Driver Yielding Behavior: Crosswalk- SOP Summary

Related Project Objective
Increased pedestrian visibility

SOP last updated July 25, 2017.

Driver yielding behavior refers to drivers yielding to pedestrians at midblock and intersection crosswalks.

Collecting data on driver yielding behavior can indicate the degree of safety that pedestrians experience when crossing the street. The SOP for this data collection type specifies the boundaries of the crosswalk observation areas and standardizes what constitutes a driver yielding behavior in the presence of pedestrians.

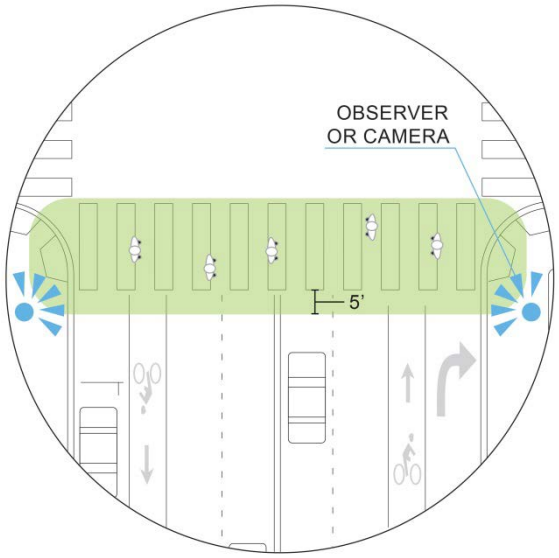
The Qualitative Observation of Close Calls SOP is a related type of analysis. Driver yielding behavior data are collected at the same time as close call data. As such, the same tools and templates are used to collect, summarize, and analyze both sets of data.

Data Collection Procedures

Location

- The observation area consists of the curb ramps, the full length and width of the crosswalk, plus an additional five feet in advance of the crosswalk as shown in Figure 1.
- Curb ramps are included in the observation area because approaching drivers are expected to yield to pedestrians waiting on or approaching a curb ramp.
- The observation area includes space in advance of the crosswalk to allow for pedestrians that leave the curb in advance of the crosswalk markings. While five feet is recommended, this distance may be increased for high-volume crosswalks.

Figure 1: Example Crosswalk Observation Areas



Duration

- Driver yielding behavior data should be collected for a period of at least two hours.
- The time of day and day of the week should be selected based on pedestrians' existing and anticipated future travel patterns. Consider when volumes are highest and when special user groups (e.g., commuters, tourists, or students) are likely present.
- Typical weekday AM/PM peak periods for pedestrians are 8:00-10:00 AM and 5:00-7:00 PM.

Definition of Yielding Behaviors

- Yielding behavior should be recorded when a driver is approaching the crosswalk and a pedestrian attempts to cross (also referred to as an interaction).
- Driver yielding occurs when a driver stops in advance of a crosswalk and waits until the pedestrian has cleared the travel lanes on the driver's side of the street.
- A pedestrian attempt to cross occurs when a pedestrian is within five feet of the edge of the street, is either stopped or walking toward the crossing, and is looking for a gap in traffic to cross.
- A person standing on the curb ramp without a clear intention of crossing the street should not be recorded as a pedestrian attempt to cross.

- When the first driver in a platoon of vehicles does not yield, subsequent drivers also tend not to yield. Each non-yielding driver in a platoon should be counted. For example, four vehicles in a platoon that do not yield to a pedestrian count as four instances of non-yielding behavior.
- However, when the first driver in a platoon of vehicles yields to a pedestrian, it should be recorded as only one instance of yielding behavior (even though subsequent drivers may yield behind the first vehicle).

Evaluation

- If data are collected for multiple periods (e.g., both AM and PM peak), the default practice is to aggregate the data for all periods before performing analysis.
- Data should be analyzed and summarized as follows:
  - Intersection Crosswalks: Report vehicle yields as percentage of total number of pedestrian-vehicle interactions
  - Midblock Crosswalks: Report vehicle yields as percentage of total number of vehicles passing (the sum of observed yielding and non-yielding vehicles) when a pedestrian is present
  - Close Calls: Close calls are reported separately and are also classified as either driver yielding or pedestrian yielding; see Table 1.

Table 1: Driver Yielding Behavior Summary

Driver Yields	Pedestrian Yields	Total Interactions	Close Calls
600 (99.5%)	3 (0.5%)	603	6 (1.0%)

Tools and Templates

- Video data collection is preferred for driver yielding behavior data as it allows for more detailed review of drivers' behaviors, as needed.
- Manual field observation is acceptable if video data collection is not possible. A field data collection sheet template is included in the SOP Excel workbook. Data should be recorded by period, day of week, and direction of travel.
- The SOP Excel workbook includes a data summary template. The data collection team would use this template to summarize the observations made either in the field or by reducing video footage.
- The SOP Excel workbook includes a data analysis template.

Clarifications for Data Collection Team

Midblock Crosswalks

- Provide an exhibit showing the crosswalk with a line marking the location at which drivers have sufficient sight distance to 1) see a pedestrian arriving at a crosswalk; and 2) stop while the person crosses the street. (The AASHTO Green Book provides guidance for identifying this stopping sight distance.)
- The Handbook digital files include an example KMZ file for indicating to the data collection team where to collect driver yielding behavior data.
- Driver yielding behavior should be observed and recorded for all vehicle lanes in both directions of travel.
- If data will be collected directly in the field, then the project manager should visit the study area in advance to identify the appropriate places for data collectors to stand while making observations.
- Data collectors should be positioned inconspicuously so that drivers do not mistake them for pedestrians waiting to cross the street.
- For locations with low pedestrian crossing volumes, mock-crossing attempts may be used to collect data.

Intersection Crosswalks

- If data will be collected directly in the field, then the project manager should visit the study area in advance to identify the appropriate places for data collectors to stand while making observations.
- Data collectors should be positioned inconspicuously so that drivers do not mistake them for pedestrians waiting to cross the street.

Yielding Behavior versus a Close Call

- Close calls are described in the SOP for Qualitative Observations of Close Calls.

- Provide guidance to the data collection team on the difference between yielding behaviors and indicators of a close call.

Resources

A Policy on Geometric Design of Highways and Streets, 6th Edition, Table 3-1 and Table 3-2

NCHRP Report 562: Improving Pedestrian Safety at Unsignalized Crossings – See "Protocol for Data Collection" on pages 34-42