

Travel time to Clinic but not Neighborhood Crime Rate is associated with Retention in Care among HIV-positive Patients

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Background

- Retention in HIV care is essential for the health of people living with HIV (PLWH) and for public health.¹
- Retention in care may be impacted by social and structural factors such as poverty, crime, and clinic accessibility.²
- The University of Chicago Medical Center (UCMC) is the largest provider of HIV care on the south side of Chicago.
- Objective:** to determine if distance to clinic, travel time to clinic, or neighborhood crime rate are associated with retention in care or viral suppression (VS) among PLWH who receive care at UCMC.

Methods

Data Collection

- We collected demographic, laboratory, and home address data for all patients ≥18 years old who received HIV care at UCMC from 2008 to 2016.
- Addresses were geocoded using ESRI's StreetMap Premium .
- Crime data were collected from the City of Chicago's Data Portal (<https://data.cityofchicago.org/>)

Definitions

- Retention was defined as ≥ 2 visits, 90 days apart for every 12 month period from the date of the first visit .³
- Viral suppression (VS) was defined as viral load < 200 copies/ml at most recent visit

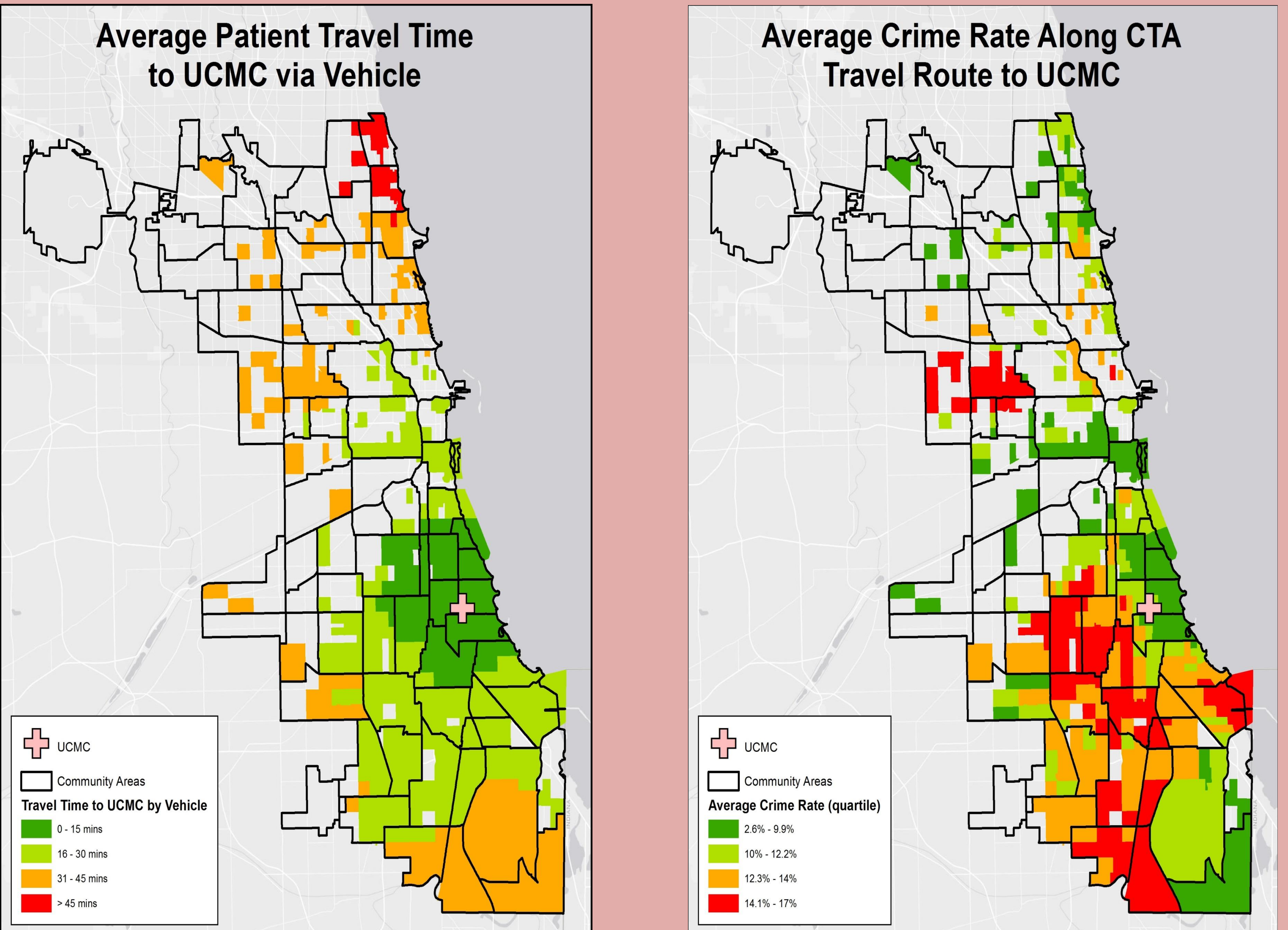
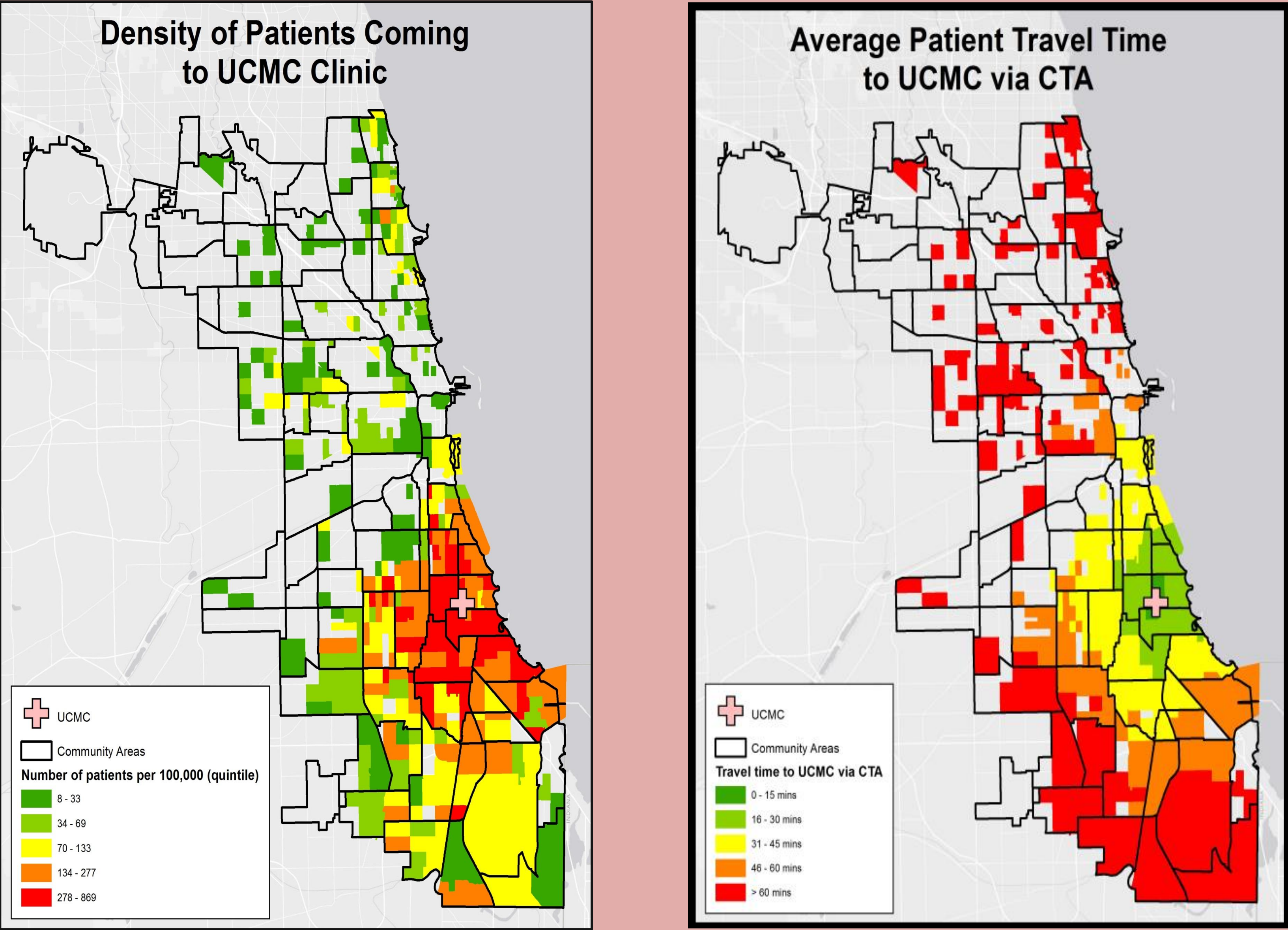
Analysis

- Distance from patient home to clinic, and travel time from patient home to clinic, using car and Chicago Transit Authority (CTA) public transportation were calculated using ESRI's ArcGIS Network Analyst module
- We measured violent crime rate within a two block radius of the public transportation route to clinic.
- Kruskal-Wallis rank sum test was used to compare outcomes between retention groups

Results

- 780 patients were included in the study.
 - 59.9% male, 86.8% African-American
 - 55.1% Medicaid insurance
 - 53.8% heterosexual risk
- 273 (35%) patients were continuously retained.
- Table 1 shows travel distance, time by car and public transportation, and crime rate along the public transportation route, stratified by retention status and VS.
- Shorter travel time by car was significantly associated with retention in care.
- There was no difference in crime rate between those retained in care vs. those not retained in care.
- Distance and travel time to clinic were not associated with viral suppression, but there was a trend toward lower neighborhood crime rates among those VS vs. those not VS (p=0.07).

Figure: Maps of patient density, travel time to clinic, and average crime rate along travel route to clinic



Abbreviations: UCMC, University of Chicago Medical Center; CTA, Chicago Transit Authority

Table 1: Association between travel distance, travel time, and crime rate and retention and viral suppression

	Retained [Median, IQR]	Not retained [Median, IQR]	P value	VS [Median, IQR]	Not VS [Median, IQR]	P value
Travel distance between patient home and clinic (miles)	3.59 [2.1-5.6]	3.90 [2.66-6.09]	0.06	3.82 [2.42-5.94]	3.82 [2.63-4.91]	0.55
Travel time between patient home and clinic by car (minutes)	15.9 [9.6-22.9]	17.1 [12.0-24.6]	0.04	16.8 [11.1-23.9]	16.2 [12.0-21.3]	0.51
Travel time between patient home and clinic by public transportation (minutes)	37.2 [31.8-53.0]	42.9 [32.9-52.9]	0.07	43.0 [31.8-53.0]	37.2 [33.0-53.0]	0.99
Violent crime rate within 2 block radius of public transportation route (crimes/100,000 population)	0.125 [0.100-0.143]	0.126 [0.101-0.144]	0.37	0.125 [0.100-0.143]	0.128 [0.113-0.150]	0.07

Conclusion

- Retention in care was not impacted by residing in high crime neighborhoods.
- Patients residing in high crime neighborhood showed a trend toward less viral suppression.
- PLWH who lived farther from HIV clinic and had longer travel time were less likely to be retained in care, but there was no such association for VS.
- Travel time may impact patient likelihood to attend HIV care appointments, but not necessarily adherence to ART.

References

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