

# Big Data Tools for Multimodal Considerations

2022 Arizona ITE-IMSA Spring Conference

May 19, 2022

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## Project Background

- Transportation Master Plan 2019 Update:
  - Public outreach showed that a strong majority of residents want to bike in Chandler but only if they feel safe.
  - Most residents indicated they were not comfortable bicycling in a typical bike lane.



### Transportation Master Plan 2019 Update

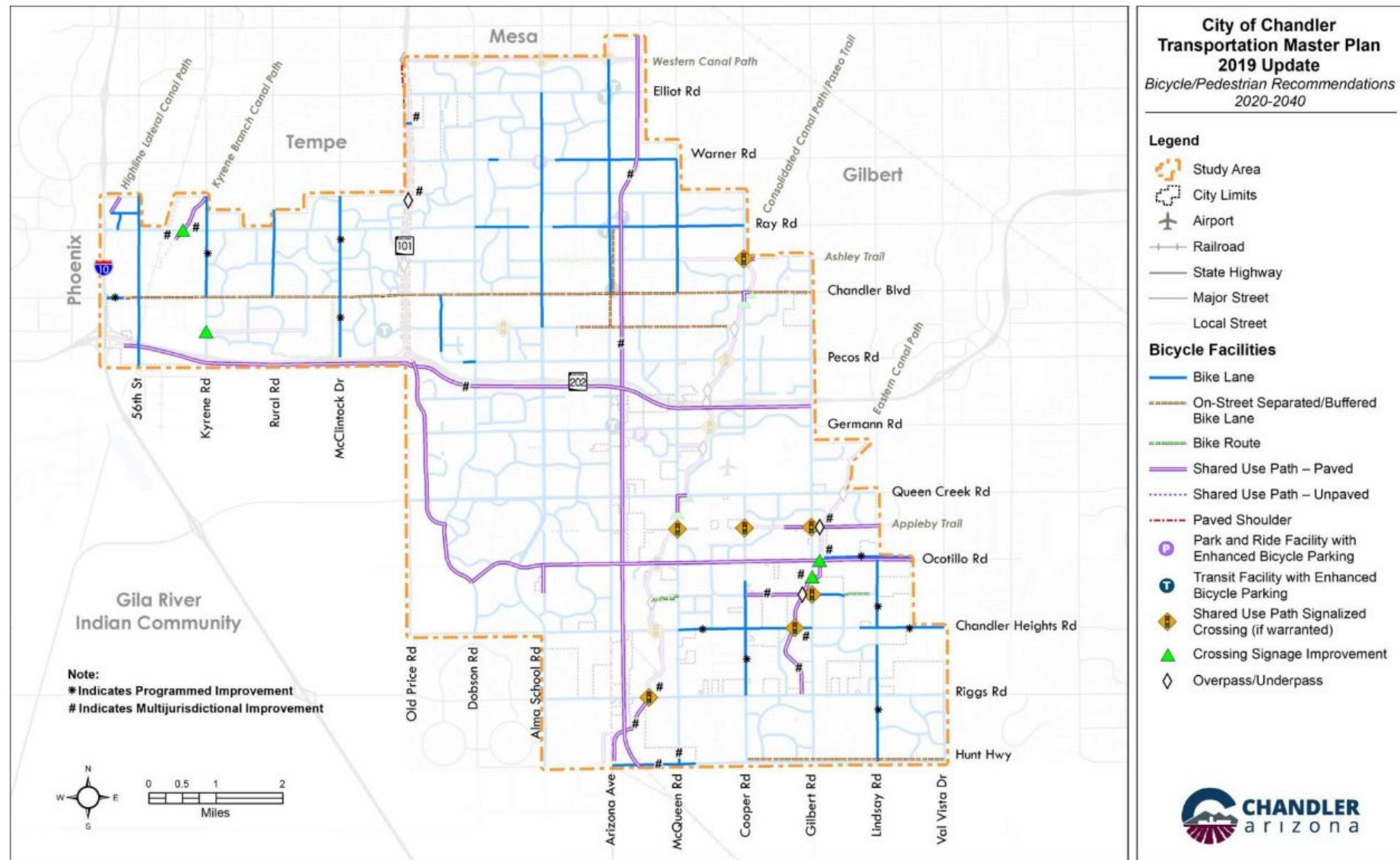


Kimley»Horn

Source: Transportation Master Plan 2019 Update



# Bicycle and Pedestrian Recommendations 2020-2040

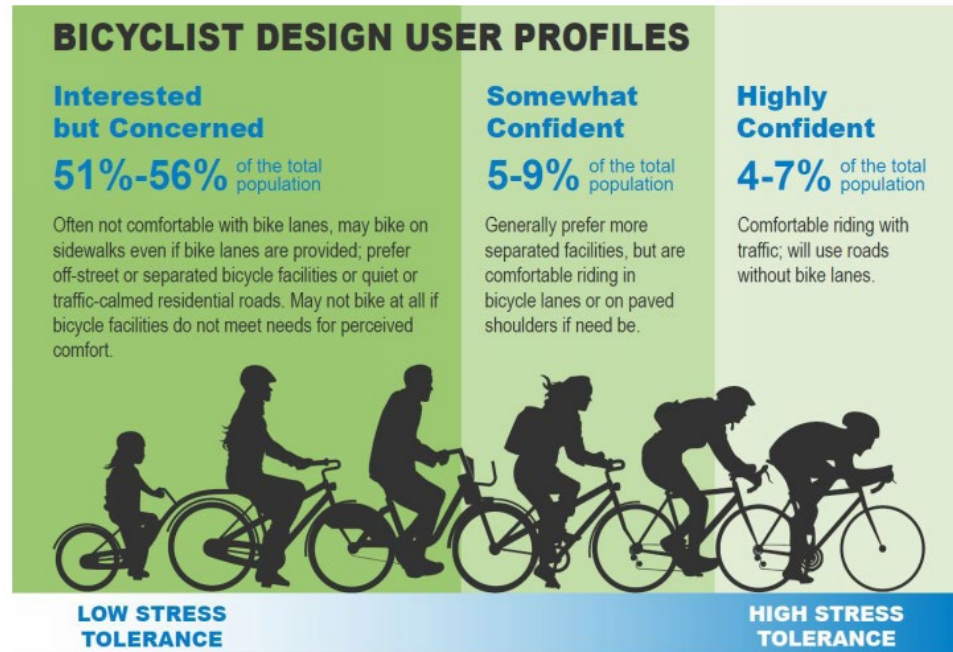


Source: Transportation Master Plan 2019 Update

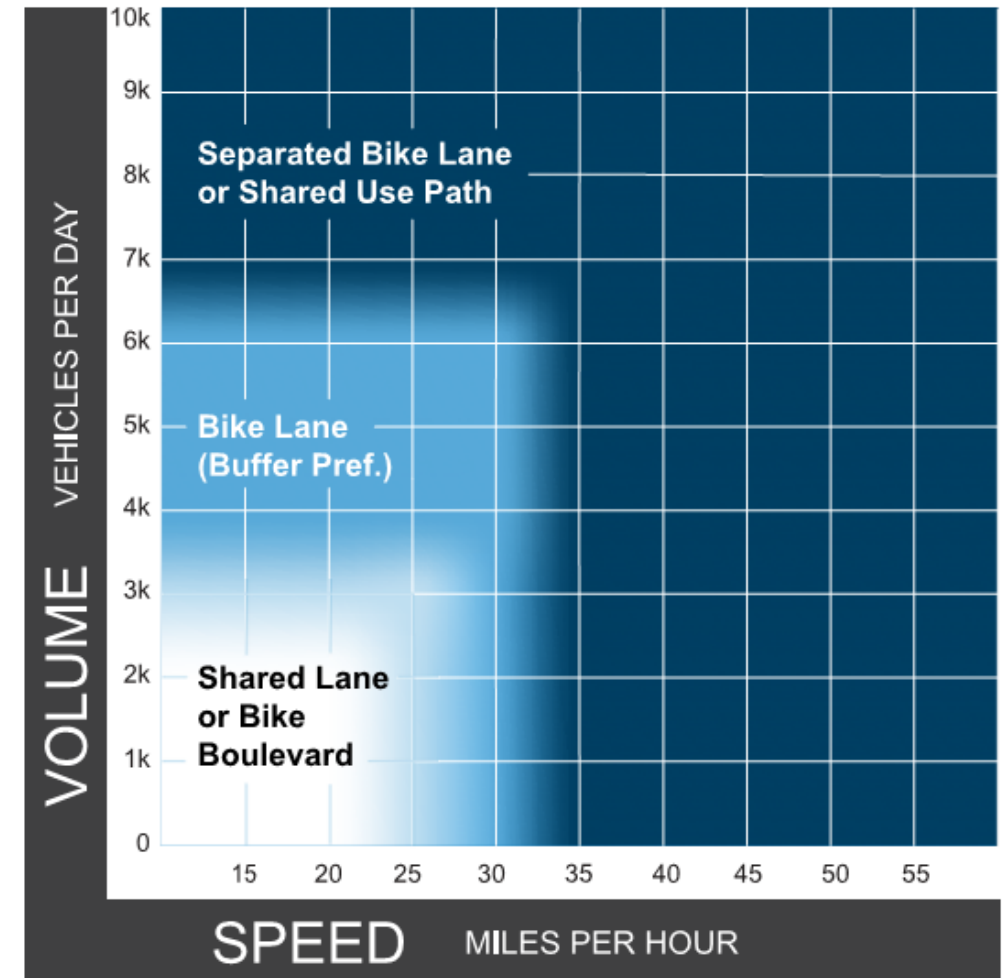


## Project Goals

- Develop corridors to accommodate the “interested, but concerned” segment of the population.



Source: Federal Highway Administration Bikeway Selection Guide, February 2019

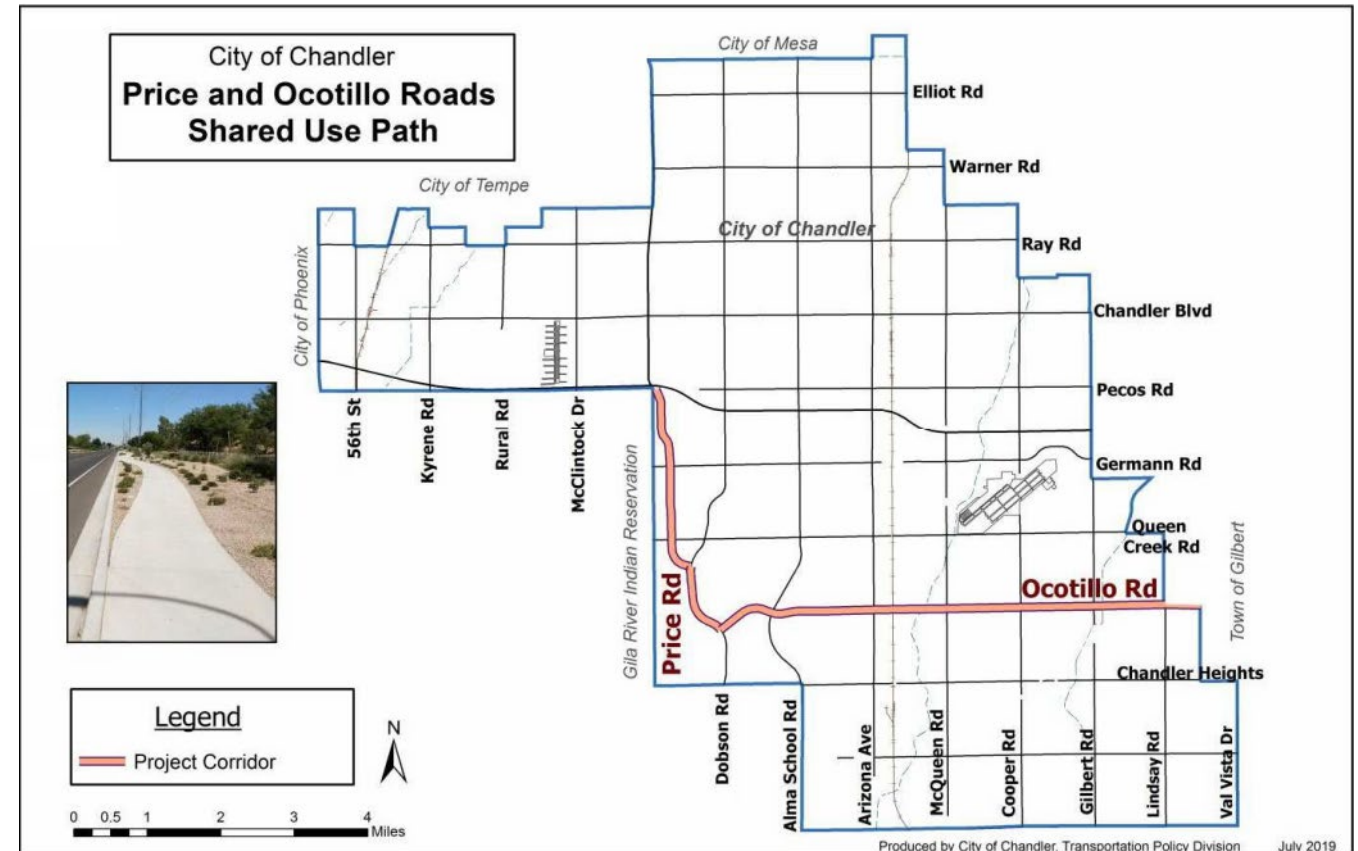


Source: Federal Highway Administration Bikeway Selection Guide, February 2019



## Project Study Area Background

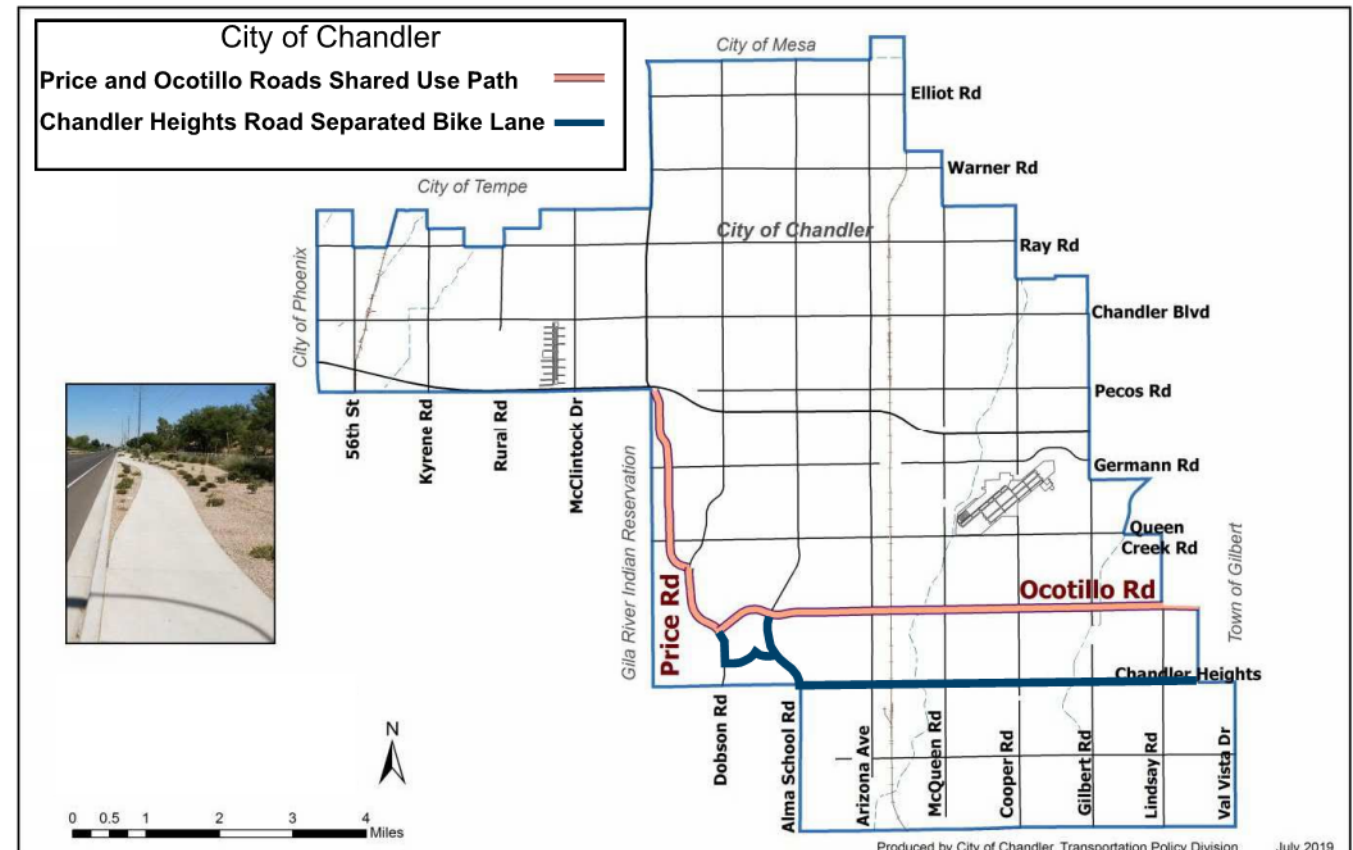
- Price and Ocotillo Roads Study:
  - Goal: Accommodate the “interested, but concerned” segment of the population
  - Status/Tasks Complete:
    - Data Inventory
    - Crash Data Summary
    - Design Criteria
    - Opportunities and Constraints Map
    - Alternatives Analysis





# Chandler Heights Road Separated Bike Lane Planning Study

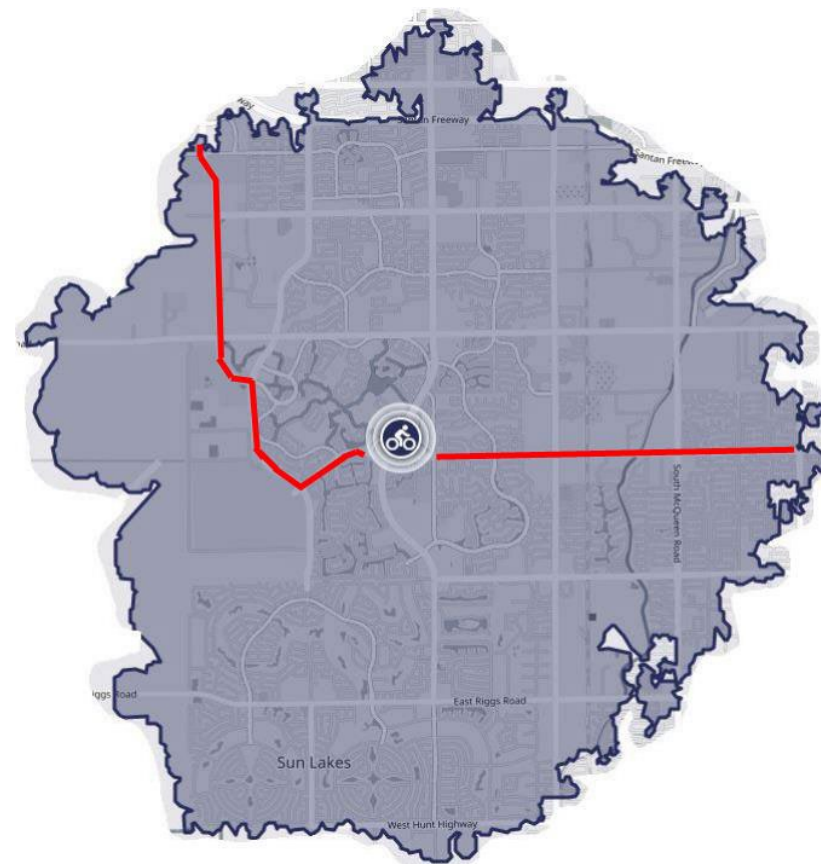
- Study Scope
  - Complete Similar Assessment for Chandler Heights
  - Compare Chandler Heights Road Corridor to Ocotillo Road





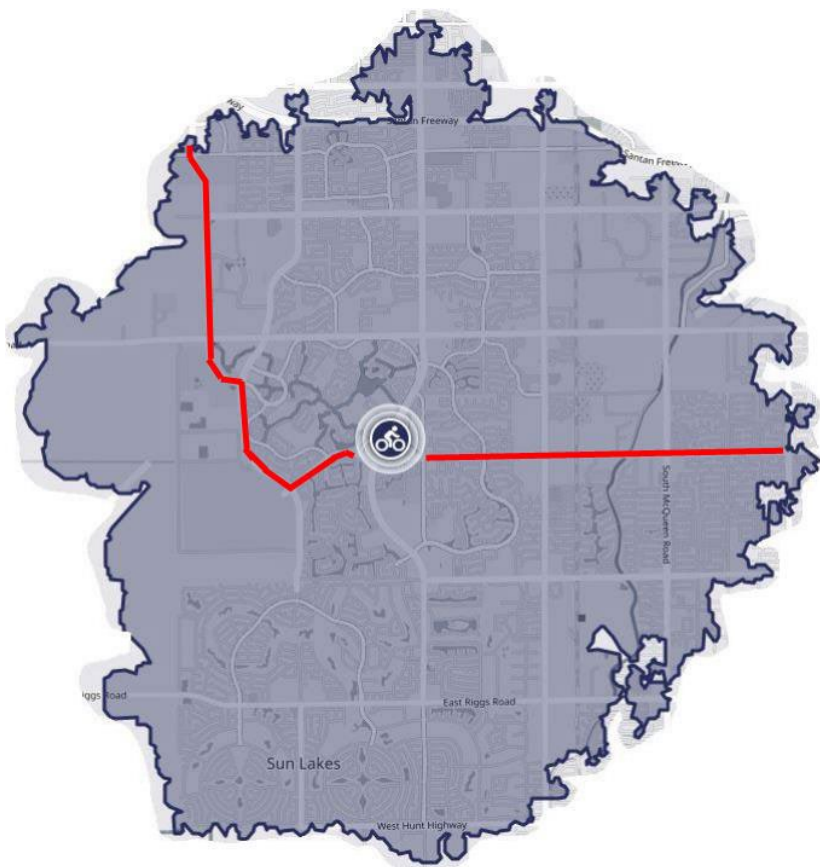
## Project Area Bicycle Travel Time Map

- Average Commute Time in Maricopa County – 26 minutes

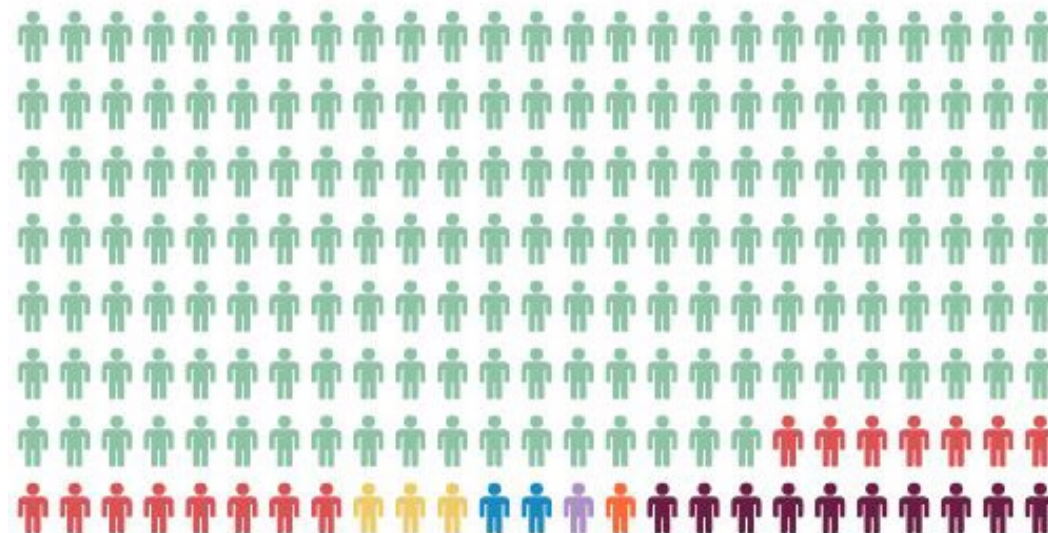




## Mode Usage within Bicycle Commute Shed



**0.8%** of people living in the project area commute to work by bicycle



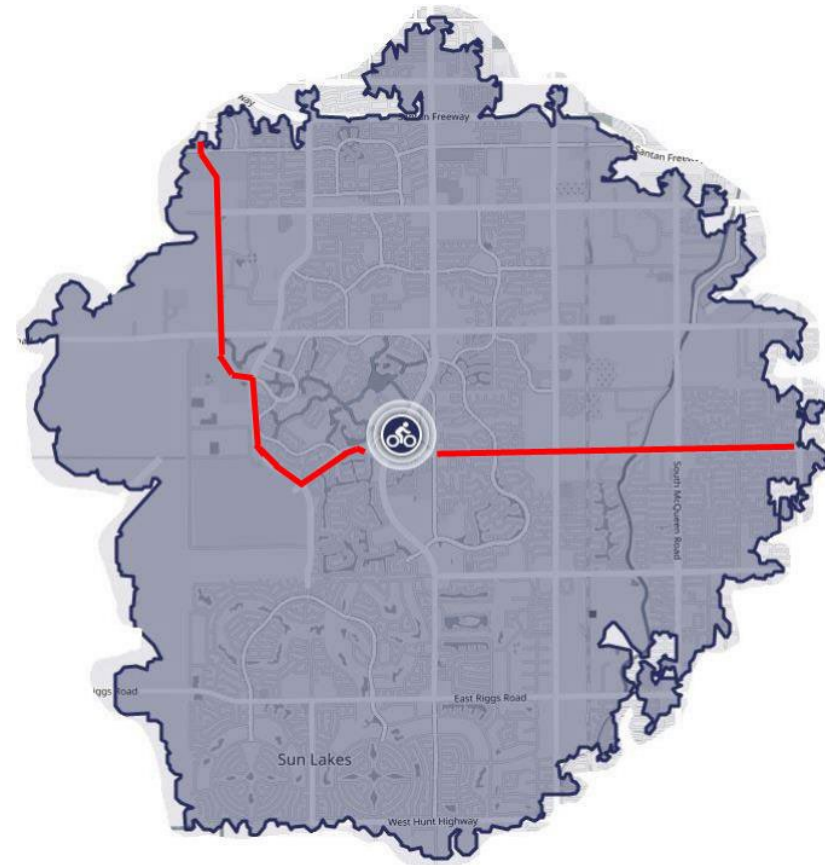
● Drive Alone 
 ● Carpool 
 ● Bus 
 ● Bicycle 
 ● Vanpool 
 ● Light Rail 
 ● Walk/Run 
 ● Telecommute

Source: 2019 Trip Reduction Program Survey Data



## Bicycle Commute Interest

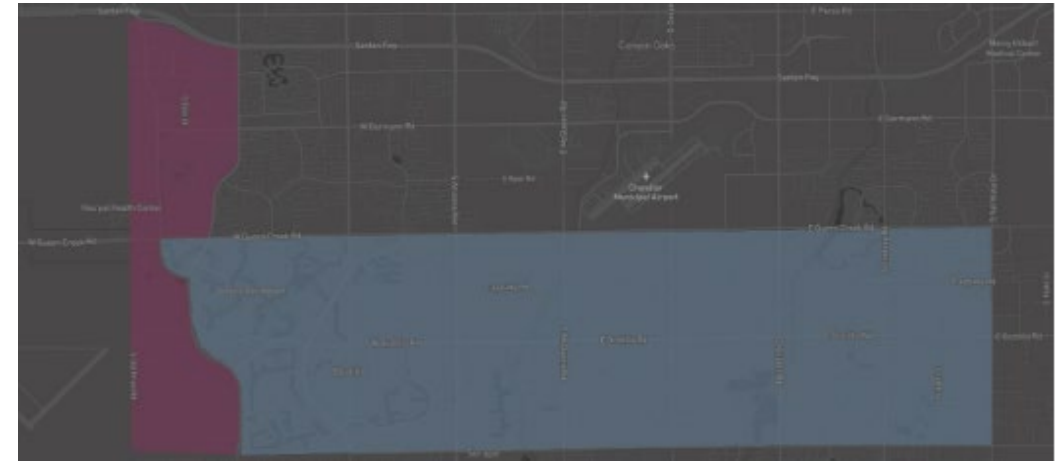
- 17.9% of residents living in project area work in project area
- 6.9% of residents living in project area interested in bicycle commuting





## Big Data – Origination-Destination Analysis

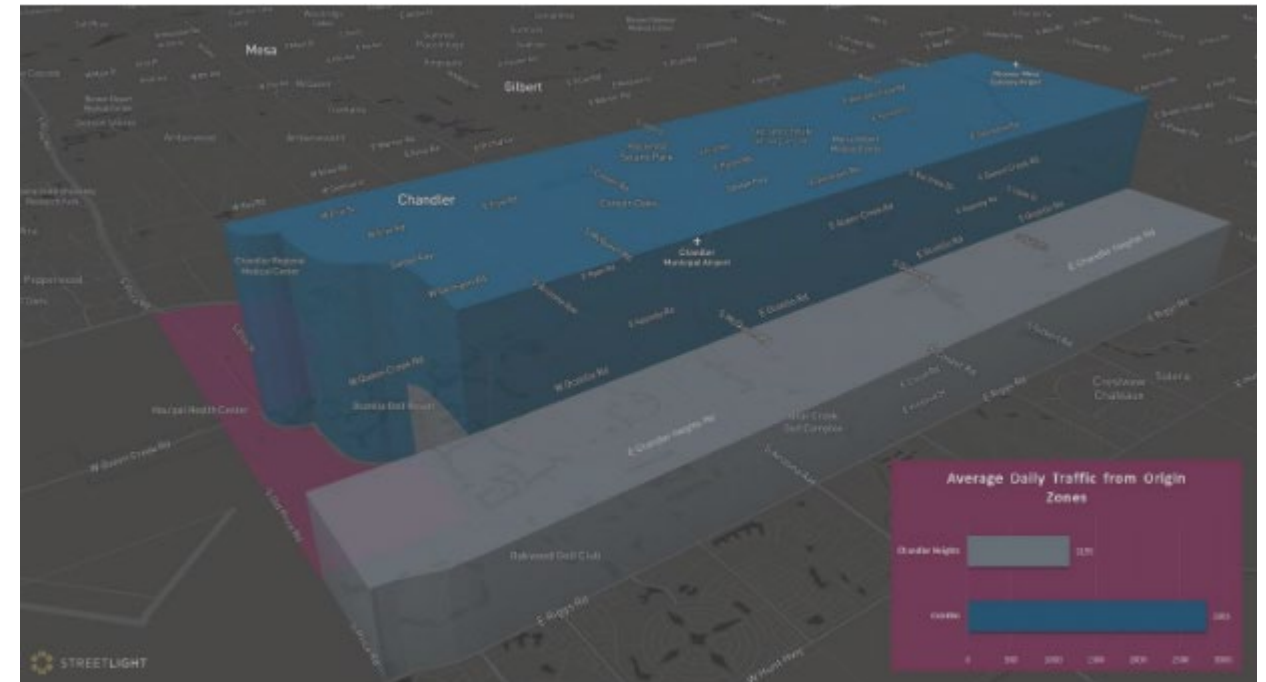
- StreetLight Data Usage
- 2019 Data – Calibrated
- Origination Zones
  - Ocotillo
  - Chandler Heights
- Destination Price Road Corridor





## Key Insights

- Average Daily Traffic from Origination Zones
  - Chandler Heights – 1,196
  - Ocotillo – 2,805

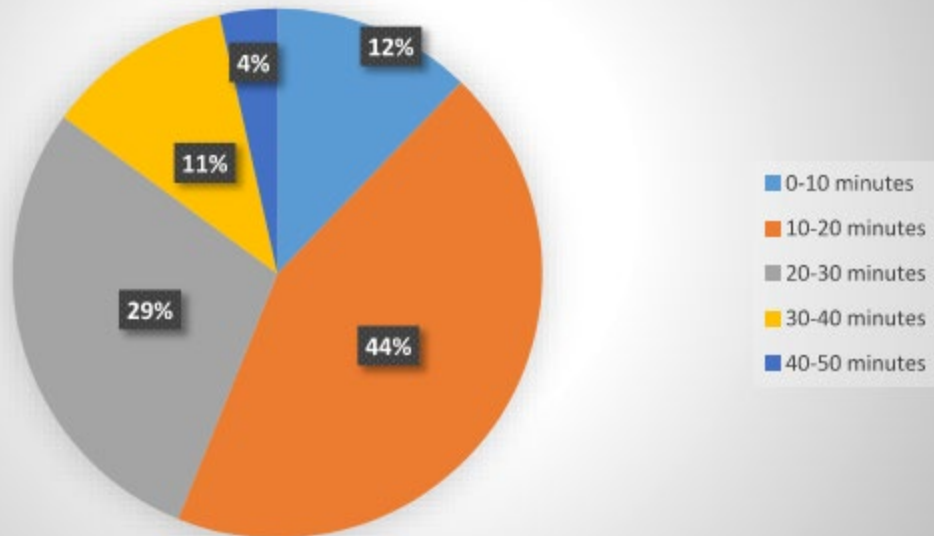




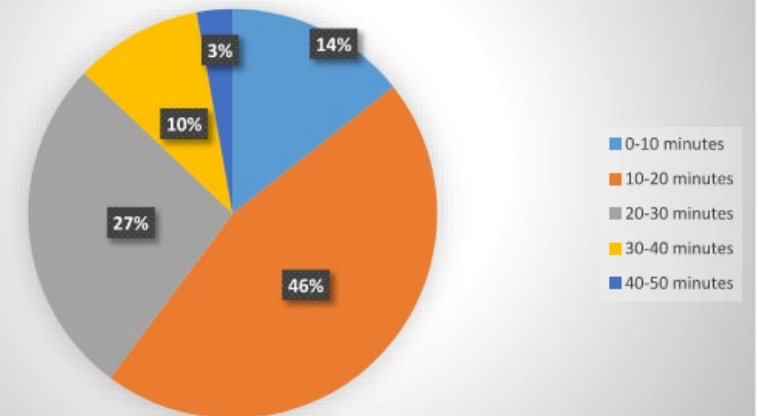
## Key Insights

- Total Traffic by Travel Time

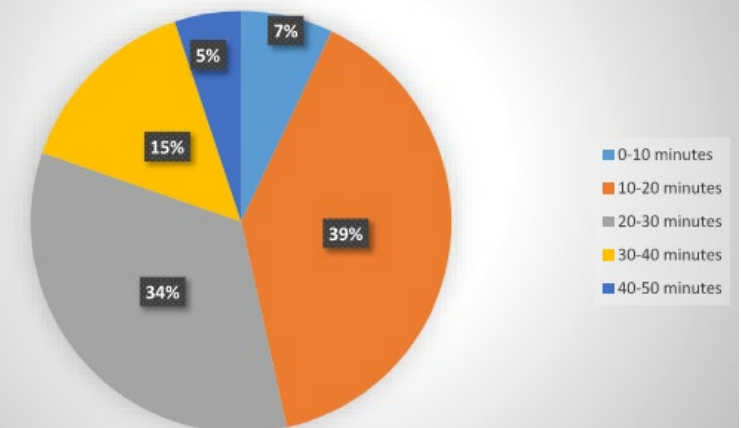
**Total Traffic By Travel Time  
(Chandler Heights & Ocotillo Originations)**



**Total Traffic By Travel Time  
(Ocotillo Originations Only)**



**Total Traffic By Travel Time  
(Chandler Heights Originations Only)**

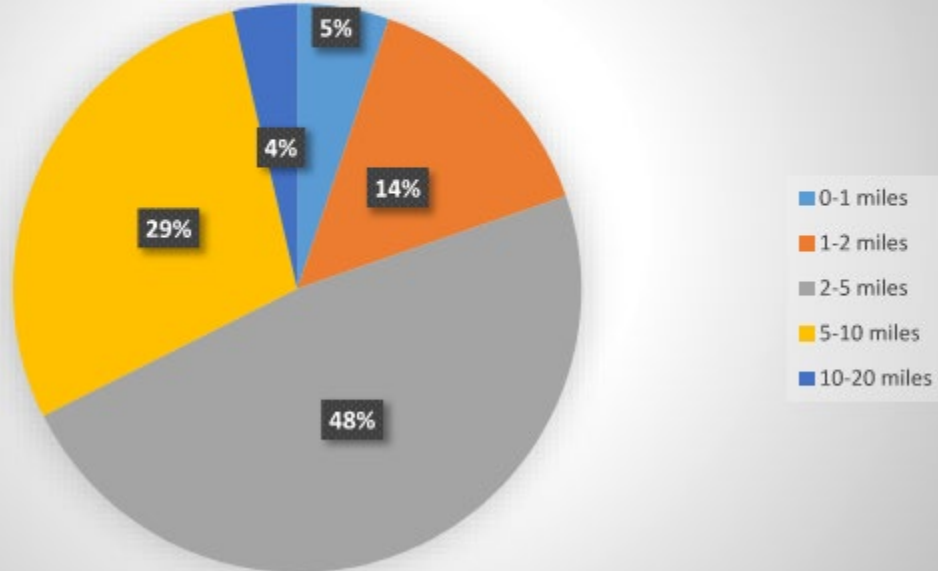




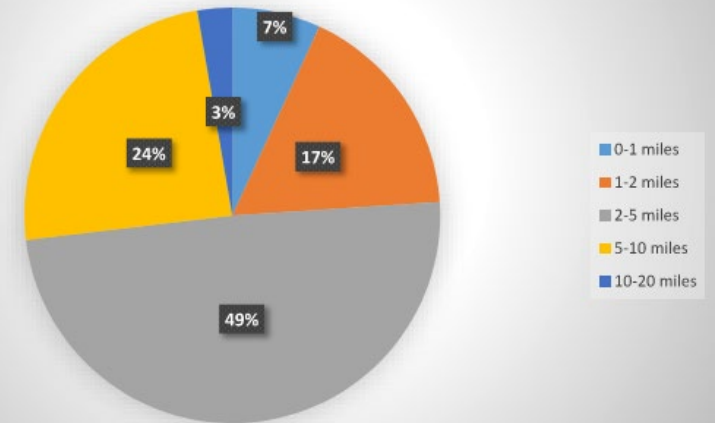
## Key Insights

- Total Traffic by Trip Length

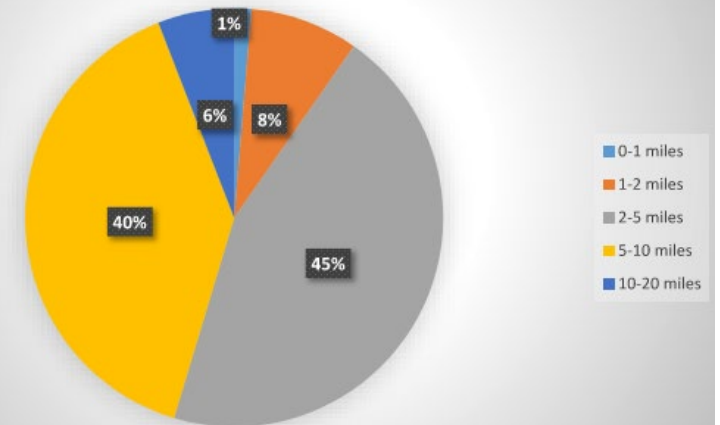
**Total Traffic By Trip Length  
(Chandler Heights & Ocotillo Originations)**



**Total Traffic By Trip Length  
(Ocotillo Originations Only)**



**Total Traffic By Trip Length  
(Chandler Heights Originations Only)**





# Chandler Heights Road vs. Ocotillo Road Comparison

- Evaluation Criteria
  - O-D Trip Capture Potential
  - Compatibility with Town of Gilbert Plan
  - Connection to Recreational Destinations
  - Connection to Education Facilities
  - Driveway Density
  - Utility Impacts
  - Cost

Alternative	Ratings Weak ( 1-2-3-4-5-6-7-8-9-10 ) Strong									Pros	Cons	Notes
	Weight/Importance											
	10	8	8	8	6	5	5	50	500			
	O-D Trip Capture Potential <sup>1</sup>	Compatibility with Town of Gilbert Plan	Connection to Recreational Destinations	Connection to Educational Facilities <sup>2</sup>	Driveway Density <sup>3</sup>	Utility Impacts	Cost	Total	Weighted Total			
Ocotillo Road	10	10	6	7	10	7	5	55	404	- Ocotillo Road trip origination zone to Price Road corridor more than double Chandler Heights Road corridor origin zone. - Town of Gilbert Plan includes shared use path on north side of Ocotillo Road - Direct access to Paseo Vista Recreation Area	- Direct access to Veterans Oasis Park and Snedigar Sports Complex not provided	- Direct access to 2 elementary schools and 2 high schools.
Chandler Heights Road	3	0	10	6	9	7	4	39	267	- Direct access to Veterans Oasis Park and Snedigar Sports Complex	- East end facility would not match Town of Gilbert Plan - Potential trip capture < 50% of Ocotillo Road trip origination trips to Price Road Corridor	- Direct access to 3 elementary schools and 1 junior high school.

1 - See Section 8.2.1 for detailed analysis

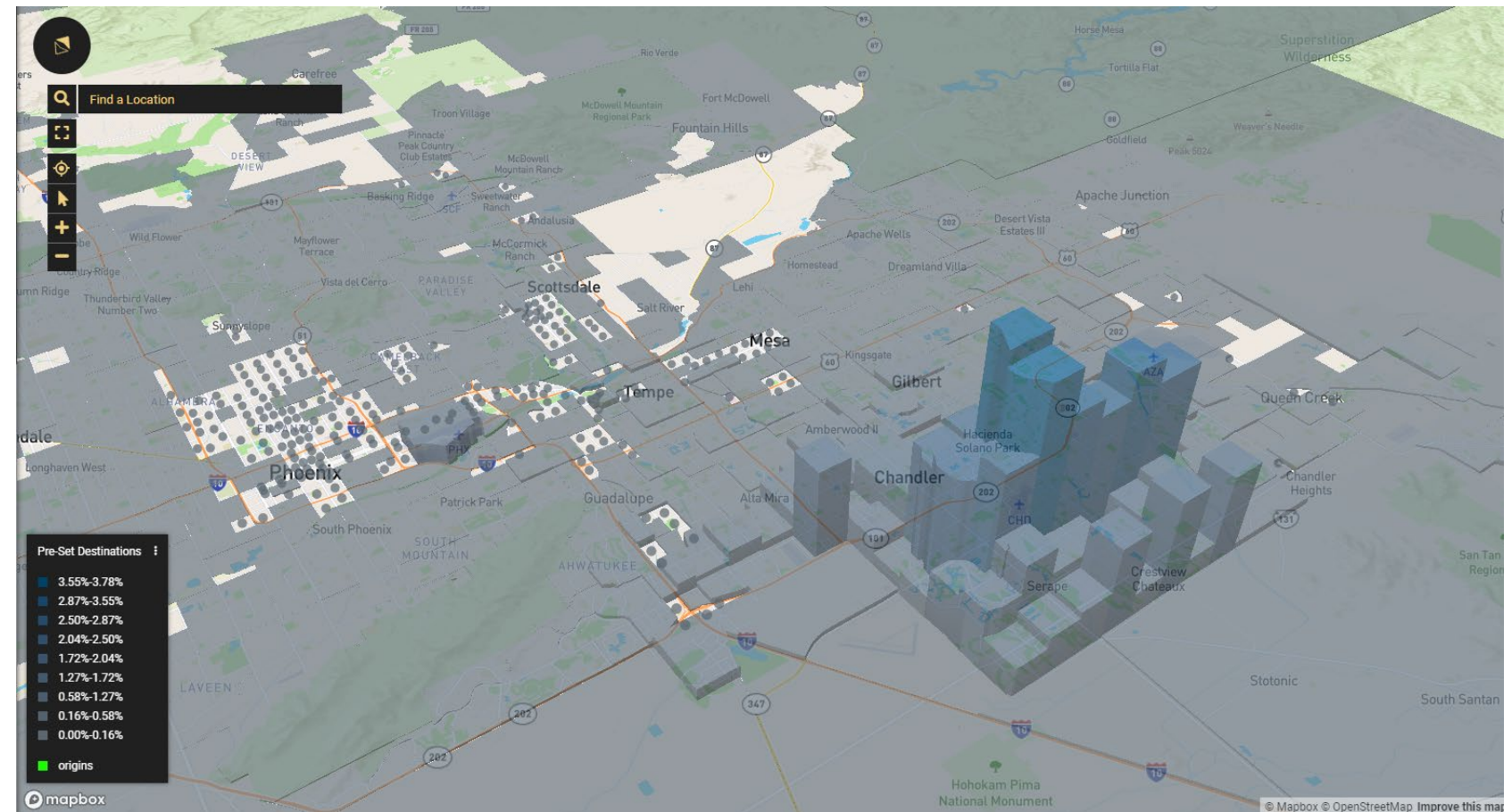
2 - Overall enrollment higher for schools on Ocotillo Road

3 - 2.1 driveways/mile on Ocotillo corridor. 2.5 driveways/mile on Chandler Heights corridor.



## Additional Insights

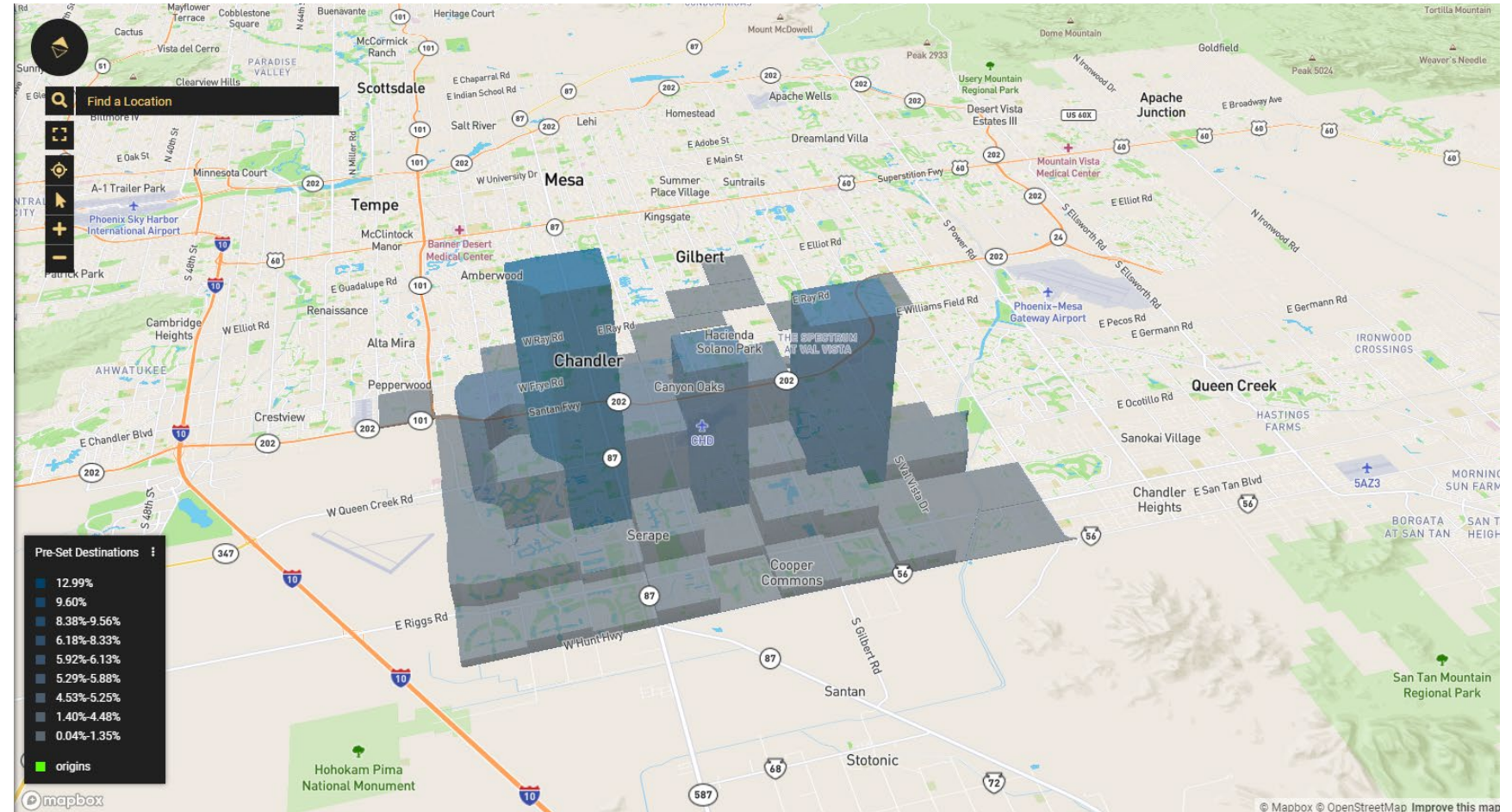
- All Destinations from Ocotillo & Chandler Heights Corridors by vehicle





## Additional Insights

- All Destinations from Ocotillo & Chandler Heights Corridors by bicycle





# Questions?

## Contact Information:

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Photo Credit: Town of Gilbert





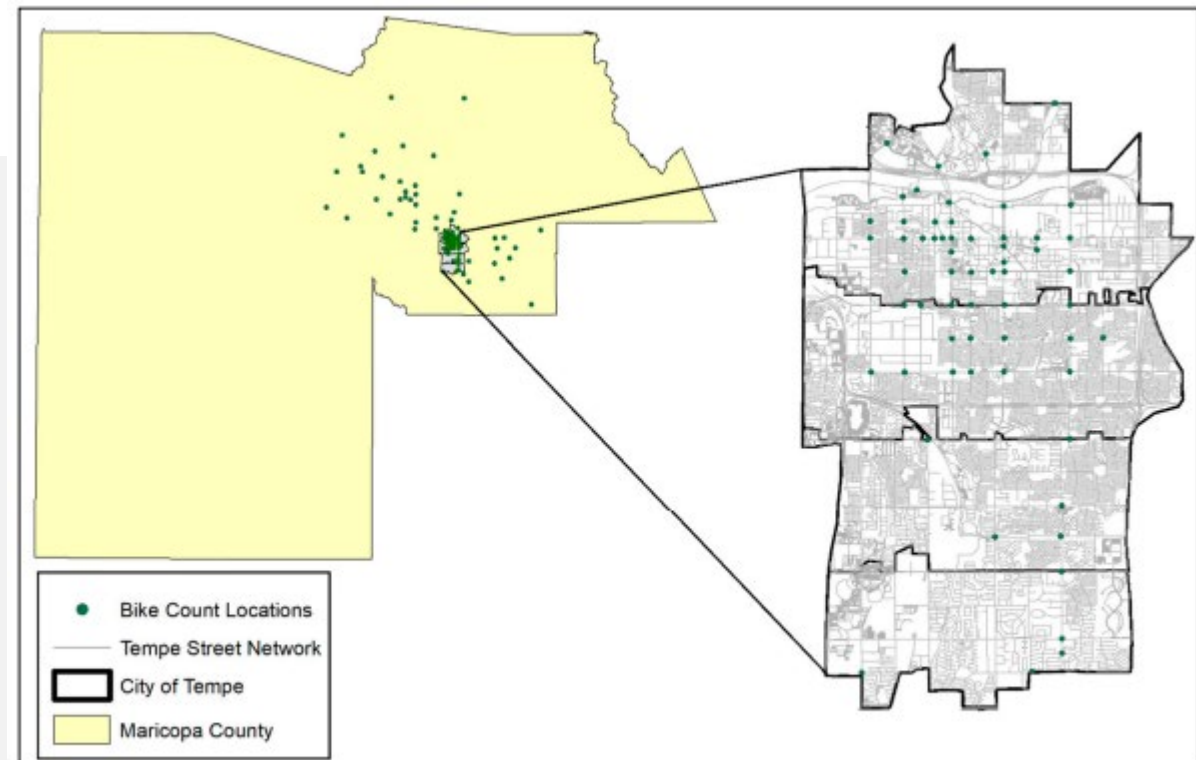


<https://www.strava.com>

# Background

This presentation contains aggregated and de-identified data from Strava Metro.

TYLin



**Figure 1.** Study area in Maricopa County, AZ, USA.

Figure Credit: Correcting Bias in Crowdsourced Data to Map Bicycle Ridership of All Bicyclists

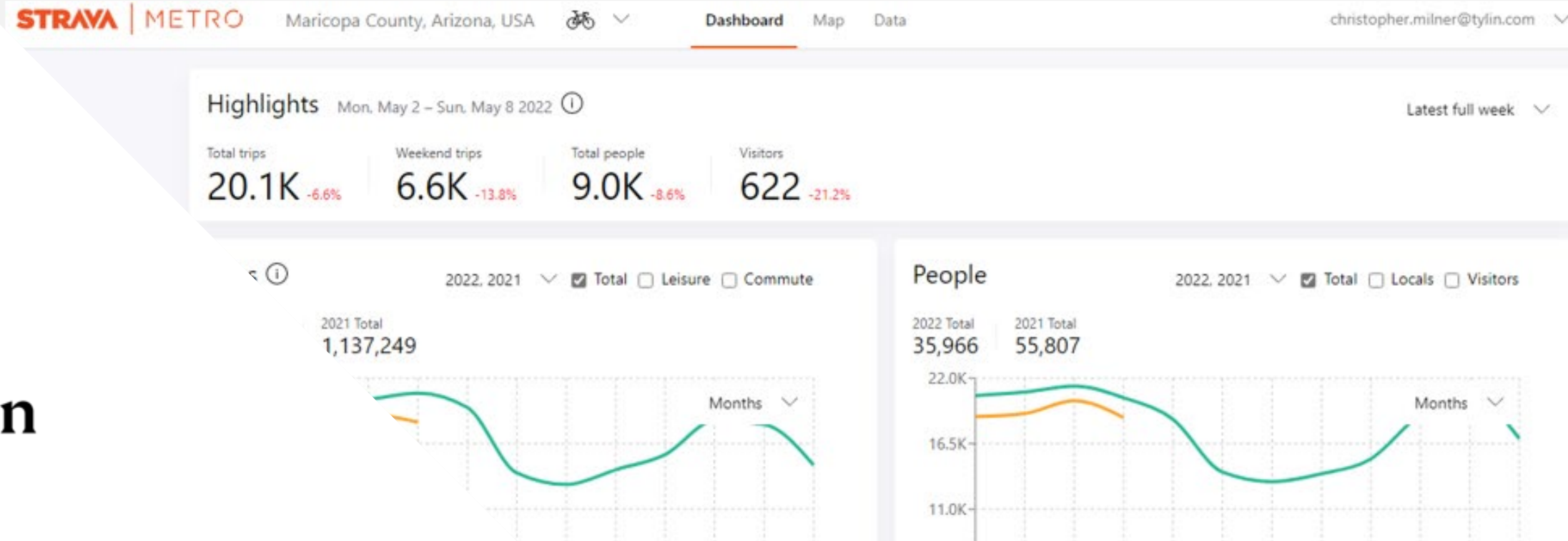




<https://metroview.strava.com/application>

# Strava Metro

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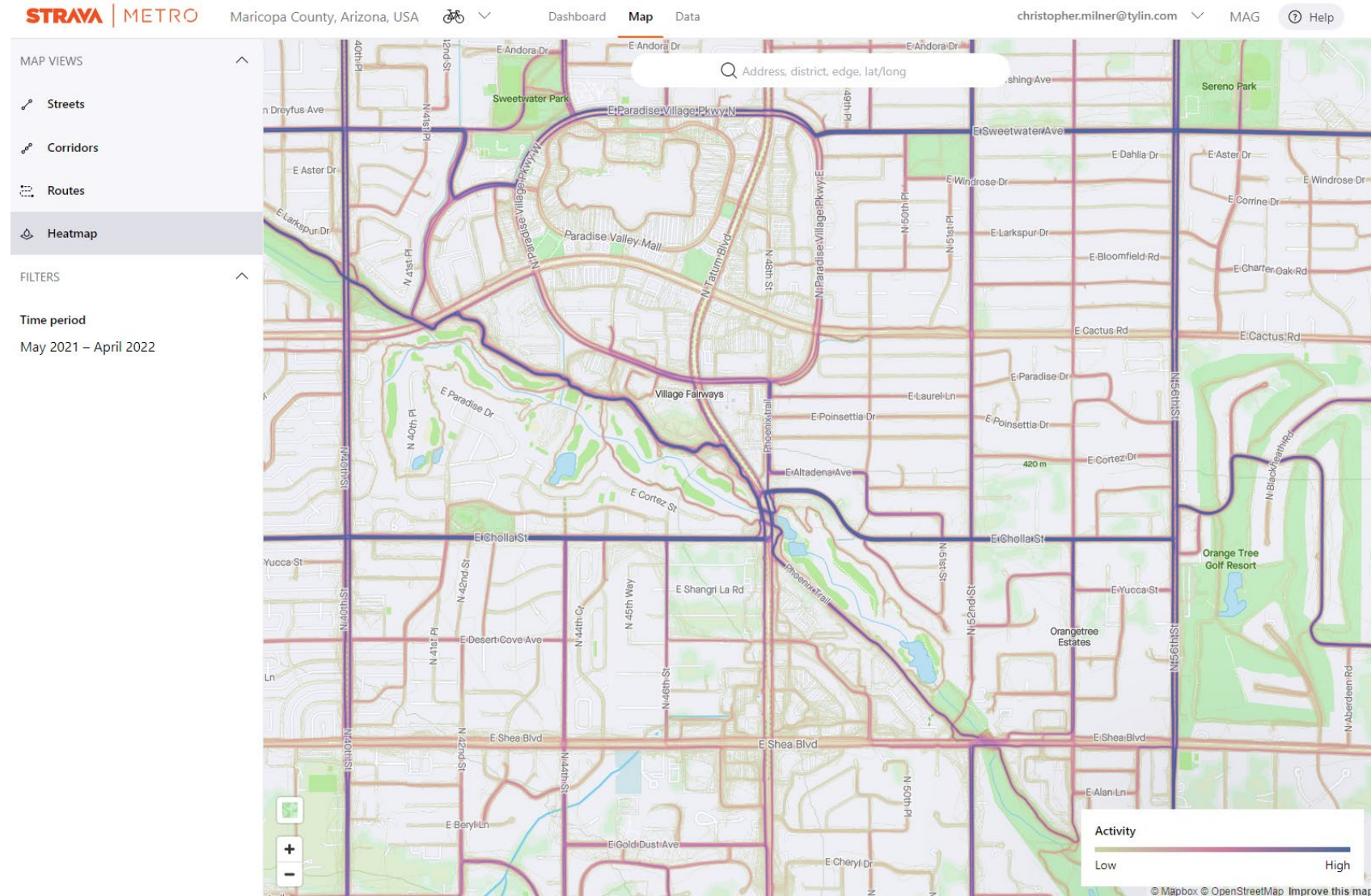


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# Heatmap



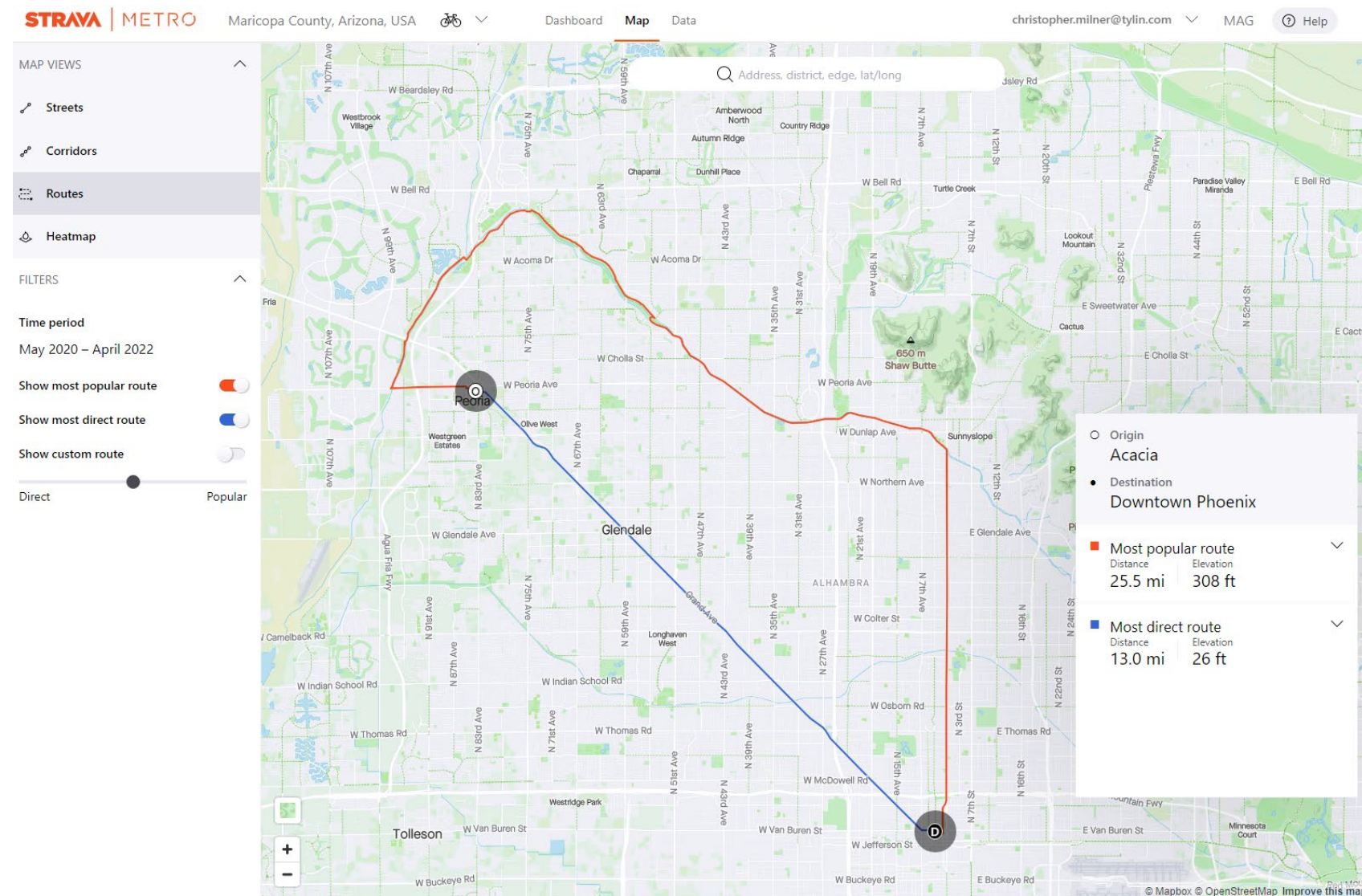
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# Routes

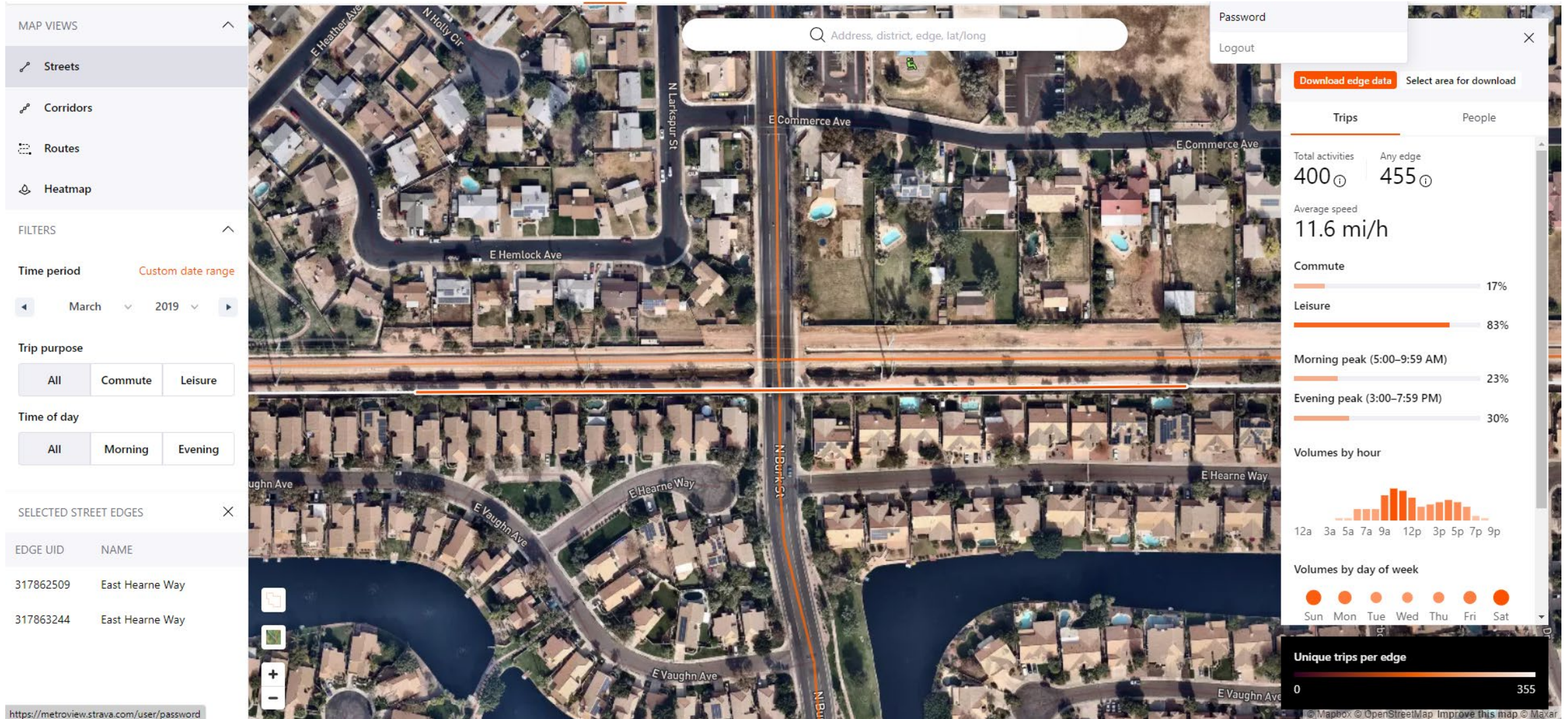
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# Strava Metro Insights

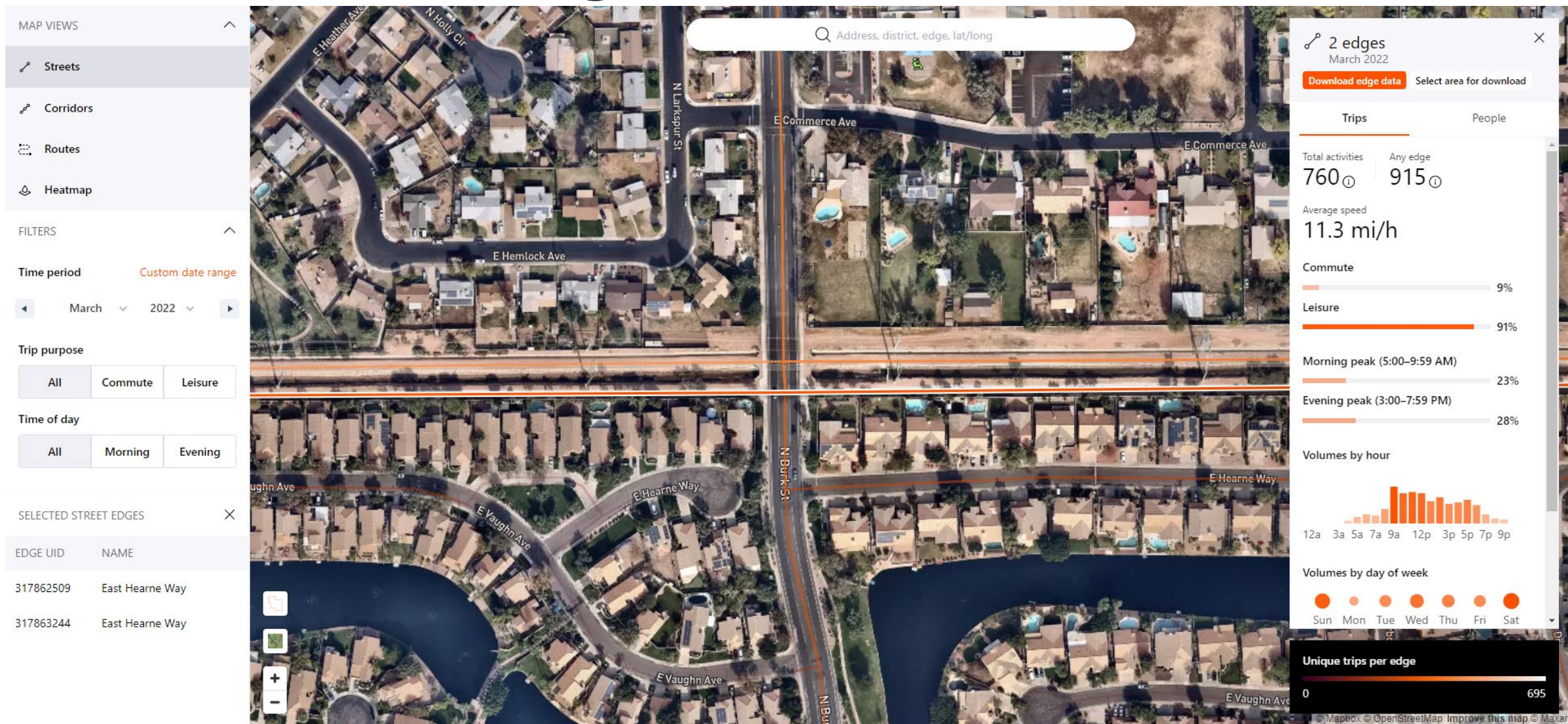
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