



U.S. Department of Transportation  
Federal Highway Administration



**Safe Roads for a Safer Future**  
*Investment in roadway safety saves lives*

# Red-Light Running



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# Traffic Signals

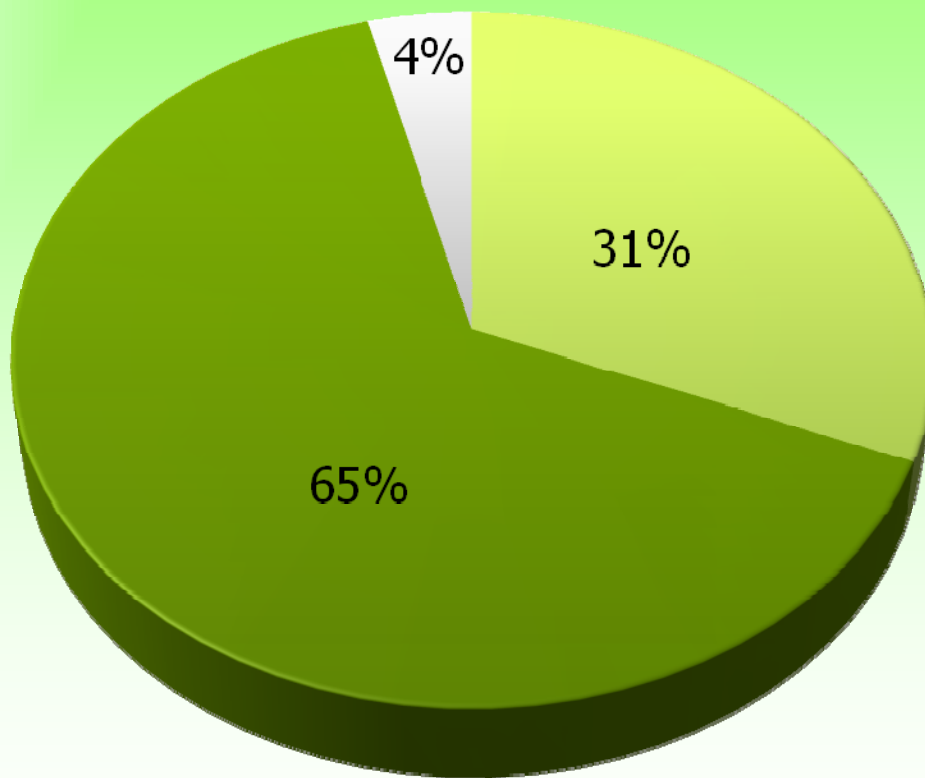
**There are at least 3 million intersections in the United States.**

**At least 300,000 are signalized.**



# Intersection Fatalities

There were 8,657 intersection fatalities in 2007



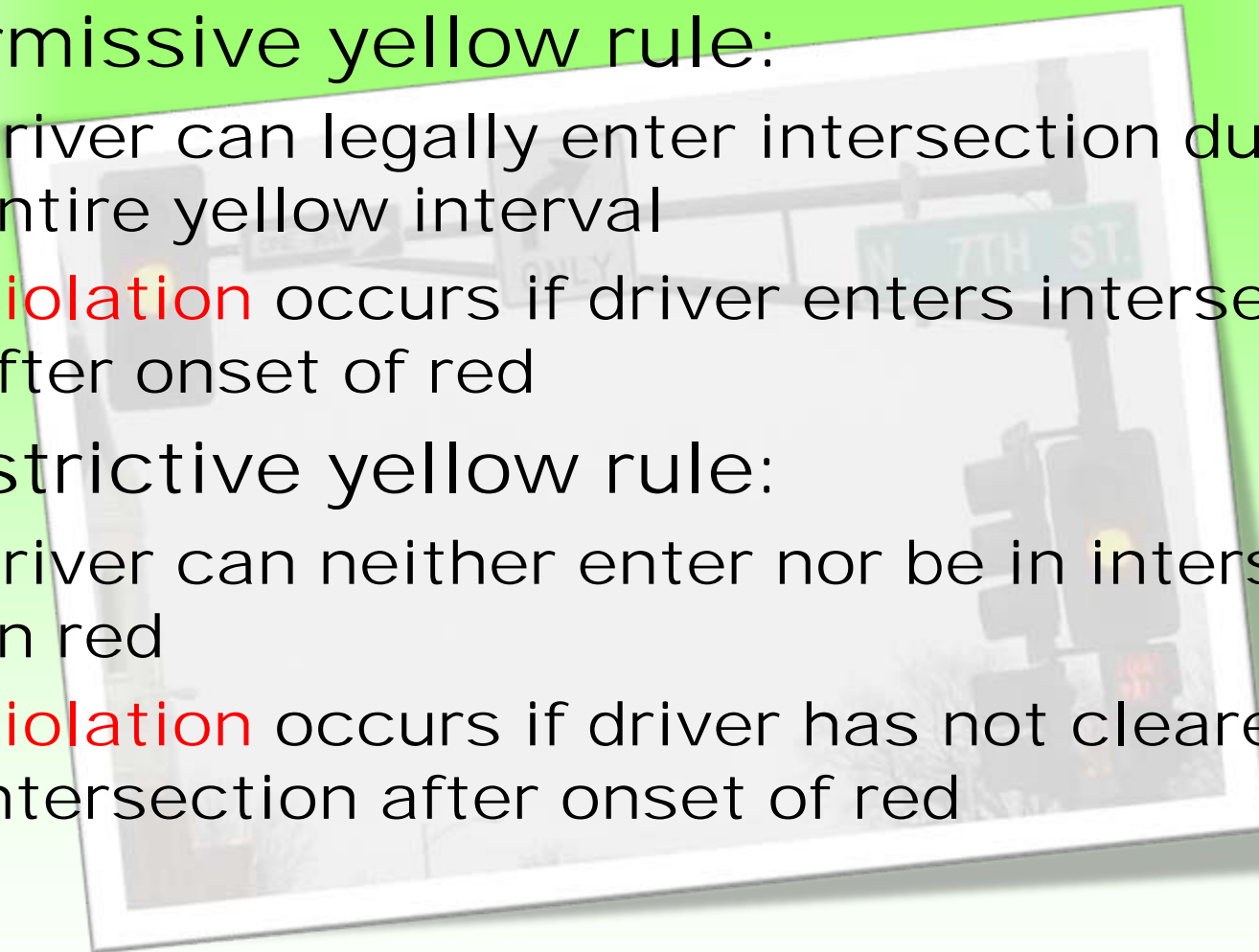
## Fatality Location

- Signalized Intersection
- Unsignalized Intersection
- Unknown

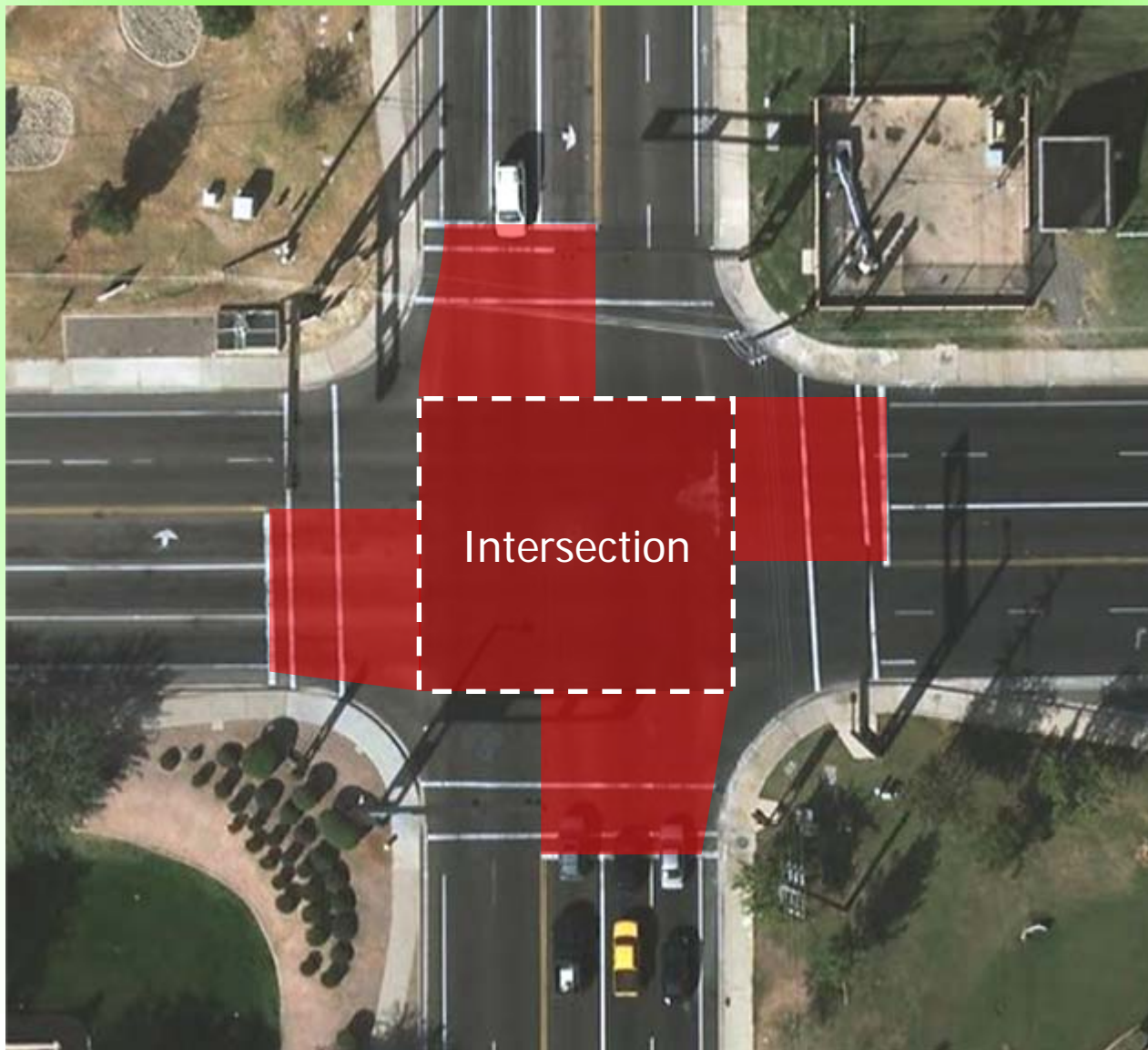


# What is Red Light Running?

- Permissive yellow rule:
  - Driver can legally enter intersection during entire yellow interval
  - **Violation** occurs if driver enters intersection after onset of red
- Restrictive yellow rule:
  - Driver can neither enter nor be in intersection on red
  - **Violation** occurs if driver has not cleared intersection after onset of red

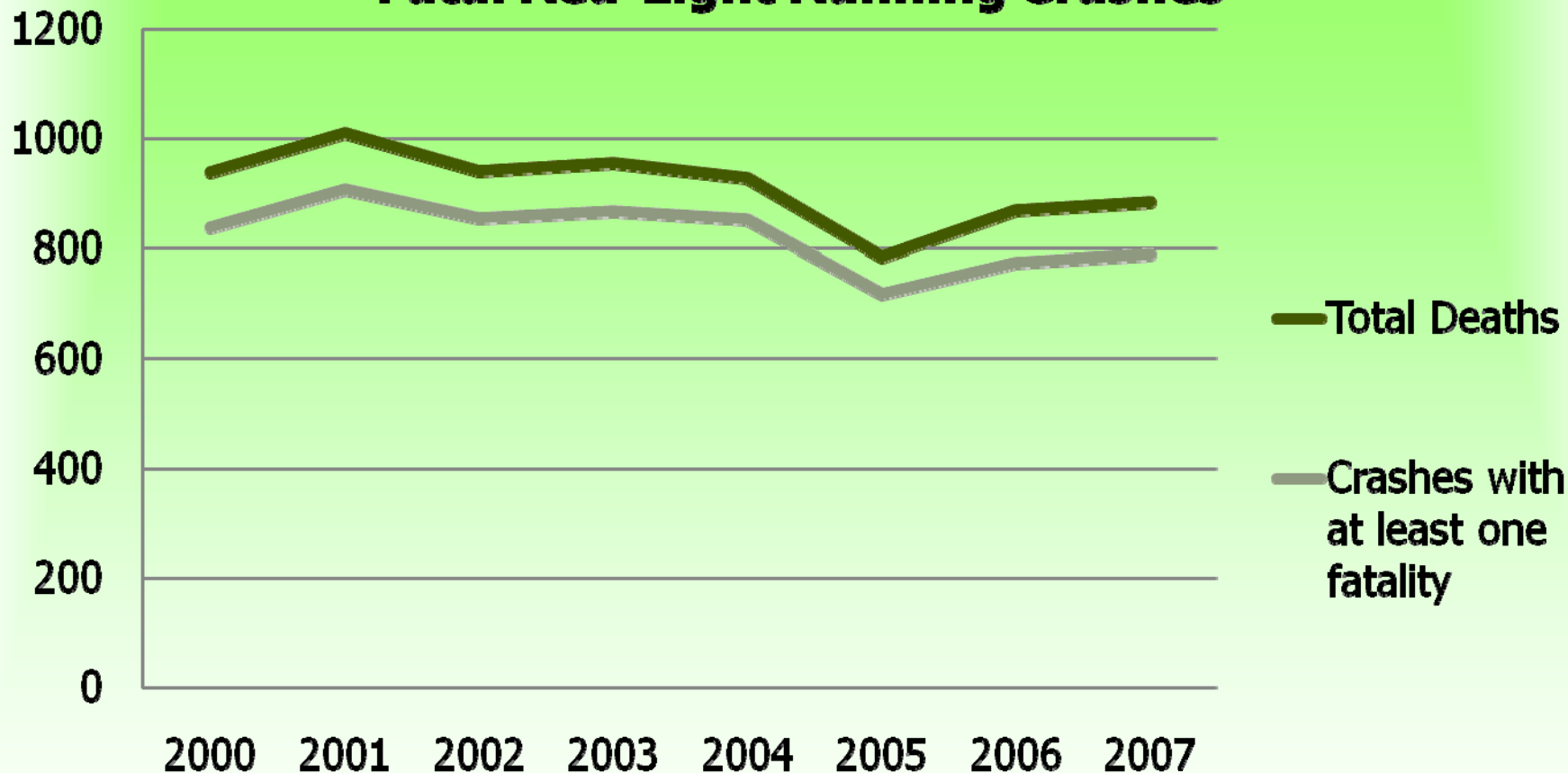


# Intersection Definition



# Safety Facts About Red-Light Running

## Fatal Red-Light Running Crashes

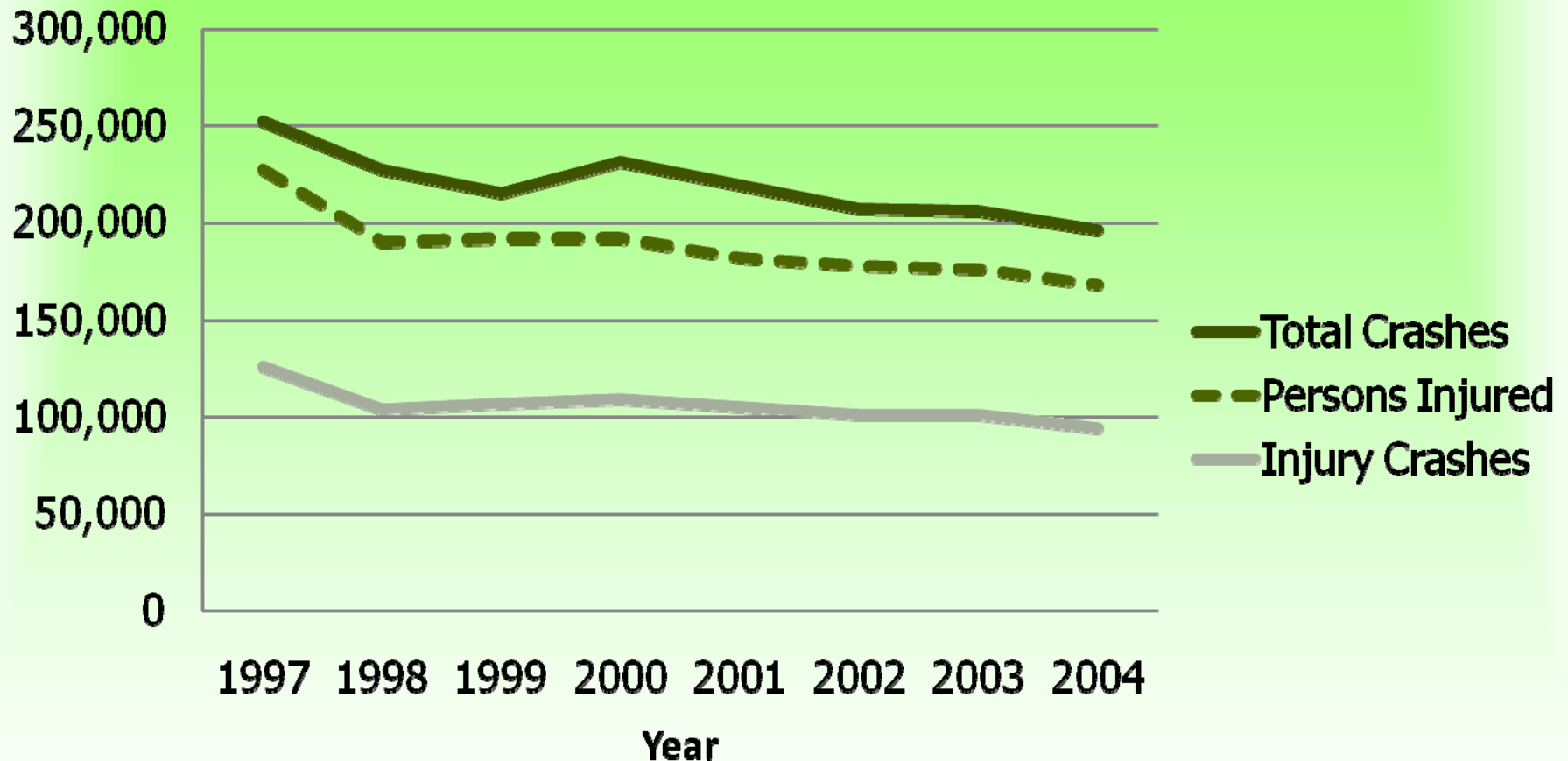


Source: *Fatality Analysis Reporting System (FARS)*, <http://www-fars.nhtsa.dot.gov>



# Safety Facts About Red-Light Running

## Red-Light Running Crashes



Source: *Establishing a Uniform Definition of Red-Light Running Crashes*, ITE Journal, March 2006





# Safety Facts About Red-Light Running

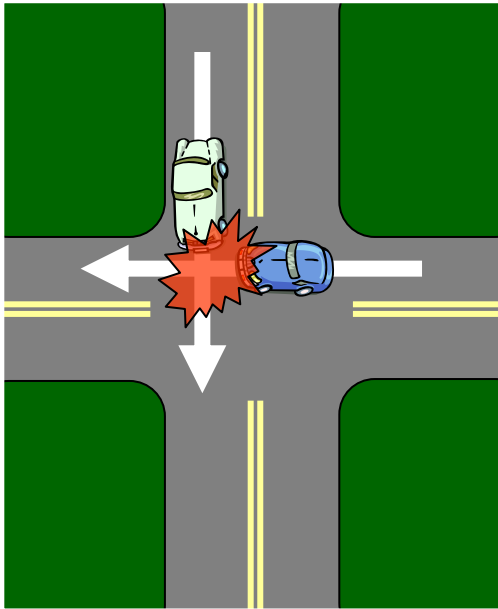
- Red-light running crashes are more likely than other crashes to cause injury
- On urban roads, fatal RLR crashes are more likely than other fatal crashes
- Fatal RLR crashes are somewhat more likely to occur during the day

Source: *Prevalence and Characteristics of Red Light Running Crashes in the United States, Accident Analysis and Prevention, 1999*

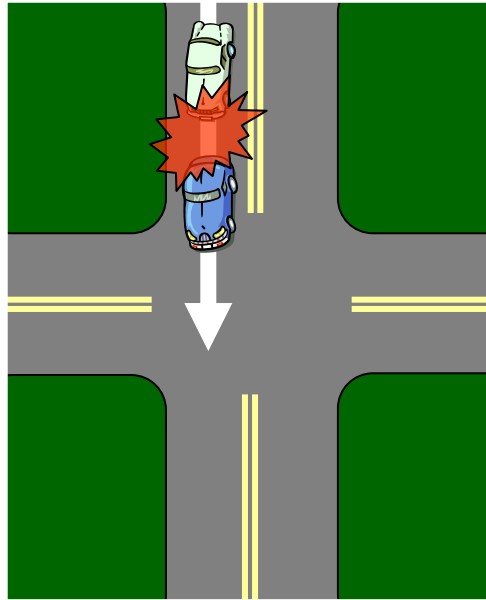




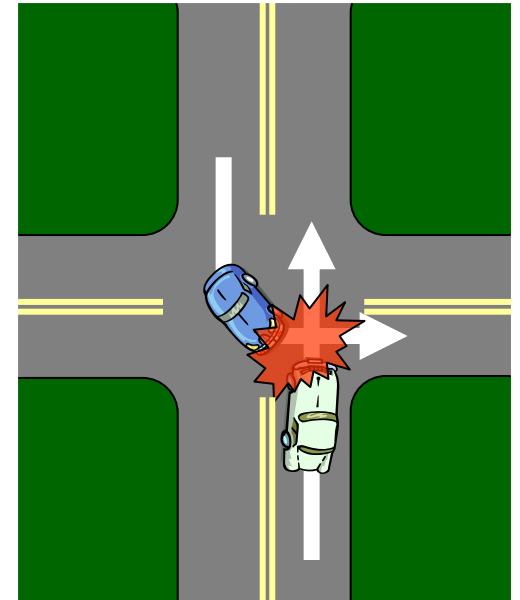
# Types of Crashes



Right angle



Rear end



Left turn



# Red-Light Running Studies

- ✓ 4% of Americans reported running red lights
  - ✓ 1% run them “often”
  - ✓ 3% run them “sometimes”
- ✓ 97% of drivers feel that other drivers running red lights are a major safety threat
- ✓ 1 in 3 people claim they personally know someone injured or killed in a red light running crash



# Types of Red-Light Runners

Unintentional

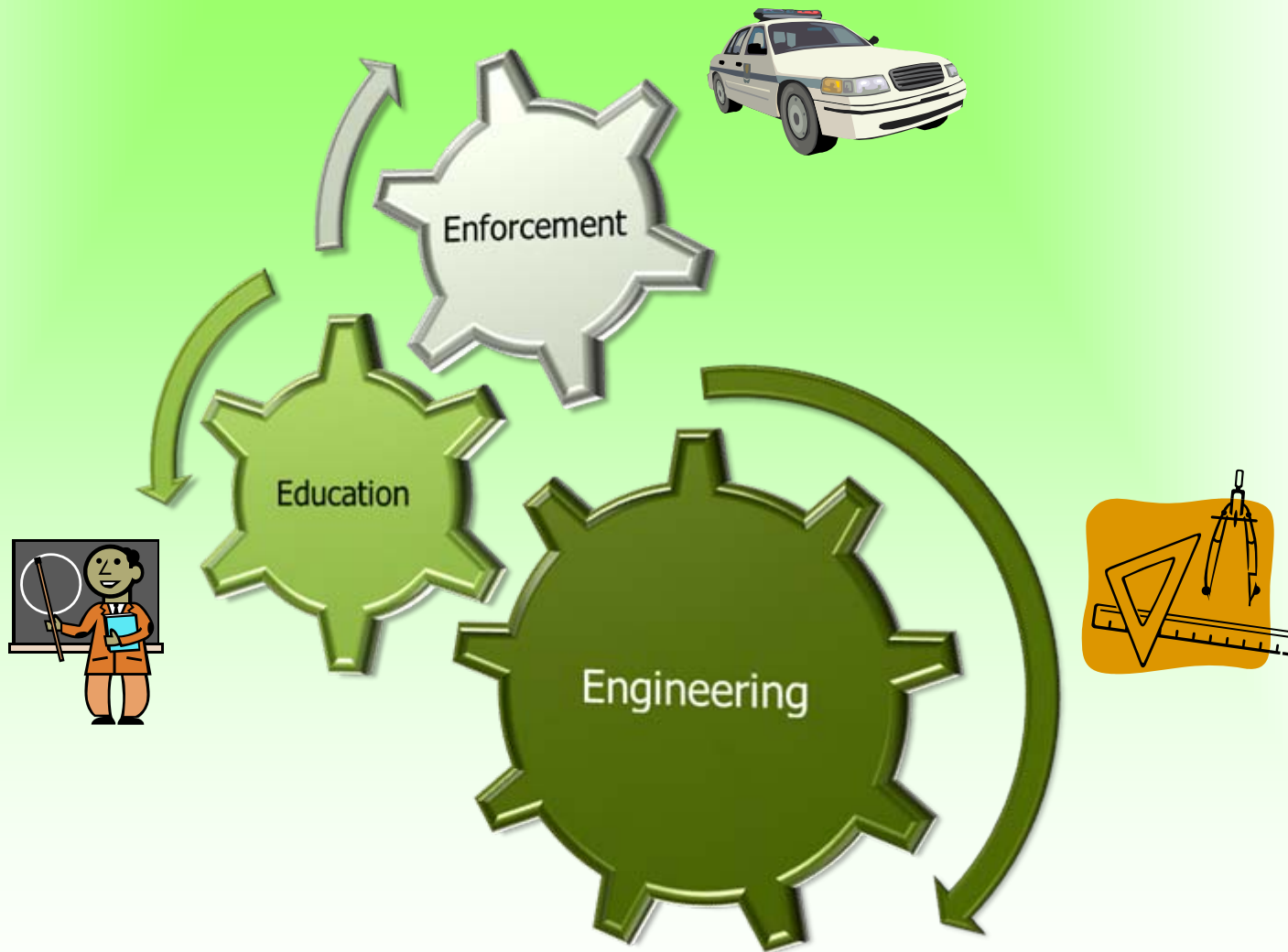
Engineering  
Countermeasures

Intentional

Enforcement  
Countermeasures



# Effective Programs



# The First Step

**The first step to addressing red-light running is to conduct a thorough field review.**

## Sample Assessment Sheet: Engineering Countermeasures to Reduce Red-Light Running

Intersection: \_\_\_\_\_ with \_\_\_\_\_  
Approach Name: \_\_\_\_\_ Direction Heading Lanes at Intersection: \_\_\_\_\_

### CHECK SIGNAL CONTROL PARAMETERS

Yellow Interval Y = \_\_\_\_\_ seconds  
All-red Interval AR = \_\_\_\_\_ seconds  
Grade (in decimal) g = \_\_\_\_\_ (uphill is positive)

Approach speed V = \_\_\_\_\_ mph  
Cross street width W = \_\_\_\_\_ feet  
Cycle length C = \_\_\_\_\_ seconds

Calculate the needed change period (CP) for this approach using agency practice or the following equation:

$$CP = 1.0 + \frac{1.47 * V}{(20 + 64.4g)} + \frac{W + 20}{1.47 * V}$$

Calculated yellow: \_\_\_\_\_ Calculated all-red: \_\_\_\_\_ Are yellow and all-red adequate? Y N

### CHECK SIGNAL VISIBILITY

Type of signal mounting: \_\_\_\_\_ Mast Arm \_\_\_\_\_ Span Wire \_\_\_\_\_ Pole \_\_\_\_\_

Can signal faces on other approaches be seen? Y N

Is anything blocking the view of the signals (e.g. utility lines or foliage)? \_\_\_\_\_

Measurement	Reference	Is Existing Adequate?
Distance upstream signal is visible on approach	feet MUTCD 4E-4.1	Y N
Distance from stop bar to signal	feet MUTCD 4E-4.2	Y N
Diameter of signal lenses	8 inch, 12 inch Y N	Y N
Four side signal	Y N	Y N
Number of signals	Per MUTCD, at least 2 signals for the major movement	Y N

### CHECK SIGNAL CONSPICUITY

Is there visual clutter at the intersection that could detract from the signal? Y N At night? Y N

Are the signal indications confusing? \_\_\_\_\_ Could glare affect signal? \_\_\_\_\_

Is the left turn signal discernible from the through signal? \_\_\_\_\_

### OPTIONS FOR CONSIDERATION

- Conduct signal warranting study
- Change yellow or red interval
- Provide dilemma-zone protection
- Modify cycle length
- Coordinate signal
- Remove/relocate sign obstruction
- Install double red signal
- Relocate signal
- Change signal mounting
- Install additional signals
- Install rear-side signal
- Install Advance Warning Flashers
- Install larger signal lenses
- Use programmable lenses
- Illuminate intersection
- Install backplates
- Install LEDs
- Install rumble strips on approach
- Use vipers or towers
- Install LEFT TURN SIGNAL sign
- Install SIGNAL AHEAD sign



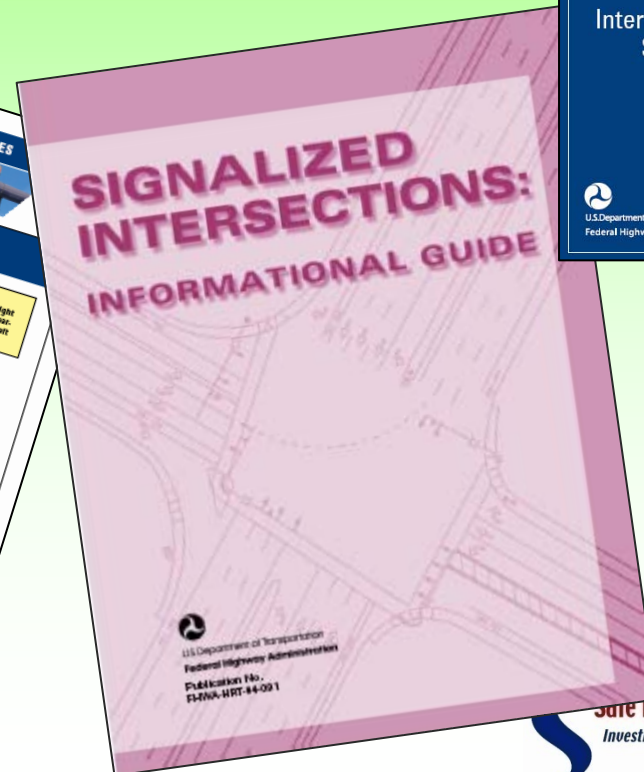
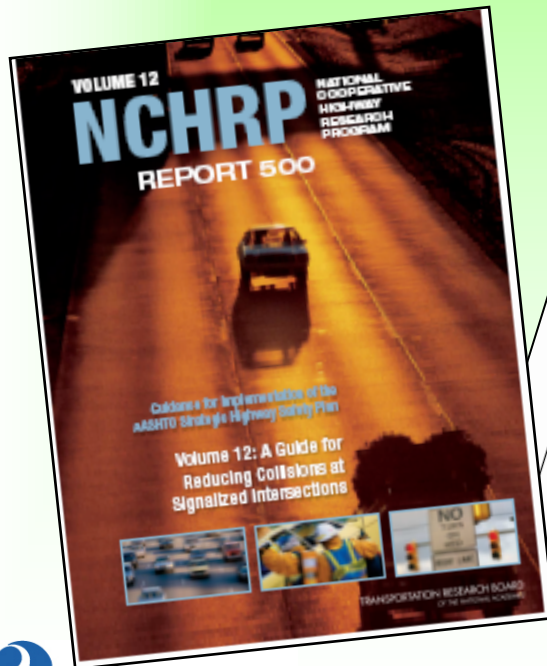
# Intersection Safety Resources

- NCHRP Report 500 Volume 12
- Guide sheets
- Safety Strategies brochure
- Signalized Intersections: Informational Guide



Intersection Safety Strategies

U.S. Department of Transportation  
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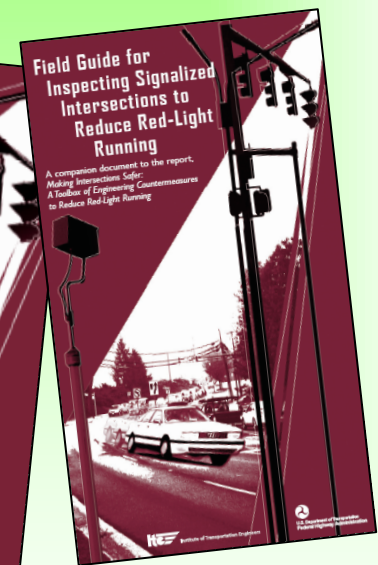
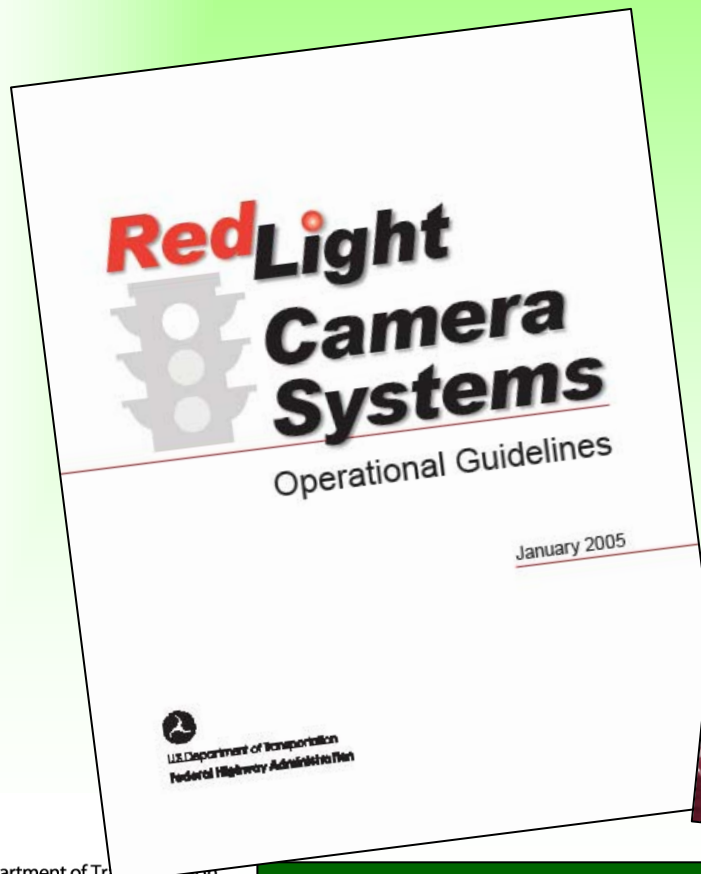
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# Red-Light Running Resources

- Red Light Camera Systems: Operational Guidelines
- Making Intersections Safer: A Toolbox...
- Field Guide for Inspecting Signalized Intersections...





# Engineering Countermeasures

- Improve signal visibility
- Improve line of sight
- Improve signal conspicuity
- Increase likelihood of stopping
- Improve signal timing
- Eliminate the need to stop



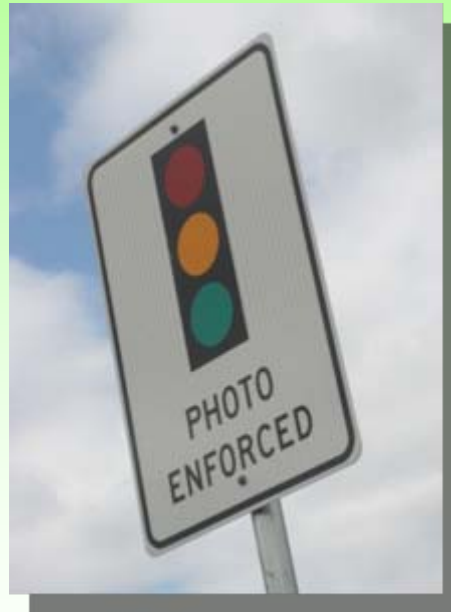
# The Next Step

- Follow up countermeasures with observation
- Number of red light runners can be surrogate for improved safety
- If unsuccessful, look towards enforcement countermeasures



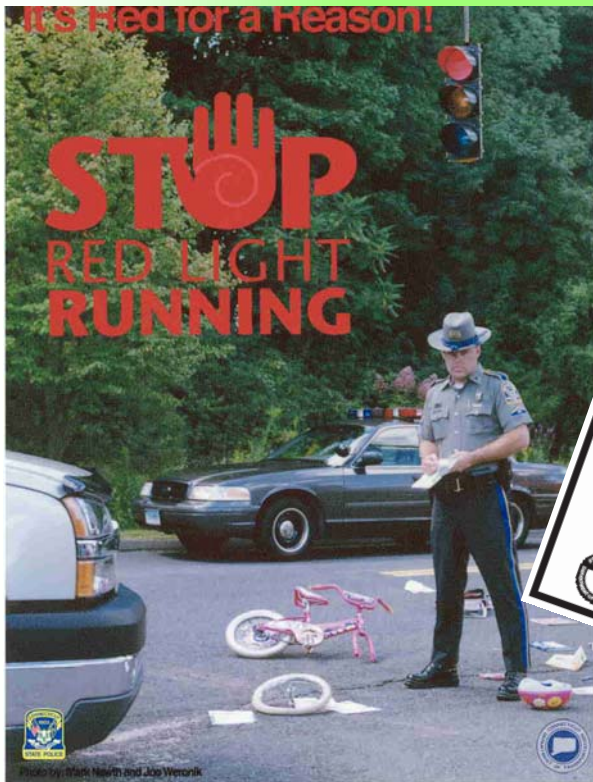
# Enforcement Countermeasures

- Increased enforcement
- Enforcement assistance lights
- Automated enforcement





# Education Countermeasures



**Do you know the law?**

1. When you approach a red light, stop before the stop bar or crosswalk, whichever is closer to you.
2. Do not "creep" into the intersection while waiting.
3. When making a right turn on red, you must first:
  - a. Come to a full stop.
  - b. Yield to all pedestrians and traffic with a green light.
4. You must come to a full stop and yield to any visually impaired pedestrian with a white/red cane or guide dog that is trying to cross the road.
5. If the traffic signal is inoperative, treat the intersection like a four-way stop.
6. With 2 convictions for red light running within 12 months, the Department of Highway Safety and Motor Vehicles will order you to attend driver improvement school.

Funding provided by the Florida Department of Transportation

**RED MEANS STOP**  
It's the law!

Red light running crashes destroy lives

Each year, red light running results in nearly 200,000 crashes, more than 100 deaths and 100,000 injuries nationwide. Red light running crashes cost society over 1.4 billion annually.

Red Means Stop Coalition  
[www.redmeansstop.org](http://www.redmeansstop.org)

**STOP RED LIGHT RUNNING**

Stop Red Light Running Week  
Statewide Enforcement Wave  
August 4 – 11, 2007

# For More Information

- FHWA Office of Safety
  - <http://safety.fhwa.dot.gov/>
- Institute of Transportation Engineers
  - <http://www.ite.org/safety/>
- American Association of State Highway and Transportation Officials
  - <http://safety.transportation.org/>
- Insurance Institute for Highway Safety
  - <http://www.iihs.org/>
- Red Means Stop Coalition
  - <http://www.redmeansstop.org/>

