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Crosswalk Behaviors of Pedestrians and Operators of Motor Vehicles

Introduction

Pedestrian safety is a main concern on college campuses. This field observation was conducted to observe behaviors of pedestrians and drivers at marked crosswalk sites. The purpose was to identify which age category and genders were most likely to adhere to the conventions associated with crosswalks. Two different sites were chosen and covert observation was employed to observe and collect data.

Choosing the site

Two different crosswalk sites, where individuals crossing the street occur with sufficient frequency, were selected to complete these observations. The first site was an on campus crosswalk that was used by students to cross the Drillfield and get to the academic side of campus. The heavy foot traffic made this site attractive for observation, as it procured a substantial amount of data. This aspect was also a limitation to the site because it was hard to monitor and account for every pedestrian, especially at a time when class was let out. It was expected to see students crossing the street outside of the crosswalk lines and disregarding cars because of situations triggering irrational behavior like being late for class.

The second site selected was an off campus intersection behind Surge where students cross to get off campus to apartments, etc. The advantages to this site it that there were more vehicles on this road so data about driver behavior is more accessible, however, this site is not as heavy with foot traffic as the on campus site. Another limitation to this site is that there were flashing crosswalk signs to alert drivers to pedestrians in the crosswalk which had an impact on the behaviors of both drivers and pedestrians.

Gaining access

No approval was needed to enter the locations, as both sites are very public places where there is little reason for individuals to keep their behaviors a secret. Data was collected through covert observation to allow for a natural setting for observation so as to not influence the actions of pedestrians or drivers.

Sampling

The sampling method used during this observation was convenience or available sampling. This sampling method was appropriate to test certain questions regarding the behaviors of pedestrians as well as drivers at crosswalks and to see what kind of responses arose. Using this method also allowed for the sample to contain many of the same attributes as the population intended for study, which is all individuals, students and adults, that comprise the Virginia Tech community.

Observations were taken at peak time of campus activity between noon and 1 p.m. on a Thursday and Friday. More specifically, the on campus crosswalk site was observed on October 1st and the off campus crosswalk site was observed on October 2nd. The date and times of these observations fits the maximum variation case sampling strategy in that a wide range of behaviors from the units of study, students or adults, pedestrians or drivers, was captured. Maximum variation sampling aimed to find variation in perspectives under typical conditions. In this instance, observing individuals walking or driving in crosswalk zones, a normal behavior in a college town. It also allowed for common themes that are evident in a sample to be identified, such as what type of individual stops most often as a crosswalk.

Collecting data

Notes and data were collected via computer to remain as covert as possible. Data charts in Microsoft Word were created to account for both pedestrians and drivers at each of the crosswalk sites. The charts contain categories to identify individuals by age, gender, and whether the pedestrian and/or driver stopped or did not stop upon entering a crosswalk zone. The two age categories chosen for observation were students, or individuals estimated to be between 17 and 22 years of age, as well as adults estimated to be 23 years and older. Context clues like dress were used to estimate age of those observed, the most identifiable clue being a backpack to identify individuals as a student.

For the data charts specific to drivers, the type of car was an additional variable observed for the purpose of further analysis. This variable was broken down into categories of small, medium, or large vehicle determined by an approximation of length and passenger carrying capacity. An "X" was marked in the appropriate category "Stopped" when an individual came to a stop and proceeded with caution before entering the street, or "Did Not Stop" if an individual did not check for cars before proceeding across the street. For the drivers, braking when a pedestrian was present at the crosswalk constituted as "Stopped," whereas not allowing pedestrians present at a crosswalk the right of way was considered "Did Not Stop."

Analyzing data

The maximum variation sampling method allowed for many common themes from the data to be analyzed. The on campus crosswalk site showed a trend that students were more likely to not stop at a crosswalk than stop. Of the 62 male students observed,

53 students, or 85 percent, did not stop before crossing the street. 26 out of 40 female students observed at this same site, or 65 percent of females, similarly did not stop. This behavior may be attributed to students' sense of empowerment in numbers. Students walking to class dominate the sidewalks and walkways; therefore if one student begins to cross, handfuls follow. A diffusion of responsibility effect occurred where pedestrians shared the risk of checking whether it is safe to cross the road or not. Pedestrians also have the right of way at crosswalks, as enforced by the VT Police, which most likely contributed to this behavior of not concerning to stop. A sense of urgency to get to class may also have prompted this behavior. For adults at the on campus crosswalk, 75 percent of females and 52 percent of males stopped walking to observe cars before crossing. Maturation and responsibility most likely played a role in this pattern.

Data collected from pedestrians at the off campus crosswalk site marked a similar trend. 86 percent of male students and 59 percent of female students did not stop or observe their surroundings before entering the street. The presence of the visual images such as the crosswalk signs and flashing lights displayed at this busy off campus crosswalk most likely contributed to more compliant crossings, while on the other hand could have encouraged non-compliancy because the visual images put more of an emphasis on cars stopping to aid pedestrians across the street rather than pedestrians being held accountable. The observations for adults were less available at this site as adults typically drive to campus, living further away than students.

The data collected appears to demonstrate that of those sampled between noon and 1 p.m. on October 2nd and 3rd, women of both age groups, in the role of pedestrian as well as driver, stopped more favorably than men at both crosswalk sites. Males tended to

display more risky road-crossing behavior than females because males waited less time and appeared less likely than females to observe ‘‘rules’’ for the use of formal crossings. Females may also tend to be more concerned with their safety, feeling more vulnerable to accidents compared to males. This can also be said about the adults who tended to stop more frequently at crosswalks than students because older individuals tend to walk slower therefore taking more time to cross the street and requiring more caution.

Volume of traffic seems to also be a factor in judgments of crossing opportunities. When traffic volume was low, particularly at the on campus crosswalk, pedestrians tended to cross spontaneously, and did not go out of their way to use a crossing facility particularly if another route was more convenient, or they were in a hurry. At higher volume areas such as the off campus crosswalk, pedestrians used more caution and adhered to the crosswalk markings more diligently.

There are several factors that may have contributed to the data collected for drivers. Speed may be one factor when evaluating these results. Men and women exhibit different behaviors when behind the wheel. Men tend to drive faster than women, which may have accounted for the higher proportion of men drivers' inability to stop at a crosswalk when pedestrians were present. Type of car may have also played a role. For instance, age of the driver generally correlated with a specific type of car with students driving smaller cars and adults driving larger family cars. Overall, the data collected from individuals at both sites the data are reflective of the ratio of male to female students at Virginia Tech and faculty to student ratio.

Exiting

Due to the nature of the research and the setting in which the data was collected, where participants were regularly entering and exiting, there were no inherent issues with exiting the setting. None of the individuals observed became aware of their observation therefore it can be assumed that no individuals were distressed by this study. A field observation would need to be submitted to an Institutional Review Board if the project meets the federal definition of research and if the project includes human subjects.

Conclusion

If this field observation were to be repeated again, a different sampling method would be employed. Using the convenience sampling method was appropriate under the time and cost restraints, although, it did not allow for a general analysis of the entire population upon completion of the study. It could not be stated that adult female pedestrians and drivers are more likely to stop at crosswalks than males simply because the data was collected in accordance to proximity to the research situation, therefore bias exists. The data is not truly representative of the Virginia Tech population. Convenience sampling also limited the data collection to individuals whose personal schedules coincided with the time and location of the study.

To overcome the flaws of the observational methods employed during this study, future observations should be taken at multiple times during the day for longer periods of time and at more collection sites. This will provide for a more complete look at the population of Virginia Tech. Conducting a survey on perceptions of ease, convenience, risk and safety upon crossing the street might also provide insight into the experiences and perceptions of pedestrians and drivers to provide for a richer analysis. However, as a convenience sample this was an effective pilot study overall.

Location: On campus- Crosswalk from Drillfield to McBryde Stairs
Date: October 1, 2014
Time: 12-1 p.m.

Pedestrians		Stopped	Did Not Stop
Student (17-22)	**Male**	XXXXXXXX (9)	XXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXX XXXXX (53)
	Female	XXXXXXXXXXXXXX (14)	XXXXXXXXXXXXXXXXX XXXXXXXXX (26)
Adult (23-older)	**Male**	XXXXXXXXXXXX (12)	XXXXXXXXXXX (11)
	Female	XXXXXX (6)	XX (2)

Drivers		Stopped	Did Not Stop	Other: Type of Vehicle		
				Large (truck, work van)	Medium (mid-size sedan)	Small (compact)
Student (17-22)	**Male**	XXXX (4)	XXXXXXXXX XXXXXXXXX XXXXXXX (23)	XXXXXX XXX (9)	XXXX (4)	XXXX XXXX XXXX XX (14)
	Female	XXX (3)	XXXXXXXXX XXXXX (14)	(0)	XXXXX (5)	XXXX XXXX XXXX (12)
Adult (23-older)	**Male**	XXX (3)	XXXX (4)	XXXXX (4)	X (1)	XX (2)
	Female	XXXXXXXXX XX (11)		(0)	XXXXXX XXXX (10)	X (1)

Location: Off campus
Date: October 2, 2014
Time: 12-1 p.m.

Pedestrians		Stopped	Did Not Stop
Student (17-22)	**Male**	XXXX (4)	XXXXXXXXXXXXXXXXXXXXXXXXXXX XXX (26)
	Female	XXXXXXXXXXXXXXX (15)	XXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXX (45)
Adult (23-older)	**Male**	X (1)	XX (2)
	Female	(0)	(0)

Drivers		Stopped	Did Not Stop	Other: Type of Vehicle		
				Large	Medium	Small
Student (17-22)	**Male**	XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX (36)	XXXXXXXXX XXX (12)	XXXXXX XXXXXX XXXXXX XXXXXX XXXX (28)	XXX (3)	XXXXX XXXXX XXXXX XX (17)
	Female	XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX X (37)	XXXXX (5)	X (1)	XXXXX XXXXX X (11)	XXXXX XXXXX XXXXX XXXXX XXXXX XXXX (30)
Adult (23-older)	**Male**	XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXX (49)	XXXXXXXXX XXXXXX (15)	XXXXXX XXXXXX X (16)	XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX X (36)	XXXXX XXXXX XX (12)
	Female	XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXX (32)	XXXXXXXXX XX (11)	XXX (3)	XXXXXX XXXXXX X (13)	XXXXXX XXXXXX XXXXXX XXXXXX XX (27)