

Analysis of Hepatitis-C Cases in Allegheny County

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Team



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Research Problem

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- Working toward a Hep C Free Allegheny: a county where new hepatitis C infections are rare and quickly identified, and people with hepatitis C are rapidly linked to care and treated, reducing hepatitis C-related inequities
- The rate of chronic hepatitis C in Allegheny County is be higher than the national average, with about double the cases in 2020 than the national average.

Goal - answer the following key questions:

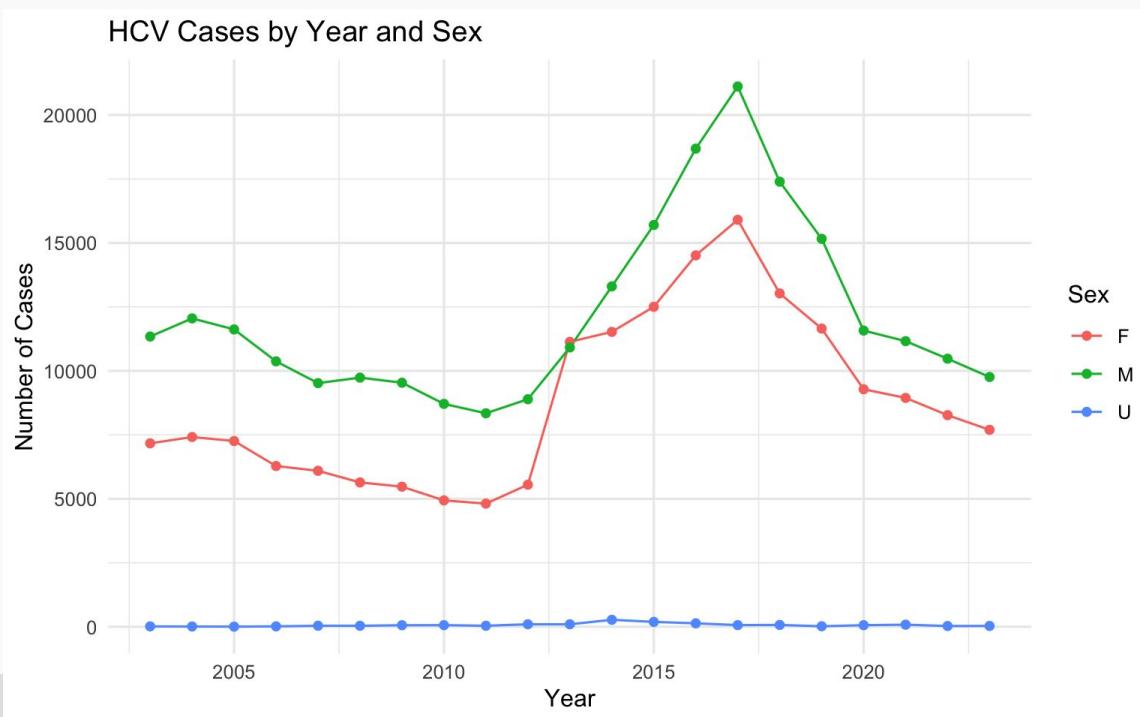
- What factors contribute to the recent trends in Hep C cases in Allegheny County?
- What demographics are affected the most?
- How effective are current public health strategies in reducing Hepatitis C incidence and mortality rates in the region?

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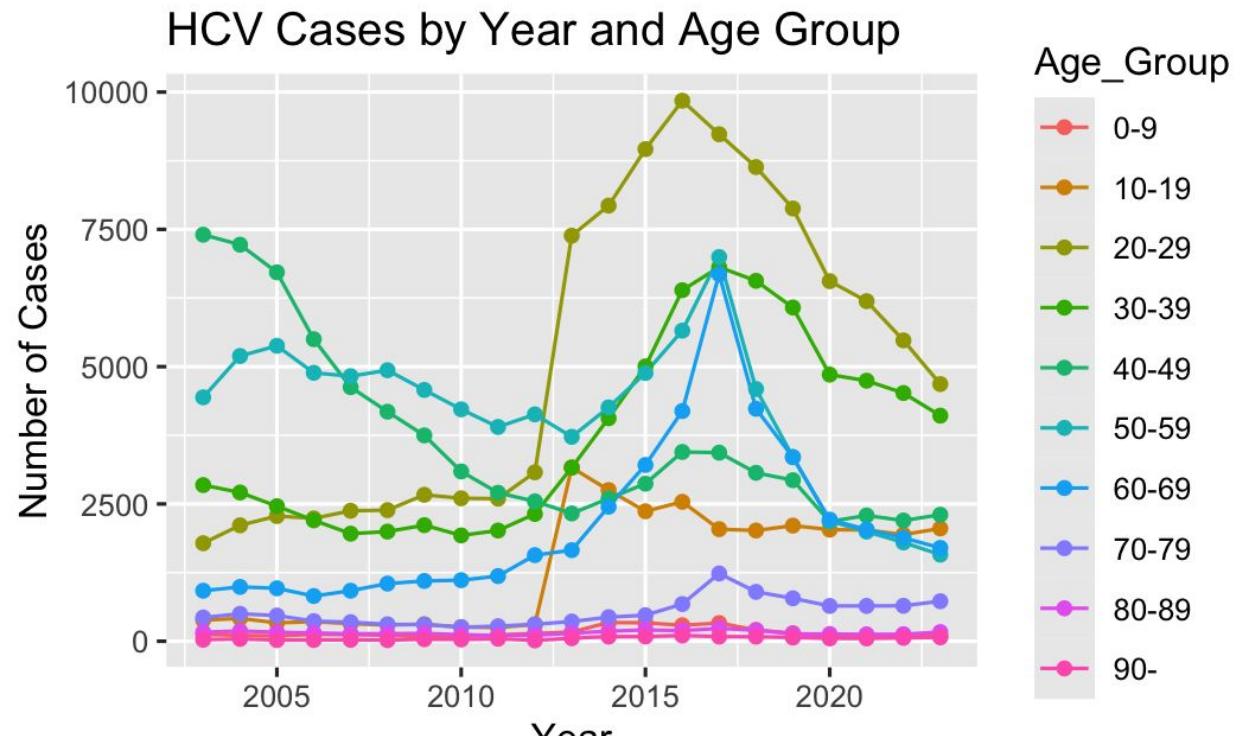
Results

1. Trend Analysis

Observed spike in chronic cases, for both genders

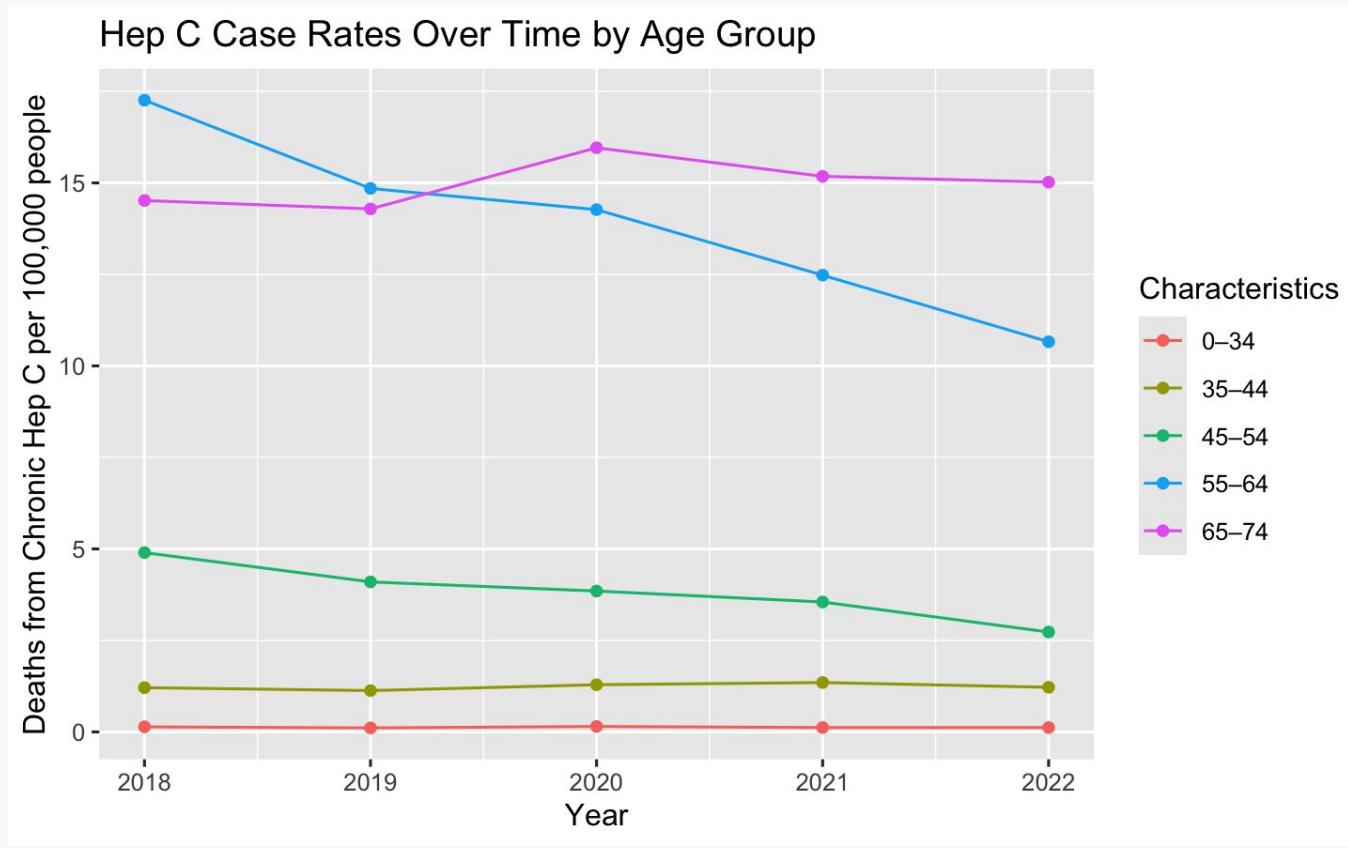


Source: chronic_hcv_by_yr_and_sex.csv ACHD provided data

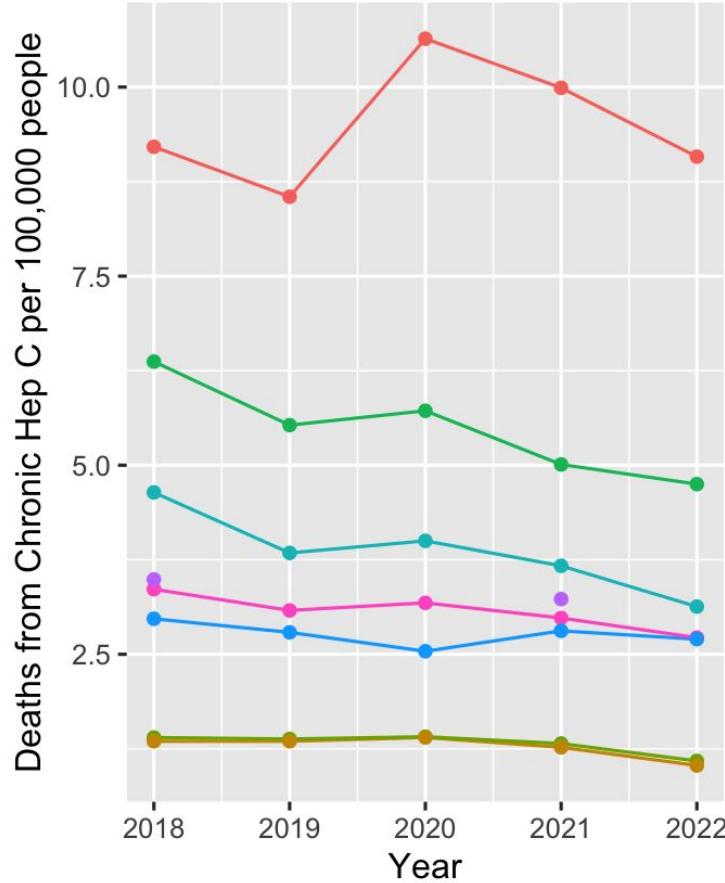


General spike in cases in 2015-2020, by age group

Observed **older** and **mid-aged** populations suffer the most with deadly cases



Hep C Case Rates Over Time by Race



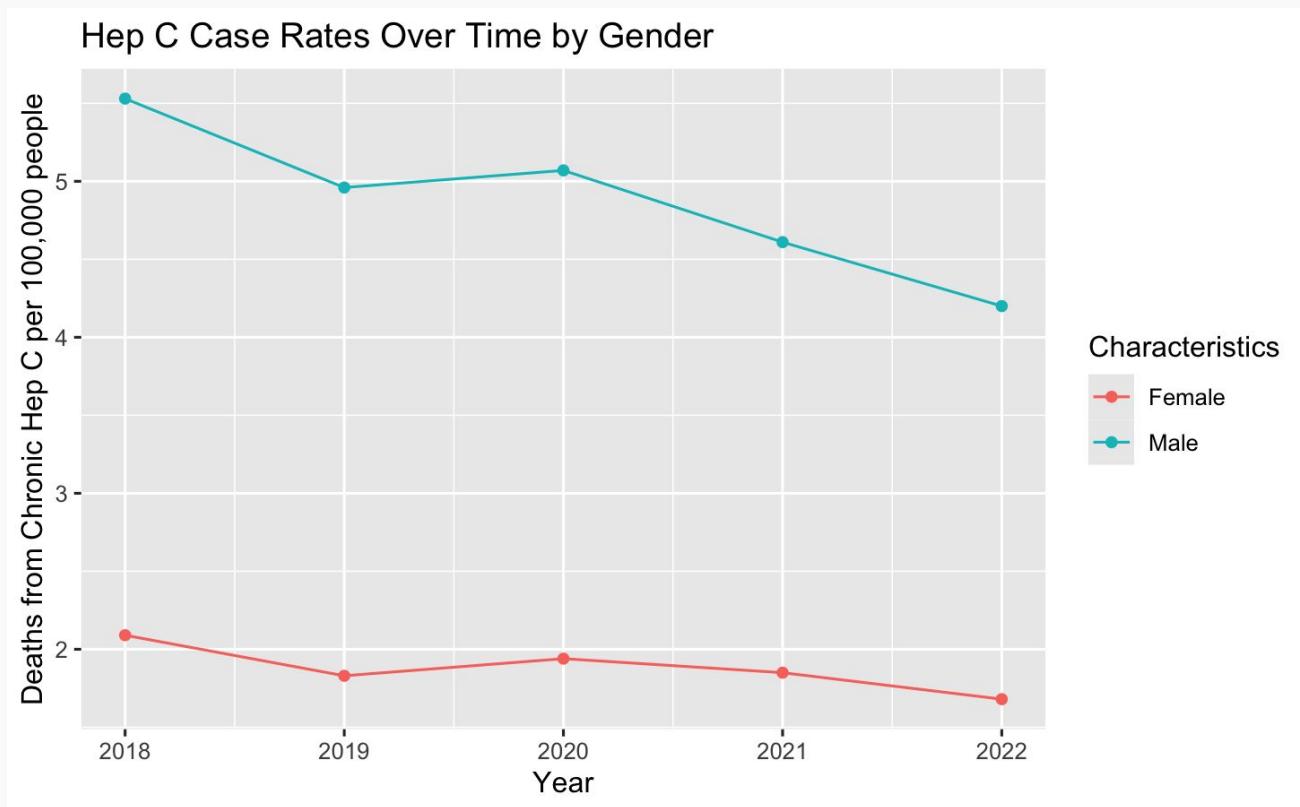
Characteristics

- American Indian/Alaska Native, non-Hispanic
- Asian, non-Hispanic
- Asian/Pacific Islander, non-Hispanic
- Black, non-Hispanic
- Hispanic
- Multiple-race, non-Hispanic
- Native Hawaiian or Other Pacific Islander, non-Hispanic
- White, non-Hispanic

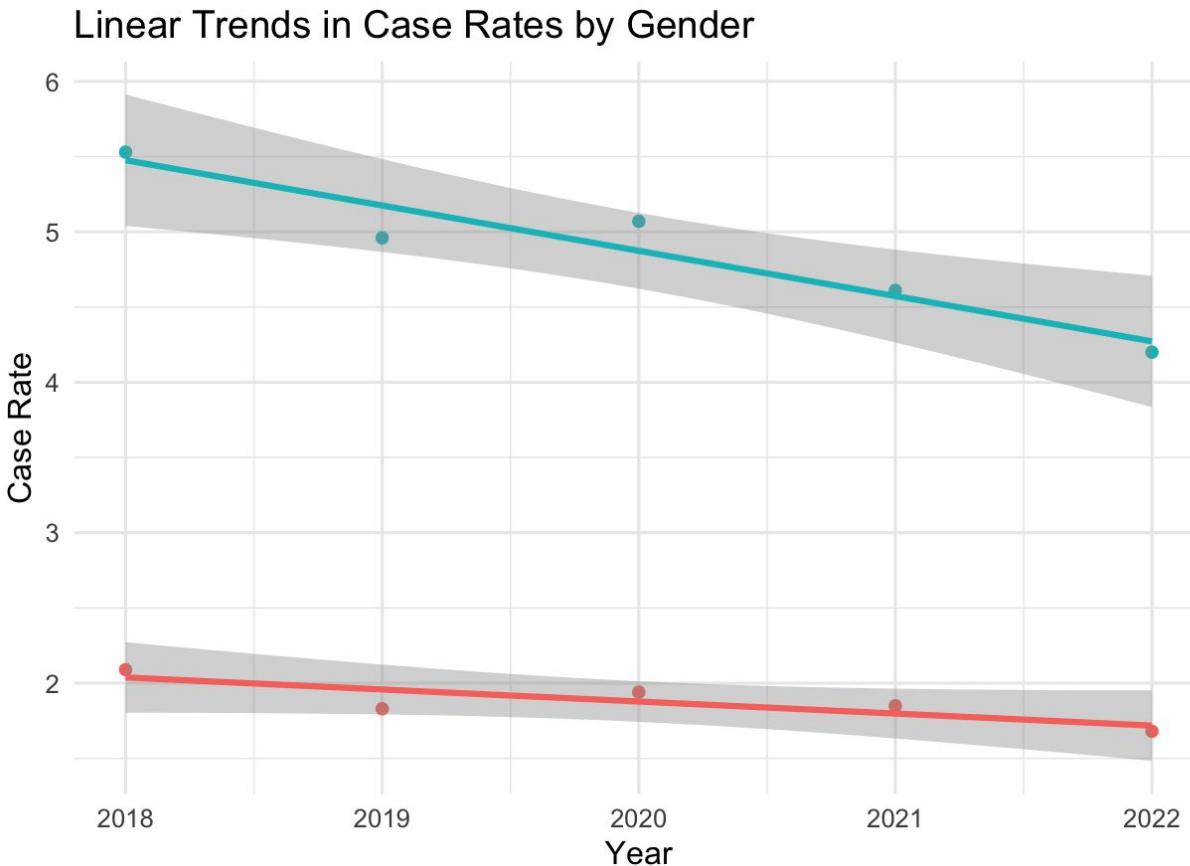
American Indian, Black and Hispanic populations face more deaths nationwide

Case rates for the country are not increasing over time

Men suffer
2.75 times
more deaths
than women.



Slight decrease in case rates for both male and female populations



2. Mapping

Initial mapping to identify key indicators

Population below Poverty level in PA, 2019



High trend of poverty rates in Allegheny County:
200,000 people in poverty compared to 10,000 in the majority of PA

Indicators for Hep-C care

1. Access to Emergency
Rooms & Hospitals

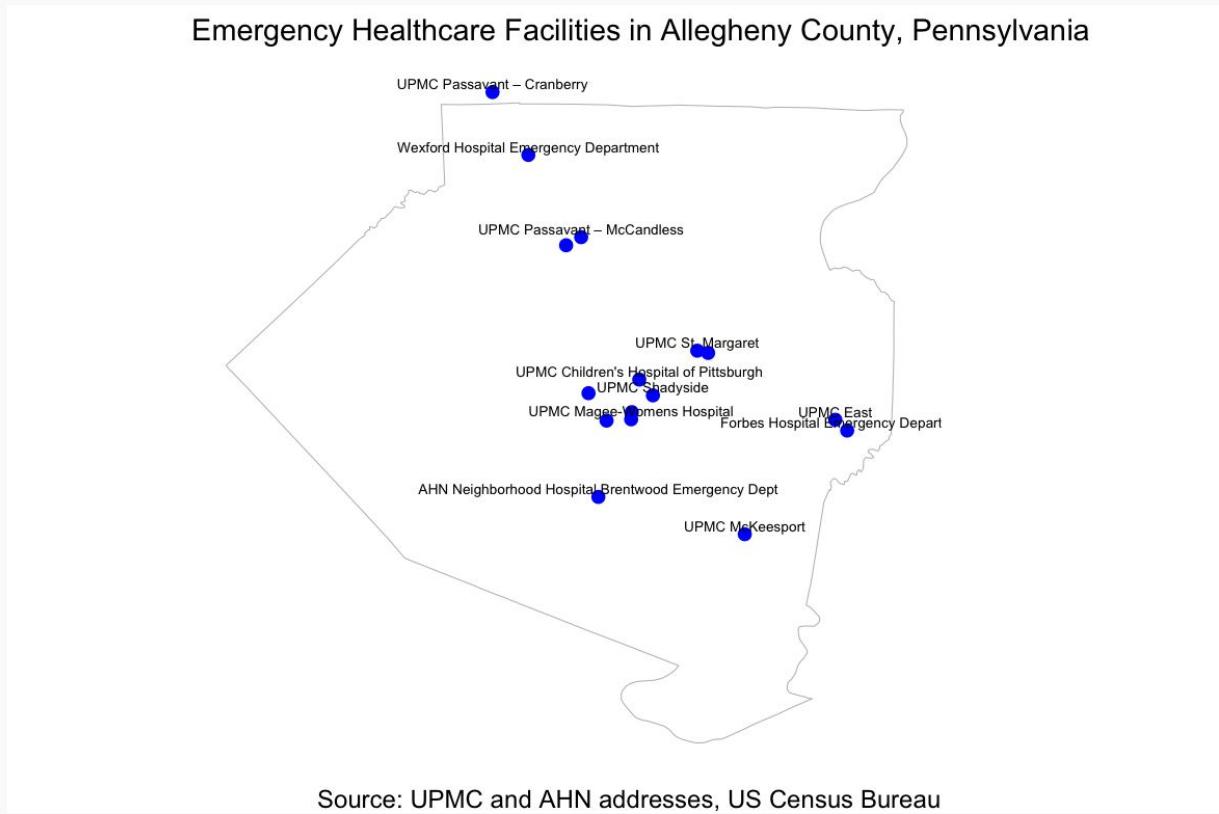
3. Access to Federally
Qualified Health Centers
(FQHC)

2. Access to Centers of
Excellence for Opioid Use
Disorder

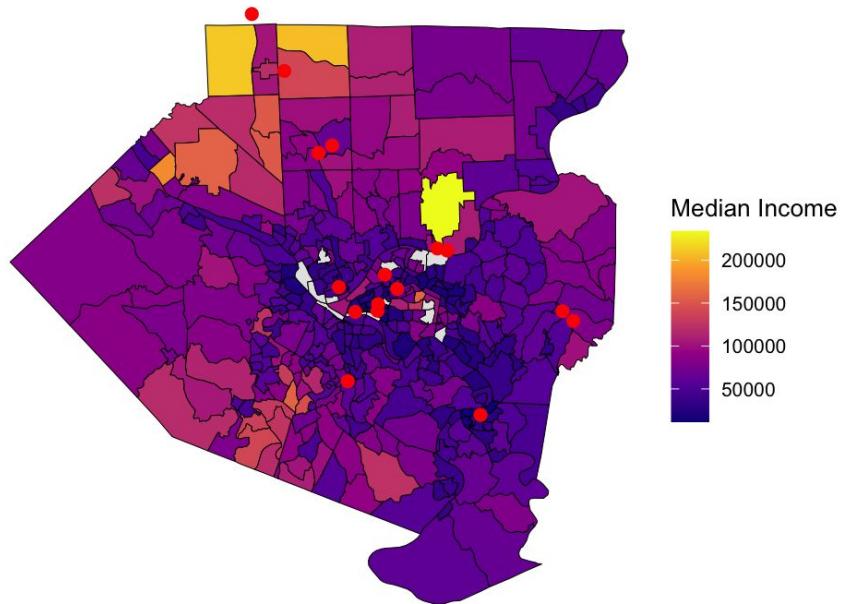
4. Access to Clean and
Safe Syringes

Hospitals/Emergency Rooms

19 hospitals which offered emergency services in Allegheny County

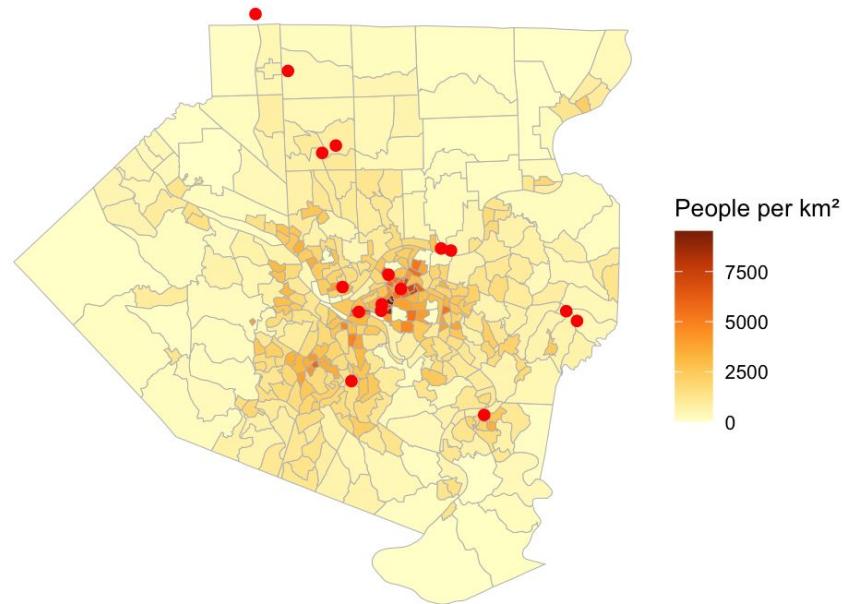


Median Household Income in Allegheny County, 2020



Data source: 2020 ACS, US Census Bureau

Population Density and Hospital Locations in Allegheny County, 2020

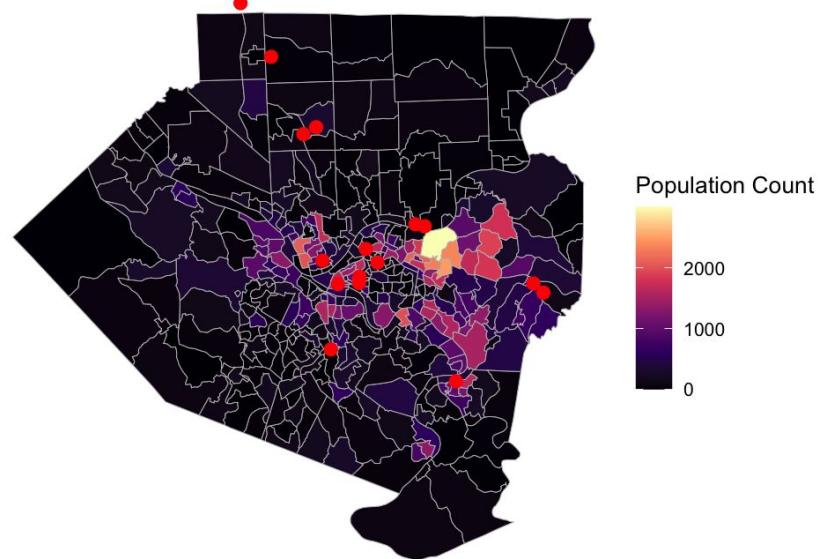


Data source: 2020 ACS, US Census Bureau

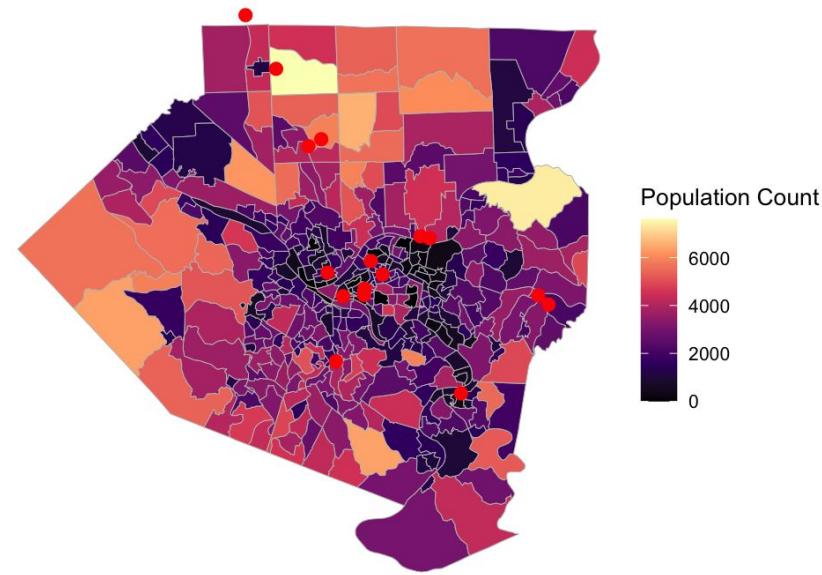
More access to care observed in low income areas, but higher populations density

White Population by Census Tract in Allegheny County, 2020

Black Population by Census Tract in Allegheny County, 2020

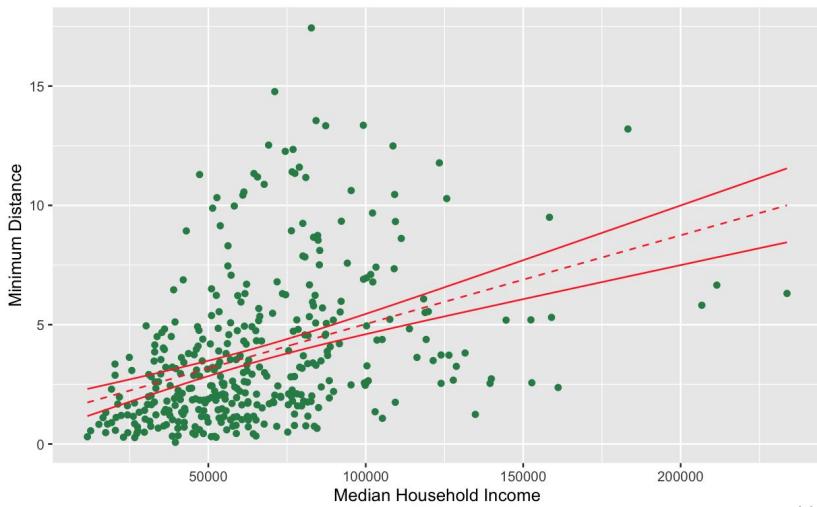


Data source: 2020 ACS, US Census Bureau

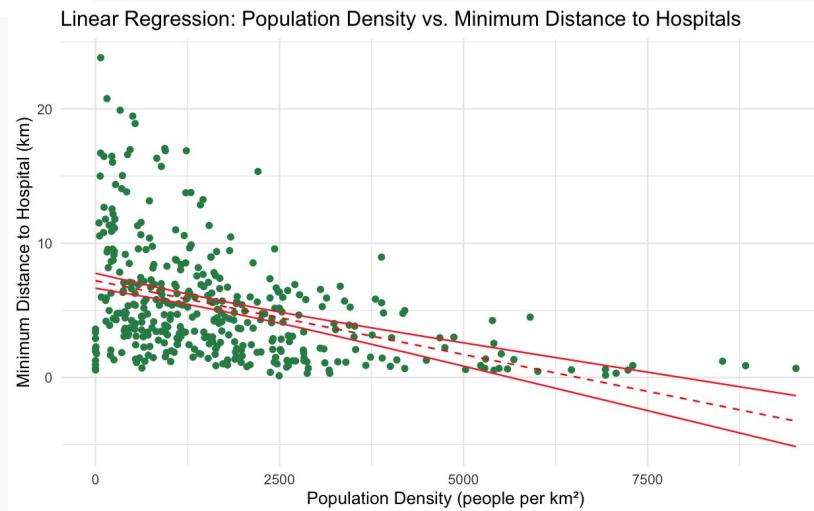


Data source: 2020 ACS, US Census Bureau

Higher populations of Hep-C affected demographics (Black populations)
concentrated around emergency room/hospitals

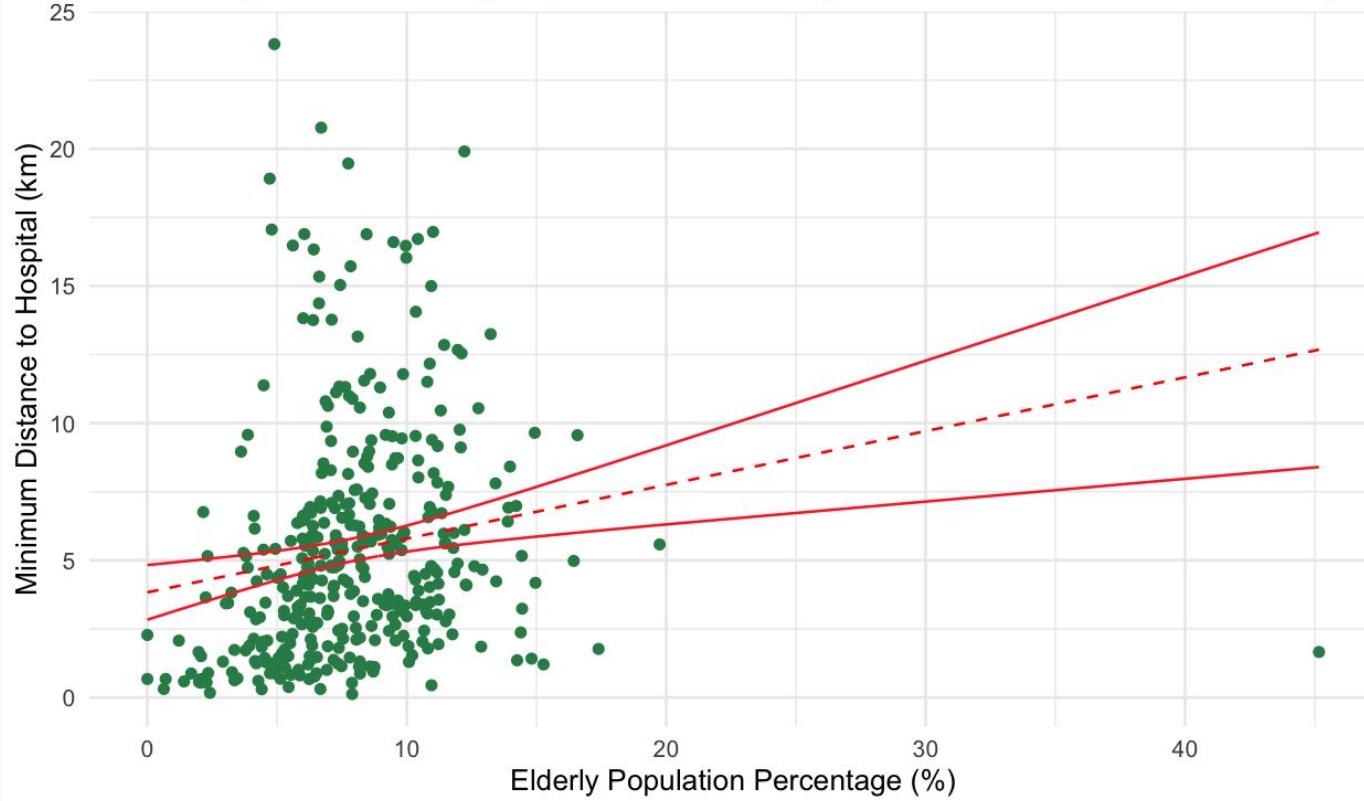


As median income **increases**, the minimum distance to a hospital **increases**.



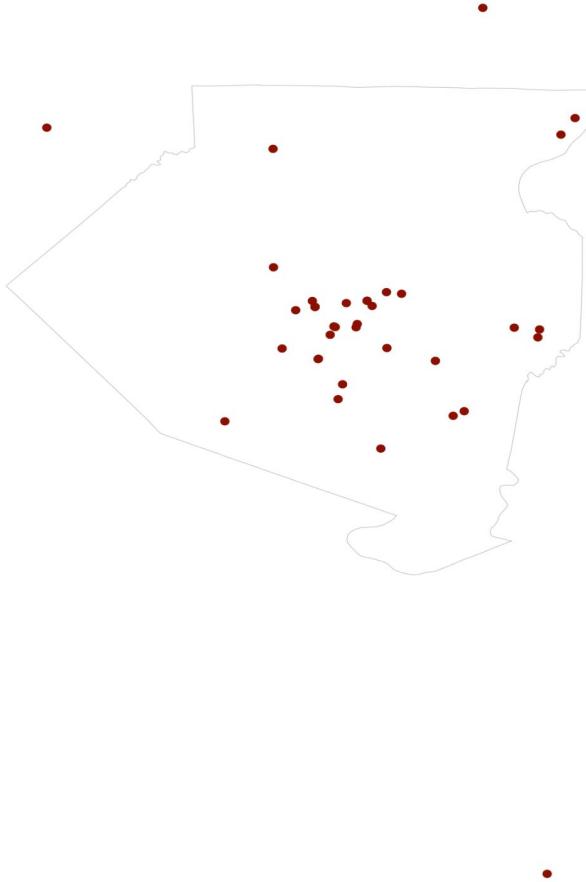
As population density **increases**, the minimum distance to hospitals **decreases**.

Linear Regression: Elderly Population Percentage vs. Minimum Distance to Hospital



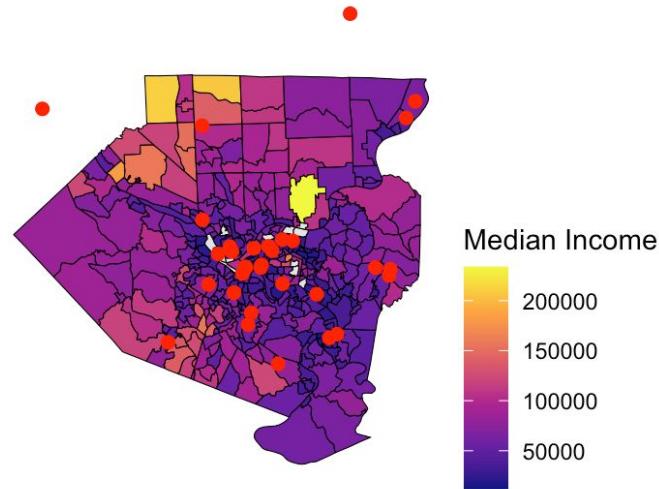
As elderly population percentage **increases**, the minimum distance to a hospital/ER **increases**.

Opioid Centers in Allegheny County, Pennsylvania



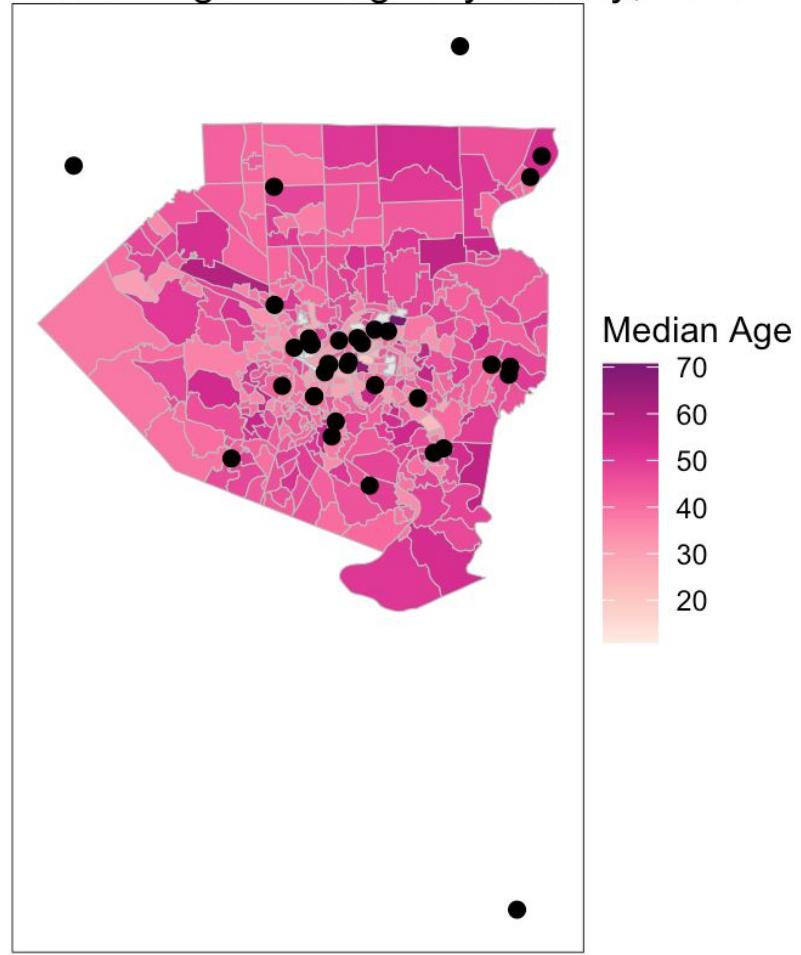
We were able to find 37 addresses of opioid centers in or near Allegheny County.

Median Household Income in Allegheny County, 2020



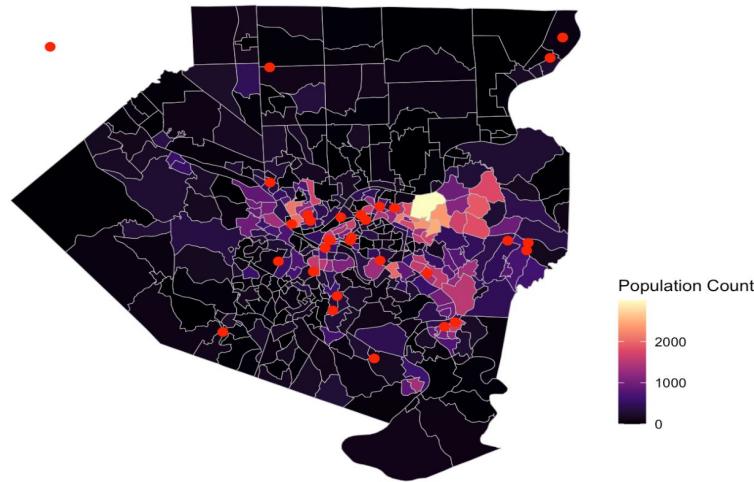
More access to opioid treatment centers around lower income areas

Median Age in Allegheny County, 2020



More access to opioid centers around
younger people

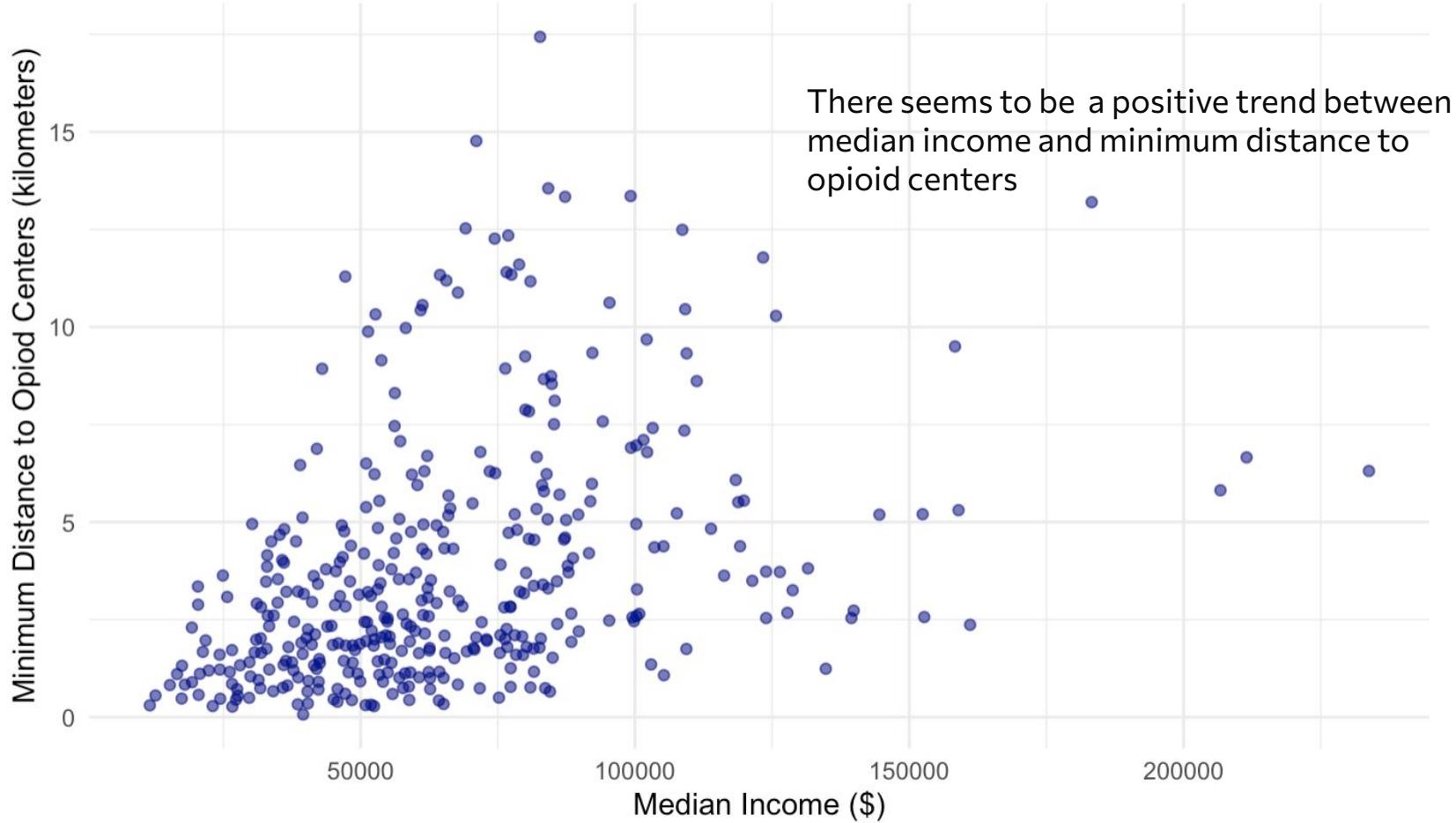
Black or African American Population by Census Tract in Allegheny County, 2020

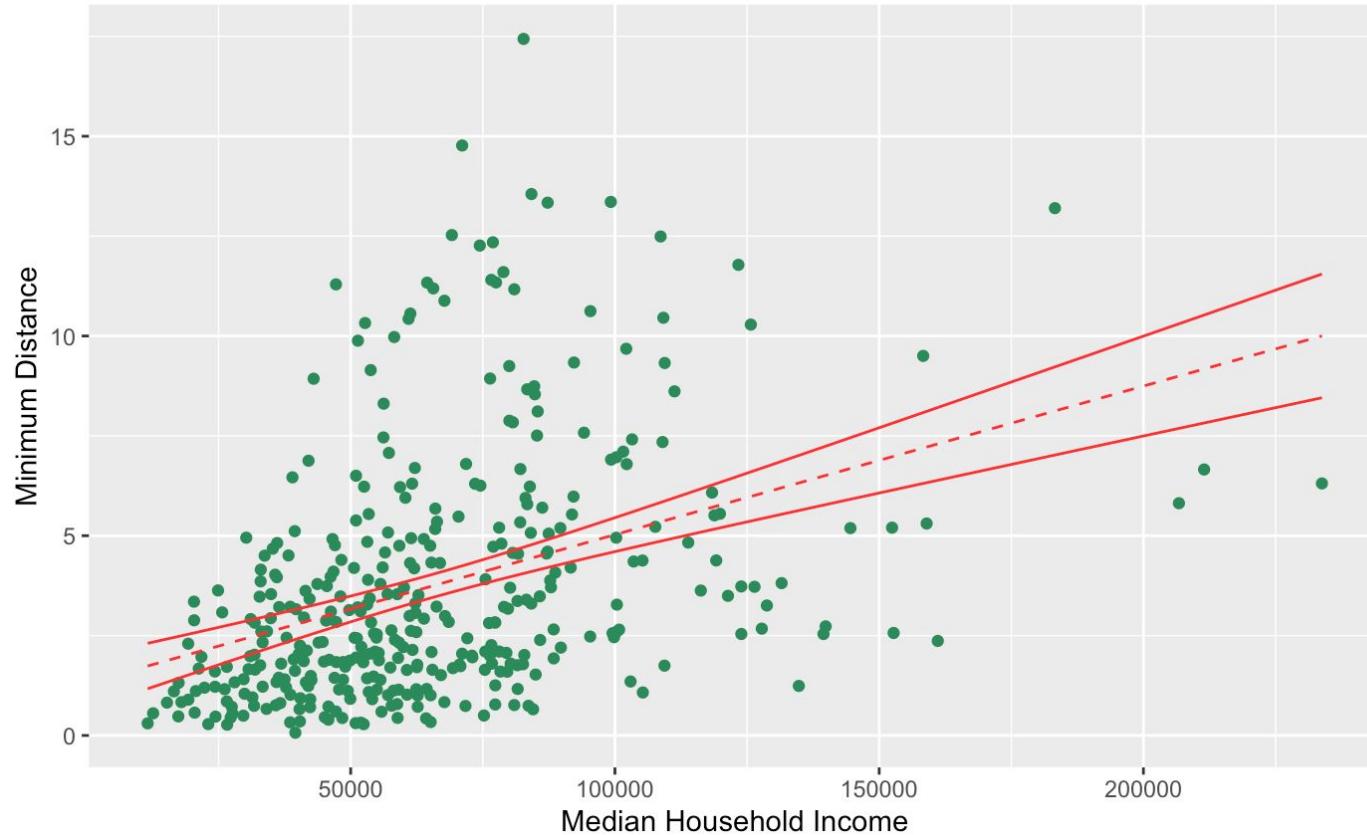


Data source: 2020 ACS, US Census Bureau

Opioid centers are around areas in Allegheny with more Black or African American populations

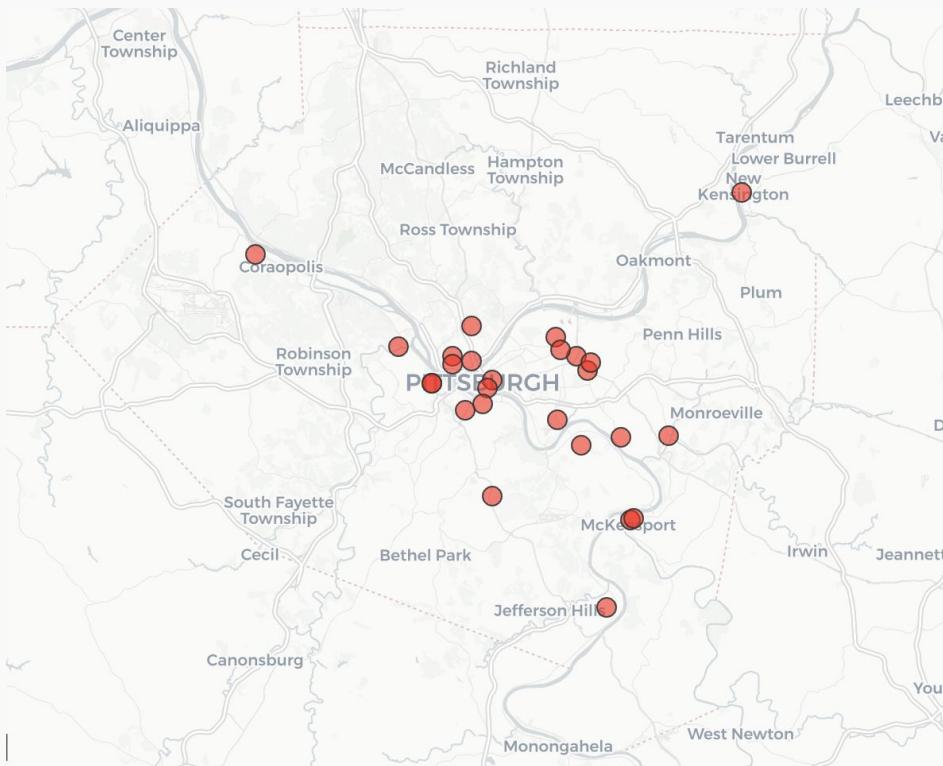
Income vs. Minimum Distance to Opiod Centers





As median household income **increases**, the minimum distance to care **increases**.

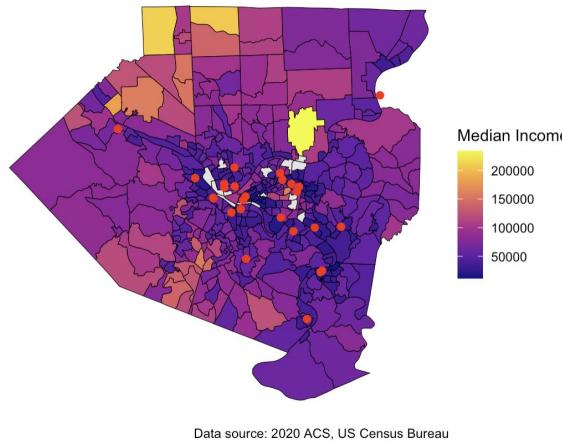
FQHCs in Allegheny County



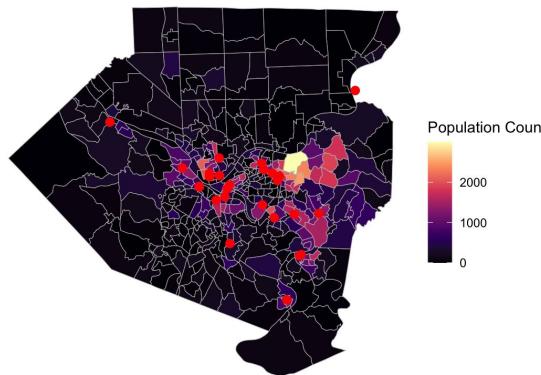
Federally Qualified Health Centers:

- Meant to operate in underserved urban and rural communities, serving populations with limited access to healthcare.
- The following geospatial analyses can be used to verify this claim.

Median Household Income in Allegheny County, 2020



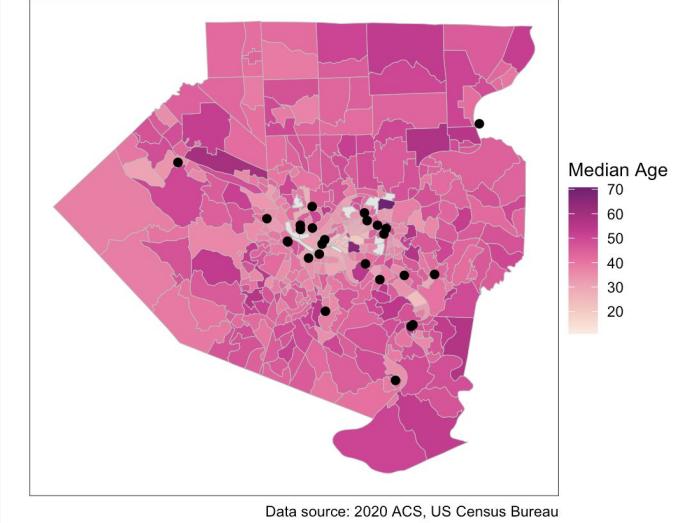
African American Population by Census Tract in Allegheny County, 2020

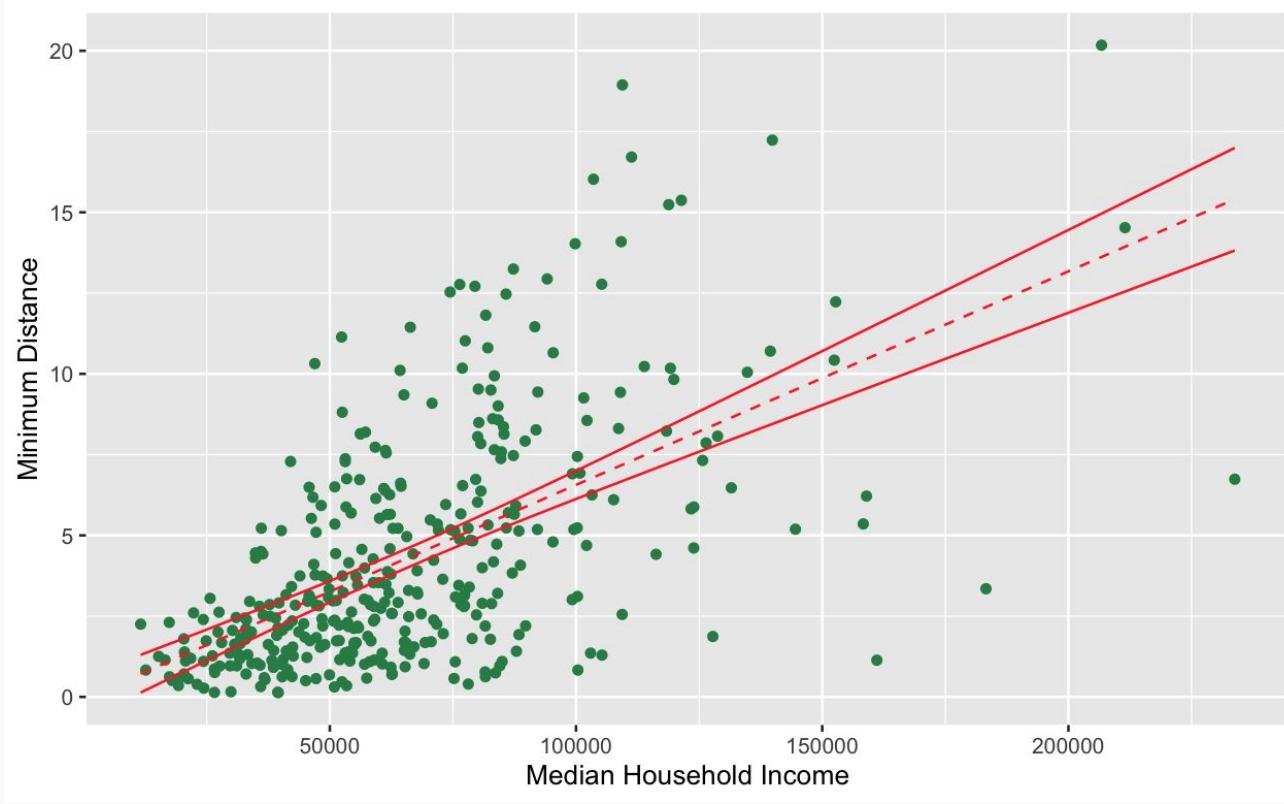


FQHCs are more commonly found in areas with...

- Lower median income
- Higher African American populations
- Lower median age

Median Age in Allegheny County, 2020

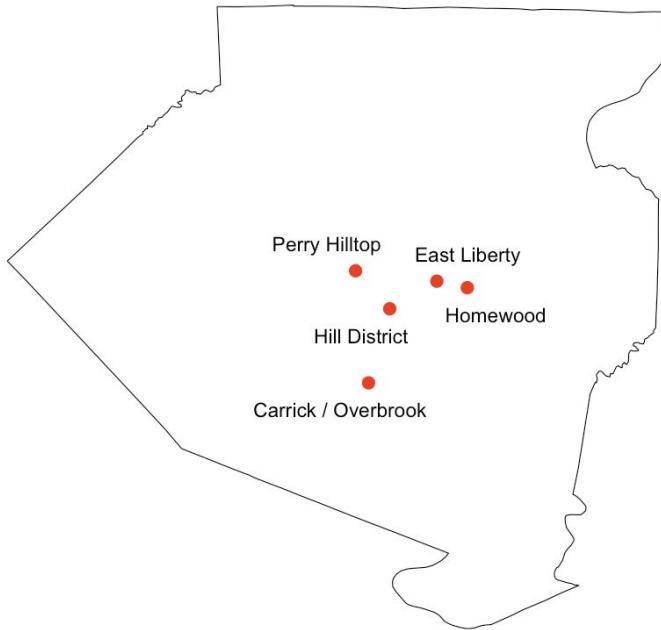




- Generally → as income increases, distances to an FQHC increases as well

Sterile Syringe Providers

Locations of Clean Syringe Providers in Allegheny County, Pennsylvania

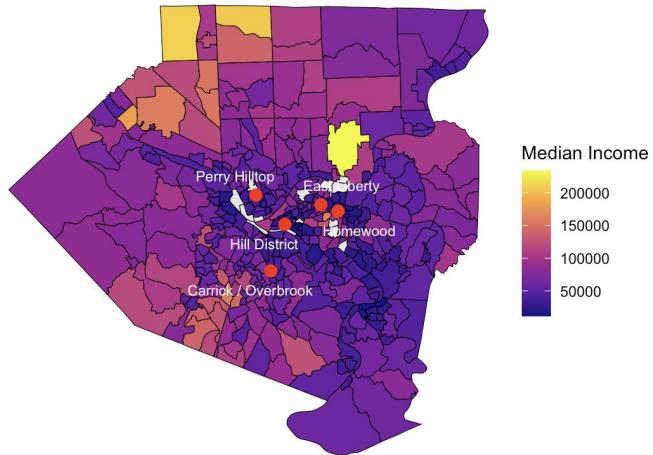


Source: Prevention Point Pittsburgh, US Census Bureau

We were able to locate 5 qualified sterile syringe providers within Allegheny County.

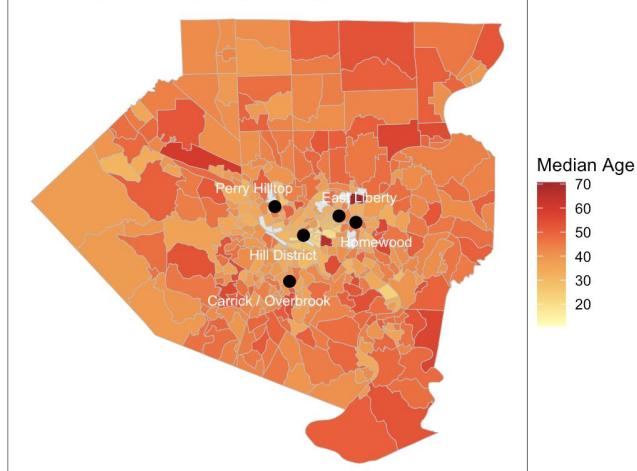
Access to clean and safe syringe sites

Median Household Income in Allegheny County, 2020



Data source: 2020 ACS, US Census Bureau

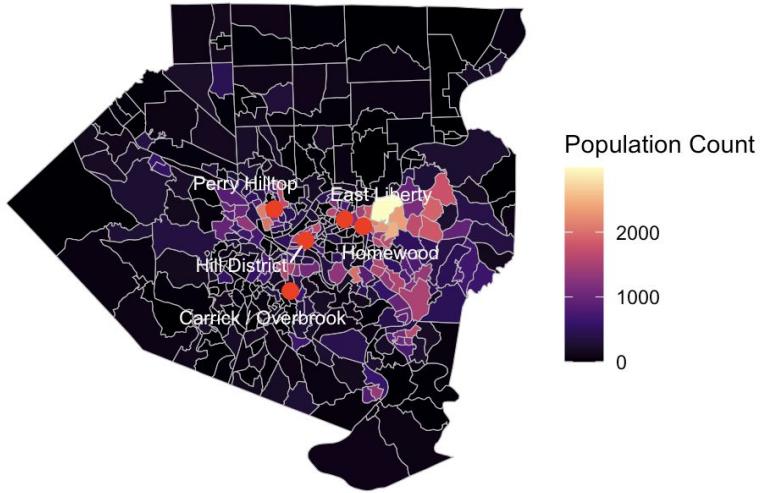
Median Age in Allegheny County, 2020



Data source: 2020 ACS, US Census Bureau

Sites are located in areas of **lower median household income** and **younger population**.

Black or African American Population by Census Tract in Allegheny County, 2020

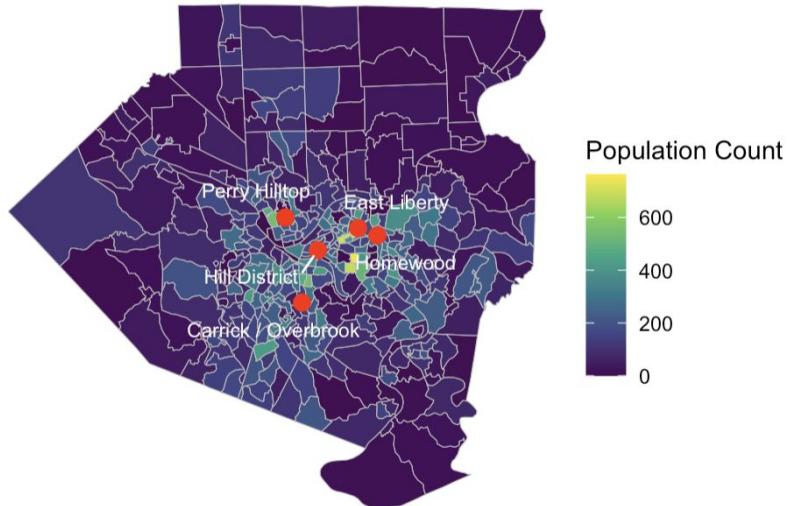


Data source: 2020 ACS, US Census Bureau

Clean syringe distribution sites are located in areas with a **higher Black or African American Population** count in Allegheny County.

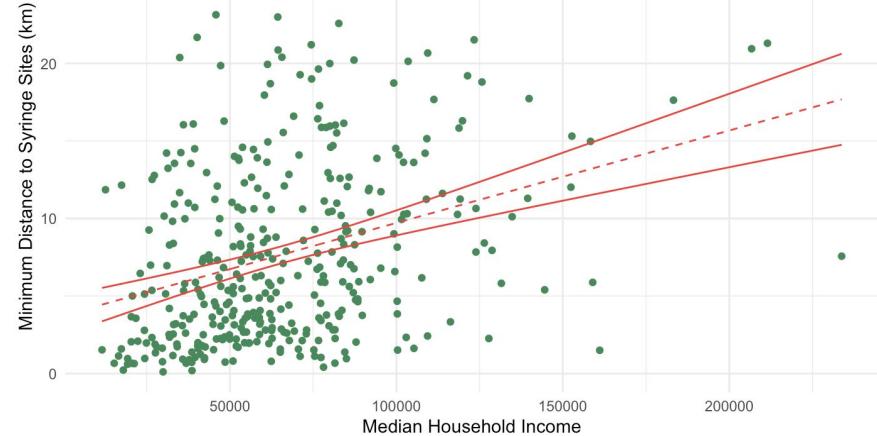
Clean syringe distribution sites are available in areas where the population has very **low access to personal vehicle transportation.**

Population Without Vehicle Transport Access by Census Tract in Allegheny County, PA



Data source: 2020 ACS, US Census Bureau

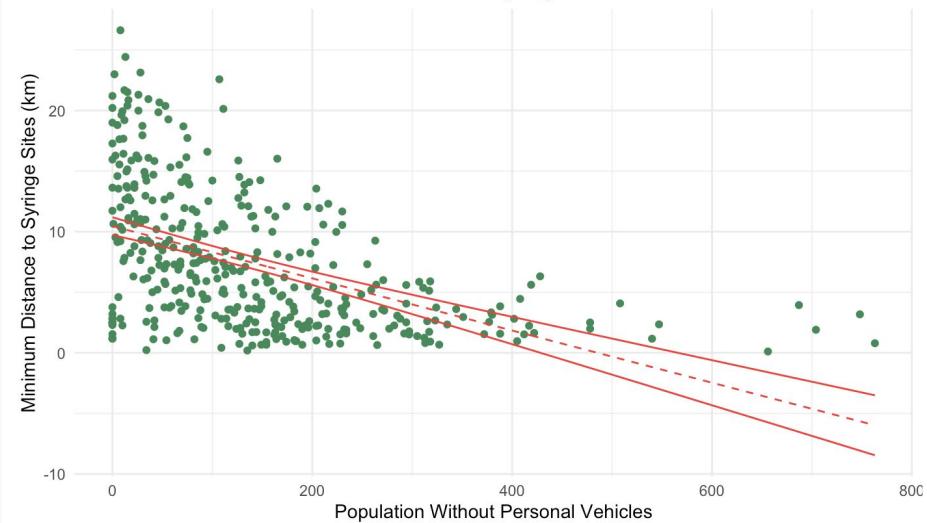
Median Household Income vs. Distance to Syringe Sites



In general, as income **increases**, the distance to syringe providers **increases**.

As population without personal transportation **increases**, the distance to syringe providers **decreases**.

Personal Vehicle Access vs. Distance to Syringe Sites



Conclusions

- Emergency rooms and hospitals are primarily located in densely populated areas of AC, aligning with the highest concentrations of Hepatitis C cases. This placement effectively addresses the areas with the greatest need. However, hospital accessibility is limited in regions with larger elderly populations, leading to longer travel times for care.
- Opioid centers are concentrated around low income, black populated, and younger populated areas in Allegheny County. There seems to be a positive correlation between median income and minimum distance to the nearest opioid center.
- FQHCs are concentrated in areas that have lower median income and age, with comparatively higher black populations, and therefore these groups have greater access to the health services FQHCs can provide.
- Access to sterile and safe syringe providers are located in areas that have a lower median household income and age. These areas of distribution are also among higher black populations, and populations who don't have access to personal vehicle transportation.

**Thank
You!**
