Manual Pedestrian and Bicycle Count Report for Alameda County

2002 to 2010

June 2011

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Executive Summary

This report compiles pedestrian and bicycle count data from several countywide sources collected in Alameda County between 2002 and 2010. While the total number of manual count locations is almost 100, the number of sites used in this report is significantly lower, at 44 pedestrian count sites and 28 bicyclist count sites. This is due to the need to have sites that were comparable with at least several other sites, by time period and over multiple years. In a few cases, time periods were adjusted or estimated in order to ensure comparable counts. Differences remain in terms of season, day of week, weather, time period, and quality of data collection, all of which may skew the data in one direction or another. This creates some challenges to assessing countywide trends over time, however, the overall trends clearly appear to be in the upward direction. This analysis has provided insight into how future data collection should take place in the county to ensure the most useful data sets.

Data was divided into five distinct periods. The AM and Weekend periods were not used in this report due to lack of comparable data.

Figure 1: Standard Time Periods

Period	Standard Times
AM	7 to 9 AM
Mid-day	12 to 2 PM
School	2 to 4 PM
PM	4 to 6 PM
Weekend	9 to 11 AM, 12 to 2 PM, 3 to 5 PM

Pedestrian Data

Overall, while there may have been temporary dips in pedestrian numbers from 2002 to 2010, the overall trend appears to be upward. The PM period data included two data sets, a comparison of 2002, 2003, and 2010 data, which shows a drop from 2002 to 2003 and then growth between 2003 and 2010 of 68%; and a comparison of 2009 and 2010 data, which shows an increase of 15%. The pedestrian data shows a drop from 2008 and 2010 counts during the mid-day period. This mid-day reduction in trips is likely due to the economic recession. School period data comparing 2008 and 2010 as well as 2009 and 2010, with different count locations, does not reflect the mid-day reduction, and actually shows pedestrian numbers increasing by 27% and 20% respectively. The gender distribution of pedestrians in the data collected show percentages roughly equal to the population with a 52%/48% male to female split. These percentages did not change significantly over the three years that this data was collected (2008 to 2010).

Bicyclist Data

The bicycle data collected shows a clear increasing trend, although individual count sites vary greatly. All of the time periods show considerable growth in numbers except for a school period comparison of four sites between 2009 and 2010, which shows a small average decline of 2%. There is a more robust set of data for bicycles due to the Alameda CTC's data collection efforts for the Level of Service (LOS) monitoring program, which included a bicycle counting program starting in 2002. Using this data, the pattern of growth is confirmed over a longer time

period with the PM data, which shows a steady increase totaling 50% from 2004 to 2010. The mid-day and school period counts comparing 2008 and 2010 both show a doubling of bicyclists.

The gender distribution for bicyclists is heavily skewed, with males making up about 74% of cyclists counted in 2010. However, the proportion of female cyclists rose significantly over the last three years, from 18% in 2008 to 26% in 2010. This increase was reflected for all time periods except for the school time period, which remained at about 18% for all three years. Only three of the sites counted during the school time periods were within a ¼ mile of a school, so it is inconclusive whether this difference is related to school-aged bicyclists. Helmet usage was collected only in 2010, and showed an even split, with 51% of cyclists counted wearing helmets.

Background

The Alameda County Transportation Commission (Alameda CTC) and several regional agencies and educational institutions have been collecting data on the number of bicyclists and pedestrian throughout the county over the last nine years. While some form of count data has been collected in seven of the last nine years, there has been little effort to analyze the longer term trends found in the data, and only over the last few years has the data collection process become standardized and routine.

Data Sources and Methodology

This report compiles data collected by several different agencies between 2002 and 2010. Count data has been collected at 99 different locations around the county, however, of these, only 44 pedestrian and 28 bicycle count sites have been used in this report. The remaining sites could not be used as they did not have data that was available during the same time period for the same set of years as other data with which to compare it. Due to the varied sources, the data collection methodologies have differed slightly, and while adjustments have been made in a few circumstances to ensure comparable counts, differences remain in terms of season and day of week, weather, and quality of data collection, all of which may skew the data somewhat in one direction or another. Research over the past few years, some of which was conducted in Alameda County, has developed and will continue to develop methodologies that allow these disparate counts to be adjusted and compared. However, due to time and resource constraints, these adjustments have not been done for this report.

The data sources used are shown below in Figure 2 and Figure 3. While AM counts were collected in 2002 and 2003, the more recent counts have focused on later time periods, providing no long-term comparison value for the AM period.

Figure 2: Pedestrian data sources and attributes for manual counts

Year	Source Agency	# Count Sites	AM	Mid-day	School	PM	Weekend	Data Collection Months	Hourly Data?	Gender Data?
2002	MTC	13	7-9am	12-2pm	--	4-6pm	--	Sept, Oct	N	N
2003	MTC	6	7-9am	--	2-4pm	4-6pm	--	--	N	N
2006	ACTC	5	--	--	--	3-6pm	--	May, June	Y	N
2008	UCTSC/ ACTC	50	--	12-2pm	3-5pm	--	9-11am, 12-2pm, 3-5pm	April, May, June, July	Y	Y
2008	ACTC	4	--	--	--	3-6pm	--	May, June	Y	N
2009	UCTSC/ ACTC	36	--	--	2-4pm	4-6pm	9-11am, 12-2pm, 3-5pm	April, May, June	Y	Y
2010	ACTC/ MTC	63	--	12-2pm	2-4pm	4-6pm	--	Sept, Oct	Y	Y

Note: MTC – Metropolitan Transportation Commission, ACTC – Alameda County Transportation Commission, UCTSC – University of California Traffic Safety Center (now SafeTREC)

Figure 3: Bicyclist data sources and attributes for manual counts

Year	Source Agency	# Count Sites	AM	Mid-day	School	PM	Weekend	Data Collection Months	Hourly Data?	Gender Data?	Helmet Use?
2002	ACTC	12	--	--	--	3-6pm	--	Unknown	N (estimated)	N	N
2002	MTC	13	7-9am	12-2pm	--	4-6pm	--	Sept, Oct	N	N	N
2003	MTC	6	7-9am	--	2-4pm	4-6pm	--	Unknown	N	N	N
2004	ACTC	12	--	--	--	3-6pm	--	Unknown	N (estimated)	N	N
2006	ACTC	12	--	--	--	3-6pm	--	April, May, June	Y (most sites)	N	N
2008	ACTC	12	--	--	--	3-6pm	--	April, May, June	Y (most sites)	N	N
2008	UCTSC/ ACTC	50	--	12-2pm	3-5pm	--	9-11am, 12-2pm, 3-5pm	April, May, June, July	Y	Y	N
2009	UCTSC/ ACTC	36	--	--	2-4pm	4-6pm	9-11am, 12-2pm, 3-5pm	April, May, June	Y	Y	N
2010	ACTC/ MTC	63	--	12-2pm	2-4pm	4-6pm	--	Sept, Oct	Y	Y	Y

Note: MTC – Metropolitan Transportation Commission, ACTC – Alameda County Transportation Commission, UCTSC – University of California Traffic Safety Center (now SafeTREC)

It is apparent from compiling almost a decade of data that standardization of count locations, time periods, and time of year allows a more accurate trend analysis over time. The Alameda CTC recognizes this, and starting in 2010 and moving forward, data collection will, at a minimum, include those locations that have been counted on the most regular basis since 2002.

Count Locations

The count locations and time periods used in this report are shown in Figure 4 and Figure 5. This list only includes locations with comparable data by time period and year. Data for all years and time periods for the 99 count locations is provided in the Appendices. Several automated bicycle and pedestrian counters have also been used in Alameda County; this report does not include data from these counters.

Figure 4: Pedestrian count locations, years, and time periods used in this report (Total of 44 sites)

	2002 PM	2003 PM	2008 Mid	2008 Sch	2009 Sch	2009 PM	2010 Mid	2010 Sch	2010 PM
Atlantic Ave and Webster St, Alameda						X			X
Broadway (CA 61) and Calhoun St, Alameda				X				X	
Central Ave and Fifth St, Alameda					X			X	
Solano Ave and Masonic Ave (Ohlone Trail), Albany						X			X
Ashby Ave (CA 13) and Hillegass Ave, Berkeley						X			X
Ashby Ave (CA 13) and Telegraph Ave, Berkeley			X				X		
College Ave and Derby St, Berkeley			X				X		
Hearst Ave and Milvia St, Berkeley						X			X
San Pablo Ave and Virginia St, Berkeley	X					X			X
Hesperian Blvd and Lewelling Blvd, County						X			X
Mission Blvd (CA 185) and Grove Way, County				X				X	
Redwood Rd and Castro Valley Blvd, County					X			X	
Dublin Blvd and Scarlett Dr (Iron Horse Trail), Dublin	X	X				X			X
Dublin Blvd and Hacienda Dr, Dublin						X			X
San Pablo Ave and 40th St, Emeryville						X			X
Fremont Blvd and Mowry Ave, Fremont	X	X							X
Fremont Blvd (CA 84) and Peralta Blvd, Fremont				X				X	
Mission Blvd (CA 238) and Nichols Ave, Fremont			X				X		
Paseo Padre Parkway and Mowry Ave, Fremont			X			X	X		X
Warm Springs and Grimmer, Fremont						X			X
Foothill Blvd (CA 238) and D St, Hayward			X				X		
Mission Blvd (CA 238) and Jefferson St, Hayward			X				X		
Santa Clara St and Ocie Way, Hayward			X				X		
Railroad Ave and First St, Livermore						X			X
Thornton Ave and Willow St, Newark						X			X
66th Ave and San Leandro St, Oakland	X	X							X
Bancroft Ave and Auseon Ave, Oakland			X				X		
Broadway and 12th St, Oakland			X			X	X		X
Chatham Rd and 13th Ave, Oakland				X			X		
Doolittle Dr (CA 61) and Airport Access Rd, Oakland						X			X
Fruitvale Ave and Alameda Ave, Oakland					X			X	
Grand Ave and Staten Ave, Oakland	X	X							X
Grand Ave and Lake Park, Oakland						X			X
MacArthur Blvd and 38th Ave, Oakland						X			X
Mandela Parkway and 14th St, Oakland						X			X
Webster St and 7th St, Oakland				X				X	
Grand Ave and Oakland Ave, Piedmont					X			X	
Stoneridge Dr and Hopyard Rd, Pleasanton						X			X
Bancroft Ave and Estudillo Ave, San Leandro	X	X				X			X
Davis St (CA 61) and Pierce Ave, San Leandro				X				X	
East 14th St (CA 185) and Hesperian Blvd, San Leandro			X				X		
East 14th St (CA 185) and Maud Ave, San Leandro				X				X	
Alvarado-Niles Rd and Dyer St, Union City						X			X
Decoto Rd and Alvarado-Niles Rd, Union City	X	X							X

Figure 5: Bicycle count locations, years, and time periods used in this report (Total of 28 sites)

	2002 PM	2004 PM	2006 PM	2008 Mid	2008 Sch	2008 PM	2009 Sch	2010 Mid	2010 Sch	2010 PM
Atlantic Ave and Webster St, Alameda	X	X	X			X				X
Broadway (CA 61) and Calhoun St, Alameda					X				X	
Central Ave and Fifth St, Alameda							X		X	
Ashby Ave (CA 13) and Telegraph Ave, Berkeley				X				X		
College Ave and Derby St, Berkeley				X				X		
Hearst Ave and Milvia St, Berkeley	X	X	X			X				X
Hesperian Blvd and Lewelling Blvd, County	X	X	X			X				X
Mission Blvd (CA 185) and Grove Way, County					X				X	
Redwood Rd and Castro Valley Blvd, County							X		X	
San Pablo Ave and 40th St, Emeryville	X	X	X			X				X
Fremont Blvd (CA 84) and Peralta Blvd, Fremont					X				X	
Mission Blvd (CA 238) and Nichols Ave, Fremont				X				X		
Paseo Padre Parkway and Mowry Ave, Fremont	X	X	X	X		X		X		X
Foothill Blvd (CA 238) and D St, Hayward				X				X		
Mission Blvd (CA 238) and Jefferson St, Hayward				X				X		
Santa Clara St and Ocie Way, Hayward				X				X		
East St and Vasco Rd, Livermore	X	X	X			X				X
Bancroft Ave and Auseon Ave, Oakland				X				X		
Broadway and 12th St, Oakland				X				X		
Chatham Rd and 13th Ave, Oakland					X				X	
Fruitvale Ave and Alameda Ave, Oakland							X		X	
Telegraph Ave and 27th St, Oakland	X	X	X			X				X
Webster St and 7th St, Oakland					X				X	
Grand Ave and Oakland Ave, Piedmont	X	X	X			X	X		X	X
Stoneridge Dr and Hopyard Rd, Pleasanton	X	X	X			X				X
Davis St (CA 61) and Pierce Ave, San Leandro					X				X	
East 14th St (CA 185) and Hesperian Blvd, San Leandro				X				X		
East 14th St (CA 185) and Maud Ave, San Leandro					X				X	

Time periods: Mid = mid-day (typically 12-2pm); Sch = School (typically 2-4pm); PM (typically 4-6pm)

Pedestrian Count Trends

Weekday PM (4-6pm)

The PM data, with three years of comparable data, is the most longitudinal available for pedestrians. And while there is a long gap in the data from 2003 to 2010, it allows a data point for seeing the longer-term trends, which show increasing numbers of pedestrians.

As seen in Figure 6, there was a drop in pedestrian numbers from 2002 to 2003 and then a rise between 2003 and 2010, of 68%. This same trend is reflected in the bicycle counts during the PM period, with a similar drop from 2002 to 2004, and then a steady rise from 2004 to 2010.

Figure 6: Total pedestrians – weekday PM (2002, 2003, 2010)
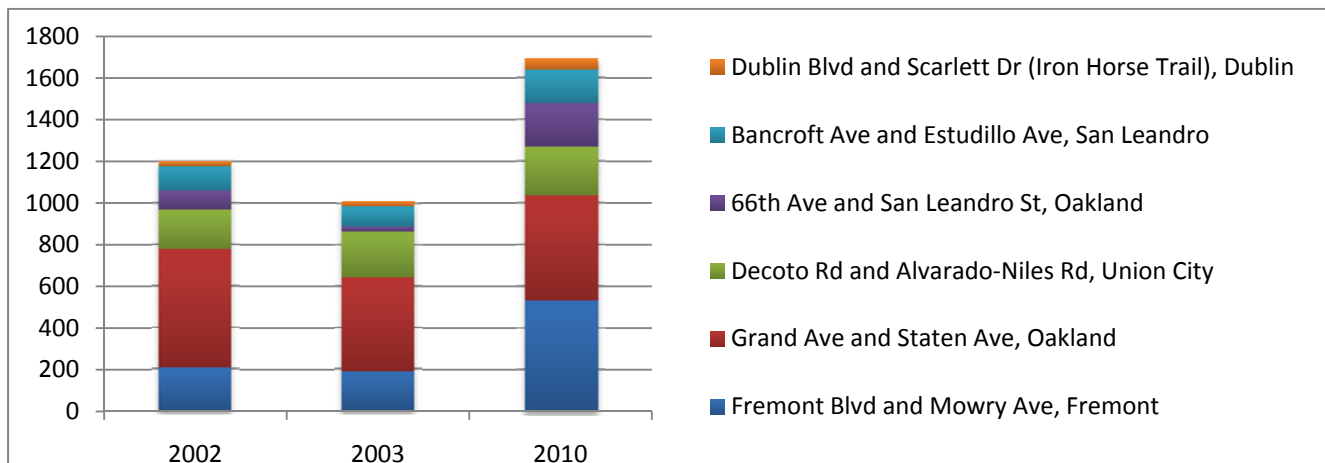
Figure 7 on the next page shows a 15% increase in pedestrian numbers from 2009 to 2010 (using different count locations from Figure 6).

Figure 7: Total pedestrians – weekday PM (2009, 2010)

Legend (top to bottom):
- Warm Springs and Grimmer, Fremont
- Doolittle Dr (CA 61) and Airport Access Rd, Oakland
- Thornton Ave and Willow St, Newark
- Stoneridge Dr and Hopyard Rd, Pleasanton
- Dublin Blvd and Hacienda Dr, Dublin
- Railroad Ave and First St, Livermore
- Alvarado-Niles Rd and Dyer St, Union City
- Dublin Blvd and Scarlett Dr (Iron Horse Trail), Dublin
- Hesperian Blvd and Lewelling Blvd, County
- Paseo Padre Parkway and Mowry Ave, Fremont
- San Pablo Ave and Virginia St, Berkeley
- Bancroft Ave and Estudillo Ave, San Leandro
- MacArthur Blvd and 38th Ave, Oakland
- Ashby Ave (CA 13) and Hillegass Ave, Berkeley
- Hearst Ave and Milvia St, Berkeley
- Mandela Parkway and 14th St, Oakland
- Atlantic Ave and Webster St, Alameda
- San Pablo Ave and 40th St, Emeryville
- Solano Ave and Masonic Ave (Ohlone Trail), Albany
- Grand Ave and Lake Park, Oakland
- Broadway and 12th St, Oakland

Weekday Mid-day (12 to 2pm)

The data available for the mid-day period show a drop of 21% in pedestrian numbers from 2008 to 2010. This may be due to the economy and a reduction in the number of jobs, with jobs being heavily concentrated in Downtown Oakland, or it may be due to the overall high temperatures during the 2010 count period. This pattern is not reflected (further below) in the school period data (the only other time period with 2008 and 2010 data), which shows pedestrian numbers rising. Interestingly, mid-day *bicycle* trips taken as part of the same data collection efforts and at the same count locations as Figure 8 almost doubled (see Figure 15).

Figure 8: Total pedestrians - weekday mid-day (2008, 2010)

Legend (top to bottom):
- Mission Blvd (CA 238) and Nichols Ave, Fremont
- Foothill Blvd (CA 238) and D St, Hayward
- Santa Clara St and Ocie Way, Hayward
- Mission Blvd (CA 238) and Jefferson St, Hayward
- Bancroft Ave and Auseon Ave, Oakland
- East 14th St (CA 185) and Hesperian Blvd, San Leandro
- Paseo Padre Parkway and Mowry Ave, Fremont
- Ashby Ave (CA 13) and Telegraph Ave, Berkeley
- College Ave and Derby St, Berkeley
- Broadway and 12th St, Oakland

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The Broadway and 12th St. count site in Downtown Oakland accounts for a large portion of the data in Figure 8, making it difficult to assess the overall countywide trend. However when analyzing all sites except for Broadway and 12th St., as in Figure 9, a similar pattern emerges:

Total Average % Change including Broadway and 12th St.: -21%
Total Average % Change excluding Broadway and 12th St.: -14%

Figure 9: Total pedestrians – weekday mid-day – excluding Broadway and 12th St (Downtown Oakland)

Legend:
- Mission Blvd (CA 238) and Nichols Ave, Fremont
- Foothill Blvd (CA 238) and D St, Hayward
- Santa Clara St and Ocie Way, Hayward
- Mission Blvd (CA 238) and Jefferson St, Hayward
- Bancroft Ave and Auseon Ave, Oakland
- East 14th St (CA 185) and Hesperian Blvd, San Leandro
- Paseo Padre Parkway and Mowry Ave, Fremont
- Ashby Ave (CA 13) and Telegraph Ave, Berkeley
- College Ave and Derby St, Berkeley

Weekday School (2-4pm)

Unlike the mid-day period, the number of pedestrians increased dramatically in the school period. Figure 10 and Figure 11 both show an increase in pedestrian numbers (27% and 47%, respectively) at different locations and across different years. This could partially be due to the use of a different set of count locations. However, it is likely that pedestrian numbers in this time period are less employment-related.

While this time period is called the "school" time period, this mostly refers to time of day and not the count locations. Of the eleven count locations compared below, only three are within a ¼ mile of schools. Figure 10 below compares 2008 and 2010 data. Note that 2008 data was collected from 3-5pm and 2010 data was collected from 2-4pm, so the comparison time period for the data collected is only 3-4pm.

Figure 10: Total pedestrians - weekday school (2008, 2010 from 3-4pm)
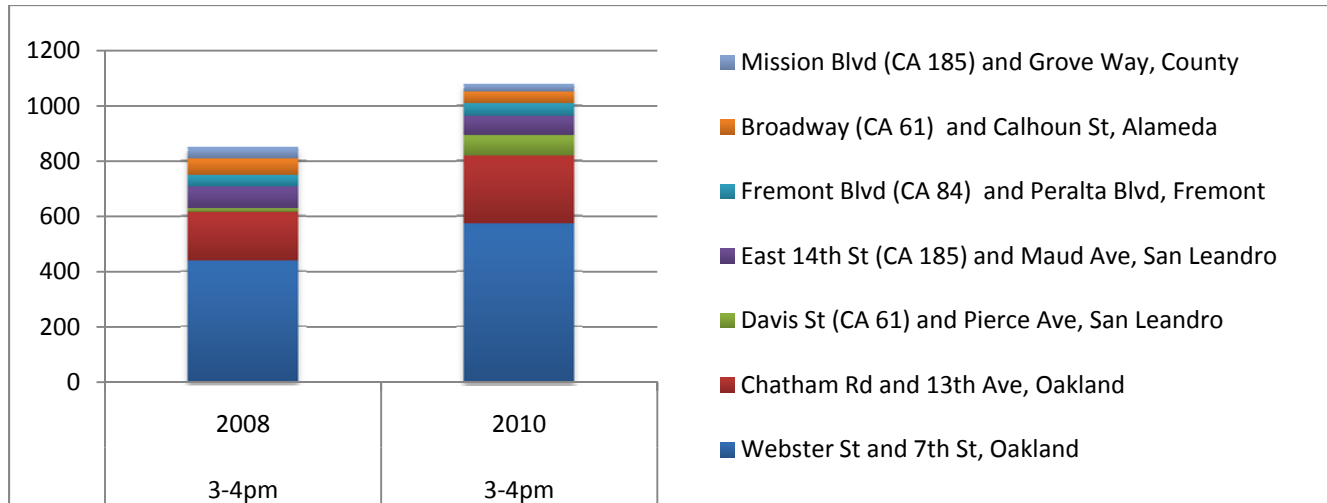
Figure 11 reflects the same upward trend shown in Figure 10, but at different count locations, different years, and the full 2-4pm time period.

Figure 11: Total pedestrians - weekday school (2009, 2010 from 2-4pm)
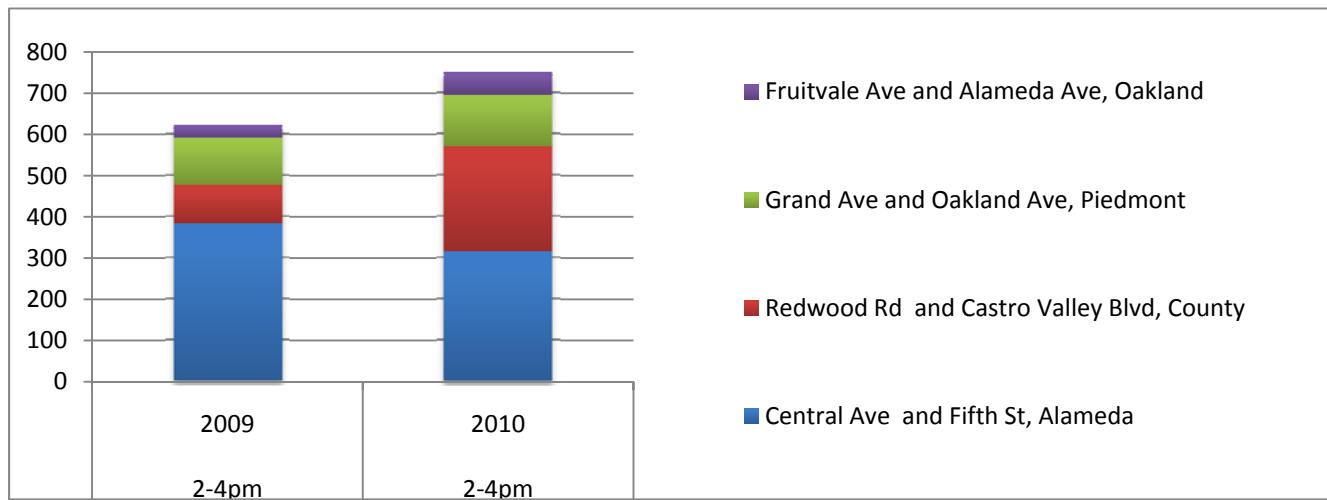
Gender Distribution

The average male-female ratio for pedestrians varied within only a few percentage points between 2008 and 2010. Typically, the number of pedestrians closely mirrors the general population distribution, while bicyclists are more heavily male.

Figure 12: Average pedestrian male – female ratio (2008, 2009, 2010)
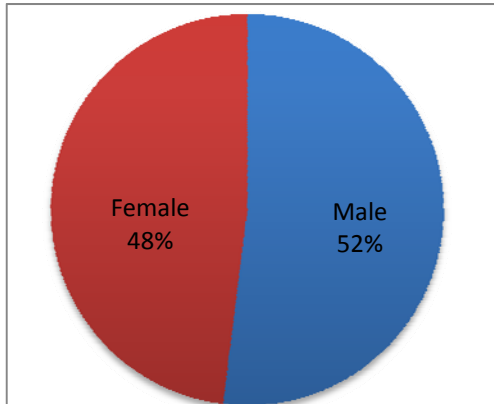
Bicyclist Count Trends

Weekday PM (4-6pm)

The weekday PM is the period for which there is the most data, both in terms of the number of comparable sites and the number of years of data that is available. While there was a slight decrease in bicyclists from 2002 to 2004, the numbers steadily increased from 2004 to 2010, as shown in Figure 13, with a total increase from 2002 to 2010 of 50%. Figure 14 shows the percentage change for the sites with the largest and smallest changes for each year, indicating that while in the aggregate bicycle use is growing steadily throughout the county, it is considerably more varied at the local level.

While one set of data (2008 and 2010) was counted from 4-6pm, all of the Alameda CTC Level of Service monitoring data (biennial from 2002 to 2008) was collected from 3-6pm. An hourly breakdown of the LOS monitoring data is available for the years 2006 and 2008 only. In order to create comparable data for the 2002 and 2004 years, an approach for converting the 3-6pm time period into a 4-6pm time period was needed. Using the 2006 and 2008 hourly data, the proportion of bicyclists counted during the two hour 4-6pm period of the three hour 3-6pm time period was calculated and used to estimate the two hour 4-6pm portion of the 2002 and 2004 data.

Figure 13: Total bicycles – weekday PM (2002, 2004, 2006, 2008, 2010)
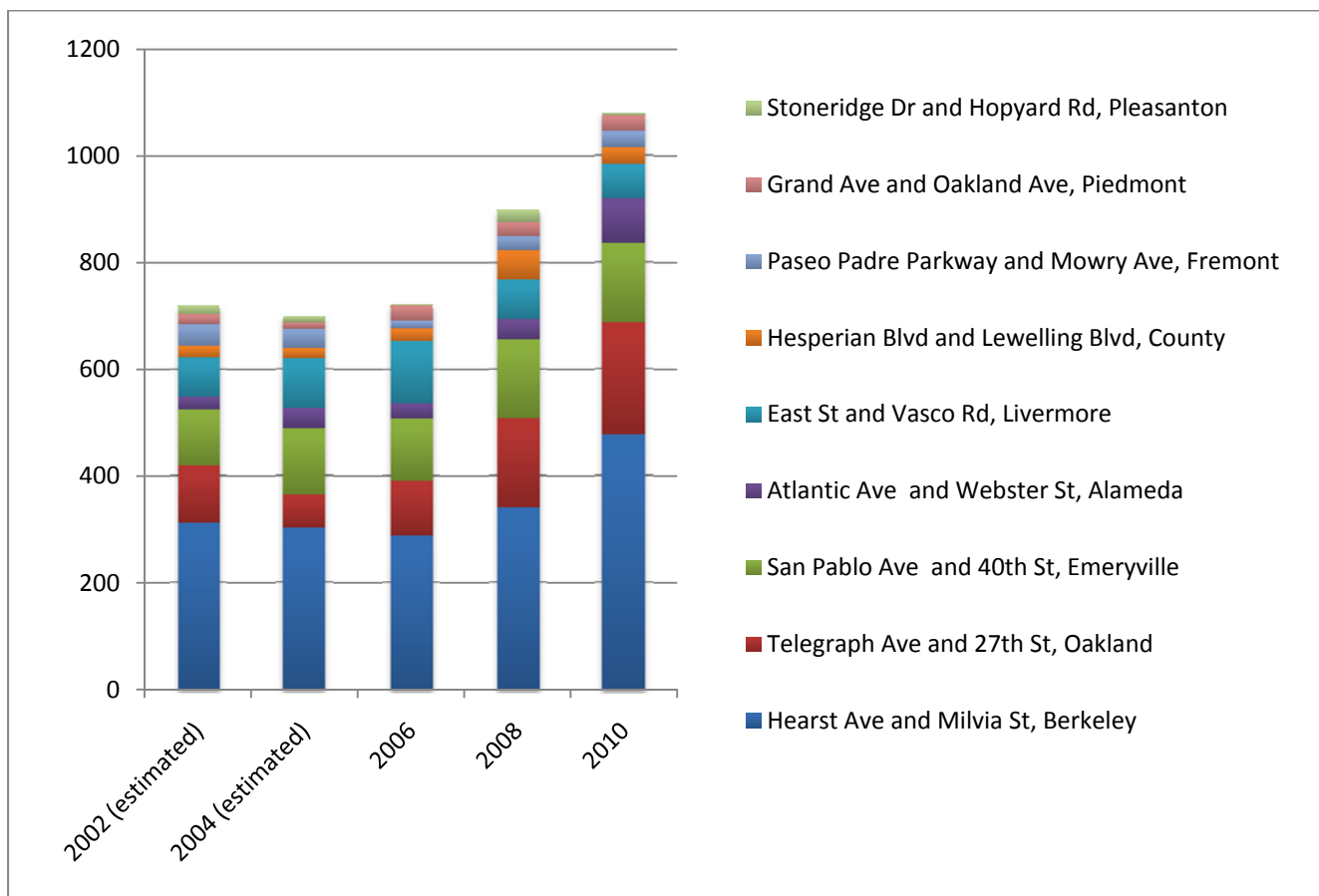
Figure 14: Percentage change in bicycle counts relative to 2002
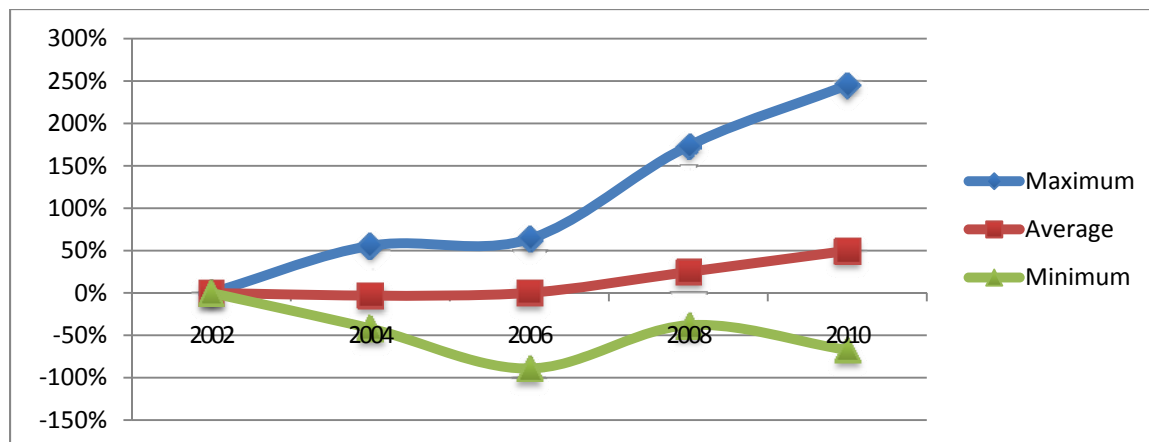
Weekday Mid-day (12 to 2pm)

While the mid-day counts comparing 2008 and 2010 showed a significant decrease in pedestrian numbers, mid-day bicycle trips almost doubled between 2008 and 2010 at the same sites, with an average increase of 83%, reflecting the overall trend for all count periods for bicyclists. It is possible that more people chose to commute by bicycle due to high fuel prices and the poor economy, or that due to continuing jobs losses, more people had the time during the day to be on their bicycles.

Figure 15: Total bicycles - weekday mid-day (2008, 2010)
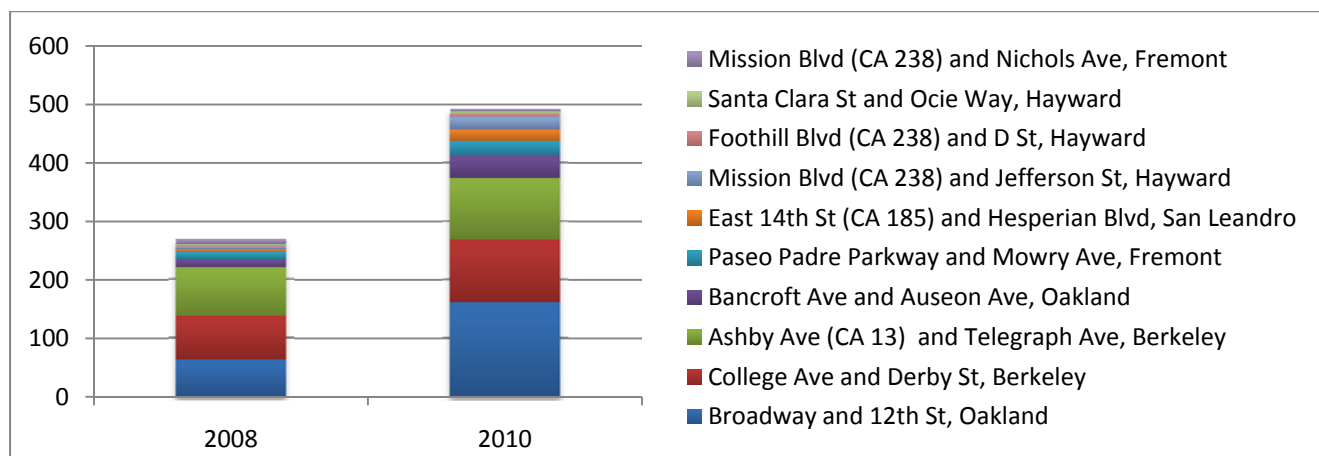
Weekday School (2-4pm)

The overall trend in bicycle numbers during the school period is increasing. For the school count period, two charts are shown below. In Figure 16, 2008 and 2010 data is shown from the 3-4pm time period; note that 2008 data was collected from 3-5pm and 2010 data was collected from 2-4pm, so the comparison time period for the data collected is only 3-4pm.

**Figure 16: Total bicycles - weekday school (2008, 2010 from 3-4pm)**
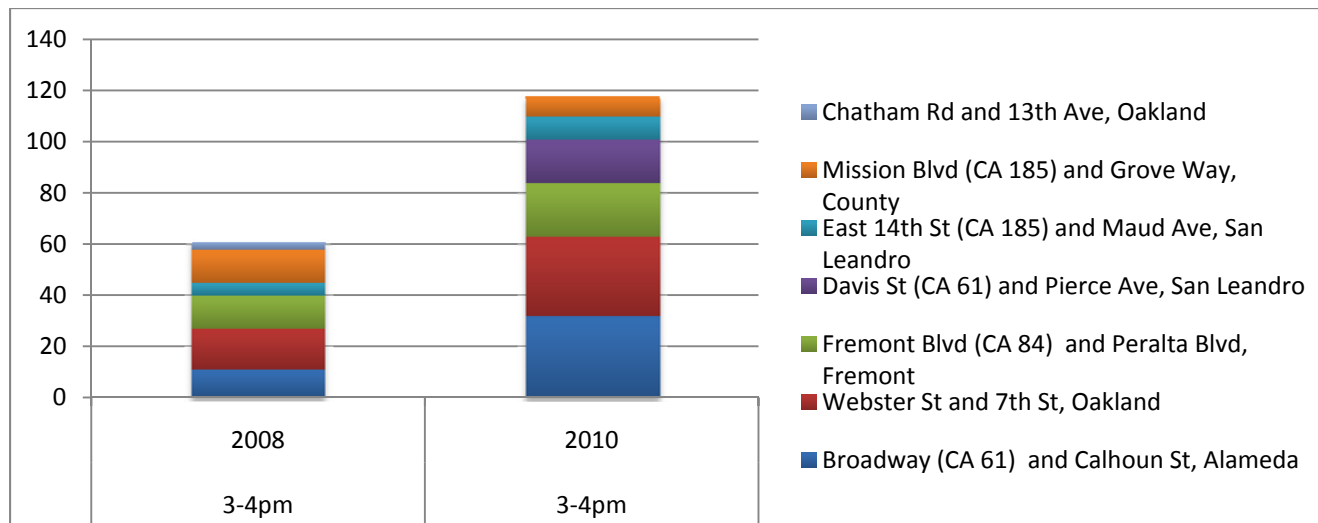
Figure 16 shows an almost doubling of bicycles from 2008 to 2010 (a 93% increase). However, Figure 17 shows that at the second set of count sites, from 2009 to 2010, the number of bicycles decreased by about 2%. This stark difference may not be statistically significant since there are only four count sites in the 2009/2010 data set. It could also be due to the difference in time periods or count sites, with only two of the four sites showing decreases during this period. It may also be the case that much of the growth between 2008 and 2010 as shown in Figure 16, took place between 2008 and 2009.

While this time period is called the "school" time period, this mostly refers to time of day and not the count locations. Of the eleven count locations included in Figures 16 and 17, only three are within a ¼ mile of schools: Grand Ave. and Oakland Ave. in Piedmont; Central Ave. and Fifth St. in Alameda; and Chatham Rd. and 13th Ave. in Oakland.

Figure 17: Total bicycles - weekday school (2009, 2010 from 2-4pm)

Legend:
- Grand Ave and Oakland Ave, Piedmont
- Redwood Rd and Castro Valley Blvd, County
- Fruitvale Ave and Alameda Ave, Oakland
- Central Ave and Fifth St, Alameda
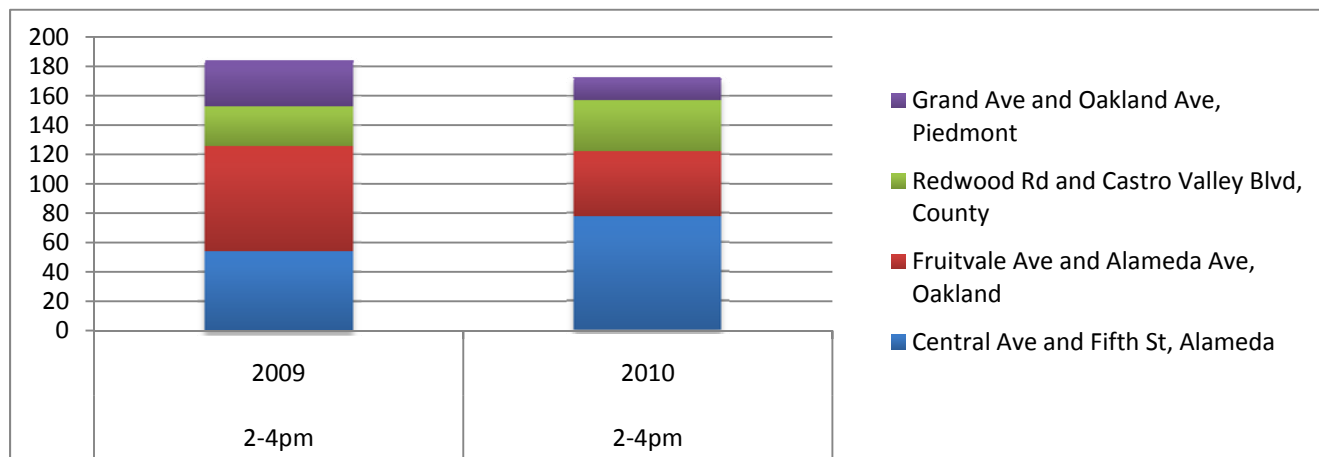
Gender Distribution

Men are far more likely to be riding a bicycle than women. However, the number of female bicyclists increased steadily over the 2008 to 2010 time period from 18% to 26%. However, during the school period (2-4pm) it remained at about 18% across all three years. Only three of the sites that were counted during the school periods were within a ¼ mile of a school, so it is inconclusive whether this difference is related to school-aged bicyclists.

Figure 18: Bicyclist male-female ratios from 2008 to 2010
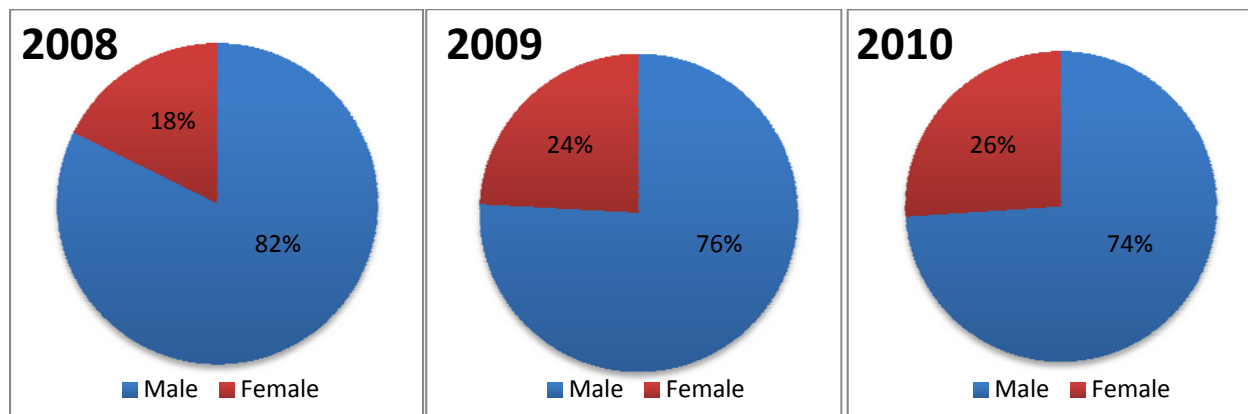
Helmet Use

Just over 50% of all bicyclists are wearing helmets, according to 2010 counts at 63 locations around the county. Data on helmet use was only collected in 2010, so there is no way to assess changes in usage. However, there was a difference between time periods:

Mid-day: 51.4%

School: 40.1%

PM: 53.5%

As discussed previously, the data is not conclusive about whether the school period data is related to the behavior of school-aged bicyclists.

Figure 19: Average helmet use in 2010
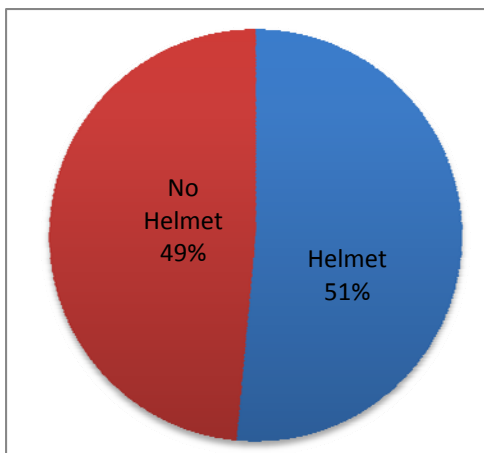
Recommendations

During the process of organizing and analyzing the data in this report, the following recommendations were developed for future data collection efforts and data analysis.

There are 99 count locations that have been counted since 2002; less than half of these were usable for comparing data across years. While each count effort may have had a specific purpose, its usefulness as longitudinal data will depend on:

- Continuing to count key sites - Sites that have been counted several times in the past should continue to be counted unless the site is being "retired."
- Using standard time periods, seasons, and days of week – To ensure comparability, continue using time periods that have been used in the past and/or time periods that are standard with other jurisdictions.
- Maintaining data in fine increments, and at least hourly – This approach will allow the use of at least part of the data, even if the standard time periods shift.
- Ensuring contextual data is maintained, such as date, time, weather, and temperature.
- Continuing to collect auxiliary data such as gender and helmet use.

In addition, more can be learned from the existing data. Research conducted by SafeTREC (formerly the UC Berkeley Traffic Safety Center) uses data from automated pedestrian counters to create adjustment factors that can be applied to existing data that was not collected during the same time period, day of week, and season. Applying these factors will allow the conversion of much of the existing data into a comparable form. This includes adjusting for season, extreme temperatures, time period, and land use. These adjustment factors are currently available for Alameda County only for pedestrian counts but hopefully they will soon be available for bicycle counts as well.

Additionally, with more years of count data, it could be useful to break the data down by planning area and possibly, by city.

Finally, future analysis should include the automated count data currently being collected throughout Alameda County, as this is a valuable resource.

Appendices

- Appendix 1: Summary data for all manual pedestrian count locations
- Appendix 2: Summary data for all manual bicycle count locations

APPENDIX 1: Summary data for all manual pedestrian count sites

ID #	Street	Cross street	City	ACTIA Planning Area	2002 AM	2002 Mid	2002 School	2002 PM	2002 Weekend	2003 AM	2003 Mid	2003 School	2003 PM	2003 Weekend	2006 AM	2006 Mid	2006 School	2006 PM* 3-6pm	2006 Weekend	2008 AM	2008 Mid	2008 School* 3-5pm	2008 School* 3-4pm	2008 PM* 3-6pm	2008 Weekend*	2009 AM	2009 Mid	2009 School	2009 School* 3-4pm	2009 PM	2009 Weekend*	2010 AM	2010 Mid	2010 School	2010 School* 3-4pm	2010 PM	2010 Weekend
1	Atlantic Avenue	Webster Street	Alameda	North																											313	140		874			457	
2	Broadway (CA 61)	Calhoun Street	Alameda	North																	72		59		34								102		41	83	
3	Central Avenue	Fifth Street	Alameda	North																							383		121		138		316		189	229	
4	Encinal Avenue (CA 61)	Oak Street	Alameda	North																	1165				297												
5	Encinal Avenue (CA 61)	Benton Street	Alameda	North																	206		116		238												
6	Otis Drive	Sandcreek	Alameda	North																										149	197						
7	Park Street	Otis Drive	Alameda	North	85			272																						280						189	
8	Park Street	San Jose	Alameda	North																										313	244						
95	Buchanan Street	Jackson Street	Albany	North																													443		329	245	
9	Solano Avenue	Masonic Ave (Ohlone Trail)	Albany	North																	514		334		397					351	303		407			551	
10	Ashby Avenue (CA 13)	Hillegass Avenue	Berkeley	North																										192	162		269			361	
11	Ashby Avenue (CA 13)	Benvenue Avenue	Berkeley	North																	332		152		412												
12	Ashby Avenue (CA 13)	Telegraph Avenue	Berkeley	North																	410				191								345			306	
13	Ashby Avenue (CA 13)	Acton Street	Berkeley	North																	70		31		68												
14	College Avenue	Derby Street	Berkeley	North																	319				628								390			748	
15	Hearst Avenue	Oxford St.	Berkeley	North	398			412																													
16	Hearst Avenue	Milvia Street	Berkeley	North																				312						306	251		339			369	
17	San Pablo Avenue	Virginia Street	Berkeley	North	78			103																						101	124		126			149	
18	San Pablo Avenue (CA 123)	Ward Street	Berkeley	North																	182				103												
19	San Pablo Avenue (CA 123)	Harrison Street	Berkeley	North																	99				114												
20	Spruce	Rose	Berkeley	North																							58		34		76						
21	University Avenue	Bonar Street	Berkeley	North																	229		117		225												
22	Hesperian Boulevard	Lewelling Boulevard	County	Central																										76	76		139		94	107	
23	Mission Boulevard (CA 185)	Grove Way	County	Central																	69		39		58								46		25	35	
24	Redwood Road	Castro Valley Boulevard	County	Central																							94		56		180		255		112	204	
25	Amador Valley Boulevard	Stagecoach Road	Dublin	East																	21				14												
26	Dougherty Road	Scarlett Drive (Iron Horse Trail)	Dublin	East																	25		19		26												
27	Dublin Boulevard	Scarlett Drive (Iron Horse Trail)	Dublin	East	19			25		22			25																	30	45		41			59	
28	Dublin Boulevard	Hacienda Drive	Dublin	East																										36	30		53			42	
29	Foothill Rd.	nr. 580 (West Dublin BART)	Dublin	East																																	
30	Powell Street	Christie Avenue	Emeryville	North	20			68																									159			104	
31	San Pablo Avenue	40th Street	Emeryville	North												512						504								509	320		456		236	523	
32	Fremont Blvd	Mowry Avenue	Fremont	South	127			205		102			188																				484			530	
98	Fremont Blvd (Washington)	Union Street	Fremont	South																													75			77	
33	Fremont Boulevard (CA 84)	Peralta Boulevard	Fremont	South																	73		44		90								93		46	84	
34	Mission Boulevard (CA 238)	Nichols Avenue	Fremont	South																	7				14								7			15	

ID #	Street	Cross street	City	ACTIA Planning Area	2002 AM	2002 Mid	2002 School	2002 PM	2002 Weekend	2003 AM	2003 Mid	2003 School	2003 PM	2003 Weekend	2006 AM	2006 Mid	2006 School	2006 PM* 3-6pm	2006 Weekend	2008 AM	2008 Mid	2008 School* 3-5pm	2008 School* 3-4pm	2008 PM* 3-6pm	2008 Weekend*	2009 AM	2009 Mid	2009 School	2009 School* 3-4pm	2009 PM	2009 Weekend*	2010 AM	2010 Mid	2010 School	2010 School* 3-4pm	2010 PM	2010 Weekend
35	Mowry Avenue (CA 84)	Cherry Lane	Fremont	South																		9	2		11									28			17	
36	Paseo Padre Parkway	Mowry Avenue	Fremont	South														190			229				83					174	117			107			112	
99	Paseo Padre Parkway	Decoto Rd	Fremont	South																	89				82									7		2	8	
37	Thornton Avenue (CA 84)	Oak Street	Fremont	South																		42	24		20													
38	Warm Springs	Grimmer	Fremont	South																								5	3		2						5	
97	C Street	Grand Street	Hayward	Central																													65			98	
39	Foothill Boulevard (CA 238)	D Street	Hayward	Central																	20				4									20			42	
40	Foothill Boulevard (CA 238)	Cotter Way	Hayward	Central																	64				68													
41	Mission Boulevard (CA 238)	Jefferson Street	Hayward	Central																	171				27			110	51		51			42			96	
42	Mission Boulevard (CA 238)	Overhill Drive	Hayward	Central																		101	56		36													
43	Mission Boulevard (CA 238)	Valle Vista Avenue	Hayward	Central																	22				31													
44	Mission Boulevard (CA 238)	Torrano Avenue	Hayward	Central																		16	6		28													
45	Santa Clara Street	Ocie Way	Hayward	Central																	10				63									33			123	
46	W Harder Road	Tarman Avenue	Hayward	Central																		22	20		12													
47	Winton Avenue	Amador Street	Hayward	Central	126			94																				292	147		34			322			150	
48	Concannon Blvd.	S. Livermore	Livermore	East	8			2																														
49	East Street	Vasco Road	Livermore	East																							15										12	
50	Railroad Avenue	First Street	Livermore	East																										35	49			74		54	
51	Ardenwood Boulevard (CA 84)	Newark Boulevard (E side interchange ramp)	Newark	South																		55	29		15									44			31	
52	Thornton Avenue	Willow Street	Newark	South																								0	1					10		8	7	
53	66th Avenue	San Leandro St	Oakland	North	143			91		49			27																					78			207	
54	Avenal	Havenscourt	Oakland	North																							45	19		18								
55	Bancroft Avenue	Auseon Avenue	Oakland	North																	56				76									84			119	
56	Broadway	12th Street	Oakland	North																	3577				1374					2032	1033			2755			1957	
57	Broadway	20th Street	Oakland	North																										1475						1407	
58	Chatham Road	13th Avenue	Oakland	North																		222	177		18									264		249	92	
59	Doolittle Drive (CA 61)	Airport Access Road	Oakland	North																		9	4		4			10	2	8							6	
60	Foothill Boulevard	15th Avenue	Oakland	North																	69				50													
61	Fruitvale Avenue	East 27th Street	Oakland	North																							424	189		257								
62	Fruitvale Avenue	Foothill Blvd	Oakland	North																													699		556	914	
63	Fruitvale Avenue	Alameda Ave	Oakland	North																							31	12		20			55		22	47	
64	Grand Avenue	Staten Ave	Oakland	North	387			571		380			457														586										504	
65	Grand Avenue	Lake Park	Oakland	North																										561	941			637	315	576	
66	High Street (CA 185)	E 12th Street	Oakland	North																																	
67	International Boulevard (CA 185)	107th Avenue	Oakland	North																	89				69													
68	International Boulevard (CA 185)	99th Avenue	Oakland	North																		381	212		174													
69	International Boulevard (CA 185)	46th Avenue	Oakland	North																		287	168		286													
70	MacArthur Boulevard	38th Avenue	Oakland	North																								415	445			313			316	
71	Mandana Boulevard	Carlston Avenue	Oakland	North																		28	5		30													

ID #	Street	Cross street	City	ACTIA Planning Area	2002					2003					2006					2008						2009						2010					
					AM	Mid	School	PM	Weekend	AM	Mid	School	PM	Weekend	AM	Mid	School	PM* 3-6pm	Weekend	AM	Mid	School* 3-5pm	School* 3-4pm	PM* 3-6pm	Weekend*	AM	Mid	School	School* 3-4pm	PM	Weekend*	AM	Mid	School	School* 3-4pm	PM	Weekend
72	Mandela Parkway	14th Street	Oakland	North																									91	56		227			377	
73	Martin Luther King Jr. Way	17th Street	Oakland	North																	152		73		76												
74	Moraga Avenue	Masonic Avenue	Oakland	North																	7				3												
75	Mountain	La Salle	Oakland	North																								1241	688		1566		964			873	
76	Telegraph Avenue	27th Street	Oakland	North													224						385				212	96		150		265			201	
96	Telegraph Avenue	40th Street	Oakland	North																											630			1034	
77	Webster Street	21st Street	Oakland	North																	1843				137												
78	Webster Street	7th Street	Oakland	North																		936	440		1131									1117	572	1063	
79	Grand Avenue	Oakland Avenue	Piedmont	North													161								144			114	92		75			123	90	45	
80	Main St	Bernal Ave	Pleasanton	East	44	152		165																									29			70	
81	Owens Drive	Andrews Drive	Pleasanton	East																	49		30		31								72			63	
82	Santa Rita Road	Francisco Street	Pleasanton	East																								113	56		67			60			32	
83	Stoneridge Drive	Hopyard Road	Pleasanton	East													16													12	17		64			14	
84	Stoneridge Drive	Hacienda Drive	Pleasanton	East																	18				7												
85	Bancroft Avenue	Estudillo Avenue	San Leandro	Central	429			118		391	705	95																		130	67		78			160	
86	Davis Street (CA 61)	Warden Avenue	San Leandro	Central																40																	
87	Davis Street (CA 61)	Pierce Avenue	San Leandro	Central																	28		11		33								146	73	106	
88	East 14th Street (CA 185)	Hesperian Boulevard	San Leandro	Central																	78				69								91			105	
89	East 14th Street (CA 185)	Maud Avenue	San Leandro	Central																		179	79		145								89	70	104	
90	East 14th Street (CA 185)	Belleview Drive	San Leandro	Central																	66	27															
91	Alvarado Niles Road	Western Avenue	Union City	South																29																	
92	Alvarado-Niles Road	Dyer Street	Union City	South																									73	52		38			54	
93	Decoto Road	Alvarado-Niles Road	Union City	South	121			193		157			218																			97			235	
94	Decoto Road	7th Street	Union City	South																								85	37		51			54			132	
Total Number of Count Locations:					13	1	0	13	0	6	0	1	6	0	0	0	0	5	0	2	23	26	25	4	47	0	0	13	13	23	36	0	45	18	18	63	0

Notes:

* Non-standard time period of AM: 7-9am, Mid-day: 12-2pm, School: 2-4pm, PM: 4-6pm, Weekend: no standard (actual time period is shown)

Green highlighted columns are estimated or use only part of the full time period data.

Appendix 2: Summary data for all manual bicycle count sites

ID#	Street	Cross street	City	ACTIA Planning Area	2002 AM	2002 Mid	2002 School	2002 PM* 3-6pm (in green), 4-6pm	2002 Weekend	2003 AM	2003 Mid	2003 School	2003 PM	2003 Weekend	2004 AM	2004 Mid	2004 School	2004 PM* 3-6pm	2004 Weekend	2006 AM	2006 Mid	2006 School	2006 PM* 3-6pm	2006 PM 4-6pm	2006 Weekend	2008 AM	2008 Mid	2008 School* 3-5pm	2008 PM* 3-6pm	2008 PM 4-6pm	2008 Weekend	2009 AM	2009 Mid	2009 School	2009 PM	2009 Weekend	2010 AM	2010 Mid	2010 School	2010 PM	2010 Weekend
1	Atlantic Avenue	Webster Street	Alameda	North				36										56					41	29					62	38					26	24			40	82	
2	Broadway (CA 61)	Calhoun Street	Alameda	North																							16			24									44	21	
3	Central Avenue	Fifth Street	Alameda	North																															54	27			78	79	
4	Encinal Avenue (CA 61)	Oak Street	Alameda	North																							43			40											
5	Encinal Avenue (CA 61)	Benton Street	Alameda	North																							14			12											
6	Otis Drive	Sandcreek	Alameda	North																															10	21					
7	Park Street	Otis Drive	Alameda	North	20			58																										63	81					
8	Park Street	San Jose	Alameda	North																															44	33					
95	Buchanan Street	Jackson Street	Albany	North																															64	88					
9	Solano Avenue	Masonic Ave(Ohlone Trail)	Albany	North																						150			127					149	135			91	148	
10	Ashby Avenue (CA 13)	Hillegass Avenue	Berkeley	North																															123	75			48	93	
11	Ashby Avenue (CA 13)	Benvenue Avenue	Berkeley	North																						45			48											
12	Ashby Avenue (CA 13)	Telegraph Avenue	Berkeley	North																						82			67									105	166	
13	Ashby Avenue (CA 13)	Acton Street	Berkeley	North																						35			36											
14	College Avenue	Derby Street	Berkeley	North																						75			65											
15	Hearst Avenue	Oxford St.	Berkeley	North	111			124																																
16	Hearst Avenue	Milvia Street	Berkeley	North				405										392					374	289					441	340					343	171			235	476	
17	San Pablo Avenue	Virginia Street	Berkeley	North	59			69																										95	74			59	86	
18	San Pablo Avenue (CA 123)	Ward Street	Berkeley	North																						77			35											
19	San Pablo Avenue (CA 123)	Harrison Street	Berkeley	North																						38			43											
20	Spruce	Rose	Berkeley	North																															50	50					
21	University Avenue	Bonar Street	Berkeley	North																						40			25											
22	Hesperian Boulevard	Lewelling Boulevard	County	Central				27										25					36	25					68	56					25	24			43	32	
23	Mission Boulevard (CA 185)	Grove Way	County	Central																						24			18									16	5	
24	Redwood Road	Castro Valley Boulevard	County	Central														26					36	29					45	27					27	55			35	28	
25	Amador Valley Boulevard	Stagecoach Road	Dublin	East																						5			25											
26	Dougherty Road	Scarlett Drive (Iron Horse Trail)	Dublin	East																						34			57											
27	Dublin Boulevard	Scarlett Drive (Iron Horse Trail)	Dublin	East	11			17		13			18																					82	84			40	55	
28	Dublin Boulevard	Hacienda Drive	Dublin	East																														31	20			3	13	
29	Foothill Rd.	nr. 580 (West Dublin BART)	Dublin	East																																				
30	Powell Street	Christie Avenue	Emeryville	North	9			7																										32	43					
31	San Pablo Avenue	40th Street	Emeryville	North				142										168					158	118					196	147					174	42			133	150	
32	Fremont Blvd	Mowry Avenue	Fremont	South	50			90		30			61																					29	67					

ID#	Street	Cross street	City	ACTIA Planning Area	2002					2003					2004					2006						2008						2009					2010				
					AM	Mid	School	PM* 3-6pm (in green), 4-6pm	Weekend	AM	Mid	School	PM	Weekend	AM	Mid	School	PM* 3-6pm	Weekend	AM	Mid	School	PM* 3-6pm	PM 4-6pm	Weekend	AM	Mid	School* 3-5pm	PM* 3-6pm	PM 4-6pm	Weekend	AM	Mid	School	PM	Weekend	AM	Mid	School	PM	Weekend
98	Fremont Blvd (Washington)	Union Street	Fremont	South																													20		32	
33	Fremont Boulevard (CA 84)	Peralta Boulevard	Fremont	South																							21		15									35		48	
34	Mission Boulevard (CA 238)	Nichols Avenue	Fremont	South																							7		4									3		4	
35	Mowry Avenue (CA 84)	Cherry Lane	Fremont	South																							7		11									9		16	
36	Paseo Padre Parkway	Mowry Avenue	Fremont	South				60										52						22	14			12		34	26	29		50		37			24		30	
99	Paseo Padre Parkway	Decoto Rd	Fremont	South																							16		15									17		22	
37	Thornton Avenue (CA 84)	Oak Street	Fremont	South																							19		16												
38	Warm Springs	Grimmer	Fremont	South																													15		62			17		23	
97	C Street	Grand Street	Hayward	Central																																	23		19	
39	Foothill Boulevard (CA 238)	D Street	Hayward	Central																							2		1									5		6	
40	Foothill Boulevard (CA 238)	Cotter Way	Hayward	Central																							6		5												
41	Mission Boulevard (CA 238)	Jefferson Street	Hayward	Central				11										23						39				3		25		12		22		15			20		28	
42	Mission Boulevard (CA 238)	Overhill Drive	Hayward	Central																							13		22												
43	Mission Boulevard (CA 238)	Valle Vista Avenue	Hayward	Central																							3		24												
44	Mission Boulevard (CA 238)	Torrano Avenue	Hayward	Central																							3		8												
45	Santa Clara Street	Ocie Way	Hayward	Central																							4		9									5		37	
46	W Harder Road	Tarman Avenue	Hayward	Central																							18		2												
47	Winton Avenue	Amador Street	Hayward	Central	20			18																									27		7			20		24	
48	Concannon Blvd.	S. Livermore	Livermore	East	1			16																																	
49	East Street	Vasco Road	Livermore	East				86										109						125	115				93	74								47		65	
50	Railroad Avenue	First Street	Livermore	East																													23		28			22		31	
51	Ardenwood Boulevard (CA 84)	Newark Boulevard	Newark	South																							14		16									33		23	
52	Thornton Avenue	Willow Street	Newark	South				5										12						11					13					14		11			7		6	
53	66th Avenue	San Leandro St	Oakland	North	67			63		27			27																									32		45	
54	Avenal	Havenscourt	Oakland	North																													22		5						
55	Bancroft Avenue	Auseon Avenue	Oakland	North																							14		16									39		17	
56	Broadway	12th Street	Oakland	North																							63		47				79		55			161		134	
57	Broadway	20th Street	Oakland	North																																		89		166	
58	Chatham Road	13th Avenue	Oakland	North																							4		13									2		8	
59	Doolittle Drive (CA 61)	Airport Access Road	Oakland	North																							3		15				16		43			8		20	
60	Foothill Boulevard	15th Avenue	Oakland	North																							8		25												
61	Fruitvale Avenue	East 27th Street	Oakland	North																													19		9						
63	Fruitvale Avenue	Alameda Ave	Oakland	North																													72		72			44		65	
62	Fruitvale Avenue	Foothill Blvd	Oakland	North																																		33		91	
64	Grand Avenue	Staten Ave	Oakland	North	52			48		79			98																								99		156	

					2002					2003					2004					2006						2008						2009					2010				
ID#	Street	Cross street	City	ACTIA Planning Area	AM	Mid	School	PM* 3-6pm (in green), 4-6pm	Weekend	AM	Mid	School	PM	Weekend	AM	Mid	School	PM* 3-6pm	Weekend	AM	Mid	School	PM* 3-6pm	PM 4-6pm	Weekend	AM	Mid	School* 3-5pm	PM* 3-6pm	PM 4-6pm	Weekend	AM	Mid	School	PM	Weekend	AM	Mid	School	PM	Weekend
65	Grand Avenue	Lake Park	Oakland	North																																			126	72		61		87	
66	High Street (CA 185)	E 12th Street	Oakland	North																																										
67	International Boulevard (CA 185)	107th Avenue	Oakland	North																											14				11										
68	International Boulevard (CA 185)	99th Avenue	Oakland	North																												48			41										
69	International Boulevard (CA 185)	46th Avenue	Oakland	North																												53			63										
70	MacArthur Boulevard	38th Avenue	Oakland	North																																			14	16		11		10	
71	Mandana Boulevard	Carlston Avenue	Oakland	North																											0				1										
72	Mandela Parkway	14th Street	Oakland	North																																			112	56		65		131	
73	Martin Luther King Jr. Way	17th Street	Oakland	North																												23			18										
74	Moraga Avenue	Masonic Avenue	Oakland	North																											2				11										
75	Mountain	La Salle	Oakland	North																																			18	20		8		11	
76	Telegraph Avenue	27th Street	Oakland	North				136										79					130	102					216	169					145	126		127		211	
96	Telegraph Avenue	40th Street	Oakland	North																																						179		327	
77	Webster Street	21st Street	Oakland	North																											33				12										
78	Webster Street	7th Street	Oakland	North																												26			15							39		56	
79	Grand Avenue	Oakland Avenue	Piedmont	North				30										21					40	29					59	27					31	16		16		29	
80	Main St	Bernal Ave	Pleasanton	East	26	20		11																																12		15	
81	Owens Drive	Andrews Drive	Pleasanton	East																											40				32							16		31	
82	Santa Rita Road	Francisco Street	Pleasanton	East																																			43	48		8		45	
83	Stoneridge Drive	Hopyard Road	Pleasanton	East				32										19					5	2					32	24					13	31		8		6	
84	Stoneridge Drive	Hacienda Drive	Pleasanton	East																											4				12										
85	Bancroft Avenue	Estudillo Avenue	San Leandro	Central	20			20		42		35	24																						24	22		9		21	
86	Davis Street (CA 61)	Warden Avenue	San Leandro	Central																											3				2										
87	Davis Street (CA 61)	Pierce Avenue	San Leandro	Central																												2			29							34		19	
88	East 14th Street (CA 185)	Hesperian Boulevard	San Leandro	Central																											6				34							21		23	
89	East 14th Street (CA 185)	Maud Avenue	San Leandro	Central																												8			33							22		23	
90	East 14th Street (CA 185)	Belleview Drive	San Leandro	Central																												10			15										
91	Alvarado Niles Road	Western Avenue	Union City	South																											16				11										
92	Alvarado-Niles Road	Dyer Street	Union City	South																																			29	34		14		20	
94	Decoto Road	7th Street	Union City	South																																			13	18		6		25	
93	Decoto Road	Alvarado-Niles Road	Union City	South	35			37		38			43																												29		78	
	Total Number of Count Locations:				13	1	0	24	0	6	0	1	6	0	0	0	0	12	0	0	0	0	12	10	0	0	24	26	12	10	50	0	0	13	23	36	0	45	18	63	0

Notes:
* Non-standard time period of AM: 7-9am, Mid-day: 12-2pm, School: 2-4pm, PM: 4-6pm, Wee

Green highlighted columns are estimated or use only part of the full time period data.