# THE AHWATU KE E-FOOTHILLS TRAFFIC ENFORCEMENT PROGRAM

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2001

# PROJECT ABSTRACT

The City of Phoenix includes a unique area isolated from the remainder of the City by the largest municipal park in the country - South Mountain Park. This formidable barrier separates a community of approximately 75,000 residents, Ahwatukee-Foothills, from the remainder of the Phoenix municipal area. Patrol officers assigned to this area have identified traffic collisions as the second highest in calls for service in the area. Ingress/egress in this area consists of only six routes, four of which intersect Interstate 10. Ahwatukee is locally known as the world's largest cul-de-sac. This results in a considerable problem, especially during peak hours.

A 1998 survey of community residents by the Ahwatukee Crime Prevention Task Force identified traffic issues as a primary problem. Analysis of traffic collision data for 1999 was evaluated for cause of collision, time of day, and location. Leading causes were found to be traffic signal violations (failure to obey signals or failure to yield), speed and turning violations. Targeted enforcement was structured to address these types of violations. A partnership was developed with the City of Phoenix Traffic Engineering Department to improve signage and roadway markings at intersections and areas where collisions are prevalent.

A community education program was developed in conjunction with a local newspaper to inform residents of Arizona laws, how to drive defensively to avoid accidents and announcing future enforcement programs. Following this educational campaign, enforcement programs began in May 2000.

Each enforcement program involved motorcycle officers from the Police Department's Traffic Bureau as well as patrol and neighborhood enforcement officers from the local neighborhood station. All violations involving traffic signal enforcement operations were videotaped. A videotape was prepared for any citation that went to court, and the tape was shown in court. The vast majority of violators who viewed the tape in court changed their plea without a trial. Violators from each traffic enforcement operation were tracked to gather statistics

on outcome. Continuing statistics have revealed that violators have a 97 percent conviction/traffic school/voluntary fine payment rate.

As a result of the enforcement programs during the last seven months of calendar year 2000, the traffic collision rate for the Ahwatukee Foothills area has been reduced by 4.7 percent. This reduction is significantly below any other area of the city, which experienced a 3.7percent increase.

# PROJECT DESCRIPTION

**INTRODUCTION:**

Phoenix, Arizona is the sixth largest city in the United States. With a population of 1,300,743 (2000 Census), Phoenix geographically encompasses approximately 477 square miles. One section of the City of Phoenix is isolated from the remainder of the city by South Mountain. This mountain range is also the largest municipal park in the country. The area south of South Mountain is known as Ahwatukee-Foothills, which began to be developed in the early 1970s. In the mid 1980s, the area experienced a tremendous development boom that is still continuing. Growth included many large multi-family structures, single-family residences and significant retail development. One major intersection has large retail complexes on all 4 corners, including a 24-screen movie theater. At the present time, the area is home to more than 75,000 residents and encompasses an area of approximately 40 square miles. Additional development is planned for a large section of land at the far west end of the geographic area.

Development of this area included major roadways that were not designed for the development surge that has occurred into the foothills of South Mountain. Traffic congestion continues to be a major source of citizen complaints. The problem is that there are only six points of ingress/egress from the entire area. Four of the six major roadways intersect with Interstate 10, which is the primary route to the metropolitan Phoenix area. The fifth road, Guadalupe, passes over Interstate 10 and into the adjacent town of Guadalupe. Guadalupe *Road is narrow and has many stop signs. The sixth and* final *roadway, 48th Street, connects* with a private road into a private hotel/resort. This road is not maintained by the City of Phoenix and is one lane in each direction. The road has many curves and meanders through the foothills of South Mountain before connecting to a major city street north of the area.

Two of the six major roads, Elliot and Warner Roads, are linked in a horseshoe shape with no access from the west, where all the new development is located. The other two major roads, Ray Road and Chandler Boulevard, are also linked further west into the community,

leaving Chandler Boulevard as the only road serving the far west portion of the community. Another main road, Pecos Road, is a divided roadway on the alignment for a future freeway. At the present time, there is no connection to Interstate 10. Pecos Road traffic is routed to Chandler Boulevard just before it intersects with Interstate 10. This causes additional congestion and frustration for commuters. Pecos Road is scheduled to be connected to Interstate 10 in 2002, but no modifications to Interstate 10 are planned to handle any additional traffic.

During morning rush hour, it is not uncommon to have traffic backed up for more than a mile on both Ray Road and Chandler Boulevard waiting to enter Interstate 10. This backup lasts for approximately 1.5 hours. The evening rush hour is similar except that it dumps a considerable amount of traffic onto local streets from Interstate 10. Two major high schools are located in the area and most students drive a car as soon as they are eligible to obtain a driver's license. Geographical location of this community and the roadway layout have made this area the largest cul-de-sac in the world.

Due to heavy development and resultant traffic congestion, the number of traffic collisions has steadily increased, which continues to drain resources of the Police Department. Analysis of the causes of collisions revealed that most were caused by failure to stop at traffic signals, turning violations, and speed too fast for conditions. Many roads in the community consist of curves and hills.

SCANNING:

In 1999, there were **450** non-injury collisions, **279** injury collisions, and 2 fatalities occurred in the Ahwatukee-Foothills community.

The increasing number of traffic collisions has drained the limited police resources assigned to the Ahwatukee Satellite Station. On many days, three officers are on duty during

daylight hours to handle all radio calls. One day per week, as many as seven patrol officers work the area. On most days, at least one motorcycle officer works the area in addition to patrol officers. Patrol officer resources are quickly consumed when a traffic collision occurs, both for investigating and controlling the resultant traffic congestion. Some days, multiple collisions are being investigated simultaneously, which consumes available patrol officers. When patrol officers are busy with traffic situations, other calls for service suffer with increased response times.

Ahwatukee-Foothills has a response time 28 percent longer than the rest of the city and the remainder of the precinct. This is due primarily to the topography of the area and scarce patrol resources. The longer response time for officers in this area was a primary factor in determining the need for analysis. Traffic collisions were identified as the second highest in calls for service for patrol officers, led only by false alarm calls.

In 1994, a group of citizens formed the Ahwatukee Crime Prevention Task Force. The Task Force focused their efforts on political pressure to get better police coverage in Ahwatukee and was eventually successful in getting a neighborhood police station established.

The Ahwatukee Foothills community has a local newspaper that is delivered twice weekly to each residence and business in the area. The newspaper and the Ahwatukee Crime Prevention Task Force conducted a survey to determine the concerns of Ahwatukee residents. The survey revealed that traffic conditions were the primary concern of area residents.

The population of Ahwatukee-Foothills is unique in that residents leave for work and return home by driving through the same area on a daily basis because there are no alternative routes available. While there are certainly visitors to the area, the vast majority of motorists on the roads during the peak hours are local residents.

A survey of local streets, conducted with staff from the City of Phoenix Traffic Engineering Department, identified some speed limit signs that were not visible due to overhanging branches or curves in the roadway.

**ANALYSIS:**

Based on survey results, traffic collision data was gathered from the Police Department's Traffic Accident Data System (TADS) to determine cause and time of day for collisions. Primary causes for collisions were violations at signalized intersections e.g., failing to stop for red signals, failing to obey turn signals, failing to yield to oncoming traffic while making left turns, and speed too fast for conditions.

A location with nearly daily collisions is 4900 East Ray Road. This location is a mid-block entrance to a retail shopping center. Eastbound traffic forms a queue to get onto Interstate 10 approximately ½ mile away. Traffic normally occupies the two left lanes, with the curb lane open for traffic to merge to the left lanes to get onto the freeway. Westbound drivers pull into a left-turn bay to wait for an opening to make a left turn into the retail center. Drivers see traffic stopped for them and proceed to make a normal left turn, not aware that a third lane along the curb that is empty. Eastbound drivers in the curb lane cannot see a vehicle turning left through stopped traffic and the two always meet at high speed at the driveway entrance. Various enforcement methods were tested to prevent these types of collisions. Methods included parking a police car along the roadway at the retail center driveway to slow curb-lane traffic significantly and to make drivers more aware of other traffic. No collisions occurred during this time but the method consumed too many patrol hours to be used on a regular basis.

One cause for the traffic queue is the traffic signals at Interstate 10. Signals are operated by the Arizona Department of Transportation (ADOT) and are not synchronized with the Phoenix traffic signals.

A concern about conducting enforcement programs is local climate. When officers are subjected to summer temperatures, fatigue sets in quickly. Winter temperatures and darkness also affect enforcement programs.

Where traffic control signs are not clearly visible, an enforcement case is much more difficult to bring to a successful conclusion in City Court.

Motorcycle officers from the Police Department Traffic Bureau who normally work Ahwatukee-Foothills were contacted for input on how to best enforce traffic violations, and the following is a summary of their work.

**RESPONSE:**

*Traffic Accident Reduction Program*

Contact was made with the City of Phoenix Traffic Engineering Department, and meetings were held to examine roadway markings and signals at major intersections in Ahwatukee-Foothills. Recommendations were made to change some signage and roadway markings. Trees were trimmed where necessary, and additional signs were installed.

The *Traffic Accident Reduction Program was* created to address problems with traffic collisions in the Ahwatukee area. The program consists of four phases: education, engineering, enforcement, and court.

*EDUCATION:* In *February* 2000, a comprehensive *education program was* implemented with the assistance of the Ahwatukee Foothills News (AFN), which is delivered to each residence and business in the community twice a week. Articles were written to explain the duties of drivers at turn arrows and red traffic lights and the importance of obeying speed limits. Each article (attached?) informed the community that enforcement programs would begin in the

near future at unannounced locations and times. These articles continued until enforcement programs began in May 2000.

Presentations were made at various meetings of community members such as the Ahwatukee Crime Prevention Task Force, Chamber of Commerce, Block Watch, and the Ahwatukee Recreation Center. Pamphlets were distributed at local Crime Fair events.

*ENGINEERING: A method* utilized *atone* location *was* complete closure *of the* left-turn lane for westbound traffic by placing traffic cones in the road. Cones were placed during peak hours only and reduced traffic collisions to zero while they were in place. Based on this success, permanent barricades and cones were installed to evaluate the need for this turn lane. Approximately 300 *feet* farther *down the road is a* signalized left-turn lane *at 48th Street. This is* a major arterial street in the community, so plans were made to permanently close the left-turn bay. While waiting to schedule the closure, an alternative plan was implemented at this location. The street was painted with large KEEP CLEAR lettering and large white Xs before the driveway. DO NOT BLOCK DRIVEWAY signs were erected for eastbound traffic. Once the marking was in place, barricades and cones were removed. Morning rush hour traffic observed the markings and usually left a large break for turning vehicles. No collisions occurred at this location while cones and barricades were in place. Future consideration will be given to permanent closure of the left-turn lane.

Signal timing for major intersections operated by the City of Phoenix was changed slightly to coincide with ADOT signals at the Interstate 10 intersection. In addition, ADOT changed their signal timing to allow eastbound traffic on Ray Road to queue on the freeway bridge instead of into the local intersections. This change alleviated some of the intersection *congestion at* 50th *Street and in the* 4900 block. *These changes* reduced *the* tendency *of* drivers to make forced lane changes to fill the left-turn lanes on the Interstate 10 bridge with vehicles waiting to get onto the freeway. Prior signal timing allowed these lanes to be open for

eastbound traffic so drivers would be more inclined to make several last minute lane changes to enter the freeway.

*ENFORCEMENT: The enforcement phase of this* program *was a concern to* supervisors assigned to the area. Due to the large amount of traffic and high speeds, enforcement efforts could not stop violators in the traditional manner by following them to wherever they could pull over for an officer. This method would consume far more officers than were available. In addition, safety of officers would be jeopardized because they were spread out across a large geographical area.

Each enforcement program was analyzed for officer safety, maximum public visibility and efficient use of patrol officers. A method of enforcement was developed that served each of these needs. The Phoenix Police Department uses several unmarked cars equipped with radar and video cameras for enforcement of aggressive drivers. Cars are provided through grant funds from the State of Arizona and are operated by personnel from the Traffic Bureau. Violators were followed through the court system to ensure appropriate prosecution for the violation.

Enforcement programs were structured to use Traffic Bureau personnel to operate radar for speed enforcement and to assist in stopping other violators. Once the enforcement location was targeted, the enforcement program would be structured to provide a safe method by which to stop violators. Enforcement programs were usually conducted in a location where manually operated traffic signals were employed to stop traffic. Officers wearing traffic vests would then step into the stopped traffic and direct violators to a parking lot or side street where other officers would write the citation. This methodology eliminated hazards to officers when they had to "chase down" a violator to issue citations. Prior to conducting each enforcement program, all personnel involved attended a briefing to discuss the targeted violation, the method of stopping violators, and the designated citation writing area.

An information brochure was created to summarize traffic statistics for the Ahwatukee area and to explain causes of traffic collisions for the area and why our officers were implementing enforcement programs. The brochure also contained general vehicle physics for informational purposes. Each violator was given a brochure (attached) during the traffic stop. While the officer was completing the citation, violators would read the brochure to learn the purpose for the traffic stop and the reason for their citation.

Logs were prepared to document the time of the violation, vehicle description, estimated and actual radar speed for speed enforcement programs, observing officer, and citation number. Logs were valuable for tracking citation status through the court system.

If the targeted violation involved a red traffic signal or turn arrow, a video camera continuously recorded all traffic at the intersection. Officers in plain clothes were stationed at the intersection to observe violations and would inform other officers by radio of color and make of each violator's vehicle. Officers positioned down the road would see the vehicle approaching and manually operate the traffic signal to stop all traffic. The violator was then directed from the flow of traffic to a designated citation writing area, where numerous marked police vehicles were parked with the overhead lights activated. As other traffic passed by the area, they could see all the flashing lights and be aware that enforcement was occurring. The citation writing area was not visible to violators in the target area.

Enforcement of speed violations was accomplished with an unmarked radar car parked along the roadway. Two officers were assigned in the car - one to operate the radar equipment and the other to log the violations and communicate vehicle descriptions to other officers.

At the conclusion of each enforcement program, officers printed a summary of traffic statistics on each citation as well as details of the daily enforcement location (signal timing facts, street widths, etc.) for later use in court. Summary information was prepared in advance, using a word processing program, and information regarding each citation was then printed directly

onto the officer copy of citations. This provided a measure of consistency when testifying in court.

During enforcement programs, several notable events occurred. On one occasion during a speed enforcement program, a bystander at a construction site took a can of spray paint and a sheet of plywood to create a warning sign for approaching motorists and placed it several blocks in front of the unmarked radar car. When all traffic suddenly slowed to the speed limit, a motorcycle officer was sent on a reconnaissance mission and located the sign. Moments after the sign was removed, traffic picked up speed again and enforcement continued. Subsequent enforcement programs always included an occasional sweep of the area to see if warnings were posted.

On other occasions, drivers were stopped and cited who had been cited in previous recent operations REWORD. Some drivers also commented that they had read about the enforcement programs that day or the day before in the local newspaper. On one occasion, enforcement was targeted on a specific direction of travel, when a driver from another direction committed a flagrant violation in front of the officers and nearly caused a collision. The driver was subsequently located and cited. While the video camera was being set up and calibrated for an enforcement program, a collision occurred in the road right next to the observing officers, but off-camera. The sound track clearly picked up the skidding and collision, which turned into a hit and run situation. The footage, including the street signs and sounds of the collision, was used at the beginning of each videotape prepared for presentation in court. It resulted in a 100 percent conviction rate.

*COURT:* When officers were notified of a trial for a citation from an enforcement program, they contacted Sergeant Norton to determine if there was a videotape of the violation. If one existed, a copy of the tape was prepared from the master tape. The video was intended to show the enforcement location and the violator's actions. Tapes were divided into three

segments: normal speed, slow motion, and stop action. The video was always set up to monitor the traffic signal as well as the lanes violators traveled. Opposing traffic lanes were also included to demonstrate the hazard involved as well as the amount of traffic present. The stop action video footage was used to show the court exactly where the violator's car was at the moment the signal turned red or the turn arrow turned deactivated. In most cases, the defendant viewed the tape before the start of the trial and then changed the plea to *Responsible* (equal to guilty under Arizona law on civil traffic violations). Trial judges were not accustomed to having video evidence presented at first but soon became aware and supportive of the technology. In the rare case where a tape was used during a trial, there was usually no response from the defendant, even when the judge asked for an explanation of why the charges were being contested. The verdict followed soon thereafter and was always *Responsible*.

**ASSESSMENT:**

Non-injury traffic collisions for the Ahwatukee Foothills area have significantly decreased from 1999 levels.

| TYPE | 1999 | 2000 | % CHANGE |
|---|---|---|---|
| Non-injury Collision | 450 | 385 | -14% |
| Injury Collision | 279 | 310 | +11% |
| Fatality | 2 | 1 | -50% |

The following table shows the same criteria on a citywide basis. As can be seen, the experience in the Ahwatukee-Foothills area was very successful at reducing the collision rate for non-injury collisions.

| TYPE | 1999 | 2000 | % CHANGE |
|---|---|---|---|
| Non-Injury Collision | 22,642 | 21,647 | -4.39% |
| Injury Collision | 14,824 | 15,191 | +2.5% |
| Fatality | 169 | 159 | -5.92% |

At the retail driveway entrance, there were zero traffic collisions during the time the barricades and cones were in place.

Traffic congestion along Ray Road has been observed to be much less than before the modifications, and the traffic queue waiting to get onto Interstate 10 is spread over a longer area but in fewer lanes than before. The queue moves in a much more orderly manner than previously with very few incidents of forced lane changes.

During our traffic enforcement programs, we received positive comments from citizens who were walking or driving by in the area. Many would approach us and say that they were

concerned about the speed, etc., of traffic in the area, and they felt much safer when they saw us taking enforcement action.

Citations issued for speed and traffic signals were tracked separately through the court system. The following table shows the disparate means of resolution of these citations:

| *DISPOSITION* | *SPEED* | *SIGNAL* |
|---|---|---|
| PAID | 67 (21 %) | 18 (36%) |
| TRAFFIC SCHOOL | 180 (56%) | 18 (36%) |
| COURT -- NOT RESPONSIBLE | 7 (2%) | 1 (2%) |
| COURT - RESPONSIBLE | 61 (19%) | 13 (26%) |
| OTHER | 5 (2%) | 0 |

A significantly higher percentage of violators who received traffic signal violations went to court for a hearing, while violators who received speeding citations attended traffic school or paid the citation more often. The Other category captured those cases where the wrong officer was subpoenaed or a videotape was not ordered in advance. Chart 1 displays the summary of speed enforcement and Chart 2 displays the summary of traffic signal enforcement.

The informational brochure provided to all violators at the traffic stop served to reduce the propensity for violators to be upset about receiving a citation. During all of these traffic enforcement programs, no formal complaints were received. Only two violators made negative remarks to officers during the citing process.

The following traffic enforcement operations have been conducted to date on this program:

| LOCATION | VIOLATION TYPE | VIOLATIONS | NOTE |
|---|---|---|---|
| 48th Street/Ray | Left turn signal | 24 | |
| 4400 E. Ray Rd | Speed (eastbound) | 58 | |
| 4500 E. Ray Rd | Speed (eastbound) | 39 | 39% over |
| 48th Street/Elliot | Left turn signal | 37 | |
| 44th Street/Chandler | No through traffic signs | 5 | |
| 2000 E. Chandler | Speed (eastbound) | 70 | 41% over |
| 3000 E. Chandler | Speed (eastbound) | 62 | 38% over |
| 11600 S. 48th Street | Speed (northbound) | 66 | 37% over |
| 16000 S. 40th Street | Speed (northbound) | 81 | 48% over |
| 48th Street/Warner | Left turn signal | 20 | |
| 3900 E. Knox Road | Speed (westbound) | 5 | |
| 3300 E. Ray Road | Speed (westbound) | 28 | 40% over |

Average speed during our speed enforcement programs was 41 percent above the posted speed limit. To date, the Traffic Enforcement Program has been a success in the Ahwatukee-Foothills community. The program will be continued into the future, with additional education and enforcement efforts to further reduce the collision rate in this unique community.

Traffic citations were tracked through the Phoenix Municipal Court system to determine the final outcome of each citation. For all citations issued, there was a 97 percent rate of conviction/voluntarily paid/traffic school attendance. (see Chart 3)

Enforcement programs will continue into the future; results will be monitored through the court process. In April 2001, we received a new speed monitoring trailer that contains a computer to log traffic counts and average speeds as well as display actual speed to individual motorists. This equipment, in conjunction with continuing analysis of statistical data, will be used to determine locations of future enforcement targets.

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# Attachments

# *AHWA TUKEE SPEED ENFORCEMENT PROGRAM*

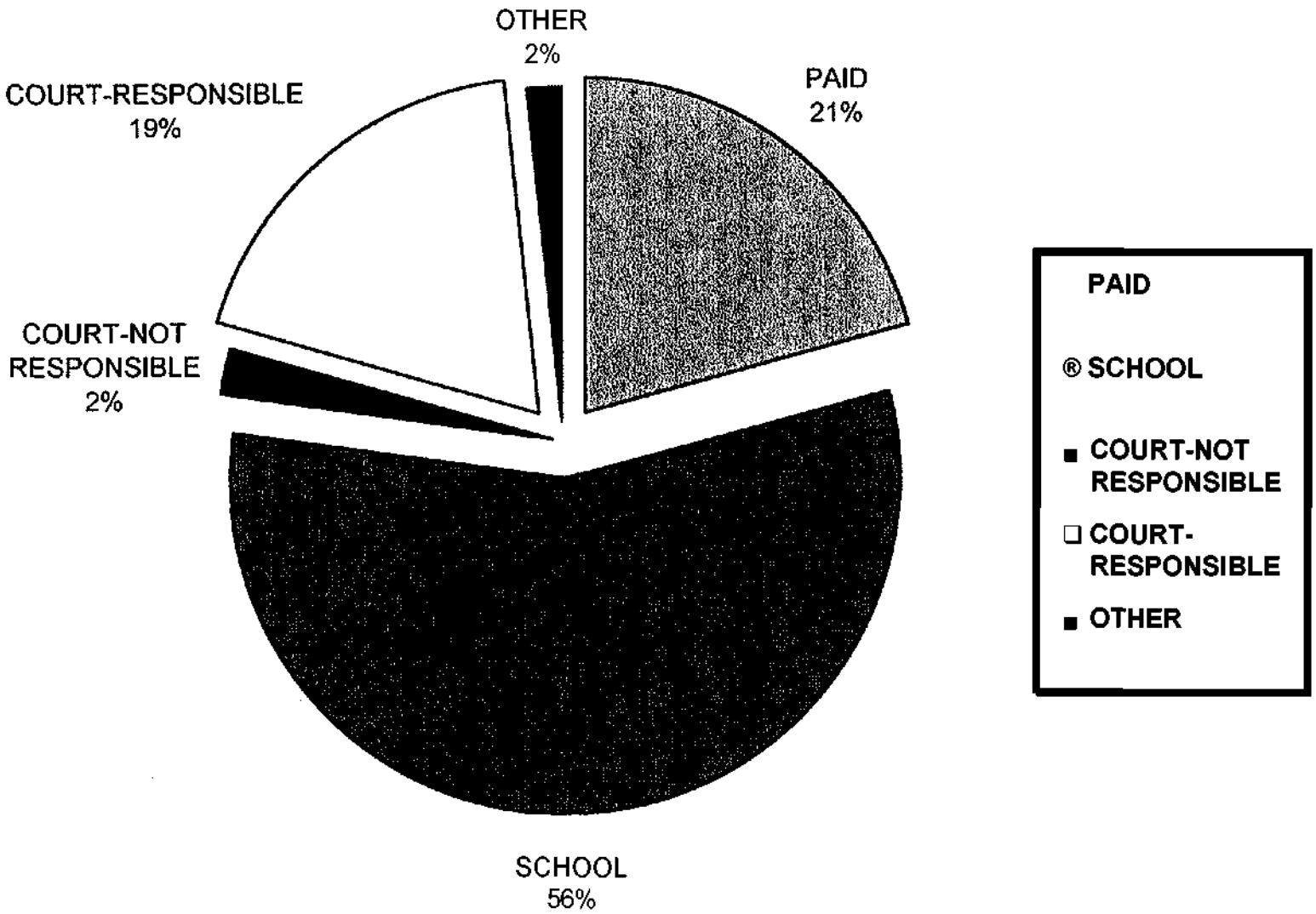



CHART 1

# *AHWATUKEE RED LIGHT ENFORCEMENT PROGRAM*

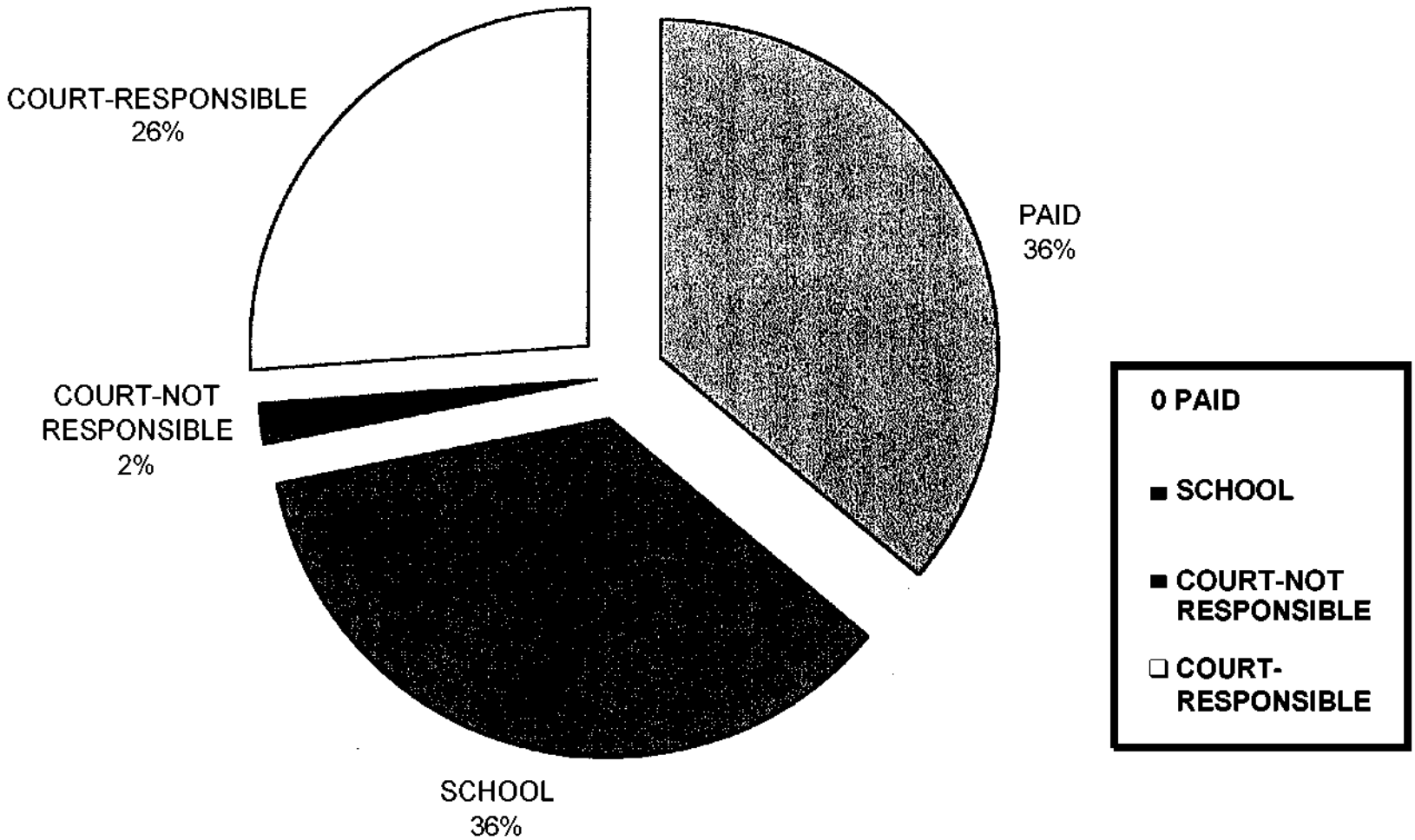
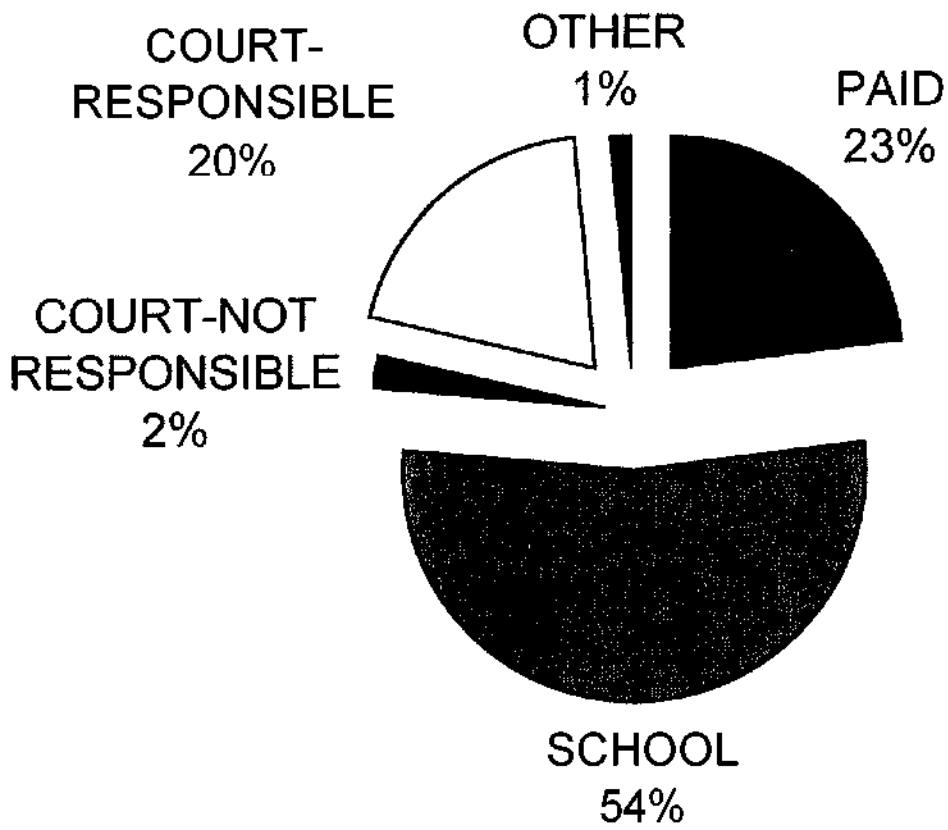



CHART 2

# *AHWATUKEE TRAFFIC PROGRAM SUMMARY*




**SPAID**

- **SCHOOL**
- **COURT-NOT RESPONSIBLE**
- COURT-**RESPONSIBLE**
- **:OTHER**