

# Where and what of WIC in Missouri

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A thematic analysis

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# Background

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- The Special Supplemental Nutrition Program for **Women, Infants, and Children (WIC)** serves to safeguard the health of low-income pregnant and postpartum women, infants, and children younger than 5 years who are at nutritional risk.
  - Our focus in this project is low-income pregnant and postpartum women.
- WIC served about 1.4 million women each month in fiscal year 2022 in the United States.
- Federal program costs for WIC totaled \$5.7 billion in fiscal year 2022.





## Does WIC program work?

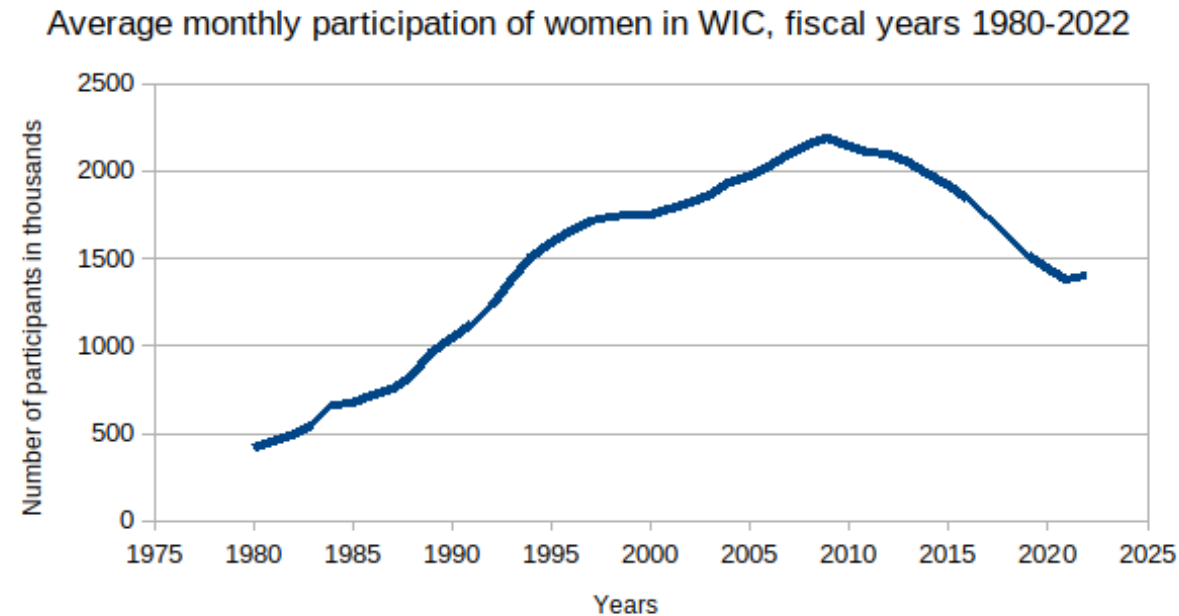
- WIC led to savings in health care costs from \$1.77 to \$3.13 within the first 60 days after birth.
- WIC improves the dietary intake of pregnant and postpartum women and improves weight gain in pregnant women.
- Pregnant women participating in WIC receive prenatal care earlier.
- WIC enrolled women who received postpartum benefits had higher hemoglobin levels and lower risk of maternal obesity at the onset of the subsequent pregnancy.
- WIC helps get children ready to start school: children who receive WIC benefits demonstrate improved intellectual development.



Source: <https://www.fns.usda.gov/wic/about-wic-how-wic-helps>

# The problem

- Decrease in WIC participation over the last decade.
- Further decline further noticed during the COVID-19 pandemic.
- Monetary loss: what if the funding is reduced but the demand is still there.



Lauren Hall and Zoë Neuberger, “Eligible Low-Income Children Missing Out on Crucial WIC Benefits During Pandemic,” CBPP, July 12, 2021, <https://www.cbpp.org/wicpandemicparticipation>.

**Data source for chart:** USDA, Economic Research Service using data from USDA, Food and Nutrition Service.

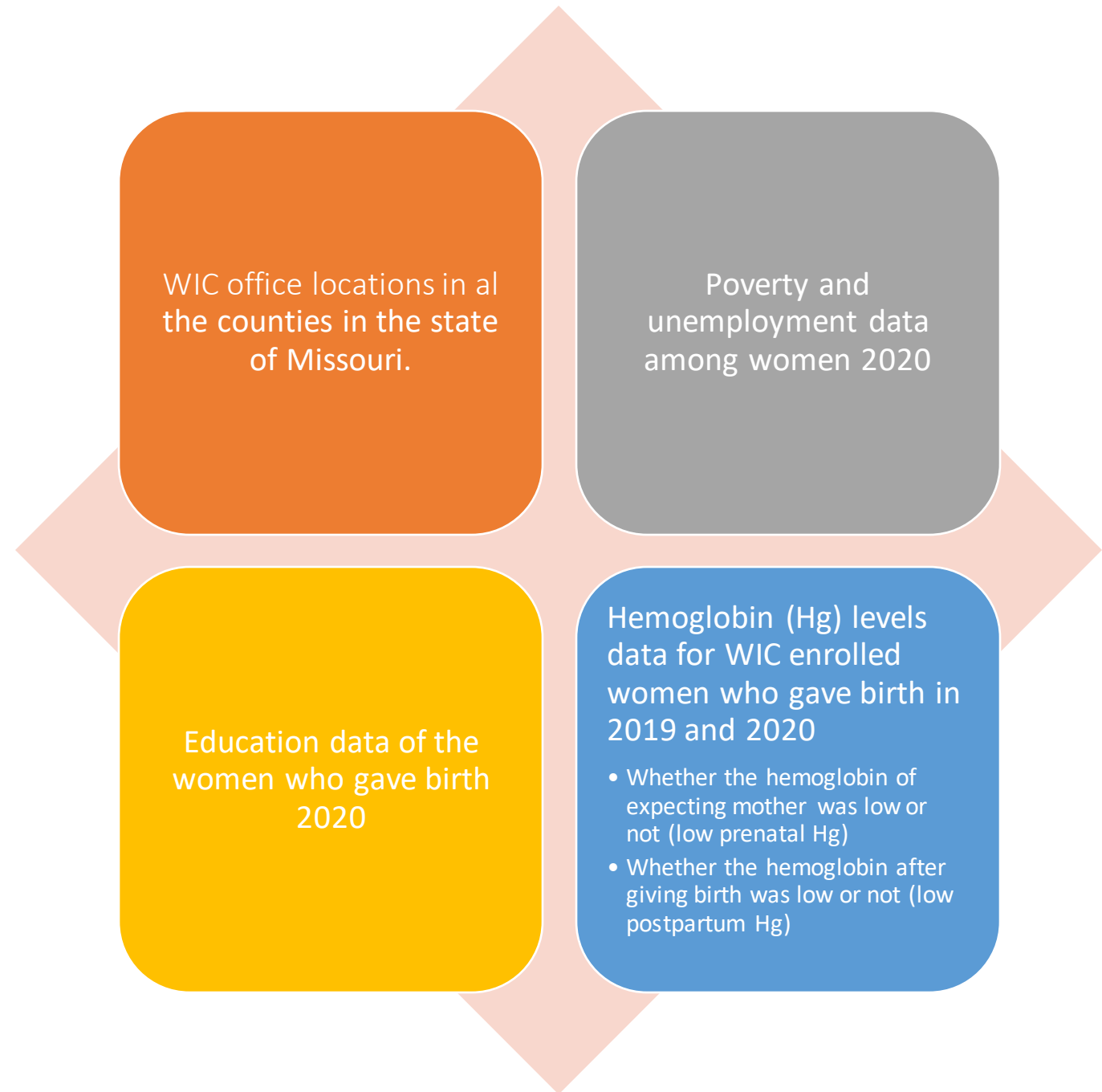
# But do people know about this program and where is this WIC located?

- WIC office locations should be reachable for everyone
- Especially in Missouri where the benefit refill is not online yet



# Data and study area

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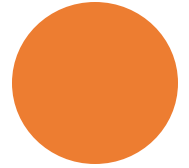
# My questions

Do existing WIC office locations cover the whole state of Missouri in terms of accessibility?

Are the existing WIC office locations accessible for unemployed and below poverty women between the age of 18 and 55?

Are the existing WIC office locations accessible for women who gave birth and do not have a college degree?

Can we identify some pattern from the change in low hemoglobin cases between 2019 and 2020 in pregnant or postpartum women?



A hand with a dark skin tone points at a complex, multi-colored transit map. The map features numerous lines in blue, orange, red, green, and purple, representing different transit routes. The background is a blurred view of the map, with the hand and the text on the right being the primary focus.

# Solution approaches

- Site selection
- Demography and thematic mapping



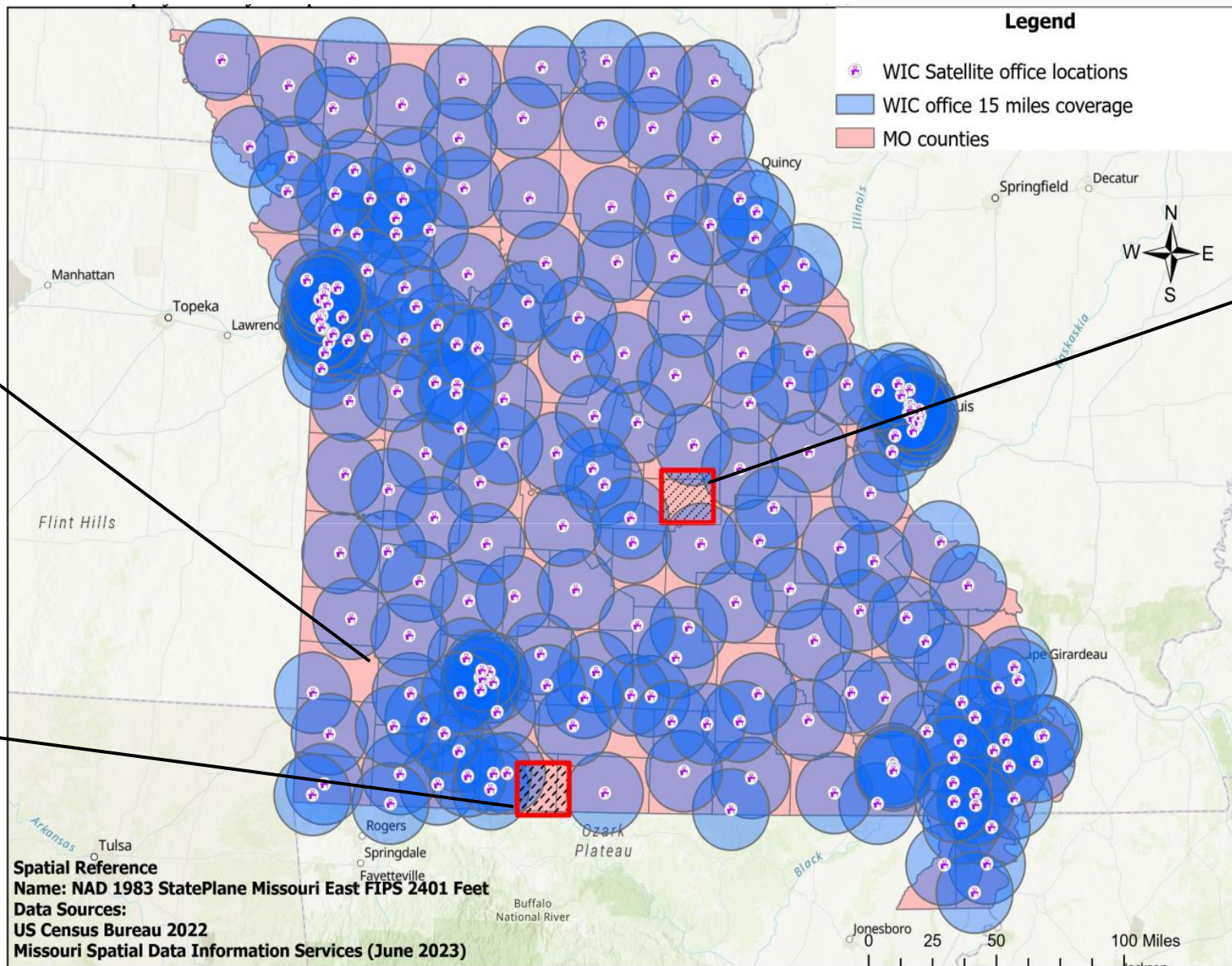
# GIS tools that I use

- Dissolve function to bring the census tract line data to county level
  - Help in making the thematic estimates robust
- Join function to merge two feature attributes on the county FPIS
- Buffer function to identify the coverage



Jasper county  
Female Pop >50000  
Mean travel time to  
work ~ 18 minutes

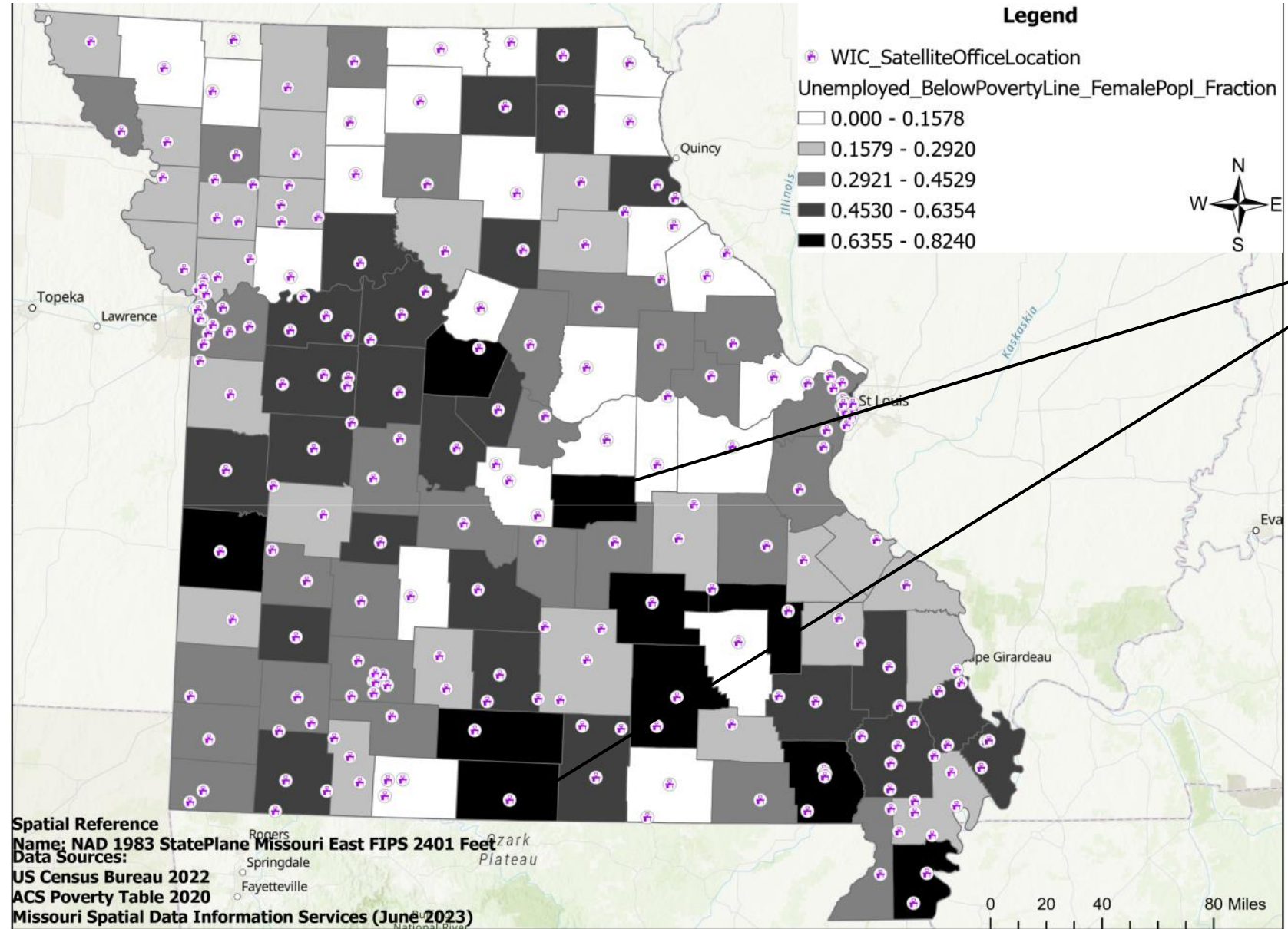
Probably covered by  
the 3 offices in Taney  
county (left side) and  
Ozark county is  
relatively small.



Maries County with no  
WIC office.  
Female Pop >4000  
Mean travel time to  
work ~ 30 min

# Does Missouri need a new WIC office location?

**Metric:**  
Fraction of women  
who were  
unemployed and  
below poverty  
level in 2020



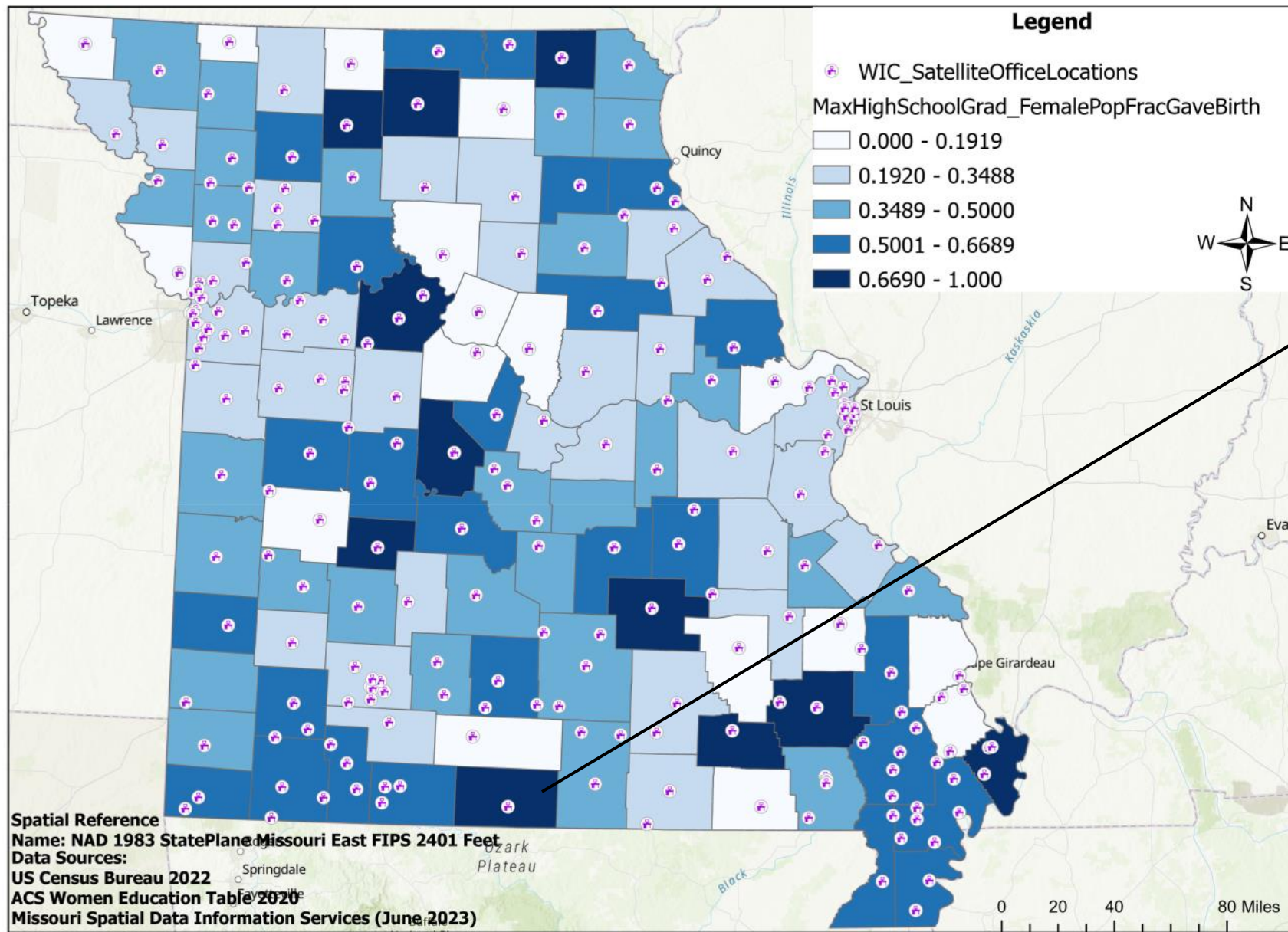
Maines County  
Ozark County

Are existing WIC offices serving the population that they intend to?



**Metric:**

Fraction of women who didn't /couldn't study beyond high school and gave birth in 2020



Ozark County

**Are existing WIC offices serving the population that they intend to?**

# Recommendations

With respect to poverty and coverage Maines County also potentially needs a WIC office.

The population is large enough

The travelling time (~30 mins) is long enough for people to not miss work when visiting far away centers

Area between Taney and Ozark county not covered by any WIC office potentially needs a new office

Large fraction of unemployed below poverty line population

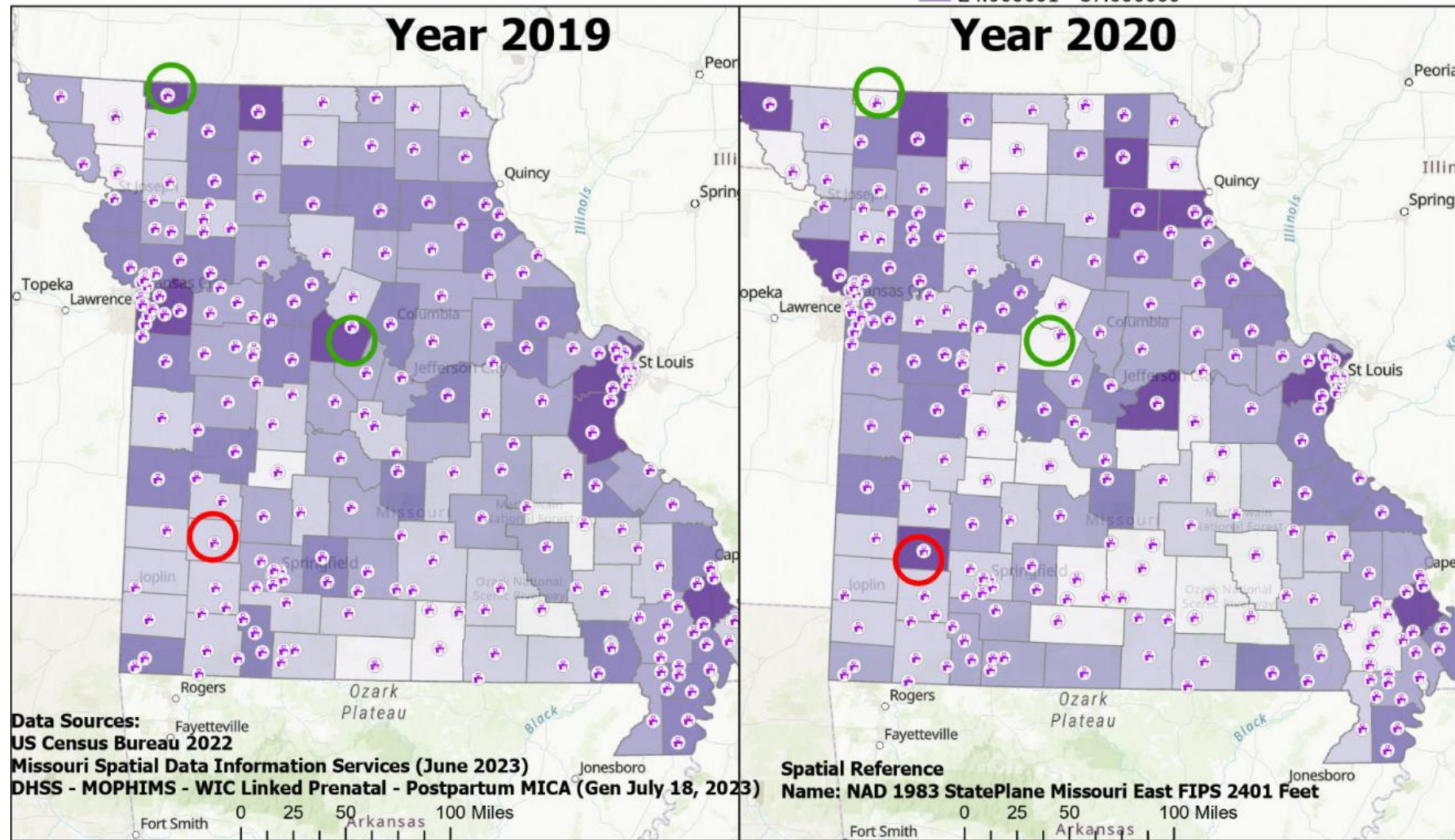
Large travelling time to go the far places



# Trend in low hemoglobin cases from 2019 to 2020

## Fraction of WIC enrolled women in different Missouri counties that gave live birth in the respective year and had a recorded low hemoglobin at prenatal visit

Credits: Map by Sandhya Tripathi  
Date Saved: 8/1/2023 11:35 PM



Clockwise order:

- **Worth County**
  - Very small so better resource allotment
- **Cooper County**
  - Very large so more resources
- **Dade County**
  - ~15% below poverty (worse during covid)

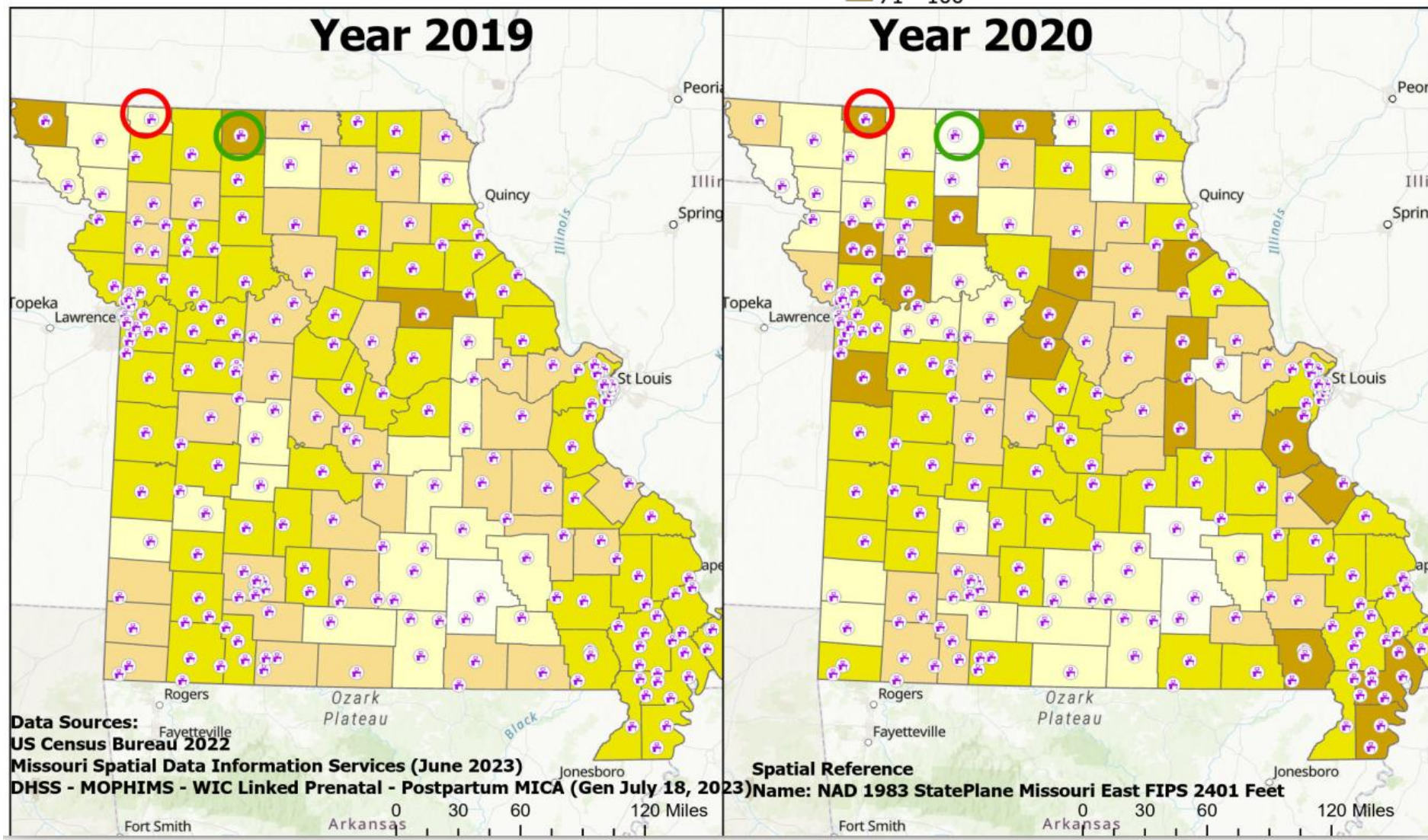
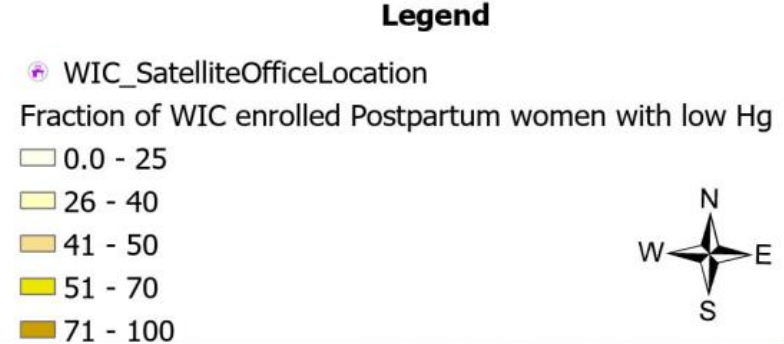


# Trend in low hemoglobin cases from 2019 to 2020

## Fraction of WIC enrolled women in different Missouri counties that gave live birth in the respective year and had a recorded low hemoglobin at postpartum visit

Credits: Map by Sandhya Tripathi

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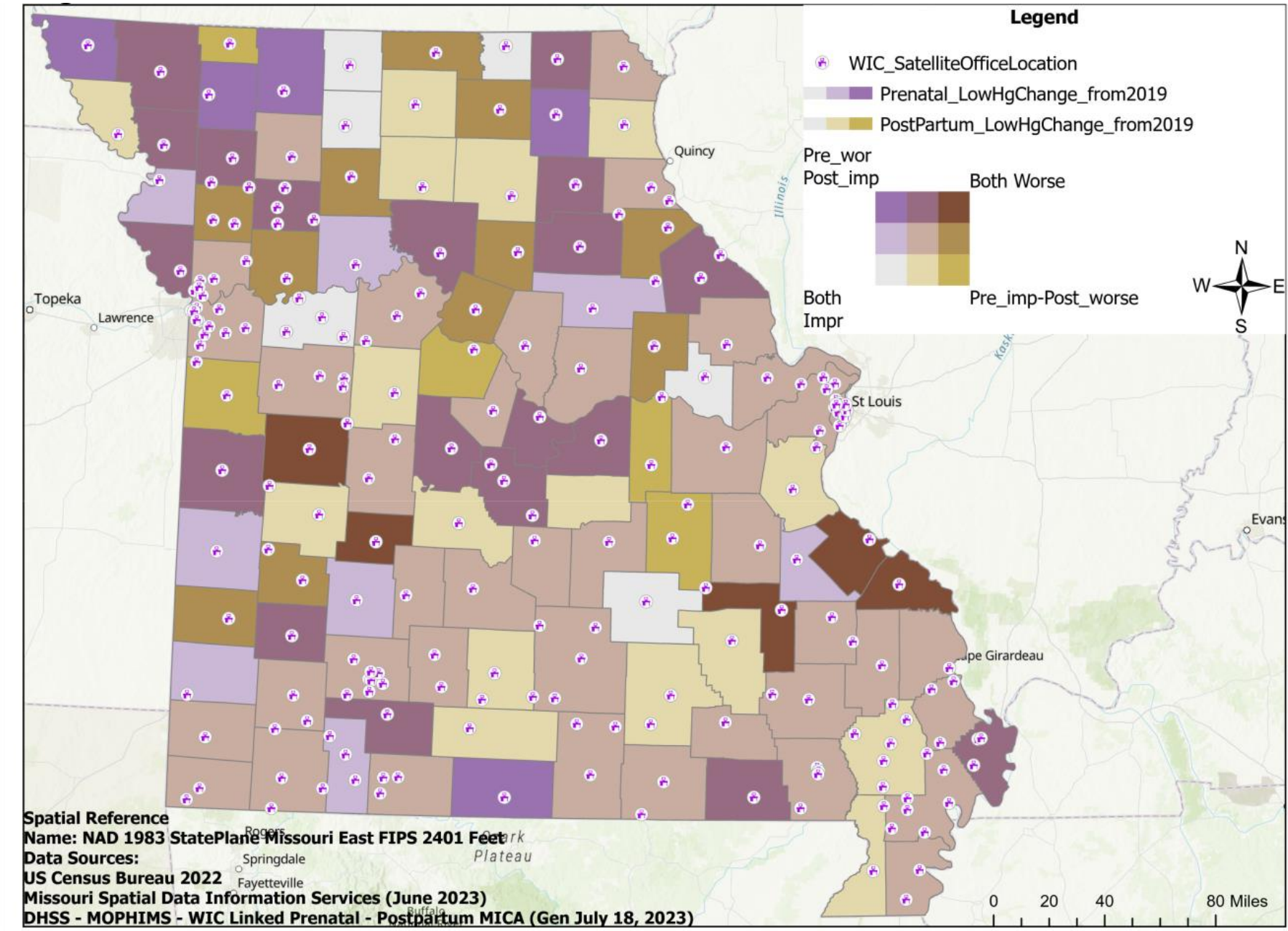


Clockwise order:

- **Worth County**
  - Reason not clear
- **Mercer County**
  - Small population size so better resource allocation



Change in percentage of WIC enrolled women with low Hemoglobin in prenatal or postpartum women in relation to the WIC locations



What happened to the low hemoglobin cases in pregnant and postpartum women?



# Challenges

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01

Unavailability of poverty and unemployment data among women who gave birth

02

Unavailability of county level WIC enrollment data in Missouri

03

Since the hemoglobin data for WIC enrolled women is from community surveys the sample size is small and hence the estimates could be unreliable.

04

Hemoglobin data for the same group of women both prenatal and postpartum would make the direct comparison possible and see the direct impact of WIC resources.

# What next?

- Are the WIC location within a certain distance of public schools?
  - This is motivated from the fact that WIC helps get children ready to start school.
  - Are there enough public schools in the area where kids can study?





Thank You