

COVID-19 Case Growth Dynamics by Population Density

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The Menges Group

Strategic Health Policy & Care Coordination Consulting

Introduction and Overview

- This edition groups all US counties by population density (persons per square mile) to assess the rates of infection and new case growth along this parameter.
 - Counties with more than 1,000 residents per square mile (the highest density cohort we established) hold 40% of the population and 65% of all confirmed cases through May 27.
 - However, new case growth is currently most rapid, on a percentage basis, in the more *sparsely* populated counties.
- This edition continues to update COVID dynamics presented in recent weeks' editions:
 - The weekly distribution of counties by new confirmed COVID-19 cases – 45% of the entire US population lives in a county where the number of new cases has increased this past week.
 - Each state's new case growth is presented for each of the past four weeks. Nationwide, 148,000 new confirmed cases occurred this past week. While this is May's lowest figure and is 7.5% below last week's case growth, the stream of new cases has been quite high throughout May, ranging from 148,000 to 165,000 per week.

COVID-19 Case Growth Dynamics by Population Density – County Level Tabulations

Population Per Square Mile	Number of Counties	Population	Percentage of US Population	Percentage of Cases through May 27	Percentage of Deaths through May 27	Rate of Confirmed Cases per 100,000 Population, as of May 27	Rate of Deaths per 100,000 Population, as of May 27	Percentage Change in New Cases, Week of May 20 - 27 versus Week of May 13 - 20	New Cases per 100,000 Population from May 20 - 27
< 50	1,691	29,422,656	9.0%	4.7%	2.7%	272	9	6.4%	40
50 - 149	781	46,363,119	14.1%	7.2%	4.8%	262	10	0.8%	33
150 - 299	260	36,071,725	11.0%	6.2%	4.7%	288	13	0.5%	32
300 - 999	262	86,653,810	26.4%	17.4%	15.9%	338	18	-5.4%	36
1,000+	149	130,220,131	39.6%	64.5%	71.9%	836	55	-10.0%	60
USA Total	3,143	328,731,441	100.0%	100.0%	100.0%	516	31	-7.5%	45

- While COVID cases have disproportionately occurred in urban counties, the virus is spreading considerably in rural counties.
- The 149 counties with the highest population density are home to 40% of the US population, 65% of all confirmed cases and 72% of all deaths as of May 27. These counties' collective rate of confirmed cases per capita is more than three times that of the least densely populated cohort of counties (and the death rate is over six times higher). The rate of new cases per capita is highest in the most densely populated cohort, although considerable new case growth is occurring in all population density cohorts.
- New cases are growing fastest on a percentage basis in the least densely populated counties. This past week relative to the previous week, the rate of new case growth dropped by 10% across the most densely populated counties but increased 6.4% across the most rural counties.

Population Density's Relationship to COVID Cases Per Capita – State Level Tabulations

Population Per Square Mile	Number of States	Population	Percentage of US Population	Percentage of Cases through May 27	Percentage of Deaths through May 27	Rate of Confirmed Cases per 100,000 Population, as of May 27	Rate of Deaths per 100,000 Population, as of May 27	Percentage Change in New Cases, Week of May 20 - 27 versus Week of May 13 - 20	New Cases per 100,000 Population from May 20 - 27
< 50	13	24,605,482	7.5%	3.8%	1.7%	262	7	-8.6%	29
50 - 149	16	97,281,421	29.6%	16.9%	12.5%	294	13	0.6%	37
150 - 299	13	137,788,706	41.9%	32.8%	28.7%	404	21	0.4%	48
300 - 999	6	58,408,532	17.8%	35.9%	44.8%	1,042	77	-22.1%	52
1,000+	3	10,647,300	3.2%	10.6%	12.4%	1,685	117	-28.7%	76
USA Total	51	328,731,441	100.0%	100.0%	100.0%	516	31	-7.5%	45

- The three most densely populated jurisdictions -- New Jersey, Rhode Island, and the District of Columbia have collectively reported a **28.7% decrease** in the number of new cases this past week. However, this high-density cohort continues to have, by far, the highest per capita rate of confirmed cases through May 27.
- 71.5% of the US population lives in a state with 50 – 299 people per square mile. States in this population density range have reported a relatively constant new case growth rate (0.6% and 0.4%) this week relative to the prior week.

Distribution of US Counties by New Confirmed Cases May 13 – 20 versus May 20 – 27

- Counties that reported a **decrease** in the number of new cases this past week (May 20 – 27) versus the previous week (May 13 – 20) represent 50.5% of the U.S. population, as well as 69.5% of all confirmed cases and 76.3% of all COVID-attributed deaths since the beginning of the outbreak.
- However, the virus continues to spread extensively. 45% of the U.S. population lives in a county where the number of new cases **increased** between these two weeks.

	Counties with No Confirmed Cases Through May 27	Counties with More New Cases May 13 - 20 than May 20 - 27	Counties with More New Cases May 20 - 27 than May 13 - 20	Counties with the Same Number of New Cases May 13 - 20 and May 20 - 27
Number of Counties	218	1,128	1,255	599
% of All Counties	6.8%	35.3%	39.2%	18.7%
% Total US Population	0.3%	50.5%	45.3%	3.9%
% Cumulative Cases as of May 27	0.0%	69.5%	29.6%	0.9%
% Cumulative Deaths as of May 27	0.0%	76.3%	23.1%	0.6%

Table 1 of 3: State-Level Weekly Growth in Confirmed Cases Throughout May, Alabama through Kansas

State	New Confirmed Cases				Percentage Change in New Cases in Each State		
	April 30 - May 6	May 6 - 13	May 13 - 20	May 20 - 27	Week of May 6 - 13 versus Week of April 30 - May 6	Week of May 13 - 20 versus Week of May 6 - 13	Week of May 20 - 27 versus Week of May 13 - 20
Alabama	1,623	2,009	2,352	2,980	24%	17%	27%
Alaska	17	13	19	15	-24%	46%	-21%
Arizona	2,059	2,469	2,721	2,365	20%	10%	-13%
Arkansas	330	625	767	1,274	89%	23%	66%
California	10,317	12,431	12,907	15,749	20%	4%	22%
Colorado	2,513	2,722	2,327	2,006	8%	-15%	-14%
Connecticut	3,295	3,860	4,162	2,271	17%	8%	-45%
Delaware	1,044	1,174	1,242	902	12%	6%	-27%
District of Columbia	1,138	1,123	967	855	-1%	-14%	-12%
Florida	4,311	4,400	5,069	5,163	2%	15%	2%
Georgia	4,293	4,142	4,296	4,551	-4%	4%	6%
Hawaii	7	11	6	1	57%	-45%	-83%
Idaho	142	167	181	225	18%	8%	24%
Illinois	15,246	16,710	15,839	13,899	10%	-5%	-12%
Indiana	4,187	3,758	3,942	3,256	-10%	5%	-17%
Iowa	3,259	2,885	2,581	2,576	-11%	-11%	0%
Kansas	1,588	1,659	1,109	792	4%	-33%	-29%

Yellow highlighting denotes the five states with the highest percent change in new cases each week.



Table 2 of 3: State-Level Weekly Growth in Confirmed Cases Throughout May, Kentucky through North Carolina

State	New Confirmed Cases				Percentage Change in New Cases in Each State		
	April 30 - May 6	May 6 - 13	May 13 - 20	May 20 - 27	Week of May 6 - 13 versus Week of April 30 - May 6	Week of May 13 - 20 versus Week of May 6 - 13	Week of May 20 - 27 versus Week of May 13 - 20
Kentucky	1,238	1,156	1,234	977	-7%	7%	-21%
Louisiana	2,398	2,263	2,705	3,327	-6%	20%	23%
Maine	159	261	304	318	64%	16%	5%
Maryland	6,428	6,664	7,515	6,600	4%	13%	-12%
Massachusetts	9,820	8,472	8,473	5,250	-14%	0%	-38%
Michigan	3,700	3,259	4,681	2,556	-12%	44%	-45%
Minnesota	3,443	4,337	4,763	4,795	26%	10%	1%
Mississippi	1,609	1,666	1,877	2,077	4%	13%	11%
Missouri	1,601	1,205	1,141	1,114	-25%	-5%	-2%
Montana	4	6	16	3	50%	167%	-81%
Nebraska	2,439	2,301	2,047	1,857	-6%	-11%	-9%
Nevada	691	738	819	849	7%	11%	4%
New Hampshire	595	558	569	418	-6%	2%	-27%
New Jersey	13,238	9,670	8,839	6,229	-27%	-9%	-30%
New Mexico	879	1,074	974	914	22%	-9%	-6%
New York	18,927	19,383	12,490	10,154	2%	-36%	-19%
North Carolina	2,276	3,067	4,371	4,566	35%	43%	4%

Yellow highlighting denotes the five states with the highest percent change in new cases each week.



Table 3 of 3: State-Level Weekly Growth in Confirmed Cases Throughout May, North Dakota through Wyoming and USA Totals

State	New Confirmed Cases				Percentage Change in New Cases in Each State		
	April 30 - May 6	May 6 - 13	May 13 - 20	May 20 - 27	Week of May 6 - 13 versus Week of April 30 - May 6	Week of May 13 - 20 versus Week of May 6 - 13	Week of May 20 - 27 versus Week of May 13 - 20
North Dakota	256	324	448	403	27%	38%	-10%
Ohio	3,549	4,151	3,710	4,002	17%	-11%	8%
Oklahoma	583	651	680	697	12%	4%	3%
Oregon	406	552	333	237	36%	-40%	-29%
Pennsylvania	6,765	7,205	5,957	5,495	7%	-17%	-8%
Rhode Island	1,584	1,630	1,521	997	3%	-7%	-34%
South Carolina	841	1,094	1,145	1,448	30%	5%	26%
South Dakota	329	953	445	533	190%	-53%	20%
Tennessee	3,231	2,524	2,273	2,836	-22%	-10%	25%
Texas	6,369	8,381	8,361	6,864	32%	0%	-18%
Utah	933	1,019	1,093	993	9%	7%	-9%
Vermont	42	21	15	27	-50%	-29%	80%
Virginia	4,410	6,490	6,162	7,341	47%	-5%	19%
Washington	2,017	1,574	1,577	1,701	-22%	0%	8%
West Virginia	151	128	162	380	-15%	27%	135%
Wisconsin	2,047	2,002	2,671	2,991	-2%	33%	12%
Wyoming	72	57	99	73	-21%	74%	-26%
United States	158,399	164,994	159,957	147,902	4.2%	-3.1%	-7.5%

Yellow highlighting denotes the five states with the highest percent change in new cases each week.



State-Level Findings

- Nationwide, rapid new case growth occurred throughout May ranging from a weekly high of 165,000 to a weekly low of 148,000.
- While the rate at which COVID spreads varies widely among states, it has spread to a considerable degree in nearly all states throughout the month of May.
- The number of new cases was lower this week than the previous week in 29 states, where 50% of the total US population resides.

5 Slide Series Overview

Our 5 Slide Series is a monthly publication whereby we briefly discuss/address a selected topic outside the confines of our client engagements. The Menges Group has a variety of datasets that we use to support our 5 Slide Series and client projects.

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