

U.S. 287 at Lamar: Economic Analysis

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Executive Summary

This memorandum provides a discussion of demographic and economic trends in Lamar and Prowers County, and an analysis of potential impacts on the local economy that may result from the proposed construction of a five-mile bypass of U.S. 287 around downtown Lamar.

The results of the analysis indicate that the project is likely to result in a loss of sales for certain Main Street businesses that rely heavily on sales from through-stop customers (i.e., travelers just passing through who stop to transact business in town), however, it is anticipated that the project would not result in significant economic impacts on the local economy, the City of Lamar, or Prowers County.

Construction Impacts

The construction of any of the build alternatives would have a positive impact on employment, sales tax revenues, and overall economic activity in the project area. The magnitude and duration of that impact will depend on the extent to which labor, equipment, and materials needed for construction are supplied locally.

During a major highway construction project, dust, noise and access limitations resulting from construction activities have the potential to result in reduced revenue for some local businesses. This is not expected to be a notable impact for this project because all of the construction for this project would take place away from established business districts.

Operations Impacts

During operations three potential impacts must be considered in the evaluation of the economic effects of this project:

- Changes in access to local businesses,
- Long-term effects on sales and employment, and
- Fiscal effects on the City of Lamar and Prowers County.

Changes in Access to Local Businesses

Highway road projects can impact local businesses by making access changes such as reducing curb cuts or limiting business access to right-in right out. The proposed highway and the three proposed interchanges are not in the vicinity of existing business districts and no businesses would experience a change in accessibility.

Long-Term Effects on the Local Economy

In this study, the potential for the project to result in long-term effects on the local economy is evaluated from several perspectives.

- The results of published studies that report the ways in which highway relief routes can affect economic activity.
- The results of interviews conducted with local businesspersons.
- The structure of Main Street businesses and the local economy.
- Likely changes in travel patterns that may result from the project.
- The potential for development around interchanges.

The results of the analysis indicate that the overall impact of the new road on Lamar is likely to be relatively minor. It is anticipated that businesses that depend heavily on through-stop traffic will experience a loss in sales, and some of those businesses may close, but this effect should be countered by an improved business climate for many businesses that would result from the reduction in truck and other vehicular traffic on Main Street.

The response of the Lamar community will play a large part in the eventual impact of the new road. A proactive response to economic development could lessen any impact to traffic-dependent businesses and improve prospects for businesses that might benefit from the reduction of truck traffic and through traffic in the downtown area. Also, the extent to which development occurs around interchanges will have a substantial effect on the prospects for a number of downtown businesses.

Fiscal Impacts to Local Government

The project could result in changes in sales tax or property tax revenue to local governments. Sales taxes from Main Street businesses represent approximately 12 percent of the City of Lamar's total revenue, and 4 percent of the revenue collected by Prowers County. It is likely that there will be some initial reduction in sales from through-stop traffic that no longer stops in Lamar. However, it is not likely that either jurisdiction will experience a significant loss in sales tax revenues.

It is estimated that the right-of-way required for project construction would result in the conversion of 174 acres of farmland from taxable to non-taxable status. This would affect various taxing districts in the county. For perspective on the magnitude of this impact, it is estimated that the conversion of land from farmland to right-of-way would result in a 0.4 percent reduction in the total revenues of Prowers County.

Introduction

This Technical Memorandum provides a discussion of demographic and economic trends in Lamar and Prowers County, and an analysis of potential impacts on the local economy that may result from the proposed project. The proposed project is a new road that would serve as an alternate route to Main Street for regional truck and automobile traffic. The route would connect to the existing U.S. 287 north and south of the city with an access to U.S. 50 east of the City.

The memorandum will provide background data and analysis necessary for preparation of the socioeconomic element of the environmental assessment that will be prepared for this project, including a discussion of existing conditions and impacts.

Existing Conditions

A discussion of population, housing, economic conditions, and travel patterns in the project area follows.

Population and Housing

In Table 1, the population of Lamar is compared to that of Prowers County and the State of Colorado. As shown, the population of Lamar was 8,869 in 2000, which is 61 percent of the population of Prowers County. Over the past 10 years the population of both Lamar and Prowers County grew more slowly than the population of the state of Colorado (6 percent and 9 percent versus 31 percent, respectively).

TABLE 1
Population Trends for Lamar, Prowers County, and the State of Colorado

	1990	2000	Change	% Change
Lamar	8,343	8,869	526	6%
Prowers County	13,347	14,483	1,136	9%
Colorado	3,294,394	4,301,261	1,006,867	31%

Source: U.S. Census Bureau, 2002.

Table 2 displays the estimated number of housing units for both Lamar and Prowers County. Similar to population, the 3,684 housing units in Lamar represent 62 percent of the housing units in Prowers County. Over 70 percent of the housing units in Lamar were detached single-family units, and secured mobile homes accounted for 12 percent of the total. The distribution of housing types is similar in Lamar and Prowers County. Both Lamar and Prowers County have nearly identical proportions of single family attached and non-attached (71 percent and 2 percent, respectively). Prowers County has a somewhat greater proportion of mobile homes than Lamar (16 percent versus 12 percent), whereas Lamar has a greater proportion of multi-family units than Prowers County (16 percent versus 11 percent).

TABLE 2
Housing Units

Housing Type	Lamar	Prowers County	Lamar % of Prowers County
Single Family, detached	2,604	4,265	61.1%
Single Family, attached	60	97	61.9%
Secured Mobile home	444	930	47.7%
Multi-Family	576	671	85.8%
Total	3,684	5,963	61.8%

Source: U.S. Census Bureau, 2002.

Business and Economic Conditions

Prowers County Employment by Sector

It is useful to investigate the structure of the local economy to understand a bit about what industries are of relative importance to an area. Employment data by business location and sector are not published in a useable form for small cities such as Lamar, thus comparisons are best conducted at the county level. However, using Prowers County as a basis for comparison will be a good proxy for Lamar because nearly all of the economic activity in Prowers County occurs within the City of Lamar. For example, 93 percent of all employment and 86 percent of all firms in Prowers County are located within the 81052 zip code, which approximates the city limits of Lamar (U.S. Census Bureau, ZIP Code Business Patterns, 2000).

Data from the Colorado Department of Labor and Employment indicate that Prowers County covered employment (workers covered by employment insurance) was 6,267 in 2000. The distribution of employment among industry sectors for Prowers County is shown in Tables 3 and 4. In Table 3, this distribution compared to the distribution for eight other southeast Colorado counties (Baca, Bent, Cheyenne, Crowley, Kiowa, Kit Carson, Las Animas, and Lincoln). Table 4 compares the distribution of employment to industry sectors for Prowers County to that of the State of Colorado.

TABLE 3
Composition of Prowers County Employment Compared to 8 Southeast Colorado Counties

Industry Sector	2000 Employment ^a		Percent of Total		
	Prowers County	SE Colorado Counties	Prowers County	SE Colorado Counties	Variance County to State
Manufacturing	1,163	391	19%	3%	16%
Ag Services, Forestry, Fishing	761	494	12%	4%	9%
Mining	85	205	1%	2%	0%
Finance, Insurance, Real Estate	259	595	4%	4%	0%
Transportation and Public Utilities	185	508	3%	4%	-1%
Wholesale Trade	258	681	4%	5%	-1%
Retail Trade	1,225	2,921	20%	21%	-2%
Construction	140	636	2%	5%	-2%
Services	716	2,470	11%	18%	-7%
Government	1,475	4,744	24%	35%	-11%
Total	6,267	13,645	100%	100%	0%

^aCovered employment.

Source: Colorado Department of Labor and Employment. Labor Market Information-ES202, 2002.

TABLE 4
Composition of Prowers County Employment Compared to the State of Colorado

Industry Sector	2000 Employment ^a		Percent of Total		
	Prowers County	State	Prowers County	State	Variance County to State
Ag Services, Forestry, Fishing	761	32,963	12%	2%	11%
Manufacturing	1,163	205,640	19%	9%	9%
Government	1,475	319,140	24%	15%	9%
Mining	85	12,880	1%	1%	1%
Retail Trade	1,225	414,558	20%	19%	1%
Wholesale Trade	258	110,408	4%	5%	-1%
Finance, Insurance, Real Estate	259	137,598	4%	6%	-2%
Transportation and Public Utilities	185	140,674	3%	6%	-3%
Construction	140	162,604	2%	7%	-5%
Services	716	650,169	11%	30%	-18%
Total	6,267	2,186,634	100%	100%	0%

^aCovered employment.

Source: Colorado Department of Labor and Employment. Labor Market Information-ES202, 2002.

The information in Tables 3 and 4 show that Prowers County has a much greater proportion of jobs in manufacturing and agricultural services, and a much lower proportion of jobs in services and construction. There are relatively fewer employees working for federal, state, and local government sector in Prowers County compared to the other SE Colorado counties, but the converse is true when compared to the state as a whole. This is not too surprising because government employment is typically a relatively large employer in smaller counties with a less diverse economic base than more populated counties. Thus, we can conclude that the Prowers County economy is more diverse than the typical SE Colorado County, and is driven in part by a large manufacturing and agricultural services sector.

The retail trade sector is also of interest because concern has been expressed about the potential for lost income and jobs in the retail sector as a result of the build alternatives rerouting traffic away from the businesses along Main Street. These data show that the retail sector employs relatively fewer persons in Prowers County than in other SE Colorado counties (two percentage points less), but slightly more than the state average (one percentage point more).

Unemployment

Table 5 presents a comparison of the Prowers County unemployment rate to the state average in 1990, 1995, 2000, and December 2002. In recent years, Prowers County's unemployment rate has been slightly higher than that of the State of Colorado, however, the County has fared a bit better than the rest of the state during the recent recession. Since 2000, Prowers County's unemployment rate has increased from 2.9 percent to 4.2 percent, whereas the State's unemployment rate has increased from 2.7 percent to 5.2 percent.

TABLE 5
Unemployment Rate Trend

	1990	1995	2000	Dec 2002
Prowers County	6.4	4.4	2.9	4.2
Colorado	5.7	4.2	2.7	5.2

Source: Colorado Department of Labor and Employment, 2002.

Businesses in the Vicinity of Main Street

In order to understand a bit more about the economic structure of Lamar and in the vicinity of Main Street, data were purchased from a commercial service that provides estimates of employment, sales, and the location of each businesses in Lamar (Dunn and Bradstreet, 2002). This information was verified using the result of interviews with selected businesses, windshield surveys and phone book comparisons to verify the existence and location of businesses.

This information was used to compile a list of businesses in Lamar, as well as the number of businesses located along Main Street, by industry sector (Table 6). Table 6 also shows the composition of businesses by sector on a percentage basis. As shown, more than half of Lamar's businesses in the following sectors are located along Main Street: social services, gas stations and convenience stores, eating & drinking establishments, apparel manufacturing, utilities, and hotels and motels. While nearly one in five businesses along Main Street is a retail business, just under 60 percent of Lamar's retail businesses are located elsewhere in town.

TABLE 6
Distribution of Businesses Along Main Street

Industry Sector	Number of Businesses In Lamar	Percent of Lamar Total	Number of Businesses Along Main Street	Percent of Total Along Main Street	Percent of Businesses in Lamar Along Main Street
Social Services and Public Education	27	3.8%	27	12.0%	100.0%
Gas Stations and Convenience Stores	6	0.8%	6	2.7%	100.0%
Eating And Drinking Establishments	26	3.7%	20	8.9%	76.9%
Utilities	7	1.0%	4	1.8%	57.1%
Hotels and Motels	16	2.3%	9	4.0%	56.3%
Government	40	5.6%	20	8.9%	50.0%
Retail	107	15.1%	47	20.9%	43.9%
Banking and FIRE ^a	53	7.5%	20	8.9%	37.7%
Communications	9	1.3%	3	1.3%	33.3%
Amusements and Entertainment	12	1.7%	3	1.3%	25.0%
Consumer Services	64	9.0%	16	7.1%	25.0%
Hospitals and Health Services	38	5.4%	9	4.0%	23.7%
Business and Legal Services	60	8.5%	14	6.2%	23.3%
Wholesale	22	3.1%	5	2.2%	22.7%
Transportation	25	3.5%	5	2.2%	20.0%
Business Social Organizations	38	5.4%	7	3.1%	18.4%
Manufacturing	39	5.5%	6	2.7%	15.4%
Construction	50	7.1%	2	0.9%	4.0%
Agriculture	69	9.7%	2	0.9%	2.9%
Total	708	100.0%	225	100.0%	31.7%

^aFIRE means Finance, Insurance and Real Estate.

Source: Dunn and Bradstreet, 2002, and CH2M HILL, 2002.

Local Government Revenue Sources

Both the City of Lamar and Prowers County derive significant revenues from sales tax collections. In 2001, Lamar received 37 percent of its revenues from sales tax collections compared to 21 percent for Prowers County. The City of Lamar projected property tax collections of \$406,649 for 2001, or 7 percent of total revenue, compared to Prowers County's projected property tax collections of \$1,782,934, or 32 percent of total county revenues.

TABLE 7
Local Government Revenue Sources, 2001

Description	Prowers County Budget	Percent of Total	City of Lamar Budget	Percent of Total
Property taxes	\$1,782,934	32%	\$406,649	7%
Sales Taxes	\$1,187,500	21%	\$2,064,060	37%
Other Taxes, Licenses, and Permits	\$2,689,427	48%	\$3,141,685	56%
Total	\$5,659,861	100%	\$5,612,394	100%

Source: Prowers County and City of Lamar, 2001.

Impacts

This section provides a discussion of the likely impacts of the proposed project on the economy of the City of Lamar. Impacts are grouped into those that may occur during construction and those that may occur during operations.

Construction Impacts

During construction, there are two types of economic impacts that may occur: beneficial increases in employment and income resulting from project construction, and reductions in revenue that may occur from impacts of construction on local businesses.

Construction Employment and Material Purchases

The construction of any of the build alternatives would have a positive impact on employment, sales tax revenues, and overall economic activity in the project area. While it is likely that many construction jobs would be filled by residents from places other than Lamar, new jobs could be created within Lamar city limits in businesses and industries that provide goods and services used during construction and in businesses that sell goods and services to workers on the project. The actual impact would be a function of where equipment and material needed for construction would be purchased.

For the typical highway construction project, the spending on materials and labor are called the direct effect of a project. The businesses that make the final sales must in turn purchase goods and services from other businesses. These indirect purchases are called indirect effects, which continue until leakages from the region in the form of imports, wages, or profits to persons outside the region end the cycle. Finally, workers at the producing businesses spend their wages in the local economy and purchase additional goods and services. These purchases are referred to as induced effects. The total economic impact of a construction project includes direct, indirect, and induced effects.

The magnitude of the impact on the local economy depends on the extent to which businesses purchase goods and services from other local businesses. Purchases from businesses outside the region are leakages from the local economy. Thus, regional purchase coefficients, which represent the proportion of local demand that is purchased from local businesses, are used in the analysis to prevent an overstatement of the economic impacts to the local economy.

While it is a bit premature at this point to estimate the construction costs of this project, it is clear that the direct, indirect, and induced spending associated with project construction would result in a substantial short-term increase in sales and employment for the local economy.

Local Business Construction Impacts

During a major highway construction project, various activities can result in reductions in revenue for some local businesses. These activities, called local business impacts, may include one or more of the items listed below.

- Real or perceived loss of access or substantial changes in access.
- Increased traffic congestion.
- Reduced or eliminated adjacent parking.
- Reduced visibility of businesses from the street.
- The creation of a disruptive and/or unpleasant environment (noise, dust, vibration).
- Disrupted utility services.

These types of impacts typically result from roadway projects that include construction in established business districts. All of the build alternatives for this project would include construction away from established business districts. It is unlikely that project construction would result in local business impacts that would result in a noticeable impact on the sales of any businesses in the project vicinity.

Operations Impacts

During operations, there are three potential impacts that must be considered in the evaluation of the economic effects of this project:

- Changes in access to local businesses,
- Long-term effects on sales and employment, and
- Fiscal effects on the City of Lamar and Prowers County.

A discussion of each of these impacts follows.

Changes in Access to Local Businesses

The proposed highway and the three proposed interchanges are not in the vicinity of existing business districts and no businesses would experience a change in accessibility.

Long-Term Effects on the Local Economy

The long-term effect of the project alternatives on the local economy is dependent on a wide range of factors, many of which cannot be predicted with certainty. Thus, this technical memorandum provides a number of different perspectives on this issue that can be used to draw some conclusions about the type and magnitude of impacts that are likely to result. Those perspectives include:

- The results of studies that report the ways in which highway relief routes can affect economic activity,
- The results of interviews conducted with local business persons,
- The structure of Main Street businesses and the local economy,
- Likely changes in travel patterns that may result from the project, and
- The potential for development around interchanges.

The discussion of these issues is followed by conclusions about the potential for long-term effects of the project.

Impact of Highway Relief Routes on Economic Activity

The impact of highway relief routes, often referred to as bypasses, on economic activity has been the focus of numerous studies in recent years. A literature review was conducted for this study and four case studies were analyzed. The results of the case studies are shown in the Appendix. A discussion of the key aspects of those case studies and other literature reviewed follows.

Table 8 presents results reported in a review of 190 studies of bypass impacts (Liff et al., 1996). As shown, most studies have found that a highway bypass has a net positive impact on the local community. Not surprisingly, that finding does not apply to traffic-serving businesses along the old route, for which about half of the studies found that the bypass had a negative impact on traffic-dependent businesses.

TABLE 8
Effects of Highway Bypasses on Communities

	% Positive	% No Impact	% Negative	% Total	Number of Studies
Overall community	89	4	7	100	141
Traffic-serving businesses along old route	30	22	49	100	88

Source: Liff et al., 1996.

For 16 studies that compared the long-term business growth for a bypassed community to a control community with similar characteristics, the following results were reported for average annual growth in sales in communities with populations of 10,000 or greater:

- Sales growth for bypassed area 3.2 percent,
- Sales growth in control area 2.3 percent, and
- Sales declined at bypassed area businesses 13 percent.

Other conclusions from the case studies include:

- Studies of highway bypasses and their effects on the bypassed community indicate that bypasses generally result in decreased retail sales, gasoline service receipts, restaurant sales, and service receipts. The initial decreases are often counteracted by reorientation and refocusing of local stores to the change in customer mix. The economic impact of highway bypasses on small cities in a rural setting is not uniform across cities. Some factors that determine those impacts include:
 - The size of the city: smaller cities are typically impacted more severely than larger cities. However, other factors such as increases or decreases in economic base industries (e.g., manufacturing) or in the local and regional economy appear to be more important in determining the overall level of business sales and employment.
 - Average daily traffic of the highway: the greater the traffic flow, the more beneficial the long-term prospects for through-traffic-dependent local businesses.

- The economic base of an area: the more inflows of funds to the local economy are affected by the highway, the more the bypass will affect local businesses.
- Bypasses typically seem to have a favorable impact on rural communities and small urban areas, but evidence in these studies is often weak. Interviews and survey of residents and businesses indicate that bypasses increase development potential along the fringe areas served by the new route, and at the same time relieve congestion, safety hazards, and other undesirable conditions in the central areas from which traffic is diverted. A potential impact of a bypass is that a downtown business district will suffer a decline in retail sales due to lower main street traffic volumes. In some instances, this decline was offset by increased sales at new developments near freeway interchanges. Many bypassed communities that suffered a reduction in retail sales experienced a transformation of the downtown area from a center of retail activity to a center supporting more professional and service businesses.
 - A study of 19 bypassed communities in Texas (Srinivasan and Kockelman, 2002) concluded that the percent of traffic diverted to the new route (traffic split) has a significant negative impact on sales. In other words, the better the new road works from a traffic standpoint, the greater the negative impact on sales. For the 19 cities studied, 47 percent of traffic (on average) was diverted to the relief route and 53 percent remained on the original route. The overall impact of the bypass on each sector becomes negative when diverted traffic hits the following thresholds: 31 percent for retail sales, 26 percent for eating and drinking establishments, 43 percent for service industries. Impacts on gasoline service stations are negative regardless of the percent of traffic diverted. Another conclusion of that study is that the bypasses had a modest negative effect on population growth and per-capita income levels. The population growth rate declines 0.036 percent per year (3 persons per year for Lamar), and per-capita income levels decline 0.6 percent per year (\$50 per-capita per year for Lamar).
 - A study of 21 small communities in Kansas (Burrell, 1996) concluded that bypasses have not been noticeably harmful to small towns in Kansas in the aggregate or in the long term. Yet in the short term real costs may be borne by certain individual businesses.
 - A study of 21 bypassed communities in Iowa and Minnesota (Otto and Anderson, 1995) found that a majority of individual business owners in the bypass communities favored the bypass. For example, retail merchants were asked “Based on your experience with the bypass, would you still favor the bypass?” The number of people in favor was three times greater than the number opposed. Another question asked merchants to describe the impact on their businesses since the bypass opened. Most (53 percent) thought that the bypass had no significant impact.

Interviews with Lamar Businesspersons

In analyzing the economic impacts of a highway project, it is useful to interview local businesspersons about their perceptions of how their business might be affected by a proposed project. For this project, 20 interviews were held with Lamar businesspersons. The interviews were conducted in-person by CH2M HILL staff from November 12-14, 2002, with a few completed by subsequent telephone conversations. The purpose of the

interviews was to gain additional insight on various perspectives on the U.S. 287 at Lamar project and its potential impact on the local business community.

The businesses selected for interviewing include major employers in Lamar and retail businesses on Main Street that may be affected by a reduction in traffic and some of the town's larger employers. The individuals we met with included both long-time Lamar residents and businesspersons, and persons relatively new to the community. The interviews also include representatives from local business and economic development organizations.

A summary of the opinions expressed that focuses on comments provided by more than one person interviewed include the following:

- Some felt that the project would have a major negative impact and that some businesses would not survive the project. Others expressed support for the project and did not think the project will hurt downtown business. Some expressed the belief that the project would hurt their business, yet they still felt the project would be a positive development for the town.
- Many expressed the opinion that what happens to land uses in the vicinity of the interchanges, particularly the east interchange at U.S. 50, will have a noticeable impact on business in Lamar. Main Street businesses expressed concerns that development would occur along the new alignment and interchanges, thus drawing more customers away from downtown.
- Designating the existing road as an "Alternate Business Route" may help bring customers into town.
- It is important to maintain the ease of access into Lamar e.g., nice flyover interchange at north and south. It will be important to make it easy for shoppers to access Main Street.
- Concerns were expressed about the current lack of safety on Main Street and potential for toxic spills.
- Many expressed the opinion that the City and County don't get along well on redevelopment issues, and that the City could use some help to get redevelopment moving forward.
- Crystal Street access and good signage on the new highway are viewed as important by some businesses.
- Some expressed concern about what occurred to downtown Limon after roadway changes and fear that something similar could happen to Lamar: others commented that Limon being on the interstate was a different situation.
- Some acknowledged that the Ports to Plains corridor designation increases the importance of building the new highway.

Main Street Businesses and the Local Economy

In Table 9, information from Dunn and Bradstreet, supplemented by information provided by the interviews with local businesses is presented about sales and employment for

businesses along Main Street. As expected, businesses that are most likely to be influenced by changes in vehicular travel patterns (gas stations and convenience stores, eating and drinking establishments, and hotels and motels) are relatively more likely to be located along Main Street than other businesses. Sixty-six to 100 percent of the sales of those businesses come from businesses located along Main Street. Only 15 percent of the sales recorded by retail businesses, which may or may not be influenced by changes in travel patterns, are located along Main Street.

Another perspective is shown in Table 10, in which sales are grouped into categories of businesses that are highly sensitive, somewhat sensitive, and mostly insensitive to changes in travel patterns. As shown, about 4.0 percent of sales in Lamar come from businesses likely to be highly sensitive to changes in travel patterns, and about 1.9 percent of sales in Lamar come from businesses that are somewhat sensitive to changes in travel patterns. Thus, 94 percent of the sales in Lamar are made by businesses that are relatively insensitive to changes in travel patterns.

TABLE 9
Main Street Sales and Employment by Industry Sector

Industry Sector	Sales			Employment		
	Lamar	Main Street	Main Street % of Total	Lamar	Main Street	Main Street % of Total
Sensitive to Changes in Traffic Patterns						
Gas Stations and Convenience Stores	\$7,371,415	\$7,371,415	100%	41	41	100%
Eating And Drinking Establishments	\$8,130,700	\$5,559,234	68%	256	157	61%
Hotels and Motels	\$5,977,764	\$3,956,364	66%	157	118	75%
Retail	\$51,724,742	\$8,008,109	15%	704	193	27%
Subtotal	\$73,204,621	\$24,895,122	34%	1,158	509	44%
Mostly Insensitive to Changes in Traffic Patterns						
Banking and FIRE ^a	\$6,032,675	\$2,650,000	44%	81	39	48%
Transportation	\$33,031,242	\$17,151,000	52%	257	122	47%
Utilities	\$29,543,454	\$12,845,984	43%	15	7	47%
Amusements and Entertainment	\$1,006,810	\$280,000	28%	27	11	41%
Business Social Organizations	\$0	\$0	0%	514	183	36%
Business and Legal Services	\$8,008,577	\$1,245,045	16%	157	27	17%
Consumer Services	\$2,271,333	\$472,000	21%	67	11	16%
Hospitals and Health Services	\$8,655,035	\$1,624,955	19%	170	25	15%
Construction	\$28,719,111	\$818,778	3%	61	5	8%
Wholesale	\$4,397,367	\$0	0%	19	1	5%
Manufacturing	\$129,488,840	\$3,290,000	3%	1,084	45	4%
Agriculture	\$27,288,818	\$1,919,620	7%	417	16	4%
Communications	\$22,828,097	\$737,145	0%	234	7	3%
Social Services and Public Education	\$16,352,867	\$0	0%	556	1	0%
Government	\$30,464,667	\$0	0%	304	-	0%
Subtotal	\$348,088,893	\$43,034,527	12%	3,963	500	13%
Total	\$421,293,514	\$67,929,650	16%	5,121	1,009	20%

^aFIRE means Finance, Insurance and Real Estate.

Source: Dunn and Bradstreet, 2002. Interviews with local businesses, CH2M HILL, 2002.

TABLE 10
At-Risk Sales from Traffic Dependent Businesses

	Sales	Percent of Total Lamar Sales
Highly Sensitive ^a	\$16,887,013	4.0%
Somewhat Sensitive ^b	\$8,008,109	1.9%
Mostly Insensitive ^c	\$396,398,392	94.1%
Total	\$421,293,514	100.0%

^aGas stations and convenience stores, hotels and motels, eating and drinking places along Main Street.

^bRetail along Main Street.

^cOther businesses.

Likely Changes in Travel Patterns

One study conducted in support of the environmental assessment is a license plate origin and destination survey (OD Survey). The methods and results of the study are reported in the technical memorandum titled *Summary of Data Collection, Travel Demand, Forecasting Model Development, and Traffic Results for the U.S. 287 at Lamar Project*. The results of that study provide insight into the travel patterns of persons going to and from the City of Lamar. This is relevant to assessing the potential for economic impacts from travelers that choose to no longer stop in Lamar to purchase goods or services once the new road is in place.

The results of the OD Survey have been summarized in a manner most useful for this analysis in Table 11. As shown, 70 percent of the trips on the U.S. 287 at Lamar are external-local trips, that is, trips either going from Lamar out of town or coming into town and remaining there. Thirty percent of the trips are through trips (external-external), that is, vehicles that are passing through town. Of the through trips, 40 percent of the trips are non-stop trips and 60 percent of the trips stop for some period of time ranging from 15 minutes to three hours in length. It is these through-stop trips that have the potential to be diverted away from town once the new road is in place.

The trip summary indicates that 18 percent of the total number of trips are through-stop trips. Of those through-stop trips, 60 percent of those trips include a stop ranging in length from 15 minutes to two hours in length.

Table 12 uses the OD survey data to estimate the percent of traffic that currently stops in Lamar that may not continue to do so in the future. This is done by estimating the percent of stops of different lengths of time that will use the new road rather than continuing to stop in town. Considering the uncertainty that surrounds this estimate, low and high estimates are provided. In the low case, it is assumed that half of the vehicles making less-than-15 minute stops would use the new road, but that all of the vehicles stopping for a longer period of time would continue to stop in Lamar. This is reasonable because there is very little in the way of comparable services for anything other than fuel or conveniences for many miles outside of Lamar. For the high case, it is assumed that all of the vehicles making shore less-than-15 minute stops would use the new road, 10 percent of vehicles making 15 minute to just under two hour stops would use the new road, and 5 percent of vehicles making longer stops would use the new road.

The results show that 16 to 39 percent of the through-stop traffic could be expected to use the new road. Considering that through-stop traffic is 18 percent of total traffic, the new road is expected to capture 3 to 7 percent of the total traffic on U.S. 287.

TABLE 11
U.S. 287 at Lamar – OD Survey Summary of Trip Purposes^a

	Trucks	Autos	Total
External vs. Local Trips			
External-Local	55%	72%	70%
External-External	45%	28%	30%
Subtotal	100%	100%	100%
Through Trips (External-External)			
Through Nonstop	84%	30%	40%
Through-Stop	16%	70%	60%
Subtotal	100%	100%	100%
Trip Summary			
External-Local	55%	72%	70%
Through Nonstop	38%	9%	12%
Through-Stop	7%	20%	18%
Subtotal	100%	100%	100%
Profile of Through Traffic			
< 15 minute	39%	32%	32%
15-120 minute Stops	57%	60%	60%
120-180 minute Stops	4%	8%	8%
Subtotal	100%	100%	100%

^aEach internal-external or external-internal counted as one trip.
Source: CH2M HILL, 2002.

TABLE 12
Forecast Loss of Potential Business Based on Estimated Use of New Route

	Low Use of New Route			High Use of New Route		
	Trucks	Autos	Total	Trucks	Autos	Total
1. Through-Stop Traffic as Percent of Total Traffic	7%	20%	18%	7%	20%	18%
2. Profile of Through-Stop Traffic						
< 15 minute stops	39%	32%	32%	39%	32%	32%
15-105 minute stops	57%	60%	60%	57%	60%	60%
120-165 minute stops	4%	8%	8%	4%	8%	8%
Subtotal	100%	100%	100%	100%	100%	100%
3. Assumed Percent Use of New Route						
<15 Min stops	50%	50%	50%	100%	100%	100%
15-105 Min stops	0%	0%	0%	10%	10%	10%
120-165 Min stops	0%	0%	0%	5%	5%	5%
4. Calculated Loss of Through-Stop Traffic (2. * 3.)						
< 15 minute stops	19%	16%	16%	39%	32%	33%
15-105 minute stops	0%	0%	0%	6%	6%	6%
120-165 minute stops	0%	0%	0%	0%	0%	0%
Subtotal	19%	16%	16%	45%	38%	39%

^aEach internal-external or external-internal counted as one trip.
Source: CH2M HILL, 2002.

Potential Development at Interchanges

It is common that when a new freeway is built around the outskirts of a town, development gradually occurs in the vicinity of the freeway interchanges. The type of development that occurs usually is targeted to serve through-stop travelers i.e., gas stations and convenience stores, restaurants, hotels and motels, and supporting retail businesses. During our interviews with local businesses, considerable concern was expressed about the potential for businesses moving from downtown to locations in the vicinity of the proposed project interchanges. At this time, there appears to be support at Prowers County to limit development in the vicinity of the interchanges, but long-term prospects for such limitations are always less than certain.

The proposed interchanges for this project are all located outside the Lamar City limits, thus any shift to serving through-stop travelers at the new interchanges rather than along Main Street would result in a net loss of sales tax revenues to the City, absent annexation. This situation has led many cities in other parts of the country to annex the areas around interchanges in an attempt to retain those tax revenues.

In summary, it is possible that new development would occur in the vicinity of the interchanges proposed for the project. Any such development would provide added competition to existing businesses along Main Street that currently serve through-stop traffic, and/or would provide relocation opportunities for those businesses. Any major shifts from serving through-stop travelers at the interchanges rather than along Main Street, would have a negative impact on sales tax revenues to the City of Lamar and corresponding positive effects to Prowers County.

Conclusion

Potential Impacts of the Project on the Local Economy

The long-term operational impact of the project on the Lamar economy could be either positive or negative depending on the course of future events, Lamar land use and development policies, and the perspective chosen for evaluation. While any specific forecast of a change in economic activity resulting from the new road is speculative, there are some comparisons to results from other studies and conclusions that can be made.

The case study of 190 communities (Liff et al., 1996) reported that on average for 25 communities the size of Lamar, the long term trend was for sales of bypassed communities to grow at nearly double the rate of sales at a control group of communities without a bypass (6.1 percent to 3.3 percent). In those communities, nine percent of businesses suffered a decline in sales, however the loss of sales at those businesses was more than made up by expansion of other businesses positively affected by changes in travel patterns.

The Texas study (Sivaramakrishnan et. al., 2002) provides the most quantitative estimates of the impacts of bypasses to traffic-dependent businesses. In their sample of 21 communities, gas stations and service stations were 7 percent of total sales and eating and drinking establishments were 8 percent of total sales, whereas in Lamar, those percentages are only 1.4 percent and 1.7 percent respectively (Table 9). Thus, Lamar's economy appears to be much less dependent upon retail sales than the communities included in that study. Lamar has a more diverse economic base and its overall economy is not highly dependent on through-stop spending, at least in comparison to the communities in that study, or in comparison to other SE Colorado communities as reported in Table 3.

In Table 12, it is estimated that 16 to 39 percent of through-stop traffic would use the new road, or 3 to 7 percent of total traffic. This is much less than what was found in the Texas study where on average 47 percent of total traffic was diverted to the new road. This is additional evidence that the impacts of the new road on Lamar businesses are likely to be less than the impacts on the communities in that study. Further, the Texas study mentions that negative effects on sales began when traffic diversion hit 26 percent for eating and drinking establishments, 31 percent for retail sales, and 43 percent for services. The expected diversion for this project is well below those thresholds.

Another factor noted in the bypass case studies is that impacts to existing businesses are greater the closer the bypassed community is to a major city. In other words, the improved mobility makes the broader array of services of the other city relatively easier to access thus negatively affecting sales in the bypassed community. In the case of Lamar, there are no communities of comparable size for many miles in any direction. Typically, if a traveler intends to stop for anything other than maybe gas or a very quick meal, they would probably still stop in Lamar after the new road is in place.

Finally, the response of the Lamar community will play a large part in the eventual impact of the new road. A proactive response to economic development could lessen any impact to

traffic-dependent businesses and improve prospects for businesses that might benefit from the reduction of truck traffic and through traffic in the downtown area. Also, the extent to which development occurs around interchanges will have a substantial effect on the prospects for a number of downtown businesses.

In conclusion, the overall impact of the new road on Lamar is likely to be relatively minor. It is likely that businesses that depend heavily on through-stop traffic will experience a loss in sales, and some of those businesses may close, but this effect should be countered by an improved business climate for many businesses that would result from the reduction in truck and other vehicular traffic on Main Street.

Fiscal Impacts to Local Government

The project may result in changes that impact the finances of the City of Lamar and Prowers County. A discussion of potential sales tax impacts and property tax impacts follows.

Potential Sales Tax Impacts

According to the 2002 Budget for the City of Lamar, sales tax receipts accounted for 37 percent of total city revenues, and according to the Colorado Department of Local Affairs, sales taxes account for 21 percent of Prowers County 2002 budget. Sales taxes are a major revenue source and the re-routing of U.S. 287 will potentially impact sales tax revenue more than any of the city's other sources of funding.

While it is not possible to quantifiably predict impacts to city and county sales tax collection from the re-routing of U.S. 287, an analysis of business characteristics in Lamar does identify potential vulnerabilities both to businesses along Main Street as well as to city and county tax bases.

Data from Dunn and Bradstreet provided a business-by-business account of sales for approximately 90 percent of all entities in Lamar. Of the remaining 10 percent, roughly half of the entities are government, public utilities, or social services in nature, and sales totals are therefore not relevant to this analysis. Estimates for the remaining entities without Dunn and Bradstreet sales data were made using comparable companies in Lamar.

To arrive at sales volumes for Prowers County, total sales from Lamar were projected using the relationship between employment by sector for Prowers County and Lamar. This assumes that the average revenue per employee would remain relatively constant within a given sector regardless of a business' location in Prowers County.

To see the role that Main Street-adjacent sales tax revenues play in both the Prowers County and Lamar City budgets, Table 13 shows the total revenue collected by each entity from all sources, and the associated estimated amounts of tax revenue received from Main Street vicinity businesses. As shown, sales taxes from Main Street businesses represent approximately 12 percent of Lamar's total revenue and 4 percent of the revenue collected by Prowers County. As discussed above, it is likely that there will be some initial reduction in sales from through-stop traffic that no longer stops in Lamar. However, based on the conclusions reached above about the likely impacts to sales, there is not expected to be significant impact to sales tax revenues for the City or the County.

Further, it should be noted that while gas stations may experience a reduction in sales from diversion of through-stop traffic from Main Street, taxes on gasoline and diesel fuel go to the state and federal government; local governments do not receive revenue directly from the fuel tax.

TABLE 13
Main Street Sales Tax Collections As a Percent of Total Revenue

	Total Revenue (2001)	Sales Taxes Collected from Main Street Businesses	Percent of Revenue from Main Street Sales Tax
Lamar	\$5,242,000	\$618,000	11.8%
Prowers County	\$5,660,000	\$206,000	3.6%

Source: Dun and Bradstreet, City of Lamar, Prowers County, and CH2M HILL, 2002.

Potential Property Tax Impacts

Construction of the project will require the conversion of land from taxable to non-taxable status. Total revenues and property tax revenues for Prowers County for 2001 were provided by the Prowers County Assessors Office. Because the exact route of the new road is uncertain, the Prowers County Assessor prepared a summary of the assessed valuation and property taxes paid for all parcels that might need to be converted, all or in part, to right-of-way for the project. Those parcels had an average assessed valuation of \$5,043 per acre and average annual property tax payments of \$377 per acre. CH2M HILL prepared a conservative (high) estimate of the amount of land that would be converted to right-of-way of 174 acres. Multiplying that figure by the average assessed value and property taxes paid on the affected parcels results in an estimate of \$877,500 in assessed value and \$65,500 in tax revenue that would be affected by the right-of-way needs of the project.

Property taxes are used to provide tax-supported services for many taxing authorities in Prowers County. The distribution of property taxes is as follows: Prowers County (34 percent), schools (47 percent), hospital (8.5 percent), towns (7 percent), special districts and drainage (3.5 percent). For perspective, the County's portion of the revenue lost through conversion to right-of-way would be 34 percent of the \$65,500 per year, or \$22,300, which represents 0.4 percent of the County's total 2001 revenue.

The land that would be converted is primarily agricultural property. The loss of farmland could also result in potentially lower gross income for farmers. This potential loss in value is considered by CDOT when appraising the property to be acquired. The loss of cropland is not expected to significantly affect the overall agribusiness industry of the project area. The potential loss of farmland is a small percentage of total farmland in the county.

Measures to Minimize Potential Impacts

There are a few actions that could be taken by CDOT and the local community to minimize the potential for adverse impacts to local businesses from the project. A list of possible actions based on the experiences of other communities that have been through similar projects follows:

- Design interchanges to ensure easy access into Lamar for travelers that may be considering visiting the downtown area.
- Place signs along the new road that designate Main Street as a business route, and/or include advertising and logo identification.
- Implement roadway improvements to Main Street such as pavement improvements, and changing local traffic and parking patterns to take advantage of the reduction in traffic to make the area more conducive to downtown shopping. Some communities have successfully implemented downtown revitalization plans or restoration organizations to jump start efforts to capitalize on the beneficial aspects of reduced truck traffic and through auto traffic in the downtown area.
- Involve the public early and often during development of the project.
- Provide technical support to local businesses to respond to change, helping them to take effective measures to minimize any adverse effects from the reduction in through-stop travel on Main Street.
- Promote Main Street businesses through information kiosks, hospitality training for business owners and employees, information brochures and other tools can help entice visitors into the downtown area. This requires the successful development and promotion of unique shopping and entertainment experiences within the downtown business districts rather than competing with any new highway and retail businesses that may develop along the interstate. It will also require a coordinated effort of downtown merchants, the City and County, and local residents to develop a vision for downtown Lamar, then take actions to make that vision a reality.

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Appendix – Case Studies of the Economic Impact of Highway Relief Roads

Introduction

There is an extensive body of literature published about the economic effects of highway relief routes, often referred to as bypasses. The studies are conducted using a variety of methodologies with the most common approach being before-after studies that include statistical analysis of the long-term economy of a group of bypassed communities to a control group. Unfortunately, no studies were identified that provided a method for predicting the economic impacts that may result from a highway relief route.

This appendix provides summaries of four of the most applicable studies. The intent of these studies is to identify impacts discovered in those studies that may be applicable to the U.S.287 at Lamar project.

Case Study 1 – Summary Results from 190 Studies

Source: Liff, Sally D., Jesse L. Buffington, and Katie Womack. *Synthesis of Information Related to Highway Problems, Effects of Highway Bypasses on Rural Communities and Small Urban Areas*. NCHRP Project 20-5, Research Results Digest No. 210, Transportation Research Board, National Research Council. May 1996.

This report summarizes the results of 190 studies of the impacts of highway bypasses on economic and social conditions in rural communities and small urban areas. The study focuses mainly on effects to business sales.

As shown in Table 1, most studies have found that a highway bypass has a net positive impact on the local community. Not surprisingly, that finding does not apply to traffic-serving businesses along the old route, for which about half of the studies found that the bypass had a negative impact on traffic-dependent businesses.

TABLE 1
Effects of Highway Bypasses on Communities

	% Positive	% No Impact	% Negative	% Total	Number of Studies
Overall community	89	4	7	100	141
Traffic-serving businesses along old route	30	22	49	100	88

For studies that compared the long-term business growth for a bypassed community to a control community with similar characteristics, the following results were reported for

average annual change in sales in 25 communities ranging from 5,000 to 10,000 in population:

- Sales growth for bypassed area 6.1 percent
- Sales growth in control area 3.3 percent
- Sales declined at bypassed area businesses 9 percent

In a summary of the results of 25 studies of bypassed communities ranging from 5,000 to 10,000 in population, the average annual changes in sales along the bypassed route was reported as follows:

- Sales growth for traffic-serving businesses 4.7 percent
- Sales growth for all businesses 3.8 percent
- Percent of cases with sales decline at traffic-serving businesses 28 percent

Other conclusions from the literature include:

- Studies of highway bypasses and their effects on the bypassed community indicate that bypasses generally result in decreased retail sales, gasoline service receipts, restaurant sales, and service receipts. The initial decreases are often counteracted by reorientation and refocusing of local stores to the change in customer mix. The economic impact of highway bypasses on small cities in a rural setting is not uniform across cities. Some factors that determine those impacts include:
 - The size of the city: smaller cities are typically impacted more severely than larger cities.
 - Average daily traffic of the highway: the greater the traffic flow, the more beneficial the long-term prospects for through-traffic-dependent local businesses.
 - The economic base of an area: the more inflows of funds to the local economy are affected by the highway, the more the bypass will affect local businesses.
 - A highway bypass may cause a decrease in business volumes in small cities. However, other factors such as increases or decreases in economic base industries (e.g., tourism) or in the local and regional economy appear to be more important in determining the overall level of business sales and employment.
- Bypasses typically seem to have a favorable impact on rural communities and small urban areas, but evidence in these studies is often weak. Interviews and survey of residents and businesses indicate that bypasses increase development potential along the fringe areas served by the new route, and at the same time relieve congestion, safety hazards, and other undesirable conditions in the central areas from which traffic is diverted.
- A potential impact of a bypass is that a downtown business district will suffer a decline in retail sales due to lower main street traffic volumes. In some instances, this decline was offset by increased sales at new developments near freeway interchanges. Many bypassed communities that suffered a reduction in retail sales experienced a transformation of the downtown area from a center of retail activity to a center supporting more professional and service businesses.

Case Study 2 – Analysis of Impacts on 21 Bypassed Communities in Kansas

Source: Burress, David. *Impacts of Highway Bypasses on Kansas Towns*. Report No. K-TRAN:KU-95-5, University of Kansas. October 1996.

This report was prepared by the Institute for Public Policy and Business Research for the Kansas Department of Transportation. It provides literature reviews, empirical findings, and policy analysis related to some of the effects of building a highway bypass around a small town in Kansas.

This study uses three types of models to estimate impacts:

1. An origin-destination model of Kansas was developed showing the number of trips that take place between each town and city in Kansas. This model was used to estimate the amount of local traffic and through traffic in every town and city in Kansas.
2. A model was developed and data was gathered to estimate the value of the time-savings generated for through traffic by bypasses in Kansas.
3. A variety of economic impact models were developed and estimated using regression analysis of economic data from several sources. These models were used to quantify the effects of bypasses on business activity in bypassed towns.

The authors state that the basic findings from their models were straightforward and consistent with previous research in other states.

1. In the long term, typical bypasses in Kansas probably do not have significant negative effects on the local economy.

Most counties and many towns may have benefited in the long term from the construction of bypasses. The major part of this benefit probably consisted in an encouragement of basic industries, presumably due to the improved transportation system. Growth in basic industry would then have indirect effects on local retailing and services.

2. In the short term, effects on individual firms are different from effects on the aggregate work force.

In Kansas towns, bypasses typically did not have negative short-term effects on the town as a whole. Bypasses did have transitory negative impacts on selected firms. The negatively impacted firms are concentrated in travel-related businesses, including restaurants, bars, motels, and services stations. However, not all travel-related firms in a bypassed town were negatively impacted.

3. There is a large amount of background variation in the experience of individual towns and individual firms.

The average effects of bypasses are generally small in comparison to this background. Moreover, individual towns and firms could be affected by bypasses in ways that differ quite a lot from the average effects. In particular, it is possible that some towns suffered

permanent gains or losses due to bypasses. Also, some individual firms may have chosen to go out of business rather than adjust to changed circumstances caused by the bypass. Those firms were replaced by other firms.

4. The size of this unrelated background variation implies that many factors other than bypasses affect the economy of small towns and of individual firms, and these various factors together are substantially more important than the bypasses.

In particular towns, these factors could either offset or exaggerate the apparent effects of bypasses. Two important factors that were touched on directly in this report are the short-term effects of recessions (the 1990-1991 recession in particular), and the long-term health of small towns in Kansas. The recession was found to have an effect on the growth of travel-related firms that was substantially more negative in small bypass towns than in the rest of the country. The growth rates of businesses in small towns were found to be less than the corresponding growth rates in the rest of the country, both before and after the bypass was built.

5. Bypasses around small towns are highly beneficial to through traffic.

Bypasses of 21 small towns in Kansas generated average time-savings for through traffic that are conservatively valued at upwards of \$1 million per year (in 1994 dollars). Even if we ignore all other benefits of the bypass, then such a bypass would be justified on a benefit-cost test if the present value of all costs was less than \$10 million (assuming a discount rate of 10 percent). Assuming the initial costs of land acquisition and construction constitute at least half of the social cost, then such a bypass would be justified in a benefit-cost test if those initial costs were less than five million dollars. (Individual bypasses could be either less or more valuable, depending on the traffic volume and the time saved per vehicle.) Larger costs could almost certainly be justified, but doing so would require a more detailed analysis.

6. The results in this report show that bypasses have probably not been noticeably harmful to small towns in Kansas in the aggregate or in the long term. Yet in the short term, real costs may be borne by certain individual firms.

This report examined three kinds of individual stakeholders in small towns: business owners, workers, and (to a lesser extent) taxpayers. The costs borne by individual workers and by taxpayers do not appear to be especially onerous. The same can be said for many of the business owners. However, in some cases particular business owners, probably concentrated in travel-related business, may experience real economic stress. Moreover, in advance of the construction, some legitimate apprehension might be felt by business owners even if they later turn out not to bear any stress. This apprehension is itself a cost to the business owners. Public agencies might respond to the uncertainty and stress faced by individual business owners in several ways:

- A promise of compensation. For example, public agencies do sometimes subsidize the costs of relocating the firm in cases where existing business access would be land-locked by the bypass. Knowledge that costs to the firm will be compensated certainly will reduce apprehension.

- Assisting businesses with technical support for responding to change, helping them take effective steps to reduce adverse consequences to the business.
- Actually reducing uncertainty by increasing the firm's knowledge about what will happen to its particular business. In other words, we need predictive models at the level of the individual firm.
- Taking redistributive effects into account when deciding whether to build a bypass.

Case Study 3 – Effects on Traffic-Dependent Businesses in 23 Bypassed Communities in Texas

Source: Srinivasan, Sivaramakrishnan and Kara Maria Kockelman. *The Impacts of Bypasses on Small- and Medium-Sized Communities: An Econometric Analysis*. Journal of Transportation Statistics, Volume 5, No. 1. 2002.

This study uses sophisticated statistical techniques to examine the effects of a highway relief route on retail sales for four industry groups that are, in part, dependent on sales to through-stop travelers: total retail sales, two subsectors of retail sales (gasoline service stations, eating and drinking establishments), and services. The study compared sales figures in 23 based communities to those of a control group of 19 cities. All of the bypassed communities had populations ranging from 2,500 to 50,000 and only communities with a single bypass were considered for the study. Nine years of data were collected for each community to capture before and after effects.

A number of factors thought to potentially influence the direction and magnitude of effects were modeled including population, percent of population that is elderly, unemployment rate, per-capita income, the ratio of the population of the nearest large city to its distance to the community under study, per-capita traffic, the ratio of traffic volume on the new route to traffic volume on the old route, the length of the bypass, the distance of the new route from the old route, the number of years and number of years squared (to capture lagged effects), and state level per-capita sales, and the year (to capture long-term economic trends).

Key findings of the research include the following:

- As one would expect, the percent of traffic diverted to the new route (traffic split) has a significant negative impact on sales. For the 19 cities studied, 47 percent of traffic (on average) was diverted to the relief route and 53 percent remained on the original route. The overall impact of the bypass on each sector becomes negative when diverted traffic hits the following thresholds: 31 percent for retail sales, 26 percent for eating and drinking establishments, 43 percent for service industries. Impacts on gasoline service stations are negative regardless of the percent of traffic diverted.
- The marginal impact of the traffic split is negative. The data on per-capita Average Annual Daily Traffic were grouped into four quartiles (1.326, 1.959, 3.180, 5.132). The results indicate that the negative impacts decline as traffic volumes in the city increase. The population of the city reduces traffic to the relief route: Larger cities are less likely to lose traffic to the new route. The city's proximity to a large city increases the traffic split.

The longer the relief route, the greater the traffic split. The magnitude of the split increases with time, then eventually stabilizes.

- The impact of a bypass is most negative on gasoline service stations, and the impact on the other three sectors depends critically on the traffic split. When about half the approaching traffic is diverted to the bypass, all four sectors were negatively impacted. Thus, the better a relief route works from a traffic standpoint, the greater its impact on per-capita sales. The service sectors are minimally impacted by a bypass.
- The bypasses had a modest negative effect on population growth and per-capita income levels. The population growth rate declines 0.036 percent per year (3 persons per year for Lamar), and per-capita income levels decline 0.6 percent per year (\$50 per-capita per year for Lamar).
- For perspective, retail sales in the group of communities analyzed represent about 50 percent of total sales (the sum of retail, service, and wholesale industries). Service industry sales constitute about 16 percent of sales with wholesale sales representing about 36 percent. Gasoline service station and eating and drinking places represent 7 and 8 percent of total sales, respectively.
- There are several other economic benefits and non-economic benefits that should be considered in a complete evaluation of a bypass project, such as safety, and ease of movement downtown.

Prior research conducted on the same sample communities (Anderson et al., 1993) showed that a bypass generally brought a small, but statistically significant, decrease to business volumes in bypassed cities. Econometric models were developed to relate total retail sales, gasoline service receipts, restaurant sales, and service receipts to the pertinent characteristics of the area. The highway bypasses were estimated to cause about a 15 percent decrease in gasoline sales, and a 10 to 15 percent decrease in restaurant sales. When access is limited on the bypass, the decrease in retail sales was estimated to be about 20 percent. The existence of a bypass was also estimated to cause a small (unreported) decrease in service receipts.

Individual case studies of bypassed communities were also conducted. The results of those studies show that local communities might not necessarily perceive bypasses as negative. Rather, the construction of a bypass is seen as one of many factors contributing to the overall economic performance of a city in a rural setting. The initial decreases in certain types of sales were often counteracted by reorientation of local stores to the change in customer mix. Political and business leadership in a given area seems to play an important role in the evolution of the city after bypass opening.

The study concluded that road investment in highway bypass construction normally produces benefits for road users in the form of reduced journey times and vehicle operating costs and an improvement in safety. It reduces environmental nuisance from traffic to residents and pedestrians along the bypassed roads. In addition, highway transportation projects such as bypass construction normally produce local economic impacts of the following nature: a) the creation of jobs and subsidy revenue from facility planning, construction, and operations; b) the indirect impact of increased productivity because of reduced transportation costs and delays; and c) the indirect impact of all of the above on nonusers because of the multiplier effect.

Site visits and interviews conducted in six cities helped illuminate the inner functioning of small cities in rural areas. Key findings of this aspect of the study include:

1. In general, the bypass is not perceived by local residents to have had a devastating impact on any of the communities that were visited. The case studies do not suggest a strong relationship between a bypass and economic growth. Other factors, such as fluctuation in the agriculture or oil business, continuing urbanization trends, and establishment of large discount stores within the market area, have a much stronger effect on local businesses.
2. Local business and political leaders can exert a strong influence on a local community and businesses and their evolution after bypass opening.
3. Spatial changes are often confined to increased activity toward and at the point at which another highway intersects the bypass. Few establishments were found at the split between the bypass and the bypassed route.
4. The removal of a portion of through traffic from the downtown streets, especially heavy vehicles, is seen in a positive light. Improved safety and cleaner air are perceived as the most important benefits.
5. Downtown businesses have typically experienced a drop in sales after the opening of the bypass. However, this drop was in many cases temporary, as business owners restructured their stores or reoriented their businesses. Many gas stations have closed on the bypassed route, corresponding to general declining trends as a result of industry restructuring nationally.

Case Study 4 – Study of 21 Bypassed Communities in Iowa and Minnesota

Source: Otto, D., and C. Anderson. *Economic Impact of Rural Highway Bypasses: Iowa and Minnesota Case Studies*. Midwest Transportation Center. January 1995.

This study analyzes the impacts of rural highway bypasses on local merchants and businesses for 21 cities and small towns in Iowa and Minnesota. The effect on overall retail sales in bypassed communities is examined by comparing each city to three comparable “control” cities without bypasses for comparable periods. Control cities were chosen to have populations, traffic volume, and distance from metropolitan areas comparable to the bypass cities. Next, total sales are separated into categories or classes of retail sales to analyze the impacts upon different types of businesses that may be attributed to the bypass. Finally, the effects of the bypass on individual merchants is examined through a personal survey of business operators in the Iowa bypass communities assessing their attitude to the bypass impacts.

The results from analyzing the secondary data indicate that the overall levels of retail sales in a community are not significantly affected by the presence of a bypass. Breaking retail sales into component categories indicated some minor re-distributional effects where bypass cities experienced lower sales compared to the control group for furniture, auto, and wholesale trade sales, while sales improved in building supplies and miscellaneous sales. The report found strong similarities in the responses of rural communities to bypasses in

both Iowa and Minnesota. Geographical, economic, and cultural similarities in these two states may explain similar responses in communities with new bypasses.

The benefits of an improved flow of traffic from bypasses around rural communities along a transportation corridor usually exceed losses of retail sales in the aggregate. Several classes of businesses oriented to highway customers indicated levels of improved retail sales. Businesses serving the local trade area and those which are dependent on repeat customers are likely to benefit from an improved downtown shopping environment. A transfer among individual business owners appears to be occurring in communities where certain businesses along the old highway close and others open along the new bypass. Over time, the majority of merchants appear to be adjusting to the new situation and report being in favor of the bypass.

The analysis of the survey data collected from individual business owners in the bypass communities indicates that an overall majority of respondents favored the bypass. For example, retail merchants were asked "Based on your experience with the bypass, would you still favor the bypass?" The number of people in favor was three times greater than the number opposed. Another question asked merchants to describe the impact on their businesses since the bypass opened. Most (53 percent) thought that the bypass had no significant impact.

When survey results were summarized by city, responses in two of the eleven Iowa cities reported high levels of negative impacts on businesses, customers, and overall shopping environment, and one of those cities reported more business owners opposed to the bypass than in favor: the authors speculate that these opinions result from a high dependence on tourism from through-stop traffic in that city (McGregor, Iowa).

Regardless of location, a majority of merchants agreed that traffic volume and noise had decreased since the bypass. They thought the shopping environment and accessibility of suppliers and delivery trucks to their place of businesses had improved or not changed since the opening of the bypass. However, the location of a business in relation to the new bypass did affect the owners' perception of impact on business activities. New businesses along the bypass were most positive about the bypass and its impacts on sales while business along the old route and away from the downtown central business district were least positive and reported that business activities were adversely affected.

The type of business being operated was another important factor affecting merchants' perception of the bypass. Service industries and highway-oriented businesses were more positive than general merchandisers, and reported business activities improved or unchanged since the bypass opening. In addition to the influence of bypasses, merchants also listed regional shopping malls and general declines in rural retailing as factors affecting their level of business activity.

Several other characteristics appeared to be important in affecting receptiveness of businesses to the bypass. Merchants who have been in business for longer periods of time are more likely to favor a bypass. Merchants in county seat towns were more likely to favor a bypass than those that are not. Also, the greater the distance from the bypass to the CBD, the more likely the merchants are opposed to the bypass.

A change to a community such as the introduction of a bypass can be an opportunity to encourage merchants to make necessary adjustments in their way of doing business. They can begin planning activities to offset challenges and problem areas introduced by their changed circumstances. The area near the bypass could be zoned commercial and the central business district could be promoted as a retailing center. These activities could help stabilize the community retailing base and help unify merchants toward a common community goal.