



SUMMARY REPORT
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OPERATIONAL AND ECONOMIC ANALYSIS OF ACCESS MANAGEMENT

Access management includes the planning, design and regulation of access to land uses adjacent to roadways to improve traffic safety, traffic flow, and economic benefits to businesses. The impact of access management on safety has been the subject of extensive study by many state DOTs nationwide; however, limited work has been done on assessing its impact on traffic operations and adjacent businesses. It is important for state DOTs to know not only the safety impacts, but also the operational and economic impacts to properly assess the value of access management.

In this project, microscopic traffic simulation models were developed for the operational analysis, which examined four access management strategies: (1) a driveway consolidation strategy in which multiple driveways are consolidated into a single driveway to provide sufficient distance between adjacent driveways; (2) a corner clearance access management strategy in which a sufficient distance is guaranteed from the intersection to the nearest access connection or driveway; (3) access restriction in which channelization in a driveway throat, at its intersection with the public road, is used to restrict left-turn movements into or out of the driveway; and (4) a non-traversable median strategy in which opposing traffic streams are separated by median to actively discourage and prevent vehicles from crossing the divider. To assess the efficacies of the different access management alternatives, travel time, delay, number of stops, and stopped delay were used as performance metrics. These metrics were used to compare mainline traffic and driveway ingress/egress traffic operations. The simulation results indicated that although the effect on operations varied by site, the driveway consolidation strategy yielded a consistent improvement on almost all of the study corridors, specifically in terms of travel time on the mainline and driveway-entering traffic.

From an economic perspective, it was important to compare the perception of business owners and managers, along with their customers, to the actual economic impact of access management

strategies. To examine how businesses and customers in South Carolina perceive the impact of raised medians, a business survey and a customer survey were conducted, and a post-facto technique was used to analyze sales volume of businesses before and after the installation of raised medians. A binary logit model was also developed to determine those factors affecting the perception of the business community regarding the impact of raised medians. Findings from the surveys indicated a negative perception among business owners prior to the installation of medians, which was also observed in other studies. After the installation, business owners had a more positive view of raised medians. Some businesses experienced an increase in the number of customers per day and gross sales after the installation of the raised medians.

The various benefits and drawbacks of access management strategies are summarized below.

- Driveway consolidation was found to be the most effective method for reducing the travel time along the mainline traffic and driveway-entering traffic (i.e., vehicles entering driveways from the immediate upstream intersection).
- Right-in/right-out only driveways and corner clearance strategies were found to improve mainline traffic operational conditions.
- While non-traversable raised medians yielded positive safety benefits, they increased the mainline traffic travel time. The installed raised medians were not the reason why the affected businesses experienced a decrease in sales volume. The local and regional macroeconomics may have contributed to the decrease in sales volume of the affected businesses and their competitors. .
- While spot improvement projects (e.g., installing directional median opening corresponding to specific driveways) did not improve the operational conditions of the mainline traffic, they did reduce the driveway-related crashes.
- Although access management strategies (i.e., both corridor-wide and spot improvement projects) restrict access to businesses, a properly designed access control can provide safe and efficient roadway operation as well as effective access to adjacent developments. In the long run, businesses will reap the benefits of access management due to improved traffic safety and traffic flow along the corridors.

The study was conducted under the guidance of Drs. Mashrur “Ronnie” Chowdhury at Clemson University and Nathan Huynh at the University of South Carolina. For further details contact Dr. Chowdhury, PI for this project, at 864-656-3313 or mac@clermson.edu.