

## SUMMARY

During 1998, the city of San Diego experienced a total of 24 fatal traffic collisions involving pedestrians. In 1999, there were 36 fatal pedestrian collisions, representing an increase of approximately 50% from 1998. An analysis of data related to these collisions revealed a disproportionate number of the total pedestrian-involved collisions had occurred along two main San Diego streets, El Cajon Boulevard and University Avenue, which are dominated by businesses and the associated pedestrian traffic. In 1999, a total of 148 pedestrian-involved traffic collisions occurred in the Mid-City area, where the longest segments of El Cajon Boulevard and University Avenue exist. According to 1998 and 1999 traffic collision data, the three most common causes of pedestrian-involved collisions were:

1. Pedestrians violating "Don't Walk" signals
2. Vehicles violating pedestrians' right-of-way
3. Pedestrians violating "jaywalking" sections

In response to this problem, the Traffic and Mid-City Divisions of the San Diego Police Department developed a project to address and reduce the number of traffic collisions involving pedestrians. The S.A.R.A. (Scanning, Analysis, Response and Assessment) problem-solving model was used as a basis to address this particular problem. After identifying the problem and analyzing the causes, a response plan was developed. This plan consisted of the following three-pronged approach:

1. Increase enforcement of applicable California Vehicle and San Diego Municipal code sections. The enforcement activity was focused on the areas with the highest pedestrian collision rates.
2. Educate the population in the areas with high collision rates by distributing a one-page brochure with information about pedestrian safety. The target areas were diverse. This brochure was distributed in several languages including Hmong, Vietnamese, Laotian, Sudanese, Spanish and English.
3. Examine the areas with the highest collision rates to identify possible collision-reducing solutions related to infrastructure of the area. Several engineering requests were submitted, one of which resulted in the relocation of several bus stops to better accommodate pedestrian traffic.

At the completion of the project, a statistical analysis of the collision rates was again conducted. The pre-project rates were compared with the post-project rates, showing a 20% reduction in the occurrence of pedestrian-involved collisions along the El Cajon Boulevard and University Avenue corridors. During the implementation of this project, the San Diego Police Department received a grant for \$190,000 from the Office of Traffic Safety. This grant will be used for a similar project which will focus on elderly involvement in pedestrian related *traffic* collisions.

**INTRODUCTION:**

During the years of 1998 and 1999, there were 60 fatal pedestrian-involved traffic collisions in the city of San Diego. In order to address this problem, the Traffic and Mid-City divisions of the San Diego Police Department joined together in a concerted effort to address and reduce the overall number of traffic collisions involving pedestrians. The S.A.R.A. problem-solving model was used as a basis to gather information and approach this problem.

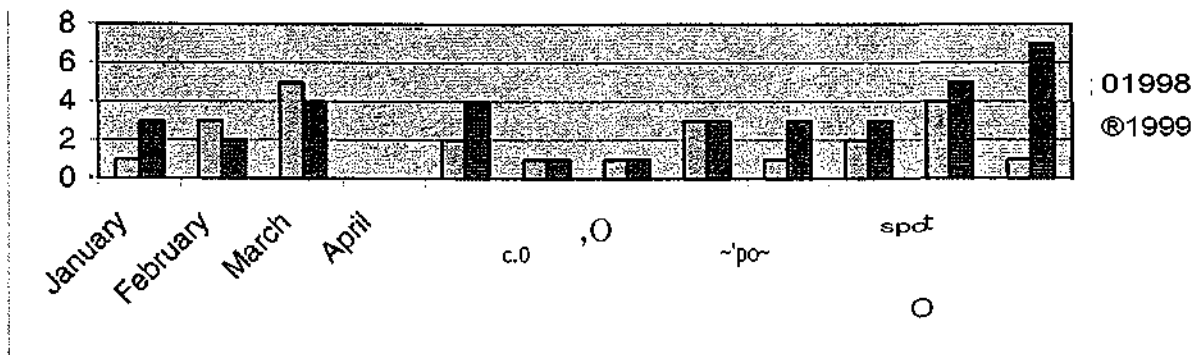
**S.A.R.A. PROBLEM-SOLVING MODEL****SCANNING:**

Collision statistics for the 1998 calendar year showed that a total of 24 fatalities had occurred in collisions involving pedestrians. This is an average of two fatal collisions per month during the year. 1999 collision statistics showed a total of 36 fatal collisions involving pedestrians. The 1999 statistics represented a statistical increase of 50% in pedestrian-involved fatal collisions.

**ANALYSIS:**

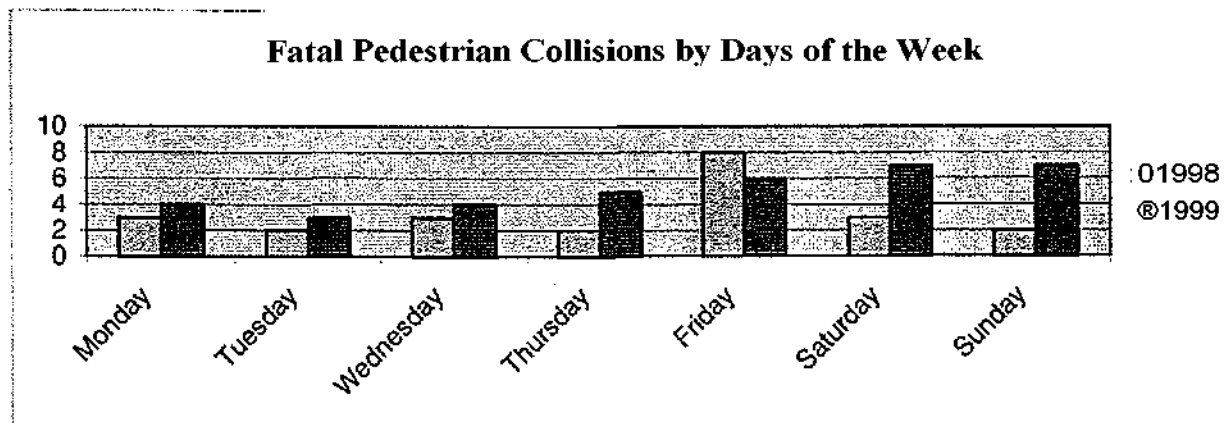
The data from both 1998 and 1999 was analyzed to identify specific aspects of these pedestrian-involved collisions. The following graphs represent part of the data analysis:

**Fatal Pedestrian Involved Collisions - City Wide**



The above chart shows that, with the exception of February and March, the number of fatal pedestrian collisions in 1999 either equaled or exceeded the number of collisions for the same month in 1998.

**Fatal Pedestrian Collisions by Days of the Week**



This chart shows the variability of fatal pedestrian collisions when related to the days of the week.

Further data analysis for 1998 and 1999 showed that the top three primary cause factors for fatal pedestrian-involved collisions were:

1. Pedestrian violation of "don't walk" signals or signs - California Vehicle Code section 21456(b) - *Whenever a pedestrian control signal showing the words "WALK" or "WAIT" or "DONT WALK" or other approved symbol is in place, the signal shall indicate as follows:*  
  
*(b) Flashing or steady "DONT WALK" or "WAIT" or approved "Upraised Hand" symbol. No pedestrian shall start to cross the roadway in the direction of the signal, but any pedestrian who has partially completed crossing shall proceed to a sidewalk or safety zone or otherwise leave the roadway while the "WAIT" or "DONT WALK" or approved "Upraised Hand" symbol is showing.*
2. Automobile violation of pedestrian right-of-way - California Vehicle Code section 21950(a) - *The driver of a vehicle shall yield the right-of-way to a pedestrian crossing the roadway within any marked crosswalk or within any unmarked crosswalk at an intersection, except as otherwise provided in this chapter.*
3. Pedestrian crossing between two controlled intersections (otherwise known as "Jaywalking") - California Vehicle Code section 21955 - *Between adjacent*

*intersections controlled by traffic control signal devices or by police officers, pedestrians shall not cross the roadway at any place except in a crosswalk.*

In 1998 fatal collisions involving pedestrians, the pedestrian was the primary cause of the collision in 19 of the 24 incidents (80%). In 1999, the pedestrian was the primary cause of the collision in 26 of the 34 incidents (72%).

In examining statistics for both injury and fatal pedestrian-involved traffic collisions in 1999, data revealed that a total of 148 pedestrian-involved collisions had occurred in the Mid-City Division. Of these 148 collisions, 13 resulted in no injuries, 131 resulted in injuries and four resulted in fatalities. 40% of the total number of pedestrian-involved collisions occurred on either El Cajon Boulevard or University Ave. Because of the over-representation of the El Cajon Boulevard and University Avenue corridors in the collision statistics, these two locations were designated as target areas for the response aspect of the P.O.P. project.

## **RESPONSE:**

After the analysis of the 1998 and 1999 fatal pedestrian-involved collision data, officers from the Traffic and Mid-City division of the San Diego Police Department joined in a collaborative effort to formulate a plan to address this problem. As a result of this effort, a response plan with three major aspects was developed and implemented from June, 2000 to December, 2000. These three aspects were Enforcement, Education and Engineering.

**ENFORCEMENT:**

Between the months of June and December, 2000, officers from Traffic Division's Accident Investigation Bureau, Motorcycle Unit and Mid-City Division officers aggressively enforced pedestrian-related vehicle code laws in the Mid-City area. This enforcement activity yielded a total of 859 contacts, which consisted of both traffic citations and traffic warnings, throughout the duration of the project.

**EDUCATION:**

Officers from the Traffic Division Safety Office developed a public safety brochure outlining responsibilities of a pedestrian and safety suggestions for a pedestrian to avoid being involved in a traffic collision. Because of the diversity of the population in Mid-City area, copies of this brochure were distributed in several languages including Hmong, Vietnamese, Laotian, Sudanese, Spanish and English.

This P.O.P. project was also highlighted by two local media sources. This media coverage provided another avenue of educating the public at large about the problem of pedestrian-involved traffic collisions, applicable laws and the response of the police department to the problem. Joe Hughes, a writer for the *San Diego Union Tribune*, wrote two stories spotlighting this project (0410412001 and 10130100). Additionally, television Channel 51 (KUSI) reporter Paul Bloom completed a broadcast news story titled *Pedestrian Crackdown* (0712812000).

**ENGINEERING:**

The construction of the roads and sidewalks along the El Cajon Boulevard and University Avenue corridors was evaluated for possible changes to promote pedestrian safety. As a result of the evaluation, several engineering requests were submitted. Of these requests, one of the most significant changes involved the relocation of eight different bus stop locations to better accommodate the flow of pedestrian traffic.

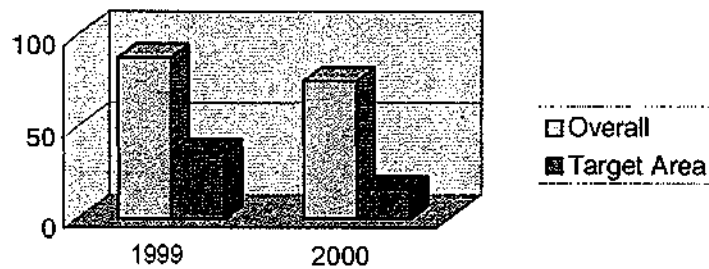
Initially, these bus stops were located in the middle of the block. This location created a problem with riders who were disembarking and wished to cross to the opposite side of El Cajon Boulevard or University Avenue. Because the bus stops were located mid-block, these riders had a propensity to cross the street immediately after exiting the bus, as opposed to walking to the nearest intersection equipped with crosswalks and/or traffic signals.

After this problem was identified, several engineering requests were submitted in an effort to relocate bus stop locations along the El Cajon Boulevard and University Avenue corridors. By the end of this project, eight different bus stops had been moved from mid-block locations closer to intersections. The movement of these bus stops allowed for disembarking riders to exits closer to intersections, there by increasing the use of the marked crosswalks and pedestrian traffic signals at these intersections.

ANALYSIS:

At the termination of the project, new collision data for the duration of the project was collected for comparison to the pre-project statistics. This data showed an approximate 15% percent decrease in the overall number of pedestrian-involved traffic collisions in the Mid-City area. In 1999, the number of pedestrian-involved traffic collisions along the El Cajon Boulevard and University Avenue corridors accounted for approximately 40% of the total number of pedestrian traffic collisions in the Mid-City area. In 2000, this number dropped to 21%. This equates to nearly a 20% reduction in the pedestrian collision rate in the P.O.P. project target area.

**Mid-City Pedestrian Involved Collisions  
June through December**



\* The collision data information from 1999 was compiled over a 12-month period, whereas the collision data from the project was collected over a seven-month period. In the comparison made above, the 15% reduction is calculated by comparing the June through December period in 1999 to the same period in 2000.



**CONCLUSION:**

With a realization in the reduction of both the overall pedestrian-involved traffic collision rate in the Mid-City area and in the target area of the El Cajon Boulevard and University Avenue, this project can be deemed a success. During the implementation phase of this project, the San Diego Police Department Traffic Safety Office was awarded a grant for \$190,000 from the Office of Traffic Safety. The funds from this grant will be used to implement a similar project with a different focus. Data analysis has shown that a large percentage of pedestrian-involved traffic collisions involve elderly people. The grant funds and related project will be used for education and prevention of pedestrian-involved collisions involving the elderly.