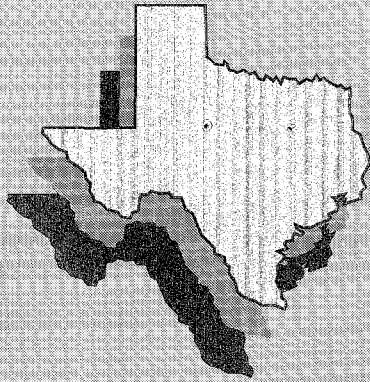




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**DEPARTMENTAL  
INFORMATION  
EXCHANGE****ECONOMIC EFFECTS OF HIGHWAY  
BYPASSES ON BUSINESS ACTIVITIES IN  
SMALL CITIES****PROBLEM STATEMENT**

Highway bypasses that reroute traffic around small rural cities in Texas generally improve the state's transportation system. By diverting traffic away from city centers, these bypasses reduce travel times (which in turn reduce traveling costs), improve safety, and rid residents of annoying traffic congestion and related pollution. Within these rural communities themselves, such improvements can often boost the local economy by providing residents with better access, which also reduces overall transportation costs and delays.

Unfortunately, the diversion of traffic can, at the same time, imperil local businesses dependent on passing traffic. This was the case in La Grange, where the construction of the US 71 bypass resulted in the almost overnight closing of many retail operations located on the old route. Thus, bypasses generate within the bypassed city both winners and losers.

Understandably, then, many local residents often resist efforts to construct bypasses in their communities. Such resistance attests to their uncertainty regarding the ultimate impact of a proposed bypass, and the fear that the construction will adversely affect the local economy. Accordingly, many transportation planners—scrambling for ways to make bypasses attractive to local officials and businesspersons—have intensified their efforts to identify the economic effects of highway bypasses on rural communities. What is lacking, planners say, is a rigorous method for predicting the net long-term economic impacts of bypasses on rural communities—that is, one whose forecasts could provide local residents and businesses an opportunity to plan for whatever changes might result from such construction. This issue is investigated in the Center for Transportation Research report "Economic Effects of Highway Bypasses on Business Activities in Small Cities: Final Report," by S. Johann Andersen, Robert Harrison, Reijo Helaakoski, Mark A. Euritt, Hani S. Mahmassani, and C. Michael Walton, all of The University of Texas at Austin.

**OBJECTIVES**

The Center for Transportation Research (CTR) of The University of Texas at Austin, in cooperation with the Texas Department of Transportation (TxDOT) and the Federal Highway Administration (FHWA), attempted in this project to identify the primary economic impacts of highway bypasses on business activities in small Texas cities, and then to develop a procedure for predicting possible economic impacts on local businesses that might result from a particular bypass proposed for construction (i.e., a procedure that could take into account unique local conditions). For the purposes of this study, a highway bypass was defined as "that segment of a new highway intended to reroute through traffic around a central business district, leaving the remainder of the intercity route unchanged." Overall, the researchers sought in this project to provide TxDOT with a means of enlightening rural community leaders about the net effects of bypasses.

**FINDINGS**

The study team first looked into the literature of bypass impacts on cities. Their findings, drawn from U.S. and European studies, suggested that, as a transportation investment, highway bypasses have various impacts on small communities. While overall mobility of a community may be improved substantially, the impacts regarding the local economies are less well known and less capable of quantification. Thus, previous work in this area was regarded as inconclusive. As the CTR researchers concede, "many factors influence the economy in a given area," and, consequently, "it is difficult to statistically determine a specific highway bypass effect."

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Nonetheless, the project team compensated for what they perceived to be the shortcomings of previous studies by employing several methods to investigate highway bypass impacts. Specifically, the study team developed a database (that included relevant information on important variables relating to both bypassed cities and non-bypassed control cities), performed a case-study analysis of several Texas cities, and, finally, developed econometric models to identify specific economic effects of highway bypasses on business activities.

In developing their database, the study team identified a total of 103 highway bypasses in Texas, each of which was then categorized according to its type—i.e., either standard bypass, multiple-city bypass, multiple-highway bypass, partial bypass, or loop. These bypasses were then categorized according to their geographic location in the state, a strategy intended to take into account the diversity of the Texas economy. Populations of the bypassed cities were then reviewed (these ranged from less than 500 to 120,000), along with the year of bypass construction (most dated from the late 1950s or 1960s, coinciding with the construction of the Interstate system). Finally, the study team focused on the “typical bypass city,” one which could serve as the basis for their analysis. Of the 103 bypasses in Texas, the research team specifically targeted for study those bypassed cities that met the following conditions:

- (1) cities whose population was between 2,500 and 25,000 at the time of the bypass construction;
- (2) cities that were bypassed between 1960 and 1980;
- (3) cities with only one bypass; and
- (4) cities with highway bypasses that did not bypass more than one city at a time.

Based on these conditions, the study team identified 23 bypassed cities located in all geographic regions in Texas.

The study team then selected a control city for each of the bypassed cities listed above. As in all controlled experiments, these controls provided the researchers with a standard of comparison in judging experimental effects (in this case, the control was the absence of a bypass, which allowed researchers to compare economic changes of the bypassed cities to those of the unbypassed control cities). In searching for

their control cities, the CTR team looked at unbypassed cities that shared certain characteristics with the sample bypassed cities (i.e., prior to the opening of the bypass). These characteristics included a common (1) highway district; (2) proximity to a larger city; (3) economic base; (4) magnitude and trend of retail sales; (5) population size category and growth trend; and (6) highway network.

The next step in the creation of the database was to assemble variables that were relevant and that could lend themselves to further statistical analysis. Drawn principally from the literature review, these variables were meant to represent the characteristics of the individual cities — characteristics that represent, in effect, changes brought about by the bypass.

To corroborate the relevancy of the literature review and the selected database variables, the study team next undertook a case study of six bypassed cities in Texas. This portion of the study included site visits and interviews with local businesspersons. The six sites were the cities of Littlefield, Bowie, Alvord, Grapeland, Navasota, and Taylor.

With a better understanding of the economic effects of highway bypasses, the study team next analyzed the data so as to develop models that could isolate the effects of highway bypasses. These economic models took into account retail sales, restaurant sales, gasoline sales, and service receipts. Statistical analyses were then used to identify “natural groups” or clusters that could represent the underlying economic structure existing within the set of bypassed cities. The results of the statistical analyses were used to refine the specifications of the econometric models.

## CONCLUSIONS

“Importantly,” the researchers conclude, “the research demonstrates that a bypass is one small variable among a variety of other more significant factors affecting the economics of small towns and cities.” Nonetheless, the study group succeeded in developing an econometric model capable of assisting transportation planners in evaluating potential economic impacts of proposed bypasses. The following are among specific conclusions drawn from this brief report:

- (1) A highway bypass will be viewed as a positive development by local citizens if the reduction in through traffic

(especially heavy vehicles) on major streets improves traffic flow and local access. Other positive consequences of bypasses include improved safety and cleaner air.

- (2) A highway bypass may reduce business volumes in small rural cities. However, many other important local factors appear to affect business activities more dramatically (these include fluctuations in the agriculture or oil business, continued urbanization trends, and the establishment of large discount stores within the market area). Thus, business communities will respond in various ways to a bypass, with the specific response depending on local characteristics.
- (3) A combined cross-sectional and time-series database can be used to develop an econometric model that can predict total retail sales, gasoline station sales, restaurant sales, and service receipts.

From these findings, the study team recommends that their econometric model be used by transportation planners to evaluate the economic consequences of constructing a highway bypass, especially with respect to retail sales, gasoline station sales, and restaurant sales. These evaluations could be used by local businesspersons concerned with the possible negative effects of bypass construction, providing them an opportunity to adjust their business operations so as to offset the possible negative effects of the new facility.

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The information provided in this summary is reported in detail in Research Report 1247-3F, “Economic Impacts of Highway Bypasses,” by S. Johann Andersen, Robert Harrison, Hani S. Mahmassani, C. Michael Walton, and Reijo Helaakoski (November 1992). The contents of the summary report do not necessarily reflect the official views of the FHWA or TxDOT.