

Evaluation of Pedestrian Video Detection to Adjust Signal Timing *Findings from a pilot installation at 9th & Howard*

New technology was installed at 9th and Howard that provides up to three extra seconds of protected crossing time for pedestrians when it detects a pedestrian who will not finish crossing before cross traffic is released. The video detection system is integrated into the traffic signal. The system was installed as a pilot project for the purposes of experimentation, and to evaluate the device's functionality and effectiveness. Evaluation was conducted in August of 2010.

The pilot installation revealed a range of practical considerations regarding its overall function, including proper alignment of the camera within the crossing area (and maintenance of this alignment over time); the ability of the camera to accurately detect pedestrian movement (found to be worse in low light); the ability of the camera to distinguish pedestrian movement from that of vehicles, bikes, and shadows; the ability of the automated algorithm to accurately predict whether detected pedestrians would be late; and whether the extended time offered was sufficient to help pedestrians clear safely. Some notable results include:

- When properly calibrated, the device triggered a crossing-time extension about 21 percent of the time.
- 20 percent of the time, the extension was not triggered even though pedestrians were still in the intersection after the end of the Flashing Red Hand (13 percent of pedestrians finished crossing during the solid Red Hand and 7 percent finishing during the cross-traffic green).
- Comparing overall clearance rates with and without the device activated, the device did not significantly change the percent of pedestrians who cleared the intersection before the start of the cross-traffic green.
- Even among the signal cycles where the extension was activated, the percent clearing before the start of cross-traffic green did not show a statistically significant difference from the signal cycles when the extension was not activated, nor from the baseline set of observations, with the device deactivated. This suggests that even when triggered, the extension might not have been enough of a help to make a difference.
- As part of the study, qualitative observations were made about how the device functions (especially regarding missed pedestrians, interference, and calibration) that may be useful for future implementation.

As implemented, the device may have had a small effect on the likelihood of pedestrians clearing the intersection before the release of cross-traffic, but the difference observed was not statistically significant: over 3.5 hours of observation with and without the device (each), the percent of late pedestrians decreased from four percent to three percent (out of about 200 crossing per hour), and the number of signal cycles with late pedestrians present decreased from 11 percent to seven percent (out of 210 observed). It is possible that additional observation would show that this effect is statistically significant.

For more information, a full report can be requested by contacting sustainable.streets@sfmta.com.