UF Herbert Wertheim College of Engineering — UNIVERSITY of FLORIDA

Overview and Analysis of Bicycle Infrastructure in Gainesville, FL

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INTRODUCTION

- Compared to other developed countries, the USA is significantly deficient on alternative transportation infrastructure

- Biking isn't the only alternative, but it is one of the most vulnerable groups on the road and has historically lacked dedicated infrastructure

- Safety is one of the main but not the only reason why bike infrastructure is important, some of the added benefits include:
  - Reduced congestion
  - Affordability
  - Individual health
  - Sustainability

- Gainesville has been showing substantial improvements in this area and contains a relatively active biking population for a city of its size
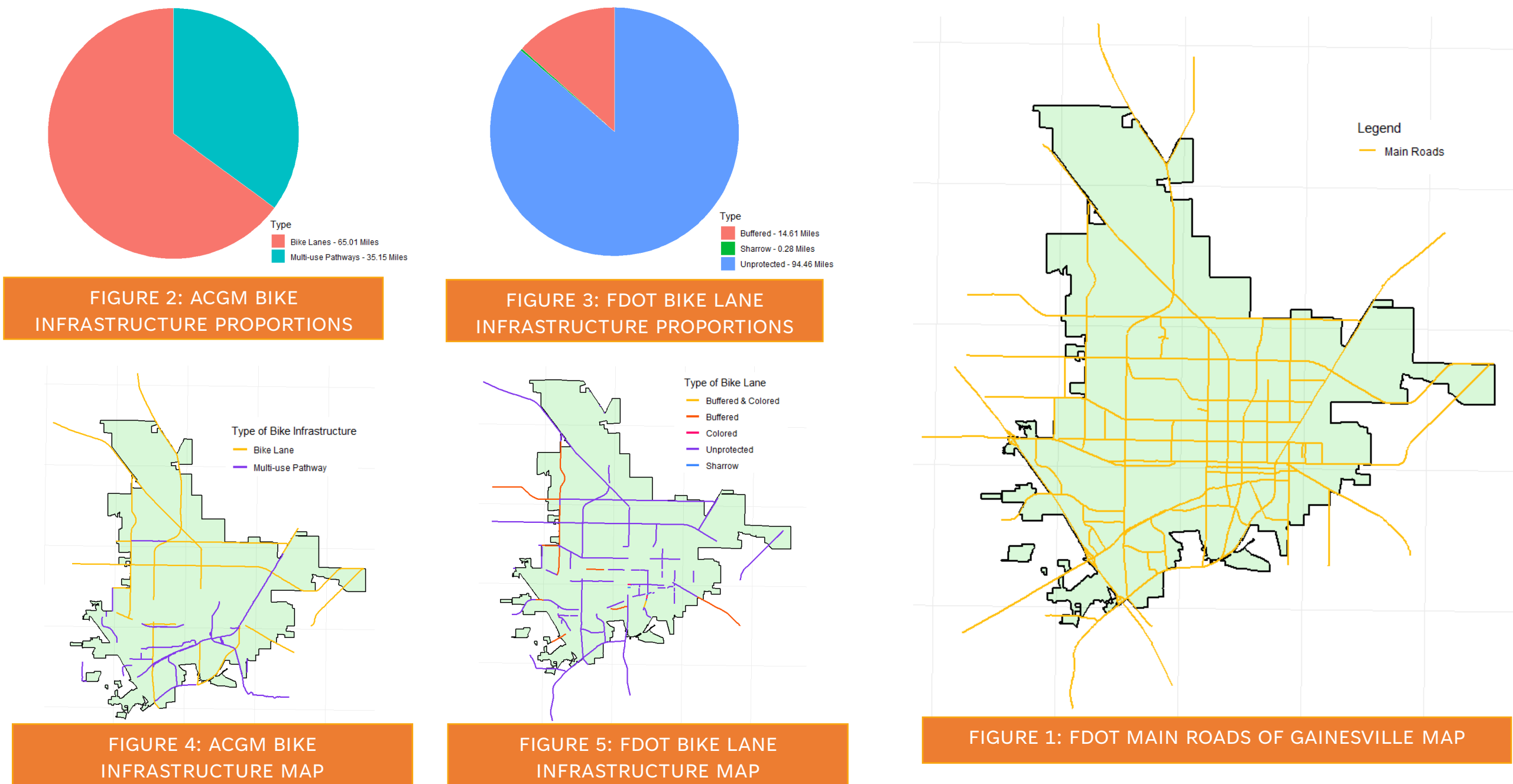
PURPOSE

- This project is focused on
  - Quantitatively and spatially analyzing bicycle infrastructure in the city of Gainesville, FL
  - Identifying areas in need of bicycle infrastructure, if possible

- In this study bicycle infrastructure will be divided into two main groups: Multi-use Pathways & Bike Lanes. The main difference being that:
  - Bike lanes share the road with motor vehicles
  - Multi-use pathways are physically separated from motor vehicular traffic

Dataset	Type	Miles	Percentage
FDOT Roadways	Road	187.20	NA
FDOT Bike Lanes	Total	109.35	100.00
FDOT Bike Lanes	Unprotected	94.46	86.38
FDOT Bike Lanes	Buffered	14.61	13.36
FDOT Bike Lanes	Sharrow	0.28	0.25
ACGM Multi-use Pathways	Multi-use Pathways	35.15	35.09
ACGM Bike Lanes	Bike Lanes	65.01	64.91

TABLE 1: SUMMARY OF QUANTITATIVE DATA BY TYPE OF INFRASTRUCTURE

RESULTS

FIGURE 2: ACGM BIKE INFRASTRUCTURE PROPORTIONS

FIGURE 3: FDOT BIKE LANE INFRASTRUCTURE PROPORTIONS

FIGURE 1: FDOT MAIN ROADS OF GAINESVILLE MAP

FIGURE 4: ACGM BIKE INFRASTRUCTURE MAP

FIGURE 5: FDOT BIKE LANE INFRASTRUCTURE MAP

Bicycle Crash Data Analysis

Roadway	Facility Type	Comments
Newberry Road	No facility	Gap before merge with SW 2nd Avenue multi-use path
SR 20 (NW 6th Street)	No facility	This central street needs a bike facility north of NW 6th Place
N Main Street	No facility	Gap between NE 23rd Avenue and NW 8th Avenue
SW 20th Avenue	Bike lane	Close to UF
SW 34th Street	Bike lane	Close to UF
NE/NW 8th Avenue	No facility	Gaps between City limits and N. Main Street. Inconsistent facilities – nothing, paved shoulder, bike lane
SR 20 (Hawthorne)	No facility	Merge with University to no bike facility - inconsistent
NW 39th Avenue	Bike lane	Major east/west connector to downtown on a busy road with minimal bike facilities
University Avenue	Bike lane or no facility	Inconsistent bike facility and gaps between Hawthorne and Gale Lemerand Drive by the football stadium.
NW/SW 13th Street	Bike lane or no facility	Inconsistent bike facility and gaps between NW 23rd boulevard and Museum Road
Archer Road	Multi-use path	This is a high traffic road with conflicts at intersections
SW 16th Avenue	Multi-use path	High traffic road

TABLE 2: MTPO BICYCLE CRASH DATA ANALYSIS

- Linear regression of **percent bike commuters ~ proportion of bike infrastructure to main roads** showed that there is no significant correlation between the two
- This is not necessarily true. Calculating proportion of bicycle infrastructure to main roads with the data available does not seem to be an accurate representation of bike infrastructure distribution
- MTPO's Technical Report 2 thoroughly evaluates areas in need of bike infrastructure by identifying gaps in the network and reviewing crash data
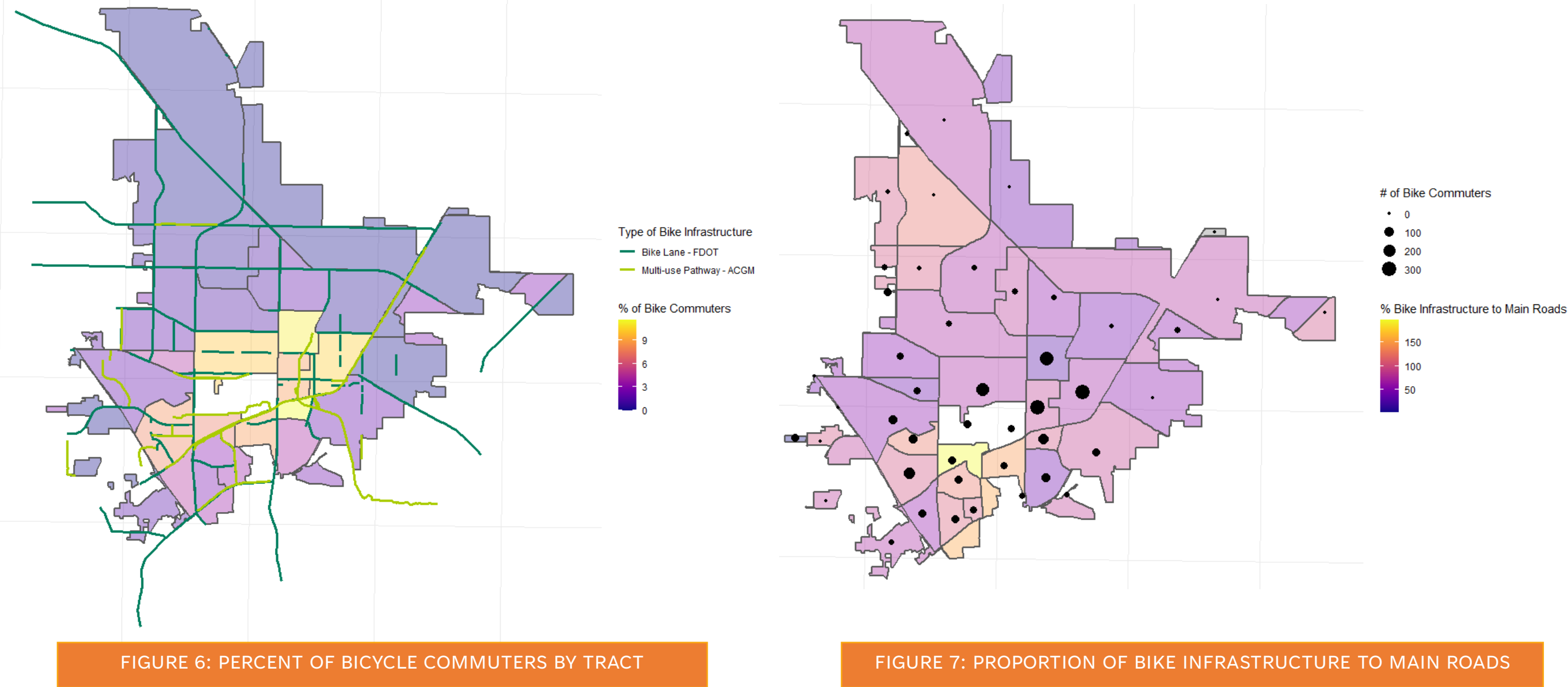- Table 2 shows a summary of bike crash data analysis found in MTPO's report

FIGURE 6: PERCENT OF BICYCLE COMMUTERS BY TRACT

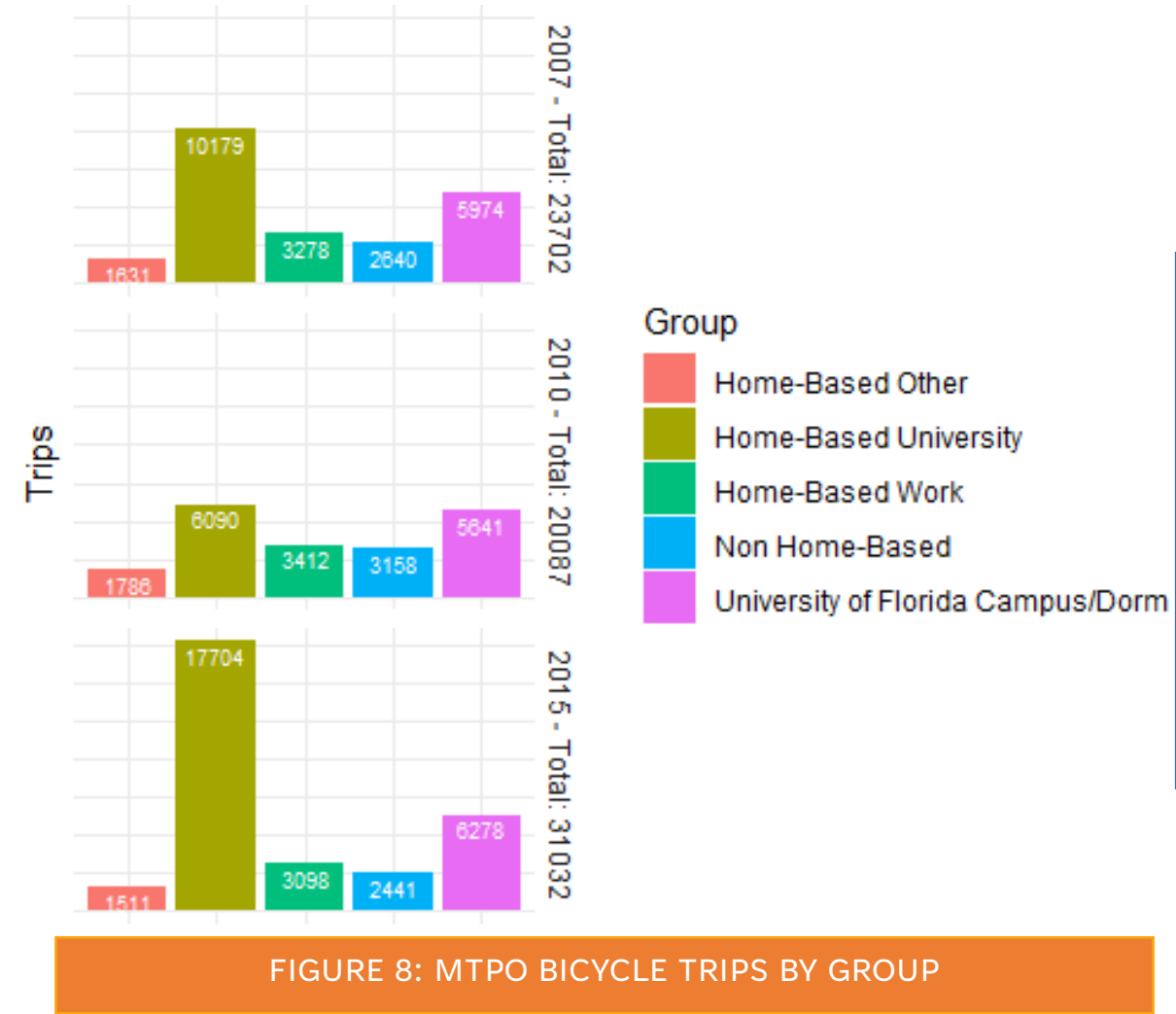

FIGURE 7: PROPORTION OF BIKE INFRASTRUCTURE TO MAIN ROADS

FIGURE 8: MTPO BICYCLE TRIPS BY GROUP

- Figure 8 show that most bicycle trips in Gainesville are in relation to the University.

- Since the means of transportation data only includes trips related to home-based work, this is a possible explanation of why the linear regression model failed.

Project Priorities, 2019-2024

Project Description	From	To	Project Type
SW 24 Avenue	SW 87 Way	SW 77 Street	Construct Multi-use path
NW 45 Avenue	NW 24 Street	NW 34 Street	Construct Multi-use path
W University Avenue [SR 26]	Gale Lemerand Drive	W 13 Street	Construct Bikeway/Sidewalk
Newberry Road (SR 26)	NW 59 Street	NW 34 Street	Protected bike lanes from 52 Terrace to 34 street
NW 6 Street Rail/Trail Extension	NW 16 Avenue	NW 39 Avenue	Extend the Rail/Trail North to NW 39 Avenue
Glen Springs Braid	Gainesville High School	NW 34 Street	Bicycle/Pedestrian Trail
Gainesville Regional Utilities Right-Of-Way	Depot Park	Williston Road (SR 331)	Bicycle/Pedestrian Trail
NE 27 Avenue	State Road 222	State Road 26	8' multi-use path on north side of road
Williston Road (SR 331)	Sweetwater Wetlands Park	Gainesville Hawthorne Rail/ Trail Connector	Bicycle/Pedestrian Trail
NW 6 Street Rail/Trail Extension	NW 16 Avenue	NW 39 Avenue	Extend the Rail/Trail North to NW 39 Avenue
University Avenue (SR 26)			Bicycle Striping and Signal Detection

Gainesville Mobility Work Plan Projects List Fiscal Year 2019-2023

Project Description	From	To	Project Type
Porter's Neighborhood	SW 6th Place/SW 7th Place	SW 6th Street Trail	Connector
NW 73rd Avenue, south	NW 43rd Street	Existing	Multi-Use
Northwood Pines ROW	NW 54th Avenue	NW 53rd Avenue Trail	Connector
NW 36th Avenue ROW	NW 21st Drive	NW 21st Street	Connector
SW 40th Boulevard Trail, east	Archer Road	SW 30th Avenue	Multi-Use
Northwood Pines, south	NW 53rd Avenue Trail	NW 45th Avenue at 34th	Multi-Use
NW 4th Place, south	NW 62nd Boulevard	Terwilliger Trail	Multi-Use
NW 42nd Avenue, north	NW 13th Street	NW 13th Street	Multi-Use

TABLE 3 & 4: PLANNED METROPOLITAN TRANSPORTATION PLANNING ORGANIZATION MODIFICATIONS

DATA

1. **Gainesville Urbanized Area Transportation Study – Year 2045 Long-Range Transportation Plan Update** (Metropolitan Transportation Planning Organization for the Gainesville Urbanized Area, 2015):
   a. Technical Report 4: 2015 Model Update and Validation – Mode Choice Validation Summary.
   b. Technical Report 2: Data Collection, Mapping and Data Development – Detailed information of planned projects, crash data, and gaps in network analysis.

2. **Means of Transportation to Work** (U.S. Department of Transportation BTS, 2020): Tract level geospatial dataset that contains workers' means of transport in both quantities and percentages.

3. **Alachua County Bicycle Infrastructure** (Alachua County Growth Management, 2019): Two datasets, one for Multi-use Pathways and another one for Bike Lanes.

4. **Florida Bike Lanes** (Florida Department of Transportation, 2021): Shows all roads with bike lanes and includes information about type of bike lanes.