Health Industry Advisor, llc

"Strategic Guidance in an Era of Unprecedented Change"

COVID-19 Dashboard

Issue # 67

Friday, June 5, 2020

Day's Highlights

"Strategic Guidance in an Era of Unprecedented Change"

Measure	Desired Change	Yesterday in the U.S.
Number of Tests	Increase	>465,000 tests; 2nd most ever
Test-Positivity Rate	Decline	4.5% test-positive past 2 days; 5.0% for past 7 days
Number of Cases	Plateau	New Cases up 5.4% week-over-week
Deaths % of Total Cases	Decline	5.7%
Number of Deaths / 1M Population	Plateau	332.8
Recoveries : Death	Increase	6.46

- Testing in the United States continued on its strong path: the 465,000 tests performed on Thursday surpassed the previous day's total, which had been the second most to-date. At this rate, we should surpass 20 million tests this weekend
- The test-positive rate was 4.5% for the day and 5.0% for the past 7 days. The cumulative rate since May 1 is now 10%
- New cases, however, are up 5.4% week-over-week. Is this the result of the relaxed restrictions across the country? It is likely too soon to be the result of the protests that have occurred recently
- States to watch due to increasing infection rates: Arizona, Arkansas, California, North Carolina, South Carolina, Tennessee, Texas and Utah. On the encouraging side, rates in Virginia and Wisconsin - which had been increasing steadily - are showing signs of retreating
- Internationally, Pakistan surpassed China in total cases and is now ranked 17th; Sweden surpassed Ecuador and is now 24th

- Among the 30 countries with the most cases, the United States ranks:
  - 5th in cases per capita
  - 11th in deaths per case
  - 8th in deaths per capita
  - 19th in the rate of case growth in the past 5 days
  - 6th in tests per capita over the past week
  - 8th in new infections per capita over the past week
- Brazil, Chile, India, Mexico, Pakistan and Sweden, among the hardest-hit countries, have yet to reach their peak in new infection rates; Peru, however, may have peaked on June 1
- Qatar continues to experience the highest rate of new infections among the countries hardest-hit by the virus - 605 new daily infections per million for the past week. By comparison, Chile is second at 245 and Peru third at 167

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
- 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"

Top 30 Countries By Total Cases
As of June 4

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	1,924,051	(1)	5,815	(5)	110,173	(1)	5.7%	(11)	333.0	(8)	1.2%	(19)	1,397	(6)	64.8	(8)
Brazil	615,870	(2)	2,899	(15)	34,039	(3)	5.5%	(13)	160.2	(11)	4.3%	(7)	77	(24)	110.5	(4)
Russia	441,108	(3)	3,023	(14)	5,384	(14)	1.2%	(24)	36.9	(19)	2.2%	(13)	1,989	(2)	61.0	(10)
Spain	287,740	(4)	6,154	(4)	27,133	(6)	9.4%	(8)	580.3	(3)	0.1%	(28)	1,550	(5)	6.1	(26)
UK	281,661	(5)	4,151	(9)	39,904	(2)	14.2%	(4)	588.0	(2)	0.6%	(22)	2,288	(1)	26.0	(17)
Italy	234,013	(6)	3,870	(11)	33,689	(4)	14.4%	(3)	557.1	(4)	0.1%	(27)	866	(12)	4.5	(27)
India	226,713	(7)	164	(29)	6,363	(12)	2.8%	(18)	4.6	(28)	4.5%	(5)	91	(23)	6.5	(25)
Germany	184,923	(8)	2,208	(21)	8,736	(9)	4.7%	(15)	104.3	(14)	0.2%	(26)	675	(14)	3.9	(28)
Peru	183,198	(9)	5,562	(6)	5,031	(15)	2.7%	(20)	152.7	(12)	3.3%	(9)	897	(10)	167.1	(3)
Turkey	167,410	(10)	1,987	(22)	4,630	(17)	2.8%	(19)	54.9	(18)	0.5%	(23)	476	(18)	10.2	(22)
Iran	164,270	(11)	1,958	(23)	8,071	(10)	4.9%	(14)	96.2	(15)	2.0%	(15)	243	(22)	36.5	(12)
France	152,444	(12)	2,336	(19)	29,065	(5)	19.1%	(1)	445.3	(6)	-4.2%	(30)	0	(30)	(110.9)	(30)
Chile	118,292	(13)	6,192	(3)	1,356	(22)	1.1%	(25)	71.0	(17)	4.5%	(4)	869	(11)	245.3	(2)
Mexico	101,238	(14)	786	(24)	11,729	(7)	11.6%	(6)	91.0	(16)	3.6%	(8)	65	(28)	25.8	(18)
Canada	93,726	(15)	2,485	(18)	7,637	(11)	8.1%	(10)	202.5	(9)	0.8%	(21)	779	(13)	18.7	(19)
Saudi Arabia	93,157	(16)	2,679	(17)	611	(26)	0.7%	(27)	17.6	(23)	2.2%	(12)	478	(17)	56.2	(11)
Pakistan	85,264	(17)	387	(27)	1,770	(20)	2.1%	(22)	8.0	(26)	5.1%	(3)	69	(26)	17.1	(20)
China	83,022	(18)	58	(30)	4,634	(16)	5.6%	(12)	3.2	(30)	0.0%	(29)	0	(29)	0.0	(29)
Qatar	63,741	(19)	22,701	(1)	45	(29)	0.1%	(29)	16.0	(24)	2.9%	(10)	1,984	(3)	604.0	(1)
Belgium	58,767	(20)	5,072	(7)	9,548	(8)	16.2%	(2)	824.1	(1)	0.2%	(25)	1,004	(8)	10.0	(23)
Bangladesh	57,563	(21)	350	(28)	781	(25)	1.4%	(23)	4.7	(27)	5.2%	(2)	72	(25)	15.7	(21)
Netherlands	46,942	(22)	2,740	(16)	5,990	(13)	12.8%	(5)	349.6	(7)	0.3%	(24)	302	(20)	8.0	(24)
Belarus	45,981	(23)	4,866	(8)	253	(28)	0.6%	(28)	26.8	(21)	2.0%	(14)	1,297	(7)	91.5	(6)
Sweden	41,883	(24)	4,149	(10)	4,562	(18)	10.9%	(7)	451.9	(5)	2.4%	(11)	519	(15)	94.5	(5)
Ecuador	40,966	(25)	2,325	(20)	3,486	(19)	8.5%	(9)	197.8	(10)	1.2%	(18)	69	(27)	27.2	(15)
South Africa	40,792	(26)	688	(26)	848	(24)	2.1%	(21)	14.3	(25)	5.7%	(1)	397	(19)	33.2	(13)
UAE	37,018	(27)	3,746	(12)	273	(27)	0.7%	(26)	27.6	(20)	1.8%	(16)	499	(16)	63.2	(9)
Singapore	36,922	(28)	6,315	(2)	24	(30)	0.1%	(30)	4.1	(29)	1.4%	(17)	1,802	(4)	87.4	(7)
Colombia	35,120	(29)	691	(25)	1,087	(23)	3.1%	(17)	21.4	(22)	4.5%	(6)	256	(21)	27.1	(16)
Portugal	33,592	(30)	3,294	(13)	1,455	(21)	4.3%	(16)	142.7	(13)	0.8%	(20)	960	(9)	27.2	(14)

Note: China does not report test volumes
On June 2 France modified its process for counting cases; historical data have yet to be updated in the data sources we use

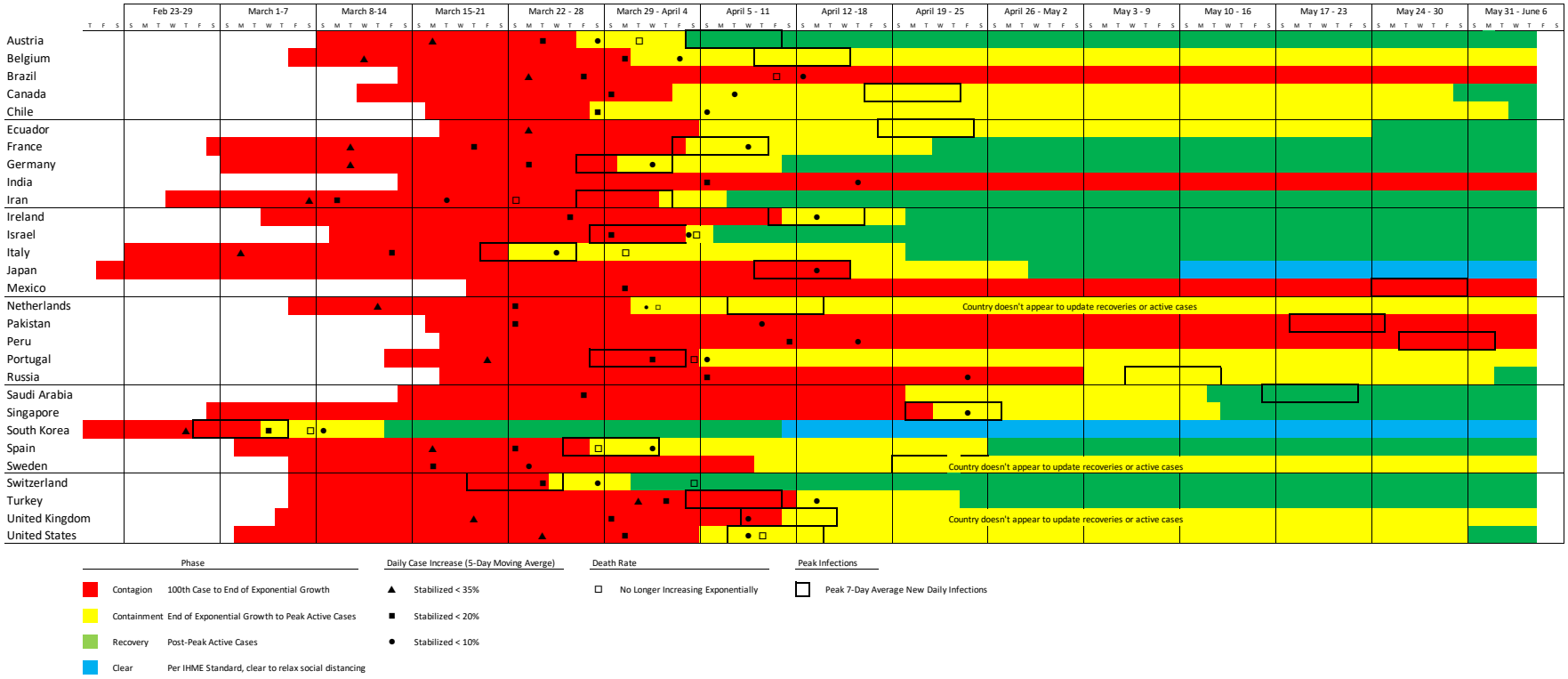
VIRUS PROGRESSION BY COUNTRY

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

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:

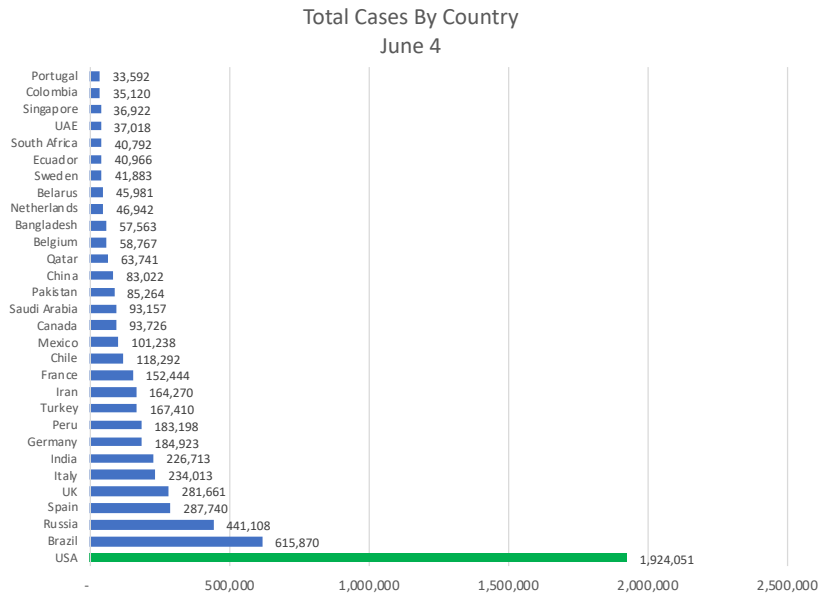
- **Afghanistan**
- **Argentina**
- **Bangladesh**
- **Belarus**
- **Columbia**
- **Denmark**
- **Dominican Republic**
- **Indonesia**
- **Kuwait**
- **Poland**
- **Qatar**
- **Panama**
- **Philippines**
- **Romania**
- **South Africa**
- **UAE**
- **Ukraine**

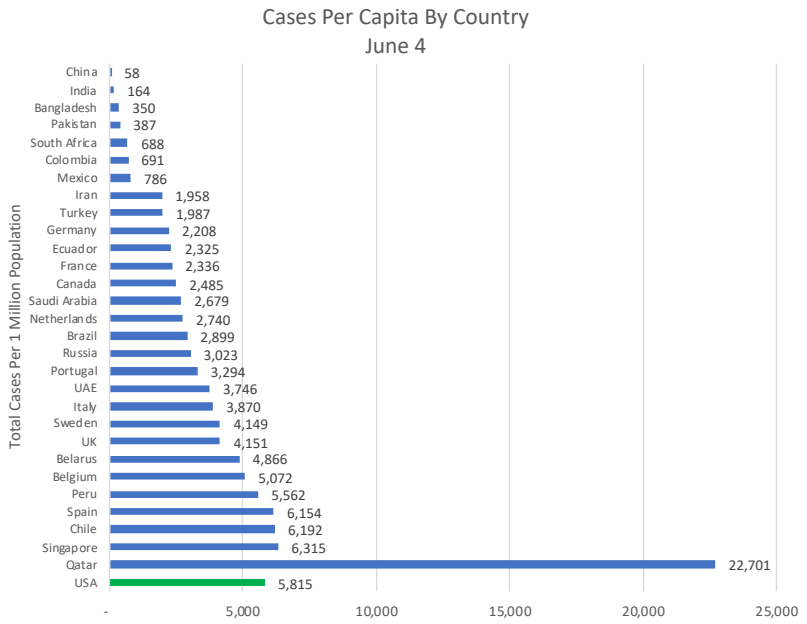
The original 30 still account for 87.0% of all cases worldwide.

		Total Cases						
Rank	Country	4-Jun	Rank	Country	6-May	Rank	Country	27-Apr
1	USA	1,924,051	1	USA	1,263,092	1	USA	1,010,356
2	Brazil	615,870	2	Spain	253,682	2	Spain	229,422
3	Russia	441,108	3	Italy	214,457	3	Italy	199,414
4	Spain	287,740	4	UK	201,101	4	France	165,842
5	UK	281,661	5	France	174,191	5	Germany	158,758
6	Italy	234,013	6	Germany	168,162	6	UK	157,149
7	India	226,713	7	Russia	165,929	7	Turkey	112,261
8	Germany	184,923	8	Turkey	131,744	8	Iran	91,472
9	Peru	183,198	9	Brazil	126,611	9	Russia	87,147
10	Turkey	167,410	10	Iran	101,650	10	China	82,830
11	Iran	164,270	11	China	82,883	11	Brazil	66,501
12	France	152,444	12	Canada	63,496	12	Canada	48,500
13	Chile	118,292	13	Peru	54,817	13	Belgium	46,687
14	Mexico	101,238	14	India	52,987	14	Netherlands	38,245
15	Canada	93,726	15	Belgium	50,781	15	India	29,451
16	Saudi Arabia	93,157	16	Netherlands	41,319	16	Switzerland	29,164
17	Pakistan	85,264	17	Saudi Arabia	31,938	17	Peru	28,669
18	China	83,022	18	Switzerland	30,060	18	Portugal	24,070
20	Belgium	58,767	19	Ecuador	29,420	19	Ecuador	23,240
22	Netherlands	46,942	20	Portugal	26,182	20	Ireland	19,648
24	Sweden	41,883	21	Mexico	26,025	21	Sweden	18,926
25	Ecuador	40,966	22	Sweden	23,918	22	Saudi Arabia	18,811
28	Singapore	36,922	23	Pakistan	23,214	23	Israel	15,555
30	Portugal	33,592	24	Chile	23,048	24	Austria	15,274
31	Switzerland	30,913	25	Ireland	22,248	25	Mexico	14,677
36	Ireland	25,142	26	Singapore	20,198	26	Singapore	14,423
43	Israel	17,495	29	Israel	16,310	27	Pakistan	13,915
44	Japan	17,018	31	Austria	15,684	28	Chile	13,813
45	Austria	16,805	32	Japan	15,253	29	Japan	13,614
52	S. Korea	11,629	38	S. Korea	10,806	35	South Korea	10,738
	Others	876,520		Others	356,176		Others	263,943
	World	6,692,694			3,817,382		World	3,062,515
	30 countries' share	86.9%			90.7%			91.4%

Cases & Cases Per Capita

Countries Ranked 1-30 In Total Cases





Country-by-Country

Deaths Per Cases & Per Capita

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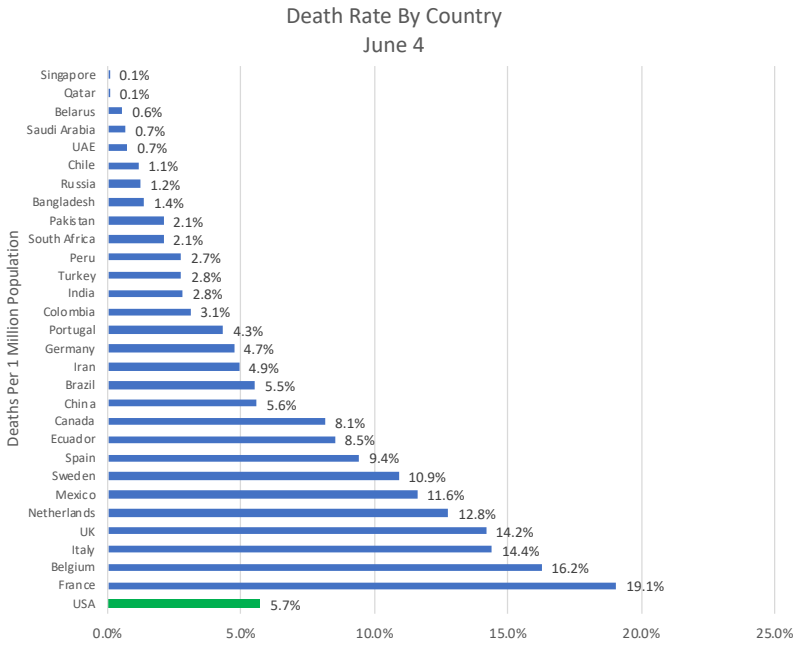
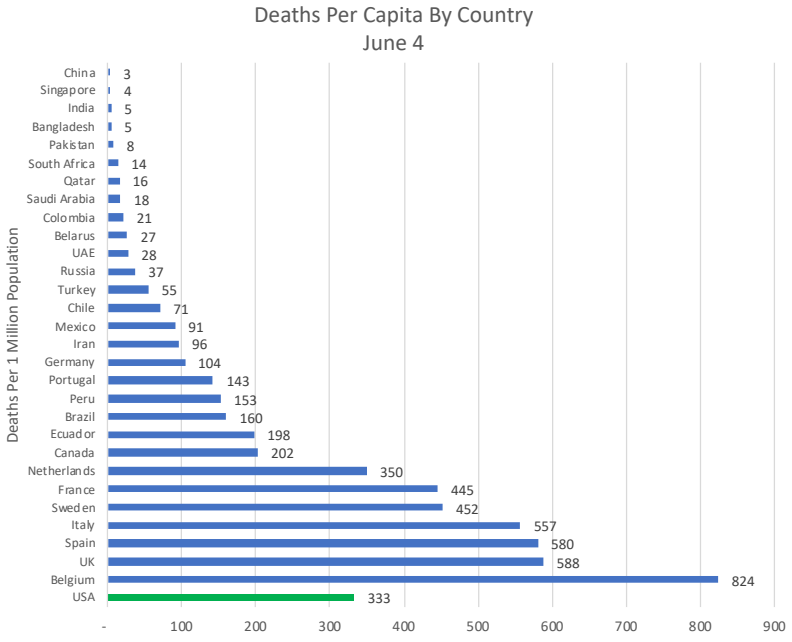
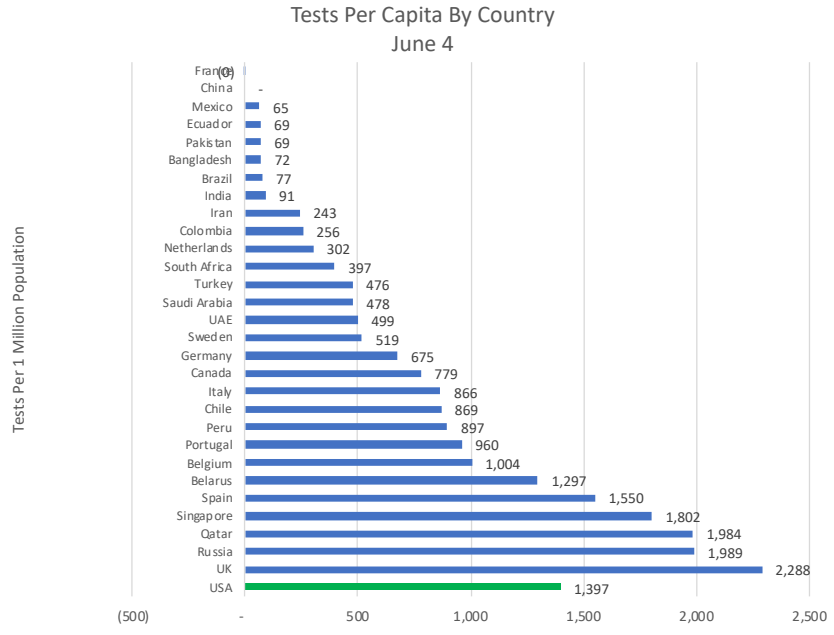
Countries Ranked 1-30 In Total Cases



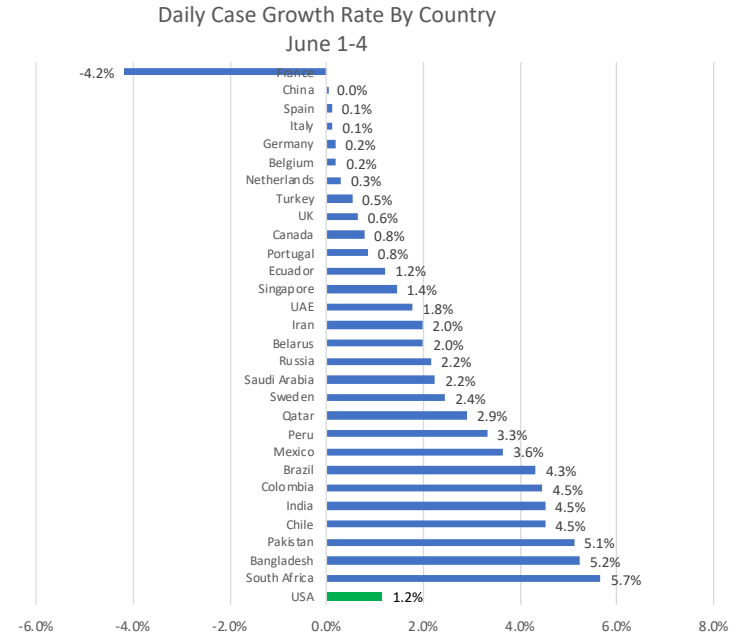


Daily Tests Per Capita & Daily Case Growth

Countries Ranked 1-30 In Total Cases



Daily Tests Per Capita For Past Week



Daily Case Growth – 5-Day Moving Average

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Country-by-Country

New Daily Infection Rates

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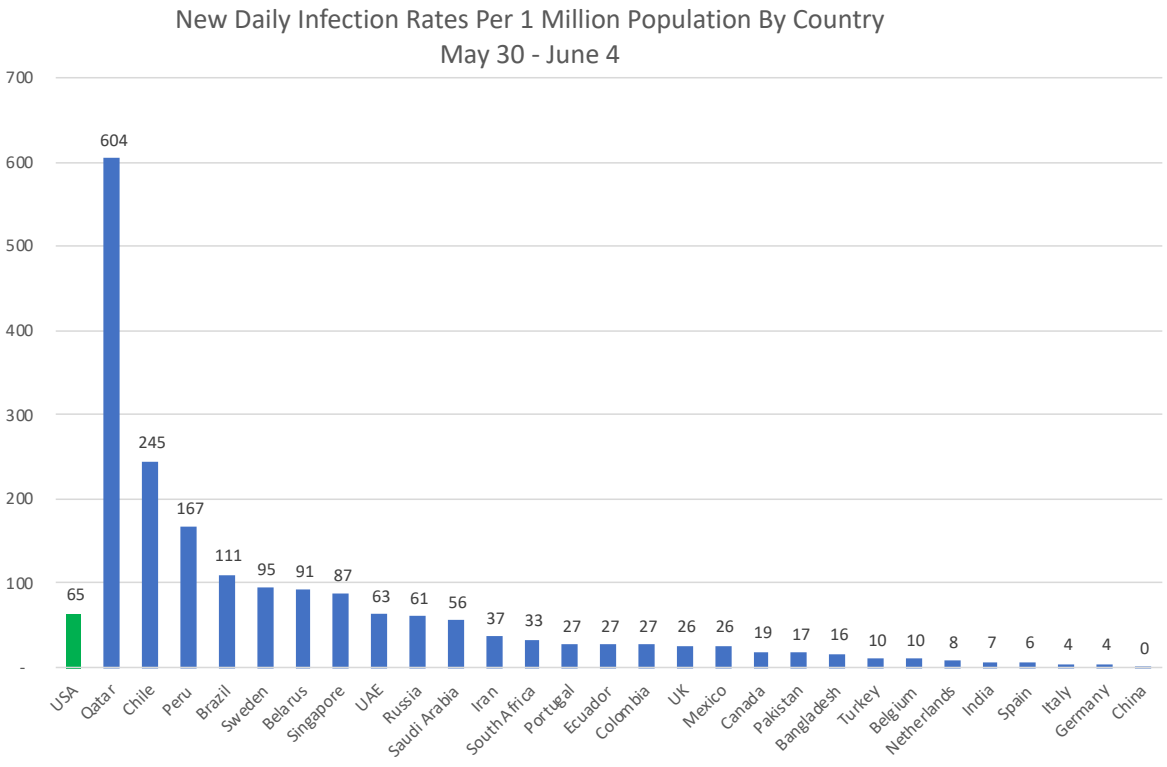
Countries Ranked 1-30 In Total Cases



UNITED STATES & STATE-BY-STATE INFORMATION

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State-by-State

Comparative Statistics- Page 1 of 2

"Strategic Guidance in an Era of Unprecedented Change"

As of June 4

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	19,072	(25)	3,889.7	(23)	653	(25)	3.4%	(34)	133.2	(26)	1.6%	(20)	1,014	(38)	74.1	(18)
Alaska	513	(51)	701.3	(49)	10	(51)	1.9%	(45)	13.7	(50)	3.4%	(2)	2,368	(4)	17.2	(45)
Arizona	22,753	(22)	3,126.0	(32)	996	(21)	4.4%	(23)	136.8	(25)	3.4%	(3)	919	(41)	97.9	(10)
Arkansas	8,425	(37)	2,791.7	(37)	151	(40)	1.8%	(47)	50.0	(43)	3.7%	(1)	1,116	(30)	89.3	(11)
California	122,808	(4)	3,108.1	(33)	4,484	(7)	3.7%	(32)	113.5	(29)	2.2%	(8)	1,418	(17)	68.7	(22)
Colorado	27,360	(18)	4,751.0	(19)	1,512	(16)	5.5%	(12)	262.6	(15)	0.9%	(40)	845	(43)	55.5	(29)
Connecticut	43,239	(13)	12,127.8	(6)	4,007	(8)	9.3%	(2)	1,123.9	(3)	0.6%	(46)	1,843	(7)	67.3	(24)
Delaware	9,746	(34)	10,008.6	(7)	386	(33)	4.0%	(29)	396.4	(12)	0.7%	(44)	1,336	(22)	84.4	(15)
District Of Columbia	9,120	(35)	12,922.4	(5)	475	(29)	5.2%	(14)	673.0	(6)	0.9%	(41)	1,535	(11)	127.1	(4)
Florida	60,183	(8)	2,802.1	(36)	2,610	(11)	4.3%	(24)	121.5	(28)	1.7%	(18)	1,034	(37)	45.9	(34)
Georgia	49,847	(11)	4,694.8	(20)	2,147	(14)	4.3%	(25)	202.2	(16)	1.5%	(22)	695	(47)	61.6	(26)
Hawaii	655	(49)	462.6	(51)	17	(49)	2.6%	(41)	12.0	(51)	0.1%	(51)	(121)	(51)	0.8	(51)
Idaho	3,054	(43)	1,704.2	(44)	83	(43)	2.7%	(40)	46.3	(44)	1.5%	(23)	473	(50)	22.7	(44)
Illinois	124,759	(3)	9,845.4	(8)	5,736	(5)	4.6%	(21)	452.7	(10)	1.0%	(39)	1,714	(10)	100.6	(8)
Indiana	36,096	(16)	5,361.7	(18)	2,231	(13)	6.2%	(9)	331.4	(13)	1.1%	(36)	911	(42)	64.3	(25)
Iowa	20,805	(23)	6,594.1	(12)	583	(27)	2.8%	(39)	184.8	(20)	1.6%	(19)	1,449	(15)	100.5	(9)
Kansas	10,212	(33)	3,505.3	(27)	227	(37)	2.2%	(44)	77.9	(38)	0.9%	(42)	1,156	(28)	37.4	(39)
Kentucky	10,705	(32)	2,396.1	(40)	458	(30)	4.3%	(27)	102.5	(31)	2.0%	(10)	1,721	(9)	48.6	(32)
Louisiana	41,562	(14)	8,940.4	(10)	2,883	(9)	6.9%	(7)	620.2	(7)	1.0%	(38)	533	(49)	84.6	(13)
Maine	2,446	(45)	1,819.7	(42)	95	(42)	3.9%	(30)	70.7	(40)	1.4%	(27)	1,119	(29)	27.3	(42)
Maryland	55,858	(10)	9,239.3	(9)	2,668	(10)	4.8%	(19)	441.3	(11)	1.4%	(24)	1,469	(14)	145.3	(2)
Massachusetts	102,063	(5)	14,686.4	(3)	7,201	(3)	7.1%	(6)	1,036.2	(4)	1.2%	(32)	1,287	(23)	147.3	(1)
Michigan	58,241	(9)	5,831.8	(15)	5,595	(6)	9.6%	(1)	560.2	(8)	0.5%	(48)	1,495	(13)	31.9	(41)
Minnesota	26,273	(19)	4,658.6	(21)	1,126	(19)	4.3%	(26)	199.7	(19)	1.7%	(17)	1,277	(24)	84.3	(17)
Mississippi	16,560	(26)	5,564.2	(17)	794	(23)	4.8%	(18)	266.8	(14)	1.7%	(15)	1,367	(20)	105.0	(7)

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State-by-State

Comparative Statistics- Page 2 of 2

"Strategic Guidance in an Era of Unprecedented Change"

As of June 4

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	14,522	(29)	2,366.1	(41)	810	(22)	5.6%	(11)	132.0	(27)	1.9%	(11)	1,108	(32)	35.7	(40)
Montana	539	(50)	504.3	(50)	17	(49)	3.2%	(35)	15.9	(49)	1.3%	(31)	1,049	(36)	7.2	(50)
Nebraska	15,117	(28)	7,814.8	(11)	189	(38)	1.3%	(49)	97.7	(33)	1.7%	(16)	1,423	(16)	137.1	(3)
Nevada	9,090	(36)	2,951.1	(35)	429	(31)	4.7%	(20)	139.3	(24)	1.4%	(28)	1,402	(19)	40.9	(37)
New Hampshire	4,876	(41)	3,586.1	(25)	273	(36)	5.6%	(10)	200.8	(17)	1.4%	(26)	1,089	(33)	51.5	(30)
New Jersey	164,519	(2)	18,522.3	(2)	12,006	(2)	7.3%	(5)	1,351.7	(2)	0.4%	(49)	2,764	(3)	84.5	(14)
New Mexico	8,353	(38)	3,983.6	(22)	383	(34)	4.6%	(22)	182.7	(21)	1.8%	(13)	2,279	(5)	67.4	(23)
New York	383,899	(1)	19,734.1	(1)	30,281	(1)	7.9%	(3)	1,556.6	(1)	0.3%	(50)	3,057	(2)	55.7	(28)
North Carolina	32,074	(17)	3,058.1	(34)	1,006	(20)	3.1%	(37)	95.9	(34)	2.9%	(4)	1,268	(25)	86.5	(12)
North Dakota	2,706	(44)	3,550.9	(26)	66	(45)	2.4%	(43)	86.6	(37)	1.2%	(33)	1,404	(18)	42.2	(36)
Ohio	37,421	(15)	3,201.4	(30)	2,342	(12)	6.3%	(8)	200.4	(18)	1.3%	(30)	944	(40)	42.3	(35)
Oklahoma	6,907	(39)	1,745.5	(43)	344	(35)	5.0%	(15)	86.9	(36)	1.5%	(21)	1,058	(35)	23.0	(43)
Oregon	4,474	(42)	1,060.8	(48)	159	(39)	3.6%	(33)	37.7	(46)	1.3%	(29)	666	(48)	13.1	(47)
Pennsylvania	78,433	(6)	6,126.6	(13)	5,883	(4)	7.5%	(4)	459.5	(9)	0.7%	(43)	710	(46)	45.9	(33)
Rhode Island	15,325	(27)	14,466.3	(4)	756	(24)	4.9%	(16)	713.6	(5)	0.7%	(45)	3,447	(1)	112.1	(5)
South Carolina	13,005	(30)	2,525.9	(38)	525	(28)	4.0%	(28)	102.0	(32)	2.7%	(5)	1,349	(21)	61.5	(27)
South Dakota	5,247	(40)	5,931.1	(14)	64	(46)	1.2%	(50)	72.3	(39)	1.1%	(34)	2,196	(6)	73.3	(19)
Tennessee	25,120	(20)	3,676.2	(24)	401	(32)	1.6%	(48)	58.7	(42)	2.2%	(9)	1,257	(27)	71.9	(20)
Texas	71,206	(7)	2,455.7	(39)	1,800	(15)	2.5%	(42)	62.1	(41)	2.3%	(7)	815	(44)	51.3	(31)
Utah	10,813	(31)	3,372.8	(29)	117	(41)	1.1%	(51)	36.5	(47)	2.6%	(6)	1,069	(34)	84.3	(16)
Vermont	1,026	(47)	1,644.3	(45)	55	(47)	5.4%	(13)	88.1	(35)	1.0%	(37)	1,530	(12)	11.9	(48)
Virginia	47,856	(12)	5,606.7	(16)	1,445	(17)	3.0%	(38)	169.3	(22)	1.9%	(12)	1,110	(31)	108.0	(6)
Washington	23,847	(21)	3,131.6	(31)	1,149	(18)	4.8%	(17)	150.9	(23)	1.4%	(25)	779	(45)	38.0	(38)
West Virginia	2,102	(46)	1,176.2	(47)	79	(44)	3.8%	(31)	44.2	(45)	1.1%	(35)	1,258	(26)	13.3	(46)
Wisconsin	19,892	(24)	3,416.4	(28)	626	(26)	3.1%	(36)	107.5	(30)	1.8%	(14)	1,805	(8)	71.6	(21)
Wyoming	921	(48)	1,591.3	(46)	17	(49)	1.8%	(46)	29.4	(48)	0.5%	(47)	945	(39)	11.1	(49)
United States	1,924,051		5,812.8		110,173		5.7%		329.7		1.2%		1,308		67.3	

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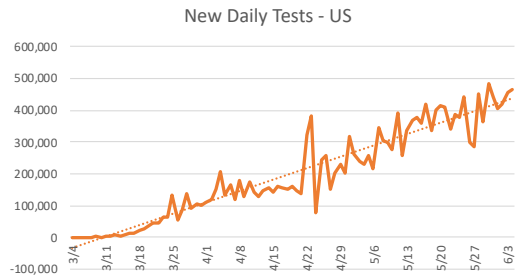
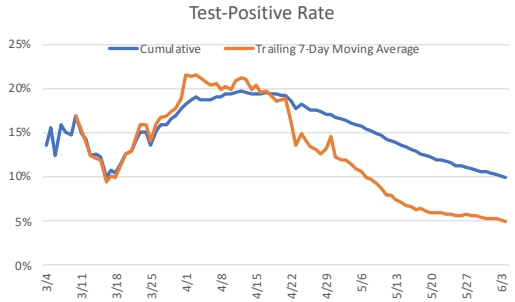
United States

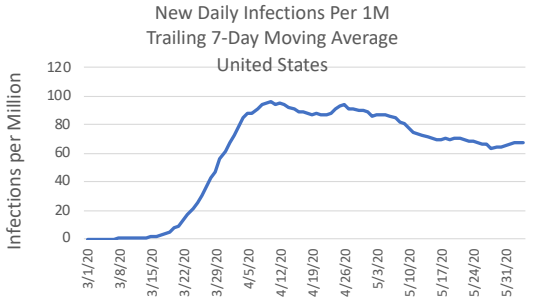
Overall Statistics

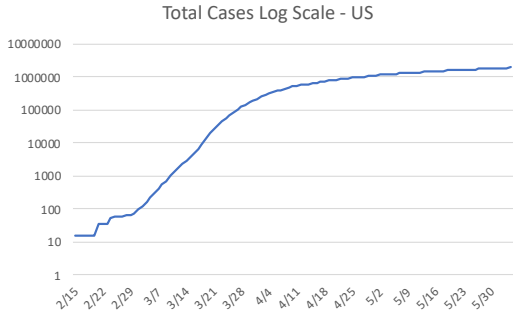
"Strategic Guidance in an Era of Unprecedented Change"

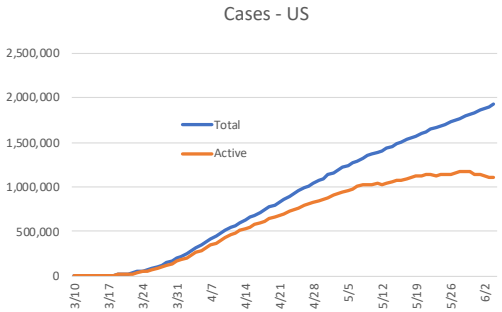
With significantly increased testing, the US is now meeting the WHO standard of <10% test-positives. This suggests that asymptomatic cases are being captured and that we have a better view of true infection rates.
Further, new daily infections continue to decline; the death rate seems to have stabilized.

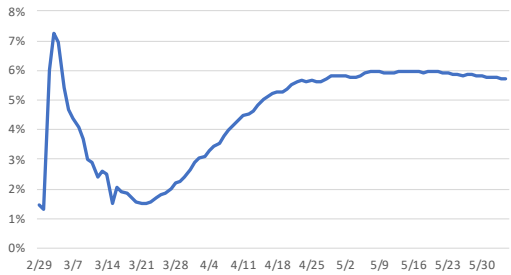












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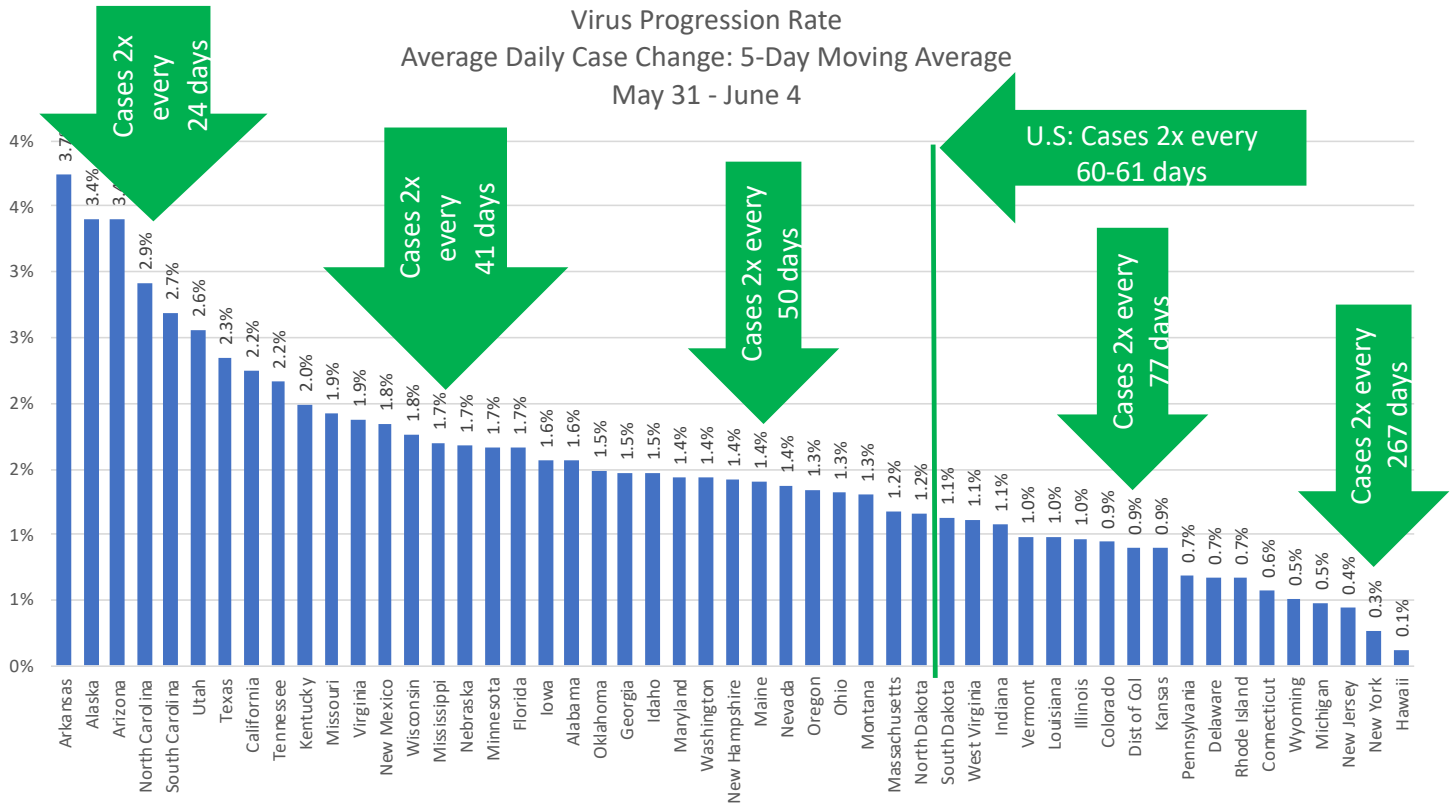
State-by-State

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 19 - 564 days to double



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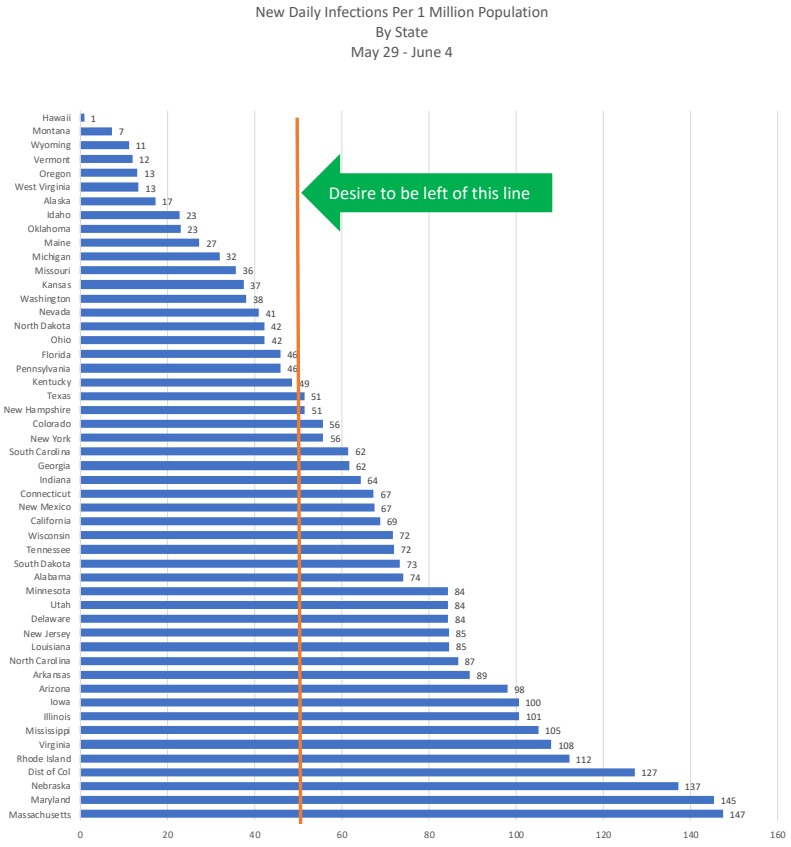
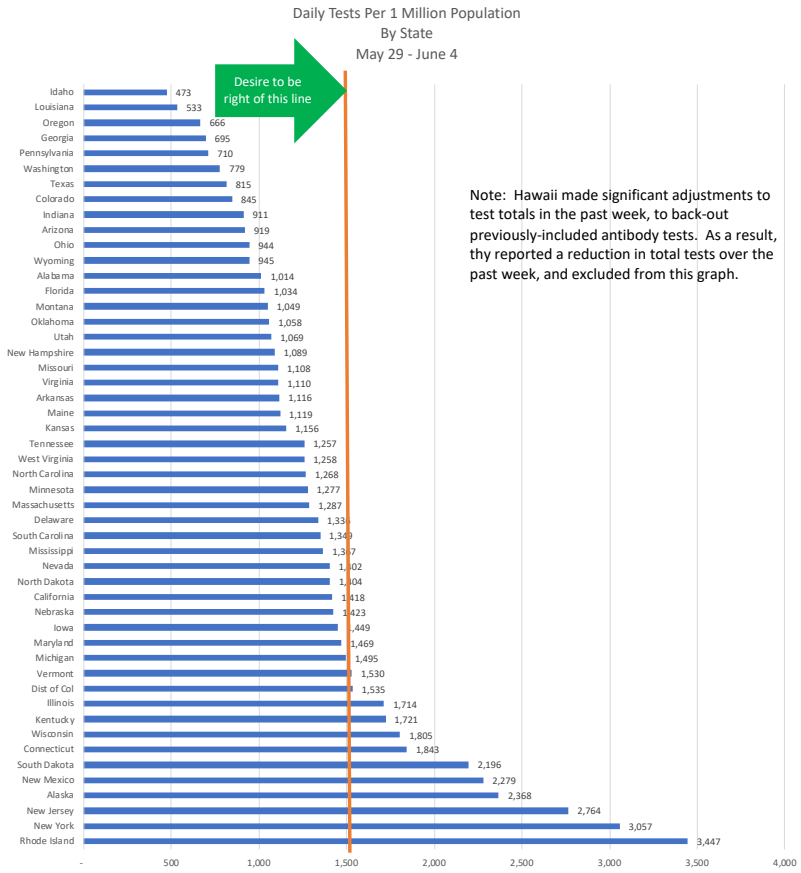
State-by-State

New Daily Infections & Tests Per Capita

"Strategic Guidance in an Era of Unprecedented Change"



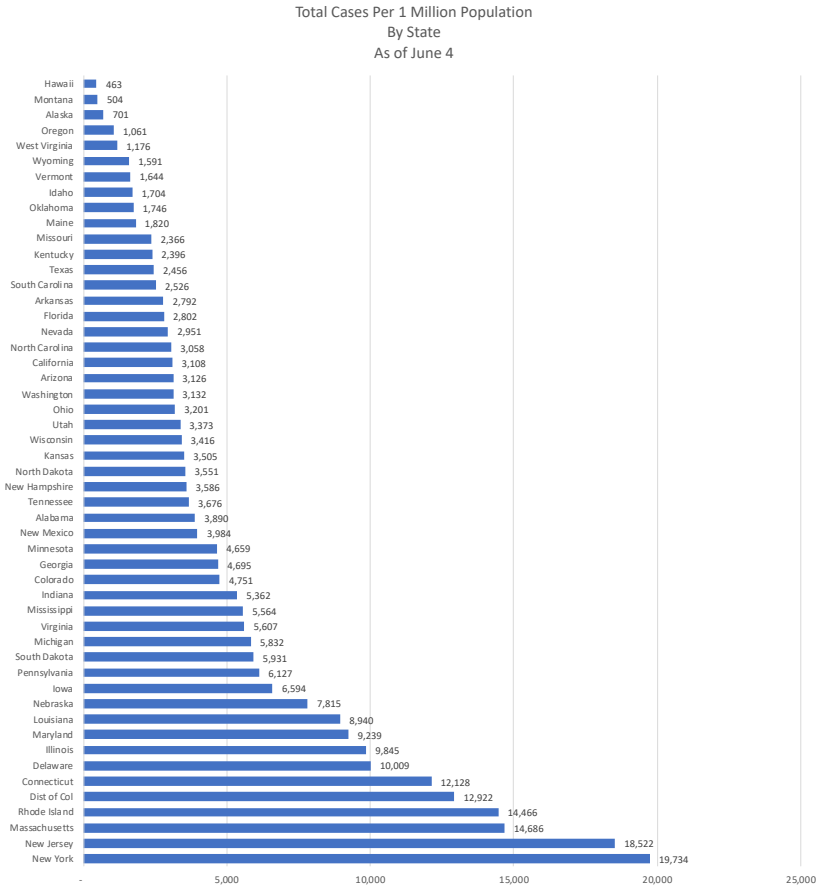


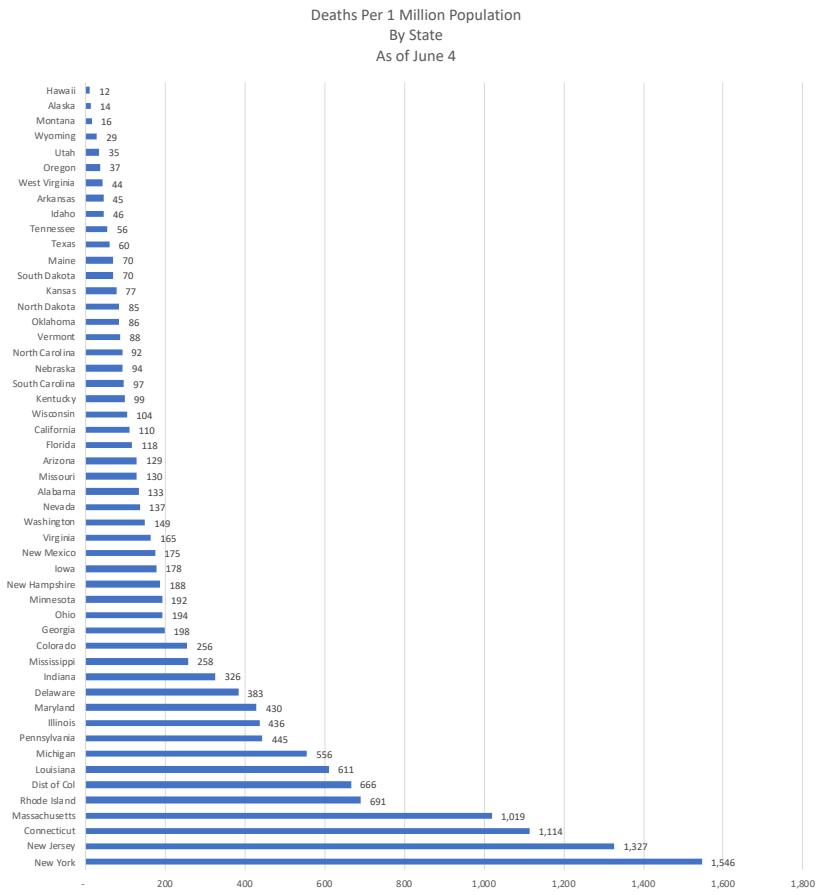
Note: Hawaii made significant adjustments to test totals in the past week, to back-out previously-included antibody tests. As a result, thy reported a reduction in total tests over the past week, and excluded from this graph.

State-by-State

Cases & Deaths Per Capita

"Strategic Guidance in an Era of Unprecedented Change"



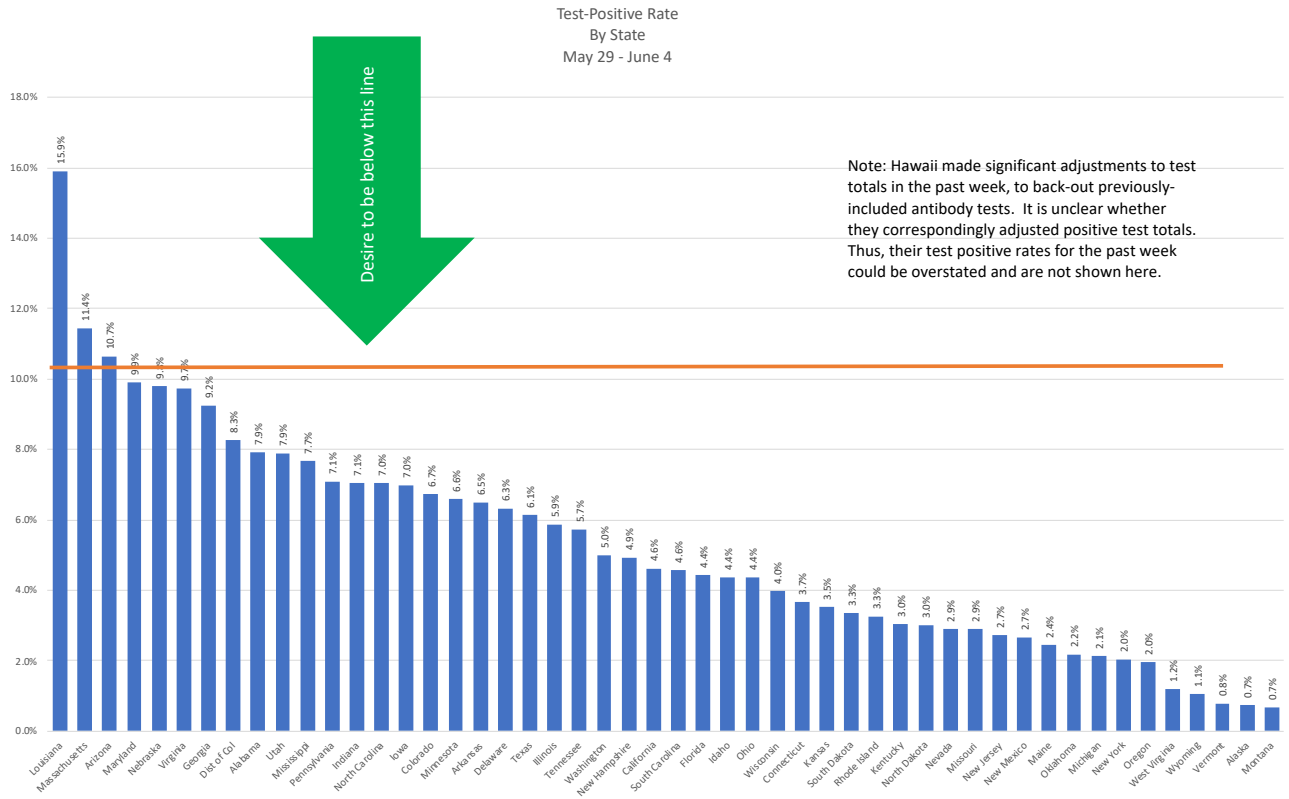


State-by-State

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.



STATE-BY-STATE READINESS FOR RELAXING RESTRICTIONS

Readiness For Relaxing Restrictions

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.**

State-By-State

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 4

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 28

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 4 weeks

June 4

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		✓		✓		✓	N	N	
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		✓		✓		✓	✓	✓	

April 8

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		✓		✓		✓	N	N	
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:

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

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 4, 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 4, 2020

VIRUS PROGRESSION: ROADMAP TO RECOVERY

Virus Progression

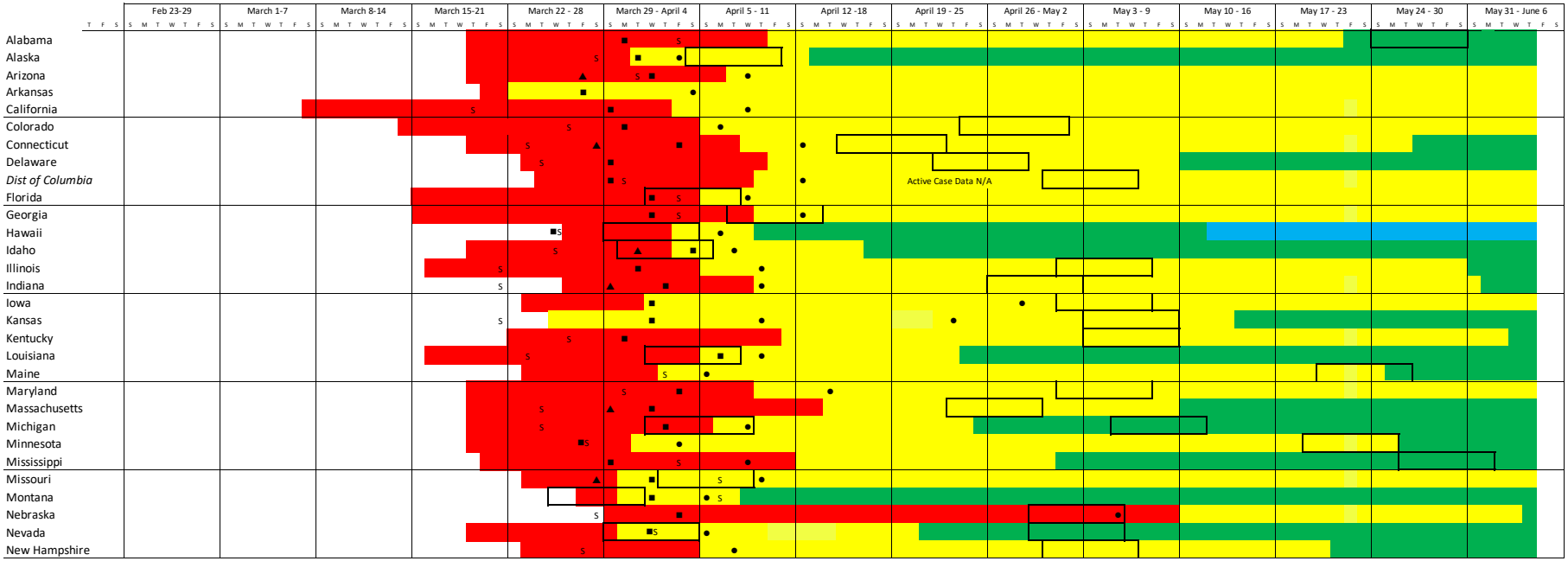
The graphic on the following two pages illustrates when the state first recorded 100 total cases (start of the "contagion" phase); when growth stopped following an exponential pattern (start of the "containment" phase); and, when peak total cases were recorded (start of the "recovery" phase). It uses 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.

State-by-State

Virus Progression – *1 of 2*

"Strategic Guidance in an Era of Unprecedented Change"



Legend on following page

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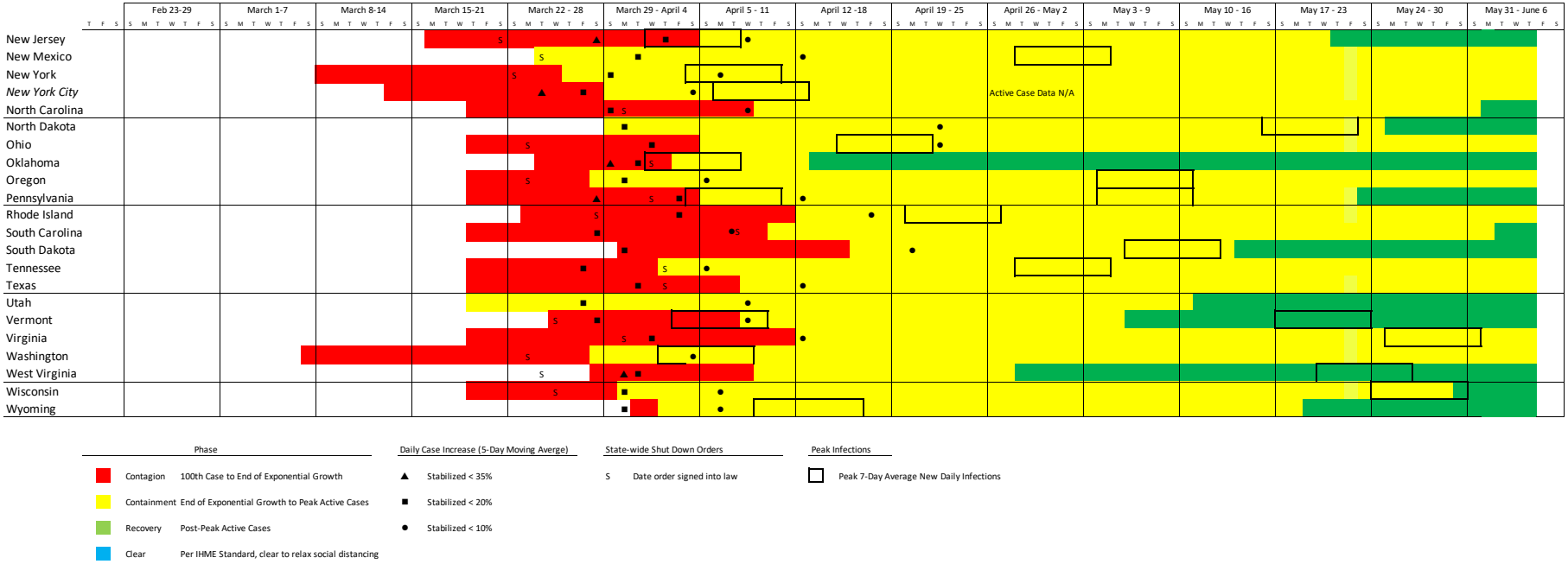
State-by-State

Virus Progression – *2 of 2*

"Strategic Guidance in an Era of Unprecedented Change"

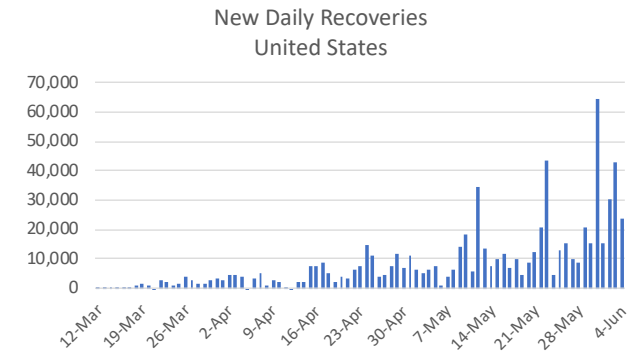


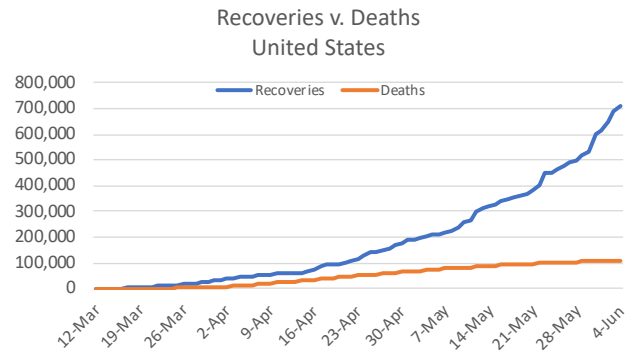
UNDER-REPORTED RECOVERIES? POSSIBLE LAG IN STATE REPORTING

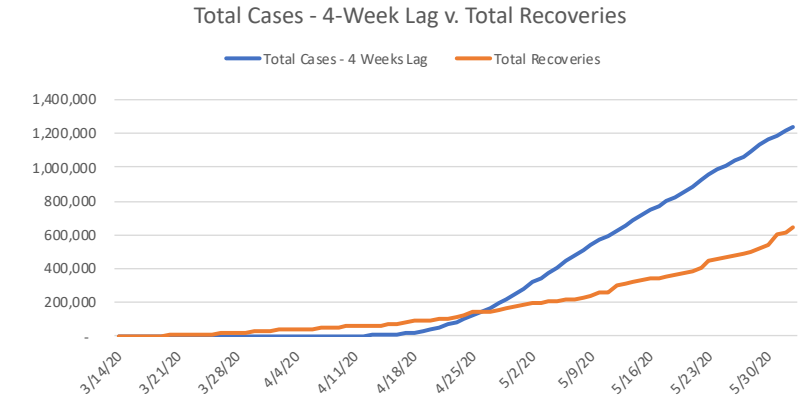
United States

Recoveries

"Strategic Guidance in an Era of Unprecedented Change"







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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 ~322-425k

State	Recoveries	Expected Recoveries Low	Expected Recoveries High
Alabama	11,395	7,237	8,141
Alaska	376	299	337
Arizona	70	7,956	8,951
Arkansas	5,919	2,955	3,325
California	29,693	49,800	56,025
Colorado	2,227	14,697	16,534
Connecticut	7,689	25,427	28,606
Delaware	5,562	4,751	5,345
District Of Columbia	1,138	4,523	5,089
Florida	10,173	31,062	34,945
Georgia	858	25,264	28,422
Hawaii	611	503	566
Idaho	2,362	1,742	1,960
Illinois	65,964	56,698	63,786
Indiana	23,707	18,002	20,253
Iowa	12,420	8,847	9,953
Kansas	4,752	5,066	5,699
Kentucky	3,303	4,902	5,515
Louisiana	31,728	24,522	27,587
Maine	1,739	1,064	1,197
Maryland	3,985	23,499	26,437
Massachusetts	78,108	58,977	66,349
Michigan	38,099	36,517	41,081
Minnesota	21,490	7,492	8,429
Mississippi	11,203	6,949	7,817
Missouri	3,397	7,586	8,534
Montana	467	366	411
Nebraska	7,598	5,752	6,094
Nevada	6,818	4,613	5,097
New Hampshire	3,187	2,274	2,466
New Jersey	21,963	108,085	119,753
New Mexico	3,115	3,594	3,862
New York	68,838	269,937	300,142
North Carolina	18,860	10,814	11,749
North Dakota	2,209	1,097	1,191
Ohio	7,130	17,707	19,418
Oklahoma	5,781	3,464	3,781
Oregon	1,894	2,391	2,624
Pennsylvania	51,020	44,802	49,408
Rhode Island	1,326	8,424	9,185
South Carolina	6,976	5,714	6,242
South Dakota	4,084	2,324	2,501
Tennessee	16,643	11,277	12,544
Texas	46,857	29,240	31,797
Utah	6,628	4,579	5,036
Vermont	881	733	817
Virginia	6,284	17,256	18,230
Washington	7,332	13,554	15,025
West Virginia	1,424	1,038	1,148
Wisconsin	12,980	7,372	8,011
Wyoming	735	508	568
United States	712,252	1,034,098	1,136,783

* - 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

On Mondays, Wednesday and Fridays we provide graphics relevant to judging how far a state (or the District of Columbia) has progressed against the virus. Seventeen states (or, sixteen and D.C.) are presented at a time. Today, we provide:

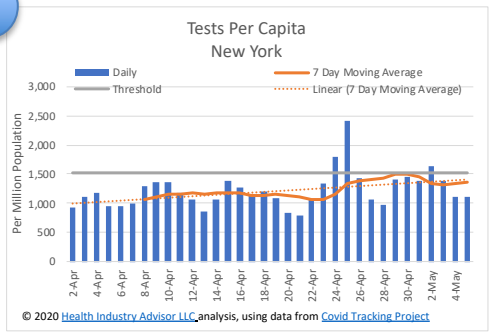
- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- District of Columbia
- Florida
- Georgia
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa
- Kansas

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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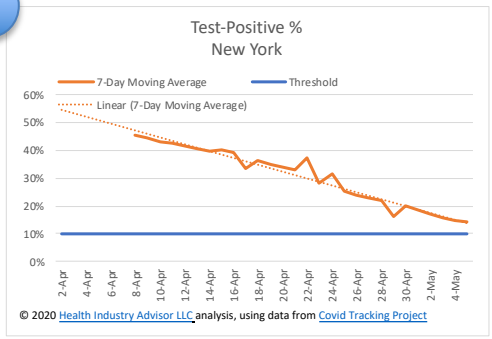

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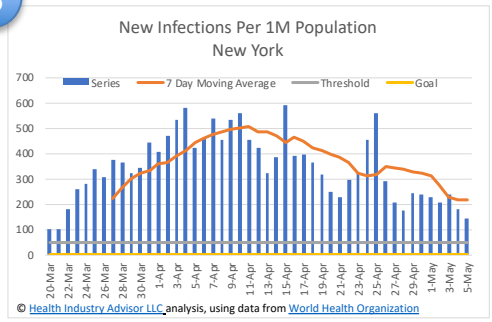

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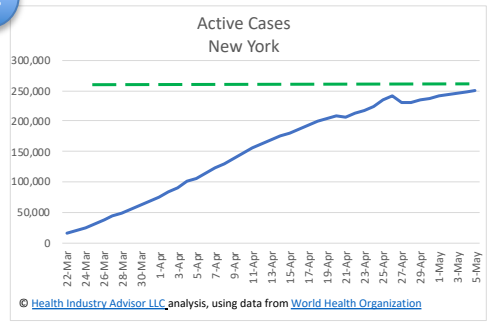
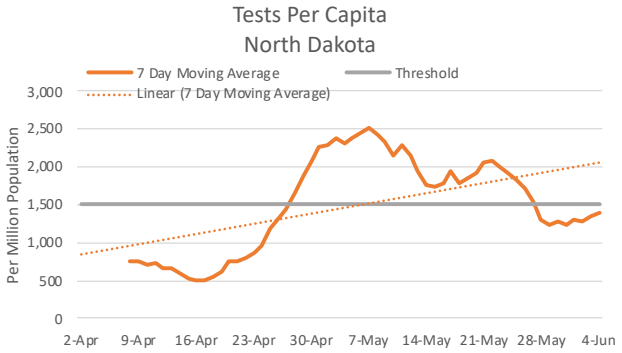
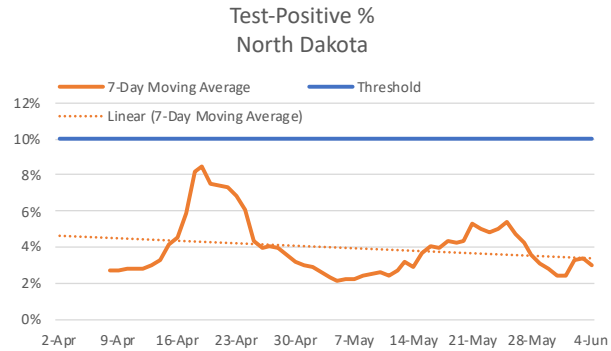
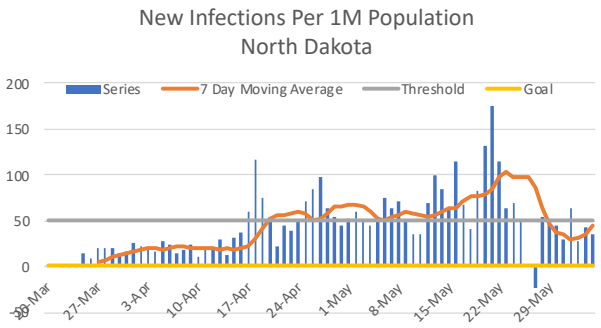
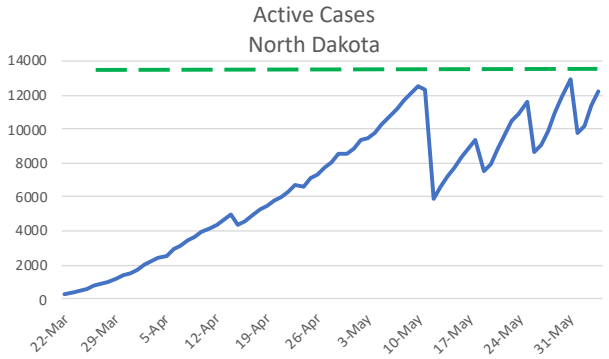


Test, New Daily Infection and Active Case Trends

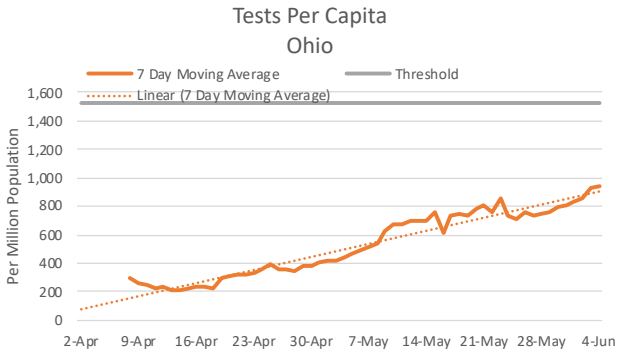


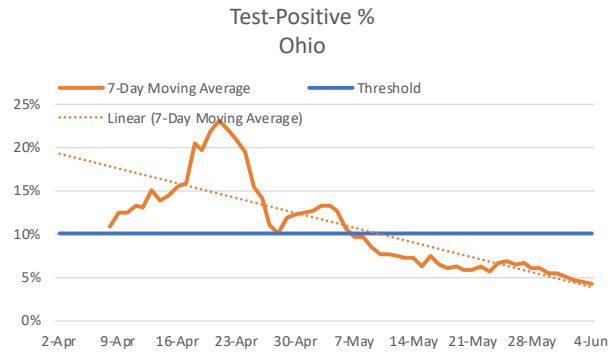


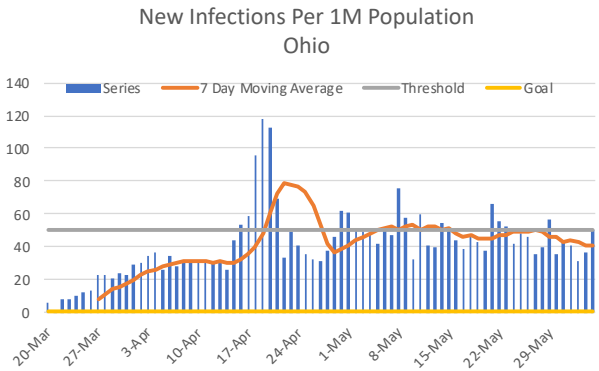


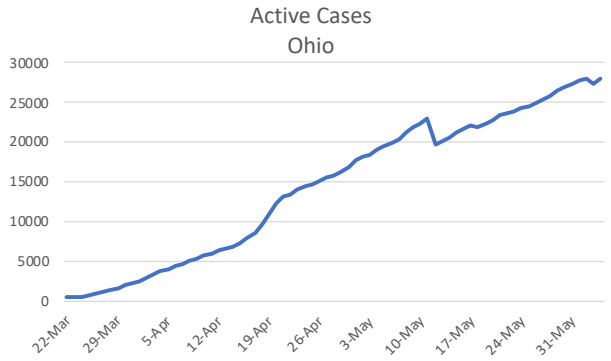


Test, New Daily Infection and Active Case Trends

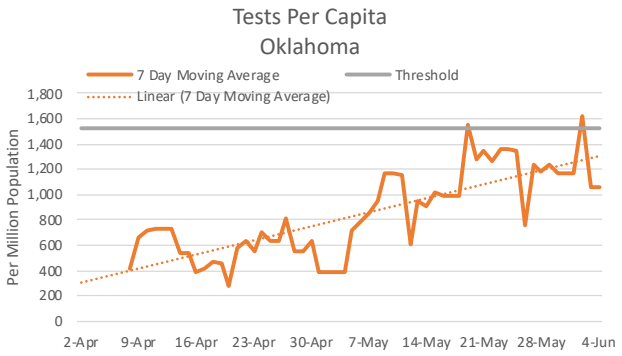


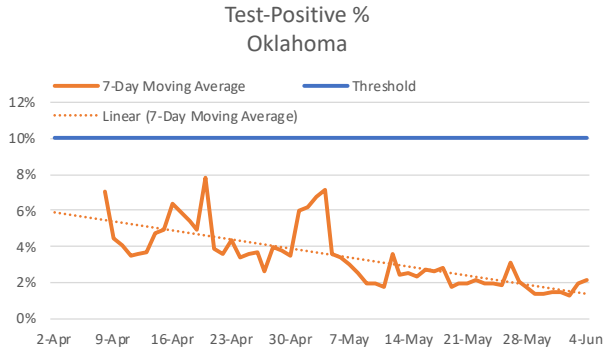


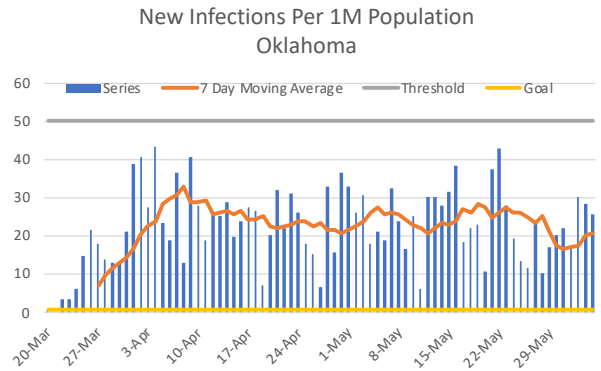


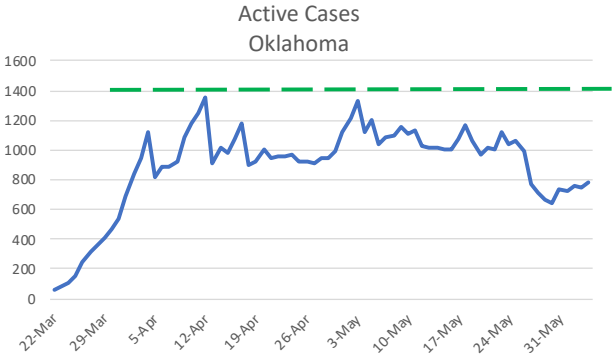


Test, New Daily Infection and Active Case Trends





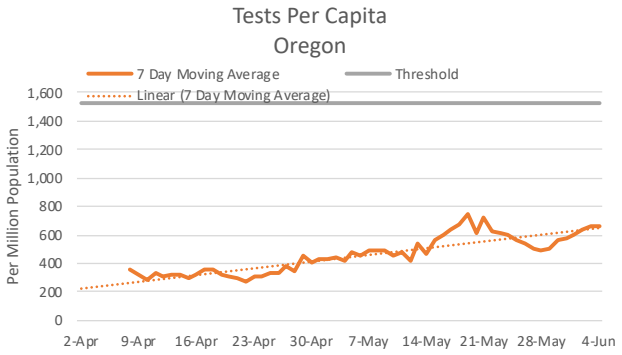


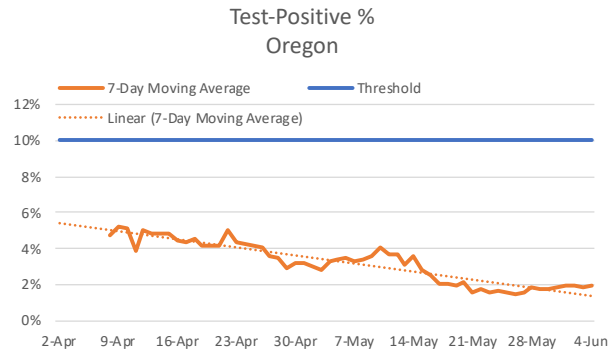


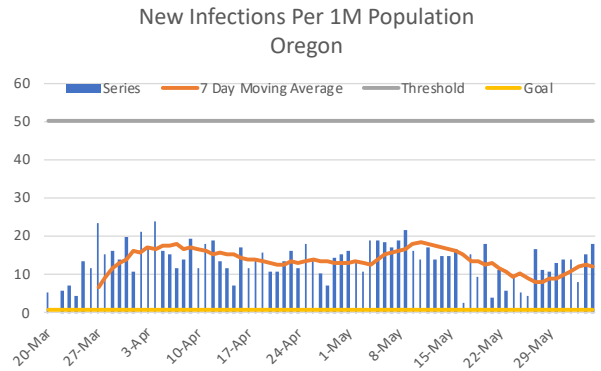
State-by-State

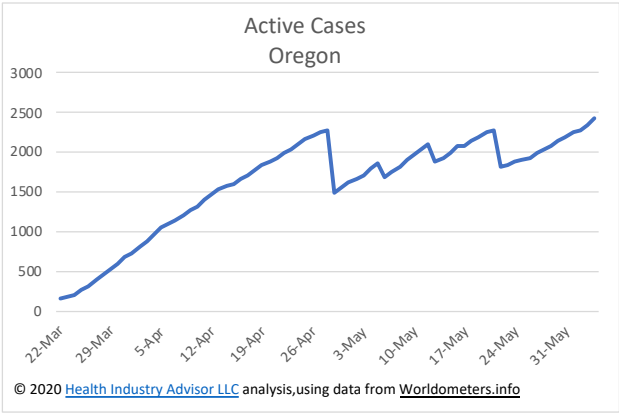
Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"









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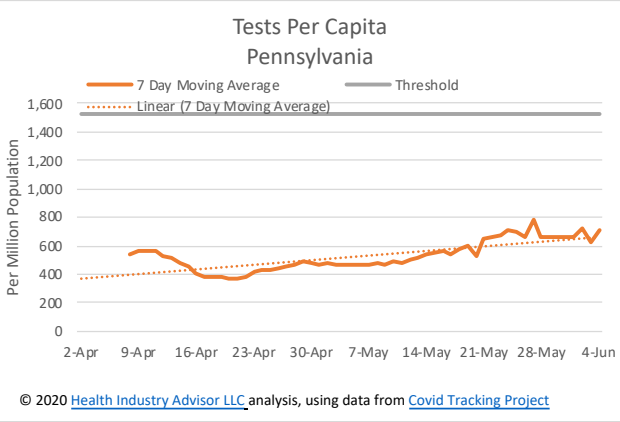

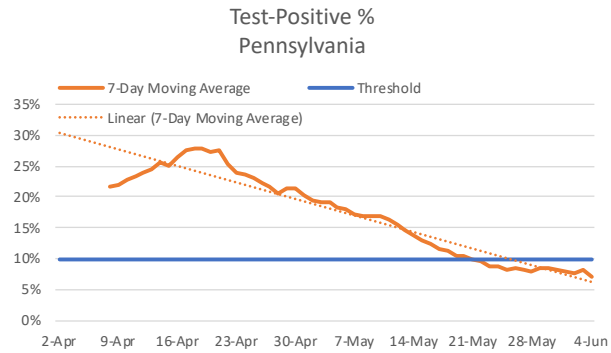

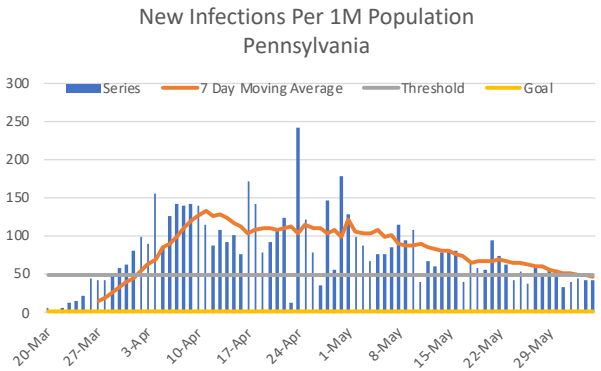

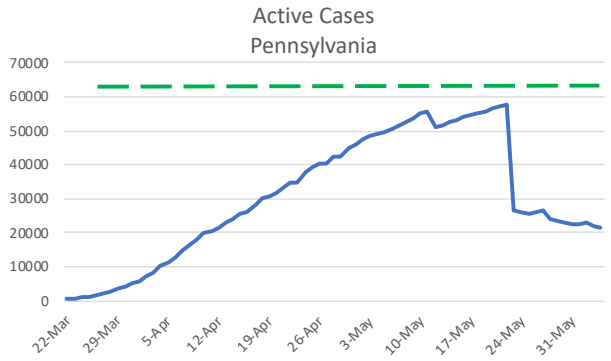

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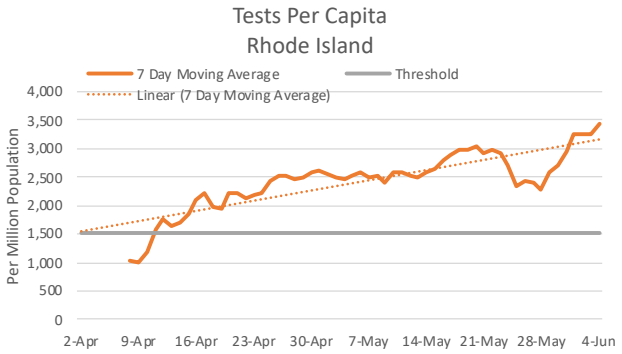
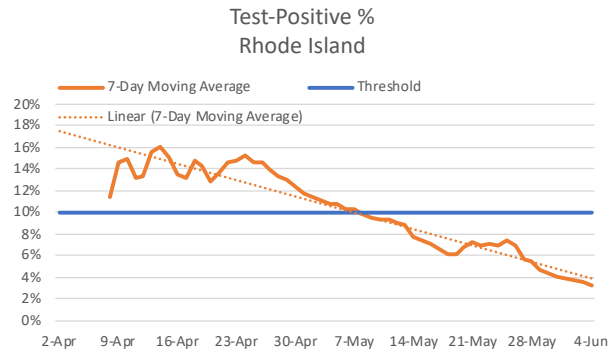
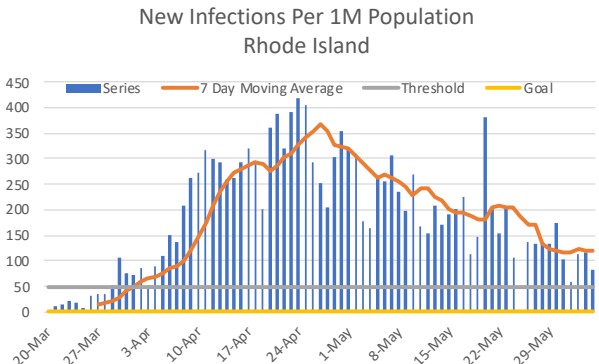
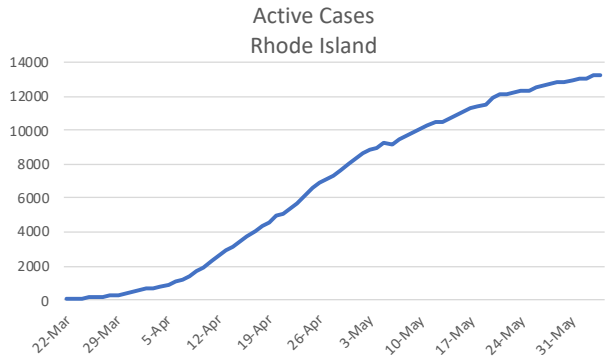
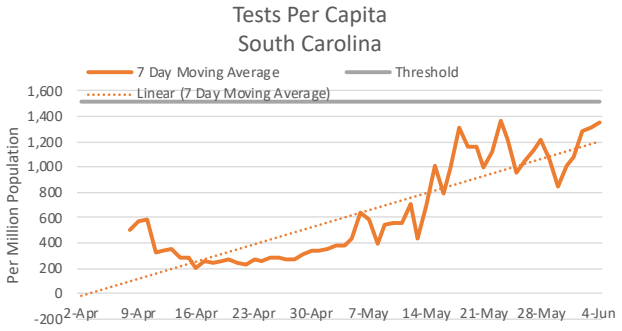


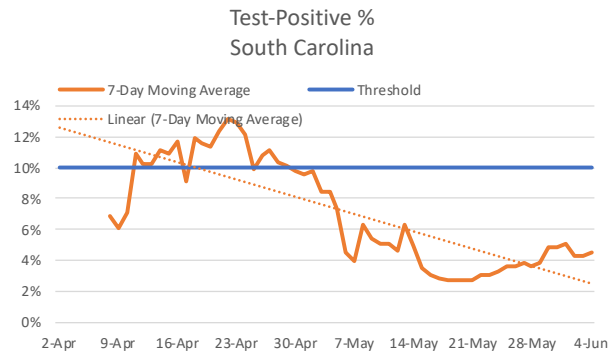


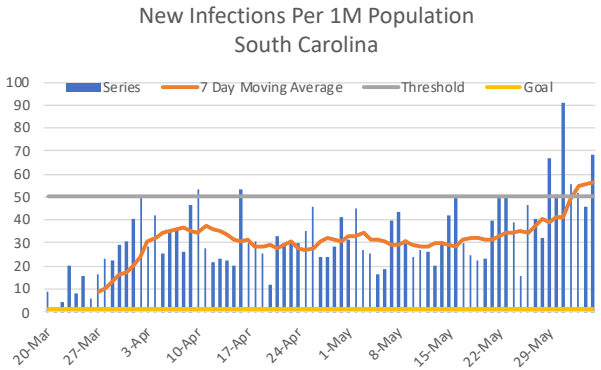


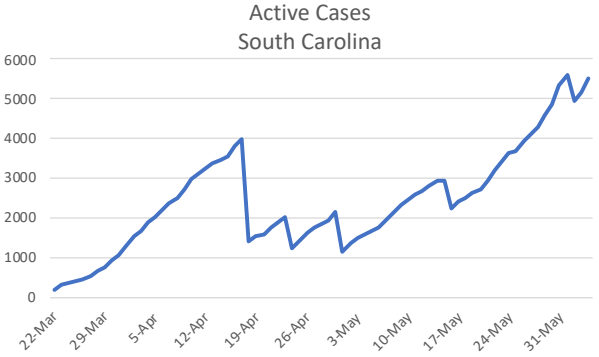


Test, New Daily Infection and Active Case Trends





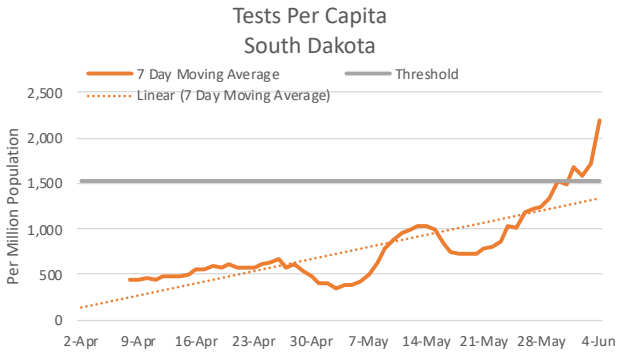


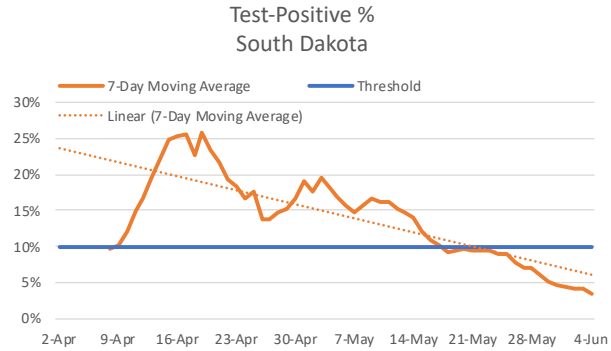


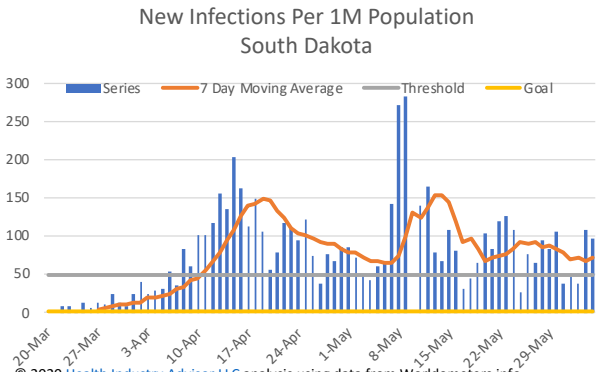
State-by-State

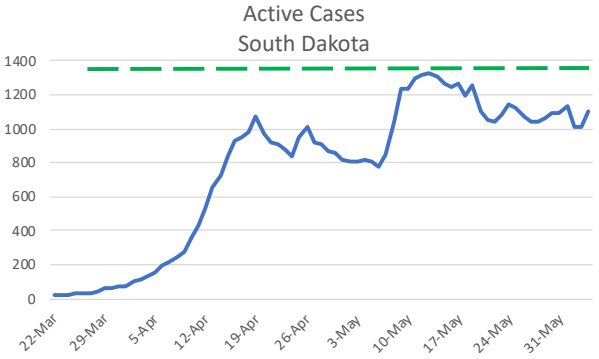
Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"

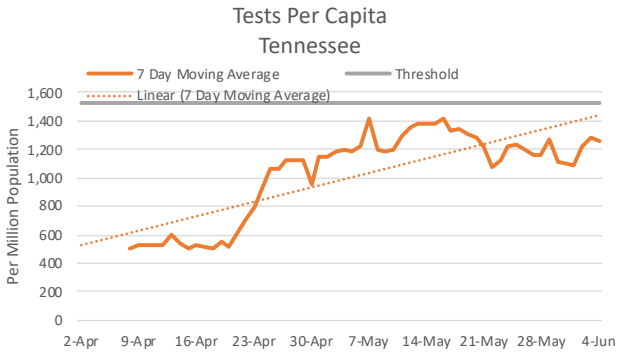


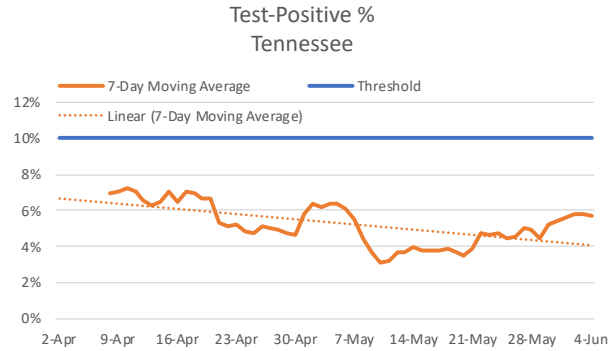


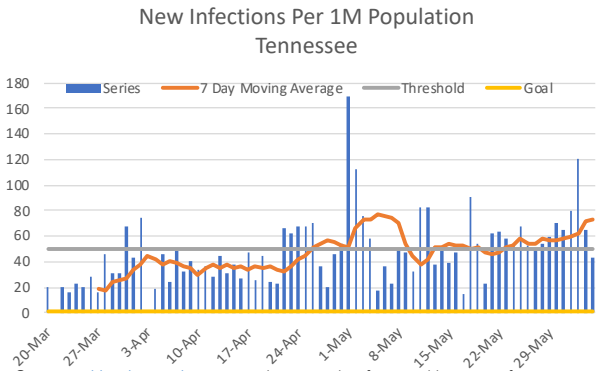


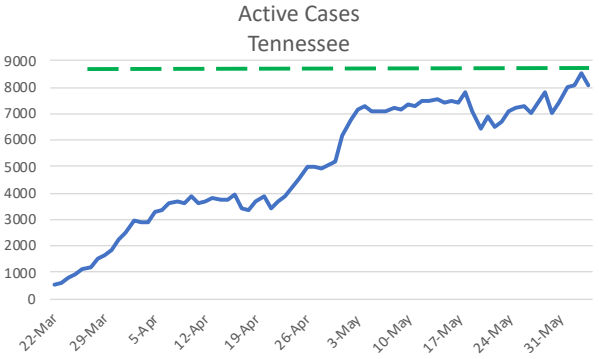


Test, New Daily Infection and Active Case Trends





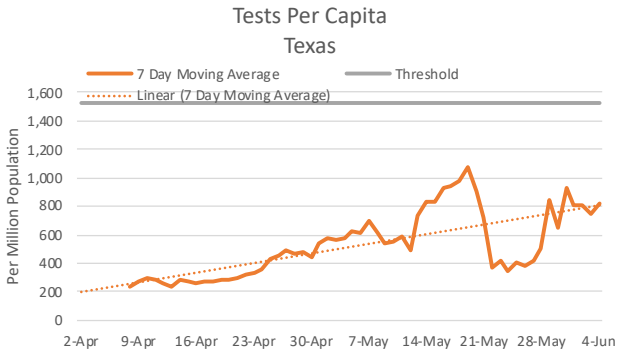


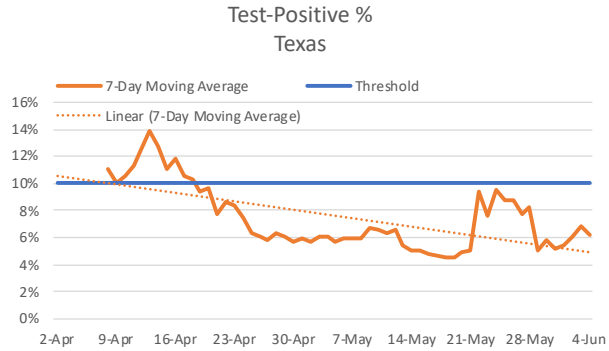


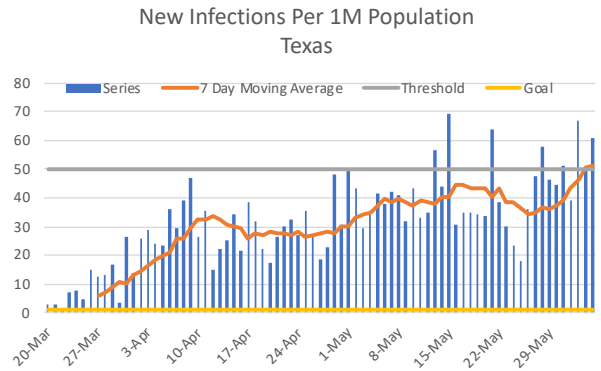
State-by-State

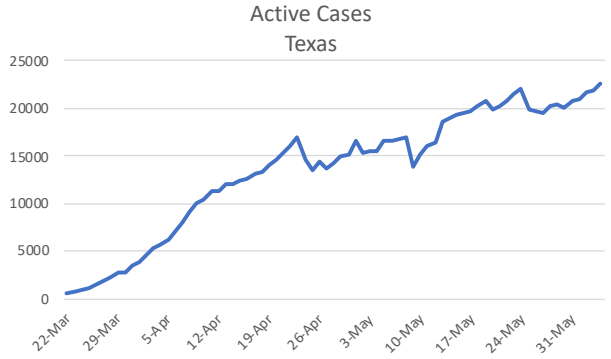
Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"





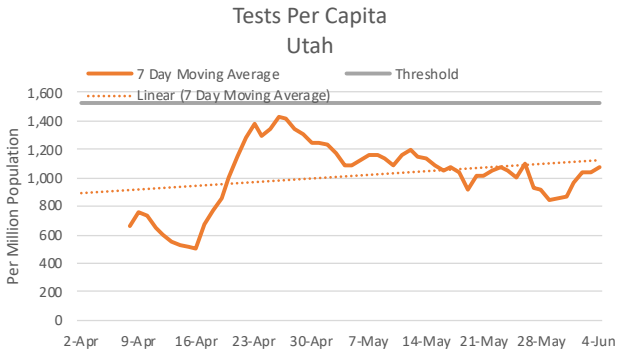


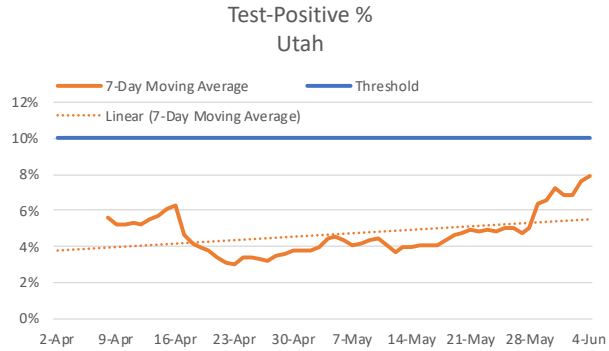


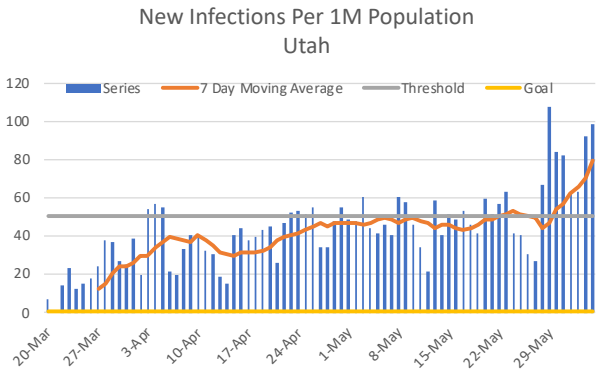
State-by-State

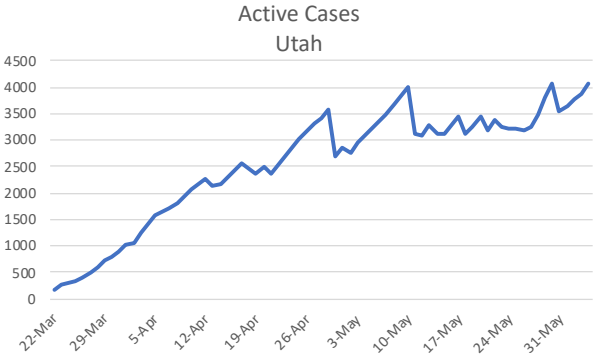
Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"









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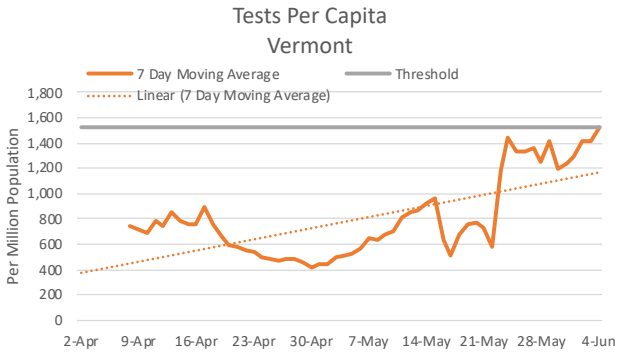

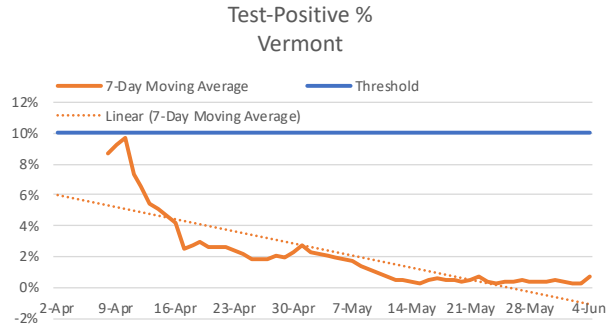

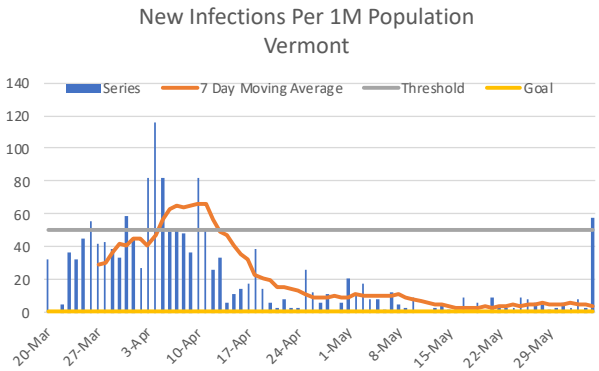

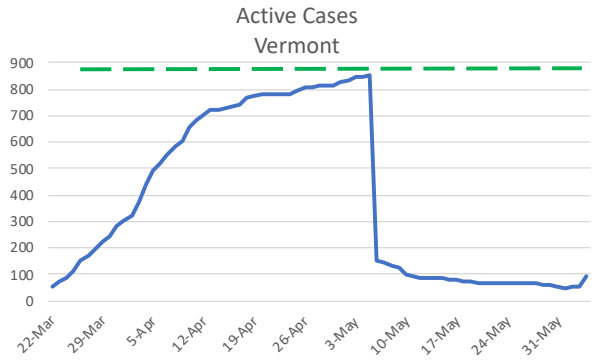

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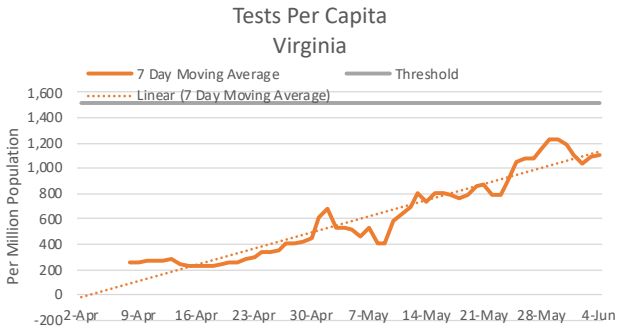
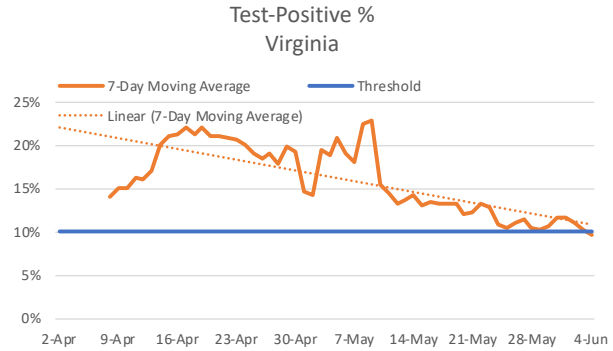
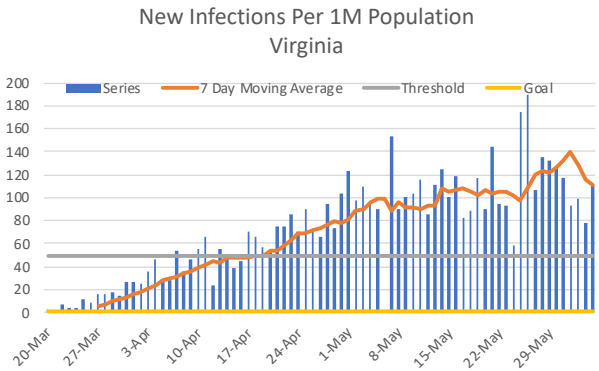
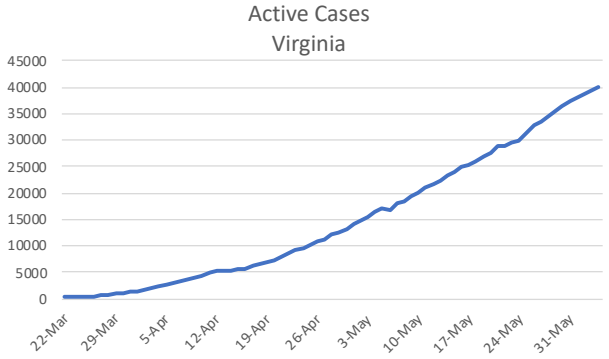


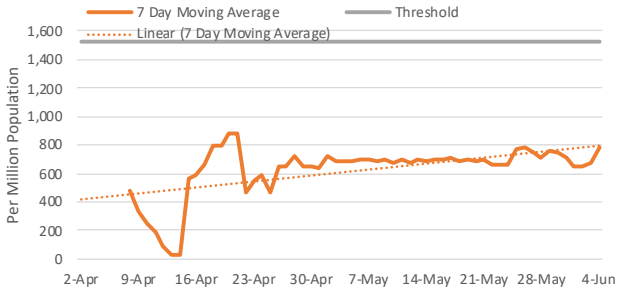




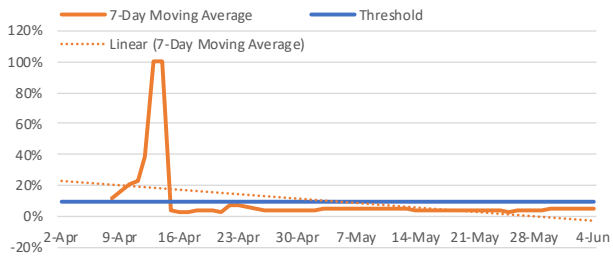


Test, New Daily Infection and Active Case Trends

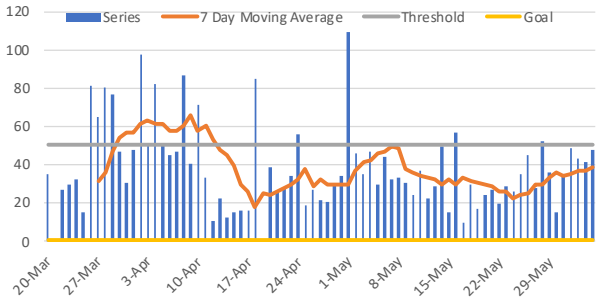
Tests Per Capita
Washington



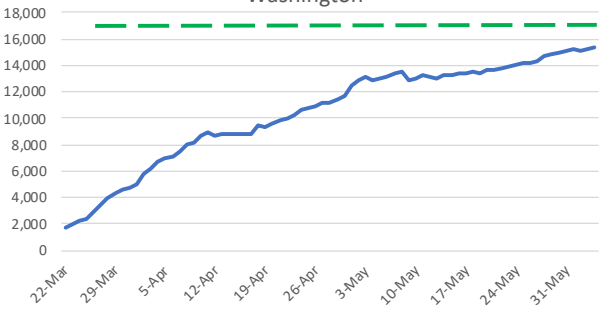
Test-Positive %
Washington



New Infections Per 1M Population
Washington



Active Cases
Washington



State-by-State

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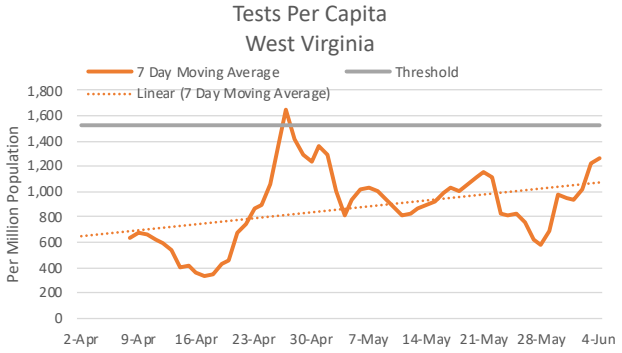

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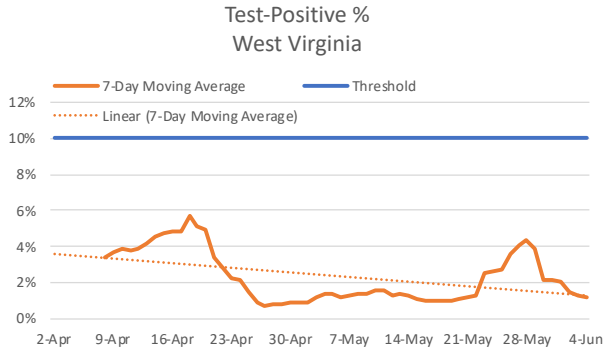

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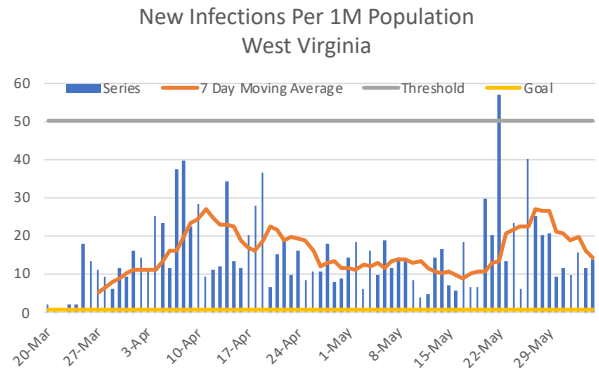

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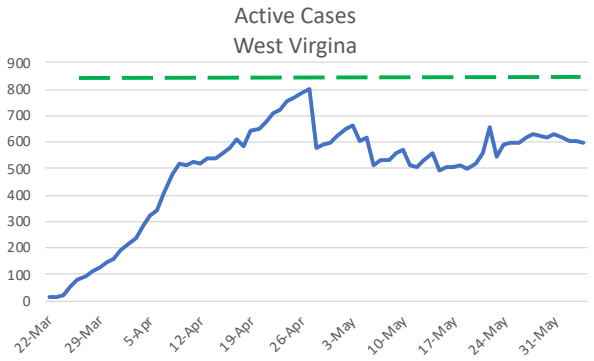

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State-by-State

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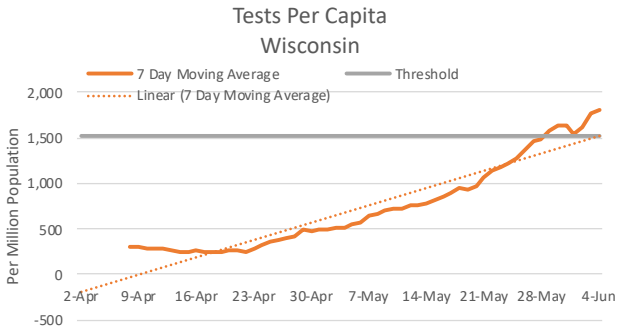

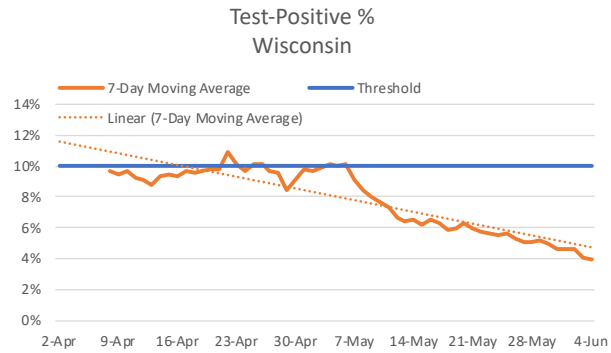

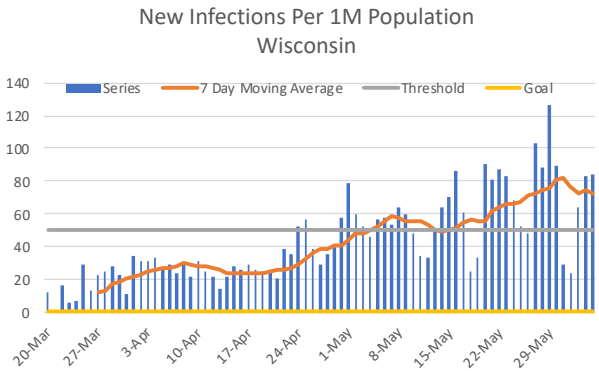

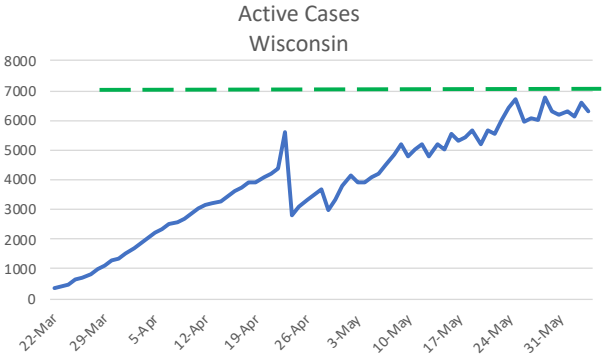

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