Health Industry Advisor, llc

"Strategic Guidance in an Era of Unprecedented Change"

COVID-19 Dashboard

Issue # 65

Wednesday, June 3, 2020

Day's Highlights

"Strategic Guidance in an Era of Unprecedented Change"

Measure	Desired Change	Yesterday in the U.S.
Number of Tests	Increase	>410,000 tests per day past 2 days; ~482k past 7 days v. 382k prior period
Test-Positivity Rate	Decline	5.1% test-positive past 2 days; 5.3% for past 7 days
Number of Cases	Plateau	New Cases up slightly – 0.8% week-over-week
Deaths % of Total Cases	Decline	5.7%
Number of Deaths / 1M Population	Plateau	326.5
Recoveries : Death	Increase	5.98

- Testing in the U.S. continues to be encouraging: an average of 410,000 daily tests were performed in the past 2 days. The test-positive rate was 5.1%
- States that seem to be exceling at testing (high tests per capita and low test-positive rates): Alaska, Connecticut, Illinois, Kentucky, Louisiana, Maine, Mississippi, New Jersey, New Mexico, New York, Oklahoma, Rhode Island, South Dakota and Wisconsin. States not meeting either standard: Alabama, Massachusetts, Nebraska and Virginia. (Georgia and Hawaii made large downward adjustments in test volumes this week - likely to remove serology tests - rendering their current rate calculations meaningless. Eleven states have lowered their test counts in recent weeks, ostensibly to remove serology tests – Florida, Georgia, Hawaii, Louisiana, Michigan, Mississippi, Minnesota, New Mexico, Utah and West Virginia)
- Indiana reported about 18,000 recoveries yesterday, helping bring total reported recoveries in the U.S. to 646,000. These represent ~6 recoveries : death. Still, we estimate that recoveries are undercounted by 344k-468k
- Nine states still report new daily infections per million population >100 (see graph on page 14); for Massachusetts, Maryland and Rhode Island it is > 145. Nineteen states report rates < 50; nine report fewer than 20; Hawaii, Montana and Vermont report fewer than 10. As of Monday, Richmond, VA and Milwaukee, WI reported the highest rate of new infections among all large central metro areas in the U.S.
- Massachusetts, Maryland and Rhode Island rates, while higher than elsewhere in the country, are down from their peaks, and are significantly lower than the 505 new cases per day per million recorded in New York at its peak (New York is currently at 61). Recent hot-spots Alabama, Minnesota and Virginia may now be passed their peak
- Notable progress toward 'readiness" for relaxing restrictions is being made across many states - even in the past week. Using criteria similar to that proposed by the President's Task Force, testing rates, test-positive rates and stress on hospital resources are improving (see graph on page 20) the improvement is more dramatic over the past 5-6 weeks (graph on page 21)
- Yesterday, the French Government lowered its case count by ~25,000, using a revised surveillance system. The revised system is purported to provide improved accuracy, relative to the estimating methodology in use since May 13th. As a result of this change, France dropped from 8th to 12th in total cases among the 30 countries we track most closely
- Mexico surpassed Canada in total cases, moving up to 14th among the countries we track most closely
- Among these countries Brazil, Chile, India, Mexico, Pakistan and Peru have yet to break from exponential daily case growth. As a result, they have yet to reach a peak in new daily infections. These rates in Peru and Chili are higher than the peak rates achieved in any other country we track (albeit lower than the peak rates posted in the Northern states in the U.S.)

COUNTRY-BY-COUNTRY INFORMATION

Countries Included

- 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
- Since that time, 18 countries have moved ahead of South Korea in total cases
- We continue to track the 30 countries, which still account for 87.2% of the 6.4 million total cases worldwide; additionally, we now have visibility to all 215 countries that have at least 1 coronavirus case
- Case and death information is sourced from the 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

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Country-by-Country

Comparative Statistics

"Strategic Guidance in an Era of Unprecedented Change"

As of June 2

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	Rank7	New Daily Infections Per 1M Population (5-Day M.A.)	Rank8
USA	1,881,205	(1)	5,683	(4)	108,059	(1)	5.7%	(13)	326.5	(9)	1.2%	(12)	56,228	(10)	67.3	(5)
Austria	16,759	(29)	1,861	(24)	669	(26)	4.0%	(20)	74.3	(19)	0.2%	(25)	50,695	(11)	3.2	(25)
Belgium	58,615	(19)	5,057	(7)	9,505	(8)	16.2%	(2)	820.1	(1)	0.3%	(22)	76,334	(4)	14.3	(15)
Brazil	556,668	(2)	2,619	(15)	31,278	(4)	5.6%	(14)	147.1	(13)	4.9%	(1)	4,378	(25)	110.4	(3)
Canada	92,410	(15)	2,448	(17)	7,395	(11)	8.0%	(10)	195.9	(11)	0.9%	(14)	45,716	(14)	21.8	(14)
Chile	108,686	(13)	5,686	(3)	1,188	(24)	1.1%	(28)	62.1	(20)	4.6%	(3)	32,077	(16)	229.6	(1)
China	83,021	(17)	58	(30)	4,634	(16)	5.6%	(15)	3.2	(30)	0.0%	(29)	0	N/A	0.0	(29)
Ecuador	40,414	(21)	2,291	(19)	3,438	(19)	8.5%	(9)	194.9	(12)	1.0%	(13)	6,739	(24)	24.8	(12)
France	151,325	(12)	2,318	(18)	28,940	(5)	19.1%	(1)	443.4	(5)	-4.1%	(30)	21,216	(20)	(68.7)	(30)
Germany	184,091	(8)	2,197	(20)	8,674	(9)	4.7%	(18)	103.5	(16)	0.2%	(24)	47,192	(12)	4.8	(24)
India	207,191	(7)	150	(28)	5,829	(13)	2.8%	(21)	4.2	(28)	4.6%	(2)	2,876	(26)	5.8	(23)
Iran	157,562	(11)	1,876	(23)	7,942	(10)	5.0%	(17)	94.6	(17)	1.8%	(9)	11,631	(23)	30.7	(9)
Ireland	25,066	(26)	5,076	(6)	1,658	(21)	6.6%	(11)	335.8	(8)	0.2%	(23)	70,624	(5)	9.6	(19)
Israel	17,285	(27)	1,997	(21)	290	(28)	1.7%	(26)	33.5	(23)	0.5%	(18)	63,326	(8)	8.7	(21)
Italy	233,515	(6)	3,862	(9)	33,530	(3)	14.4%	(3)	554.6	(4)	0.2%	(26)	65,527	(7)	7.0	(22)
Japan	16,930	(28)	134	(29)	894	(25)	5.3%	(16)	7.1	(26)	0.3%	(21)	2,343	(28)	0.3	(28)
Mexico	93,435	(14)	725	(25)	10,167	(7)	10.9%	(7)	78.9	(18)	3.7%	(6)	2,190	(29)	24.7	(13)
Netherlands	46,647	(20)	2,722	(14)	5,967	(12)	12.8%	(5)	348.2	(7)	0.3%	(20)	21,004	(21)	8.9	(20)
Pakistan	76,398	(18)	346	(26)	1,621	(22)	2.1%	(25)	7.3	(25)	4.5%	(4)	2,621	(27)	12.1	(16)
Peru	174,884	(9)	5,304	(5)	4,767	(15)	2.7%	(23)	144.6	(14)	4.3%	(5)	33,176	(15)	195.6	(2)
Portugal	32,895	(24)	3,226	(12)	1,436	(23)	4.4%	(19)	140.8	(15)	0.8%	(15)	83,066	(2)	26.5	(11)
Russia	423,741	(3)	2,826	(13)	5,037	(14)	1.2%	(27)	33.6	(22)	2.3%	(7)	76,418	(3)	58.5	(7)
Saudi Arabia	89,011	(16)	2,557	(16)	549	(27)	0.6%	(29)	15.8	(24)	2.1%	(8)	18,333	(22)	50.4	(8)
Singapore	35,836	(23)	6,126	(2)	24	(30)	0.1%	(30)	4.1	(29)	1.5%	(11)	24,561	(19)	85.3	(4)
South Korea	11,541	(30)	225	(27)	272	(29)	2.4%	(24)	5.3	(27)	0.3%	(19)	57,244	(9)	0.9	(27)
Spain	287,012	(4)	6,139	(1)	27,127	(6)	9.5%	(8)	580.2	(2)	0.1%	(27)	86,921	(1)	11.2	(18)
Sweden	38,589	(22)	3,821	(10)	4,468	(18)	11.6%	(6)	442.4	(6)	1.6%	(10)	27,292	(17)	58.7	(6)
Switzerland	30,874	(25)	3,605	(11)	1,920	(20)	6.2%	(12)	224.2	(10)	0.1%	(28)	46,336	(13)	1.9	(26)
Turkey	165,555	(10)	1,963	(22)	4,585	(17)	2.8%	(22)	54.4	(21)	0.6%	(17)	24,957	(18)	11.5	(17)
UK	277,985	(5)	4,095	(8)	39,369	(2)	14.2%	(4)	579.9	(3)	0.6%	(16)	68,011	(6)	26.8	(10)

Note: China does not report test volumes

VIRUS PROGRESSION BY COUNTRY

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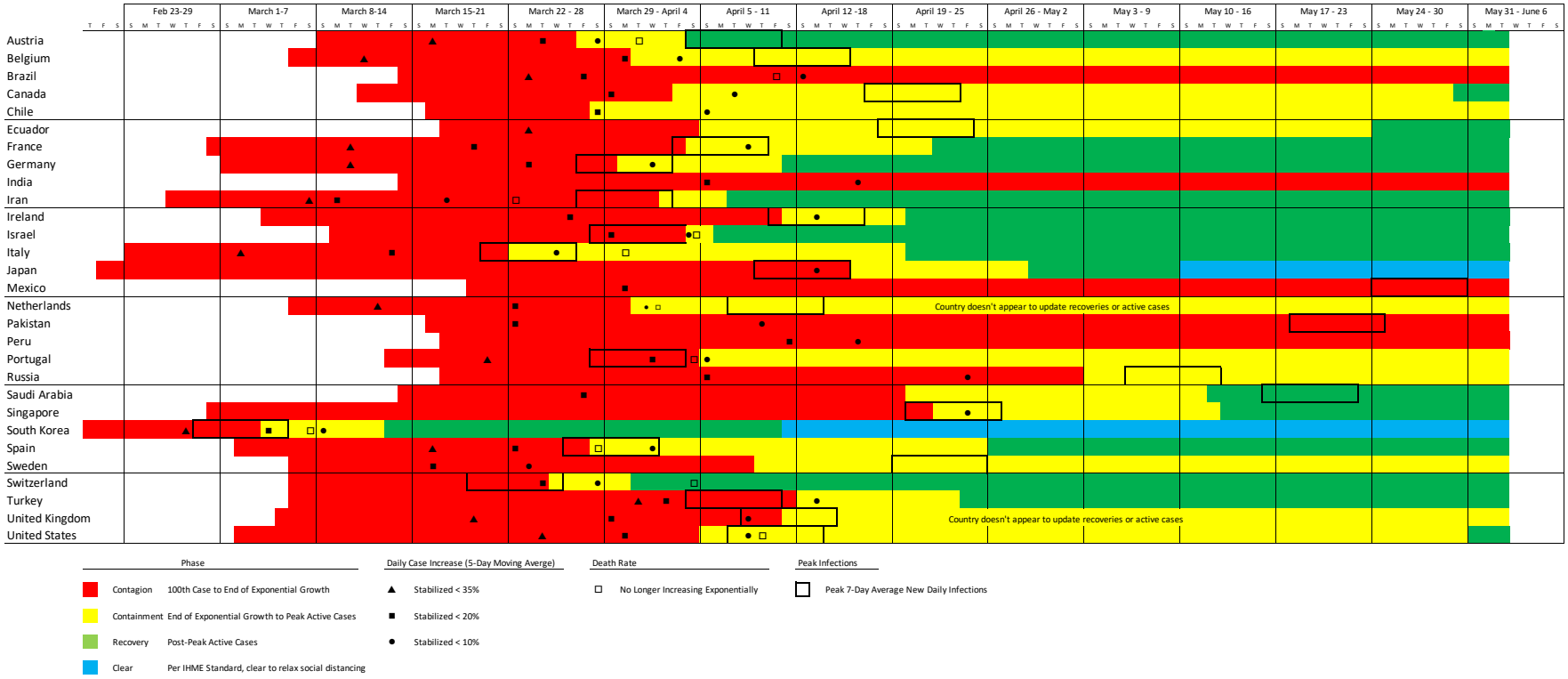
Country-by-Country

Virus Progression

"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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"Strategic Guidance in an Era of Unprecedented Change"

Country-By-Country
Listing of Countries By Total Cases

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 87.2% of all cases worldwide.

		Total Cases						
Rank	Country	2-Jun	Rank	Country	6-May	Rank	Country	27-Apr
1	USA	1,881,205	1	USA	1,263,092	1	USA	1,010,356
2	Brazil	556,668	2	Spain	253,682	2	Spain	229,422
3	Russia	423,741	3	Italy	214,457	3	Italy	199,414
4	Spain	287,012	4	UK	201,101	4	France	165,842
5	UK	277,985	5	France	174,191	5	Germany	158,758
6	Italy	233,515	6	Germany	168,162	6	UK	157,149
7	India	207,191	7	Russia	165,929	7	Turkey	112,261
8	Germany	184,091	8	Turkey	131,744	8	Iran	91,472
9	Peru	174,884	9	Brazil	126,611	9	Russia	87,147
10	Turkey	165,555	10	Iran	101,650	10	China	82,830
11	Iran	157,562	11	China	82,883	11	Brazil	66,501
12	France	151,325	12	Canada	63,496	12	Canada	48,500
13	Chile	108,686	13	Peru	54,817	13	Belgium	46,687
14	Mexico	93,435	14	India	52,987	14	Netherlands	38,245
15	Canada	92,410	15	Belgium	50,781	15	India	29,451
16	Saudi Arabia	89,011	16	Netherlands	41,319	16	Switzerland	29,164
17	China	83,021	17	Saudi Arabia	31,938	17	Peru	28,669
18	Pakistan	76,398	18	Switzerland	30,060	18	Portugal	24,070
20	Belgium	58,615	19	Ecuador	29,420	19	Ecuador	23,240
22	Netherlands	46,647	20	Portugal	26,182	20	Ireland	19,648
24	Ecuador	40,414	21	Mexico	26,025	21	Sweden	18,926
25	Sweden	38,589	22	Sweden	23,918	22	Saudi Arabia	18,811
26	Singapore	35,836	23	Pakistan	23,214	23	Israel	15,555
29	Portugal	32,895	24	Chile	23,048	24	Austria	15,274
31	Switzerland	30,874	25	Ireland	22,248	25	Mexico	14,677
35	Ireland	25,066	26	Singapore	20,198	26	Singapore	14,423
42	Israel	17,285	29	Israel	16,310	27	Pakistan	13,915
43	Japan	16,930	31	Austria	15,684	28	Chile	13,813
44	Austria	16,759	32	Japan	15,253	29	Japan	13,614
51	S. Korea	11,541	38	S. Korea	10,806	35	South Korea	10,738
	Others	826,136		Others	356,176		Others	263,943
	World	6,441,282			3,817,382		World	3,062,515
	30 countries' share	87.2%			90.7%			91.4%

Country-by-Country

Cases & Cases Per Capita

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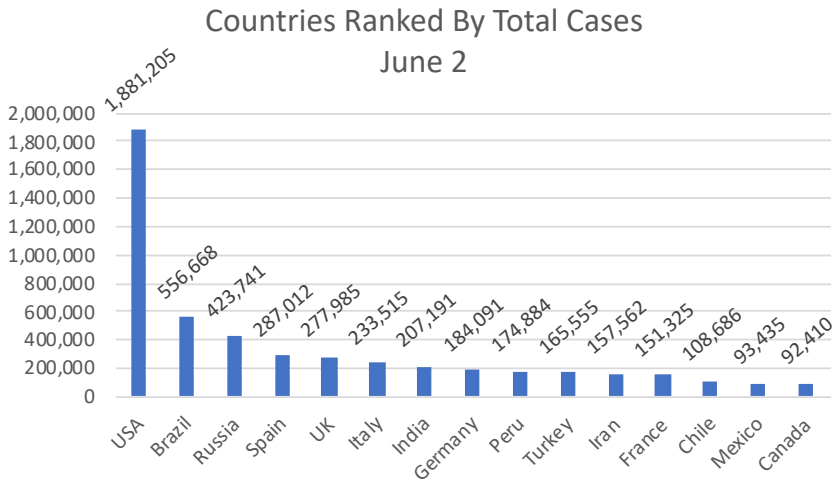

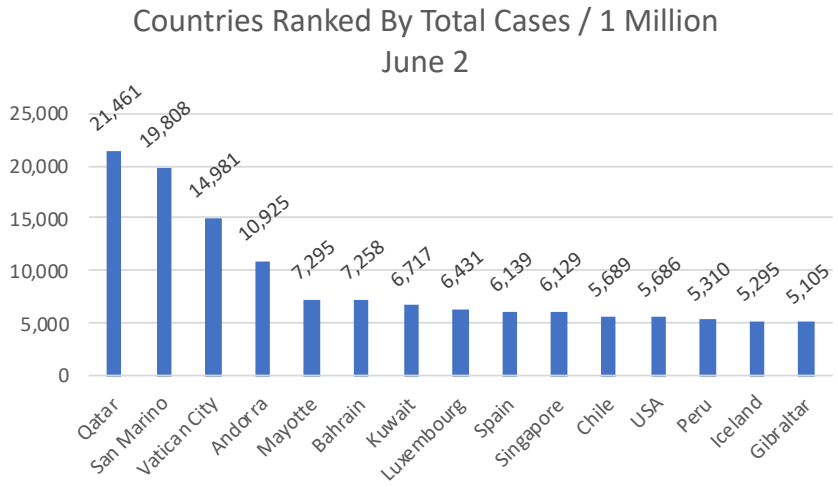

Country-by-Country

Deaths Per Cases & Per Capita

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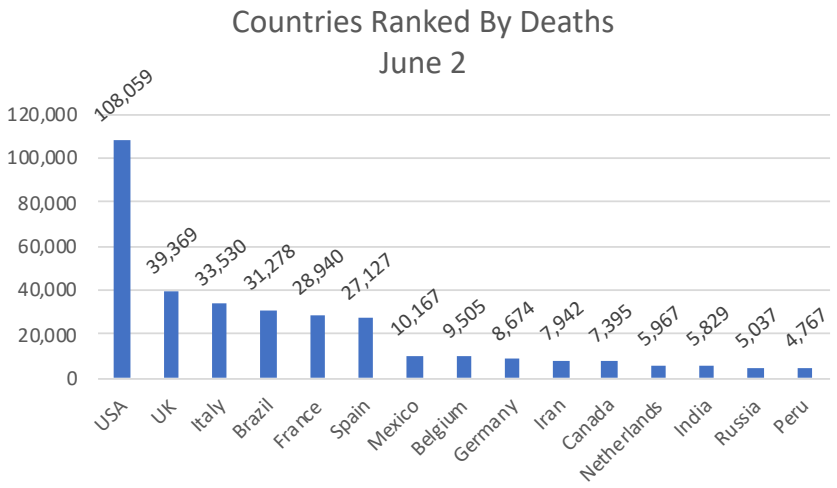
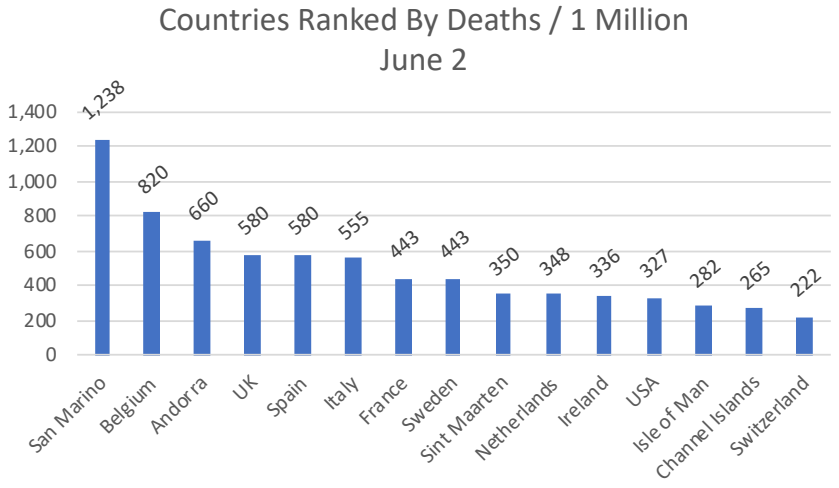




UNITED STATES & STATE-BY-STATE INFORMATION

Health Industry Advisor, llc

State-by-State

Comparative Statistics

"Strategic Guidance in an Era of Unprecedented Change"

As of June 2

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	18,720	(25)	3,817.9	(23)	653	(25)	3.5%	(34)	133.2	(25)	2.5%	(8)	875	(40)	89.4	(13)
Alaska	487	(51)	665.7	(49)	10	(51)	2.1%	(45)	13.7	(50)	2.8%	(5)	2,195	(4)	14.8	(47)
Arizona	21,250	(22)	2,919.5	(33)	941	(21)	4.4%	(23)	129.3	(27)	3.6%	(1)	924	(39)	87.7	(14)
Arkansas	7,818	(38)	2,590.6	(37)	136	(40)	1.7%	(47)	45.1	(44)	3.6%	(2)	1,016	(38)	77.5	(16)
California	117,962	(4)	2,985.5	(32)	4,360	(7)	3.7%	(32)	110.3	(29)	2.6%	(7)	1,357	(18)	65.8	(24)
Colorado	26,788	(18)	4,651.7	(19)	1,474	(16)	5.5%	(12)	256.0	(15)	1.3%	(30)	856	(43)	55.1	(29)
Connecticut	42,979	(13)	12,054.9	(6)	3,972	(8)	9.2%	(2)	1,114.1	(3)	0.7%	(46)	1,813	(6)	67.2	(21)
Delaware	9,685	(34)	9,945.9	(7)	373	(33)	3.9%	(30)	383.0	(12)	1.1%	(40)	1,342	(19)	90.8	(11)
District Of Columbia	8,886	(35)	12,590.9	(5)	470	(29)	5.3%	(14)	666.0	(6)	0.9%	(42)	1,143	(29)	111.7	(6)
Florida	57,447	(9)	2,674.7	(36)	2,531	(11)	4.4%	(24)	117.8	(28)	1.5%	(22)	842	(44)	34.5	(40)
Georgia	48,207	(11)	4,540.4	(20)	2,102	(14)	4.4%	(25)	198.0	(16)	1.3%	(33)	(547)	(51)	56.8	(27)
Hawaii	653	(49)	461.2	(51)	17	(49)	2.6%	(41)	12.0	(51)	0.2%	(51)	(146)	(50)	1.0	(51)
Idaho	2,933	(43)	1,636.7	(44)	83	(43)	2.8%	(39)	46.3	(43)	1.2%	(38)	536	(49)	18.7	(44)
Illinois	122,848	(3)	9,694.6	(8)	5,525	(6)	4.5%	(22)	436.0	(10)	1.2%	(37)	1,667	(8)	108.8	(8)
Indiana	35,237	(16)	5,234.1	(18)	2,197	(13)	6.2%	(8)	326.3	(13)	1.3%	(32)	874	(41)	67.0	(22)
Iowa	20,017	(23)	6,344.4	(12)	561	(27)	2.8%	(40)	177.8	(20)	1.5%	(23)	1,299	(23)	104.7	(9)
Kansas	10,090	(33)	3,463.4	(27)	225	(37)	2.2%	(44)	77.2	(38)	1.3%	(27)	1,075	(32)	40.5	(34)
Kentucky	10,185	(32)	2,279.7	(40)	442	(30)	4.3%	(26)	98.9	(31)	2.1%	(15)	1,836	(5)	39.5	(35)
Louisiana	40,748	(14)	8,765.3	(10)	2,839	(9)	7.0%	(7)	610.7	(7)	1.0%	(41)	1,601	(12)	82.4	(15)
Maine	2,377	(45)	1,768.3	(42)	94	(42)	4.0%	(29)	69.9	(40)	1.7%	(19)	1,638	(9)	28.5	(42)
Maryland	54,175	(10)	8,960.9	(9)	2,597	(10)	4.8%	(18)	429.6	(11)	1.7%	(17)	1,449	(15)	153.3	(2)
Massachusetts	101,163	(5)	14,556.9	(3)	7,085	(3)	7.0%	(6)	1,019.5	(4)	1.3%	(31)	1,314	(22)	153.6	(1)
Michigan	57,731	(8)	5,780.7	(14)	5,553	(5)	9.6%	(1)	556.0	(8)	0.6%	(47)	1,330	(21)	37.6	(37)
Minnesota	25,508	(19)	4,523.0	(21)	1,082	(19)	4.2%	(27)	191.9	(18)	2.1%	(14)	1,237	(26)	89.9	(12)
Mississippi	16,020	(26)	5,382.8	(17)	767	(23)	4.8%	(19)	257.7	(14)	2.2%	(12)	1,521	(14)	109.9	(7)
Missouri	13,969	(29)	2,276.0	(41)	796	(22)	5.7%	(10)	129.7	(26)	1.5%	(25)	1,051	(33)	31.5	(41)
Montana	523	(50)	489.3	(50)	17	(49)	3.3%	(35)	15.9	(49)	1.5%	(21)	1,120	(31)	5.9	(49)
Nebraska	14,611	(28)	7,553.2	(11)	181	(38)	1.2%	(49)	93.6	(33)	2.0%	(16)	1,357	(17)	147.1	(3)
Nevada	8,830	(36)	2,866.7	(34)	421	(31)	4.8%	(20)	136.7	(24)	1.5%	(24)	1,332	(20)	38.6	(36)
New Hampshire	4,749	(41)	3,492.7	(25)	256	(36)	5.4%	(13)	188.3	(19)	1.6%	(20)	1,188	(28)	54.4	(30)
New Jersey	163,147	(2)	18,367.9	(2)	11,783	(2)	7.2%	(5)	1,326.6	(2)	0.5%	(48)	2,924	(2)	98.6	(10)
New Mexico	8,024	(37)	3,826.7	(22)	367	(34)	4.6%	(21)	175.0	(21)	1.7%	(18)	1,755	(7)	60.9	(25)
New York	381,912	(1)	19,632.0	(1)	30,078	(1)	7.9%	(3)	1,546.1	(1)	0.3%	(49)	2,891	(3)	60.9	(26)
North Carolina	30,022	(17)	2,862.5	(35)	961	(20)	3.2%	(37)	91.6	(34)	3.1%	(3)	1,125	(30)	75.8	(17)
North Dakota	2,646	(44)	3,472.2	(26)	65	(45)	2.5%	(43)	85.3	(37)	1.3%	(29)	1,273	(25)	35.4	(39)
Ohio	36,395	(15)	3,113.6	(30)	2,267	(12)	6.2%	(9)	193.9	(17)	1.4%	(26)	862	(42)	40.6	(33)
Oklahoma	6,692	(39)	1,691.2	(43)	339	(35)	5.1%	(15)	85.7	(36)	1.3%	(28)	1,614	(11)	20.0	(43)
Oregon	4,335	(42)	1,027.8	(48)	157	(39)	3.6%	(33)	37.2	(46)	1.2%	(36)	632	(48)	12.5	(48)
Pennsylvania	77,320	(6)	6,039.7	(13)	5,691	(4)	7.4%	(4)	444.5	(9)	0.8%	(45)	719	(46)	49.6	(32)
Rhode Island	15,112	(27)	14,265.2	(4)	732	(24)	4.8%	(17)	691.0	(5)	0.8%	(43)	3,263	(1)	121.6	(4)
South Carolina	12,415	(30)	2,411.3	(38)	501	(28)	4.0%	(28)	97.3	(32)	2.8%	(4)	1,278	(24)	55.5	(28)
South Dakota	5,067	(40)	5,727.6	(15)	62	(46)	1.2%	(50)	70.1	(39)	1.1%	(39)	1,584	(13)	66.9	(23)
Tennessee	24,375	(20)	3,567.2	(24)	381	(32)	1.6%	(48)	55.8	(42)	2.4%	(9)	1,226	(27)	71.3	(19)
Texas	67,973	(7)	2,344.2	(39)	1,735	(15)	2.6%	(42)	59.8	(41)	2.3%	(10)	813	(45)	50.4	(31)
Utah	10,202	(31)	3,182.2	(29)	113	(41)	1.1%	(51)	35.2	(47)	2.7%	(6)	1,034	(35)	70.5	(20)
Vermont	988	(47)	1,583.4	(45)	55	(47)	5.6%	(11)	88.1	(35)	0.3%	(50)	1,419	(16)	4.8	(50)
Virginia	46,239	(12)	5,417.2	(16)	1,407	(17)	3.0%	(38)	164.8	(22)	2.2%	(11)	1,033	(36)	115.4	(5)
Washington	23,168	(21)	3,042.5	(31)	1,138	(18)	4.9%	(16)	149.4	(23)	1.2%	(35)	650	(47)	36.8	(38)
West Virginia	2,056	(46)	1,150.4	(47)	78	(44)	3.8%	(31)	43.6	(45)	1.2%	(34)	1,018	(37)	16.1	(45)
Wisconsin	18,917	(24)	3,249.0	(28)	607	(26)	3.2%	(36)	104.3	(30)	2.2%	(13)	1,617	(10)	74.9	(18)
Wyoming	912	(48)	1,575.8	(46)	17	(49)	1.9%	(46)	29.4	(48)	0.8%	(44)	1,047	(34)	15.3	(46)
United States	1,881,205		5,683.4		108,059		5.7%		326.5		1.2%		1,229		67.3	

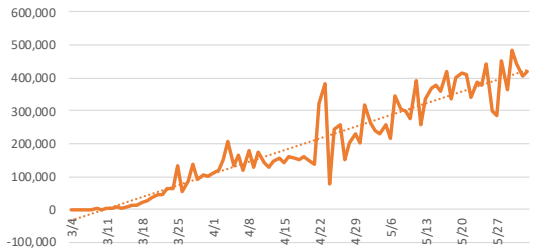
United States

Overall Statistics

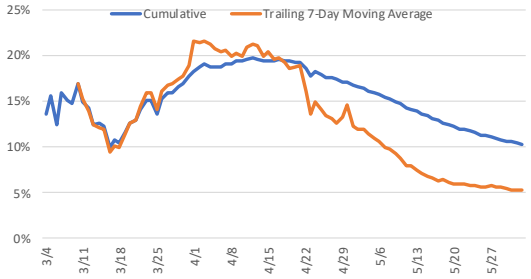
"Strategic Guidance in an Era of Unprecedented Change"

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.

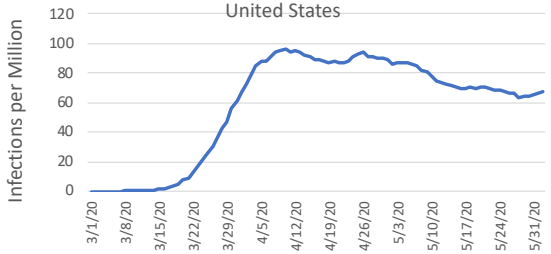
New Daily Tests - US



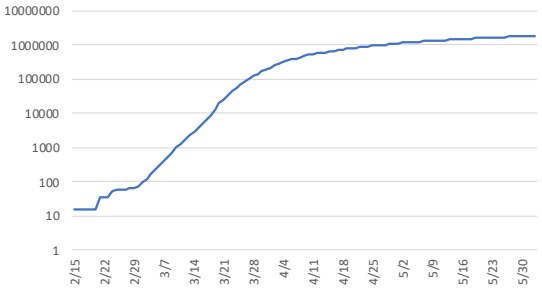
Test-Positive Rate



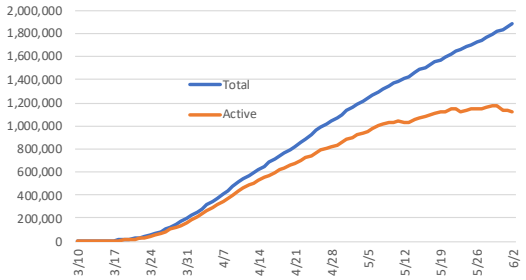
New Daily Infections Per 1M
Trailing 7-Day Moving Average
United States



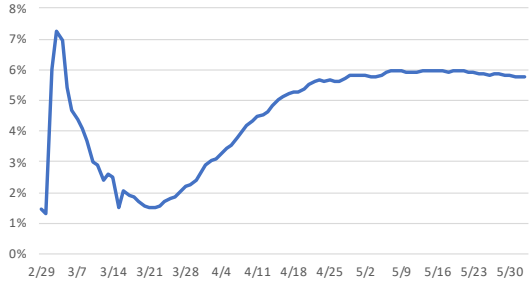
Total Cases Log Scale - US



Cases - US



Deaths Per Case - US



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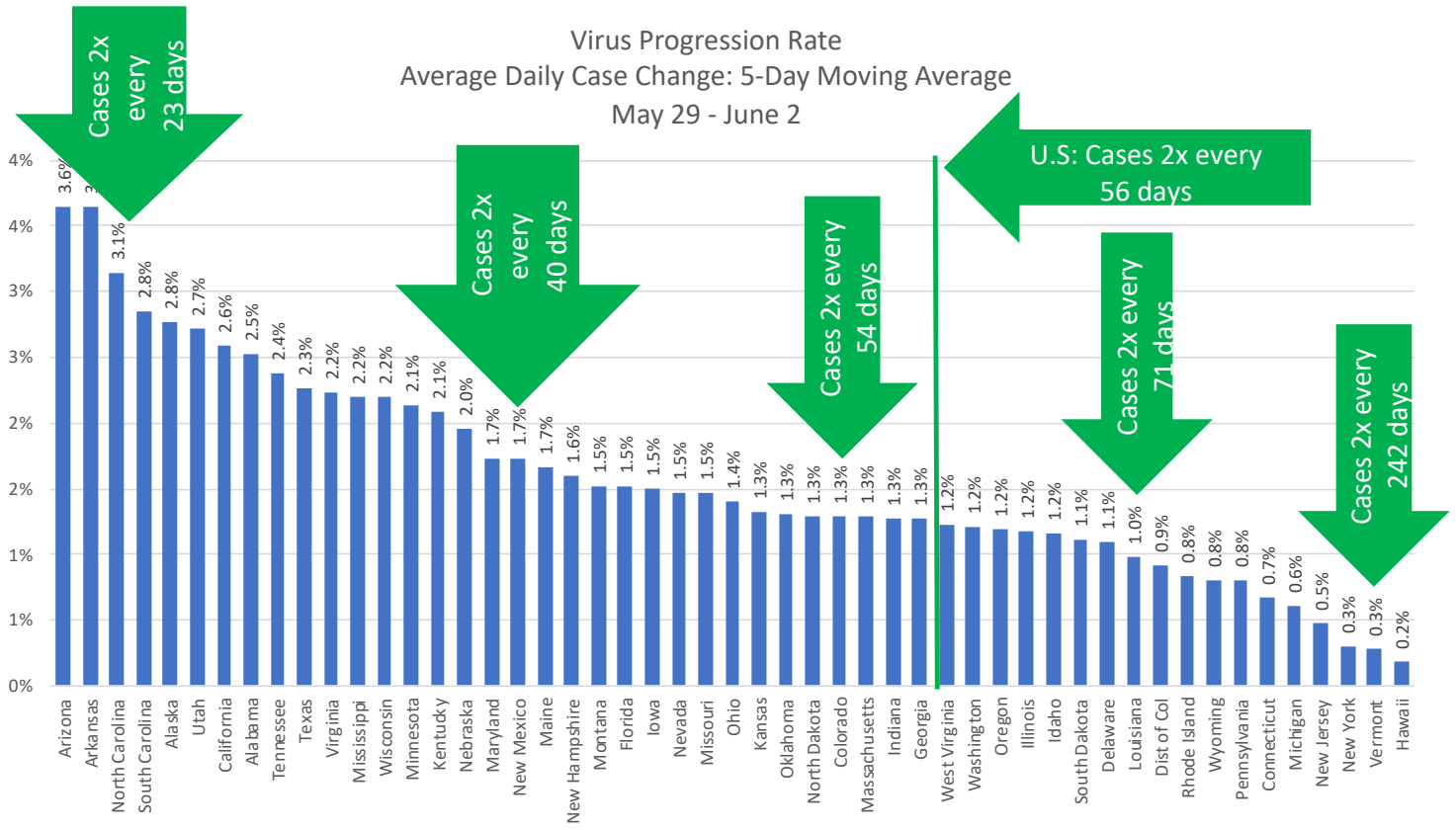
State-by-State

Average Daily Case Growth

"Strategic Guidance in an Era of Unprecedented Change"

At the height of the epidemic, cases in some states were doubling every few days. Now, they would take from 20 days to more than a year to double



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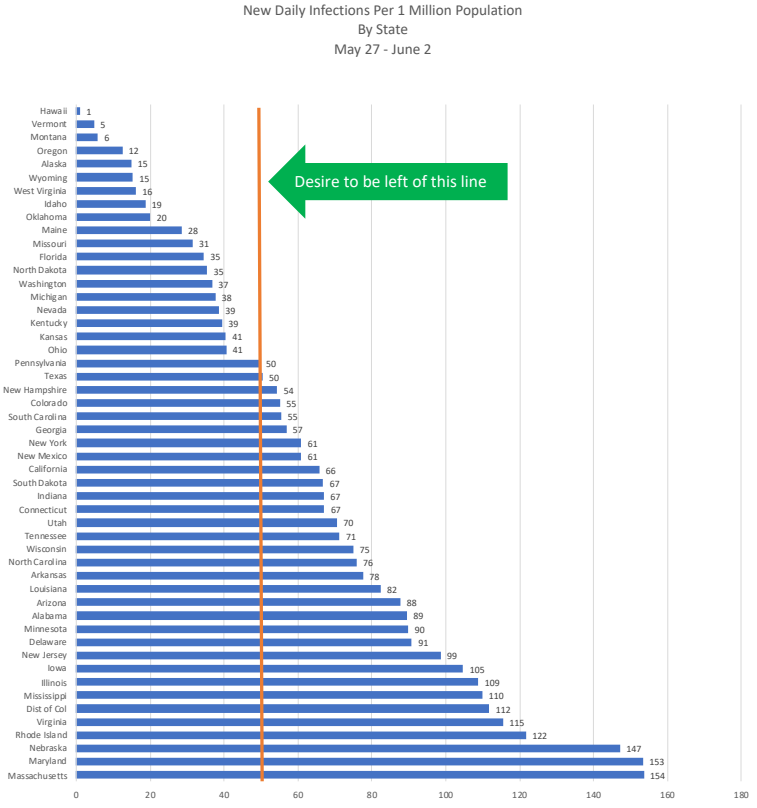
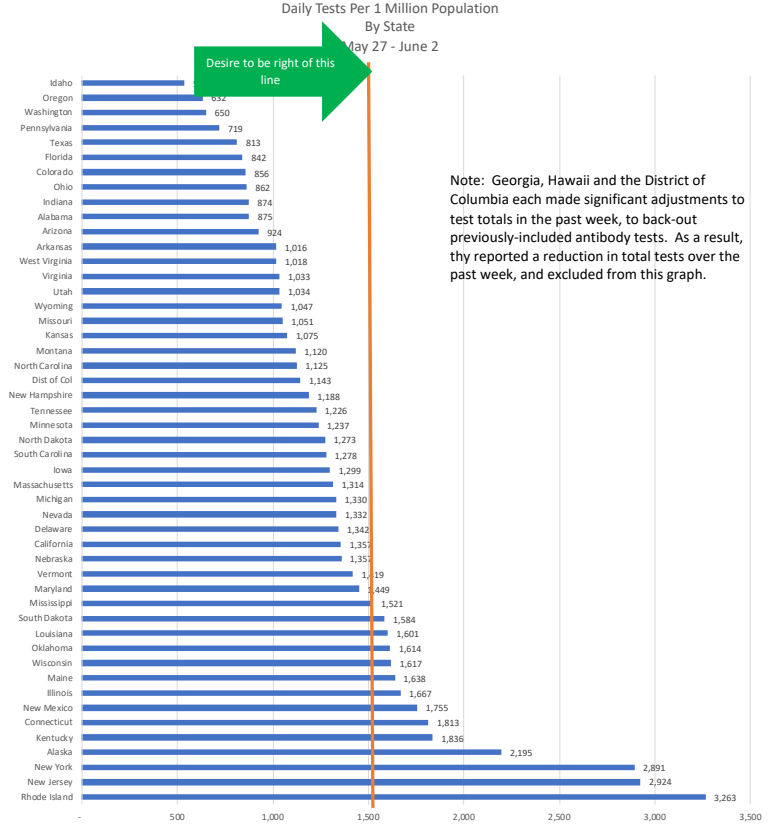
State-by-State

New Daily Infections & Tests Per Capita

"Strategic Guidance in an Era of Unprecedented Change"





Note: Georgia, Hawaii and the District of Columbia each made significant adjustments to test totals in the past week, to back-out previously-included antibody tests. As a result, thy reported a reduction in total tests over the past week, and excluded from this graph.

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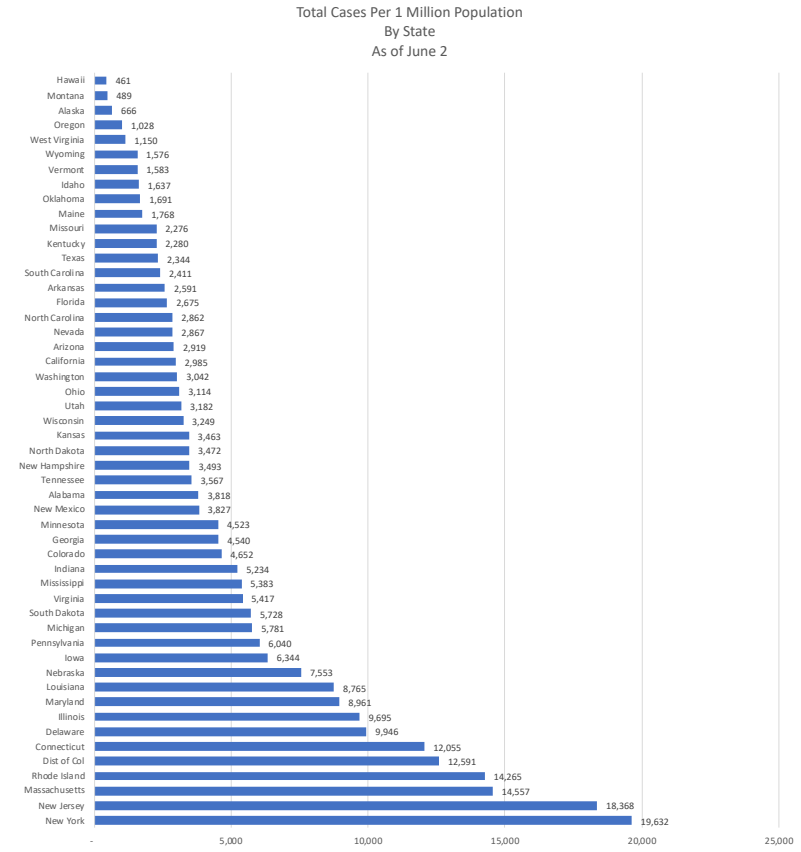
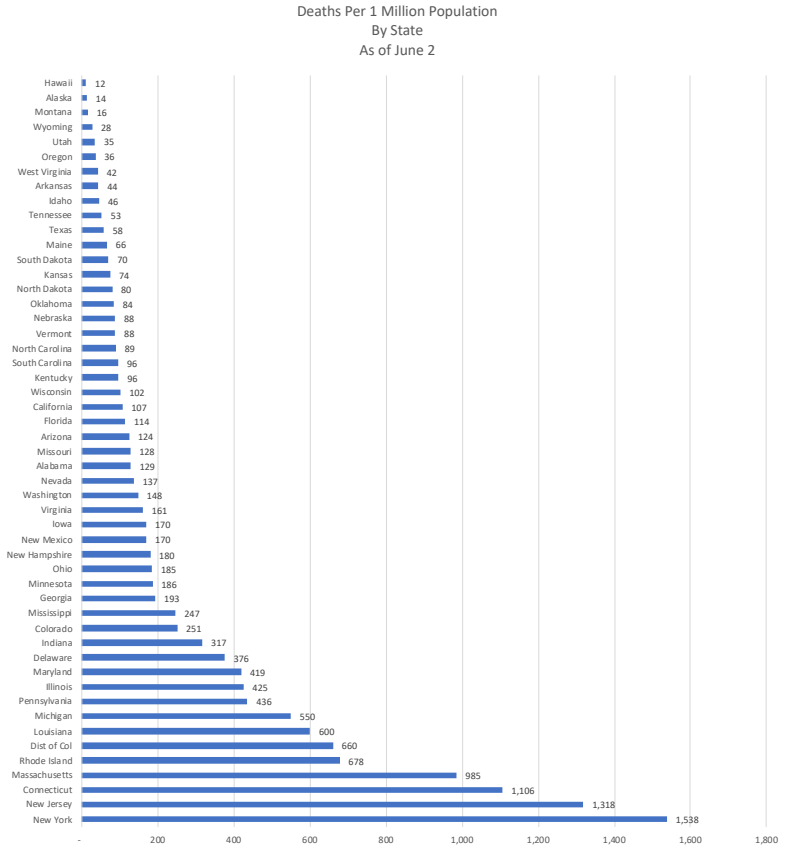
State-by-State

Cases & Deaths Per Capita

"Strategic Guidance in an Era of Unprecedented Change"





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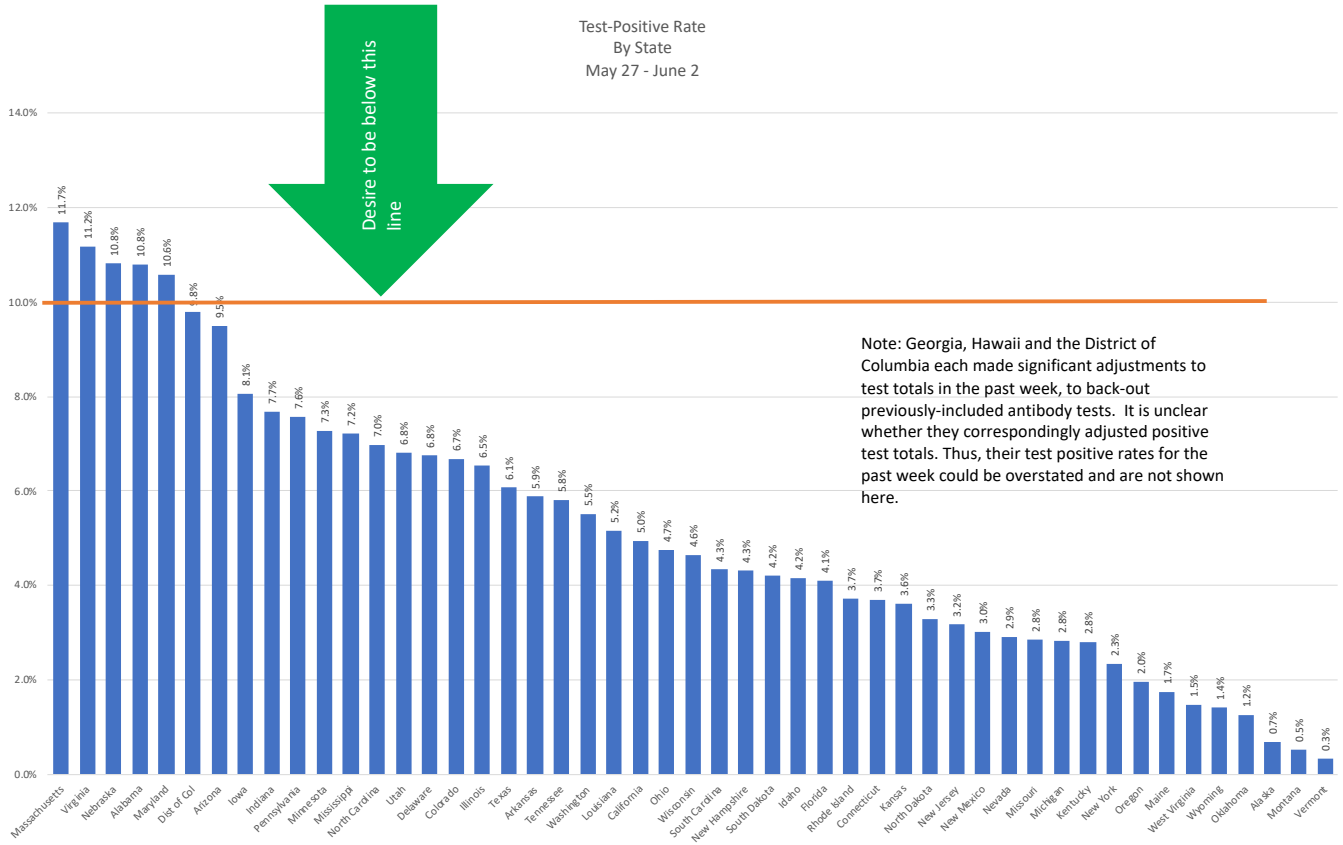
State-by-State

Which States Are Performing Sufficient Tests?

"Strategic Guidance in an Era of Unprecedented Change"

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. All except 5 states met this guideline for the past week.



Note: Georgia, Hawaii and the District of Columbia each made significant adjustments to test totals in the past week, to back-out previously-included antibody tests. It is unclear whether they correspondingly adjusted positive test totals. Thus, their test positive rates for the past week could be overstated and are not shown here.

STATE-BY-STATE READINESS FOR RELAXING RESTRICTIONS

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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

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

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State-By-State

Relative "Readiness" For Relaxing Restrictions

"Strategic Guidance in an Era of Unprecedented Change"

Change over past week

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 Co									
Florida									
Georgia									
Hawaii									
Idaho									
Illinois									
Indiana									
Iowa									
Kansas									
Kentucky									
Louisiana									
Maine									
Maryland									
Massachuset									
Michigan									
Minnesota									
Mississippi									
Missouri									
Montana									
Nebraska									
Nevada									
New Hampsh									
New Jersey									
New Mexico									
New York									
North Carolin									
North Dakota									
Ohio									
Oklahoma									
Oregon									
Pennsylvania									
Rhode Island									
South Carolin									
South Dakota									
Tennessee									
Texas									
Utah									
Vermont									
Virginia									
Washington									
West Virginia									
Wisconsin									
Wyoming									

May 26

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 Co									
Florida									
Georgia									
Hawaii									
Idaho									
Illinois									
Indiana									
Iowa									
Kansas									
Kentucky									
Louisiana									
Maine									
Maryland									
Massachuset									
Michigan									
Minnesota									
Mississippi									
Missouri									
Montana									
Nebraska									
Nevada									
New Hampsh									
New Jersey									
New Mexico									
New York									
North Carolin									
North Dakota									
Ohio									
Oklahoma									
Oregon									
Pennsylvania									
Rhode Island									
South Carolin									
South Dakota									
Tennessee									
Texas									
Utah									
Vermont									
Virginia									
Washington									
West Virginia									
Wisconsin									
Wyoming									

Legend and sources provided on 2nd following page

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State-By-State

Relative "Readiness" For Relaxing Restrictions

"Strategic Guidance in an Era of Unprecedented Change"

Progress over 5+ weeks

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 Co									
Florida									
Georgia									
Hawaii									
Idaho									
Illinois									
Indiana									
Iowa									
Kansas									
Kentucky									
Louisiana									
Maine									
Maryland									
Massachuset									
Michigan									
Minnesota									
Mississippi									
Missouri									
Montana									
Nebraska									
Nevada									
New Hampsh									
New Jersey									
New Mexico									
New York									
North Carolin									
North Dakota									
Ohio									
Oklahoma									
Oregon									
Pennsylvania									
Rhode Island									
South Carolin									
South Dakota									
Tennessee									
Texas									
Utah									
Vermont									
Virginia									
Washington									
West Virginia									
Wisconsin									
Wyoming									

April 30

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 following page

Relative "Readiness" For Relaxing Restrictions

Legend:

Time period	Tests per Capita: per 1M, Average last 2 weeks	Tests per Capita: Direction, last 14 days v prior 2 weeks	Test-Positive Rate: last 7 days	Test-Positive Rate: Direction, last 14 days v prior 2 weeks	New Daliy Infection Rate: per 1M, last 7 days	New Daliy Infection Rate: Direction, last 14 days v prior 2 weeks	Baseline: CDC Baseline by region	Direction: last 14 days v prior 2 weeks	Hospital Resources: 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	

Sources:

Influenza guidelines and data from Centers fo Disease Control (https://gis.cdc.gov/grasp/fluview/fluportaldashboard.html), accessed April 30 - May 31, 2020

Test data from Covid Tracking Project (https://covidtracking.com/), accessed March 21-June 2, 2020

Hospital resource Need projections from Institure for Health Metrics and Evaluation (), accessed April 30- May 31, 2020

Infection rate data from worldometer.info, accessed March 21-June 2, 2020

VIRUS PROGRESSION: ROADMAP TO RECOVERY

Virus Progression

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.

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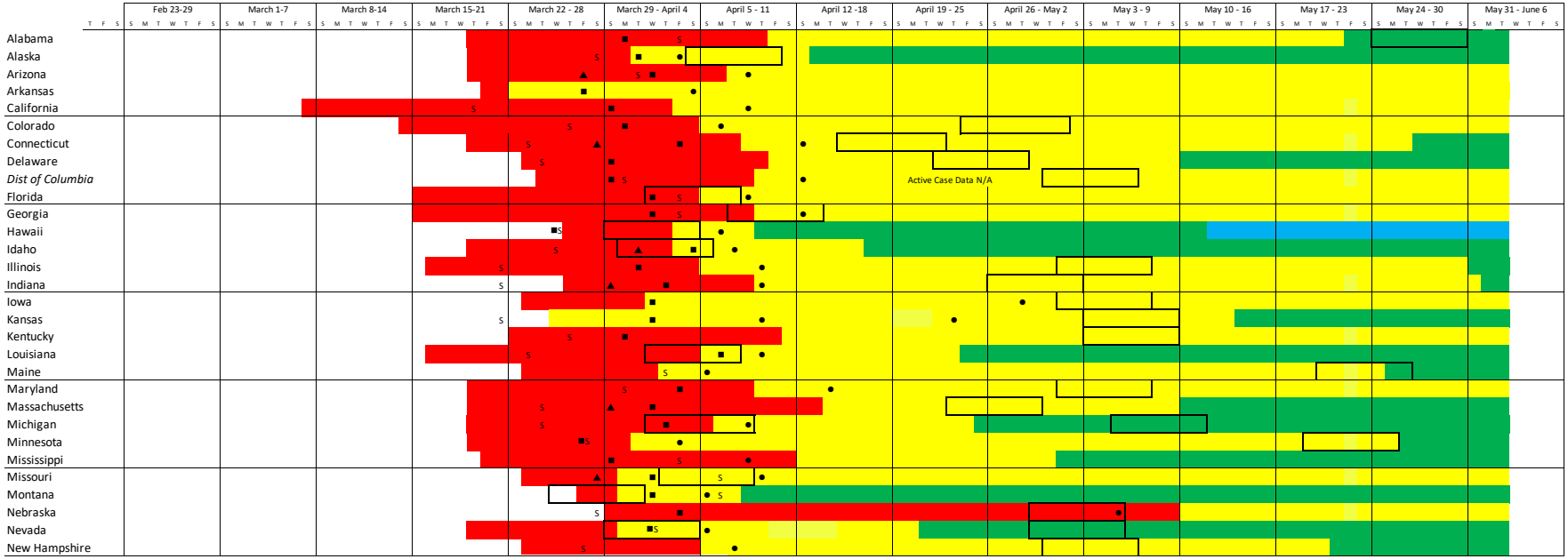
State-by-State

Virus Progression – *1 of 2*

"Strategic Guidance in an Era of Unprecedented Change"



Legend on following page

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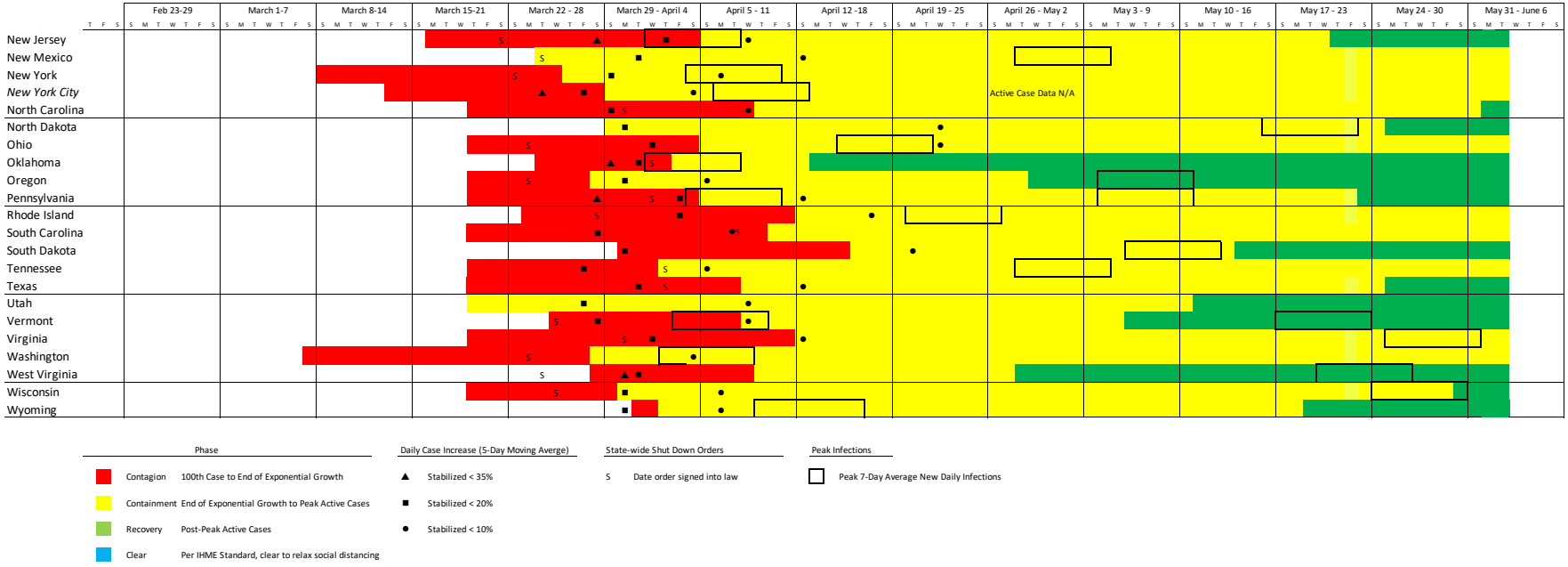
State-by-State

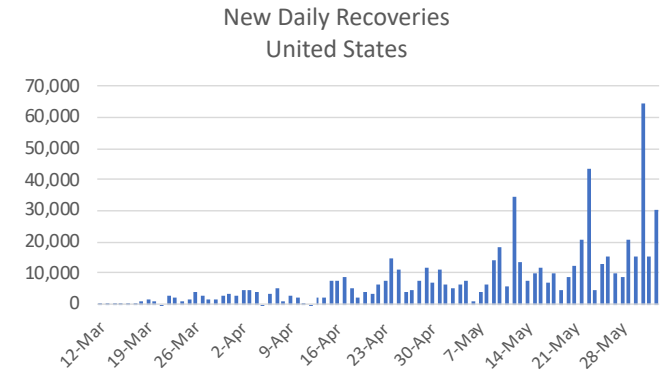
Virus Progression – *2 of 2*

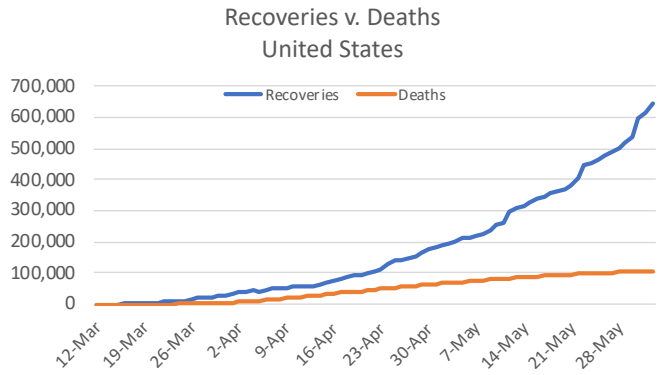
"Strategic Guidance in an Era of Unprecedented Change"

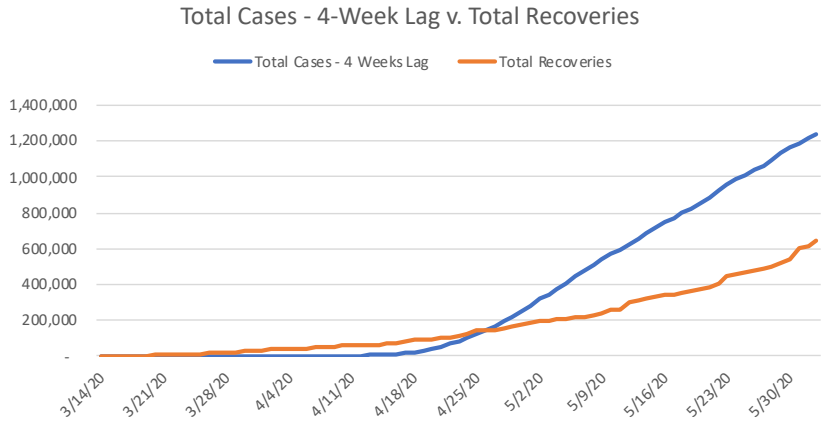


UNDER-REPORTED RECOVERIES? POSSIBLE LAG IN STATE REPORTING

Recoveries







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Recoveries

Reporting of Recoveries Seems to Be Lagging

"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 ~344-468k

State	Recoveries	Expected Recoveries Low	Expected Recoveries High
Alabama	9,355	6,750	7,593
Alaska	371	297	334
Arizona	70	7,444	8,375
Arkansas	5,567	2,797	3,146
California	24,930	46,900	52,763
Colorado	2,179	13,891	15,628
Connecticut	7,511	24,497	27,559
Delaware	5,442	4,297	4,834
District Of Columbia	1,137	4,258	4,790
Florida	9,890	29,951	33,695
Georgia	697	23,914	26,903
Hawaii	609	500	563
Idaho	2,282	1,702	1,914
Illinois	63,537	52,770	59,366
Indiana	22,623	16,826	18,930
Iowa	11,604	8,089	9,100
Kansas	4,552	4,506	5,069
Kentucky	3,275	4,658	5,240
Louisiana	31,728	23,997	26,996
Maine	1,646	981	1,103
Maryland	3,855	21,694	24,405
Massachusetts	46,354	56,217	63,244
Michigan	38,099	35,518	39,957
Minnesota	20,381	6,281	7,066
Mississippi	11,203	6,566	7,386
Missouri	3,318	7,182	8,079

State	Recoveries	Expected Recoveries Low	Expected Recoveries High
Montana	462	366	411
Nebraska	592	5,150	5,794
Nevada	6,602	4,475	5,035
New Hampshire	3,071	2,109	2,372
New Jersey	19,958	105,364	118,535
New Mexico	2,960	3,310	3,724
New York	67,254	264,111	297,125
North Carolina	18,860	10,009	11,260
North Dakota	2,127	1,013	1,139
Ohio	6,036	16,777	18,874
Oklahoma	5,599	3,302	3,714
Oregon	1,894	2,271	2,555
Pennsylvania	48,839	43,126	48,516
Rhode Island	1,302	7,946	8,940
South Carolina	6,976	5,473	6,157
South Dakota	3,990	2,177	2,449
Tennessee	15,916	10,952	12,321
Texas	44,517	27,390	30,814
Utah	6,319	4,359	4,904
Vermont	880	726	816
Virginia	6,011	16,205	18,230
Washington	6,905	13,088	14,724
West Virginia	1,373	994	1,118
Wisconsin	12,172	6,853	7,709
Wyoming	692	483	544
United States	645,974	990,106	1,113,870

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

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

STATE TEST, INFECTION AND CASE TRENDS

Test, New Daily Infection and Active Case Trends

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

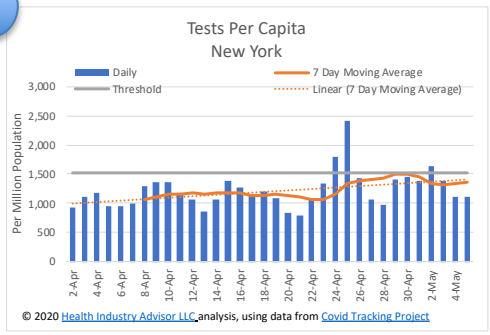
- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Missouri
- Montana
- Nebraska
- Nevada
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Carolina

Test, New Daily Infection and Active Case Trends

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

1



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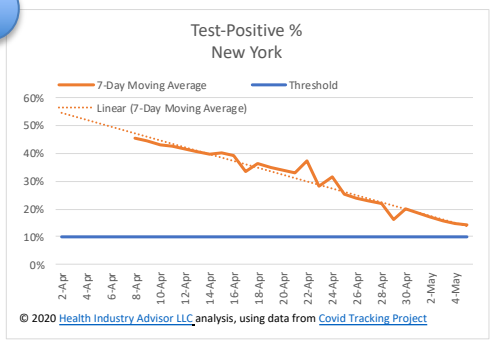

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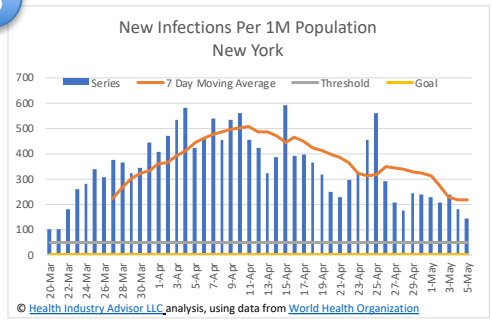

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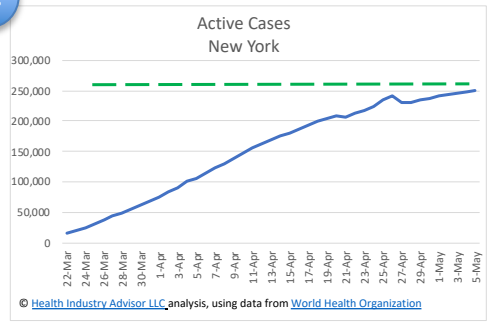
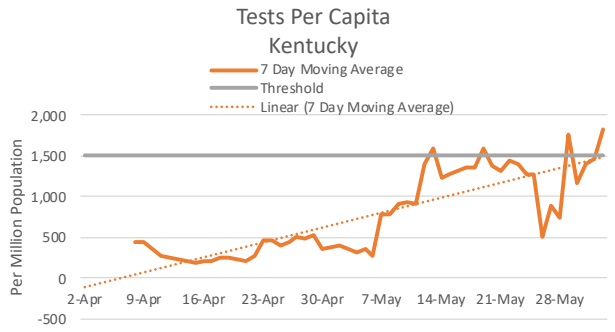
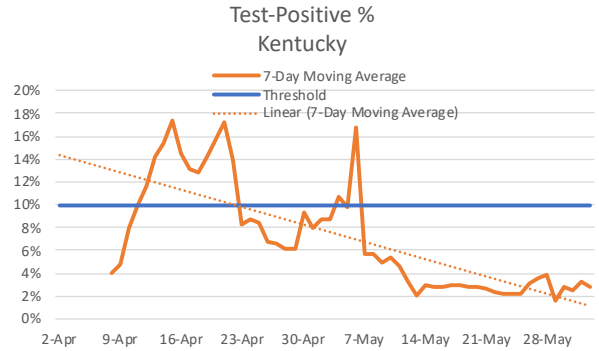
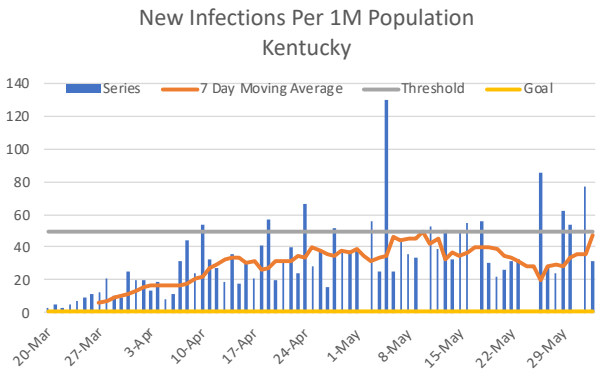
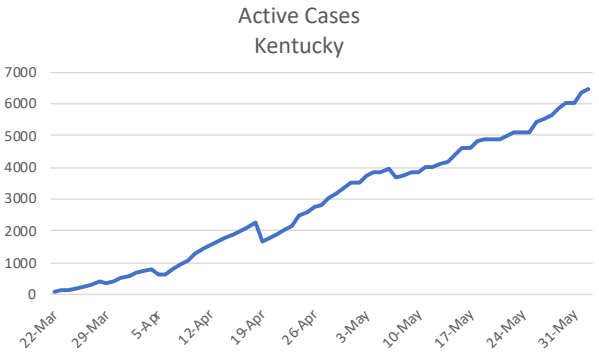


Test, New Daily Infection and Active Case Trends









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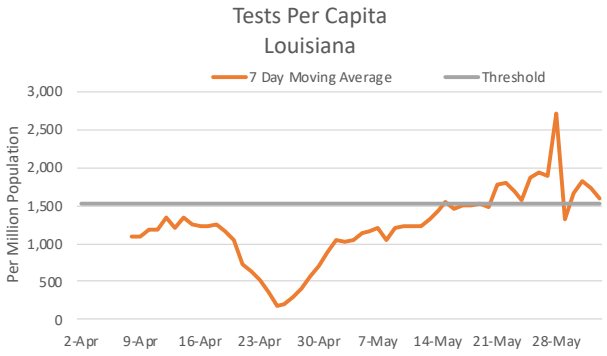

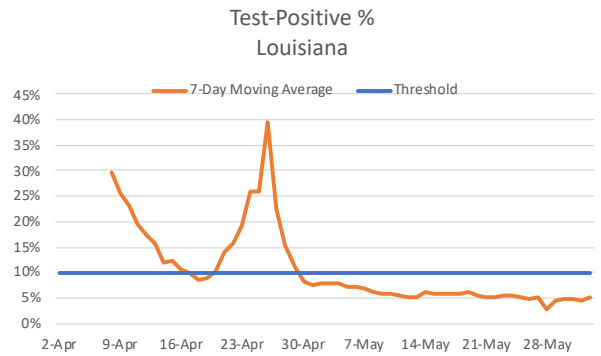

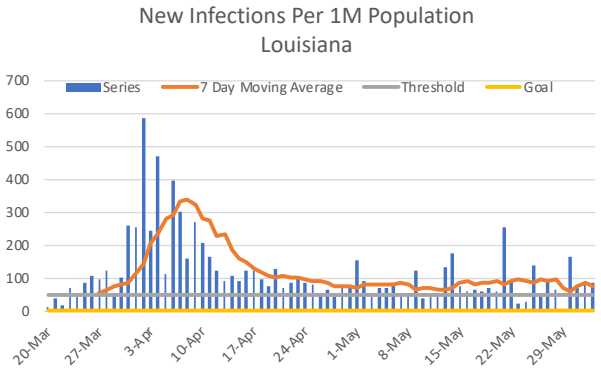

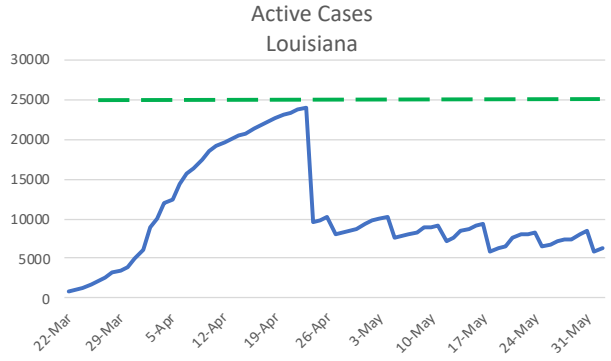

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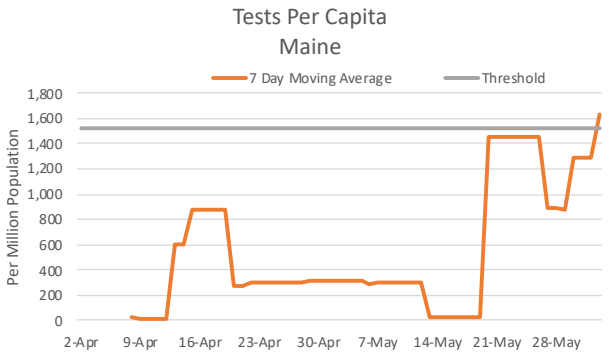

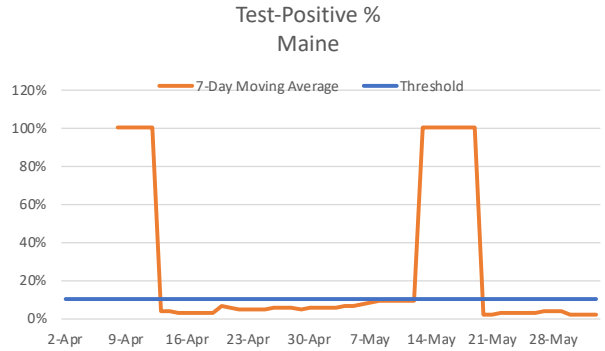

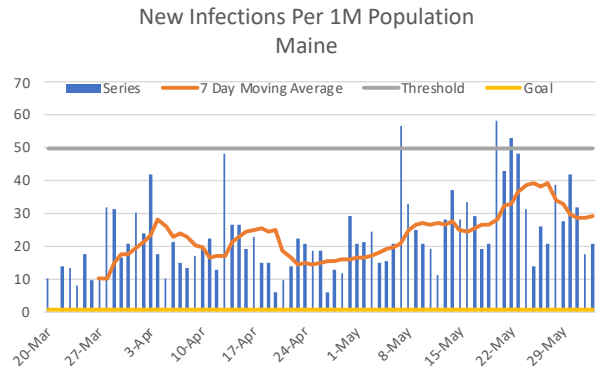

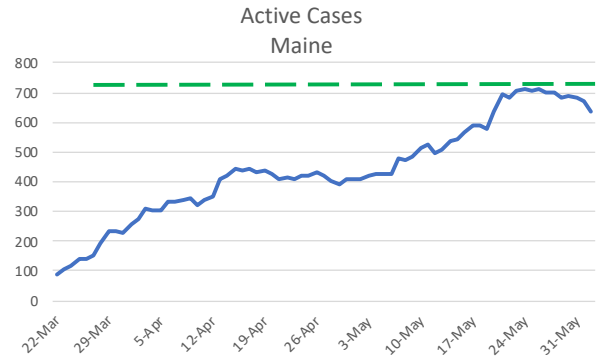

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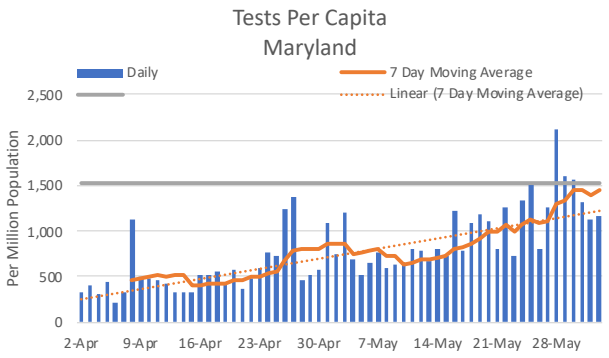

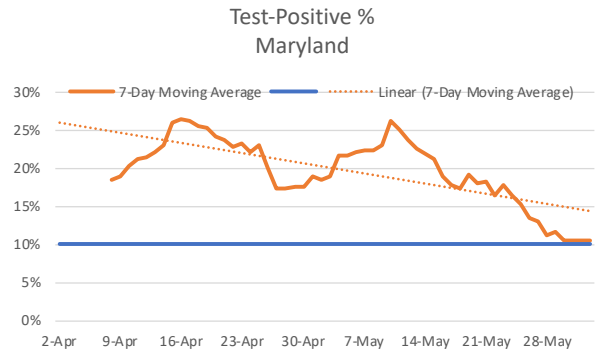

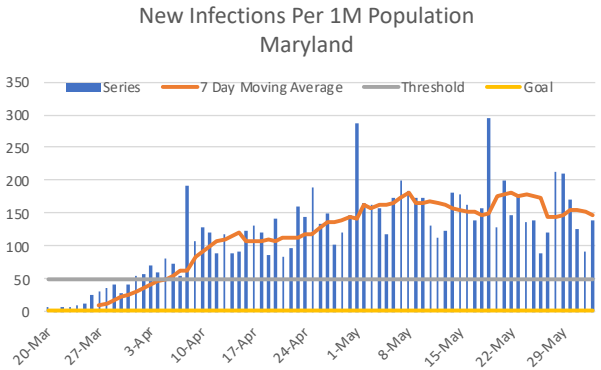

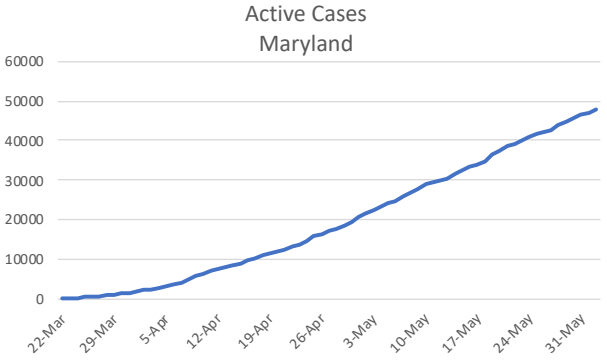

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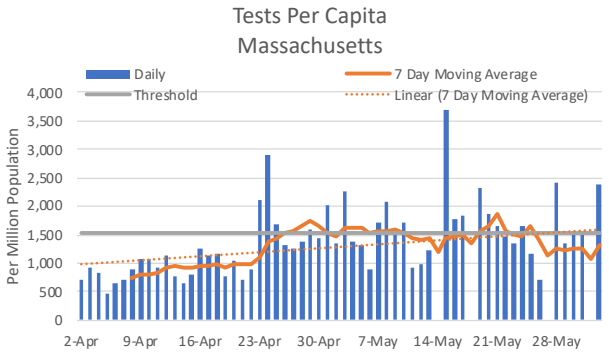

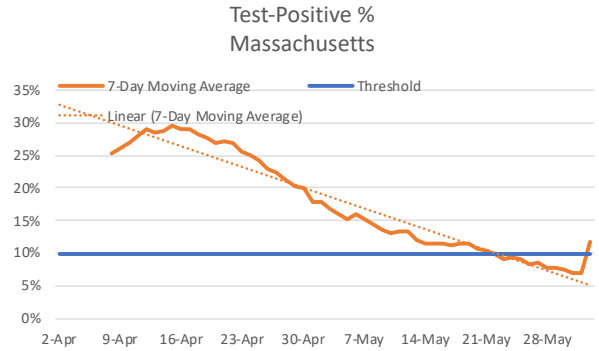

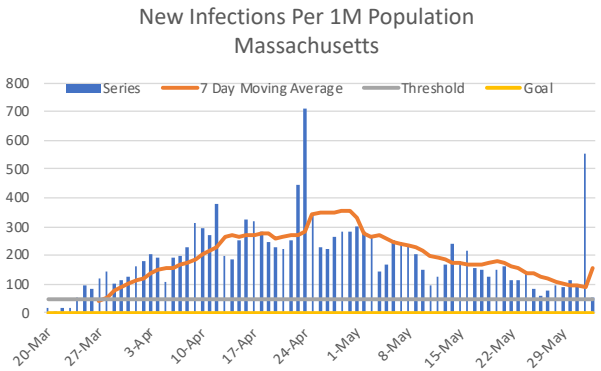

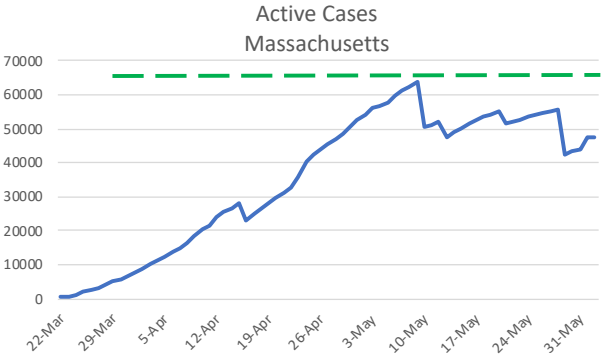

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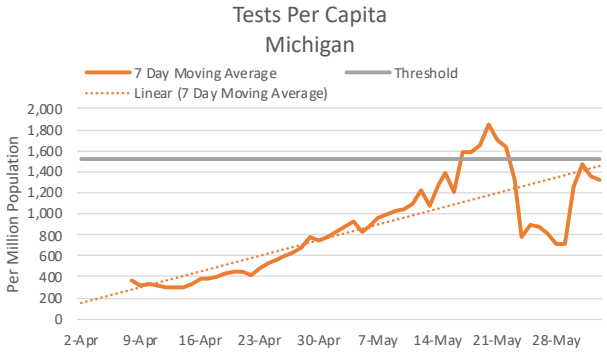

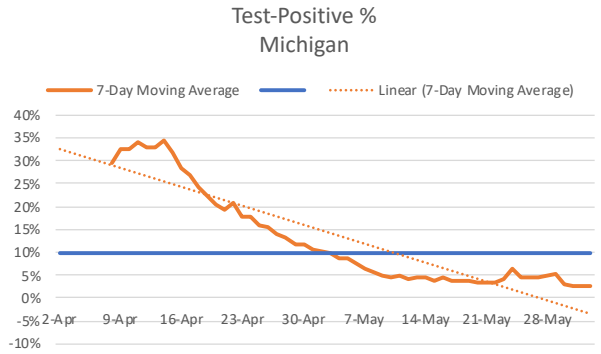

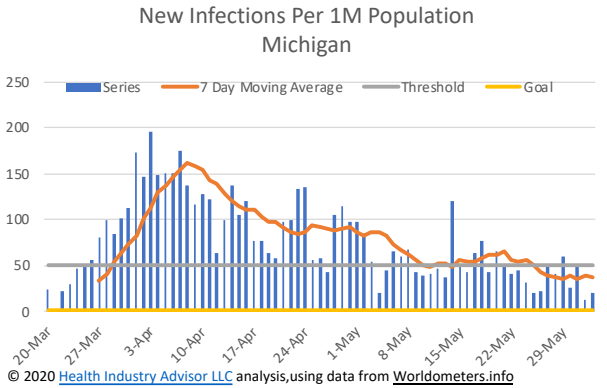

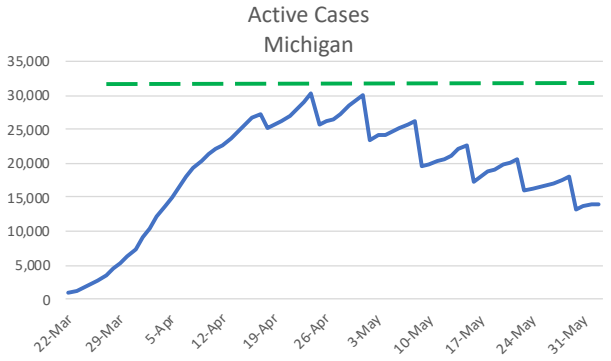

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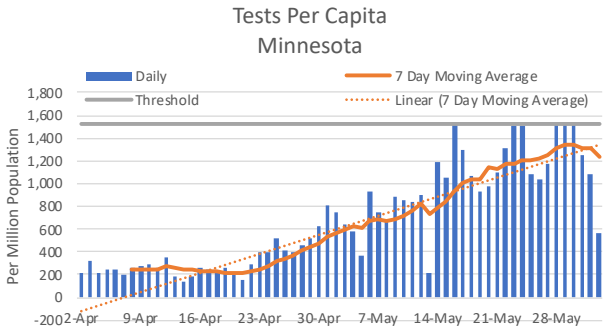

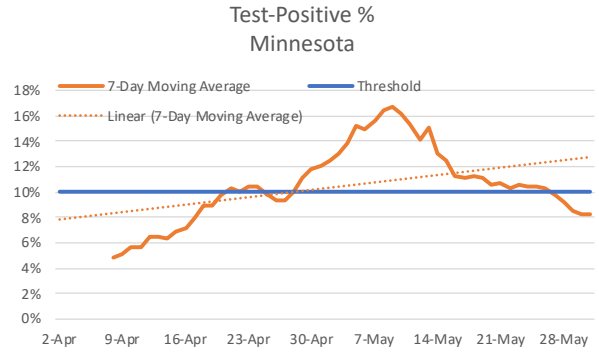

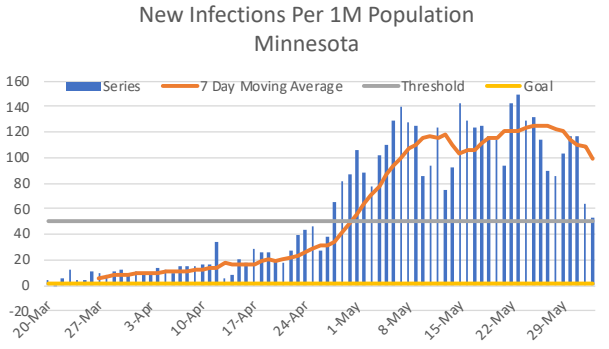

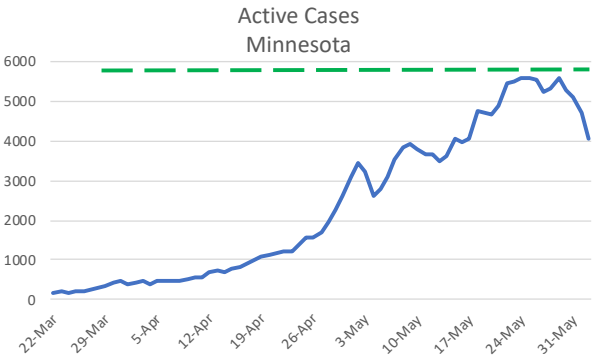

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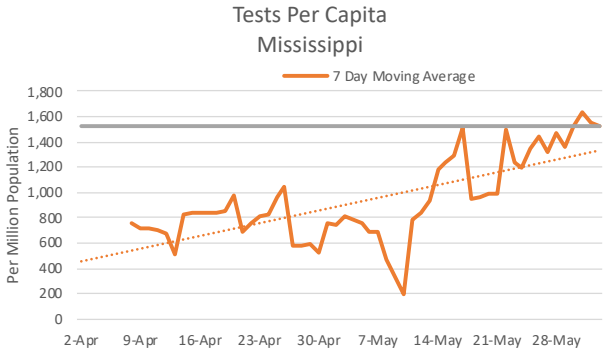

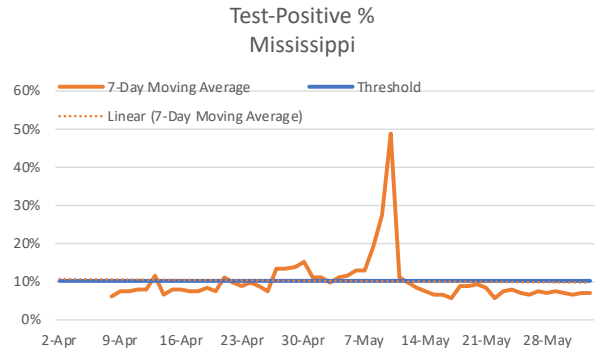

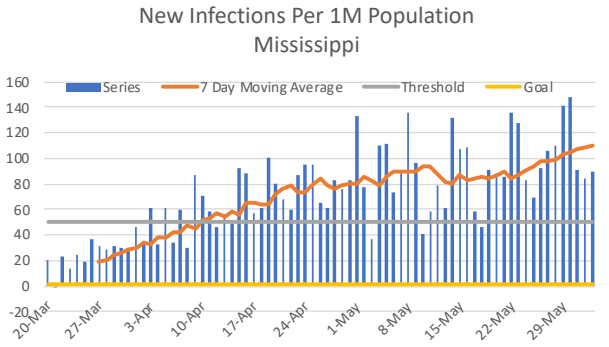

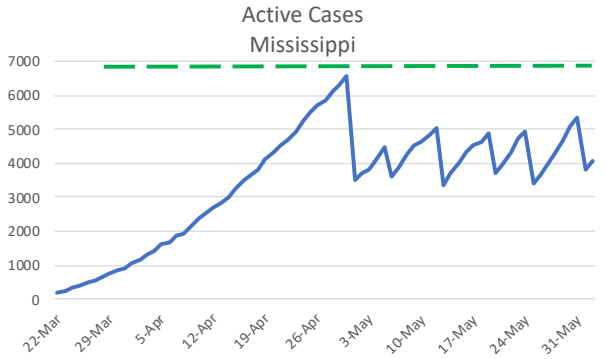

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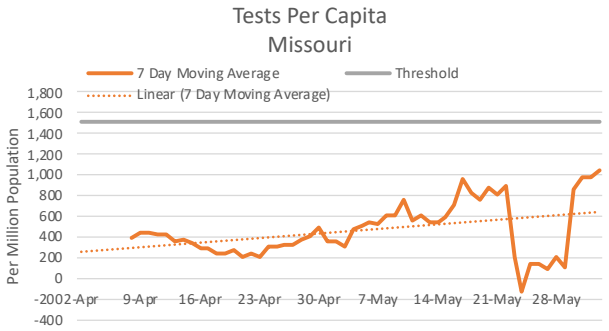

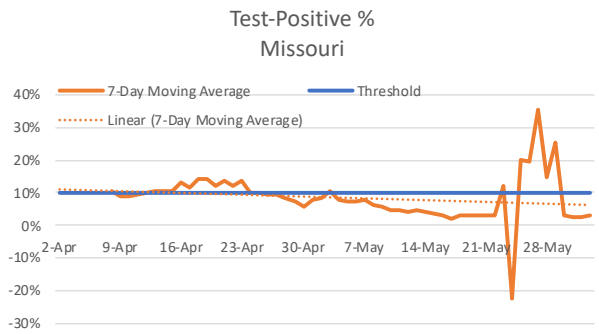

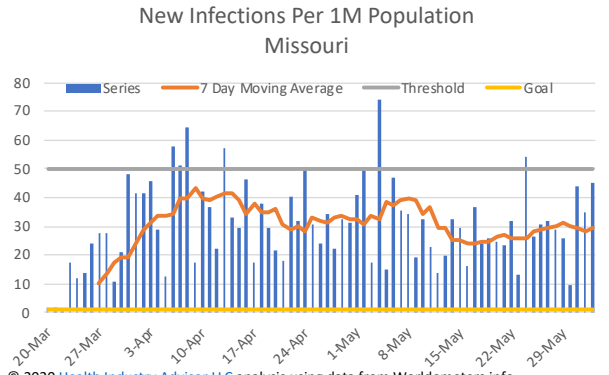

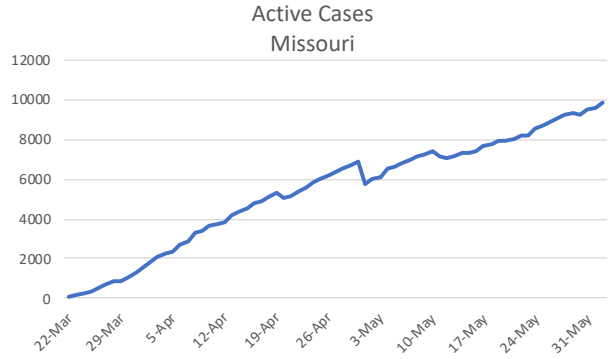

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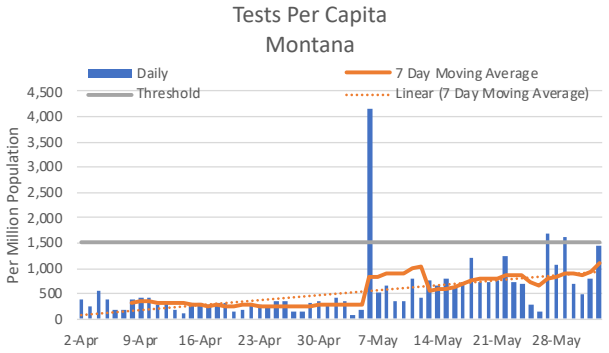

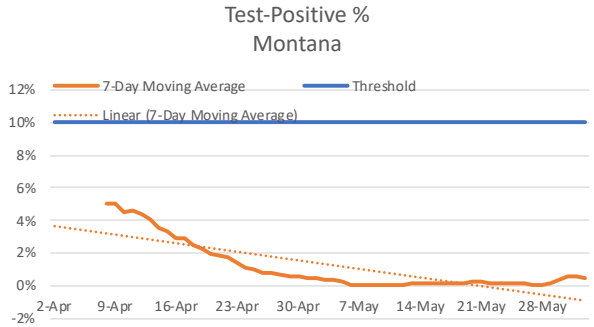

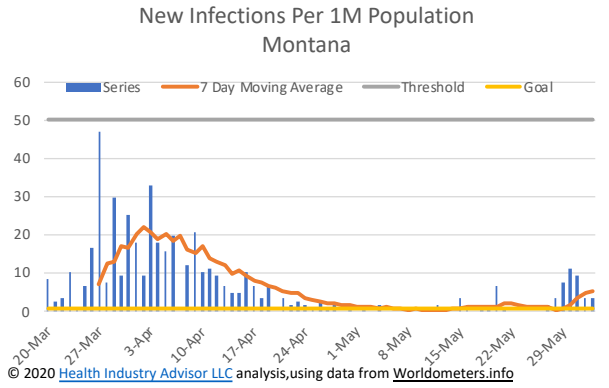

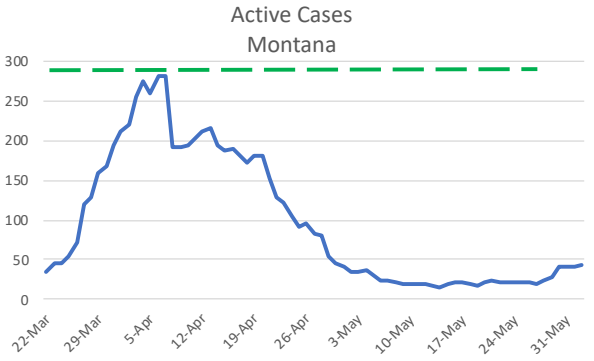

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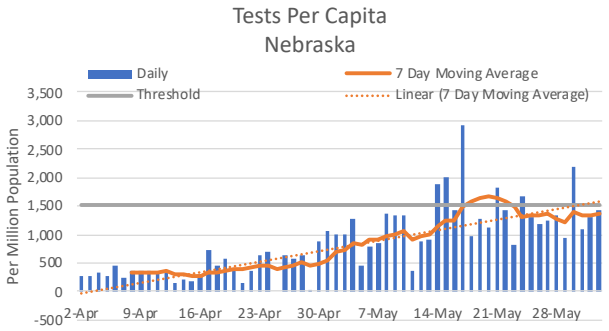

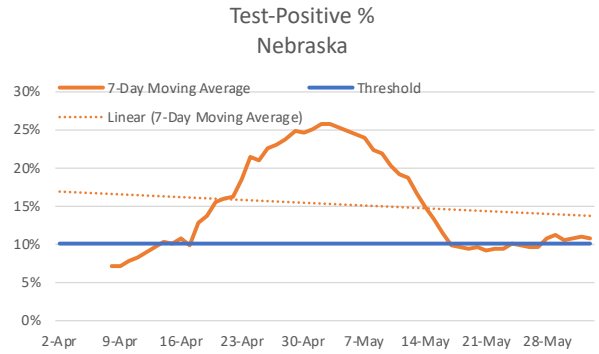

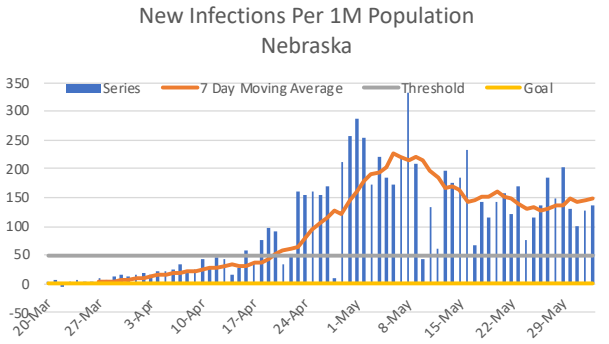

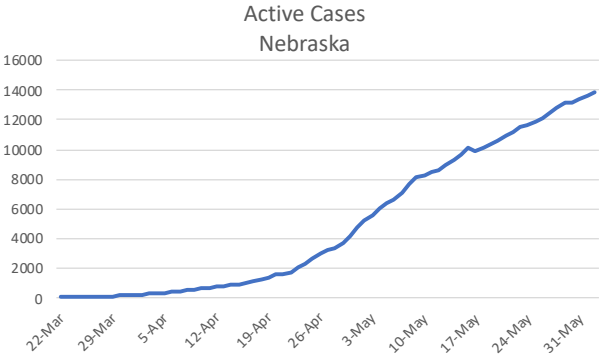

Health Industry Advisor, llc

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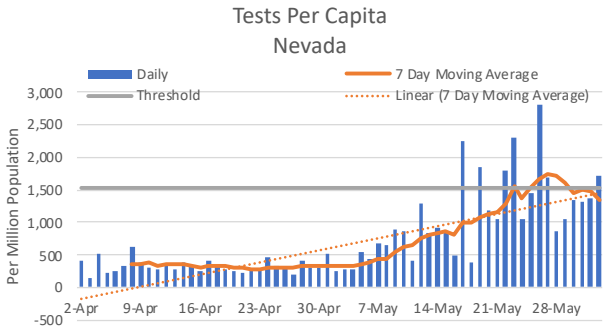

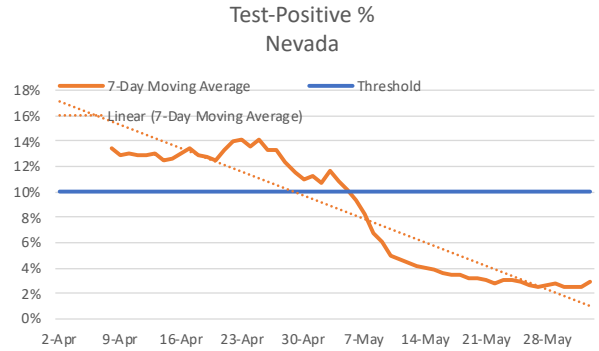

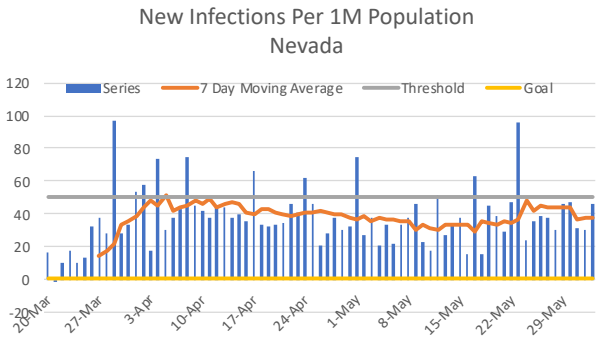

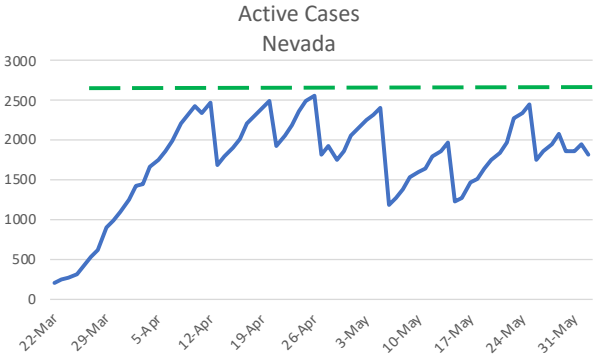

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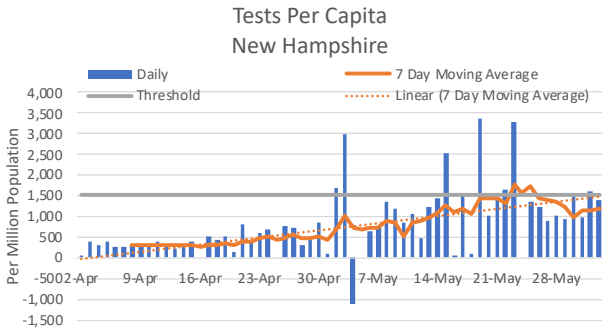

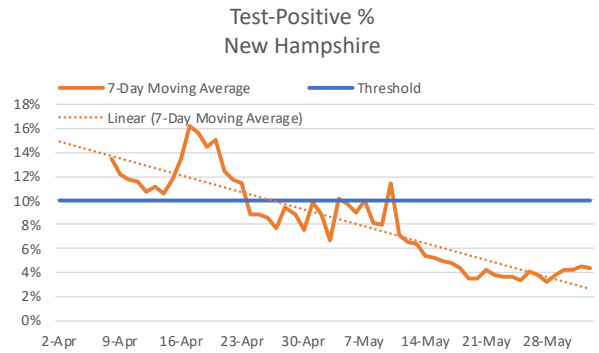

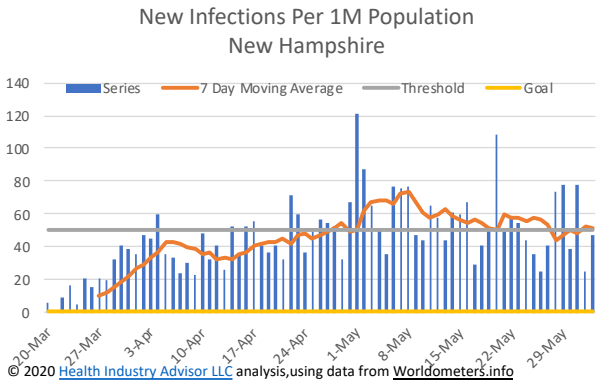

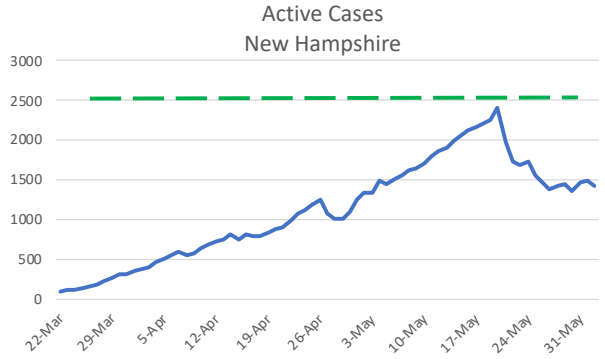

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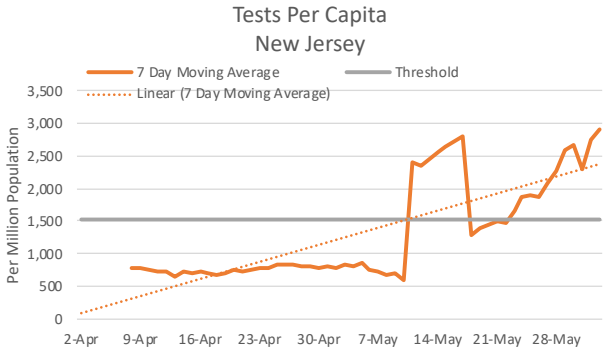

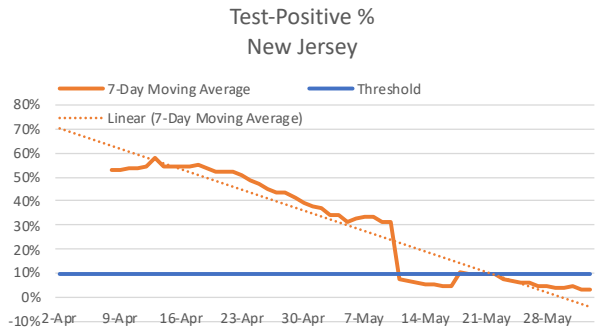

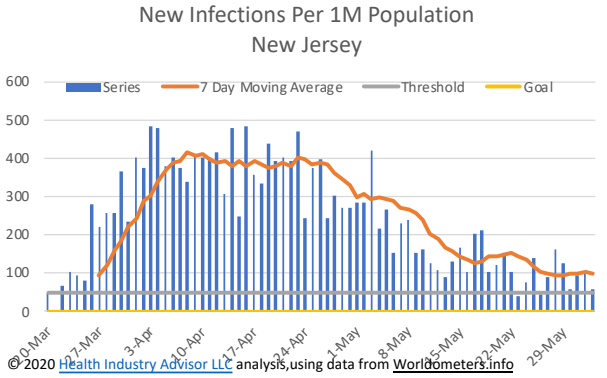

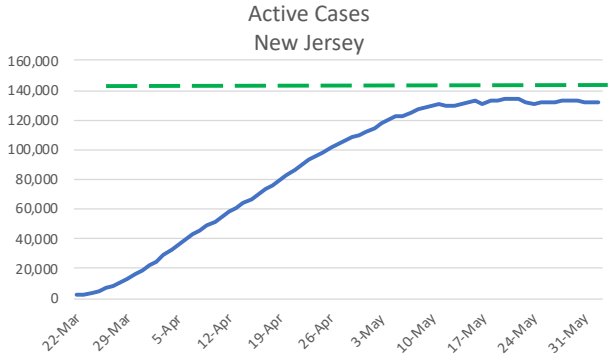

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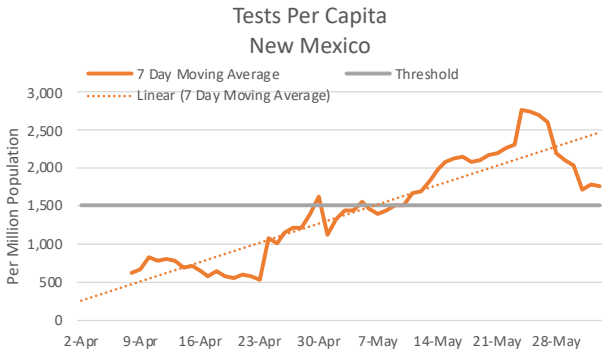

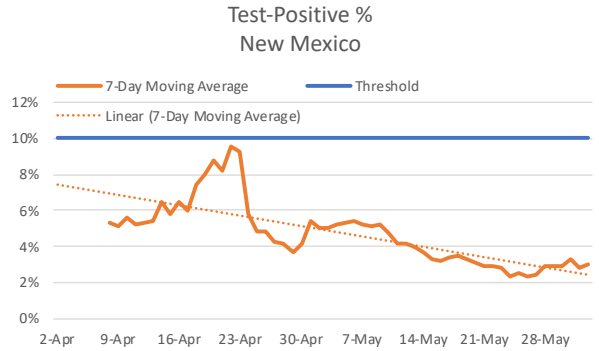

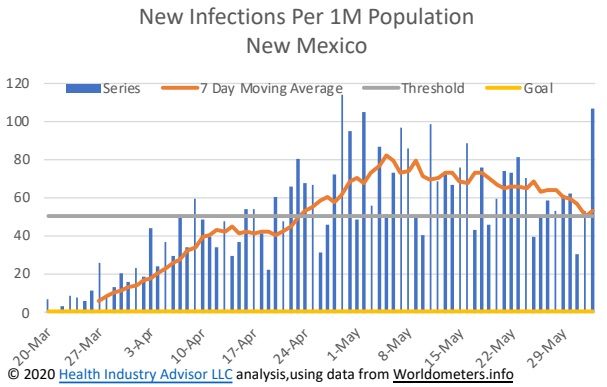

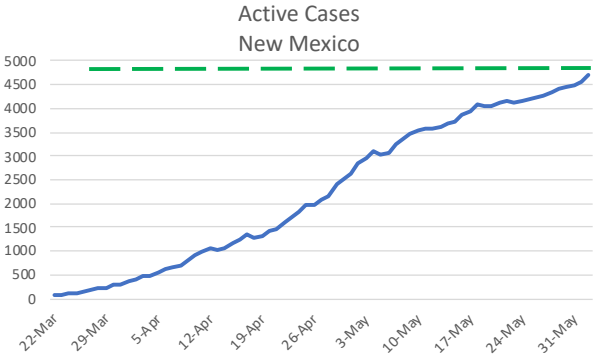

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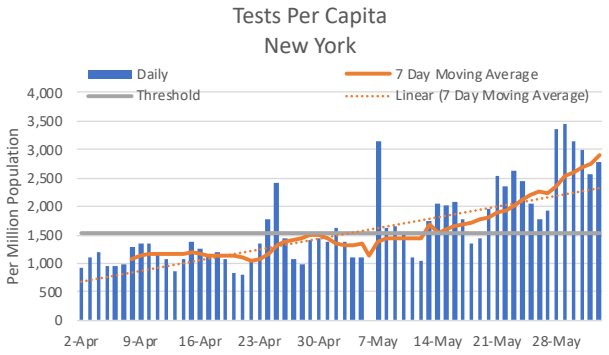

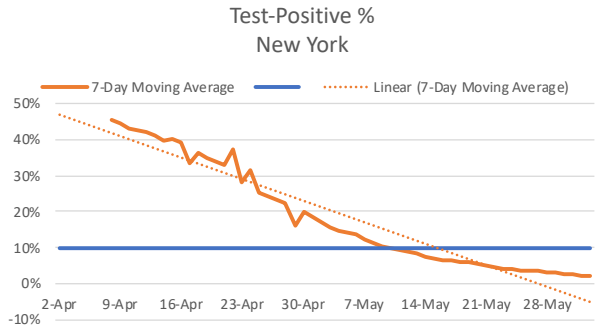

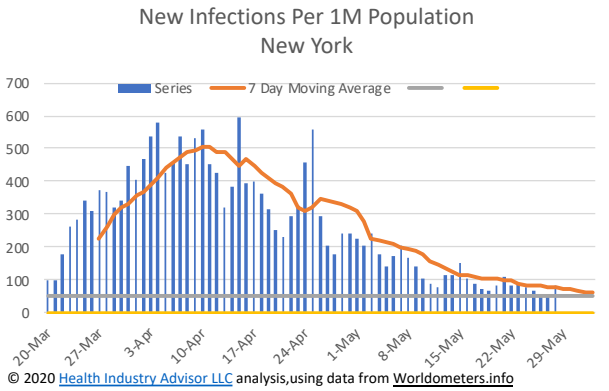

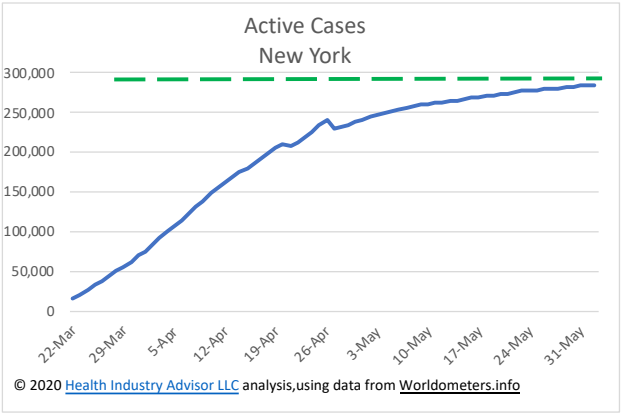

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