A Time-Geographic Study of Tourist Travel Delay as a Result of Traffic Crashes in Central Florida
Daniela Sabillon, Graduate Student, M.S. GIS Administration and John D. Morgan, Ph.D., GISP, Assistant Professor of GIS, University of West Florida, Pensacola, FL

ABSTRACT TEXT: Home to world-class theme parks, attractions, and resorts, Central Florida's tourist economy plays a major role in shaping the region’s transportation network. The time spent on leisure activities by traveling tourists is paramount to their overall satisfaction and future repeat visits. However, mobility between leisure activities can be hindered by traffic incidents both directly and indirectly. This independent research is motivated by the ongoing Central Florida Visitor Study (FDOT) which aims to understand visitor travel patterns for the purpose of providing insights to local authorities on best ways to invest in transportation infrastructure. Specifically, this project applies a time-geographic framework to explore tourist travel delay as a result of traffic crashes in Central Florida. Because traffic congestion are activities that occur at certain physical locations, for limited amounts of time, and caused by various constraints, it is inherent of spatial and temporal dimensions in a manner that requires the trading of one at the expense of the other. Using geostatistical analysis and geo-visualization methods, time geography offers a non-traditional way to analyze and visualize movement and patterns in space and time. Additionally, by extending hot spot analysis into a time-geographic context, we can begin to consider clusters both spatially and temporally. Recent versions of Esri’s ArcGIS have implemented a unique approach to incorporating time-geographic methods and 3D mapping into its popular desktop GIS product. Specifically, ArcGIS Pro now has the capability to produce what is called an Emerging Hot Spot Analysis (EHSA). EHSA is used to identify trends in data using a space-time cube. This presentation will cover an EHSA case study that explores the impact of traffic delay due to crashes, and contextualizes our findings within the framework of time geography.

Geospatial Analytics of Population Mobility Using Big Data Sources
Reza Sardari, Ph.D., GISP, Traffic and Revenue Analyst, Cintra, Dallas, TX

ABSTRACT TEXT: Traffic congestion is a significant issue in urban areas throughout the world. It affects not only air pollution, public health, and economic development, but also individual/household travel behavior. Despite this recognition, empirical studies of congestion’s impact on travel behavior are limited. The present research aims to fill this gap by applying geospatial data analysis and analyzing disaggregated household survey data of the Seattle Metropolitan area integrated with a time-related mobility measure. This study makes three main contributions to the travel behavior literature: First, it suggests a methodology to develop travel time delay index using GIS and big data sources such as Google and UBER; second, it investigates the effects of travel time delay on household vehicle miles traveled using a comprehensive framework that incorporates residential preference/self-selection factors; finally, it adds a new empirical approach to the literature using GIS spatial analysis tools and a structural equation modeling.

Routing Millions of GPS Points Using Open Street Map, OSMNX and NetworkX
Russell Prentice, B.SC. ADP GIS, Geospatial Application Developer, Licker Geospatial Consulting Ltd., Vancouver, BC - Canada
Aaron Licker, BA ADP GIS, GISP Expected Soon, Principal, Licker Geospatial Consulting Ltd., Vancouver, BC – Canada

ABSTRACT TEXT: Due to an acknowledged gap in the knowledge base surrounding cyclist behaviors and day-to-day cycling activities, organizations have started using app or device collected cell phone GPS to demonstrate active transportation behaviors. Cities are keenly interested in mapping out these bike user behaviors especially as it relates to new infrastructure or challenging intersections to justify investments and to motivate calls to action. This presentation will explore the case example of the use of app-collected to use anonymously collected point data, create accurate routes from messy data and answer the following queries:

- What are the common routing choices
- What are the origins and destinations of these routes; and
- What are common cyclist flows based on discretionary factors.

The presentation will cover:

- The ask required for analysis of massive point data sources as they pertain to routing
- Issues encountered to solve massive routing problems
- A potential and reproducible open source solution to build routes and allow for interesting analysis.

This relatively technical presentation is geared towards GIS professionals who are involved in municipal active transportation and for those who enjoy seeing massive point datasets crushed down into nice shiny linear objects.