Los Angeles County
Metropolitan Transportation Authority

Metro Orange Line Mode Shift Study and Greenhouse Gas Emissions Analysis

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Prepared by:
Los Angeles County
Metropolitan Transportation Authority
One Gateway Plaza
Los Angeles, CA 90012-2952
Ph: 213.922.1100
www.metro.net/sustainability

ICF International, Prime
811 W. 7th Street,
Los Angeles, CA 90017

Fehr and Peers, Subconsultant
201 Santa Monica Boulevard, Suite 500
Santa Monica, CA 90401

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ACKNOWLEDGEMENTS

Project Team

Metro

Cris Liban, Manager of Environmental Compliance and Services Department

Gwynneth L. Doyle, Senior Environmental Specialist

Lynne Goldsmith, Bike Program Manager

Anthony (Tony) Jusay, Transportation Planning Manager

Nathan Baird, Bike Planning Intern

David Sotero, Media Relations

Elizabeth McGowan, Senior Marketing and Communications Officer

Sarah Winfrey, Communications Assistant

Anna Mercaldi, Assistant Public Communications Officer

ICF International

Lee Lisecki, Principal/Project Director

Keith Cooper, Senior Air Quality and Climate Change Analyst

Fehr and Peers

John Stutsman, AICP, Principal

Steve Crosley, AICP, Senior Transportation Planner

Peter Carter, AICP, Transportation Planner

Los Angeles County Bicycle Coalition

Jennifer Klausner, Executive Director

Alexis Lantz, Planning and Policy Director

Dorothy Kieu Le, Policy Director (Former)

Over 30 Volunteers

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EXECUTIVE SUMMARY

The Metro Orange Line is a 14-mile Bus Rapid Transit (BRT) busway that extends from the terminus of the Metro Red Line subway in North Hollywood through the Sepulveda Basin and on to Warner Center in Woodland Hills. To complement the busway and promote sustainable, alternative transportation, a bikeway was constructed together with the busway. Since its opening, the Metro Orange Line bus has generated higher than expected ridership, and its parallel bicycle facility is well-utilized by bicyclists and pedestrians for commute, exercise, and recreational purposes.

Construction of the Metro Orange Line busway was coupled with investments in bicycle and pedestrian infrastructure at a cost of $1.3 million per mile for the bikeway ($10.5M total).[1] These investments have supported higher shares of bicycle use for work, school, shopping, and visits to friends than would otherwise have occurred.[2] This is particularly important since an analysis of Metro Orange Line catchment areas finds that the combined bikeshed for Metro Orange Line stations is 13 times larger than the sum of the walksheds for each station.

Metro is required under the Board-adopted Metro Sustainability Implementation Plan (MSIP) to evaluate ways to reduce greenhouse gas emissions (GHGe). Since there is a lack of local data on bicycle use, it is difficult to evaluate the potential for mode shift and trip chaining opportunities within the Metro system. Increased mode-shifting and trip chaining reduces Vehicle Miles Traveled (VMT) and GHGe. For decision makers, this study provides valuable preliminary[3] information on existing efforts to improve sustainability and livability with multimodal transportation facilities by assessing the benefits of mode shift away from driving alone. This study also provides empirical data for identifying bicycle use as a sustainability strategy.

The potential benefits of sustainable transportation solutions such as the integrated Metro Orange Line busway and bikeway include improved traffic flow, shorter trip lengths, safer streets for pedestrians and bicyclists, lower GHGe, reduced dependence on fossil fuels, increased trip-chaining (combining several errands/stops into one trip), and independence for those who prefer not to or are unable to drive. These benefits advance the livable communities concept, which is supported and advocated for by the United States Department of Transportation (USDOT). This study looks at the sustainability and livability benefits enabled by Metro Orange Line bicycle facilities.

According to U.S. Secretary of Transportation Ray LaHood, in order to create livable communities, “the range of transportation choices available to all Americans—including transit, walking, bicycling, and improved connectivity for various modes—must be expanded.”[4] Increasing bicycle and pedestrian access along the Metro Orange Line brings Los Angeles County communities closer to achieving this goal.

Environmental sustainability is another integral attribute of livable communities. Secretary LaHood has noted that livable communities must have “lower greenhouse gas emissions” and “reduced dependence on fossil fuels.”[5] As Los Angeles County looks for opportunities to reduce greenhouse gas emissions, bicycling represents a promising non-motorized option to automobile travel.

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[1] This is separate from the busway

[2] Stranger, Richard. “An Evaluation of Los Angeles’ Orange Line Busway,” *Journal of Public Transportation*, Vol. 10, No. 1, 2007.

[3] Due to limitations on the scope of this study and survey, further studies/surveys of the Orange Line and other transit lines are recommended to statistically validate and replicate, using rigorous sampling methodology, this study’s results and conclusions.

[4] Statement of Ray LaHood, Secretary of Transportation, before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate Hearing on Greener Communities, Greater Opportunities: New Ideas for Sustainable Development and Economic Growth (June 16, 2009).

[5] Ibid.

STUDY PURPOSE AND JUSTIFICATION

To date, the role the bikeway plays in improving regional sustainability by increasing Metro Orange Line transit ridership, reducing automobile use, and lowering GHGe has not been studied. The purpose of this study is to identify the potential benefits of constructing the Metro Orange Line as an integrated transportation system where transit, bicycle, and pedestrian travel modes are included. This study is justified by the requirements of the Metro's Long Range Transportation Plan,[6] Metro Sustainability Implementation Plan (MSIP),[7] Metro Bicycle Transportation Strategic Plan,[8] SCAG's Regional Transportation Plan,[9] Air Resources Board regional GHGe reduction targets for the SCAG region,[10] and USDOT policy supporting livable communities and the development of fully integrated active transportation networks. This study was conducted to determine the effects and usage of a bikepath along with major infrastructure system as well as to determine specific details of a bike project's cost-effectiveness as a strategy for reducing greenhouse gas emissions and vehicle miles traveled (VMT).

STUDY SYNOPSIS

This study consists of counts that focused on bicycles and pedestrians on the bike path, counts of bicyclists on the busway and a survey that focused on bicyclists and park-and-ride drivers. The count and survey methodology was designed to develop preliminary estimates of the potential mode shift, VMT, and GHGe reduction benefits attributable to Metro Orange Line bicycle facilities by documenting and describing the travel behavior of system users. These bicycle facilities include the Metro Orange Line Bike Path, station bicycle storage, and bike racks on the Metro Orange Line bus.

FINDINGS

Overall, 1,722 surveys were distributed (1,496 English language surveys and 226 Spanish language surveys). Of these, 253 were received by April 10, 2010, reflecting a 15% return rate. Of these respondents, 45% arrived at the station by bicycle, 23% drove alone, 10% rode the Metro Red Line, 9% walked, 8% rode the Metro bus, 4% were dropped off, and 2% carpooled.

The survey conducted for this report found that:

- 71% of respondents who identified themselves as bicyclists use the busway three days a week or more;
- 76% of bicyclists reported taking their bikes with them on the bus;
- 55% of respondents who identified themselves as bicyclists completely agreed that the Metro Orange Line Bike Path has influenced their use of a bicycle for transportation;
- 87% of bicyclists reported using the Metro Orange Line Bike Path;
- 34% use the Metro Orange Line Bike Path 3 to 4 days a week; and
- 52% percent of respondents stated that work was the purpose of their trip.

[6] 2009 Long Range Transportation Plan, Los Angeles County Metropolitan Transportation Authority.

[7] Los Angeles County Metropolitan Transportation Authority (Metro), June 17, 2008.

[8] 2006 Metro Bicycle Transportation Strategic Plan, Los Angeles County Metropolitan Transportation Authority.

[9] 2008 Regional Transportation Plan, Southern California Association of Governments, adopted 2008.

[10] SCAG Pledges To Work With Air Resources Board, On Greenhouse Gas Emissions Targets, Press Release, Southern California Association of Governments, September 23, 2010.

- More than a quarter of all responses (28%) mentioned that safety was a key benefit provided by the Metro Orange Line Bike Path
- 16% of respondent comments mentioned the value of the Metro Orange Line Bike Path for exercise and health.

Trip Distances: Bicyclists Using Busway

- Average distance from origin to first station: 1.9 miles (based on 30 responses; 24% of bicyclist responses)
- Average distance traveled on the Metro Orange Line bus: 8.4 miles (based on 41 responses; 32% of bicyclist responses)
- Average distance from last station to destination: 1.6 miles (based on 21 responses; 17% of bicyclist responses)

Trip Distance: Bicyclists Using Bike Path

- Average distance from origin to destination (not including recreational trips): 7.8 miles (based on 18 responses; 14% of bicyclist responses)

Trip Distance: Park-and-Ride Users

- Average distance from origin to first station: 1.7 miles (based on 27 responses; 47% of park-and-ride responses)
- Average distance traveled on the Metro Orange Line bus: 9.8 miles (based on 35 responses; 61% of park-and-ride responses)
- Average distance from last station to destination: 0.5 miles (based on 24 responses; 42% of park-and-ride responses)

The survey also revealed that Metro Orange Line bicycle facilities have had a positive influence on people who typically drive to the station. Among park-and-ride respondents:

- 11% sometimes bicycle to the station;
- 19% agreed that the Metro Orange Line Bike Path has influenced their use of a bicycle for transportation;
- 24% have considered bicycling or walking to the station; and
- 39% reported using the Metro Orange Line Bike Path at some point.

These findings suggest that an integrated bicycle and pedestrian facility can potentially play an important role in improving livability and reducing GHGe when combined with a major transit infrastructure project.

Counts suggest that an estimated 535 bicyclists ride the Metro Orange Line bus each weekday. Compared to driving alone, it is estimated that bicyclists who use the Metro Orange Line bus collectively reduce their VMT between 274 miles and 2,074 miles each weekday, depending on the type of trip being replaced.

The 772 bicyclists who use the Metro Orange Line Bike Path without using the Metro Orange Line bus collectively result in an estimated reduction of 2,621 miles per weekday in VMT.

Together, bicyclists who use the Metro Orange Line bus and bicyclists who use the Metro Orange Line Bike Path may be saving between 371 and 602 metric tons of CO_2 per year based on the results of this preliminary study. The mode shift generated by the Metro Orange Line bus and its integrated Metro Orange Line Bike Path is potentially removing the equivalent of about 73 to 118 automobiles from the road annually. Metro's overall GHGe is approximately 478,000 MT GHGe.[11]

The results of this study suggest that complementing fixed-guideway transit infrastructure with bicycle and pedestrian facilities can reduce VMT and GHGe. Although a previous Metro study[12] concluded that building bicycle facilities is a less cost-effective strategy[13] for reducing GHGe than other options available to Metro, that study should not be seen as discouraging investment in bicycle programs given the co-benefits of bicycle facilities, such as increased safety and the potential health benefits for pedestrians and bicyclists. The likelihood is that the true benefits of bicycle strategies will grow over time as bicycle networks become more robust and more people view bicycling as a mode of transportation. Therefore, the results of this study should be considered with other work[14] to better understand the overall policy implications.

REPORT STRUCTURE

The following list summarizes the contents of each chapter in this report:

- Chapter 1 introduces the study, its purpose and justification, presents the catchment areas around Metro Orange Line stations and summarizes methodologies for data collection and analysis.
- Chapter 2 describes the count data and gives an overview of survey responses.
- Chapter 3 provides a detailed description of how VMT savings were calculated.
- Chapter 4 translates VMT to GHGe.
- Chapter 5 summarizes the report's main findings and provides recommendations for future surveys and system improvements.

[11] Los Angeles County Metropolitan Transportation Authority, "Towards a Sustainable Future: June 2009 Baseline Sustainability Report." June, 2009.

[12] Los Angeles County Metropolitan Transportation Authority, "Greenhouse Gas Emissions Cost Effectiveness Study," June 2010.

[13] Exploring additional lower cost ways to further increase bicycling could substantially improve the cost effectiveness of bicycle programs.

[14] Los Angeles County Metropolitan Transportation Authority, "Bicycle-Rail Trip Analysis and Greenhouse Gas Emissions Reduction Focused Study, March 2011.

CHAPTER 1. INTRODUCTION

The Metro Orange Line is a 14-mile Bus Rapid Transit (BRT) busway that extends from the terminus of the Metro Red Line subway in North Hollywood to Warner Center in Woodland Hills. To complement the busway and promote alternative transportation, a bikeway was constructed together with the busway. Since its opening, the Metro Orange Line bus has generated higher than expected ridership, and its parallel bicycle facility is well-utilized by bicyclists and pedestrians for both commute and recreational purposes.

1.1 STUDY PURPOSE AND JUSTIFICATION

To date, the role the bikeway plays in improving regional sustainability by increasing Metro Orange Line transit ridership, reducing automobile use, and lowering GHGe has not been studied. The purpose of this study is to identify the potential benefits of constructing the Metro Orange Line as an integrated transportation system where transit, bicycle, and pedestrian travel modes are included. Using the methodologies, survey data, results, and recommendations, this study will also serve as a baseline for future bike and major infrastructure studies.

There is a lack of local data on bicycle use. It is therefore difficult to evaluate the potential for mode shift and trip chaining opportunities within the Metro system as a result of bike use. Increased mode-shifting and trip chaining reduces VMT and GHGe. This study was conducted to determine the effects and usage of a bikepath built in conjunction with a major transit line as well as to determine specific details of a bike project's cost-effectiveness as a strategy for reducing greenhouse gas emissions and VMT.

On March 15, 2010, U.S. Secretary of Transportation Ray LaHood announced a new federal policy[15] on the development of fully integrated active transportation networks. Transportation agencies, such as Metro are expected to take the lead on this new policy:

> The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.

In light of this new federal policy statement, preparation of this Metro Orange Line mode shift study comes at an opportune time. The study's purpose, to identify the potential benefits of a multimodal Metro Orange Line, can serve as the data to support this new policy. By estimating these benefits, Metro should be able to follow USDOT's recommended actions with data to support this policy shift:

> The DOT encourages States, local governments, professional associations, community organizations, public transportation agencies, and other government agencies, to adopt similar policy statements on bicycle and pedestrian accommodation as an indication of their commitment to accommodating bicyclists and pedestrians as an integral element of the transportation system. In support of this commitment, transportation agencies and local communities should go beyond minimum design standards and requirements to create safe, attractive, sustainable, accessible, and convenient bicycling and walking networks.

[15] United States Department of Transportation, *Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations* (signed on March 11, 2010 and announced March 15, 2010).

1.2 METHODOLOGY

All Metro Orange Line stations are served by buses with triple bike racks. Of the 14 Metro Orange Line stations, 13 have bike racks and rentable lockers. The Warner Center Station, which is off of the separated right-of-way, has bicycle racks provided by the City of Los Angeles. This study focused on the seven stations with the highest bicycle and pedestrian activity:

- North Hollywood Station - 5373 North Lankershim Boulevard at Chandler Boulevard;
- Van Nuys Station - 13620/13622 West Oxnard Street at Buffalo Avenue;
- Sepulveda Station - 15430/15432 West Erwin Street at Sepulveda Boulevard;
- Balboa Station - 6338/6340 North Balboa Boulevard at Victory Boulevard;
- Reseda Station - 6064/6065 North Reseda Boulevard at Oxnard Street;
- Pierce College Station - 6424/6425 Winnetka Avenue at Friar Street; and
- Canoga Station - 6610 Canoga Avenue between Vanowen Street and Victory Boulevard.

The study consisted of three components:

- Counts of passing bicyclists and pedestrians;
- Counts of bicyclists boarding and alighting from buses; and
- A survey distributed to bicyclists and park-and-ride users.

The counts and survey were designed to collect preliminary data that could be used to estimate potential mode shift, VMT, and GHGe reduction benefits attributable to trips made by bicycle, in conjunction with Metro Orange Line bicycle facilities (the Metro Orange Line Bike Path, bicycle parking, and triple bike racks on Metro Orange Line buses) by documenting and describing the travel behavior of system users.

1.2.1 Bicyclist Counts

Bicyclists and passing pedestrians on the Metro Orange Line Bike Path and bicyclists boarding and alighting from buses were counted during three peak times on the weekday (Wednesday, March 24, 2010): 7:00 AM to 9:00 AM, 12:00 PM to 2:00 PM; and 4:00 PM to 6:00 PM except at the Van Nuys and North Hollywood stations where counts were conducted continuously from 6:00 AM to 6:00 PM. Weekend bicyclists were counted during a four-hour window, 10:00 AM to 2:00 PM on the weekend day (Saturday, March 27, 2010).

1.2.2 Survey

The survey was distributed to bicyclists and park-and-ride users. Metro staff and volunteers, including volunteers from the Los Angeles County Bicycle Coalition, conducted the survey. Survey forms were serialized, and available in both English and Spanish. A copy of the survey appears in Appendix B. Surveyors stopped pedestrians and bicyclists to hand out the survey and put surveys on windshields of cars parked in the park-and-ride lots. Surveys distributed to pedestrians and bicyclists were available in English and Spanish. Surveys distributed at the park-and-ride were English-only.

Some bicyclists and pedestrians completed and turned in surveys directly to the staff and volunteers at the stations, but respondents were encouraged to complete the survey and return it by mail or fill it out online.

Overall, 1,722 surveys were distributed (1,496 English language surveys and 226 Spanish language surveys). Of these, 253 were received. During the Wednesday data collection, 1,560 surveys were distributed (1,352 English language surveys and 208 Spanish language surveys). During the Saturday data collection, 162 surveys were distributed (144 English language surveys and 18 Spanish language surveys). The weather was clear and sunny on both days.

The park-and-ride survey addressed Metro Orange Line bus riders who accessed the BRT system by automobile. The survey program was designed to help understand the travel behavior of people who drive to Metro Orange Line bus stations.

The park-and-ride survey was conducted in conjunction with the rider survey. It consisted of placing surveys on the windshields of cars in the park-and-ride lots of each study location. Park-and-ride system users received the same survey as bicyclists.

1.2.3 Data Analysis Methodology

The data from the counts and surveys[16] were used to estimate the potential benefits of Metro Orange Line bicycle facilities by calculating the VMT saved by bicyclists who formerly made trips by driving alone. Bicyclists who use the Metro Orange Line bus (both those who park at the station and those who take their bikes on the bus), bicyclists who use the Metro Orange Line Bike Path, and bicyclists who use both are all included in this analysis. All types of trips are included except trips made solely for recreation. The data were also used to understand the general types and ranges of bikeway/busway user experiences.

1.3 BIKEWAY DESCRIPTION

From east to west, the bikeway is a Class II bike lane[17] (between the North Hollywood Station and just west of Coldwater Canyon Avenue) and then becomes a Class I bike path (between just west of Coldwater Canyon Avenue and Canoga Boulevard). Figure 1 depicts the study area. The Metro Orange Line bus opened in October 2005 with 8.2 miles of Metro Orange Line Bike Path constructed at an average unit cost per mile of $1.3 million.[18] (The 2005 cost of $10.6 million would be $11.85 million in 2010 dollars.)

If the Metro Orange Line Bike Path were built by itself today, the per-mile cost would be $1.54 million or approximately $12.82 million for the 8.2-mile stretch.[19] Therefore, a savings of nearly one million dollars was realized by concurrent construction of Metro Orange Line bus and Metro Orange Line Bike Path facilities, but there was also an immediate and lasting environmental gain through reduced VMT's and GHGe's.

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[16] Stations, times of day, days of the week, bicyclists, and park-and-ride users were not sampled randomly, and data were only collected on days with good weather. Therefore, the results cannot be used to generalize to all bicyclists or to all bus riders.

[17] **Class I** Bikeway (Bike Path) provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow by motorists minimized.

Class II Bikeway (Bike Lane) provides a striped lane for one-way bike travel on a street or highway.

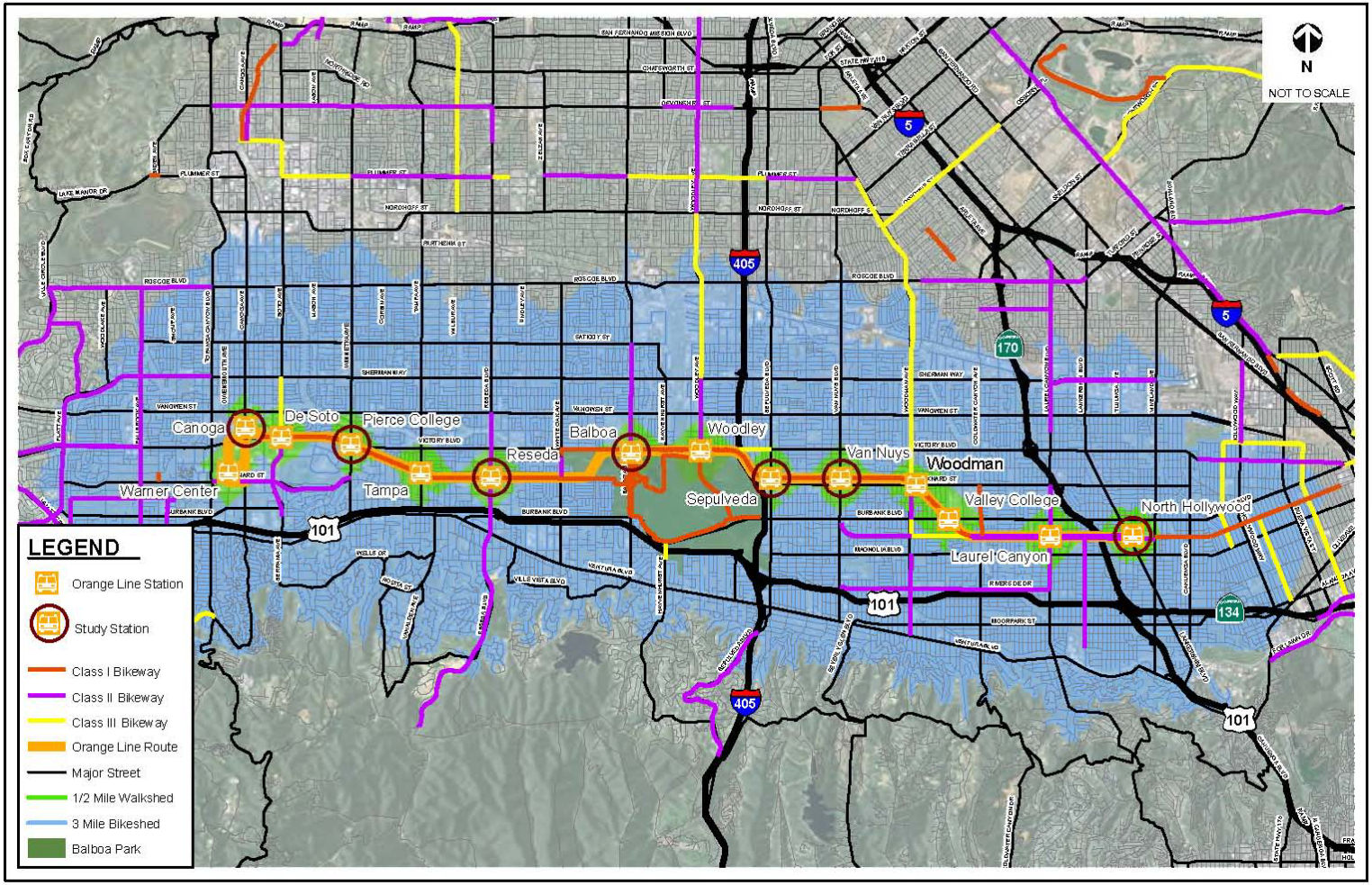
Class III Bikeway (Bike Route) provides for shared use with pedestrian or motor vehicle traffic.

Source: California Department of Transportation. *California Highway Design Manual Chapter 1000, Section 1001.4* Definitions, (June 26, 2006).

[18] Stranger, Richard. "An Evaluation of Los Angeles' Orange Line Busway," *Journal of Public Transportation*, Vol. 10, No. 1, 2007.

[19] Between May 2005 and May 2010, construction costs in Los Angeles increased by 20.3%, according to the Engineering News-Record Construction Cost Index.

Figure 1. Walksheds and Bikesheds for Metro Orange Line Stations



FEHR & PEERS
TRANSPORTATION CONSULTANTS

WALKSHEDS AND BIKESHEDS FOR METRO ORANGE LINE STUDY STATIONS

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1.4 WALKSHED & BIKESHED ANALYSIS

Figure 1 includes all Metro Orange Line stations as well as existing Class I paths, Class II lanes, and Class III routes. Half-mile walksheds and three-mile bikesheds are depicted for each Metro Orange Line station. (Detailed maps for each station where data was collected are included in Appendix A.) These distances reflect the Federal Transit Administration's (FTA) formal policy on catchment areas for pedestrians and bicycles. FTA has proposed a formal policy on catchment areas in order to designate "a radius around a public transportation stop or station within which FTA will consider pedestrian and bicycle improvements to have a de facto functional relationship to public transportation."[20] A quarter-mile walking distance has typically been the assumed pedestrian catchment area for transit. However, recent research has shown that transit riders are willing to walk a half-mile or bike up to three miles to reliable, fixed-guideway transit.[21, 22]

Figure 1 also illustrates two important points. First, there are discontinuities between the bicycle facilities on city streets and the Metro Orange Line Bike Path. Class II lanes and Class III routes can provide bicycle feeder service to the Metro Orange Line, but there are few stations with north and south access to bikeways, and there are major existing bikeway networks that are not connected to the Metro Orange Line Bike Path by bike lanes or bike routes.

Second, Figure 1 shows the difference in land area between walksheds and bikesheds. When bicycling to a transit station becomes a viable option, the non-motorized catchment area is greatly increased. For the Metro Orange Line, the total area of the bikeshed (omitting overlaps) is 79.58 square miles and the total area of the walkshed (omitting overlaps) is 5.91 square miles. Comparing these two catchment areas, the bikeshed encompasses about 13 times more land area than the walkshed. As noted in "Maximizing Mobility in Los Angeles – First & Last Miles Strategies," bicycle use is a key strategy for overcoming distance barriers to transit access.[23]

While the walkability/bikeability analysis found no significant barriers to access, a lack of pedestrian friendliness at certain stations and poor connectivity via a discontinuous bicycle network (discussed above) have the potential to discourage walk/bike trips that would have otherwise been made. The following presents a general overview of the land uses that surround each surveyed station and a qualitative assessment of pedestrian and bicycle friendliness (detailed maps for each station where data was collected are included in Appendix A):

- North Hollywood Station – A wide variety of land uses surround the station, including commercial (office, retail, and restaurant), single-family and multi-family residential, and recreational (North Hollywood Park). The station lies within a short walking distance of the Metro Red Line, which facilitates intra-system transfers and promotes greater accessibility via transit. Station bike access is only provided in the east-west direction via Class II bike lanes along Chandler Boulevard. Tujunga and Lankershim Boulevards, with two travel lanes in each direction, are the most direct north-south routes to the station. They have no designated bikeways.

- Van Nuys Station – This station runs perpendicular to the Van Nuys Boulevard commercial corridor, where auto sales and auto service businesses are the prevailing land uses. A Los Angeles County courthouse and ancillary uses lie northeast of the station. Single-family and

[20] "Proposed Policy Statement on the Eligibility of Pedestrian and Bicycle Improvements Under Federal Transit Law," *Federal Register*, Vol. 74, No. 218, Nov. 13, 2009. Regarding final adoption, see http://www.aashtojournal.org/Pages/052810bicycles.aspx.

[21] Marc Schlossberg, Asha Weinstein Agrawal, Katja Irvin and Vanessa Louise Bekkouche. *How Far, By Which Route, and Why? A Spatial Analysis of Pedestrian Preference*. Mineta Transportation Institute, 2007.

[22] Krizek, Kevin, Ann Forsyth, and Laura Baum, *Walking and Cycling International Literature Review*. Victoria Department of Transport, 2009.

[23] "Maximizing Mobility in Los Angeles – First & Last Mile Strategies," Southern California Association of Governments, 2009.

multi-family residential also fall within the half-mile station walkshed. Although the area is not particularly pedestrian-friendly, it is a major transfer point to/from Metro Rapid and Metro Local bus service. No designated north-south bikeways are provided to the station.

- Sepulveda Station – Station adjacent land uses include a 1000+ space parking lot, self storage, and light industrial. Commercial and light industrial uses dominate the half-mile walkshed, with single-family residential located away from the commercial corridors. No designated north-south bikeways are provided to the station.

- Balboa Station – Land uses that surround the station include educational (High Tech Los Angeles High School, Mulholland Middle School), recreational (Lake Balboa Park), single- and multi-family residential, commercial (retail and office), and even farmland. The station is bicycle-friendly, being well served via Class I (Lake Balboa Park) bike paths and Class II bike lanes

- Reseda Station – This station is ideally situated at the intersection of Oxnard Street & Reseda Boulevard. Ample commercial land uses, including retail and restaurant, surround the station. Single-family and multi-family residential also fall within the half-mile walkshed. Designated bike access to the station is provided via a Class II bikeway on Reseda Boulevard.

- Pierce College Station – Pierce College is within easy walking distance of the station. The remainder of the station area is primarily single-family residential. No designated north-south bikeways are provided to the station.

- Canoga Station – Light industrial and commercial uses (including Westfield Topanga) dominate the built environment in the immediate vicinity of the station. Residential uses begin at and end just outside the half-mile walkshed. Canoga Park High School is also just outside the half-mile walkshed on Vanowen Street. No designated north-south bikeways are provided to the station.

CHAPTER 2. STUDY RESULTS

This chapter reviews the results from the manual counts of bicycles and pedestrians as well as counts that were extrapolated to reach daily totals for all Metro Orange Line stations. It also reviews summary statistics for all returned surveys.

During the weekday count, 375 bicyclists were observed boarding and 366 bicyclists were observed alighting Metro Orange Line buses. On the Metro Orange Line Bike Path, there were 1,862 bike counts and 1,879 pedestrian counts. During the Saturday count, 48 bicyclists were observed boarding and 51 bicyclists were observed alighting. On the Metro Orange Line Bike Path on Saturday, there were 275 bike counts and 135 pedestrian counts.

2.1 COUNT SYNOPSIS

2.1.1 Busway

For bicyclists on the busway, peak hour totals are shown in Table 1, and full counts are included in Appendix C. Table 1 includes both bicyclists who boarded the bus and bicyclists who parked their bike at the station.[24] For stations where 12-hour counts were not conducted, the 12-hour values were extrapolated. The extrapolations derived a 12-hour count based on the average ratio of AM peak, midday peak, and PM peak to 12-hour counts at the Van Nuys and North Hollywood Stations.

During the AM peak hour, the highest number of bicyclists boarding the Metro Orange Line bus (24) was recorded at the North Hollywood Station. The top midday count occurred at the Reseda Station (16), and the top PM count was observed at the North Hollywood Station (33). The highest number of AM peak alightings[25] (34) was observed at the Pierce College Station, and the top midday (16) and PM (29) peaks were both observed at the North Hollywood Station.

By a large margin, the North Hollywood Station had the greatest number of bicyclists boarding and alighting between 6:00 AM and 6:00 PM, with 134 boardings and 123 alightings. The popularity of the North Hollywood Station can be attributed to its location at the eastern terminus of the Metro Orange Line, and its function as a transfer point to the Metro Red Line subway.

The North Hollywood Station also had the greatest number of boardings and alightings during the midday on Saturday with 26 boardings and 34 alightings.

Putting a bike on the Metro Orange Line bus or riding on the Metro Orange Line Bike Path was observed to be a more popular travel choice than leaving a bike at a boarding station in either a rack or locker. On the survey dates, at most stations, less than a half dozen lockers were observed being used. Since lockers occupied in the morning were occupied by the same bikes in the evening, they seemed primarily to serve as long-term storage based on study observations. The vast majority of bikes parked at stations were on racks, or on station railings.

2.1.2 Bikeway

Peak hour station totals for weekday and weekend counts are shown in Table 2. The full results are included in Appendix D. On the Metro Orange Line Bike Path during the AM peak, the highest number of bicyclists was observed at the Van Nuys Station, where 58 bicyclists were counted. The Van Nuys Station

[24] Someone who used both the Metro Orange Line bus and the Metro Orange Line Bike Path would be counted in both places. For this reason, survey results are used to avoid double counting, as discussed in Chapter 4.

[25] An alighting is a passenger disembarking or "off."

Table 1. Bicyclists on Busway Counts

	Weekday				Weekend
	AM Peak (7–9 AM)	Midday Peak (12–2 PM)	PM Peak (4–6 PM)	6 AM–6 PM*	10 AM–2 PM
Boardings					
Canoga	12	4	6	36	--
Pierce College	8	8	4	33	--
Reseda	11	16	17	73	--
Balboa	9	6	6	35	--
Sepulveda	7	3	0	17	--
Van Nuys	10	11	12	47	22
North Hollywood	24	14	33	134	26
Total Boardings	81	62	78	375	48
Alightings					
Canoga	2	4	9	28	--
Pierce College	34	4	3	77	--
Reseda	9	5	13	51	--
Balboa	4	0	3	13	--
Sepulveda	5	4	6	28	--
Van Nuys	5	5	16	46	17
North Hollywood	17	16	29	123	34
Total Alightings	76	38	79	366	51

* Counts for the following stations were extrapolated from the ratio of 12-hour counts to peak hour counts from Van Nuys and North Hollywood: Canoga, Pierce, Reseda, Balboa, Sepulveda.

Table 2. Bikeway Counts

	Weekday				Weekend
	AM Peak (7–9 AM)	Midday Peak (12–2 PM)	PM Peak (4–6 PM)	6 AM–6 PM*	10 AM–2 PM
Bikes					
Canoga	4	16	23	76	--
Pierce College	29	38	59	222	--
Reseda	31	41	71	252	--
Balboa	44	68	92	360	--
Sepulveda	29	64	69	286	--
Van Nuys	58	50	99	351	150
North Hollywood	40	43	89	315	125
Total **	235	320	502	1862	275
Pedestrians					
Canoga	6	3	2	19	--
Pierce College	53	10	29	159	--
Reseda	35	18	55	186	--
Balboa	32	51	96	309	--
Sepulveda	22	14	6	72	--
Van Nuys	129	84	77	489	70
North Hollywood	95	80	191	645	65
Total **	372	260	456	1879	135

* Counts for the following stations were extrapolated from the ratio of 12-hour counts to peak hour counts from Van Nuys and North Hollywood: Canoga, Pierce, Reseda, Balboa, Sepulveda.
** Counts do not represent the exact number of people using the Bike Path since bicyclists and pedestrians passing multiple stations were counted at each station.

was also the location where the most pedestrians (129) were counted during the AM peak. During the midday peak, the most bicyclists (68) were observed at the Sepulveda Station, and the Van Nuys Station again had the highest number of pedestrians. During the PM peak, the Van Nuys Station had the highest number of bicyclists (99), and the North Hollywood Station had the highest number of pedestrians (191).

Based on extrapolations from its AM, midday, and PM peak periods, the Balboa Station had the highest daily number of bike riders (360), probably attributable in part to its location in Balboa Park. Manual counts brought the Van Nuys Station to a close second with 351 daily riders. The North Hollywood Station had the most pedestrians with 645.

On Saturday, the Van Nuys Station was busier than the North Hollywood Station from 10:00 AM to 2:00 PM, with 150 bicyclists and 70 pedestrians.

2.2 GENERAL SURVEY RESULTS

Overall, 1,722 surveys were distributed (1,496 English language surveys and 226 Spanish language surveys). Of these, 253 were received, reflecting a 15% return rate. On the weekday, 1,560 surveys were distributed (1,352 English language surveys and 208 Spanish language surveys). On the weekend, 162 surveys were distributed (144 English language surveys and 18 Spanish language surveys).

Although the respondents were predominantly male (74%), they represented a variety of age groups. Twenty-four percent were 18-28 years old, 15% were 29-39 years old, 25% were 40-50 years old, 28% were 51-65 years old, and 8% were 66+ years old.

Most respondents were traveling to or from their places of employment. Fifty-two percent of all respondents stated that work was the purpose of their trip. Friends, school, and home were listed as trip purposes for 8%, 7%, and 5% of respondents. The “Other” category was used by the remaining 28% of respondents. For most people, this write-in category was used to describe the purpose of their trip as recreation.

The survey was directed at bicyclists and park-and-riders, but there were other types of transportation represented as well. Overall, 45% of respondents arrived at the station by bicycle (either on the Metro Orange Line bus or on the Metro Orange Line Bike Path), 23% drove alone, 10% rode the Metro Red Line, 9% walked, 8% rode a Metro bus, 4% were dropped off, and 2% carpooled.

2.2.1 Stated Preference Questions

Stated preference questions provide additional insight into travel behavior. Additionally, they can illuminate observations found during implementation of the study. For stated preference questions, respondents selected one of the following choices: 1-Agree Completely, 2-Somewhat Agree, 3-Neutral, 4-Disagree, or 5-Disagree Completely. The results below apply to all people who returned a survey.

Question #13. The Metro Orange Line has made me more likely to take public transit. *(246 responses)*

When asked this question, 58% of all respondents said that they agreed completely with this statement, and an additional 11% said that they somewhat agreed. Of the remaining respondents, 14% were neutral, 4% disagreed, and 13% disagreed completely.

Question #14. The inclusion of a bike path next to the Metro Orange Line bus has influenced me to use a bicycle for transportation. *(239 responses)*

Responding to this question, 38% agreed completely, 8% somewhat agreed, 21% were neutral, 12% disagreed, and 22% disagreed completely.

Question #15. The inclusion of bicycle parking at the Metro Orange Line bus stations has made me more likely to use my bicycle to get to the transit station. *(232 responses)*

This question found that 24% of respondents agreed completely that more bike parking had made them more likely to bike to the station, 10% somewhat agreed, 29% were neutral, 12% disagreed, and 24% disagreed completely.

2.3 SURVEY RESULTS BY MODE OF TRANSPORTATION

Survey questions are selectively analyzed in Chapter 3 based on their relevance to support the vehicle miles traveled analysis of this study, in addition to providing reasons for patron behavior for utilizing the Metro Orange Line. However, since many of the survey responses are informative, some are discussed here. Additionally, responses to all questions are included in the appendices of this report. Appendix E contains responses to each question from the 127 people who used a bicycle at some point in their trip and returned a survey. Appendix F contains responses to each question from the 57 people who drove alone to the station and returned a survey. Survey respondents did not answer all questions; therefore the total number of responses per question varied.

2.3.1 Selected Bicyclist Responses

Bicyclists are frequent users of the Metro Orange Line bus, with 71% using the busway three days a week or more, and 28% having used the Metro Orange Line bus for three years or more (Question #8D, Question #8F). Of bicyclists who returned surveys, most were male (83%) and more than half were 40 year of age or older. Of those who responded, 92% used the Metro Orange Line bus at least once a week (Question #8D). Of this 92%, 60% use the Metro Orange Line bus five days a week or more, 11% use the Metro Orange Line bus 3 to 4 days a week, and 21% use the Metro Orange Line bus 1 to 2 days a week. Bicyclists defined their trip purpose according to five categories: work (32%), friends (13%), school (7%), home (7%), or other, typically specified as exercise or recreation (40%).

Regarding the interface of the Metro Orange Line bus with bicycling, 76% of bicyclists reported taking their bikes with them on the bus (Question #8E). Only 15% said that they parked at the station with 32% agreeing completely that bike parking has influenced their use of a bicycle to get to the transit station (Question #8E, Question #15).

In addition to using the bus bike rack and station bike parking, it is notable that nearly all bicyclists made use of the connecting bikeway as part of their trip. Of bicyclists who responded, 87% reported using the Metro Orange Line Bike Path on the day of the survey (Question #9A). Most bicyclists use the Metro Orange Line Bike Path at least once a week, with 17% using the Metro Orange Line Bike Path 1 to 2 days a week, 34% using the Metro Orange Line Bike Path 3 to 4 days a week, and 31% using the Metro Orange Line Bike Path 5 or more days a week (Question #9D).

In addition to bicycling or walking to get to the Metro Orange Line bus and/or the Metro Orange Line Bike Path, 17% used the Metro Red Line, 16% drove alone, 14% used a Metro bus, 8% were dropped off, and 4% carpooled (Question #10A).[26] When bicyclists choose to drive alone to the Metro Orange Line bus or Metro Orange Line Bike Path, the most commonly cited reasons for driving were time (45%), weather (42%), and convenience (39%), distance (30%), and comfort (19%) (Question #10B).[27]

Forty-eight percent of bicyclists completely agreed that the Metro Orange Line bus has made them more likely to take transit, and 55% completely agreed that the Metro Orange Line Bike Path has influenced their use of a bicycle for transportation (Question #13, Question #14).

[26] Because respondents made multiple responses to the question, percentages reflect the number of times a response was chosen divided by the number of people who answered the question.

[27] See above note.

2.3.2 Bicyclist Trip Distance Statistics

Bicyclists Using Busway

- Average distance from origin to first station: 1.9 miles (based on 30 responses; 24% of bicyclist responses)
- Average distance traveled on the Metro Orange Line bus: 8.4 miles (based on 41 responses; 32% of bicyclist responses)
- Average distance from last station to destination: 1.6 miles (based on 21 responses; 17% of bicyclist responses)

Bicyclists Using Bike Path

- Average distance from origin to destination (not including recreational trips): 7.8 miles (based on 18 responses; 14% of bicyclist responses)

2.3.3 Selected Park-and-Rider Responses

Twenty-three percent of survey respondents were people who drove alone to a Metro Orange Line station. Despite the fact that they drove to the Metro Orange Line on the day of the survey, additional questions revealed that their travel behavior often included multiple modes. Even people who drove to Metro Orange Line stations benefited from its bicycle facilities.

Just over half of all park-and-ride respondents have used the Metro Orange Line bus for more than three years, and 79% completely agreed that the Metro Orange Line bus has made them more likely to use transit (Question #8F, Question #13). Although most park-and-ride respondents always drive alone to the Metro Orange Line, 23% sometimes walk, 11% sometimes bicycle, 9% sometimes use the Metro Red Line, and 7% sometimes take the bus. In addition, 23% report sometimes being dropped off at the Metro Orange Line station, and 5% report sometimes carpooling (Question #10A). Of those who drove alone to the Metro Orange Line station, 39% reported using the Metro Orange Line Bike Path at some point (Question #11B). Six percent of park-and-riders said they used the Metro Orange Line Bike Path one to two times a week and 8% said they use it three to four times a week. Park-and-riders defined their trip purpose according to five categories: work (82%), friends (3%), school (2%), home (2%), or other (11%).

Of respondents who identified themselves as park-and-riders, 19% agreed either completely or somewhat that the Metro Orange Line Bike Path has influenced their use of a bicycle for transportation and 24% have considered bicycling or walking to the Metro Orange Line (Question #14, Question #11A). The inclusion of bicycle parking was cited by 17% of respondents as something that made them more likely to arrive at a Metro Orange Line station by bike (Questions #15). Even though these individuals were driving alone to a station on one of the survey dates, the Metro Orange Line Bike Path has evidently had a positive influence on mode shift for some trips.

Distance was the top reason given for driving alone to the Metro Orange Line (Question #10B). Of park-and-riders, 56% noted distance, 43% noted convenience, 41% noted time, 30% noted comfort, and 15% noted weather. Write-in responses for this question made up 17% of the total and included mentions of being handicapped, not owning a bike or knowing how to ride one, needing a car to run errands, or having concerns about safety.

2.3.4 Park-and-Ride Trip Distance Statistics

- Average distance from origin to first station: 1.7 miles (based on 27 responses; 47% of park-and-ride responses)
- Average distance traveled on the Metro Orange Line bus: 9.8 miles (based on 35 responses; 61% of park-and-ride responses)
- Average distance from last station to destination: 0.5 miles (based on 24 responses; 42% of park-and-ride responses)

2.4 RIDER RESPONSES

Question #12 gave respondents an opportunity to provide feedback, in their own words about how the Metro Orange Line Bike Path has changed the way they travel. In most cases, the feedback was positive. This chapter reviews responses that range from safety and exercise to kudos and criticism.

2.5 SAFETY

More than a quarter of all responses (28%) mentioned that safety was a key benefit provided by the Metro Orange Line Bike Path. “Without the bike path, I would not bike to work—L.A. drivers are too aggressive and dangerous,” read one typical comment. “[The Metro Orange Line Bike Path] has made it safe to cycle,” said another.

One respondent noted that the Metro Orange Line Bike Path helped change his preferred mode of transportation, “I feel a lot safer than riding on streets…it’s what encouraged me to bike to work.” Another respondent who cited the influence of the Metro Orange Line Bike Path on his choice of transportation explained, “[It] enables me to do without a car. I travel by bike safely across the Valley even if a bus is not available.”

2.6 EXERCISE

The second most common theme, mentioned in 16% of respondent comments, was the value of the Metro Orange Line Bike Path for exercise and health. “It’s a great way to get some exercise and chat with friends,” said one pedestrian. “I love the bike path for recreation and exercise,” said another.

While there are walkers and bicyclists who use the path exclusively for recreation, many people also comment that exercise is an additional benefit that comes from using the Metro Orange Line Bike Path for another purpose. “[I] use it to combine my workout with traveling,” said one. “Gets me to work plus it’s great for exercise,” said another.

2.7 PRAISE

Several respondents were unconditional fans of the Metro Orange Line Bike Path. “Awesome! Less traffic, peaceful and quick to get around town,” exclaimed one. Another wrote, “Adore it—safe, sane, flat, lighted. Went from driving alone 5 miles each way to work to biking daily in less time! Plus longer weekend rides—hook up + public transportation.”

Other words that people used to describe the Metro Orange Line Bike Path included “convenient,” “looks great…very clean,” “better access to public transit,” “quick,” “smooth,” “cheaper than gas,” “ecological,” “secure,” “fun,” and “Cool—it works for the bike riders.”

2.8 CRITIQUE

A few people used this question to suggest ways that the Metro Orange Line Bike Path could be improved. One criticism noted, "Wish…that the crosswalk signal buttons were installed closer to the sidewalk ramps—with shoes clipped into the bike, the current spacing makes using the signals difficult. I've fallen and seen others fall too." "Light timing should be better," suggested another.

Several respondents noted that greater carrying capacity on buses would be helpful. "I had to wait for four [Metro] Orange Line buses to get my bike on the front this evening at 6:00 PM," said one bicyclist. Others lamented the discontinuities in the Metro Orange Line Bike Path. One respondent said that he "[wished] it went further and that the bike path continued along the bus path the entire way."

One comment complained about the mix of bicyclists and pedestrians on the Metro Orange Line Bike Path, and another cited the presence of homeless people along the Metro Orange Line Bike Path.

2.9 MOBILITY AND ACCESS

Several respondents commented that the Metro Orange Line Bike Path has increased their mobility options. "Mostly, it's given me an alternative way to travel safely. I like to use it to go shopping, for exercise, and occasionally to get to work," said one bicyclist.

"It enables me to go places—to Pierce College, the Senior Center," said one respondent who also mentioned that he is 82 years old. He continued, "I bought an adult tricycle because of [the Metro Orange Line Bike Path]; I have over 5,000 miles on my odometer now."

Another said simply that Metro Orange Line Bike Path has given him the ability "to navigate and explore the valley" using an alternative form of transportation.

In one longer response, a bicyclist described the switch he made from driving alone to bicycle commuting:

> Prior to the Orange Line Bike Path opening, I rarely biked any distance in the SF Valley. Contending with the traffic was dangerous and tiring. The Orange Line Bike Path has made biking (my preferred mode of transportation) to the West Valley feasible…Thanks for building the bike path in the Orange Line Plan, and please build more…these bike paths are wonderful.

CHAPTER 3. VMT REDUCTIONS FROM BICYCLING

This chapter estimates the potential reduction in automobile travel due to the Metro Orange Line bicycle facilities.[28] It includes analyses of bicyclists who use the Metro Orange Line bus as well as bicyclists who use the Metro Orange Line Bike Path without using the bus.

First, counts and survey data are used to estimate the volume of busway and bikeway bicyclists. Then, survey data is used to estimate how many of each type of automobile trip are being replaced; the two types are trips from origin to station and trips from origin to destination. Finally, the automobile trips that are being replaced are multiplied by the average trip length for that type of trip. The result is an estimate of reduced VMT that can be used to calculate GHGe savings. This method can be generalized as follows: (volume of bicyclists) x (replaced auto trips per bicyclist) x (average length of auto trip) = estimate of reduced VMT.

3.1 VMT REDUCTIONS FACILITATED BY SWITCHING FROM DRIVE ALONE TO BICYCLING AND TRANSIT

The VMT reduction facilitated by the Metro Orange Line bus and the Metro Orange Line Bike Path can be estimated[29] by analyzing the travel behavior of bicyclists who formerly made the same trip by car. For this purpose, four categories of trips were considered:

Category 1) People who bike to and from the station who formerly drove to the station;

Category 2) People who bike to and from the station who formerly drove the entire trip distance;

Category 3) People who bike the entire trip distance who formerly drove the entire trip distance; and

Category 4) People who bike the entire trip distance who formerly drove to the station.

The word “station” refers to both Metro Orange Line stations and other rail stations to where people are going to or coming from (Metro Red Line, etc.). Distances for all categories are based on the shortest path drivable by automobile. The first two trip categories (1 and 2) represent bicyclists who use the busway. Most people fall into the second category (2). Average trip distances for bicyclists arriving or departing from stations suggest that the second category represents most bicyclists. However, some respondents have a trip end that is a walkable distance of a half-mile or less (i.e., they could have walked from their last station to their destination), which would make them candidates for the first category (1). In order to present the range of possible values more accurately, busway VMT reductions will be reported as falling in between these two low and high estimates. Categories 1 (low) and 2 (high) will be discussed in Section 4.3.

The third trip category (3) applies to bicyclists on the Metro Orange Line Bike Path. Category 3 will be discussed in Section 4.4. The fourth category (4) is not included in this analysis. The survey did not provide sufficient information for differentiating this trip type or for estimating distances formerly traveled, although this category likely describes a negligible amount of trips since a trip that is long enough to warrant both a car trip and a transit trip is typically much longer than the distance that could reasonably be exchanged for a bike trip.

[28] The calculated reductions in vehicle miles traveled presented in this chapter are subject to change when this study is replicated with a rigorous sampling methodology.

[29] Ibid.

3.2 BUSWAY VMT REDUCTION

3.2.1 Category 1 (Low Estimate)

For the multimodal reduction described in the first trip category (1), a driving trip to and from the Metro Orange Line station would be replaced with a bicycle trip to and from the station. This represents the low estimate of potential busway VMT reductions. Steps for producing this estimate are as follows:

- Determine the number of bicyclists who use the Metro Orange Line bus;
- Determine the number of bicyclists who use the Metro Orange Line bus who switched from driving alone to bicycling; and
- Determine the average distance traveled by bicyclists between their origin and first station (including the return trip).

The number of bicyclists per station is based on manual counts. At stations where no counts were conducted, the number of bicyclists was estimated based on the ratio of bicycle riders who were counted to Metro Orange Line bus riders, using Metro ridership data. Bicycle boardings and alightings for each station were added together and divided by two (so that they would not be double counted) for an estimate of the total number of bicycle riders using the busway. The estimated number of daily weekday bicyclists using the Metro Orange Line bus (including both those who parked at the station and those who took their bikes on the bus) was 535.

Question #7 asked, "Did you make today's trip another way before using the Metro Orange Line bus or Bike Path?" According to their responses, 13.5% of Metro Orange Line bicyclists formerly made their trip by driving alone. Multiplied by 535, this yields 72 bicyclists.

The average trip length for bicyclists who used the Metro Orange Line bus was 1.9 miles. Replacing this trip to and from the station each day with a bicycle trip saves an estimated 274 VMT each day.[30]

3.2.2 Category 2 (High Estimate)

For the second trip type (2), the VMT savings is considered to be the entire distance from origin to destination, which includes the bicycle trip from origin to boarding station, Metro Orange Line bus trip from boarding station to alighting station, and trip from alighting station to destination. Because existing Metro Orange Line bus operations is considered a baseline condition, busway trip distance in this category is factored into the VMT reduction calculation even though the bicyclist is riding a motorized and emissions generating transit vehicle.

The high estimate includes the following steps:

- Determine the number of bicyclists who use the Metro Orange Line bus;
- Determine the number of bicyclists who use the Metro Orange Line bus who switched from driving alone to bicycling; and
- Determine the average distance between origin and destination by car.

[30] (72 bicyclists per day) x (1.9 miles per trip) x (2 trips) = 274 VMT saved per day.

As noted, 13.5% of 535 Metro Orange Line bicyclists switched from driving alone. The shortest street path distance for each response was used to determine the average distance between origin and destination. For bicyclists who used the Metro Orange Line bus, the average origin-destination distance was 14.4 miles. As a group, these bicyclists save an estimated 2,074 miles of VMT each day.[31]

3.3 BIKEWAY VMT REDUCTION

3.3.1 Category 3

The third category (3) refers to someone who formerly made their trip by driving and now bikes from origin to destination using the Metro Orange Line Bike Path for part of their trip. Estimating the bikeway reduction consists of the following steps:

- Determine the ratio of busway bicyclists to bikeway bicyclists
- Apply the previously calculated number of daily busway bicyclists
- Apply the ratio of bikeway bicyclists who formerly drove alone
- Apply the average distance from origin to destination (including the return trip)

According to Question #8, 59% of bicyclists did not use the Metro Orange Line busway. Applying this percentage to the number of bicyclists per station produces an estimate of 772 bicyclists.[32] Some bicyclists who use the Metro Orange Line bus also use the Metro Orange Line Bike Path, as reflected in Question #9, which finds that 87% of bicyclists used the Metro Orange Line Bike Path at some point, but only bicyclists who use the Metro Orange Line Bike Path without using the Metro Orange Line bus are included in the Bikeway Reduction calculation.

The number of Metro Orange Line bicyclists who do not use the Metro Orange Line bus (772) is multiplied by the ratio of Metro Orange Line bicyclists who formerly drove alone (21.7%), for an estimated number of 168 bicyclists. This number is multiplied by the average non-recreational distance traveled from origin to destination, about 7.8 miles (doubled for the return trip). The estimated number of weekday vehicle miles saved by bicyclists who use the Metro Orange Line Bike Path (but not the Metro Orange Line bus) is about 2,621 miles.[33]

3.4 OTHER CATEGORIES CONSIDERED

3.4.1 Category 4

The category of people who formerly drove to the station as park-and-riders, but now use their bikes to travel the entire distance (Category 4) was not included in this analysis. This survey did not ask bicyclists whether they previously drove the entire distance or parked at the station, and it did not ask them their former origin and destination stations. However, this category describes a bicyclist who previously found the distance from their origin to destination long enough to warrant the time and cost of a car trip to the Metro Orange Line station in addition to the time and cost of taking the Metro Orange Line bus. The estimate of saved VMT for a trip made in Category 4 would typically be less than for a trip made in Category 3, although if any bicyclists were described by this category they would likely represent a small fraction of the total.

[31] (72 bicyclists per day) x (14.4 miles per trip) x (2 trips) = 2,074 miles of VMT saved per day.

[32] Ratio of busway bicyclists to non-busway bicyclists [75/52]) x (535 busway bicyclists) = 772 bikeway bicyclists

[33] (168 bicyclists per day) x (7.8 miles per trip) x (2 trips) = 2,621 miles of VMT saved per day.

3.4.2 Existing Bicyclists

While VMT savings were calculated for bicyclists who indicated that they formerly made the same trip by driving alone, Metro Orange Line bicycle infrastructure also supports existing bicyclists who were making their commute trip via bicycle prior to the launch of the Metro Orange Line. Because these individuals have not converted their bicycle trip to a drive alone trip, their driving distances can be seen as VMT not generated. This figure also captures people who moved to the area since the opening of the Metro Orange Line and have been traveling by bicycle from day one.

According to the survey, 28.8% of bicyclists using the Metro Orange Line reported previously making their trip to the station by bike. Performing the calculations described above for multimodal reductions finds that between 585 miles[34] and 4,435 miles[35] are potentially being saved each day by people who continue to bike instead of driving.

Among bicyclists, 10.1% of those who use the Metro Orange Line Bike Path (and whose purpose is not recreation) formerly made the same trip by bike. Performing calculations for bikeway reductions yields an estimated 1,217 miles[36] of VMT daily that are potentially not being generated.

3.4.3 Recreational Bicycling

In addition to enabling an alternative mode of transportation for people who are making a trip to work, school, shopping, or friends, the Metro Orange Line Bike Path has facilitated recreational bicycling. The write-in response for the trip purpose question (#3) included “recreation,” ”exercise,” ”pleasure,” ”health,” ”fun,” and ”work out” as trip purposes. The average distance traveled by bicyclists who indicated that they were bicycling for recreation was 7.9 miles. Overall, 49% of bicyclists on the Metro Orange Line Bike Path indicated that they were using it exclusively for recreation. This represents 380 bicyclists traveling a total of nearly 3,000 recreational miles per day. This is a significant contribution to public safety and public health. The Metro Orange Line Bike Path gives people a facility where they are protected from vehicle traffic, and it encourages physical fitness through walking and biking.

3.4.4 Weekend Bicycling

Based on the response to Question #3, some bicycle trips made on the weekend were for purposes other than recreation, and in a few cases these bicycle trips replaced car trips. A more detailed future study of weekend bicyclists would measure the VMT savings achieved by these bicycle trips.

Although this study conducted counts for four hours on a Saturday, it would be misleading to extrapolate weekend data based on weekday data because of significant differences in weekday and weekend travel behavior. For example, weekday peaks are higher, with large numbers of people traveling within a short amount of time. Weekend peaks are lower but more sustained, reflecting more flexible, non-commute schedules. There are also differences in the proportion of recreational riders on Saturday and Sunday. To estimate the number of bicyclists using the Metro Orange Line bus and the Metro Orange Line Bike Path on the weekend, full-day counts at multiple stations on both Saturday and Sunday would be necessary.

Another method for assessing the total VMT savings resulting from bicyclists would be to ask bicyclists how many days a week they use their bike to access the station. This would help to account for people who work on the weekend, assuming they also work during the week. Question #8D asked respondents how many days per week they rode the Metro Orange Line bus, but did not specify how many Metro Orange Line bus trips were accessed via bicycle versus another travel mode.

[34] (154 bicyclists per day) x (1.9 miles per trip) x (2 trips) = 585 miles per day

[35] (154 bicyclists per day) x (14.4 miles per trip) x (2 trips) = 4,435 miles per day

[36] (78 bicyclists per day) x (7.8 miles per trip) x (2 trips) = 1,217 miles per day

3.4.5 Park-and-Ride Potential

The average distance from origin to station for park-and-riders was 1.7 miles (based on 27 responses). The average distance traveled on the Metro Orange Line bus by these riders was 9.8 miles (based on 35 responses). The average distance from the last transit station to the final destination for park-and-riders was 0.5 miles (based on 24 responses), which falls within the expected half-mile walkshed. It is notable that most park-and-ride respondents (76%) traveled to the North Hollywood Station where the majority transferred to the Metro Red Line.

Calculating VMT savings from these average distances would require knowing the ratio of park-and-riders to total Metro Orange Line bus riders. Because this study did not survey the general population of Metro Orange Line bus riders (it was addressed specifically to bicyclists and people who parked in park-and-ride lots), the ratio of park-and-riders to Metro Orange Line bus riders was not determined.

Although total VMT for all park-and-riders cannot be estimated, the average distances reported by park-and-riders (for example, 1.7 miles from origin to the station) are similar to the average distances traveled by bicyclists (for example, 1.9 miles from origin to the station). This suggests that there may be an opportunity for increasing the number of people who replace a car trip to the station with a bicycle trip to the station, further reducing VMT and GHGe. This could be achieved by identifying locations where bicycle facilities and bicycle access could be improved.

CHAPTER 4. ESTIMATED GREENHOUSE GAS EMISSIONS REDUCTIONS

Reductions in VMT will have the co-benefit of reducing mobile-source air pollutant emissions, which include greenhouse gas (GHGe) emissions, criteria pollutant emissions, and air toxics emissions. All of these are regulated in California with the last two being regulated by the United States Environmental Protection Agency. Including a discussion of the emissions mentioned above will convey the entire spectrum of regulated air quality emissions.

A key issue related to GHGe is that vehicular travel contributes significantly to overall emissions. Statewide, transportation emissions from vehicles generate over one-third of overall emissions. At a municipal level, transportation may contribute more than 50 percent to citywide or countywide emissions.

The South Coast Air Basin (Basin) currently fails to meet national ambient air quality standards (NAAQS) for three criteria pollutants: ozone (O_3), inhalable particulates (PM_{10}) and fine particulates ($PM_{2.5}$). The 1990 amendments to the federal Clean Air Act identify specific emission-reduction goals for areas such as the Basin that do not meet NAAQS. Within the Basin, automobile exhaust comprises the largest source of O_3 precursor emissions reactive organic compounds (ROC) and nitrogen oxides (NO_X).

With respect to air toxics, the South Coast Air Quality Management District (SCAQMD) has recently completed the Multiple Air Toxics Exposure Study III (MATES III), which was an ambient air monitoring and evaluation study conducted in the Basin. The MATES III study concluded that the average carcinogenic risk throughout the Basin, attributed to toxic air contaminants, is approximately 1,194 in one million. Mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributor to inhalation cancer risk.

This chapter develops air pollutant reduction estimates and relates those estimates to annual vehicle offsets.

4.1 METHODOLOGY

Vehicle emission volumes are determined by several factors, including the types of vehicles in circulation, how often they are started and stopped, how they are driven (speed distribution profile), and how far they are driven (VMT). The Caltrans Emissions Factors model (CT-EMFAC) was used to estimate GHGe, criteria pollutant, and MSAT emissions reductions, based on the VMT reduction estimates derived from the survey results.

CT-EMFAC is a California-specific project-level analysis tool, which models the GHGe constituent pollutant CO_2, as criteria pollutant and MSAT emissions using the latest version of the California Mobile Source Emission Inventory and Emission Factors model (EMFAC2007). The model was developed by UC Davis, in coordination with Caltrans and the California Air Resources Board (CARB), and is the Caltrans preferred model for quantification of mobile-source GHGe. Emissions rates vary by vehicle speed, and as a result, the ratio of air pollutant emissions generated per mile is not a flat rate. This estimate reflects the diversity of vehicle speeds based on the speed distribution provided by EMFAC2007. For GHGe constituent emissions nitrous oxide (N_2O) and methane (CH_4), an average gram per mile emissions factor of 0.0065 and 0.016, respectively, was uses to estimate emissions.[37]

[37] Derived by averaging the passenger vehicle emissions factors for years 2005 through 2008 provided in the *Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories*, Version 1.1, May 2010, prepared by the California Air Resources Board.

GHGe other than CO_2 are commonly converted into carbon dioxide equivalents, which takes into account the differing global warming potential (GWP) of different gases. For example, the Intergovernmental Panel on Climate Change (IPCC) finds that N_2O has a GWP of 310 and methane has a GWP of 21. Thus, emissions of 1 ton of N_2O and 1 ton of $CH_4$are represented as the emissions of 310 tons and 21 tons of CO_2e, respectively. This method allows for the summation of different greenhouse gas emissions into a single total.

4.2 BUSWAY USE EMMISSONS REDUCTIONS

For bicyclists who use the Metro Orange Line bus, the potential average daily reduction in VMT ranges from a low estimate of 274 miles to a high estimate of 2,074 miles or 71,240 to 539,240 miles annually (assuming 260 weekdays per year), where survey results suggest that the true number is closer to the high estimate.[38] Potential pollutant reduction estimates are provided below in Table 3.

Table 3. Busway Use Emissions Reductions in Tons per Year

Pollutant	Low Estimate	High Estimate
Greenhouse Gas Emissions (Metric Tons)		
Carbon Dioxide (CO_2)	34.9	264.5
Nitrous Oxide (N_2O)	4.63E-04	3.51E-03
Methane (CH_4)	1.14E-03	8.63E-03
CO_2 equivalent (CO_2e)	35.1	265.8
Criteria Pollutant Emissions		
Reactive Organic Compounds (ROC)	2.22E-02	1.68E-01
Nitrogen Oxides (NO_X)	7.04E-02	5.33E-01
Carbon Monoxide (CO)	2.54E-01	1.9
Sulfur Dioxide (SO_2)	3.71E-04	2.81E-03
Inhalable Particulates (PM_{10})	2.94E-03	2.23E-02
Fine Particulates ($PM_{2.5}$)	2.71E-03	2.05E-02
MSAT Emissions		
Diesel Particulate Matter	1.72E-03	1.31E-02
Formaldehyde	7.30E-04	5.53E-03
Butadiene	8.22E-05	6.22E-04
Benzene	4.63E-04	3.51E-03
Acrolein	1.77E-05	1.34E-04
Acetaldehyde	3.02E-04	2.29E-03
ICF International, October 2010		

4.3 BIKEWAY GREENHOUSE GAS EMISSIONS REDUCTION

For bicyclists who use the Metro Orange Line Bike Path but not the Metro Orange Line bus, there would be a potential daily VMT savings of 2,621 miles, or 681,460 miles annually. Potential pollutant reduction estimates are provided below in Table 4.

[38] The calculated reductions in vehicle miles traveled and resulting reductions in pollutant emissions presented in this chapter are preliminary only and are subject to change when this study is replicated with a rigorous sampling methodology.

Table 4. Bikeway Only Use Emissions Reductions in Tons per Year

Pollutant	Emissions Reduction Estimate
Greenhouse Gas Emissions (Metric Tons)	
Carbon Dioxide (CO_2)	334.3
Nitrous Oxide (N_2O)	4.43E-03
Methane (CH_4)	1.09E-02
CO2 equivalent (CO_2e)	335.9
Criteria Pollutant Emissions	
Reactive Organic Compounds (ROC)	2.13E-01
Nitrogen Oxides (NO_X)	6.73E-01
Carbon Monoxide (CO)	2.4
Sulfur Dioxide (SO_2)	3.55E-03
Inhalable Particulates (PM_{10})	2.82E-02
Fine Particulates ($PM_{2.5}$)	2.59E-02
MSAT Emissions	
Diesel Particulate Matter	1.65E-02
Formaldehyde	6.99E-03
Butadiene	7.86E-04
Benzene	4.43E-03
Acrolein	1.69E-04
Acetaldehyde	2.89E-03
ICF International, October 2010.	

For bicyclists who use the Metro Orange Line Bike Path but not the Metro Orange Line bus, there would be a potential daily VMT savings of 2,621 miles, or 681,460 miles annually. This potential VMT savings represents about 335.9 metric tons of CO_2e each year.

Together, bicyclists who use the Metro Orange Line bus and bicyclists who use the Metro Orange Line Bike Path are potentially saving between 371 and 602 metric tons of CO_2 per year.

Another way to assess the benefits of the Metro Orange Line bus and Metro Orange Line Bike Path is to measure the emission reductions in a different context, namely vehicle offsets. On average, an automobile is driven 11,720 miles per year, producing 5.1 metric tons of CO_2e.[39] The mode shift generated by the Metro Orange Line bus and its integrated Metro Orange Line Bike Path takes the equivalent of about 73 to 118 automobiles off the road annually.[40]

[39] U.S. Environmental Protection Agency, http://www.epa.gov/cleanenergy/energy-resources/refs.html, May 31, 2011.

[40] (371 metric tons of CO2e) / (5.1 metric tons of CO2e) = 73 automobiles; (602 metric tons of CO2e) / (5.1 metric tons of CO2e) = 118 automobiles

CHAPTER 5. FINDINGS AND RECOMMENDATIONS

5.1 FINDINGS

Over 1,700 surveys were distributed to bicyclists and park-and-ride cars, and 15% were completed by the survey cutoff date of April 10, 2010. Of these respondents, 45% arrived at the station by bicycle, 23% drove alone, 10% rode the Metro Red Line, 9% walked, 8% rode the Metro bus, 4% were dropped off, and 2% carpooled.

Among bicyclist respondents, 71% use the busway three days a week or more, and 55% of bicyclists completely agreed that the Metro Orange Line Bike Path has influenced their use of a bicycle for transportation. The survey also revealed that Metro Orange Line bicycle facilities have had a positive influence on people who typically drive to the station. Among park-and-ride respondents, 11% sometimes bicycle to the station, 19% agreed that the Metro Orange Line Bike Path has influenced their use of a bicycle for transportation, and 24% have considered bicycling or walking to the station. Future survey work could explore the gap between considering bicycling to a station and actually doing it.

According to the survey data collected, the Metro Orange Line has helped to make bicycling a viable alternative to driving. Bicyclists travel an average of 1.9 miles from their origin to their first transit station, an average of 8.4 miles on the Metro Orange Line bus, and an average of 1.6 miles from their last station to their final destination. Survey respondents who drove alone to the station traveled an average of 1.7 miles to their first transit station, an average of 9.8 miles on the Metro Orange Line bus, and an average of 0.5 miles from their final station to the final destination. As noted by these distances, the ability to use a bicycle to travel from station to final destination significantly increases the functional catchment area of the final transit station. The similarity between the distances traveled by bicyclists and drivers suggests an opportunity for increasing the mode share of bicyclists who use the Metro Orange Line and further decreasing GHGe.

An estimated 535 bicyclists use the Metro Orange Line bus each weekday. Compared to driving alone, bicyclists who use the Metro Orange Line bus potentially reduce their VMT between 274 and 2,074 miles each weekday, depending on the type of trip being replaced, with the actual number closer to the high end of the range. The 772 bicyclists who use the Metro Orange Line Bike Path without using the Metro Orange Line bus eliminate an estimated 2,621 miles per weekday in VMT. Together, bicyclists who use the Metro Orange Line bus and bicyclists who use the Metro Orange Line Bike Path are potentially saving between 314 and 507 metric tons of CO_2 per year.

5.1.1 Bicycle Facilities, Cost, and GHGe Reductions

Bicycle travel is a small but important part of travel on Metro's facilities. This study demonstrates the impact of bicycling in the Orange Line corridor. One way to assess the current and potential impact of bicycling is to compare GHG reductions from bicycle trips to GHG reductions from other alternative mode options and energy saving strategies. Metro's "Greenhouse Gas Emissions Cost Effectiveness Study" (June 2010) found quantified costs for, among others, bicycle facilities and incentives to reduce GHGe:

1. The options presented in that report represent two distinct investment pilots, both of which were shown to reduce GHGe. The cost-effectiveness of bicycle programs could be improved substantially by exploring ways to achieve the same or higher increases in bicycling at lower cost to Metro.

2. Bicycle programs provide a number of co-benefits beyond emission reductions including increased safety for bicyclists and pedestrians, health benefits from increases in physical activity, and generating higher ridership on Metro buses and trains. Dollars per ton of GHGe reduced should not be used as a singular decision-making criterion to judge the benefits of bicycling on Metro facilities.

3. The total potential impact of a program of coordinated bicycle investments is greater than the sum of its parts. There is a definite "network effect" to bicycle travel. While individual facilities do attract new users, more riders will be attracted to each facility when bicycles can be a safe, convenient, and efficient means of transport for all destinations in Los Angeles. The true benefits of bicycle strategies are likely to grow over time as the network becomes more robust and as more people view bicycling as a competitive mode of transportation.

This study provides empirical data on travel by bicycle on Metro's facilities. Use of this data and other similar data that may be collected in the future will be key to designing effective strategies to promote, sustain, and expand bicycle mode share across Metro's system.

5.1.2 Study Limitations

A more thorough survey of the general population of Metro Orange Line bus riders would provide greater context for this study and others. For example, in order to know what percentage of Metro Orange Line bus riders currently drive to the station, Metro Orange Line bus riders as a whole must be surveyed. Similarly, a statistically superior way to understand the factors influencing how people choose to arrive at the Metro Orange Line bus would be to solicit responses from the full population of Metro Orange Line bus riders.

People had significant difficulty accurately reporting the cross streets of their origin and destination. A common mistake was to list the cross streets of the station where they boarded the Metro Orange Line bus or where they entered the Metro Orange Line Bike Path. This occurred despite the fact that the previous question had asked them to indicate a specific location where their trip had started. Future surveys should anticipate possible misinterpretations and state this question more clearly to increase the number of accurate and usable responses. Another option would be to conduct intercept surveys with maps.

Providing different surveys for different groups (one version for bicyclists, one version for drivers, etc.) would have improved the clarity of the data and possibly improved the rate of return by only asking people to respond to questions that were relevant to their experience. Shortening the survey to focus on specific areas of interest would have increased the rate of return. Incentivizing the return of surveys would also have improved the return rate. Increasing the total number of surveys distributed at all of the stations would also have improved the number of usable responses.

The Metro Orange Line Bike Path is used seven days a week. While this study encompassed the hours of the typical workday and workweek, future studies could be conducted to better understand travel behavior on the weekend. Conducting counts and collecting survey data for the full day at multiple locations on Saturday and Sunday would provide a more complete picture of weekend use of Metro Orange Line bicycle facilities for both commuting and recreational purposes.

5.2 RECOMMENDATIONS

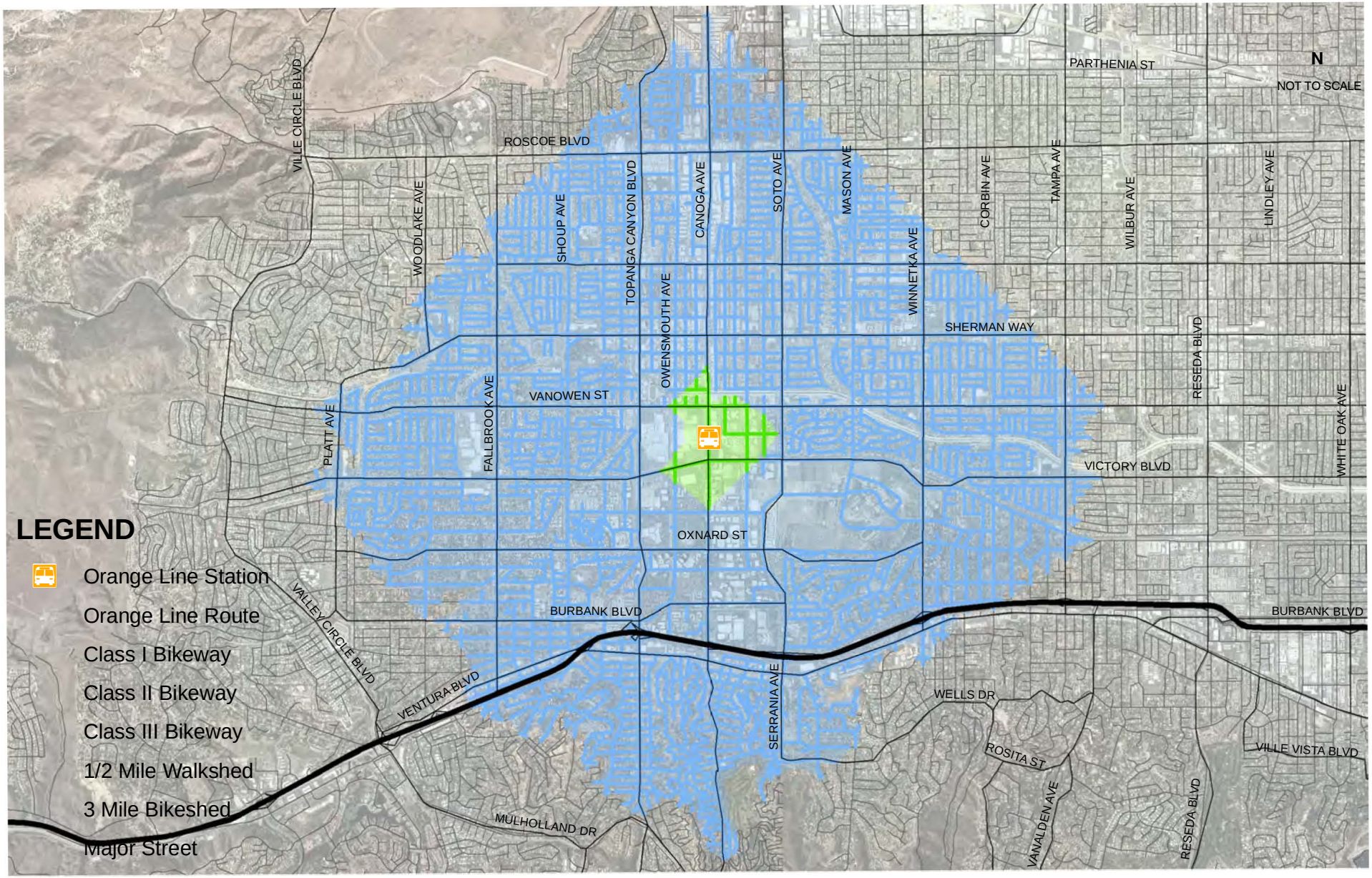
Making concurrent investments in bicycle and public transportation facilities is an effective strategy for increasing the number of people who bike to transit stations. Enabling greater bicycle access to stations with bikeways that increase safety and decrease travel time allows transit infrastructure to more fully benefit from the three-mile bicycle catchment radius. This benefit is provided at both the origin and destination stations. In this study, park-and-riders reported traveling an average of 0.5 miles after they left their final Metro Orange Line Station. Bicyclists, by comparison, accessed their first station from an average of 1.9 miles away, and traveled an average of 1.6 miles after leaving their last station. The difference between the distances traveled by park-and-riders and bicyclists illustrates the significant gain in access made possible by bicycling.

Providing bikeways, like the Metro Orange Line Bike Path, also helps people to make trips entirely without their cars. The survey and count data collected and analyzed indicate that VMT and GHGe reductions can be attributed to the Metro Orange Line's combination of fixed-guideway transit and a non-motorized bicycle facility. The extent of the co-benefits of this combination can be further explored in a future more rigorous study.

5.3 FUTURE STUDIES & NEXT STEPS

This study was limited in scope and consequently, it was not possible to sample bicyclists, pedestrians, drivers, stations, or days systematically. Therefore, the data from this study, although useful and informative, are preliminary and subject to change contingent upon the results of future studies/surveys that employ rigorous sampling methodology. More research is recommended to validate and replicate the results of this study.

APPENDIX A: WALKSHEDS AND BIKESHEDS BY STATION



FEHR & PEERS
TRANSPORTATION CONSULTANTS

June 9, 2010 SP
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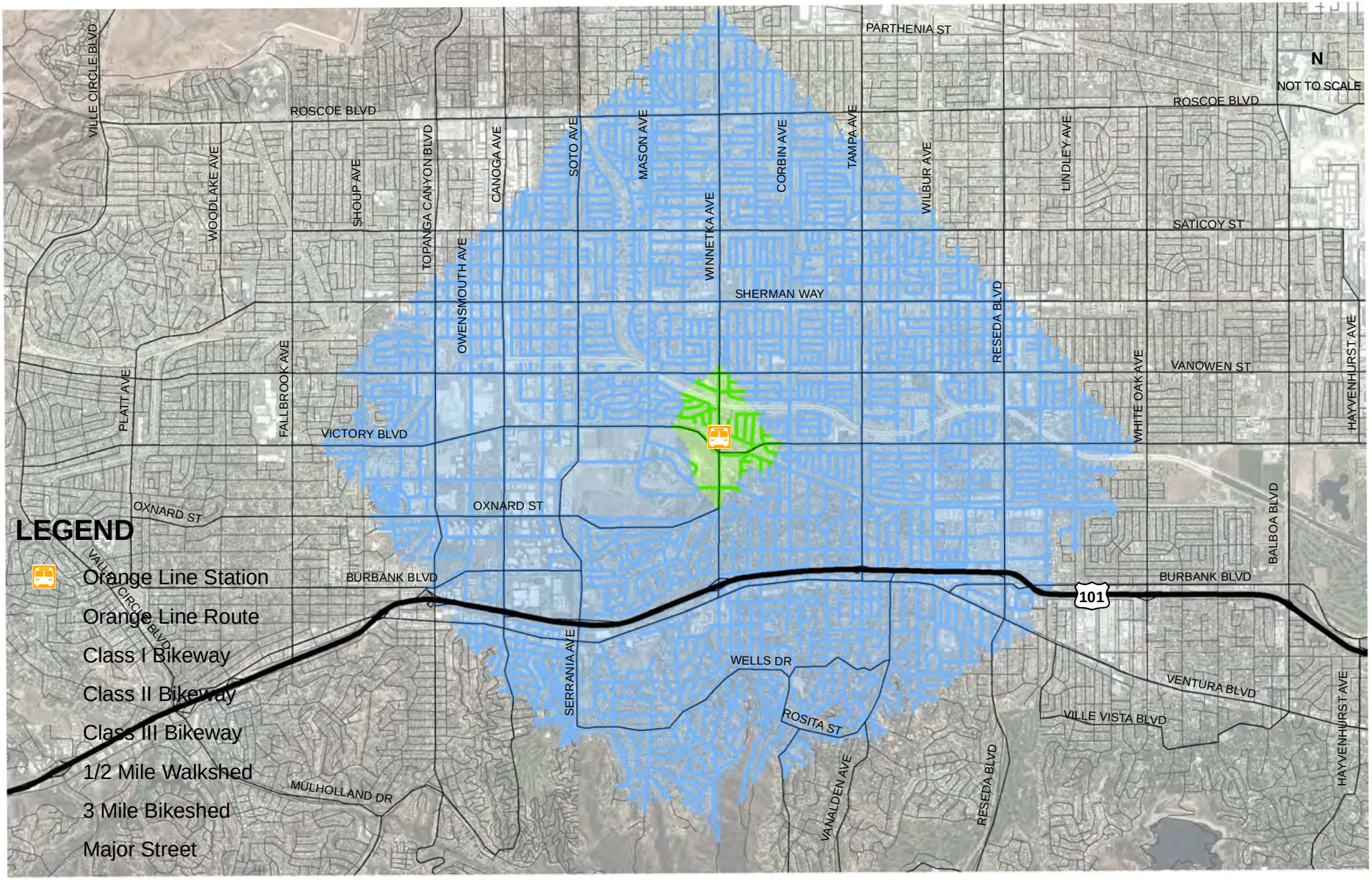
CANOGA STATION - WALKSHED AND BIKESHED ANALYSIS



FEHR & PEERS
TRANSPORTATION CONSULTANTS

June 9, 2010 SP
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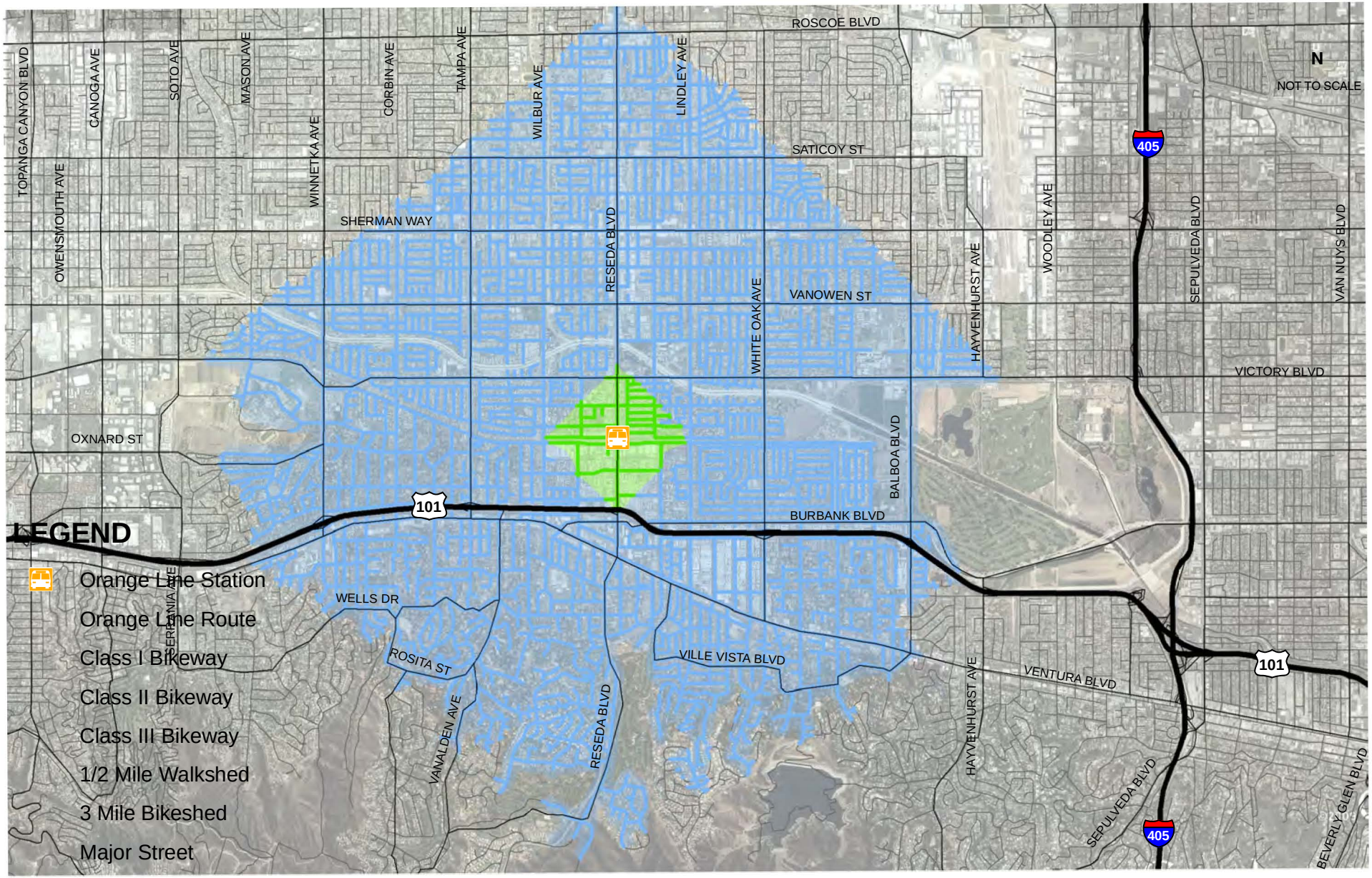
PIERCE COLLEGE STATION - WALKSHED AND BIKESHED ANALYSIS



FEHR & PEERS
TRANSPORTATION CONSULTANTS

June 9, 2010 SP
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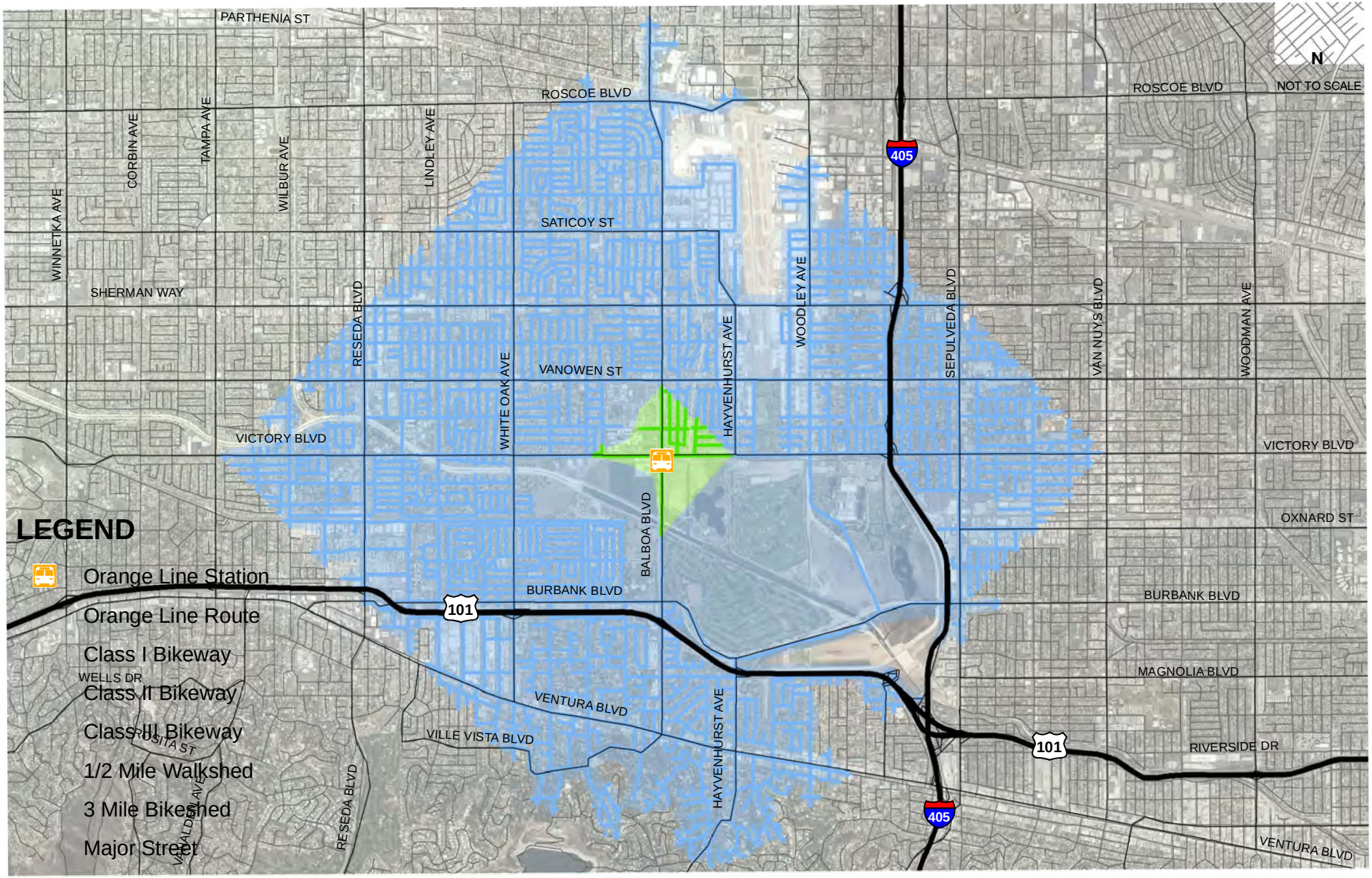
RESEDA STATION - WALKSHED AND BIKESHED ANALYSIS



FEHR & PEERS
TRANSPORTATION CONSULTANTS

June 9, 2010 SP
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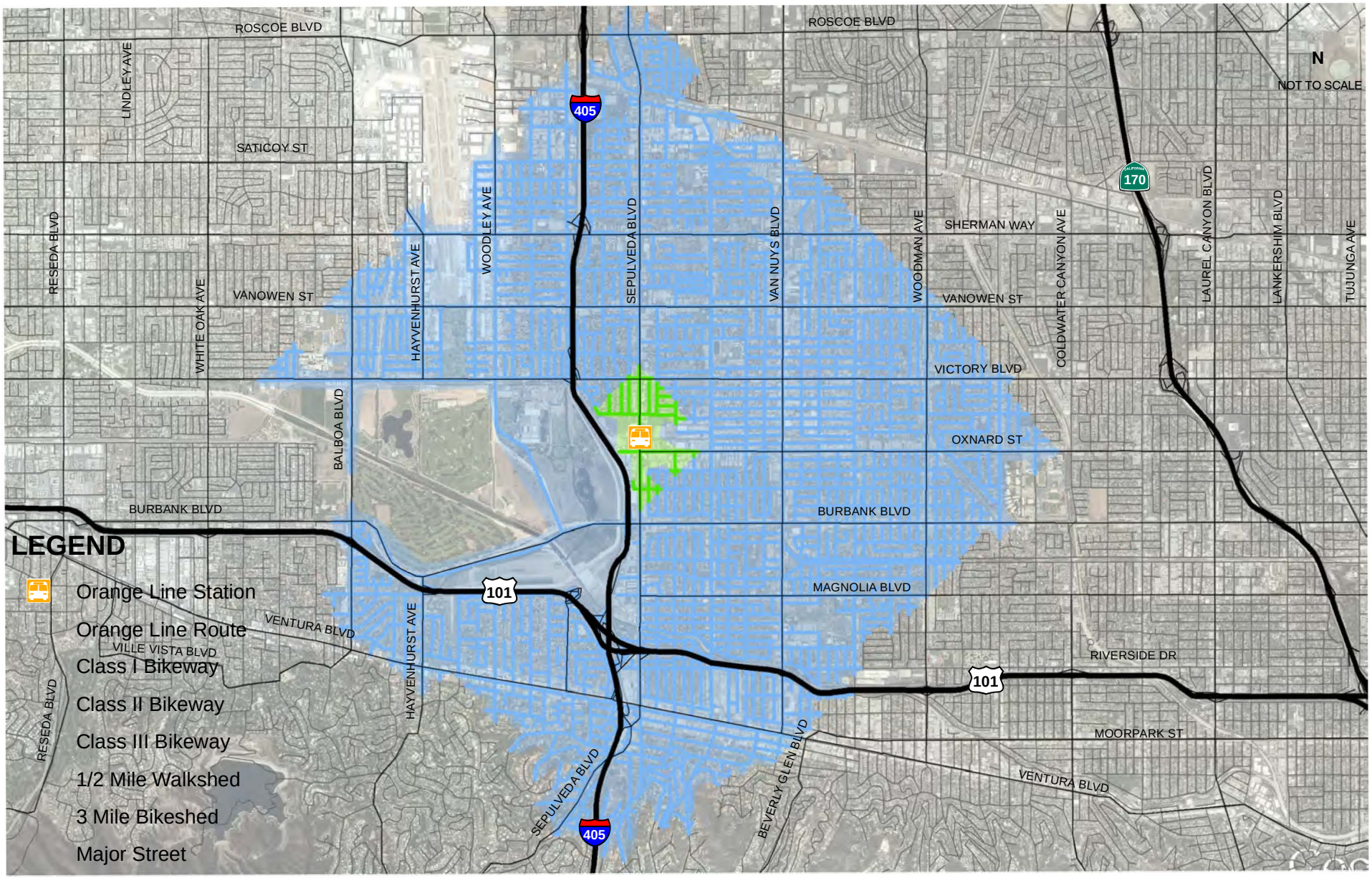
BALBOA STATION - WALKSHED AND BIKESHED ANALYSIS



FEHR & PEERS
TRANSPORTATION CONSULTANTS

June 9, 2010 SP
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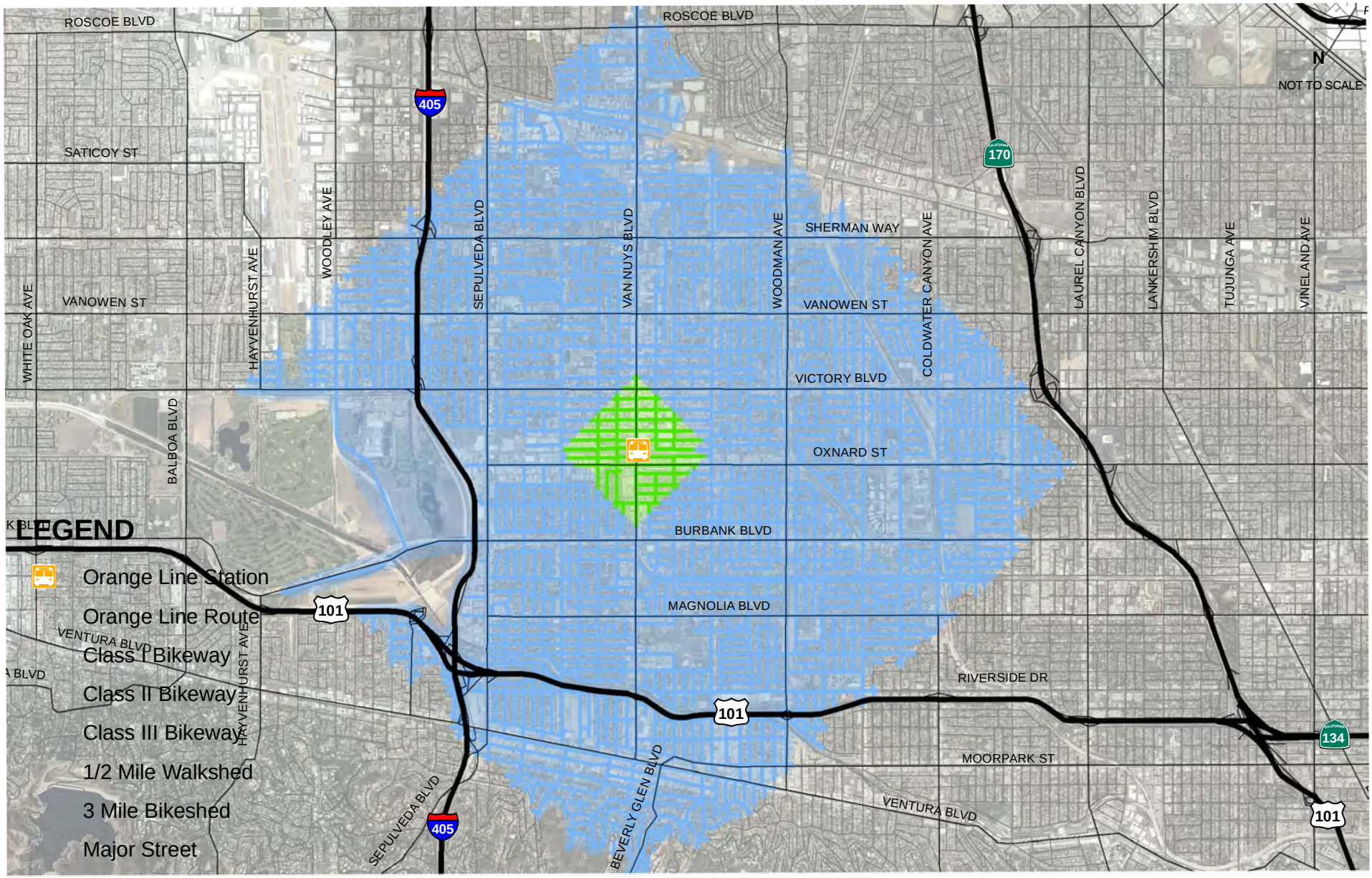
SEPULVEDA STATION - WALKSHED AND BIKESHED ANALYSIS



FEHR & PEERS
TRANSPORTATION CONSULTANTS

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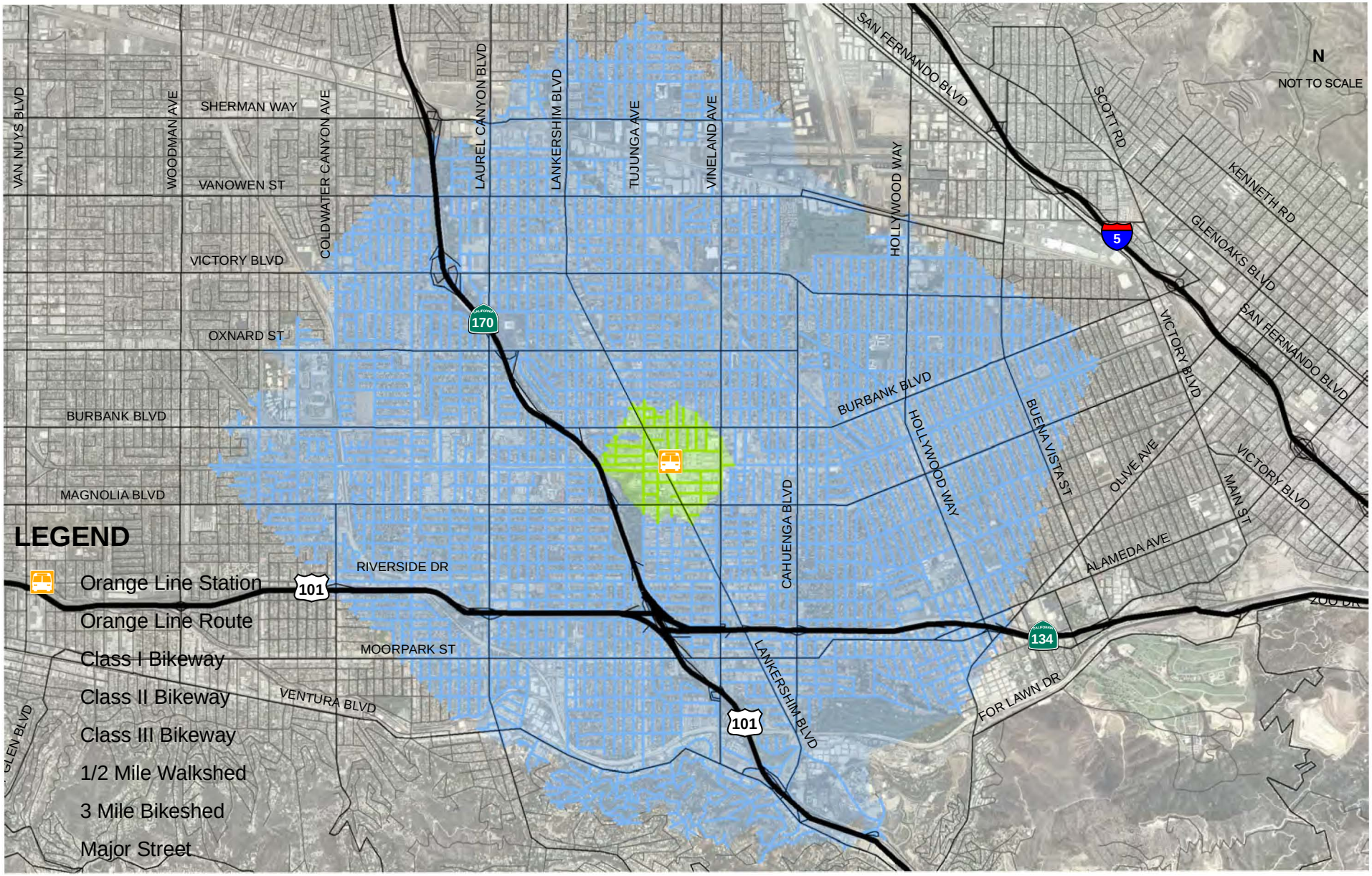
VAN NUYS STATION - WALKSHED AND BIKESHED ANALYSIS



FEHR & PEERS
TRANSPORTATION CONSULTANTS

June 9, 2010 SP
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NORTH HOLLYWOOD STATION - WALKSHED AND BIKESHED ANALYSIS

APPENDIX B: SURVEY QUESTIONS

METRO ORANGE LINE TRANSPORTATION SURVEY

Metro is conducting a survey of transit riders to study the benefits of building a bikeway next to a transit corridor, and we need your help.

Please fill out this survey and return by mail, or complete online at *www.metro.net/sustainability*.

To be counted, don't forget the survey serial number from your printed survey form needs to go in the online version.

ABOUT YOU

Age

○ 18-28 years ○ 29-39 years ○ 40-50 years
○ 51-65 years ○ 66+ years

Gender

○ Male ○ Female

1433
SERIAL NUMBER

ONE-WAY TRIP

Please answer all questions that apply.

1. **Where did your trip *start* today?**
   ○ Home ○ School ○ Work ○ Friends
   ○ Other *(Please specify)* _____

2. **What are the nearest cross-streets to where your trip *started* today?**
   _____

3. **What is the purpose of your trip?**
   ○ Home ○ School ○ Work ○ Friends
   ○ Other *(Please specify)* _____

4. **What are the nearest cross-streets to your trip *destination*?**
   _____

5. **How did you get to the Metro Orange Line or Bike Path today?**
   ○ Bicycle ○ Walk ○ Metro bus
   ○ Metro Red Line ○ Drive Alone ○ Carpool
   ○ Dropped-off

6. **How will you get to your trip destination today after getting off Metro Orange Line or Bike Path?**
   ○ Bicycle ○ Walk ○ Metro bus
   ○ Metro Red Line ○ Drive Alone ○ Carpool
   ○ Dropped-off

7. **Did you make today's trip another way before using the Metro Orange Line bus or Bike Path?**
   ○ Yes ○ No
   If yes, how?
   ○ Bicycle ○ Walk ○ Metro bus
   ○ Metro Red Line ○ Drive Alone ○ Carpool
   ○ Dropped-off

8. **Are you using the Metro Orange Line today?**
   ○ Yes ○ No
   If you answered yes to question 8:
   At what station did you *board* Metro Orange Line?
   ○ North Hollywood ○ Sepulveda ○ Van Nuys
   ○ Canoga ○ Laurel Canyon ○ Woodley
   ○ Tampa ○ Warner Center ○ Valley College
   ○ Balboa ○ Pierce College ○ Woodman
   ○ Reseda ○ De Soto
   At what station did you *exit* Metro Orange Line?
   ○ North Hollywood ○ Sepulveda ○ Van Nuys
   ○ Canoga ○ Laurel Canyon ○ Woodley
   ○ Tampa ○ Warner Center ○ Valley College
   ○ Balboa ○ Pierce College ○ Woodman
   ○ Reseda ○ De Soto

Metro

How often do you ride the Metro Orange Line?
○ 5 or more days/wk ○ 1-2 days/wk
○ Once a month or less ○ 3-4 days/wk
○ Less than once a week

If you used your bicycle to get to the Metro Orange Line, did you:
○ Park at the station ○ Use the bus bike rack
○ Did not ride bike

How long have you been using Metro Orange Line?
_____ Months _____ Years

9. **Are you using the Metro Orange Line Bike Path today (walking or bicycling)?**
   ○ Yes ○ No
   If you answered yes to question 9:
   At what cross streets did you *enter* the Bike Path?
   _____
   At what cross streets did you *exit* the Bike Path?
   _____
   How often do you use the Metro Orange Line Bike Path?
   ○ 5 or more days/wk ○ 1-2 days/wk
   ○ Once a month or less ○ 3-4 days/wk
   ○ Less than once a week
   How long (approximately) have you been using the Metro Orange Line Bike Path?
   _____ Months _____ Years

10. **What other travel modes do you use to get to Metro Orange Line and/or Bike Path? Choose all that apply:**
    ○ Bicycle ○ Walk ○ Metro bus
    ○ Metro Red Line ○ Drive Alone ○ Carpool
    ○ Dropped-off
    If you ever drive alone, what are the reasons you choose to do so over bicycling or walking? Choose all that apply:
    ○ Convenience ○ Distance ○ Weather
    ○ Comfort ○ Time
    ○ Other *(Please specify)* _____

11. **If you predominately drive alone, have you considered bicycling or walking to Metro Orange Line?**
    ○ Yes ○ No
    How often do you bicycle or walk on the Orange Line Bike Path?
    ○ 5 or more days/wk ○ 1-2 days/wk
    ○ Once a month or less ○ 3-4 days/wk
    ○ Less than once a week ○ Never
    If you bicycle or walk on the Orange Line Bike Path, what type of trips do you make on the bike path?
    ○ Work ○ School ○ Shopping
    ○ Exercise ○ Friends
    ○ Other *(Please specify)* _____

12. **In your own words, please describe how the Metro Orange Line Bike Path has changed or modified the way you travel?**
    _____
    _____
    _____

Please rate the following statements on a scale of 1 to 5.
(1 - AGREE COMPLETELY, 2 - SOMEWHAT AGREE, 3 - NEUTRAL, 4 - DISAGREE and 5 - DISAGREE COMPLETELY)

13. **The Metro Orange Line has made me more likely to take public transit.**
    ○ 1 ○ 2 ○ 3 ○ 4 ○ 5

14. **The inclusion of a bike path next to the Metro Orange Line bus has influenced me to use a bicycle for transportation.**
    ○ 1 ○ 2 ○ 3 ○ 4 ○ 5

15. **The inclusion of a bicycle parking at the Metro Orange Line bus stations has made me more likely to use my bicycle to get to the transit station.**
    ○ 1 ○ 2 ○ 3 ○ 4 ○ 5

ENCUESTA DE TRANSPORTE DE METRO ORANGE LINE

Metro está realizando una encuesta para usuarios de transporte para estudiar los beneficios de la construcción de vías de bicicletas al lado de un corredor y necesitamos su ayuda.

Por favor llene el formulario y envielo por correo o tome la encuesta por Internet en *metro.net/sustainability*.

Si toma la encuesta por Internet, por favor incluya el número de serie en el formulario de la encuesta.

SOBRE USTED

Edad

○ 18-28 años ○ 29-39 años ○ 40-50 años
○ 51-65 años ○ 66+ años

Género

○ Hombre ○ Mujer

1799
NÚMERO DE SERIE

VIAJE DE UNA-DIRECCIÓN

Por favor conteste todas las preguntas que apliquen.

1. ¿Donde *empezó* su viaje hoy?
   ○ Su casa ○ Escuela ○ Trabajo ○ Amigo(s)
   ○ Otro *(Por favor especifique)* _____

2. ¿Cual es la intersección más cercana de donde *empezó* su viaje?
   _____

3. ¿Cual es el *destino* en este viaje?
   ○ Su casa ○ Escuela ○ Trabajo ○ Amigo(s)
   ○ Otro *(Por favor especifique)* _____

4. ¿Cual es la intersección más cercana al *destino* de su viaje?
   _____

5. ¿Cómo llego a la parada de autobús o vía de bicicleta de Metro Orange Line?
   ○ Por bicicleta ○ Caminando ○ Autobús de Metro
   ○ Metro Red Line ○ Viajando ***solo*** en coche
   ○ Viajando ***acompañado*** en coche
   ○ La(o) trajeron a la estación

6. ¿Después de desborar Metro Orange Line como llegará a su *destino* en el viaje de hoy?
   ○ Por bicicleta ○ Caminando ○ Autobús de Metro
   ○ Metro Red Line ○ Viajando ***solo*** en coche
   ○ Viajando ***acompañado*** en coche
   ○ La(o) recogerán en la estación

7. ¿Cuál es el propósito de su viaje?
   ○ Llegar a casa ○ Escuela
   ○ Trabajo ○ Visitando amigo(s)
   ○ Otro *(Por favor especifique)* _____

8. ¿Usará usted Metro Orange Line hoy?
   ○ Sí ○ No

   Si contesto Sí a la pregunta 8:
   ¿En qué estación *abordó* Metro Orange Line?

   ○ North Hollywood ○ Sepulveda ○ Van Nuys
   ○ Canoga ○ Laurel Canyon ○ Woodley
   ○ Tampa ○ Warner Center ○ Valley College
   ○ Balboa ○ Pierce College ○ Woodman
   ○ Reseda ○ De Soto

   ¿En qué estación *desbordó* Metro Orange Line?

   ○ North Hollywood ○ Sepulveda ○ Van Nuys
   ○ Canoga ○ Laurel Canyon ○ Woodley
   ○ Tampa ○ Warner Center ○ Valley College
   ○ Balboa ○ Pierce College ○ Woodman
   ○ Reseda ○ De Soto

¿Con qué frecuencia viaje en Metro Orange Line?

○ 5 o más días por semana ○ 1-2 días por semana
○ Una vez al mes o menos ○ 3-4 días por semana
○ Menos de una vez por semana

¿Si utilizó la vía de bicicletas de Metro Orange Line, usted:

○ Se estaciono en la estación ○ Utilizo los portábicicletas

Por cuanto tiempo ha utilizado Metro Orange Line?

_____ Meses _____ Años

9. ¿Esta hoy usando la vía de bicicletas de Metro Orange Line (ya sea caminando o en su bicicleta)?
   ○ Sí ○ No

   Si contesto Sí a la pregunta 9:
   ¿Por cuál intersección *entró* a la vía de bicicleta?
   _____

   ¿Por cuál intersección *salió* de la vía de bicicleta ?
   _____

¿Con qué frequencia usa la vía de bicicleta de Metro Orange Line?

○ 5 o más días por semana ○ 1-2 días por semana
○ Una vez al mes o menos ○ 3-4 días por semana
○ Menos de una vez por semana

¿Aproximadamente, por cuanto tiempo ha usado la vía de bicicletas de Metro Orange Line?

_____ Meses _____ Años

10. ¿Que otros tipos de transporte utiliza para llegar a Metro Orange Line y/o la vía de bicicletas? Escoja todos los que apliquen:
    ○ Por bicicleta ○ Caminando ○ Autobús de Metro
    ○ Metro Red Line ○ Viajando ***solo*** en coche
    ○ Viajando ***acompañado*** en coche
    ○ La(o) trajeron a la estación

    ¿Cuando *maneja solo*, cuales son las razones por las que usted decide manejar sobre caminar o viajar por bicicleta? Escoja todos los que apliquen:

    ○ Conveniencia ○ Distancia ○ El ambiente climático
    ○ Comodidad ○ Tiempo
    ○ Otro *(Por favor especifique)* _____

11. ¿Si usted predominantemente maneja solo, a usted considerado viajar por bicicleta o caminar para llegar a Metro Orange Line?
    ○ Sí ○ No ○ No aplica

    ¿Que tan seguido camina o toma la bicicleta para llegar a la vía de bicicletas de Metro Orange Line?

    ○ 5 o más días por semana ○ 1-2 días por semana
    ○ Una vez al mes o menos ○ 3-4 días por semana
    ○ Menos de una vez por semana ○ Nunca

    ¿Si camina o toma la vía de bicicletas de Metro Orange Line que tipo de viajes hace sobre esta?

    ○ Trabajo ○ Escuela ○ De compras
    ○ Ejercicio ○ Amigos
    ○ Otro *(Por favor especifique)* _____

12. En sus propias palabras por favor describa cómo es que la vía de bicicletas de Metro Orange Line ha cambiado o modificado la manera en la que usted viaja.
    _____
    _____
    _____

Por favor categorize de 1 a 5.
(1 - COMPLETAMENTE DE ACUERDO, 2 - ALGO DE ACUERDO, 3 - NEUTRAL, 4 - ALGO EN DESACUERDO y 5 - EN COMPLETO DESACUERDO)

13. Metro Orange Line ha hecho más probable que yo tome transporte público.
    ○ 1 ○ 2 ○ 3 ○ 4 ○ 5

14. La inclusión de la vía de bicicletas a un lado de Metro Orange Line me influyó a utilizar la bicicleta como medio de transporte.
    ○ 1 ○ 2 ○ 3 ○ 4 ○ 5

15. La inclusión de la vía de bicicletas a un lado de Metro Orange Line ha hecho más probable que yo utilicé una bicicleta como medio de transporte.
    ○ 1 ○ 2 ○ 3 ○ 4 ○ 5

Metro

APPENDIX C: BUSWAY COUNTS

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BUSWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **CANOGA**

TIME		BICYCLIST BOARDINGS (ONS)		BICYCLIST ALIGHTINGS (OFFS)	
FROM	TO	PARKED BIKE @ STATION	BIKE ON BUS (RACK)	PARKED BIKE @ STATION	BIKE ON BUS (RACK)
7:00 AM	7:15 AM	0	0	0	0
7:15 AM	7:30 AM	1	0	0	0
7:30 AM	7:45 AM	1	3	0	0
7:45 AM	8:00 AM	2	2	0	0
8:00 AM	8:15 AM	1	0	0	1
8:15 AM	8:30 AM	1	0	0	1
8:30 AM	8:45 AM	1	0	0	0
8:45 AM	9:00 AM	0	0	0	0
AM Peak Total		**7**	**5**	**0**	**2**
12:00 PM	12:15 PM	0	0	0	1
12:15 PM	12:30 PM	0	0	0	0
12:30 PM	12:45 PM	1	0	0	1
12:45 PM	1:00 PM	0	0	0	0
1:00 PM	1:15 PM	0	1	0	1
1:15 PM	1:30 PM	0	2	0	1
1:30 PM	1:45 PM	0	0	0	0
1:45 PM	2:00 PM	0	0	0	0
Midday Peak Total		**1**	**3**	**0**	**4**
4:00 PM	4:15 PM	0	1	1	1
4:15 PM	4:30 PM	0	0	0	0
4:30 PM	4:45 PM	0	2	0	1
4:45 PM	5:00 PM	0	0	0	1
5:00 PM	5:15 PM	0	0	0	0
5:15 PM	5:30 PM	0	1	1	2
5:30 PM	5:45 PM	0	1	0	1
5:45 PM	6:00 PM	0	1	1	0
PM Peak Total		**0**	**6**	**3**	**6**
6-HR Total		**8**	**14**	**3**	**12**

** For equality of scaling, AM peak totals reflect counts from 7:15 AM - 9:00 AM.*

Bikes Parked at Station:

Start Shift		*End Shift*	
7:00 AM	3	9:00 AM	15
12:00 PM	12	2:00 PM	11
4:00 PM	13	6:00 PM	8

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BUSWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **CANOGA**

TIME		BICYCLIST BOARDINGS (ONS)		BICYCLIST ALIGHTINGS (OFFS)	
FROM	TO	PARKED BIKE @ STATION	BIKE ON BUS (RACK)	PARKED BIKE @ STATION	BIKE ON BUS (RACK)
7:00 AM	7:15 AM	0	0	0	0
7:15 AM	7:30 AM	0	0	0	0
7:30 AM	7:45 AM	2	2	0	4
7:45 AM	8:00 AM	0	0	1	8
8:00 AM	8:15 AM	0	0	0	6
8:15 AM	8:30 AM	2	2	0	4
8:30 AM	8:45 AM	0	0	0	7
8:45 AM	9:00 AM	0	0	0	4
AM Peak Total		**4**	**4**	**1**	**33**
12:00 PM	12:15 PM	0	2	0	0
12:15 PM	12:30 PM	0	0	0	0
12:30 PM	12:45 PM	0	3	1	0
12:45 PM	1:00 PM	0	0	0	2
1:00 PM	1:15 PM	1	1	0	1
1:15 PM	1:30 PM	0	0	0	0
1:30 PM	1:45 PM	0	1	0	0
1:45 PM	2:00 PM	0	0	0	0
Midday Peak Total		**1**	**7**	**1**	**3**
4:00 PM	4:15 PM	0	0	0	0
4:15 PM	4:30 PM	0	1	0	0
4:30 PM	4:45 PM	0	1	0	0
4:45 PM	5:00 PM	0	0	0	0
5:00 PM	5:15 PM	0	0	0	1
5:15 PM	5:30 PM	0	0	0	0
5:30 PM	5:45 PM	0	2	0	0
5:45 PM	6:00 PM	0	0	0	2
PM Peak Total		**0**	**4**	**0**	**3**
6-HR Total		**5**	**15**	**2**	**39**

** For equality of scaling, AM peak totals reflect counts from 7:15 AM - 9:00 AM.*

Bikes Parked at Station:

Start Shift		*End Shift*	
7:00 AM	3	9:00 AM	3
12:00 PM	3	2:00 PM	5
4:00 PM	6	6:00 PM	5

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BUSWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **CANOGA**

TIME		BICYCLIST BOARDINGS (ONS)		BICYCLIST ALIGHTINGS (OFFS)	
FROM	TO	PARKED BIKE @ STATION	BIKE ON BUS (RACK)	PARKED BIKE @ STATION	BIKE ON BUS (RACK)
7:00 AM	7:15 AM	0	1	1	2
7:15 AM	7:30 AM	1	1	0	4
7:30 AM	7:45 AM	0	3	0	0
7:45 AM	8:00 AM	0	0	0	3
8:00 AM	8:15 AM	0	1	0	0
8:15 AM	8:30 AM	0	3	0	0
8:30 AM	8:45 AM	0	2	0	1
8:45 AM	9:00 AM	0	0	0	1
AM Peak Total		**1**	**10**	**0**	**9**
12:00 PM	12:15 PM	0	4	0	1
12:15 PM	12:30 PM	0	3	0	0
12:30 PM	12:45 PM	0	3	0	2
12:45 PM	1:00 PM	0	0	0	0
1:00 PM	1:15 PM	0	2	0	0
1:15 PM	1:30 PM	0	2	0	2
1:30 PM	1:45 PM	0	0	0	0
1:45 PM	2:00 PM	0	2	0	0
Midday Peak Total		**0**	**16**	**0**	**5**
4:00 PM	4:15 PM	0	1	0	1
4:15 PM	4:30 PM	0	3	0	1
4:30 PM	4:45 PM	0	0	0	0
4:45 PM	5:00 PM	0	0	0	3
5:00 PM	5:15 PM	0	3	0	2
5:15 PM	5:30 PM	0	4	0	2
5:30 PM	5:45 PM	0	0	0	2
5:45 PM	6:00 PM	0	6	0	2
PM Peak Total		**0**	**17**	**0**	**13**
6-HR Total		**1**	**43**	**0**	**27**

** For equality of scaling, AM peak totals reflect counts from 7:15 AM - 9:00 AM.*

Bikes Parked at Station:

Start Shift		*End Shift*	
7:00 AM	NA	9:00 AM	NA
12:00 PM	NA	2:00 PM	NA
4:00 PM	NA	6:00 PM	NA

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BUSWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **BALBOA**

TIME		BICYCLIST BOARDINGS (ONS)		BICYCLIST ALIGHTINGS (OFFS)	
FROM	TO	PARKED BIKE @ STATION	BIKE ON BUS (RACK)	PARKED BIKE @ STATION	BIKE ON BUS (RACK)
7:00 AM	7:15 AM	0	2	0	0
7:15 AM	7:30 AM	0	3	0	1
7:30 AM	7:45 AM	0	0	0	0
7:45 AM	8:00 AM	0	2	0	1
8:00 AM	8:15 AM	0	1	0	0
8:15 AM	8:30 AM	1	1	0	0
8:30 AM	8:45 AM	0	0	0	2
8:45 AM	9:00 AM	0	1	0	0
AM Peak Total		**1**	**8**	**0**	**4**
12:00 PM	12:15 PM	0	0	0	0
12:15 PM	12:30 PM	0	1	0	0
12:30 PM	12:45 PM	0	1	0	0
12:45 PM	1:00 PM	0	1	0	0
1:00 PM	1:15 PM	0	0	0	0
1:15 PM	1:30 PM	0	0	0	0
1:30 PM	1:45 PM	0	0	0	0
1:45 PM	2:00 PM	1	2	0	0
Midday Peak Total		**1**	**5**	**0**	**0**
4:00 PM	4:15 PM	0	0	0	1
4:15 PM	4:30 PM	0	0	0	1
4:30 PM	4:45 PM	0	0	0	0
4:45 PM	5:00 PM	0	0	0	0
5:00 PM	5:15 PM	0	1	0	0
5:15 PM	5:30 PM	0	2	0	1
5:30 PM	5:45 PM	0	2	0	0
5:45 PM	6:00 PM	0	1	0	0
PM Peak Total		**0**	**6**	**0**	**3**
6-HR Total		**2**	**19**	**0**	**7**

** For equality of scaling, AM peak totals reflect counts from 7:15 AM - 9:00 AM.*

Bikes Parked at Station:

Start Shift		*End Shift*	
7:00 AM	8	9:00 AM	9
12:00 PM	9	2:00 PM	10
4:00 PM	10	6:00 PM	10

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BUSWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **SEPULVEDA**

TIME		BICYCLIST BOARDINGS (ONS)		BICYCLIST ALIGHTINGS (OFFS)	
FROM	TO	PARKED BIKE @ STATION	BIKE ON BUS (RACK)	PARKED BIKE @ STATION	BIKE ON BUS (RACK)
7:00 AM	7:15 AM	0	1	0	1
7:15 AM	7:30 AM	0	1	0	0
7:30 AM	7:45 AM	0	2	0	0
7:45 AM	8:00 AM	0	0	0	0
8:00 AM	8:15 AM	0	0	0	0
8:15 AM	8:30 AM	0	3	0	0
8:30 AM	8:45 AM	0	0	0	2
8:45 AM	9:00 AM	0	1	0	3
AM Peak Total		**0**	**7**	**0**	**5**
12:00 PM	12:15 PM	0	0	0	0
12:15 PM	12:30 PM	0	0	0	0
12:30 PM	12:45 PM	0	1	0	0
12:45 PM	1:00 PM	0	1	0	1
1:00 PM	1:15 PM	0	0	0	0
1:15 PM	1:30 PM	0	0	0	0
1:30 PM	1:45 PM	0	1	0	2
1:45 PM	2:00 PM	0	0	0	1
Midday Peak Total		**0**	**3**	**0**	**4**
4:00 PM	4:15 PM	0	0	0	4
4:15 PM	4:30 PM	0	0	0	0
4:30 PM	4:45 PM	0	0	0	1
4:45 PM	5:00 PM	0	0	0	0
5:00 PM	5:15 PM	0	0	0	0
5:15 PM	5:30 PM	0	0	0	0
5:30 PM	5:45 PM	0	0	0	0
5:45 PM	6:00 PM	0	0	0	1
PM Peak Total		**0**	**0**	**0**	**6**
6-HR Total		**0**	**10**	**0**	**15**

** For equality of scaling, AM peak totals reflect counts from 7:15 AM - 9:00 AM.*

Bikes Parked at Station:

Start Shift		*End Shift*	
7:00 AM	NA	9:00 AM	NA
12:00 PM	NA	2:00 PM	NA
4:00 PM	NA	6:00 PM	NA

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BUSWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **VAN NUYS**

TIME		BICYCLIST BOARDINGS (ONS)		BICYCLIST ALIGHTINGS (OFFS)	
FROM	TO	PARKED BIKE @ STATION	BIKE ON BUS (RACK)	PARKED BIKE @ STATION	BIKE ON BUS (RACK)
6:00 AM	6:15 AM				
6:15 AM	6:30 AM				
6:30 AM	6:45 AM	0	3	0	1
6:45 AM	7:00 AM	0	0	1	0
7:00 AM	7:15 AM	0	3	0	0
7:15 AM	7:30 AM	1	0	0	0
7:30 AM	7:45 AM	1	0	0	0
7:45 AM	8:00 AM	0	1	0	0
8:00 AM	8:15 AM	0	0	0	0
8:15 AM	8:30 AM	1	0	0	1
8:30 AM	8:45 AM	0	0	0	1
8:45 AM	9:00 AM	1	2	0	3
9:00 AM	9:15 AM	0	1	0	0
9:15 AM	9:30 AM	0	1	0	0
9:30 AM	9:45 AM	0	0	0	0
9:45 AM	10:00 AM	0	0	0	0
10:00 AM	10:15 AM	0	0	0	2
10:15 AM	10:30 AM	0	0	1	0
10:30 AM	10:45 AM	0	2	0	0
10:45 AM	11:00 AM	0	0	0	1
11:00 AM	11:15 AM	0	0	0	0
11:15 AM	11:30 AM	1	0	1	0
11:30 AM	11:45 AM	0	0	1	1
11:45 AM	12:00 PM	0	0	1	0
12:00 PM	12:15 PM	0	1	0	0
12:15 PM	12:30 PM	0	4	0	1
12:30 PM	12:45 PM	0	1	0	2
12:45 PM	1:00 PM	0	1	0	0
1:00 PM	1:15 PM	0	1	0	2
1:15 PM	1:30 PM	0	0	0	0
1:30 PM	1:45 PM	0	3	0	0
1:45 PM	2:00 PM	0	0	0	0
2:00 PM	2:15 PM	0	1	0	1
2:15 PM	2:30 PM	0	0	0	1
2:30 PM	2:45 PM	0	0	0	0
2:45 PM	3:00 PM	0	1	0	1
3:00 PM	3:15 PM	0	0	0	2
3:15 PM	3:30 PM	0	2	0	1
3:30 PM	3:45 PM	0	2	0	4
3:45 PM	4:00 PM	0	0	0	0
4:00 PM	4:15 PM	0	0	0	2
4:15 PM	4:30 PM	0	1	0	3
4:30 PM	4:45 PM	0	0	0	2
4:45 PM	5:00 PM	0	2	0	1
5:00 PM	5:15 PM	0	1	0	1
5:15 PM	5:30 PM	0	3	0	2
5:30 PM	5:45 PM	0	1	0	1
5:45 PM	6:00 PM	0	4	0	4
AM Peak Total		**4**	**6**	**0**	**5**
Midday Peak Total		**0**	**11**	**0**	**5**
PM Peak Total		**0**	**12**	**0**	**16**
12-Hour Counts		**5**	**42**	**5**	**41**

Bikes Parked at Station:

Start Shift		*End Shift*	
6:00 AM	3	6:00 PM	3

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BUSWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **NORTH HOLLYWOOD**

TIME		BICYCLIST BOARDINGS (ONS)		BICYCLIST ALIGHTINGS (OFFS)	
FROM	TO	PARKED BIKE @ STATION	BIKE ON BUS (RACK)	PARKED BIKE @ STATION	BIKE ON BUS (RACK)
6:00 AM	6:15 AM	1	6	1	3
6:15 AM	6:30 AM	0	0	0	1
6:30 AM	6:45 AM	3	0	0	3
6:45 AM	7:00 AM	0	6	0	1
7:00 AM	7:15 AM	0	0	0	0
7:15 AM	7:30 AM	0	4	0	3
7:30 AM	7:45 AM	0	1	0	2
7:45 AM	8:00 AM	0	2	0	1
8:00 AM	8:15 AM	0	7	0	0
8:15 AM	8:30 AM	0	2	0	5
8:30 AM	8:45 AM	0	4	0	4
8:45 AM	9:00 AM	0	4	0	2
9:00 AM	9:15 AM	0	6	1	3
9:15 AM	9:30 AM	0	7	0	5
9:30 AM	9:45 AM	0	2	0	0
9:45 AM	10:00 AM	0	3	0	4
10:00 AM	10:15 AM	0	3	0	1
10:15 AM	10:30 AM	0	2	0	2
10:30 AM	10:45 AM	0	1	0	2
10:45 AM	11:00 AM	0	1	0	2
11:00 AM	11:15 AM	1	1	0	2
11:15 AM	11:30 AM	0	1	1	1
11:30 AM	11:45 AM	0	2	0	2
11:45 AM	12:00 PM	0	3	0	0
12:00 PM	12:15 PM	0	4	0	5
12:15 PM	12:30 PM	0	1	0	0
12:30 PM	12:45 PM	0	6	0	3
12:45 PM	1:00 PM	0	0	0	4
1:00 PM	1:15 PM	0	0	0	1
1:15 PM	1:30 PM	0	1	0	1
1:30 PM	1:45 PM	0	1	0	0
1:45 PM	2:00 PM	0	1	0	2
2:00 PM	2:15 PM	0	3	0	1
2:15 PM	2:30 PM	0	1	0	6
2:30 PM	2:45 PM	0	0	0	4
2:45 PM	3:00 PM	0	2	0	0
3:00 PM	3:15 PM	0	2	0	0
3:15 PM	3:30 PM	0	3	0	5
3:30 PM	3:45 PM	0	2	0	2
3:45 PM	4:00 PM	0	1	0	8
4:00 PM	4:15 PM	1	2	0	2
4:15 PM	4:30 PM	0	7	0	3
4:30 PM	4:45 PM	0	3	0	4
4:45 PM	5:00 PM	0	2	0	1
5:00 PM	5:15 PM	0	5	0	3
5:15 PM	5:30 PM	0	4	0	5
5:30 PM	5:45 PM	0	3	0	1
5:45 PM	6:00 PM	0	6	0	10
AM Peak Total		**0**	**24**	**0**	**17**
Midday Peak Total		**0**	**14**	**0**	**16**
PM Peak Total		**1**	**32**	**0**	**29**
12-Hour Counts		**6**	**128**	**3**	**120**

Bikes Parked at Station:

Start Shift		*End Shift*	
6:00 AM	2	6:00 PM	4

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BUSWAY COUNT SHEET

SATURDAY, MARCH 27 2010 **VAN NUYS**

TIME		BICYCLIST BOARDINGS (ONS)		BICYCLIST ALIGHTINGS (OFFS)	
FROM	TO	PARKED BIKE @ STATION	BIKE ON BUS (RACK)	PARKED BIKE @ STATION	BIKE ON BUS (RACK)
10:00 AM	10:15 AM	0	0	0	0
10:15 AM	10:30 AM	0	0	1	0
10:30 AM	10:45 AM	0	2	0	0
10:45 AM	11:00 AM	0	2	1	0
11:00 AM	11:15 AM	0	2	0	0
11:15 AM	11:30 AM	0	3	0	1
11:30 AM	11:45 AM	0	0	0	1
11:45 AM	12:00 PM	0	2	0	1
12:00 PM	12:15 PM	0	1	0	1
12:15 PM	12:30 PM	0	2	0	2
12:30 PM	12:45 PM	0	1	0	3
12:45 PM	1:00 PM	0	2	0	1
1:00 PM	1:15 PM	0	0	0	4
1:15 PM	1:30 PM	0	3	0	0
1:30 PM	1:45 PM	0	2	0	1
1:45 PM	2:00 PM	0	0	0	0
4-Hour Counts		**0**	**22**	**2**	**15**

Bikes Parked at Station:

Start Shift		*End Shift*	
10:00 AM	3	2:00 PM	1

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BUSWAY COUNT SHEET

SATURDAY, MARCH 27 2010 **NORTH HOLLYWOOD**

TIME		BICYCLIST BOARDINGS (ONS)		BICYCLIST ALIGHTINGS (OFFS)	
FROM	TO	PARKED BIKE @ STATION	BIKE ON BUS (RACK)	PARKED BIKE @ STATION	BIKE ON BUS (RACK)
10:00 AM	10:15 AM	0	0	0	0
10:15 AM	10:30 AM	0	2	0	4
10:30 AM	10:45 AM	0	1	0	3
10:45 AM	11:00 AM	0	0	0	1
11:00 AM	11:15 AM	0	3	0	4
11:15 AM	11:30 AM	0	0	0	1
11:30 AM	11:45 AM	0	1	0	3
11:45 AM	12:00 PM	0	1	0	1
12:00 PM	12:15 PM	0	4	0	3
12:15 PM	12:30 PM	0	2	0	1
12:30 PM	12:45 PM	0	2	0	0
12:45 PM	1:00 PM	0	2	0	4
1:00 PM	1:15 PM	0	2	0	2
1:15 PM	1:30 PM	0	2	0	2
1:30 PM	1:45 PM	0	2	0	4
1:45 PM	2:00 PM	0	2	0	1
4-Hour Counts		**0**	**26**	**0**	**34**

Bikes Parked at Station:

Start Shift		*End Shift*	
10:00 AM	NA	2:00 PM	NA

APPENDIX D: BIKEWAY COUNTS

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BIKEWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **CANOGA**

TIME		BIKES		PEDESTRIANS	
FROM	TO	EASTBOUND	WESTBOUND	EASTBOUND	WESTBOUND
7:00 AM	7:15 AM	1	0	0	0
7:15 AM	7:30 AM	1	0	0	0
7:30 AM	7:45 AM	1	1	2	1
7:45 AM	8:00 AM	1	0	1	0
8:00 AM	8:15 AM	0	0	0	2
8:15 AM	8:30 AM	0	0	0	0
8:30 AM	8:45 AM	0	0	0	0
8:45 AM	9:00 AM	0	0	0	0
AM Peak Total*		**3**	**1**	**3**	**3**
12:00 PM	12:15 PM	3	0	1	0
12:15 PM	12:30 PM	3	0	1	0
12:30 PM	12:45 PM	1	1	0	0
12:45 PM	1:00 PM	1	2	0	1
1:00 PM	1:15 PM	0	0	0	0
1:15 PM	1:30 PM	1	0	0	0
1:30 PM	1:45 PM	0	3	0	0
1:45 PM	2:00 PM	1	0	0	0
Midday Peak Total		**10**	**6**	**2**	**1**
4:00 PM	4:15 PM	0	0	0	0
4:15 PM	4:30 PM	1	2	1	0
4:30 PM	4:45 PM	1	1	0	0
4:45 PM	5:00 PM	1	0	0	0
5:00 PM	5:15 PM	1	3	0	0
5:15 PM	5:30 PM	3	3	0	0
5:30 PM	5:45 PM	2	1	0	0
5:45 PM	6:00 PM	1	3	1	0
PM Peak Total		**10**	**13**	**2**	**0**
6-HR Total		**23**	**20**	**7**	**4**

** For equality of scaling, AM peak totals reflect counts from 7:15 AM - 9:00 AM.*

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BIKEWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **PIERCE**

TIME		BIKES		PEDESTRIANS	
FROM	TO	EASTBOUND	WESTBOUND	EASTBOUND	WESTBOUND
7:00 AM	7:15 AM				
7:15 AM	7:30 AM	3	3	7	6
7:30 AM	7:45 AM	2	3	2	3
7:45 AM	8:00 AM	0	0	2	2
8:00 AM	8:15 AM	2	2	4	2
8:15 AM	8:30 AM	6	3	5	7
8:30 AM	8:45 AM	1	0	5	3
8:45 AM	9:00 AM	2	2	1	4
AM Peak Total*		**16**	**13**	**26**	**27**
12:00 PM	12:15 PM	2	1	0	0
12:15 PM	12:30 PM	4	4	1	0
12:30 PM	12:45 PM	6	1	1	2
12:45 PM	1:00 PM	0	2	0	1
1:00 PM	1:15 PM	4	2	0	0
1:15 PM	1:30 PM	1	1	1	0
1:30 PM	1:45 PM	2	5	1	1
1:45 PM	2:00 PM	1	2	0	2
Midday Peak Total		**20**	**18**	**4**	**6**
4:00 PM	4:15 PM	4	2	1	5
4:15 PM	4:30 PM	5	3	0	0
4:30 PM	4:45 PM	1	2	0	0
4:45 PM	5:00 PM	3	5	0	0
5:00 PM	5:15 PM	5	3	2	1
5:15 PM	5:30 PM	1	2	2	1
5:30 PM	5:45 PM	7	5	6	0
5:45 PM	6:00 PM	6	5	4	7
PM Peak Total		**32**	**27**	**15**	**14**
6-HR Total		**68**	**58**	**45**	**47**

** For equality of scaling, AM peak totals reflect counts from 7:15 AM - 9:00 AM.*

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BIKEWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **RESEDA**

TIME		BIKES		PEDESTRIANS	
FROM	TO	EASTBOUND	WESTBOUND	EASTBOUND	WESTBOUND
7:00 AM	7:15 AM	2	1	5	6
7:15 AM	7:30 AM	4	2	5	2
7:30 AM	7:45 AM	2	1	2	7
7:45 AM	8:00 AM	1	3	6	3
8:00 AM	8:15 AM	1	0	1	1
8:15 AM	8:30 AM	1	3	1	1
8:30 AM	8:45 AM	2	7	1	0
8:45 AM	9:00 AM	2	2	0	5
AM Peak Total*		**13**	**18**	**16**	**19**
12:00 PM	12:15 PM	3	6	1	4
12:15 PM	12:30 PM	2	5	0	0
12:30 PM	12:45 PM	5	1	0	3
12:45 PM	1:00 PM	4	0	0	1
1:00 PM	1:15 PM	2	2	5	0
1:15 PM	1:30 PM	3	2	0	1
1:30 PM	1:45 PM	0	2	1	2
1:45 PM	2:00 PM	0	4	0	0
Midday Peak Total		**19**	**22**	**7**	**11**
4:00 PM	4:15 PM	2	2	2	0
4:15 PM	4:30 PM	2	3	1	5
4:30 PM	4:45 PM	2	6	0	5
4:45 PM	5:00 PM	1	3	1	2
5:00 PM	5:15 PM	2	6	1	3
5:15 PM	5:30 PM	6	7	9	3
5:30 PM	5:45 PM	5	6	4	6
5:45 PM	6:00 PM	7	11	6	7
PM Peak Total		**27**	**44**	**24**	**31**
6-HR Total		**59**	**84**	**47**	**61**

** For equality of scaling, AM peak totals reflect counts from 7:15 AM - 9:00 AM.*

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BIKEWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **BALBOA**

TIME		BIKES		PEDESTRIANS	
FROM	TO	EASTBOUND	WESTBOUND	EASTBOUND	WESTBOUND
7:00 AM	7:15 AM	0	3	4	2
7:15 AM	7:30 AM	2	1	1	1
7:30 AM	7:45 AM	4	1	0	1
7:45 AM	8:00 AM	2	3	1	0
8:00 AM	8:15 AM	2	2	4	3
8:15 AM	8:30 AM	3	9	3	3
8:30 AM	8:45 AM	4	4	5	6
8:45 AM	9:00 AM	3	4	2	2
AM Peak Total*		**20**	**24**	**16**	**16**
12:00 PM	12:15 PM	10	6	6	4
12:15 PM	12:30 PM	4	3	1	6
12:30 PM	12:45 PM	1	6	4	3
12:45 PM	1:00 PM	3	8	2	2
1:00 PM	1:15 PM	2	5	2	8
1:15 PM	1:30 PM	4	0	1	8
1:30 PM	1:45 PM	4	4	1	1
1:45 PM	2:00 PM	5	3	2	0
Midday Peak Total		**33**	**35**	**19**	**32**
4:00 PM	4:15 PM	8	4	6	1
4:15 PM	4:30 PM	7	2	8	5
4:30 PM	4:45 PM	1	3	9	5
4:45 PM	5:00 PM	1	10	11	6
5:00 PM	5:15 PM	10	9	9	1
5:15 PM	5:30 PM	11	4	9	7
5:30 PM	5:45 PM	8	4	7	2
5:45 PM	6:00 PM	9	1	5	5
PM Peak Total		**55**	**37**	**64**	**32**
6-HR Total		**108**	**96**	**99**	**80**

** For equality of scaling, AM peak totals reflect counts from 7:15 AM - 9:00 AM.*

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BIKEWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **SEPULVEDA**

TIME		BIKES		PEDESTRIANS	
FROM	TO	EASTBOUND	WESTBOUND	EASTBOUND	WESTBOUND
7:00 AM	7:15 AM	1	2	0	0
7:15 AM	7:30 AM	2	0	0	0
7:30 AM	7:45 AM	0	2	1	3
7:45 AM	8:00 AM	2	0	3	2
8:00 AM	8:15 AM	1	10	2	2
8:15 AM	8:30 AM	1	2	2	2
8:30 AM	8:45 AM	3	0	2	2
8:45 AM	9:00 AM	4	2	1	0
AM Peak Total*		**13**	**16**	**11**	**11**
12:00 PM	12:15 PM	3	5	0	1
12:15 PM	12:30 PM	4	4	2	4
12:30 PM	12:45 PM	10	6	0	0
12:45 PM	1:00 PM	3	5	0	0
1:00 PM	1:15 PM	4	2	2	0
1:15 PM	1:30 PM	5	0	0	1
1:30 PM	1:45 PM	5	3	0	1
1:45 PM	2:00 PM	1	4	2	1
Midday Peak Total		**35**	**29**	**6**	**8**
4:00 PM	4:15 PM	6	5	1	1
4:15 PM	4:30 PM	5	1	0	1
4:30 PM	4:45 PM	8	3	0	0
4:45 PM	5:00 PM	5	1	1	2
5:00 PM	5:15 PM	3	10	0	0
5:15 PM	5:30 PM	5	2	0	0
5:30 PM	5:45 PM	6	2	0	0
5:45 PM	6:00 PM	3	4	0	0
PM Peak Total		**41**	**28**	**2**	**4**
6-HR Total		**89**	**73**	**19**	**23**

** For equality of scaling, AM peak totals reflect counts from 7:15 AM - 9:00 AM.*

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BIKEWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **VAN NUYS**

TIME		BIKES		PEDESTRIANS	
FROM	TO	EASTBOUND	WESTBOUND	EASTBOUND	WESTBOUND
6:00 AM	6:15 AM				
6:15 AM	6:30 AM				
6:30 AM	6:45 AM	1	2	1	4
6:45 AM	7:00 AM	4	4	7	7
7:00 AM	7:15 AM	7	3	11	13
7:15 AM	7:30 AM	2	5	2	12
7:30 AM	7:45 AM	5	6	6	13
7:45 AM	8:00 AM	1	2	11	14
8:00 AM	8:15 AM	2	8	9	8
8:15 AM	8:30 AM	7	0	3	7
8:30 AM	8:45 AM	4	3	4	4
8:45 AM	9:00 AM	1	2	6	6
9:00 AM	9:15 AM	4	3	2	3
9:15 AM	9:30 AM	2	4	5	5
9:30 AM	9:45 AM	0	2	4	9
9:45 AM	10:00 AM	1	4	1	1
10:00 AM	10:15 AM	6	3	7	10
10:15 AM	10:30 AM	4	2	4	6
10:30 AM	10:45 AM	4	2	3	2
10:45 AM	11:00 AM	1	3	8	6
11:00 AM	11:15 AM	6	2	1	2
11:15 AM	11:30 AM	1	6	2	2
11:30 AM	11:45 AM	3	4	1	6
11:45 AM	12:00 PM	2	5	4	1
12:00 PM	12:15 PM	1	7	4	8
12:15 PM	12:30 PM	1	4	6	1
12:30 PM	12:45 PM	5	5	9	1
12:45 PM	1:00 PM	0	3	8	7
1:00 PM	1:15 PM	1	0	7	6
1:15 PM	1:30 PM	5	2	2	12
1:30 PM	1:45 PM	3	2	4	3
1:45 PM	2:00 PM	5	6	1	5
2:00 PM	2:15 PM	3	2	6	1
2:15 PM	2:30 PM	4	4	4	3
2:30 PM	2:45 PM	3	3	3	3
2:45 PM	3:00 PM	2	5	10	3
3:00 PM	3:15 PM	3	2	6	3
3:15 PM	3:30 PM	8	1	12	4
3:30 PM	3:45 PM	2	4	10	8
3:45 PM	4:00 PM	10	3	7	2
4:00 PM	4:15 PM	5	8	4	1
4:15 PM	4:30 PM	3	9	7	5
4:30 PM	4:45 PM	7	3	9	4
4:45 PM	5:00 PM	2	5	8	10
5:00 PM	5:15 PM	8	2	3	4
5:15 PM	5:30 PM	12	4	2	1
5:30 PM	5:45 PM	11	5	6	2
5:45 PM	6:00 PM	11	4	7	4
AM Peak Total		**29**	**29**	**52**	**77**
Midday Peak Total		**21**	**29**	**41**	**43**
PM Peak Total		**59**	**40**	**46**	**31**
12-Hour Counts		**183**	**168**	**247**	**242**

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BIKEWAY COUNT SHEET

WEDNESDAY, MARCH 24 2010 **NORTH HOLLYWOOD**

TIME		BIKES		PEDESTRIANS	
FROM	TO	EASTBOUND	WESTBOUND	EASTBOUND	WESTBOUND
6:00 AM	6:15 AM	2	1	3	2
6:15 AM	6:30 AM	0	3	11	13
6:30 AM	6:45 AM	2	2	3	24
6:45 AM	7:00 AM	4	4	15	2
7:00 AM	7:15 AM	0	3	13	16
7:15 AM	7:30 AM	7	3	16	17
7:30 AM	7:45 AM	4	1	2	8
7:45 AM	8:00 AM	5	2	2	2
8:00 AM	8:15 AM	2	0	2	3
8:15 AM	8:30 AM	3	2	3	4
8:30 AM	8:45 AM	2	3	0	4
8:45 AM	9:00 AM	1	2	3	0
9:00 AM	9:15 AM	3	3	2	1
9:15 AM	9:30 AM	5	2	4	2
9:30 AM	9:45 AM	3	3	2	1
9:45 AM	10:00 AM	5	2	4	2
10:00 AM	10:15 AM	3	2	2	3
10:15 AM	10:30 AM	0	1	3	2
10:30 AM	10:45 AM	1	1	2	1
10:45 AM	11:00 AM	5	2	2	1
11:00 AM	11:15 AM	3	0	1	0
11:15 AM	11:30 AM	0	1	2	4
11:30 AM	11:45 AM	13	8	0	3
11:45 AM	12:00 PM	3	1	4	3
12:00 PM	12:15 PM	5	8	6	3
12:15 PM	12:30 PM	2	0	3	0
12:30 PM	12:45 PM	0	3	5	5
12:45 PM	1:00 PM	1	2	5	2
1:00 PM	1:15 PM	6	2	8	13
1:15 PM	1:30 PM	5	2	7	2
1:30 PM	1:45 PM	1	3	3	4
1:45 PM	2:00 PM	2	1	6	8
2:00 PM	2:15 PM	1	2	2	0
2:15 PM	2:30 PM	4	3	2	2
2:30 PM	2:45 PM	5	2	8	6
2:45 PM	3:00 PM	1	1	7	8
3:00 PM	3:15 PM	8	3	2	9
3:15 PM	3:30 PM	4	2	5	8
3:30 PM	3:45 PM	6	1	60	10
3:45 PM	4:00 PM	10	2	20	6
4:00 PM	4:15 PM	9	6	20	1
4:15 PM	4:30 PM	4	7	16	9
4:30 PM	4:45 PM	5	4	5	14
4:45 PM	5:00 PM	2	3	29	5
5:00 PM	5:15 PM	5	8	6	3
5:15 PM	5:30 PM	5	7	12	7
5:30 PM	5:45 PM	6	3	21	11
5:45 PM	6:00 PM	6	9	16	16
AM Peak Total		**24**	**16**	**41**	**54**
Midday Peak Total		**22**	**21**	**43**	**37**
PM Peak Total		**42**	**47**	**125**	**66**
12-Hour Counts		**179**	**136**	**375**	**270**

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BIKEWAY COUNT SHEET

SATURDAY, MARCH 27 2010 **VAN NUYS**

TIME		BIKES		PEDESTRIANS	
FROM	TO	EASTBOUND	WESTBOUND	EASTBOUND	WESTBOUND
10:00 AM	10:15 AM				
10:15 AM	10:30 AM				
10:30 AM	10:45 AM				
10:45 AM	11:00 AM	10	12	1	1
11:00 AM	11:15 AM	5	3	4	5
11:15 AM	11:30 AM	8	12	5	2
11:30 AM	11:45 AM	7	11	2	8
11:45 AM	12:00 PM	6	7	1	0
12:00 PM	12:15 PM	7	1	5	9
12:15 PM	12:30 PM	4	10	3	1
12:30 PM	12:45 PM	4	5	2	3
12:45 PM	1:00 PM	3	3	2	7
1:00 PM	1:15 PM	5	1	1	4
1:15 PM	1:30 PM	5	4	1	0
1:30 PM	1:45 PM	6	6	2	0
1:45 PM	2:00 PM	4	1	1	0
4-Hour Counts		**74**	**76**	**30**	**40**

METRO ORANGE LINE TRANSPORTATION CHOICE SURVEY

BIKEWAY COUNT SHEET

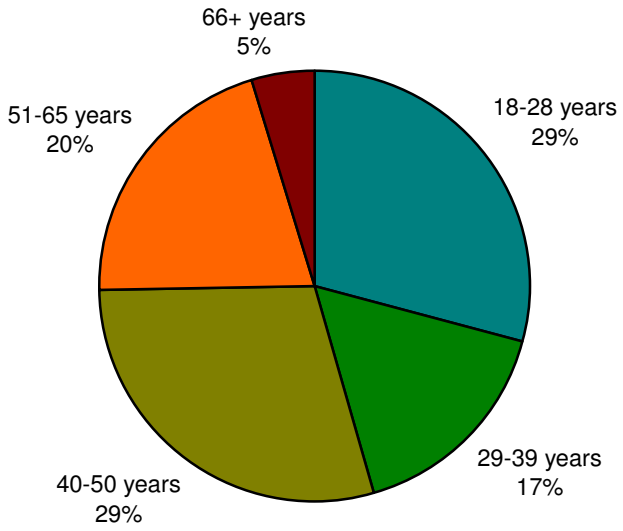
SATURDAY, MARCH 27 2010 **NORTH HOLLYWOOD**

TIME		BIKES		PEDESTRIANS	
FROM	TO	EASTBOUND	WESTBOUND	EASTBOUND	WESTBOUND
10:00 AM	10:15 AM				
10:15 AM	10:30 AM	3	3	2	2
10:30 AM	10:45 AM	4	7	2	1
10:45 AM	11:00 AM	7	3	4	4
11:00 AM	11:15 AM	3	2	4	2
11:15 AM	11:30 AM	5	3	2	0
11:30 AM	11:45 AM	7	8	4	4
11:45 AM	12:00 PM	5	5	3	2
12:00 PM	12:15 PM	4	1	2	1
12:15 PM	12:30 PM	7	3	3	1
12:30 PM	12:45 PM	1	4	2	2
12:45 PM	1:00 PM	4	3	1	2
1:00 PM	1:15 PM	7	4	2	2
1:15 PM	1:30 PM	3	1	2	0
1:30 PM	1:45 PM	3	3	2	3
1:45 PM	2:00 PM	6	6	1	3
4-Hour Counts		**69**	**56**	**36**	**29**

APPENDIX E: BICYCLIST SURVEY RESPONSES

BICYCLIST

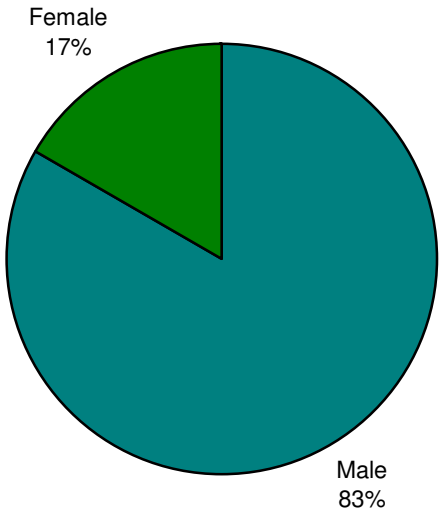
AGE



	#	%
18-28 years	37	29%
29-29 years	21	17%
40-50 years	37	29%
51-65 years	26	20%
66+ years	6	5%
Total Respondents	127	

BICYCLIST

SEX

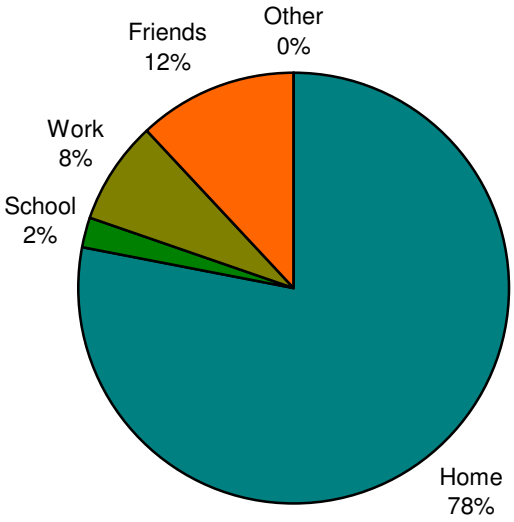


	#	%
Male	106	83%
Female	21	17%
Total Respondents	127	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

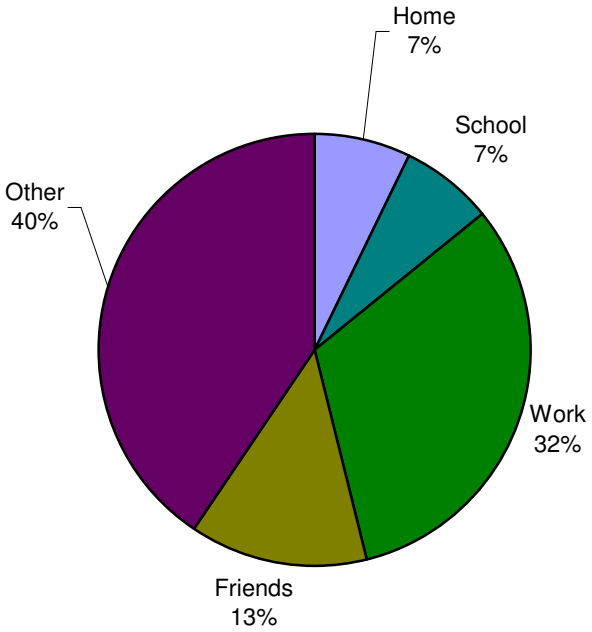
1. WHERE DID YOUR TRIP START TODAY?



	#	%
Home	99	78%
School	3	2%
Work	10	8%
Friends	15	12%
Other	0	0%
Total Respondents	127	

BICYCLIST

3. WHAT IS THE PURPOSE OF YOUR TRIP?

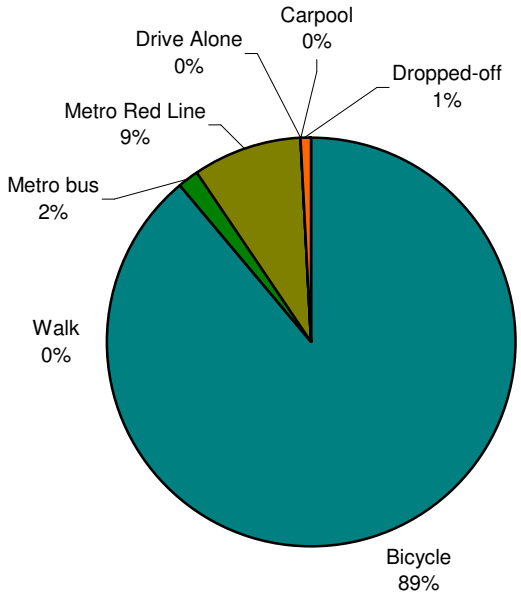


	#	%
Home	9	7%
School	9	7%
Work	40	32%
Friends	17	13%
Other	51	40%
Total Respondents	126	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

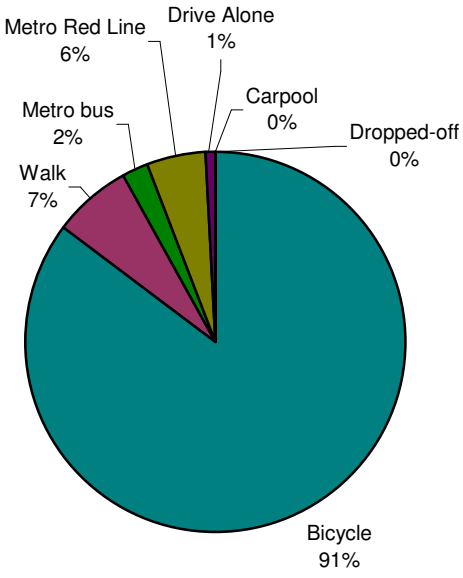
5. HOW DID YOU GET TO THE METRO ORANGE LINE OR BIKE PATH TODAY?



	#	%
Bicycle	112	89%
Walk	0	0%
Metro bus	2	2%
Metro Red Line	11	9%
Drive Alone	0	0%
Carpool	0	0%
Dropped-off	1	1%
Total Respondents	126	

BICYCLIST

6. HOW WILL YOU GET TO YOUR TRIP DESTINATION TODAY AFTER GETTING OFF THE METRO ORANGE LINE OR BIKE PATH? [MULTIPLE RESPONSES]

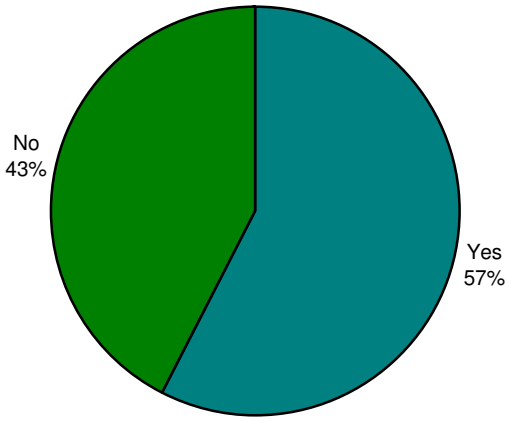


	#	%
Bicycle	115	91%
Walk	9	7%
Metro bus	3	2%
Metro Red Line	7	6%
Drive Alone	1	1%
Carpool	0	0%
Dropped-off	0	0%
Total Respondents	126	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

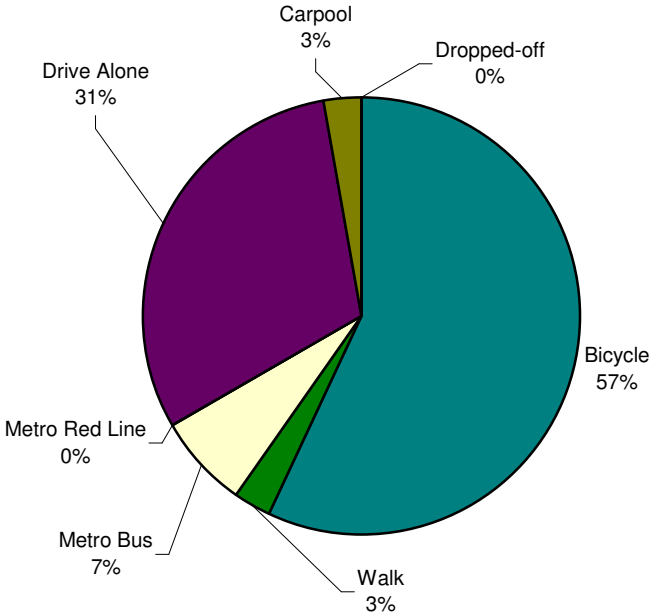
7A. DID YOU MAKE TODAY'S TRIP ANOTHER WAY BEFORE USING THE METRO ORANGE LINE OR BIKE PATH?



	#	%
Yes	70	57%
No	52	43%
Total Respondents	122	

BICYCLIST

7B. IF YES [TO 7A], HOW?

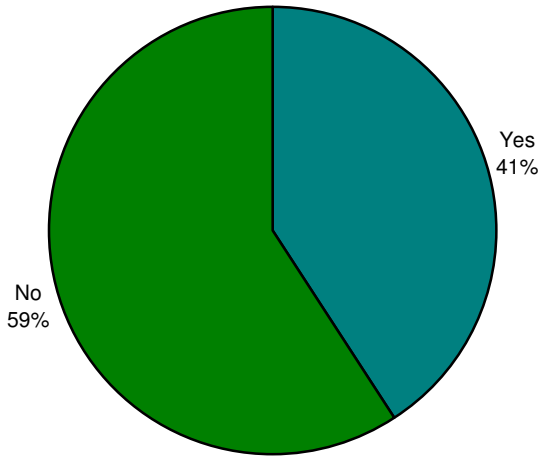


	#	%
Bicycle	41	57%
Walk	2	3%
Metro Bus	5	7%
Metro Red Line	0	0%
Drive Alone	22	31%
Carpool	2	3%
Dropped-off	0	0%
Total Respondents	72	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

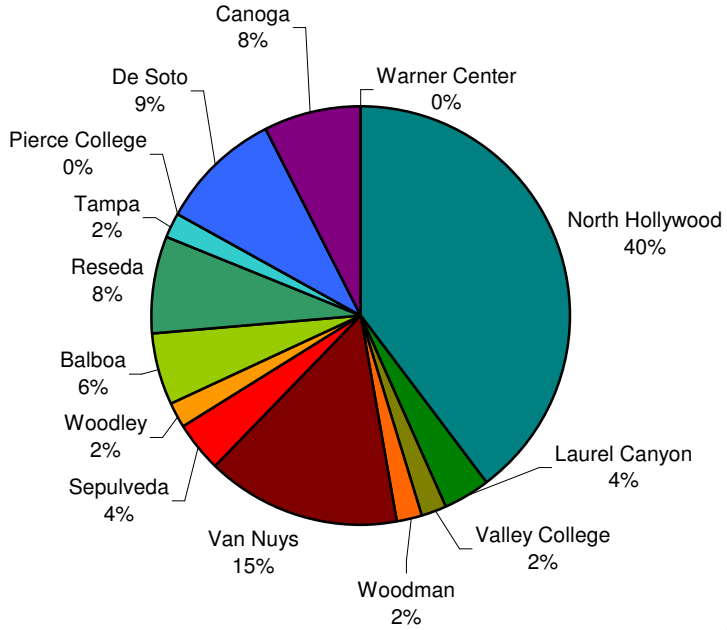
8A. ARE YOU USING THE METRO ORANGE LINE TODAY?



	#	%
Yes	52	41%
No	75	59%
Total Respondents	127	

BICYCLIST

8B. AT WHAT STATION DID YOU BOARD THE METRO ORANGE LINE?

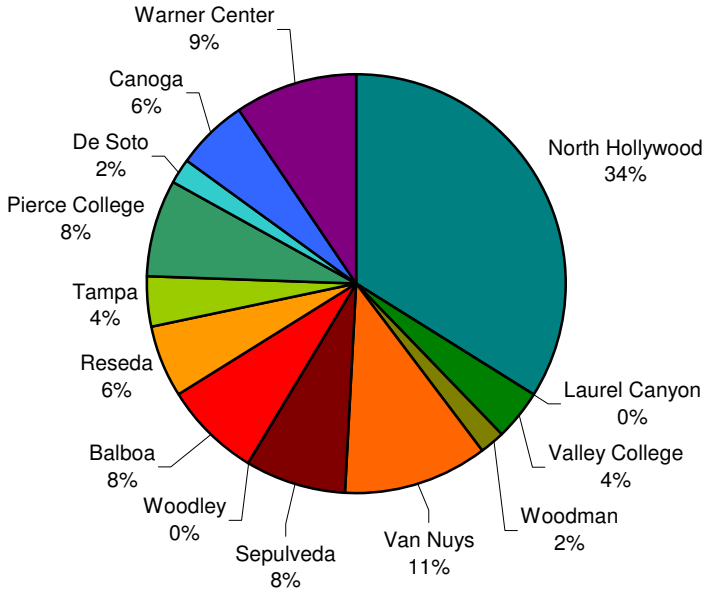


	#	%
North Hollywood	21	40%
Laurel Canyon	2	4%
Valley College	1	2%
Woodman	1	2%
Van Nuys	8	15%
Sepulveda	2	4%
Woodley	1	2%
Balboa	3	6%
Reseda	4	8%
Tampa	1	2%
Pierce College	0	0%
De Soto	5	9%
Canoga	4	8%
Warner Center	0	0%
Total Respondents	53	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

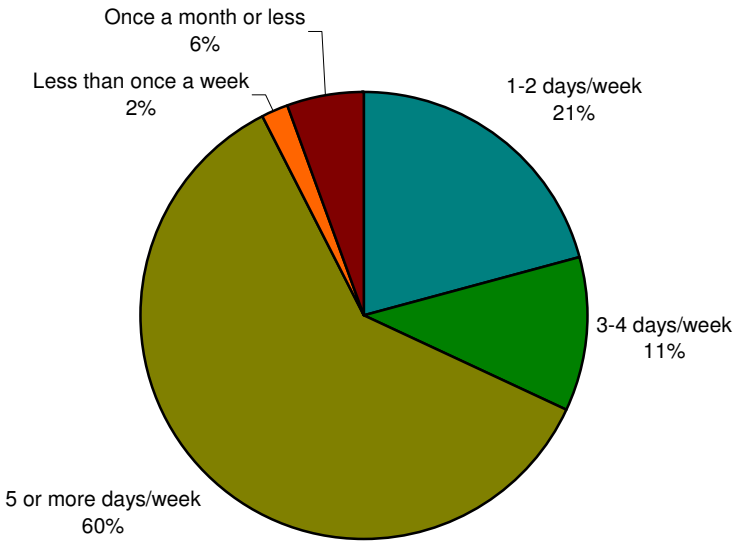
8C. AT WHAT STATION DID YOU EXIT THE METRO ORANGE LINE?



	#	%
North Hollywood	18	34%
Laurel Canyon	0	0%
Valley College	2	4%
Woodman	1	2%
Van Nuys	6	11%
Sepulveda	4	8%
Woodley	0	0%
Balboa	4	8%
Reseda	3	6%
Tampa	2	4%
Pierce College	4	8%
De Soto	1	2%
Canoga	3	6%
Warner Center	5	9%
Total Respondents	53	

BICYCLIST

8D. HOW OFTEN DO YOU RIDE THE METRO ORANGE LINE?

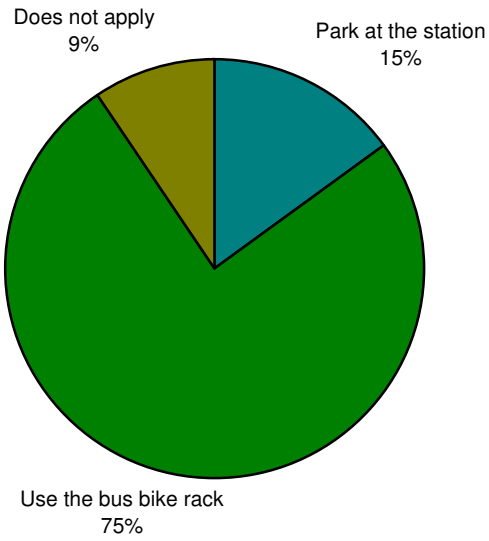


	#	%
1-2 days/week	11	21%
3-4 days/week	6	11%
5 or more days/week	32	60%
Less than once a week	1	2%
Once a month or less	3	6%
Total Respondents	53	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

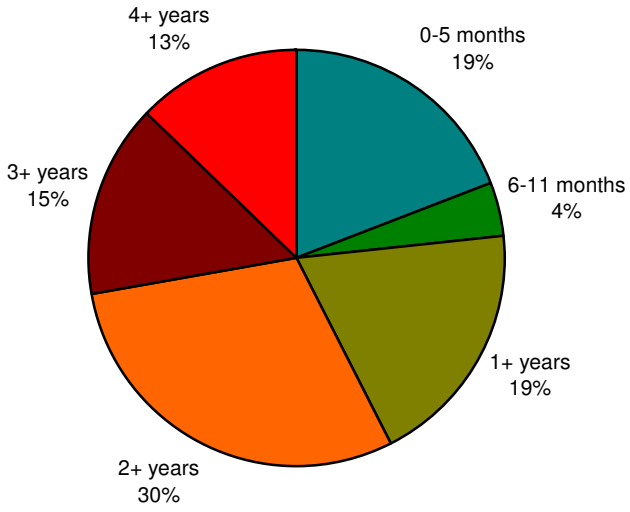
8E. IF YOU USED YOUR BIKE TO GET TO THE METRO ORANGE LINE, DID YOU...



	#	%
Park at the station	8	15%
Use the bus bike rack	40	75%
Does not apply	5	9%
Total Respondents	53	

BICYCLIST

8F. HOW LONG HAVE YOU BEEN USING THE METRO ORANGE LINE?

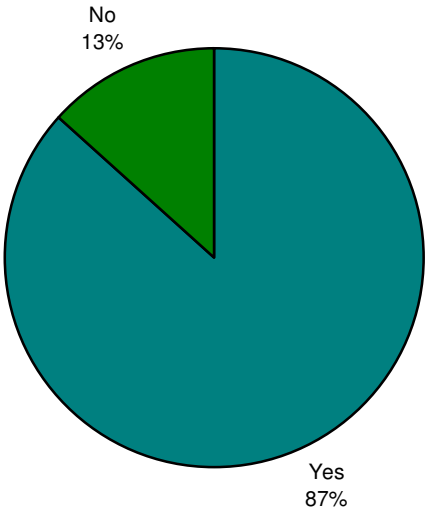


	#	%
0-5 months	9	19%
6-11 months	2	4%
1+ years	9	19%
2+ years	14	30%
3+ years	7	15%
4+ years	6	13%
Total Respondents	47	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

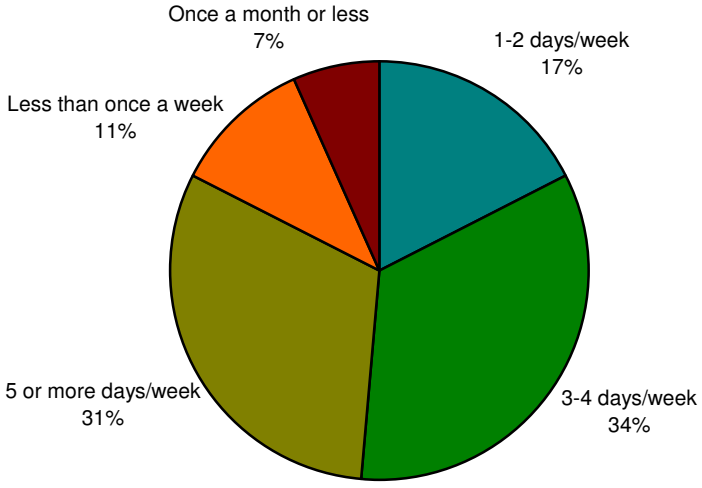
9A. ARE YOU USING THE METRO ORANGE LINE BIKE PATH TODAY?



	#	%
Yes	105	87%
No	16	13%
Total Respondents	121	

BICYCLIST

9D. HOW OFTEN DO YOU USE THE METRO ORANGE LINE BIKE PATH?



	#	%
1-2 days/week	18	17%
3-4 days/week	35	34%
5 or more days/week	32	31%
Less than once a week	11	11%
Once a month or less	7	7%
Total Respondents	103	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

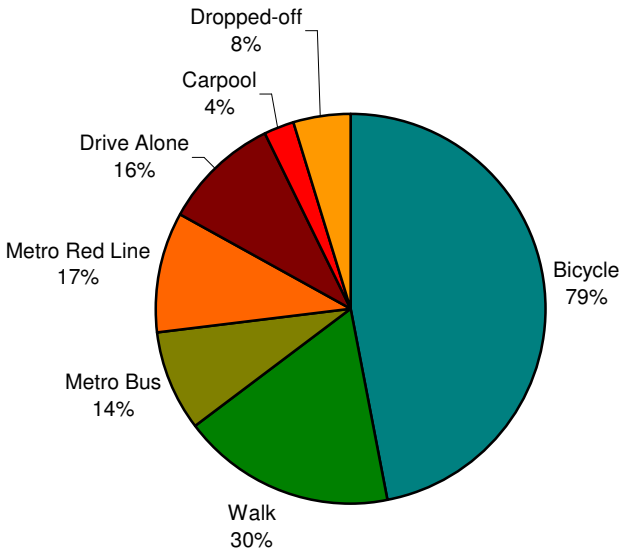
9E. HOW LONG HAVE YOU BEEN USING THE METRO ORANGE LINE BIKE PATH?

	#	%
0-5 months	15	16%
6-11 months	11	12%
1+ years	19	21%
2+ years	19	21%
3+ years	9	10%
4+ years	19	21%
Total Respondents	92	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

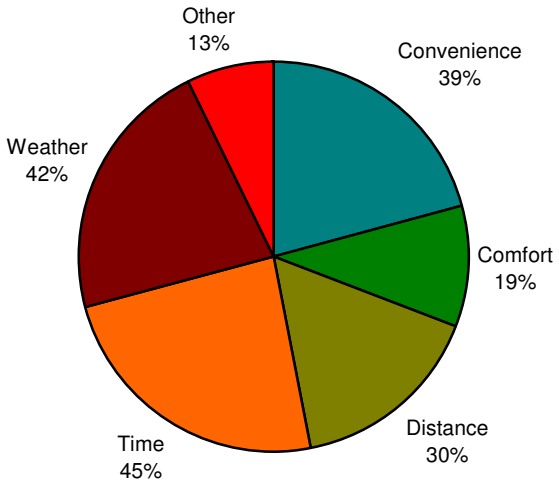
10A. WHAT OTHER TRAVEL MODES DO YOU USE TO GET TO THE METRO ORANGE LINE AND/OR BIKE PATH? [MULTIPLE RESPONSES]



	#	%
Bicycle	92	79%
Walk	35	30%
Metro Bus	16	14%
Metro Red Line	20	17%
Drive Alone	19	16%
Carpool	5	4%
Dropped-off	9	8%
Total Respondents	117	

BICYCLIST

10B. IF YOU EVER DRIVE ALONE, WHAT ARE THE REASONS YOU CHOOSE TO DO SO OVER BICYCLING OR WALKING? [MULTIPLE RESPONSES]

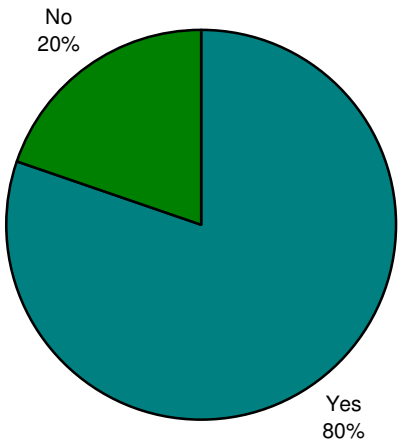


	#	%
Convenience	35	39%
Comfort	17	19%
Distance	27	30%
Time	40	45%
Weather	37	42%
Other	12	13%
Total Respondents	89	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

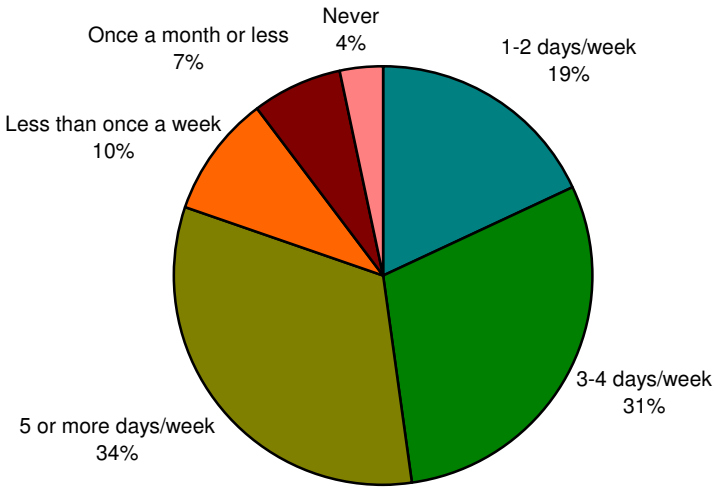
11A. IF YOU PREDOMINANTLY DRIVE ALONE, HAVE YOU CONSIDERED BICYCLING OR WALKING TO THE METRO ORANGE LINE?



	#	%
Yes	69	80%
No	17	20%
Total Respondents	86	

BICYCLIST

11B. HOW OFTEN DO YOU BICYCLE OR WALK ON THE ORANGE LINE BIKE PATH?

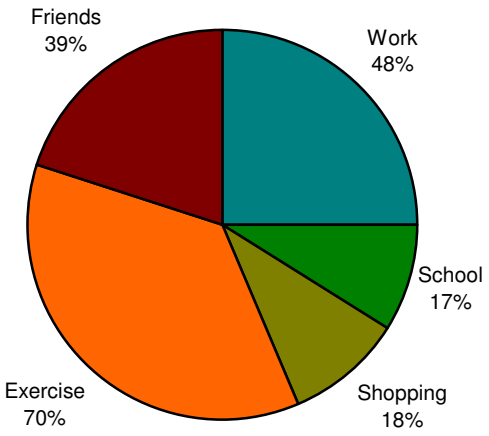


	#	%
1-2 days/week	21	19%
3-4 days/week	35	31%
5 or more days/week	38	34%
Less than once a week	11	10%
Once a month or less	8	7%
Never	4	4%
Total Respondents	113	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

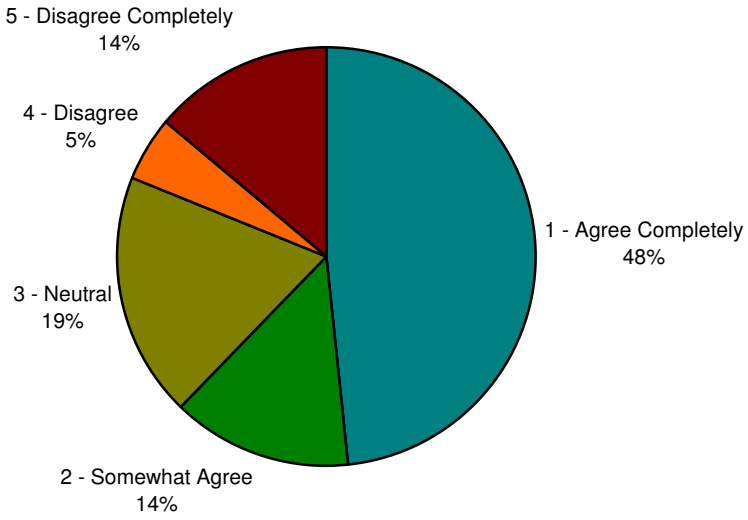
11C. IF YOU BICYCLE OR WALK ON THE ORANGE LINE BIKE PATH, WHAT TYPE OF TRIPS DO YOU MAKE ON THE BIKE PATH? [MULTIPLE RESPONSES]



	#	%
Work	52	48%
School	19	17%
Shopping	20	18%
Exercise	76	70%
Friends	42	39%
Total Respondents	109	

BICYCLIST

13. THE METRO ORANGE LINE HAS MADE ME MORE LIKELY TO TAKE TRANSIT.

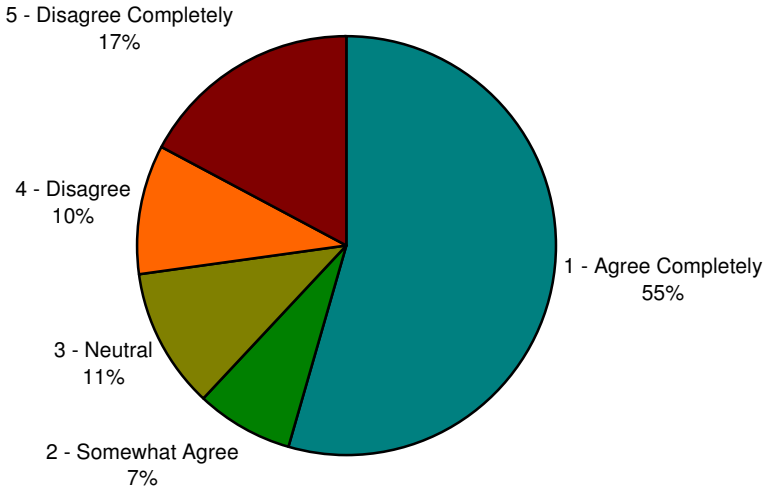


	#	%
1 - Agree Completely	59	48%
2 - Somewhat Agree	17	14%
3 - Neutral	23	19%
4 - Disagree	6	5%
5 - Disagree Completely	17	14%
Total Respondents	122	

** Due to rounding, percentages may not add to 100%*

BICYCLIST

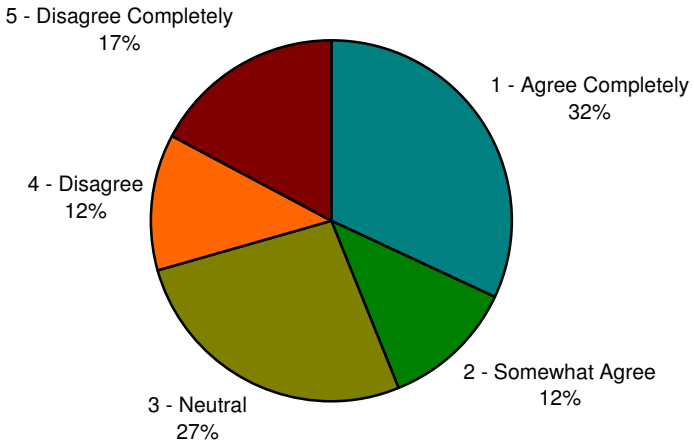
14. THE INCLUSION OF A BIKE PATH HAS INFLUENCED ME TO USE A BICYCLE FOR TRANSPORTATION.



	#	%
1 - Agree Completely	66	55%
2 - Somewhat Agree	9	7%
3 - Neutral	13	11%
4 - Disagree	12	10%
5 - Disagree Completely	21	17%
Total Respondents	121	

BICYCLIST

15. THE INCLUSION OF BICYCLE PARKING AT THE METRO ORANGE LINE BUS STATIONS HAS MADE ME MORE LIKELY TO USE MY BICYCLE TO GET TO THE TRANSIT STATION.



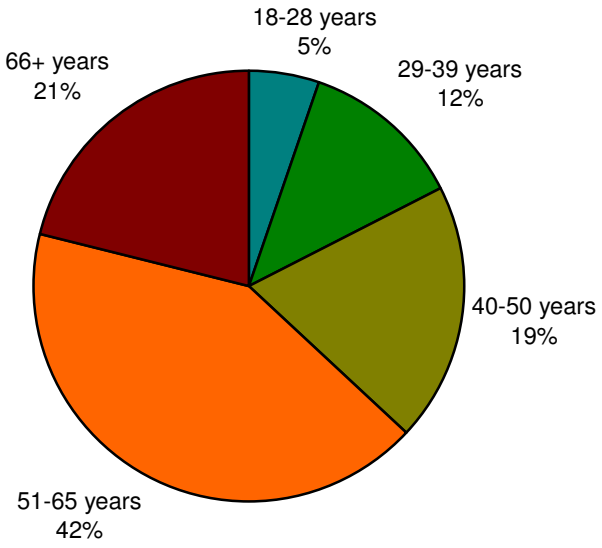
	#	%
1 - Agree Completely	37	32%
2 - Somewhat Agree	14	12%
3 - Neutral	31	27%
4 - Disagree	14	12%
5 - Disagree Completely	20	17%
Total Respondents	116	

** Due to rounding, percentages may not add to 100%*

APPENDIX F: DRIVE ALONE RESPONSES

DRIVE ALONE

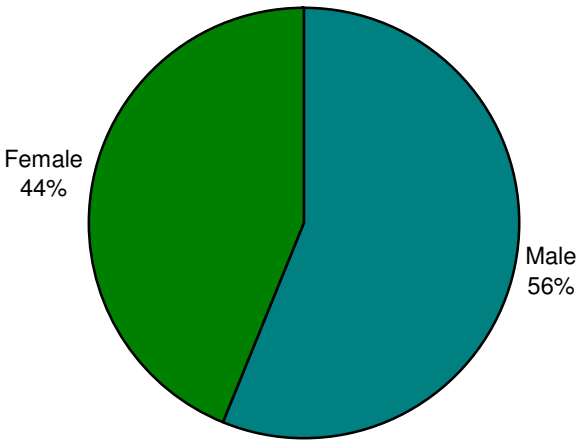
AGE



	#	%
18-28 years	3	5%
29-39 years	7	12%
40-50 years	11	19%
51-65 years	24	42%
66+ years	12	21%
Total Respondents	57	

DRIVE ALONE

SEX

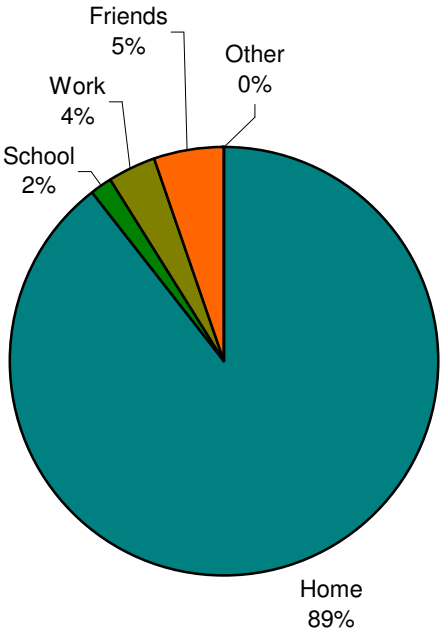


	#	%
Male	32	56%
Female	25	44%
Total Respondents	57	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

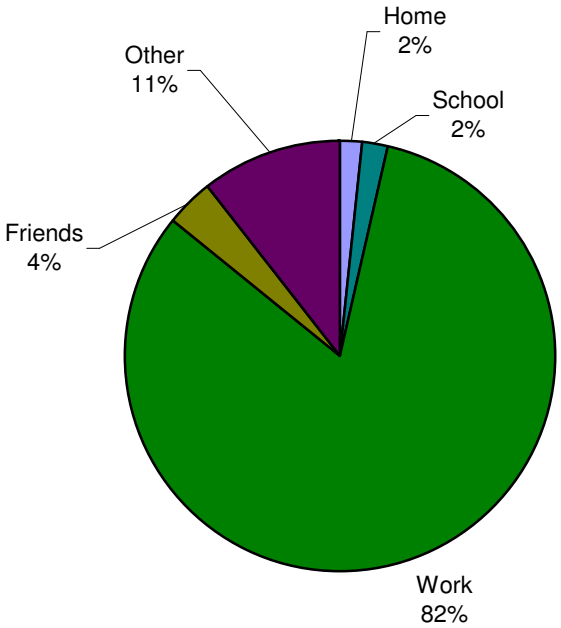
1. WHERE DID YOUR TRIP START TODAY?



	#	%
Home	51	89%
School	1	2%
Work	2	4%
Friends	3	5%
Other	0	0%
Total Respondents	57	

DRIVE ALONE

3. WHAT IS THE PURPOSE OF YOUR TRIP?

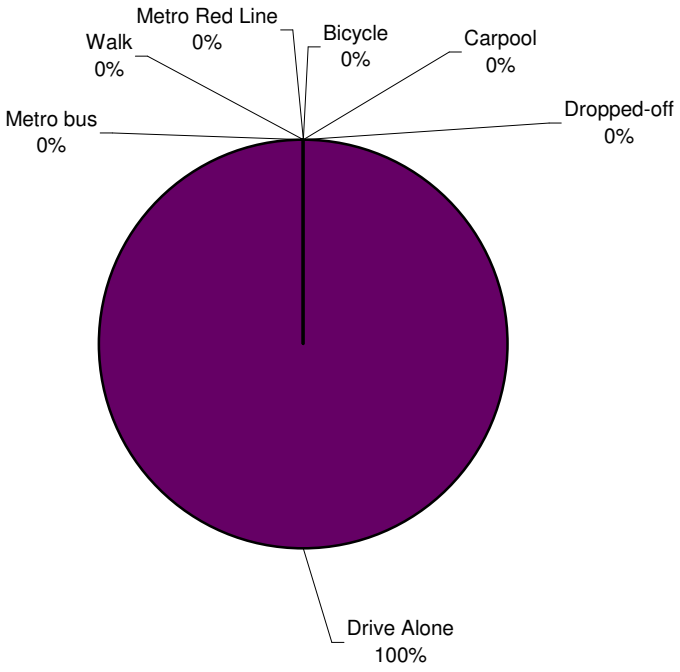


	#	%
Home	1	2%
School	1	2%
Work	47	82%
Friends	2	4%
Other	6	11%
Total Respondents	57	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

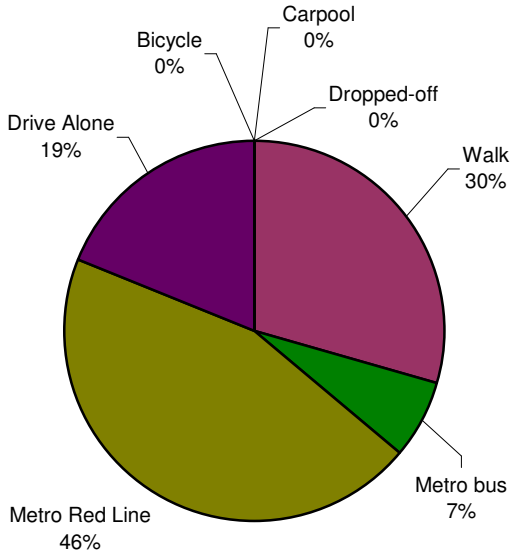
5. HOW DID YOU GET TO THE METRO ORANGE LINE OR BIKE PATH TODAY?



	#	%
Bicycle	0	0%
Walk	0	0%
Metro bus	0	0%
Metro Red Line	0	0%
Drive Alone	57	100%
Carpool	0	0%
Dropped-off	0	0%
Total Respondents	57	

DRIVE ALONE

6. HOW WILL YOU GET TO YOUR TRIP DESTINATION TODAY AFTER GETTING OFF THE METRO ORANGE LINE OR BIKE PATH?

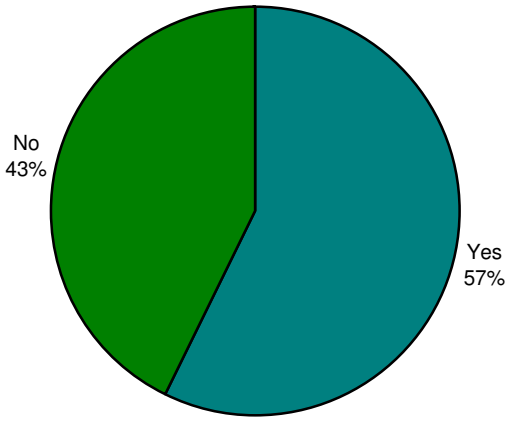


	#	%
Bicycle	0	0%
Walk	17	30%
Metro bus	4	7%
Metro Red Line	26	46%
Drive Alone	11	19%
Carpool	0	0%
Dropped-off	0	0%
Total Respondents	57	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

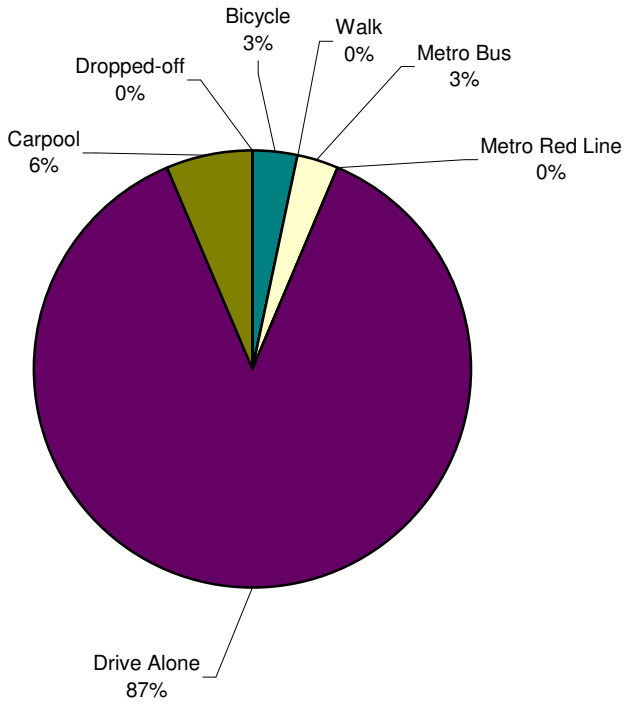
7A. DID YOU MAKE TODAY'S TRIP ANOTHER WAY BEFORE USING THE METRO ORANGE LINE OR BIKE PATH?



	#	%
Yes	32	57%
No	24	43%
Total Respondents	56	

DRIVE ALONE

7B. IF YES [TO 7A], HOW?

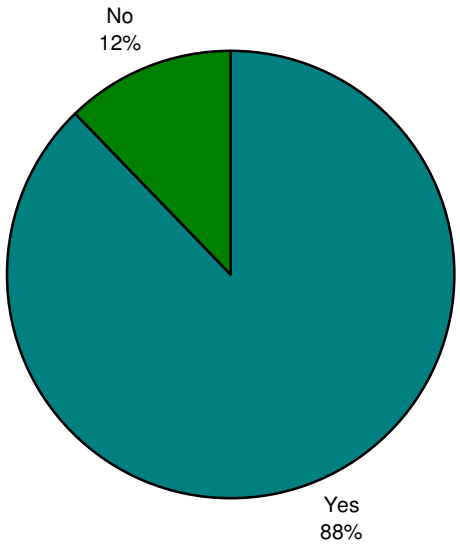


	#	%
Bicycle	1	3%
Walk	0	0%
Metro Bus	1	3%
Metro Red Line	0	0%
Drive Alone	27	87%
Carpool	2	6%
Dropped-off	0	0%
Total Respondents	31	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

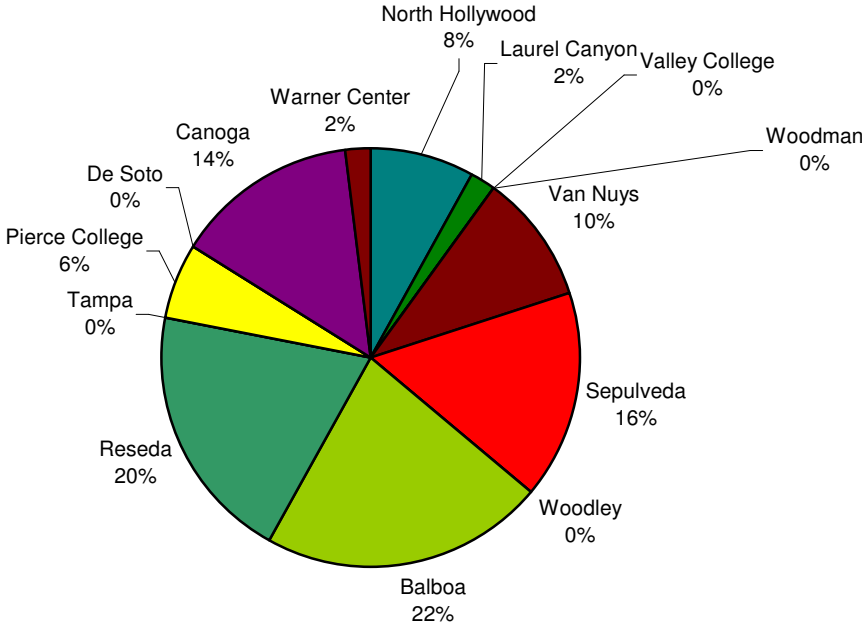
8A. ARE YOU USING THE METRO ORANGE LINE TODAY?



	#	%
Yes	50	88%
No	7	12%
Total Respondents	57	

DRIVE ALONE

8B. AT WHAT STATION DID YOU BOARD THE METRO ORANGE LINE?

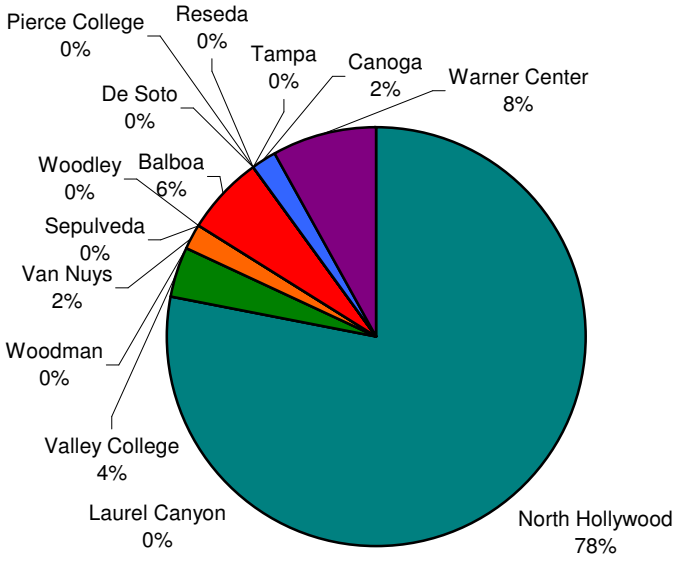


	#	%
North Hollywood	4	8%
Laurel Canyon	1	2%
Valley College	0	0%
Woodman	0	0%
Van Nuys	5	10%
Sepulveda	8	16%
Woodley	0	0%
Balboa	11	22%
Reseda	10	20%
Tampa	0	0%
Pierce College	3	6%
De Soto	0	0%
Canoga	7	14%
Warner Center	1	2%
Total Respondents	50	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

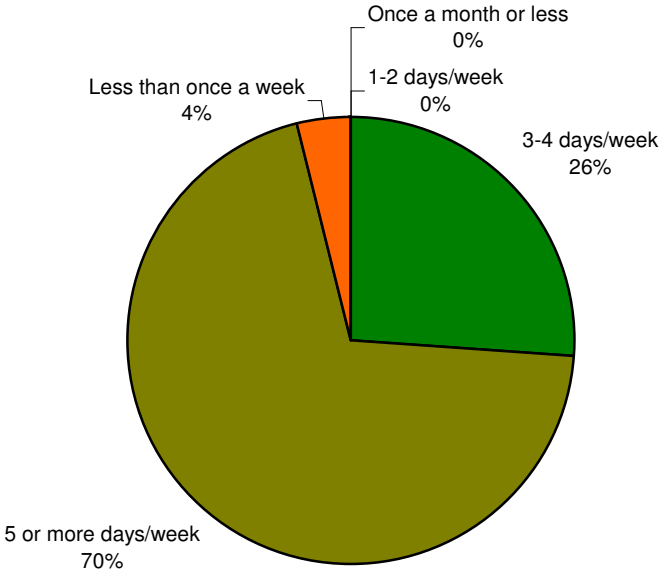
8C. AT WHAT STATION DID YOU EXIT THE METRO ORANGE LINE?



	#	%
North Hollywood	39	78%
Laurel Canyon	0	0%
Valley College	2	4%
Woodman	0	0%
Van Nuys	1	2%
Sepulveda	0	0%
Woodley	0	0%
Balboa	3	6%
Reseda	0	0%
Tampa	0	0%
Pierce College	0	0%
De Soto	0	0%
Canoga	1	2%
Warner Center	4	8%
Total Respondents	50	

DRIVE ALONE

8D. HOW OFTEN DO YOU RIDE THE METRO ORANGE LINE?

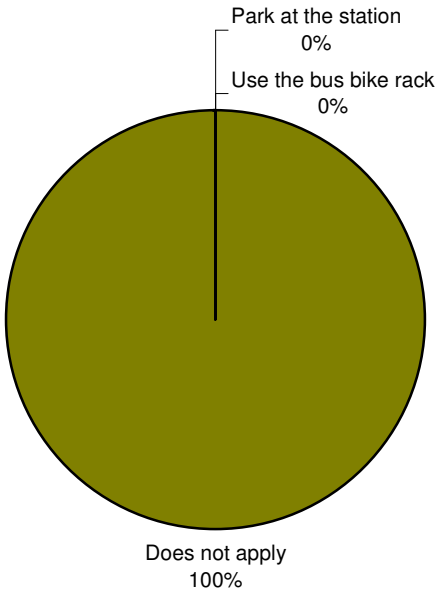


	#	%
1-2 days/week	0	0%
3-4 days/week	13	26%
5 or more days/week	35	70%
Less than once a week	2	4%
Once a month or less	0	0%
Total Respondents	50	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

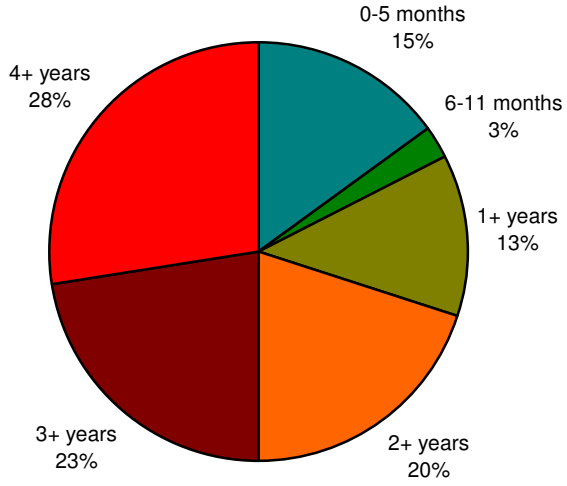
8E. IF YOU USED YOUR BIKE TO GET TO THE METRO ORANGE LINE, DID YOU...



	#	%
Park at the station	0	0%
Use the bus bike rack	0	0%
Does not apply	50	100%
Total Respondents	50	

DRIVE ALONE

8F. HOW LONG HAVE YOU BEEN USING THE METRO ORANGE LINE?

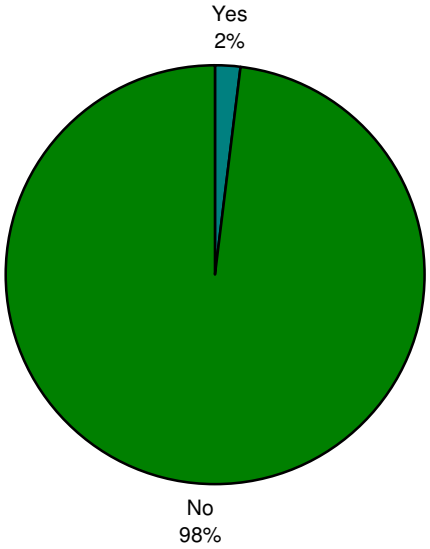


	#	%
0-5 months	6	15%
6-11 months	1	3%
1+ years	5	13%
2+ years	8	20%
3+ years	9	23%
4+ years	11	28%
Total Respondents	40	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

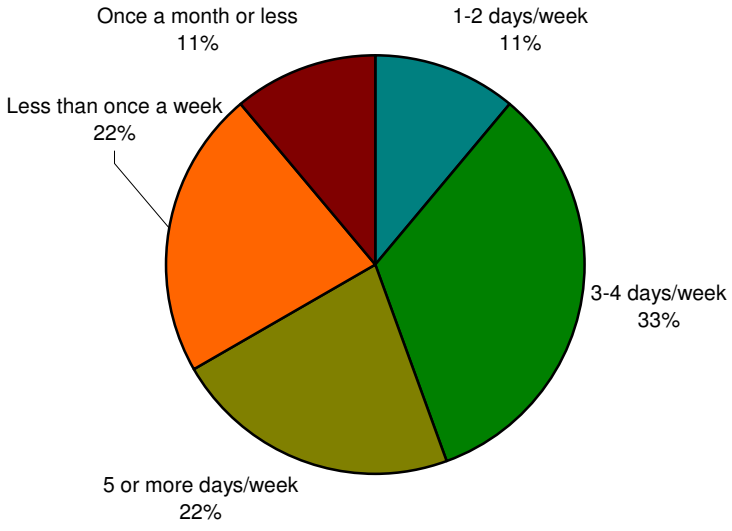
9A. ARE YOU USING THE METRO ORANGE LINE BIKE PATH TODAY?



	#	%
Yes	1	2%
No	48	98%
Total Respondents	49	

DRIVE ALONE

9D. HOW OFTEN DO YOU USE THE METRO ORANGE LINE BIKE PATH?

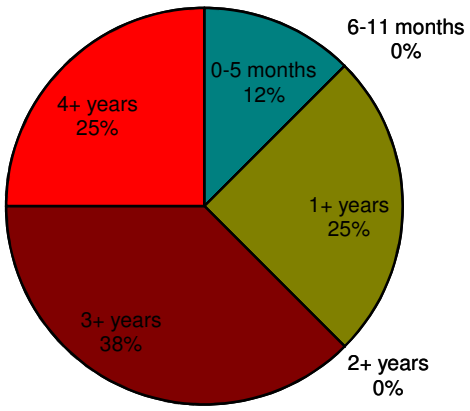


	#	%
1-2 days/week	1	11%
3-4 days/week	3	33%
5 or more days/week	2	22%
Less than once a week	2	22%
Once a month or less	1	11%
Total Respondents	9	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

9E. HOW LONG HAVE YOU BEEN USING THE METRO ORANGE LINE BIKE PATH?

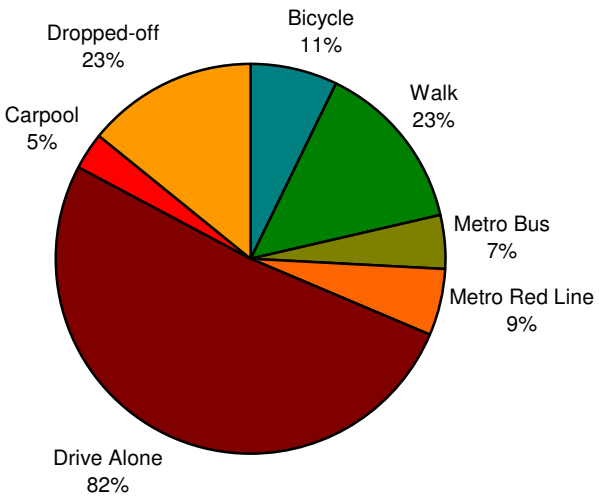


	#	%
0-5 months	1	13%
6-11 months	0	0%
1+ years	2	25%
2+ years	0	0%
3+ years	3	38%
4+ years	2	25%
Total Respondents	8	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

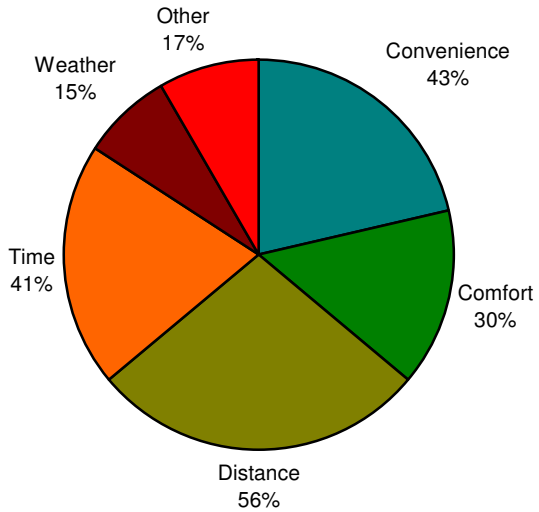
10A. WHAT OTHER TRAVEL MODES DO YOU USE TO GET TO THE METRO ORANGE LINE AND/OR BIKE PATH? [MULTIPLE RESPONSES]



	#	%
Bicycle	5	11%
Walk	10	23%
Metro Bus	3	7%
Metro Red Line	4	9%
Drive Alone	36	82%
Carpool	2	5%
Dropped-off	10	23%
Total Respondents	44	

DRIVE ALONE

10B. IF YOU EVER DRIVE ALONE, WHAT ARE THE REASONS YOU CHOOSE TO DO SO OVER BICYCLING OR WALKING? [MULTIPLE RESPONSES]

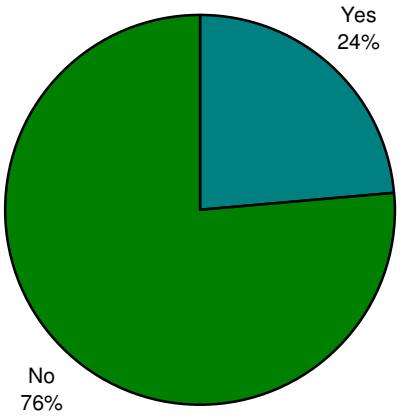


	#	%
Convenience	23	43%
Comfort	16	30%
Distance	30	56%
Time	22	41%
Weather	8	15%
Other	9	17%
Total Respondents	54	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

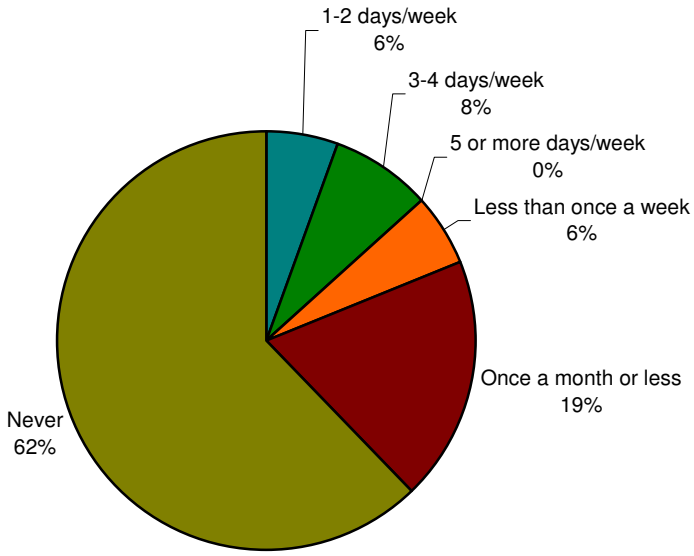
11A. IF YOU PREDOMINANTLY DRIVE ALONE, HAVE YOU CONSIDERED BICYCLING OR WALKING TO THE METRO ORANGE LINE?



	#	%
Yes	12	24%
No	39	76%
Total Respondents	51	

DRIVE ALONE

11B. HOW OFTEN DO YOU BICYCLE OR WALK ON THE ORANGE LINE BIKE PATH?

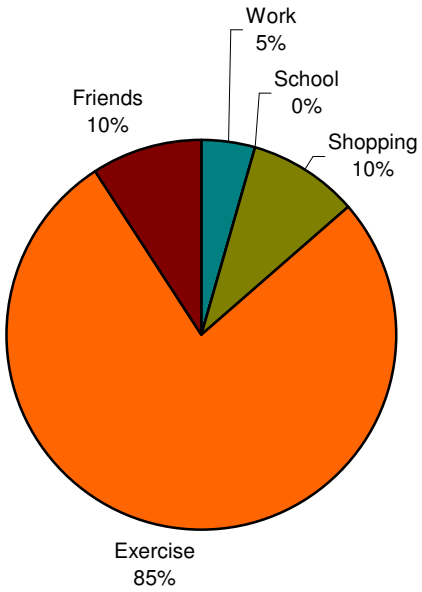


	#	%
1-2 days/week	3	6%
3-4 days/week	4	8%
5 or more days/week	0	0%
Less than once a week	3	6%
Once a month or less	10	19%
Never	33	62%
Total Respondents	53	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

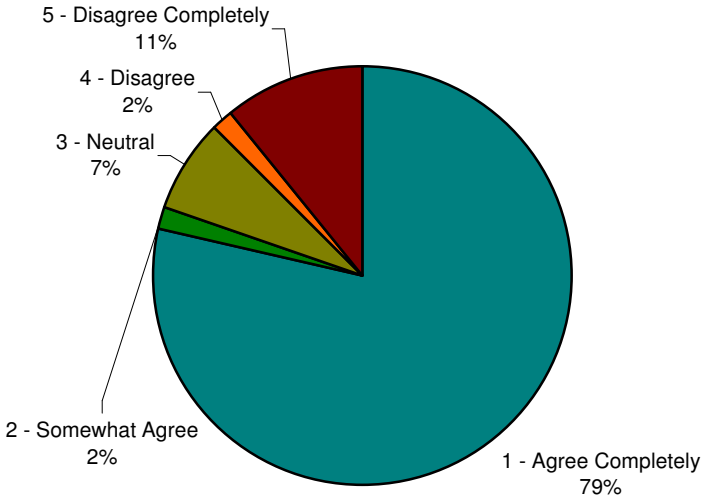
11C. IF YOU BICYCLE OR WALK ON THE ORANGE LINE BIKE PATH, WHAT TYPE OF TRIPS DO YOU MAKE ON THE BIKE PATH? [MULTIPLE RESPONSES]



	#	%
Work	1	5%
School	0	0%
Shopping	2	10%
Exercise	17	85%
Friends	2	10%
Total Respondents	20	

DRIVE ALONE

13. THE METRO ORANGE LINE HAS MADE ME MORE LIKELY TO TAKE TRANSIT.

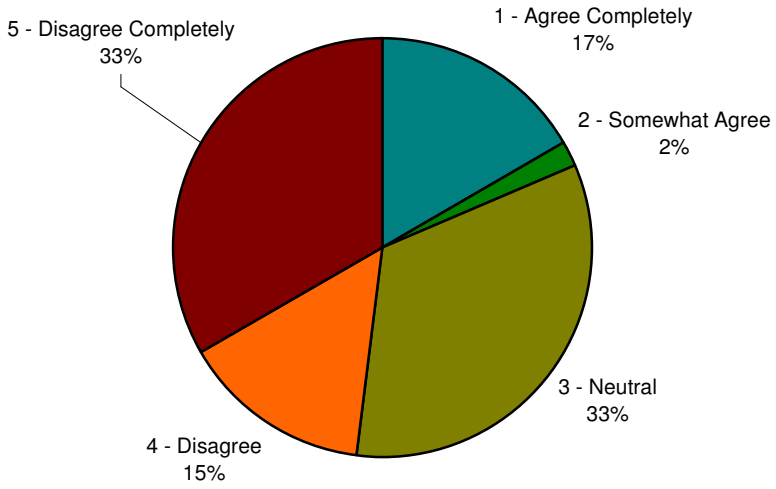


	#	%
1 - Agree Completely	44	79%
2 - Somewhat Agree	1	2%
3 - Neutral	4	7%
4 - Disagree	1	2%
5 - Disagree Completely	6	11%
Total Respondents	56	

** Due to rounding, percentages may not add to 100%*

DRIVE ALONE

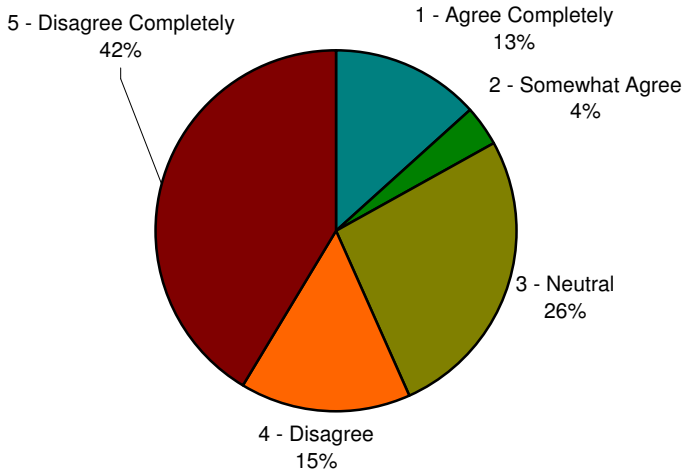
14. THE INCLUSION OF A BIKE PATH HAS INFLUENCED ME TO USE A BICYCLE FOR TRANSPORTATION.



	#	%
1 - Agree Completely	9	17%
2 - Somewhat Agree	1	2%
3 - Neutral	18	33%
4 - Disagree	8	15%
5 - Disagree Completely	18	33%
Total Respondents	54	

DRIVE ALONE

15. THE INCLUSION OF BICYCLE PARKING AT THE METRO ORANGE LINE BUS STATIONS HAS MADE ME MORE LIKELY TO USE MY BICYCLE TO GET TO THE TRANSIT STATION.



	#	%
1 - Agree Completely	7	13%
2 - Somewhat Agree	2	4%
3 - Neutral	14	26%
4 - Disagree	8	15%
5 - Disagree Completely	22	42%
Total Respondents	53	

** Due to rounding, percentages may not add to 100%*

Los Angeles County
Metropolitan Transportation Authority

One Gateway Plaza
Los Angeles, CA 90012-2952

213.922.9200 Tel
213.922.5259 Fax
metro.net

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