

Forensic Aspects of Driver Perception and Response

Third Edition

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Table 18.2 Response Times of Approaching Drivers to the Onset of the Yellow Phase of Traffic Signals at Different Locations

Intersection Approach	Mean Time (sec)	Standard Deviation (sec)	85% Time (sec)
University Drive	1.28	0.82	2.0
Southern Ave. (Day)	1.49	0.62	1.9
Southern Ave. (Night)	1.43	0.73	2.0
U.S. 60	1.38	0.60	2.1
First Ave.	1.24	0.51	1.8
Sixth Street	1.55	0.70	2.0
Broadway Blvd. (Day)	1.16	0.48	1.5
Broadway Blvd. (Night)	1.09	0.44	1.5
All Approaches	1.30	0.60	1.8

From Wortman and Matthias (1983)

Rakha et al. (2007) tested 60 subjects in a formal study on a closed course. Measures were made of PRT and run-stop decisions as a function of distance from the simulated intersection. Based on this work the investigators concluded that the 1.0-second PRT recommended in signal design procedures is valid.

When considering the value of these data as indicators of driver PRT it would be helpful to recall the mindset of a driver approaching a signal that has been green for some time. The driver knows there is a possibility it will change to yellow before the intersection is reached. If a pedestrian signal is visible to the approaching driver its status will provide an additional cue to the likelihood of a signal change. If the signal does change from green to yellow then the driver must decide whether she is close enough to clear through or must stop. Detection and identification are not really issues in this case, only decision.

Another approach utilizing unaware motorists is the so-called "trap study," which has been employed as a means of evaluating vehicle signaling systems. This procedure requires two test vehicles and is run in normal traffic. A test vehicle with the lighting system of interest merges in front of a potential subject, a second vehicle with the measurement equipment merges behind. When all is ready the lead vehicle presents a brake signal for a few seconds (without actually slowing). The time from that presentation until the subject responds by braking is measured in the following vehicle. The test vehicles then move away from the subject who, ideally, has no awareness that a test was conducted, and locate another subject. Three such investigations of interest are those reported by the Allen