Final Report

ORIGIN AND DESTINATION SURVEY RESULTS FOR THE ORLANDO-ORANGE COUNTY EXPRESSWAY AUTHORITY

Project ID# 27

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16. Abstract

This report describes the design, administration, and analysis of the Origin/Destination survey of users of the Orlando-Orange County Expressway System. The basic survey form consisted of a letter-sized paper with the questionnaire on one side and a return address, cover letter, and title on the other side. The questionnaire has 13 questions that cover trip purpose, time, frequency, vehicle occupancy, trip origin, trip destination, off/on ramps, and some of the trip-maker characteristics. These trip-maker characteristics are occupation, age, and income. The survey was also published on the World Wide Web at *www.catss.ucf.edu/survey*. A total of 180,000 surveys were scheduled for distribution. The survey distribution was scheduled starting from November 2nd through November 21st. The survey distribution was planned over three major periods on the weekdays: morning peak period (7:00 AM – 9:00 AM), off-peak period (12:00 PM – 3:00 PM), and evening peak period (4:00 PM – 7:00 PM). For the weekdays the survey was carried out over one period from 12:00 PM to 5:00 PM. A total of 167,149 surveys were at the ten mainline toll plazas and the eastbound Conway Ramp Plaza (to account for vehicles coming from I-4 and exiting at Conway), and mailed to E-Pass users. For non E-Pass customers, 100,960 survey forms were distributed. For E-Pass users, 66,189 surveys were mailed to a random sample via bulk mail with a cover letter. This number represents approximately a third of the E-Pass users. A total of 21,137 responses were received, accounting for 12.7% response rate. The report includes a detailed analysis for trip characteristics, trip-maker characteristics, origin-destination patterns, and travel trends.

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EXECUTIVE SUMMARY

One of the most important criteria to the success of any transportation services is to understand the users of this service. Understanding the users, their needs, travel patterns, is essential to plan and implement successful measures to improve and expand the service. The Orlando-Orange County Expressway Authority is interested in obtaining detailed data related to the users of the expressway system. This data includes the users' trip origins and destinations, travel patterns, trip purposes, frequency of trip making using the system, and also the characteristics of the trip makers.

This report describes the design, administration, and analysis of the Origin/Destination survey of users of the Orlando-Orange County Expressway System. The Orlando-Orange County Expressway System encompasses three major highways: the East-West Expressway (SR 408), Beeline Expressway (SR 528) from I-4 to SR 520, and the Central Florida GreeneWay (SR 417) from I-4 to SR 520. The basic survey form consisted of a letter-sized paper with the questionnaire on one side and a return address, cover letter, and title on the other side. The questionnaire has 13 questions that cover trip purpose, time, frequency, vehicle occupancy, trip origin, trip destination, off/on ramps, and some of the trip-maker characteristics. These trip-maker characteristics are occupation, age, and income. A map of the Expressway system was attached to each questionnaire to help the respondent in identifying his/her on/off-ramps.

The survey was also published on the World Wide Web at *www.catss.ucf.edu/survey*. A total of 180,000 surveys were scheduled for distribution. The survey distribution was

scheduled starting from November 2nd through November 21st. The basic idea was to distribute surveys on each mainline toll plaza once on a weekday (typical weekday: Tuesday, Wednesday or Thursday) and again on the weekend to get a complete representation of the driver population. The survey distribution was planned over three major periods on the weekdays: morning peak period (7:00 AM – 9:00 AM), off-peak period (12:00 PM – 3:00 PM), and evening peak period (4:00 PM – 7:00 PM). For the weekdays the survey was carried out over one period from 12:00 PM to 5:00 PM.

A total of 167,149 surveys were at the ten mainline toll plazas and the eastbound Conway Ramp Plaza (to account for vehicles coming from I-4 and exiting at Conway), and mailed to E-Pass users. For non E-Pass customers, 100,960 survey forms were distributed. For E-Pass users, 66,189 surveys were mailed to a random sample via bulk mail with a cover letter. This number represents approximately a third of the E-Pass users. The random sample was obtained from the Expressway Authority database of the E-Pass users via a random sampling process.

A total of 21,137 responses were received, accounting for 12.7% response rate. About 2.5 percent (504 responses) were via the internet. The responses could be divided to 7,529 representing 7.5 percent response rate for non E-Pass users, and 13,608 representing 20.6 percent response rate for E-Pass users. The analysis part of this report covers a detailed analysis for trip characteristics, trip-maker characteristics, origin-destination patterns, and travel trends. In most cases analysis will be separated based on the E-Pass usage because of many differences between the two groups.

The trip frequency distribution shows that the overall average is 6.8 trips per week. The overall average of trip length on the Expressway system is 13.62 miles. The average number of mainline toll plazas crossed during a trip was founded to be two. This means that on average an expressway user drives 13.62 mile on the expressway system and crosses two mainline plazas on his/her trip. Vehicle occupancy distribution shows that Drive-alone mode (one person per vehicle) was the most common (65.68%) followed by 2-people per vehicle (23.08%). The overall average occupancy was 1.52 person per vehicle. This average varies over the day with 1.35 for the peak period and 1.62 for the off-peak period. Residency distribution of the Expressway users shows that the Central Florida residents are the predominant users (93.44%) followed by the users from outside the area in Central Florida for business (3.03%). Tourists represent 2.55 percent of the sample.

An initial origin/destination analysis was based on eight major areas: West Orlando, I-4, Orlando Downtown, East Orange County, Attractions, South Orange, Orlando International Airport, Oviedo / Sanford, Coast, and other. East Orange and West Orlando areas are the major trip generators accounting for 26.30 percent and 22.03 percent, of the total trip produced by the non E-Pass users, respectively. East Orange County, West Orlando, and Oviedo / Sanford are the most trip generators accounting for 23.66 percent, 15.69 percent, and 14.12 percent of the total E-Pass users' trips, respectively. The origin/destination for tourist trips shows that the attractions are the most generating areas to the expressway system. Attractions generate 33.44 percent of the tourist trips. Half of these trips end at the Orlando international airport.

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CHAPTER 1

INTRODUCTION

1.1 Background

The Orlando-Orange County Expressway System -- OOCEA (see Figure 1.1) encompasses three major highways: the East-West Expressway (SR 408), Beeline Expressway (SR 528) from I-4 to SR 520, and the Central Florida GreeneWay (SR 417) from I-4 to SR 520. The total length of the system is 79.03 miles divided as SR 408 : 21.977 miles, SR 417 : 22.647 miles, and SR 528 : 34.406 miles. The system has 10 mainline plazas distributed as 4 mainline plazas on SR 408, 4 mainline plazas on SR 417, and 2 mainline plazas on SR 528. Users pay tolls at ten mainline toll plazas as well as some of the on/off ramps. In 1995, the initial Electronic Toll collection system (E-Pass) was completed at the majority of the mainline toll plazas and the tolled ramps on the system. As of May 1998, E-Pass only lanes have been opened at all the mainline toll plazas. The total weekday Annual Average Daily Traffic (AADT) that passes through the ten mainline toll plazas is approximately 420,000.

1.2 Objective of the Study

One of the most important criteria to the success of any transportation services is to understand the users of this service. Understanding the users, their needs, and their travel patterns, is essential to plan and implement successful measures to improve and expand the service.

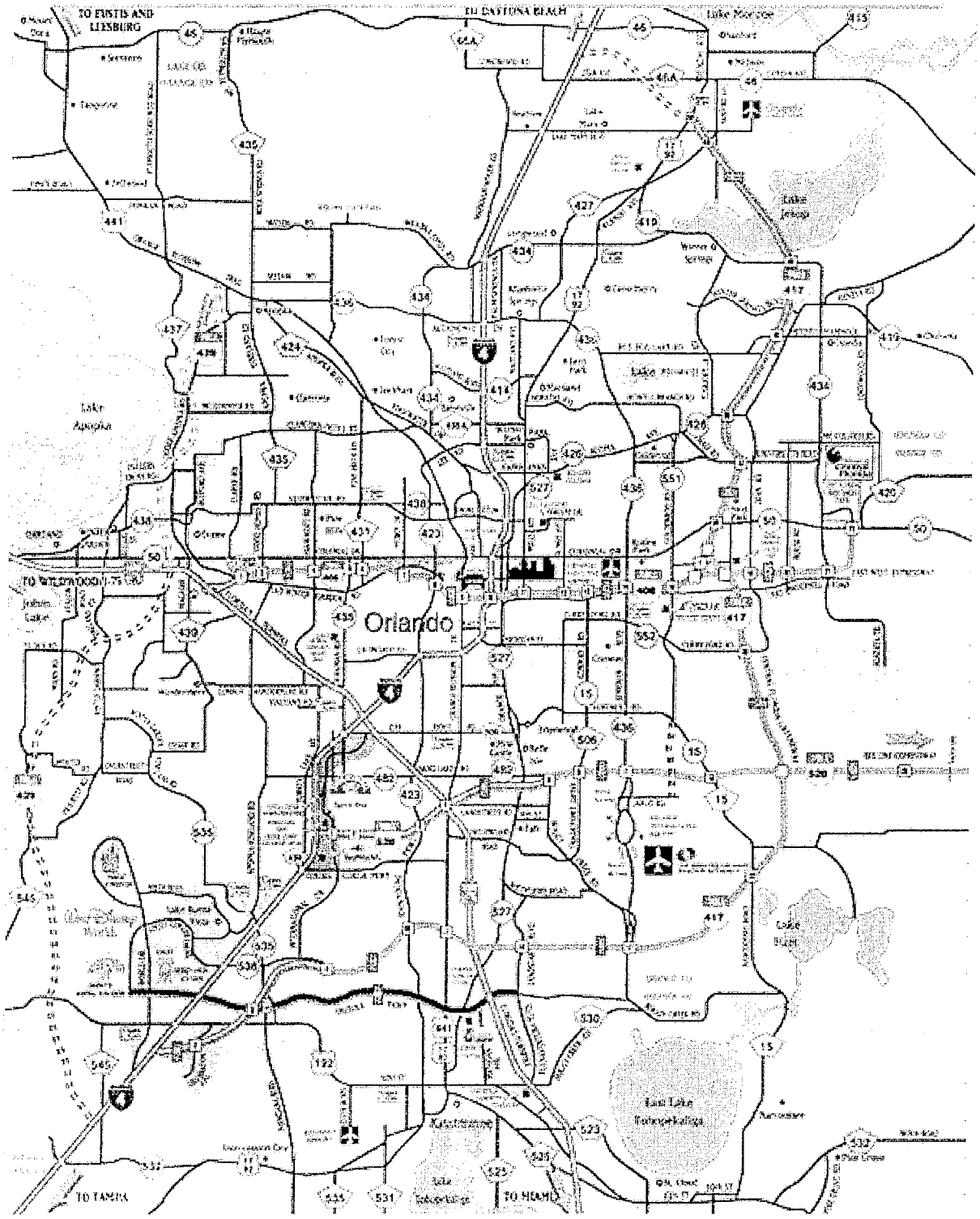


Figure 1.1 The Orlando-Orange County Expressway System

The OOCEA is interested in obtaining detailed data related to the users of the expressway system. This data includes the users' origins and destinations, travel pattern, trip purposes, frequency of trip making using the system, and also the characteristics of the trip makers. The main objectives of the survey are:

- Identify the trip origins and destinations of the expressway system users
- Understand the users' travel patterns, trip purposes, and trip making frequency
- Identify the major trip generators for the expressway system
- Develop expansion factors that will be used in the 2025 Master Plan

This report is organized as follows. Chapter 2 provides a summary of literature review on origin-destination surveys carried on the Orlando-Orange County Expressway System. Chapter 3 summarizes the survey design, administration, and survey response rates. Chapter 4 describes the detailed analysis process for origin-destination trends, trip characteristics, and driver characteristics. Finally, Chapter 5 documents conclusions of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 Process of Origin-Destination Data Collection

A number of O-D survey methods, such as roadside survey, home-interview survey, telephone survey, or mail survey can be used to collect origin-destination information. Mail and telephone surveys are generally cheaper to conduct compared to the roadside survey and home interviews, but with a lower response rate. Telephone surveys have a relatively higher response rate and sufficiently trained interviewers can clarify confusing questions and directly code the data too. With the wide usage of the internet, surveys can be electronically published and users can submit forms directly into the database. Direct registering into database means instant error response to the user that virtually eliminates responses with errors.

2.2 O/D Studies on the Orlando-Orange County Expressway System

Three studies were conducted on the Orlando-Orange County Expressway System. Vollmer Associates and Post Buckley Schuh/Jernighan did first study in October 1992. Surveys were distributed at eight mainline toll plazas and at ten locations on the nearby non-toll roads. This study did not address the origins and destinations of the toll and non-toll roadway users. The purpose of the study was to compare the characteristics of the users of the toll and non-toll roads, such as residency, age, occupation, income, trip purpose, trip frequency, and vehicle occupancy.

The study also encompassed the user's choice of non-toll roads compared to toll roads, user feedback on the toll road operation, and the percent share of toll roads in vehicle miles of travel. Most common reason to avoid toll roads was to save money. The report suggested potential locations for toll plaza locations and toll implementation strategies with the percent toll revenues from each main line plaza. Out of 57,165 questionnaires handed out at toll roads, the return rate was 22% (12,511) and of the 49,651 distributed at non-toll roads, the return rate was 20% (10,049).

A second study was an origin-destination survey conducted by Vollmer Associates LLP (VA) and the Transportation Consulting Group (TCG) in October 1996. Three locations were chosen to distribute surveys in western Orange County. A total of 22,554 surveys were handed out in both directions at the three locations. Average usable response rate was 22 percent. From the expanded hourly survey data, trip proportions to and from each zone were summarized. Other information collected from the survey was regarding the driver characteristics (residency, income), trip characteristics (purpose, frequency, and vehicle occupancy). Although the study is very much related to the scope of this project, in the sense that it has the same objective, it was limited by the locations at which the surveys were distributed. Also, E-pass was not as extensively used as in the current situation.

CHAPTER 3

SURVEY DESIGN, ADMINISTRATION AND RESPONSE

3.1 Survey Form Design

The Origin/Destination survey was designed at the University of Central Florida. The design of the survey form was woven over suggestions from HDR / Transportation Consulting Group (TCG), as the collaborating consultant and the Central Florida Expressway Authority as the client. The survey form consisted of a letter-sized paper with the questionnaire (see Figure 3.1) on one side and a return address, cover letter, and title on the other side . The surveys were printed with 6-digit serial numbers in order to keep track of the location where each survey was distributed. The survey was pre-tested with UCF students, stuff, and faculty members.

Based on our experience and the travel survey design literature, people tend not to fill out survey forms as soon as they receive them. Sometimes even not within one or two weeks of receipt. Therefore, referring to the current trip ("this" trip) when asking question related to a specific trip in the questionnaire was seen as unrealistic and would provide inaccurate data because people tend to forget when they received the survey, particularly when they delay completing it. Therefore, it was decided to refer to the "last" trip using the Expressway System.

CENTRAL FLORIDA EXPRESSWAY SYSTEM

Travel Survey

www.catss.ucf.edu/survey/

PLEASE ANSWER THE QUESTIONS BELOW ABOUT THE LAST TRIP YOU MADE USING THE CENTRAL FLORIDA EXPRESSWAY SYSTEM

1. Are you (check one):
   - ❑ A Resident of Central Florida
   - ❑ Vacationing or visiting here
   - ❑ From outside the area, here on business
   - ❑ Passing through the area

2. What was the purpose of your LAST trip on the expressway system (check one)?
   - ❑ Commute to work from home
   - ❑ Commute from work to home
   - ❑ Travel to/from school
   - ❑ Travel to/from airport
   - ❑ Other:_____
   - ❑ Personal business
   - ❑ Shopping
   - ❑ Work related
   - ❑ Recreation

3. When did you begin this trip?
   Time:_____ Date:_____

4. How often do you make this trip for this purpose? (check one)
   - ❑ 7 or more times a week
   - ❑ 5-6 times a week
   - ❑ 3-4 times a week
   - ❑ 2 times a week
   - ❑ once a week
   - ❑ 2-3 times a month
   - ❑ once a month
   - ❑ more than 6 times a year
   - ❑ less than 6 times a year
   - ❑ Other:_____

5. How many people were in the vehicle, including the driver (check one)?
   ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 or more

6. What is the nearest major intersection OR the address where you began your trip?
   Cross streets:_____
   Address:_____

7. What is the nearest major intersection OR the address where your trip ended (No round trip please. End point should be different than the beginning point)?
   Cross streets:_____
   Address:_____

8. For that trip, where did you ENTER and EXIT the Expressway System? (check only ONE Entrance and ONE Exit that apply to your last trip; a map is provided for your assistance)

SR 408 (East West Expressway)

		Enter	Exit
	Florida's Turnpike	❑	❑
1-	SR 50 West Colonial Dr./Clarke Rd.	❑	❑
2-	Good Homes Rd.	❑	❑
4-	Hiawassee Rd.	❑	❑
5-	SR 435 Kirkman Rd.	❑	❑
6-	Pine Hills Rd	❑	❑
7-	Mercy Dr.	❑	❑
8A-	SR 423 John Young Pkwy	❑	❑
8B-	Tampa Ave.	❑	❑
9-	US 441/17-92 Orange Blossom Tr.	❑	❑
10A-	I-4.	❑	❑
10B-	Orange Ave/Downtown	❑	❑
11A-	Rosalind Ave/Anderson Rd.	❑	❑
11B-	Mills Ave./Downtown	❑	❑
12A-	Bumby Ave	❑	❑
12B-	Crystal Lake Dr	❑	❑
13-	SR 15 Conway Rd.	❑	❑
14-	SR 436 Semoran Blvd.	❑	❑
16-	SR 551 Goldenrod Rd.	❑	❑
18-	Valencia College Lane	❑	❑
19-	Dean Rd.	❑	❑
20-	Rouse Rd.	❑	❑
21-	Alafaya Tr.	❑	❑
23-	SR 50 East Colonial Dr.	❑	❑
	Challenger Parkway	❑	❑
	Other :_____	❑	❑

SR 417 (Central Florida GreeneWay)

		Enter	Exit
	I-4	❑	❑
2-	Celebration Ave.	❑	❑
3-	Osceola Pkwy.	❑	❑
6-	SR 536 International Dr.	❑	❑
10-	John Young Pkwy.	❑	❑
11-	US 441/US 17-92 Orange Blossom Tr.	❑	❑
14-	Landstar Blvd.	❑	❑
17-	Boggy Creek Rd.	❑	❑
22-	Narcoossee Rd.	❑	❑
30-	Curry Ford Rd.	❑	❑
33B-	Valencia College Lane	❑	❑
34-	SR 50 East Colonial Dr.	❑	❑
37-	University Blvd.	❑	❑
38-	SR 426 Aloma Ave.	❑	❑
41-	Red Bug Lake Rd.	❑	❑
44-	SR 434	❑	❑
49-	CR 427 Lake Mary Blvd.	❑	❑
50-	US 17-92 Airport Blvd.	❑	❑
	Other:_____	❑	❑

SR 528 (Bee Line Expressway)

		Enter	Exit
	I-4	❑	❑
1-	International Drive	❑	❑
2-	Orangewood Blvd.	❑	❑
3-	SR 423 John Young Pkwy.	❑	❑
4-	Florida Turnpike/US 441	❑	❑
8-	Boggy Creek Rd./McCoy Rd.	❑	❑
9-	Tradeport Dr.	❑	❑
11-	SR 436 Semoran Blvd.	❑	❑
13-	Narcoossee Rd.	❑	❑
20-	ICP Blvd.	❑	❑
24-	Dallas Blvd.	❑	❑
31-	SR 520	❑	❑
	Other:_____	❑	❑

9. For all trip purposes, how many times did you use the expressway system last week? (If you made a round trip, please count each direction as one trip)_____

10. What is your occupation?
    - ❑ Professional
    - ❑ Retail
    - ❑ Self Employed
    - ❑ Teaching
    - ❑ Clerical
    - ❑ Other:_____
    - ❑ Student
    - ❑ Retired

11. What is your age?
    ❑ 16-25 ❑ 26-35 ❑ 36-50 ❑ 51-65 ❑ Over 65

12. What is your approximate household income?
    - ❑ Under $15,000
    - ❑ $15,000-24,999
    - ❑ $25,000-34,999
    - ❑ $35,000-49,999
    - ❑ $50,000-64,999
    - ❑ $65,000-80,000
    - ❑ Over $80,000

13. What is your zipcode? _____ (Home) _____ (Work)

THANK YOU FOR YOUR CONTRIBUTION TO THIS IMPORTANT STUDY

For any comments/suggestions, please visit us at www.expresswayauthority.com

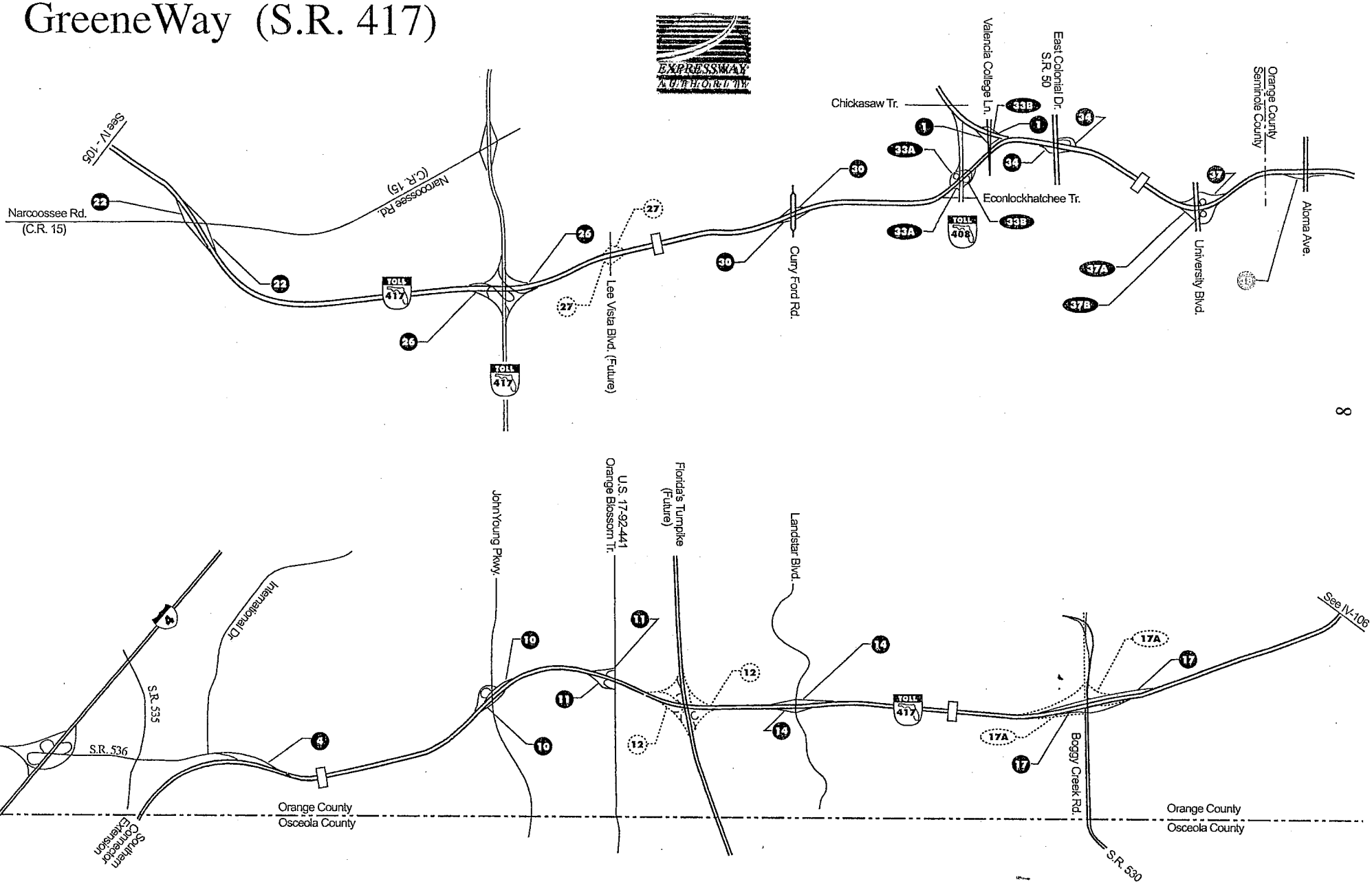
DROP COMPLETED SURVEY IN MAILBOX (NO POSTAGE NEEDED). YOU MAY WIN $100!!!

To be included in our drawing to win one of ten $100 U.S. Savings Bonds, please provide your name and address below (Employees and family members of OOCEA and their consultants are not eligible for this drawing).

Name_____
Address:_____
_____
City:_____State:_____ZIP:_____
Tel (optional):_____

Figure 3.1 Questionnaire Survey Form

GreeneWay (S.R. 417)



In such case a respondent will always, whenever he decide to complete the survey, will be filling out the questionnaire for the last rip that he/she remembers. Also since E-Pass users receive the survey by mail, referring to the last trip was realistic and made all the questionnaires consistent, whether receiving them at toll plazas or by mail. As the survey progressed, this approach proved to be correct, since most of the respondents responded at least one week after they received the survey forms.

Furthermore, some respondents responded even more than a month latter (completed surveys were received up till March 2000, 4 months after the initial distribution of the surveys). However, this approach required more effort to expand the data to represent the population because we cannot assume that a respondent who received the survey at a certain mainline plaza actually completed the survey for this trip.

Rather, an algorithm was developed to determine the toll plazas that were used during the trip. This algorithm uses the on and off ramps as the inputs. Then, the number of respondents at each plaza was calculated. Another algorithm that uses a weighting technique was developed to calculate the expansion factors. This algorithm uses traffic volume by direction at each mainline plaza and number of respondents at each plaza as the inputs. The output was a vector of expansion factors. Each factor was assigned to its corresponding trip. In conclusion, although referring to the last trip increased the effort of data expansion, it was a worth approach because it is much more accurate and reliable.

3.2 World Wide Web of the Survey

The survey was also published on the World Wide Web at www.catss.ucf.edu/survey. Internet was not the prime media for the survey conduct, but an alternative for instant response for those who received the printed questionnaires. The web URL was printed on the cover letter as well as on the top of the questionnaire. The internet version of the survey form is almost similar to the paper version, except for logical validation and the self-checking ability of the form. The form also had a cover letter. The questionnaire is linked to the cover letter. Successful submission of the questionnaire leads the user to a confirmation letter. The Internet Navigation Sequence for the survey form is shown in Figure 3.2. All the three main pages have hotlinks to the main web pages of Central Florida Expressway Authority and the University of Central Florida on the top. Also, there are hotlinks to the maps of all the three expressways, for those users who need maps to locate their entry and/or exit. Besides augmenting the response rate, internet version of the survey form was designed and validated to minimize unusable submissions by:

1. Providing combo boxes (drop down menus with pre-typed choices) where possible and empty boxes for users with unusual responses.
2. The following questions were considered mandatory to be responded:
    - Q1 : Where is the user from (residency)?
    - Q2 : What is the trip purpose?
    - Q3 : Time and date of the trip.
    - Q4 : Frequency of the trip under consideration.

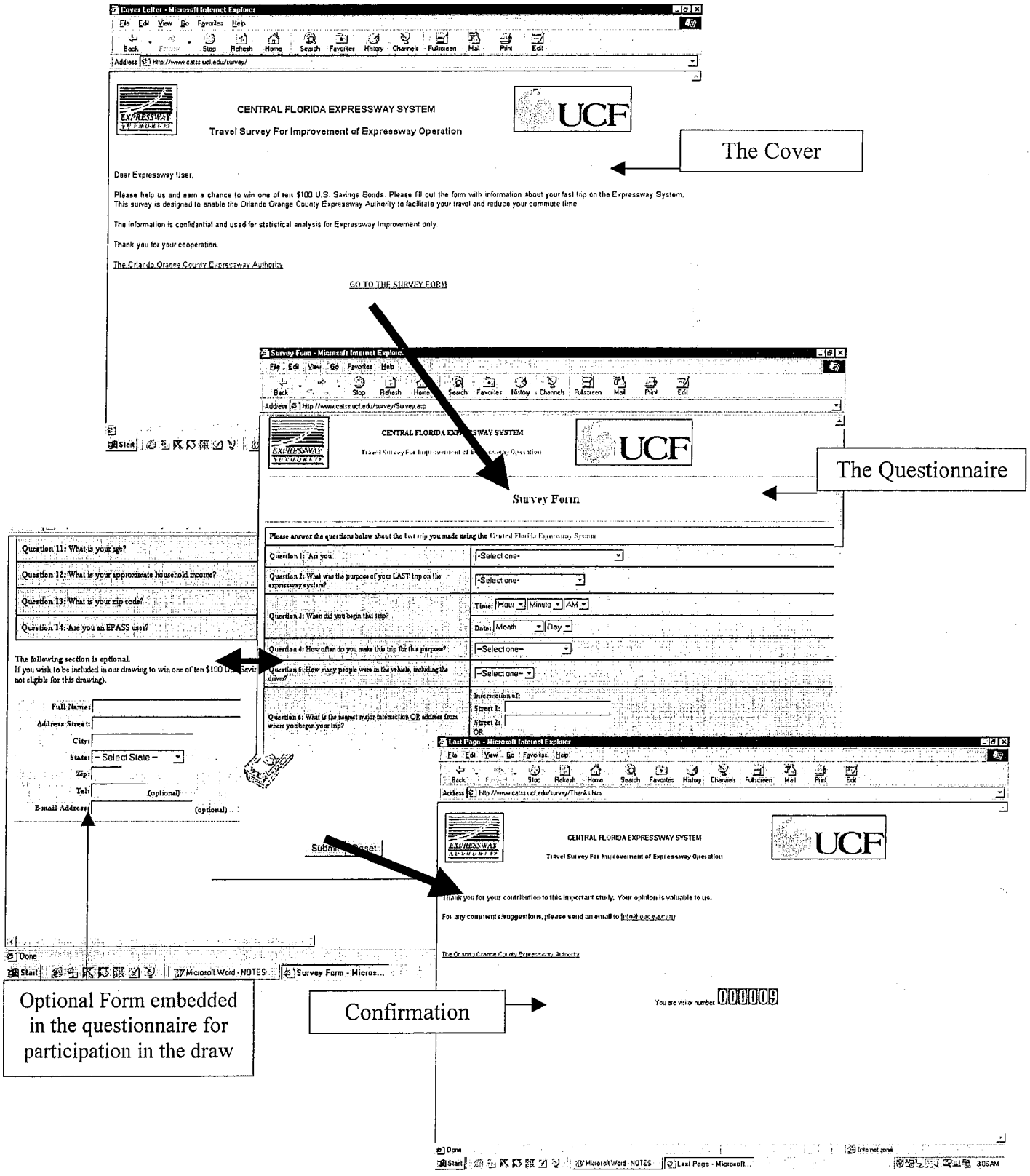
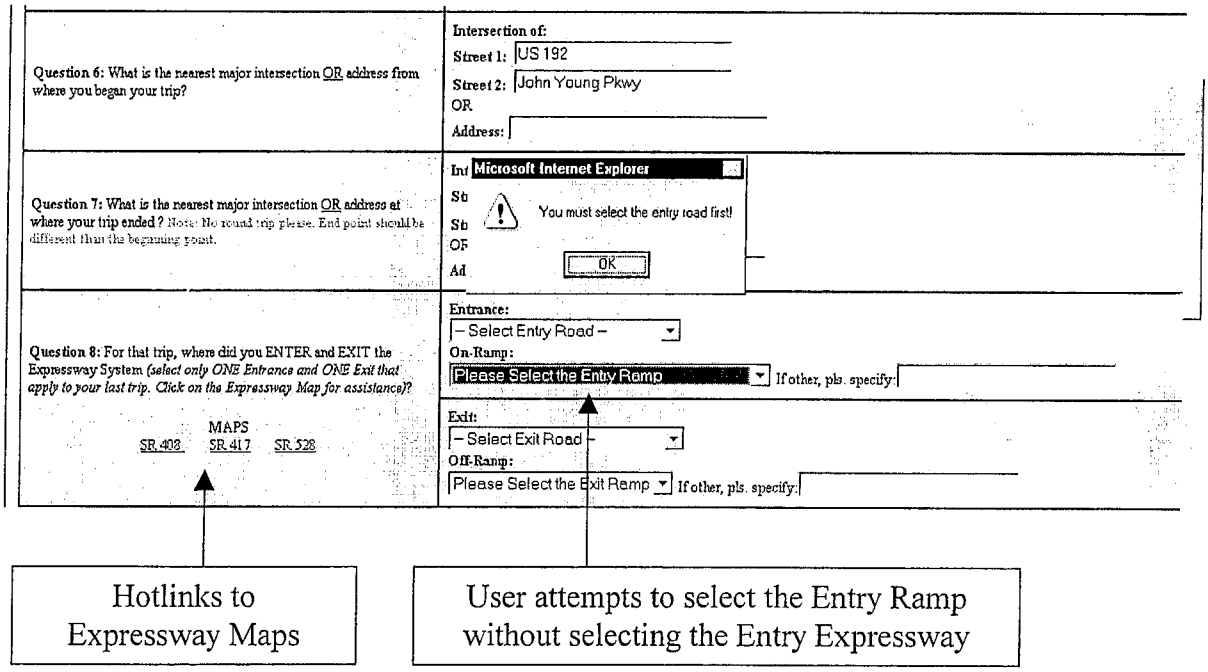


Figure 3.2 Survey Form Navigation Sequence



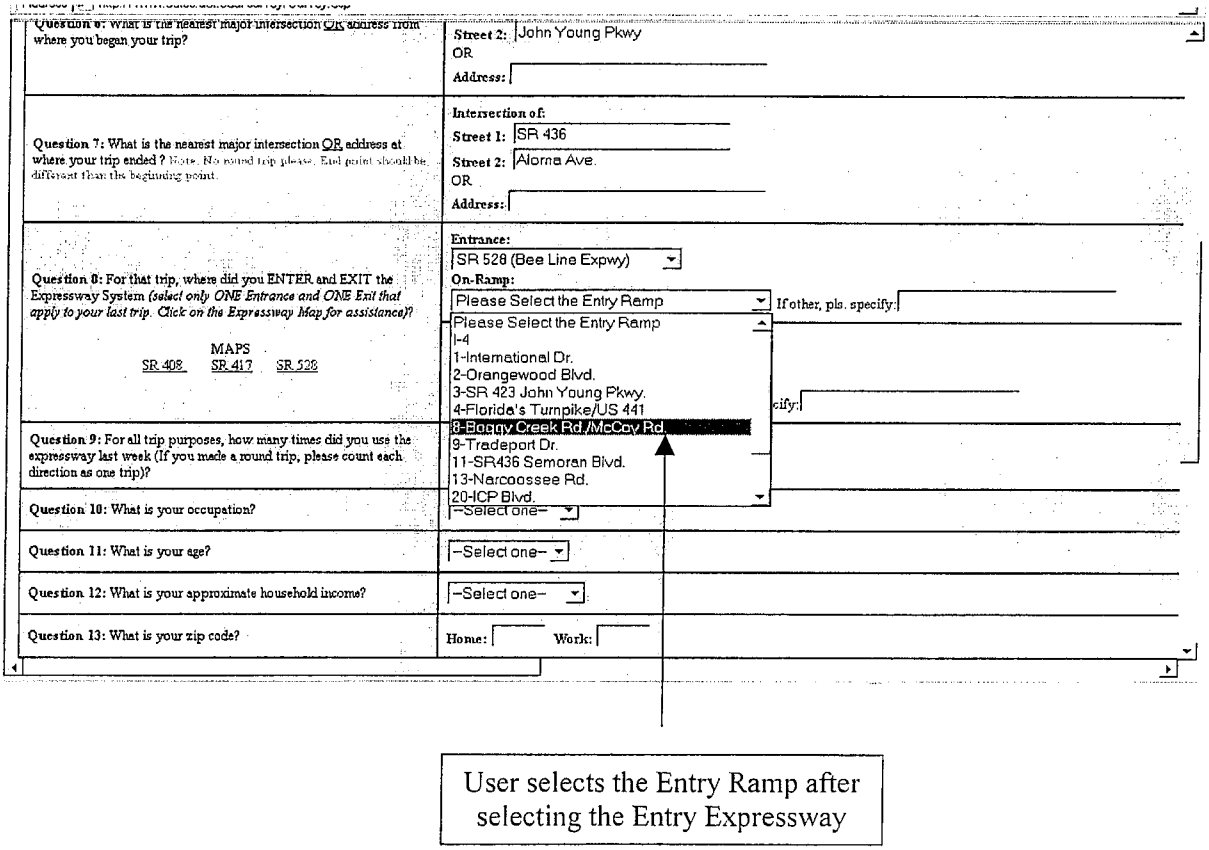
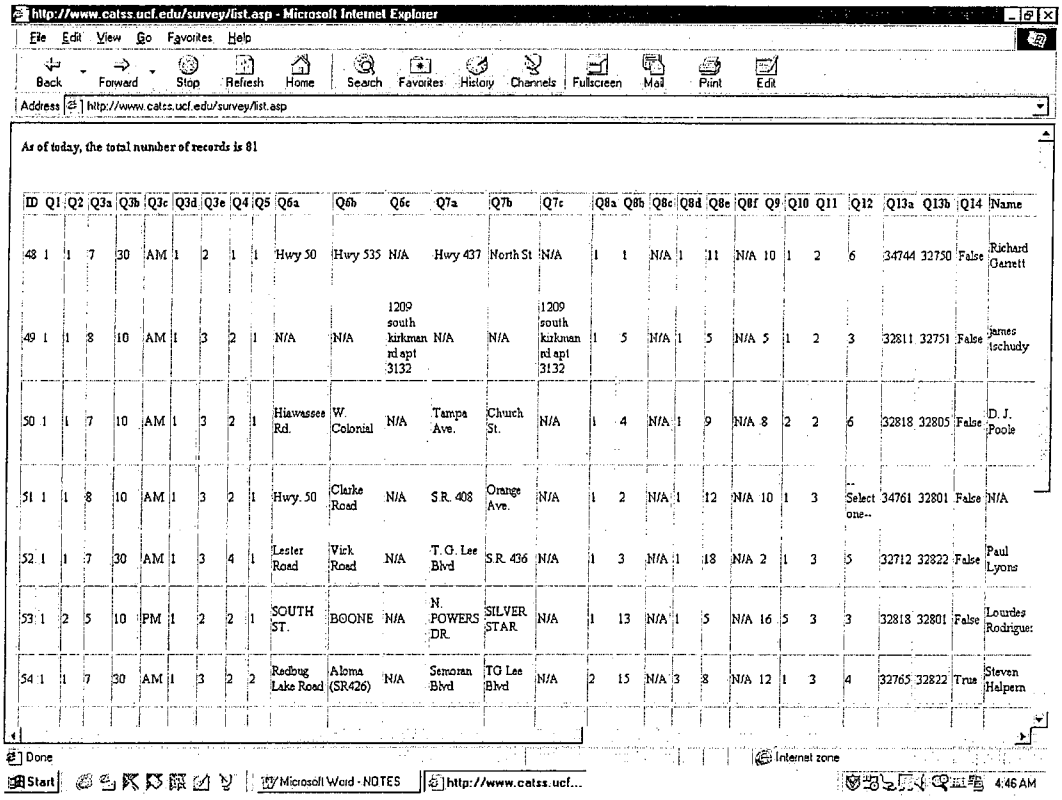


Figure 3.3 A Typical Example of Form Validation

- Q6 through Q8 : One of the following combinations:
  - Nearest major intersection at the origin (Q6) *and* destination (Q7)
  - Nearest major intersection at the origin (Q6) *and* exit ramp (Q8, part 2)
  - Nearest major intersection at the destination (Q7) *and* entry ramp (Q8, part 1)
  - Entry *and* exit ramps (Q8). The user cannot select a ramp without selecting one of the three expressways. This particular example of form validation is snapped in Figure 3.3.
- Q9 : How many times the user used the expressway last week?
- Q14 : Are you an E-PASS user?

  This is an additional question to the internet version of the survey. The paper version was printed on two different color papers to differentiate between the two groups.

All the submissions were directed to an ASCII database file format (see Figure 3.4). The responses to the questions were numerically coded. For instance, four choices to question number 1 were coded as 1, 2, 3, and 4. This makes the data entry into the computer convenient and statistical analysis more adaptable



http://www.catss.ucf.edu/survey/list.asp - Microsoft Internet Explorer

File Edit View Go Favorites Help

Back Forward Stop Refresh Home Search Favorites History Channels Fullscreen Mail Print Edit

Address http://www.catss.ucf.edu/survey/list.asp

As of today, the total number of records is 81

ID	Q1	Q2	Q3a	Q3b	Q3c	Q3d	Q3e	Q4	Q5	Q6a	Q6b	Q6c	Q7a	Q7b	Q7c	Q8a	Q8b	Q8c	Q8d	Q8e	Q8f	Q9	Q10	Q11	Q12	Q13a	Q13b	Q14	Name
48	1	1	7	30	AM	1	2	1	1	Hwy 50	Hwy 535	N/A	Hwy 437	North St	N/A	1	1	N/A	1	11	N/A	10	1	2	6	34744	32750	False	Richard Garrett
49	1	1	8	10	AM	1	3	2	1	N/A	N/A	1209 south kirkman rd apt 3132	N/A	N/A	1209 south kirkman rd apt 3132	1	5	N/A	1	5	N/A	5	1	2	3	32811	32751	False	james tschudy
50	1	1	7	10	AM	1	3	2	1	Hiawassee Rd.	W. Colonial	N/A	Tampa Ave.	Chuch St.	N/A	1	4	N/A	1	9	N/A	8	2	2	6	32818	32805	False	D. J. Poole
51	1	1	8	10	AM	1	3	2	1	Hwy. 50	Clarke Road	N/A	S R. 408	Orange Ave.	N/A	1	2	N/A	1	12	N/A	10	1	3	--Select one--	34761	32801	False	N/A
52	1	1	7	30	AM	1	3	4	1	Lester Road	Vick Road	N/A	T. G. Lee Blvd	S R. 436	N/A	1	3	N/A	1	18	N/A	2	1	3	5	32712	32822	False	Paul Lyons
53	1	2	5	10	PM	1	2	2	1	SOUTH ST.	BOONE	N/A	N. POWERS DR.	SILVER STAR	N/A	1	13	N/A	1	5	N/A	16	5	3	3	32818	32801	False	Lourdes Rodrigue:
54	1	1	7	30	AM	1	3	2	2	Redbug Lake Road	Aloma (SR426)	N/A	Semoran Blvd	TG Lee Blvd	N/A	2	15	N/A	3	8	N/A	12	1	3	4	32765	32822	True	Steven Halpern

Done

Internet zone

Start Microsoft Word - NOTES http://www.catss.ucf... 4:46 AM

Figure 3.4 Internet Response ASCII Database

3.3 Steps Taken to Increase the Response Rate

1. The survey was colored printed, self-addressed and postage prepaid.
2. A simplified map of the expressway system was attached to each survey form to assist respondents to answer questions concerning the on/off ramps on the Expressway system.
3. The survey was published on the World Wide Web to give the users of the Expressway System another alternative for responding.
4. Users were given an incentive to respond by arranging a draw. Participation into the draw is optional. Ten of the participants will be selected and offered $100 U.S. savings bond. Participation into the draw was also possible through the internet.

5. The UCF survey team was asked to wear the orange safety vests with tags that identifying them as UCF students to highlight the importance of the survey.

3.4 Safety Training Session

Before starting the survey distribution, all UCF students attended a safety training session in October 22, 1999 at 9:00 AM at the Dean Road Mainline Plaza. The attendance of this session was mandatory for all UCF survey team. Numerous safety issues regarding the working environment in and around the plazas were discussed. These rules are part of the FTS Standard Operating procedures. Also, a map with locations of parking lots at each mainline plaza was handed to each member of the UCF survey team.

3.5 Survey Distribution

A total of 180,000 surveys were printed in two colors (white for distribution, and yellow for mailing). The survey distribution was scheduled starting from November 2nd through November 21st. The basic idea was to distribute surveys on each mainline toll plaza once on a weekday (typical weekday: Tuesday, Wednesday or Thursday) and again on the weekend to get a complete representation of the driver population. The survey distribution was planned over three major periods on the weekdays: morning peak period (7:00 AM – 9:00 AM), off-peak period (12:00 PM – 3:00 PM), and evening peak period (4:00 PM – 7:00 PM). For the weekends, the survey was carried out over one period from 12:00 to 5:00 PM.

Toll collection facilities generally include three toll payment methods. Manual, which is a lane where toll is paid in cash to a toll collector. Automatic Coin Machine (ACM), exact

coins are dropped in an ACM machine. Automatic Vehicle Identification (AVI) known as E-Pass, where toll is electronically collected using a transponder in which the vehicle is identified without stopping at the toll plaza or on/off ramp. Therefore, the survey distribution manner had to differ between Manual/ACM lanes and E-Pass lanes. Based on the data provided by the Expressway Authority, approximately 35 percent of the expressway users have E-Pass.

At Manual/ACM toll lanes vehicles stop to pay tolls, therefore, questionnaires could be handed to the driver. Plaza toll collectors standing at the manual lanes and UCF surveyors standing at the ACM lanes were the distributing team. The plaza geometry, obtained from the Official Expressway Manual, used to identify how many ACM lanes, manual lanes, and lane-operating schedule. This was to help us to know how many UCF surveyors need to be hired. Also, to calculate proportions of surveys among the distributing team.

To estimate how many surveys would be distributed in which direction, hourly volumes were extracted from the Expressway Authority Manual for 1998 and the number of surveys was proportional to the hourly traffic volumes. The number of survey forms distributed at each lane represented approximately a third of the passing traffic during the distribution period. Special consideration was given to locations where estimated number of surveys was less than 1000. These small estimates of surveys were augmented by 40 percent. If the number was still less than 1000, 1000 surveys were distributed. Therefore, approximately 117,000 surveys were scheduled to be handed out on the ten mainline toll plazas and the

eastbound Conway Ramp Plaza (to account for vehicles coming from I-4 and exiting at Conway). Eventually 100,960 survey forms were distributed.

At E-Pass lanes, vehicles do not stop so we can not distribute on plaza sites. However, addresses of E-Pass users are known from the E-Pass subscribers' database. Therefore, questionnaires could be mailed to them. Finally, 66,189 surveys were mailed to a random sample of E-Pass users via bulk mail with a cover letter representing approximately a third of the E-Pass users. The random sample was obtained from the Expressway Authority database of the E-Pass users via a random sampling process. In case of official or business vehicles, a sample of multiple users from the same organization was randomly selected. A customized cover letter was sent with multiple survey forms to the agency and each user from the same organization was requested to respond based on his/her last trip.

3.6 Response Rate

A total of 21,137 responses were received, accounting for 12.7% response rate. About 2.5 percent (504) responses were via the internet. The responses could be divided to 7,529 (7.5%) for non E-Pass users, 13,608 (20.6%) for E-Pass users. Appendix A has a detailed profile for the responses for the E-Pass and non E-Pass users.

3.7 Quality of Data

Figure 3.5 depicts the percent of missing answers for each question in the survey for the three groups (E-Pass, non E-Pass, Internet). This figure illustrates that responses over the internet had the least missing questions. Variables that were considered important to

respond to achieve the objectives of the study were validated, and therefore the respondent had to complete them before submission. Therefore, several variables had no missing cases for internet respondents. Still for the other variables (non-key questions), the internet had the least percent of missing questions compared to the E-Pass and non E-Pass groups. Internet users might have high level of education and awareness and therefore are keen to respond in surveys related to studies that would affect them. Comparing the E-Pass and Non E-Pass groups shows alternating trends. E-Pass users have more missing cases in indicating the trip time and date, probably because the system is part of their travel habits and they don't have to pay manually for each trip. Therefore, they are less likely to remember the specific time or date of the trip.

The analysis showed that E-Pass users have higher income levels than non E-Pass. It is generally known that individuals in the higher income categories do not report their incomes in surveys. Therefore, the percent of missing income in the E-Pass group is higher than the Non E-Pass group. It is very important to note that for the key variables to this survey, origin, destination, on and off ramps, the E-Pass group has less missing cases than the non E-Pass group. Figure 3.6 illustrates the percent of completed forms for each of the three groups as well as the percent of forms with 1, 2, 3, 4, 5 or 6+ missing variables. The internet respondents have the highest percent of complete cases (all questions are completed), followed by non E-Pass, then E-Pass, 73, 46, and 40 percent, respectively.

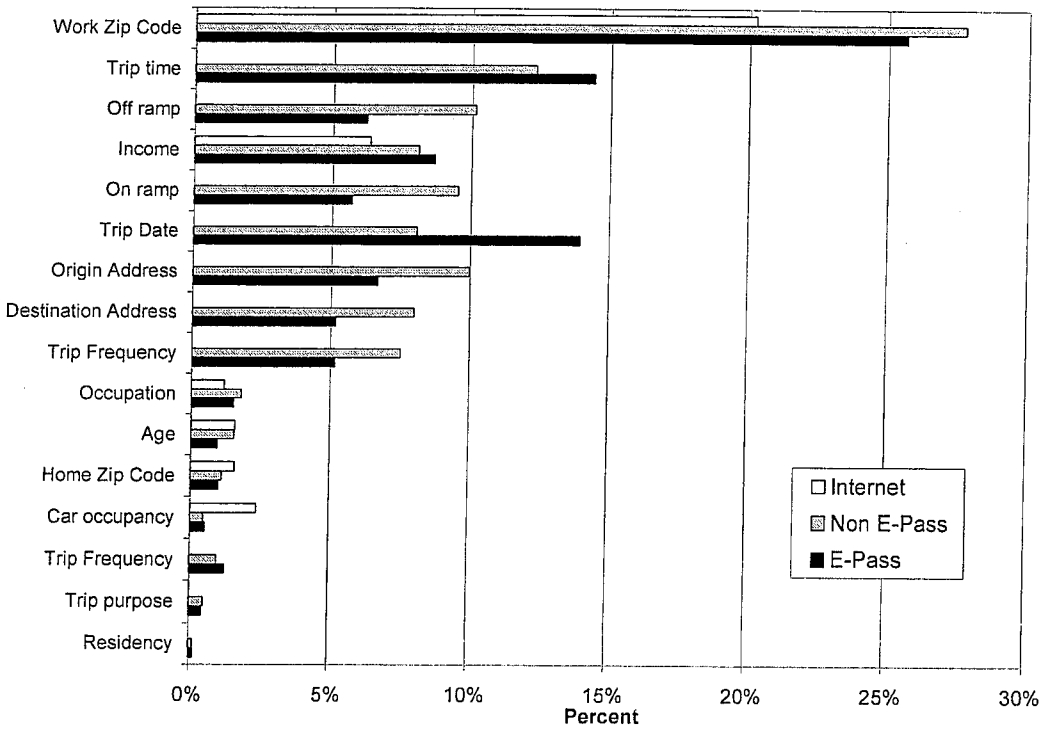


Figure 3.5 Distribution of Missing Answer by Variable

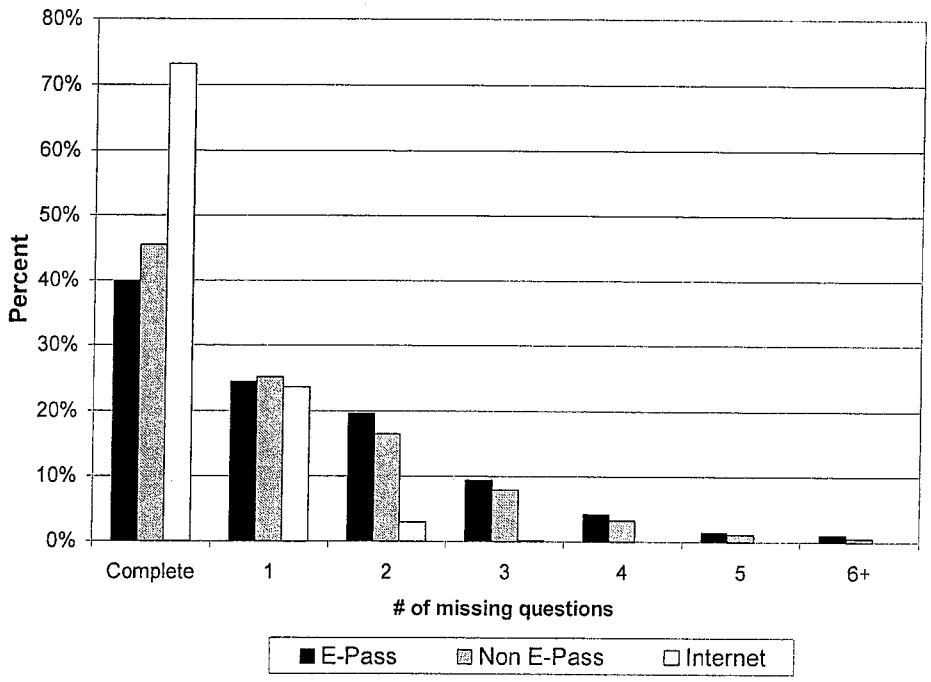


Figure 3.6 Number of Missing Questions per Form

CHAPTER 4

SURVEY FINDINGS AND ANALYSIS

This chapter presents the important survey findings as well as some of the statistical tests that investigate the significance of each variable. The answers to each question for both E-Pass and non E-Pass respondents are presented in Appendix A. A weighting factor was considered to account for the differences of market segmentation ratio and response rate. Since the response rate for the E-Pass users was 2.7 times higher than the non E-Pass users, the non E-Pass user responses were weighted by a factor of 2.7 to expand it to a response rate equivalent to the E-Pass users. It worth mentioning that the number of questionnaires distributed to E-Pass users were 40 percent of the total, which is similar to the E-Pass market penetration (about 40%). Therefore, the weighting effect was used to account for only the difference in response rates between E-Pass and non E-Pass users. In this manner the two groups can be lumped together and treated as one. However, in most cases analysis will be separated based on the E-Pass usage because of many differences between the two groups.

Conditional probability techniques will be used to investigate the differences between the E-Pass and non E-Pass users. Two-way tables were constructed to calculate the conditional probabilities. In the case presented in this report, one variable is related to travel characteristics (say, the row variable, X) and the other is E-Pass usage (the column variable, Y). Then, it is informative to construct a separate probability distribution for X at each level of Y. Such a distribution consists of conditional probabilities for X, given the level of Y, and is called conditional distribution.

4.1 Trip Characteristics

Seven trip characteristics were considered in this section : trip purpose, trip time, trip day, trip frequency, trip length, vehicle occupancy, and number of mainline plazas used during the trip. Nine trip purpose categories were considered as follow: commute to work from home, commute from work to home, travel to/from school, travel to/from airport, personal business, shopping, work related, recreation, and other purposes

4.1.1 Trip Purpose

Figure 4.1 shows the trip purpose distribution. The predominant trip purpose is the commute trips accounting for 40.67 percent. Commuter trips can be further divided into commute to work from home (24.72%) and commute to home from work (15.95%). The higher percentage of commuters going to work from home could be attributed to the fact that people are more concerned of being on time when going to work, and the Expressway system is expected to have reliable travel times. Work related trips are the second major trip purpose (16.12%). Therefore, the work trips account for 56.79 percent of the whole trip purposes. This value is lower than the percentage of work trips in the study done by Vollmer Associates (62.5% work trips), February 1997, indicating an increase in non-commute trip usage of the system. The percentages of other trip purposes are : 12.50% personal business trips, 8.92% travels to/from airport, 8.50% recreation trips, 4.17% travel to/from school, 3.76% shopping trips, and 4.83% other purposes.

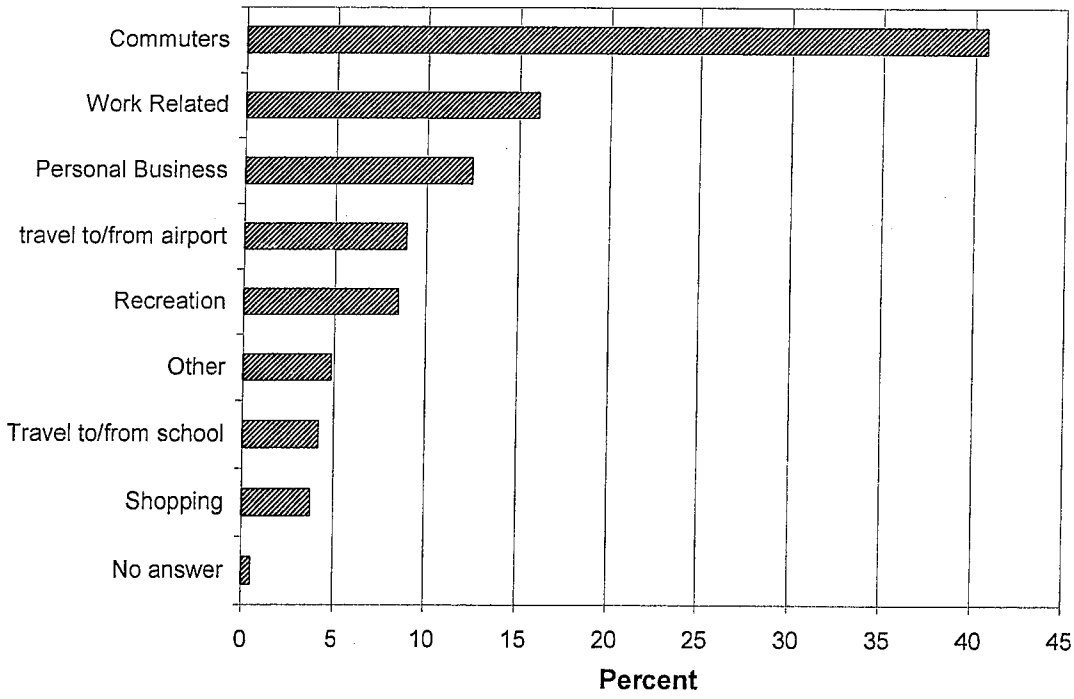


Figure 4.1 Trip Purpose Distribution

Figure 4.2 shows the association between trip purpose and E-Pass usage. E-Pass users have higher percentage of personal business, shopping, and recreation trips than non E-Pass users. This is expected since E-Pass users find the Expressway system more convenient to use. A Chi-square test (Table 4.1) was used to test whether there is a significant difference in trip purpose distribution between the E-Pass and non E-Pass users. The results indicated that there is a significant difference between the two groups.

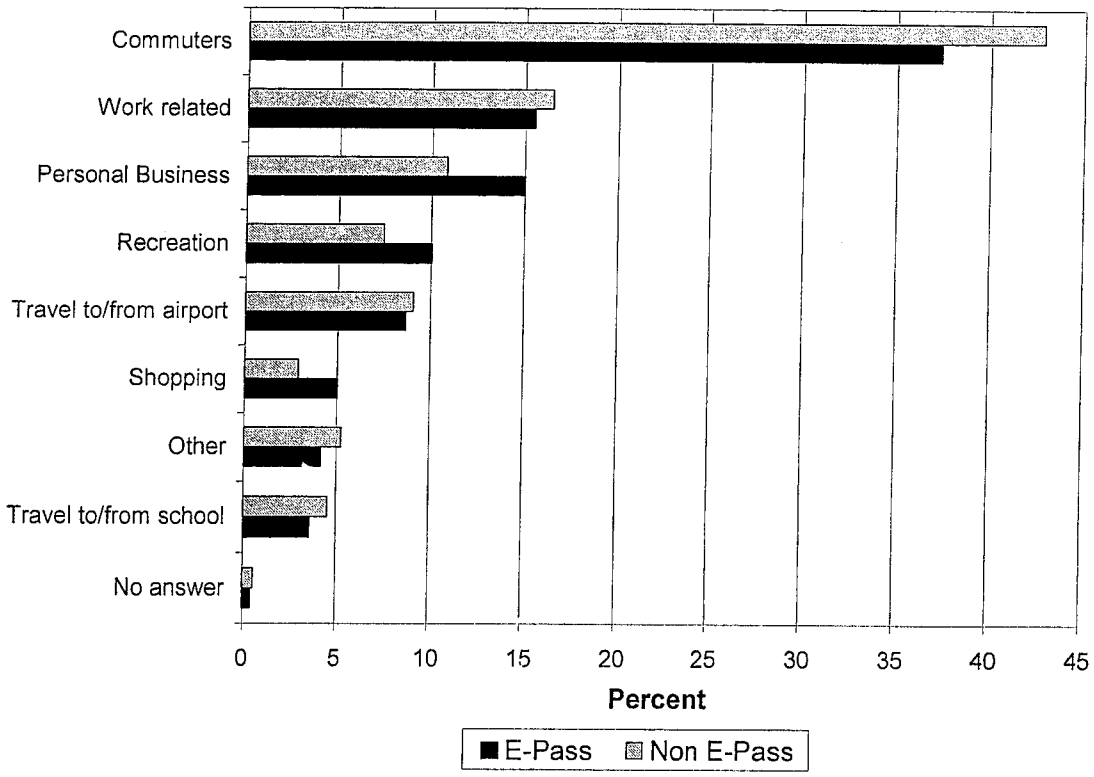


Figure 4.2 Trip Purpose versus E-Pass

Table 4.1 Trip Purpose Distribution by E-Pass

(the percent between parentheses is cell size relative to the group total)

Trip Purpose	E-Pass	Non E-Pass
Commute trips	5091 (37.58%)	3227 (43.11%)
Personal business/work related	4162 (30.72%)	2056 (27.46%)
Travel to/from airport	1182 (8.73%)	684 (9.14%)
Recreation	1367 (10.09%)	562 (7.51%)
Travel to/from school	489 (3.61%)	343 (4.58%)
Other	569 (4.20%)	396 (5.29%)
Shopping	686 (5.06%)	218 (2.91%)
Total	13546 (100%)	7486 (100%)

Statistic	Value	DF	Prob.	Contingency Coefficient
Chi-square	166.502	6	0.001	0.089

4.1.2 Trip Time

Figure 4.3 illustrates the trip distribution by time of day for a weekday. The morning peak hour is higher and narrower than the afternoon peak hour. During the morning peak hour (7:00 AM to 8:00 AM), commute to work from home trips represent 62 percent followed by personal business/work related trips (23%). During the afternoon peak period (4:00 PM to 6:00 PM), commuters to home from work represent 60 percent and personal business trips represent 15 percent of the total volume in this period. During the off-peak period (11:30AM to 12:30PM) personal business/work related trips contribute to 48 percent of the total trips during this period.

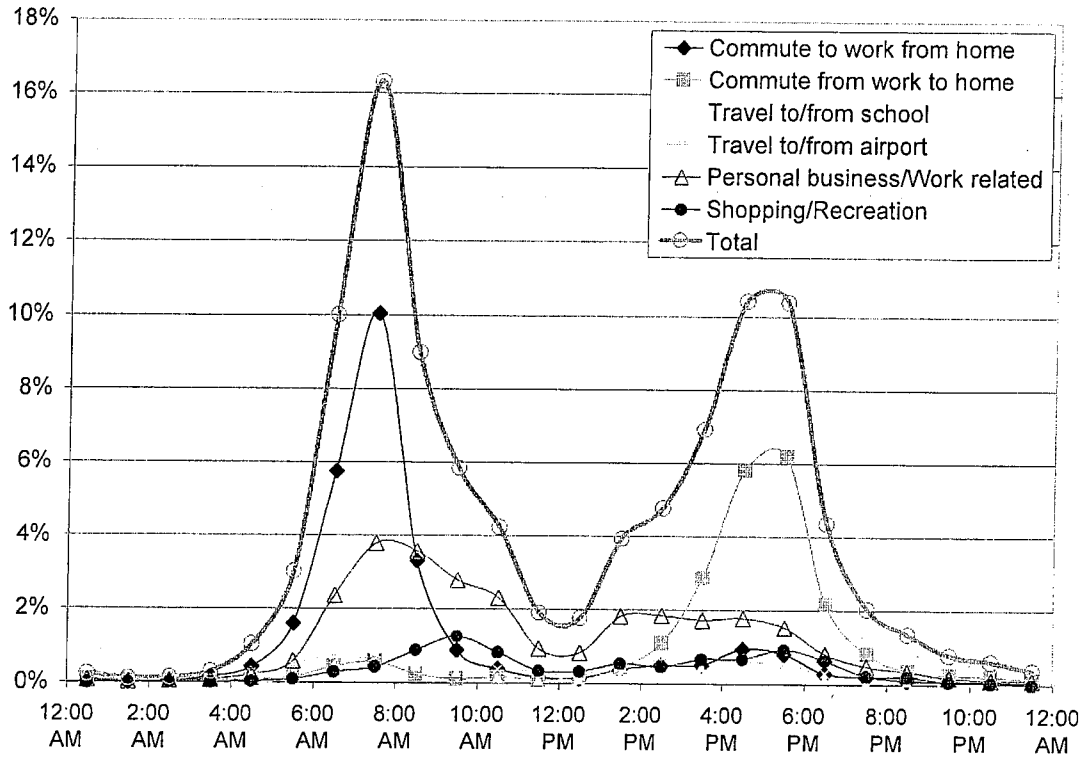


Figure 4.3 Trip Distribution by Time of Day

Figure 4.4 shows the trip distribution by time of day and E-Pass usage for a weekday. This curve is represented in percentages because of different sample sizes. The E-Pass curve has almost two equal peaks: one for the morning peak period and other for the evening. The non E-Pass curve has two unequal peaks. The morning peak is much higher than the evening peak. This indicates that non E-Pass users tend to use the Expressway system more in the morning.

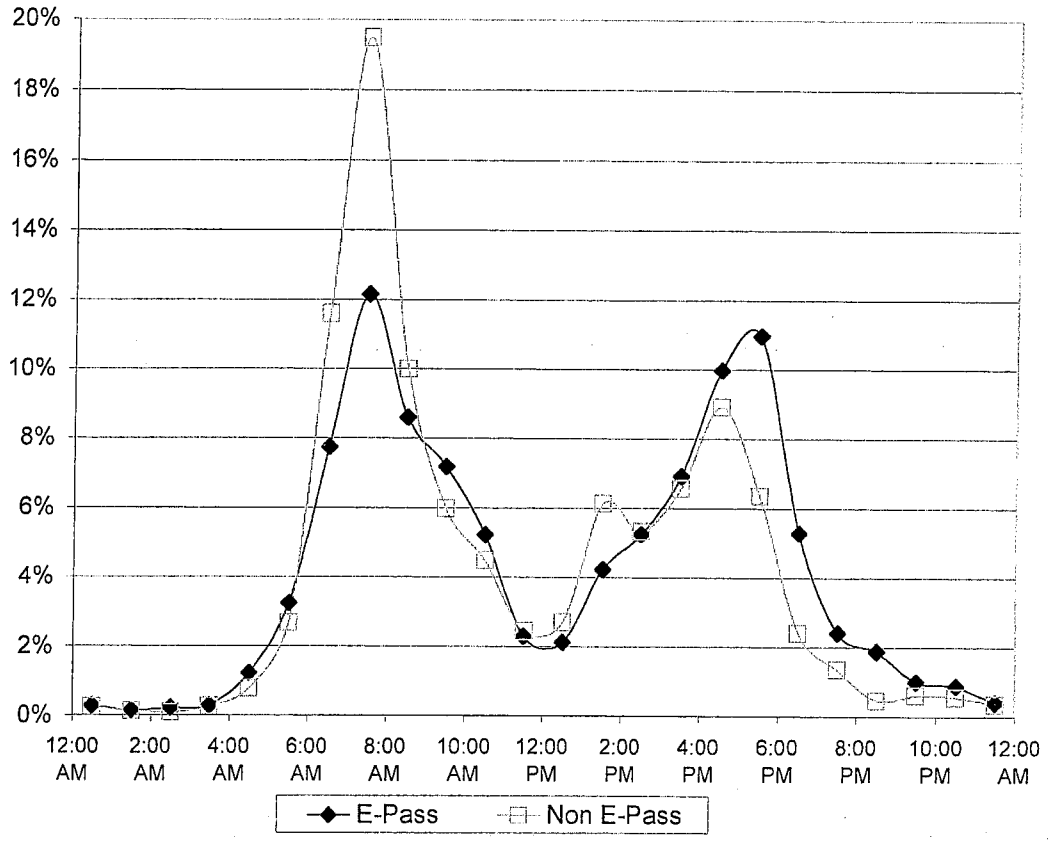


Figure 4.4 Trip Time versus E-Pass

4.1.3 Trip Day

Figure 4.5 presents the distribution of trips by day of week. About 84.33 percent of the trips were made during weekdays. Trips during the weekends represent only 15.67 percent because of less commute trips during weekends. The mid-week travel rate (Tue, Wed, and Thurs) is higher than the rest of the week.

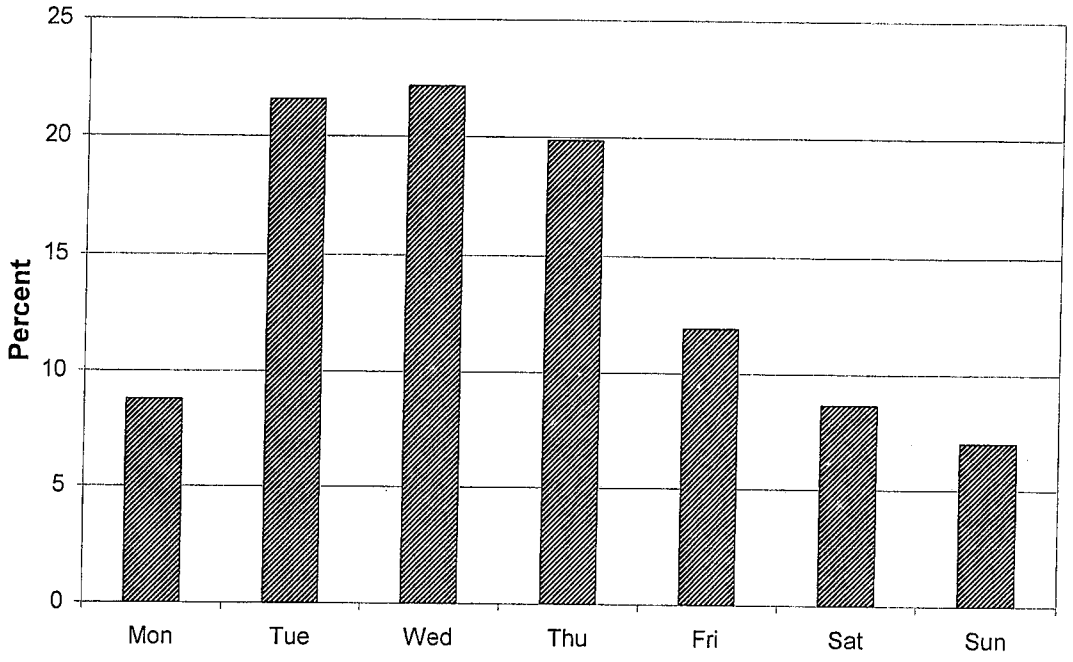


Figure 4.5 Trip Distribution by Day of Week

Figure 4.6 shows the association between trip day and E-Pass usage. The percent of trips made on Tuesdays and Thursdays for non E-Pass users is higher than the equivalent percentage of E-Pass users. The trend is reversed for weekends and the other weekdays. A Chi-square test (Table 4.2) was used to test whether there is a significant difference in trip day distribution between the E-Pass and non E-Pass users. The results indicated that there is a significant difference between the two groups.

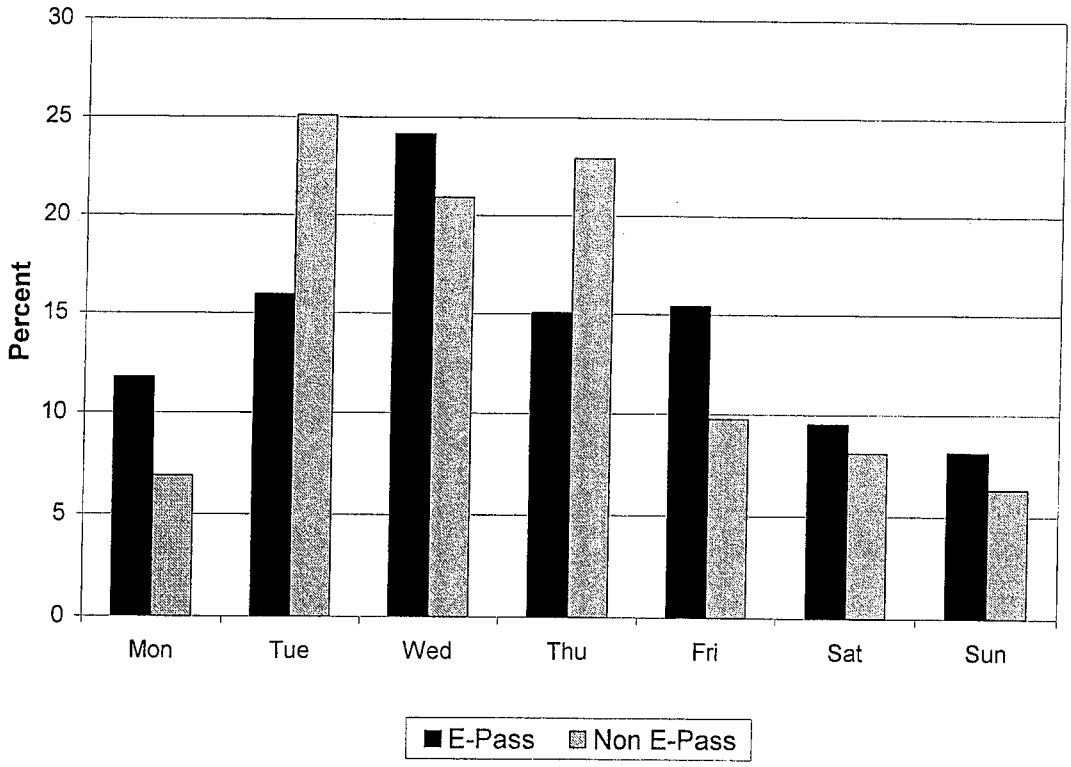


Figure 4.6 Day of Trip versus E-Pass

Table 4.2 Trip Day Distribution by E-Pass

(The percent between parentheses is cell size relative to the group total)

Trip Day	E-Pass	Non E-Pass
Monday	1384 (11.76%)	477 (6.89%)
Tuesday	1877 (15.96%)	1739 (25.10%)
Wednesday	2840 (24.14%)	1449 (20.92%)
Thursday	1772 (15.06%)	1588 (22.92%)
Friday	1814 (15.42%)	676 (9.76%)
Saturday	1121 (9.53%)	561 (8.10%)
Sunday	956 (8.13%)	438 (6.32%)
Total	11764 (100%)	6928 (100)

Statistic	Value	DF	Prob.	Contingency Coefficient
Chi-square	596.285	6	0.001	0.176

4.1.4 Trip Frequency

In this question people were asked to give the number of trips made on the expressway system last week. Round trips were counted as two trips. Figure 4.7 shows the last-week trip frequency distribution. The overall average of trip frequency equals 6.8 trips per week. More than 55 percent of trips were made more than 6 times a week. This is higher than the results of Vollmer Associates study (25.3% of trips were made more than 6 times a week), February 1997. This indicates that there is a significant increase in the usage of the expressway system. Figure 4.8 shows that larger percentage of non E-Pass users reporting higher trip frequencies on the system. However, for very high frequencies (15 or more), the percentage of E-Pass users is higher, possibly because of business related users (e.g., Orange County Sheriff, delivery and taxi services, etc.). However, the difference in trip frequency distribution between the two groups is not significant.

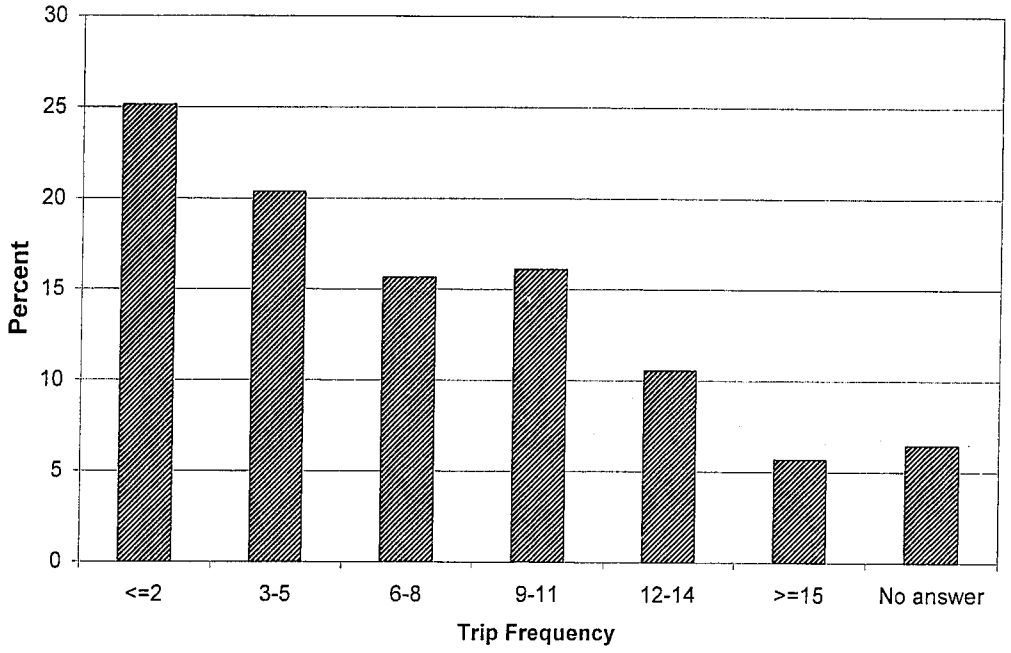


Figure 4.7 Trip Frequency Distribution

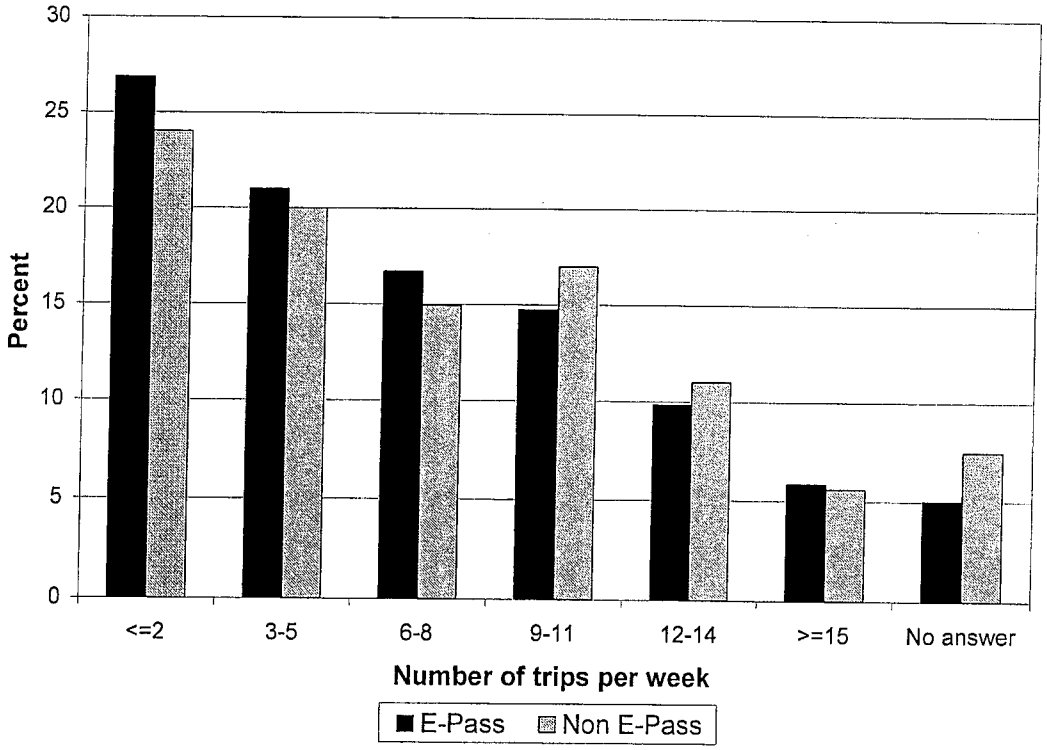


Figure 4.8 Trip frequency versus E-Pass

Table 4.3 Trip Frequency Distribution by E-Pass

(the percent between parentheses is cell size relative to the group total)

No. of trips per week*	E-Pass	Non E-Pass
<= 2	3,653 (28.27%)	1,808 (25.95%)
3 – 5	2,855 (22.09%)	1,505 (21.60%)
6 – 8	2,275 (17.60%)	1,124 (16.13%)
9 – 11	2,004 (15.51%)	1,280 (18.37%)
12 – 14	1,342 (10.38%)	829 (11.90%)
>= 15	795 (6.15%)	421 (6.04%)
Total	12924 (100%)	6967 (100%)

Statistic	Value	DF	Prob.	Contingency Coefficient
Chi-square	47.181	5	0.001	0.049

* Round trips were counted as two trips

4.1.5 Trip Length

Figure 4.9 shows the trip length distribution on the expressway system. These values were determined for each respondent by calculating the distance between his/her on and off-ramps. The distance between each pair of on and off-ramp was obtained from the Expressway traffic manual. The overall average of trip length on the Expressway system equals 13.62 miles. This means that on average an expressway user drives 13.62 mile on the expressway system per trip. Trip length also varies by E-Pass usage. Figure 4.9 shows trip length distribution by E-Pass usage. The percentage of short trips ($\leq$ 4 miles) to the total trips of E-Pass users is higher than the equivalent percentage for non E-Pass users. This can be interpreted that E-Pass users tend to use the expressway system more frequently for short trips than non E-Pass users. The average trip length for the E-pass users is 13.54 miles and 13.92 miles for non-E-Pass users. However, the difference in trip length distribution between the two groups is barely significant.

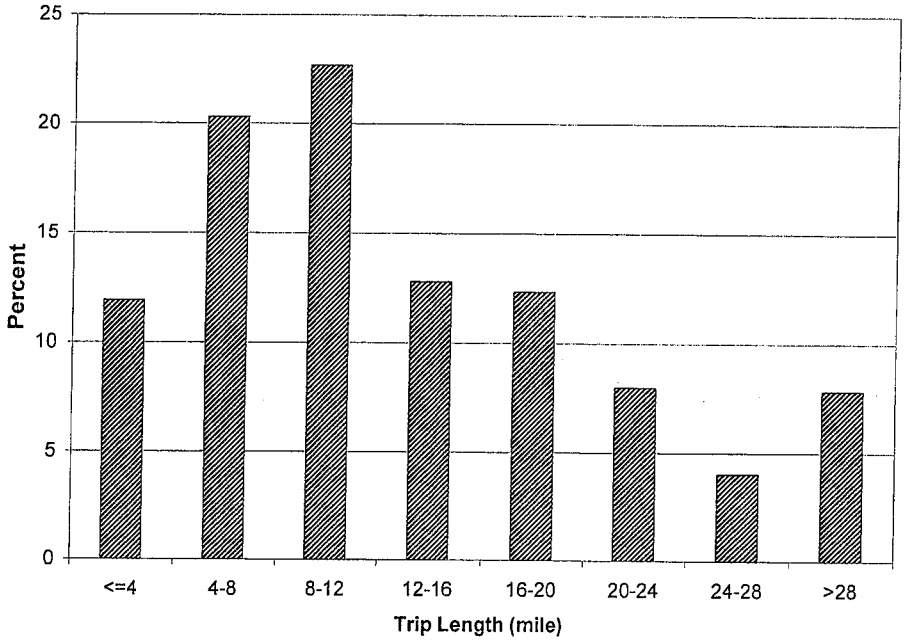


Figure 4.9 Trip length distribution

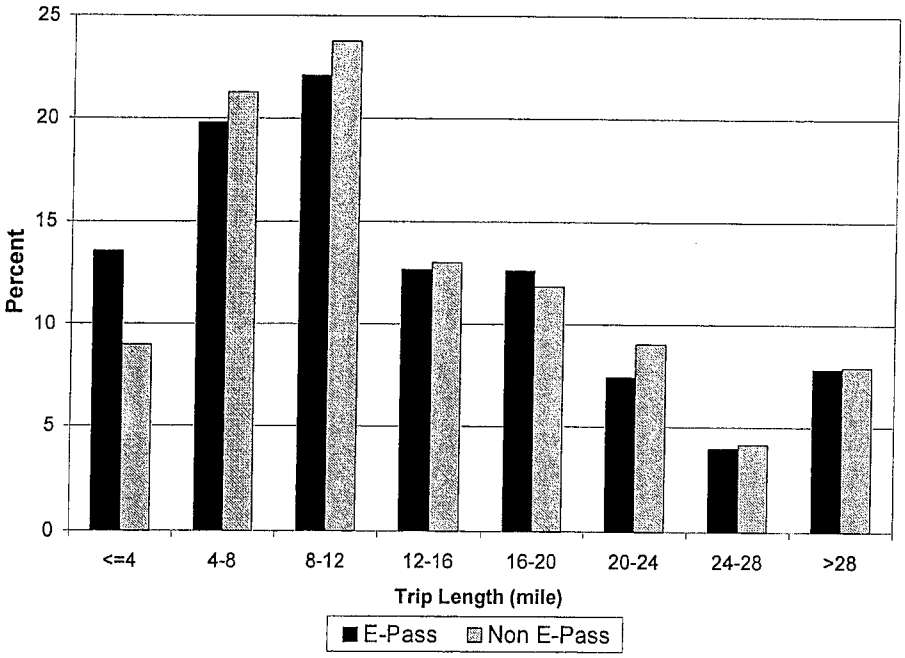


Figure 4.10 Trip Length versus E-Pass

Table 4.4 Trip Length Distribution by E-Pass
(the percent between parentheses is cell size relative to the group total)

Trips length (mile)	E-Pass	Non E-Pass
<= 4	1600 (13.56%)	587 (8.98%)
4.01 - 8	2334 (19.79%)	1390 (21.27%)
8.01 – 12	2607 (22.10%)	1552 (23.75%)
12.01 – 16	1496 (12.68%)	851 (13.02%)
16.01 – 20	1490 (12.63%)	775 (11.86%)
20.01 - 24	876 (7.43%)	590 (9.03%)
24.01 - 28	470 (3.98%)	272 (4.16%)
> 28	923 (7.82%)	517 (7.91%)
Total	11796 (100%)	6534 (100%)

Statistic	Value	DF	Prob.	Contingency Coefficient
Chi-square	99.857	7	0.001	0.074

4.1.6 Vehicle Occupancy

Vehicle occupancy distribution is shown in Figure 4.11. Drive-alone mode (one person per vehicle) was the most common (65.68%) followed by 2-people per vehicle (23.08%). These results are consistent with the study conducted by Vollmer Associates (68.7% drive alone, 21.6 one passenger), February 1997. Other car occupancies are : 5.7 percent for three people per vehicle, 3.38 percent for four people per vehicle and 1.58 percent for 5 people or more per vehicle. The overall average occupancy was 1.52 person per vehicle. This average varies over the day with 1.35 for the peak period and 1.62 for the off-peak period. It should be noted that on the national level, car occupancy ranges between 1.1 and 1.2.

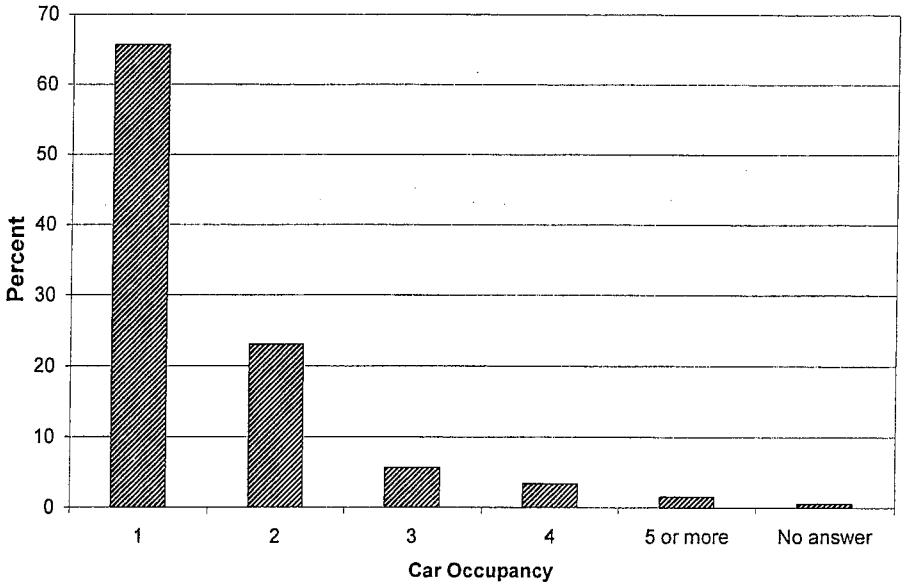


Figure 4.11 Vehicle Occupancy Distribution

Figure 4.12 shows the association between vehicle occupancy and E-Pass usage. Car occupancy varies also between E-Pass and Non E-Pass users. For the E-Pass users the average occupancy was 1.54 while for the Non E-Pass users the average occupancy was 1.49. Although E-Pass users' average occupancy is slightly higher, the result is seen as barely significant with a very low contingency coefficient.

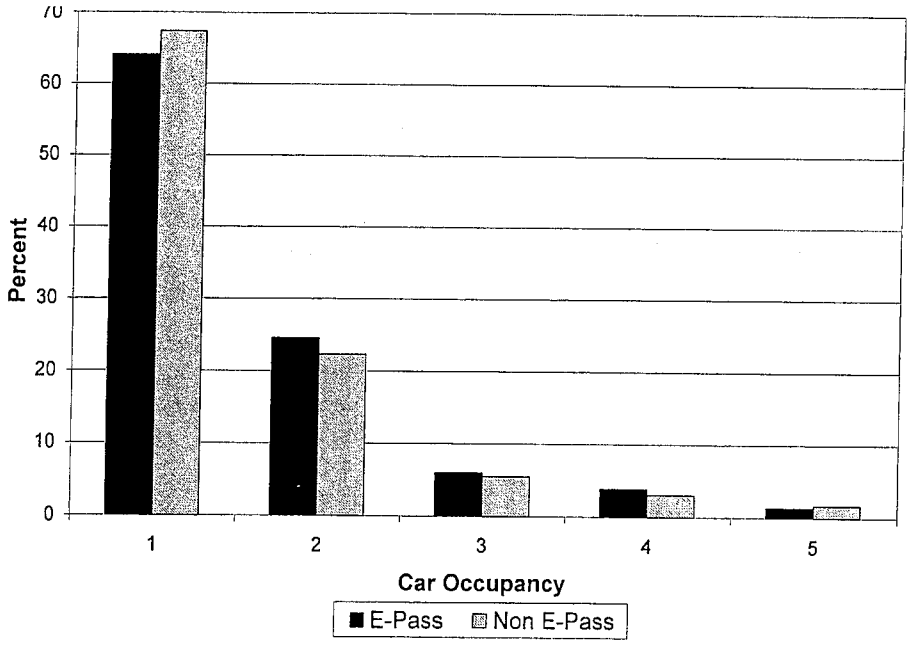


Figure 4.12 Vehicle Occupancy versus E-Pass

Table 4.5 Vehicle Occupancy Distribution by E-Pass
(the percent between parentheses is cell size relative to the group total)

Car Occupancy	E-Pass	Non E-Pass
1	8669 (64.07%)	5045 (67.40%)
2	3326 (24.58%)	1669 (22.30%)
3	821 (6.07%)	412 (5.50%)
4	526 (3.89%)	231 (3.09%)
5 or more	189 (1.40%)	128 (1.71%)
Total	13531 (100%)	7485 (100)

Statistic	Value	DF	Prob.	Contingency Coefficient
Chi-square	33.103	4	0.001	0.040

4.1.7 Number of Mainline Plazas

Figure 4.13 shows the distribution of number of toll plaza passed during the trip. This was determined by an algorithm that tracks each respondent's route based on the on and off ramps for his/her trip, then identify the mainline toll plazas crossed during the trip. The average number of toll plazas was founded to be two. This means that on average the expressway users pass through 2 plazas per trip. Since the average plaza spacing on the expressway systems is equal to 6.0 miles, average of 2 plazas is consistent with the average trip length on the expressways system. Figure 4.14 shows the number of mainline toll plazas crossed during the trip for the E-Pass and non E-Pass users. This figure support the observation made in Figure 4.10 since the percentage of the E-Pass users who did not pass through any mainline plaza is higher than the percentage of the non E-Pass users. The average number of mainline plaza crossed during a trip is 1.9 for the E-Pass users and 2.0 for the non E-Pass users. E-Pass users have higher percentage of short trips that do not involve crossing mainline plazas.

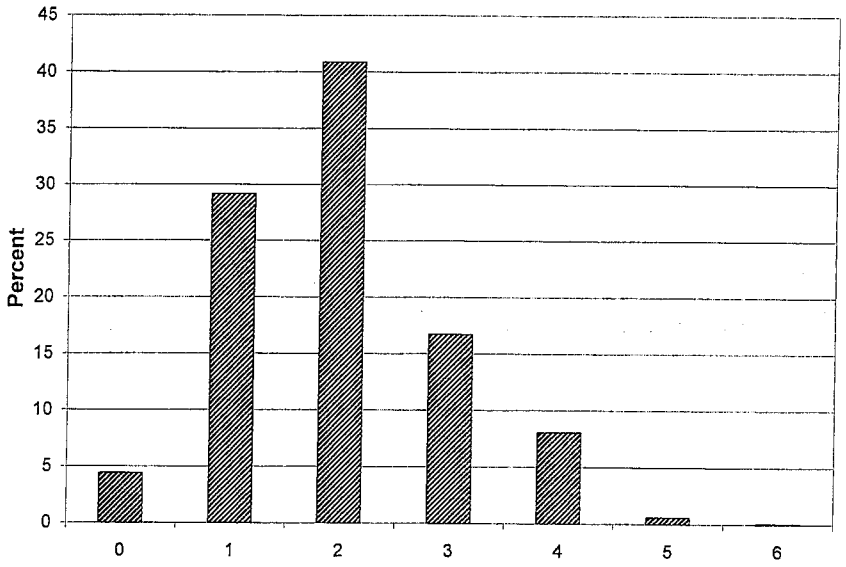


Figure 4.13 Number of Mainline Toll Plazas Crossed During a Trip

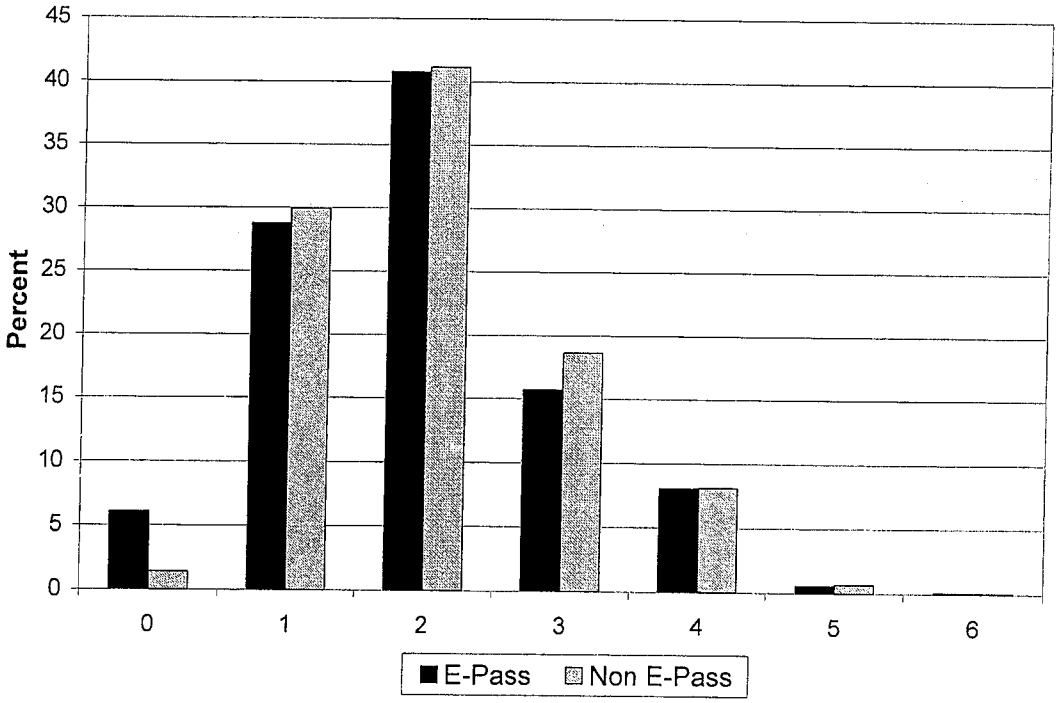


Figure 4.14 Number of Mainline Toll Plazas versus E-Pass

Table 4.6 Number of Mainline Toll Plazas by E-Pass
(the percent between parentheses is cell size relative to the group total)

# of mainline plaza	E-Pass	Non E-Pass
0	711 (6.06%)	93 (1.43%)
1	3378 (28.77%)	1945 (29.94%)
2	4785 (40.76%)	2672 (41.13%)
3	1843 (15.70%)	1211 (18.64%)
4	945 (8.05%)	526 (8.10%)
5	68 (0.58%)	45 (0.69%)
6	10 (0.09%)	4 (0.06%)
Total	11740 (100%)	6496 (100%)

Statistic	Value	DF	Prob.	Contingency Coefficient
Chi-square	227.785	6	0.001	0.111

4.2 Trip-maker Characteristics

Four variables were related to the trip-maker. These characteristics are residency, occupation, age, and income. Residency was defined in the survey as: resident of Central Florida (CF), vacationing or visiting Central Florida, from outside the area, in Central Florida on business, and passing through the area. Occupation was defined in the survey as: professional, retail, self-employed, teaching, clerical, student, retired, and other. Age was categorized as: very young users (16 to 25 year old), young users (26 to 35 year old), middle age (36 to 50 year old), upper middle age (51 to 65 year old), and old (over 65 year old). Income represents the total annual household income. Income was categorized into seven categories: under $15,000, $15,000 – 24,999, $25,000 – 34,999, $35,000 – 49,999, $50,000 – 64,999, $65,000 – 80,000, and over $80,000.

4.2.1 Trips versus Residency

Figure 4.15 shows the residency distribution of the Expressway users. The Central Florida residents are the predominant users (93.44%) followed by the users from outside the area in Central Florida for business (3.03%). Tourists represent 2.55 percent of the sample. This predominance of Central Florida users is consistent with other study done by Vollmer Associates (97.7 % Central Florida users), February 1997. However, there is an increase in the percent of trips made by non-Central Florida residents.

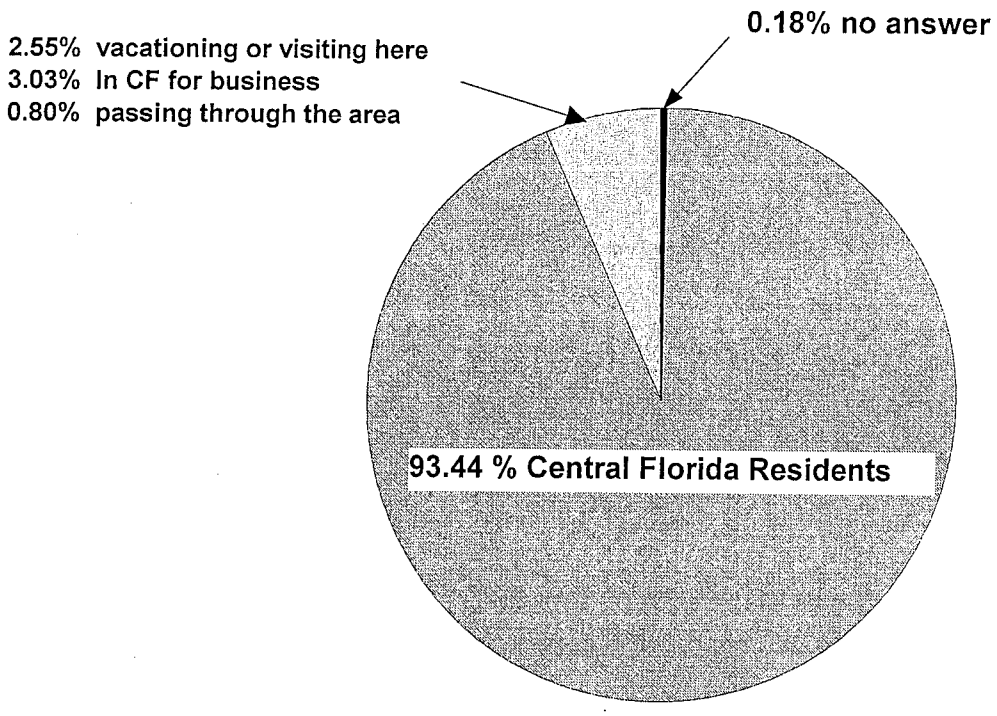


Figure 4.15 Residency Distribution

Figure 4.16 shows the association between residency and E-pass usage. The majority of the E-Pass users are CF residents. A Chi-square test (Table 4.7) was used to test whether there is a significant difference in residency distribution between the E-Pass and non E-Pass users. The results indicated that there is a significant difference between the two groups.

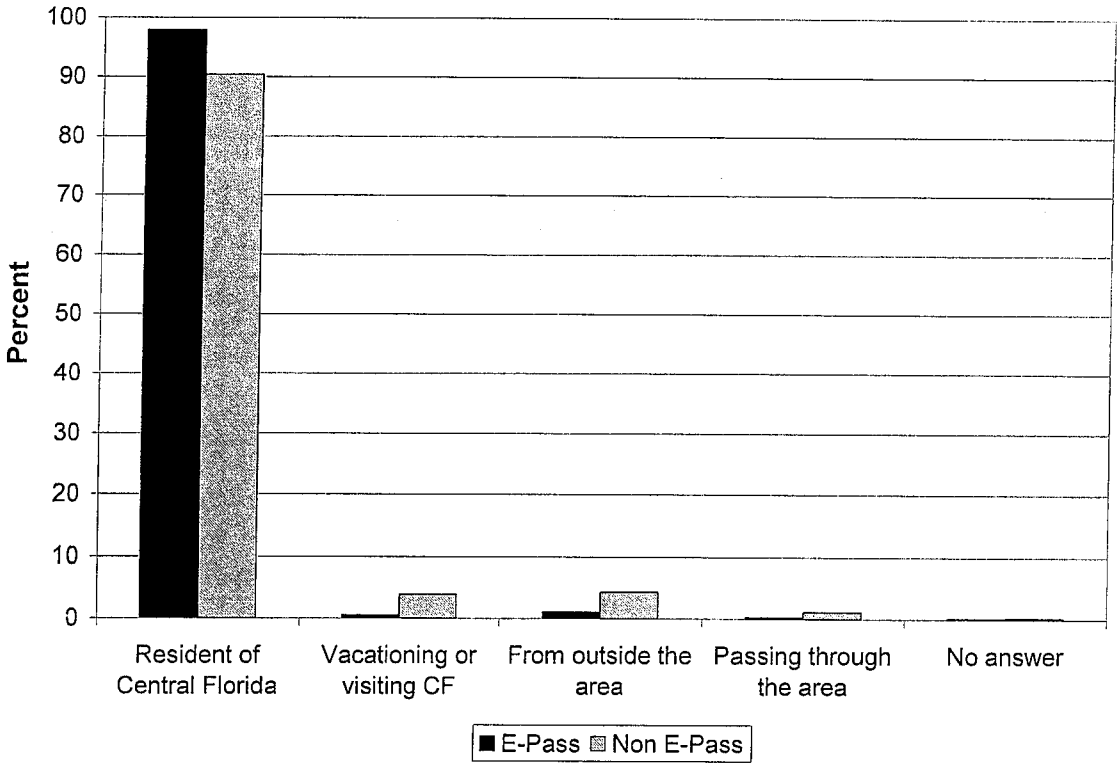


Figure 4.16 Residency versus E-Pass

Table 4.7 Residency Distribution by E-Pass

(the percent between parentheses is cell size relative to the group total)

Residency	E-Pass	Non E-Pass
Resident of CF	13323 (98.06%)	6810 (90.63%)
Vacationing or visiting CF	74 (0.54%)	293 (3.90%)
From outside the area, in CF for business	145 (1.07%)	327 (4.35%)
Passing through CF	44 (0.32%)	84 (1.12%)
Total	13586 (100%)	7514 (100%)

Statistic	Value	DF	Prob.	Contingency Coefficient
Chi-square	624.687	3	0.001	0.170

4.2.2 Trips by Occupation

Figure 4.17 shows the distribution of trips by user occupation. Professionals using the Expressway system represent 52.53 percent of the total trips made on the Expressway. Self employed users come in the second place by 11.44 percent. Teachers represent the lower percentage with contribution of 3.12 percent. Figure 4.18 shows the distribution of trips by occupation and E-Pass usage. The E-Pass group has higher percentages of the professional and self-employed than the non E-Pass group. Table 4.8 indicated that there is a significant difference of occupation distribution between the E-Pass users and the non E-Pass users.

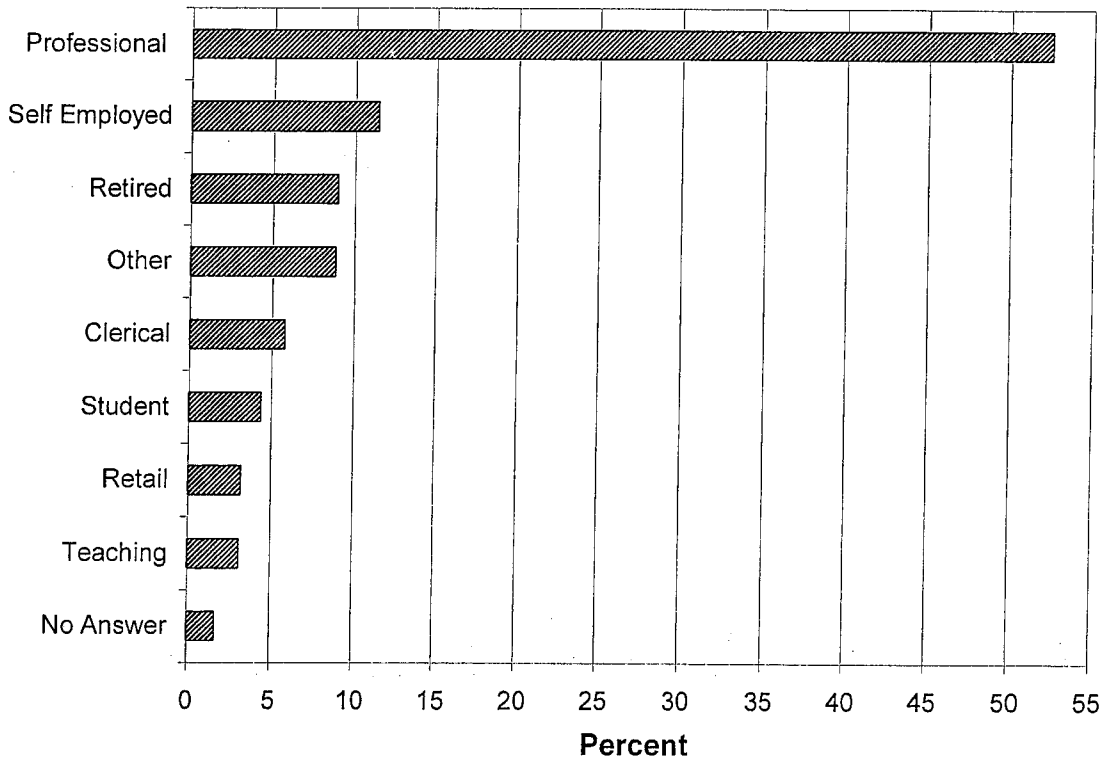


Figure 4.17 Trips by Occupation

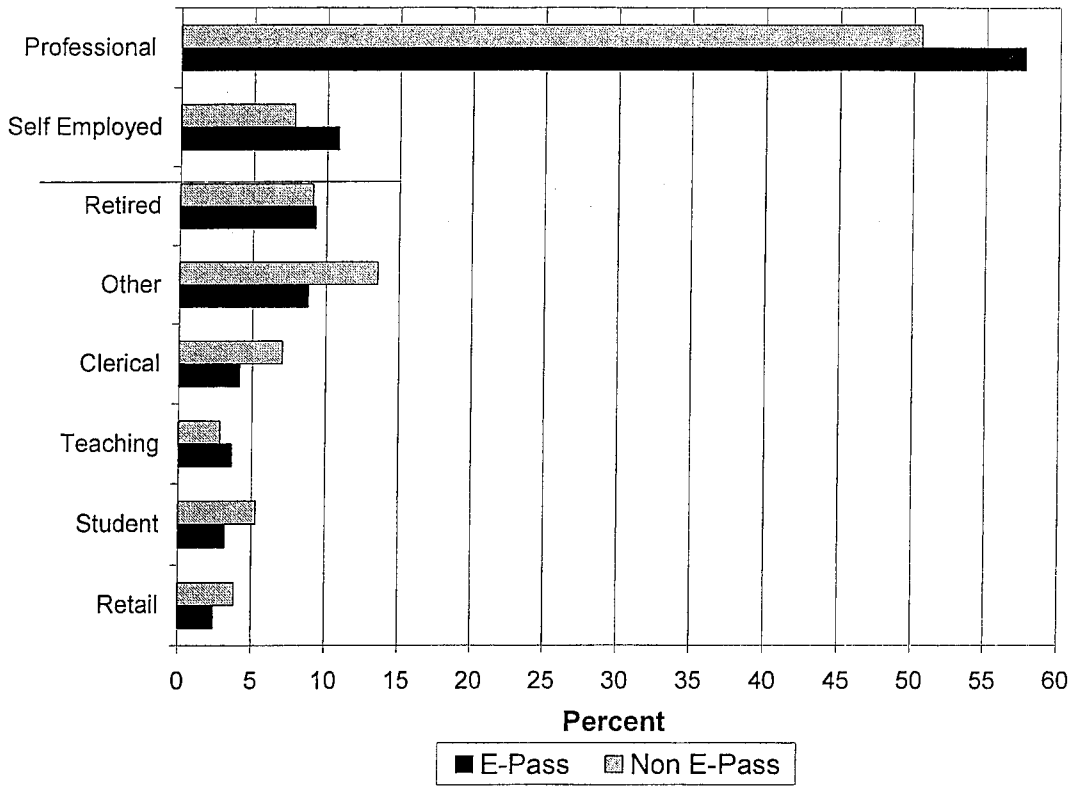


Figure 4.18 Occupation versus E-Pass

Table 4.8 Occupation Distribution by E-Pass

(the percent between parentheses is cell size relative to the group total)

Occupation	E-Pass	Non E-Pass
Professional	7,735 (57.70%)	3,738 (50.58%)
Teaching	486 (3.63%)	211 (2.86%)
Student	428 (3.19%)	390 (5.28%)
Retail	327 (2.44%)	282 (3.82%)
Clerical	558 (4.16%)	522 (7.06%)
Retired	1,243 (9.27%)	671 (9.08%)
Self Employed	1,449 (10.81%)	575 (7.78%)
Other	1,180 (8.80%)	1,001 (13.55%)
Total	13406 (100%)	7390 (100%)

Statistic	Value	DF	Prob.	Contingency Coefficient
Chi-square	360.111	7	0.001	0.130

4.2.3 Trips by Age

The trip distribution of users by age is shown in Figure 4.19. The largest number of users is in the middle-age group (38.86%) followed by upper middle group (22.65%). The lowest is the old group (6.95%). Figure 4.20 shows the distribution of trips by age and E-Pass usage. The E-Pass group has higher percentages of the middle and upper middle age groups than the non E-Pass group. Table 4.9 indicated that there is a significant difference of age distribution between the E-Pass users and the non E-Pass users.

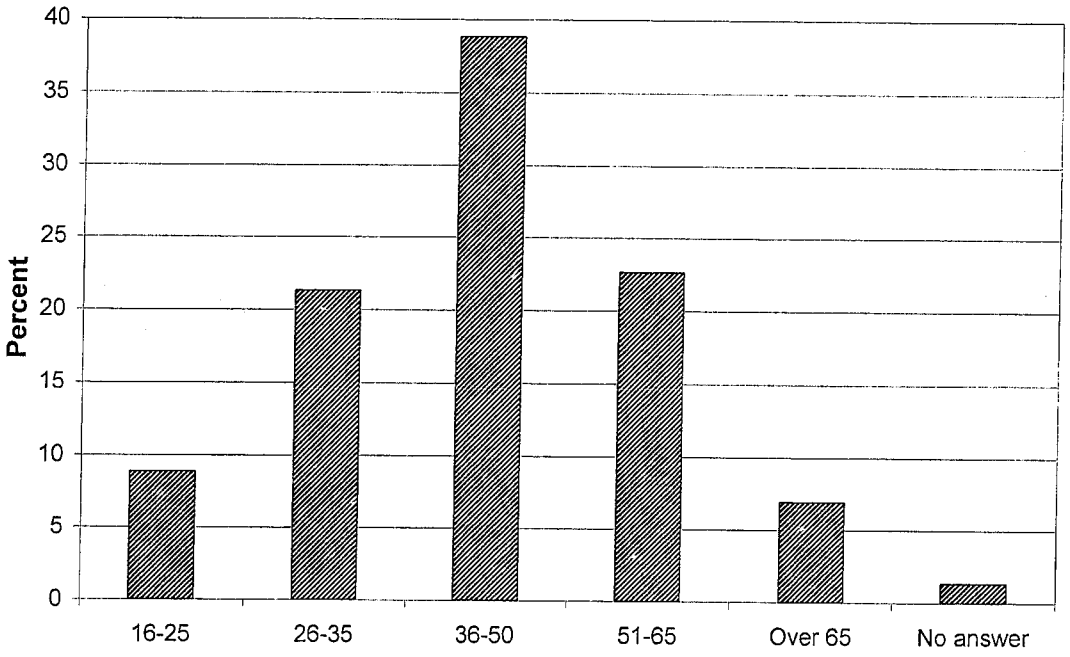


Figure 4.19 Trip Distribution by Age

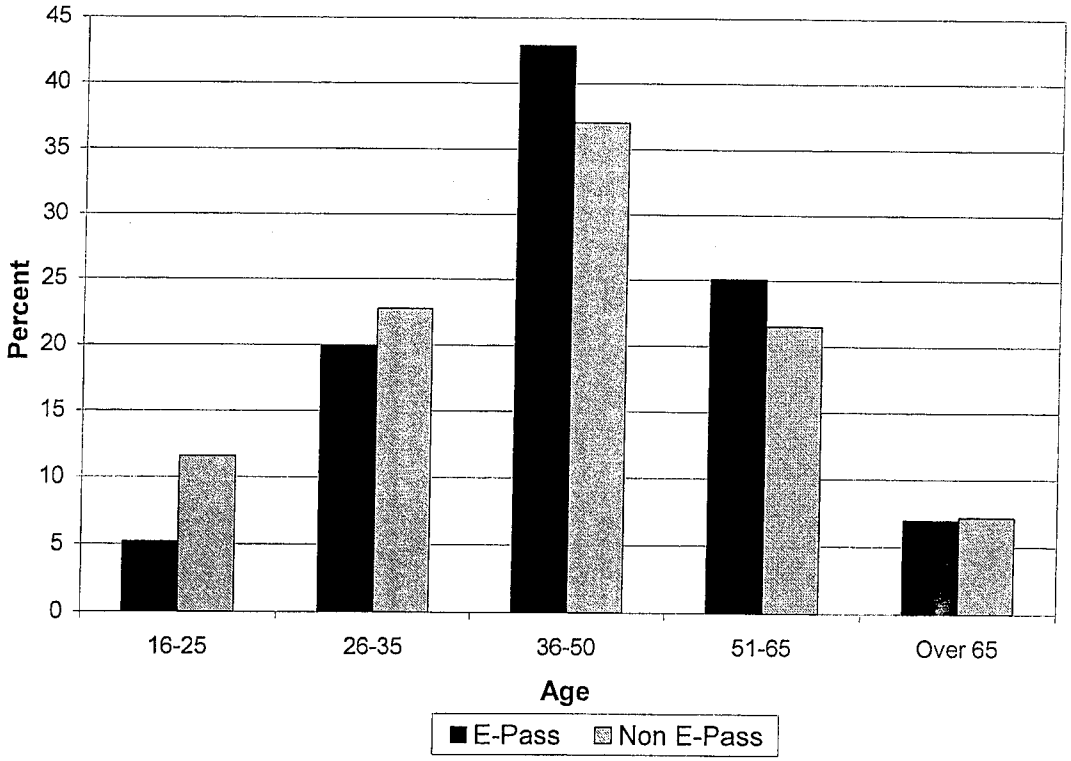


Figure 4.20 Age versus E-Pass

Table 4.9 Age Distribution by E-Pass

(the percent between parentheses is cell size relative to the group total)

Age Group	E-Pass	Non E-Pass
16-25	698 (5.18%)	857 (11.57%)
26-35	2680 (19.89%)	1686 (22.76%)
36-50	5782 (42.90%)	2744 (37.04%)
51-65	3385 (25.12%)	1593 (21.50%)
Over 65	932 (6.92%)	528 (7.13%)
Total	13477 (100%)	7408 (100%)

Statistic	Value	DF	Prob.	Contingency Coefficient
Chi-square	347.712	4	0.001	0.128

4.2.4 Trips by Household Income

Figure 4.21 shows the trip distribution by income. The majority (18.67%) has income greater than $80,000, followed by income of $50,000 – 64,000. More than 50% percent of the expressway users have an income of $50,000 or more. Figure 4.22 shows the distribution of trips by income and E-Pass usage. The E-Pass group has higher percentage in the high-income category (more than $ 65,000 a year) than the non E-Pass group. Table 4.10 indicated that there is a significant difference of income distribution between the E-Pass users and the non E-Pass users.

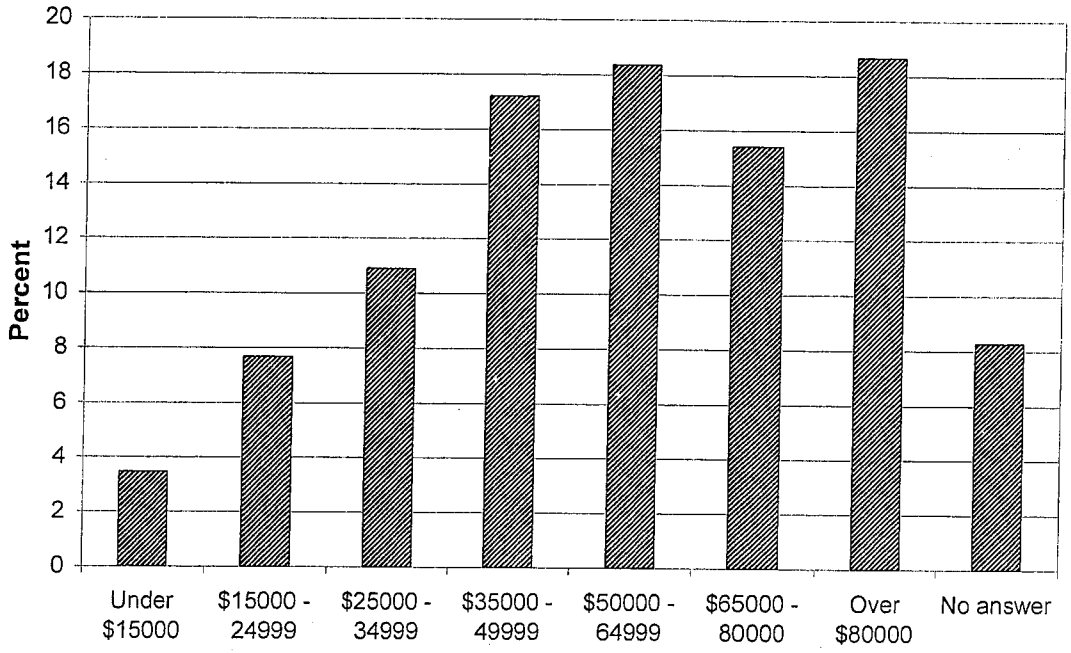


Figure 4.21 Trip Distribution by Income

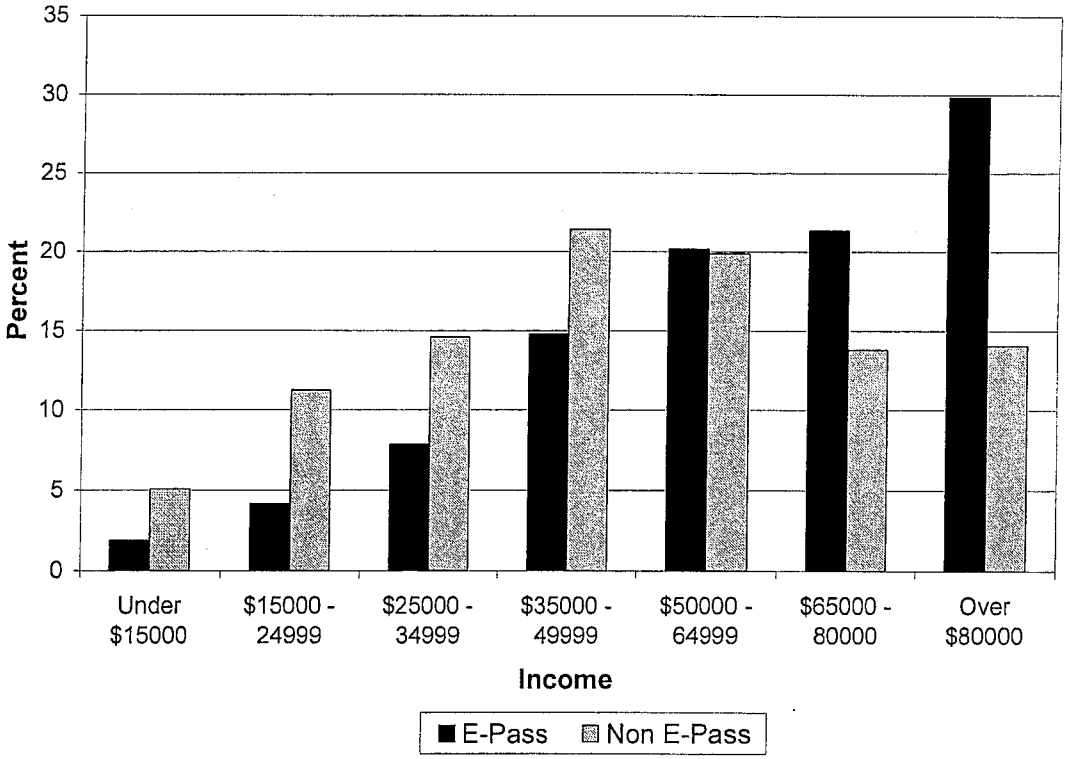


Figure 4.22 Income versus E-Pass

Table 4.10 Income Distribution by E-Pass

(the percent between parentheses is cell size relative to the group total)

Income	E-Pass	Non E-Pass
Under $15,000	231 (1.86%)	351 (5.07%)
$15,000 – 24,999	515 (4.14%)	776 (11.21%)
$25,000 – 34,999	974 (7.83%)	1,009 (14.57%)
$35,000 – 49,999	1,837 (14.78%)	1,483 (21.42%)
$50,000 – 64,999	2,511 (20.20%)	1,377 (19.89%)
$65,000 – 80,000	2,653 (21.34%)	955 (13.79%)
Over $80,000	3,712 (29.86%)	972 (14.04%)
Total	12433 (100%)	6923 (100%)

Statistic	Value	DF	Prob.	Contingency Coefficient
Chi-square	1392.918	6	0.001	0.259

4.3 Origin and Destination Patterns

4.3.1 Sample Trip Distribution

Table 4.11 shows the trip distribution among the three routes of the Expressway System. The East-West Expressway (SR 408) is the most used route followed by the GreeneWay (SR 417), then the BeeLine (SR 528). All roads tend to have equal marginal distribution for trips (i.e., total generation approximately equals to total attraction for each route).

Table 4.11 Sample Trip Distribution on the Expressway system

To / From	SR 408	SR 417	SR 528	Total
SR 408	8610 (41.9%)	1760 (8.6%)	561 (2.7%)	10931 (53.2%)
SR 417	1572 (7.6%)	3643 (17.7%)	1206 (5.9%)	6421 (31.2)
SR 528	391 (1.9%)	899 (4.4%)	1917 (9.3%)	3207 (15.6%)
Total	10573 (51.4%)	6302 (30.7%)	3684 (17.9%)	20559 (100%)

Figures 4.23 and 4.24 show the distribution of E-Pass and non E-Pass users on the Expressway System. Both groups tend to frequently use the SR 408 followed by SR 417 and SR 528. The percentage of Non E-Pass users is higher for SR 408 and SR 528. The percentage of users that started and ended on SR 408 and SR 528 is 45.6 percent and 10.6 percent for non E-Pass users vs. 39.8 and 8.6 percent for E-Pass users , respectively. The percentage of E-Pass users is higher for SR 417 (19.5% vs. 14.6%).

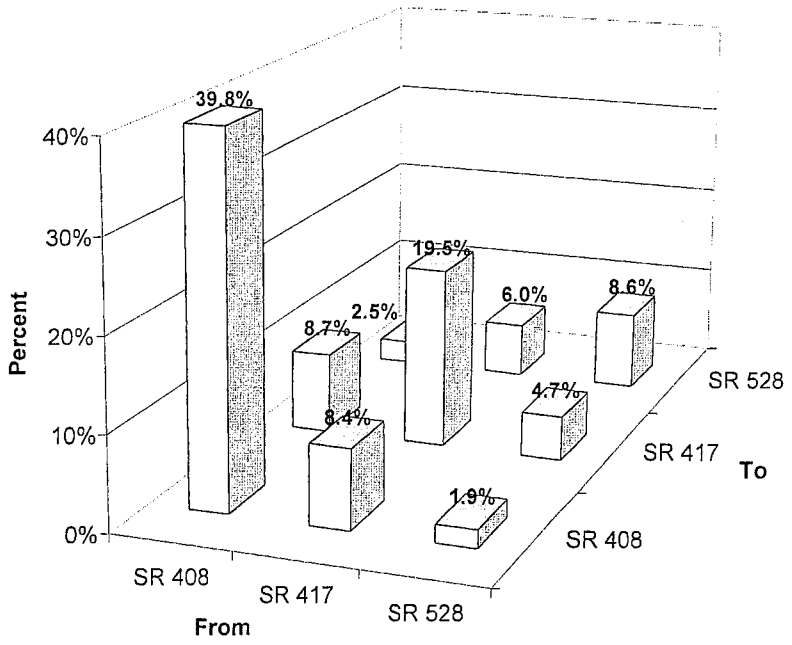


Figure 4.23 Distribution of the E-Pass Users on the Expressway system

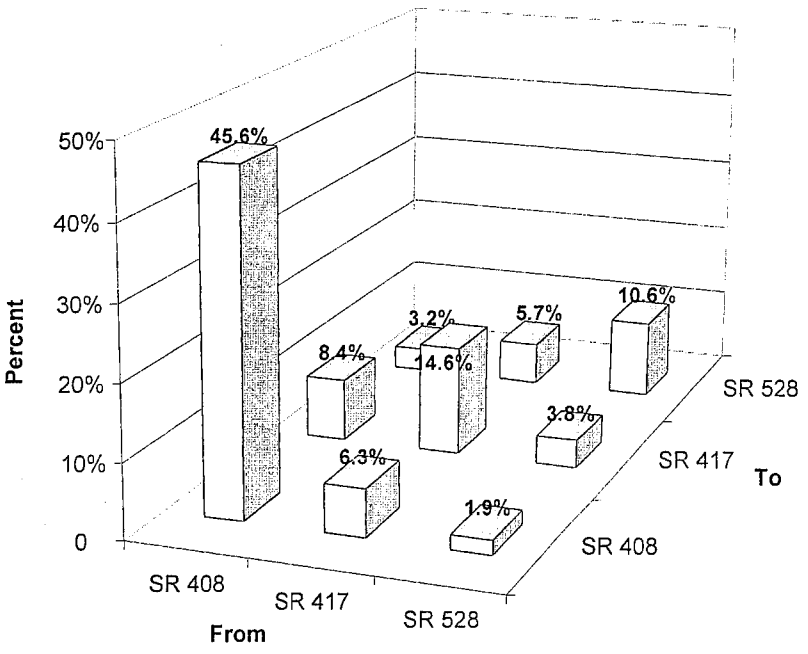


Figure 4.24 Distribution of the Non E-Pass Users on the Expressway system

4.3.2 Commuter Trip Distribution

Figure 4.25 shows the distribution of commute trips on the Expressway System. SR 408 was used by the highest percentage of commuter trips, which could be explained by its crucial extension between the east and west areas passing through the Orlando Downtown area. It can be also concluded that 70 percent of the commuters use only one route during their trips.

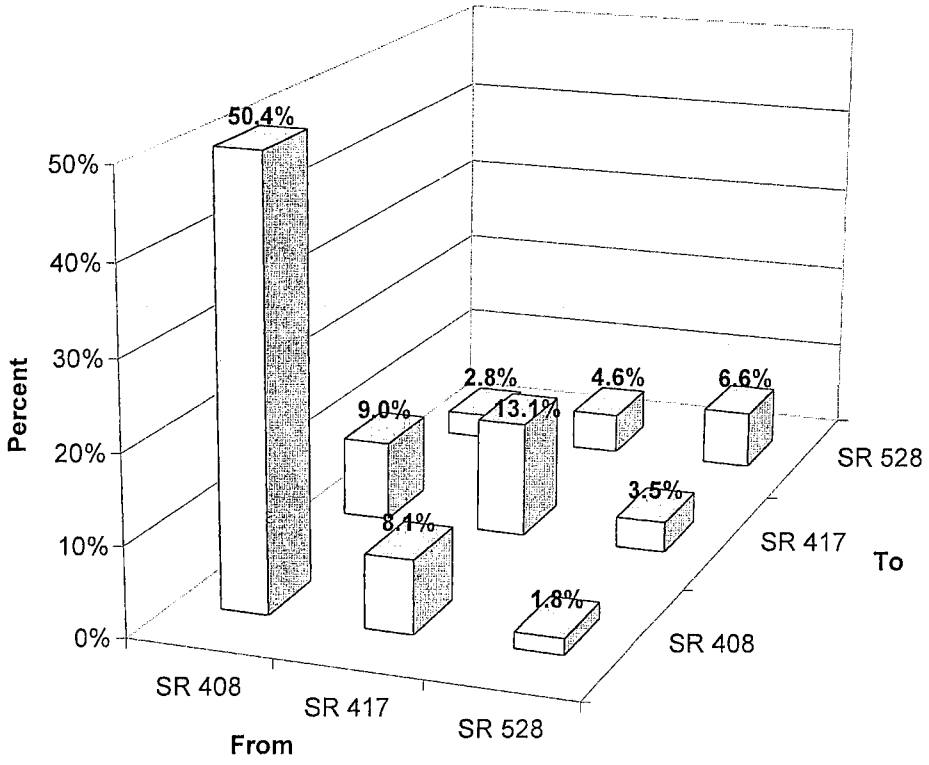


Figure 4.25 Commuter Trips on the Expressway system

4.3.3 Tourist Trip Distribution

Figure 4.26 presents the trip distribution for tourist trips along the Expressway routes. It appears that tourists mostly use SR 417 and SR 528. The fact that these routes are the main connections to the tourist area (attractions) and the Airport could explain this phenomenon. Tourists use SR 408 to get to downtown Orlando that considered as an attraction. Another way of locating tourists on the system is by mainline plaza. Table 4.12 shows the distribution of tourist trips at each mainline plaza. The higher percentage of tourist is located at the John Young Parkway and Boggy Creek plazas on SR 417. These plaza are closer to the main attractions of Central Florida as well as the international airport.

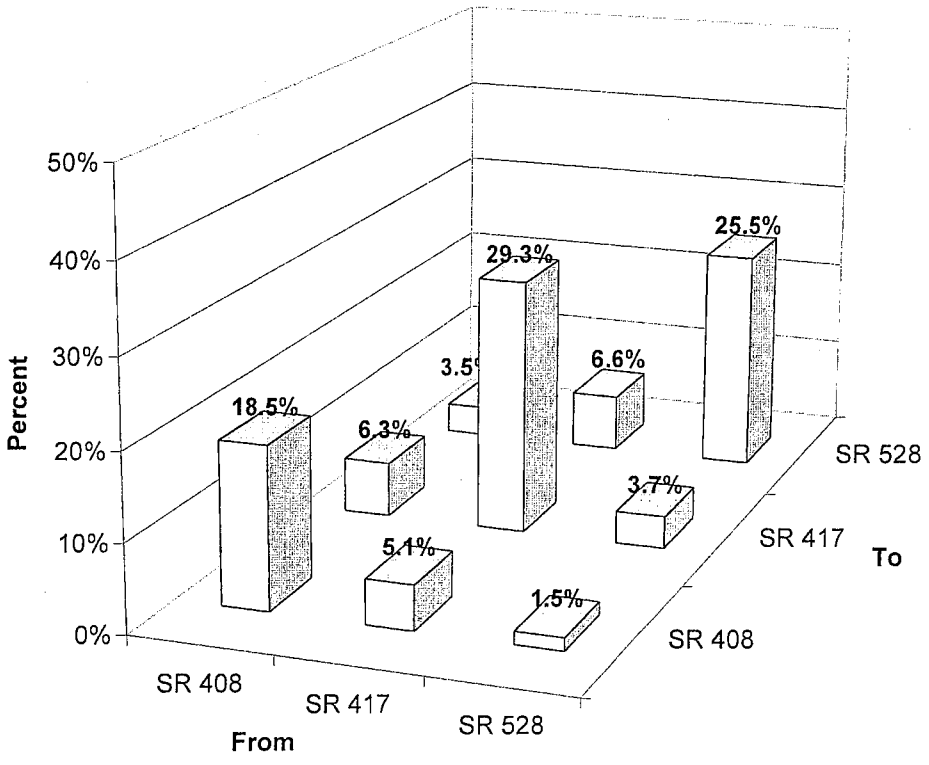


Figure 4.26 Tourists on the Expressway System

Table 4.12 Tourist Distribution by Mainline Plaza

Plaza	CF Resident	Tourist	Other
John Young Parkway	88.3%	5.5%	6.3%
Boggy Creek	88.8%	5.1%	6.1%
Main (SR 528)	88.4%	3.6%	8.0%
Airport	92.5%	3.0%	4.6%
Curry Ford	93.6%	2.4%	4.0%
University	95.8%	1.8%	2.3%
Hiawassee	94.8%	1.7%	3.5%
Holland West	96.2%	1.3%	2.5%
Holland East	96.8%	1.1%	2.1%
Dean	97.0%	0.9%	2.1%

4.3.4 Weekday versus Weekend Trips

Figures 4.27 and 4.28 show the distribution of trips on the Expressway System for the weekday and weekend trips respectively. About 43.9 percent of the total weekday trips started and finished in SR 408, 16.1 percent began and ended in SR 417, and 9.5 percent started and ended in SR 528. Trips starting in SR 528 and finishing in SR 408 yield the least percentage of the distribution with 1.9 percent. Figure 4.28 shows a different trend compared with the weekday trip distribution. The percentage of weekend trips starting and ending in SR 408 decreased to 38.4 percent. In general, the percentage of users of SR 417 and SR 528 is more during weekends than weekdays.

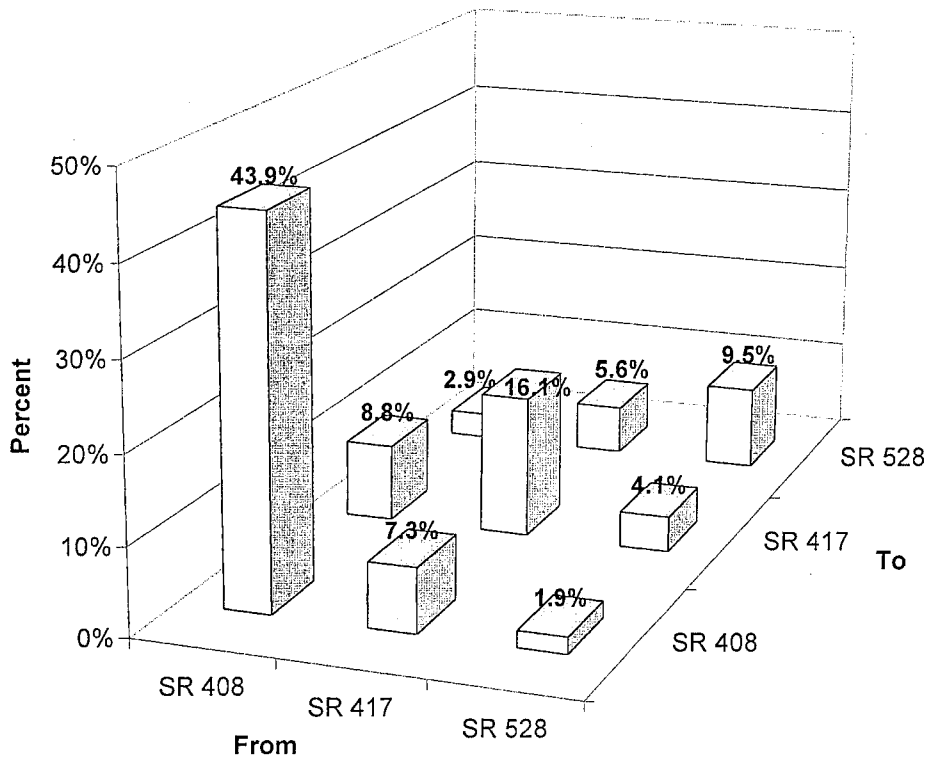


Figure 4.27 Weekday Trips on the Expressway System

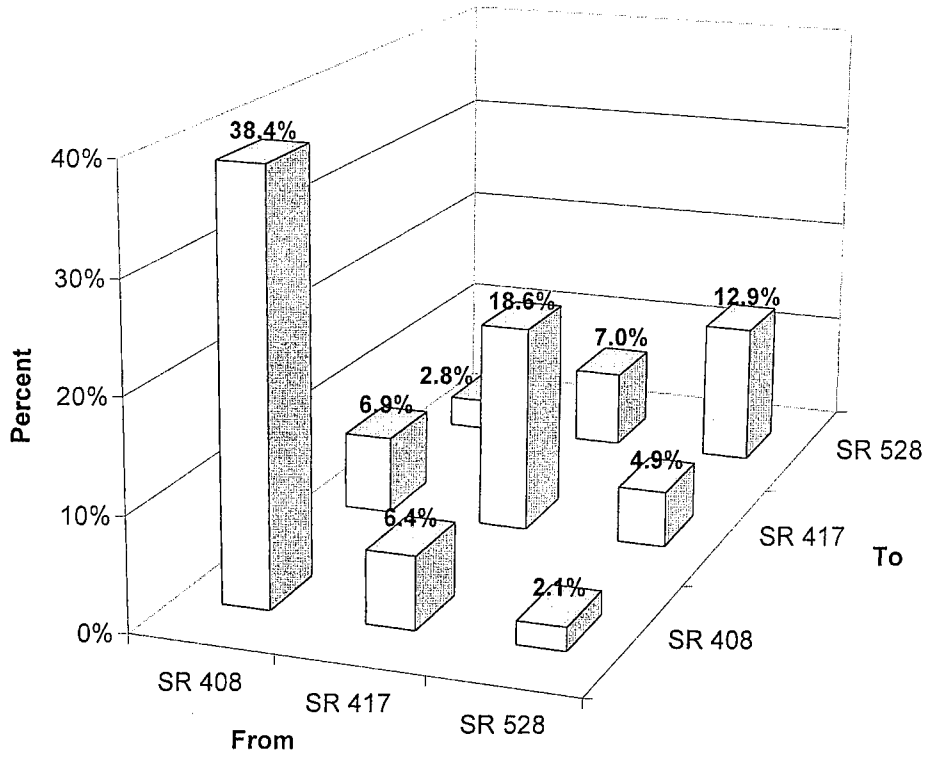


Figure 4.28 Weekend Trips on the Expressway System

4.3.5 Origin/Destination Tables

Eight major areas were determined based on the on and off-ramps along the Expressway System. Table 4.13 shows the on and off ramps for each area. It is important to stress that this O/D effort is only to highlight the major trip generating areas. It is by no mean a detailed O/D effort. HDR/TCG is incorporating a detailed O/D analysis in the 2025 Master Plan of the expressway system. A detailed O-D matrix for the whole system by on and off ramps can be found in Appendix B.

Table 4.13 On/Off Ramps for Areas

Zone	On/off ramps
West Orlando	**SR 408 (East West Expressway)** ▪ Florida's Turnpike ▪ SR 50 West Colonial Dr./Clarke Rd. ▪ Good Homes Rd. ▪ Hiawassee Rd. ▪ SR 435 Kirkman Rd. ▪ Pine Hills Rd ▪ Mercy Dr. ▪ SR 423 John Young Pkwy ▪ Tampa Ave.
I-4	**SR 408 (East West Expressway)** ▪ I-4
Orlando Downtown	**SR 408 (East West Expressway)** ▪ US 441/17-92 Orange Blossom Tr. ▪ Orange Ave/Downtown ▪ Rosalind Ave/Anderson Rd. ▪ Mills Ave./Downtown ▪ Bumby Ave ▪ Crystal Lake Dr
East Orange County	**SR 408 (East West Expressway)** ▪ SR 436 Semoran Blvd. ▪ SR 551 Goldenrod Rd. ▪ Valencia College Lane ▪ Dean Rd. ▪ Rouse Rd. ▪ Alafaya Tr. ▪ SR 50 East Colonial Dr. ▪ Challenger Parkway **SR 417 (Central Florida GreeneWay)** ▪ Curry Ford Rd.

Zone	On/off ramps
	▪ Valencia College Lane ▪ SR 50 East Colonial Dr. ▪ University Blvd.
Attractions	**SR 417 (Central Florida GreeneWay)** ▪ I-4 ▪ Celebration Ave. ▪ Osceola Pkwy. ▪ SR 536 International Dr. **SR 528 (Bee Line Expressway)** ▪ I-4 ▪ International Drive ▪ Orangewood Blvd.
South Orange	**SR 417 (Central Florida GreeneWay)** ▪ John Young Pkwy. ▪ US 441/US 17-92 Orange Blossom Tr. ▪ Landstar Blvd. **SR 528 (Bee Line Expressway)** ▪ SR 423 John Young Pkwy. ▪ Florida Turnpike / US 441
Orlando International Airport	**SR 417 (Central Florida GreeneWay)** ▪ Boggy Creek Rd. ▪ US 17-92 Airport Blvd. **SR 528 (Bee Line Expressway)** ▪ Boggy Creek Rd./McCoy Rd. ▪ Tradeport Dr. ▪ SR 436 Semoran Blvd. ▪ Narcoossee Rd.
Oviedo / Sanford	**SR 417 (Central Florida GreeneWay)** ▪ SR 426 Aloma Ave. ▪ Red Bug Lake Rd. ▪ SR 434 ▪ CR 427 Lake Mary Blvd.
Coast	**SR 528 (Bee Line Expressway)** ▪ ICP Blvd. ▪ Dallas Blvd. ▪ SR 520 ▪ Other (I-95)
Other	**SR 408 (East West Expressway)** ▪ SR 15 Conway Rd. **SR 417 (Central Florida GreeneWay)** ▪ Narcoossee Rd.

Table 4.14 presents the origin/destination of the non E-Pass users. East Orange and west Orlando areas are major trip generators accounting for 26.30 percent and 22.03 percent, of the total trip produced by the non E-Pass users, respectively. West Orlando and Downtown mainly attract trips generated by the East Orange area. Trips generated from West Orlando mainly go to East Orange area. Large percentage of the trips generated from east and west Orange County go to I-4, downtown, east and west Orange County. As expected, the largest percentage of trips generated from the airport end at the attractions and vice versa. A considerable percentage of trips alternate between the attractions, airport and the space coast.

Table 4.15 shows the origin/destination for E-Pass users. The East Orange County area, West Orlando, and Oviedo / Sanford are the most trip generators accounting for 23.66 percent, 15.69 percent, and 14.52 percent of the total E-Pass users' trips, respectively. Although the same trends as the non E-Pass O/D can be realized, the O/D for E-Pass users tend to be more distributed and not concentrated in the major generators as the non E-Pass. Table 4.16 shows the origin/destination for tourist trips. The attractions are the most trip generating area to the expressway system. Attractions generate 34.77 percent of the tourist trips. Half of these trips are going to the Orlando international airport.

Table 4.14 Origin-Destination Matrix for non E-Pass Trips

(the percent between parentheses is cell size relative to the non E-Pass sample size)

From \ To	West Orlando	I-4	Downtown	East Orange	Attractions	South Orange	Airport	Oviedo/ Sanford	Coast	Other	Total
West Orlando	244	246	362	437	15	7	27	61	22	79	1500
	3.58%	**3.61%**	**5.32%**	**6.42%**	0.22%	0.10%	0.40%	0.90%	0.32%	1.16%	**22.03%**
I-4	123	0	14	320	10	1	15	33	20	36	572
	1.81%	0.00%	0.21%	**4.70%**	0.15%	0.01%	0.22%	0.48%	0.29%	0.53%	8.40%
Downtown	134	1	7	247	10	0	10	71	8	13	501
	1.97%	0.01%	0.10%	**3.63%**	0.15%	0.00%	0.15%	1.04%	0.12%	0.19%	7.36%
East Orange	370	307	402	211	117	70	162	78	35	39	1791
	5.43%	**4.51%**	**5.90%**	3.10%	1.72%	1.03%	2.38%	1.15%	0.51%	0.57%	**26.30%**
Attractions	2	3	2	93	11	64	218	46	93	9	541
	0.03%	0.04%	0.03%	1.37%	0.16%	0.94%	3.20%	0.68%	1.37%	0.13%	7.95%
South Orange	4	2	1	105	132	8	65	36	39	8	400
	0.06%	0.03%	0.01%	1.54%	1.94%	0.12%	0.95%	0.53%	0.57%	0.12%	5.87%
Airport	3	10	9	106	99	35	102	40	81	8	493
	0.04%	0.15%	0.13%	1.56%	1.45%	0.51%	1.50%	0.59%	1.19%	0.12%	7.24%
Oviedo/Sanford	50	33	79	79	63	40	104	14	16	12	490
	0.73%	0.48%	1.16%	1.16%	0.93%	0.59%	1.53%	0.21%	0.23%	0.18%	7.20%
Coast	14	15	22	29	128	38	127	13	7	2	395
	0.21%	0.22%	0.32%	0.43%	1.88%	0.56%	1.87%	0.19%	0.10%	0.03%	5.80%
Other	44	7	4	26	20	4	4	16	1	0	126
	0.65%	0.10%	0.06%	0.38%	0.29%	0.06%	0.06%	0.23%	0.01%	0.00%	1.85%
Total	988	624	902	1653	605	267	834	408	322	206	6809
	14.51%	9.16%	13.25%	**24.28%**	8.89%	3.92%	12.25%	5.99%	4.73%	3.03%	100.00%

Table 4.15 Origin-Destination Matrix for E-Pass Trips

(the percent between parentheses is cell size relative to the E-Pass sample size)

From \ To	West Orlando	I-4	Downtown	East Orange	Attractions	South Orange	Airport	Oviedo/ Sanford	Coast	Other	Total
West Orlando	373 2.91%	366 2.85%	459 3.58%	543 4.23%	25 0.19%	9 0.07%	37 0.29%	106 0.83%	34 0.27%	61 0.48%	2013 **15.69%**
I-4	243 1.89%	0 0.00%	57 0.44%	559 4.36%	14 0.11%	7 0.05%	27 0.21%	107 0.83%	16 0.12%	81 0.63%	1111 8.66%
Downtown	321 2.50%	41 0.32%	25 0.19%	533 4.15%	9 0.07%	3 0.02%	18 0.14%	190 1.48%	29 0.23%	43 0.34%	1212 9.45%
East Orange	482 3.76%	427 3.33%	699 5.45%	379 2.95%	212 1.65%	113 0.88%	292 2.28%	290 2.26%	52 0.41%	89 0.69%	3035 **23.66%**
Attractions	8 0.06%	2 0.02%	2 0.02%	146 1.14%	56 0.44%	169 1.32%	270 2.10%	107 0.83%	109 0.85%	15 0.12%	884 6.89%
South Orange	3 0.02%	1 0.01%	3 0.02%	139 1.08%	179 1.40%	19 0.15%	120 0.94%	47 0.37%	45 0.35%	15 0.12%	571 4.45%
Airport	20 0.16%	7 0.05%	18 0.14%	277 2.16%	192 1.50%	75 0.58%	164 1.28%	219 1.71%	96 0.75%	20 0.16%	1088 8.48%
Oviedo/Sanford	133 1.04%	98 0.76%	248 1.93%	324 2.53%	223 1.74%	86 0.67%	395 3.08%	278 2.17%	46 0.36%	32 0.25%	1863 **14.52%**
Coast	33 0.26%	21 0.16%	41 0.32%	57 0.44%	196 1.53%	66 0.51%	228 1.78%	59 0.46%	17 0.13%	5 0.04%	723 5.64%
Other	84 0.65%	48 0.37%	46 0.36%	68 0.53%	17 0.13%	12 0.09%	19 0.15%	26 0.20%	6 0.05%	3 0.02%	329 2.56%
Total	1700 13.25%	1011 7.88%	1598 12.46%	3025 23.58%	1123 8.75%	559 4.36%	1570 12.24%	1429 11.14%	450 3.51%	364 2.84%	12829 100.00%

Table 4.16 Origin-Destination Matrix for Tourist Trips

(the percent between parentheses is cell size relative to the tourist sample size)

To / From	West Orlando	I-4	Downtown	East Orange	Attractions	South Orlando	Airport	Oviedo/ Sanford	Coast	Other	Total
West Orlando	0.75%	2.54%	1.20%	5.98%	0.71%	0.00%	1.07%	1.34%	0.71%	0.00%	14.32%
I-4	0.98%	0.00%	0.13%	3.26%	0.49%	0.00%	0.62%	1.07%	0.36%	0.71%	7.62%
Downtown	0.71%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.49%	0.00%	0.36%	1.56%
East Orange	2.77%	1.07%	1.11%	0.13%	1.56%	0.00%	0.49%	0.36%	0.71%	0.13%	8.34%
Attractions	0.36%	0.00%	0.00%	5.39%	0.36%	0.71%	**18.98%**	2.54%	6.08%	0.36%	**34.77%**
South Orlando	0.00%	0.00%	0.00%	0.36%	2.14%	0.00%	1.20%	0.49%	2.28%	0.00%	6.47%
Airport	0.13%	0.71%	0.00%	0.85%	4.42%	1.07%	1.69%	0.71%	1.43%	0.00%	11.03%
Oviedo/Sanford	0.49%	0.36%	0.13%	0.13%	1.92%	0.00%	0.85%	0.00%	0.00%	0.00%	3.88%
Coast	0.71%	0.36%	0.00%	0.00%	3.84%	1.20%	4.20%	0.49%	0.13%	0.00%	10.93%
Other	0.36%	0.00%	0.00%	0.36%	0.36%	0.00%	0.00%	0.00%	0.00%	0.00%	1.07%
Total	7.27%	5.04%	2.58%	16.45%	15.80%	2.99%	29.11%	7.49%	11.70%	1.56%	100.00%

4.4 Travel Trends

This section summaries some of the interesting results of the survey. Conditional probability techniques will be used to investigate the differences among travel characteristics conditioned on the E-Pass usage. Three-way tables were constructed to calculate the conditional probabilities. In the case presented in this report, two variables are related to travel characteristics (say, the row variable, X, column variable, Y) and the third is E-Pass usage (variable, Z).

4.4.1 Residency versus Trip Purpose by E-Pass Use

Table 4.1 shows the relationship between residency and the trip purpose for E-Pass and Non E-Pass users. For the residents of Central Florida, commute trips represent the highest percentage of the total trip purposes, followed by work related and personal business trip purpose. Some major differences appear between the E-Pass and Non E-Pass users, which can be summarized as follow. The percentages of E-Pass commuters heading towards work and returning back home are almost equal, while Non E-Pass users going to work represent almost the double percentage of those coming back home. This phenomenon can be explained by the fact that people are more concerned to be on time for work and the expressway system is considered more reliable than the other roadway. The percentage of personal business, recreation and shopping trips for E-Pass users is higher than for the Non E-Pass users. For the other categories (vacationing or visiting CF, from outside the area in CF for business and passing through CF), personal business trips for E-Pass users is much higher than the Non E-Pass users. This could be explained by the fact that heavy users coming very often to CF prefer to buy the E-Pass to avoid traffic congestion and for more convenience. Trips to/from the airport and to/from recreation areas are made mainly by tourists, which explains higher percentage among the Non E-Pass users.

Table 4.17 Residency versus Trip Purpose by E-Pass Use
(the percent between parentheses is cell size relative to the group total)

E-Pass Users

Trip purpose / Residency	Commute to work	Commute from work	To/from school	To/from airport	Personal business	Work related	Shopping	Recreation	Other	Total
Resident of CF	2459 (18.52%)	2598 (19.57%)	478 (3.6%)	1161 (8.75%)	1998 (15.05%)	2039 (15.36%)	678 (5.11%)	1336 (10.06%)	528 (3.98%)	13275 (100%)
Vacationing or visiting CF	2 (2.82%)	3 (4.23%)	1 (1.14%)	6 (8.45%)	16 (22.54%)	3 (4.23%)	5 (7.04%)	14 (19.72%)	21 (29.58%)	71 (100%)
From outside the area in CF for business	16 (11.19%)	7 (4.90%)	10 (6.99%)	11 (7.69%)	19 (13.29%)	64 (44.76%)	2 (1.4%)	6 (4.2%)	8 (5.59%)	143 (100%)
Passing through CF	1 (2.27%)	0 (0%)	0 (0%)	3 (6.82%)	11 (25%)	8 (18.18%)	0 (0%)	10 (22.73%)	11 (25%)	44 (100%)
Total (Mean)	2478 (18.31%)	2608 (19.27%)	489 (3.61%)	1181 (8.73%)	2044 (15.10%)	2114 (15.62%)	685 (5.06%)	1366 (10.09%)	568 (4.20%)	13533 (100%)

Note: Chi-square = 331.712; DF = 24; Contingency coef. = 0.155; P value = 0.001

Non E-Pass

Trip purpose / Residency	Commute to work	Commute from work	To/from school	To/from airport	Personal business	Work related	Shopping	Recreation	Other	Total
Resident of CF	2166 (31.93%)	1029 (15.17%)	326 (4.81%)	488 (7.19%)	743 (10.95%)	1044 (15.39%)	210 (3.1%)	439 (6.47%)	339 (5%)	6784 (100%)
Vacationing or visiting CF	2 (0.69%)	3 (1.04%)	2 (0.69%)	106 (36.81%)	25 (8.68%)	14 (4.86%)	5 (1.74%)	97 (33.68%)	34 (11.81%)	288 (100%)
From outside the area in CF for business	20 (6.15%)	6 (1.85%)	9 (2.77%)	75 (23.08%)	33 (10.15%)	169 (52%)	2 (0.62%)	4 (1.23%)	7 (2.15%)	325 (100%)
Passing through CF	0 (0%)	0 (0%)	6 (7.23%)	12 (14.46%)	12 (14.46%)	14 (16.87%)	1 (1.2%)	22 (26.51%)	16 (19.28%)	83 (100%)
Total (Mean)	2188 (29.25%)	1038 (13.88%)	343 (4.59%)	681 (9.10%)	813 (10.87%)	1241 (16.59%)	218 (2.91%)	562 (7.51%)	396 (5.29%)	7480 (100%)

Note: Chi-square = 1301.114; DF = 24; Contingency coef. = 0.358; P value = 0.001

4.4.2 Residency versus Vehicle Occupancy by E-Pass Use

Table 4.18 presents the residency versus vehicle occupancy by E-Pass use. Statistical analysis showed that the distribution for E-Pass and Non E-Pass users follow the same trend. Driver only (one-person) trips are predominant for CF residents and for travelers from outside the area in CF for business. For the same categories the number of people in the vehicle is inversely related to the number of trips made. Tourists tend to share the ride with at least one passenger. Almost the same trend could also be realized for travelers passing through the area. The results from Table 4.18 is specifically significant for non E-Pass (Chi-square = 452.492, D.F. = 12, Contingency coef.=0.239).

4.4.3 Residency versus Trip Frequency by E-Pass Use

Table 4.19 illustrates the frequency of trips for E-Pass and Non E-Pass users for all residency categories. The "Less than 2 trips per week" category for all purposes has the highest frequency for all residency categories. The higher the frequency of trips per week the less the number of trips made. However, for CF residents the slope is flat, while for the other categories the slope is much steeper until it reaches zero for passing through CF category at the level of more than 9 trips/week for E-Pass users and at more than 12 trips/week for Non E-Pass users.

Table 4.18 Residency versus Vehicle Occupancy by E-Pass Use
(the percent between parentheses is cell size relative to the group total)

E-Pass Users

Occupancy / Residency	1	2	3	4	5 or more	Total
Resident of CF	8523 (64.3%)	3230 (24.37%)	803 (6.06%)	515 (3.89%)	185 (1.4%)	13256 (100%)
Vacationing or visiting CF	21 (28.77%)	35 (47.95%)	7 (9.59%)	8 (10.96%)	2 (2.74%)	73 (%)
From outside the area in CF for business	99 (68.28%)	37 (25.52%)	6 (4.14%)	2 (1.38%)	1 (0.69%)	145 (100%)
Passing through CF	18 (40.91%)	20 (45.45%)	4 (9.09%)	1 (2.27%)	1 (2.27%)	44 (100%)
Total (Mean)	8661 (64.07%)	3322 (24.57%)	820 (6.07%)	526 (3.89%)	189 (1.40%)	13518 (100%)

Note: Chi-square = 59.476; DF = 12; Contingency coef. = 0.066; P value = 0.001

Non E-Pass Users

Occupancy / Residency	1	2	3	4	5 or more	Total
Resident of CF	4725 (69.74%)	1423 (21%)	352 (5.2%)	181 (2.67%)	94 (1.39%)	6775 (100%)
Vacationing or visiting CF	56 (19.24%)	136 (46.74%)	34 (11.68%)	38 (13.06%)	27 (9.28%)	291 (100%)
From outside the area in CF for business	227 (69.85%)	75 (23.08%)	11 (3.38%)	8 (2.46%)	4 (1.23%)	325 (100%)
Passing through CF	31 (36.9%)	35 (41.67%)	12 (14.29%)	3 (3.57%)	3 (3.57%)	84 (100%)
Total (Mean)	5039 (67.41%)	1669 (22.33%)	409 (5.47%)	230 (3.08%)	128 (1.71%)	7475 (100%)

Note: Chi-square = 452.492; DF = 12; Contingency coef. = 0.239; P value = 0.001

Table 4.19 Residency versus Trip Frequency by E-Pass Use
(the percent between parentheses is cell size relative to the group total)

E-Pass Users

Trip Frequency / Residency	≤ 2	3 - 5	6 - 8	9 - 11	12 - 14	≥ 15	Total
Resident of CF	3510	2801	2255	1991	1333	806	12696
	(27.65%)	(22.06%)	(17.76%)	(15.68%)	(10.5%)	(6.35%)	(100%)
Vacationing or visiting CF	40	12	4	1	3	3	63
	(63.49%)	(19.05%)	(6.35%)	(1.59%)	(4.76%)	(4.76%)	(100%)
From outside the area in CF for business	68	31	14	9	5	3	130
	(52.31%)	(23.85%)	(10.77%)	(6.92%)	(3.85%)	(2.31%)	(100%)
Passing through CF	32	6	1	0	0	0	39
	(82.05%)	(15.38%)	(2.56%)	(0%)	(0%)	(0%)	(100%)
Total	3650	2850	2274	2001	1341	812	12928
(Mean)	(28.23%)	(22.05%)	(17.59%)	(15.48%)	(10.37%)	(6.28%)	(100%)

Note: Chi-square = 148.313; DF = 15; Contingency coef. = 0.106; P value = 0.001

Non E-Pass Users

Trip Frequency / Residency	≤ 2	3 - 5	6 - 8	9 - 11	12 - 14	≥ 15	Total
Resident of CF	1416	1374	1054	1254	823	416	6337
	(22.34%)	(21.68%)	(16.63%)	(19.79%)	(12.99%)	(6.56%)	(100%)
Vacationing or visiting CF	165	63	26	7	4	4	269
	(61.34%)	(23.42%)	(9.67%)	(2.6%)	(1.49%)	(1.49%)	(100%)
From outside the area in CF for business	170	57	37	17	1	2	284
	(59.86%)	(20.07%)	(13.03%)	(5.99%)	(0.35%)	(0.7%)	(100%)
Passing through CF	57	10	4	1	0	0	72
	(79.17%)	(13.89%)	(5.56%)	(1.39%)	(0%)	(0%)	(100%)
Total	1808	1504	1121	1279	828	422	6962
(Mean)	(25.97%)	(21.60%)	(16.10%)	(18.37%)	(11.89%)	(6.06%)	(100%)

Note: Chi-square = 562.424; DF = 15; Contingency coef. = 0.273; P value = 0.001

4.4.4 Residency versus Household Income by E-Pass Use

Table 4.20 shows the relationship between the residency and the expressway system users income. For Central Florida residents, the percentage of E-pass users increases as the income goes up: only 1.83 percent of the C.F. E-pass users have an income level below $15,000, and 29.93 percent had an income over $80,000. For non E-pass holders, the percentage of users rise with the increase in income level until it reaches its peak at the range of income between $35,000 and $49,999 then it starts going down.

4.4.5 Trip Purpose versus Weekday by E-Pass Use

Tables 4.21 and 4.22 illustrate the distribution of trip purpose over the weekdays for E-Pass and non E-Pass users, respectively. Statistical tests have demonstrated that there is no difference between the trends for E-pass and non E-pass use. The data shows that there are major groups of categories that could be distinguished. Trips stay fairly constant and high during the weekdays but fall dramatically during the weekend. This first group comprises commute trips, trips to/from school and work related trips. Trips percentages remain relatively constant over the whole week. The second group contains trip to/from airport and personal business trips. The third group with low percentage during the weekdays and high percentage during the weekend includes shopping and recreational trips. The percentage of commute trips tends to be higher throughout the week for E-Pass users except Tuesdays and Thursdays.

Table 4.20 Residency versus Household Income by E-Pass Use
(the percent between parentheses is cell size relative to the group total)

E-Pass Users

Household Income / Residency	Under $15,000	$15,000 - 24,999	$25,000 - 34,999	$35,000 - $49,999	$50,000 - 64,999	$65,000 - 80,000	Over $80,000	Total
Resident of CF	223 (1.83%)	505 (4.14%)	959 (7.87%)	1797 (14.75%)	2457 (20.17%)	2596 (21.31%)	3647 (29.93%)	12184 (100%)
Vacationing or visiting CF	0 (0%)	3 (4.48%)	8 (11.94%)	14 (20.9%)	11 (16.42%)	14 (20.9%)	17 (25.37%)	67 (100%)
From outside the area in CF for business	7 (5.83%)	4 (3.08%)	5 (3.85%)	19 (14.62%)	30 (23.08%)	33 (25.38%)	32 (24.62%)	130 (100%)
Passing through CF	0 (0%)	1 (2.44%)	2 (4.88%)	6 (14.63%)	11 (26.83%)	6 (14.63%)	15 (36.59%)	41 (100%)
Total (Mean)	230 (1.85%)	513 (4.13%)	974 (7.84%)	1836 (14.78%)	2509 (20.2%)	2649 (21.33%)	3711 (29.87%)	12422 (100%)

Note: Chi-square = 23.783; DF = 18; Contingency coef. = 0.044; P value = 0.162

Non E-Pass Users

Household Income / Residency	Under $15,000	$15,000 - 24,999	$25,000 - 34,999	$35,000 - $49,999	$50,000 - 64,999	$65,000 - 80,000	Over $80,000	Total
Resident of CF	332 (5.28%)	752 (11.95%)	947 (15.05%)	1381 (21.95%)	1260 (20.02%)	830 (13.19%)	791 (12.57%)	6293 (100%)
Vacationing or visiting CF	11 (4.35%)	8 (3.16%)	32 (12.65%)	38 (15.02%)	48 (18.97%)	49 (19.37%)	67 (26.48%)	253 (100%)
From outside the area in CF for business	4 (1.37%)	10 (3.42%)	20 (6.85%)	44 (15.07%)	54 (18.49%)	61 (20.89%)	99 (33.9%)	292 (100%)
Passing through CF	4 (5.19%)	3 (3.9%)	8 (10.39%)	19 (24.68%)	14 (18.18%)	15 (19.48%)	14 (18.18%)	77 (100%)
Total (Mean)	351 (5.08%)	773 (11.18%)	1007 (14.56%)	1482 (21.43%)	1376 (19.90%)	955 (13.81%)	971 (14.04%)	6915 (100%)

Note: Chi-square = 212.887; DF = 18; Contingency coef. = 0.173; P value = 0.001

Table 4.21 Trip Purpose versus Weekday for E-Pass Users
(the percent between parentheses is cell size relative to the group total)

Day / Trip purpose	MON	TUE	WED	THURS	FRI	SAT	SUN	Total
Commute to work	258 (11.93%)	345 (15.96%)	630 (29.14%)	423 (19.57%)	366 (16.93%)	81 (3.75%)	59 (2.73%)	2162 (100%)
Commute from work	202 (8.14%)	406 (16.36%)	899 (36.22%)	372 (14.99%)	463 (18.65%)	80 (3.22%)	60 (2.42%)	2482 (100%)
To/from school	67 (15.69%)	99 (23.19%)	118 (27.63%)	72 (16.86%)	52 (12.18%)	10 (2.34%)	9 (2.11%)	427 (%)
To/from airport	173 (17.2%)	164 (16.3%)	159 (15.81%)	140 (13.92%)	149 (14.81%)	95 (9.44%)	126 (12.52%)	1006 (%)
Personal business	213 (12.46%)	267 (15.61%)	279 (16.32%)	232 (13.57%)	232 (13.57%)	268 (15.67%)	219 (12.81%)	1710 (%)
Work related	256 (15.07%)	346 (20.36%)	431 (25.37%)	280 (16.48%)	236 (13.89%)	76 (4.47%)	74 (4.36%)	571 (%)
Shopping	71 (12.43%)	73 (12.78%)	84 (14.71%)	59 (10.33%)	62 (10.86%)	135 (23.64%)	87 (15.24%)	1699 (%)
Recreation	94 (7.83%)	113 (9.41%)	145 (12.07%)	116 (9.66%)	187 (15.57%)	315 (26.23%)	231 (19.23%)	1201 (%)
Other	47 (12.2%)	59 (12.8%)	82 (17.79%)	74 (16.05%)	61 (13.23%)	56 (12.15%)	82 (17.79%)	461 (%)
Total (Mean)	1381 (11.78%)	1872 (15.97%)	2827 (24.12%)	1768 (15.09%)	1808 (15.43%)	1116 (9.52%)	947 (8.08%)	11719 (%)

Note: Chi-square = 1981.854; DF = 48; Contingency coef. = 0.380; P value = 0.001

Table 4.22 Trip Purpose versus Weekday for Non E-Pass Users
(the percent between parentheses is cell size relative to the group total)

Day / Trip purpose	MON	TUE	WED	THURS	FRI	SAT	SUN	Total
Commute to work	145 (7.34%)	505 (25.57%)	435 (22.03%)	586 (29.67%)	215 (10.89%)	61 (3.09%)	28 (1.42%)	1975 (100%)
Commute from work	80 (8.08%)	252 (25.45%)	198 (20%)	290 (29.29%)	110 (11.11%)	40 (4.04%)	20 (2.02%)	990 (100%)
To/from school	41 (12.89%)	90 (28.3%)	74 (23.27%)	78 (24.53%)	18 (5.66%)	8 (2.52%)	9 (2.83%)	318 (100%)
To/from airport	33 (5.12%)	159 (24.65%)	173 (26.82%)	93 (14.42%)	55 (8.53%)	66 (10.23%)	66 (10.23%)	645 (100%)
Personal business	41 (5.54%)	186 (25.14%)	135 (18.24%)	147 (19.86%)	56 (7.57%)	92 (12.43%)	83 (11.22%)	740 (100%)
Work related	89 (7.93%)	344 (30.63%)	248 (22.08%)	251 (22.35%)	103 (9.17%)	48 (4.27%)	40 (3.56%)	1123 (100%)
Shopping	4 (1.98%)	43 (21.29%)	21 (10.4%)	29 (14.36%)	17 (8.42%)	52 (25.74%)	36 (17.82%)	202 (100%)
Recreation	26 (4.86%)	69 (12.9%)	86 (16.07%)	55 (10.28%)	61 (11.4%)	131 (24.49%)	107 (20%)	535 (100%)
Other	18 (4.86%)	85 (22.97%)	72 (19.46%)	57 (15.41%)	37 (10%)	55 (14.86%)	46 (12.43%)	370 (100%)
Total (Mean)	477 (6.92%)	1733 (25.12%)	1442 (20.90%)	1586 (22.99%)	672 (9.74%)	553 (8.02%)	435 (6.31%)	6898 (100%)

Note: Chi-square = 1076.060; DF = 48; Contingency coef. = 0.367; P value = 0.001

4.4.6 Trip Purpose versus Trip Frequency by E-Pass Use

Tables 4.23 and 4.24 present number of trips per week related to the trip purpose for E-Pass and non E-Pass users, respectively. Almost 90 percent of the commuters make at least 3 trips a week on the expressway system. About 60 percent of the commute trips occur 5 or 6 times per week. Most trips "to/from school" and "work related" occur 3 to 4 times per week. Shopping and recreational trips are made mostly less than one time per week. This percentage is specifically high for recreation trips for non E-Pass users. The association between the trip type and its frequency per week is very strong for the E-Pass group. The frequency of trip making for E-Pass users is dependent on the trip purpose (Chi-square=8514.809, D.F.=40, Contingency coef.= 0.624).

4.4.7 Vehicle Occupancy versus Trip Purpose by E-Pass Use

Tables 4.25 and 4.26 show vehicle occupancy for different trip purposes for E-Pass and Non E-Pass users, respectively. From these tables, E-Pass and Non E-Pass users follow the same trend. Driver alone (one person) is the predominant mode for commute trips, trips to/from school, personal business and work related trips. Two people (driver and 1 passenger) is the predominant mode for shopping and recreation trips, followed by driving alone mode. After that, and for all trip purposes, as the occupancy increases, the number of observations decreases. The computation of the average occupancy shows that the average varies from one group to another. The lowest average occupancy is observed in commute from work to home trips for E-Pass users with 1.12 persons / vehicle (1.14 p/veh for Non E-Pass users). The highest average occupancy is 2.29 persons / vehicle and that is observed in recreation trips for Non E-Pass users (2.2 for E-Pass users). The association between vehicle occupancy and trip purpose very significant.

Table 4.23 Trip Purpose versus Trip Frequency for E-Pass Users
(the percent between parentheses is cell size relative to the group total)

Trip frequency / Trip purpose	≥ 7	5 - 6	3 - 4	2	1	< 1	Total
Commute to work	374 (15.15%)	1414 (57.29%)	363 (14.71%)	130 (5.27%)	72 (2.92%)	115 (4.66%)	2468 (100%)
Commute from work	273 (10.49%)	1636 (62.87%)	400 (15.37%)	130 (5%)	62 (2.38%)	101 (3.88%)	2602 (100%)
To/from school	52 (10.72%)	82 (16.91%)	147 (30.31%)	111 (22.89%)	49 (10.1%)	44 (9.07%)	485 (100%)
To/from airport	11 (0.94%)	10 (0.86%)	36 (3.08%)	83 (7.11%)	79 (6.76%)	949 (81.25%)	1168 (100%)
Personal business	46 (2.27%)	72 (3.56%)	182 (9%)	212 (10.48%)	245 (12.11%)	1266 (62.58%)	2023 (100%)
Work related	291 (14.09%)	219 (10.61%)	340 (16.46%)	197 (9.54%)	176 (8.52%)	842 (40.77%)	2065 (100%)
Shopping	3 (0.45%)	9 (1.34%)	37 (5.51%)	76 (11.31%)	90 (13.39%)	457 (68.01%)	672 (100%)
Recreation	3 (0.22%)	14 (1.04%)	63 (4.68%)	107 (7.96%)	173 (12.86%)	985 (73.23%)	1345 (100%)
Other	11 (1.97%)	22 (3.94%)	43 (7.71%)	48 (8.6%)	80 (14.34%)	354 (63.44%)	558 (100%)
Total (Mean)	1064 (7.95%)	3478 (25.98%)	1611 (12.03%)	1094 (8.17%)	1026 (7.66%)	5113 (38.20%)	13386 (100%)

Note: Chi-square = 8514.809; DF = 40; Contingency coef = 0.624; P value = 0.001

Table 4.24 Trip Purpose versus Trip Frequency for Non E-Pass Users
(the percent between parentheses is cell size relative to the group total)

Trip frequency / Trip purpose	≥ 7	5 - 6	3 - 4	2	1	< 1	Total
Commute to work	439 (20.15%)	1361 (62.46%)	220 (10.1%)	63 (2.89%)	31 (1.42%)	65 (2.98%)	2179 (100%)
Commute from work	159 (15.38%)	615 (59.48%)	150 (14.51%)	51 (4.93%)	14 (1.35%)	45 (4.35%)	1034 (100%)
To/from school	30 (8.85%)	77 (22.71%)	98 (28.91%)	62 (18.29%)	33 (9.73%)	39 (11.5%)	339 (100%)
To/from airport	15 (2.22%)	8 (1.18%)	14 (2.07%)	16 (2.37%)	14 (2.07%)	609 (90.09%)	676 (100%)
Personal business	41 (5.08%)	44 (5.45%)	67 (8.3%)	67 (8.3%)	72 (8.92%)	516 (63.94%)	807 (100%)
Work related	172 (14.02%)	124 (10.11%)	155 (12.63%)	106 (8.64%)	91 (7.42%)	579 (47.19%)	1227 (100%)
Shopping	5 (2.37%)	5 (2.37%)	13 (6.16%)	16 (7.58%)	24 (11.37%)	148 (70.14%)	211 (100%)
Recreation	5 (0.89%)	9 (1.61%)	22 (3.94%)	29 (5.19%)	36 (6.44%)	458 (81.93%)	559 (100%)
Other	17 (4.39%)	12 (3.1%)	28 (7.24%)	28 (7.24%)	38 (9.82%)	264 (68.22%)	387 (100%)
Total (Mean)	883 (11.9%)	2255 (30.39%)	767 (10.34%)	438 (5.90%)	353 (4.76%)	2723 (36.70%)	7419 (100%)

Note: Chi-square = 4979.499; DF = 40; Contingency coef = 0.380; P value = 0.001

Table 4.25 Vehicle Occupancy versus Trip Purpose for E-Pass Users
(the percent between parentheses is cell size relative to the group total)

Vehicle occupancy / Trip purpose	1	2	3	4	5 or more	Total
Commute to work	2166	250	27	17	8	2468
	(87.76%)	(10.13%)	(1.09%)	(0.69%)	(0.32%)	(100%)
Commute from work	2364	202	25	9	7	2607
	(90.68%)	(7.75%)	(0.96%)	(0.35%)	(0.27%)	(100%)
To/from school	364	70	28	17	8	487
	(74.74%)	(14.37%)	(5.75%)	(3.49%)	(1.64%)	(100%)
To/from airport	403	428	185	120	39	1175
	(34.3%)	(36.43%)	(15.74%)	(10.21%)	(3.32%)	(100%)
Personal business	925	799	191	93	31	2039
	(45.37%)	(39.19%)	(9.37%)	(4.56%)	(1.52%)	(100%)
Work related	1636	353	69	25	17	2100
	(77.9%)	(16.81%)	(3.29%)	(1.19%)	(0.81%)	(100%)
Shopping	232	326	66	43	13	680
	(34.12%)	(47.94%)	(9.71%)	(6.32%)	(1.91%)	(100%)
Recreation	354	640	160	152	54	1360
	(26.03%)	(47.06%)	(11.76%)	(11.18%)	(3.97%)	(100%)
Other	207	234	64	47	11	563
	(36.77%)	(41.56%)	(11.37%)	(8.35%)	(1.95%)	(100%)
Total (Mean)	8651	3302	815	523	188	13479
	(64.18%)	(24.50%)	(6.05%)	(3.88%)	(1.39%)	(100%)

Note: Chi-square = 3901.890; DF = 32; Contingency coef = 0.474; P value = 0.001

Table 4.26 Vehicle Occupancy versus Trip Purpose for Non E-Pass Users
(the percent between parentheses is cell size relative to the group total)

Vehicle occupancy / Trip purpose	1	2	3	4	5 or more	Total
Commute to work	1909	220	34	13	4	2180
	(87.57%)	(10.09%)	(1.56%)	(0.6%)	(0.18%)	(100%)
Commute from work	919	96	13	4	3	1035
	(88.79%)	(9.28%)	(1.26%)	(0.39%)	(0.29%)	(100%)
To/from school	278	39	14	3	5	339
	(82.01%)	(11.5%)	(4.13%)	(0.88%)	(1.47%)	(100%)
To/from airport	196	257	116	67	42	678
	(28.91%)	(37.91%)	(17.11%)	(9.88%)	(6.19%)	(100%)
Personal business	402	302	73	27	8	812
	(49.51%)	(37.19%)	(8.99%)	(3.33%)	(0.99%)	(100%)
Work related	953	204	38	20	20	1235
	(77.17%)	(16.52%)	(3.08%)	(1.62%)	(1.62%)	(100%)
Shopping	79	97	24	14	2	216
	(36.57%)	(44.91%)	(11.11%)	(6.48%)	(0.93%)	(100%)
Recreation	134	268	59	63	37	561
	(23.89%)	(47.77%)	(10.52%)	(11.23%)	(6.6%)	(100%)
Other	160	169	37	19	7	392
	(40.82%)	(43.11%)	(9.44%)	(4.85%)	(1.79%)	(100%)
Total	5030	1652	408	230	128	7448
(Mean)	(67.53%)	(22.18%)	(5.48%)	(3.09%)	(1.72%)	(100%)

Note: Chi-square = 2216.481; DF = 32; Contingency coef = 0.479; P value = 0.001

4.4.8 Vehicle Occupancy versus Weekday by E-Pass Use

Tables 4.27 and 4.28 present the association between the vehicle occupancy and the weekday for E-Pass and non E-Pass users, respectively. There is no significant difference observed between the E-Pass and Non E-Pass users. During the weekdays the majority of travelers drives alone (more than 67% for both users). This trend shift on weekends. About 40 percent of E-Pass and 37 percent of non E-Pass users travel with one passenger. In general, vehicle occupancies are higher on weekends than weekdays. This conclusion supports the previous result (vehicle occupancy versus trip purpose), since commute trips peak on the weekdays (low occupancies) and shopping and recreation trips rise on the weekend (high occupancy). The average occupancy for both users on the weekdays is 1.43 persons / vehicle. On the weekend, the average occupancy for E-Pass users is 2 persons / vehicle for E-Pass users and 1.93 persons / vehicle for Non E-Pass users.

Table 4.27 Vehicle Occupancy versus Weekday for E-Pass Users
(the percent between parentheses is cell size relative to the group total)

Vehicle occupancy / Day	1	2	3	4	5 or more	Total
MON	925 (67.03%)	296 (21.45%)	95 (6.88%)	47 (3.41%)	17 (1.23%)	1380 (100%)
TUE	1345 (71.96%)	373 (19.96%)	92 (4.92%)	41 (2.19%)	18 (0.96%)	1869 (100%)
WED	2155 (76.18%)	494 (17.46%)	97 (3.43%)	69 (2.44%)	14 (0.49%)	2829 (100%)
THURS	1228 (69.81%)	365 (20.75%)	108 (6.14%)	39 (2.22%)	19 (1.08%)	1759 (100%)
FRI	1214 (67.11%)	400 (22.11%)	104 (5.75%)	57 (3.15%)	34 (1.88%)	1809 (100%)
SAT	431 (38.52%)	453 (40.48%)	111 (9.92%)	88 (7.86%)	36 (3.22%)	1119 (100%)
SUN	347 (36.53%)	372 (39.16%)	109 (11.47%)	96 (10.11%)	26 (2.74%)	950 (100%)
Total (Mean)	7645 (65.26%)	2735 (23.50%)	716 (6.11%)	437 (3.73%)	164 (1.40%)	11715 (100%)

Note: Chi-square = 979.307; DF = 24; Contingency coef = 0.278; P value = 0.001

Table 4.28 Vehicle Occupancy versus Weekday for Non E-Pass Users
(the percent between parentheses is cell size relative to the group total)

Vehicle occupancy / Days	1	2	3	4	5 or more	Total
MON	339	95	23	11	8	476
	(71.22%)	(19.96%)	(4.83%)	(2.31%)	(1.68%)	(100%)
TUE	1236	375	84	21	18	1734
	(71.28%)	(21.63%)	(4.84%)	(1.21%)	(1.04%)	(100%)
WED	1003	283	75	49	29	1439
	(69.7%)	(19.67%)	(5.21%)	(3.41%)	(2.02%)	(100%)
THURS	1215	262	57	30	15	1579
	(76.95%)	(16.59%)	(3.61%)	(1.9%)	(0.95%)	(100%)
FRI	457	139	35	27	14	672
	(68.01%)	(20.68%)	(5.21%)	(4.02%)	(2.08%)	(100%)
SAT	228	210	62	43	16	559
	(40.79%)	(37.57%)	(11.09%)	(7.69%)	(2.86%)	(100%)
SUN	193	152	44	26	22	437
	(44.16%)	(34.78%)	(10.07%)	(5.95%)	(5.03%)	(100%)
Total (Mean)	4671	1516	380	207	122	6896
	(67.73%)	(21.98%)	(5.51%)	(3%)	(1.77%)	(100%)

Note: Chi-square = 425.831; DF = 24; Contingency coef = 0.241; P value = 0.001

CHAPTER 5

SUMMARY AND CONCLUSIONS

The Orlando-Orange County Expressway System -- OOCEA encompasses three major highways: the East-West Expressway (SR 408), Beeline Expressway (SR 528) from I-4 to SR 520, and the Central Florida GreeneWay (SR 417) from I-4 to SR 520. The total length of the system is 79.03 miles divided as SR 408 : 21.977 miles, SR 417 : 22.647 miles, and SR 528 : 34.406 miles. The system has 10 mainline plazas distributed as 4 mainline plazas on SR 408, 4 mainline plazas on SR 417, and 2 mainline plazas on SR 528. Users pay tolls at ten mainline toll plazas as well as some of the on/off ramps.

The Orlando-Orange County Expressway Authority is interested in obtaining detailed data related to the users of the expressway system. This data includes the users' trip origins and destinations, travel patterns, trip purposes, frequency of trip making using the system, and also the characteristics of the trip makers. The main objectives of the survey are:

- Identify the trip origins and destinations of the expressway system users
- Understand the users' travel patterns, trip purposes, and trip making frequency
- Identify the major trip generators for the expressway system
- Develop expansion factors that will be used in the 2025 Master Plan

The basic survey form consisted of a letter-sized paper with the questionnaire on one side and a return address, cover letter, and title on the other side. The questionnaire has 13 questions that cover trip purpose, time, frequency, vehicle occupancy, trip origin, trip

destination, off/on ramps, and some of the trip-maker characteristics. These trip-maker characteristics are occupation, age, and income. A map of the Expressway system was attached to each questionnaire to help the respondent in identifying his/her on/off-ramps. The survey was also published on the World Wide Web at *www.catss.ucf.edu/survey*.

The survey distribution began November 2nd through November 21st. The basic idea was to distribute surveys on each mainline toll plaza once on a weekday (typical weekday: Tuesday, Wednesday or Thursday) and again on the weekend to get a complete representation of the driver population. The survey distribution was planned over three major periods on the weekdays: morning peak period (7:00 AM – 9:00 AM), off-peak period (12:00 PM – 3:00 PM), and evening peak period (4:00 PM – 7:00 PM). For the weekdays the survey was carried out over one period from 12:00 PM to 5:00 PM.

A total of 167,149 surveys were distributed at the ten mainline toll plazas and the eastbound Conway Ramp Plaza (to account for vehicles coming from I-4 and exiting at Conway), and mailed to E-Pass users. For non E-Pass customers, 100,960 survey forms were distributed. For E-Pass users, 66,189 surveys were mailed to a random sample via bulk mail with a cover letter. This number represents approximately a third of the E-Pass users. The random sample was obtained from the Expressway Authority database of the E-Pass users via a random sampling process.

A total of 21,137 responses were received, accounting for 12.7% response rate. About 2.5 percent (504 responses) were via the internet. The responses could be divided to 7,529

representing 7.5 percent response rate for non E-Pass users, and 13,608 representing 20.6 percent response rate for E-Pass users. The analysis part of this report covers a detailed analysis for trip characteristics, trip-maker characteristics, origin-destination patterns, and travel trends. In most cases analysis will be separated based on the E-Pass usage because of many differences between the two groups. Trip characteristics cover some of factors that are related to the trip such as trip purpose, trip length, and trip characteristics. Trip-maker characteristics analysis investigates some variables related to the trip-maker such as residency, age, income, and occupation. Origin-destination patterns investigate the major production and attraction zones that affect the Expressway System. Travel trends tend to show significant relationship among the variables.

The predominant trip purpose is the commute trips accounting for 40.67 percent. Commuter trips can be further divided into commute to work from home (24.72%) and commute to home from work (15.95%). The trip distribution by time of day for a weekday shows that morning peak hour is higher and narrower than the afternoon peak hour. During the morning peak hour (7:00 AM to 8:00 AM), commute to work from home trips represent 62 percent followed by personal business/work related trips (23 %). During the afternoon peak period (4:00 PM to 6:00 PM), commuters to home from work represent 60 percent and personal business trips represent 15 percent of the total volume in this period.

The trip frequency distribution shows that the overall average of trip frequency equals 6.8 trips per week. The overall average of trip length on the Expressway system equals 13.62 miles. The average number of mainline toll plazas crossed during a trip was founded to be

two. Trip length also varies by E-Pass usage; the average trip length for the E-pass users is 13.54 miles and 13.92 miles for non E-Pass users. However, the difference in trip length distribution between the two groups is barely significant.

Vehicle occupancy distribution shows that Drive-alone mode (one person per vehicle) was the most common (65.68%) followed by 2-people per vehicle (23.08%). The overall average occupancy was 1.52 person per vehicle. This average varies over the day with 1.35 for the peak period and 1.62 for the off-peak period. It should be noted that on the national level, car occupancy ranges between 1.1 and 1.2. Car occupancy varies also between E-Pass and Non E-Pass users. For the E-Pass users the average occupancy was 1.54 while for the Non E-Pass users the average occupancy was 1.49. Although E-Pass users' average occupancy is slightly higher, the result is seen as barely significant with a very low contingency coefficient.

Residency distribution of the Expressway users shows that the Central Florida residents are the predominant users (93.44%) followed by the users from outside the area in Central Florida for business (3.03%). Tourists represent 2.55 percent of the sample. Occupation distribution indicates that professionals using the Expressway system represent 52.53 percent of the total trips made on the Expressway. Self employed users come in the second place by 11.44 percent. The trip distribution of users by age is shows that the largest number of users is in the middle-age group (38.86%) followed by upper middle group (22.65%). The lowest is the old age group (6.95%).

The trip distribution by income indicates that the majority (18.67%) has income greater than $80,000, followed by income of $50,000 – 64,000. The E-Pass group has higher percentage in the high-income category (more than $ 65,000 a year) than the non E-Pass group. The analysis indicated that there is a significant difference in the income distribution between the E-Pass users and the non E-Pass users.

The origin/destination analysis was based on eight major areas: West Orlando, I-4, Orlando Downtown, East Orange County, Attractions, South Orange, Orlando International Airport, Oviedo / Sanford, Coast, and other. These zones were represented by some of the on and off-ramps along the Expressway System. For example, Orlando Downtown was represented by some ramps on the East West Expressway (SR 408) as follow: US 441/17-92 Orange Blossom Tr., Orange Ave/Downtown, Rosalind Ave/Anderson Rd., Mills Ave./Downtown, Bumby Ave, and Crystal Lake Dr.

The O-D table of the origin/destination of the non E-Pass users shows that East Orange and West Orlando areas are the major trip generators accounting for 26.30 percent and 22.03 percent, of the total trip produced by the non E-Pass users, respectively. The origin/destination for E-Pass users indicates that East Orange County, West Orlando, and Oviedo / Sanford are the most trip generators accounting for 23.66 percent, 15.69 percent, and 14.12 percent of the total E-Pass users' trips, respectively. Although the same trends as the non E-Pass O/D can be realized, the O/D for E-Pass users tend to be more distributed and not concentrated in the major generators as the non E-Pass. The origin/destination for tourist trips shows that the attractions are the most generating areas to the expressway

system. Attractions generate 33.44 percent of the tourist trips. Half of these trips end at the Orlando international airport.

For the Central Florida Residents, the percentages of E-Pass commuters heading towards work and returning back home are almost equal, while Non E-Pass users going to work represent almost the double percentage of those coming back home using the expressway system. This phenomenon can be explained by the fact that people are more concerned to be on time for work and the expressway system is considered more reliable than the other roadway. The percentage of personal business, recreation and shopping trips for E-Pass users is higher than for the Non E-Pass users. Driver only (one-person) trips are predominant for the Central Florida residents and for travelers from outside the area in CF for business. For the same categories the number of people in the vehicle is inversely related to the number of trips made. Tourists tend to share the ride with at least one passenger.

REFERENCES

1. System's Traffic Data and Statistics Manual, Orlando-Orange County Expressway Authority, April 1999.
2. Survey of Expressway Users and Non-Users, prepared by Prof. Evan M. Berman at University of Central Florida, May 1999.
3. Origin and Destination Survey Results, prepared by Vollmer Associates for the Orlando-Orange County Expressway Authority, February 1997.
4. User Travel Survey and Potential Toll Modifications, prepared by Vollmer Associates for the Orlando-Orange County Expressway Authority, October 1992.

APPENDIX A
SURVEY PROFILE

EPASS USERS

1. Are you (check one):

• A Resident of Central Florida	13323	97.91%
• Vacationing or visiting here	74	0.54%
• From outside the area, here on business	145	1.07%
• Passing through the area	44	0.32%
• No answer	22	0.16%

2. What was the purpose of your LAST trip on the expressway system (check one)?

• Commute to work from home	2480	18.22%
• Commute from work to home	2611	19.19%
• Travel to/from school	489	3.59%
• Travel to/from airport	1182	8.69%
• Personal business	2046	15.04%
• Shopping	686	5.04%
• Work related	2116	15.55%
• Recreation	1367	10.05%
• Other:	569	4.18%
• No answer	62	0.46%

3. When did you begin this trip?

Time :_____ **Date :** _____

Time

▪ 12:01 AM – 1:00 AM	33	0.24%
▪ 1:01 AM – 2:00 AM	18	0.13%
▪ 2:01 AM – 3:00 AM	25	0.18%
▪ 3:01 AM – 4:00 AM	35	0.26%
▪ 4:01 AM – 5:00 AM	144	1.06%
▪ 5:01 AM – 6:00 AM	380	2.79%
▪ 6:01 AM – 7:00 AM	906	6.66%
▪ 7:01 AM – 8:00 AM	1422	10.45%
▪ 8:01 AM – 9:00 AM	1005	7.39%
▪ 9:01 AM – 10:00 AM	840	6.17%
▪ 10:01 AM – 11:00 AM	612	4.50%
▪ 11:01 AM – 12:00 AM	269	1.98%
▪ 12:01 PM – 1:00 PM	249	1.83%
▪ 1:01 PM – 2:00 PM	494	3.63%
▪ 2:01 PM – 3:00 PM	615	4.52%
▪ 3:01 PM – 4:00 PM	810	5.95%
▪ 4:01 PM – 5:00 PM	1167	8.58%
▪ 5:01 PM – 6:00 PM	1285	9.44%
▪ 6:01 PM – 7:00 PM	619	4.55%
▪ 7:01 PM – 8:00 PM	282	2.07%
▪ 8:01 PM – 9:00 PM	221	1.62%

▪ 9:01 PM – 10:00 PM	119	0.87%
▪ 10:01 PM – 11:00 PM	103	0.76%
▪ 11:01 PM – 12:00 AM	48	0.35%
▪ No answer	1907	14.01%

Date

▪ Monday	1384	10.17%
▪ Tuesday	1877	13.79%
▪ Wednesday	2840	20.87%
▪ Thursday	1772	13.02%
▪ Friday	1814	13.33%
▪ Saturday	1121	8.24%
▪ Sunday	956	7.03%
▪ No answer	1844	13.55%

4. How often do you make this trip for this purpose? (check one)

• 7 or more times a week	1064	7.82%
• 5-6 times a week	3483	25.60%
• 3-4 times a week	1613	11.85%
• 2 times a week	1099	8.08%
• once a week	1030	7.57%
• 2-3 times a month	1963	14.43%
• once a month	828	6.08%
• more than 6 times a year	934	6.86%
• less than 6 times a year	1101	8.09%
• Other	322	2.37%
• No answer	171	1.26%

5. How many people were in the vehicle, including the driver (check one)?

• 1	8669	63.71%
• 2	3326	24.44%
• 3	821	6.03%
• 4	526	3.87%
• 5 or more	189	1.39%
• No answer	77	0.57%

6. What is the nearest major intersection OR the address where you began your trip?

▪ No answer	691	5.08%

What is the nearest major intersection OR the address where your trip ended (No round trip please. End point should be different than the beginning point)?

▪ No answer	888	6.52%

For that trip, where did you ENTER and EXIT the Expressway System? (check only ONE Entrance and ONE Exit that apply to your last trip; a map is provided for your assistance)

- No answer for on-ramp : 779 (5.72%)
- No answer for off-ramp : 848 (6.23%)

9. For all trip purposes, how many times did you use the expressway system last week? (If you made a round trip, please count each direction as one trip)

• <= 2	3653	26.84%
• 3 – 5	2855	20.98%
• 6 – 8	2275	16.72%
• 9 – 11	2004	14.73%
• 12 – 14	1342	9.86%
• >= 15	795	5.84%
• No answer	684	5.03%

10. What is your occupation?

• Professional	7735	56.84%
• Teaching	486	3.57%
• Student	428	3.15%
• Retail	327	2.40%
• Clerical	558	4.10%
• Retired	1243	9.13%
• Self Employed	1449	10.65%
• Other	1180	8.67%
• No answer	202	1.48%

11. What is your age?

• 16-25	698	5.13%
• 26-35	2680	19.69%
• 36-50	5782	42.49%
• 51-65	3385	24.88%
• Over 65	932	6.85%
• No answer	131	0.96%

12. What is your approximate household income?

• Under $15,000	231	1.70%
• $15,000-24,999	515	3.78%
• $25,000-34,999	974	7.16%
• $35,000-49,999	1837	13.50%
• $50,000-64,999	2511	18.45%
• $65,000-80,000	2653	19.50%
• Over $80,000	3712	27.28%
• No answer	1175	8.63%

NON EPASS USERS

1. Are you (check one):

• A Resident of Central Florida	6810	90.45%
• Vacationing or visiting here	293	3.89%
• From outside the area, here on business	327	4.34%
• Passing through the area	84	1.12%
• No answer	15	0.20%

2. What was the purpose of your LAST trip on the expressway system (check one)?

• Commute to work from home	2189	29.07%
• Commute from work to home	1038	13.79%
• Travel to/from school	343	4.56%
• Travel to/from airport	684	9.08%
• Personal business	814	10.81%
• Shopping	218	2.90%
• Work related	1242	16.50%
• Recreation	562	7.46%
• Other	396	5.26%
• No answer	43	0.57%

3. When did you begin this trip?

Time :_____ **Date :** _____

Time

• 12:01 AM – 1:00 AM	17	0.22%
• 1:01 AM – 2:00 AM	9	0.12%
• 2:01 AM – 3:00 AM	6	0.08%
• 3:01 AM – 4:00 AM	18	0.24%
• 4:01 AM – 5:00 AM	52	0.69%
• 5:01 AM – 6:00 AM	177	2.35%
• 6:01 AM – 7:00 AM	768	10.20%
• 7:01 AM – 8:00 AM	1288	17.11%
• 8:01 AM – 9:00 AM	661	8.78%
• 9:01 AM – 10:00 AM	396	5.26%
• 10:01 AM – 11:00 AM	296	3.93%
• 11:01 AM – 12:00 AM	161	2.14%
• 12:01 PM – 1:00 PM	179	2.38%
• 1:01 PM – 2:00 PM	405	5.38%
• 2:01 PM – 3:00 PM	352	4.68%
• 3:01 PM – 4:00 PM	434	5.76%
• 4:01 PM – 5:00 PM	589	7.82%
• 5:01 PM – 6:00 PM	421	5.59%
• 6:01 PM – 7:00 PM	160	2.13%
• 7:01 PM – 8:00 PM	90	1.20%

• 8:01 PM – 9:00 PM	31	0.41%
• 9:01 PM – 10:00 PM	41	0.54%
• 10:01 PM – 11:00 PM	37	0.49%
• 11:01 PM – 12:00 AM	25	0.33%
• No answer	916	12.17%

Date

▪ Monday	477	6.34%
▪ Tuesday	1739	23.10%
▪ Wednesday	1449	19.25%
▪ Thursday	1588	21.09%
▪ Friday	676	8.98%
▪ Saturday	561	7.45%
▪ Sunday	438	5.82%
▪ No answer	601	7.98%

4. How often do you make this trip for this purpose? (check one)

• 7 or more times a week	885	11.75%
• 5-6 times a week	2256	29.96%
• 3-4 times a week	768	10.20%
• 2 times a week	438	5.82%
• once a week	354	4.70%
• 2-3 times a month	723	9.60%
• once a month	356	4.73%
• more than 6 times a year	488	6.48%
• less than 6 times a year	871	11.57%
• Other	313	4.16%
• No answer	77	1.02%

5. How many people were in the vehicle, including the driver (check one)?

• 1	5045	67.01%
• 2	1669	22.17%
• 3	412	5.47%
• 4	231	3.07%
• 5 or more	128	1.70%
• No answer	44	0.58%

6. What is the nearest major intersection <u>OR</u> the address where you began your trip?

▪ No answer	596	7.92%

7. What is the nearest major intersection <u>OR</u> the address where your trip ended (No round trip please. End point should be different than the beginning point)?

▪ No answer	743	9.87%

For that trip, where did you ENTER and EXIT the Expressway System? (check only ONE Entrance and ONE Exit that apply to your last trip; a map is provided for your assistance)

- No answer for on-ramp : 720 (9.56%)
- No answer for off-ramp : 766 (10.17%)

9. For all trip purposes, how many times did you use the expressway system last week? (If you made a round trip, please count each direction as one trip)

• <= 2	1808	24.01%
• 3 – 5	1505	19.99%
• 6 – 8	1124	14.93%
• 9 – 11	1280	17.00%
• 12 – 14	829	11.01%
• >= 15	421	5.59%
• No answer	562	7.46%

10. What is your occupation?

• Professional	3738	49.65%
• Teaching	211	2.80%
• Student	390	5.18%
• Retail	282	3.75%
• Clerical	522	6.93%
• Retired	671	8.91%
• Self Employed	575	7.64%
• Other	1001	13.30%
• No answer	139	1.85%

11. What is your age?

• 16-25	857	11.38%
• 26-35	1686	22.39 %
• 36-50	2744	36.45%
• 51-65	1593	21.16 %
• Over 65	528	7.01%
• No answer	121	1.61%

12. What is your approximate household income?

• Under $15,000	351	4.66%
• $15,000-24,999	776	10.31%
• $25,000-34,999	1009	13.40%
• $35,000-49,999	1483	19.70%
• $50,000-64,999	1377	18.29%
• $65,000-80,000	955	12.68%
• Over $80,000	972	12.91%
• No answer	606	8.05%

APPENDIX B

O-D TABLES OF THE EXPRESSWAY SYSTEM

Table B.1 Trip Production and Attraction of the Expressway System
(the percent between parentheses is cell size relative to the sample size of each E-Pass group)

Expressway	Ramp Name	E-Pass Users		Non E-Pass Users	
		Enter	Exit	Enter	Exit
SR 408 (East West Expressway)	Florida's Turnpike	626 4.9%	479 3.8%	487 7.2%	255 3.8%
	SR 50 West Colonial Dr./Clarke Rd.	362 2.8%	275 2.2%	313 4.6%	172 2.5%
	Good Homes Rd.	163 1.3%	135 1.1%	102 1.5%	61 0.9%
	Hiawassee Rd.	302 2.4%	293 2.3%	166 2.5%	109 1.6%
	SR 435 Kirkman Rd.	214 1.7%	211 1.7%	175 2.6%	179 2.6%
	Pine Hills Rd	82 0.6%	67 0.5%	82 1.2%	42 0.6%
	Mercy Dr.	27 0.2%	14 0.1%	18 0.3%	12 0.2%
	SR 423 John Young Pkwy	216 1.7%	206 1.6%	134 2.0%	137 2.0%
	Tampa Ave.	16 0.1%	20 0.2%	8 0.1%	21 0.3%
	US 441/17-92 Orange Blossom Tr.	178 1.4%	221 1.7%	75 1.1%	155 2.3%
	I-4	1101 8.6%	1011 7.9%	560 8.3%	624 9.2%
	Orange Ave/Downtown	311 2.4%	281 2.2%	124 1.8%	215 3.2%
	Rosalind Ave/Anderson Rd.	180 1.4%	438 3.4%	84 1.2%	228 3.4%
	Mills Ave./Downtown	240 1.9%	273 2.1%	79 1.2%	118 1.7%
	Bumby Ave	165 1.3%	193 1.5%	64 0.9%	97 1.4%
	Crystal Lake Dr	121 0.9%	192 1.5%	71 1.0%	89 1.3%
	SR 15 Conway Rd.	190 1.5%	152 1.2%	58 0.9%	89 1.3%
	SR 436 Semoran Blvd.	327 2.6%	427 3.3%	236 3.5%	235 3.5%
	SR 551 Goldenrod Rd.	364 2.9%	349 2.7%	300 4.4%	204 3.0%
	Valencia College Lane	78 0.6%	120 0.9%	56 0.8%	50 0.7%
	Dean Rd.	238 1.9%	149 1.2%	155 2.3%	76 1.1%
	Rouse Rd.	121 0.9%	83 0.7%	42 0.6%	51 0.8%
	Alafaya Tr.	395 3.1%	361 2.8%	232 3.4%	198 2.9%
	SR 50 East Colonial Dr.	412 3.2%	351 2.8%	304 4.5%	219 3.2%
	Challenger Parkway	124 1.0%	208 1.6%	56 0.8%	143 2.1%

Expressway	Ramp Name	E-Pass Users		Non E-Pass Users	
		Enter	Exit	Enter	Exit
SR 417 (Central Florida GreeneWay	I-4	256 2.0%	333 2.6%	212 3.1%	163 2.4%
	Celebration Ave.	111 0.9%	115 0.9%	41 0.6%	42 0.6%
	Osceola Pkwy.	88 0.7%	88 0.7%	27 0.4%	33 0.5%
	SR 536 International Dr.	127 1.0%	217 1.7%	109 1.6%	171 2.5%
	John Young Pkwy.	186 1.5%	174 1.4%	125 1.8%	67 1.0%
	US 441/US 17-92 Orange Blossom Tr.	119 0.9%	132 1.0%	89 1.3%	65 1.0%
	Landstar Blvd.	106 0.8%	65 0.5%	86 1.3%	46 0.7%
	Boggy Creek Rd.	92 0.7%	179 1.4%	69 1.0%	151 2.2%
	Narcoossee Rd.	137 1.1%	143 1.1%	68 1.0%	71 1.0%
	Curry Ford Rd.	228 1.8%	230 1.8%	117 1.7%	84 1.2%
	Valencia College Lane	37 0.3%	36 0.3%	14 0.2%	20 0.3%
	SR 50 East Colonial Dr.	105 0.8%	148 1.2%	70 1.0%	61 0.9%
	University Blvd.	571 4.5%	563 4.4%	194 2.9%	312 4.6%
	SR 426 Aloma Ave.	535 4.2%	405 3.2%	151 2.2%	95 1.4%
	Red Bug Lake Rd.	635 5.0%	518 4.1%	178 2.6%	159 2.4%
	SR 434	310 2.4%	217 1.7%	82 1.2%	59 0.9%
	CR 427 Lake Mary Blvd.	383 3.0%	289 2.3%	79 1.2%	95 1.4%
	US 17-92 Airport Blvd.	324 2.5%	342 2.7%	117 1.7%	157 2.3%
SR 528 (Bee Line)	I-4	213 1.7%	217 1.7%	108 1.6%	109 1.6%
	International Drive	69 0.5%	126 1.0%	37 0.5%	79 1.2%
	Orangewood Blvd.	20 0.2%	27 0.2%	7 0.1%	8 0.1%
	SR 423 John Young Pkwy.	82 0.6%	73 0.6%	33 0.5%	33 0.5%
	Florida Turnpike/US 441	78 0.6%	115 0.9%	67 1.0%	56 0.8%
	Boggy Creek Rd./McCoy Rd.	114 0.9%	127 1.0%	61 0.9%	94 1.4%
	Tradeport Dr.	155 1.2%	157 1.2%	54 0.8%	64 0.9%
	SR 436 Semoran Blvd.	310 2.4%	652 5.1%	136 2.0%	302 4.5%
	Narcoossee Rd.	93 0.7%	113 0.9%	56 0.8%	66 1.0%
	ICP Blvd.	16 0.1%	28 0.2%	5 0.1%	23 0.3%
	Dallas Blvd.	35 0.3%	22 0.2%	16 0.2%	15 0.2%
	SR 520	338 2.6%	184 1.4%	205 3.0%	124 1.8%
	I-95	334 2.6%	216 1.7%	169 2.5%	160 2.4%

Table B.2 The Expressway System Ramp Code

Expressway	Ramp name	Code
SR 408 (East West Expressway)	Florida's Turnpike	1
	SR 50 West Colonial Dr./Clarke Rd.	2
	Good Homes Rd.	3
	Hiawassee Rd.	4
	SR 435 Kirkman Rd.	5
	Pine Hills Rd	6
	Mercy Dr.	7
	SR 423 John Young Pkwy	8
	Tampa Ave.	9
	US 441/17-92 Orange Blossom Tr.	10
	I-4.	11
	Orange Ave/Downtown	12
	Rosalind Ave/Anderson Rd.	13
	Mills Ave./Downtown	14
	Bumby Ave	15
	Crystal Lake Dr	16
	SR 15 Conway Rd.	17
	SR 436 Semoran Blvd.	18
	SR 551 Goldenrod Rd.	19
	Valencia College Lane	20
	Dean Rd.	21
	Rouse Rd.	22
	Alafaya Tr.	23
	SR 50 East Colonial Dr.	24
	Challenger Parkway	25
SR 417 (Central Florida GreeneWay	I-4	26
	Celebration Ave.	27
	Osceola Pkwy.	28
	SR 536 International Dr.	29
	John Young Pkwy.	30
	US 441/US 17-92 Orange Blossom Tr.	31
	Landstar Blvd.	32
	Boggy Creek Rd.	33
	Narcoossee Rd.	34
	Curry Ford Rd.	35
	Valencia College Lane	36
	SR 50 East Colonial Dr.	37
	University Blvd.	38
	SR 426 Aloma Ave.	39
	Red Bug Lake Rd.	40
	SR 434	41
	CR 427 Lake Mary Blvd.	42
	US 17-92 Airport Blvd.	43
SR 528 (Bee Line)	I-4	44
	International Drive	45
	Orangewood Blvd.	46
	SR 423 John Young Pkwy.	47
	Florida Turnpike/US 441	48
	Boggy Creek Rd./McCoy Rd.	49
	Tradeport Dr.	50
	SR 436 Semoran Blvd.	51
	Narcoossee Rd.	52
	ICP Blvd.	53
	Dallas Blvd.	54
	SR 520	55
	I-95	56

Table B.3 O-D Table of E-Pass User Trips from SR 408 to SR 408

(the percent between parentheses is cell size relative to the E-Pass sample size)

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	0	12	1	51	35	2	1	35	4	19	134	68	7	13	36	1	12	16	13	8	5	0	16	23	11
	0.0%	0.1%	0.0%	0.4%	0.3%	0.0%	0.0%	0.3%	0.0%	0.1%	1.1%	0.5%	0.1%	0.1%	0.3%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.2%	0.1%
2	5	0	1	10	13	0	0	20	2	24	79	47	10	12	20	1	8	26	14	3	5	4	8	11	2
	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.2%	0.0%	0.2%	0.6%	0.4%	0.1%	0.1%	0.2%	0.0%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
3	1	3	0	1	2	1	0	8	3	5	49	17	1	6	13	0	4	10	4	1	1	1	4	6	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.4%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	22	1	2	0	4	0	0	12	4	5	63	28	1	7	21	1	9	27	16	4	4	5	16	5	8
	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.5%	0.2%	0.0%	0.1%	0.2%	0.0%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
5	14	9	1	4	0	1	0	0	1	4	24	27	0	6	13	0	7	11	11	8	3	3	16	8	6
	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%
6	1	1	0	0	0	0	0	2	0	3	6	7	1	5	4	0	5	12	6	0	2	2	4	5	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1	0	0	2	6	0	0	0	0	3	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	30	15	10	11	6	2	0	0	0	1	9	6	0	1	12	0	7	17	10	3	3	0	7	11	6
	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
9	1	2	1	4	1	0	0	0	0	0	0	0	0	1	2	0	1	0	0	0	0	0	2	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	11	15	6	6	5	1	1	2	0	0	2	0	1	1	4	0	9	15	16	4	7	2	9	11	4
	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%
11	92	45	23	44	27	6	1	5	0	0	0	7	1	12	33	4	64	127	82	30	36	12	71	85	30
	0.7%	0.4%	0.2%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.3%	0.0%	0.5%	1.0%	0.6%	0.2%	0.3%	0.1%	0.6%	0.7%	0.2%
12	33	32	24	26	13	3	0	4	0	2	0	0	1	2	0	1	0	20	13	7	10	4	12	20	5
	0.3%	0.3%	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.1%	0.1%	0.0%	0.1%	0.2%	0.0%
13	3	0	3	0	2	0	0	0	0	0	0	0	0	1	2	0	4	14	23	3	6	4	19	12	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
14	16	8	6	7	1	0	0	3	0	1	8	1	0	0	2	0	2	5	12	7	12	4	26	25	4
	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.2%	0.2%	0.0%
15	29	7	10	13	10	6	1	5	0	4	27	0	1	0	0	0	2	3	5	3	1	3	7	8	2
	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
16	0	3	1	2	1	1	0	1	0	0	4	0	0	0	1	0	0	2	7	4	8	4	13	10	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%
17	23	16	8	11	12	4	0	9	0	9	47	2	9	6	0	2	0	4	1	1	2	1	3	2	1
	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.4%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
18	20	21	8	16	8	8	1	13	1	12	63	5	28	12	2	1	2	0	6	3	4	4	12	18	2
	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	0.5%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
19	15	16	2	15	14	12	4	11	0	16	69	7	36	19	0	14	0	1	0	5	3	1	18	14	7
	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	0.5%	0.1%	0.3%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%
20	1	1	0	4	0	1	0	1	0	4	20	0	13	5	1	3	0	2	1	0	1	0	0	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21	17	5	2	4	3	2	0	7	0	14	37	5	25	5	3	12	3	9	5	0	0	0	4	1	5
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.3%	0.0%	0.2%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
22	2	3	0	6	5	0	0	1	0	1	21	4	8	6	2	10	0	1	2	1	0	0	2	8	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
23	11	7	2	7	9	2	1	7	2	13	72	9	43	24	3	40	3	22	13	0	3	0	0	1	0
	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.6%	0.1%	0.3%	0.2%	0.0%	0.3%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
24	22	11	5	11	9	3	0	15	0	16	73	9	46	21	3	26	1	10	16	3	5	9	2	0	2
	0.2%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.6%	0.1%	0.4%	0.2%	0.0%	0.2%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
25	10	1	1	4	3	2	0	0	0	4	16	2	11	13	4	6	1	6	6	1	4	2	0	0	0
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table B.4 O-D Table of E-Pass User Trips from SR 408 to SR 417

(the percent between parentheses is cell size relative to the E-Pass sample size)

From \ To	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1	4	0	2	0	0	1	0	1	0	2	0	3	24	10	14	5	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%
2	2	0	0	0	0	0	1	0	1	0	0	1	5	6	8	1	2	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
3	1	0	0	0	0	0	0	0	1	1	1	0	4	3	0	2	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	0	0	0	1	0	0	0	0	0	0	0	1	16	7	4	1	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
5	1	0	0	0	0	0	0	0	0	2	4	1	11	5	6	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
6	0	0	0	0	0	0	0	0	1	0	0	1	4	3	0	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	1	0	0	0	0	0	0	0	0	0	0	1	2	3	2	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	1	1	0	5	0	1	1	2	0	2	0	2	6	7	9	1	2	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%
9	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	0	1	1	1	1	1	0	0	1	3	1	1	10	5	5	3	4	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
11	4	0	1	1	3	1	1	9	7	5	4	17	60	33	50	15	9	5
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.5%	0.3%	0.4%	0.1%	0.1%	0.0%
12	0	1	0	0	0	0	0	1	1	1	0	2	22	21	13	7	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%
13	1	0	0	0	0	0	0	1	3	4	0	7	22	7	29	5	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.1%	0.2%	0.0%	0.0%	0.0%
14	1	0	0	0	0	0	1	0	3	1	0	4	18	19	20	4	3	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
15	0	0	0	0	0	0	0	0	1	0	1	2	3	2	4	0	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16	0	0	0	0	0	0	0	0	0	0	0	1	9	6	19	3	6	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
17	1	0	0	0	0	1	0	0	1	1	0	0	2	1	0	3	0	
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
18	3	0	0	1	3	1	0	0	1	1	0	1	6	5	9	7	6	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%
19	2	0	1	0	2	0	1	0	2	4	0	0	11	4	12	1	6	9
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%
20	0	0	1	0	0	1	0	0	1	1	0	0	1	3	4	0	1	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21	1	1	2	2	4	2	1	0	2	3	0	0	0	2	7	5	8	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%
22	1	0	0	0	1	2	2	1	2	0	0	0	0	2	6	4	2	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
23	10	2	2	3	3	1	1	2	6	1	1	0	5	6	8	6	1	7
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
24	11	4	2	5	0	1	2	3	3	1	0	1	2	6	3	4	4	1
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
25	2	0	1	1	0	1	0	1	2	0	0	0	1	0	1	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table B.5 O-D Table of E-Pass User Trips from SR 408 to SR 528

(the percent between parentheses is cell size relative to the E-Pass sample size)

From \ To	44	45	46	47	48	49	50	51	52	53	54	55	56
1	2	1	0	0	4	2	4	7	0	0	1	5	7
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
2	0	0	0	0	0	0	1	4	0	0	0	3	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	1	0	0	0	0	0	0	1	0	0	0	2	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	0	1	0	0	1	0	1	0	0	0	0	3	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	1	0	0	0	0	0	2	0	0	0	0	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	0	0	0	0	0	0	0	0	0	1	1	0	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	0	0	0	0	0	0	0	0	0	0	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	0	0	0	0	0	1	1	0	0	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	0	0	0	0	0	0	1	0	1	1	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	7	0	1	0	2	0	4	8	1	0	1	8	7
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%
12	0	0	0	0	0	0	0	0	1	0	0	3	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
13	0	0	0	0	0	0	0	0	0	0	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
14	0	0	0	0	0	0	0	3	0	0	1	3	7
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
15	0	1	1	0	0	0	0	1	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16	1	0	0	0	0	0	0	1	0	0	0	2	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
17	2	0	0	1	0	0	1	1	0	0	0	0	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
18	1	1	0	0	0	0	0	0	0	0	1	1	6
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
19	2	1	0	1	0	1	0	2	0	1	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
20	0	0	1	0	0	0	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21	1	3	0	2	3	4	3	8	1	0	0	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
22	0	4	0	0	0	3	1	3	1	0	0	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
23	7	4	1	2	0	2	0	15	4	0	0	1	0
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
24	1	2	1	2	6	6	1	13	2	1	0	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
25	2	1	0	0	0	0	2	8	2	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

Table B.6 O-D Table of E-Pass User Trips from SR 417 to SR 408

(the percent between parentheses is cell size relative to the E-Pass sample size)

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	4	0	1	4	7
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
27	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
28	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	8
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
29	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	1	0	0	3	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	1	1	0	0	1	0	4	3	8
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
32	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	1	1	0	4	0	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	1	2	0	7
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
34	1	0	0	0	0	0	0	0	0	3	1	0	6	5	1	3	0	1	1	0	0	1	4	4	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
35	2	1	4	0	0	0	1	1	0	0	7	1	5	6	0	1	0	5	0	0	2	0	3	1	9
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
36	0	0	0	0	1	0	0	1	0	0	2	0	1	0	0	0	0	0	0	0	0	0	1	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
37	3	3	3	0	2	0	0	1	0	2	7	1	5	1	2	4	0	2	1	0	0	0	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
38	24	7	4	10	10	3	0	5	1	13	40	6	43	25	2	15	1	8	9	2	1	1	2	0	8
	0.2%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	0.3%	0.2%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
39	16	6	0	6	7	3	0	7	1	10	35	4	45	18	2	7	0	7	6	7	2	3	5	4	7
	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.3%	0.0%	0.4%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
40	20	9	2	6	4	4	3	8	0	10	47	8	46	18	2	17	0	9	7	3	1	5	6	8	12
	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.4%	0.1%	0.4%	0.1%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
41	9	3	2	3	1	0	0	3	0	2	11	2	21	5	1	6	2	4	7	1	2	1	3	5	4
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
42	6	2	0	1	0	0	0	1	0	8	5	0	7	4	0	5	1	6	7	2	1	1	10	3	6
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
43	1	7	1	1	1	0	0	2	0	4	2	1	2	3	0	3	0	8	3	3	0	1	3	1	8
	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%

Table B.7 O-D Table of E-Pass User Trips from SR 417 to SR 417

(the percent between parentheses is cell size relative to the E-Pass sample size)

From \ To	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
26	0	1	2	1	16	9	3	43	6	8	1	5	26	15	16	6	12	23
	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.3%	0.0%	0.1%	0.0%	0.0%	0.2%	0.1%	0.1%	0.0%	0.1%	0.2%
27	2	0	9	3	26	12	3	19	0	1	0	0	10	4	4	2	0	2
	0.0%	0.0%	0.1%	0.0%	0.2%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
28	9	9	0	4	11	7	3	7	3	3	0	0	4	3	1	1	2	3
	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
29	1	0	0	0	30	18	9	11	2	5	0	1	11	2	7	4	4	3
	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
30	12	17	11	43	0	4	4	15	3	6	1	8	16	4	5	2	6	1
	0.1%	0.1%	0.1%	0.3%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
31	9	13	8	28	0	0	2	6	6	3	0	3	13	4	3	0	2	7
	0.1%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
32	6	6	3	16	6	1	0	8	5	5	1	2	10	6	3	0	2	6
	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
33	8	5	4	9	7	7	1	0	5	6	1	3	7	4	3	1	3	3
	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
34	5	2	3	4	6	3	1	5	0	18	2	9	10	4	7	2	7	8
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	0.1%
35	14	2	1	7	9	3	5	3	11	0	0	5	4	6	16	4	18	10
	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%
36	1	0	0	1	0	0	0	1	1	2	0	0	5	4	8	3	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
37	7	3	1	3	1	2	0	2	1	0	1	0	2	4	7	3	6	8
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
38	28	2	4	11	8	11	9	5	11	8	2	5	0	4	16	18	38	38
	0.2%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.3%
39	29	10	4	10	10	6	3	7	7	4	3	9	9	0	14	12	29	19
	0.2%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%	0.2%	0.1%
40	40	12	7	10	6	14	2	6	4	12	3	11	16	16	0	18	45	45
	0.3%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%	0.4%	0.4%
41	13	1	2	6	3	5	1	1	7	4	4	6	16	10	21	0	12	24
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	0.0%	0.1%	0.2%
42	16	6	3	3	3	6	0	6	11	13	2	6	51	40	47	14	0	7
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.4%	0.3%	0.4%	0.1%	0.0%	0.1%
43	21	2	2	8	2	2	3	9	12	11	3	8	51	18	39	15	0	0
	0.2%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%	0.4%	0.1%	0.3%	0.1%	0.0%	0.0%

Table B.8 O-D Table of E-Pass User Trips from SR 417 to SR 528

(the percent between parentheses is cell size relative to the E-Pass sample size)

From \ To	44	45	46	47	48	49	50	51	52	53	54	55	56
26	1	1	0	1	0	0	0	4	1	1	1	16	19
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
27	0	0	0	0	2	0	0	0	0	0	0	4	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
28	0	0	0	0	0	0	0	1	0	1	0	2	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
29	1	0	0	0	0	0	0	0	0	1	0	4	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30	0	0	0	0	0	1	0	2	0	0	0	2	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
31	1	0	0	1	0	0	0	0	0	0	1	1	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
32	1	1	0	0	0	0	0	0	0	2	0	0	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
33	0	0	0	0	0	0	0	0	0	0	0	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
34	0	0	0	0	0	1	1	0	2	2	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
35	6	2	0	7	3	7	6	18	5	1	1	2	3
	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
36	0	0	0	0	0	0	0	0	0	0	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
37	0	4	0	1	1	0	0	6	1	0	0	1	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
38	10	12	2	5	3	8	4	48	4	1	0	8	8
	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.4%	0.0%	0.0%	0.0%	0.1%	0.1%
39	11	7	3	5	5	9	9	72	9	1	0	7	4
	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.6%	0.1%	0.0%	0.0%	0.1%	0.0%
40	8	7	1	6	9	4	3	58	7	0	0	4	6
	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%
41	3	4	2	1	1	1	4	45	1	1	0	6	7
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.1%
42	2	3	0	0	0	3	4	47	4	1	0	5	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
43	0	3	1	0	1	4	7	32	5	0	1	6	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%

Table B.9 O-D Table of E-Pass User Trips from SR 528 to SR 408

(the percent between parentheses is cell size relative to the E-Pass sample size)

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
44	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	4	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	2	0	0	2	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
46	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
47	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	3	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
48	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	2	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
49	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	1	4	3	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
50	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	5	2	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
51	2	1	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0	1	2	0	2	1	12	8	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
52	2	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	0	0	0	6	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
53	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
55	8	1	0	4	1	0	0	8	1	6	13	1	6	5	0	3	0	5	0	1	0	1	0	2	0
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
56	3	1	1	3	0	0	0	2	0	4	8	3	7	2	0	1	1	6	2	0	0	0	1	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table B.10 O-D Table of E-Pass User Trips from SR 528 to SR 417

(the percent between parentheses is cell size relative to the E-Pass sample size)

From \ To	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
44	2	1	0	0	0	1	0	2	0	4	0	1	3	3	4	0	1	12
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
45	0	0	0	0	0	0	0	0	2	3	0	2	4	3	4	3	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
46	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
47	0	0	0	0	0	0	0	0	0	5	0	3	12	5	2	1	0	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
48	0	0	0	0	0	0	0	0	0	5	0	1	0	0	2	0	0	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
49	0	2	1	1	0	0	1	0	0	10	0	2	3	6	7	0	3	6
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
50	1	0	0	2	1	1	0	0	2	11	0	5	9	5	10	5	3	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
51	2	0	0	0	1	0	0	1	1	21	0	3	13	34	24	14	12	17
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%	0.3%	0.2%	0.1%	0.1%	0.1%
52	2	0	0	1	0	0	0	0	0	9	0	2	3	6	2	2	3	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
53	1	0	0	1	0	0	0	0	1	0	0	0	0	0	2	0	0	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
54	4	0	0	1	0	1	1	0	1	2	0	0	0	0	1	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
55	33	4	3	16	5	2	1	0	1	2	0	2	5	11	5	6	4	22
	0.3%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.2%
56	20	7	7	8	6	3	2	1	1	14	0	0	8	12	4	7	7	7
	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%

Table B.11 O-D Table of E-Pass User Trips from SR 528 to SR 528

(the percent between parentheses is cell size relative to the E-Pass sample size)

From \ To	44	45	46	47	48	49	50	51	52	53	54	55	56
44	0	5	0	8	8	12	36	52	7	2	2	17	21
	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.3%	0.4%	0.1%	0.0%	0.0%	0.1%	0.2%
45	1	0	1	0	1	4	7	10	2	0	0	3	5
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
46	2	0	0	0	1	0	4	1	1	0	0	1	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
47	1	1	0	0	0	3	13	8	2	1	2	6	7
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
48	1	1	0	1	0	3	9	27	3	0	0	11	5
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%
49	11	1	1	1	3	0	1	15	6	0	4	8	9
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%
50	35	8	2	7	7	2	0	9	6	0	2	3	3
	0.3%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
51	36	10	2	9	14	7	3	0	6	3	3	10	28
	0.3%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%
52	7	3	1	2	5	11	4	3	0	1	0	3	8
	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
53	0	0	0	0	0	1	0	1	1	0	0	0	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
54	3	1	1	1	0	0	3	7	1	0	0	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
55	24	14	3	3	18	11	11	47	14	2	0	0	3
	0.2%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%
56	24	19	2	6	17	16	6	64	12	3	0	6	0
	0.2%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%

Table B.12 O-D Table of Non E-Pass User Trips from SR 408 to SR 408

(the percent between parentheses is cell size relative to the non E-Pass sample size)

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	0	6	0	33	43	1	1	19	2	22	101	55	3	10	26	0	14	24	11	1	2	4	18	21	4
	0.0%	0.1%	0.0%	0.5%	0.6%	0.0%	0.0%	0.3%	0.0%	0.3%	1.5%	0.8%	0.0%	0.1%	0.4%	0.0%	0.2%	0.4%	0.2%	0.0%	0.0%	0.1%	0.3%	0.3%	0.1%
2	2	0	3	4	26	0	0	13	3	17	55	51	4	5	15	6	4	21	13	1	3	1	10	9	6
	0.0%	0.0%	0.0%	0.1%	0.4%	0.0%	0.0%	0.2%	0.0%	0.3%	0.8%	0.8%	0.1%	0.1%	0.2%	0.1%	0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%
3	2	0	0	1	2	0	0	2	4	7	22	18	0	2	7	1	4	7	2	2	1	1	2	0	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.3%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
4	15	6	0	0	0	0	0	2	2	7	37	18	2	3	9	0	7	11	4	1	0	3	5	6	4
	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.5%	0.3%	0.0%	0.0%	0.1%	0.0%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%
5	16	2	1	3	0	0	0	1	0	7	21	22	0	2	9	2	8	14	7	4	3	1	5	6	7
	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.3%	0.0%	0.0%	0.1%	0.0%	0.1%	0.2%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%
6	0	1	0	0	0	0	0	0	7	1	7	12	1	0	3	0	12	9	3	1	2	1	5	6	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
7	0	0	0	0	0	0	0	0	0	0	1	3	0	0	2	0	0	2	1	0	1	1	0	4	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
8	6	6	1	0	0	1	0	0	0	2	2	4	0	0	3	1	10	9	18	1	3	3	4	13	7
	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.3%	0.0%	0.0%	0.0%	0.1%	0.2%	0.1%
9	1	4	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	6	9	2	4	1	0	0	1	0	0	1	0	0	0	1	2	2	4	3	0	1	1	8	7	2
	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
11	55	31	13	8	15	1	0	0	0	3	0	1	2	1	5	2	20	69	52	9	26	4	44	44	14
	0.8%	0.5%	0.2%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.3%	1.0%	0.8%	0.1%	0.4%	0.1%	0.7%	0.7%	0.2%
12	17	18	6	8	8	3	0	0	0	0	0	0	0	0	1	0	0	3	7	0	6	3	8	10	2
	0.3%	0.3%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%
13	0	1	0	1	2	0	0	0	0	0	0	0	0	1	0	0	1	9	10	2	2	0	5	10	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%
14	3	2	2	1	0	0	0	1	0	0	0	0	0	0	0	0	1	4	5	1	2	5	7	11	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.2%	0.0%
15	14	6	3	6	2	2	1	1	0	1	0	0	0	0	0	0	2	1	1	0	1	2	6	1	2
	0.2%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
16	0	0	0	2	1	0	0	0	0	0	0	0	0	1	0	0	0	1	5	4	6	1	12	15	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.2%	0.2%	0.0%
17	8	8	4	1	7	2	1	12	0	1	5	0	0	0	1	0	1	0	0	0	0	0	0	0	3
	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
18	19	17	4	2	16	9	2	13	1	12	60	1	13	3	0	0	0	0	1	1	2	2	10	5	6
	0.3%	0.3%	0.1%	0.0%	0.2%	0.1%	0.0%	0.2%	0.0%	0.2%	0.9%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%
19	12	8	11	6	12	6	3	20	2	8	74	4	30	10	1	7	0	3	0	2	0	2	14	13	10
	0.2%	0.1%	0.2%	0.1%	0.2%	0.1%	0.0%	0.3%	0.0%	0.1%	1.1%	0.1%	0.4%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	0.1%
20	7	2	0	0	1	0	0	1	0	2	8	3	6	2	0	3	0	0	2	0	0	0	0	3	1
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21	7	7	1	5	3	3	0	5	0	9	25	5	21	7	2	11	2	1	2	1	0	2	1	3	3
	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.4%	0.1%	0.3%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
22	3	0	0	0	1	1	0	1	0	0	6	1	5	0	0	4	0	0	2	1	0	0	1	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
23	12	6	1	6	13	1	0	9	0	4	46	2	23	12	2	15	0	10	6	0	0	0	0	2	0
	0.2%	0.1%	0.0%	0.1%	0.2%	0.0%	0.0%	0.1%	0.0%	0.1%	0.7%	0.0%	0.3%	0.2%	0.0%	0.2%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
24	19	10	2	5	6	3	2	12	0	16	45	3	46	20	4	14	0	8	16	1	0	2	1	0	0
	0.3%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.2%	0.0%	0.2%	0.7%	0.0%	0.7%	0.3%	0.1%	0.2%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
25	3	1	1	1	4	0	0	5	0	2	7	0	5	3	1	4	0	0	2	1	1	0	0	1	0
	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table B.13 O-D Table of Non E-Pass User Trips from SR 408 to SR 417

(the percent between parentheses is cell size relative to the non E-Pass sample size)

From \ To	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1	2	1	0	0	3	0	0	0	2	2	0	1	19	2	13	2	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.2%	0.0%	0.0%	0.0%
2	0	0	0	0	0	1	0	1	2	3	0	1	13	2	3	1	3	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
3	0	0	0	0	2	0	0	0	1	0	0	0	2	1	4	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
4	0	0	0	0	0	0	0	2	0	0	0	0	9	2	4	2	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
5	0	0	0	0	0	0	0	0	0	0	1	3	16	5	2	2	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%
6	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	1	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	0	2	1	2	0	0	0	1	0	1	0	0	15	3	3	0	1	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	0	2	1	2	0	0	0	0	2	0	0	0	2	1	2	1	4	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
11	4	0	0	0	0	1	0	6	4	4	1	2	51	11	17	3	2	5
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.8%	0.2%	0.3%	0.0%	0.0%	0.1%
12	1	0	0	0	0	0	0	0	0	0	1	2	10	2	4	1	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
13	0	0	0	0	0	0	0	0	0	0	1	1	3	10	11	3	1	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%
14	0	0	0	0	0	0	0	0	1	1	0	0	11	5	9	1	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%
15	0	0	0	2	0	0	0	0	0	0	0	1	4	1	3	1	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
16	1	0	0	1	0	0	0	1	0	0	1	0	6	2	2	0	4	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%
17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
18	1	0	0	0	0	1	0	0	1	2	0	1	9	3	6	1	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
19	1	0	0	0	3	1	0	1	2	2	0	1	6	2	4	2	5	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%
20	0	0	0	0	1	0	0	0	0	1	0	0	0	1	3	1	5	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
21	1	0	0	3	1	1	2	1	2	0	0	0	4	0	0	0	2	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
22	1	2	0	1	1	1	0	0	0	0	0	0	0	1	0	1	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
23	7	1	0	3	2	3	2	1	3	0	1	0	2	0	1	1	3	1
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
24	6	0	0	0	1	5	1	1	3	0	0	0	1	2	4	4	2	1
	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%
25	0	0	0	2	1	0	1	0	1	1	0	1	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table B.14 O-D Table of Non E-Pass User Trips from SR 408 to SR 528
(the percent between parentheses is cell size relative to the non E-Pass sample size)

From \ To	44	45	46	47	48	49	50	51	52	53	54	55	56
1	1	2	0	0	0	2	2	3	0	1	0	2	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
2	0	2	0	0	0	1	1	3	1	0	1	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	0	0	0	0	1	0	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	0	0	0	0	0	0	2	1	1	1	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	0	0	0	0	0	0	0	1	0	0	0	0	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	0	0	0	0	0	0	0	0	0	0	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	0	0	0	0	0	0	0	0	0	0	0	3	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	2	0	0	0	0	0	0	0	1	0	0	3	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	0	0	0	0	0	0	0	0	1	0	0	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	3	3	0	0	0	0	0	4	0	3	0	8	9
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%
12	0	0	0	0	0	0	0	0	0	1	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
13	0	0	0	0	0	0	0	0	0	0	0	1	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
14	0	0	0	0	0	0	1	1	1	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
15	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16	0	0	0	0	0	0	0	0	0	0	0	0	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
17	0	1	0	0	0	0	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
18	2	2	0	0	0	0	0	0	0	1	0	1	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
19	0	0	0	0	0	1	1	0	0	1	0	2	5
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
20	0	0	0	0	0	0	0	0	0	0	0	0	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21	1	1	0	0	2	1	3	3	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
22	1	0	1	0	1	0	0	2	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
23	3	4	0	0	0	7	3	13	0	0	0	1	0
	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
24	2	4	0	1	3	9	3	9	6	0	0	0	1
	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
25	0	2	0	1	0	0	1	3	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table B.15 O-D Table of Non E-Pass User Trips from SR 417 to SR 408

(the percent between parentheses is cell size relative to the non E-Pass sample size)

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	1	2	1	3	1	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
27	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
29	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	5
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
32	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	4	1	8
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
33	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1	1	0	0	0	0	1	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
34	1	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2	0	0	0	2	1	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
35	0	1	0	0	0	0	0	0	0	3	3	1	2	1	0	1	0	1	0	0	1	0	2	1	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
36	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
37	1	1	0	1	1	1	0	4	0	3	4	1	5	2	1	1	0	0	0	0	0	0	0	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
38	9	4	0	2	6	2	0	4	0	2	28	3	15	11	1	1	0	2	5	0	0	0	0	0	3
	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.4%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
39	3	5	2	0	3	1	1	4	0	6	10	2	10	6	0	1	1	1	2	2	0	0	2	0	3
	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
40	4	0	2	2	3	2	0	2	0	5	17	5	18	7	2	3	1	4	4	5	1	1	0	3	4
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.1%	0.3%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
41	1	3	0	4	2	0	0	1	0	2	2	0	5	0	1	1	0	1	2	0	1	1	0	1	1
	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
42	2	1	0	0	0	0	0	2	0	2	4	0	0	1	0	2	0	1	1	4	0	0	0	2	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
43	0	0	0	1	0	0	0	1	0	2	7	0	1	0	0	3	0	2	1	0	1	1	1	1	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table B.16 O-D Table of Non E-Pass User Trips from SR 417 to SR 417

(the percent between parentheses is cell size relative to the non E-Pass sample size)

From \ To	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
26	0	0	1	2	1	7	5	59	4	7	0	9	21	3	9	9	5	20
	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.9%	0.1%	0.1%	0.0%	0.1%	0.3%	0.0%	0.1%	0.1%	0.1%	0.3%
27	0	0	0	1	4	1	1	10	1	1	0	1	0	0	3	1	1	6
	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
28	0	0	0	4	2	0	1	5	0	1	0	1	2	0	0	0	1	3
	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
29	0	0	0	0	10	13	12	31	4	2	0	3	4	1	2	1	1	10
	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.2%	0.5%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
30	11	5	6	33	0	4	1	3	2	4	0	3	16	5	3	2	2	5
	0.2%	0.1%	0.1%	0.5%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.1%
31	9	3	4	26	0	0	0	5	3	3	0	3	8	2	1	1	2	0
	0.1%	0.0%	0.1%	0.4%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
32	3	0	6	15	1	0	0	3	3	3	0	4	9	3	3	6	2	1
	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%
33	11	3	4	10	4	2	0	0	0	2	2	1	5	4	4	0	0	4
	0.2%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%
34	5	1	2	9	1	2	0	2	0	6	0	2	6	2	3	2	7	2
	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%
35	8	7	2	3	3	0	2	4	5	0	0	0	2	0	1	0	4	2
	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
36	0	0	0	0	0	0	0	1	1	0	0	0	3	0	0	1	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
37	4	2	0	4	1	2	2	1	1	1	0	0	3	0	2	2	5	2
	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
38	16	1	0	1	3	4	6	2	3	2	2	0	0	1	1	0	1	2
	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
39	11	3	0	3	3	2	1	2	2	1	5	1	0	0	2	1	1	3
	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
40	8	1	1	7	5	4	1	0	4	3	0	3	0	2	0	0	5	3
	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
41	1	0	0	4	3	0	2	0	2	1	2	2	2	0	0	0	1	2
	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
42	4	1	0	2	4	2	2	3	2	2	0	4	3	0	2	0	0	1
	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
43	15	0	0	6	4	2	0	0	7	5	1	5	1	1	3	0	0	0
	0.2%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table B.17 O-D Table of Non E-Pass User Trips from SR 417 to SR 528
(the percent between parentheses is cell size relative to the non E-Pass sample size)

From \ To	44	45	46	47	48	49	50	51	52	53	54	55	56
26	0	0	0	0	1	0	1	3	0	1	1	10	15
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%
27	0	0	0	0	0	0	0	0	0	1	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
28	0	0	0	0	1	0	0	0	0	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
29	0	0	0	0	0	1	1	0	0	0	1	3	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
30	1	0	0	2	0	0	0	1	0	0	1	0	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
31	0	1	0	0	0	0	0	4	0	0	0	1	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
32	0	0	0	0	0	0	0	0	0	1	1	0	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
33	0	0	0	0	1	0	0	0	1	0	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
34	1	0	0	0	1	0	0	0	0	0	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
35	5	2	0	2	7	9	6	9	7	0	0	1	5
	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%
36	0	0	0	0	0	0	1	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
37	0	0	0	0	1	2	0	2	2	2	0	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
38	4	6	0	0	1	9	5	14	3	0	0	3	6
	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%
39	5	4	0	4	0	7	2	19	0	0	0	2	2
	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
40	3	1	0	2	2	3	6	14	1	0	0	2	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
41	1	1	0	2	0	1	1	19	1	0	0	0	5
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1%
42	1	1	0	0	1	3	2	9	2	1	1	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
43	1	3	0	0	1	4	3	23	4	0	0	3	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%

Table B.18 O-D Table of Non E-Pass User Trips from SR 528 to SR 408

(the percent between parentheses is cell size relative to the non E-Pass sample size)

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
44	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
48	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	3	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
51	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	1	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
52	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	1	0	0	0	0	0	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
53	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
54	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
55	3	1	0	2	0	1	1	0	0	4	9	0	3	3	0	0	0	1	2	1	0	0	0	2	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
56	2	1	0	0	1	1	0	0	0	1	5	0	6	3	1	1	0	5	3	0	2	0	1	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	255	172	61	109	179	42	12	137	21	155	624	215	228	118	97	89	89	235	204	50	76	51	198	219	143
	3.8%	2.5%	0.9%	1.6%	2.6%	0.6%	0.2%	2.0%	0.3%	2.3%	9.2%	3.2%	3.4%	1.7%	1.4%	1.3%	1.3%	3.5%	3.0%	0.7%	1.1%	0.8%	2.9%	3.2%	2.1%

Table B.19 O-D Table of Non E-Pass User Trips from SR 528 to SR 417

(the percent between parentheses is cell size relative to the non E-Pass sample size)

From \ To	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
44	1	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0	1	6
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
45	0	0	0	0	0	0	0	0	0	1	0	0	5	0	3	1	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
47	0	0	0	0	0	0	0	0	0	2	0	1	3	1	0	0	1	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
48	0	0	0	0	0	0	0	1	0	3	0	0	3	0	1	0	1	7
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
49	1	0	0	1	0	0	0	0	0	4	0	1	3	4	3	0	2	6
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
50	1	0	0	0	0	0	1	1	0	1	0	1	7	1	1	1	0	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
51	1	0	0	0	0	0	2	0	1	7	0	1	9	1	4	1	6	11
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%	0.2%
52	0	0	1	0	0	0	0	0	0	1	1	1	2	3	1	0	0	5
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
53	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
54	0	0	0	2	1	1	0	0	0	1	0	0	1	0	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
55	14	6	3	13	2	2	0	1	0	1	0	0	4	2	0	0	0	20
	0.2%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.3%
56	13	1	1	9	0	3	1	2	1	0	1	0	3	3	5	1	2	6
	0.2%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
	163	42	33	171	67	65	46	151	71	84	20	61	312	95	159	59	95	157
	2.4%	0.6%	0.5%	2.5%	1.0%	1.0%	0.7%	2.2%	1.0%	1.2%	0.3%	0.9%	4.6%	1.4%	2.4%	0.9%	1.4%	2.3%

Table B.20 O-D Table of Non E-Pass User Trips from SR 528 to SR 528
(the percent between parentheses is cell size relative to the non E-Pass sample size)

From \ To	44	45	46	47	48	49	50	51	52	53	54	55	56
44	0	0	0	2	2	1	4	28	11	2	3	16	21
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.4%	0.2%	0.0%	0.0%	0.2%	0.3%
45	1	0	0	0	1	3	1	6	3	0	0	5	3
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%
46	0	1	0	0	0	1	0	3	0	0	0	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
47	2	2	0	0	0	1	1	7	1	1	0	2	4
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
48	4	1	0	0	0	0	5	19	0	1	0	9	9
	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%	0.0%	0.0%	0.1%	0.1%
49	1	0	0	0	1	0	0	5	6	0	2	7	5
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%
50	3	1	1	1	1	0	0	8	2	1	2	3	5
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
51	22	4	2	3	7	4	0	0	2	1	1	18	17
	0.3%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%
52	3	4	0	2	3	8	2	0	0	2	1	4	7
	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
53	0	0	0	0	1	0	0	0	1	0	0	0	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
54	0	1	0	0	2	1	0	2	0	1	0	1	0
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
55	20	17	4	6	9	8	3	31	3	0	0	0	3
	0.3%	0.3%	0.1%	0.1%	0.1%	0.1%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
56	16	8	0	5	5	7	3	33	5	0	0	2	0
	0.2%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%