State of Missouri COVID-19 Response Vaccine Distribution Analysis

September 15, 2021
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Executive Summary | Key Insights

STATEWIDE METRICS

- Statewide case rates **slightly increased** week over week but are **substantially lower** than the **August peak**
- **Region E**'s case rate is **50% higher** than all other regions and **more than a third** (37%) of all hotspots are either contained or within 35 miles of the region
- Missouri's case rates are considerably **lower than those in neighboring states**, except for **Nebraska**

VACCINE UPTAKE TRENDS

- Total **vaccine initiations** were the **lowest since mid June** with ~25k Missourians taking their 1st dose this past week
- The **largest share of population** getting a 1st dose was in **Region E**
- Vaccine uptake hotspots occurred in **major metro commuting communities** and **smaller urban towns** across the State
- The vaccine uptake desert within Kansas City's I-435 loop **consolidated** within the eastern edge of the interstate
- Most neighboring states have **higher vaccine uptake** than Missouri, but are experiencing the **same trend of urban areas having higher uptake than rural**
COVID-19 Case Rate Analysis
For the time period between 8/27/21 and 9/9/21, the change in COVID-19 case rate (per 100,000) 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.

Total case rate hotspots slightly *increased* (+4) over the past week, mostly in Regions C and E.

**32 of 86 (37%)** statewide case rate hotspots are either contained or within 35 miles of Region E (an increase from last week).

In Region E, 73% of case rate hotspots (16 of 22) are in *close proximity to I-55 and US-60*.

**Note:** Data normalized by population (per 100,000 residents) per Census Tract. COVID-19 case rate data provided by the State of Missouri as of 9/9/21. Previous 2-week change view provided in the Appendix, along with the number of hotspots per region, and the methodology, data sources, and limitations.
For the time period between 8/27/21 and 9/09/21, case rate hotspots (areas with statistically significant changes in case rates in comparison to surrounding areas) are displayed on the left for Kansas City and on the right for St. Louis.

**Case rate hotspots** increased from last week in the core of **Kansas City** (12 within I-435) and **St. Louis** (10 inside I-270).

The surge in cases in **Wentzville** and **St. Peters** (outside St. Louis) has persisted for 3 weeks running.

**Kansas City's number of case rate hotspots** within the **vulnerable section** of the SE I-435 corridor (according to the COVID-19 Vulnerability Index), has **gone down** the last 2 weeks.

**Note:** Data normalized by population (per 100,000 residents) per Census Tract. COVID-19 case rate data provided by the State of Missouri as of 9/9/21. Previous 2-week change view provided in the Appendix, along with the number of hotspots per region, and the methodology, data sources, and limitations.

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For the time period between 8/27/21 and 9/09/21, case rates in MO are compared to counties in neighboring states.

Note: Data normalized by population (per 100,000 residents) per Census Tract. COVID-19 case rate data provided by the State of Missouri as of 9/9/21. Neighboring state COVID-19 case rate data from US Centers for Disease Control and USA Facts. Methodology, data sources, and limitations provided in the Appendix.

- Case rates in Missouri are starkly lower than all surrounding states other than Nebraska.
- Some border cities in Missouri have elevated case rates that are similar to neighboring counties in the adjacent state.
The visualization and table below display the evolution of weekly case rate changes by Region over the past 15 weeks.

**Regional Change in Case Rate Over Time (cases per 100k)**

*Note:* Case data provided by the State of Missouri (MHA). Differences in x-axis scale may occur due to timing of data delivery (e.g., due to a holiday). Methodology, data sources, and limitations are available in the Appendix.

<table>
<thead>
<tr>
<th>Date of Case Data Received*</th>
<th>Case Rate per 100k increase Week over Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 3, 2021</td>
<td>194</td>
</tr>
<tr>
<td>June 9, 2021</td>
<td>100</td>
</tr>
<tr>
<td>June 20, 2021</td>
<td>171</td>
</tr>
<tr>
<td>June 24, 2021</td>
<td>112</td>
</tr>
<tr>
<td>July 8, 2021</td>
<td>318</td>
</tr>
<tr>
<td>July 15, 2021</td>
<td>170</td>
</tr>
<tr>
<td>July 22, 2021</td>
<td>146</td>
</tr>
<tr>
<td>July 29, 2021</td>
<td>149</td>
</tr>
<tr>
<td>August 5, 2021</td>
<td>159</td>
</tr>
<tr>
<td>August 11, 2021</td>
<td>171</td>
</tr>
<tr>
<td>August 18, 2021</td>
<td>171</td>
</tr>
<tr>
<td>August 26, 2021</td>
<td>171</td>
</tr>
<tr>
<td>September 1, 2021</td>
<td>171</td>
</tr>
<tr>
<td>September 8, 2021</td>
<td>171</td>
</tr>
</tbody>
</table>

**Total cases** across the state **increased slightly week over week** but are **down significantly from early August**. **Case rates** were **highest in Region E** for the third straight week – **50% higher than any other region**.

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Vaccine Uptake Analysis
Darker shades in the map on the left indicate Census Tracts with larger vaccination gaps, with regional drill downs for Kansas City and St. Louis provided on the right.

Areas with the largest vaccination gaps continue to align with the more populated areas across Missouri – typically surrounding urban areas.

**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 9/9/2021. Census Tracts appearing transparent do not contain data due to having a population <6. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.
18+ Population | Percent Vaccinated

Darker shades on the map on the left indicate Census Tracts with higher percentages of residents who have initiated vaccination – with regional drill downs for Kansas City and St. Louis labeled to the right.

**PERCENT WITH 1 DOSE (%)**

Vaccinated Categories (%)
- 0.0% - 29.9%
- 30.0% - 39.9%
- 40.0% - 49.9%
- 50.0% - 69.9%
- 70.0%+ (Highest)

**Census Tracts with the lowest percent vaccinated** are concentrated in more **rural areas** in Regions B, D, I, & G.

**3.2% (160K)**

Est. Amount of 18+ Population that has received Dose 1 but not Dose 2

**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 9/9/2021. Census Tracts appearing transparent do not contain data due to having a population <6. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.

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The map below displays the vaccination rates for Missouri and neighboring states through 9/9/21 for the 18+ population cohort

**Legend**

- MO RTI Boundaries (9)
- Percent Vaccinated - 09/09
  - 0.000000 - 29.900000 (87)
  - 29.900001 - 39.900000 (75)
  - 39.900001 - 49.900000 (223)
  - 49.900001 - 69.900000 (436)
  - 69.900001 - 100.000000 (50)

- Each of the neighboring states are experiencing the same **urban/rural vaccine uptake divide** (i.e. higher rates in urban areas)

- Most neighboring states have **higher vaccination rates than Missouri** – consistently at the urban and rural scales

**Note:** Data normalized by population (per 100,000 residents) per Census Tract. COVID-19 case rate data provided by the State of Missouri as of 9/9/21. Neighboring state COVID-19 case rate data from US Centers for Disease Control and USA Facts. Methodology, data sources, and limitations provided in the Appendix.

Darker shades on the map on the left indicate counties with larger vaccination gaps with regional drill downs for Kansas City and St. Louis labeled to the right.

VACCINATION GAP (#)

<table>
<thead>
<tr>
<th>Vaccination Gap Quintiles (#)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 107</td>
</tr>
<tr>
<td>108 – 167</td>
</tr>
<tr>
<td>168 – 236</td>
</tr>
<tr>
<td>237 – 327</td>
</tr>
<tr>
<td>328 – 794</td>
</tr>
</tbody>
</table>

Similar trends persist for the 12-17 as with the 18+ population – more populated/urban areas have the largest number of unvaccinated.

Region C continues to have the largest vaccination gap (98,722) for the 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 09/9/2021. All vaccinations tagged to the “<18” age group were assumed to be between ages 12-17. Census Tracts appearing transparent do not contain data due to having a population <6. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.
Darker shades on the map on the left indicate counties with higher percentages of residents who have initiated vaccination – with regional drill downs for Kansas City and St. Louis labeled to the right.

**PERCENT WITH 1 DOSE (%)**

- **H**: 0.0% - 29.9%
- **B**: 30.0% - 39.9%
- **A**: 40.0% - 49.9%
- **F**: 50.0% - 69.9%
- **C**: 70.0%+ (Highest)

**Urban** areas tend to have **higher rates of vaccine uptake**, although the stark divide is **more apparent in the 12-17 cohort than 18+**

**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 9/9/2021. All vaccinations tagged to the “<18” age group were assumed to be between ages 12-17. Census Tracts appearing transparent do not contain data due to having a population <6. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.
Regional Vaccination Rates Over Time: Last 5 Weeks

The visualization and table below display weekly and cumulative vaccination rates at the regional level. Week 35 (8/25 – 9/4) is the most recent complete week.

**5-Week Additional Percent of 18+ Population Vaccinated by Region**

![Graph showing regional vaccination rates over time]

<table>
<thead>
<tr>
<th>MMWR Week Ending Date</th>
<th>18+ Cumulative % Vax</th>
<th>18+ % Vax Previous Week (MMWR 33 to 34)</th>
<th>12-17 Cumulative % Vax</th>
<th>12-17 % Vax Previous Week (MMWR 33 to 34)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region A</td>
<td>53.9%</td>
<td>0.6%</td>
<td>44.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Region B</td>
<td>44.8%</td>
<td><strong>0.4%</strong></td>
<td>17.2%</td>
<td><strong>0.5%</strong></td>
</tr>
<tr>
<td>Region C</td>
<td>59.6%</td>
<td>0.5%</td>
<td><strong>49.9%</strong></td>
<td>1.0%</td>
</tr>
<tr>
<td>Region D</td>
<td>50.4%</td>
<td>0.5%</td>
<td>30.8%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Region E</td>
<td>48.1%</td>
<td><strong>0.8%</strong></td>
<td>20.1%</td>
<td><strong>1.1%</strong></td>
</tr>
<tr>
<td>Region F</td>
<td>60.6%</td>
<td>0.5%</td>
<td>37.6%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Region G</td>
<td>43.4%</td>
<td><strong>0.4%</strong></td>
<td><strong>16.1%</strong></td>
<td><strong>0.3%</strong></td>
</tr>
<tr>
<td>Region H</td>
<td>52.4%</td>
<td>0.5%</td>
<td>26.0%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Region I</td>
<td><strong>41.7%</strong></td>
<td>0.5%</td>
<td>22.9%</td>
<td><strong>0.8%</strong></td>
</tr>
<tr>
<td>State Average</td>
<td>55.0%</td>
<td>0.5%</td>
<td>39.7%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

**Note:** All weeks are calendar weeks, defined by SMV using MMWR week, where Week 35 is 8/25 – 9/4. 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 9/9/2021. J&J vaccinations are coded as both dose 1 and dose 2. Methodology, data sources, and limitations are available in the Appendix.

Vaccine initiations fell for the 5th straight week and is the lowest total since mid-June (18+ and 12-17). Region E had the largest share of its 18+ population vaccinated for the fourth straight week.

**Bolded** percentages indicate the highest and lowest cumulative % vaccinated.
Vaccination uptake hotspots for 09/02 - 09/09 are displayed below in red. These vaccine uptake hotspots represent the communities that far exceeded the State average for the dates indicated.

Vaccine uptake hotspots are mainly in **St. Louis and Kansas City suburbs** and **smaller regional urban centers** (Columbia/Jefferson City, Cape Girardeau, Springfield, Joplin, Park Hills/Farmington, Sikeston, and Waynesville)

They continue to be **linked to major transportation routes** (I-44, I-70, I-55, US 63)

**Note:** Data on vaccinated individuals include 1st round Moderna & Pfizer vaccinations and J&J vaccinations across all ages, and indicate the residence of the individual vaccinated, as of 9/9/21. Methodology, data sources, and limitations are available in the Appendix.

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*Source: Heatmap analysis for 09/02-09/09, based on available data from Missouri Department of Health and Human Services.*

*For internal use only by State of Missouri. Output based on available data.*
Vaccination uptake deserts are displayed in shades of blue from 9/02 - 9/09, indicating Census Tracts where the weekly vaccine uptake is significantly lower than State and/or regional averages – a more sensitive test of differences in community-level uptake in comparison to the hotspot analysis.

How to interpret these maps:

- **High Vaccine Uptake**: Statistically significant clusters of high statewide initiation rates.
- **High Regional Uptake**: Statistical outlier – high initiation rates surrounded by low.
- **Low Regional Uptake**: Statistical outlier – low initiation rates surrounded by high.
- **Low Vaccine Uptake/Uptake Desert**: Clusters of statistically low statewide initiation rates.

Majority of vaccine uptake deserts (by area) exist in Regions B and H; majority of vaccine uptake deserts (by population) are in urban clusters (Kansas City and St. Louis).

Suburban and commuting communities along I-70, I-55 and I-44 continue to drive vaccination uptake.

The St. Louis Metro region has the highest concentration of vaccine uptake deserts & regional high uptake outliers throughout the entire State.

**Note:** Data on vaccinated individuals include 1st round Moderna & Pfizer vaccinations and J&J vaccinations across all ages, and indicate the residence of the individual vaccinated, as of 9/9/21. Methodology, data sources, and limitations are available in the Appendix.
Regional COVID-19 Snapshot

To support comparison between Regions and a deeper understanding of analyses throughout this report, the table below provides information on COVID-19 cases, cumulative vaccine uptake across age groups, and recent vaccine uptake trends at the regional level.

<table>
<thead>
<tr>
<th>Region</th>
<th>Cumulative COVID-19 Case Burden (# per 100k)</th>
<th>14-Day Change in COVID-19 Case Burden (%)</th>
<th>COVID-19 Case Rate Hotspots (#)</th>
<th>18+ Cumulative Vax (%)</th>
<th>18+ Vax Previous Week (%)</th>
<th>12-17 Cumulative Vax (%)</th>
<th>12-17 Vax Previous Week (%)</th>
<th>Vaccine Uptake Deserts (#)</th>
<th>Vaccine Uptake Hotspots (#)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10,443</td>
<td>1.9%</td>
<td>26</td>
<td>53.9%</td>
<td>0.6%</td>
<td>44.0%</td>
<td>1.0%</td>
<td>60</td>
<td>16</td>
</tr>
<tr>
<td>B</td>
<td>9,455</td>
<td>1.1%</td>
<td>11</td>
<td>44.8%</td>
<td>0.4%</td>
<td>17.2%</td>
<td>0.5%</td>
<td>39</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>9,940</td>
<td>1.8%</td>
<td>24</td>
<td>59.6%</td>
<td>0.5%</td>
<td>49.9%</td>
<td>1.0%</td>
<td>256</td>
<td>21</td>
</tr>
<tr>
<td>D</td>
<td>11,239</td>
<td>1.0%</td>
<td>3</td>
<td>50.4%</td>
<td>0.5%</td>
<td>30.8%</td>
<td>0.6%</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>E</td>
<td>11,250</td>
<td>2.9%</td>
<td>22</td>
<td>48.1%</td>
<td>0.8%</td>
<td>20.1%</td>
<td>1.1%</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>F</td>
<td>12,078</td>
<td>1.4%</td>
<td>7</td>
<td>60.6%</td>
<td>0.5%</td>
<td>37.6%</td>
<td>0.9%</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>G</td>
<td>9,255</td>
<td>1.6%</td>
<td>1</td>
<td>43.4%</td>
<td>0.4%</td>
<td>16.1%</td>
<td>0.3%</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>H</td>
<td>10,394</td>
<td>1.5%</td>
<td>0</td>
<td>52.4%</td>
<td>0.5%</td>
<td>26.0%</td>
<td>0.9%</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>I</td>
<td>10,197</td>
<td>1.6%</td>
<td>2</td>
<td>41.7%</td>
<td>0.5%</td>
<td>22.9%</td>
<td>0.8%</td>
<td>0</td>
<td>1</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 9/9/21. COVID-19 case rate provided by the State of Missouri as of 9/9/21. Methodology, data sources, and limitations are available in the Appendix.
Appendix
For the time period between 8/20/21 and 9/1/21, the change in COVID-19 case rate (per 100,000) 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.

**3-Day Case Rate Change**

**State of Missouri - 09/01/21**

<table>
<thead>
<tr>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT Boundaries</td>
</tr>
<tr>
<td>13-Day Case Rate Change - 09/01</td>
</tr>
<tr>
<td>0.000000 - 0.00200</td>
</tr>
<tr>
<td>0.002001 - 0.00400</td>
</tr>
<tr>
<td>0.004001 - 0.00600</td>
</tr>
<tr>
<td>0.006001 - 0.00800</td>
</tr>
<tr>
<td>0.008001 - 0.01000</td>
</tr>
<tr>
<td>0.010001 - 0.01200</td>
</tr>
<tr>
<td>&gt;0.01200</td>
</tr>
</tbody>
</table>

**Regions A, C and E** have experienced the **highest increase of COVID-19 case rates** and have the **highest number of case rate hotspots**

**27 of 82 (33%) Statewide case rate hotspots** are either contained or within 35 miles of **Region E (Farmington/Park Hills)**

**Case rate hotspots** have continued to increase in **Region E** – with **86% (12 of 14 hotspots)** in close proximity to **I-55 and US-60** for the past two weeks.

**Note:** Data normalized by population (per 100,000 residents) per Census Tract. COVID-19 case rate data provided by the State of Missouri as of 9/9/21. Previous 2-week change view provided in the Appendix, along with the number of hotspots per region, and the methodology, data sources, and limitations. *Change in case burden is typically provided as 14-day delta but due to timing of data receipt, updated to 13-day for this week.
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