ALAMEDA COUNTY


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Executive Summary

The Alameda County Transportation Commission (Alameda CTC), along with several regional agencies and educational institutions, has been collecting data on the number of bicyclists and pedestrians throughout the county since 2002. This data, while useful, was not always collected in a consistent manner. In 2010, the Alameda CTC established an annual count program with the selection of 63 sites at which to conduct counts every year using the same methodology. The primary goal of the count program is to provide countywide trends in bicycling and walking over multiple years. Where there is sufficient data, the goal is also to assess trends at the sub-county level using the North, Central, South and East planning area groupings.

In 2011, Alameda CTC published the first report analyzing data collected from 2002 to 2010. This report provides the second update to this initial report, an analysis of count data collected in 2011 and 2012.

Data Sources and Methodology

The manual count data used in this report was collected during four distinct time periods, as shown in Figure ES-1. The morning, or “AM,” count period was added this year as a pilot. Sites counted during the school period were also counted during the morning period to gauge the differences between them and to assess whether a morning period should be included in the ongoing count program.
There are two groupings of manual count data that serve different purposes:

- "Longitudinal data" describes historic trends since 2002 using a small set of count locations that are available for this comparison. Although it is only a small number of locations, this data set is useful for tracking the long-term trends, since it allows observing an eleven-year trend line.
- "Annual data" uses a larger number of locations that were selected in 2010 for the annual count program. These locations were counted again in 2011 and 2012. As time goes on, this larger set of data will provide accurate trends in walking and bicycling throughout the county and at the planning area level.

Figure ES-2 below shows a summary of the years in which manual counts were conducted and the number of sites for each grouping of data, by time period.

<table>
<thead>
<tr>
<th>Count Period</th>
<th>Annual Data</th>
<th>Longitudinal Data</th>
</tr>
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<tbody>
<tr>
<td></td>
<td># of Sites for Time Period Comparisons</td>
<td># of Sites for Gender and Helmet Analyses</td>
</tr>
<tr>
<td>Pedestrian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid-day</td>
<td>2010, 2011, 2012</td>
<td>42</td>
</tr>
<tr>
<td>School</td>
<td>2010, 2011, 2012</td>
<td>16</td>
</tr>
<tr>
<td>AM (Pilot)</td>
<td>2012</td>
<td>16</td>
</tr>
<tr>
<td>Bicycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid-day</td>
<td>2010, 2011, 2012</td>
<td>42</td>
</tr>
<tr>
<td>School</td>
<td>2010, 2011, 2012</td>
<td>16</td>
</tr>
<tr>
<td>AM (Pilot)</td>
<td>2012</td>
<td>16</td>
</tr>
</tbody>
</table>

Note: Sites that were not counted during the same time period for all comparison years are not included in the time period analyses, but are included in the gender and helmet analyses.
Pedestrian Count Trends

Pedestrian counts increased across all time periods from 2011 to 2012, with the largest jump (7%) during the PM peak period. Longer-term trends show considerable growth in the last decade, with pedestrian counts increasing by 59% from 2002 to 2012. A Summary of the pedestrian count trends is provided below.

Total Pedestrians (2010, 2011, 2012; weekday PM; 61 sites) (as seen in Chapter 2, Figure 2-2)

Annual Count Data – 2010 to 2012

- Pedestrian counts increased from 2011 to 2012 across all time periods.
- The PM period data shows a 7% increase in pedestrian counts in the last year (and a 6% increase from 2010 to 2012).
- Mid-day period pedestrian counts also show a 5% increase over 2011 (and a 7% increase from 2010 to 2012).
- School period data, based on counts collected at 16 sites that are within a half-mile of at least one K-12 school, shows a minor increase of 2%, which may not be significant (from 2010 to 2011 there was essentially no change in pedestrian counts.
- By area of the county, the percent change in pedestrians from 2011 to 2012 shows increases in all planning areas. Central County saw the highest percent growth, with a 46% increase over 2011 counts, and the South and East County had increases of 9% and 25% respectively, and
the North, with the highest number of pedestrians counted, showed 3% in growth.

- The pilot AM period pedestrian counts were 6% lower than the school period counts at the same sites. At the site level, just over half of the sites showed lower pedestrian counts during the AM period than during the school period. This suggests that counting during the AM time period is not sufficiently different to warrant counting both periods or switching the counts near schools to the AM time period.

**Longitudinal Count Data – 2002 to 2012**

The long-term trend in PM period pedestrian counts continues to be upward. From 2002 to 2012, pedestrian counts increased by 59% at a set of six common sites (see Figure ES-3 below, and Figure 2-7, which lists the count sites). The longitudinal data trends for pedestrians are shown below as the percentage change relative to 2002, with a trend line that shows estimated increases between 2003 and 2010, during which no data is available.

Figure ES-3: Percent Change in PM Pedestrian Counts Relative to 2002 (2002, 2003, 2010, 2011, 2012; weekday PM, 6 sites, which are listed in Figure 2-7)

**Bicyclist Count Trends**

Bicyclist counts increased between 2011 and 2012 during all time periods, continuing a steady trend in increasing counts seen since 2002. A summary of bicyclist count trends is provided on the following page.
Annual Count Data – 2010 to 2012

- Bicyclists counted in the PM period increased by 12% from 2011 to 2012 (and 42% from 2010 to 2012).
- The mid-day period counts also show a 12% increase from 2011 to 2012 (and a 54% increase from 2010 to 2012).
- The school period saw a more significant increase of 94% from 2011 to 2012 at the 16 count sites within at least a half mile of a K-12 school, (and a 115% increase since 2010).
- By area of the county, the percent change in bicyclists from 2011 to 2012 shows increases in all planning areas. Central County saw the highest percent growth, with a 56% increase over 2011 counts, East County showed an increase of 25%, and the North and South had increases of 8% and 6% respectively. While the North shows one of the lower percent growth rates, it has the highest increase in the number of bicyclists counted.
- The pilot AM period bicyclist counts were 23% higher than the school period counts at the same sites. The variation by site did not correlate to distance from the school, suggesting that the higher AM counts are likely due to non-school-related bicycle commuters and not to significant differences in school-related bicycle trips.
Longitudinal Count Data – 2002 to 2012

Comparing the 9 sites that have been consistently counted during the PM period since 2002, there was a 64% increase in bicycle counts from 2002 to 2012. This is a decrease of 11 percentage points from 2011 to 2012, which is not reflected in the larger annual count data set. Figure ES-4 below shows the percentage increase of PM period counts relative to 2002, as well as a trend line that best fits this data.

Figure ES-4: Percent Change in PM Bicyclist Counts Relative to 2002 (2002, 2004, 2006, 2008, 2010, 2011, 2012; weekday PM, 9 sites, which are listed in Figure 3-7)

Gender and Helmet Data

Bicyclist gender and helmet use is also collected as part of the manual count program. The following summarizes the trends in these two areas.

- Women accounted for 49.6% of pedestrians in 2012. This is down less than 1% from the 2011 counts, which is likely not significant at this aggregated level. At the planning area level, women made up 49% of pedestrians counted in the North planning area in 2012, and 48% and 50% in the Central and South planning areas. In the East planning area, females made up 42% of pedestrians in 2012.

- Women made up 33% of bicyclists counted in 2012. However, the proportion of female cyclists has risen steadily and significantly over the last three years, from 26% in 2010. By time period, female bicyclists made up 33% of bicyclists counted during PM period in 2012, 36% during the school
period, and 31% of mid-day period bicyclists. By planning area, females made up 36% of bicyclists counted in the North, 27% in the Central planning area, 31% in the South, and 14% in the East planning area.

- Helmet usage increased between 2011 and 2012 from 58% to 61% of all bicyclists counted. Increases in helmet usage were seen in all time periods except the mid-day where it remained even with last year, and in all areas of the county except the South planning area where it decreased from 62% to 55%.

- Helmet use among women is 11% higher than among males, as seen in the count data. At the planning area level, the difference is most distinct in the Central planning area where 22% more females than males wore helmets. The increase in females bicycling may be one explanation for the increase in helmet use.

**Contextual Data and Trends**

The bicyclist and pedestrian count trends are compared in this report to various other data sources, as summarized below.

**Collisions**

- While pedestrian injuries and fatalities due to collisions decreased 20% in Alameda County between 2002 and 2010, pedestrian volumes in the PM period increased by 41% during this same period. This suggests a significant decline in the number of fatal or injury collisions per pedestrian in the county.

- From 2002 to 2010, the total number of bicycle injuries and fatalities due to collisions rose by 17%. During this same period, bicyclist volumes increased by 50% suggesting a lower collision rate per bicyclist.

**Access to BART**

- Increased walking and biking in the county has coincided with increases in the percentage of people walking and biking to BART stations in Alameda County.
Population
- The total increase in the population of Alameda County from 2002 to 2012 was 4.9%, as compared to the 59% and 64% increases in pedestrians and bicyclists counted, respectively, during this same period.

California Gasoline Prices
- From 2002 to 2012, gas prices rose by 161%, as compared to the 59% and 64% increases in pedestrian and bicycle counts, respectively, suggesting that increasing gas prices could be influencing the changes in walking and biking.

Unemployment Rate
- From 2002 to 2012, the unemployment rate rose 36%, and in the same period walking and biking increased 59% and 64% respectively. While there are correlations, there is not enough data to make conclusive assessments on the impact of unemployment on walking and biking in the county.
1. Introduction

Purpose

The primary goal of the Alameda CTC bicycle and pedestrian count program is to provide overall countywide trends in bicycling and walking over multiple years. Where there is sufficient data, the goal is also to assess trends at the sub-county levels using the North, Central, South and East planning area designations.

The countywide count program includes data from both annual manual counts conducted at intersections and ongoing automated bicycle/pedestrian counters that are located on multi-use trails and in bicycle lanes.

Having a regular count program with consistent walking and bicycling data is important for many reasons, including:

- **Baseline Data:** To have a standard methodology used over multiple years so as to accurately compare the trends across the county.
- **Safety:** To understand the changes in collision rates, i.e., the number of bicycle/pedestrian collisions relative to their volumes.
- **Timely Data:** To see trends as they are happening. Annual count data shows trends more immediately than data sources that are collected less frequently.
• **Modeling:** To assist with enhancing the regional and countywide transportation models’ ability to predict walking and biking trips.

• **Performance Metrics:** To have data that tracks the progress of Countywide Bicycle and Pedestrian Plan implementation and climate protection policies.

• **Return on Investment/Planning:** Although many factors contribute to walking and bicycling rates, counts can help show the impact of bicycle/pedestrian capital facilities and programs so as to improve decision-making. For example, it may be possible to assess the changes in school trips as a result of Safe Routes to Schools programs.

Although counting at selected intersections captures only a small subset of people who are biking and walking, it is standard practice to use a limited set of locations to extrapolate the number of people using these modes. The intent is not to count everyone who is on foot or bike, or even those places with the highest number of bicyclists and pedestrians, at any one time. Rather, the goal is to paint a picture of changes over time.

### Manual Count Program

Bicycle and pedestrian counts have been conducted at various locations and time periods around the county since 2002. The history of this program and the current methodology for the manual count portion of the countywide program are described below.

There are two groupings of manual count data presented in this report, each of which serves a different purpose:

- “Longitudinal data” describes historic trends since 2002 using a small set of count locations that are available for comparison. Although it is only a small number of locations, this data set is useful for tracking the long-term trends, since it allows observing an 11-year trend line.

- “Annual data” uses a larger number of locations that were selected in 2010 for the annual count program. These locations were counted again in 2011 and 2012. As time goes on, this larger set of data will provide accurate trends in walking and bicycling throughout the county and at the planning area level.
1. INTRODUCTION

Longitudinal Count Locations

Since 2002, Alameda CTC and other agencies have collected manual count data for countywide purposes at 101 different locations around the county. Some of these counts were of bicyclists only and some were in different time periods. The same sites were not counted in each year. Therefore, there is no trend line for all 101 sites. The historic counting efforts have included:

- The (former) Alameda County Congestion Management Agency’s biennial Level of Service (LOS) Monitoring Report included bicyclist counts at 12 locations. These were
Figure 1-2: Map of Manual Count Locations

- The Metropolitan Transportation Commission (MTC) conducted regional bicyclist and pedestrian counts in 2002 and 2003 at 13 and 6 locations, respectively, in Alameda County.

- UC Berkeley’s Safe Transportation Research & Education Center (SafeTREC), formerly the Traffic Safety Center, with funding from the Alameda CTC, conducted bicycle and pedestrian counts at a combined 79 locations in 2008 and 2009 to assist in developing a model to predict pedestrian and bicyclist volumes. These locations were mainly, but not exclusively, on Caltrans facilities, since this was the focus of the research project.

Data that was collected at the same sites, during the same time periods, and for the same set of years is considered comparable. The longitudinal data set includes comparable counts that span 11 years, and are limited to six common sites for pedestrians and nine for bicyclists. There is not enough comparable data to do a longitudinal analysis for the mid-day and school periods.

Additional information on the historical manual count data, including the year, lead agency, time period and data collected, are shown in Appendices A-3 and A-4.

**Annual Count Locations**

In 2010, 63 count locations were selected by Alameda CTC for an annual count program, most of which were a subset of the 101 count locations described above. The sites were selected based on a set of criteria that includes the following:

<table>
<thead>
<tr>
<th>Primary Criteria (in order of importance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Locations where counts have been conducted historically, especially those counted in earlier years.</td>
</tr>
<tr>
<td>• On the Countywide Bicycle or Pedestrian Network. All locations are on one or both networks.</td>
</tr>
<tr>
<td>• Distribution of sites by area of the county, based on population (to follow national best practices on the number of counts needed to accurately reflect walking and biking)</td>
</tr>
</tbody>
</table>
Secondary Criteria

- Variety of land uses – commercial, residential, industrial and offices
- Variety of land use density (within ¼-mile radius) – high, medium and low
- Variety of street types
- Variety of types of crossings: signalized and unsignalized
- Some locations near transit (within a ¼-mile radius)
- Some locations near multi-use trails (within a ¼-mile radius)
- Some locations near schools (within a ½-mile radius)
- Minimum distance between count locations of ¼-mile to reduce interdependence between the sample locations

These 63 selected sites, or a subset of them, have been the focus of the Counts Reports published in 2011 and 2012. For the fall 2012 counts, 61 of these sites remained the same, while two sites were retired and replaced with new locations due to issues with the intersection configurations, as follows:

- Mission Boulevard and Jefferson Street in Hayward was replaced by Whitman Street and Tennyson Road in Hayward, which is 0.8 miles away; and
- Ardenwood Boulevard (CA 84) and Newark Boulevard (east-side interchange ramp) in Newark was replaced by Newark Boulevard and Jarvis Avenue in Newark, which is one block away.

Data from these retired and new replacement sites is not used in the time period comparisons, but is used in the gender and helmet analyses in this report.

Additionally, two sites in Emeryville were counted during the incorrect time periods in 2012, affecting the number of sites in the mid-day and school period comparisons. The Powell Street and Christie Avenue site was counted during the school period in 2012, instead of the mid-day period; and the San Pablo Avenue and 40th Street site was counted during mid-day period in 2012 instead of the school period. Data collected during the PM time period was not affected at these sites.
Data Collection Methodology
Since 2010, the following data has been collected for each count location:

- **Contextual information:** Date, time, weather, and temperature.
- **Pedestrians:** The number of pedestrians crossing each intersection leg (or where an intersection leg would be, if at a 3-way intersection) and their gender.
- **Bicyclists:** The number of bicyclists originating from each intersection leg, their gender, and whether or not they were using a helmet.

Prior to 2010, all or a subset of the above information was collected.

Since 2010, all counts were conducted by paid, trained consultants, on non-rainy days during September and October. (In 2012, several locations were mistakenly counted in November.) Before 2010, counts were either conducted by volunteers, city staff, or paid consultants.

Time Periods
The manual count data used in this report was collected during three distinct time periods, as shown in Figure 1-3. Additionally, in 2012 a morning (“AM”) count period was added as a pilot to assess differences at school locations between the AM and afternoon (or “school”) count periods. Only those sites counted during the afternoon (“school”) period were also counted during the AM period.

Although morning and weekend counts were conducted at some sites prior to 2010, the more recent counts have focused on the mid-day, afternoon and PM time periods. Longitudinal morning and weekend counts are not analyzed in this report due to the lack of comparable data.

Automated Count Program
In addition to conducting manual counts, Alameda CTC owns five automated bicycle/pedestrian counters, which allow data to be collected 24 hours a day. These include two in-pavement bicycle-
only counters and three moveable pedestrian/bicycle counters. Figure 1-4 compares the features of these two counter types.

The East Bay Regional Park District (EBRPD) has 24 automated bicycle/pedestrian counters deployed on trails throughout their district, and will be installing more as new trails are built.

Data from both the Alameda CTC and EBRPD counters has not been incorporated into this report, but it will be included in future reports to portray a more robust picture of walking and biking in the county. In particular, the data will show multi-use trail use around the county. While often used for utilitarian purposes, trails are also heavily used recreationally, so counts on these trails can help track recreational bicycling and walking.

Alameda CTC and EBRPD currently have one or more counters on the following trails in the county with a goal of covering even more trails, and more fully covering each trail, in the future:

- Bay Trail
- Alameda Creek Trail
- Iron Horse Trail
- Encinal Point Trail
- San Leandro Creek Trail
- Oyster Bay Trail
- Tassajara Creek Trail

**Figure 1-4: Automated Counter Features**

<table>
<thead>
<tr>
<th>Permanence of installation site</th>
<th>Bicycle Counters</th>
<th>Pedestrian/Bicycle Counters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanence of installation site</td>
<td>Permanent installation</td>
<td>Moveable</td>
</tr>
<tr>
<td>Mode</td>
<td>Bicycles only</td>
<td>Not mode-specific: pedestrians, bicyclists, rollerbladers, etc.</td>
</tr>
<tr>
<td>Facility type</td>
<td>Bicycle lanes</td>
<td>Multi-use trails, sidewalks</td>
</tr>
<tr>
<td>Installation type</td>
<td>In-pavement</td>
<td>Pole-mounted</td>
</tr>
<tr>
<td>Detector type</td>
<td>Electro-magnetic loop detector</td>
<td>Infrared detector</td>
</tr>
<tr>
<td>Direction of travel</td>
<td>One direction</td>
<td>Two directions</td>
</tr>
</tbody>
</table>

...
Alameda CTC is coordinating with the EBRPD and other jurisdictions within Alameda County that currently have or may develop automated count programs in the future, to share data and ensure the most effective usage and siting of the counters.
2. Pedestrian Count Trends

Pedestrian counts increased across all time periods from 2011 to 2012, with the largest jump (7%) during the PM peak period. Longer-term trends show considerable growth in the last decade, with pedestrian numbers increasing by 59% from 2002 to 2012.

Pedestrian count data was collected during four time periods, titled “PM,” “mid-day,” “school,” and “AM,” as described in the Introduction, and shown in Figure 2-1 below. Two sets of data were analyzed, “annual” and “longitudinal.” Annual data, collected in 2010, 2011, and 2012 includes the full set of 61 count sites for the PM time period. Each of these sites was counted a second time in either the mid-day or school period. And in 2012, a pilot AM

Figure 2-1: Pedestrian Data Sets

<table>
<thead>
<tr>
<th></th>
<th>Annual Data</th>
<th>Longitudinal Data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Comparison Years</td>
<td># of Sites for Time Period Comparisons</td>
</tr>
<tr>
<td>Mid-day</td>
<td>2010, 2011, 2012</td>
<td>42</td>
</tr>
<tr>
<td>School</td>
<td>2010, 2011, 2012</td>
<td>16</td>
</tr>
<tr>
<td>AM (Pilot)</td>
<td>2012</td>
<td>16</td>
</tr>
</tbody>
</table>

Note: Sites that were not counted during the same time period for all comparison years are not included in the time period analyses, but are included in the gender analysis.
From 2011 to 2012, the number of pedestrians counted during the PM peak period increased by 7% across the 61 count sites. Over the past three years (2010 to 2012), the number of pedestrians counted increased 6% (due to a minor decrease from 2010 to 2011).

The longitudinal data set compares the more recent annual data with historic counts, where available, at a smaller set of six sites for the PM period only. There is not sufficient historical data to provide a longitudinal analysis for the mid-day and school periods.

**Pedestrian Weekday PM (4-6 PM)**

**Annual Data (2010 to 2012)**

From 2011 to 2012, the number of pedestrians counted during the PM peak period increased by 7% across the 61 count sites; this is a greater increase than the other time-periods counted. Over the past three years (2010 to 2012), the number of pedestrians counted increased 6% (due to a minor decrease from 2010 to 2011).

The following figures show how these changes were distributed at the planning area level. As shown in Figure 2-3, while the number of pedestrians counted has fluctuated over the past three years, overall, it has increased for most planning areas.

As shown in Figure 2-4, North County saw a 3% increase from 2011 to 2012, which offset the 3% decrease from last year’s counts (2010 to 2011). The Central, South, and East, while having fewer overall pedestrians than the North, continue to show steady and significant increases in pedestrians counted. Central County saw
the highest percent growth, with a 46% increase over 2011 counts, and the South and East County had increases of 9% and 25%, respectively. Together with the data from the two previous years, the pedestrian counts have increased, or not changed, as in the case of North County, in all planning areas from 2010 to 2012.

Figure 2-3: Change in Number of Pedestrian by Planning Area (2010, 2011, 2012; weekday PM; 61 sites)

Figure 2-4: Percent Change in Pedestrians by Planning Area (2010, 2011, 2012; weekday PM; 61 sites)

The North planning area has the highest population in the county and the most people walking, so increases in the percent of pedestrians counted translate to higher increases in the number of pedestrians as compared to the other planning areas. For example, the 3% increase in the North planning area from 2011
to 2012 translates to 414 additional pedestrians, while a 9% increase in the South planning area during this same period translates to 129 more pedestrians.

Figure 2-5 shows the changes in the numbers of pedestrians by planning area and compares these numbers with the percentages, over three years.

Figure 2-5: Comparison of Absolute and Percent Change in Pedestrians Counted by Planning Area (2010, 2011, 2012; weekday PM; 61 sites)

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th># Difference</th>
<th>% Change</th>
<th># Difference</th>
<th>% Change</th>
<th># Sites Counted</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>14,052</td>
<td>13,615</td>
<td>14,029</td>
<td>414</td>
<td>3%</td>
<td>-23</td>
<td>0%</td>
<td>30</td>
</tr>
<tr>
<td>Central</td>
<td>1,234</td>
<td>1,214</td>
<td>1,772</td>
<td>558</td>
<td>46%</td>
<td>538</td>
<td>44%</td>
<td>13</td>
</tr>
<tr>
<td>South</td>
<td>1,276</td>
<td>1,452</td>
<td>1,581</td>
<td>129</td>
<td>9%</td>
<td>305</td>
<td>24%</td>
<td>12</td>
</tr>
<tr>
<td>East</td>
<td>346</td>
<td>373</td>
<td>466</td>
<td>93</td>
<td>25%</td>
<td>120</td>
<td>35%</td>
<td>8</td>
</tr>
</tbody>
</table>

Figure 2-6: Variability in Pedestrian Data by site (2010, 2011, 2012; weekday PM; 61 sites)

<table>
<thead>
<tr>
<th></th>
<th>2011 to 2012</th>
<th>2010 to 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased</td>
<td>34 (56%)</td>
<td>32 (52%)</td>
</tr>
<tr>
<td>Decreased</td>
<td>19 (31%)</td>
<td>18 (30%)</td>
</tr>
<tr>
<td>Did not change</td>
<td>8 (13%)</td>
<td>11 (18%)</td>
</tr>
</tbody>
</table>

Sites with Greatest Percentage Increase:
- Stoneridge Drive and Hopyard Road, Pleasanton
- Paseo Padre and Decoto Road, Fremont

Sites with Greatest Absolute Increase:
- 290%
- Winton Avenue and Amador Street, Hayward
- 270

Sites with Greatest Percentage Decrease:
- 36%
- East Street and Vasco Road, Livermore
- -64%

Sites with Greatest Absolute Decrease:
- -158
- College Avenue and Derby Street, Berkeley
- -230

Note: Sites that showed an increase were defined as having a percent change of 5% or greater. Sites with no change in usage were defined as having a percent change between 5% and -5%. Sites with a decrease in usage were defined as having a percent change of -5% or less.
Just as there is variability at the planning area level, there is also variability at the site level, as shown in Figure 2-6. From 2011 to 2012, 42 count sites (or 69% of all sites) either saw an increase or showed no change in pedestrian numbers, while 19 (or 31%) of the sites showed a decrease in pedestrians during these years. Similar variability is seen in the 2010 to 2012 data.

**Longitudinal Data (2002 to 2012)**

The PM period, with five years of comparable data covering an 11-year time period, has the most longitudinal data available for pedestrians. While there is a gap in the data from 2003 to 2010, it allows a point of comparison for seeing the longer-term trends, which show overall increasing numbers of pedestrians.

Historically, the numbers of pedestrians counted at six common sites increased by 59% from 2002 and 2012 (see Figure 2-7). During this period, there was a drop in pedestrian numbers from 2002 to 2003 and then a significant rise between 2003 and 2010. From 2010 to 2012, the percent increase shown by this smaller set of sites was 13%, which is slightly higher than the 7% increase seen in the annual count data described above.

![Figure 2-7: Total Pedestrians (2002, 2003, 2010, 2011, 2012; weekday PM; 6 sites)](image-url)
Figure 2-7 also shows the variability at the site level for the longitudinal data. While every one of the six sites saw increases in pedestrians counted between 2002 and 2012, the amount of increase at each site varied. In 2012, the site with the greatest percentage increase (66th Avenue and San Leandro Street in Oakland) was 263% higher relative to the 2002 count. The site with the smallest percentage increase (Grand Avenue and Staten Avenue in Oakland) showed an increase of 10% from 2002.

**Pedestrian Weekday Mid-day (12–2pm)**

**Annual Data (2010 to 2012)**

From 2011 to 2012, there was a 5% increase in pedestrian counts over the 42 sites counted during the mid-day period, and a 7% increase from 2010 to 2012, as shown in Figure 2-8.

![Figure 2-8: Total Pedestrians (2010, 2011, 2012; weekday mid-day; 42 sites)](image)

At the site level, counts at 26 of the 42 sites (62%) either increased or remained the same from 2011 to 2012. Figure 2-9 on the following page shows the site variability of the mid-day period.

**Pedestrian Weekday School (2–4pm)**

**Annual Data (2010 to 2012)**

The number of pedestrians counted during the school period increased only slightly (2%) from 2011 to 2012, as shown in Figure 2-10. The three-year data (2010 to 2012) also shows the total number of pedestrians essentially remaining steady during this count period. All 16 sites included in this analysis are within a half-mile of at least one school, and some of them are near more
than one school. Additionally, seven of these count sites are within a quarter mile of at least one school.

**Figure 2-9: Variability in Pedestrian Data by Site (2010, 2011, 2012; weekday mid-day; 42 sites)**

<table>
<thead>
<tr>
<th>Sites with Greatest Percentage...</th>
<th>2011 to 2012</th>
<th>2010 to 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased</td>
<td>19 (45%)</td>
<td>24 (57%)</td>
</tr>
<tr>
<td>Decreased</td>
<td>16 (38%)</td>
<td>11 (26%)</td>
</tr>
<tr>
<td>Did not change</td>
<td>7 (17%)</td>
<td>7 (17%)</td>
</tr>
<tr>
<td>Increase</td>
<td>100%</td>
<td>182%</td>
</tr>
<tr>
<td>Warm Springs and Grimmer, Fremont</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decrease</td>
<td>-56%</td>
<td>-57%</td>
</tr>
<tr>
<td>Bancroft Avenue and Auseon Avenue, Oakland</td>
<td></td>
<td>Mowry Avenue (CA 84) and Cherry Ln, Fremont</td>
</tr>
<tr>
<td>Increase</td>
<td>202</td>
<td>169</td>
</tr>
<tr>
<td>MacArthur Boulevard and 38th Avenue, Oakland</td>
<td></td>
<td>Winton Avenue and Amador Street, Hayward</td>
</tr>
<tr>
<td>Decrease</td>
<td>-95</td>
<td>-121</td>
</tr>
<tr>
<td>Atlantic Avenue and Webster Street, Alameda</td>
<td></td>
<td>Broadway and 20th Street, Oakland</td>
</tr>
</tbody>
</table>

Note: Sites that showed an increase were defined as having a percent change of 5% or greater. Sites with no change in usage were defined as having a percent change between 5% and -5%. Sites with a decrease in usage were defined as having a percent change of -5% or less.

**Figure 2-10: Total Pedestrians at Count Sites Within a Half-mile of a School (2010, 2011, 2012; weekday school period; 16 sites)**
While this overall 2% increase was likely not significant, there was significant variability among the school period sites, as shown in Figure 2-11, with three quarters of the sites showing either an increase in pedestrians counted or no change from 2011 to 2012.

**Figure 2-11: Variability in Pedestrian Data by Site at Count Sites Within a Half-mile of a School (2010, 2011, 2012; weekday school period; 17 sites)**

<table>
<thead>
<tr>
<th></th>
<th>2011 to 2012</th>
<th>2010 to 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased</td>
<td>7 (44%)</td>
<td>10 (63%)</td>
</tr>
<tr>
<td>Decreased</td>
<td>4 (25%)</td>
<td>5 (31%)</td>
</tr>
<tr>
<td>Did not change</td>
<td>5 (31%)</td>
<td>1 (6%)</td>
</tr>
</tbody>
</table>

- **Sites with Greatest Percentage Increase**
  - Thornton Avenue and Willow Street, Newark: 125%
  - Paseo Padre Parkway and Decoto Road, Fremont: 414%

- **Sites with Greatest Percentage Decrease**
  - Davis St (CA 61) and Pierce Avenue, San Leandro: -33%
  - Central Avenue and Fifth Street, Alameda: -42%

- **Sites with Greatest Absolute Increase**
  - Grand Avenue and Oakland Avenue, Piedmont: 87
  - Fruitvale Avenue and Foothill Boulevard, Oakland: 121

- **Sites with Greatest Absolute Decrease**
  - Chatham Road and 13th Avenue, Oakland: -75
  - Central Avenue and Fifth Street, Alameda: -132

*Note: Sites that showed an increase were defined as having a percent change of 5% or greater. Sites with no change in usage were defined as having a percent change between 5% and -5%. Sites with a decrease in usage were defined as having a percent change of -5% or less.*

**Pilot AM Period Data (2012)**

In 2012, a morning (“AM”) count period was added as a pilot to assess differences at school locations between the AM and afternoon (or “school”) count periods. Only those sites counted during the afternoon (“school”) period were also counted during the AM period. The AM period counts were 6% lower than the school period counts at the same site. At the site level, just over half of the sites (9 of the 16 sites) showed lower pedestrian counts during the AM period than during the school period. The variation by site did not correlate to distance from the school. Figure 2-12 on the following page shows the variability in the AM and school period data at the same sites. This data suggests that counting
Pedestrian and Bicycle Manual Counts Report

during the AM time period is not sufficiently different to warrant counting both periods or switching the counts near schools to the AM time period.

Figure 2-12: Comparison of AM and School Period Counts (2012; weekday AM and school periods; 16 sites)

| Percent difference between total bicyclists counted during the AM and school periods at the same sites | -6% |
| Number (and percent) of sites where AM counts are higher | 6 (38%) |
| Number (and percent) of sites where AM counts are lower | 9 (56%) |
| Number (and percent) of sites where AM counts are equal | 1 (6%) |

Pedestrian Gender Distribution

While the percent of females in the county population, at 50.9%, is slightly higher than that of males, the percent of females counted walking has typically been lower than males. Between 2010 and 2012, the overall percent of pedestrians that were female ranged between 48.3% and 50.0%, (see Figure 2-13).

Figure 2-13: Percent Female by Year (2010, 2011, 2012; weekday mid-day, school, and PM; 63 sites)

The percentage of female pedestrians varies considerably throughout the county, as shown in the PM period count data below. (Comparable data for all time periods across all count years for each planning area is not available.)

The North and South planning areas had the highest percentage of female pedestrians in 2012, with 49% and 50% of pedestrians...
counted, respectively. The Central planning area showed significant increases from 43% of pedestrians counted in 2010 to 48% in 2012. The 2009 number in this planning area of 50% female pedestrians appears to be an outlier. The East planning area has the lowest proportion of female pedestrians, with percentages ranging between 39% and 44% females between 2009 and 2012.

As shown in Figure 2-15, the mid-day time period consistently has the highest proportion of female pedestrians counted, with over 50% in 2011 and 2012. The mid-day time period average across all years with gender data is 50.1%. This could be due to the fact that women

Figure 2-15: Percent Female Pedestrians by Planning Area and Year (2009 to 2012; weekday PM, 63 sites)

![Graph showing percentage of female pedestrians by planning area and year.]

Figure 2-14: Percent Female Pedestrians by Planning Area and Year (2009 to 2012; weekday PM, 63 sites)

![Graph showing percentage of female pedestrians by planning area and year.]
may feel safer walking during daylight hours and may be more likely to walk for exercise during the lunch hour. For the school period, the average for all years with data during this period is 48.0%. In 2009, almost 51% of pedestrians counted were female, but this appears to be an outlier, as the other years’ data shows the percentages steadily increasing from 47% in 2008 to almost 49% in 2012. The percent of females counted during the PM time periods is also within this range with the exception of 2011 which saw almost 50% female pedestrians. The average for all years with PM period data is 48.5%. In each of the time periods there appears to be a gradual increase in the number of females walking.
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3. Bicyclist Count Trends

Bicyclist counts increased significantly between 2011 and 2012 during all time periods, continuing a steady trend in increasing counts seen since 2002. Notably, the increase in female bicycling has continued, with an increase from 30% to 33% from 2011 to 2012.

Bicyclist count data was collected during four time periods titled “PM,” “mid-day,” “school,” and “AM,” as described in the Introduction, and shown in Figure 3-1 below. Two sets of data were analyzed for the PM period: “annual” and “longitudinal.” Annual data, collected in 2010, 2011, and 2012, includes the full set of data.

Figure 3-1: Bicyclists Data Sets

<table>
<thead>
<tr>
<th>Count Period</th>
<th>Comparison Years</th>
<th># of Sites for Time Period Comparisons</th>
<th># of Sites for Gender and Helmet Analyses</th>
<th>Comparison Years</th>
<th># of Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>2010, 2011, 2012</td>
<td>16</td>
<td>18</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>AM (Pilot)</td>
<td>2012</td>
<td>16</td>
<td>17</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note: Sites that were not counted during the same time period for all comparison years are not included in the gender and helmet analyses.
61 sites for the PM time period. Each site was counted a second time in either the mid-day or school period.

In 2012, a pilot AM period was added for the 16 sites counted during the school period in order to compare the two periods. The longitudinal data set compares the more recent annual data with historic counts, where available, at a smaller set of nine sites for the PM period only. There is not sufficient historical data to provide a longitudinal analysis for the mid-day and school periods.

**Bicyclists Weekday PM (4-6 PM)**

**Annual Data (2010 to 2012)**

From 2011 to 2012, there was a 12% increase in bicyclist counts across the 61 count sites, during the PM period, as shown in Figure 3-2. While this is a smaller increase than that seen from 2010 to 2011, which was 27%, it continues the trend of significant annual increases in bicycling.

This countywide increase in bicyclists counted was mirrored at the planning area level, where counts increased in each of the four planning areas from 2011 to 2012, continuing a three year upward trend, as shown in Figure 3-3 on the following page.

The percentage increase by planning area is shown in Figure 3-4. The Central area of the county showed the greatest percent change, with a 56% increase in bicyclists counted from 2011 to 2012. The increases during this period in the other planning areas
are 8% in the North area, 6% in the South area, and 25% in the East planning area. These increases build on across the board increases in bicyclist counts in all parts of the county from 2010 to 2011. The greatest increases from 2010 to 2012 were in the Central and South planning areas, as also shown in Figure 3-4.

Figure 3-3: Change in Number of Bicyclists by Planning Area (2010, 2011, 2012; weekday PM; 61 sites)

![Figure 3-3: Change in Number of Bicyclists by Planning Area (2010, 2011, 2012; weekday PM; 61 sites)](image)

Figure 3-4: Percent Change in Bicyclists by Planning Area (2010, 2011, 2012; weekday PM; 61 sites)

![Figure 3-4: Percent Change in Bicyclists by Planning Area (2010, 2011, 2012; weekday PM; 61 sites)](image)

On the following page, Figure 3-5 shows the changes in the numbers of bicyclists by planning area and compares these numbers with the percentages, from 2011 to 2012, and the three year period of 2010 to 2012. The North planning area has the highest population and the highest number of bicyclists, so smaller increases in the percent of bicyclists translate to higher increases in the number of bicyclists as compared to the other planning areas.
Similar to the planning area level, the site level data is also variable. The table in Figure 3-6 shows the variability in the PM data. Notably, 52 of the 61 sites (or 85%) show either an increase or no change relative to 2010.

**Figure 3-6: Variability in Bicyclist Data by site (2010, 2011, 2012; weekday PM; 61 sites)**

<table>
<thead>
<tr>
<th>Number and Percent of Sites that...</th>
<th>2011 to 2012</th>
<th>2010 to 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased</td>
<td>40 (66%)</td>
<td>47 (77%)</td>
</tr>
<tr>
<td>Decreased</td>
<td>18 (30%)</td>
<td>9 (15%)</td>
</tr>
<tr>
<td>Did not change</td>
<td>3 (5%)</td>
<td>5 (8%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sites with Greatest Percentage...</th>
<th>Increase</th>
<th>Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase</td>
<td>880%</td>
<td>-44%</td>
</tr>
<tr>
<td>Mission Boulevard (CA 185) and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grove Way, County</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatham Road and 13th Avenue,</td>
<td>1150%</td>
<td>-52%</td>
</tr>
<tr>
<td>Oakland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warm Springs and Grimmer,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fremont</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sites with Greatest Absolute...</th>
<th>Increase</th>
<th>Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase</td>
<td>71</td>
<td>132</td>
</tr>
<tr>
<td>Grand Avenue and Lake Park,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oakland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Pablo Avenue and Virginia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street, Berkeley</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decrease</td>
<td>-70</td>
<td>-58</td>
</tr>
<tr>
<td>San Pablo Avenue and 40th Street</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emeryville</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Sites that showed an increase were defined as having a percent change of 5% or greater. Sites with no change in usage were defined as having a percent change between 5% and -5%. Sites with a decrease in usage were defined as having a percent change of -5% or less.
Longitudinal Data (2002 to 2012)

For the weekday PM period there is also longer-term trend data available going back to 2002, for a limited set of nine sites. As shown in Figure 3-7, the overall trend since 2002 is that the number of bicyclists counted has increased by 64%. However, from 2011 to 2012, there was a decrease (of 6%) in bicyclists counted at these nine sites, which is not reflected in the larger annual data set described above. The decrease is mostly due to lower bicycle counts in 2012 at the 3 sites in Emeryville, Oakland, and Fremont.

Figure 3-7 below also shows that while, in the aggregate, bicycle use has grown steadily throughout the county since 2002, it is

Note: Data for 2002 and 2004 were estimated to allow their inclusion in this comparison. The biennial Level of Service (LOS) data from 2002 to 2008 was collected from 3 - 6pm. An hourly breakdown of the LOS monitoring data was available for the years 2006 and 2008 only. In order to create comparable data for the 2002 and 2004 years, the 2006 and 2008 hourly data was used to estimate the proportion of bicyclists counted during the two-hour 4 - 6pm period.
considerably more varied at the site level from year to year. In 2012, at the site with the maximum increase relative to 2002 (Grand Avenue and Oakland Avenue in Piedmont), 419% more bicyclists were counted than in 2002, while the site at San Pablo Avenue and 40th Street in Emeryville saw a 13% drop in bicyclists compared to 2002 and was the only site of the nine locations to show an overall decrease from 2002 and 2012.

### Bicyclist Weekday Mid-day (12–2pm)

#### Annual Data (2010 to 2012)

There was an increase in mid-day bicyclists counted of 12% from 2011 to 2012, calculated from 42 sites, as shown in Figure 3-8. Since 2010, the number of bicyclists counted in this period has increased by 54%.

**Figure 3-8: Total Bicyclists (2010, 2011, 2012; weekday mid-day; 42 sites)**

The number of bicyclists counted during the weekday school period increased from 2011 to 2012 by 94%. Only one of the 16 school period sites showed a decrease in counts. Of these 42 sites, 30 (or 71%) of them increased or showed no change from 2011 to 2012, while only 12 (or 29%) showed a decrease, as shown in Figure 3-9 on the following page. Over a three year period of 2010 to 2012, 86% of the count sites increased or remained the same.

### Bicyclist Weekday School (2–4pm)

#### Annual Data (2010 to 2012)

The number of bicyclists counted during the weekday school period increased from 2011 to 2012 by 94% countywide, as shown in Figure 3-10. This is a significantly higher increase than from 2010
Figure 3-9: Variability in Bicyclist Data by Site (2010, 2011, 2012; weekday mid-day; 42 sites)

<table>
<thead>
<tr>
<th>Number and Percent of Sites that...</th>
<th>2011 to 2012</th>
<th>2010 to 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased</td>
<td>28 (67%)</td>
<td>34 (81%)</td>
</tr>
<tr>
<td>Decreased</td>
<td>12 (29%)</td>
<td>6 (14%)</td>
</tr>
<tr>
<td>Did not change</td>
<td>2 (5%)</td>
<td>2 (5%)</td>
</tr>
</tbody>
</table>

Sites with Greatest Percentage...

<table>
<thead>
<tr>
<th>Increase</th>
<th>Owens Drive and Andrews Drive, Pleasanton</th>
<th>Santa Clara Street and Ocic Way, Hayward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease</td>
<td>Mountain and La Salle, Oakland</td>
<td>Warm Springs and Grimmer, Fremont</td>
</tr>
</tbody>
</table>

Sites with Greatest Absolute...

<table>
<thead>
<tr>
<th>Increase</th>
<th>Solano Avenue and Masonic Avenue (Ohlone Trail), Albany</th>
<th>Decoto Road and Alvarado-Niles Road, Union City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease</td>
<td>Paseo Padre Parkway and Mowry Avenue, Fremont</td>
<td>Park Street and Otis Drive, Alameda</td>
</tr>
</tbody>
</table>

Note: Sites that showed an increase were defined as having a percent change of 5% or greater. Sites with no change in usage were defined as having a percent change between 5% and -5%. Sites with a decrease in usage were defined as having a percent change of -5% or less.

Figure 3-10: Total Bicyclists at Count Sites Within a Half-mile of a School (2010, 2011, 2012; weekday school period; 16 sites)
to 2011, which showed only 11% increase at the same 16 sites. It is unknown why there was such large increase from 2011 to 2012.

Only one of the 16 sites showed a decrease, while the others showed either an increase or no change in bicyclists from 2011 to 2012, as shown in Figure 3-11. All of the 16 sites included in this analysis are within a half-mile of at least one school, and seven of these are within a quarter mile of at least one school. Figure 3-11 shows the site variability of the school period.

**Pilot AM Period Data (2012)**

In 2012, a morning ("AM") count period was added as a pilot to assess differences at school locations between the AM and afternoon (or "school") count periods. Only those sites counted during the afternoon ("school") period were also counted during
the AM period. The total AM period bicyclist counts were 23% higher than the total school period counts at the same sites. Out of 16 sites, 10 (or 63%) of the sites had higher AM period counts than school period counts.

Figure 3-12 compares the AM and school period data at the same sites. The AM and school period count differences do not match those seen with the pedestrian counts which show that overall AM counts are 6% lower than the school period counts and a majority of sites show lower counts during the AM period than the school period.

The variation by site did not correlate to distance from the school, suggesting that the higher AM counts are primarily due to non-school-related bicycle commuters and not to significant differences in school-related bicycle trips. In fact, total AM period counts are 7% higher than the total PM period counts at these same locations. This indicates that a small portion of the higher AM bicycle trip numbers may be attributable to schools. The difference is not sufficient to warrant counting both the AM and school periods or switching the counts near schools to the AM time period. Accurately determining the changes in biking to and from schools would best be done by working directly with schools via the in-school Safe Routes to Schools programs.

**Bicyclist Gender Distribution**

While the percent of females in the county population, at 50.9%, is slightly higher than that of males, males are far more likely to bicycle than females, although this is changing. From 2011 to 2012, the percentage of female bicyclists counted increased from 30% to 33% countywide (see Figure 3-13). This continues a steady upward trend of female bicycling; females made up 26% of bicyclists counted in 2010.
As shown in Figure 3-14, there are significant differences in the
distribution of female bicyclists throughout the county, with the
highest percentages in the 2012 data shown in the North (36%) and South (31%) planning areas. This represents a decrease of
6% from 2011 in the South planning area, though the 2011 number
may be an outlier. Female bicyclists made up 27% of bicyclists in
the Central planning area, up from 20% in 2011; and 14% in the
East planning area, where the proportion when down by 1% from
2011. All planning areas saw increases in female cyclists counts

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**Figure 3-14: Percent Female Bicyclists by Planning Area (2010, 2011, 2012; weekday mid-day, school and PM periods; 63 sites)**

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**Figure 3-15: Percent Female Bicyclists by Time Period (2008, 2009, 2010, 2011, 2012; weekday mid-day, school and PM periods where data available; 63 sites)**
from 2010 to 2012 by between 2% (in the East planning area) and 17% (in the South planning area).

There appears to be little difference in the percent of female bicyclists across time periods in 2012. The PM period shows the most even and steady upward trend in percentages of women biking. The school period saw the largest jump in 2012, with an increase of 16% from 2011.

**Bicyclist Helmet Use**

For the third year in a row, the number of bicyclists counted wearing helmets increased. Between 2011 and 2012, helmet use increased from 58% to 61%, according to counts at 63 locations around the county, as shown in Figure 3-16.

Figure 3-17 shows an increase in helmet use across all planning areas from 2011 to 2012, except in the Southern part of the county, which showed a 7% decrease. The East part of the county showed the greatest increase, 10% from 2011 to 2012, and has the highest overall helmet usage, with 70% of bicyclists wearing helmets during the 2012 count.

Helmet use increased or remained the same across all time periods in 2012 as shown in Figure 3-18 on the following page. The school period showed the greatest increase with a 13% rise in helmet use since 2011. Helmet use remained the same from 2011 to 2012 during the mid-day period. Overall, helmet use during the PM period is the highest, with 63% of bicyclists wearing helmets.
This is the first year that helmet use by gender was analyzed. Countywide, helmet use is 11% higher among female bicyclists than male bicyclists (see Figure 3-19). The Central part of the county shows the greatest gender difference with 22% more females wearing helmets than males, while in the rest of the county, the difference ranges from 9 to 11%. Given the difference in helmet usage, the increase above in the number of females bicycling likely has some influence on the increase seen in helmet use.
4. Contextual Data and Trends

Looking at the pedestrian and bicycle count data and trends in relation to other data and trends in the county can allow new interpretations of existing data and shed further light on the reliability of the count trends. This section compares the longitudinal PM-period bicycle and pedestrian count data to trends in pedestrian and bicycle collisions, pedestrian and bicycle access to BART stations, county population, gasoline prices and unemployment rates.

Assessing Collision Rates

Collisions

Collision data from the Statewide Integrated Traffic Records System (SWITRS)* was used to compare the trends in bicycle and pedestrian volumes to injuries and fatalities in these two groups. From 2002 to 2010 (the year for which there is the most recent collision data), pedestrian collisions fell by 20%. During this same time period (2002 to 2010), pedestrian volumes in the PM period increased by 41% at six sites. This suggests a continued significant decline in the pedestrian collision rate, or the number of collisions per pedestrian.

* SWITRS data is known to under-report bicycle and pedestrian collisions because it only uses data from traffic collision reports that involve a motor vehicle, and only those in which injuries or fatalities occurred. Often bicycle and pedestrian collisions and near collisions are never reported, so the true number of collisions is unknown.
Figure 4-1 shows the percent change in injuries and fatalities resulting from collisions compared with the percent change in pedestrian volumes, both relative to 2002.

Provisional SWITRS data for 2011, which is not included in Figure 4-1, suggests that pedestrian injuries and fatalities have continued to fall, to 25% below 2002 numbers while Alameda CTC data shows that pedestrian counts increased by 47% from 2002 to 2011. SWITRS will release final data for 2011 in late 2013.

From 2002 to 2010, the total number of bicycle collisions has varied, with the years between 2008 and 2010 showing a jump in the number of overall injuries and fatalities, and 2010 being 13% higher than in 2002. However, in this same period, between 2002 and 2010, bicyclist volumes increased more rapidly, by 50%. The data suggests a drop in the number of collisions per bicyclist (or collision rate) over the past few years. Figure 4-2 shows the percent change in injuries and fatalities resulting from collisions compared with the percent change in bicycle volumes, both relative to 2002.
Provisional 2011 SWITRS data, which is not included in Figure 4-2, shows a significant decline in bicyclist injuries and fatalities to 1% below 2002 numbers, while Alameda CTC data shows that bicycle counts increased by 75% from 2002 to 2011. SWITRS will release final 2011 data in late 2013.

**Figure 4-2: Percent Change in Bicyclist Injuries and Fatalities Compared with Percent Change in Bicycle Counts, Relative to 2002**

Source: Injuries and fatalities – Statewide Integrated Traffic Records System (SWITRS); Alameda CTC bicyclist counts – longitudinal data, PM period, 9 sites.

Comparing Count Data to Other Bicycle/Pedestrian Usage Data

**Access to BART**

Approximately every ten years, BART collects data on how people access BART stations. The 1998 to 2008 BART station access data correlates closely to the Alameda CTC longitudinal PM count data for pedestrians and bicyclists during a similar time period. Between 1998 and 2008, pedestrian access to BART stations grew by 58%. For bicyclists during the same period, access to BART stations grew by 74%. There is no countywide pedestrian or bicycle data available for the exact same period, however Alameda CTC data indicates similar increases for both pedestrians and bicycles over the ten year period from 2002 to 2012 of 59% and 64%, respectively. This suggests that as pedestrian and bicycle use grows, people are also using these modes as a way to access regional transit, addressing first and last mile transit issues.
Evaluating Contributing Factors to Bicycle/Pedestrian Trends

Population

Some portion of growth in pedestrian and bicycle usage could be due simply to population growth in Alameda County since 2002, the first year of count data. However, population growth, 4.9% from 2002 to 2012, is significantly lower than the growth of walking and biking during this same period, which was 59% and 64%, respectively (see Figure 4-3).

Figure 4-3: Percent Change in Alameda County Population Compared with Percent Change in Bicycle and Pedestrian Counts, Relative to 2002
California Gasoline Prices

One factor often cited as a reason that people switch from driving to walking or biking is higher gas prices. Figure 4-4 shows the percent change in annual gasoline consumer price index for California juxtaposed with the percentage change in Alameda County biking and walking numbers, using the PM period longitudinal data. From 2002 to 2012, gas prices rose by 161%, as compared to the 59% and 64% increases in pedestrian and bicycle counts, respectively, suggesting that increasing gas prices could be influencing the changes in walking and biking.

Figure 4-4: Percent Change in Growth of California Gas Prices Compared with Percent Change in Bicycle and Pedestrian Counts, Relative to 2002
Unemployment Rate

Unemployment rates could impact bicycling and possibly walking rates, as people without steady incomes are less able to afford driving and maintaining a car, and sometimes even using transit. In reviewing the data, it is unclear whether unemployment in Alameda County is a factor that contributes to the increase in bicycling and walking since 2002. While there are correlations, there is not enough data to make conclusive assessments. From 2002 to 2012, the unemployment rate rose 36%, and in the same period walking and biking increased 59% and 64%, respectively. However the change in the unemployment rate in the interim years does not match that for bicycling, and there is no pedestrian count data available for much of this period.

Figure 4-5: Percent Change in Alameda County Unemployment Rate Compared with Percent Change in Bicycle and Pedestrian Counts, Relative to 2002
5. Future Considerations

Over the past few years of collecting, organizing, analyzing and presenting the data in this annual report, the following list of possible future data collection and analysis efforts has been compiled. The list represents ideas of staff and committee members to enhance, expand, and/or streamline the collection and analysis of bicycle and pedestrian data. Implementation of the following ideas will depend on the amount of resources available.

Considerations for Future Data Collection and Analysis Efforts

- Expand and report on collection of data using automated 24-hour bicycle and pedestrian counters. Improve sophistication of automated count data analysis through development of factors for missing data, use of GIS, and validation with manual count data. Automated and manual data should be collected in a coordinated manner. Automated data is particularly useful for capturing trail and bicycle lane usage data.

- Each data collection cycle, evaluate all count sites to ensure that sites with major physical, land use or transportation infrastructure changes are either retired or data is modified, and that new, relevant sites are added, as appropriate.
• Investigate increasing the number of annual count sites, so that the number of sites matches national best practice recommendations for the best representation of changes in walking and bicycling.

• Migrate data into a geographic database (GIS) to improve geographically related analysis capabilities such as distance from schools or transit, main roads, land-use density, and Priority Development Areas (PDAs). GIS will also allow cross analysis of count data with other data sets such as Safe Routes to School, and Census and American Community Survey data; and will allow improved visual representations of trends and selection of new count sites.

• Explore the possibility of conducting weekend manual counts to better capture recreational bicycling and walking. Weekend data was collected in 2008 at 47 count locations and in 2009 at 36 count locations. Counts were conducted on Saturdays during one of three two-hour count periods between 9am and 4pm. Initial research suggests that weekend counts are no more expensive to collect than weekday counts, on an hourly basis.

• Analyze data for locations near transit and also in PDAs, and track trends over time.

• Compare count trends to changes in bicycle and pedestrian commute modes over time.

• Segregate and analyze those count locations near schools with active Safe Routes to Schools (SR2S) programs, and also compare count data to the evaluation data collected by the SR2S program.

• Explore ways to collect data via automation, such as using video detection at traffic signals. This may allow increased data collection throughout the county at a lower cost.

• Research and apply adjustment factors to existing collected data. Adjustment factors are being developed and refined by academics and others, which can be applied to existing data that was not collected during identical time periods, days of week and/or seasons. Applying these factors allows the conversion of much more of the existing data into a comparable form. This includes adjusting for season, extreme temperatures, time
These adjustment factors are currently available for Alameda County only for pedestrian data, but hopefully they will soon be developed for bicycle data as well. Although it may be time-intensive to apply them, these adjustments would allow a larger number of data points to more accurately be compared, resulting in a more refined analysis of walking and bicycling trends. The use of automated counters can help to provide accurate location-specific factor values to manual count data.

- Develop and implement streamlined methods for providing up-to-date data, where not already in place, to local jurisdictions and to the general public.
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Appendices

Appendices A-1 through A-4 are on the following pages.
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| ID# | Street            | Cross Street    | City          | ACTC Planning Area | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|-----|-------------------|-----------------|---------------|-------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1   | Atlantic Avenue   | Webster Street  | Alameda North | 313 140 874 457   | 938 | 399  | 843  | 373  |      |      |      |      |      |      |      |
| 2   | Broadway (CA 61)  | Colhoum Street  | Alameda North | 72               | 34   | 102  | 83   | 55   | 94   | 119  | 79   |      |      |      |      |
| 3   | Central Avenue    | Fifth Street    | Alameda North | 383 138 316 229  | 210 | 143  | 184  | 133  |      |      |      |      |      |      |      |
| 7   | Park Street       | Otis Drive      | Alameda North | 85 272           |      |      |      |      |      |      |      |      |      |      |      |
| 95  | Buchanan Street   | Jackson Street  | Albany North  |                  |      |      |      |      |      |      |      |      |      |      |      |
| 15  | Solano Avenue     | Magnolia Ave    | Albany North  | 714 397          | 351 | 303  | 407  | 551  | 424  | 384  | 440  | 255  |      |      |
| 10  | Ashby Avenue (CA 13) | Hillegas Avenue | Berkeley North |                  |      |      |      |      |      |      |      |      |      |      |      |
| 26  | Mission Boulevard (CA 185) | Telegraph Avenue | Berkeley North | 410 191          |      |      |      |      |      |      |      |      |      |      |
| 14  | College Avenue    | Derby Street    | Berkeley North | 319 628          |      |      |      |      |      |      |      |      |      |      |
| 16  | Heard Avenue      | Milvia Street   | Berkeley North | 312              | 84   | 84   |      |      |      |      |      |      |      |      |
| 29  | San Pablo Avenue  | Virginia Street | Berkeley North | 78 103           | 101  | 124  | 126  | 149  | 125  | 132  | 247  | 321  |      |      |
| 23  | Mission Boulevard (CA 185) | Glove Way | Berkeley North | 69 58            |      |      |      |      |      |      |      |      |      |      |
| 14  | Redwood Road      | Costa Valley Road | Berkeley North | 94 180           | 255  | 204  | 264  | 172  | 255  | 283  | 216  |      |      |
| 27  | Dublin Boulevard  | Scarlett Drive  | Dublin East    | 19 25 22 25      |    1 | 45   | 28   | 60   | 45   | 77   |      |      |      |
| 28  | Dublin Boulevard  | Hacienda Drive  | Dublin East    | 36 30 53 42      | 61   | 71   | 47   | 53   |      |      |      |      |      |      |
| 30**| Powell Street     | Christie Avenue | Emeryville North | 20 68           |    1 | 159  | 210  | 186  | 75   | 65   | 154  |      |      |
| 31**| San Pablo Avenue  | 40th Street     | Emeryville North | 512 504          | 509  | 320  | 456  | 523  | 478  | 515  | 306  | 425  |      |
| 32  | Fremont Blvd      | Mowry Avenue    | Fremont South  | 127 205 102 188  |      |      |      |      |      |      |      |      |      |
| 33  | Fremont Blvd (Washington) | Union Street | Fremont South  | 75 77            | 107  | 140  | 108  | 177  |      |      |      |      |      |      |
| 33  | Fremont Boulevard (CA 84) | Pixaris Boulevard | Fremont South | 73               | 93   | 84   | 104  | 119  | 189  | 100  | 155  |      |      |
| 34  | Mission Boulevard (CA 238) | Nichols Avenue | Fremont South  | 7 14             | 7    | 15   | 14   | 19   |      |      |      |      |      |
| 35  | Mowry Avenue (CA 84) | Cherry Lane     | Fremont South  | 9 11             | 28   | 17   | 20   | 16   | 17   |      |      |      |      |
| 36  | Paseo Padre Parkway | Mowry Avenue    | Fremont South  | 190 229          | 83   | 174  | 117  | 107  | 112  | 176  | 236  | 140  | 204  |
| 38  | Warm Springs      | Glimmer         | Fremont South  | 89 82            | 7    | 8    | 22   | 31   | 54   | 36   | 50   |      |      |
| 38  | Warm Springs      | Glimmer         | Fremont South  | 89 82            | 7    | 8    | 22   | 31   | 54   | 36   | 50   |      |      |
| 37  | Mission Boulevard | Croft Street    | Hayward Central | 5 3 2           | 5    | 2    | 2    | 4    | 3    |      |      |      |      |
| 39  | Foothill Boulevard | D Street        | Hayward Central | 20               | 4    | 9    | 42   | 14   | 9    | 23   | 63   |      |      |
| 41**| Mission Boulevard (CA 238) | Jefferson Street | Hayward Central | 171             | 27   | 110  | 51   | 42   | 96   | 568  | 46   |      |      |
| 45  | Santa Clara Street | Ocie Way        | Hayward Central | 10 63            | 53   | 123  | 98   | 103  | 93   | 99   |      |      |      |
| 100 | Whitney Street    | Tennison Road   | Hayward Central | 89 82            | 7    | 8    | 22   | 31   | 54   | 36   | 50   |      |      |
| 47  | Winton Avenue     | Amador Street   | Hayward Central | 126             | 94   |      |      |      |      |      |      |      |      |
| 49  | East Street       | Vasco Road      | Livermore East | 15               | 12   | 16   | 11   | 30   | 7    |      |      |      |      |
| 50  | Railroad Avenue   | First Street    | Livermore East | 35 49 74         | 54   | 70   | 48   | 60   | 38   |      |      |      |      |
| 51**| Ardenwood Boulevard (CA 84) | Newark Boulevard | Newark South    | 55 15            |      |      |      |      |      |      |      |      |
| 101**| Newark Boulevard (CA 84) | Newark Boulevard | Newark South    | 126             | 117  |      |      |      |      |      |      |      |      |
| 52  | Thornton Avenue   | Willow Street   | Newark South   | 0 10 7           | 8    | 7    | 15   | 18   | 20   |      |      |      |      |
| 53  | 6th Avenue        | San Leonardo St | Oakland North  | 143 91 49 27     | 78   | 207  | 98   | 229  | 75   | 330  |      |      |
| 55  | Bancroft Avenue   | Auseon Avenue   | Oakland North  | 56 76            | 84   | 119  | 143  | 138  | 63   | 94   |      |      |
| 56  | Broadway          | 12th Street     | Oakland North  | 3577            | 1374 | 2032 1033 2755 | 1957 2735 | 1921 | 2803 1995 |      |      |
| 57  | Broadway          | 20th Street     | Oakland North  | 1475            | 1407 1408 1388 | 1354 1534 |      |      |      |      |      |
| 58  | Chatham Road      | 13th Avenue     | Oakland North  | 222 18           | 264  | 92   | 240  | 86   | 155  | 165  | 149  |      |      |
| 59  | Doolittle Drive (CA 61) | Airport Access Road | Oakland North | 9 4 10 2 8       | 6    | 12   | 10   | 15   | 20   |      |      |      |      |
| 61  | Fruitvale Avenue  | Foothill Blvd   | Oakland North  | 699 914          | 806  | 751  | 637  | 820  | 775  |      |      |      |      |
| 63**| Fruitvale Avenue  | Alamedale Ave   | Oakland North  | 31 20            | 55 47 | 35 62 | 31 49 |      |      |      |      |      |      |
|-----|-------------------------|--------------|--------------|-------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 64  | Grand Avenue            | Stieten Ave  | Oakland      | North             | 387      | 571      | 380      | 467      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 65  | Grand Avenue            | Lake Park    | Oakland      | North             |          |          |          |          | 586      | 504      | 635      | 568      | 700      | 729      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 70  | MacArthur Boulevard     | 38th Avenue  | Oakland      | North             |          |          |          |          | 561      | 941      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 72  | Mandela Parkway         | 14th Street  | Oakland      | North             |          |          |          |          | 415      | 445      | 313      | 316      | 277      | 294      | 479      | 398      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 75  | Mountain                | La Salle     | Oakland      | North             |          |          |          |          | 91       | 56       | 227      | 377      | 164      | 311      | 123      | 256      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 76  | Telegraph Avenue        | 27th Street  | Oakland      | North             |          |          |          |          | 1241     | 1566     | 954      | 873      | 901      | 825      | 159      | 890      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 78  | Telegraph Avenue        | 40th Street  | Oakland      | North             | 224      | 385      | 212      | 155      | 365      | 201      | 332      | 294      | 366      | 339      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 79  | Webster Street          | 7th Street   | Oakland      | North             |          |          |          |          | 936      | 1131     | 1117     | 1103     | 1148     | 1100     | 1193     | 1100     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 80  | Main St                 | Bernal Ave   | Pleasanton   | East              | 44       | 152      | 165      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 81  | Owens Drive             | Andrews Drive| Pleasanton   | East              | 49       | 31       |          | 72       | 63       | 57       | 49       | 54       | 49       |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 82  | Santa Rita Road         | Francisco St | Pleasanton   | East              |          |          |          |          | 113      | 67       | 60       | 32       | 31       | 47       | 63       | 64       |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 83  | Stoneridge Drive        | Hopyard Rd   | Pleasanton   | East              | 16       |          | 12       | 17       | 64       | 14       | 77       | 21       | 134      | 82       |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 85  | Bancroft Avenue         | Estudillo Ave| San Leandro  | Central           | 429      | 118      | 391      | 705      | 95       | 130      | 67       | 78       | 140      | 123      | 191      | 88       | 114      |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 87  | Davis Street (CA 61)    | Pierce Avenue| San Leandro  | Central           |          | 28       | 33       |          | 146      | 106      | 165      | 95       | 85       | 111      | 136      |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 88  | East 14th Street (CA 185)| Hesperian Blvd| San Leandro  | Central           |          | 78       | 69       |          | 91       | 105      | 97       | 102      | 106      | 194      |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 89  | East 14th Street (CA 185)| Maud Ave     | San Leandro  | Central           |          | 179      | 145      |          | 89       | 104      | 160      | 112      | 226      | 154      | 195      |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 92  | Alvarado-Niles Road     | Dyer St      | Union City   | South             |          |          |          | 73       | 52       | 38       | 54       | 70       | 89       | 116      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 93  | Decoto Road             | Alvarado-Niles Road | Union City | South             | 121      | 193      | 137      | 218      |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 94  | Decoto Road             | 7th St       | Union City   | South             | 85       | 51       | 54       | 132      | 55       |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
| **  | Total Number of Count Locations |        |              | 11                | 11       | 7       | 7       | 7       | 11       | 12       | 4        | 23       | 16       | 21       | 31       | 4       | 18       | 4       | 18       | 4       | 17       | 4       | 15       | 4       |          |          |          |          |

Notes:
* Non-standard time period used. Standard time periods are considered: AM: 7-9am, Mid-day: 12-2pm, School: 2-4pm, PM: 4-6pm, Weekend: Varies, but always 2-hours.)
** Sites 41 and 51 replaced by sites 100 and 101 in Annual Count program beginning in 2012.
*** For Sites 30 and 31, the School and Mid-day periods in 2012 were unintentionally switched.
**** Site 63 counted during school period but not included in school period analyses due to non-proximity to a school.
### A-2: Summary Data for all Manual Bicycle Count Sites, 2002 to 2012

| # | Street | Cross Street | City       | Planning Area | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|--------|--------------|------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1 | Atlantic Avenue | Webster Street | Alameda North | AM | 36 | 56 | 41 | 29 | 62 | 38 | 26 | 24 | 40 | 82 | 26 | 72 |
| 2 | Broadway (CA 61) | Colhoum Street | Alameda North | AM | 16 | 24 | 12 | 52 | 24 | 44 | 21 | 13 | 89 | 78 | 62 |
| 3 | Central Avenue | Fifth Street | Alameda North | AM | 54 | 27 | 78 | 79 | 81 | 73 | 48 | 61 | 94 | 72 |
| 7 | Park Street | Otis Drive | Alameda North | AM | 20 | 58 | 63 | 81 | 65 | 77 | 37 | 53 | 84 |
| 9 | Solano Avenue | Mission Ave(Ohlone Trail) | Albany North | AM | | | | | | | | | | | |
| 10 | Ashby Avenue (CA 13) | Telegraph Avenue | Berkeley North | AM | 82 | 67 | 105 | 166 | 103 | 154 | 117 | 166 | 72 | | |
| 14 | College Avenue | Derby Street | Berkeley North | AM | 75 | 65 | 108 | 167 | 119 | 188 | 95 | 156 | 40 | | |
| 16 | Heart Avenue | Mivya Street | Berkeley North | AM | 405 | 392 | 374 | 289 | 441 | 340 | 343 | 171 | 235 | 476 | 470 |
| 17 | San Pablo Avenue | Virginia Street | Berkeley North | AM | 59 | 69 | 95 | 74 | 59 | 86 | 104 | 153 | 161 | 218 | | |
| 22 | Hesperian Boulevard | Llewelling Boulevard | County Central | AM | | | | | | | | | | | | |
| 23 | Mission Boulevard (CA 185) | Grove Way | County Central | AM | 24 | 16 | 16 | 65 | 48 | 40 | 49 | 52 | 28 | 67 | | |
| 24 | Redwood Road | Castro Valley Boulevard | County Central | AM | 26 | 36 | 25 | 68 | 56 | 25 | 24 | 43 | 32 | 42 | 63 | | |
| 27 | Dublin Boulevard | Scarlet Drive | Dublin East | AM | 11 | 17 | 13 | 18 | 82 | 40 | 55 | 46 | 70 | 50 | 83 |
| 30 | Powell Street | Christie Avenue | Emeryville North | AM | | | | | | | | | | | | |
| 31 | San Pablo Avenue | 40th Street | Emeryville North | AM | | | | | | | | | | | | |
| 32 | Fremont Blvd | Mowery Avenue | Fremont South | AM | 50 | 90 | 30 | 61 | | | | | | | | |
| 33 | Fremont Boulevard (CA 84) | Peralta Boulevard | Fremont South | AM | 21 | 16 | | | | | | | | | | |
| 34 | Mission Boulevard (CA 238) | Nichols Avenue | Fremont South | AM | 7 | 4 | 12 | 21 | 31 | 29 | | | | | | |
| 35 | Mowry Avenue (CA 84) | Cherry Lane | Fremont South | AM | 7 | 11 | | | | | | | | | | |
| 36 | Paseo Padre Parkway | Mowery Avenue | Fremont South | AM | 60 | 52 | 22 | 14 | 12 | 34 | 26 | 29 | | | | |
| 38 | Warm Springs | Gimmer | Fremont South | AM | | | | | | | | | | | | |
| 39 | Foothill Boulevard | D Street | Hayward Central | AM | 2 | | | | | | | | | | | |
| 41 | Mission Boulevard | Jefferson Street | Hayward Central | AM | 11 | 23 | 39 | 3 | 25 | 12 | 22 | 15 | 20 | 28 | 22 | 19 |
| 45 | Santa Clara Street | Cicely Way | Hayward Central | AM | 4 | 5 | 37 | 59 | 54 | 75 | | | | | | |
| 47 | Winton Avenue | Amador Street | Hayward Central | AM | 20 | 18 | 7 | 23 | 22 | 27 | 24 | 67 | 36 | | |
| 49 | East Street | Vasco Road | Livermore East | AM | 86 | 109 | 125 | 115 | 93 | 74 | | | | | | |
| 50 | Railroad Avenue | First Street | Livermore South | AM | | | | | | | | | | | | |
| 51 | Ardenwood Boulevard (CA 84) | Newark Boulevard (E side interchange ramp) | Newark South | AM | 14 | 16 | | | | | | | | | | |
| 52 | Thornton Avenue | Willow Street | Newark South | AM | 5 | 12 | 11 | 13 | 14 | 11 | 7 | 6 | 24 | 40 | 25 | 30 |
| 53 | 6th Avenue | San Leandro St | Oakland North | AM | 47 | 63 | 27 | 27 | | | | | | | | | |
| 55 | Bancroft Avenue | Aueson Avenue | Oakland North | AM | 14 | 16 | | | | | | | | | | |
| 56 | Broadway | 12th Street | Oakland North | AM | 63 | 47 | 79 | 55 | 161 | 134 | 176 | 187 | 204 | 240 | | |
| 57 | Broadway | 20th Street | Oakland North | AM | | | | | | | | | | | | |
| 58 | Chatham Road | 13th Avenue | Oakland North | AM | 4 | 13 | | | | | | | | | | |
| 59 | Doolittle Drive (CA 61) | Airport Access Road | Oakland North | AM | 3 | 16 | 43 | 8 | 20 | 13 | 23 | 10 | 18 | | | |
| 62 | Fruitvale Avenue | Fruitful Blvd | Oakland North | AM | 33 | 91 | 42 | 39 | 76 | 78 | | | | | | |
| 63 | Fruitvale Avenue | Alameda Ave | Oakland North | AM | 72 | 72 | 44 | 45 | 43 | 116 | 72 | 92 | | | |
| 64 | Grand Avenue | Stanten Ave | Oakland North | AM | 52 | 48 | 79 | 98 | | | | | | | | | |
| 65 | Grand Avenue | Lake Park | Oakland North | AM | 126 | 72 | 61 | 87 | 104 | 107 | 235 | 177 | 178 | | | |
| 70 | MacArthur Boulevard | 38th Avenue | Oakland North | AM | 14 | 16 | 11 | 10 | 19 | 28 | 21 | 33 | | | | |
| 72 | Mandela Parkway | 14th Street | Oakland North | AM | 112 | 56 | 65 | 131 | 69 | 129 | 79 | | | | |
| 73 | Mountain | La Salle | Oakland North | AM | | | | | | | | | | | | |
| 76 | Telegraph Avenue | 27th Street | Oakland North | AM | 136 | | | | | | | | | | | |

**Source:** ACTC Planning Area

**Note:** AM = 3-6pm (in green), 4-6pm (in blue), PM = 4-6pm; Mid = Weekend; School = School*
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Notes:
* Non-standard time period used. Standard time periods are considered: AM: 7-9am, Mid-day: 12-2pm, School: 2-4pm, PM: 4-6pm, Weekend: Varies, but always 2-hours.
** Sites 41 and 51 replaced by sites 100 and 101 in Annual Count program beginning in 2012
** For Sites 30 and 31, the School and Mid-day periods in 2012 were unintentionally switched.
** Site 63 counted during school period but not included in school period analyses due to non-proximity to a school.

Green highlighted cells are estimated or use only part of the full time period data.
A-3: Pedestrian Data Sources and Attributes for Manual Counts

<table>
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<th>Weekend</th>
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Note: MTC = Metropolitan Transportation Commission; Alameda CTC = Alameda County Transportation Commission; UCTSC - University of California Traffic Safety Center (now SafeTREC)

A-4: Bicyclist Data Sources and Attributes for Manual Counts

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Note: MTC = Metropolitan Transportation Commission; Alameda CTC = Alameda County Transportation Commission; UCTSC - University of California Traffic Safety Center (now SafeTREC)
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