

ACCESS TO PHARMACIES IN WESTERN NY BY VETERANS AND THOSE LIVING IN POVERTY

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TOPICS

- ▶ Introduction to the project
- ▶ About the Region
- ▶ Pharmacy Characteristics
- ▶ GIS Analysis
- ▶ Findings
- ▶ Web Mapping Application
- ▶ Limitations
- ▶ Conclusions

INTRODUCTION TO THE PROJECT

- ▶ 'Pharmacy deserts' were first found to be prevalent in predominately minority communities in Chicago in recent years (Qato, 2014).
- ▶ Access to both medications and free counseling about prescribed and over the counter drug products via community (i.e., retail) pharmacies was called into question by these findings.
- ▶ To improve Veteran access to care, in May 2016 the US Department of Veterans Health Affairs partnered with CVS Health to begin offering VA-funded care at CVS retail clinics in Palo Alto, California (Joszt 2016).
- ▶ The purpose of this project was to identify travel times to community pharmacies by pharmacy characteristics (24-hour pharmacist staffing, 24-hour stores, drive-throughs) from neighborhoods of concentrated poverty or Veteran residency.

ABOUT THE REGION

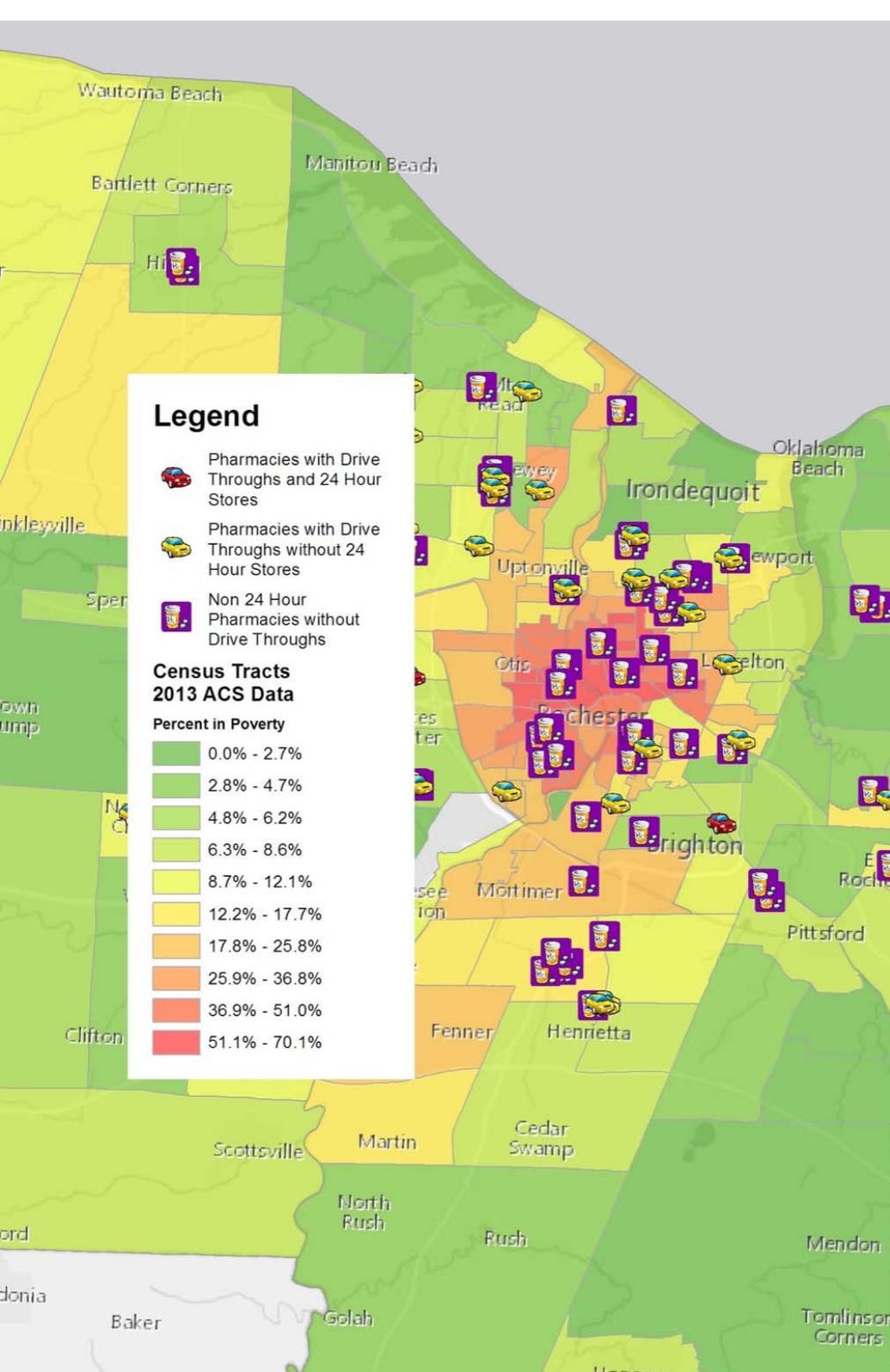
- ▶ Monroe County in Western New York includes the city of Rochester. Among cities of similar size, it is the only one in which more than half of children live in poverty. (Doherty EJ, 2015)
- ▶ The total Monroe County population was 749,857 in 2013.
 - ▶ About 40,341 (5.4%) were Veterans (US Census, US Census, 2014 Estimates).
 - ▶ 73% of Veterans were aged 55 or older and 23% had one or more military service-connected disabilities.
 - ▶ Veteran annual median income was about \$37,000.
 - ▶ A small percentage of Veterans (n=2,420, 6%) reported incomes below the Federal Poverty Level in the previous 12 months.
 - ▶ Concentration of Veterans per Census tract was 1.9% to 12% with the highest concentrations in rural and suburban areas
- ▶ There 140 community pharmacies Monroe County Region.
- ▶ The number of pharmacies ranged from 0 to 6 per Census tract.

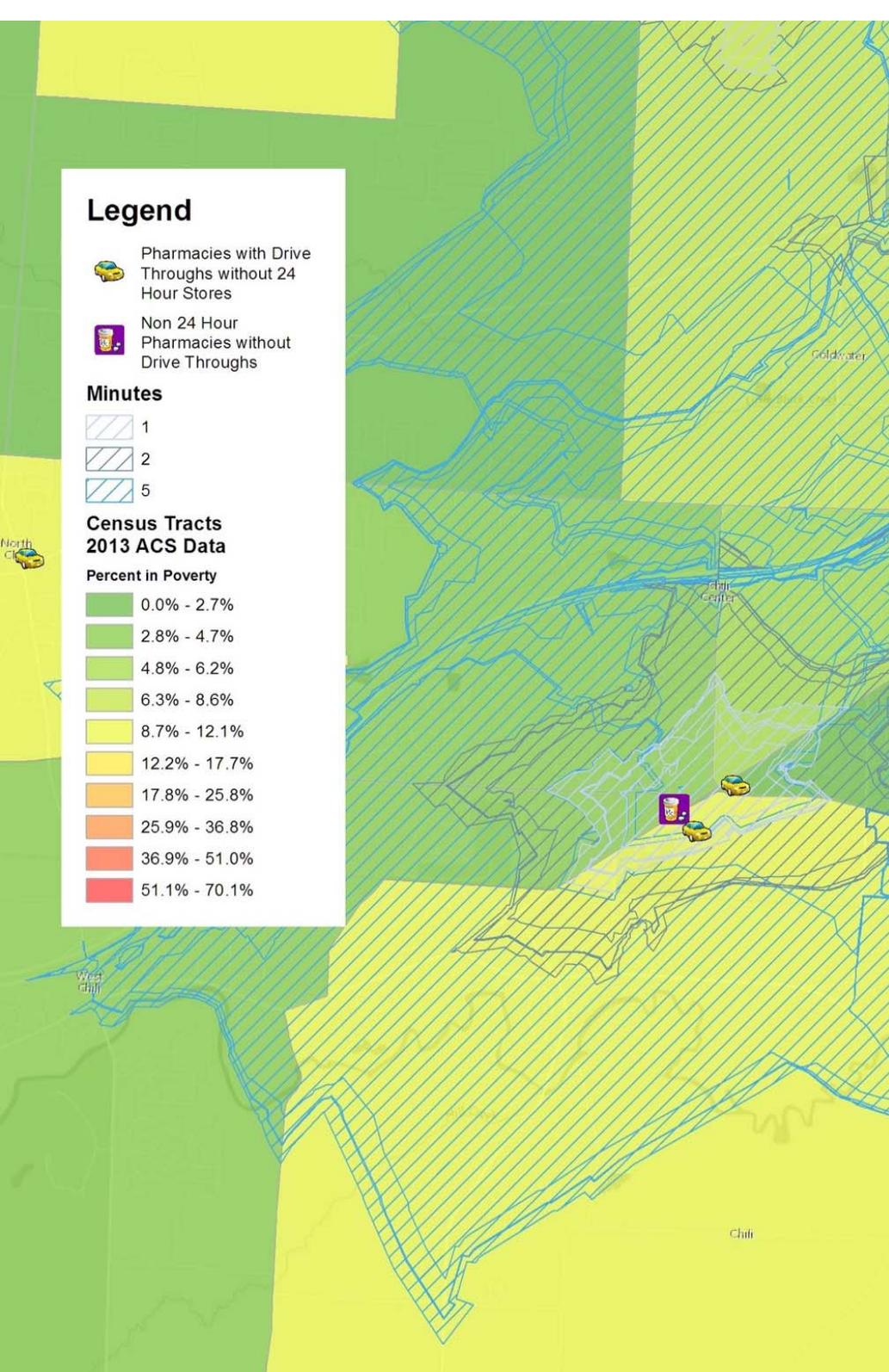
PHARMACY CHARACTERISTICS

Pharmacy Characteristics	n (%)
National Chain (Walgreens, Rite Aid, CVS)	69 (49.3)
Regional/Local Chain (Kinney, Metcare RX, Medicinne Shoppe)	4 (2.9)
Independent	19 (13.6)
Grocery Store (Tops, Wegmans)	24 (17.1)
Big Box Store (Target, Sam's Club, Walmart, Kmart)	21 (0.2)
Community Health Center	3 (2.1)
Drive-Throughs	51 (36.4)
24-hour Pharmacist-provided services	2 (1.4)
24-hour store (no pharmacist on duty overnight)	25 (17.9)

GIS ANALYSIS

- ▶ The GIS Analysis took on a few different tasks
- ▶ First, all pharmacies were geocoded using the New York State Centerline File.
 - ▶ Some pharmacies were manually placed because of arbitrary addresses.
- ▶ Using the Census Tiger files (US Census), we combined census tracts with US Census data for percentage of households living in poverty, percentage of Veteran households and pharmacy characteristics.





TRAVEL TIME TO PHARMACIES

- ▶ Network analysis was used to determine walking and driving times to the nearest pharmacy from each census tract.
- ▶ Using the pharmacies as the center and the road network from the New York State Centerlines, we calculated service areas.
- ▶ Travel times were defined as 1,2,5,10, 15 and 20 minutes or more.
- ▶ 1,2, and 5 minute travel times describe 'walkability' to a pharmacy.

TRAVEL TIME TO PHARMACIES

- ▶ Have a good network dataset
 - ▶ We used the New York State Centerline file which has turn restrictions and speed limits
- ▶ When configuring the routing network convert length and speed limits to time
- ▶ Once we had the travel time polygons, we did a spatial join to the census data to allow for demographic analysis
- ▶ Also before posting the data onto ArcGIS Online, we simplified the polygons to save on credits

TRAVEL TIME TO PHARMACIES

Network Analyst | Routina ND

Network Analyst

Service Area

- RITE AID PHARMAC
- WALGREENS #1120
- WEGMANS PHARM
- WEGMANS PHARM
- TARGET PHARMAC
- WEGMANS PHARM
- HILTON FAMILI
- METCARE RX
- RITE AID PHA
- TOPS PHARMA
- WALGREENS #
- WEGMANS PH
- CVS PHARMA
- WAL-MART PH
- CHURCHVILLE

Layer Properties

Accumulation | Attribute Parameters | Network Locations

General | Layers | Source | Analysis Settings | Polygon Generation | Line Generation

Settings

Impedance:

Default Breaks:

Use Time:

Time of Day:

Day of Week:

Specific Date:

Direction:

Away From Facility

Towards Facility

U-Turns at Junctions:

Use Hierarchy

Ignore Invalid Locations

Restrictions

Oneway

[About the service area analysis layer](#)

OK Cancel Apply

Layer Properties

Accumulation | Attribute Parameters | Network Locations

General | Layers | Source | Analysis Settings | Polygon Generation | Line Generation

Generate Polygons

Polygon Type

Generalized

Detailed

Trim Polygons:

Multiple Facilities Options

Overlapping
Create polygons for each facility. These polygons may overlap.

Not Overlapping
Allocate polygons to the closest facility.

Merge by break value
Join polygons of multiple facilities having the same break values.

Excluded Sources

NYS_Centerlines_0715

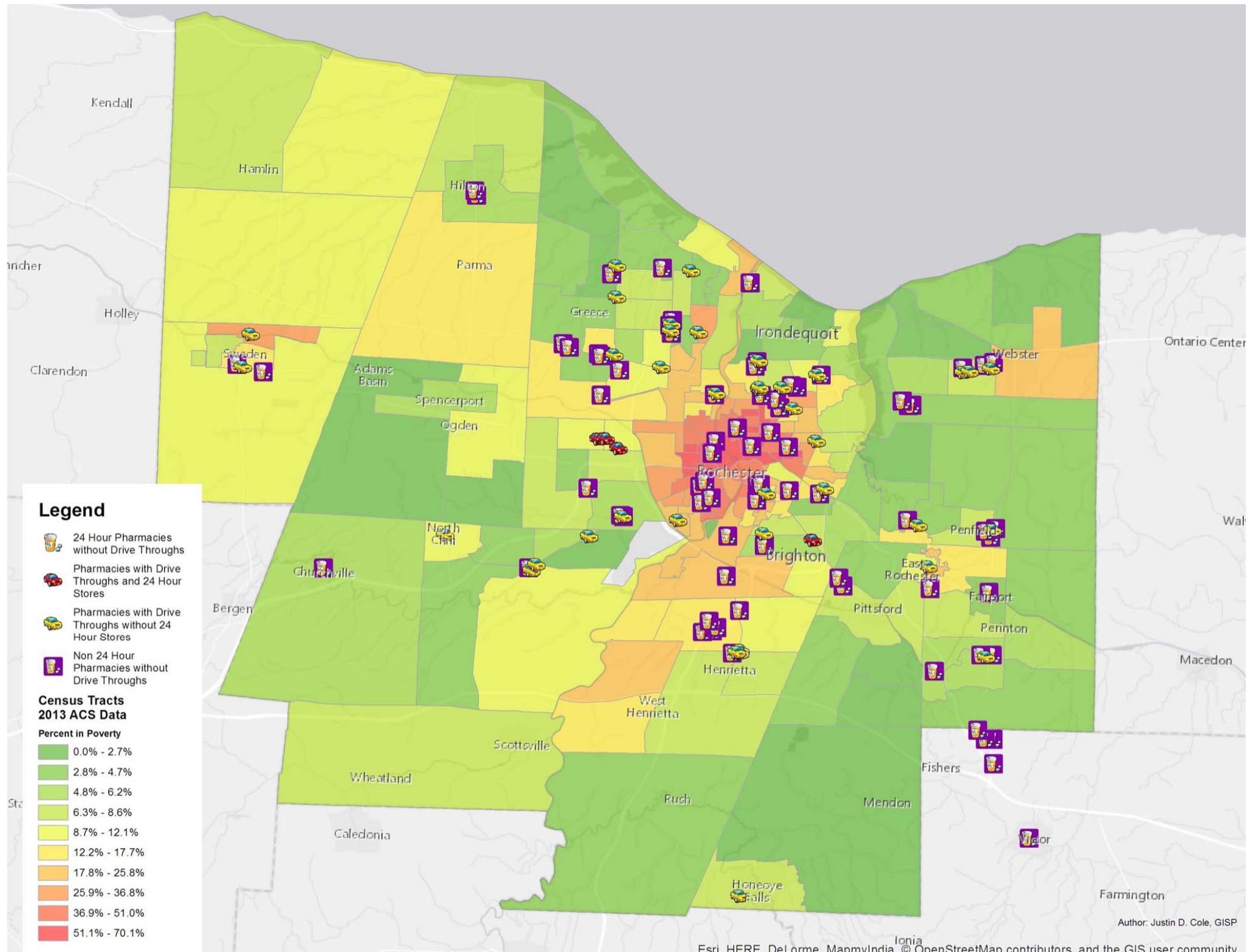
Overlap Type

Rings
Do not include the area of the smaller breaks. Create the polygons going between consecutive breaks.

Disks
Create the polygons going from the facility to the break.

[About the service area analysis layer](#)

OK Cancel Apply

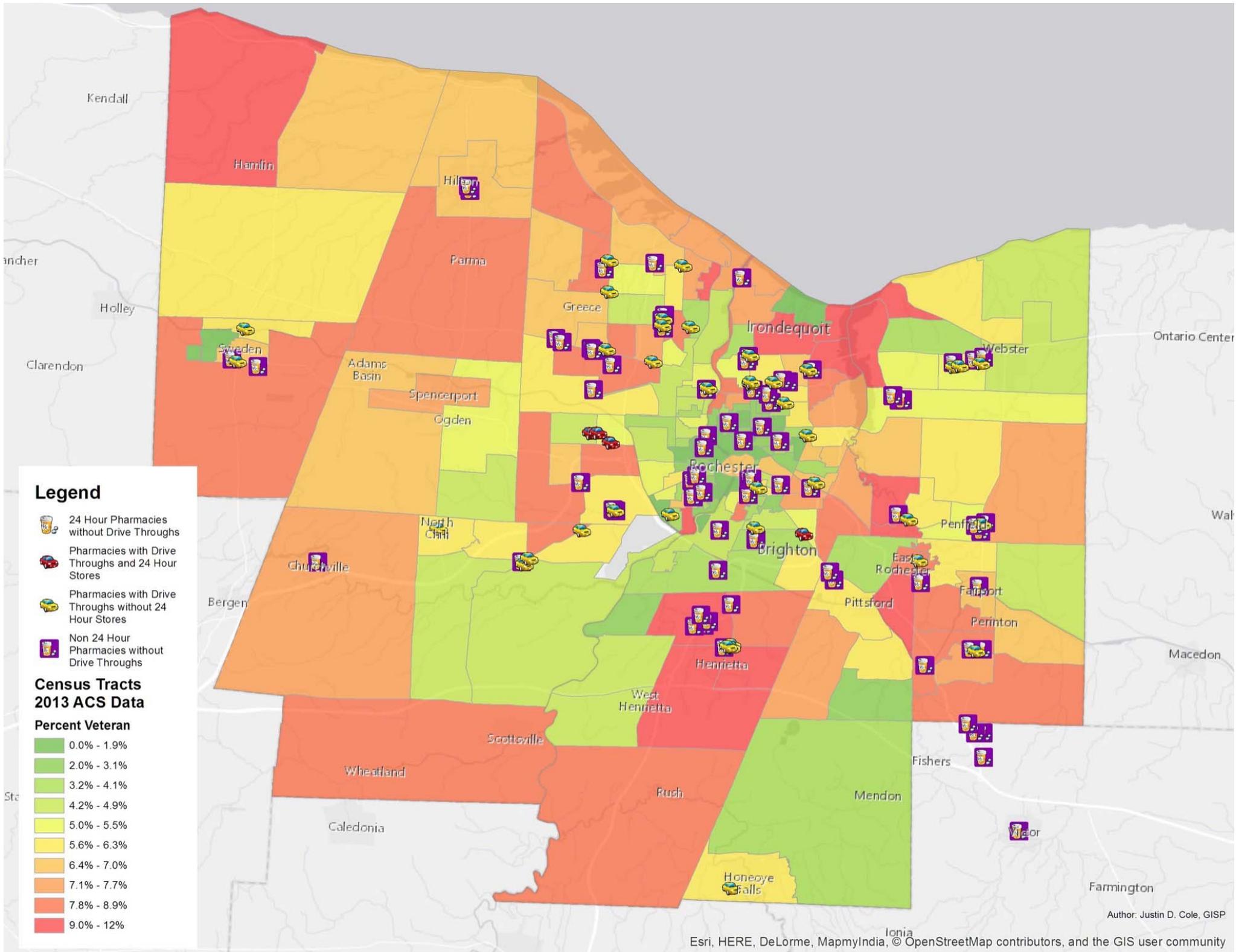


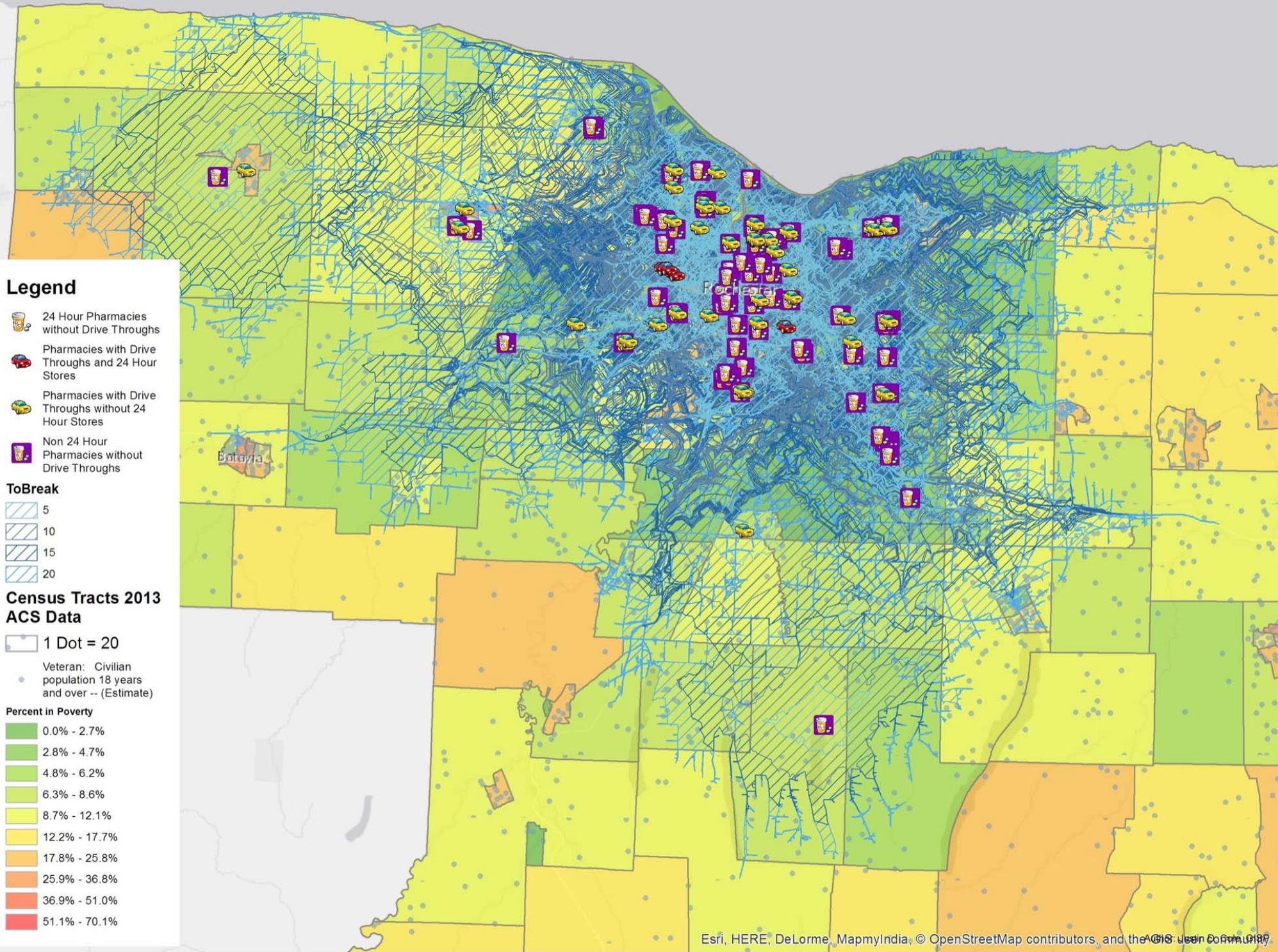
Legend

-  24 Hour Pharmacies without Drive Throughs
-  Pharmacies with Drive Throughs and 24 Hour Stores
-  Pharmacies with Drive Throughs without 24 Hour Stores
-  Non 24 Hour Pharmacies without Drive Throughs

Census Tracts 2013 ACS Data

- Percent in Poverty**
-  0.0% - 2.7%
 -  2.8% - 4.7%
 -  4.8% - 6.2%
 -  6.3% - 8.6%
 -  8.7% - 12.1%
 -  12.2% - 17.7%
 -  17.8% - 25.8%
 -  25.9% - 36.8%
 - 36.9% - 51.0%
 - 51.1% - 70.1%





Legend

-  24 Hour Pharmacies without Drive Throughs
-  Pharmacies with Drive Throughs and 24 Hour Stores
-  Pharmacies with Drive Throughs without 24 Hour Stores
-  Non 24 Hour Pharmacies without Drive Throughs

ToBreak

-  5
-  10
-  15
-  20

Census Tracts 2013 ACS Data

 1 Dot = 20

Veteran: Civilian population 18 years and over -- (Estimate)

Percent in Poverty

-  0.0% - 2.7%
-  2.8% - 4.7%
-  4.8% - 6.2%
-  6.3% - 8.6%
-  8.7% - 12.1%
-  12.2% - 17.7%
-  17.8% - 25.8%
-  25.9% - 36.8%
-  36.9% - 51.0%
-  51.1% - 70.1%

FINDINGS

- ▶ All Census tracts in Monroe County, New York were approximately 5 to 20-minutes by vehicle from at least one community pharmacy.
 - ▶ Only two pharmacies were staffed 24-hours by pharmacists.
 - ▶ 1/3 of all pharmacies had drive-throughs.
- ▶ Rite Aid and Walgreens stores made up 73.9% of national chain pharmacy stores in the Monroe County region, and represented 36.4% of all community pharmacies.
 - ▶ A pending merger may result in the closing of some locations and a reassessment of access.

FINDINGS

- ▶ Veterans and residents living in poverty appeared to have reasonable access to pharmacy services as measured by drive time from household Census tracts to community pharmacies.

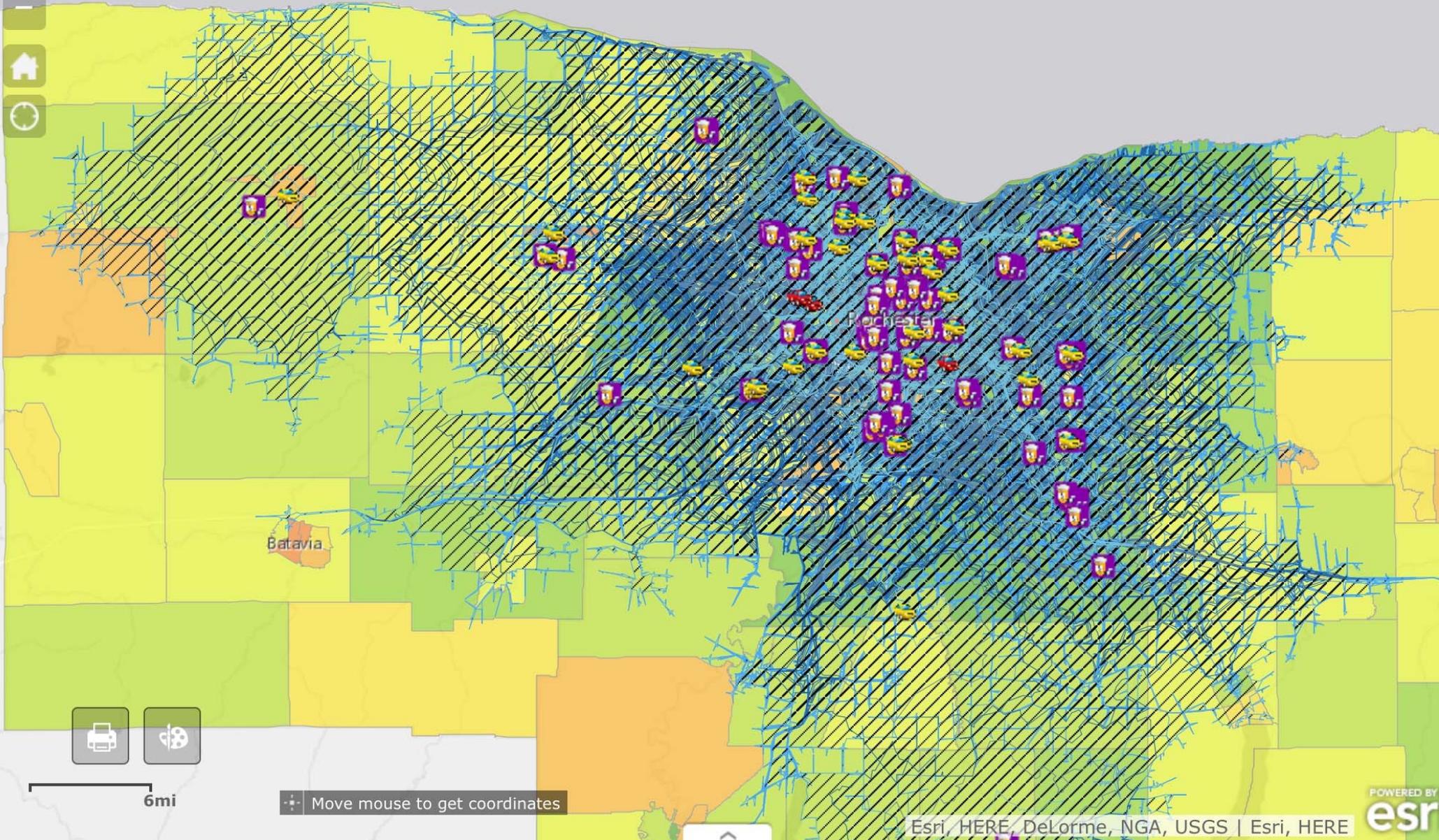
WEB TOOLS



Pharmacy and Census Tracts



Esri World Geocoder



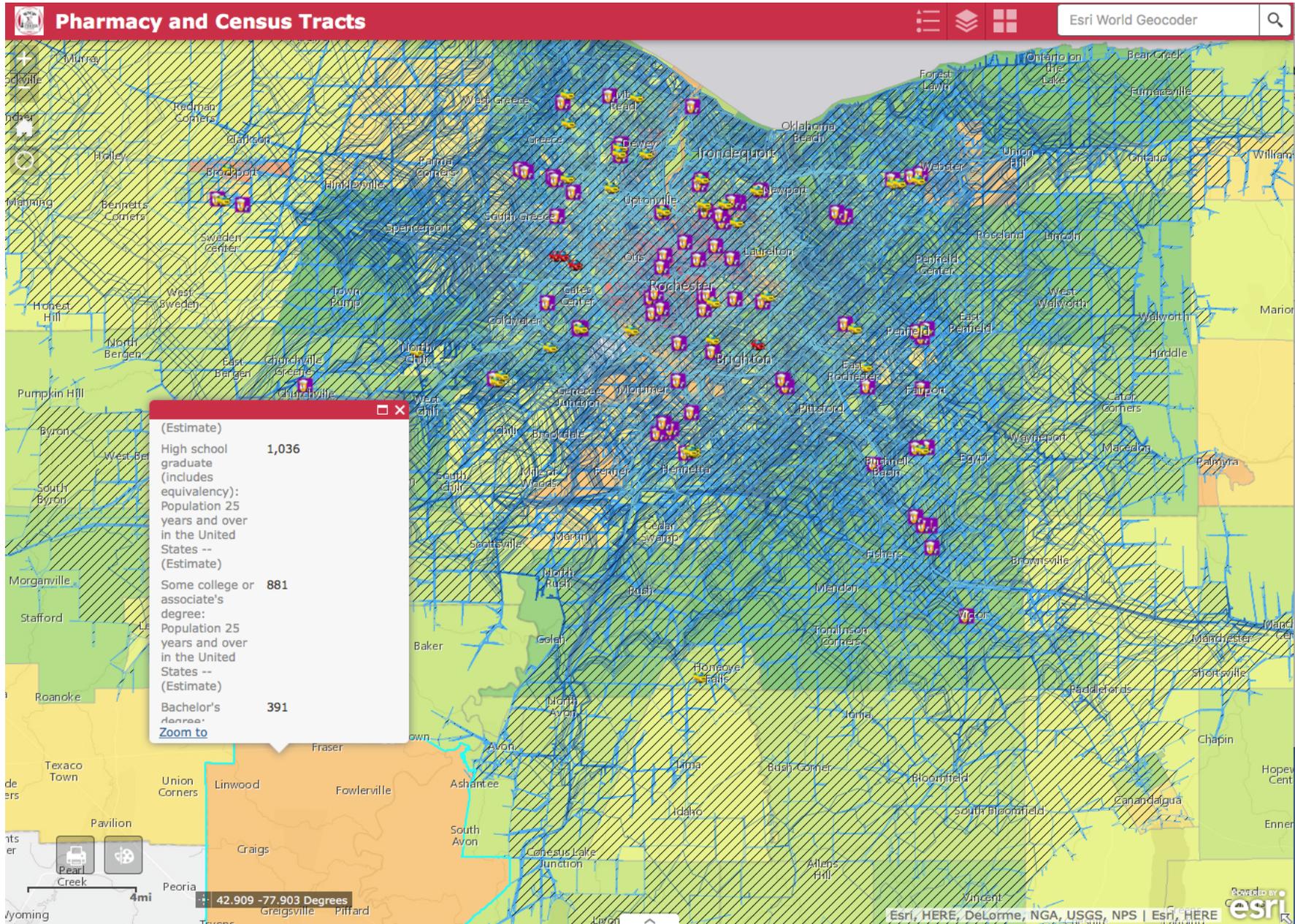
6mi

Move mouse to get coordinates

WEB TOOLS

- ▶ One thing that really brought a lot of this to light was not just the maps, but the ability to explore that data using web GIS.
- ▶ This allowed for researchers with no GIS skills to interact with the data and explore more attributes than just what was displayed in the published maps.
- ▶ It also is helping ask new questions that were not even thought of
 - ▶ Is there enough material in particular languages?

WEB TOOLS



WEB TOOLS

Legend



24 Hour Pharmacies without Drive Throughs



Pharmacies with Drive Throughs and 24 Hour Stores



Pharmacies with Drive Throughs without 24 Hour Stores



Non 24 Hour Pharmacies without Drive Throughs

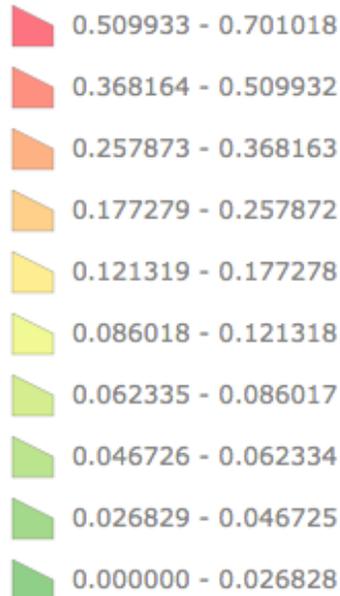


Pharmacy Sites Drive Times (Simplified)

- 5
- 10
- 15
- 20

Census Tracts 2013 ACS Data Percent in Poverty

PerInPoverty



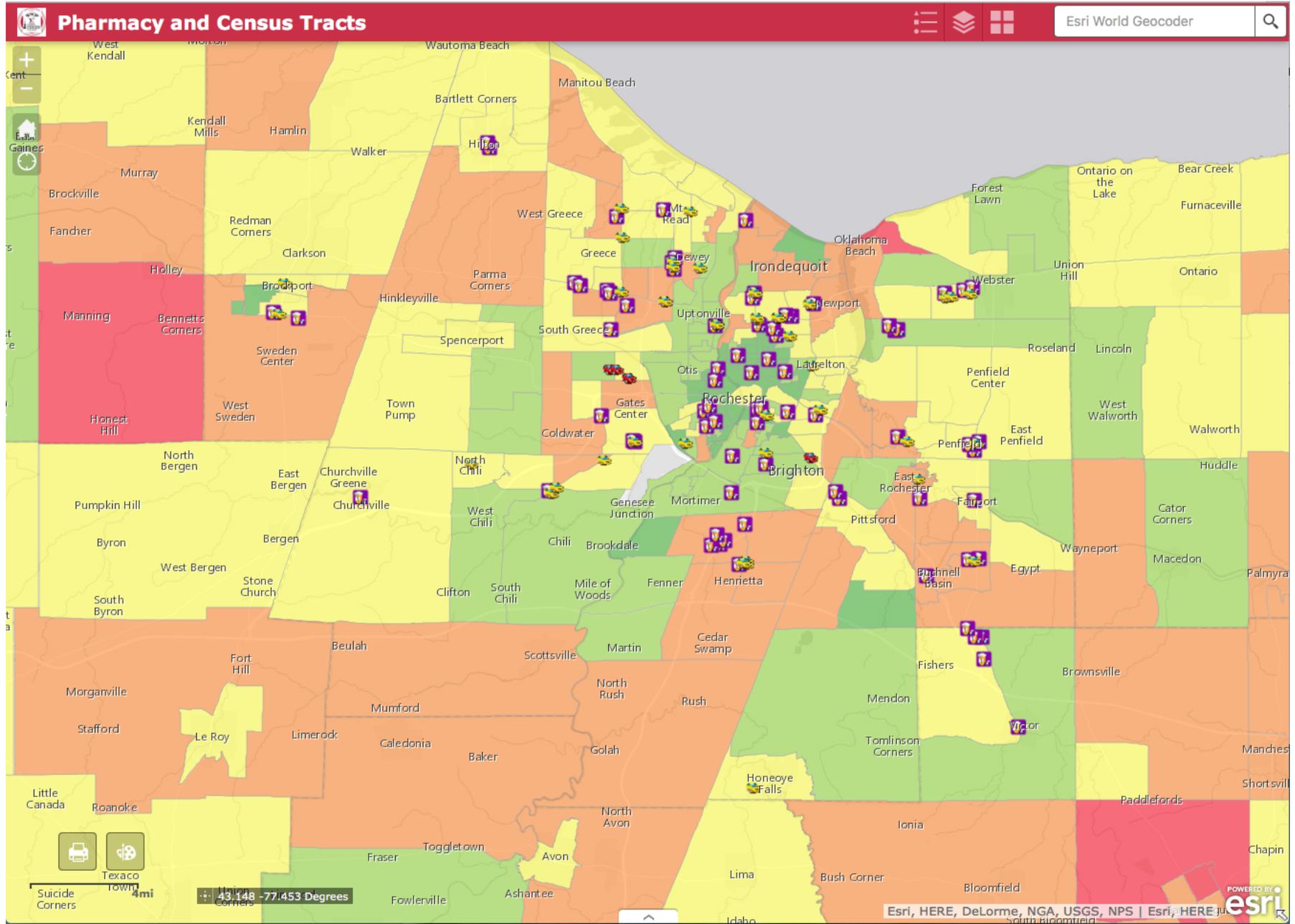
Layer List



Operational Layers

- 24 Hour Pharmacies without Drive Throughs
- Pharmacies with Drive Throughs and 24 Hour Stores
- Pharmacies with Drive Throughs without 24 Hour Stores
- Non 24 Hour Pharmacies without Drive Throughs
- Pharmacy Sites Drive Times (Simplified)
- Census Tracts 2013 ACS Data Percent Veteran Status
- Census Tracts 2013 ACS Data Percent in Poverty

WEB TOOLS



LIMITATIONS

- ▶ Study limitations include the exclusion of extended hours (for example, 7am to 10pm) from our analysis for parsimony.
- ▶ We only considered access to brick-and-mortar pharmacies and pharmacist-provided services, yet Rite Aid and Walgreens both offer 24-7 access to pharmacists via on-line chat, secure messaging and phone (including TDY for hearing/speech disabled).
- ▶ These services were excluded from our discussion of access to pharmacies and pharmacy services.
- ▶ Also we did not look at multimodal means of transportation.
 - ▶ public transportation

CONCLUSIONS

- ▶ The on-demand and increasingly clinical nature of community pharmacy services paired with patients' use of self-care as a first strategy for managing most symptoms, suggest that the importance of community pharmacists and pharmacies in the US healthcare system is likely to increase.
- ▶ As pharmacy chains increasingly seek clinical roles in the healthcare system, substance abuse prevention, screening and treatment referral may be a real possibility.

QUESTIONS?

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REFERENCES

- ▶ Qato DM, Daviglius ML, Wilder J, Lee T, Qato D, Lambert B. 'Pharmacy deserts' are prevalent in Chicago's predominantly minority communities, raising medication access concerns. *Health Aff.* 2014;33(11):1958-65.
- ▶ Joszt L. Minute Clinic-VA Partnership could reduce wait times for Veterans seeking care. AJMC.com. Published on-line May 27, 2016.
- ▶ Doherty EJ. Benchmarking Rochester's poverty: A 2015 update and deeper analysis of poverty in the City of Rochester. A report from the Rochester Area Community Foundation and ACT Rochester. Last accessed May 31, 2016 at: www.actrochester.org.