

## **ABSTRACT**

This study investigates five signalized intersections in Jacksonville, Florida on State Road (SR) 10, also known as Atlantic Boulevard. Over one thousand crash reports were analyzed to create a greater understanding of the way signal head configuration and other variables can affect crash severity. The crash reports for the old data were taken from 2014 to 2016 at the intersections of Hickory Creek Boulevard/Kensington Gardens Boulevard, Girvin Road, Hodges Boulevard/Joeandy Road, Queens Harbor Boulevard, and San Pablo Road. The crash reports for the new data were taken from 2020 to 2023 from the same intersections. This study found that each intersection had its own configuration at both times. All intersections except for San Pablo Road had the signal heads located on mast arms at both times. Some intersections have been upgraded since the data was taken. This corridor will also be going through major rehabilitation in the coming years, thus improving safety and changing the configuration of at least one signalized intersection.

The main objective of this study was to determine whether or not the placement of the signal heads could substantially affect the severity of crashes. The standards listed in the Florida Department of Transportation's Design Manual (FDM) 2024, Standard Plans/Index 2024, and the Manual of Uniform Traffic Control Devices (MUTCD) 2009 Edition were directly considered as well. It was found that the signal head configuration influenced the severity of crashes at the considered intersections but not to the same extent as other factors (e.g., total number of persons in the vehicle, road surface condition, day or night, influence by alcohol or drugs, intersection-related, and driver age). More data must be collected in the following years to conduct additional experiments and obtain more thorough insights into the effects of signal head configuration on the occurrence of crashes and their severity.