WASHINGTON TRAFFIC SAFETY COMMISSION

Traffic Research & Data Center

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EVALUATION OF "TARGETED PEDESTRIAN ENFORCEMENT"

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INTRODUCTION

The safety of pedestrians on public roads depends primarily on three factors:

- environmental factors including the design of crosswalks,
- pedestrian behavior and their awareness of approaching vehicles, and
- the behavior of drivers, especially compliance with traffic laws intended to protect pedestrians from vehicle collisions.

Clearly, one of the most critical factors is driver compliance with pedestrian safety laws. Washington law regulating driver behavior at crosswalks require that approaching vehicles must slow or stop when a pedestrian steps off the curb into a crosswalk (RCW 46.61.235). On a multi-lane road the requirement to stop applies to vehicles in the lane next to the curb as well as the adjacent lane. As the pedestrian moves through the lanes of traffic, vehicles in the lane occupied by the pedestrian as well as vehicles in both of the adjacent lanes must stop. A vehicle may proceed once the pedestrian has cleared the adjacent lane.

Driver compliance with pedestrian crosswalk laws can be influenced by public education and police enforcement. Many drivers are unaware of the requirements specified in the crosswalk law. Other drivers may see pedestrians only as obstacles in the roadway that require a vehicle maneuver in order to proceed. Public information and education that explains the crosswalk law and the penalties for violations may be beneficial. However, many drivers may perceive a low likelihood of police enforcement, which would obviate their motivation to comply with the law. In most jurisdictions the amount of crosswalk enforcement, in fact, is very low.

One method of increasing driver compliance with crosswalk laws is the technique of targeted pedestrian enforcement (TPE). This technique involves deploying a pedestrian decoy, a cadre of police traffic enforcement officers (typically motorcycle officers), and an observer who is in radio contact with the pedestrian and the enforcement personnel. A roadway crosswalk site is selected where the pedestrian decoy will attempt to cross when a vehicle passes a marked point on the road which is a measured distance from the crosswalk. The enforcement personnel are positioned a block or two ahead and are hidden from the view of drivers approaching the target crosswalk. Drivers that fail to stop or slow for the pedestrian are then pulled over by the enforcement officers and

either cited or given a warning. The observer radios a description of the errant vehicle to the enforcement officers. TPE is typically conducted in conjunction with public information media messages that inform drivers of the enforcement effort.

The purpose of this study was to evaluate the effectiveness of TPE in increasing the rate of driver compliance with the crosswalk law.

METHOD

THE SETTING FOR THE STUDY: BELLINGHAM AND OLYMPIA, WASHINGTON.

The targeted enforcement activities were conducted in Bellingham Washington. We gratefully acknowledge the participation of the Bellingham Police Department in this study, and in particular, the assistance and enthusiastic support of Sergeant Shawn Aiumu in coordinating the enforcement as well as the observation and data collection activities.

Bellingham is a medium size city (population ~ 70,000) located on the Interstate 5 corridor 90 miles north of Seattle and about 50 miles south of the Canadian border. The economy of the city is based primarily on retail trade, services, and manufacturing. The culture and economy of the city are strongly influenced by Western Washington University.

Olympia (population ~ 40,000) was the comparison city for the study. The three-city metropolitan area of Olympia, Tumwater, and Lacey has a population of about 80,000, roughly equivalent to that of Bellingham. The city is located at the southern tip of Puget Sound on the I-5 corridor about 60 miles south of Seattle. Olympia is the State Capital, and the local economy is primarily driven by state government, with retail trade and services also being important aspects. Similar to Bellingham, the city is home to a state university, The Evergreen State College, which has had a major influence on the city's culture and economy.

THE STUDY SITES.

There were six sites in Bellingham - three enforcement sites and three comparison sites. All sites were roads posted for 25 MPH speed limits and near to the downtown area of the city. Four of the sites were 3-lane one-way streets and two were 2-way streets (one lane in each direction) with a center left-turn lane. An equal number of both types of streets were assigned to the enforcement and comparison conditions. The sites were selected by the Bellingham Police Department because they posed a higher risk of pedestrian-vehicle collisions. At each site there was a marked crosswalk with no traffic control signs or signals.

Three comparison sites were selected in Olympia that appeared to be similar to the Bellingham sites and were near the downtown area. The Olympia sites included two one-way streets and one 2-way/center left-turn street. Each had a 25 MPH speed limit, a marked crosswalk, and no traffic control signs or signals.

All of the sites in both cities were set up with a measured distance from the crosswalk of approximately 160 feet where a traffic cone was placed a few feet from the curb or a fixed object such a light post was noted. This distance was selected to give adequate time for a vehicle to stop at the crosswalk when traveling at a 35 MPH speed on wet pavement and allowed for a two second driver reaction time.

DESIGN OF THE STUDY: BEFORE-DURING-AFTER WITH MULTIPLE COMPARISONS.

The study was conducted over a three week period during the weeks beginning October 28, November 4, and November 11, 2002. The study began on the Monday following the change from daylight savings time to standard time. Observations were made on weekdays during two hour periods in the morning (7-9 AM) or afternoon (3-5 PM).

Observations of vehicle responses to the pedestrian decoy were conducted in the first week at all study sites to establish baseline rates of driver compliance.

Enforcement activities were conducted in the second week at three of the Bellingham sites, and observations of driver compliance were conducted at all of the study sites. Public service media announcements of the impending TPE activities in Bellingham began during the weekend following the baseline week and continued into the week of enforcement. These media messages were carried on local TV, radio, and newspapers.

Follow-up observations at all sites were done in the week following enforcement activities. The observations at each site were made on the same day of the week and same time of day over the three week study period.

The Olympia sites provided an assessment of driver compliance in a city where no special enforcement or media activities had been conducted. The comparison sites in Bellingham provided an assessment of the effect of the media announcements in the absence of specific enforcement activities.

The design of the study, then, consisted of three time periods (before, during, and after the enforcement activities) by three types of sites (TPE sites, non-TPE sites in the same city that received the media messages, and comparison sites in a different city where no enforcement of media activities occurred).

PROCEDURES.

Observations were done on weekdays in the morning (7-9 AM) or afternoon (3-5 PM). Because Fall weather in Washington is unpredictable, the observer-pedestrian teams were instructed that in the event of rain or extreme cold to limit data collection to 200 observations or the scheduled two-hour time period, whichever came first.

Observations were initiated when a vehicle passed the cone or object that was located about 160 feet from the crosswalk. The pedestrian would then step onto the street one or two paces from the curb and look at the approaching vehicle. Eye contact with the driver was minimized. If the vehicle slowed or stopped, the pedestrian would proceed

across the street. The pedestrian was instructed to be cautious of other vehicles in adjacent lanes and not to proceed unless the other vehicles also were slowing.

The observer recorded on a data sheet whether or not the vehicle stopped or slowed for the pedestrian. "Stopping" was defined in accordance with the Washington crosswalk law; i.e., a vehicle that stopped or slowed for the pedestrian, but then continued before the pedestrian had cleared the adjacent lane was counted as "not stopping". When observations were initiated as a group of vehicles approached, each vehicle was counted on the data sheet as to whether it had complied with the crosswalk law.

THE PEDESTRIAN DECOY.

The pedestrian decoys in both cities were of similar appearance; male, about six feet tall, weighing about 170-180 pounds, dressed in casual clothing and neutral colors. The pedestrian in Bellingham was a commissioned police officer. Two different persons served as pedestrians in Olympia; one was a retired police officer and the other a WTSC staff person. All received training for the study on the crosswalk procedures and safety precautions.

RESULTS

Driver compliance with the crosswalk law at the Bellingham TPE sites averaged 49.3% during the baseline week and increased to 63.1% when the enforcement activities were conducted. During the follow-up week compliance remained high at 74.4%. These data are shown in Table 1. There were 236 traffic citations issued for crosswalk violations during the week of enforcement.

Compliance rates at the comparison sites in Bellingham were somewhat lower, but showed the same pattern of improvement increasing from 40.4% to 59.6% to 65.5% over the three weeks of the study.

In contrast, driver compliance at the Olympia comparison sites during the baseline week was substantially lower than the Bellingham baseline rates, and remained low during the second week as well as during the follow-up week. Compliance in Olympia averaged 26.1% over the three weeks of the study.

The data were analyzed for potential confounding factors such as inclement weather, poor visibility, time of day, day of week, and road configuration (one-way vs. two-way). None of these factors could account for either the improvements in driver compliance found at the Bellingham sites or for the differences found between the Bellingham and Olympia sites.

TABLE 1. PERCENT OF DRIVERS STOPPING OR YIELDING FOR THE PEDESTRIAN

CITY	TYPE OF SITE	STUDY PHASE	N OF DRIVERS YIELD FOR PED	N OF SITES / N OF DRIVERS	PERCENT YIELD FOR PED
BELLINGHAM	CONTROL	BEFORE		3	
			458	1134	**40.4%**
		DURING		3	
			489	821	**59.6%**
		AFTER		3	
			416	635	**65.5%**
		Total		9	
			1363	2590	52.6%
	ENFORCEMENT	BEFORE		3	
			512	1038	**49.3%**
		DURING		3	
			567	899	**63.1%**
		AFTER		3	
			433	582	**74.4%**
		Total		9	
			1512	2519	60.0%
OLYMPIA	CONTROL	BEFORE		3	
			162	614	**26.4%**
		DURING		3	
			187	590	**31.7%**
		AFTER		3	
			110	557	**19.7%**
		Total		9	
			459	1761	26.1%

DISCUSSION

Both the TPE and comparison sites in Bellingham showed increases in driver compliance of 25 percentage points from baseline to follow-up which represents more than a 50% improvement. The fact that there was a comparable increase in compliance at the non-enforcement sites suggests that Bellingham drivers had received the media messages about the TPE program and adjusted their driving behavior accordingly.

Driver compliance did not change at the comparison sites in the city of Olympia where no enforcement or media activities occurred, and in fact, decreased by six percentage points. This finding suggests that the improvement in driver compliance found in Bellingham can be legitimately attributed to the TPE program and not to some other extraneous factor that influenced driver behavior throughout the State.

The data also show that the increased compliance in Bellingham continued during the follow-up week, suggesting at least a short-term carry-over effect from the week of the TPE activities. The extent to which this improvement might continue into the future is unknown. However, It is likely that compliance would revert back to baseline levels in the absence of at least some continued enforcement and public awareness . We recommend that the Bellingham Police Department continue to conduct occasional TPE activities accompanied with media messages.

It should be also noted that the effect of TPE was found in a city with a relatively high baseline compliance rate. An important question is whether TPE would also be effective in a jurisdiction where the baseline rate was low.

In conclusion, the findings of this study demonstrate that the technique of targeted pedestrian enforcement can be an effective tool for improving the rate of driver compliance with the pedestrian crosswalk law.