

# **Gold Line System Analysis**

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June 15, 2004

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## Gold Line Introduction

Up until the 1950's, public rail transportation connected Pasadena to Los Angeles. Since the dismantling of that system, the Los Angeles County Metropolitan Transportation Authority has created a regional transportation plan that uses rail as the backbone of a new transit system. The Red Line, the Blue Line, and the Green Line have created a partial network. The newest addition to this network is the Gold Line.

The Gold Line is a light rail system that runs from Union Station in downtown Los Angeles to east Pasadena. It is a 13.7 mile stretch of rail that uses a previous Southern Pacific rail line. The route has 13 stops; the commute from east Pasadena to

downtown Los Angeles is 36 minutes. Once the riders reach Union Station, they can connect to the entire Los Angeles area using rail transit and buses.

The Gold Line opened June 26<sup>th</sup> 2003 with a daily ridership projection of 26,000 to 32,000 people per day (MTA). The system cost 859 million dollars, generated from state and local money.



Figure 1

The Gold Line provides light rail service in an area that has never had light rail before. The residents of the area are used to the convenience of freeways and the independence provided by automobiles. Because of the time frame in which Southern California was developed, the region is primarily designed around the automobile. It is generally the most attractive transportation mode, and new transportation modes must compete with the automobile. The automobile can provide freedom of choice, time savings, and versatility. However, automobile use has negative external effects such as air pollution and consumption of fossil fuels, and congestion.

One other type of a negative effect of automobile dependence is cost. Commuters feel that the car is a necessity, so they can be trapped. Since many residents in Southern California consider the auto a necessity, purchase price and insurance cost are not weighted as heavy as other costs. Transit ticket fare is often compared to only gas and parking price. This comparison does not look at the entire direct cost of automobile use.

In order for one mode of transportation to be chosen over another, it has to be competitive in terms of cost, time, and convenience. The question for planners is the degree in which the Gold Line is competitive with the automobile.

The Gold Line route, running from Pasadena, an urban hub in Southern California, to downtown Los Angeles, seems like an ideal alignment for rail. Before the light rail system was built, the Los Angeles County Metropolitan Transportation Authority forecast 26,000 to 32,000 trips would be generated per day. The ridership in the first 6 months of operation ranged between 12,000 and 18,000 trips per day. This analysis seeks to better understand the ridership performance of the system. We began this process by asking questions about who is riding the Gold Line. Data on

demographics and car availability helped us understand this issue. Station boardings and alightings were studied to find out patterns of use, by station. Station access was studied to see availability of modes that connect to the station. Lastly, the report concludes with a series of issues and opportunities and the evaluation of a series of alternative strategies to increase ridership.

## **Literature Review on Transit Oriented Development**

Although other reports focus on transit-oriented development (TOD) potentials, this brief review provides an introduction to the subject. During the past decade there has been a shift in consumer preferences, employer location strategies, and transportation planning, and at the convergence of these trends is a new style of development called TOD. Many predictions have been made about whether TOD is going to be successful. Some analysts believe that the amount of hype around TOD far exceeds the progress to date. But others disagree and point out the successful places where TODs have proven effective.

Many major metropolitan areas are planning, designing or constructing new transit project at this time. Whether it is light rail, rapid bus or commuter rail, the transit boom offers these regions the opportunity to create a new armature for growth and development that is oriented to transit service. Demographers estimate that as much as 30 percent of the demand for housing is for denser, walkable, mixed-use communities and that less than 2 percent of new housing starts are in this category. Transit-oriented development may provide the answer to the challenge of meeting this demand (Reconnecting America 2004).

Transit-oriented development promises to reduce family transportation expenses, reduce auto use, increase the share of walking and transit trips, and generate revenue for developers, cities and transit agencies. Yet the lack of a well defined TOD product or delivery system has meant that some projects have failed to live up to expectations.

Transit oriented development can be seen as a tool for addressing the future needs of cities. It can provide some answers to questions on issues like sprawl. Because

developed areas are expanding at twice the rate of the population growth, and commuter traffic is increasing at about the same rate, sprawl is an ever-increasing topic of debate.

Gerald and Belzer (2000) describe how TOD's can assist in these problems. They mention that there is a need to reshape land use patterns at a regional, local and neighborhood level and to expand transportation choices and better integrate development. More transportation choices instead of more highways are what they advocate because auto-dominated transportation system is economically inefficient.

Boarnet and Compin (2004) define a TOD as a mixed-use development within walking distance of a rail transit station and core commercial area. Having a station at a walking distance is definitely a transportation choice and could prove to be efficient. Boarnet and Compin (2004) explain how these projects require a lot of patience and that progress towards TOD goals is often incremental. A very important factor in the success of projects they studied in San Diego County was the level of understanding and agreement among planning and city officials.

Porter (1998) did an analytical and comprehensive report on 19 regions in which light rail systems are in place. Most of these regions are from the United States, with two other regions from Canada. Porter found that in almost all regions TOD is an incremental goal and that public officials in many regions have difficulties attracting development to the station area.

TOD can promote affordable housing by providing sites for affordable and accessible housing, according to Parker (2002). Parker also explains that TOD can decrease infrastructure costs, saving tax dollars. She indicates that TODs can also promote walkability and transit accessibility by providing pedestrian orientated



development. Lund, Cervero & Willson's (2004) findings also help understand TOD. The report provides information such as station characteristics, demographics, and residential location of California TOD's that helps explain why residents living near transit stations are around five times more likely to commute by transit as the average resident worker in the same city. Also, based on disaggregate models of transit ridership, TOD residents are more likely to use transit if there is less of a time benefit for traveling via highways (compared to transit), if there is good pedestrian connectivity at the destination, if they are allowed flexible work hours, and if they have limited vehicle availability (Lund, Cervero & Willson 2004).

The idea of New Urbanism is associated with TOD. Lund (2003) discusses how placing amenities such as parks and retail shops within walking distance of homes will increase pedestrian travel. Lund also describes how personal attitudes play a significant role in predicting individual behaviors. However, Gordon (1997) explains that low-density suburban-style living is the growing preference among families. One main point Gordon makes is that developers in general are often prevented from changing growth patterns due to land use regulations, and are restricted by zoning and building standards. He also argues that due to consumer preferences, developers are at risk of building projects that are not single-family detached homes.

In order to counter sprawl or create high density new urbanism, planners need to address these problems and allow for special zoning in transit oriented developments. Southern California in general has little zoning that is specifically designated for TODs if it has any at all (Gordon 1997). Gordon explains how suburbanization has been

successful in actually decreasing congestion by shifting highway demand from core areas.

Bae (2002) found that “Orenco Station may be more successful as an attractive, upscale suburban neighborhood than as a TOD.” She points out that only a small percentage of residents use the rail line. Bae’s study shows that three quarters of neighborhood respondents always drive cars, and only one in six use any type of transit more than twice a week. In addition, factors other than those relating to transit contribute to the success of the neighborhood--walking distance of high tech jobs, including Intel, attractive upscale design characteristics, and generous open space. Also, it is 2.2 miles from the freeway and with the average commute time in Portland being 18.5 minutes versus the 50-minute commute via light rail, light rail has a difficult competing.

## Ridership Information

### Demographics

The data used to describe ridership characteristics of the Gold Line Corridor was obtained from a two-phase study done by MTA<sup>1</sup> in which 4,177 patrons of public transit were surveyed before the opening of the Gold Line, and 4,340 were surveyed after its opening. The studies reveal riders' demographic data, the change in corridor transit riders, and their behaviors.

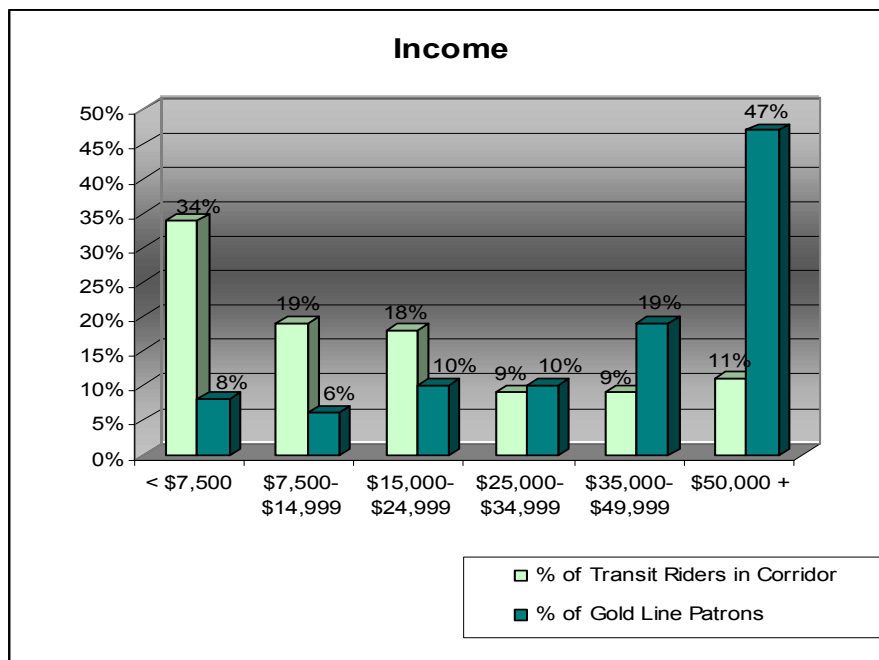


Figure 2

The demographic profile for the Gold Line, when compared with those of the transit users in the corridor (which includes *all* transit users, including Gold Line patrons), shows some interesting differences. Nearly half (47%) of Gold Line riders' income is \$50,000 or more (see Figure 2) or more per year whereas corridor-wide, 71%

<sup>1</sup> Los Angeles County Metropolitan Transportation Authority. "Gold Line Corridor Before/After Study: Combined Report". 2003.

earn less than \$25,000 per year. The median yearly income for transit users in the corridor is \$11,250 versus \$42,500 for Gold Line users. Therefore, the Gold Line is not serving the typical transit rider in the corridor but attracting “choice” riders. “Choice” riders refer to riders who have access to a car but chose transit for convenience or other reason. The higher income profile means that the Gold Line is drawing many riders out of their cars, which helps achieve congestion reduction goals. However, the relative lack of low income riders indicates that the line is not serving the “transit dependent” populations as much as might be expected.

In terms of gender, Figure 3 shows that males dominate the Gold Line riders at 64% whereas females are the majority (53%) of overall corridor transit users.

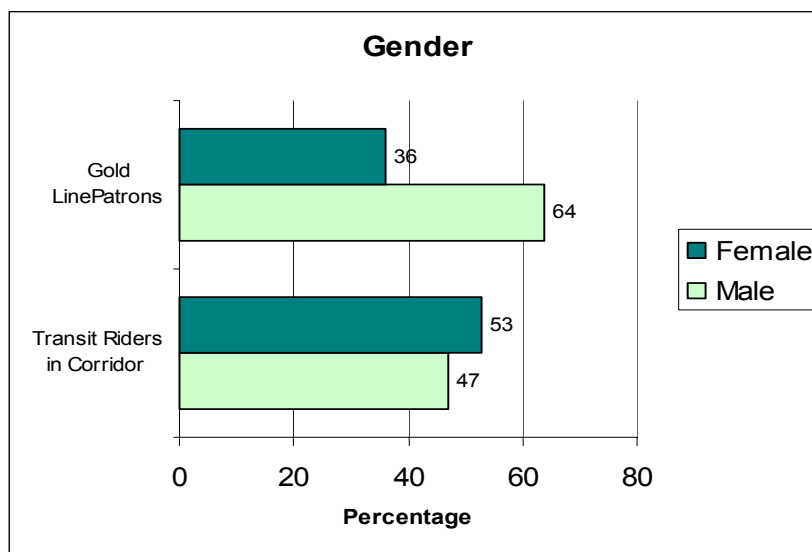


Figure 3

The median age is higher for Gold Line riders than the overall corridor rider, 41 years and 35 years respectively. The most significant differences between corridor users and Gold Line users in terms of age are in the teen and 50's groups (Figure 4). Corridor-wide, 13% of users are in the teen group while only 2% of the Gold Line riders are teens.

The 50's group makes up only 14% of corridor transit users, while accounting for 23% of the Gold Line users. Again, the difference between Gold Line riders and transit riders in the corridor illustrates the Gold Line's success is in serving working age populations, and its lesser suitability for the dispersed trip origins of youth and older populations.

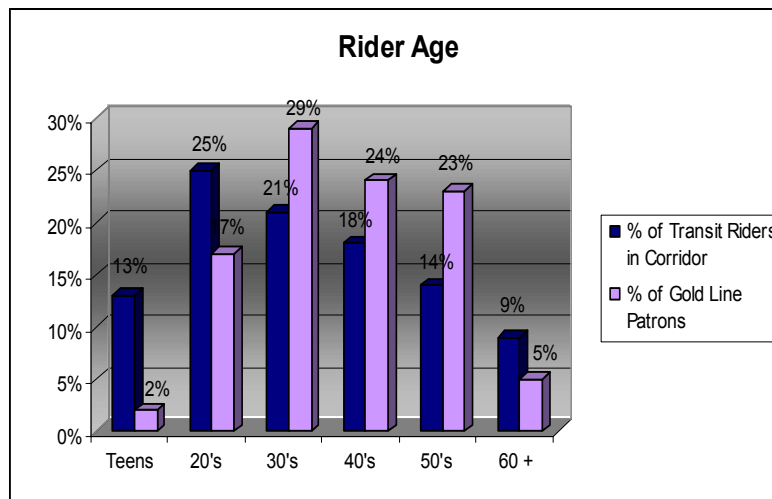


Figure 4

Figure 5 shows that the race/ethnicity difference between Gold Line and corridor-wide transit patrons is most pronounced among Hispanics and Whites. Hispanics account for only 30% of Gold Line users while being the dominant group of transit riders corridor-wide (65%). Whites on the other hand, make up 39% of the Gold Line users while accounting for only 11% of overall transit use in the corridor.

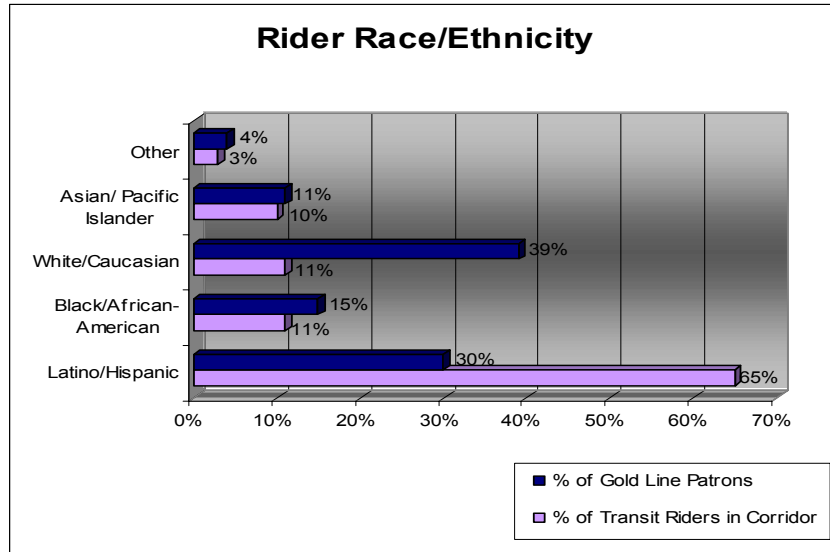


Figure 5

The demographic data suggests that the Gold Line is capturing the older, middle and upper-middle class choice rider, especially white males. Though not the expected or even intended outcome, these riders do represent positive societal benefits, such as fewer cars on the roads and less pollution and fuel consumption. One possible reason for propensity of the choice riders is that there is a greater likelihood that they work at professional occupations in downtown Los Angeles. Therefore, it is readily discernable that if one worked in downtown Los Angeles and lived in Pasadena, the Gold Line would be a rational mode choice. It offers competitive travel time and the chance to avoid downtown parking charges. It may, however, take time for other current and potential transit users to discover ways in which to use the Gold Line to fit their needs.

Over time, potential users may change their place of employment or residence to better utilize the Gold Line. It is likely also that a significant number of those with the more typical bus rider demographic are riding the Gold Line because of the changes in bus service that have eliminated redundant service. Specifically, MTA has shifted express bus service elsewhere if that particular route paralleled the Gold Line, and has altered

other routes to link to Gold line stations (stops within one block). The MTA study notes in its summary that historically, bus and rail demographic differences tend to attenuate in the first year.

### **Car Ownership for the Four Station Areas**

One of the most important factors in understanding corridor ridership potential is access/ ownership of automobiles. For this we combined all of the census tracts that intersected the 1/2 mile radius around each of the four stations under study and examined household ownership and/or access. The summary data showed congruity with the overall station income characteristics (See Figure 5). Households in Sierra Madre and Allen station areas both had high levels of availability, 93.5% and 89.9% respectively. Highland Park had a lower percentage of car ownership at 80.2%. Chinatown had a significantly lesser percentage of auto ownership at 50.5%. These numbers suggest that there are significant numbers of households that do not own cars and therefore have need for transit, especially in Chinatown and Highland Park.

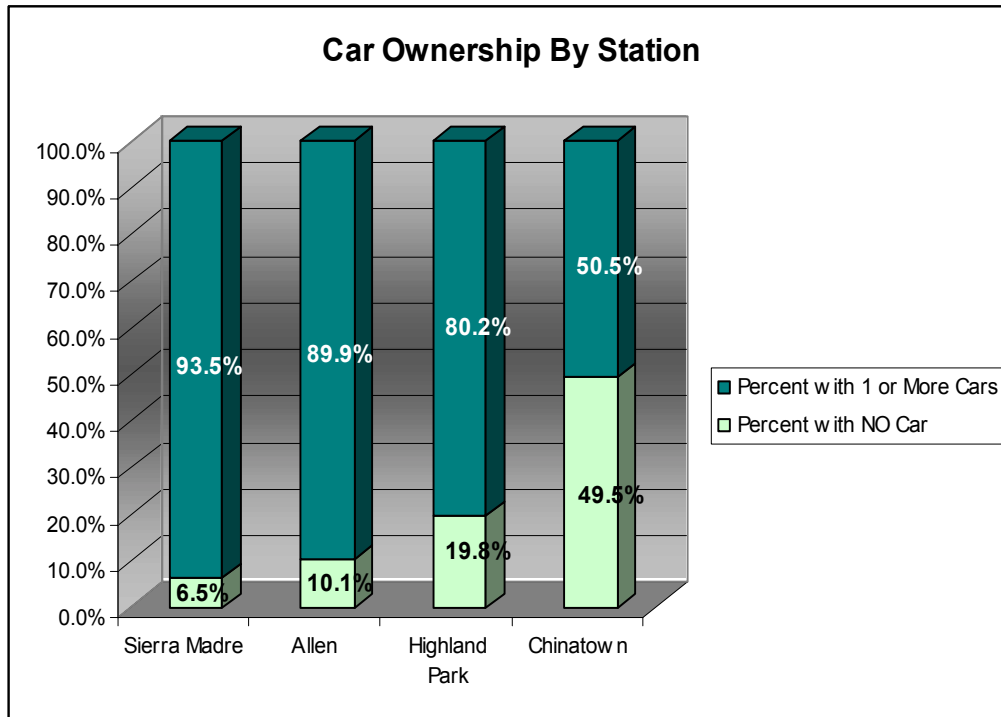


Figure 6

### Trip Purpose, Origin, and Destination

Currently there is no available data on Gold Line trip purpose. The MTA questionnaire did ask about origins and destinations as well as which bus line the patron was going and/or had alighted. Unfortunately, the study did not report these results, and the system team has thus far been unable to obtain those results. The MTA is considering further patrons surveys on this issue.

### Other Rider Data

The MTA Gold Line study found that the proportion of riders making transfers corridor-wide dropped from 38% to 33% after the opening of the Gold Line. A reduction in transfer rates for transit is important because, as Robert Cervero refers to them,



“[transfers] are the scourge of transit services worldwide”.<sup>2</sup> The average distance traveled in the corridor is 7.4 miles, up slightly from prior to the opening of the Gold Line of 7.3 miles. The average corridor-wide speed is up slightly to 13.9 mph from 13.5 mph. The average speed on the Gold Line is 18.4 mph, significantly faster than the corridor-wide average.

### **Station Information**

Examination of the boardings and alightings by day and station reveals, to a degree, how each station functions within the context of the system. The following table and graph (Figure 7 and Table 1) shows the number of passengers per station by either weekday, Saturday, or Sunday<sup>3</sup>. The stations are arranged by their geographic order on the rail line. We see that Union Station is by far the busiest station, followed by Sierra Madre Villa, Memorial Park, and Chinatown. In order to consider the remaining station performances, days of the week must be considered.

Clearly Union Station is the prominent station with 33% of the average weekly use due to the fact that downtown Los Angeles is a major employment center and because the station is the main transportation hub in the region. Sierra Madre is second-busiest station as it is the other terminus of the line and has generous free parking. Sierra Madre’s Saturday and Sunday averages are higher than its weekday average. Thus, it appears that users of this station (presumably from points east) are using it for many purposes in addition to commuting. However, some of the weekend ridership may be

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<sup>2</sup> Cervero, Robert. *The Transit Metropolis: A Global Inquiry*. Washington: Island, 1998, 364.

<sup>3</sup> Data file provided by Jake Satin-Jacobs, Manager, Service Performance Analysis, Los Angeles County Metropolitan Transportation Authority, January 2004.

commuting trips to retail employment near the station. It appears that users of Memorial Park, the third-busiest, are using the station for a blend of commuting and non-commuting purposes.

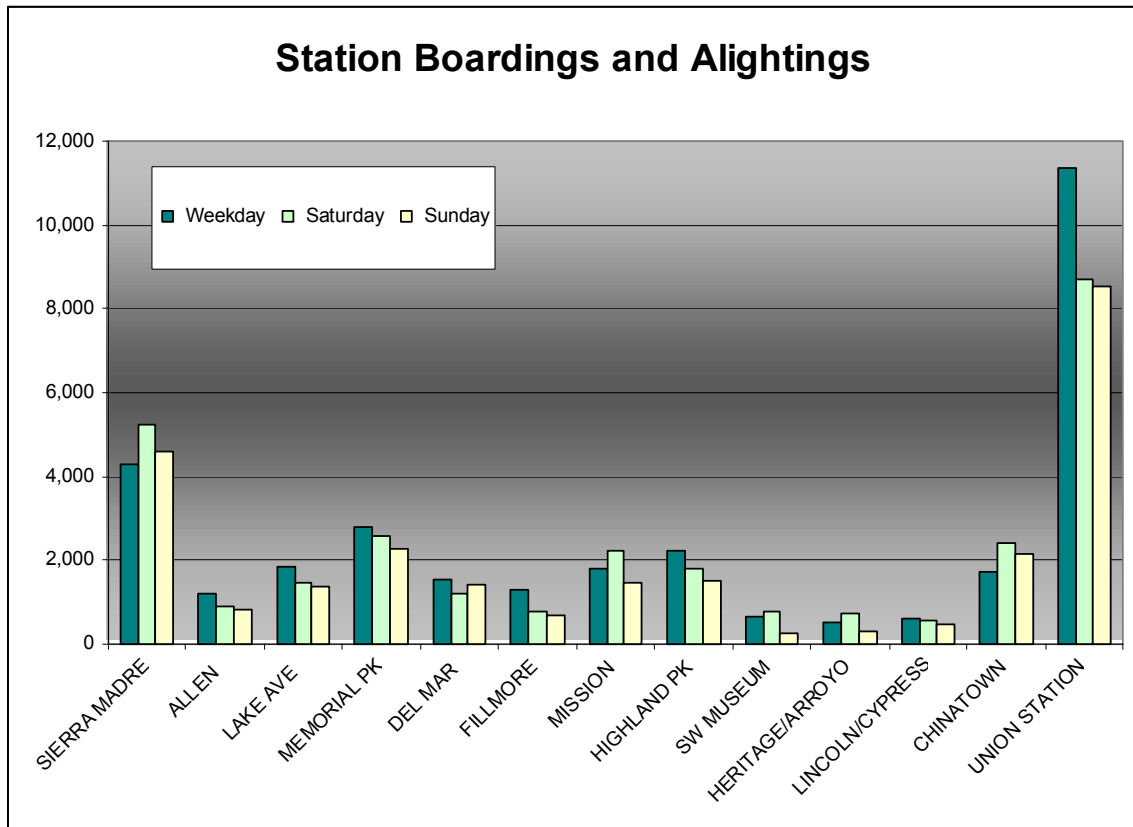


Figure 7

	Weekday Avg.	Saturday Avg.	Sunday Avg.	Weekly Avg.	% of Avg. Weekly System Use
SIERRA MADRE	4,295	5,209	4,570	14,074	16%
ALLEN	1,221	915	794	2,930	3%
LAKE AVE	1,829	1,461	1,388	4,679	5%
MEMORIAL PK	2,782	2,583	2,257	7,621	9%
DEL MAR	1,557	1,180	1,409	4,147	5%
FILLMORE	1,275	789	688	2,753	3%
MISSION	1,802	2,211	1,466	5,480	6%
HIGHLAND PK	2,230	1,791	1,502	5,523	6%
SW MUSEUM	638	792	266	1,696	2%
HERITAGE/ARROYO	528	716	284	1,527	2%
LINCOLN/CYPRESS	597	570	469	1,636	2%
CHINATOWN	1,696	2,404	2,158	6,259	7%
UNION STATION	11,377	8,703	8,549	28,629	33%
TOTALS	31,828	29,326	25,800	86,954	100%

*Table 1*

## Station Overviews

As mentioned, the four stations that have been selected in this study are Sierra Madre Villa, Allen, Highland Park, and Chinatown. Each station is unique in character and types of proposed uses; however they all have high potential for TOD.

Sierra Madre Villa: A terminus station that it is the second-busiest station on the line. It is underutilized, however in terms of station capacity and because the parking structure is barely half full at peak weekday periods<sup>4</sup>. Its main function seems to be as destination point for automobile drivers from the east who wish to ride the train. A second function is access to employment and shopping opportunities in the station area. Perhaps a potential for increased usage at Sierra Madre is in shopping and employment access to big-box retail for residents in the lower to moderate-income areas along the Gold Line.

<sup>4</sup> Based on field observation conducted February 3, 2004 and data provided by the Sierra Madre Villa Station team from a subsequent field observation.

Allen Station: One of the stations with the lowest percentage of boardings and alightings, Allen is located in a predominantly residential neighborhood. The area does have potential for TOD due, in part, to the strong demand for housing in Pasadena. The station is a point of access rather than a destination. The usage pattern at this station suggests that it is used mainly for work trips.

Chinatown: The fourth busiest station, Chinatown serves as a destination point for the attractions therein. The boarding and alighting data shows a significant increase in usage on Saturday and Sunday versus weekdays. One limitation is that the platform is somewhat disjointed from the neighborhood. There is strong development potential in Chinatown as there is a plethora of vacant land to the east of the station.

Highland Park: The area is a point of access, not a destination. The area is mostly low- to middle-income residential area with significant pedestrian-friendly commercial activity on Figueroa. Highland Park station ranks fourth-busiest in terms of weekday usage with considerable drop off in ridership on the weekend. One of the concerns about TOD in this area is the possibility of gentrification.

## **RSA Data**

Examining the origin and destination data by geographic area gives a perspective on how the Gold Line is being used on a system-wide level. By looking specifically at the Regional Statistical Areas (RSA) surrounding the Gold Line<sup>5</sup> and other adjoining metro rail lines, we can begin to understand the current state of use and perhaps potential usage patterns. RSAs are geographic units that the Southern California Association of Governments (SCAG) uses in their regional transportation model. The following map

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<sup>5</sup> Data obtained from “Gold Line Corridor Before/After Study Combined Report”. Metropolitan Transportation Authority, 2003.

shows the specific areas and their relation to the Gold Line, as well as other significant regional landmarks, such as downtown Los Angeles. Table 2 shows overall trip distribution by RSA.

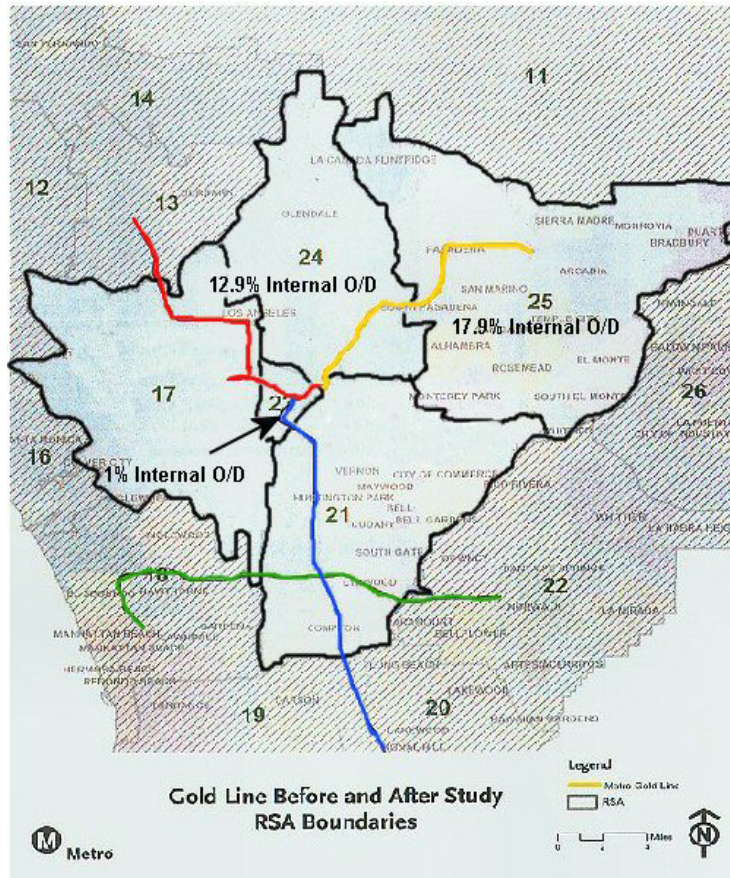


Figure 8

One interesting fact about Gold Line use can be seen from the above map; the amount of intra-RSA origin and destinations. Nearly 18% of all Gold Line trips have origin and destination in RSA 25, which includes Pasadena and South Pasadena. Also, nearly 14% of all Gold Line trips originate and terminate inside of RSA 24, including Highland Park. Nearly half (47.8%) of all trips are intra-RSA trips. This tells us that the Gold Line is being used much for local trips. Also, downtown Los Angeles (RSA 23) is only a destination for 15.6% of all trips (See table 2), but if we add all trips that go through downtown

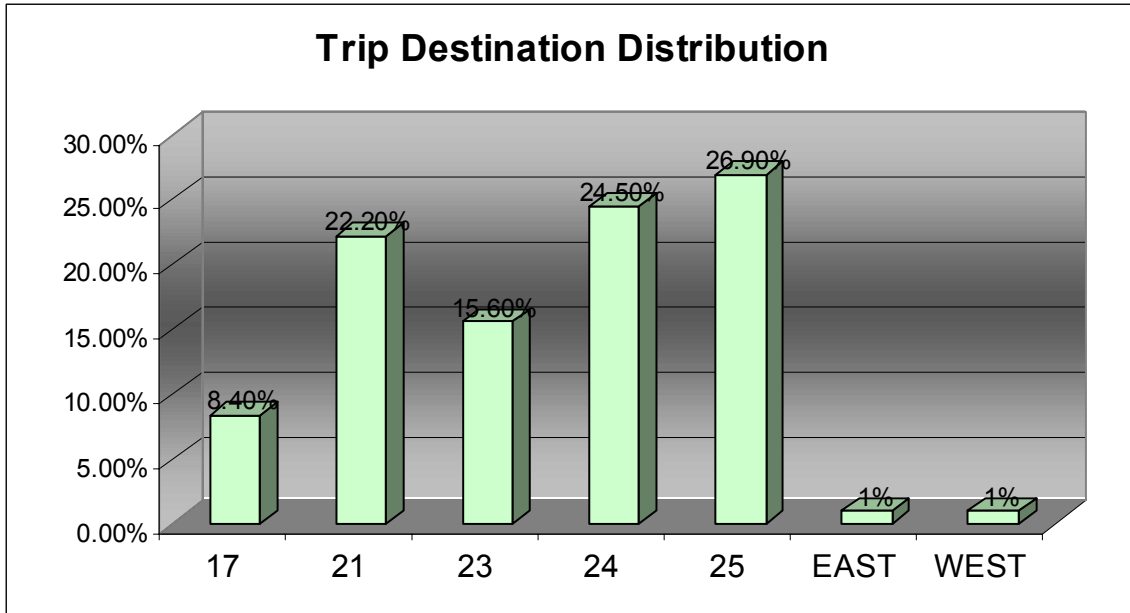


Figure 9

(destination RSAs 17, 21, and WEST), they account for 47.2%. Only 4.1% of RSA 25 destinations are to RSA 23 and 7.8% of RSA 24 (the largest) have RSA 23 destinations. Also of note is that in this data only 1.9% of all trips originated in EAST (meaning from RSAs to the east of RSA 25), thus casting doubt that the Claremont extension will be catering to an existing demand. See Table 2.

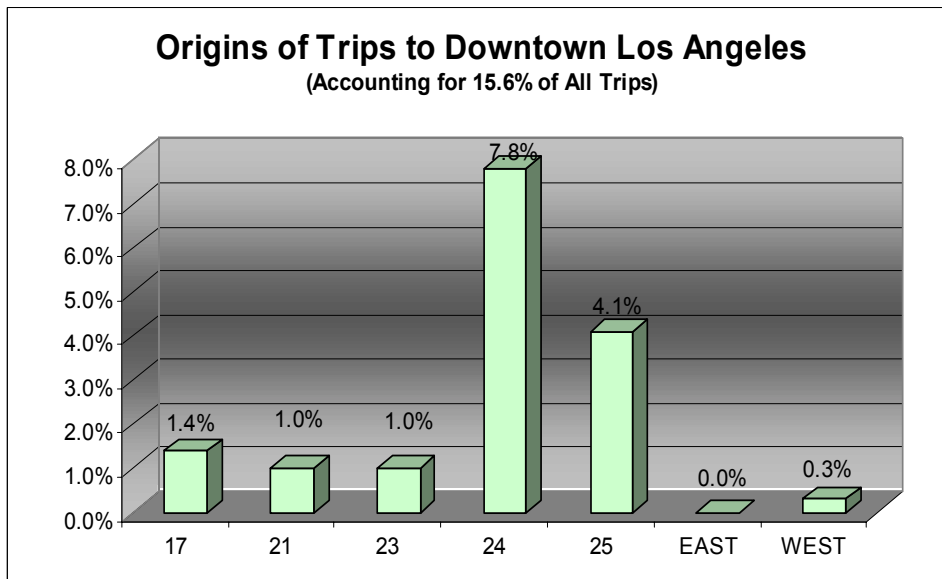


Figure 10

**Origin/Destination after Gold Line opening**

		Destination							
	RSA	17	21	23	24	25	East	West	Totals
Origin	17	0.90%	0.40%	1.40%	1.70%	0.90%	0.00%	0.00%	5.30%
	21	0.70%	13.60%	1.00%	2.20%	1.20%	0.00%	0.00%	18.70%
	23	1.30%	0.10%	1.00%	4.20%	1.30%	0.50%	0.00%	8.40%
	24	3.10%	2.20%	7.80%	12.90%	4.10%	0.40%	0.00%	30.50%
	25	2.40%	5.90%	4.10%	3.10%	17.90%	0.10%	0.60%	34.10%
	EAST	0.00%	0.00%	0.00%	0.00%	1.50%	0.00%	0.40%	1.90%
	WEST	0.00%	0.00%	0.30%	0.40%	0.00%	0.00%	0.00%	0.70%
	Totals	8.40%	22.20%	15.60%	24.50%	26.90%	1.00%	1.00%	
		Destination							
	RSA	17	21	23	24	25	East	West	
Origin	17	NA	NA	-57%	-62%	-29%	NA	NA	
	21	NA	60%	90%	-2%	-7%	NA	-100%	
	23	-17%	-52%	-65%	-35%	-53%	NA	-100%	
	24	58%	28%	-23%	-23%	15%	-27%	-100%	
	25	96%	489%	21%	17%	11%	-81%	201%	
	EAST	NA	NA	NA	NA	56%	NA	NA	
	WEST	NA	NA	-44%	-2%	NA	-95%	NA	

*Table 2*

## **System Access**

### **System Parking Analysis**

In analyzing automobile access to the system we analyzed the parking available at the stations. The four MTA system parking lots for the Gold Line are at Sierra Madre Villa, Del Mar, Heritage Square, and Lincoln Heights stations. An underground parking structure is being built at the Mission station to supplement those already built. Sierra Madre Villa station serves as the main commuter station with a large amount of parking, 1,000 spaces in total. Del Mar station has 600 spaces, all of which are pay parking, either daily for \$5 or monthly for \$39. Heritage Square and Lincoln Heights are much smaller and have 145 and 91 spaces total. Table 2 below summarizes the results of parking occupancy counts.

<b>System Parking Counts</b>				
	Sierra Madre	Del Mar	Heritage Square	Lincoln Heights
Capacity	1000	600	145	91
Reserved				
Used	32	26	NA	NA
Regular Used	447	91	NA	NA
Total Used	479	117	67	37
% Total Used	48%	20%	46%	41%
Note: All Counts Made Between 11:45 and 12:45 on 2/3/04				

*Table 3*

Since ridership is at about half of what it was expected it is no surprise that the parking facilities are at about half full. Parking usage is an indicator of ridership for auto access. The Sierra Madre station is an especially good indicator if more parking is needed and/or if there should be more pay parking.

We believe it will be quite some time until riders will support any implementation or rise in parking rates. The low utilization rate at the Del Mar station shows that right now there is little support to pay for parking to ride the Gold Line at Del Mar. It seems



potential riders prefer to drive to their destination instead of paying the \$1.25 one way fare. Implementing pay parking would only keep more riders away.

Although it is disappointing that the parking lots are not filling to capacity, it still shows that there are available spaces for future growth in ridership. Possibly, people seeing these unfilled parking facilities will be attracted to use the Gold Line knowing that there is plenty of available parking at all times of the day. Since the non pay parking facilities are only between 40-50% full, the stations with parking can support at least double the ridership from auto access patrons. Since the non pay parking facilities are more attractive, we expect the non pay parking facilities to increase the most and soonest.

When the parking reaches 80-90% we believe that parking prices should be instituted and additional parking facilities be built if high occupancy levels continue. Parking pricing will reduce ridership unless there is sufficient demand to replace any lost riders. However, supplying more parking may keep riders from trying bus lines, carpooling, or other modes to reach the stations. Although, instituting parking pricing and building additional parking is the most logical expansion as ridership and parking usage increases.

## **Bus Access**

The second main mode of access to the system is through public transportation. To analyze this we looked at maps of bus routes that connect with stations along the line. From this we developed the map shown in Figure 11, which shows in the highlighted area the high concentration area of bus lines through the corridor. The arrows indicate which

direction and where the bus lines general end up. From this we can see how those using public transportation can access the Gold Line.

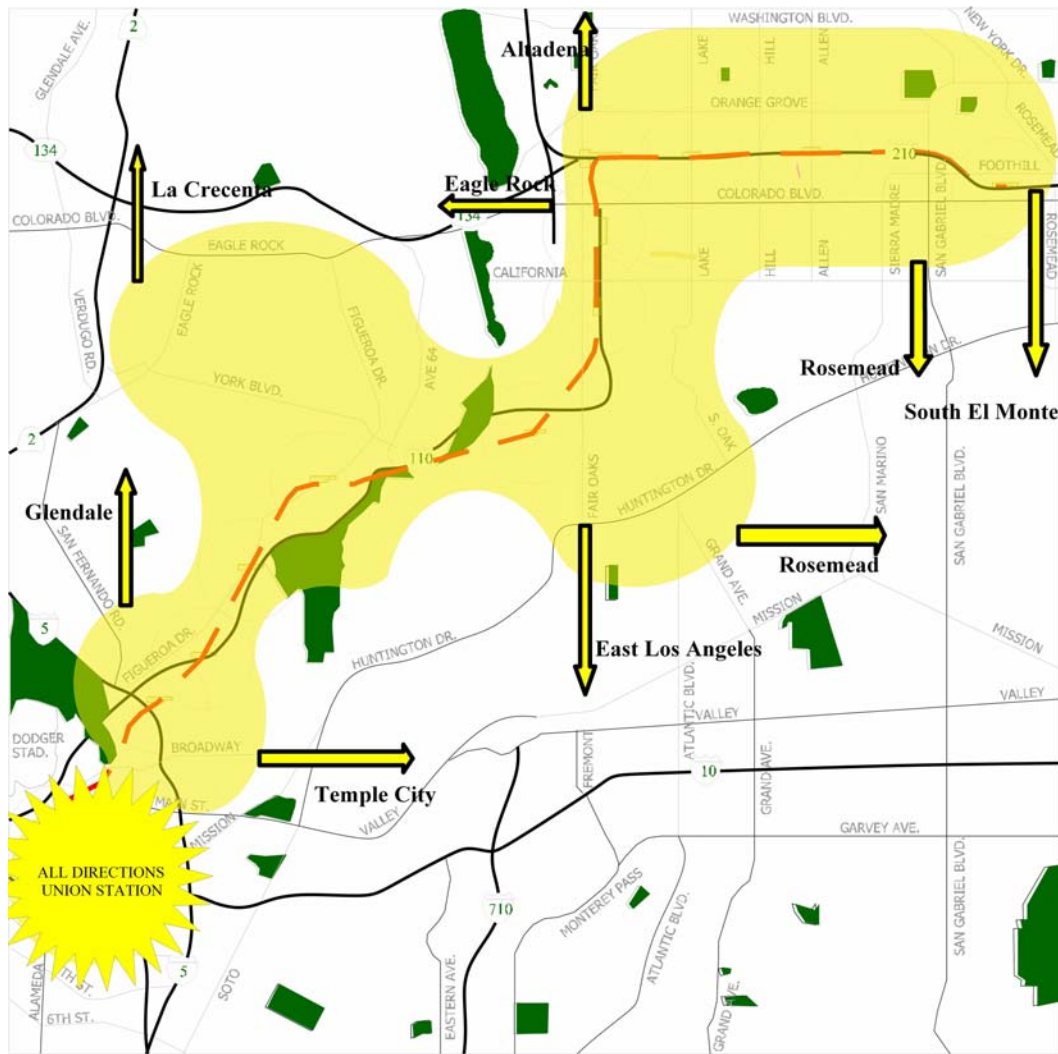


Figure 11

The map shows that there is a high density of bus routes close to the Gold Line. It also shows that there appears to be enough connections to nearby cities to the Gold Line using the bus. Many of the bus lines' routes are designed to serve other local destinations rather than the Gold Line. Also within the high density area of bus lines there are three MTA bus lines that compete with the Gold Line by running parallel to the Gold Line and also serve downtown.

## **Why Has Ridership Not Met Forecasts?**

As has already been stated, ridership is lower than expected. Our main goal is to find out how to increase ridership. First we must understand why ridership is significantly lower than expected.

First, we believe ridership is low because there is a limited amount of work destinations along the Gold Line. The high density work destination at Lake Avenue in Pasadena appears to be the only concentrated work destination area along the Gold Line. Downtown L.A. is not a directly served work destination for the line because a person would need to transfer to get there. Other stations may have a significant number of jobs, but are more dispersed. Most of the employment around these stations is small scale industrial or commercial developments.

If the Gold Line connected to the Blue Line at 7<sup>th</sup> and Figueroa, as was originally planned, there would be more direct work destinations along the Gold Line. This direct connection would be more attractive to commuters to downtown and we would most likely see higher ridership. Development of additional work destinations is important for an increase in ridership.

The second reason for low ridership is because the Gold Line covers a short distance. Since the line is short there is a limited amount of destinations available for travelers. Transfers to bus or the Red Line are needed to reaching any destination off of the Gold Line. This only makes travel time longer by adding on waiting time to transfer. Linked to this reason is the relatively slow speed of the Gold Line at 18 mph. Even with traffic, an automobile may be traveling faster and reach the destination faster. Even with the possibility of paying for parking downtown or somewhere else this travel time

disadvantage turns potential riders away. Given both its short distance and low speed, the Gold Line is not competitive with the automobile for many trip destinations. The Gold Line will have to improve its competitiveness in order to attract more riders mainly through shorter door to door travel time and increased bus/shuttle routes to make transfers easier.

The last reason is the strike's interruption of service. Post-strike ridership is lower on all rail lines, but is expected to recover. Looking at the graphs below, we can see that Gold Line ridership was already dropping off before the strike. Part of this is most likely the novelty (and free passes) of the Gold Line were wearing off and people were returning to another mode of travel. However, the strike did interrupt service enough to turn riders away that were already using the system and back to their usual mode of travel.

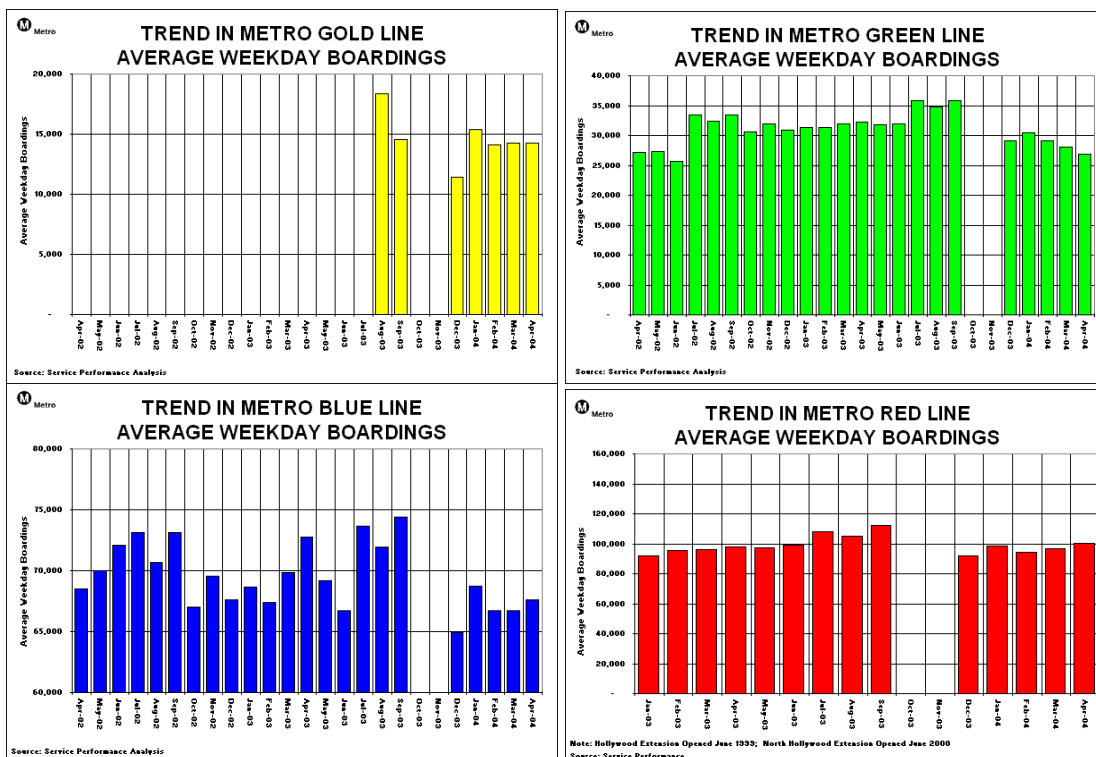


Figure 12

As congestion increases on freeways the Gold Line will become more attractive as automobile travel time increases. Increases in gasoline prices may also make the Gold Line more attractive because of the higher cost of driving. Even if prices do not remain high, it may influence automobile drivers enough to try the Gold Line.

The Green Line also had lower than expected ridership rates and has seen a significant increase from its opening rates. The Green Line can be closely compared to the Gold Line because neither of them have strong employment centers along them and run through a corridor highly served by both a freeway and multiple bus routes. At around 27,000 riders per average weekday, the Green Line is slightly above projected figures that were made before the aerospace crash which the line was intended to serve. The Green Line opened at around 14,000, similar to the Gold Line, and has nearly doubled since then. No major improvements have been made to the Green Line or the surrounding area to attract ridership. Ridership has increased despite the loss of the aerospace industry to support ridership. Since the lines are fairly similar the Gold Line will likely see a comparable increase in ridership.

## **Issues**

### **Commuter Usage**

We have found that the number one issue that the Gold Line system is facing is the low number of riders during peak hours. This shows that the Gold Line is not being used for work trips to the extent that is desirable. While it is a great accomplishment to gain riders for non-work trips, the Gold Line is not meeting its full potential of serving a much larger number of commuters.

<b>Weekday and Weekend Boardings</b>				
	Red Line	Blue Line	Green Line	Gold Line
Average Weekday Boardings	112,021	74,406	35,847	14,573
Average Weekend Boardings	76,395	49,871	17,655	12,130
% Weekend of Weekday Ridership	68.20%	67.03%	49.25%	83.24%

*Table 4*

As is seen in Table 4 above there is very little drop off between weekday and weekend boardings. Comparatively, other lines have a relatively high number of weekday riders, but their ridership on weekends drops significantly. This suggests that the Gold Line is very attractive for weekend trips.

### **TOD Strategy Should Support Ridership**

Any TOD supported by cities or by MTA should be designed to support ridership on the Gold Line. Mainly, we believe that TOD should be designed more for lower to middle income households. These are the groups of people that already support public transit. We believe that if these types of households were located near stations rather than higher income households there would be a greater benefit for ridership. Higher

income households will not be as strongly affected by increases in gasoline prices and therefore will not be as likely to try public transit. Lower income households are not as able to pay for parking as higher income households. Providing low and moderate income housing close to stations would reduce these costs for these households.

Although the Gold Line is much more high income friendly than any bus, with its decreased noise and increased cleanliness, high income households are not as likely to use the Gold Line compared to lower and moderate income households, all else being equal.

Higher income housing may be more attractive to cities because it is more politically acceptable and creates a more inviting atmosphere to visitors. However, the housing crisis we have in Southern California is not for higher income housing but affordable housing for low as well as moderate income households. We believe that it is a city's and especially MTA's responsibility to more strongly support development of housing for low to moderate income households near Gold Line stations. This support would accomplish two goals: increase affordable housing stock and increase ridership on the Gold Line.

### **Tradeoffs Between Revenue and Ridership**

MTA has recently reduced their daily fares systemwide and this will support increased ridership. MTA should seek maximum ridership by providing efficient and effective transit alternatives for all.

Keeping fares low will attract new riders, especially low income riders, to try out the system and possibly continue using the system. Increasing parking fees also falls into

this category. Drivers, especially Southern California drivers, dislike paying for parking. Increasing or implementing parking prices might keep people from trying the Gold Line and turn away some that are already using it, if they are implemented before demand is strong enough to ensure that new riders are attracted to replace any that are discouraged by parking charges.

Once the Gold Line has significantly increased its ridership it would be feasible to increase fares. Some drop off in ridership would occur but many riders who have come to depend on the system would stay. If fares were raised too soon then ridership would never reach levels to justify the construction of the Gold Line.

### **How Can System Speed be Improved?**

Time is one of the greatest determining factors when deciding on mode choice. If a person can reach their destination 20 minutes faster with their car versus the Gold Line, they will most likely choose their car. Maintaining the fastest end-to-end trip time for the Gold Line is key in attracting new riders.

Of course, some community groups have opposed the current speed and noise and vibration related to the Gold Line. We believe that more people are becoming aware that these impacts are less than expected and/or they are getting used to them. Working with these groups will be key if there are any further complaints or if there are considerations of increasing the speed through certain areas.

The speed of the train does have a certain limit, which may have already been reached, given the concerns of certain community groups. Increasing door-to-door speed is the next alternative, and possibly the most viable. Just like increasing rail speed,



increasing the speed of the mode a rider uses to *reach* the Gold Line also makes the line more attractive to use.

### **How Can L.A. Station Area TOD be Increased?**

Although there has been great interest by developers to build housing near stations in Pasadena and South Pasadena, there has been more modest interest in the communities of Los Angeles. Many of these communities have high demand for housing at all income levels. Households who are unable to find homes in Pasadena and South Pasadena are looking to L.A. neighborhoods. Lower income households are seeking affordable housing close to downtown L.A. and other employment centers.

This should provide enough of a basis for interest by developers. There is interest in Highland Park and Lincoln Heights, but not at the level in Pasadena. Possibly joint partnerships between the City of Los Angeles, MTA, private developers, and community based organizations can be sought to help remedy housing problems in the area including rehabilitating the existing stock of housing as well as expanding the current stock.

Gentrification of these areas is also an issue if new development of any kind were to take place. As previously stated, development of housing for low- to moderate-income households is most important. Affordable housing requirements should be considered for approval of new developments.

## **Opportunities**

### **Employer Incentives for Transit Use**

One way to encourage ridership on the Gold Line is for cities and MTA to provide incentives to large employers for utilizing transit promoting programs. This can be applied to existing large employers or small soon to be developed businesses. This would be most effective to large employers in downtown L.A. and Pasadena.

Existing employers may be given grants by MTA to help defer the costs of starting up and/or running certain programs. Programs may include provision of vehicles at work for use by employees during the day, subsidizing employee's monthly MTA passes, subsidizing reserved or pay parking at MTA lots for the Gold Line, and many others. Those that are already using these programs may also be expanded. Preference should be given to employers that have pay parking to offer more opportunities for their employees and they will be more likely to use the programs.

### **Marketing Towards High Potential Riders**

MTA should focus a good deal of its marketing and advertising on commuters to downtown L.A. This group represents a large number of people that are looking for alternative modes of transportation downtown. This group can be broken down into two main groups: those already living near the Gold Line and those living further east of the Gold Line.

Those living near the Gold Line are the easiest market to capture. They can walk, ride a bike, or take a short bus trip to a nearby station. Promotion of these modes, fares, and travel time on busses and the Gold Line would be important to capture this group.

The Gold Line is a much more attractive mode of transportation for this group versus those who live further east.

If a person lives further east, then they still have to face traffic on I-210 both in the morning and late afternoon to reach stations that will then take them to downtown. Extension of the Gold Line east may help remedy this problem, but a current solution is needed to capture this market of potential riders. Promoting fast and regularly scheduled bus lines that connect with Gold Line stations and focusing the service around the Gold Line would be important in any effective attraction of these riders. Expansion of HOV lanes on I-210 or special bus lanes would also help increase speed. These are all part of increasing door-to-door speed of the system.

### **Joint Decision-making on Station Area Land Use**

A great opportunity for promoting TOD is to have cooperation between the MTA and cities on land use and development approvals and conditions similar to the development in South Pasadena. Lines of communication would be more open between the two groups to discuss plans for development and plans for the Gold Line. Any development near a station should view the station as a great asset. Any change in Gold Line policy may change the outcome for any given development.

The goal of this coordination of planning is to create proper TOD. By doing this a greater development strategy may be created for the Gold Line. Developers and marketing experts would also be important to be consulted to gauge private willingness for such measures.

## **Housing Development**

Around many of the station areas there are a large number of vacant lots open for development. Most of these vacant lots are relatively small and would be best suited for housing development. It is our opinion that low- as well as moderate-income housing should be built on many of these lots.

Cities and community based organizations need to take greater steps in attracting developers to developing housing on these vacant lots. Some of these lots may need extensive cleanup given their previous uses, but this is important in order to provide more housing and help revitalize some of these communities. While this is mainly true for the L.A. stations, similar practices can be applied to Pasadena and South Pasadena. Specifics for type of development and location will be left to the station area groups for study.

## **Attract Large Employers to Middle Stations**

As already stated there is vacant land around many stations. Development of large buildings is possible on a handful of these properties. These properties should be saved for consideration of development of buildings for large employers. Development could range from industrial to office type buildings. Commercial development could also be included, which would help bring in more revenues, but its success is much more based on location than industrial and office type development. Office type development would fit in the best with TOD and should be sought before industrial development. Industrial development would not typically be in accordance with TOD but certain uses

and designs may be altered, including parking, floor area ratio, and height, to better fit in with TOD objectives.

This would provide destination points for many of the middle of the line stations. There is very little activity around these stations and the neighborhoods need revitalization. Placing a large number of jobs would not only help revitalize the neighborhood by providing local jobs, but it would also help attract riders to the Gold Line that may be commuting to the area. Development of businesses may also start a domino effect of development, including housing, in the area that would further improve neighborhoods.

## **Alternatives Analysis**

We have established that ridership on the Gold Line is lower than expected and that many options are available to increase ridership. The rest of this paper will evaluate in more detail four possible alternatives to boost ridership on the Gold Line: fare structure, system access, extensions, and marketing. Our main goal is to boost average weekday ridership. Our specific objective is to boost it to 60,000 average weekday riders by 2020. This is actually the original forecast MTA had for the Gold Line for 2020. By meeting this objective the Gold Line will be able to meet its potential as a high capacity light rail line. At this level it would be close to the Blue Line's current level of riders.

## **Evaluation Criteria**

We established a set of evaluation criteria to rank the alternatives we developed, to determine which alternatives are the best and their priority. The first criterion we set is the amount of riders each alternative creates. This is the most important criterion because it is the main determinant in meeting the objective. Second is cost of each alternative. This is important to determine the efficiency of each alternative by finding how much is spent on each rider that is produced. Third is social equity, which determines if the alternative has any significant effects on those with less choice and access. Fourth is political feasibility. This looks at other factors that involve public approval of alternatives. Fifth is environmental impact, which looks at issues involving pollution, sprawl, traffic, noise, and many other possible environmental impacts.

## **Fare Structure Alternative**

Altering fare prices is one popular alternative for increasing ridership on any type of transit. Expected increases or decreases in ridership can be calculated using fare

elasticity models. Shown on Table 5 are fare elasticities that can be utilized in predicting the consequences of altering fare prices on the Gold Line.

A fare elasticity measures the percentage change in riders resulting from a 1% increase or decrease in fares (as long as other factors like income and service level remain constant). The elasticities shown below are short run elasticities that represent ridership response anywhere between one month and one year. The arc elasticities used here cannot be trusted as being accurate beyond a 20% change in fares. Rider response cannot be accurately estimated with such extreme increases or decreases in fares.

### **Current Fare Structure**

On the Gold Line a one-way pass costs \$1.25. A day pass good on all MTA rail lines and local bus lines is \$3.00. An additional cost of \$0.50 and \$1.00 is needed to transfer to MTA zone 1 and zone 2 express busses respectively. Transfer to municipal bus line can also be purchased at ticket booths for \$0.25. Senior tickets are available at \$0.45 for a one-way trip and at \$1.50 for a day pass. MTA monthly passes can be purchased for \$52.

### Transit Fare Elasticities

Factor	Elasticity
Overall transit fares	-0.33 to -0.22
Riders under 16 years old	-0.32
Riders aged 17-64	-0.22
Riders over 64 years old	-0.14
People earning <\$5,000	-0.19
People earning >\$15,000	-0.28
Car Owners	-0.41
People without a car	-0.10
Work trips	-0.10 to -0.19
Shopping trips	-0.32 to -0.49
Off-peak trips	-0.11 to -0.84
Peak trips	-0.04 to -0.32
Trips <1 mile	-0.55
Trips >3 miles	-0.29

Source: Gillen (1994)

Table 5

### Fare Reduction

Using the overall transit fare elasticity of 0.33, seen in Table 5, we can see that a significant reduction in fares does not have a profound effect on ridership. The figures available (April 2004) show average weekday ridership at 14,249. At a 10% reduction in fares (from \$1.25 for a one-way trip to \$1.125) the expected ridership would only increase by 470 to 14,719 for average weekday ridership. With a 20% reduction in fares from \$1.25 to \$1.00 expected ridership would only increase by 940 to 15,189.

There is also the concern that a reduced amount of revenue may have an impact on ridership. In response, the MTA might have to reduce the frequency of service on the Gold Line to respond to reduced revenue. For example, the 10% reduction of fare leads to an approximately 7% reduction (\$1,252) in revenue per average day. Such a drop in revenue may lead to a drop in the level of service on the Gold Line. Ridership will react



negatively to a drop in the frequency of service, possibly to the point where more riders are lost from a drop in the frequency of service as are gained from the reduction in fares.

### **Targeted Fares**

A way to possibly combat reduction in revenues is to increase fares for ridership groups whose demand is less elastic. One user group that has lower elasticities is peak hour riders. For most lines this would be a rather standard change in fare structure. As has already been stated in our report, peak hour trips are low, based on visual survey and the relatively low amount of weekday ridership. To institute increased fares for this group would only have a negative effect on ridership for a user group that is already low.

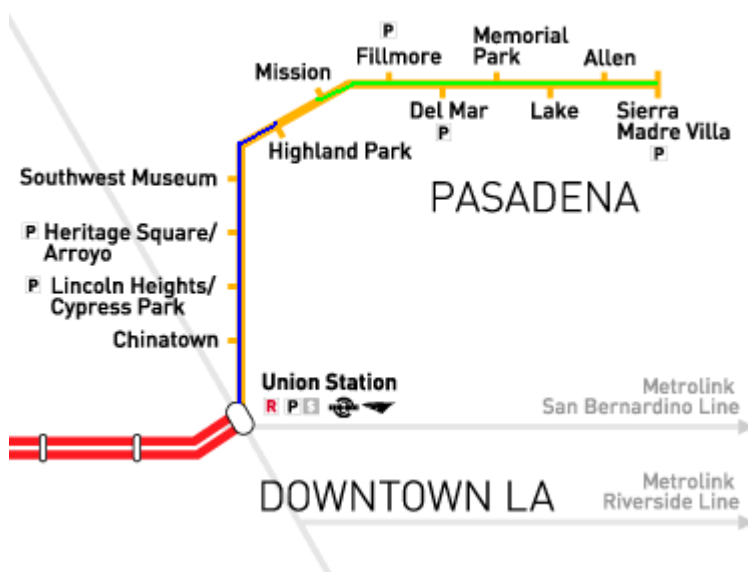
Increasing fares for other groups that have lower elasticity presents equity and feasibility issues. Charging lower income groups, those without access to a car, and seniors higher fares presents equity problems by taking advantage of those with restricted incomes and limited alternatives for transportation. It also presents feasibility problems in creating a fare structure that distinguishes between these groups and charges them a different fare. Despite their lower elasticity, fares should not be increased for these groups considering equity and environmental justice issues.

### **Distance Based**

A third strategy for fare pricing is developing a zone or distance based system. This type of system would charge riders less for shorter trips and more for longer trips. This would help create better equity in the system by more accurately charging riders for how much they are using the system.

One possible method is to charge riders less for intra-RSA trips and more for inter-RSA trips. The line can easily be broken up into two zones dividing the Pasadena

and South Pasadena stations from the Los Angeles stations (Figure 13). As has already been shown in the ridership information section there are a high number of intra-RSA trips using the Gold Line. This would reduce fares for those already using the system, possibly as low as \$1.00 or even \$0.75 for a one-way ticket. For those that are making longer, inter-RSA trips a slightly higher fare of possibly \$1.50 to \$1.75 for a one-way ticket.



*Figure 13*

Another similar system may be to establish zones between every station, similar to the Metrolink system (Figure 14). This would simply charge riders by the number of stations they pass. This would most likely lead to additional shorter trips along the Gold Line, but may have an adverse effect on greatly increasing the cost of longer trips and possibly total trips.

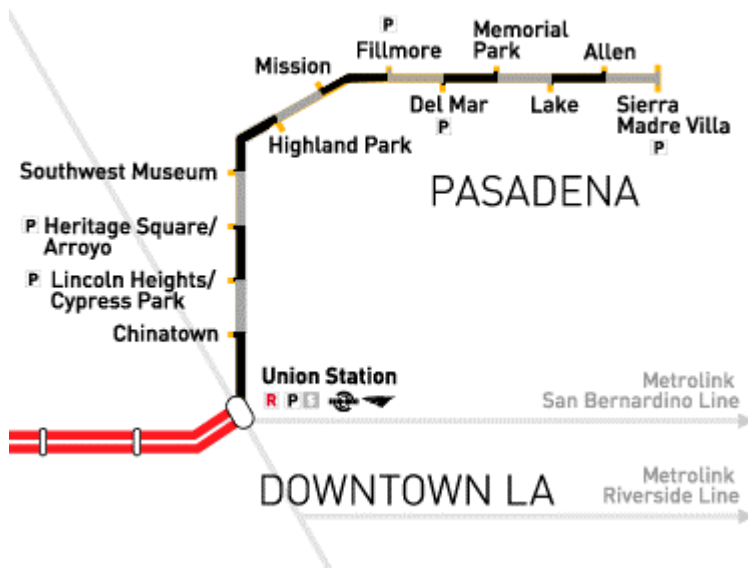


Figure 14

Unfortunately, these types of strategies further complicate what may already be seen as a complicated fare system. Any more complicated zone or distance based fare structure may be too confusing for riders. Riders' ease of use should be important in considering any changes in fare structure. The system should be friendly for all users, new and experienced.

## **System Access Alternative**

Another alternative for increasing ridership is to increase the amount of transit in the area to make it easier for riders to access the Gold Line. This will help decrease door-to-door travel time and make transit a more attractive alternative than using a car to access the system. Three of the ways to increase transit in the area are to increase the service along existing routes, create new routes to serve Gold Line riders, and create new local shuttle routes.

### **Increase Service Frequency**

MTA lines 266, 267, and 268 are the primary bus lines that serve the sierra madre villa station. These bus lines have headways of between 40 and 45 minutes. If this amount of time were cut in half it would make the line more attractive to take. Riders would not have to check schedules to see when the next bus is coming.

The average number of busses used per MTA route is approximately 13. In order to reduce the headways by half the number of busses would need to be doubled, supposing that these lines use about 13 busses. Each 40 foot CNG bus approximately costs between \$250- \$300 thousand dollars. This involves a total cost of between \$3.25 million and \$3.9 million per route in capital costs.

Each route approximately has an operating budget of \$4.07 million. If this was also doubled considering there would be double the number of drivers, maintenance costs, etc. each route would have operating costs of \$8.14 million. Total costs for each route would range from \$11.39 to \$12.04 million. That would be an increase of between \$7.32 and \$7.97 million from the current operating cost of each route.

## New Routes

Creating a new route would follow a similar process. The total cost of each new route would be between \$11.39 and \$12.04 million. There does not appear to be any significant gaps in service area that need to be filled by adding additional routes, according to our analysis of bus routes in the area. The bus routes, which include MTA, Foothill and other municipal bus lines, can be seen below in Figure 15.

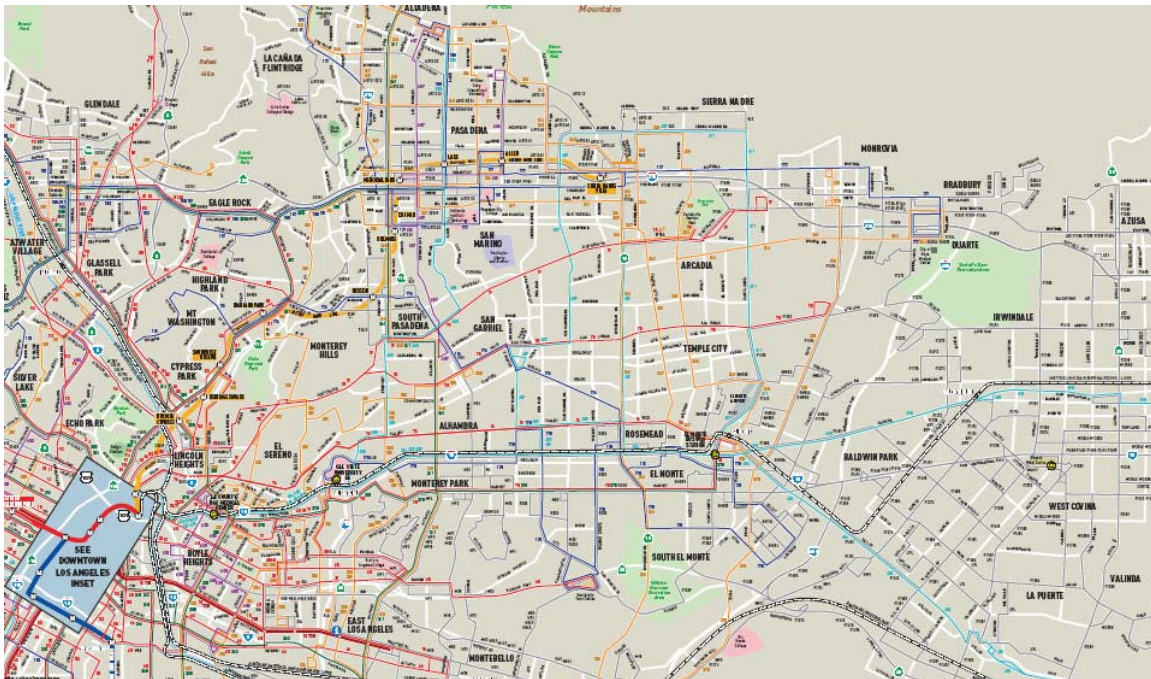


Figure 15

## Shuttle Service

There are small gaps in service area that can be best served by shuttle busses rather than by large busses. These types of routes would focus on each station area communities needs for access to the station. One area we found that was lacking station area service was around the Heritage Square and Southwest Museum stations. Although these stations have around 5 or 6 bus lines that connect or stop near the stations, there are no bus lines that run perpendicular with the Gold Line to serve the communities in that

area. The geography of these areas may limit bus service from serving in this area.

Smaller shuttle routes can easily be placed in a narrow area such as these.

These shuttles can operate in different ways as well. They can operate similar to a DASH or Pasadena shuttle with a fixed route. Or they can operate in a certain area and be demand responsive and be a dial-a-ride system. In our opinion, a fixed route would be the best form of shuttle service to serve the community and provide a more reliable system. Either a route with two endpoints on either side of the rail line or a circular route would be appropriate in these areas to connect with the Gold Line. Stops would be at key areas of activity in the communities and also could make connections with bus lines that do not connect with Gold Line stations.

This type of service may be placed at any or even all station areas to allow each community better access to the Gold Line. It would allow those beyond walking distance to quickly and cheaply access the station. A shuttle service would also provide Gold Line riders access to work, shopping, or other destination that may not be within walking distance of the station.

Cost per shuttle bus is between \$50,000 and \$100,000. Each route would need approximately eight shuttles at a total capital cost of between \$400,000 and \$800,000. Operating costs may differ greatly depending on the type of shuttle service that is chosen. Pasadena and Los Angeles already have a municipal shuttle program in effect. Proposition A funding can be used to expand services in these two cities.

All of these alternatives present certain costs for their implementation. Estimated growth in ridership is difficult to predict for these alternatives. It is the opinion of this

group that a local shuttle service is the best alternative to increase ridership due to its low cost and ability to serve station area communities.

## **Line Extension Alternative**

There are two proposed extensions for the Gold Line. The first extension is called the Eastside extension. This extension has already been approved and is in the process of being constructed. This extension is a six-mile route with eight stops that runs through East Los Angeles. It will run from Union Station along First Street and Third Street to Atlantic Boulevard. It is light rail, so most of it will be at grade with the exception of a tunnel joining First and Third Street. This rail line will take 17 minutes to run from end-to-end.

This extension of the rail line runs through a dense area. The eight stops are within a six mile stretch. This puts each stop at less than a mile apart. The question for this extension is will it increase ridership for the Gold Line. In order to address this question, we have to put the East LA extension into perspective. This extension is only six miles, compared to the existing line that is 14 miles. To put this extension in perspective, we will look at ridership per mile. If more riders are generated per mile on the extension than the original line, then overall ridership per mile will increase on the system.

The Gold Line has an average weekday boarding of 14,249 and a Saturday and Sunday average ridership of 12,590 and 8,961. Since it is 13.7 miles, this makes the ridership per mile is 1,027 riders on the weekdays and 891 riders per mile on the weekends. The Environmental Impact Reports, or EIRs, of both extensions project ridership into the future. The East LA extension looks at the year 2020 and the Foothill extension looks at the year 2025.



In the year 2020, the East LA extension of the Gold Line is project to have 16,020 daily transit boardings. When put into context and stretched over the six miles, riders per mile equals 2,670 riders per day. This number is significantly higher than ridership on the existing Gold Line, as can be seen in Figure 16. This extension would help to increase ridership on the Gold Line.

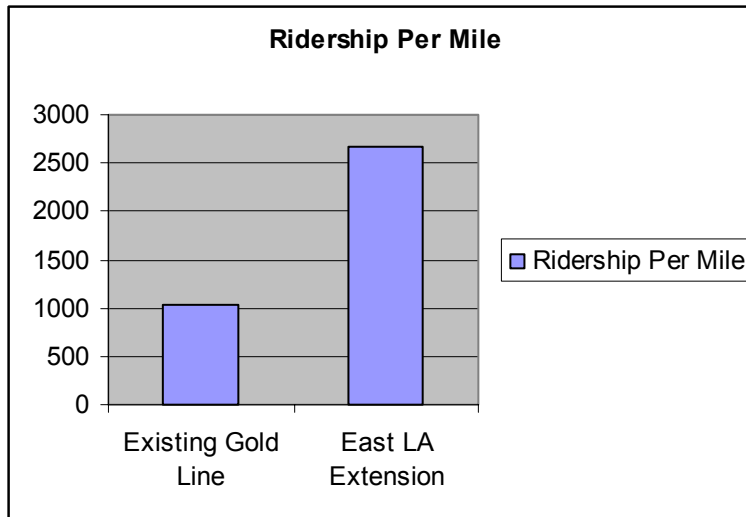


Figure 16

The second extension is a proposed 23 mile extension that runs from East Pasadena to Montclair. It is called the Foothill extension. This extension will have 14 stops in all of the cities that it goes through. This extension is not yet approved. However, a feasibility analysis and a draft EIR have already been performed. Stops and sites have been located and alternatives have been looked at.

This extension runs along the 210 Freeway through a large portion of it. It is all at grade. The estimated travel time from Montclair to Sierra Madre in East Pasadena is 32 minutes. There are 14 stops that run on the 23 mile line. This puts each stop just under two miles apart. Density changes as this extension travels from urban Pasadena to suburban Montclair.

These new extensions are different. The six mile East LA extension is a short line with frequent stops. It serves the area differently. The Foothill Extension goes from the suburbs to downtown Los Angeles. The stops are spaced farther apart. It seems that this extension will serve commuters going to downtown.

The Foothill Extension is projected into 2025. In this year, the extension is projected to generate 18,100 riders. This number is higher than the other extension. However, it is longer than the East LA extension. When dispersed over the 23 miles, daily riders per mile come to 787 riders per mile. This number is lower than current ridership on the Gold Line, as can be seen in Figure 17. This extension will not help the ridership per mile on the entire Gold Line system.

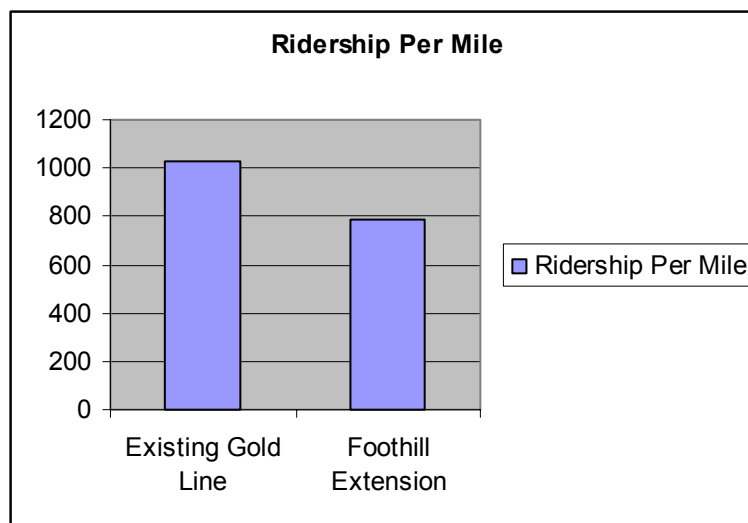


Figure 17

One factor that has to be mentioned is the time difference between the data on the existing Gold Line and the extensions the existing data on the Gold Line is present day in 2004. The East LA extension is looked at in 2020 and the Foothill Extension is looked at in 2025. This is a 16 to 21 year difference. According to the Pasadena to Claremont Gold Line Phase II Alternatives analysis, there will be a 9.7% increase in employment in

LA County between 2005 and 2020. Between 2000 and 2025, there is going to be a 24.5% increase in population.

One other factor to look at is the current ridership of the existing Gold Line. The Gold Line was projected to have 24,000 to 36,000 riders per day when it opened. It now has about 14,000 riders per day. This is about half of what was projected.

When analyzing the data on the two proposed extensions of the Gold Line, conclusions can be drawn based on ridership and projections. Ridership on the Gold Line will benefit from the East LA extension. Ridership overall and per mile will significantly increase. The Foothill extension will increase overall ridership, but ridership per mile will likely decrease.

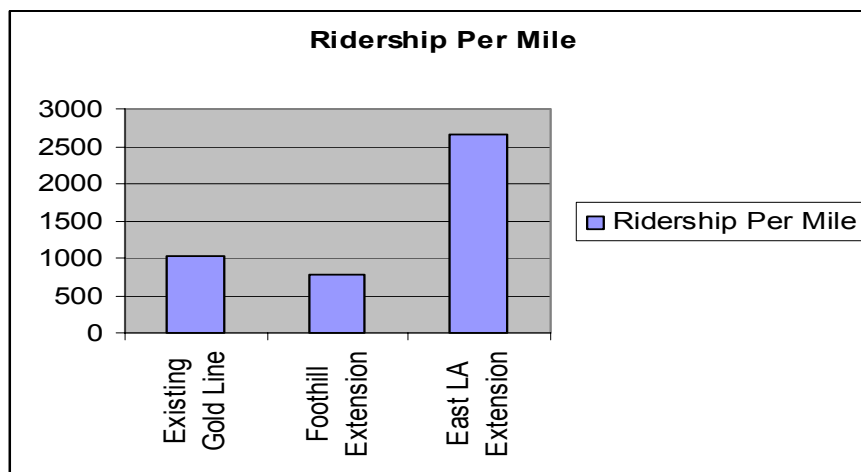


Figure 18

When looking at the projected ridership in the future we can see that these extensions will have a great effect on total ridership for the Gold Line. The extensions alone will have about 34,000 average weekday riders *if* projections are realized. That is over half of what our objective of 60,000. Of course this is just based on MTA projections which may be inaccurate, but is the best way to gauge growth in ridership on the Gold Line.

## **Marketing Alternative**

Probably the best feature of using marketing plans to increase ridership on the Gold Line is flexibility. They allow for either very broad or extremely specific campaign. In addition, their very nature allows for an incremental approach. There are many ways in which to market to increase ridership (see Figure 19). The most obvious is for MTA to market the benefits of the Gold Line; something the agency already does. While that type of marketing certainly is important, the goal here is to develop other types of creative campaigns that focus on specific or targeted users. In particular, we are focusing on transit users who are shoppers without automobile access, non-traditional employees (such as retail), and tourists or people engaged in other leisure activities.

We are not addressing the traditional downtown commuter in this evaluation. A study funded by the US Department of Housing and Urban Development found that marketing campaigns have significant impacts on off-peak riders, while having little or no effect on commuters.<sup>6</sup> In fact, it is not the intention of this analysis to develop a list specific marketing campaigns for the Gold Line, but rather, to hopefully inspire multifarious and possibly public/private collaborative types of campaigns to boost ridership. Thus, this alternative will look specifically at one type of public/private marketing idea and then evaluate it as if it was but one of many marketing ideas all applied aggregately.

A recent transit study done by Oram Associates of New York City (a transit consulting firm) found that many transit agencies miss perhaps the largest market of transit riders by focusing on getting people to use transit regularly. “Infrequent users

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<sup>6</sup> Battberg, Robert C. and Samuel Stivers. “A Statistical Evaluation of Transit Promotion”. *Journal of Marketing Research*, Aug. 1970, vol. 7, no. 3.

(those riding twice a week or less) are a far larger share of the total market of transit users”.<sup>7</sup> Therefore, this alternative suggests public/private marketing that would be primarily aimed at capturing a greater share of the infrequent riders. This would be done by advertising specific regional-draw retail stores to areas that are located near Gold Line station areas and lack the aforementioned services.

As the station area demographic data shows, the areas adjacent to the Chinatown and Highland Park stations are areas of moderate to moderately-low income. There are also a high number of households (in comparison to the region) that do not own or have ready access to an automobile. In Highland Park, 19.8% of households do not own a car and in Chinatown, 49.5% do not own a car. These areas are also not generally located near big box retail shopping centers. However, because of the route of the Gold Line, it is possible to get to some of these stores via the Gold Line. The Sierra Madre Villa station is located adjacent (one block) to shopping center on Foothill Boulevard and Halstead. Within this shopping center are various stores such as Bed Bath and Beyond, PetSmart, Party City, Wickes Furniture, Old Navy, Chicks, Zany Brainy, Famous Footwear, Starbucks, Best Buy, and others. If we use the example of Best Buy, we see a problem of access to both the Chinatown and Highland Park station areas. The nearest Best Buy store locations to Chinatown are Atwater Village (2909 Los Feliz Blvd), Culver City (10799 Washington Blvd), Burbank (1501 N. Victory Place), and West Los Angeles (11301 Pico Blvd.). The trip times to the previous store locations are: Atwater Village, Metro bus 094 North, 18 minutes, Culver City, Metro bus 33 West, 48 minutes, Burbank, Metro bus, 36 minutes, West Los Angeles, Metro bus 33 West, 1 hour, 18 minutes, and Pasadena, Gold

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<sup>7</sup> “Infrequent Riders Overlooked in Most Transit Marketing” *Urban Transport News*. 17 Jan. 1996, vol. 24, no. 2.

Line, 41 minutes.<sup>8</sup> Gold Line usage is comparable or better than all of the location except Atwater Village. However, the Pasadena location could possibly still be viable because the headways on Metro bus vary, but may be around every thirty minutes, whereas Gold Line headways average about ten minutes. In addition, the nature of interior space may be more conducive to shopping than that of a bus. There are much fewer stops and thus fewer passenger “recombination” (boardings and alightings) on light rail than bus service. Some people may find this a more enjoyable environment when handling multiple packages.

In Highland Park, the two nearest Best Buy locations are Atwater Village (2909 Los Feliz Blvd, Los Angeles) and the location near Sierra Madre station in Pasadena (3415 E. Foothill Blvd.). To reach the Best Buy at Atwater Blvd, taking MTA Metro bus 181 South would take 47 minutes. The trip to the Pasadena Best Buy via the Gold Line would take 22 minutes. In this case, it is clear that accessing Best Buy in Pasadena is best alternative.

Again, the intent here is not to limit this to shopping at Best Buy. The idea is to create creative marketing campaigns directed at the transit dependent and choice users alike. These types of campaigns could benefit the residents as they would have improved access to certain services at locations that they may have never thought of, it would benefit retail stores by potentially boosting their sales, and better utilize the Gold Line by adding riders, and further incorporating it into the urban fabric. As mentioned before, a marketing campaign focusing on the Pasadena shopping center and residents of Highland Park is just one possible component of a larger plan. For example, in addition, the strong Latino culture of Highland Park or Chinese culture of Chinatown and the types of

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<sup>8</sup> Times and route information calculated by using MTA trip calculator, <http://www.metro.net>

businesses associated therewith would in turn be marketed toward residents of Pasadena. One benefit enjoyed by residents of southern California is the broad array of “authentic” cultural places. (There are many examples where these attractions have revitalized areas, such as Leimert Park in south Los Angeles and potentially the Plaza de Mexico in Lynwood.)

The marketing alternative, relative to the evaluation criteria, does have many positive aspects. It could be very inexpensive relative to major capital costs associated with line extension or increased bus service. It is conceivable that such projects could receive funding from a public-private partnership, such as participating retail centers. Relating to the environment, creating programs to increase mass transit instead of automobile usage clearly is beneficial to the environment. Specifically, this plan would potentially add riders to the Gold Line, which runs on electricity and creates no direct emissions. In terms of social equity, again, the marketing alternatives score well because transit is important to those with lower incomes who can not afford the luxury of an automobile. It grants them access to shopping and employment. It also scores well in terms of system compatibility as the specifics of the marketing plan would focus on areas that are already served by the Gold Line. The drawback to the marketing alternative is that given the fact that the concept is somewhat abstract, it is therefore difficult to quantify its effectiveness.

## Marketing Concept

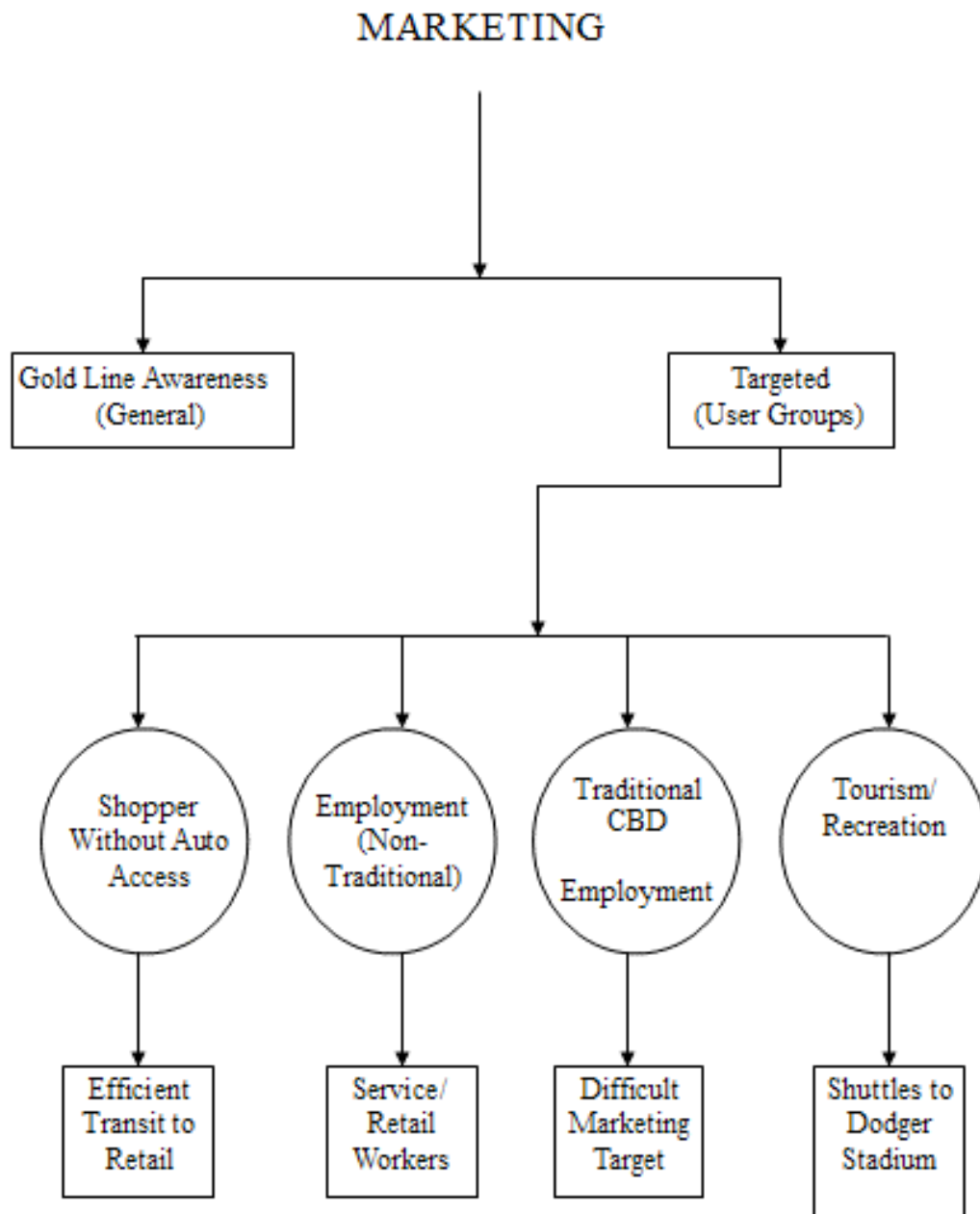


Figure 19



## **No Action Alternative**

The no action alternative means that nothing would be done in an attempt to increase ridership on the Gold Line, with the exception of projects currently underway such as the TOD development around Del Mar station. It assumes that none of the proposals of other teams in this study would be endeavored. The no action alternative leaves any development to market forces acting within the current local ordinances. In addition, bus lines will not be altered or augmented in any attempt to better utilize the Gold Line.

In order to attempt to estimate the future ridership of the Gold Line without any action, we must compare it to other MTA lines. The most comparable line, the Green Line, has not had significant attempts at boosting ridership by any of the alternatives offered here. Both the Green and Gold Lines have portions that travel on freeway medians. The Blue Line, unlike either the Green or Gold Lines, has high ridership (one of the most successful single lines in the country), but it also links the first and second-largest cities in Los Angeles County, and as such, is not used as a comparable in this alternative. The Green Line has seen ridership more than double in 9 years. At its opening, the weekday average ridership was 11,000<sup>9</sup> and as of April 2004 it was 26,938<sup>10</sup>. But the Gold Line is different than the Green Line in that it has great potential for both peak and off-peak ridership because it has “destinations”, such as a connection to downtown Los Angeles’s Union Station and Old Town Pasadena.

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<sup>9</sup> White, Franklin E., CEO, MTA. “Letter to the Editor”, *LA Times*. Nov 5, 1995, pg4.

<sup>10</sup> Data from MTA.net

The Gold Line may expect a significant increase in ridership in the next decade, perhaps doubling its numbers. As people naturally become more acclimated to it, and as the population in southern California continues to increase, ridership likely will increase. It is unlikely, however, that it will reach the original projection of 60,000 riders by 2020 without further action. In fact, if ridership were to double in ten years (28,000), it would have taken a decade to reach the original goal set for the first year of operation. Also note that the Green Line has reached a plateau at around 27,000 and has been hovering there for the last few years.

## **Evaluation and Conclusions**

All of the alternatives present very different methods for boosting ridership on the Gold Line. Looking at the evaluation matrix (Table 6) we can see how each alternative ranks based on the evaluation criteria we set. While certain alternatives appear to work better than others a mix of these alternatives is best in boosting ridership. Marketing appears to be the best overall alternative to pursue. It does not present a high promise for ridership, but has low costs and should be easily approved. System access is the second best alternative.

	<b>Alternatives</b>				
<b>Criteria</b>	Fare Structure	System Access	Line Extension	Marketing	No Action
Riders Produced	1	3	5	2	1
Cost	3	3	1	4	5
Social Equitability	2	4	3	4	2
Political Feasibility	2	4	3	5	3
Environmental Impact	5	4	3	5	2
<b>Totals</b>	<b>13</b>	<b>18</b>	<b>15</b>	<b>20</b>	<b>13</b>
1=worst, 5=best					

*Table 6*

The line extension strategy would better utilize the existing Gold Line but has a very high cost. Since the East L.A. extension has already been approved, securing funding and obtaining public and political approval will guarantee their construction and maximum level of service. The desirability of the Foothill extension depends on more evidence that commuters from points east will rider the Gold Line.

The fare structure alternative does not appear to be feasible in the near future, but as ridership increases such measures may become more feasible to increase ridership. Implementing a new fare structure now most likely will have no effect or possibly a negative effect on ridership.

While these alternatives present a substantial growth in ridership we do not believe that these measures alone will boost ridership to the objective of 60,000 average weekday ridership. The no action alternative presents a picture of how the area will respond and possibly deteriorate if none of the alternatives are sought. Pursuit of other alternatives, primarily TOD, will help to boost ridership to the point where 60,000 average weekday riders might be reached by 2020. A large investment has been made in constructing the Gold Line. Further financial and political investment is necessary in expanding services to better utilize the current investment and boost ridership on the Gold Line.

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