



Multimodal Access Management Guidebook

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islands provide a space to install improved lighting at pedestrian crossing locations. Improved lighting has been shown to reduce the nighttime pedestrian fatalities at crossings by 78%.¹

Delay Reduction

Raised medians and refuge islands also reduce the amount of delay incurred by pedestrians waiting for a gap in traffic to cross. Shorter delays translate into fewer pedestrians taking risks by crossing through “holes” in the traffic stream. On a four-lane roadway with 5,000 ADT, medians can reduce pedestrians’ delay waiting for a gap by 79% (from 41 seconds to 9 seconds).²

1.3.2 Traffic Operational Benefits of Vehicular Access Management

The *TRB Access Management Manual* summarizes various studies related to the effects of vehicular access management on roadway traffic operation. These studies have assessed the influence of driveway spacing on travel time using a variety of analysis techniques. All the studies indicate that access management helps to increase capacity, maintain desired free-flow speed, and reduce delays. The studies conclude that vehicular access management preserves roadway efficiency.

Increasing the number of vehicle access points and signals along a roadway results in increased vehicular delay, and reduction in free-flow speed. Minimizing the number of traffic signals and promoting uniform signal spacing significantly improve travel times.

As illustrated in the *Highway Capacity Manual (HCM)*, the free-flow speed (FFS) of a roadway is reduced as the vehicle access point density increases. Studies indicate that for each vehicle access point per mile, the estimated FFS decreases by approximately 0.25 mph, regardless of the type of median. The expected FFS reductions of multilane highway segments with the increase in vehicle access point density are shown in *Table 6*.

Table 6 | Adjustment to FFS for Vehicle Access Point Density for Multilane Highways

Access Point Density (Access points/mile)	Reduction in Free Flow Speed (FFS) (mph)
0	0.0
10	2.5
20	5.0
30	7.5
>40	10

Source: *HCM 7th Edition, Exhibit 12-24*

1.3.3 Business/Economic Impacts of Access Management

Vehicular access management preserves the functional integrity of the state roadways which is essential for economic activity and economic development. A summary of research on the economic effects of vehicular access management is provided in the *TRB Access Management Manual*. The studies indicated that median projects generally have little overall adverse impact on

¹ FHWA, Desktop Reference for Crash Reduction Factors, FHWA, Washington, DC, September 2007.

² NCHRP Report 616, Multimodal Level of Service Analysis for Urban Streets, TRB, Washington DC, 2008.

business activity. Business owner perceptions of potential impacts of changes in access tend to be much worse than the actual impacts.

In 2010, the North Carolina DOT published a study, [*Economic Effects of Access Management Techniques in North Carolina*](#), that was conducted in response to business owner opposition to access management and a perception that access management applications would negatively affect profits. The study found no significant difference in revenue between comparison sites and treatment sites. Access management treatments, particularly the installation of medians, did not affect businesses as much as initially perceived. After completion of the project, the general perception by the business owners conceiving use of the medians was more favorable than before construction of the medians.

The [*NCHRP Report 420, Impacts of Access Management Techniques*](#), reached the following conclusions regarding economic impacts:

The economic impacts of various median alternatives depend on the extent that access is improved, restricted, or denied. The impacts to specific establishments also depend on the type of activity involved and on background economic conditions.

Where direct left turns are prohibited, some motorists will change their driving or shopping patterns to continue patronizing specific establishments. Some repetitive pass-by traffic will use well designed or conveniently located U-turn facilities. Impacts also will be reduced at locations where direct left-turn access is available. In some cases, retail sales may increase as overall mobility improves.

The results of studies to date generally indicate that median projects have minimal adverse impact on business activity. Some businesses report increases in sales, some report no change, and others report decreases. Most of the businesses report no change in business activity after a median project.

Destination type businesses, such as certain restaurants and specialty stores, appear to be less sensitive to access changes than businesses that rely primarily on pass-by traffic, such as gasoline stations or convenience stores. The likelihood of left turns into a business is known to decline as opposing traffic volumes increase; therefore, medians will have relatively little effect on the number of customers making left turns into a business on high-volume roadways or during peak travel periods.

The [*FDOT Access Management Brochure, Access Management Answers to your Business Questions*](#), states:

Access management does not impact the demand for goods and services. But, if access management is not implemented, businesses can be hurt by congested, high collision roadways near their entrances.

Most businesses see no loss in business due to access management improvements. Customers favor access managed highways 4 to 1. Business owners report that the actual impacts to their properties were much less than they anticipated.