State of Missouri COVID-19 Response Vaccine Distribution Analysis
July 12, 2021
This document includes COVID-19 data analysis for the State of Missouri in support of their vaccine ordering and distribution process.

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Executive Summary | Key Insights

**COVID-19 CASE RATE HOTSPOTS**

- Regional COVID-19 outbreak hotspots intensified in **southwest Missouri**, focused largely in:
  - Region D's **Springfield, Joplin, and Branson** areas
  - **Lebanon** (Laclede County – Region I) and **Ava** (Douglas County – Region G)
- Previous hotspots in Regions E and B have lessened in severity

**VACCINE UPTAKE TRENDS**

- **Elevated vaccine uptake** in Region D stretched across much of southwest Missouri in areas surrounding **Springfield, Joplin and Branson** – the region vaccinated the largest percent of their population in comparison to the rest of the State
- Uptake **deserts receded** as portions of state (Springfield, Jefferson City, Columbia) vaccinated more residents

**AGE-COHORT ANALYSES**

- Vaccine **initiations decreased slightly** for both the 18+ and 12-17 population week over week
- The **stark divide** in 12-17 year-old vaccine uptake between **rural and urban counties remains persistent**, with urban counties vaccinating the 12-17 population at higher rates than their rural counterparts

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**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 07/06/2021. COVID-19 case rate data is a change analysis of rates (cases per 100k) using data from 06/25/21 to 07/09/21. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.
COVID-19 Case Rate Hotspot Analysis
For the time period between 6/25/21 and 7/9/21, COVID-19 case rate (per 100,000) change is displayed on the left and case rate hotspots (areas with statistically significant changes in case rates in comparison to surrounding areas) are displayed on the right.

Region D, including Springfield and Joplin, experienced sharp increases in cases from 2 weeks prior. Hotspots again were largely focused within Region D while previous hotspots in Region E moderated somewhat.
Uptake Analysis

All Eligible Populations
7-Day Vaccination Hotspots and Significance

Vaccination uptake hotspots are displayed in red from 6/29-7/6, indicating Census Tracts where vaccinations have been administered at rates significantly higher than State averages.

**Hotspots of Vaccinations at the Census Tract Level**

Vaccine uptake activity intensified in locations in **southwest Missouri** where there are rising case rates – Springfield and Joplin (Region D).

*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, and is as of 07/06/2021. Methodology, data sources, and limitations are available in the Appendix.
7-Day Vaccine Uptake Desert Analysis

Vaccination uptake deserts are displayed in blue from 6/29-7/6, indicating Census Tracts where vaccination uptake is significantly lower than State averages.

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

Elevated vaccine uptake in Region D stretched across much of southwest Missouri; Region G also saw elevated uptake. Uptake deserts shrunk somewhat as pockets of the State vaccinated at elevated rates, including metro areas and central Missouri (Jefferson City, Columbia).

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, and is as of 07/06/2021. Methodology, data sources, and limitations are available in the Appendix.
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>632k</td>
<td>92k</td>
<td>945k</td>
<td>427k</td>
<td>154k</td>
<td>191k</td>
<td>68k</td>
<td>103k</td>
<td>90k</td>
<td>2,702K</td>
</tr>
<tr>
<td>% UNVACCINATED WITHIN REGION</td>
<td>54.55%</td>
<td>62.58%</td>
<td>48.00%</td>
<td>59.10%</td>
<td>61.62%</td>
<td>48.76%</td>
<td>67.76%</td>
<td>55.71%</td>
<td>67.47%</td>
<td>53.43%</td>
</tr>
<tr>
<td>SHARE OF ELIGIBLE STATEWIDE POPULATION</td>
<td>22.91%</td>
<td>2.87%</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>22.36%</td>
<td>2.34%</td>
<td>43.47%</td>
<td>12.56%</td>
<td>4.07%</td>
<td>8.51%</td>
<td>1.37%</td>
<td>3.49%</td>
<td>1.84%</td>
<td>100%</td>
</tr>
<tr>
<td>SHARE OF STATEWIDE REMAINING UNVACCINATED</td>
<td>23.40%</td>
<td>3.40%</td>
<td>34.95%</td>
<td>15.82%</td>
<td>5.70%</td>
<td>7.06%</td>
<td>2.50%</td>
<td>3.83%</td>
<td>3.33%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Region C leads the State with the lowest % unvaccinated, while Region G has the highest % unvaccinated. Regions C and D remain the two regions with greater than a 1% difference between their shares of eligible statewide population and of statewide vaccinations.

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 07/06/2021. 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.
18+ 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.

**18+ Additional Percent of Population Vaccinated by Region (Week 22 to Week 26)**

<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>0.7%</td>
</tr>
<tr>
<td>E</td>
<td>0.3%</td>
</tr>
<tr>
<td>F</td>
<td>0.5%</td>
</tr>
<tr>
<td>G</td>
<td>0.7%</td>
</tr>
<tr>
<td>H</td>
<td>0.5%</td>
</tr>
<tr>
<td>I</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

**KEY OBSERVATIONS**

- Vaccine initiations decreased slightly from 27.4k to 25.9k week over week.
- For the second week in a row, Regions D and G vaccinated the highest percentage of their 18+ population.
- In Week 26, Region D had 9 of the top 10 Census Tracts by number of vaccine initiations.
- Data indicates there may be a gap of ~200k doses between vaccine initiation and completion.
  - Cumulatively, there have been ~300k more Dose 1 vaccinations than Dose 2. However, based on the typical vaccine schedule (~4 weeks), the expected difference should be ~100k.

**Note:** All weeks are calendar weeks, defined by SMV using MMWR week, where Week 26 is 6/27 – 7/4. 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 07/06/2021. J&J vaccinations are coded as both dose 1 and dose 2. Methodology, data sources, and limitations are available in the Appendix.
Priority Counties by Vaccination Gap & Percent Unvaccinated

Missouri counties are ranked by vaccination gap (the number of residents 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 – based on vaccine initiations, not including second dose vaccinations.

**STATE WIDE**

<table>
<thead>
<tr>
<th>Top 5 Counties by Vaccination Gap (#)</th>
<th>Top 5 Counties by Unvaccinated (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOP 5 COUNTIES BY VACCINATION GAP (#)</strong></td>
<td><strong>TOP 5 COUNTIES BY UNVACCINATED (%)</strong></td>
</tr>
<tr>
<td>1. St. Louis: 399,300 ⬇️ -4.4k</td>
<td>1. Pulaski*: 79.5% ⬆️ -0.4%</td>
</tr>
<tr>
<td>2. Jackson: 306,800 ⬇️ -3.6k</td>
<td>2. Clark: 75.9% ⬆️ -0.1%</td>
</tr>
<tr>
<td>3. St. Charles: 160,800 ⬇️ -1.8k</td>
<td>3. Putnam: 74.4% ⬆️ -0.3%</td>
</tr>
<tr>
<td>4. Greene: 122,800 ⬇️ -2.3k</td>
<td>4. Ozark: 74.0% ⬆️ -0.6%</td>
</tr>
<tr>
<td>5. Jefferson: 114,100 ⬇️ -1.3k</td>
<td>5. Scotland: 73.8% ⬆️ -0.2%</td>
</tr>
</tbody>
</table>

*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, and are from 07/06/2021. Methodology, data sources, and limitations are available in the Appendix. Green circles indicate the magnitude of change week over week – 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. Full data set provided in corresponding Excel file.
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 on the right higher percentages of unvaccinated (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 07/06/2021. 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 shows the distribution of each county's percent unvaccinated for the 12-17 population, colored by urban/rural designation. For example, there are 3 counties (2 urban, 1 rural) that have an unvaccinated percent between 82.5% and 85.0%

**Histogram: Distribution of 12-17 Population % Unvaccinated by County**

**KEY OBSERVATIONS**

- The **stark divide** in 12-17 year-old vaccine uptake between rural and urban counties remains persistent

- **St. Louis County** has the lowest percent unvaccinated for the 12-17 population (56%)

- There is a **positive correlation** between a county's numerical 12-17 population and its percent vaccinated in both the urban and rural county groups

**Note:** Urban/Rural designation defined from Census. All weeks are calendar weeks, defined by ShowMeVax (SMV), where Week 26 is 6/27 – 7/4. 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 07/06/2021. All vaccinations tagged to the “<18” age group were assumed to be between ages 12-17. Individuals who received a vaccine not tagged to a county were filtered out. Methodology, data sources, and limitations are available in the Appendix.
The graph below depicts the total vaccinations administered over the past 5 weeks, comparing the share of vaccinations that have gone to the 12-17 population versus the over 18 population.

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

![Graph showing the comparison of vaccinations between 12-17 and adult populations over the past 5 weeks. The graph includes a bar chart with each bar divided into two sections, one for 18+ population and another for 12-17 population.](image)

**KEY OBSERVATIONS**

- Vaccine initiation **decreased slightly** for both the 18+ and 12-17 population in the latest calendar week.
- The share of initiations for the 12-17 population **stayed consistent** from Week 25 to Week 26.
- An estimated 1.2% of the 12-17 population initiated vaccination in Week 26.
  - Only regions A, C, D, and F vaccinated >1% of their 12-17 population.

**Note:** All weeks are calendar weeks, defined by MMWR pulled from SMV where Week 26 is 6/27 – 7/4. 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 07/06/2021. All vaccinations tagged to the “<18” age group were assumed to be between ages 12-17. Individuals who received a vaccine not tagged to a county 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 on the right higher percentages of unvaccinated (for the 12-17 population).

**Vaccination Gap (#)**

**Percent Unvaccinated (%)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Vaccination Gap Quintiles (#)</th>
<th>Unvaccinated Quintiles (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>133 – 660</td>
<td>56.2% - 87.1%</td>
</tr>
<tr>
<td>B</td>
<td>668 – 1,083</td>
<td>87.1% - 91.8%</td>
</tr>
<tr>
<td>C</td>
<td>1,109 – 1,741</td>
<td>91.9% - 93.3%</td>
</tr>
<tr>
<td>D</td>
<td>1,750 – 3,246</td>
<td>93.4% - 96.2%</td>
</tr>
<tr>
<td>E</td>
<td>3,225 – 43,451</td>
<td>96.2% - 99.0%</td>
</tr>
</tbody>
</table>

Region C continues to have the largest 12-17 year-old vaccination gap (115,938), while Region G has the highest % unvaccinated (95.6%).

Still only 3 counties (St. Louis, Boone, and Platte Counties) have vaccinated more than 35% of their under 18 population.

Rural counties continue to experience lower vaccine uptake in both the 18+ and 12-17 population.

**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 07/06/2021. 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.
**12-17 Year-olds | Vaccine Uptake**

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

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**VACCINE INITIATION BY COUNTY (#)**

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**KEY OBSERVATIONS**

- Eight of the top 10 counties with the **highest number of vaccinations** for individuals aged 12-17 are within **Regions A & C**
  - St. Louis, Jackson, and St. Charles counties represent the top 3 counties with the most vaccinations for individuals aged 12-17
- 11 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)

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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 vaccinated, and as of 07/06/2021. 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.
For the time period between 6/21/21 and 7/2/21, case rate change is displayed on the left and statistically significant case rate hotspots are displayed on the right – areas with high changes in case rates in comparison to surrounding areas.

**COVID-19 Case Rate Comparisons**

**Classified Rates vs. Statistical Hotspots**

11-Day COVID-19 Case Rate Change
State of Missouri - June 21st through July 2nd

Regional COVID-19 outbreak hotspots again were focused within **Region D** in the **Greene County/Springfield** and **Joplin** areas.

The **Kennett** hotspot within **Dunklin County** remained consistent.

Region **H** and **B** hotspots remained persistent, with challenges remaining in **Worth County** and **Trenton**.

**New and/or expanding hotspots** are now in **Branson**, **Lebanon** and **Ava**.

*Note: COVID-19 case rate (cases per 100k) data provided by the State of Missouri as of 07/02/21.*
Statewide Geospatial Visualization of COVID-19 Vulnerable Populations

The graph below visually depicts the updated COVID-19 Vulnerability Index – focus areas are consolidated in urban, low socio-economic and minority-focused communities.

**FACTORS CONTRIBUTING TO VULNERABILITY**

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

**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 (in order of CTs appearing in top 150)

*Note: Data on vaccinated individuals are based on 1st round Moderna and Pfizer vaccinations and J&J vaccinations, based on the residence of the individual (18+) vaccinated, and as of 06/28/21. COVID-19 case rate provided by the State of Missouri as of 7/2/21. Methodology, data sources, and limitations are available in the Appendix. Vaccination rates larger than 1 were set to 1 due to identified data quality issue that is being investigated.*

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### 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

<table>
<thead>
<tr>
<th>Vulnerability Index Rank</th>
<th>Census Tract</th>
<th>County</th>
<th>18+ Population</th>
<th>Variables Included in the CVI</th>
<th>Additional Demographic Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unvaccinated as of 6/29/21 (%)</td>
<td>Cumulative COVID-19 Case Burden as of 7/2/21 (# per 100k)</td>
</tr>
<tr>
<td>Statewide Census Tract Average</td>
<td></td>
<td></td>
<td></td>
<td>53.10%</td>
<td>8,589</td>
</tr>
<tr>
<td>1</td>
<td>29510106200</td>
<td>St. Louis City</td>
<td>980</td>
<td>69.29%</td>
<td>7,531</td>
</tr>
<tr>
<td>2</td>
<td>29189212002</td>
<td>St. Louis County</td>
<td>2,196</td>
<td>65.35%</td>
<td>16,799</td>
</tr>
<tr>
<td>3</td>
<td>29095013203</td>
<td>Jackson County</td>
<td>2,837</td>
<td>70.64%</td>
<td>9,966</td>
</tr>
<tr>
<td>4</td>
<td>29189212200</td>
<td>St. Louis County</td>
<td>5,797</td>
<td>68.28%</td>
<td>5,317</td>
</tr>
<tr>
<td>5</td>
<td>29095005602</td>
<td>Jackson County</td>
<td>1,321</td>
<td>67.75%</td>
<td>8,216</td>
</tr>
<tr>
<td>6</td>
<td>29189213900</td>
<td>St. Louis County</td>
<td>1,389</td>
<td>70.99%</td>
<td>7,461</td>
</tr>
<tr>
<td>7</td>
<td>29189213800</td>
<td>St. Louis County</td>
<td>4,763</td>
<td>68.19%</td>
<td>7,494</td>
</tr>
<tr>
<td>8</td>
<td>29189212102</td>
<td>St. Louis County</td>
<td>2,286</td>
<td>73.45%</td>
<td>5,392</td>
</tr>
<tr>
<td>9</td>
<td>29510107500</td>
<td>St. Louis City</td>
<td>2,287</td>
<td>72.02%</td>
<td>6,976</td>
</tr>
<tr>
<td>10</td>
<td>29510109700</td>
<td>St. Louis City</td>
<td>1,886</td>
<td>68.29%</td>
<td>7,735</td>
</tr>
</tbody>
</table>

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 06/28/21. COVID-19 case rate provided by the State of Missouri as of 7/2/21. Methodology, data sources, and limitations are available in the Appendix.
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Information presented is illustrative of a sample of analyses and capabilities that may be available to you to support COVID-19 response and recovery efforts in Missouri.

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