2013 Union Station Bike Counts

Counts Performed March 2013

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Introduction

Los Angeles County is in the midst of historic transportation changes: Measure R has enabled the largest rail transit construction program in decades, with new transit ridership only outpaced by a surge in bicycle ridership over the past several years enabled by buildout of the City's 2010 Bicycle Plan and County's 2012 Bicycle Master Plan. These complementary trends reinforce a policy shift away from the automobile in favor of greener and healthier modes. As the regional hub for this new transportation paradigm, bicycle access to and through Union Station is the lynchpin for increasing bike-rail transit, a significant and growing segment of overall ridership.

Metrolink, Amtrak, and Metro Rail services bring 60,000[1] individuals a day to Union Station. Each agency has basic bicycle accommodation, with some specifically adapting rolling stock to better accommodate bicycles on board. Metrolink's bike cars are the best local example of a transit agency encouraging bikes-on-board, while Metro Rail has removed select seats in some train cars to provide an area for people to stand with bicycles and other bulky items. Amtrak has struggled to keep pace with demand for on-board capacity. The current development of a Union Station Master Plan provides an opportunity to better integrate bike-rail transit across all agencies with needed upgrades in bicycle access and parking. Bike counts provide a baseline against which to gauge future trends and the effectiveness of policies to encourage bike-rail transit.

The Los Angeles County Bicycle Coalition (LACBC) organized the first Union Station bicycle count in March of 2013. With the help of over 45 volunteers, counts were conducted on every platform within Union Station. A total of 926 bicyclists were counted during the two days of data collection. Data was collected during three time periods: one weekday during the morning and afternoon, and one weekend day at midday. These time frames were selected to gather data reflecting peak commute hours during the workweek, as well as peak travel activity during the weekend.

Count data collected provides planners, engineers, educators and advocates with a set of baseline indicators that can be used when evaluating upcoming initiatives, projecting usage trends, and monitoring the use of current facilities. LACBC adapted screenline count methodology to Union Station's platform layout and collected data specifically applicable in a transit system setting.

About the Los Angeles County Bicycle Coalition

Since 1998, the Los Angeles County Bicycle Coalition (LACBC) has worked to build a better, more bikeable LA County. Through advocacy, education and outreach, the organization unites the diverse bicycling community behind the common purpose of making the Los Angeles region a safe and enjoyable place to ride. LACBC is the only membership-based nonprofit bicycle advocacy organization working on countywide

[1] http://www.metro.net/projects/LA-union-station/

policy and empowering local advocates to make change in their communities. LACBC has undertaken multiple policy campaigns to improve first and last-mile access to regional transit, including Amtrak, Metrolink, and Metro.

Count Objectives

Union Station is the hub of a five-county regional transit system, creating unique challenges and opportunities for bicycle access. Metrolink and Metro Rail provide excellent rapid transit over long distances, but may not reach within walking distance from customers' origins and destinations. Bicycles complement local transit in closing these gaps in service to extend the effective reach of the rail system to approximately three miles from each station, a 36-fold increase in service area versus a half-mile walking radius. Bicycles have the unique advantage of being compact enough to bring on board rail transit or park efficiently at secure station facilities and eliminate the transfer penalty of local shuttle service.

The 2013 Union Station Bicycle Count provides baseline data to understand how people currently use bicycles on board rail transit. Future counts will establish whether improvements, such as better and more predictable bike access on rail cars or more secure station parking affect bikes-on-board trends. (Note: Better parking facilities at origin stations would be expected to *decrease* the number of bicycles taken on board. Similarly, bikesharing between Union Station and downtown Los Angeles will greatly reduce the need to carry private bikes on board for those traveling to downtown.) LACBC expects this data to inform policy decisions relating to the Union Station Master Plan, Amtrak Pacific Surfliner on-board capacity, Metrolink bike cars, and Metro Rail.

Count Methodology

LACBC adapted the screenline methodology from *Conducting Bicycle and Pedestrian Counts: A Manual for Jurisdictions in Los Angeles County and Beyond* ("the Manual" hereafter) to meet the needs of a train station count. Alterations to standard methodology are explained below.

Count Locations

Given the layout of Union Station, the count required a total of 16 locations to be covered by a volunteer in order to ensure all bicyclists were counted. Counts of bicyclists using the Red and Gold Lines used a simple screenline methodology, with the addition that Gold Line volunteers tracked which direction trains were going. Counts of bicyclists using Metrolink and Amtrak required more volunteers to count for each train, because of these agencies' more complicated operations. Each platform serves two tracks (e.g. 7 and 8), with each track boarding up to two trains (e.g. 7A and 7B). Each platform has two ramps and a stair. Platforms 3 through 10 are connected at the south end by a walkway allowing inter-platform transfers without descending into the tunnel.

Volunteer positions are depicted by stars in Figure 1. Screenlines were established at each entrance to the platform. Volunteers noted which trains passengers boarded or alighted before or after passing through the screenline.

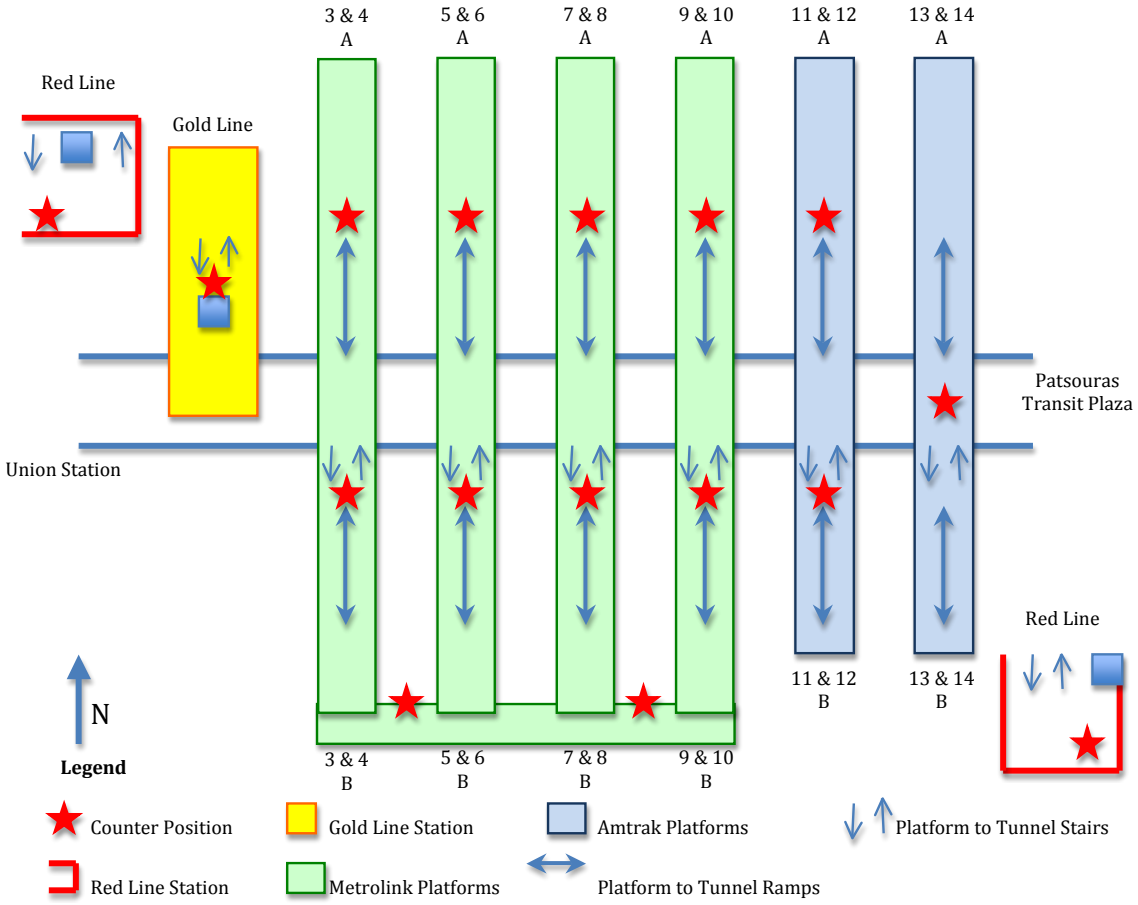

Figure 1: Los Angeles Union Station Layout

Count Dates and Times

The Manual suggests that two morning and two afternoon count periods take place during peak weekday traffic hours (7am – 9am, 4pm – 6pm), and one week end count period from 11am – 1pm. The LACBC used available resources to conduct counts as follows:

- Tuesday, March 19th, 2013
  - 6:30am – 9:30am
  - 4pm – 7pm
- Saturday, March 23rd, 2013
  - 10am – 1pm

Count durations were extended by an hour to ensure major commuter trains were incorporated into the count.

Count Procedure
Volunteers were provided with detailed count instructions before the counts began. Attributes including gender and whether the bicyclist was using a folding bike were recorded for each individual.

Red Line. A screenline was established on the mezzanine level of each subway portal, allowing volunteers to record whether bicyclists used the stairs, escalators, or elevator from one location. Bicyclists were counted in 15-minute increments.

Gold Line. A screenline was established on the platform level at the top of the stairs and elevator, allowing volunteers to record whether the bicyclists were traveling to or from East LA or Pasadena. Bicyclists were counted in 15-minute increments.

Metrolink/Amtrak. Screenlines were established at the entrance of each platform. Each platform required two volunteers, each positioned at the top of one of the ramps. One of these volunteers also monitored the stairs. Two additional volunteers were positioned to monitor screenlines on the south end of each platform to record transfers. (See Figure 1 above) Bicyclists were recorded boarding and alighting each train (rather than in standard 15-minute increments). Volunteers recorded the train number and time of arrival or departure for each train in addition to whether the Metrolink train had a bike car.

See Appendix 2 for count forms used for each location.

Count Results

Bicyclists Observed

A total of 926 bicyclists were counted boarding or arriving via services at Union Station. As Figure 2 shows, the majority of bicyclists arrived via Metro Rail services, with 368 using the Red/Purple Lines and 308 using the Gold Line. The Metrolink and Amtrak systems attracted 226 and 24 bicyclists respectively. Detailed count results can be found in Table A-1 in Appendix 1.

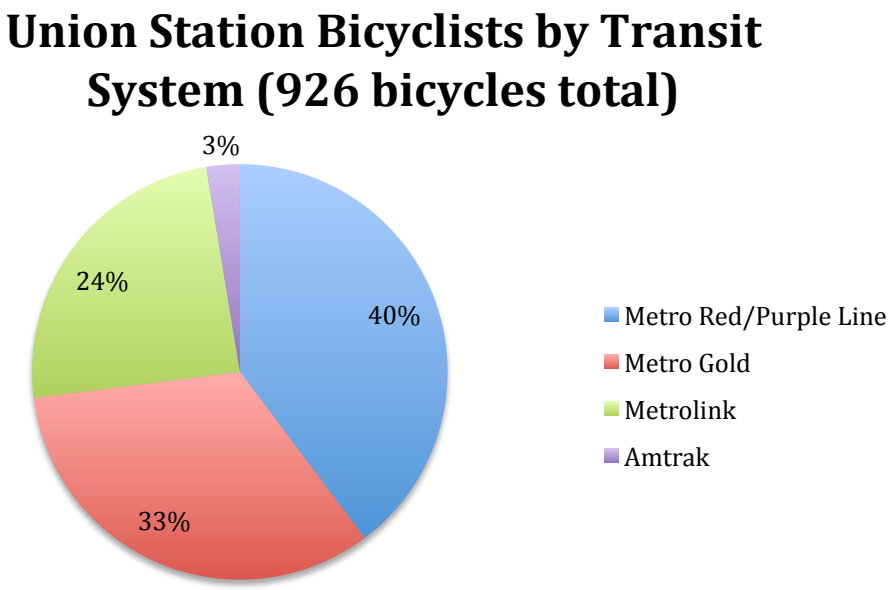

Figure 2: Prevalence of Transit Service Used by Bicyclists

When breaking down the count numbers by count period, as depicted in Figure 3, we see the same trend of Metro Rail riders out numbering those entering Union Station via other services. The count totals from weekday mornings are very similar to those observed on weekday afternoons for most transit services, which would be expected since the count periods were selected to observe a significant amount of commuter traffic. This is further reflected by the totals of 377 bicyclists observed on the weekday morning, and 379 in the afternoon. Values from the Amtrak do not fit this trend, as 7 times more bicyclists were observed in the afternoon than in the morning count periods.

Weekend counts yielded a total of 170 bicyclists. With 151 of those counted accessing Union Station via Metro Rail services, the data suggests that weekend visitors tend to be from local communities rather than farther communities connected by Metrolink.

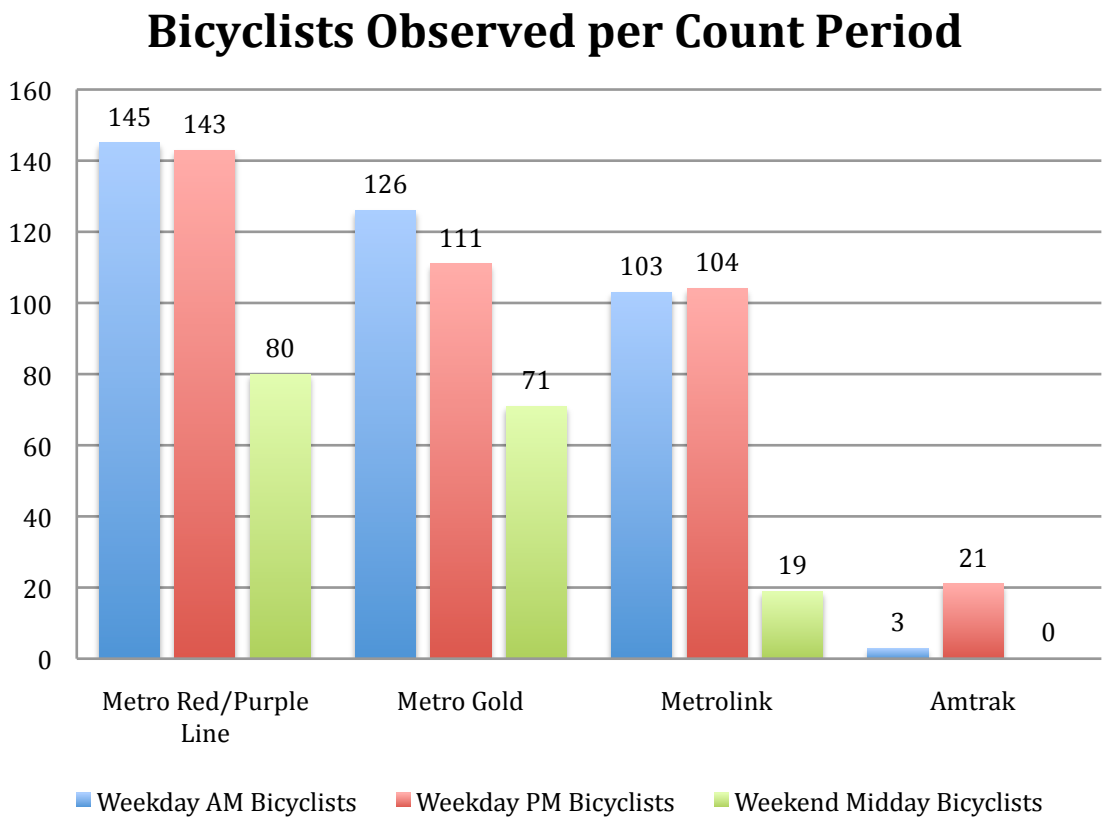

Figure 3: Bicyclists per Count Period

Gender of Observed Bicyclists

Only 9% (86) of the 926 bicyclists counted were female. However, the proportion of female bicyclists observed varied depending on the count period and transit system. When looking at total count values, 13% of bicyclists using the Metro Red/Purple Lines, 7.8% of Gold Line users, and 5.6% of Metrolink and Amtrak users were females.

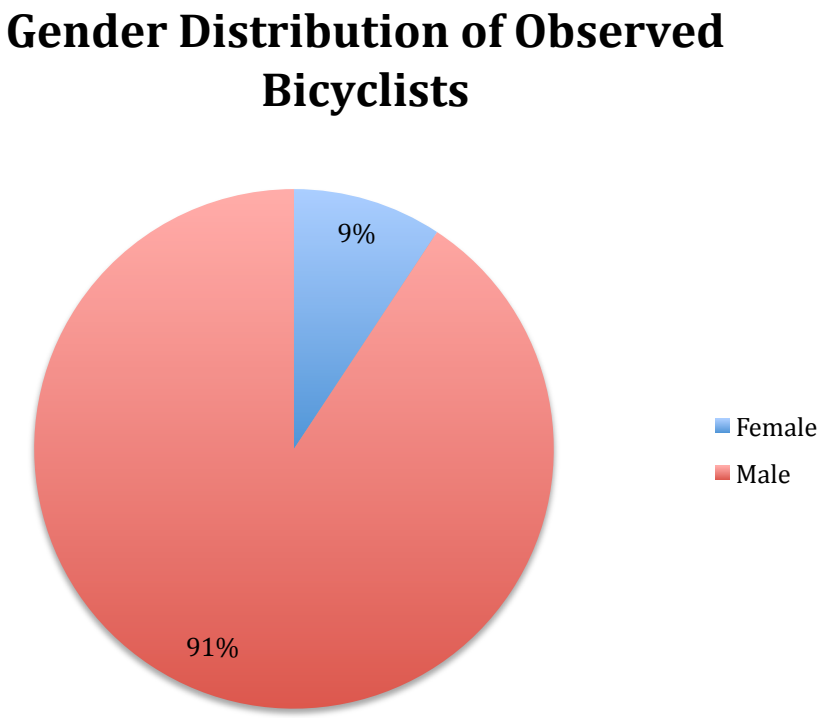

Figure 4: Gender of Observed Bicyclists

Breaking down the female bicyclist data by count period, we see that the amount of women bicyclists on the Metro Red/Purple lines vary slightly from 11.9% to 12.4%. The Metro Gold Line experienced a wide variance in women bicyclists, with a low of 3.9% on a weekday morning, and a high of 12.7% midday on a weekend. Metrolink and Amtrak numbers were combined and showed a range of 5% (1 of 19) to 5.7% (6 of 106).

Tables A-2 through A-5 provide a breakdown of female bicyclists per count period.

Folding Bicycles

Despite the convenience and space saving ability of folding bicycles, only 19 (2%) of the total bicyclists counted were utilizing this type of bicycle. Of the total folding bikes, 13 were counted using Metro Rail, and 6 were using Metrolink or Amtrak.

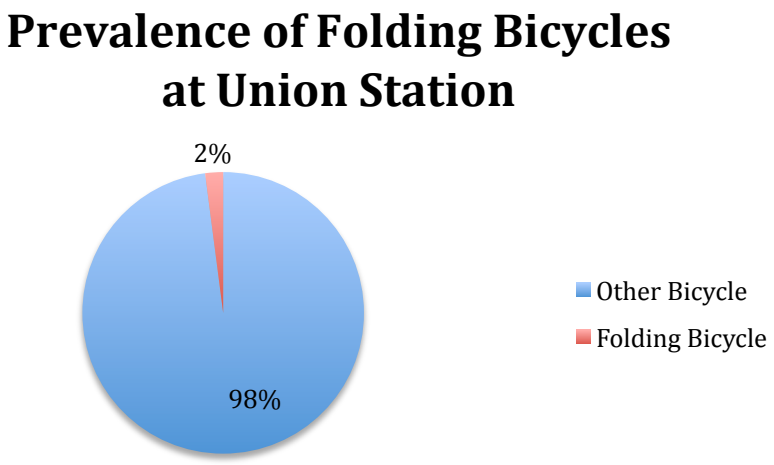

Figure 5: Folding Bicycles Observed

Metro Rail: Bicyclist Access and Exit Practices

At Union Station, one can access the Red/Purple Line platforms underground by stairs, elevators, and escalators. Over half of bicyclists use the escalators to transport their bicycles to and from the rail platforms. Just more than a quarter of bicyclists use the stairs, and the remaining access the platforms via elevators.

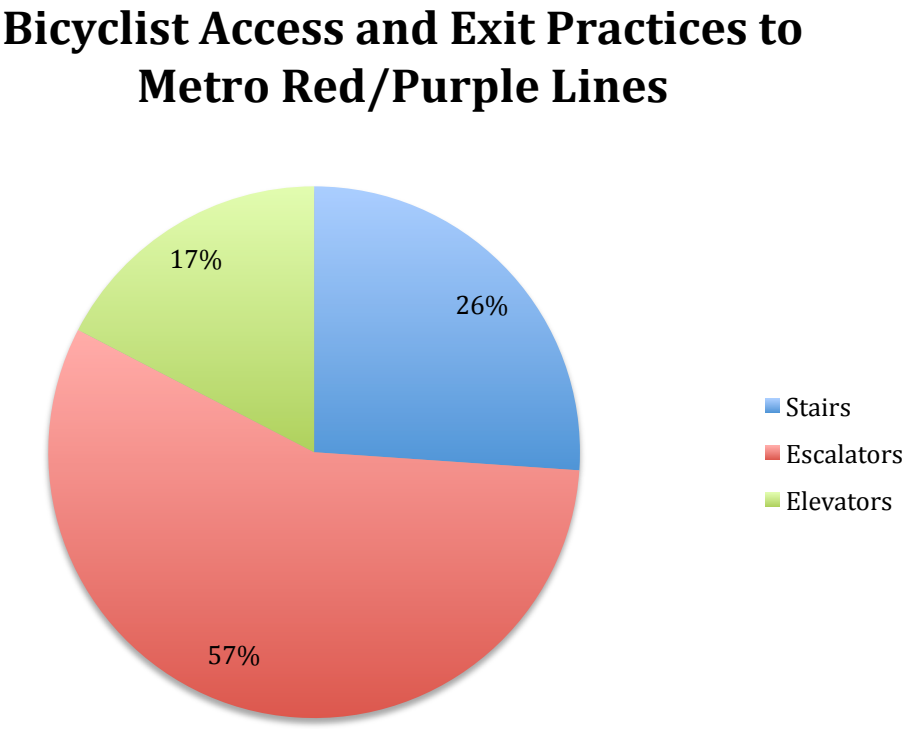

Figure 6: Bicycle Access and Exit Practices on Metro Red and Purple Lines

The Gold Line is only accessible by stairs and elevators. As such, just over 80% of bicyclists opt to use the stairs, as opposed to waiting for the elevator to get onto the platform.

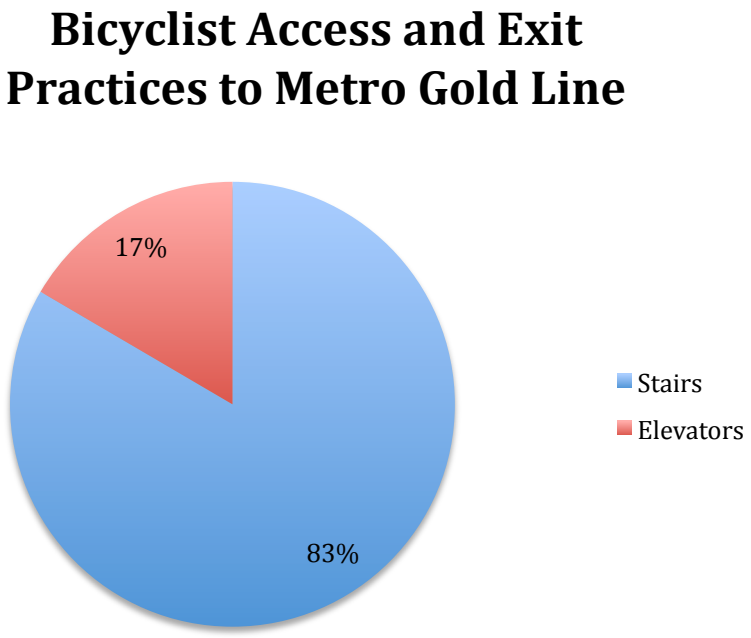

Figure 7: Bicycle Access and Exit Practices on Metro Gold Line

Metrolink Bicycle Car Usage

An average of 2.5 bicyclists per train were counted at Union Station using the Metrolink System. However, the averages vary quite significantly when calculating the amount of bicyclists per train on trains with and without a designated Bike Car. Trains without a Bike Car averaged 2.1 bicyclists per train, while those with a Bike Car experienced 3.4 bicyclists per train.

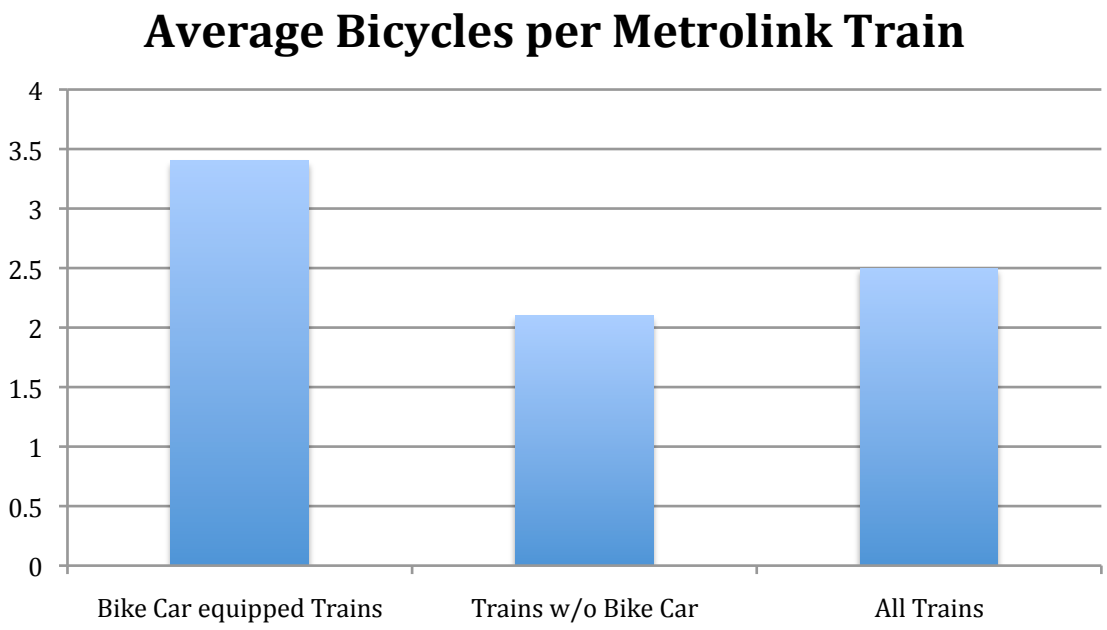

Figure 8: Bicycles per Metrolink Train

Data representing train and bicyclist totals can be found in Table A-8.

Arrivals and Departures

In total, 472 bicyclists were counted arriving to Union Station, while 454 were observed departing. Interestingly, 203 bicyclists were counted arriving during the weekday morning period, and 203 bicyclists were counted departing during the afternoon period. Morning departures and afternoon arrivals were counted at 174 and 176 respectively.

When looking at the arrivals and departures of individual services, the numbers vary more. Even so, each service shows a correlation between morning and afternoon trends, where if morning arrivals are more than departures, afternoon departures are more than arrivals and vice-a-versa.

Tables A-10 through A-13 provide details on the arrival and departure rates per count period for each transit system.

Data Analysis

- Of 926 bicyclists counted, only 9% were women. This suggests bicycling remains a male dominated mode of transportation as further observed by the 2011 L.A. Bike Count (17% female)[2], and the 2013 Spring Street Bicycle

[2] *L.A. Bike Count.* Los Angeles County Bicycle Coalition. 2011.

Count (14% female)[3]. Specific policies promoting female ridership may reduce this gender disparity.

- Though against Metro's rules[4], more than half of bicyclists use the escalators as seen in Figure 6, to access/exit the subway. Bicyclists appear to value the convenience and speed of escalators over slower elevators and more difficult stairs.

- On Metrolink trains, the presence of a Bike Car correlated with a 60% increase in bicyclist ridership when compared to trains without such accommodations.

- The lack of variance in commute period arrivals and departures suggests that a majority of bicyclists are indeed commuters. During the morning count, 203 bicyclists arrived at, while 174 departed from Union Station. The afternoon count was effectively the opposite of that, with 203 bicyclists departing and 176 arriving.

Recommendations

Although only a baseline count, the data show clear demand for bike-rail transit integration. All agencies operating at Union Station have removed restrictions on carrying bicycles on board trains and some have begun adapting rolling stock to accommodate bikes-on-board. These recommendations will further increase the utility of bicycles as a first and last-mile solution and should be pursued as a component of increasing ridership across the transit system:

1. Improve on-street bike infrastructure connections to rail stations. FTA guidance allows bikeways within three miles of a station to be an eligible transit capital project. Metro should include station access in all new transit projects and prioritize bicycle network development around existing stations system-wide. Special attention to facilities that are safe and attractive for women (i.e. separated from traffic) are important to increase the demographic range of bicyclists.
2. Improve internal circulation at Union Station for those carrying bicycles. Bicyclists are particularly sensitive to level changes and will take the route that requires the least physical effort. Given the overwhelming use of escalators to exit the Red Line, Metro should revisit its policy prohibiting this common practice or defer enforcement until convenient alternatives are provided, including stair channels and/or faster and larger elevators. Current elevators are often unable to efficiently serve wheelchair users, passengers with strollers and/or luggage, and bicyclists.

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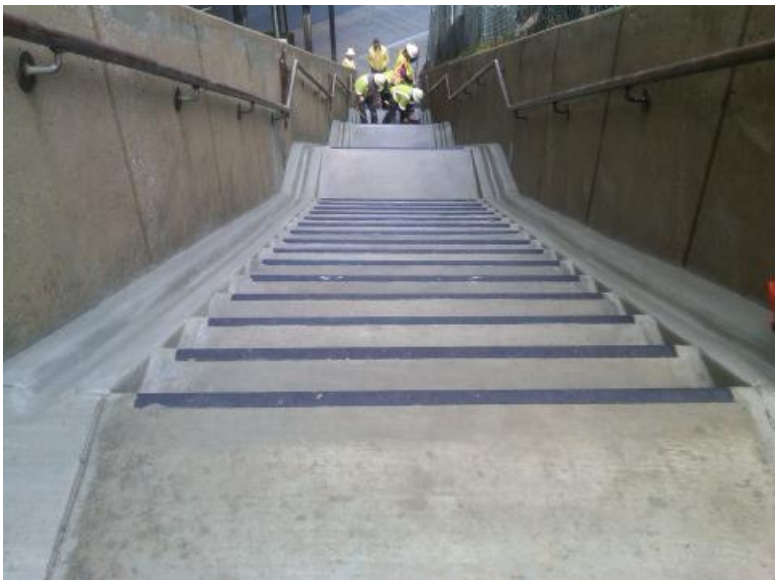
[3] *Spring Street Bicycle Count: 2012/2013*. Parklet Studies. 2013.
[4] http://www.metro.net/bikes/bikes-metro/

3. Design new transit stations with consideration for bicycle access to platforms. Station platforms above or below-grade should include stair channels, and wider and less steep stairs. All ADA-accessible station elements should be designed for dual purpose.

Picture 1: Such an add-on can be used to accommodate bicyclists on existing stairways.

Photo Credit: Emily Naparalla, freshtilt.com



Picture 1: Bicycle channels can also be directly incorporated into stairway design.

Photo Credit: Washington Metro Area Transit Authority, planitmetro.com

4. Improve bike parking at origin stations. Secure long-term parking allows commuters to avoid bringing their bicycles on board trains, provided that strong last-mile connections exist. Wherever demand for long-term parking is demonstrated with bike lockers, a bike center/mobility hub should be constructed. Modular bike station units provide a cost-effective alternative to custom construction for suburban stations. To the extent feasible, secure parking should be available on-demand instead of monthly rentals to enable more flexible travel options.
5. Improve bike parking at Union Station. The count demonstrates a strong demand for Union Station as a point-of-entry into the Metro Rail system and for Metrolink reverse-commute service. As Union Station itself continues to develop into a destination, both short-term and long-term secure bike parking will be needed. A consolidated bike center could provide both functions efficiently and should be pursued as part of the Union Station Master Plan.
6. Install bike share at Union Station. Bike share, combined with on-street infrastructure will effectively close the last-mile gap to downtown. Careful management and bike distribution will be needed to accommodate unbalanced demand during commute periods.
7. Standardize deployment of Metrolink Bike Cars to improve reliability. Bike Cars are an effective way to encourage bicycle use, particularly for trips originating and ending at suburban stations. Metrolink should seek to standardize one Bike Car per train and consistently locate Bike Car immediately behind locomotive so that customers know where to wait on the platform and speed boarding.
8. Promote folding bicycles as demand for bike access exceeds capacity. As bicycling grows countywide, the potential exists for bike-rail ridership to increase exponentially. Programs to promote the use of folding bicycles can mitigate this demand.
9. Conduct future bike counts at Union Station and system-wide. As bicycle policies change and accommodations improve, bike counts will measure the effectiveness of these investments. Additionally, bike parking occupancy surveys and on-board bike counts will provide complementary data on overall system utilization.

Appendix 1: Data Tables

Table A-1: Bike Distribution Amongst Union Station Service Providers

Transit System	Platform Range	Total Bicyclists	Weekday AM Bicyclists	Weekday PM Bicyclists	Weekend Midday Bicyclists
Metro Red/Purple Line	West and East Portals	368	145	143	80
Metro Gold Line	1A/2A	308	126	111	71
Metrolink System	3A/B – 9A/B	226	103	104	19
Amtrak	10A/B – 12A/B	24	3	21	None Observed
Total		926	377	379	170

Table A-2: Total Female Bicyclists

Transit System	Platform Range	Total Bicyclists	Female Bicyclists	Percentage Female
Metro Red/Purple Line	West and East Portals	368	48	13.0%
Metro Gold Line	1A/2A	308	24	7.8%
Metrolink + Amtrak	3A/B – 12A/B	250	14	5.6%

Table A-3: Female Bicyclists by Observation Period – Weekday AM

Transit System	Platform Range	Weekday AM Bicyclists	Female Bicyclists	Percentage Female
Metro Red/Purple Line	West and East Portals	145	18	12.4%
Metro Gold Line	1A/2A	126	5	3.9%
Metrolink + Amtrak	3A/B – 12A/B	106	6	5.7%

Table A-4: Female Bicyclists by Observation Period – Weekday PM

Transit System	Platform Range	Weekday PM Bicyclists	Female Bicyclists	Percentage Female
Metro Red/Purple Line	West and East Portals	143	17	11.9%
Metro Gold Line	1A/2A	111	10	9.0%
Metrolink + Amtrak	3A/B – 12A/B	125	7	5.6%

Table A-5: Female Bicyclists by Observation Period – Weekend Midday

Transit System	Platform Range	Weekend Midday Bicyclists	Female Bicyclists	Percentage Female
Metro Red/Purple Line	West and East Portals	33	4	12.1%
Metro Gold Line	1A/2A	71	9	12.7%
Metrolink + Amtrak	3A/B – 12A/B	19	1	5.3%

Table A-6: Total observed Folding Bike Prevalence

Transit System	Platform Range	Total Bicyclists	Folding Bikes	Percentage Folding
Metro Red/Purple Line	West and East Portals	368	4	1.1%
Metro Gold Line	1A/2A	308	9	2.9%
Metrolink + Amtrak	3A/B – 12A/B	250	6	2.4%

Table A-7: Bicyclist Access and Exit Practices to Metro Rail Lines

	Red/Purple Lines	Gold Line
Stairs	96	257
Escalators	208	n/a
Elevators	64	51
Total Bicyclists	368	308

Table A-8: Metrolink Bike Car Usage

	Trains	Bicycles	Average Bicycle/Train
Bike Car equipped Trains	28	96	3.4
Trains w/o Bike Car	62	130	2.1
Total	90	226	2.5

Table A-9: Bicyclist Arrival and Departures from Union Station

All Trains	Bike Arrivals	Bike Departures
Weekday Morning	203	174
Weekday Afternoon	176	203
Weekend	93	77

Table A-10: Bicyclist Arrival and Departures from Union Station – Metro Red/Purple Line

Red/Purple	Bike Arrivals	Bike Departures
Weekday Morning	53	92
Weekday Afternoon	73	70
Weekend	37	43

Table A-11: Bicyclist Arrival and Departures from Union Station – Gold Line

Gold	Bike Arrivals	Bike Departures
Weekday Morning	80	46
Weekday Afternoon	45	66
Weekend	44	27

Table A-12: Bicyclist Arrival and Departures from Union Station – Amtrak

Amtrak	Bike Arrivals	Bike Departures
Weekday Morning	0	3
Weekday Afternoon	16	5
Weekend	n/a	n/a

Table A-13: Bicyclist Arrival and Departures from Union Station – Metrolink

Metrolink	Bike Arrivals	Bike Departures
Weekday Morning	70	33
Weekday Afternoon	42	62
Weekend	12	7

Appendix 2: Bicycle Count Form

Date: ________________ Time: ___________ AM/PM to ___________ AM/PM

Volunteer Name: __________________________ Page # ____ of ____

Metrolink and Amtrak

Train Info:	Bicyclists: *Use tally marks* ~~||||~~ ~~||||~~ ||
Metrolink/Amtrak Arriving/Departing Train # _______ Time: ________ Platform: ________ A / B Bike Car? Y / N	
Metrolink/Amtrak Arriving/Departing Train # _______ Time: ________ Platform: ________ A / B Bike Car? Y / N	
Metrolink/Amtrak Arriving/Departing Train # _______ Time: ________ Platform: ________ A / B Bike Car? Y / N	
Metrolink/Amtrak Arriving/Departing Train # _______ Time: ________ Platform: ________ A / B Bike Car? Y / N	
Metrolink/Amtrak Arriving/Departing Train # _______ Time: ________ Platform: ________ A / B Bike Car? Y / N	

Additional Data (mark above AND here):

Female:	
Folding Bike:	