

Impulse Trips to Shopping Centers

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The results of about 4,000 shopper interviews taken at two shopping centers—a community type and a regional type—in western Florida are reported. The questions identified separately the proportion of customers of impulse type who decided that they would enter a shopping center only when they were actually driving by the shopping center. For the community shopping center this proportion was 6.1 percent, and for the regional shopping center it was 3.1 percent. However, the changes in access affected only one of the two routes adjacent to the community center and one of the three routes adjacent to the regional center. Since no significant change in access or loss of impulse customers would be involved with the nonrevised routes, the actual proportions of impulse trips potentially lost were 2.6 percent of the total for the community center and 2.3 percent of the total for the regional center. Bypass shoppers (those passing by already but planning a stop) were similar for both centers—30 to 36 percent of the total. Therefore, the growth in volume passing by the sites (made possible only by additional traffic capacity produced by the improvements) would expose the centers to added bypass traffic and would thus more than offset the slight initial drop in the number of impulse customers. Such findings are of potential value to government agencies addressing the question of business loss as a result of eminent domain proceedings for major route improvements. They also may be of value to business owners affected by such improvements who desire to assess their actual likely potential losses.

The purpose of this paper is to assist public agencies in disputing claims of business damage loss for changes in access as a result of adjacent route improvements. Evidently, the findings will also give credence to assessment of the small amount of business damage that actually could occur initially. The amounts of loss are highly site specific and are most strongly related to the type of route improvement and change of access that has actually been constructed. Additionally, it should be noted that the route changes usually provide improved capacity and access for regular shoppers and therefore actually increase the future business activity level—thus more than offsetting the losses due to decreased impulse trips.

Unless an extreme circuitry of access is constructed, the improvements to the adjacent route should benefit abutting businesses (once the agonies of construction are over!). In looking at added circuitry of travel for basic customers, the area is obviously a factor. For example, people will drive farther to reach a motel or restaurant in a rural area than would be the case in an urban area—particularly if other, competing businesses are more readily accessible.

Data on proportions of impulse trips among the total number of shopping trips were secured at two locations in Florida. One location involved a community-type shopping center at the intersection of two routes where a single-point diamond-type interchange has been proposed. The second location was a regional shopping center abutted by three routes where parallel service roads would be constructed and where grade separations would be constructed so that one access route would overpass the two intersecting routes. Data were secured by interviews with shoppers, and the proportion of im-

pulse shoppers was determined on the basis of answers to certain questions. Information on proportions of trips of other types (generated, diverted, or conventional bypass; see next section) was also obtained. Also, data on whether purchases were made, travel distances, routes of entry and exit, and so forth were secured.

TYPES OF TRIPS

There are three principal trip types identified in the traffic profession. These are defined in the ITE report *Trip Generation (1)* as follows:

1. Primary (generated)—trips made for the specific purpose of visiting the generator. The stop is the primary reason for the trip; for example, a home-to-shopping-to-home combination is a primary trip set. (In the interview studies in Florida generated trips were defined slightly differently as “trips involving a planned visit directly from a given location—such as home—to the shopping center, with direct return to the point of origin.”)

2. Passby (bypass)—trips made as intermediate stops on the way from an origin to a primary trip destination. Bypass trips are attracted from traffic passing the site on an adjacent street that contains direct access to the generator. These trips do not require a diversion from another roadway. (In the studies in Florida the definition of bypass trips used was “persons already on one of the adjacent roadways, en route to or from other destinations, who stop in the shopping center.”)

3. Diverted linked—trips attracted from other roadways within the vicinity of the generator but in which a diversion from that roadway to another roadway is required to gain access to the site. These roadways could include streets or freeways adjacent to the generator, but without direct access. (The definition of diverted link trips in the Florida study was “trips oriented at some point and destined to another point, with a stop at the subject shopping center being intermediate; however, a change from a normal routing and being a planned visit are required.”)

Figure 1 illustrates the three types of trips. Early studies of bypass trips at urban service stations were reported in 1969 by Box (2). These were performed by visually tracing movements at eight sites during peak hours. Drivers leaving the station to return toward the direction of their origin were considered to be making generated trips, and these trips were found to range from 12 to 73 percent of the total trips of the entering volume of traffic. The average of such directly generated traffic was 46 percent during the morning rush hour and 42 percent during the evening rush hour. In a study of rural service stations, Billion and Scheinbart (3) found 10 to 25 percent of service station traffic to be generated.

In other unpublished studies in 1971, Box recorded the license plate numbers of entering and leaving vehicles, by direction, to determine the proportion of generated traffic. At a 6500-m²

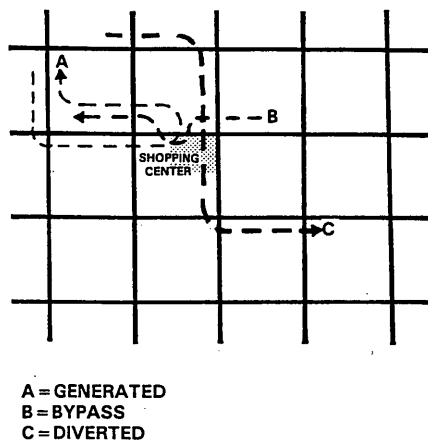


FIGURE 1 Types of trips.

(72,000-ft²) neighborhood-type center, the weekday p.m. proportion of generated trips was found to be 48 percent, and on Saturday it was found to be 64 percent. A similar study of a 9500-m² (106,000-ft²) community shopping center containing a K-Mart found on a weekday that the proportion of generated trips was 47 percent. There was thus an excellent correlation with the weekday figures among the two shopping centers and the service stations. It was clear that of the driveway volumes counted for such uses, only about one-half could be considered generated (or diverted) trips and therefore could be added to the volumes of the adjacent intersections.

Beginning in the late 1970s a number of interview studies were done and reported to ITE. These are given in Tables VII-1, VII-2, and VII-3 of *Trip Generation*, 5th ed. (1). Weekday data for 67 shopping centers, Saturday data for 14 shopping centers, and 37 studies for other land uses are listed.

For any land use it should be obvious that there are two types of bypass trips—the planned and the impulse trip. In the latter a driver enters the site only because it is convenient and because it is seen relatively at the last moment (the actual decision to stop is made on the basis of the observation of the facility rather than on the basis of any type of forethought—other than a need to eat, purchase gas, etc.). Evidently, the impulse trip is subject to possible reduction or loss because of modifications or restrictions of access. Figure 2 illustrates how the impulse type of bypass trip would be affected by construction of a diamond-type interchange.

IMPULSE TRIP STUDIES

There is no way that impulse trips can be detected by passive means such as observing traffic movements or tracing license plates. An interview basically involving a shopper intercept on the premises is required. It therefore requires rights of entry for the purposes of conducting the interviews to be granted by the shopping center owners or management. The interviews at the Florida shopping centers were conducted by using a properly quantified sampling technique. The community shopping center, Tarpon Square, had 16 000 m² (177,000 ft²) of gross floor area and about 1,100 parking spaces. A K-Mart is the major tenant. The interviews were conducted on a variety of different days of the week and hours of the day, with a total of 835 valid samples secured.

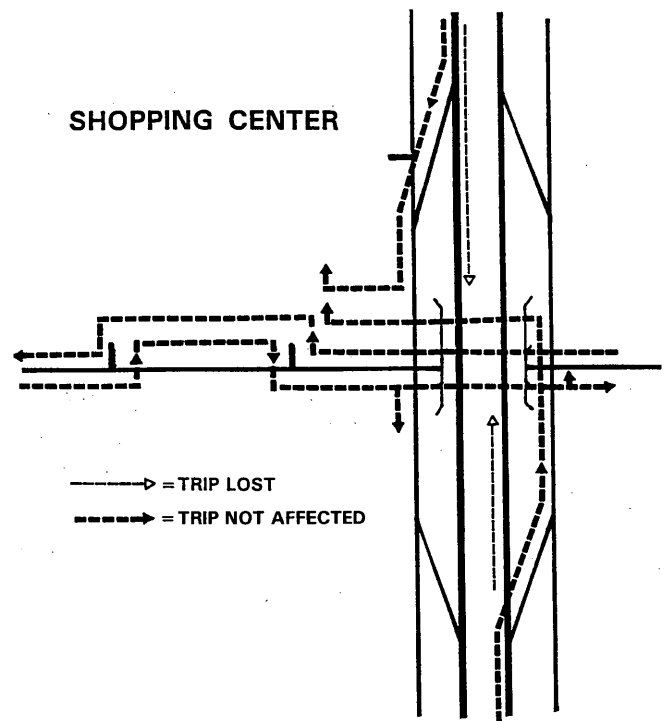


FIGURE 2 Impulse trips at a diamond interchange.

The second site was the Countryside Mall, located in Clearwater, Fla. It has an area of about 100 000 m² (1,100,000 ft²) of gross leasable area and contains 5,800 parking spaces. It has four department stores as the major tenants. Again, the interviews were conducted on a variety of days of the week and hours of the day, with a total of 3,160 valid samples secured.

Impulse trips were determined by comparing answers to two key questions. One, under the general heading of "what was the main reason you decided to come to this shopping center on this particular shopping trip," has "just driving by" as the answer indicating an impulse trip. The second question was under the subject of "how did you know where this mall was located?," again with an answer of "just driving by" identifying an impulse trip. When the answers to both of these questions were the same, the trip was defined as of the impulse type, a subset of the general bypass category.

FINDINGS

Figure 3 shows the conditions at the Tarpon Square community shopping center, where full access was generally available by making both right and left turns from the two intersecting major streets. The proposed improvement was to consist of a single-point diamond interchange with US-19 overpassing Tarpon Avenue. Right-turn access would continue to be available from a one-way southbound service road on the west side of US-19 and, using off-ramps and Tarpon Avenue, via this street. Continued full access would be available for at least the main driveway on Tarpon Avenue, which also would be signalized.

From the interview studies the proportions of generated, diverted, and bypass trips were identified (C. F. Wasala, unpublished interview study at Tarpon Square Shopping Center for Florida Depart-

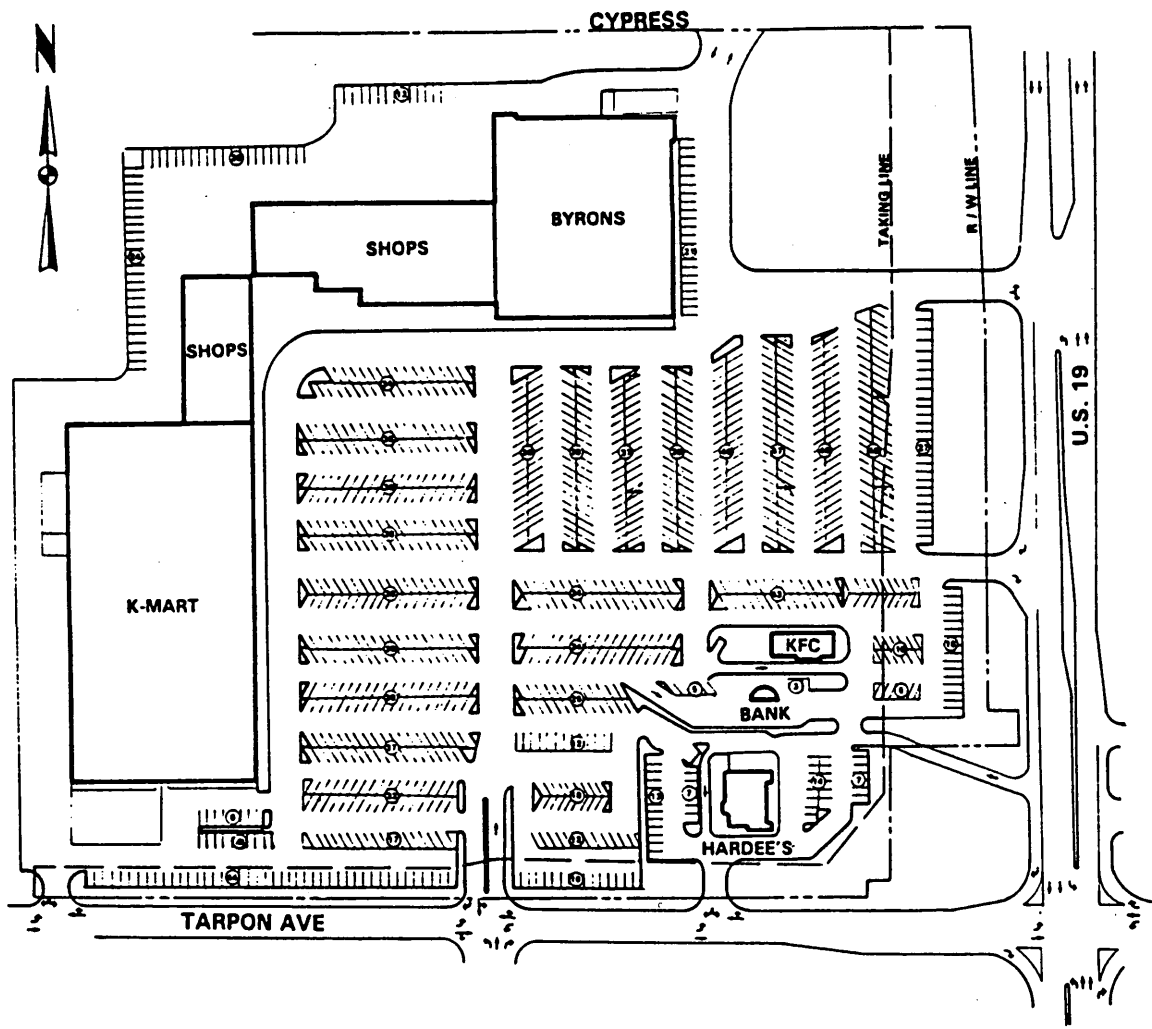


FIGURE 3 Conditions at Tarpon Square before improvements.

ment of Transportation, October 1991). These are summarized in Table 1, including the subdivisions of planned versus impulse bypass trips.

Although the proportion of impulse trips is low, the actual number that would potentially be lost as a result of the improvement is even less. Impulse trips along Tarpon Avenue would not be affected. The final proportion of impulse trips, using only those trips along US-19, was only 2.6 percent of total shopping trips.

TABLE 1 Tarpon Square Trip Characteristics

	Proportion (%)
Generated	12.9
Diverted	50.8
Bypass	
Planned	30.2
Impulse	6.1
Total	100.0

The intersection of US-19 and Tarpon Avenue was heavily congested. The volume on US-19 was approaching saturation, with little room for further growth. Construction of the improvement would do two things: reduce existing congestion and allow for continued further growth of through traffic on US-19. Reduction in congestion would increase the comfort and convenience of access to the shopping center. Future traffic growth along US-19 would increase the exposure and therefore the number of planned bypass trips. The combination of these factors would, without question, provide a positive benefit—more than offsetting the small loss of US-19 impulse trip customers.

The Countryside regional shopping center in Clearwater, Fla., is also located on US-19, south of Tarpon Springs. Figure 4 shows the existing access, which involves some restrictions of left turns, but overall there is full accessibility from all three of the abutting routes (P. C. Box, Unpublished Traffic Access and Parking Study at Countryside Mall for Florida Department of Transportation, July 1992).

The improvement consists of construction of single-point interchanges at Highway 580 and at Countryside Boulevard. The ramp system is shown in Figure 5 and in effect provides a full diamond for the Highway 580 intersection and a half-diamond for the Coun-

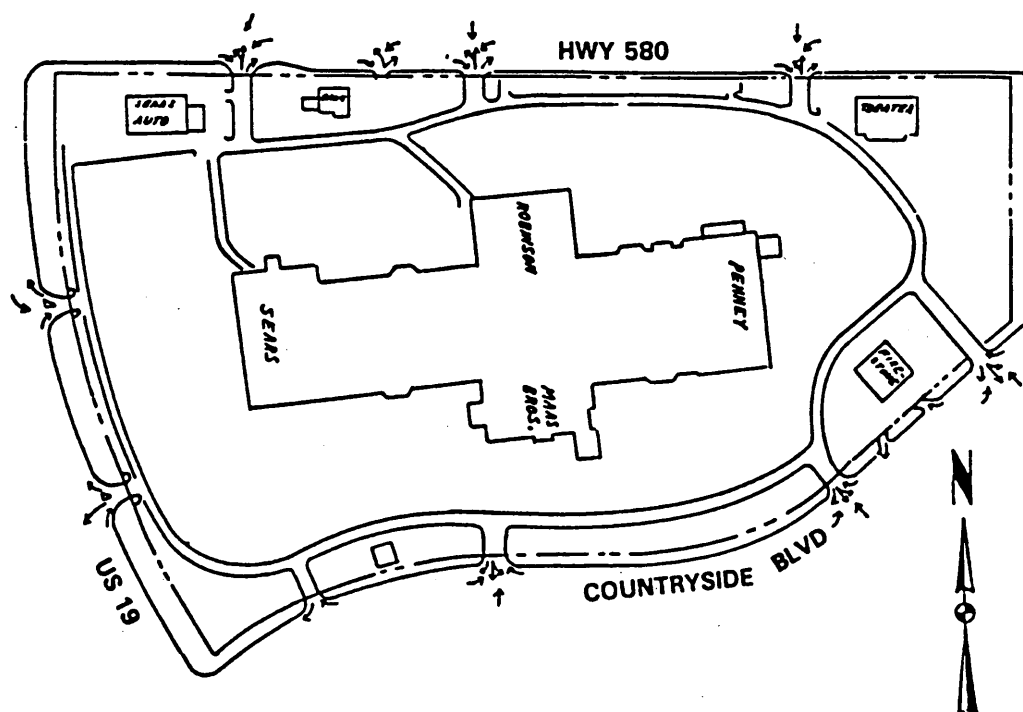


FIGURE 4 Existing access to Countryside Mall.

tryside Boulevard intersection. A right in-and-out driveway was added immediately north of Countryside Boulevard but south of the off-ramp. Remaining access points along US-19 were closed; however, those along Highway 580 and Countryside Boulevard were retained, with generally full access.

Interview studies for the Countryside Mall were conducted in a fashion similar to those conducted for Tarpon Square (C. F. Wasala, unpublished interview study at Countryside Mall for Florida Department of Transportation, November 1990). Similar questions were asked, and the findings relative to trip characteristics are given in Table 2. Again, the proportion of impulse trips to total trips is further reduced by considering just those involving US-19. These amounted to only 2.3 percent of the total.

Traffic conditions were very congested at the US-19 intersections with Highway 580 and with Countryside Boulevard. By improving ease and facility of access through these intersections, the overall accessibility of the shopping center is being improved. Also, the capacity to allow for future through traffic growth on US-19 is being developed, thus increasing the potential volume of planned bypass trips drawn from the through traffic flow. Again, this should result

in reclaiming the small loss of impulse trips shortly after the completion of construction.

Comparison of the data in Tables 1 and 2 shows the great difference in the proportion of traffic generated (as expected, the regional mall is a greater generator). However, the bypass trip proportions drawn from the existing traffic adjacent to the sites are similar for both centers. The bypass trip average from the reported ITE studies is 41 percent for smaller centers of less than 18 000 m² (200,000 ft²) and 26 percent for larger centers of more than 63 000 m² (700,000 ft²) (1). Although there is some correlation, it should be noted that sample sizes for the ITE studies, when reported, were much smaller than those in the studies in Florida, and samples were often taken only during the p.m. peak hour periods.

CONCLUSIONS

The studies show that the proportion of impulse trips in relation to the total number of trips decreases as the center size increases. This is to be expected because few people driving by a large shopping center make a sudden decision to pull in compared with the number who make a sudden decision to pull in to fast-food establishments, for example. In any case the proportion, and therefore the total number, of impulse trips to shopping centers of the sizes studied is very small. When the twin effects of reduction in congestion and added capacity for additional through traffic growth on the boundary roadways are considered, the probability that increased shopping center business will more than offset that lost from the few impulse trips is evident.

Additional interview studies of the type used in the two projects described here would be desirable. Similar data for other types and sizes of land use would be helpful both to public agencies involved

TABLE 2 Countryside Mall Trip Characteristics

	Proportion (%)
Generated	48.4
Diverted	12.6
Bypass	
Planned	35.9
Impulse	3.1
Total	100.0

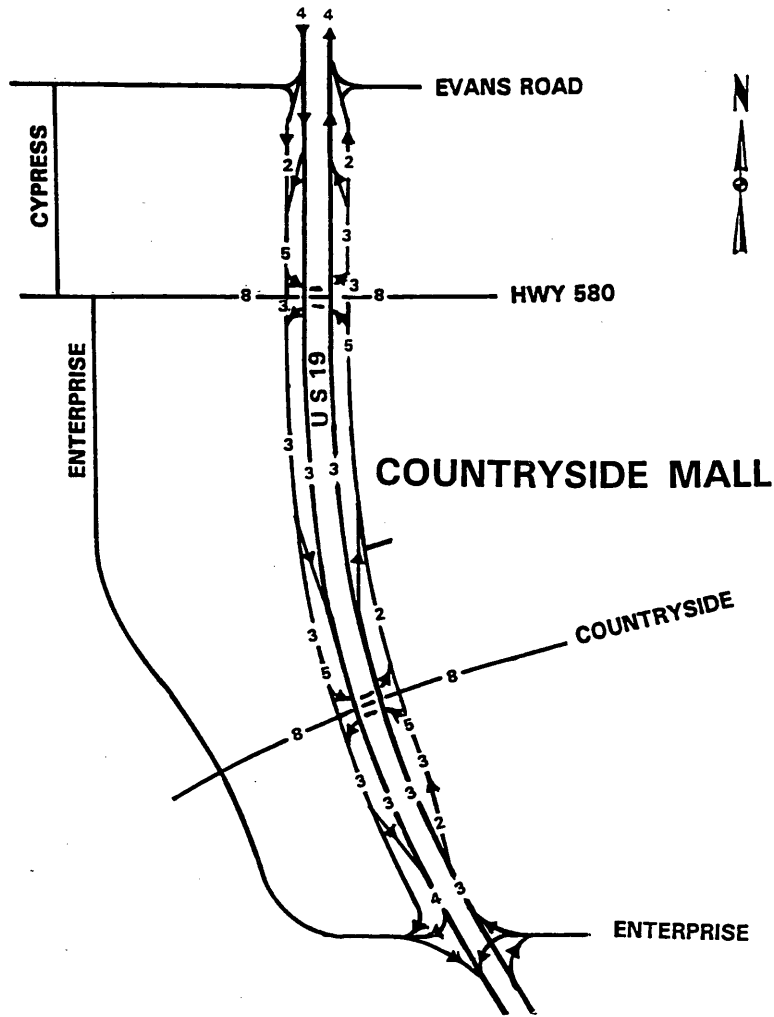


FIGURE 5 Improvement lanes.

in eminent domain proceedings and to owners of those businesses affected by the proposed improvements.

REFERENCES

1. *Trip Generation*, 5th ed. ITE, Washington, D.C., 1991.

2. Box, P. C. Driveway Accident and Volume Studies. Part II. Service Stations. *Public Safety Systems*, July/Aug. 1969.
 3. Billion, C. E., and I. Scheinbart. A Study of Engress and Egress at Gasoline Service Stations on Rural State Highways Without Control of Access. *HRB Proc.*, 1956.

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