

COVID-19 Dashboard

Issue # 50
Wednesday, May 13, 2020

Day's Highlights

"Strategic Guidance in an Era of Unprecedented Change"

Measure	Desired Change	Yesterday in the U.S.
Number of Tests	Increase	650,000 tests reported on Monday and Tuesday
Test-Positivity Rate	Decline	5.8% for past 2 days; 7.9% for past 7 days
Number of Cases	Plateau	New cases declined for the 5th consecutive day; down 15.3% week-over-week
Deaths % of Total Cases	Decline	Steady at 5.9%
Number of Deaths / 1M Population	Plateau	252.0
Recoveries : Death	Increase	3.56

- The U.S continued to broaden its testing, with an average of 325,000 the past two days; the test-positive rate was 5.8%. For the week, tests averaged 312,000 per day, with an 7.9% test-positive rate.
- For the past week only 14 states (CO, CT, DE, IA, IL, IN, KS, MA, MD, MN, NE, PA, SC and VA) and the District of Columbia failed to meet or beat the [World Health Organization](#)'s suggested threshold of 10% or fewer test-positive results. By that measure, the remaining states appear to be adequately testing for the virus.
- Twenty-five states (AR, AS, AZ, CA, HI, FL, ID, KY, MI, ME, MO, MT, NC, NV, OK, OR, SC, TN, TX, UT, VT, WA, WV, WI and WY) reported new daily infection rates of 52 or less during the past week
- States are making fair progress against the federal guidelines proposed for determining readiness to re-open. Progress is most evident on the test-positive rates and against the incidence of influence-like illness visits. The largest discrepancy is in the area of hospital resource needs – the IHME modifies its projections regularly and has “penalized” states for re-opening, by indicating higher projected hospital resources needs than projected only 1 week ago
- We are monitoring states that have met criticism for re-opening early, particularly Florida and Georgia. Thus far, both states are showing low test-positive rates and have yet to show any spike in new infection rates. However, It's still early to expect much change.
- Over the past few days, four states appear to have passed peak active cases: Delaware, Massachusetts, Minnesota and Washington. Others may have as well, however, its difficult to ascertain these peaks due to lags and inconsistencies in state reporting of recoveries.
- Internationally, Chile, Mexico, Pakistan, Russia and Saudi Arabia have made the largest moves in the past two weeks up the rankings of total cases by country. Russia now has the third most cases in the world. Bangladesh, Belarus, Columbia, Indonesia, Poland, Qatar, Philippines, Romania, South Africa UAE and Ukraine now occupy spots in the top 40, ahead of South Korea.
- Singapore has the highest new daily infection rate over the past week, followed by Peru, Russia and Chile.
- The following countries have yet to show declining new daily infection rates: Brazil, Chile, India, Mexico, Pakistan and Saudi Arabia. Belgium, Brazil, Chile, India, Mexico, Pakistan, Peru and Russia have yet to indicate a peak in active cases.

COUNTRY-BY-COUNTRY INFORMATION

Countries Included

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- In Mid-March, we began tracking the twenty countries with the most coronavirus cases; in mid-April, we expanded it to the thirty countries with the most cases
- Since that time, 11 countries have moved ahead of South Korea in total cases
- We continue to track the 30 countries, which still account for 90% of total cases worldwide
- Case and death information is sourced from the [World Health Organization](#), which is accessed daily; analysis by Health Industry Advisor LLC

Country-by-Country Comparative Statistics

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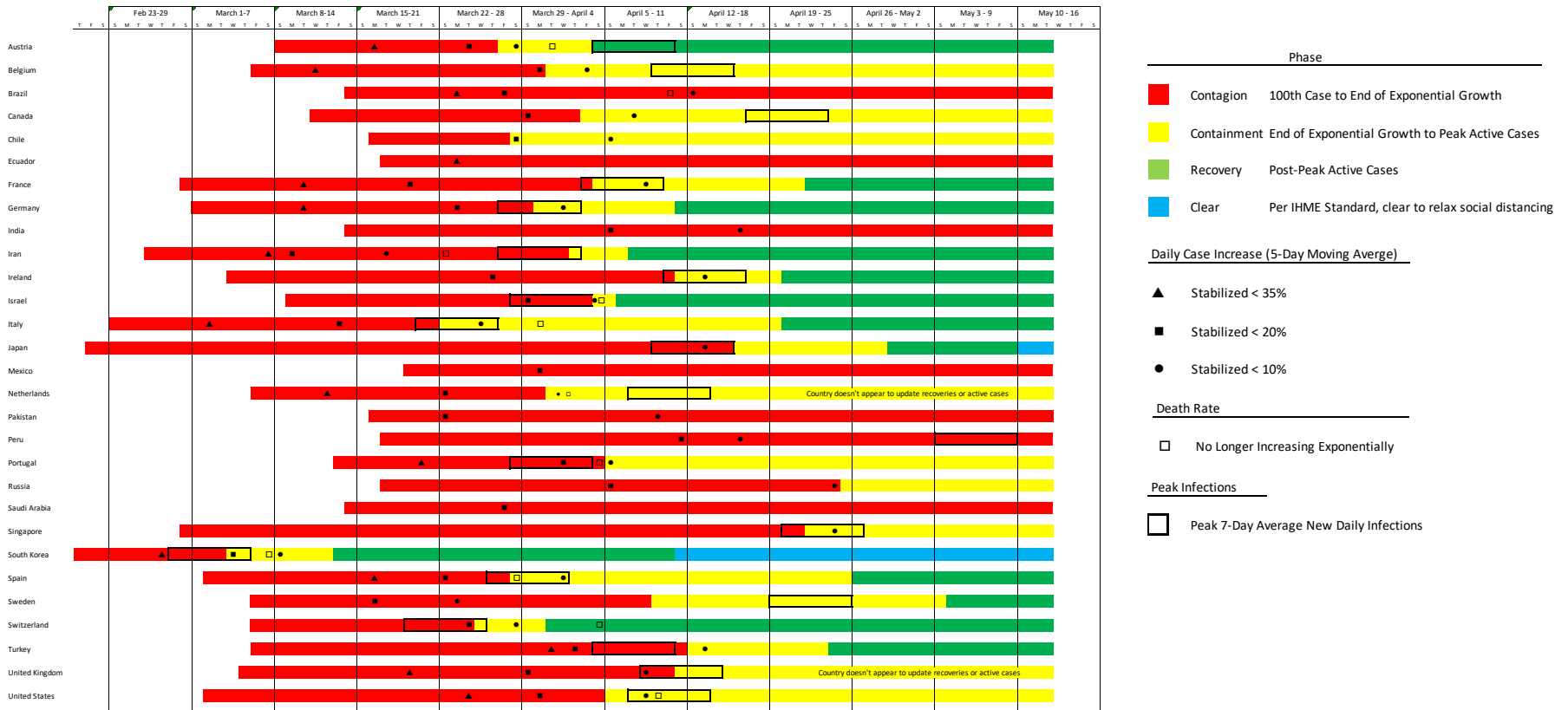
Country	Total Cases	Rank	Cases per 1M Population	Rank	Deaths	Rank	Death Rate	Rank	Deaths per 1 Million Population	Rank	5-day Moving Average Case Growth Rate	Rank	Tests per 1M Population	Rank	New Daily Infections Per 1M Population (5-Day M.A.)	Rank
USA	1,408,636	(1)	4,256	(4)	83,425	(1)	5.9%	(15)	252.0	(9)	1.7%	(13)	30,017	(12)	73.8	(3)
Austria	15,961	(29)	1,772	(17)	623	(25)	3.9%	(20)	69.2	(16)	0.3%	(25)	36,564	(9)	4.9	(24)
Belgium	53,779	(15)	4,640	(3)	8,761	(7)	16.3%	(1)	755.9	(1)	0.9%	(17)	51,385	(5)	40.3	(11)
Brazil	177,602	(7)	836	(24)	12,404	(6)	7.0%	(11)	58.4	(18)	5.5%	(5)	3,459	(25)	42.3	(10)
Canada	71,157	(14)	1,885	(16)	5,169	(11)	7.3%	(10)	137.0	(11)	1.9%	(11)	30,356	(11)	34.5	(13)
Chile	31,721	(20)	1,659	(20)	335	(26)	1.1%	(27)	17.5	(22)	5.2%	(6)	15,868	(19)	72.5	(5)
China	82,919	(11)	58	(29)	4,633	(12)	5.6%	(16)	3.2	(29)	0.0%	(30)	0	(30)	0.0	(29)
Ecuador	30,419	(21)	1,724	(18)	2,327	(17)	7.6%	(9)	131.9	(12)	0.1%	(29)	4,830	(24)	(11.8)	(30)
France	178,225	(6)	2,730	(10)	26,991	(4)	15.1%	(2)	413.5	(5)	0.4%	(24)	21,213	(15)	16.8	(18)
Germany	173,171	(8)	2,067	(14)	7,738	(8)	4.5%	(17)	92.4	(14)	0.4%	(23)	32,891	(10)	10.5	(21)
India	74,292	(12)	54	(30)	2,415	(16)	3.3%	(21)	1.7	(30)	5.7%	(2)	1,275	(28)	2.6	(26)
Iran	110,767	(10)	1,319	(22)	6,733	(9)	6.1%	(14)	80.2	(15)	1.4%	(14)	7,328	(23)	18.4	(17)
Ireland	23,242	(26)	4,707	(2)	1,488	(21)	6.4%	(12)	301.3	(8)	0.8%	(19)	52,414	(4)	36.4	(12)
Israel	16,529	(27)	1,910	(15)	260	(28)	1.6%	(26)	30.0	(20)	0.2%	(27)	54,277	(2)	4.0	(25)
Italy	221,216	(5)	3,659	(6)	30,911	(3)	14.0%	(4)	511.2	(3)	0.5%	(22)	44,221	(6)	19.4	(16)
Japan	15,968	(28)	126	(28)	657	(24)	4.1%	(19)	5.2	(25)	0.6%	(20)	1,768	(26)	0.8	(27)
Mexico	36,327	(18)	282	(25)	3,573	(14)	9.8%	(8)	27.7	(21)	5.6%	(3)	1,048	(29)	12.7	(20)
Netherlands	42,984	(16)	2,509	(12)	5,510	(10)	12.8%	(5)	321.6	(7)	0.6%	(21)	15,778	(20)	15.8	(19)
Pakistan	32,674	(19)	148	(27)	724	(23)	2.2%	(25)	3.3	(28)	5.8%	(1)	1,385	(27)	6.9	(22)
Peru	72,059	(13)	2,186	(13)	2,057	(19)	2.9%	(22)	62.4	(17)	4.2%	(8)	16,140	(18)	90.4	(2)
Portugal	27,913	(23)	2,737	(9)	1,163	(22)	4.2%	(18)	114.1	(13)	0.9%	(18)	54,317	(1)	31.0	(14)
Russia	232,243	(3)	1,549	(21)	2,116	(18)	0.9%	(28)	14.1	(23)	5.6%	(4)	39,781	(7)	73.2	(4)
Saudi Arabia	42,925	(17)	1,233	(23)	264	(27)	0.6%	(29)	7.6	(24)	4.9%	(7)	13,281	(22)	52.0	(9)
Singapore	24,671	(25)	4,217	(5)	21	(30)	0.1%	(30)	3.6	(27)	3.3%	(9)	13,856	(21)	128.5	(1)
South Korea	10,936	(30)	213	(26)	258	(29)	2.4%	(24)	5.0	(26)	0.2%	(26)	30,016	(13)	0.4	(28)
Spain	269,520	(2)	5,765	(1)	26,920	(5)	10.0%	(7)	575.8	(2)	1.0%	(16)	52,781	(3)	57.9	(7)
Sweden	27,272	(24)	2,700	(11)	3,313	(15)	12.1%	(6)	328.0	(6)	2.1%	(10)	17,576	(16)	57.4	(8)
Switzerland	30,380	(22)	3,547	(7)	1,867	(20)	6.1%	(13)	218.0	(10)	0.2%	(28)	36,611	(8)	6.2	(23)
Turkey	141,475	(9)	1,677	(19)	3,894	(13)	2.8%	(23)	46.2	(19)	1.1%	(15)	17,082	(17)	20.3	(15)
UK	226,463	(4)	3,336	(8)	32,692	(2)	14.4%	(3)	481.6	(4)	1.8%	(12)	29,566	(14)	66.2	(6)

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Country-by-Country Virus Progression

"Strategic Guidance in an Era of Unprecedented Change"

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



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Country-By-Country Listing of Countries By Total Cases

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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. These countries have moved up:

- Bangladesh
- Belarus
- Columbia
- Indonesia
- Poland
- Qatar
- Philippines
- Romania
- South Africa
- UAE
- Ukraine

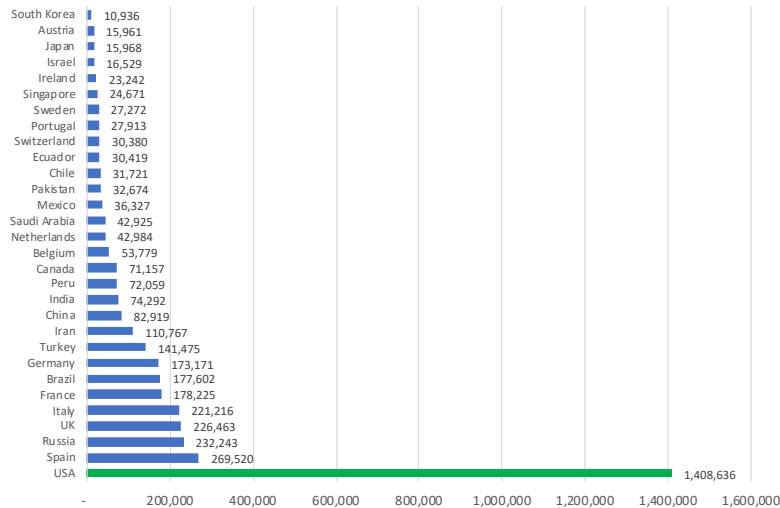
The original 30 still account for ~90% of all cases worldwide.

Country	12-May	Total Cases 6-May	27-Apr
1 USA	1,408,636	1 USA 1,263,092	1 USA 1,010,356
2 Spain	269,520	2 Spain 253,682	2 Spain 229,422
3 Russia	232,243	3 Italy 214,457	3 Italy 199,414
4 UK	226,463	4 UK 201,101	4 France 165,842
5 Italy	221,216	5 France 174,191	5 Germany 158,758
6 France	178,225	6 Germany 168,162	6 UK 157,149
7 Brazil	177,602	7 Russia 165,929	7 Turkey 112,261
8 Germany	173,171	8 Turkey 131,744	8 Iran 91,472
9 Turkey	141,475	9 Brazil 126,611	9 Russia 87,147
10 Iran	110,767	10 Iran 101,650	10 China 82,830
11 China	82,919	11 China 82,883	11 Brazil 66,501
12 India	74,292	12 Canada 63,496	12 Canada 48,500
13 Peru	72,059	13 Peru 54,817	13 Belgium 46,687
14 Canada	71,157	14 India 52,987	14 Netherlands 38,245
15 Belgium	53,779	15 Belgium 50,781	15 India 29,451
16 Netherlands	42,984	16 Netherlands 41,319	16 Switzerland 29,164
17 Saudi Arabia	42,925	17 Saudi Arabia 31,938	17 Peru 28,669
18 Mexico	36,327	18 Switzerland 30,060	18 Portugal 24,070
19 Pakistan	32,674	19 Ecuador 29,420	19 Ecuador 23,240
20 Chile	31,721	20 Portugal 26,182	20 Ireland 19,648
21 Ecuador	30,419	21 Mexico 26,025	21 Sweden 18,926
22 Switzerland	30,380	22 Sweden 23,918	22 Saudi Arabia 18,811
23 Portugal	27,913	23 Pakistan 23,214	23 Israel 15,555
24 Sweden	27,272	24 Chile 23,048	24 Austria 15,274
25 Qatar	25,149	25 Ireland 22,248	25 Mexico 14,677
26 Belarus	24,873	26 Singapore 20,198	26 Singapore 14,423
27 Singapore	24,671	27 Belarus 19,255	27 Pakistan 13,915
28 Ireland	23,242	28 Qatar 17,972	28 Chile 13,813
29 UAE	19,661	29 Israel 16,310	29 Japan 13,614
30 Poland	16,921	30 UAE 15,738	30 Poland 11,902
31 Bangladesh	16,660	31 Austria 15,684	31 Romania 11,339
32 Israel	16,529	32 Japan 15,253	32 Belarus 11,289
33 Ukraine	16,023	33 Poland 14,740	33 Qatar 11,244
34 Japan	15,968	34 Romania 14,107	34 UAE 10,839
35 Austria	15,961	35 Ukraine 13,184	35 South Korea 10,738
36 Romania	15,778	36 Indonesia 12,438	
37 Indonesia	14,749	37 Bangladesh 11,719	
38 Colombia	12,272	38 S. Korea 10,806	
39 Philippines	11,350		
40 South Africa	11,350		
41 S. Korea	10,936		
Others	249,370	Others 237,023	Other 207,330
World	4,337,602	World 3,817,382	World 3,062,515
Total for Countries we track (in bold)	3,920,106	3,461,206	2,798,572
% of World's cases	90.4%	90.7%	91.4%

Country-by-Country Cases & Cases Per Capita

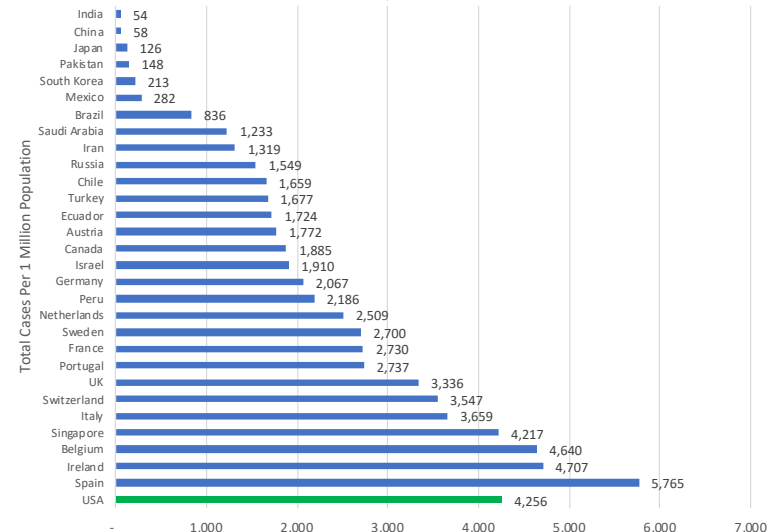
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Total Cases By Country
May 12



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Cases Per Capita By Country
May 12

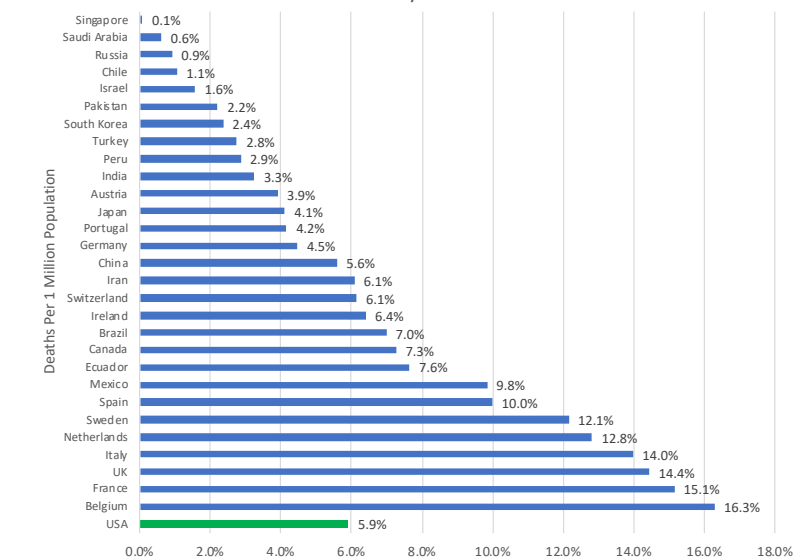


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Deaths Per Cases & Per Capita

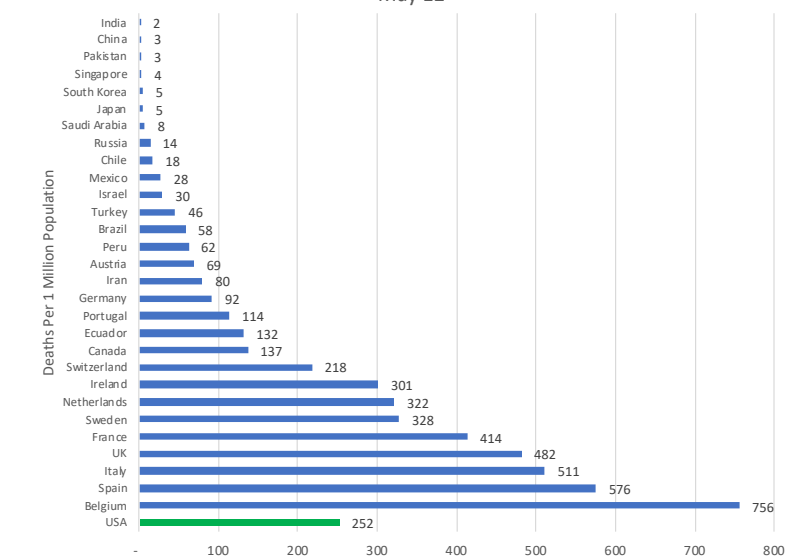
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Death Rate By Country
May 12



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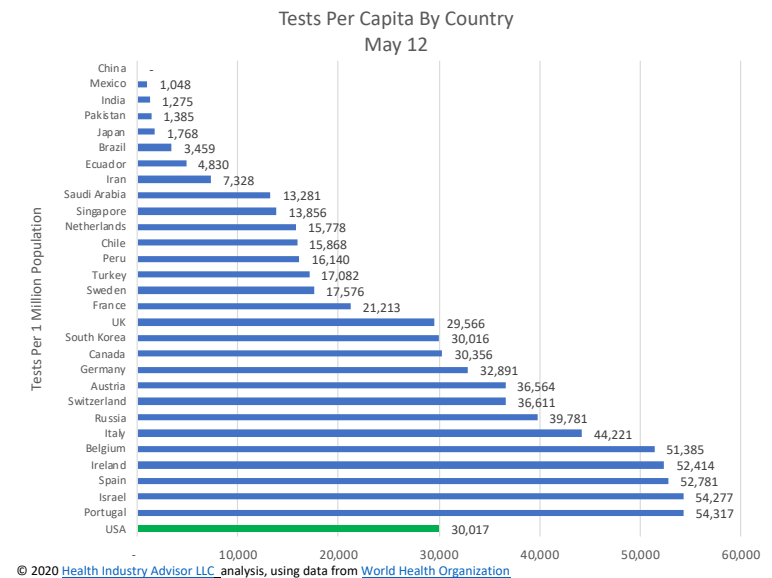
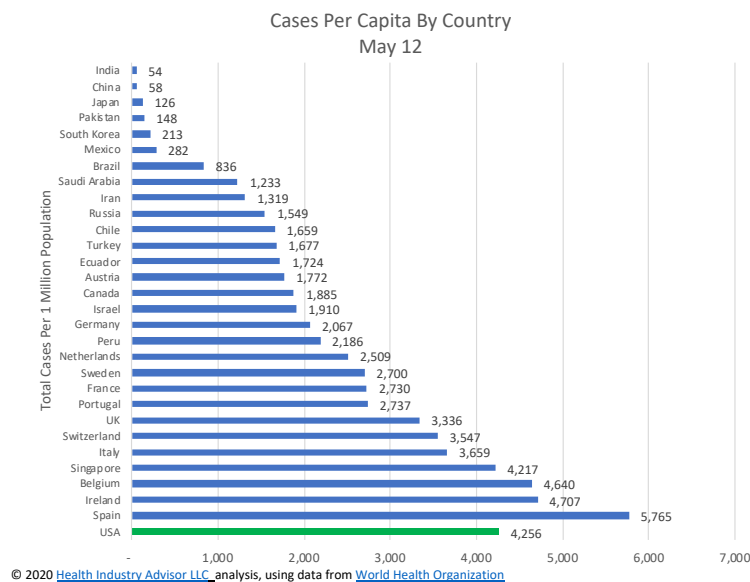
Deaths Per Capita By Country
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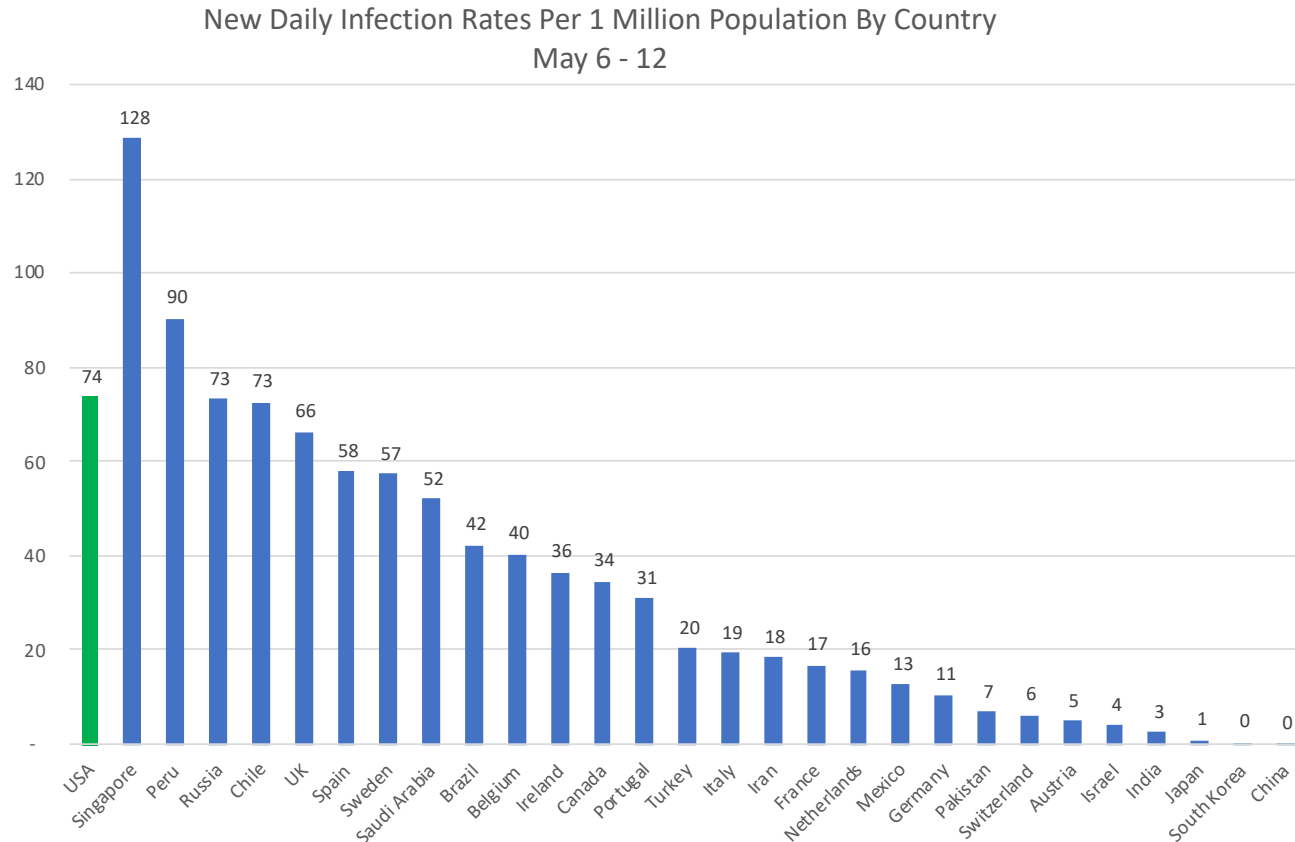


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Country-by-Country Tests Per Capita & Case Growth Rate

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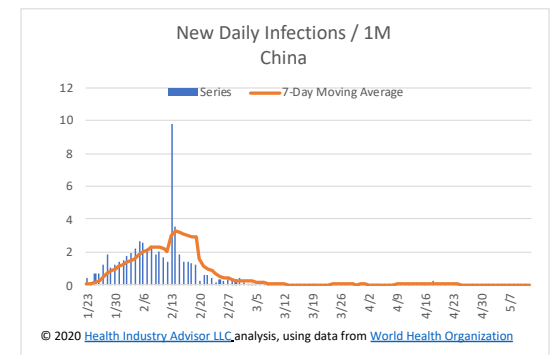
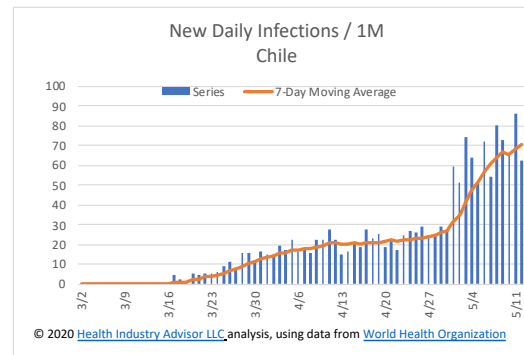
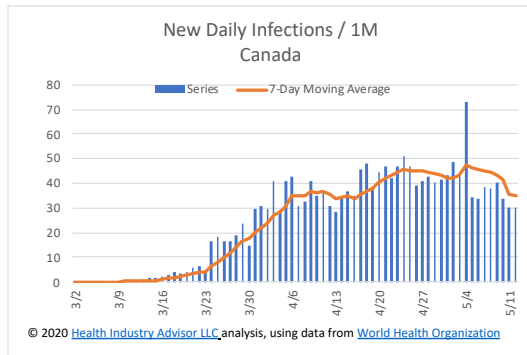
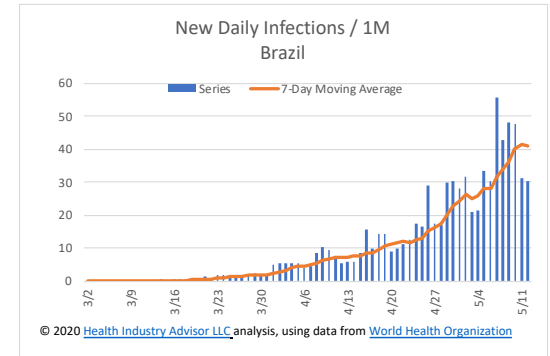
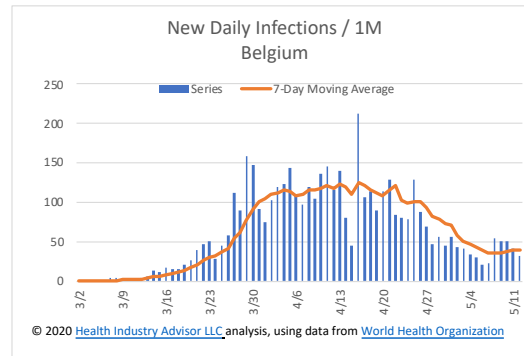
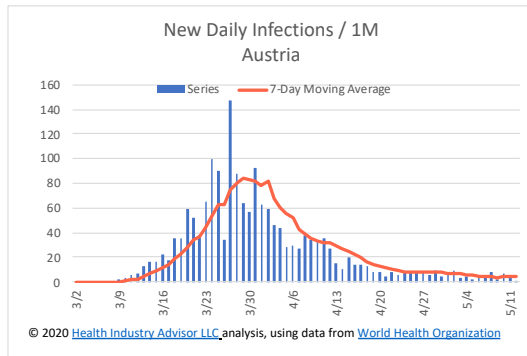




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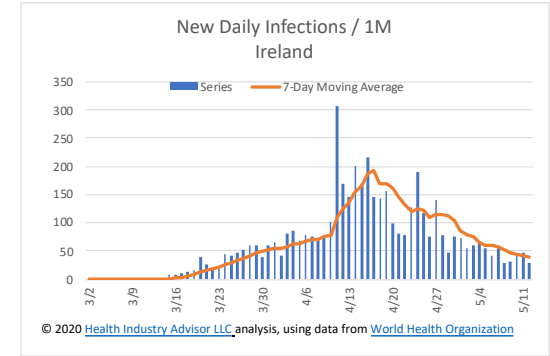
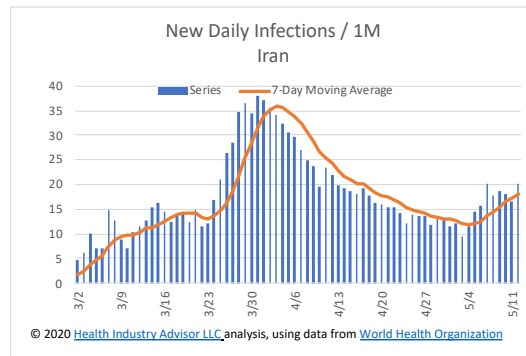
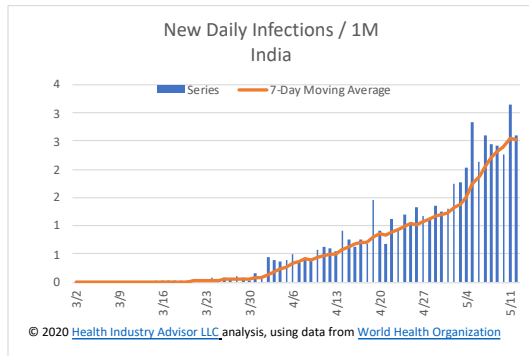
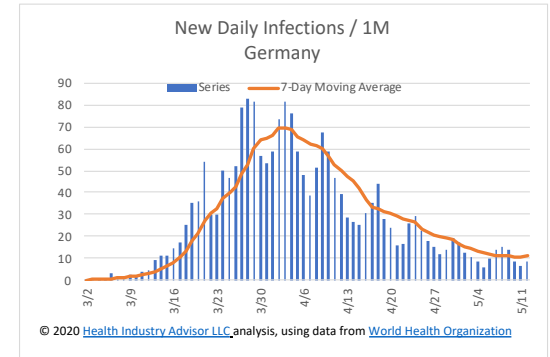
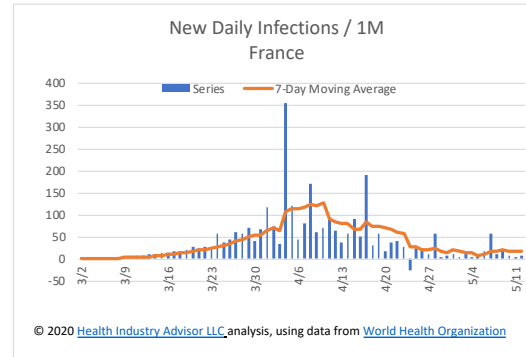
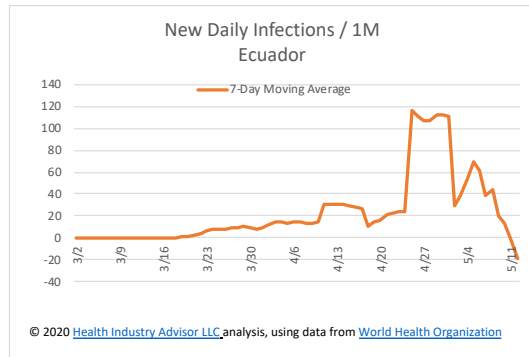
New Daily Infection Rate Time Series

"Strategic Guidance in an Era of Unprecedented Change"



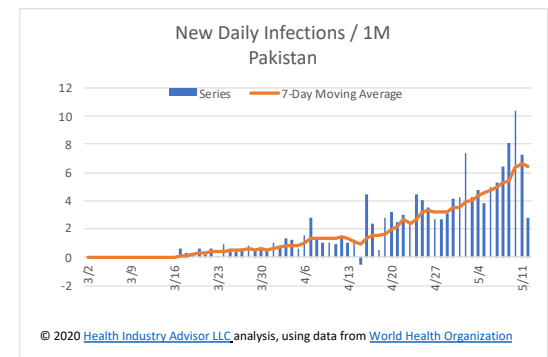
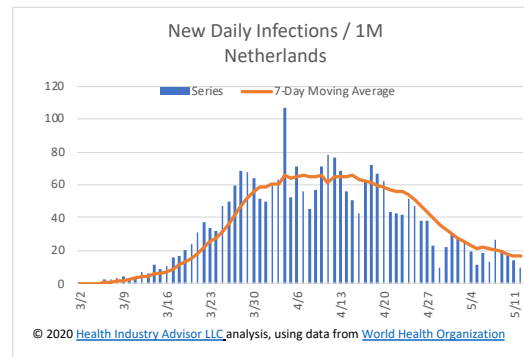
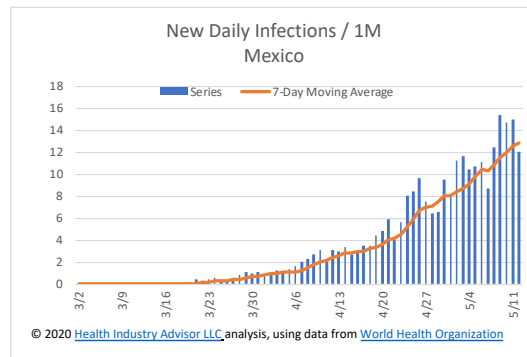
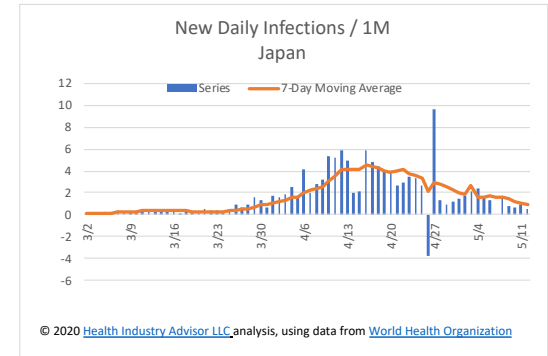
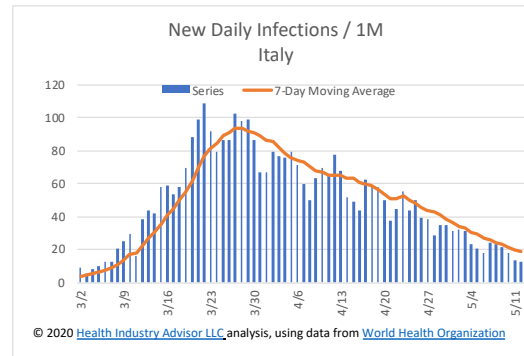
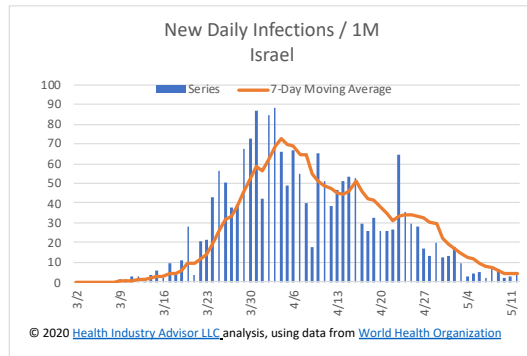
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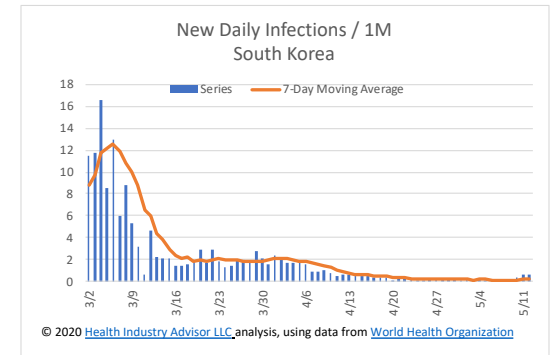
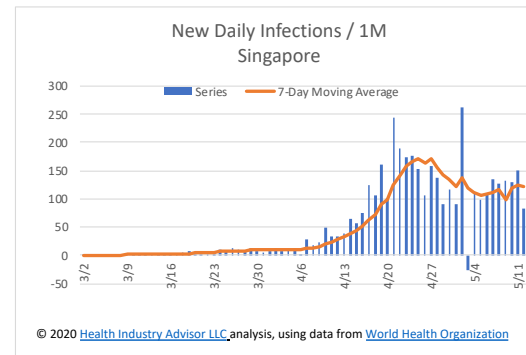
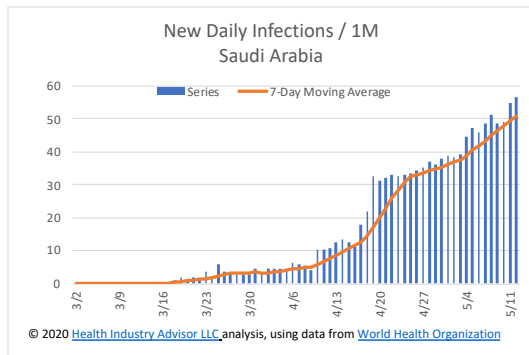
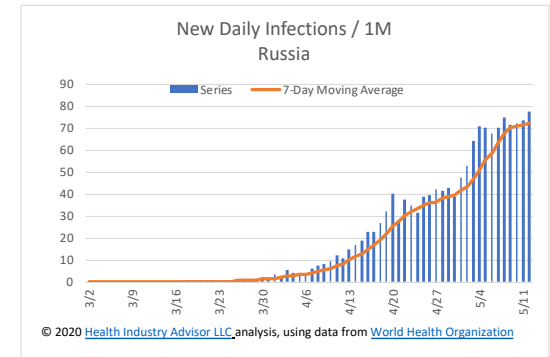
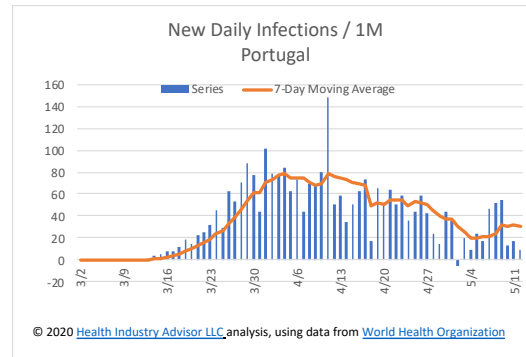
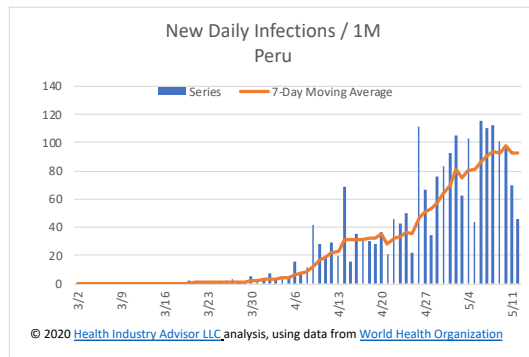
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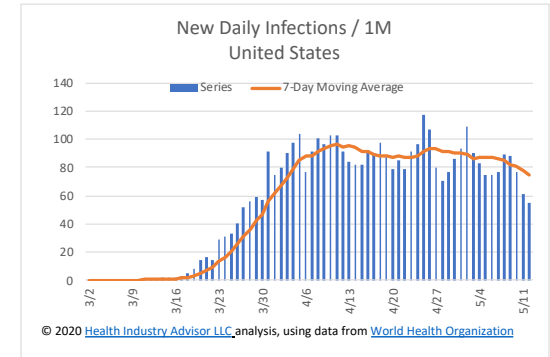
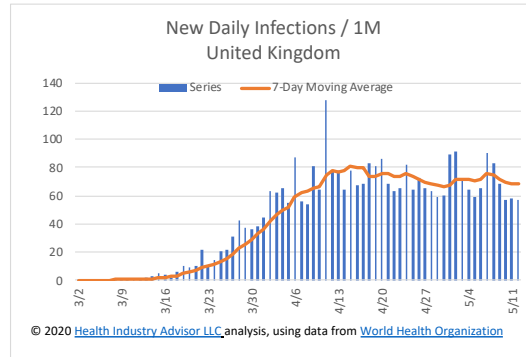
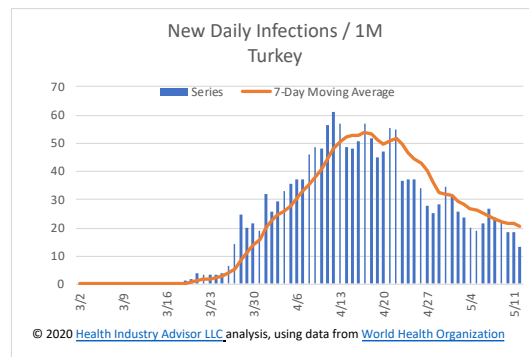
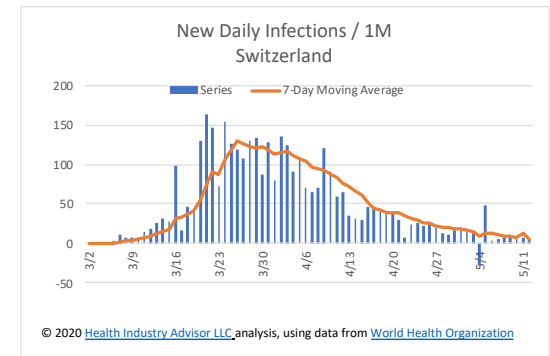
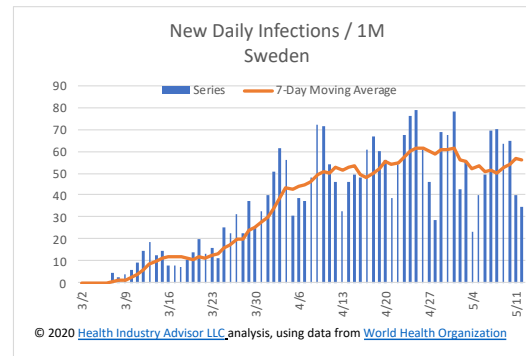
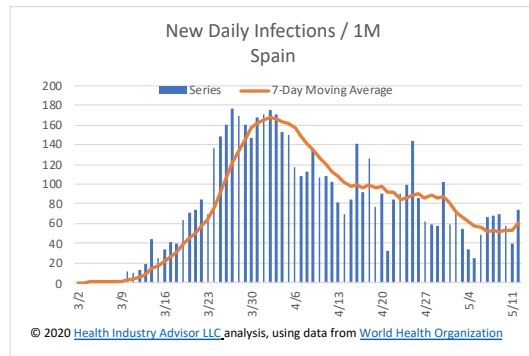


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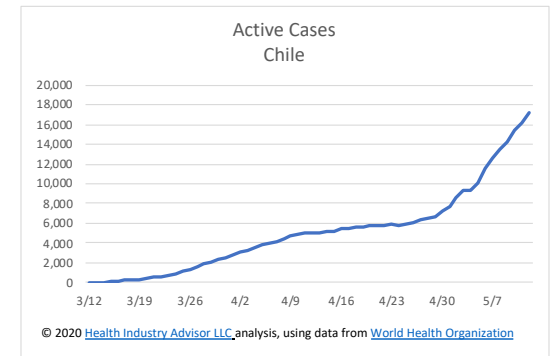
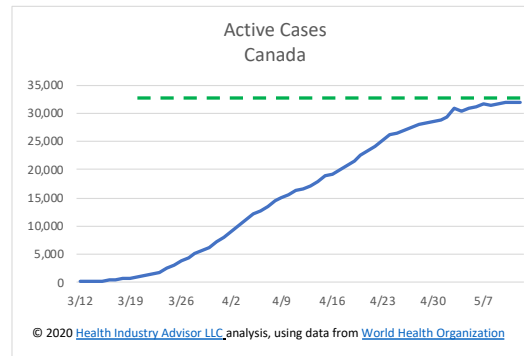
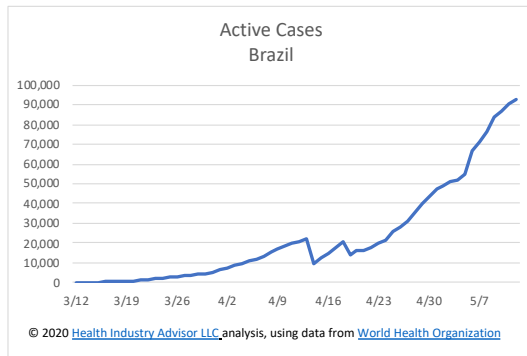
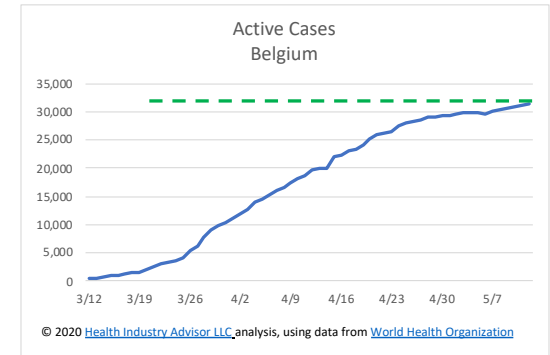
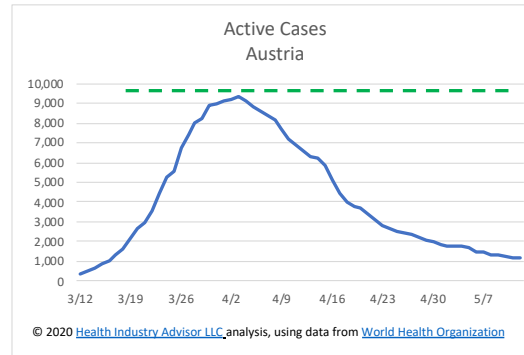
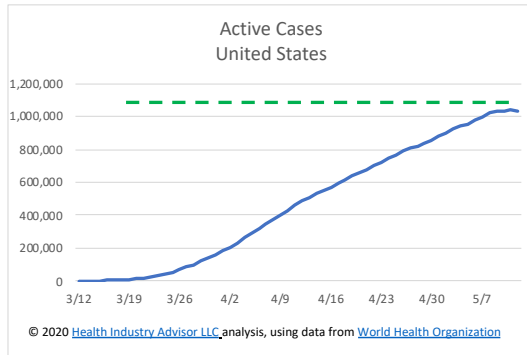


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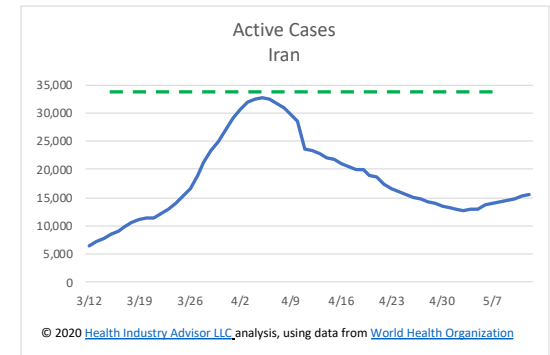
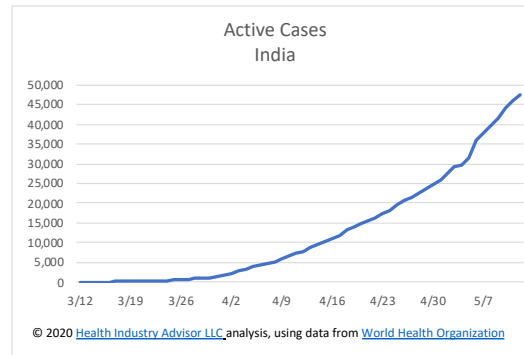
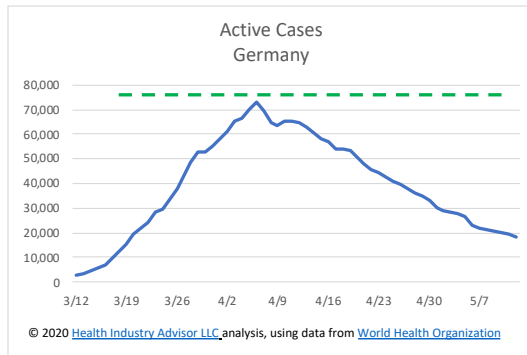
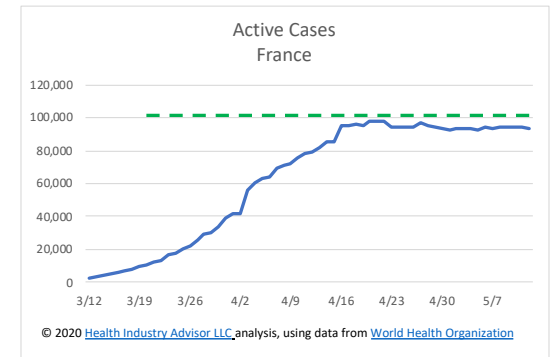
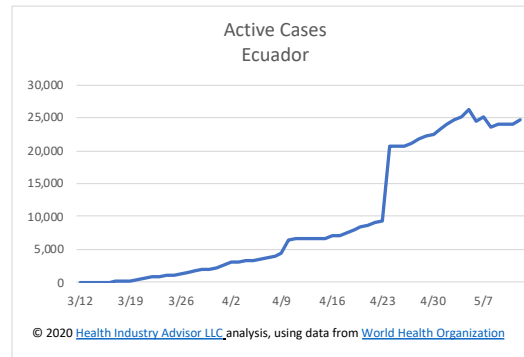
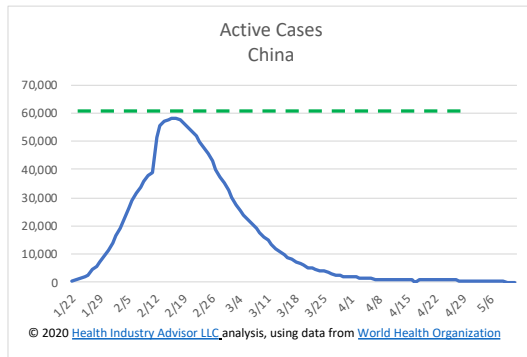
Country-by-Country Active Case Trends

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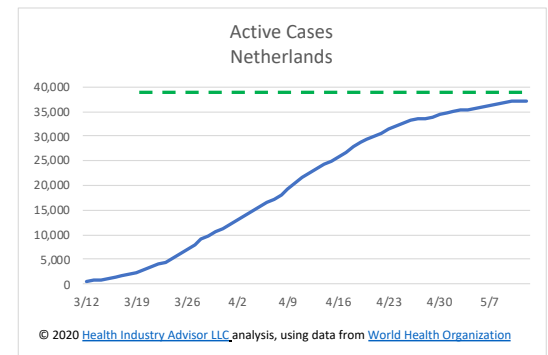
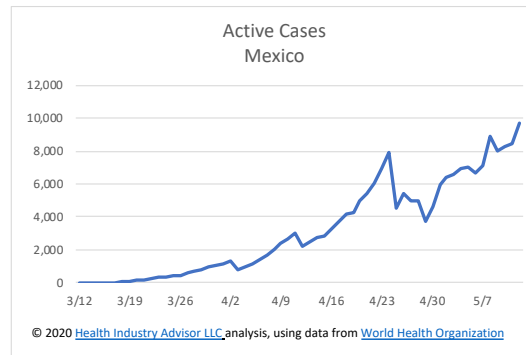
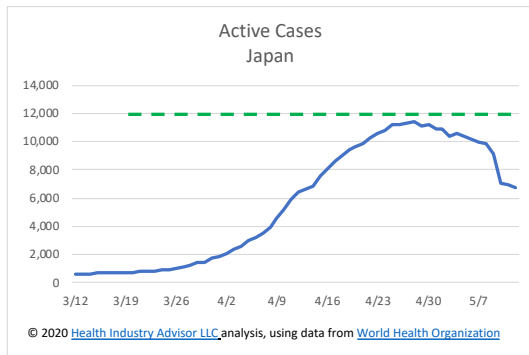
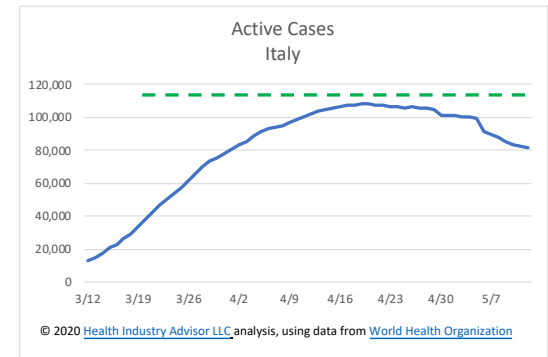
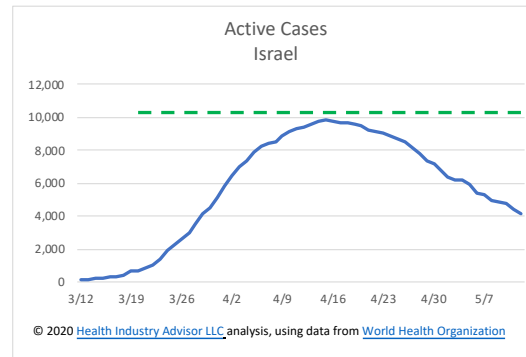
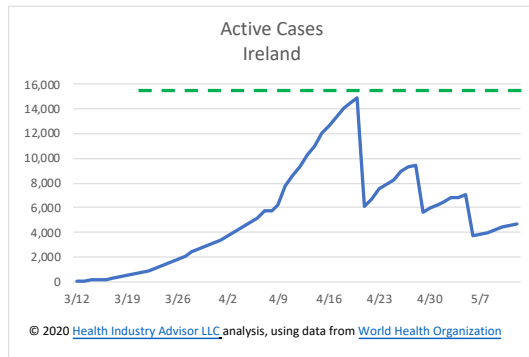
Country-by-Country Active Case Trends

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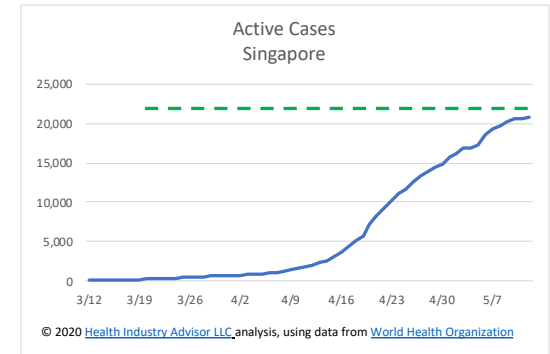
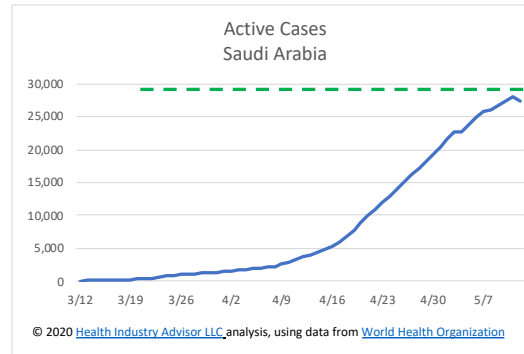
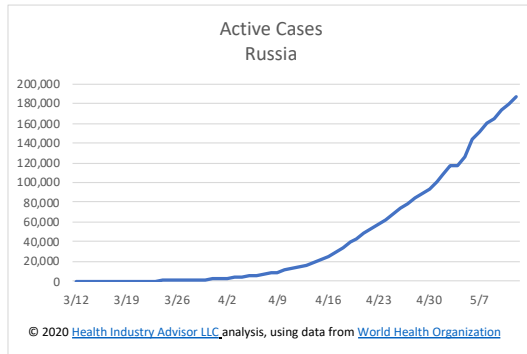
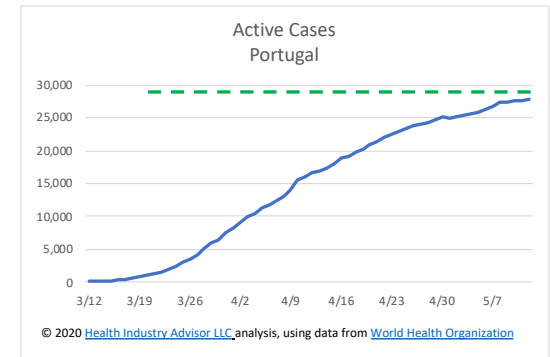
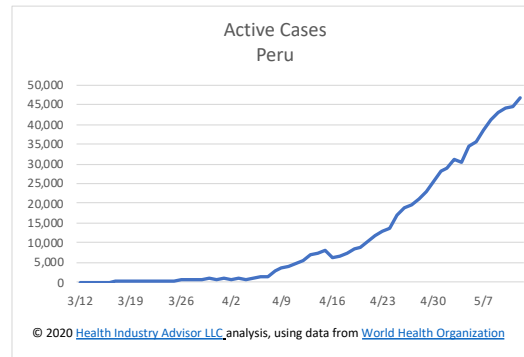
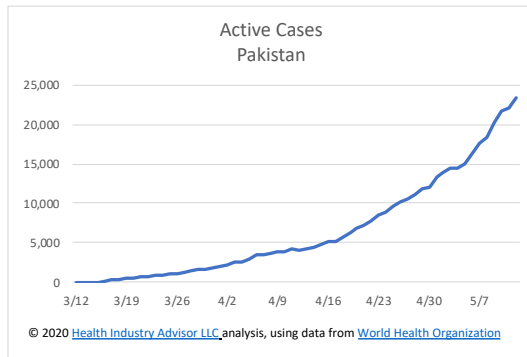
Country-by-Country Active Case Trends

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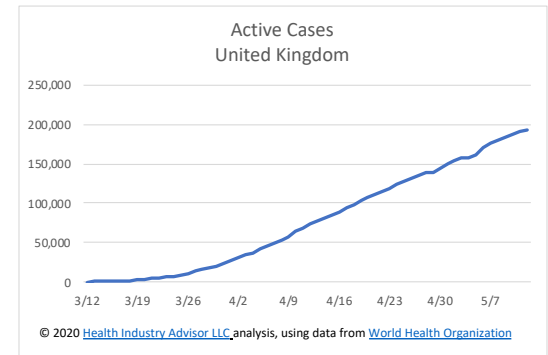
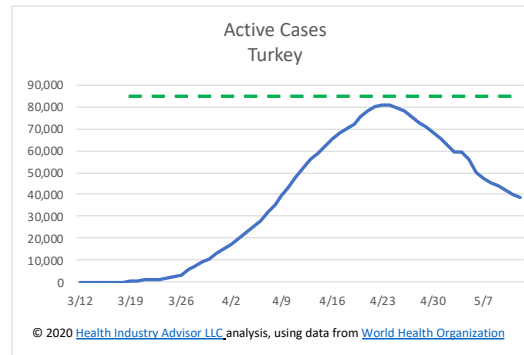
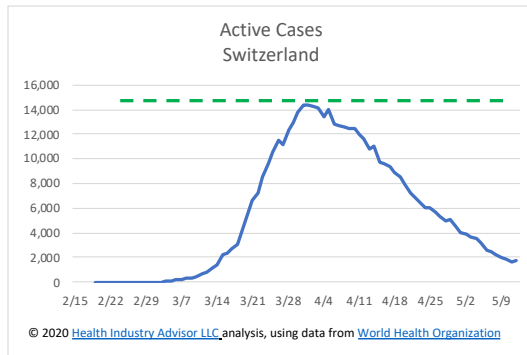
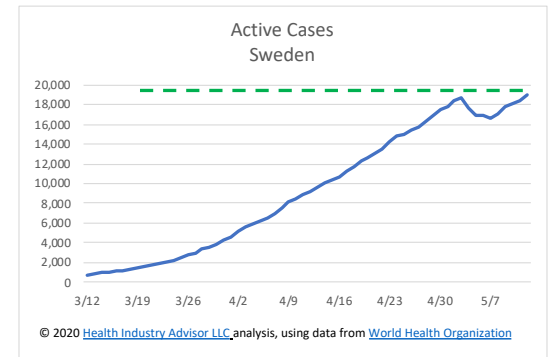
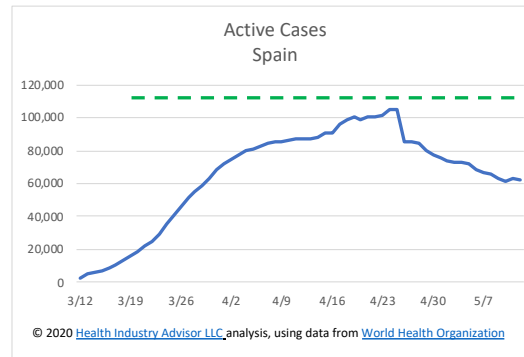
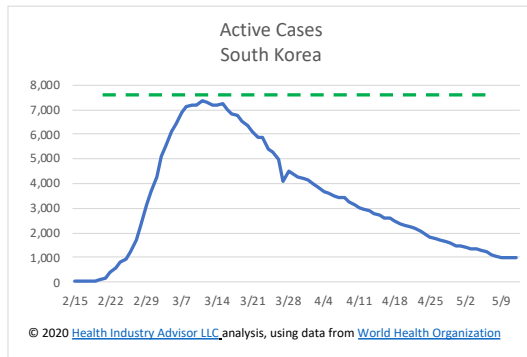
Country-by-Country Active Case Trends

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Country-by-Country Active Case Trends

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UNITED STATES & STATE-BY-STATE INFORMATION

State-by-State Comparative Statistics

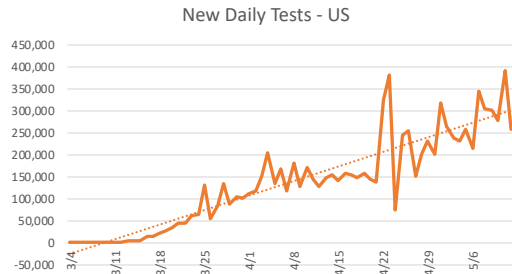
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State	Total Cases	Rank	Cases per 1M Population	Rank2	Deaths	Rank3	Death Rate	Rank4	Deaths per 1 Million Population	Rank5	5-day Moving Average Case Growth Rate	Rank6	Tests per 1M Population Past 7 days	Rank7	New Daily Cases Per 1M Population (5-Day M.A.)	Rank8
Alabama	10,164	(26)	2,134.1	(26)	435	(24)	4.3%	(25)	88.7	(24)	3.0%	(15)	771	(30)	59.1	(24)
Alaska	381	(51)	523.5	(49)	10	(50)	2.6%	(42)	13.7	(49)	0.5%	(48)	1,420	(7)	2.3	(49)
Arizona	11,380	(24)	1,563.5	(36)	542	(21)	4.8%	(19)	74.5	(29)	3.2%	(9)	1,275	(10)	48.3	(29)
Arkansas	4,043	(39)	1,339.7	(42)	94	(40)	2.3%	(45)	31.1	(45)	2.3%	(29)	691	(35)	27.7	(40)
California	69,203	(5)	1,751.4	(34)	2,778	(8)	4.0%	(31)	70.3	(30)	2.7%	(21)	882	(24)	47.4	(30)
Colorado	19,879	(17)	3,452.0	(17)	987	(16)	5.0%	(18)	171.4	(14)	2.2%	(31)	638	(41)	73.7	(19)
Connecticut	33,765	(11)	9,470.5	(5)	3,008	(7)	8.9%	(2)	843.7	(3)	1.7%	(37)	1,203	(13)	143.9	(10)
Delaware	6,565	(33)	6,741.9	(8)	225	(34)	3.4%	(38)	231.1	(12)	2.6%	(23)	1,147	(16)	187.3	(5)
District Of Columbia	6,389	(34)	9,052.8	(6)	328	(28)	5.1%	(13)	464.8	(6)	3.2%	(12)	1,309	(8)	246.7	(11)
Florida	40,982	(8)	1,908.1	(32)	1,735	(10)	4.2%	(27)	80.8	(28)	1.5%	(39)	777	(29)	27.2	(42)
Georgia	34,002	(10)	3,202.5	(19)	1,444	(13)	4.2%	(26)	136.0	(16)	2.0%	(32)	914	(22)	61.4	(22)
Hawaii	634	(49)	447.8	(50)	17	(48)	2.7%	(41)	12.0	(51)	0.3%	(50)	385	(49)	1.3	(50)
Idaho	2,260	(43)	1,261.1	(43)	70	(41)	3.1%	(39)	39.1	(41)	0.9%	(45)	186	(51)	12.3	(46)
Illinois	79,007	(3)	6,234.9	(9)	3,459	(6)	4.4%	(24)	273.0	(11)	3.0%	(14)	1,232	(11)	171.0	(7)
Indiana	24,627	(15)	3,658.1	(16)	1,540	(12)	6.3%	(8)	228.8	(13)	2.4%	(25)	709	(34)	87.4	(16)
Iowa	12,373	(21)	3,921.6	(15)	271	(32)	2.2%	(46)	85.9	(25)	3.5%	(5)	934	(20)	120.9	(12)
Kansas	7,143	(31)	2,451.8	(21)	180	(36)	2.5%	(43)	61.8	(35)	3.6%	(4)	760	(31)	89.0	(15)
Kentucky	6,677	(32)	1,494.5	(38)	311	(30)	4.7%	(20)	69.6	(32)	2.4%	(26)	912	(23)	45.8	(32)
Louisiana	31,815	(13)	6,843.7	(7)	2,308	(9)	7.3%	(4)	496.5	(5)	0.9%	(46)	1,226	(12)	65.8	(21)
Maine	1,462	(45)	1,087.6	(46)	65	(43)	4.4%	(22)	48.4	(38)	3.1%	(13)	298	(50)	27.3	(41)
Maryland	33,373	(12)	5,520.1	(10)	1,683	(11)	5.0%	(15)	278.4	(10)	3.5%	(7)	657	(39)	164.6	(8)
Massachusetts	78,462	(4)	11,290.3	(3)	5,108	(3)	6.5%	(6)	735.0	(4)	1.7%	(36)	1,448	(6)	192.7	(3)
Michigan	47,552	(7)	4,761.5	(11)	4,584	(4)	9.6%	(1)	459.0	(7)	1.1%	(44)	1,098	(17)	51.5	(28)
Minnesota	11,799	(22)	2,092.2	(28)	591	(19)	5.0%	(16)	104.8	(19)	6.6%	(1)	756	(32)	115.6	(13)
Mississippi	9,674	(28)	3,250.5	(18)	435	(24)	4.5%	(21)	146.2	(15)	2.8%	(19)	778	(28)	86.3	(17)
Missouri	10,149	(27)	1,653.6	(35)	507	(22)	5.0%	(17)	82.6	(27)	1.8%	(35)	563	(44)	29.4	(38)
Montana	459	(50)	429.5	(51)	16	(49)	3.5%	(36)	15.0	(48)	0.1%	(51)	1,000	(18)	0.3	(51)
Nebraska	8,572	(29)	4,431.3	(13)	100	(39)	1.2%	(48)	51.7	(37)	4.8%	(2)	922	(21)	183.8	(6)
Nevada	6,152	(36)	1,997.3	(29)	312	(29)	5.1%	(14)	101.3	(20)	1.7%	(38)	646	(40)	30.7	(37)
New Hampshire	3,160	(42)	2,324.0	(23)	133	(37)	4.2%	(28)	97.8	(23)	2.9%	(17)	842	(25)	60.1	(23)
New Jersey	141,137	(2)	15,889.9	(2)	9,341	(2)	6.6%	(5)	1,051.7	(2)	1.2%	(42)	2,392	(2)	189.7	(4)
New Mexico	5,069	(37)	2,417.5	(22)	208	(35)	4.1%	(30)	99.2	(21)	3.4%	(8)	1,671	(4)	70.7	(20)
New York	347,151	(1)	17,845.1	(1)	27,003	(1)	7.8%	(3)	1,388.1	(1)	0.8%	(47)	1,449	(5)	145.2	(9)
North Carolina	15,273	(20)	1,456.2	(40)	575	(20)	3.8%	(34)	54.8	(36)	3.2%	(11)	673	(37)	45.0	(33)
North Dakota	1,518	(44)	1,992.0	(30)	36	(46)	2.4%	(44)	47.2	(39)	2.8%	(20)	2,298	(3)	54.9	(25)
Ohio	24,787	(14)	2,120.5	(27)	1,360	(14)	5.5%	(11)	116.3	(18)	2.8%	(18)	677	(36)	52.7	(22)
Oklahoma	4,613	(38)	1,165.8	(44)	274	(31)	5.9%	(9)	69.2	(33)	1.9%	(34)	1,160	(14)	20.5	(43)
Oregon	3,286	(41)	779.1	(47)	130	(38)	4.0%	(32)	30.8	(46)	2.4%	(24)	479	(47)	17.8	(45)
Pennsylvania	60,576	(6)	4,731.8	(12)	3,841	(5)	6.3%	(7)	300.0	(9)	2.0%	(33)	483	(46)	85.4	(18)
Rhode Island	11,450	(23)	10,808.4	(4)	430	(25)	3.8%	(23)	405.9	(8)	2.3%	(28)	2,589	(1)	242.5	(2)
South Carolina	7,792	(30)	1,513.4	(37)	346	(27)	4.4%	(23)	67.2	(34)	2.4%	(27)	562	(45)	28.7	(39)
South Dakota	3,517	(40)	3,975.5	(14)	34	(47)	1.0%	(51)	38.4	(42)	4.8%	(3)	947	(19)	137.1	(11)
Tennessee	15,544	(19)	2,274.8	(25)	251	(33)	1.6%	(47)	36.7	(43)	2.2%	(30)	1,293	(9)	41.2	(34)
Texas	40,855	(9)	1,409.0	(41)	1,153	(15)	2.8%	(40)	39.8	(40)	2.9%	(16)	583	(43)	38.6	(35)
Utah	6,362	(35)	1,984.4	(31)	68	(42)	1.1%	(49)	21.2	(47)	2.6%	(22)	1,155	(15)	46.6	(31)
Vermont	927	(47)	1,485.6	(39)	53	(45)	5.7%	(10)	84.9	(26)	0.4%	(49)	810	(27)	5.7	(48)
Virginia	24,081	(16)	2,821.3	(20)	839	(18)	3.5%	(37)	98.3	(22)	3.5%	(6)	587	(42)	90.5	(14)
Washington	17,610	(18)	2,312.6	(24)	932	(17)	5.3%	(12)	122.4	(17)	1.5%	(40)	669	(38)	34.4	(36)
West Virginia	1,369	(46)	766.0	(48)	57	(44)	4.2%	(29)	31.9	(44)	1.4%	(41)	818	(26)	11.6	(47)
Wisconsin	10,418	(25)	1,789.3	(33)	409	(26)	3.9%	(33)	70.2	(31)	3.2%	(10)	730	(33)	53.5	(26)
Wyoming	669	(48)	1,155.9	(45)	7	(51)	1.0%	(50)	12.1	(50)	1.2%	(43)	398	(48)	18.0	(44)
United States	1,385,834		4,255.7		81,795		5.9%		252.0		1.9%		908		73.8	

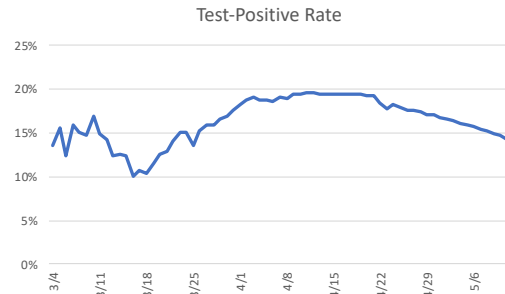
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United States Overall Statistics

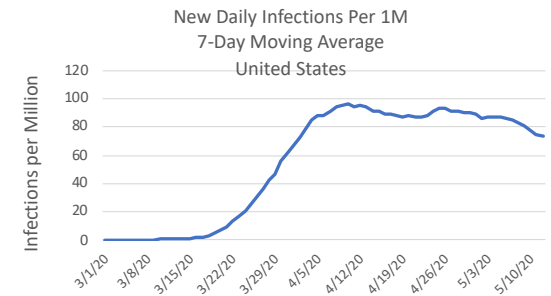
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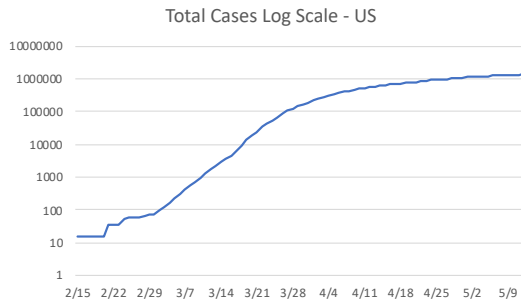
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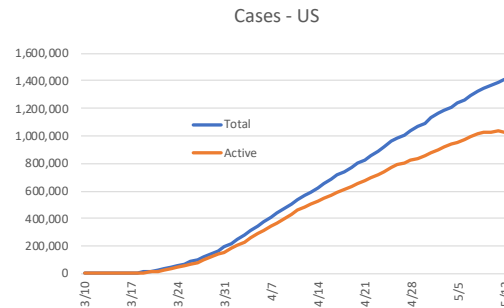
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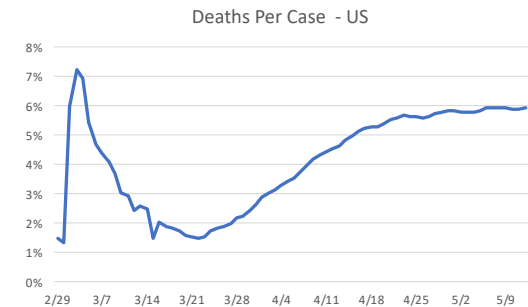
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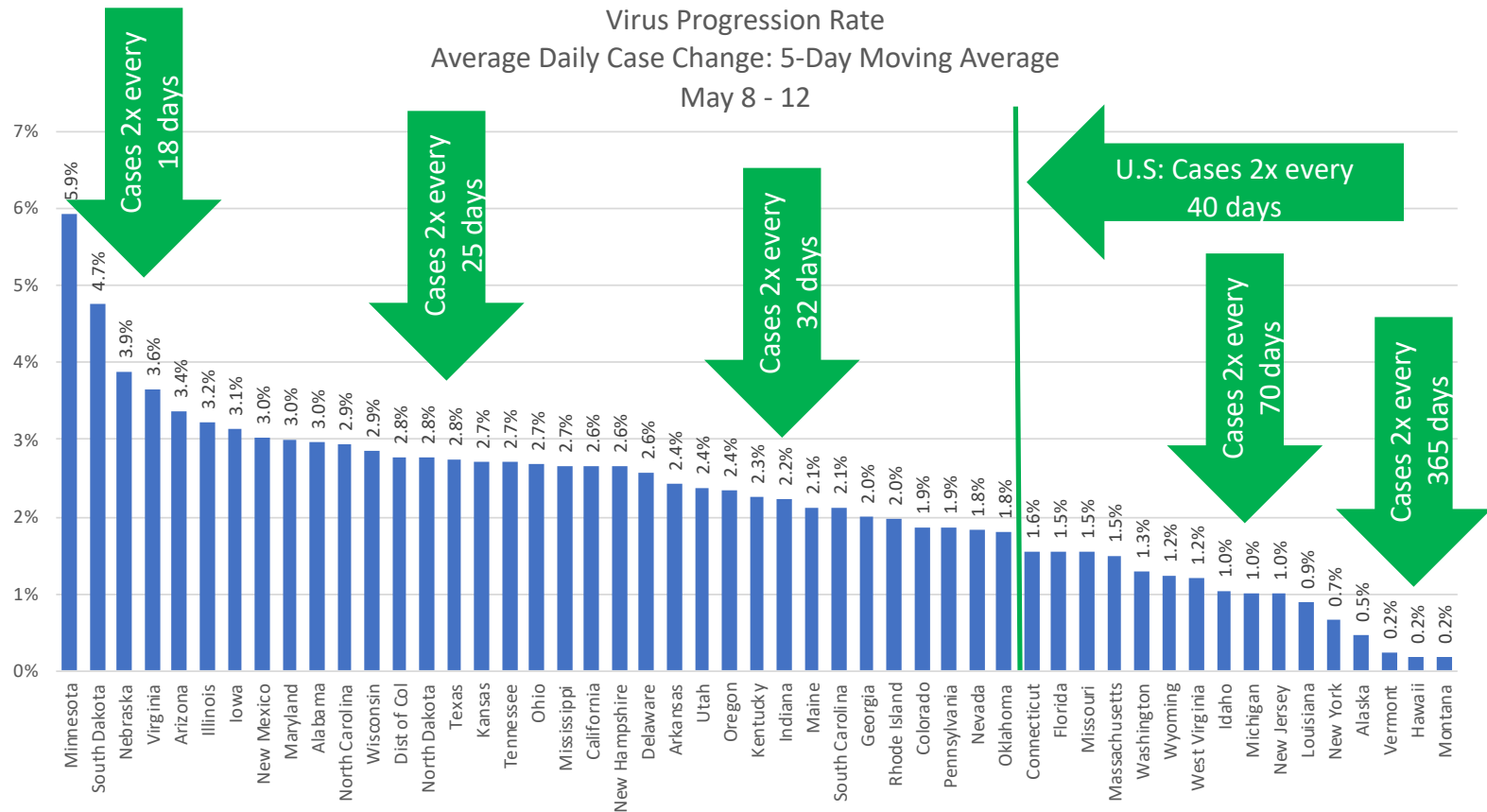
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Average Daily Case Growth

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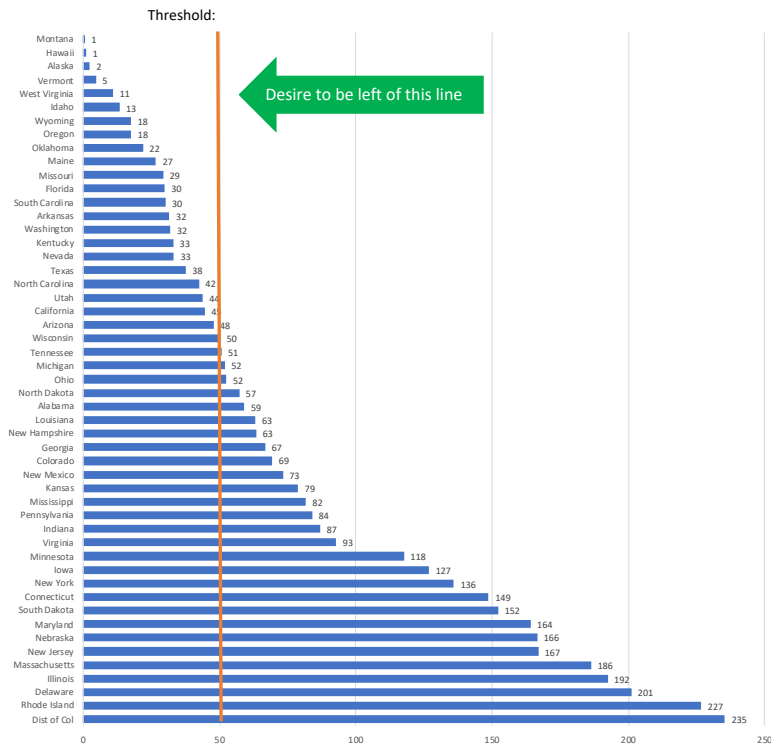


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State-by-State New Daily Infections & Tests Per Capita

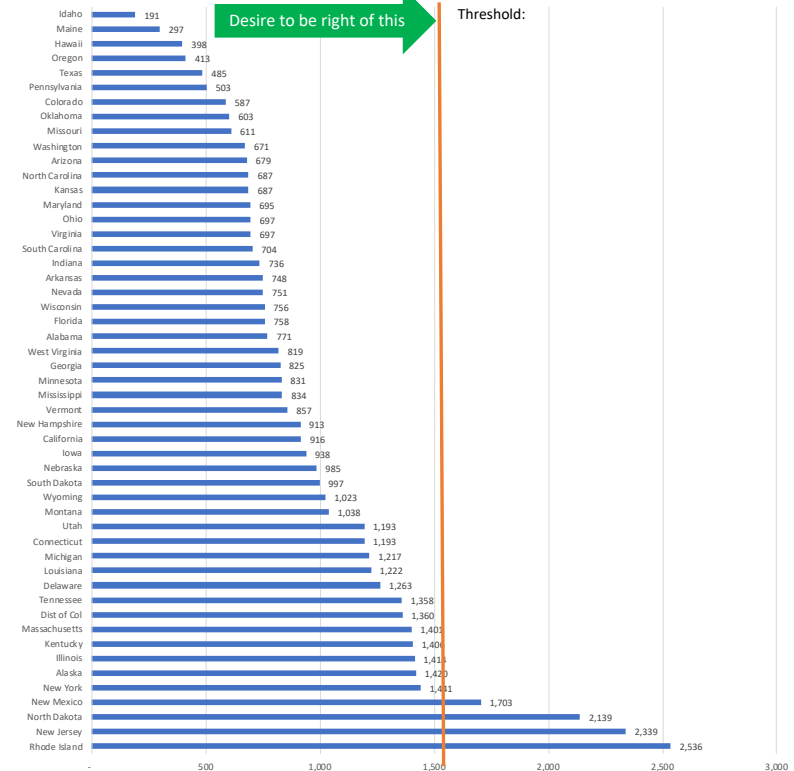
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New Daily Infections Per 1 Million Population
By State
May 6 - 12



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Daily Tests Per 1 Million Population
By State
May 6 - 12

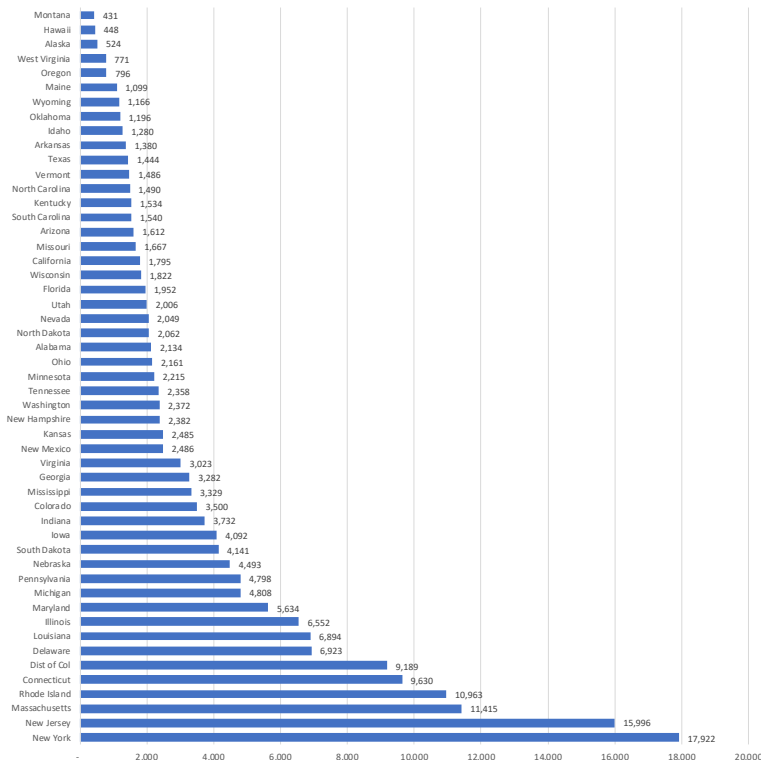


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State-by-State Cases & Deaths Per Capita

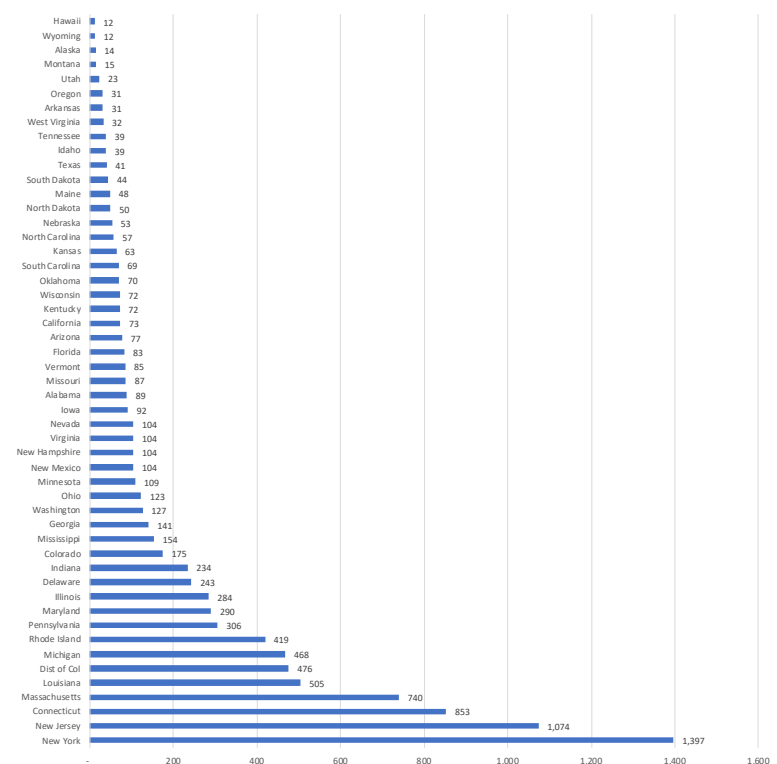
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Total Cases Per 1 Million Population
By State
As of May 12



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Deaths Per 1 Million Population
By State
As of May 12

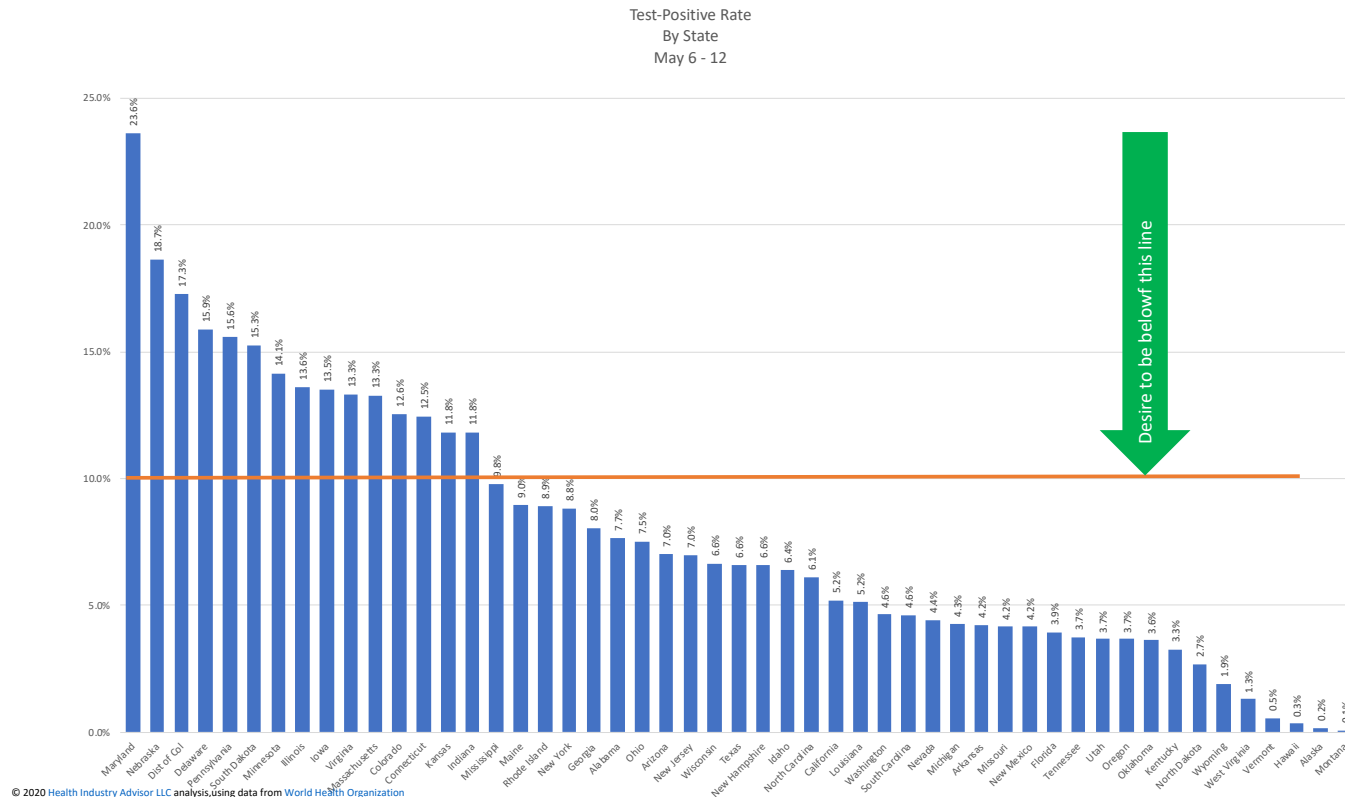


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Which States Are Performing Sufficient Tests?

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The [World Health Organization](https://www.who.int) 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 14 states and the District of Columbia were met this guideline for the past week.



STATE-BY-STATE READINESS FOR RELAXING RESTRICTIONS

Readiness For Relaxing Restrictions

“Strategic Guidance in an Era of Unprecedented Change”

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

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

Readiness For Relaxing Restrictions

"Strategic Guidance in an Era of Unprecedented Change"

Highlights:

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

May 12

State	Tests / Capita		Test-Positive Rate		New Infections / 1 Million		Influenza-Like Illness		Hospital Resources
	#	Direction	#	Direction	#	Direction	Baseline	Direction	
Alabama									
Alaska									
Arizona									
Arkansas									
California									
Colorado									
Connecticut									
Delaware									
District Of Columbia									
Florida									
Georgia									
Hawaii									
Idaho									
Illinois									
Indiana									
Iowa									
Kansas									
Kentucky									
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 30

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

Legend and sources provided on 2nd following page

May 12

State	Tests / Capita		Test-Positive Rate		New Infections / 1 Million		Influenza-Like Illness		Hospital Resources
	#	Direction	#	Direction	#	Direction	Baseline	Direction	
Alabama									
Alaska									
Arizona									
Arkansas									
California									
Colorado									
Connecticut									
Delaware									
District Of Columbia									
Florida									
Georgia									
Hawaii									
Idaho									
Illinois									
Indiana									
Iowa									
Kansas									
Kentucky									
Louisiana									
Maine									
Maryland									
Massachusetts									
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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 15

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

Legend and sources provided on following page

"Strategic Guidance in an Era of Unprecedented Change"

Legend:

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

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Sources:

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

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

Hospital resource Need projections from Institute for Health Metrics and Evaluation (), accessed April 30, 2020

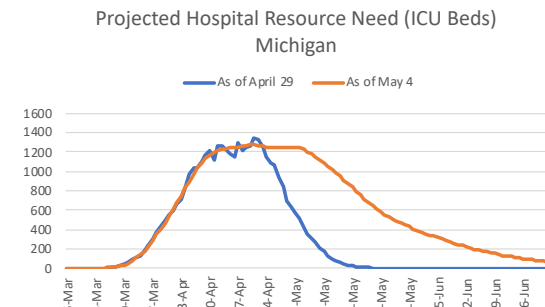
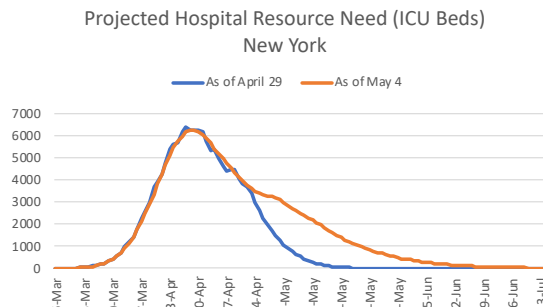
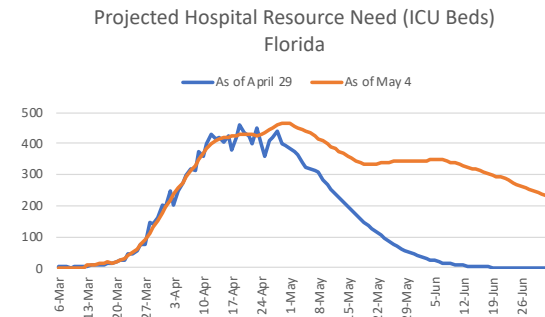
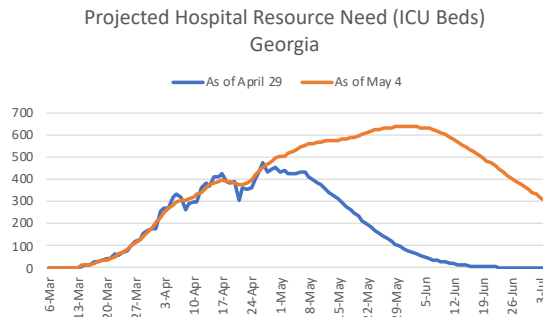
Infection rate data from World Health Organization (worldometer.info), accessed March 21-May 2, 2020

Impact of Relaxing Social Distancing

IHME's Hospital Resource Need Projections Are Sensitive to Relaxing Restrictions

"Strategic Guidance in an Era of Unprecedented Change"

The Institute for Health Metrics and Evaluation (IHME) regularly updates [projections of hospital resource](#) needs. Comparing their projections from April 29 and May 4 indicates how much relaxing restrictions factors into these projections. Consider how much the projections changed for Florida and Georgia:



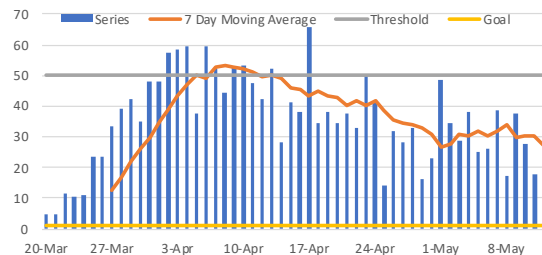
Note: ICU beds were selected as representative of the three metrics that IHME uses: total beds, ICU beds and ventilators. HIA does not vouch for the accuracy of these projections; in our limited experience, they seem to over-state actual needs.

State-By-State Impact of Relaxing Restrictions

"Strategic Guidance in an Era of Unprecedented Change"

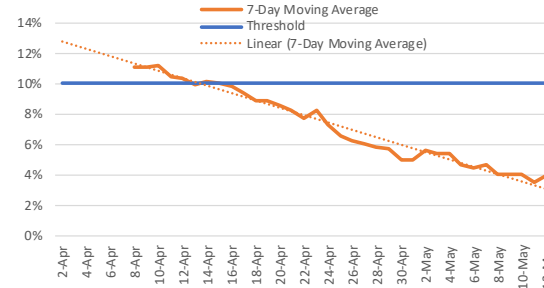
With several states re-opening, we plan to monitor testing and infection rates to determine if, when and how much impact relaxation has on renewed spread of the virus. Here, we focus on Florida and Georgia. *Too early to observe any meaningful change in new infection rates – which are relatively low in both states.*

New Infections Per 1M Population
Florida



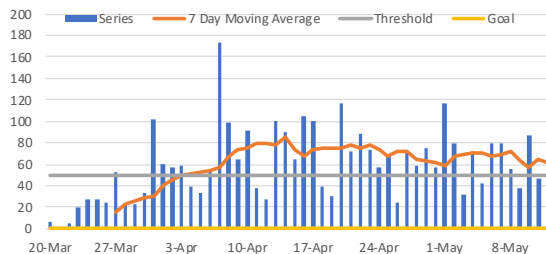
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Test-Positive %
Florida



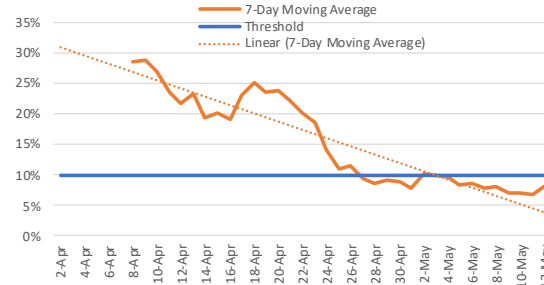
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New Infections Per 1M Population
Georgia



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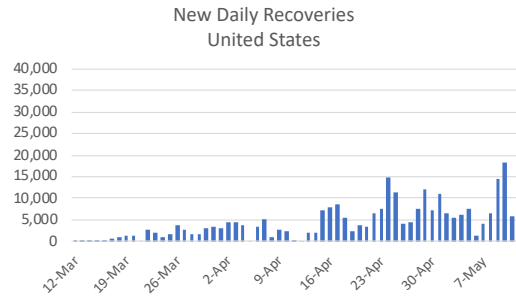
Test-Positive %
Georgia



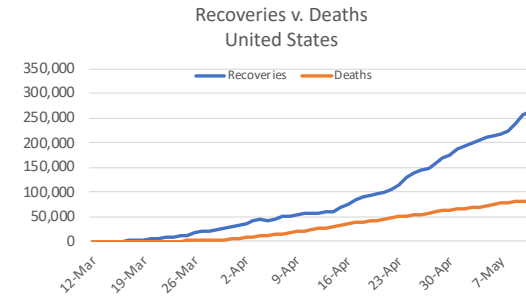
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UNDER-REPORTED RECOVERIES? POSSIBLE LAG IN STATE REPORTING

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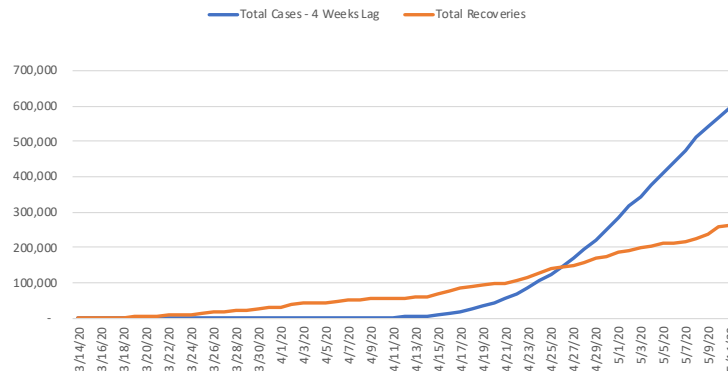


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Total Cases - 4-Week Lag v Total Recoveries



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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 ~190-250k

As of May 12

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

State	Recoveries	Expected Recoveries	
		Low	High
Alabama	20	3,162	3,558
Alaska	334	228	257
Arizona	70	3,045	3,425
Arkansas	3,220	1,198	1,348
California	11,688	20,429	22,982
Colorado	695	6,353	7,147
Connecticut	2,929	11,191	12,590
Delaware	2,802	1,541	1,733
District Of Columbia	886	1,646	1,852
Florida	7,093	17,302	19,465
Georgia	340	11,662	13,120
Hawaii	563	414	465
Idaho	1,379	1,171	1,318
Illinois	8,776	18,598	20,922
Indiana	1,691	6,822	7,674
Iowa	5,618	1,519	1,709
Kansas	1,675	1,141	1,283
Kentucky	2,546	1,768	1,989
Louisiana	22,608	17,214	19,366
Maine	913	587	661
Maryland	2,394	7,578	8,525
Massachusetts	22,148	22,530	25,347
Michigan	22,686	21,601	24,301
Minnesota	8,223	1,356	1,526
Mississippi	4,421	2,470	2,778
Missouri	2,654	3,771	4,243

State	Recoveries	Expected Recoveries	
		Low	High
Montana	425	319	359
Nebraska	22	721	811
Nevada	4,197	2,470	2,779
New Hampshire	1,234	873	982
New Jersey	3,228	55,059	61,942
New Mexico	1,434	1,126	1,266
New York	58,730	162,498	182,811
North Carolina	9,115	4,106	4,620
North Dakota	877	273	307
Ohio	4,168	5,824	6,552
Oklahoma	3,423	1,747	1,966
Oregon	1,125	1,306	1,470
Pennsylvania	6,364	20,372	22,919
Rhode Island	730	2,601	2,926
South Carolina	4,881	2,842	3,198
South Dakota	2,309	790	889
Tennessee	8,336	4,658	5,241
Texas	24,251	12,010	13,512
Utah	3,267	1,930	2,171
Vermont	787	602	677
Virginia	3,124	4,937	5,554
Washington	4,002	8,636	9,716
West Virginia	813	555	625
Wisconsin	5,014	2,844	3,200
Wyoming	451	226	254
United States	303,968	491,109	552,497

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

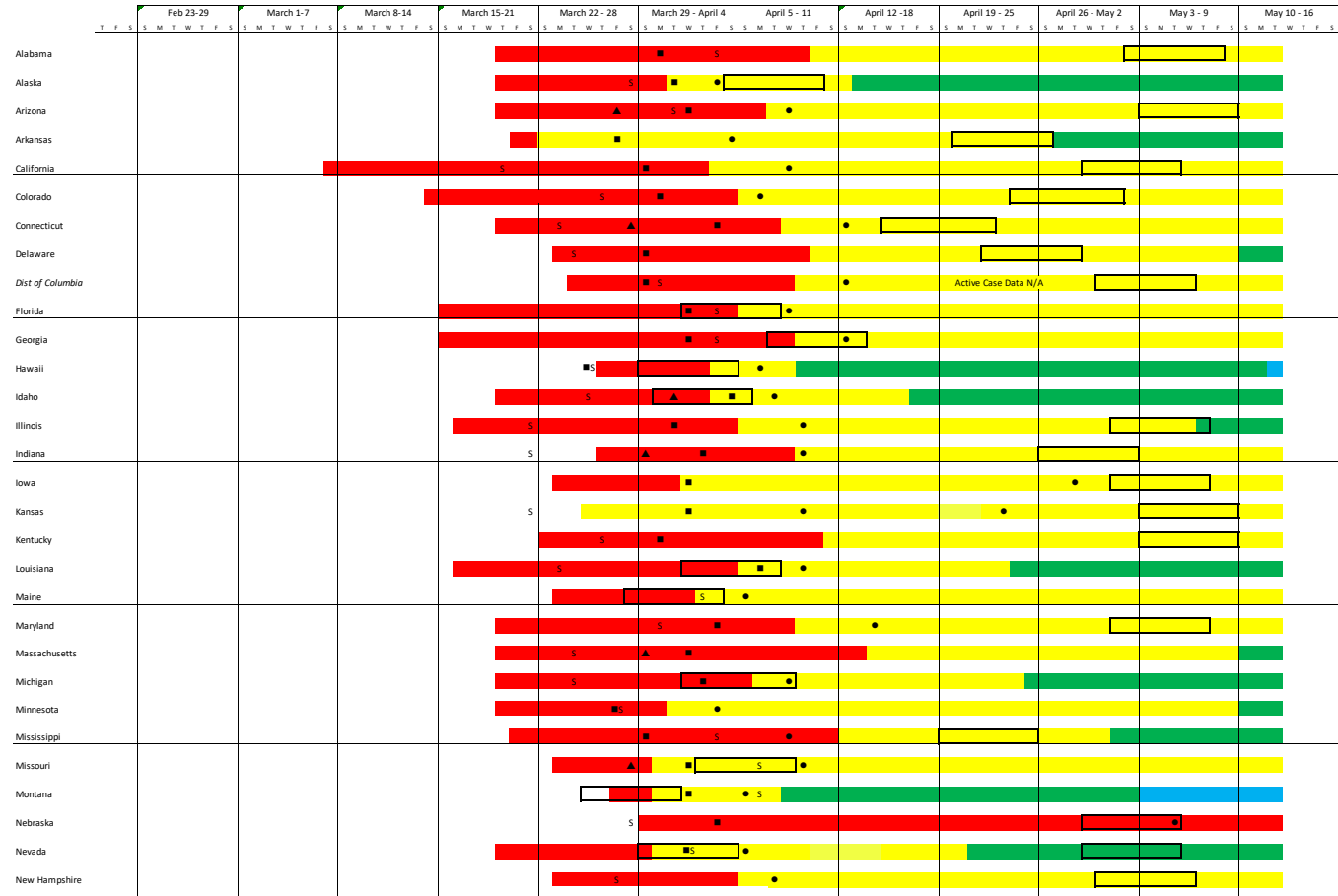
 - States seemingly up-to-date with reporting recoveries
 - States only reporting ~ 1/2 expected recoveries
 - States well-behind in reporting recoveries

VIRUS PROGRESSION: ROADMAP TO RECOVERY

State-by-State Virus Progression – 1 of 2

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



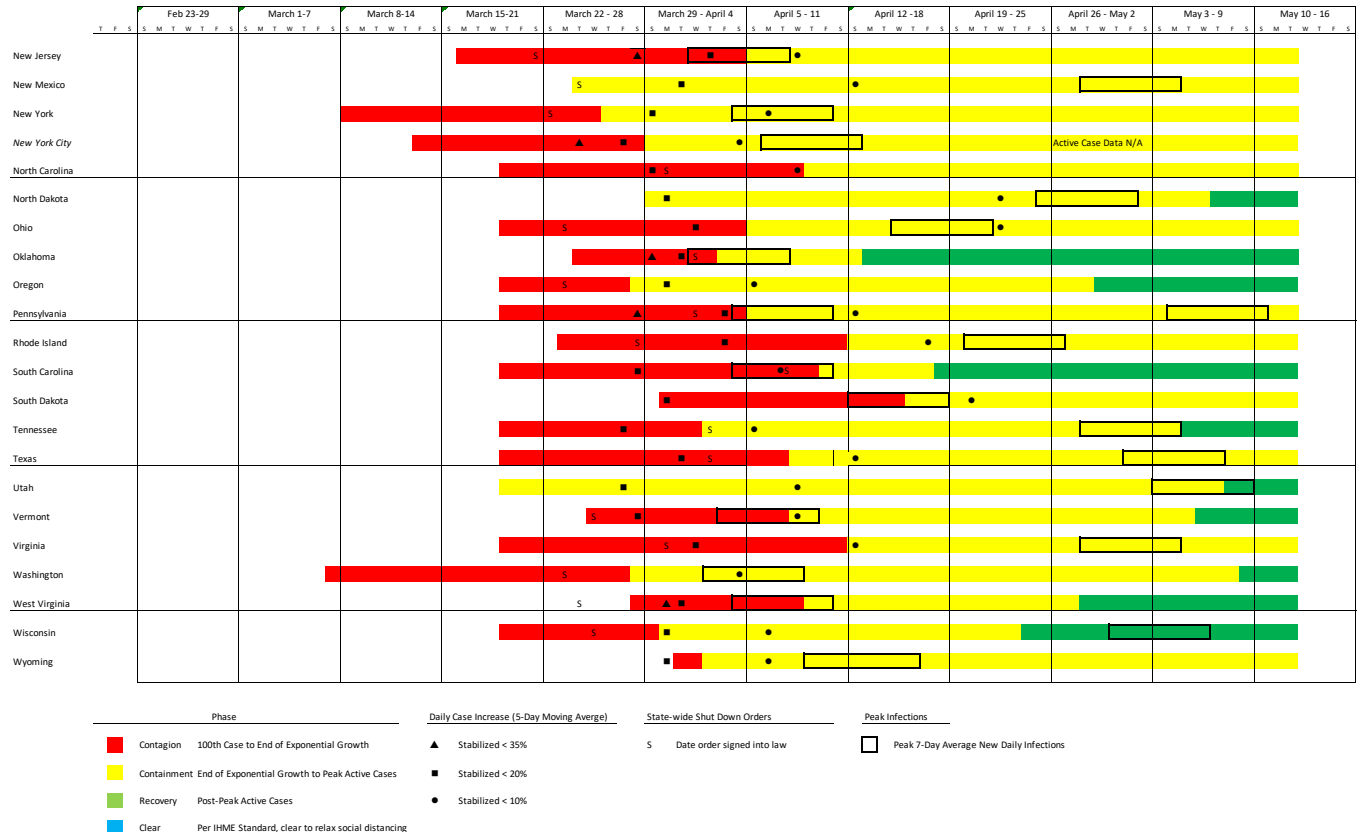
Legend on following page

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State-by-State Virus Progression – 2 of 2

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



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STATE TEST, INFECTION AND CASE TRENDS

"Strategic Guidance in an Era of Unprecedented Change"

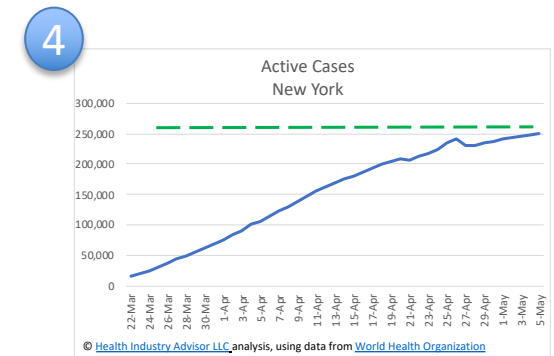
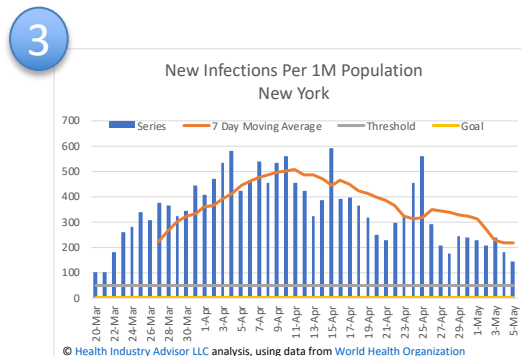
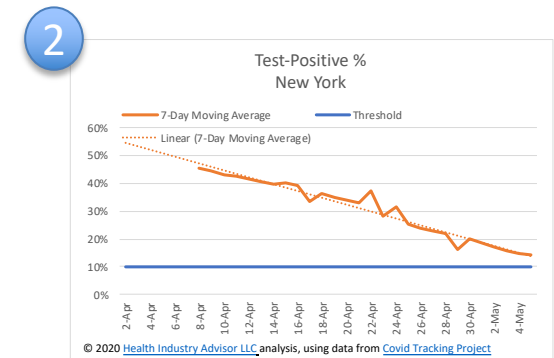
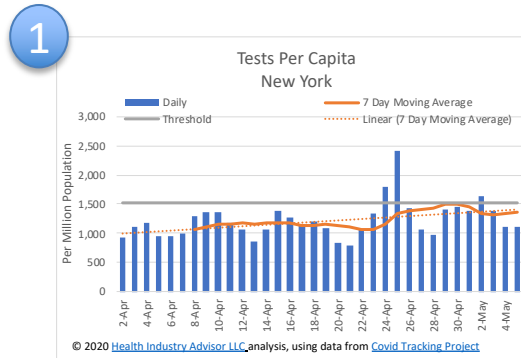
On Mondays, Wednesday and Fridays we provide graphics relevant to judging how far a state (or the District of Columbia) has progressed against the virus. Seventeen states (or, sixteen and D.C.) are provided at a time. Today, we provide:

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

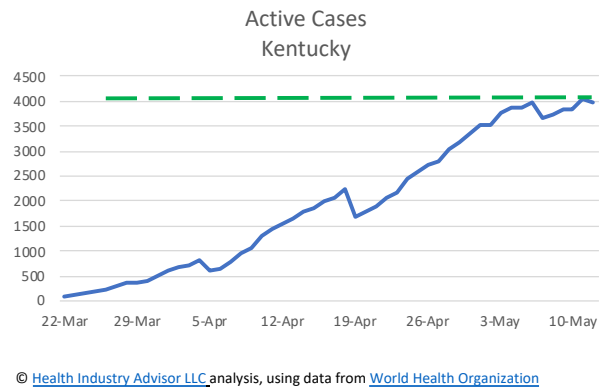
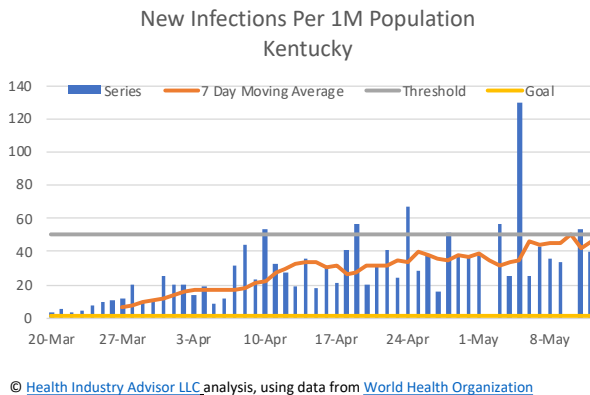
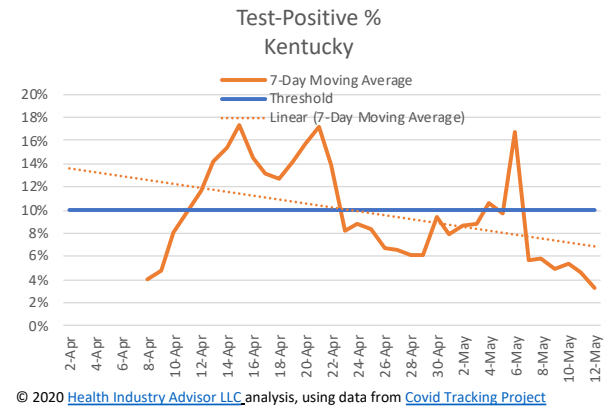
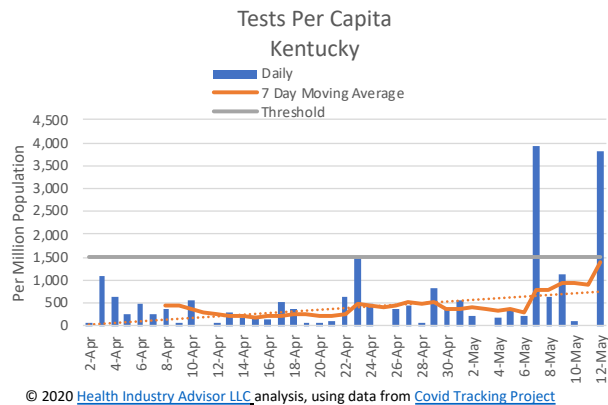
"Strategic Guidance in an Era of Unprecedented Change"

How to "read" these charts:

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

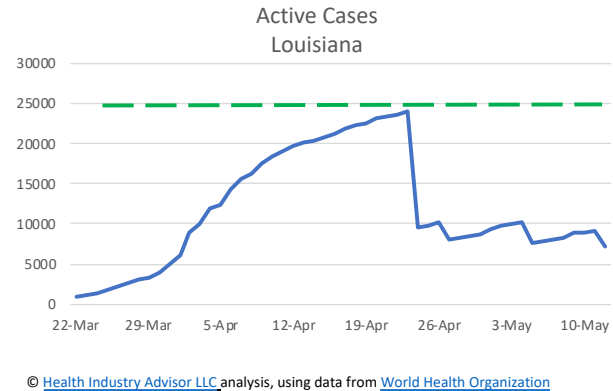
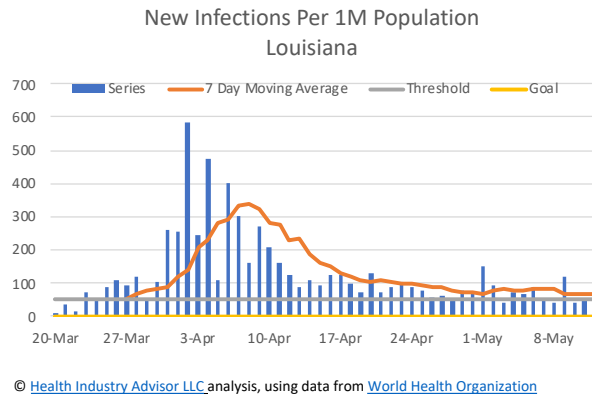
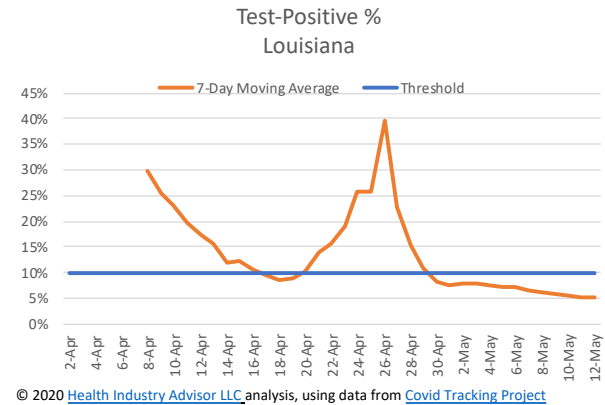
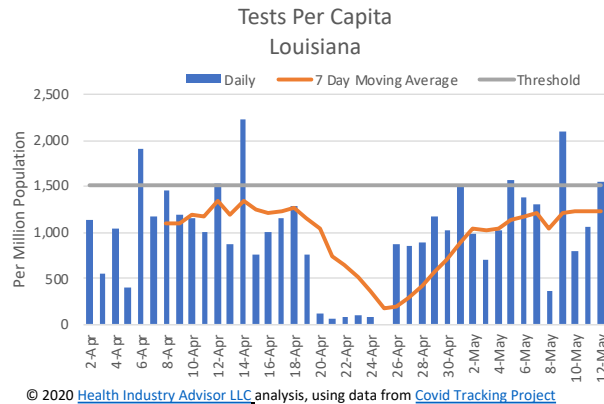


"Strategic Guidance in an Era of Unprecedented Change"



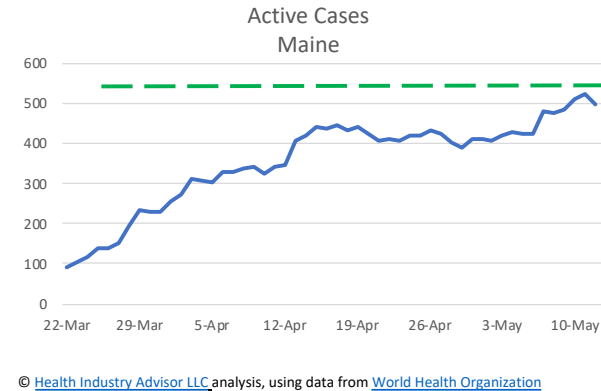
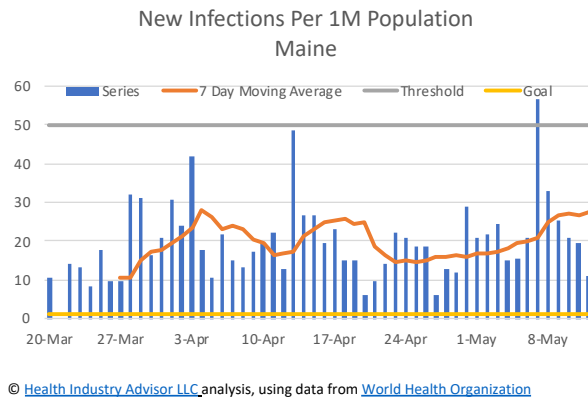
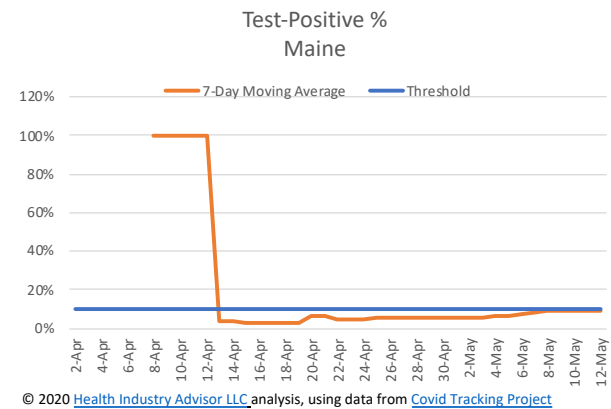
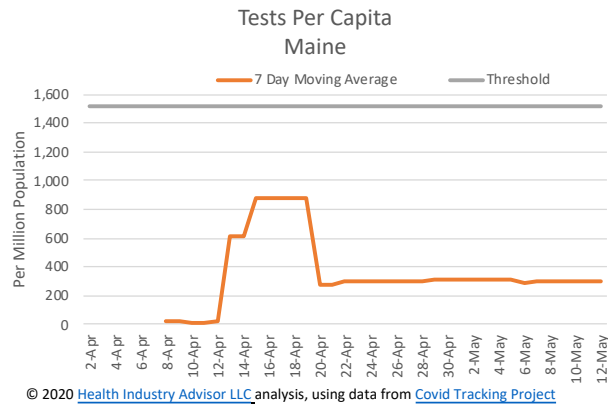
State-by-State Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"



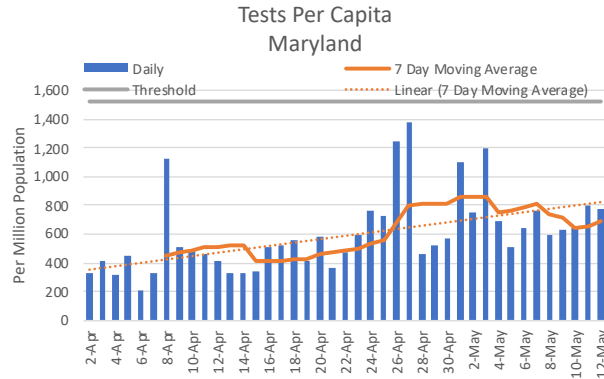
State-by-State Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"

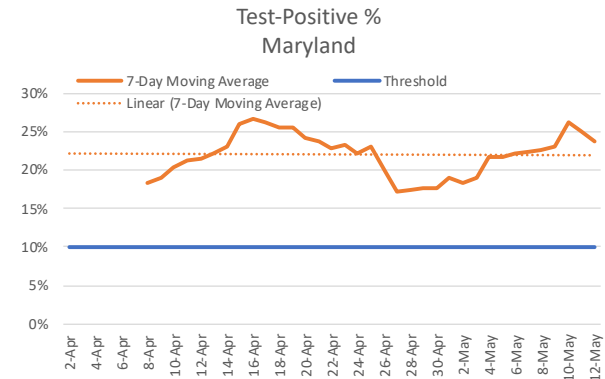


State-by-State Test, New Daily Infection and Active Case Trends

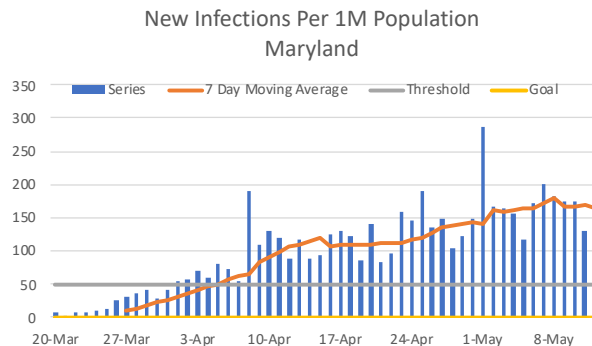
"Strategic Guidance in an Era of Unprecedented Change"



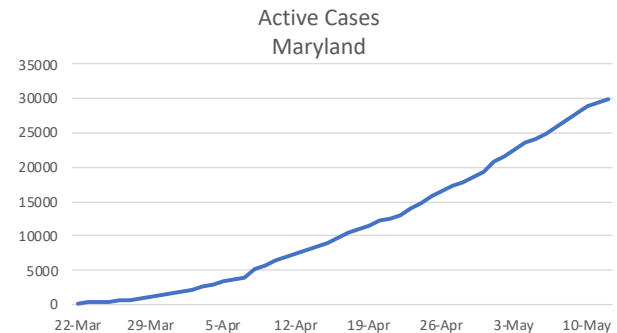
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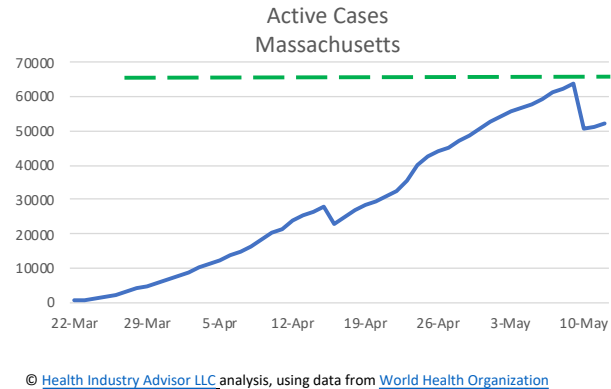
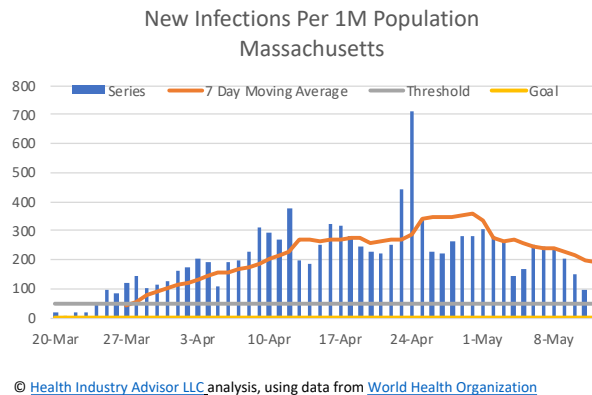
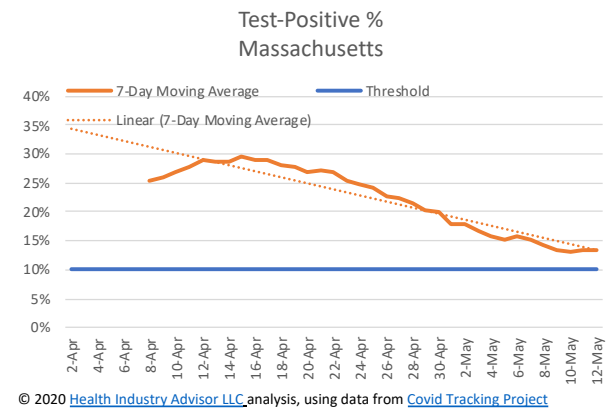
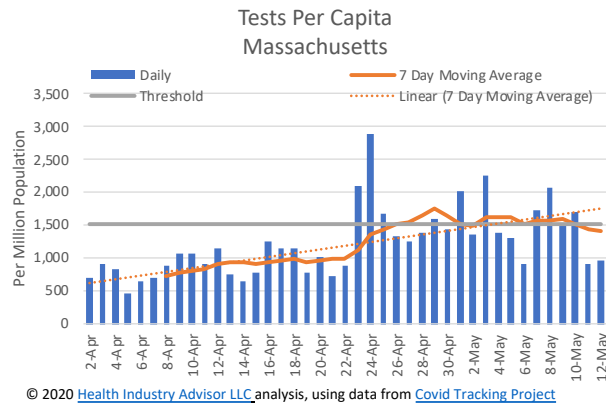


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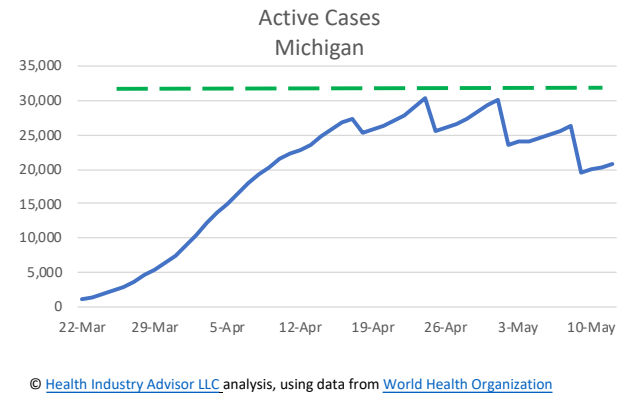
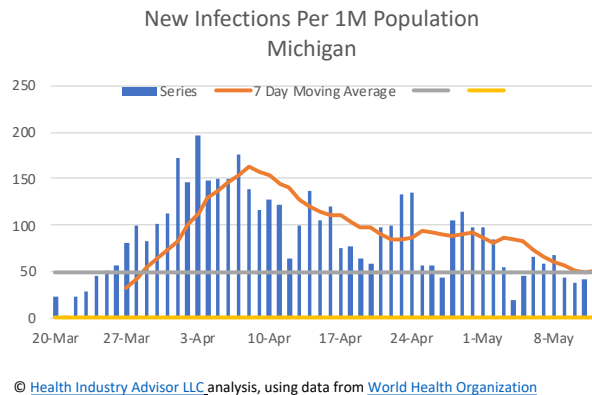
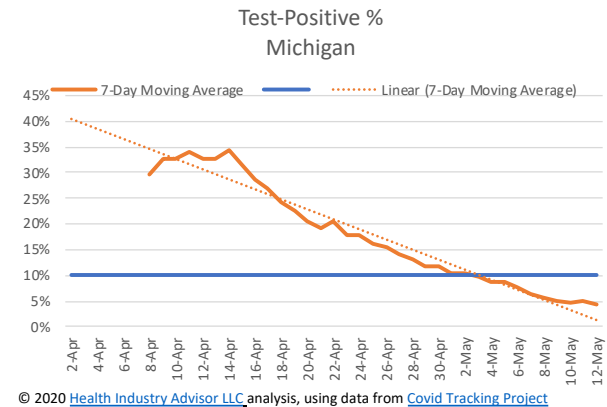
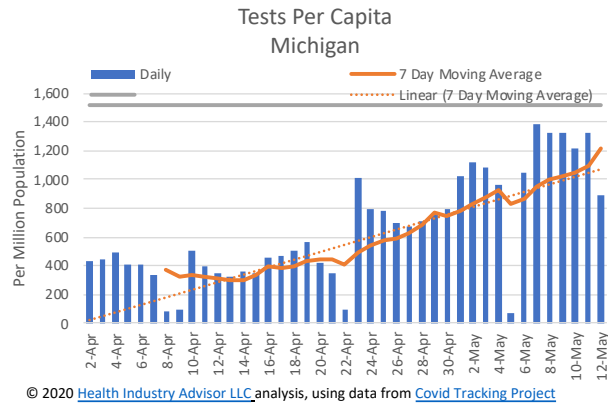


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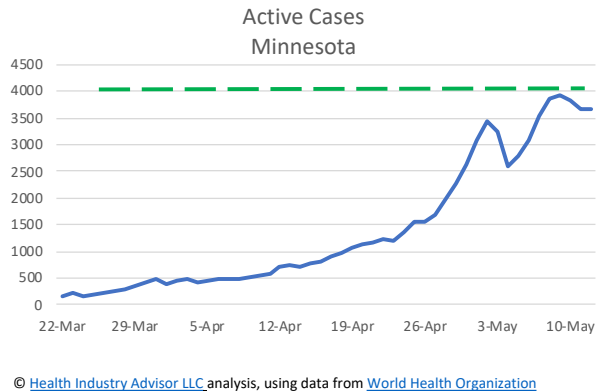
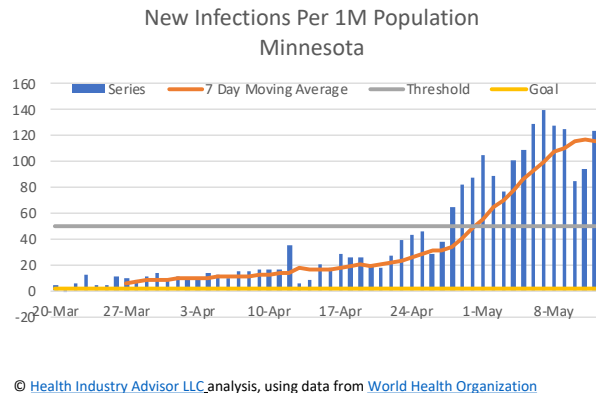
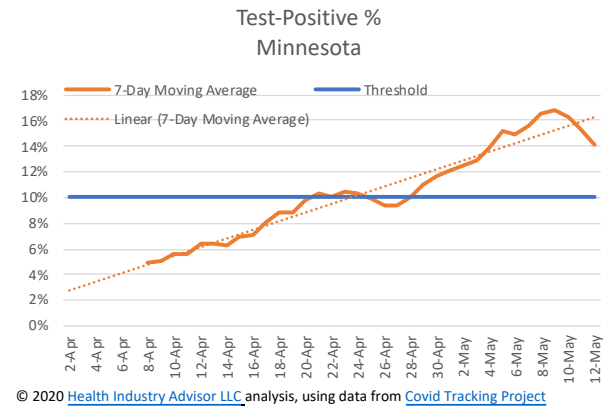
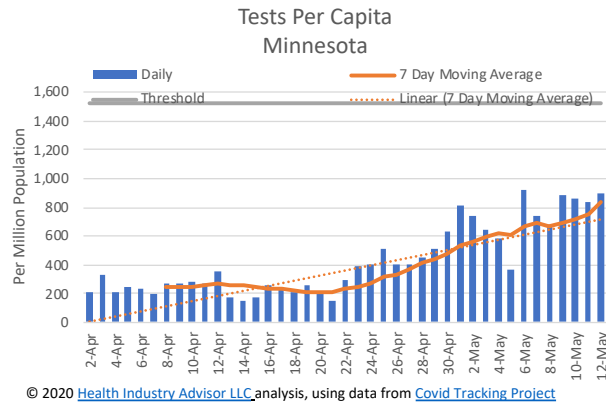
"Strategic Guidance in an Era of Unprecedented Change"



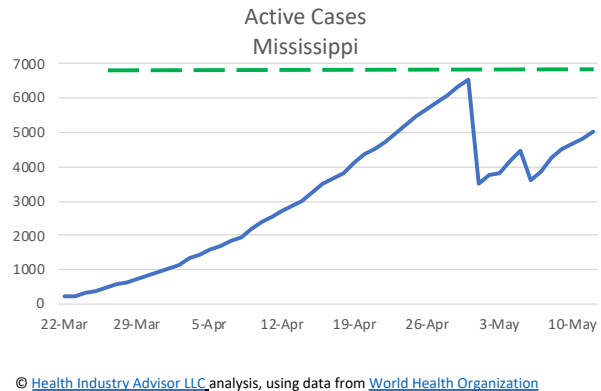
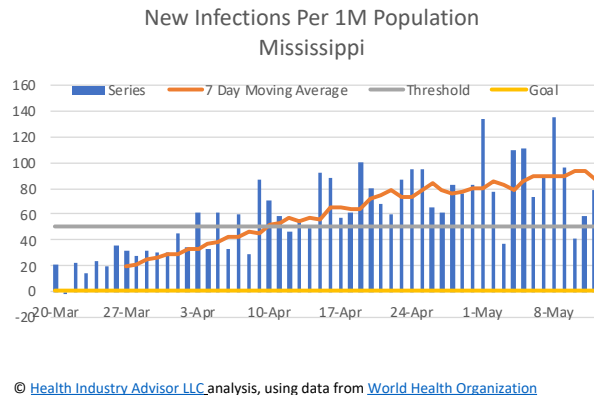
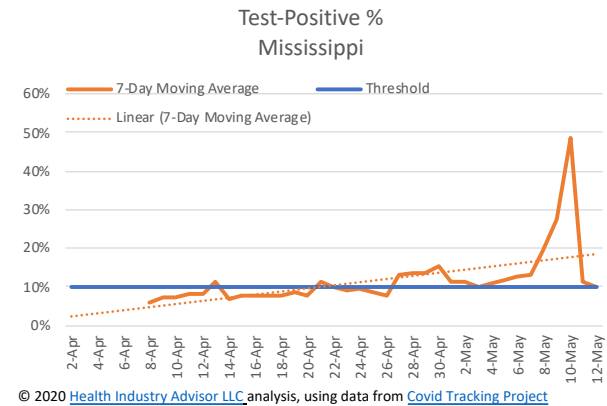
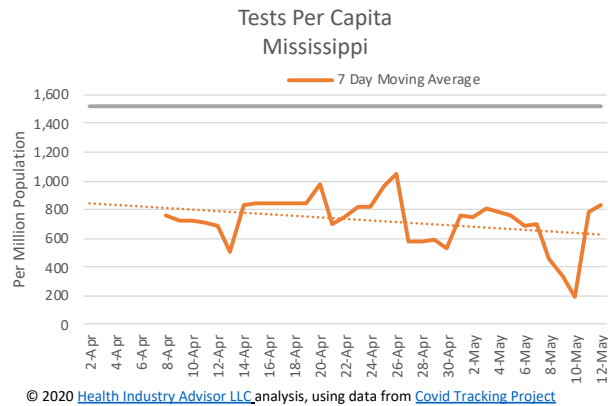
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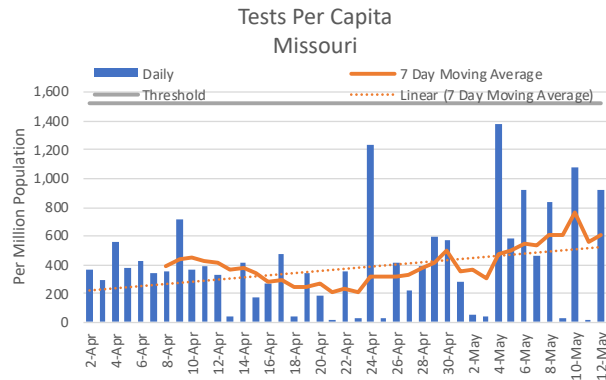
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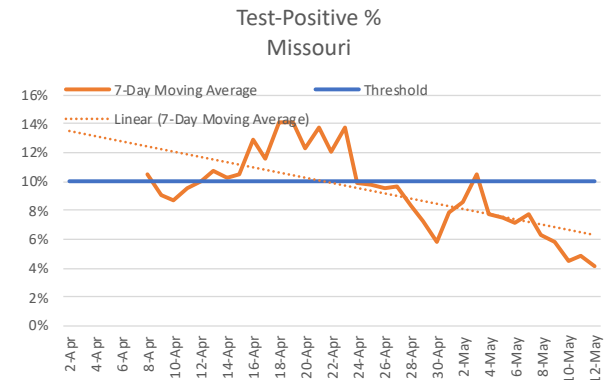
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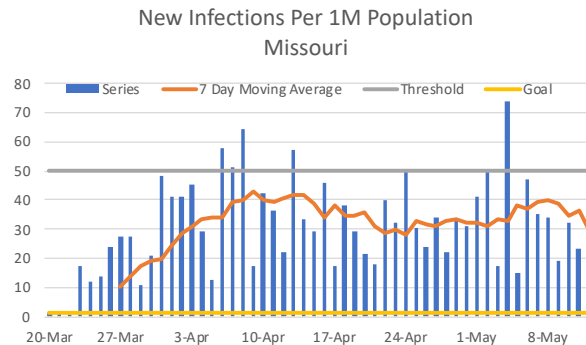
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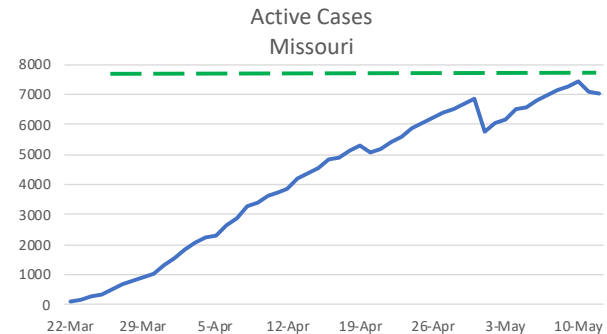
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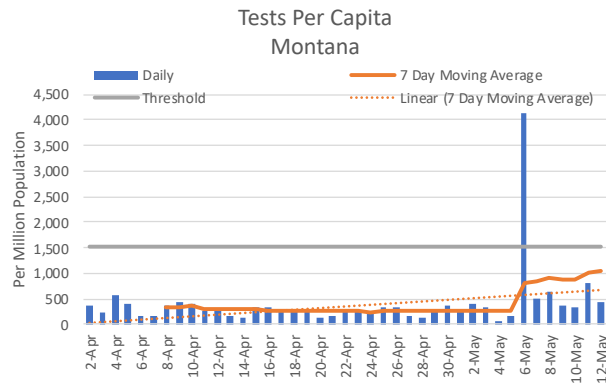


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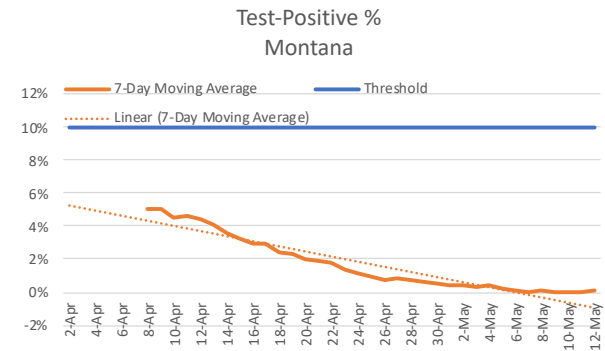


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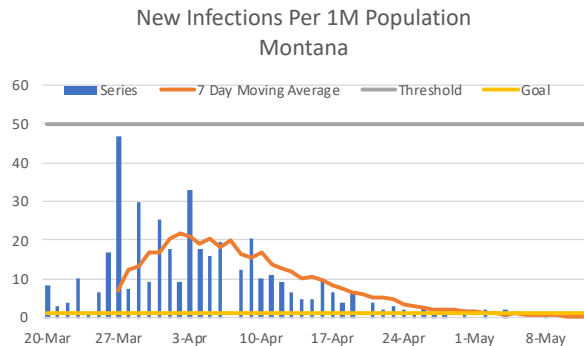
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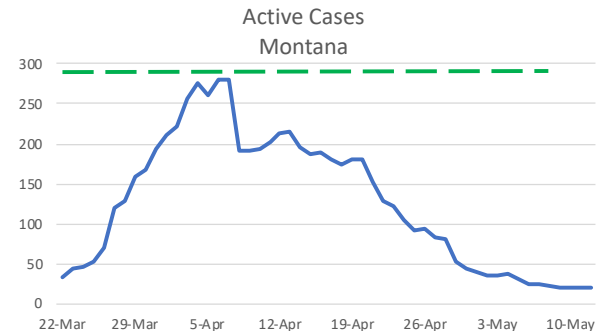
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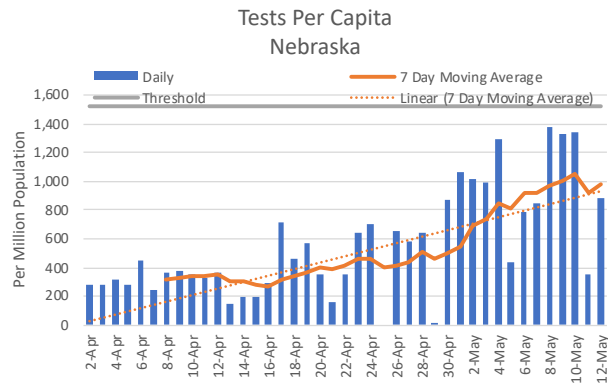


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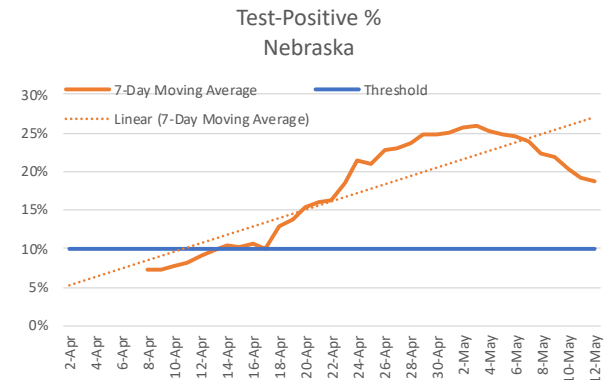


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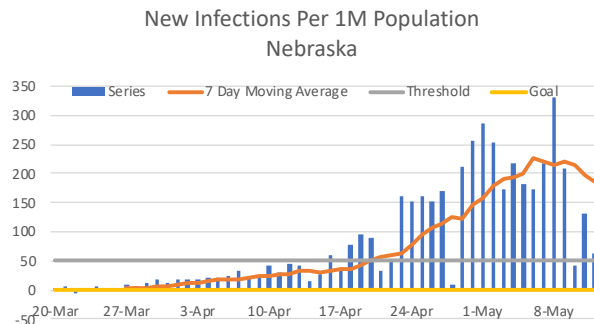
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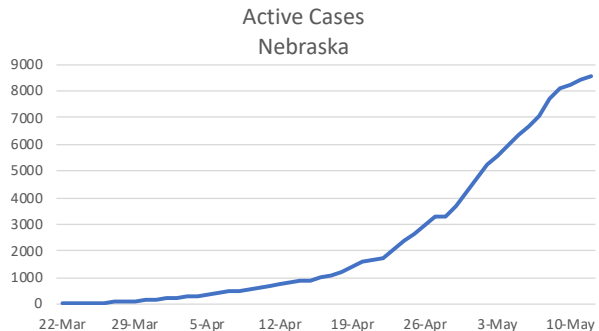
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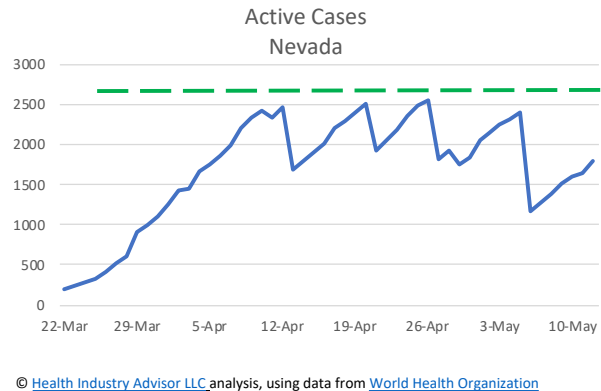
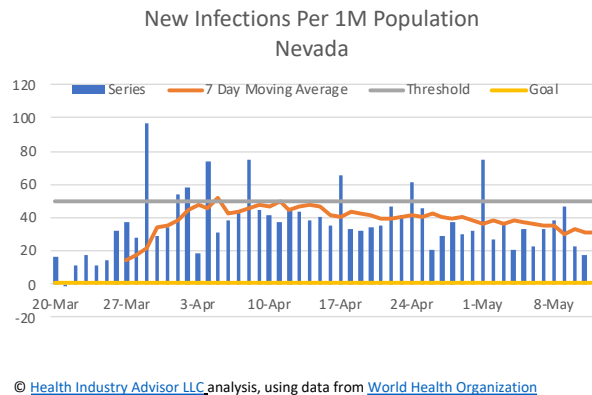
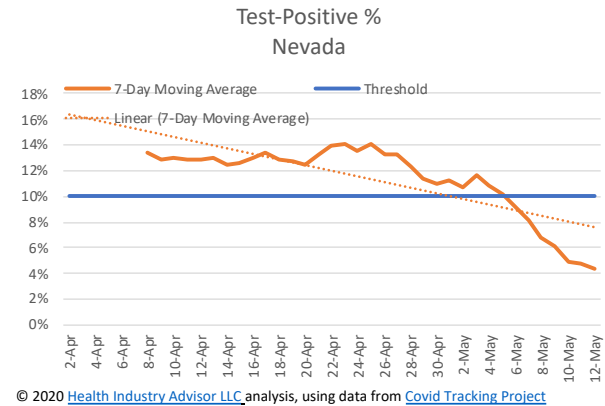
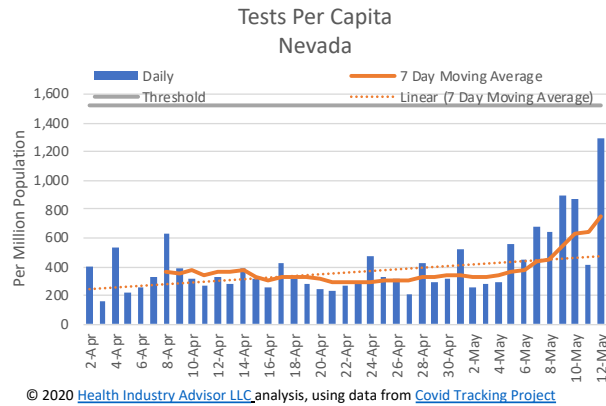


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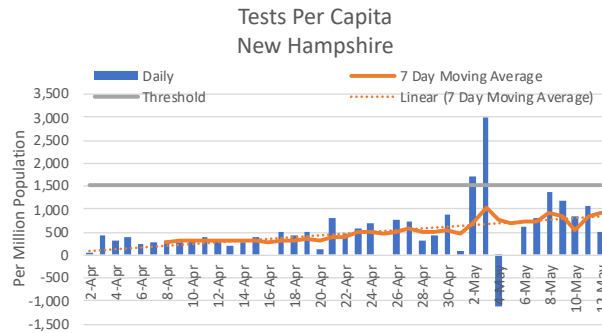


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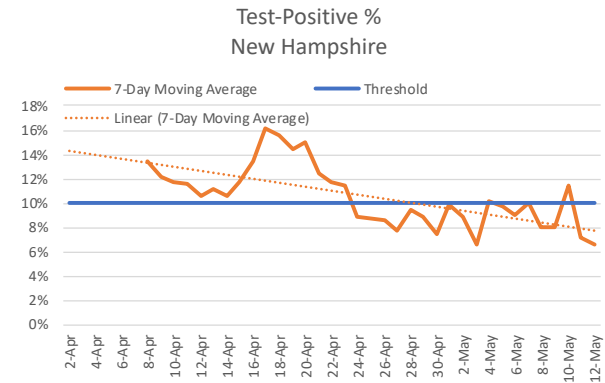
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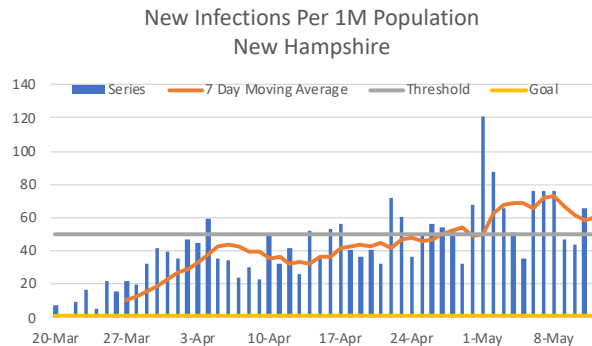
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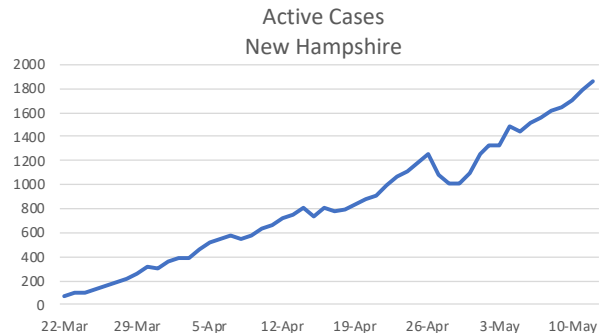
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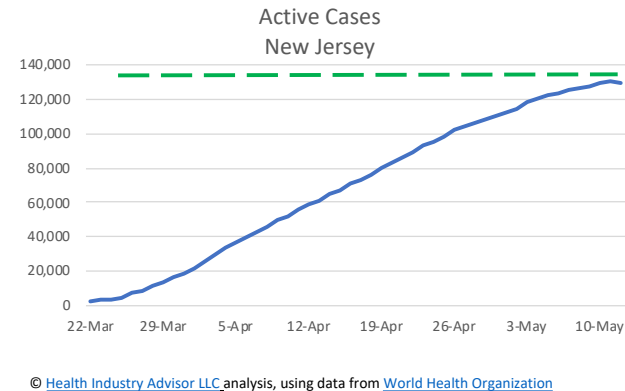
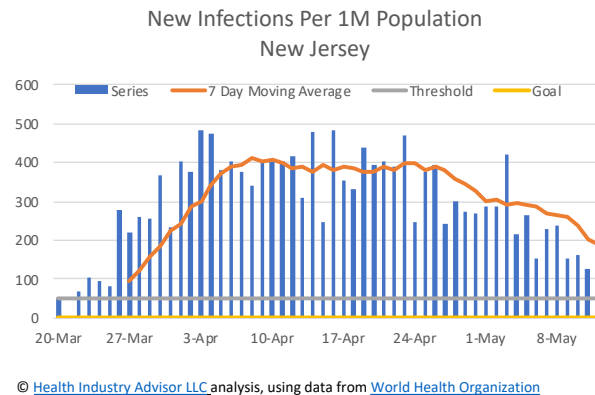
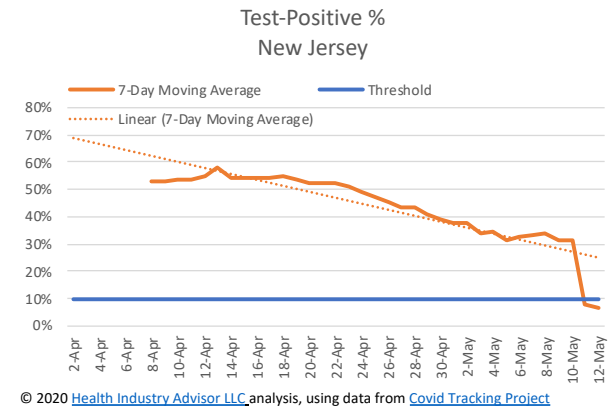
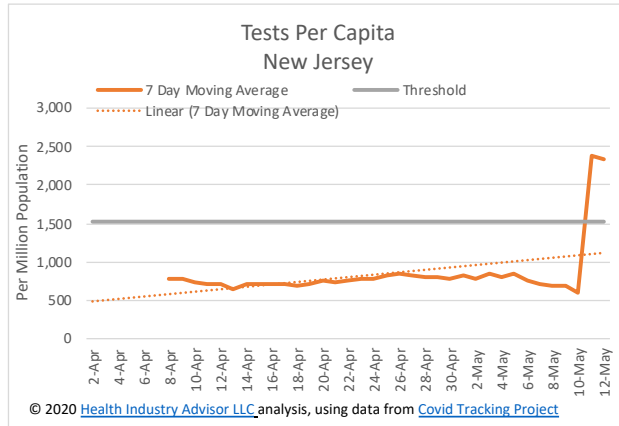


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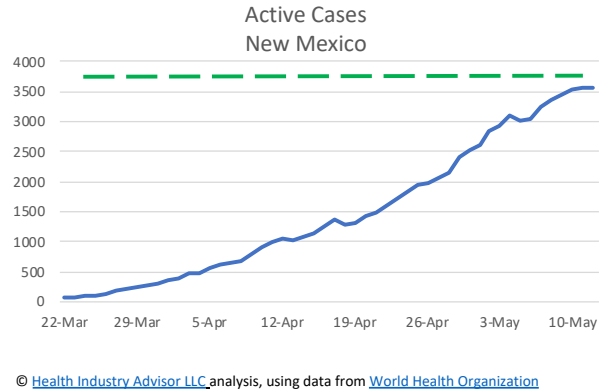
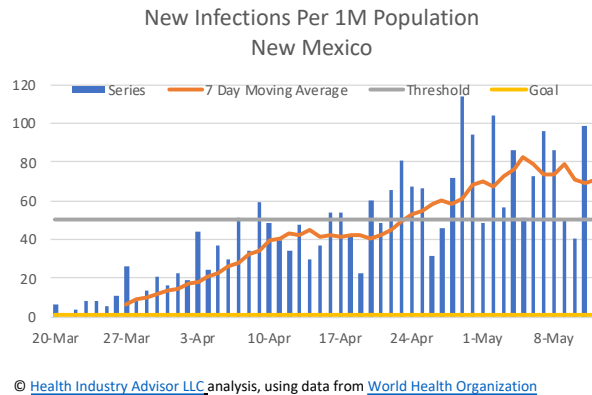
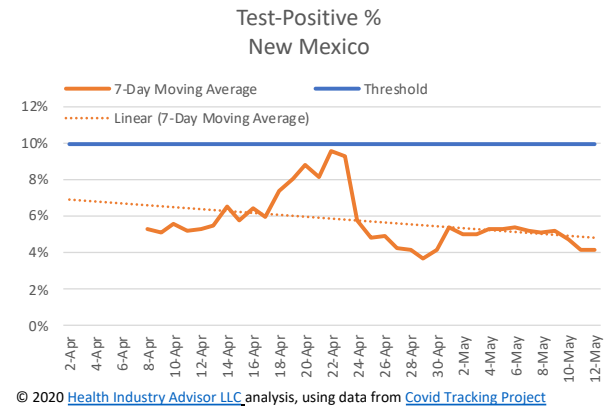
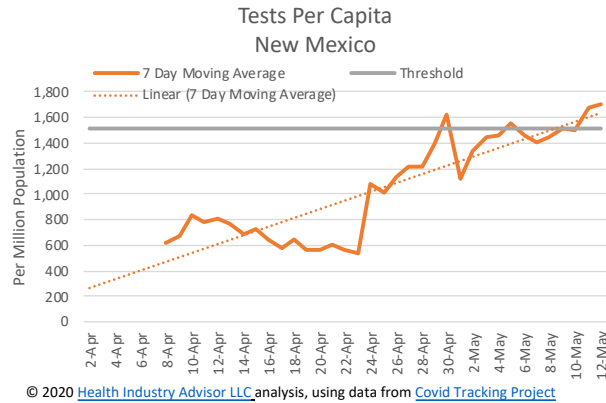
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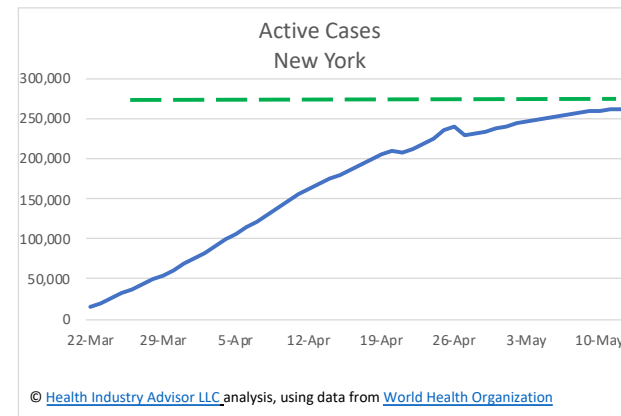
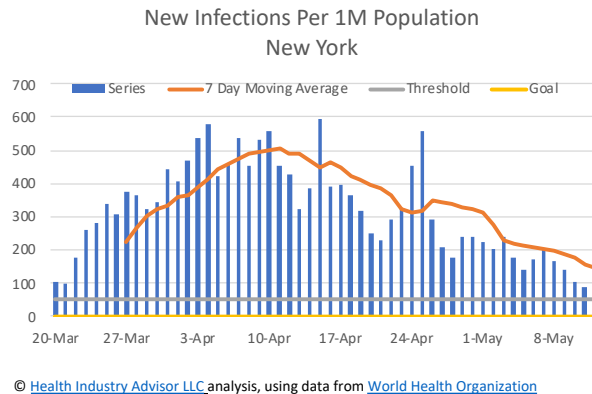
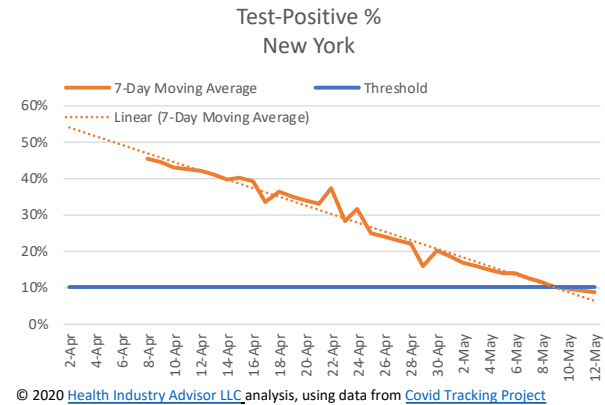
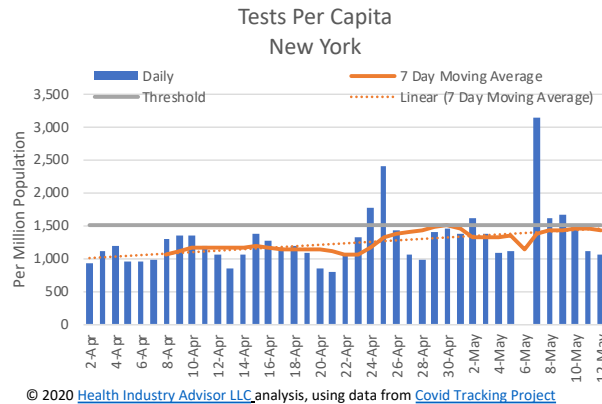
State-by-State Test, New Daily Infection and Active Case Trends

"Strategic Guidance in an Era of Unprecedented Change"



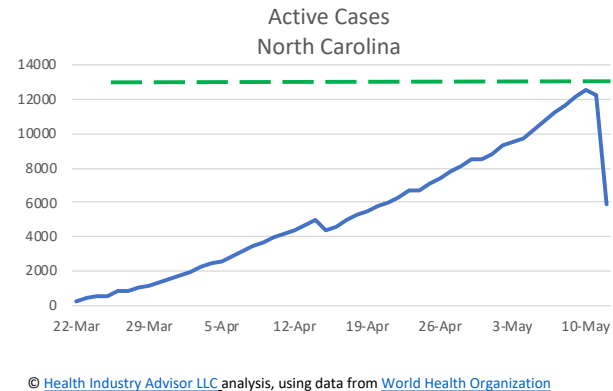
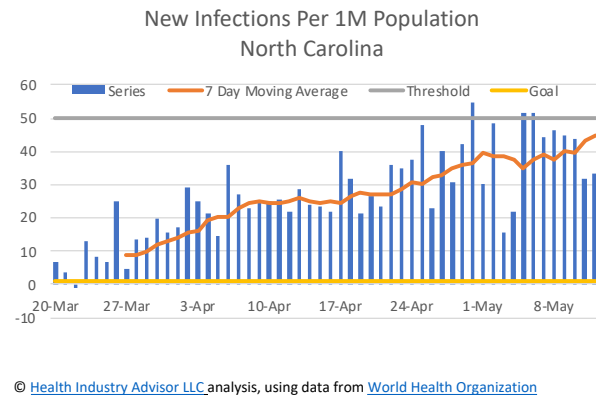
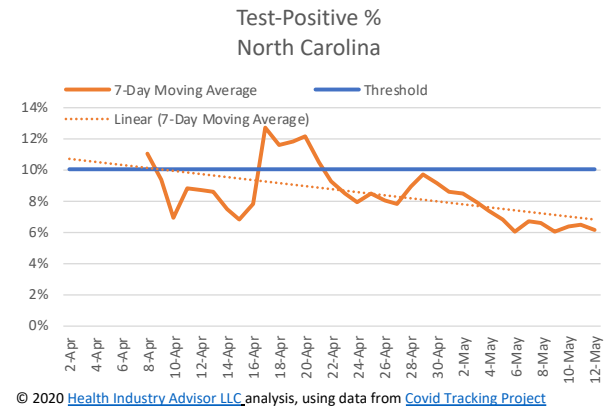
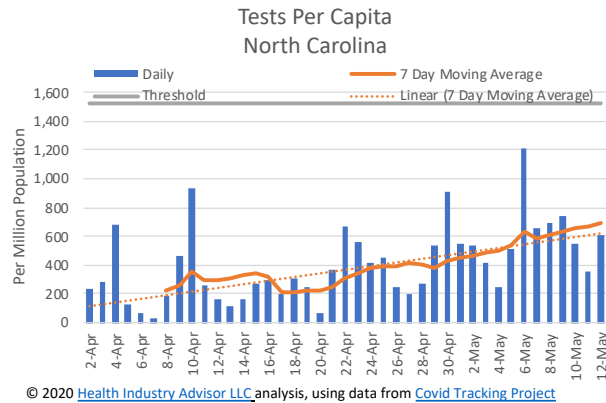
State-by-State Test, New Daily Infection and Active Case Trends

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

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U.S. COUNTY-BY-COUNTY INFORMATION

"Strategic Guidance in an Era of Unprecedented Change"

- On the following pages, case and death information¹ is presented for the 100 most populous counties in the United States
- New York case and death information are reported on a combined basis for Bronx, Kings, New York, Queens and Richmond counties
- Population information is the 2019 official estimate from the US Census Bureau²

1. - Data from [The New York Times](#), based on reports from state and local health agencies. Accessed May 10-12, 2020

2. "Annual Estimates of the Resident Population for Counties in the United States: April 1, 2010 to July 1, 2019 (CO-EST2019-ANNRES)", Source: U.S. Census Bureau, Population Division, Release Date: March 2020. Accessed May 12, 2020

U.S. County-By-County Infection and Deaths Rates: Most Populous Counties

"Strategic Guidance in an Era of Unprecedented Change"

As of May 11

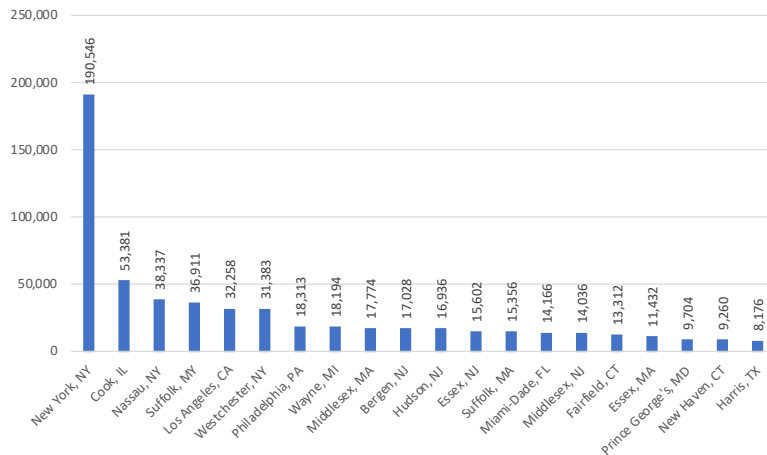
County	County seat	2019 Est. Population - Millions	Total Cases	Total Deaths	New Cases	New Deaths	Cases / 1M	New Cases / 1M	Deaths / 1M	New Deaths / 1M
Los Angeles, CA	Los Angeles	10.04	32,258	1,569	581	39	3,213	58	58	4
New York, NY	Includes: Bronx, Kings, New York and Richmond Counties	8.34	190,546	19,563	890	127	22,856	107	107	15
Cook, IL	Chicago	5.15	53,381	2,361	726	44	10,365	141	141	9
Harris, TX	Houston	4.71	8,176	179	298	7	1,735	63	63	1
Maricopa, AZ	Phoenix	4.49	5,988	250	161	3	1,335	36	36	1
San Diego, CA	San Diego	3.34	5,128	194	139	-	1,536	42	42	-
Orange, CA	Santa Ana	3.18	3,627	76	121	-	1,142	38	38	-
Miami-Dade, FL	Miami	2.72	14,166	490	160	3	5,214	59	59	1
Dallas, TX	Dallas	2.64	6,123	145	253	2	2,323	96	96	1
Riverside, CA	Riverside	2.47	5,189	217	150	5	2,100	61	61	2
Clark, NV	Las Vegas	2.27	4,762	260	12	-	2,101	5	5	-
King, WA	Seattle	2.25	7,434	507	69	5	3,300	31	31	2
San Bernardino, CA	San Bernardino	2.18	3,015	121	51	-	1,383	23	23	-
Tarrant, TX	Fort Worth	2.10	3,745	104	50	1	1,781	24	24	0
Bexar, TX	San Antonio	2.00	1,920	57	19	1	958	9	9	0
Broward, FL	Fort Lauderdale	1.95	5,882	258	24	1	3,012	12	12	1
Santa Clara, CA	San Jose	1.93	2,341	131	2	-	1,214	1	1	-
Wayne, MI	Detroit	1.75	18,194	2,105	119	8	10,400	68	68	5
Alameda, CA	Oakland	1.67	2,122	75	37	-	1,270	22	22	-
Middlesex, MA	Lowell and Cambridge	1.61	17,774	1,235	185	28	11,028	115	115	17
Philadelphia, PA	Philadelphia	1.58	18,313	893	102	(1)	11,561	64	64	(1)
Sacramento, CA	Sacramento	1.55	1,172	52	6	-	755	4	4	-
Palm Beach, FL	West Palm Beach	1.50	3,887	238	19	1	2,597	13	13	1
Suffolk, NY	Riverhead	1.48	36,911	1,689	209	22	24,997	142	142	15
Hillsborough, FL	Tampa	1.47	1,448	38	16	1	984	11	11	1
Orange, FL	Orlando	1.39	1,511	34	7	-	1,084	5	5	-
Nassau, NY	Mineola	1.36	38,337	2,425	120	12	28,253	88	88	9
Franklin, OH	Columbus	1.32	3,881	124	104	5	2,947	79	79	4
Travis, TX	Austin	1.27	2,171	65	44	5	1,704	35	35	4
Hennepin, MN	Minneapolis	1.27	3,744	398	186	9	2,958	147	147	7
Oakland, MI	Pontiac	1.26	7,752	849	16	6	6,164	13	13	5
Cuyahoga, OH	Cleveland	1.24	2,861	147	66	1	2,316	53	53	1
Allegheny, PA	Pittsburgh	1.22	1,511	123	8	1	1,243	7	7	1
Salt Lake, UT	Salt Lake City	1.16	3,370	48	79	4	2,904	68	68	3
Contra Costa, CA	Martinez	1.15	1,048	32	-	-	909	-	-	-
Fairfax, VA	Fairfax	1.15	6,200	243	308	4	5,403	268	268	3

1. - Data from [The New York Times](#), based on reports from state and local health agencies. Accessed May 10-12, 2020
2. 2019 Official estimated population. "Annual Estimates of the Resident Population for Counties in the United States: April 1, 2010 to July 1, 2019 (CO-EST2019-ANNRES)", Source: U.S. Census Bureau, Population Division, Release Date: March 2020. Accessed May 12, 2020
3. Case and death information for New York includes the following counties: Bronx, Kings, New York, Queens and Richmond

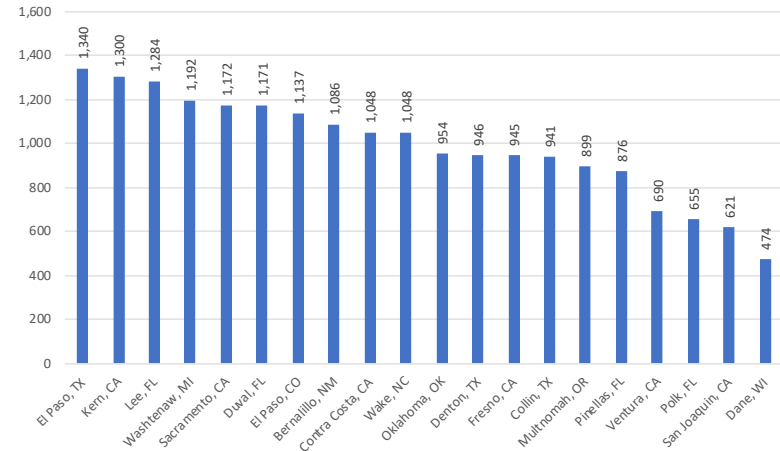
U.S. County-By-County Counties With Most & Fewest Total Cases

"Strategic Guidance in an Era of Unprecedented Change"

Counties with Most Total Cases
of 100 Most Populous Counties
As of May 11



Counties with Fewest Total Cases
of 100 Most Populous Counties
As of May 11

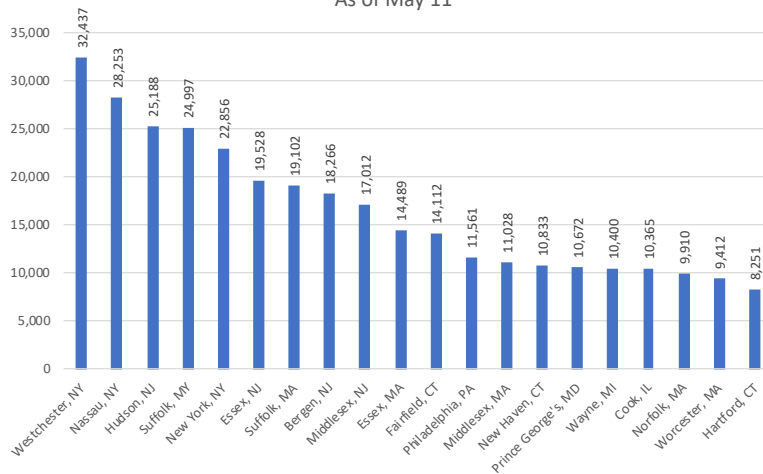


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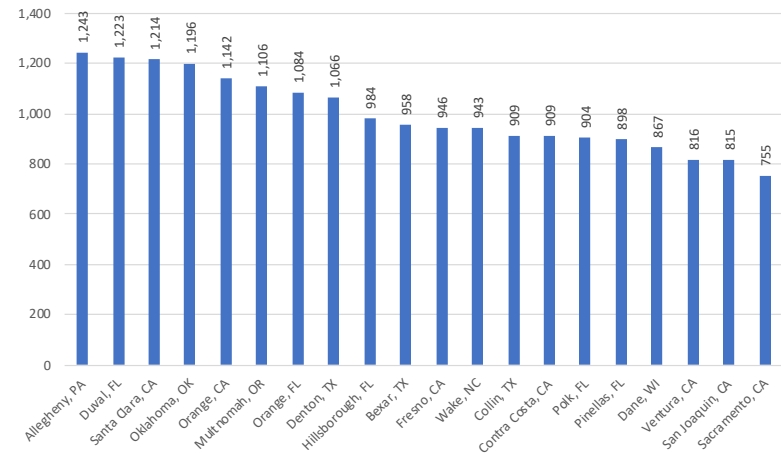
U.S. County-By-County Counties With Most & Fewest Cases Per Capita

"Strategic Guidance in an Era of Unprecedented Change"

Counties with Most Cases / Million
of 100 Most Populous Counties
As of May 11



Counties with Fewest Cases / Million
of 100 Most Populous Counties
As of May 11

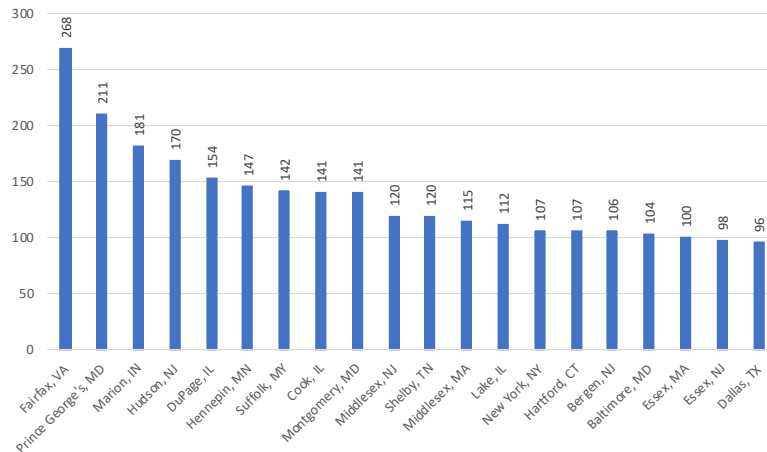


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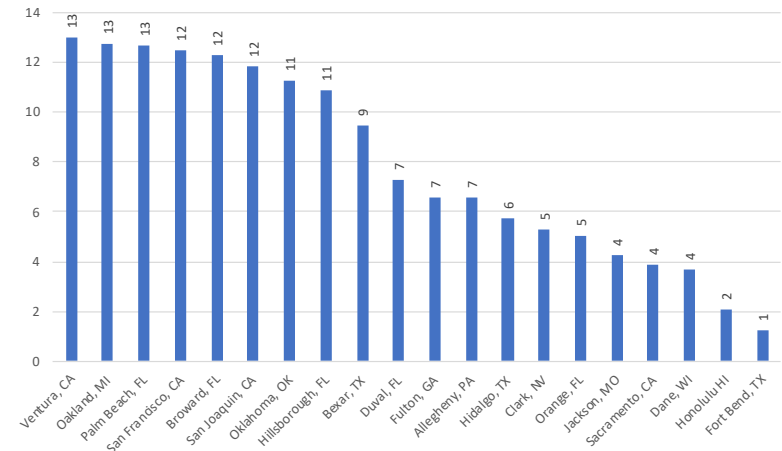
U.S. County-By-County Counties With Most & Fewest New Cases Per Capita

"Strategic Guidance in an Era of Unprecedented Change"

Counties with Most New Cases / Million
of 100 Most Populous Counties
May 11



Counties with Fewest New Cases / Million
of 100 Most Populous Counties
May 10

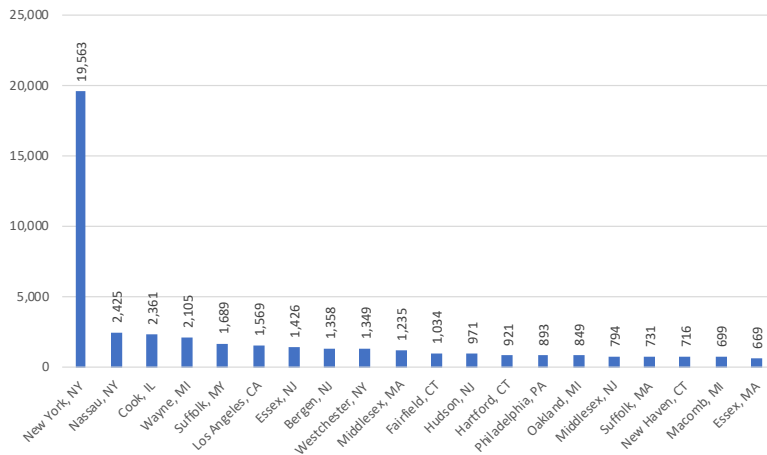


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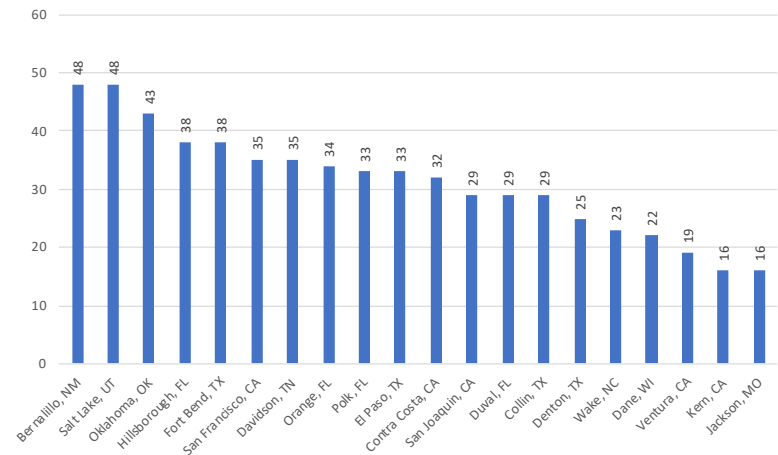
U.S. County-By-County Counties With Most & Fewest New Deaths

"Strategic Guidance in an Era of Unprecedented Change"

Counties with Most Total Deaths
of 100 Most Populous Counties
As of May 10



Counties with Fewest Total Deaths
of 100 Most Populous Counties
As of May 10

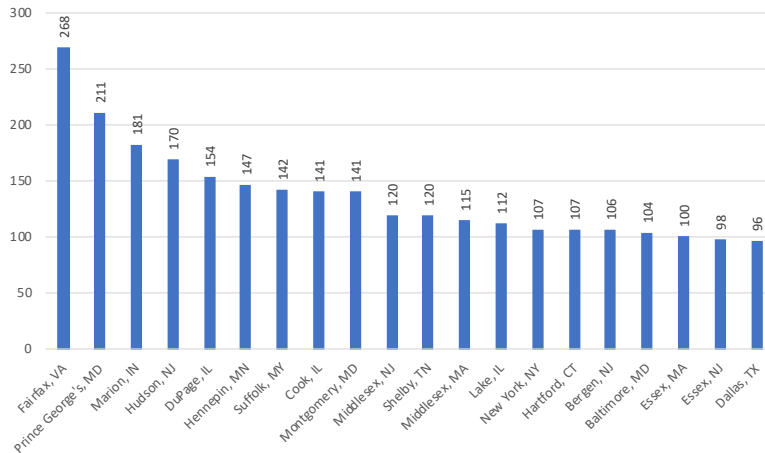


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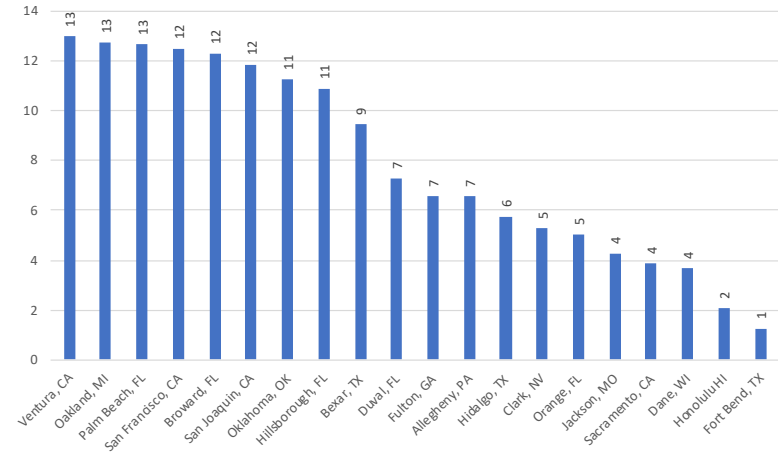
U.S. County-By-County Counties With Most & Fewest New Deaths / Capita

"Strategic Guidance in an Era of Unprecedented Change"

Counties with Most Deaths / Million
of 100 Most Populous Counties
As of May 10



Counties with Fewest Deaths / Million
of 100 Most Populous Counties
As of May 10



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