

Effectiveness of Pedestrian Crossing Treatments at Night

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Background

- Texas, between 2010 and 2016:
 - 3434 fatal pedestrian crashes representing 16 percent of all fatal crashes
- Large majority of fatal pedestrian crashes occur during nighttime (79 percent)



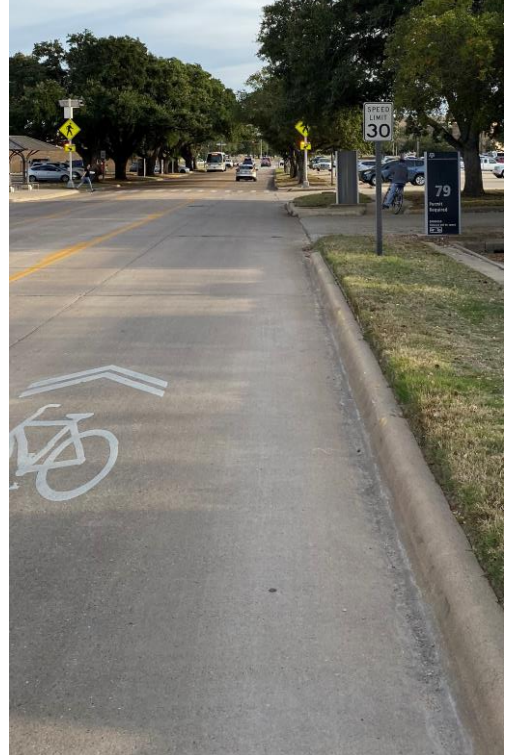
Goal

- Compare the day and night operational performance of the PHB, RRFB, and LED-Em treatments



Study Approach

- Goal: 30 sites, both daytime and nighttime
- Site identification:
 - Build upon previous year's study of LED-Ems
 - Updated list of PHBs in Austin
 - TextITE e-newsletter request, especially for RRFBs



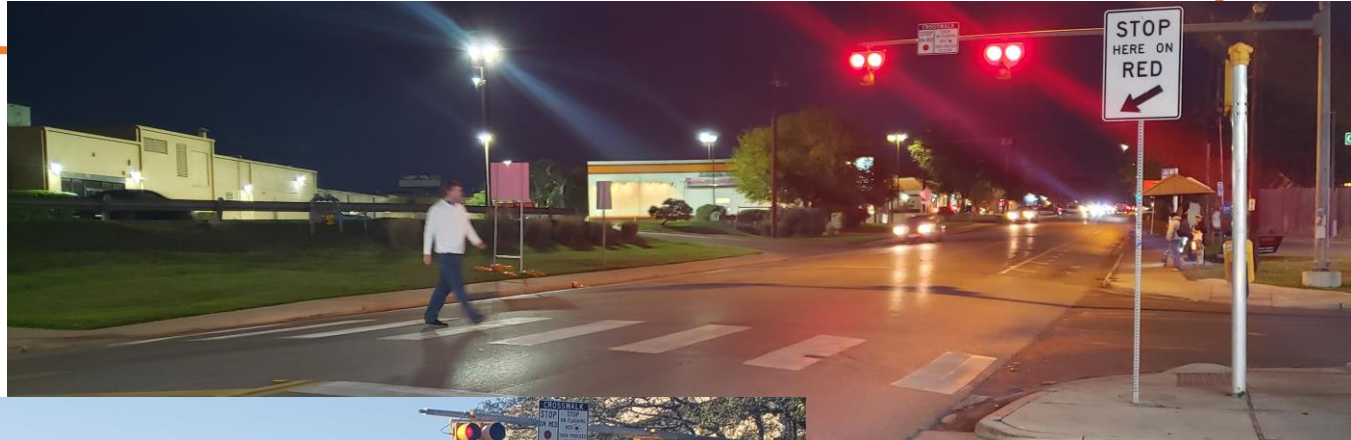
Number of Sites

- Site selection:
 - Goal of 10 sites for each treatment of interest
 - Range of posted speed limits and median type
 - Limit to 2- or 4-lane roads
 - Data collection efficiency

TYPE	DAY OR NIGHT	SITES
LED-Em	Day	13
LED-Em	Night	6
PHB	Day	10
PHB	Night	10
RRFB	Day	12
RRFB	Night	11

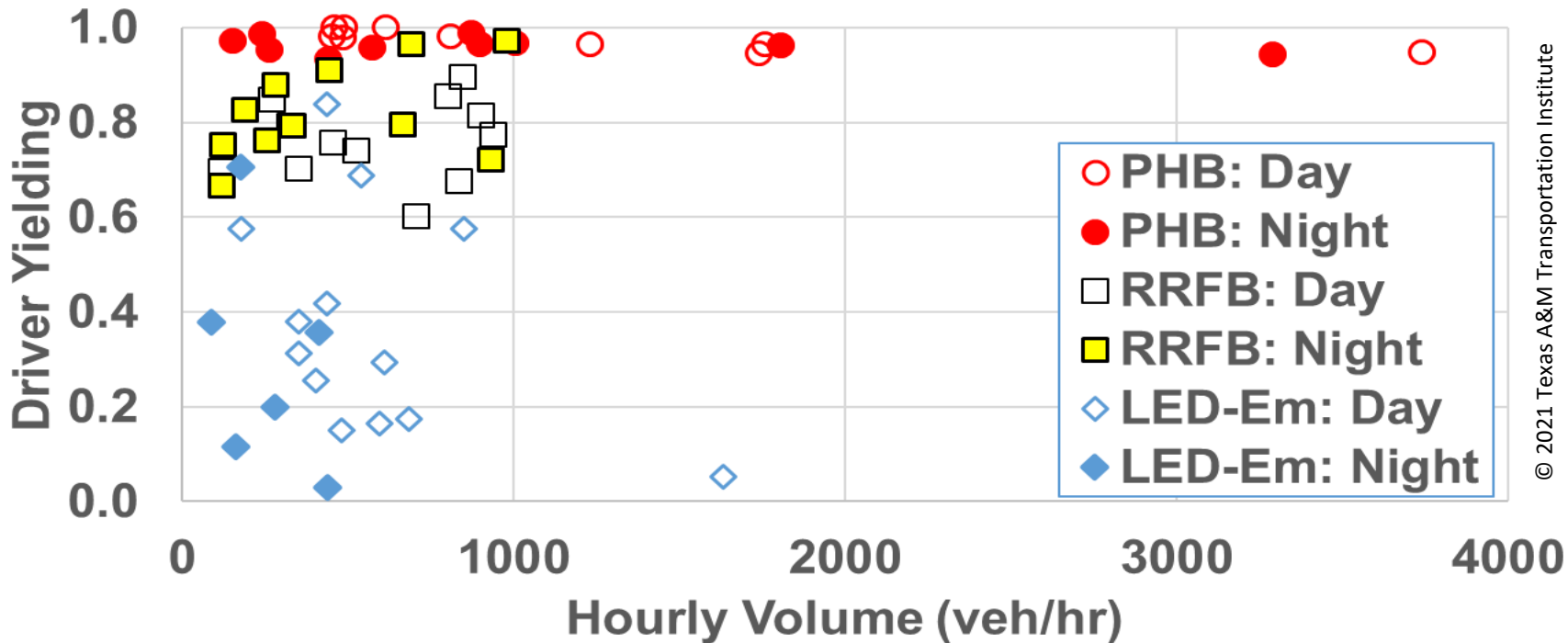
Data Collection

Protocol: 60 staged pedestrian crossing events or 4-hours of data



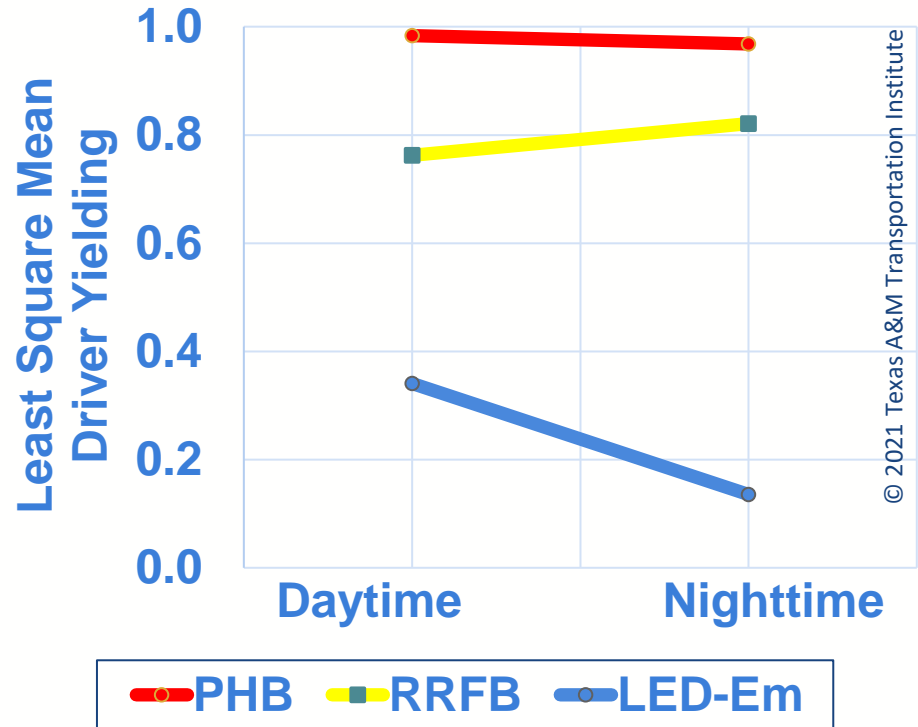
When: November 2019 to February 2020, May 2019

Driver Yielding by Hourly Volume, Per Site and Light Level



Day / Night

- Consider all data
- Treatment type (results are different, statistically)
- PHB = similar day & night
- RRFB = higher at night (not statistically significant)
- LED-Em = higher at day (statistically significant)



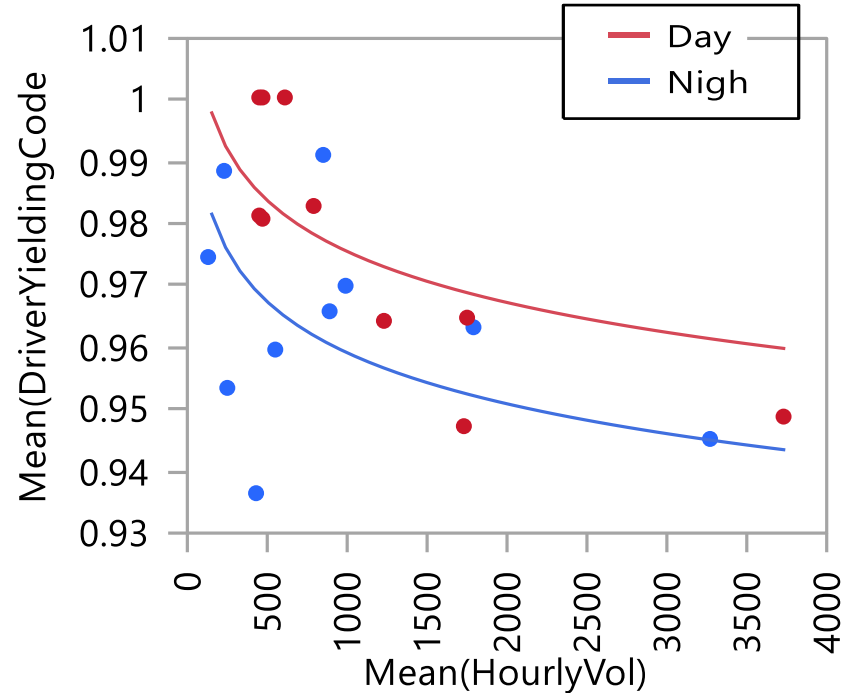
Posted Speed Limit

- Consider all data
- Low speed = 20 (school zone), 30, or 35 mph
- High speed = 40, 45, or 50 mph

LSM Differences Tukey HSD					
Level	#Sites	A	B	C	Least Square Mean (LSM)
PHB, Low	5	A			0.978
PHB, High	5	A			0.974
RRFB, Low	6	A			0.789
RRFB, High	6	A			0.795
LED-Em, Low	10		B		0.376
LED-Em, High	3			C	0.101

PHB

- Data for 10 PHB sites
- Significant variables:
 - Light level
 - Higher driver yielding during daytime (98% compared to 96%), but not practically different
 - Hourly volume
 - Slightly lower driver yielding at higher volumes, again not practically different



RRFB

- Previous studies found higher driver yielding for:
 - 2-leg (midblock)
 - Median refuge present
 - School within 0.5 mile
 - Advance yield lines present
- Current study included data for 12 RRFB sites
 - Limited additional insights, demonstrates that site conditions greatly influence driver yielding for this type of device
 - Support use of advance yield lines

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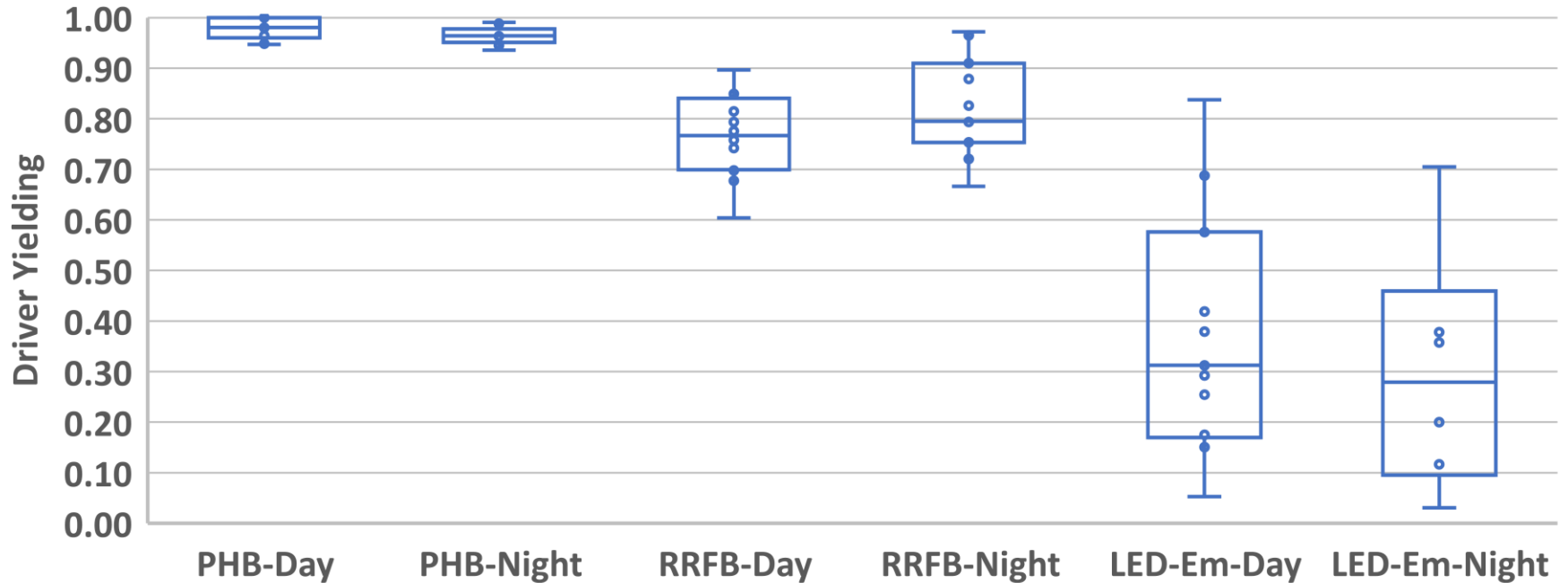
LED-Em

- Number of sites: 13 daytime, 6 nighttime
- Findings, higher driver yielding for:
 - Lower speed limit group (20-school zone, 30-35 mph)
 - 2 lanes rather than 4 lanes
 - Narrow lanes (10.5-11 ft rather 11.5-12 ft)
 - Lower hourly volumes
 - Daytime
 - Advance yield line present

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Is the Pedestrian Treatment More or Less Effective at Night?



Questions...



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