BICYCLE AND PEDESTRIAN TRAVEL DEMAND FORECASTING: SUMMARY OF DATA COLLECTION ACTIVITIES

by

Aaron Hottenstein
Graduate Research Assistant
Texas Transportation Institute

Shawn Turner, P.E.
Assistant Research Engineer
Texas Transportation Institute

and

Gordon Shunk, P.E.
Research Engineer
Texas Transportation Institute

Research Report 1723-2
Research Study Number 0-1723
Research Study Title: Bicycle and Pedestrian Travel Demand Forecasting for Existing and Proposed Transportation Facilities

Sponsored by the
Texas Department of Transportation
In Cooperation with
U.S. Department of Transportation
Federal Highway Administration

September 1997

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

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
FHWA/TX-98/1723-2		

4. Title and Subtitle	5. Report Date
BICYCLE AND PEDESTRIAN TRAVEL DEMAND FORECASTING: SUMMARY OF DATA COLLECTION ACTIVITIES	September 1997
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
Aaron Hottenstein, Shawn Turner, and Gordon Shunk	Research Report 1723-2

9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Texas Transportation Institute The Texas A&M University System College Station, Texas 77843-3135	11. Contract or Grant No. Study No. 0-1723

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
Texas Department of Transportation Research and Technology Transfer Office P. O. Box 5080 Austin, Texas 78763-5080	Research Report: September 1996 - August 1997
	14. Sponsoring Agency Code

15. Supplementary Notes

Research performed in cooperation with the Texas Department of Transportation and the U.S. Department of Transportation, Federal Highway Administration.
Research Study Title: Bicycle and Pedestrian Travel Demand Forecasting for Existing and Proposed Transportation Facilities

16. Abstract

This report summarizes data collection activities performed at eight different sites in Texas urban areas. The data were collected to help develop and test bicycle and pedestrian travel demand forecasting techniques. The research team collected data about actual bicycle and pedestrian facility usage rates (i.e., 12-hour volume counts) and trip characteristics (i.e., trip origin and destination, length, purpose, and frequency). The volume count and survey data were collected on bicycle and pedestrian facilities in College Station, Austin, Houston, and Dallas.

The research team developed several preliminary findings from the data collection activities. The usage levels at data collection sites ranged from high-use side streets (Timber/Bizzell Street, Shoal Creek Boulevard) to high-use separated paths (Brays Bayou Trail and White Rock Lake Trail) to low-use state highways (FM 2818, RM 2222). Also, usage levels varied considerably for some sites during the three days of data collection. There was no apparent explanation for this day-to-day variability at some sites, but the research team will investigate this issue in future data analysis tasks. Useful information was gathered about bicycle and pedestrian trip generators and trip length distributions. This trip information will be particularly useful for developing and testing demand forecasting models. Several of the sites had low survey response rates, which means that the trip information gathered at these sites may not be representative of the entire bicycle and pedestrian population. The researchers may have to supplement sites having low survey response rates with information from other sites or studies.

17. Key Words	18. Distribution Statement
Travel Demand Forecasting, Bicycle, Pedestrian, Non-motorized Travel, Sketch Planning, Modeling	No restrictions. This document is available to the public through NTIS: National Technical Information Service 5285 Port Royal Road Springfield, Virginia 22161

19. Security Classif.(of this report)	20. Security Classif.(of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	106	

Form DOT F 1700.7 (8-72) **Reproduction of completed page authorized**

DISCLAIMER

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Texas Department of Transportation. This report does not constitute a standard, specification, or regulation. This report was prepared by Aaron Hottenstein, Shawn Turner (Texas certification number 82781), and Gordon Shunk (California certification number 0936).

ACKNOWLEDGMENTS

The authors wish to acknowledge the support and guidance of Maria Burke, Project Director, of TxDOT's Design Division. Other members of the project advisory panel who offered comments on the data collection plan include:

- Stan Burrier, Transportation Planning and Programming Division, TxDOT
- Paul Douglas, Bicycle/Pedestrian Coordinator, Multimodal Division, TxDOT
- Glenn Gadbois, Executive Director, Texas Bicycle Coalition
- Jacqueline Magill, District Bicycle Coordinator, Austin District, TxDOT
- Bob Musselman, Region 6, Federal Highway Administration

The authors also wish to thank the following undergraduate students who assisted in reducing and summarizing the bicycle and pedestrian data:

- Alisha Irion
- Stephanie Key
- Mary Tinsley
- Thomas Wilson, Jr.

A special thanks is extended to Troy Rother for supervising data reduction and preparing report graphics.

TABLE OF CONTENTS

PAGE

LIST OF FIGURES ix

LIST OF TABLES xii

CHAPTER 1 - INTRODUCTION 1
Organization of this Report 2

CHAPTER 2 - STUDY DESIGN 3
Data Collection Site Selection 3
Video Data Collection 4
Intercept Survey Distribution 10

CHAPTER 3 - DATA REDUCTION AND SUMMARY 11
Bicycle and Pedestrian Volumes 11
Bicyclist and Pedestrian Trip Lengths 17
Bicycle Trip Purpose 21
Bicycle and Pedestrian Trip Frequency 21
Survey Comments 21

CHAPTER 4 - SUMMARY OF FINDINGS AND CONCLUSIONS 25

APPENDIX A: 12-HOUR BICYCLE AND PEDESTRIAN VOLUME COUNTS A-1

APPENDIX B: BICYCLE AND PEDESTRIAN TRIP ORIGINS/DESTINATIONS
AND TRIP LENGTH DISTRIBUTIONS B-1

APPENDIX C: BICYCLE AND PEDESTRIAN TRIP PURPOSE AND FREQUENCY . . . C-1

APPENDIX D: BICYCLE AND PEDESTRIAN SURVEY COMMENTS D-1

LIST OF FIGURES

PAGE

Figure 1. Site Locations in College Station 5
Figure 2. Site Locations in Austin 6
Figure 3. Site Locations in Houston 7
Figure 4. Site Locations in Dallas 8
Figure 5. Intercept Survey Card 10
Figure 6. 12-Hour Bicycle Counts in College Station, March 19-21, 1997 12
Figure 7. 12-Hour Bicycle Counts in Austin, April 16-18, 1997 12
Figure 8. 12-Hour Bicycle Counts in Houston, May 6-8, 1997 13
Figure 9. 12-Hour Bicycle Counts in Dallas, May 20-22, 1997 13
Figure 10. 12-Hour Pedestrian Counts in College Station, March 19-21, 1997 14
Figure 11. 12-Hour Pedestrian Counts in Austin, April 16-18, 1997 14
Figure 12. 12-Hour Pedestrian Counts in Houston, May 6-8, 1997 15
Figure 13. 12-Hour Pedestrian Counts in Dallas, May 20-22, 1997 15
Figure 14. Bicycle Trip Purpose for All 8 Texas Sites 22
Figure 15. Pedestrian Trip Purpose for All 8 Texas Sites 22
Figure A-1. Hourly Bicycle Volumes on FM 2347 (George Bush Drive) in College Station, March 19-21, 1997 . . . . . A-5
Figure A-2. Hourly Bicycle Volumes on Timber/Bizzell Street in College Station, March 19-21, 1997 . . . . . A-5
Figure A-3. Hourly Bicycle Volumes on FM 2818 in College Station, March 19-21, 1997 . . A-6
Figure A-4. Hourly Bicycle Volumes on Welsh Avenue in College Station, March 19-21, 1997 . . . . . A-6
Figure A-5. Hourly Bicycle Volumes on Shoal Creek Boulevard in Austin, April 16-18, 1997 . . . . . A-7
Figure A-6. Hourly Bicycle Volumes on RM 2222 in Austin, April 16-18, 1997 . . . . . A-7
Figure A-7. Hourly Bicycle Volumes on Loop 360 in Austin, April 16-18, 1997 . . . . . A-8
Figure A-8. Hourly Bicycle Volumes on Allen Parkway in Houston, May 6-8, 1997 . . . . . A-9
Figure A-9. Hourly Bicycle Volumes on Brays Bayou Trail in Houston, May 6-8, 1997 . . . . A-9
Figure A-10. Hourly Bicycle Volumes on South Main Street in Houston, May 6-8, 1997 . . A-10
Figure A-11. Hourly Bicycle Volumes on Royal Lane in Dallas, May 20-22, 1997 . . . . . A-11
Figure A-12. Hourly Bicycle Volumes on Greenville Avenue in Dallas, May 20-22, 1997 . . A-11
Figure A-13. Hourly Bicycle Volumes on White Rock Lake Trail in Dallas, June 3-5, 1997 . . . . . A-12
Figure A-14. Hourly Pedestrian Volumes on FM 2347 (George Bush Drive) in College Station, March 19-21, 1997 . . . . . A-13
Figure A-15. Hourly Pedestrian Volumes on Timber/Bizzell Street in College Station, March 19-21, 1997 . . . . . A-13

LIST OF FIGURES (Continued)

PAGE

Figure A-16 Hourly Pedestrian Volumes on FM 2818 in College Station, March 19-21, 1997 . . . . . A-14
Figure A-17. Hourly Pedestrian Volumes on Welsh Avenue in College Station, March 19-21, 1997 . . . . . A-14
Figure A-18. Hourly Pedestrian Volumes on Shoal Creek Boulevard in Austin, April 16-18, 1997 . . . . . A-15
Figure A-19. Hourly Pedestrian Volumes on RM 2222 in Austin, April 16-18, 1997 . . . . . A-15
Figure A-20. Hourly Pedestrian Volumes on Loop 360 in Austin, April 16-18, 1997 . . . . . A-16
Figure A-21. Hourly Pedestrian Volumes on Allen Parkway in Houston, May 6-8, 1997 . . . A-17
Figure A-22. Hourly Pedestrian Volumes on Brays Bayou Trail in Houston, May 6-8, 1997 . . . . . A-17
Figure A-23. Hourly Pedestrian Volumes on South Main Street in Houston, May 6-8, 1997 . . . . . A-18
Figure A-24. Hourly Pedestrian Volumes on Royal Lane in Dallas, May 20-22, 1997 . . . . . A-19
Figure A-25. Hourly Pedestrian Volumes on Greenville Avenue in Dallas, May 20-22, 1997 . . . . . A-19
Figure A-26. Hourly Pedestrian Volumes on White Rock Lake Trail in Dallas, June 3-5, 1997 . . . . . A-20
Figure B-1. Trip Origins and Destinations at FM 2347 (George Bush Drive) and Timber/Bizzell Street B-5
Figure B-2. Trip Origins and Destinations at FM 2818 and Welsh Avenue B-6
Figure B-3. Trip Origins and Destinations at RM 2222 and Shoal Creek Boulevard B-7
Figure B-4. Trip Origins and Destinations on Loop 360 at the Colorado River B-8
Figure B-5. Trip Origins and Destinations on Allen Parkway at Taft Street B-9
Figure B-6. Trip Origins and Destinations at Brays Bayou Trail and South Main Street B-10
Figure B-7. Trip Origins and Destinations at Royal Lane and Greenville Avenue B-11
Figure B-8. Trip Origins and Destinations at White Rock Lake Trail and Mockingbird Lane B-12
Figure B-9. Bicycle Trip Length Probability (Origin to Site Location) by Site Location B-13
Figure B-10. Bicycle Trip Length Probability (Origin to Site Location) by City B-14
Figure B-11. Bicycle Trip Length Probability (Origin to Site Location to Destination) by Site Location B-15
Figure B-12. Bicycle Trip Length Probability (Origin to Site Location to Destination) by City B-16
Figure B-13. Pedestrian Trip Length Probability (Origin to Site Location) by City B-17
Figure B-14. Pedestrian Trip Length Probability (Origin to Site Location to Destination) by City B-18

LIST OF FIGURES (Continued)

PAGE

Figure C-1. Bicycle Trip Purpose at FM 2347 (George Bush Drive) and Timber/Bizzell in College Station C-5
Figure C-2. Bicycle Trip Purpose at FM 2818 and Welsh Avenue in College Station C-5
Figure C-3. Bicycle Trip Purpose at RM 2222 and Shoal Creek Boulevard in Austin C-6
Figure C-4. Bicycle Trip Purpose on Loop 360 in Austin C-6
Figure C-5. Bicycle Trip Purpose on Allen Parkway and Taft Street in Houston C-7
Figure C-6. Bicycle Trip Purpose at Brays Bayou Trail and South Main Street in Houston . . C-7
Figure C-7. Bicycle Trip Purpose at Royal Lane and Greenville Avenue in Dallas C-8
Figure C-8. Bicycle Trip Purpose at White Rock Lake Trial in Dallas C-8
Figure C-9. Pedestrian Trip Purpose at FM 2347 (George Bush Drive) and Timber/Bizzell in College Station C-9
Figure C-10. Pedestrian Trip Purpose at FM 2818 and Welsh Avenue in College Station . . . C-9
Figure C-11. Pedestrian Trip Purpose at RM 2222 and Shoal Creek Boulevard in Austin . . C-10
Figure C-12. Pedestrian Trip Purpose on Allen Parkway and Taft Street in Houston C-11
Figure C-13. Pedestrian Trip Purpose at Brays Bayou Trail and South Main Street in Houston C-11
Figure C-14. Pedestrian Trip Purpose at Royal Lane and Greenville Avenue in Dallas C-12
Figure C-15. Pedestrian Trip Purpose on White Rock Lake Trial at Mockingbird Lane in Dallas C-12
Figure C-16. Bicycle Trip Purpose for All 8 Texas Sites C-13
Figure C-17. Pedestrian Trip Purpose for All 8 Texas Sites C-13
Figure C-18. Bicycle Work Trip Frequency C-14
Figure C-19. Bicycle Recreation Trip Frequency C-14
Figure C-20. Bicycle School Trip Frequency C-15
Figure C-21. Pedestrian School Trip Frequency for all 8 Texas Sites by Trip Purpose C-16
Figure C-22. Pedestrian Work Trip Frequency C-16
Figure C-23. Pedestrian Recreation Trip Frequency C-17
Figure C-24. Pedestrian Personal Trip Frequency C-17
Figure C-25. Pedestrian School Trip Frequency C-18
Figure C-26. Pedestrian Other Trip Frequency C-18

LIST OF TABLES

PAGE

Table 1. Data Collection Site Locations 4
Table 2. Description of Data Collection Sites 9
Table 3. Average 12-Hour Bicycle Volumes 11
Table 4. Average 12-Hour Pedestrian Volumes 16
Table 5. Bicycle Trip Length Summary Statistics 18
Table 6. Pedestrian Trip Length Summary Statistics 19
Table 7. Bicycle Trip Purpose Summary Statistics 20
Table 8. Pedestrian Trip Purpose Summary Statistics 20
Table 9. Average Bicycle Trip Frequency for All Samples 23
Table 10. Average Pedestrian Trip Frequency for All Samples 23
Table C-1. Average Bicyclist Trip Frequency at FM 2347 (George Bush Drive) and Timber/Bizzell Street C-19
Table C-2. Average Bicyclist Trip Frequency at FM 2818 and Welsh Avenue C-19
Table C-3. Average Bicyclist Trip Frequency at RM 2222 and Shoal Creek Boulevard C-20
Table C-4. Average Bicyclist Trip Frequency on Loop 360 at the Colorado River C-20
Table C-5. Average Bicyclist Trip Frequency on Allen Parkway at Taft Street C-21
Table C-6. Average Bicyclist Trip Frequency on Brays Bayou Trail at South Main Street . . C-21
Table C-7. Average Bicyclist Trip Frequency at Royal Lane and Greenville Avenue C-22
Table C-8. Average Bicyclist Trip Frequency on White Rock Lake Trail at Mockingbird Lane C-22

CHAPTER 1
INTRODUCTION

The overall research goal for TxDOT study 0-1723 is to develop a methodology that will provide TxDOT personnel with the information and a decision-making framework to assess existing and proposed travel demand by bicyclists and pedestrians. The research objectives and progress to date are as follows:

- *Identify existing information for travel demand forecasting for bicycle and pedestrian travel*. The literature review contained in Report 1723-1 identifies and describes a number of related studies and ongoing research related to bicycle/pedestrian demand forecasting methods.
- *Identify the factors affecting selection of bicycle/pedestrian travel*. The literature review in Report 1723-1 enumerates a number of factors that influence bicycle/pedestrian demand, categorized mostly as land use and demographics characteristics.
- *Assess the influence of factors related to selecting bicycle/pedestrian travel*. The relative influence of various land use and demographic factors are highlighted in Report 1723-1.
- *Assess whether influential factors for NMT are indicated but data is insufficient, and recommend additional data collection if necessary*. After assessing the factors thought to influence bicycle and pedestrian travel, the research team agreed that it would be necessary to collect survey data about bicycle and pedestrian travel in Texas. This report (1723-2) documents these data collection activities.
- *Develop relationships between influential factors and bicycle/pedestrian travel*. This will be accomplished in the second year of this study.
- *Develop several models addressing the affect of influential factors on bicycle/pedestrian travel*. This will be accomplished in the second year of this study.

- *Evaluate models for forecasting utility*. This will be accomplished in the second year of this study.

The end product for this research study will be a single document containing the findings of validity testing for several bicycle and pedestrian travel demand forecasting models. Should one or more models be validated, detailed documentation will be developed for the future use of these models by TxDOT. A validated demand forecasting model will provide a consistent framework for evaluating and prioritizing existing and proposed corridors for bicycle and pedestrian improvements.

TTI Research Report 1723-1, "Bicycle and Pedestrian Travel Demand Forecasting: Literature Review," document several demand forecasting methodologies that could be tested for validity. The objective of the data collection activities documented in this report was to gather sufficient information about bicycle and pedestrian trip characteristics and usage levels in Texas to test and/or adapt these existing methodologies for use by TxDOT.

Organization of this Report

This report contains a summary of the data collection activities performed in the spring of 1997. The data were collected for the purposes of developing and testing bicycle and pedestrian travel demand forecasting techniques. The report is divided into the following sections:

- **Chapter 1: Introduction -** presents the objectives for this research study;
- **Chapter 2: Study Design -** describes the study design and data collection procedures used in this study;
- **Chapter 3: Data Reduction and Summary -** summarizes the bicycle and pedestrian usage and trip data collected in the spring and summer of 1997; and,
- **Chapter 4: Summary of Findings and Conclusions -** provides major findings and conclusions from this task of the study.

CHAPTER 2
STUDY DESIGN

This chapter describes the study design and data collection procedures used in this study. The research team used video cameras to record facility usage over several days and distributed intercept survey cards at the sites to collect information about bicycle and pedestrian trip characteristics. The following sections provide more detail on these data collection activities.

Data Collection Site Selection

For this study, eight sites were selected in four Texas cities: College Station, Austin, Houston, and Dallas. (Table 1 and Figures 1 to 4). Several criteria determined site selection:

- Adequate provision of bicycle and pedestrian facilities;
- Relatively high levels of use;
- Geometric and traffic characteristics typical of state roadways;
- Trip purposes predominantly transportation-related; and,
- Ability to position video data collection equipment.

The researchers performed site surveys in College Station, Houston, Austin, San Antonio, Dallas, and Tyler to investigate potential data collection sites. Initially, the researchers experienced difficulty in identifying state roadways with adequate bicycle/pedestrian provisions and high levels of use. Consequently, several of the data collection sites were chosen where high-use facilities intersected with state roadways. Also, several shared-use trails were selected because of their high levels of use for transportation purposes. The number of sites were spread geographically among the urban areas of Texas, and the bicycle and pedestrian facilities at these sites incorporate a number of different design characteristics and adjacent land uses. Table 2 describes the characteristics of the roadways at each site.

Table 1. Data Collection Site Locations

City and Date of Data Collection	Site Location
College Station, March 19-21, 1997	FM 2347 (George Bush Drive) at Timber/Bizzell Street
	FM 2818 at Welsh Avenue
Austin, April 16-18, 1997	RM 2222 (Allendale Road) at Shoal Creek Boulevard
	Loop 360 at the Colorado River
Houston, May 6-8, 1997	Allen Parkway at Taft Street
	Brays Bayou Trail at South Main Street
Dallas, May 20-22 and June 3-5, 1997	Royal Lane at Greenville Avenue
	White Rock Lake Trail at Mockingbird Lane

Video Data Collection

The data collection method used portable video cameras mounted on a towable trailer assembly. The video cameras recorded pedestrian and bicycle volumes at each data collection site. Researchers taped each site for twelve hours on every day of a three-day period, resulting in a minimum of 36 hours of video for each site. The videotape was then reduced in the office. Bicycle and pedestrian volumes were counted on all videotapes and compiled for the use in the calibration of demand forecasting models for Texas. This data collection began on March 19, 1997 and ended on June 5, 1997.

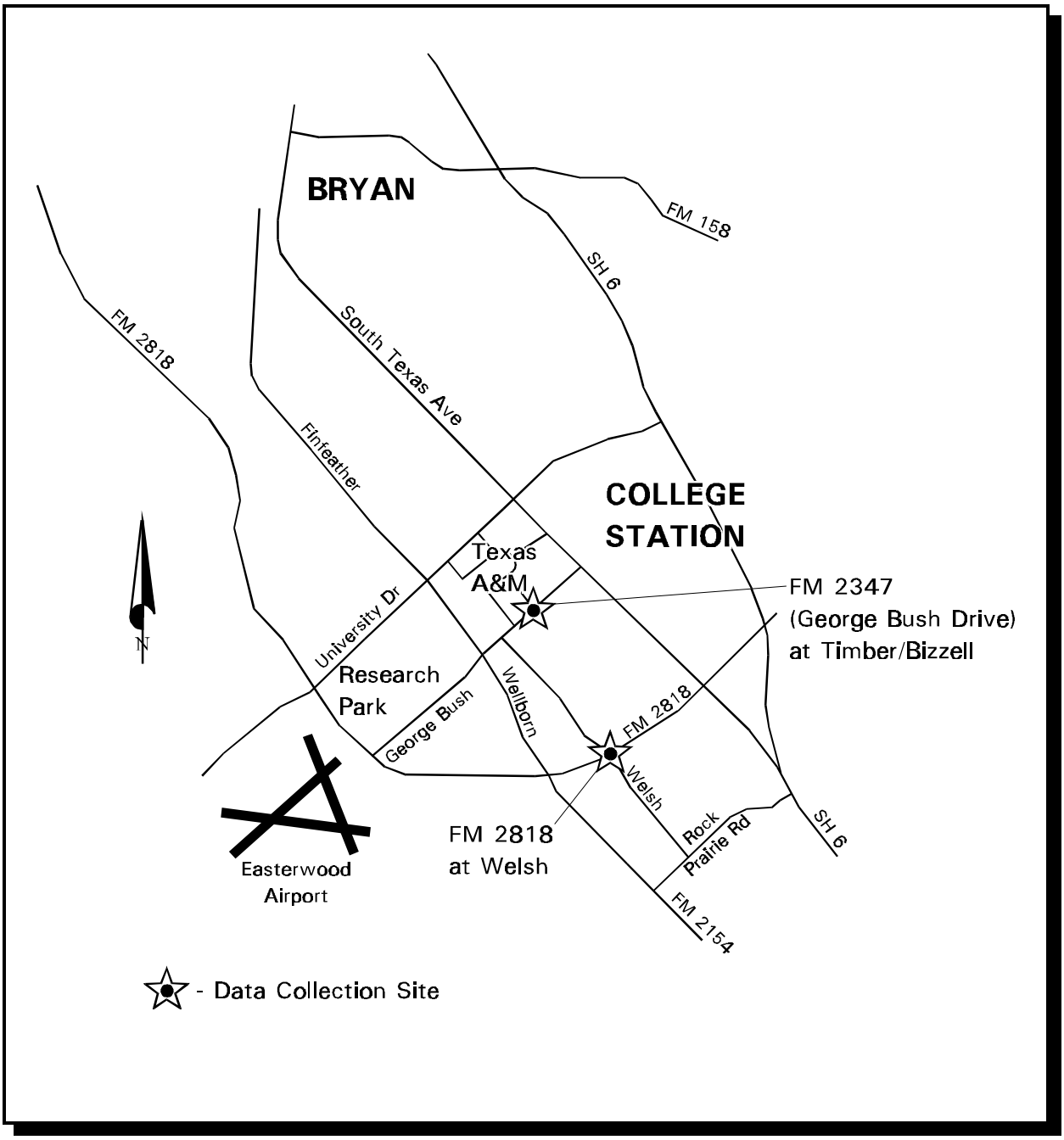


Figure 1. Site Locations in College Station

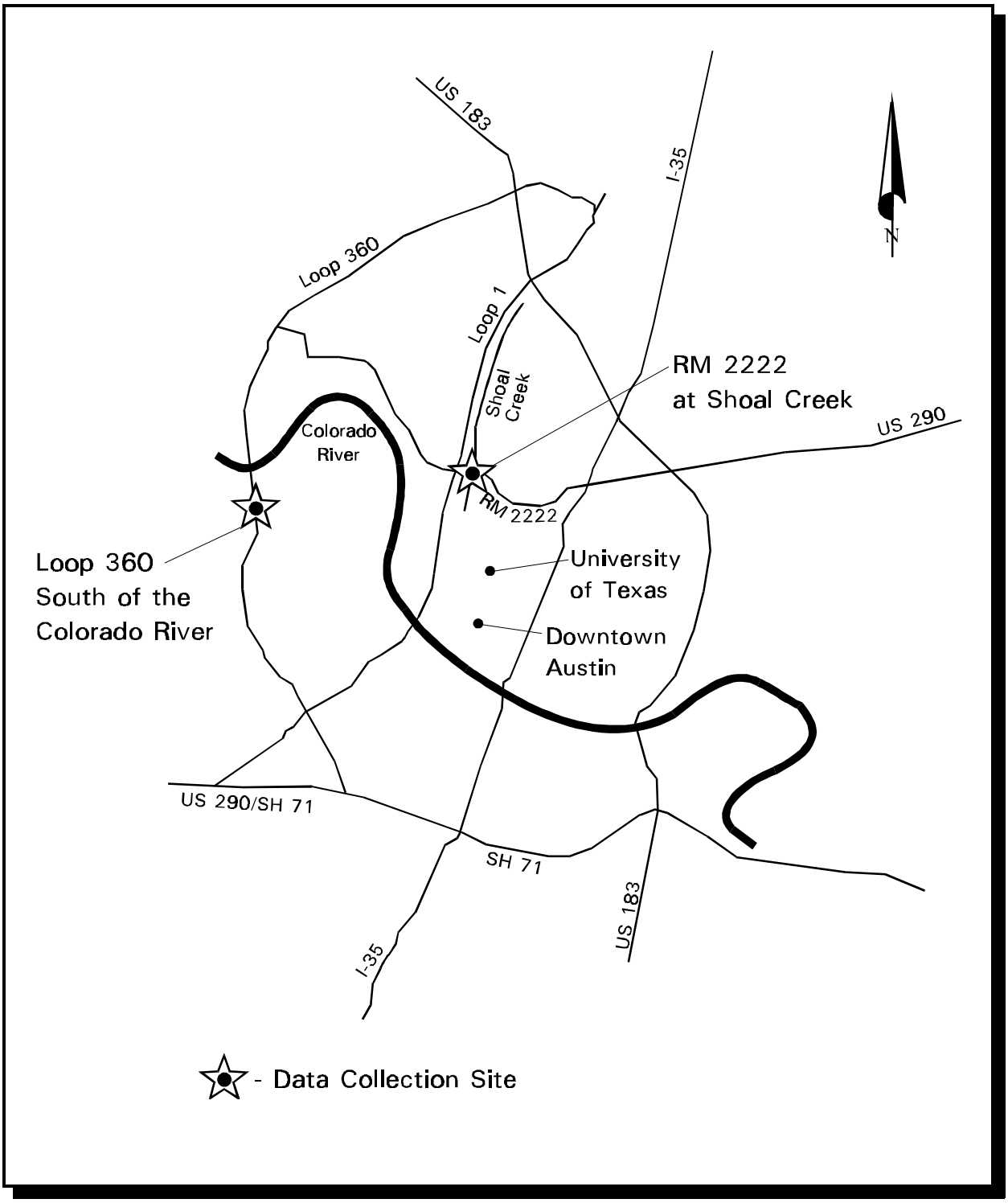


Figure 2. Site Locations in Austin

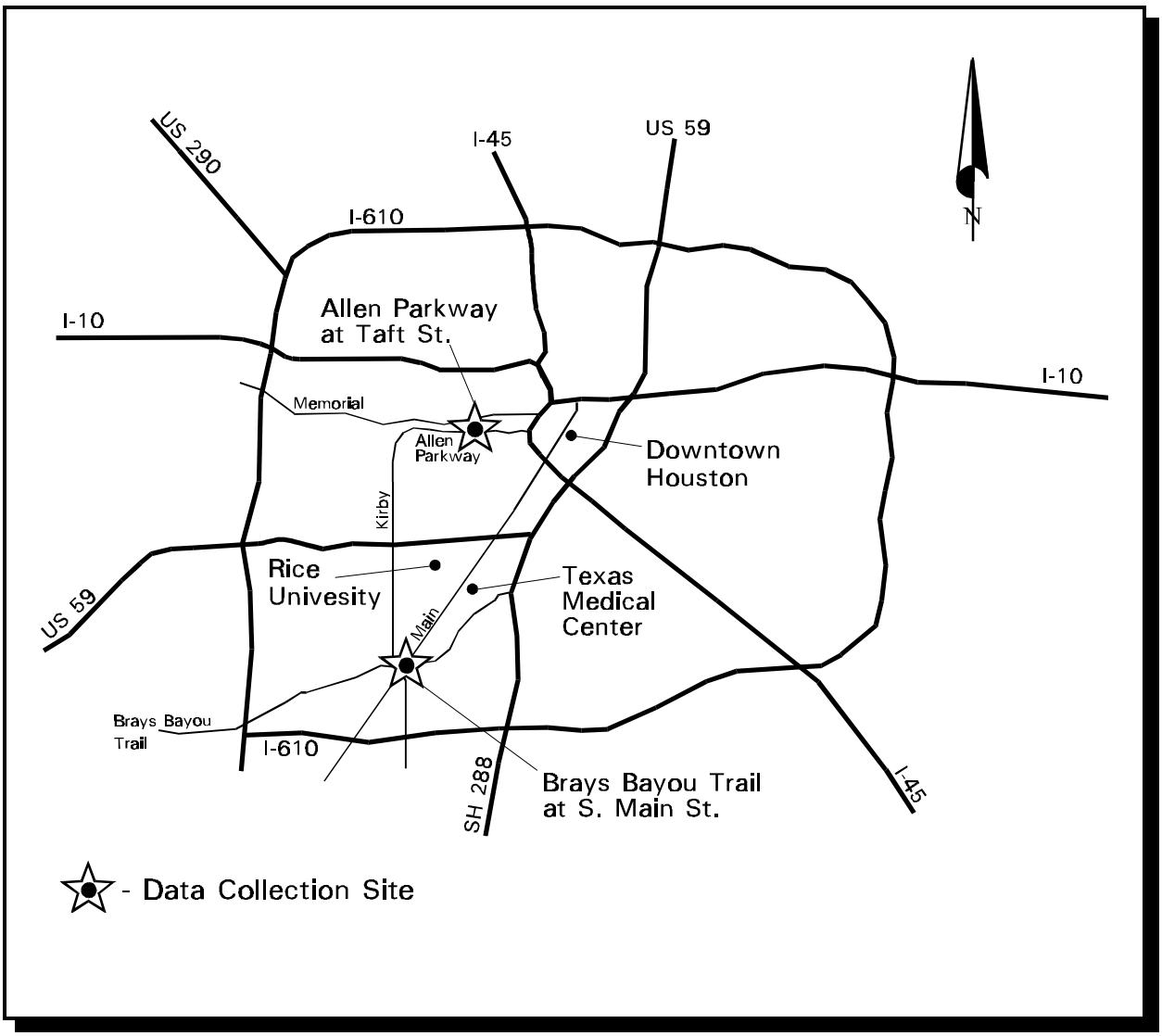


Figure 3. Site Locations in Houston

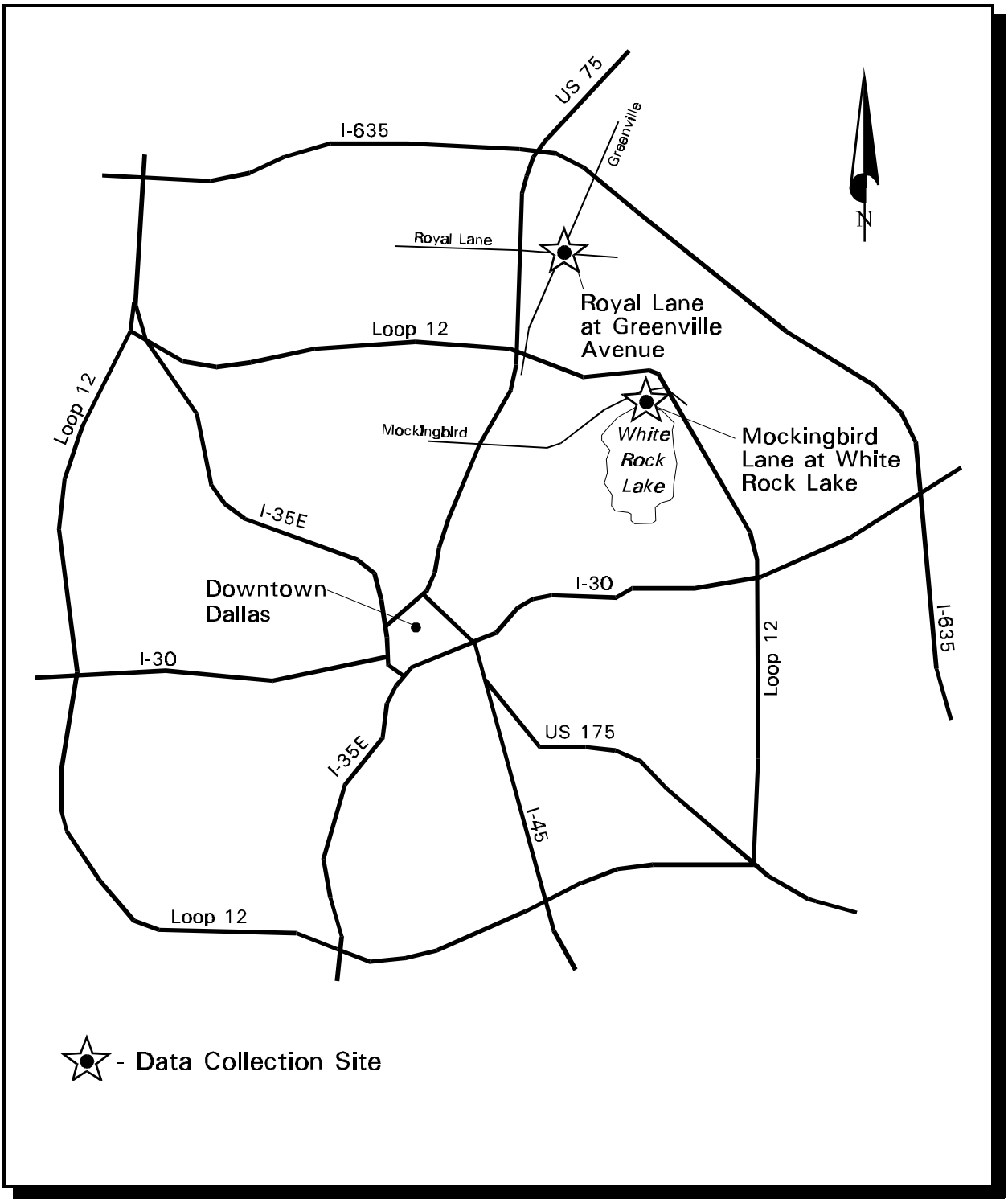


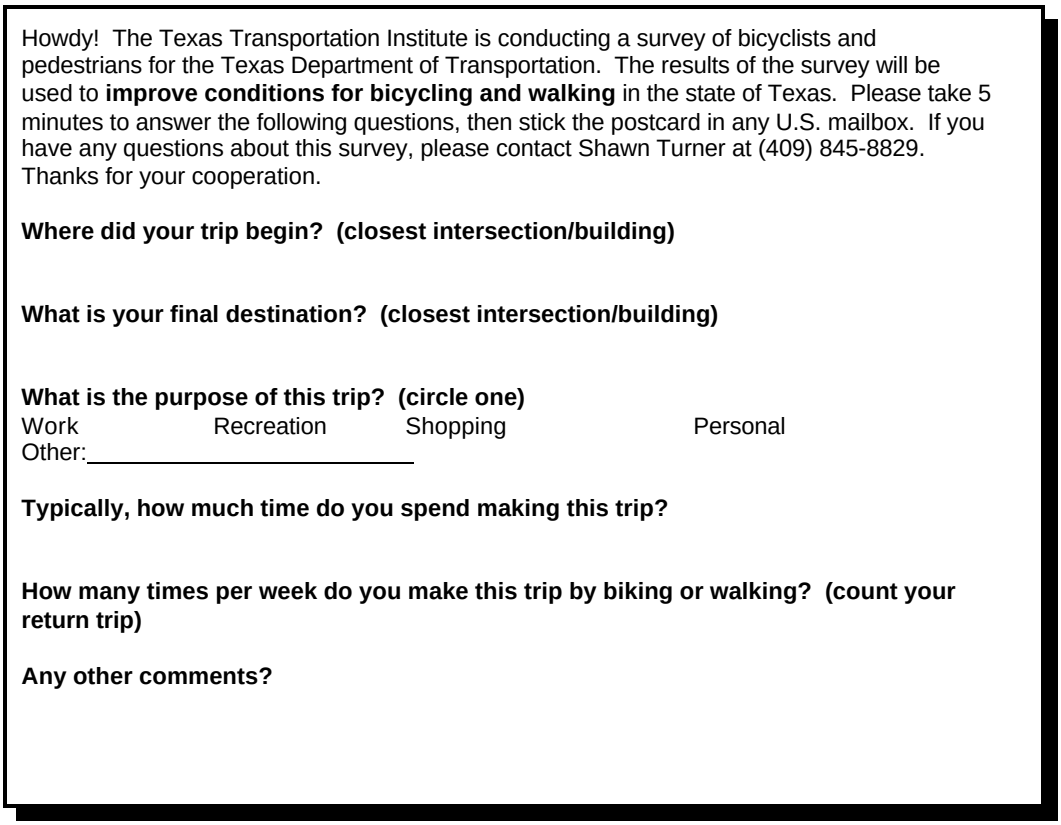
Figure 4. Site Locations in Dallas

Table 2. Description of Data Collection Sites

Site	Primary Corridor					Intersecting Corridor				
	Street	**State Highway? (Yes/No)**	**Street Type and Cross Section**	**Bike/Ped Facilities**	**Anticipated Bike/Ped. Usage**	**Street**	**State Highway? (Yes/No)**	**Street Type and Cross Section**	**Bike/Ped Facilities**	**Anticipated Bike/Ped. Usage**
1	FM 2347 (Geo. Bush Dr.), College Station	yes	4-lane divided arterial	2-way bike lanes, sidewalk, jogging path	moderate commuter, recreational	Bizzell/ Timber Street	no	2-lane collector	sidewalk	high commuter
2	FM 2818, College Station	yes	4-lane undivided arterial	1.2 m shoulders	low recreational	Welsh Street	no	2-lane collector	bike lanes/ sidewalks on both sides	moderate commuter, recreational
3	RM 2222, Austin	yes	urban major arterial	sidewalks on both sides	low recreational	Shoal Creek Boulevard	no	2-lane collector	bike lanes/ sidewalks on both sides	moderate commuter, recreational
4	Loop 360, Austin	yes	suburban state highway	1.8-2.4 m shoulders	high recreational	Courtyard Drive	no	2-lane local	sidewalk	low
5	North Brayswood, Houston	no	urban minor arterial	parallel bicycle and jogging trail	high recreational, moderate commuter	Main Street	no	4-lane undivided arterial	sidewalks	low
6	Allen Parkway, Houston	no	6-lane divided arterial	parallel bicycle and jogging trail	high recreational, moderate commuter	Shepherd	no	3-lane one way pair	sidewalks, dirt paths	moderate recreational, low commuter
7	Royal Lane, Dallas	no	4-lane undivided arterial	parallel bicycle path	moderate recreational, low commuter	Greenville Avenue	no	4-lane undivided arterial	sidewalks on both sides	low commuter
8	Mockingbird Lane, Dallas	no	suburban minor arterial	parallel bicycle path	high recreational, low commuter	Vicinity of White Rock Lake	n/a			

Intercept Survey Distribution

While the sites were being videotaped, a worker was assigned the task of distributing color coded survey cards (Figure 5) to bicyclists and pedestrians during peak and off-peak periods of travel. The survey cards were in the form of a postage prepaid postcard that recipients could take with them to complete and mail in at a later date. The survey cards consisted of five questions that will be used to supplement the National Personal Transportation Survey data base and the 1990 Census Journey-to-Work.


Howdy! The Texas Transportation Institute is conducting a survey of bicyclists and pedestrians for the Texas Department of Transportation. The results of the survey will be used to **improve conditions for bicycling and walking** in the state of Texas. Please take 5 minutes to answer the following questions, then stick the postcard in any U.S. mailbox. If you have any questions about this survey, please contact Shawn Turner at (409) 845-8829. Thanks for your cooperation.

Where did your trip begin? (closest intersection/building)

What is your final destination? (closest intersection/building)

What is the purpose of this trip? (circle one)
Work Recreation Shopping Personal
Other:_____

Typically, how much time do you spend making this trip?

How many times per week do you make this trip by biking or walking? (count your return trip)

Any other comments?

Figure 5. Intercept Survey Card

CHAPTER 3
DATA REDUCTION AND SUMMARY

Bicycle and Pedestrian Volumes

The bicycle and pedestrian volumes were counted for a period of 36 hours at all eight Texas locations. Bicycle and pedestrian volumes were reduced to illustrate the 12-hour volumes on each roadway at all site locations. Twelve-hour counts typically account for about 90 to 95 percent of the daily volume during the time of data collection. Figures 6 through 13 illustrate the 12-hour bicycle and pedestrian volumes grouped according to city and facility. Tables 3 and 4 show the average 12-hour bicycle and pedestrian volumes.

Table 3. Average 12-Hour Bicycle Volumes

Facility	Average 12-hour Bicycle Volume
FM 2347 (George Bush Drive	161
Timber/Bizzell Street	314
FM 2818	7
Welsh Avenue	73
RM 2222	10
Shoal Creek Boulevard	112
Loop 360	62
Allen Parkway	169
Brays Bayou Trail	195
South Main	15
Royal Lane	111
Greenville Avenue	2
White Rock Lake Trial	346

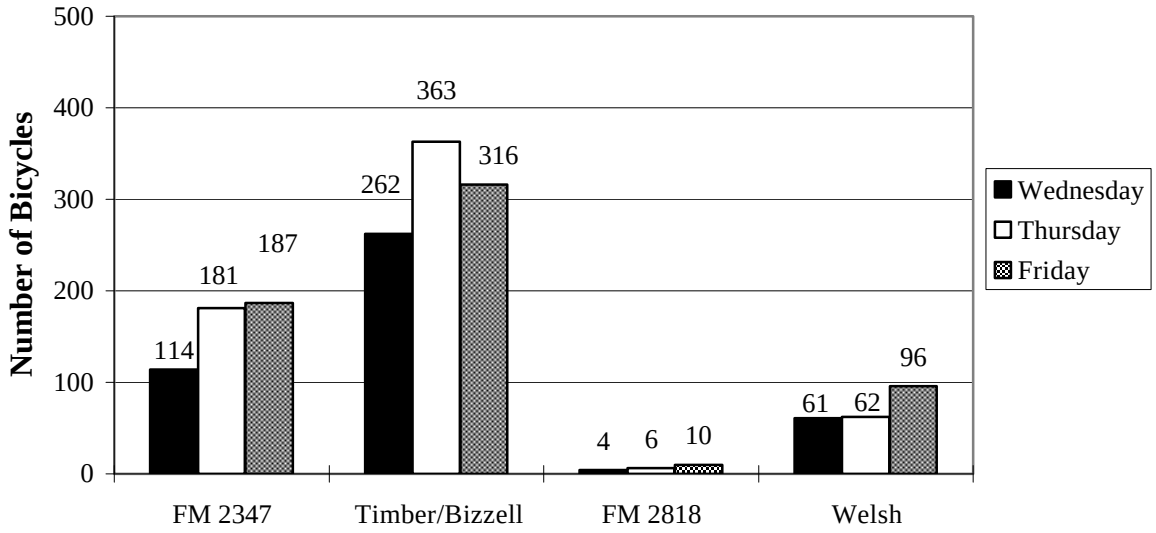


Figure 6. 12-Hour Bicycle Counts in College Station, March 19-21, 1997

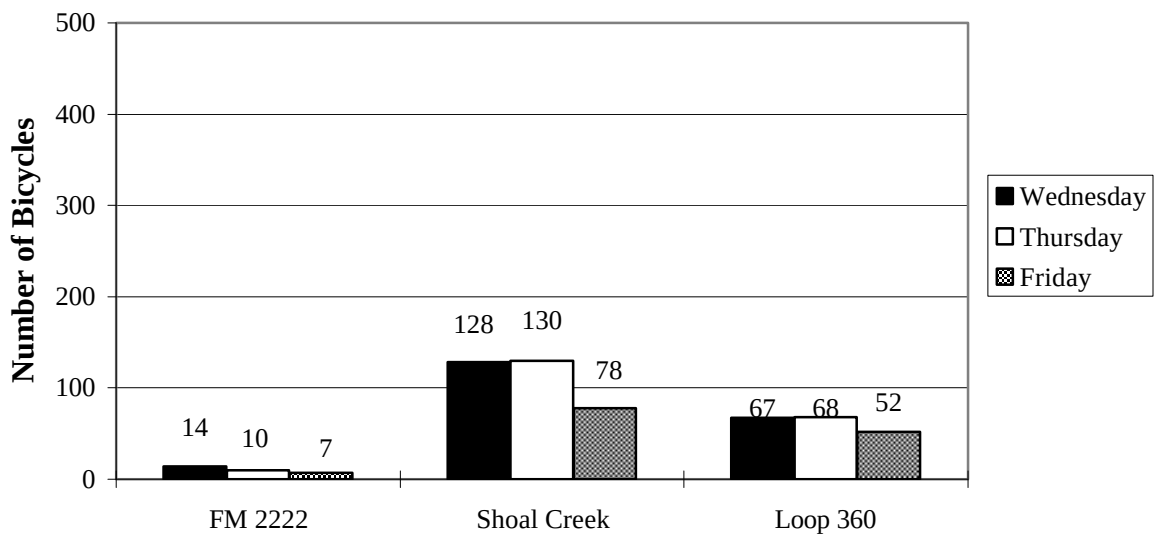


Figure 7. 12-Hour Bicycle Counts in Austin, April 16-18, 1997

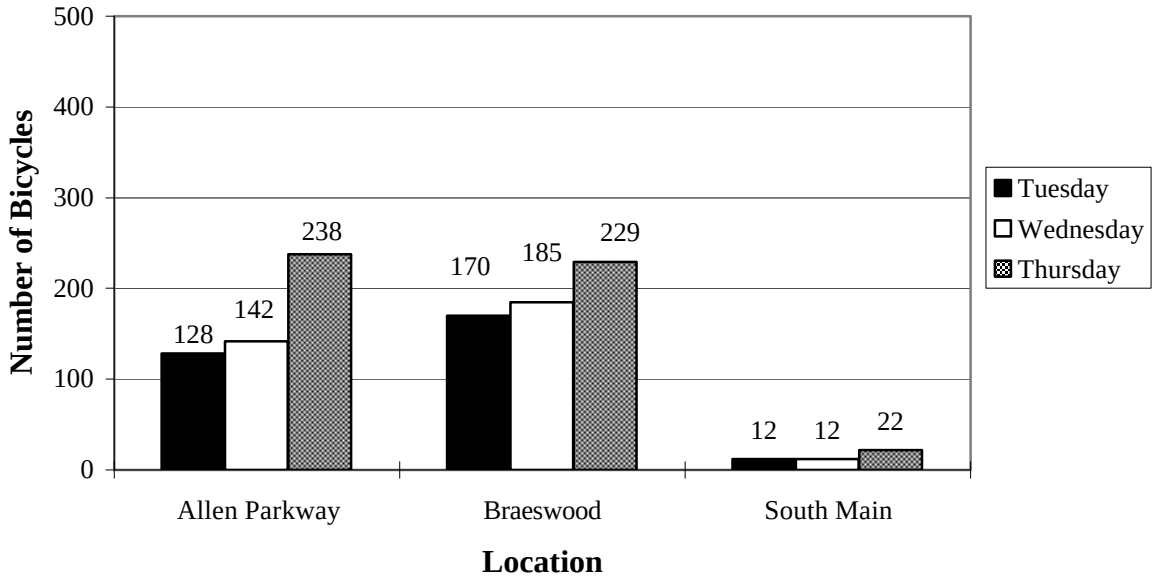


Figure 8. 12-Hour Bicycle Counts in Houston, May 6-8, 1997

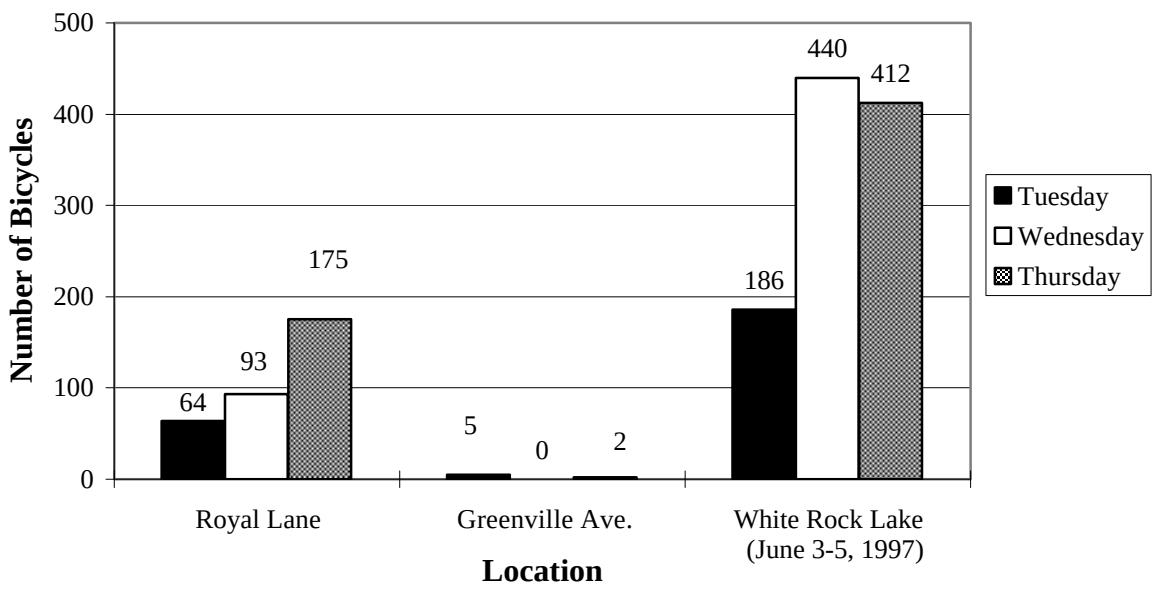


Figure 9. 12-Hour Bicycle Counts in Dallas, May 20-22, 1997

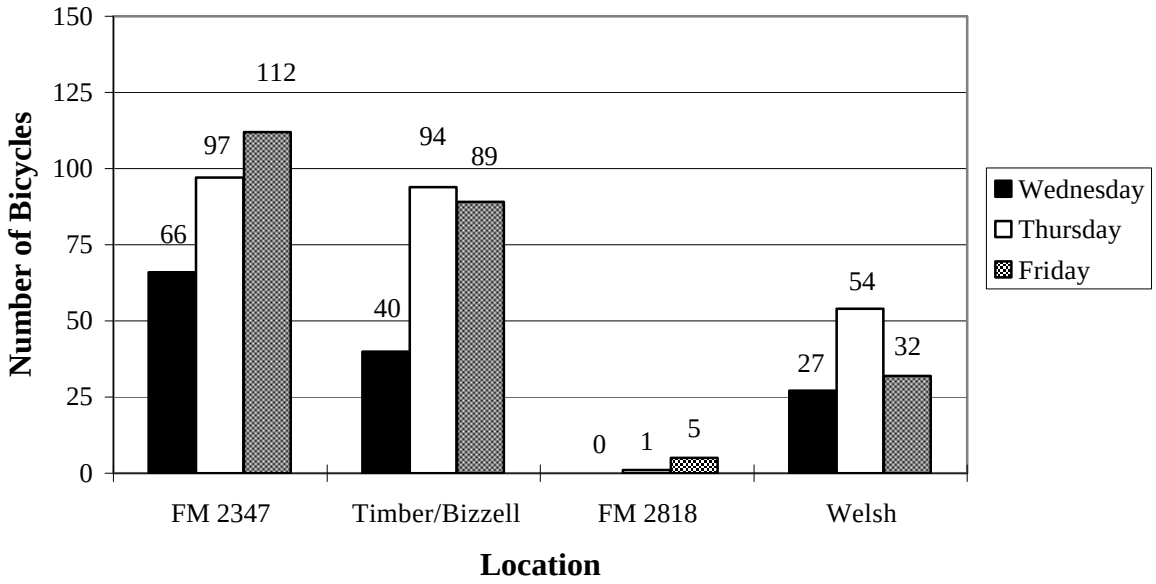


Figure 10. 12-Hour Pedestrian Counts in College Station, March 19-21, 1997

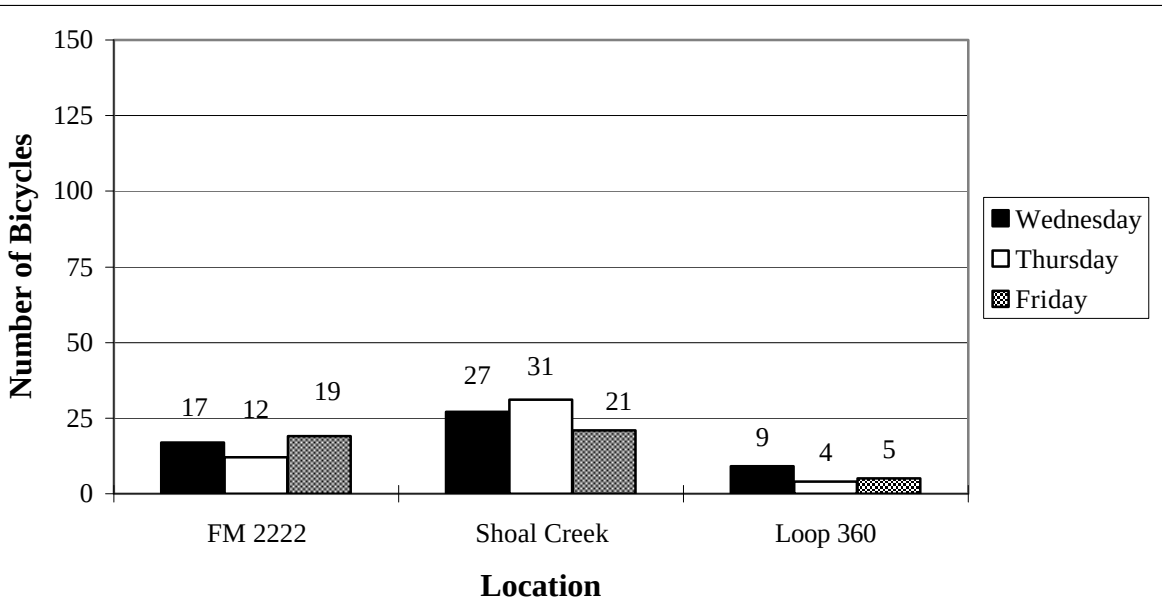


Figure 11. 12-Hour Pedestrian Counts in Austin, April 16-18, 1997

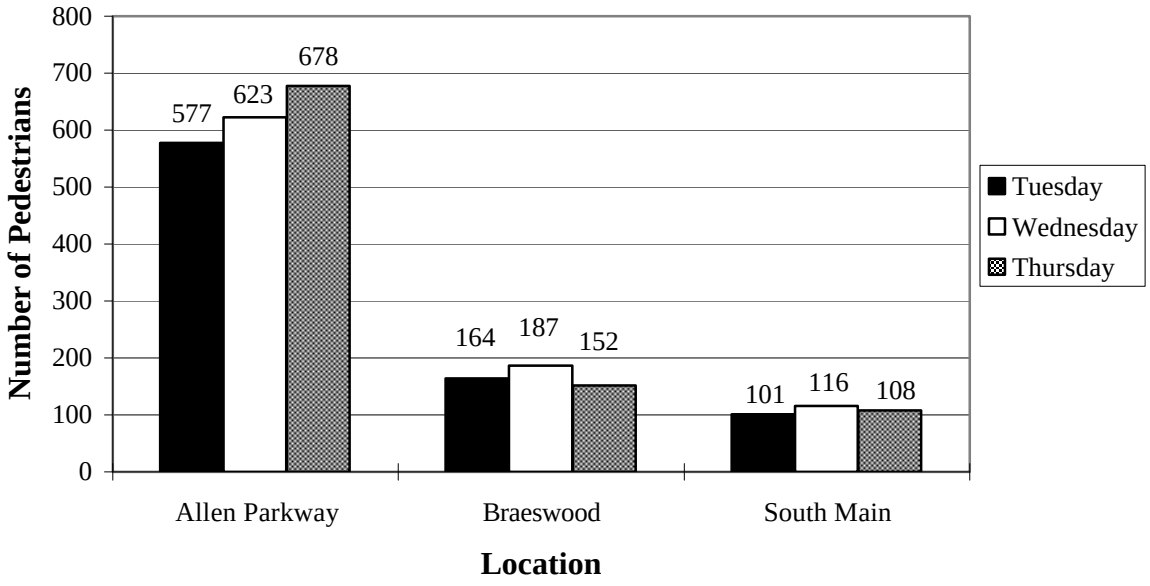


Figure 12. 12-Hour Pedestrian Counts in Houston, May 6-8, 1997

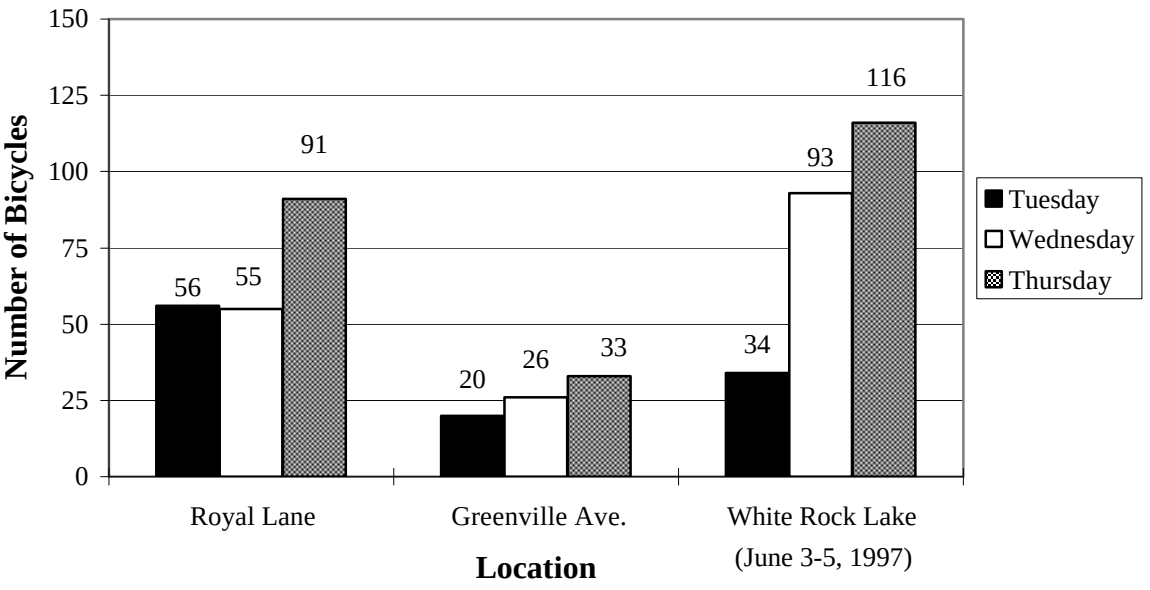


Figure 13. 12-Hour Pedestrian Counts in Dallas, May 20-22, 1997

Table 4. Average 12-Hour Pedestrian Volumes

Facility	Average 12-Hour Pedestrian Volume
FM 2347 (George Bush Drive)	92
Timber/Bizzell Street	74
FM 2818	2
Welsh Avenue	38
RM 2222	16
Shoal Creek Boulevard	26
Loop 360	6
Allen Parkway	626
Brays Bayou Trail	168
South Main Street	108
Royal Lane	67
Greenville Avenue	26
White Rock Lake Trail	81

The locations where there are high bicycle and pedestrian volumes provide adequate sidewalks and bicycling areas. White Rock Lake Trail, which has the highest amount of bicycle volume, is located near a high-use recreational park area in Dallas. The trail along White Rock Lake connects to many other trails that distribute cyclists into the surrounding areas. Timber/Bizzell Street, which has the second highest bicycle volume, is located at Texas A&M University and is a direct connection to the university for many students. The facilities provided along Timber/Bizzell Street allow many cyclists to travel to the campus. Allen Parkway and Brays Bayou Trail are separated shared use paths that attract a large amount of bicyclists for the purposes of recreation and commuting.

Locations where high pedestrian volumes were observed were Allen Parkway, Brays Bayou Trail, and South Main Street. The large volumes at Allen Parkway can be attributed to a high amount of activity over the lunch hour (from 12 p.m. to 1 p.m.). During this time, pedestrian volumes ranged between 200 and 250 people.

To provide further detail, the bicycle and pedestrian volumes were examined on an hourly level (Appendix A). The most common trend seen in the hourly data shows an increase in bicycle and pedestrian activity during the late afternoon and early evening hours. Figures A-1 through A-26 contain 12-hour bicycle and pedestrian volumes for all locations.

Bicyclist and Pedestrian Trip Lengths

Using the origin and destination information provided on the survey cards, it was possible to determine the distances that people travel from their origins to the site locations and to their destinations. Researchers geo-coded the surveys into geographic information system (GIS) software and calculated straight-line distances (trip lengths). Geo-coding is the process of assigning coordinates on a map to a piece of information. In this case, the survey cards asked respondents their origins and destinations, the origins and destinations were assigned coordinates on a maps of the respective cities. Appendix B contains information about the trip origins and destinations, and also contains more detailed information on the trip length distributions.

Researchers calculated distances from the origin to site location (O-S) and site location to destination (S-D). To calculate the total straight line distance that a person traveled, the combination of the origin to site location and site location to destination distances were added together to determine the approximate total distance (O-D). In some cases, researchers used judgement to determine origins and destinations that could not be found on the map data base used for geo-coding.

The research team used information obtained from the calculation of trip distances to develop trip length probability curves. The average distance that people surveyed travel on bicycle from their

origin to the site location is approximately 3.2 km (2.0 mi) and their total average trip length from origin to destination is 6.3 km (3.9 mi). Graphs showing cumulative percent of trip lengths (Figures B-9 to B-10) illustrate that 50 percent of people travel 2.4 km (1.5 mi) or less from their origin to site location by bicycle and 50 percent of people travel 5.2 km (3.3 mi) or less from their origin to destination by bicycle. Table 5 contains bicycle trip length summary statistics for all eight sites.

Table 5. Bicycle Trip Length Summary Statistics

Site Location	Number of Surveys	Average Distance, km (mi)	
		Origin-Site	Origin-Destination
FM 2347 and Timber/Bizzell	60	1.64 (1.02)	2.99 (1.86)
FM 2818 and Welsh	12	1.51 (0.94)	5.15 (3.20)
RM 2222 and Shoal Creek	31	4.43 (2.75)	9.31 (5.78)
Loop 360	9	5.92 (3.68)	12.48 (7.75)
Allen Parkway	9	2.42 (1.50)	4.07 (2.53)
Brays Bayou Trail	26	4.06 (2.52)	6.94 (4.31)
Royal Lane and Greenville Ave.	20	4.20 (2.61)	9.13 (5.67)
White Rock Lake Trail	6	5.39 (3.35)	8.45 (5.25)
Entire Sample	**173**	**3.21 (2.00)**	**6.39 (3.97)**

The average distance that people are willing to walk from their origin to their site locations is approximately 1.9 km (1.2 mi) and the average distance that pedestrians are willing to travel from their origin to destination is approximately 4.0 km (2.5 mi). Appendix B contains more detailed information on trip length distributions. For example, 50 percent of the pedestrian population surveyed are willing to travel approximately 1.3 km (0.8 mi) from their origin to the site locations (Figure B-11) and 50 percent of those pedestrians are willing to travel 2.9 km (1.8 mi) from their origin to destination. Table 6 contains the pedestrian trip length summary statistics for all eight sites that were surveyed.

Table 6. Pedestrian Trip Length Summary Statistics

Site Location	Number of Surveys	Average Distance, km (mi)	
		Origin-Site	Origin-Destination
FM 2347 and Timber/Bizzell	11	1.46 (0.91)	2.70 (1.68)
FM 2818 and Welsh	4	0.84 (0.52)	1.98 (1.23)
RM 2222 and Shoal Creek	5	1.00 (0.62)	2.17 (1.35)
Loop 360	0	n.a.	n.a.
Allen Parkway	24	2.24 (1.39)	4.25 (2.64)
Brays Bayou Trail	10	0.95 (0.59)	1.67 (1.04)
Royal Lane and Greenville Ave.	6	2.53 (1.57)	8.86 (5.50)
White Rock Lake Trail	9	1.92 (1.19)	4.41 (2.74)
Entire Sample	**69**	**1.73 (1.08)**	**3.76 (2.34)**

Distances were also sorted by trip purpose over the entire sample to allow for the examination of the distances that bicyclists and pedestrians travel for various purposes. The sorting of trip purpose at each site would have yielded low sample sizes, so all sites were combined when examining trip lengths by trip purpose. For example, the average distance that people cycle to work is 5.7 km (3.6 mi) and pedestrians travel 3.3 km (2.0 mi). Tables 7 and 8 provide bicycle and pedestrian trip lengths organized by trip purpose.

Table 7. Bicycle Trip Purpose Summary Statistics

Trip Purpose	Number of Surveys	Average Distance, km (mi)	
		O-S	O-D
Work	81	3.00 km (1.87 mi)	5.74 km (3.57 mi)
Recreation	56	4.36 km (2.71 mi)	8.81 km (5.47 mi)
Shopping	1	4.03 km (2.50 mi)	6.36 km (3.95 mi)
Personal	4	3.32 km (2.06 mi)	7.52 km (4.67 mi)
School	29	1.36 km (0.85 mi)	2.80 km (1.74 mi)
Other	2	2.69 km (1.67 mi)	8.52 km (5.29 mi)

Table 8. Pedestrian Trip Purpose Summary Statistics

Trip Purpose	Number of Surveys	Average Distance, km (mi)	
		O-S	O-D
Work	6	1.52 km (0.94 mi)	3.34 km (2.08 mi)
Recreation	37	1.93 km (1.20 mi)	4.07 km (2.53 mi)
Shopping	0	n.a.	n.a.
Personal	7	1.16 km (0.72 mi)	2.25 km (1.40 mi)
School	5	0.76 km (0.48 mi)	1.68 km (1.05 mi)
Other	14	2.26 km (1.41 mi)	4.61 km (2.87 mi)

Bicycle Trip Purpose

Researchers entered responses from the returned survey cards into a data base file for further analysis. As of July 23, 1997, 175 bicycle and 69 pedestrian surveys have been returned and entered into the data base. The data base information was then analyzed to determine the trip purposes of the cyclists and pedestrians surveyed. Figures 14 and 15 show the trip purposes for all the returned surveys. Recreation and work purposes were the most frequent responses for bicycling and pedestrian activities. Appendix C contains more detailed information on trip purposes for the eight sites.

Bicycle and Pedestrian Trip Frequency

Trip frequency is the number of times in a week that an individual makes a particular trip. Survey respondents were asked the number of times per week that they made a particular trip, including the return trip. Table 9 shows the average trip frequency by trip purpose for the entire population surveyed. The average bicycle trip frequencies for each site location were also computed and can be found in Appendix C. Due to the small number of pedestrian surveys, the summary of pedestrian trip frequencies was kept to the entire sample. The average trip frequencies by trip purpose can be found in Table 10. Graphs showing the cumulative percent of people versus trip frequency can be found in Appendix C. Pedestrian trip frequencies for all trip purposes can also be found in Appendix C.

Survey Comments

Bicyclists and pedestrians that responded to the survey had space to include general comments. The comments ranged widely, from favorable comments related to the conduct of this study, to suggestions for improvement in bicycle and pedestrian facilities. Appendix D contains all comments received through this study.

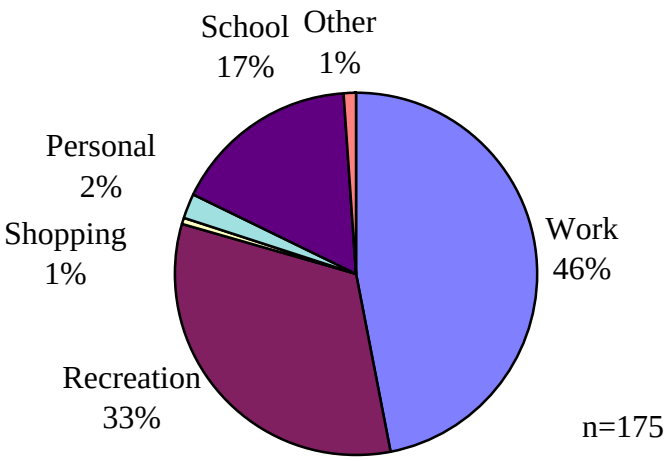


Figure 14. Bicycle Trip Purpose for all 8 Texas Sites

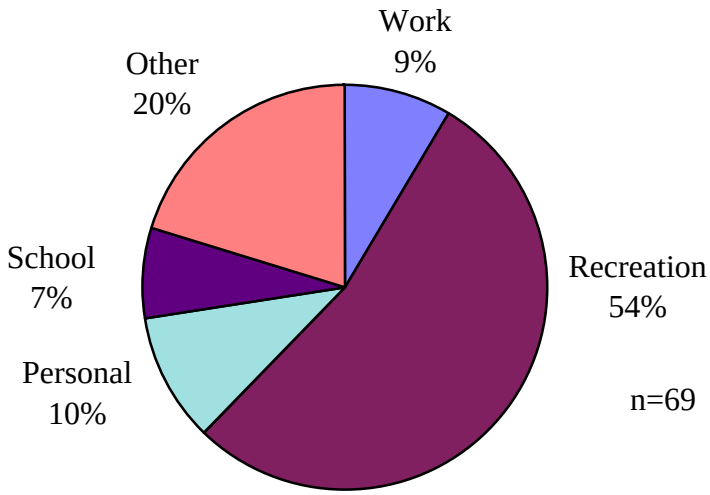


Figure 15. Pedestrian Trip Purpose for all 8 Texas Sites

Table 9. Average Bicycle Trip Frequency for All Samples

Purpose	Number of Surveys	Average Trip Frequency
Work	81	10
Recreation	53	6
Shopping	1	3
Personal	4	4
School	29	11
Other	2	7

Table 10. Average Pedestrian Trip Frequency for All Samples

Purpose	Number of Surveys	Average Trip Frequency
Work	6	9
Recreation	32	7
Shopping	0	0
Personal	6	7
School	5	11
Other	14	7

CHAPTER 4
SUMMARY OF FINDINGS AND CONCLUSIONS

This chapter summarizes preliminary findings and conclusions of the data collection efforts. In the next task, the research team will examine the collected data more carefully in an attempt to develop and test bicycle and pedestrian demand forecasting procedures. The preliminary findings and conclusions from the data collection activities can be summarized into the following points.

- **The data collection activities incorporated a range of sites with varying street and land use characteristics and bicycle/pedestrian usage levels.** The usage levels at data collection sites ranged from high-use side streets (e.g., Timber/Bizzell Street, Shoal Creek Boulevard) to high-use separated paths (e.g., Brays Bayou Trail and White Rock Lake Trail) to low-use state highways (e.g., FM 2818, RM 2222). Information at each site about adjacent land uses, street characteristics, and trip survey data should enable the research team to identify those factors which most strongly affect usage at each site.

- **Useful survey information was gathered about trip generators and trip length distributions.** This trip information will be particularly useful in comparing the measured usage levels to predicted usage levels from several models that will be tested. Additional one-day site surveys may be necessary to confirm collected data and collect any additional data about trip generators and adjacent land uses.

- **Usage levels varied considerably for some sites during data collection**. The usage levels were fairly constant across the three full days of data collection at some sites (e.g., Welsh Avenue, Brays Bayou Trail); however, other sites (e.g., Allen Parkway, White Rock Lake Trail) had considerable variability of use between the three days of data collection. There is no apparent explanation for this day-to-day variability at some sites, but the research team will investigate this issue in the next research task.

- **Some sites have very low survey response rates.** Several of the sites had low survey response rates, which means that the trip information gathered at these sites may not be representative of the entire bicycle and pedestrian population. In the next research task, the survey information will be compared among sites to determine any significant differences. The researchers may have to supplement sites having low survey response rates with additional information from other sites or studies.

APPENDIX A

12-HOUR BICYCLE AND PEDESTRIAN VOLUME COUNTS

APPENDIX A: 12-HOUR BICYCLE AND PEDESTRIAN VOLUME COUNTS

This appendix summarizes the bicycle and pedestrian volume counts performed at eight sites in Texas. The research team used video cameras to record bicycle and pedestrian activity at the designated intersections, and the video was reduced at a later date in the office. A minimum of three days of data was collected at all sites. In most cases, these three days were the middle weekdays (i.e., Tuesday, Wednesday, and Thursday). At sites where high recreational traffic was expected on the weekend, data were collected on Thursday, Friday, and Saturday. Figures A-1 through A-13 summarize the 12-hour bicycle volume counts, and Figures A-14 to A-26 summarize the 12-hour pedestrian volume counts.

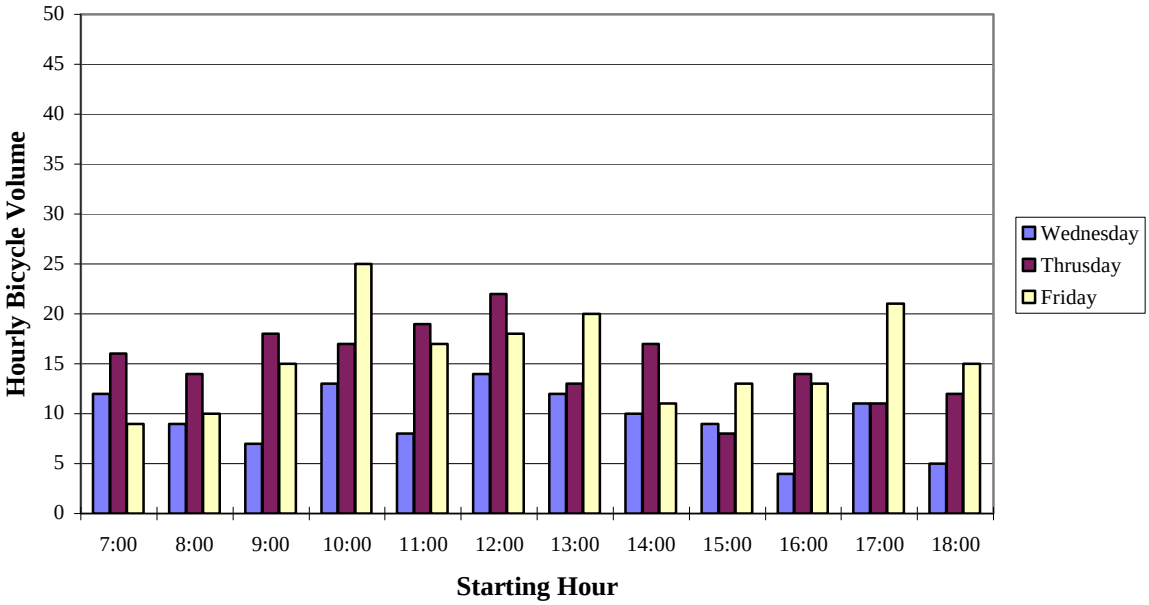


Figure A-1. Hourly Bicycle Volumes on FM 2347 (George Bush Drive) in College Station, March 19-21, 1997

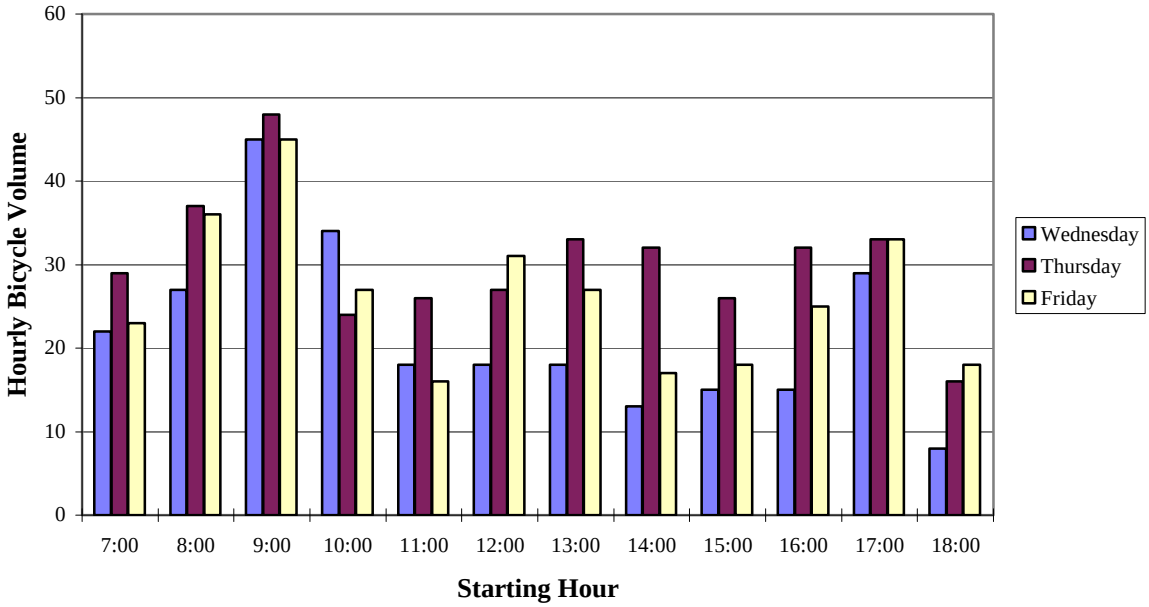


Figure A-2. Hourly Bicycle Volumes on Timber/Bizzell Street in College Station, March 19-21, 1997

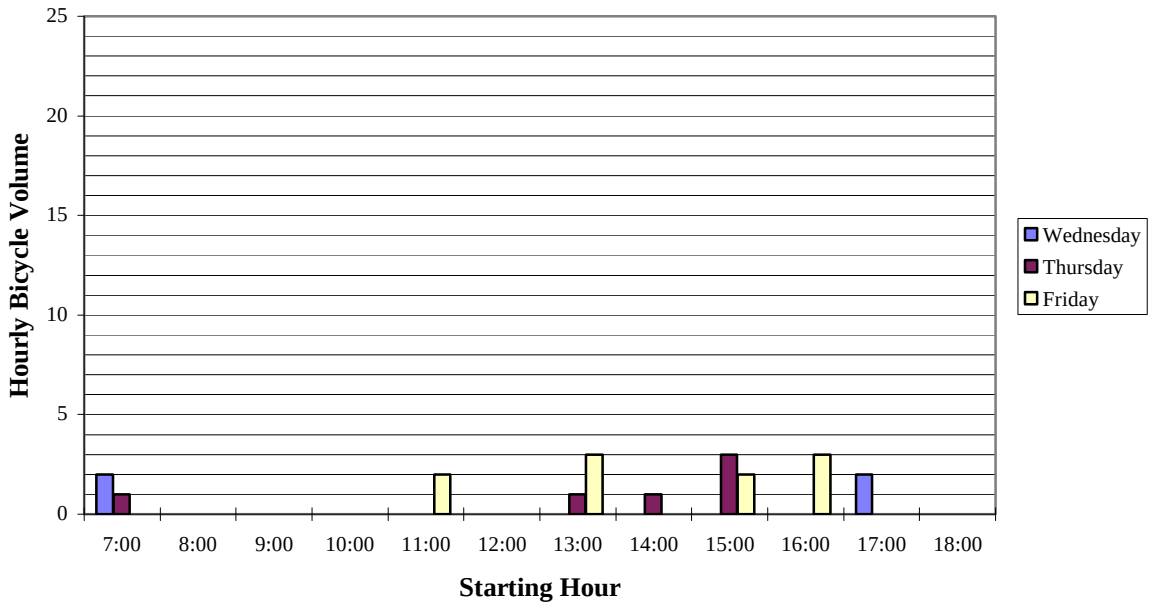


Figure A-3. Hourly Bicycle Volumes on FM 2818 in College Station, March 19-21, 1997

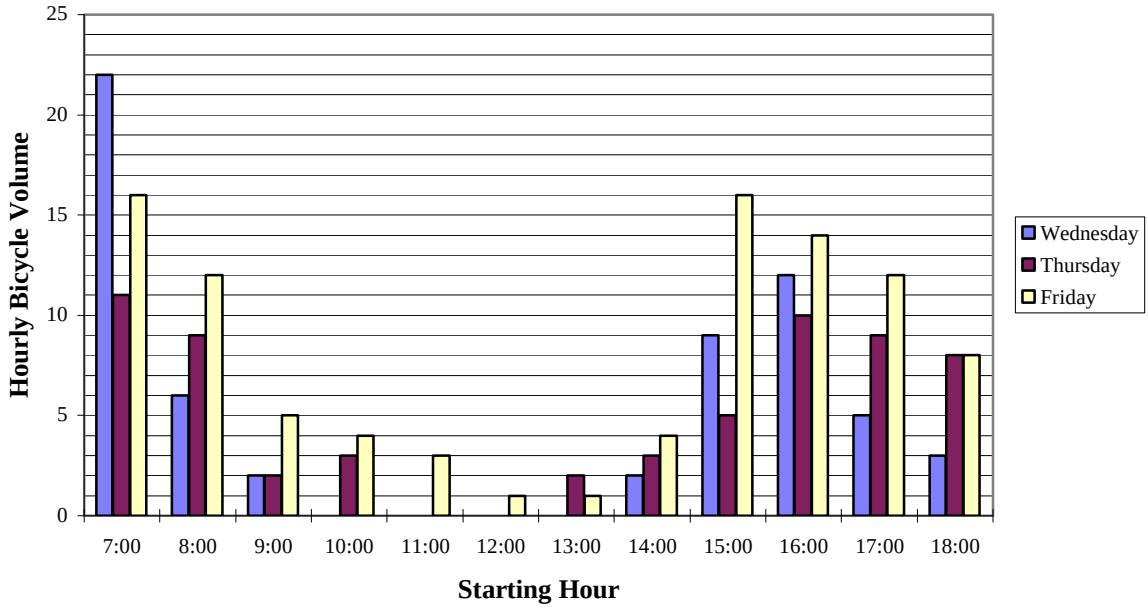


Figure A-4. Hourly Bicycle Volumes on Welsh Avenue in College Station, March 19-21, 1997

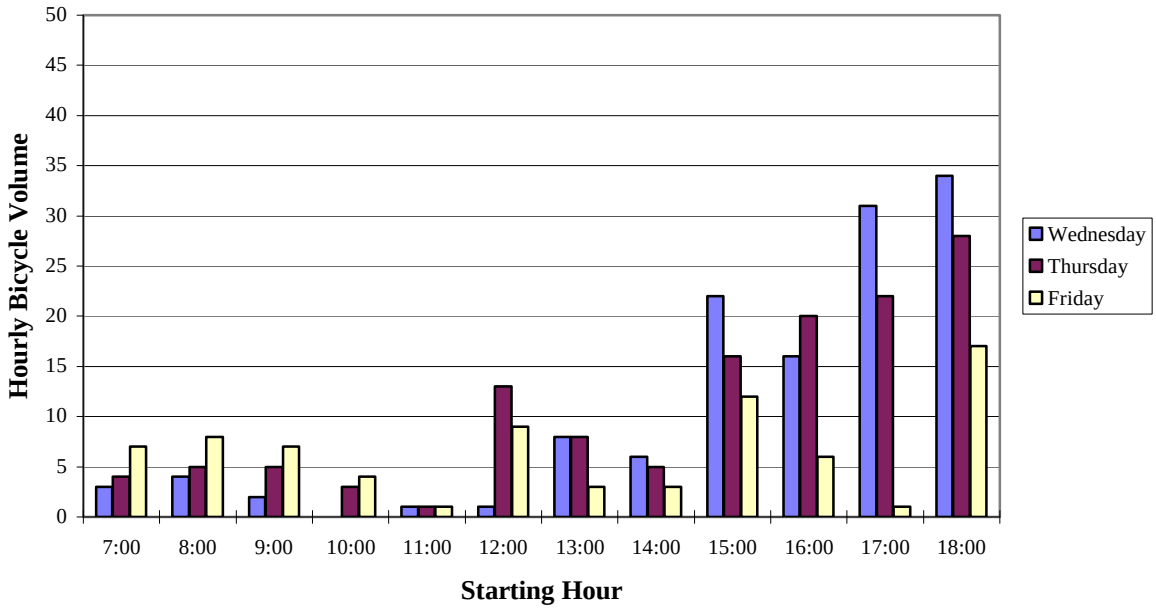


Figure A-5. Hourly Bicycle Volumes on Shoal Creek Boulevard in Austin, April 16-18, 1997

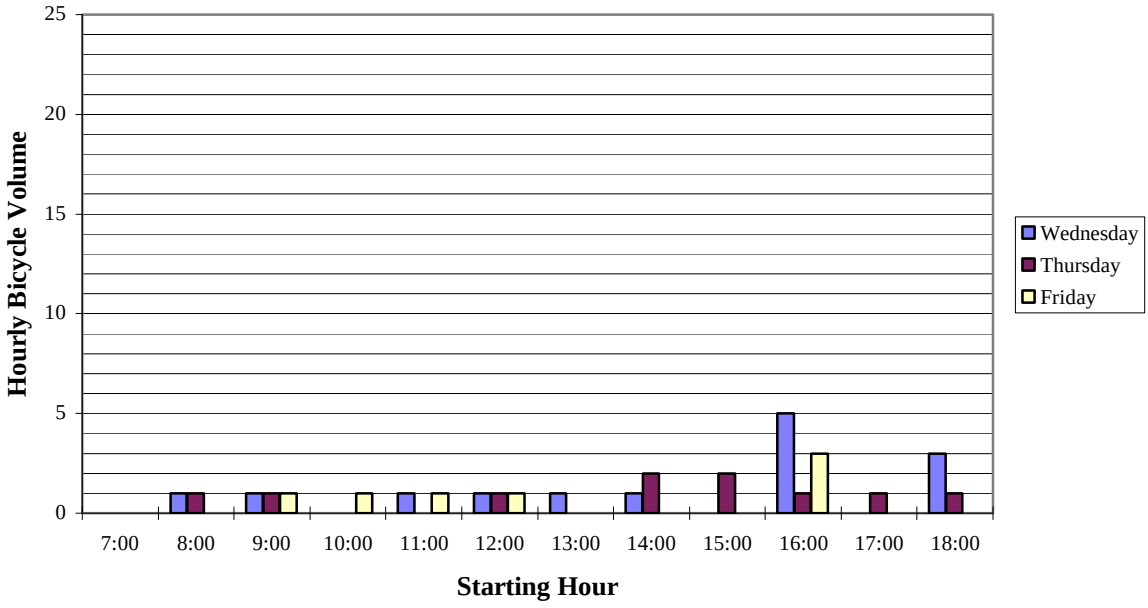


Figure A-6. Hourly Bicycle Volumes on RM 2222 in Austin, April 16-18, 1997

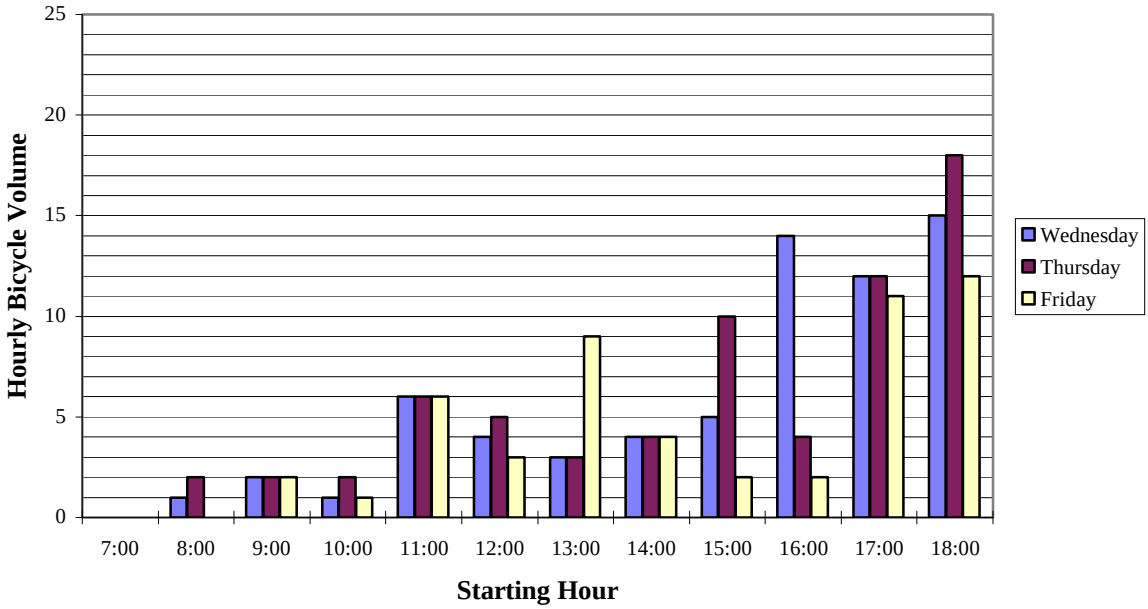


Figure A-7. Hourly Bicycle Volumes on Loop 360 in Austin, April 16-18, 1997

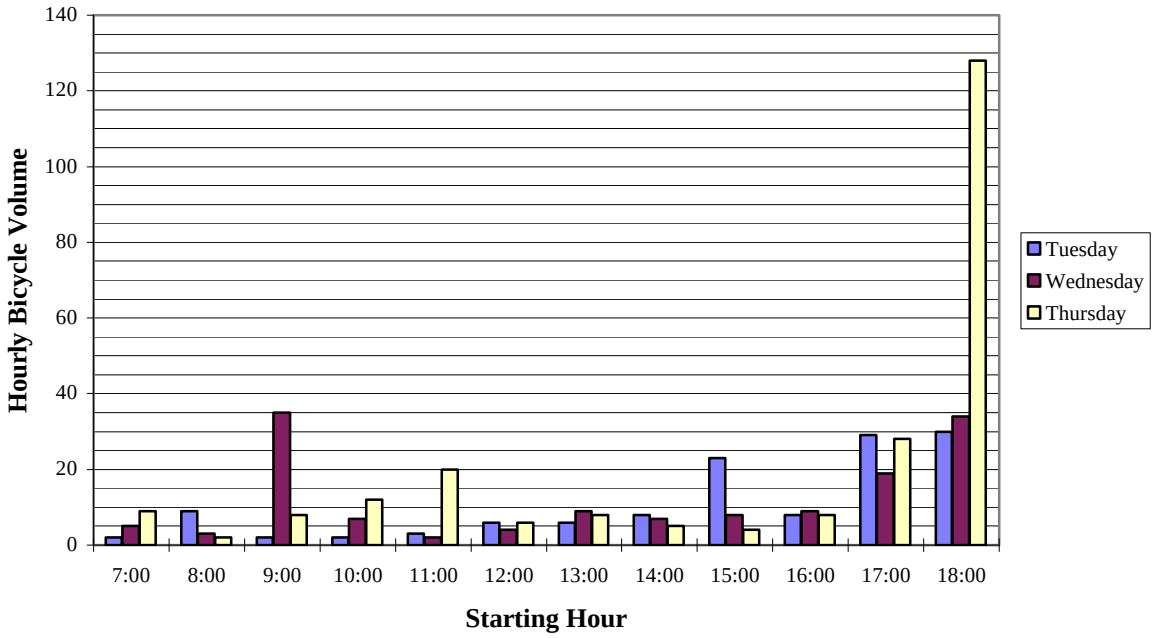


Figure A-8. Hourly Bicycle Volumes on Allen Parkway in Houston, May 6-8, 1997

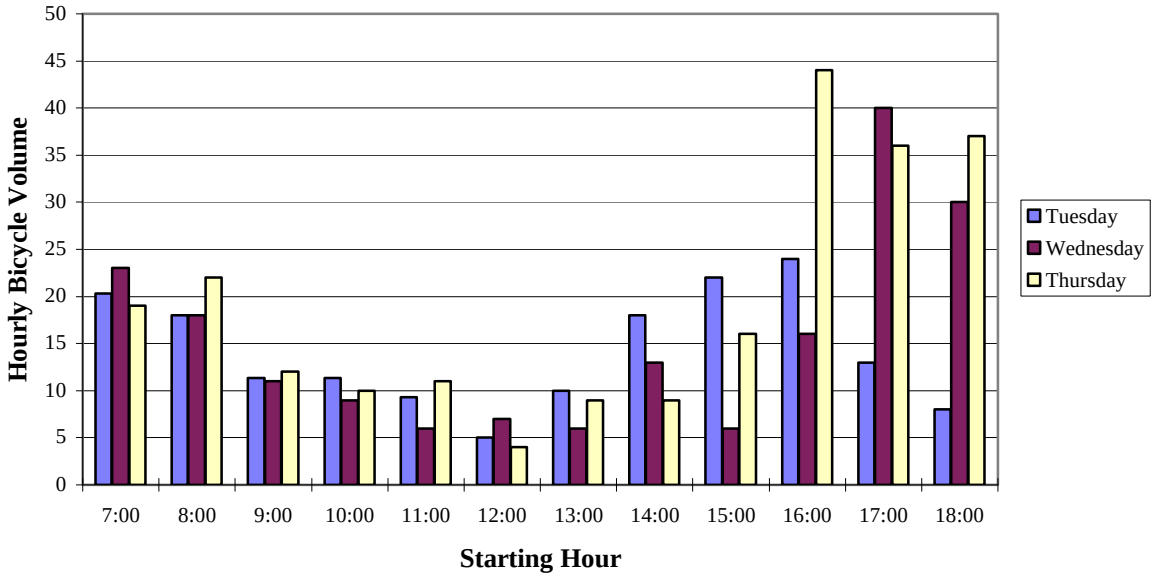


Figure A-9. Hourly Bicycle Volumes on Braes Bayou Trail in Houston, May 6-8, 1997

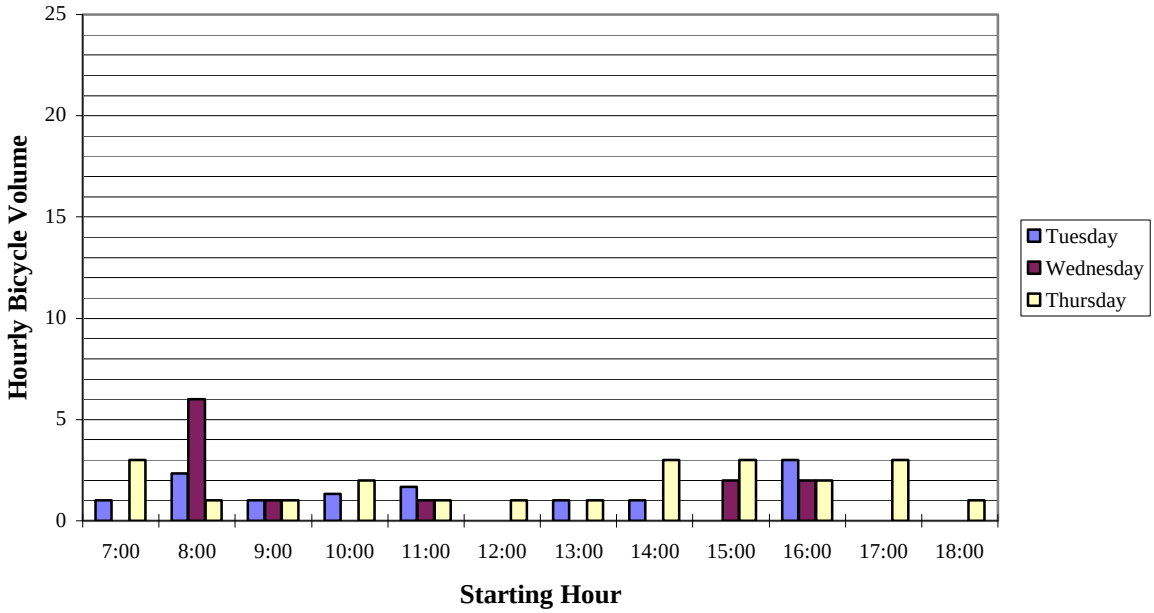


Figure A-10. Hourly Bicycle Volumes on South Main Street in Houston, May 6-8, 1997

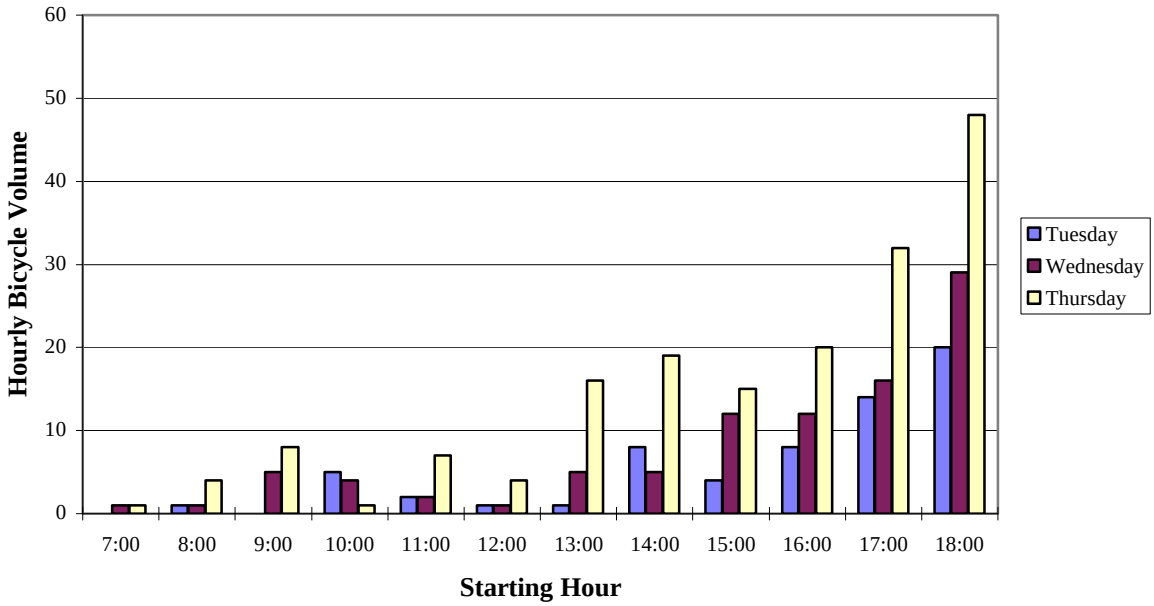


Figure A-11. Hourly Bicycle Volumes on Royal Lane in Dallas, May 20-22, 1997

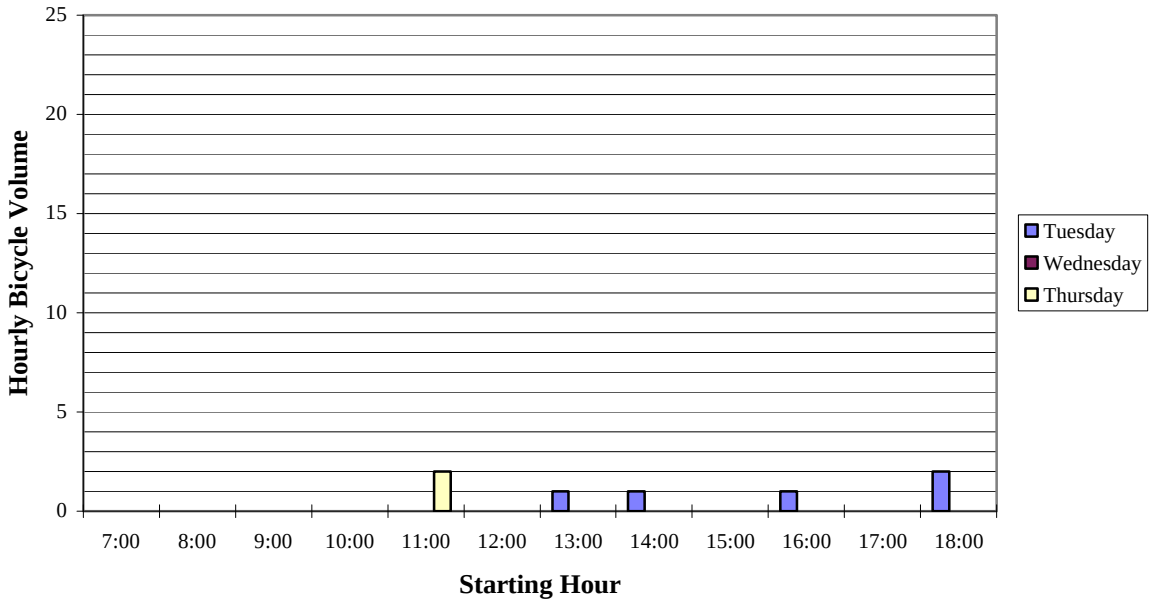


Figure A-12. Hourly Bicycle Volumes on Greenville Avenue in Dallas, May 20-22, 1997

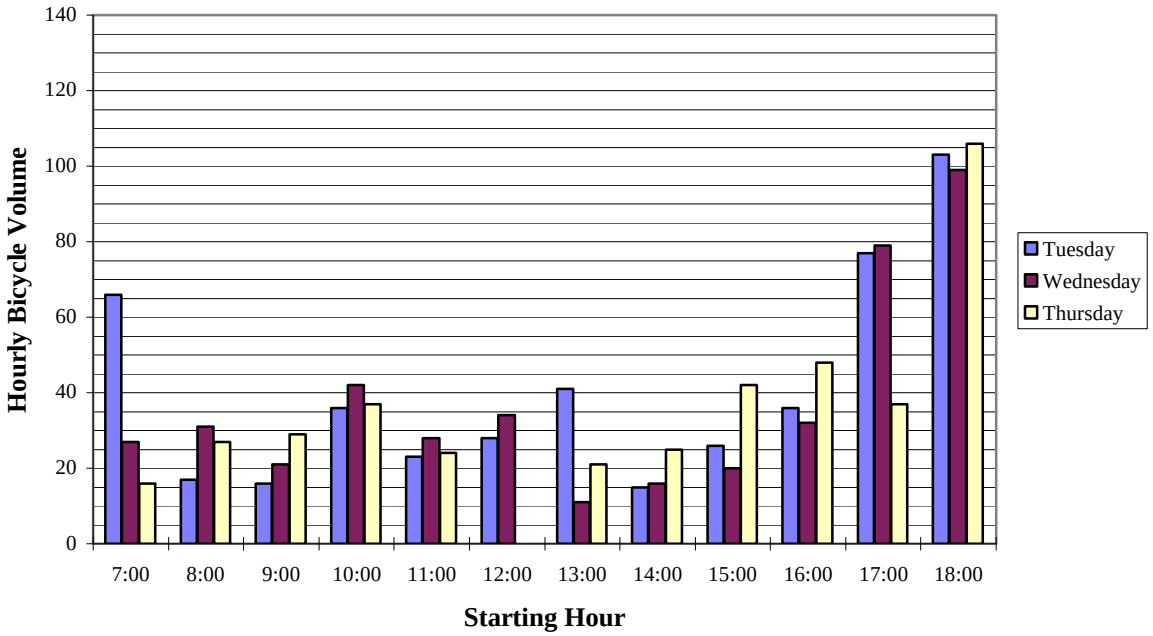


Figure A-13. Hourly Bicycle Volumes on White Rock Lake Trail in Dallas, June 3-5, 1997

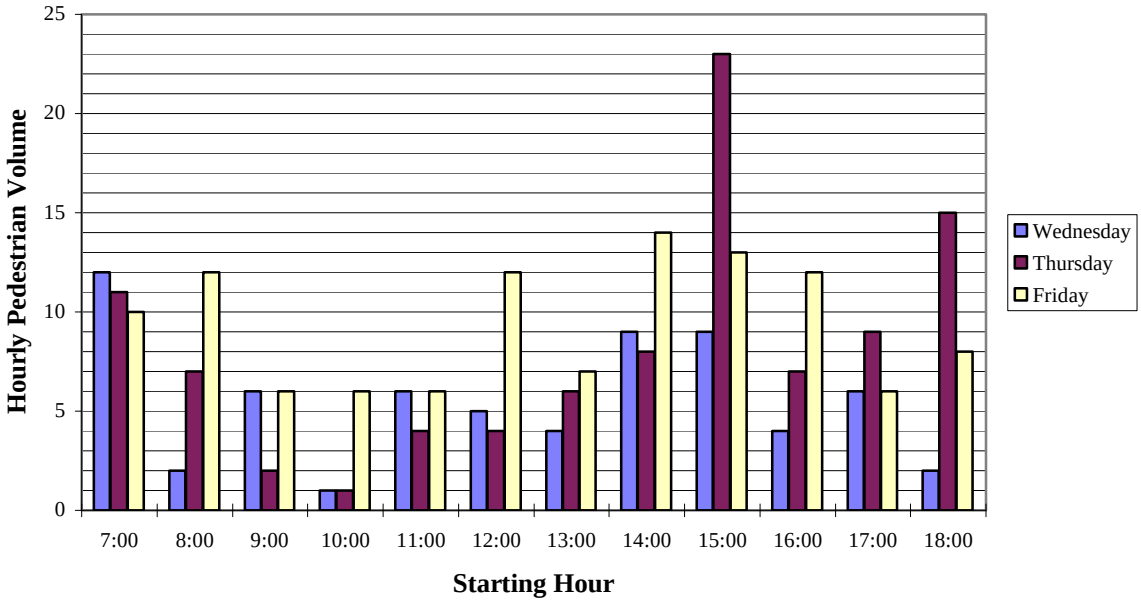


Figure A-14. Hourly Pedestrian Volumes on FM 2347 (George Bush Drive) in College Station, March 19-21, 1997

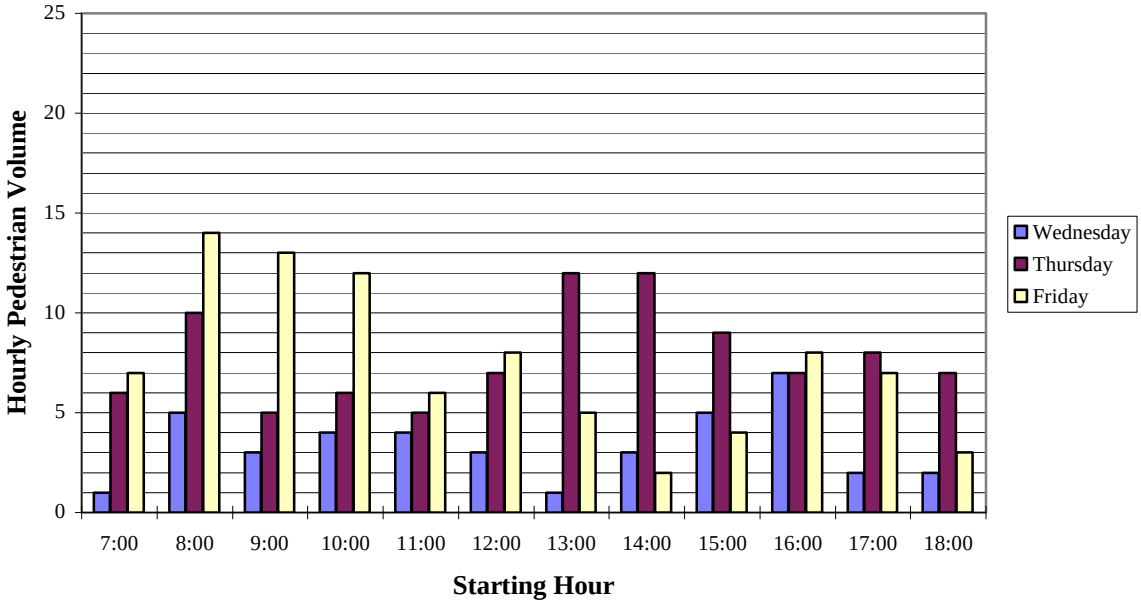


Figure A-15. Hourly Pedestrian Volumes on Timber/Bizzell Street in College Station, March 19-21, 1997

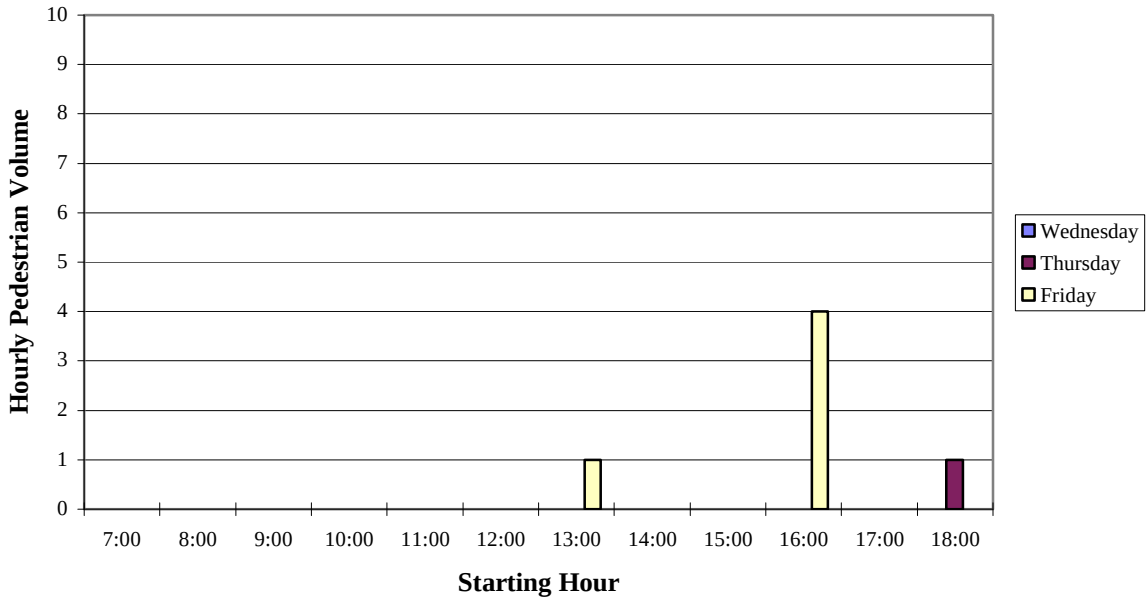


Figure A-16. Hourly Pedestrian Volumes on FM 2818 in College Station, March 19-21, 1997

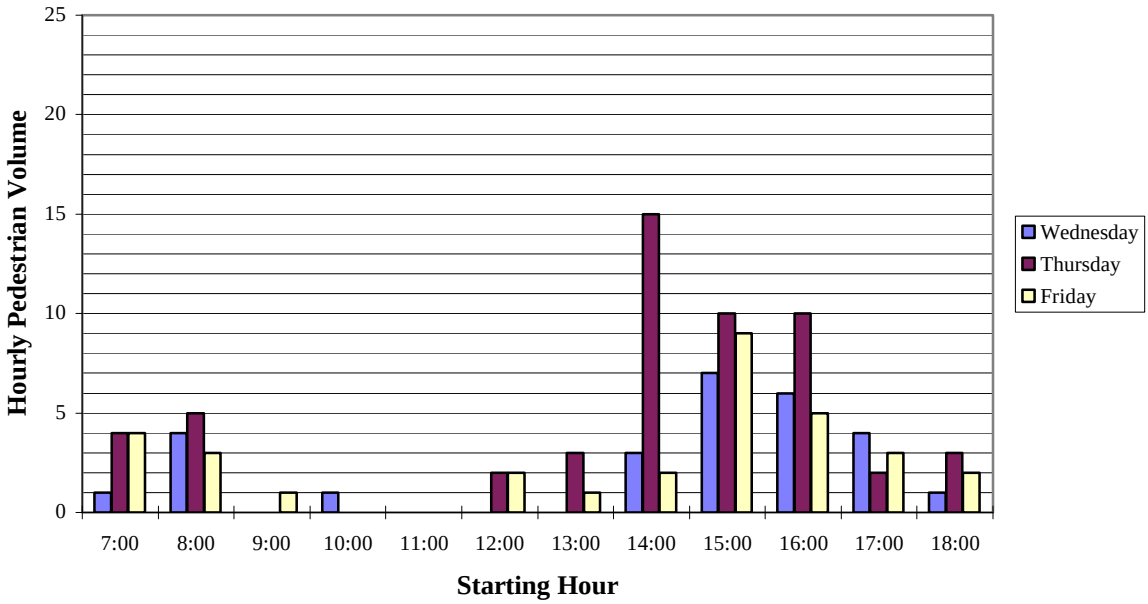


Figure A-17. Hourly Pedestrian Volumes on Welsh Avenue in College Station, March 19-21, 1997

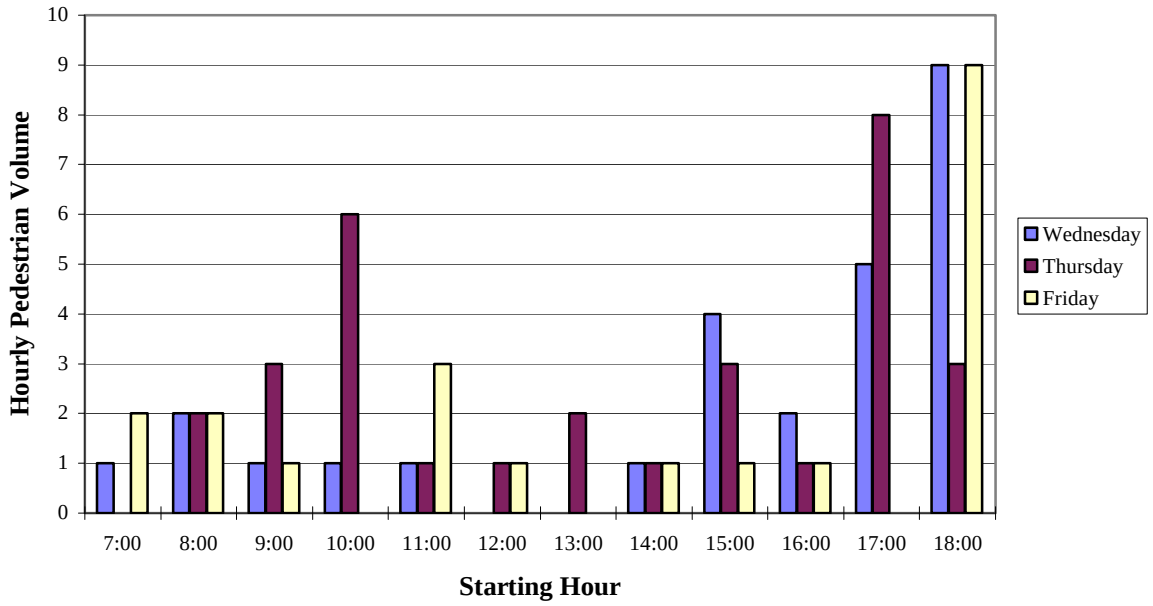


Figure A-18. Hourly Pedestrian Volumes on Shoal Creek Boulevard in Austin, April 16-18, 1997

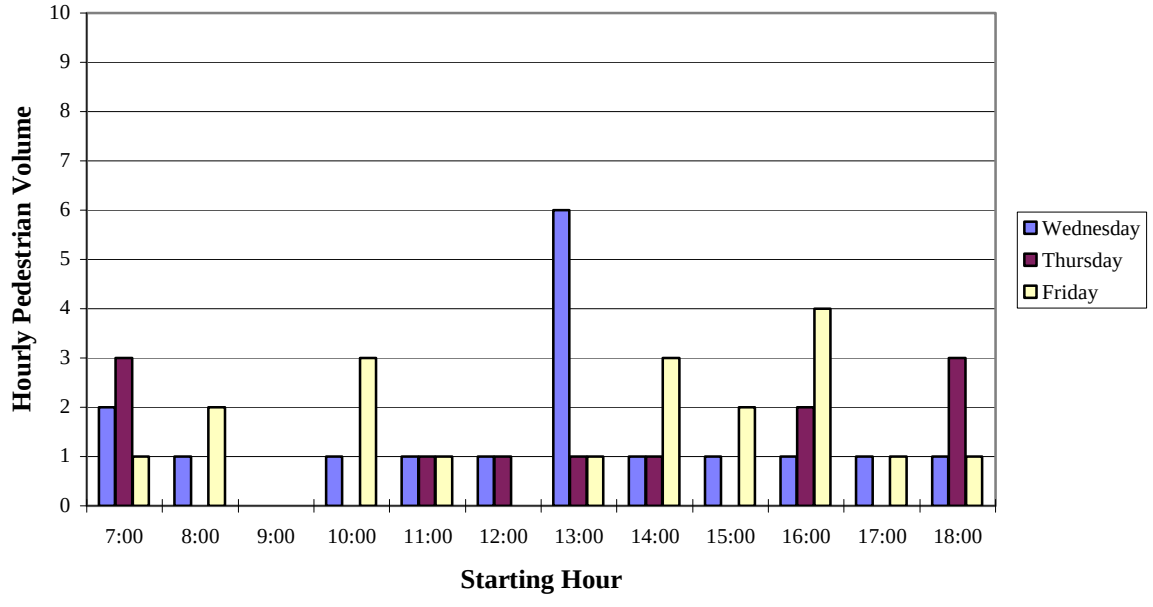


Figure A-19. Hourly Pedestrian Volumes on RM 2222 in Austin, April 16-18, 1997

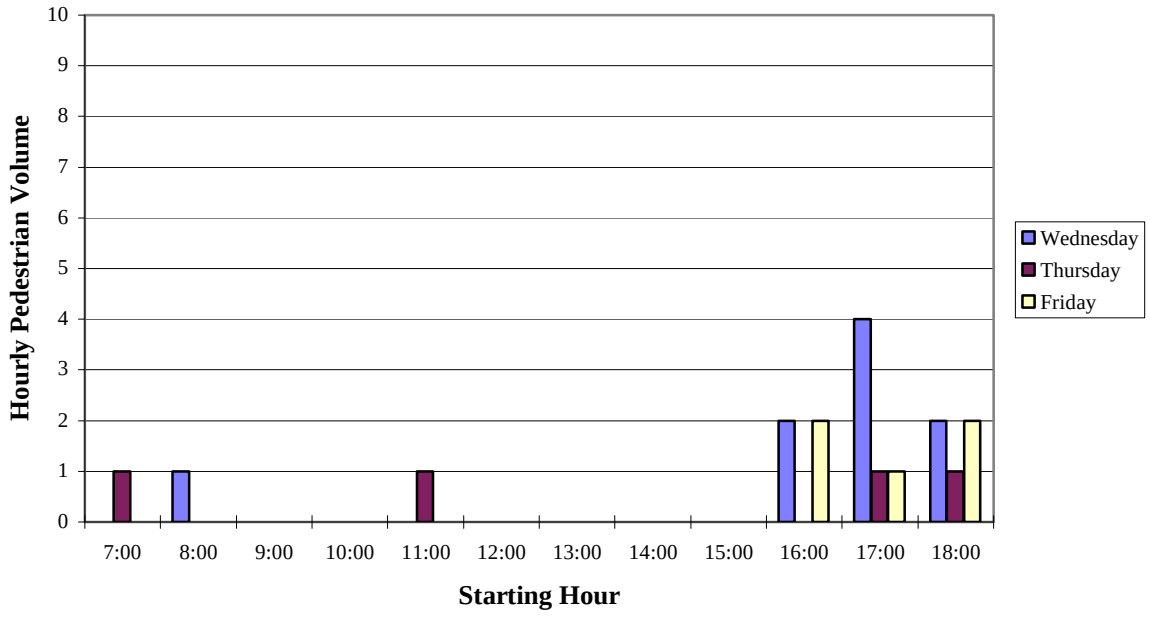


Figure A-20. Hourly Pedestrian Volume on Loop 360 in Austin, April 16-18, 1997

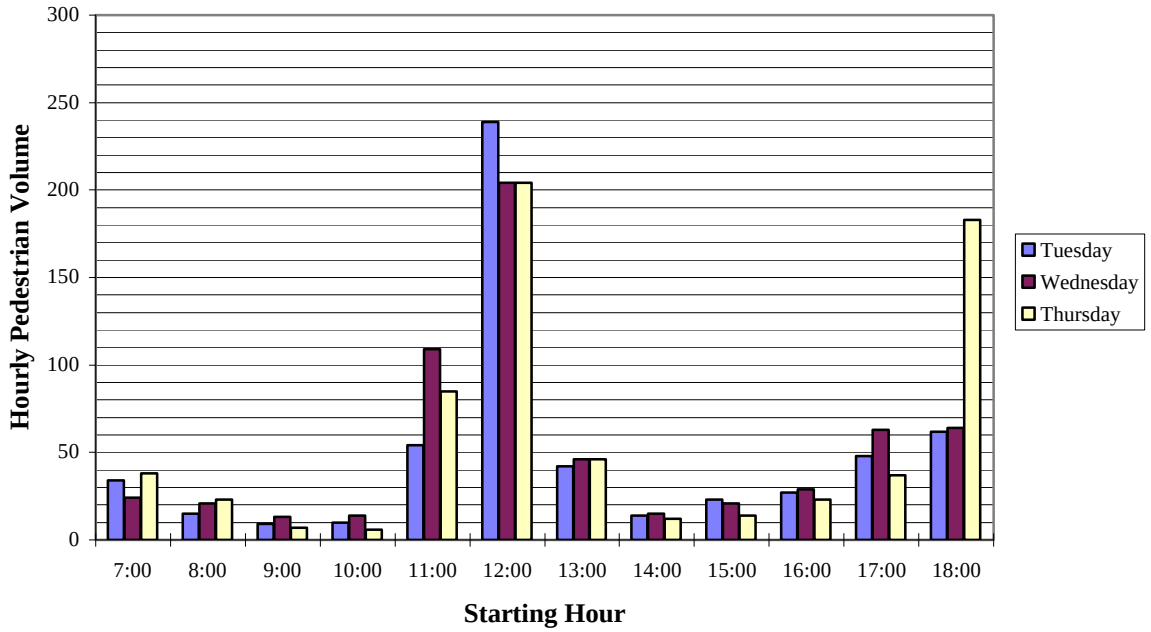


Figure A-21. Hourly Pedestrian Volumes on Allen Parkway in Houston, May 6-8, 1997

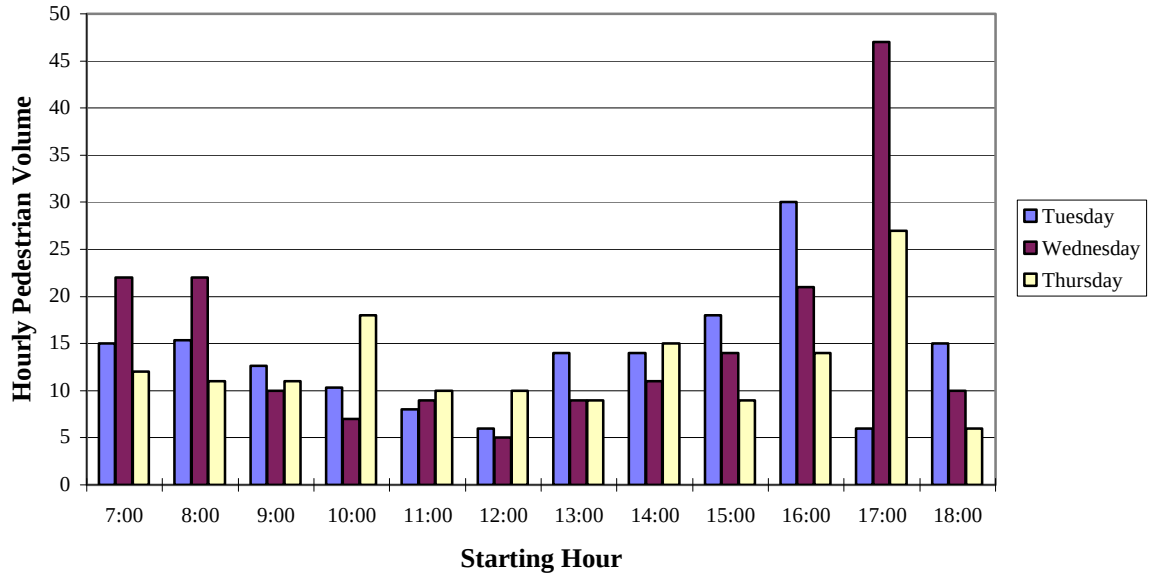


Figure A-22. Hourly Pedestrian Volumes on Braes Bayou Trail in Houston, May 6-8, 1997

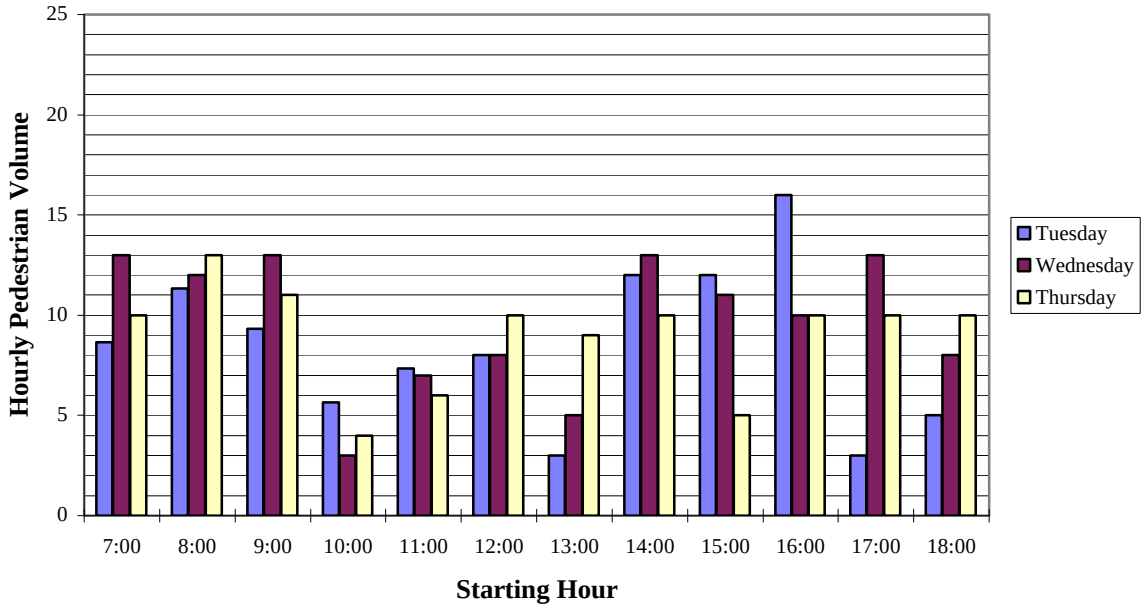


Figure A-23. Hourly Pedestrian Volumes on South Main Street in Houston, May 6-8, 1997

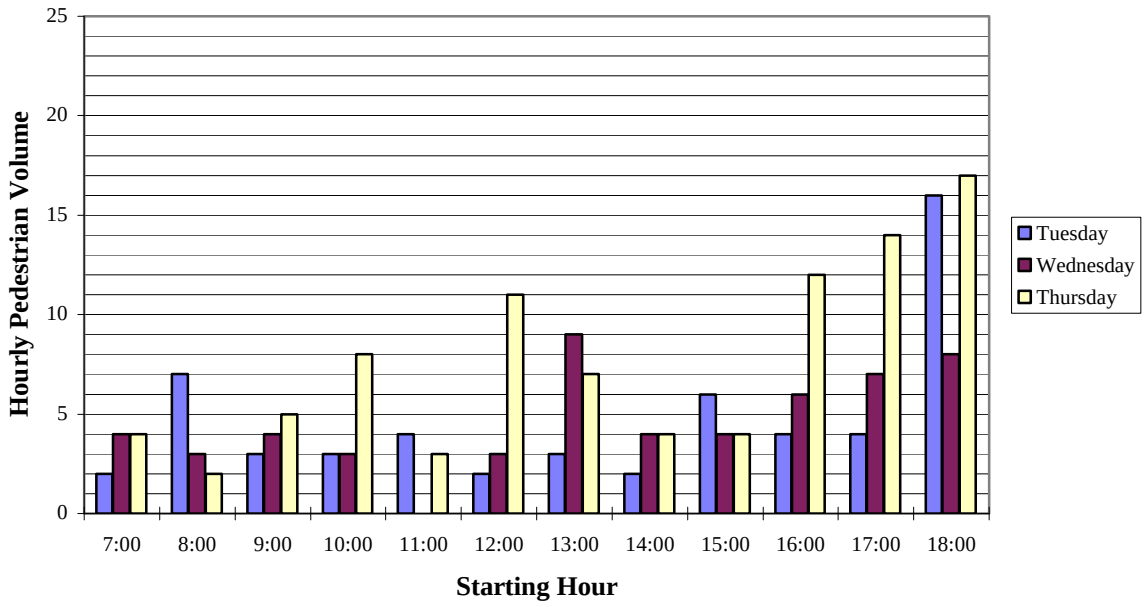


Figure A-24. Hourly Pedestrian Volume on Royal Lane in Dallas, May 20-22, 1997

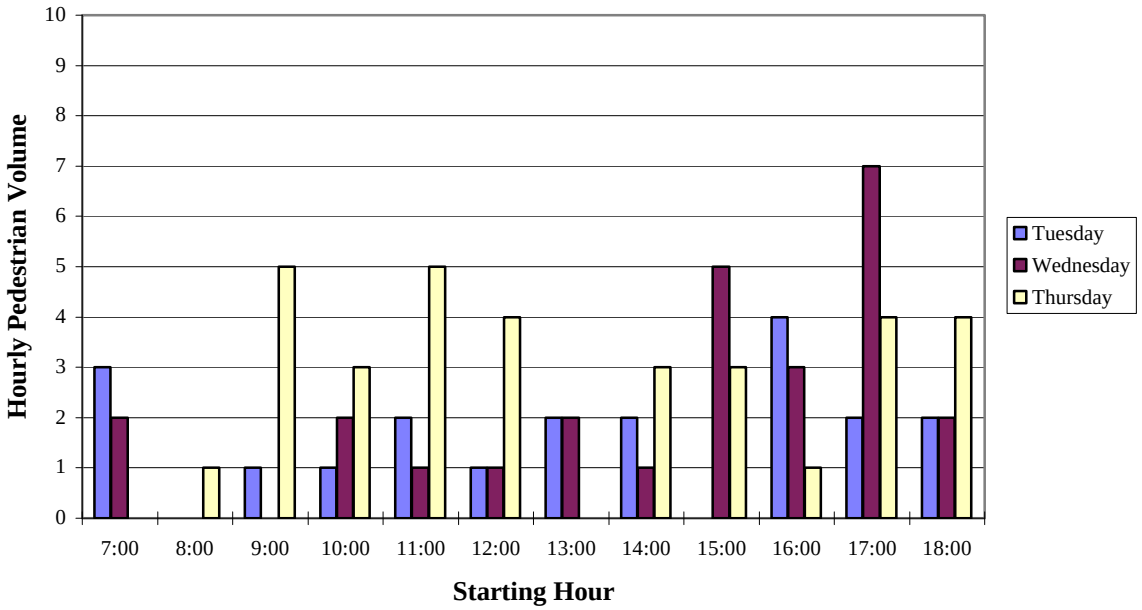


Figure A-25. Hourly Pedestrian Volume on Greenville Avenue in Dallas, May 20-22, 1997

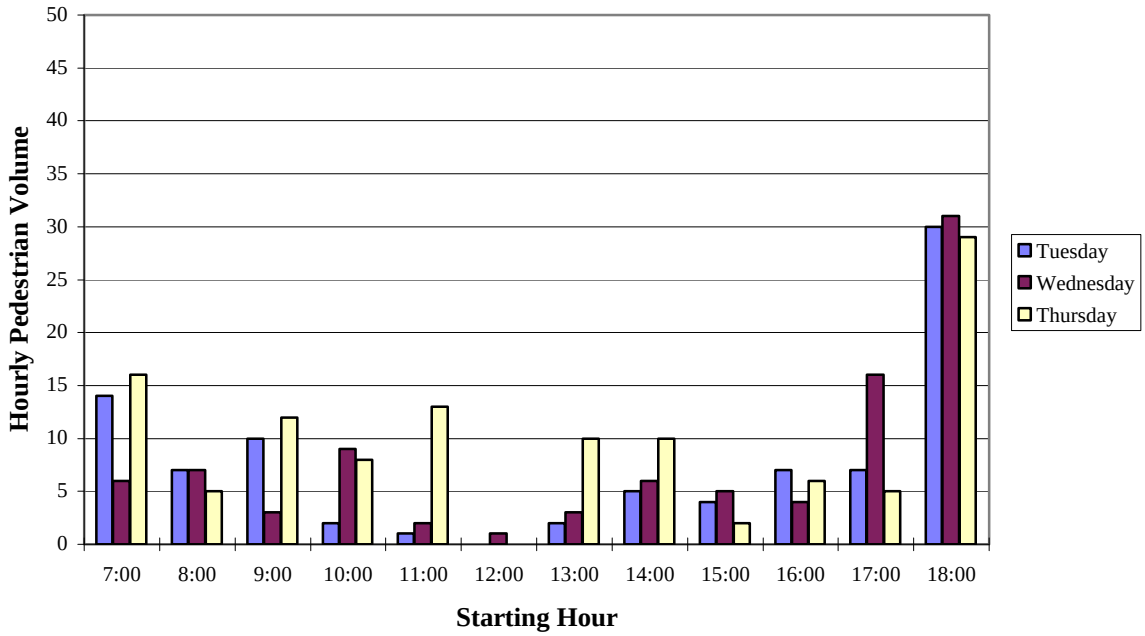


Figure A-26. Hourly Pedestrian Volumes on White Rock Lake Trail in Dallas, June 3-5, 1997

APPENDIX B

BICYCLE AND PEDESTRIAN TRIP ORIGINS/DESTINATIONS AND TRIP LENGTH DISTRIBUTIONS

APPENDIX B: BICYCLE AND PEDESTRIAN TRIP ORIGINS/DESTINATIONS AND TRIP LENGTH DISTRIBUTIONS

This appendix summarizes the bicycle and pedestrian trip origins/destinations and trip length distributions. Intercept survey postcards were distributed during the video data collection to as many passing bicyclists and pedestrians as possible. Bicyclists and pedestrians at the data collection site were asked to mail the postage-paid survey back to the research team, and the survey responses were summarized and geo-coded into a geographic information system (GIS). The GIS software was then used to analyze the bicycle and pedestrian trip characteristics.

Figures B-1 through B-8 illustrate the trip origins and destinations in relation to the data collection site. Figures B-9 through B-14 present the bicycle and pedestrian trip length distributions.

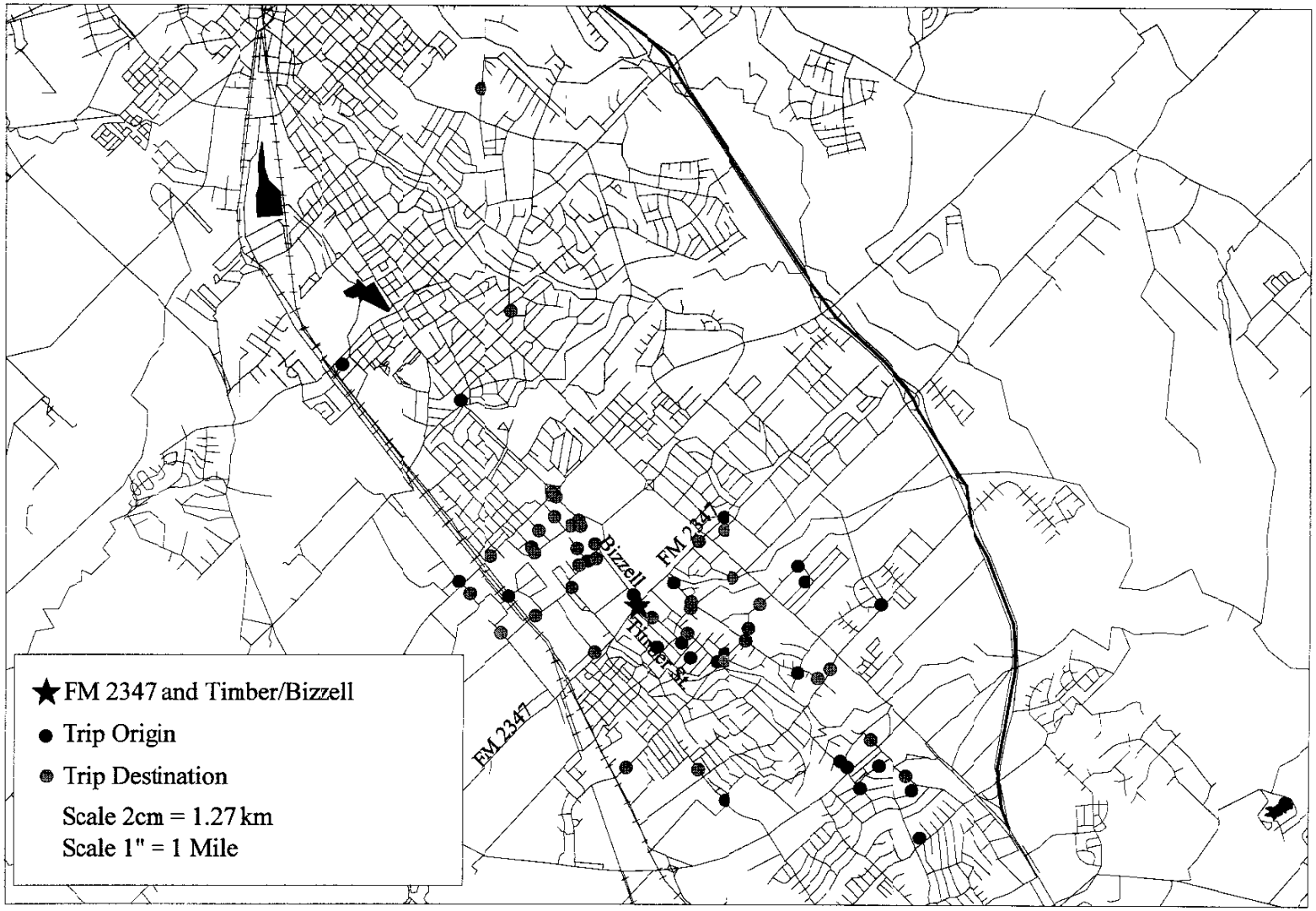


Figure B-1. Trip Origins and Destinations at FM 2347 (George Bush Drive) and Timber/Bizzell Street

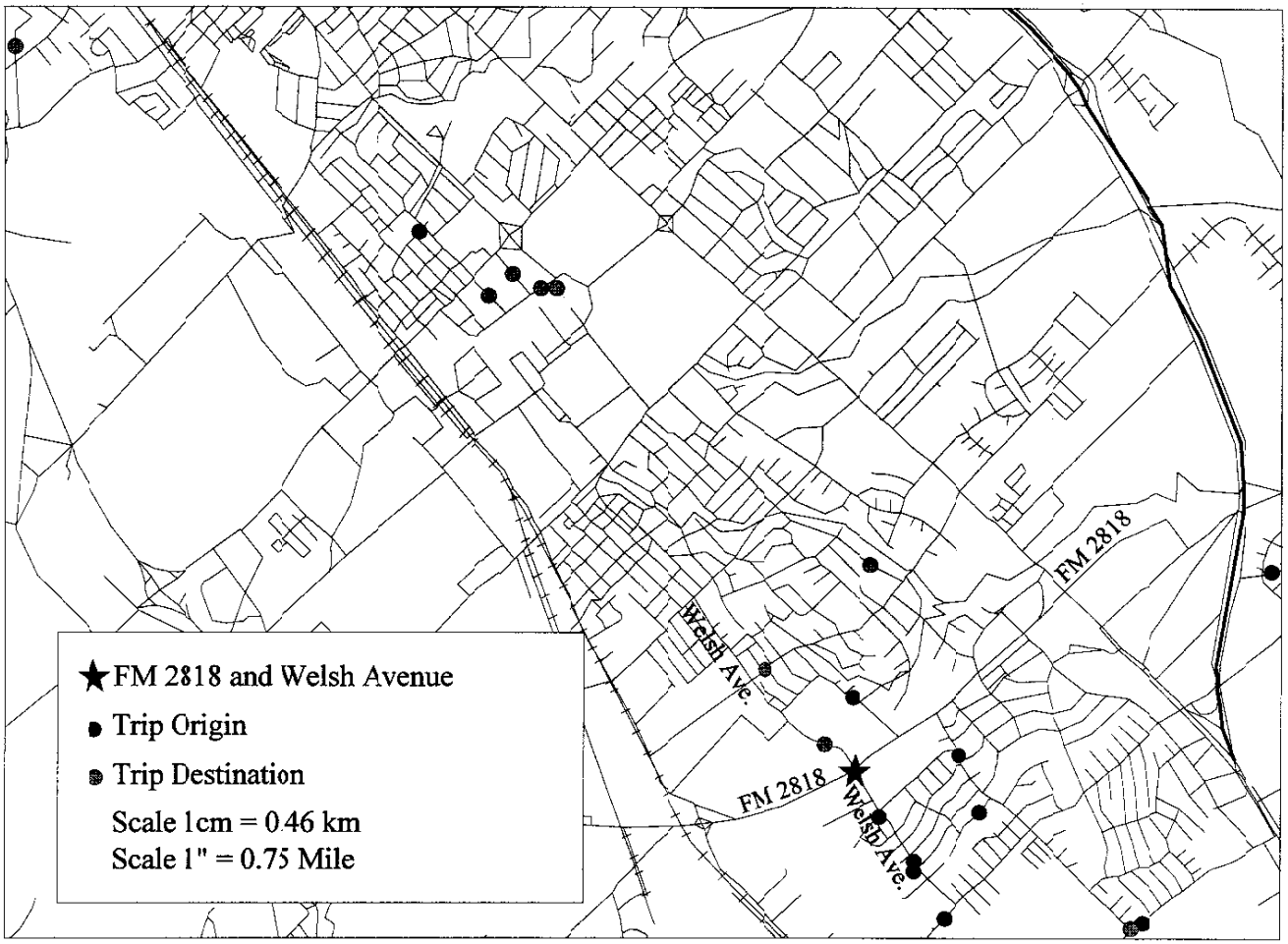


Figure B-2. Trip Origins and Destinations at FM 2818 and Welsh Avenue

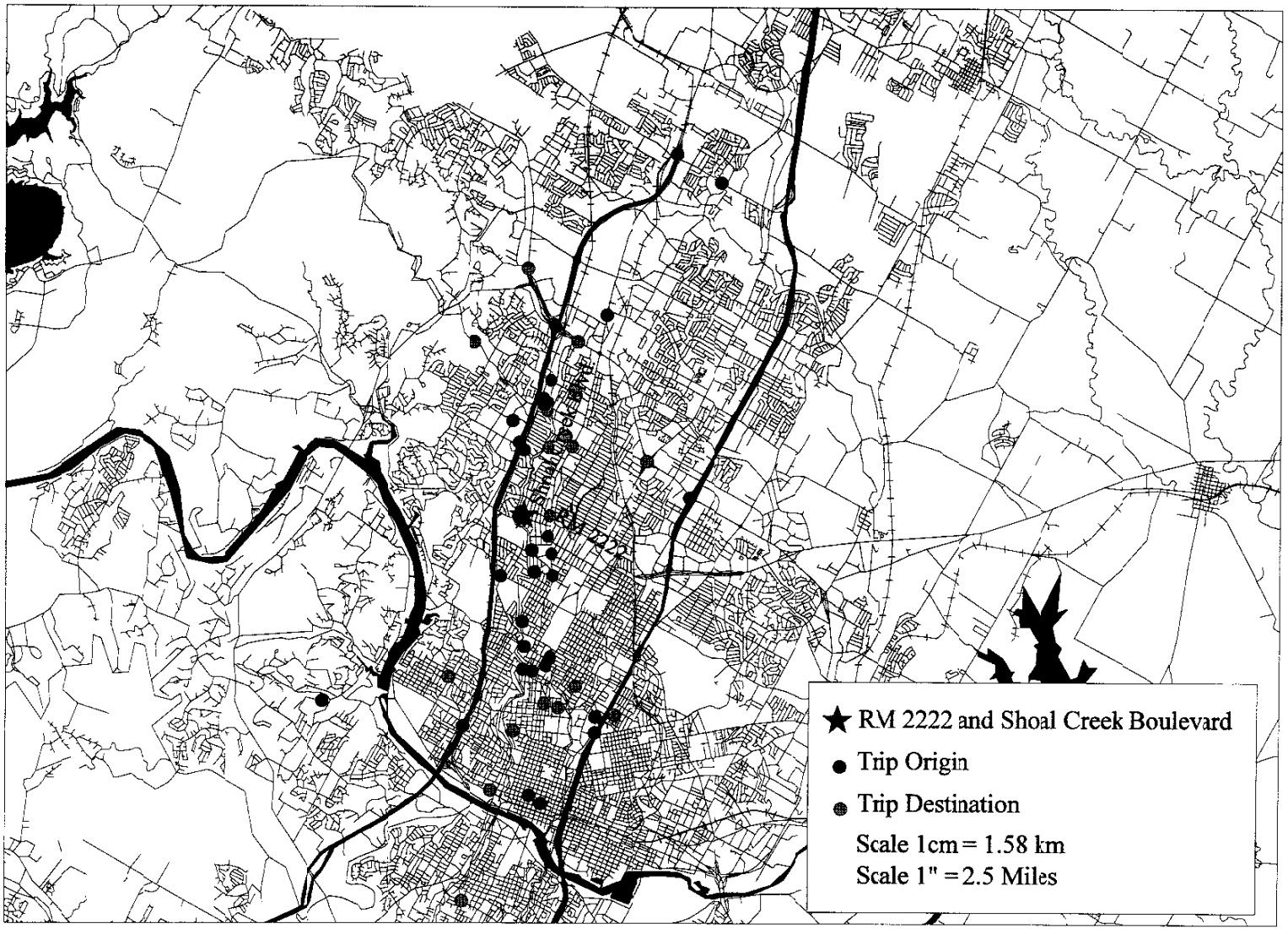


Figure B-3. Trip Origins and Destinations at RM 2222 and Shoal Creek Boulevard.

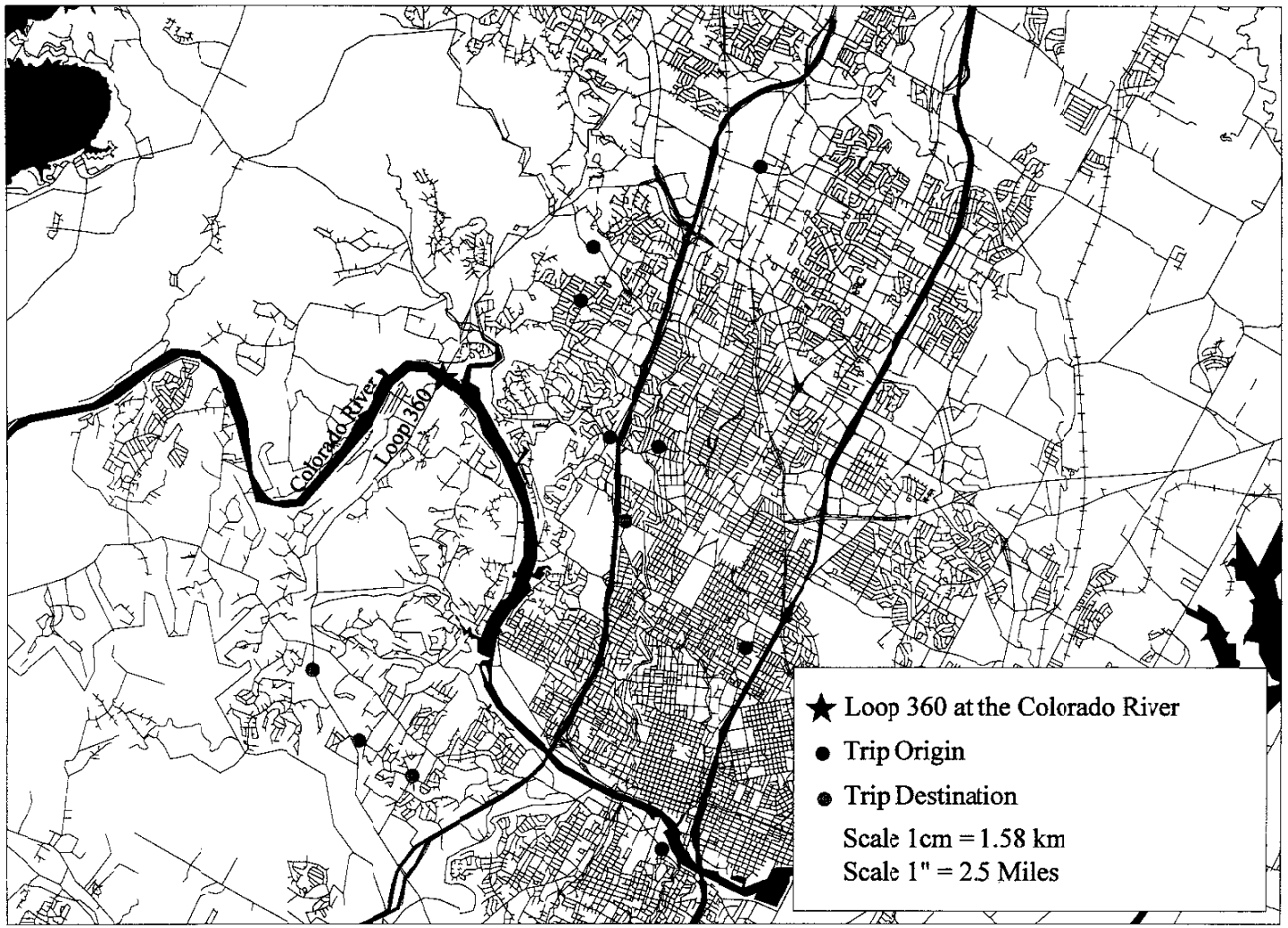


Figure B-4. Trip Origins and Destinations on Loop 360 at the Colorado River

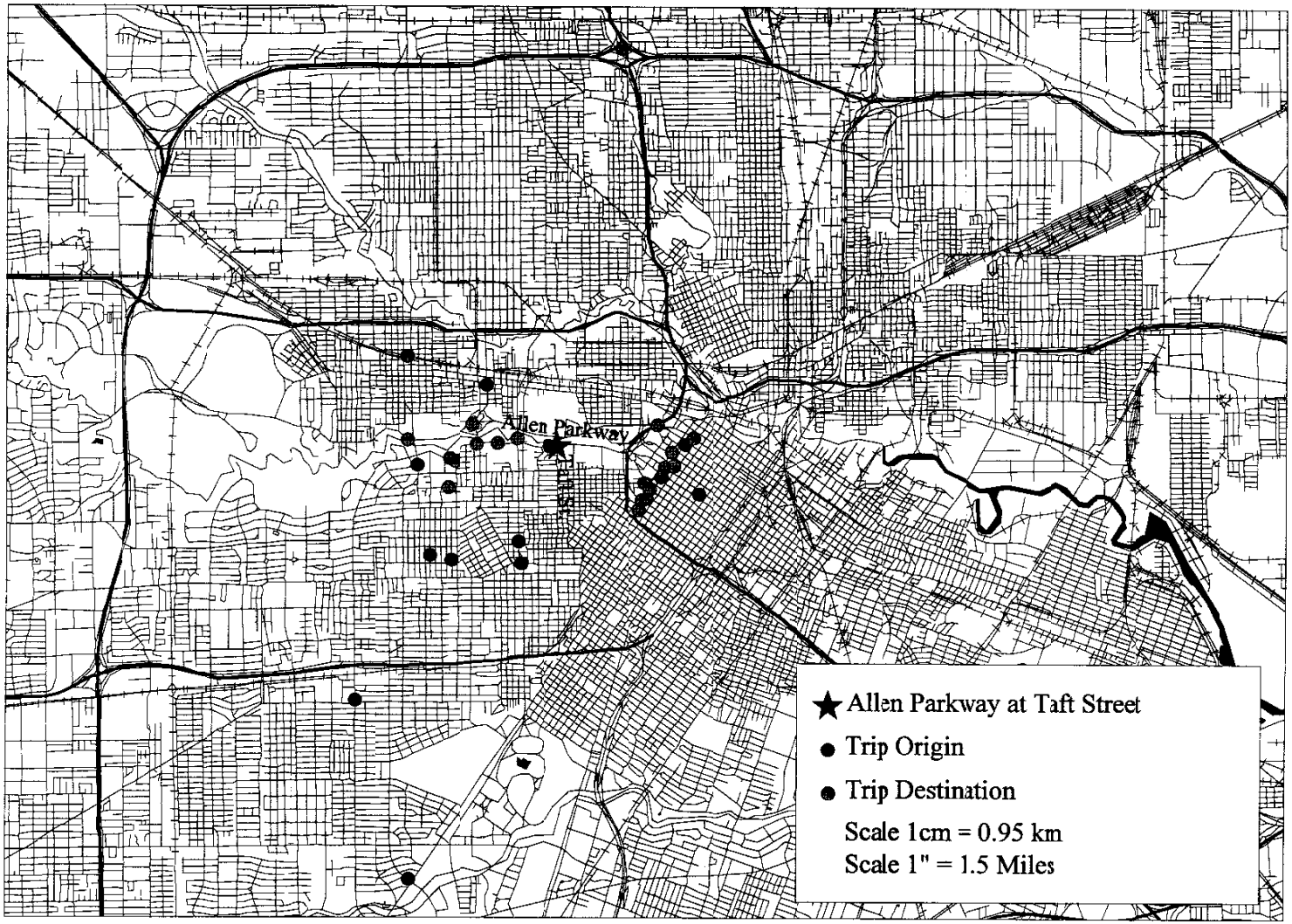


Figure B-5. Trip Origins and Destinations on Allen Parkway at Taft Street.

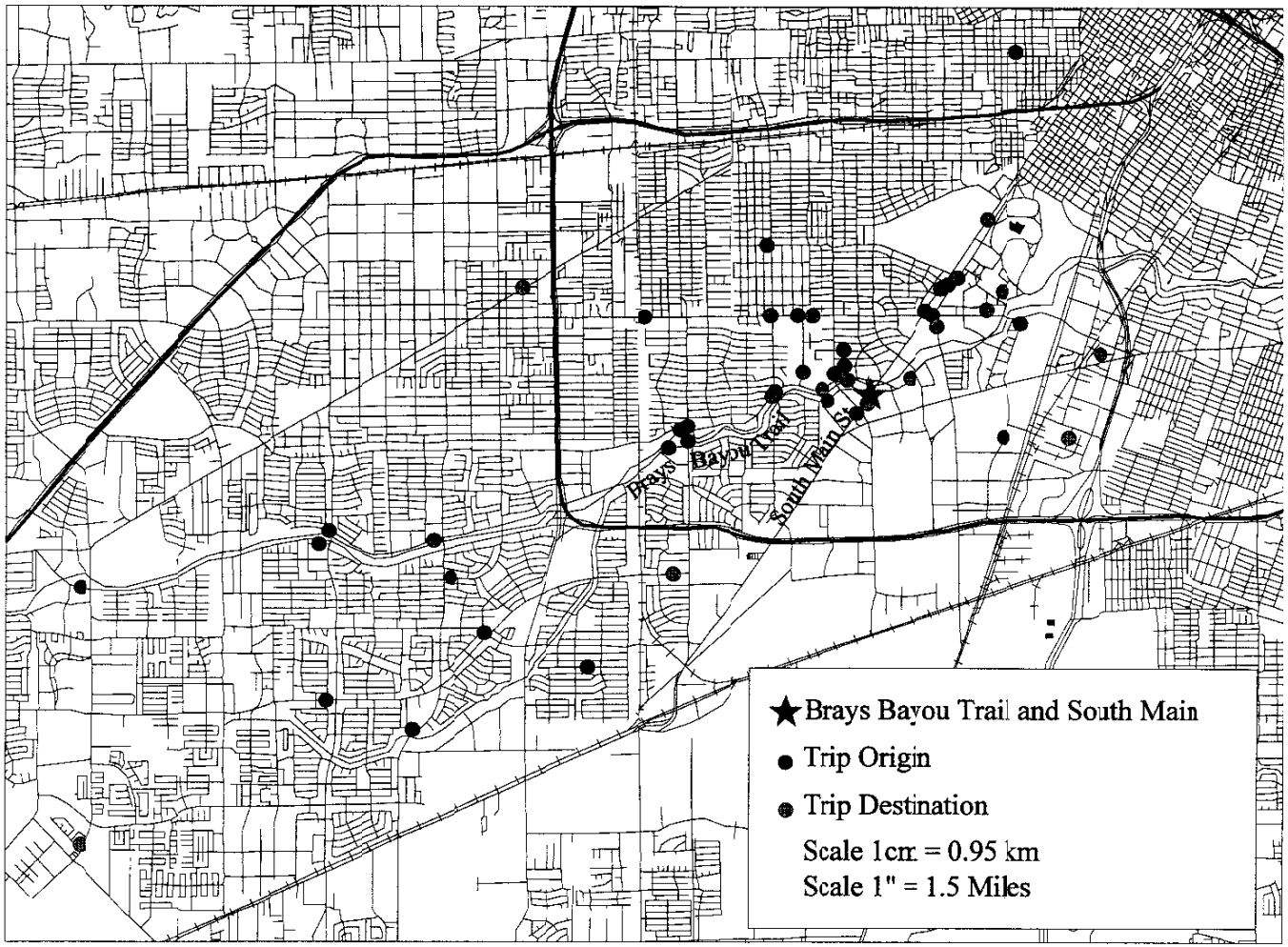


Figure B-6. Trip Origins and Destinations at Brays Bayou Trail and South Main Street

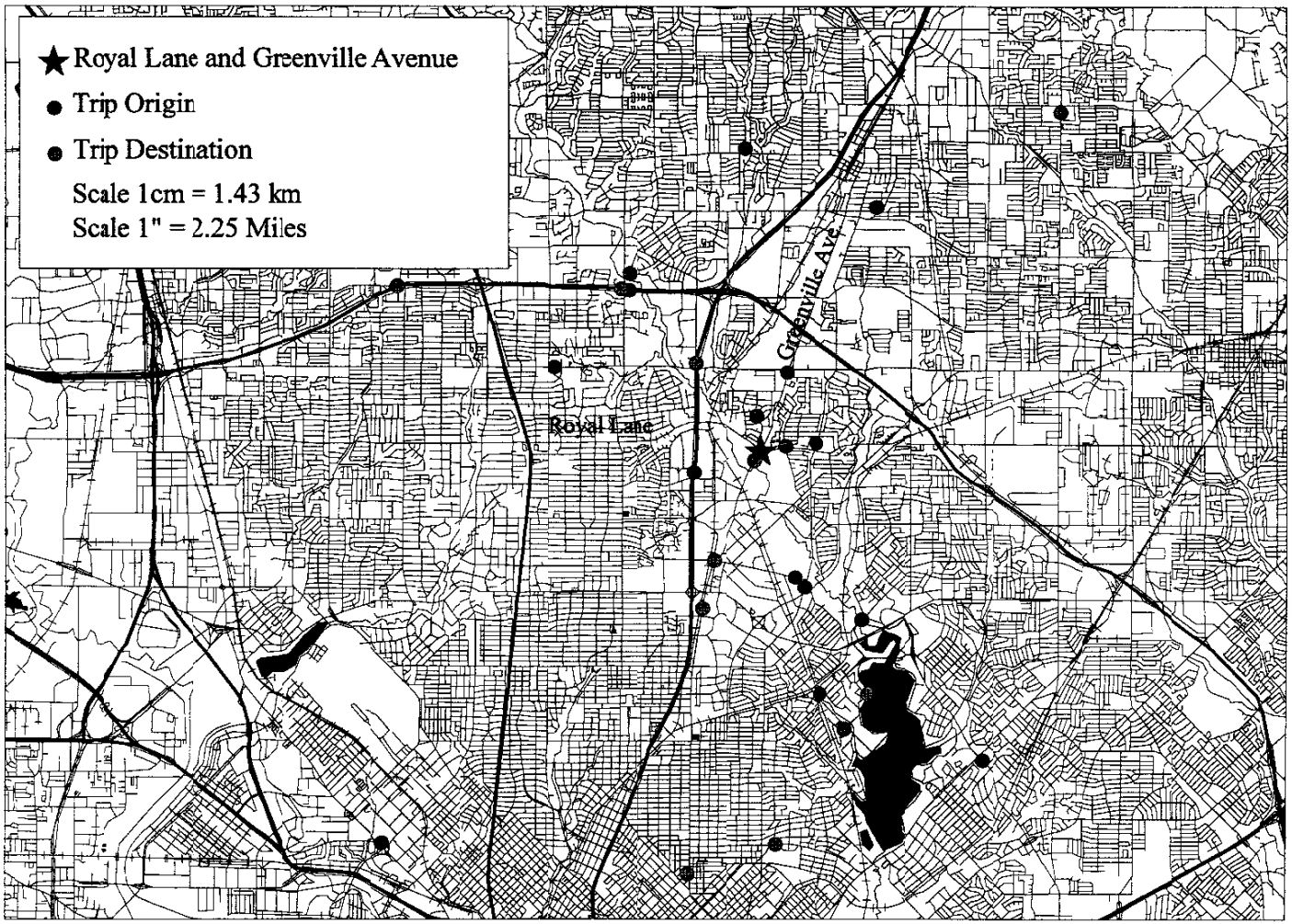


Figure B-7. Trip Origins and Destinations at Royal Lane and Greenville Avenue.

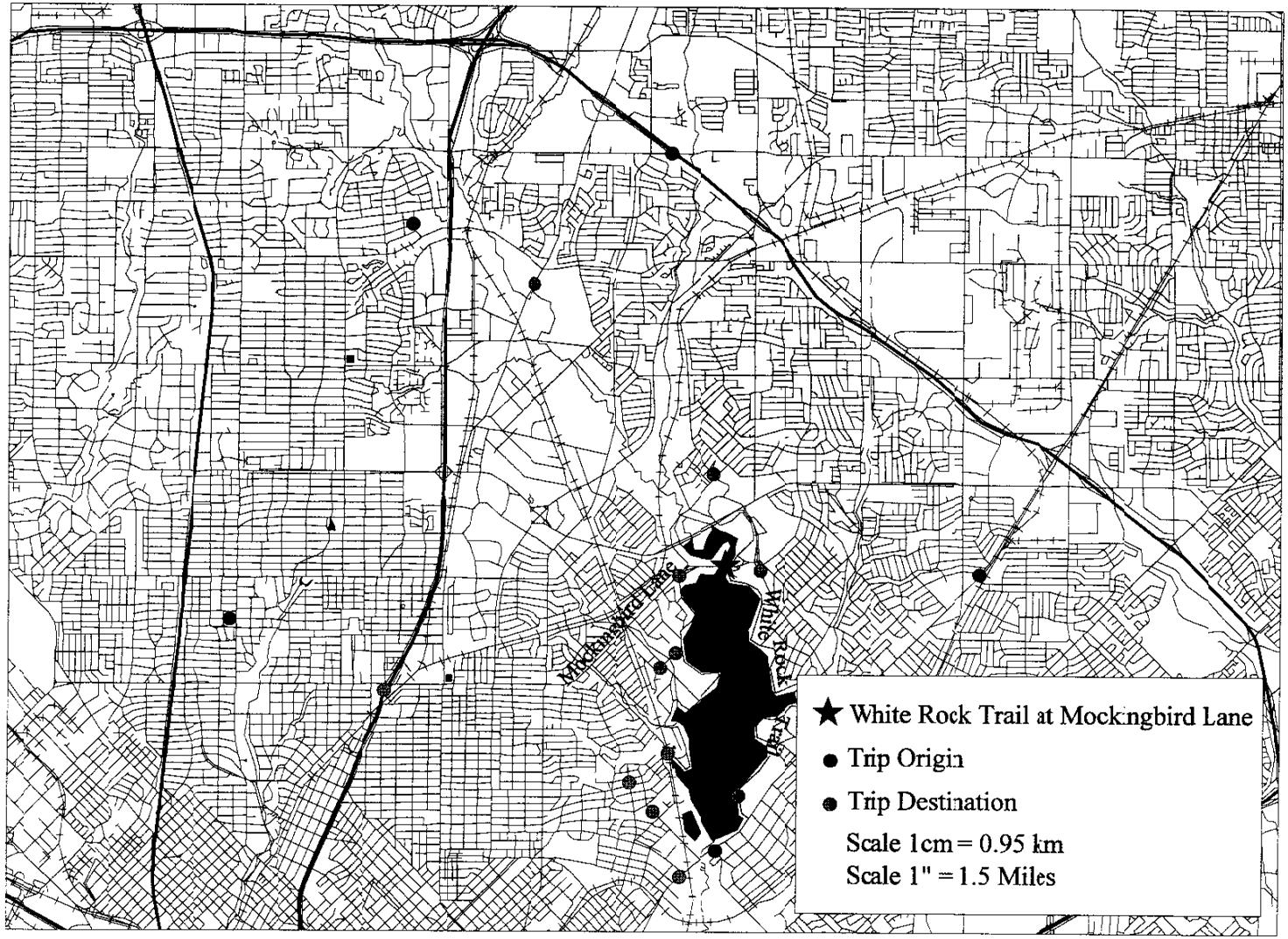


Figure B-8. Trip Origins and Destinations at White Rock Trail and Mockingbird Lane.

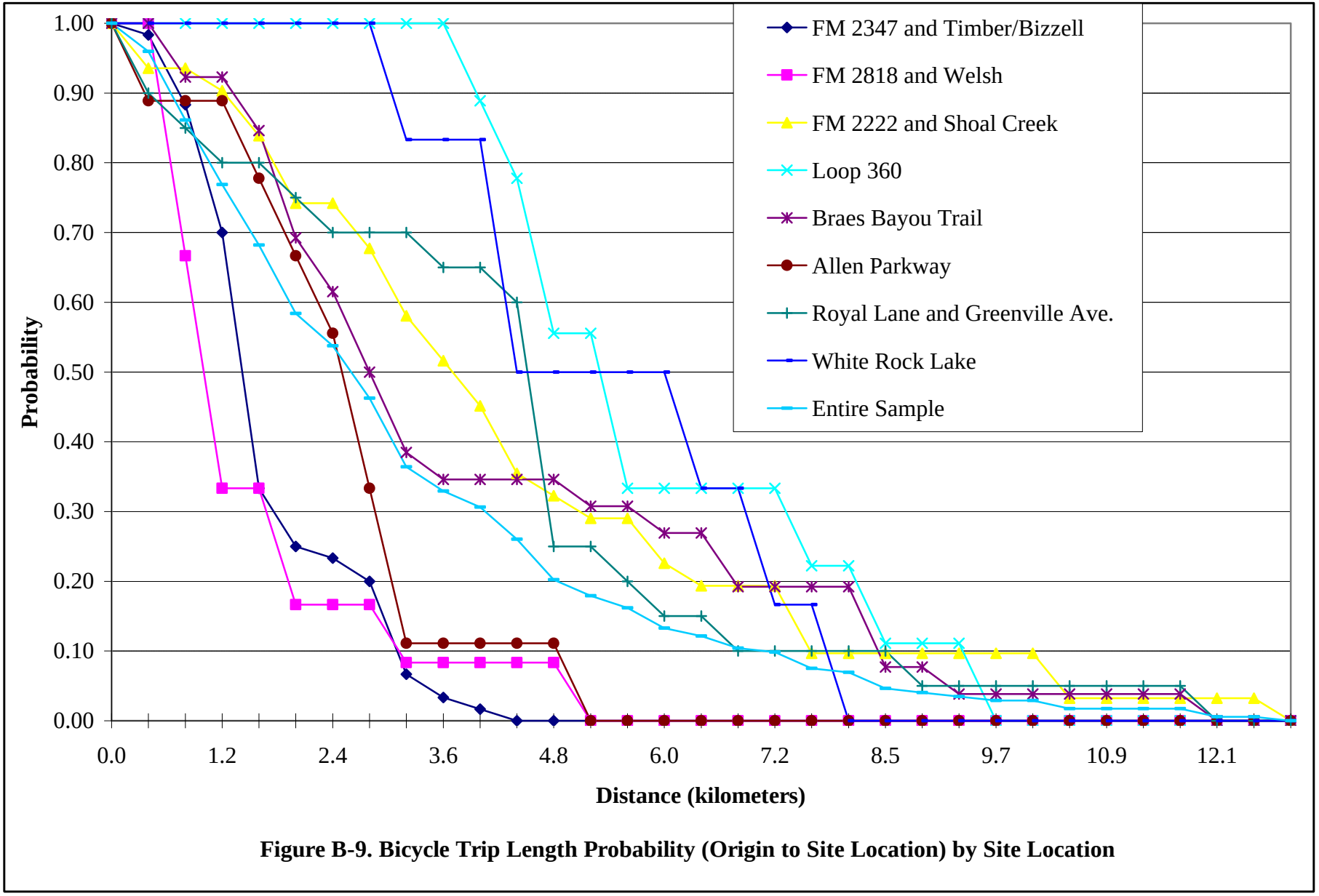


Figure B-9. Bicycle Trip Length Probability (Origin to Site Location) by Site Location

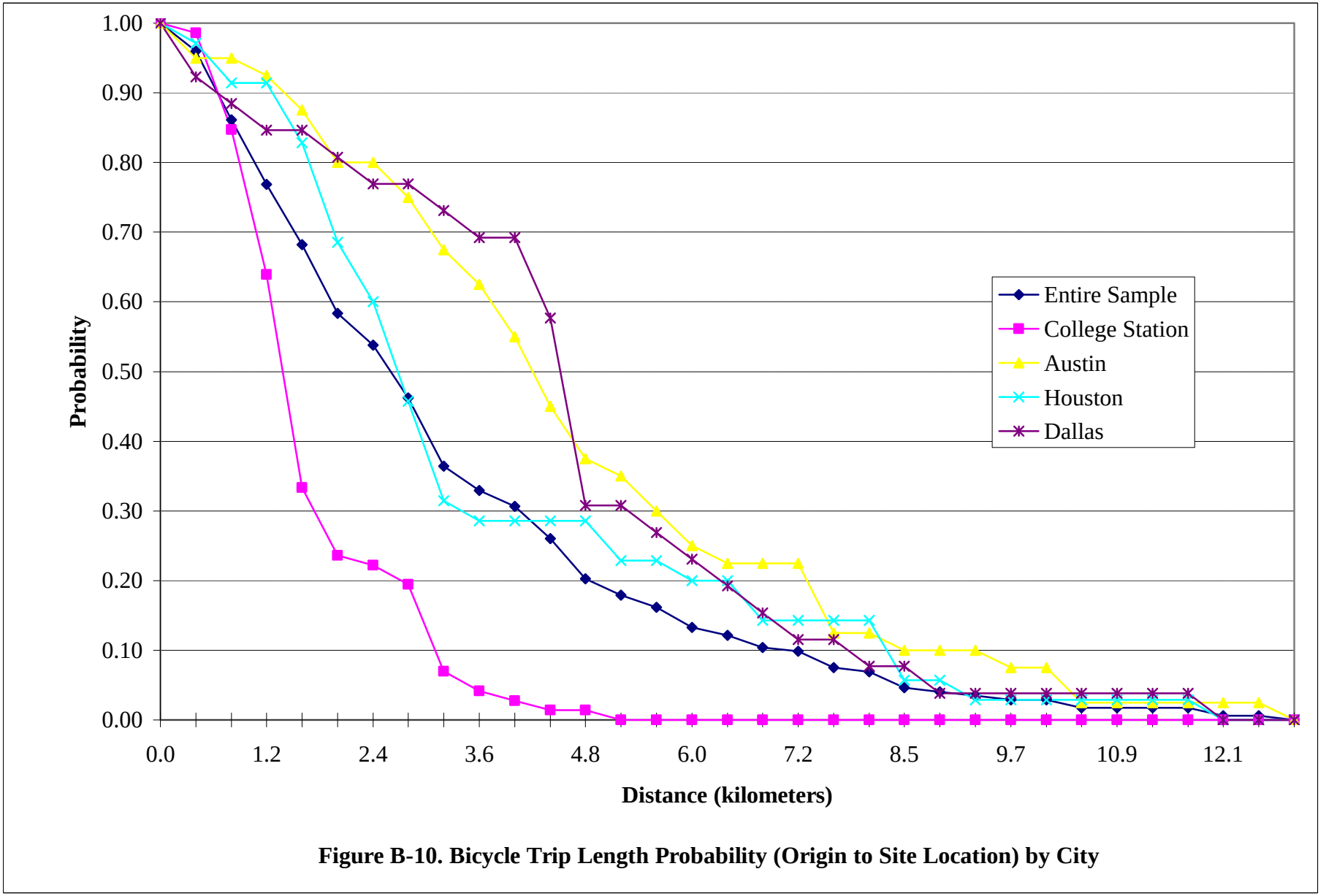


Figure B-10. Bicycle Trip Length Probability (Origin to Site Location) by City

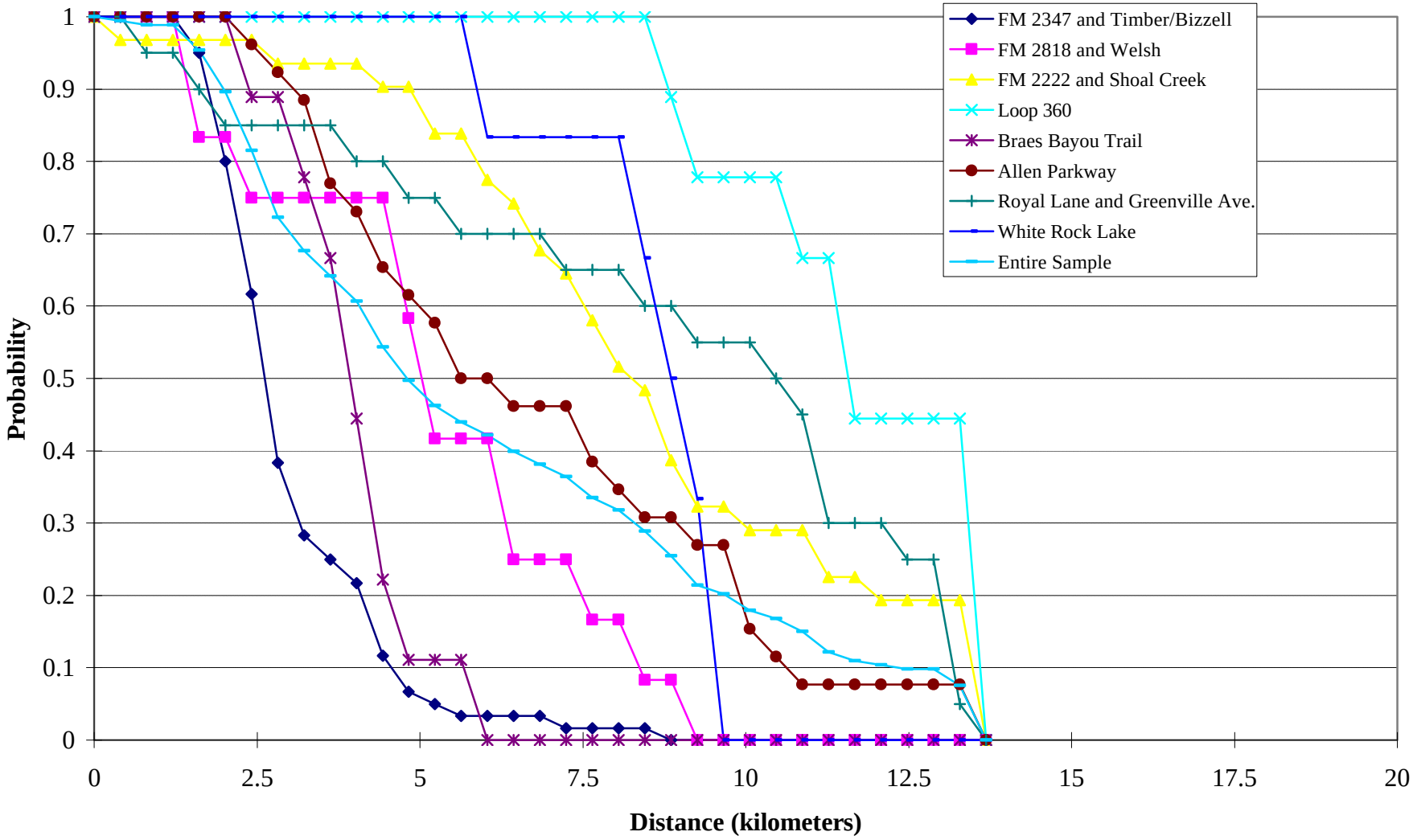


Figure B-11. Bicycle Trip Length Probability (Origin to Site Location to Destination) by Site Location

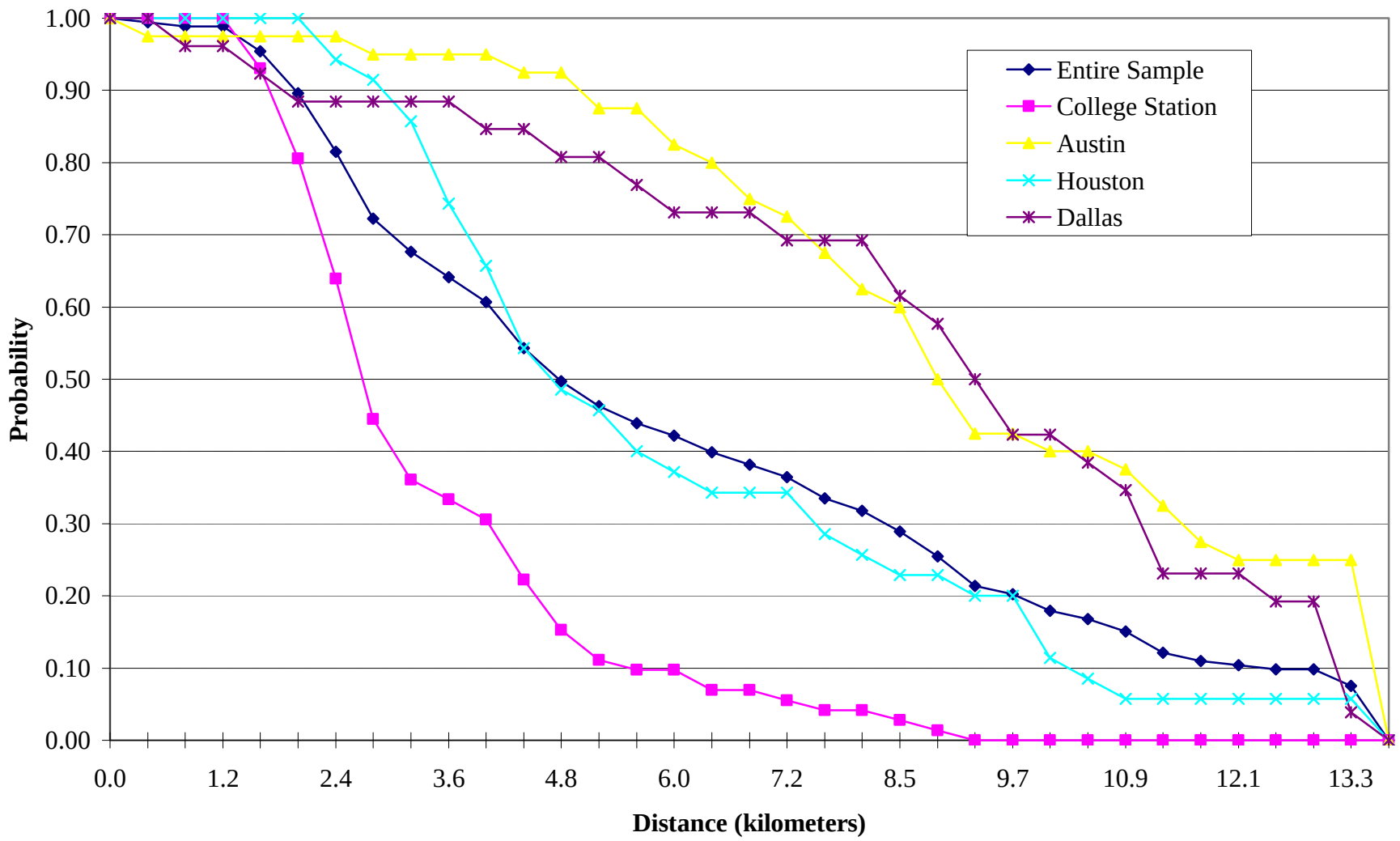


Figure B-12. Bicycle Trip Length Probability (Origin to Site Location to Destination) by City

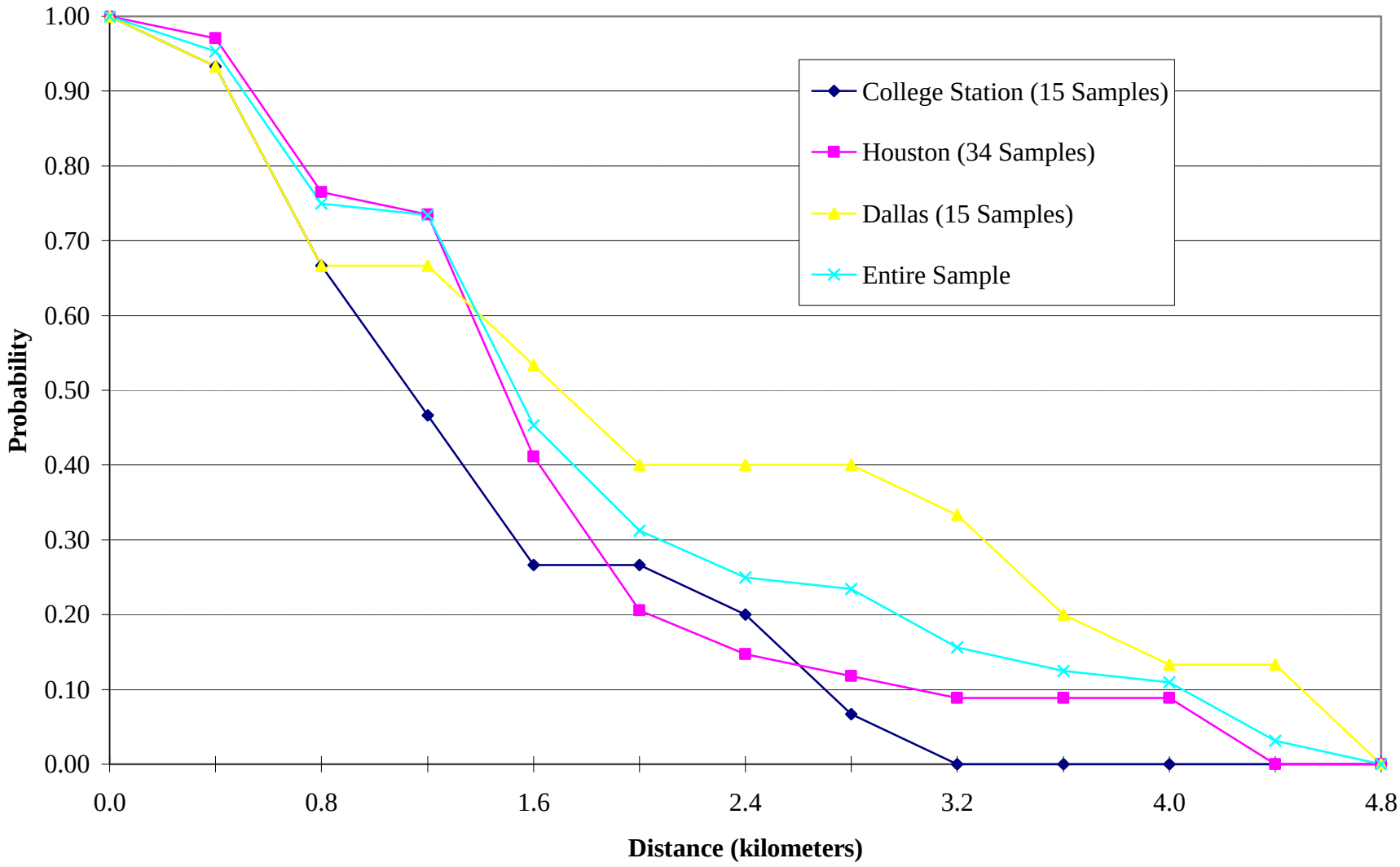


Figure B-13. Pedestrian Trip Length Probability (Origin to Site Location) by Site Location.

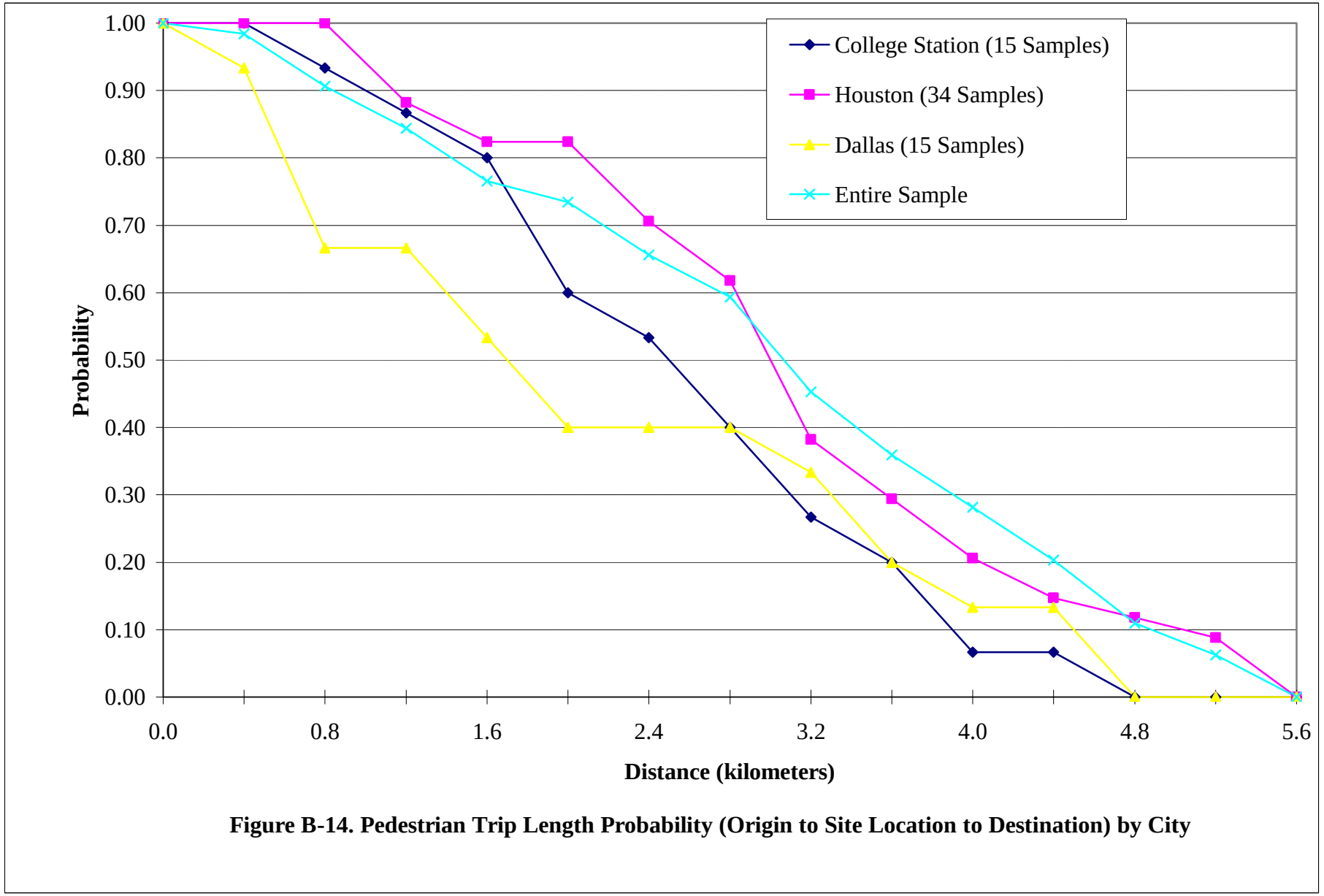


Figure B-14. Pedestrian Trip Length Probability (Origin to Site Location to Destination) by City

APPENDIX C

BICYCLE AND PEDESTRIAN TRIP PURPOSE AND FREQUENCY

APPENDIX C: BICYCLE AND PEDESTRIAN TRIP PURPOSE AND FREQUENCY

This appendix summarizes the bicycle and pedestrian trip purpose and frequency. Intercept survey postcards were distributed during the video data collection to as many passing bicyclists and pedestrians as possible. Bicyclists and pedestrians at the data collection site were asked to mail the postage-paid survey back to the research team, and the survey responses were summarized into computer spreadsheet software. The spreadsheet software was then used to summarize the bicycle and pedestrian trip characteristics.

Figures C-1 through C-17 summarize the bicycle and pedestrian trip purpose for each of the eight sites. Figures C-18 through C-26 present the bicycle and pedestrian trip frequency distributions. Tables C-1 through C-8 summarize the bicyclist trip frequency by trip purpose for each site.

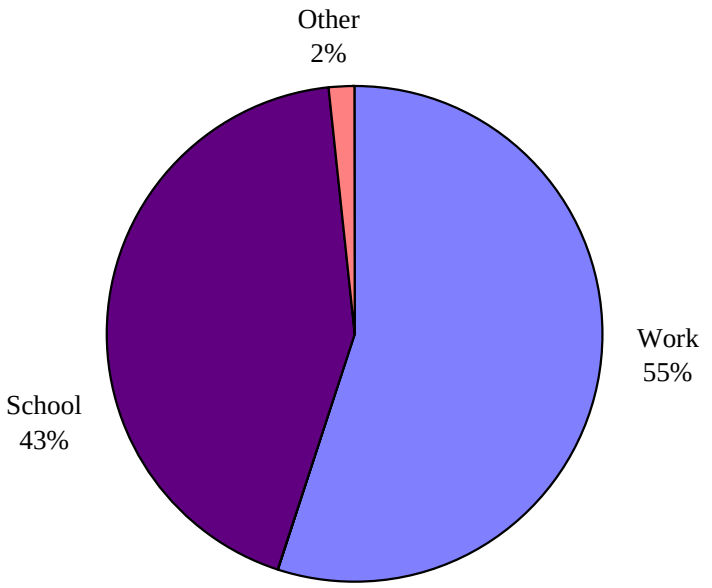


Figure C-1. Bicycle Trip Purpose at FM 2347 (George Bush Drive) and Timber/Bizzell in College Station

n=60

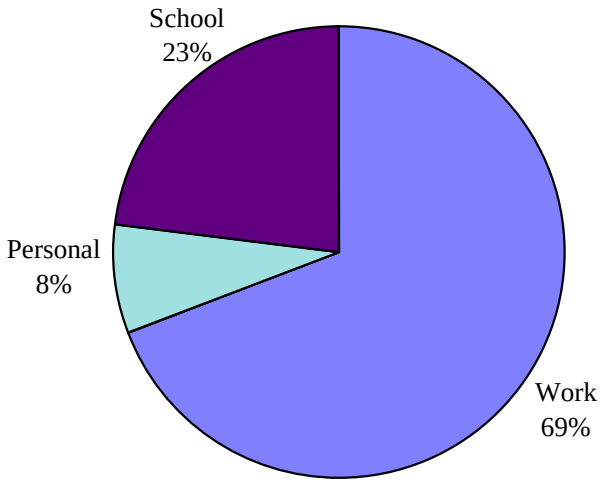


Figure C-2. Bicycle Trip Purpose at FM 2818 and Welsh Avenue in College Station

n=13

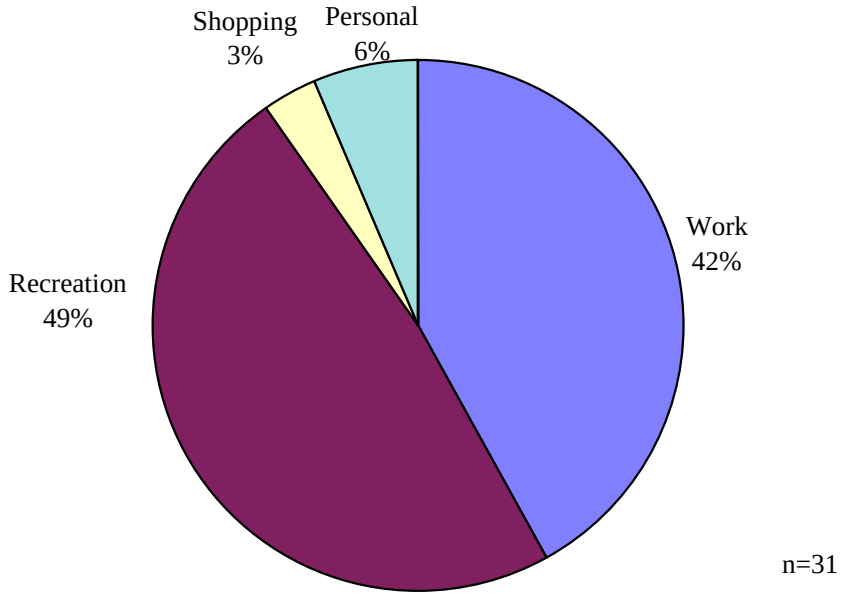


Figure C-3. Bicycle Trip Purpose at RM 2222 and Shoal Creek Boulevard in Austin

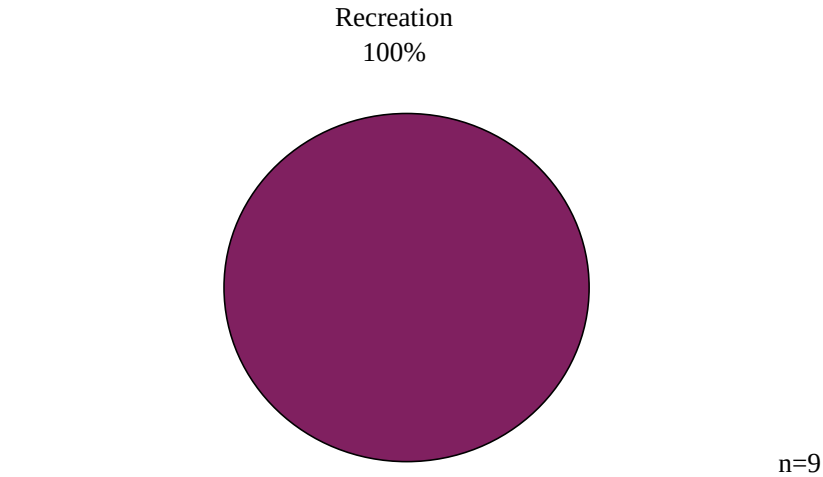


Figure C-4. Bicycle Trip Purpose at Loop 360 in Austin

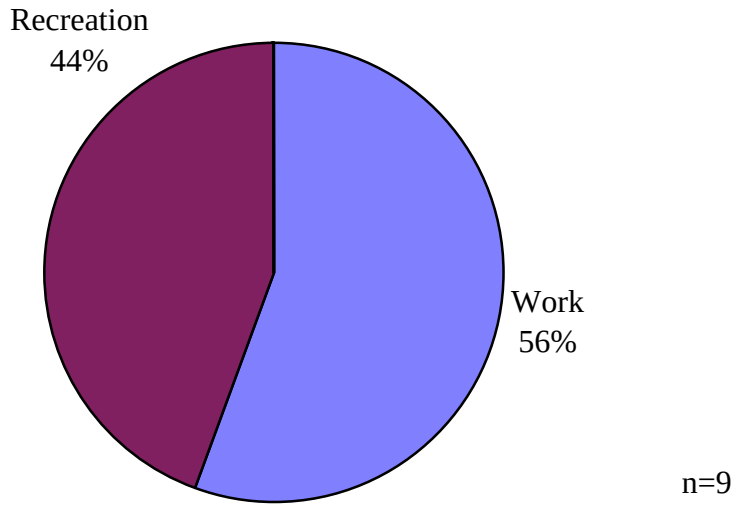


Figure C-5. Bicycle Trip Purpose on Allen Parkway and Taft Street in Houston

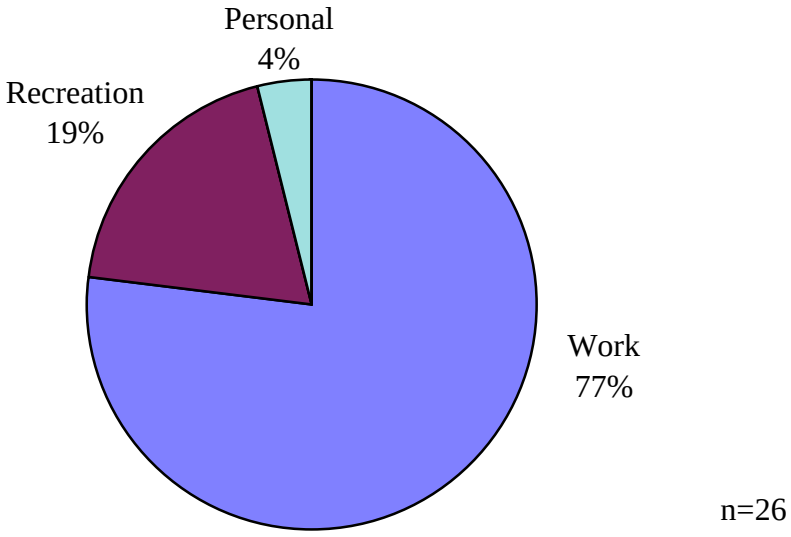


Figure C-6. Bicycle Trip Purpose at Braes Bayou Trail and South Main Street in Houston

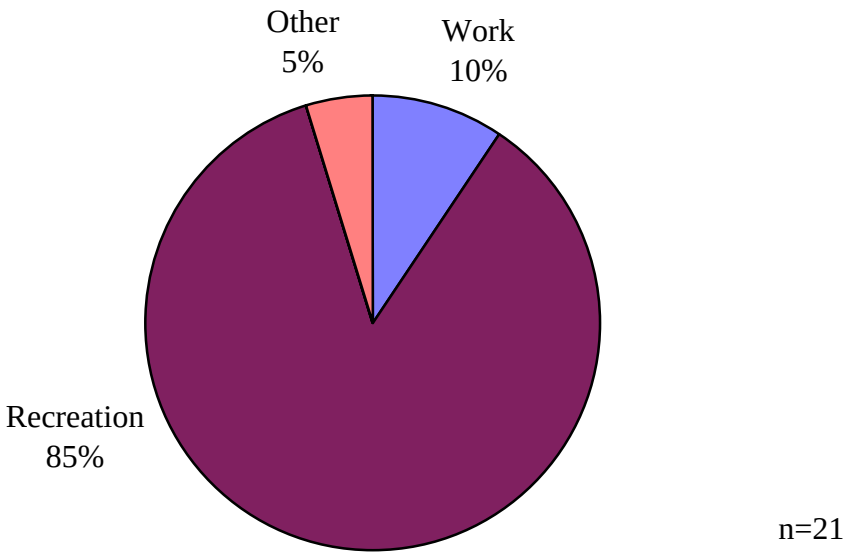


Figure C-7. Bicycle Trip Purpose at Royal Lane and Greenville Avenue in Dallas

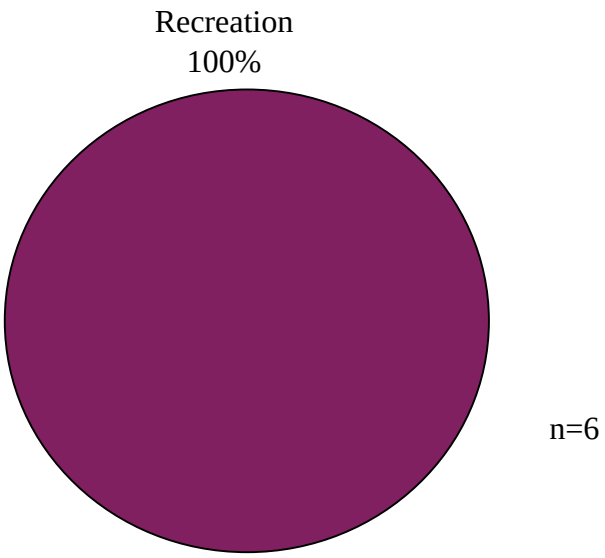


Figure C-8. Bicycle Trip Purpose at White Rock Lake Trail in Dallas

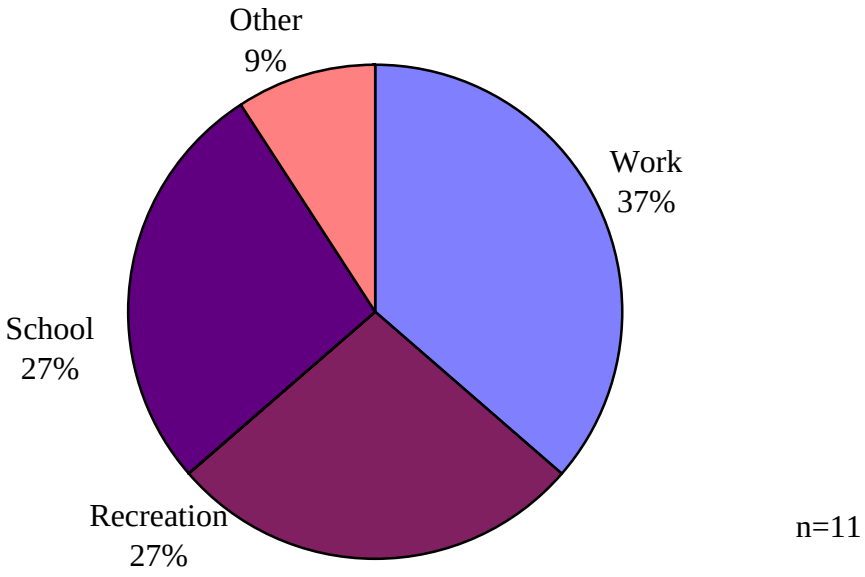


Figure C-9. Pedestrian Trip Purpose at FM 2347 (George Bush Drive) and Timber/Bizzell in College Station

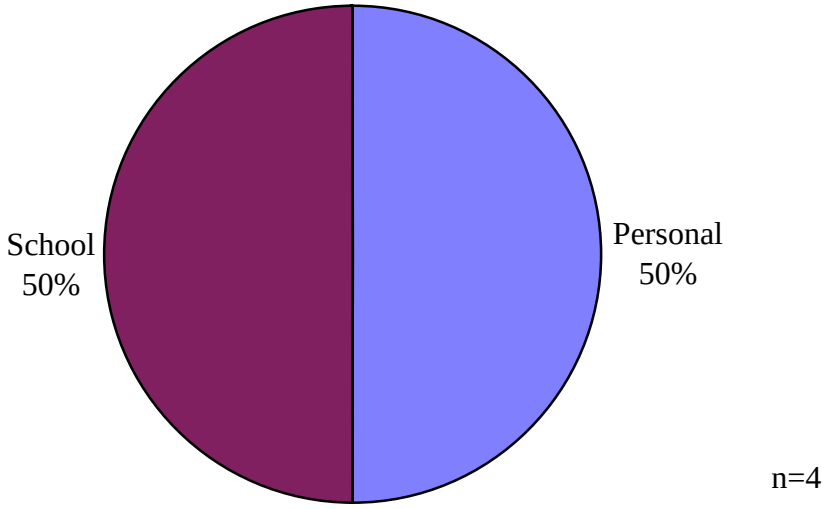


Figure C-10. Pedestrian Trip Purpose at FM 2818 and Welsh Avenue in College Station

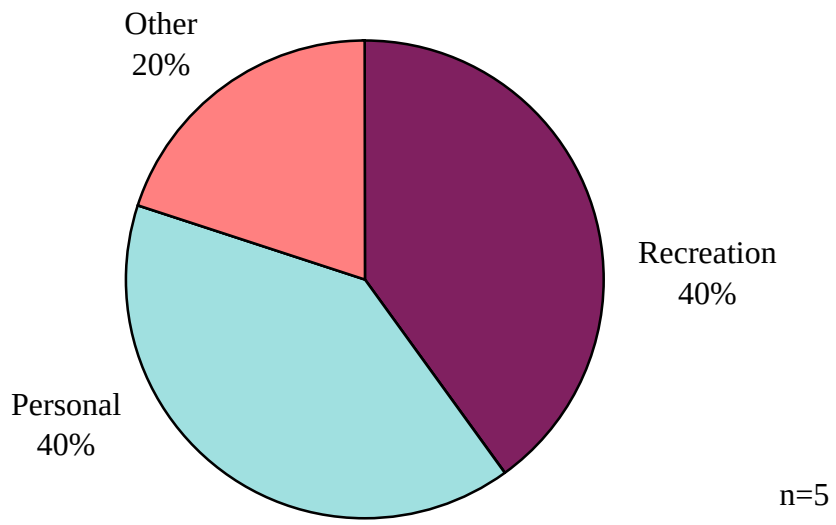


Figure C-11. Pedestrian Trip Purpose at RM 2222 and Shoal Creek Boulevard in Austin

No pedestrian surveys were returned for Loop 360 in Austin.

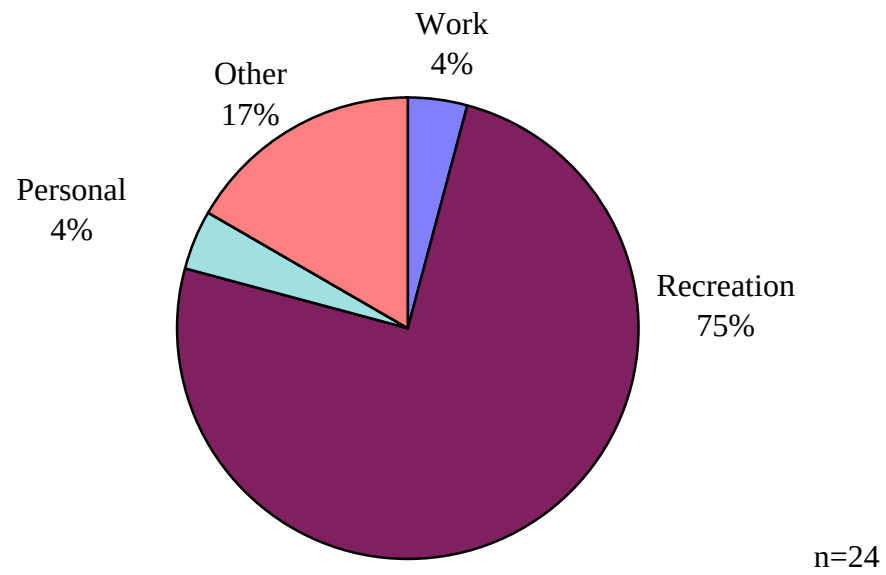


Figure C-12. Pedestrian Trip Purpose on Allen Parkway and Taft Street in Houston

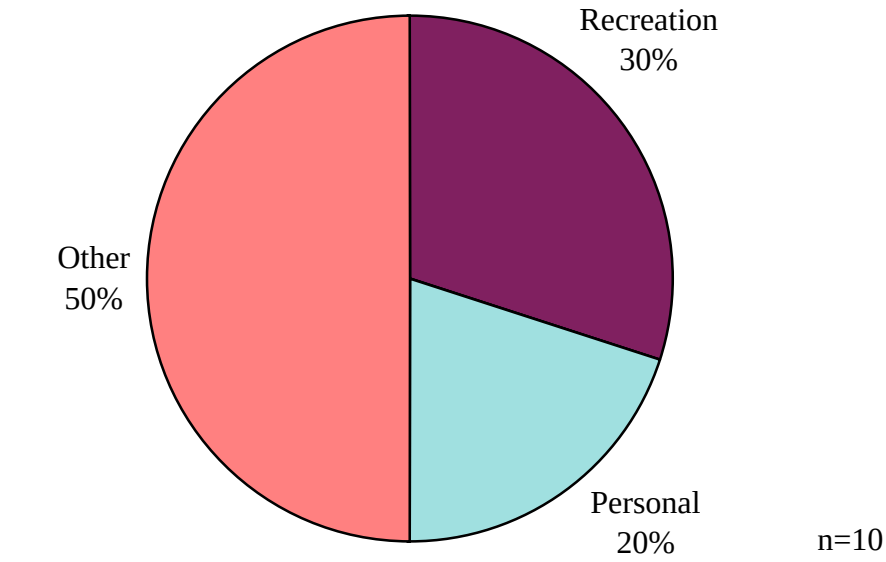


Figure C-13. Pedestrian Trip Purpose at Braes Bayou Trail and South Main Street in Houston

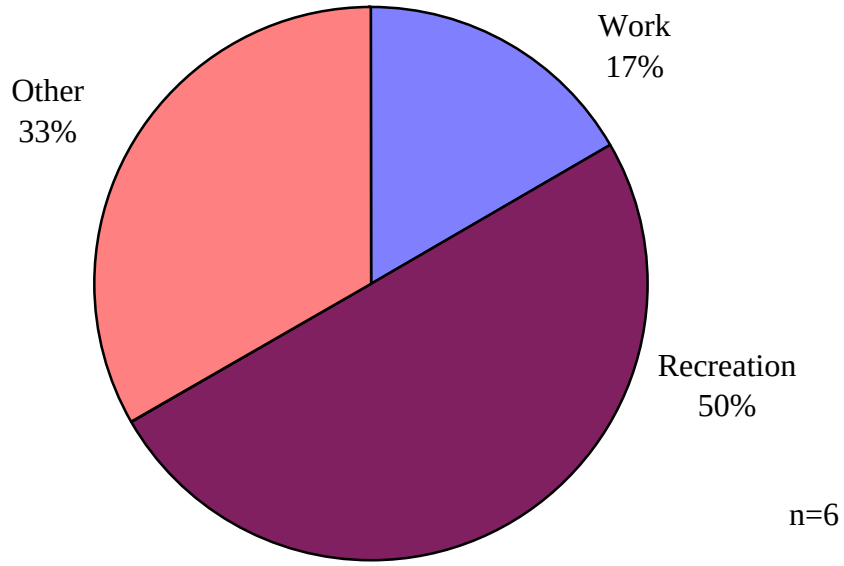


Figure C-14. Pedestrian Trip Purpose at Royal Lane and Greenville Avenue in Dallas

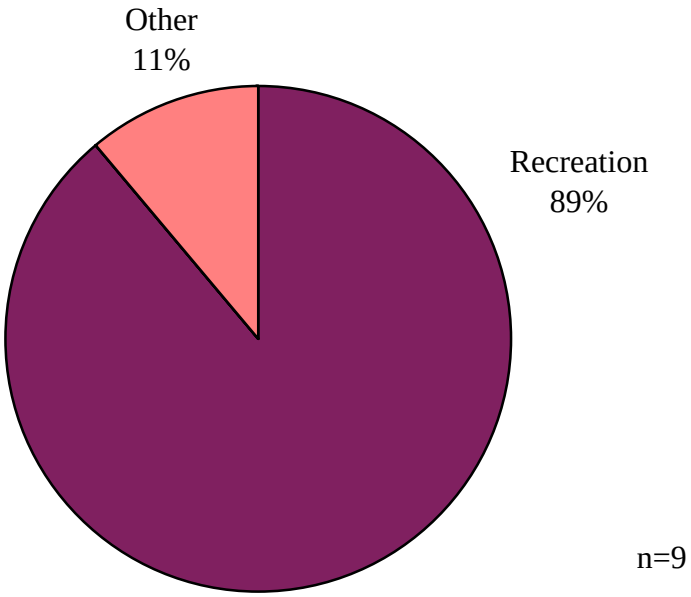


Figure C-15. Pedestrian Trip Purpose on White Rock Lake Trail at Mockingbird Lane in Dallas

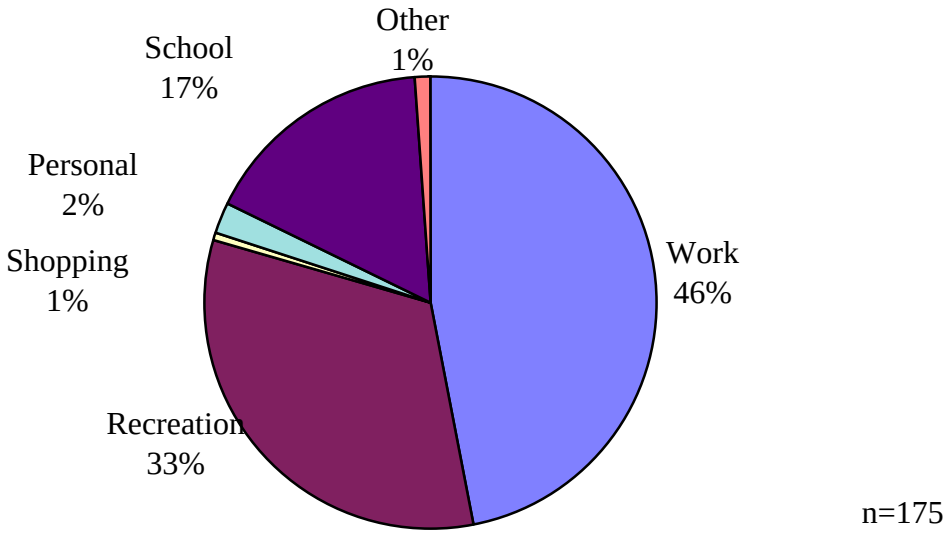


Figure C-16. Bicycle Trip Purpose for all 8 Texas Sites

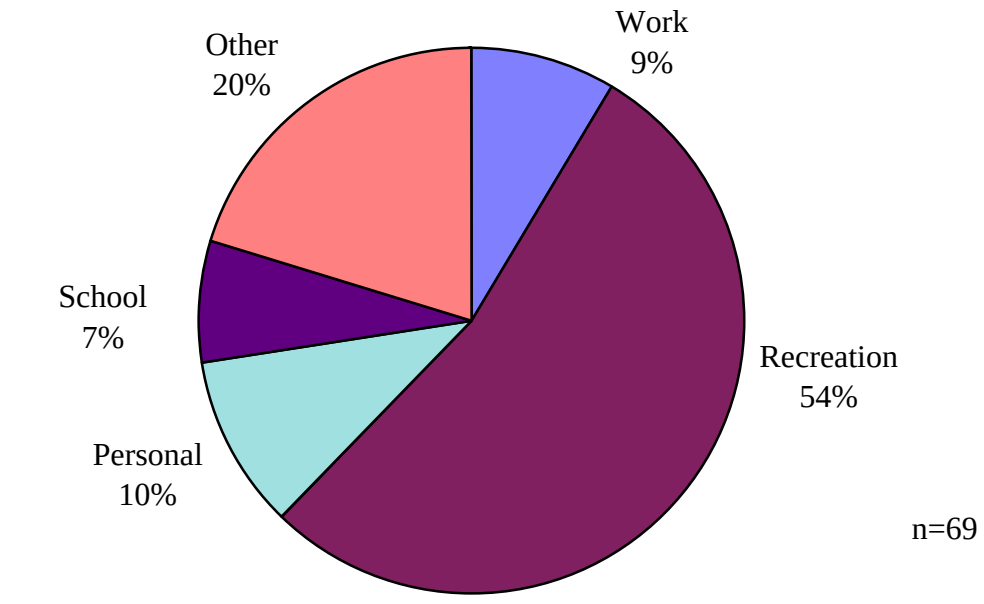


Figure C-17. Pedestrian Trip Purpose for all 8 Texas Sites

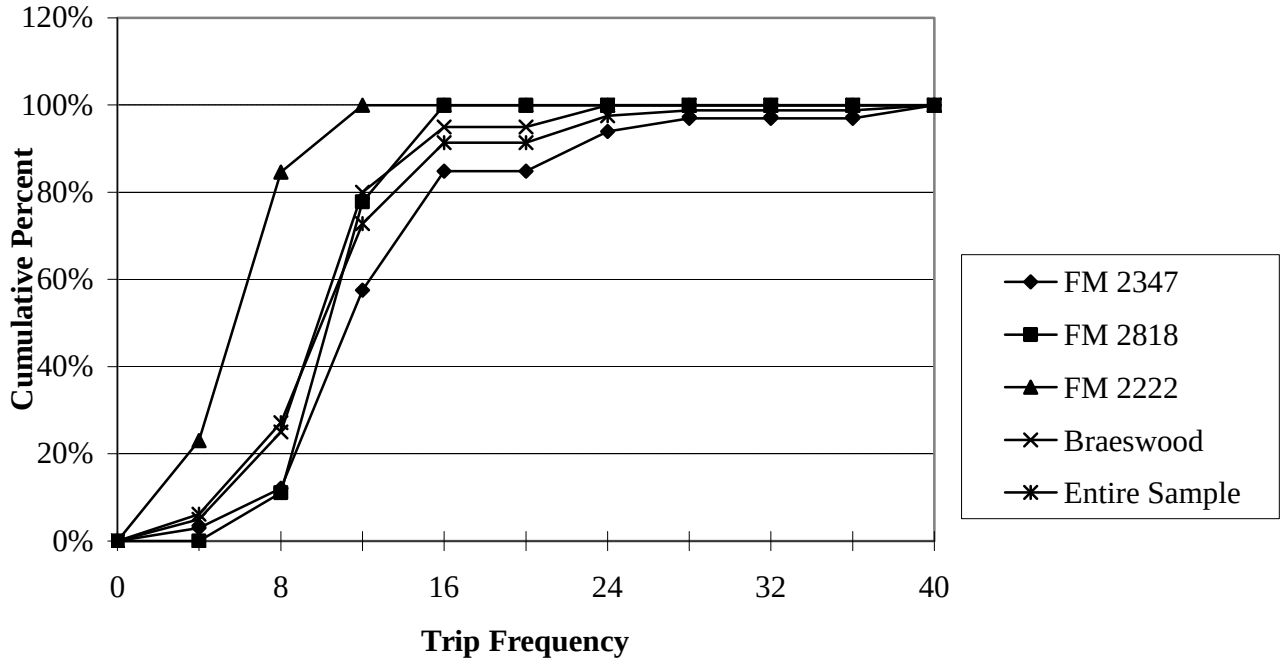


Figure C-18. Bicycle Work Trip Frequency

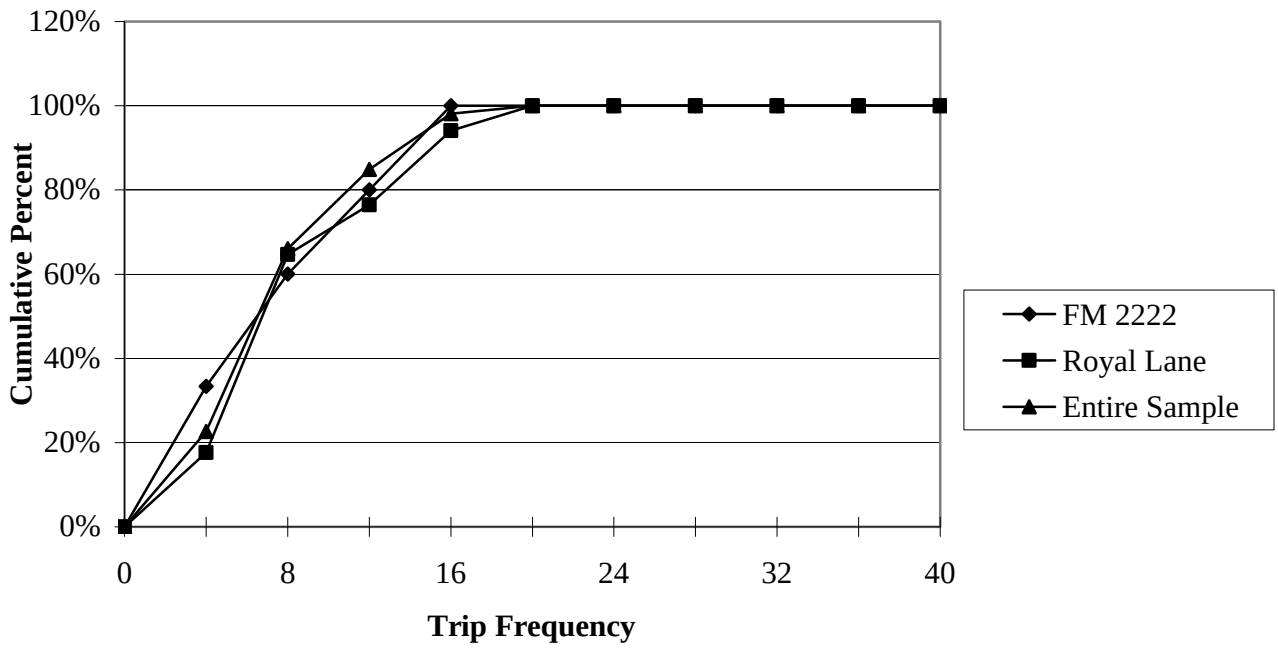


Figure C-19. Bicycle Recreation Trip Frequency

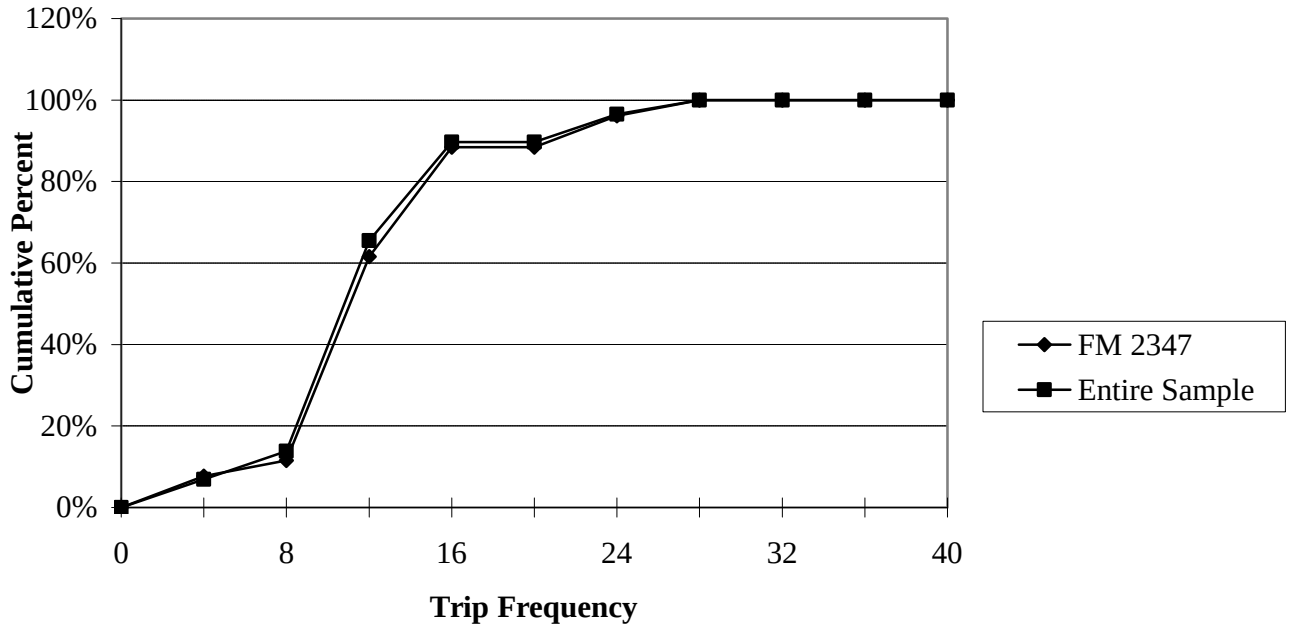


Figure C-20. Bicycle School Trip Frequency

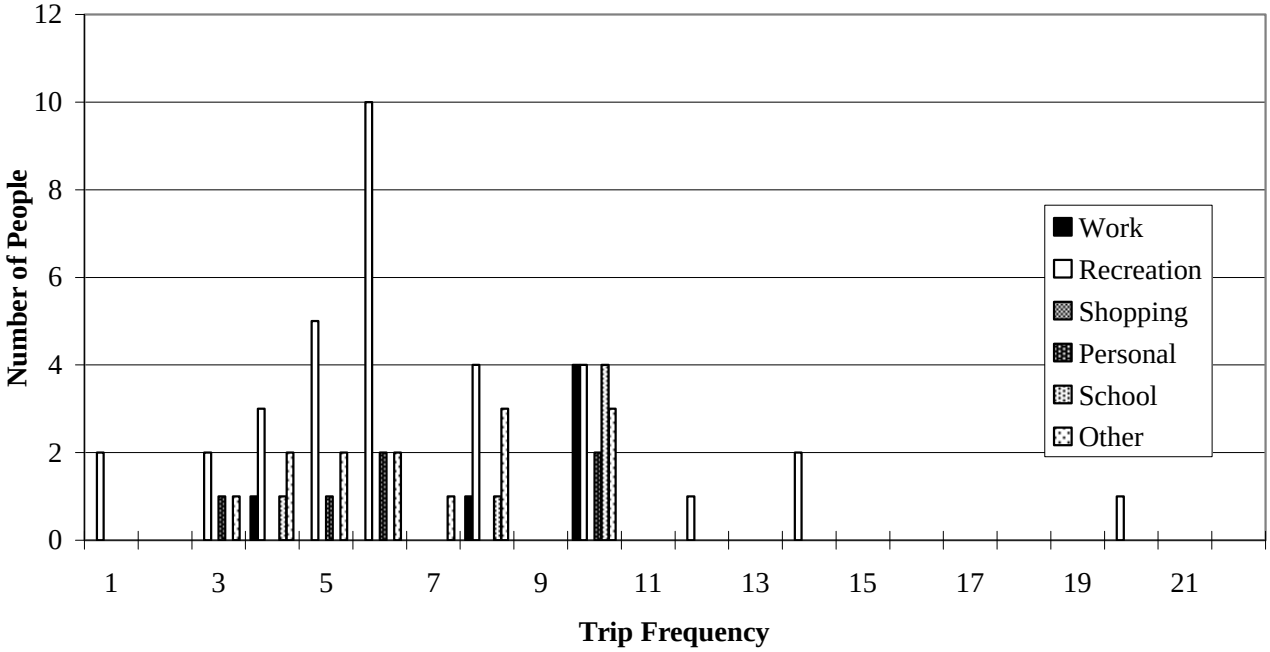


Figure C-21. Pedestrian Trip Frequency for All 8 Texas Sites by Trip Purpose

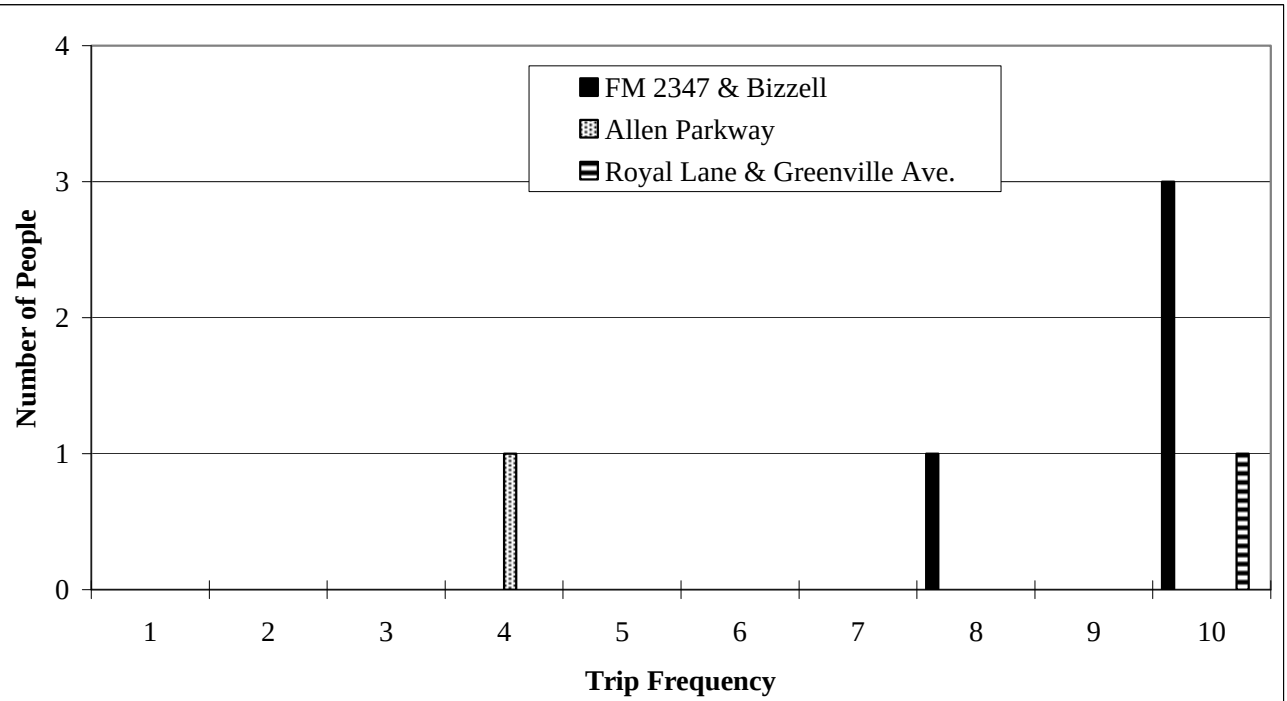


Figure C-22. Pedestrian Work Trip Frequency

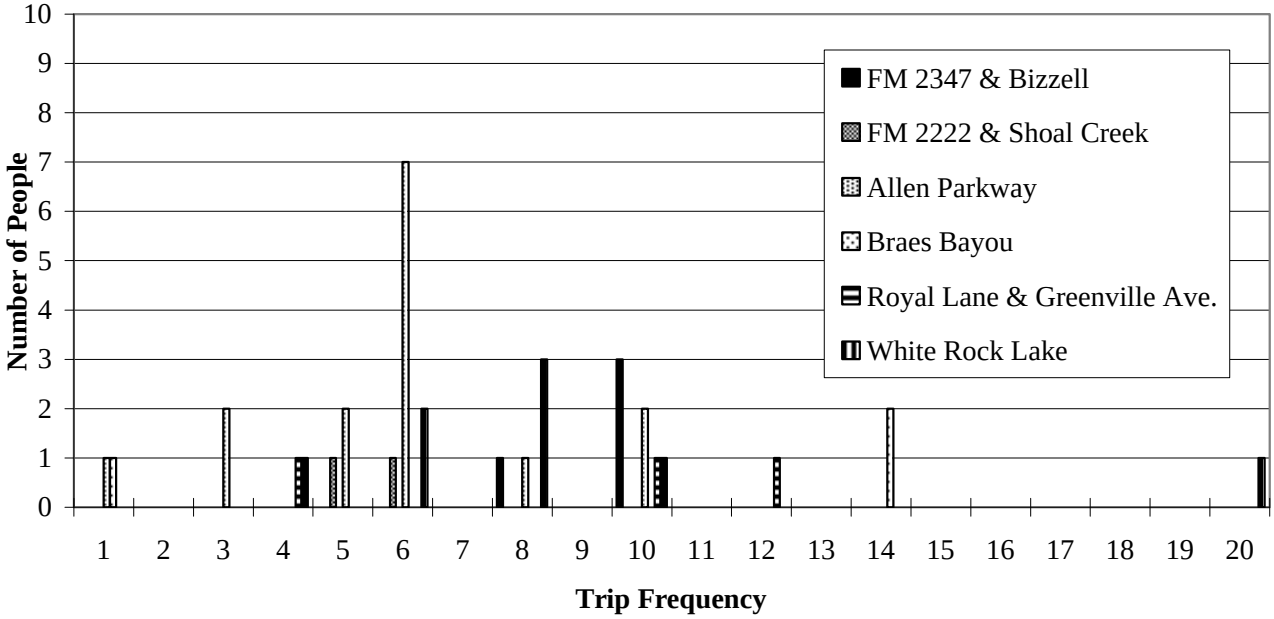


Figure C-23. Pedestrian Recreation Trip Frequency

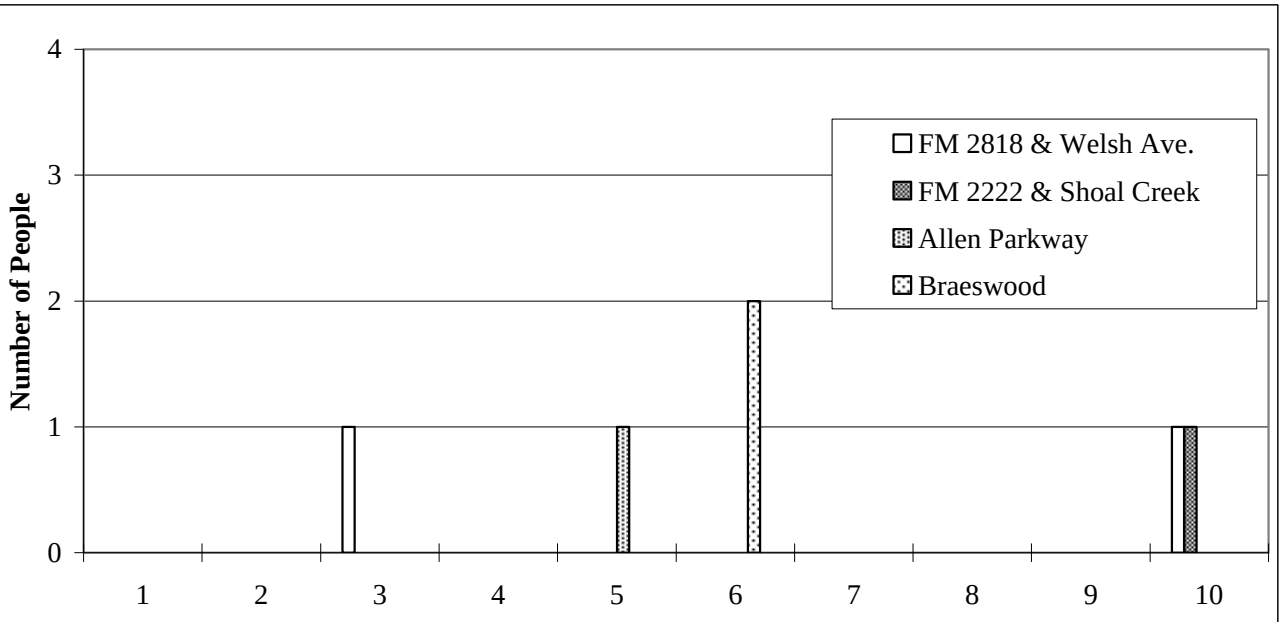


Figure C-24. Pedestrian Personal Trip Frequency

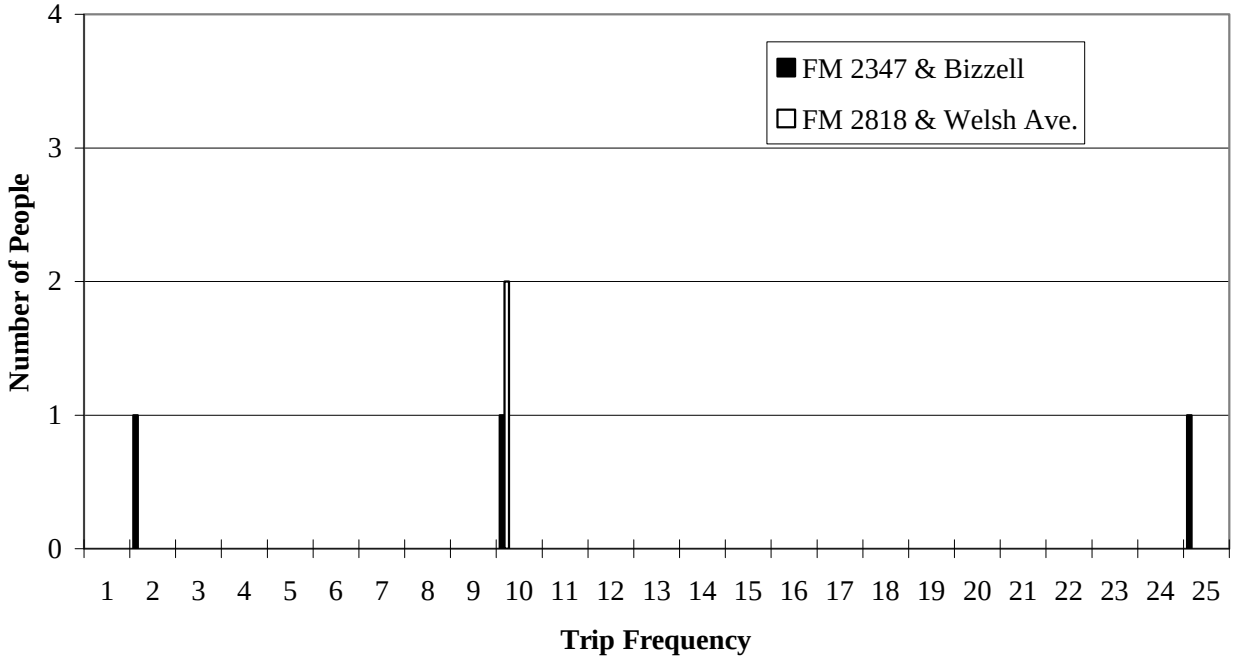


Figure C-25. Pedestrian School Trip Frequency

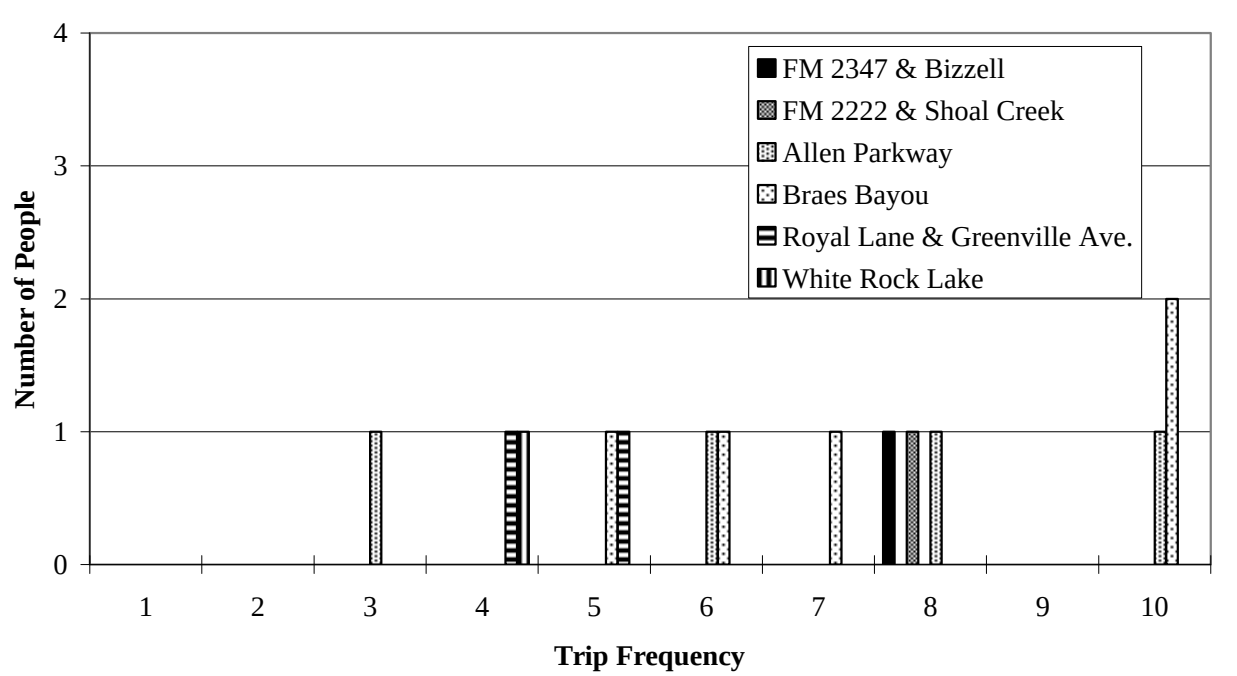


Figure C-26. Pedestrian Other Trip Frequency

Table C-1. Average Bicyclist Trip Frequency at FM 2347 (George Bush Drive) and Timber/Bizzell Street

Trip Purpose	Number of Responses	Average Bicyclist Trip Frequency (trips per week)
Work	33	12
Recreation	0	n.a.
Shopping	0	n.a.
Personal	0	n.a.
School	26	11
Other	1	12
Average	**60**	**12**

Table C-2. Average Bicyclist Trip Frequency at FM 2818 and Welsh Avenue

Trip Purpose	Number of Responses	Average Bicyclist Trip Frequency (trips per week)
Work	9	10
Recreation	0	n.a.
Shopping	0	n.a.
Personal	1	n.a.
School	3	9
Other	0	n.a.
Average	**13**	**9**

Table C-3. Average Bicyclist Trip Frequency at RM 2222 and Shoal Creek Boulevard

Trip Purpose	Number of Responses	Average Bicyclist Trip Frequency (trips per week)
Work	13	5
Recreation	15	7
Shopping	1	3
Personal	2	4
School	0	n.a.
Other	0	n.a.
Average	**31**	**6**

Table C-4. Average Bicyclist Trip Frequency on Loop 360 at the Colorado River

Trip Purpose	Number of Responses	Average Bicyclist Trip Frequency (trips per week)
Work	0	n.a.
Recreation	6	4
Shopping	0	n.a.
Personal	0	n.a.
School	0	n.a.
Other	0	n.a.
Average	**6**	**4**

Table C-5. Average Bicyclist Trip Frequency on Allen Parkway at Taft Street

Trip Purpose	Number of Responses	Average Bicyclist Trip Frequency (trips per week)
Work	4	12
Recreation	4	9
Shopping	0	n.a.
Personal	0	n.a.
School	0	n.a.
Other	0	n.a.
Average	**8**	**10**

Table C-6. Average Bicyclist Trip Frequency on Brays Bayou Trail at South Main Street

Trip Purpose	Number of Responses	Average Bicyclist Trip Frequency (trips per week)
Work	20	11
Recreation	5	6
Shopping	0	n.a.
Personal	1	3
School	0	n.a.
Other	0	n.a.
Average	**26**	**8**

Table C-7. Average Bicyclist Trip Frequency at Royal Lane and Greenville Avenue

Trip Purpose	Number of Responses	Average Bicyclist Trip Frequency (trips per week)
Work	2	10
Recreation	17	7
Shopping	0	n.a.
Personal	0	n.a.
School	0	n.a.
Other	1	2
Average	**20**	**7**

Table C-8. Average Bicyclist Trip Frequency on White Rock Lake Trail at Mockingbird Lane

Trip Purpose	Number of Responses	Average Bicyclist Trip Frequency (trips per week)
Work	0	n.a.
Recreation	6	6
Shopping	0	n.a.
Personal	0	n.a.
School	0	n.a.
Other	0	n.a.
Average	**6**	**6**

APPENDIX D

BICYCLE AND PEDESTRIAN SURVEY COMMENTS

APPENDIX D: BICYCLE AND PEDESTRIAN SURVEY COMMENTS

This appendix contains bicycle and pedestrian comments from the intercept survey cards. The comments are presented by bicyclists and pedestrians for each data site.

Bicyclist Comments at the Intersection of FM 2347 (George Bush Drive) and Timber/Bizzell Street in College Station

Less stop signs for bikes if possible.
Why are bike lanes in poor shape?
Hope to see safe bike lanes in B/CS.
Cars block bike lanes.
My bike is more reliable than my car.
Easier to park bike than car on campus.
Need better left turn lanes at Commons.
Dangerous split section on Bush at Bizzell.
I also cycle for fun.
More white lanes between cars and bikes.
Please make biking a bigger priority.
Bike lanes need to connect.
I also ride my bike to and from TAMU.
I also bike for recreation.
More bike paths please.
I also make 15 minute trips to work.
More direct routes to Bryan.
Thanks for trying to improve conditions
Light at Timber & Bush is too short.
Cars use bike lanes as temporary parking
Also ride 3 hours per week for recreation.
First ½ mile of Glade needs bike lane.
College Station and TAMU need more bike lanes.
Save gas and peaceful days.
Too many cars drive and park in bike lane.
Lights are weight activated-causes problem.
Need bike lanes on part of my route.
University and Texas need bike lanes.
Bizzell bike lanes flood when it rains.
Cars park on Bizzell without being towed.
B/CS needs bikeways badly.
Parking on Bizzell is a chronic problem.

Pedestrian Comments at the Intersection of FM 2347 (George Bush Drive) and Timber/Bizzell Street in College Station

Is there a law against sidewalks in B/CS?
Sidewalks are not continuous.
Enjoy sidewalks, wish there were more.
It's a nice walk.

Bicyclist Comments at the Intersection of FM 2818 and Welsh Avenue in College Station

Southwest Parkway needs a bike lane.
Better walking conditions on College Main.
Bike lanes are in poor condition.

Pedestrian Comments at the Intersection of FM 2818 and Welsh Avenue in College Station

Use a wheelchair.
The outside air is refreshing.

Bicyclist Comments at the Intersection of RM 2222 and Shoal Creek Boulevard in Austin

More bike lanes; no helmets.
Glad to see you doing this.
Austin should be bike friendly.
I also make personal trips by bike.
Shoal Creek Blvd. is safe; Burnett isn't.
Shoal Creek trails need maintaining.
Jollyville Rd needs a marked bike lane.
Hard to get from "here to there".
Need more bike lanes; repeal helmet law!
Improve non-motorists conditions.
I cycle in a gym because of bad weather.
Bike lanes badly.
Need more safe places to ride.
Bike lanes need repair.
I am a competitive cyclist.
Repeal the Helmet Ordinance.
Drivers need to make turn signals.

Pedestrian Comments at the Intersection of RM 2222 and Shoal Creek Boulevard in Austin

I'm happy to have a bike lane on Shoal.
Use exercise as category.
Need more sidewalks
Sidewalks or trails would be nice.

Bicyclist Comments on Loop 360 at the Colorado River in Austin

Spend 12 hours per week riding.

Need path away from truck exhaust.

Trip taken two times per month.

I commute (Westlake via 360 to Braker).

360 is great for riding, but dangerous.

Regular trip-360, 2222, Balcones, and home.

Loop 360 and Bee Cave are popular routes.

Bicyclist Comments on Allen Parkway at Taft Street in Houston

Wish Allen Parkway had a safe crossing.

This week only-visitor from SC.

Bikes and peds are a bad mix.

I like to ride this bike trail.

Buffalo Bayou should be maintained.

Clean up Bayou.

Complete trails from Waugh to Memorial.

Pedestrian Comments on Allen Parkway at Taft Street in Houston

Lots of traffic in the evening.

Out-of-town visitor.

Too bumpy.

Maintenance is needed on Buffalo Bayou.

Loose dogs; dogs waste on track.

Repairs needed at bridges.

Too bumpy for rollerblades.

Nice trail.

Hwy 6 and I-10 W is good for rollerblades.

Bike lanes would be great and safe.

Stop the subsidence!

People need to stay off the grass.

Widen trail, use cinder, fix benches.

Too bumpy.

Needs better lighting for night.

Bicyclist Comments on Brays Bayou Trail at South Main Street in Houston

Maintain Bayou trail.

Path maintenance; separate paths for bike and peds.

I like it!

Need more and safer bike paths.

Parts of road need repairs.

Make streets more bike friendly.

Maintenance needed on Brays Bayou trail.

Hike & Bike trail is dangerous at night.

Safety is an issue; paths need repair.

Parts of Brays Bayou trails in bad shape

None, good bike trails

I ride length of Brays Trail.

Great!

Always need more bike trails.

Safety concerns-lighting?

Pedestrian Comments on Brays Bayou Trail at South Main Street in Houston

Exercise

Grass on Sides of Bayou needs cutting.

Cut grass; repair pavement.

Love the jogging path.

Widen Brays Bayou; need bridge at Buffalo.

Repair pavement; cut grass.

Bicyclist Comments at the Intersection of Royal Lane and Greenville Avenue in Dallas

Driver and Cyclist education!

Longer lights for cyclists would help.

Great ride.

Need better drainage along trails.

Need ped/bike bridge at Greenville and Royal.

Need wider trails.

Do survey in Spanish as well as English.

Appreciate the paths in Dallas a lot.

I ride my bike about 100 miles per week.

Need more bikeways on city streets.

Connect or build more long trails.

Light too short at Greenville and Royal.

Pedestrian Comments at the Intersection of Royal Lane and Greenville Avenue in Dallas

Need more trails.

Widen paths and keep them clean

Bridges need repairs, trails wider.

Need more paved trails for in-line skate.

Bicyclist Comments on White Rock Lake Trail at Mockingbird Lane in Dallas

We need bike lanes on our roads.

White Rock Lake needs a lot of attention.

Pedestrian Comments on White Rock Lake Trail at Mockingbird Lane in Dallas

Bikers and peds should have own places.

Ped/bike trails need extension in Dallas.

Trash and pet mess need to be cleaned up.

More trails, what about on old R.R. line.