Health Industry Advisor, llc

"Strategic Guidance in an Era of Unprecedented Change"

COVID-19 Dashboard

Issue # 80

Friday, June 19, 2020

Day's Highlights

"Strategic Guidance in an Era of Unprecedented Change"

Measure	Desired Change	Yesterday in the U.S.
Number of Tests	Increase	~466,000
Test-Positivity Rate	Decline	5.8% test-positive on Tuesday; 4.7% for past 7 days
Number of Cases	Plateau	Cases increased 18% week-over-week
Deaths % of Total Cases	Decline	5.3%
Number of Deaths / 1M Population	Plateau	364.6
Recoveries : Death	Increase	7.71

- Yesterday serves as a reminder that this virus will not simply fade away: the United States reported more than 29,000 new cases - the highest daily total (adjusting for accounting changes made by New York and Michigan on June 5) since May 2. New cases for the past 7 days averaged nearly 25,000 per day, the highest since the seven-day period ending May 10
- Twelve states have not yet established a peak in new daily infections per capita: Arizona, Arkansas, California, Florida, Nevada, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Texas and Utah. On the flip-side, ten states are reporting new infection rates of <25% of their peak rates: Connecticut (14%), Delaware (24%), Illinois (23%), Massachusetts (10%), Michigan (12%), New Jersey (11%), New York (9%), Pennsylvania (24%), Rhode Island (15%) and Vermont (9%). An additional ten states are between 25-50% of their peak rate
- Ten states have experienced increases > 25 in new daily infections per million during the past 7 days: Arizona (72), Florida (53), South Carolina (46), Alabama (46), Louisiana (38), Oklahoma (36), Nebraska (36), Texas (34), Arkansas (34) and Tennessee (27)
- Test volume was reasonably good yesterday, with 466,000 tests. The test-positive rate was up to 5.8% on the day, the highest single-day rate since May 29
- Eight states are experiencing an increasing test-positive rate over the past week: Alabama, Arizona, Florida, Hawaii, Oklahoma, South Carolina, South Dakota and Wyoming
- Five states are experiencing significant week-over week increases in hospitalized COVID-19 patients and are at or near peak in these patients: Arizona, Georgia, South Carolina, Texas and Utah. (Note: These data for Alaska, Florida, Hawaii, Idaho, Kansas and Tennessee were unavailable.) Conversely, 21 states have experienced week-over-week double-digit % declines in these patients: Connecticut, Delaware, Illinois, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Pennsylvania, Rhode Island, Virginia, West Virginia and Wisconsin
- Taking into consideration infections, test-positives, case growth and hospitalization rates, we rate the level of concern among the states as follows:
  - Eight (mostly Southern) states are in our "High" concern category: Alabama, Arizona, Arkansas, Florida, Mississippi, North Carolina, South Carolina and Utah
  - Eight states are in our "Moderately High" concern category: California, Georgia, Nebraska, Nevada, Oklahoma, South Dakota, Tennessee and Texas
  - Three states are in our "Moderate" concern category: Louisiana, Minnesota and Virginia
  - The remaining 31 states are in our "Low" concern category
- Fewer than 1,000 deaths were recorded in the United States yesterday (747) - the 9th consecutive day of fewer than 1,000 deaths and the 12th in the past 13. As a result, the death rate per case fell again, to 5.33%

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 213 countries and 2 conveyances 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 18

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 (7-Day M.A.)	Rank8
USA	2,263,651	(1)	6,840	(4)	120,688	(1)	5.3%	(13)	364.7	(7)	1.6%	(19)	1,574	(6)	75.1	(7)
Brazil	983,359	(2)	4,627	(9)	47,869	(2)	4.9%	(14)	225.3	(11)	4.1%	(10)	267	(20)	119.5	(5)
Russia	561,091	(3)	3,845	(14)	7,660	(13)	1.4%	(25)	52.5	(18)	2.2%	(15)	1,766	(5)	57.4	(10)
India	381,091	(4)	276	(28)	12,604	(8)	3.3%	(18)	9.1	(27)	5.0%	(6)	107	(23)	8.6	(23)
UK	300,469	(5)	4,427	(10)	42,288	(3)	14.1%	(4)	623.0	(2)	0.6%	(22)	2,143	(2)	19.1	(18)
Spain	292,348	(6)	6,253	(5)	27,136	(6)	9.3%	(7)	580.4	(3)	0.2%	(28)	1,104	(7)	7.8	(25)
Peru	244,388	(7)	7,416	(3)	7,461	(14)	3.1%	(20)	226.4	(10)	2.6%	(13)	680	(13)	128.3	(3)
Italy	238,159	(8)	3,939	(13)	34,514	(4)	14.5%	(3)	570.8	(4)	0.2%	(29)	916	(9)	4.8	(28)
Chile	225,103	(9)	11,779	(2)	3,841	(20)	1.7%	(24)	201.0	(13)	7.9%	(1)	912	(10)	530.8	(1)
Iran	197,647	(10)	2,354	(19)	9,272	(10)	4.7%	(16)	110.4	(15)	1.9%	(17)	291	(19)	29.8	(15)
Germany	190,126	(11)	2,269	(20)	8,946	(11)	4.7%	(15)	106.8	(16)	0.4%	(26)	572	(15)	5.7	(27)
Turkey	184,031	(12)	2,183	(21)	4,882	(17)	2.7%	(21)	57.9	(17)	1.1%	(21)	544	(16)	17.0	(19)
Pakistan	160,118	(13)	725	(25)	3,093	(21)	1.9%	(23)	14.0	(26)	6.0%	(3)	130	(22)	26.3	(16)
Mexico	159,793	(14)	1,240	(23)	19,080	(7)	11.9%	(6)	148.0	(14)	4.3%	(9)	80	(25)	33.9	(14)
France	158,641	(15)	2,431	(18)	29,603	(5)	18.7%	(1)	453.6	(6)	0.4%	(25)	0	(29)	6.7	(26)
Saudi Arabia	145,991	(16)	4,196	(12)	1,139	(27)	0.8%	(27)	32.7	(21)	4.7%	(8)	639	(14)	123.1	(4)
Bangladesh	102,292	(17)	621	(26)	1,343	(26)	1.3%	(26)	8.2	(29)	5.6%	(5)	98	(24)	21.0	(17)
Canada	100,220	(18)	2,656	(17)	8,300	(12)	8.3%	(10)	220.0	(12)	0.5%	(23)	1,009	(8)	10.2	(21)
Qatar	84,441	(19)	30,074	(1)	86	(30)	0.1%	(30)	30.6	(22)	2.4%	(14)	1,774	(4)	476.7	(2)
South Africa	83,890	(20)	1,415	(22)	1,737	(25)	2.1%	(22)	29.3	(24)	7.5%	(2)	481	(18)	61.0	(9)
China	83,293	(21)	58	(30)	4,634	(18)	5.6%	(11)	3.2	(30)	0.1%	(30)	0	(28)	0.0	(30)
Belgium	60,348	(22)	5,208	(8)	9,683	(9)	16.0%	(2)	835.6	(1)	0.2%	(27)	892	(11)	7.9	(24)
Colombia	60,217	(23)	1,184	(24)	1,950	(23)	3.2%	(19)	38.3	(19)	5.9%	(4)	259	(21)	42.1	(11)
Belarus	56,657	(24)	5,996	(6)	331	(28)	0.6%	(29)	35.0	(20)	1.8%	(18)	1,842	(3)	73.2	(8)
Sweden	56,043	(25)	5,550	(7)	5,053	(16)	9.0%	(8)	500.4	(5)	3.0%	(12)	858	(12)	109.7	(6)
Egypt	50,437	(26)	493	(27)	1,938	(24)	3.8%	(17)	19.0	(25)	4.9%	(7)	0	(29)	15.0	(20)
Netherlands	49,319	(27)	2,878	(15)	6,078	(15)	12.3%	(5)	354.7	(8)	0.4%	(24)	494	(17)	8.9	(22)
Ecuador	49,097	(28)	2,784	(16)	4,087	(19)	8.3%	(9)	231.8	(9)	2.0%	(16)	72	(26)	37.7	(13)
UAE	43,752	(29)	4,426	(11)	298	(29)	0.7%	(28)	30.1	(23)	1.3%	(20)	6,032	(1)	40.0	(12)
Indonesia	42,762	(30)	156	(29)	2,339	(22)	5.5%	(12)	8.6	(28)	3.9%	(11)	61	(27)	3.9	(29)

Note: China does not report test volumes

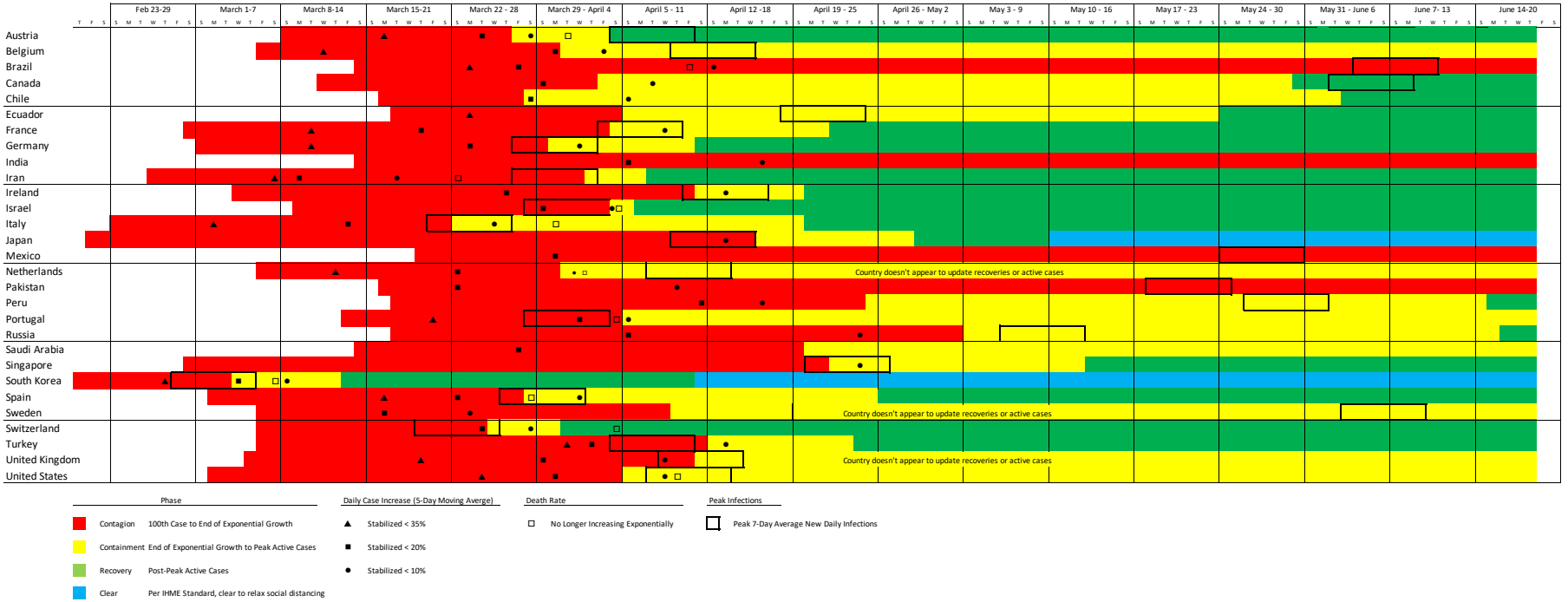
VIRUS PROGRESSION BY COUNTRY

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.



UNITED STATES & STATE-BY-STATE INFORMATION

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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 85.0% of all cases worldwide.

		Total Cases						
Rank	Country	18-Jun	Rank	Country	6-May	Rank	Country	27-Apr
1	USA	2,263,651	1	USA	1,263,092	1	USA	1,010,356
2	Brazil	983,359	2	Spain	253,682	2	Spain	229,422
3	Russia	561,091	3	Italy	214,457	3	Italy	199,414
4	India	381,091	4	UK	201,101	4	France	128,339
5	UK	300,469	5	France	174,191	5	Germany	158,758
6	Spain	292,348	6	Germany	168,162	6	UK	157,149
7	Peru	244,388	7	Russia	165,929	7	Turkey	112,261
8	Italy	238,159	8	Turkey	131,744	8	Iran	91,472
9	Chile	225,103	9	Brazil	126,611	9	Russia	87,147
10	Iran	197,647	10	Iran	101,650	10	China	82,830
11	Germany	190,126	11	China	82,883	11	Brazil	66,501
12	Turkey	184,031	12	Canada	63,496	12	Canada	48,500
13	Pakistan	160,118	13	Peru	54,817	13	Belgium	46,687
14	Mexico	159,793	14	India	52,987	14	Netherlands	38,245
15	France	158,641	15	Belgium	50,781	15	India	29,451
16	Saudi Arabia	145,991	16	Netherlands	41,319	16	Switzerland	29,164
18	Canada	100,220	17	Saudi Arabia	31,938	17	Peru	28,669
21	China	83,293	18	Switzerland	30,060	18	Portugal	24,070
22	Belgium	60,348	19	Ecuador	29,420	19	Ecuador	23,240
25	Sweden	56,043	20	Portugal	26,182	20	Ireland	19,648
27	Netherlands	49,319	21	Mexico	26,025	21	Sweden	18,926
28	Ecuador	49,097	22	Sweden	23,918	22	Saudi Arabia	18,811
31	Singapore	41,473	23	Pakistan	23,214	23	Israel	15,555
32	Portugal	38,089	24	Chile	23,048	24	Austria	15,274
36	Switzerland	31,200	25	Ireland	22,248	25	Mexico	14,677
42	Ireland	25,355	26	Singapore	20,198	26	Singapore	14,423
48	Israel	20,036	29	Israel	16,310	27	Pakistan	13,915
51	Japan	17,668	31	Austria	15,684	28	Chile	13,813
52	Austria	17,223	32	Japan	15,253	29	Japan	13,614
58	S. Korea	12,257	38	S. Korea	10,806	35	South Korea	10,738
	Others	1,282,757		Others	356,176		Others	301,446
	World	8,570,384			3,817,382		World	3,062,515

Country-by-Country

Cases & Cases Per Capita

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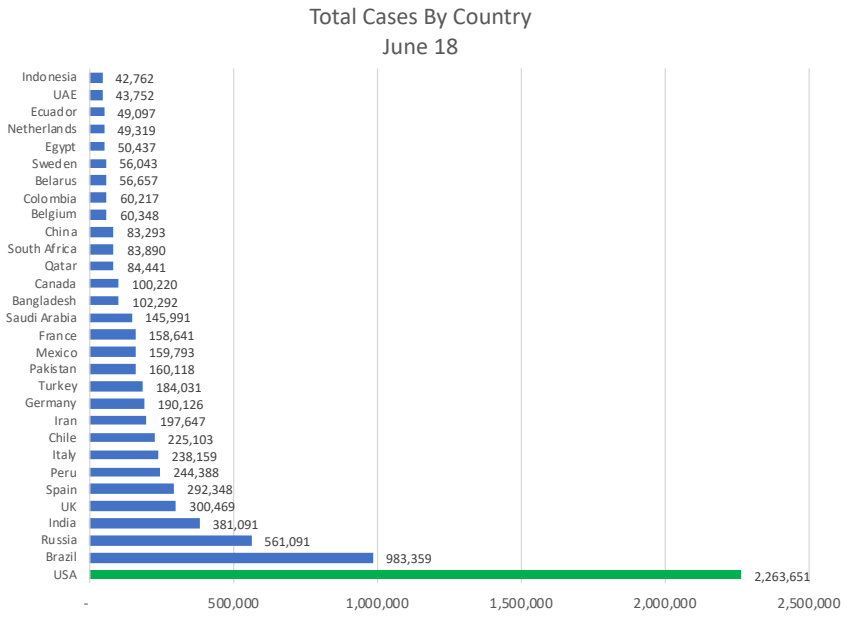
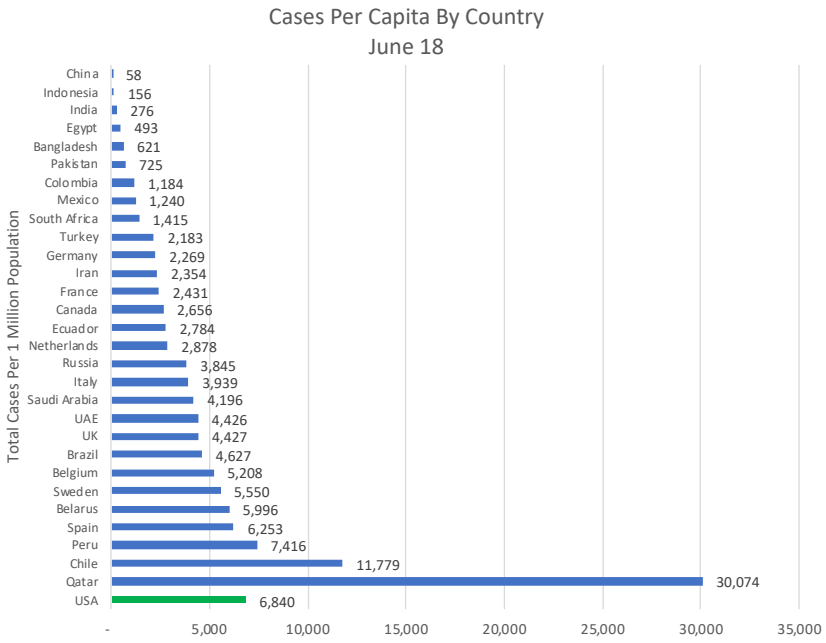
Countries Ranked 1-30 In Total Cases





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Country-by-Country

Deaths Per Cases & Per Capita

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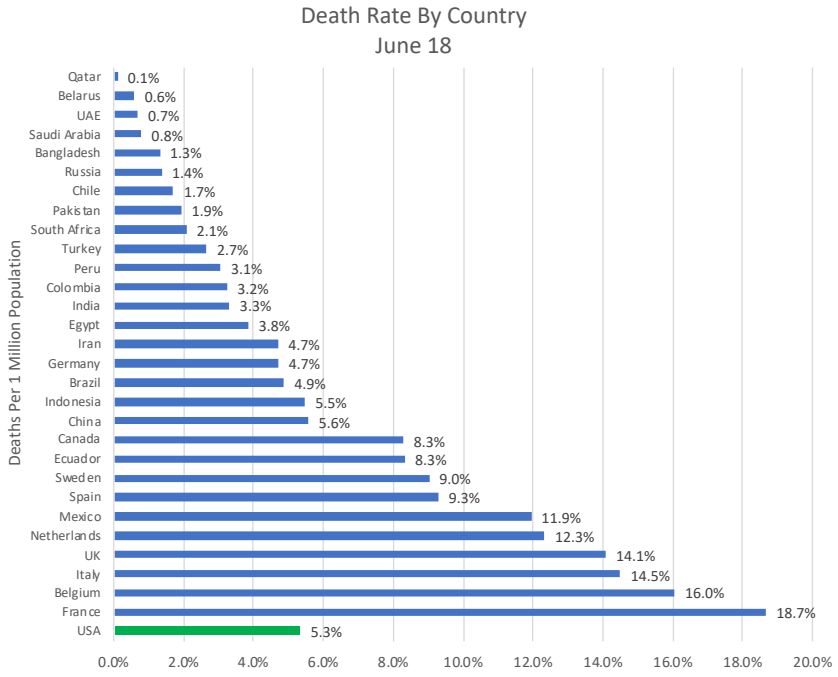
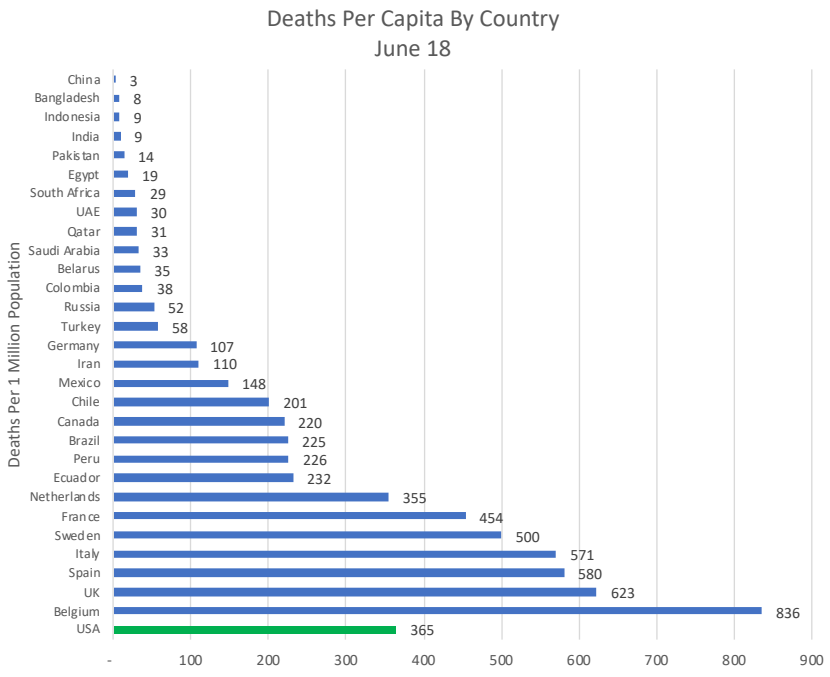
Countries Ranked 1-30 In Total Cases





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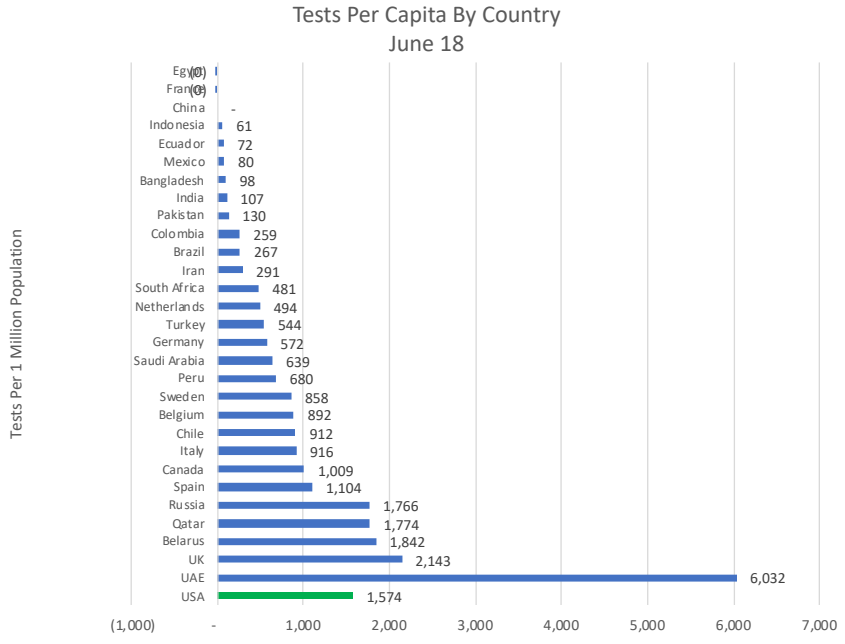
Country-by-Country

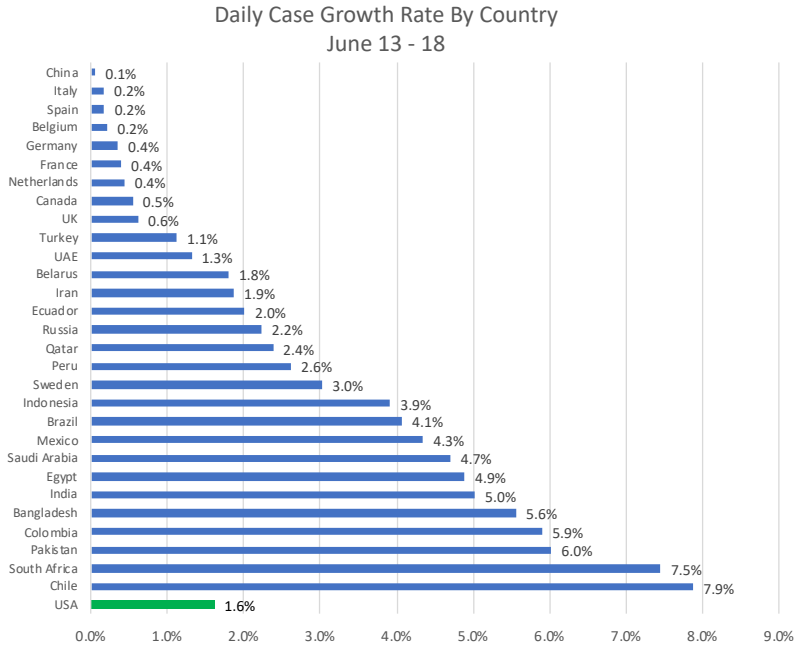
Daily Tests Per Capita & Daily Case Growth

"Strategic Guidance in an Era of Unprecedented Change"

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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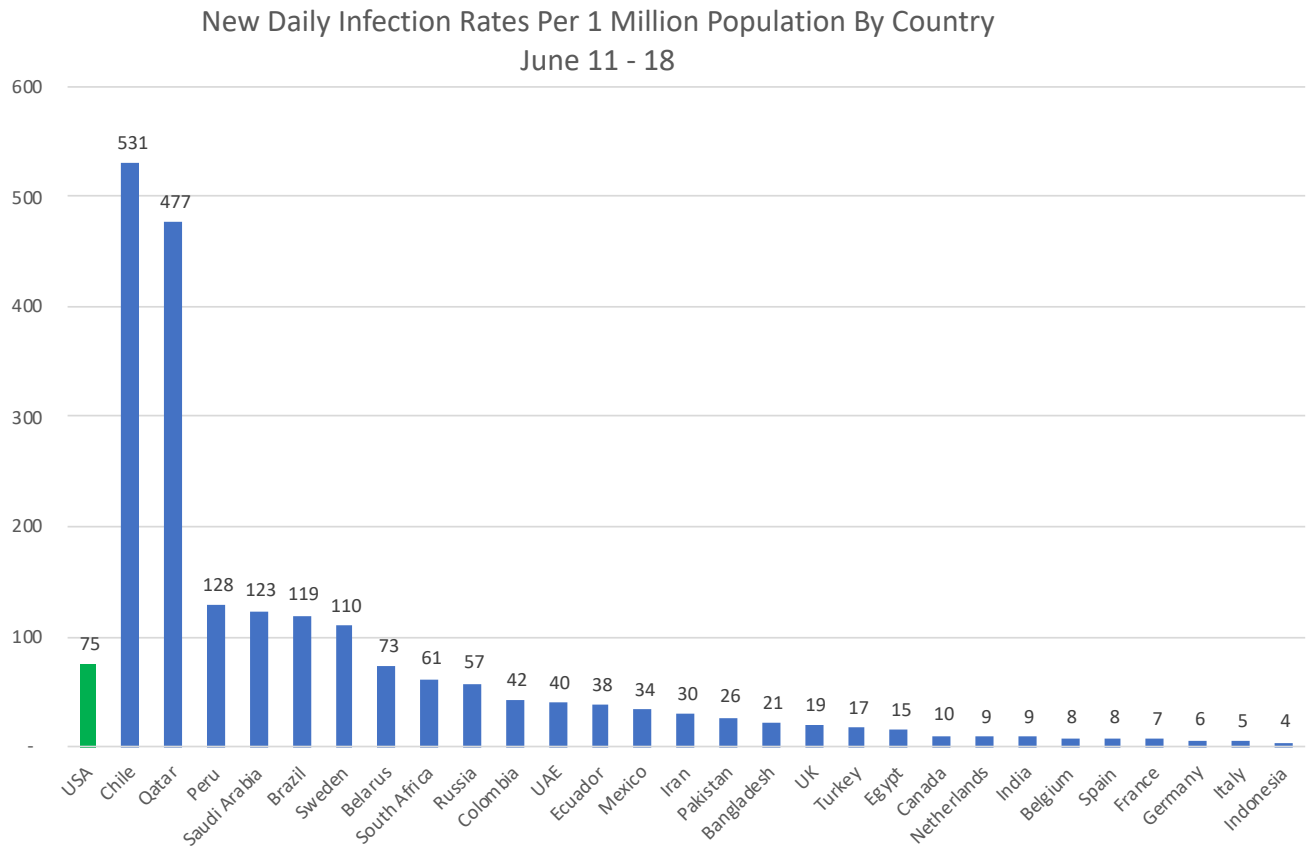

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"Strategic Guidance in an Era of Unprecedented Change"

STATE-BY-STATE
OVERALL ASSESSMENT SCORECARD

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State-By-State
Overall Assessment Scorecard

"Strategic Guidance in an Era of Unprecedented Change"

Several factors should be considered when assessing where a state stands with its virus progression status:

- Current rate of new infections
  - relative to its peak (is it declining or near its peak?)
- Test-positive rate
- Rate of change in cases
- Hospitalized patients v. its peak

We combined these criteria into a single score, reflective of our relative degree of concern of each state's current status (High, Moderately High, Moderate, Low)

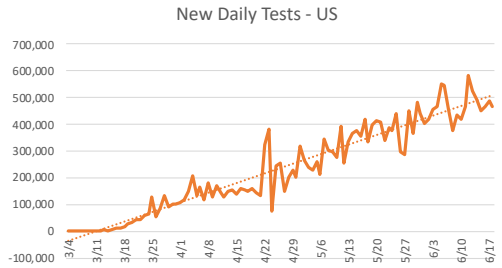
Status, as of June 18

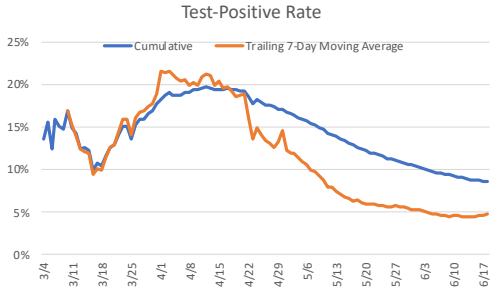
United States

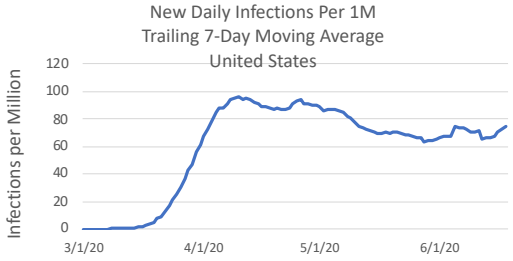
Overall Statistics

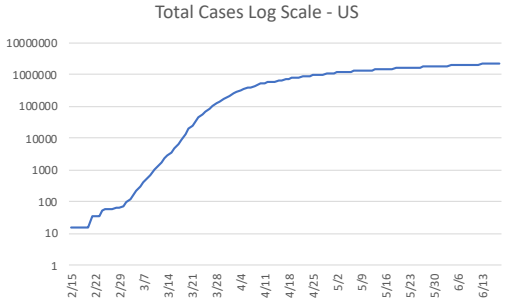
"Strategic Guidance in an Era of Unprecedented Change"

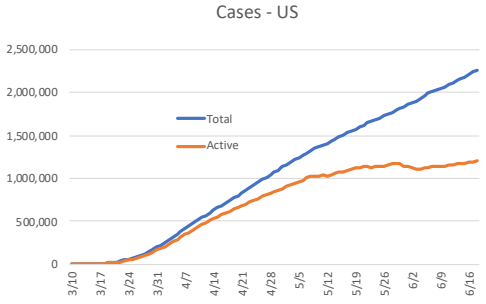
With significantly increased testing, the US is now meeting the WHO standard of <10% test-positives. This suggests that asymptomatic cases are being captured and that we have a better view of true infection rates.
Further, new daily infections continue to decline; the death rate seems to have stabilized.

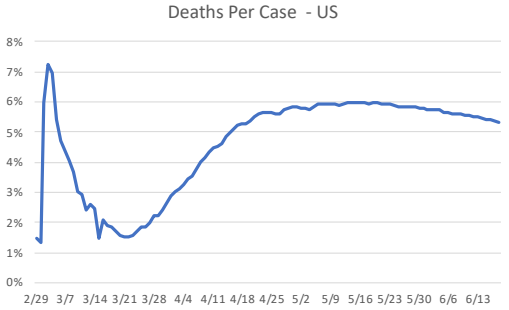












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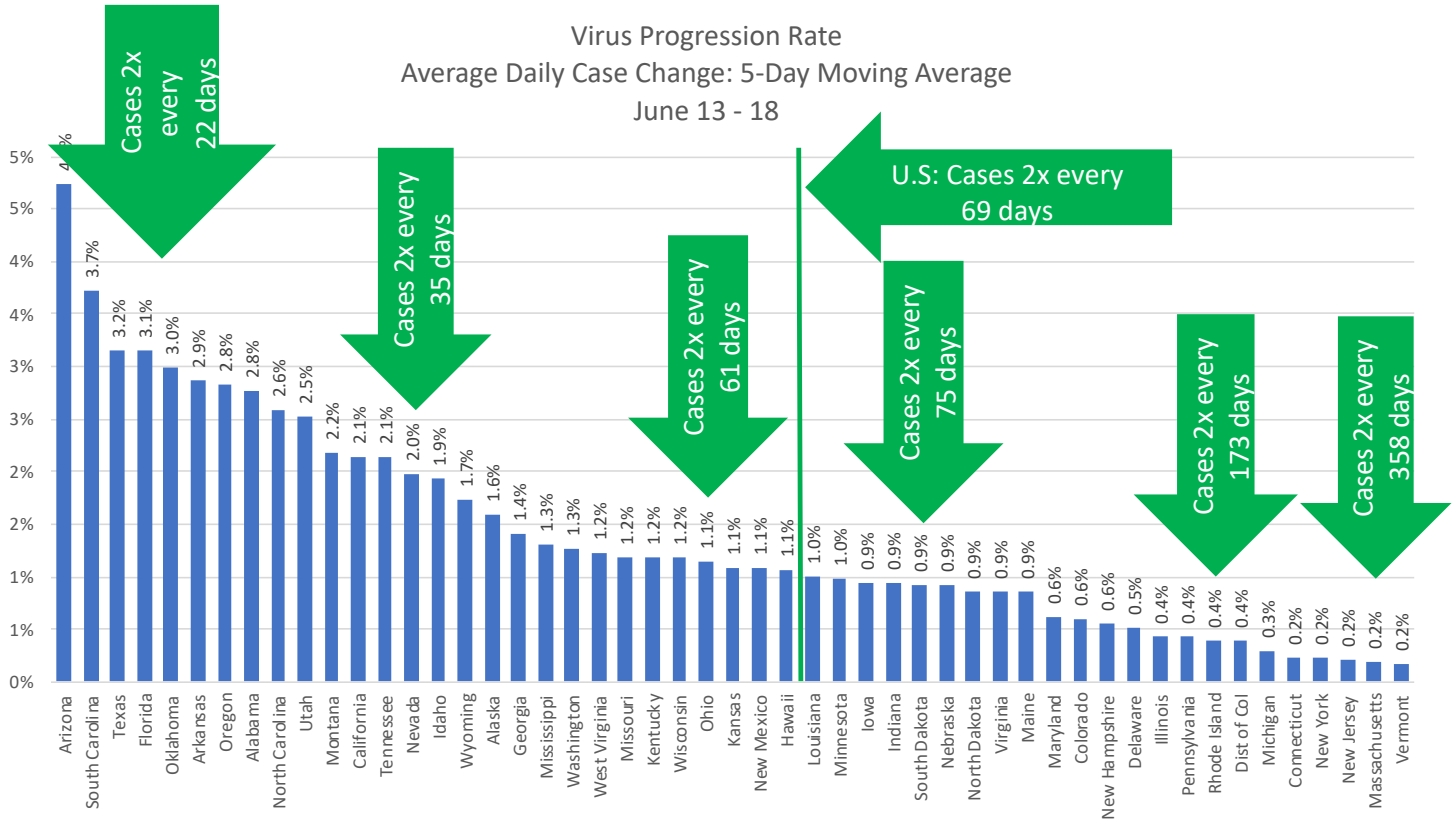
State-by-State

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 15 – 392 days to double



State-by-State

New Daily Infections & Tests Per Capita

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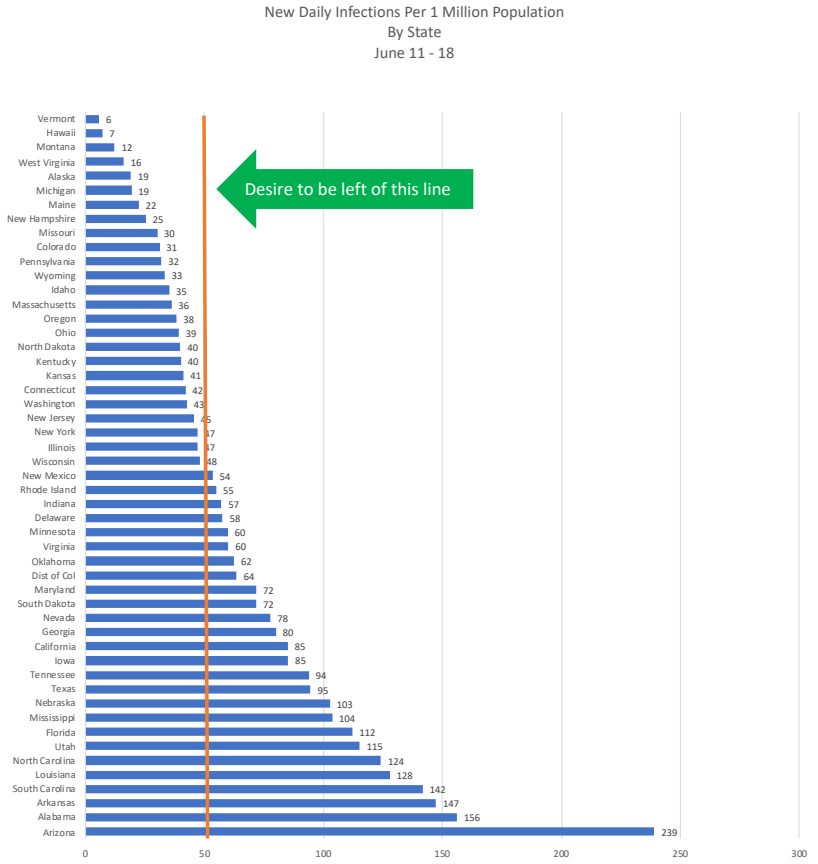

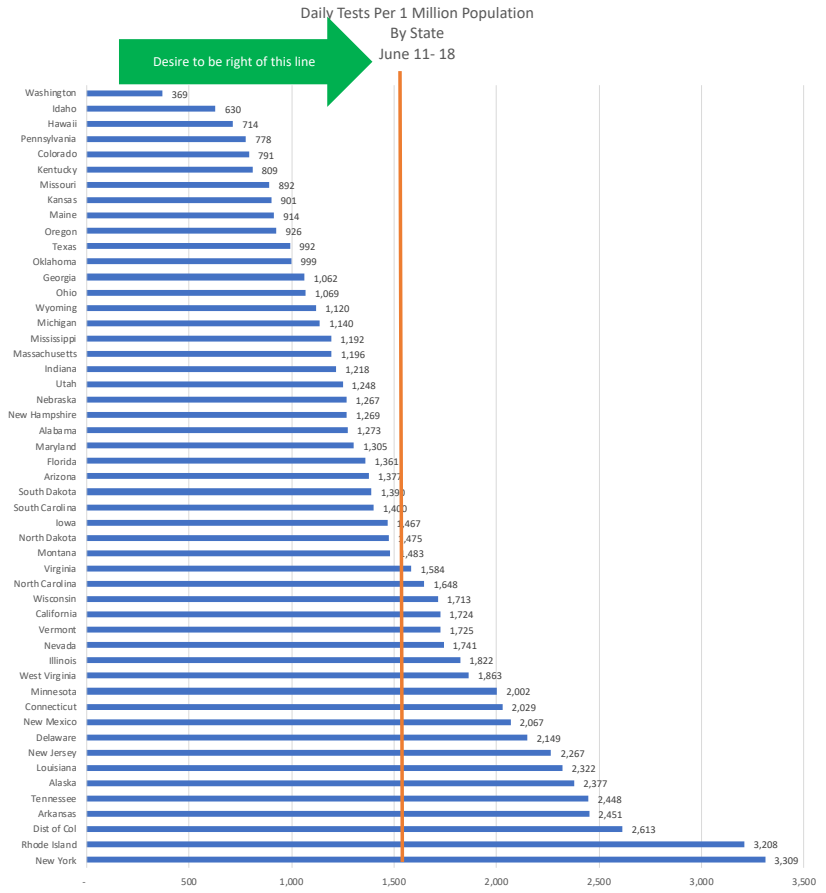

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State-by-State

Cases & Deaths Per Capita

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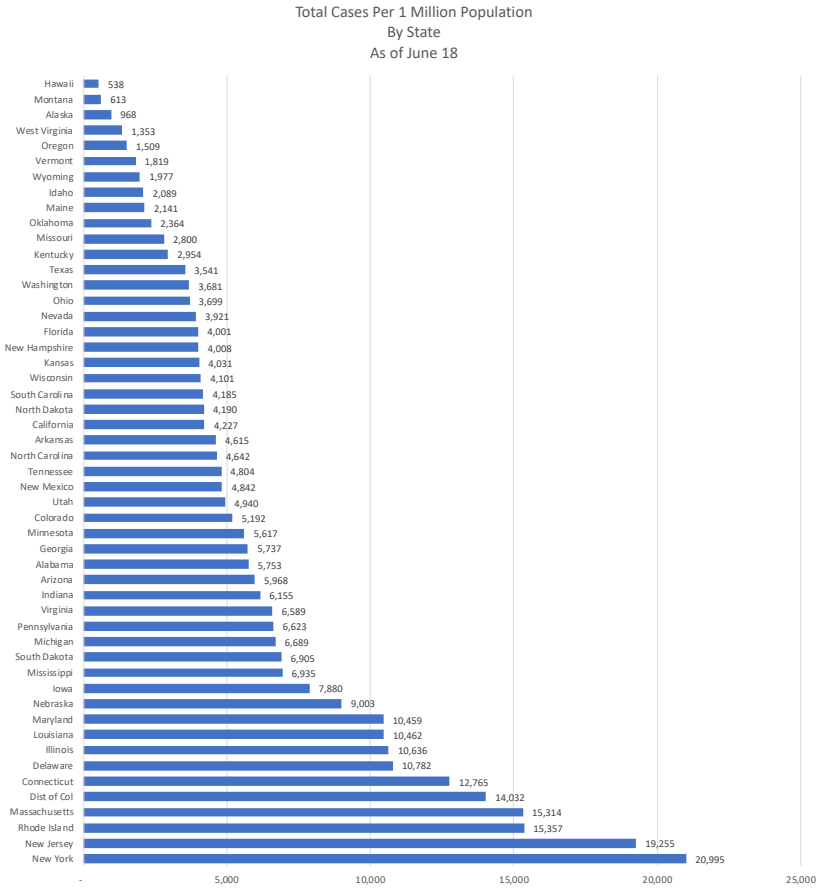

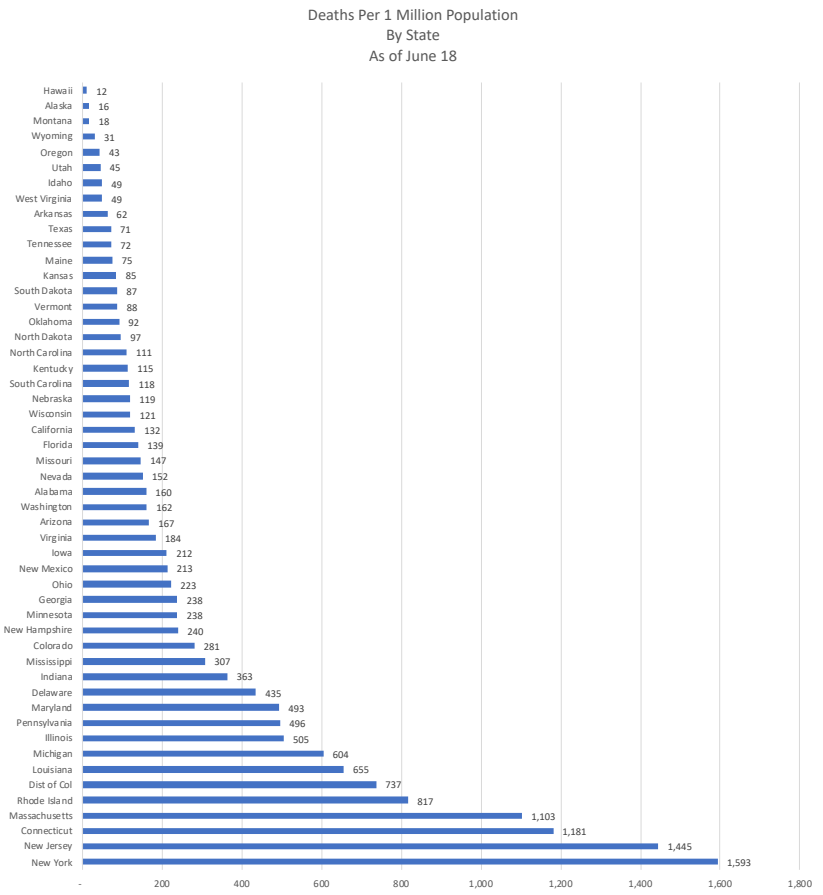

State-by-State

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. Only Alabama and Arizona failed to meet this guideline for the past week (Washington made an adjustment to their test data yesterday, impacting its rate calculation).

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 2 weeks

June 18

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									

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									

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 past 4 weeks

June 18

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 21

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 following page

Relative "Readiness" For Relaxing Restrictions

Legend:

Time period	Tests per Capita (per 1M, Average last 2 weeks)	Direction (last 14 days v prior 2 weeks)	Test-Positive Rate (last 7 days)	Direction (last 14 days v prior 2 weeks)	New Daliy Infection Rate (per 1M, last 7 days)	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 - June 7, 2020

Test data from Covid Tracking Project (https://covidtracking.com/), accessed March 21-June 19, 2020

Hospital resource Need projections from Institure for Health Metrics and Evaluation (), accessed April 30- June 7, 2020

Infection rate data from worldometer.info, accessed March 21-June 19, 2020

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State-by-State

Comparative Statistics- Page 1 of 2

"Strategic Guidance in an Era of Unprecedented Change"

As of June 18

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	28,206	(22)	5,752.6	(20)	810	(25)	2.9%	(36)	165.2	(24)	2.8%	(8)	1,273	(29)	155.1	(2)
Alaska	708	(50)	967.8	(49)	12	(51)	1.7%	(45)	16.4	(50)	1.6%	(17)	2,377	(6)	20.1	(46)
Arizona	43,443	(16)	5,968.5	(19)	1,271	(19)	2.9%	(34)	174.6	(23)	4.7%	(1)	1,377	(26)	217.3	(1)
Arkansas	13,928	(32)	4,615.2	(28)	208	(39)	1.5%	(48)	68.9	(43)	2.9%	(6)	2,451	(4)	153.3	(3)
California	167,007	(3)	4,226.7	(29)	5,362	(7)	3.2%	(30)	135.7	(29)	2.1%	(12)	1,724	(17)	84.2	(13)
Colorado	29,901	(21)	5,192.3	(23)	1,638	(16)	5.5%	(12)	284.4	(15)	0.6%	(39)	791	(47)	29.1	(43)
Connecticut	45,510	(15)	12,764.8	(6)	4,226	(8)	9.3%	(1)	1,185.3	(3)	0.2%	(47)	2,029	(11)	43.4	(30)
Delaware	10,499	(36)	10,781.9	(7)	431	(34)	4.1%	(23)	442.6	(12)	0.5%	(41)	2,149	(9)	56.9	(23)
District Of Columbia	9,903	(38)	14,031.9	(5)	527	(29)	5.3%	(14)	746.7	(6)	0.4%	(45)	2,613	(3)	62.7	(19)
Florida	85,926	(7)	4,000.7	(35)	3,064	(10)	3.6%	(28)	142.7	(28)	3.1%	(4)	1,361	(27)	102.1	(9)
Georgia	60,912	(11)	5,737.0	(21)	2,605	(13)	4.3%	(22)	245.4	(16)	1.4%	(18)	1,062	(39)	81.4	(16)
Hawaii	762	(49)	538.2	(51)	17	(50)	2.2%	(42)	12.0	(51)	1.1%	(28)	714	(49)	6.0	(51)
Idaho	3,743	(43)	2,088.7	(44)	89	(43)	2.4%	(40)	49.7	(44)	1.9%	(15)	630	(50)	29.7	(42)
Illinois	134,778	(4)	10,636.0	(8)	6,537	(4)	4.9%	(16)	515.9	(9)	0.4%	(42)	1,822	(14)	49.0	(27)
Indiana	41,438	(18)	6,155.2	(18)	2,491	(14)	6.0%	(10)	370.0	(13)	0.9%	(32)	1,218	(33)	56.8	(24)
Iowa	24,861	(24)	7,879.7	(12)	680	(27)	2.7%	(38)	215.5	(21)	0.9%	(31)	1,467	(23)	83.1	(14)
Kansas	11,743	(35)	4,030.8	(33)	251	(37)	2.1%	(43)	86.2	(39)	1.1%	(26)	901	(44)	42.7	(31)
Kentucky	13,197	(33)	2,953.9	(40)	520	(30)	3.9%	(24)	116.4	(34)	1.2%	(23)	809	(46)	35.6	(38)
Louisiana	48,634	(14)	10,461.6	(9)	3,068	(9)	6.3%	(7)	660.0	(7)	1.0%	(29)	2,322	(7)	141.5	(4)
Maine	2,878	(45)	2,141.0	(43)	102	(42)	3.5%	(29)	75.9	(40)	0.9%	(37)	914	(43)	21.1	(45)
Maryland	63,229	(10)	10,458.5	(10)	3,016	(11)	4.8%	(17)	498.9	(11)	0.6%	(38)	1,305	(28)	82.8	(15)
Massachusetts	106,422	(5)	15,313.6	(4)	7,770	(3)	7.3%	(6)	1,118.1	(4)	0.2%	(50)	1,196	(34)	41.0	(33)
Michigan	66,798	(9)	6,688.6	(15)	6,061	(6)	9.1%	(2)	606.9	(8)	0.3%	(46)	1,140	(36)	18.8	(47)
Minnesota	31,675	(20)	5,616.5	(22)	1,376	(18)	4.3%	(21)	244.0	(17)	1.0%	(30)	2,002	(12)	61.5	(21)
Mississippi	20,641	(27)	6,935.5	(13)	938	(23)	4.5%	(18)	315.2	(14)	1.3%	(19)	1,192	(35)	103.6	(8)

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State-by-State

Comparative Statistics- Page 2 of 2

"Strategic Guidance in an Era of Unprecedented Change"

As of June 18

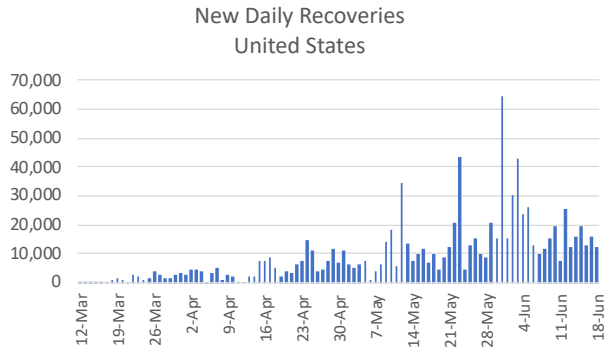
State	Total Cases	Rank	Cases per 1M Population	Rank2	Deaths	Rank3	Death Rate	Rank4	Deaths per 1 Million Population	Rank5	5-day Moving Average Case Growth Rate	Rank6	Tests per 1M Population Past 7 days	Rank7	New Daily Cases Per 1M Population (5-Day M.A.)	Rank8
Missouri	17,185	(29)	2,800.0	(41)	946	(22)	5.5%	(11)	154.1	(27)	1.2%	(22)	892	(45)	35.3	(39)
Montana	655	(51)	612.8	(50)	20	(48)	3.1%	(31)	18.7	(49)	2.2%	(11)	1,483	(21)	9.2	(49)
Nebraska	17,415	(28)	9,002.8	(11)	240	(38)	1.4%	(49)	124.1	(30)	0.9%	(34)	1,267	(31)	88.7	(11)
Nevada	12,076	(34)	3,920.6	(36)	475	(32)	3.9%	(25)	154.2	(26)	2.0%	(14)	1,741	(15)	77.8	(17)
New Hampshire	5,450	(42)	4,008.2	(34)	331	(36)	6.1%	(9)	243.4	(18)	0.6%	(40)	1,269	(30)	27.1	(44)
New Jersey	171,029	(2)	19,255.3	(2)	12,927	(2)	7.6%	(5)	1,455.4	(2)	0.2%	(49)	2,267	(8)	47.0	(28)
New Mexico	10,153	(37)	4,842.1	(25)	456	(33)	4.5%	(19)	217.5	(20)	1.1%	(27)	2,067	(10)	55.5	(25)
New York	408,426	(1)	20,994.9	(1)	31,092	(1)	7.6%	(3)	1,598.3	(1)	0.2%	(48)	3,309	(1)	37.0	(36)
North Carolina	48,690	(13)	4,642.4	(27)	1,235	(21)	2.5%	(39)	117.8	(33)	2.6%	(9)	1,648	(19)	116.3	(6)
North Dakota	3,193	(44)	4,189.9	(30)	75	(46)	2.3%	(41)	98.4	(35)	0.9%	(35)	1,475	(22)	42.2	(32)
Ohio	43,238	(17)	3,699.0	(37)	2,637	(12)	6.1%	(8)	225.6	(19)	1.1%	(25)	1,069	(38)	35.6	(37)
Oklahoma	9,354	(39)	2,363.9	(42)	366	(35)	3.9%	(26)	92.5	(36)	3.0%	(5)	999	(40)	51.4	(26)
Oregon	6,366	(40)	1,509.3	(47)	187	(40)	2.9%	(33)	44.3	(47)	2.8%	(7)	926	(42)	39.2	(34)
Pennsylvania	84,792	(8)	6,623.3	(16)	6,427	(5)	7.6%	(4)	502.0	(10)	0.4%	(43)	778	(48)	33.6	(40)
Rhode Island	16,269	(30)	15,357.4	(3)	885	(24)	5.4%	(13)	835.4	(5)	0.4%	(44)	3,208	(2)	61.6	(20)
South Carolina	21,548	(26)	4,185.1	(31)	621	(28)	2.9%	(35)	120.6	(32)	3.7%	(2)	1,400	(24)	133.1	(5)
South Dakota	6,109	(41)	6,905.5	(14)	78	(45)	1.3%	(50)	88.2	(38)	0.9%	(33)	1,390	(25)	72.0	(18)
Tennessee	32,829	(19)	4,804.4	(26)	509	(31)	1.6%	(47)	74.5	(41)	2.1%	(13)	2,448	(5)	89.4	(10)
Texas	102,661	(6)	3,540.5	(39)	2,142	(15)	2.1%	(44)	73.9	(42)	3.2%	(3)	992	(41)	88.0	(12)
Utah	15,839	(31)	4,940.5	(24)	152	(41)	1.0%	(51)	47.4	(46)	2.5%	(10)	1,248	(32)	110.5	(7)
Vermont	1,135	(48)	1,818.9	(46)	56	(47)	4.9%	(15)	89.7	(37)	0.2%	(51)	1,725	(16)	8.2	(50)
Virginia	56,238	(12)	6,588.7	(17)	1,586	(17)	2.8%	(37)	185.8	(22)	0.9%	(36)	1,584	(20)	60.2	(22)
Washington	28,028	(23)	3,680.7	(38)	1,248	(20)	4.5%	(20)	163.9	(25)	1.3%	(20)	369	(51)	38.3	(35)
West Virginia	2,418	(46)	1,353.0	(48)	88	(44)	3.6%	(27)	49.2	(45)	1.2%	(21)	1,863	(13)	14.6	(48)
Wisconsin	23,876	(25)	4,100.7	(32)	719	(26)	3.0%	(32)	123.5	(31)	1.2%	(24)	1,713	(18)	45.7	(29)
Wyoming	1,144	(47)	1,976.6	(45)	18	(49)	1.6%	(46)	31.1	(48)	1.7%	(16)	1,120	(37)	33.1	(41)
United States	2,263,651		6,838.8		120,688		5.3%		364.7		1.1%		1,497		75.1	

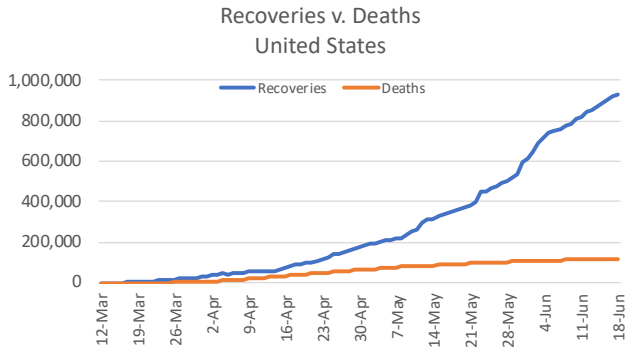
UNDER-REPORTED RECOVERIES? POSSIBLE LAG IN STATE REPORTING

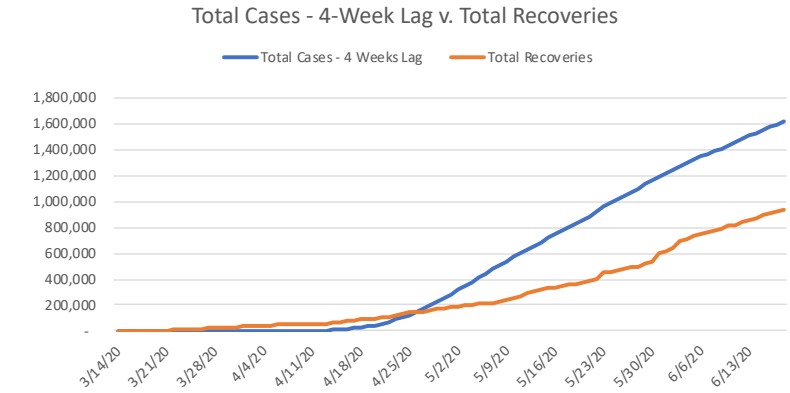
United States

Recoveries

"Strategic Guidance in an Era of Unprecedented Change"







Health Industry Advisor, llc

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 ~365-528k

State	Recoveries	Expected Recoveries Low	Expected Recoveries High
Alabama	15,974	10,630	11,959
Alaska	438	322	362
Arizona	6,863	12,252	13,784
Arkansas	9,376	4,366	4,912
California	45,722	70,561	79,381
Colorado	4,368	18,553	20,872
Connecticut	9,039	31,366	35,287
Delaware	6,350	6,709	7,547
District Of Columbia	1,155	6,230	7,009
Florida	16,551	38,940	43,808
Georgia	4,200	32,530	36,597
Hawaii	640	518	582
Idaho	3,088	2,027	2,281
Illinois	86,849	82,149	92,417
Indiana	30,175	23,949	26,942
Iowa	15,575	12,936	14,553
Kansas	6,911	6,938	7,806
Kentucky	3,506	6,629	7,457
Louisiana	37,017	29,203	32,854
Maine	2,300	1,502	1,689
Maryland	4,640	34,825	39,178
Massachusetts	88,725	72,067	81,076
Michigan	45,089	42,808	48,159
Minnesota	27,566	14,560	16,380
Mississippi	15,323	9,778	11,000
Missouri	3,800	9,324	10,490
Montana	545	383	431
Nebraska	11,066	9,140	10,283
Nevada	8,716	5,804	6,530
New Hampshire	4,104	3,148	3,542
New Jersey	35,053	122,753	138,097
New Mexico	4,351	5,178	5,825
New York	86,865	293,086	329,721
North Carolina	29,219	16,976	19,098
North Dakota	2,809	1,783	2,006
Ohio	9,211	24,170	27,191
Oklahoma	7,071	4,544	5,112
Oregon	2,502	3,054	3,435
Pennsylvania	57,995	55,498	62,435
Rhode Island	1,502	10,857	12,214
South Carolina	9,734	7,503	8,441
South Dakota	5,069	3,400	3,825
Tennessee	21,949	15,169	17,065
Texas	63,815	42,806	48,156
Utah	8,786	6,299	7,087
Vermont	917	760	855
Virginia	7,493	27,310	30,723
Washington	9,056	16,021	18,023
West Virginia	1,665	1,282	1,443
Wisconsin	17,613	11,108	12,497
Wyoming	870	641	721
United States	930,994	1,296,722	1,458,812

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

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

VIRUS PROGRESSION: ROADMAP TO RECOVERY

Virus Progression

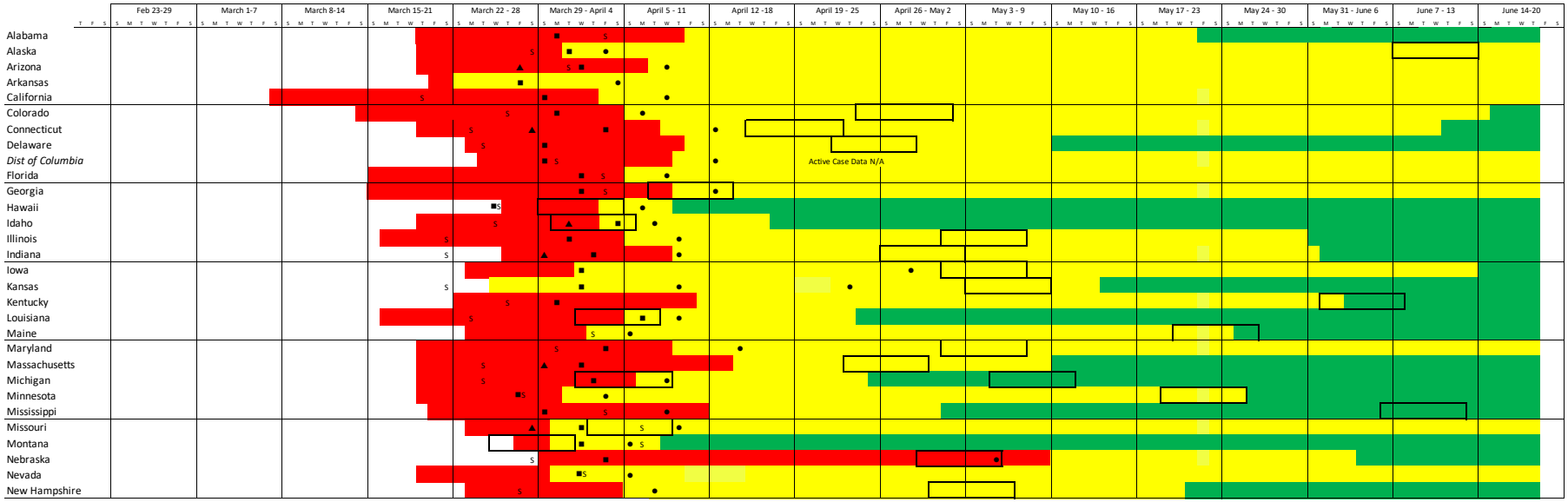
The graphic on the following two pages illustrates when the state first recorded 100 total cases (start of the "contagion" phase); when growth stopped following an exponential pattern (start of the "containment" phase); and, when peak total cases were recorded (start of the "recovery" phase). It uses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

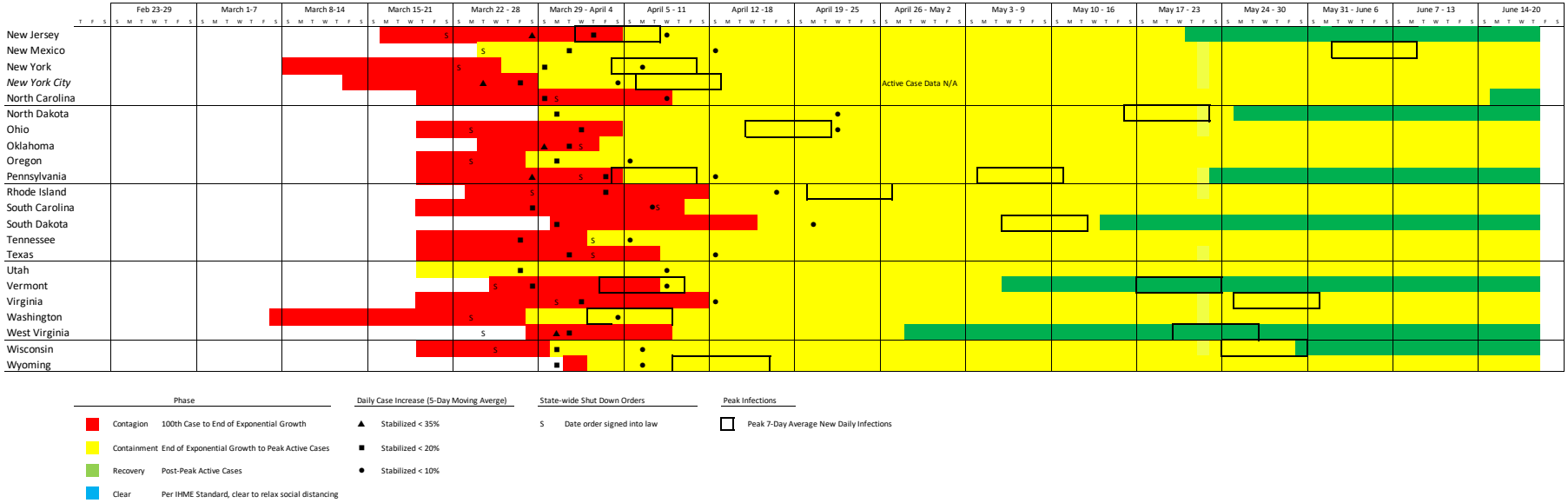
Virus Progression – *1 of 2*

"Strategic Guidance in an Era of Unprecedented Change"



Legend on following page

Virus Progression – *2 of 2*



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 provided at a time. Today, we provide:

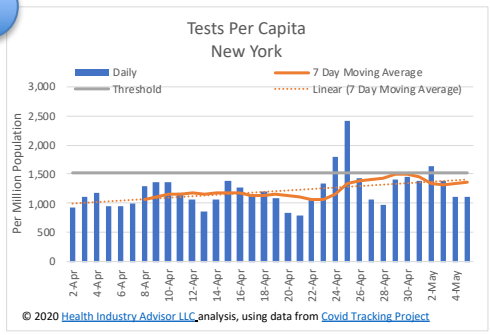
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Texas
- Utah
- Vermont
- Virginia
- Washington
- West Virginia
- Wisconsin
- Wyoming

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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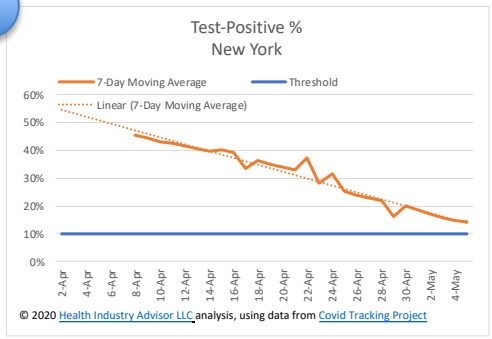

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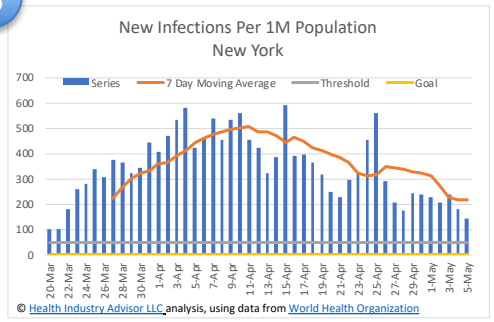

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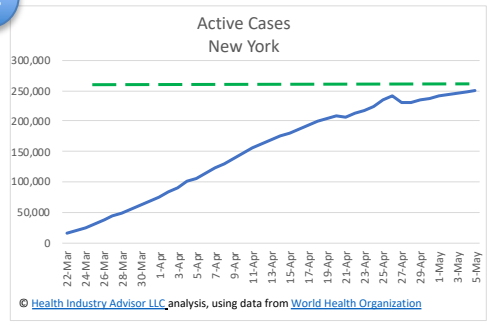
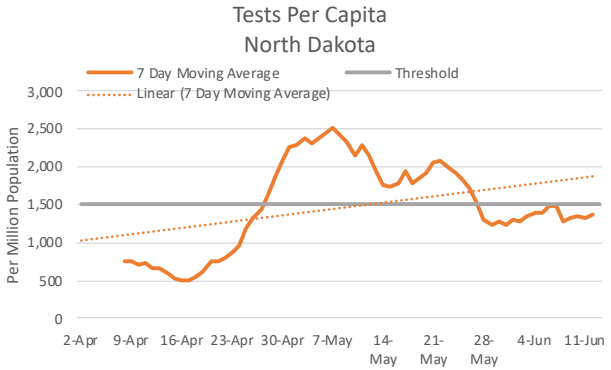
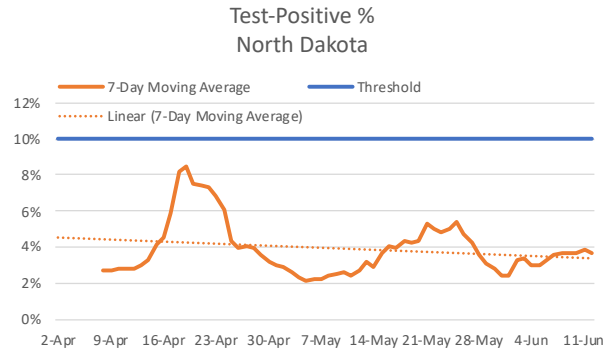


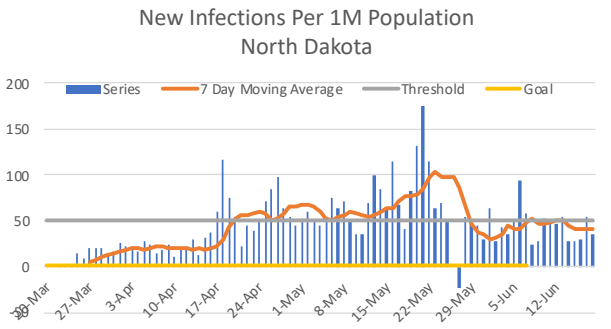
State-by-State

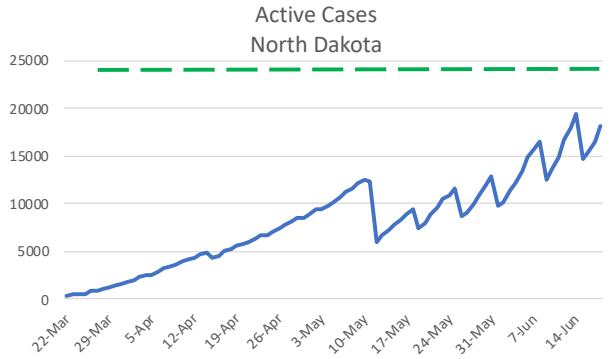
Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"

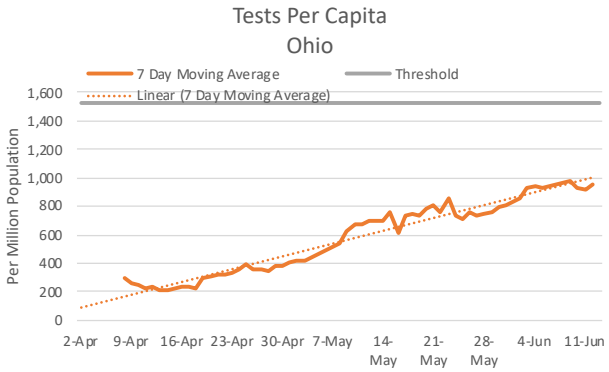


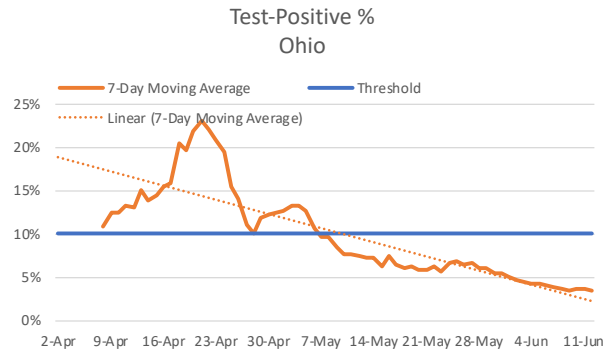


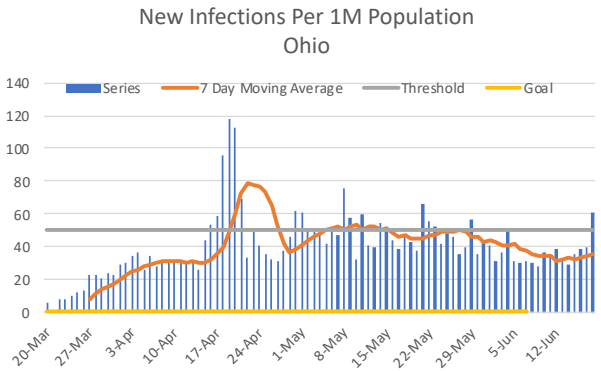


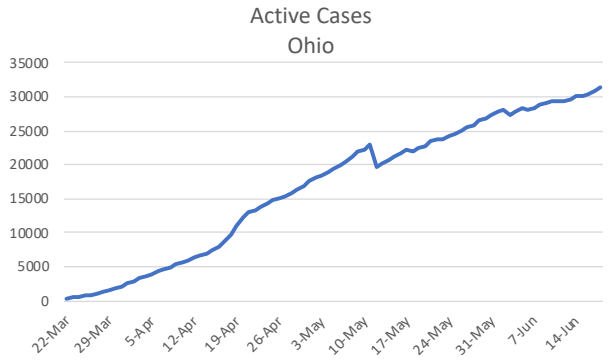


Test, New Daily Infection and Active Case Trends





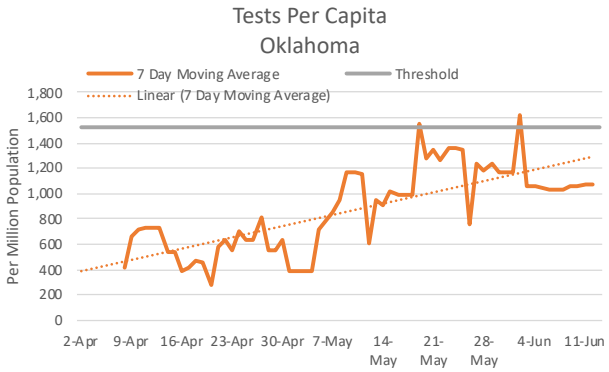


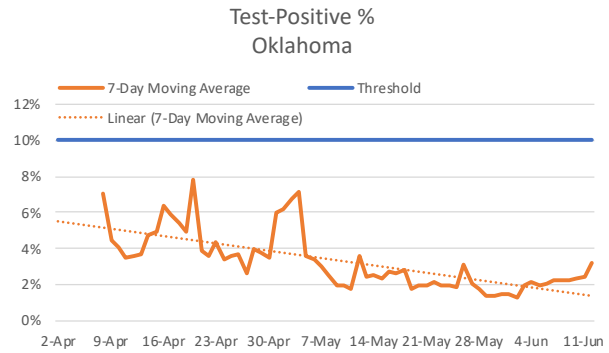


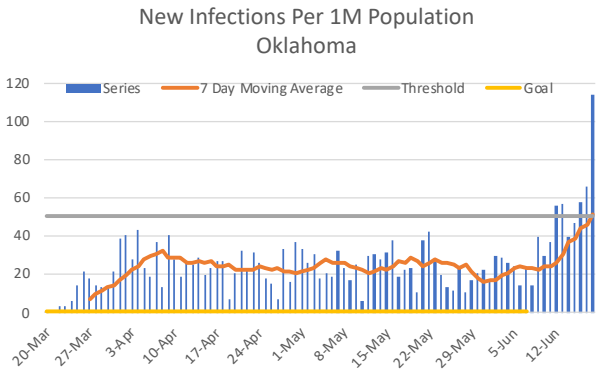
State-by-State

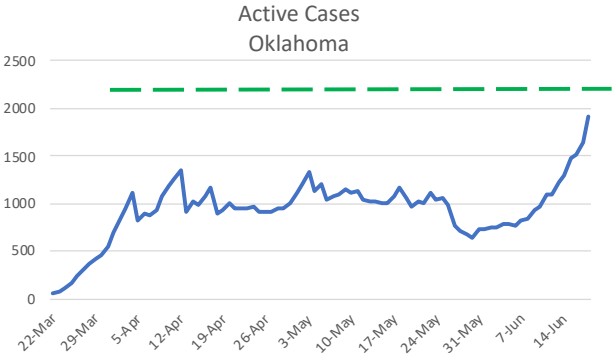
Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"





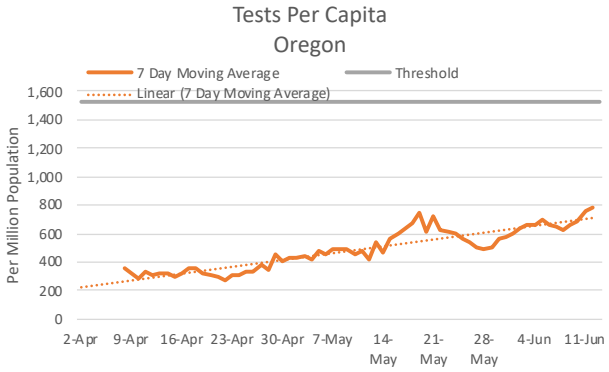


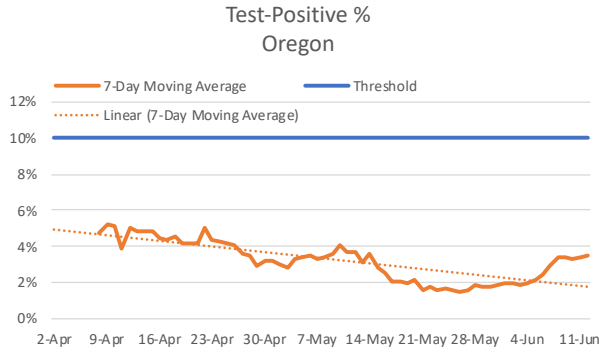


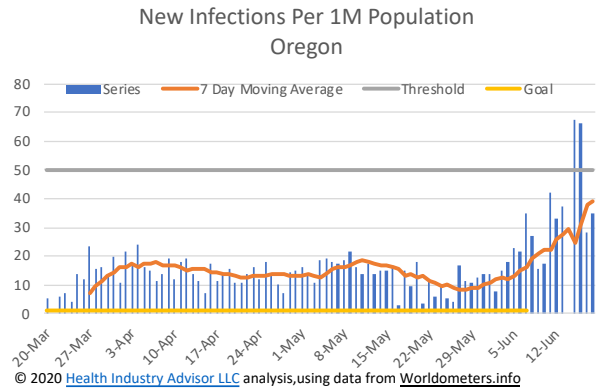
State-by-State

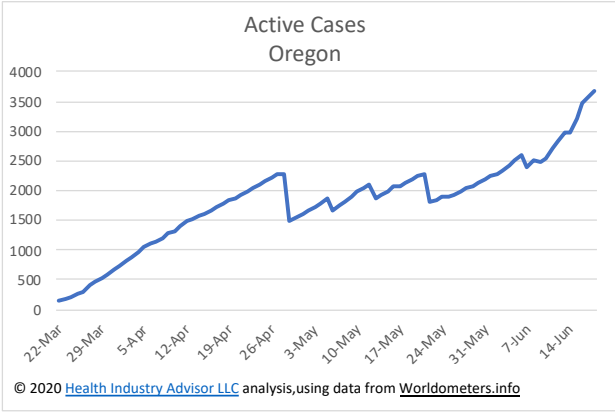
Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"









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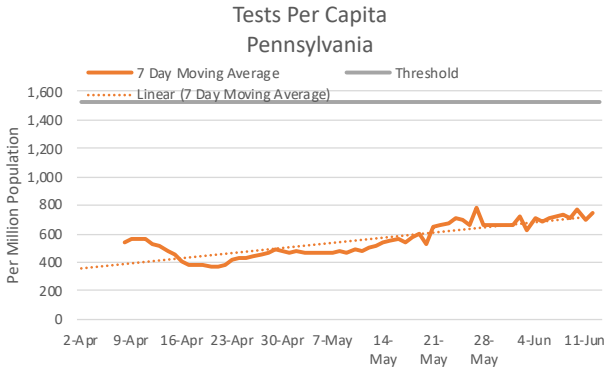

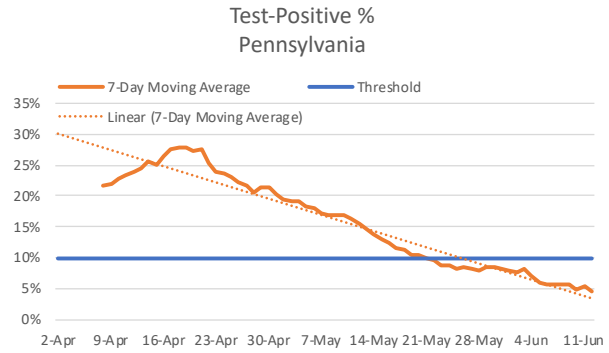

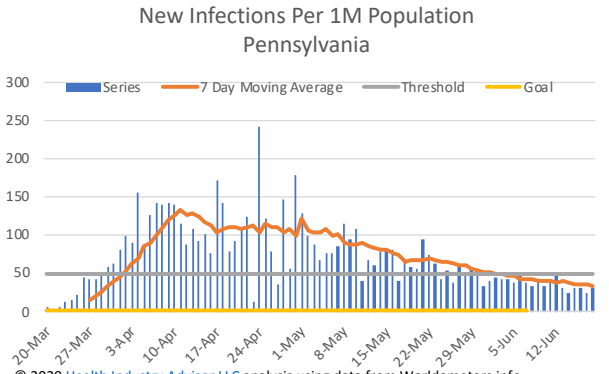

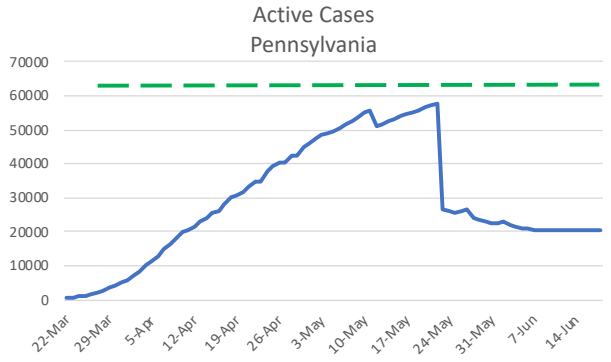

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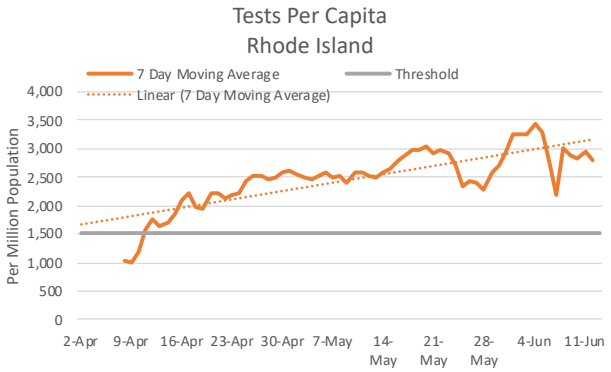
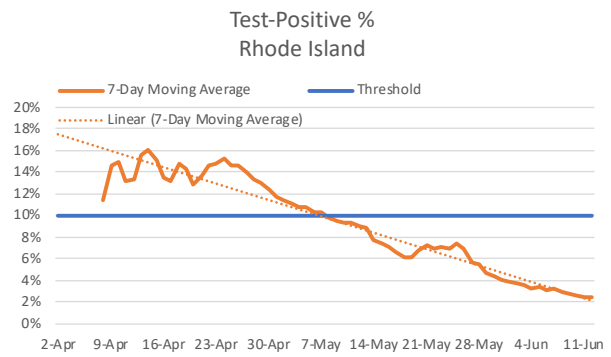
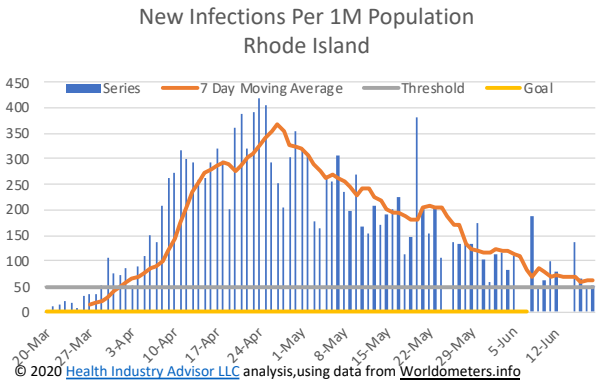
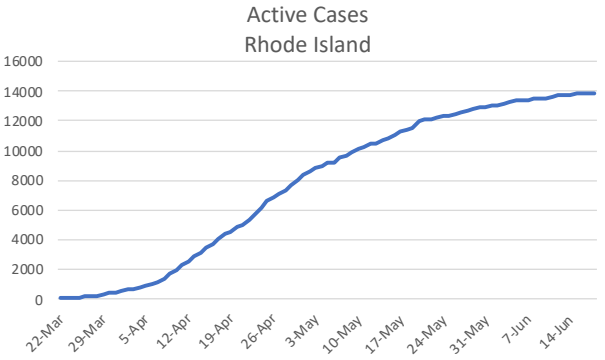




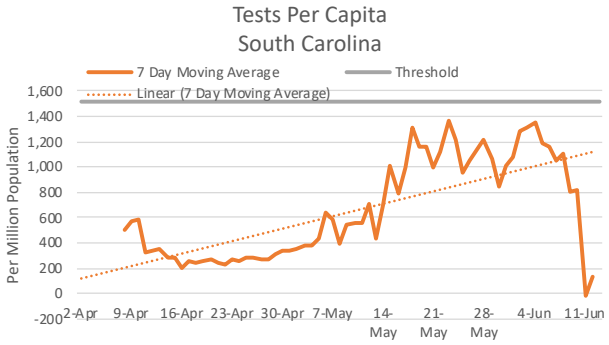


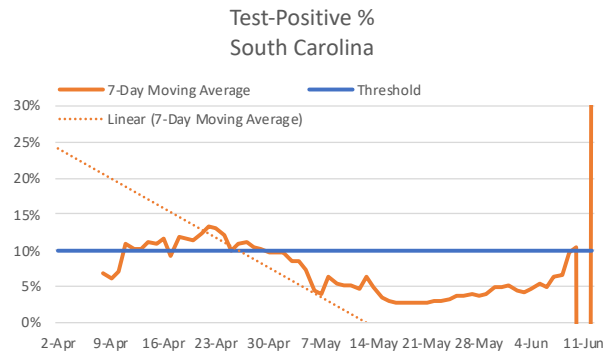


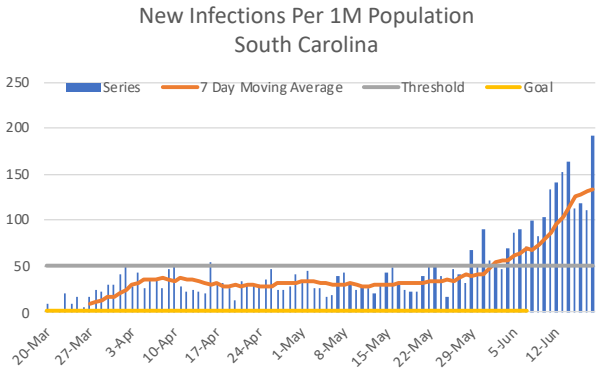
State-by-State

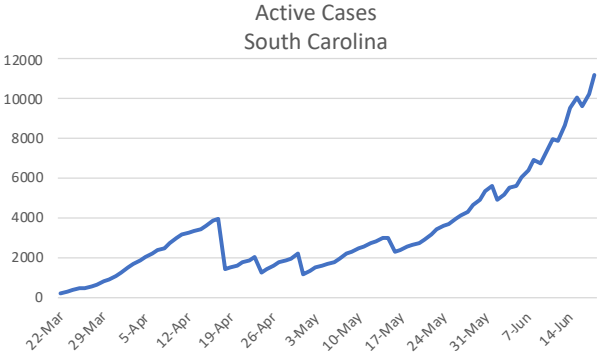
Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"

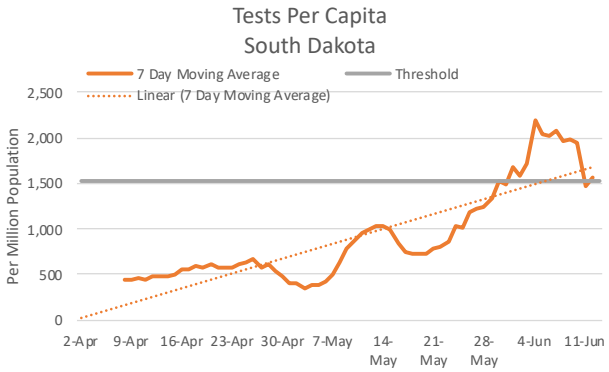


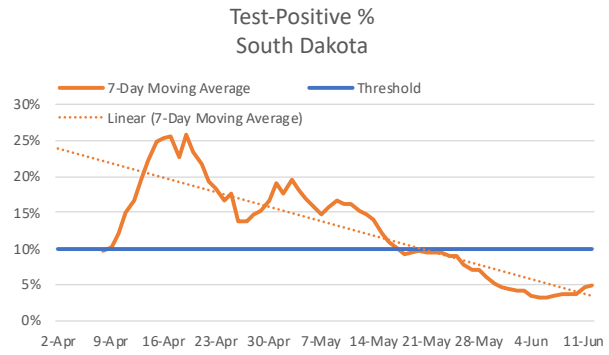


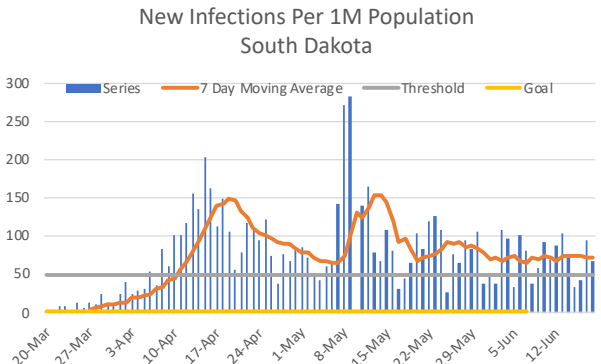


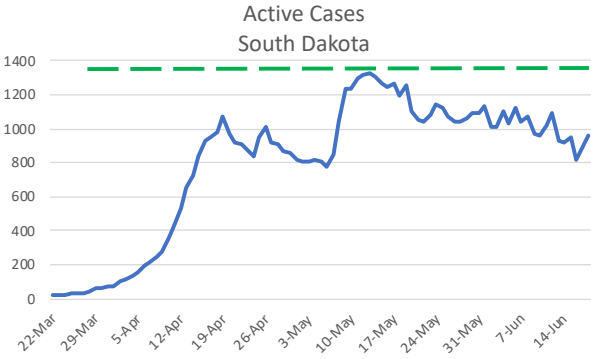


Test, New Daily Infection and Active Case Trends





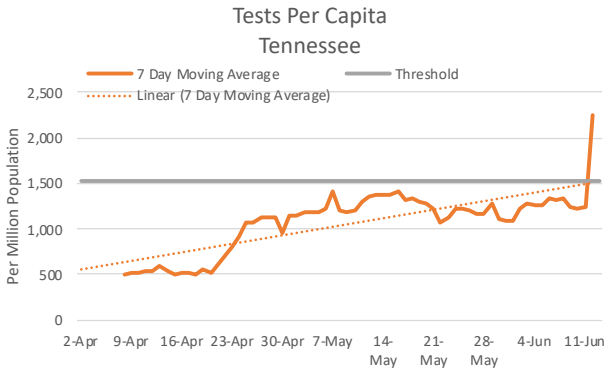


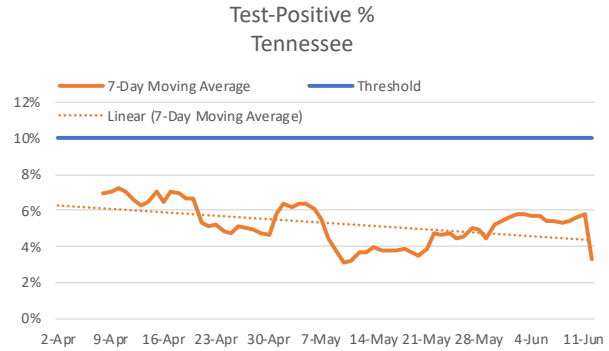


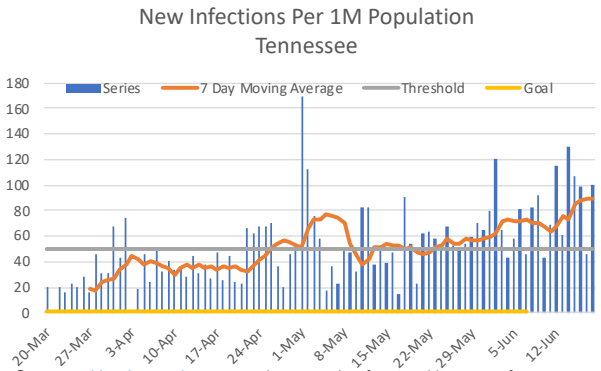
State-by-State

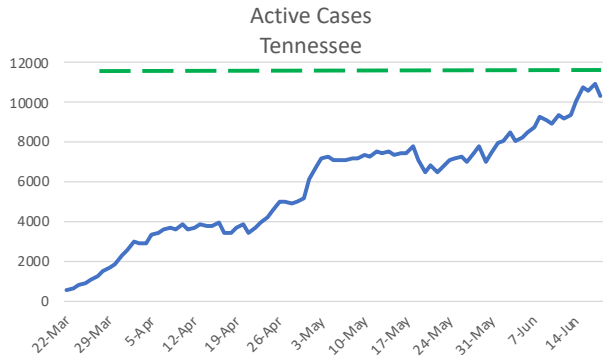
Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"





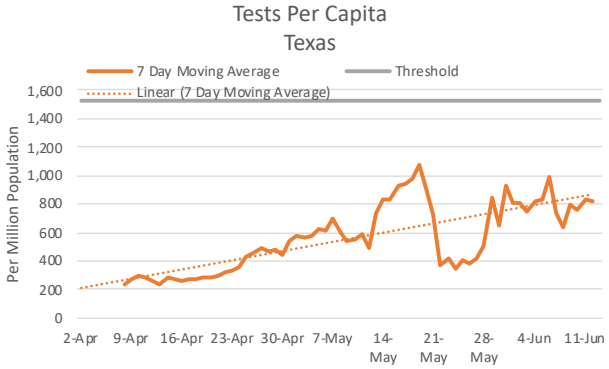


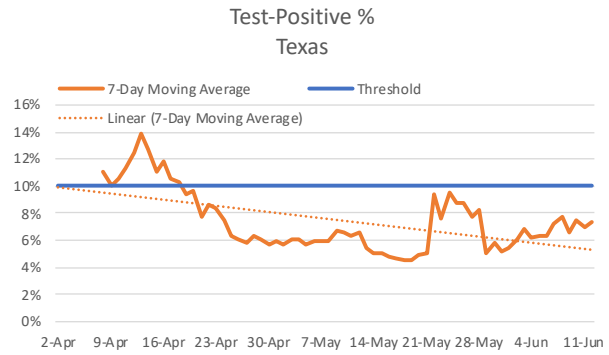


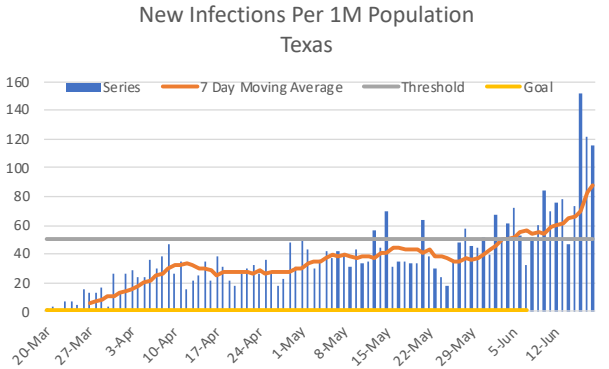
State-by-State

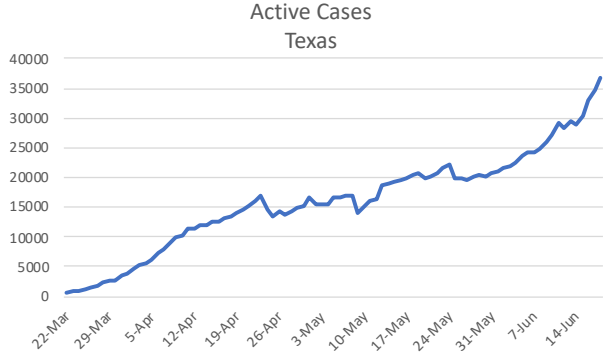
Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"









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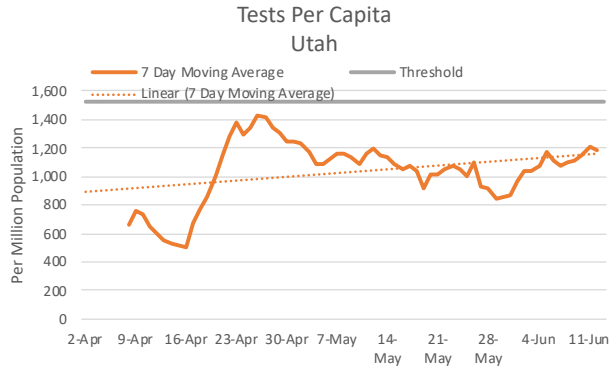

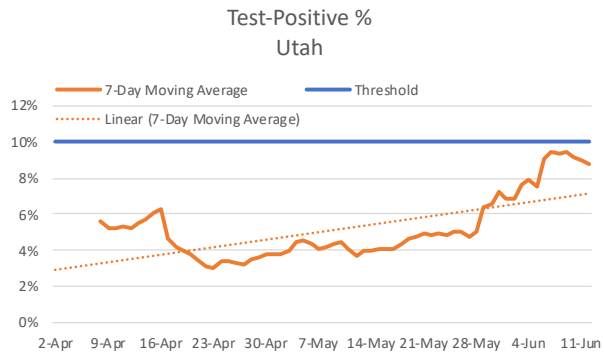

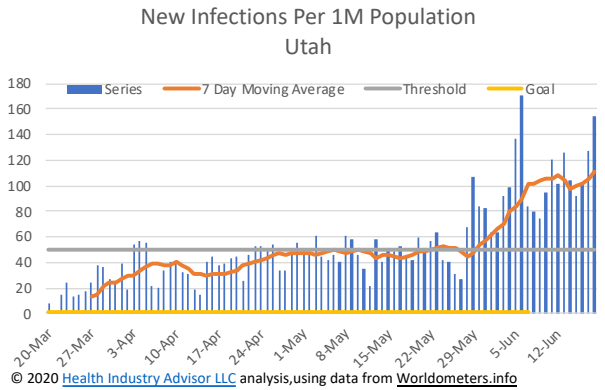

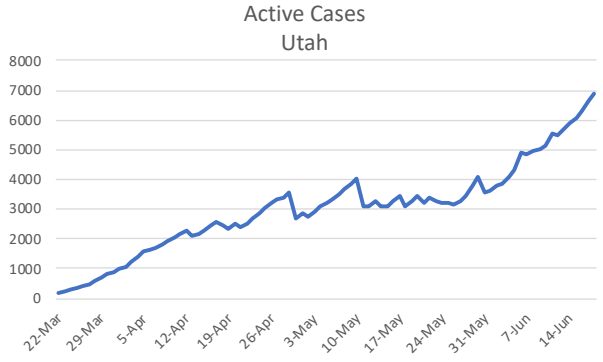

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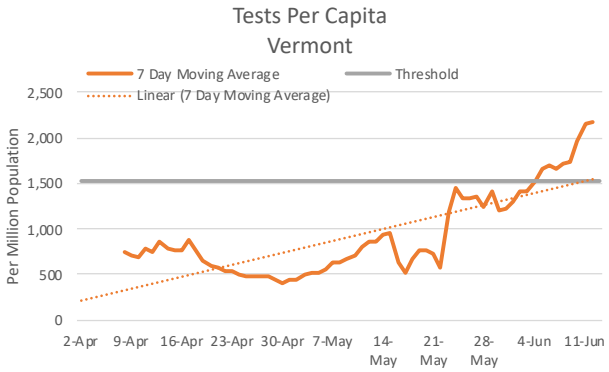

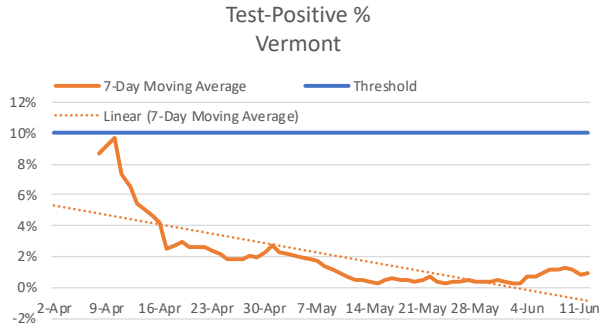

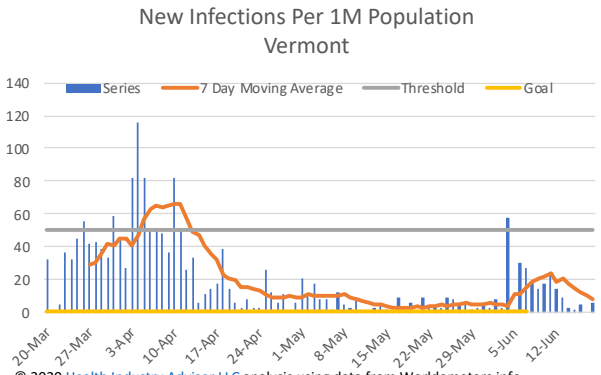

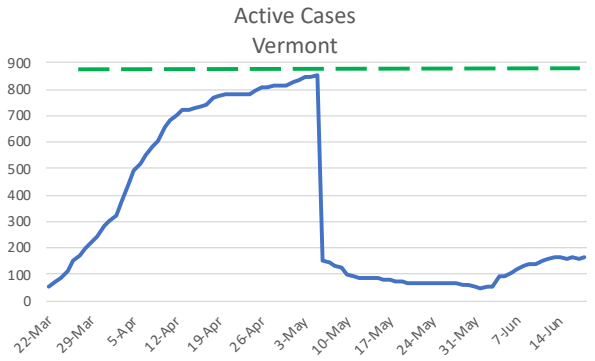

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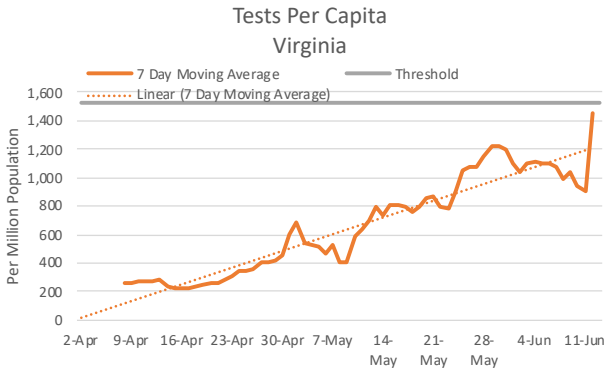

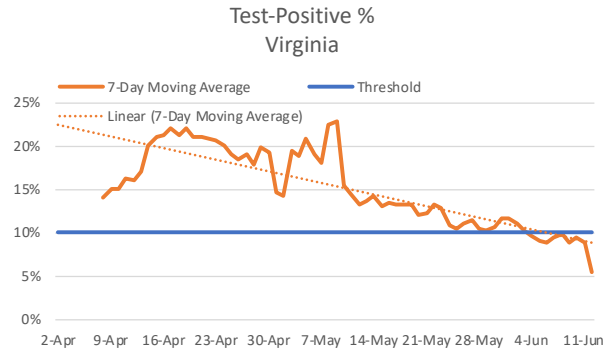

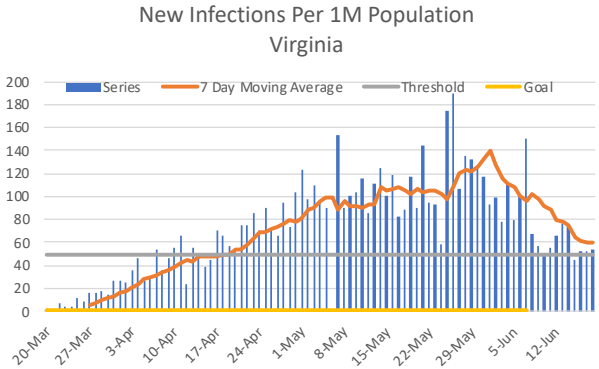

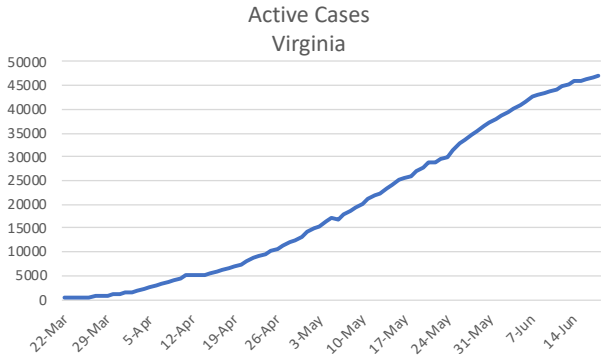

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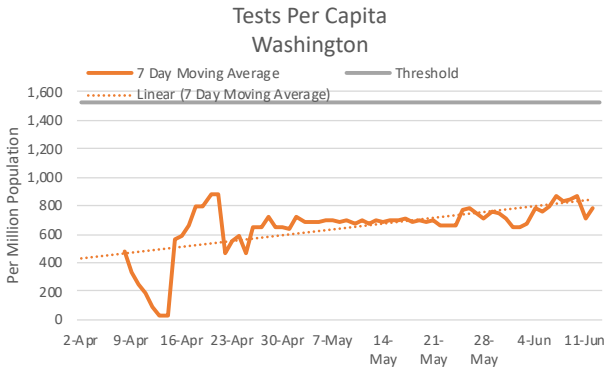

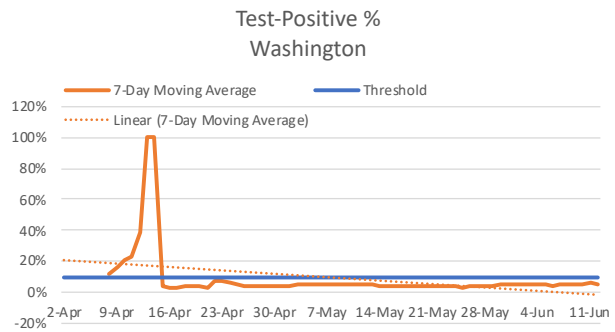

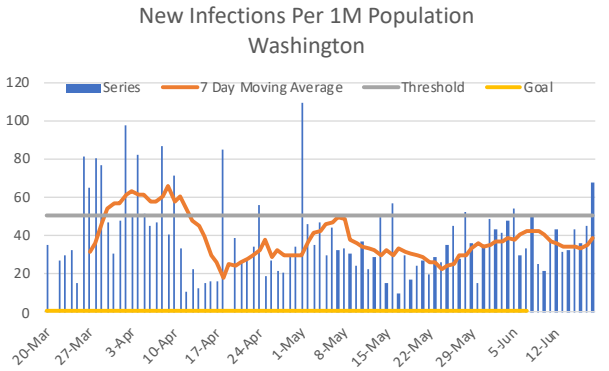

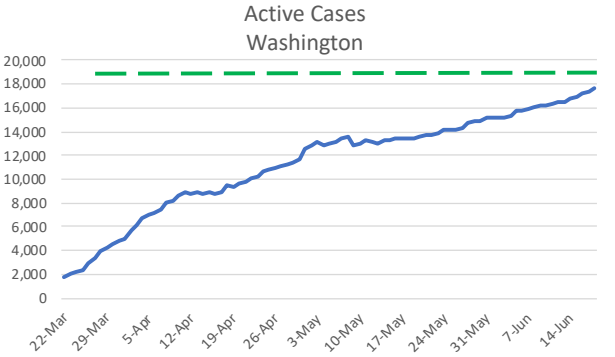

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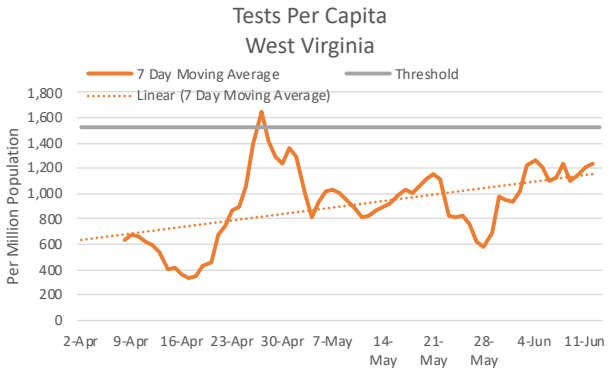

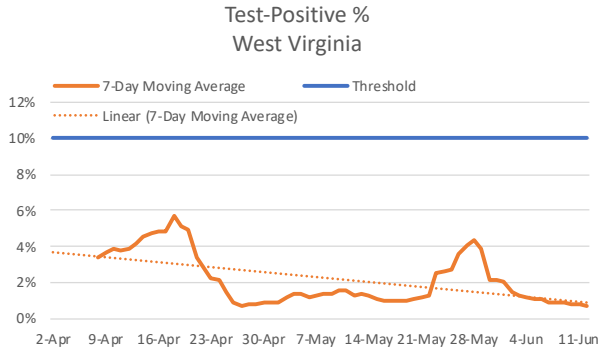

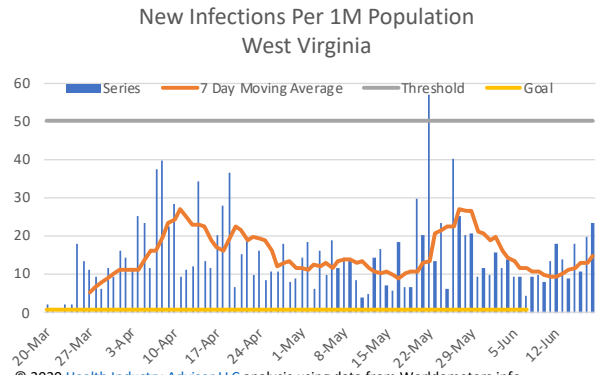

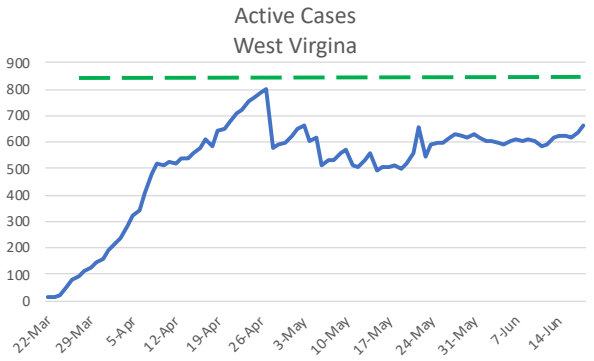

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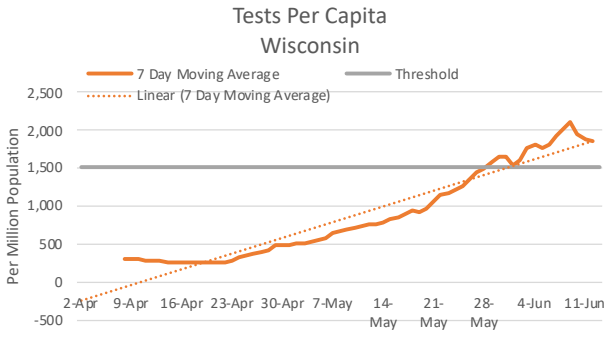

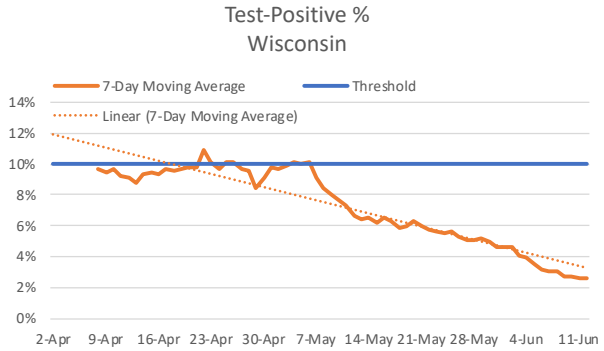

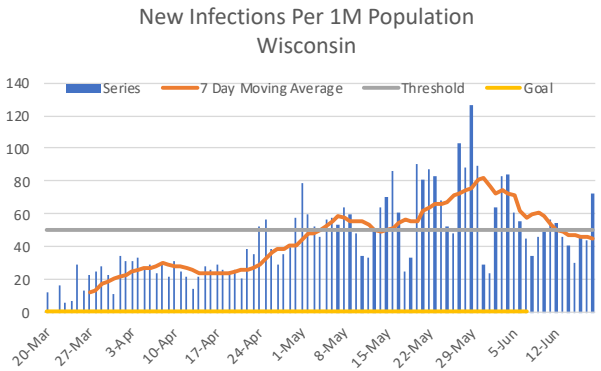

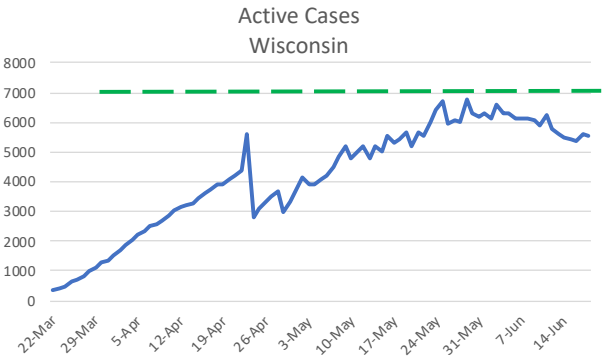

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