

## Report 26-R38: Business Impacts of Access Changes

### BACKGROUND

To improve safety and operations, VDOT sometimes rebuilds intersections or road segments with restricted left turns, closed medians, or other changes that affect motor vehicle access to parcels that front the road. VDOT has seen design approvals in three recent reconstruction projects delayed by public opposition that manifested partly as questions about the impact that a change in motor vehicle access might have on a business's customer traffic.

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### RESEARCH OBJECTIVES

This study sought to determine whether a change in motor vehicle access to a commercial property had a measurable impact on year-to-year changes in the number of customers visiting or in the volume of customer transactions, while controlling for other influences.

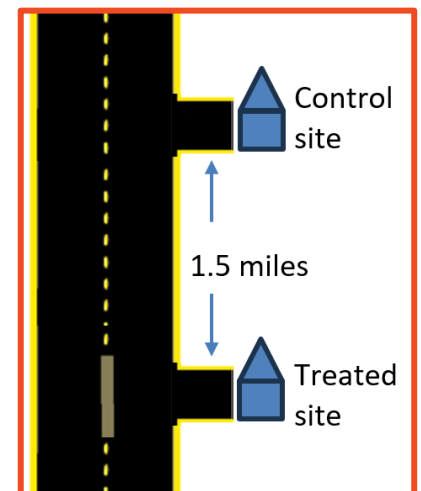
### APPROACH

The investigators compiled a list of VDOT reconstruction projects that created left-turn restrictions or affected motor vehicle access to the parcels fronting the road in some other fashion. They identified a treated group of commercial parcels that fronted the roads where these projects were located and a control group of nearby commercial parcels housing similar businesses that did not front the reconstructed areas.

Direct measures of customer visits or customer transactions, such as taxable sales, could not be obtained. Instead, the investigators used an indirect measure of a commercial property's attractiveness to customers: the assessed value of the real estate.

The investigators developed a model that compared (1) changes in assessed value over time of active commercial parcels whose accessibility to motor vehicles was affected by a VDOT reconstruction project with (2) changes in assessed value over time of active commercial parcels whose accessibility to motor vehicles was not affected by a VDOT reconstruction project.

Access was measured in two ways. The first measure was the number of turns required for an approaching vehicle to enter the parking lot. The second measure was the travel distance required for an approaching vehicle to enter the parking lot.

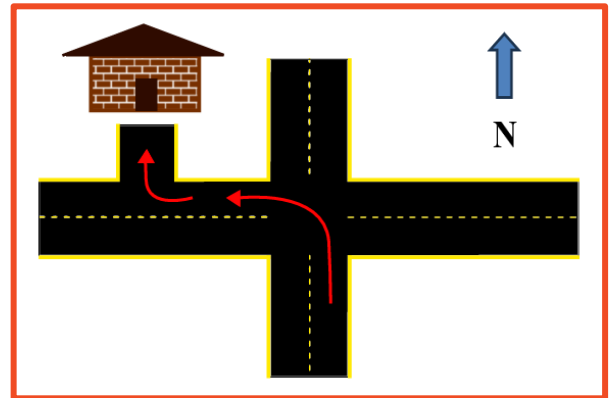


*Top: a control site where no change in access occurred.  
Bottom: a treated site where reconstruction altered access.*

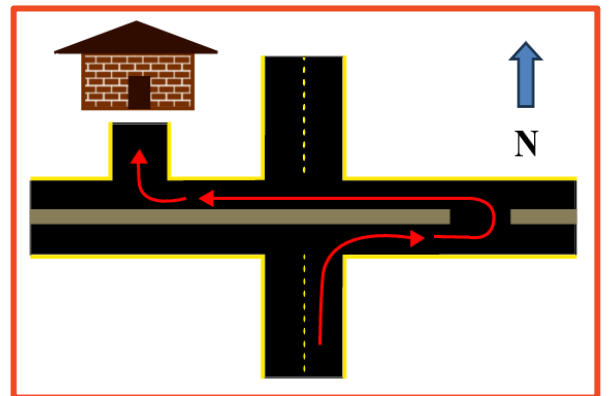
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### OUTCOMES

- A change in the number of turns required to enter a business's parking lot had no statistically detectable impact on the changes in assessed value over time of a commercial parcel (Example: the two figures at right show the number of turns increased by 1).
- A change in the second measure of motor vehicle access, the travel distance required to enter a business's parking lot, also had no statistically detectable impact on the changes in assessed value over time (Example: the two figures at right show the distance increased by 0.2 miles).
- The division of the businesses operating on active commercial parcels into three categories, based on their expected sensitivity to changes in access, did not make a statistically detectable improvement in the "fit" of the business impacts model.
- Local factors that the business impacts model did not capture had a big influence on the changes in assessed value over time of a commercial parcel.
- Mere frontage on a VDOT reconstruction project, with or without a change in motor vehicle access, had a small, statistically detectable correlation with the changes in assessed value over time. The causal mechanism for this change was not identified.



*Before reconstruction, northbound traffic requires 0.1 miles and two maneuvers—a left turn to the westbound route and then a right turn into the parking lot.*



*After reconstruction, northbound traffic requires 0.3 miles and three maneuvers—a right turn to the eastbound route, a U-turn, and then a right turn into the parking lot.*

### RESEARCH BENEFITS

These more complete answers to stakeholder questions about the business impacts of access changes may reduce the risk of a delay during the preliminary engineering phase. The study estimates this benefit to be at least \$9,000 annually.

Examples of commercial parcels subject to potential changes in motorized access in previous VDOT projects—parcels whose information was collected during this project—may help VDOT narrow the uncertainty in the cost estimates they make for future real estate acquisitions. The study estimates this benefit to be at least \$20,000 annually.