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IH-30 VALUE PRICING PROJECT FOR THE DALLAS DISTRICT

by

Christopher Poe, Ph.D., P.E.
Assistant Agency Director
Texas Transportation Institute

Roberto Macias
Research Associate Scientist
Texas Transportation Institute

David Ungemah
Associate Research Scientist
Texas Transportation Institute

and

Tina Collier Geiselbrecht
Associate Transportation Researcher
Texas Transportation Institute

CASEY, should we add her name?

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TEXAS TRANSPORTATION INSTITUTE
The Texas A&M University System
College Station, Texas 77843-3135

DISCLAIMER

This research was performed in cooperation with the Texas Department of Transportation (TxDOT) and the Federal Highway Administration (FHWA). The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the FHWA or TxDOT. This report does not constitute a standard, specification, or regulation, nor is it intended for construction, bidding, or permit purposes. The engineer in charge was Christopher Poe, Ph.D., P.E. #XXXXX

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I. INTRODUCTION

The limited space to build new roads, fiscal constraints of federal and state government investment to fund new road construction or add additional capacity to the existing road infrastructure, and the need to use the roads in a more efficient manner has triggered in the recent years a trend to look for alternative ways for addressing the country's transportation needs. One of these alternatives that has become increasingly accepted by politicians, decision-makers and the public is value pricing.

Value pricing in roads, also known as congestion pricing, is a way of controlling congestion in a road by charging users a fee that varies depending on the level of congestion. Users are charged higher tolls during peak periods and lower tolls during off-peak periods. In most cases the objective is to keep the speed above a certain level or not to exceed a predetermined traffic volume. As a result, value pricing promotes the use of roads in a more efficient manner by incentivizing users to shift their trips to off-peak times, carpool, shift modes, or look for alternative routes. Although the value pricing concept has been used for several decades in other sectors, such as airlines, hotels and utilities, its use in roads (and potentially other transportation modes such as air and water) has only become more popular in recent years.

Several value pricing projects have been implemented in the United States in the last ten years such as SR-91 in Orange County, IH-15 in San Diego, IH-394 in Minnesota, and SR-167 in Seattle. In the Dallas-Forth Worth (DFW) region, the Texas Department of Transportation (TxDOT) is in the process of implementing value pricing on the I-30W Managed HOV lanes. This will be the first value pricing application in the region.

The project is being deployed in three phases: HOV, Value Pricing, and Ultimate. This report describes the current state of the I-30W value pricing project (VPP). The Texas Transportation Institute (TTI) has been supporting the efforts of the Texas Department of Transportation (TxDOT) – Dallas district as I-30 West corridor is being reconstructed. Through the Federal Highway Administration's Value Pricing Program the corridor is serving as a test bed to test the efficacy of several operational strategies. The experience and knowledge gained from this project will become extremely useful for many future value pricing projects that will be deployed in the near future in the DFW region. As part of that effort and in support of pre-implementation efforts, TTI has conducted the following tasks:

- Data Collection and Evaluation: describes the metrics developed at the beginning of the project to answer key questions related to the implementation of value pricing on I-30W and presents the findings to date.

- Survey: to gather public opinion as it relates to congestion in DFW, perception of the region's HOV lanes and I-30W HOV lanes, and the introduction of congestion pricing in the near future on I-30W.

- Focus Groups: focus groups of targeted individuals recruited from the survey were conducted to delve more deeply into opinions and information learned in the survey.

- Stake Holder Interviews: interviews were conducted to gather input from targeted employers and facility operators in the I-30W corridor. The objective of the interviews is to allow for a better understanding of the issues and concerns regarding HOV operations, managed HOV lanes, and aspects of pricing.

SYSTEM OVERVIEW

The DFW region's 2030 Transportation Plan designates several corridors to include managed HOV lanes, including I-30W. The DFW region conducted a regional value pricing study that ranked the priority corridors for value pricing. The I-30W corridor was the highest ranked corridor and was granted designation as a Value Pricing test corridor by the US Department of Transportation. In addition, the Texas Legislature has passed legislation in the past three sessions that gave authority for TxDOT to develop toll road projects on the state system. Additionally, several major investment studies, including the I-635 Lyndon B. Johnson Corridor Major Investment Study, recommended managed lanes as part of their Locally Preferred Alternatives (LPA), which received local municipal support (1).

The I-30W corridor consists of a new managed lane facility which is built in the median of the general purpose lanes. Consistent with regional and state policy, the I-30W managed lanes (ML) is being implemented in phases with HOV-only operation as the first phase. Value Pricing will be applied to this managed lane facility. The I-30W managed lanes ML facility consists of a combination of one and two lane reversible flow segments. The two-lane section serves the high demand between SH-360 and Loop 12. The value pricing will be implemented to help ensure the one-lane section has high level-of-service.

The I-30W VPP is being jointly developed by TxDOT, Dallas Area Rapid Transit (DART), and North Texas Tollway Authority (NTTA) in collaboration with the North Central Texas Council of Governments (NCTCOG). This development includes the planning, design, operational and maintenance needs for the project. The ML have been established to: 1) help address the air quality problems in the region; 2) reduce single-occupant vehicle travel by providing travel time and pricing incentives to HOVs and transit passengers to improve air quality; 3) make available high-speed reliable travel to all users in the corridor (>50 mph); 4) create an area Managed HOV Lanes test bed to test operation and pricing strategies for the region; and 5) create revenue generation to pay for the ongoing operation and maintenance of the ML(2). The I-30W VPP is considered a test bed for the DFW region and an example for other Texas urban areas. Different approaches are to be implemented and evaluated; as a result, the findings from the I-30W VPP project will serve as a precedent for other Texas facilities to follow in implementation.

The ML will be restricted to HOV (i.e., two-or-more persons per vehicle), SOV, motorcycles, and transit vehicles. All other classifications, such as trucks, RVs, and non-transit buses, will not be allowed, but the Electronic Toll Collection (ETC) system is being designed to charge a toll in the event that unauthorized vehicles utilize the ML. Hybrids in Texas are not given preferential treatment.

PHASED IMPLEMENTATION

The I-30W VPP is being deployed in three phases which are dependant on the progress of the construction. A detailed description of these three phases is provided below.

HOV Phase

Initially this phase consists of a five mile segment from 19th street to west of Loop 12. This segment was opened to the public in July 2007. The segment will extend past east of Loop 12 in the spring of 2009 for an approximate total length of 11 miles as shown in Figure 1. During the HOV phase the facility will operate as an HOV facility and no tolls will be charged to the following valid users: HOV 2+ vehicles, vanpools, motorcycles, and transit vehicles allowed to use the facility. Illegal users such as single occupancy vehicles are considered violators.

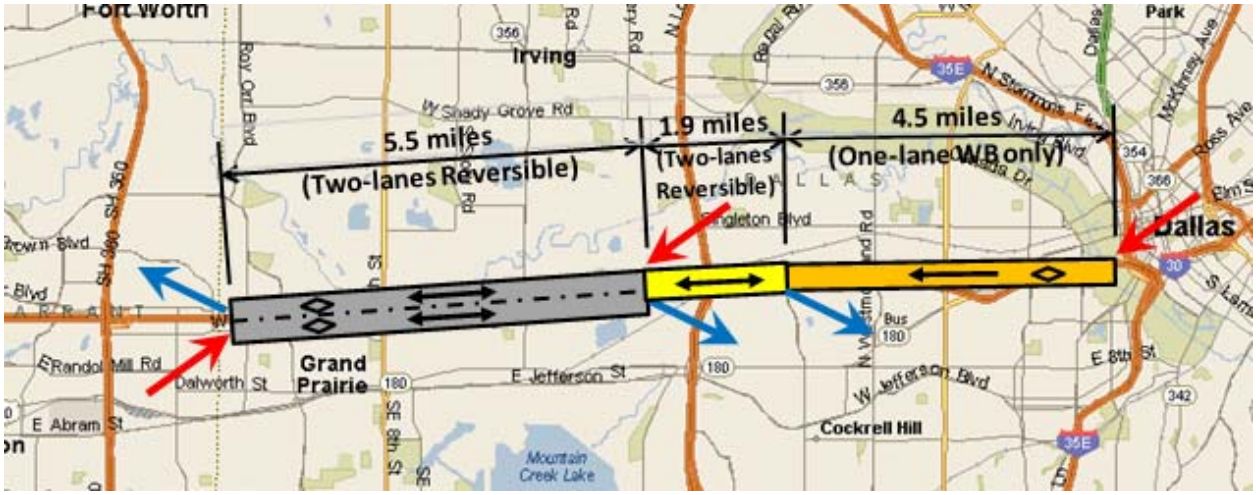


Figure 1: I-30W Managed Lanes Eastbound and Westbound Segments

Value Pricing Phase

In the second phase, the HOV lanes will be converted to Value Pricing lanes. This phase is scheduled to open in 2010. A not-to-scale visual representation is depicted in Figure 2.

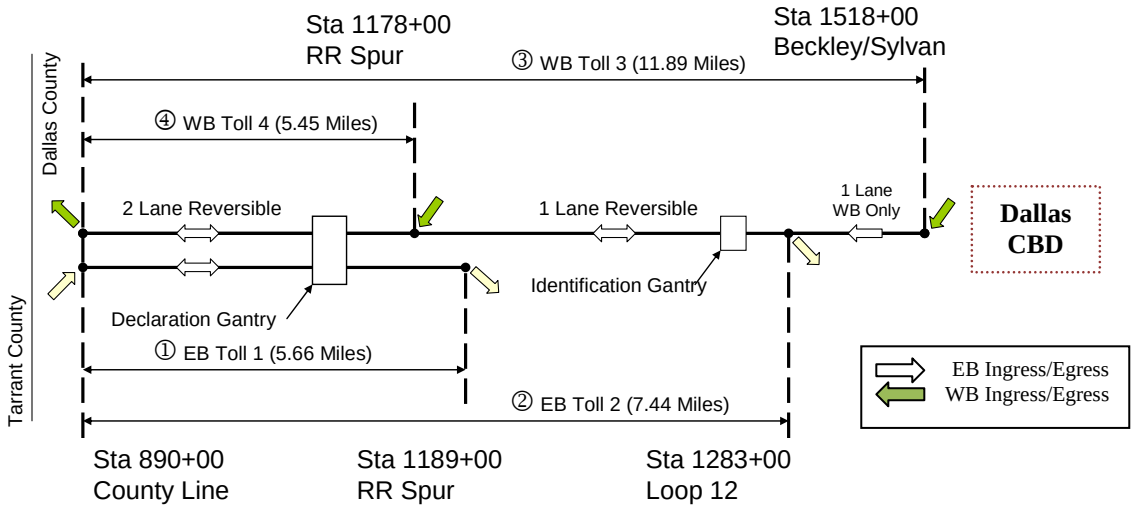


Figure 2: Toll Segments for Value Pricing Phase (2)

The ML will have variable pricing. As the driver approaches the entrance to the ML a series of Dynamic Message Signs (DMS) display the toll rate for the next two exits. The toll that the user will pay is the one displayed on the DMS or the lowest toll during the trip. The toll will increase as traffic increases on the ML and decrease as traffic decreases. Users will be able to pay the toll using a valid TollTag or interoperable transponder. Users without a transponder can still use the ML and will be processed according to the NTTA's video tolling process and subject to an additional convenience fee. Certain users such as HOV and motorcycles will pay a reduced toll but are still required to carry a valid transponder. A declaration gantry will be used to differentiate between HOV and motorcycles and other users. The declaration gantry has four lanes, two for HOVs and motorcycles and two for SOVs. Transit and exempt vehicle can travel in any of the lanes.

During this phase value pricing will be introduced in two stages: Fixed Schedule Mode and Dynamic Mode.

Fixed Schedule Mode

During the first 180 days after Service Commencement, the ML will operate in Fixed Schedule Mode. During this period a toll schedule, the "Toll Base Rate Schedule", will be used to calculate the tolls. The Toll Base Rate Schedule is a fixed rate schedule where higher rates are charged during peak times and lower rates during off-peak periods. The objective is to maintain an adequate level of service (LOS), with speeds greater than 50 mph, within the facility. Based on the facility's performance, the Toll Base Rate Schedule is manually calibrated, by reducing or

increasing the rates, to maintain the desired LOS. This calibration occurs no more often than every 30 days.

Dynamic Mode

After the initial 180 days of operation in Fixed Schedule Mode, the ML will start operating in Dynamic Mode using a dynamic pricing algorithm currently under development. In Dynamic Mode rates can increase or decrease from the "Base Toll Rate" as often as needed but not more frequently than once every 5 minutes, in order to manage the demand on the Managed HOV Lanes. Dynamic Mode will provide more flexibility to adapt the "Base Toll Rates" to prevailing traffic conditions. The maximum toll rate cap is $0.75/mile.

Ultimate Phase

Subsequent Phases will expand the facility in several stages. In the first stage, due to the widening of the bridges, the eastbound lanes will extend to Beckley Avenue. A second stage will convert the one-lane reversible segment to a reversible two-lane segment.. These additional phases are still in the planning stages and the details are not covered in this report.

OPERATIONAL POLICIES AND CONSTRAINTS

The I-30W ML have several operational policy and constraints that apply to the current system.

Type of Facility

The I-30W ML is considered a "Separated Reversible HOT Lanes" facility. This type of facility is physically separated from general-purpose lanes by the use of concrete barriers or a wide painted buffer (3). In our case, a concrete barrier is present throughout the entire length of the facility. It is also considered reversible because the direction of travel changes by time of day to accommodate the peak demand. In our case, the facility operates in eastbound direction in the morning peak hours and westbound direction in the afternoon peak hours.

Limited Access/Egress

The I-30W ML has limited entry and exit points. During HOV Phase morning operation (eastbound) there is only one entry point and two exit points. During the evening operation (westbound) there is only one entry point and one exit point. During Value Pricing Phase morning operation (eastbound) there will be only one entry point and two exit points and for the evening operation (westbound) there will be two entry points and only one exit point. See Figure 1 for a graphical representation. The Ultimate Phase of this project will increase the number of entry and exit point as more segments are added to the facility.

Hours of Operation in HOV Phase

The I-30W ML has limited hours of operations. Its main goal is to serve the morning and afternoon peak hours. Currently the hours of operation are as follows: 6:00am to 10:00am and 3:00pm to 7:00pm five days a week. It is also open during special events.

II. SURVEY

In refining and assessing the use of managed HOV lanes on the IH-30 corridor, the project team developed this analysis for testing perceptions and responses to the congestion pricing concept. The purpose of the survey is to inform the development of the IH-30 Managed HOV Lanes. To that end, the survey provides an assessment of variable pricing, operations, and marketing guidelines for users of the IH-30 corridor, such as regular commuters, event visitors, occasional users (such as transit riders who drive alone on occasion), mobile professionals, and off-peak commuters.

SURVEY METHODOLOGY

Previous survey experience by TTI in Dallas determined that strategic partnerships with local media and employers provide a sufficient base of contact for survey distribution. Local articles, links from websites, and distribution of postcards encouraged individuals to visit the DallasTravelSurvey.org website to complete the IH-30 survey.

The combination of sources yielded a total survey sample of 870 cases (after duplicative and partial responses were eliminated from the dataset), with geographical distribution determined by zip code. Figure 1 indicates the distribution of surveys in the Dallas / Ft. Worth Metroplex. As can be seen, the majority of respondents to the survey were within 5 miles radius of the IH-30 corridor, a reasonable distance from which to assume regular or semi-regular use of the facility.

Although the sample size is sufficient to provide a +/- 3.32 confidence interval at the 95% confidence level (meaning, that 95% of the time on questions where opinion is evenly split, the correct answer to a question will be within 3.32 percentage points), the matter of statistical confidence is dependent upon the sampling methodology. To be certain, as a web-based survey with a self-selected sample, the survey is not random and will not accurately represent the opinions of the Dallas / Ft. Worth population at-large. However, the target population for this analysis is not the public-at-large; rather, the target population are *existing users of the IH-30 corridor during peak periods*. Given the limitations of current travel behavior inventory data, it is not possible to accurately describe this population and its dynamics. Instead, using the 2007 American Community Survey database for the Metroplex, and adjusting for household income by means of transportation to work, the research team constructed a hypothetical profile of corridor users from census data of the population. The survey sample shows a +/- 7.78 confidence interval at the 95% confidence level.

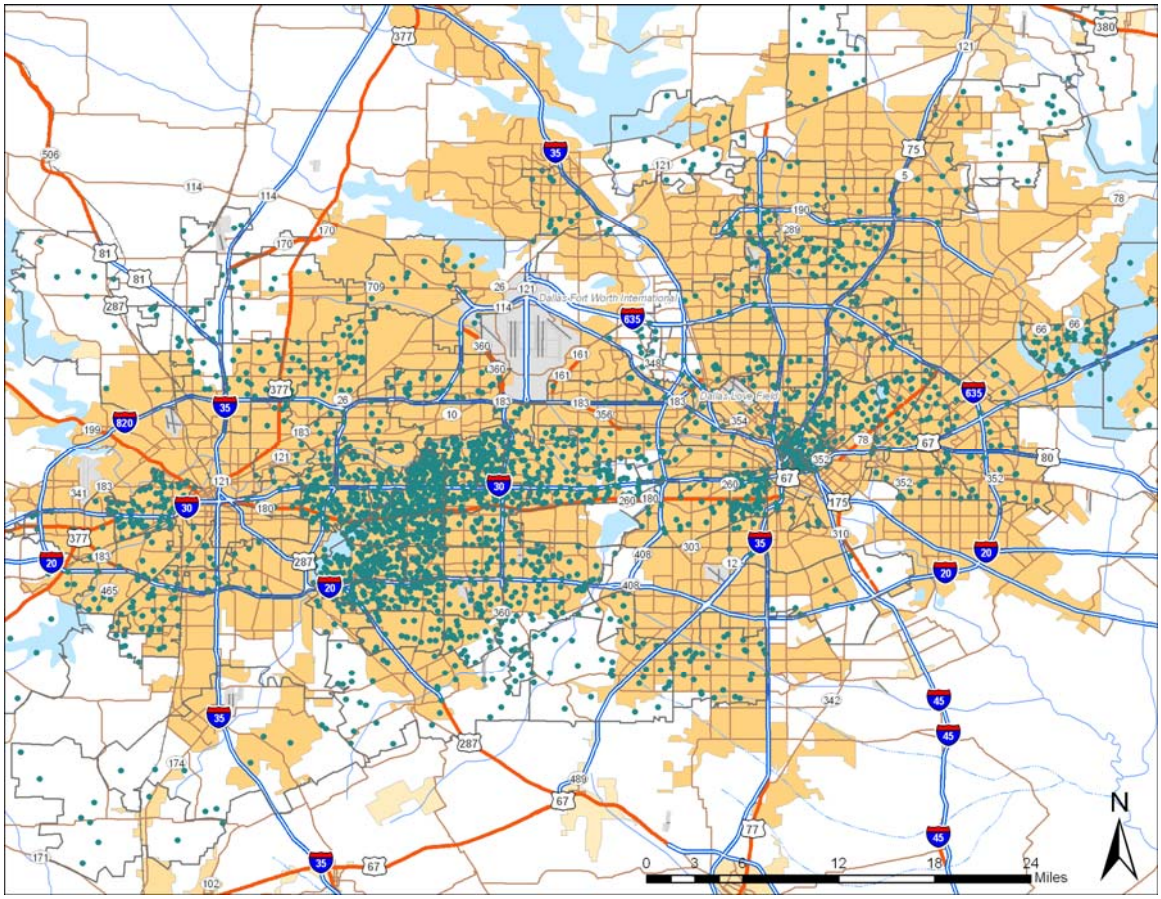


Figure 1: Geographic Distribution of Survey Respondents.

SURVEY DEMOGRAPHICS

Figure 2 shows over 90 percent of survey respondents fell between the ages of 26 and 65. As this segment of the community comprises the primary employed cohorts, they best lend themselves to analysis of the IH-30 Managed HOV Lanes from a commuting perspective – a prime target market for the priced HOV concept. Educational attainment favors college attendees and graduates, with almost 70 percent of survey respondents holding a bachelor or higher degree, as shown in Figure 3. Although this finding is significantly higher than the population at-large, it may not be incongruous for the commuting population within the corridor. For ethnic composition, less than fifteen percent of respondents were non-Caucasian, as shown in Figure 4. Finally, household income parallels the findings for educational attainment, as seen in Figure 5. This indicates the survey sample is tilted in favor of highly educated, highly paid workers.

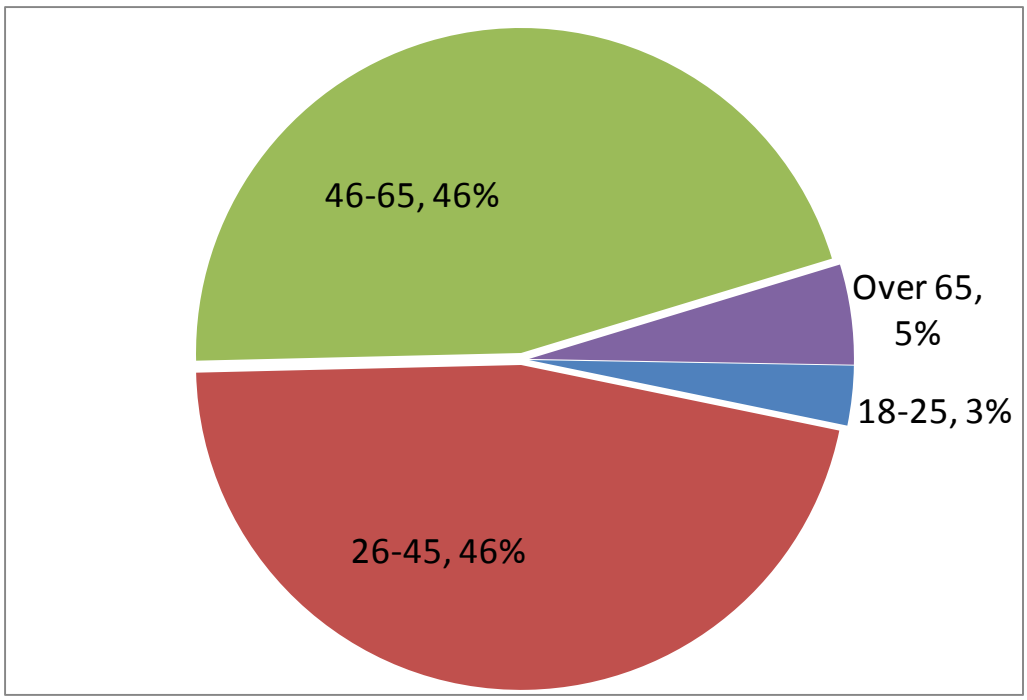


Figure 2: Age of Respondents

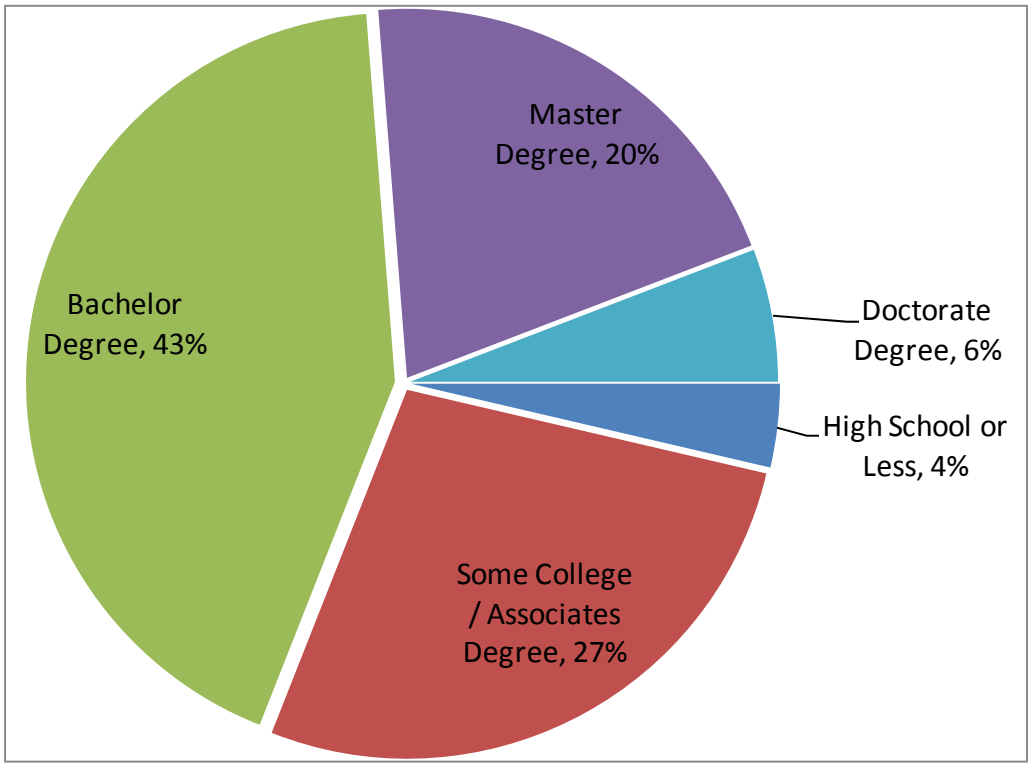


Figure 3: Educational Attainment of Respondents

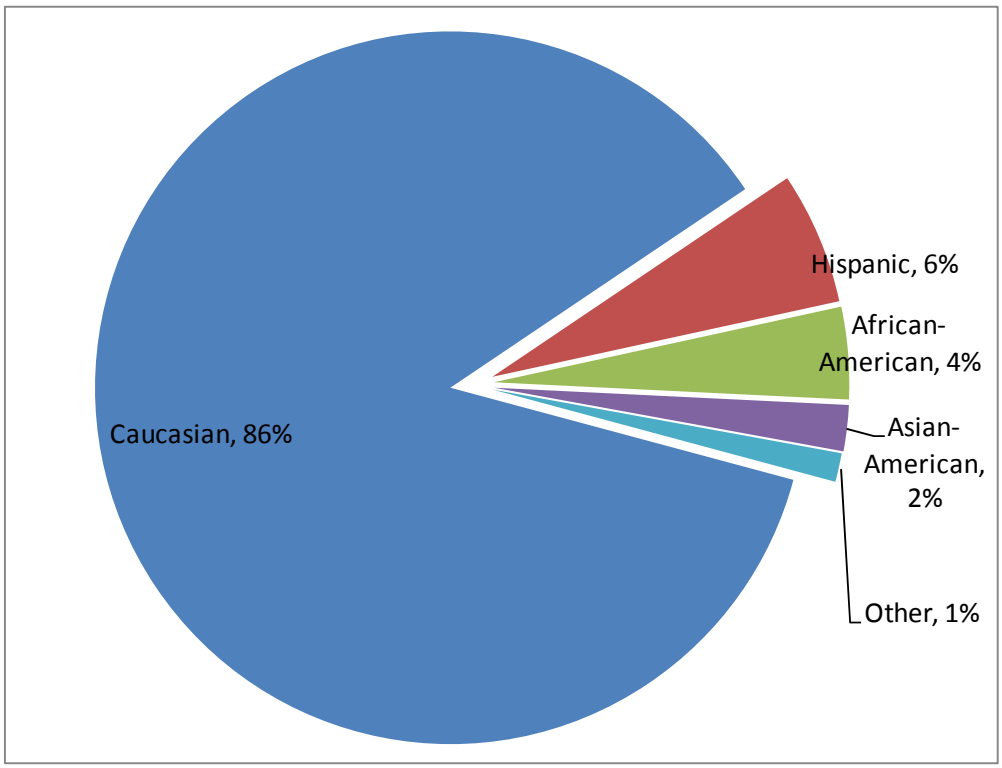


Figure 4: Ethnic Composition of Respondents

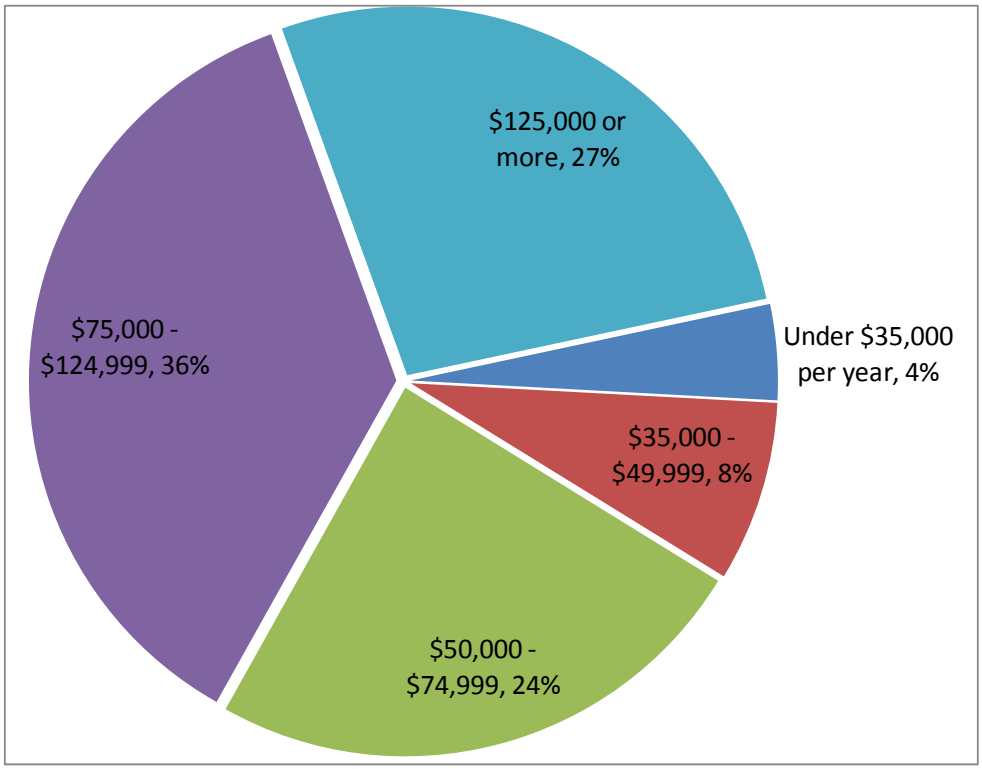


Figure 5: Household Income of Respondents

TRIPS TAKEN ON IH-30

The most common types of trips taken on IH-30 during the week are trips made between work and home (Figure 6). A little over half (53 percent) of respondents indicated that they make trips on IH-30 during the week that are either from home to work or from work to home. A cross tabulation of these reported trip types show that a little less than half (48 percent) of these trips are round trips, indicating that a little over 50 percent of respondents are traveling to either their home (from work) or work (from home) on IH 30 but are choosing an alternate route for the reverse trip or are making other types of trips as opposed to a return trip. For example, these respondents may make a shopping trip on the return home from work or take their children to school on the trip to work. All 870 survey respondents were given the opportunity to answer this question.

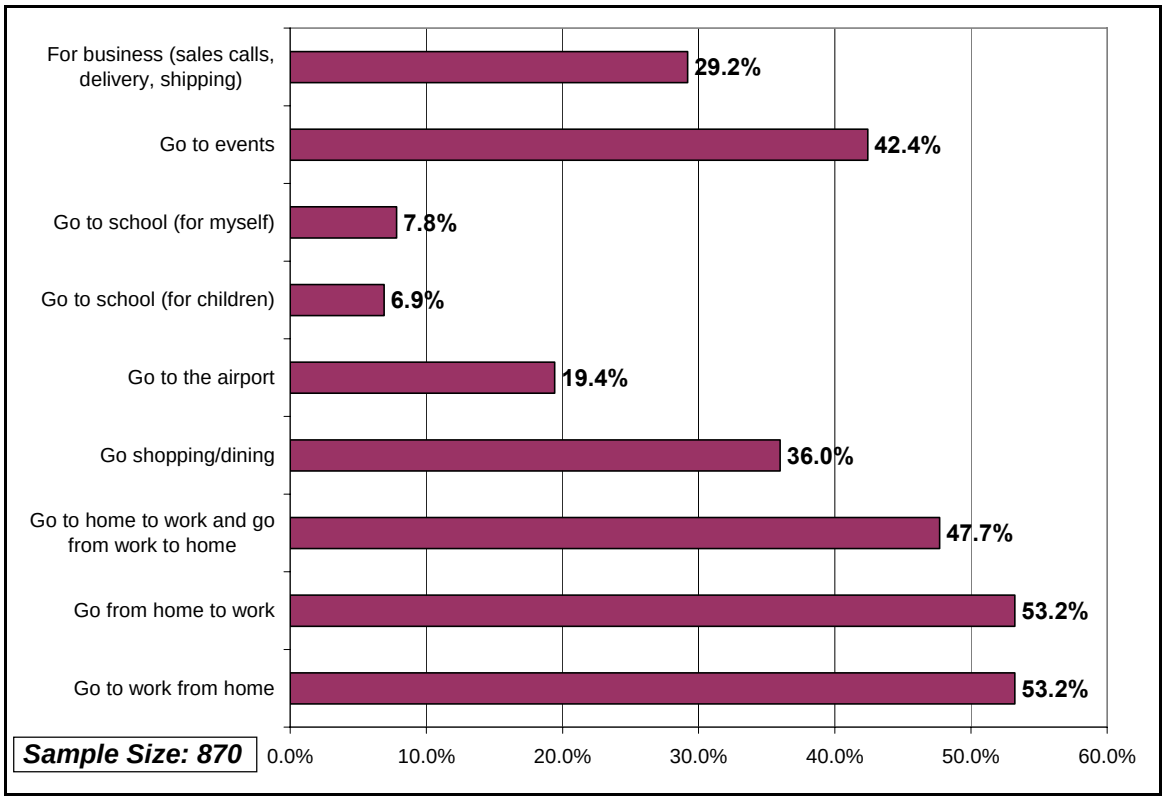


Figure 6: "What type of trips do you make on IH -30 during the week?"

Individuals who indicated that they made trips on IH-30 that were either from home to work or from work to home were coded as commuters and further analyzed in terms of their responses as a group to this survey. For the remainder of this memo, the term “commuters” refers to respondents who indicated that they took trips on IH-30 to and from work and home and non-commuters are respondents who either did not provide an answer or indicated that their trips were for a different purpose.

When respondents were asked what the times of the day they typically travelled on IH 30 were, nearly half of respondents indicated that they travelled during the morning and afternoon rush

hours (Figure 7). Individuals traveling in either the morning rush hour or the evening rush hour (but not both) comprised nearly a quarter of responses. Midday was the least selected time for travel on IH 30. Respondents were only allowed to select one time for each day.

		Monday	Tuesday	Wednesday	Thursday	Friday
Morning Rush Hour	(6:00 am - 9:00 am)	11.0%	10.7%	11.1%	10.8%	9.7%
Late Morning	(9:00 am - 11:00 am)	6.8%	6.2%	5.7%	5.3%	5.9%
Midday	(11:30 am - 1:30 pm)	2.9%	2.6%	2.9%	2.7%	2.7%
Afternoon	(1:30 pm - 3:00 pm)	3.2%	3.2%	3.2%	3.5%	3.3%
Evening Rush Hour	(3:00 pm - 7:00 pm)	10.4%	11.3%	12.1%	12.7%	13.4%
Both Morning & Evening Rush Hours		48.5%	48.4%	48.5%	48.2%	47.3%
Varies or Do Not Know		17.3%	17.6%	16.6%	16.8%	17.6%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%
	Total Respondents	693	698	687	695	693

Figure 7: Time of Day for IH 30 Utilization

Commuters were much more likely to travel on IH 30 in both the morning and evening peak hours (Figure 8). Commuters who only travel during one of the day's rush hours were more likely to travel on IH 30 in the morning peak.

COMMUTERS		Monday	Tuesday	Wednesday	Thursday	Friday
Morning Rush Hour	(6:00 am - 9:00 am)	13.8%	13.3%	13.9%	13.4%	12.9%
Late Morning	(9:00 am - 11:00 am)	3.7%	3.6%	3.3%	2.6%	3.5%
Midday	(11:30 am - 1:30 pm)	1.6%	1.2%	1.4%	2.0%	1.2%
Afternoon	(1:30 pm - 3:00 pm)	1.8%	1.6%	1.8%	2.2%	1.9%
Evening Rush Hour	(3:00 pm - 7:00 pm)	9.3%	9.5%	10.2%	10.9%	9.8%
Both Morning & Evening Rush Hours		61.9%	62.5%	62.2%	62.1%	62.4%
Varies or Do Not Know		7.9%	8.3%	7.2%	6.7%	8.3%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%
	Total Respondents	493	496	489	494	481

Figure 8: Time of Day for IH 30Utilization, Commuters

Non-commuters were much more likely than commuters to indicate that they did not know when they typically travelled on IH 30 or that their times of travel varied (Figure 9). Non-commuters were also more likely to travel in the late morning and midday on IH 30 than commuters.

NON-COMMUTERS		Monday	Tuesday	Wednesday	Thursday	Friday
Morning Rush Hour	(6:00 am - 9:00 am)	4.0%	4.5%	4.0%	4.5%	2.4%
Late Morning	(9:00 am - 11:00 am)	14.5%	12.4%	11.6%	11.9%	11.3%
Midday	(11:30 am - 1:30 pm)	6.0%	5.9%	6.6%	4.5%	6.1%
Afternoon	(1:30 pm - 3:00 pm)	6.5%	6.9%	6.6%	6.5%	6.6%
Evening Rush Hour	(3:00 pm - 7:00 pm)	13.0%	15.8%	16.7%	16.9%	21.7%
Both Morning & Evening Rush Hours		15.5%	13.9%	14.6%	13.9%	13.2%
Varies or Do Not Know		40.5%	40.6%	39.9%	41.8%	38.7%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%
	Total Respondents	200	202	198	201	212

Figure 9: Time of Day for IH 30Utilization, Non-Commuters

UTILIZATION OF IH-30 AND PERCEPTIONS OF CONGESTION

The North Dallas area is generally perceived as having the highest levels of congestion in the metro area with 77 percent of respondents indicating that traffic in that area is “heavy” (Figure 10). The second highest levels of congestion were reported for Downtown Dallas with 73.4 percent of respondents indicating that traffic was heavy (Figure 12). The DFW area had the third highest rate of respondents indicating that traffic was heavy at 57.3 percent and 56.3 percent of respondents indicated that the congestion in the Mid-Cities area was heavy (Figure 14 and Figure 13, respectively). Only 18 percent of respondents stated that traffic in South Dallas is heavy, and 42.4 percent stated that traffic is “medium” (Figure 11) South Dallas had the highest percentage of respondents indicating that traffic was “light” with 11.7 percent. The South Dallas area also had the highest rate of respondents indicating that they were “uncertain” about traffic congestion of any of the areas at almost 28 percent. A little less than half of respondents indicated that traffic congestion in Fort Worth was “medium” and only 24.4 percent indicated that traffic was heavy.

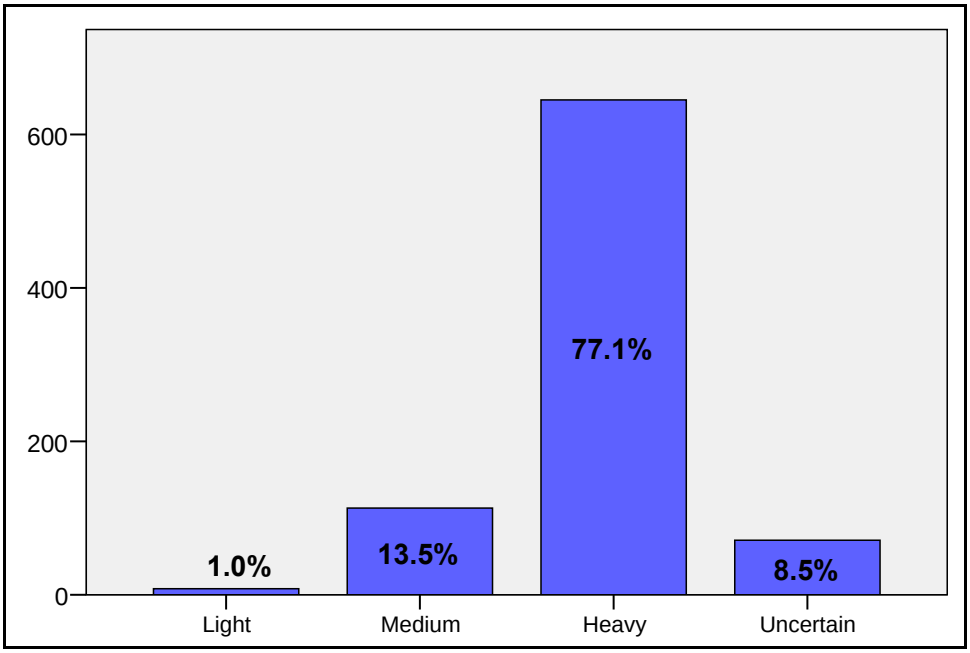


Figure 10: Perception of Traffic - North Dallas

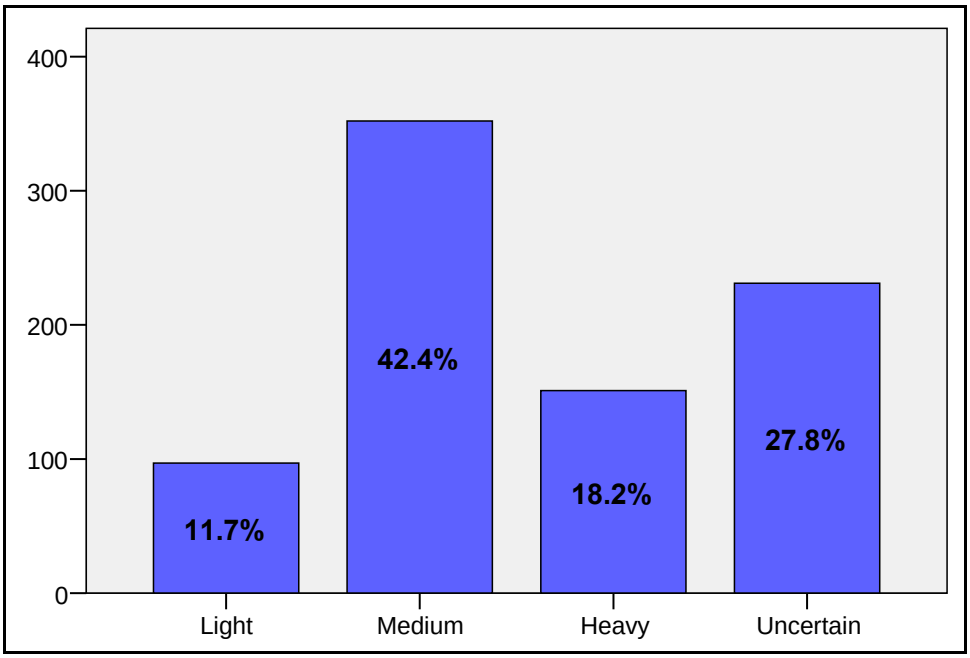


Figure 11: Perception of Traffic - South Dallas

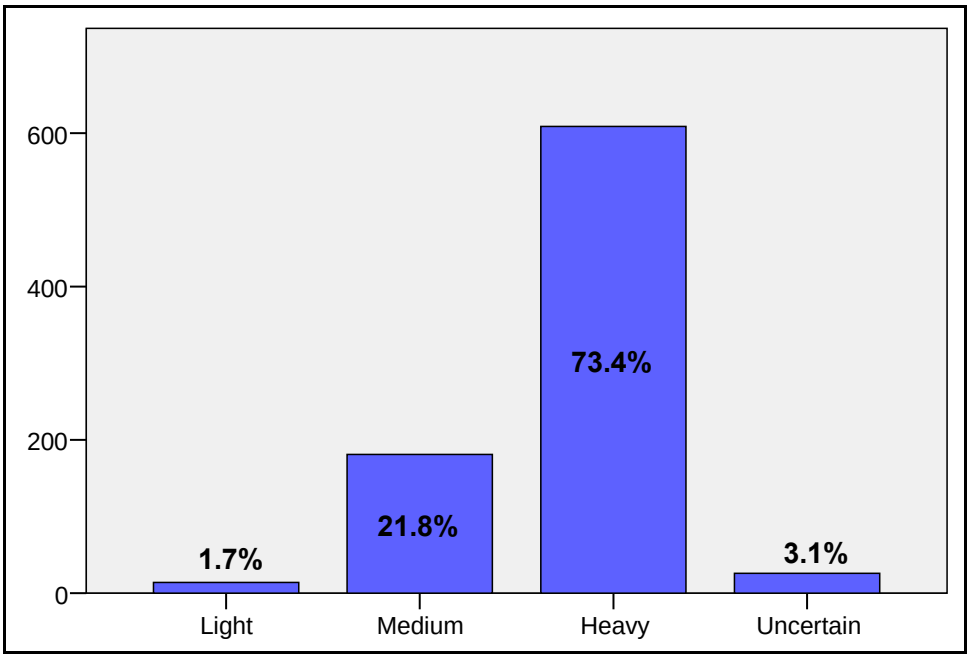


Figure 12: Perception of Traffic - Downtown Dallas

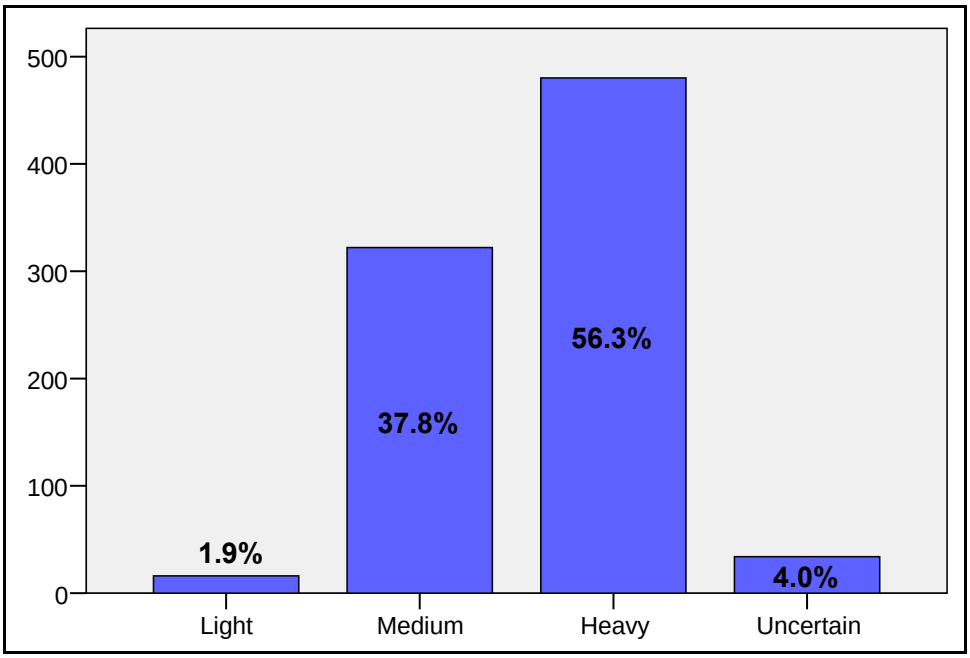


Figure 13: Perception of Traffic - Mid Cities

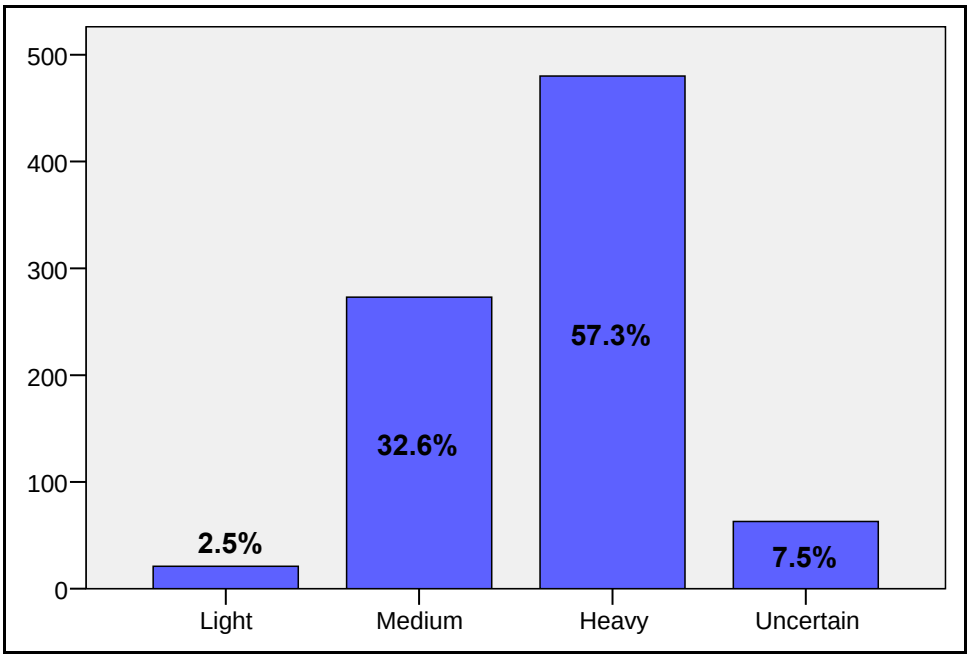


Figure 14: Perception of Traffic - DFW Airport

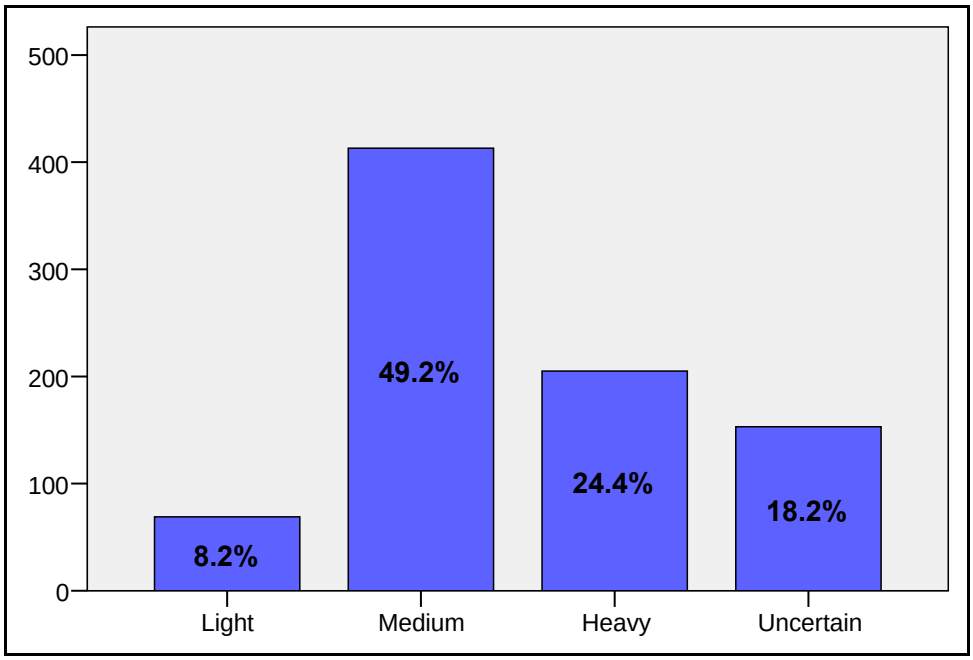


Figure 15: Perception of Traffic - Fort Worth

IH-30 is utilized to a great extent by respondents, as 27 percent indicated that they take 6-10 trips on the roadway each week and 28 percent indicated that they made more than 10 trips a week (Figure 16).

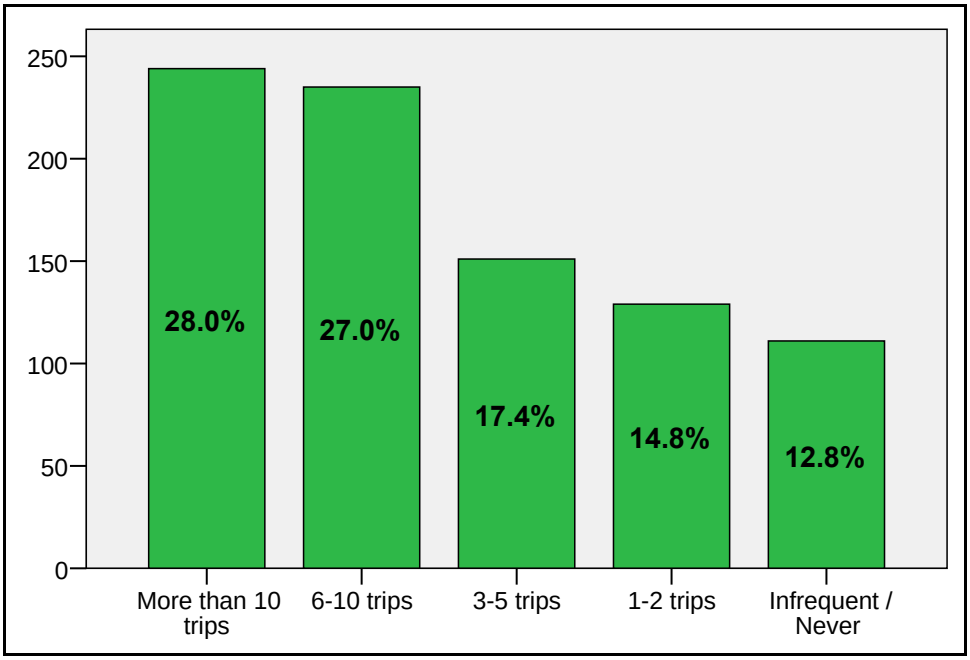


Figure 16: Trips per Week on IH-30

The most common ingress point for recent trips on IH-30 by respondents lays to the west of SH-360 (Figure 17). Almost 47 percent of respondents indicated that their last trip on IH-30 began in this area and 27.1 percent indicated that their trip on IH-30 began east of Westmoreland Road, at the other end of the intercity corridor.

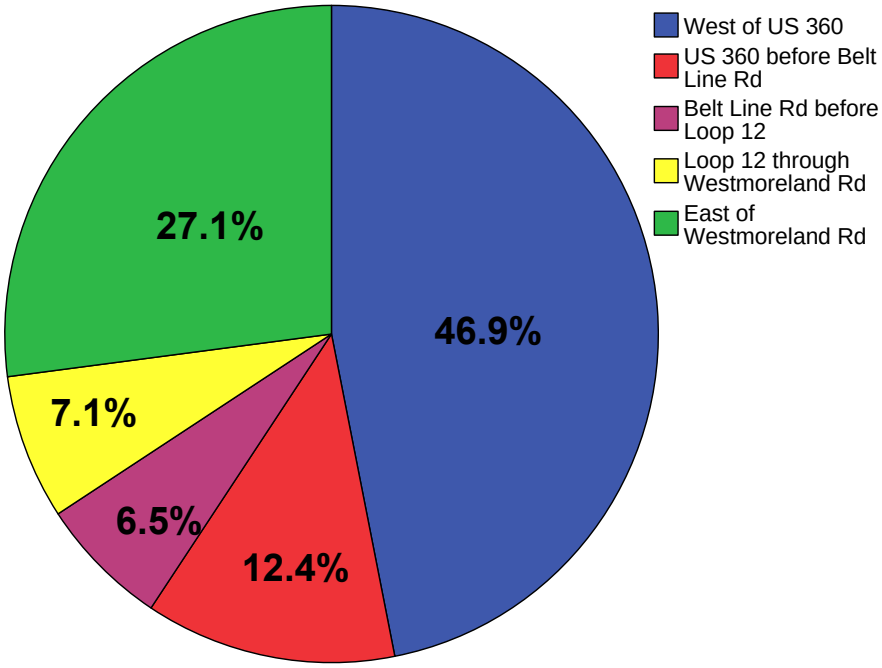


Figure 17: Ingress point for most recent trip on IH-30

The most common egress point for respondents' most recent trip on IH-30 was to the east of Westmoreland Road with 41.3 percent of respondents indicating that their trips ended in this area (Figure 18). The second most reported egress point lay to the west of SH-360 at 31.7 percent.

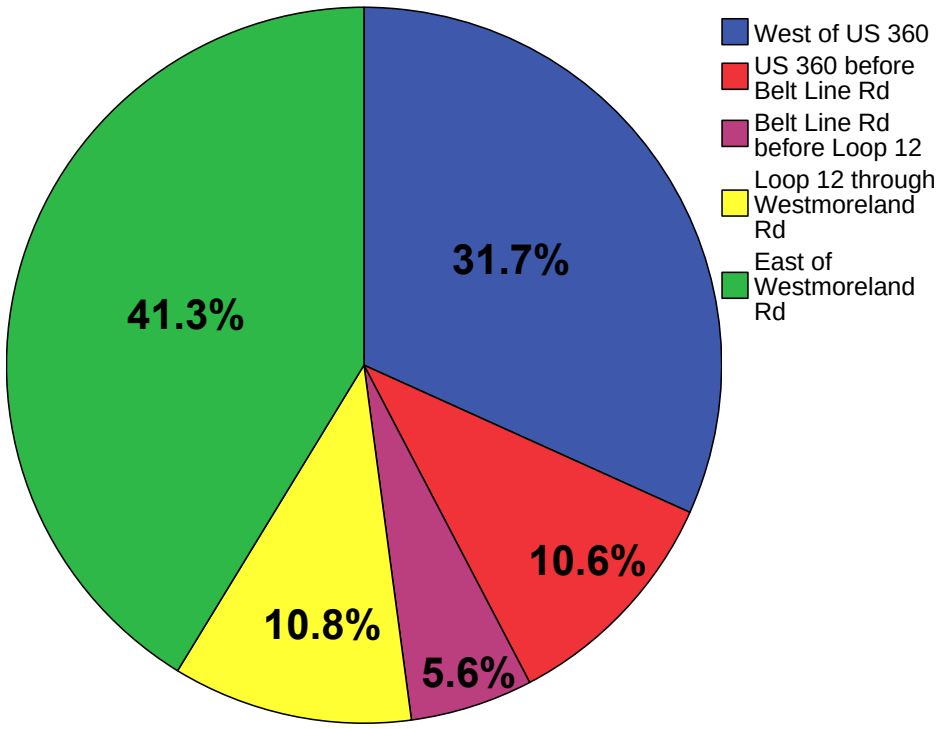


Figure 18: Egress point for most recent trip on IH-30

A cross tabulation of ingress and egress points for respondents' most recent trip on IH-30 shows that trips beginning west of SH-360 and ending east of Westmoreland road account for more than a quarter (26.1 percent) of the recent trips made by respondents (Figure 19). Trips that began east of Westmoreland road and ended west of SH-360 accounted for 14.3 of recent trips made by respondents. Therefore it appears that a little over 40 percent of the most recent trips taken on I-30 between Dallas and Fort Worth by respondents traverse the entire managed HOV lane corridor.

Ingress Point for most recent trip on IH-30	Egress point for most recent trip on IH-30: West of 360	US 360 before Belt Line Rd	Belt Line Rd before Loop 12	Loop 12 through Westmoreland Rd	East of Westmoreland Rd
West of 360	**9.4%**	**4.6%**	**1.9%**	**5.0%**	**26.1%**
US 360 before Belt Line Rd	**3.2%**	**0.5%**	**0.9%**	**2.4%**	**5.2%**
Belt Line Rd before Loop 12	**2.0%**	**0.8%**	**0.9%**	**0.7%**	**2.0%**
Loop 12 through Westmoreland Rd	**2.8%**	**0.8%**	**0.4%**	**0.9%**	**2.3%**
East of Westmoreland Rd	**14.3%**	**3.8%**	**1.5%**	**1.9%**	**5.7%**

Figure 19: Cross tabulation of ingress and egress points for most recent trip on IH-30

Further analysis reveals that this pattern is somewhat consistent for commuters and non-commuters (Figure 20 and Figure 21). However, commuters were much more likely to report

that their most recent trip on IH-30 began west of SH-360 and ended east of Westmoreland road, whereas non-commuters had the highest percentage of respondents that indicated that their recent trips were in the reverse direction and began to the east of Westmoreland Road and ended west of SH-360. Furthermore, non-commuters had a higher percentage of respondents who indicated that their most recent trip on IH-30 ended at SH-360, before Belt Line road.

Egress point for most recent trip on IH-30

Ingress Point for most recent trip on IH-30 — Commuters	West of 360	US 360 before Belt Line Rd	Belt Line Rd before Loop 12	Loop 12 through Westmoreland Rd	East of Westmoreland Rd
West of 360	**9.8%**	**4.1%**	**2.4%**	**6.1%**	**30.6%**
US 360 before Belt Line Rd	**1.2%**	**0.6%**	**1.0%**	**2.6%**	**5.3%**
Belt Line Rd before Loop 12	**1.8%**	**0.8%**	**0.6%**	**0.6%**	**2.8%**
Loop 12 through Westmoreland Rd	**2.4%**	**0.4%**	**0.2%**	**1.2%**	**2.4%**
East of Westmoreland Rd	**12.2%**	**1.8%**	**1.8%**	**2.0%**	**5.7%**

Figure 20: Cross tabulation of ingress and egress points for most recent trip on IH-30, Commuters

Egress point for most recent trip on IH-30

Ingress Point for most recent trip on IH-30 — Non-Commuters	West of 360	US 360 before Belt Line Rd	Belt Line Rd before Loop 12	Loop 12 through Westmoreland Rd	East of Westmoreland Rd
West of 360	**8.6%**	**5.7%**	**0.8%**	**2.9%**	**16.7%**
US 360 before Belt Line Rd	**7.3%**	**0.4%**	**0.8%**	**2.0%**	**4.9%**
Belt Line Rd before Loop 12	**2.4%**	**0.8%**	**1.6%**	**0.8%**	**0.4%**
Loop 12 through Westmoreland Rd	**3.7%**	**1.6%**	**0.8%**	**0.4%**	**2.0%**
East of Westmoreland Rd	**18.8%**	**8.2%**	**0.8%**	**1.6%**	**5.7%**

Figure 21: Cross tabulation of ingress and egress points for most recent trip on IH-30, Non-Commuters

During the peak periods of the day, traffic on IH-30 is generally regarded as being the heaviest between the Trinity Bridge and Downtown Dallas with 81.4 percent of respondents stating that traffic in the area is "heavy" (Figure 28). The next highest levels of congestion during the peak period were reported for the area between Loop 12 and the Trinity Bridge with 62.3 percent of respondents indicating that traffic is heavy (Figure 27). Peak period traffic is also viewed as heavy between Belt Line Road and Loop 12 at 60.2 percent (Figure 26). Congestion is perceived as being the lightest during the peak periods between Loop 820 and Fielder Road, as 35 percent of respondents indicated that traffic is heavy and 37.3 percent indicating that traffic is "medium" (Figure 22). Peak period traffic is perceived as slightly better between Fielder Road and Collins street with 47.9 percent indicating that traffic is heavy and 33.8 percent state that peak period traffic is medium (Figure 23). The areas around SH-360 viewed as being lighter in peak period traffic that areas to the west but heavier than areas to the east, as 58.6 percent of respondents indicated that traffic is heavy between Collins Street and SH-360 and 48.2 percent indicated that is heavy between SH-360 and Belt Line Road (Figure 24 and Figure 25).

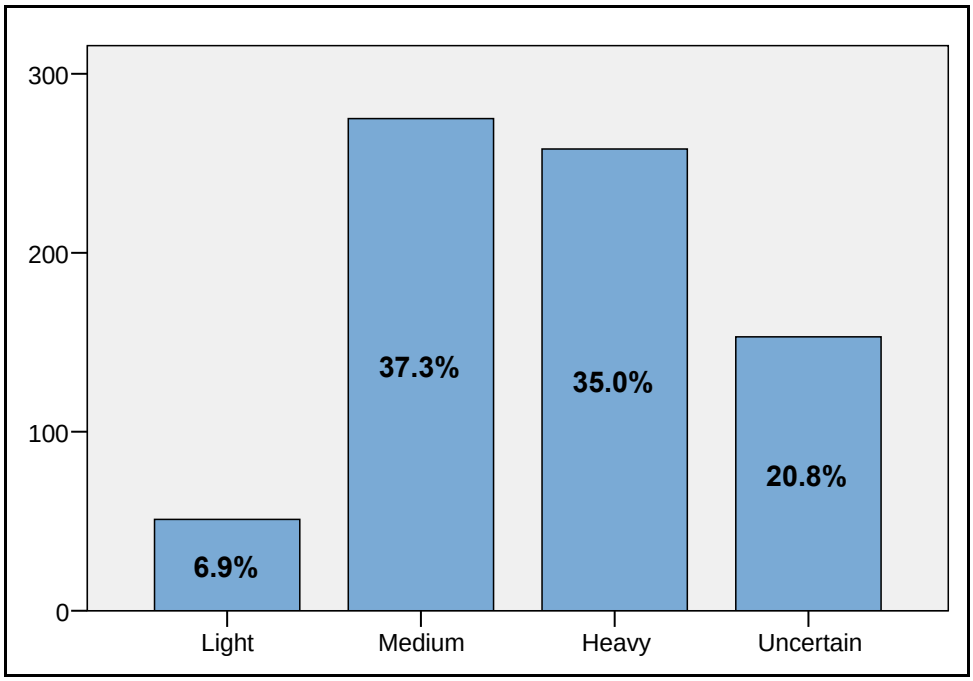


Figure 22: Perception of Peak Traffic - Loop 820 to Fielder Road

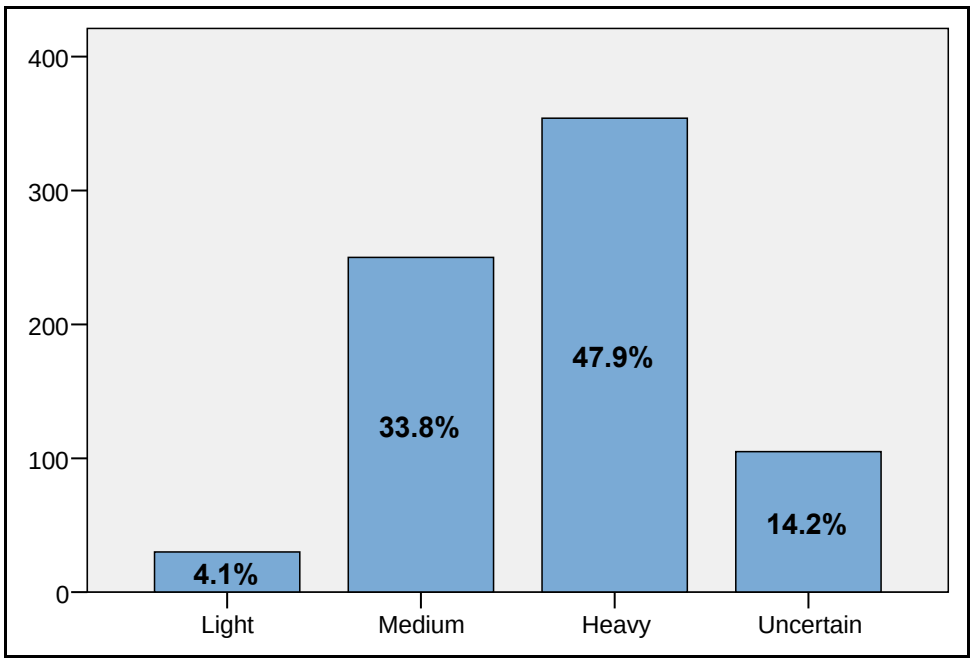


Figure 23: Perception of Peak Traffic - Fielder Road to Collins Street

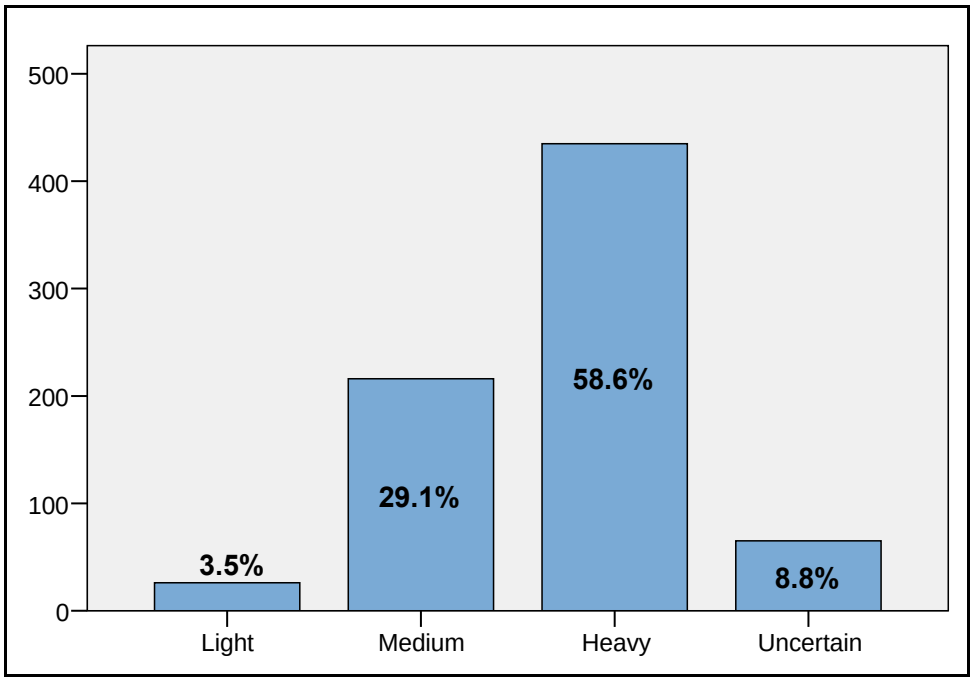


Figure 24: Perception of Traffic - Collins Street to SH 360

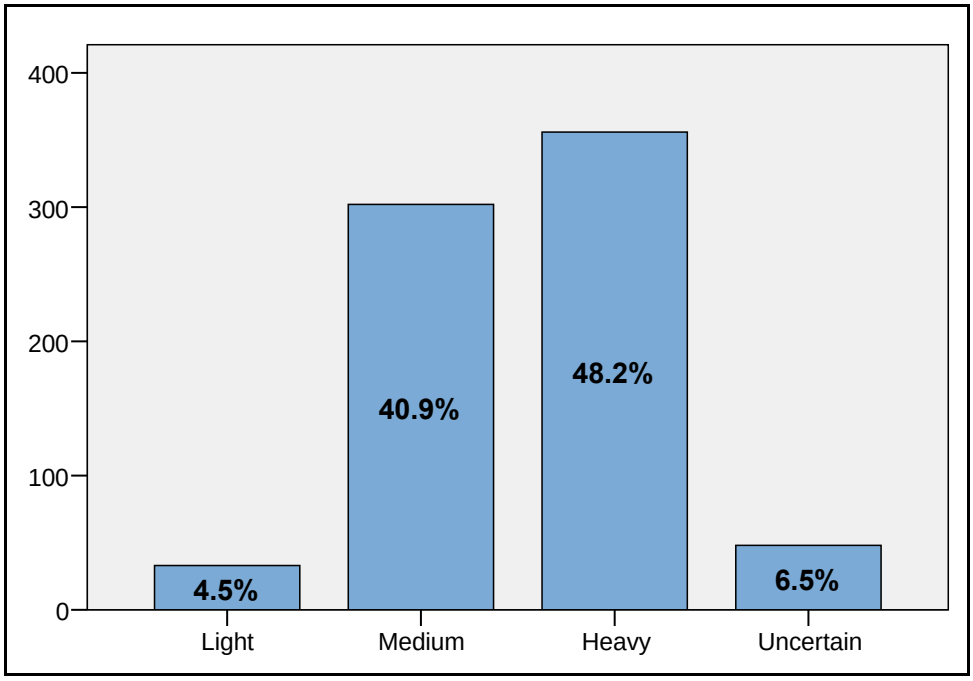


Figure 25: Perception of Peak Traffic - SH 360 to Belt Line Road

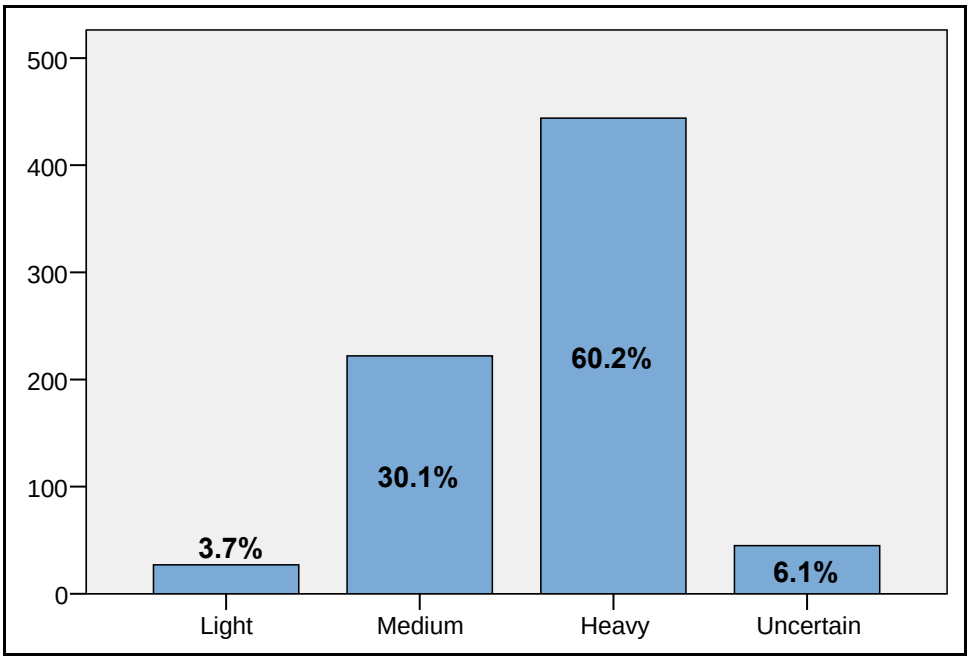


Figure 26: Perception of Peak Traffic - Belt Line Road to Loop 12

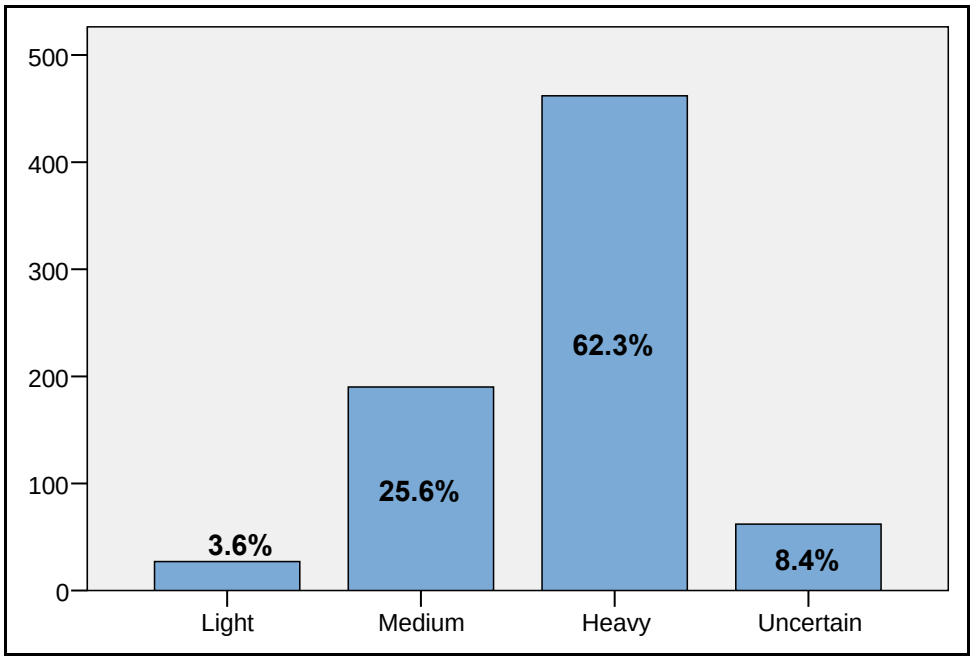


Figure 27: Perception of Peak Traffic - Loop 12 to Trinity Bridge

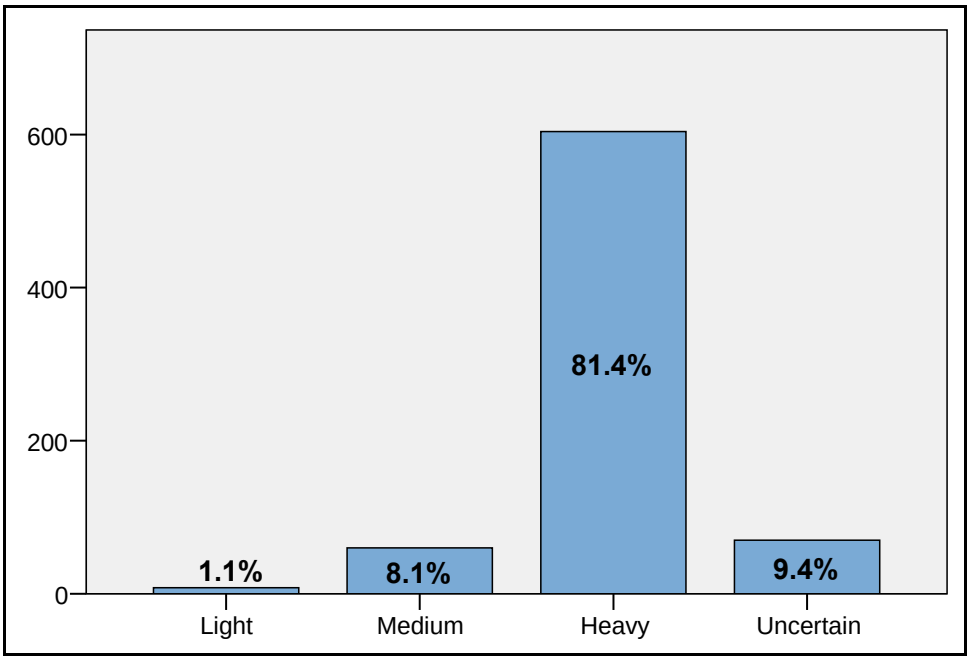


Figure 28: Perception of Peak Traffic - Trinity Bridge to downtown Dallas

PERCEPTIONS OF HOV LANES

A majority of respondents stated that they feel the HOV lanes are effective with 11.7 percent stating they are “very effective” and 43.7 percent stating that they are “somewhat effective”(Figure 29). There is, however, a large percentage of respondents who indicated that they believe the lanes are “not effective” at 42.8 percent, the second highest reported answer.

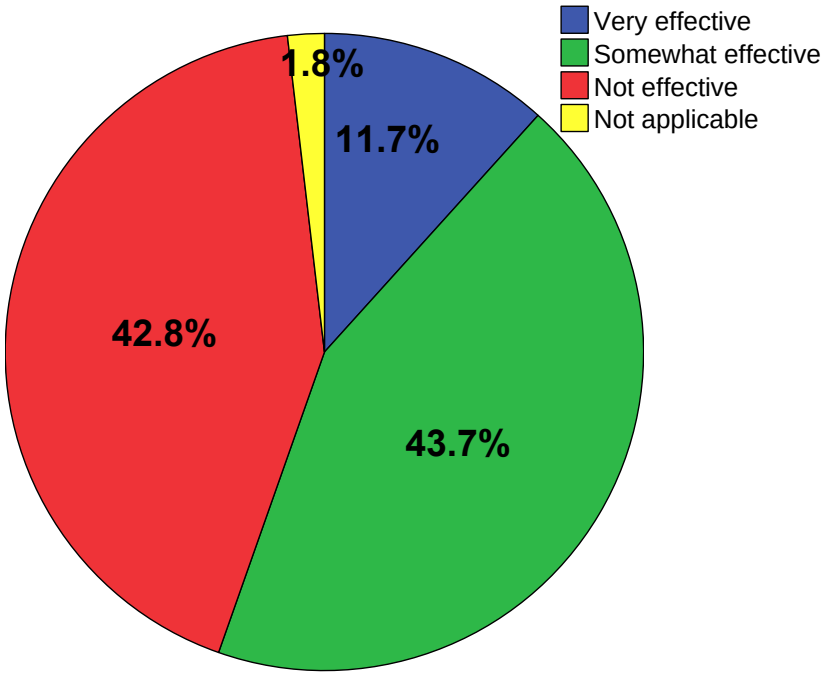


Figure 29: "Do you feel the HOV lanes are effective?"

Commuters were slightly less likely to indicate that the HOV lanes are either effective or somewhat effective (Figure 30). Commuters were also more likely to indicate that the IH-30 HOV lanes are not effective.

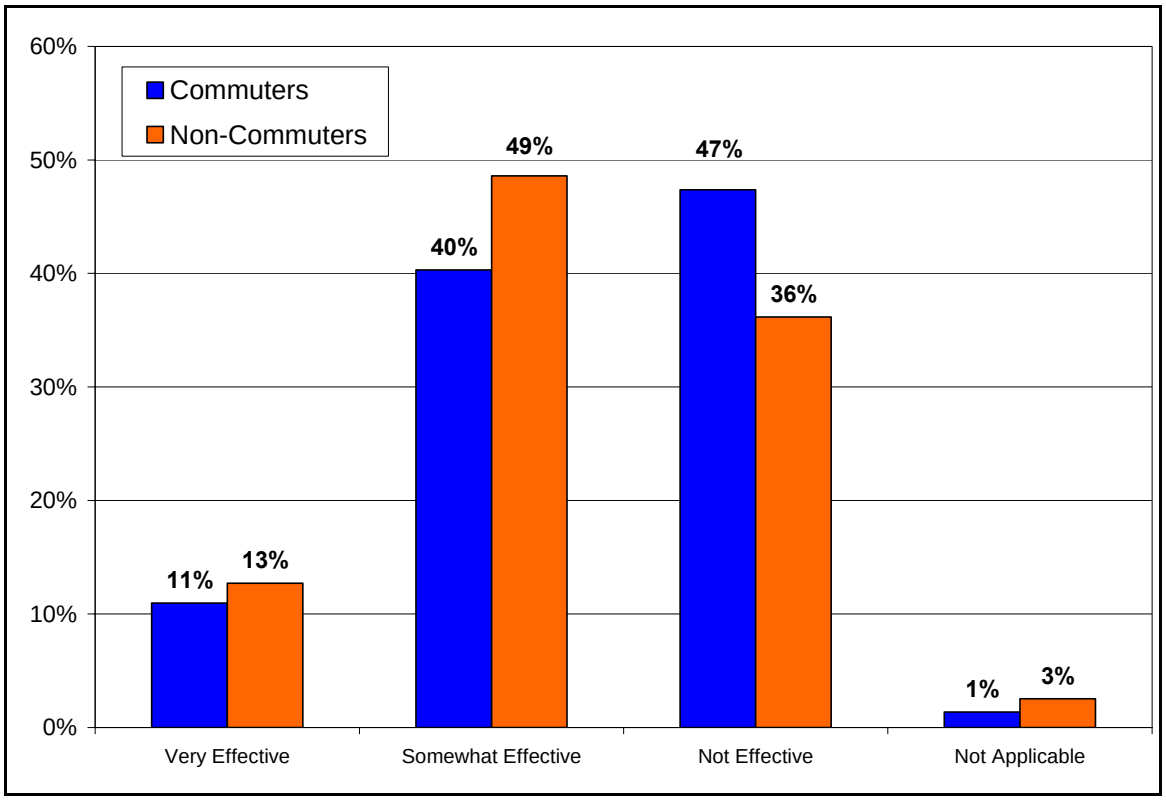


Figure 30: Perception of HOV Lane Effectiveness, Commuters vs. Non-Commuters

An even greater majority of respondents stated that they believe the lanes to be fair, as 30.4 percent indicated that they are "very fair" and 34.4 percent indicated that they are "somewhat fair" (Figure 31). Less than a third (32.5 percent) feel that the lanes are "unfair).

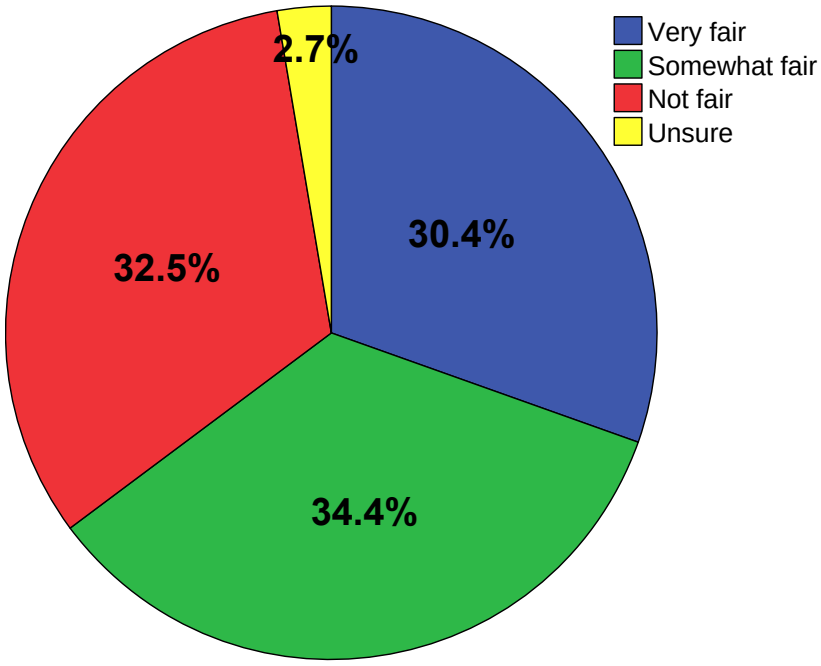


Figure 31: "Do you feel the HOV lanes are fair?"

Non-Commuters were more likely to indicate that they believed the HOV lanes to be very fair compared to commuters, while commuters were more likely than non-commuters to indicate that they believed the lanes to be unfair (Figure 32).

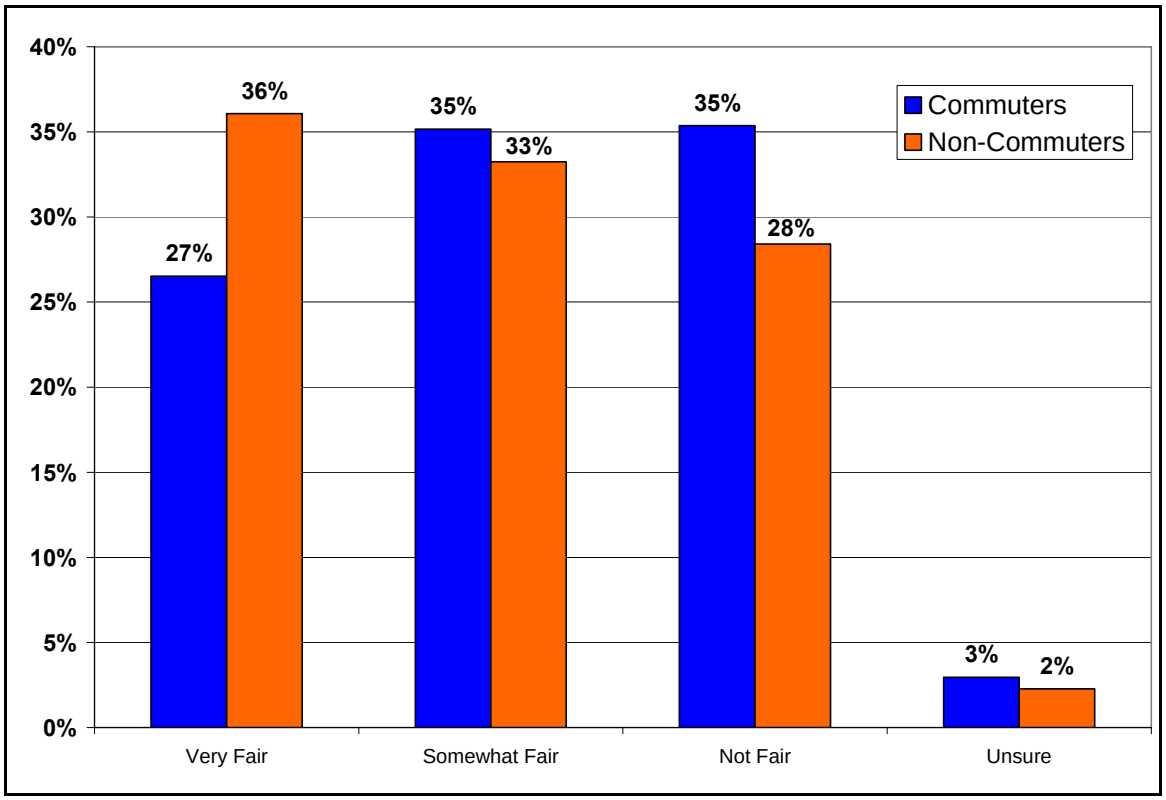


Figure 32: Perceived Fairness of IH-30 HOV Lanes, Commuters vs Non-Commuters

When asked whether the HOV lanes are a value to regional mobility, respondents are almost split between those who feel they are not (43.5 percent) and those who feel they are (43.8 percent) (Figure 33). This leaves a rather sizable percentage of respondents who are unsure as to the lanes' value to regional mobility at 12.7 percent.

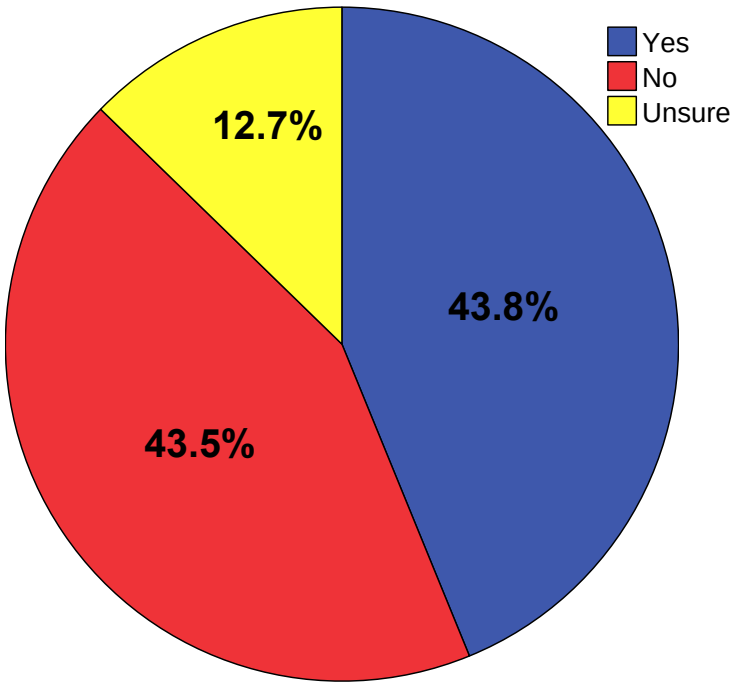


Figure 33: "Do you feel the HOV lanes are a value to regional mobility?"

Non-commuters were more likely to view the IH-30 HOV lanes as a value to regional mobility (Figure 34).

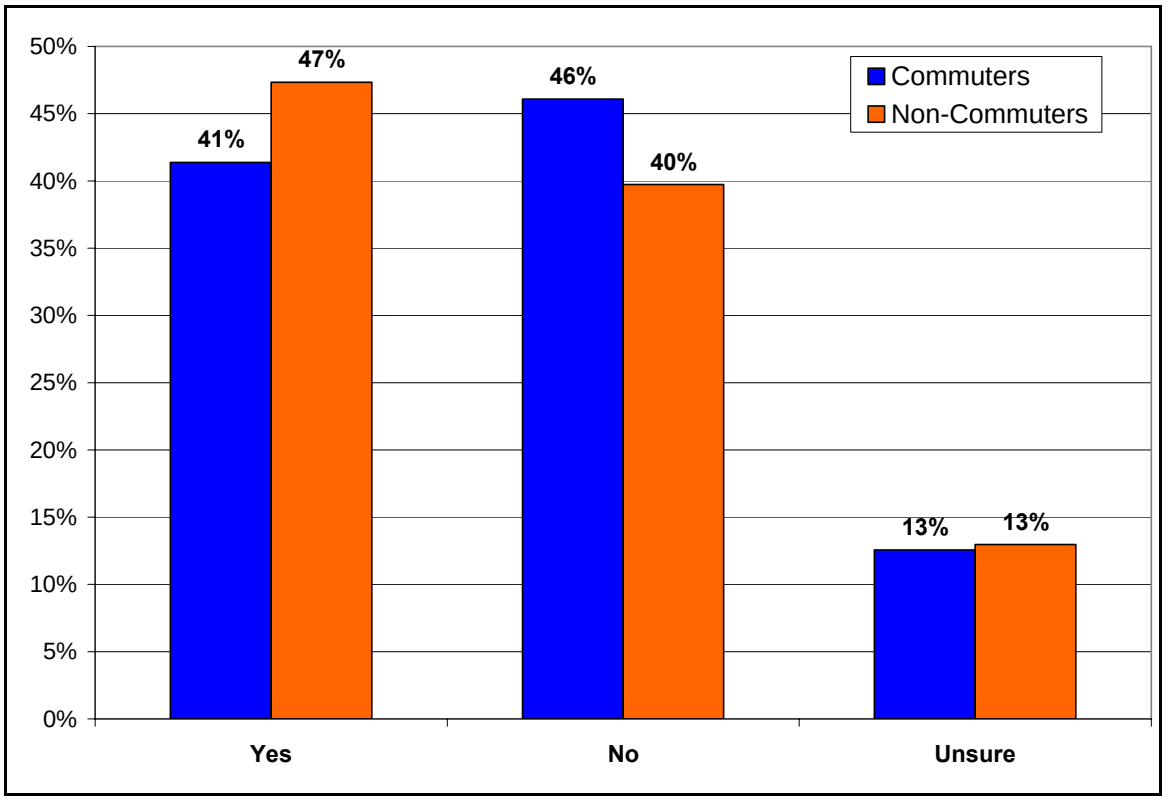


Figure 34: Perceived Value of HOV Lanes to Regional Mobility, Commuters vs Non-Commuters

When asked about what specific benefits the HOV lanes provide to the region, a majority of respondents (63 percent) indicated that the HOV lanes generate travel time savings (Figure 35). Respondents are more skeptical however, about the lanes' potential to reduce congestion and improve air quality, as a little less than half stated that the lanes do not provide benefits in these areas (49 percent for congestion reduction and 47 percent for air quality). Respondents were nearly split as to the lanes' potential to provide fuel savings, as 41 percent stated that the lanes do provide fuel savings and 39 percent indicated that they do not.

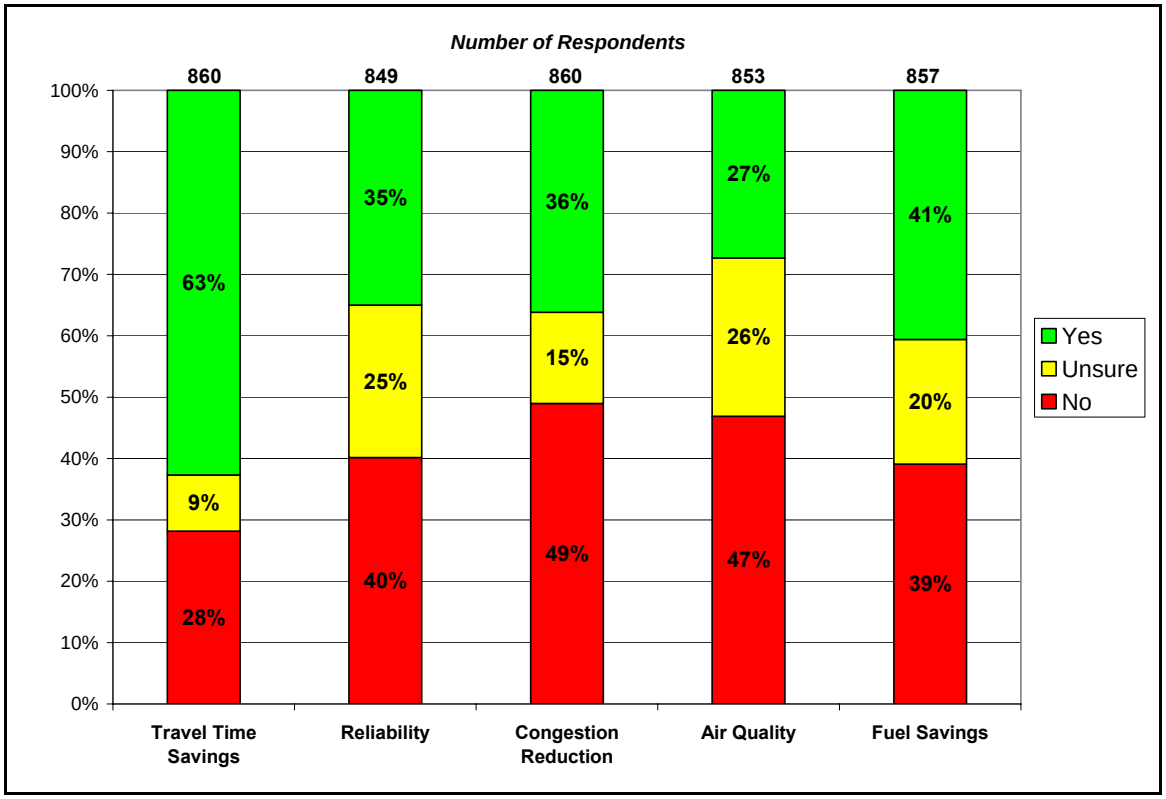


Figure 35: "Do you feel the HOV lanes provide the following benefits?"

IH-30 MANAGED HOV LANES

Most respondents indicated that they were at least somewhat aware of the managed lanes on IH-30, as 48.4 percent indicated that they knew “a little” and 32.3 percent indicated that they knew “a lot” about the facility (Figure 36). Less than 20 percent indicated that they knew “nothing” about the managed lanes.

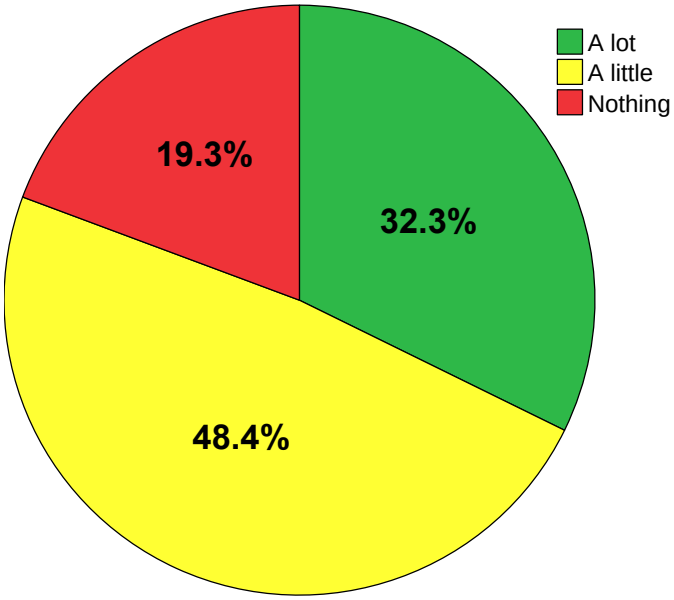


Figure 36: "How much do you know about the managed HOV lanes on IH-30 west of Dallas?"

However, only a third of respondents indicated that they had actually used the managed lanes on IH-30 (Figure 37). Of the respondents that indicated that they had used the lanes, most indicated that they use it infrequently, with 11.3 percent indicating they “hardly ever” used them and 10.4 percent of respondents indicated that they used the lanes “a few times a month”. Only 3 percent of respondents use the lanes on a “weekly” basis, and 2.9 percent use the lanes on a “daily” basis. Of the 22 respondents who indicated that they used the managed HOV lanes on a daily basis, only one was a non-commuter. Of the 23 respondents who stated that they used the facility on weekly basis, 3 of these were non-commuters.

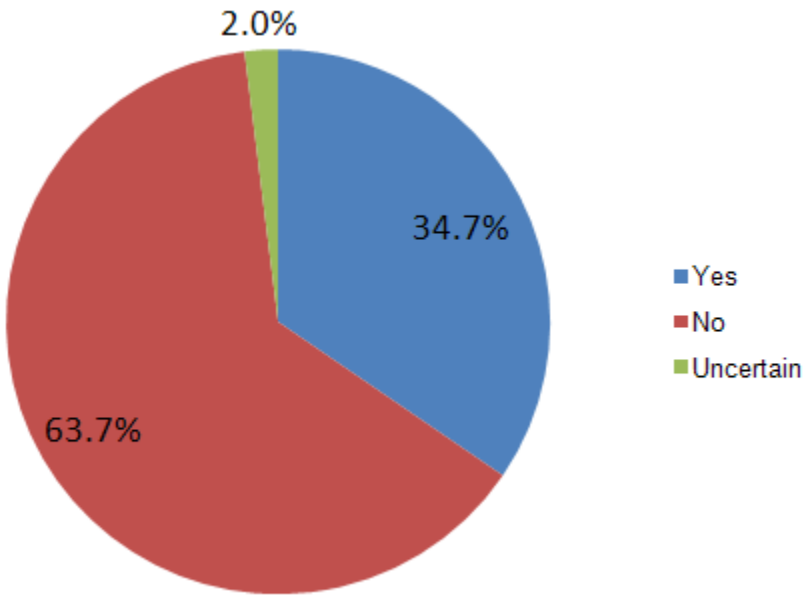
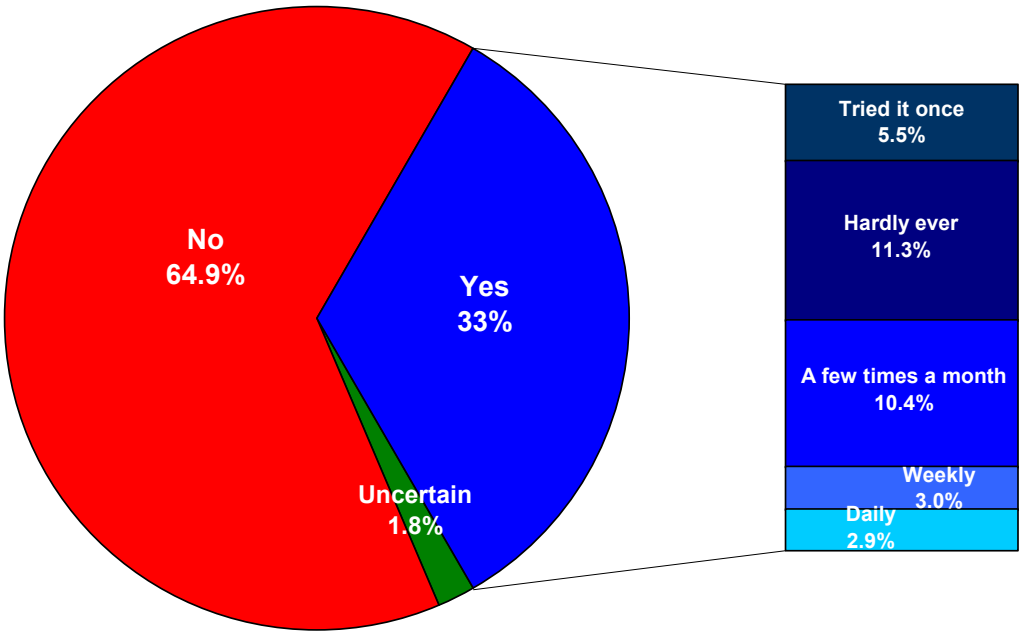


Figure 37: "Have you ever used the managed lane on IH-30 between SH 360 and Loop 12? If so, how often?"

Respondents who indicated that they used the IH 30 Managed HOV Lanes on a weekly, daily, or monthly basis were asked on what days they typically use the facility. Respondents who indicated that they used the facility daily naturally indicated that they used the facility for all days of the work week with the exception of one individual who indicated that they did not typically use the facility on Monday (Figure 38). Respondents who had previously indicated that they used the IH 30 managed HOV lanes on a weekly basis tended to favor using the facility on Mondays, while respondents who only used the facility on a monthly basis tended to prefer to utilize it on Fridays. The percentages shown in each column represent the percentage of respondents within each user class (daily, weekly, or monthly) who selected that day as a day that they typically use the IH 30 managed HOV lanes.



Use of IH 30 Managed HOV Lanes	Total Respondents	Days of the Week				
		Monday	Tuesday	Wednesday	Thursday	Friday
Daily	22	95.5%	100.0%	100.0%	100.0%	100.0%
Weekly	23	82.6%	69.6%	73.9%	69.6%	69.6%
Monthly	63	65%	67%	65%	63%	83%

Figure 38: Typical Days of Use of IH 30 Managed HOV Lanes

The most common types of trips on the IH-30 managed lanes are for traveling from home to work or from work to home (Figure 39). Nearly nine percent of respondents indicated that they used the lanes to travel from work to home, and 7.8 percent indicated that they used the managed lanes to travel from home to work. Respondents who indicated they used the lane for trips made from home to work and from work to home accounted for 7.2 percent. School related trips were the least cited trip type for the IH-30 managed HOV lanes. Only respondents who indicated that they used the managed HOV lanes "a few times a month," "weekly," or "daily" answered this particular question on the survey and respondents were able to choose more than one option.

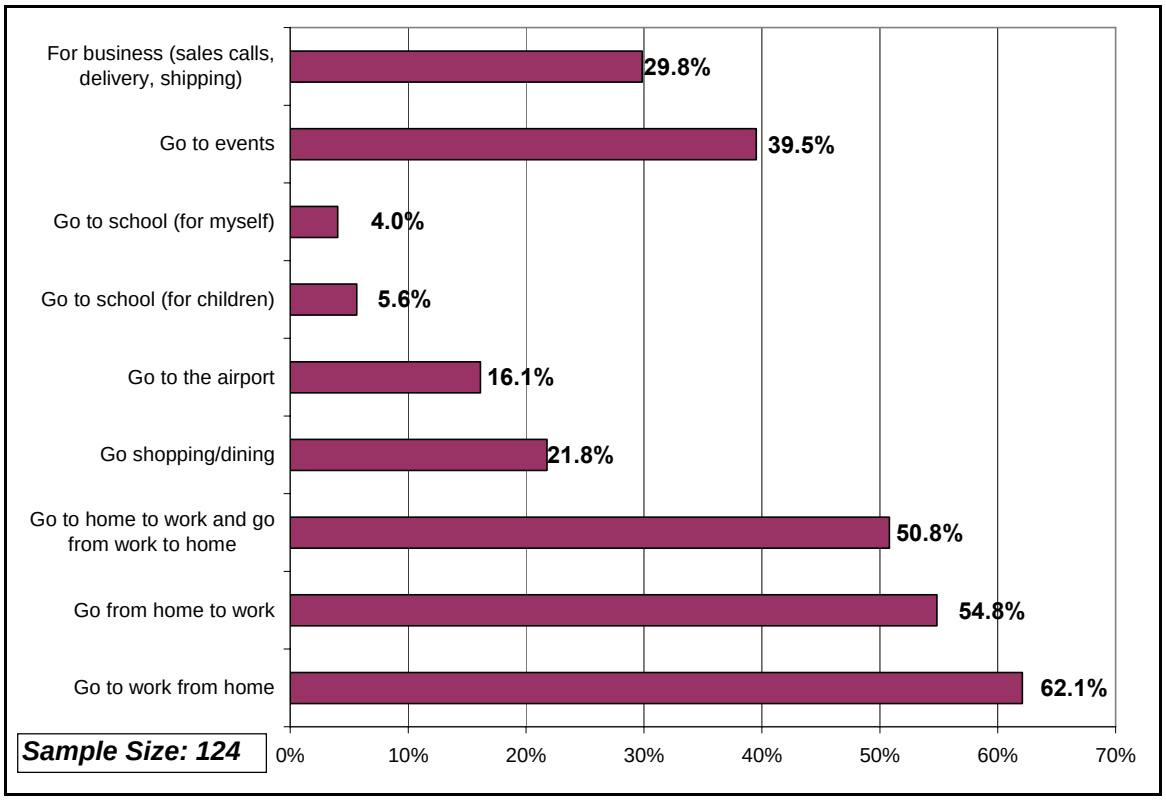


Figure 39: "What type of trips do you make on the IH-30 managed HOV lane during the week?"

When asked to give their general impression of the IH-30 managed lanes, most respondents indicated that they had a “very favorable” (14.3 percent) or a “somewhat favorable” (27.4 percent) impression of the facility (Figure 40). There was; however, a large number of residents who indicated that they had an “unfavorable” (21 percent) or a “very unfavorable” (19 percent impression) of the facility. A substantial percentage of respondents indicated that they had either a neutral impression or no opinion on the facility at 18.3 percent.

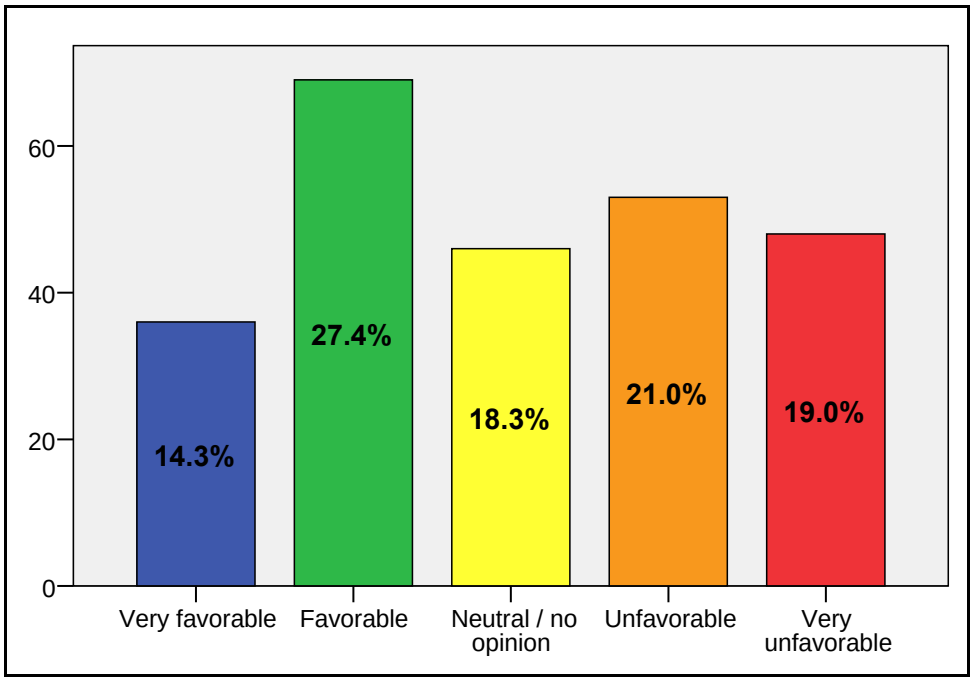


Figure 40: "What is your general impression of the IH-30 managed HOV lane?"

Non-commuters were more likely to have a favorable or very favorable impression of the facility, and commuters were more likely to have an unfavorable or very unfavorable impression.

Impression of I-30 Managed HOV Lanes

	Very Favorable	Favorable	Neutral/No Opinion	Unfavorable	Very Unfavorable
Commuters	**13.5%**	**25.4%**	**17.3%**	**23.8%**	**20.0%**
Non-Commuters	**16.4%**	**32.8%**	**20.9%**	**13.4%**	**16.4%**

Figure 41: Impression of Managed HOV Lanes, Commuters vs Non-Commuters

Of the respondents who indicated they had used IH-30 facility, only 18.7 percent indicated that they had changed their opinion of the facility since using it (Figure 42). A majority of these respondents indicated that their opinion had improved (3.6 percent “greatly improved” and 6.8 percent “somewhat improved”).

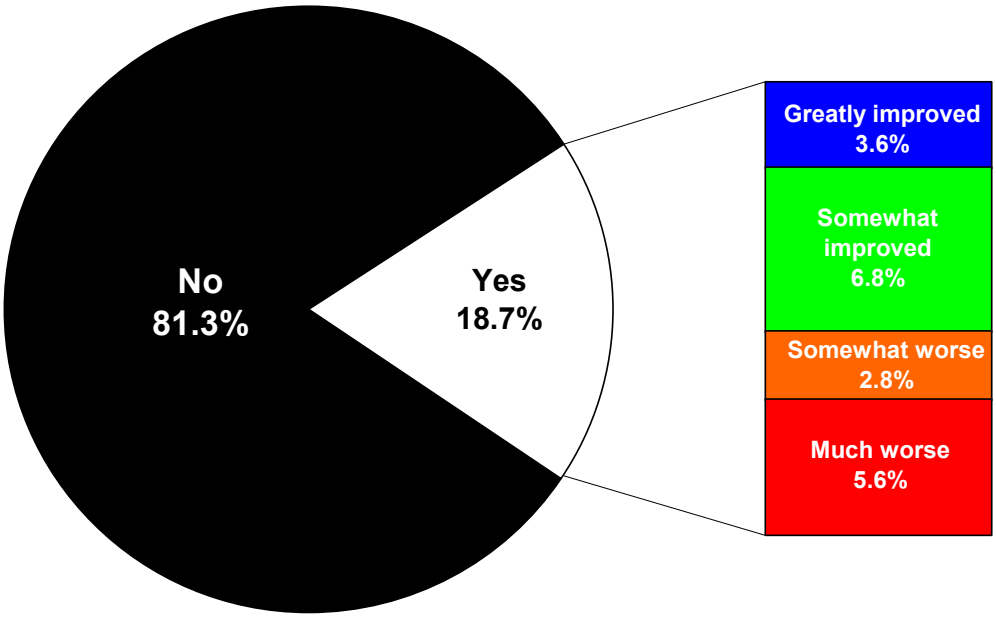


Figure 42: "Has your impression of HOV lanes changed since using the IH-30 managed HOV lane? If so, how has your impression changed?"

Of those respondents that indicated that their impression of the facility had worsened since using it, 42 percent indicated that they had wanted to use the facility but could not because it was closed (Figure 43). This sentiment was echoed by respondents who elected to provide an open ended response to the question “Have any of the following happened to you while travelling on or trying to use” the managed lanes, which is attached in Appendix A.

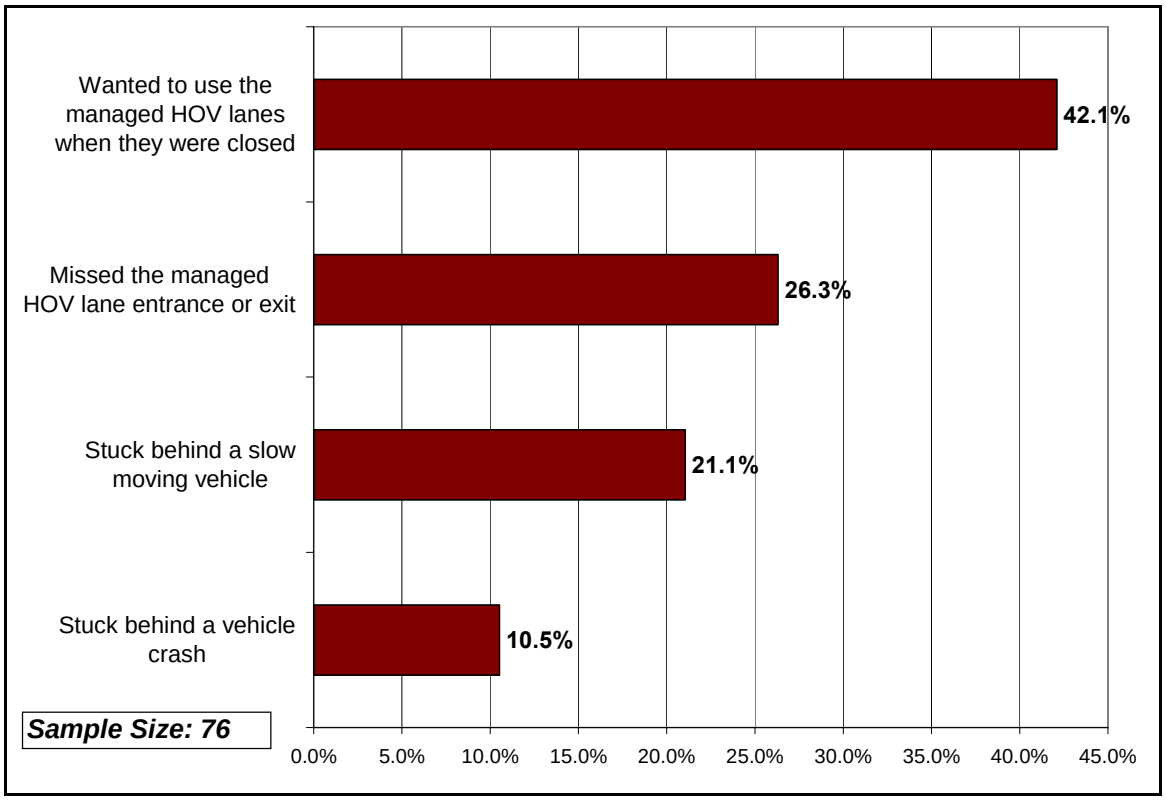


Figure 43: "Have any of the following happened to you while driving on or trying to use the IH-30 managed HOV lane?"

The most common reasons for using the managed HOV lanes on IH-30 are for avoiding congestion and saving time (Figure 44). The least cited reasons for using the lane were that destinations or home were close to the HOV lanes. This indicates that perhaps a substantial number of the facility's users are travelling out of their way in order to utilize it. Respondents were able to choose more than one option, and a cross tabulation of this data revealed that half of the respondents who indicated that their destinations were close to the HOV lane indicated that their homes were close to the HOV lane as well.

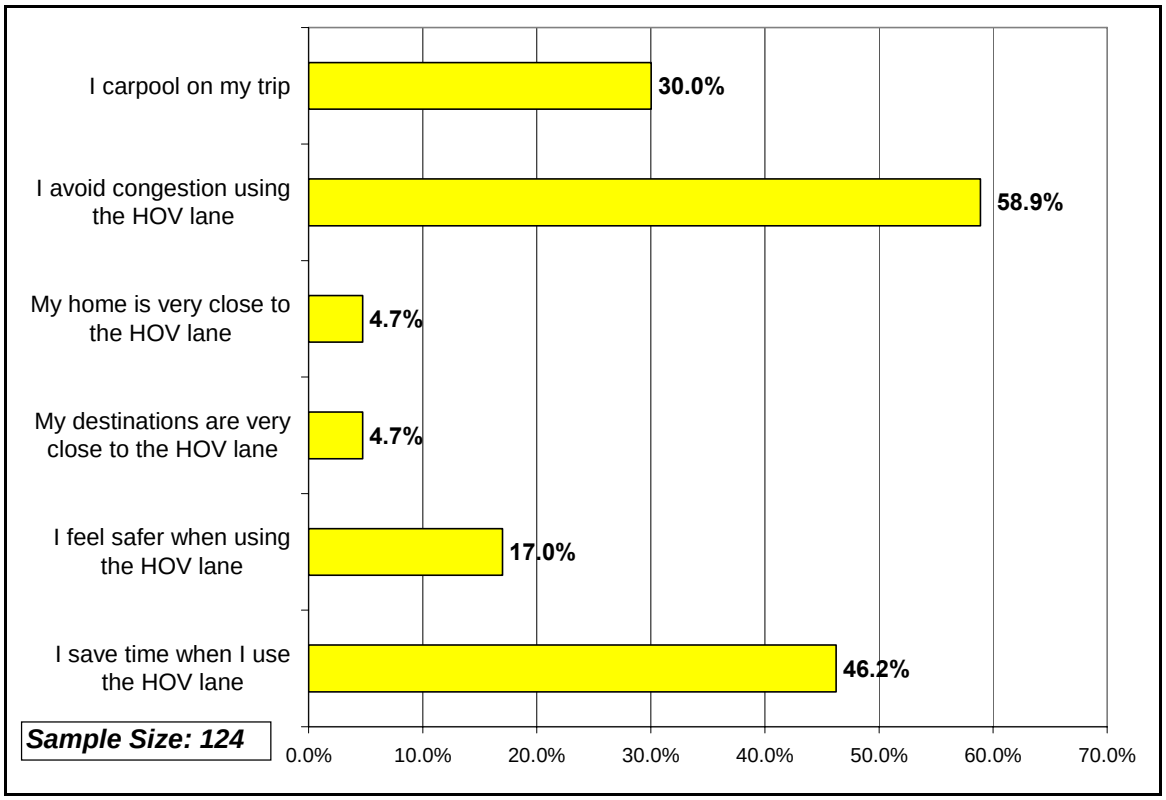


Figure 44: "Please select your reasons for using the managed HOV lane."

When asked to rate the quality of the IH-30 managed lanes in terms of understanding directional signs, maintenance of roadway or pavement, cleanliness of lanes and level of safety, the responses were mostly "adequate" (Figure 45). A plurality of respondents in each category stated that the managed lanes were adequate for each measure (43.4 percent for understanding directional signs, 40 percent for maintenance, 36.5 percent for cleanliness of the lanes, and 31.7 percent for safety.) The highest rated measures were maintenance of roadway or pavement (30 percent "very good" and 14.4 percent "excellent") and cleanliness of lanes (33.3 percent very good and 11.2 percent excellent.) Understanding of directional signs and safety received the highest "poor" and "fair" ratings.

The high "adequate" response rates for these operating measures are troublesome for the managed HOV lanes. Such facilities are generally regarded as a "premium service" for travelers, often justifying the pricing elements that are incorporated. This analysis shows that in spite of the premium service offered by the facility, in terms of time savings, the facility is not viewed by a large portion of travelers as offering anything above what they might consider adequate.

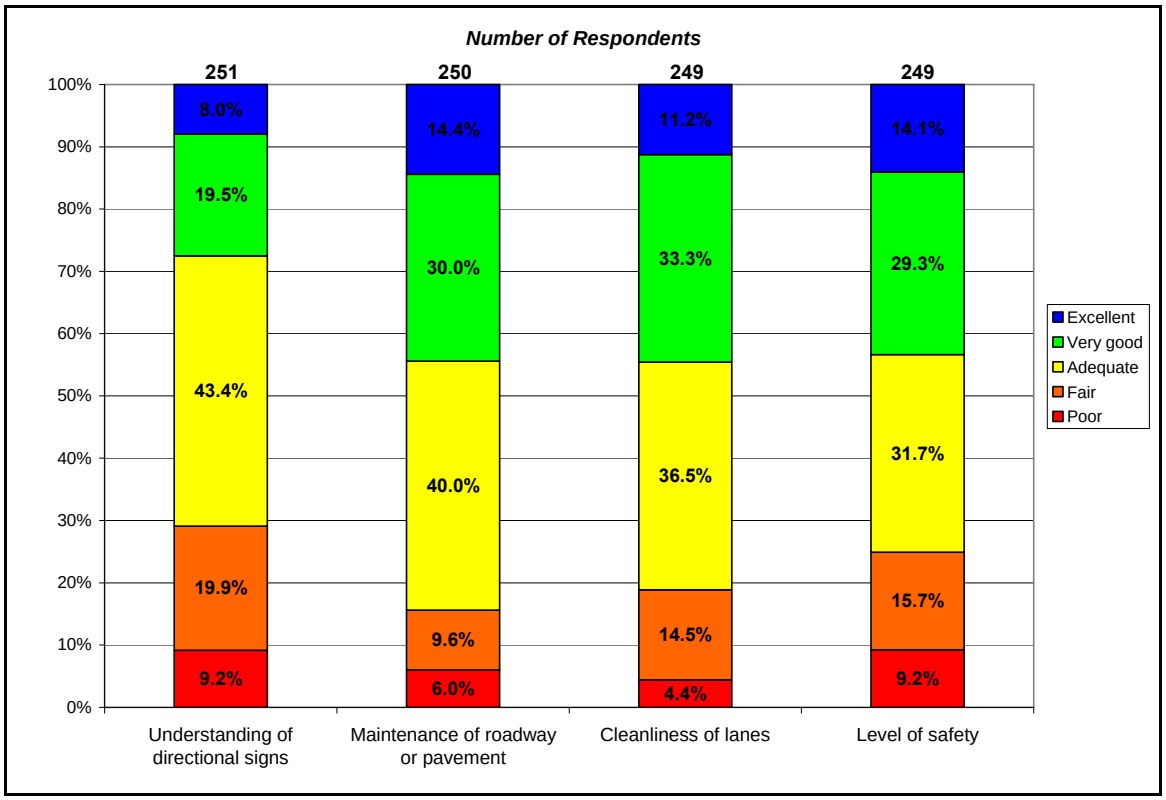


Figure 45: "Please rate the quality of the IH-30 managed HOV lane for each of the following measures"

Respondents were given information regarding the upcoming extension of the IH-30 managed lanes eastbound from 19th Street to Cockrell Hill Road and westbound from the Trinity River Bridge to 19th Street. When asked how this extension would affect their use of the IH-30 managed lanes, most (67.4 percent) indicated that the extension would not change their use of the facility (Figure 46). This is not surprising given the cross tabulation of ingress and egress points discussed earlier, as a large portion of trips taken within the IH-30 corridor either begin to the west of this location and end to the east or begin to the east of this location and to the west. Less than 3 percent indicated that they would use the facility less often and 13.4 percent indicated that they use it more often.

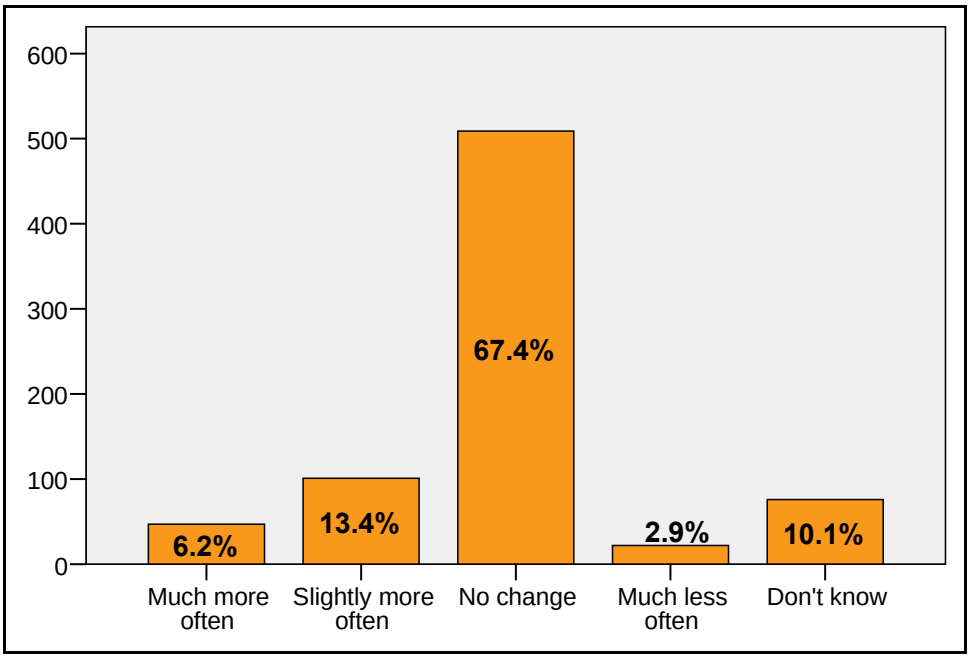


Figure 46: Effect of HOV lane extension on use of IH-30 HOV lanes

When respondents were asked if they had previously heard about the managed lanes concept, 60.5 percent indicated that they had. As a follow up, respondents were asked several questions regarding the use of pricing on HOV facilities (Figure 47). A majority of respondents (56.3 percent) stated that they understood how pricing works and the sample was generally split between respondents who were aware that pricing would be introduced to the IH-30 managed lanes in the near future. However, a large majority of respondents stated that they did not support pricing on the managed HOV lanes (61.1 percent) and did not believe variable pricing was fair (58.7 percent).

	Yes	No	Not Sure
Did you know the IH-30 managed HOV lanes will introduce pricing in the future?	**48.2%**	**47.3%**	**4.5%**
Do you understand how variable pricing works?	**56.3%**	**34.2%**	**9.5%**
Do you support variable pricing on the IH-30 managed HOV lanes?	**17.1%**	**61.1%**	**21.8%**
Do you believe variable pricing is fair?	**17.3%**	**58.7%**	**24.0%**

Figure 47: Responses to pricing related questions

These patterns were consistent for respondents regardless of whether they were commuters or non-commuters (Figure 47). However, non-commuters were slightly more likely to oppose the imposition of variable pricing on the IH-30 managed HOV lanes (63 percent opposition for non-commuters and 60 percent for commuters).

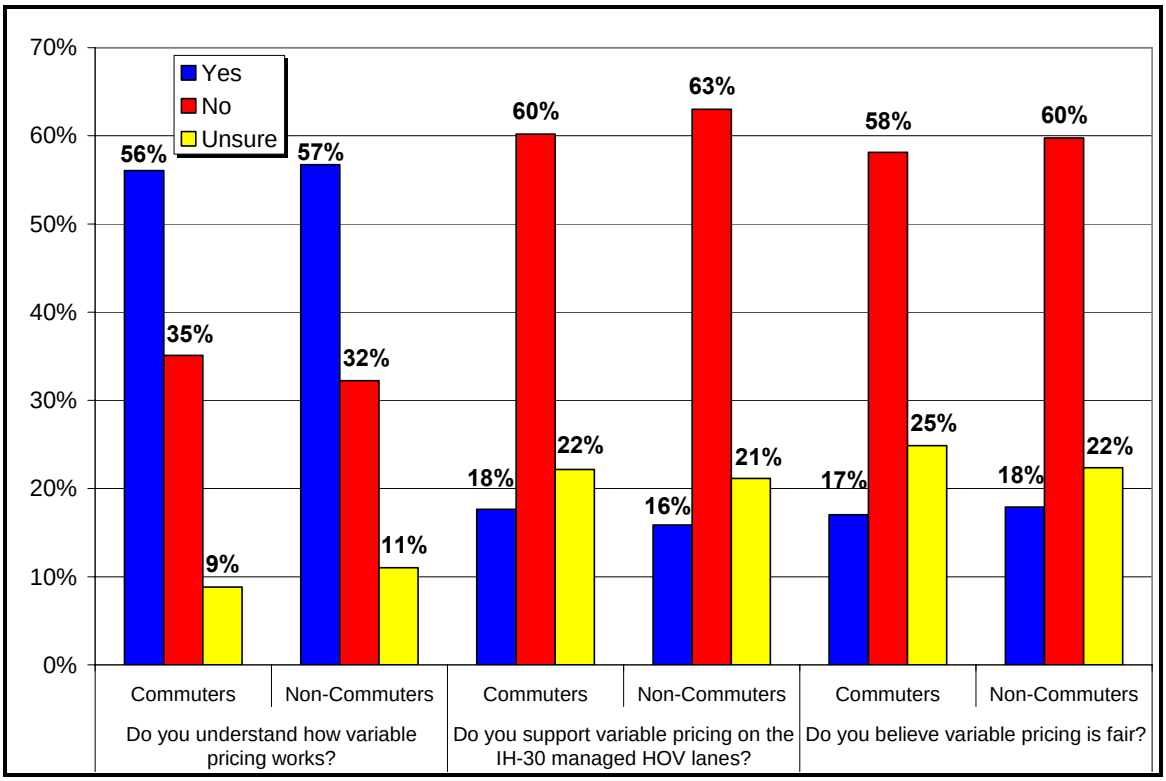


Figure 48: Perceptions and Opinions of Variable Pricing, Commuters vs Non-Commuters

It does not appear that self-reported understanding of variable pricing affects support for variable pricing on the IH-30 managed HOV lanes (Figure 49). The majority of respondents who indicated that they did not support pricing on the facility indicated that they understood variable pricing. However, those who indicated that they supported variable pricing were more likely to state that they understood pricing. The majority of respondents who did not understand pricing were opposed to variable pricing on the facility.

Support for Variable Pricing

Understand Variable Pricing	Yes	No	Unsure
Yes	12.6%	38.3%	5.3%
No	3.1%	17.4%	13.8%
Unsure	1.5%	5.3%	2.8%

Figure 49: Understanding and Support of Variable Pricing

A similar relationship is observed in the perceived fairness of variable pricing versus self-reported understanding of variable pricing (Figure 50). The majority of respondents who indicated that they understood variable pricing still viewed variable pricing as unfair.

Understand Variable Pricing	Fairness of Variable Pricing: Yes	No	Unsure
Yes	12.7%	37.9%	5.7%
No	3.2%	15.6%	15.4%
Unsure	1.5%	5.0%	3.0%

Figure 50: Understanding and Perceived Fairness of Variable Pricing

It therefore appears that support for variable pricing on the IH-30 managed HOV lanes is directly correlated to each respondents perception of variable pricing's fairness (Figure 51). Respondents who supported variable pricing where more likely to view variable pricing as fair, whereas those who did not view pricing as fair were more likely to oppose it. Furthermore, respondents who were unsure of variable pricing's fairness were more likely to be unsure of their support for variable pricing on the IH-30 managed HOV lanes.

Support for Variable Pricing	Fairness of Variable Pricing: Yes	No	Unsure
Yes	13.8%	1.6%	1.7%
No	1.5%	55.2%	4.5%
Unsure	2.1%	1.9%	17.9%

Figure 51: Perceived Fairness of and Support for Variable Pricing

When asked where they had heard about the managed lanes concept, the most common responses were from the newspaper and television news stations (Figure 52). Radio was also cited as a popular source of information regarding the managed lanes concept, while public meetings were the least cited. Only respondents who indicated that they had previously heard about the managed lanes concept were given the opportunity to answer this question and respondents were able to choose more than one option.

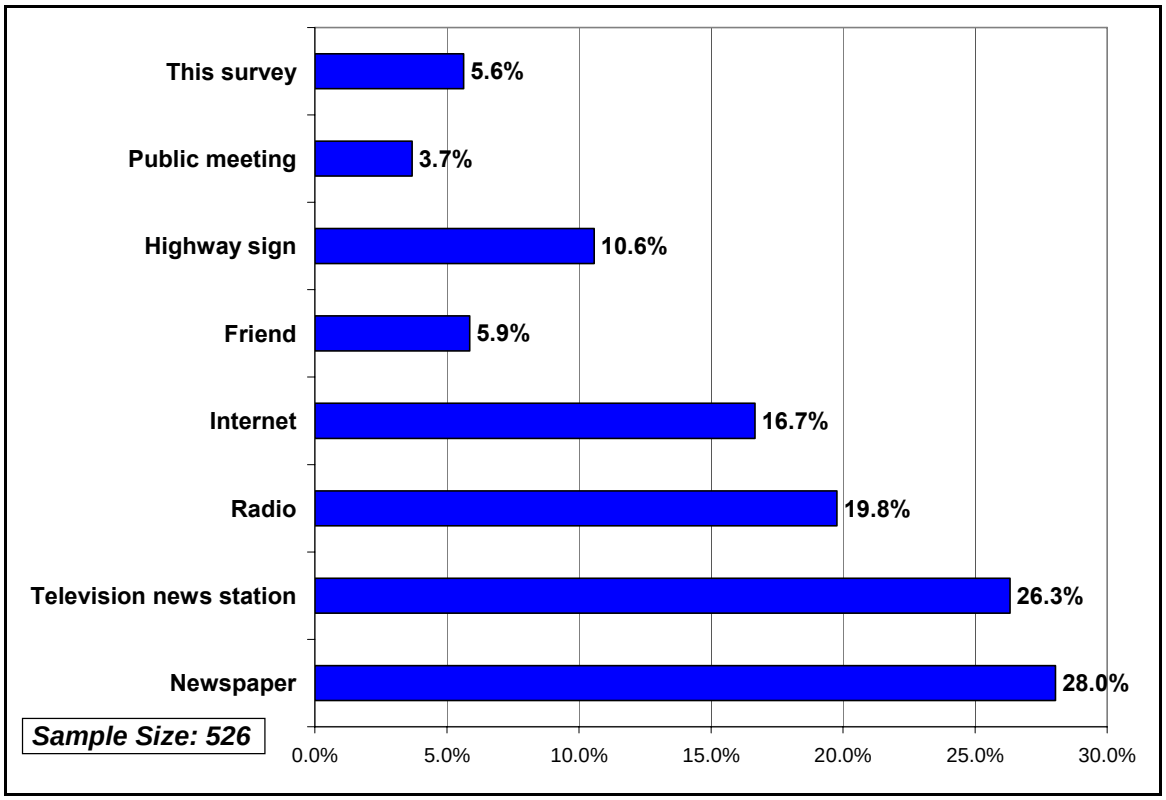


Figure 52: "Where did you hear about the managed lane concept?"

Respondents were asked what they believed to be the fairest methods for managing the IH-30 HOV lanes (Figure 53). Respondents were allowed to select more than one option, but the most common method cited was allowing carpools to travel for free in the managed lanes. Allowing transit vehicles to access the lanes for free was the second most popular management method cited. The least popular method cited was that of increasing the toll rate during peak periods to reduce congestion on the managed lanes (variable pricing), echoing the results shown in Figure 47. Respondents were able to choose more than one option.

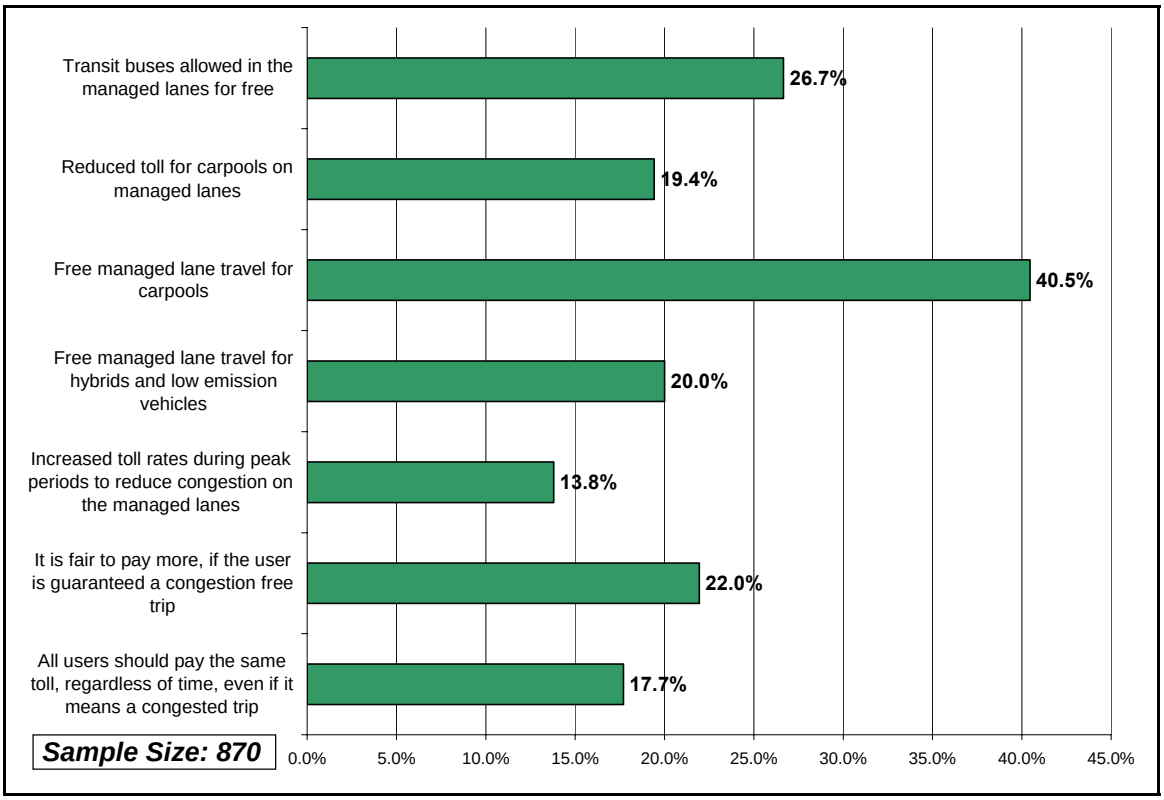


Figure 53: "Which of the following do you believe are fair methods to manage the IH-30 HOV lanes?"

Respondents clearly favor free HOV access to the IH-30 managed lanes facility. When asked to select their preferred pricing scenarios for HOV2 and HOV3+ during the peak and off-peak periods of the day, a clear majority preferred toll free access for both HOV classifications for all periods of the day (Figure 54). However, these majorities were greater for HOV3+. Nearly three quarters of respondents favored toll free access for HOV3+ during the peak hours (72.7 percent) and off-peak hours (72.8 percent), while smaller majorities favored toll free access for HOV2 during the peak (52.7 percent) and off-peak (64.5 percent). Over a quarter (26.8 percent) of respondents favored a 50 percent toll reduction for HOV2 during the peak periods.

		Free toll	50% of Full Toll	Full Toll
Rush Hours (Morning eastbound 6 - 9 am and evening westbound 4 - 7 pm)	High Occupancy Vehicle - 2 Occupants (HOV 2)	52.7%	26.8%	20.5%
	High Occupancy Vehicle - 3 or more Occupants (HOV 3+)	72.7%	11.1%	16.2%
Non-Rush Hours (early morning, midday or late evening	High Occupancy Vehicle - 2 Occupants (HOV 2)	64.5%	16.1%	19.4%
	High Occupancy Vehicle - 3 or more Occupants (HOV 3+)	72.8%	10.3%	17.0%

Figure 54: "Which pricing scenarios are fair for rush hours and non-rush hours?"

Respondents were asked what state their preferred method for receiving toll rate notifications (Figure 55). The most popular method was through roadside signs, which was selected by 75 percent of participants. The least popular option was through text messages, which was selected by only 11.4 percent. It should be noted that respondents were able to choose more than one option.

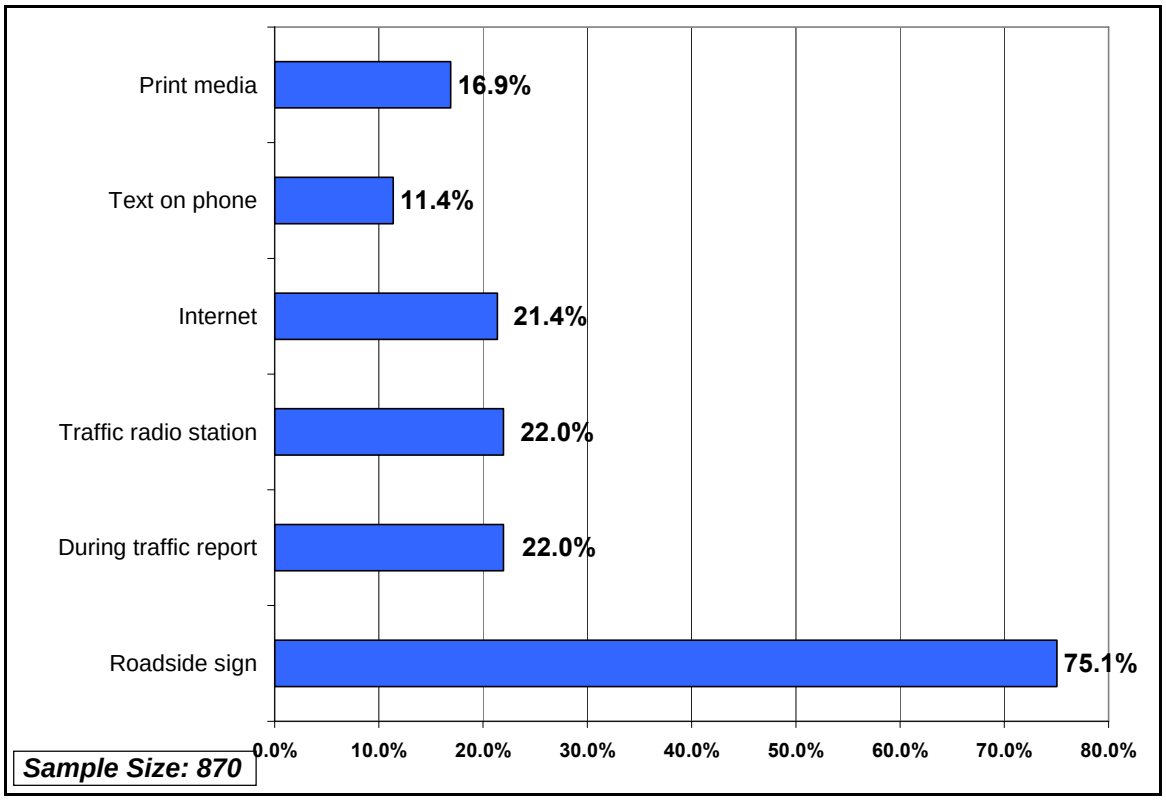


Figure 55: "How would you like notification of toll rates while traveling on the IH-30 managed HOV lanes?"

III. FOCUS GROUP

With any project development, it is important to gain an understanding of the public's perception of the project. It is especially important in cases where new and/or different approaches and operating strategies may be employed. One way to garner a snapshot of these impressions is through the use of focus groups. While surveys may allow for a general broad understanding of the feelings of a larger percentage of the population about certain issues; the answers are merely responses to the questions that are asked. Focus groups, on the other hand, allow for a more in-depth understanding as to *why* people may feel a particular way. Focus groups conducted after preliminary data collection through survey methods allow researchers to concentrate on issues to get a better understanding of the rationale behind their answers.

FOCUS GROUP RECRUITMENT AND LOGISITICS

It was the intent of the research team to conduct three focus groups of commuters who regularly traveled the I-30 West corridor. As with all focus groups, it is best to get a representation of the population. While, we did not specifically screen the eligible participants for any criteria, including age, ethnicity, income, gender or race, we did have a mix of age, race and gender.

Prior to the focus group phase of this research, a survey was developed and deployed for the project. At the end of the survey, participants had an option of providing their contact information if they wished to be contacted about future outreach opportunities. Over 200 people that took the survey provided their contact information.

The project team determined that three focus groups would be held in the I-30 West corridor. In an effort to capture commuters into downtown Dallas and the western suburbs as well, one focus group was held in Arlington, at the western end of the corridor. This focus group took place on August 12, 2008 at 6:00pm at the offices of the North Central Texas Council of Governments (NCTCOG). Two other focus groups were conducted at the other end of the corridor at the Dallas County Offices building, near downtown. Two focus groups were held at this location on August 13, 2008. One group was conducted from 11:30am-1:00pm. This was an effort to allow people that had other commitments after work to attend during the lunch period. The second group was conducted at the same location from 5:30 – 7:00.

Recruitment for the focus group participants was handled via e-mail. After the meeting locations were secured, an e-mail was sent to everyone that responded on the survey that they were willing to participate in additional outreach activities. The mass e-mail (attached as Appendix B) asked people that were available on those days and times to contact a TTI employee in the Austin office. This employee gathered the person's name and contact number and signed up the participant for the group requested. Each group was limited to 10 participants. If others e-mailed or called after the groups were filled they had the option of being on a waiting list in case of cancellations. Several people chose to do this and some were subsequently asked to attend.

Each focus group had the same TTI facilitator. The facilitator used a discussion guide to lead the discussion. The discussion guide was previously approved by TxDOT and NCTCOG. The guide is attached as Appendix C. Focus group participants were paid $ 50.00 for their participation. At least three TTI staff members were present for each focus group, including the moderator and a note-taker. The sessions were also audio-taped and later transcribed. The participants were aware of this. The session began with a welcome, an explanation of the purpose of the focus group, a statement of the protocol and expectations for the focus group, and introductions. Prior to beginning each focus group, the participants were asked to read and sign consent forms acknowledging that they are aware of the purpose of the focus groups and how the results will be used.

PRELIMINARY INFORMATION

At the request of TxDOT, prior to beginning the focus group, each participant was asked to complete a handout, Appendix D, which contained several phrases related to toll lanes, managed lanes, or express lanes. The purpose of this exercise was to determine what the participants thought these phrases meant before any discussion took place. Overwhelming, the term "managed" means control to these participants. This is either through access or through video cameras. Nearly every respondent some how related the term managed to the concrete barriers on I-30. A few people thought that managed meant extra law enforcement or speed cameras. It is important to note that each person completed this exercise as they arrived for the focus group. At no point before completing this sheet did any of the participants interact with each other. Yet, nearly everyone had the same general meaning of the term managed. All of the people were familiar with traditional toll lanes as well as HOV lanes. Some people did not know what "HOV/Toll" indicated. There was general agreement on the meaning of Express lanes. Most thought this meant very limited access. Thus most thought Toll Express lanes were simply express lanes that charged a toll to travel on them.

FOCUS GROUP DESCRIPTIONS

The first focus group, held at NCTCOG, consisted of seven men and three women. Most of the participants have lived in the Dallas area for several years. All commuted on I-30 regularly. The second group, held during the lunch hour at the Dallas County office was comprised of three women and five men. In this group everyone had lived in the Dallas area for more than 10 years with the exception of two people, one who had been in the area for six years and one had been in the Dallas area just about one year. All commute on I-30 for at least part of their commute. The third group, also held at the Dallas County offices, consisted of six women and one man. All members of this group commute on I-30 and all had been in the Dallas area for several years.

RESULTS OF THE FOCUS GROUP DISCUSSION

Travel Patterns on IH-30 Experiences

The participants in each of the focus groups were asked to relate their travel experiences in the IH-30 corridor. As previously mentioned, everyone traveled the IH-30 corridor for at least part of their commute trip. At the beginning, everyone stated that traffic congestion in the corridor is bad. However, most went on to say that "it's not really that bad" compared to other corridors in the Metroplex. There was general agreement that the construction in the area is contributing to congestion. Several people did mention that it was getting better. There was overall frustration about chokepoints or bottlenecks in the corridor, specifically when several lanes are forced to merge down to two or three. In each of the groups at least a few people mentioned access and egress to the facility as the major contributor to congestion. These people felt as if the surface streets were incapable of allowing people to exit that facility in an expeditious manner. Specific streets mentioned were East Chase, Beckley and Highway SH-360 and the area around the stadiums. Other areas mentioned were Copper Hill, downtown Dallas and the merging and weaving that is required to get on a different facility, and Loop 12.

Several people in each of the groups mentioned that there are quite a few alternate routes available and they use them regularly. In fact, one person mentioned that if you "didn't know the alternate routes, you were just stupid."

Thoughts about HOV lanes in the Dallas Area

When queried about the effectiveness of the HOV lanes in the Metroplex, the majority of the people in all groups felt that the lanes were ineffective. Many believed they are a waste of taxpayer money. Each group mentioned the lack of a "network of HOV lanes". They stated that there seems to be no logic in where the HOV lanes are located. Some people cited Houston HOV lanes as an example of how HOV lanes should be constructed. They believe there should be direct access ramps to and from the lanes. The majority of the people, even those that regularly travel in the HOV lane, felt that violators are a problem and there should be more enforcement of the occupancy requirements.

Some people expressed opinions that a network of HOV lanes could possibly be effective but the facilities in existence today only exacerbate the congestion problems. In general, many understood and supported the overall premise of the HOV lanes. They supported the need to get people out of their cars but in a "that's fine for them, but I'm not going to do it" manner. Many simply said that it was impossible for them to carpool due to the nature of their jobs. There was an overwhelming sentiment that drivers, whether HOV users or not, did not like the concrete barrier separation. In fact, that is what the term "managed" meant to them.

There was concern that each of the HOV lanes in the Dallas area operated differently and physically looked different from each other. Several people postulated that may be the cause of the underutilization. They felt that people who are eligible to use the lanes are simply not using

them because they are unaware or do not understand the operating rules on each facility. There was strong agreement among all groups that the lanes should be open at all times.

Use of and Opinions of the I-30 Managed HOV lane

At least one person in each of the three focus groups uses the managed HOV lane on I-30 on some occasions. There was one person in the first group that commuted daily on the managed HOV lane and three people in the third group. Among the regular users of the managed HOV lane, there was support for the lane. Many are anxiously awaiting the opening of the extension although none knew definitively what the plans are for the extension facility. There was resentment among the non-users (more so than the users) about the portion of the lane that is currently constructed and not yet opened. They felt that this was an incredible waste.

One person commented on the opening and closing of the lane. He stated that personnel assigned to this task often block the adjacent general purpose lanes. He felt that not only was this an impediment to traffic flow; it was also a safety hazard. The majority felt the lane should be open 24 hours a day. Some people mentioned the idea of having the lanes open to HOV travelers in the peak periods but allowing general purpose access at other times. Many also felt that the barrier separation caused accidents and then "you're stuck". Several people also mentioned limiting the entrances and exits on the HOV as a way to increase use. They suggested making it more like an express lane. At the same time, others said they may use the lane if the entrances and exits were more convenient to them.

The most unanimous comment in all three of the groups among HOV users and non-users was the disruption caused by law enforcement officers in the HOV lane. There was agreement and "eyewitness testimony" in each of the groups about law enforcement officers in the HOV lane stopping vehicles for speeding. Most stated this was often the case even as the adjacent general purpose lanes were moving at even higher speeds. When asked which type of law enforcement was issuing citations, most people thought it was municipal police (as opposed to Department of Public Safety or Dallas Area Rapid Transit [DART]). This observation seemed to really provoke the group members.

Knowledge of Plans for Future Operations on the I-30 Managed HOV Lane

As noted earlier, very few participants knew about the plans to extend the managed HOV lane. Some had noticed the "unused concrete" and assumed that would be an extension but they did not understand why it was not yet open. Although most believe in the general principles of the HOV lane operation; they also did not think they would use the facility even after the extension is open. Many expressed concern that there is still the bottleneck when you reach the Trinity River bridge. They did not feel that it was "worth it" (even at no cost) to travel in the HOV lane and then get stuck at a bottleneck.

Knowledge of and Opinions on Pricing

The facilitator asked each group about their knowledge of the future operating plans for the managed HOV lane on I-30. This question sought to ascertain the participants' understanding of the regional pricing policies and their opinions about the policies.

Most people had heard some mention that there would be tolling on the lane but no one was very clear on who or how people might be tolled. As expected, some comments were directly related to opposing tolling in general. A few expressed the feeling of double taxation. Others indicated that I-30 was already tolled decades ago and paid for so it should not be tolled again. Some people thought the occupancy requirements were going to increase and HOVs would be charged a toll. Some people thought that HOVs would get a discount.

The facilitator then described how the managed HOV lane might operate and asked the participants their opinions. After considerable discussion, in two of the three focus groups there was unanimous agreement that HOVs should be free. One group felt strongly that everyone should pay. They reasoned that HOVs were already getting a discount because they could split the toll or did not have to drive everyday. There was not agreement on what a minimum occupancy should be but the majority felt it should be vehicles with two or more people in the car. Most people felt it would be terribly unfair to charge people that are already carpooling. There was some confusion among each of the groups about how it would actually work. There was skepticism that any operating agency, be it TxDOT, DART or NTTA, would have the ability to implement such a complex program.

Most people were unaware of the possibility of variable tolls. As expected there was considerable confusion about how that would actually be implemented as well as the ability of the implementing agency to do so. One group in particular could not understand how the tolls would vary in an attempt to manage demand. Even after being given several examples, most in the group still agreed that a flat toll would be most effective in keeping traffic moving.

There was uncertainty about several issues, including:

- how the toll would be collected,
- how people would know what the toll would be,
- when the toll would change,
- what to do if you are a carpool,
- how could a trip be guaranteed,
- what to do in the event of an accident (this goes back to the dislike of the barriers),
- what is the need for this,
- where does the toll revenue go,
- how would this be enforced,
- what effect this would have on traffic in general purpose lanes caused by drivers trying to decide whether or not to enter the lanes, and
- impact on out-of-town drivers.

After the participants had a chance to digest the information with the facilitator answering questions as they arose, nearly all of the group members thought it might be a good idea and they may occasionally use this as a single occupant vehicle. However, there was an overwhelming lack of confidence in all the groups that something this complicated could actually be done. There was also concern that even if a toll was paid, the traveler still ended up at the same bottleneck further down the road. Most people did not think it would be worth the time saved earlier in the trip to sit at a bottleneck.

The majority of the participants felt the price should be comparable to the currently operating toll roads. It was very difficult for them to imagine paying because of the limited 5-mile lane segment currently operating. Interestingly, there was strong support in all three groups for what they termed "express lanes". These would be lanes that would charge a toll; they would have very limited access and they would go from downtown Dallas to Ft. Worth. HOVs would be allowed to travel for free. Everyone in each of the groups felt that if this type of facility could be built, maybe as an elevated structure, and that would be the best solution. However, not everyone understood that a variable toll would be needed to manage demand. Some felt the limited access (only two or three exits) would regulate the demand.

Overall, most people indicated they might possibly use the managed HOV and be willing to pay a toll. Most would not use the option everyday. Some people that felt that the bottlenecks must be addressed before a project like this could be feasible.

SIGNING COMPREHENSION

Part of this research also sought to gauge the understanding of various signage that could be deployed on the facility. Focus group participants were shown slides of different signs and sign configurations and asked what messages the signs conveyed to them. The signs were displayed using a projector so the picture quality is better than the examples shown in this report. Figure 56 is the first slide that was displayed.

Figure 56. First Example of Signage

The sign used a hypothetical highway number (10) with a section on the bottom of the numerical that says toll. There is a banner at the top of the sign that has a black diamond and says HOV/TOLL LANE. Above that there are two more signs side by side. The one on the left is the TxTAG logo and the one on the right says PAY BY MAIL.

Participants were first asked what the banner with the black diamond meant to them. Initially, the majority of the people felt that it meant that it was an HOV lane and that HOVs would be charged a toll. Among all the groups there was considerable confusion regarding this sign. When asked if SOVs could travel in the lane, most people then thought that yes, perhaps they could if they paid a toll. Only one or two people recognized the TxTAG logo and others brought up the question of how they would pay a toll. Only one person understood PAY BY MAIL because he was aware of the controversy of this on SH 121 in the area. Several people thought the sign contained too much information and one person noted that it was not in Spanish. However, this may have been a facetious comment. Several people noted that because the sign said HOV they would avoid it all together for fear of getting a ticket. Many people also suggested that the sign have the orange circle with the T, as is the case on the toll roads in the Metroplex.

Figure 57, below, was then displayed to the groups.

Figure 57. Second Example of Signage

The second example is the same as the first except that above the numerical marking are the words ACCESS TO. Participants were asked what the term meant to them. Everyone agreed that this sign conveyed that the lane was leading to an entrance ramp. They also believed that this would be a direct access-type ramp. There would be no need to stop at an intersection. That was the only meaning they got from this sign. When asked if they had any information about where you might get off this road, the majority indicated that it was impossible to tell. Some said that the TOLL part under the 10 was confusing because it was felt that access to 10 should be free. One group felt that the banner at the bottom should say LEFT LANE ONLY because they felt that everyone not trying to access 10 should be in a different lane.

The third slide, Figure 58, does not have a numerical designation; instead the words, EXPRESS LANES ENTRANCE, are displayed. The banner at the top has a black diamond and the TxTAG logo and the word ONLY.

Figure 58. Third Example of Signage

Most participants in the three groups preferred the word ENTRANCE to ACCESS. Most people assumed this was a limited access facility so if you accessed it you would not be able to exit for several miles. Only a few people recognized the black diamond and thought it was open to HOVs. Many were confused about the TxTAG logo because that is unfamiliar to them. Some stated that if it included the orange circle with the T then they would feel more comfortable. A few people recognized that it was a toll lane but were concerned that it does not say how much it will cost. A small number of people were unclear that it was a toll lane. Interestingly, almost everyone in each group assumed that this lane would have a high speed limit. They really liked the EXPRESS LANES terminology.

Lastly, each group was shown a short (50 seconds) video that simulated driving through the corridor at highway speeds. They were asked to pay attention to the signing. After the video, the facilitator asked for thoughts and opinions. Without exception, everyone was confused after the video. They indicated that there was simply too much information to take in. After initial discussions about the video, the groups were shown a fourth slide, Figure 59.

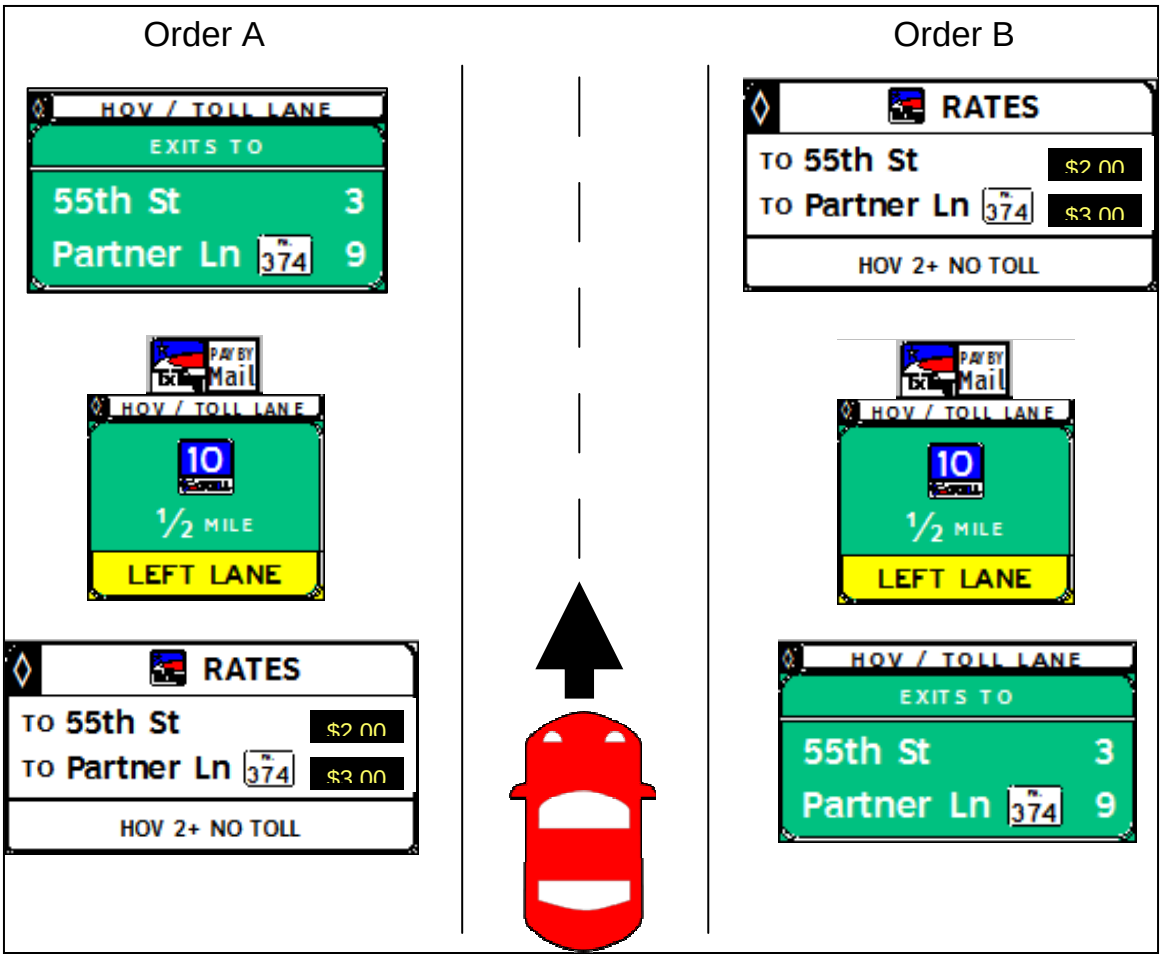


Figure 59. Sign Images from Video Clip

The intent of the two signing scenarios is to determine not only the meaning of the signs to drivers but also a preference of the signing order. Most participants agreed that if you were a regular commuter you would learn what the signs meant after a short time. But, in this setting many were confusing to most people. Several people mentioned that the rate signs were too much information to read on a sign but that the sign was meaningful to them. They were unsure whether they could process all of the information while driving. Two groups specially mentioned adding pavement markings as a way to aid in delivering information. Most people thought the banner was too small. Several people suggested having different colored signing for toll lanes. One group suggested "FREE FOR 2+" in place of "HOV 2+ NO TOLL". Some people suggested have a Dynamic Message Signs (DMS) that would show travel times to the designated exits, citing examples from San Antonio. There was no agreement in any of the groups about the ordering of the signs.

WRAP UP AND CONCLUDING COMMENTS

At the end of each group the facilitator gave participants an opportunity to discuss any other issues. The facilitator also used this time to ask the groups when and how they thought the public should be engaged in process of implementing this type of program. The majority of the people first noted that a program should be simple. They preferred the lane be called a "managed toll lane" because that more accurately conveys what it really is. They felt that it should be advertised that HOVs travel for free. The majority of the people suggested that engaging the public should be happening more than a year before opening. Some people mentioned an example of the public service announcements that are being shown for the switch to digital television and likened this to an outreach effort like that.

A small number of people in two of the groups were opposed to tolling in principle and did not support any type of pricing. A good number of people in all three groups have concerns about where their tax money is being spent and if they do support pricing in the area, want to know where the toll revenues will be used.

CONCLUSIONS

Overall conclusions from the three focus groups indicate that travelers in the I-30 corridor perceive traffic congestion as bad but not that bad when put in the perspective or other facilities in the Metroplex. A majority of the people feel that the traffic congestion is due to on-going construction or design issues related to access and egress. While most participants agree with the philosophical reasons for implementing HOV lanes, most people feel they are underutilized in the Dallas area. Many believe the reason for this is because all the facilities look physically different and have different operating policies. Some people believe that an HOV system can only be effective if it is part of a network. There was agreement among the participants that the HOV lanes should be open 24 hours a day and perhaps then they would be used more. There was an enormous dislike of the barrier separation on the managed HOV lane on I-30. Several people cited various problems with this configuration, including what they perceived as safety hazards when personnel are opening and closing the lanes and the problems with accidents or other incidents that happen within the lane.

When asked about opinions on pricing a managed HOV facility, most people expressed confusion on how such a concept could be implemented. There was also an extreme lack of confidence in the ability of any implementing entity to actually complete a project such as this. That being said, almost all of the focus group participants indicated that they would, on occasion, pay for travel in a congestion-free lane. There was a strong preference for flat tolls, even if they were variable, over dynamic pricing. Two of the three groups felt HOVs should be given a preference.

Many people suggested the need for signs in a different color or with a distinguishing banner to denote that the managed HOV lane operates differently from regular lanes. They also advised a long and extensive outreach effort as a means to educate the public about the project.

Clearly, a few common themes can be found in each of the three focus groups. Communication plans and outreach efforts should address these issues to ensure successful project implementation.

- Communicate the effectiveness of current HOV lanes
- Educate current users and non-users on the operation of all HOV lanes in the Metroplex
- Discuss the need for expansion of HOV lanes
- Demonstrate how the managed HOV lanes may create a network
- Discuss how current bottlenecks will be addressed
- Educate the public about how a managed HOV lane would be operated, using tangible project examples
- Educate the public about the current funding situation and clearly demonstrate what toll revenues from the project would be used for.

IV. STAKEHOLDER INTERVIEWS

Stakeholder interviews are an integral part of project development. The involvement of various stakeholders and stakeholder groups are imperative for a successful project. The information gleaned from these groups provides the project development team with information that can be used to address important issues and concerns.

As the I-30 project transitions from a traditionally operated High Occupancy Vehicle (HOV) lane to a more robust managed lane facility it is important to gauge stakeholders' perceptions and opinions about future operations in the corridor and how it will impact their own operations.

IDENTIFYING THE STAKEHOLDERS

The TTI staff worked with the I-30 Mobility Coordinator who had already compiled a list of major employers and others in the corridor that would be interested in making sure the corridor was accessible to their patrons and customers. From the list, the project team identified employers or event operators between Arlington and downtown Dallas, including the mid-cities of Irving and Grand Prairie. During the months of May, June and July over 40 facility operators and major employers within the I-30 West corridor were contacted to arrange a time for an interview. Unfortunately, many of the numbers provided were simply to a main number and it was difficult to identify the appropriate person to speak with; thus many calls went unreturned. After several attempts, it became apparent that conducting in-person stakeholder interviews was not viable. The project team then asked the I-30 Mobility Coordinator to identify persons in the corridor with whom he had regular communication and thus would be more likely to respond. In August, a list of five individuals, from stadium operators, amusement park operators and major employers were identified. Due to time constraints on the project, it was determined that phone interviews would be the most expedient way to accomplish this task. Phone calls were made to each of the five identified contacts. Four of the five contacts consented to a phone interview. The fifth contact did not respond to repeated phone messages.

DEVELOPING THE INTERVIEW GUIDE

Prior to the narrowing of the potential interviewees, an interview guide was developed to ensure that each respondent was asked the same information. While the guide is simply that, a guide, it does provide a frame of reference for the interviewer from which to ask questions.

The interview guide, attached as Appendix E, first asks the interviewee about their role in the community. In other words, do they or would they have a vested interest in the operations of the I-30 West managed HOV lane. The interviewees were then asked their impressions of the I-30 West corridor. This question attempted to get a sense of their perceptions of development in the corridor now and in the future. The interviewees were asked about traffic in the corridor and whether or not they felt that it impacted customers, potential customers or patrons. The stakeholders were asked if they knew about the use of the I-30 West corridor by employees,

customers or patrons. The questions then moved to the use of the HOV lane and the current operation of the HOV lane. Interviewees were asked about their knowledge of the future plans for the managed HOV lane. Lastly, interviewees were asked about incentives that may be in use or may be considered for employees' use of the HOV lane. Additional questions were asked of facility operators to ascertain how the plans for future operations in the I-30 West corridor may impact their own operations. Responses to the questions are described in the next section.

The interview guide was developed by the project team and reviewed by TxDOT – Dallas district staff and staff from the North Central Texas Council of Governments.

INTERVIEW FINDINGS

As noted earlier, the interviews were limited to four individuals. In each case, except one, a TTI staff person conducted the interview over the telephone. In one case, after several attempts to conduct the interview, the TTI staff person e-mailed the interview guide to the interviewee who answered the questions and e-mailed the guide back.

The results of the interviews are detailed below.

Jud Heflin, Director, Stadium Development

Dallas Cowboys

The Dallas Cowboys organization is currently building a new football stadium in Arlington. The stadium is located adjacent to the Texas Rangers baseball stadium. The stadium will be open for the 2009 football season and will be host to Super Bowl XLV in 2011. Needless to say, the stadium operators have an extreme interest in facilitating traffic to and from their facility in the most expeditious manner possible.

Mr. Helfin noted that he and the Dallas Cowboys organization have been made aware of how the I-30 Managed HOV lane might operate in the area around the stadium. It is their understanding that although the lane may operate as an HOV/Managed lane in Dallas County when it reaches the Tarrant County line it will operate as a "Special Events" lane. Anyone wishing to access the new stadium will have access to the lane without the need for a toll tag or as an HOV.

Mr. Heflin described the needs of patrons exiting the facility to access the stadium. The Rangers and Cowboys will share parking for events since they are typically scheduled at opposite times of the year. Patrons paying cash for parking will exit from the managed/HOV lane at Baird Farms Road. Baird Farms Road has a typical cross section of three lanes in each direction. For special events the lanes will be reconfigured as a reversible facility with as many as five lanes used as entry and one lane reserved for travel in the opposite direction. The cash paying customers will park in the Rangers parking lot(s).

Patrons that have pre-paid parking or are "couponed" are supposed to exit the facility at the next exit past Baird Farms Road (Collins) and park in the lots closest to the new stadium. There will

also be a VIP group of patrons that will also exit at Baird Farms Road and one of the inbound lanes of the reversible section will be reserved for their use and they will proceed to parking under the new stadium.

The Dallas Cowboys are planning under the above operational strategy and it is important to them that they are kept aware of any changes that may be made.

There are plans to have to permanent signing on the I-30 corridor in the managed HOV lane as well as the general purpose lanes. The organization also has agreements with the city of Arlington and TxDOT to have dynamic message signs available for these events.

When asked if the organization had considered allowing patrons to pay for parking with a toll tag, Mr. Heflin responded that it had been considered at one time but at this time they did not believe toll tag penetration was sufficient to warrant the infrastructure expense of installing readers in the parking lots.

John Hardin, Vice President, Event Operations and Security

Texas Rangers Baseball Club

After many attempts to reach Mr. Hardin for a one-on-one interview it became apparent that schedules were not going to allow this. For this interview, the researcher e-mailed the interview guide to Mr. Hardin and asked him to complete it. He returned the completed guide via e-mail.

Mr. Hardin believes that the I-30 corridor is somewhat vital to the development of the area but that development is based more on the economy and a transportation corridor plays a smaller role in the development decision.

Mr. Hardin stated that traffic in the I-30 corridor is bad during peak times but he believes that this is mostly a result of the on-going construction on the facility.

Mr. Hardin was unaware of the current managed HOV lane operations in the I-30 corridor and stated that he personally does not use it.

Employees of the Texas Ranger Baseball Club are not required to pay for parking and the club does not offer incentives for carpooling or transit.

Mr. Hardin indicated that employees and patrons use the toll facilities in the Dallas – Ft. Worth area and that it has both positives and negatives.

Mr. Hardin reported that he is familiar with the term *managed lanes* and thinks they are a wonderful idea. He stated that he is familiar with the plans for managed HOV lanes on the I-30 corridor and that he is aware that there is a regional managed lanes policy.

He was not familiar with the term HOT and did not believe employees or patrons would pay to travel alone in the HOV lane. He then answered that people may be willing to pay for a travel

time savings. He thought the lane should have a guaranteed minimum speed of 70mph. He believes this would be a good improvement to I-30.

Mr. Hardin believes the I-30 managed HOV lane will have a positive impact on access to parking for the Texas Rangers. He suggested that lane be open 24 hours a day, seven days a week but definitely pre and post events.

The Rangers Club has not considered allowing toll tags to be used to pay for parking.

Terry Murphy

General Motors

Mr. Murphy was unaware of any future plans for the I-30 corridor. He stated that he is simply notified of activities that are taking place in the corridor. Concerning traffic congestion, he took the opportunity to voice his bigger concerns over access to SH 360 rather than I-30. He understands that "they" are currently working on this.

He does not believe that many of his employees carpool but for them, congestion is not an issue. Over 40 percent of the employees are shift workers and the first shift begins at 6:00am so the managed HOV lane is not really an option for them. However, in the next three weeks they are considering extending first shift to 4:30 and then it might become more of issue for the employees. He did state that they have a very low tolerance for tardiness and if the change is approved he felt that the employees might be more inclined to carpool or even pay a toll to travel on the managed HOV lane to ensure a reliable trip that would keep them from being late to work. He understood how the management of the lane would work through pricing.

General Motors does not charge for parking. When asked about what would motivate General Motors to offer incentives for employees to carpool, he mentioned that if they didn't have ample parking they may consider something like that.

When asked about deliveries and the need for just-in-time (JIT) deliveries Mr. Murphy stated that all of their JIT deliveries arrive via I-20. They do have deliveries that use the I-30 corridor but these are not time sensitive.

Ann Mattila, Facility/Security Manager

US Nuclear Regulatory Commission

There are approximately 200 employees at the Commission. The parking lot for the building backs to the service road of I-30 on the westbound side. There are many views of construction from the building.

Ms. Mattila feels the I-30 corridor is vital to the area. It is the primary link between Dallas and Fort Worth. It offers easy access to the Dallas-Ft. Worth Airport. This is a critical requirement for their employees. The majority of the employees are inspectors and they often fly in and out

of the area to perform inspections. Moreover, the workforce needs to have easy access to both their building and the airport in case of emergencies.

Ms. Mattila believes there is heavy traffic in the I-30 corridor but it is not gridlock as it is in on other corridors in the area. She feels that a good portion of the congestion is a result of the construction in the corridor. Ms. Mattila believes that many local businesses have been hurt by the construction. She has seen several smaller retailers close because of inadequate access to their stores due to the construction. She believes that development in the corridor has been delayed due to the construction but that it will increase when construction is complete.

The Commission has outgrown the capacity of their current building and are currently in the procurement process for more building space. As such, they recently studied where their employees live. Again, because it is a necessity to have ready access to the facility in times of emergency, it was necessary to determine employees' home locations when scouting for new locations. About 50 percent of the employees live in the South Arlington/Mansfield area and about 50 percent live in the "HEB" area of Hurst, Euless, Bedford. Ms. Mattila believes that at some point in their commute, employees must access the I-30 corridor. However, the current managed HOV lane does not facilitate their travel since it does not extend to their location. Ms. Mattila thought that when the lane is extended that more people would carpool. However, she was unaware of plans for expansion.

When queried about the HOT lane concept, again, Ms. Mattila was unaware of plans for this on the I-30 corridor. When asked if she thought employees might use it she responded that she "doubted" it. However, she did think the concept of a congestion-free trip for a price was a good idea and thought that others might pay. She had no opinion on what toll charge should be levied but felt that the minimum speed limit should be guaranteed.

Commission employees are not required to pay for parking but the Commission does encourage carpooling and participates in the Vanpool program through TRE. They currently have two vans and are on a waiting list for two more.

CONCLUSIONS

There is a general feeling that the I-30 corridor is congested but not nearly as bad as other facilities in the region. Most feel the primary reason for this is the ongoing construction. Most have at least some knowledge of the plans for expansion of the managed HOV lane but none seem to be aware of exactly what that entailed. The respondents were split as to whether or not people would pay to use an HOV lane.

Some in the corridor have a more vested interest than others in the completion of the construction and the ultimate operation of the facility. These individuals are supportive of the project. They should be kept informed about the project and involved in the decision-making as appropriate. Any of these interviewees could easily be project champions.

V. DATA COLLECTION AND EVALUATION

To evaluate and monitor the I-30 corridor as it transitions from a general purpose lanes facility to a general purpose + managed lanes facility (initially as HOV-only and later implement value pricing), it is necessary to collect a substantial amount of operational data on the general purpose lanes, managed lanes, and a control corridor. The objective is to provide the basis for comparing the different phases of the project as it transitions. To accomplish this objective, key metrics and a comprehensive data collection plan were developed.

DATA COLLECTION

The data collected on this project must be sufficient to answer key questions related to the implementation of value pricing on I-30:

- Has the implementation of value pricing on I-30 affected the demand for carpools, vanpools, and bus service in the corridor? What are the effects upon corridor performance, air quality, and modal achievement? Can these findings be used to inform the regional planning and air quality conformity process for the future?
- Has the declaration process independently impacted carpool use in the corridor?
- What are the benefits and impacts of taking a phased approach, HOV-only then value pricing?
- Were traffic and revenue forecasts for the I-30 managed lanes accurate? If not, what could be done in the future to refine those forecasts for better pre-project assessment? Can this data be used to inform the TxDOT and/or NCTCOG predictive model for managed lanes?
- Has variable pricing been effective in ensuring travel times and speed throughout the facility? Can a process for refining toll rates over time be articulated for other corridors interested in pursuing a similar pricing scheme?
- Has public education been effective in understanding the use of managed lanes, especially in how they differ from the region's toll roads? How has public perception to the concept changed post-implementation?

Some of these questions can only be answered after the implementation of the Value Pricing Phase. However, answers to several of these questions are starting to emerge as more data is being collected and analyzed. As part of this effort the project team gathered comprehensive data on: travel speed differentials between the HOV lane facility and the general purpose lanes, operational reliability of the HOV lane, methodology for setting toll rates (future), eligibility violations, average vehicle occupancy, bus / vanpool ridership, public opinion in the corridor, and other metrics relevant to regional practitioners. Each of these measures, after analysis, can provide evidence to a variety of audiences to enable separate planning efforts for value pricing.

The project team started collecting data on the I-30 general purpose lanes before the I-30 ML opened. This was done in September of 2006 and March of 2007. To ensure data reliability and

measure the impact beyond I-30, a control corridor was selected. The same data that is being collected on the I-30 corridor is also collected on the I-20 control corridor. The I-20 control corridor was selected because it runs parallel to I-30, has similar traffic composition and general purpose lane configuration. The I-20 control corridor only has general purpose lanes.

Field Data Collection

Quarterly data collection is conducted to monitor the performance of the general purpose lanes and the managed lanes. Data collection is done during the AM and PM peak periods. The Managed lanes are reversible and operate eastbound (towards Dallas Central Business District) from 6 am to 10 am in the AM period and westbound in the PM period from 3 pm to 7 pm. The rest of the day and during weekend days the facility is closed. This schedule will be expanded in the Value Pricing Phase. Figure 60 describes the type of data being collected. The data collection period covered in this report is from September 2006 to July 2008.

Data Collected	Description	Location		
		I-30 General Purpose Lanes	I-30 Managed HOV Lanes	I-20 General Purpose Lanes
Automatic Counters	• Permanent pneumatic counters • Frequency: on daily basis 24/7		√	
Occupancy and Vehicle Counts	• Manually performed from 6am-9am and 4pm-7pm • Frequency: one day per quarter	√	√	√
Travel Time Runs	• Approximately every 30 minutes from 6am-9am and 4pm-7pm • Frequency: one day per quarter	√	√	√

Figure 60: Data Collected on a Quarterly Basis

OPERATIONAL PERFORMANCE

The operational performance of I-30 pre and post HOV will be described in this section which is divided in the following sub-sections: Occupancy, Volume, Violations, Travel Time, and Speed. A high level summary table for the seven data collection periods is presented in Figure 61 and Figure 62.

MEASURE	Sep-06			Mar-07						Jul-07 for GP and Aug-07 for HOV									Sep-07 for GP and Oct-07 for HOV								
	IH-30 WEST (TOM LANDRY)			IH-30 WEST (TOM LANDRY)			IH-20 (CONTROL CORRIDOR)			IH-30 WEST- General Purpose (TOM LANDRY)			IH-30 WEST- HOV (TOM LANDRY)			IH-20 (CONTROL CORRIDOR)			IH-30 WEST- General Purpose (TOM LANDRY)			IH-30 WEST- HOV (TOM LANDRY)			IH-20 (CONTROL CORRIDOR)		
	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE
A.M. PEAK HOUR(1)																										
DART BUSES	0	0	0.00	1	30	30.00	0	0	0.00	0	0	0.00	0	3	10.00	1	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
OTHER BUSES	5	40	8.00	0	0	0.00	2	10	5.00	3	0	0.00	0	3	10.00	1	20	20.00	1	10	10.00	1	10	10.00	1	0	0.00
VANPOOLS	1	8	8.00	1	5	5.00	2	16	8.00	0	0	0.00	2	12	6.00	11	55	5.00	2	10	5.00	0	0	0.00	8	46	5.75
3+ PERSON CARPOOLS	35	115	3.29	31	94	3.03	16	48	3.00	20	67	3.35	14	42	3.02	16	50	3.13	11	33	3.00	1	3	3.00	44	144	3.27
2 PERSON CARPOOLS	287	574	2.00	246	492	2.00	232	464	2.00	242	484	2.00	158	316	2.00	327	654	2.00	95	190	2.00	196	392	2.00	384	768	2.00
1 PERSON VEHICLES	3664	3664	1.00	4690	4690	1.00	6823	6823	1.00	4577	4577	1.00	13	13	1.00	6469	6469	1.00	4646	4646	1.00	0	0	0.00	7216	7216	1.00
MOTORCYCLES	7	7	1.00	1	1	1.00	11	11	1.00	5	5	1.00	5	5	1.00	23	23	1.00	0	0	0.00	2	2	1.00	23	23	1.00
TRUCKS	162	171	1.06	153	153	1.00	220	220	1.00	163	163	1.00	0	0	0.00	195	196	1.01	146	146	1.00	0	0	0.00	224	230	1.03
TOTAL	4,161	4,579	1.10	5,123	5,465	1.07	7,306	7,592	1.04	5,010	5,296	1.06	193	396	2.05	7,043	7,467	1.06	4,901	5,035	1.03	200	407	2.04	7,900	8,427	1.07
A.M. PEAK PERIOD (6:00-9:00)																										
DART BUSES	0	0	0.00	1	30	30.00	0	0	0.00	2	0	0.00	0	3	10.00	3	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
OTHER BUSES	9	40	4.44	3	10	3.33	7	40	5.71	8	20	2.50	1	3	5.00	3	20	6.67	1	10	10.00	3	10	3.33	3	30	10.00
VANPOOLS	3	21	7.00	7	47	6.71	9	54	6.00	17	85	5.00	6	36	5.63	21	105	5.00	5	25	5.00	0	0	0.00	10	56	5.60
3+ PERSON CARPOOLS	79	253	3.20	105	331	3.15	44	140	3.18	54	171	3.17	28	88	3.14	93	290	3.12	51	159	3.12	23	74	3.22	110	354	3.22
2 PERSON CARPOOLS	786	1,572	2.00	926	1,852	2.00	750	1,500	2.00	555	1,110	2.00	357	715	2.00	1,038	2,076	2.00	437	874	2.00	451	902	2.00	1,039	2,078	2.00
1 PERSON VEHICLES	11042	11042	1.00	11982	11982	1.00	17528	17528	1.00	12803	12803	1.00	31	31	1.00	16601	16601	1.00	12181	12181	1.00	1	1	1.00	18483	18483	1.00
MOTORCYCLES	30	30	1.00	6	6	1.00	22	22	1.00	22	22	1.00	11	11	1.00	65	65	1.00	2	2	1.00	6	6	1.00	87	87	1.00
TRUCKS	546	567	1.04	503	506	1.01	777	784	1.01	683	683	1.00	0	0	0.00	646	651	1.01	462	464	1.00	0	0	0.00	692	704	1.02
TOTAL	12,495	13,525	1.08	13,533	14,764	1.09	19,137	20,068	1.05	14,144	14,894	1.05	435	887	2.04	18,470	19,808	1.07	13,139	13,715	1.04	484	993	2.05	20,424	21,792	1.07
P.M. PEAK HOUR(1)																										
DART BUSES	1	0	0.00	0	0	0.00	0	0	0.00	1	30	30.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
OTHER BUSES	0	0	0.00	4	10	2.50	0	0	0.00	1	0	0.00	0	0	0.00	2	0	0.00	6	100	16.67	0	0	0.00	3	40	13.33
VANPOOLS	8	58	7.25	2	10	5.00	4	32	8.00	4	26	6.50	5	25	5.00	3	15	5.00	8	46	5.75	2	16	8.00	6	45	7.50
3+ PERSON CARPOOLS	49	159	3.24	35	106	3.03	84	269	3.20	73	239	3.27	36	114	3.17	45	150	3.33	59	191	3.24	14	44	3.14	69	220	3.19
2 PERSON CARPOOLS	549	1,098	2.00	363	726	2.00	821	1,642	2.00	476	952	2.00	216	432	2.00	559	1,118	2.00	586	1,172	2.00	181	362	2.00	634	1,268	2.00
1 PERSON VEHICLES	3918	3918	1.00	3457	3457	1.00	6236	6236	1.00	3909	3909	1.00	20	20	1.00	6340	6340	1.00	3767	3767	1.00	11	11	1.00	5868	5868	1.00
MOTORCYCLES	17	17	1.00	2	2	1.00	31	31	1.00	6	6	1.00	1	1	1.00	23	23	1.00	13	13	1.00	2	2	1.00	8	8	1.00
TRUCKS	169	182	1.08	119	122	1.03	228	241	1.06	107	110	1.03	0	0	0.00	290	301	1.04	148	155	1.05	0	0	0.00	270	279	1.03
TOTAL	4,711	5,432	1.15	3,982	4,433	1.11	7,404	8,451	1.14	4,577	5,272	1.15	278	592	2.13	7,262	7,947	1.09	4,587	5,444	1.19	210	435	2.07	6,858	7,728	1.13
P.M. PEAK PERIOD (4:00-7:00)																										
DART BUSES	4	0	0.00	1	30	30.00	0	0	0.00	1	30	30.00	0	0	0.00	1	0	0.00	0	0	0.00	1	15	15.00	0	0	0.00
OTHER BUSES	7	100	14.29	10	30	3.00	4	60	15.00	7	50	7.14	0	0	0.00	5	0	0.00	20	350	17.50	0	0	0.00	6	80	13.33
VANPOOLS	25	177	7.08	14	105	7.50	9	63	7.00	6	39	6.50	11	55	5.00	4	20	5.00	26	145	5.58	3	21	7.00	12	81	6.75
3+ PERSON CARPOOLS	190	614	3.23	151	480	3.18	287	909	3.17	237	767	3.24	72	231	3.21	158	506	3.20	261	841	3.22	38	119	3.13	187	609	3.26
2 PERSON CARPOOLS	1,526	3,052	2.00	1,090	2,180	2.00	2,687	5,374	2.00	1,327	2,654	2.00	489	978	2.00	2,178	4,356	2.00	1,678	3,356	2.00	444	888	2.00	1,718	3,436	2.00
1 PERSON VEHICLES	10569	10569	1.00	9455	9455	1.00	17141	17141	1.00	10388	10388	1.00	39	39	1.00	16916	16916	1.00	10381	10381	1.00	34	34	1.00	15191	15191	1.00
MOTORCYCLES	50	50	1.00	4	4	1.00	70	70	1.00	23	23	1.00	8	8	1.00	71	71	1.00	31	31	1.00	7	7	1.00	14	14	1.00
TRUCKS	540	568	1.05	445	466	1.05	720	778	1.08	360	370	1.03	0	0	0.00	740	786	1.06	490	521	1.06	0	0	0.00	713	730	1.02
TOTAL	12,911	15,130	1.17	11,170	12,750	1.14	20,918	24,395	1.17	12,349	14,321	1.16	619	1311	2.12	20,073	22,655	1.13	12,887	15,625	1.21	527	1084	2.06	17,841	20,141	1.13
TOTAL AM + PM Period																										
TOTAL	25,406	28,655	1.13	24,703	27,514	1.11	40,055	44,463	1.11	26,493	29,215	1.10	1054	2198	2.09	38,543	42,463	1.10	26,026	29,340	1.13	1011	2077	2.05	38,265	41,933	1.10

Figure 61: Quarterly Metrics from September 2006 through October 2007(Part 1)

MEASURE	Dec-07									Apr-08									Jul-08								
	IH-30 WEST- General Purpose (TOM LANDRY)			IH-30 WEST- HOV (TOM LANDRY)			IH-20 (CONTROL CORRIDOR)			IH-30 WEST- General Purpose (TOM LANDRY)			IH-30 WEST- HOV (TOM LANDRY)			IH-20 (CONTROL CORRIDOR)			IH-30 WEST- General Purpose (TOM LANDRY)			IH-30 WEST- HOV (TOM LANDRY)			IH-20 (CONTROL CORRIDOR)		
	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE	VEHICLES	PERSONS	OCC. RATE
A.M. PEAK HOUR(1)																											
DART BUSES	1	15	15.00	0	0	0.00	0	0	0.00	1	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	2	10	5.00
OTHER BUSES	2	0	0.00	0	0	0.00	0	0	0.00	4	30	7.50	3	20	6.67	4	0	0.00	3	20	6.67	1	0	0.00	4	0	0.00
VANPOOLS	2	10	5.00	4	20	5.00	2	10	5.00	1	5	5.00	1	5	5.00	1	5	5.00	4	20	5.00	6	30	5.00	4	20	5.00
3+ PERSON CARPOOLS	23	72	3.13	17	55	3.24	23	71	3.09	8	24	3.00	8	24	3.00	12	37	3.08	75	250	3.33	20	65	3.25	47	152	3.23
2 PERSON CARPOOLS	316	632	2.00	208	416	2.00	423	846	2.00	101	202	2.00	238	476	2.00	301	602	2.00	467	934	2.00	196	392	2.00	380	760	2.00
1 PERSON VEHICLES	4634	4634	1.00	34	34	1.00	6975	6975	1.00	4851	4851	1.00	0	0	0.00	7430	7430	1.00	3893	3893	1.00	17	17	1.00	5793	5793	1.00
MOTORCYCLES	2	2	1.00	4	4	1.00	13	13	1.00	2	2	1.00	5	5	1.00	19	19	1.00	10	10	1.00	11	11	1.00	20	20	1.00
TRUCKS	215	234	1.09	0	0	0.00	177	181	1.02	158	161	1.02	0	0	0.00	213	220	1.03	158	161	1.02	0	0	0.00	226	238	1.05
TOTAL	5,195	5,599	1.08	267	529	1.98	7,613	8,096	1.06	5,126	5,275	1.03	255	530	2.08	7,980	8,313	1.04	4,610	5,288	1.15	251	515	2.05	6,476	6,993	1.08
A.M. PEAK PERIOD (6:00-9:00)																											
DART BUSES	5	30	6.00	0	0	0.00	2	15	7.50	2	10	5.00	0	0	0.00	6	60	10.00	2	0	0.00	0	0	0.00	3	10	3.33
OTHER BUSES	6	30	5.00	2	10	5.00	3	10	3.33	10	50	5.00	3	20	6.67	10	50	5.00	4	50	12.50	7	70	10.00	6	20	3.33
VANPOOLS	9	45	5.00	11	55	5.00	10	59	5.90	9	54	6.00	2	10	5.00	1	5	5.00	8	43	5.38	10	50	5.00	5	25	5.00
3+ PERSON CARPOOLS	74	229	3.09	30	95	3.17	49	151	3.08	49	153	3.12	18	57	3.17	56	170	3.04	168	546	3.25	38	119	3.13	93	298	3.20
2 PERSON CARPOOLS	855	1,710	2.00	489	978	2.00	942	1,884	2.00	481	962	2.00	549	1098	2.00	899	1,798	2.00	1,181	2,362	2.00	463	926	2.00	960	1,920	2.00
1 PERSON VEHICLES	11347	11347	1.00	50	50	1.00	17348	17348	1.00	12600	12600	1.00	2	2	1.00	18519	18519	1.00	10452	10452	1.00	30	30	1.00	15492	15492	1.00
MOTORCYCLES	3	3	1.00	10	10	1.00	26	26	1.00	5	5	1.00	9	9	1.00	51	51	1.00	27	27	1.00	28	28	1.00	64	64	1.00
TRUCKS	661	730	1.10	0	0	0.00	705	737	1.05	535	543	1.01	0	0	0.00	757	784	1.04	528	547	1.04	0	0	0.00	751	785	1.05
TOTAL	12,960	14,124	1.09	592	1198	2.02	19,085	20,230	1.06	13,691	14,377	1.05	583	1196	2.05	20,299	21,437	1.06	12,370	14,027	1.13	576	1223	2.12	17,374	18,614	1.07
P.M. PEAK HOUR(1)																											
DART BUSES	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
OTHER BUSES	0	0	0.00	0	0	0.00	1	0	0.00	4	20	5.00	0	0	0.00	4	30	7.50	3	40	13.33	2	50	25.00	2	20	10.00
VANPOOLS	0	0	0.00	0	0	0.00	0	0	0.00	3	15	5.00	2	10	5.00	3	15	5.00	2	13	6.50	3	15	5.00	5	28	5.60
3+ PERSON CARPOOLS	27	86	3.19	10	30	3.00	17	54	3.18	39	124	3.18	32	105	3.28	35	109	3.11	143	473	3.31	39	128	3.28	112	383	3.42
2 PERSON CARPOOLS	315	630	2.00	239	478	2.00	453	906	2.00	368	736	2.00	198	396	2.00	651	1,302	2.00	554	1,108	2.00	171	342	2.00	894	1,788	2.00
1 PERSON VEHICLES	3765	3765	1.00	13	13	1.00	6569	6569	1.00	3939	3939	1.00	17	17	1.00	6095	6095	1.00	3843	3843	1.00	20	20	1.00	6200	6200	1.00
MOTORCYCLES	4	4	1.00	1	1	1.00	14	14	1.00	3	3	1.00	3	3	1.00	9	9	1.00	14	14	1.00	10	10	1.00	31	31	1.00
TRUCKS	125	127	1.02	0	0	0.00	202	206	1.02	195	202	1.04	0	0	0.00	234	249	1.06	131	137	1.05	0	0	0.00	221	233	1.05
TOTAL	4,236	4,612	1.09	263	522	1.98	7,256	7,749	1.07	4,551	5,039	1.11	252	531	2.11	7,031	7,809	1.11	4,690	5,628	1.20	245	565	2.31	7,465	8,683	1.16
P.M. PEAK PERIOD (4:00-7:00)																											
DART BUSES	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
OTHER BUSES	7	110	15.71	1	0	0.00	7	50	7.14	8	80	10.00	0	0	0.00	10	50	5.00	11	130	11.82	3	60	20.00	5	20	4.00
VANPOOLS	12	75	6.25	2	10	5.00	22	139	6.32	10	50	5.00	3	18	6.00	9	45	5.00	6	45	7.50	4	20	5.00	15	87	5.80
3+ PERSON CARPOOLS	111	369	3.32	33	102	3.09	140	438	3.13	122	391	3.20	49	161	3.29	102	319	3.13	441	1,454	3.30	87	283	3.25	412	1,376	3.34
2 PERSON CARPOOLS	851	1,702	2.00	622	1244	2.00	1,687	3,374	2.00	1,071	2,142	2.00	399	798	2.00	1,709	3,418	2.00	1,651	3,302	2.00	437	874	2.00	2,710	5,420	2.00
1 PERSON VEHICLES	9927	9927	1.00	38	38	1.00	18176	18176	1.00	9841	9841	1.00	40	40	1.00	16625	16625	1.00	10069	10069	1.00	44	44	1.00	16521	16521	1.00
MOTORCYCLES	15	15	1.00	7	7	1.00	35	35	1.00	9	9	1.00	7	7	1.00	24	24	1.00	28	28	1.00	22	22	1.00	75	75	1.00
TRUCKS	374	382	1.02	0	0	0.00	682	709	1.04	547	580	1.06	0	0	0.00	672	716	1.07	484	509	1.05	0	0	0.00	642	683	1.06
TOTAL	11,297	12,580	1.11	703	1401	1.99	20,749	22,921	1.10	11,608	13,093	1.13	498	1024	2.06	19,151	21,197	1.11	12,690	15,537	1.22	597	1303	2.18	20,380	24,182	1.19
TOTAL AM + PM Period																											
TOTAL	24,257	26,704	1.10	1295	2599	2.01	39,834	43,151	1.08	25,299	27,470	1.09	1081	2220	2.05	39,450	42,634	1.08	25,060	29,564	1.18	1173	2526	2.15	37,754	42,796	1.13

Figure 62: Quarterly Metrics from December 2007 through July 2008 (Part 2)

Vehicle Occupancy

Two of the main objectives of the I-30 ML are to reduce single-occupant vehicle travel by providing user incentives to HOVs and transit passengers and to make available high-speed reliable travel to eligible users in the corridor. This section describes the trends observed in vehicle occupancy prior to opening the I-30 ML and during the HOV Phase. Figure 63 and Figure 64 depict the occupancy rate trend from September 2006 to July 2008. The HOV Phase began in July 2007. The occupancy rates for the AM and PM periods have remained fairly constant throughout this period. The I-30 ML average occupancy rate is 2.07 persons/veh with little variation between the AM and PM periods. The I-30 general purpose lanes average occupancy is higher in the PM period (1.16 persons/veh) than in the AM period (1.08 persons/veh). The occupancy rate is for all vehicles including transit vehicles.

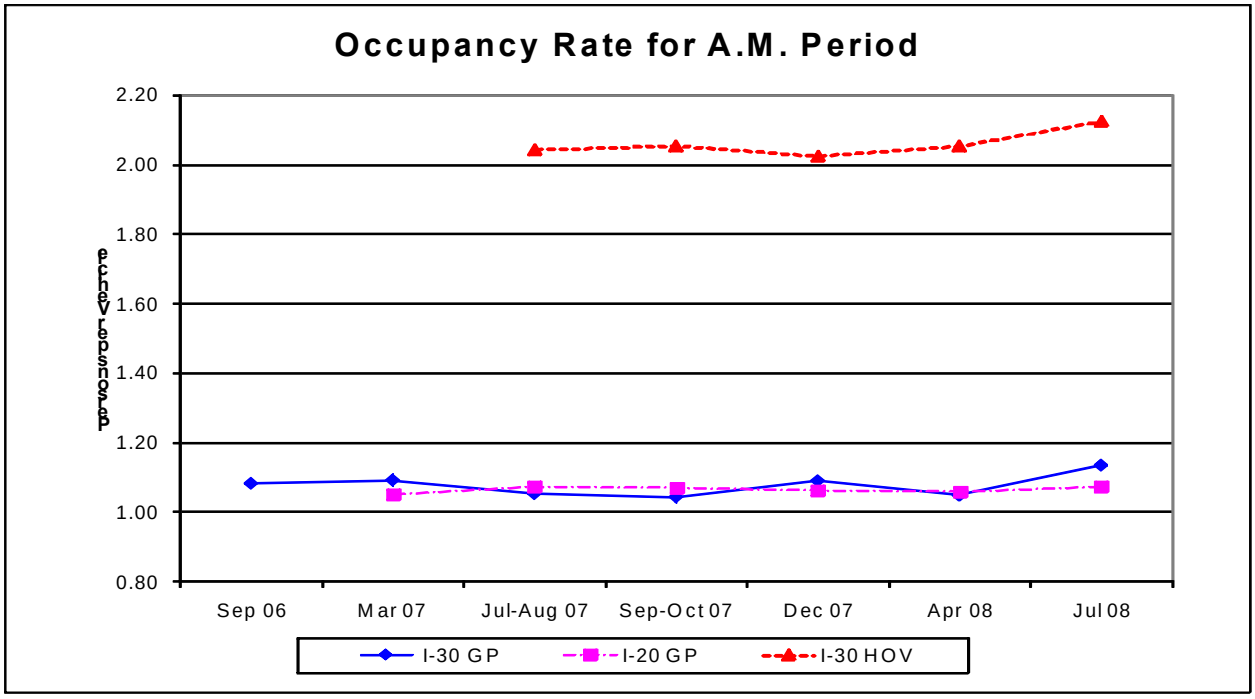


Figure 63: Occupancy Rate for A.M. Period by Facility

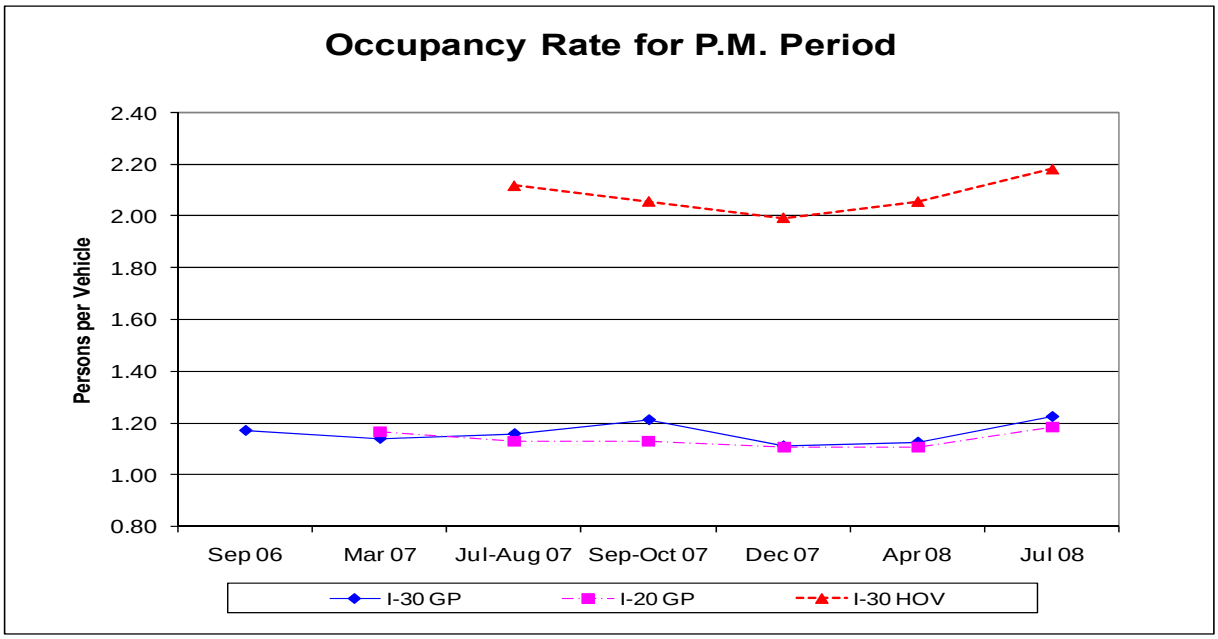


Figure 64: Occupancy Rate for P.M. Period by Facility

Figure 65 provides vehicle occupancy broken down by time-of-day. During the morning hours, 6am to 9am, the occupancy rate is fairly constant for each of the data collection periods. Only the 6am to 7am hour on 7/31/08 has a lower occupancy rate of 1.48. This is attributed to being the opening date. This is considered the learning period for the drivers and once confusion cleared during the first hour, the occupancy rate and violation rate stabilized as well. During the afternoon hours, 3pm to 7 pm, the occupancy rate from quarter-to-quarter varied a slightly between 2 and 2.5 persons/veh.

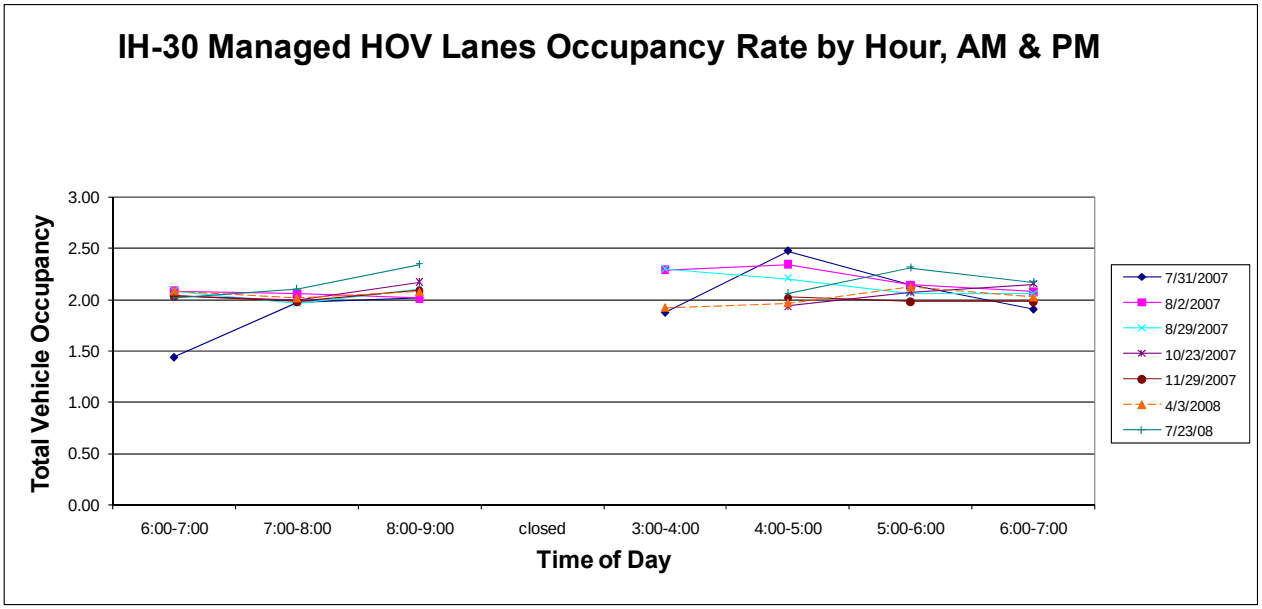


Figure 65: I-30 Managed HOV Lanes Occupancy Rate by hour for AM and PM period

VEHICLE VOLUMES

Figure 66 and Figure 67 , respectively, show the vehicle volumes for the AM and PM periods. The small quarter-to-quarter variation on the I-30 and I-20 general purpose lanes volumes is attributed to seasonal volume fluctuation rather than to the opening of the I-30 Managed HOV lanes. It is expected that the opening of the new segment of the I-30 Managed HOV lanes, which extends to Dallas CBD, will have a larger impact on the general purpose lanes.

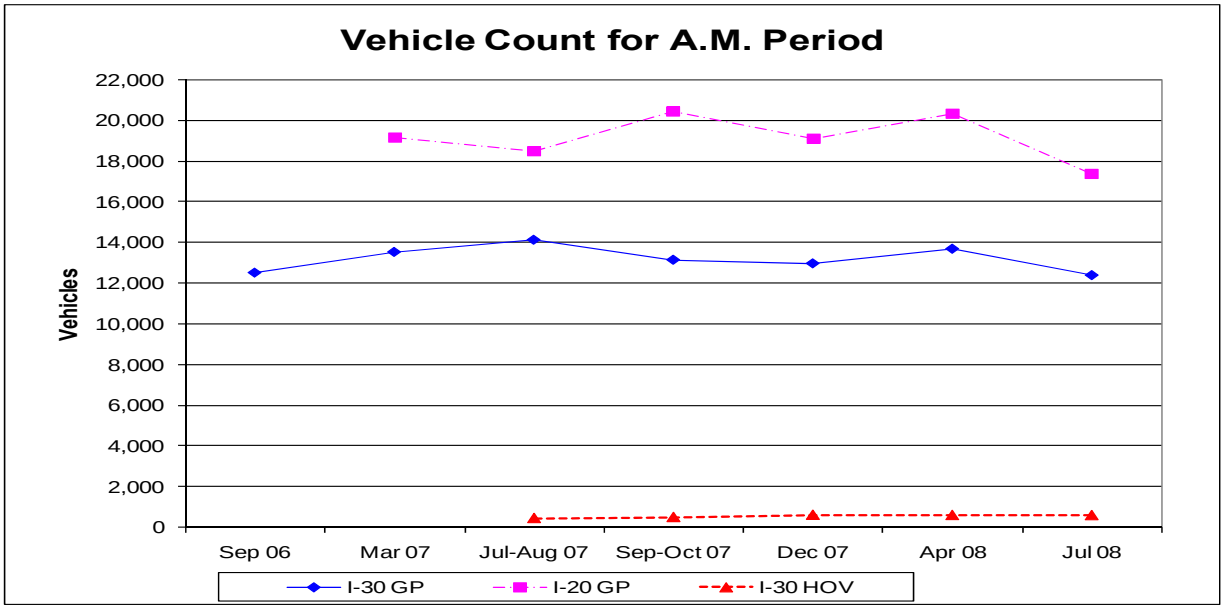


Figure 66: I-30 and I-20 Vehicular volume for A.M. Period

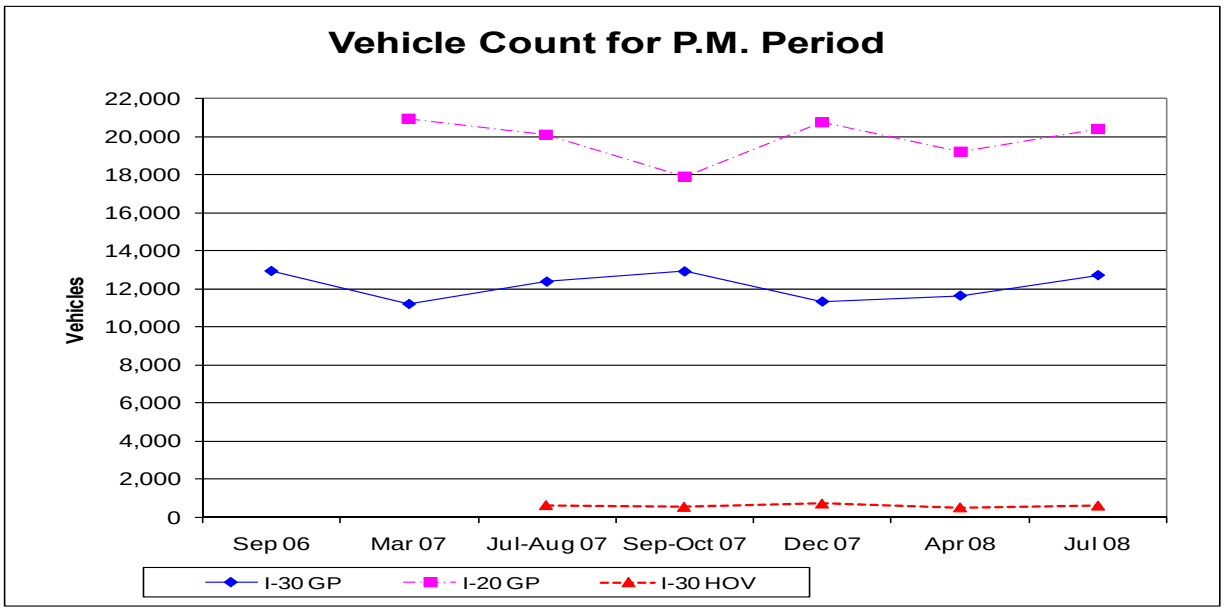


Figure 67: I-30 and I-20 Vehicular volume for A.M. Period

A measure of success for the I-30 ML is when the combined numbers of carpools in the general purpose and managed lanes is higher than the number of carpools in the general purpose lanes before the opening of the managed lanes. An increase would indicate that more drivers see the benefit of the managed lanes, thus making a decision to start carpooling effectively removing vehicles from the road (4). Figure 68 shows an increase on the combined number of carpools after the I-30 ML opened. Future data collections will confirm this trend.

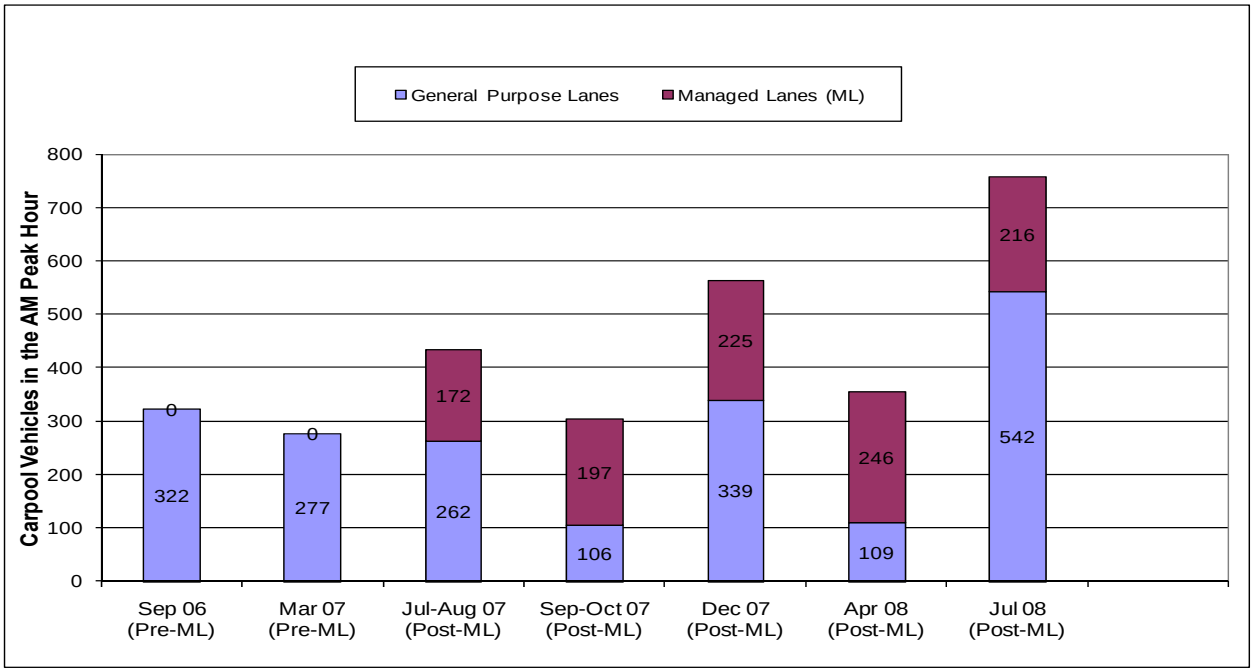


Figure 68: Change in Number of Carpools Before and After the Managed HOV Lanes

Figure 69 provides the average daily traffic (ADT) on the I-30 ML over time. Days with no ADT values are due to sensors being inactive. The ADT shown in the figure is the sum of the eastbound morning operations (6am-10am) and westbound evening operations (3pm-7pm) due to the reversible approach of the facility. Weekly ADT follows the same pattern: starting with the lowest ADT on Mondays and peaking by Friday. Figure 69 excludes weekends and holidays when the managed lanes are closed. The current operating hours schedule will be expanded in the Value Pricing Phase when higher volumes are expected once SOV are allowed to use the facility. In the current HOV phase demand does not justify extended hours of operation and the associated enforcement costs.

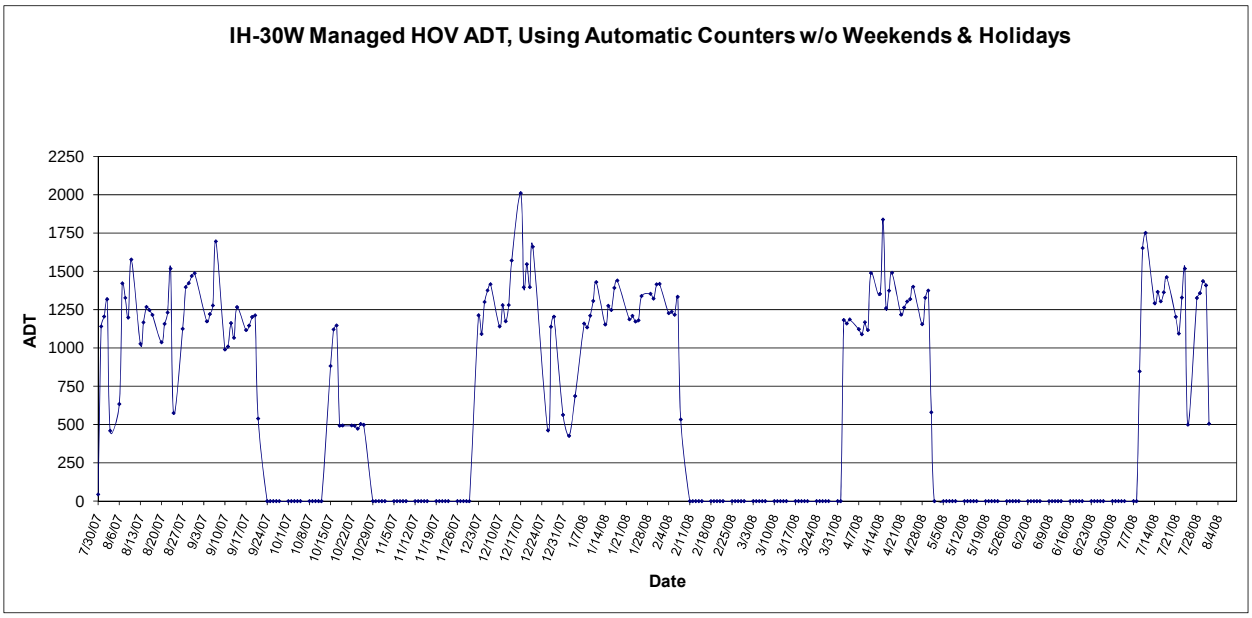


Figure 69: I-30W Managed Lanes ADT during weekdays and excluding holidays

VIOLATION RATE

There are two types of violations in the current HOV Phase: 1) SOVs, with the exception of motorcycles, and 2) illegal vehicles such as trucks with more than two axles or a gross weight capacity of five-tons or more and vehicles towing trailers. Figure 70 includes the daily violations for vehicles carrying one person with the exception of motorcycles. The average violation rate is in the 5 to 7% range and has been rather stable since the beginning of operations. The higher violation rate on 7/31/07 can be attributed to this being the opening date. As explained in the previous section, the public went through a "learning period" during the first few hours after opening the ML. DART Police are responsible for enforcement of this facility. The fine for an HOV violation is $200 per infraction. Figure 71 shows the violation rate by time of day. The objective of this graph is to identify a particular hour when higher violation rates are observed so enforcement can be adjusted accordingly. As shown in the graph, the violation rate is rather uniform throughout the day.

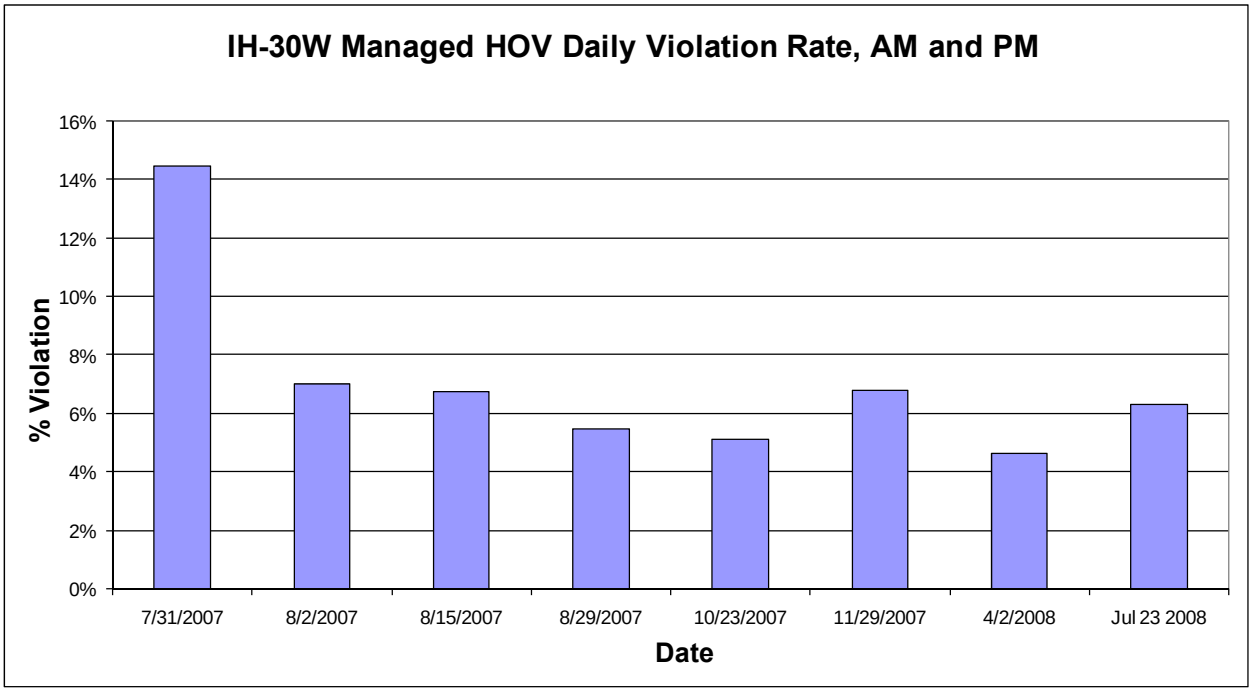


Figure 70: Observed Occupancy Violation Rate on the I-30 Managed Lanes

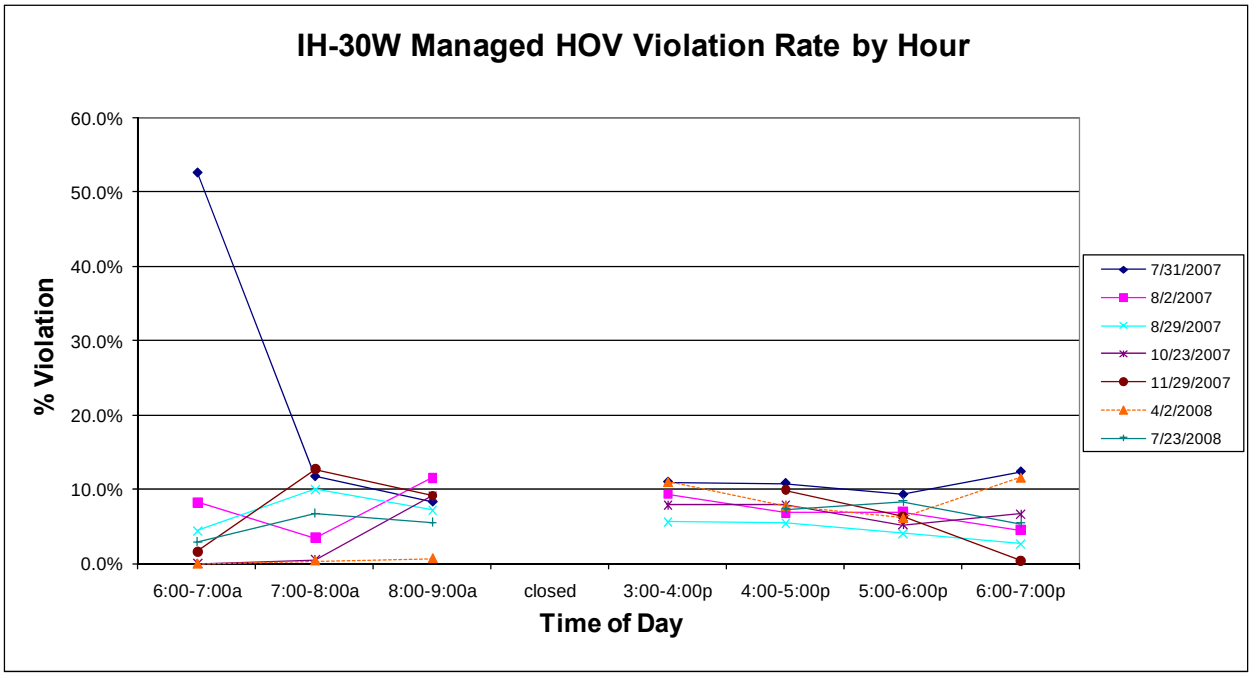


Figure 71: Observed Occupancy Violation Rate by time of day

TRAVEL TIME AND SPEED

Travel time savings are directly related to operating speed. Researchers found that to encourage the formation of carpools or to increase bus utilization, a minimum of five minutes of total travel time savings over the general-purpose lanes is required (4). Figure 72 shows that during the AM peak hour (eastbound) the time savings when using the HOV lanes were five minutes or more. However, for April 2008 and July 2008 the time savings were less than one minute because the general purpose lanes were uncongested. This can be explained by the road construction west of the HOV lanes access point. The road work is having an impact on the general purpose lanes. The construction area has a new and curvier alignment, no shoulders, and narrower lanes. All of these is causing two things that might explain the improved traffic condition east of the conflict area: 1) metering effect: by slowing down traffic it creates better conditions downstream, and 2) people might be seeking alternative routes to avoid the construction zone. Future data collection periods after the construction is completed will confirm if the travel time savings are greater than 5 minutes.

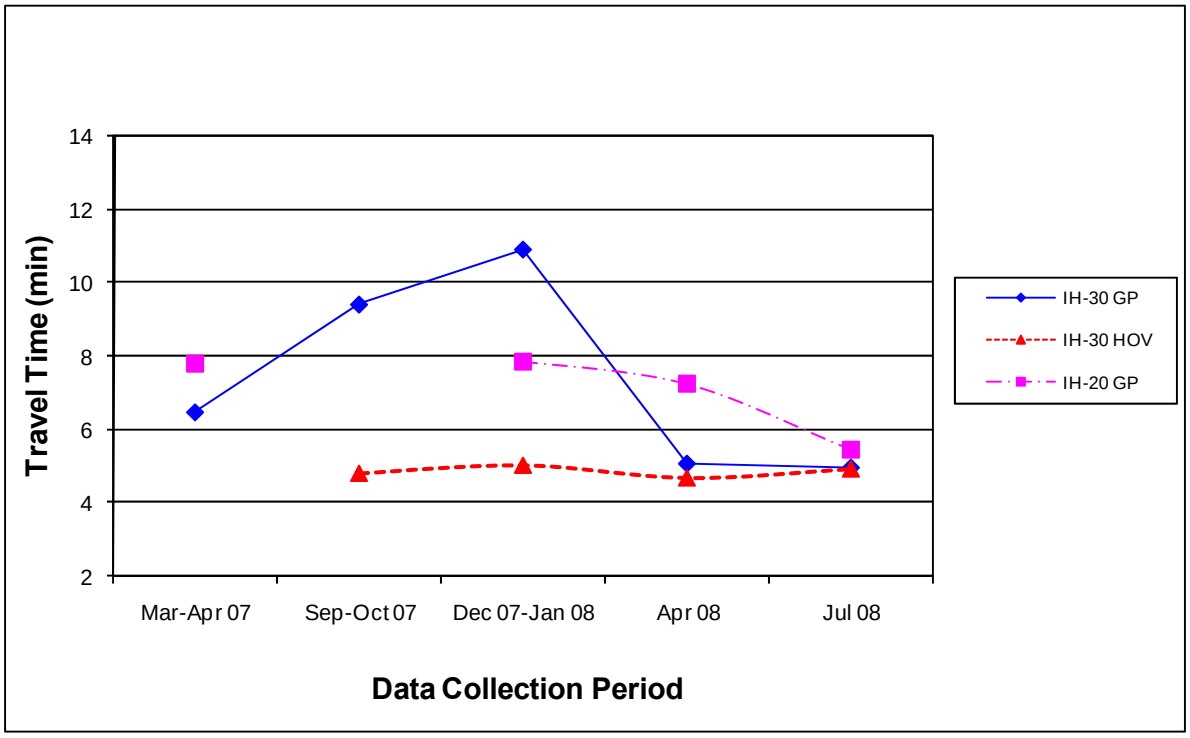


Figure 72: Travel Time Runs for I-30W and I-20 During the AM Peak Hour

The average travel time savings in the PM peak hour (westbound) is less than one minute as shown in Figure 73. During the PM period the lanes are reversed westbound away from Dallas CBD. Currently there is no bottleneck in the westbound direction as is the case going eastbound towards the CBD in the morning.

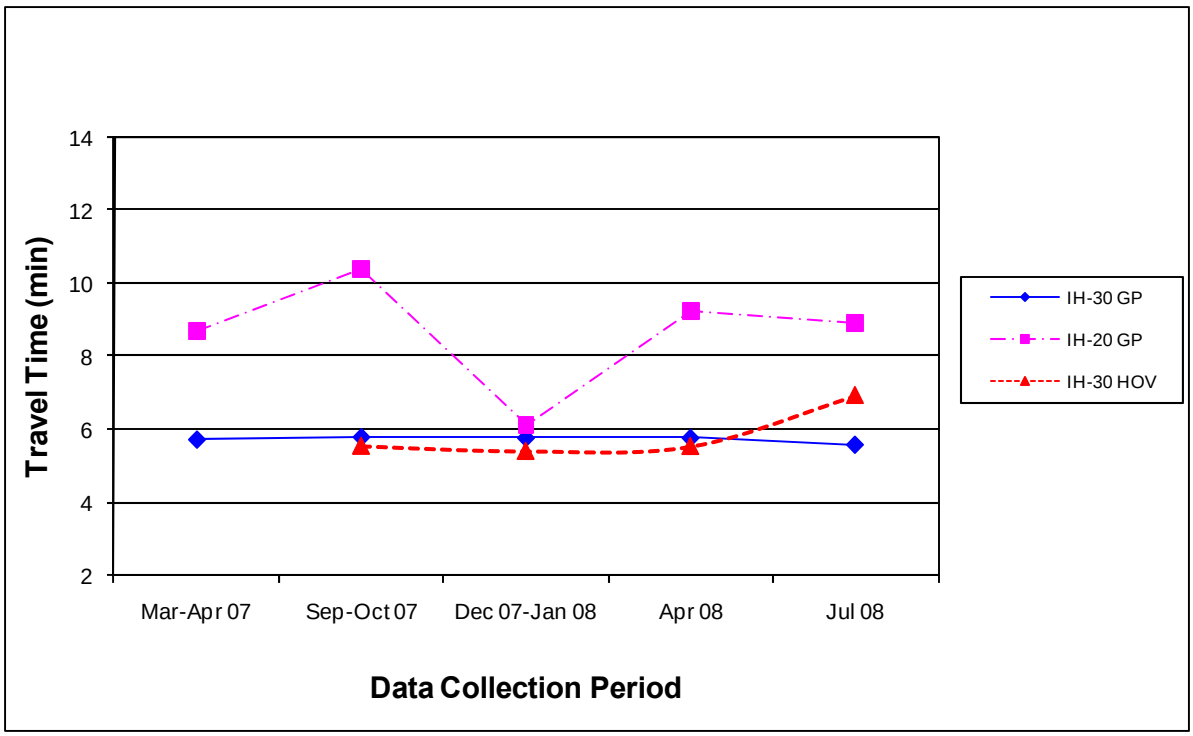


Figure 73: Travel Time Runs for I-30W and I-20 During the PM Peak Hour

Figure 74 through Figure 77 show the average speeds by time-of-day on the general purpose lanes and managed lanes during the four data collection periods. In the morning peak hour for the Sept 2007 and Dec 2007 periods, the I-30 ML provided a faster commute than the general purpose lanes. However, during the Apr 2008 and Jul 2008 periods the speed difference was negligible. The observed speed improvements on the general purpose lanes are believed to be caused by the upstream construction activity as explained in the section above. The combined average speed in the I-30 ML and general purpose lanes for ALL the AM periods is 64.73 mph and 59.14 mph, respectively. For the PM periods it was 62.14 mph and 62.64 mph, respectively.

Average speed comparison graphs by time-of-day on the I-20 control corridor vs. I-30 general purpose lanes during the five data collection periods are included in Appendix F.

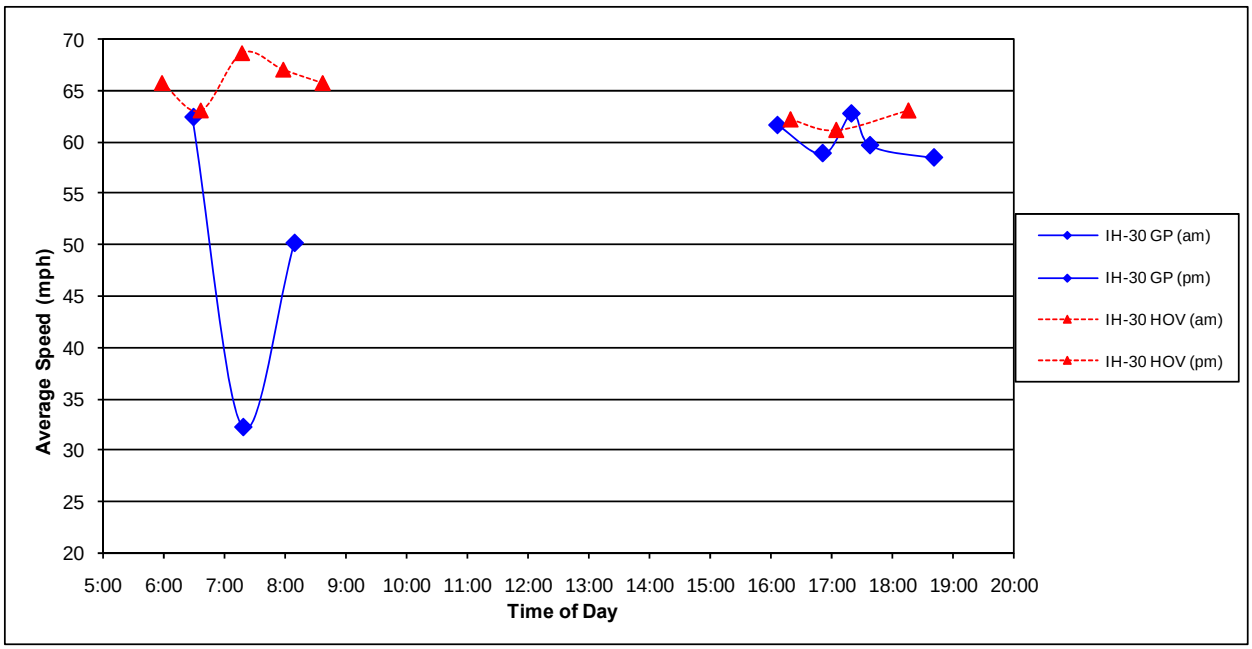


Figure 74: Average Speed Comparison I-30 Main Lanes vs. Managed HOV Lane, Sep - Oct 2007

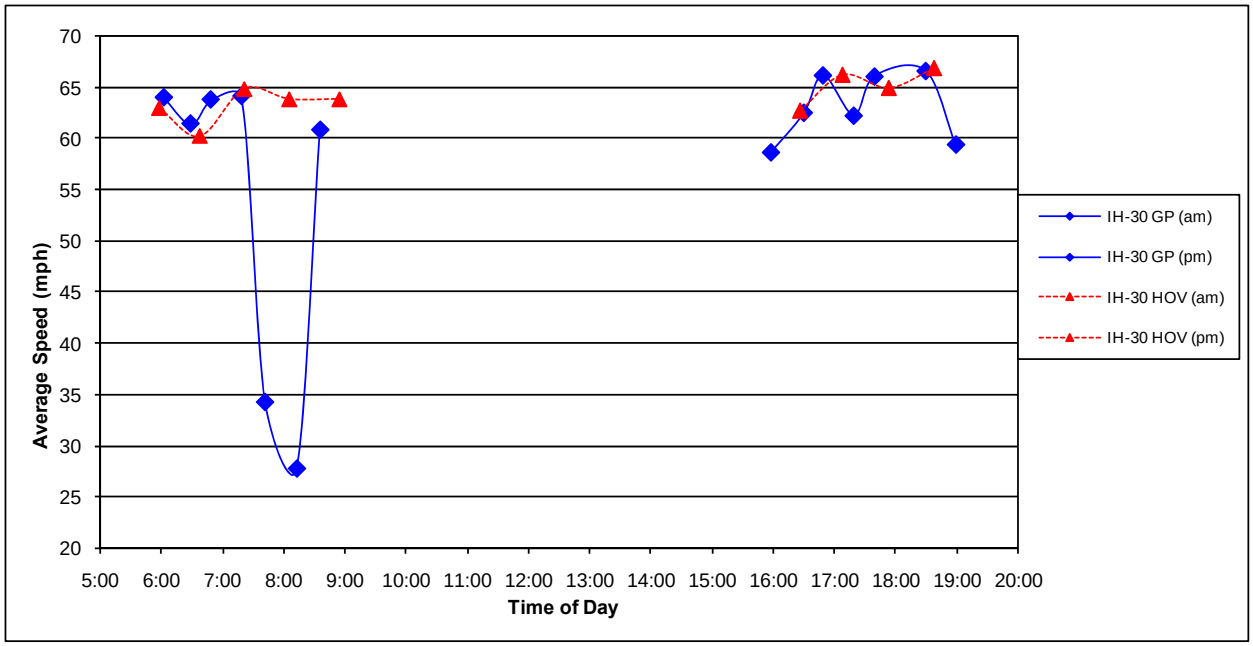


Figure 75: Average Speed Comparison I-30 Main Lanes vs. Managed HOV Lanes, Dec 07 - Jan 08

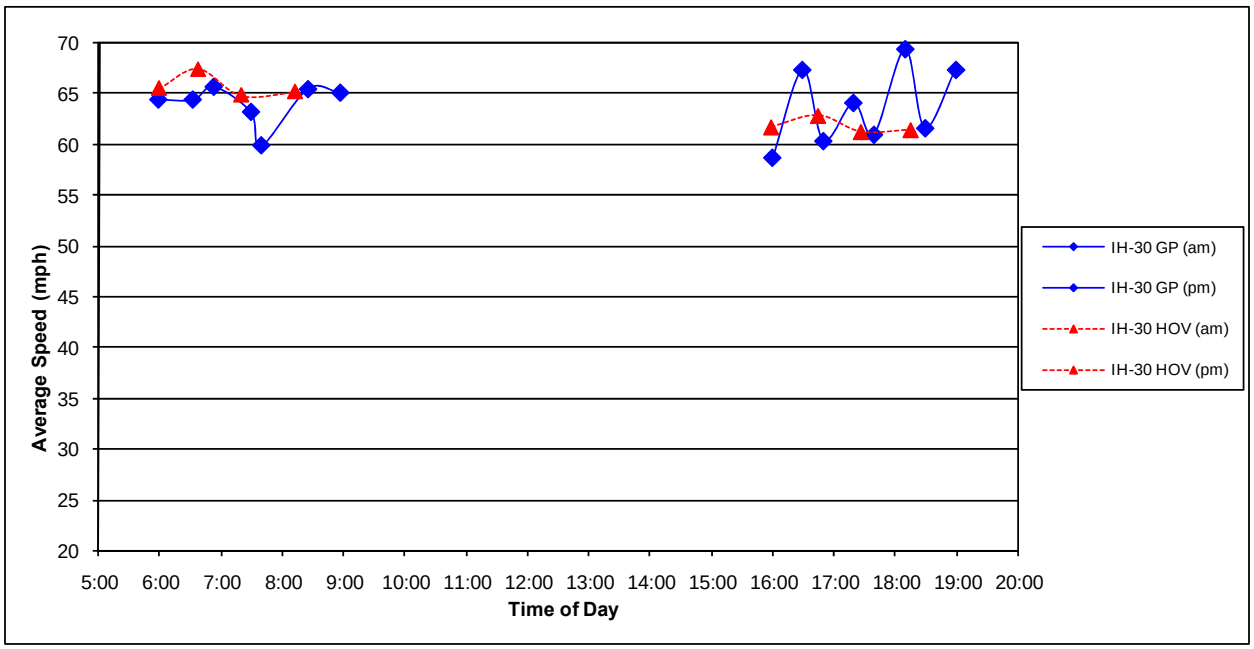


Figure 76: Average Speed Comparison I-30 Main Lanes vs. Managed HOV Lanes, Apr 08

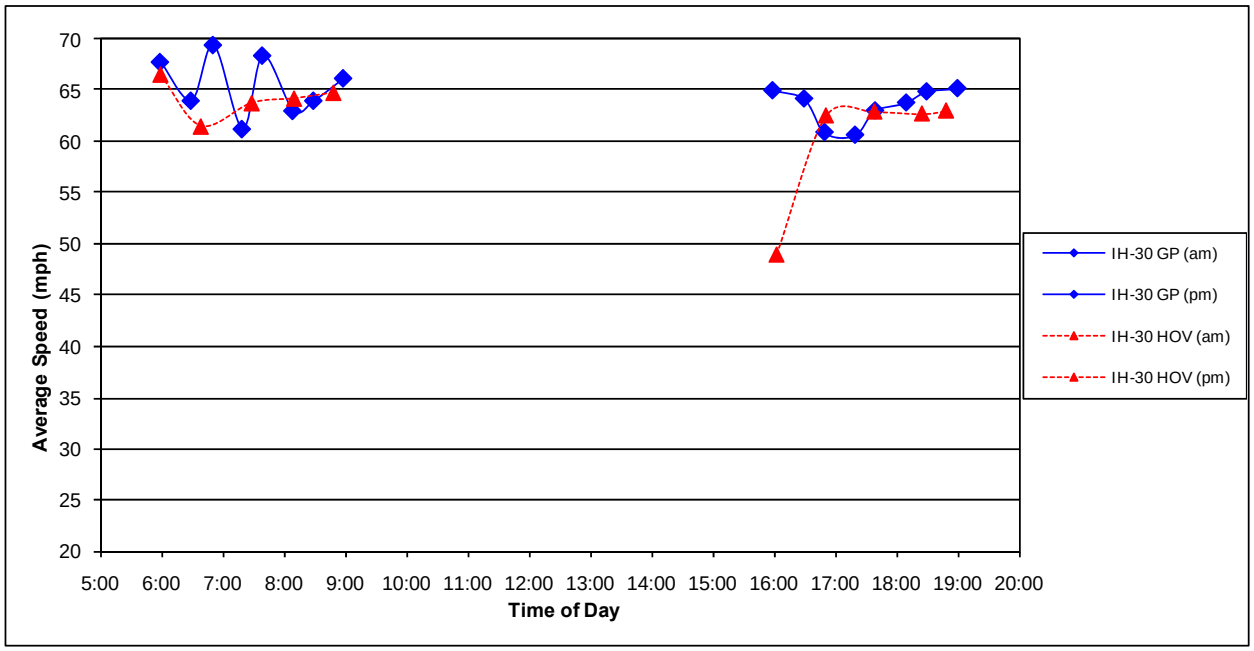


Figure 77: Average Speed Comparison I-30 Main Lanes vs. Managed HOV Lanes, Jul 08

LESSONS LEARNED

Demand on the I-30 Managed HOV lanes is still low due to its limited ingress and egress points and being only five-miles long. Drivers are currently experiencing minimal benefits when using the facility and see little incentive to form carpools. This is expected to change as a new six-mile segment, connecting the existing segment to Dallas CBD, is open in 2010 and more strategic ingress and egress points are added. Although this will not allow eastbound travel all the way to the CBD, it will allow HOV users to travel past east of Loop 12 interchange, thus avoiding the conflicting area.

In terms of violations, the I-30 Managed HOV lanes violation rate is within the regional average of 5-10%.

The evaluation of the I-30W ML has revealed some lessons that can be applied to other transportation agencies attempting to establish value pricing or value pricing evaluation programs.

First, goals of the managed lane should be established early in the project. The goals should be used to define the metrics of the evaluation program. For example, a goal of travel reliability might be established. For that goal, the metric may be the 95th percentile travel speed or the difference between mean and 95th percentile travel speed. The evaluation program must be able to collect sufficient data to calculate these metrics. For the above example that would be enough travel time runs to generate mean and 95th percentile travel times.

Second, construction of the managed lane can impact the before data collection period. If the phasing of the construction is perceived to have significant impacts on the travel patterns in a corridor, then this should be identified early. Agencies may consider starting the before data collection period even before any construction starts in attempts to be able to control for data collected in the construction period.

Third, if general purpose capacity is being added at the same time as the managed lane, then expectations on benefits must be adjusted to account for the reduction in congestion that the new general purpose lane capacity will provide. General purpose lane congestion must be monitored before and during managed lane operation to account for ridership and travel time savings.

Fourth, the use of a control corridor is an effective way to supplement the evaluation methodology. This is especially true if no construction or capacity additions are planned in the control corridor. The control corridor should have similar characteristics (i.e., radial facility vs. circumferential, number of lanes, etc.) and serve similar population and employment patterns.

APPENDIX A : OPEN ENDED RESPONSES

Open-ended responses to question: “Have any of the following happened to you while traveling on or trying to use the IH-30 managed HOV lane?”

- Entrance & Exits are not convenient
- Lanes should be open (unmanaged) at off peak hours
- Overzealous speeding enforcement
- Exited right at the Loop 12 backup and had trouble getting over to Loop 12 exit
- Pulled over because officer couldn't see second passenger
- Causes too much traffic on non HOV lanes for just a few people
- TXDOT needs to open them up to all when I-30 E or W is bumper to bumper
- They are closed the majority of the time
- Why managed instead of full time - not wise use of tax money

Open-ended responses to question: “Please select your reasons for using the managed HOV lane.”

- Just to try it and see why so much money is wasted on a lane nobody uses
- Tried it since I had an extra passenger on occasion
- had someone in the car with me
- i have kids in my car
- Less stressful for thru traffic
- due to random changes in congestion it saves time in the long run but not on a daily basis
- more than one person in the car
- loaded question
- It's rare that I'm traveling with someone else in the car but am thrilled to be able to use it when there is
- tried them out
- The HOV lane should be replaces with commuter rail
- Currently Free of Tolls
- I sometimes avoid congestion, but usually have to drive slower than the non-HOV lanes

- it was there and I was there. didn't really need it because road wasn't congested but used it anyway.
- open all lanes to traffic
- rode with someone else only a few times
- Once with extra passenger
- sometimes have passenger
- I had a passenger with me that day
- To see if it was worth using, and no it is
- Save on fuel
- Motorcycle Safety
- Trvelling with someone - note that the purpose is NEVER carpooling - that conception is a joke
- because I can
- I hoped it would be faster, but it was not.
- wanted to try it when carpooling one time
- less speed enforcement
- just curious
- waste of roadway
- 2 people in the car. Just wanted to try it.
- 2 or more in car
- Thought it would save time
- just trying it out once
- USUALLY AVOID WRECKS
- It was open
- Happen to have a passenger that day
- car accident, which happens a lot since the HOV lanes were put in.
- curiosity
- I use them when I have a passenger and can't use them when I don't. It is not fair to all who drive

- I have an extra person in my car
- actually had more than myself in the car
- No one hardly uses it, it is a waste…let the people who are jammed in traffic get on the I-30 HOV
- save fuel also
- do not use them
- to see if it saves time during rush hour

Open ended responses to the question: "Where did you hear about the managed lane concept?"

- My Job to Know
- NCTCOG
- experienced it in Houston
- Experienced it in Chicago
- http://www.dart.org/maps/hovextension.asp
- Houston Experience
- Work
- There is one on 75
- traveling in California where there are similar lanes
- coworkers
- Travel experience
- School (UTA)
- Used in other cities
- I am an urban planner
- California
- NCTCOG Mobility 2030
- WORK
- otr driving
- Personal Studies (Civil Engineering)

- This overall conversion of what should be free access to all 'scam' is well known and documented.
- Personal Research
- California
- use it in southern California
- PREVIOUS USE
- another
- Direct Coordination with TxDOT
- In use in other states.
- I've seen them in other cities.
- email from NTTA
- NTTA surveys
- US 75 managed lanes
- job
- I am a civil engineer w/ a firm that does TxDOT design
- not sure

Open ended responses to the question: “How would you like notification of toll rates while driving on the IH-30 managed HOV lanes?”

- Tolls are unfair
- In-road sign like
- Don't raise them
- abolish all
- This begs the question. If required, whole road should be toll
- email
- HOV TOLLS ARE
- XM Radio's DFW

- Would not like it at all. when was your last pay raise with gas the way it now you want to suck more blood from us. find a way to get all traffic moving for the rich and poor
- No more tolled lanes
- No HOV
- Get rid of all HOV
- DMS
- no
- No TOLL SCAMS
- I would like no notification because the damn lanes shouldn't be tolled by you people in the first place
- no tolls/how about mass transit
- Who cares. We need commuter rail, not HOV lanes
- harging a toll for using an HOV is
- Don't have
- GPS
- HOV means "High Occupancy" not "Toll Road"
- Any method that provides real-time notification.
- Direct
- Multiple road signs, large and well
- homing
- no requirement to pay toll
- none, I won't drive
- A common website for the whole metroplex advertised often and to all that has all the TxDot and driver related info for the public to EASILY access, very user friendly so that its common knowledge on where to go if you have questions because a lot of time
- mail to uncle sam
- I refuse to pay, so it doesn't matter, will not use. This road has already been paid for with my tax money.
- there should be no tolls. this was already a toll road once.

- DO NOT CHARGE A
- No toll rates
- no fees
- no tolls
- no tolls
- dont brother
- No signs are required if the are no tolls.
- TX DOT SIGNS
- trucks block signs. just don't charge the tax
- NO TOLLS
- don't want variable at all
- I thought hov lanes were about saving the planet. Now you want to turn them into a profit center- Absolute nonsense.
- tv
- no tolls stop scamming
- tier fee structure (3 or more free, 2 riders is less, 1 rider fee)
- N/A. Against Tolls
- I will never use this scam
- STUPID IDEA
- Rates should be standard
- Every possible
- None do not do!
- Eliminate HOV lanes
- NO MORE TOLLS
- I'll never use them
- none, I would never pay for it!!

- this is the dumbest thing I've ever heard of!!
- I am against the tolls to start with - this survey is a joke and a manipulation. I am sorry I took it.
- no
- ALL
- DART/TxDOT is insane! We want carpooling. You are discouraging that
- I would not like them, the point of the HOV lane is to encourage car pooling!
- It doesn't matter
- this is ridiculous
- no tolls on I30
- None at all
- For roadside signs, the sign should be a quarter mile before entrance
- No tolls anywhere
- This is unfair to charge drivers for. It was created to help keep cars off of the road and reduce pollution. You are trying to capitolize on this.
- Again the wealthy get subsidies by the poor drivers and get the best service. This is unfair! Stop ripping off the rest of the drivers!
- No Toll, no sign
- do establish them and don't worry about how to announce them.
- no tolls
- NONE DO NOT BUILT IT
- hi-way signs need to be up and visable well in advance of changes of lane changes, off ramps, our signage for our FREEways are too little too late sometime.
- Signs on entrances/Above booths
- Notify the toll authority and take it out of their profits. The road system should be available to the public and operate as a not for profit versus a for profit private industry.
- no tolls - no need for notification
- do not agree with fee
- There should NOT be tolls. Period.

- No
- Don't want tolls. Our taxes pay for roads.
- NO FUCKING TOLLS!!!
- Via overhead lite signs
- could care less
- long before entering the HOV
- NO COST
- no tolls at all
- don't care
- commercial ads
- stop tolling our freeways, we pay taxes to build our roads
- Digital Read-out Sign/s
- email
- Digital sign that can show fares as they change.
- tv and newspaper.
- NO TOLLS or HOV lanes
- Eliminate HOV Lanes
- use reverse lanes-no tolls
- one price for all
- on my car's nav system so I can avoid them
- Toll Free
- I dissapprove of tolls.
- No tolls!!!
- Newpaper, TV, Radio
- NO TOLL FEES
- educatrion needs to be effective

- don't put in hov lanes
- No tolls. Period.
- via vehicle NAV unit
- in-car or portable nav. systems - but don't charge a fee for this information
- I will NEVER PAY to use the HOV lane.
- do not implement this
- NO TOLL ROADS AND NO TOLL LANES FOR I 30 OR ANY EXISTING ROAD OR HI WAY
- mass mailing
- Computerized signs over HOV entrances, such as those now used to give AMBER ALERTS and accident information
- It does not matter, collecting the toll is wrong

Open ended responses to the question: "Which of the following do you believe are fair methods to manage the IH-30 managed HOV lanes?"

- HOV lanes generally are obsolete
- Roads should be free. Tolls never go away ie DNT. Tolling was sold as a lie for voter approval. It should be eliminated, but to subsidies to construction only is fair.
- eliminate managed HOV lanes entirely. Absolutely stupid idea.
- i am not for this solutuion
- Eliminate the managed lane and expand the highway to five lanes so everyone can benefit
- legalize marijuana and tax to support city growth
- no toll, no hov lanes
- Separate lane for buses.
- should not charge for HOV Lanes. It is rediculous
- Get rid of them. They are a waste of taxpayer dollars. Open the freeway to more lanes so that traffic moves better overall.
- i don't think HOV lanes should have a toll
- No Tolls. Tolls favor the socioeconomically well off at the expense of the disadvantaged

- This is not a solution to get people o carpool and reduce air polution. It is a way for people that can afford to pay to have a congestion free trip. I understand the economics of it all but can we not introduce a managed fleet system or some type of van

- Standard free HOV lanes for two or more passengers in a car. Make the whole road a tol road if it is that important. Get rid of the useless and dangerous barriers.

- To charge will be a disincentive to current users, train provides a cost savings and may outway the cost of convinience.

- all tolls are bad HOV lanes give a few people a chance to fly by while the rest of us sit parked producing emissions. Get it!

- it should all be free, or not do it at all.

- remove the HOV lane

- Reduce HOV lanes and put money into public transportation such as trains.

- Half price toll for car pool of three or more.

- HOV lanes don't work. If they did properly, then they would be just as congested as the LBJ's and I 30s they're currently on.

- higher fairs on game days for example in arlington and on major events

- High MPG cars should be allowed with 1 driver

- do away with HOV lane and open to all traffic. All the publis has paid for it, open it to all the public.

- Get rid of all HOV lanes

- HOV lanes should be free for all

- no tolls

- free motorcycles

- SCRAP the HOV SCAM

- Take the damn things out and make it fair for EVERYONE... not just treehuggers and Lexus drivers.

- loaded questions

- HOV lanes cause congestion at entrances, and merges, I cannot participate because I cannot carpool, and I see very low usage of the lanes

- Charging tolls should be a crime.

- no tolls

- Remove the HOV lane and add a commuter rail system instead
- no speed limit if you pay to drive
- turn them into regular lanes
- free managed travel for HOV eligible vehicles
- no hov toll
- Don't have managed lanes
- State Highway should not have a toll at all
- Dedicate non-hov tolls to fund managed lane mass transit
- i pay enough taxes, hov should not be managed--it is a hazard and waste of tax payers money having them open and close like you do right now. i have seen too many accidents with these crews. call me 817 229-0054
- Free Single lanes Each direction 24/7
- Let me pay a toll and travel without an additional passenger
- NO HOV LANES
- HOV means 'High Occupancy" not "Toll Road"
- free for all if more than 2 people in vehicle
- All free with 2 or more occupants
- No toll
- HOV should just be Free!
- no managed lane costs charged for anyone who uses it
- no charge
- No tolls at all
- toll roads should be eliminated
- HOV lanes have missed the boat. Effective traffic management starts with mass transit
- Toll Tags for those that don't fit usual HOV lane rules like more then one person, or motorcycle, for example
- no tolls, what-so-ever !!!!

- Get rid of HOV lanes
- our taxes pay for roads
- It'd make more sense to toll the regular lanes and leave the HOV lanes free, since they're underutilized.
- I already paid for that road and shouldn't have to pay again!
- the barriers should be removed and additional lanes added for everyone to use
- no tolls. I-30 was a toll road in the past, no part of it needs to be again.
- hov lanes are a joke they take up way to much space that could be used for regular traffic
- open all lanes to all traffic
- Get rid of the lanes and add another free lane for everyone
- WHEN PAYING TO USE LANES SPEED LIMITS SHOULD BE RAISED
- tollsshould not be charged for roads built with public money!
- no fee
- no tolls
- Leave HOV as they are today. Two or more people can use the HOV Lanes during all times of the day.
- no toll at all
- DO NO implement "managed" lanes. Taxpayers have already paid for the roads.
- get rid of HOV lanes
- It is NOT a fee. It is another TAX!!!
- free for all
- NO TOLLS
- remove hov, no tolls
- NO MANAGED LANES!
- The only fair way is to keep them free at all times
- NO CHARGE!!!Open the roads,where is our gas tax money----
- HOV lanes useless! Get them out of here! NOW! They make traffic worse, and do NOTHING for the environment!

- not for any tolls
- no hov
- all free we pay enough
- Open All The Lanes to Free Traffic our taxes paid for this road
- Much more policing and enforcement esp. for number of riders
- No Tolls. Keep current structure, if can't eliminate HOV
- Remove them and build roads designed to handle future traffice and stop creating extra taxes for tax payers
- NONE-GET RUD IF THEM
- Make them free
- no charge for all vehicles
- no toll
- SHould not be tolled already pay for it
- Eliminate HOV lanes
- NO MORE TOLLS. PERIOD
- Free by-pass lanes for anyone
- Get rid of HOV lanes all together!
- Free for Motorcycles
- everyone should have free access to all lanes on a publicly paid for road!!!
- eliminate them
- Eliminate both the HOV lanes and the any asociated tolls on what should be free access to all - not just the privileged to the benefit of private investment companies.
- turn the lanes into free non managed additional lanes for general traffic as needed for directional traffic
- Motorcycles remain free on managed lane travel HOV is slower than other lanes I-30 Arlington
- school buses are free
- SOV use is hairbrained! Have you forgotten we are trying to encourage carpooling----
- don't charge at all for HOV

- Free HOV Lanes
- No tolls, Taxes are already too high and should guarantee free travel.
- All lanes should be free for all users
- no charge at all
- All traffic in extra lanes
- No Toll
- There is not a fair way. The HOV will rarely be used.
- No tolls anywhere..Where is the tax we pay on our fuel now-
- Toll Roads benefit the rich and those who can not afford the tolls are force to use roads not maintain or continued poor planning in the past and the present for road use tommarow.
- No Toll
- Free Motorcycles
- remove HOV lanes
- discontinue all such b/s lanes we the tax payers or we the people need full usage when we are out there the politicians use planes that I pay for so leave the FREEWAYS ALONE, we bought them with our blood and tax dollars not yours.
- Before even considering an HOV, you need a minimum of 5 lanes each direction of regular travel. Go to LA, watch, learn.
- No HOV's, No Tolls
- open the lanes for all drivers
- replace them with bus routes
- ALL FREE
- Open up all the lanes for everyone
- no toll fees at all
- all lanes should be free
- No large trucks allowed
- No toll and use by all that meet the lane use requirements. I am not in support of the use of tolls. It hurts lower income individuals and families that are already struggling. Tax revenues need to be properly set and managed with tax dollars for roads

- Do not agree with tolls for I-30 HOV lane since we bought and paid for the road in the first place. Want to charge toll....build a road!
- no tolls.
- Open all lanes to all people all the time. No more HOVs
- I think gasoline taxes should cover roads... I hate toll collection on public roads!!!!
- Free lanes for EVERYONE. Stop the double taxation of our freeways.
- all lanes should be toll free.
- NO FUCKING TOLLS!!
- no charge
- controlling where we exit
- Open the HOV lane to all traffic which will reduce the overall congestion for all. If you have only a few uses of the HOV and 98% of the drivers sitting in traffic wasting fuel, adding air pollution have you really done anything to reduce the problem--
- capacity is expanded by having toll free lanes and not HOV lanes. The cost of gas will cause car pooling
- federally funded highways should not be toll roads. these are already funded by tax dollars
- No tolls should be charged; no more HOV lanes should be built
- NONE OF THESE OPTIONS
- remove HOV lanes
- It is a ripoff
- Free managed lane travel.
- abolish the stupid HOV
- NO COST PERIOD
- Open the Lane to all Traffic instead of the few that use it. This will help.
- uh, Free- It's HOV not a tollway way.
- No toll charges
- HOV Lanes actually cause congestion - let all cars use all lanes & just make it a minor toll that is less if you have more people in the car
- no charge and used as express lanes, not HOV HOV wastes fuel and time

- Variable pricing including single occupancy vehicles
- I refuse to use toll roads
- no toll at all
- All taxpayers pay for roadways and should therefore be allowed to enjoy the extra lanes TOLL FREE period.
- remove HOV and give all an extra lane
- reduced toll for transit buses
- Stop managing the HOV lanes and convert them to normal lanes.
- if charged a toll allow service vehicles as the many people in the area who drive service vehicles such as hvac technicians and plumbers as well as others are generally either travellingt with only a limited amount of paid travel time or they are on time
- Use the HOV lanes for rail
- Stop tolling our freeways
- free HOV travel all times
- everyone should be able to use 1 person in vehicle could pay a higher price to use
- no HOV lane - use the extra lanes for traffic - period.
- I don't think there should be any prices! We pay enough tolls already!!!
- HOV lanes should not be tolled
- Not sure if this is the place to put it but even though I often carpool I feel HOV lanes are a very poor idea as they appeal to the lowest common denominator of drivers: those with 2+ persons. New lanes should be added for the benefit of all and usable
- hov lanes are a stupid idea
- allow driver only cars to travel with toll
- get rid of them they waste money
- Eliminate HOV Lanes
- No Managed Lanes
- Anyone willing to pay a toll if you are gonna charge people should be allowed to use the lanes even if only one person in car.
- use lanes for smaller effecient vehicles 1-2 passenger sub 1,000 lb vehicles tht

- Else, only elitists will use tolled area.
- transit busses with passengers allowed to travel for free
- Turn into regular lanes so more people can use them
- use as reverse lanes
- Motorcycles for free
- Use Managed Lanes as another lane for any traffic
- Eliminate HOV lanes
- plus fee for less than 80MPH
- if you really want to reduce congestion and fuel, simply make I-30 4 lanes both directions. The HOV lanes are almost empty as we sit bumper to bumper burning fuel. Many people can't car pool due to type of work they do. Just make 4 lanes both directions a
- joke-selective enforcement
- It is not fair to charge tolls on a roadway already paid for by taxpayer money. It is undemocratic to allow motorists to buy their way onto the carpool lanes. This idea stinks!
- None is fair
- open all lanes to all traffic to reduce congestion
- I do not believe tolls should be used for any lane
- I'm not in favor of HOV lanes period
- HOV lanes should not be toll roads.
- I don't think the toll lanes help congestion at all. Opening the lanes to all travelers would help more than trying to encourage carpooling. I know of no one both lives and works near me, and my schedule changes due to work load, so carpooling is not fe
- Allow single riders for a toll. Motorcycles are already allowed.
- No tolls, we already have way too many.
- Charge a premium and allow single drivers to use lane.
- NO TOLL
- Free HOV
- toll only on new construction

- No HOV lanes
- Free or reduced fee use of managed lanes for Toll Tag users
- We shouldn't pay for roads at the gas pump & on the roads
- single passenger car should be able to get on if they pay
- No tolls. Period
- Pricing is fine if everyone has a chance to pay. Electronic pricing discriminates against out of towners and people from parts of town with few toll roads. All a big scam to end up pricing all roads.
- We already pay for the roads, no more tolls
- Minimum Number of Passengers
- free for all
- No tolls, no managed lanes, all lanes available to all vehicles.
- free
- No tolls at all, 3+ or 4+/car during congestion, free/very low cost frequent mass transit service
- No HOV Lane Get Rid of it
- remove the HOV lanes
- NO TOLLS! GET RID OF HOV AND OPEN LANES UP TO ALL USERS--FREE OF CHARGE!
- change HOV lanes to additional regular lanes
- take the money wasted on HOV lanes and build better and wider freeways
- NO TOLL ROADS AND NO TOLL LANES FOR I 30 OR ANY EXISTING ROAD OR HI WAY
- free for 3+ carpools
- No charge for HOV
- City Residents who pay taxes
- NO TOLLS
- collecting a toll on a road built with tax money is not legal

APPENDIX B: E-MAIL TO POSSIBLE PARTIPCANTS

Greetings –

The Texas Transportation Institute is currently conducting two research projects in the Arlington/Dallas area, and is looking for members of the public to participate.

The first project consists of research regarding the managed HOV lanes on the Tom Landry (I-30) Freeway. We are looking for individuals who travel on the I-30 corridor to participate in one of three possible focus groups on the subject. You have been contacted because you indicated during a related survey that you are interested in participating in future focus group sessions. Individuals who participate will receive $50 cash for their input. Meals are not provided.

Focus Group sessions will be held as following:

Tuesday, August 12, 2008: 6:00 PM to 7:30 PM,

North Central Texas Council of Governments

616 Six Flags Drive, Building CP2, Arlington.
http://www.nctcog.org/aa/locator_map.asp

Wednesday, August 13, 2008: 11:30 AM to 1:00 PM,

Or 5:00 PM to 6:30 PM,

Dallas County Offices

411 Elm Street, 4th floor.
http://www.mapquest.com/maps?city=Dallas&state=TX&address=411+Elm+Street

If you are interested in attending one of these sessions, please respond to this email address to register. You must be registered to attend and attendance is limited to 10 people per session. Employees of the Texas Transportation Institute, Texas A&M University System, or Texas Department of Transportation are not eligible to participate.

For the second project, a flyer is attached explaining your opportunity to provide input on traffic sign designs. Participants will receive $30 cash compensation for their time/input. If you, or someone else you know would be interested in participating, please use the contact information provided on the flyer. Individuals may not participate in both research opportunities.

Sincerely,

APPENDIX C: DISCUSSION GUIDE

Focus Group Discussion Guide

I. Intro

Welcome to the focus group today. Thank you for taking time out of your busy schedules to talk with us. I'd like to begin by telling you about how the group will work and then we'll get down to the specifics of our topic for the day.

How many of you have participated in a focus group before?

The success of the group depends quite a bit on how willing you are to share with us what you think. So, I'm asking you right up front to be open and forthcoming, and not to worry about what I might think, or what others in the group might think about what you say, or even if you are giving a viewpoint that disagrees with someone else's. We're not really talking today about matters that would be considered very sensitive, but the topic is one that we would expect people to have differing opinions on, so I do want to encourage lots of dialogue. Don't worry about the tape recorder. We will keep the tape to ourselves and just use it to help us with our notes. Try to forget that it's there. Let me assure you that we will always keep everything you say as anonymous.

Having said that, I want you to relax and enjoy the conversation. But I do have to ask that you talk one-at-a-time, that you not have any side conversations, and you speak loudly so that everyone can hear what each person has to say. I don't expect our discussion to last more than about an hour and a half. If you need to get more refreshments or use the facilities around the hall, please feel free to get up at any time.

First I'd like us to have some brief introductions. I'll start with us…

Now, let's go around the room and say your first name only (because we're keeping this anonymous), and a little bit about who you are, how long have you lived in the Dallas area and what you do for a living.

OK, now we're ready to get on with the topic at hand. TTI is working with TxDOT to gain a better understanding of how people feel about the Managed HOV lanes on I-30 and how they may operate in the future. We're also going to talk about the signing along the corridor and how it can be used to communicate information to you.

II. Travel Characteristics

First I want to ask you some basic questions about your travel on the I-30 corridor.

Do you travel this corridor most days? For what purpose?

What do you think of the congestion? How bad is it? Are there some parts that are worse than others? Where?

In general, do you think HOV lanes in the DFW region are effective? Why or why not?

Do you think the Managed HOV Lane on I-30 is effective? Why? Why not?

Do you ever use the Managed HOV lane? What do you think of it?

How easy is it to get on and off? Where do you access and exit?

Does it meet your needs? If no, what would make it better?

Do you know that the Managed Lanes will extend in the future? *Show graphic*

Will this change your use of the Managed HOV lane?

III. Pricing

What do you know about the plans for future operation of the I-30 Managed HOV lane? *Explain how the lane might operate, including variable pricing, if necessary*

What do you think of this? Do you think it is fair?

Do you know how the price will be determined? *Congestion in the ML lanes, GP lanes or both*

What do you know about the region's pricing policies with regard to HOVs? *Offer brief explanation of policies*

Do you think the policies are fair and appropriate? Why? Why not?

Do you think might be more likely to use the Managed HOV lane? Under what circumstances?

IV. Signing Questions

Sign Question 1. 1 Mile advance (Slide 1)

What do you think HOV/ TOLL means?

Do you have to pay if you are an HOV?

Can you use the lane if you are not an HOV? If so, do you have to pay?

(after discussion, explain operation that SOV is tolled, HOV is free)

Given this operation, what other term could we put in the banner of the sign that explains it better?

QUESTION 2

ACCESS TO (Slide 2)

What do you think “access to” means?

OK to prompt with:

- Will it be a place to change lanes to and from the special lane?
- Will it be a separate elevated ramp that gets you to I-10 Toll?
- Is it an upcoming intersection or interchange with I-10 Toll?

Do you think cars will come and go in and out of the special lane?

(*after discussion, explain that it’s a break in the barrier or traffic cones that allow vehicles to change lanes in and out of the managed lane)*

Given this operation, what other term could we put on the sign that is better?

EXPRESS LANE ENTRANCE (Slide 3)

Do you like the word ENTRANCE better? Better than access.

What do you think Express Lane means?

OK to prompt with:

Does it mean:

- higher speed limit
- limited number of cross-streets exits
- faster travel time

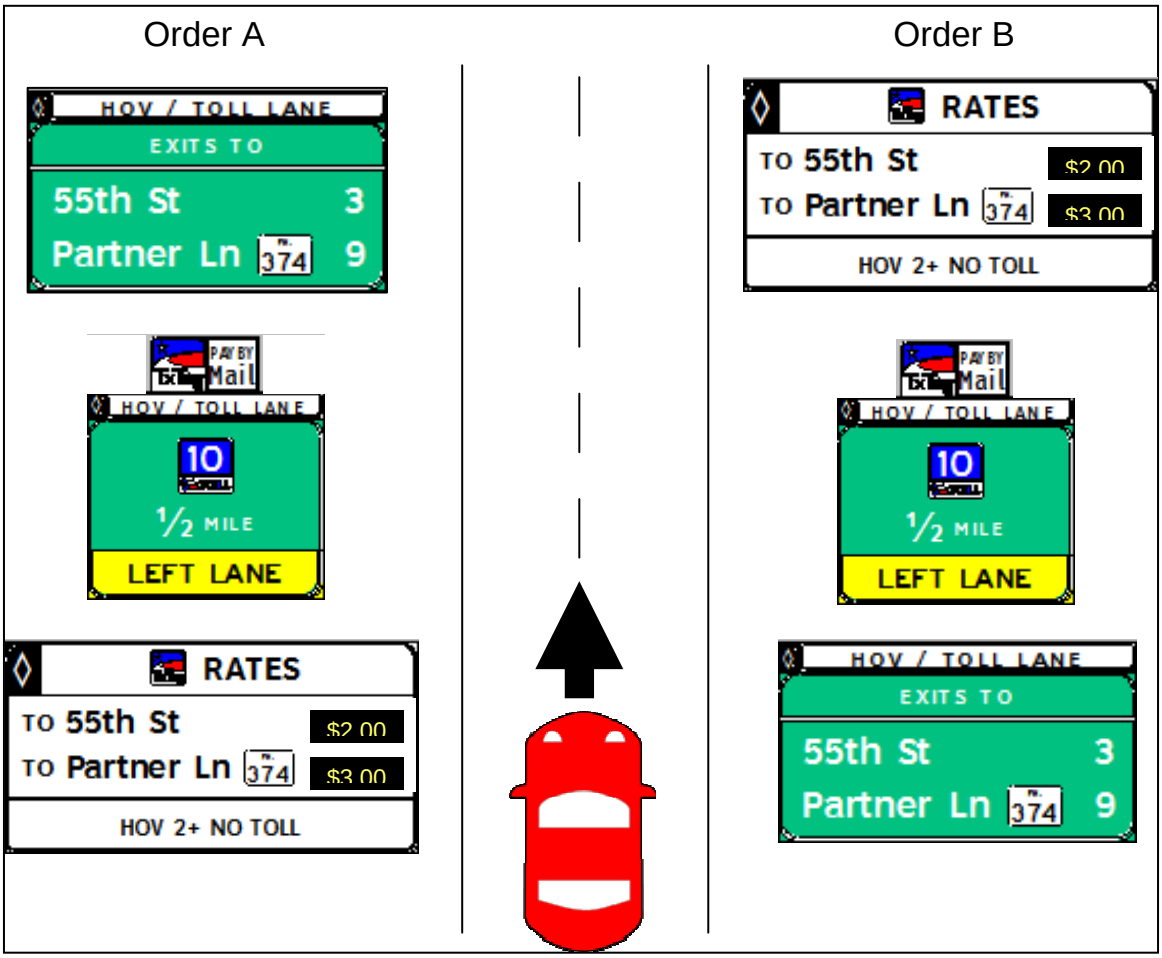
QUESTION 3

Let's watch this short video to see how some of these signs would look when you're approaching these special lanes. After we watch the video we'll look at the signs in detail. The video is to give you an idea of the order in which they'll be placed.

Play Video named Version3

Can begin the video at the beginning and stop after 50 sec.

Order Comparison (Slide 5)



In the video we watched, this sign showing the price came first and in Order A. This slide shows an alternate version where the list of exits and distances comes first.

Which order do you like best?

Which helps you make the decision about whether or not to enter into the lane – price or knowing the exits?

Why do you like this order?

Would you like to know the estimated travel time in order to make your decision?

VII. Other Outstanding Issues

Is there anything else about I-30 that you would like to comment on?

VI. Wrap-up

A. Summarize
B. Hanging Issues
C. Thanks

APPENDIX D: TERMINOLGY

Please tell us what you think the following terms mean in terms of who has access to the lanes, if there is a toll, who might pay a toll, etc.

Express Lanes

Toll Lanes

HOV/Toll Lanes

Toll Express Lanes

Managed Toll Lanes

Managed HOV Lanes

APPENDIX E: STAKEHOLDER INTERVIEW GUIDE

I-30 Value Pricing Project

Stakeholder Interview Guide

30 minute discussion type interview

Graphics may be used to aid in communicating opinions

1. What is your role in the community? (e.g. business person, community leader, facility operator, major employer, etc)

2. What are your impressions of the I-30 corridor? How vital is this corridor to the development of the mid-cities? How vital is this corridor to the development of West Dallas and the CBD? How vital is this corridor to the development of Fort Wroth? Do you see development increasing? Are you aware of coming development?

3. What are your impressions of traffic in the I-30 corridor? Is it bad? Is it getting worse? Is it now or do you think it will affect development in the corridor?

4. How often do you or your employees use the I-30 freeway? Are there better routes between the mid-cities and Dallas? SH 183? Division/US 80? I-20?

5. How familiar are you with the HOV lane on I-30 and its operation? Do you know the eligibility requirements? Do you know where you can access it?

6. How do you feel about where the HOV lane starts and stops? Do you know the plan and schedule for future segments?

7. How often do you or your employees use the HOV lane?

8. How do you feel about the current hours of operation?

9. Are employees required to pay for parking?

10. Do you offer any employee incentives for carpooling or taking transit?

11. What would motivate you to offer incentives?

12. How do you feel about tolling or pricing? Does it impact the travel of your employees or customers? Do your employees or customers use Dallas North Tollway or President George Bush Turnpike to get to your business? If so, is this a positive or negative impact to your employees/customers?

13. Are you familiar with the term *managed lane*? Do you have a better suggestion?

14. Did you know there is a plan for managing the HOV lane on the I-30 corridor? Did you know there is a regional managed lanes policy?

15. How do you think a HOT lane (*describe HOT, if necessary)* will affect your customers?

16. Do you think your customers or employees (primarily employees) would be willing to pay a toll to travel alone in the HOV lane?

17. How much is an appropriate charge? What is the maximum you think people would pay?

18. Do you think people (customers and employees would pay to have a guaranteed trip reliability? For example, if you knew for sure that your trip would take 15 minutes, would you be willing to pay for that?

19. If the HOT lane can guarantee a minimum speed, what do you think that speed should be? (i.e. 50, 60, etc)

20. What do you know about congestion/dynamic pricing? (*Use graphic examples here, if available.)*

21. How would you feel if this were to be implemented on the I-30 HOV lane?

These additional questions will be asked of facility operators.

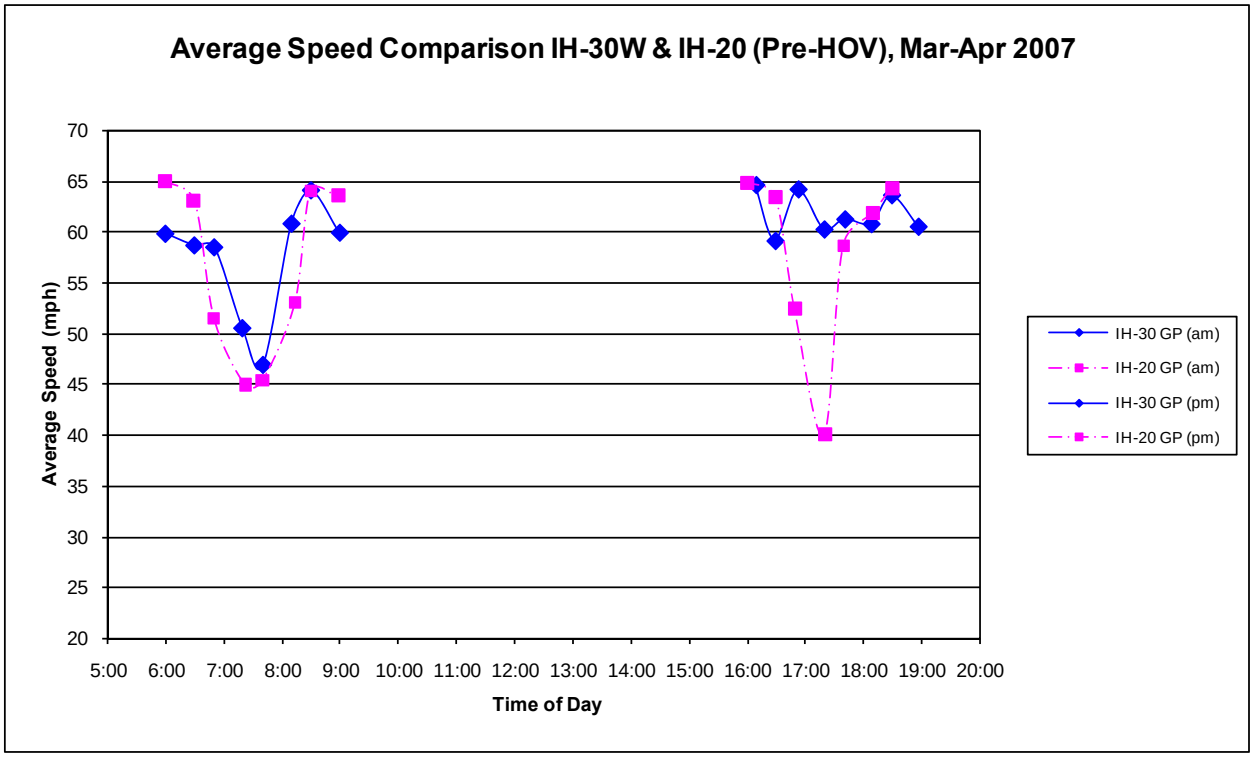
1. How will the I-30 HOV/Manage lane affect your traffic control plans? Do you know of any plans for direct access to your parking?

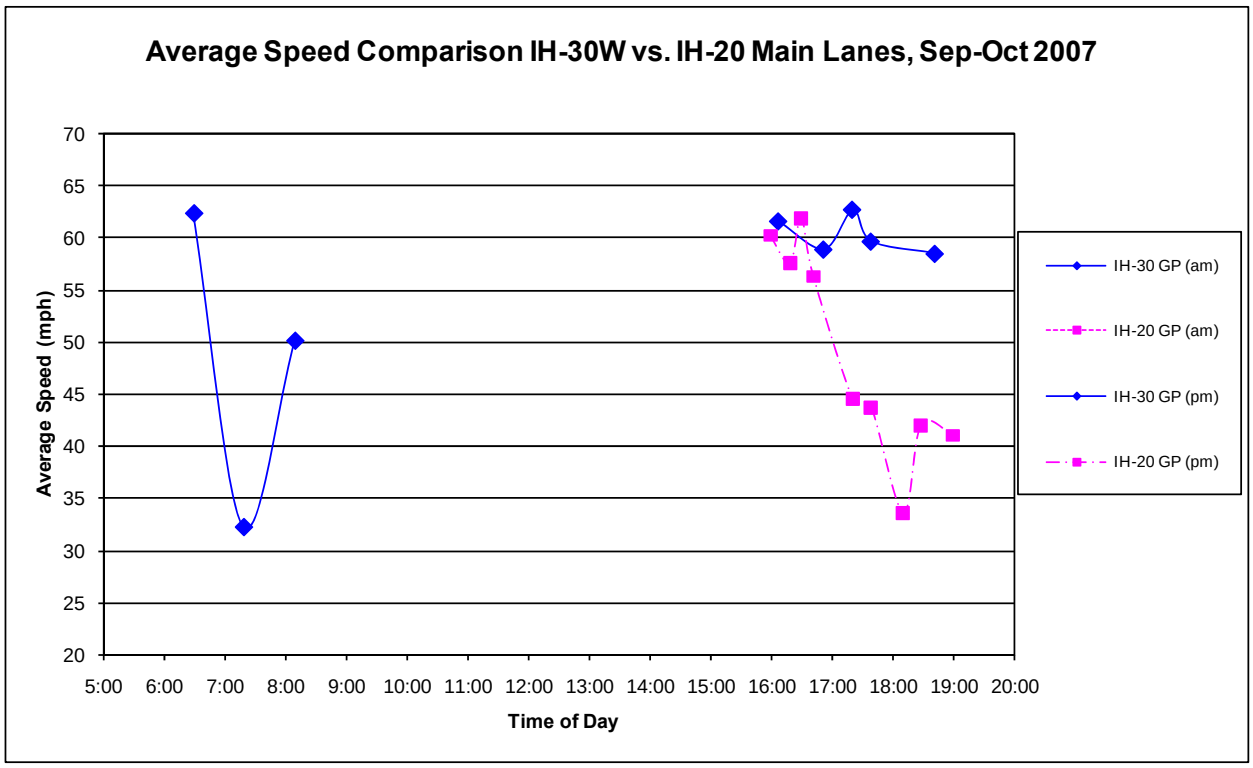
2. What hours of operation of the HOV lane would benefit your “customers”? (is it important to be open on the weekends)

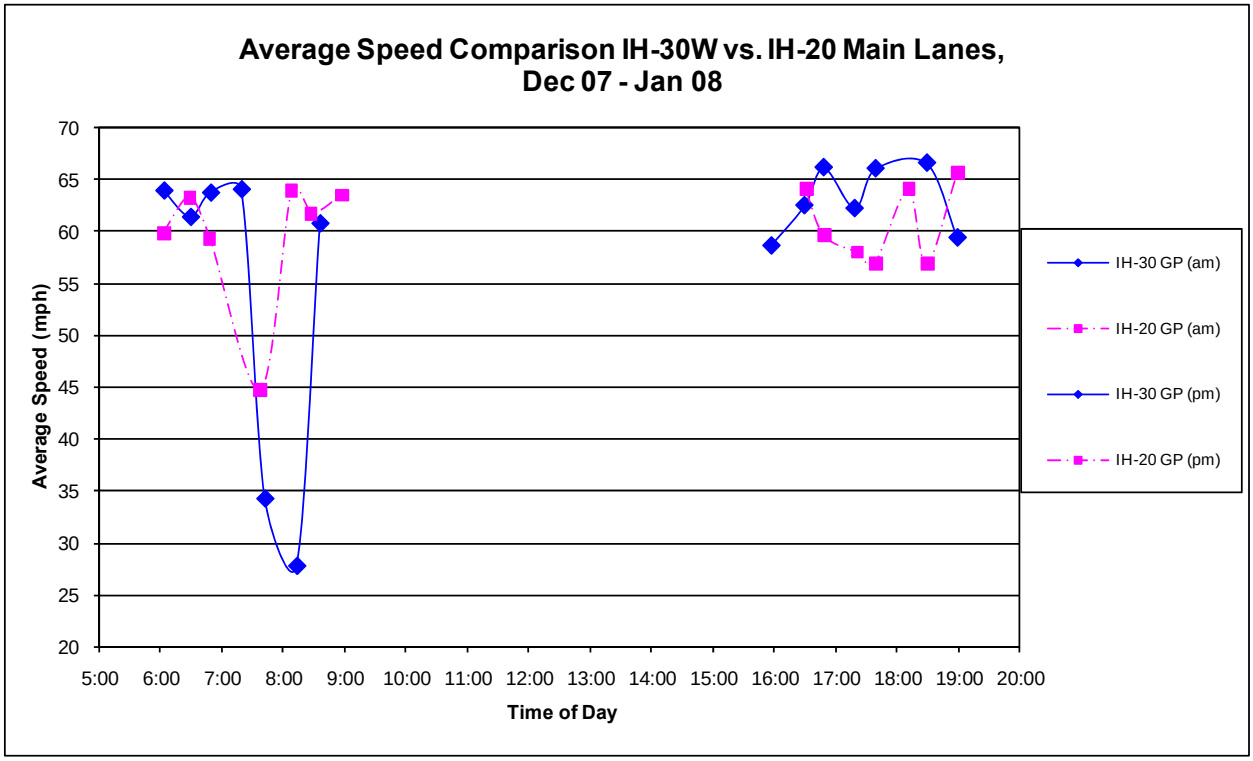
3. Have you considered allowing your customers to use their toll tag to pay for parking? Would you consider an entrance lane or a parking entrance designated especially for toll tags?

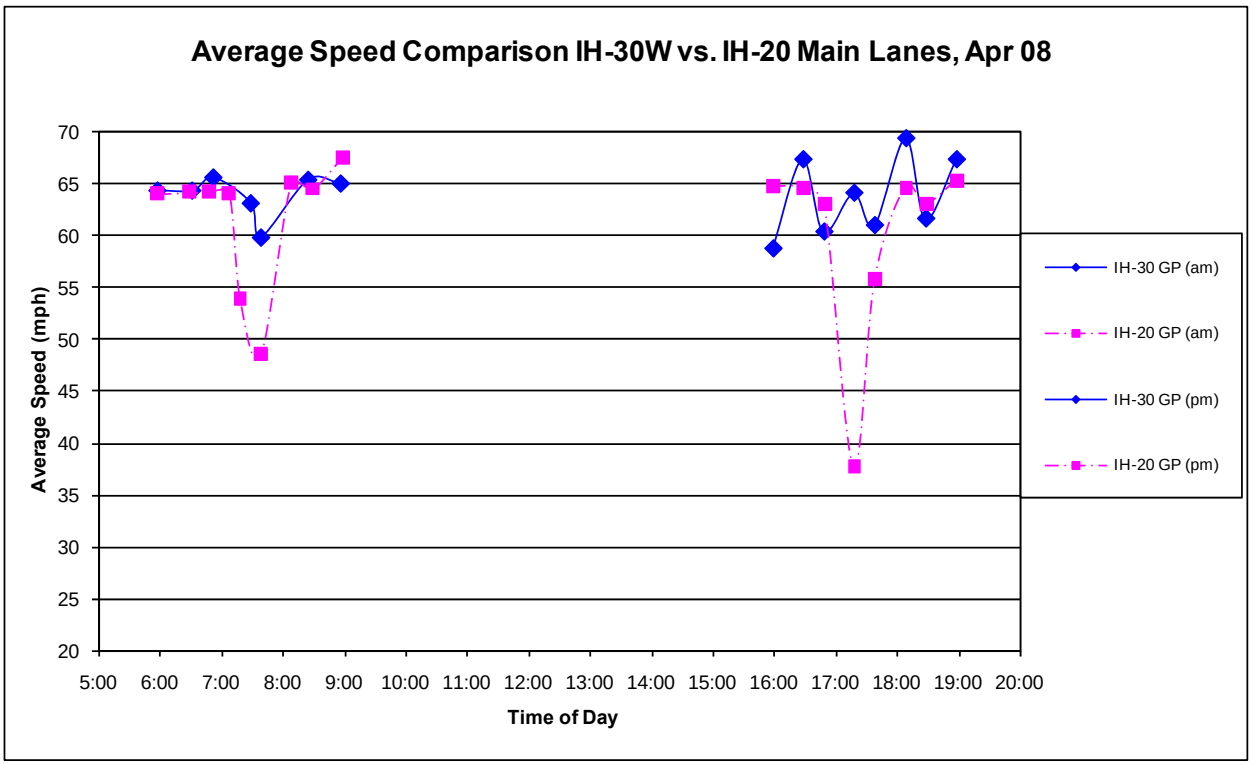
APPENDIX F: I-30 VERSUS I-20 SPEED COMPARISON

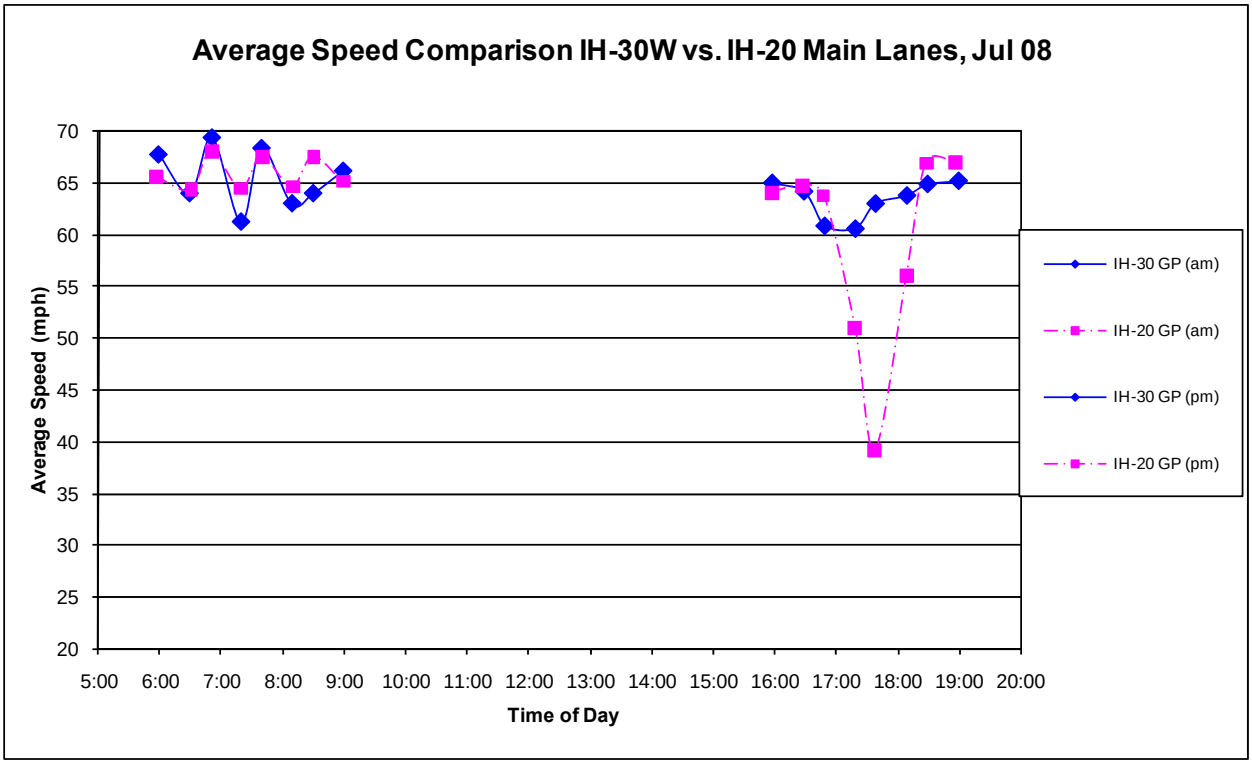
Average speeds by time-of-day on the I-20 control corridor and I-30 general purpose lanes during the five data collection periods:




Average Speed Comparison IH-30W vs. IH-20 Main Lanes, Sep-Oct 2007
Average Speed (mph)
70
65
60
55
50
45
40
35
30
25
20
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
Time of Day
IH-30 GP (am)
IH-20 GP (am)
IH-30 GP (pm)
IH-20 GP (pm)


Average Speed Comparison IH-30W vs. IH-20 Main Lanes,
Dec 07 - Jan 08
Average Speed (mph)
70
65
60
55
50
45
40
35
30
25
20
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
Time of Day
IH-30 GP (am)
IH-20 GP (am)
IH-30 GP (pm)
IH-20 GP (pm)


Average Speed Comparison IH-30W vs. IH-20 Main Lanes, Apr 08
Average Speed (mph)
70
65
60
55
50
45
40
35
30
25
20
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
Time of Day
IH-30 GP (am)
IH-20 GP (am)
IH-30 GP (pm)
IH-20 GP (pm)


Average Speed Comparison IH-30W vs. IH-20 Main Lanes, Jul 08
Average Speed (mph)
70
65
60
55
50
45
40
35
30
25
20
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
Time of Day
IH-30 GP (am)
IH-20 GP (am)
IH-30 GP (pm)
IH-20 GP (pm)

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