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NAFTA Transportation: The Impacts of Southern Border Trucking on the Texas Highway System

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Introduction

United States' merchandise exports to Mexico increased from \$41.5 billion in 1993 to an estimated \$78 billion in 1998, or by 14 percent annually. With Mexico's dramatic increase in the importation of U.S. goods, it has become the United States' second-largest trading partner, surpassing Japan.¹ This is a trend that is expected to continue as more U.S. and global corporations move value-added facilities to Mexico. This current rise in trade between the United States and Mexico has developed a new demand for the transportation of freight between the nations. The combined transportation industries (air, ship, pipe, mail, and truck) moved \$173.7 billion worth of goods between the United States and Mexico in 1998.²

The increased transportation needs that have arisen because of NAFTA have placed new demands on the Texas Highway System. In order to further explore these new demands, this report examines all U.S. – Mexico modes of transportation and the reasons trucks have become such an important component for NAFTA trade. In addition, the report explains why Texas roads are affected more than other states. Finally, the increased traffic flow from NAFTA in Texas is inspected.

Modes of Transportation

During 1998, air cargo only accounted for \$7.57 billion, or 4.4 percent, of U.S. - Mexico trade. Air shipments are limited because of space and size considerations; moreover, they are also expensive when compared to other transportation options. In many cases companies that ship small, lightweight cargo use this type of transportation. For example, this mode of transportation plays the most important role in the electronics industry, as this industry ships a large volume of smaller packages. In 1998, the United States exported more cargo (\$4.60 billion worth) by air to Mexico than it imported from the country by the same means because a large percentage of U.S. exports to Mexico are intermediate materials that are assembled into complete parts or products in Mexico's maquiladora industry. In many cases, the products imported back into the United States are heavier than those exported to Mexico as a result of processing.

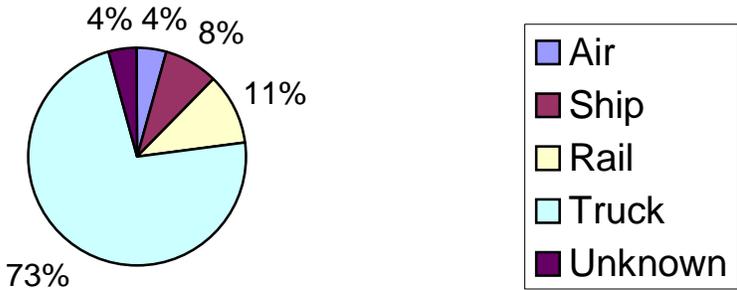
Thus, only 3.1 percent (\$2.97 billion) of U.S. imports from Mexico came by air in 1998, while 10.6 percent, or \$10.02 billion, of imports from Mexico were transported by water vessel in the same year (see Charts 1, 2, and 3).

In most cases, water vessels are used to carry heavier and larger cargo loads than those taken by air. While air cargo transported only 61.48 million pounds of cargo from the United States to Mexico in 1998, it had a value of \$4.60 billion, or 5.8 percent of the total value of goods exported to Mexico. During the same year, water vessels were used to carry 18.55 billion pounds of U.S. exports to Mexico, however, this only amounted to \$4.25 billion worth (5.4 percent) of exports to Mexico. Overall, these vessels carried 8.2 percent, or \$14.27 billion, of the total trade value between the United States and Mexico in 1998. Of this amount, the United States imported \$10.02 billion worth of trade from Mexico by water vessel, or 10.6 percent of the total value of U.S. imports from Mexico. One of the primary reasons given for the low percentage of trade by sea vessels, especially exports from the United States, is the poor condition of the Mexican seaports. These ports have been neglected for some time and many companies have chosen to bypass them by shipping their sea going cargo to Houston, and from there, the cargo is transported to Mexico by truck, a point to which we shall return (see Charts 1, 2, and 3).³

A majority, 87.4 percent, (\$151.8 billion) of the total value of U.S. - Mexico trade was moved in 1998 by surface modes of transportation which include mail, pipe, rail, and truck. The least important of these surface modes is mail, which only carried \$262,098 worth of goods in 1998.⁴ In the same year pipelines, which are limited to transporting liquid and gas products, only moved \$75.75 million worth of freight. Both of these modes of transportation combined did not even represent one percent of all trade between the United States and Mexico (see Charts 1, 2, and 3). (Although, these numbers might be slightly higher in reality because the Bureau of Transportation Statistics reports that 4.2 percent of the value of products transported by surface mode is unknown or done by some other type of surface transportation mode.)

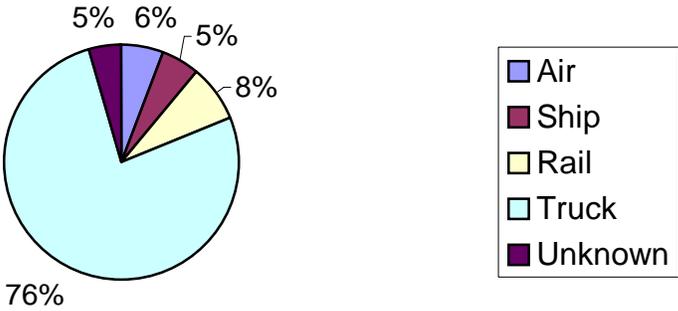
The most important modes of surface transportation and overall transportation across the U.S. - Mexico border are rail and truck. The rail system is the second most utilized mode of transportation

Chart 1: Total U.S. - Mexico Trade by Mode in 1998 (Base on Value)



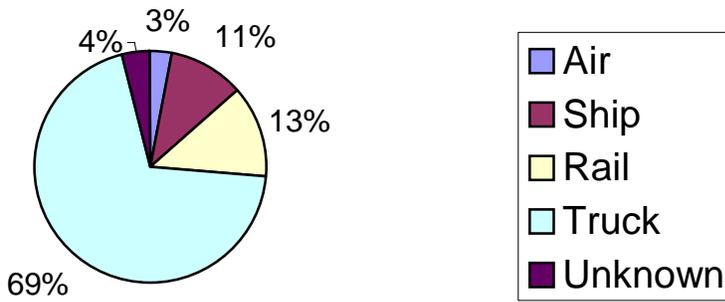
Source: U.S. Department of Transportation, www.bts.gov

Chart 2: Total U.S. Exports to Mexico by Mode in 1998 (Based on Value)



Source: U.S. Department of Transportation, www.bts.gov

Chart 3: Total U.S. Imports from Mexico by Mode in 1998 (Based on Value)



Source: U.S. Department of Transportation, www.bts.gov

between the United States and Mexico, carrying 10.5 percent of the total trade value (\$18.22 billion) in 1998 between the countries. Since 1991, Mexico has started to modernize its rail infrastructure. Projects include upgrading freight corridors for increased freight capacity, allowing tracks to handle double-stack container traffic, enlarging tunnels, rail-line relocation, reducing grades in mountainous areas, reducing sharp curves, and electrifying tracks.⁵ Furthermore, Mexico has also begun the process of privatizing the rail system. These improvements have helped the railways to become more productive. The rail share of traffic in Mexico increased for the first time in 1996 from 12.5 percent to 15 percent.⁶ Railway officials hope to increase railway traffic by an additional 16 percent by the year 2007, primarily by trying to cut into the trucking industry's share of the transportation business in Mexico.⁷ Although rail cost 30 percent to 50 percent less than trucking in competitive routes, many feel that trucking is the most efficient way to transport cargo. One of the main reasons trucking is the most popular mode of transporting goods across the U.S. – Mexico border (72.7 percent of all trade in 1998) is the demand for *just-in-time* inventory delivery systems, which many businesses and most maquiladoras use to operate. Such a production process does not favor the rail system and its history of delays.⁸

Just-in-time (JIT) manufacturing is a Japanese management philosophy, which involves having the right items of the right quality and quantity in the right place at the right time. North American companies have implemented many aspects of JIT, especially when it comes to inventories and the transportation of goods. Furthermore, the growing Mexican maquiladora industry uses the just-in-time delivery system to operate a large proportion of its facilities.⁹ Although this philosophy deals with many steps in the manufacturing process, it is the JIT delivery system that places the greatest demands on the transportation industry. The focal point of JIT is the elimination of waste, and waste is anything that does not add value. In order to cut this waste, JIT systems decrease the time lapse between material arrivals, processing and assembly of the final product for consumers. This is done by reducing raw material, working process, and finished goods inventories. In turn, this reduces the waste of space needed for inventories, over production to keep such an inventory, and the need to hire people to operate large inventory departments.¹⁰ With JIT, intermediate and final products are being moved more frequently on a tighter schedule from factory to factory and then to the customer. For this system to work, there must be an increase in the frequency of deliveries with smaller amounts of material.

Why Texas?

The trucking industry seems to be the segment of the transportation industry best equipped to meet these JIT demands because it can provide a higher frequency of deliveries with less delays and it can carry the needed size of loads to specific locations for JIT manufacturing. Consequently, trucks have increasingly become critical since the implementation of NAFTA. Texas A&M reported that between 1993 and 1997 the number of northbound trucks crossing the border increased 88 percent to 960,000 annually and the number of southbound trucks crossing the border increased 30 percent to 1,300,000.¹¹ This massive increase in trade and truck traffic led the California Department of Transportation (Caltrans) to conduct a study on trade coming north across the California – Mexico border by truck, which serves as a basis for further discussion of NAFTA – related trucking.

The Caltrans study found that 75 percent of the goods crossing into California from Mexico stayed in California. Furthermore, a majority of these goods remained in Southern California.¹² One of the main reasons goods transported into California by truck do not leave the state is because of California's geographical location. California is one of the farthest states from the main areas of trade with Mexico

(Mid-West and Northeast regions of the United States). Thus, most of the goods imported at the land ports in California are meant to stay in the state.¹³ Moreover, California, with the world's 6th largest economy, creates its own demand and markets often placing it outside other sectoral discussions. However, most of the states with the highest percent of trade with Mexico are located in the Northeast and Midwest United States, and the shortest route to and from Mexico is through Texas.

Most of the \$11.8 billion worth (or half) of Mexican imports that were delivered to states in the Northeast, East North Central and South, were brought through two ports - Laredo and El Paso.¹⁴ Thus, 80 percent of the overland trade-flow between the United States and Mexico crosses in Texas. As a result, officials from the Texas Department of Transportation estimate that traffic increases will range from 25 percent to 88 percent in counties along the three main NAFTA corridors in the state between 1993 and 2011 (Interstate 35, Interstate 10, and U.S. Highway 59). Furthermore, the number of trucks that cross into Texas from Mexico are projected to increase by 1,600 to 6,400 trucks per day by 2011.¹⁵

Increased Truck Traffic in Texas

Texas has more than 77,000 miles of state-maintained roadway that includes 3,200 miles of Interstate Highways, 12,100 miles of U.S. or State Highways and 41,000 miles of farm-to-market roads, plus municipal roads. These roadways are connected to Mexico's road system via 24 international bridges, which are mainly owned on the U.S. side by the city or county, while five of the Texas border crossings are privately owned. Beginning in the 1990s, Interstate Highways 35 and 10 have served as the primary transportation arteries in Texas and they will continue to dominate in the future. In order to accommodate the increasingly burgeoning traffic, especially the commercial truck traffic generated by NAFTA, substantial investment in maintaining and improving Texas' main traffic arteries will be required for I-10, I-35, as well as U.S. 59.¹⁶

Interstate-35 carries the greatest percentage of trade among the NAFTA partners.¹⁷ Traffic on I-35 as a whole grew by one third between 1990 and 1995, while traffic has quintupled between Laredo and Austin and between Waco and Hillsboro from 1960 to 1993. The Texas Department of Transportation estimates that traffic will increase by 50 percent to 75 percent in the counties through which I-35 passes between 1993 and 2011. Furthermore, NAFTA trade could raise those projections by 700 to 2,800 trucks per day. For example, Frio County, which is southwest of San Antonio, Texas, was expected to have an

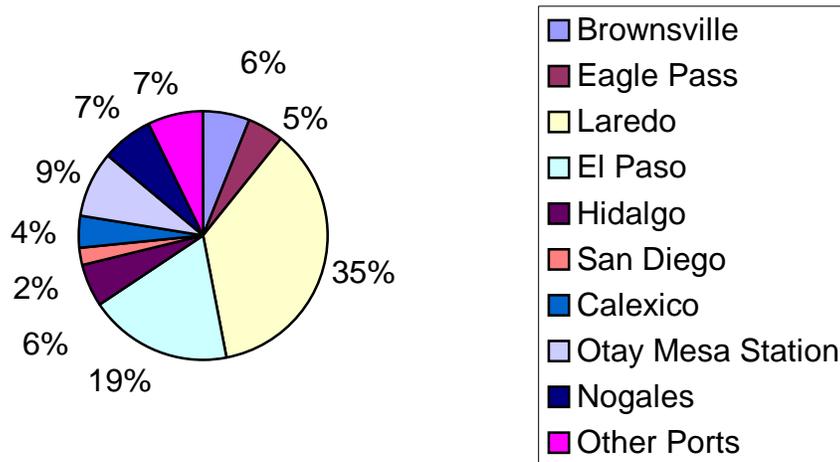
increase in traffic from 11,200 vehicles per day in 1993 to 19,500 vehicles by 2011; however, with the impact of NAFTA, traffic could mount up to 22,300 vehicles per day (including 6,800 trucks) in 2011. The area between Austin and San Antonio, Texas could see as many as 84,800 vehicles per day, including 11,200 trucks due to NAFTA. The area around Waco, Texas is likely to have an increase in traffic from 35,000 in 1993 to 60,900 by 2011 and could reach 63,700 (with 14,800 trucks) with the implementation of NAFTA.¹⁸

Interstate-10 is not going to see as great of an impact as I-35 on most of its road surface because the bulk of NAFTA-related traffic occurs around El Paso, which serves as a link to the northeast. Interstate -10 acts as a connection to U.S. 54, which is used to carry international goods to the rest of the country. Although most NAFTA goods are transported to the North, a substantial percentage of the goods go to California and the Carolinas, resulting in I-10 being used to transport these goods. In fact, Hudspeth County (east of El Paso) should see an increase in NAFTA traffic from 8,500 per day in 1993 to about 13,800 in 2011. When NAFTA truck traffic is included with the estimate of road use, Hudspeth Country should have around 16,200 vehicles a day travel along I-10. While most traffic on I-10 in San Antonio and Houston areas are local, NAFTA should have minimal effect on traffic. Nevertheless, NAFTA is predicted to increase traffic in the counties east and west of Houston. Colorado County (west of Houston) could mount from 24,000 vehicles a day in 1993 to as high as 32,400 in 2011. In Chambers County (east of Houston), NAFTA could increase the volume to as high as 41,700 vehicles with as many as 13,200 trucks per day compared to only 28,000 vehicles in 1993.¹⁹

U.S. Highway 59 is estimated to have an increase in traffic between 35 percent and 90 percent by 2011 and NAFTA trade could boost those projections by 300 to 1,200 trucks per day. Traffic could climb as high as 5,400 vehicles a day (counting truck traffic) along U.S. 59 around Laredo, up from 2,500 in 1993. Victoria County (northwest of Corpus Christi) could show an increase in vehicle traffic from 15,900 in 1993 to 23,000 in 2011 and possibly up 24,200 vehicles with a high NAFTA impact. Traffic in Polk County, just north of Houston, is projected to have a rise from 16,700 vehicles in 1993 to a possible high of 23,700 in 2011.²⁰ It is important to report that these predictions could be effected by the construction or the non-construction of the I-69 corridor, which would connect U.S. 59 to the northeastern part of the United States.

These three traffic arteries in Texas are the most important NAFTA-related roads systems in the state. However, they may not reach the high use estimates predicted by the State of Texas because of the non-implementation of NAFTA's trucking provisions. Yet, the use of these highways will continue to grow because they connect the remainder of the United States to the busiest land ports in the country (El Paso and Laredo, Texas). The El Paso ports of entry in 1998 were used to transport 18.6 percent of the value of all surface trade between the United States and Mexico, while the Laredo ports of entry were used as a corridor to transport 36.1 percent of the total value of land trade in the same year. These ports together were used to transport more trade (based on the value of goods transported) between the United States and Mexico than all the other land ports combined for a total of 54.7 percent of the land trade between these nations in 1998 (see Chart 4).²¹ Clearly, these two ports of entry are the most important ports on the U.S. – Mexico border because they are used to import goods that are then transported to the rest of the United States. Moreover, these ports are the destinations for most of the goods that are being exported from the United States to Mexico; hence, NAFTA truck traffic in Texas has increased and will continue to grow.

Chart 4: Value of U.S. - Mexico Trade by Southern Border Port



Source: Texas A & M International University, *Imports from Mexico Total Year 1998 and Exports to Mexico Total Year 1998* <http://tamiu.edu/coba/bti/tables/import98/yearlyim98.html>, 29 September 1999.

Endnotes

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