Covid-19 Community Explorer

The best and worst performing counties in the U.S.

Notes on terminology: Throughout this report, counties are divided by deciles. If a county is referred to as "highly vaccinated" or having a low case or death rate, it is considered "well performing" or among the "best performers" nationwide. This means it has a vaccination rate that puts it in the top ten percent of U.S. counties (the highest decile), or a case or death rate that puts it in the bottom ten percent of U.S. counties (the lowest decile). Counties referred to as having a low vaccination rate or a high case or death rate, those deemed "poorly performing" or the "worst performers," are those within the ten percent of U.S. counties with the lowest vaccination rates (lowest decile) or the highest case or death rates (highest deciles). Current figures for the 90th and 10th percentiles along each of these metrics are available in Table 2. State-level analyses provide metrics for a "typical" county in a given state: this metric represents the numerical average of that metric for each county in the state. Statewide metrics, by contrast, are calculated using every recorded instance of that metric in the state as a fraction of the entire state population (for incidence rates, this is then multiplied by 100,000). For states with a heavy population concentration in a few counties, the statewide metrics will likely differ from the value for a "typical" or average county in the state; statewide rates in these instances will be much closer to the rate in highly populous counties than to the mean county rate.

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Key findings for December 2021:

1) Community Profile Perspective

Counties in **Community Profile One** remain the best performing on average (Table 1). The average vaccination rate is the highest (65.91%, about 12 percentage points higher than the next profile at 53.87%), and average case rate is the lowest (14,346 cases per 100,000) as is the death rate (192 deaths per 100,000). *Community Profile One represents 38 percent of the U.S. population and is the most ethnically diverse community with the highest income level. It is a highly educated cohort that resides in large metro areas.*

Counties in **Community Profiles Three, Six, and Seven** tend to be the worst performing when it comes to fatalities (Table 1). **Profile Three** has averaged the highest number of deaths per 100,000 people at 381, and while its case rate of 17,950 cases per 100,000 is only fourth highest among the profiles, it has the second highest fatality rate, with deaths representing 2.14% of cases. *Community Profile Three represents 12 percent of the U.S. population and has the largest Black population, with the lowest income of all the profiles. These counties are primarily concentrated in the Southeast.* **Profile Six** has the second highest death rate at 375 deaths per 100,000 people, and the second highest case rate at 18,761 cases per 100,000 people. It has the third highest fatality rate, with deaths averaging 2.07% of confirmed cases. *Community Profile Six represents five percent of the U.S. population and is the youngest cohort of the profiles, with the largest Hispanic population, the lowest education level, and the least access to healthy food or health insurance. The counties are concentrated in the West and West South-Central regions.* **Profile Seven** averages the third highest number of deaths per 100,000 people (363) despite ranking fifth among community profiles by case rate at 16,742 cases per 100,000. Deaths average 2.20% of confirmed cases, giving this profile the highest average fatality percentage. *Community Profile Seven represents four percent of the US population, containing the oldest cohort consisting mostly of White, elderly retirement communities.*

In the previous analysis period (October to November), the increase in death rates exceeded the percent increase in case rates for all community profiles except Profile Eight, and in the current analysis (November to December), death rate increases exceeded case rate increases for two of eight community profiles. **Community Profiles Five and Seven** are the only two community profiles whose average death rate grew faster than the average case rate in the last month (Figure 1). The large growth in case rates relative to death rates in the past month is down to the extreme contagiousness of the omicron variant (Figure 2).

Table 1. Average Vaccination Rate (Booster Rate), Deaths per 100,000, Cases per 100,000, and Fatality Rate by Community Profile

Profile	Vaccination Rate	(Booster Rate)	Cases per 100,000	Deaths per 100,000	Fatality Rate
Profile 1	65.91%	(22.46%)	14,346	192	1.33%
Profile 2	53.87%	(19.10%)	16,254	215	1.33%
Profile 3	46.85%	(12.79%)	17,950	381	2.14%
Profile 4	44.40%	(15.52%)	18,437	341	1.88%
Profile 5	46.42%	(17.86%)	18,850	315	1.69%
Profile 6	49.23%	(15.06%)	18,761	375	2.07%
Profile 7	48.25%	(16.95%)	16,742	363	2.20%
Profile 8	48.63%	(20.41%)	16,634	267	1.57%
All Counties	48.85%	(17.29%)	17,487	308	1.77%

Figure 1. Increases in Cases versus Deaths per 100,000 (November to December), by Community Profile

% increases in case rates are shown in transparent bars with the figures displayed to the right; % increases in death rates are shown in solid bars with figures shown to the left.
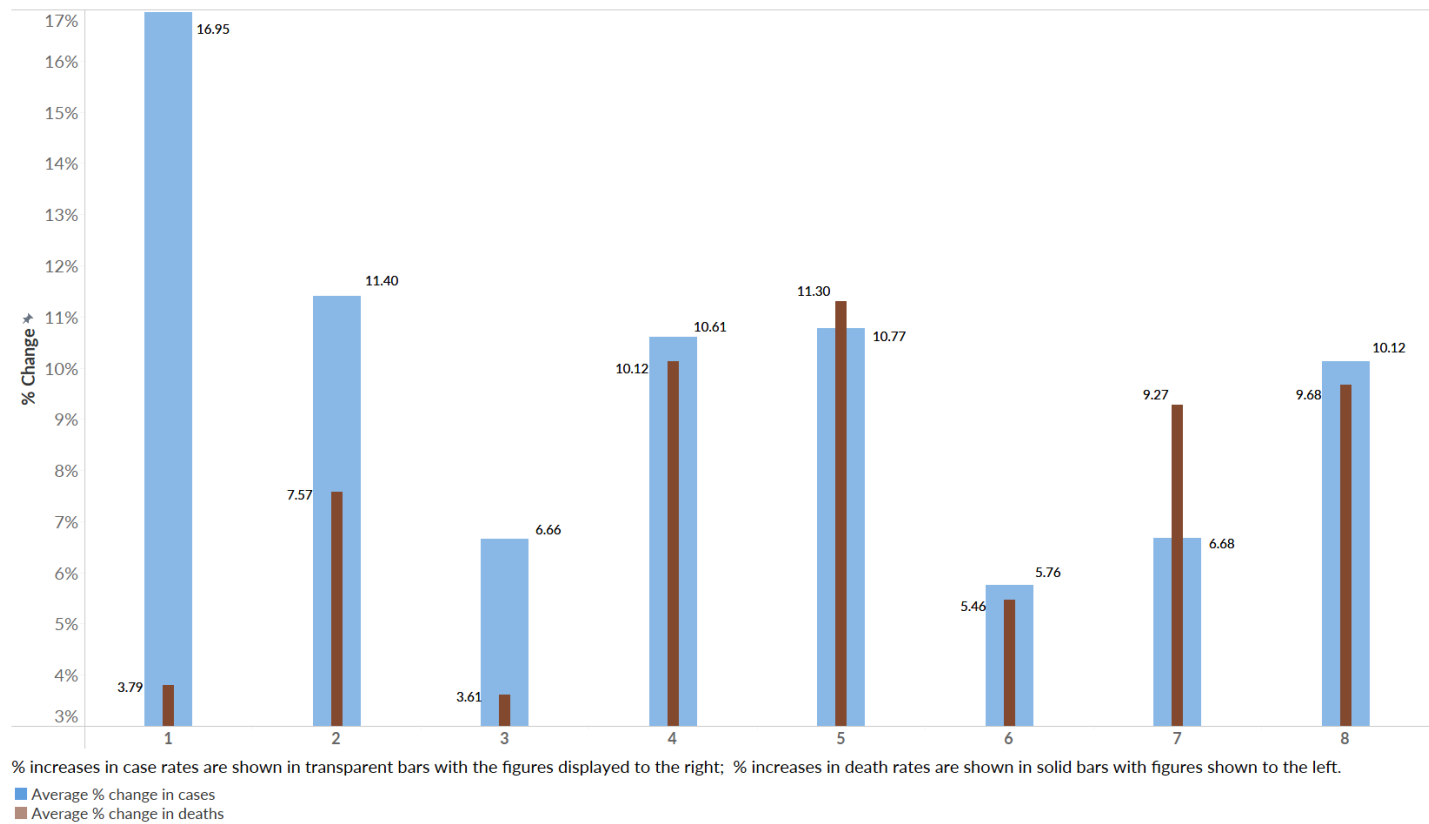
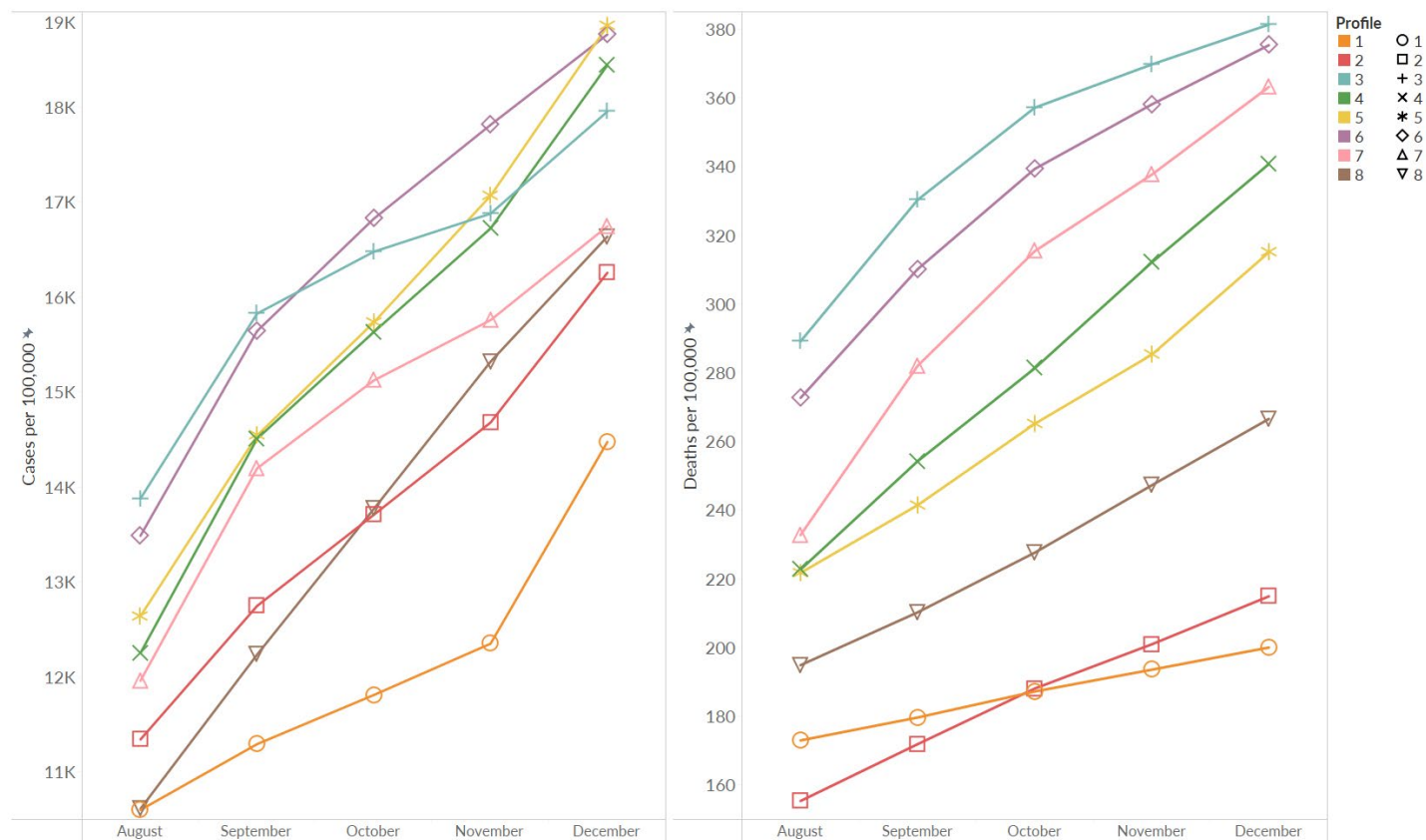- Average % change in cases
- Average % change in deaths

Figure 2. Trends in Cases and Deaths per 100,000 (August to December 2021), by Community Profile

2) State and County-specific Perspective
Best performing counties -Top 10% (Figure 3):

- **Vaccination rate**: Four community profiles (One, Two, Six, and Eight) make up 87.5% of the best performing 10% of U.S. counties.

    o In Community Profile One, over 60% of counties fall in the top tenth.

    o Massachusetts has the highest percentage of its counties falling in the top tenth nationwide (12 of 14 counties, or 86%). The average vaccination rate for those 12 counties is 71.06%, while a typical county in MA would have a vaccination rate of approximately 69.68%. Statewide, the vaccination rate is 73.20%.

    o In both Hawaii[1] and Rhode Island, every county falls in the "most vaccinated" tenth of U.S. counties.

- **Number of cases per 100,000**: Counties in Profile Eight (31%) and Two (27%) comprise almost 60% of the 315 counties with the fewest number of cases per 100,000

    o Vermont is the state with the highest percentage of its counties falling in the best performing tenth nationwide (11 of 14, or 79%). Within those 11 counties, the average case is 8,956 per 100,000, while a typical VT county would have a case rate of approximately 10,154 per 100,000. Statewide, the total case rate is 10,022 per 100,000.

    o Hawaii has the lowest state case rate, with 7,530 cases per 100,000 statewide; a typical county in HI would have a case rate of 5,716 per 100,000.

- **Number of deaths per 100,000**: 26 counties have no recorded deaths from Covid-19; most of them (23) fall within Profile Eight.

    o Nebraska contains eight of the counties with no reported deaths (35 of its 93 counties also fall in the best performing tenth of counties). It is followed by Utah and Colorado, with 3 counties each with no deaths.

    o Of the 316 counties with low death rates, three-quarters fall within Profile Two (30%) and Profile Eight (45%).

    o Vermont has the lowest state death rate at 73 deaths per 100,000; all its counties fall within the best performing tenth of counties.

    o After VT, Alaska has the highest percentage of best performing counties, 22 out of 29[2]. The average death rate is 71 per 100,000 in the well performing county equivalents, and a typical county-equivalent in AK would have a death rate of 96 per 100,000. The total death rate statewide is 130 per 100,000.

- **640** counties fall in the best performing decile for **at least one of the three Covid-19 metrics** (Figure 4-1)

- **86% of the best performing 64 counties on all three Covid-19 metrics are split between Profiles Eight (31%), Two (22%), and One (33%)** (Figure 4-2).

    o All four counties in Hawaii[1] are among the best performing 10% of counties by all three Covid-19 metrics, as are 10 of California's 58 counties; this makes California the state with the highest number of high performing counties and Hawaii the state with the highest percentage of its counties being considered among the best performing.

    o States in New England perform especially well: the top five states by statewide vaccination rate are (in order): Vermont, Maine, Rhode Island, Connecticut, Massachusetts. Vermont and Maine are third and fourth from the bottom by statewide case rate, and first and third from the bottom by statewide death rate, respectively. 61 of 67 counties in New England are considered well performing by at least one of the three metrics; these counties are mostly split between Profiles Two (38%) and Eight (44%).

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[1] Vaccination data is not available for Kalawao County, which is the smallest of HI's counties, but its case rate and death rate are within the best performing 10% of counties nationwide.
[2] County death information for Bristol Bay and Lake and Peninsula Boroughs are reported together; deaths for Hoonah-Angoon Census Area and Yakutat City and Borough are reported together. 20 of 27 reporting entities in AK fall in the best performing tenth of counties.
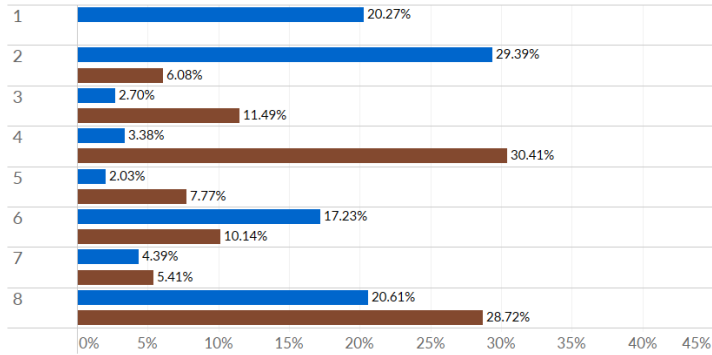
Worst performing counties – Bottom 10% (Figure 3):

- **Vaccination rate**: Almost 60% of the worst performing 296 counties falls in Profiles Four (30%) and Eight (29%)[3], largely rural counties with a large White and Black population with the lowest income level of all the profiles.

  - Nebraska is the state with the highest proportion of poorly performing counties at 35% (33 of its 93 counties). The average vaccination rate is 30.09% within those 33 counties. A typical county in NE would have a vaccination rate of 39.91%, but the statewide vaccination rate is much higher at 59.03%.

- **Number of cases per 100,000**: Over 40% of the 314 worst performing counties in terms of cases per 100,00 falls in Profiles Four (21.34%) or Six (21.97%)[4].

  - Arizona has the highest proportion of counties with case rates in the top tenth, six out of 15 counties. In those six counties, the average case rate is 23,356 per 100,000 people, while a typical AZ county would have a rate of 20,260 cases per 100,000. Statewide, Arizona's case rate is 19,317 per 100,000.

  - Only two of the worst-performing counties by case rate fall in Profile One, both in Florida. Broward county has a case rate of 22,628 per 100,000 and Miami-Dade has a rate of 31,377. Miami-Dade County has the ninth-worst case rate of all U.S. counties nationwide.

- **Number of deaths per 100,000**: 67% of the worst performing counties in terms of deaths per 100,000 are in Profiles Three (25%), Six (22%), and Eight (20%)

  - 37% of the worst-performing counties by death rate fall in just two states: Texas (21% or 66 counties) and Georgia (16% or 50 counties).

  - Arizona is state with the highest percentage of its counties falling in the worst tenth by death rate with one-third of its 15 counties among the worst performing. In these five counties, the death rate is 661 per 100,000 people, and a typical county in AZ would have a rate of 459 per 100,000. Statewide, the rate is 339 deaths per 100,000 people, second only to Mississippi (353 deaths per 100,000).

- **783** counties fall within the worst performing decile for **at least one of the three Covid-19 metrics** (Figure 4-3).

- **Only six** counties can be considered among the worst performing **by vaccination, case, *and* death rates**: two each in Profiles Three and Six, and one each in Profiles Seven and Eight (Figure 4-4).

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[3] Community Profile Four represents seven percent of the U.S. population and has the largest White population. This population reports the lowest income of all the profiles. It encompasses mostly rural counties in the East North Central and Northeast regions. Community Profile Eight represents three percent of the U.S. population and is the most rural cohort, consisting of an older White population with the most limited access to healthy food. The counties are mostly in the north part of the West, Midwest, and Northeast regions.
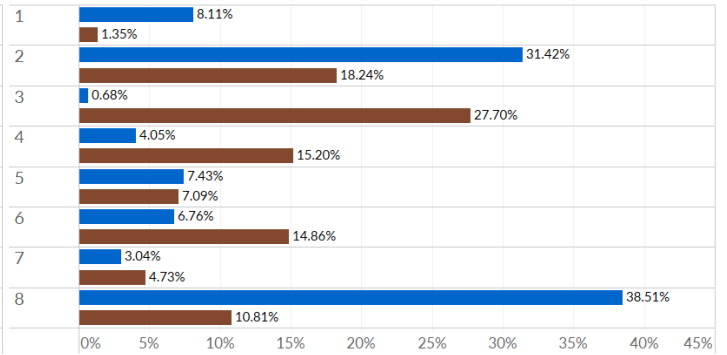
[4] Community Profile Six represents five percent of the U.S. population and is the youngest cohort of the profiles, with the largest Hispanic population, the lowest education level, and the least access to healthy food or health insurance. The counties are concentrated in the West and West South-Central regions.

Figure 3. Distribution of Best and Worst Performing Counties by Community Profile
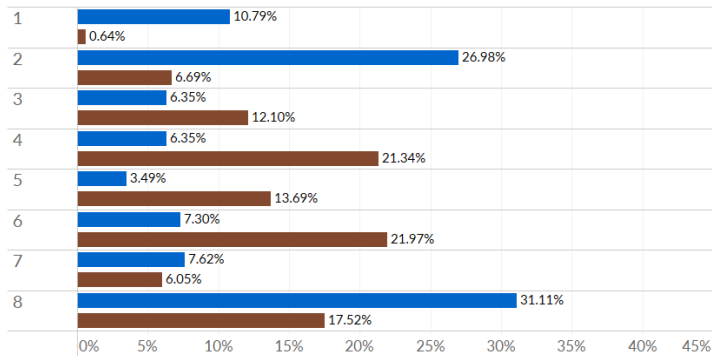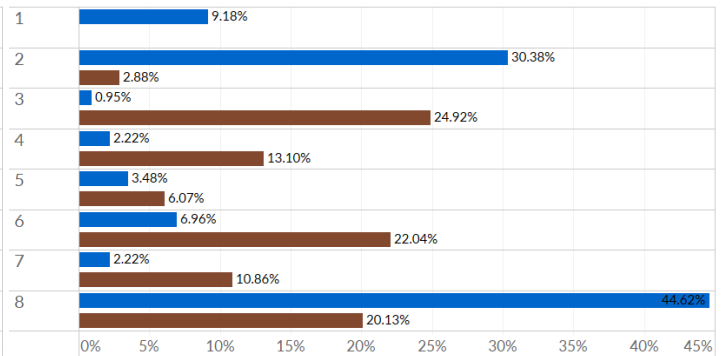
By Vaccination Rate

Profile	Best	Worst
1	20.27%	
2	29.39%	6.08%
3	2.70%	11.49%
4	3.38%	30.41%
5	2.03%	7.77%
6	17.23%	10.14%
7	4.39%	5.41%
8	20.61%	28.72%

By Booster Rate

Profile	Best	Worst
1	8.11%	1.35%
2	31.42%	18.24%
3	0.68%	27.70%
4	4.05%	15.20%
5	7.43%	7.09%
6	6.76%	14.86%
7	3.04%	4.73%
8	38.51%	10.81%

By Cases per 100,000

Profile	Best	Worst
1	10.79%	0.64%
2	26.98%	6.69%
3	6.35%	12.10%
4	6.35%	21.34%
5	3.49%	13.69%
6	7.30%	21.97%
7	7.62%	6.05%
8	31.11%	17.52%

By Deaths per 100,000

Profile	Best	Worst
1	9.18%	
2	30.38%	2.88%
3	0.95%	24.92%
4	2.22%	13.10%
5	3.48%	6.07%
6	6.96%	22.04%
7	2.22%	10.86%
8	44.62%	20.13%

■ % of counties that fall in the best performing tenth of U.S. counties
■ % of counties that fall in the worst performing tenth of U.S. counties

Where are the best performing counties?

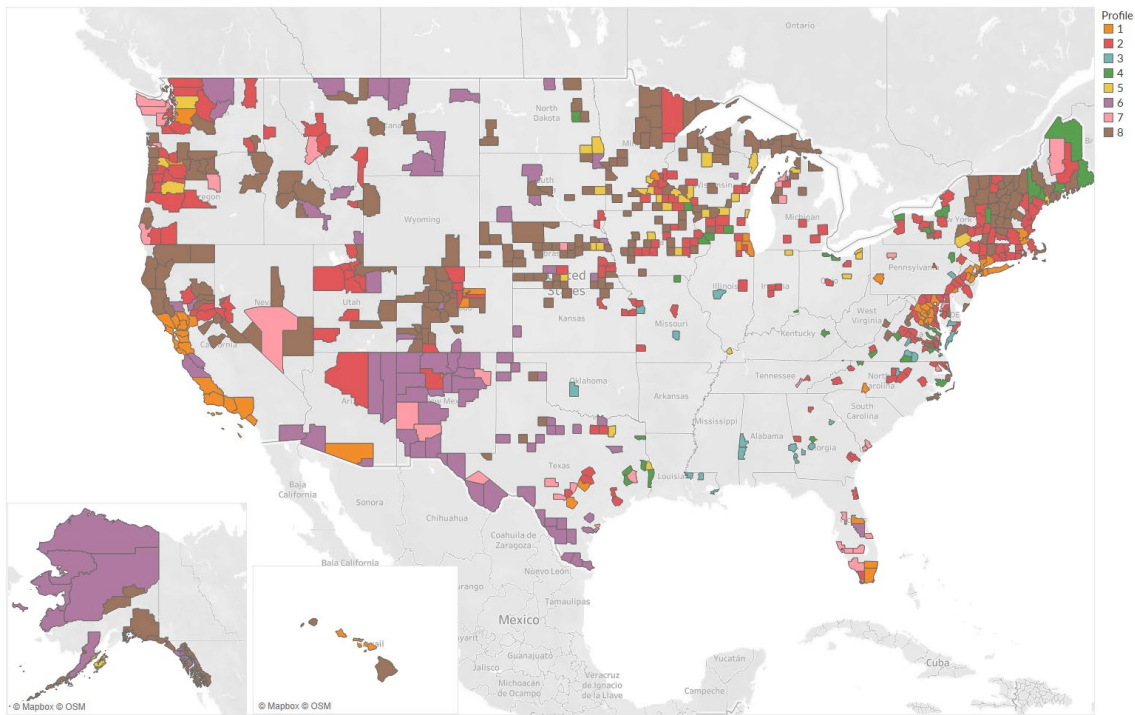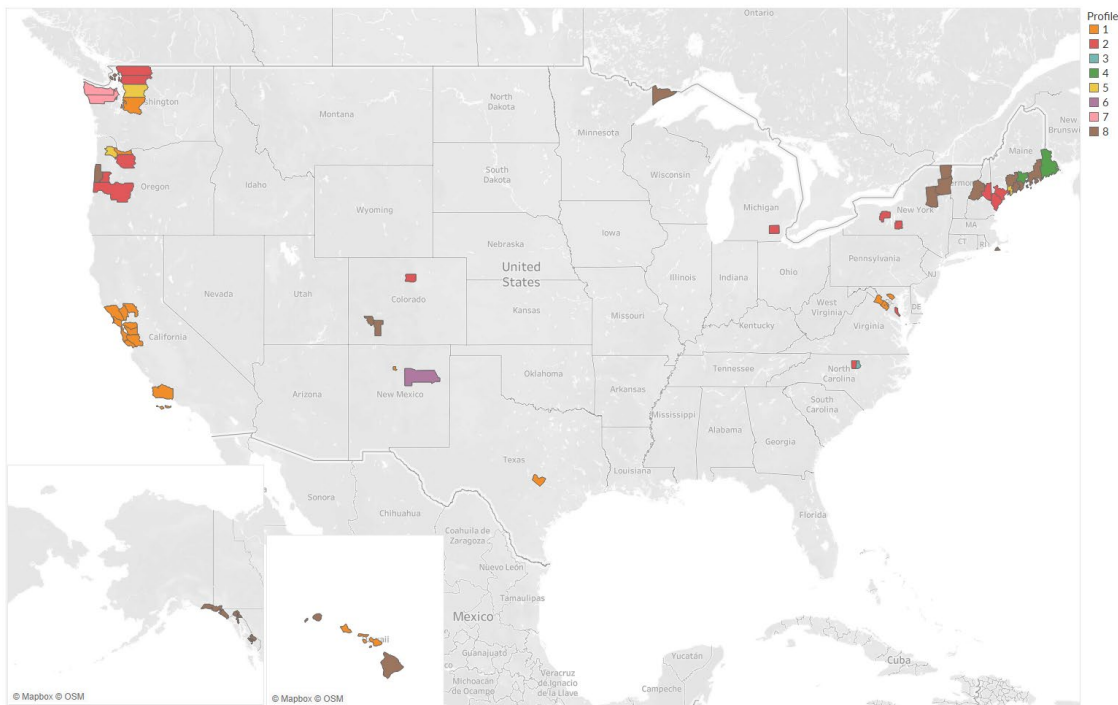**Figure 4-1. The best performing tenth of counties along at least one of the three[5] Covid-19 metrics**

Figure 4-2. The best performing tenth of counties along all three Covid-19 metrics

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[5] Booster rates are not included among these metrics because it is such a recent development.

Where are the worst performing Counties?

Figure 4-3. The worst performing tenth of counties along at least one of the three Covid-19 metrics
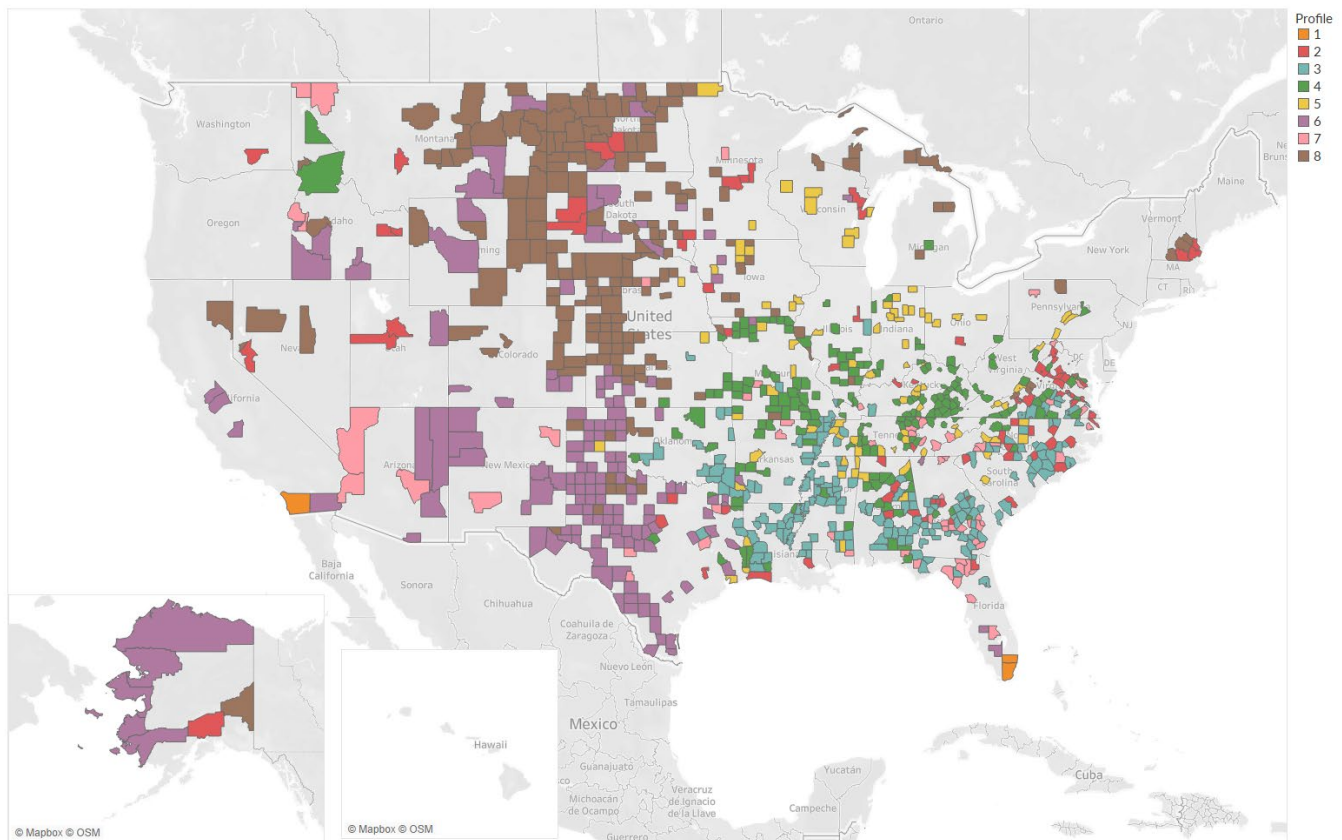

Figure 4-4. The worst performing tenth of counties along all three Covid-19 metrics
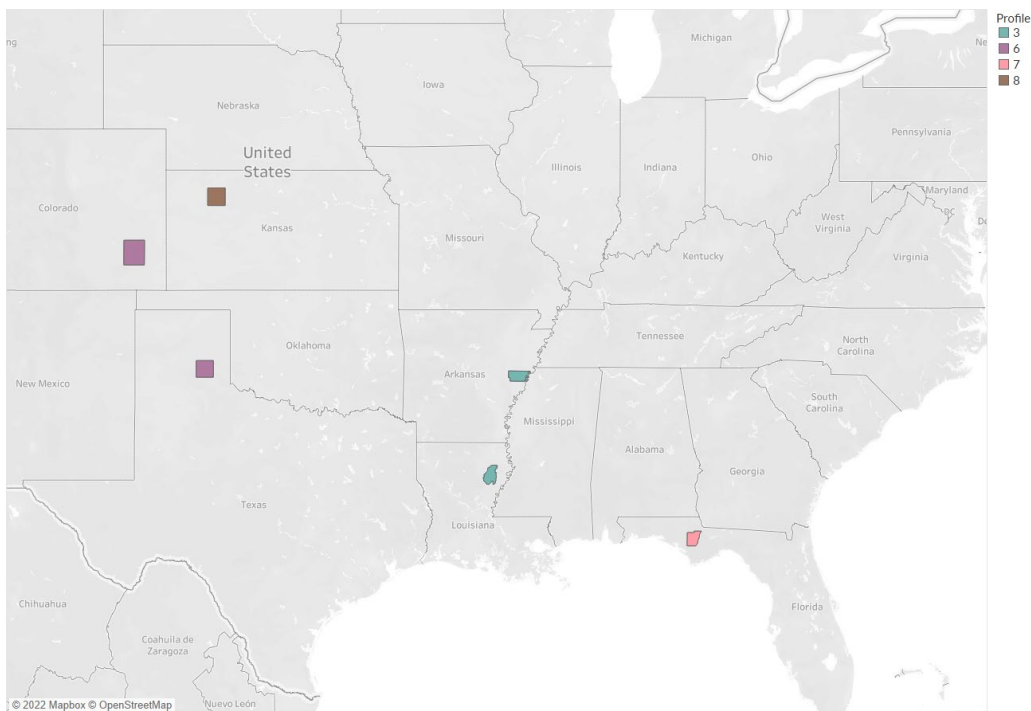
Table 2. Cutoff Points for Best and Worst Performing Deciles

		Vaccination Rate	Booster Rate	Cases per 100,000	Deaths per 100,000	Fatality Rate
Best Performing Decile	Maximum	97.63%[6]	45.03%	1,220	0	0%
	Minimum	63.68%	26.32%	12,749	129	0.89%
	Average	70.51%	30.46%	10,382	85	0.59%
Worst Performing Decile	Maximum	35.89%	9.83%	65,938	1,333	7.81%
	Minimum	11.33%	0.20%	21,775	490	2.79%
	Average	31.72%	7.26%	24,214	597	3.43%

Table 3. Best and Worst Individual Performers in the United States

		Vaccination Rate	Booster Rate	Cases per 100,000	Deaths per 100,000	Fatality Rate
Counties	Best	Bristol Bay Borough, AK[7]	San Juan County, WA	Kalawao County, HI	N/A[8]	N/A[8]
	Profile	8	8	7		
	Worst	Slope County, ND	Prince George County, VA	Chattahoochee County, GA	McMullen County, TX	Sabine County, TX
	Profile	8	2	2	6	5
States	Best	Vermont	Vermont	Hawaii	Vermont	Utah
	Value	75.20%	37.00%	7,530	73	0.59%
	Worst	Idaho	New Hampshire	North Dakota	Mississippi	Mississippi
	Value	44.95%	9.58%	22,362	353	1.92%

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[6] CDC caps their own estimates of county vaccination rates at 95%.
[7] Presidio County, TX has a higher estimated vaccination rate of 105%, likely representing an error in CDC attribution of county of residence for vaccinations.
[8] More than one county has recorded no deaths; see p. 4.