



An Evaluation of the Effectiveness of School Zone Flashers

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Current Practice

Flashers are currently being placed on many school zone signs throughout North Carolina at the request of schools and in an attempt to bring more awareness to the speed limit signs.

Current NC Administrative Code (Title 19A Chapter 2 Subchapter B)

“Standard signing and marking for school zones is the responsibility of the Department of Transportation. If a traffic and engineering investigation conducted by the Department of Transportation shows that there are hazardous conditions present adjacent to a school greater than those normally present in school areas, and that these conditions can be alleviated by the use of school flashers, then the Department of Transportation will install school flashers and maintain them.”

Report Objectives

This report summarized the effectiveness of placing flashers on school zone speed limit signs to improve speed compliance in school zones

Our objectives were to:

- Determine if flashers located in reduced speed school zones decrease speeds and increase speed compliance when compared to reduced speed school zones without flashers.
- Examine differences in vehicle speeds and compliance rates in school zones during reduced speed school zone hours of operation (school time) versus hours outside the reduced speed school zone hours of operation (non-school time).

Sign and Flasher Assemblies

All treatment sites contained dual flashers that were either mounted on a pole on the side of the roadway (11 sites) or on span wire above the roadway (4 sites).



Western Alamance High



Pleasant Garden Elementary

Measures of Effectiveness

- Percent of vehicles exceeding the speed limit
- Average vehicle speed
- 85th percentile speed
- Pace speed

Speed data measured in the morning and afternoon on typical weekdays when school was in session during:

- School Time at treatment sites,
- Non-School Time at treatment sites,
- School Time at comparison sites, and
- Non-School Time at comparison sites.

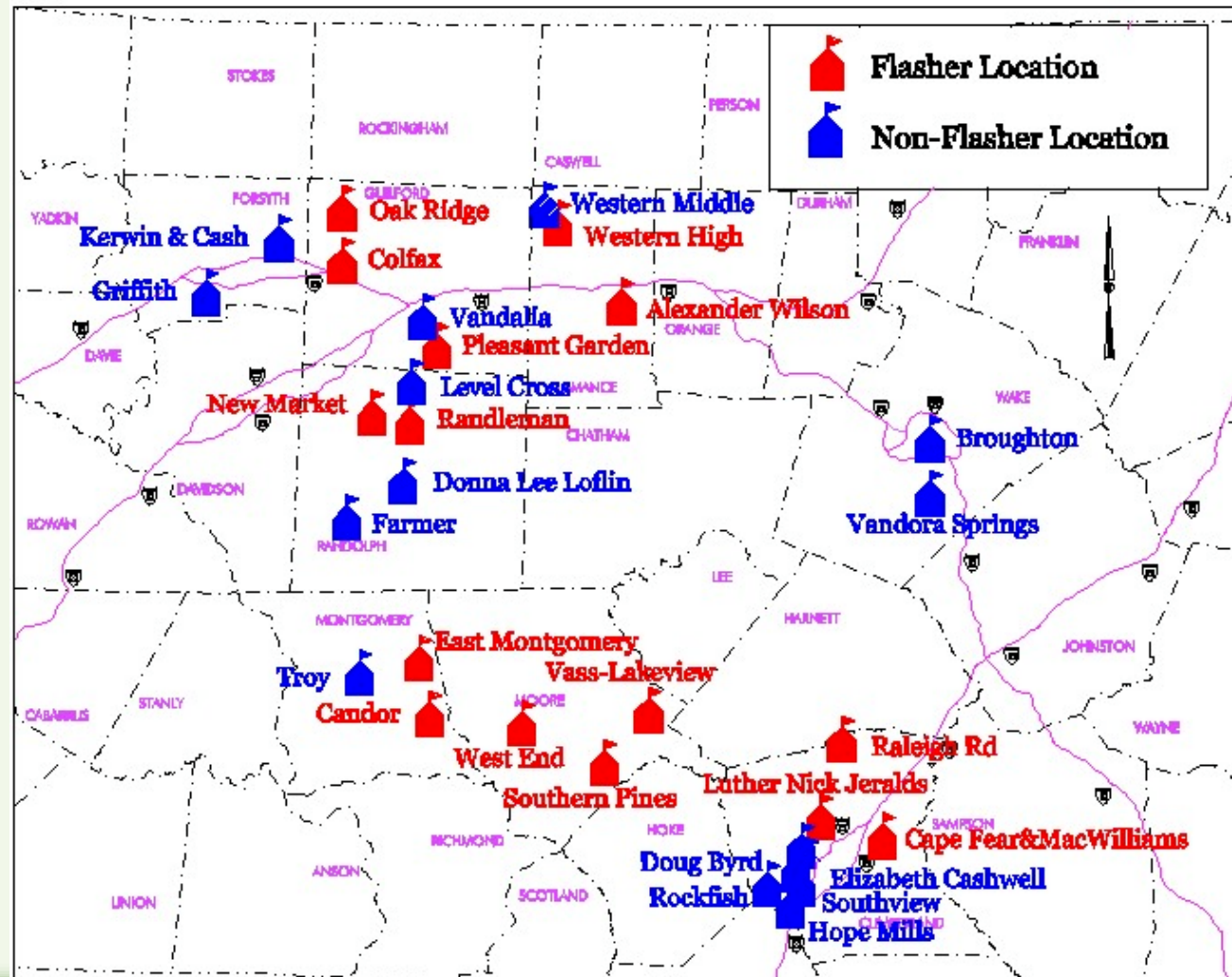
Site Selection

- Contacted Regional Traffic Engineers to create a statewide listing of candidate flasher sites
- Compiled a list of over 120 candidate sites spanning from Division 5 to 14
- Used the TEAAS ordinance system to identify comparison non-flasher sites that matched the treatment sites as closely as possible
- Scheduled field visits to locations that had been installed at least 3 years and were within a reasonable driving distance from Raleigh

Site Selection

FINAL SELECTION:

- 15 treatment sites with flashers
- 15 comparison sites without flashers
- Sites with a mix of geometric and geographic features
- School time speed limits between 25-45 mph



Comparison Sites

Speed data from the treatment and comparison sites were compared during non-school time hours to measure how similar the two groups operated.

The data shows that the treatment and comparison sites are similar, with the same speed distributions during non-school time hours.

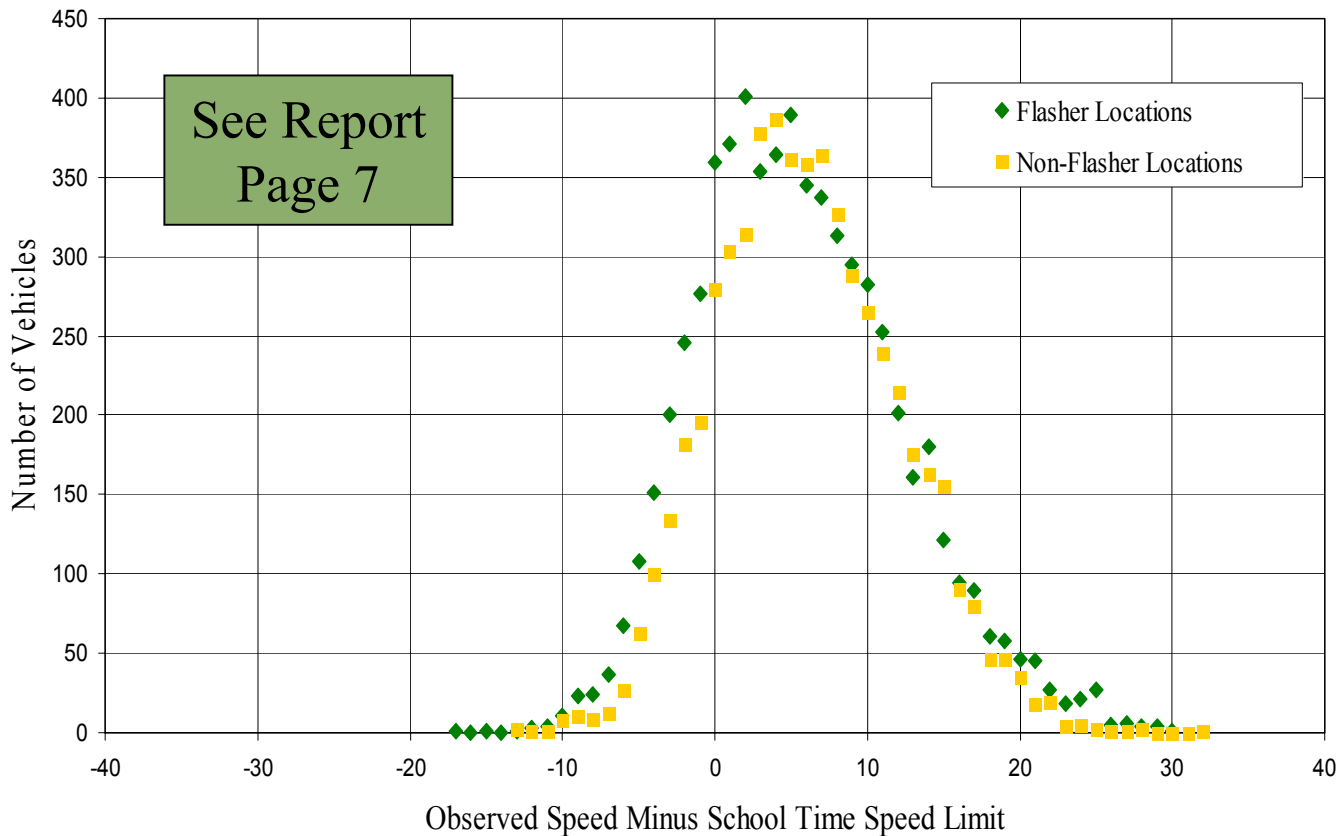
The comparison sites are a good comparison group without any conditions that would reasonably affect a driver's choice of speed.

**Speed Data Collected During Non-School Time Hours
(With Speeds Referenced From the Non-School Time Speed Limit)**

	Observations	Vehicles Exceeding Speed Limit	Average Speed Above (+) / Below (-) Speed Limit (mph)	85th Percentile Speed Above (+) / Below (-) Speed Limit (mph)	Pace Speed Above (+) / Below (-) Speed Limit (mph)
Flashers - Total	6020	46.20%	-0.1	+5.5	-5 to +5 (65%)
Flashers (25 mph ST)	2605	53.30%	+1.3	+7.0	-4 to +6 (65%)
Flashers (35+ mph ST)	3415	40.90%	-1.1	+4.4	-5 to +5 (65%)
NonFlashers - Total	5276	47.30%	0.0	+5.4	-5 to +5 (66%)
NonFlashers (25 mph ST)	2737	52.40%	+0.9	+6.4	-4 to +6 (64%)
NonFlashers (35+ mph ST)	2539	41.80%	-0.9	+4.3	-6 to +4 (69%)

Results - Flasher vs. Non-Flasher

Speed Distribution During School Time



Similar Distribution

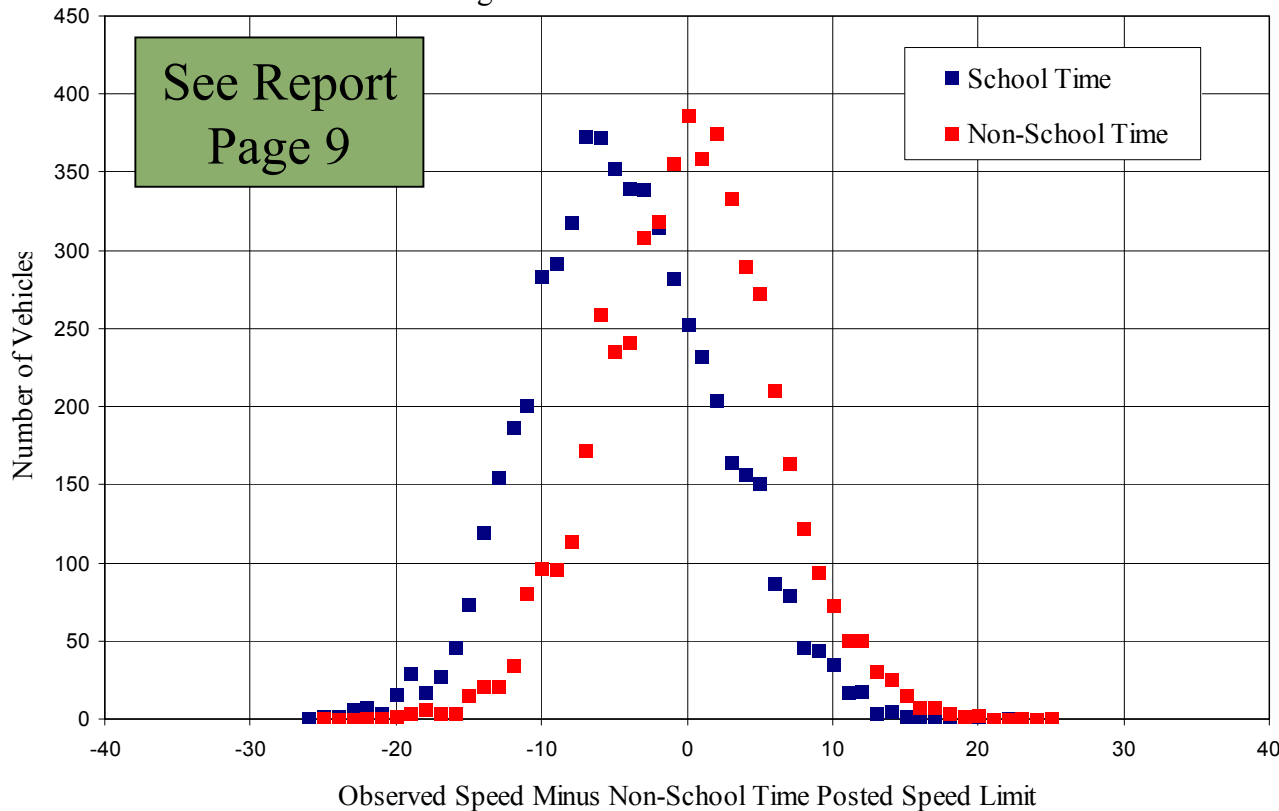
- The flashers are not more effective at lowering vehicle speeds than signing alone.

Low Compliance

- At treatment and comparison sites, average and 85th percentile speeds are approx. 6 mph and 12 mph above the speed limit.

Results - School Time vs. Non-School Time at Non-Flasher Locations

Figure 4. Speed Distribution at **Non-Flasher** Locations
During School Time and Non-School Time



Shifted Distribution

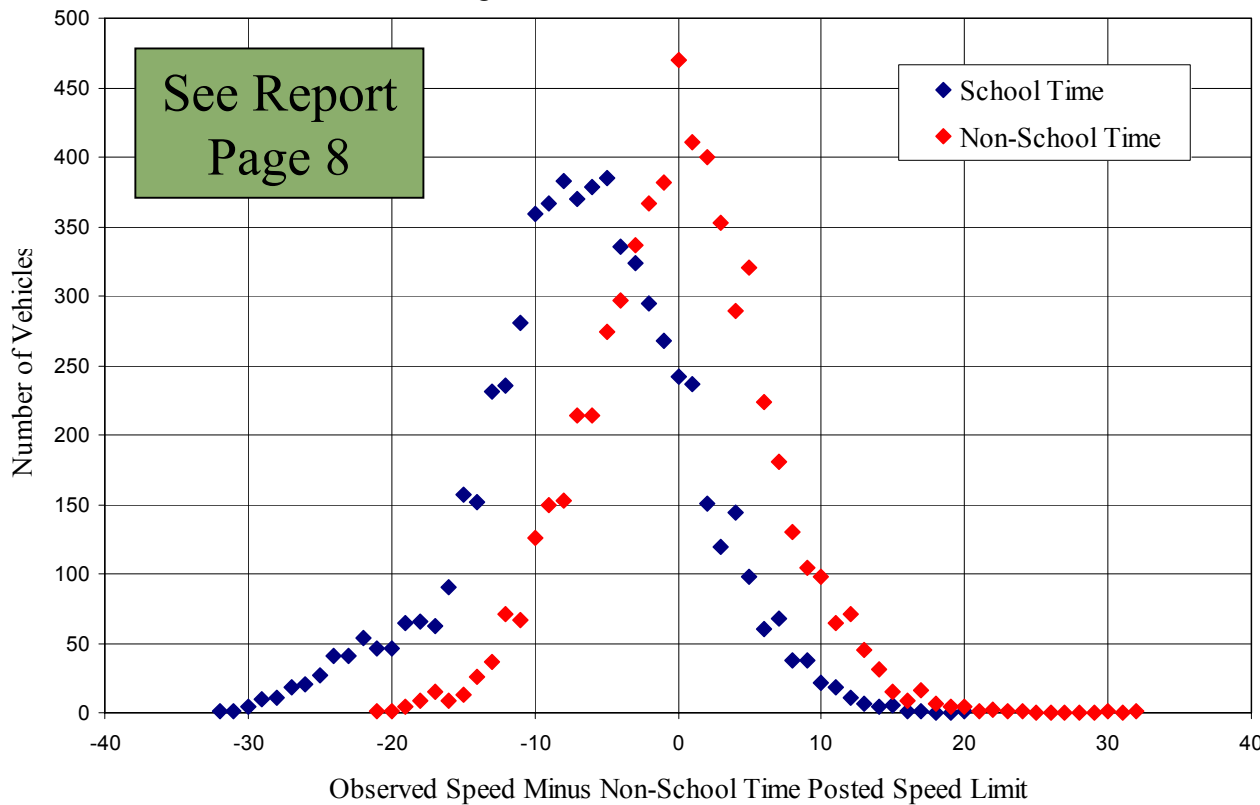
- School time speed distribution is noticeably shifted to the left from the non-school time speed distribution.

Speed Decrease

- Vehicle speeds decreased from non-school time hours to school-time hours at **non-flasher** sites.
- Average vehicle speeds below the non-school time speed limit.

Results - School Time vs. Non-School Time at Flasher Locations

Speed Distribution at **Flasher** Locations
During School Time and Non-School Time



Shifted Distribution

- Vehicle speeds decreased from non-school time hours to school-time hours at **flasher** sites.

Flashers and Non-Flashers Behaved Similar

- Overall, the speed distributions of both flasher and non-flashers sites appear very similar during all times of day.

Crash Analysis

- For completeness, analyzed crash rates at all sites using the most recent 3 years of reported crashes
- Due to small sample sizes difficult to draw conclusions from data

FINDINGS:

- Crash rates were *higher* at *flasher* sites than non-flasher sites during both school time hours and non-school time hours
- At flasher and non-flasher sites, approximately 30 percent of crashes are occurring during school time hours
- No pedestrian crashes occurred during school time hours.

Conclusions

- Flashers are not more effective at lowering speeds in school zones than signing and pavement marking alone.
- Regardless of flasher presence, average speeds during school time were above the school time speed limit but below the non-school time speed limit. This indicates that motorists were making an effort to reduce their speed during the school time, although the speed reductions were not enough to bring them into compliance with the school time speed limit.



QUESTIONS?

