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# Evaluation of Photo Red Light (PRL) Enforcement Program in the City of Miami Beach


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Organization Development Performance Initiatives
**City of Miami Beach**

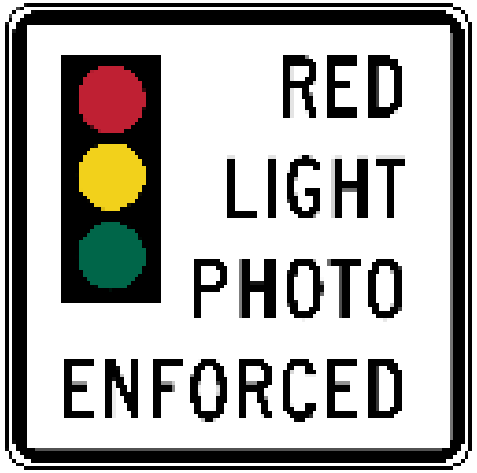
# Background

- Red-Light Running (RLR) involves a driver entering an intersection after the traffic signal has turned red.
- In 2015, on average, two people were killed every day due to RLR*.
- Over the last decade, photo red light (PRL) cameras have been increasingly deployed to reduce the occurrence of RLR crashes.

* Source: National Center for Statistics and Analysis (NCSA)

# Research Objective

Evaluate the safety effectiveness of the Photo Red Light (PRL) Enforcement Program in the City of Miami Beach, Florida



# Research Approach

- Two methods:
  - Simple before-after crash data analysis
  - Advanced before-after crash data analysis using full-Bayes approach
- RLCs were installed in 2010
  - Before Period: 2008-2009
  - After Period: 2011-2013

# Data

- Crash
- Traffic volume
- Roadway geometric characteristics
- Traffic control features

- 9 Treatment Intersections (intersections with RLC)
- 19 Non-Treatment Intersections (intersections without RLC)

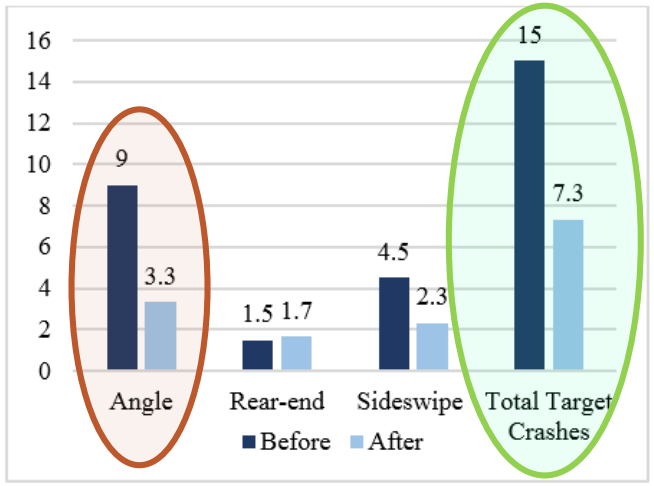
# Treatment Intersections

1. Washington Ave and 17th St.
2. Alton Road and 17th St.
3. Washington Ave and Dade Blvd.
4. Pinetree Blvd and 23rd St.
5. 41st St. and Prairie Ave
6. Alton Road and Chase Ave
7. Indian Creek Dr and W 63rd St.
8. Indian Creek Dr and Abbott Ave
9. 71st St. and Indian Creek Dr

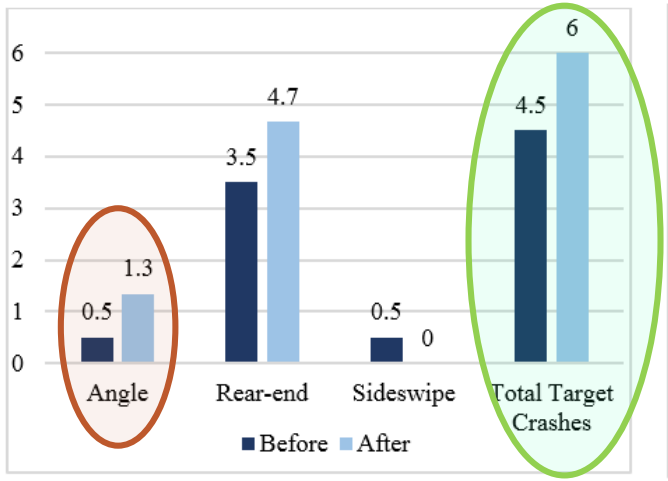
# Non-Treatment Intersections

1. Dade Blvd and Prairie Ave
2. 5th St. and Alton Road
3. Arthur Godfrey Rd. and Meridian Ave
4. Alton Road and 16th St.
5. Alton Road and 11th St.
6. Alton Road and 8th St.
7. 17th St. and James Ave
8. Alton Road and W 47th St.
9. Washington Ave and 16th St.
10. 41st St. and Indian Creek Dr
11. 5th St. and Collins Ave
12. Collins Ave and 16th St.
13. Collins Ave and 23rd St.
14. 63rd St. and Pine Tree Dr
15. West Ave and 17th St.
16. Pine Tree Dr and Sheridan Ave
17. Washington and 15th St.
18. Pine Tree Dr and W 47th St.
19. West Avenue and 11th St.

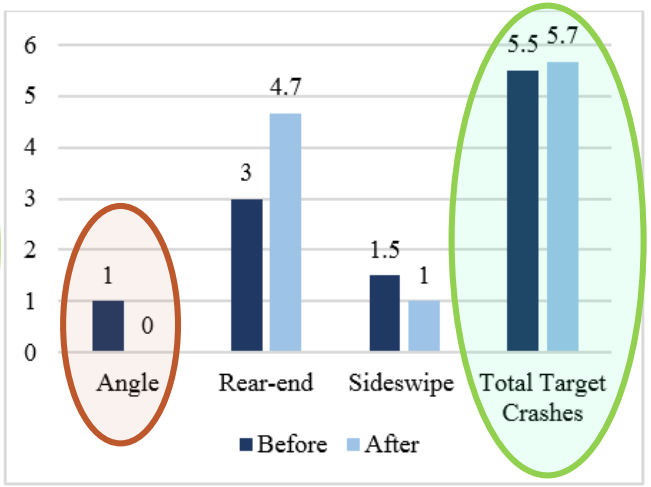
# Four-legged Intersections with RLC



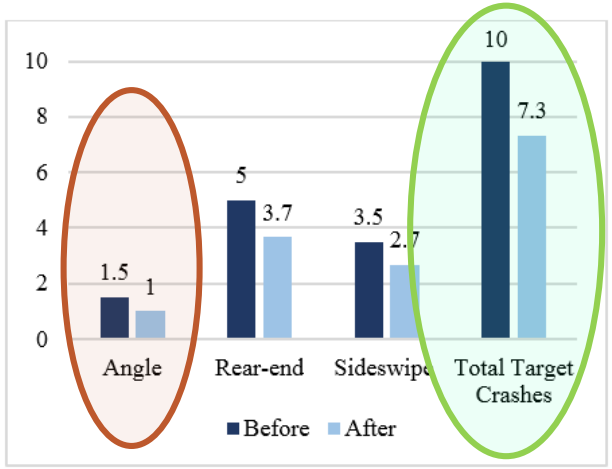

Washington Ave & 17th St.



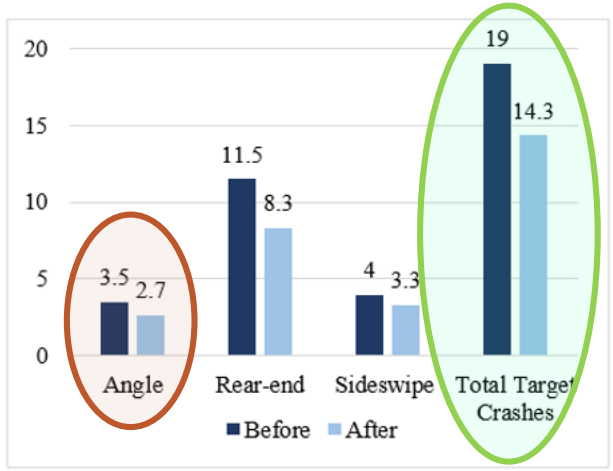

W 41st St. and Prairie Ave




Alton Rd and Chase Ave

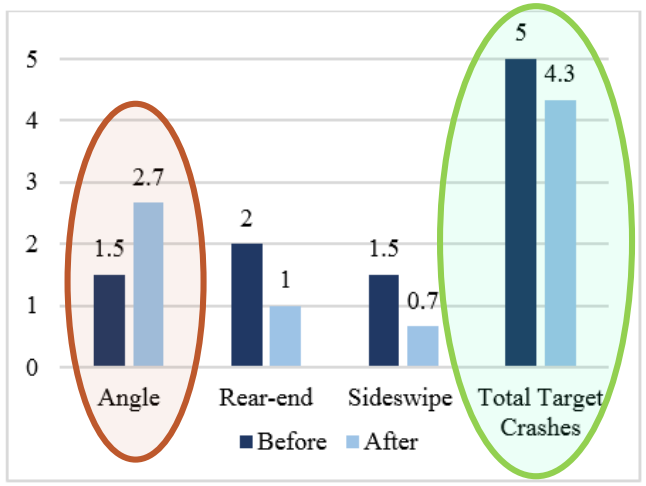



Indian Creek Dr and W 63rd St.

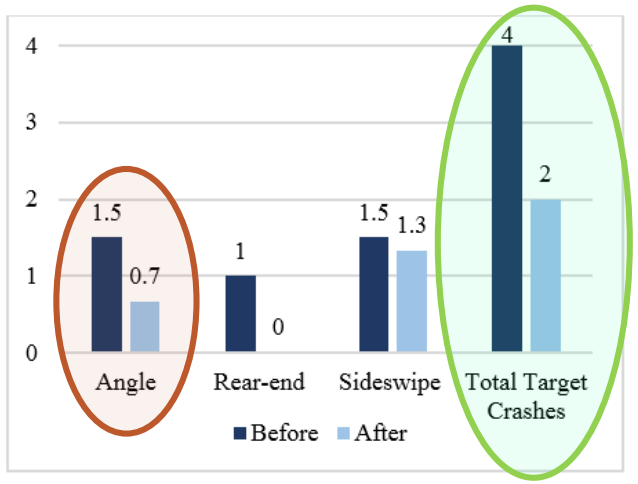



Indian Creek Dr and 71st St.

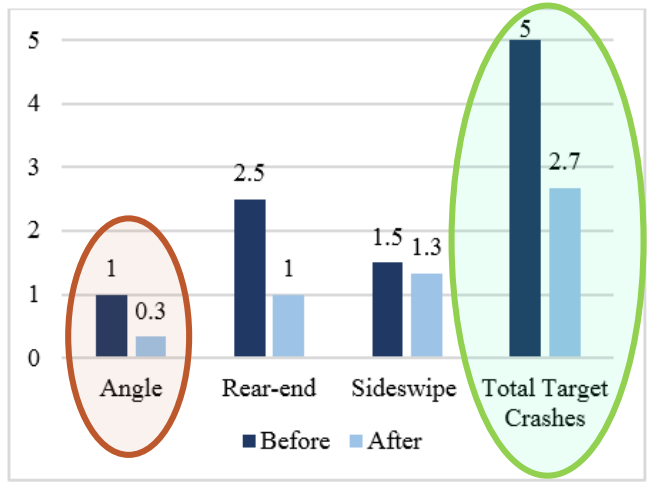
# Three-legged Intersections with RLC




Washington Ave and Dade Blvd

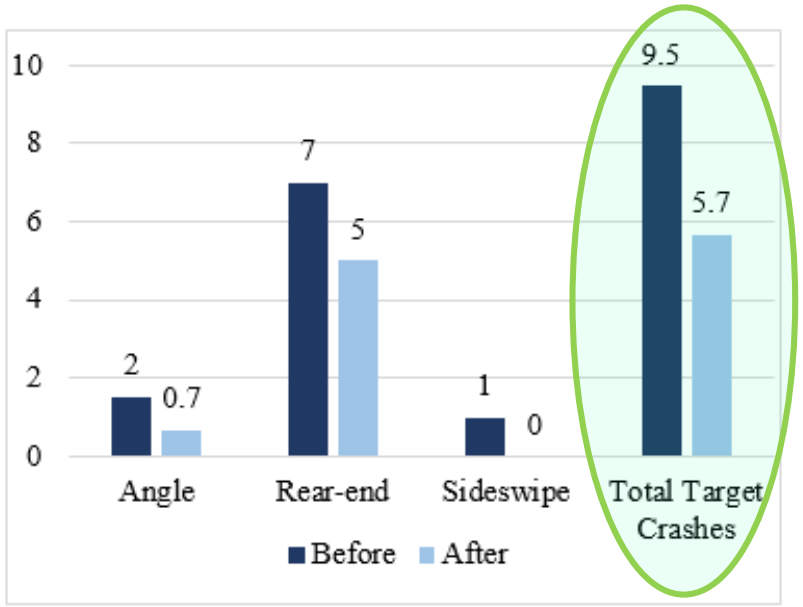



Pine Tree Blvd and 23rd St.

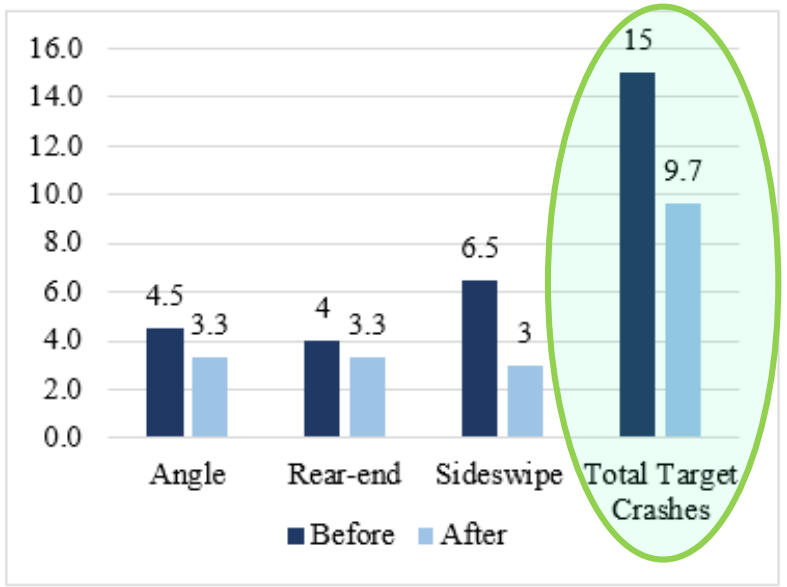



Indian Creek Dr and Abbott Ave

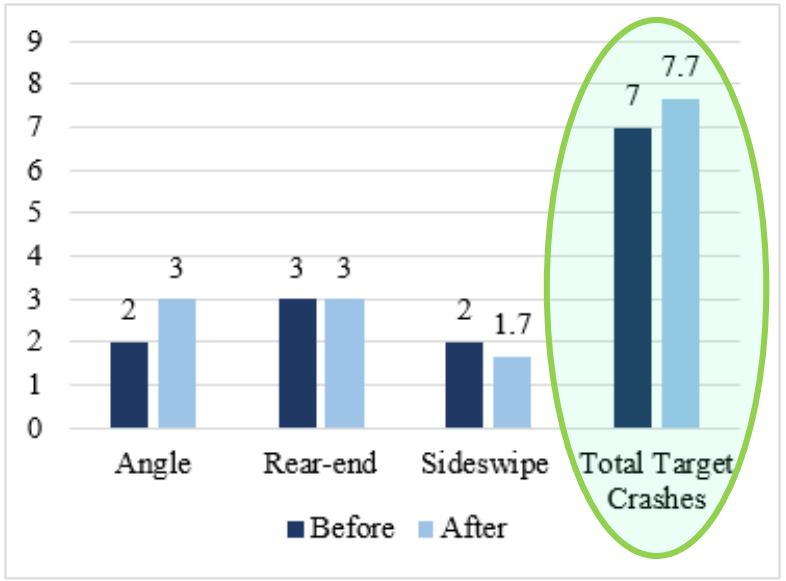
# Similar Intersections With No RLC




Arthur Godfrey Rd. and Meridian Ave

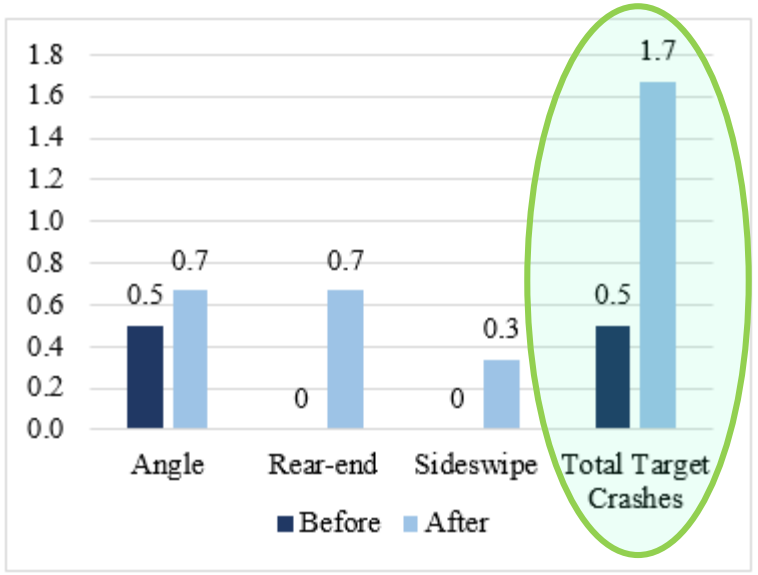



Alton Rd. and 16th St.

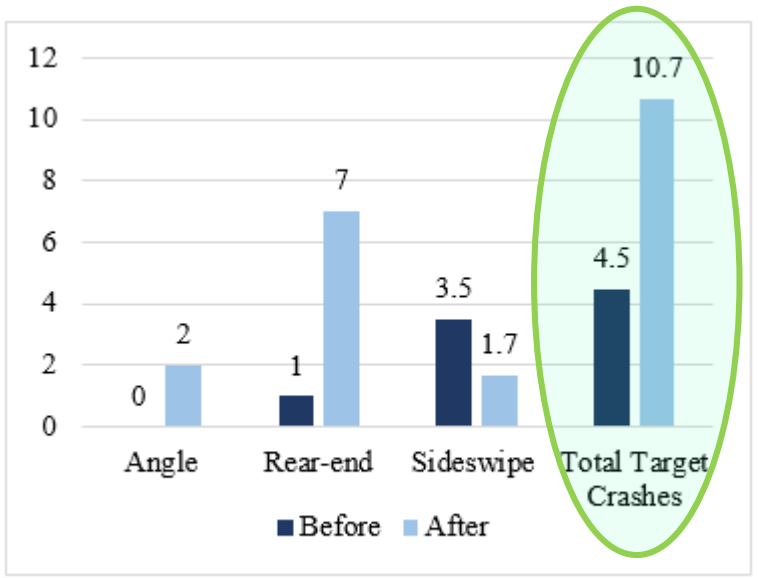



Alton Rd. and 11th St.

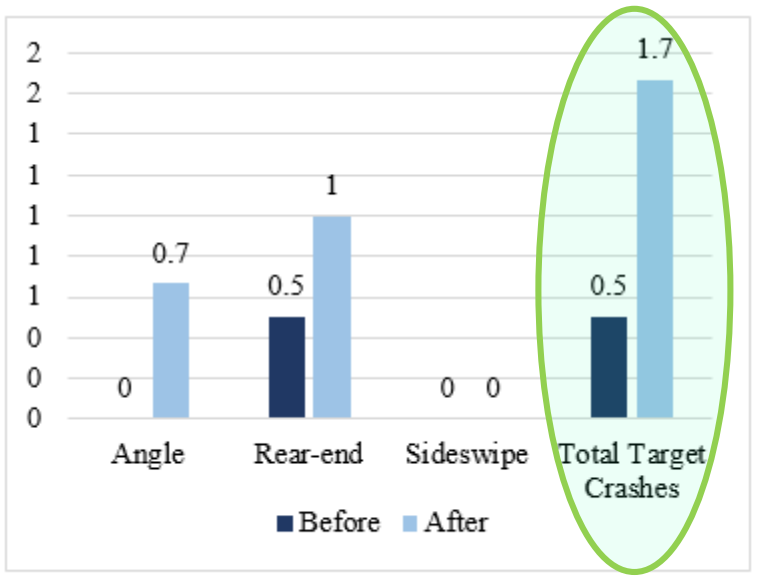
# Intersections Far Away From Treatment Sites




Meridian Ave and 8th St.




Washington Ave and 11th St.




Meridian Ave and 11th St.

# Summary of Results

At four-legged intersections with RLCs

- Target crashes usually reduced after the installation of RLCs
- Angle and sideswipe crashes usually decreased while rear-end crashes usually increased

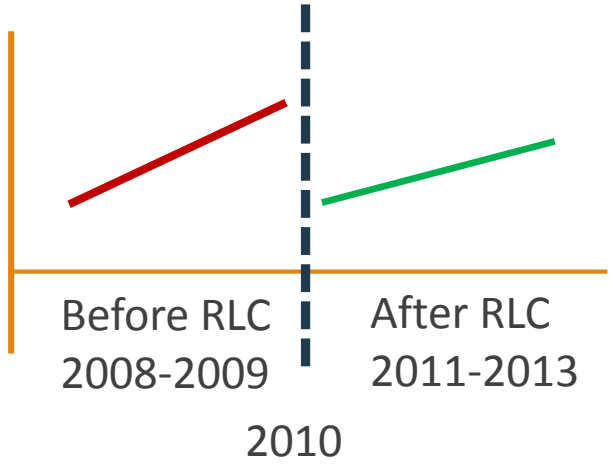
At three-legged intersections with RLCs

- Target crashes usually reduced after the installation of RLCs
  - Rear-end and sideswipe crashes reduced at all the three intersections
  - Angle crashes reduced at two intersections

# Reflection

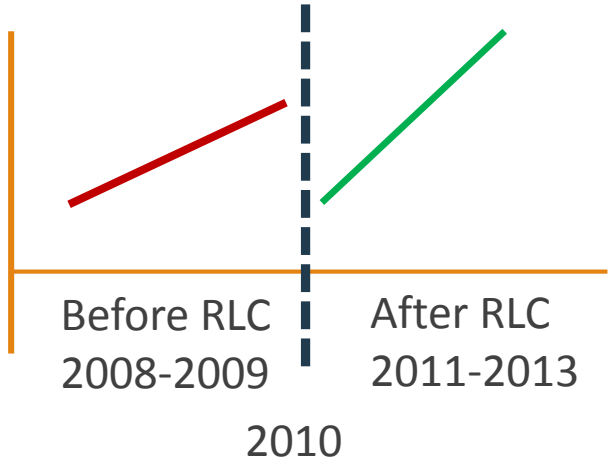
- The intersections in the vicinity of RLCs experienced fewer angle and sideswipe crashes
- The intersections far away from the treatment sites experienced an increase in angle and sideswipe crashes in 2011-2013 compared to 2008-2009
- Fewer target crashes were observed within the region with RLCs:
  - Jurisdiction-wide publicity of RLCs
  - The general public's lack of knowledge on the exact installation locations of RLCs

# Statistical Models – Target, Angle, & Sideswipe Crashes



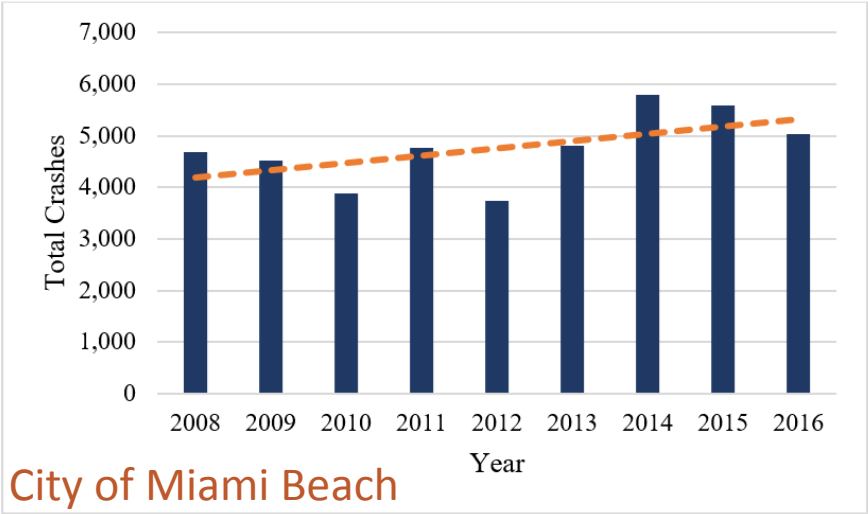

- The after-period experienced fewer crashes than the before-period
- There is a significant drop in crashes immediately after the installation of RLCs
- The crashes dropped immediately after the installation of RLCs, and then continued to increase, but they are still lower than the crashes in the before-period

# Statistical Models – Rear-end Crashes

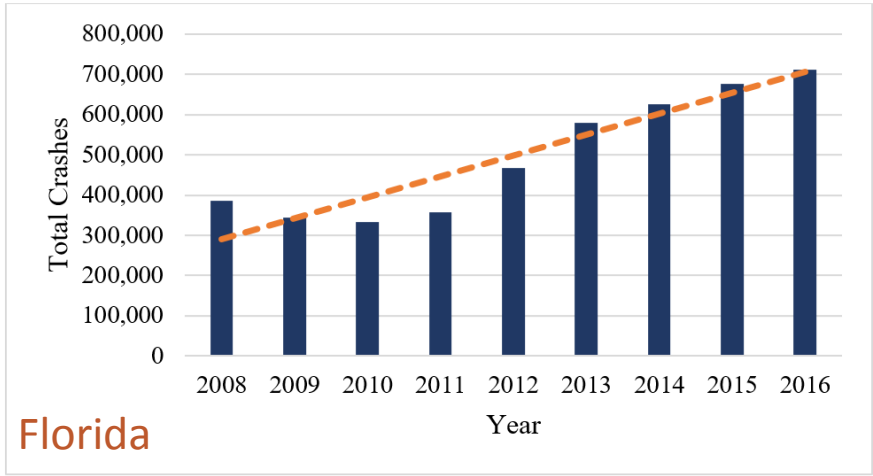



- The after-period experienced fewer crashes than the before-period
- There is a significant drop in crashes immediately after the installation of RLCs
- The crashes dropped immediately after the installation of RLCs, and then continued to increase at a steeper rate

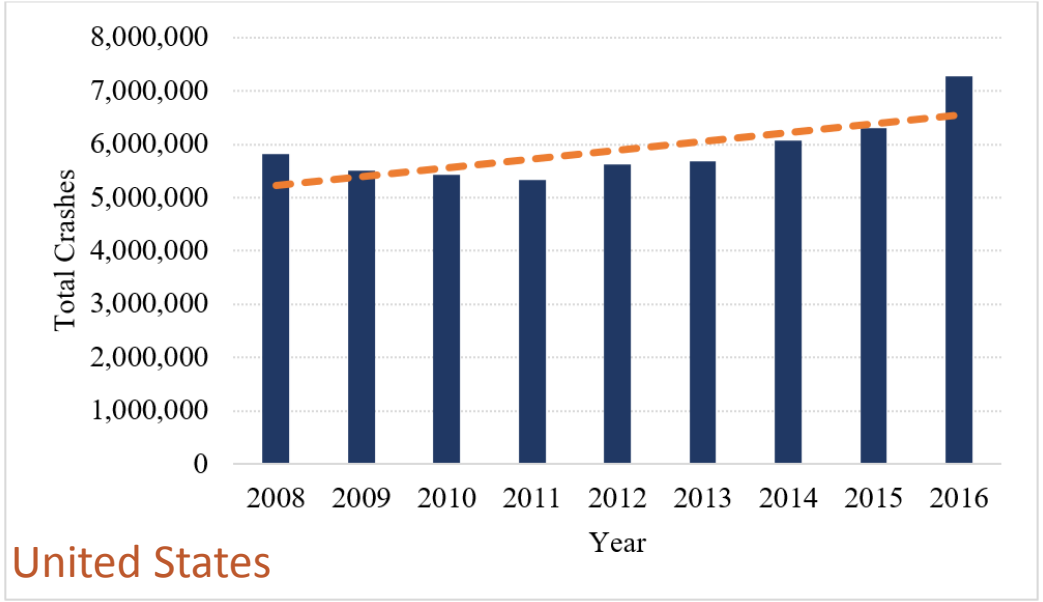
# Crashes Are Increasing With Time!




City of Miami Beach

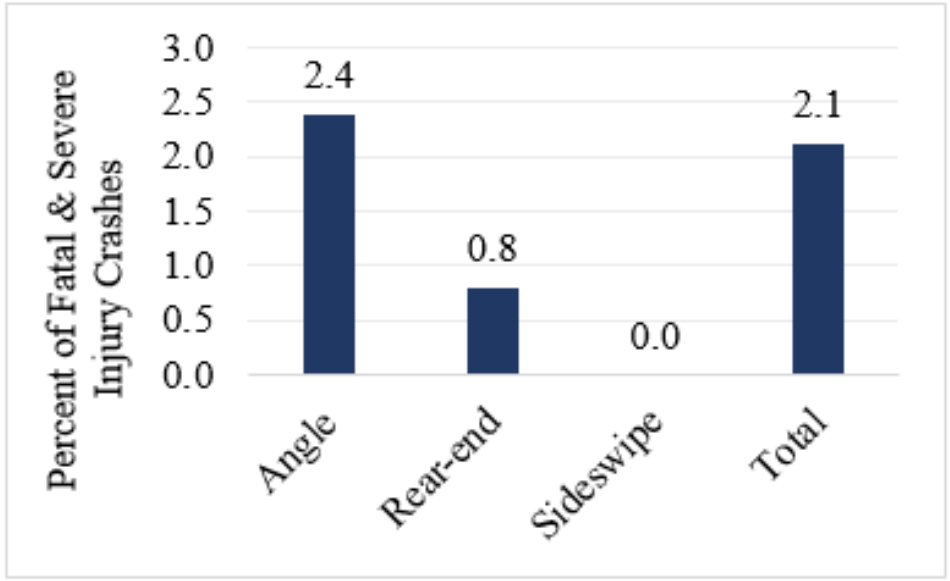



Florida




United States

# Angle Crashes Are Relatively More Severe!

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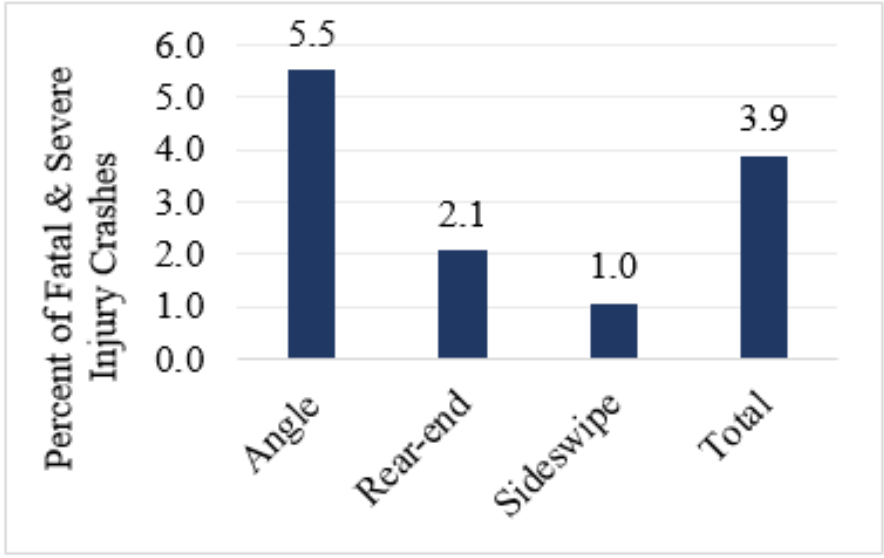


Florida

# Summary of Results

- Crashes, in general, are increasing with time.
- Fewer target crashes occurred at the intersections with RLCs.
  - Fewer target crashes occurred within the region with RLCs.
  - Intersections far away from the treatment sites experienced an increase in angle and sideswipe crashes.
- There is a significant sudden drop in all types of target crashes immediately after the installation of RLCs.
- Compared to the before-period, the after-period experienced:
  - Fewer target, angle, & sideswipe crashes
  - More rear-end crashes
- Rear-end crashes are less severe compared to angle crashes.

# Thank You!

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