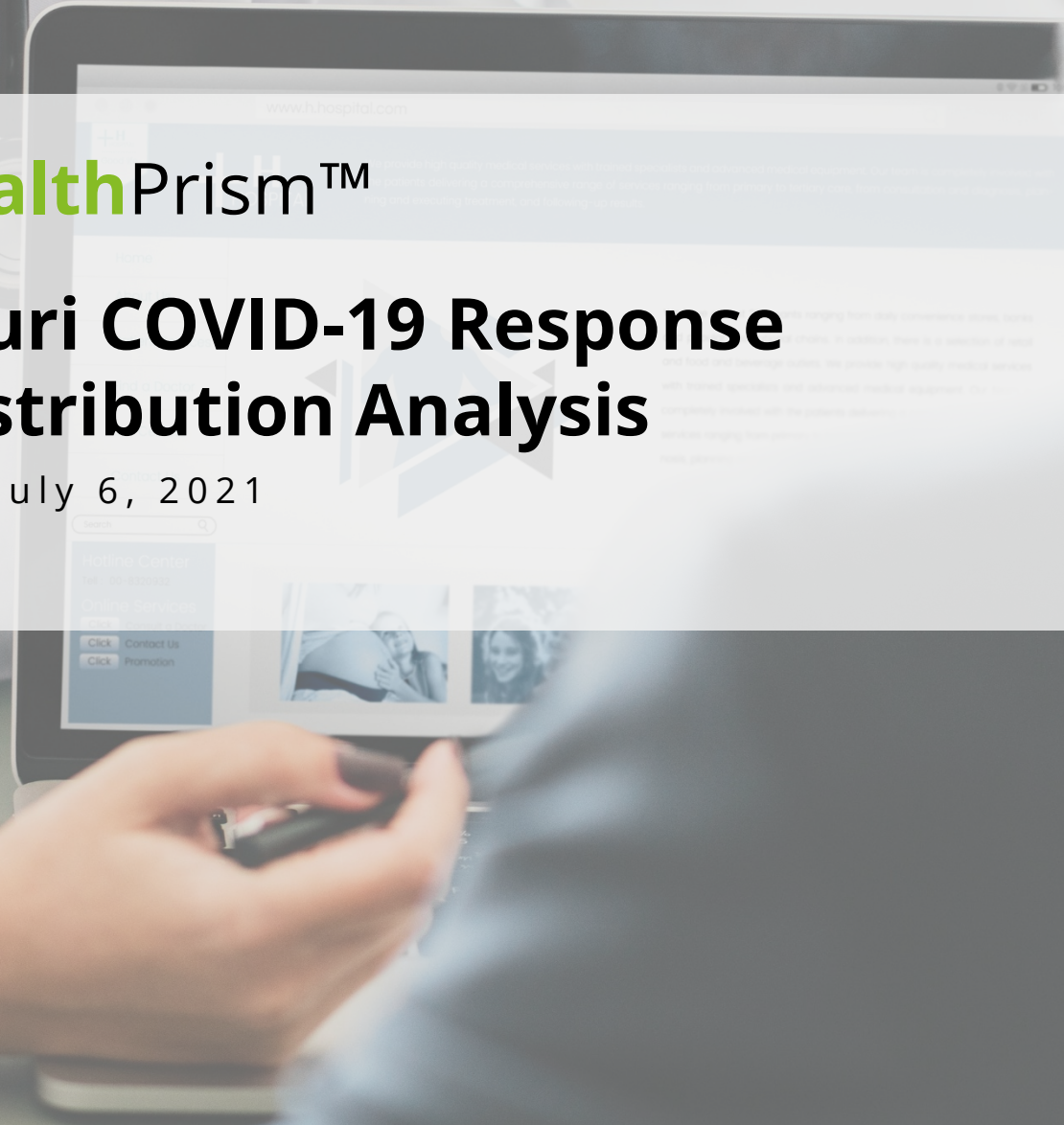


HealthPrism™

# State of Missouri COVID-19 Response Vaccine Distribution Analysis

July 6, 2021



This document includes COVID-19 data analysis for the State of Missouri in support of their vaccine ordering and distribution process

**Follow the links below to view each section:**

[Executive Summary](#) [3]

[COVID-19 Case Rate Hotspot Analysis](#) [4-5]

[Statewide Uptake \(All Ages\)](#) [6-8]

[18+ Population Analysis](#) [9-15]

[12-17 Population Analysis](#) [16-20]

[Appendix](#) [21-24]

**COVID-19  
CASE RATE  
HOTSPOTS**



- Several regional COVID-19 outbreak hotspots remained persistent, focused in:
  - Region D’s **Springfield and Joplin areas**
  - Region E’s **Kennett hotspot within Dunklin County**
  - Regions H and B’s hotspots in **Worth County and Trenton**
- **New and/or expanding hotspots** are now in **Branson, Lebanon, and Ava**

**CENSUS TRACT  
ANALYSIS**



- **Vaccine uptake hotspots** emerged in the **Springfield metro region and suburban/exurban St. Louis communities** this week

**AGE-COHORT  
ANALYSES**



- Vaccine initiation **increased** for all populations in the latest calendar week (jumped from ~25k to ~30k)
- Region D, the area with most significant COVID-19 case rate hotspots, experienced the **largest additional percent** of its population initiating vaccination (0.7%) – its highest increase since Week 20
- Consistent with previous trends, the refreshed COVID-19 Vulnerability Index (18+) indicates the top 150 CTs are within 4 regions across the State – **Regions C, A, E and D (in order of appearance in top 150 CTs)**

**Note:** Data on vaccinations include 1<sup>st</sup> round Moderna & Pfizer vaccinations and J&J vaccinations, are based on residence of the 18+ individual vaccinated (unless otherwise stated), and are from 06/28/2021. COVID-19 case rate data is a change analysis using data from 06/21/21 to 07/02/21. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.

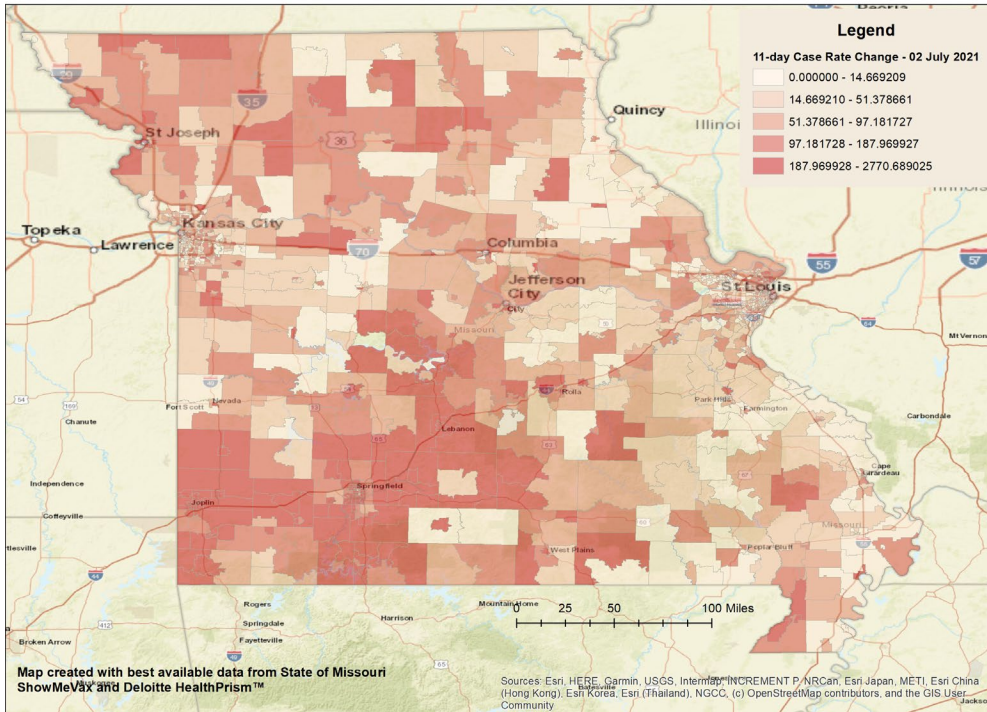
# COVID-19 Case Rate Hotspot Analysis



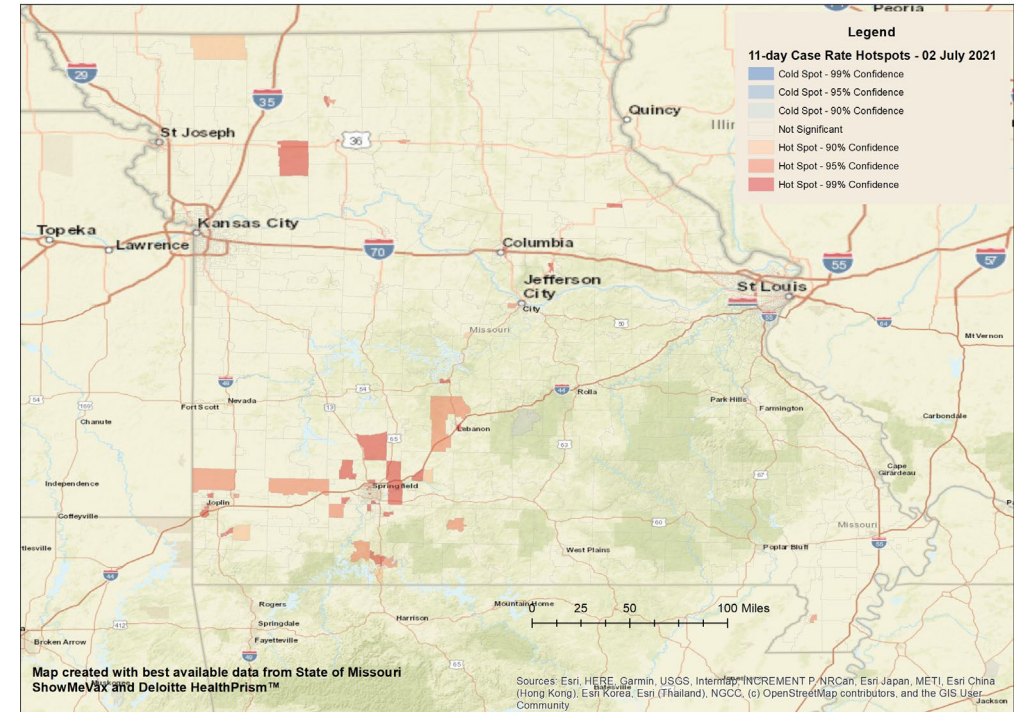
For the time period between 6/21/21 and 7/2/21, case rate change is displayed on the left and statistically significant case rate hotspots are displayed on the right – areas with high changes in case rates in comparison to surrounding areas

## 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



11-Day COVID-19 Case Rate Hotspots  
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 data provided by the State of Missouri as of 07/02/21. Previous 2-week change view provided in the Appendix, along with methodology, data sources, and limitations.

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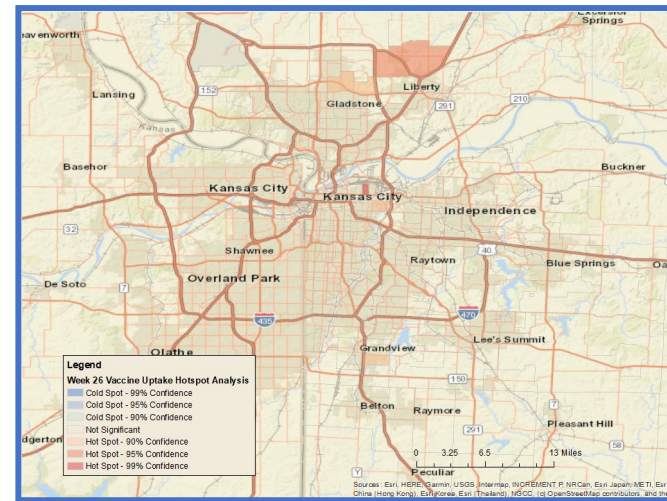
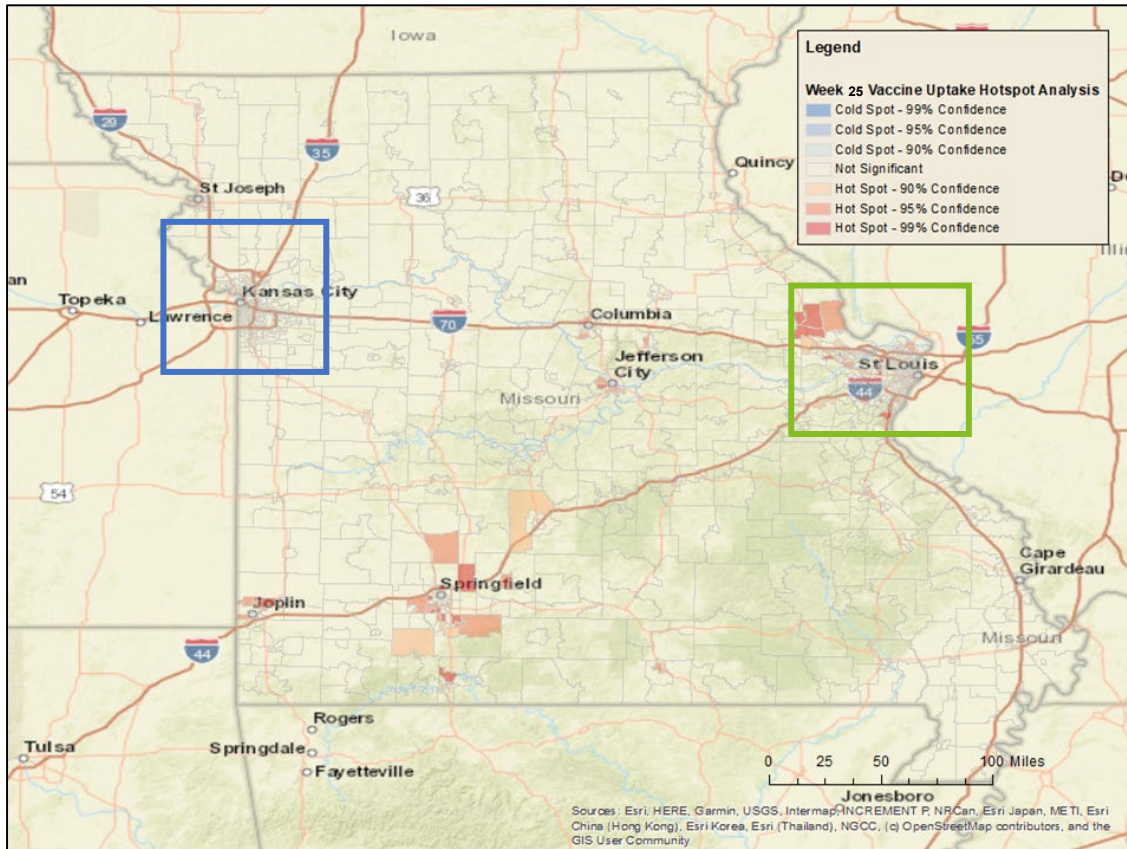
# **Uptake Analysis**

## ***All Eligible Populations***

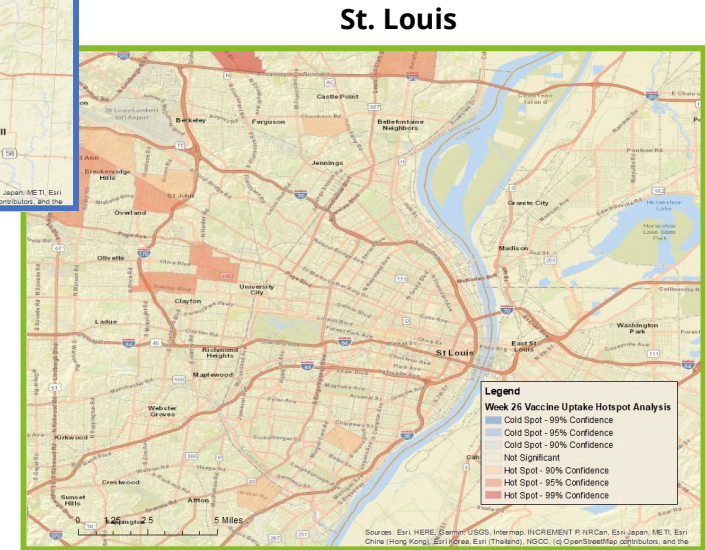


Vaccination uptake hotspots are displayed in red for Week 25 (MMWR), indicating Census Tracts where vaccinations have been administered at rates significantly higher than State averages

## Hotspots of Vaccinations at the Census Tract Level



Kansas City



St. Louis

**Springfield and surrounding Census Tracts** emerged as the **most intense vaccine uptake hotspots** in Week 25 MMWR

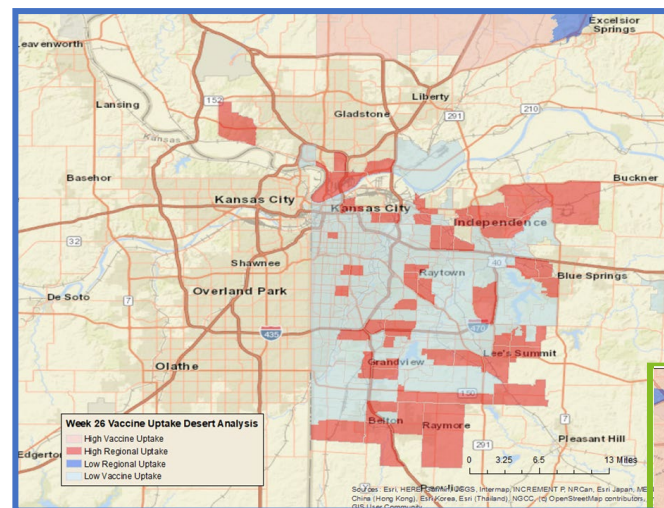
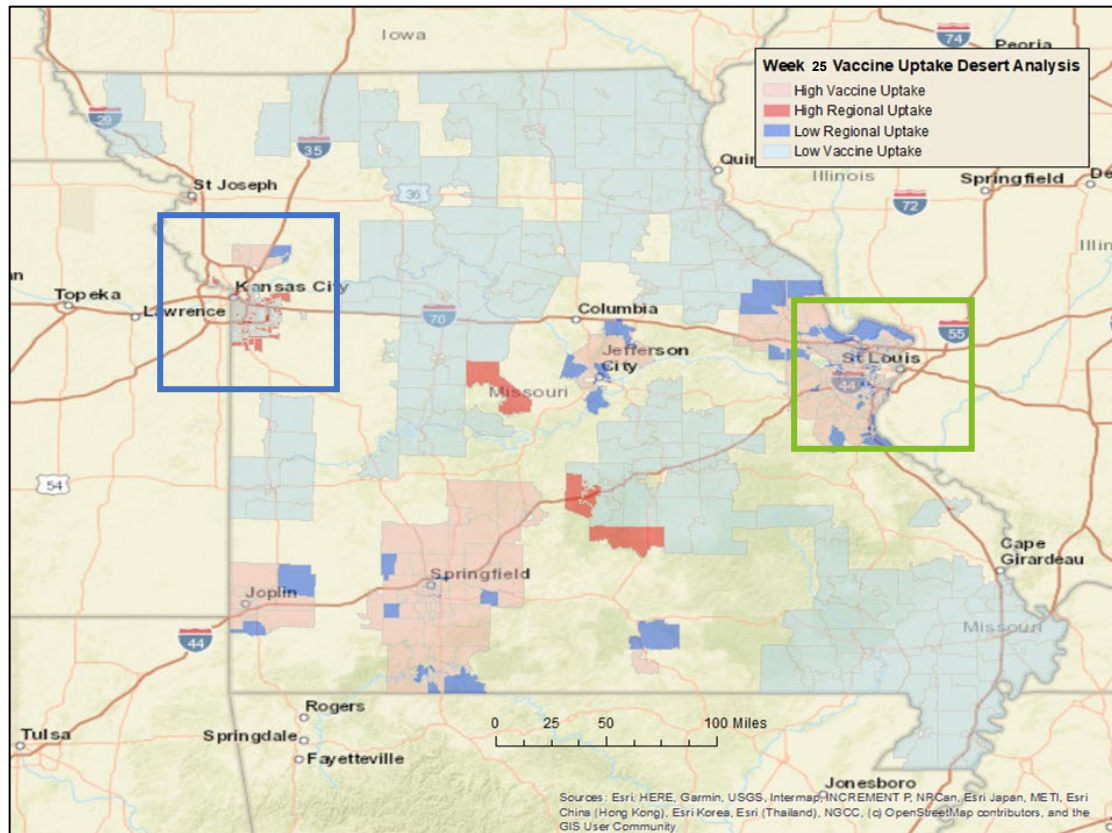
Vaccination hotspots around the **St. Louis** metro region were focused on the **suburbs/exurbs northwest of city**

**Note:** Data on vaccinated individuals is based on 1<sup>st</sup> round Moderna & Pfizer vaccinations and J&J vaccinations, includes all ages, and indicates the residence of the individual vaccinated. Data as of 06/28/2021 using MMWR week in SMV, where Week 25 is 6/20 – 6/26. Methodology, data sources, and limitations are available in the Appendix.

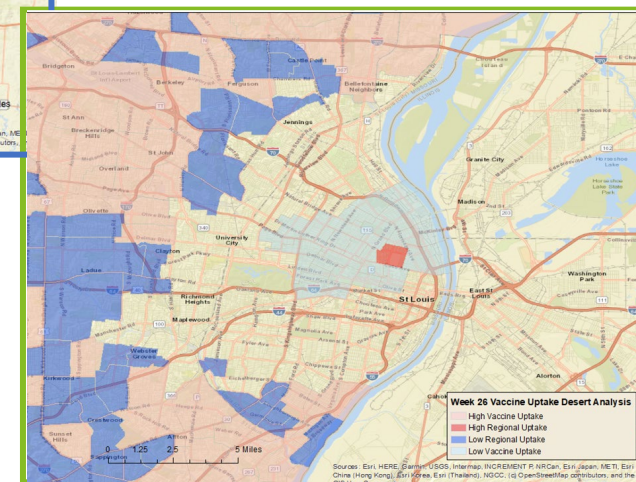


Vaccination uptake deserts are displayed in blue for Week 25 (MMWR), indicating Census Tracts where vaccination uptake is significantly lower than State averages

## Vaccine Uptake Desert at the Census Tract Level



Kansas City



St. Louis

Vaccine uptake trends in Regions B, E, F and H remained consistent with recent weeks, particularly regarding deserts in state's **Northeast corner and Bootheel regions**  
 Recent vaccine uptake near **Kansas City's vulnerable Southeast communities** have **continued to move further outside the I-435 loop** for the second week in a row  
 Vaccination uptake across **St. Louis** and surrounding suburbs continues to be patchy

**Note:** Data on vaccinated individuals is based on 1<sup>st</sup> round Moderna & Pfizer vaccinations and J&J vaccinations, includes all ages, and indicates the residence of the individual vaccinated. Data as of 06/28/2021 using MMWR week in SMV, where Week 25 is 6/20 – 6/26. Methodology, data sources, and limitations are available in the Appendix.



# 18+ Population Analysis

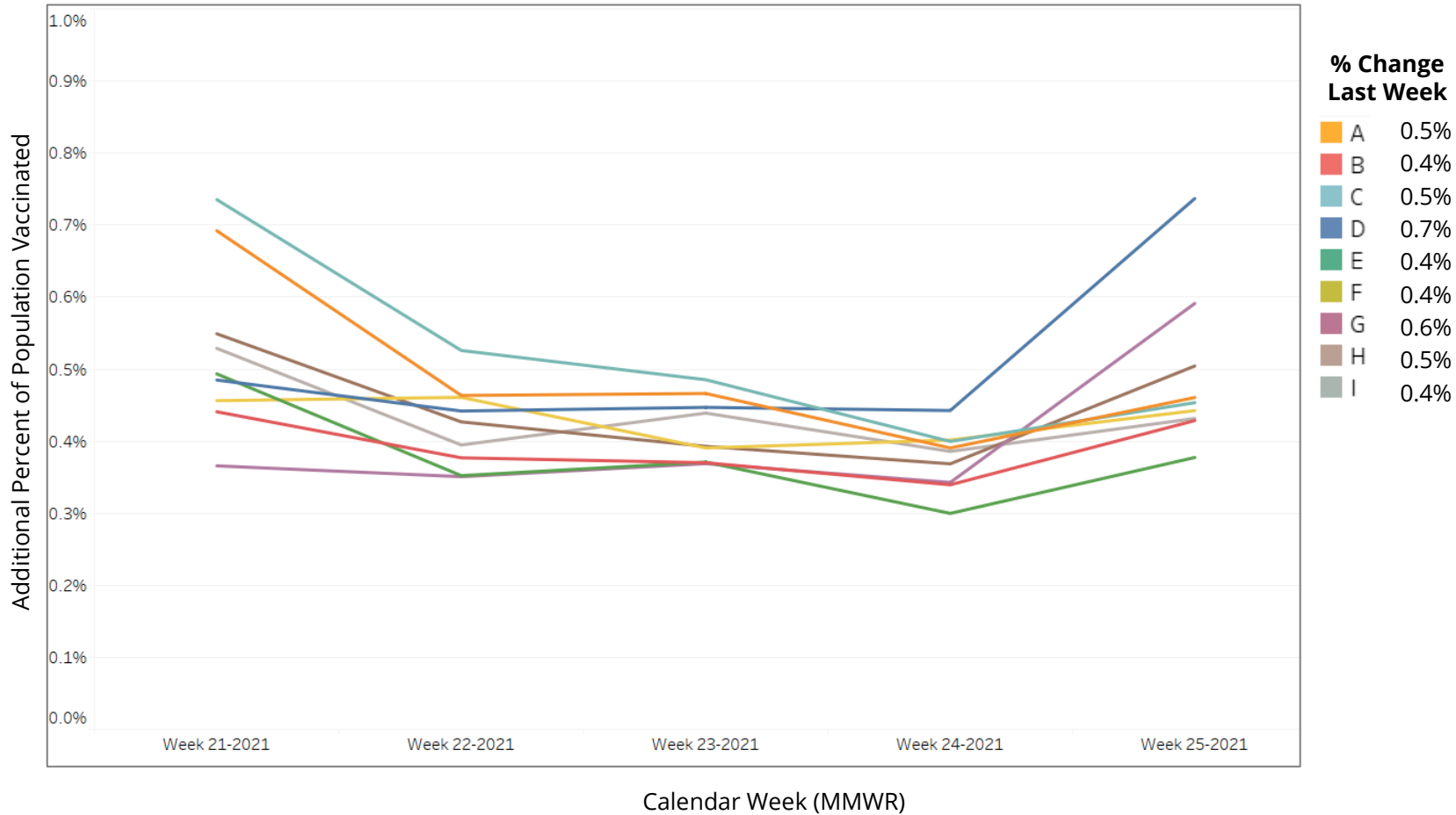
This table provides vaccination progress metrics at the regional level to understand how the share of vaccinations varies across the State

	REGIONS									
	A	B	C	D	E	F	G	H	I	Statewide
<b>VACCINATION GAP (#)</b>	639k	93k	955k	434k	155k	193k	68k	104k	91k	2,733K
<b>% UNVACCINATED WITHIN REGION</b>	55.13%	63.04%	48.56%	60.08%	62.13%	49.41%	68.60%	56.38%	68.00%	54%
<b>SHARE OF ELIGIBLE STATEWIDE POPULATION</b>	22.87%	2.89%	38.88%	14.27%	4.91%	7.72%	1.96%	3.67%	2.61%	100%
<b>SHARE OF STATEWIDE VACCINATIONS</b>	22.39%	2.34%	43.57%	12.43%	4.07%	8.52%	1.35%	3.49%	1.84%	100%
<b>SHARE OF STATEWIDE REMAINING UNVACCINATED</b>	23.37%	3.39%	34.94%	15.90%	5.68%	7.07%	2.50%	3.83%	3.32%	100%

**Note:** Data on vaccinations include 1<sup>st</sup> round Moderna & Pfizer vaccinations and J&J vaccinations, are based on residence of the 18+ individual vaccinated (unless otherwise stated), and are from 06/28/2021. 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.

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 21 to Week 25)



### KEY OBSERVATIONS


- **Initiations increased from ~20k to ~25k**, a 25% increase week over week
  - The ~25k doses is the highest total since Week 21
- **Vaccinations increased in every Region; the largest percentage increase occurred in Region D**
- 16 of the Top 20 Census Tracts by vaccine initiations are in **Region D**


**Note:** All weeks are calendar weeks, defined by SMV using MMWR week, where Week 25 is 6/20 – 6/26. Data on vaccinations include 1<sup>st</sup> round Moderna & Pfizer vaccinations and J&J vaccinations, are based on residence of the 18+ individual vaccinated (unless otherwise stated), and are from 06/28/2021. Methodology, data sources, and limitations are available in the Appendix.








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






**2.7M**   
 unvaccinated (of 18+ population)

**54.1%**   
 unvaccinated (of 18+ population)

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

1. **St. Louis:** 403,700 ▶ 
2. **Jackson:** 310,400 ▶ 
3. **St. Charles:** 162,600 ▶ 
4. **Greene:** 125,100 ▶ 
5. **Jefferson:** 115,400 ▶ 

### TOP 5 COUNTIES BY UNVACCINATED (%)

1. **Pulaski\*:** 80.0% ▶ 
2. **Clark:** 76.0% ▶ 
3. **Putnam:** 75.0% ▲ 
4. **Ozark:** 74.6% ▼ 
5. **Scotland:** 74.0% ▶ 

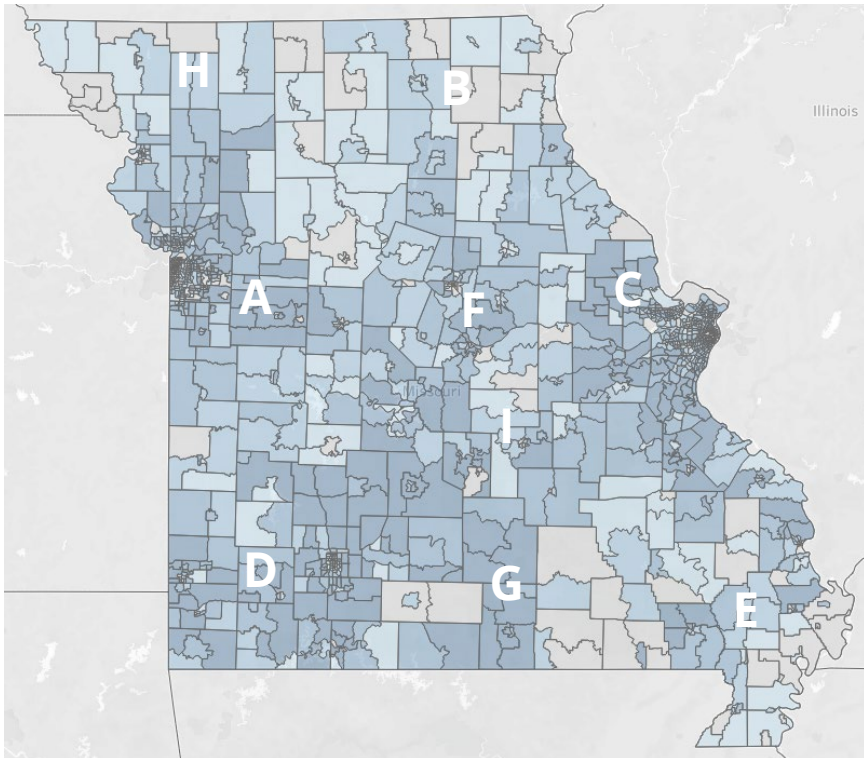
\*Pulaski has the highest percent unvaccinated, likely due to the large military presence and missing federal vaccination data

**Note:** Data on vaccinations include 1<sup>st</sup> round Moderna & Pfizer vaccinations and J&J vaccinations, are based on residence of the 18+ individual vaccinated (unless otherwise stated), and are from 06/28/2021. 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.

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)

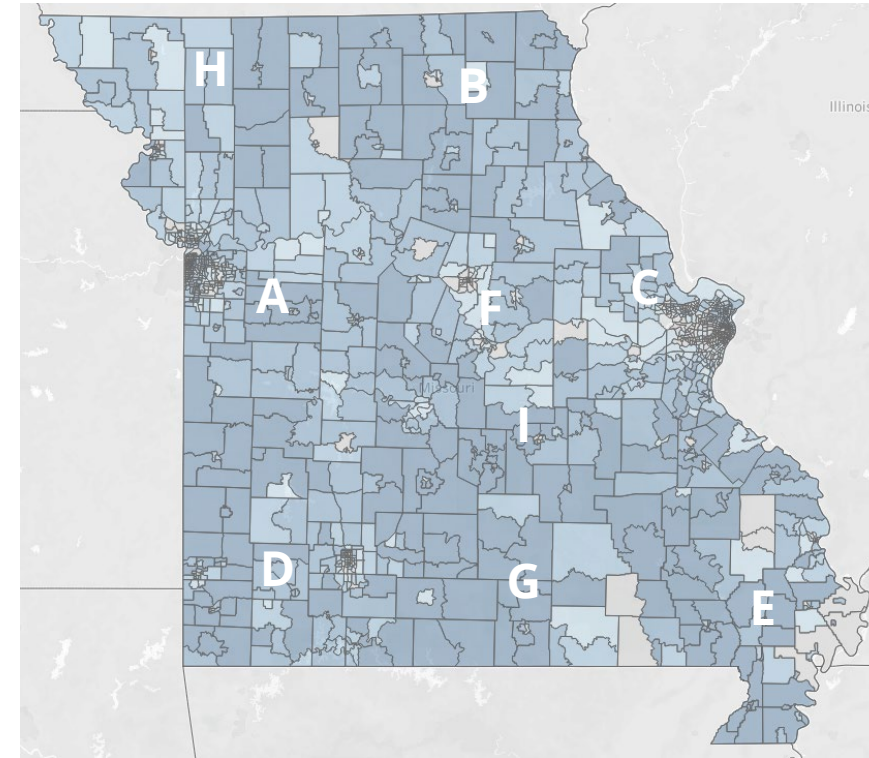
## VACCINATION GAP (#)

## PERCENT UNVACCINATED (%)



### Vaccination Gap Quintiles (#)

- 0 - 1,092
- 1,095 - 1,580
- 1,582 - 2,116
- 2,121 - 2,806
- 2,811 - 7,157



### Unvaccinated Quintiles (%)

- 0.0% - 43.1%
- 43.1% - 53.4%
- 53.4% - 59.7%
- 59.7% - 65.8%
- 65.8% - 93.0%

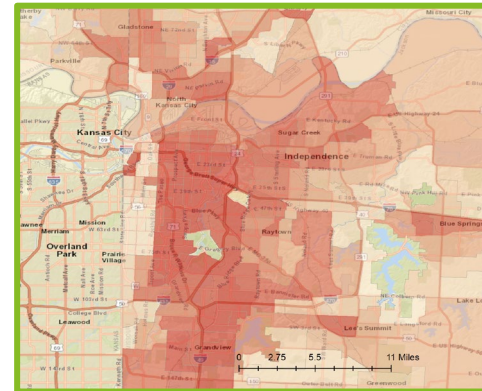
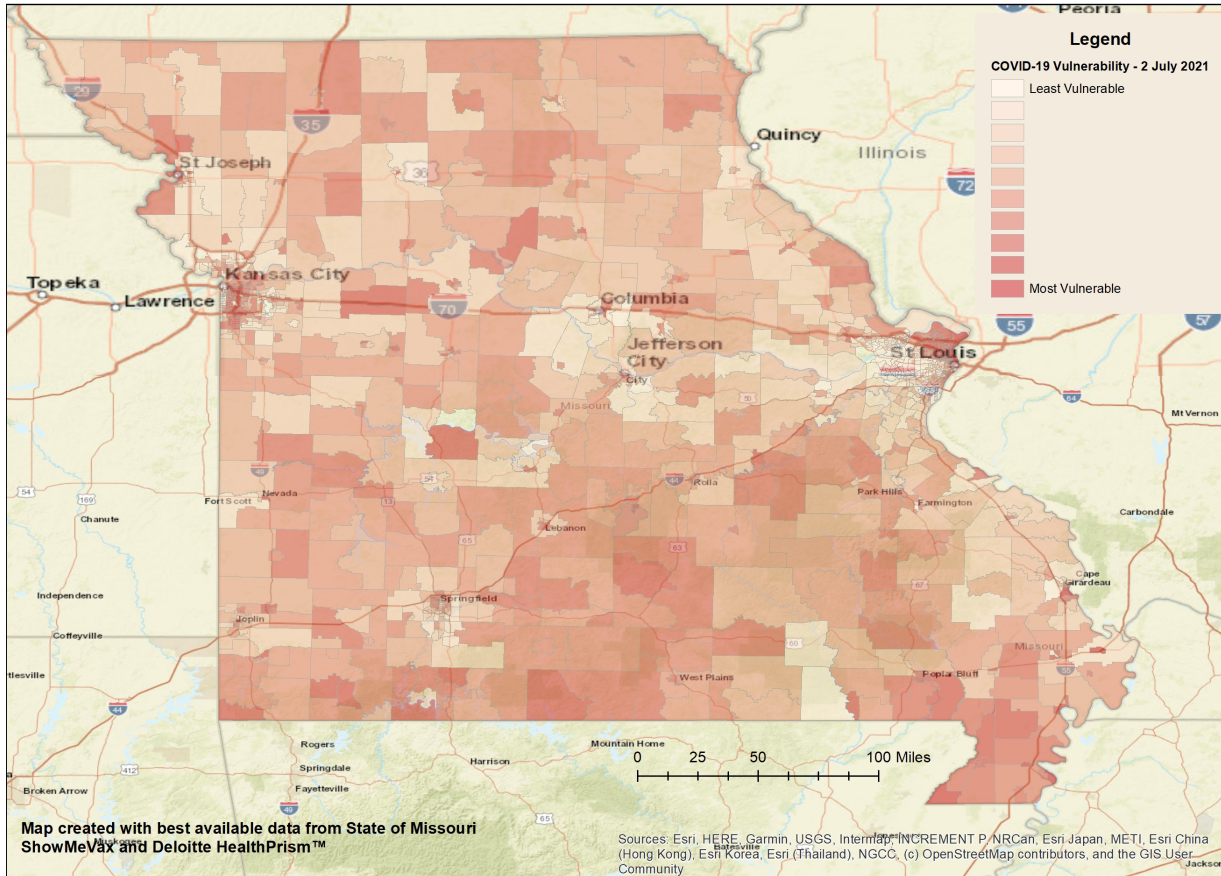
Areas with the largest **vaccination gaps** continue to align with the **more urban areas** of highest population across Missouri  
 Census Tracts with the highest **percentages of unvaccinated populations** are concentrated in more **rural areas** in Regions B, D, I, G, & E

**Note:** Data on vaccinations include 1<sup>st</sup> round Moderna & Pfizer vaccinations and J&J vaccinations, are based on residence of the 18+ individual vaccinated (unless otherwise stated), and are from 06/28/2021. Methodology, data sources, and limitations are available in the Appendix. Full data set provided in corresponding Excel file.

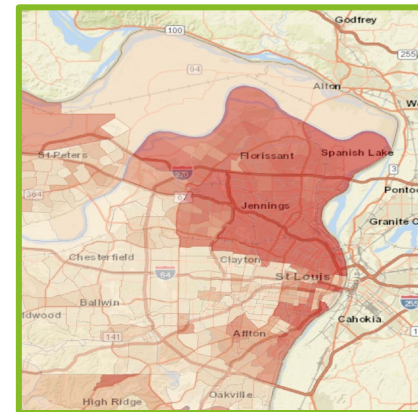


The graph below visually depicts the updated COVID-19 Vulnerability Index – focus areas are consolidated in urban, low socio-economic and minority-focused communities

**COVID-19 Vulnerability Index  
State of Missouri - 07/02/21**



**Kansas City**



**St. Louis**

**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 1<sup>st</sup> 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.



# 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

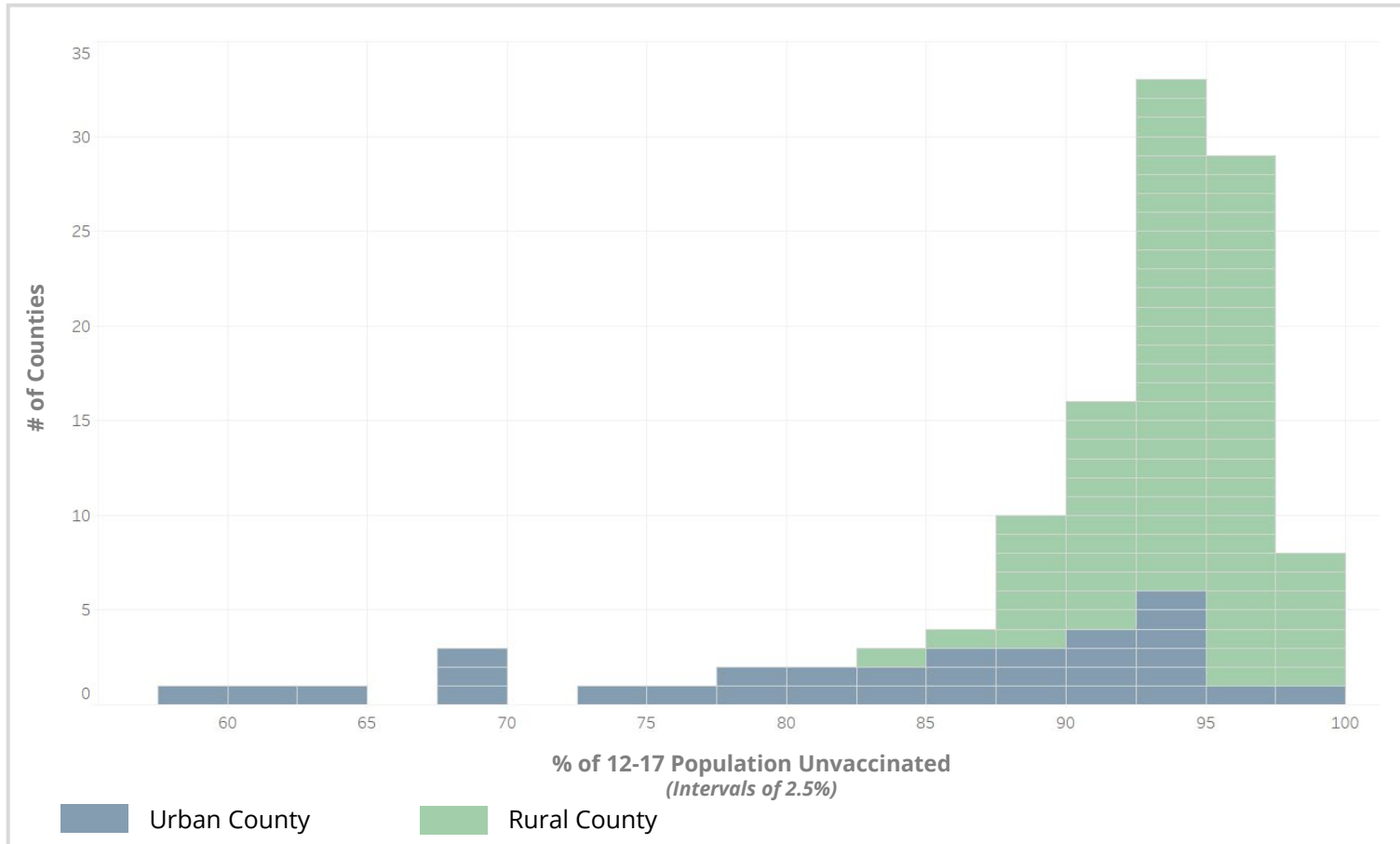
Vulnerability Index Rank	Census Tract	County	18+ Population	Variables Included in the CVI					Additional Demographic Characteristics		
				Unvaccinated as of 6/29/21 (%)	Cumulative COVID-19 Case Burden as of 7/2/21 (# per 100k)	1+ Medical Comorbidities (%)	Minority Populations (%)	Living Below 138% FPL (%)	Households without Internet Access (%)	Crowded Households (%)	Individuals with Education Level Below High School (%)
<b>Statewide Census Tract Average</b>				<b>53.10%</b>	<b>8,589</b>	<b>29.86%</b>	<b>20.43%</b>	<b>21.64%</b>	<b>17.42%</b>	<b>5.17%</b>	<b>9.98%</b>
1	29510106200	St. Louis City	980	69.29%	7,531	38.98%	97.96%	70.32%	42.92%	11.68%	16.46%
2	29189212002	St. Louis County	2,196	65.35%	16,799	39.71%	94.85%	54.19%	19.13%	9.19%	12.27%
3	29095013203	Jackson County	2,837	70.64%	9,966	42.30%	92.14%	55.73%	18.69%	10.85%	12.74%
4	29189212200	St. Louis County	5,797	68.28%	5,317	62.69%	96.89%	38.00%	34.81%	11.04%	14.46%
5	29095005602	Jackson County	1,321	67.75%	8,216	49.36%	96.37%	47.05%	14.45%	3.64%	15.84%
6	29189213900	St. Louis County	1,389	70.99%	7,461	34.05%	96.90%	58.13%	46.02%	6.55%	10.30%
7	29189213800	St. Louis County	4,763	68.19%	7,494	58.56%	96.66%	33.78%	26.39%	11.36%	14.63%
8	29189212102	St. Louis County	2,286	73.45%	5,392	42.26%	96.59%	47.16%	15.91%	14.01%	13.99%
9	29510107500	St. Louis City	2,287	72.02%	6,976	38.22%	96.98%	45.90%	41.42%	11.37%	21.04%
10	29510109700	St. Louis City	1,886	68.29%	7,735	29.32%	95.49%	57.29%	55.80%	6.22%	24.95%

**Note:** Data on vaccinated individuals are based on 1<sup>st</sup> 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.

# 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 four counties (three urban, one rural) that have an unvaccinated percent between 85% and 87.5%

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



**72.8%**  
Percentage of 12-17 year-olds unvaccinated in **urban** designated counties

**92.5%**  
Percentage of 12-17 year-olds unvaccinated in **rural** designated counties

**KEY OBSERVATIONS**

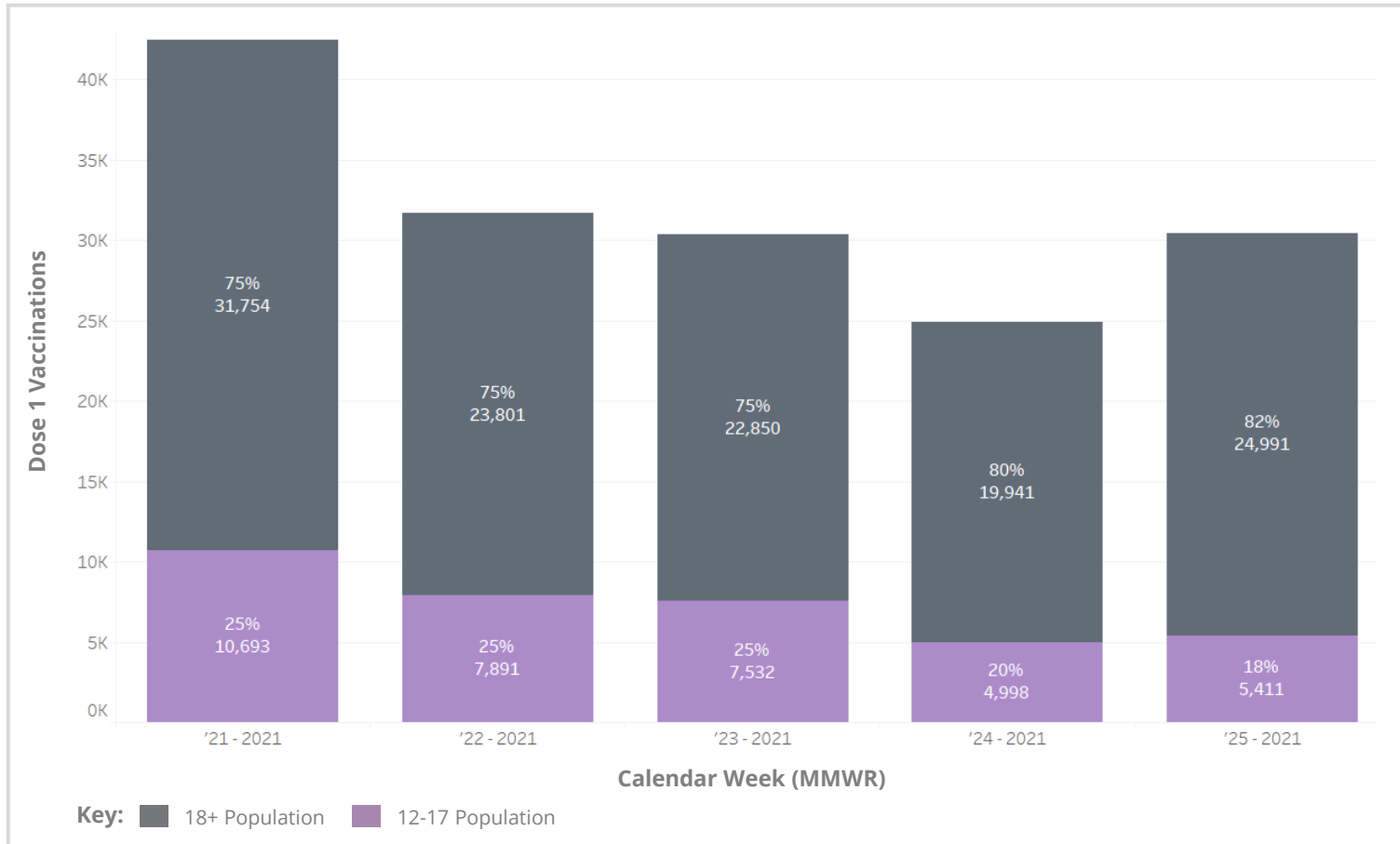
- There is a **stark divide** in 12-17 year-old vaccine uptake between **rural and urban counties**
- **St. Louis County** has vaccinated the **highest proportion** of its 12-17 population
- There is a **positive correlation** between a county's numerical **12-17 population and its percent vaccinated** 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 25 is 6/20 – 6/26. Data on vaccinated individuals are based on 1<sup>st</sup> round Moderna & Pfizer vaccinations and J&J vaccinations, based on the residence of the individual vaccinated, and as of 06/28/2021. 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 under 18 population versus the over 18 population

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



**22.3%** ▲ 1.1% from last week  
 Percentage of 12-17 population that has initiated vaccination

### KEY OBSERVATIONS

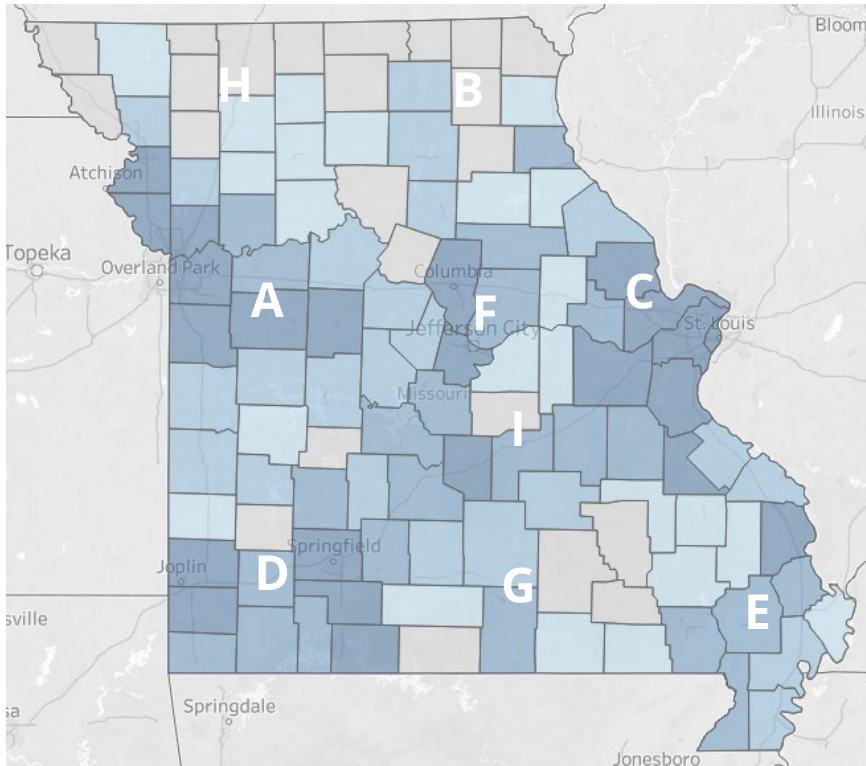
- Vaccine initiation **increased** for both the 18+ and 12-17 population in the latest calendar week
- The share of initiations for the 12-17 population **dropped for the 2nd straight week to 18%** after remaining steady at ~25%
- An estimated 1.1% of the 12-17 population initiated vaccination in Week 25

**Note:** All weeks are calendar weeks, defined by MMWR pulled from SMV where Week 25 is 6/20 – 6/26. Data on vaccinated individuals are based on 1<sup>st</sup> round Moderna & Pfizer vaccinations and J&J vaccinations, based on the residence of the individual vaccinated, and as of 06/28/2021. 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.

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)

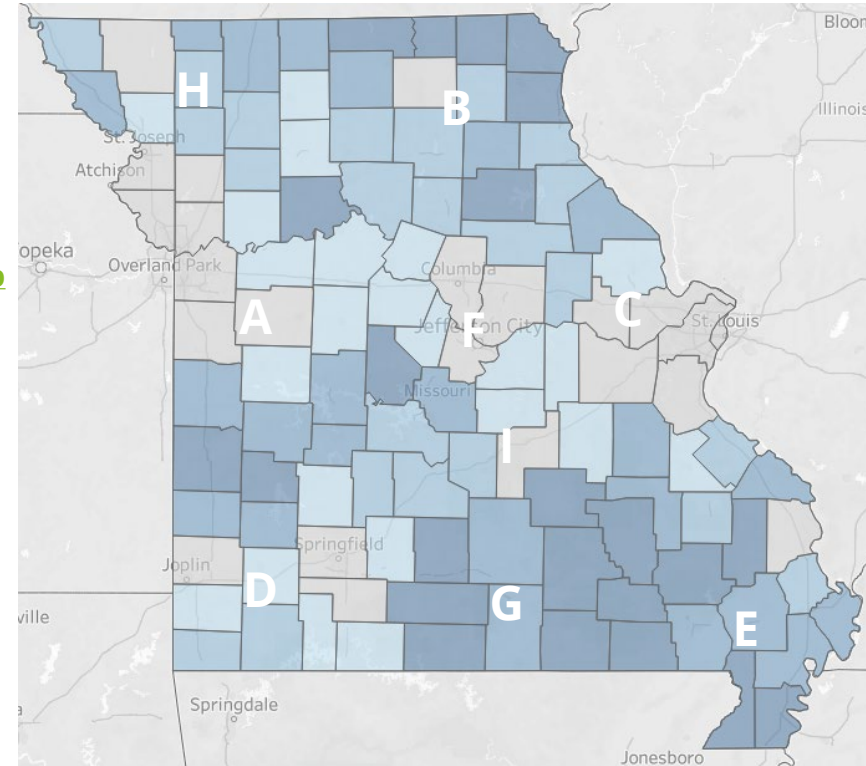
## VACCINATION GAP (#)

## PERCENT UNVACCINATED (%)



### Vaccination Gap Quintiles (#)

- 133 - 666
- 672 - 1,087
- 1,117 - 1,748
- 1,767 - 3,256
- 3,295 - 44,612



### Unvaccinated Quintiles (%)

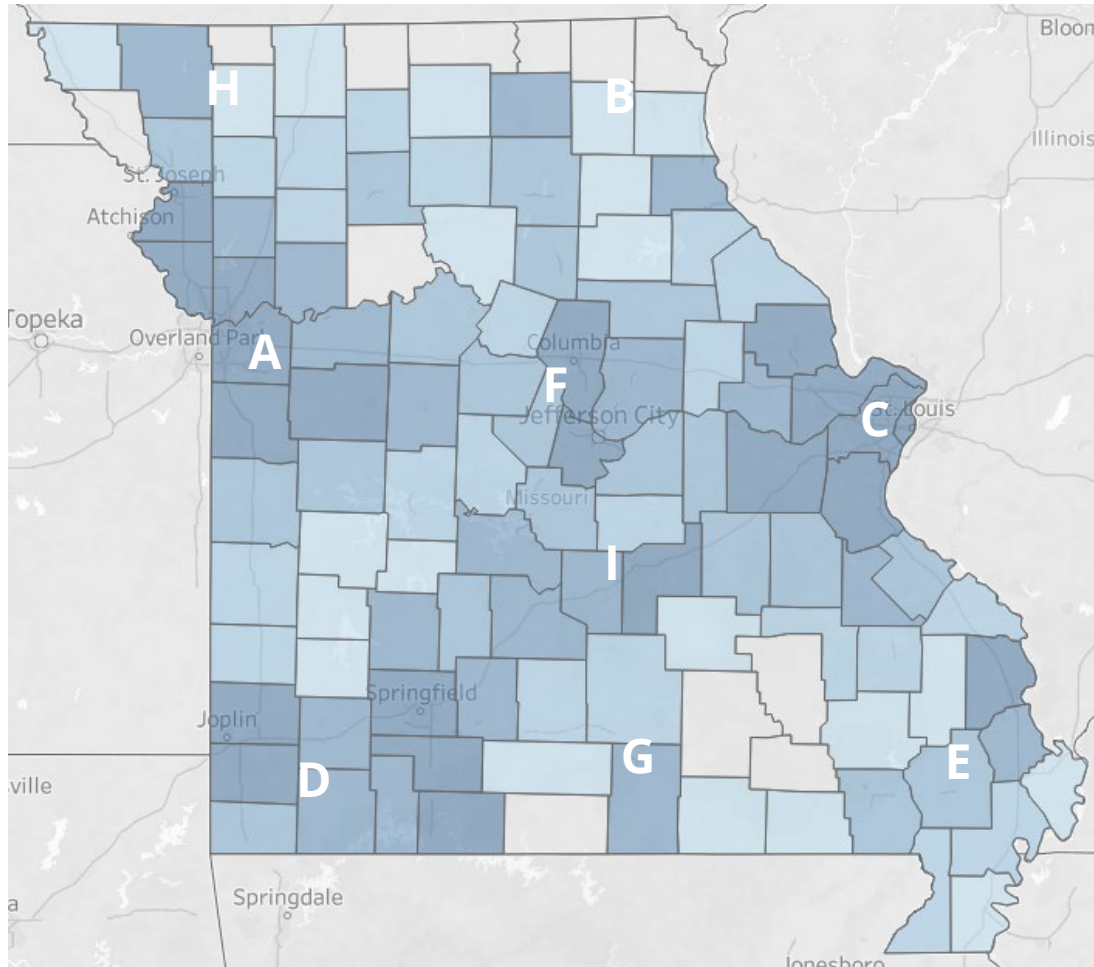
- 57.7% - 88.3%
- 88.6% - 92.5%
- 92.6% - 93.9%
- 94.1% - 96.5%
- 96.5% - 99.2%

**Region C** has the **largest** 12-17 population (118,478) remaining eligible for vaccination  
 Only 3 counties (Boone, St. Louis, and Platte Counties) have vaccinated 35% of their under 18 population  
 Similar to 18+ trends, **rural counties** continue to experience **lower vaccine uptake**

**Note:** Data on vaccinated individuals are based on 1<sup>st</sup> round Moderna & Pfizer vaccinations and J&J vaccinations, based on the residence of the individual vaccinated, and as of 06/28/2021. 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.

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

## VACCINE INITIATION BY COUNTY (#)



### Vaccination Uptake Quintiles (#)

- 20 - 42
- 42 - 69
- 69 - 160
- 160 - 449
- 449 - 32,701

### 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
- 12 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 1<sup>st</sup> round Moderna & Pfizer vaccinations and J&J vaccinations, based on the residence of the individual vaccinated, and as of 06/28/2021. 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.

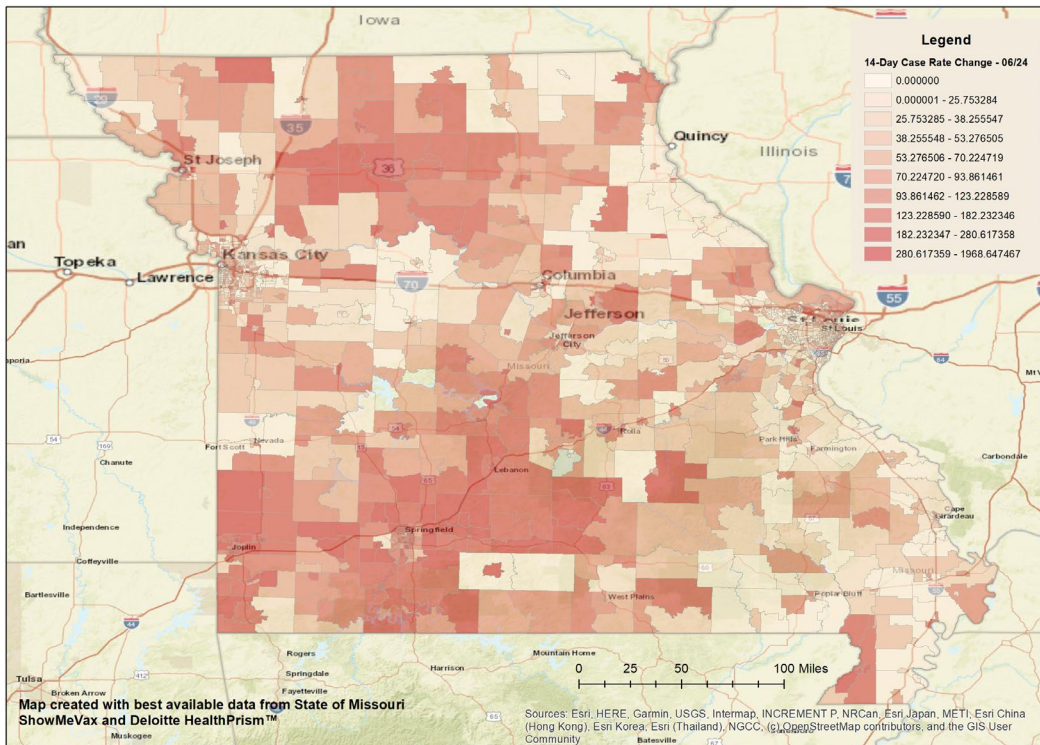
# Appendix



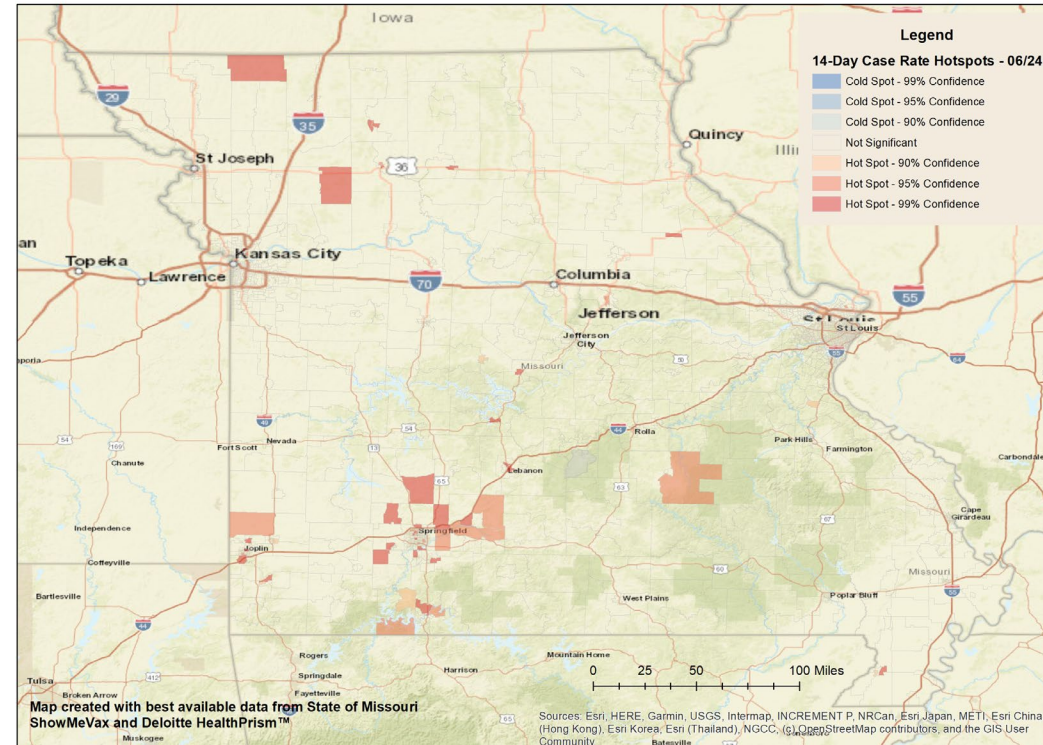
Statistically significant case rate hotspots between 6/10/21 and 6/24/21 are displayed on the right – areas with high changes in case rates in comparison to surrounding areas

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

14-Day COVID-19 Case Rate Change  
June 10<sup>th</sup> through June 24<sup>th</sup>



14-Day COVID-19 Case Rate Hotspots  
June 10<sup>th</sup> through June 24<sup>th</sup>



Regional COVID-19 outbreak hotspots again were focused within **Region D** in the **Greene County/Springfield** and **Joplin** areas  
 A hotspot is getting larger and more significant in **Kennett** within **Dunklin County** in the Bootheel region  
 Linn-Livingston County hotspots **moderated somewhat**, with challenges remaining in south Livingston and a new hotspot appearing in **Region H** (Worth County)

**Note:** COVID-19 case rate data provided by the State of Missouri as of 06/25/21.  
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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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