

The WIC Need Index: Identifying Areas for Targeted Outreach in Allegheny County, PA



Data Science for Social Good REU

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The Problem

- Pregnancy and early childhood are a critical period of human development
- Preventing food insecurity and poor nutrition during this time frame is crucial to the future health and wellbeing of our communities.
- **Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)** was instituted through the Child Nutrition Act of 1966 to meet the special needs of new mothers, infants, and young children.

However, many eligible children are not receiving benefits

51.2%

of those eligible for WIC actually received benefits in 2021.

6,000,000

guardians, babies, and young children who met eligibility requirements did not participate in WIC in 2021.

**Why aren't more people
enrolling in WIC?**

Administrative Burdens

- Must schedule and bring all necessary paperwork to an **in-person appointment at a WIC clinic** to initially enroll and re-certify.
- WIC cards require physical reloading every 3 months, so must visit WIC offices in person, use a drop box, or send their cards through the mail and have them mailed back.
- Benefits can only be used in limited places at approved vendors.

In-person appointments are necessary for assessing the health and nutritional risk of the child, but they might impose undue burdens on those who are applying.

WIC in Allegheny County, PA

- WIC enrollment is down and hasn't yet reached pre-pandemic levels.
- Newly elected County Executive (most important position in local government) has highlighted increased WIC enrollment as a KPI next year.
- Sending a mobile van across the County to invite eligible residents to enroll
- Bringing onsite enrollment to more existing clinics in the coming year, serving parents and young children in more neighborhoods across the County.

Improving access to WIC Clinics is key to overcoming administrative burdens of applying and increasing enrollment in the program.



Mobile WIC enrollment van

What areas would benefit the most from targeted outreach efforts?

The plan

1. Where are clinics and vendors in Allegheny County?
2. What areas of the County are furthest from the nearest clinic? Vendor?
3. Construct an index representing how much an area would benefit from targeted WIC enrollment efforts.

Inform County policymakers where to target enrollment outreach.

Collected data at the **Census Tract level** from the **American Community Survey 5-year Estimates** based on WIC eligibility requirements:

Demographic

- Total households with children under 6
- Number of women 15-50 who gave birth to a child within the past 12 months

Accessibility

- Number of households without a vehicle
- Walkability score (sidewalk to street ratio)
- Distance to the nearest WIC Clinic
- Distance to the nearest WIC Vendor (i.e. where benefits can be spent)

Income

- Percentage of families with children under 6 living below the federal poverty line
- Number of households who received food stamps (SNAP) in the last 12 months

Methodology

- Coded all variables in same direction (higher = more need)
- Standardize each variable → computed z-score
- Computed average z-score across all 8 variables
- ***WIC Need Index Score = Average Z-Score***

$$Z = \frac{x - \mu}{\sigma}$$

Z = standard score

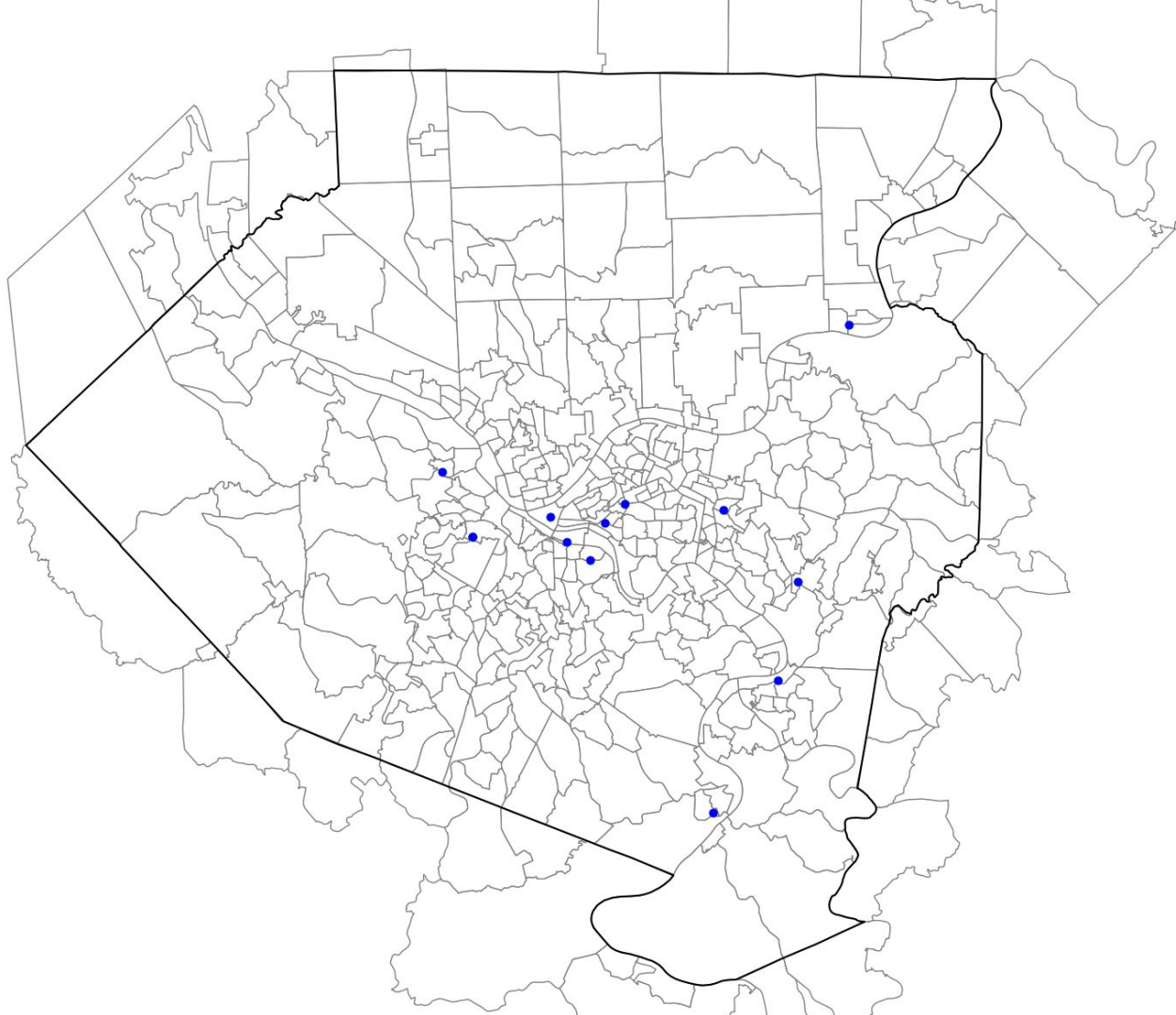
x = observed value

μ = mean of the sample

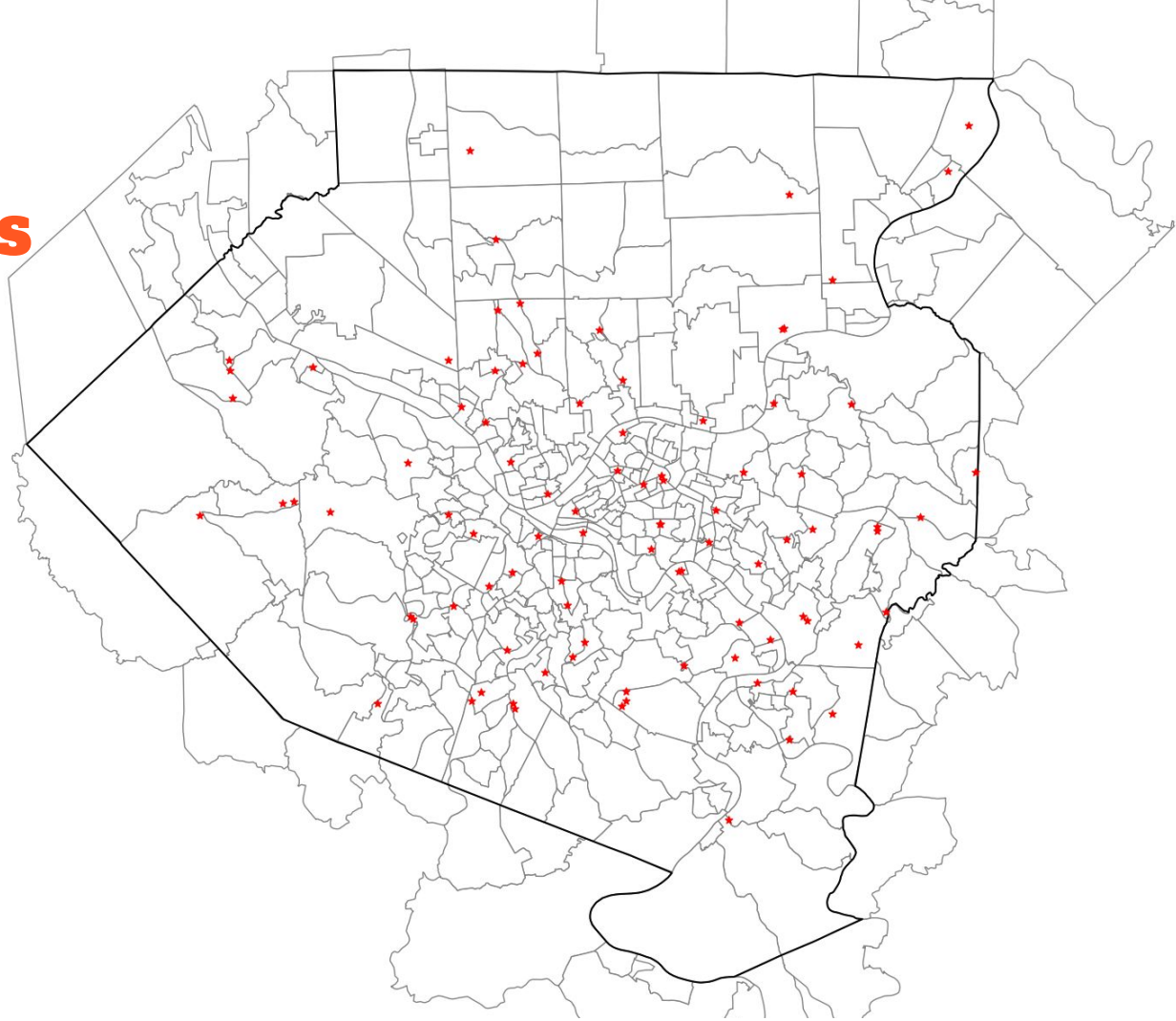
σ = standard deviation of the sample

Results

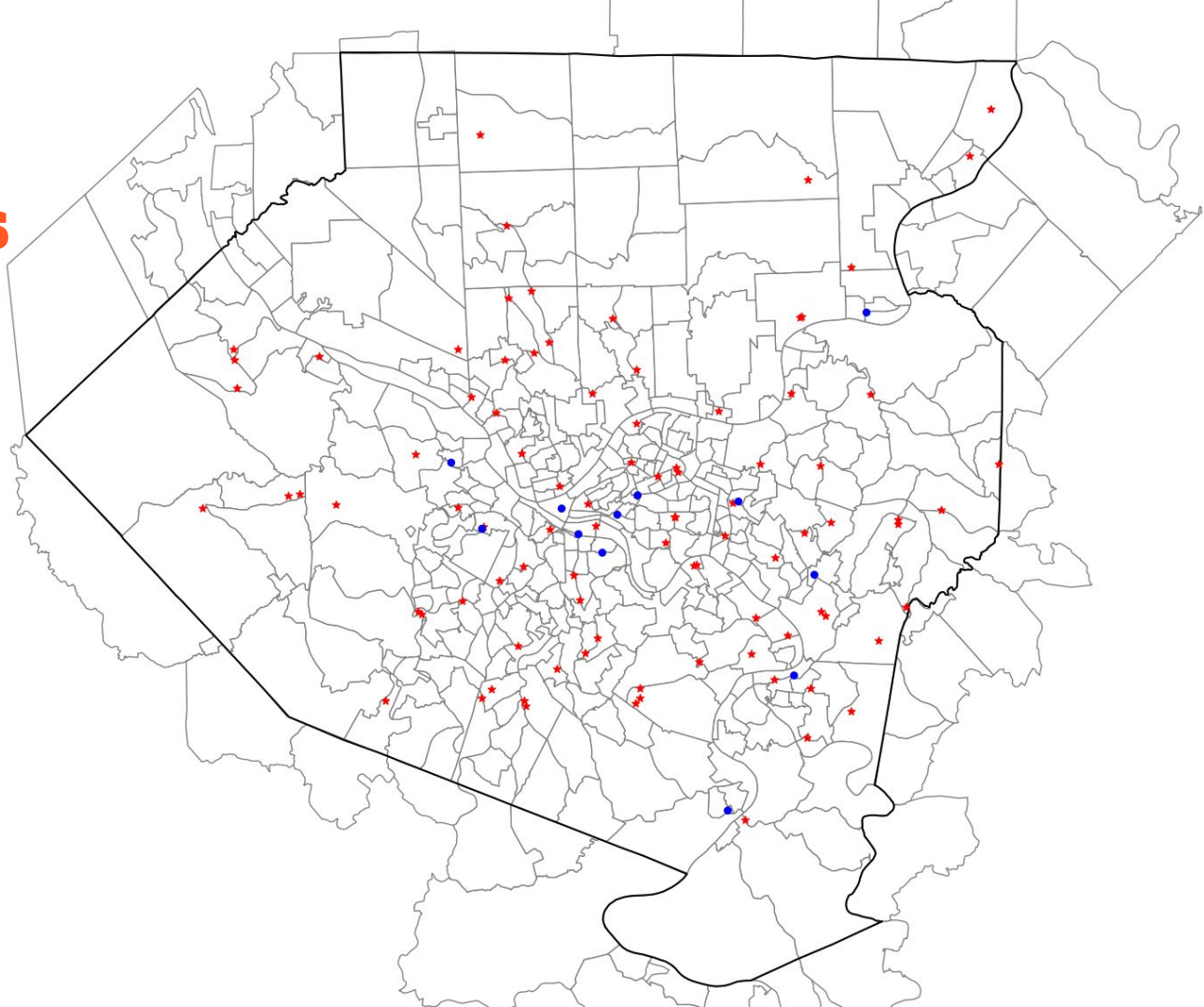
Distribution of WIC Clinics



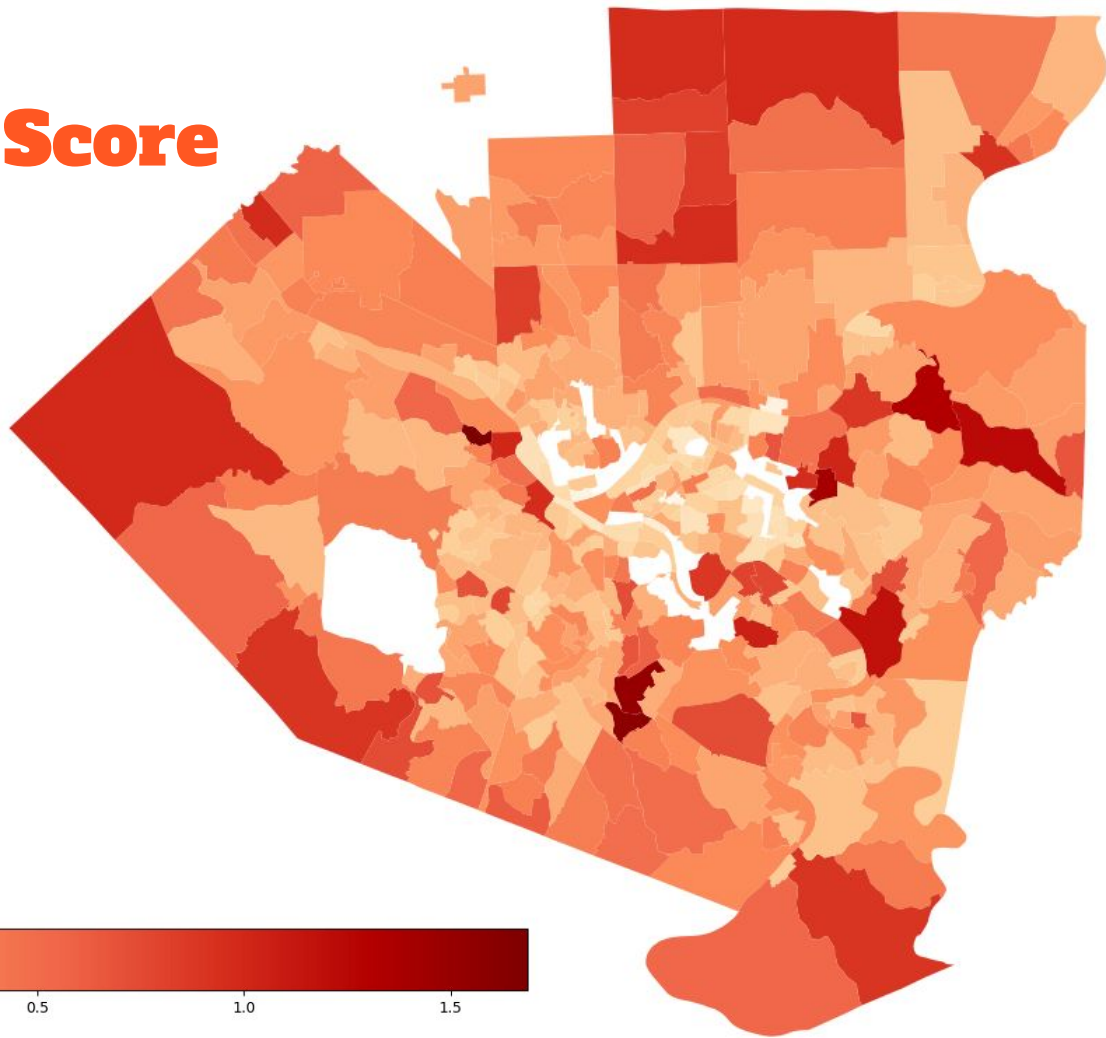
Distribution of WIC Vendors



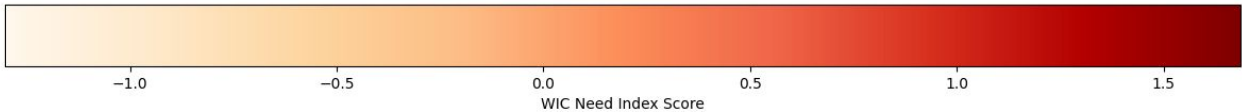
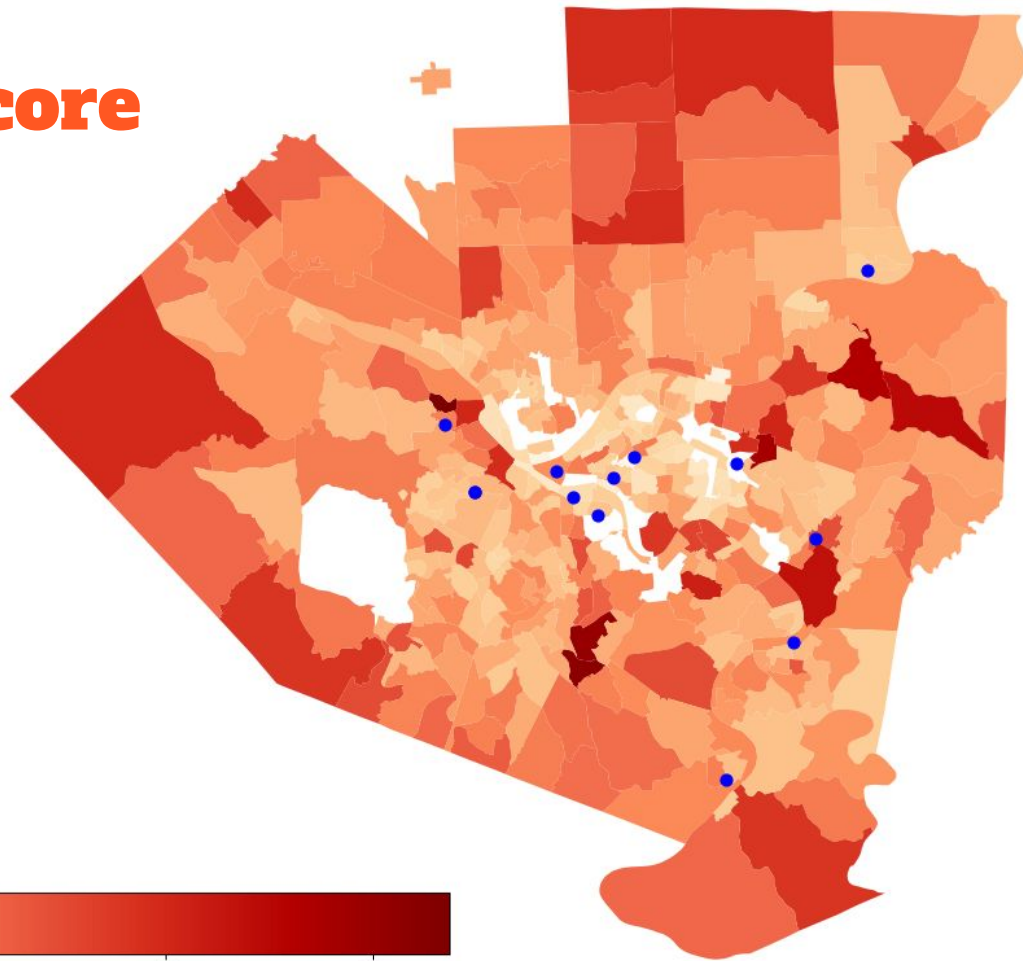
Distribution of WIC Clinics & Vendors



WIC Need Index Score



WIC Need Index Score & Clinic Locations



Limitations & Future Directions

What's next?

- **Adding medical and epidemiological data for conditions meeting WIC medical/nutritional risk criteria**
- Weighting different components of the index
- More robust methodology behind the index (e.g. accounting for non-normally distributed variables)
- Create a web dashboard to share with the County

Questions?

