State of Missouri COVID-19 Response Vaccine Distribution Analysis

June 21, 2021
This document includes data and analysis on COVID-19 for the State of Missouri in support of their vaccine ordering and distribution process.

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- **Executive Summary** [3]
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Executive Summary | Key Insights

**COVID-19 CASE RATE HOTSPOTS**
- While 4 statistical hotspots were found in the Kansas City (1) and St Louis (3) metro regions, the Census Tracts exhibiting higher case rate increases and statistical hotspots are in smaller town settings.
- Larger hotspot clusters persist in the Linn-Livingston region as well as near Joplin, Lebanon, Salem, Springfield and Troy.

**STATEWIDE UPTAKE TRENDS**
- Similar to previous weeks, across all ages, total vaccine initiation largely remained consistent week over week (i.e. first doses down by ~300 in our reporting period, and down by 1k in the ShowMeVax calendar).

**CENSUS TRACT ANALYSIS**
- **Polk County** – an area with rising COVID-19 case rates – experienced a vaccination hotspot in all 4 of its Census Tracts, bumping its overall percent vaccinated up by 1.5% to 35%.
- Despite continued case rate spikes in Regions H and B, no vaccination hotspots appeared in that area this week.
- Continued progress vaccinating vulnerable communities was recorded within and adjacent to the Kansas City I-435 southeast corridor for the 3rd straight week.

**12-17 POPULATION**
- 12-17 year-old vaccine initiations as a share of total initiations remained steady week over week at ~25%.
- Rural counties continue to demonstrate lower vaccine uptake than their urban and suburban counterparts.

*Note: Data on vaccinations include 1st round Moderna & Pfizer vaccinations and J&J vaccinations, are based on residence of the 18+ individual vaccinated (unless otherwise stated), and are from 06/15/2021. COVID-19 case rate data is a 14-day case rate change analysis using data from 05/27/21 to 06/10/21. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.*
COVID-19 Case Rate Hotspot Analysis
COVID-19 Case Rate Hotspots at the Census Tract Level

All case rate hotspots exhibit high case rate increases between May 27th and June 10th, but not all high case rate increases qualify as statistically significant hotspots.

### COVID-19 Case Rate Comparisons
#### Classified Rates vs Statistical Hotspots

While 4 statistical case rate hotspots are found in the Kansas City (1) and St Louis (3) metro regions, the census tracts exhibiting higher case rate increases and statistical hotspots are in smaller town settings.

Larger hotspot clusters persist in the Linn-Livingston region as well as near Joplin, Lebanon, Salem, Springfield and Troy.
18+ Population Analysis
Regional Overview

This table provides vaccination progress metrics at the regional level to understand how the share of vaccinations varies across the State.

<table>
<thead>
<tr>
<th>REGIONS</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>Statewide</th>
</tr>
</thead>
<tbody>
<tr>
<td>VACCINATION GAP (#)</td>
<td>651k</td>
<td>94k</td>
<td>988k</td>
<td>445k</td>
<td>157k</td>
<td>198k</td>
<td>70k</td>
<td>107k</td>
<td>92k</td>
<td>2,802k</td>
</tr>
<tr>
<td>% UNVACCINATED WITHIN REGION</td>
<td>56.2%</td>
<td>64.0%</td>
<td>50.2%</td>
<td>61.5%</td>
<td>63.0%</td>
<td>50.5%</td>
<td>69.8%</td>
<td>57.5%</td>
<td>69.0%</td>
<td>55%</td>
</tr>
<tr>
<td>SHARE OF ELIGIBLE STATEWIDE POPULATION</td>
<td>22.91%</td>
<td>2.91%</td>
<td>38.92%</td>
<td>14.30%</td>
<td>4.94%</td>
<td>7.74%</td>
<td>1.97%</td>
<td>3.67%</td>
<td>2.64%</td>
<td>100%</td>
</tr>
<tr>
<td>SHARE OF STATEWIDE VACCINATIONS</td>
<td>22.49%</td>
<td>2.35%</td>
<td>43.48%</td>
<td>12.33%</td>
<td>4.10%</td>
<td>8.58%</td>
<td>1.33%</td>
<td>3.50%</td>
<td>1.84%</td>
<td>100%</td>
</tr>
<tr>
<td>SHARE OF STATEWIDE REMAINING UNVACCINATED</td>
<td>23.25%</td>
<td>3.36%</td>
<td>35.26%</td>
<td>15.88%</td>
<td>5.62%</td>
<td>7.05%</td>
<td>2.49%</td>
<td>3.81%</td>
<td>3.29%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: Data on vaccinations include 1st round Moderna & Pfizer vaccinations and J&J vaccinations, are based on residence of the 18+ individual vaccinated (unless otherwise stated), and are from 06/15/2021. Methodology, data sources, and limitations are available in the Appendix. Cells outlined in green indicate a greater than 1 percentage point discrepancy between share of eligible statewide population and share of statewide vaccinations.

For internal use only by State of Missouri. Output based on available data.
Regional Vaccination Rates Over Time

This visualization displays the weekly change in percent vaccinated in each region over the last 5 weeks for the over 18 population.

### Additional Percent of Population Vaccinated by Region (Week 19 to Week 23)

<table>
<thead>
<tr>
<th>Region</th>
<th>% Change Last Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.5%</td>
</tr>
<tr>
<td>B</td>
<td>0.4%</td>
</tr>
<tr>
<td>C</td>
<td>0.4%</td>
</tr>
<tr>
<td>D</td>
<td>0.4%</td>
</tr>
<tr>
<td>E</td>
<td>0.4%</td>
</tr>
<tr>
<td>F</td>
<td>0.4%</td>
</tr>
<tr>
<td>G</td>
<td>0.4%</td>
</tr>
<tr>
<td>H</td>
<td>0.4%</td>
</tr>
<tr>
<td>I</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

**Calendar Week (MMWR)**

**Note:** All weeks are calendar weeks, defined by SMW using MMWR week, where Week 23 is 6/6 – 6/12 (timeline will reflect this cadence moving forward). Data on vaccinations include 1st round Moderna & Pfizer vaccinations and J&J vaccinations, are based on residence of the 18+ individual vaccinated (unless otherwise stated), and are from 06/15/2021. Methodology, data sources, and limitations are available in the Appendix. Negative vaccination changes were set to zero due to identified data quality issue that is being investigated.

**KEY OBSERVATIONS**

- Additional percentages of population initiating vaccination overall remained consistent with last week – the average Region increased their 18+ vaccination by 0.4%, in line with last week’s average.
- Raw vaccine initiation decreased slightly week over week to ~22k (previous week was 23k).
- Dose 2 vaccines increased ~6k this past week.
- Two Census Tracts (in Jackson and St. Francois County) saw initiations increase >50 week over week; 2 Census Tracts saw initiations decrease >50 (Census Tracts in Callaway and Cole).
Priority Counties by Vaccination Gap & Percent Unvaccinated

Missouri counties were ranked by vaccination gap (the number of residents are estimated to be unvaccinated and eligible) and percent unvaccinated (estimate of the percent of eligible residents that have not been vaccinated) for the over 18 population.

**TOP 5 COUNTIES BY VACCINATION GAP (#)**

1. **St. Louis**: 403,200 ▶ -6.0k
2. **Jackson**: 309,200 ▶ -3.9k
3. **St. Charles**: 163,300 ▶ -2.1k
4. **St. Louis City**: 133,700 ▶ -2.3k
5. **Greene**: 125,100 ▶ -1.4k

**TOP 5 COUNTIES BY UNVACCINATED (%)**

1. **Pulaski**: 80.6% ▶ -0.4%
2. **Putnam**: 75.0% ▶ -0.4%
3. **Ozark**: 74.5% ▶ -0.3%
4. **Clark**: 74.2% ▶ 0.2%
5. **McDonald**: 73.5% ▼ -0.7%

*Pulaski has the highest percent unvaccinated, likely due to the large military presence and missing federal vaccination data*

**Note:** Data on vaccinations include 1st round Moderna & Pfizer vaccinations and J&J vaccinations, are based on residence of the 18+ individual vaccinated (unless otherwise stated), and are from 06/15/2021. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file. Magnitude of change is a numerical difference between the 2 weeks for vaccination gap and a percentage point difference for percent unvaccinated. Blue indicates a county new to the list in comparison to last week. ▶ indicates no change in rank since last week. ▲ ▼ indicates increase and decrease in rank since last week, respectively. Discrepancies with percent change compared to last week due to updated Census Tract data provided by the State.
Cumulative Vaccination Gap and Percent Unvaccinated for Eligible Populations

Darker shades on the map on the left indicate Census Tracts with larger vaccination gaps and higher percentages of unvaccinated on the right (for the 18+ population).

**VACCINATION GAP (#)**

**PERCENT UNVACCINATED (%)**

Areas with the largest vaccination gaps continue to align with the more urban areas of highest population across Missouri. Census Tracts with the highest percentages of unvaccinated populations are concentrated in more rural areas in Regions B, D, I, G, & E.

**Note:** Data on vaccinations include 1st round Moderna & Pfizer vaccinations and J&J vaccinations, are based on residence of the 18+ individual vaccinated (unless otherwise stated), and are from 06/15/2021. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.
12-17 Population Analysis
The graph below depicts the total vaccinations administered over the past 5 weeks, comparing the share of vaccinations that have gone to the under 18 population versus the over 18 population.

Share of Vaccinations Comparison Between 12-17 and Adult (18+) Population

**KEY OBSERVATIONS**

- 12-17 vaccine initiations as a share of total initiations remained steady week over week at ~25%, as did the raw total of vaccinations ~7.5k
- Buchanan, St. Louis City, and Jefferson saw the biggest percent changes in 12-17 vaccinated; St. Louis County, Jackson, and St. Charles saw the largest numeric change
- Dose 2 vaccinations across all ages nearly doubled from Week 22 to Week 23 (~12k to ~23k)

**Note:** All weeks are calendar weeks, defined by ShowMeVax (SMV), where Week 23 is 6/6 – 6/12 (timeline will reflect this cadence moving forward). Data on vaccinated individuals are based on 1st round Moderna & Pfizer vaccinations and J&J vaccinations, based on the residence of the individual vaccinated, and as of 06/15/2021. All vaccinations tagged to the “<18” age group were assumed to be between ages 12-17. Null counties were filtered out. Methodology, data sources, and limitations are available in the Appendix.
12-17 Year-olds | Remaining Unvaccinated

Darker shades on the map on the left indicate counties with larger vaccination gaps and higher percentages of unvaccinated on the right (for the 12-17 population).

**VACCINATION GAP (#)**

**PERCENT UNVACCINATED (%)**

Region C has the largest 12-17 population (124,852) remaining eligible for vaccination.

Only three 3 (Boone County, St. Louis County, and Platte County) have vaccinated 35% of its under 18 population.

Similar to 18+ trends, rural counties continue to experience lower vaccine uptake.

Note: Data on vaccinated individuals are based on 1st round Moderna & Pfizer vaccinations and J&J vaccinations, based on the residence of the individual vaccinated, and as of 06/15/2021. All vaccinations tagged to the “<18” age group were assumed to be between ages 12-17. Analysis ran at the county level due to several Census Tracts still with limited uptake thus far. Null counties were filtered out. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.

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12-17 Year-olds | Vaccine Uptake

Darker shades on the map indicate counties with larger vaccination uptake (for the 12-17 population)

VACCINE INITIATION BY COUNTY (#)

<table>
<thead>
<tr>
<th>Vaccination Uptake Quintiles (#)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 – 39</td>
</tr>
<tr>
<td>44 – 89</td>
</tr>
<tr>
<td>90 – 147</td>
</tr>
<tr>
<td>152 – 401</td>
</tr>
<tr>
<td>426 – 29,173</td>
</tr>
</tbody>
</table>

KEY OBSERVATIONS

• Regions A & C represent 8 of the Top 10 counties with the highest number of vaccinations for individuals aged 12-17
  - St. Louis, Jackson, and St. Charles counties represent the top 3 counties with the most vaccinations for individuals aged 12-17

• 21 counties have vaccinated fewer than 20 individuals within the age 12-17 cohort – largely in rural areas in the north and south of the State (depicted in gray)

Note: Data on vaccinated individuals are based on 1st round Moderna & Pfizer vaccinations and J&J vaccinations, based on the residence of the individual vaccinated, and as of 06/15/2021. All vaccinations tagged to the “<18” age group were assumed to be between ages 12-17. Analysis ran at the county level due to several Census Tracts still with limited uptake thus far. Null counties were filtered out. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.
Uptake Analysis

All Eligible Populations
Vaccination uptake hotspots are displayed in red for Week 23 (MMWR), indicating Census Tracts where vaccinations have been administered at rates significantly higher than State averages.

**Significant vaccine uptake hotspots appeared in Polk County, north/northwest of Springfield**

**Vaccine uptake hotspots have also appeared south/southwest of St. Louis**

**Note:** Data on vaccinated individuals is based on 1st round Moderna & Pfizer vaccinations and J&J vaccinations, includes all ages, and indicates the residence of the individual vaccinated. Data as of 06/15/2021 using MMWR week in SMV, where Week 23 is 6/6 – 6/12 (timeline will reflect this cadence moving forward). Methodology, data sources, and limitations are available in the Appendix.
Vaccination uptake deserts are displayed in blue for Week 23 (MMWR), indicating Census Tracts where vaccination uptake is significantly lower than State averages.

**Vaccine Uptake Desert at the Census Tract Level**

Urban and rural trends remained consistent with recent weeks: uptake deserts in the state's northern region and bootheel, and patches of strikingly low uptake north of Kansas City and St. Charles and St. Louis counties.

Continued progress is recorded within and adjacent to the Kansas City I-435 southeast corridor for the third straight week.

**Note:** Data on vaccinated individuals is based on 1st round Moderna & Pfizer vaccinations and J&J vaccinations, includes all ages, and indicates the residence of the individual vaccinated. Data as of 06/15/2021 using MMWR week in SMV, where Week 23 is 6/6 – 6/12 (timeline will reflect this cadence moving forward). Methodology, data sources, and limitations are available in the Appendix.
The graph below visually depicts the updated COVID-19 Vulnerability Index – focus areas are consolidated in urban, low socio-economic and minority-focused communities.

**KEY OBSERVATIONS**

- The **most vulnerable regions** within the State of Missouri remain in the **urban cores of Kansas City and St. Louis**.
- Only 4 regions are represented in the Top 150 most vulnerable Census Tracts in Missouri – **Regions C, A, E and D**, respectively in order.

**FACTORS CONTRIBUTING TO VULNERABILITY**

- COVID-19 Case Burden
- Living below 138% of the Federal Poverty Level
- 1 or more medical comorbidity
- Minorities populations
- Percent Unvaccinated

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**Note:** Data on vaccinated individuals are based on 1st round Moderna & Pfizer vaccinations and J&J vaccinations, based on the residence of the individual (18+) vaccinated, and as of 06/01/2021. COVID-19 case burden data as of 06/04/21. More information on methodology can be found in the Appendix. CVI will be updated the week of 06/28/21.
## Statewide Top 10 Census Tracts by the COVID-19 Vulnerability Index

Below are the top 10 Census Tracts across Missouri with the highest COVID-19 Vulnerability Index scores – notably all in St. Louis and Kansas City.

<table>
<thead>
<tr>
<th>Vulnerability Index Rank</th>
<th>Census Tract</th>
<th>County</th>
<th>18+ Population</th>
<th>Unvaccinated as of 6/2/21 (%)</th>
<th>Cumulative COVID-19 Case Burden as of 6/4/21 (# per 100k)</th>
<th>1+ Medical Comorbidities (%)</th>
<th>Minority Populations (%)</th>
<th>Living Below 138% FPL (%)</th>
<th>Households without Internet Access (%)</th>
<th>Crowded Households (%)</th>
<th>Individuals with Education Level Below High School (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>29510106200</td>
<td>St. Louis City</td>
<td>980</td>
<td>74.29%</td>
<td>7,531</td>
<td>38.98%</td>
<td>97.96%</td>
<td>70.32%</td>
<td>42.92%</td>
<td>11.68%</td>
<td>16.46%</td>
</tr>
<tr>
<td>2</td>
<td>29189212002</td>
<td>St. Louis</td>
<td>2,196</td>
<td>69.76%</td>
<td>16,190</td>
<td>39.71%</td>
<td>94.85%</td>
<td>54.19%</td>
<td>19.13%</td>
<td>9.19%</td>
<td>12.27%</td>
</tr>
<tr>
<td>3</td>
<td>29095013203</td>
<td>Jackson</td>
<td>2,837</td>
<td>73.49%</td>
<td>9,686</td>
<td>42.30%</td>
<td>92.14%</td>
<td>55.73%</td>
<td>18.69%</td>
<td>10.85%</td>
<td>12.74%</td>
</tr>
<tr>
<td>4</td>
<td>29189212200</td>
<td>St. Louis</td>
<td>5,797</td>
<td>71.19%</td>
<td>5,234</td>
<td>62.69%</td>
<td>96.89%</td>
<td>38.00%</td>
<td>34.81%</td>
<td>11.04%</td>
<td>14.46%</td>
</tr>
<tr>
<td>5</td>
<td>29095005602</td>
<td>Jackson</td>
<td>1,321</td>
<td>70.70%</td>
<td>8,076</td>
<td>49.36%</td>
<td>96.37%</td>
<td>47.05%</td>
<td>14.45%</td>
<td>3.64%</td>
<td>15.84%</td>
</tr>
<tr>
<td>6</td>
<td>29189213900</td>
<td>St. Louis</td>
<td>1,389</td>
<td>74.95%</td>
<td>7,405</td>
<td>34.05%</td>
<td>96.00%</td>
<td>58.13%</td>
<td>46.02%</td>
<td>6.55%</td>
<td>10.30%</td>
</tr>
<tr>
<td>7</td>
<td>29189213800</td>
<td>St. Louis</td>
<td>4,763</td>
<td>70.96%</td>
<td>7,370</td>
<td>58.56%</td>
<td>96.66%</td>
<td>33.78%</td>
<td>26.39%</td>
<td>11.36%</td>
<td>14.63%</td>
</tr>
<tr>
<td>8</td>
<td>29189212102</td>
<td>St. Louis</td>
<td>2,286</td>
<td>76.60%</td>
<td>5,196</td>
<td>42.26%</td>
<td>96.59%</td>
<td>47.16%</td>
<td>15.91%</td>
<td>14.01%</td>
<td>13.99%</td>
</tr>
<tr>
<td>9</td>
<td>29510109700</td>
<td>St. Louis City</td>
<td>1,886</td>
<td>72.11%</td>
<td>7,685</td>
<td>29.32%</td>
<td>95.49%</td>
<td>57.29%</td>
<td>55.80%</td>
<td>6.22%</td>
<td>24.95%</td>
</tr>
<tr>
<td>10</td>
<td>29189213600</td>
<td>St. Louis</td>
<td>2,877</td>
<td>66.15%</td>
<td>6,885</td>
<td>50.78%</td>
<td>93.33%</td>
<td>44.35%</td>
<td>34.82%</td>
<td>13.18%</td>
<td>17.90%</td>
</tr>
</tbody>
</table>

**Statewide Census Tract Average**
- Unvaccinated as of 6/2/21 (%): 55.83%
- Cumulative COVID-19 Case Burden as of 6/4/21 (# per 100k): 8,361
- 1+ Medical Comorbidities (%): 29.86%
- Minority Populations (%): 20.43%
- Living Below 138% FPL (%): 21.64%
- Households without Internet Access (%): 17.42%
- Crowded Households (%): 5.17%
- Individuals with Education Level Below High School (%): 9.98%

**Note:** Data on vaccinated individuals are based on 1st round Moderna & Pfizer vaccinations and J&J vaccinations, based on the residence of the individual (18+) vaccinated, and as of 06/01/2021. COVID-19 case burden data as of 06/04/21. More information on methodology can be found in the Appendix. CVI will be updated the week of 06/28/21.
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