

Emergency Vehicle Operator Accident Avoidance



OBJECTIVES

- **Identify accident causes.**
- **Discuss the repercussions of an accident.**
- **Demonstrate the habits and practices of a safe, defensive driver.**
- **Demonstrate control measures for common accident causes.**
- **Discuss Department accident statistics.**

Why do accidents occur?

Accident Causes

Two major factors of accidents.

- Lack of forethought: *human error* is the *number one cause* of traffic collisions.
- Speed (excessive): *speed* is a *contributing factor* to almost all traffic collisions and causes approximately 60% of serious accidents.



Primary Factors of Traffic Collisions

- Intersections (60%)
- Unsafe speed for conditions
- Right-of-way violations
- Following too closely
- Reckless driving (by the public)
- Backing
- Parking
- Poor vehicle design:
 - Under braked / over weight
 - High center of gravity, poor baffling
- Poor vehicle maintenance:
 - Chassis condition
 - Drive train, brakes, steering components

Some factors we control, some we don't.



**Mechanical
failure**



BAD DRIVERS
Blaming the back-seat passenger since 1923.

Types of Accidents

Preventable

- **The driver :**

- Was a contributing party.
- Did not use defensive driving techniques.
- Did not follow Department policy.

Non-preventable

- **The driver :**

- Was not at fault.
- Could not have reasonably prevented accident.

Work related damage

- Damage occurred under work related conditions.
- Was beyond driver's control.



**Why should I worry
about my driving?**

What's at stake?

Legal Aspects

Effect of Exemption

– 21056 and 21807

- Sections 21055 and 21806 do not relieve the driver of a vehicle or an authorized emergency vehicle from the duty to drive with due regard for the safety of all persons using the highway, nor protect him or her from the consequences of an arbitrary exercise of the “privileges” granted (AKA “negligence”).

– CVC 2007

- If the driver is involved in an accident, it may be assumed that the driver was not operating the vehicle with due regard and the exempt privileges may be revoked.

Defensive and Safe Driving

If you are involved in an accident, a court may/will judge your actions as an emergency vehicle operator on two primary considerations:

- Was the emergency vehicle responding to a **true emergency**?
- Did the emergency vehicle driver exercise **due regard** for the safety of others?



If you can not answer these for sure, think twice about your driving habits.

A single vehicle accident can affect several people.

YOU



Your family



Your crew



The public we serve

**Let's look at some
habits that can help
reduce accident
risk.**

Defensive and Safe Driving

The defensive driver

- **Makes allowances for his or her own deficiencies.**
- **Makes allowances for lack of skill and knowledge of others.**
- **Understands they have no control over:**
 - **Unpredictable actions of other drivers.**
 - **Unpredictable actions of pedestrians.**
 - **Over weather or road conditions.**
- **Will give up their right-of-way.**
- **Makes concessions to avoid collisions.**

Defensive and Safe Driving

Keys to defensive driving (Smith)

- **Aim high in steering**
- **Get the big picture**
- **Keep your eyes moving**
- **Leave yourself an out**
- **Make sure they can see and hear you**

Accident Prevention

Smith Safe Driving System for Accident Prevention

- **Identify** a hazard / situation.
- **Predict** the action of the hazard / situation.
- **Decide** how to avoid the hazard / situation.
- **Execute** your decision.
- **Always maintain a defensible space cushion.**

Defensive and Safe Driving

By avoiding complacency and utilizing the entire crew to assist the driver, hazards are better identified and mitigated.



Defensive and Safe Driving

“A Driver” has the proper balance of:

- **A**ttitude
- **D**istractions (Lack of)
- **R**est/**R**eadiness
- **I**ntuition / **I**ntent
- **V**ehicle Knowledge
- **E**xperience
- **R**epair – state of the vehicle



A DRIVER

Good Attitude

- **Most important**
- **Mental regard for ourselves and others (A.K.A. professionalism)**
- **Not inbred: learned**
- **Pride in past record**
- **Faith in experience**
- **Follows laws and policies**

A DRIVER

Bad Attitude

- **Overconfidence**
- **Lack of confidence**
- **Self-righteousness**
- **Aggression**
- **Impatience**
- **Pre-occupation**
- **Peer pressure**

A DRIVER

Distractions

Drivers *must* limit the effects of concentration loss due to:

- Passengers
- Noise (sirens, communications)
- Weather
- Traffic
- MDT



A DRIVER

Distractions

How many sides of the apparatus do you need to be concerned with?

- Front
- Left
- Back
- Right
- Top
- Bottom
- Inside



A DRIVER

Rest/Readiness

- Physical Fitness
- Mental Fitness



A DRIVER



NWCG Driving Standards summary

- No driver will drive more than 10 hours (behind the wheel) within any duty-day.
- A driver shall drive only if they have had at least 8 consecutive hours off duty before beginning a shift.
- Exceptions:
 - ✓ accomplish immediate and critical suppression objectives
 - ✓ address immediate and critical firefighter or public safety issues.

A DRIVER

Intuition

- The ability to understand something immediately, without the need for conscious reasoning.
- Based on experience and situational awareness.

Intent

- Have a plan, know the plan.

A DRIVER

Vehicle Knowledge

Apparatus capabilities and limitations

- Braking
- Turning
- Performance
- Reactions
- Maintenance



A DRIVER

Experience

- Developed psychomotor skills
- Understanding the physical forces acting upon a vehicle
- Level of driver knowledge and experience
- Training



Ability + Training = Skill / Skill + Attitude = Performance

A DRIVER

Repair (State of Repair)

- **Vehicle condition**
- **Maintenance record**
- **Pre-trip / Post-trip inspection**

LACoFD Manual V-D, C-2, S-1, III Policy B
NFPA 1500 6.4 (2002)
NFPA 1451 10.2.2 (2002)

[illegible]

Defensive and Safe Driving

Decrease Response Time

- Be ready before the alarm is sounded.
- Once the alarm is sounded:
 - Get dressed/properly outfitted
 - Get to and on the vehicle
 - Get out fast
 - Remember:
 - Daytime = 1 minute to vehicles – ready to go
 - Nighttime = 90 seconds to vehicle - ready to go
- Don't drive recklessly fast!

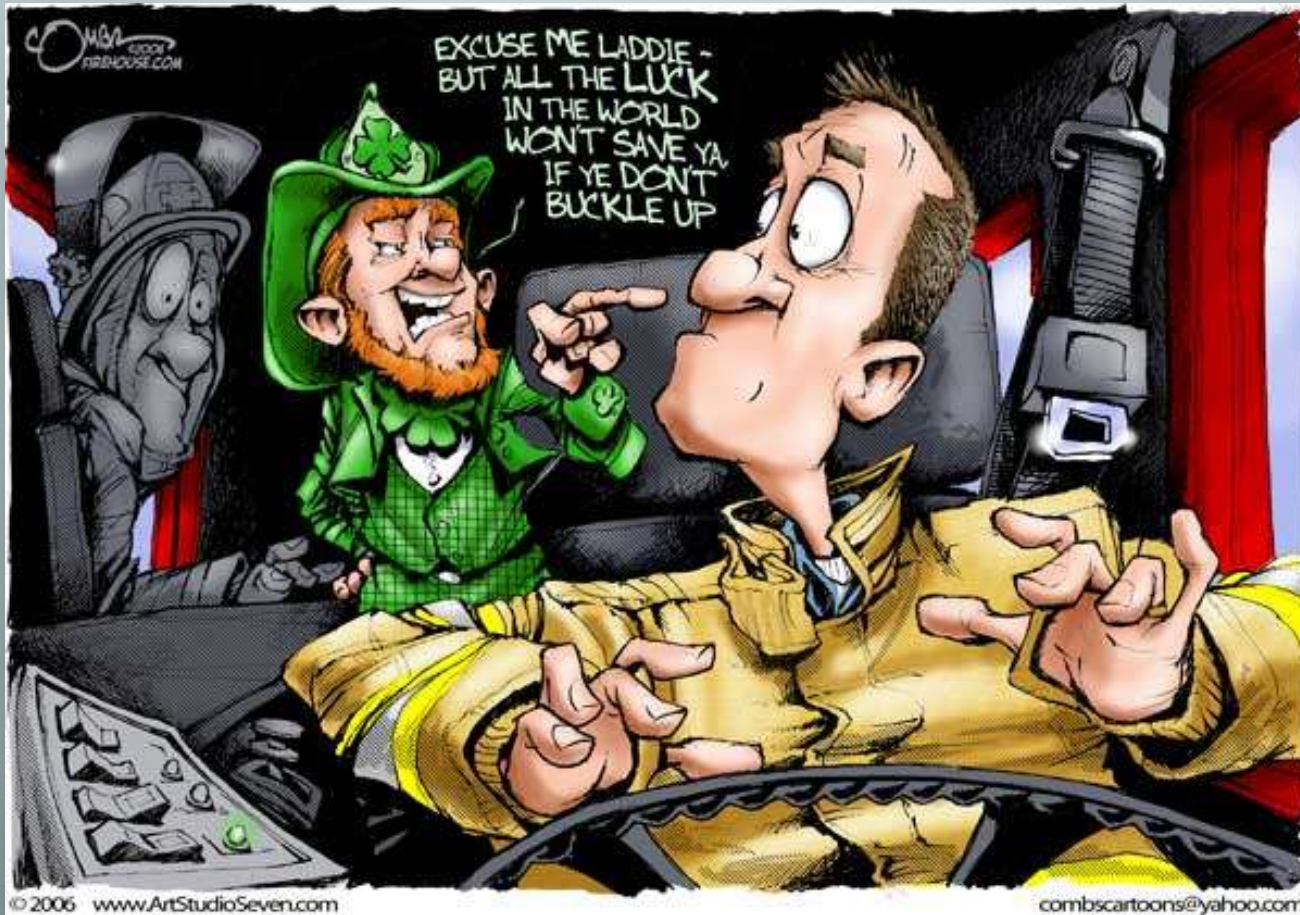


Defensive and Safe Driving

- Check station apparatus bay doors.
- Check apparatus compartment doors.
- Hot start / shoreline / charging cords
 - Ensure they are disconnected.



Defensive and Safe Driving



- Remember – seat belts save lives!
- And it's the law.

Defensive and Safe Driving



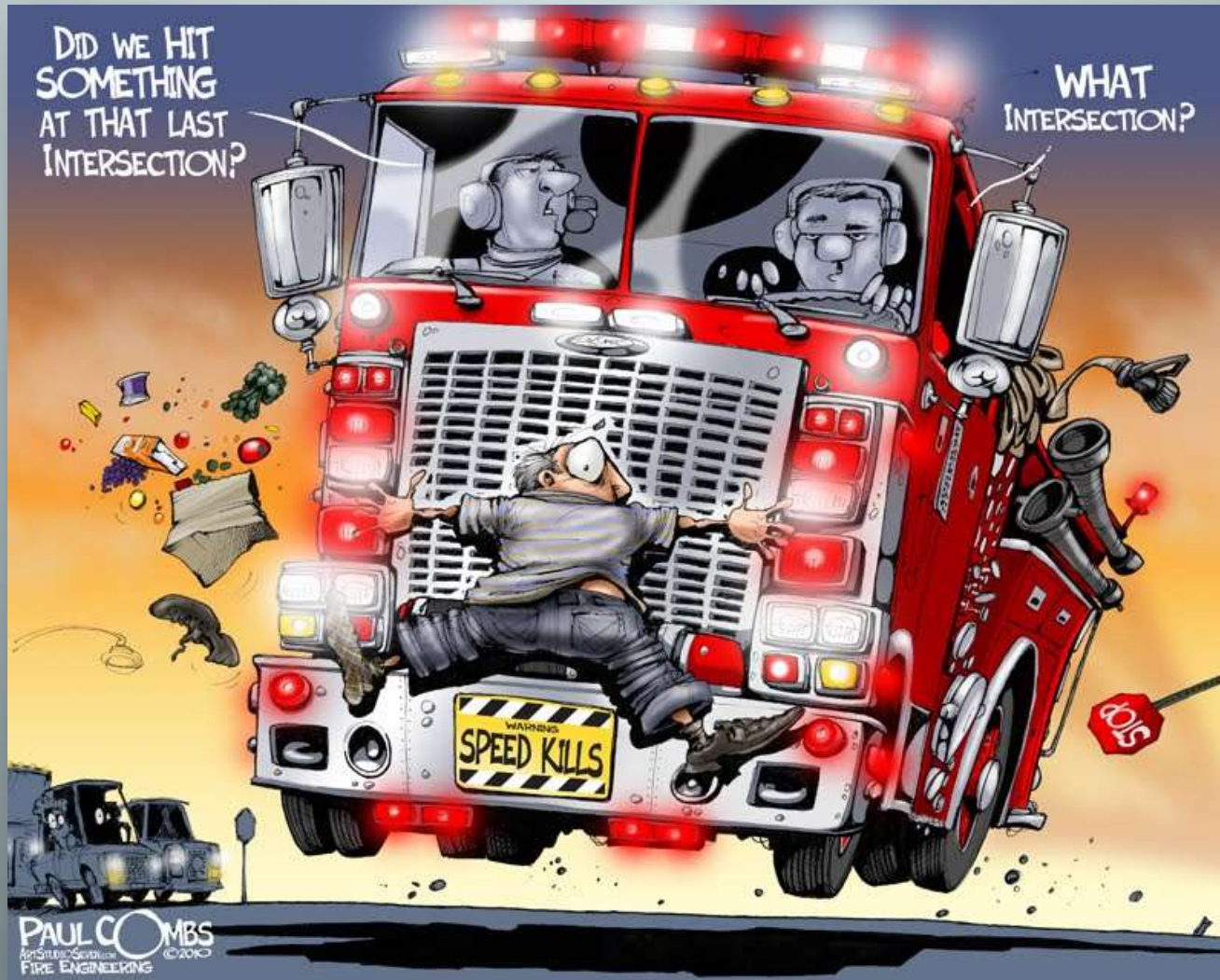
- **Seat belts, Seat belts, Seat belts!**
- **No standing on the rig!**

**Let's revisit
accident causes
and take a
closer look.**

Intersections

(A factor in 60% of accidents)

Why clear intersections?



Approach cautiously, cross cautiously.

Accident Prevention

Code 3 Intersection Safety

- Approach and enter with caution.
- Release accelerator, cover the brake pedal.
- Be prepared to stop.
- Enter toward center of roadway.
- Clear lane by lane.
- Watch for gutter snipers.



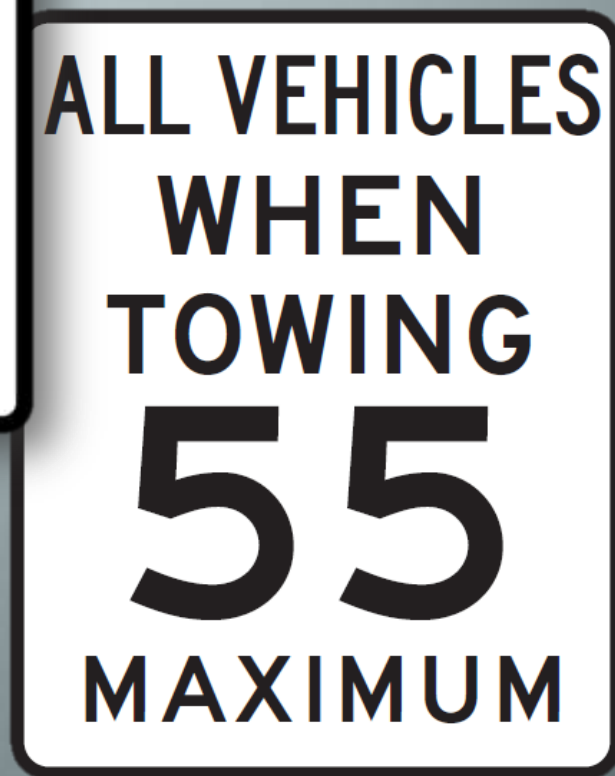
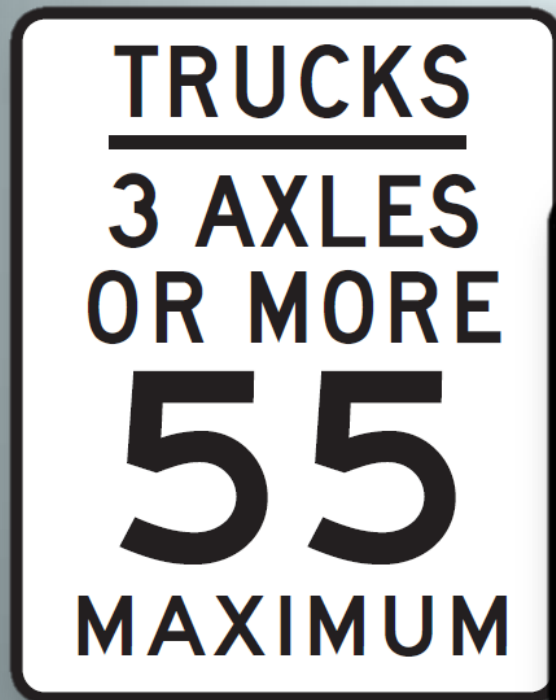
Accident Prevention

Code 3 Intersection Safety

- Make eye contact.
- Never push or force a stopped vehicle into intersection.
- If they get hit, you are liable.
- Consider shutting down lights and siren if stopped at a red light, once it changes, then proceed.
- Cautiously use opposing traffic lanes if necessary.



Unsafe speed for conditions



**What type of vehicle
are you driving?**

Accident Prevention

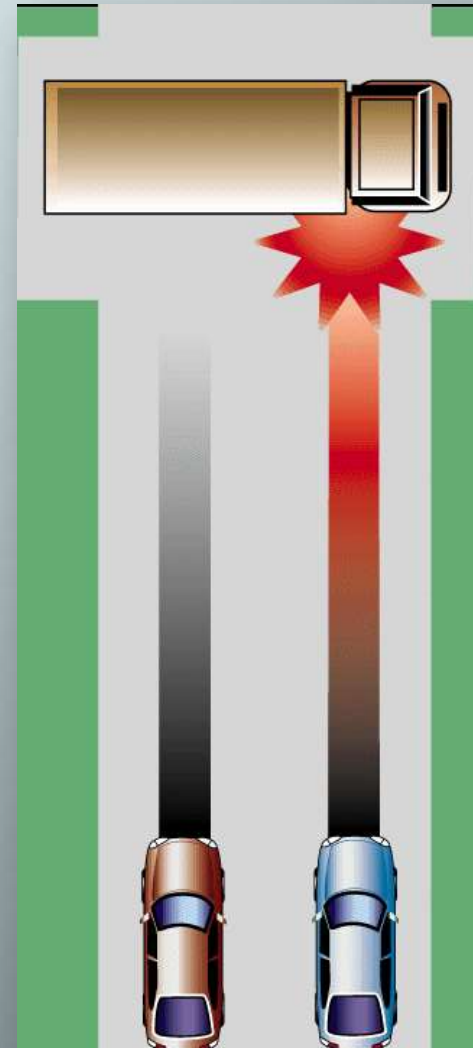
Stopping Distance Formula

- $\frac{3}{4}$ second = Perception time
- $\frac{3}{4}$ second = Decision/reaction time
- $\frac{1}{4}$ - 1 second = Air brake lag
- 150 – 200 feet = Braking Distance
- Therefore the time elapsed from your initial notice of an incident / hazard until the brakes start to take effect is approximately $1 \frac{3}{4}$ to $2 \frac{1}{2}$ seconds.

Accident Prevention

Factors affecting *Total Stopping Distance*

- Driver's influence
 - Fatigued
 - Distracted
- Vehicle's influence
 - Tire condition
 - Brake condition
 - Cargo
- Vehicle weight
- Driving conditions



Total Stopping Distance

Driving Conditions

- Type of road surface
 - Rough
 - Slippery
 - Slope or grade
- Speed
- Traffic patterns
- Weather



January 29, 2008 early morning, Bouquet Canyon, Patrol 107 – Black Ice

LACo. FD

Engine 77

**Slow-Speed
Rollover
(Black Ice)**

**January 15,
2001**



Defensive and Safe Driving

Calif. Firefighter dies after fire engine slides off road

Duty Death: Chris Kanton - [Beaumont, California]

Biographical Info

Age: 24

Additional Info: Kanton had been with the Riverside County Fire Department for two years. Kanton is survived by his wife.

Incident Details

Cause of Death: Kanton was killed after the fire engine he was riding in hydroplaned off the freeway and down an embankment.

Date of Incident: August 6, 2005



LACoFD Policy

- Engine brakes / retarders shall be used in either the lowest setting or completely off in wet or slippery road conditions. It is permissible to test the engine brake / retarder to see if it is effective, prior to actually needing it.

Vol. D, Ch. 5, Sub. 1

Following too closely

Accident Prevention

Four Second Rule

- Always maintain a minimum 4 second following distance.
- When speed increases above 40 MPH, add 1 second for every 10 MPH.
- Therefore following distance at speeds:
 - Up to 40 MPH = 4 seconds
 - 50 MPH = 5 seconds
 - 60 MPH = 6 seconds
 - 70 MPH = 7 seconds
- When responding Code 3, add 1 second to following distance.
- Increase time during inclement weather.



Backing

Backing

- **Large cause of accidents**
(# 1 preventable accident)
 - Avoid when possible
 - Use a helper
 - Circle of safety
- **Backing signals/buzzers**
 - One = Stop
 - Two = Forward
 - Three = Reverse
- **Verbal communication**
(head set) is best!



Because drivers cannot see everything behind the vehicle, backing is always hazardous. A great number of accident reports submitted result from poor backing technique.

VOLUME D, CHAPTER 4, SUBJECT 2



Use a helper whenever possible. A helper can see blind spots that you can't. The helper should stand near the back of the vehicle where you can see him or her.

Code 3 Driving

Safety equipment helps support the public's awareness on emergency responses.



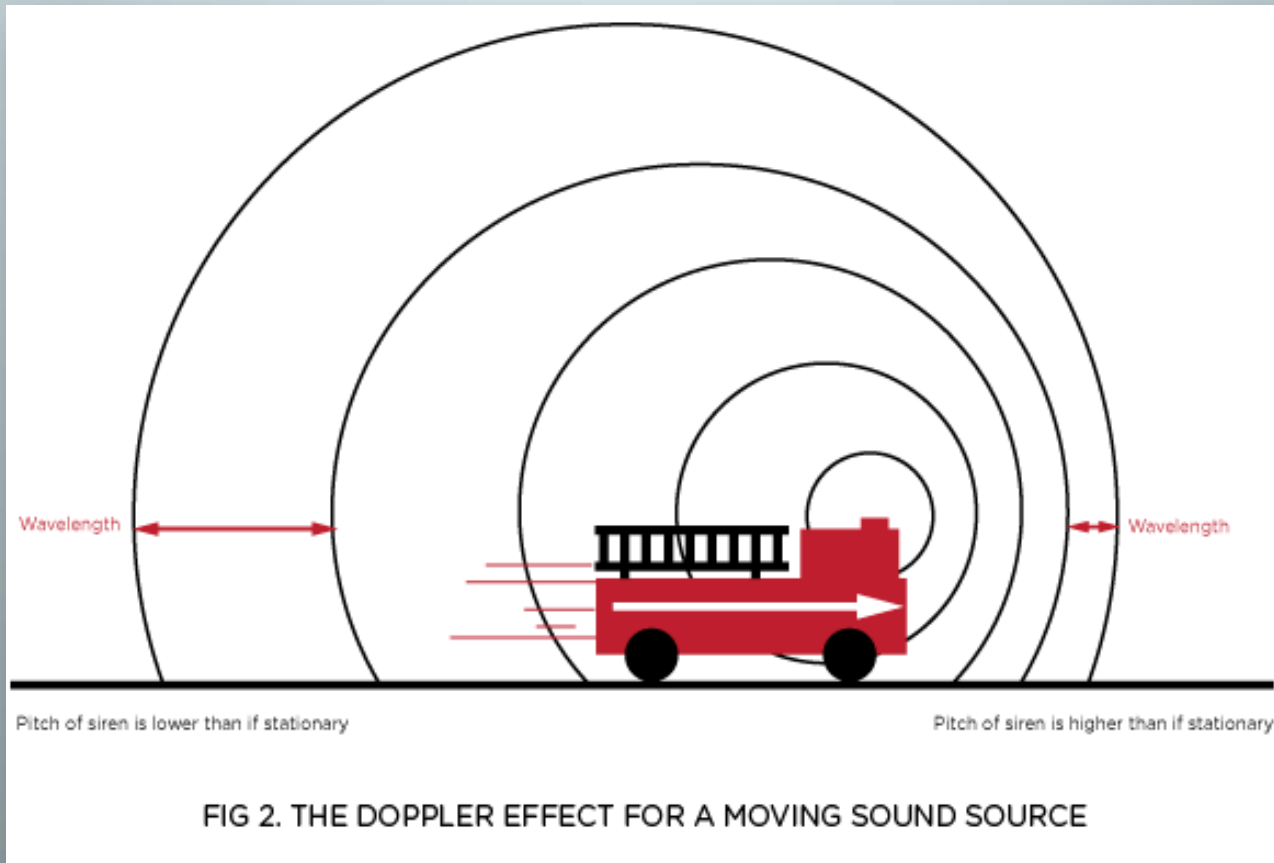
Siren Use



LACoFD Policy:

- The siren is required to be sounded in such a manner that **full range** of the siren is produced.
- The siren is required to be sounded continuously.
- If only red lights and NO siren is used, the driver shall drive in a Code 2 manner.

Siren Use



Sound compression

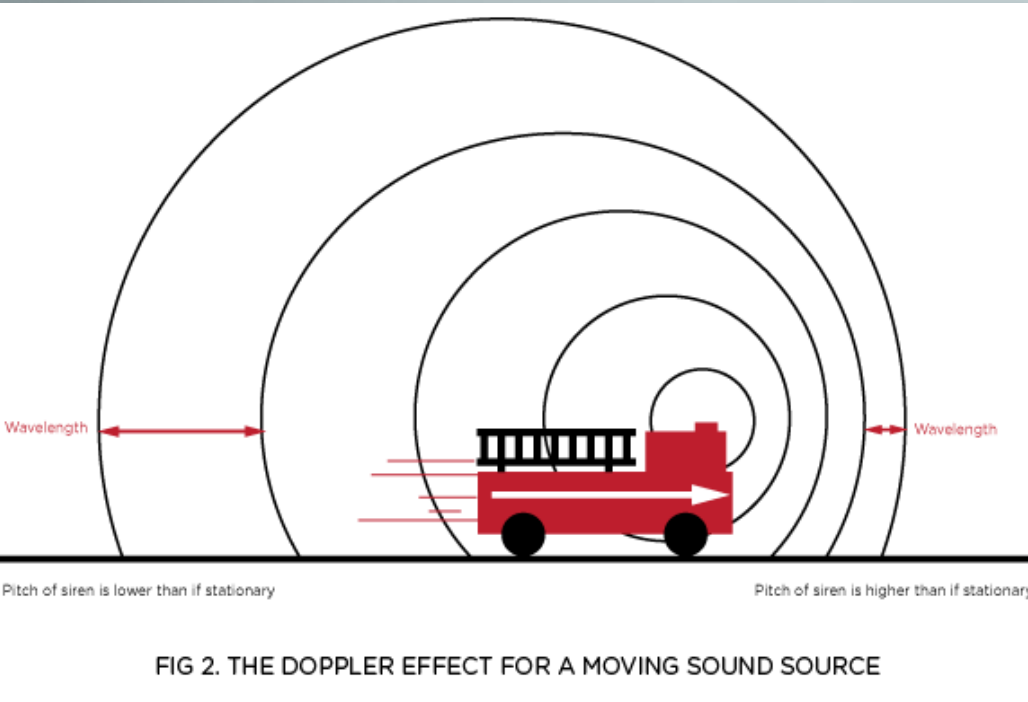
- The sirens effectiveness is based upon the speed of the vehicle.
- Increased speed, reduces siren projection.

Siren Use

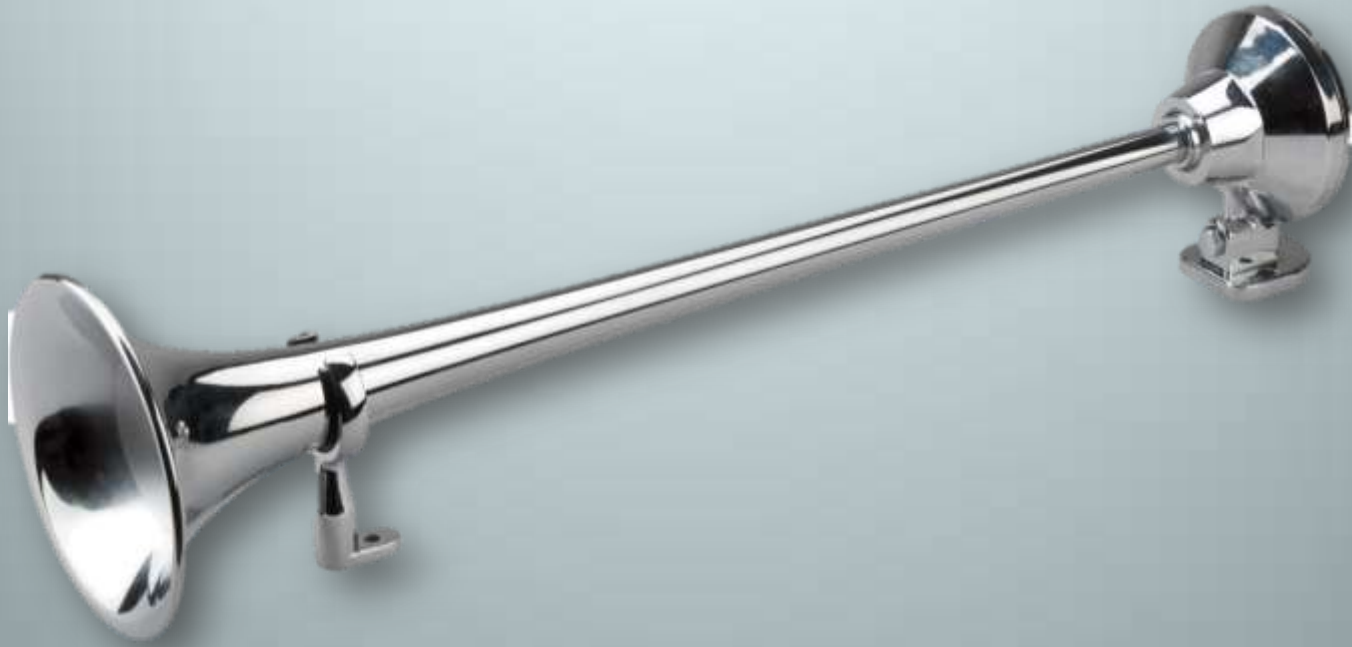
Sound compression

- **Electronic siren:**
 - 40 MPH = 300' siren projection
 - 60 MPH = 12' siren projection
- **Grinder siren:**
 - Slightly better projection due to disturbance of air.

LACoFD Manuals V-D,C-4, S-5, III Policy C-2



Horn Use



- **Air Horns are not considered authorized warning devices and should be used in conjunction with sirens and emergency lights.**
- **Intermittent bursts as to not drown out siren.**

Vol. D C4 S5 (G;4)

Emergency Light Use



- **LACoFD vehicles that shall not operate Code 3 as authorized emergency vehicles:**
 - **Heli-Tenders**
 - **Fuel Tenders**

LACoFD Manuals V-D, C-4, S-5, III Policy, E-8 to E-11



Emergency Light Use



LACoFD vehicles that shall not operate Code 3 as authorized emergency vehicles, unless they are required to move into traffic or bypass congested traffic areas.

- Water Tenders
- Heavy Transports

Move-ups shall be Code 2 unless directed by FCCF.



Code 3 Driving



**Defensive driving
doesn't end
when you turn
off your warning
devices.**

Routine Driving



**Keep your
guard up!**

Head Light Use



All apparatus shall be operated with its headlights on at all times (exception staff vehicles/passenger sedans)

Vol. D C6 S1 E;a (02/15/00)

Accident Prevention

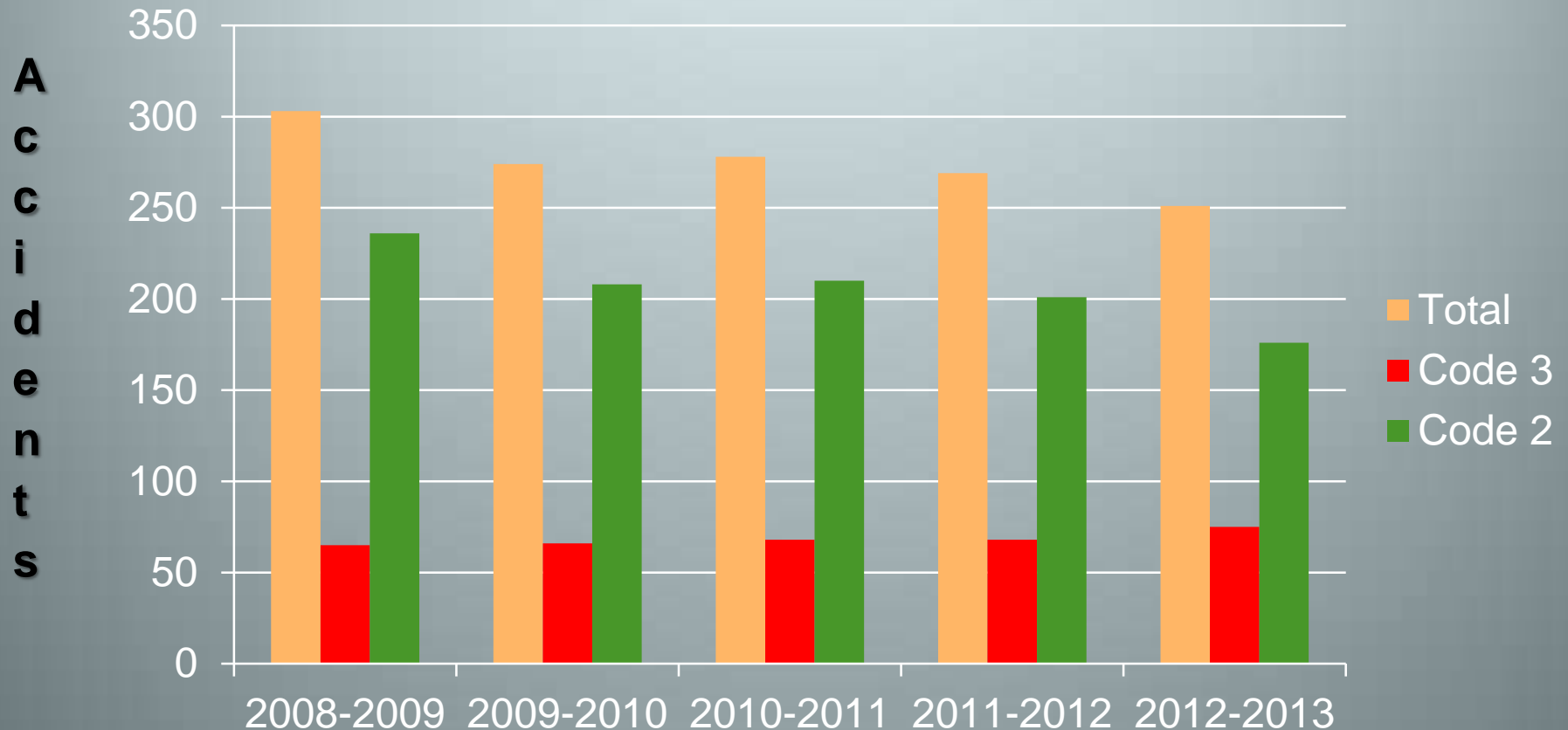
Accident Avoidance Practices

- **Steer to avoid an accident**
 - Except in a water tender
- **Occupy the vacated area**
- **Glancing blow is better**
- **Drive at a controlled speed**
- **Keep lane clearances / position**
- **Check mirrors**



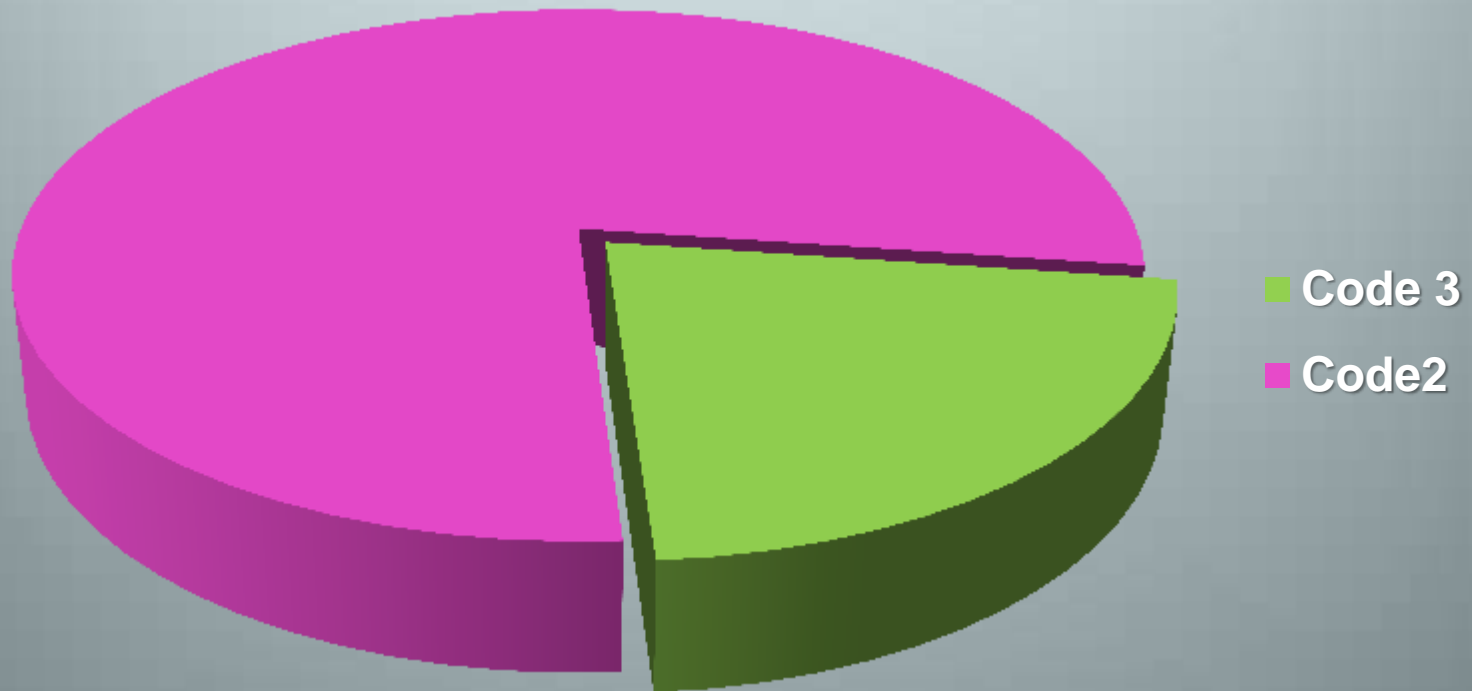
**How are we doing
as a Department?**

Department Annual Totals



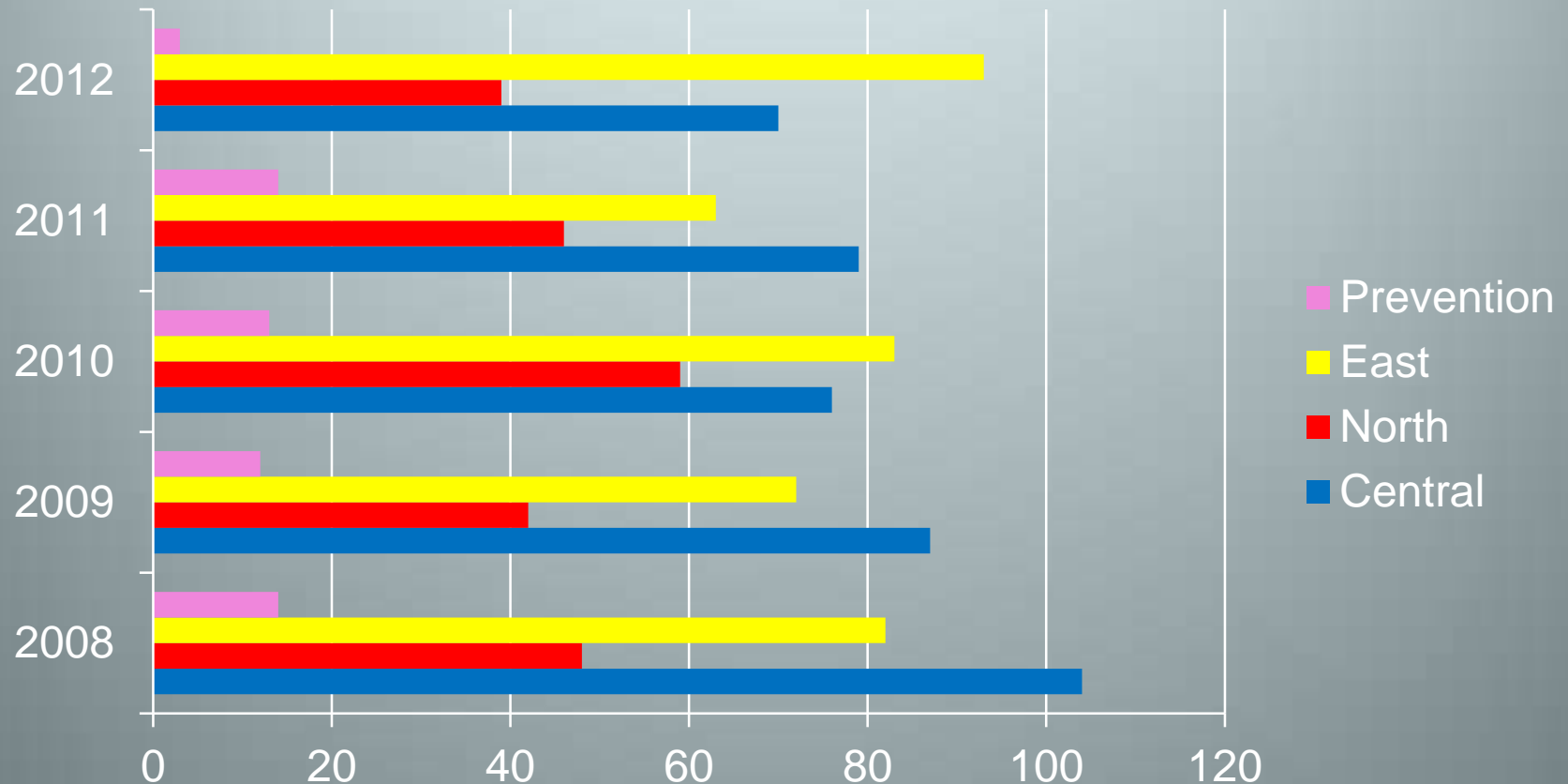
Where are we vulnerable?

Total Accidents from 2008 to 2013



Trends indicate where we become more complacent and increase our potential for accidents.....

Location, Location, Location?



**TOTAL NUMBER OF
ACCIDENTS**

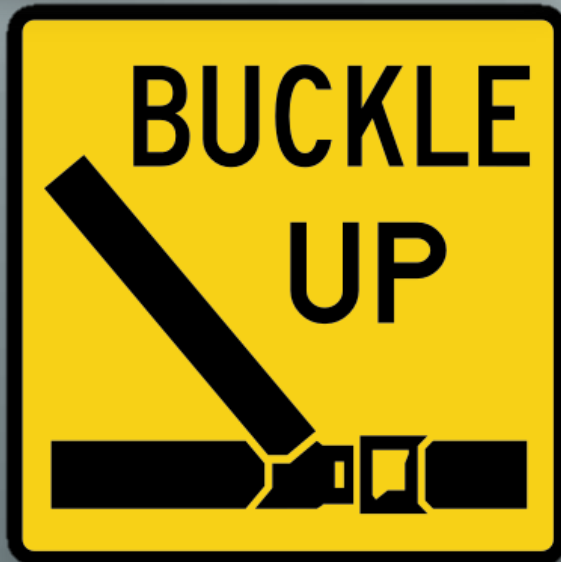
There are factors we can't control.



BAD DRIVERS

Blaming the back-seat passenger since 1923.

The one thing we can control is...Ourselves!



Remember
who we affect



Director of Training
Battalion Chief Derek Alkonis

LACoFD Training Services Section
(323) 881-2436