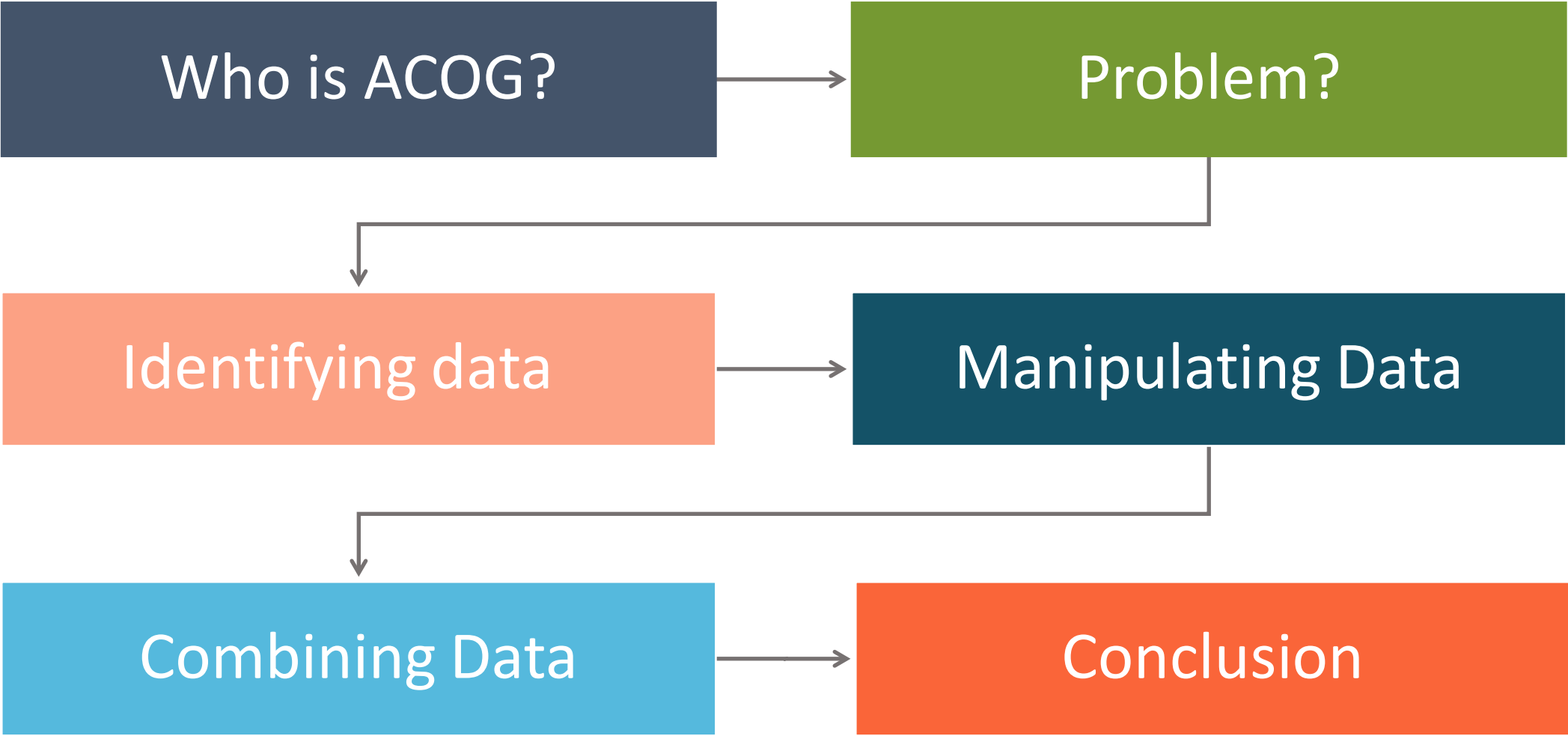


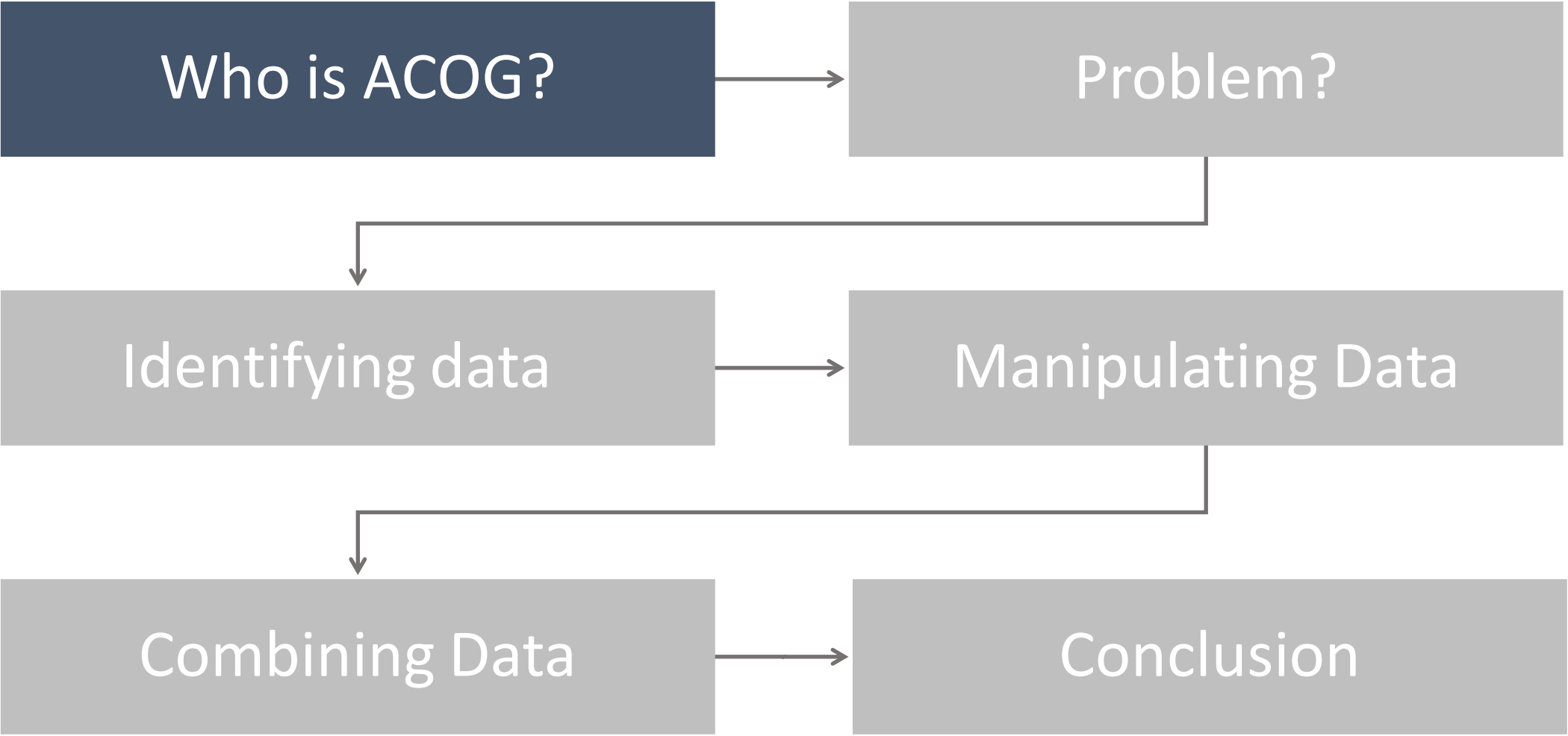
Identifying Regional Pedestrian Priorities: GIS Analysis

Kate Brady & Jennifer Sebesta, ACOG

SCAUG

September 22, 2015



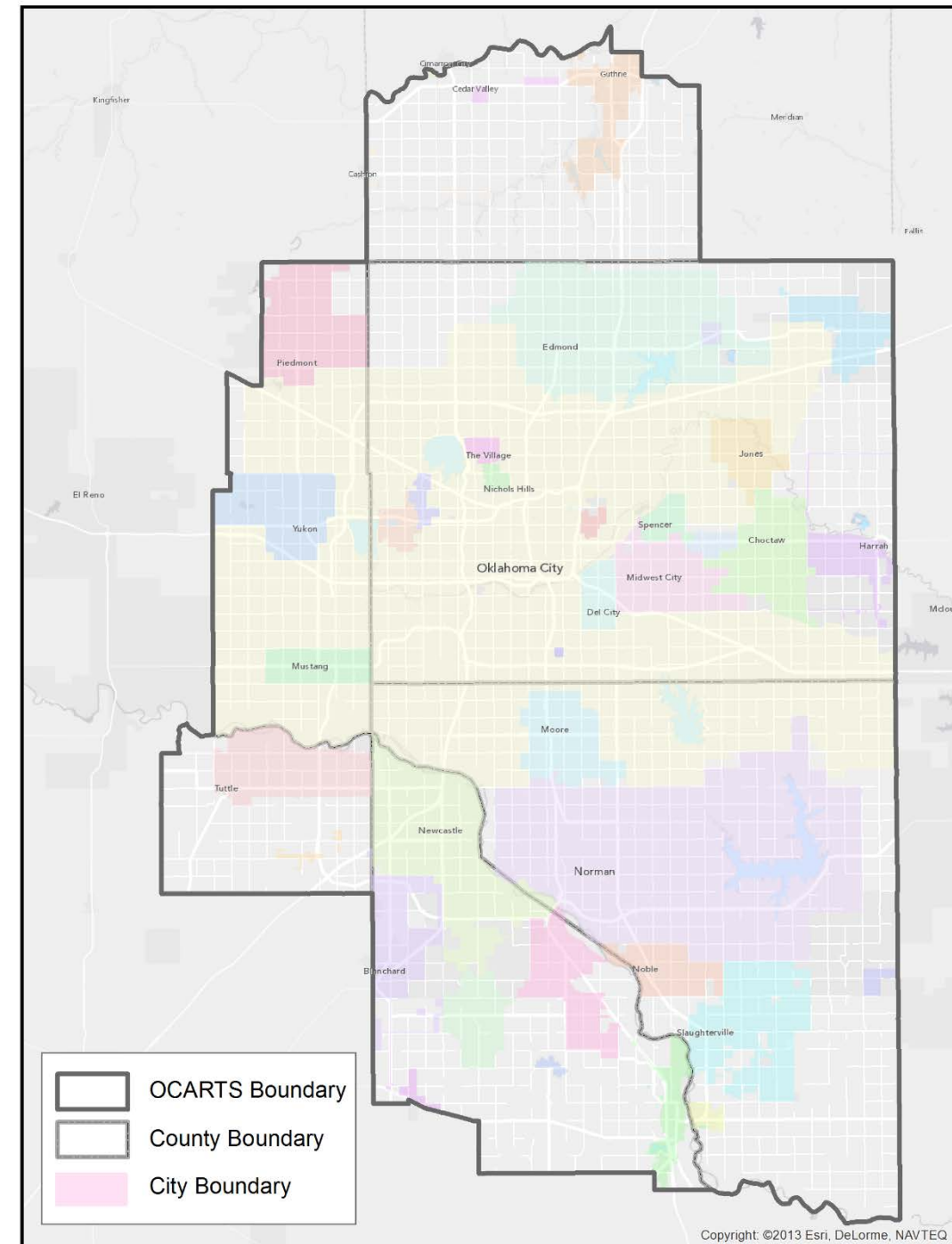


Who is ACOG

- = Association of Central Oklahoma Governments
- Divisions:
 - 9-1-1 Public Safety
 - Water
 - Economic Development
 - Transportation Planning

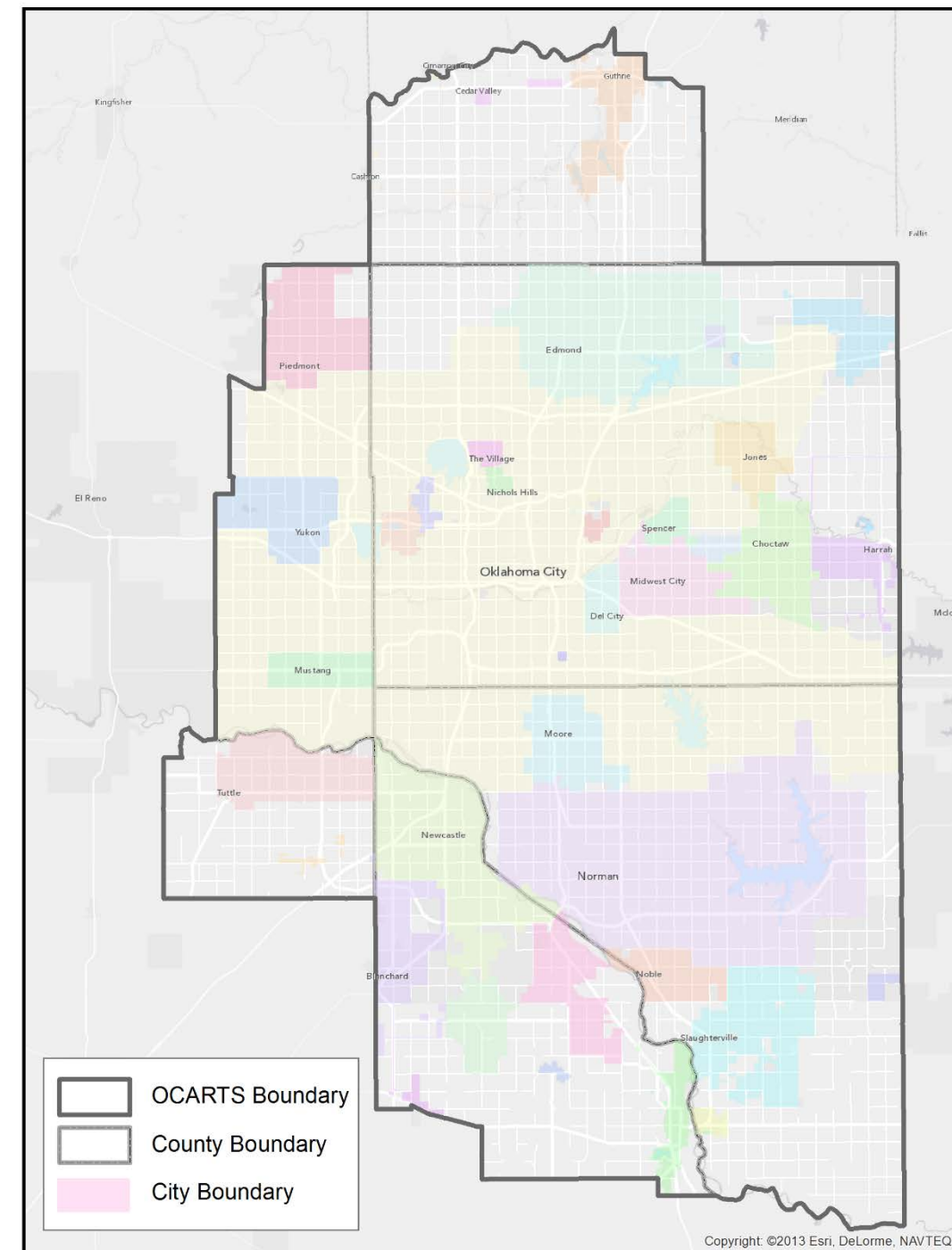
Oklahoma City Area Regional Transportation Study (OCARTS) Area

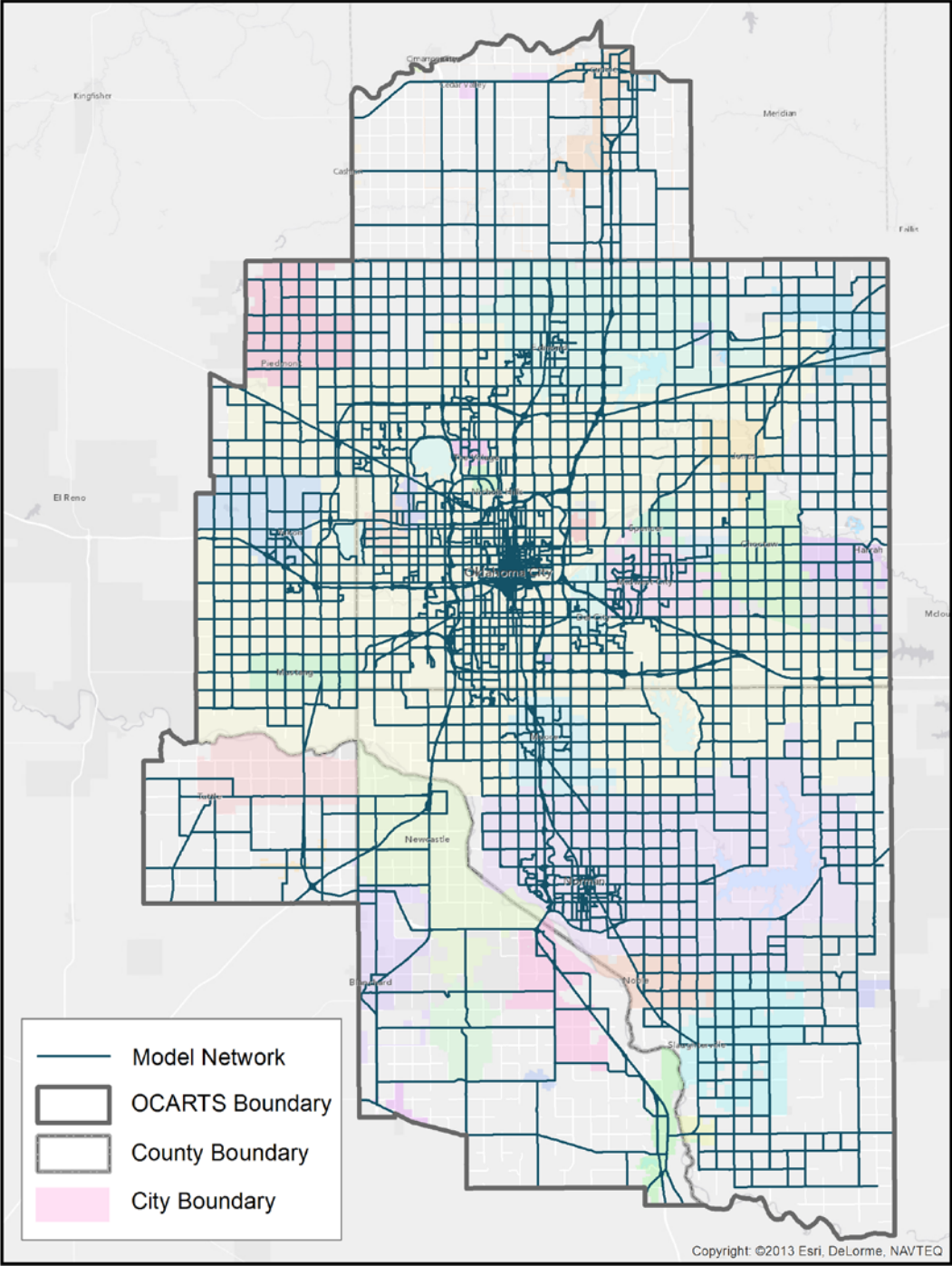
- 2000 square miles
- 47 cities, towns, and counties
- 1.1 Million population (2010)
- 1.6 Million population (2040 projected)

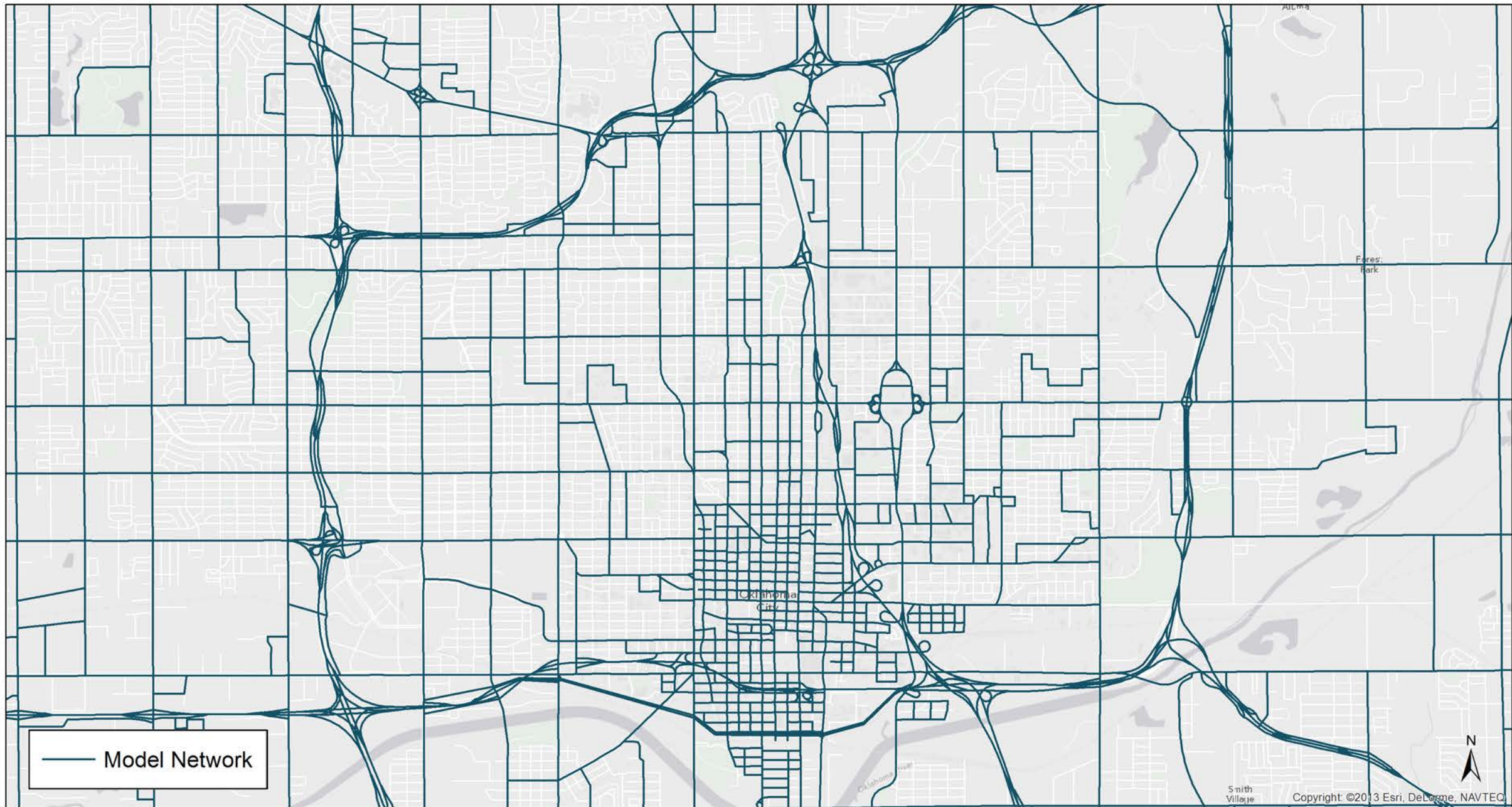


OCARTS: Metropolitan Planning Organization

- Planning the responsible use of federal transportation dollars
- A long range plan every 5 years to project out 25 years
- the first LRP was approved in 1968 for the year 1985
- Currently working on the 2040 plan







Our past view of transportation...



Shields Blvd 1
35 62 77 2 1/2
M L King Ave/
Eastern Ave 3

EXIT 149

Western Ave ↗



Transitioning gradually to...

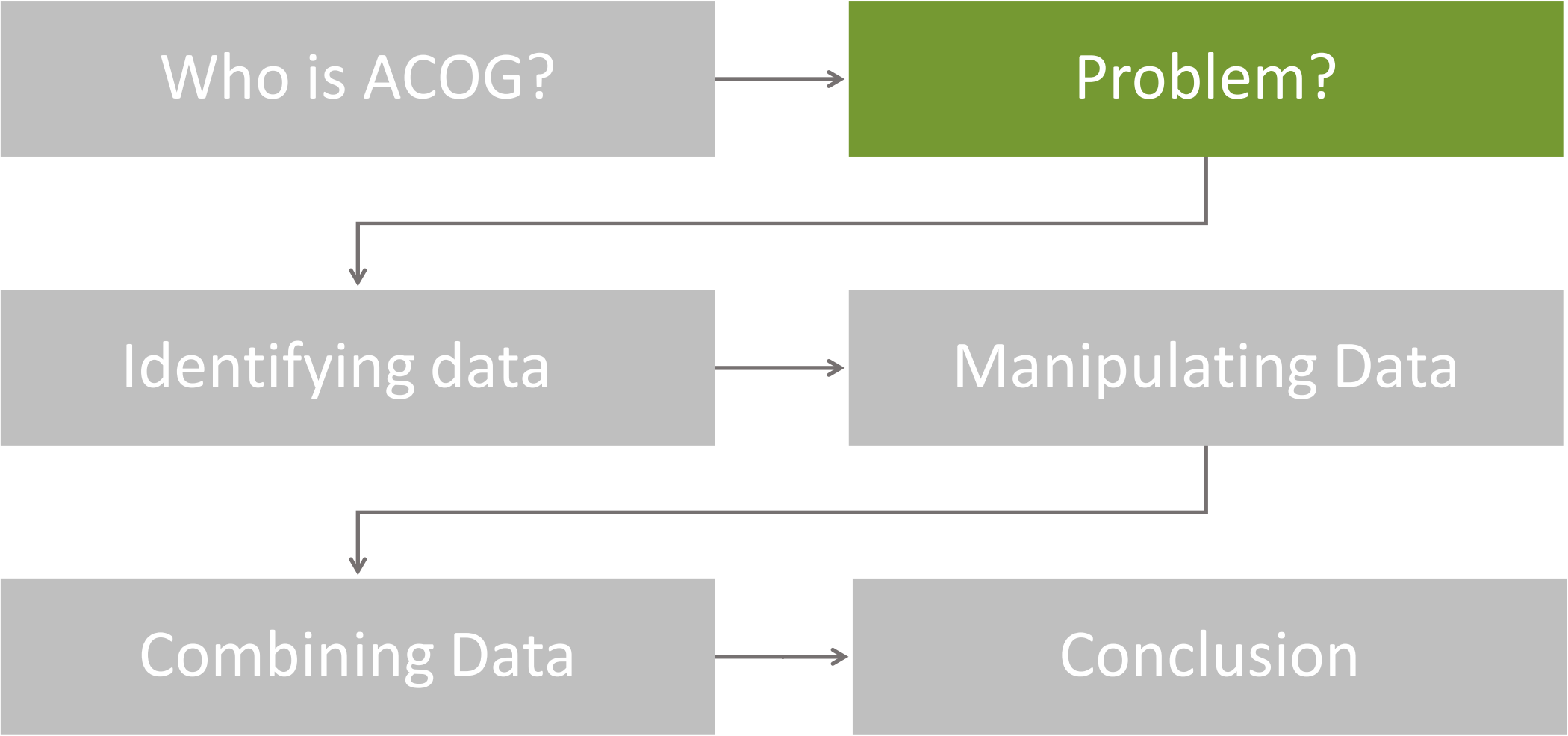




Bicycle Pedestrian Advisory Committee

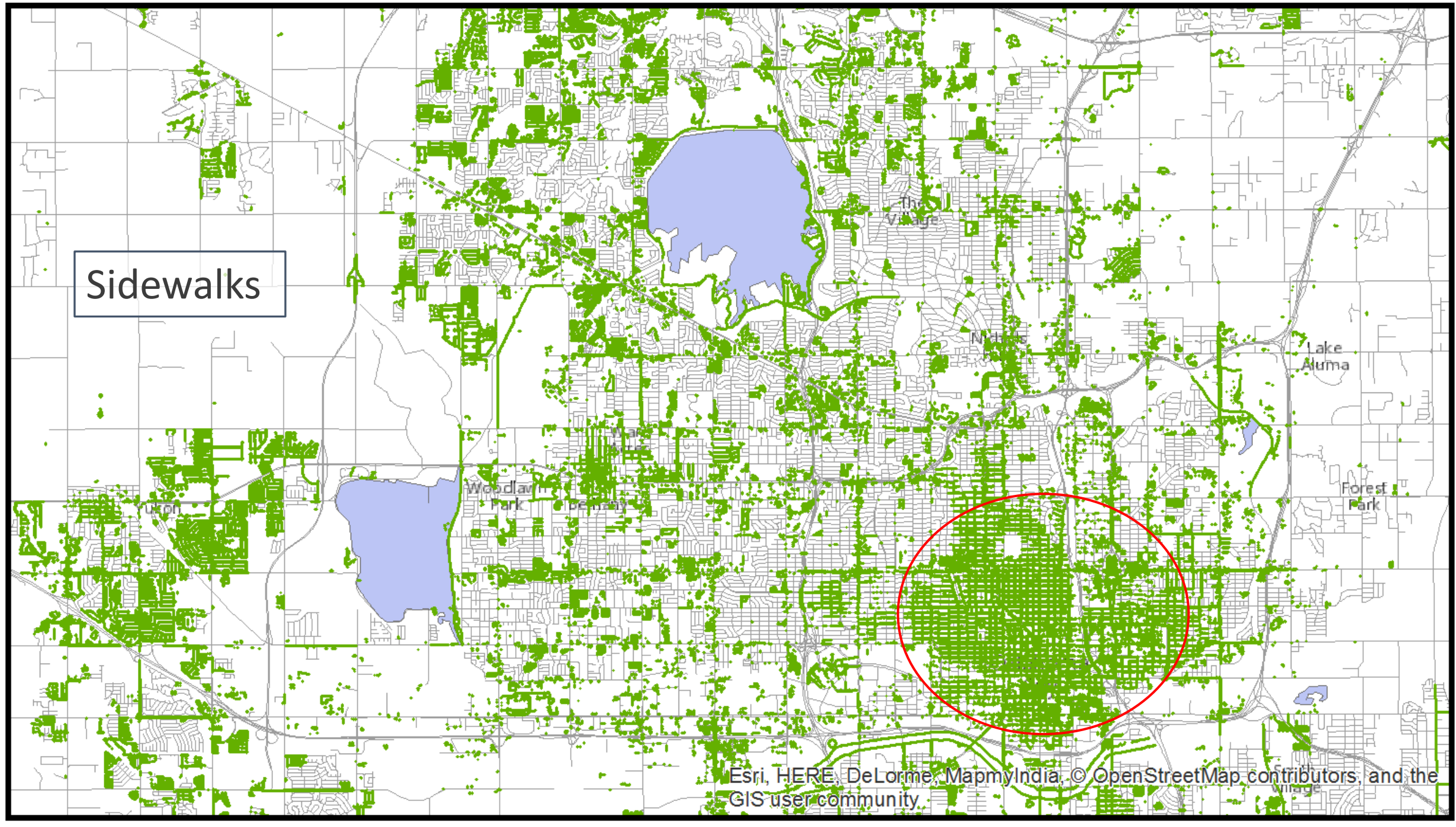
- Interested staff from area communities
- Advocacy & special interest groups
- Direct our actions to address regional needs & priorities



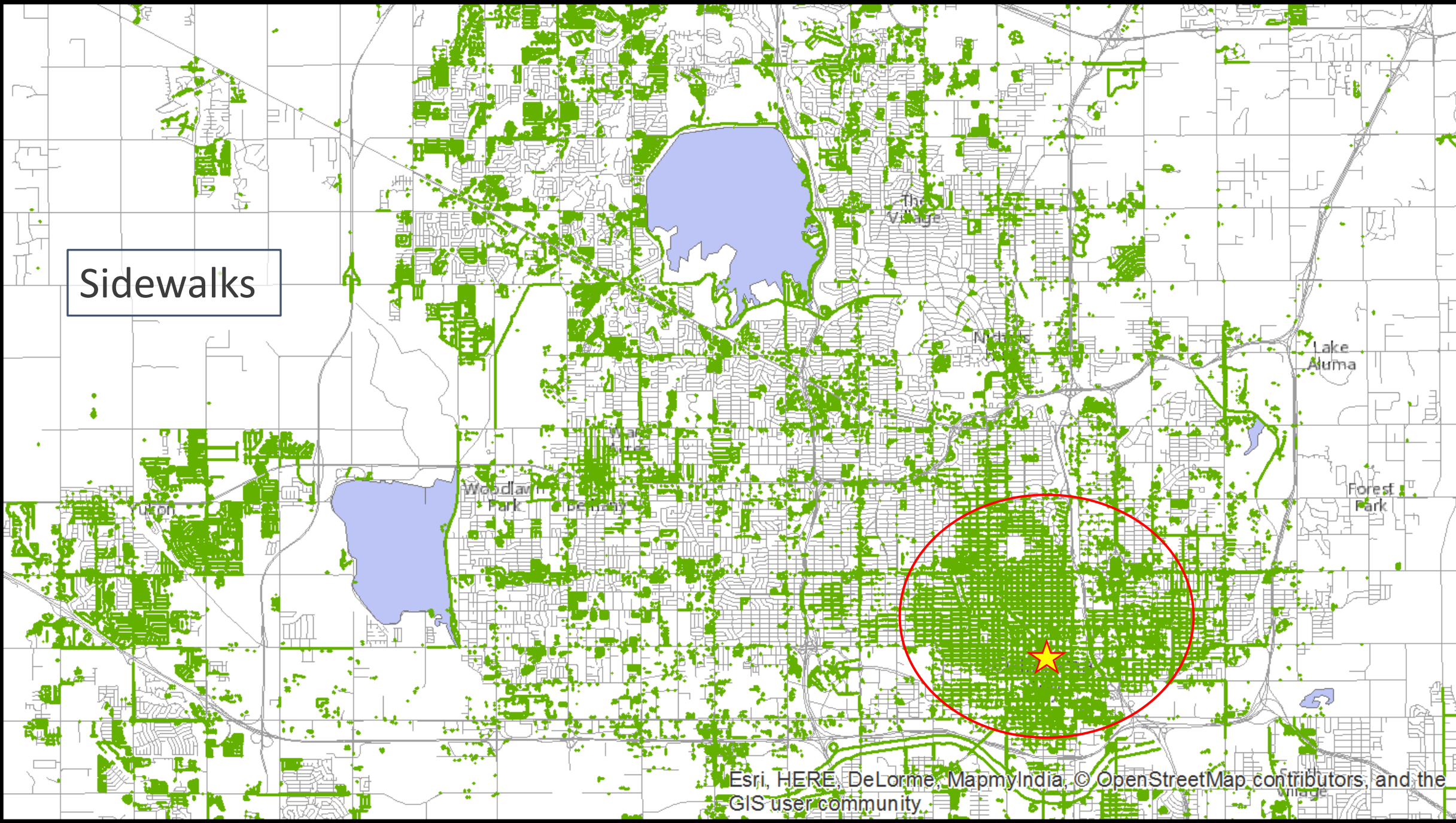


Sidewalks

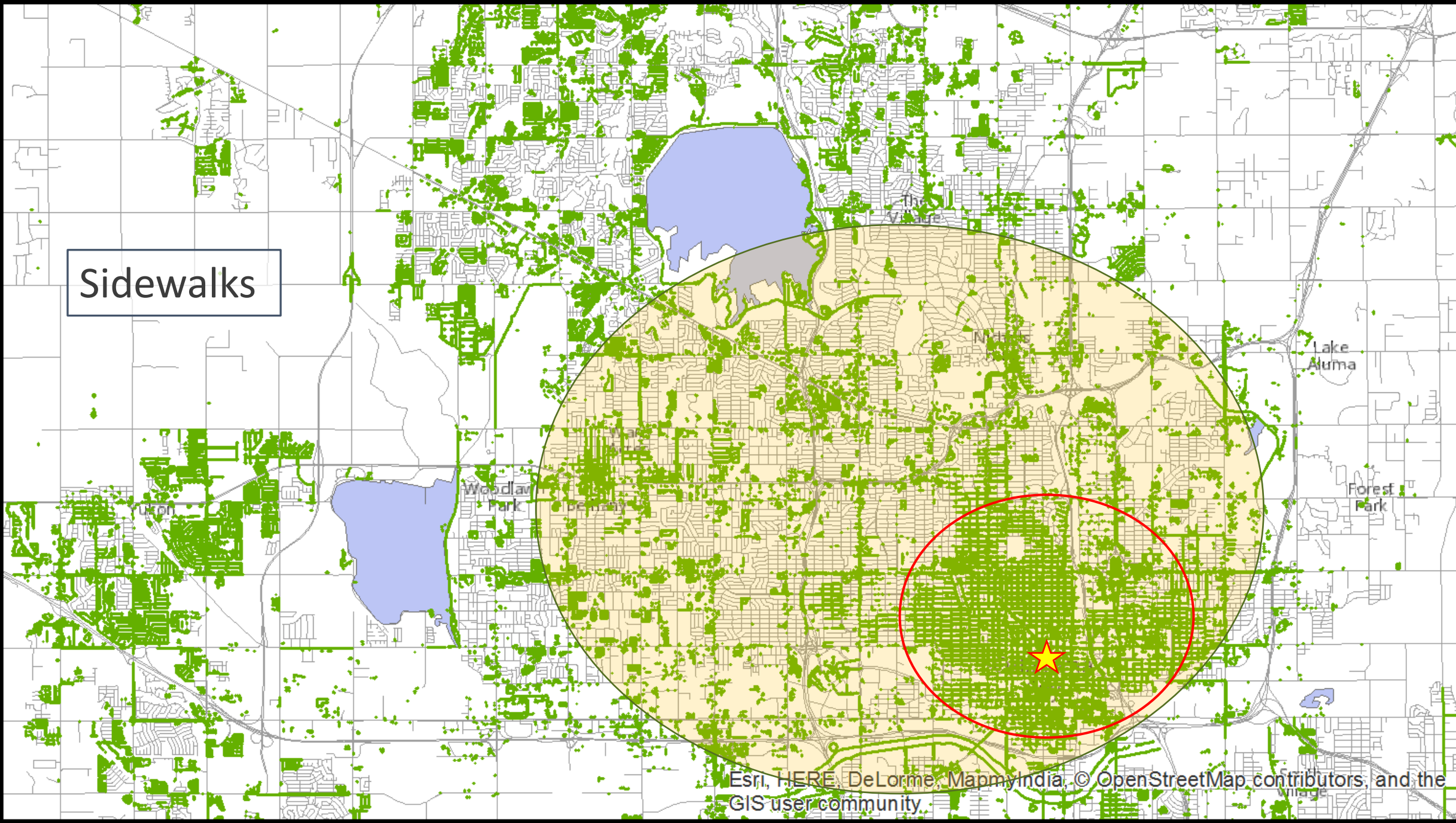
Sidewalks



Sidewalks



Sidewalks



Sidewalks

OCARTS Sidewalks

— Sidewalks

El Reno

Chickasha

Shawnee



Sidewalk Summary

3534 miles of network.
 612.7 miles of sidewalk.
 11.7% network miles have sidewalk.

Sidewalk Coverage	Network Miles
Limited to None	3120
Partial	274
Full	140

Transportation Alternatives Program (2014)

- Federal Funding for Alternative Modes of Transportation
- \$2.8 Million for 2 years
- 10 projects funded— paths, sidewalks, bike routes, transit improvements—including
 - Almost 2 miles of sidewalk
 - Over 5 miles of multi-use path

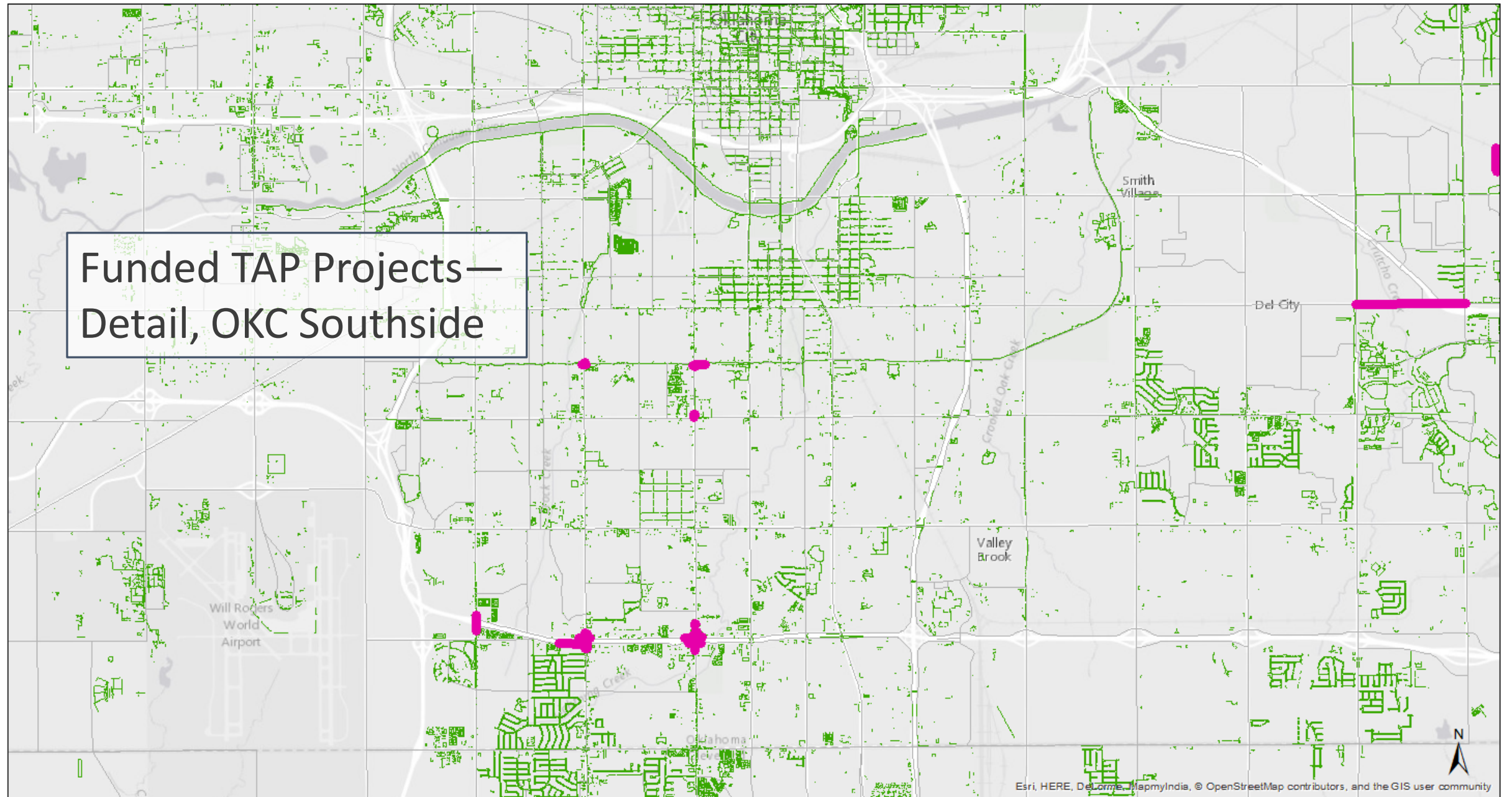
Funded TAP Projects

El Reno

Shawnee

Chickasha

Funded TAP Projects— Detail, OKC Southside

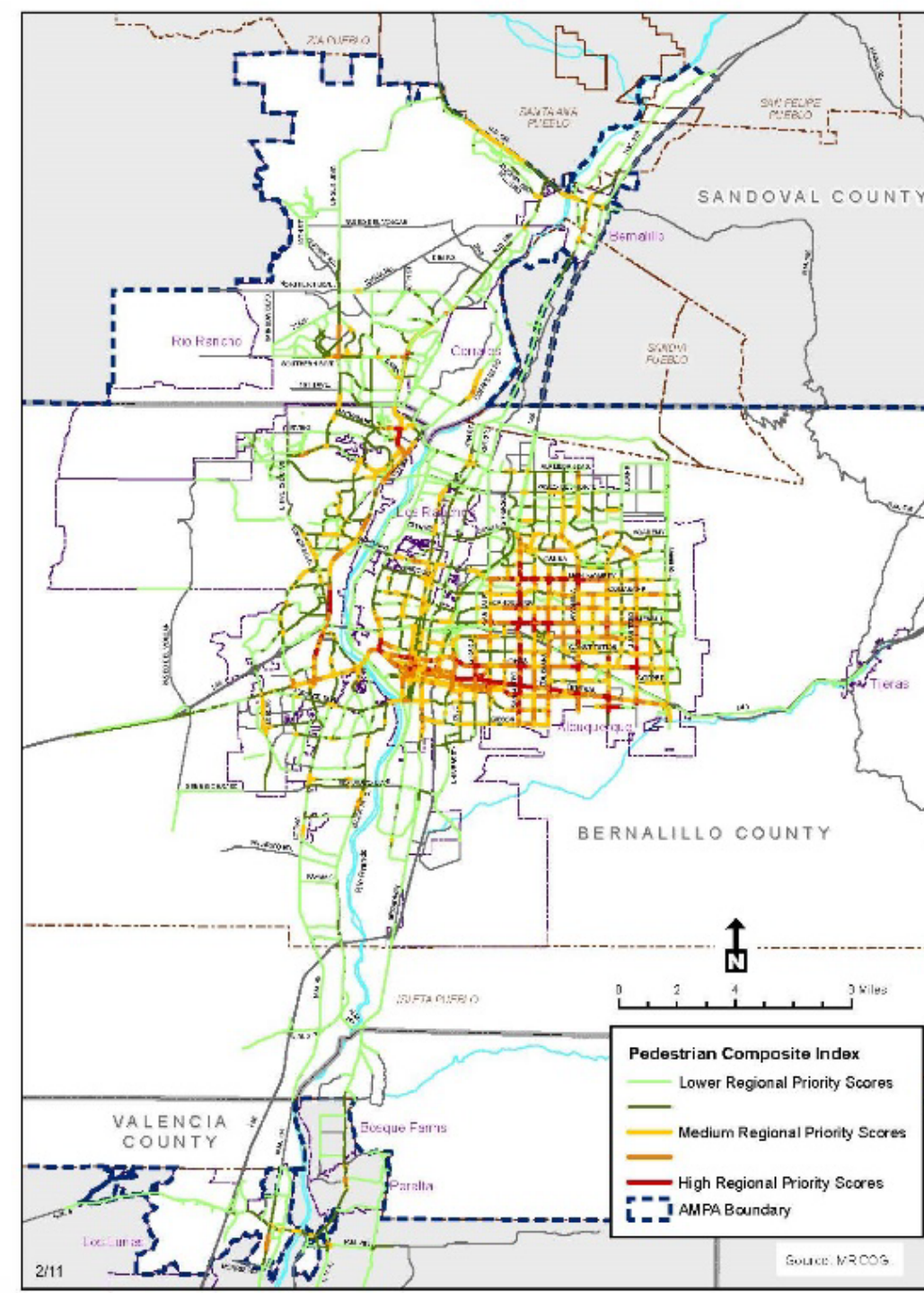


What is the problem in need of solution?

- Decades of planning and building transportation for vehicles only leaves us playing catch-up on investments now to get to the kind of walkable region residents want and need.
- Funds at all levels (federal, state, local) are limited, and are insufficient for the need.
- How do we spend the available resources in the best, most efficient way possible?

Solution: Albuquerque's Pedestrian Composite Index

- Data Driven GIS Analysis
- Regional Scope
- Outcome: Map of Regional Priority Corridors for Investment in Pedestrian Improvements
 - Network Roads only



Performance Measurement

	Length (Miles)	2008 Average Weekday Daily Traffic Volume	Posted Speed	Total Pedestrian Crashes for Surrounding Area (2004-2008)	Overall Deterrent Score	Overall Generator Score	Pedestrian Composite Index Score: D x G
Indian School to Lomas	1.0	8,789	30	5.6	0.54	1.82	0.99
Lomas to Lead	0.7	9,052	30	34.2	0.54	3.27	1.77
Lead to Gibson	1.3	4,663	30-35	10.2	0.49	1.60	0.79
Generator Scores							
	Length (Miles)	Average Presence of Schools (1 - road segments within 1/4 mile, 0.5 - road segments within 1/2 mile)	Average Presence of Community Centers, Libraries and Cultural Centers (0.25 for road segments within 1/4 mile)	Average Presence of Bus Stops (1 - road segments within 1/4 mile of a high volume stop, 0.5 - road segments within 1/2 mile of a high volume stop, 0.25 for road segments within 1/4 mile of regular stop)			
Indian School to Lomas	1.0	0.43	0.03	0.40			
Lomas to Lead	0.7	0.25	0.00	0.69			
Lead to Gibson	1.3	0.05	0.08	0.25			
Generator Scores							
	Length (Miles)	Percentage of People Walking or Taking Transit to Work (2000 Census)	Proportion of Households with no Motorized Vehicles (2000 Census)	Availability of Restaurants, Coffee Shops, Grocery Stores (Regional Percentile)	Surrounding Roadway Connectivity (Average True Intersections Per Square Mile)		
Indian School to Lomas	1.0	9%	3%	12	189		
Lomas to Lead	0.7	41%	31%	90	191		
Lead to Gibson	1.3	14%	14%	38	148		



High Generation

Low Generation

High Deterrents

High Priority

It depends

Low Deterrents

It depends

**Low Regional
Priority**

High Generation

Low Generation

High Deterrents

High Priority

It depends

Low Deterrents

It depends

Low Regional
Priority

High Generation

Low Generation

High Deterrents

High Priority

It depends

Low Deterrents

It depends

Low Regional
Priority

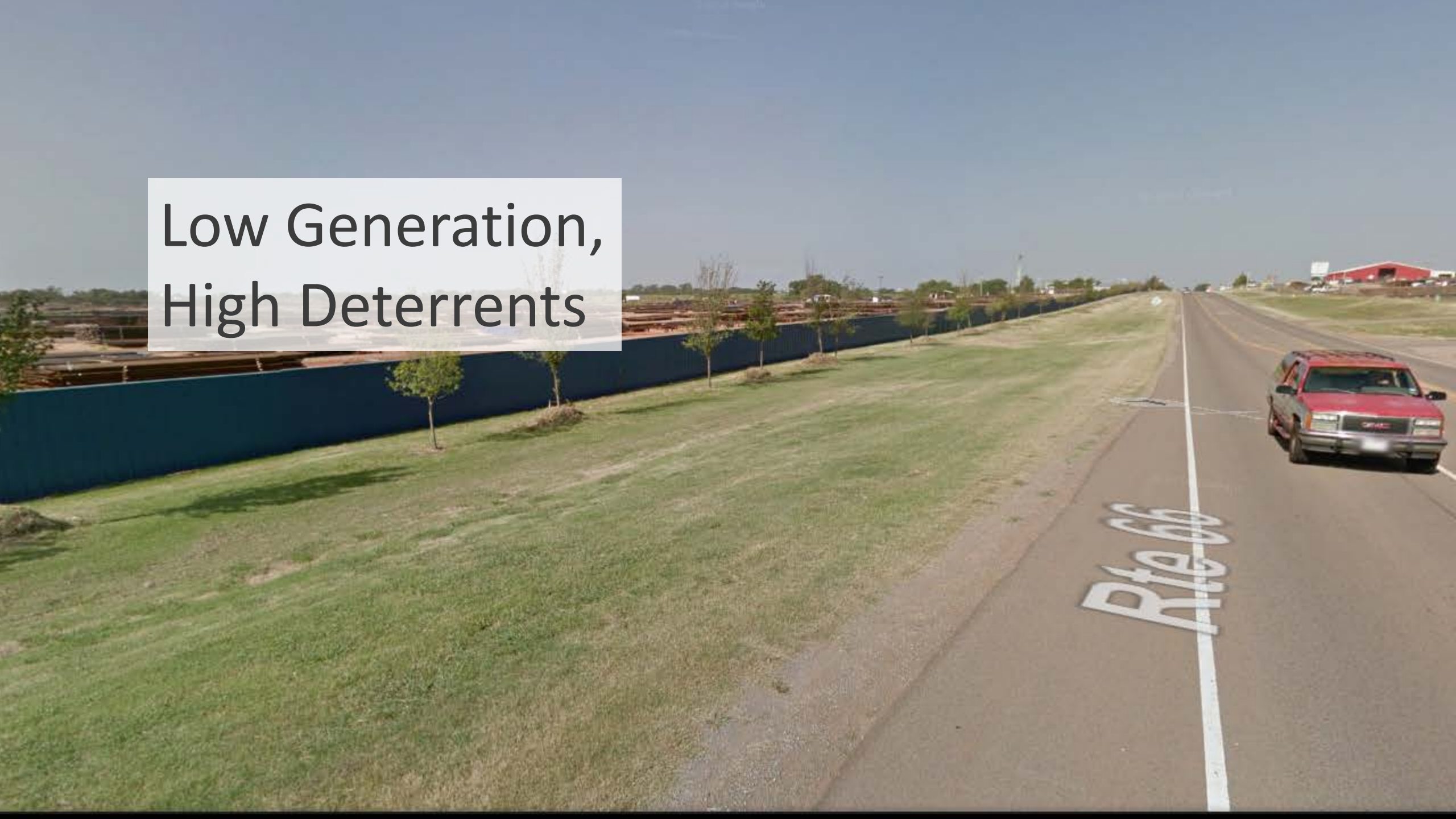
High Generation, High Deterrents



High Generation, Low Deterrents

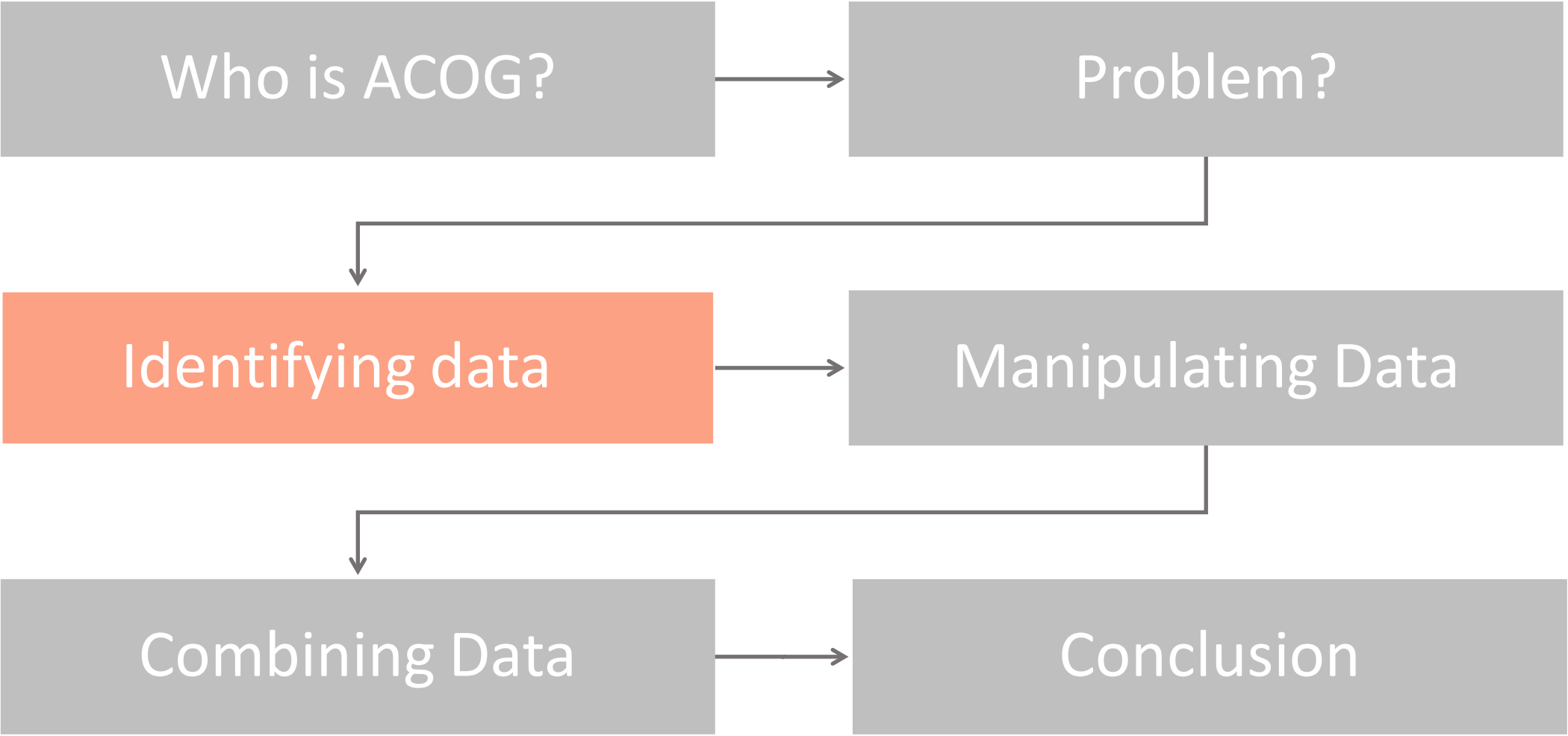


Low Generation,
High Deterrents



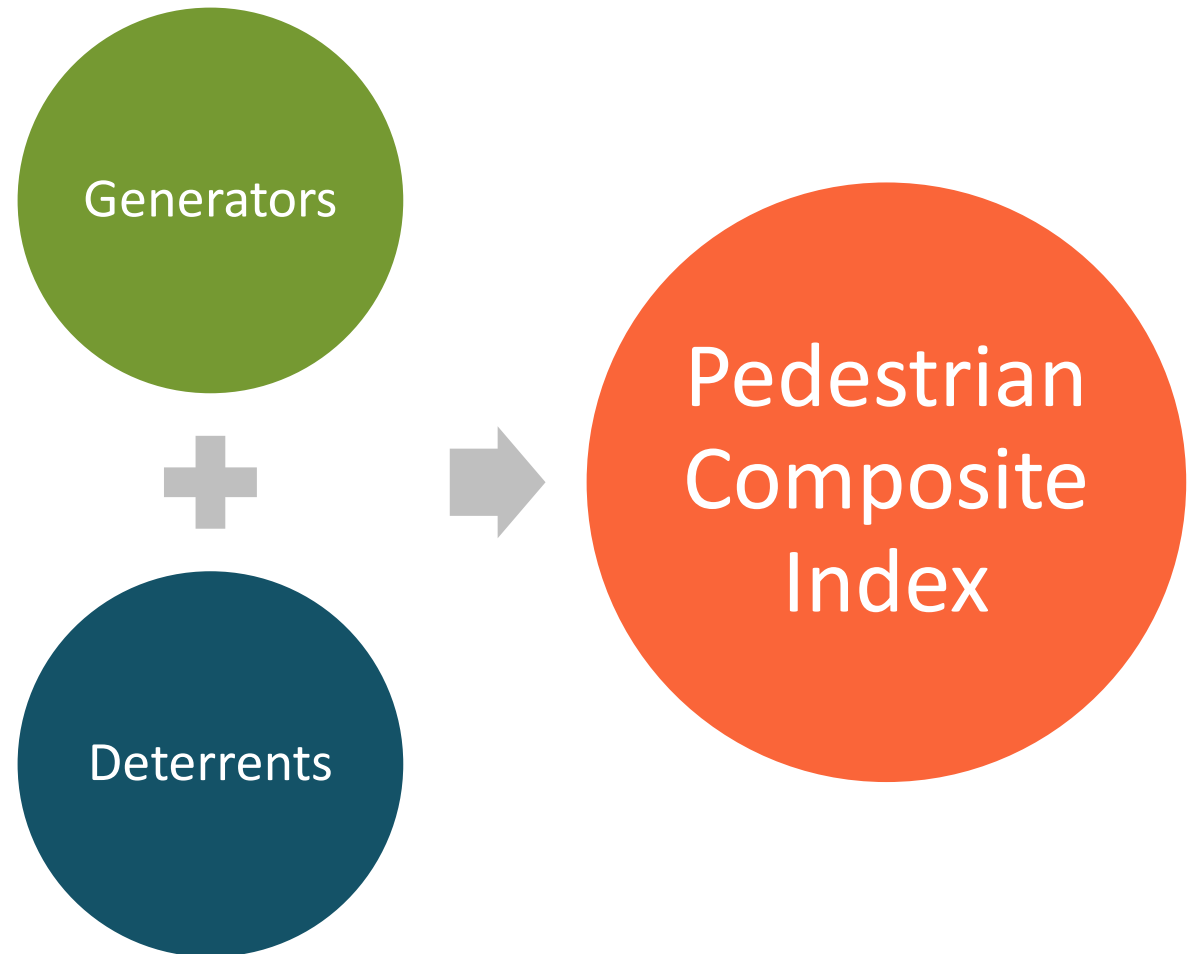
Low Generation,
Low Deterrents





Data for Analysis

- Data Available:
 - Demographics
 - Business information
 - Sidewalks
 - Land Use
 - Transportation network
- Data Not Available:
 - Signalized intersections
 - Midblock crossings
 - Pedestrian traffic counts
 - Actual observed off-peak speeds



Pedestrian Generators

- Schools & Libraries
- Parks & Recreational Facilities
- Transit Facilities
- Walkable Businesses
- Street Network Connectivity
- Demographics
 - Access and Age
- Multifamily Land Use
- Regional Activity Centers
- Employment & Population Density

Pedestrian Generators – BPAC Approved

- Schools & Libraries
- Parks & Recreational Facilities
- Transit Facilities
- Walkable Businesses
- ~~Street Network Connectivity~~
- Demographics
 - Access and Age
- ~~Multifamily Land Use~~
- ~~Regional Activity Centers~~
- ~~Employment & Population Density~~

Pedestrian Deterrents

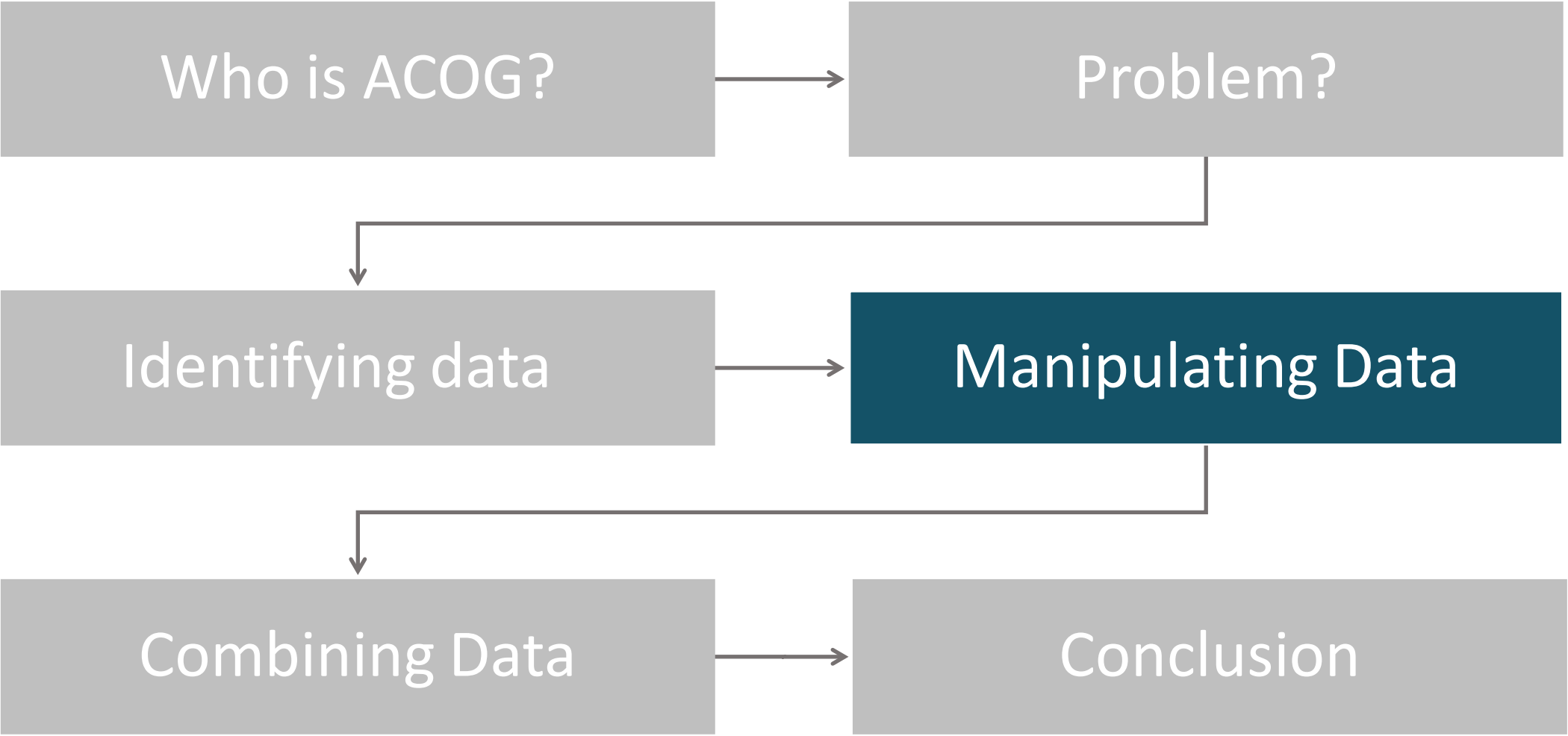
- Pedestrian Safety (Crash Data)
- Traffic Volume (AADTs)
- Number of Lanes
- Industrial Land Use
- Barriers
- Low Percent of Sidewalk Coverage

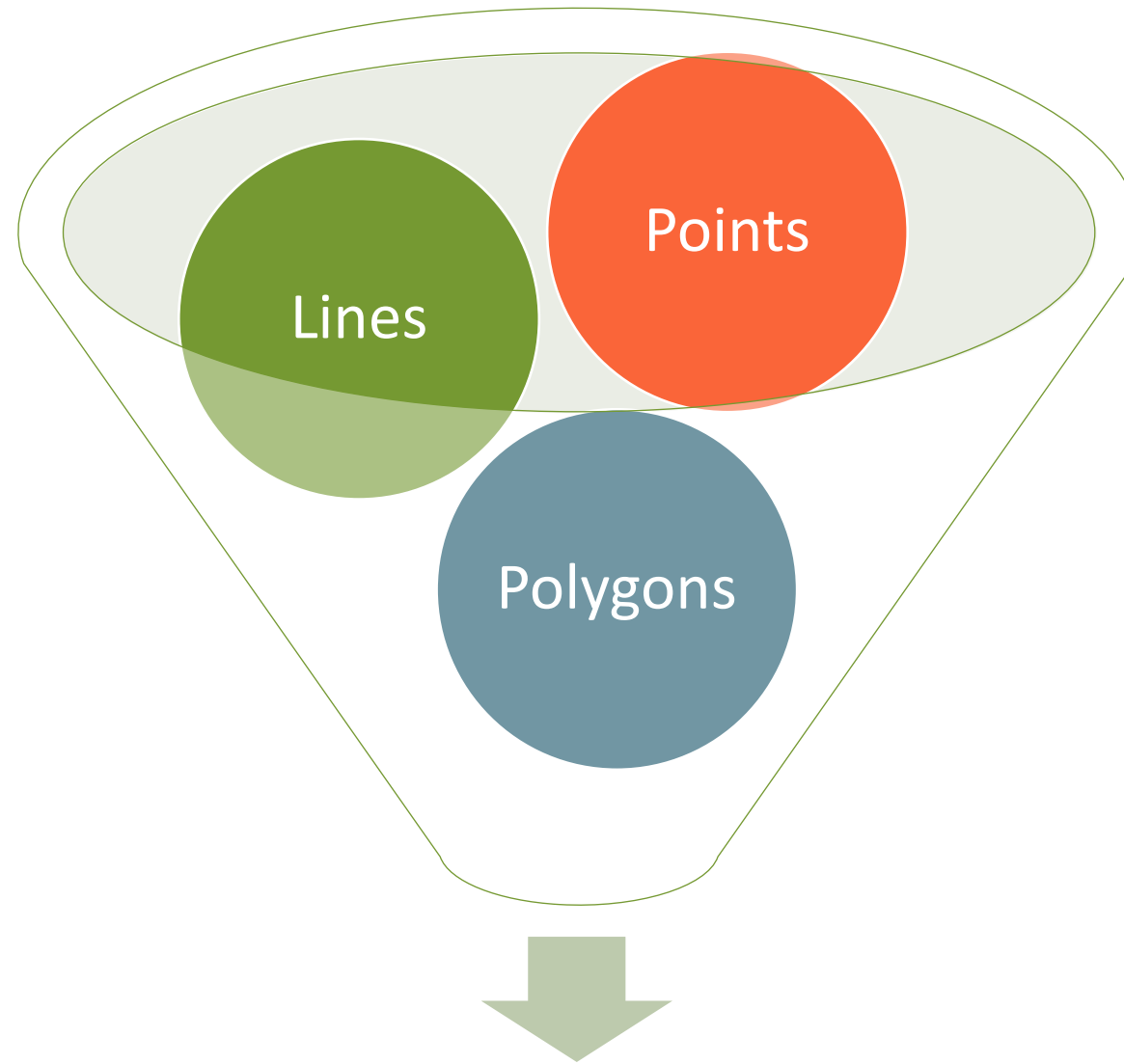
Pedestrian Deterrents – BPAC Approved

- Pedestrian Safety (Crash Data)
- Traffic Volume (AADTs)
- Number of Lanes
- ~~Industrial Land Use~~
- Barriers
- Low Percent of Sidewalk Coverage

BPAC Secondary Qs: How to use the data

- Distance or Density?
- If Distance, how FAR?
 - $\frac{1}{4}$ mile from elementary schools is highest, then $\frac{1}{2}$ mile
 - $\frac{1}{4}$ mile from high schools is highest, then 1 mile





Line Segments of the Road Network

Generators

Points

Lines

Polygons

6 Destinations

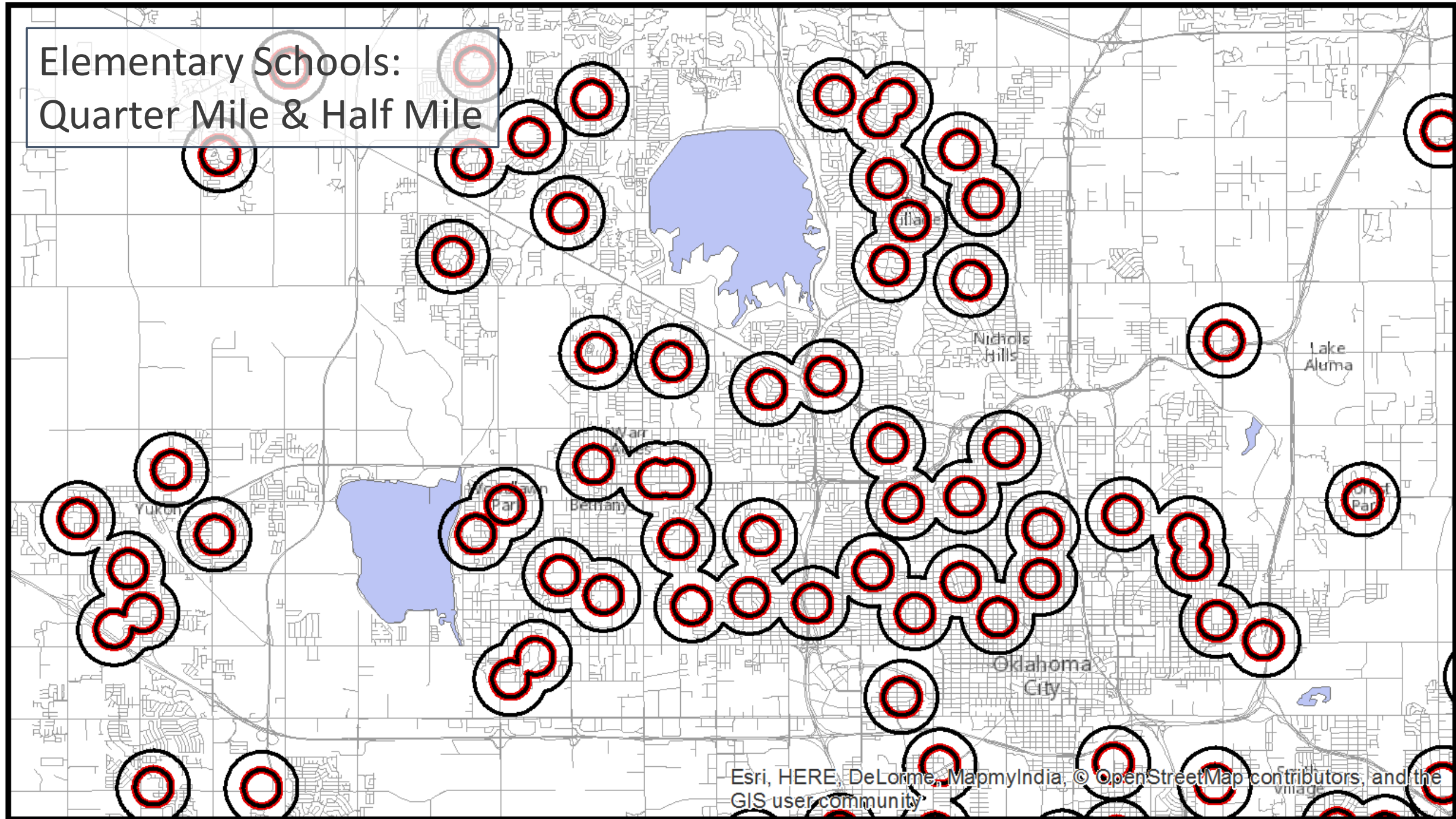
Bus Stops

Walkable
Businesses

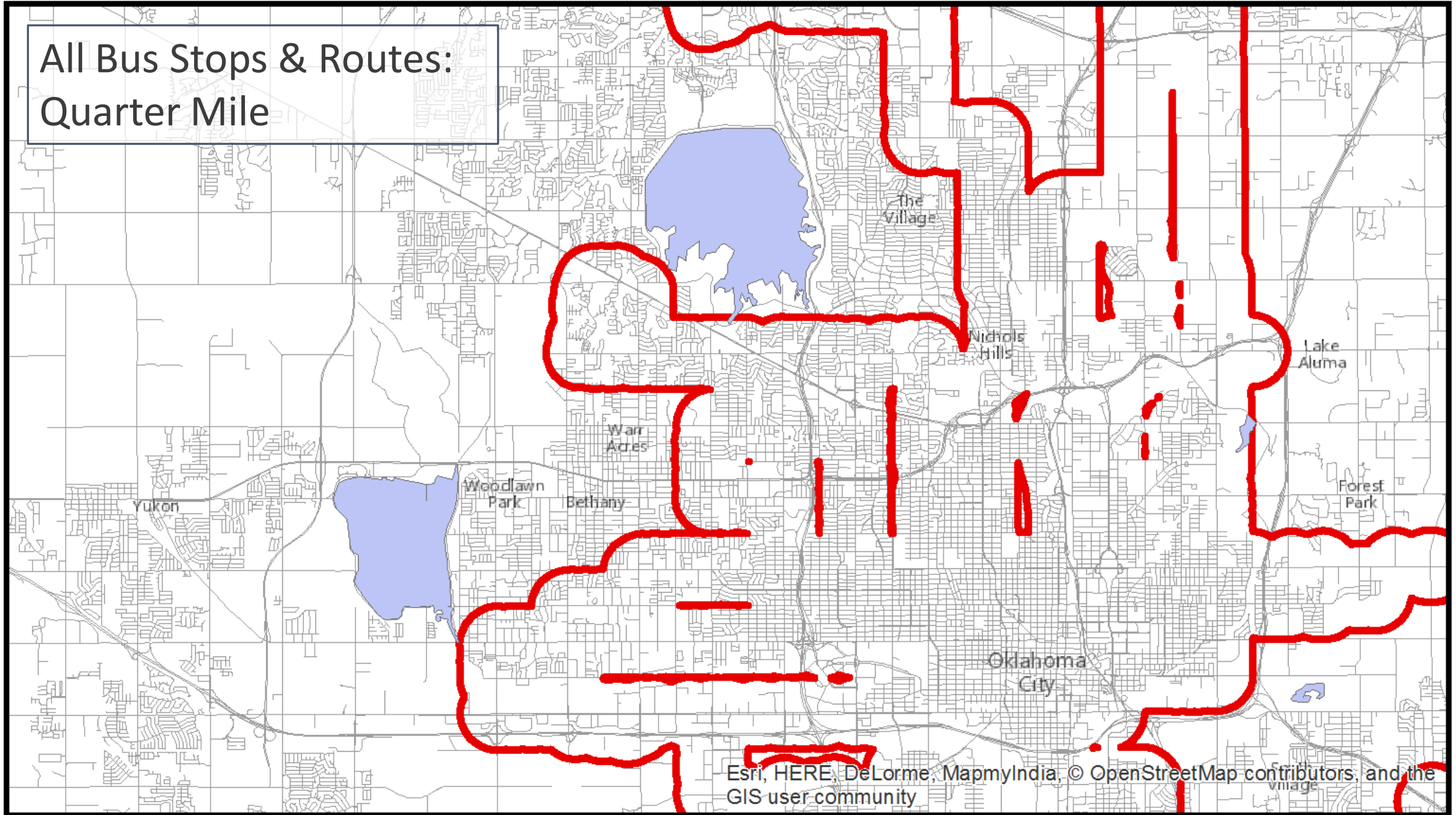
Bus Routes

2
Demographics

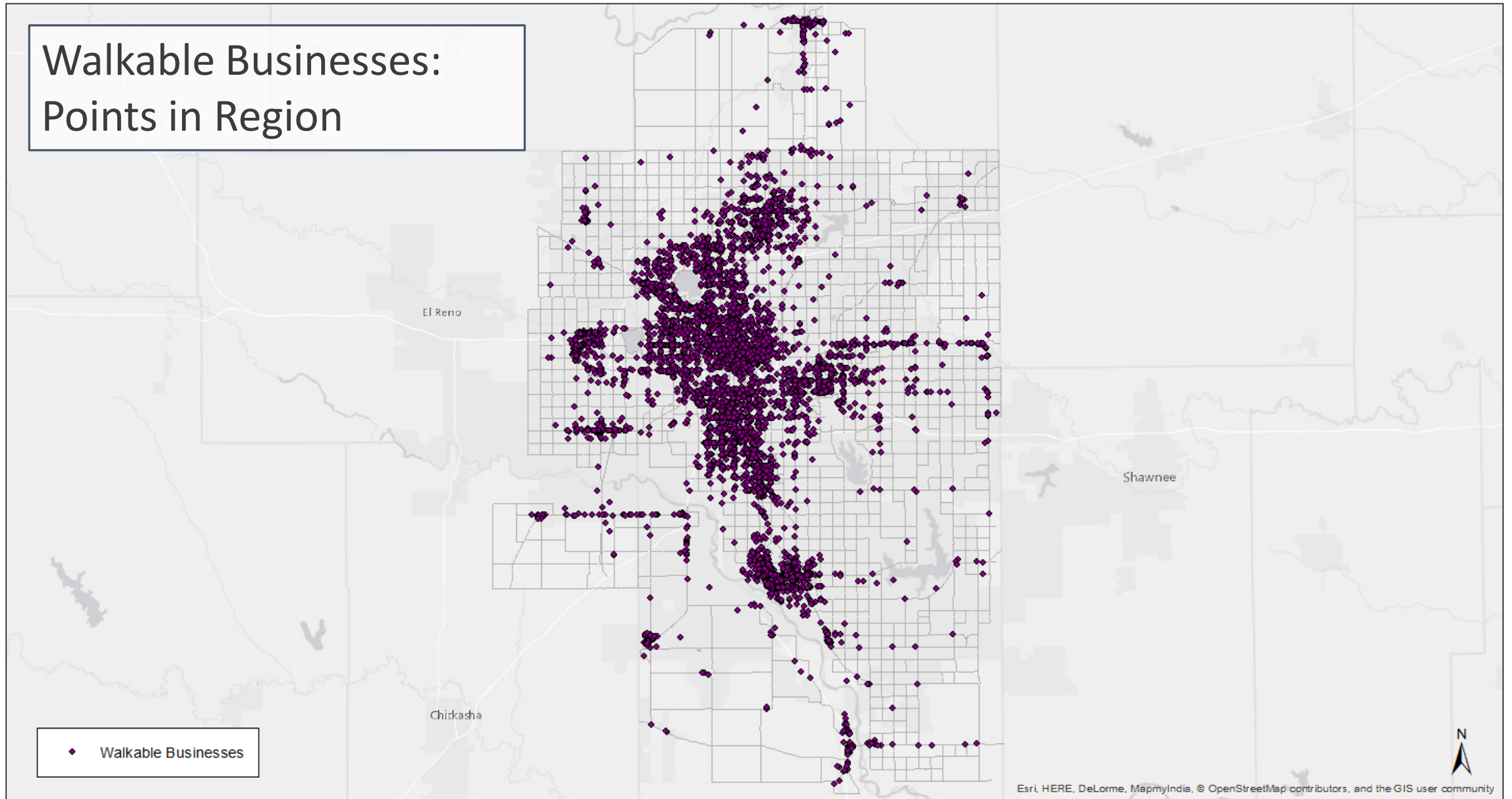
Elementary Schools: Quarter Mile & Half Mile



All Bus Stops & Routes: Quarter Mile

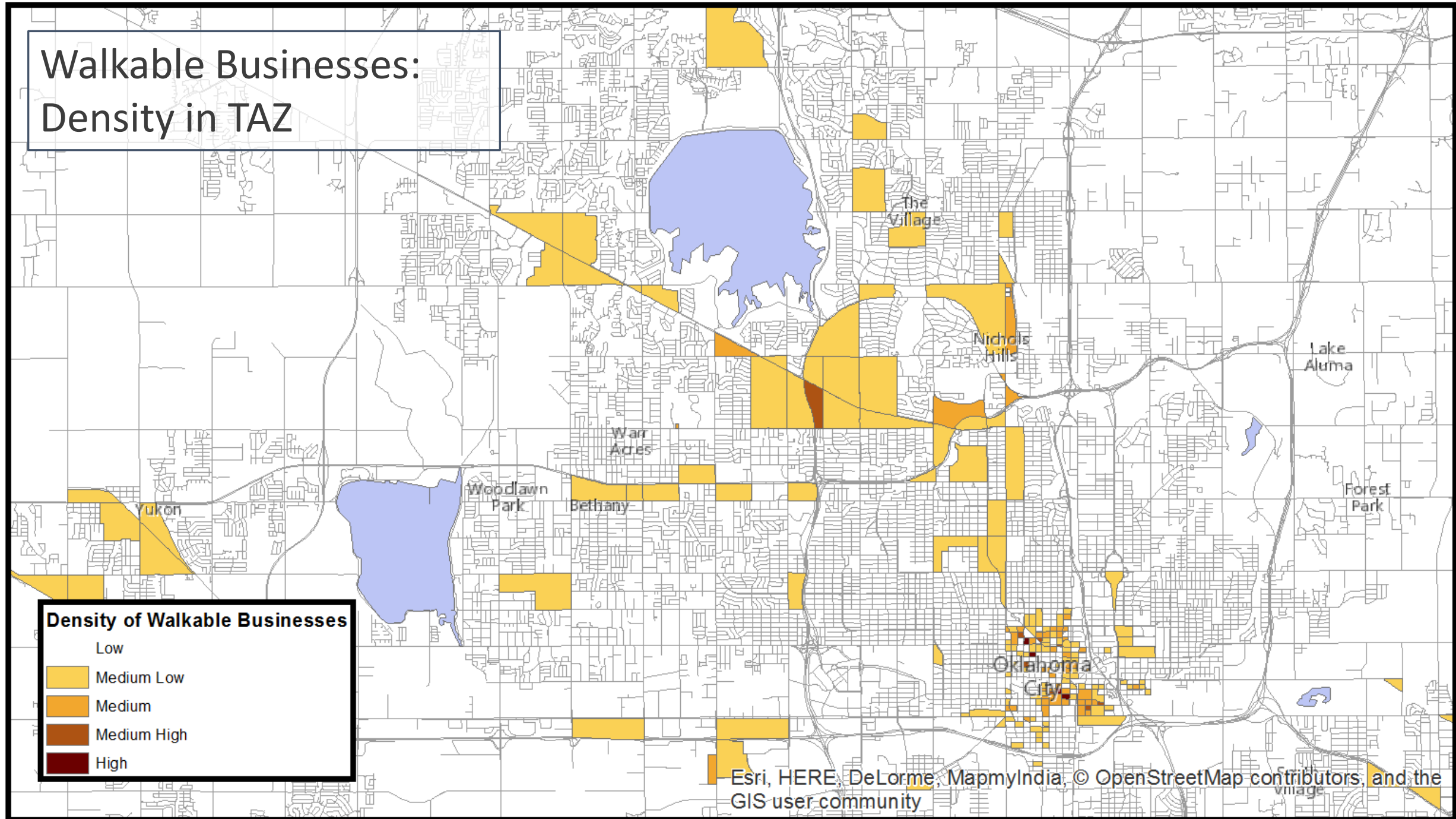
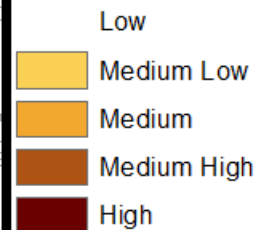


Walkable Businesses: Points in Region



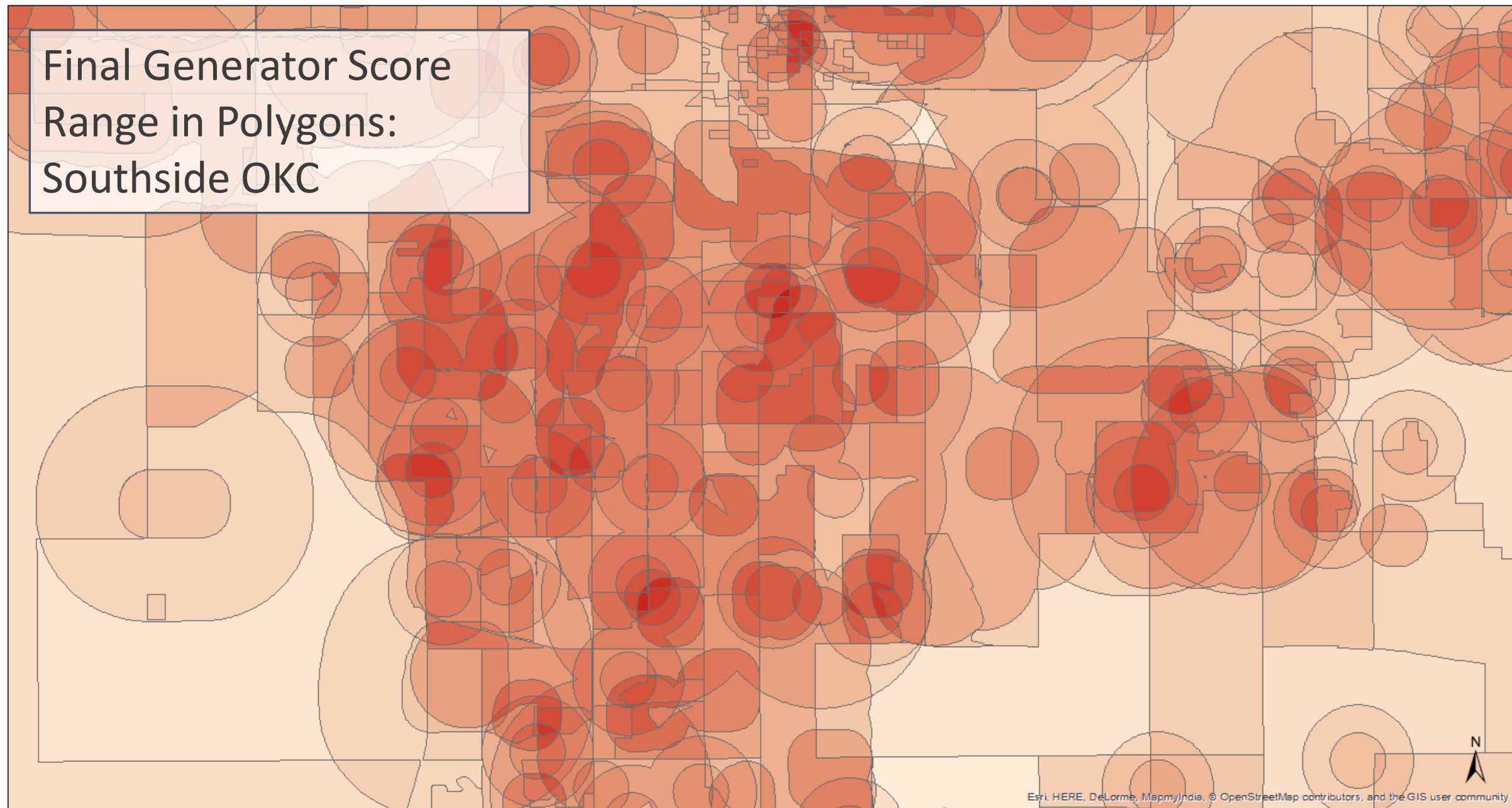
Walkable Businesses: Density in TAZ

Density of Walkable Businesses



Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

Final Generator Score
Range in Polygons:
Southside OKC



Deterrents

Points

Lines

Safety

Barriers

Road
Characteristics

Pedestrian Crashes: Location, Number & Severity

2007-2011 Number & Severity

- Low
- Medium Low
- Medium
- Medium High
- High

Pedestrian Crashes: Severity & Density by TAZ

Crash Numbers by Severity

Low

Medium Low

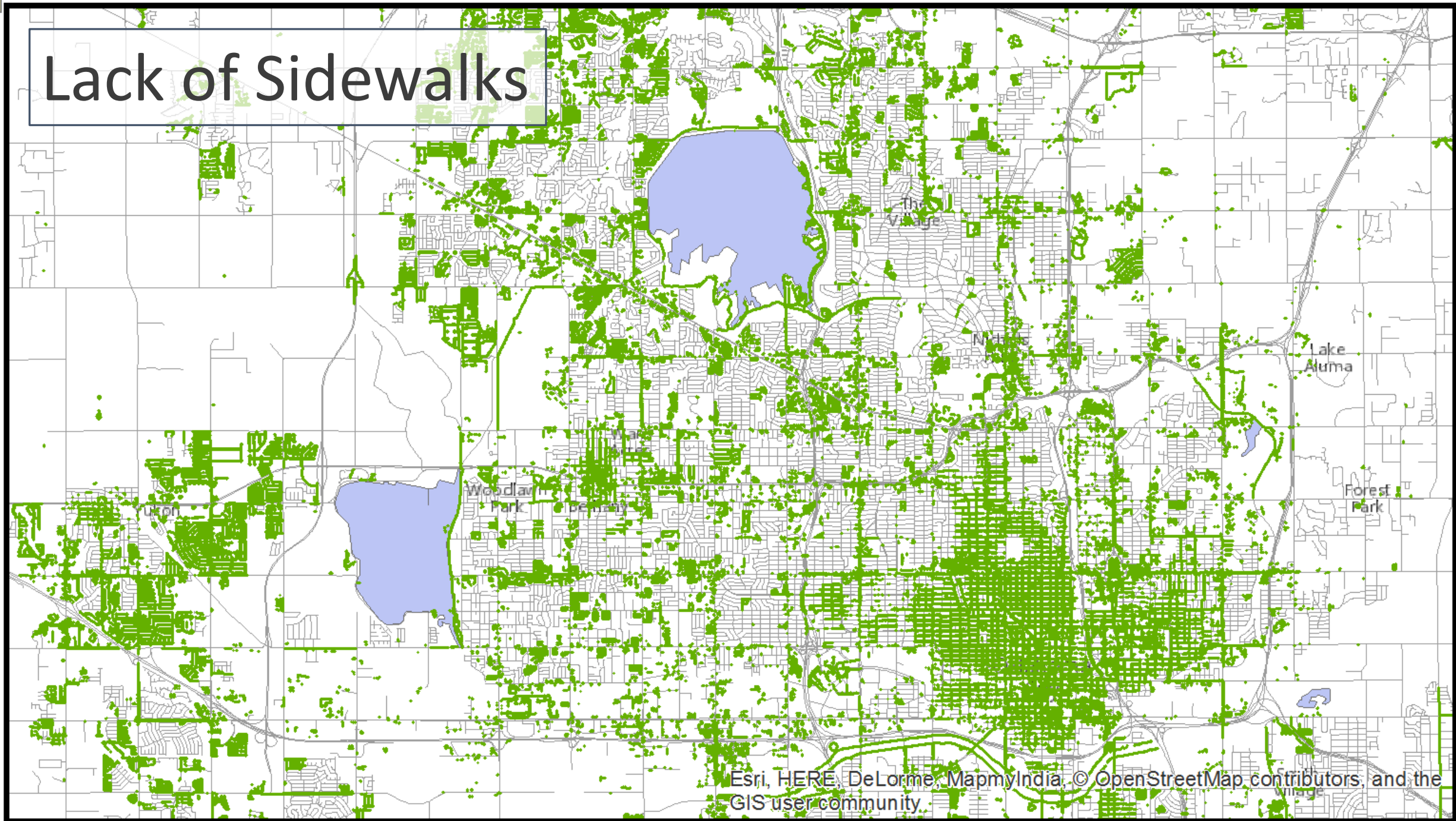
Medium

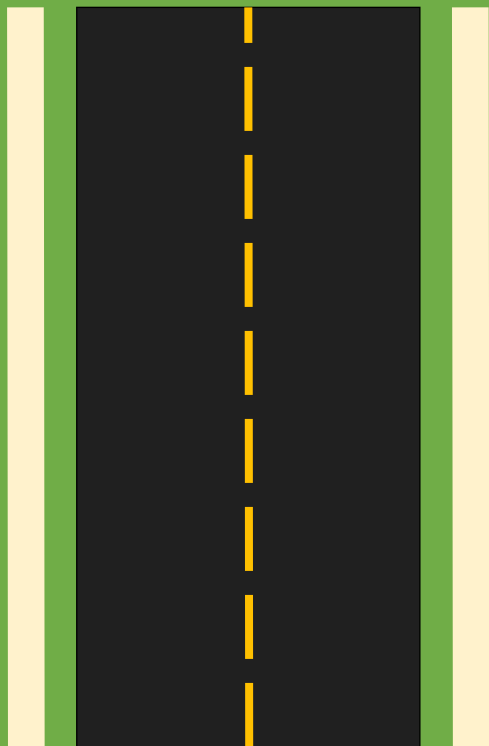
Medium High

High

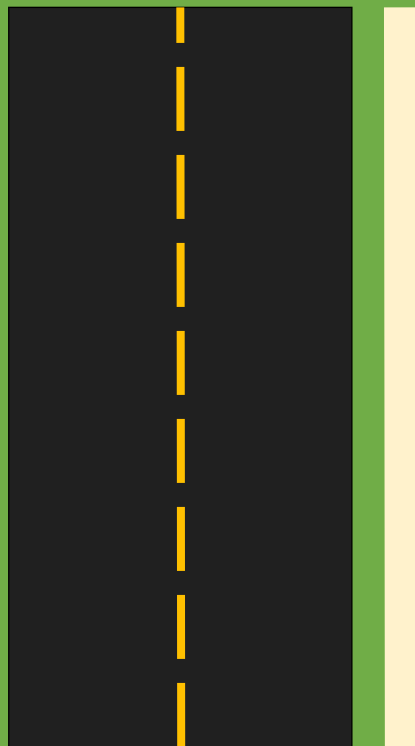
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the
GIS user community

Lack of Sidewalks

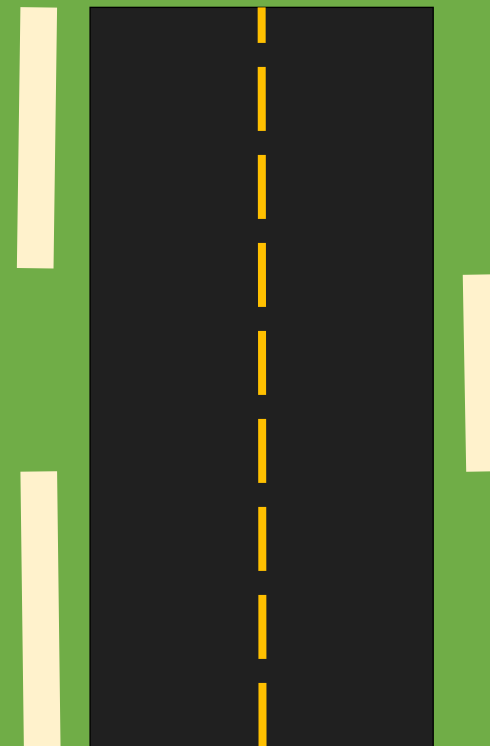




Full Coverage=
2 Sidewalk: 1 Road length

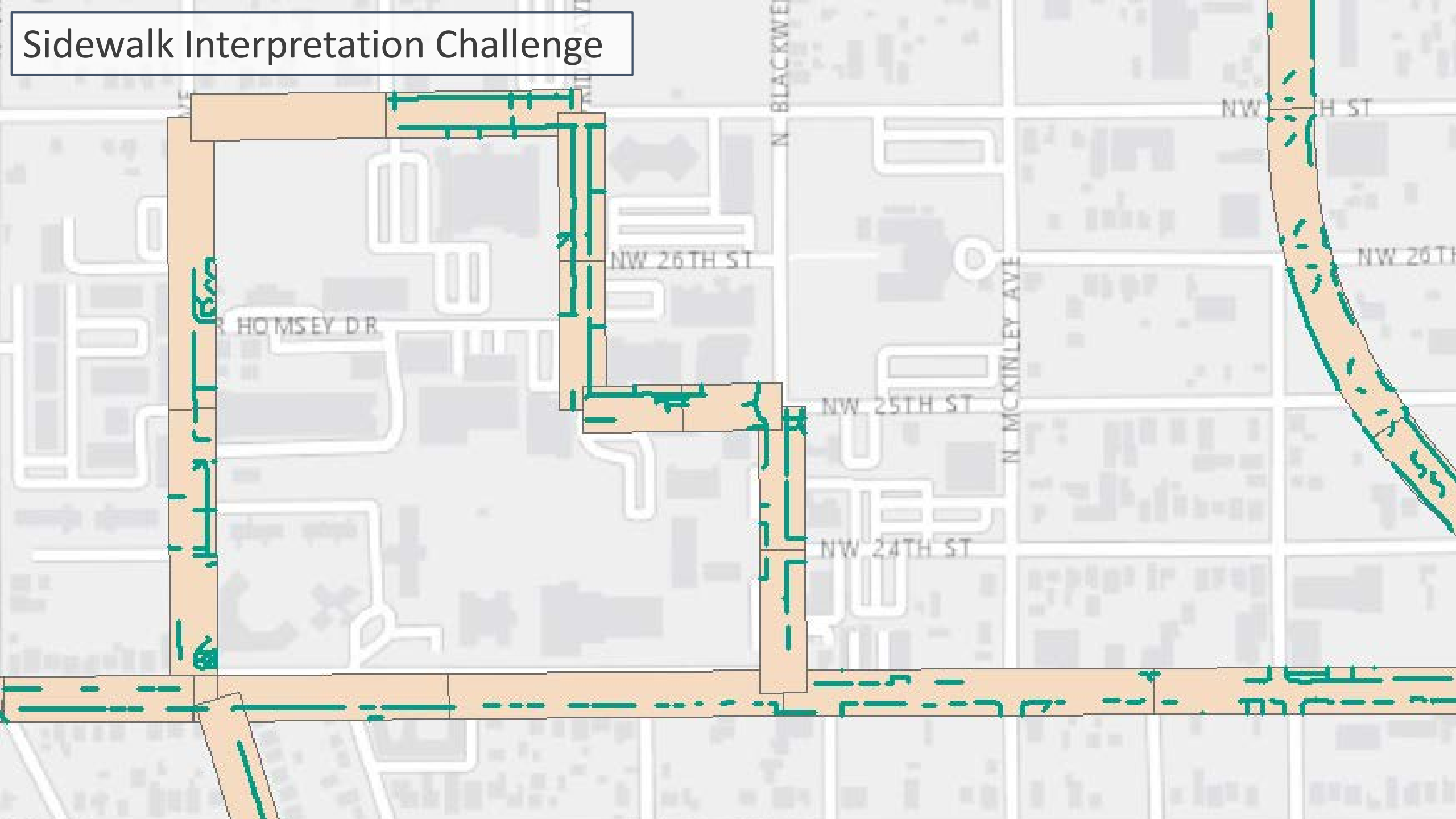


Partial Coverage=
1 Sidewalk: 1 Road length

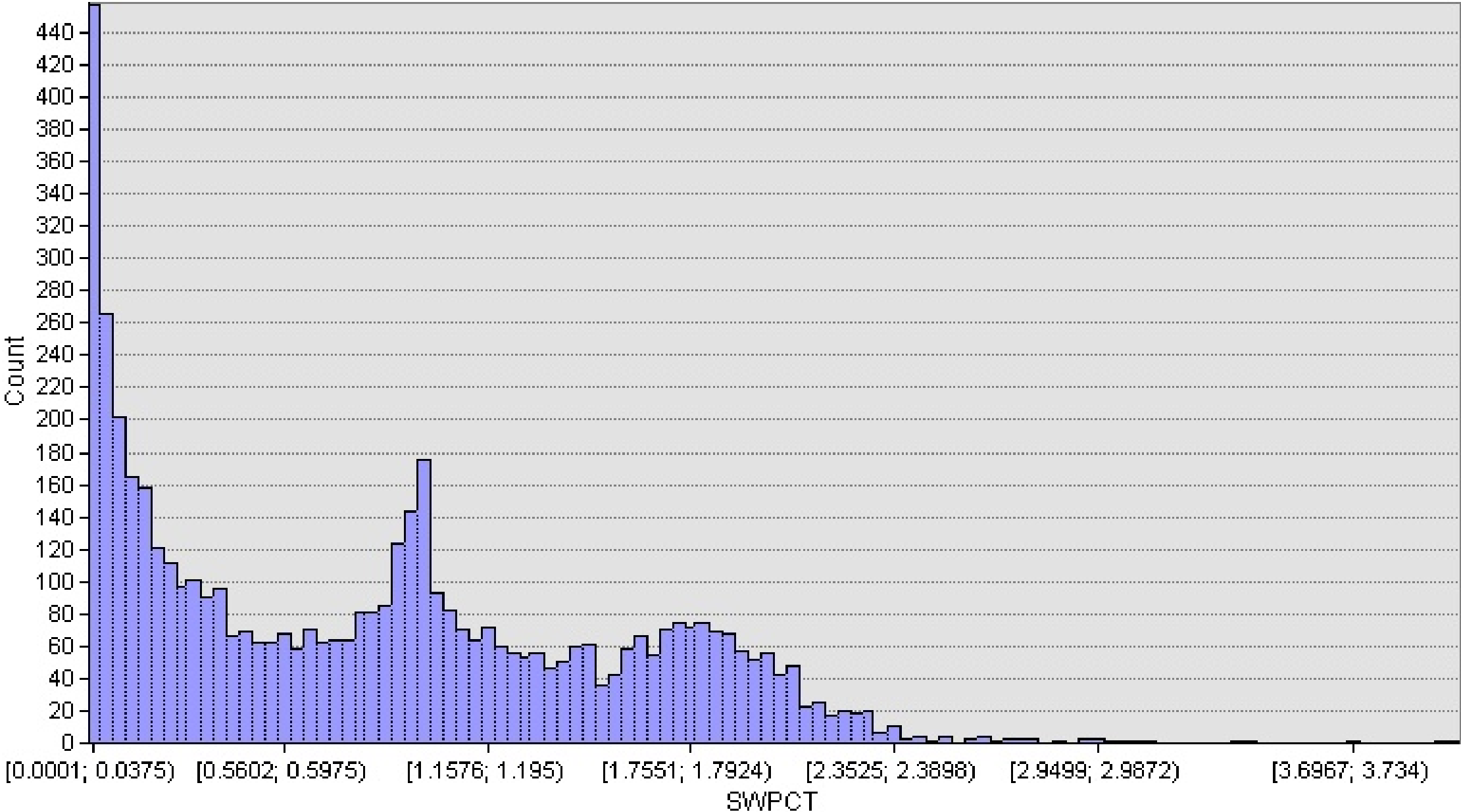


Partial Coverage=
1 Sidewalk: 1 Road length

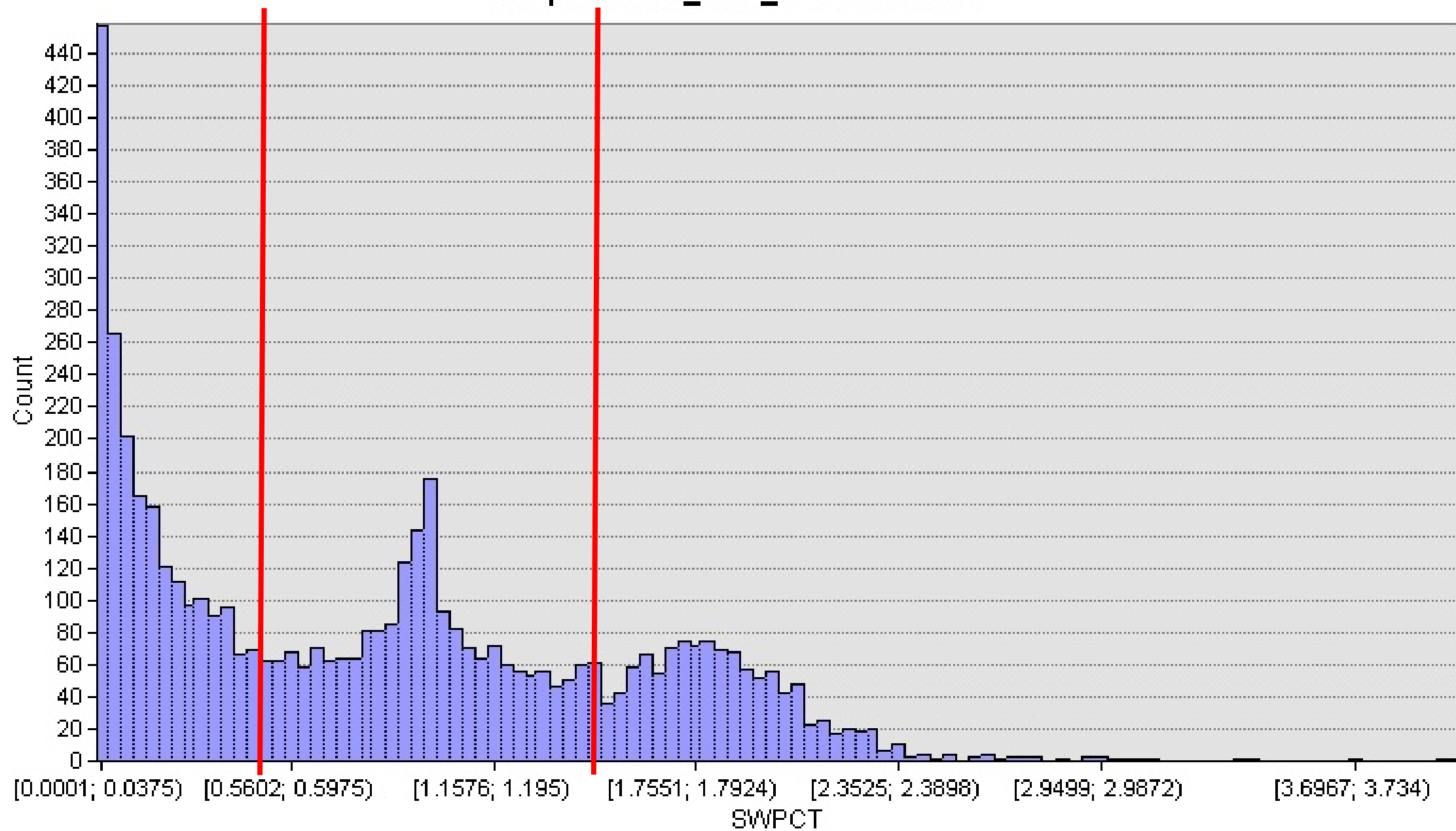
Sidewalk Interpretation Challenge



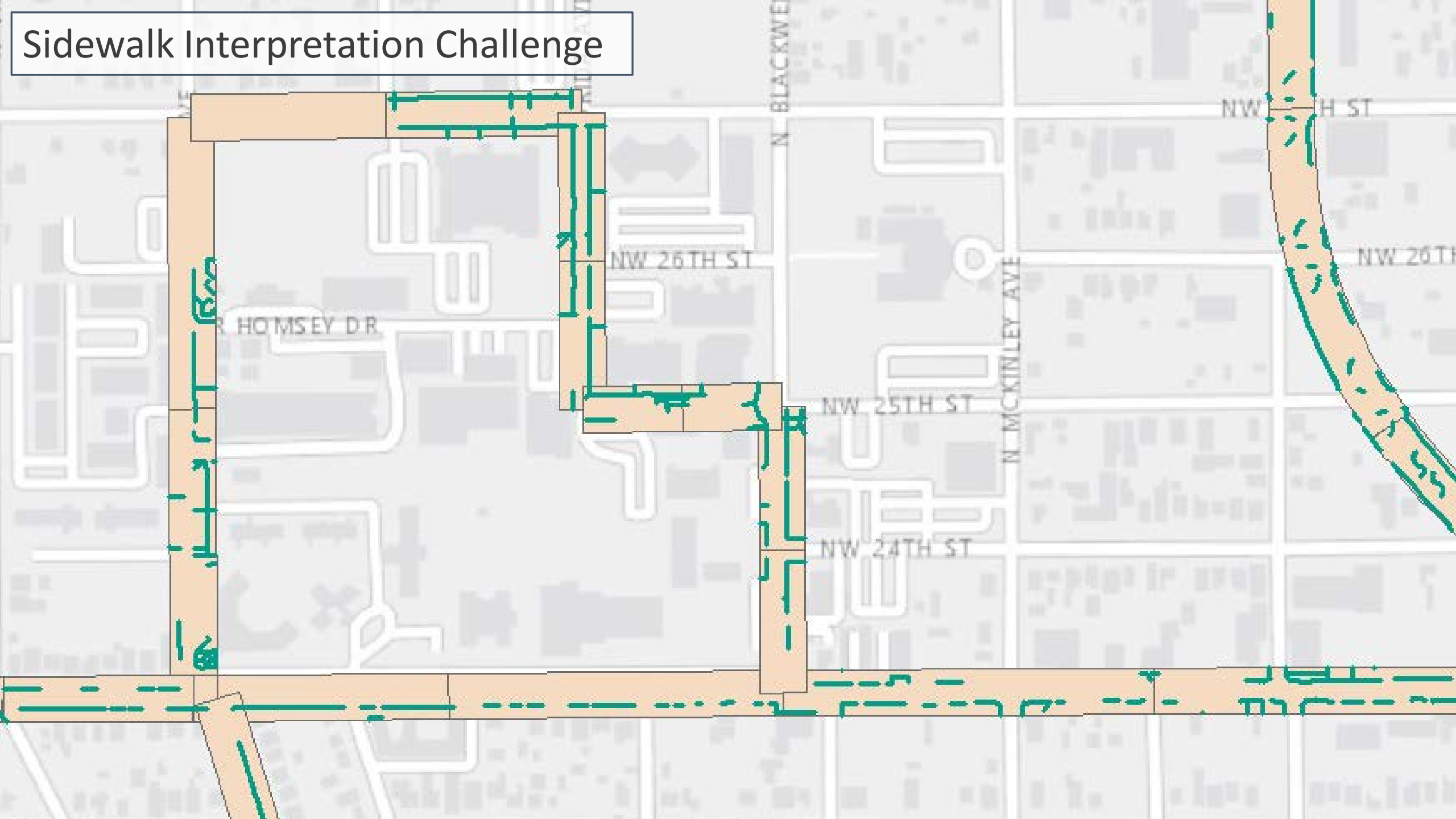
Graph of NW_Rds_directionless



Graph of NW_Rds_directionless



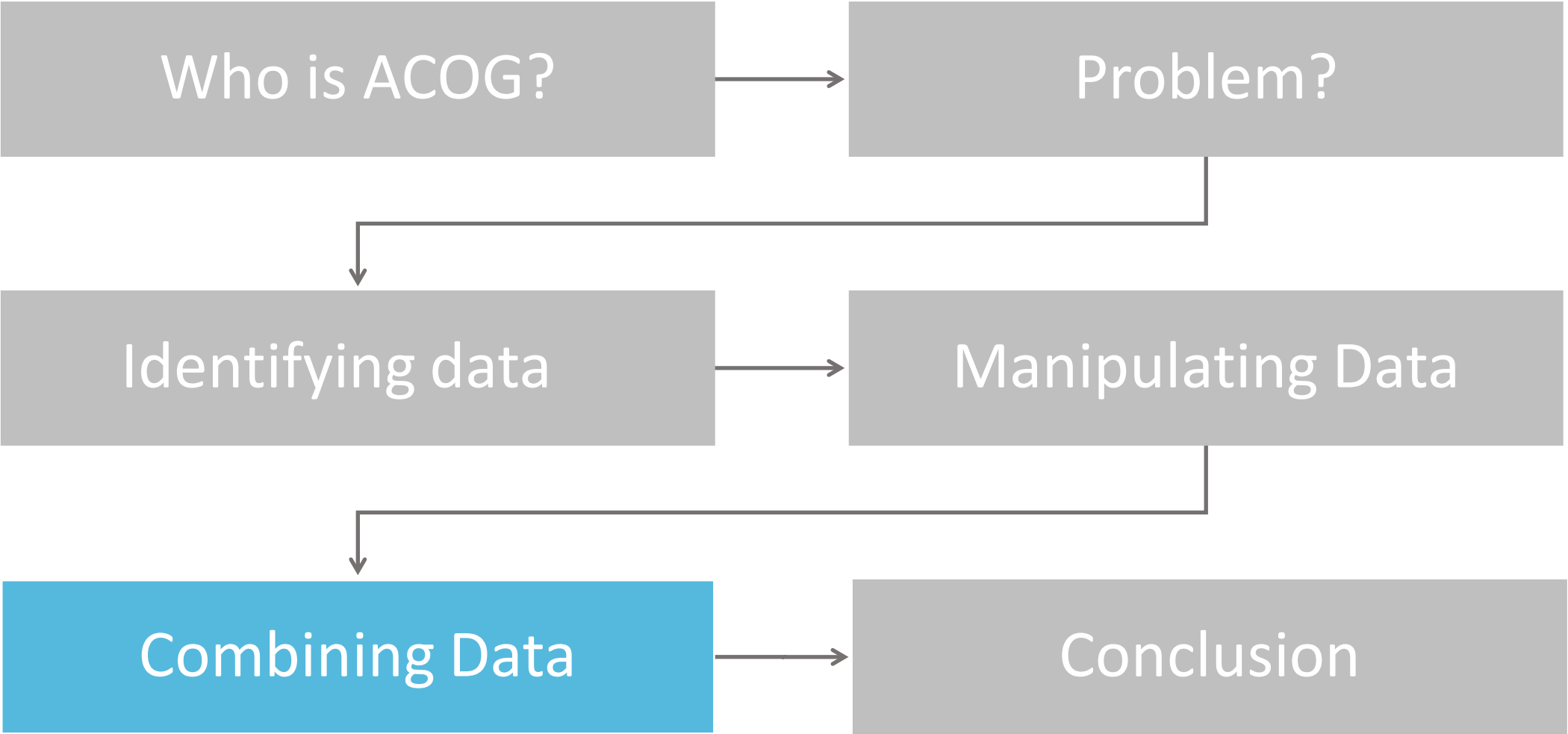
Sidewalk Interpretation Challenge



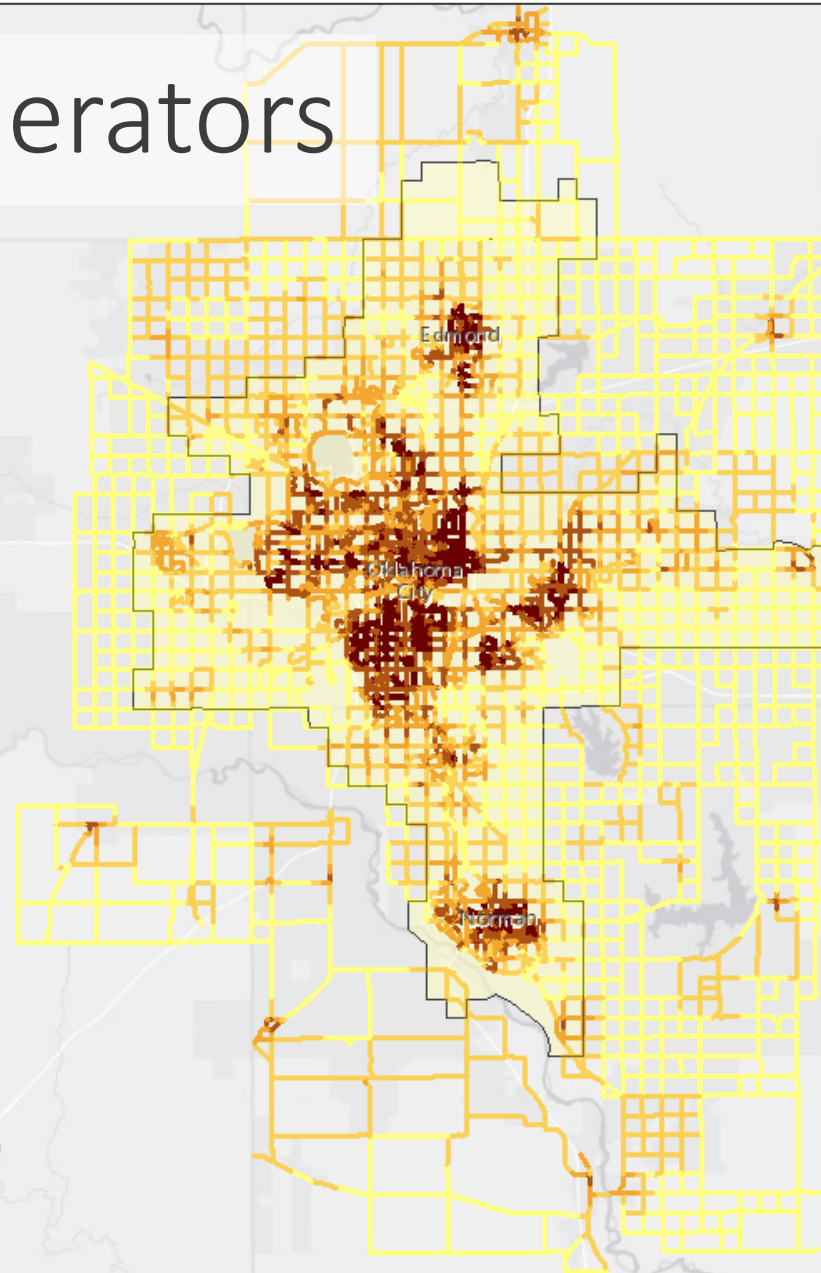
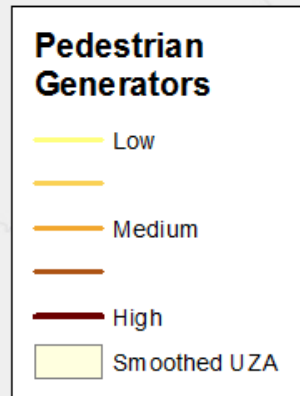
Sidewalk Coverage on Network Roads: Percentage by Segment

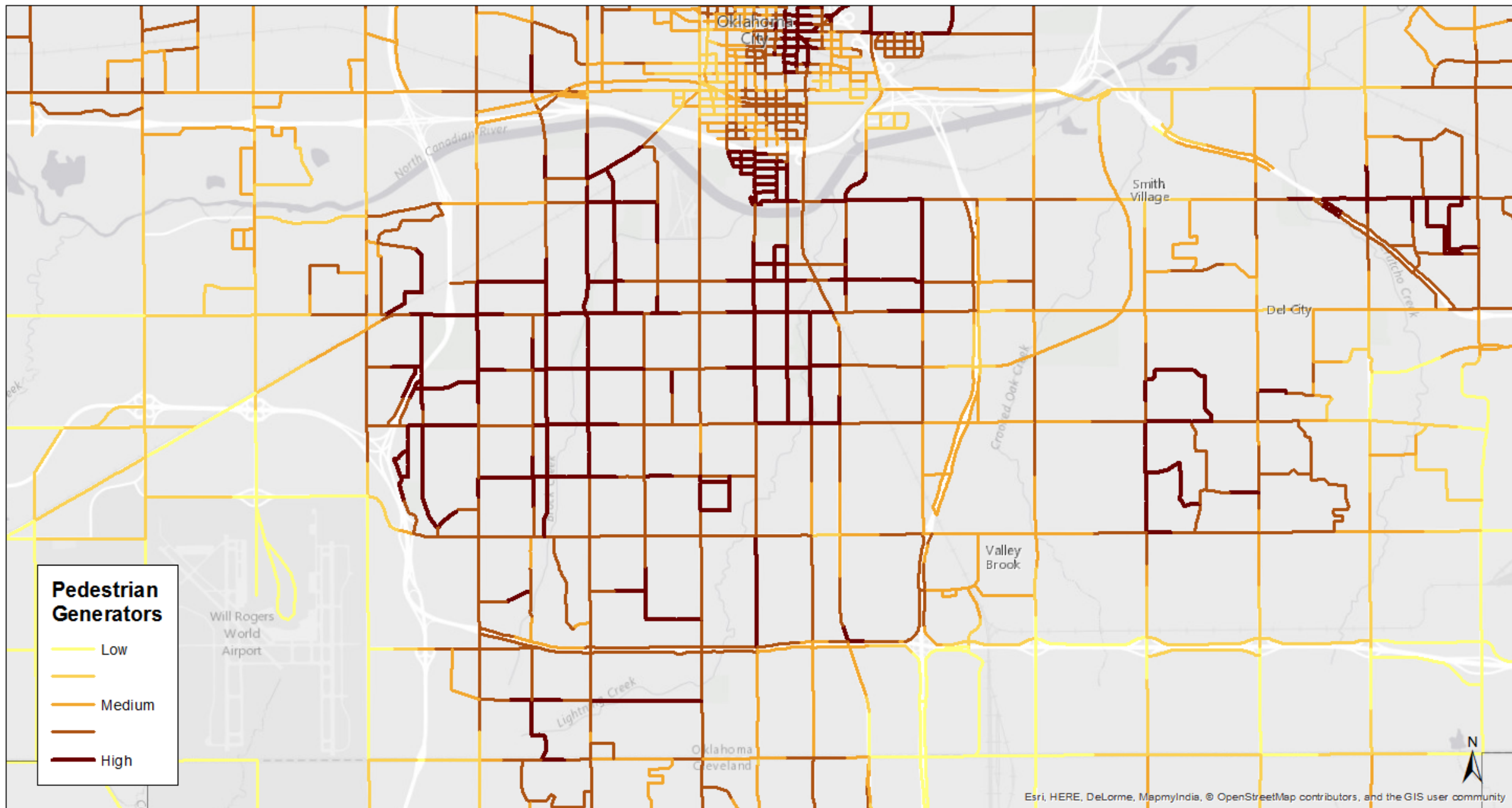
- Limited to No Coverage
- Partial Coverage
- Full Coverage

Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and
the GIS user community

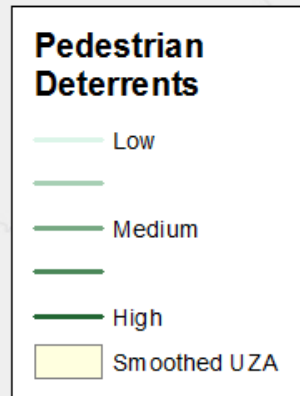


Pedestrian Generators





Pedestrian Deterrents

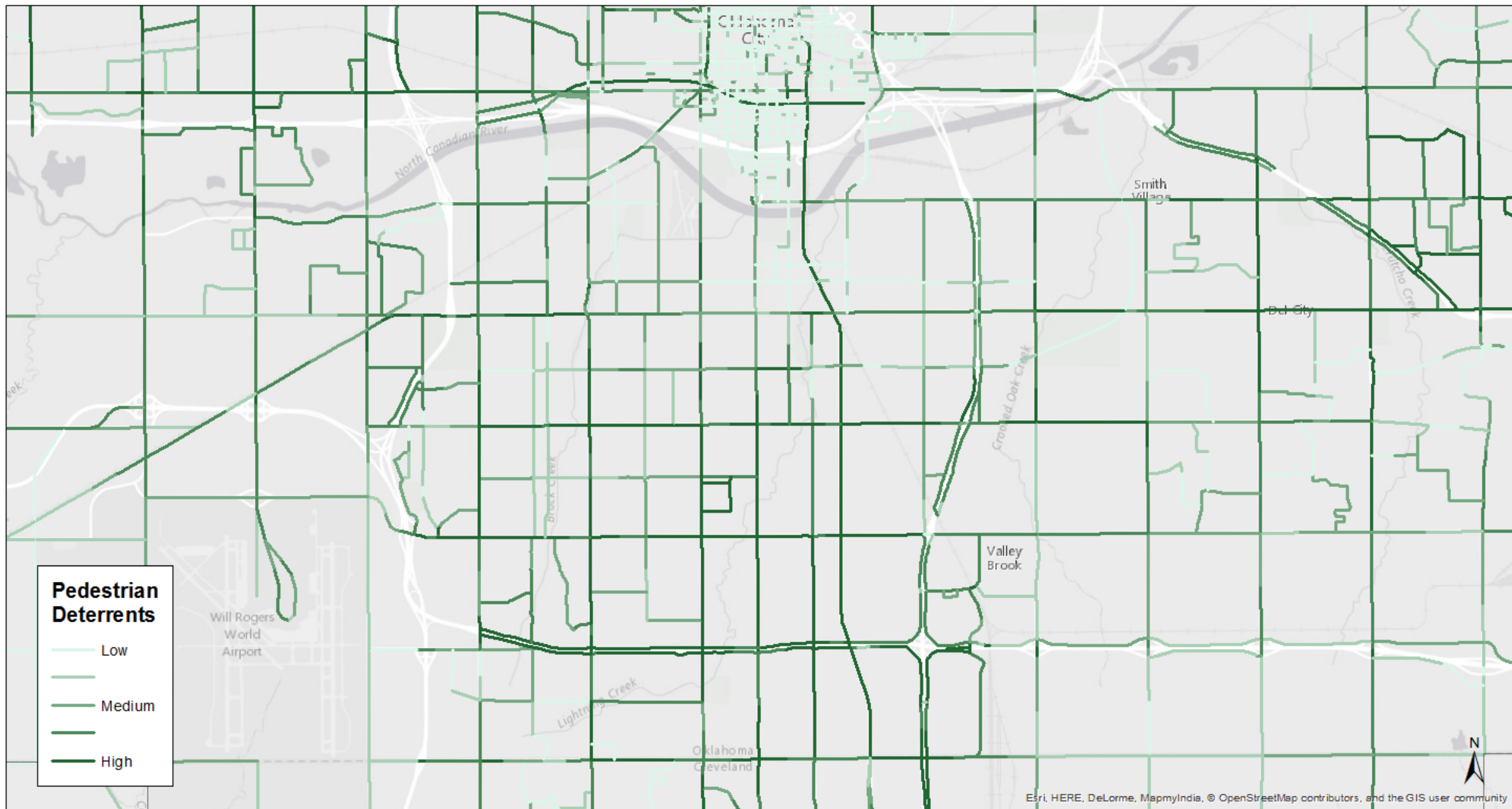


El Reno

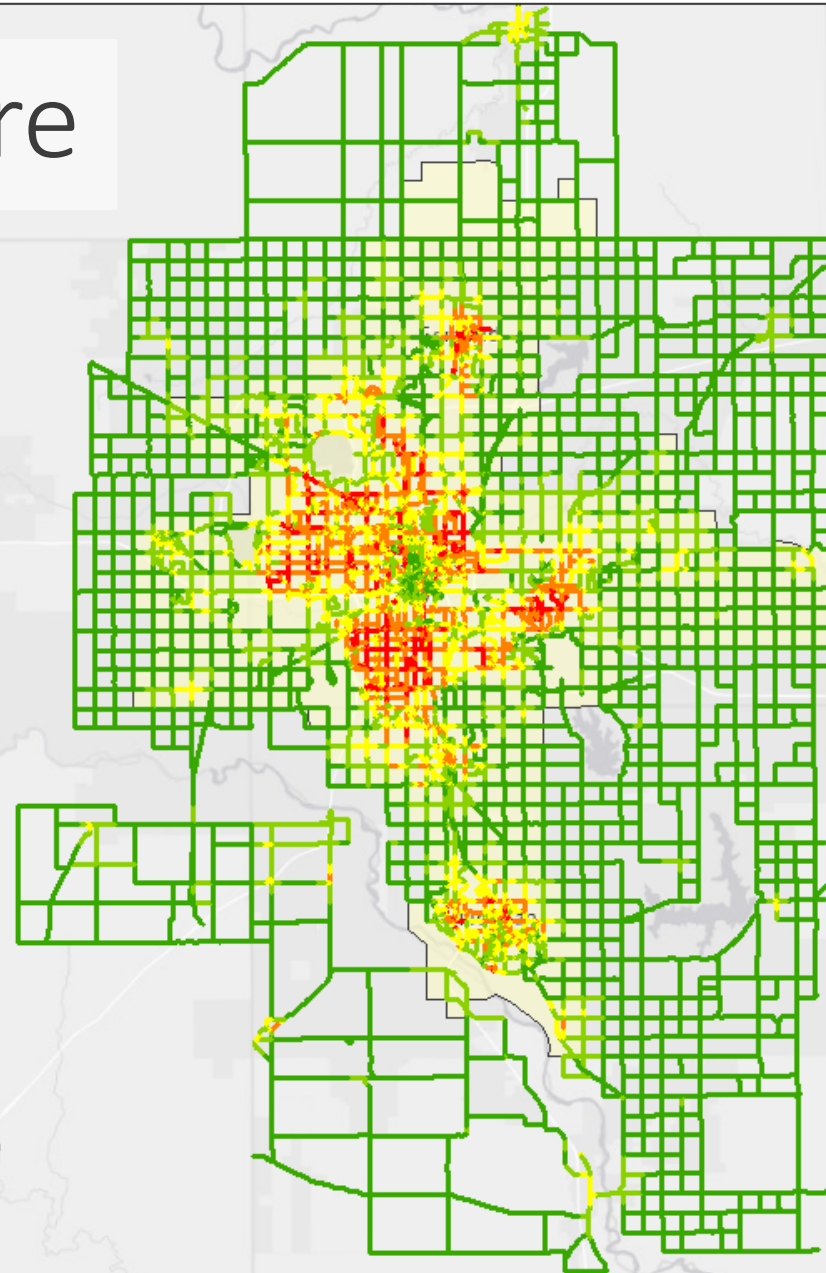
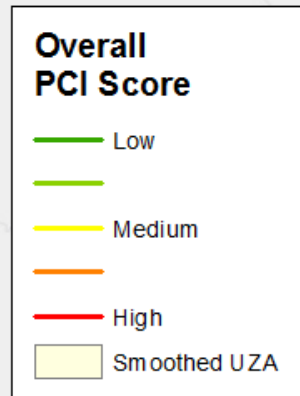
Chickasha

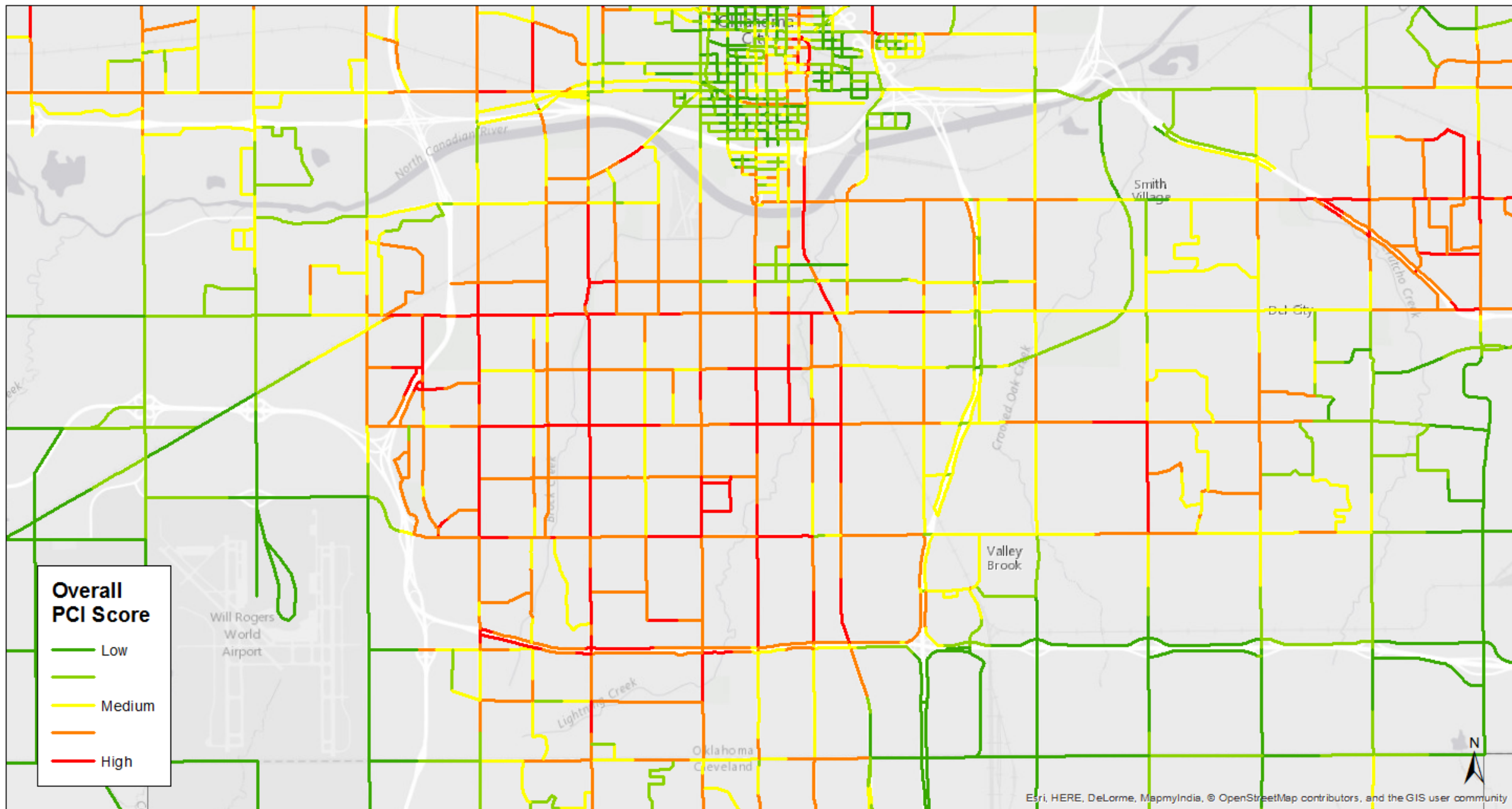
Shawnee

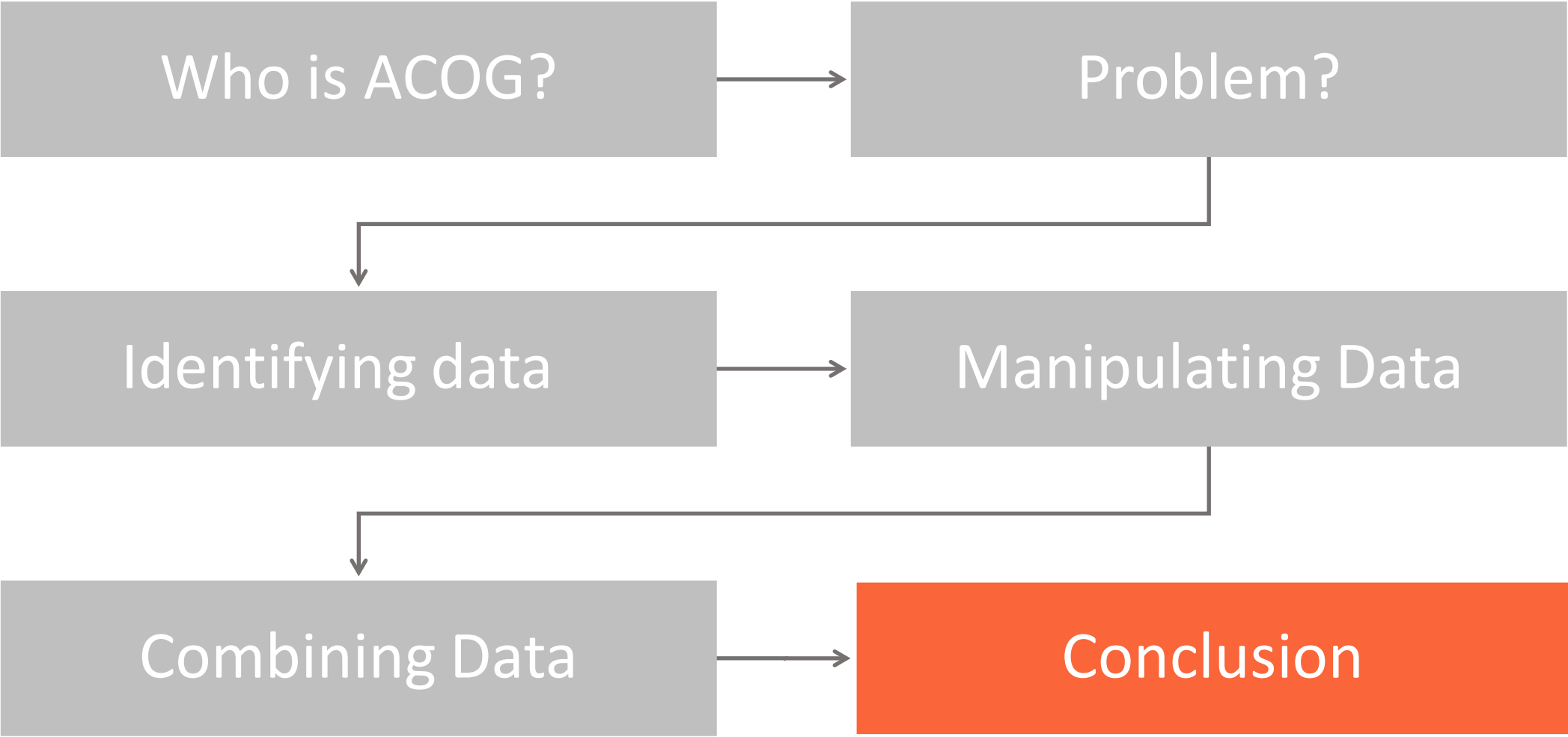




Overall PCI Score







Potential uses for this analysis

- Regional Pedestrian Plan
- Long Range Plan
- Individual communities' priorities
- Scoring for a given project

Questions & Feedback

Kate Brady

Associate Planner—Bicycle,
Pedestrian, Livability

ACOG

kbrady@acogok.org

405.778.6169

Jennifer Sebesta

GIS Specialist

ACOG

jsebesta@acogok.org

405.778.6139