State of Missouri COVID-19 Response Vaccine Distribution Analysis

June 14, 2021
This document includes data and analysis on COVID-19 vaccinations for the State of Missouri in support of their vaccine ordering and distribution process.

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Executive Summary | Key Insights

**STATEWIDE UPTAKE**
- Across all ages, total vaccine initiation **largely remained consistent** week over week (i.e. slight uptick in vaccination in our reporting period, but a slight decrease in the ShowMeVax calendar)

**REGIONAL & COUNTY TRENDS**
- Regions B and H – with counties experiencing case rate spikes – increased their percent vaccinated with at least 1 dose by 0.4% and 0.3% respectively, in line with State averages

**CENSUS TRACT ANALYSIS**
- For the 2nd **week in a row**, the Kansas City region experienced **improvements in vaccine uptake** share for **vulnerable Census Tracts** throughout the southeast corner of the I-435 loop
- A wave of **vaccination hotspots** occurred between the **Linn-Livingston County outbreak** and the **Kansas City metro region**
  - This trend emerged in varying degrees in **other vulnerable and under-vaccinated regions** across the State (e.g. Bootheel, Joplin, Springfield)

**12-17 POPULATION**
- There is a stark difference in vaccination between 12-17 year-olds in more populated urban counties in comparison to other counties – in the 8 counties where there are an estimated >100k 12-17 year olds, **vaccination is 24.8%** – in the remaining 106 counties the vaccination rate is 7.5%
- 12-17 initiations as a **share of total initiations** remained steady week over week at ~25%

**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 06/08/2021. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.

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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><strong>Vaccination Gap (#)</strong></td>
<td>659k</td>
<td>95k</td>
<td>1,002k</td>
<td>449k</td>
<td>159k</td>
<td>199k</td>
<td>70k</td>
<td>108k</td>
<td>93k</td>
<td>2,833k</td>
</tr>
<tr>
<td><strong>% Unvaccinated within Region</strong></td>
<td>56.8%</td>
<td>64.5%</td>
<td>50.9%</td>
<td>62.1%</td>
<td>63.5%</td>
<td>51.0%</td>
<td>70.2%</td>
<td>58.0%</td>
<td>69.5%</td>
<td>56.0%</td>
</tr>
<tr>
<td><strong>Share of Eligible Statewide Population</strong></td>
<td>22.9%</td>
<td>2.9%</td>
<td>38.9%</td>
<td>14.3%</td>
<td>4.9%</td>
<td>7.7%</td>
<td>1.9%</td>
<td>3.7%</td>
<td>2.6%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Share of Statewide Vaccinations</strong></td>
<td>22.5%</td>
<td>2.4%</td>
<td>43.5%</td>
<td>12.3%</td>
<td>4.1%</td>
<td>8.6%</td>
<td>1.3%</td>
<td>3.5%</td>
<td>1.8%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Share of Statewide Remaining Unvaccinated</strong></td>
<td>23.3%</td>
<td>3.3%</td>
<td>35.4%</td>
<td>15.9%</td>
<td>5.6%</td>
<td>7.0%</td>
<td>2.5%</td>
<td>3.8%</td>
<td>3.3%</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Note:** Data on vaccinated individuals are based on 1st round Moderna, Pfizer, and J&J vaccinations, based on the residence of the individual (18+) vaccinated, and as of 06/08/21. 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. Statewide percent unvaccinated discrepancies between county and Census Tract level data being investigated.
Regional Vaccination Rates Over Time

This visualization displays the weekly change in percent vaccinated in each region over the last 10 weeks for the over 18 population.

18+ Additional Percent of Population Vaccinated by Region (SMV Week 14 to Week 23)

Note: All weeks are calendar weeks, defined by ShowMeVax (SMV), where Week 23 is 5/30 – 6/5. Data on vaccinated individuals are based on 1st round Moderna, Pfizer, and J&J vaccinations, based on the residence of the individual (18+) vaccinated, and as of 06/08/21. 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

- All regions experienced a decrease in vaccinations week over week – apart from Region F (which remained flat)
- Both Dose 2 and Dose 1 vaccinations fell approximately 7k week over week
- Despite this decrease, 5 counties administered >1,000 dose 1 vaccines while 33 counties administered >100 dose 1 vaccines
- Demand continued to fall in the urban areas with St. Louis County (-1,243), Jackson County (-1,240), and St. Charles (-662) experiencing the largest numeric decreases
Missouri counties were ranked by vaccination gap (how many residents are unvaccinated and estimated to be eligible) and percent unvaccinated (estimate of eligible residents that have not been vaccinated) for the over 18 population.

<table>
<thead>
<tr>
<th>TOP 5 COUNTIES BY VACCINATION GAP (#)</th>
<th>TOP 5 COUNTIES BY UNVACCINATED (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. St. Louis</strong>: 435,200 ▶ -5.5k</td>
<td><strong>1. Pulaski</strong>: 79.7% ▶ -0.4%</td>
</tr>
<tr>
<td><strong>2. Jackson</strong>: 321,100 ▶ -3.7k</td>
<td><strong>2. Newton</strong>: 79.6% ▶ -0.4%</td>
</tr>
<tr>
<td><strong>3. St. Charles</strong>: 172,400 ▶ -2.2k</td>
<td><strong>3. McDonald</strong>: 78.9% ▶ -0.4%</td>
</tr>
<tr>
<td><strong>4. St. Louis City</strong>: 154,900 ▶ -2.0k</td>
<td><strong>4. Reynolds</strong>: 76.5% ▶ -0.4%</td>
</tr>
<tr>
<td><strong>5. Jefferson</strong>: 129,800 ▶ -1.0k</td>
<td><strong>5. Clark</strong>: 75.6% ▶ -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 vaccinated individuals are based on 1st round Moderna, Pfizer, and J&J vaccinations, based on the residence of the individual (18+) vaccinated, and as of 06/08/21. 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. Statewide percent unvaccinated discrepancies between county and Census Tract level data being investigated.
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 vaccinated individuals are based on 1st round Moderna, Pfizer, and J&J vaccinations, based on the residence of the individual (18+) vaccinated, and as of 06/08/21. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.

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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.

**KEY OBSERVATIONS**

- **There is a stark difference in vaccination between 12-17 year-olds in more populated urban counties vs other counties**
  - In the 8 counties where it is estimated there is >100k 12-17 year olds, vaccination is 24.8%, while in the remaining 106 counties the vaccination rate is 7.5%
- Vaccinations dropped slightly in the most recent SMV week for both the 12-17 and 18+ populations
- 12-17 initiations as a share of total initiations remained steady week over week at ~25%

**Note:** All weeks are calendar weeks, defined by ShowMeVax (SMV), where Week 23 is 5/30 – 6/5. 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 06/08/2021. Null counties were filtered out. All vaccinations tagged to the "<18" age group were assumed to be between ages 12-17. 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 (%)**

No county has vaccinated more than 35% of its under 18 population.

Region C has the largest 12-17 population (131,039) remaining eligible for vaccination.

Although the 12-17 roll-out has just begun, similar to 18+ trends, rural counties are experiencing a lower vaccine uptake thus far.

**Note:** Data on vaccinated individuals are based on 1st round Moderna, Pfizer, and J&J vaccinations, based on the residence of the individual (under 18) vaccinated, and as of 06/08/21. Null counties were filtered out. 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. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.

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

**VACCINE INITIATION BY COUNTY (#)**

**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 Counties are the only counties with more than 10K 1st doses administered
- 25 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

**Note:** Data on vaccinated individuals are based on 1st round Moderna, Pfizer, and J&J vaccinations, based on the residence of the individual (under 18) vaccinated, and as of 06/08/21. Null counties were filtered out. 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. Methodology, data sources, and limitations are available in the Appendix.
Uptake Analysis

All Eligible Populations
Vaccination uptake hotspots are displayed in red for Week 23, 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 hotspots have **limited occurrence** in the **urban cores** of **Kansas City** and **St Louis**.

A wave of **vaccination hotspots** occurred between the **Linn-Livingston County outbreak** and in varying degrees in many **other vulnerable and under-vaccinated regions** across the State (e.g. Bootheel, Joplin, Springfield).

**Note:** Data on vaccinated individuals includes under and over 18 year olds, is based on 1st round Moderna & Pfizer vaccinations and J&J vaccinations, and indicates the residence of the individual vaccinated. Data as of 06/08/2021. Methodology, data sources, and limitations are available in the Appendix.
Vaccination uptake deserts are displayed in blue for Week 23, indicating Census Tracts where vaccination uptake is significantly lower than State averages.

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

For the **second week in a row**, the Kansas City region experienced **improvements** to **vaccine uptake** share in **vulnerable Census Tracts** throughout the southeast corner of the **I-435 loop**, while the St. Louis region experienced **varying uptake** within its more vulnerable communities.

**Note:** Data on vaccinated individuals includes under and over 18 year olds, is based on 1st round Moderna & Pfizer vaccinations and J&J vaccinations, and indicates the residence of the individual vaccinated. Data as of 06/08/2021. Methodology, data sources, and limitations are available in the Appendix.
COVID-19 Vulnerability Index
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**, respectively in order.

**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.
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>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 6/2/21 (%)</td>
<td>Cumulative COVID-19 Case Burden as of 6/4/21 (# per 100k)</td>
</tr>
<tr>
<td>Statewide Census Tract Average</td>
<td></td>
<td></td>
<td></td>
<td>55.83%</td>
<td>8,361</td>
</tr>
<tr>
<td>1</td>
<td>29510106200</td>
<td>St. Louis City</td>
<td>980</td>
<td>74.29%</td>
<td>7,531</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>
</tr>
<tr>
<td>3</td>
<td>29095013203</td>
<td>Jackson</td>
<td>2,837</td>
<td>73.49%</td>
<td>9,686</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>
</tr>
<tr>
<td>5</td>
<td>29095005602</td>
<td>Jackson</td>
<td>1,321</td>
<td>70.70%</td>
<td>8,076</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>
</tr>
<tr>
<td>7</td>
<td>29189213800</td>
<td>St. Louis</td>
<td>4,763</td>
<td>70.96%</td>
<td>7,370</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>
</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>
</tr>
<tr>
<td>10</td>
<td>29189213600</td>
<td>St. Louis</td>
<td>2,877</td>
<td>66.15%</td>
<td>6,885</td>
</tr>
</tbody>
</table>

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