

# Mapping traffic and speeding hotspots in Gainesville

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## Introduction

City of Gainesville is conducting years over years data collecting of local traffic. Traffic surveys aim to capture data that accurately reflects the real-world traffic situation in the area. By analyzing the read data, department of transportation can better manage the traffic and furth better make planning.

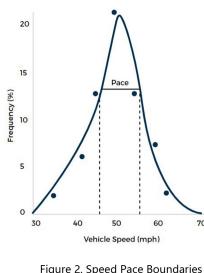
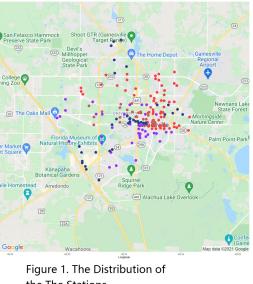
The mission of my project is to use techniques I learn in class to make analysis of the local traffic data. To find which part region of Gainesville is growing relative to transportation volume and find whether speeding is increasing or decreasing over time.

## Methods

Use packages like "xlsx", "tidyverse" to extract data from the original data as well as tidying up the data. Thus get dataframes which contains all kinds of data I need.

To visualize of the data, some packages like "ggplot2", "ggmap" would be introduced into the program.

## Data and Background

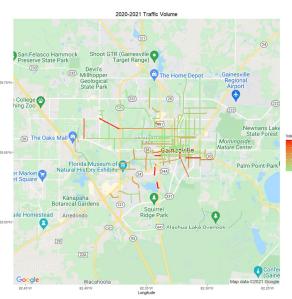
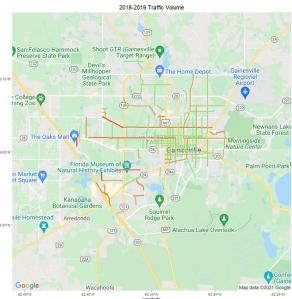


The survey is conducted in every two years. For each quarter, a limit number of stations are put into use. Each color in the picture present the stations.

Speed Pace is the range of 10-mph speed at which the majority of cars are traveling on a particular stretch of road. While the 85th percentile is the maximum speed that 85% of drivers will not exceed, the 10-mph pace is the range of speed at which those cars are actually moving. Speed pace also helps confirming that the speed limit is set correctly

## Question and Results

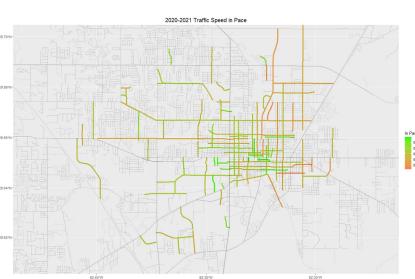
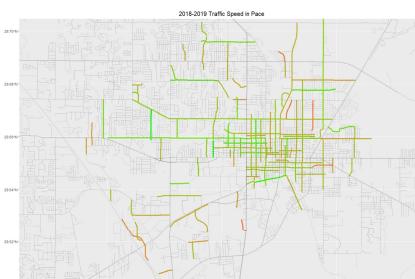
### 1. Where are the Traffic Hotspot



Traffic volume have changed a lot through the four years. The growth rate for the two figure is 7.6%. From the map we can observe the new spot change from NW 8th Ave to the southeast area in Gainesville .

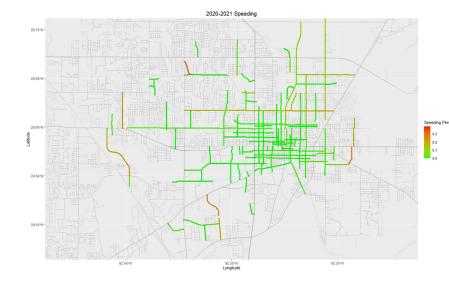
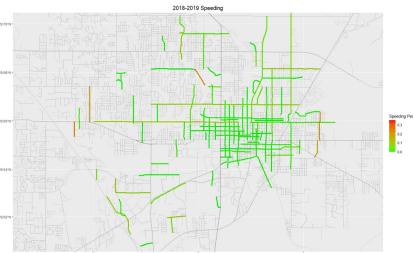
As the traffic is observed in Feb 2020, Sept 2020 and Mar 2021, no obvious decline is observed compared to previous. However there exist an increase in traffic volume which may be explained by the fact that Gainesville is a heavily private cars oriented city.

### 2. How is the speed pace in those Traffic Spot?



Speed pace represent the congestion rate of the network. If the speed pace drop to a certain degree. It means that the congestion situation is getting worse. For example NW 8th Ave in 2020-2021 could not maintain the speed pace in last time survey. From the compare of the two graphs, we can primarily find that in 2020-2021 situation get worse in many places for they not keep a good speed pace percentage.

### 3. What is the change in speeding percentage?



Speeding Increase in 6.3% in 2020-2021 survey compared to 2018-2019. We can see in the map that SE 24th St has the highest rate of speeding in both surveys. However it can be concluded that most speeding situations happen in the outside area of Gainesville.

## Reference:

Rakha H, Zhang W. Estimating Traffic Stream Space Mean Speed and Reliability from Dual- and Single-Loop Detectors. *Transportation Research Record*. 2005;1925(1):38-47.