

Evaluating the Impact of the Memphis Greenway Infrastructure

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Logan Sirbaugh



THE UNIVERSITY OF
MEMPHIS



Agenda

- Background
- StreetLight Data Analytics
- Research Methodology
- Current Results
- Future Research

Background

- **Project Statement**

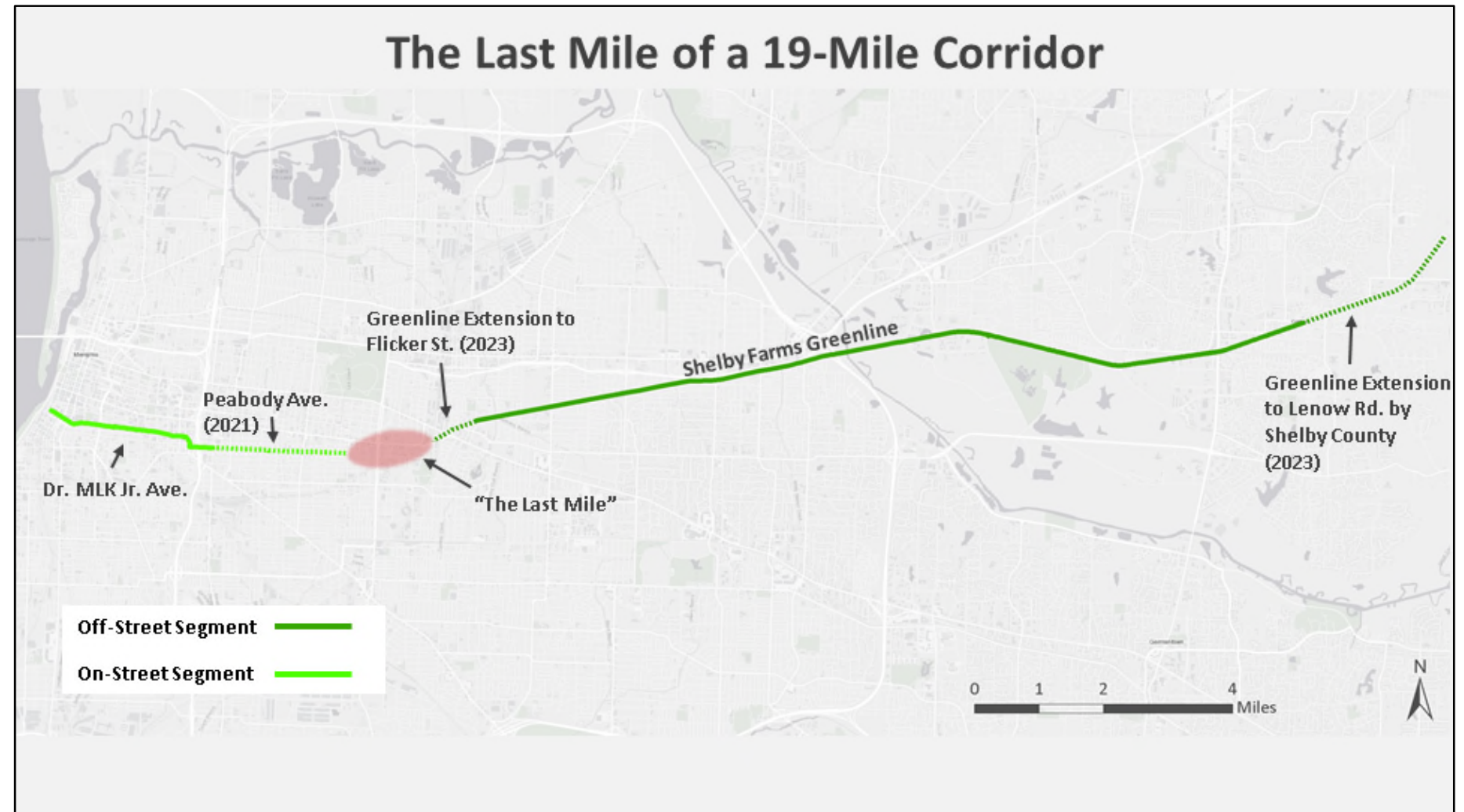
- The goal of the study is to determine the degree to which the Memphis greenways provide a viable active transportation option for low-income areas through the use of StreetLight Data analytics.



Background

- **Shelby Farms Greenline**

- 10.65 miles of paved trail
- Tillman Street at Walnut Grove Road in Midtown to B Street at Macon Road in Cordova
- Addition of Midtown Connection will create continuous path to downtown Memphis

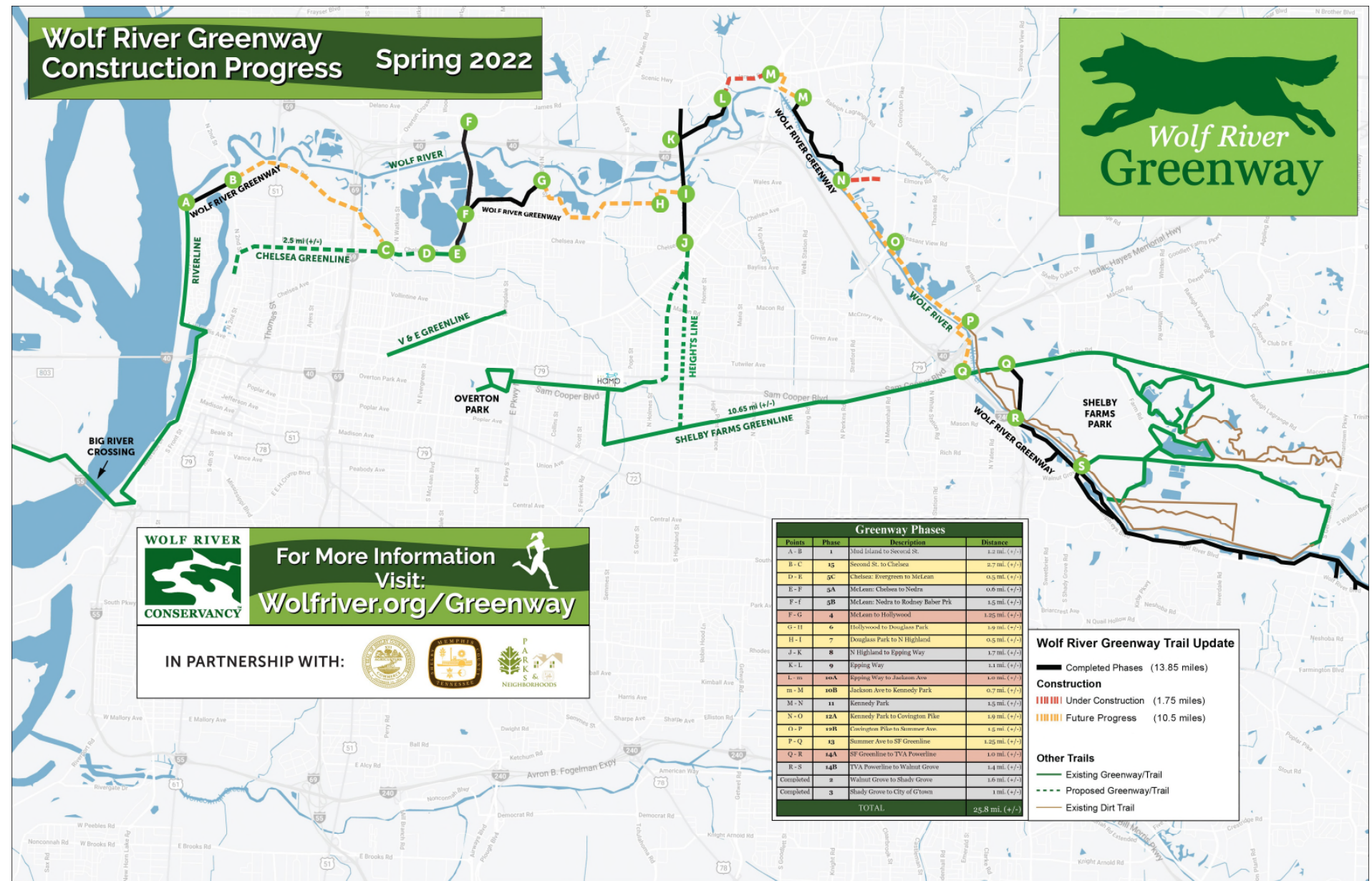


Source: <https://bikepedmemphis.files.wordpress.com/2021/02/greenline-corridor-map.png>

Background

• Wolf River Greenway

- 26-mile paved trail
- Connects with Shelby Farms Greenline near Shelby Farms Park
- Expanding to 36-mile paved trail connecting Germantown, TN to downtown Memphis

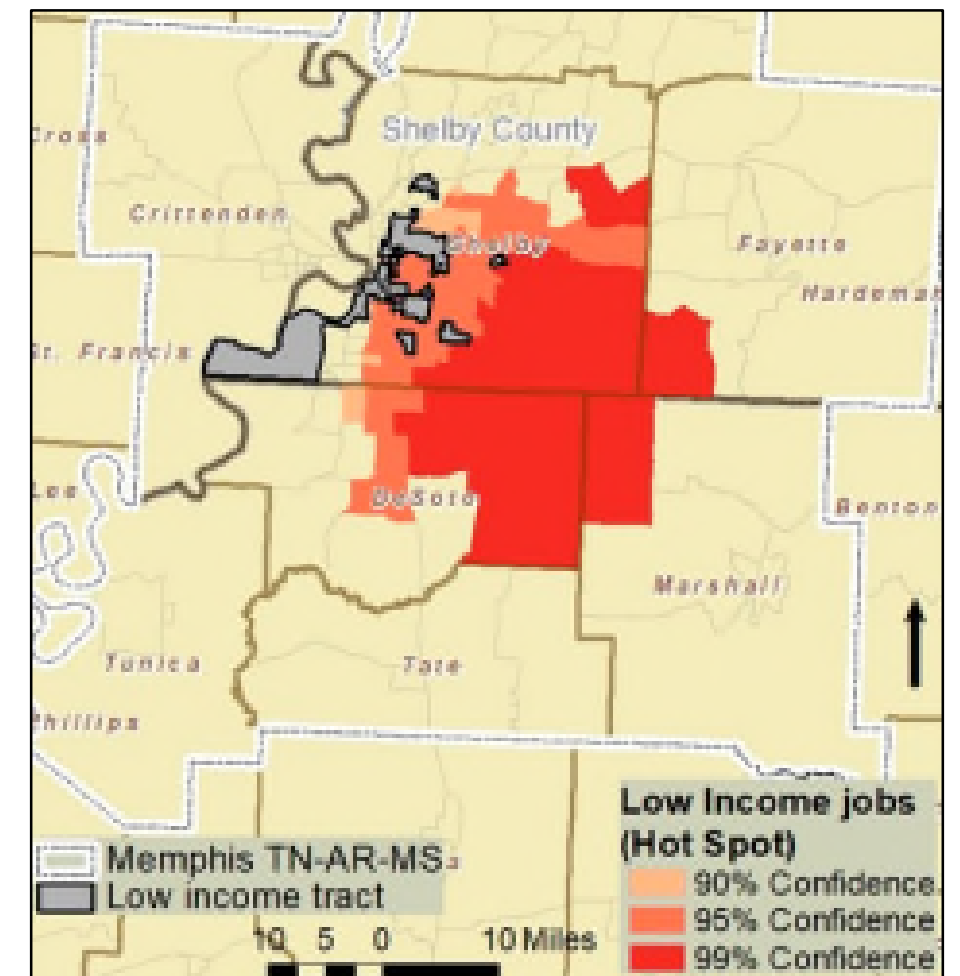
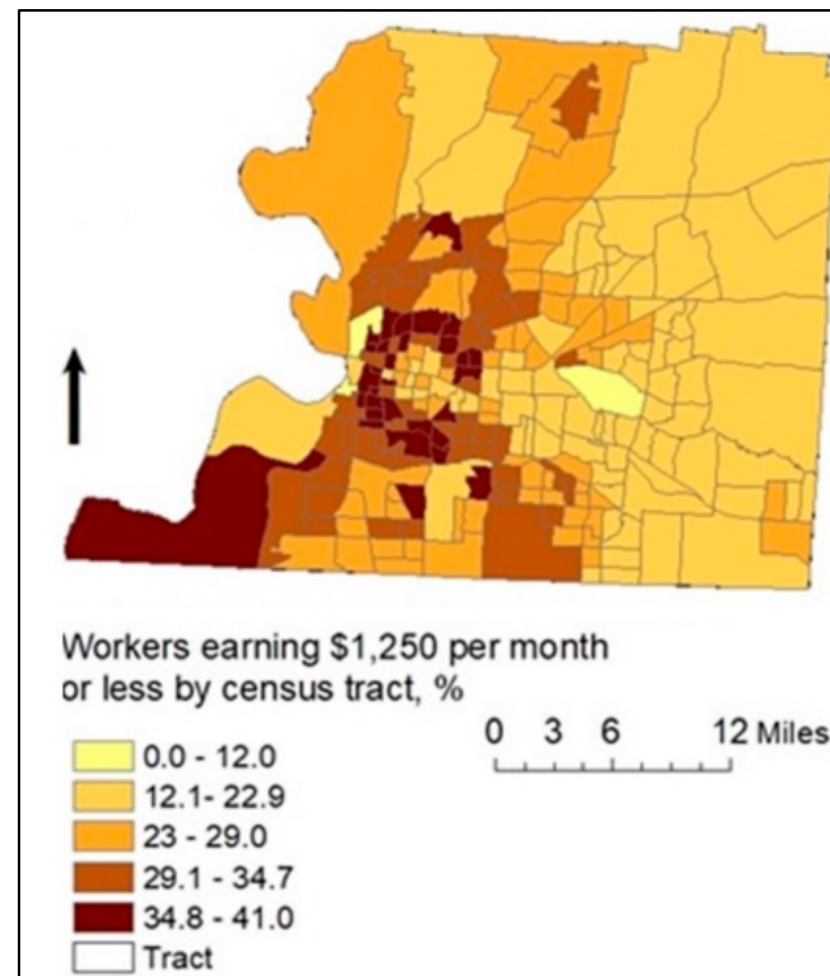


Source: *Connecting Communities Capital Campaign*

Background

- **Low-Income Workforce in Shelby County, TN**

- Increasing distance between low-income households and low-income jobs
- Plan to re-develop maps from ACS data to validate claims



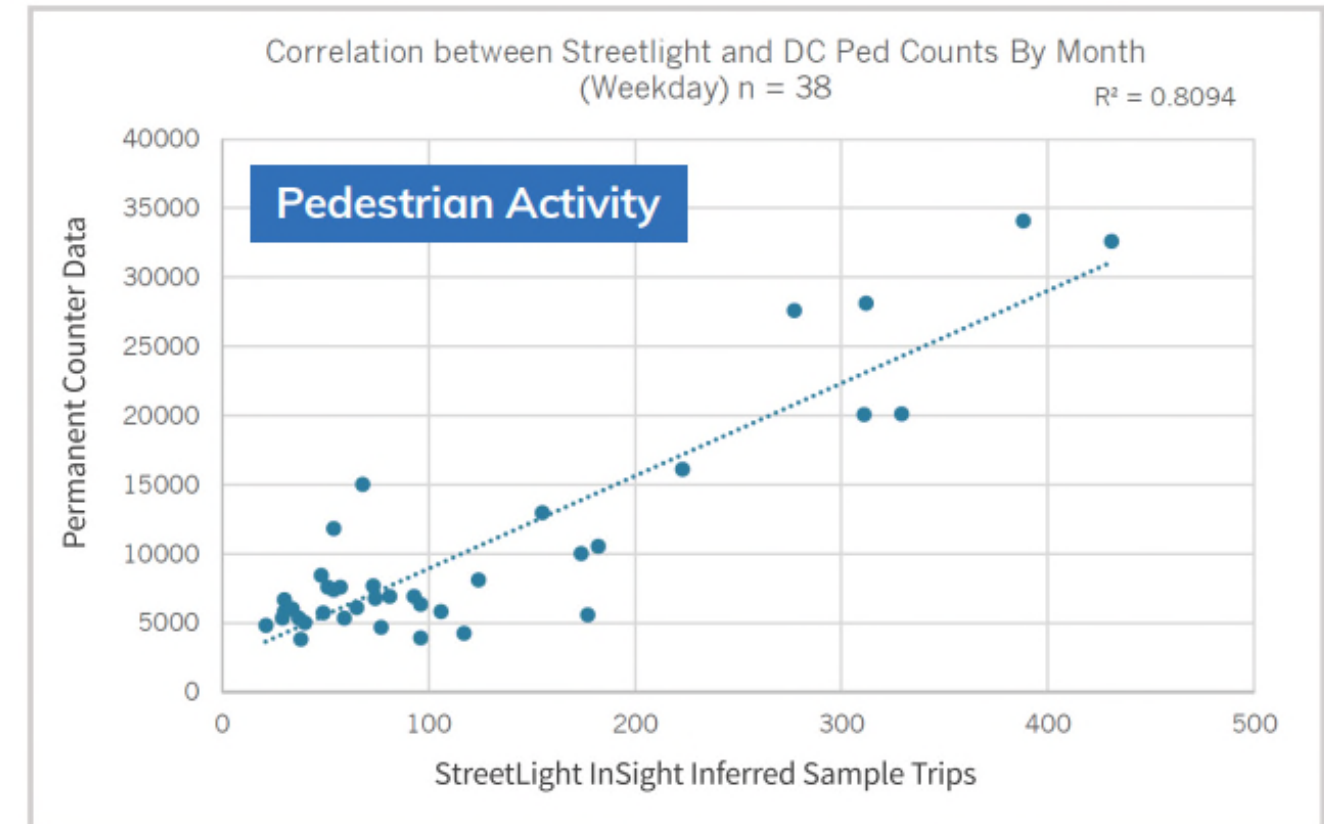
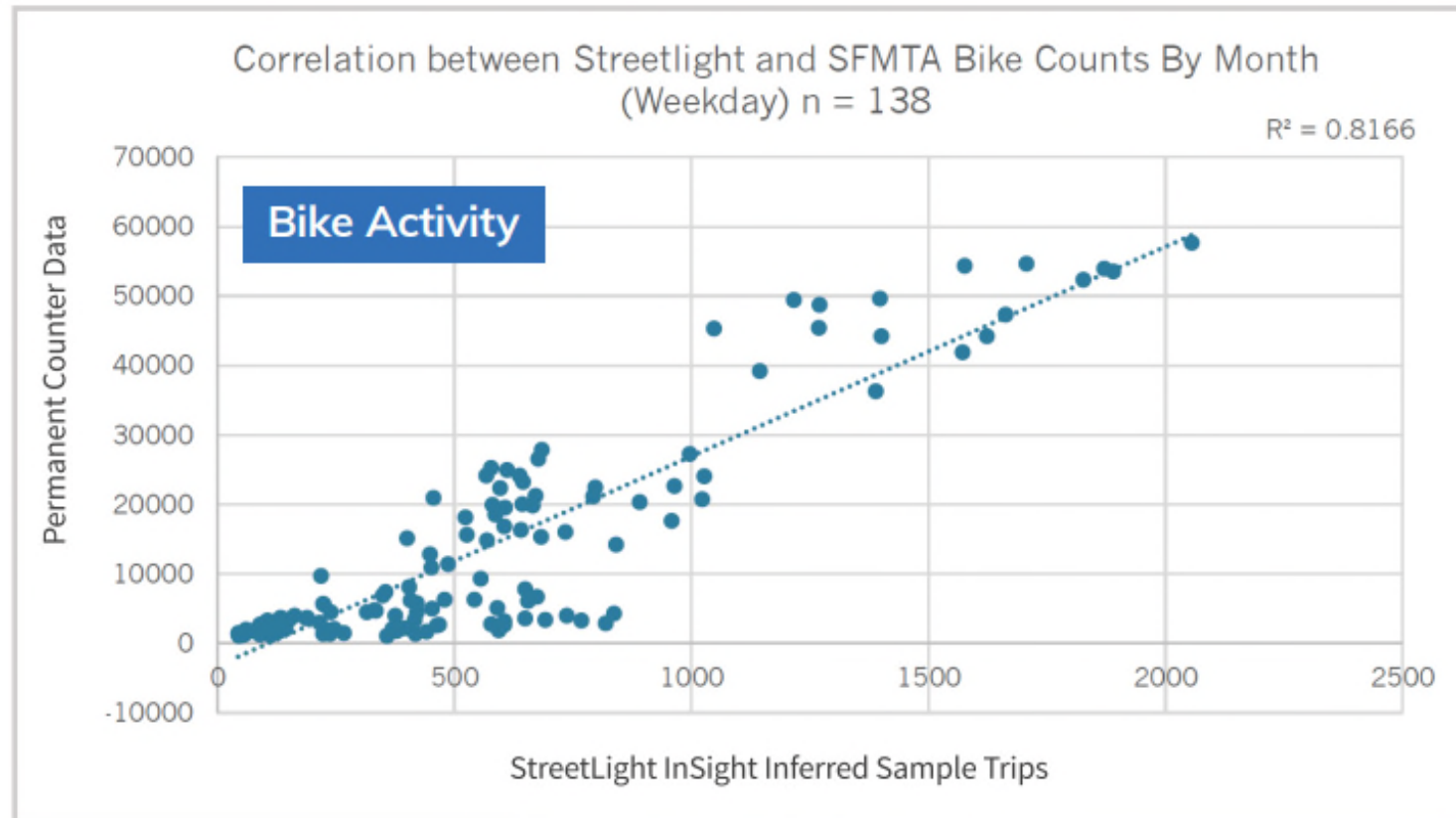
StreetLight Data

- Partnership with StreetLight
 - This analysis has been made possible through the partnership with StreetLight Data for use of their active transportation analytics.
- Data Collection Methods
 - General Location-Based Services (LBS) data
 - Mode-Tagged Location-Based Services (MT-LBS) data
 - Well-validated bicycle and pedestrian counts

StreetLight Data

- **Data Validation**

- Comparison of cyclist and pedestrian counts for StreetLight Data and permanent counters



Methodology

- **Network Analysis of Existing Bicycle Network**
 - Developed from the Shelby County Data website
 - Developed map of existing and proposed bicycle facilities
 - Development of localized areas of need (in progress)
- **Analysis conducted using StreetLight Data Analytics (in progress)**
 - Use of trip attributes
 - Use of demographic data
 - Use of origin-destination
- **Validation of StreetLight Data Analytics**

Methodology

- **Zone Selection**

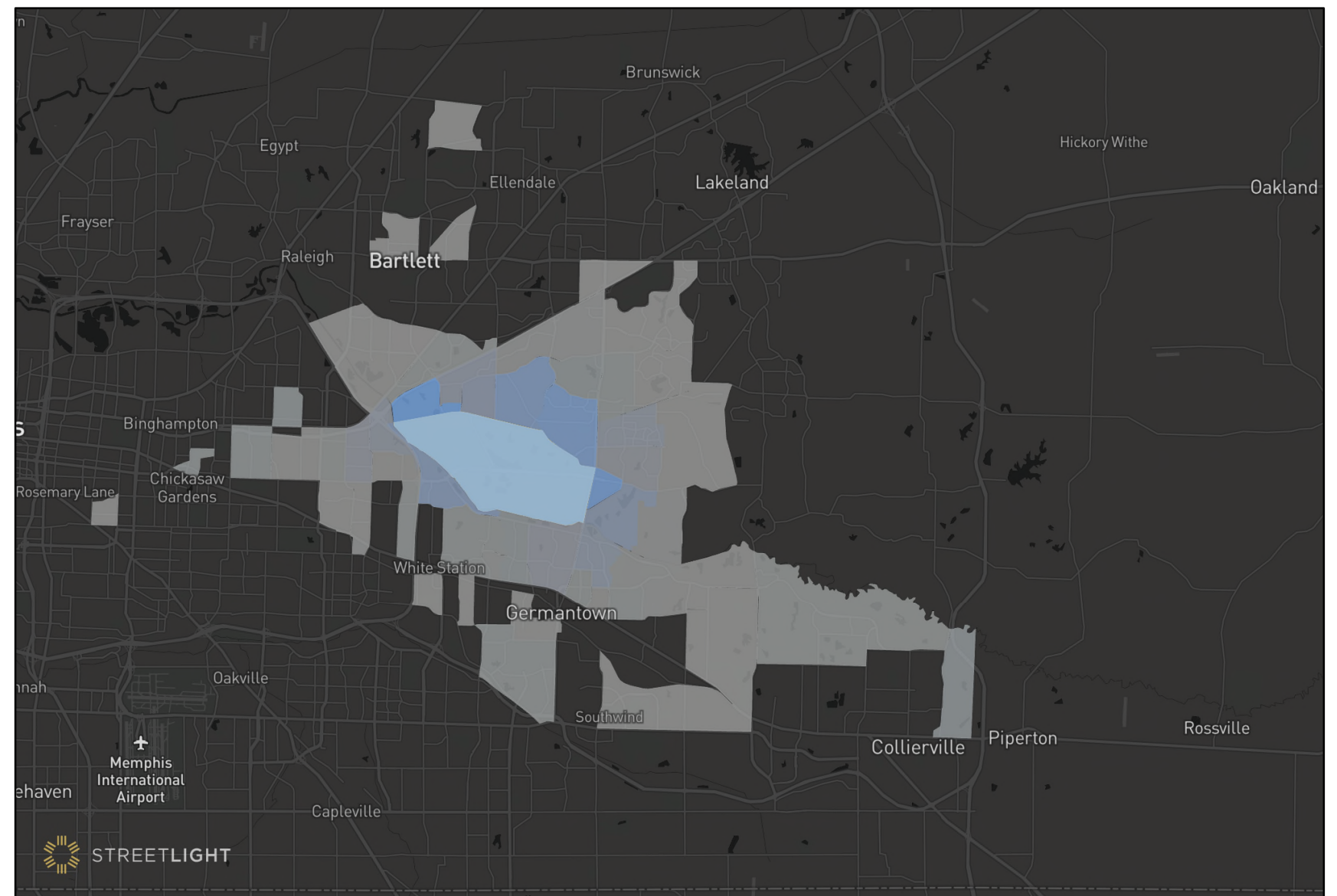
- Based on two target areas:
 - Areas identified as low-income target areas
 - Areas with limited bicycle facilities



Methodology

- **Conduct Analyses**

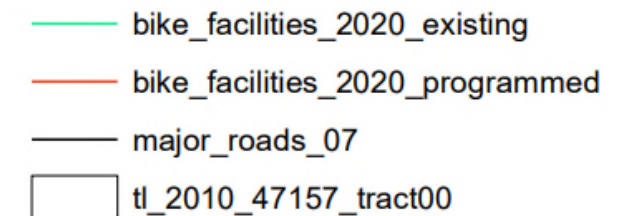
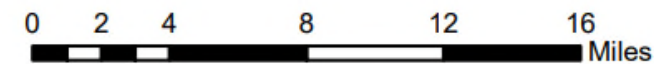
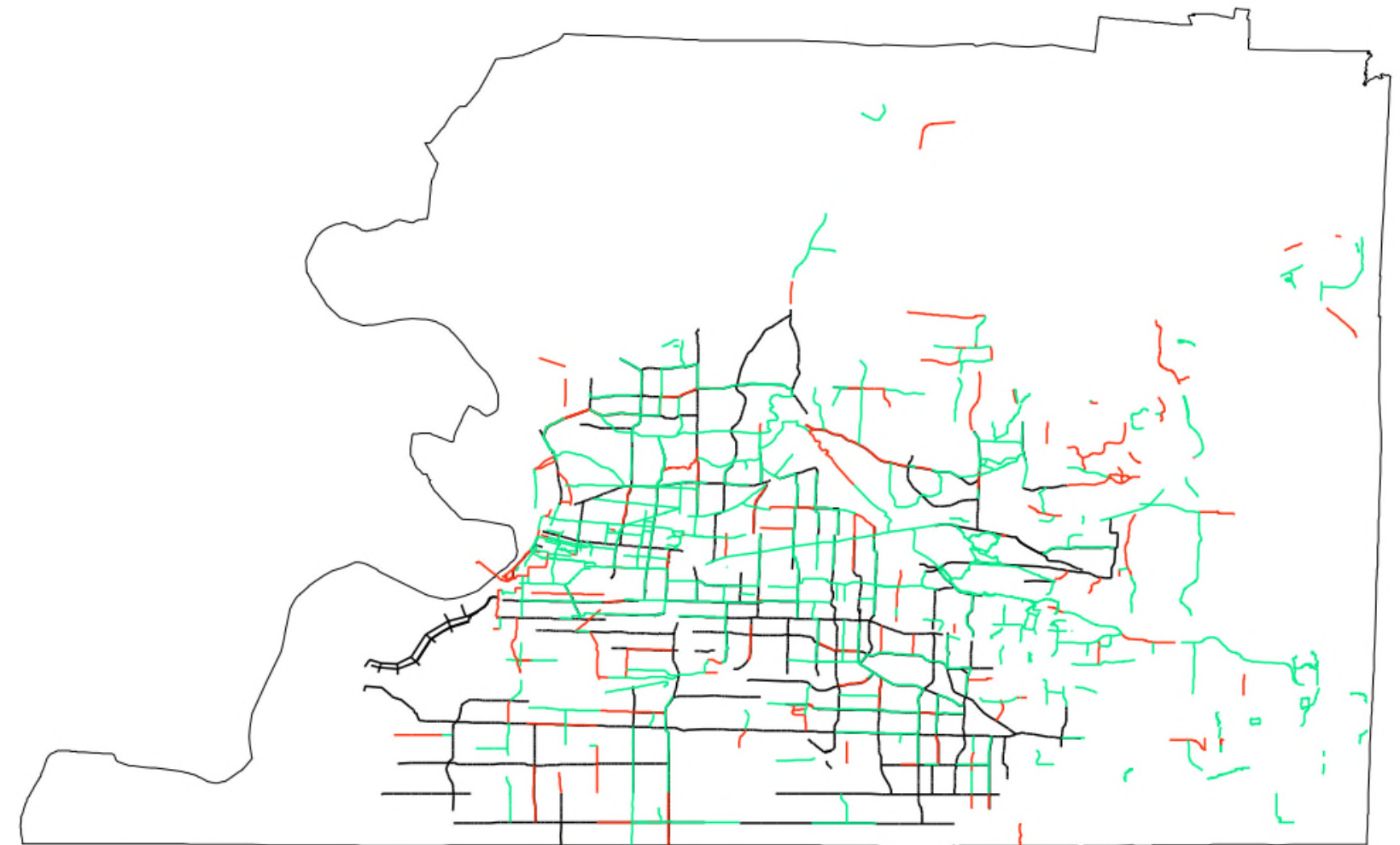
- Trip Analysis
 - Bicycle
 - Pedestrian
- Origin-Destination Analysis
 - Bicycle
 - Pedestrian



Results

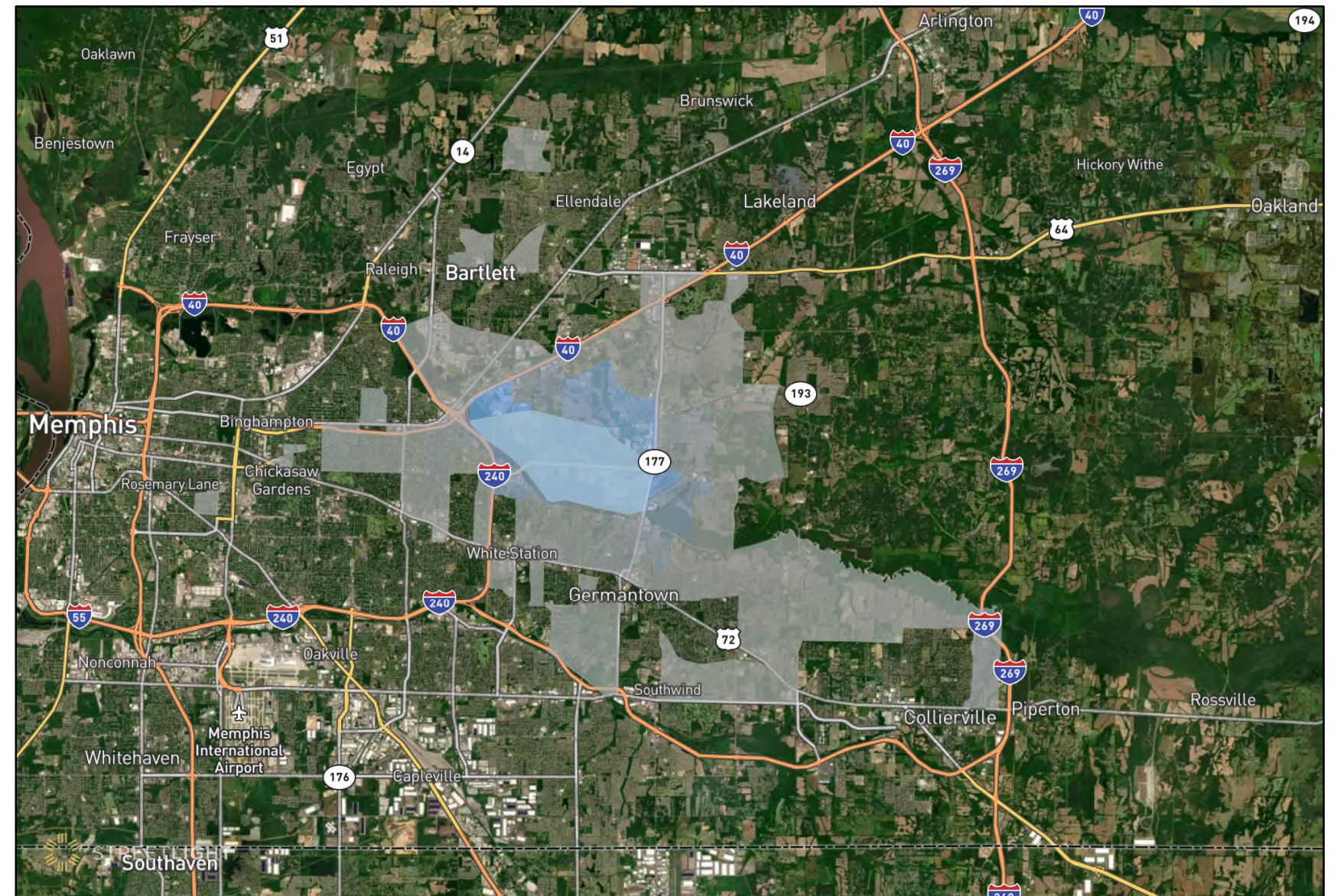
- **Network Analysis**

- Current bike network for Shelby County, TN
- Includes existing (green) and proposed (red) bicycle facilities in Shelby County, TN
- Used to identify key target areas for bicycle facility improvement



Results

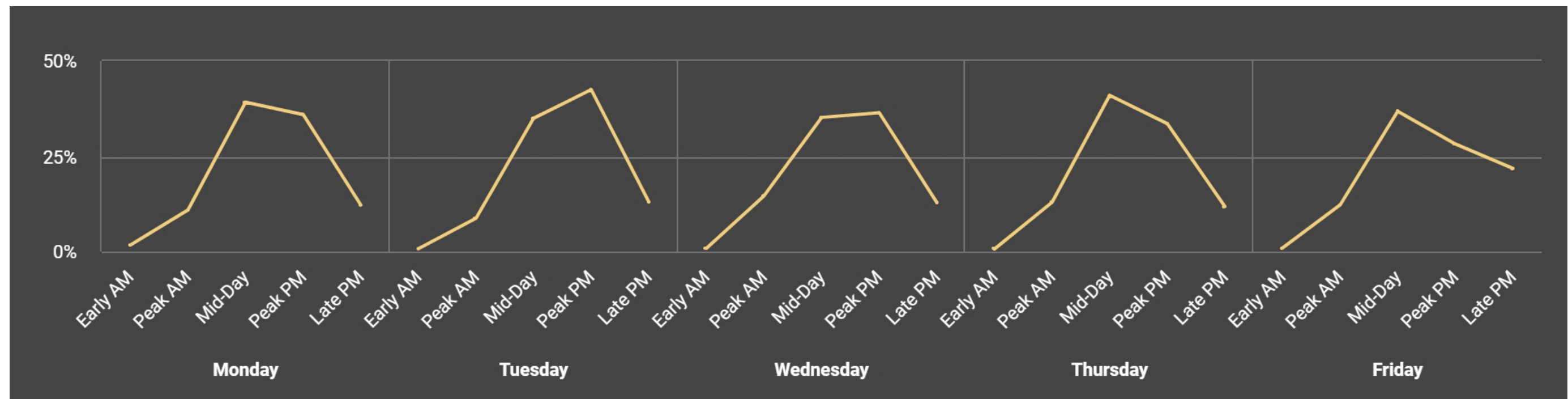
- **Example Analysis**
 - Shelby Farms Park
 - Conducted trip analysis
 - Using pre-set origins
 - Time period
 - Nov 2020 – Oct 2021
 - Based on most recent, accurate StreetLight Data



Results

- **Volume Distribution**

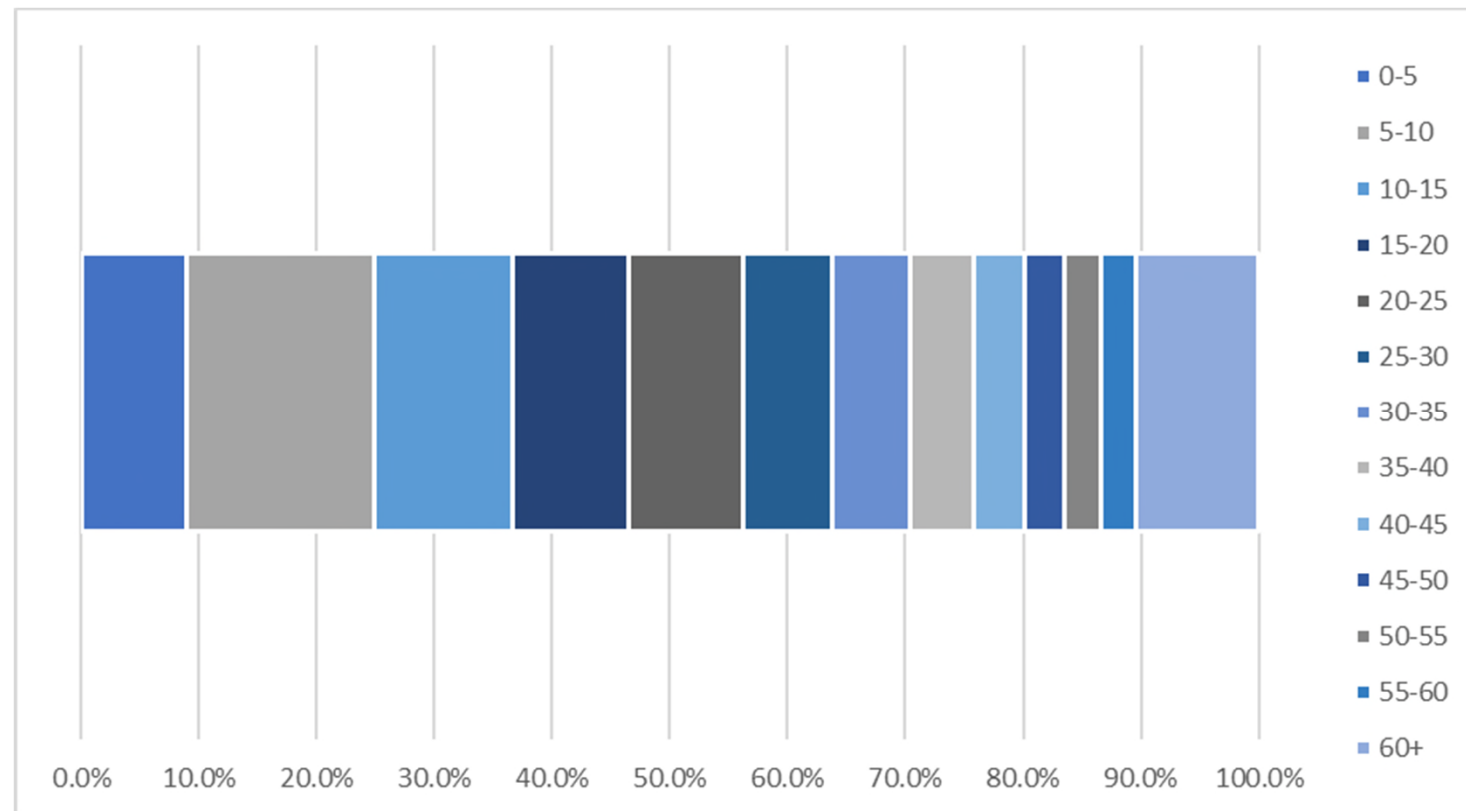
- Represented using StreetLight pre-set time periods



Results

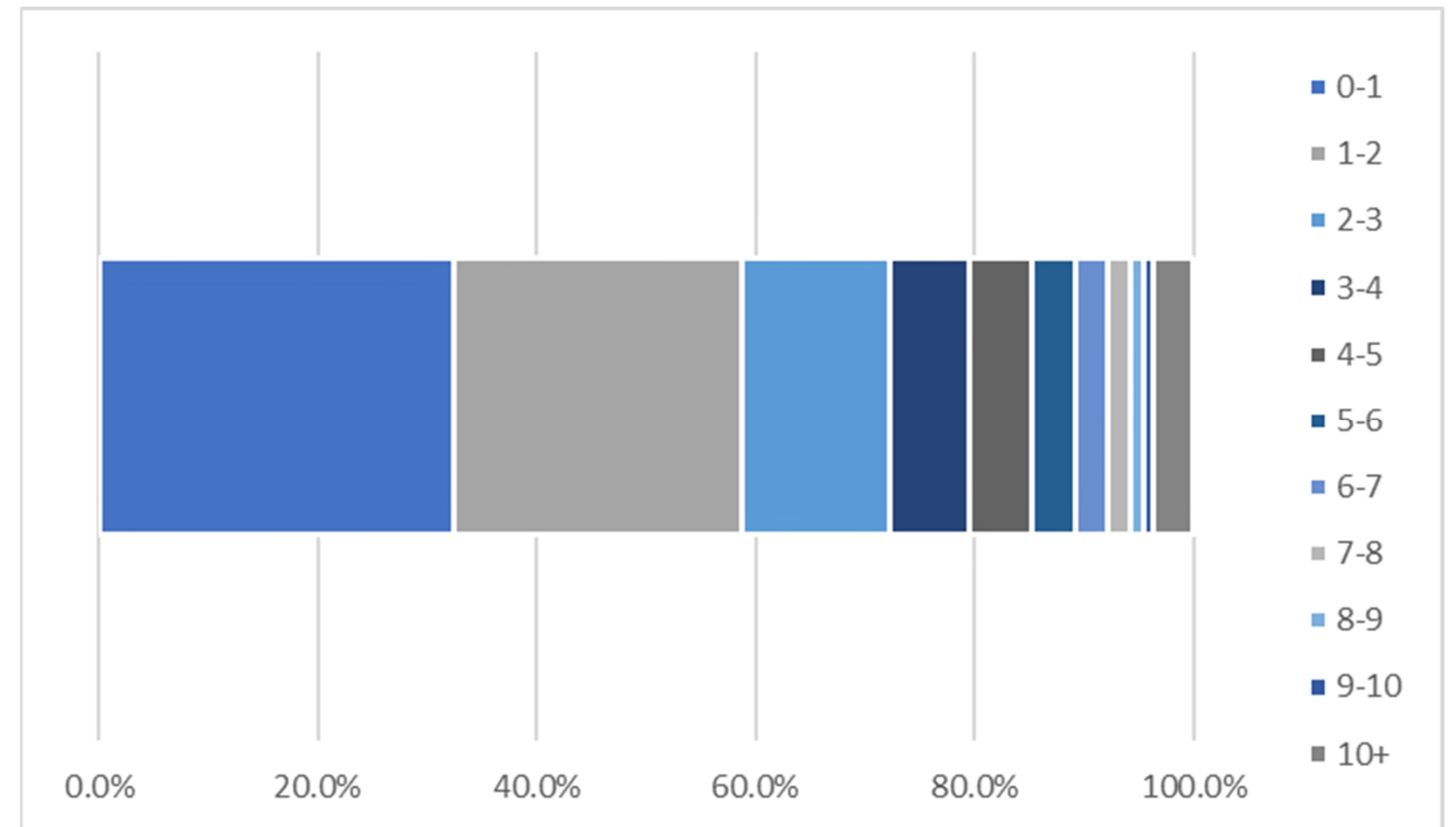
- **Traffic by Travel Time**

- Expressed in minutes



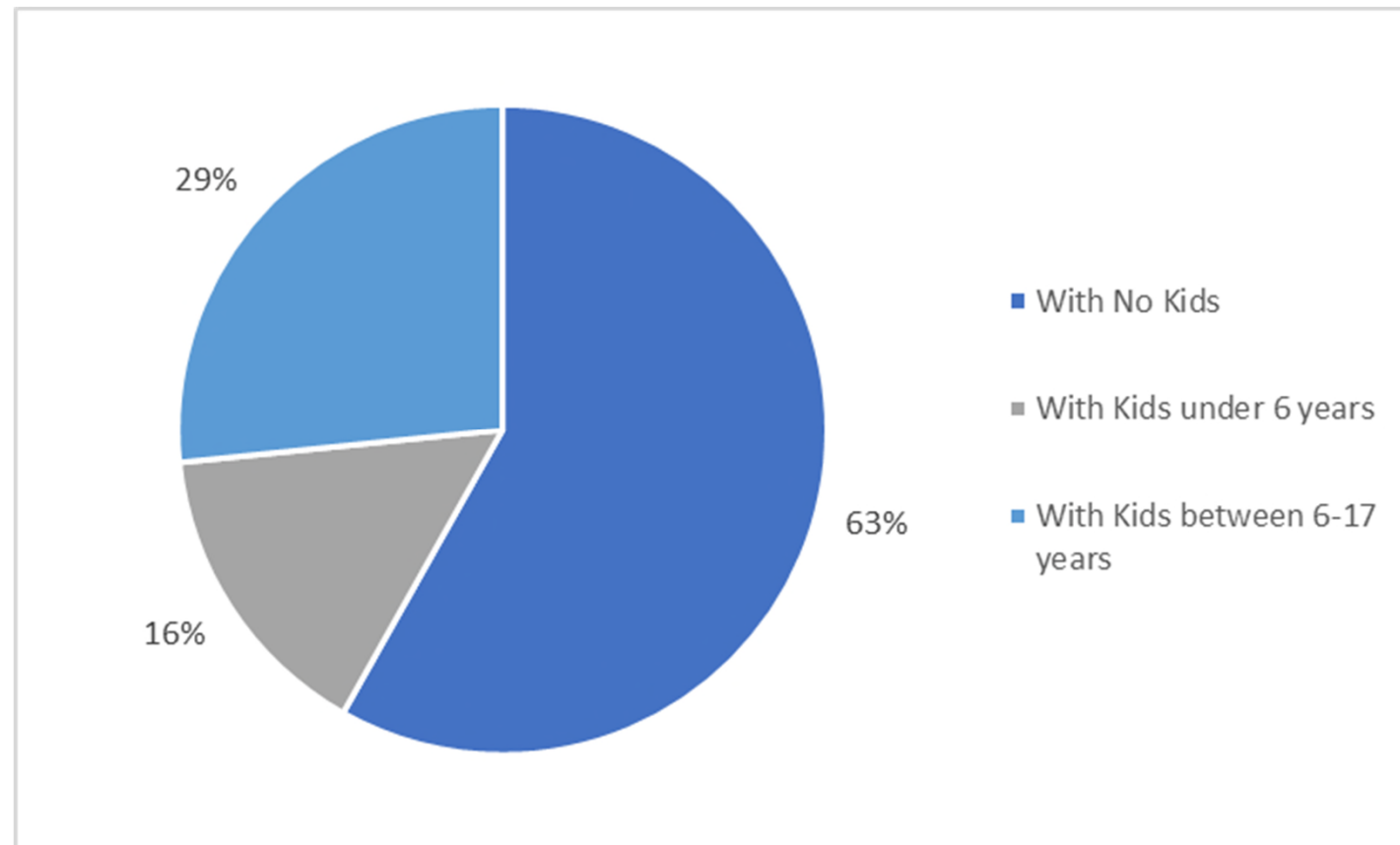
- **Traffic by Trip Length**

- Expressed in miles

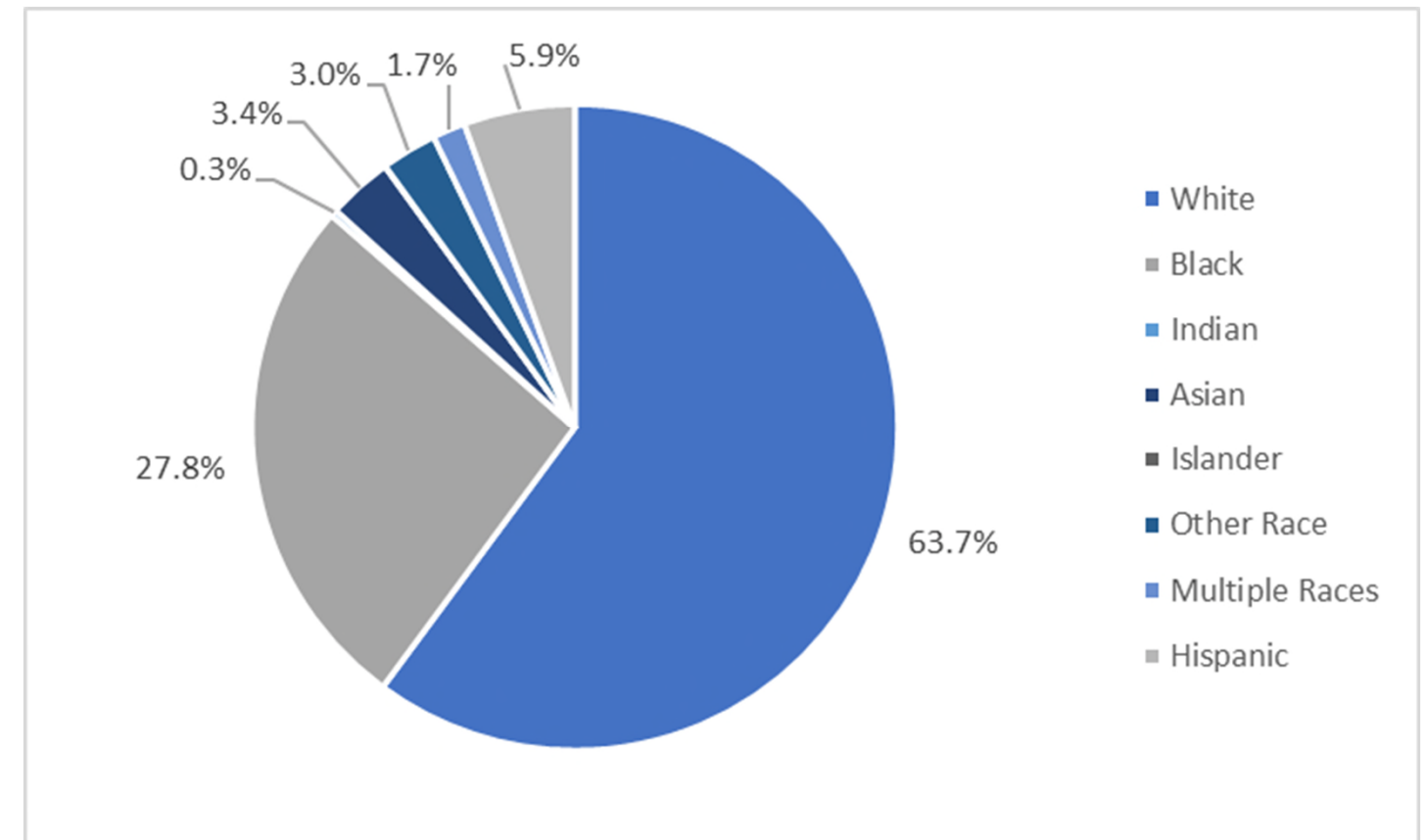


Results

• Traffic by Family Status

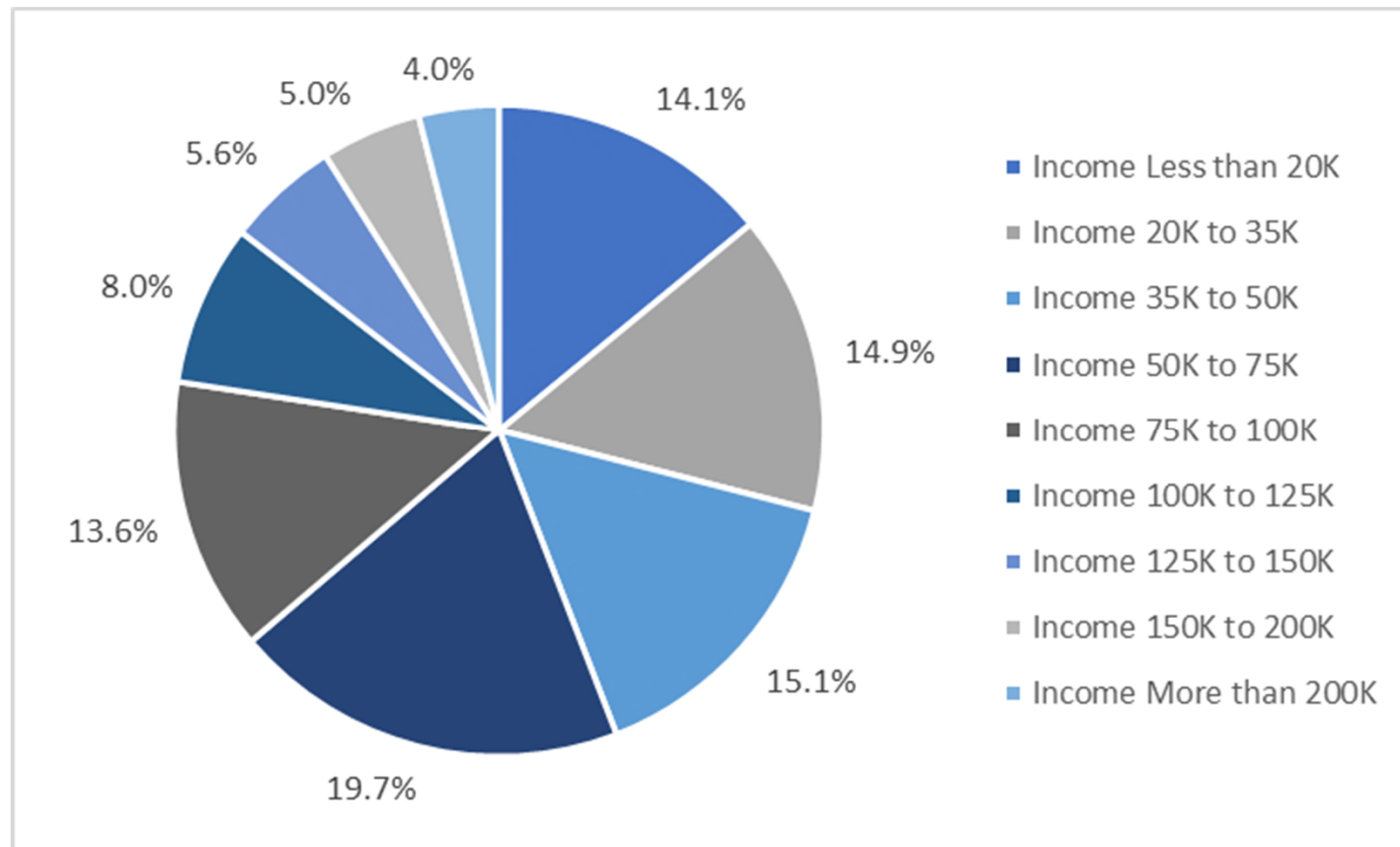


• Traffic by Race/Ethnicity

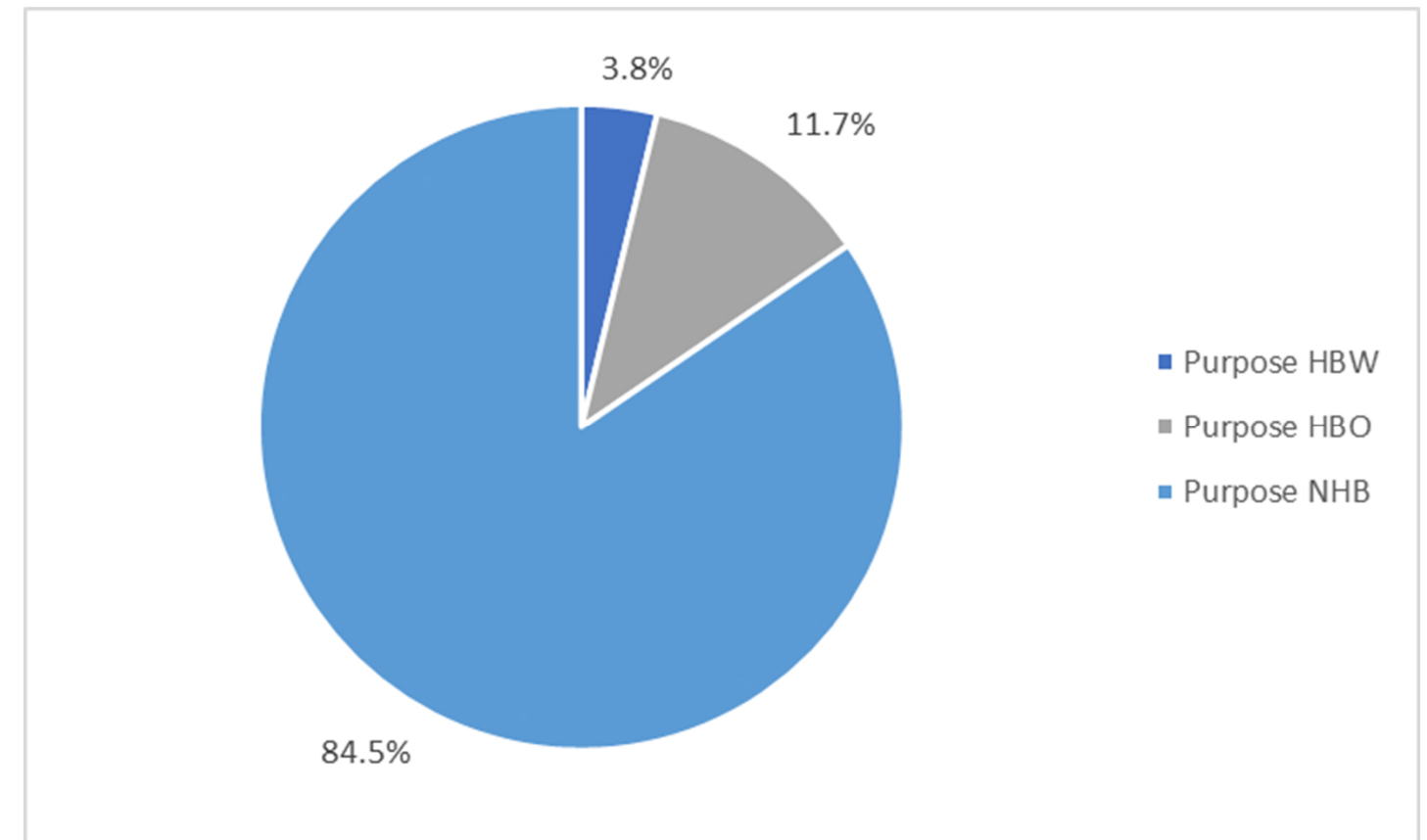


Results

• Traffic by Household Income



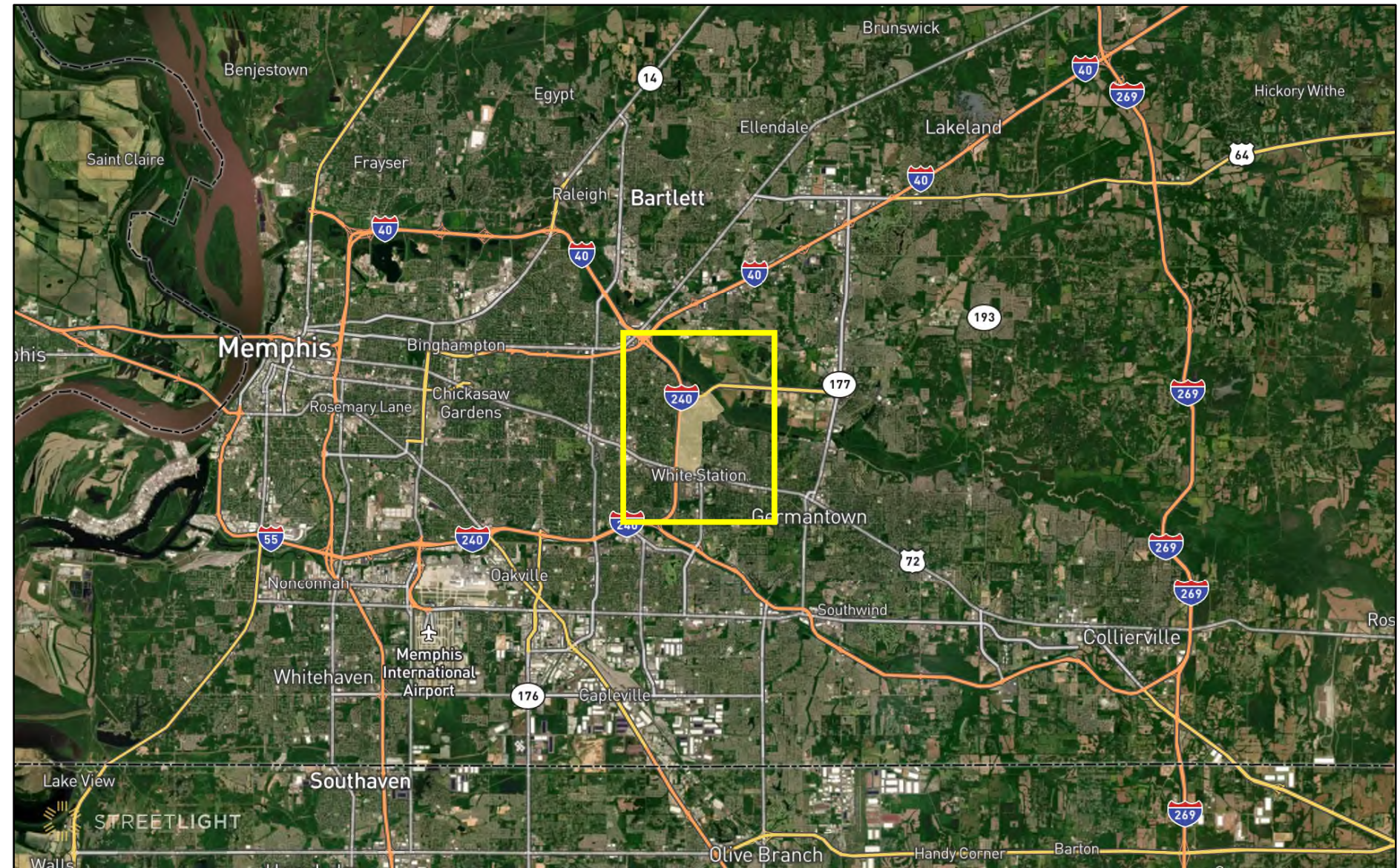
• Traffic by Trip Purpose



Results

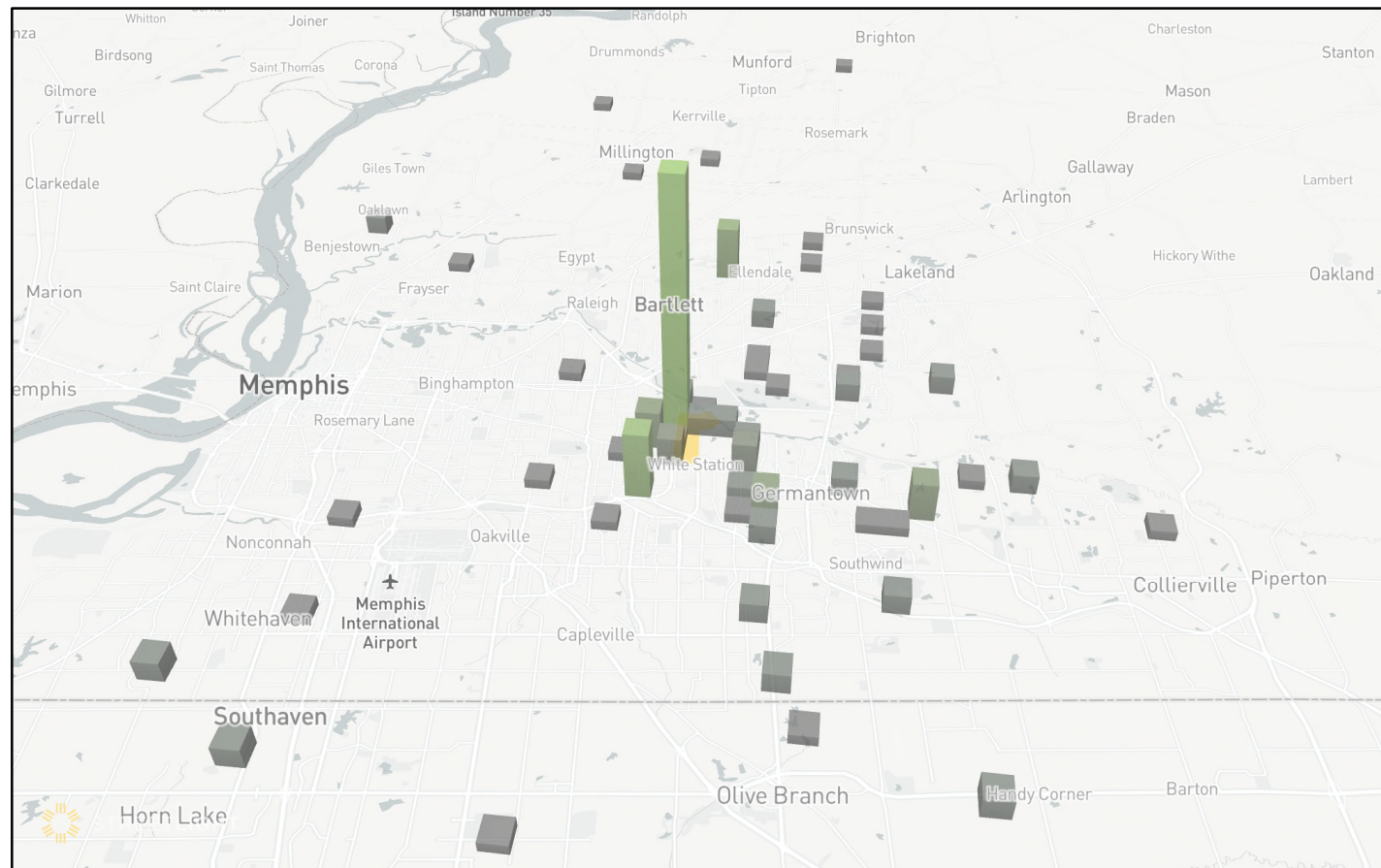
- **Initial Analysis**

- Humphreys Boulevard at Walnut Grove (Wolf River Greenway)
- Conducted zone analysis
- Time period
 - Nov 2020 – Oct 2021
 - Based on most recent, accurate StreetLight Data

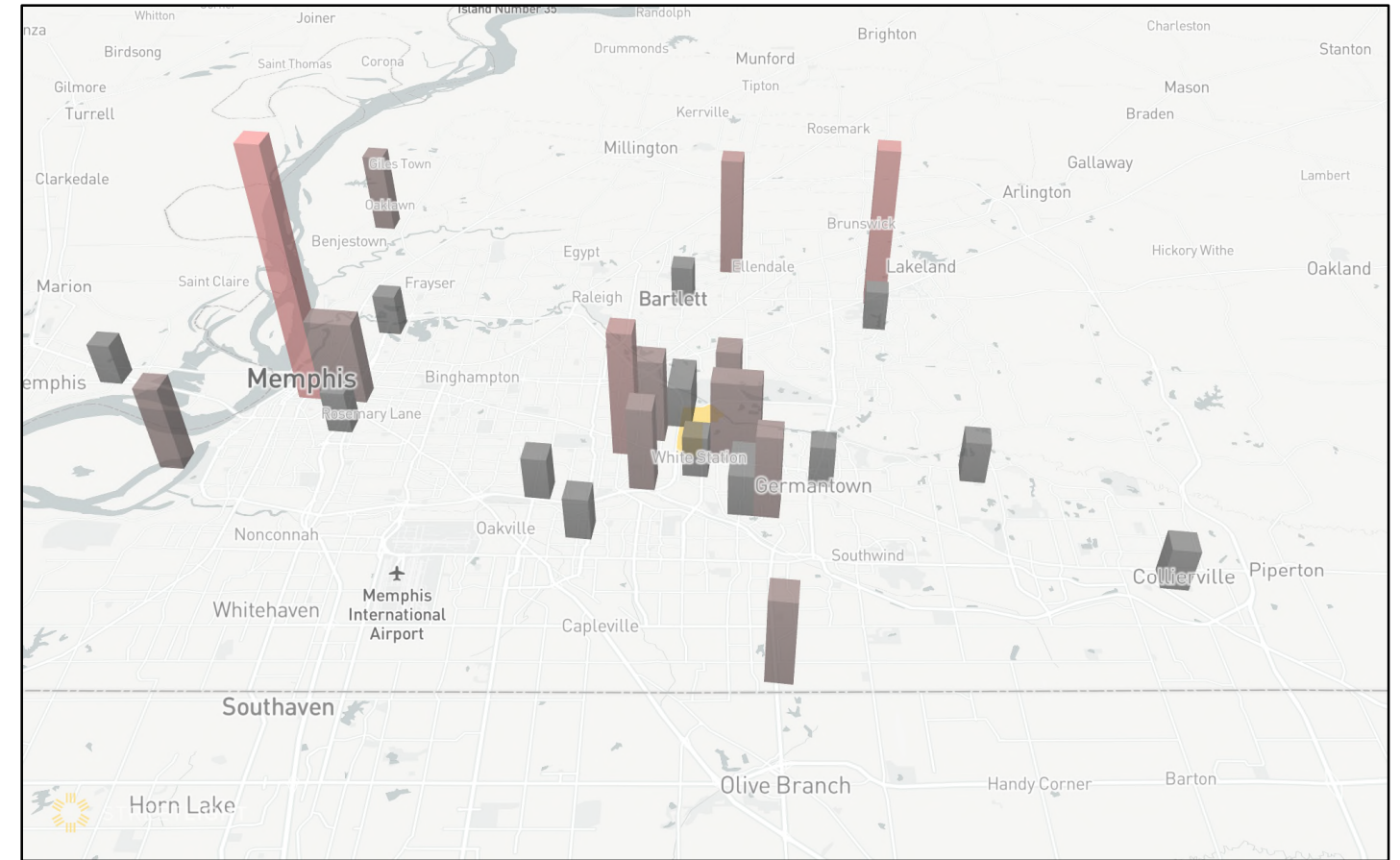


Results

- Home Locations



- Work Locations



Future Research

- **Additional Target Areas**

- Examine additional areas lacking bicycle facilities to determine the current travel patterns and establish high-priority facilities.

- **StreetLight Feasibility**

- Determine the practicality and accuracy of StreetLight by comparing the advantages and disadvantages of utilizing StreetLight Data to conventional data collection and analytics.



Logan Sirbaugh

Graduate Research Assistant

Department of Civil Engineering

University of Memphis

lnsrbaugh@memphis.edu

References

- 27, M. J. J., & 27, J. (2020, July 20). *Greenway vs. Greenline: Demystifying all confusion*. StyleBlueprint. Retrieved May 17, 2022, from <https://styleblueprint.com/memphis/everyday/greenway-greenline/>
- Antipova, A. (2020, February 7). *Analysis of commuting distances of low-income workers in Memphis metropolitan area, TN*. MDPI. Retrieved May 17, 2022, from <https://www.mdpi.com/2071-1050/12/3/1209>
- "Connecting Communities: Capital Campaign for the Wolf River Greenway." *Connecting Communities Capital Campaign*, Wolf River Conservancy, <https://wolfriver.org/wrgcampaign>.
- ibikememphis, P. author B. (2021, February 24). *New project will connect Midtown to Shelby Farms Greenline*. City of Memphis Bikeway and Pedestrian Program. Retrieved May 17, 2022, from <https://bikepedmemphis.wordpress.com/2021/02/24/new-project-will-connect-midtown-to-shelby-farms-greenline/>
- *It's your park*. Shelby Farms Park. (n.d.). Retrieved May 17, 2022, from <https://www.shelbyfarmspark.org/shelby-farms-greenline>
- *StreetLight Data*. StreetLight Insight. (n.d.). Retrieved May 17, 2022, from <https://insight.streetlightdata.com/analyses>
- *Transportation Analytics On Demand*. StreetLight Data. (2022, April 28). Retrieved May 17, 2022, from <https://www.streetlightdata.com/>