Project Title: Exploring Innovational Solutions in Multimodal OD Data

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Project Summary

Origin destination data (O/D) is critically important in transportation planning. Real time O/D data can contribute to improving traffic operations and performance measures; however, this data is difficult to obtain. It is usually estimated through an expensive survey with only a small response percentage. While Bluetooth O/D equipment can provide some percentages of O/D data, it is not able to provide the comprehensive O/D data needed for transportation planning and operations. Therefore, this project will present a model to estimate O/D by fusing traditional loop detector data and available O/D data.

In addition, real time O/D data could be useful at diverging diamond interchanges which consist of two signalized intersections. These traffic signals provide safety and mobility benefits; however, they are currently treated as an individual intersection on the arterial and the OD traffic flow patterns are not considered to establish the traffic signal timing plan. Real time O/D data estimation at a diverging diamond interchange (DDI) is important for traffic signal optimization which could alleviate congestion and remove the typical DDI bottleneck, but OD is difficult to collect and even estimate in the field. Therefore, the proposed project will also create an OD model including congestion effects that consists of a linear system to estimate real-time OD.

These two models will be verified through simulation. The research team will work with the Mississippi Department of Transportation (MDOT) to collect field data which will be used to validate the model estimations and simulation results.