

Peaks in Huntsville

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Background

Transportation is the action of transporting someone or something or the process of being transported. This someone or something plays the most important role when transporting something. These things have to be looked at from every aspect. People going and coming to work, delivery trucks, mailmen, children going and coming from school or day care or summer camp, senior citizens, people shopping, college students. All these aspects causes congestion which indicates traffic. Upon the US-72 or University Dr. I recorded and studied travel time for Huntsville roadways, US-72 (University Drive), to examine and quantify congestion levels. Basically, the study would involve driving along roadways in peak and non-peak hour traffic hour traffic to examine the additional travel time associated with peak period traffic to quantify congestion and impacts of congestion in the community. With transportation being define, the population, the city, and the citizens of a country know the importance of roadways and other transportation examples such as air, boat, and train. Within the city of Huntsville transportation is going 24/7 especially on major road such as US-72 or better known as University Dr.

Materials

The GPS is a Global Positioning System, and its usage played a key role in the progression of the gathering of data. These devices communicate their exact location to an orbiting satellite, showing its exact location on the Earth using 3D coordinates. The GPS used to record data was a Garmin eTrex Legend Cx Personal Navigator. The GPS was used in this project to take a snapshot of my vehicle's position (coordinates) and speed every 10 seconds.



My vehicle (2012 Jeep Liberty)

With the data of traffic peaks tracked by use of the Legend Cx GPS, we used a program called Garmin Map Source. It allowed us to collect data which we then copied into a text file and created a DBASE (Database) in Libre Office. Once the DataBase was created we used ArcGIS to display the data graduated color scheme, and statistics for each run.



Methods

My methods were testing the congestions levels in Huntsville. Within this Method I decided to do three runs driving up and down University Drive or Hwy 72 to show each perspective on time and what applies while driving. Each run consisted of an eastbound route and a westbound route. Some Route was important than others, which is why it is not shown in this report.

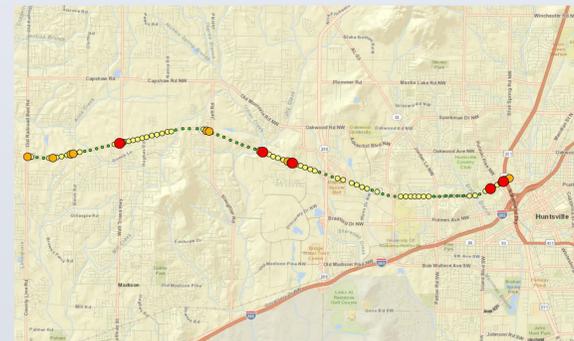
The first run was between the hours of 6:30 am-8:30am which falls in the time frame of "Morning Peak" This is the eastbound run down University Drive.

The second run was between the hours of 4:30-6:30 which falls in the time frame of "Evening Peak". The westbound run is shown here because it shows how congested University is traveling from the city.

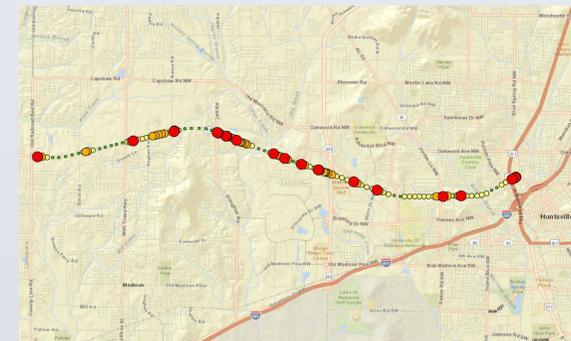
The third run was between the hours of 8:30-2:00 which falls in the time frame of "Off-Peak". This run included Both eastbound and westbound. These were the calmest runs considering people and all the other attributes were at home and not on the road.

Results

Morning Peak

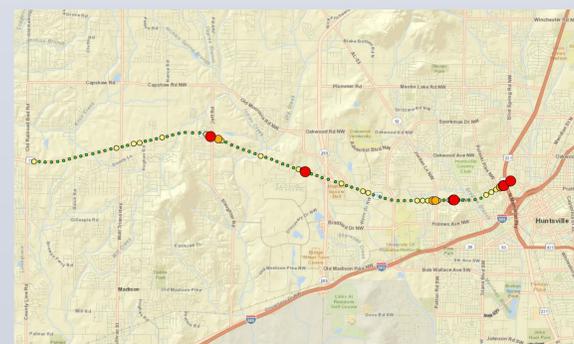


Evening Peak

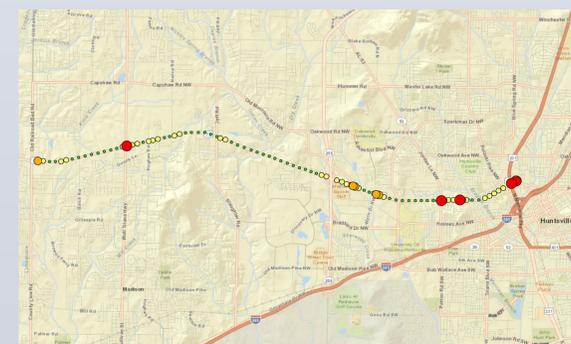


Green: 32-64 mph Yellow: 21-30 mph Orange: 7- 20 mph Red: 0- 6mi mph

Off Peak West-bound



Off Peak East-bound



Average Speed & Time of Runs

First Run

| Points | Length | Area | Elapsed Time | Avg. Speed |
|--------|---------|-----------|--------------|------------|
| 206 | 22.0 mi | 0.1 sq mi | 0:34:45 | 38 mph |

Second Run

| Points | Length | Area | Elapsed Time | Avg. Speed |
|--------|---------|-----------|--------------|------------|
| 298 | 22.0 mi | 0.1 sq mi | 0:50:30 | 26 mph |

Third Run

| Points | Length | Area | Elapsed Time | Avg. Speed |
|--------|---------|-----------|--------------|------------|
| 206 | 22.0 mi | 0.1 sq mi | 0:34:45 | 38 mph |

Conclusion

This data indicates that there a lot of attributes from the runs that I did over the course of the summer. The attributes that make up most of the congestions is children being picked up from school, or day camp, people getting off work, shopping, and delivery trucks going through the city. The congestion can be prevented by going out at different times, going out for necessities instead of wants, or even taking back roads. The part that every motor vehicle operator does not understand is congestion comes from everybody transporting at one time. One might also petition with the local government officials to employ some commonly suggested methods of solutions to traffic congestion: realtime signalized intersections along a roadway to work progressively (meaning, if you start from a red light you should be able to get green the rest of the way down the strip); increase the number of lanes on the roadway; increase mass transit options; or encourage carpooling. These methods rely on the government taking a hand though, and cannot be readily relied upon.

RECU Comments & Acknowledgements

I would like to thank Mrs. Rosemary Robinson for introducing me into the RECU program and Dr. Emmanuel Waddell for pointing me into the right direction with the Civil Engineering Department. In the Civil Engineering Department, I had the pleasure of working under Dr. Jeffery Wilson and Dr. Michael Anderson. Dr. Wilson and Dr. Anderson helped me over the summer to create the perfect research project to present the average driver and beginning driver on how bad traffic is on the main roadway of Huntsville, AL. Also Dr. Wilson helped me tremendously with transferring data and helping me with getting me to report that I have. Then I would like to give a special thanks to Dr. Vogler for accepting me into the RECU program. This program has also taught me information dealing with Civil Engineering and not dealing with it as well. I would love to this program again next year because it gives students the ability to learn what they want to do as a career, knowledge about their degree they are pursuing, and giving life lessons. Once again thank you.