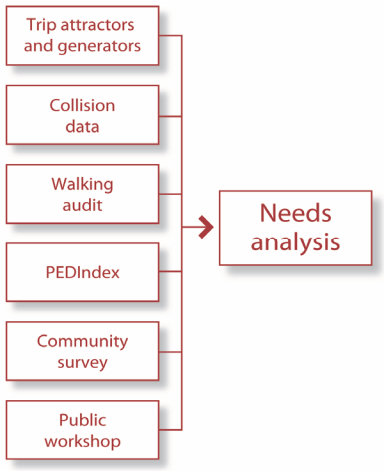
4. Needs Analysis

This needs analysis examines where pedestrian improvements are needed in San Mateo. The examination begins with a review of trip attractors and generators to identify where pedestrians are likely to walk to and from. How people access these destinations, whether on foot, by car, by bike or with transit, and typical travel time are then reviewed to understand the current and potential rates of walking. Pedestrian collision locations and rates, a walking audit, and PEDIndex are also reviewed to understand locations likely in need of pedestrian related improvements. The needs analysis concludes with a summary of community input gathered from a community survey and a workshop.



Qualitative data and community input help to identify pedestrian needs in San Mateo.

4.1. Pedestrian Attractors and Generators

Walking can be a viable means of transportation if schools, employment centers, shopping centers, and parks are accessible by walkways. These pedestrian "attractors" and "generators" are examined below and are used to identify potential recommended pedestrian facilities. Pedestrian attractors are land uses such as retail centers, schools, transit, major employers, senior centers, community centers, medical facilities, parks and the San Mateo County Event Center that attract pedestrians from the surrounding area. Pedestrian generators are land uses, such as senior housing developments, that bring new pedestrians to live in a given area. **Figure 4-1** presents San Mateo's pedestrian attractors and generators.

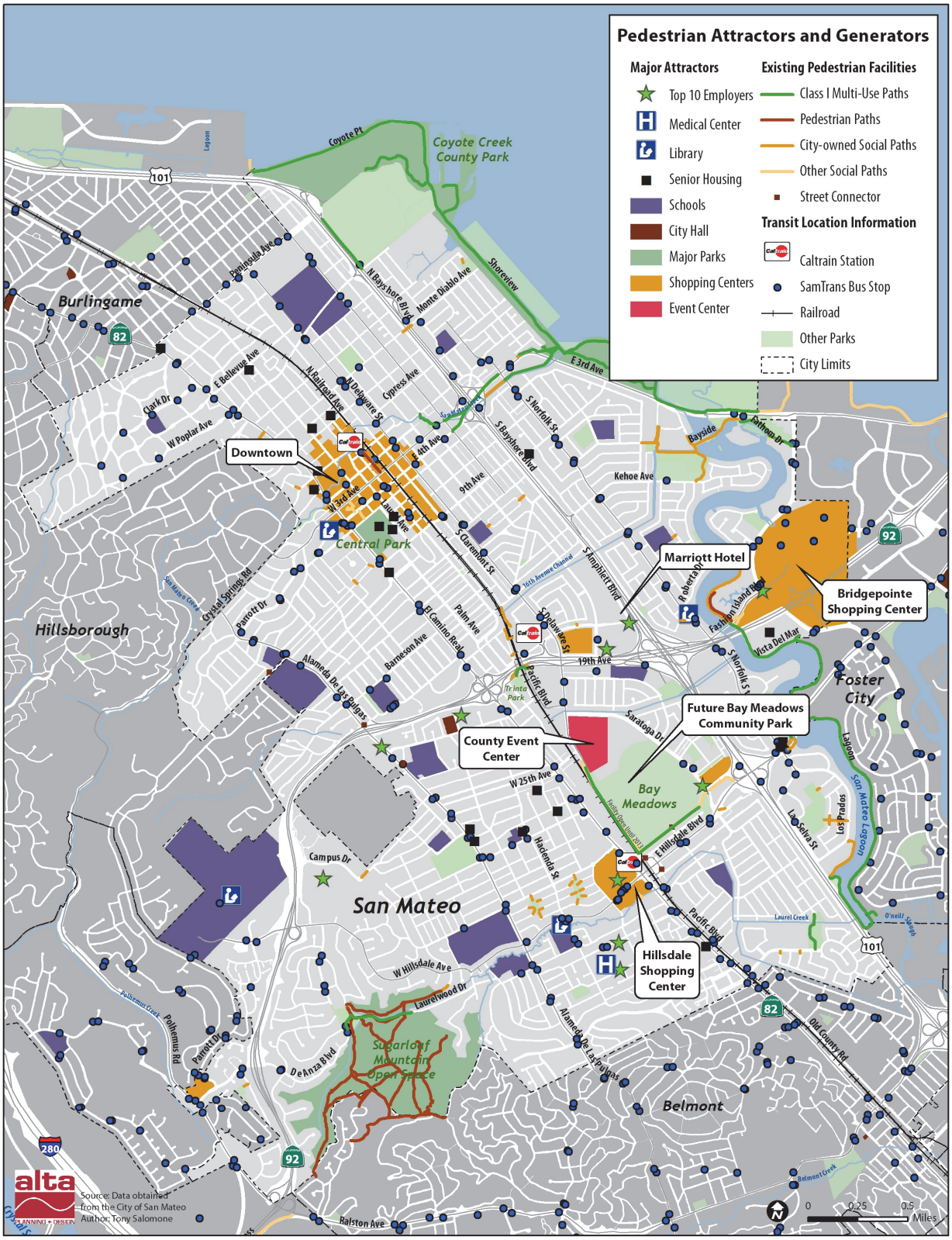


Figure 4-1: San Mateo's Pedestrian Attractors and Generators

4.1.1. Retail Centers

Retail centers are always among the highest pedestrian trip generators in any community. San Mateo's retail centers are served by a combination of transit and centralized parking facilities that include structured parking, and on street surface parking. The result is highly concentrated pedestrian flows in some areas. The areas include Downtown, Hillsdale, Bridgepointe and neighborhood retail centers.

Downtown San Mateo is the City's historic retail center. The area is comprised of several blocks and features restaurants, boutique retail, and entertainment uses, including a movie theater. The Central Park and Recreation Center is also located in Downtown San Mateo. Downtown is home to a farmers market May through October. All streets within Downtown include sidewalk facilities of varying widths. Other pedestrian amenities include countdown pedestrian signal heads at traffic intersections, crosswalks, street trees, and street furniture.

Hillsdale Shopping Center is a large indoor shopping mall located west of the Hillsdale Caltrain Station. The center features three anchor stores, plus 130 specialty stores and restaurants and 5,800 parking spaces. The shopping center is accessible from sidewalks on Hillsdale Boulevard, 31st Avenue, and El Camino Real.

Bridgepointe Shopping Center is a regional retail, dining, office, hotel, and residential center located at Mariner's Island, just west of Foster City. Bridgepointe also includes an ice skating rink, which offers public skating and youth hockey and skating programs. Sidewalks on Bridgepointe Parkway, Bridgepointe Circle, Armada Way, and Trader Lane provide pedestrian access to the Bridgepointe Shopping Center.

Merchants in smaller neighborhood retail centers such as 20th Avenue, 25th Avenue, 37th Avenue, 41st Avenue and Norfolk Street are also a valuable resource and destination for pedestrians. For example, the 25th Avenue retail area is a traditional shopping street with grocery stores, a pharmacy, post office, and many restaurants serving resident needs.

Retail centers need facilities to accommodate higher pedestrian activity. These include marked crosswalks, pedestrian countdown signals, and curb ramps as well as pedestrian scaled lighting and wayfinding signs.

4.1.2. Schools

Over 22,000 students are enrolled at schools in San Mateo, representing a large population of potential pedestrians. Approximately half of these students attend kindergarten through high

school at San Mateo schools that are located within neighborhoods and attract pedestrians. Half of these students are enrolled at the College of San Mateo, which hosts the San Mateo Farmers' Market on Wednesdays and Saturdays, an event that draws pedestrians from the surrounding neighborhoods. **Table 4-1** lists the schools in San Mateo and their enrollment.

Table 4-1: San Mateo School Enrollment (2010)

School	Enrollment
Abbott Middle School	752
Aragon High School	1,670
Baywood Elementary	509
Beresford Elementary	238
Borel Middle School	953
Carey Elementary	238
College of San Mateo	11,000
College Park Elementary	265
Fiesta Gardens International School	447
George Hall Elementary	433
Highlands Elementary	451
Hillsdale High School	1,171
Horrall Elementary	437
Junipero Serra High School	162
Laurel Elementary	417
Meadow Heights Elementary	313
North Shoreview Montessori	311
Park School	452
Parkside Elementary	420
San Mateo High School	1,396
San Mateo Park Elementary	485
Sunnybrae Elementary	470
Total Enrollment	**23,009**

As part of the public survey conducted for this Plan, respondents were asked if they take a child to school and, if they do, how do they get there. Of those survey respondents who take a child to school, 19 percent walk, 28 percent drive to school then home, and 50 percent drive to school then another location. Most College of San Mateo students drive or take transit to the college, because of the hilly topography.

Pavement markings, such as crosswalks, have definite and important functions in a proper scheme of school area traffic control. As stated in

the previous chapter, State law requires a marked pedestrian crosswalk located in a roadway contiguous to a school building or school grounds to be yellow. A marked pedestrian crosswalk located within 600 feet from a school building or school grounds may be yellow. The majority of crosswalks (approximately 73 percent) located within 600 feet of a school are yellow.

4.1.3. Mixed-Use Neighborhoods

San Mateo has mixed-use neighborhoods at some locations throughout the City. These land use patterns tend to increase pedestrian activity by placing origins and destinations within closer proximity to each other than in large single-use neighborhoods. Mixed-use developments exist near downtown San Mateo and are planned at Bay Meadows and the Delaware Street/Concar Drive areas. Other areas are zoned for mixed-use development but will require time to build out.

4.1.4. Transit

Transit opportunities in San Mateo include Caltrain and SamTrans. Most areas of the City are located within a quarter mile of bus routes; however, designated bus stops are not frequent and therefore less accessible. As discussed in the previous chapter, 70 percent of passengers walk to their bus stop and 62 percent walk from their stop to their final destination.

4.1.5. Major Employers

San Mateo's top ten employers employ more than 11,000 people. These employees constitute a large number of potential pedestrians. The location of the top ten employers is shown in **Figure 4-1** and in **Table 4-2**. Many of the top ten employers are located in an office park context offering limited pedestrian access. No data on employees walking to these major employers is available; however, existing land use and infrastructure near the major employers does not create an inviting walking environment. In order to address this infrastructure barrier, pedestrian improvements should be implemented by improving access with pedestrian friendly elements including wide sidewalks, pedestrian scaled lighting and landscaping separation where feasible.

Table 4-2: Top 10 Employers (2010)

Employer	Address	Employees
Franklin Templeton Group	1 Franklin Pkwy and 960 Park Pl	5,900
San Mateo Medical Center	222 W 39th Ave	1,400
Hillsdale Shopping Center (Macy's, Sears and Nordstrom)	115 Hillsdale Mall	1,100
City of San Mateo	330 W. 20th Avenue	695
Campus Drive Businesses (Net Suite Inc. and Terarecon Inc.)	2955 Campus Dr #100 and #325	630
California Casualty Group	1900 Alameda De Las Pulgas	500
Salesforce.com	900 Concar Dr	400
Success Factors Inc	1500 Fashion Island Blvd # 300	350
YMCA	1877 S. Grant St	300
San Mateo County Psychological	225 37th Ave #125	285
	Total	**11,560**

Source: City of San Mateo

4.1.6. Senior Housing Developments and Senior Centers

Walking is the only exercise in which the rate of participation does not decline in the middle and later years. In a national survey, the highest percentage of regular walkers for any group (39.4%) was found among men 65 years of age and older.

President's Council on Physical Fitness and Sports. www.alleghenycounty.us/hr/walkfacts.aspx

It is anticipated that by 2017, over 35 percent of San Mateo's population will be age 50 or over. Seniors have a clear need for safe pedestrian environments that are designed with consideration of their rates of movement, sight, and reaction time. The City's *Aging Well, San Mateo* (2009) report found that the likelihood of being no longer able to drive increases with age. Maintaining mobility, especially for those who can't drive is and will be an important goal in the coming years. The distribution of adults aged 55 and older by census tract is shown in **Figure 4-2**. The highest distribution of adults aged 55 and older is in central and southwestern San Mateo. People who live at a distance from or without adequate pedestrian facilities to shopping areas or the main public transportation corridors may find themselves isolated when they stop driving.

Senior centers in the City of San Mateo include the City of San Mateo Senior Center, the Martin Luther King Center, and Self-Help for the Elderly. The San Mateo Senior Center, located at 2645 Alameda De Las Pulgas, serves meals and hosts activities including yoga classes, seminars, bingo, billiards, and mahjong. The Martin Luther King Center is located at 725 Monte Diablo and also serves meals and hosts activities. Self-Help for the Elderly, located in Central Park, offers a variety of services (such as employment training, a wellness program, and homecare and hospice) and hosts social and cultural events.

Figure 4-2: Distribution of Adults Aged 55 and Older by Census Tract (2005-2009)

4.1.7. Medical Facilities

The San Mateo Medical Center is a 509-bed public hospital and clinic system. It offers a range of services from pediatrics and senior care to radiology and financial assistance. The Main Campus is located at 222 West 39th Avenue. The Center is located a few blocks from the Hillsdale Shopping Center and El Camino Real where many SamTrans buses stop. It is also within walking distance to the Caltrain Hillsdale Station. Pedestrians access the Medical Center along Edison Street. This street has narrow crosswalks, missing curb ramps and rolled curbs where vehicles often park partially on the sidewalk impeding pedestrian activity. Another pedestrian access corridor is along 39th Avenue. The City is in the process of installing curb ramps in many locations between the Medical Center and El Camino Real. Visitors accessing by transit from the bus stop on the eastern side of El Camino Real must cross five lanes of traffic at an uncontrolled crosswalk.

Mills Health Center, located at 100 South San Mateo Drive, provides a wide range of outpatient services, including surgery, rehabilitation and diagnostics. The Mills Health Center, in Downtown, is within walking distance to many SamTrans stops including those on El Camino Real. It is also near the Downtown Caltrain Station. San Mateo Drive at 2nd Avenue is a wide intersection in an area with a high number of pedestrian related collisions. Additionally, the western sidewalk along San Mateo Drive between 2nd Avenue and the driveway entrance to the health center is immediately adjacent to a sharp drop in grade.

4.1.8. Parks and Community Centers

San Mateo has a variety of park facilities including playgrounds, ball fields, courts, and picnic areas that serve as recreational destinations for the community. These outdoor amenities attract individuals, families, local residents and tourists. San Mateo's larger park destinations are described below.

Sugarloaf Mountain is a 227-acre open space parkland adjacent to Laurelwood Park in the southwest corner of the City. The park features several hiking trails. Trailheads are located off of Glendora Drive, Shasta Drive and Laurelwood Drive.

Coyote Point Recreation Area is a 600-acre San Mateo County park located on the border of Burlingame and San Mateo. The park provides opportunities for picnicking, swimming, fishing, bicycling, sailing, and hiking, as well as several playgrounds. There are a number of pathways in the park that connect the various park areas. CuriOdyssey (formerly referred to as the Coyote Point Museum for Environmental Education),

an environmental science center, is located within the park. The park can be accessed by multi-use paths along the shoreline and North Bayshore Boulevard.

Central Park and Recreation Center is a 16-acre park located in Downtown San Mateo. The park is a central city landmark and includes lighted tennis courts, playground, baseball field, Japanese Tea Garden, and Mini Train for children. The recreation center offers community classes and rental space. The park can be accessed via sidewalks along El Camino Real and 5th, 9th, and Laurel Avenues.

Shoreline Park is one of the newest parks in San Mateo. It totals over 140 acres and is comprised of two parts: Ryder Park and Seal Point Park. Ryder Park includes a water theme park, play areas, outdoor classroom, and a barbeque and picnic area. Seal Point Park features a 3-acre off-leash dog park and several walking and bicycling paths. The park can be accessed by the 3rd Avenue Class I multi-use path and the San Francisco Bay Trail.

Beresford Recreation Center and Park is an 18.5-acre park located on Alameda de las Pulgas between Dolores Street and 28th Avenue. Beresford Park is known for its many amenities, including one of two San Mateo skateboard plazas, the Gary Yates lighted bocce ball complex, a fully enclosed tot playground, and tennis and basketball courts. Community garden plots and the San Mateo Garden Center are also located in the park. Activities offered at Beresford Recreation Center include preschool activities, after school care, and youth and adult classes. The park is accessible via sidewalks along Alameda de las Pulgas, 28th Avenue, and Parkside and Parkview Ways.

Bay Meadows Community Park is currently in the planning stages. This 12-acre community park will be located adjacent to Saratoga Drive between the San Mateo County Event Center property and the proposed 28th Avenue extension. Once completed, the park will be accessible via sidewalks along Saratoga Drive.

The **Martin Luther King Community Center (MLK Center)** is located at 725 Monte Diablo Avenue, adjacent to Martin Luther King Jr. Park. The MLK Center hosts youth activities including the San Mateo Police Activities League, drop-in basketball, and several dance and fitness classes. The swim center has two pools open from Memorial Day through mid-August. During the winter holidays, Candyland brings generations of families to MLK Center for a holiday stroll through Licorice Forest and Gum Drop Mountain.

4.1.9. San Mateo County Event Center

The County Event Center is host to a variety of events, including the San Mateo County Fair and the Maker Fair. The Event Center also hosts other consumer and trade events, meetings, festivals, corporate events, and sporting events. The 48-acre event facility is located at 1346 Saratoga Drive and is accessed by pedestrians via the main entrance at Delaware and 25th, or the side entrance on Saratoga.

4.2. Commuter Travel

Monitoring the number persons walking to work in the City provides a way to track the success of pedestrian facilities. This Plan presents US Census Journey to Work data from the United State Census Bureau's 2008 American Community Survey. As pedestrian facilities are built and education and encouragement programs implemented, Journey to Work data can be revisited to monitor changes in walking rates. The percentage of San Mateo residents that walk to work is about 3.6 percent, which is slightly higher than the state and national rates of 2.8 percent. **Table 4-3** lists the mode choices of San Mateo, California and the United States.

Table 4-3: Journey to Work Data

Mode	San Mateo	California	United States
Drive Alone	69.8%	72.7%	75.5%
Carpool	9.8%	11.9%	10.7%
Public Transit	8.4%	5.3%	5.0%
Worked from Home	4.7%	4.8%	4.1%
Walked	3.6%	2.8%	2.8%
Other	2.5%	1.5%	1.3%
Bicycle	1.1%	1.0%	0.5%

Source: U.S. Census Bureau, 2008 American Community Survey

Review of travel time to work is important in estimating the potential number of persons walking to work. Generally, a driving commute time of 9 minutes or less is equivalent to a 30 minute walking commute, assuming flat topography and light to moderate traffic. Based on a variety of factors, communities nationwide have demonstrated that it is possible for San Mateo to shift a portion of the 13.4 percent of the 9 minute or less vehicular commuters to walking. **Table 4-4** compares average San Mateo commute times with California and the United States.

Table 4-4: Travel Time to Work

Travel Time	San Mateo	California	United States
Less than 9 minutes	13.4%	11.6%	14.3%
10 to 14 minutes	15.6%	13.7%	14.4%
15 to 29 minutes	35.6%	35.7%	36.1%
30 to 44 minutes	21.5%	21.1%	19.6%
45 minutes or more	13.8%	17.9%	15.5%

Source: U.S. Census Bureau, 2009 American Community Survey

4.3. Collision Analysis

Safety is a major concern for current and potential pedestrians and can be a determining factor in the decision whether or not to walk. This section reviews collision data from the Statewide Integrated Traffic Report System (SWITRS) to identify the risk to pedestrians in collisions involving a motor vehicle, where collisions frequently occur, and where roadway design improvements are needed.

According to SWITRS, approximately 7 percent of all collisions (i.e., 376 of 5,732 collisions) in San Mateo from 2001 through 2009 involved pedestrians. Though this is a relatively small percentage of the total collisions, collisions that involved pedestrians often resulted in a pedestrian injury. Pedestrians made up 50 percent of all traffic deaths (see **Figure 4-3**) and 11 percent of all traffic injuries (see **Figure 4-5**) in San Mateo in the eight-year period. Between 2001 and 2009, the number of pedestrian-related collisions per year range from a low of 33 in 2009 to a high of 57 in 2003.

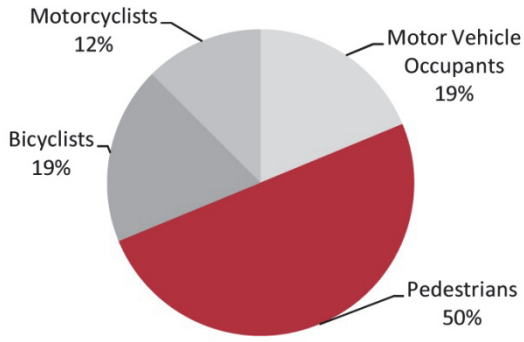


Figure 4-3: Traffic Fatalities (2001-2009)

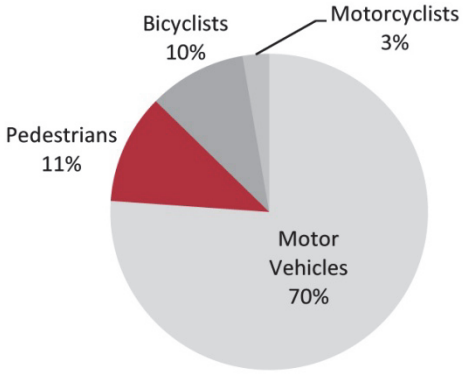


Figure 4-4: Traffic Injuries (2001-2009)

Table 4-5 presents the number of pedestrian collisions in San Mateo from 2001 to 2009 and **Figure 4-6** and **Figure 4-7** map these collisions. The data tells us that pedestrians are significantly more vulnerable in collisions than motor vehicle occupants, bicyclists, and motorcyclists. Studies show that the likelihood of a pedestrian fatality in a pedestrian/vehicular collision increases as the traveling speed of the motor vehicle increases (**Figure 4-5**).[26] Targeting improvements along high speed roadways will be an important factor to reduce the number of pedestrian fatalities in San Mateo.

Table 4-5: Pedestrian Related Collisions by Year and Injury Category

Year	Property Damage Only	Injured	Killed	Total
2001	0	40	0	40
2002	1	35	0	36
2003	0	57	0	57
2004	0	41	1	42
2005	1	34	0	35
2006	2	41	2	45
2007	0	37	0	37
2008	0	48	3	51
2009	1	30	2	33
Total	**5**	**363**	**8**	**376**

Source: 2000-2009 Statewide Integrated Traffic Report System

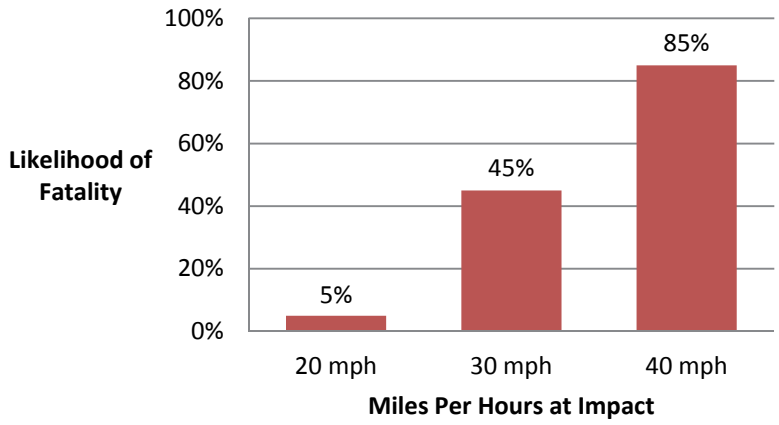


Figure 4-5: Pedestrian Fatalities Based on Speed of Vehicle

[26] "Killing Speed and Saving Lives," U.K. Department of Transportation, London, 1987.

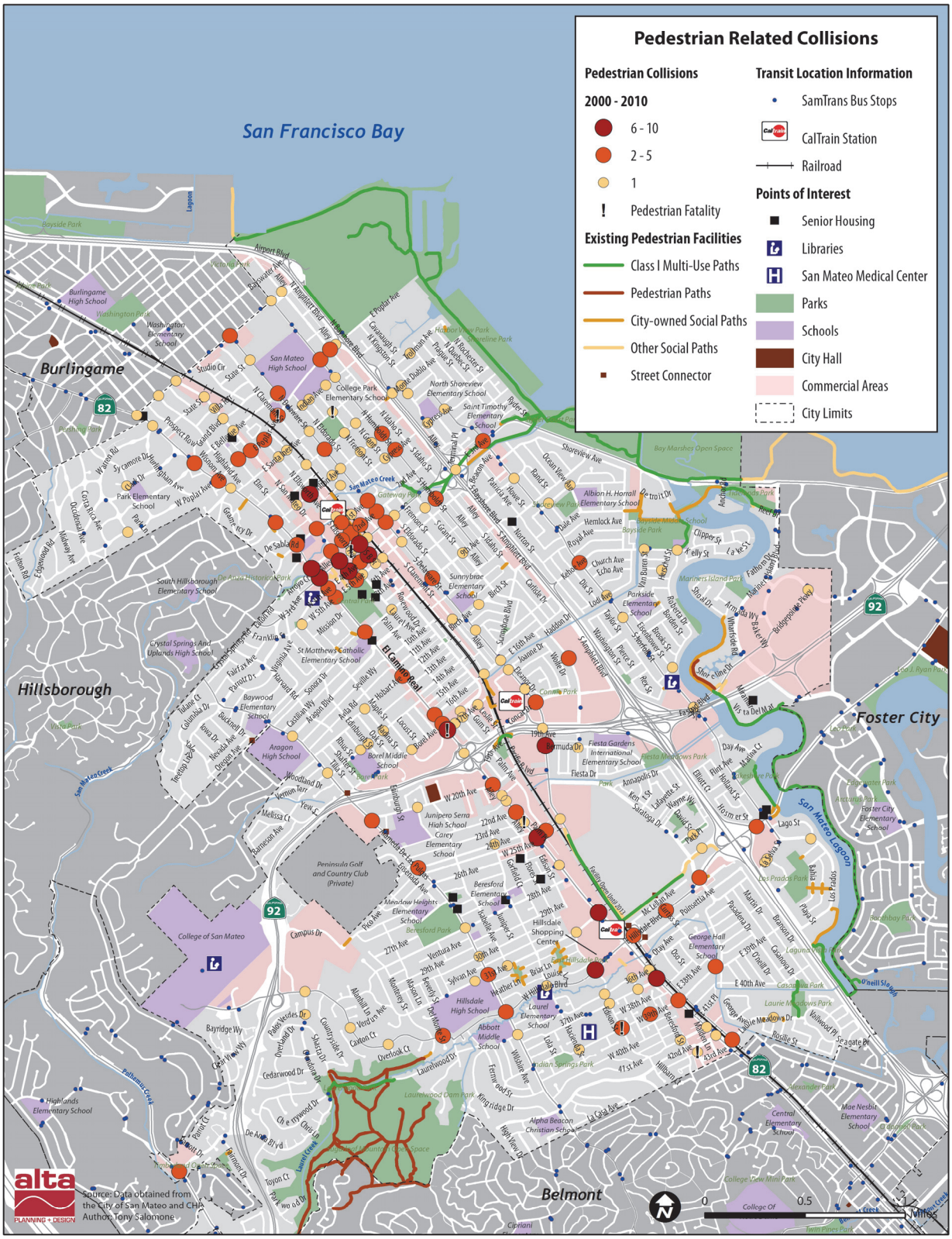


Figure 4-6: Pedestrian Related Collisions

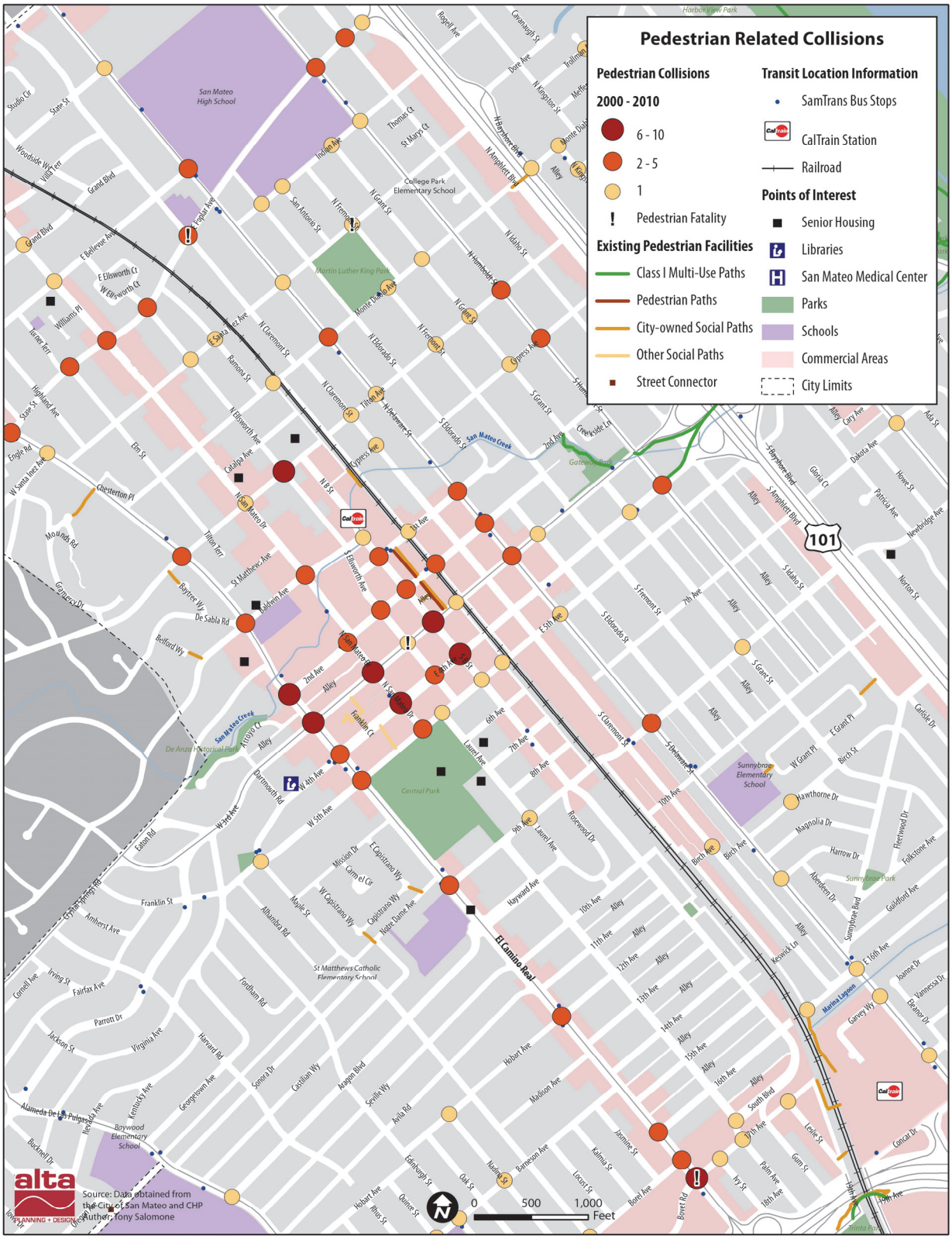


Figure 4-7: Pedestrian Related Collisions (Downtown San Mateo Detail)

Between 2001 and 2009, the City of San Mateo experienced an average of 0.46 pedestrian-automobile collisions per 1,000 population per year. This is higher than the average for San Mateo County of 0.37 pedestrian-automobile collisions per 1,000 population per year.

The California Office of Traffic Safety provides collision rankings every year based number of collisions and city population size. The City of San Mateo often ranks high as the greatest number of pedestrian involved collisions by population. **Table 4-6** presents San Mateo's collision ranking, focusing on pedestrian collisions ages 15 and under and 65 and over. The table shows San Mateo's 2005-2009 ranking among cities with populations between 50,001 and 100,000. A higher ranking number indicates more collisions. The table shows the City of San Mateo often has more collisions than cities of similar size. Prior to 2009, the City ranked very high for collisions involving pedestrians over 65 and relatively high for collisions involving pedestrians under 15.

Table 4-6: Office of Traffic Safety Collision Rankings

Type of Collision	2005	2006	2007	2008	2009
Pedestrians Under 15	46th of 100	32nd of 103	27th of 106	29th of 103	64th of 104
Pedestrians Over 65	25th of 100	11th of 103	2nd of 106	4th of 103	43rd of 104
Total Pedestrians	23rd of 100	11th of 103	25th of 106	6th of 103	62nd of 104

A higher ranking number indicates more collisions.

Source: California Office of Traffic Safety

Analysis shows that the number of collisions per month varies throughout the year with higher collision rates occurring during the winter months (generally October through March). The data also reveals a higher number of collisions on weekdays than on weekends. Approximately 15 to 17 percent of collisions occur on a given weekday, while 8 to 12 percent of collisions occur on a weekend day. No factors are found to correlate with this trend. **Table 4-7** shows that the number of pedestrian-related collisions varies by the time of day. The time period between 2:00 PM and 6:00 PM experiences the highest number of pedestrian-related collisions. Most pedestrian-related collisions occurred in clear weather (74 percent) or cloudy conditions (21 percent); some occurred in rainy conditions (5 percent).

Table 4-7: Number of Pedestrian-Related Collisions by Time of Day

Time of Day	Number of Collisions
6:00 - 10:00 AM	75
10:00 AM - 2:00 PM	80
2:00 - 6:00 PM	122
6:00 - 10:00 PM	87
10:00 PM - 6:00 AM	12

Source: 2000-2009 Statewide Integrated Traffic Report System

Figure 4-8 presents the number of pedestrian related collision victims by age group. The age groups most commonly involved in collisions were in the 21-30 year old age group, followed by the 11-20 year old age group. Additionally nearly 40 percent were under the age of 20 or over the age of 60. This indicates the most vulnerable users, youth and seniors are disproportionally involved in collisions.

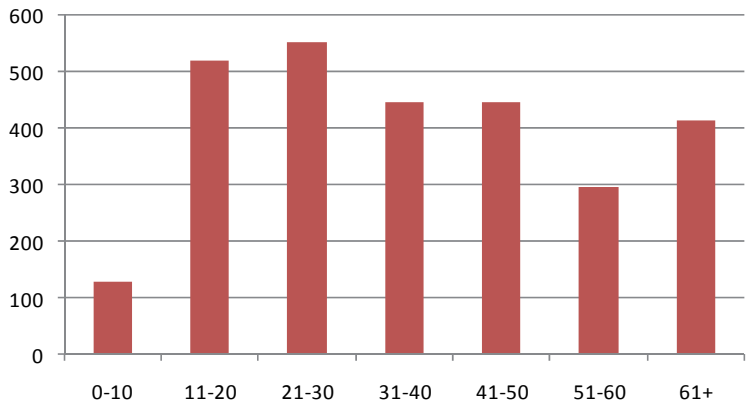


Figure 4-8: Pedestrian Related Collisions by Victim Age Group

Fast-moving vehicle traffic reduces the comfort of pedestrians and the likelihood of surviving a collision if one occurs. **Figure 4-10** illustrates the rapid increase in the likelihood of pedestrian death that occurs as vehicle speeds increase, and shows how older pedestrians are particularly vulnerable. Overall, pedestrians age 65 and older are more than 5 times as likely to die in crashes than pedestrian's age 14 or less. The likelihood of death increases steadily for age groups in between.

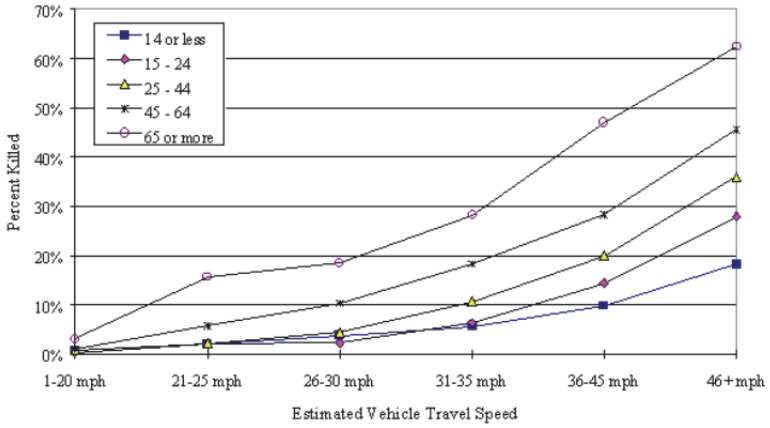


Figure 4-9: Fatal Injury Rates by Vehicle Speed by Pedestrian Age

Source: Preusser Research Group, 1999. Literature Review on Vehicle Travel Speeds and Pedestrian Injuries. National Highway Traffic Study Administration. Data are from Florida, 1993-1996; pedestrians in single vehicle crashes.

Identification of the most common pedestrian related violations and their locations informs the City of possible engineering or education needs. A specific re-occurring violation can be the result of unclear traffic controls or roadways not designed for pedestrian use. It can also be the result of pedestrians not aware of or complying with the "rules of the road." **Table 4-8** lists the top 10 most common traffic violations resulting in pedestrian related collisions for San Mateo and lists the party at fault.

Table 4-8: Party at Fault in Pedestrian Related Collisions

Violation	Driver at Fault	Pedestrian at Fault	Fault Unreported	Total
Automobile Right of Way (Violation)	3	0	1	4
Driving Under the Influence of Alcohol or Drug	4	0	0	4
Improper Passing	3	0	1	4
Improper Turning	9	0	1	10
Pedestrian Right of Way (Violation of)	143	1	33	177
Pedestrian Violation	2	102	1	105
Traffic Signals and Signs	4	0	2	6
Unsafe Speed	13	0	1	14
Unsafe Starting or Backing	16	0	6	22
Wrong Side of Road	1	0	1	2
Other/Unknown	9	5	18	32
Total	**207**	**108**	**65**	**380**

Source: 2000-2009 Statewide Integrated Traffic Report System

The most common traffic violation cited in vehicle-pedestrian collisions is encroachment within the pedestrian right-of-way. This data supports the pedestrian action data (**Table 4-9**), which state that the highest number of collisions occur within marked intersection crosswalks and indicates a need to improve the crossing environment. Other common pedestrian actions include crossing a roadway at a location either outside or without a marked crosswalk and walking within the road or along the roadway shoulder. This indicates a need for pedestrian and driver education as well as infrastructure improvements at high collision intersections.

The second most common infringement are pedestrian violations. These violations may indicate that pedestrians do not know the rules of the road or choose not to follow them. Other frequent driver violations include unsafe starting and backing, unsafe speed, and improper turning.

Table 4-9: Pedestrian Action During Collision

Pedestrian Action	Collisions
Crossing in Crosswalk at Intersection*	207
Crossing Not in Crosswalk**	85
In Road, Including Shoulder	47
Not in Road	19
Crossing in Crosswalk Not at Intersection	9
Approaching/Leaving School Bus	1

**Assumes marked crosswalk*
***Approximately 80 percent of these collisions did not occur at an intersection*
Source: 2000-2009 Statewide Integrated Traffic Report System

This analysis of pedestrian violations will inform the Plan's recommendations. Approximately half (54 percent) of pedestrian related collisions are the fault of the driver, while 28 percent are at the fault of the pedestrian and 17 percent of collisions do not report the party at fault (**Figure 4-10**). These violations identify the need for motorist and pedestrian education, outreach and direct and logical pedestrian crossings on busy roadways.

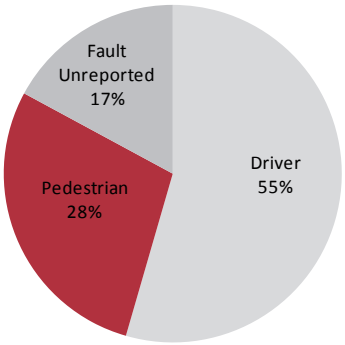


Figure 4-10: Pedestrian Related Collisions Party at Fault Summary

Table 4-10 the locations with the most collisions, including the party at fault and the collision type. The vast majority of collisions occurred in the Downtown area near 2nd, 3rd, and 4th Avenues and along El Camino Real. High concentrations of collisions also occurred along Delaware Street, East Poplar Avenue, West Hillside Boulevard, 1st Street, 5th Street, and Alameda de les Pulgas. In general, the collision locations are along popular pedestrian routes, provide logical and direct connections, and are near attractor or popular destinations.

Table 4-10: Top Collision Locations by Collision Type and Party at Fault

Location/ Party at Fault	Not Stated	Crossing in Crosswalk at Intersection	Crossing in Crosswalk not at Intersection	Crossing Not in Crosswalk	In Road, Including Shoulder	Not in Road	Total
4th Avenue and B Street							
Motorist	-	5	1	1	-	-	7
Bicycle	-	-	-	-	-	1	1
Not Stated	1	-	-	-	-	-	1
3rd Avenue and El Camino Real							
Motorist	-	4	-	-	-	-	4
Not Stated	-	2	-	-	-	-	2
25th Avenue and El Camino Real							
Motorist	-	1	-	-	-	-	1
Pedestrian	-	2	-	-	-	-	2
Bicycle	-	-	-	-	1	-	1
Not Stated	-	2	-	-	-	-	2
Edison Street and Hillsdale Boulevard							
Motorist	-	4	1	-	-	-	5
Pedestrian	-	-	1	-	-	-	1
Not Stated	-	1	-	-	-	-	1
5th Avenue and El Camino Real							
Motorist	-	3	-	1	-	-	4
Pedestrian	-	1	-	-	-	-	1
Not Stated	-	1	-	-	-	-	1
31st Avenue and El Camino Real							
Motorist	-	-	-	-	1	-	1
Pedestrian	-	-	-	4	1	-	5
37th Avenue and El Camino Real							
Motorist	-	2	-	-	-	-	2
Pedestrian	-	1	-	2	-	-	3
Not Stated	-	-	-	-	1	-	1
Ellsworth Avenue and Tilton Avenue							
Motorist	-	5	-	-	-	-	5
Pedestrian	-	-	-	1	-	-	1
Total	**1**	**34**	**3**	**9**	**4**	**1**	**52**

Source: 2000-2009 Statewide Integrated Traffic Report System

Figure 4-11 presents the vehicle movement preceding the collision with the pedestrian. While the majority of movements were vehicles proceeding straight, left turning vehicles and other unsafe turning movements were the second most common. This suggests a need for better pedestrian visibility as well as driver education.

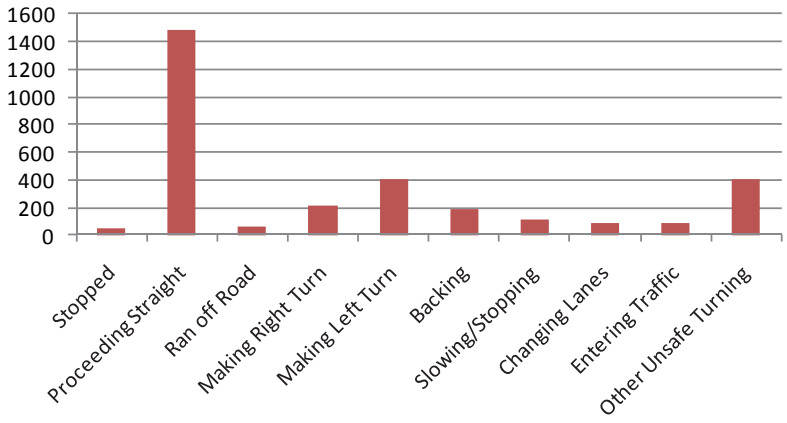


Figure 4-11: Movement Preceeding Collision

Studies show that marked crosswalks at uncontrolled locations have a higher frequency of pedestrian collisions than unmarked crosswalks at uncontrolled locations on roadways with more than two travel lanes.[27] This indicates striping a crosswalk may not improve conditions for the pedestrian.

Based on an analysis of City GIS data, there are 1,200 marked crosswalks. Approximately 185 crosswalks do not have associated traffic controls such as a traffic signal or stop signs. US Department of Transportation Federal Highway Administration (FHWA) recommendations for installing marked crosswalks and other pedestrian improvements at uncontrolled locations vary depending on the vehicle average daily traffic (ADT),[28] roadway type (number of travel lanes and median type), and speed limit. Additional field work and analysis are needed to identify the locations of marked, uncontrolled crosswalks within the City and determine whether these crossings are consistent with current FHWA and MUTCD guidelines as well as best practices. **Table 4-11** identifies the location of several marked, uncontrolled crosswalks.

[27] Zegeer, C., Stewart, J., and Huang, H. Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations. Report No.FHWA-RD-01-142, Federal Highway Administration, McLean, VA, May 2001.
[28] ADT is the average number of vehicles two-way passing a specific point in a 24-hour period, normally measured throughout a year.

Possible improvements could include a signal warrant analysis or installation of pedestrian beacons.

Table 4-11: Select Crosswalks Without Traffic Controls

Uncontrolled Crosswalk Locations	Crossing Location Type
El Camino Real at 39th Avenue	Intersection
El Camino Real at 22nd Avenue	Intersection
W. Hillsdale Blvd between Hacienda St and Edison St	Midblock
W. Hillsdale Blvd and Scenic Wy	Intersection

4.4. Walking Audits

Stakeholders and City staff participated in three day-long walking audits on March 8, 9, and 10, 2011. A walking audit is a walking workshop that examines a focused cluster of intersections in a neighborhood or along a corridor, typically in areas near activity centers like schools, or in major pedestrian nodes like downtown areas. Walking audits are typically conducted as an initial step to improve the pedestrian environment within a selected area. They are a means to observing and learning how to "see through the eyes of the pedestrian."

During the walking audits, participants observed positive practices and issues and noted opportunity areas. The participants observed how motorists behave around pedestrians and overall general pedestrian behavior, especially at intersections (for example, where pedestrians cross at unmarked locations to avoid certain intersections). Participants discussed potential recommendations to address pedestrian safety concerns at specific locations along the route.

The walking audits followed each of three walking routes:

- Route 1: Hillsdale Station Area. Edison Street, West 39th Avenue, El Camino Real, and Hillsdale Boulevard
- Route 2: Downtown. El Camino Real, Tilton Avenue, B Street, West 4th Avenue
- Route 3: North Central. Monte Diablo Avenue, Delaware Street, East 3rd Avenue, Fremont Street

These routes were selected because they represent areas of the City with higher numbers of pedestrian-involved collisions over the last 10 years and also allowed the participants to focus on prototypical pedestrian conditions around the City. **Appendix D** summarizes the discussions that occurred during each walking audit and includes the site-specific recommendations that the participant group identified.

Recommendations vary based on site-specific characteristics and needs including observed motorist and pedestrian behavior, site geometries (e.g., number of travel lanes, presence of turn pockets and bicycle lanes), traffic volumes, traffic controls, sightlines, adjacent land use access, and transit and emergency response access. The recommendations include improvements such as pedestrian hybrid beacons, median refuge islands, travel lane reconfiguration, curb extensions, signage, pavement markings (e.g., stop bars, high visibility crosswalks), directional curb ramps, and pedestrian-scale lighting.

4.5. Community Identified Needs

The public outreach process for the Citywide Pedestrian Master Plan included a community workshop, a community survey, and presentations at public meetings (see Section 4.5.3). The goal of these efforts was to gather information on resident and employee travel patterns in the City and opinions and suggestions on opportunities, challenges, and potential facilities and programs from a large and diverse population of San Mateo residents. The purpose of the survey was to help inform the development of pedestrian facilities and programs as well as to serve as a benchmark for travel patterns.

4.5.1. Community Workshops

The City held a community workshop at the San Mateo Main Library on January 27, 2011 to discuss the Citywide Pedestrian Master Plan process and draft vision and goals, and receive community suggestions and comments. The sign-in sheet was completed by 33 attendees, though a headcount conducted during the workshop indicated higher attendance.

The workshop included a breakout session where attendees worked together in groups to identify pedestrian-related challenges and opportunities. Challenges included walking routes the participants would like to walk, but currently do not and the characteristics of these routes that make them undesirable. Opportunities included routes the participants regularly walk and identification of the characteristics of these routes that make them walkable. Participants identified citywide and area-specific comments for the Beresford Park, Downtown, Hayward Park, North Central, Northwest Heights, and Shoreview areas. **Figure 4-12** and **Figure 4-13** present community-identified opportunities and challenges. In addition to the breakout session, each attendee had the opportunity to complete a comment card. A summary of the citywide comments received at the workshop is provided below.

Comments regarding the overall pedestrian network included:

- Identify pedestrian accessible cores where walking currently occurs (e.g., 3rd Avenue and B Street) and remove impediments to walking. Link cores with traffic-calmed walking corridors. Link walking corridors with land uses associated with the elderly and children.
- Address major barriers such as the Caltrain tracks and freeways.
- Consider road diets on streets with excess capacity.
- Address how pedestrians and bicyclists travel; provision of dedicated bicycle facilities could encourage bicyclists to ride in bikeways and not on sidewalks.
- Ensure effective connections with existing and planned transit-oriented developments.

Comments involving specific pedestrian facilities and amenities included:

- Sidewalks with rolled curbs are often obstructed by cars.
- Consider adjusting signal-timing in certain locations to allow for a longer crossing time.
- Enhance pedestrian crossings on multi-lane streets.
- Improve connection between Downtown and Central Park.
- Incorporate parklets into Downtown.

A second community workshop was held in October 2011 to gather public input on the Draft Citywide Pedestrian Master Plan. Nine members of the public attended. Comments generally supported the findings of the Draft Plan and expressed a particular interest in the walking environment of the downtown area. The installation of parklets was an especially popular recommendation.

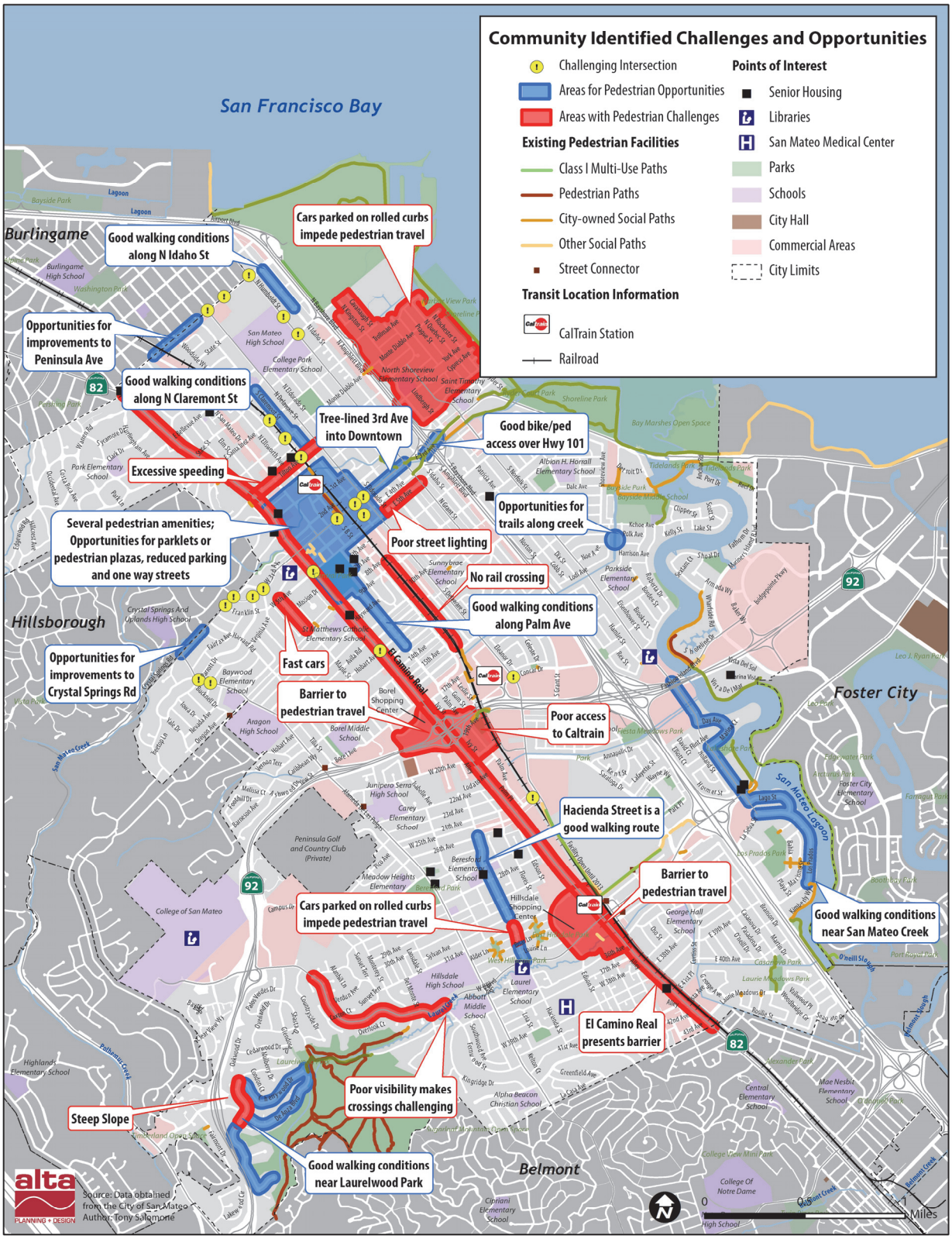


Figure 4-12: Community Identified Challenges and Opportunities

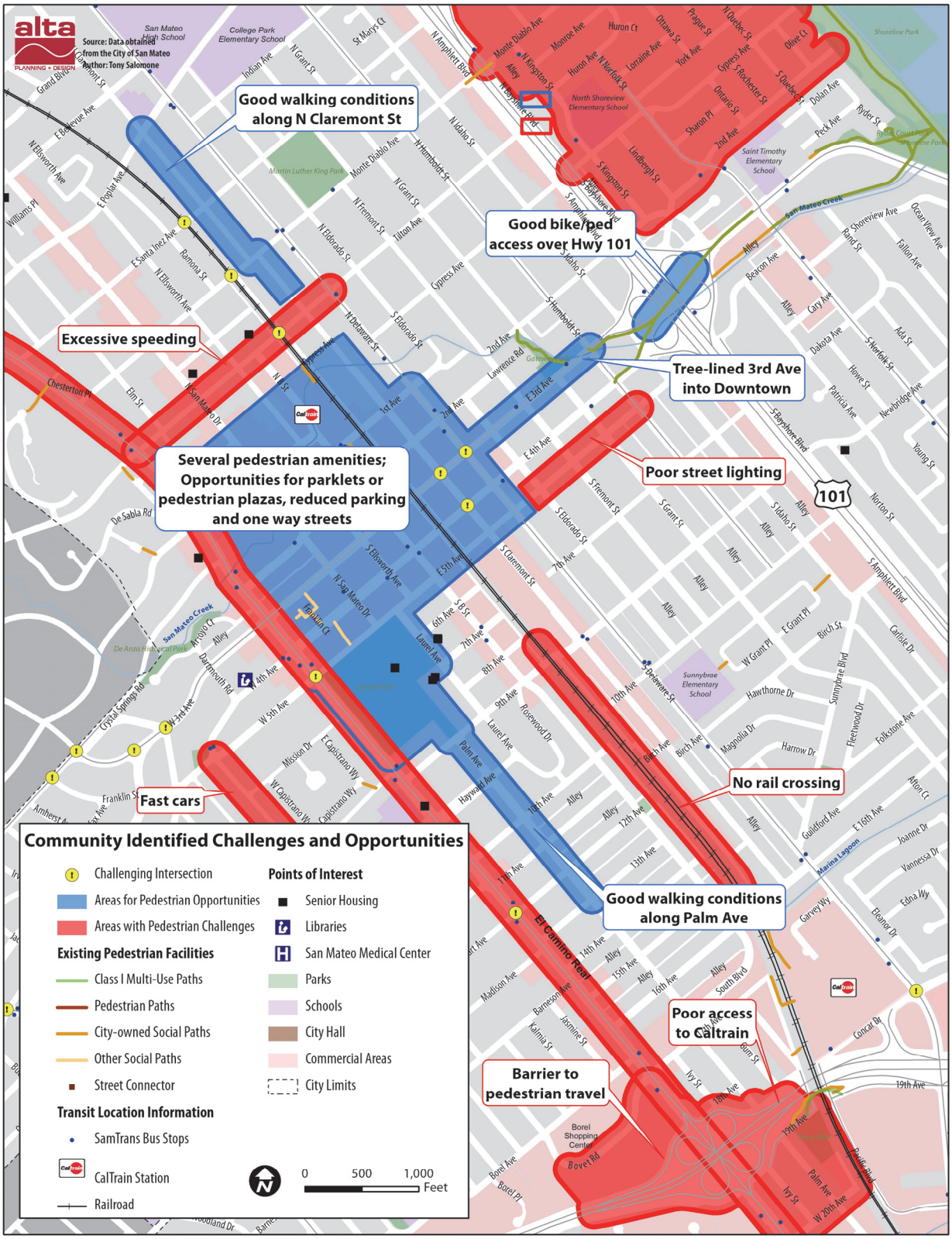


Figure 4-13: Community Identified Challenges and Opportunities (Downtown San Mateo Detail)

Comments related to programmatic needs included:

- Partner with the police department on pedestrian stings targeting drivers that fail to yield to pedestrians can help to raise awareness of the laws.
- Measure pedestrian activity, hazards, and injuries as a means to inform decisions about the location and types of recommended improvements.
- Hold events to encourage walking downtown and in Central Park.
- Provide educational programs for pedestrians and bicyclists.
- Provide education for using public transit.
- A volunteer program to help with maintenance.

4.5.2. Community Survey

Approach

The City of San Mateo's pedestrian survey was available on the project website[29] between January 27, 2011 and March 10, 2011. In total, the City received just over 475 responses. Local community groups were notified of the survey effort through email newsletters. These groups include:

- Interested parties list from the City of San Mateo Citywide Pedestrian Master Plan
- Interested parties list from the City of San Mateo Bicycle Master Plan
- City/County Association of Governments of San Mateo County (C/CAG) Bicycle and Pedestrian Advisory Committee (BPAC)
- Franklin Templeton San Mateo Headquarters
- San Mateo Health Center
- Vista Center for the Blind and Visually Impaired
- Burlingame Mother's Club
- SMART email distribution list
- San Mateo-Foster City Unified School District
- San Mateo County Commission on Disabilities
- City of San Mateo Employees
- San Mateo Mother's Club

[29] www.cityofsanmateo.org/index.aspx?nid=2218

In addition to the email newsletter notifications, the online survey was made available at the City's January 27, 2011 public workshop and paper copies were distributed at the San Mateo Senior Center.

Survey Results

Overall, the results from the survey show active levels of walking in San Mateo, and overall relative satisfaction with walking conditions in San Mateo. Respondents were asked to provide information on their travel behavior, what they see as obstacles and/or barriers to pedestrian travel, their preferred pedestrian facilities or amenities, and their most and least favorite places to walk and walking routes.

Respondent Information

The survey captured a wide range of ages among its respondents. As **Figure 4-14** shows, the largest age group to respond was the 35 to 44 age group, representing over one-quarter of respondents. In addition to the 35 to 44 age group, the other large segments of respondents were between 45 to 54 and 55 to 64. Combined, these respondents made up for nearly three quarters of all surveys received. The majority of survey respondents do not have children in the home that attended school.

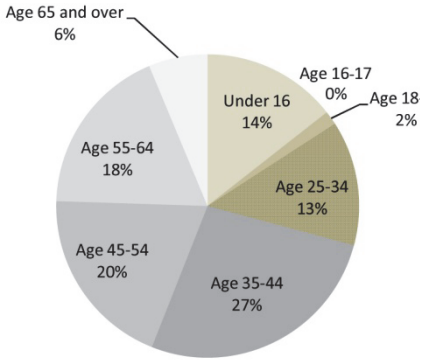


Figure 4-14: Survey Respondent Age Groups

Most respondents were women by a ratio of approximately two female respondents for every one male respondent. Less than two percent of respondents use a mobility assistance device. The most common mobility assistive devices used are canes and walkers. Additional respondents stated use of wheelchairs and crutches.

Travel Behavior

Survey respondents rated their travel preferences based on distance for trips less than one mile in length and trips between one and five miles in length. **Figure 4-15** shows that the survey respondents are active pedestrians, frequently making trips less than one mile by foot.

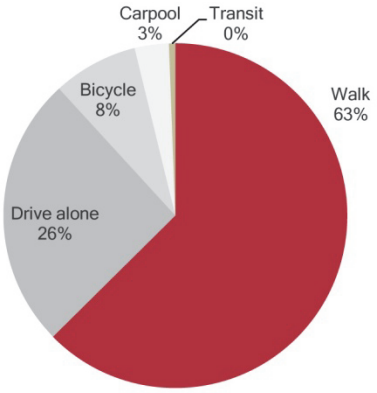


Figure 4-15: Travel Mode For Trips Under One Mile

The survey results show that the respondents are active walkers, and likely to be quite familiar with the pedestrian environment – especially in and around their place of residence (over two-thirds of respondents reported that their trips originate from their home or a residential location). The survey responses also suggest that a number of people are walking from home to Downtown San Mateo. Survey respondents stated that their walking trips usually end at home or a residential location (31 percent), Downtown San Mateo (25 percent), a retail area other than Downtown (14 percent), work (13 percent) or a park (9 percent).

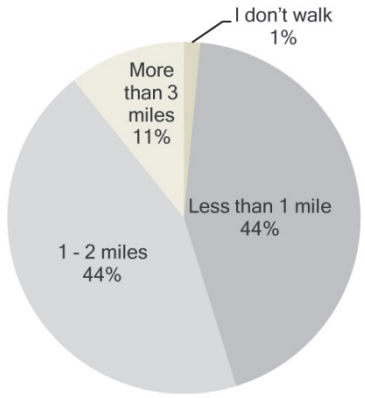


Figure 4-16: Typical Walking Trip Distance

Somewhat surprisingly, over one-quarter of the respondents reported using their car for trips less than one mile. The survey reveals that there are obstacles in San Mateo that prevent walking from being more convenient.

Figure 4-16 reinforces a commonly felt theme in pedestrian planning, in that planning for pedestrians should typically focus on trips that are less than two miles from trip origin to destination. Survey respondents indicated that almost 90 percent of trips are less than 2 miles in length. Focusing on pedestrian-related amenities within two miles of trip generators (such as, retail districts, parks, and Downtown) can provide the biggest return on investment in realizing San Mateo's goal of increasing the mode share of pedestrian and bicycle travel to 30 percent for trips one mile or less by 2020.

The survey asked respondents to rate the most important destinations for San Mateo pedestrian travel. The results of this question are displayed in **Figure 4-17**. Most of the respondents indicated broad support in improving pedestrian access to destinations throughout San Mateo. However, two destinations received a distinct interest amongst survey respondents: Downtown San Mateo and Parks. In exploring missing gaps in the pedestrian network and nodes of pedestrian activity, San Mateo parks and Downtown should be examined carefully for pedestrian network improvements. Recommended improvements within a two-mile radius of Downtown and parks stand to provide the greatest benefit to encouraging more pedestrian activity.

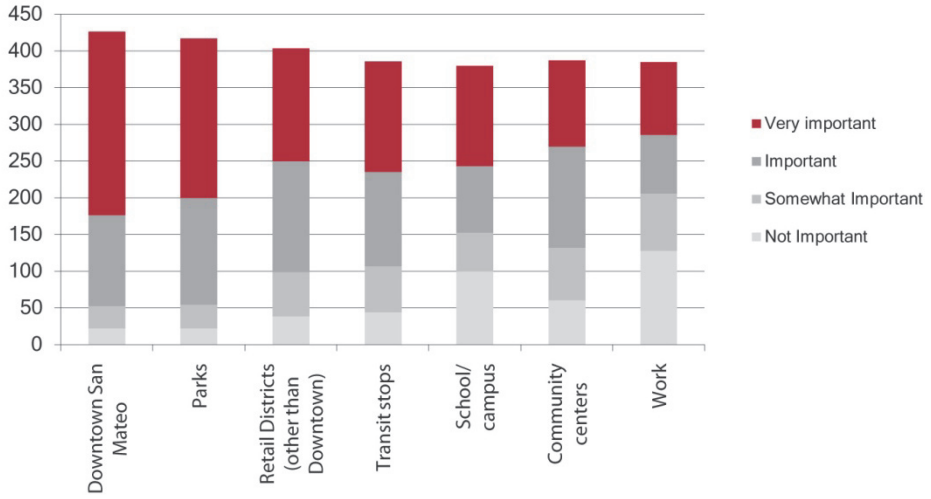


Figure 4-17: Key Pedestrian Access Areas

Obstacles/Barriers

In addition to identifying their most important walking destinations, respondents indicated the barriers or obstacles that they face while walking in San Mateo. The potential barriers and obstacles listed in the survey and the percentage of respondents who state each barrier or obstacle prevents them from walking more are identified below:

- Not enough time (54%)
- Destinations are too far (43%)
- Bad weather (39%)
- Concerns about safety (31%)
- Insufficient lighting (18%)
- Sidewalks in poor condition (16%)
- Lack of sidewalks (15%)
- Obstructions on sidewalks (11%)
- Lack of curb ramps (9%)
- Disability/other health impairment (3%)

Many people listed variables the City cannot control, namely time constraints, weather, or that a desired destination is too far away. However, over 30 percent of respondents listed general "concerns about safety" and almost 20 percent listed "insufficient lighting" as obstacles that prevent them from walking more. These are barriers and obstacles the City can seek to remedy.

A greater understanding of obstacles and barriers San Mateo residents experience can be gleaned from their open-ended responses regarding their least favorite walking routes or places to walk. Characteristics of the respondents' least favorite walking routes include routes (bold indicates most frequent responses):

- **Along high traffic volume streets**
- **Along streets with higher traffic speeds**
- **In need of maintenance (e.g., broken or uneven surfaces)**
- **Without sufficient lighting**
- Without continuous sidewalks
- With narrow sidewalks
- Lacking separation between the sidewalk and the street
  With rolled curbs (versus vertical curbs)
- Lacking landscaping or street trees
- Exhibiting poor driver behavior (especially Downtown)
- Lacking curb ramps (especially for wheelchair users, persons with strollers, and children on bikes)

- Lacking pedestrian connections (requiring out-of-direction travel)

Preferences

Survey respondents also ranked their preferences for facility improvements from desirable to undesirable. The potential facility improvements and the percentage of respondents are identified below (bold indicates highest preferences):

- **Lighting (57%)**
- **Crosswalks (50%)**
- **Street trees (49%)**
- **Trail/path improvements (47%)**
- **Slowing traffic (45%)**
- **Road pavement improvements (45%)**
- Pedestrian push buttons (44%)
- Other landscaping improvements (43%)
- Benches or other seating (35%)
- Wider sidewalks (33%)
- Corner curb ramps (33%)
- Route/wayfinding signage (23%)

None of the listed facilities were ranked by respondents as completely undesirable, but a few were reported as "somewhat desirable":

- Route/Wayfinding Signs (23%)
- Benches or other Seating (18%)

All of the facility types received at least some support, showing that there is a broad level of interest, with varying opinions on which facilities would be the most valuable to the San Mateo pedestrian network. Despite the overall high level of interest for all facility improvements, lighting, crosswalks, and street trees were the favorites.

Walking to School

Several survey questions focused on walking as it pertains to getting to school. Almost two-thirds of respondents indicated that they did not take a child to school (see **Figure 4-18**). Of those respondents who do take a child to school, 19 percent walk, 28 percent drive to school then home, and 50 percent drive to school then another location.

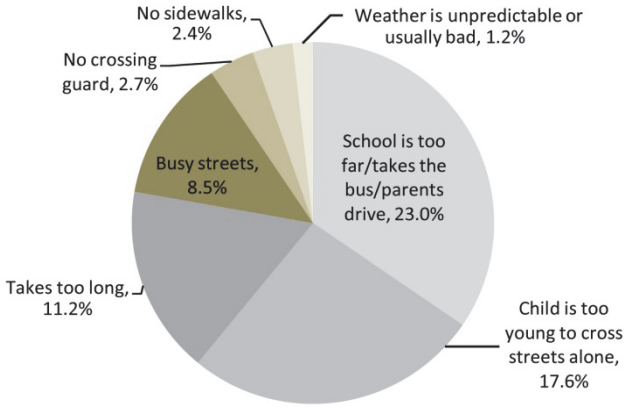


Figure 4-18: Obstacles for Children Walking to School

Over 55 percent of the respondents reported not having any children in their household - thus making the sample size limited in its ability to specifically address parent/student obstacles in walking to school. Of the obstacles that San Mateo has some influence over, the largest concern listed by respondents was "busy streets" (only 8.5 percent). For a more in-depth look at student-parent concerns regarding pedestrian safety, a more focused survey/campaign within San Mateo's schools, such as a Safe Routes to Schools program, may be necessary.

Community-Identified Favorite and Least Favorite Places or Routes to Walk

Survey respondents identified their favorite places and routes to walk. The most commonly identified favorite places and routes within San Mateo include:

- Downtown San Mateo
- 3rd, 4th, and 5th Avenues and B Street into Downtown San Mateo
- City and county parks: Beresford Park, Bayshore Park, Central Park, Coyote Point Park, Laurelwood Park, Ryder Park, San Mateo Park, Seal Point
- San Francisco Bay Trail

- Trails around Marina Lagoon
- Parrot Drive to Central Park
- Alameda de las Pulgas
- Palm Avenue to Central Park
- Maple Street from Hobart Avenue to 5th Avenue
- 25th Avenue
- Saratoga Drive
- Neighborhood streets (ex: Baywood, Aragon, near Bay Meadows)
- Hillsdale Mall
- Caltrain
- Bus stops
- Libraries

The least favorite places to walk or walking routes most commonly identified include:

- El Camino Real (reasons stated include high traffic volumes, fast travel speeds, lack of separation between the sidewalk and travel lanes, narrow sidewalks, obstruction along sidewalks, too many active driveways, noise, exhaust)
- Downtown San Mateo (reasons stated include narrow sidewalks, distracted drivers, right turn on red allowances, bicyclists using sidewalks)
- All Highway 101 over and undercrossings
- Neighborhoods with rolled curbs
- Central Park after dark

4.5.3. Additional Public Outreach

During preparation of the Pedestrian Master Plan, City staff presented the Plan and received comments at the following public meetings:

- City Council on October 4, 2011; April 16, 2012 (Adoption)
- Park and Recreation Commission on December 1, 2010
- Downtown San Mateo Association on January 6, 2011; October 6, 2011
- Planning Commission on January 11, 2011; September 13, 2011; October 11, 2011; March 13, 2012
- Public Works Commission on September 14, 2011; October 12, 2011; March 14, 2012
- Senior Center on March 4, 2011; September 16, 2011
- Senior Citizen Commission on November 16, 2010; November 15, 2011

- San Mateo United Homeowners Association on March 17, 2011; September 15, 2011
- Sierra Club on September 20, 2011

At these meetings, the City received comments from the public that have been incorporated into this Plan and encouraged meeting attendees to participate in the community survey.

4.6. Estimating Walking Demand

Pedestrian demand in a location can be predicted from a number of factors including densities distance to pedestrian attractors, demographics and street network type. This section applies PedINDEX, a model adapted from the Environmental Protection Agency's Smart Growth INDEX, to estimate potential walking demand in the City of San Mateo. The PedINDEX model estimates potential walking activity at the street level in order to better evaluate the location and type of future pedestrian improvements. By categorizing levels of pedestrian demand based on socio-economic and land use and other factors, the City can identify places that have the most desirable walking conditions.

Eighteen indicators, summarized in **Appendix E**, were selected to estimate potential walking activity. The indicators include specific variables identifying the density and diversity of land uses, proximity to walking destinations, transit accessibility and pedestrian supportiveness of the street network. Of these factors, 17 are consistent with variables used in the Countywide PedINDEX model that was developed for the San Mateo County Comprehensive Bicycle and Pedestrian Master Plan. One variable, Senior Residences, was added at the request of City of San Mateo staff. Each variable was assigned a score proportional to its expected relationship to walking demand. The final score is a sum of each of the 18 indicators and is a forecast of potential pedestrian activity for each street. The scores range from zero to 100, with 100 as having the highest potential for activity.

Figure 4-19 maps the model results. Streets in purple hold the highest potential for pedestrian activity. In general the areas with the highest score are concentrated along the El Camino Real Corridor, including El Camino Real itself and many of its cross streets. The model also gives high scores along street segments located in Downtown San Mateo, including the area around the San Mateo Caltrain Station, and the area

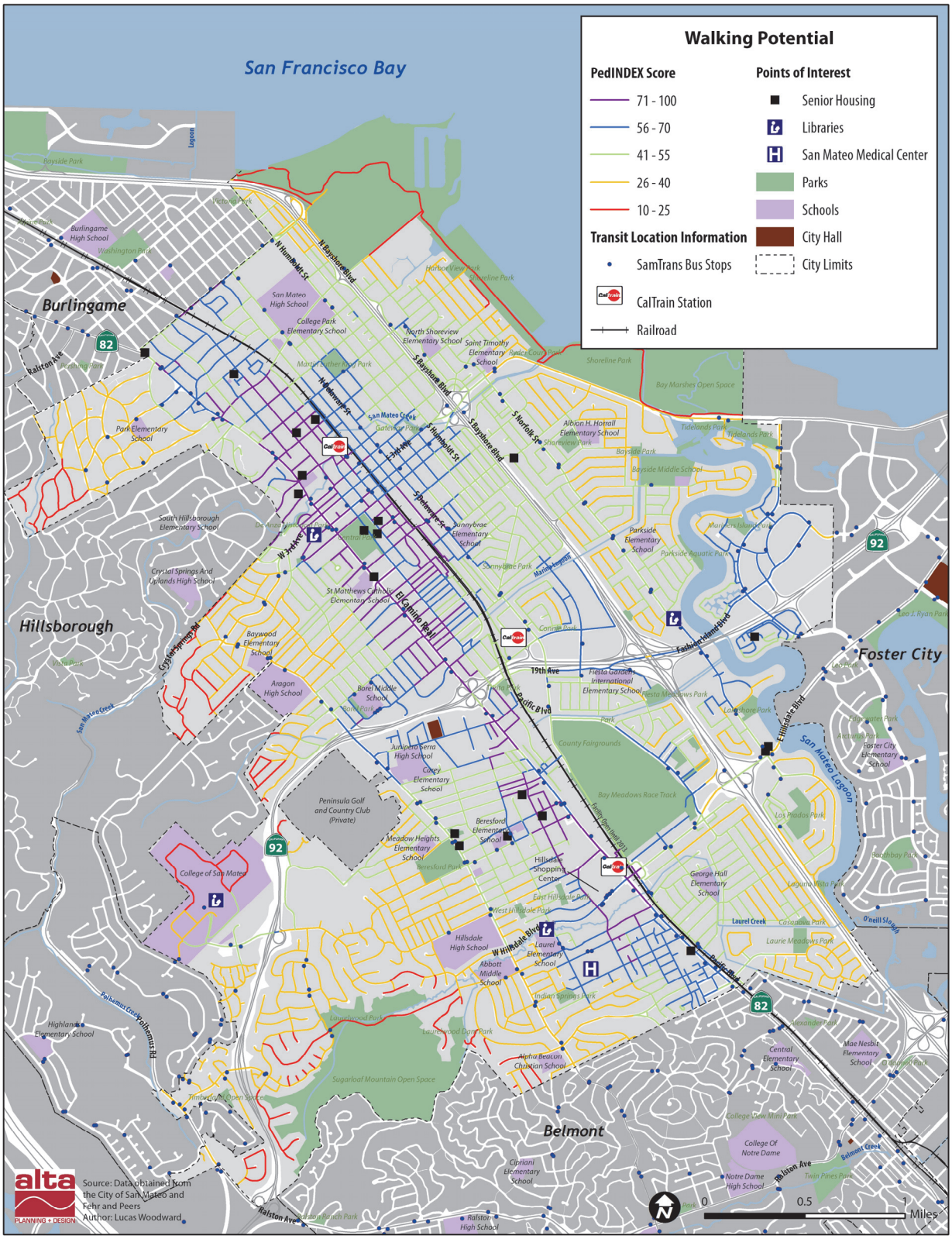


Figure 4-19: Walking Potential (Source: Fehr & Peers, 2011)

around the Hillsdale Shopping Center. Neighborhood retail areas like those along 25th and 37th Avenues also scored high.

The areas around the San Mateo Medical Center, the San Mateo City Hall and the Bridgepointe Shopping Center also rank fairly high. These areas are retail centers and job centers within the City. Areas around schools have a moderate PedINDEX rating.

It should be noted that pedestrian activity east of Highway 101 around the Bridgepointe Shopping Center is not currently prevalent; however, the model forecasts this as a high potential activity area. The model forecasts high potential for pedestrian activity because of higher densities and mixed land uses. This illustrates the role of the model in identifying not just existing levels of demand but also areas with high potential for pedestrian demand if impediments to walking are removed.

The City model results are also consistent with the Countywide PedINDEX model, which showed higher pedestrian activity potential in downtown areas, including Downtown San Mateo, and throughout the El Camino Real Corridor.

4.7. Summary of Findings

This analysis for San Mateo reveals the need for both infrastructure and programmatic improvements. Infrastructure improvements such as pedestrian corridors and enhanced crossings are needed to connect attractors and generators and improve safety at high collision areas. Other infrastructure improvements include lighting and street trees to help create a more desirable pedestrian environment. Programmatic improvements such as education, outreach, and encouragement may help reduce conflict and also encourage more walking.

Pedestrian attractors and generators are generally well-served by existing sidewalks. However, gaps in the sidewalk network exist generally within residential areas in east and southeast San Mateo, near the City limits, and consist of one- to three-block long segments. Further, the width and condition of sidewalks vary throughout the City and community input implies that some sidewalks (e.g., in Downtown San Mateo) may not meet the pedestrian demand. Rolled curbs, located primarily within single-family neighborhoods allow cars to park on the sidewalk and obstruct pedestrian travel.

The need for continuous walkways and enhanced crossings to attractors is evident in the pedestrian-related collision data. The highest rates of collisions occur near attractors near Downtown and along El Camino Real. High concentrations of collisions have also

occurred along Delaware Street, East Poplar Avenue, West Hillside Boulevard, 1st Street, 5th Street, and Alameda de les Pulgas. Investment in community-preferred walkways to community destinations as well as pedestrian and motorist education and outreach is needed.

The US Census shows the pedestrian mode share in San Mateo is higher than the state and national mode share. The survey data shows though walking is a popular mode of travel for trips less than one mile in length, a significant number of people choose to drive for these shorter trips. The community survey indicated that concerns about safety and insufficient lighting are significant obstacles to walking. Traffic calming, improved pedestrian crossings, and pedestrian-scale lighting may encourage more walking.

Collision data, the public workshop, and the community survey also revealed programmatic needs. The collision analysis indicates pedestrian education and outreach for both drivers and pedestrian about rights, responsibilities and the rule of the road are needed. The City has initiated an inventory and map of pedestrian facilities such as curb ramps, crosswalks, and street lights. In addition to completing these inventories, pedestrian counts would inform decisions about the location and types of improvements needed.