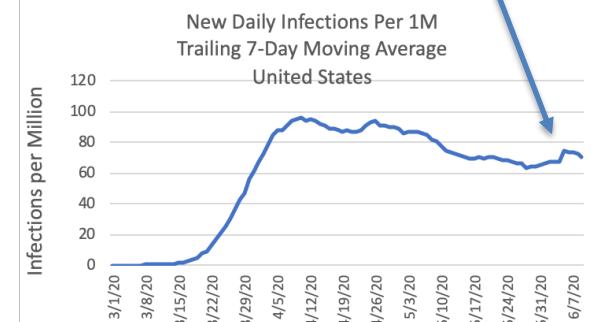
With significantly increased testing, the US is now meeting the WHO standard of <10% test-positives. This suggests that asymptomatic cases are being captured and that we have a better view of true infection rates. Further, new daily infections continue to decline; the death rate seems to have stabilized.



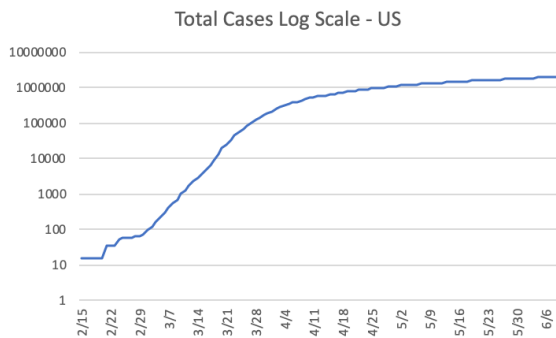
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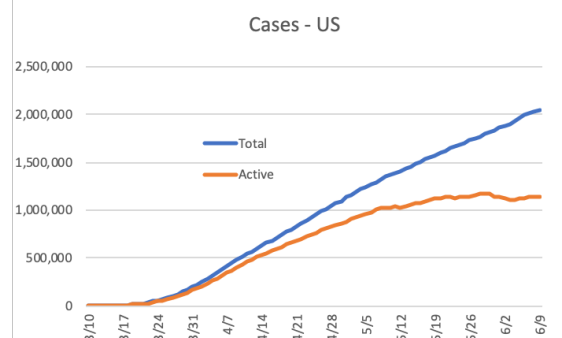
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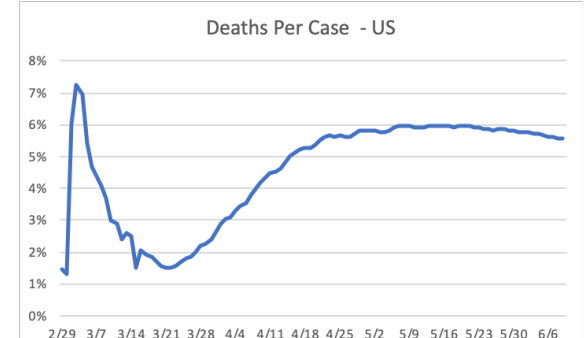
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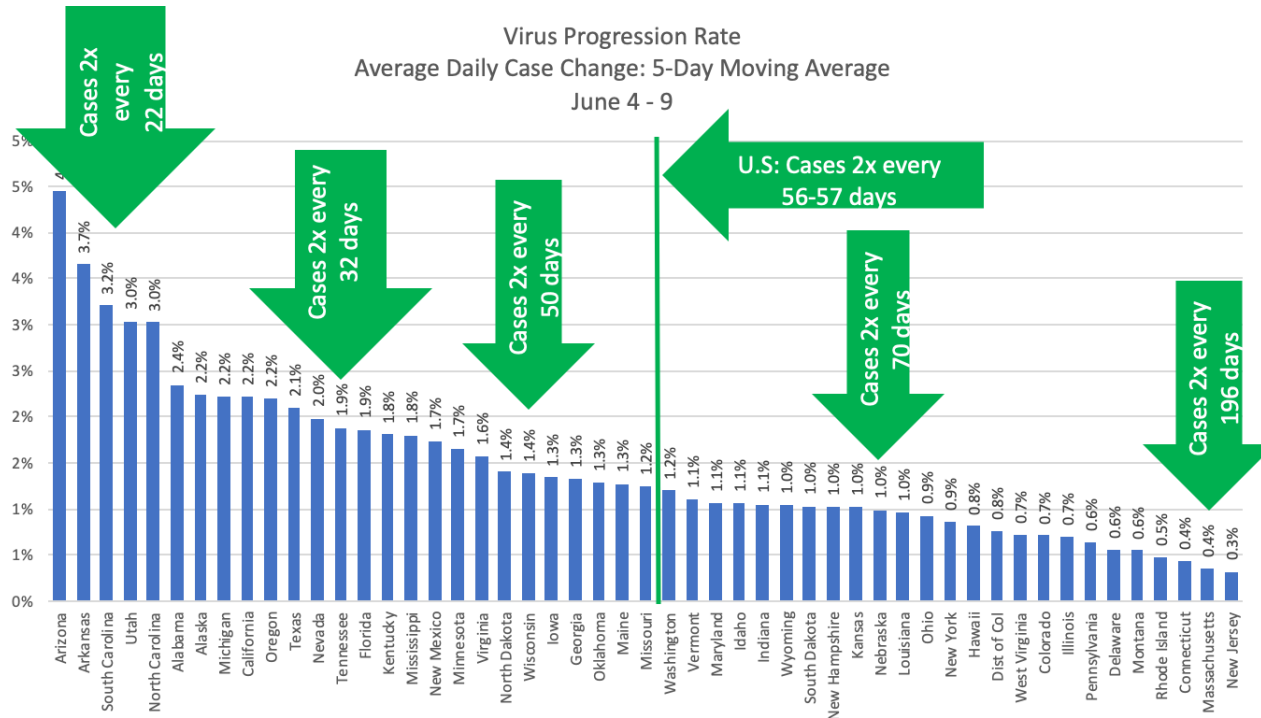


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State-by-State Average Daily Case Growth

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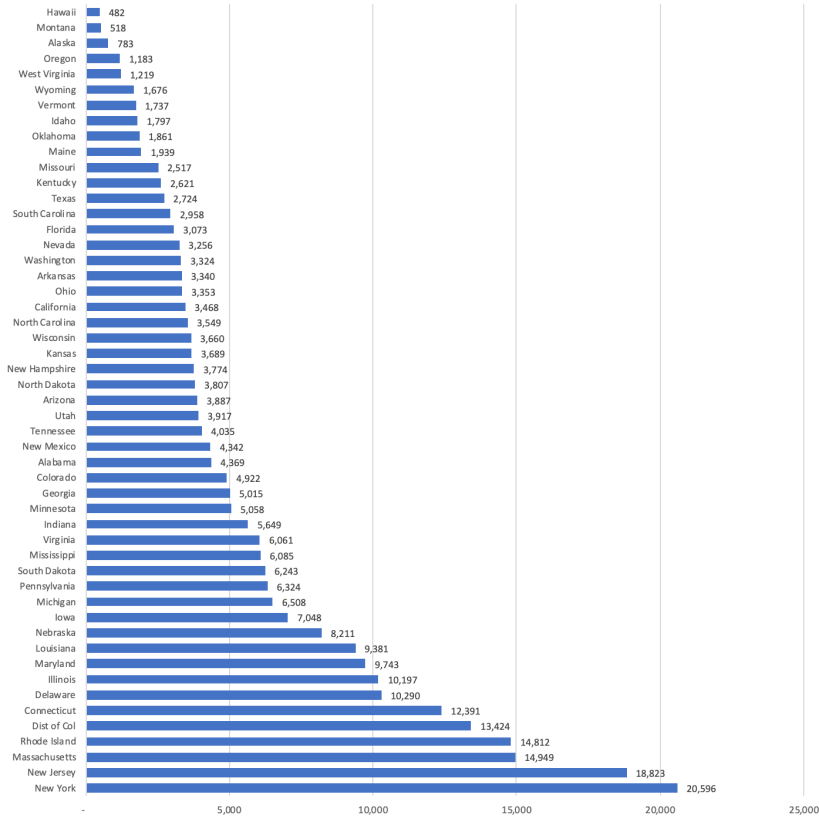
At the height of the epidemic, cases in some states were doubling every few days. Now, they would take from 16 – 213 days to double



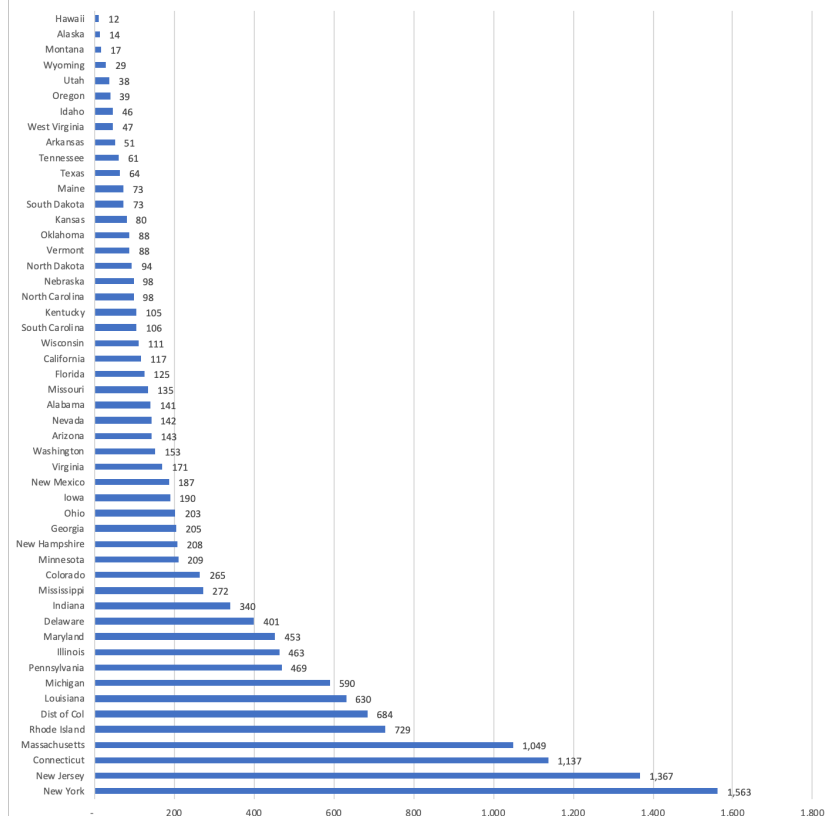
State-by-State Cases & Deaths Per Capita

"Strategic Guidance in an Era of Unprecedented Change"

Total Cases Per 1 Million Population
By State
As of June 9



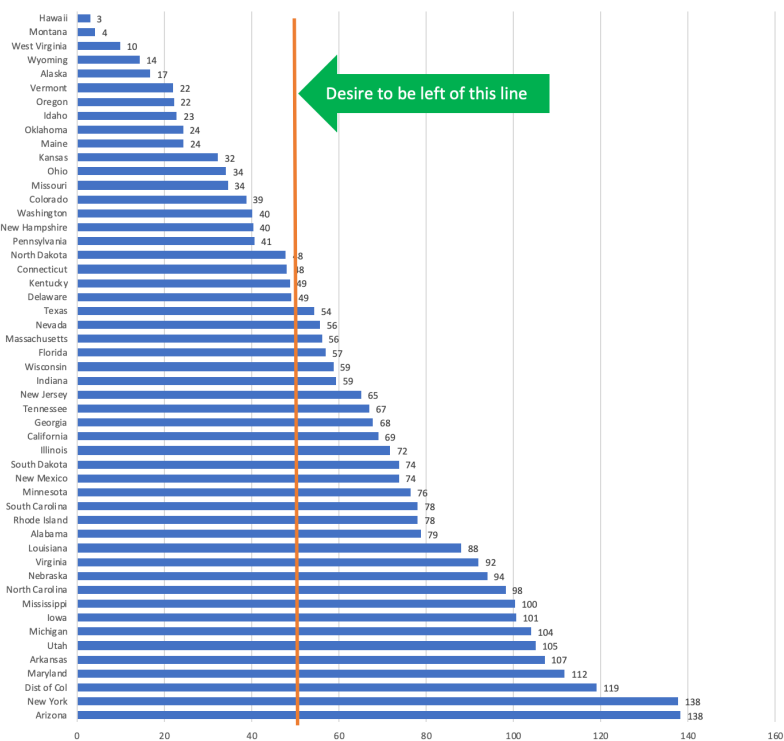
Deaths Per 1 Million Population
By State
As of June 9



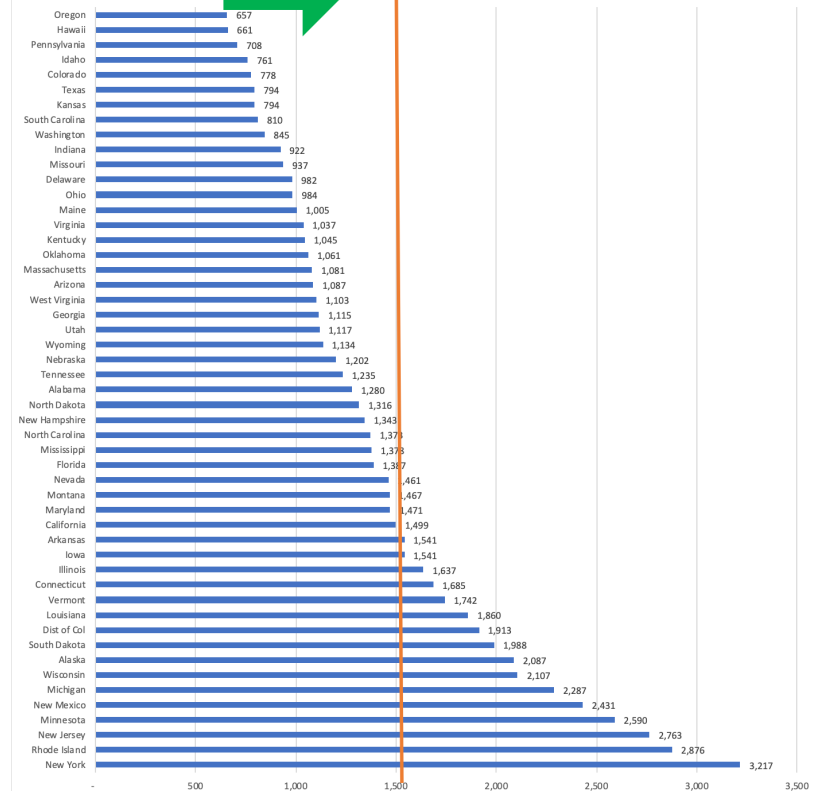
State-by-State New Daily Infections & Tests Per Capita

"Strategic Guidance in an Era of Unprecedented Change"

New Daily Infections Per 1 Million Population
By State
June 2 - 9



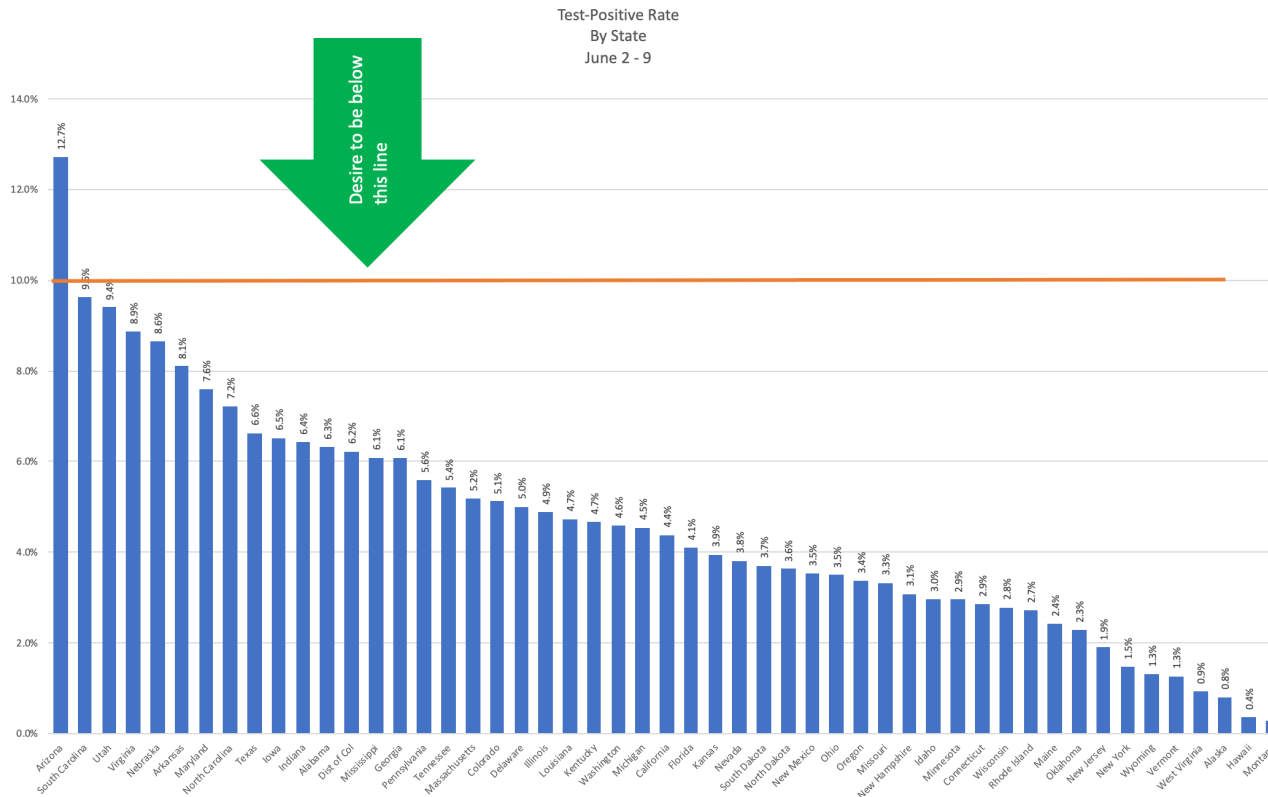
Daily Tests Per 1 Million Population
By State
June 2 - 9



Which States Are Performing Sufficient Tests?

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The [World Health Organization](#) suggested that the test-positive rate should be 10% or lower, for testing to be sufficient to assess the true prevalence of the virus. Only Arizona states met this guideline for the past week.



STATE-BY-STATE READINESS FOR RELAXING RESTRICTIONS

“Strategic Guidance in an Era of Unprecedented Change”

We recently modified the tests/capita metric in two ways: first, we changed to tests/capita past 2 weeks (v. cumulative); second, we adopted the Harvard based study of susceptible-infected-recovered model (SEIR) identification of a goal of 2.7% of population tested per week; and, a minimum of 1520 tests per 1 million population. This will serve as a more challenging standard.

- We recently introduced a scorecard to provide a snapshot of each state’s readiness for relaxing restrictions on businesses and individuals.
- To portray readiness we have incorporated the following measures into to the scorecard, (along with the rationale for the scoring within each measure):
 - Tests/Capita – last 14 days; indicates testing robustness; grading quintiles based on Harvard study using susceptible-infected-recovered model (SEIR) 2.7% of population tested per week, 1%, 0.7%, 0.35%, all others
 - Direction – whether test volume increased/stayed level, or decreased the past 2 weeks v. prior two weeks
 - Test-Positive Rate – indicates whether testing is identifying sufficient numbers of non-infected persons; grading based on comparison to best reported in the world (South Korea, Australia, New Zealand), next group of countries (Canada, Germany, Denmark), then, next 3 levels set to differentiate among states
 - Direction – whether test positive rate increased/stayed level, or past 2 weeks v. prior two weeks
 - New Infections / 1 Million – indicates how quickly the virus is spreading; grading based on: rate proposed by IHME for ending social distancing, top ten, top 20, top 25 among the countries we track, then all others
 - Direction – whether new infection per capita rate increased/stayed level, or past 2 weeks v. prior two weeks
 - Influenza-Like Illness – Using CDC-reported data, indicates whether the state’s visits for influenza the past week were above or below CDC baseline for the state’s region
 - Direction – whether the % visits for influenza the last 3 weeks increased or decreased the past 3 weeks v. the prior 3 weeks
 - Hospital Resources – using IHME projections, whether the state is pre- or post- peak projected hospital resource needs due to the virus; and the 5 of peak resources projected to be needed today. Grading based on current need at <45% of peak, 45-60%, 60-75%, 75-85%, and all others.
- On the following pages, we portray state-by-state readiness on various dates.
- **These scorecards are for informational purposes only. The measures and grading used are not based on any scientific standard and should not be considered a substitute for public health considerations or other clinical or economic judgement. States may elect to move faster or slower than the scorecard might otherwise indicate.**

Readiness For Relaxing Restrictions

"Strategic Guidance in an Era of Unprecedented Change"

Highlights:

- Progress has been made in several states, on both testing volumes and test-positive rates
 - Most states are still testing far below the minimum 152 daily tests per 1 million population cited in a recent [NY Times article](#); and the higher standard of 2.7% of the population tested weekly (386 daily per 1 million, as suggested by a recent [Kaiser Family Foundation article](#). Both articles referenced Harvard researchers as the source of these metrics
 - Test-positive rates in many states, however, are below or close to the 10% threshold suggested by Dr. Maria Van Kerkhove of the [World Health Organization](#), as indicative of sufficient testing to have reasonable visibility to true infection rates
- As we have progressed past the peak flu season in many states, that “constraint” on re-opening is diminishing
- With the relaxing of restrictions in many states, the [Institute for Health Metrics and Evaluation’s \(IHME\) projections](#) of these states’ hospital resources needs have increased significantly in the past week. Note: these metrics consider hospital resource needs, however, they do not consider capacity

June 9

State	Tests / Capita		Test-Positive Rate		New Infections / 1 Million		Influenza-Like Illness		Hospital Resources
	#	Direction	#	Direction	#	Direction	Baseline	Direction	
Alabama									
Alaska									
Arizona									
Arkansas									
California									
Colorado									
Connecticut									
Delaware									
District Of Columbia									
Florida									
Georgia									
Hawaii									
Idaho									
Illinois									
Indiana									
Iowa									
Kansas									
Kentucky									
Louisiana									
Maine									
Maryland									
Massachusetts									
Michigan									
Minnesota									
Mississippi									
Missouri									
Montana									
Nebraska									
Nevada									
New Hampshire									
New Jersey									
New Mexico									
New York									
North Carolina									
North Dakota									
Ohio									
Oklahoma									
Oregon									
Pennsylvania									
Rhode Island									
South Carolina									
South Dakota									
Tennessee									
Texas									
Utah									
Vermont									
Virginia									
Washington									
West Virginia									
Wisconsin									
Wyoming									

June 2

State	Tests / Capita		Test-Positive Rate		New Infections / 1 Million		Influenza-Like Illness		Hospital Resources
	#	Direction	#	Direction	#	Direction	Baseline	Direction	
Alabama									
Alaska									
Arizona									
Arkansas									
California									
Colorado									
Connecticut									
Delaware									
District Of Columbia									
Florida									
Georgia									
Hawaii									
Idaho									
Illinois									
Indiana									
Iowa									
Kansas									
Kentucky									
Louisiana									
Maine									
Maryland									
Massachusetts									
Michigan									
Minnesota									
Mississippi									
Missouri									
Montana									
Nebraska									
Nevada									
New Hampshire									
New Jersey									
New Mexico									
New York									
North Carolina									
North Dakota									
Ohio									
Oklahoma									
Oregon									
Pennsylvania									
Rhode Island									
South Carolina									
South Dakota									
Tennessee									
Texas									
Utah									
Vermont									
Virginia									
Washington									
West Virginia									
Wisconsin									
Wyoming									

Legend and sources provided on 2nd following page

June 9

State	Tests / Capita		Test-Positive Rate		New Infections / 1 Million		Influenza-Like Illness		Hospital Resources
	#	Direction	#	Direction	#	Direction	Baseline	Direction	
Alabama									
Alaska									
Arizona									
Arkansas									
California									
Colorado									
Connecticut									
Delaware									
District Of Columbia									
Florida									
Georgia									
Hawaii									
Idaho									
Illinois									
Indiana									
Iowa									
Kansas									
Kentucky									
Louisiana									
Maine									
Maryland									
Massachusetts									
Michigan									
Minnesota									
Mississippi									
Missouri									
Montana									
Nebraska									
Nevada									
New Hampshire									
New Jersey									
New Mexico									
New York									
North Carolina									
North Dakota									
Ohio									
Oklahoma									
Oregon									
Pennsylvania									
Rhode Island									
South Carolina									
South Dakota									
Tennessee									
Texas									
Utah									
Vermont									
Virginia									
Washington									
West Virginia									
Wisconsin									
Wyoming									

May 12

State	Tests / Capita		Test-Positive Rate		New Infections / 1 Million		Influenza-Like Illness		Hospital Resources
	#	Direction	#	Direction	#	Direction	Baseline	Direction	
Alabama									
Alaska									
Arizona									
Arkansas									
California									
Colorado									
Connecticut									
Delaware									
District Of Columbia									
Florida									
Georgia									
Hawaii									
Idaho									
Illinois									
Indiana									
Iowa									
Kansas									
Kentucky									
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New Mexico									
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North Dakota									
Ohio									
Oklahoma									
Oregon									
Pennsylvania									
Rhode Island									
South Carolina									
South Dakota									
Tennessee									
Texas									
Utah									
Vermont									
Virginia									
Washington									
West Virginia									
Wisconsin									
Wyoming									

Legend and sources provided on following page

Legend:

Time period	Tests per Capita	Direction	Test-Positive Rate	Direction	New Daily Infection Rate	Direction	Baseline	Direction	Hospital Resources
	Average last 2 weeks	last 14 days v prior 2 weeks	last 7 days	last 14 days v prior 2 weeks	per 1M last 7 days	last 14 days v prior 2 weeks	CDC Baseline by region	last 14 days v prior 2 weeks	As of 4/26
	>3,850		<=2%		<10				<45% of Peak
	1520 - 3,850		2-10%		10-50				45-60% of Peak
	1,501 - 3,850		10-14%		50-100				60-75% of Peak
	501 - 1,500		14-18%		100-150				75-85% of peak
	<750		>18%		>150				>85% of Peak or Pre-Peak
		Up		Down		Down by 40%	Below Baseline	Down	
						Down by 10%		N/A	
		Down		Up		Down <10% or Up	Above Baseline	Up	

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Sources:

Influenza guidelines and data from Centers for Disease Control (<https://gis.cdc.gov/grasp/fluview/fluportaldashboard.html>), accessed April 30 - June 7, 2020

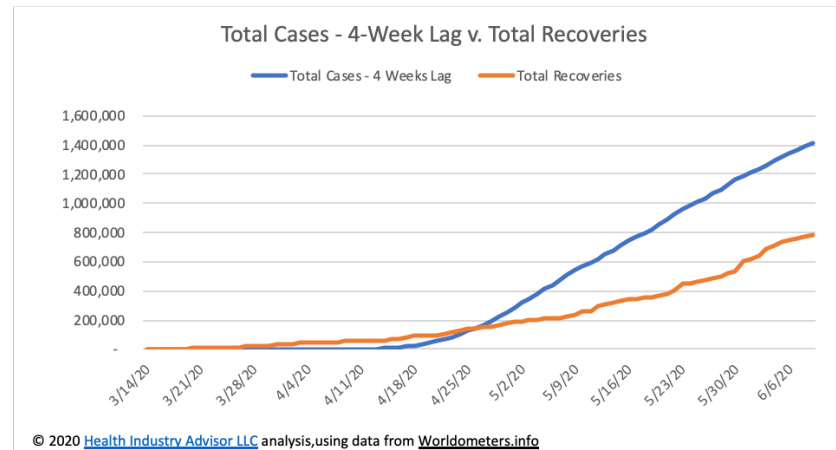
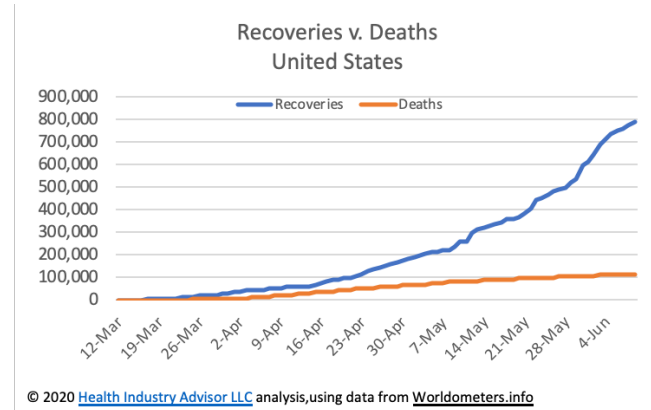
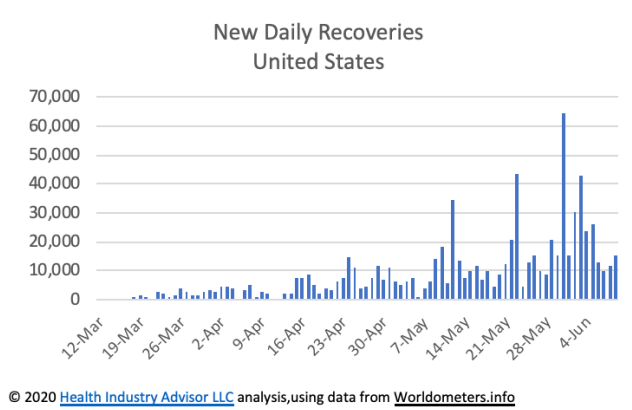
Test data from Covid Tracking Project (<https://covidtracking.com/>), accessed March 21-June 10, 2020

Hospital resource Need projections from Institute for Health Metrics and Evaluation (<https://www.ihme.washington.edu/>), accessed April 30-June 7, 2020

Infection rate data from worldometer.info, accessed March 21-June 10, 2020

UNDER-REPORTED RECOVERIES? POSSIBLE LAG IN STATE REPORTING

"Strategic Guidance in an Era of Unprecedented Change"



"Strategic Guidance in an Era of Unprecedented Change"

Which states seem to be lagging in reporting?

At this point, we should be expecting far more recoveries in the U.S.

Comparing the reported recoveries to Total Cases 4 weeks ago*, this shortfall is ~340-480k

* - 4 weeks is the presumed time from infection-onset to recovery referenced by many states

State	Recoveries	Expected Recoveries	
		Low	High
Alabama	11,395	8,371	9,418
Alaska	389	306	345
Arizona	174	9,389	10,562
Arkansas	6,875	3,331	3,748
California	35,171	56,750	63,844
Colorado	2,404	16,126	18,141
Connecticut	7,689	27,466	30,900
Delaware	5,888	5,393	6,067
District Of Columbia	1,143	5,188	5,837
Florida	12,534	33,538	37,731
Georgia	858	27,878	31,363
Hawaii	621	508	572
Idaho	2,554	1,834	2,064
Illinois	69,207	66,417	74,719
Indiana	26,205	20,102	22,614
Iowa	13,501	10,330	11,621
Kansas	5,578	5,792	6,516
Kentucky	3,365	5,482	6,168
Louisiana	33,904	25,640	28,845
Maine	1,992	1,182	1,329
Maryland	4,279	27,249	30,655
Massachusetts	78,108	63,466	71,399
Michigan	42,041	38,417	43,219
Minnesota	24,221	9,995	11,245
Mississippi	13,356	7,926	8,917
Missouri	3,499	8,186	9,209

State	Recoveries	Expected Recoveries	
		Low	High
Montana	485	369	415
Nebraska	8,820	6,954	7,823
Nevada	7,373	5,049	5,680
New Hampshire	3,501	2,591	2,915
New Jersey	28,160	113,663	127,871
New Mexico	3,699	4,170	4,691
New York	84,982	278,924	313,790
North Carolina	23,653	12,498	14,061
North Dakota	2,450	1,257	1,414
Ohio	7,704	20,211	22,738
Oklahoma	6,073	3,786	4,259
Oregon	2,332	2,686	3,022
Pennsylvania	54,572	49,140	55,283
Rhode Island	1,398	9,291	10,453
South Carolina	7,928	6,342	7,134
South Dakota	4,483	2,930	3,297
Tennessee	18,013	12,889	14,500
Texas	51,140	33,493	37,679
Utah	7,391	5,146	5,789
Vermont	890	742	834
Virginia	6,677	20,640	23,220
Washington	7,966	14,451	16,258
West Virginia	1,482	1,102	1,240
Wisconsin	14,583	8,489	9,550
Wyoming	789	540	608
United States	788,862	1,126,909	1,267,772

Low = 80% of Total Cases 4 week ago
High = 90% of Total Cases 4 week ago

 - States seemingly up-to-date with reporting recoveries
 - States only reporting ~ 1/2 expected recoveries
 - States well-behind in reporting recoveries

VIRUS PROGRESSION: ROADMAP TO RECOVERY

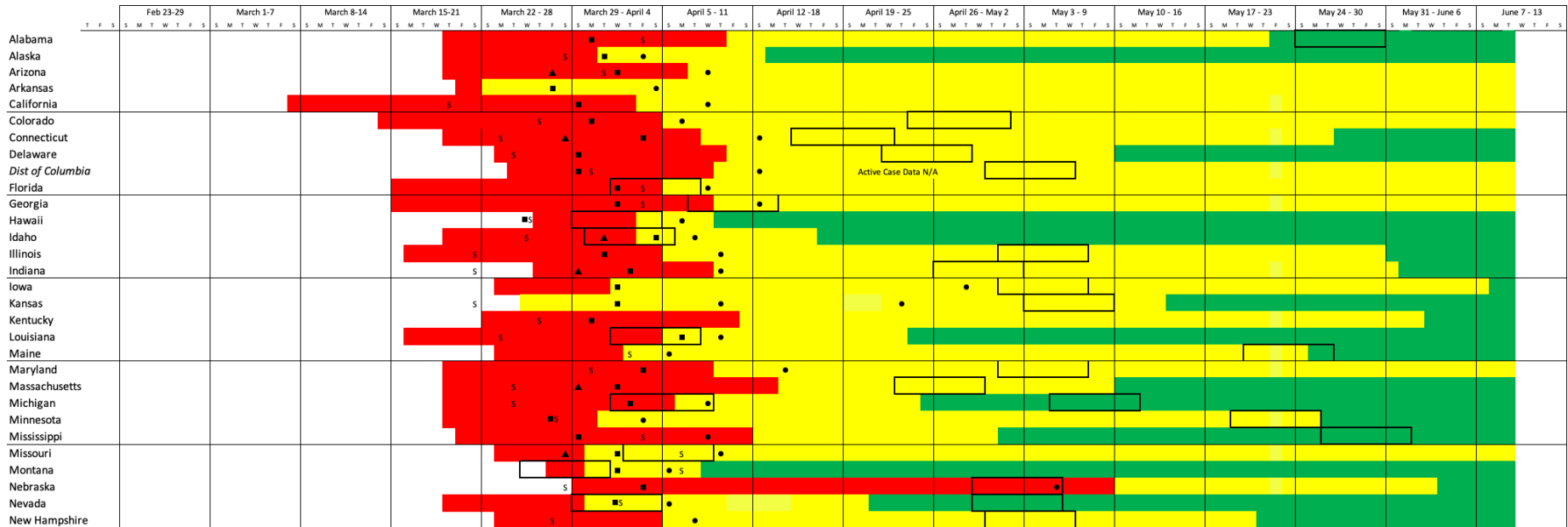
"Strategic Guidance in an Era of Unprecedented Change"

The graphic on the following two pages illustrates when the state first recorded 100 total cases (start of the "contagion" phase); when growth stopped following an exponential pattern (start of the "containment" phase); and, when peak total cases were recorded (start of the "recovery" phase). It uses symbols to indicate when average daily case growth rates fell (and were sustained) below certain benchmarks, as well as when deaths stopped growing exponentially.

A state is not shaded green until active cases appear to have peaked.

State-by-State Virus Progression – 1 of 2

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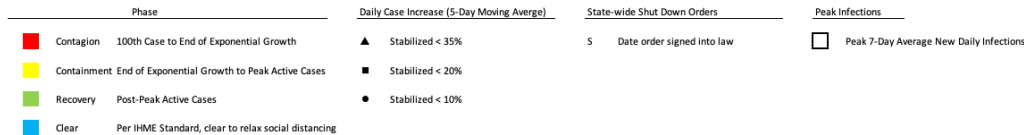
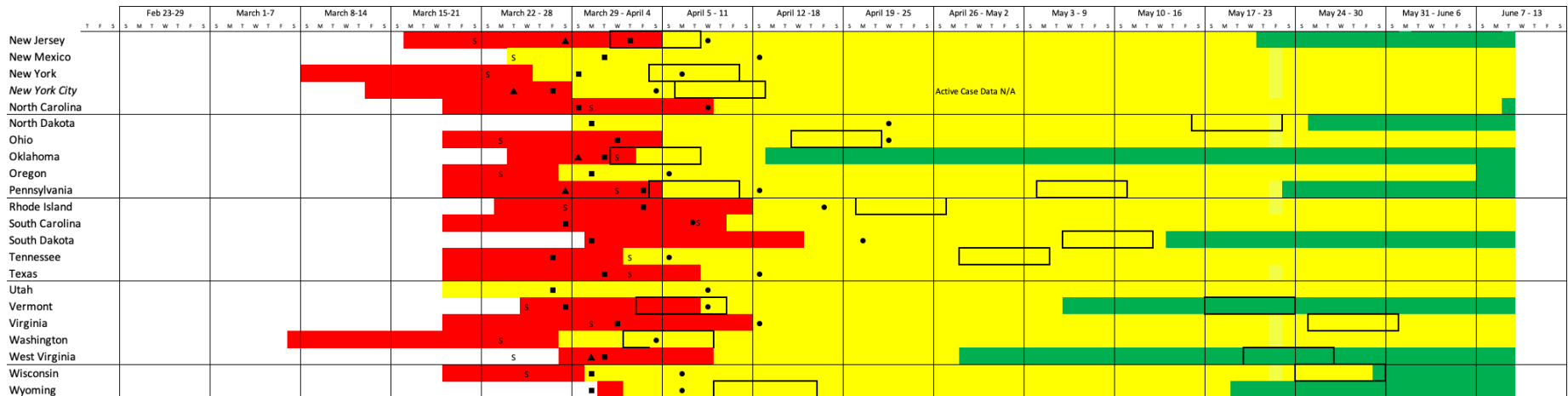


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State-by-State Virus Progression – 2 of 2

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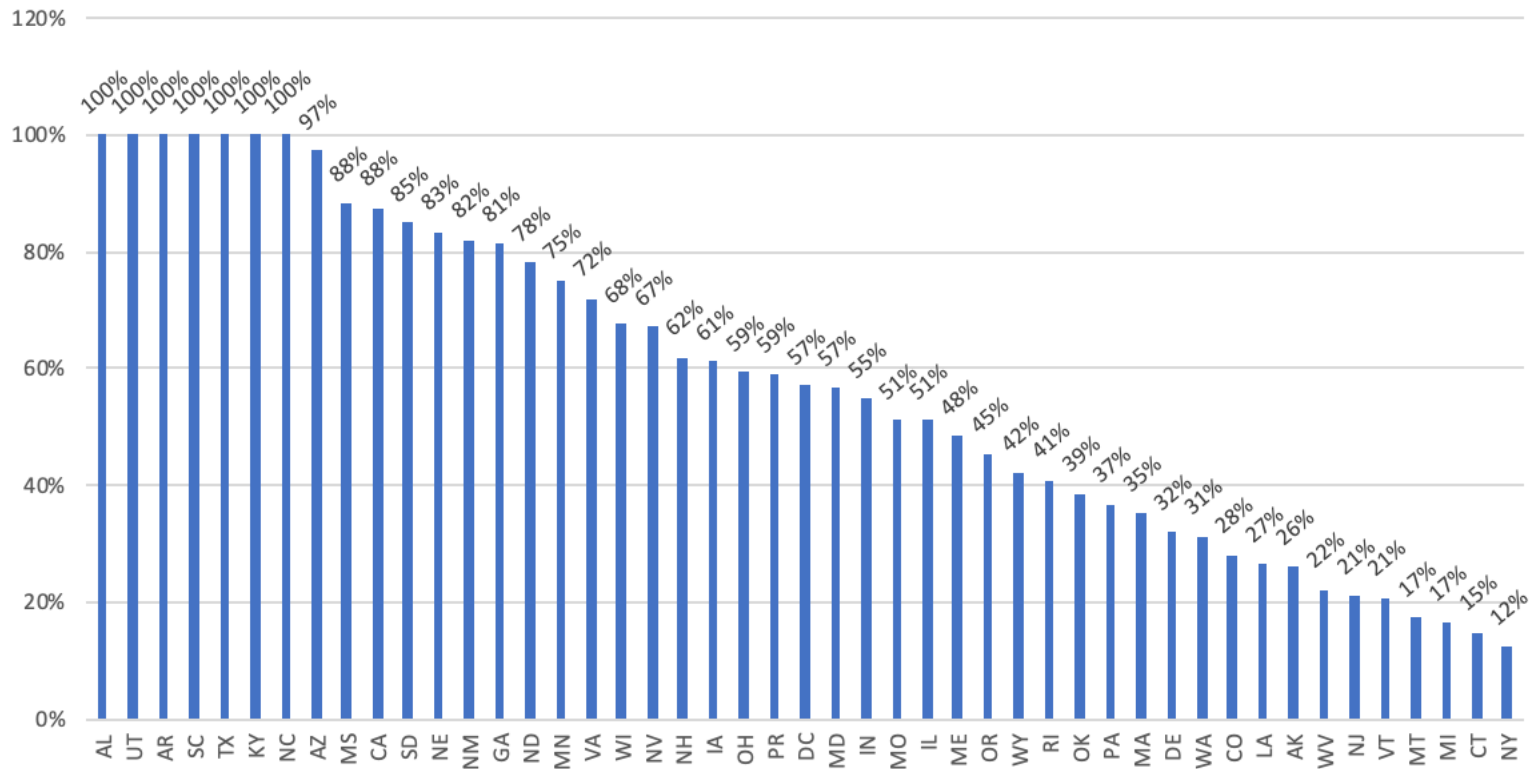
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STATE-BY-STATE COVID HOSPITALIZATIONS

COVID Hospitalizations: Last 7 Days v. Peak 7-Day Period

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COVID Hospitalizations By State
Past 7-Days as % of Peak 7-Day Period

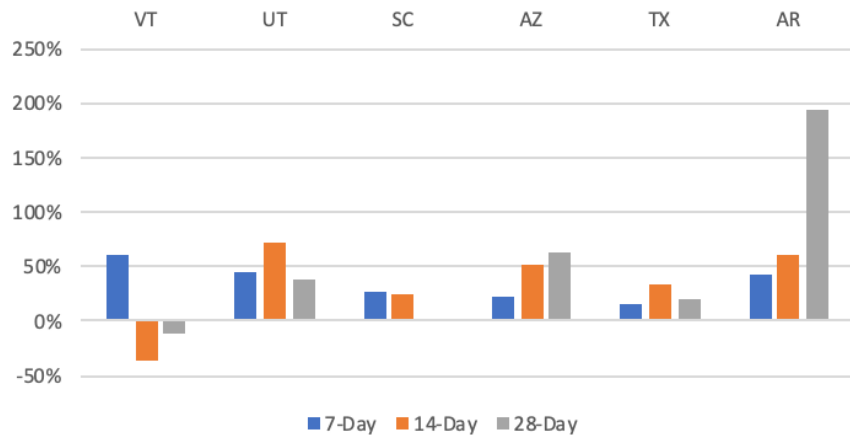


Changes In COVID Hospitalized patients

"Strategic Guidance in an Era of Unprecedented Change"

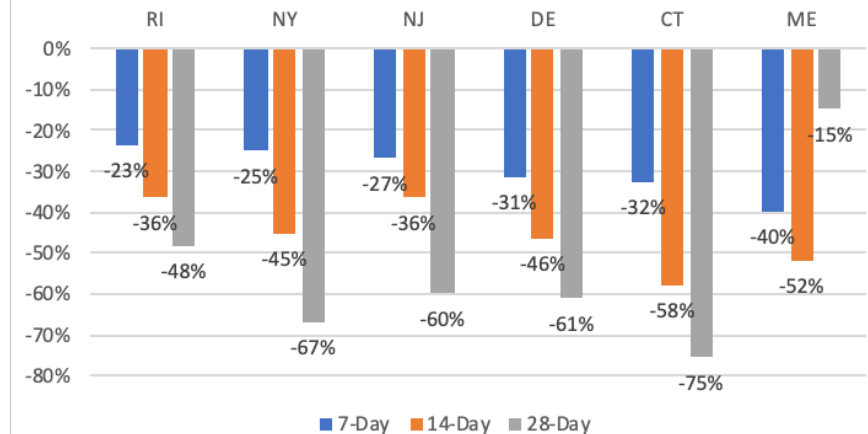
Largest Increases Past 7 Days

Change in Hospitalized Patients



Largest Declines Past 7 Days

Change in Hospitalized Patients



Source: COVID Tracking Project

Note: Florida is not included in the source data

STATE TEST, INFECTION AND CASE TRENDS

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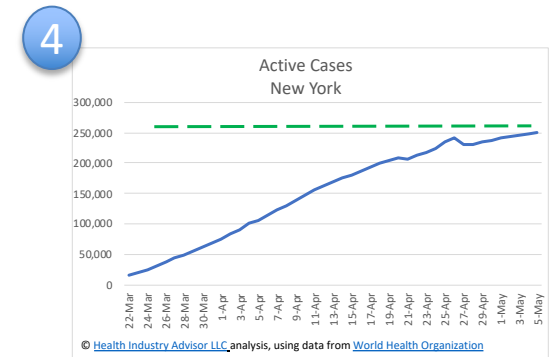
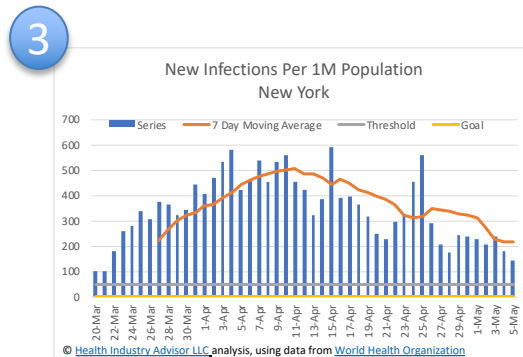
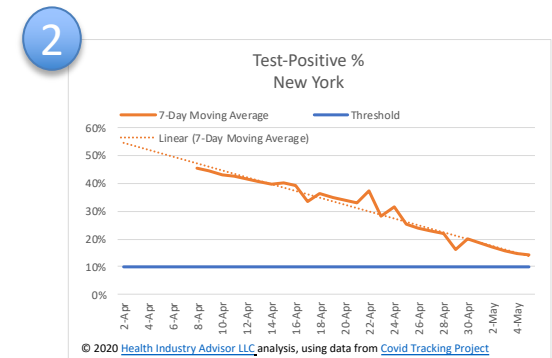
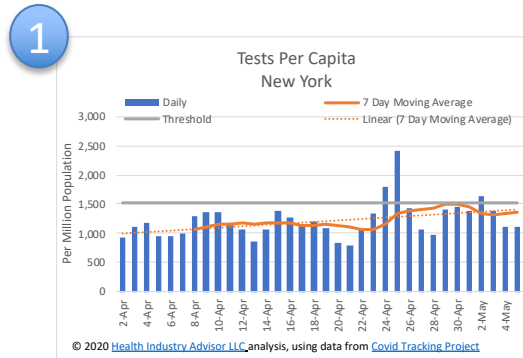
Graphics relevant to judging how far a state has progressed against the virus are provided on the following pages for:

- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Missouri
- Montana
- Nebraska
- Nevada
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Carolina

"Strategic Guidance in an Era of Unprecedented Change"

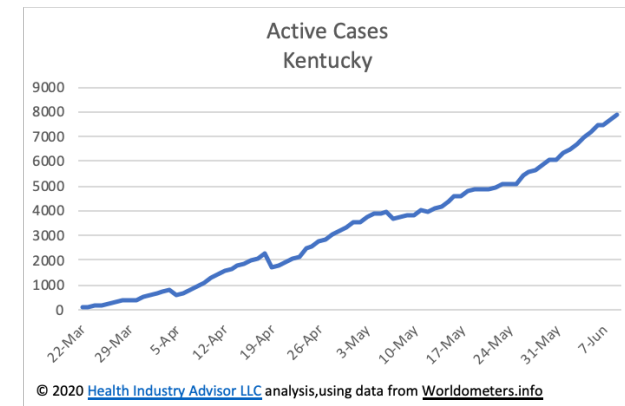
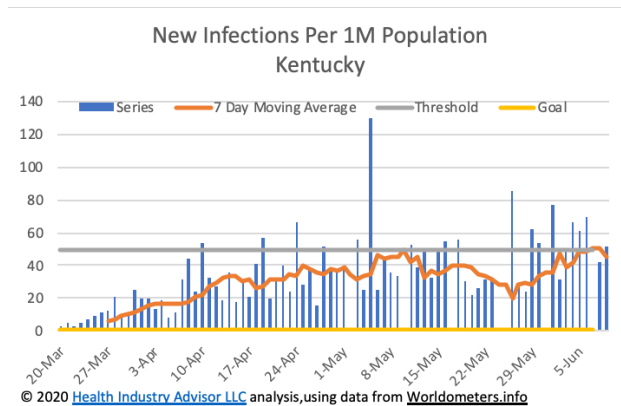
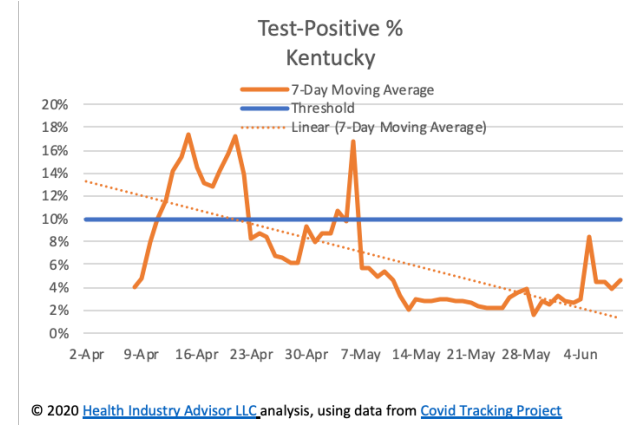
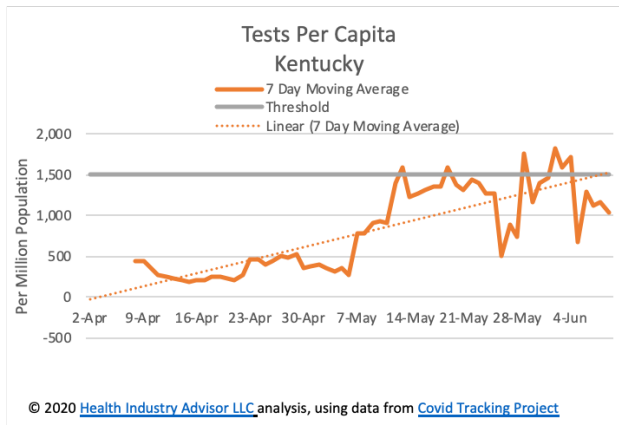
How to "read" these charts:

- Chart 1 – Desire to see tests per capita:
 - Above the threshold
 - Increasing or stable
- Chart 2 - Desire to see Test-Positive %:
 - Below the threshold
 - Declining or stable
- Chart 3 - Desire to see New Infections Per Capita:
 - Below the threshold
 - Declining or stable
- Chart 4 - Desire to see Active Cases:
 - Declining

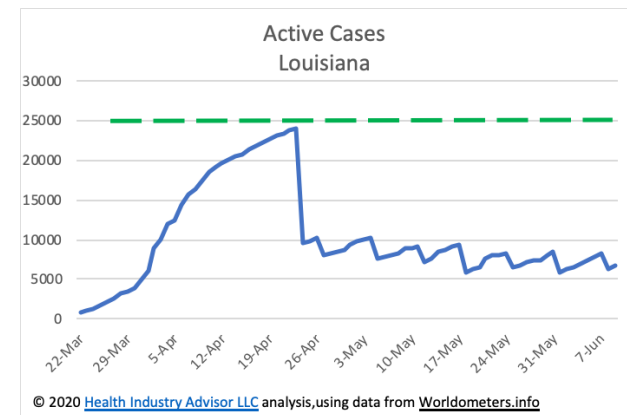
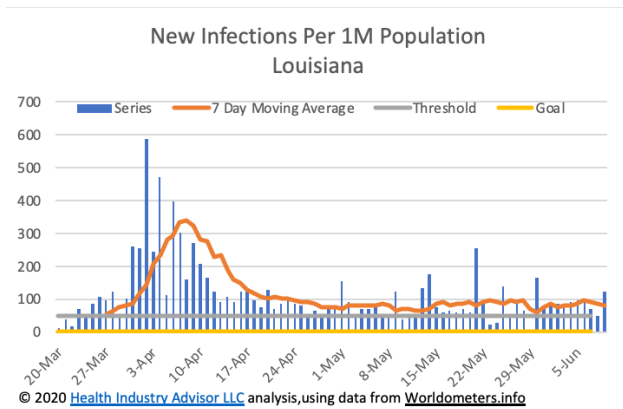
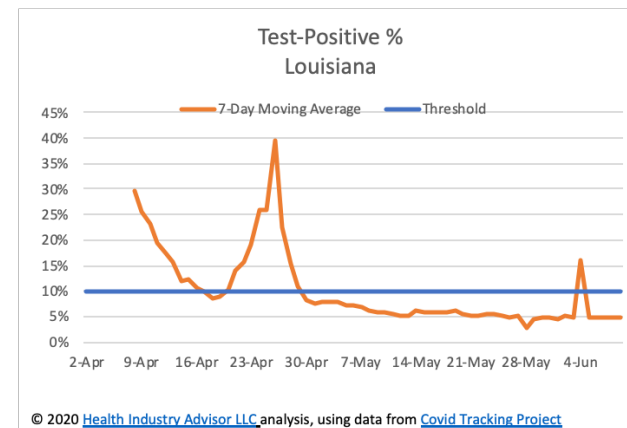
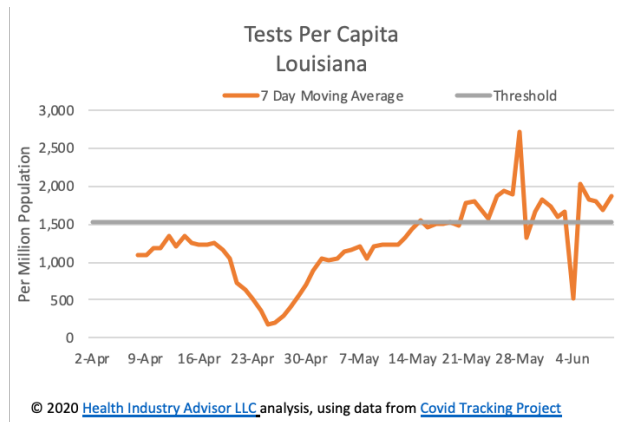


State-by-State Test, New Daily Infection and Active Case Trends

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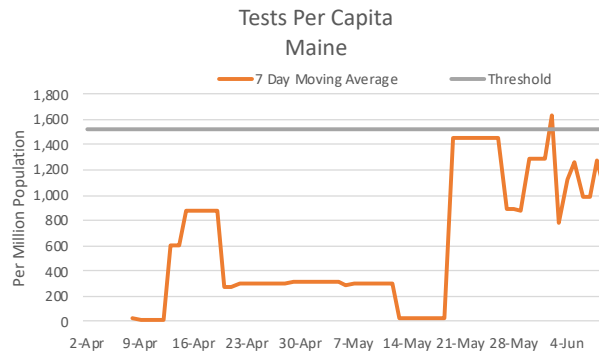


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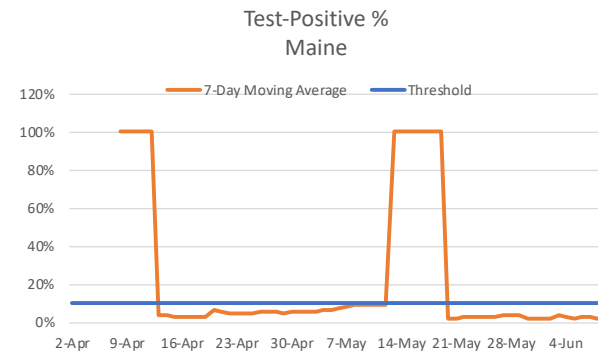


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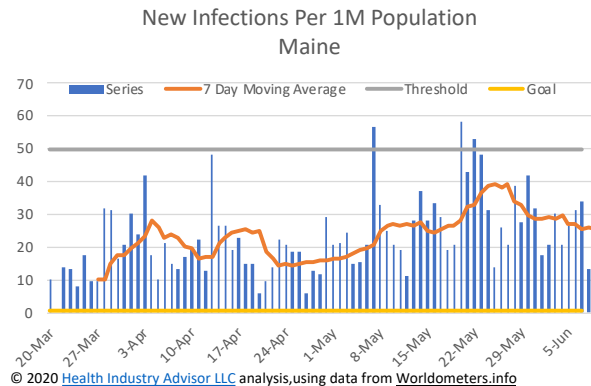
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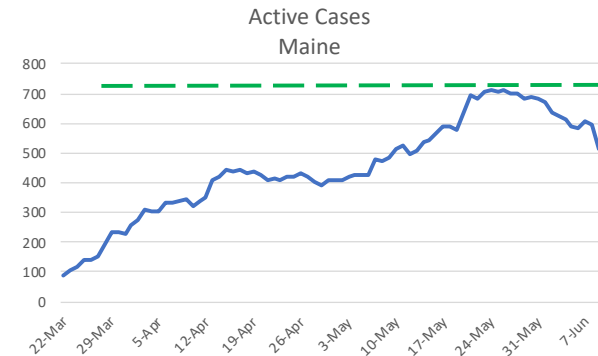
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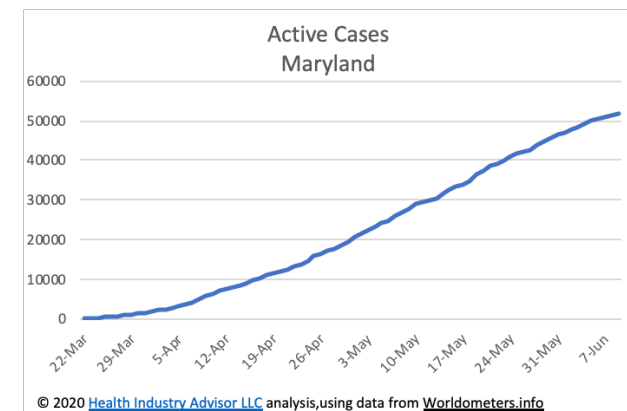
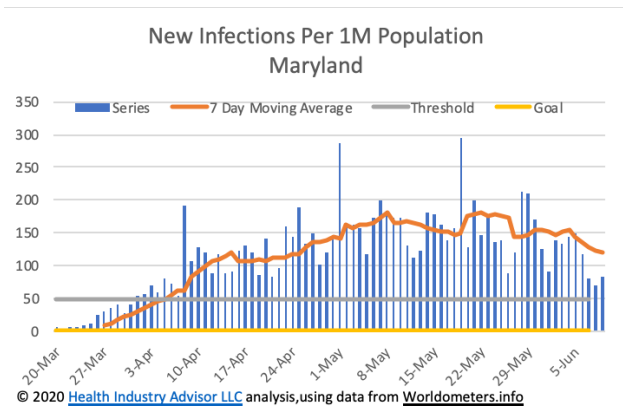
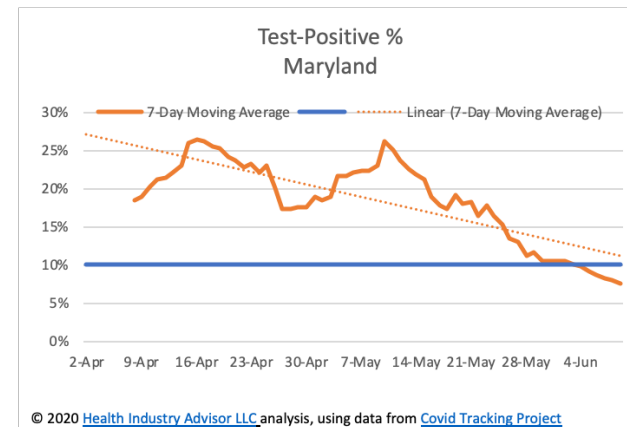
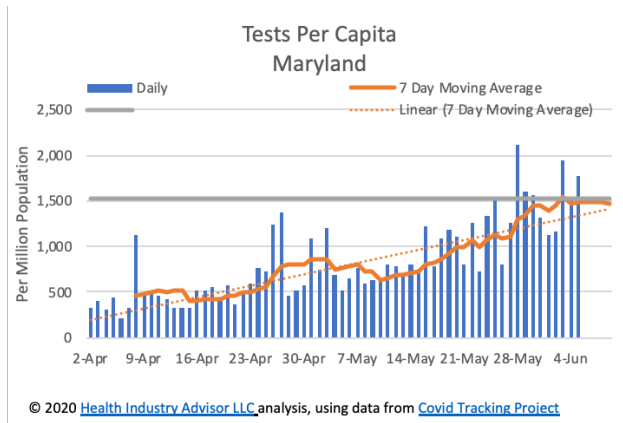


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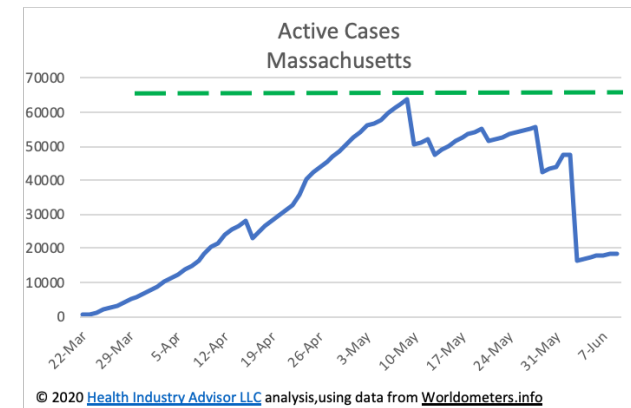
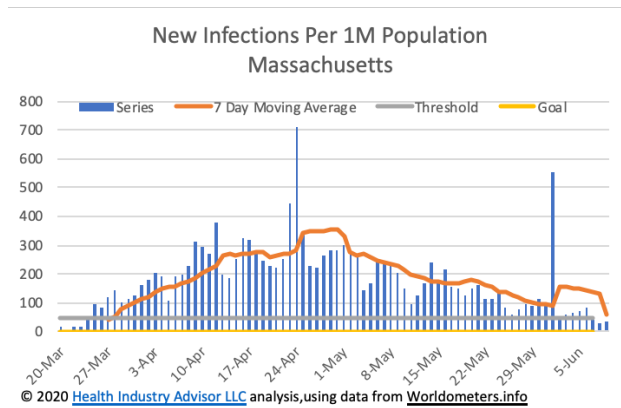
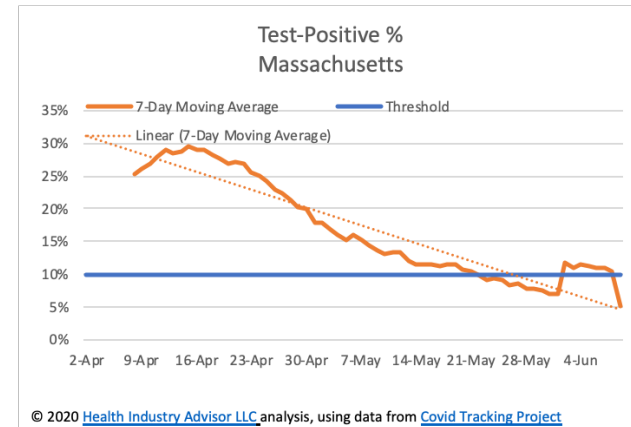
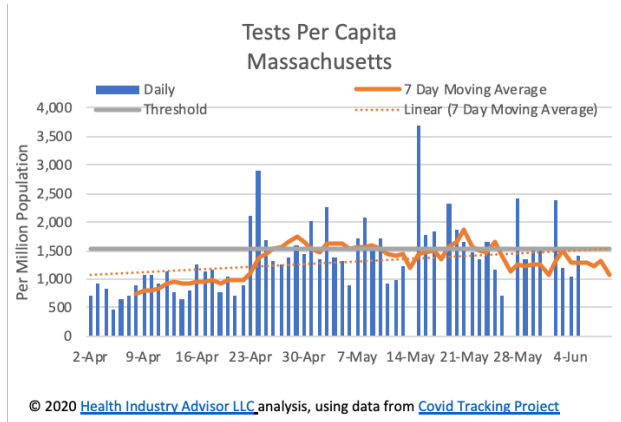


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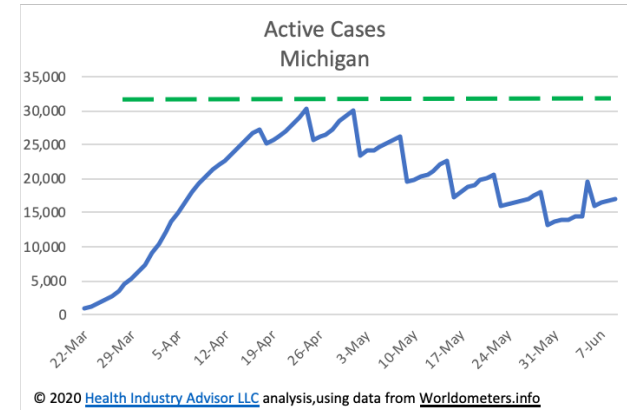
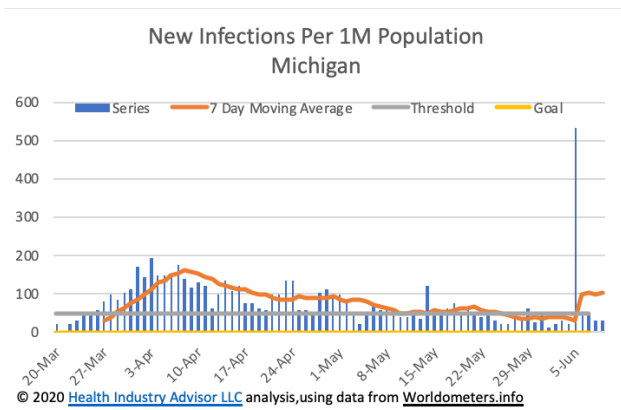
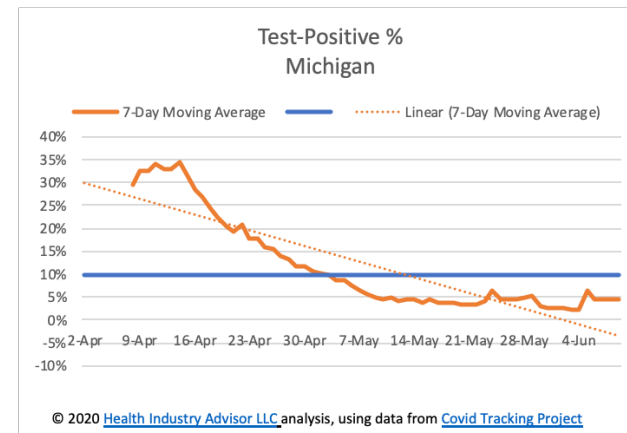
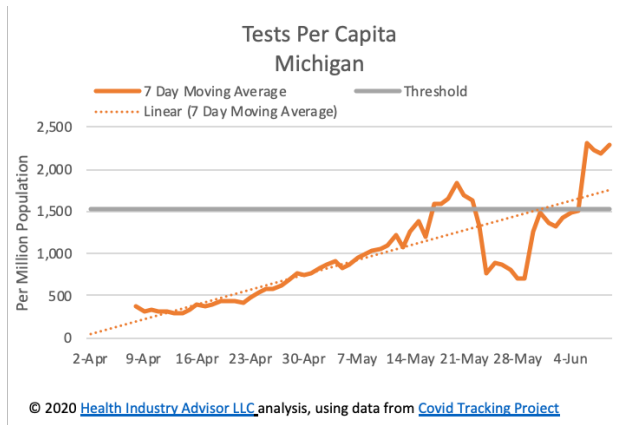
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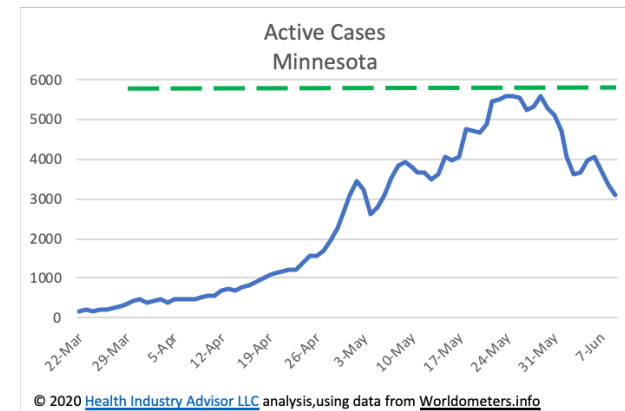
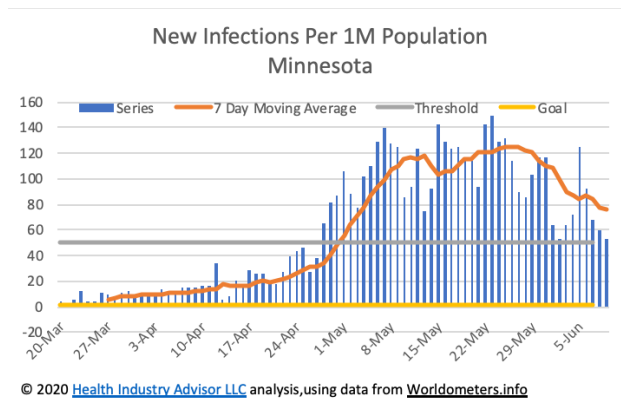
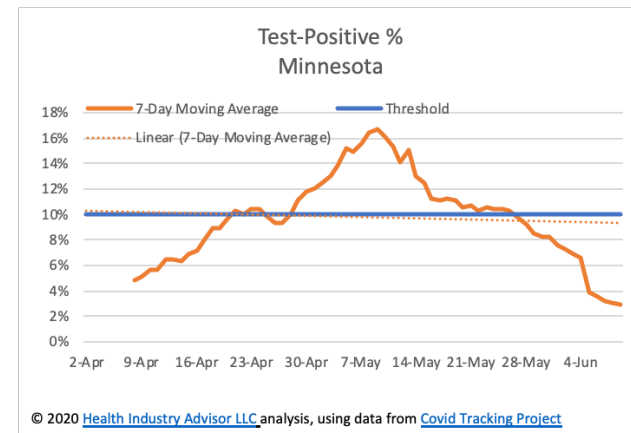
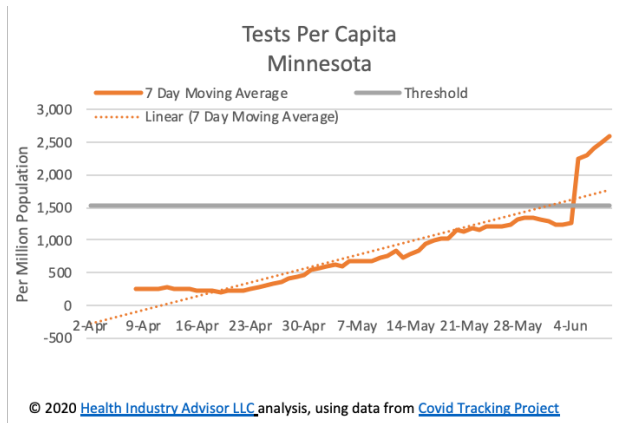
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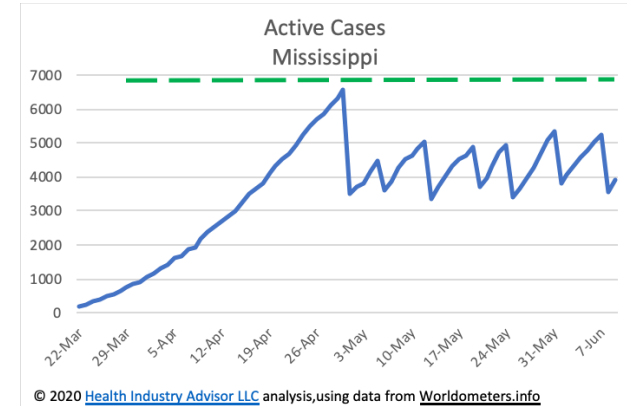
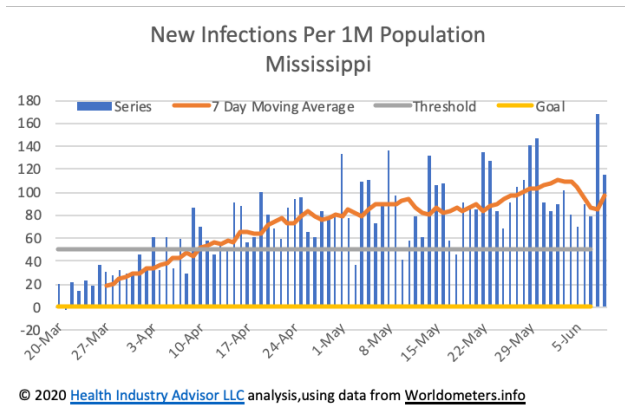
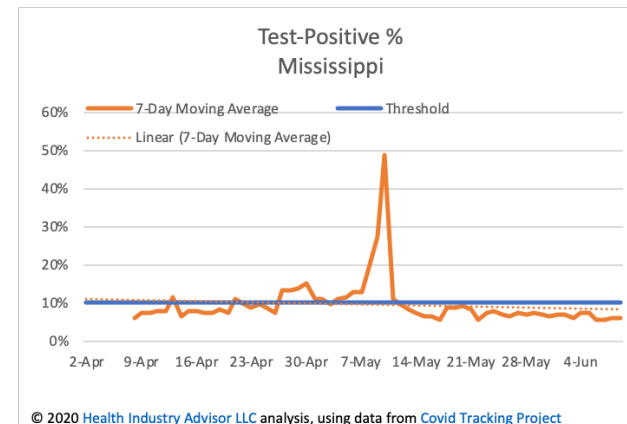
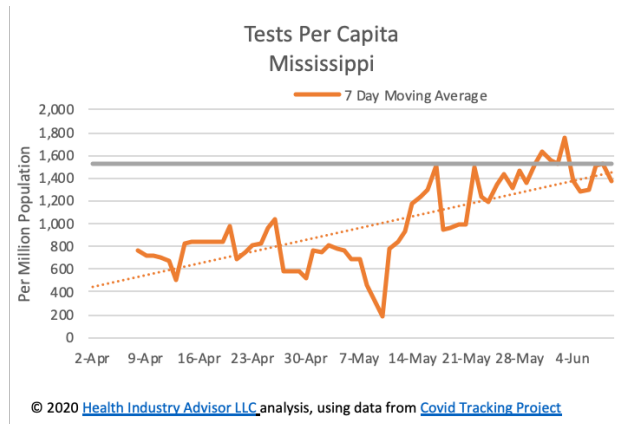
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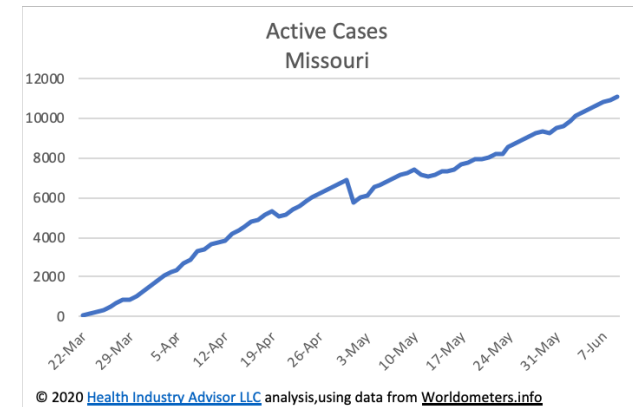
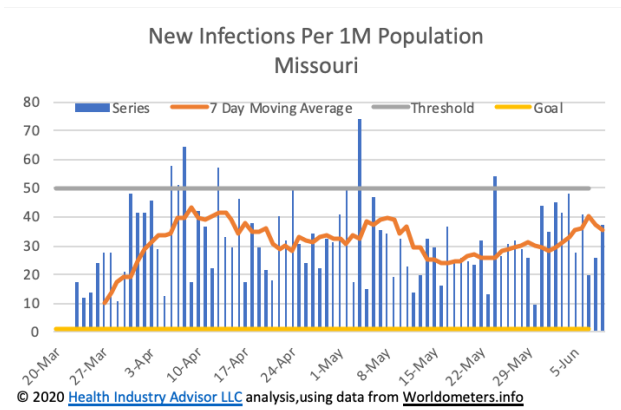
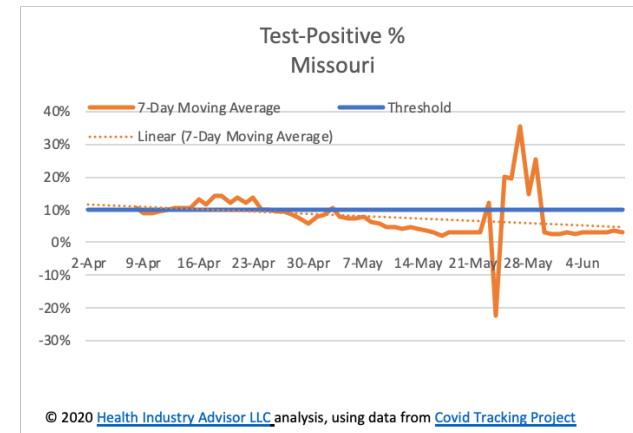
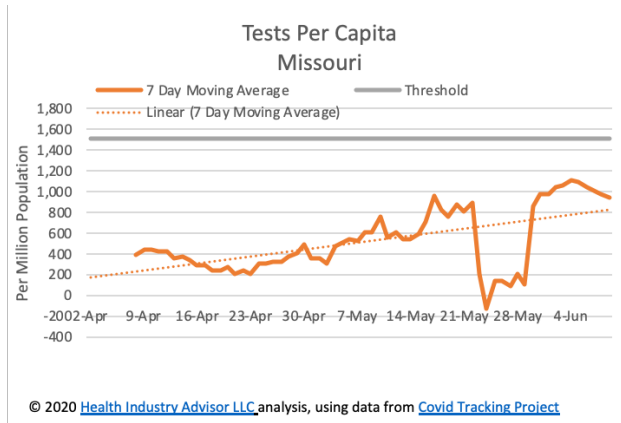
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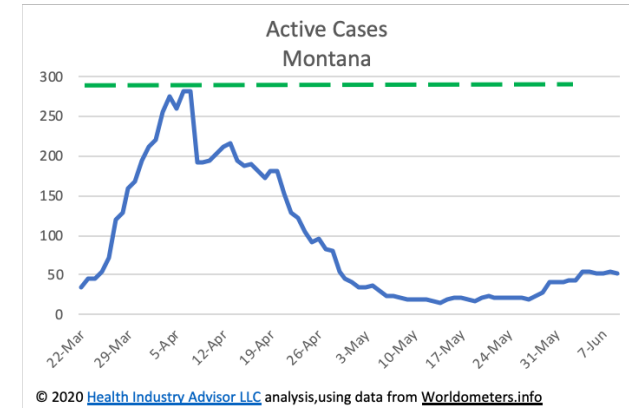
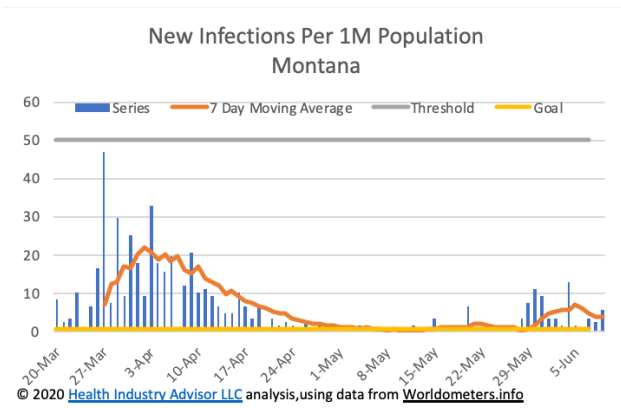
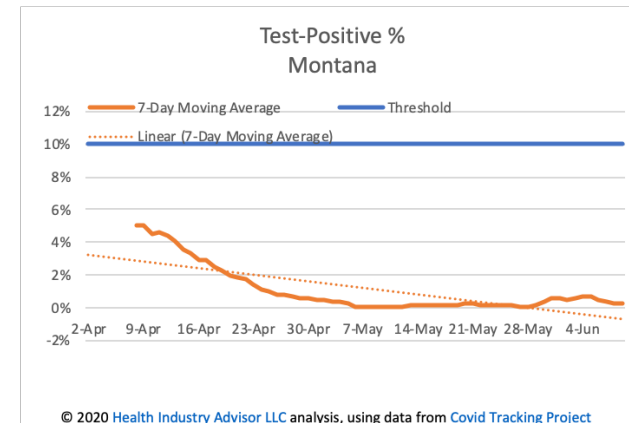
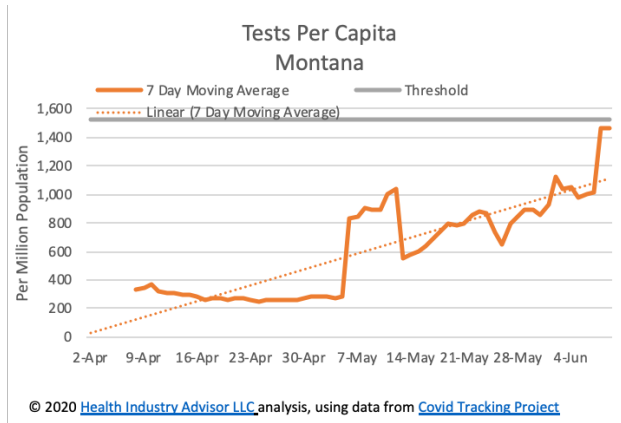
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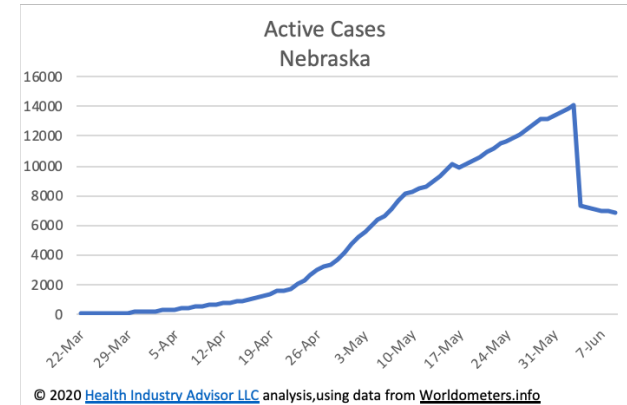
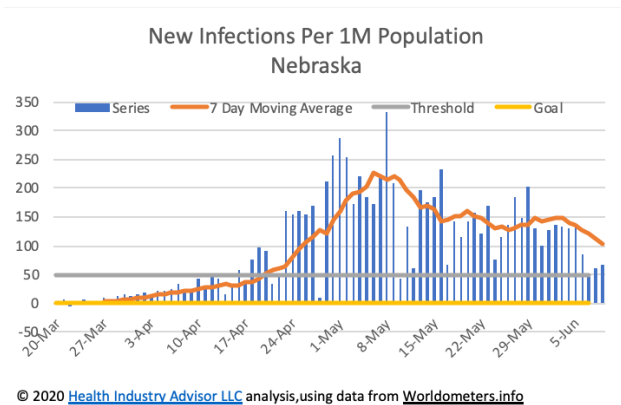
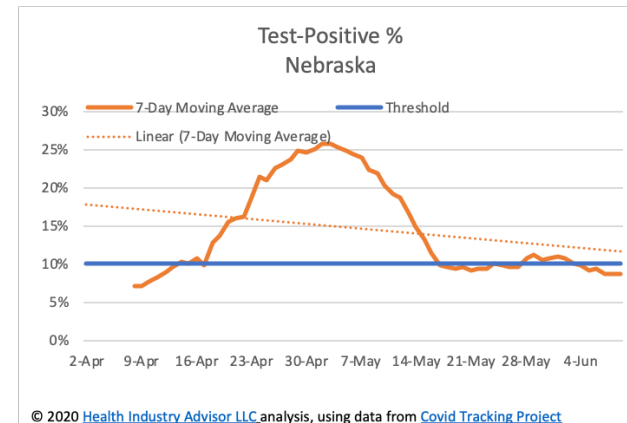
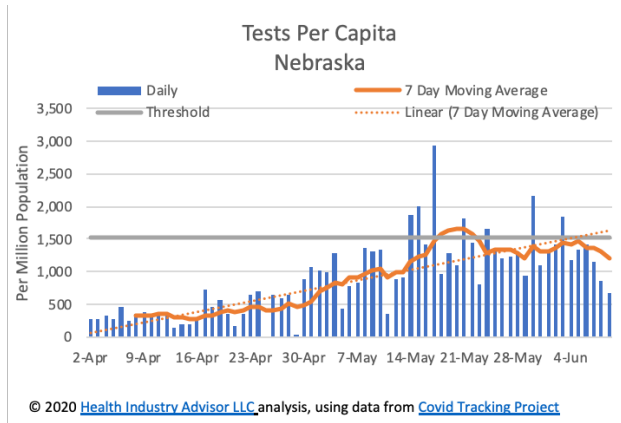
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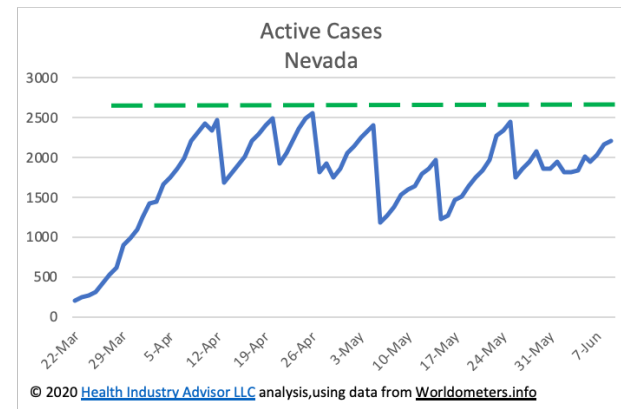
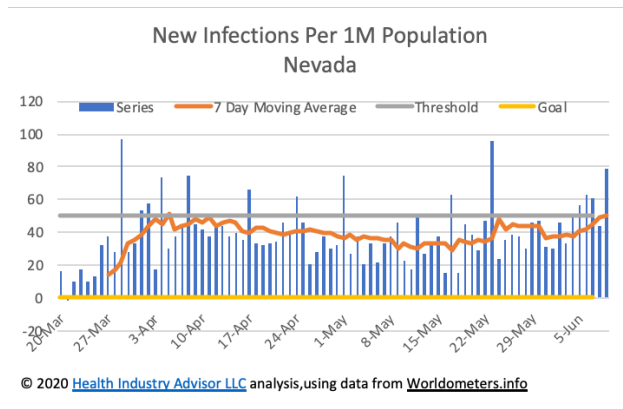
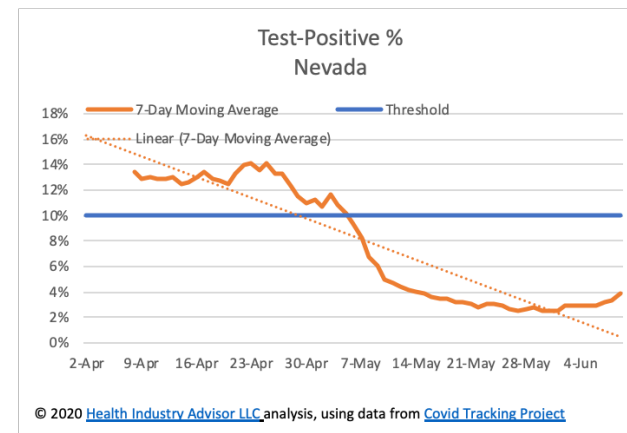
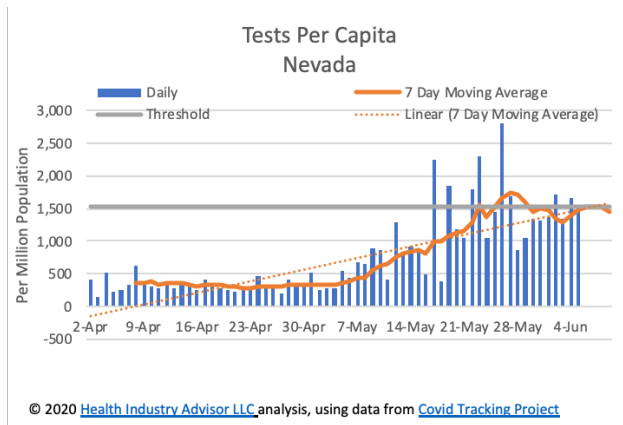
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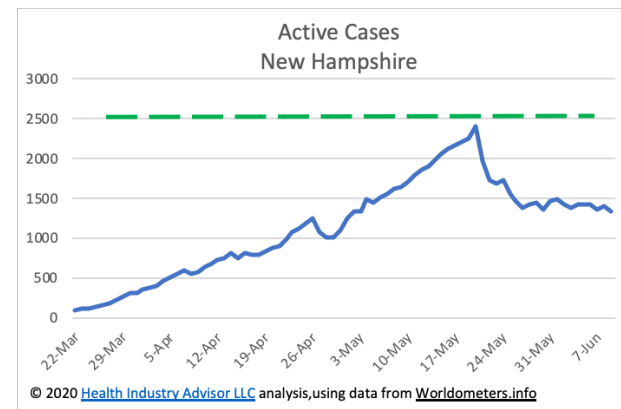
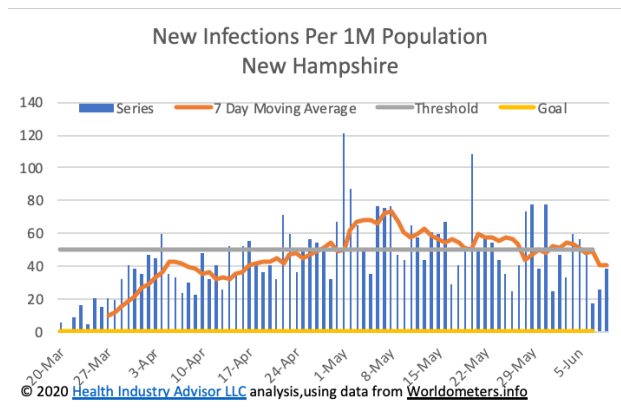
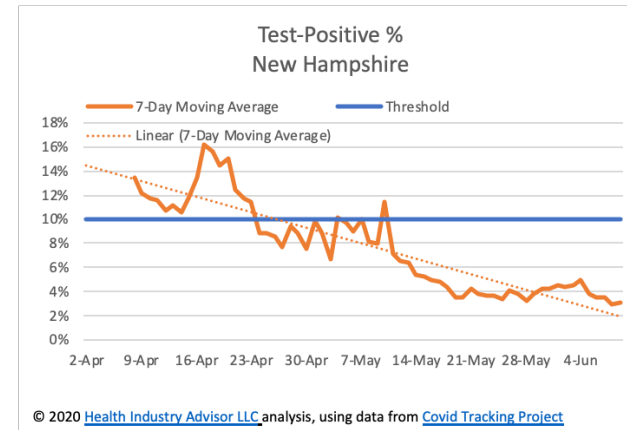
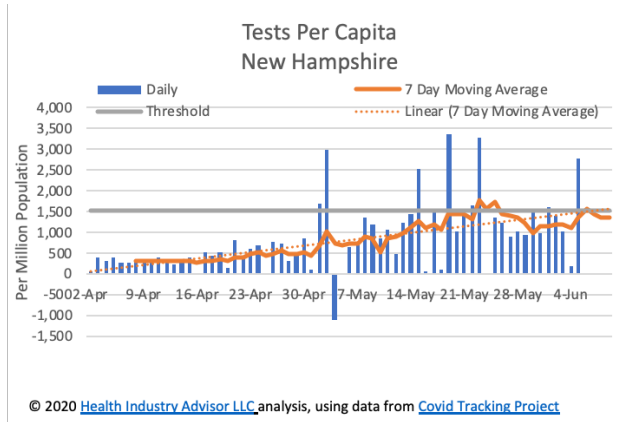


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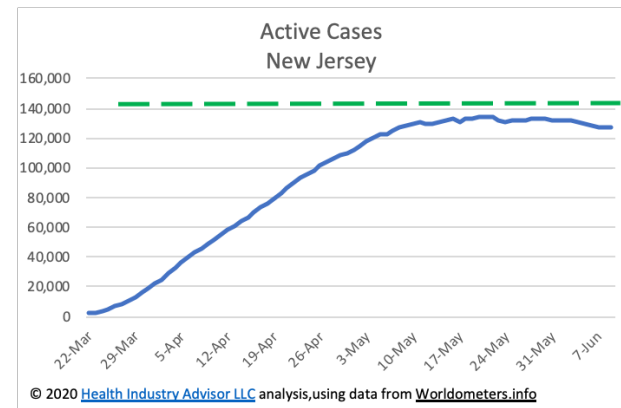
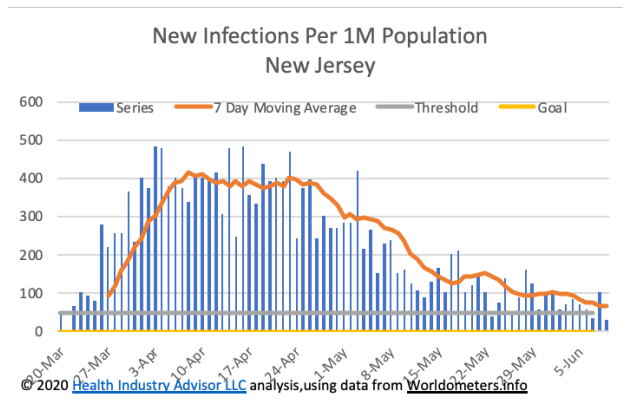
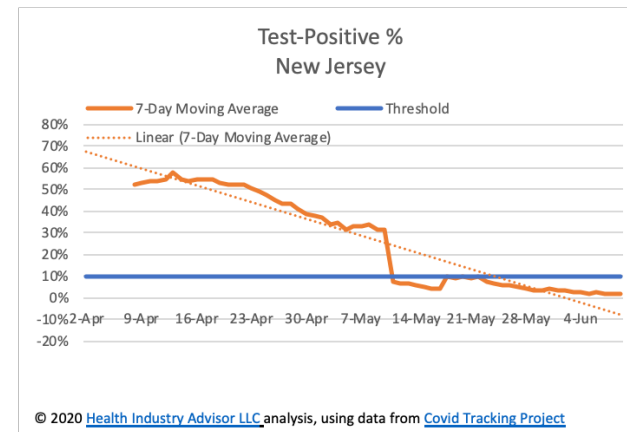
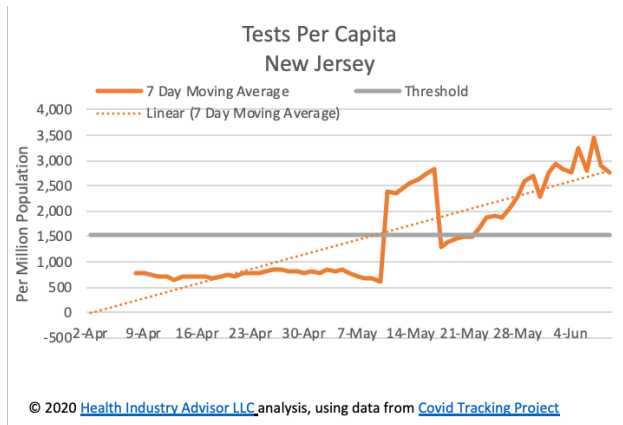
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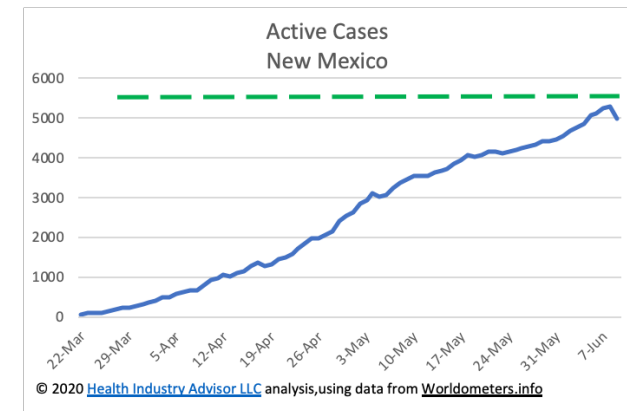
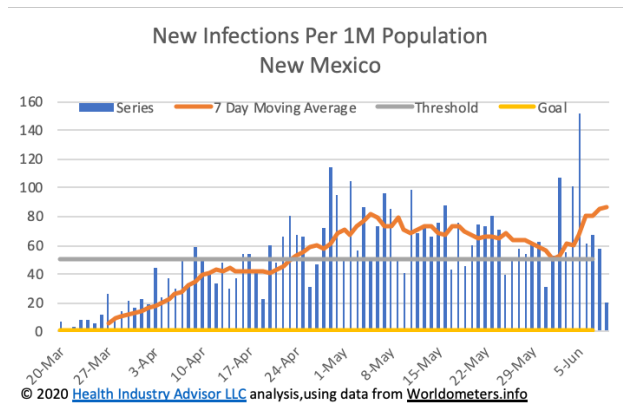
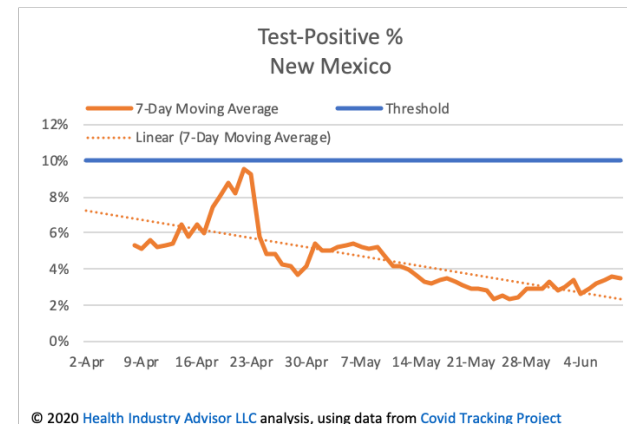
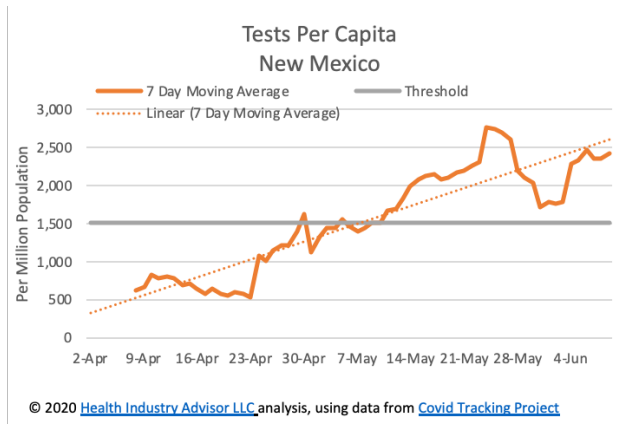
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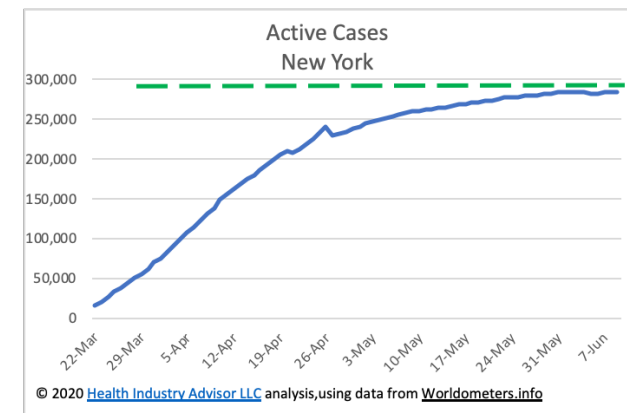
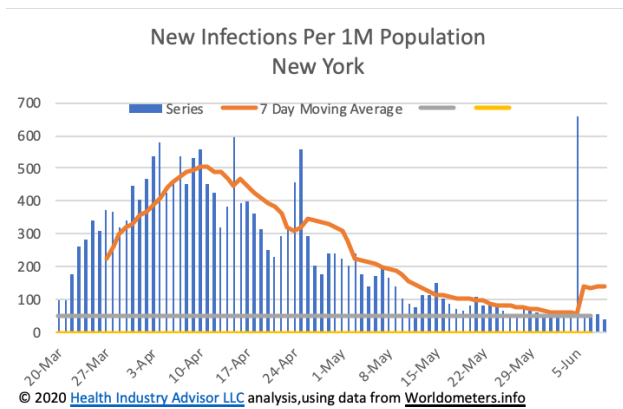
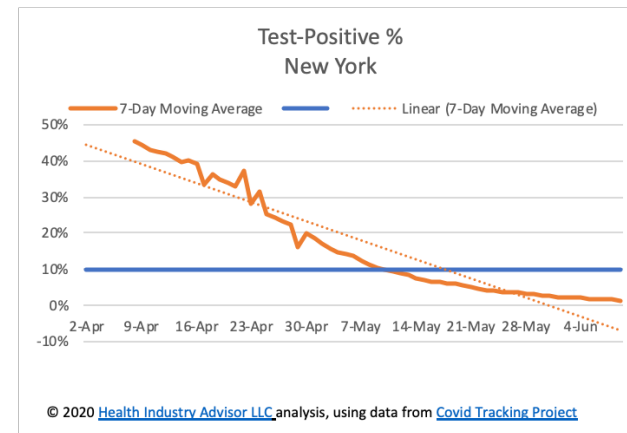
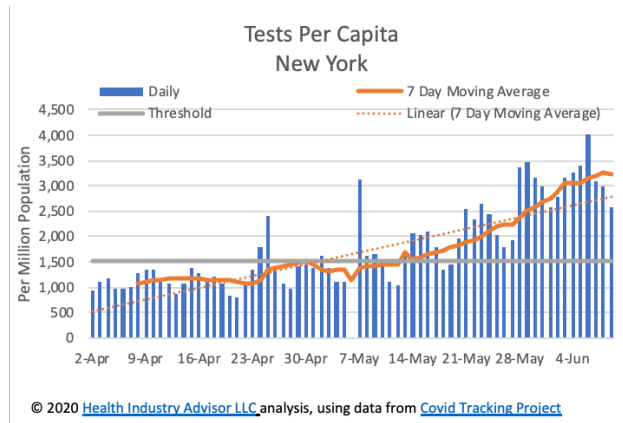


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