

Title: NATIONAL OBSERVATIONAL SURVEY OF PEDESTRIAN BEHAVIOUR AT CROSSWALKS

Presenting Author: Victoria Gitelman

Authors: V. Gitelman 1;D. Shinar 2;S. Levi 2;

Affiliation

1. The Ran Naor Road Safety Research Center, Technion, Haifa, Israel, 2. Israel National Road Safety Authority,

Abstract:

Pedestrian injury is one of the major road safety problems in Israel where pedestrians typically present a third of the total road accident fatalities and about a tenth of the total injuries. Improper infrastructure characteristics, unsafe pedestrian behaviour, vulnerability of certain pedestrian groups or improper interaction between pedestrians and crosswalk arrangements appear among factors contributing to pedestrian accidents. Observational surveys are one of the ways for studying these factors. A national observational survey of pedestrian behaviour was initiated in Israel aiming at characterization of pedestrian behaviour at crossings and providing a basis for long-term monitoring.

As pedestrian behaviour is infrastructure dependent, it is common to define the survey for different types of locations. The Israeli survey's framework included three types of pedestrian crossing sites: signalized junctions, non-signalized junctions and street sections - because, according to a recent study of pedestrian accidents in Israel, these types of locations are associated with a significant share of both fatalities and injuries. The survey is focused on urban sites as those are responsible for 75% of pedestrian fatalities and 95% of pedestrian injuries in Israel. For each location type, a stratified sampling of sites was applied, based on the population size and types of Israeli towns and accounting for geographic areas of the country. In addition, in selecting the sites an equal subdivision of crosswalks on divided and undivided roads was provided. The final sample included 59 sites distributed throughout the country, of which 19 were at signalized junctions, 19 at non-signalized junctions and 21 at street sections.

At each site, the observations continued for 4 hours. The survey was focused on the pedestrian behaviours such as: compliance with traffic lights at signalized crossings; stopping prior to crossing; checking vehicle traffic prior to crossing; place of waiting to cross; finishing crossing during green; crossing within the crosswalk boundaries; using distractions (earphones, mobile phones) by pedestrians; pedestrian-vehicle conflicts. The survey was carried out in November 2008; the sample included 6613 pedestrians.

The data analysis demonstrated the extent of unsafe pedestrian behaviours according to crossing types, e.g.:

- At signalized junctions, 12% of the pedestrians do not stop prior to crossing and 17% cross on red, of whom 20% - outside the crossing boundaries.
- At non-signalized junctions, 57% of pedestrians do not stop prior to crossing and 15% of those who stopped, wait on the carriageway; 20% of those who did not stop cross outside the crossing boundaries.
- On street sections, 41% of the pedestrians do not stop prior to crossing and 23% of those who stopped wait on the carriageway; 33% of those who did not stop cross outside the crossing boundaries.

Moreover, "a chain" of unsafe behaviours is identifiable: among those who cross on red and do not stop prior to crossing, typically higher shares of crossings outside the boundaries, not checking the vehicle traffic and crossing on red/ outside the boundaries at the second half of the crossing, were observed.

Jerusalem, Israel, May 30-June 2, 2010

Comparing the age groups, high shares of unsafe behaviours were observed for younger pedestrians (until 18) than for adults (19-65). On the other hand, elderly pedestrians (aged 65+) are typically strict to observe safe behaviour rules, more so than other ages. Nevertheless, they experience higher shares of not finishing crossing on green and of vehicle-pedestrian conflicts at signalized junctions.

The survey's data enabled comparisons of pedestrian behaviours at various traffic arrangements. It was found that e.g.:

- at signalized crosswalks without a separation versus similar crosswalks with a separation, more pedestrians did not check the traffic prior to crossing;
- comparing non-signalized crosswalks, more pedestrians did not stop prior to crossing at junctions than on street sections;
- crosswalks on single-carriageway streets are associated with the highest shares of pedestrians crossing outside the boundaries among those who did not stop and of pedestrian-vehicle conflicts.

The scope of pedestrian distraction was not high: on all types of crosswalks, 9%-12% of pedestrians were observed with earphones, 1%-4% with mobile phones. Additional insights into pedestrian behaviours of populations groups: religious sectors, the Arab population – is provided.

The findings are useful for planning safety interventions (publicity and enforcement campaigns, public education) and for re-considering typical pedestrian crossing arrangements in Israeli towns.