

The Pasadena Gold Line:  
Development Strategies, Location Decisions, and Travel Characteristics along a New Rail Line in the  
Los Angeles Region

April 2005

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a publication of the  
**Mineta Transportation Institute**  
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### ACKNOWLEDGMENTS

This study was a collaborative effort by a team of researchers and university students. The authors would like to thank the following persons for their efforts and suggestions: Researcher Daniel Evans, San José State University; Research Assistant David Levitan, California State Polytechnic University, Pomona; and Student Researcher Tin Yeung, San José State University.

Additional thanks to MTI staff, including Research Director Trixie Johnson, Research and Publications Assistant Sonya Cardenas, Graphic Designer Shun Nelson, Webmaster Barney Murray, and Editorial Associates Irene Rush and Catherine Frazier for editing and publishing assistance.

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## EXECUTIVE SUMMARY

### OVERVIEW

A study recently prepared for Caltrans (Travel Characteristics of Transit-Oriented Development in California<sup>1</sup>) assesses the travel patterns of persons who live, work, shop, and recreate near suburban and infill rail transit stations throughout California. The study found that those who live in transit-oriented developments (TODs) have higher levels of transit use than persons in surrounding areas. The Gold Line, which began revenue operations in 2003 and has been accompanied by a boom in TOD, had not opened in time to be included in that study. This research extends that research to the Gold Line corridor. It examines travel behavior in station areas surrounding the light-rail transit line, which connects Los Angeles to Pasadena, and explores development and management issues along this new rail line.

To take a more comprehensive approach to the study and understanding of rail station development within the Southern California context, this research combines quantitative and qualitative approaches. Household surveys provide a measurement of the early results of the Gold Line in attracting nearby residents to transit use and baseline quantitative data for future longitudinal studies as the line matures. Surveys are also used to understand residents' household location choices and attitudes toward transportation options in their neighborhood. Interviews with developers and property managers supplement these data, providing new understandings of the logic and influencing factors behind rail station development and the extent to which rail access is incorporated into building management strategies along new rail lines.

### RESEARCH CONTEXT

Southern California faces many challenges related to growth: traffic congestion, a lack of affordable housing, and environmental problems, to name just a few. Investments in rail systems and TOD are seen as a means not only to reduce automobile use and increase transit ridership, but also to conserve resources and open space, revitalize local economies, accommodate affordable housing needs, and give residents more housing and mobility options. According to a statewide report on the status of TOD in California, "there is more activity with TOD planning and

implementation in California now than at any time during the last century."<sup>2</sup>

The Pasadena Gold Line extends from Union Station, the Southern California rail and bus transit hub located at the northern edge of downtown Los Angeles, to Sierra Madre Villa on the east side of Pasadena. The Gold Line intersects the cities of Los Angeles, South Pasadena, and Pasadena and travels through a wide range of environments, from L.A.'s Chinatown, to upscale neighborhoods of South Pasadena and the Old Town area of Pasadena, to suburban employment centers on the east end. The total travel time (according to the Los Angeles County Metropolitan Transit Agency [LACMTA], the operating transit agency) is 36 minutes. The line has 13 stations, including the terminal points at Union Station and Sierra Madre Villa. Because this study concentrates on suburban and infill development, as detailed below, data collection is limited to TODs outside the central Los Angeles area, from Lincoln Heights east to the end-of-the-line Sierra Madre Villa station.

The Gold Line carried 17,018 weekday riders as of July 2004, approximately one-half the forecasted ridership. The total ridership of the Long Beach Blue Line is significantly higher, but weekend ridership on both the Gold Line and the Blue Line is relatively strong.

## STUDY PURPOSES

The first purpose of this study is to examine the early travel behavior outcomes of Gold Line TODs and identify TOD design and policy features that contribute to success. The project methodology is consistent with that used in *Travel Characteristics of Transit-Oriented Development in California* to allow comparisons to results elsewhere in the state and to complete the creation of a baseline for future Gold Line or statewide studies. The study methodology is also similar to studies done on this subject in the early 1990s.<sup>3</sup>

The second purpose of this study is to understand the factors behind the TOD boom in the Gold Line corridor. Unlike the previous studies, this research includes interviews with key developers and property managers operating in Gold Line station areas. In these surveys, they discuss their understandings of the influence of rail transit accessibility on development, to identify both encouragements and impediments to TOD.

The project has the following policy implications:

It provides an information base that can enhance station-area and access planning for the Gold Line. This can help cities decide on the development densities and land-use combinations that are most appropriate for specific station areas.

It informs planning for extensions to the Gold Line, one that will proceed to East Los Angeles (anticipated to open in 2009), and the other that is proposed to proceed east, well into the San Gabriel Valley.

It assists developers in assessing opportunities and designing sites.

By comparing these data to information about other rail lines in California, it gives regional and state policymakers a better sense of the ridership that can be expected along new rail lines, compared to more established transit lines such as the Bay Area Rapid Transit (BART) system.

## LITERATURE REVIEW

In 1992, Robert Cervero conducted a statewide study of travel behavior among Californians who live or work near rail stations.<sup>4</sup> Because the BART system is the most developed rail system in the state, the research focused primarily on the Bay Area, but some sites from Southern California and Sacramento rail lines were included. A follow-up study conducted in 2003 also focused on residents and office workers, but expanded the research into new rail lines and TODs throughout California--particularly those in the Los Angeles Metro and San Diego Trolley systems.<sup>5</sup> By including many of the same sites, the 2003 study was able to examine longitudinal changes in transit ridership.

Both studies come to three similar conclusions:

Ridership is (on average) around five times higher among people who live or work near rail stations compared to surrounding areas.

The likelihood of a person's using transit is influenced by characteristics not only of the trip origin, such as density and distance to station, but also at the trip destination, such as parking costs and bus connectivity.

Distance to the station is more critical than land-use mix or local design elements in predicting transit use--in other words, a person who lives or works close to a rail station and wants to use transit is not likely to be deterred by an unfriendly pedestrian environment.

The follow-up study also concluded that although overall transit ridership had not increased significantly, BART was finally achieving its TOD ridership expectations. Both of these studies help us to understand residents' and office workers' reactions to rail access and provide a strong basis for future longitudinal studies of travel behavior along California's rail lines, but neither provided insight into station-area development processes nor examined a new rail line. These are the primary research gaps being served by this study of Gold Line station areas.

## TOD IMPLEMENTATION

Two other California studies have used interviews with key participants to answer questions of TOD implementation--one along the Los Angeles-Long Beach Blue Line,<sup>6</sup> where TOD has been minimal except for downtown Long Beach areas, and one along San Diego's light-rail trolley lines,<sup>7</sup> which have been more successful in attracting development. The Blue Line study interviewed developers and community leaders; it identified some of the main constraints to TOD along this corridor as a negative image of surrounding areas combined with high land costs, low densities along the rail corridor, inaccessible stations and unfriendly pedestrian environments, and a lack of integration into local planning regulations and permitting processes. The San Diego study interviewed planning directors and identified these additional constraints: a lack of available undeveloped land, especially when rail lines travel through already-developed areas; a negative perception of higher-density residential developments; and a sales tax revenue structure that makes commercial land uses more attractive than housing or

office development.

The nonridership advantages of TOD can counteract some of these barriers if they coincide with local goals. A rail station's ability to leverage development opportunities, for example, can help to revitalize distressed areas or downtowns and increase the use of vacant areas.<sup>8</sup> TODs also provide improved opportunities for housing, particularly in areas suffering from a housing crisis.<sup>9</sup> In San Diego's La Mesa station area, for example, the rail stations were near areas in need of development; thus, TOD supported both regional and local goals and made the city more willing to entitle development. This is not always the case, however, and the San Diego study<sup>10</sup> recommends increasing local officials' awareness of the regional and local advantages of TOD to minimize the barrier of conflicting goals. Both of these studies demonstrate the importance of understanding and responding to local contexts and support the need to examine TOD implementation in a broader range of environments.

## TODS AND TRAVEL BEHAVIOR

Past research on travel characteristics within TODs strongly indicates a link between physical factors, such as density and transit accessibility, and increased transit ridership.<sup>11</sup> TOD implementation, however, does not always result in increased transit ridership, and the roles of demographics, transportation investments, and other policies and development strategies need to be considered. For example, the Blue Line has the highest ridership of L.A.'s Metro lines, despite of the lack of development along the line. Ridership is high because the line runs through lower-income, transportation-disadvantaged communities, although station-area densities throughout this corridor are low. In other cases, changing demographics and economies constrain the ridership impacts of improved transit access. In a study of households in the Toronto area, where a highly coordinated transit system has been developed, several trends are making travel more difficult to serve by transit: increasing trip rates and more complex trip patterns, more nonwork and nonschool travel, more nonhome-based trips, and more nonpeak-period trips.<sup>12</sup>

Transportation infrastructures can also inhibit ridership, in spite of investments in TOD and rail. For example, rail networks are often oriented toward central business districts, despite the decentralization of regions and a loss of jobs in downtown areas.<sup>13</sup> This can reduce the use of rail for commuting purposes. A study in 2002 attributes lower-than-expected modal shifts (from automobiles to transit) to parallel developments in automobile and transit infrastructure. This study concludes that transit ridership will not occur at the desired levels as long as similar investments are being made in automobile infrastructure.<sup>14</sup> This observation has been noted by several other studies.<sup>15</sup> Parking supply and pricing--especially in suburban areas, where parking is often oversupplied and constituents are less supportive of priced or reduced parking to facilitate TOD<sup>16</sup>--is also a significant deterrent to transit ridership among residents and users of TOD.<sup>17</sup>

Finally, it is becoming apparent that household location choice and residents' attitudes toward transit access play an important role in TOD travel behavior. A longitudinal travel diary study of residents in the Seattle, Washington, region<sup>18</sup> found that households moving into more transit-accessible neighborhoods do make a shift toward transit modes. A California study also found that residents who moved into a TOD because of the improved transit access were significantly more likely to use the nearby transit.<sup>19</sup> This issue--in particular, who is moving into TODs and how the move affects their travel behavior--is addressed in this study, but deserves more attention. More comprehensive assessments of TOD, taking into account the full spectrum of demographic, political, economic, and other factors influencing ridership, are needed.

By taking a combined quantitative-qualitative case-study approach to understanding TOD, this research not only expands on our current understanding of TOD implementation, travel behavior, and residential location, but also explores and identifies connections among these factors and raises new questions for future study. This research also expands on the existing research by specifically targeting TOD along a new rail line--research that will be increasingly important as California and other jurisdictions explore opportunities for rail extensions.

## RESEARCH METHODOLOGY

This report presents findings from three related but distinct data collection efforts. First, residents living within one-third of a mile of a Gold Line rail station were surveyed regarding travel behavior and residential location. The sampling unit for these surveys is the multi-unit building; sites were limited to infill and suburban locations outside of downtown Los Angeles. Union Station and Chinatown were excluded from all surveys because they were urban central business district (CBD) environments, and Lincoln Heights and Heritage Square were excluded because there were no multifamily sites to survey.

The second data collection effort consisted of qualitative interviews with developers and property managers of residential TOD buildings in Gold Line station areas. These buildings do not necessarily overlap with the residential survey sites because many were not yet occupied and some were not completed at the time this research was conducted. Interviewees were identified using a snowball sample technique, in which public sector informants provided contacts in the Gold Line development community.

Finally, data on each station area were compiled through secondary data sources and site evaluations. Quantitative assessments of the station area population and housing characteristics were compiled from 2000 U.S. Census data, and the local pedestrian environment was assessed quantitatively through site evaluations (see [See Appendix C: Pedestrian Evaluation Worksheet](#)[See Appendix C: Pedestrian Evaluation Worksheet](#)Appendix C). These data were used for comparison purposes and to improve our understanding of the household survey and interview findings.

## RESEARCH OBJECTIVES

There were three primary objectives for this project:

To understand property developers' and managers' perceptions of and responses to development opportunities within new Southern California

rail station areas

To evaluate station-area residents' responses to the new rail access in terms of travel behavior and location decisions

To provide a more complete data set for future studies of how travel choices, location decisions, and property management decisions within station areas change over time.

## SELECTION OF SURVEY SITES

As noted above, interviewee subjects were identified through a snowball sample technique, beginning with public sector informants. Identifying potential survey sites required extensive legwork. The first task in selecting sites for study was to create a list of multi-unit buildings located within one-third mile of the Gold Line stations. To increase our range of potential sites and to recognize the significant variation in development patterns across the station areas, buildings of all sizes were considered. (This is different from the previous studies, where buildings were limited to 50 units or more in order to make the most efficient use of resources.) Students in a senior Community Planning Studio class in the Department of Urban and Regional Planning initiated this task, conducting field reconnaissance on all Gold Line stations. After the students listed potential sites, a research assistant refined and narrowed the list based on additional criteria. It was important that the selected sites represent a range of housing affordability; sites in the cities of Los Angeles, South Pasadena, and Pasadena; and a range of densities and project scales. Some sites were eliminated because unit addresses could not be obtained. A total of 37 buildings were surveyed, ranging in size from 10 to 374 units. Table 1 summarizes data collection efforts at each station area.

All sites were located within walking distance (one-third of a mile) of a rail station, except in the case of Sierra Madre Villa (the terminal station), where we had to extend out to a 1-mile radius to find suitable multi-unit buildings.

Summary of data collection efforts by station area				
Station	Characteristics	Buildings Surveyed	Developer Interviews	Manager Interviews
Lincoln Heights	Industrial district	0	1	0
Southwest Museum	Community district, no parking at station	3	0	0
Highland Park	Community district, no parking at station	1	0	0
Mission	Community district, no parking at station	10	2	0
Fillmore	Hospital and residential district, 160 parking spaces	4	0	0
Del Mar	Emerging urban, mixed-use district, 600 parking spaces	4	2	0
Memorial Park	Urban, mixed-use setting, no parking at station	2	0	2
Lake	Highest-density office and residential cluster, no parking at station	4	4	3
Allen	Residential neighborhood, no parking at station	3	0	0
Sierra Madre Villa	End-of-the-line station, 1,000 parking spaces	6	1	0

## HOUSEHOLD SURVEYS

The quantitative assessment of travel behaviors and location decisions was conducted through self-administered questionnaires. Travel behavior questions were the same as those used in the statewide Caltrans study, but supplemented by questions related to residential location decisions and perceptions of the new rail station access. [See Jonathan Levine, et al., Land Use and Transportation Alternatives: Constraint or Expansion of Household Choice, Mineta Transportation Institute \(MTI\) Report 01-19, San Jose, CA: San Jose State University, 2002.](#) See Appendix A for the survey instrument.

The following are the primary research questions of the resident surveys:

Does residential location near the Gold Line increase the probability of transit use in work and nonwork trips, as compared to transit-mode share in the surrounding city? To what degree does location in a TOD bring about a change in travel behavior (versus relocation of prior transit users)?

What is the influence of other factors, such as the service qualities of competing modes, demographic characteristics, policy features, and neighborhood attributes?

What factors influence residential location in a TOD? How did travel behavior differ from the previous residence to the current one?

Surveys were sent to all residential units within each building. The questionnaire included a cover letter describing the project and giving instructions for completing the survey; a letter of endorsement from the mayor of Pasadena for Pasadena surveys or the councilman for the city of Los Angeles for the Los Angeles surveys; and a prepaid, preaddressed envelope. The first mailing was sent in early June, and follow-up survey packages were sent to all nonrespondents three weeks later.

Two additional strategies were used to increase response rates. First, everyone who returned a completed questionnaire was eligible for a raffle drawing with two \$500 cash prizes. Second, surveys were translated into Spanish and there was a notice at the top of the introductory letter informing potential respondents (in Spanish) of how to obtain a Spanish-language survey. The survey team received only three requests for Spanish surveys; none of these was returned. The resulting overall response rate is 13.9 percent. The survey instrument is provided in

## KEY PARTICIPANT INTERVIEWS

Inquiries into the development and management responses to new rail access were conducted through oral interviews with project developers and property managers operating within Gold Line station areas. The following are the primary research questions for the developer and property manager surveys:

How does the Gold Line influence the market for TOD in the entire corridor?

How did proximity to the Gold line affect a specific TOD project, considering factors such as planning, design, development economics, financing, development entitlements, and marketing?

We selected developers that represent the range of development conditions along the Gold Line. Neighborhoods vary from residential districts with a small-town feeling to urban-scale mixed-use areas. We generated our list of interview targets by talking with planners who worked at LACMTA, the city of Los Angeles, and the city of Pasadena during the Gold Line planning period. [See Interviews were conducted with Art Cueto, LACMTA; Marsha Rood and Brian League, City of Pasadena; and Gerald Gubitan, Planning Deputy for Councilman Reyes, City of Los Angeles.](#)

An interview guide was developed to ensure that consistent questions were asked of respondents. The questions were open-ended, allowing the respondent to explain the situation as he or she sees it. (See Appendix B for a copy of the interview guide.) The primary objectives of the developer interviews were to gain insights into how light-rail transit station proximity influenced development practices and to discover planning issues that support or impede the continuation of TOD in the corridor. For each developer, Web research was completed on project characteristics and a telephone interview was conducted with a senior manager directly involved in the development. Each interview took about 30 minutes.

## THE GOLD LINE AND ITS STATION AREAS

The Pasadena Gold Line extends from Union Station in downtown Los Angeles (the hub for L.A. rail and bus transit) to Sierra Madre Villa on the east side of Pasadena (see Figure 1). The Gold Line intersects three cities: Los Angeles, South Pasadena, and Pasadena. Spurred by supportive local and regional policy, a strong housing market, and the Gold Line construction decision, the Gold Line corridor has had a substantial amount of development over the last five years, with more projects on the way.



Source: Metropolitan Transportation Authority (<http://www.mta.net>)

Map of Pasadena Gold Line and its rail stations

Among the best-known TODs in the corridor is Holly Street Village, a mixed-use, infill project built over the air rights of the Gold Line at the Memorial Park station. Projects are now planned or under construction at almost all the Gold Line station areas. In Pasadena alone, 1,127 apartment units are listed as in the planning or construction process. Most include retail uses, and some include affordable housing units. The average project size is 94 units per project. In addition, there are 585 condominium projects listed, with an average size of 59 units per project. Some are loft-style units. These totals do not include the many projects already completed, but a total of 1,712 units in the planning or construction stage in Pasadena station areas is a high level of activity. [See Data obtained from city of Pasadena Website, http://www.ci.pasadena.ca.us/planninganddevelopment/developmentprojects/projects.asp, accessed on 8/25/04.](http://www.ci.pasadena.ca.us/planninganddevelopment/developmentprojects/projects.asp) Residential development activity is proceeding on a slower basis in the City of Los Angeles, but there are some major projects. The single largest TOD in the corridor is under construction at the Lincoln Heights station, a 533-unit residential development that includes for-sale housing and affordable rental housing. Planning work is underway for large mixed-use developments at the Chinatown and Union Station Gold Line stations.

The following overviews illustrate the wide range of population, housing, and development characteristics along the Gold Line corridor. These overviews are based on data from the 2000 U.S. Census (see Table 2 on page 25) and site observations, and are presented here from west to east. [See U.S. Census data for the one-third-mile radii around station areas were compiled using the LandView 6 program produced by the U.S. Census Bureau. Land View 6 estimates population characteristics within a radius "by tallying Census 2000 data for those block \[group\] points whose coordinates fall within the circle defined by the radius." Data are derived from Summary Files 1 and 3 of the 2000 U.S. Census.](#) The surveyed TOD sites are described briefly.

## SOUTHWEST MUSEUM

The Southwest Museum station area is predominantly Hispanic, with 22 percent of the Spanish-speaking population speaking English "less than very well." In 2000, of workers ages 16 and over, 14 percent commuted by transit in 2000, 17 percent carpooled, and 61 percent drove

alone. (Note that none of the station areas received rail service until 2003.) Although 73 percent of the population is of driving age (16 years and older), 65 percent of households are families. Among the station areas in this study, Southwest Museum has one of the highest shares of low-income households (29 percent make \$25,000 or less per year) and transit dependency (18 percent of households have no vehicle available). The station sits at the base of Mount Washington, a hillside neighborhood with higher-income characteristics than the station area.

Most of the housing stock consists of one-unit buildings and structures that were built prior to 1960. Of the occupied housing units, 58 percent are rental, and nearly 60 percent of residents had moved into their current residence within the past five years (as of 2000). The overall densities are 10,918 persons per square mile and 3,850 housing units per square mile. Immediately next to the station is a day-care facility in a historic structure that was developed to take advantage of Gold Line proximity.

Three TOD sites or buildings were included in this study: two along North Figueroa Street and one on Woodside Drive. All three are relatively large (40 to 85 units) and were constructed in the 1960s and early 1970s.

Evaluations of the pedestrian environment between each of the sites and the rail station reveal that routes are relatively safe from traffic, with sidewalks on both sides of the street for the entire route and crosswalks and signals at every intersection, but they do not rate well in terms of comfort, aesthetics, or sense of safety. None of the block faces has more than one street tree or street light; there are no benches or other furniture; landscaping is sporadic; and graffiti, trash, and bars on windows were common. Figueroa Avenue, a major arterial that separates the sites from the rail station, is up to 75 feet wide, but has no street medians.

## **HIGHLAND PARK**

Highland Park was one of the first suburbs of Los Angeles. Today, Highland Park--more so than any of the other station areas--is a predominantly Hispanic community (91 percent are Hispanic or Latino, and 44 percent speak English "less than very well"), with a large number of families (76 percent of all households) and young children (11 percent of the population is under 5 years of age). Highland Park also has the highest population density (20,991 persons per square mile), and the largest shares of transit commuters (21 percent) and carpool commuters (23 percent). Less than 6 percent of the population has a college degree, 25 percent of the population is living below poverty, and 21 percent of households are transit dependent (with no vehicle available). There are gang and public safety issues in this community.

The housing stock is quite diverse in terms of the number of units per building (38 percent are single-unit, 41 percent have 2 to 19 units, and 21 percent have 20 units or more) and the age of the structures (18 percent were built between 1980 and 1994, 27 percent between 1960 and 1979, and 55 percent before 1960). As of 2000, the station area was not characterized by new development: No structures were built between 1995 and 2000. Eighty percent of the occupied housing units are rentals, and nearly 60 percent of the population moved into their current residence within the past five years (from 1995 to 2000). Portions of the station area are under a historic overlay zone and a TOD ordinance. The station is one block from the busy main street of the commercial district, Figueroa Street.

Unfortunately, household addresses were successfully obtained for only one (15-unit) building in this station area. Even with a 13 percent response rate, this provided only two surveys. These surveys are clustered with Southwest Museum and Mission in the analysis section, but no conclusions regarding travel behavior or residential location can be drawn for this station area.

The pedestrian environment surrounding the Highland Park station is quite similar to that at Southwest Museum, with trash, graffiti, and bars on windows along the entire route between the residential site and the rail station. Like Southwest Museum, there is no street furniture, and few (if any) street lights and street trees along the route. Landscaping is slightly better than in Southwest Museum, sidewalks are common and wide, and intersection wait times are 20 seconds or less.

## **MISSION**

The Mission station area is located in the old town area of South Pasadena. South Pasadena has a higher-income profile than the City of Los Angeles station areas. The area has a moderate share of Hispanic or Latino residents (23 percent), and these residents are less linguistically isolated than in Southwest Museum and Highland Park, with only 2 percent of the Spanish-speaking population speaking English "less than very well." This station area also has one of the highest shares of Asian persons (19 percent) and the largest share of family households where all parents in the household work (80 percent). Mission is the only station area that reported no transit commuting in the 2000 Census.

Nearly one-half of the housing stock consists of one-unit dwellings, and two-thirds of the housing structures were built prior to 1960. Sixty-three percent of occupied housing units were rentals as of 2000, and 61 percent of all residents (including renters and owners) moved to their current residence between 1995 and 2000. The community is in the path of a planned extension of the 710 Freeway, but has participated with others opposed to the freeway in preventing its construction. Some in the community saw the Gold Line as an alternative to freeway building.

Ten TOD sites or buildings were surveyed within the Mission station area: three along Prospect Avenue and seven along Orange Grove Boulevard. The newest building was constructed in 1971 and the oldest in 1928; most were built in the 1950s and 1960s. The buildings have an average size of 20 units, ranging from 14 to 32.

The station has no public parking yet and only one connecting bus route. However, LACMTA has teamed up with a TOD developer to fund public station parking in a TOD next to the station, which is under construction. The two Mission station TOD sites for which pedestrian evaluations were conducted are both located within 100 yards of the station. Landscaping was excellent (ranking 5 out of 5 on a subjective evaluation; see Appendix C), street trees and lights are present, and there is a bench to sit on. Trash, graffiti, and vacant buildings were nowhere to be found; the sole intersection was signaled, had a marked crosswalk, and the wait time was never more than 30 seconds.

## **FILLMORE**

Primarily comprising medical and hospital services, Fillmore's station area has the lowest population density as of 2000 (3,279 persons per square mile). City planners saw this corridor as being appropriate for biotechnology research and development, but that development has been slow in occurring. The station area also has a low share of young children (just 4 percent of the total population); the highest educational attainment among the studied station areas, with 38 percent of the adult population earning a bachelor's degree or higher; and a high share of single-person households (58 percent). Fillmore's racial and ethnic make-up is quite diverse, with Asian persons representing 15 percent of the population, Black or African American persons comprising 12 percent, and Hispanic or Latino comprising 19 percent. Fillmore has the highest share of single-occupancy-vehicle (SOV) commuters (87 percent) and the lowest share of carpool commuters (1 percent). Only 5 percent of the station-area population commuted by transit in 2000.

Fillmore has few total housing units (664) compared to the other nine station areas. One-third of these units are located in large multi-unit buildings (20 units or more), and just 22 percent are single-unit dwellings. Fillmore also has a high share of renters (80 percent) and newer residents (70 percent moved in between 1995 and 2000). The Fillmore station has 160 public parking spaces and five connecting bus routes.

Four TODs were surveyed in the Fillmore Station. All sites are located close to one another, along South Marengo Avenue, about 0.2 mile southeast of the station. Two were built in the early 1960s, two in the early 1980s, and one is a condominium complex. Sizes range from 12 to 30 units per building. The pedestrian routes have average to excellent landscaping (ranging from 3 to 5 on the subjective 5-point ranking), and there was no evidence of trash, graffiti, vacant buildings, or barred windows. Although there is little retail nearby and only one street tree and street light per block face, it was a fairly pleasant route overall.

## **DEL MAR**

Del Mar is similar to Fillmore in several ways: low population density (4,388 persons per square mile), few children under 5 years of age (4 percent of the population), high educational attainment (29 percent have a bachelor's degree or higher), a large share of single-person households (62 percent), and a relatively diverse ethnic composition (10 percent Black or African American, 11 percent Asian, 28 percent Hispanic). It also has a large majority of workers (80 percent) who commute by SOV and few (2 percent) who carpool. However, this station area is going through substantial change, with construction of the Del Mar Station TOD surrounding the station. The completed project will include public parking for the Gold Line and the restoration of the Santa Fe Depot train station.

The size of Del Mar's housing stock is also similar to Fillmore's, with just 835 total units, but its housing units are relatively older (the majority were built before 1960 rather than 1980) and more concentrated in large structures (20 units or more). The Del Mar station has great potential for future high-density infill development.

Four large buildings (80 to 150 units) were surveyed in the Del Mar station area: one on Cordova, one on East Del Mar, one on South Euclid, and one on East Bellevue. All four were built in the late 1960s and early 1970s, and one now consists of condominium housing. The Del Mar station has 600 underground parking spaces (at a \$5 per day parking charge) and seven connecting bus routes.

Del Mar's nearby pedestrian environment is also similar to that of the Fillmore station area. Although the residential buildings are slightly farther away (about one-third of a mile), the landscaping was fair to excellent (rating between 2 and 5) and there was no trash, graffiti, vacant buildings, or alleys. Sidewalks were present on both sides of the street and intersections had signals and crosswalks, although wait times approached 2 minutes at some of the wider intersections. Street lights, trees, and furniture were limited (zero or one per block face).

## **MEMORIAL PARK**

The Memorial Park station area is located at the northern edge of historic Old Pasadena. It has a low population density and few young children, but has a higher share of seniors than Fillmore and Del Mar (17 percent of the total population is at least 65 years of age) and an even higher share of single-person households (74 percent). Its population is ethnically and racially diverse, with 16 percent Black or African American, 15 percent Asian, and 22 percent Hispanic or Latino. The station has the best level of integration in the Old Town area of Pasadena. Holly Street Village, a mixed-use residential project, was built over the rail station and right of way.

The most interesting aspect of the Memorial Park station area, however, is that 29 percent of its working population walks to work. This is not surprising given the transit- and walking-dependent population (Memorial Park has more low-income households, elderly persons, and households with no vehicles than any other station area), but this behavior also appears to be supported by Memorial Park's central location in Pasadena's mixed-use, pedestrian-friendly environment.

The large majority of housing units (82 percent) near the Memorial Park station are located in buildings with 20 or more units. As of 2000, this station area had the largest share of recent development, with 24 percent of its housing structures constructed between 1995 and 2000. This percentage drops to just 5 percent in the station areas with the next largest shares of recent development (Fillmore and Lake). Memorial Park also has the highest percentage of renters, occupying 93 percent of occupied housing units.

Only two sites were surveyed within the Memorial Park station area. One of these (Holly Street Village) consists of 374 units built directly above the rail station. Holly Street Village was constructed in the early 1990s, in anticipation of the upcoming rail line. The second site was built in 1924 and has just 51 units. The Memorial Park station has no public parking, and nine connecting bus routes.

With a major TOD built directly above the station and several TODs located within one-quarter-mile east of the station, the pedestrian environment in and around the Memorial Park station was one of the strongest of all the TODs studied. Landscaping was excellent, with nearly every block face along each of the routes ranking either a 4 or 5, and there was no evidence of trash, graffiti, vacant buildings, or

barred windows. Street trees and lights were not over-abundant (only one street tree and light per block face on average), but intersection wait times were rarely more than 30 seconds.

## **LAKE**

The Lake station area has much higher densities than the three Pasadena station areas to the west (Fillmore, Del Mar, and Memorial Park). The Lake station has 11,197 persons and 5,035 housing units per square mile. It also has a higher share of families and young children (under 5 years), and fewer single-person households. Compared to the other nine station areas, Lake has the characteristics of a more transit-dependent population: It has the second-highest share (15 percent) of persons 65 years and older, the third-highest share (22 percent) of persons living below poverty, and a high share of households (17 percent) that have no vehicle available. Commute mode splits reflect a relatively high share of carpooling (12 percent), transit (6 percent) and walking (10 percent). SOV commuting, however, still dominated, comprising 68 percent of workers' commute trips. This station area has the largest population of Black or African Americans (18 percent), and 21 percent of the population is Hispanic or Latino.

Building sizes are fairly well distributed across single-unit dwellings, small multi-unit buildings, and large buildings (20 or more units). The area had received some recent development as of 2000, but nearly all the housing structures were built before 1995: 24 percent between 1980 and 1995, 30 percent between 1960 and 1979, and 42 percent before 1960. As with nearly all the studied station areas, the large majority of residents (85 percent) are renters, and more than half moved into their current residence between 1995 and 2000.

These demographics have to be understood in terms of the role that the 134 Freeway plays in bifurcating the station area. The area to the south of the station is high-density office and new residential units, while the area to the north of the station is a more traditional residential neighborhood with a lower income profile. The station itself is located in the freeway median, below street level.

Four TODs were surveyed within the Lake station area: three to the north of the freeway (two along North Catalina and one on North El Molino), and one south of the freeway (on East Walnut). All four buildings were built more recently (late 1980s to 2001) compared to other station areas, and they include a wide range of sizes (from 24 to 214 units). One building consists of 28 condominiums.

Residents living to the north or south have a substantial walking distance to reach the station. As with the rest of the stations to the east, this station has a harsher station platform environment, related to noise and safety issues associated with being in a freeway median. As the most westerly of the three stations located along Interstate 210, conditions along the walking routes probably varied the most of any of the stations examined, with landscaping ranging from 1 to 5 and intersection wait times ranging from no wait time to 60 seconds. Newer sites in this area, including Alexan City Place, provide localized areas of excellent landscaping and other pedestrian elements.

## **ALLEN**

The Allen station area has the second-highest population density (after Highland Park), with 13,124 persons per square mile. Thirty-five percent of its population is Hispanic or Latino, 8 percent is at least 65 years of age, and 25 percent have a bachelor's degree or higher. Along with Fillmore and, to a lesser extent, Mission, the Allen station area has higher incomes than most of the station areas, with more than one-quarter of the households making \$75,000 or more, and only 10 percent making less than \$25,000. The number of households with no vehicles available, however, is still moderately high--11 percent. In 2000, nearly three-quarters of the working population drove alone to work, 18 percent carpooled, and only 3 percent rode transit.

The majority of the housing stock (as of 2000) was built before 1960, with just 3 percent built from 1995 to 2000. The station area has a higher share of single-family dwellings (63 percent of all housing units), and a lower share of renters (57 percent) relative to most other station areas. As in other station areas, the majority of Allen's residents had moved in within the last 5 years (as of 2000). The Allen station has the most residential neighborhood feel of all the stations. South of the station, a large cluster of automobile repair shops are interspersed with the residential development. Colorado Boulevard, a major east-west commercial corridor, is a few blocks south of the station,

The three TODs surveyed in the Allen station area are all located along North Allen and all are condominiums. Two of the sites were built in the early 1970s and consist of 75 units each; the third was built in 1989 and has just 10 units. The Allen station has no parking and four connecting bus routes.

Walking south along North Allen Avenue toward the three TOD sites, all located within 500 feet of one another, the pedestrian environment deteriorates as you move further from the station. Landscaping worsens to a value of 1 (on the 5-point scale), and street trees are completely gone by the last block. Although trash and graffiti are not a problem, the pedestrian environment seems to be missing something and is similar to many suburban, auto-oriented neighborhoods.

## **SIERRA MADRE VILLA**

In spite of their physical separation at opposite ends of the Gold Line, the residents and housing stock around Sierra Madre Villa are quite similar to that of the Southwest Museum and Highland Park station areas, except at much lower densities (less than 6,000 persons and 1,800 housing units per square mile). Average household size is high (3.44 persons); families are dominant (78 percent of households); the population is predominantly Hispanic or Latino (60 percent), with a high level of linguistic isolation (32 percent speak English "less than very well"); and 21 percent of households make less than \$25,000 annually. Unlike Southwest Museum and Highland Park, vehicle availability is quite high, with only 4 percent of the households having no vehicle available. Nevertheless, carpool commuting is high (20 percent). Only 3 percent of workers commuted by transit in 2000, 6 percent walked to work, and 67 percent drove alone.

Sierra Madre Villa's housing stock is almost entirely composed of older, single-family dwellings: 88 percent of the housing units are one-unit

(attached or detached) buildings, and more than three-quarters of the housing stock was constructed before 1960. This is the only station area with more owners than renters (60 percent and 40 percent respectively), and the only one where more than half of all residents had lived in their place of residence for more than 5 years as of 2000. This housing stock coexists with major employment centers and a big box retail outlet.

Six multi-unit TODs were identified and surveyed in the Sierra Madre Villa station area: one on North Rosemead Boulevard and five on Cliff Drive. Four of these sites have 10 to 12 units per building; the other two have 31 and 41 units. Five are condominiums, and all but one was built during the 1960s; the sixth was built in 1994, after the future Gold Line alignment was confirmed.

Because of the lack of multi-unit housing within walking distance of the Sierra Madre Villa station, the selected sites are all 0.6 to 0.7 mile from the station--by far the longest walking distance of any residential buildings that we examined. The five sites on Cliff Drive, northeast of the station, are adjacent to one another, so the route was the same for all sites. As was the case with the Allen station, the quality of landscaping rapidly declines as you move farther from the station. Intersection wait times were consistently about 45 seconds. The route also requires one to walk along Rosemead Boulevard, a major arterial, for a good amount of time. Overall, these elements create a very suburban and auto-oriented feel, quite similar to that surrounding the Allen station.

**Key demographic, social, economic and housing characteristics for one-third mile radius around station area**

Characteristics	SW Museum	Highland Park	Mission	Fillmore	Del Mar	Memorial Park	Lake	Allen	Sierra Madre	All Station Areas
Total population	3,712	7,137	2,597	1,115	1,492	1,635	3,807	4,462	1,997	27,954
Persons per square mile	10,918	20,991	7,638	3,279	4,388	4,809	11,197	13,124	5,874	9,135
Under 5 years of age	8%	11%	5%	4%	4%	3%	7%	7%	7%	7%
16 years and older	73%	71%	81%	85%	87%	91%	83%	81%	72%	78%
65 years and older	9%	5%	10%	9%	10%	17%	15%	8%	10%	9%
Female persons	50%	50%	52%	51%	46%	46%	54%	50%	52%	51%
White persons	49%	40%	70%	64%	67%	61%	51%	61%	54%	54%
Black or African American	4%	4%	4%	12%	10%	16%	18%	9%	3%	8%
Asian persons	11%	7%	19%	15%	11%	15%	10%	13%	13%	11%
Hispanic or Latino origin	69%	91%	23%	19%	28%	22%	41%	35%	60%	53%
Foreign-born persons	37%	51%	19%	19%	21%	29%	34%	36%	43%	37%
Speak Spanish in home and speak English less than very well	22%	44%	2%	7%	11%	5%	18%	11%	32%	21%
High school diploma, no college, 25 years and over	20%	17%	10%	9%	10%	15%	13%	18%	16%	15%
Bachelor's degree or higher, 25 years and older	13%	6%	29%	38%	27%	28%	19%	25%	15%	19%
Unemployed persons, 16 years and older	7%	7%	4%	8%	11%	5%	5%	6%	3%	6%
Drive alone to work	61%	49%	74%	87%	80%	52%	68%	74%	67%	66%
Carpool to work	17%	23%	16%	1%	2%	5%	12%	18%	20%	15%
Take public transit to work	14%	21%	0%	5%	7%	8%	6%	3%	35	9%
Walk to work	3%	3%	6%	2%	5%	29%	10%	2%	6%	6%
Total households	1,248	2,007	1,212	618	806	1,135	1,642	1,766	570	11,004
Average household size	2.84	3.51	2.14	1.63	1.62	1.40	2.18	2.49	3.44	2.36
Family households	65%	76%	50%	31%	27%	20%	43%	57%	78%	52%
Single person households	27%	17%	40%	58%	62%	74%	47%	33%	16%	39%
Household income \$75,000 or more	20%	6%	20%	26%	21%	14%	18%	26%	20%	18%
Household income less than \$25,000	29%	29%	9%	9%	23%	32%	19%	10%	21%	34%
Persons below poverty	20%	25%	9%	11%	21%	17%	22%	10%	16%	18%
Persons with own children under 6 years, where all parents in family work	34%	42%	80%	70%	51%	64%	54%	45%	23%	45%
No vehicles available	18%	21%	4%	1%	22%	38%	17%	11%	4%	15%
Total housing units	1,309	2,116	1,252	664	835	1,195	1,712	1,835	599	11,517
Units per square mile	3,850	6,224	3,682	1,953	2,456	3,515	5,035	5,397	1,762	3,764
In 1-unit buildings	62%	38%	48%	22%	16%	2%	24%	63%	88%	40%
In 2- to 19-unit buildings	27%	41%	35%	44%	30%	16%	44%	29%	8%	32%
In 20-plus-unit buildings	10%	21%	16%	33%	55%	82%	31%	8%	5%	27%
Units built 1995 to 2000	2%	0%	1%	5%	3%	24%	5%	3%	4%	5%
Units built 1980 to 1994	13%	18%	8%	23%	15%	14%	24%	9%	9%	15%
Units built 1960 to 1979	26%	27%	24%	30%	22%	7%	30%	26%	12%	24%
Units built before 1960	60%	55%	66%	41%	60%	56%	42%	62%	76%	57%
Occupied housing units	95%	94%	96%	94%	95%	93%	95%	96%	95%	95%
Owner-occupied	42%	20%	37%	20%	18%	7%	15%	43%	60%	28%
Renter-occupied	58%	80%	63%	80%	82%	93%	85%	57%	40%	72%

Vacant housing units	5%	6%	4%	6%	5%	7%	5%	4%	5%	5%
Moved in 1999 to 2000, occupied units	25%	22%	26%	28%	28%	38%	23%	26%	20%	24%
Moved in 1995 to 1998, occupied units	34%	37%	35%	42%	35%	37%	46%	34%	28%	35%

U.S. Census data for the one-third mile radii around station areas were compiled using the LandView 6® program produced by the U.S. Census Bureau. LandView 6 estimates population characteristics within a radius "by tallying Census 2000 data for those block [group] points whose coordinates fall within the circle defined by the radius." Data are derived from Summary Files 1 and 3 of the 2000 U.S. Census.

## OVERVIEW OF RESIDENTIAL SURVEYS

This chapter summarizes the results of the residential surveys conducted at TODs in the Gold Line corridor.

### RESPONSE RATES

Surveys were distributed to 1,595 multifamily housing units located within one-third mile of Gold Line stations. Each survey respondent was asked to provide detailed information on up to three "main" trips for a predetermined day of the week. (In order to collect as much information as possible on commute travel, and to remain consistent with the previous statewide studies, weekend days were not included.) A trip is defined in the survey instrument as "one direction of travel (for instance, from home to work or from work to the grocery store or from a restaurant to home)." Respondents determine which trips constitute a "main" trip, but are asked to include at least one direction of their travel to work or school if they made a work or school trip during their recorded day of travel.

A total of 221 surveys were successfully completed and returned, for an overall response rate of 13.9 percent. Response rates were highest (30.1 percent) in the Lake station area, and lowest (8.1 percent) in the Memorial Park station area. From these surveys, a total of 477 individual trips were reported. Survey responses are summarized in Table 3. Note that response rates do not include undeliverable surveys.

The 14 percent response rate achieved is slightly higher than that of the 2003 statewide TOD study. Caution must be exercised in drawing interpretations from individual stations because of low numbers of responses. The station groupings shown in Table 3 are the greatest degree to which results can be disaggregated.

Gold Line survey response rates by station area(s)				
Station Area	Surveys Distributed	Survey Responses	Response Rate a	Total No. of Reported Trips
SW Museum/ Highland Park/ Mission	419	43	10.3	96
Fillmore/Del Mar	481	57	11.9	110
Memorial Park	267	33	8.1	72
Lake	146	44	30.1	106
Allen/Sierra Madre	282	44	15.6	93
Total	1,595	221	13.9 b	477

a. Margin of error is calculated at the 95 percent confidence level assuming the most conservative population proportion (0.5). This population proportion maximizes the assumed standard error. A 10 percent margin of error means that if the survey were to be repeated, survey responses would lie +/- 10 percent of the initial survey responses 95 percent of the time, for each survey question. Or, we can be 95 percent confident that the actual values are +/- 10 percent of the reported values.

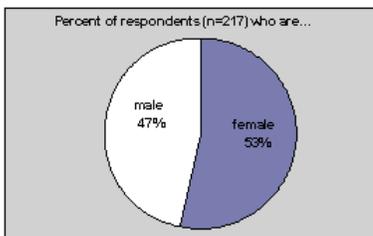
b. Margin of error is less than 10 percent (at the 99 percent confidence level)

### DEMOGRAPHIC CHARACTERISTICS

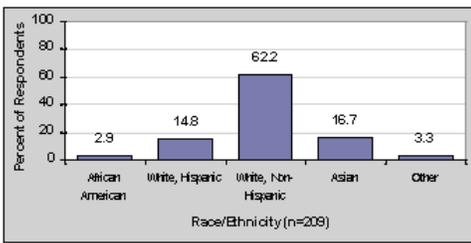
The following demographic characteristics of the respondents are discussed below: age, gender, and ethnicity; household size; vehicle availability; length of residency; occupation; and household income.

#### Age, Gender, and Ethnicity

Survey respondents have a mean age of 41.4 years (n=185, SD=14.92), with a range in ages from 18 to 81. Just over one-half of respondents (53 percent) are female (see Figure 2). The majority of respondents are white, non-Hispanic (62.2 percent), followed by similar shares of Asian and Hispanic residents (16.7 percent and 14.8 percent, respectively). Black or African American and Other ethnicities (including Pacific Islander and American Indian) comprise the smallest share, with each representing less than 5 percent of the total surveyed population (see Figure 3).



**Gender of survey respondents**

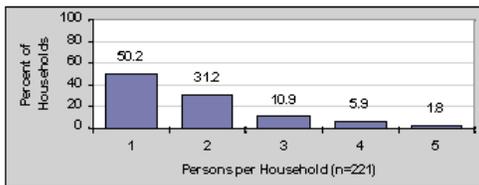


**Race/ethnicity of survey respondents**

Compared to the station area population as a whole, Latino or Hispanic residents are significantly underrepresented among survey respondents. This is likely because of the small number of surveys received from the Southwest Museum and Highland Park station areas, which have the largest concentrations of Latino or Hispanic populations. Asian persons are slightly overrepresented in the survey population (16.7 percent compared to 11 percent), and Black or African American populations are underrepresented (2.9 percent compared to 8 percent). However, the share of respondents indicating their race as white, non-Hispanic is quite similar to that found in the 2003 California TOD study (62.2 percent for Gold Line, 61.5 percent for the California study).

### Household Size

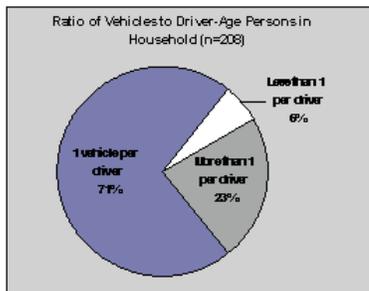
The large majority of station-area respondents (81.4 percent) live in small, one- or two-person households (see Figure 4). This is higher than the regional average of 50.3 percent, but is to be expected given that this study (and station-area development) focuses on higher-density apartment and condominium units. Fewer than 10 percent of respondents live in four- or five-person households, and no respondent reported a household size larger than five persons, indicating that relatively few families with children lived in the projects we surveyed. The results for the Gold Line are consistent with statewide results (81.4 percent in one- or two-person households in the Gold Line study and 83.2 percent in the California study).



**Number of persons living in respondent's household**

### Vehicle Availability

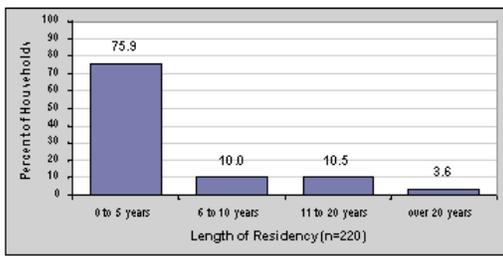
More than 70 percent of respondents' households have one vehicle available for each person of driving age (see Figure 5). Nearly one-quarter of the households have more than one vehicle per driver, and only 6 percent have fewer than one vehicle per driver. (The comparable statewide TOD level is 10.8 percent.) In other words, only a small percentage of the surveyed residents have some degree of transit dependency in their household. Although one might expect station areas to attract households with no cars or fewer cars, the respondent income data (see page [See Household Income](#)) indicates that these households have the economic resources to own an automobile. Over the long run, transit planners hope that the Gold Line, other transit services, and walk/bike opportunities lead to lower levels of automobile ownership. Adjustments in vehicle ownership happen slowly, only after a household determines that alternative transportation is sufficient. Therefore, it would be appropriate to resurvey these buildings in five years to determine if automobile ownership levels change. The level of automobile ownership is important because it is directly related to the level of parking requirement, which in turn affects housing affordability.



**Availability of vehicles in respondent's household**

### Length of Residency

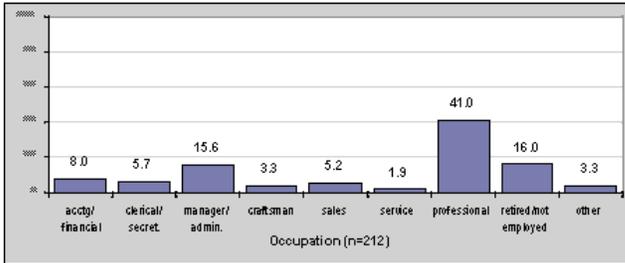
The mean length of residency for surveyed respondents is 4.1 years (n=220, SD=5.66; see Figure 6). Nearly 15 percent have lived at their current residence for more than 10 years (with a maximum of 30 years), while 75.9 percent have moved into their current residence in the past 5 years. Nearly 44 percent moved into their residence in 2003 or 2004. This means that most survey respondents lived in their current residence prior to 2003--more than six months before the Gold Line opened. There has, therefore, been little opportunity for households that are predisposed to using transit to filter into the units. On the other hand, for those residents who lived in the study buildings before and after the Gold Line, we can reliably attribute a change in travel mode to transit to the presence of the Gold Line.



**Number of years that respondent has lived at current residence**

### Occupation

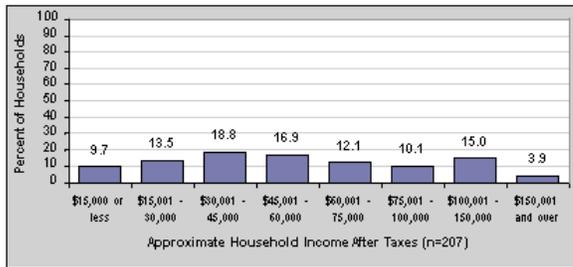
The largest share of survey respondents (41 percent) classifies their current occupation as "professional" (see Figure 7). This is much higher than the region as a whole, where only 14 percent of the population works in professional occupations. The next largest occupation groups are unemployed and retired persons (16 percent), and persons in managerial and administrative positions (15.6 percent). The most underrepresented occupations in the surveyed population are labor (1.0 percent), which was combined with "other" occupations in Figure 7, and service (1.9 percent).



**Occupation of respondent (self-reported)**

### Household Income

Household incomes among the survey respondents are fairly evenly distributed (see Figure 8), with small concentrations in the \$30,001 to \$60,000 and \$100,001 to \$150,000 ranges. This distribution is similar to that of the greater Los Angeles area, except that the station-area households are less likely to have incomes of less than \$30,000 (23 percent compared to 33 percent regionwide). The income levels are similar to the statewide TOD results, the exception being a higher share of individuals reporting incomes over \$100,000 per year.



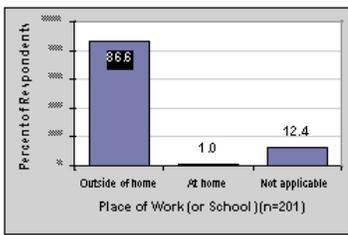
**Respondents' approximate household income (after taxes)**

## WORKPLACE CHARACTERISTICS

Respondents' work locations and workplace transportation options are discussed below.

### Work Location

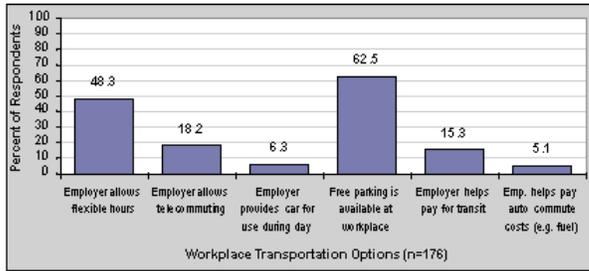
Of the surveyed respondents, 87 percent travel to their place of work or to attend school, with only 1 percent able to work or attend school entirely from home (see Figure 9). The remainder of the surveyed population (12 percent) is either unemployed or retired and not attending school. The majority of commutes are to Los Angeles (24.4 percent) and Pasadena (23.5 percent), followed at a distance by Alhambra (4.5 percent), Glendale/Burbank (3.6 percent), and Hollywood (2.3 percent). Anecdotes about the Gold Line from developer and manager interviews suggest that many decision makers and members of the public think that downtown Los Angeles is the primary destination for commute trips. Although it is the largest job concentration in the area, it is important to note that three of every four commute trips is to a location other than downtown Los Angeles.



Share of respondents who work (or attend school) away from home

### Workplace Transportation Options

Figure 10 shows the workplace transportation programs offered by employers. The most common option is free parking, a disincentive to transit use. (Note that the availability of free parking in the survey is less than the national average.) Providing a financial advantage for automobile commuting works against the convenience and stress-reducing effect of rail transit. Only 15.3 percent of respondents indicated that their employer helps pay for transit. Given the investment made in transit in Los Angeles, employers' lack of support for transit works against the success of the Gold Line.



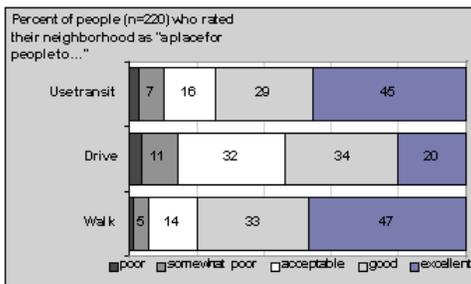
Transportation options available at TOD residents' place of work or school

## ATTITUDES AND PERCEPTIONS

Respondents' perceptions of the local transportation environment and their attitudes toward transportation in general are discussed below.

### Perceptions of Local Transportation Environment

The large majority of station-area residents rate their neighborhood as a good or excellent place to walk and use transit (80 and 74 percent respectively, see Figure 11). This is a positive response for a region that is sometimes considered not friendly to walking and transit. All the communities along the Gold Line corridor have well-developed pedestrian facilities, a long history of transit service, and clusters of development. More than half the respondents, however, rate their neighborhood as a good or excellent place to drive, with an additional 32 percent rating the driving environment as "acceptable." This suggests that although the TODs have strong walking and transit environments, they are relatively friendly to automobiles. Furthermore, although there is severe congestion in the Southern California region, congestion levels in this particular corridor are not considered that severe. As shown previously, many respondents have trip destinations in their own or a nearby city. Relatively short travel distances and manageable (or avoidable) congestion helps explain how the automobile competes so effectively with transit alternatives.

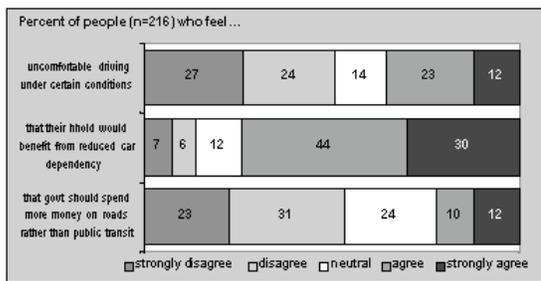


Respondents' perceptions of the local transportation environment

### Attitudes Toward Transportation in General

To examine the link between individual attitudes toward automobile travel and actual travel behavior, survey respondents were asked to report the extent to which they agree or disagree with three attitudinal statements. These statements (presented in Figure 12) were replicated from Jonathan Levine's (2002) study of transportation alternatives and household choice.

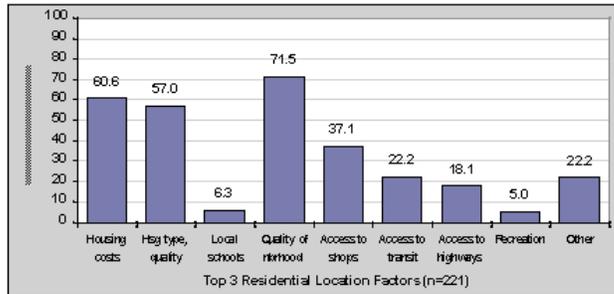
More than one-third of respondents report that they are uncomfortable driving under certain conditions (such as long distances, nighttime, or unfamiliar routes), 74 percent think that their household would benefit from reduced car dependency, and only 22 percent believe that the government should devote more transportation money to expanding roads and highways relative to public transit expenditures. This portrays a population that is generally favorable to public transit and other nonautomobile modes.



**Respondents' attitudes toward three dimensions of automobile travel**

## RESIDENTIAL LOCATION CHOICES

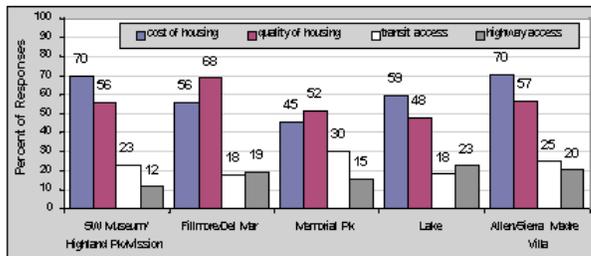
Based on the top three factors that respondents reportedly considered when moving to their current station-area residence, people were most likely to move into the current Gold Line corridor because of the neighborhood quality (72 percent), the cost of housing (61 percent), and the type or quality of housing (57 percent). Thirty-seven percent moved to their current residence for improved access to shops and other services, and 18 percent moved for improved highway access. Only 22 percent of respondents reported "access to transit" as one of their top three reasons for moving to the station area (see Figure 13).



**Top three factors considered when moving to current TOD residence**

The need for housing and the attractiveness of these northeast Los Angeles neighborhoods far outweighed the importance of access to transit. (Housing-related issues also outweighed transit as a primary location factor in the California TOD study in all regions except for the Bay Area Rapid Transit District.) This does not appear attributable to the fact that Gold Line service came to the station after the location decision was made by most respondents. In fact, residents who moved into the station area in 2003 or 2004 (either after service commenced, or within six months of the Gold Line opening) were less likely to note transit access as a primary reason for moving: Transit access was cited by more than one-third of residents who moved in before 2003, but only by one-fifth of the newer residents. The fact that access to transit is less important than other factors, however, does not mean that these residents do not perceive it as an advantage.

Figure 14 shows how the responses varied by station grouping. Transit was most frequently noted as a factor in the Allen/Sierra Madre Villa (25 percent) and Southwest Museum/Highland Park/Mission groupings (23 percent). None of the projects surveyed has been built recently, so many of the longer-term respondents in those projects may be referring to bus transit availability when they made their location decision. However, the Allen/Sierra Madre station areas are end-of-the-line station areas, where the Gold Line offers a significant accessibility advantage to likely destinations. The Los Angeles station areas are generally lower-income and have greater transit dependency.



**Housing and transportation-related location factors by station area(s)**

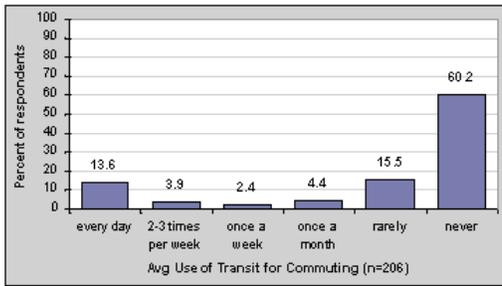
Highway access is most frequently identified by Lake Avenue station respondents. That station is located in the middle of a freeway interchange with the 134 Freeway. Highway access is more important there than even in the Allen/Sierra Madre Villa station-area groupings, which one might expect to be the most automobile-oriented station areas.

## TRAVEL BEHAVIOR OVERVIEW

Three aspects of the respondents' travel behavior are discussed below: transit commuting frequency; their primary mode of travel for their three main trips; and trip chaining on their three main trips.

### Transit Commuting Frequency

When asked how often they usually use transit for commuting, nearly 15 percent report that they commute by transit every day, and 4 percent use it two to three times per week (see Figure 15). More than 75 percent never or rarely use transit for commuting. Nearly 30 percent of station-area residents statewide use transit every day, so the Gold Line results are lower than the average. However, the results are impressive when compared to other light-rail station areas in that study. In only its first six months of operations, the Gold Line respondents report that they use transit every day more frequently than Long Beach station-area residents on the Blue Line (6.3 percent) or Mission Valley residents on the San Diego Trolley (12.4 percent).

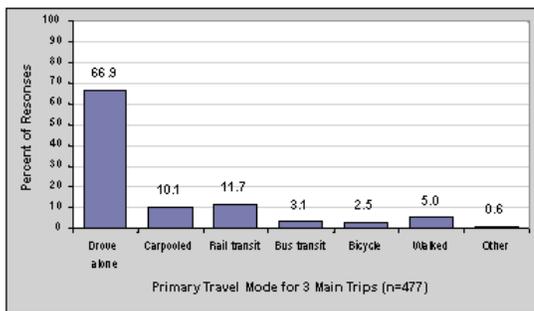


**Transit commuting frequencies for all surveyed TOD residents combined**

The other aspect of light-rail use is those who use the system less than daily. Another 10.7 percent of Gold Line respondents use transit for commuting at times, and at least once a month. This part-time option would be reflected in lower total vehicle miles traveled (VMT).

**Primary Modes of Travel for "3 Main Trips"**

"Main trips" refer to one direction of travel only, and include work and nonwork travel. Nearly 15 percent of respondents' main trips for their reported day of travel are by transit: 11.7 percent by rail, and 3.1 percent by bus (see Figure 16). This level, while lower than the California TOD average, exceeds the level of transit use found in the Long Beach and Mission Valley light-rail TODs. It also exceeds the transit share found in the 2000 census for the station areas.

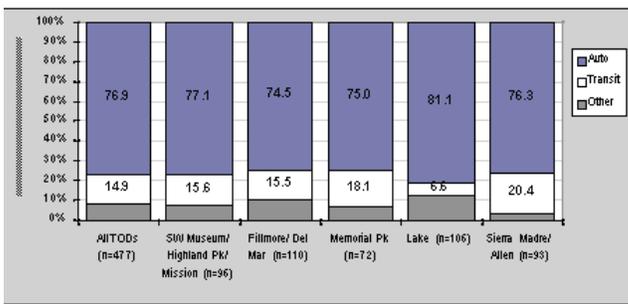


**Primary modes of travel for reported main trips (all TODs)**

Survey respondents indicate that 7.5 percent of trips are by bicycle or foot. This level exceeds the average found in the California TOD survey. It also exceeds the level of walking and biking found in more mature heavy-rail transit systems, such as the BART Pleasant Hill and Alameda County TODs. The quality of the pedestrian environment is reinforced by responses summarized in Figure 11, where 80 percent of respondents rated their neighborhood as a good place to walk.

More than three-quarters of the trips reported by respondents are by automobile (with 67 percent in single-occupancy vehicles and 10 percent in carpools). Although lower than normal levels of automobile use in Southern California, this level means that cities must carefully consider traffic impacts as they permit higher densities in station areas. High-density TOD will add to the total number of trips generated per acre of land development, even though the automobile mode share is likely to be lower.

Across the individual station areas or clusters of station areas, transit ridership is highest among residents who live near the eastern end of the rail line, within the Sierra Madre and Allen station areas (see Figure 17). These station areas, however, have the lowest rates of bicycling and walking trips, resulting in a mode split for automobile travel that is almost identical to the mean. These station areas have a more suburban style of development, with lower density, fewer mixed uses, and automobile-oriented urban design. The Gold Line has made a big difference in commuting behavior in these communities--the residents within one-third of a mile of the station reported only a 3 percent transit share in 2000, before the Gold Line was operational. In our survey, station-area respondents report a 20.4 percent transit share for their main trips (work and nonwork).



**Primary modes of travel by station area(s)**

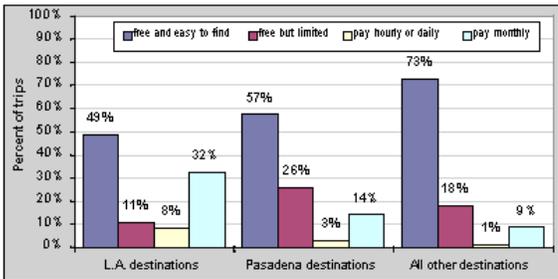
At the other end of the spectrum, residents near the Lake station are least likely to use transit as their primary mode of travel, but most likely to walk or bike to their destination. The 6.6 percent share reported in our surveys is almost identical to the transit use reported in the 2000 census for work trips. The Lake station, like the Sierra Madre Villa and Allen stations, is in the middle of the 134 Freeway right-of-way. It has high levels of noise and presents safety concerns. In this case, the addition of the Gold Line did not significantly change the overall travel patterns of residents, although it did reinforce pedestrian activity.

The Memorial Park station, which is directly below one of the projects surveyed, has perhaps the best integration into the urban area. It has the second-highest level of transit use of the groupings. The level of transit use is more than twice as large as that reported in the 2000 census for the journey to work (8 percent).

Two of the larger projects surveyed demonstrate how location and design can affect levels of transit use. The Holly Street Village project was developed with explicit TOD objectives and is positioned over the station and right of way. That project has an 18.8 percent transit share, no bus use, and a 3.1 percent walk share (n=64). In contrast, Alexan City Place, which appeals to a similar renter profile, has a 4.3 percent rail share, no bus use, and a 6.5 percent walk share. The Alexan City Place project is more than 1,000 feet from the Lake station, which is more difficult to access than the Memorial Park station. The rail connection was a less explicit design and marketing feature of this project. These results suggest that design and marketing make a difference.

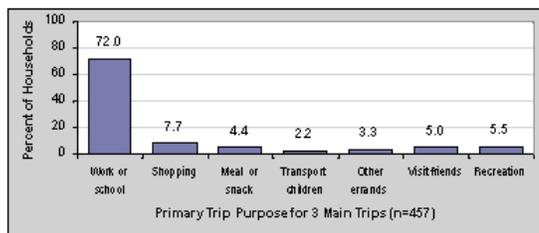
The Fillmore/Del Mar TOD respondents reported a level of transit use more than twice as high as that for station-area journey-to-work trips in 2000. The Southwest Museum/Highland Park/Mission results show higher transit shares than the journey-to-work average reported in the 2000 census. However, there is considerable variation--Southwest Museum and Highland Park had high preexisting transit mode shares, whereas the Mission station area reported no transit use for the journey to work in 2000.

As Figure 18 illustrates, free parking competes with transit for many of the survey respondents who currently drive--particularly at destinations outside of Los Angeles and Pasadena. The survey instrument asked all respondents to indicate the cost of parking for their commute trip. Most nonautomobile respondents answer N/A to this question, so we do not have a complete measurement of parking pricing for all respondents. Therefore, we are unable to attribute mode choice to parking price.



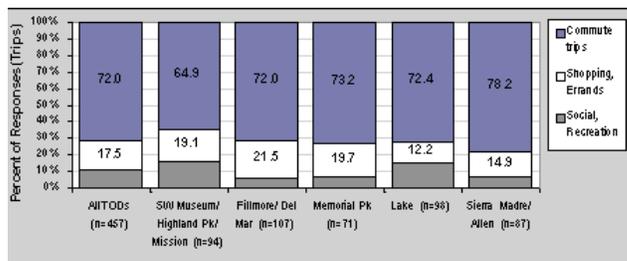
**Parking price and availability at destination (vehicle trips only, n=304)**

The most common trip purpose for respondents' three main trips is travel to and from work or school (see Figure 19). However, the survey asked respondents to include at least one direction of their work or school travel if their recorded day of travel included a work or school trip, so these trip purposes are biased in favor of commute travel and should not be used as an indicator of the distribution or shares of work and nonwork travel. These data tell us that the travel characteristics presented in this report are predominantly reflections of commute travel.



**Primary trip purposes for reported main trips (all TODs)**

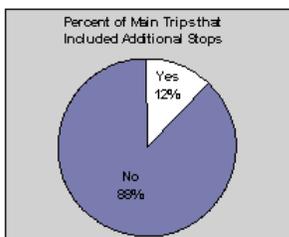
Figure 20 provides a breakdown of trip purposes by station area(s). Commute travel is reported most frequently toward the eastern end of the rail line (near Sierra Madre and Allen), and least frequently in the westernmost stations, closer to downtown Los Angeles. Since stations closer to downtown L.A. have larger transit-dependent populations, it is not surprising that transit is used there for a broader variety of purposes. Also, the Gold Line provides a reverse commute function for inner-city residents. For example, residents of Highland Park can use the Gold Line to access big-box retail stores at the Sierra Madre Villa station. Travel for "shopping and errands" is most common in the Fillmore and Del Mar station areas, and travel for "social and recreational" purposes is most common near the Lake station and the SW Museum/Highland Park/Mission station cluster. These stations offer quick travel time to both downtown Pasadena and downtown Los Angeles. Evidence of the use of the Gold Line for nonwork trips is also found in the comparatively high levels of Saturday and Sunday ridership. [See Average daily boardings for January 2004 were 14,543 on Saturdays and 12,195 on Sundays, compared to 15,393 on weekdays. Information from the MTA Website: www.mta.net/news\\_info/ridership/ridership\\_avg.htm, accessed January 2005.](http://www.mta.net/news_info/ridership/ridership_avg.htm)



Primary trip purposes by station area(s)

### Trip Chaining on "3 Main Trips"

Only 12 percent of all reported main trips included additional stops, or "trip chaining" (see Figure 21). Trip chaining is more common on nonwork trips (24 percent include additional stops) than work trips (only 6 percent include additional stops). The emerging mixed-use and commercial clusters along the Gold Line are making transit more practical when trip chaining is involved. For example, the Southwest Museum station has an immediately adjacent day care center; there is a drug store at the Fillmore station, and downtown Pasadena has a wide variety of retail shops and services.



Additional stops during reported main trips

### COMPARISON TO PRIOR COMMUTE BEHAVIOR

To better understand the impact that moving to a TOD has on an individual's commute behavior, respondents were asked to provide information not only on their current commute patterns but also their typical commute patterns at their previous residence and workplace. Table 4 shows a complex pattern of mode shifting when individuals move to a station area. One would expect shifts from auto commuting to transit, but if the TOD location also offers good freeway access, the opposite could take place. Keep in mind that some of these residents moved to the station area before the Gold Line was operational.

The data in Table 4 show a net shift toward transit (11.1 percent shifting from automobile to rail or bus, and 4.7 percent shifting from rail or bus to automobile). Compared to the California TOD data set, these shifts are similar in terms of shifts from automobile to transit, but there is a lower level of shifting from transit to automobile among the Gold Line respondents. The Gold Line results show that a shift toward transit occurred when survey respondents moved into their current units. One cannot assume that the Gold Line caused all these mode changes, because some respondents may have deliberately selected these locations because they had a predisposition to use transit, but the Gold Line and the available development near stations made possible these shifts toward greater transit use.

Concerning walking, biking, and carpooling, the responses show that the shift toward and away from these modes was roughly equal. No net shift toward walking, biking, and carpooling was reported.

Comparison of prior and current commute modes for surveyed TOD residents			
Percent of Commute Trips That Shifted			
From automobilea to rail transit	10.5	From rail transit to automobilea	2.2
From automobilea to bus transit	0.6	From bus transit to automobilea	2.5
From automobilea to walking or biking	5.1	From walking or biking to autoa	5.1
From driving alone to carpooling	2.9	From carpooling to driving alone	3.1
No shift: Still taking transit (bus or rail)	2.5	No shift: Still driving alone	60.8

NOTE: Prior commute mode is based on "typical mode used"; current commute mode is based on actual mode used for work or school travel on reported day of travel.  
a Alone, with passengers, or as a passenger.

## ANALYSES OF VARIANCE IN TRANSIT RIDERSHIP

In the following two sections, one-way analysis of variance (ANOVA) is used to test the hypothesis that two population groups (for example, males and females) demonstrate equal mean levels of rail use (no bus) or overall transit use (rail and bus). All ANOVA are conducted at the trip level (n=477), based on the primary mode used for each of the respondents' three main trips. All analyses are conducted at the 95 percent confidence level. Note that ANOVA are also conducted for bus use only, but are not presented separately because of the small number of bus trips (n=15); they are noted in the discussion, however, if the direction of the relationship is opposite from that found with rail transit. Because primary trip modes are entered as dummy variables (1, 0), the reported mean values can be interpreted as mode share (for example, a mean of 0.74 equals a mode share of 74 percent).

Please note that in this section, all n values reflect the number of trips, not respondents.

### Demographic Variables

Demographic variables discussed below are vehicle availability, occupation, household income, age and gender, and households with children.

#### Vehicle Availability

Station-area residents living in households with fewer than one vehicle per driver-age person are significantly more likely to use transit (rail and/or bus) than those in households with at least one vehicle per driver (see Table 5).

	N	Rail Use Only			Rail and Bus		
Vehicles available	(trips)	Mean	SD	SE	Mean	SD	SE
Less than 1 per driver	108	0.194	0.398	0.039	0.269	0.445	0.043
1 or more per driver	369	0.095	0.293	0.015	0.114	0.318	0.017
Model Summary		F = 8.1, p < 0.01			F = 16.3, p < 0.001		

#### Occupation

Station-area residents employed in office or professional occupations are significantly more likely (at the 90 percent level) to use rail and significantly less likely (at the 99 percent level) to use bus transit, resulting in a nonsignificant difference in overall transit use (see Table 6). This is noteworthy because the largest majority of station-area residents (41 percent) work in professional occupations. Residents employed in sales and service occupations are less likely to use all forms of transit, suggesting that these workplaces may not be well-served by the existing transit network, although the differences are not significant.

	N	Rail Use Only			Rail and Bus		
Occupation	(trips)	Mean	SD	SE	Mean	SD	SE
Office or professional	336	0.131	0.338	0.018	0.140	0.347	0.019
All other	122	0.074	0.262	0.024	0.172	0.379	0.034
Model Summary		F = 2.87, p < 0.10			F = 0.73, p = NS		

#### Household Income

Low-income respondents (those living in households with an income of \$15,000 or less) are significantly more likely to use bus transit but less likely (at a nonsignificant level) to use rail transit (see Table 7). The difference in overall transit use is significant, with low-income respondents more likely to use transit, but these relationships suggest that the destinations of lower-income households (such as service-sector employment) may not be adequately served by rail networks. Higher-income individuals generally choose transit if its overall performance characteristics are superior to the automobile; lower-income individuals often are more constrained in their travel choices.

	N	Rail Use Only			Rail and Bus		
Household income	(trips)	Mean	SD	SE	Mean	SD	SE
\$15,000 or less	27	0.074	0.267	0.051	0.444	0.506	0.097
Over \$15,000	425	0.118	0.323	0.016	0.129	0.336	0.016
Model Summary		F = 0.472, p < NS			F = 20.79, p < 0.001		

#### Age and Gender

Gold Line station area residents over the age of 65 are significantly more likely to use transit as their primary mode of travel than are residents age 65 or younger, although the difference in rail use (after removing bus ridership) is not significant (see Table 8). It is possible that older travelers feel less comfortable driving and thus more inclined to use other forms of travel, although this does not explain the nonsignificant difference in rail use. Female travelers (n=246) are less likely to use rail and more likely to use bus transit than are male travelers (n=223); these relationships, however, are not significant at the 95 percent confidence level.

	N	Rail Use Only			Rail and Bus		
Respondent age (trips)		Mean	SD	SE	Mean	SD	SE
Over 65 years	16	0.188	0.403	0.101	0.500	0.516	0.129
65 years or younger	389	0.113	0.317	0.016	0.123	0.329	0.017
Model Summary		F = 0.827, p = NS			F = 19.06, p < 0.001		

### **Households with Children**

Station-area residents with one or more children under the age of 16 in the household (n=84) are more likely to use rail and less likely to use bus transit compared to households with no children (n=393), but neither difference is significant at the 95 percent confidence level. The lack of significant variation may be a result of the study's focus on commute trips, which typically do not involve children unless they are being dropped off or picked up along the way. This does not appear to be the case here, however, because only 6 percent of commute trips involved additional stops.

### **Residential Location Variables**

Length of residency and location choice factors are discussed below.

#### **Length of Residency**

Station-area residents who moved into their current residence in 2003 or 2004 (within 9 months before or after Gold Line service began) are significantly more likely to use rail transit compared to those who moved before 2003 (Table 9). Their likelihood of using bus transit, however, is somewhat lower than that of more established residents (although not at a significant level), resulting in a nonsignificant difference in overall transit use. Station-area residents who have lived in their current residence for more than 10 years (n=63) are more likely to use all forms of transit compared to residents of 10 years or less (n=412), but only the difference in bus use is significant. The phenomenon of longer-term residents having a greater likelihood of using transit was also found in the California TOD study. In that study, residency over 5 years increased the likelihood of using transit by a factor of two. Newer residents were more likely to drive alone, carpool, or walk.

	N	Rail Use Only			Rail and Bus		
Moved to residence (trips)		Mean	SD	SE	Mean	SD	SE
In 2003 or 2004	220	0.150	0.358	0.024	0.177	0.383	0.026
Prior to 2003	255	0.090	0.287	0.018	0.126	0.332	0.021
Model Summary		F = 4.08, p < 0.05			F = 2.49, p = NS		

#### **Location Choice Factors**

Station-area residents who identified "access to transit" as one of their top three residential location factors were significantly more likely to use transit (rail and/or bus) as their primary commute mode (see Table 10). This reflects the self-selection idea that has been raised in the literature, which argues that those moving into TODs are not average households but those who have a predisposition to use transit and are looking for a transit-friendly location. Therefore, one cannot assume that all households would respond in a similar manner. However, because transit-friendly locations are hard to come by in Southern California, we believe that is significant for the planning and development process to increase the stock of housing in transit-friendly locations and facilitate this self-selection.

	N	Rail Use Only			Rail and Bus		
Location factors (trips)		Mean	SD	SE	Mean	SD	SE
Include transit access	105	0.391	0.490	0.048	0.495	0.502	0.049
Do not include transit access	372	0.040	0.197	0.010	0.051	0.220	0.011
Model Summary		F = 121.08, p < 0.001			F = 173.31, p < 0.001		

Similarly, station-area residents who cited "access to highways" as a primary reason for moving to the station area are significantly less likely to use transit (see Table 11). The difference in overall transit use, however, is only significant at the 90 percent confidence level, and the difference in rail transit alone is nonsignificant.

	N	Rail Use Only			Rail and Bus		
Location factors (trips)		Mean	SD	SE	Mean	SD	SE
Include highway access	82	0.085	0.281	0.031	0.085	0.281	0.031
Do not include hwy access	395	0.124	0.330	0.017	0.162	0.369	0.019
Model Summary		F = 0.98, p = NS			F = 3.16, p < 0.10		

Rail use is significantly lower among those who cited housing cost, or the type or quality of housing, as one of their top three reasons for moving to their current residence (see Table 12 and Table 13). This relationship also holds true for bus and overall transit use, but the difference in bus ridership is not significant. This finding is important because of the high share of respondents (more than 80 percent) who reported at least one of these housing factors as a primary motivation for moving to their current location, compared to the low share (less

than 25 percent) who reported "access to transit." This distribution of location choice factors does not differ among residents who moved in 2003 or 2004.

	N	Rail Use Only			Rail and Bus		
Location factors	(trips)	Mean	SD	SE	Mean	SD	SE
Include housing cost	289	0.093	0.291	0.017	0.125	0.331	0.019
Do not include housing cost	188	0.154	0.362	0.026	0.186	0.390	0.028
Model Summary		F = 4.09, p < 0.05			F = 3.42, p < 0.10		

	N	Rail Use Only			Rail and Bus		
Location factors	(trips)	Mean	SD	SE	Mean	SD	SE
Include housing type	265	0.057	0.232	0.014	0.079	0.271	0.017
Do not include housing type	212	0.193	0.396	0.027	0.236	0.426	0.029
Model Summary		F = 22.17, p < 0.001			F = 23.84, p < 0.001		

### Trip Characteristics

Commuter versus nonwork travel, trip chaining, and trip destinations are discussed below.

#### *Commuter vs. Nonwork Travel*

Commuter trips (to or from work or school) are significantly more likely to involve rail (p < 0.05) and significantly less likely to involve bus (p < 0.01), resulting in a nonsignificant difference in overall transit use (see Table 14). This suggests that the Gold Line is adequately serving employment locations (at least those of station-area residents, who are predominantly employed in office and professional occupations), while nonwork destinations are better served by bus transit.

	N	Rail Use Only			Rail and Bus		
Trip purpose	(trips)	Mean	SD	SE	Mean	SD	SE
Work or School	325	0.142	0.349	0.019	0.151	0.358	0.020
Other (nonwork)	119	0.059	0.236	0.022	0.126	0.333	0.031
Model Summary		F = 5.72, p < 0.05			F = 0.43, p = NS		

#### *Trip Chaining*

Trips that include additional stops are significantly less likely to involve rail transit as the primary mode of travel (see Table 15). This relationship reverses in the case of bus travel, with bus trips being more likely to involve additional stops, resulting in a nonsignificant difference in overall transit use. Trip chaining tends to penalize transit ridership because of the difficulty of coordinating transit service with multiple trip destinations. This penalty could be minimized as walkable retail, service, and other opportunities become more fully integrated into Gold Line station areas.

	N	Rail Use Only			Rail and Bus		
Trip included	(trips)	Mean	SD	SE	Mean	SD	SE
Additional stops	51	0.039	0.196	0.027	0.098	0.300	0.042
No additional stops	368	0.139	0.346	0.018	0.163	0.370	0.019
Model Summary		F = 4.02, p < 0.05			F = 1.44, p = NS		

#### *Trip Destinations*

Downtown Los Angeles is widely perceived as being the primary work destination for trips from this corridor. Of the 440 main trips that provided a destination location, Los Angeles accounts for 78 (or 18 percent). Among trips extending outside the city of Pasadena, those ending in Los Angeles were significantly more likely to use transit (rail alone, or combined with bus) as their primary mode (see Table 16). The Gold Line is successful at capturing Los Angeles-bound transit users, although the total number of trips going into Los Angeles is fewer than most people anticipated. Pasadena accounts for 226 (or 51.3 percent) of the main trips that reported a destination location. Trips ending in Pasadena also show a statistically significant greater share of rail and overall transit use compared to trips that end outside of either Pasadena or Los Angeles (see Table 17).

	N	Rail Use Only			Rail and Bus		
Trip destination	(trips)	Mean	SD	SE	Mean	SD	SE
Los Angeles	78	0.308	0.465	0.053	0.359	0.483	0.055
Outside LA or Pasadena	136	0.022	0.147	0.013	0.044	0.206	0.018
Model Summary		F = 43.86, p < 0.001			F = 43.99, p < 0.001		

ANOVA in transit ridership: Pasadena trip destinations							
	N	Rail Use Only			Rail and Bus		
Trip destination	(trips)	Mean	SD	SE	Mean	SD	SE
Pasadena	226	0.084	0.278	0.019	0.120	0.325	0.022
Outside Pasadena or LA	136	0.022	0.147	0.013	0.044	0.206	0.018
Model Summary		F = 5.78, p < .05			F = 5.88, p < .016		

## OVERVIEW OF INTERVIEW FINDINGS

Unlike the experience of Los Angeles' Blue Line, where TOD was slow to materialize, [See Loukaitou-Sideris and Banerjee](#) the Gold Line corridor already has a substantial amount of transit-oriented development in place. To better understand the development side of TOD, we interviewed developers, property managers, and other contacts concerning their perceptions on the relationship of the Gold Line to development activity. The key observations from these interviews are summarized in the tables and commentaries below.

### DEVELOPER PERSPECTIVES

The following are key observations from developers involved in Gold Line TOD:

There is a high level of TOD activity in housing and mixed-use development in the corridor. This activity is supported by a growing cohort of infill developers who specialize in urban settings, transit connections, and more complicated projects that involve private/public partnerships. The driving factor behind this trend is the need for housing of all types, and affordable housing, in the Los Angeles market. There is little demand for office and research and development facilities at this time.

Density and affordable housing issues are closely linked. Many elected officials are seeking affordable housing in TOD, but the density required to achieve such affordable housing supply can be problematic to local communities concerned about too much change and traffic impacts.

Proactive public planning and political leadership advance TOD: General plans and specific plans have built community consensus in preparation for light-rail development. Local consensus on focusing development was tied to the benefits of TOD in preserving single-family neighborhoods. In Los Angeles, the local councilman strongly supports TOD, emphasizing the need for affordable housing.

TOD in the city of Pasadena has been highly visible. This growth, plus disruption associated with construction and operation of the Gold Line and unrelated infrastructure projects, has produced concerns among some community members that too much growth is occurring. Pasadena has imposed a development moratorium in the core area while it considers a general plan update and new Central City Specific Plan.

Although the Los Angeles County Metropolitan Transportation Authority does not have land-use authority, its role in TOD has been significant, in planning an alignment that had development potential, acquiring and disposing of land for development, providing grant resources, and partnering with local cities. Planning for a transit line is critical: It is a one-time event in which planners and engineers can create development opportunities (for example, sensitive design and land acquisition) or destroy them (for example, poor bus interface and station design).

Light-rail station access has both functional and symbolic value to development. Developers have varying assessments of how the Gold Line affects land values. Most developers indicate that rail access is a part of a complex matrix of factors that determine land value. Often the availability of an entitled infill development housing parcel outweighs another factor, given the difficulty of acquiring infill sites in built-up areas. Developers' assessments of how the Gold Line will affect VMT and automobile ownership vary; most have not radically changed their parking practice. However, light rail makes sense to elected officials, community members, and developers, and it supports many local and regional objectives.

Developers need experience and examples before they will consider meaningful reductions in parking supply. Leasing agents must be convinced that they can market projects with less parking and/or unbundled parking. Because of the level of development occurring in the Gold Line corridor, experience and precedents are quickly being built, which may yield project refinements in the next generation of Gold Line TODs. Developers spend as much as \$30,000 per space on parking, so an oversupply of parking drives up the cost of housing and/or reduces profitability. Examples of lower parking supply and unbundling exist in downtown Los Angeles, San Diego, the Bay Area, and Sacramento.

Project planning, design, construction, and sales can be better integrated. Projects can get locked into developers' or cities' rules of thumb that inhibit innovations in areas such as parking supply and pricing. The developers interviewed had different structures and objectives, ranging from build and hold to the fee-developer model. Forums are needed that bring together public and private sectors and the different functions within those sectors, such as market professionals, designers, and lenders, or city planning, housing, and public works officials. Activities related to the upcoming Railvolution and Congress for New Urbanism conferences, as well as local symposia and university projects, have provided opportunities for these dialogues.

The study did not include real estate market assessment, but during the interviews, developers revealed information about the general market for residential uses in the corridor. It appears that both rental and for-sale apartments are in demand across the corridor. A high level of activity is occurring now, but apartment construction was slow in the early 1990s, so the 10-year average rate of unit construction is not as high as it might seem. Rents for the type of luxury apartments being built are in the range of \$2.25 per square foot. According to Alex Wong of Trammel Crow, that rent justifies wood frame construction but is not sufficient to justify concrete or steel construction. The design implication of this is that five stories is the maximum building height with wood frame construction. According to Pasadena planners, this has made some recent projects "bulky," as developers seek to approach 80 units per acre. Few projects are building large units; three-bedroom units are the exception. Most projects have a mix of studio, one-bedroom, and two-bedroom units. Projects typically feature amenities such as

pools, exercise rooms, and business centers.

Table 18 summarizes the development projects studied and explains their relevance. Projects range from high-end projects developed with no interaction with LACMTA to complex projects on former LACMTA land with affordable housing. Table 19 summarizes the developers' general perceptions of TOD potential in the corridor. Responses concerning the effect of the Gold Line on the real estate market range from indicating that it was a causal factor in the project to rail access being one of many desirable location features. Rail seemed to be most important to projects that were testing the market in an area without similar models (the Lincoln Heights project, because of the lack of new housing construction in that area, and the Pinnacle at Sierra Madre Villa, because of a lack of luxury apartments that far east of downtown Pasadena).

The common response on the best-suited real estate products for the Gold Line corridor was dense projects. The predominant market for density is residential uses, reflecting the strength of the residential market and relative weakness of office markets at this time. Some projects have a mix of rental and for-sale units.

Developers learn about TOD through outlets such as the Urban Land Institute (ULI), special-purpose conferences, visits to other places, and peer relationships. Because TOD is still a relatively new area, respondents indicated that there is not an agreed-upon set of information sources.

The developers interviewed have a positive impression of the Gold Line. None commute on it regularly, but most have ridden it for business or recreational trips. They believe it provides a pleasant experience. Most of the issues they raise are similar to those noted in media reports--noise issues and the travel speed of the train.

Summary of developer interviews						
Project Name and Web Site (if available)	Gold Line Station	Status	Company	Contact	Project Description	Relevance to Study
Pinnacle at Sierra Madre Villa <a href="http://www.ci.pasadena.ca.us/planninganddevelopment/developmentprojects/plwtc.asp">www.ci.pasadena.ca.us/planninganddevelopment/developmentprojects/plwtc.asp</a>	Sierra Madre Villa	Under construction	BRE Properties Irvine, CA	Ken France	188 units. Adjacent to station.	Involves historic preservation, 12 affordable units, received variance for reduced parking. Was MTA property.
Alexan City Place, 801 East Walnut Street, Pasadena	Lake Avenue	Completed	Trammel Crow	Alex Wong	214 units. 1,300 feet from station.	Large-scale project, innovative parking lease terms.
North Lake Lofts, 220 North Lake Avenue, Pasadena <a href="http://www.ci.pasadena.ca.us/planninganddevelopment/developmentprojects/lakewalnut.asp">www.ci.pasadena.ca.us/planninganddevelopment/developmentprojects/lakewalnut.asp</a>	Lake Avenue	Final approvals	Standard Pacific Homes	Steve Ross	106 for-sale condos, 5 live/work spaces, 9,200 sq. ft. ground-floor retail. 800 feet from station.	Testing condominium market. In areas with policy questions about housing versus office/retail.
Mill Creek Development, 695 East Colorado Boulevard, Pasadena	Lake Avenue	Planning	Ken McCormick	Joel Sheldon, land-owner	Likely to be apartments and condos on two sites. 3,100 feet from station.	Project 0.6 mile from station, at edge of station-area influence.
Madison Walk, Walnut Avenue, Pasadena	Lake Avenue	Completed	Olson Company	Mark Buckland	48 for-sale units, built at 80 units per acre. ~2500 feet from station (across the street).	Larger developer, experience throughout California.
Del Mar Station, South Arroyo Parkway and Del Mar Boulevard, Pasadena	Del Mar	Under construction	Urban Partners, Los	Dan Rosenfelt	347 units, 20,000 square feet retail, 1,200 parking	Large complex TOD, received design awards, involves historic preservation

<a href="http://www.mparchitects.com/projects/del_mar/text.html">http://www.mparchitects.com/projects/del_mar/text.html</a>			Angeles, CA			parking spaces. Built around station.	preservation of train station. GL goes through middle of the site. Was MTA property.
Milan, Cordova and South Arroyo Parkway, Pasadena	Del Mar	Planning	Champion Developments	Stewart Proffitt		For-sale housing and 6,000 square feet of retail. ~500 feet from station.	Project proposed during growth moratorium period.
Mission Meridian Village, Mission and Meridian Boulevards, South Pasadena, <a href="http://www.missionmeridianvillage.com/">http://www.missionmeridianvillage.com/</a> (information also obtained from Art Cueto, LACMTA)	Mission	Under construction	Creative Housing Assoc., Lambert Dev., LLC	Michael Deadon		67 units, loft and duplex, 5,000 square feet retail. Across the street from station.	Model for gaining community acceptance, sensitivity to neighborhood and historical resources; partnership with LACMTA on parking.
Pasadena/Sycamore Lofts, Palisades Development Group	Mission	Planning	Palisades Development Group	Avi Brosh		Loft-style, for-sale housing 1.3 miles from station.	Project example outside traditional view of influence area of station.
Lincoln Heights TOD <a href="http://www.multihousingnews.com/multihousing/search/search_display.jsp?vnu_content_id=1000557253">http://www.multihousingnews.com/multihousing/search/search_display.jsp?vnu_content_id=1000557253</a>	Avenue 26/ Lincoln Heights	Under construction	AMCAL Developments	Percy Vaz		533 units in 4 phases; senior affordable, family apartments, condos, retail. Adjacent to station.	Urban Los Angeles setting, first large L.A. site on Gold Line; diverse project; working with nonprofit service provider; tax credits for affordable housing; child care proposed.
Responses concerning TOD in the Southern California region, including Gold Line, Red Line, and Blue Line							
CIM Group (No specific current project; did Pottery Barn project on Colorado)	N/A	N/A	CIM Group	John Given		Pottery Barn project is residential over retail.	Extensive experience with TOD throughout California.

**General perceptions of TOD in the Gold Line corridor**

Project	How does Gold Line affect market?	Best suited real estate products	Information sources	Opinion of Gold Line
Pinnacle at Sierra Madre Villa, BRE Properties	Surge of activity after Gold Line announcement.	Garden, wrap, and podium apartment projects, depending on station context; prefers not to do mixed use in suburban areas.	ULI seminars, peer relationships, market research (macro and micro), looking at new products.	Favorable.
Alexan City Place, Lake Station, Trammell Crow	One of several factors that make downtown living desirable.	Dense projects, at least 50 units per acre, up to 100 units per acre desirable.	Informal, would like more systematic information.	May be best chance of any L.A. light rail for extending use beyond blue-collar riders.
North Lake Lofts, Standard Pacific Homes	Over time will bring development clusters at stations.	Housing, followed by mixed use and service-oriented retail uses.	ULI	Comfortable, clean, goes through interesting and varied neighborhoods.
Mill Creek Development	A major influence.	Housing. Mixed-use and service-oriented retail will	Local symposia, public discussions and presentations. Some	Not very good. Concerned that system is too slow, not as convenient as people hoped, traffic

Development		follow, but secondary.	Internet sources on growth and planning.	at crossings, wanted more crossings grade separated.
Madison Walk, Olsen Company	Housing is determined by city regulations; transit stations help cities allocate and justify density.	Housing.	Visit sites, especially Northern California. Railvolution conference.	Cited articles about slow travel times. Expected a larger effect from proximity to desirable destinations. Competitive travel time is key.
Del Mar Station, Urban Partners	Essential link between northeast communities and downtown L.A.; sees Pasadena as bedroom to downtown L.A.	Depends on neighborhood; residential stronger than office and R&D in current market; housing densities of 60-90 units per acre.	Experience in other locations: Portland, Europe, Washington State. ULI, Railvolution, Mobility 21, TOD book.	Good project, disappointing travel time. Expect ridership growth over time.
Milan, Champion Development	Improves suitability of land for residential, strengthens deals.	Primarily housing, retail is secondary. High-density housing within 1/4 mile of station.	ULI, <i>Wall Street Journal</i> , university conferences.	Believes ridership is fine. Takes longer to ride than to drive, which hurts use.
Mission Meridian Village, Creative Housing Associates	Primary reason for project.	Condominium best suited to South Pasadena market.	Not known.	Satisfied with project as built; ridership low but expect improvement. Sound attenuation for units cost extra \$150k.
Pasadena/Sycamore Lofts, Palisades Development Group	No effect. Gold Line has had bad press--noise, lack of use, cost.	All types.	None.	Largely negative. Public transit a tough sell in Los Angeles culture.
Lincoln Heights TOD, AMCAL Developments	Primary reason for project, especially for-sale housing component.	Dense housing, for sale and rental. Retail and office do not benefit as much.	Real estate journals. Seminars: Urban League, BIA, downtown housing group.	Positive experience as rider, wondered why not more riders.
Responses concerning TOD in the Southern California region, including the Gold Line, Red Line, and Blue Line				
CIM Group	Land availability for infill housing primary. Transit access a bonus, but tangential. Transit development can create development sites.	Housing and affordable housing. Best uses depend on line and station characteristics.	Not asked.	Not asked.

Table 20 summarizes some of the specifics of the projects studied and their relationship to the Gold Line. Most of the projects are under construction, having proceeded through land acquisition and entitlements while the Gold Line was in the final construction process. There was a period of uncertainty about whether the Gold Line would be built when construction was shifted to a joint powers authority, so it is not surprising that a high level of activity occurred when it was clear that the project would be completed. The housing market was robust during this period, which spurred development.

Most respondents believe they paid some premium for land because it was near a transit stop. However, they found it difficult to attribute a particular impact solely to Gold Line proximity. In most cases, the Gold Line was one of several attractive features about the site, with others including freeway accessibility and Pasadena employment opportunities and amenities. The farther the site was from a station, the less impact it had on land price. In two cases, transit accessibility was a more important factor in the price of land and the ability to attract equity and financing.

Developers' responses about how the Gold Line affected the market analysis for the project varied. Some developers said the project type and characteristics were not affected by the Gold Line, but that the project was defined by the demand for urban housing in Pasadena. The farther the project was from the station, the less impact was reported, with a quarter-mile seeming to be a rule of thumb. Two other developers said all or part of the project would not have been built without the Gold Line. As mentioned, the locations where the Gold Line played a larger role are sites where the developer was introducing a new product to the market area--luxury rental housing at the Pinnacle project at the end-of-the-line Sierra Madre Villa station and for-sale family housing at the Lincoln Heights TOD. A third developer (Madison Walk) indicated that Gold Line proximity expanded their market area for the project from the usual 3- to 5-mile radius of the site to include downtown Los Angeles workers, whom they targeted in their advertising.

In three cases, land for the TOD was purchased by LACMTA as part of the development of the Gold Line project. LACMTA then issued requests for proposals and conveyed the land to the developers. Developers expressed general satisfaction with the LACMTA process and praised LACMTA leadership in this area. One developer said that future agreements should include performance timelines so that projects are built in a reasonable time frame. The other critical issue is station planning and design, because rail construction may provide unique opportunities to acquire land and design access facilities and parking in a way that is supportive of TOD.

Effects on land acquisition, market potential, financing, design, and parking						
Project	Type of land acquisition	Paid premium for transit-access location?	Did rail change assessment of market?	Did rail affect ability to attract equity and financing?	Did rail affect architect selected?	Did rail affect parking supply/policy?
Pinnacle at Sierra Madre Villa, BRE Properties	2002, LACMTA site	Yes, perhaps 20%, counting obligation for historic preservation in cost	Would not have done a luxury apartment project in this location w/o GL; it helps make the	REIT board would not have approved project w/o	No, sought best architect for matching units to	Built less than code (1.5/unit) based on a city request that they apply for the variance. Comfortable with lower parking supply. Total 267 spaces

		Cost.	market for this product.	Gold Line.	units to market.	parking supply. Total 207 spaces.
Alexan City Place, Lake Station, Trammell Crow	1999/2000, private site	No	No	Gold Line was a one of a number of positives, but not a driving factor.	No	GL allowed them to go with lower end of usual standard. Provided 10% above city code. Charge \$75/ month for spaces over 1/unit. Have found that they slightly overbuilt parking.
North Lake Lofts, Standard Pacific Homes	Scheduled to close in 2004, private site	Yes, but hard to quantify, one of many amenities of the site.	No, location has many other attributes--freeway access, employment.	Don't know.	No	No. Felt for-sale market required normal standards. Has 2/unit, 2 guests/unit, 5/1,000 for retail. Total 192 spaces.
Mill Creek Development	Respon-dent is property owner.	No, quite far from station.	No	Not known.	No, but selected architect experienced in TOD.	Not determined.
Madison Walk, Olsen Company	2002	Probably not. Line was still in the future. Premium paid for central Pasadena location.	Expanded market for project beyond the 3-5 miles typical for their developments. Targeted downtown L.A. workers.	No, funding is not predicated on specific projects.	No, but has in other projects.	Project at 1.8 spaces/ home, below their norm for for-sale housing. Comfortable with this supply. Building even lower supply in other cities. Provide some spaces with units, but sell extra spaces at \$15-20k per space.
Del Mar Station, Urban Partners	1999/2000, LACMTA site	No; transit access balanced by distance from Colorado, extra site costs, untested market.	No	Not known.	No, selected best architect for Pasadena market.	Exceeded code (no GL experience on auto ownership). Underground parking costs up to \$30k per space because of complexity of building around the rail line.
Milan, Champion Development	Under contract	Yes, but cannot quantify.	Project parameters driven by city regulations, permitted density, units, height, etc.	Makes project less risky.	No	Following city code requirements. For-sale units must correctly structure parking for tract map approval.
Mission Meridian Village, Creative Housing Associates	1997, private/public partnership	Not known.	Yes, Gold Line is primary reason for development.	Initial lender skepticism; built consortium including public sector.	Yes	Project includes 143 spaces designated for GL patrons, paid for with Proposition C funds. GL and resident parking separated. Underground parking pushed costs to \$25-30k/space.
Pasadena/Sycamore Lofts, Palisades Development Group	Not known	No	No	No	No	No
Lincoln Heights TOD, AMCAL Developments	2003, private. Land required more environmental mediation than anticipated.	Yes	Yes, made for-sale housing possible; affordable housing may have proceeded w/o rail.	Yes, affordable housing received credits from State Tax Credit Allocation committee.	No	Yes, used existing code provisions for lower supply near transit. Providing 1 space/unit on rental and ~1.75 spaces/unit on for-sale housing.
Responses concerning TOD in Southern California region, including the Gold Line, Red Line, and Blue Line.						
CIM Group	Varied	Sometimes no, always difficult to isolate. More evident in developments right next to stations, where new market is created.	Market is primarily based on other factors, primarily need for infill housing.	Not asked.	No, unless the development is directly upon station.	Yes, but primary driver is difficulty in providing full parking in constrained urban environment. In other markets, lowering supply to 1 space/unit, unbundling parking in leases.

Proximity to a rail transit station did not influence selection of the project architect in most cases. The primary orientation of most developers was optimizing the unit type, mix, design, and amenities. Only where a project was directly over a station did developers indicate that they would bring in more specialized TOD expertise.

Responses on parking were varied. Some developers built fewer spaces than code (with variances); one did so at the invitation of the city (Pinnacle). Others, especially for-sale units, built above code. Those developers relied on their sense of market demands and the perspective of their marketing and leasing professionals. Since the Gold Line was not a proven rail system, there was a tendency to be conservative on parking supply issues. One apartment developer indicated that in hindsight, they had slightly overbuilt the parking for the project (Alexan). In higher-cost areas of downtown Los Angeles, precedents are being set for lower parking supply and alternative parking locations.

Some projects had high expenditures on parking because that parking was in underground garages that cost up to \$30,000 per space (Del Mar Station, Mission Meridian project). Building conventional amounts of parking next to transit stations has disadvantages: It increases building cost, reduces housing affordability, and does not provide a disincentive to automobile ownership in station areas. However, it is clear

that developers will be cautious about underbidding parking because it will affect the marketability of their project. In addition, the strong market for housing in this corridor may have enabled them to overbuild parking while still producing a profitable project. Consistent city policies can encourage lower parking supplies if developers have the assurance that competing projects will not be allowed to overbuild parking and receive a competitive advantage.

In the cases reviewed here, most city requirements recognize that less parking should be built in TOD housing, either directly in specific plan or zoning provisions, or with a willingness to consider variances.

Most developers planned to follow the conventional practice of bundling parking with rent or the sale of the condominium. The problem with this practice is that it creates no economic disincentive to automobile ownership. Tenants might as well continue to own cars as long as spaces are free. This practice is common in the market area.

The interviews identified a notable exception to this practice. The developers of the Alexan City Place project, near the Lake station, initially attempted to lease the project with unbundled parking. That is, rents were set without including any parking space(s), and parking was made available at \$75 per month. This is a desirable approach because it makes the development relatively more attractive to those who own fewer cars and creates an economic incentive to reduce car ownership. After receiving resistance to this in the initial marketing, the developer modified the approach to provide one space per unit, regardless of the number of bedrooms, and make additional spaces available at \$75 per month. Although not complete unbundling, this practice creates an incentive for tenants to reduce the number of cars they own. The developer indicated that precedent for this approach is growing in higher-cost areas such as downtown Los Angeles; perhaps over time this will emerge in the Pasadena market. City officials should carefully monitor parking occupancy levels and make adjustments to minimum parking requirements. They should also encourage developers to unbundle parking.

Other developers were queried about the unbundled parking concept. Most had not considered it and often indicated that project marketing and leasing professionals influenced this issue. Generally, they do not want to deviate from standard practice in the market area. Since TOD represents a form of housing with different transportation attributes, this adherence to standard practice is an impediment to change. Cities may want to engage the marketing and leasing professionals in their area in discussions of innovative ways to structure leases and parking. Another possibility is for the developer to involve the marketing and leasing professional more fully during the project planning and design process. More coordination might produce early ideas on leasing structures that would affect the parameters of the project, such as parking supply. When that does not happen, it seems likely that parking will be overbuilt. If that is locked in before marketing and leasing professionals are involved, they have little option but to offer the parking free, using it as a competitive amenity.

Strong market demand for housing has made many of these projects possible, but a public policy played an important role in supporting TOD. In most cases, cities anticipated the Gold Line project and developed general plan, specific plans, or zoning code provisions that allowed TOD to occur. Some projects required only design review; others required variances. In one case, the city invited the developer to request a variance from parking requirements (Pinnacle). In most cases, a full Environmental Impact Report (EIR) was not required. No particular impediments were identified, although several developers noted that design review can be a lengthy process. Most developers believed that transit accessibility played an important role in their ability to secure development entitlements, either as in current plans, and an ability to gain variances, and/or an impetus to counter opposition to growth. In Pasadena, plans have called for clustered developments to enable the city to protect single-family neighborhoods.

There are several stations where no development has taken place, such as Highland Park. These communities have complex planning requirements, such as a Historic Preservation Overlay Zone, and there is community opposition to dense development. Highland Park has both attractive architectural assets and a supply of affordable housing. Unlike areas such as Lake Avenue, which does not have an existing neighborhood south of the station, the Highland Park station area has many stakeholders and conflicting agendas. Los Angeles has developed a TOD ordinance for this area, but development has not occurred. The planning process used in the Mission/Meridian project, which involved substantial community involvement and an iterative design process, may be a model for stations such as Highland Park.

Developers indicate that the role of station access is more influential in planning decisions than in determining market demand. Other government programs have also supported TOD. For example, the Lincoln Heights project received affordable housing tax credits from the state in part because the point system for allocating credits included transit accessibility.

Several developers discussed impediments to development unrelated to city approvals. For infill projects, soil contamination is an issue. The developer of the Lincoln Heights project indicated that soil contamination was a larger issue than they had anticipated in their project planning. He suggested that additional or better-funded city or state programs to assist with environmental remediation are needed. Since a number of the city of Los Angeles station areas are former industrial lands, this issue deserves attention.

Overall, the developers expected that the Gold Line proximity of their sites will support greater valuations of those properties over a 20-year time period compared to a site without such transit access. All indicated that it was difficult to estimate what that advantage would be, since the Gold Line is so new. Table 21 summarizes developer comments on city approvals and future valuations.

City approvals and future valuations						
Project	Did GP, Specific Plan and zoning support development?	Did city process impede development?	Did project require changes to plans or regulations?	EIR required?	Overall effect of transit location in receiving entitlements	Expectations of change in value over 20 years?
Pinnacle at Sierra Madre Villa, RFE Properties	GP and East Pasadena Specific Plan allowed increased density	No. Design review process was lengthy but ultimately added value to	Variance on parking, to build less than code. City asked developer to apply for	No, covered under the EIR for the Specific	City was supportive of project.	Valuation will be supported as more people use transit. Development of

Other Properties	increased density and height.	project.	to apply for variance; supported it.	Specific Plan.		station areas as mixed-use corridor.
Alexan City Place, Lake Station, Trammell Crow	GP supported concept, but density allocations did not provide for this parcel. Zoning allowed 87 units/acre.	No	GP amendment	Mitigated negative declaration, traffic study.	Transit accessibility an important element of city support for project.	Expects positive effect, but hard to quantify. Current cap rate is about 5.5%.
North Lake Lofts, Standard Pacific Homes	Yes, allowed housing and mixed use.	No, but process was lengthy, 10 months. Transit accessibility did not appear to provide priority to permit processing.	No, just concept design review.	Mitigated negative declaration, with traffic mitigation.	Helped overcome resistance to housing on Lake (some officials wanted office).	Will enhance, but can't quantify. Will get feedback from buyers when marketing begins.
Mill Creek Development	Yes, both old and new GP and SP support development.	Project caught in current moratorium pending acceptance or rejection of new GP and Central District SP.	Minor variances.	Expect a mitigated negative declaration.	Did not ease entitlement process. Change and disruption from GL and development have created antigrowth movement.	Adds value, especially if city continues with focused growth, but project closer to station will benefit more.
Madison Walk, Olsen Development	Yes	No	No	Negative declaration.	Not that much; Pasadena planning already supported infill and cluster development.	Homes will increase in value at faster rate. Experience in Bay Area suggests impact will increase over time.
Del Mar Station, Urban Partners	GP and Santa Fe Specific Plan supported project.	No	Required 8 variances, for height, setbacks, ducts in parking garage, etc.	Yes, traffic was a significant issue.	Lots of coordination, complex partners, but it worked. LACMTA a good partner.	A definite plus, as market acceptance is gained.
Milan, Champion Development	Yes	Project currently subject to central area moratorium.	Not known.	Not known.	Plans support TOD but community has growth concerns.	Greater level of property appreciation than elsewhere.
Mission Meridian Village, Creative Housing Associates	Site identified as bonus site in Specific Plan.	No, but required extensive community participation and design refinement. Community opposed structure parking.	Project fit in general SP parameters, but had to work out design, massing, parking, etc.	Focused EIR required, even though there was EIR for Specific Plan.	Essential to city and community approval.	Project substantially sold out without marketing. Increased use expected to enhance value.
Pasadena/Sycamore Lofts, Palisades Development Group	Yes, but it was a new product for the city.	No	No	No, but traffic study required.	None	Intuitive expectation of increase.
Lincoln Heights TOD, AMCAL Developments	Yes, with leadership from Council office.	No. More assistance on environmental remediation would have been helpful.	Rezoning from M-2.	Mitigated negative declaration.	Significant	Positive; difficult to estimate. Perhaps 50 basis points on cap rate.
Responses concerning TOD in the Southern California region, including the Gold Line, Red Line, and Blue Line						
CIM Group	Depending on circumstances, plans can be supportive. Station design decisions also critical.	There can be a backlash to change and growth. Desire for affordable housing can conflict with community desire to cap densities.	N/A	N/A	Transit accessibility can be tied to broader case for infill housing.	Creation of transit-rich core in Los Angeles, which will have different travel patterns.

## PROPERTY MANAGERS AND MARKETING

Once a project is complete, property managers shape the success of TODs in supporting transit. With property manager backing, residential TODs can foster a self-selection process in which residents who intend to use transit are attracted to the units and choose to stay longer than those who do not use transit. We interviewed five property managers in the Gold Line corridor to learn about operational issues and the importance of the Gold Line in their marketing approaches and in the lives of their tenants. The following summarizes the key observations:

Most property managers use Gold Line access in their marketing materials. The use of rail for nonwork purposes is noted, as well as the tradition journey-to-work function. The primary marketing emphasis, however, is the quality of the housing and the quality of the neighborhood.

Several operational issues were worked out by LACMTA during the initial operating period. Notable were the loudness of crossing bells, which has been modified in terms of volume and duration, and brake squeal by the train cars.

Gold Line access is not a determining factor in most tenants' locational decisions, although many property managers reported anecdotes

about tenants who used the rail.

Gold Line use tightly relates to demographics, job type, and location.

Systematic studies of the travel patterns of residents are not generally done.

Table 22 identifies the property managers interviewed and summarizes project characteristics. One project is not identified because the respondent requested anonymity.

Property managers interviewed				
Project name	Property Manager	Gold Line Station	Project Description	Residents Surveyed?
Alexan City Place	Jill Renfrow, Senior Property Manager	Lake Avenue	214 units, 1,300 feet from station	Yes
Pasadena Gateway Villas, 290 North Hudson Avenue, Pasadena 91101	Nevine Khalil, Property Manager	Lake Avenue	140 units, 1,300 feet from station	No
Terraces Apartment Homes at Paseo Colorado	Rob Jackson, Leasing Manager	Memorial Park	391 units above a retail mall	No
Holly Street Village Apartments, 151 East Holly Street, Pasadena	Yudi Hager, Assistant Manager	Memorial Park	374 unit mixed-use complex, directly above station	Yes
N/Aa	N/A	Memorial Park	N/A	N/A
<b>a Information not available; property manager requested anonymity.</b>				

Table 23 summarizes the ways that transit access affects project marketing and operations. Most property owners use light-rail proximity in their marketing materials, but other attributes of the location are more important, for example, employment and recreation/cultural opportunities in downtown Pasadena. In most cases, Gold Line access was not a determining factor in tenants' location decisions, although it is generally seen as a plus. Property managers do not collect information on their tenants' travel patterns, but offered anecdotes about small numbers of tenants who use the Gold Line. With the exception of the Alexan City Place project mentioned earlier, most projects bundle parking with the unit.

Transit access in project marketing and operations				
Project	How is GL used in marketing?	Does GL affect tenant's location decisions?	Do tenants use GL?	Effect on Parking
Alexan City Place, Lake Station, Trammell Crow	Uses proximity to Lake station in marketing materials.	No	See residential survey results.	One space/unit free; any additional spaces \$75/month.
Pasadena Gateway Villas	Uses proximity, but not believed to be a strong selling point. Mentioned in promotional materials.	No. Tenants tend to be people relocating from out of state who have jobs that require automobile travel.	Anecdotal evidence suggests not	N/A
Terrace Apartment Homes at Paseo Colorado	Gold Line mentioned in promotional materials.	About 30% of tenants ask about GL access. Tenants talk frequently and positively about GL.	Manager knows 3 tenants who regularly use Gold Line.	N/A
Holly Street Village Apartments, 151 East Holly Street, Pasadena	Current marketing materials do not mention Gold Line; new materials will.	Tenants speak favorably about Gold Line, except those who live directly above the station.	Manager knows 12 tenants who commute to Los Angeles on GL.	Parking free with unit.
Property manager requested anonymity	Not strongly marketed.	Only anecdotal evidence, no systematic study		Parking free with unit.

We obtained two sets of marketing materials to see how the Gold Line was portrayed. The materials for the Mission Meridian Village development prominently feature Gold Line proximity (a 3-minute walk) as part of the overall housing and neighborhood amenities. The four-page market brochure includes statements about Gold Line access, a photograph of the Mission Station, a map of the Gold Line system, and a map of the entire regional light- and heavy-rail system. This map also shows the scheduled Gold Line extension to East Los Angeles and the hoped-for extension to Claremont

In contrast, the Archstone Pasadena project, located on Colorado Boulevard at Oak Knoll Avenue, about midway between the Lake station and the Memorial Park station, does not mention the Gold Line. The only mention of transportation accessibility is that downtown Los Angeles is 15 minutes away. Its materials emphasize proximity to restaurants, museums, educational institutions, and parks. The brochure includes a map of the central Pasadena area showing major roads and freeways, but there is no indication of the Gold Line route or Gold Line stations that serve the project.

The Southern California Association of Governments indicates that traffic congestion will worsen over the next 20 years. These station-area projects were opened at a time when congestion annoys many residents, but congestion levels for the type of trips corridor residents take are not yet that severe. The automobile is a faster travel mode for almost all trips in the corridor, especially since many of those trips are on surface streets and/or avoid the most congested highway facilities in the region. However, increasing congestion in this travel corridor will change the travel time balance between driving and other modes and will improve transit ridership. These projects will have a strong accessibility advantages. Marketing materials can target potential transit riders more aggressively, highlighting transit-friendly demographics and lifestyle factors. As indicated by the developer of the Madison Walk project, targeted marketing to high-potential markets, such as downtown Los Angeles workers, can effectively increase the "trade area" of the development. Finally, restructuring lease arrangements can help reward those who live next to rail and own fewer (or no) cars by unbundling parking cost from rent.

## CONCLUSION AND POLICY RECOMMENDATIONS

The household surveys and key participant interviews both suggest that TOD along the Gold Line is heading in the right direction. The paragraphs that follow summarize our key conclusions and offer a series of policy recommendations.

### CONCLUSIONS

In terms of travel behavior, residents living within Gold Line station areas already exhibit encouraging levels of transit use, in spite of the fact that the Gold Line has been a transportation choice and a part of residents' location and travel decision making for only a short time. The 15 percent transit share for main trips is a significant improvement over existing transit levels in most areas of the corridor. Although ridership is lower than that of TOD residents in heavy-rail systems such as BART, it is quite good for light rail in this context. The Gold Line has performed better in capturing transit trips from TOD than Long Beach (along the Blue Line) or San Diego's Mission Valley (along San Diego's Trolley line)--two other light-rail systems in California.

In terms of development, Pasadena, South Pasadena, and Los Angeles are on the right track in encouraging TOD. Given the issues of housing demand, transportation and environment, and the fact that none of the parking facilities provided at Gold Line stations currently fill, using land around Gold Line stations for housing and mixed-use TODs is appropriate. Housing projects are being built for a range of occupants: renters and owners, singles and families, and persons with upper, middle, and lower incomes.

If the goal is not only to increase transit ridership but also to reduce automobile dependency, the 7.5 percent level of pedestrian and bicycling activity is encouraging. This level of walking and bicycle use exceeds that in many comparison areas and suggests that the corridor is beginning to succeed as a mixed-use area. Reinforcing this is the finding that linked trips (trips for more than one purpose) do not discourage transit use, as is usually the case.

### POLICY RECOMMENDATIONS

Four policy and development issues emerged as deserving of additional attention: the provision of affordable housing within station areas; encouraging transit-oriented (as opposed to transit-adjacent) housing projects; identifying an appropriate mix of residential, employment, and other land uses; and revising current parking policies.

Housing affordability is an important element of TOD because transit ridership is lower when TODs attract affluent, automobile-oriented residents. Affordable housing in a TOD is likely to provide greater transit ridership for a wider range of trip purposes, to better meet the needs of transportation-disadvantaged populations, and also may require fewer parking spaces. Although Los Angeles and Pasadena are requiring affordable housing in Gold Line station areas, the surveys found that the majority of residents are more affluent and automobile oriented.

Among new projects, ridership varies considerably across those projects that are built close to (but not oriented toward) the rail stations, and those that capitalize on the rail access, such as Holly Street Village, built directly over the Memorial Park station. The former projects are achieving lower transit shares than the more transit-oriented projects or those that predated the Gold Line. This may be partially attributed to the fact that many new residents are moving into Gold Line station areas because of housing-related factors rather than transit accessibility, but it also suggests that design makes a difference. New TODs directly over pedestrian-oriented stations have a greater transit share than projects located blocks away from stations that are less pedestrian friendly (for example, located in the middle of the freeway).

While demand for rental and for-sale housing outweighs all other land uses, cities have questions about the types of TOD land uses that should be encouraged. There is tension in Pasadena, for example, over allowing additional housing and preserving some sites for office development. This study did not survey office workers, but such surveys would be valuable in making that policy choice. The configuration of the Gold Line is well suited for providing trips from station origins to destinations in downtown Pasadena and downtown Los Angeles.

Cooperation is needed among cities, developers, property managers, and project leasing agents on parking policy. Although there is progress in reducing supplies and unbundling parking spaces from rents or sales price, most projects still give away parking spaces and do not create an economic incentive for tenants to reduce automobile ownership. Reducing automobile ownership is critical to achieving many public and private objectives, the most prominent of which is to decrease the cost of housing. Flex-car programs that provide a car for occasional use are a promising way to make reduced car ownership less inconvenient for TOD residents.

Although Gold Line ridership is below expectations, all the rail lines in Los Angeles have shown growth in their first five years of operations. The results of this study are encouraging, but should be considered as an early measurement. Future studies and monitoring should occur as the system matures.

### APPENDIX A: HOUSEHOLD SURVEY INSTRUMENT



**APPENDIX B: INTERVIEW PROTOCOLS**



## **APPENDIX C: PEDESTRIAN EVALUATION WORKSHEET**

### **ENDNOTES**

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Richard W. Willson, "The Role of Parking Policy in Transit Oriented Development," paper presented at the 2004 Association of Collegiate Schools of Planning conference, Portland Oregon, 2004.

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Kevin J. Krizek, "Residential relocation and changes in urban travel: Does neighborhood-scale urban form matter?" *Journal of the American Planning Association*, 69(3)(2003): 265-281.

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Interviews were conducted with Art Cueto, LACMTA; Marsha Rood and Brian League, City of Pasadena; and Gerald Gubitan, Planning Deputy for Councilman Reyes, City of Los Angeles.

Data obtained from city of Pasadena Website, <http://www.ci.pasadena.ca.us/planninganddevelopment/developmentprojects/projects.asp>, accessed on 8/25/04.

U.S. Census data for the one-third-mile radii around station areas were compiled using the LandView 6 program produced by the U.S. Census Bureau. Land View 6 estimates population characteristics within a radius "by tallying Census 2000 data for those block [group] points whose coordinates fall within the circle defined by the radius." Data are derived from Summary Files 1 and 3 of the 2000 U.S. Census.

Average daily boardings for January 2004 were 14,543 on Saturdays and 12,195 on Sundays, compared to 15,393 on weekdays. Information from the MTA Website: [www.mta.net/news\\_info/ridership/ridership\\_avg.htm](http://www.mta.net/news_info/ridership/ridership_avg.htm), accessed January 2005.

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## ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of variance
BART	Bay Area Rapid Transit
BIA	Building Industry Association
CBD	Central business district
EIR	Environmental impact report
GL	Gold Line
GP	General Plan
LACMTA	Los Angeles County Metropolitan Transit Agency
RAPOC	Research Associates Policy Oversight Committee

REIT	Real Estate Investment Trust
SOV	Single-occupancy vehicle
SP	Specific Plan
TOD	Transit-oriented development
TRB	Transportation Research Board
ULI	Urban Land Institute
VMT	Vehicle miles traveled

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### **PEER REVIEW**

San Jose State University, of the California State University system, and the MTI Board of Trustees have agreed upon a peer view process to ensure that the results presented are based upon a professionally acceptable research protocol.

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