Red Light Camera Effectiveness

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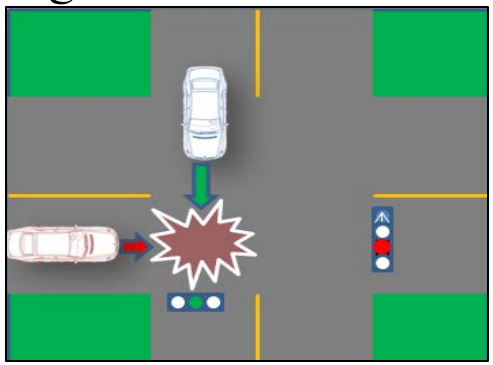
Background

- In the U.S., 733,000 people were injured at more than 2.3 million reported intersection-related crashes in 2008 (NHTSA).
- 165,000 people were injured by red-light running at signalized intersections.
- In Texas, there were over 11,600 crashes in 2011 associated with red-light running violations.

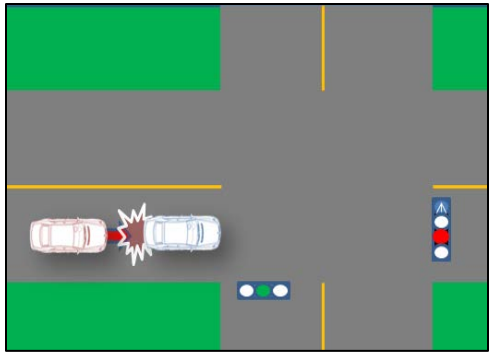
Objective

To evaluate and determine the effectiveness that automated traffic enforcement systems have on reducing:

- Total crashes
- Angle crashes



- Rear end crashes



Study Data Sample

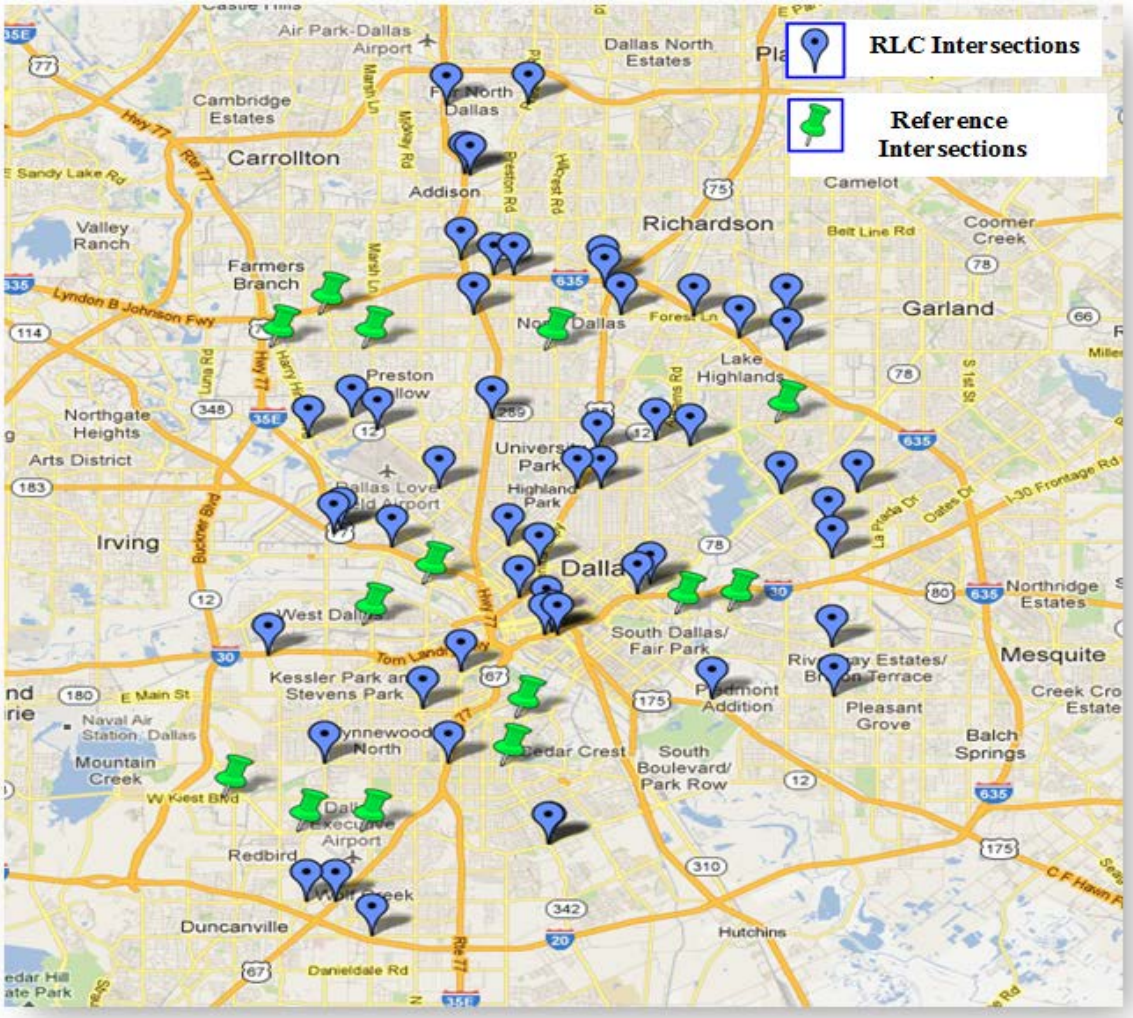
There were 32 communities around the state that installed and used red light cameras for enforcement of signal violations at signalized intersections.

There were 245 monitored signal controlled intersections from around the State that were considered in this evaluation.

Study Design

- Empirical Bayes methodology was used to measure safety effectiveness at the camera treated sites.
- Red light related crashes were isolated and evaluated.
- Before & after time periods were used to measure frequency change.
- Total, angle, and rear end crash types were evaluated.
- Reference intersections were selected based on similar roadway and ADT characteristics *(study minimized spill over effect)*

Study Design



Variables Considered

- Yellow signal time intervals
- All red signal phasing at intersections
- Annual daily traffic counts *(before and after periods)*
- Roadway system types *(Interstate and U.S. highway feeders, city streets, farm to market roads, spurs etc.)*
- Intersection geometry/design *(lane assignment/channelization, widths, turn bays, median presence, protected turn, and speed limits)*

Empirical Bayes Findings

- All crashes
  - Decrease by 20%.
  - At 5% level, we can expect a decrease from 13% to 27%.
  - A reduction of about 233 crashes per year.
- Angle crashes
  - Decrease by 24%.
  - A reduction of about 258 crashes per year.
  - HSM has a CMF of 0.74.
- Rear end crashes
  - Increase by 37%.
  - An increase of about 26 crashes per year.
  - HSM has a CMF of 1.18.

Conclusions

If installed at intersections with significant red light running crashes red light cameras:

- Reduce crashes that result from red light running;
- Reduce right-angle collisions significantly;
- Reduce all type of crashes regardless of roadway classification; and
- Usually result in an increase in rear-end collisions

Thank you