State
Smart Transportation
Initiative

Data and Analysis for Vienna Transportation Planning Process

City Council Work Session

June 12, 2017

Two resources

1. Accessibility measures

- ***What can people get to?***
- Used by VDOT to score projects
- Statewide license for software and data (Sugar Access)

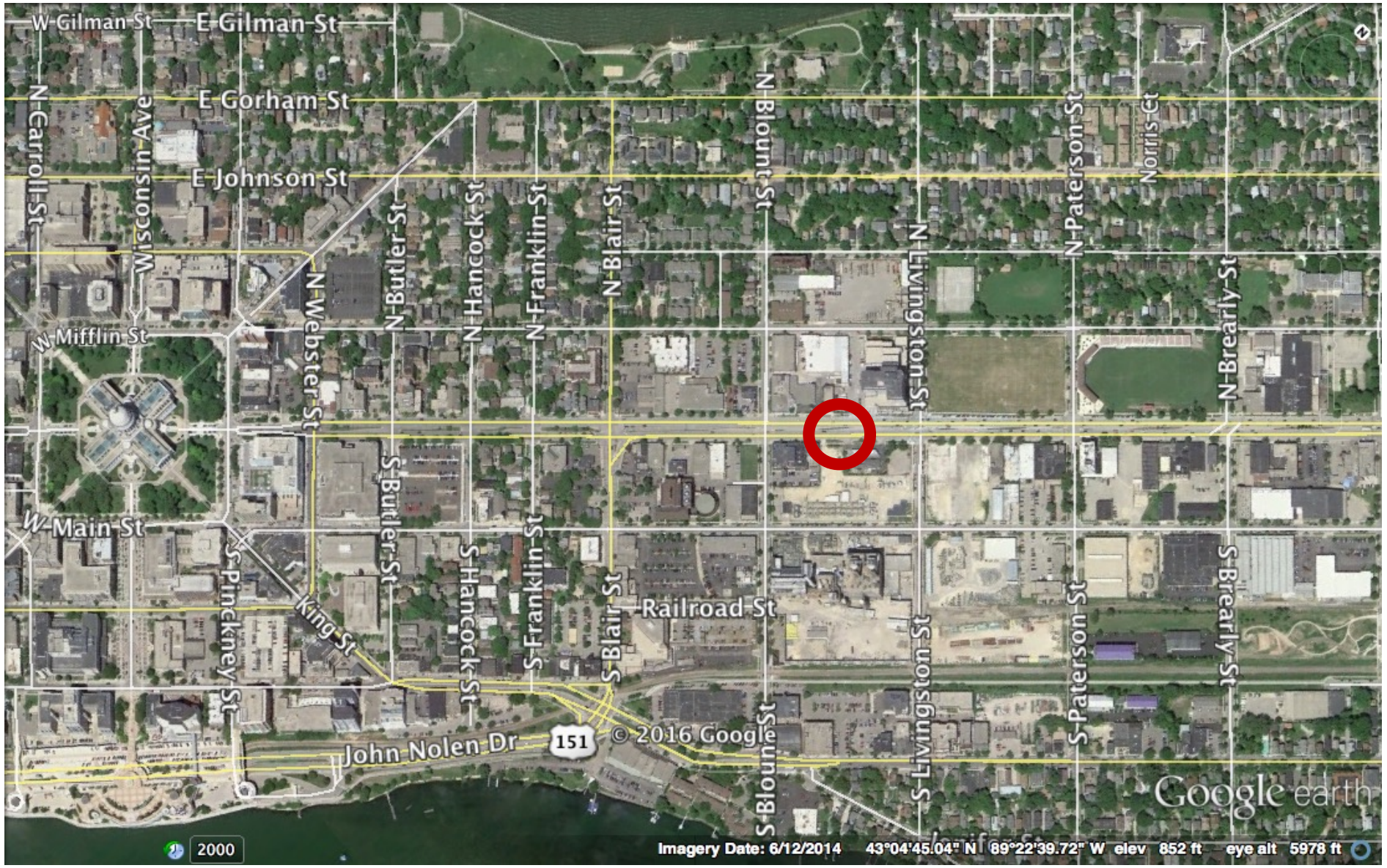
2. Trip-making data

- ***Where are people going?***
- Data available via VDOT contracts (StreetLight Data)

SSTI is contracted through OIPI to assist in implementation.

Accessibility analysis
(Sugar Access)

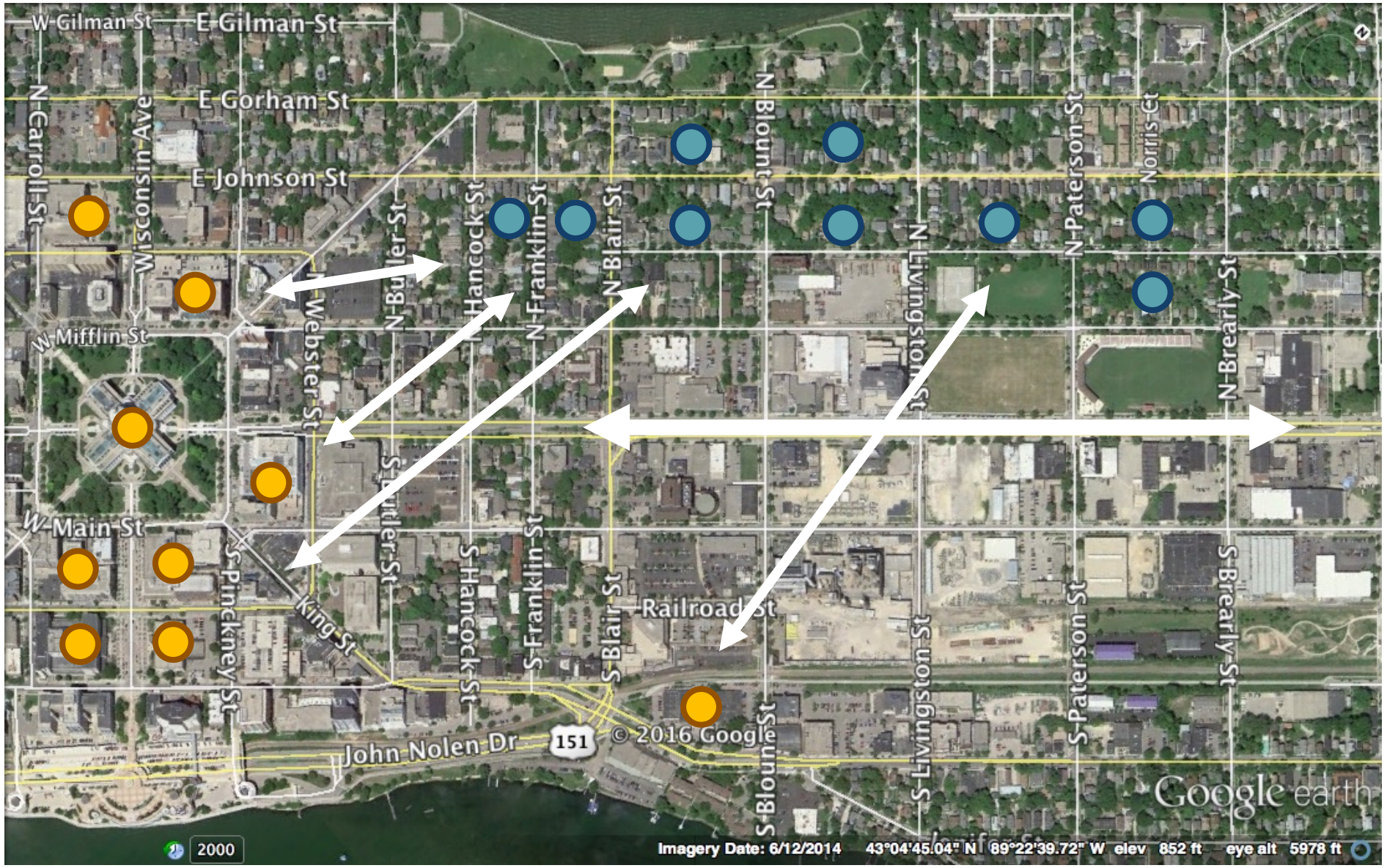
Why measure accessibility?



Mobility measures

- Travel speed
- Level of service
- Vehicle throughout
- Person throughput

Why measure accessibility?



Accessibility measures

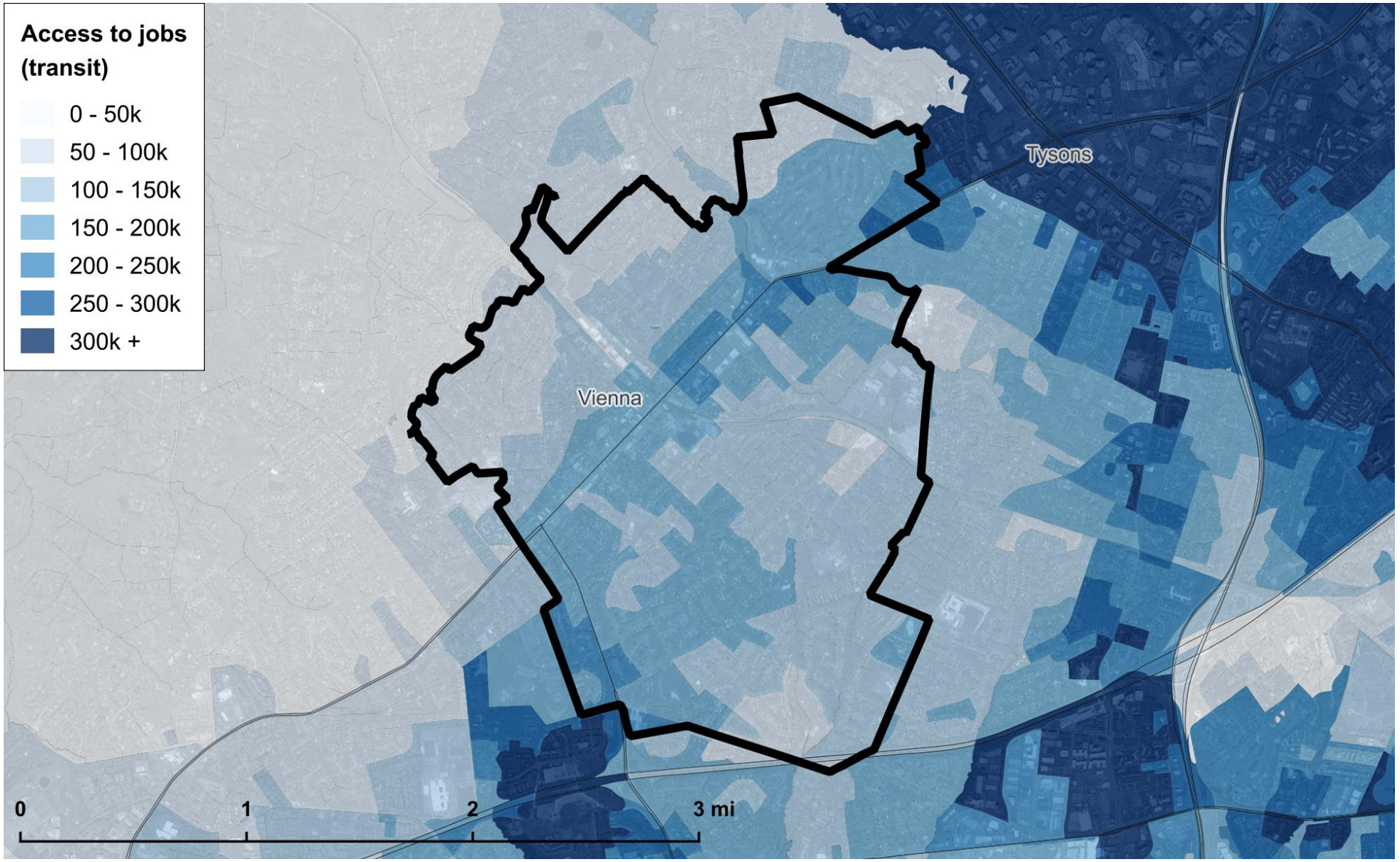
- Origins
- Destinations
- Ability to travel between them

Accessibility measures

- Access to jobs
  - 20% of trips; 30% of VMT
  - Reported as “number of jobs”
- Non-work access
  - Groceries, parks, schools, restaurants, and other non-work destinations
  - 80% of trips; 70% of VMT
  - Reported as a score (0-100)

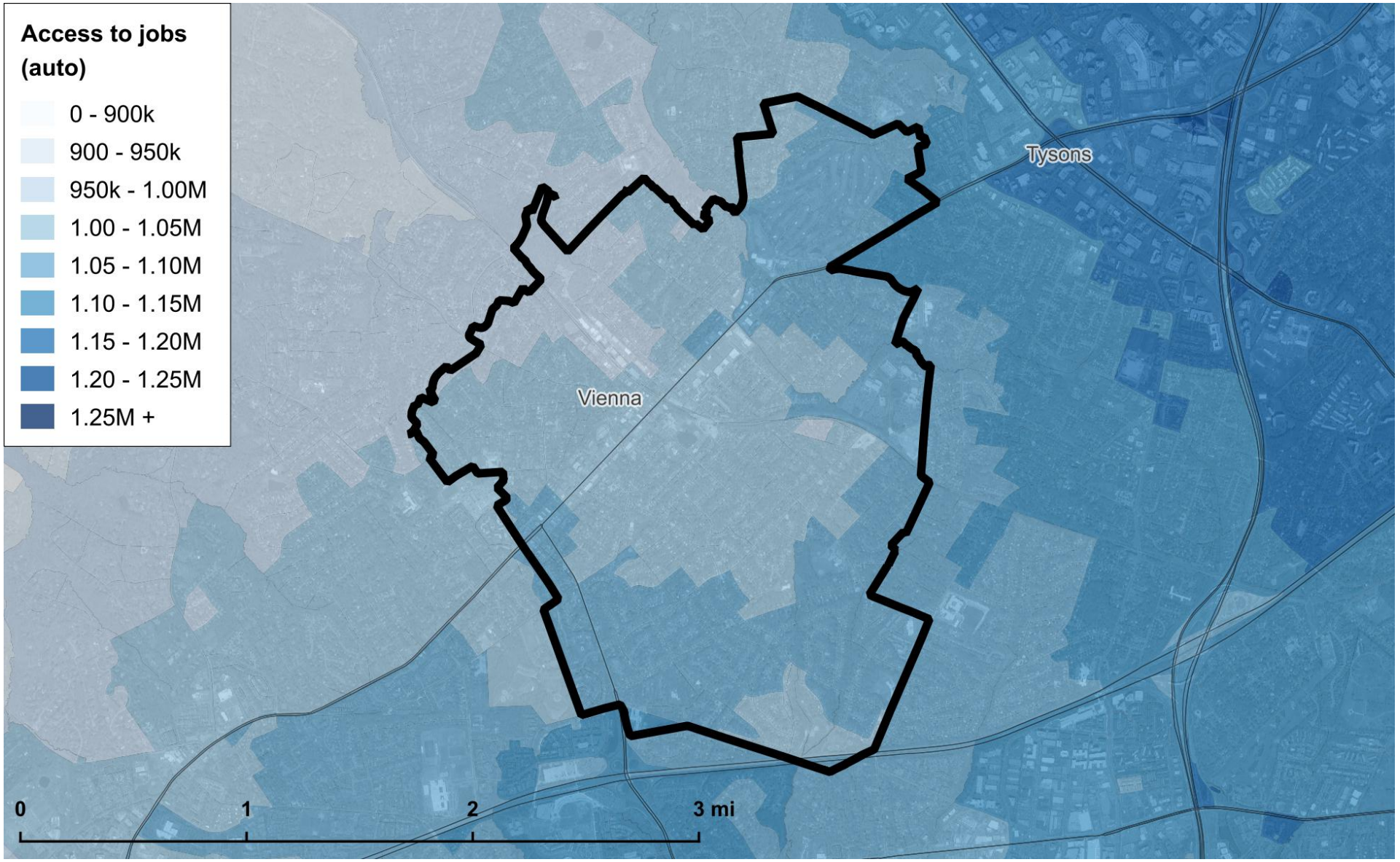
- What’s needed?
  - Transportation networks
    - Roads, bike paths, sidewalks, vehicle speeds, and transit routes and schedules
  - Land uses
    - Jobs and non-work destinations
  - Calculation methods

Access to jobs by transit (avg. morning)



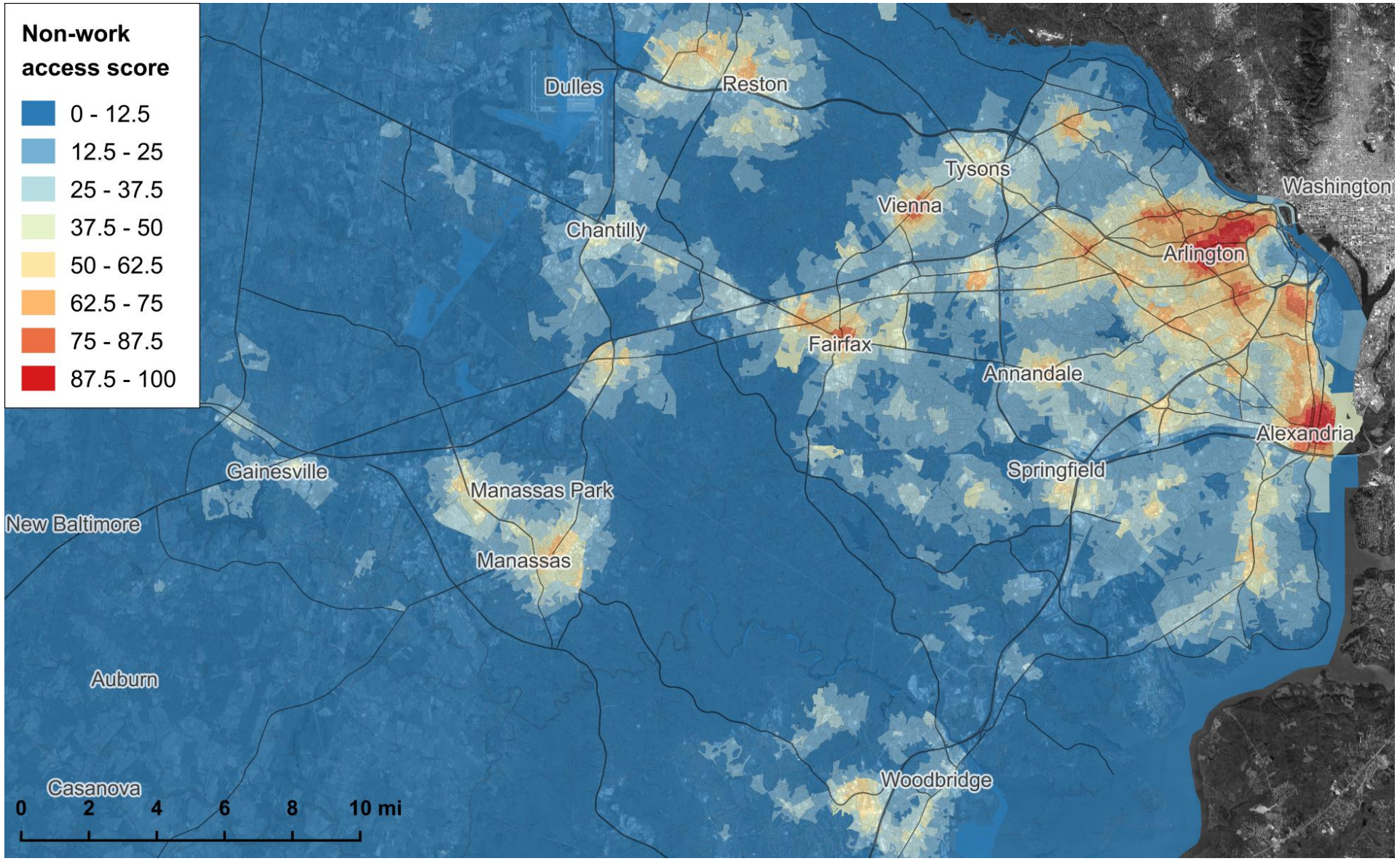
- Total number of jobs accessible from each Census block
- Nearby jobs count fully; more distant jobs count partially
  - E.g., a job 40 minutes away counts 60%
  - From travel surveys
  - Varies by mode, region, and trip purpose

Access to jobs by driving (avg. morning)



- Much higher accessibility than transit
- Less variation throughout city

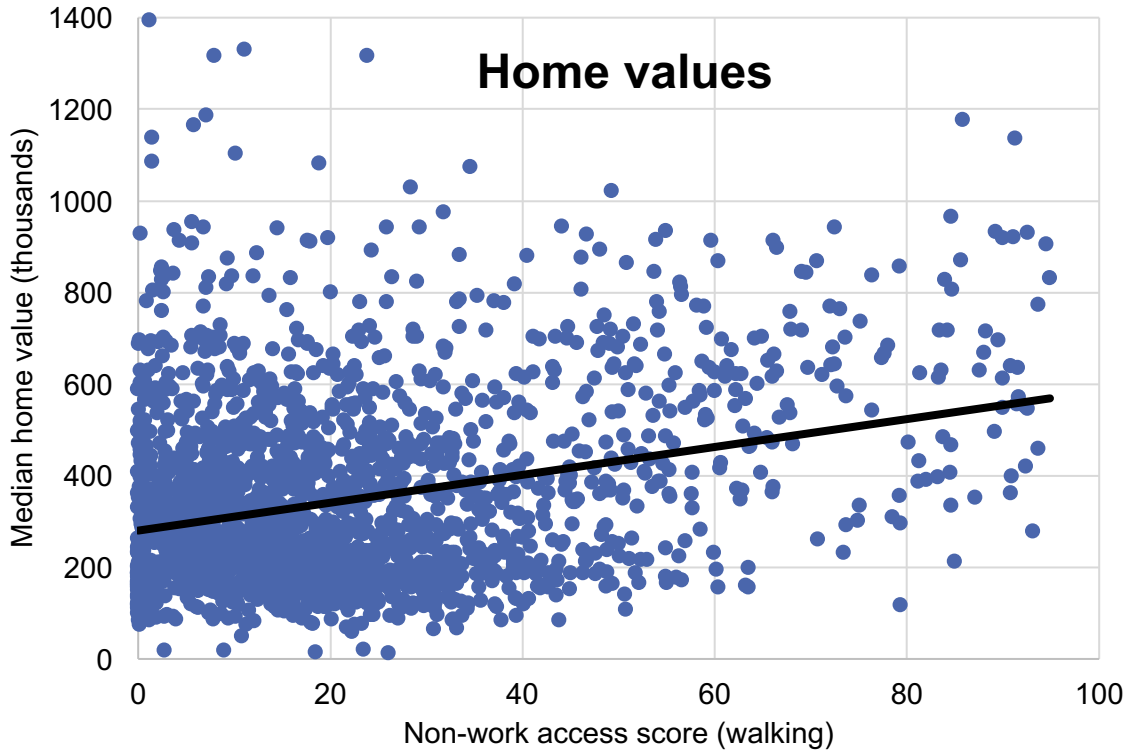
Non-work access (*new measure*)

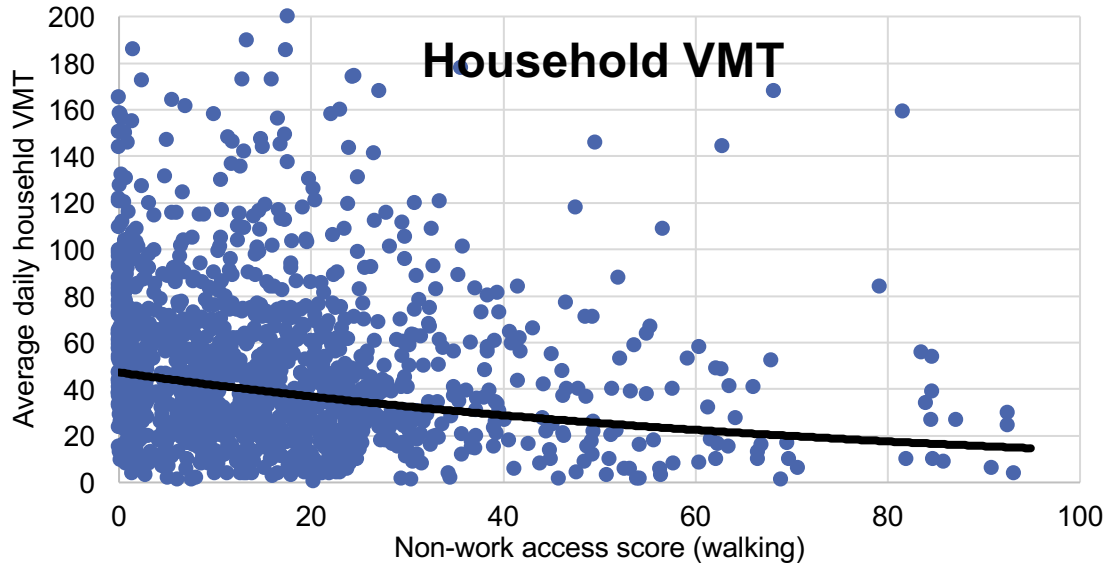


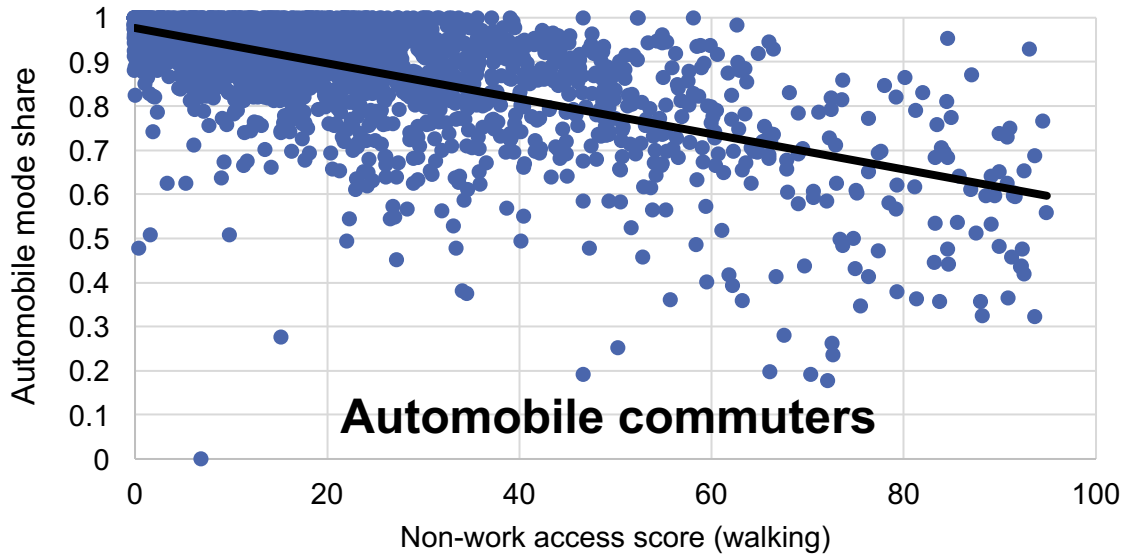
- Groceries, parks, schools, restaurants, and other non-work destinations
- Non-work access is a local measure
- "Walkable neighborhoods" are accessible by all modes

Related outcomes

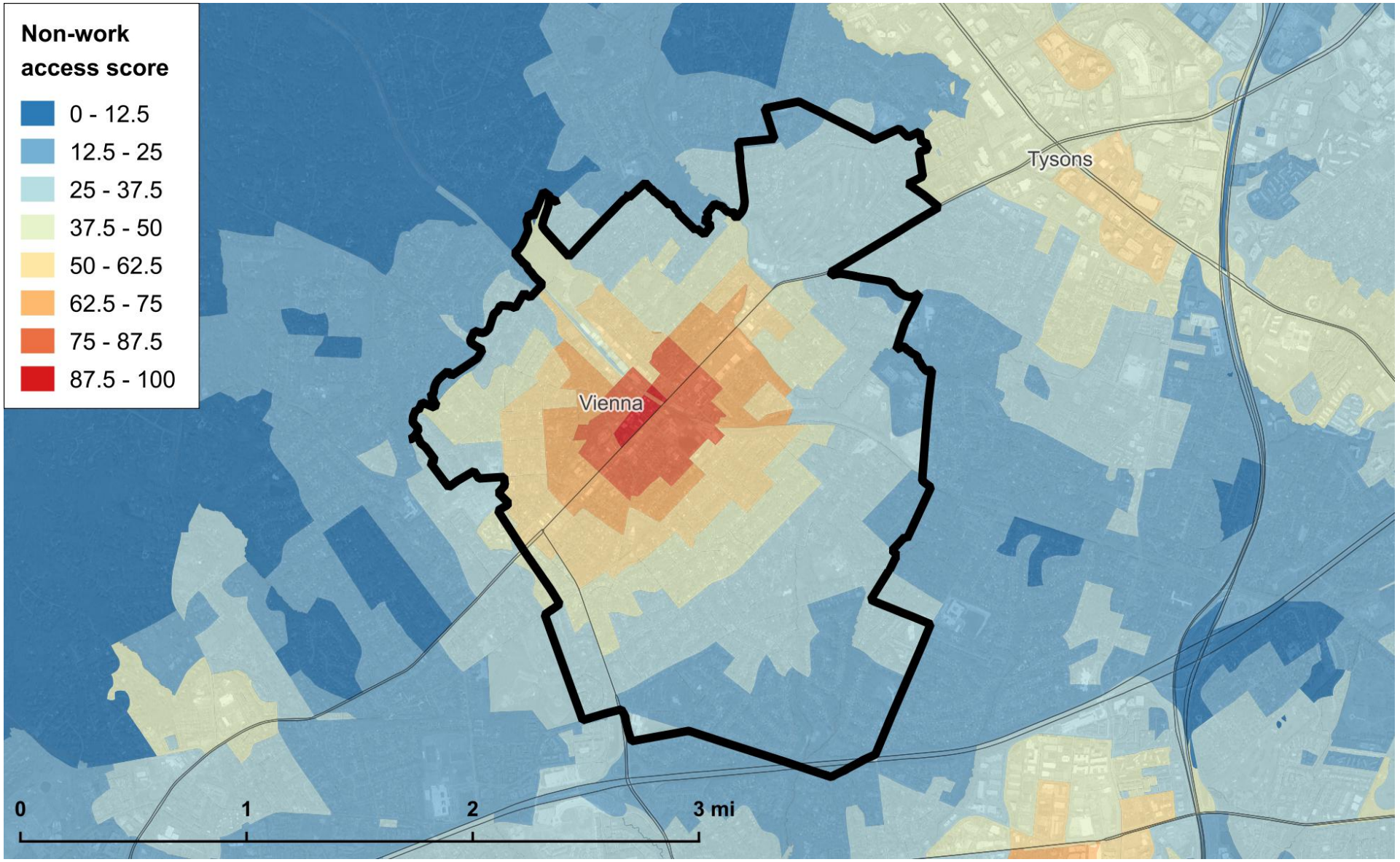
Non-work access is associated with lower travel demand and greater economic value







Non-work access in Vienna



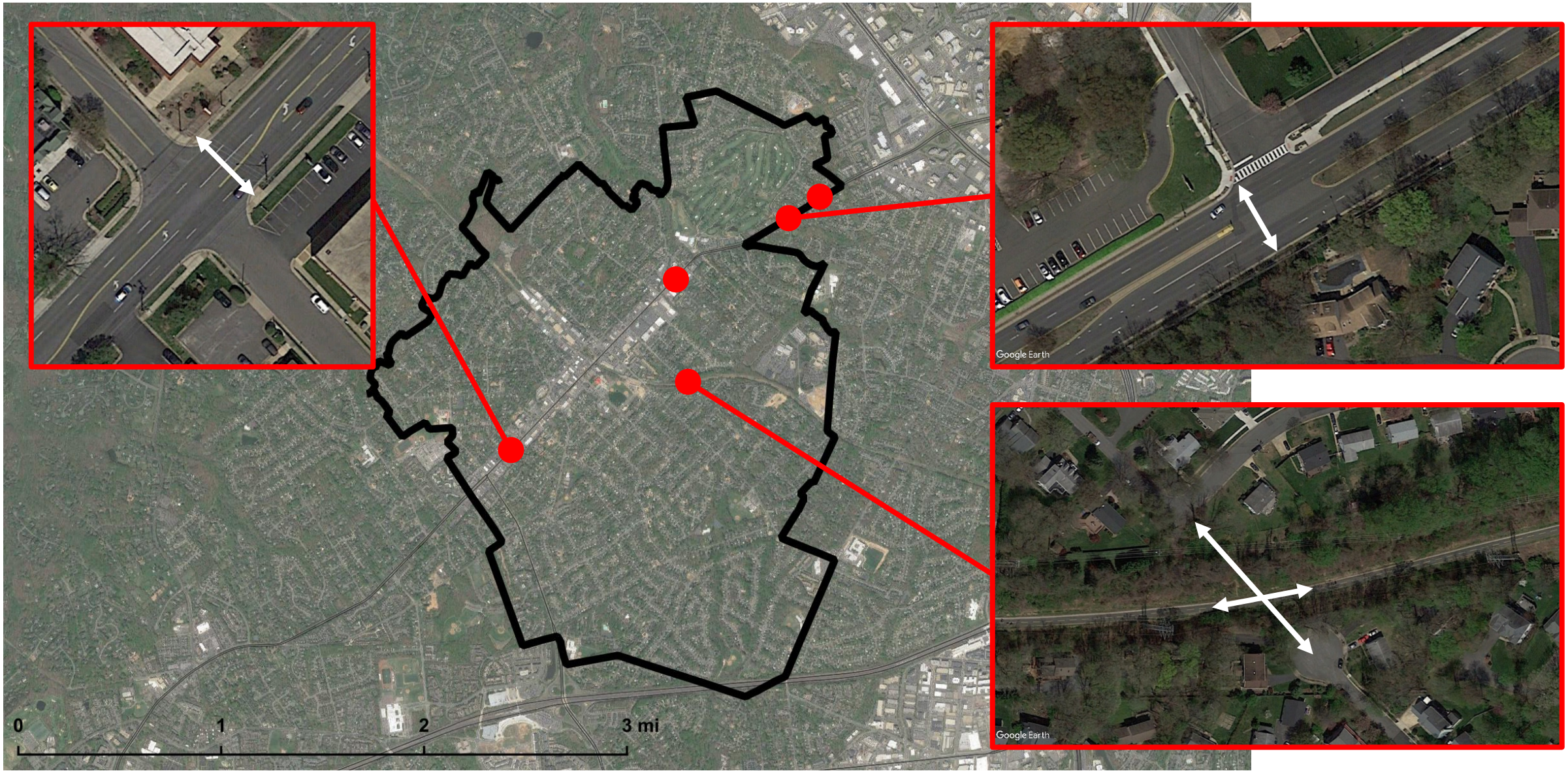
- Variety of destinations
- Quality and connectivity of the pedestrian network

Pedestrian (and bicycle) accessibility

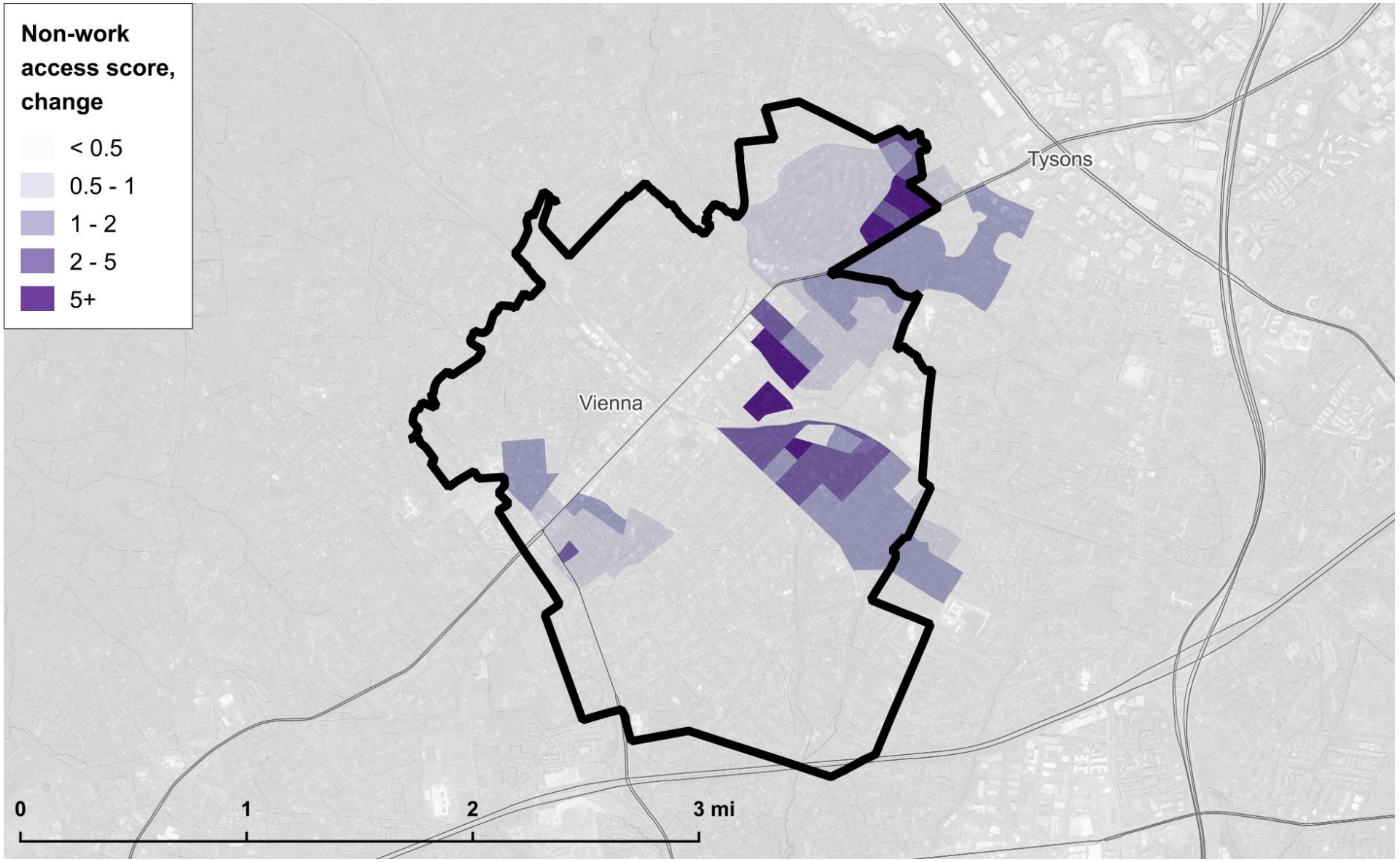
- Direct routes (+)
- Sidewalks and protected bike lanes (+)
- Crosswalks, signals, and medians (+)

- More lanes / wider roads (-)
- Higher vehicle speeds (-)
- Highway interchanges (-)

Spot improvements



Non-work access, change

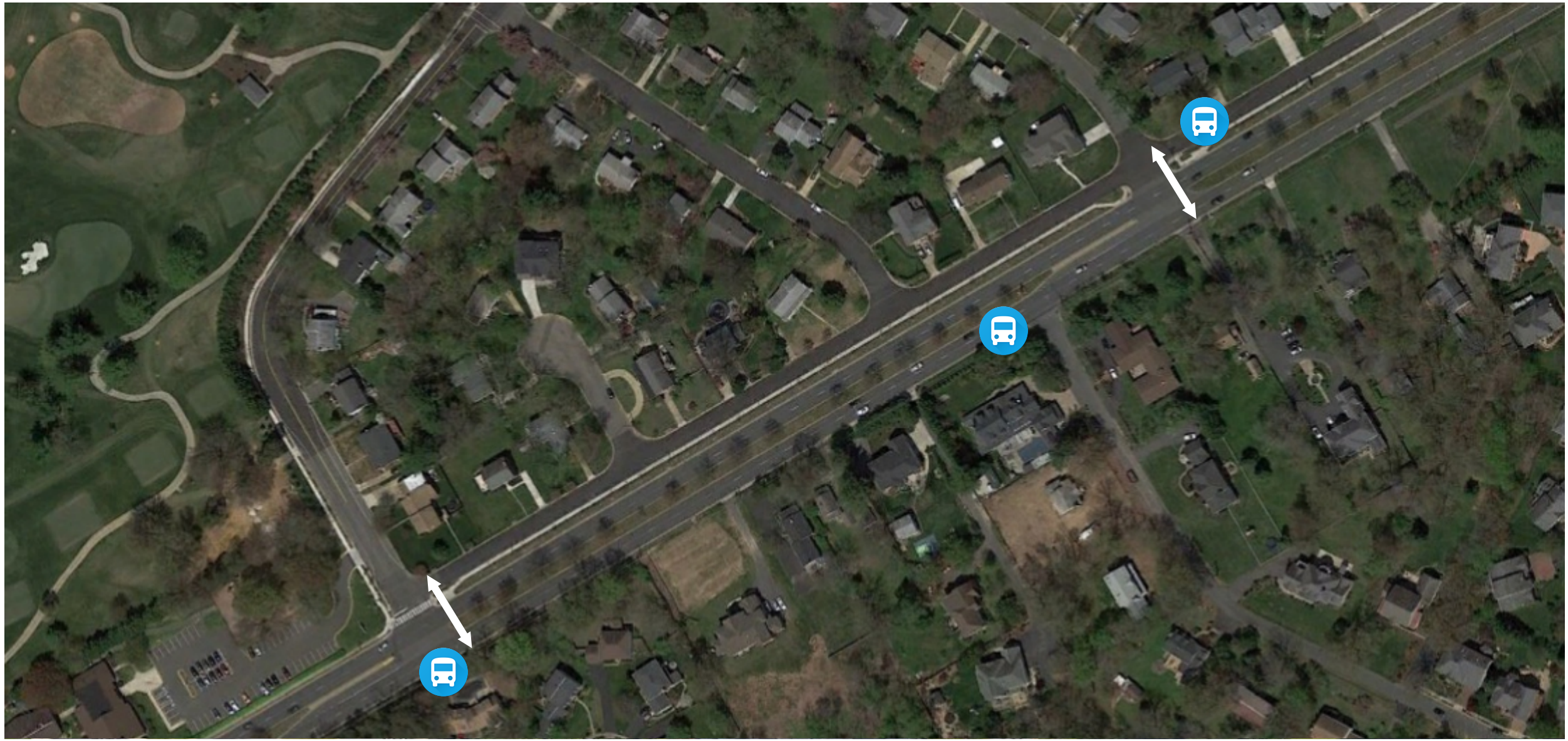


- More than 1,000 households earn at least one point

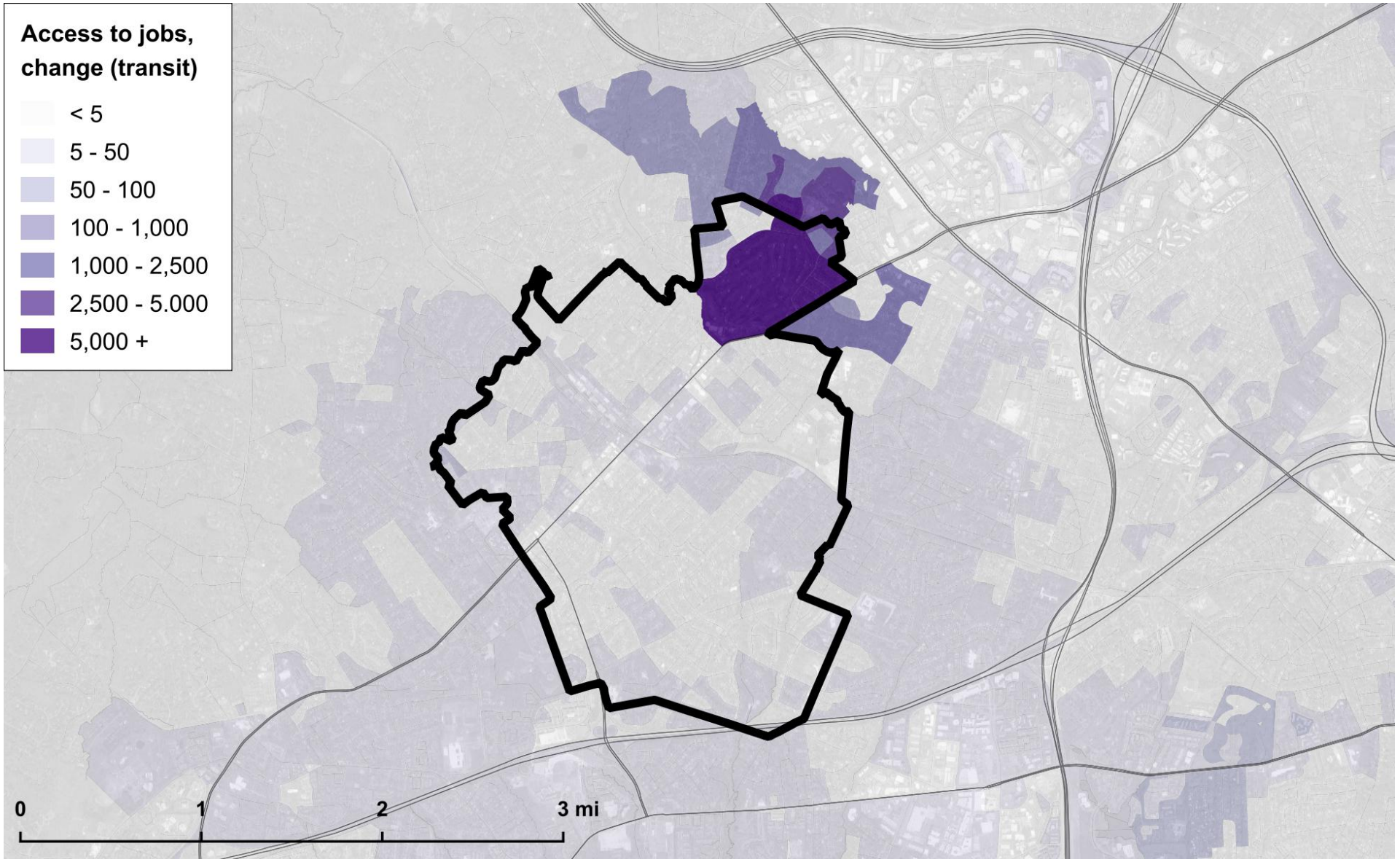
Total impact

- 4,165 points

Chain Bridge Road crossings



Access to jobs by transit, change



Average impact

- 37 jobs
- Across more than 175,000 households

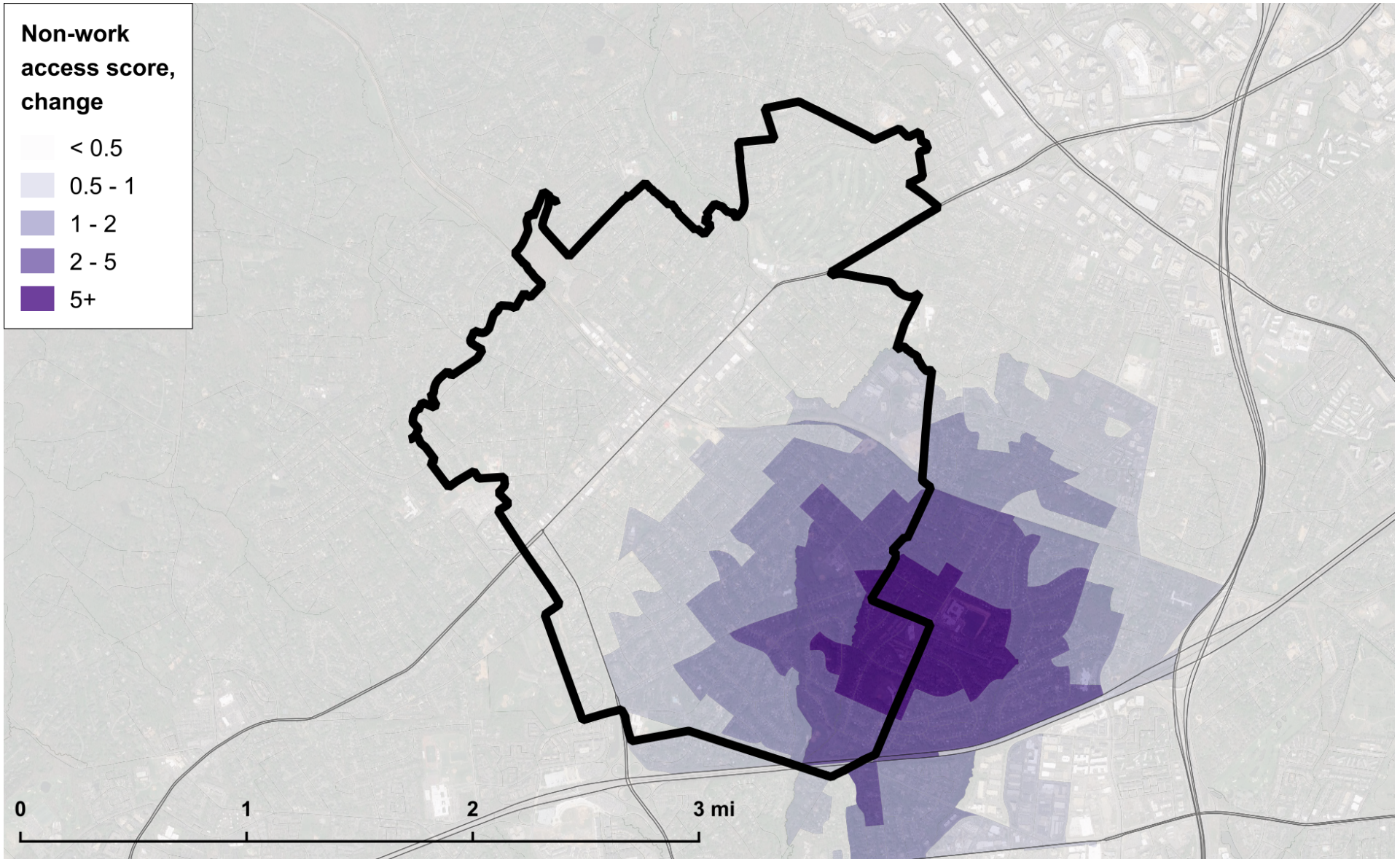
Total impact

- 6.5 million household-jobs

Mixed-use development

+ Grocery store
+ Retail store
+ Art venue
+ Restaurant
+ Coffee shop
+ Bank or ATM
+ Condos/apartments

Non-work access, change



- Nearly 7,000 households earn at least one point
- New housing also affected

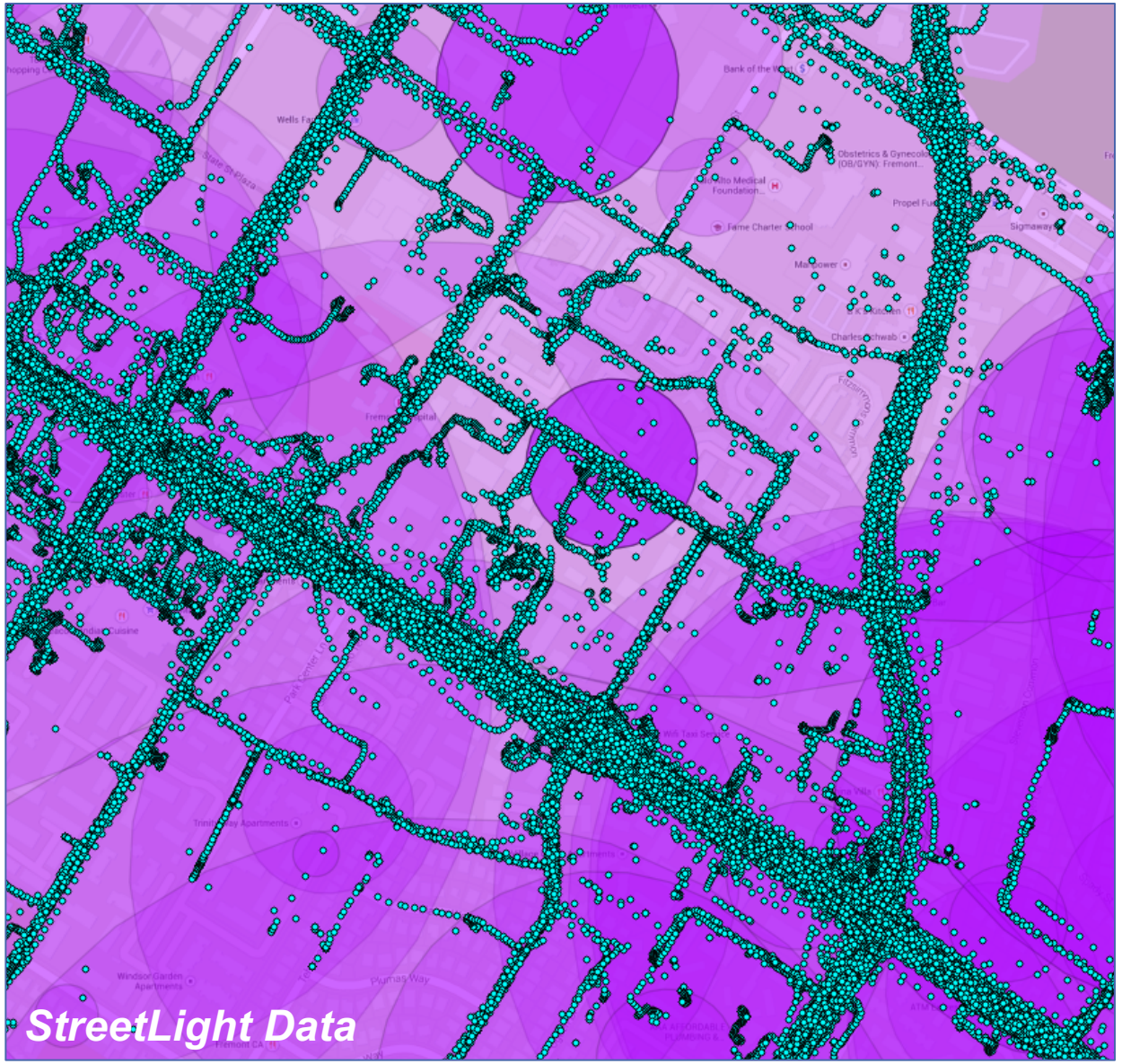
Total impact

- 29,400 points

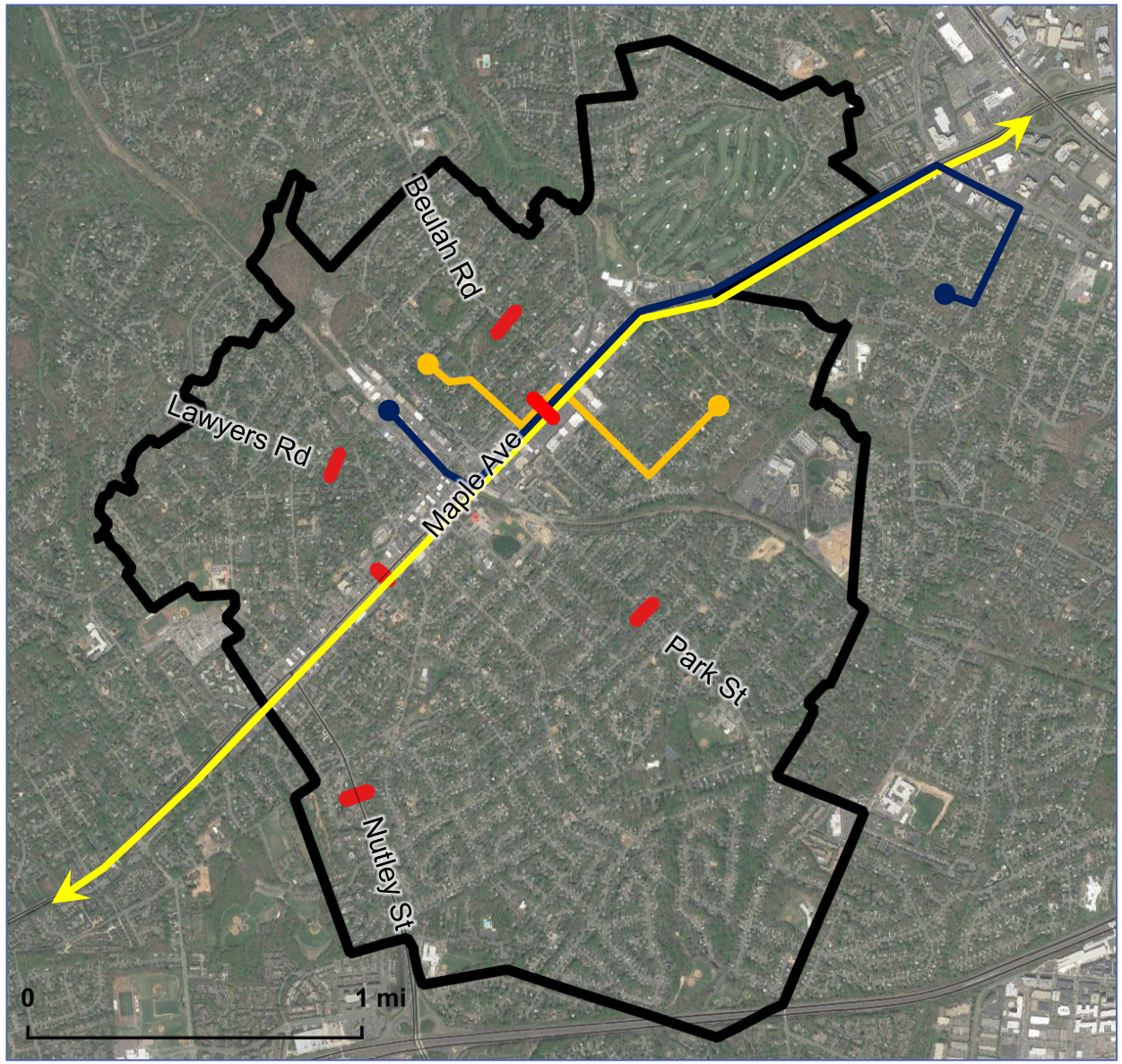
Trip-making analysis
(StreetLight Data)

Trip-making data (StreetLight Data)

- Precise location information (5-meter accuracy)
- Data from in-vehicle GPS devices and mobile apps
- Personal vehicles only
  (commercial vehicles also available)

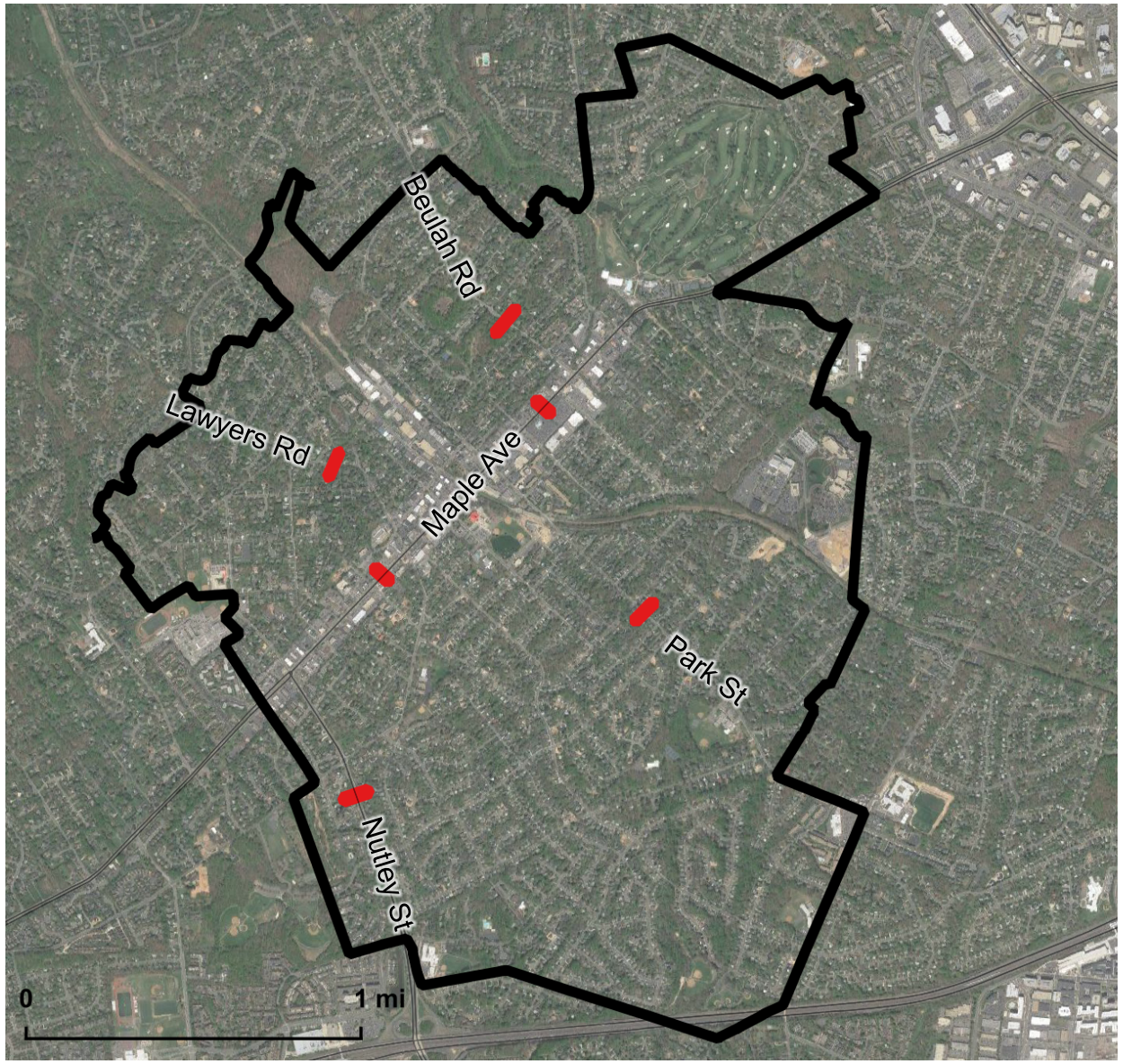


Trip-making analysis



- Trip characteristics
  - Trip lengths
  - Travel times
  - Average speed
  - Circuity
  - Local / pass-through / internal-external

Trip-making analysis (avg. weekday)



Road	Trip length (miles)			
	0-5	5-10	10-20	20+
Maple Ave W	45%	29%	18%	8%
Maple Ave E	49%	26%	18%	7%
Nutley St SW	33%	23%	31%	13%
Park St	57%	23%	15%	5%
Lawyers Rd	31%	34%	27%	8%
Beulah Rd	56%	23%	16%	5%

Road	Local	Internal-external	Pass-through
Maple Ave W	11%	51%	38%
Maple Ave E	11%	54%	35%
Nutley St SW	5%	54%	41%
Park St	19%	62%	19%
Lawyers Rd	6%	55%	39%
Beulah Rd	7%	62%	30%

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Discussion and next steps

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