



United States Highway Safety Priorities:

A Comprehensive Approach for Saving Lives

**14th Canadian Multidisciplinary Road
Safety Conference**

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Haddon Matrix

Human

Vehicle

Environment

Pre-Event



Event



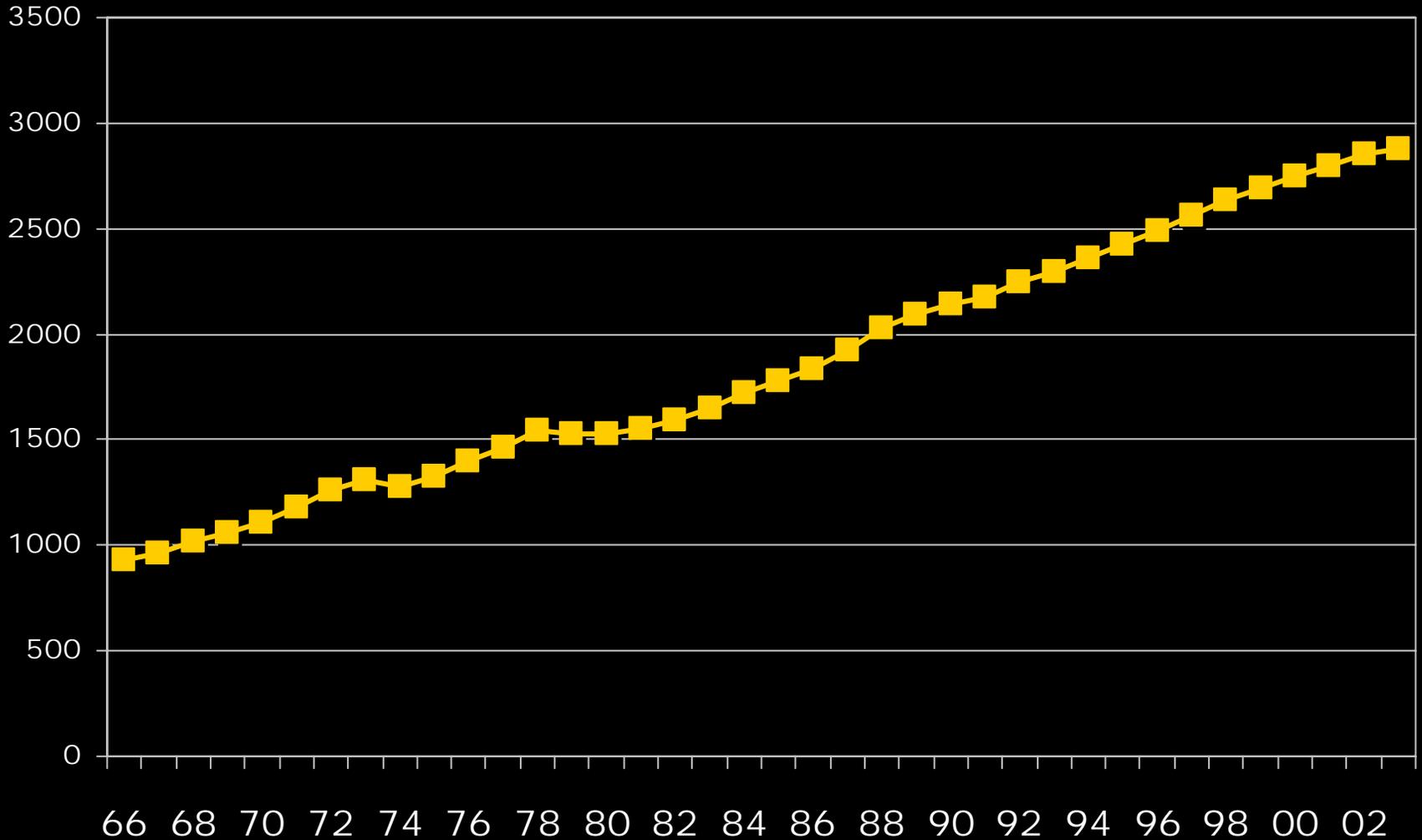
Post-Event



Top 10 Leading Causes of Death in the United States for 2001, by Age Group

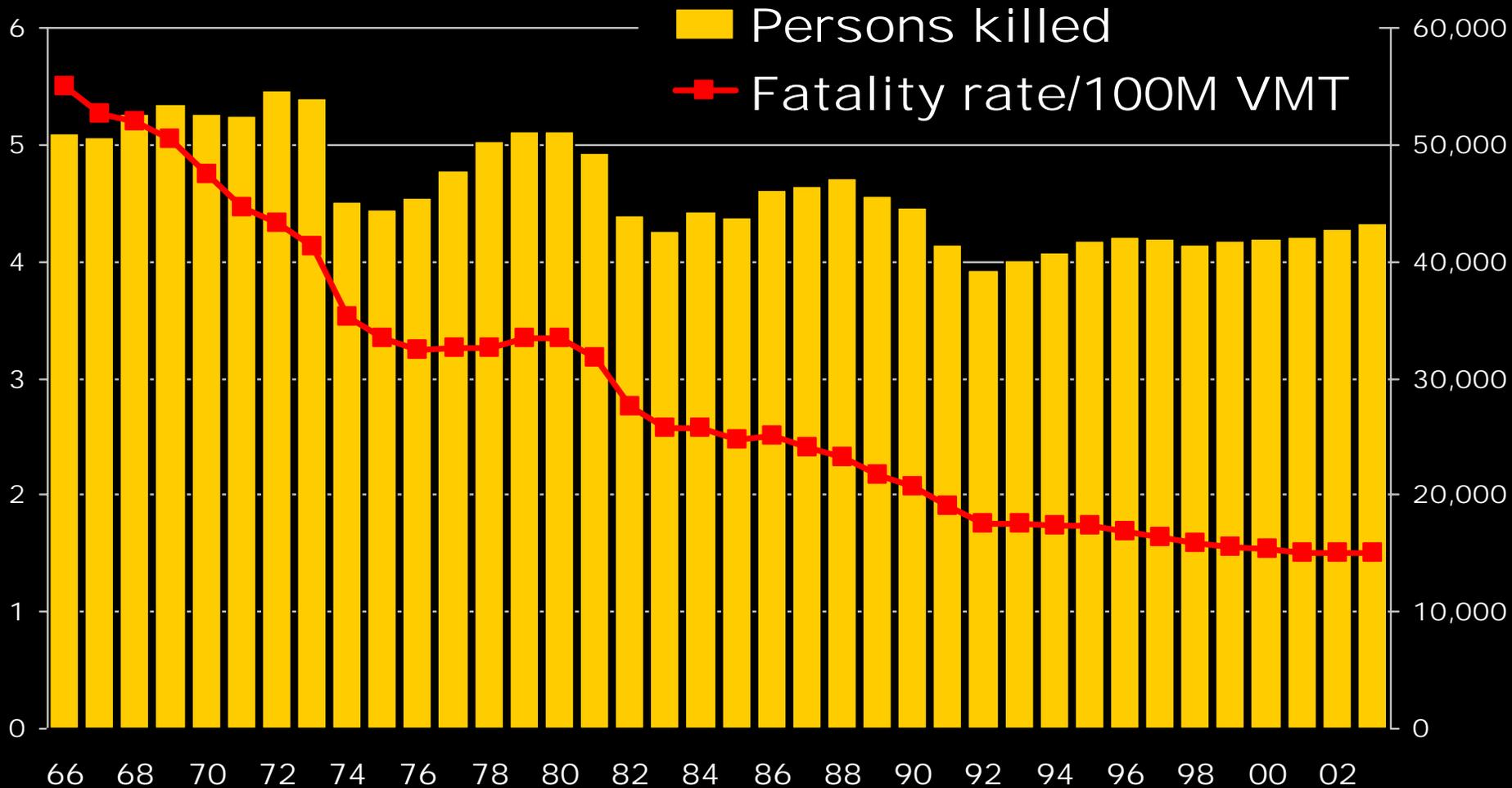
R A N K	Cause and Number of Deaths											Years of Life Lost
	Infants Under 1	Toddlers 1-3	Young Children 4-7	Children 8-15	Youth 16-20	Young Adults 21-24	Other Adults			Elderly 65+	All Ages	
							25-34	35-44	45-64			
1	Perinatal Period 13,734	Congenital Anomalies 496	MV Traffic Crashes 533	MV Traffic Crashes 1,546	MV Traffic Crashes 5,979	MV Traffic Crashes 4,136	MV Traffic Crashes 6,759	Malignant Neoplasms 16,569	Malignant Neoplasms 139,785	Heart Disease 582,730	Heart Disease 700,142	Malignant Neoplasms 23% (8,614,131)
2	Congenital Anomalies 5,513	MV Traffic Crashes 421	Malignant Neoplasms 400	Malignant Neoplasms 829	Homicide 2,414	Homicide 2,738	Homicide 5,204	Heart Disease 13,326	Heart Disease 98,885	Malignant Neoplasms 390,214	Malignant Neoplasms 553,768	Heart Disease 22% (8,110,571)
3	Heart Disease 479	Accidental Drowning 393	Exposure to Smoke/Fire 178	Suicide 447	Suicide 1,879	Suicide 1,924	Suicide 5,070	MV Traffic Crashes 6,891	Stroke 15,518	Stroke 144,486	Stroke 163,538	MV Traffic Crashes 5% (1,700,952)
4	Homicide 332	Homicide 362	Congenital Anomalies 168	Homicide 391	Malignant Neoplasms 814	Accidental Poisoning 771	Malignant Neoplasms 3,994	Suicide 6,635	Diabetes 14,913	Chronic Lwr. Resp. Dis. 106,904	Chronic Lwr. Resp. Dis. 123,013	Stroke 5% (1,687,683)
5	Septicemia 312	Malignant Neoplasms 321	Accidental Drowning 164	Congenital Anomalies 324	Accidental Poisoning 566	Malignant Neoplasms 768	Heart Disease 3,160	HIV 5,867	Chronic Lwr. Resp. Dis. 14,490	Influenza/ Pneumonia 55,518	Diabetes 71,372	Chronic Lwr. Resp. Dis. 4% (1,444,745)
6	Influenza/ Pneumonia 299	Heart Disease 200	Homicide 133	Accidental Drowning 293	Heart Disease 398	Heart Disease 543	Accidental Poisoning 2,507	Accidental Poisoning 5,036	Chronic Liver Disease 13,009	Diabetes 53,707	Influenza/ Pneumonia 62,034	Suicide 3% (1,079,822)
7	MV Traffic Crashes 139	Exposure to Smoke/Fire 170	Heart Disease 82	Heart Disease 273	Accidental Drowning 326	Accidental Drowning 211	HIV 2,101	Homicide 4,268	Suicide 9,259	Alzheimer's 53,245	Alzheimer's 53,852	Perinatal Period 3% (1,070,154)
8	Nephritis/ Nephrosis 133	Septicemia 96	MV NonTraffic Crashes 51	Exposure to Smoke/Fire 140	Congenital Anomalies 244	Congenital Anomalies 206	Stroke 601	Chronic Liver Disease 3,336	MV Traffic Crashes 8,750	Nephritis/ Nephrosis 33,121	MV Traffic Crashes 42,443	Diabetes 3% (1,014,201)
9	Stroke 108	Influenza/ Pneumonia 92	Benign Neoplasms 46	MV NonTraffic Crashes 125	Accidental Falls 114	HIV 167	Diabetes 595	Stroke 2,491	HIV 5,437	Septicemia 25,418	Nephritis/ Nephrosis 39,480	Homicide 3% (924,263)
10	Meningitis 78	Perinatal Period 63	Septicemia 33	Chr. Lwr. Resp. Dis. 102	Acc. Dischg. of Firearms 114	Accidental Falls 134	Congenital Anomalies 458	Diabetes 1,958	Nephritis/ Nephrosis 5,106	Hypertension Renal Dis. 16,397	Septicemia 32,238	Chronic Liver Disease 2% (623,998)
A L L	27,568	4,288	2,703	6,672	15,851	14,940	41,683	91,674	412,204	1,798,420	2,416,425	All Causes 100% (36,866,317)

U.S. Vehicle Miles Traveled, 1966 – 2003 (in Billions)



Source: FHWA

United States Fatalities and Rate Per 100M VMT



Source: 2002 FARS

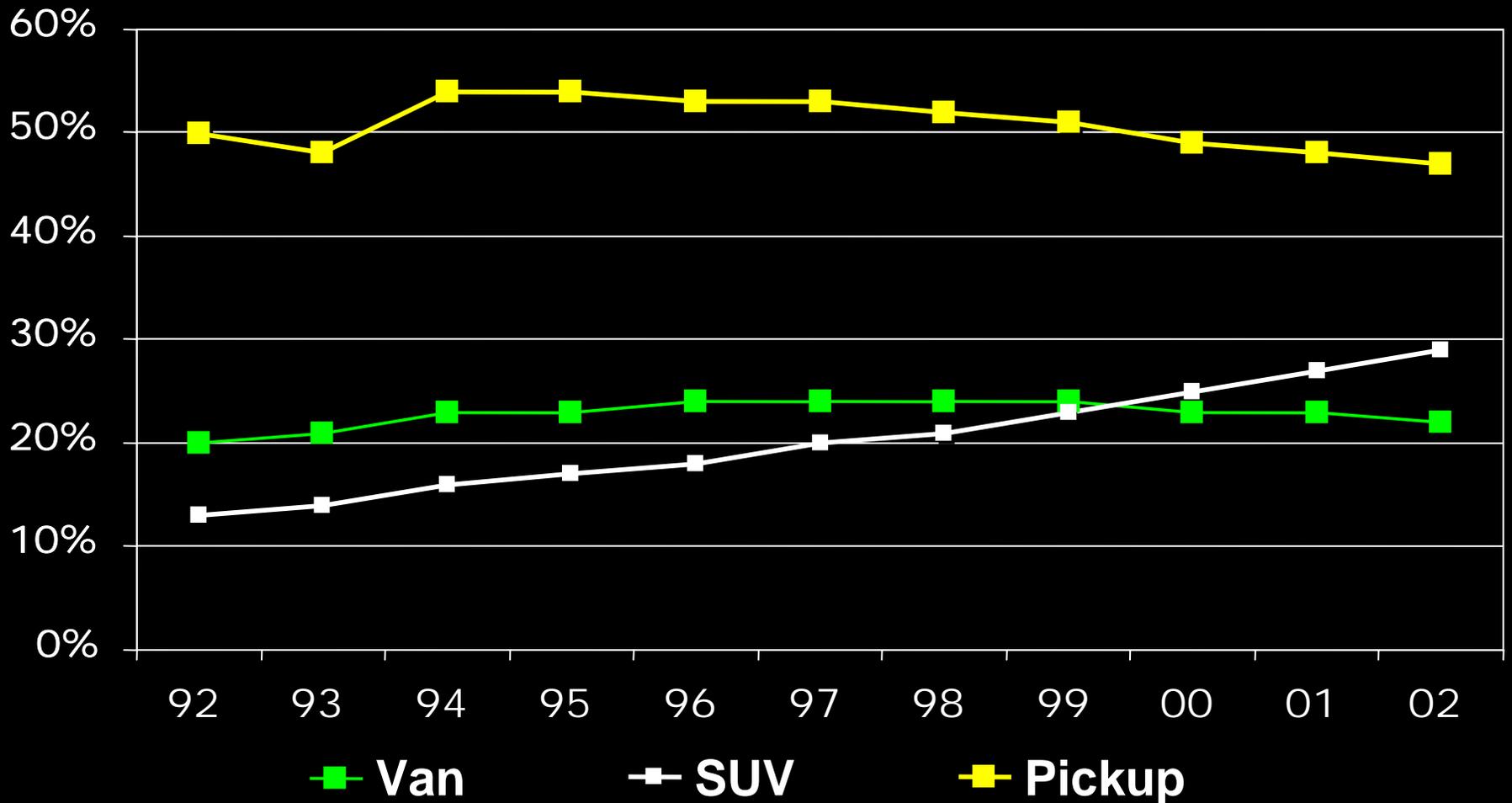
Economic Cost of Crashes



- **\$230 billion total**
 - ◆ **\$32 billion medical cost**
 - ◆ **\$51 billion for impaired driving**
 - ◆ **\$20 billion failure to use belts**

Change in LTV Fleet

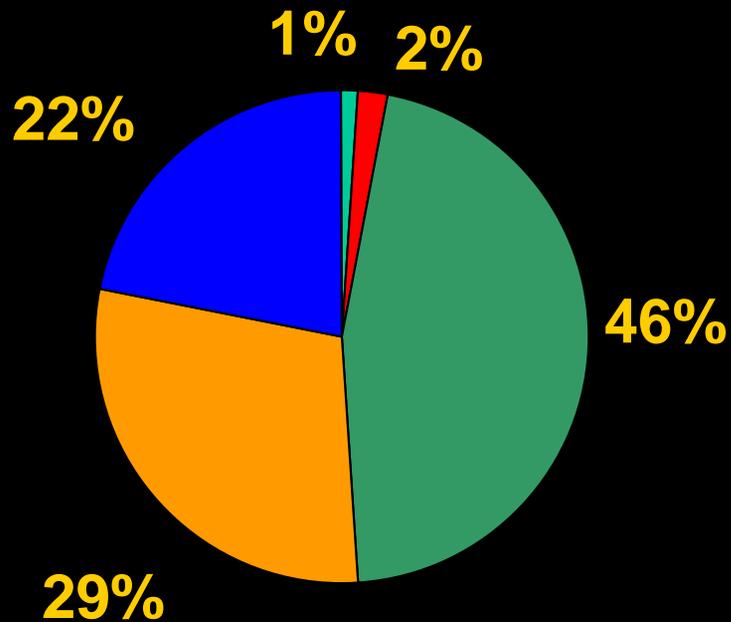
1992 - 2002



Vehicles and Fatalities by Collision Type - 2002

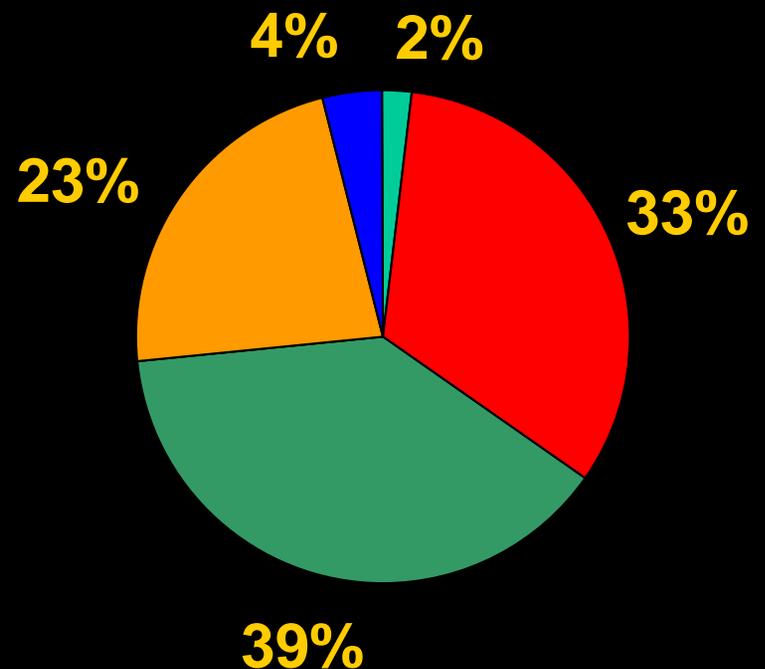
Passenger Vehicles in Crashes

Approx. 10.6 million vehicles involved



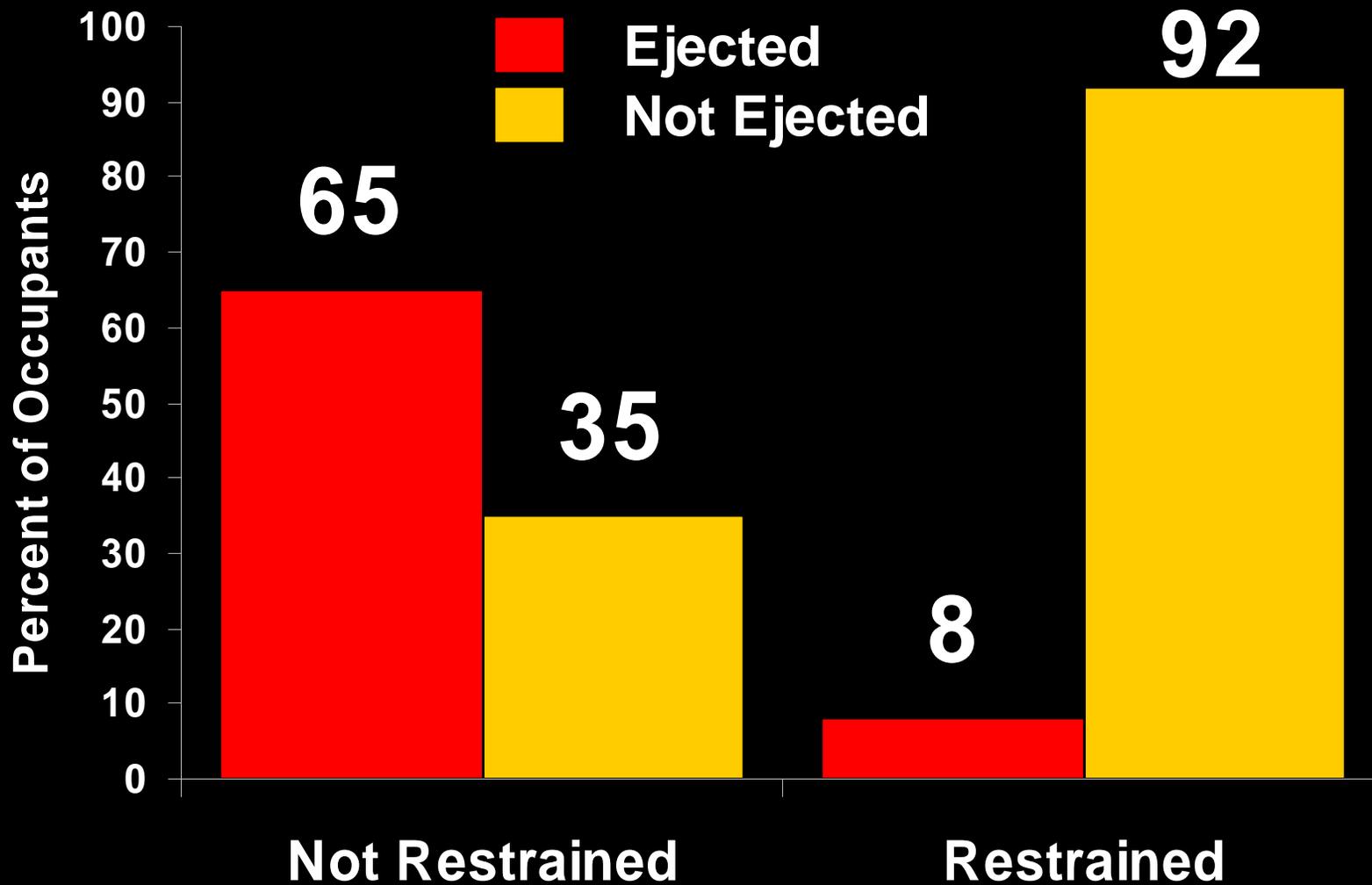
Passenger Vehicle Occupant Fatalities

32,598 total occupants killed

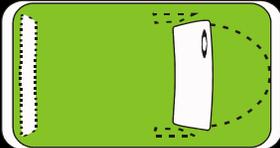
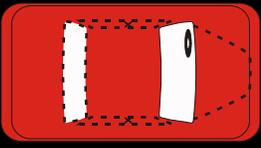
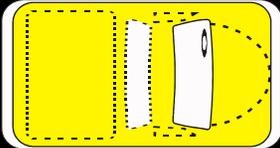
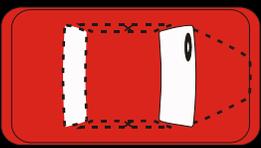
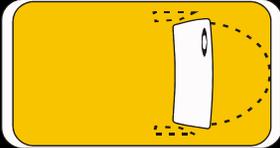
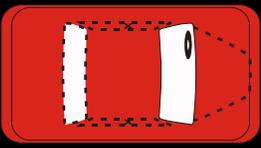
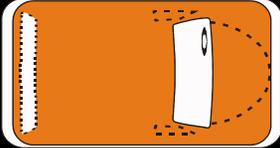
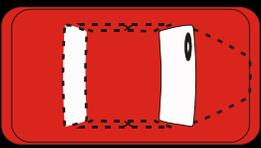
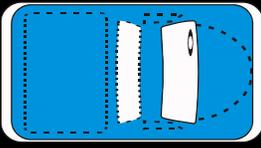
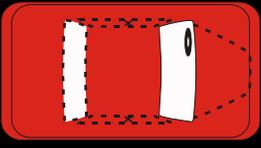


■ Rollover ■ Front ■ Side ■ Rear ■ Other

Restrained Occupants Are Rarely Ejected In Fatal Rollovers 2002

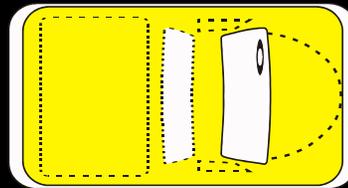


Driver Fatality Ratios in Frontal Crashes: 1995-2001

Large Van			1:8.5
Large Pickup			1:7.9
Sport Utility Vehicle (All)			1:4.5
Minivan			1:3.6
Compact Pickup			1:2.1

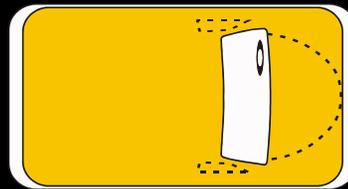
Driver Fatality Ratios in Side Crashes : 1995-2001

Large Pickup



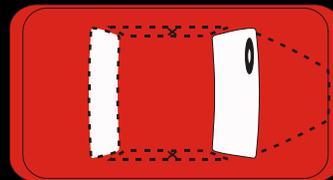
1:39.1

Sport Utility Vehicle (All)



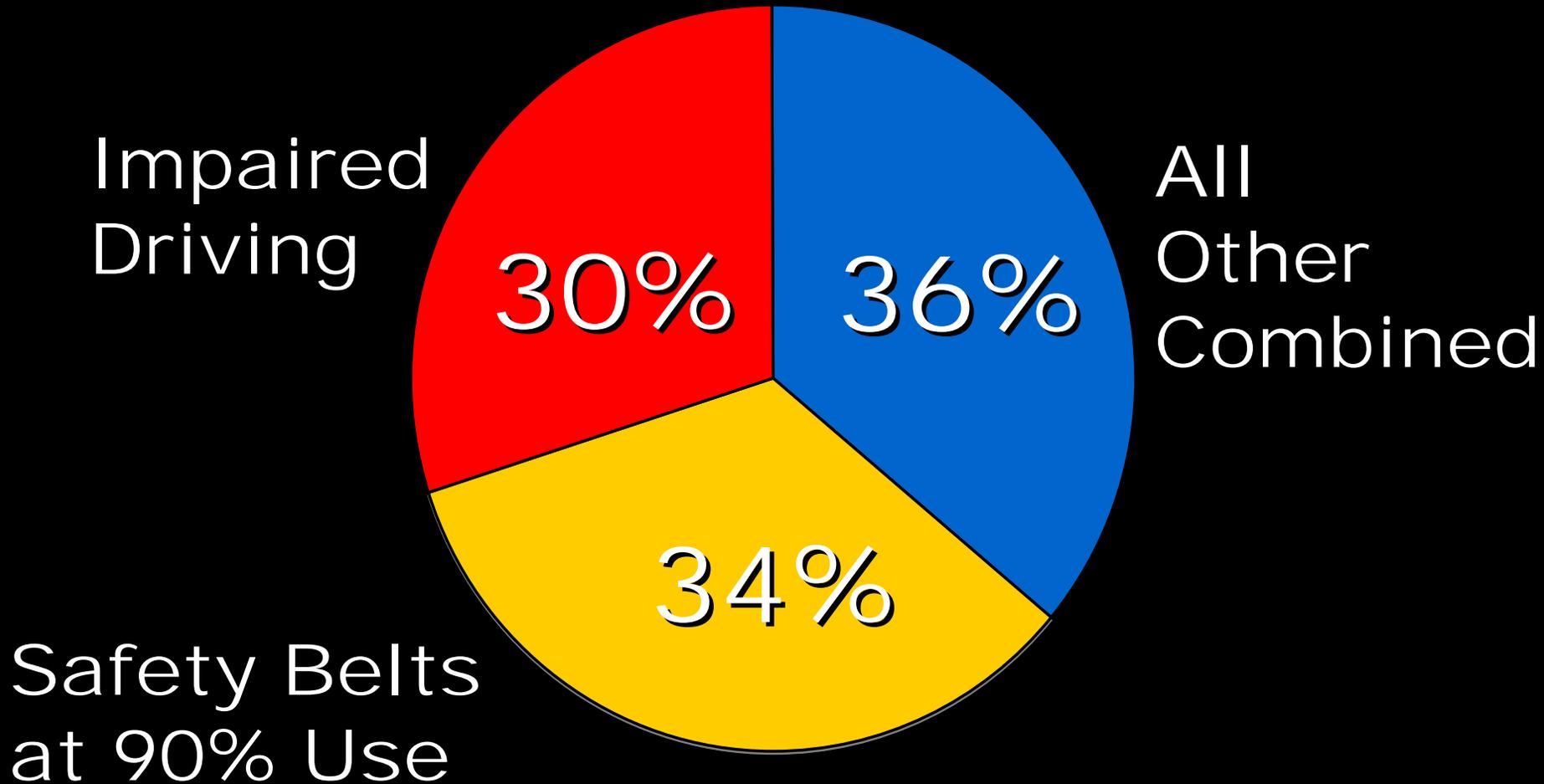
1:22.1

Passenger Car



1:8.2

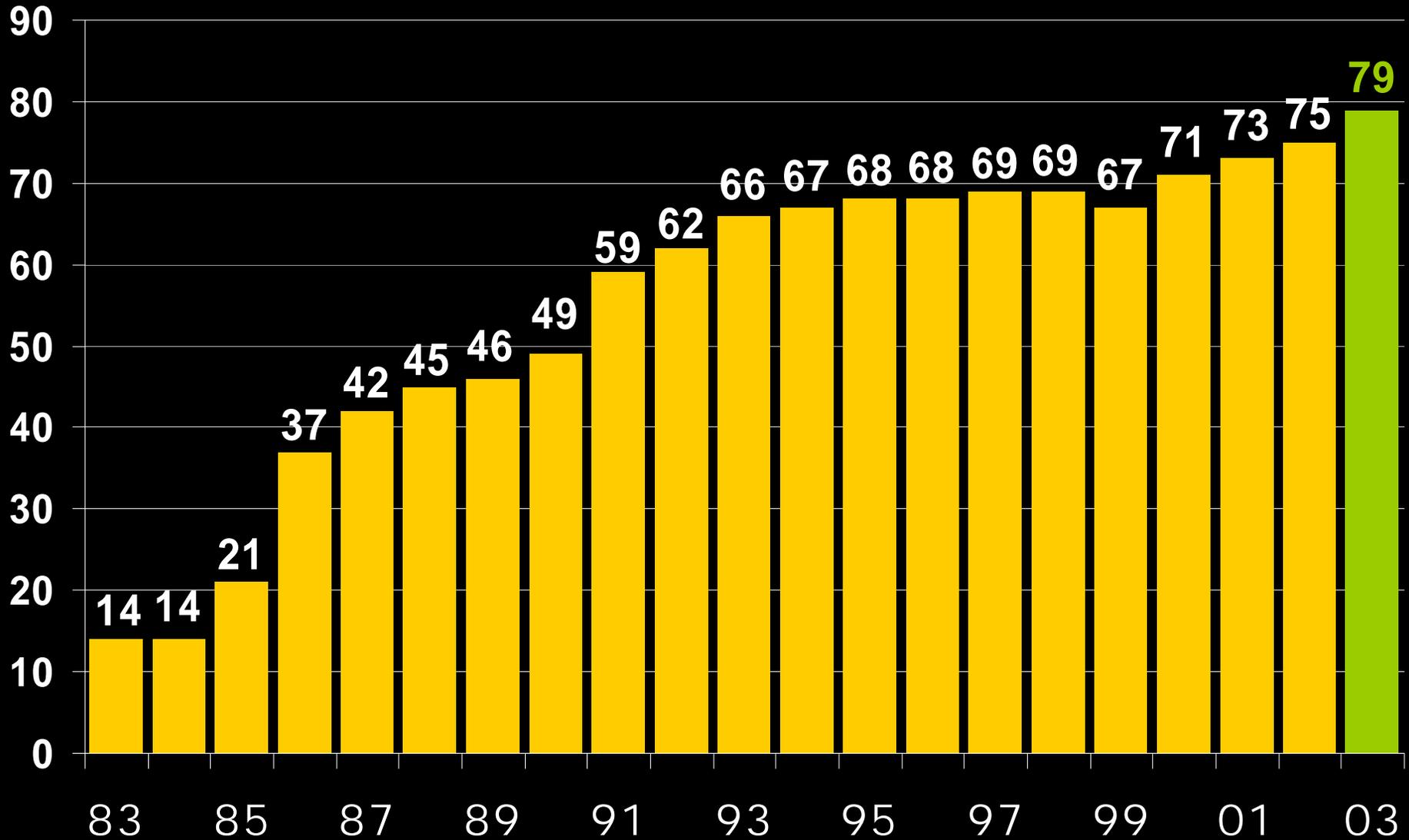
Predicted Lives Saved by Countermeasure



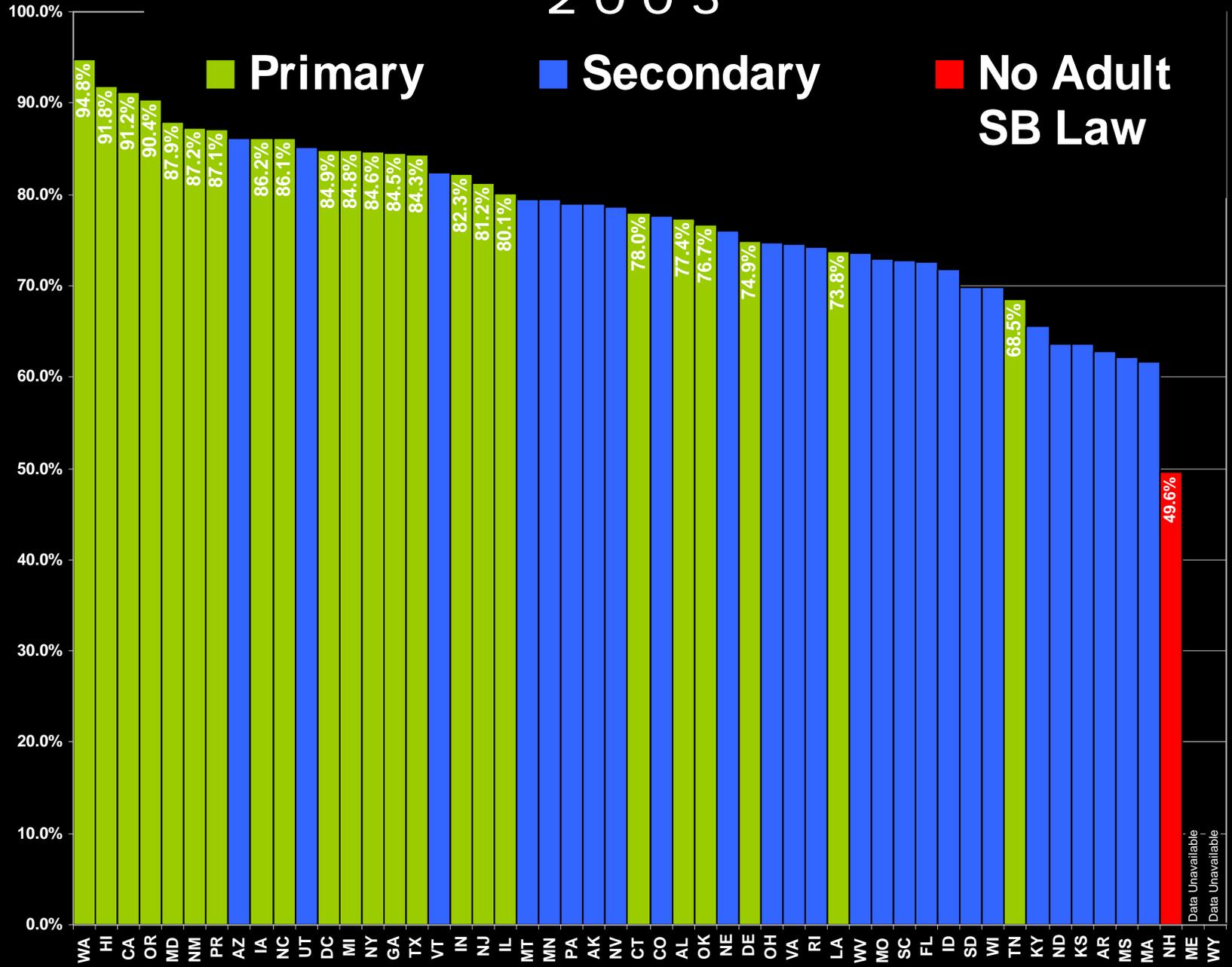
U.S. Highway Safety Priorities

- **Increase safety belt use**
- **Reduce impaired driving**
- **Improve data**
- **Reduce rollovers**
- **Improve vehicle compatibility**

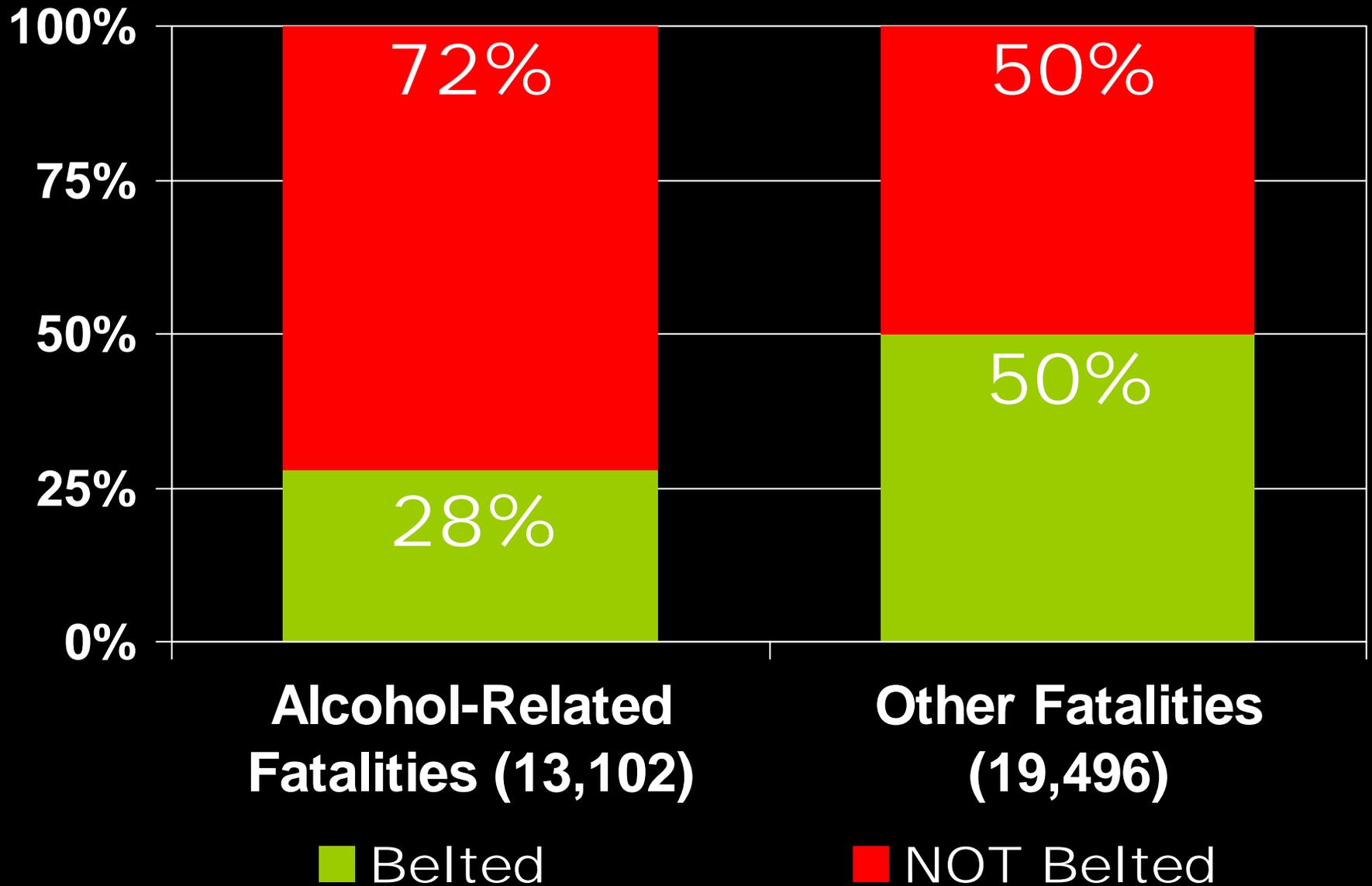
Safety Belt Use Rates



Safety Belt Use Rates By Law & State 2003

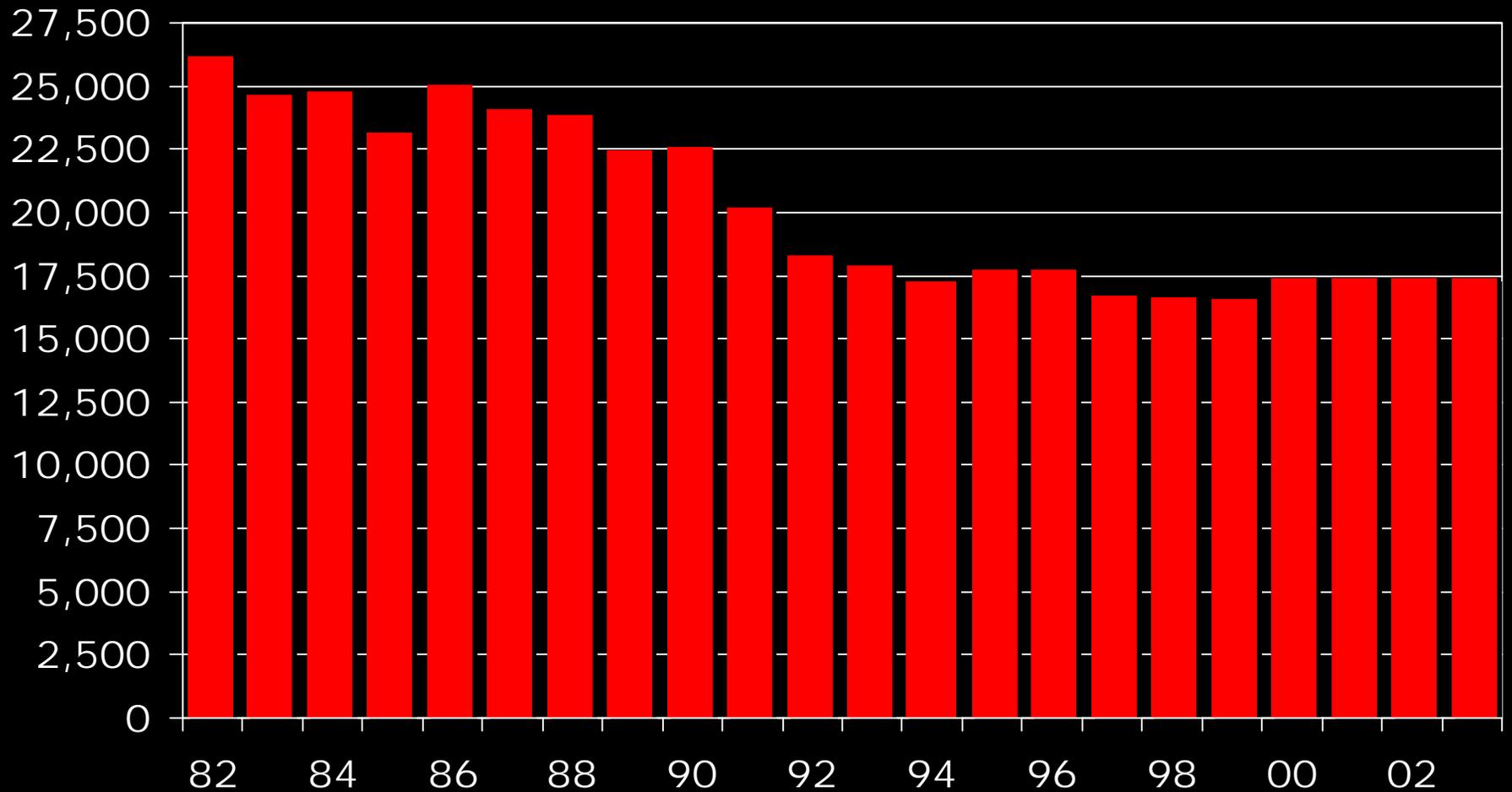


2002 U.S. Occupant Fatalities: 32,598



Alcohol-Related Fatalities

1982 - 2003



Source: FARS

Strategies for Reducing Impaired Driving



High Visibility Enforcement



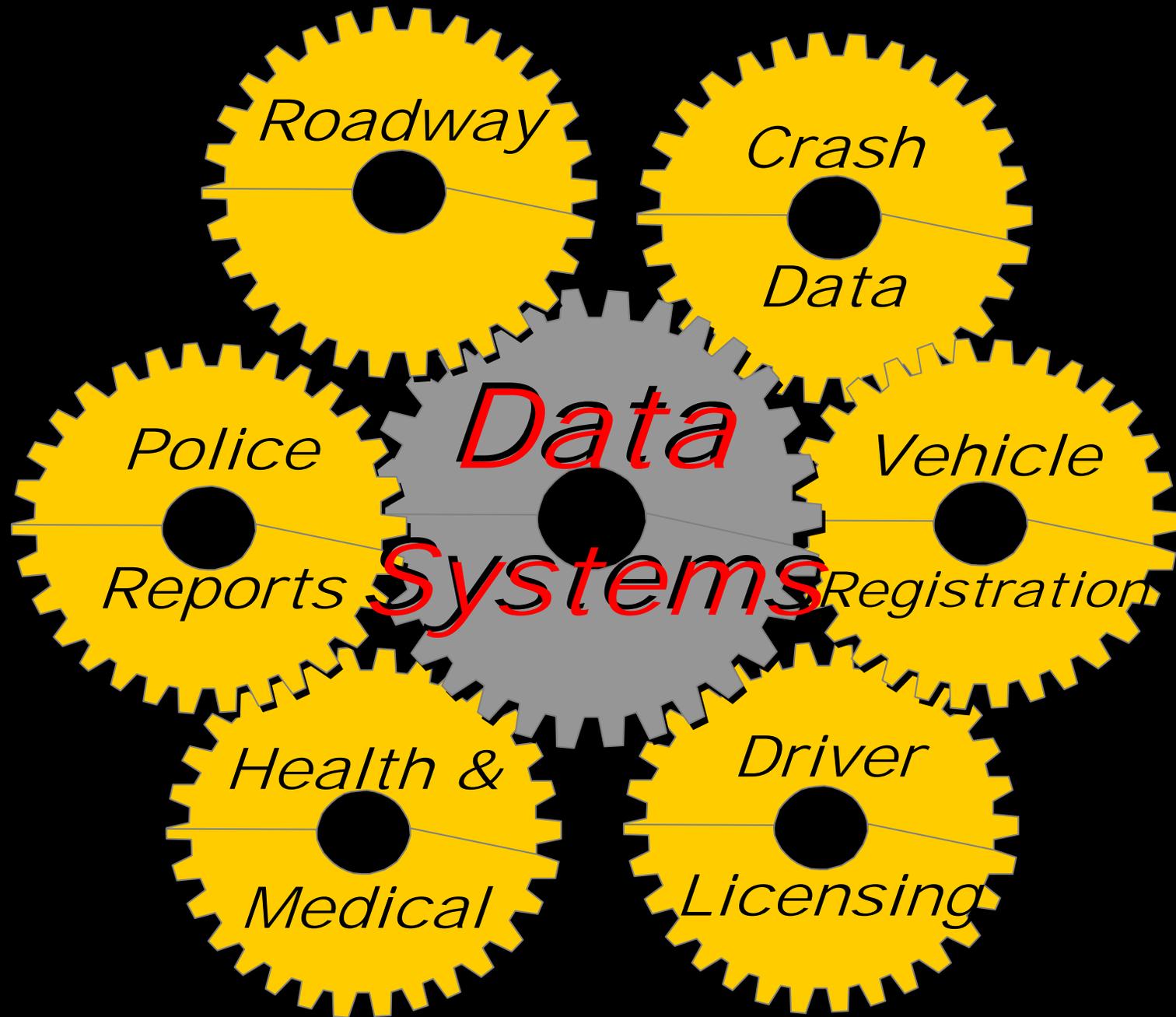
DWI Courts & Special Prosecutors



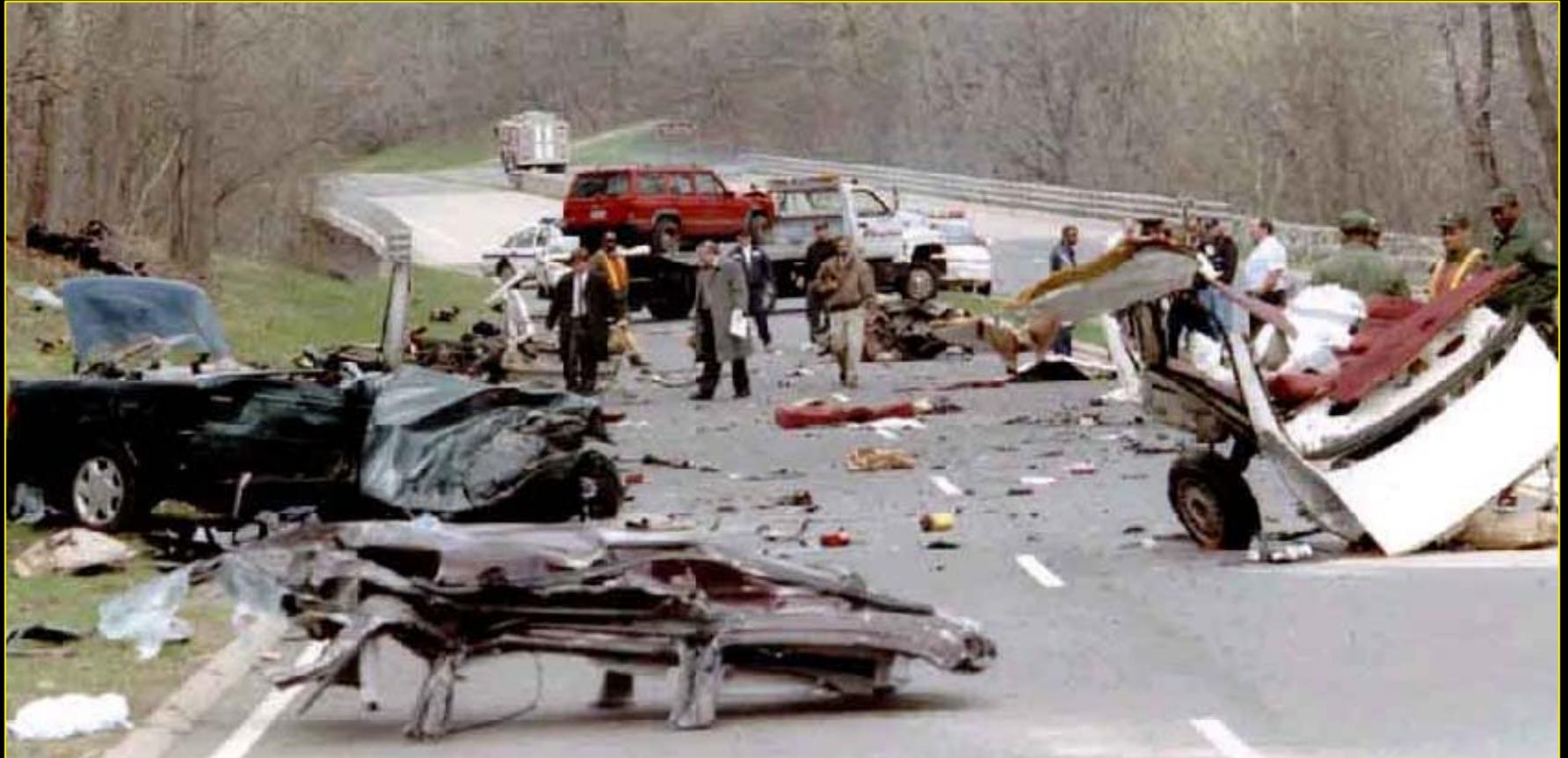
Screening & Brief Intervention



Primary Safety Belt Laws



Reduce Rollovers



2000 Toyota 4Runner 4x4

Maneuver: Fishhook

Entrance Speed: 40 mph

ESC: No

2003 Toyota 4Runner 4x4

Maneuver: Fishhook

Entrance Speed: 45 mph

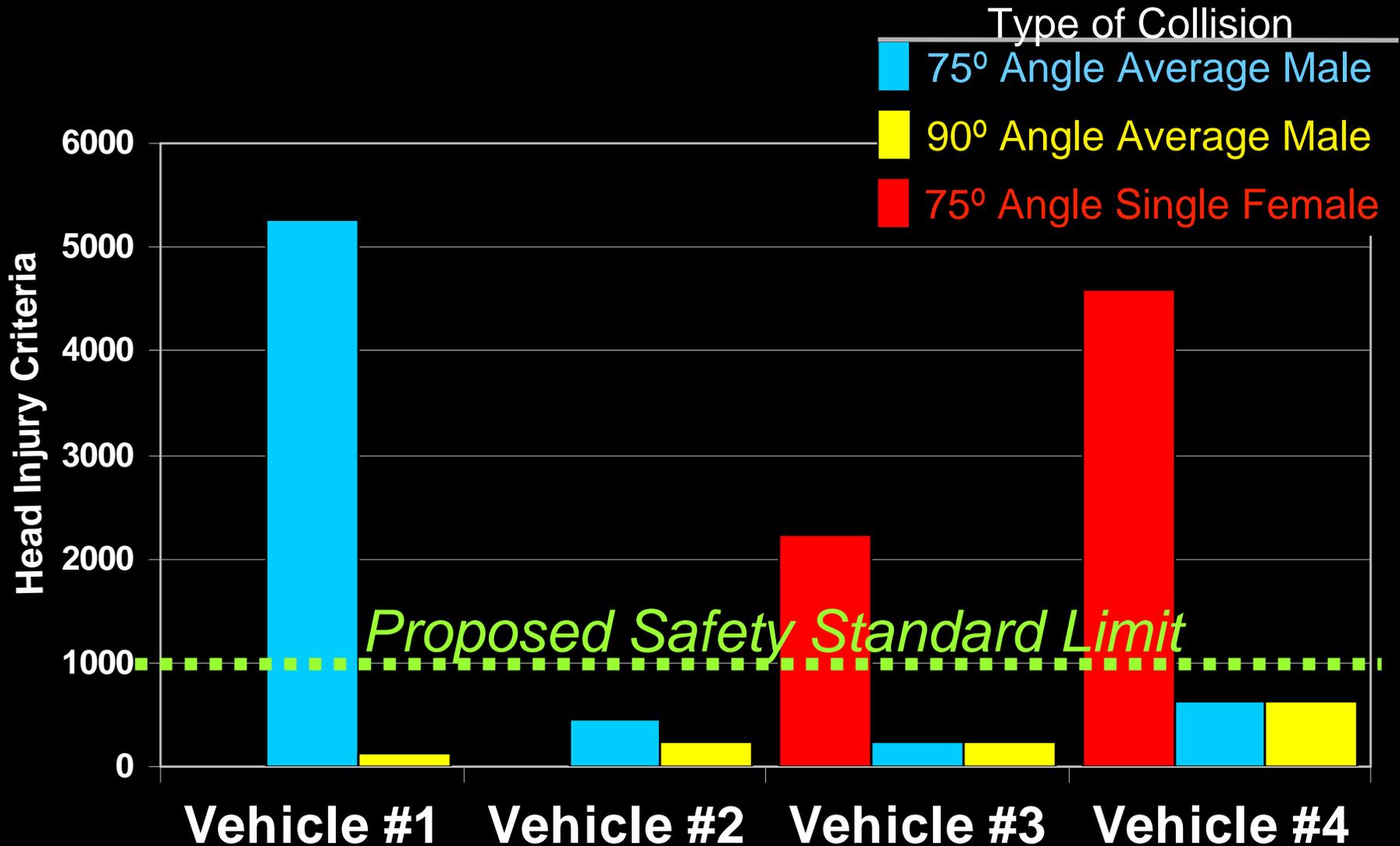
ESC: Yes

Improve Vehicle Compatibility



Head Injury Test Results

Vehicle/Pole Collisions





Evolution of Vehicle Safety

The Past:

**Crash
Worthiness**

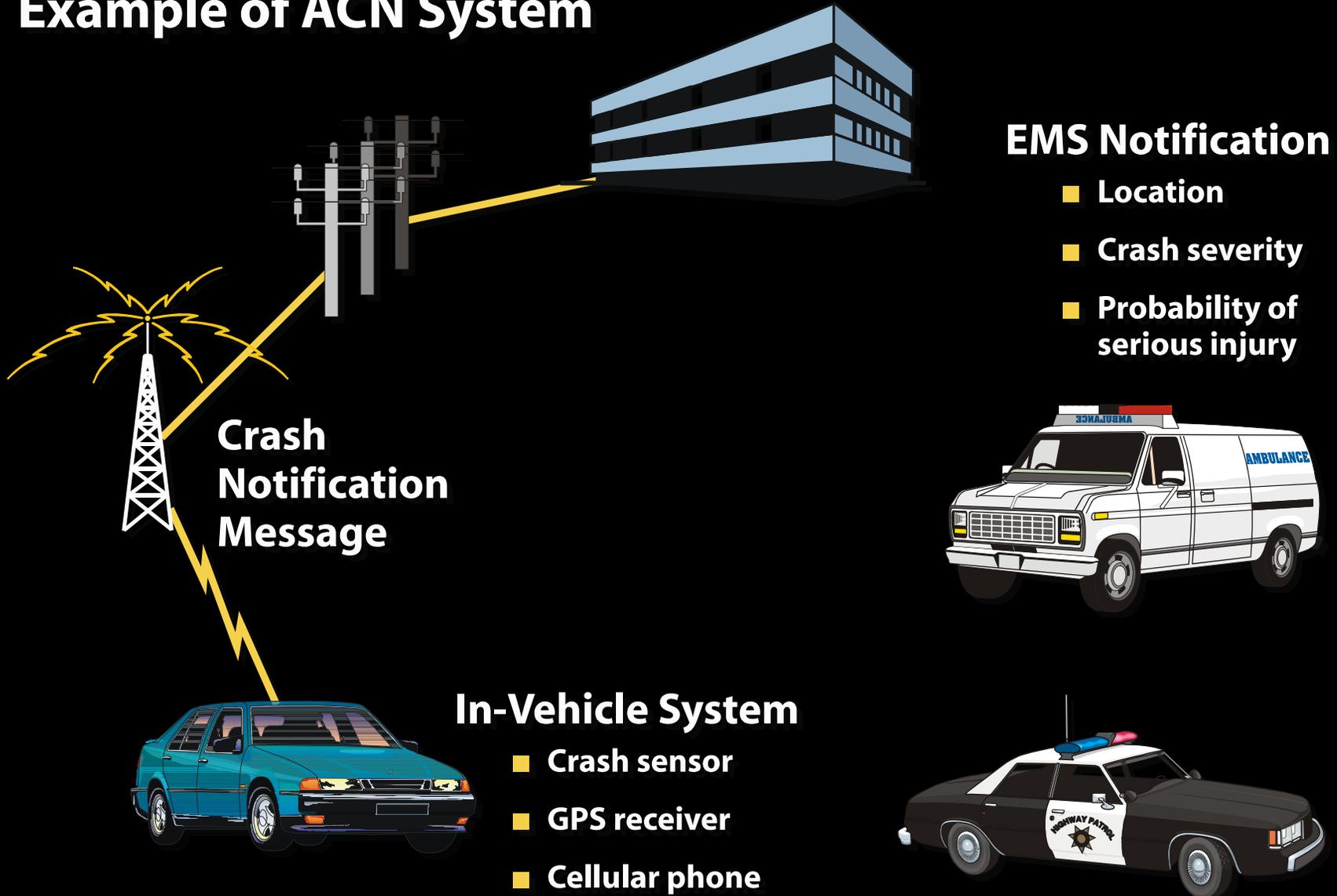


The Future:

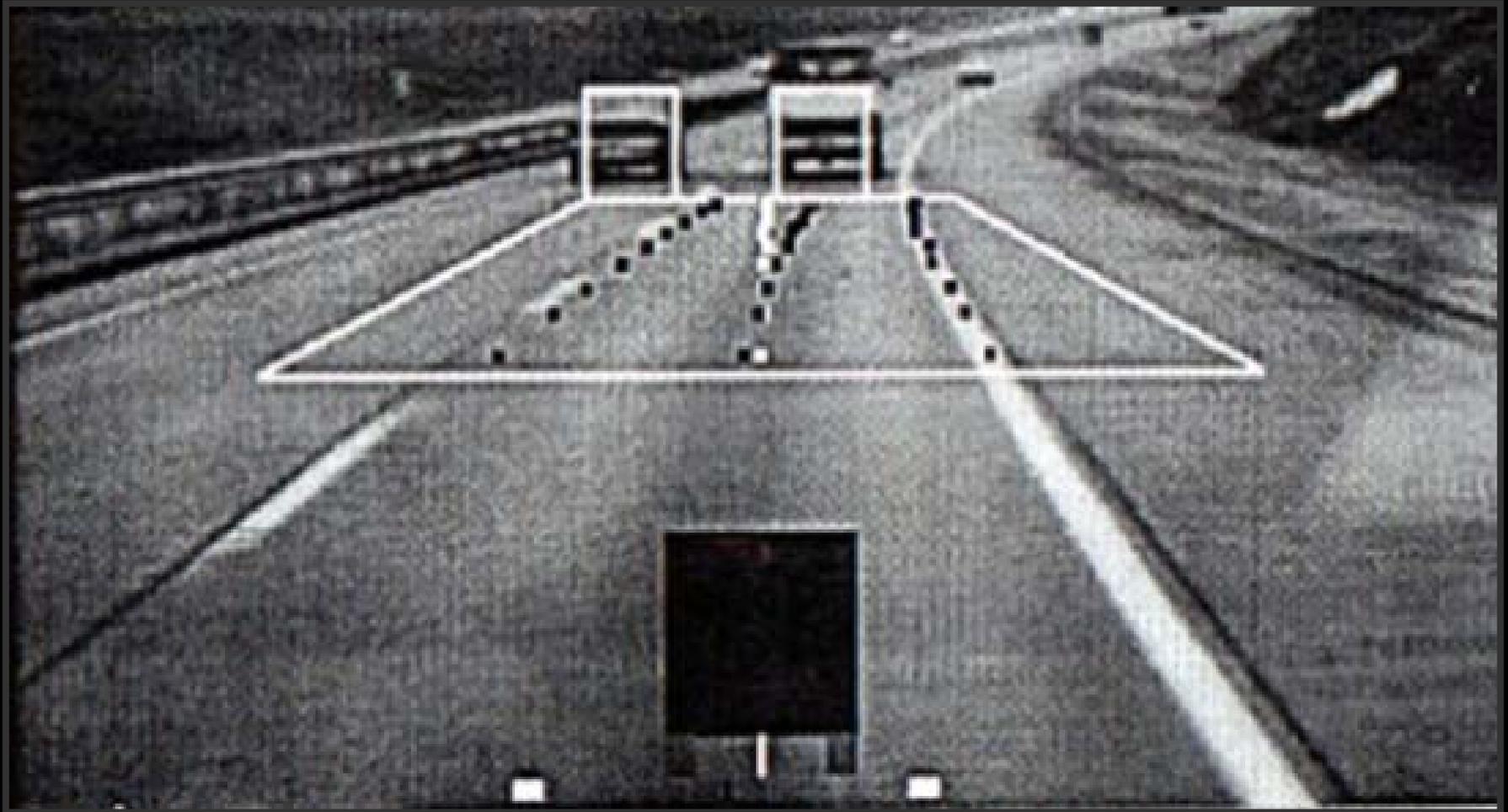
**Crash
Avoidance**

Automatic Collision Notification

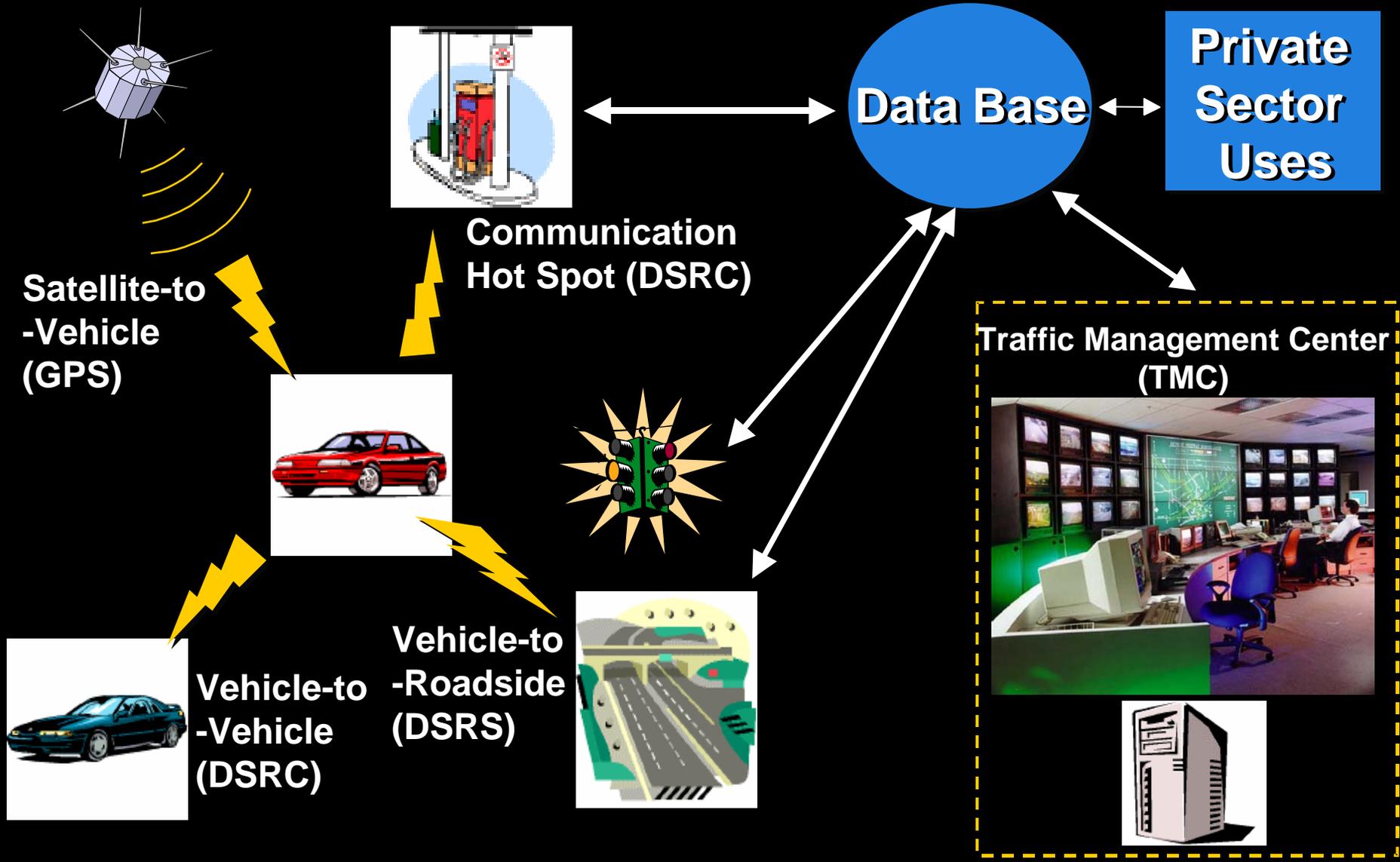
Example of ACN System



Road Departure Warning System



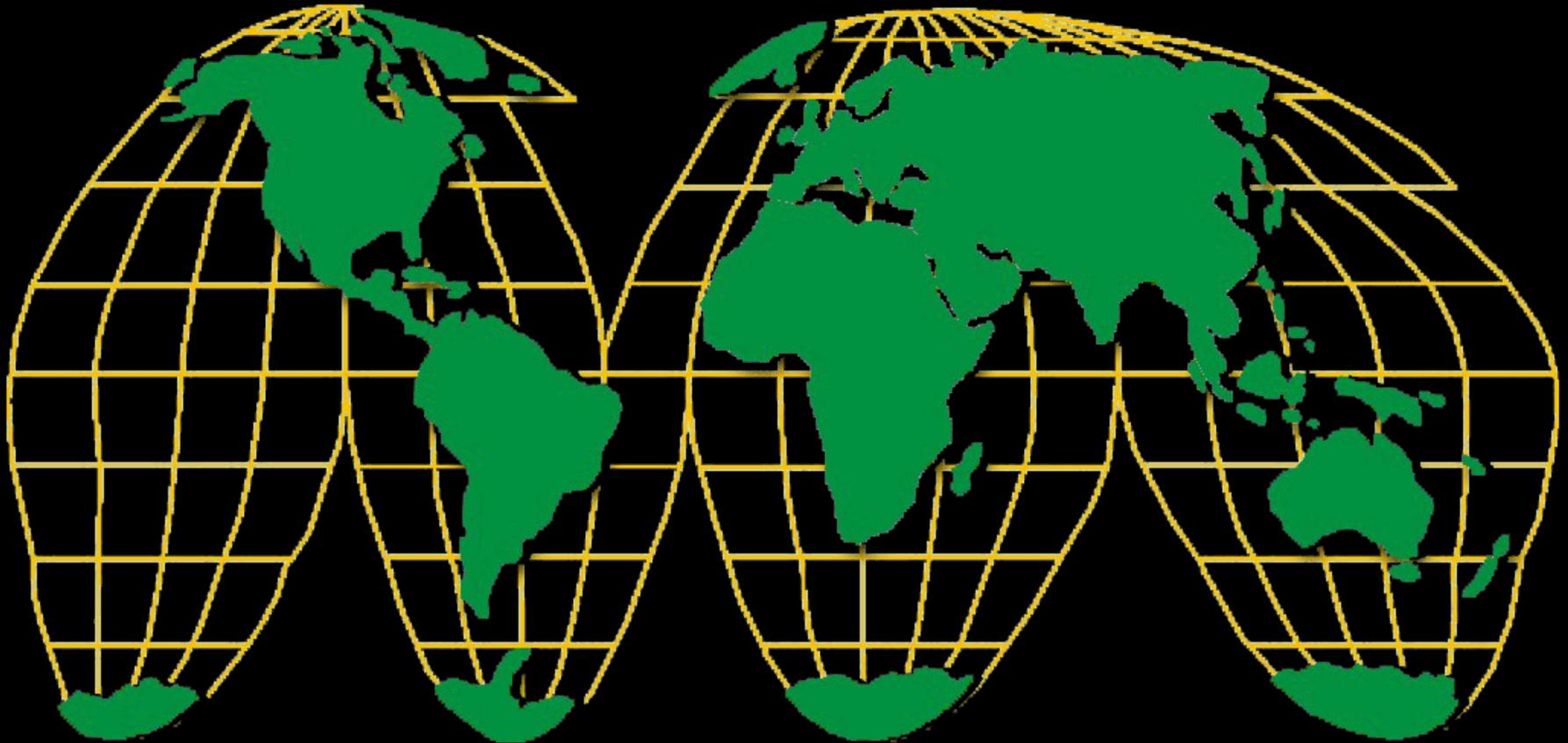
Dedicated Short Range Communication (DSRC)



Global Road Safety

- **Per Year**

- ◆ **1.2 million deaths**
- ◆ **\$518 billion economic costs (USD)**





People Saving People

www.nhtsa.gov