

Characteristics of Rear-Seat Occupants of Passenger Vehicles Involved in Motor Vehicle Crashes 2005

Presented at Session 446
Protecting Rear-Seat Occupants of Passenger Vehicles
2007 Transportation Research Board Annual Meeting
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Presentation Objective

- **Define the Problem**
 - ◆ **Crash-Involved Occupants**
 - ◆ **Injured/Killed**
 - ◆ **Compare Rates**
- **Characteristics of Occupant**
 - ◆ **Vehicles Involved**
 - ◆ **Age**
 - ◆ **Restraint Use**

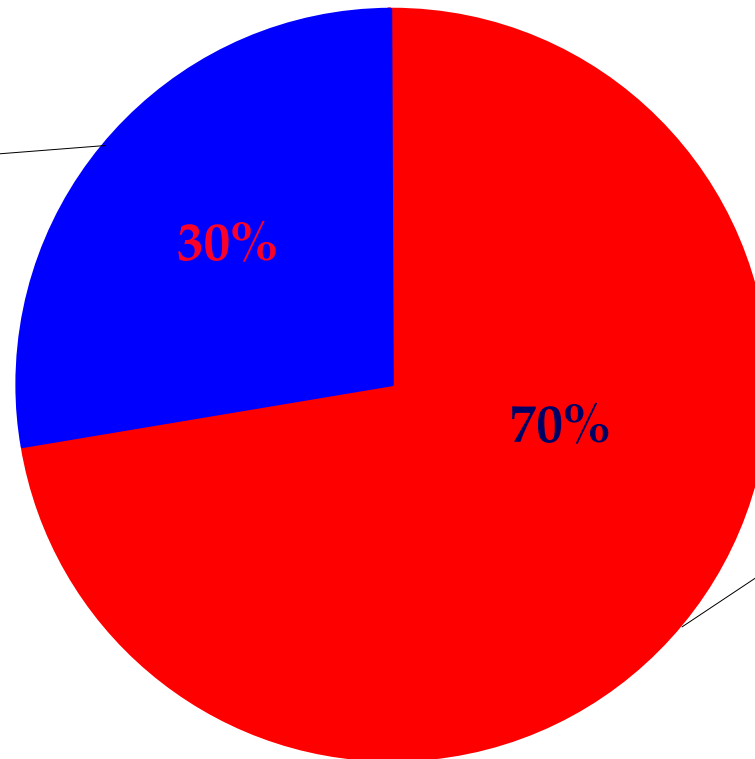
- **2005 Fatality Analysis Reporting System (FARS)**
- **2005 National Automotive Sampling System General Estimates System (NASS-GES)**

The Problem

In 2005, 43,443 Killed in Motor Vehicle Crashes

Total People Killed in 2005: 43,443

**Others
Killed
- 12,028 -
30%**



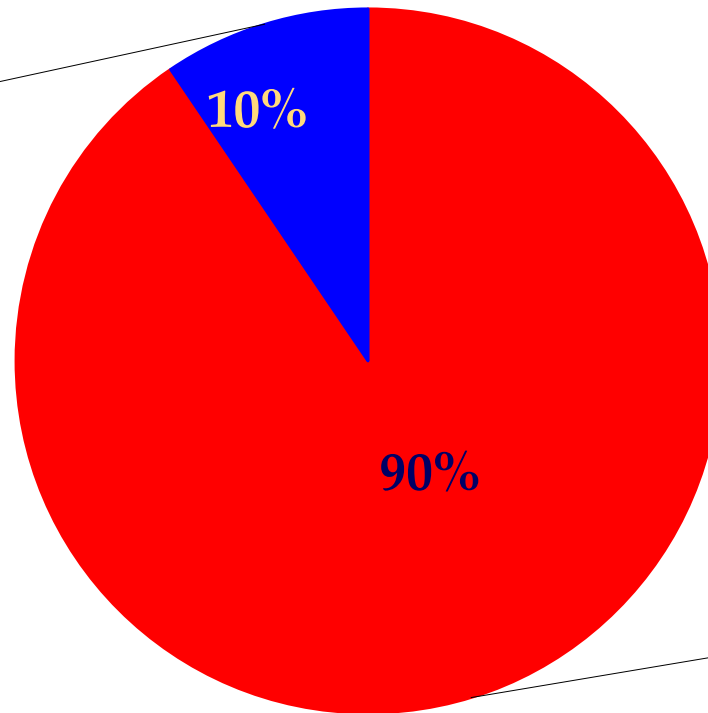
**Passenger
Vehicle
Occupants
- 31,415 -
70%**

Source: FARS, 2005

Nearly 2.7 Million Injured

Total Injured People in 2005: 2,699,000

**Others
Injured
- 253,000 -
10%**

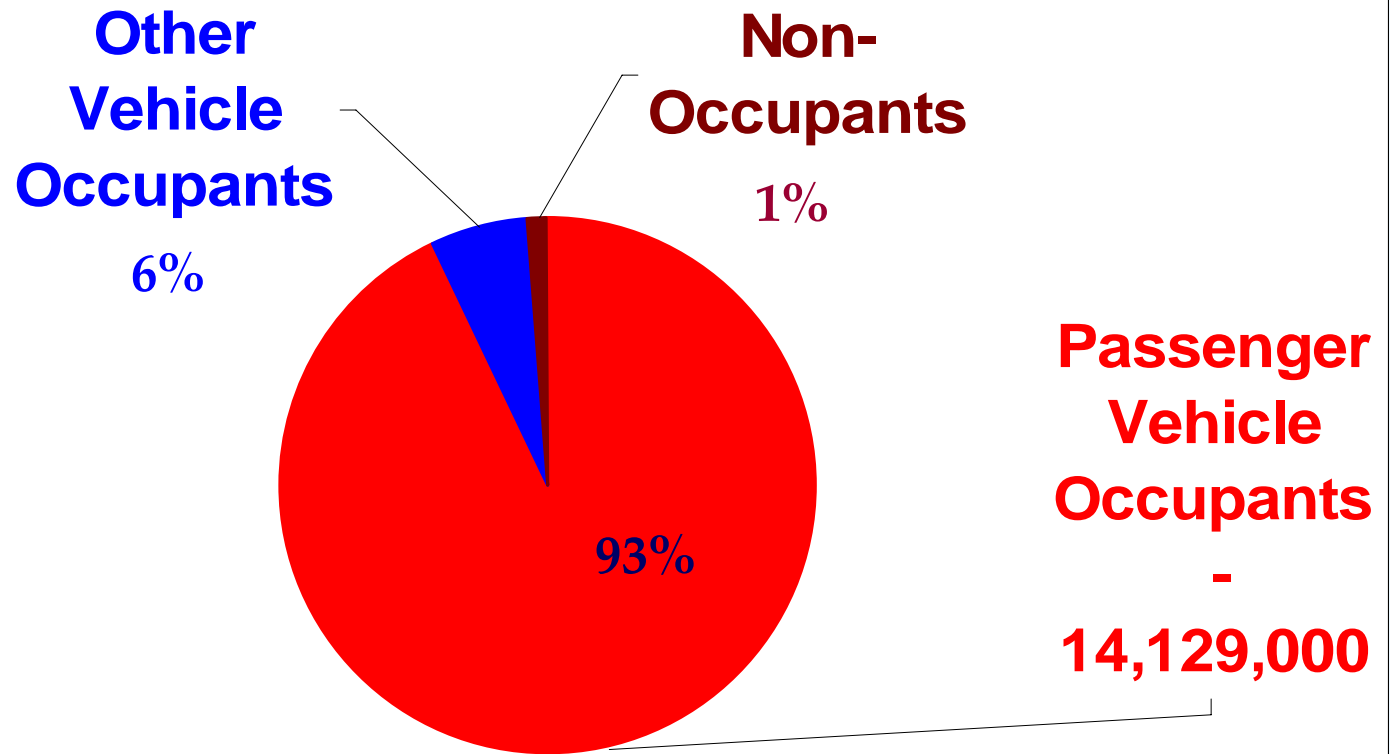


**Passenger
Vehicle
Occupants
- 2,446,000 -
90%**

Source: NASS-GES, 2005

15,161,000 People Involved in Police-Reported Crashes

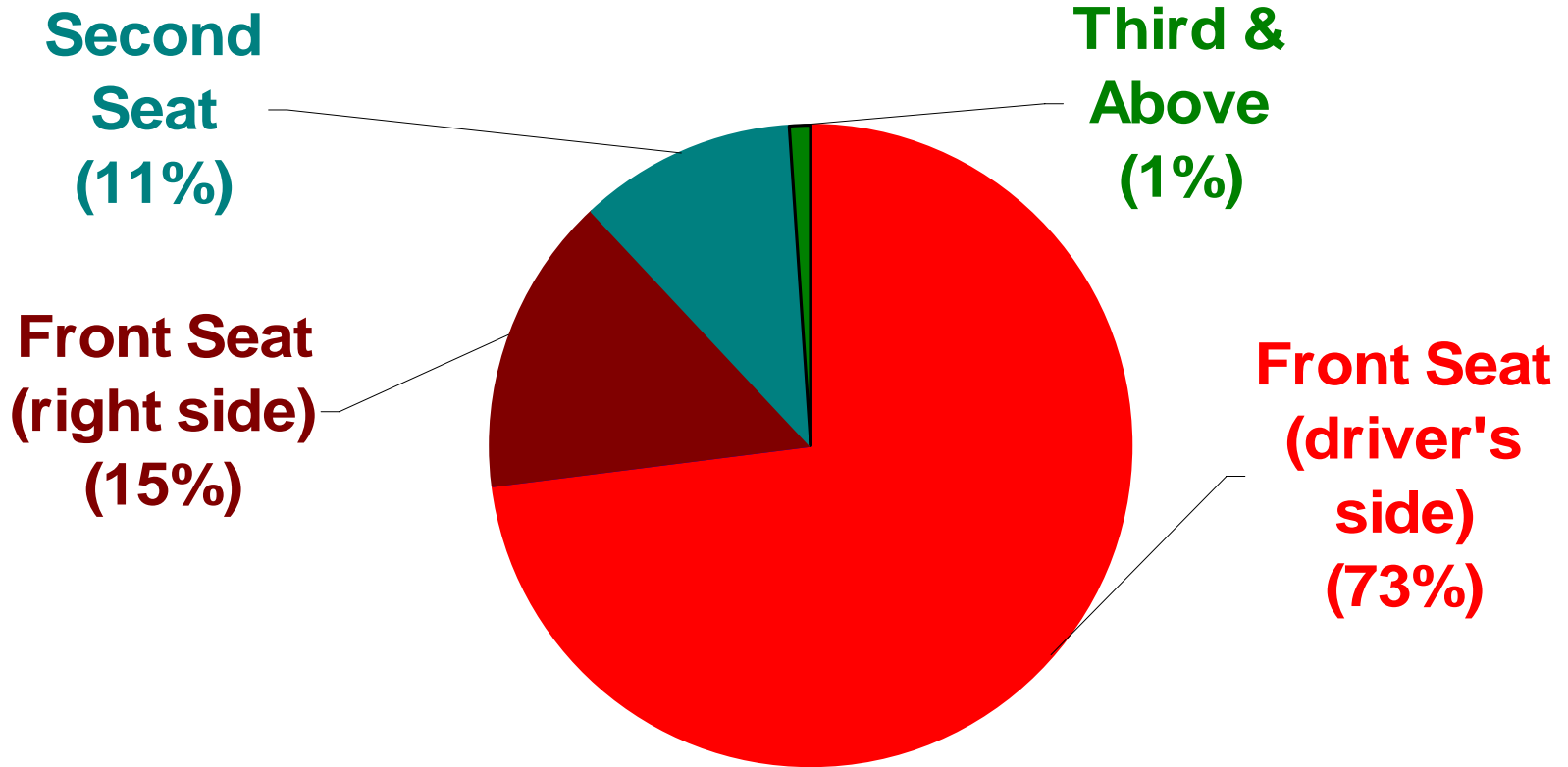
Total People Involved in Police-Reported
National Crashes in 2005: 15,161,000



Source: NASS-GES, 2005

Of Course, Most of These Are Drivers, But ...

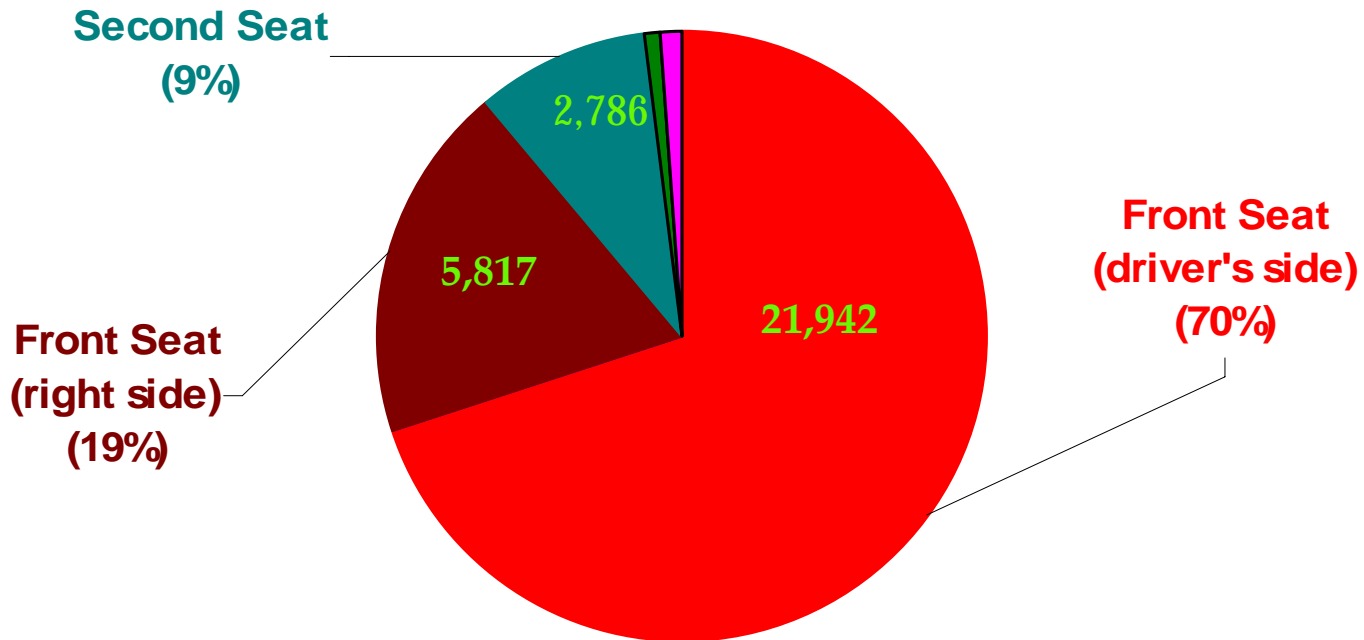
**Passenger Vehicles Occupants Involved in Police-Reported
Crashes, by Seating Position, 2005: 14,129,000**



Source: NASS-GES, 2005

Distribution of Fatalities is Slightly Different ...

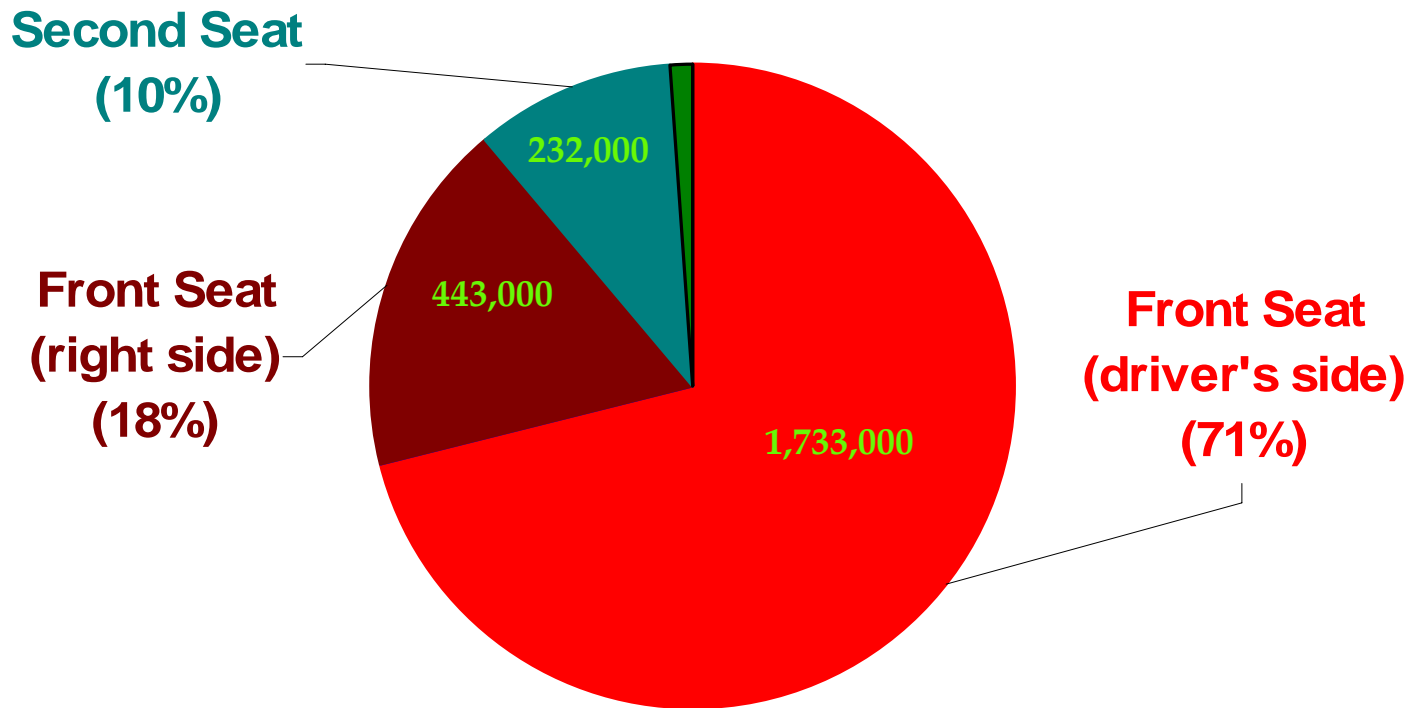
**Relative Percentage of Passenger Vehicles' Killed Occupants
by Seat Position in 2005: 31,415**



Source: FARS, 2005

As Is the Distribution of People Injured ...

**Relative Percentage of Passenger Vehicles' Injured Occupants
by Seat Position in 2005: 2,422,000**



Source: NASS-GES, 2005

But the Second Seat Has Lower Fatality and Injury Rates

Number and Rate of Passenger Vehicle Occupants Killed or Injured, by Seating Position, 2005

Seating Position	Total Crash Involved	Killed		Injured	
		Total	Rate /100	Total	Rate / 100
Front Right	2,158,000	5,817	0.27	443,000	20.5
Second	1,491,000	2,786	0.19	232,000	15.6
Third +	141,300	363	0.25	16,000	11.3

Source: FARS, NASS-GES, 2005

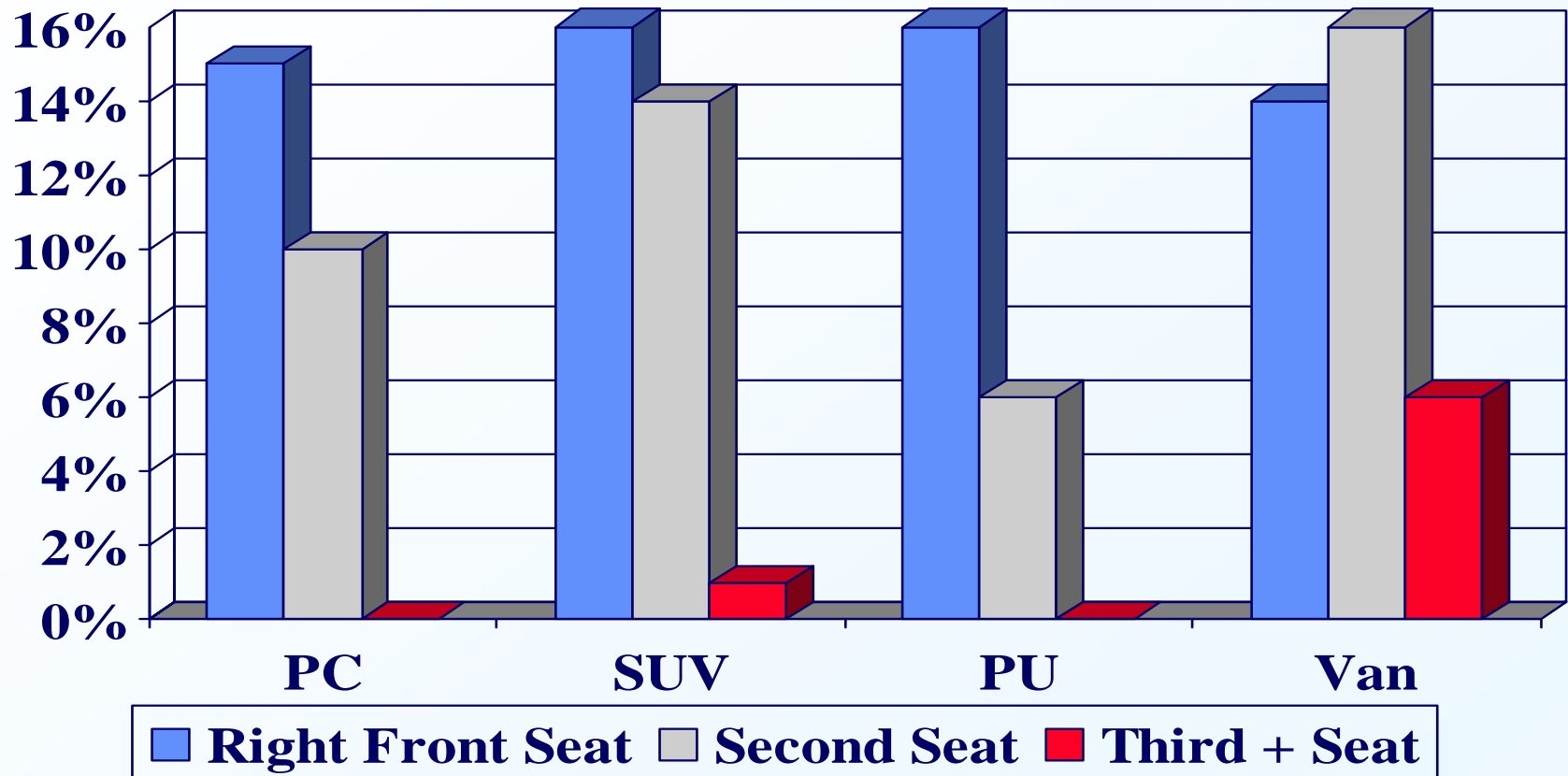
Characteristics Of Second-Seat Occupants

(Compared to Right-Front-Seat Occupants)

Where Are They?

SUVs and Vans Have a Higher Percentage of All Occupants in Rear Seats

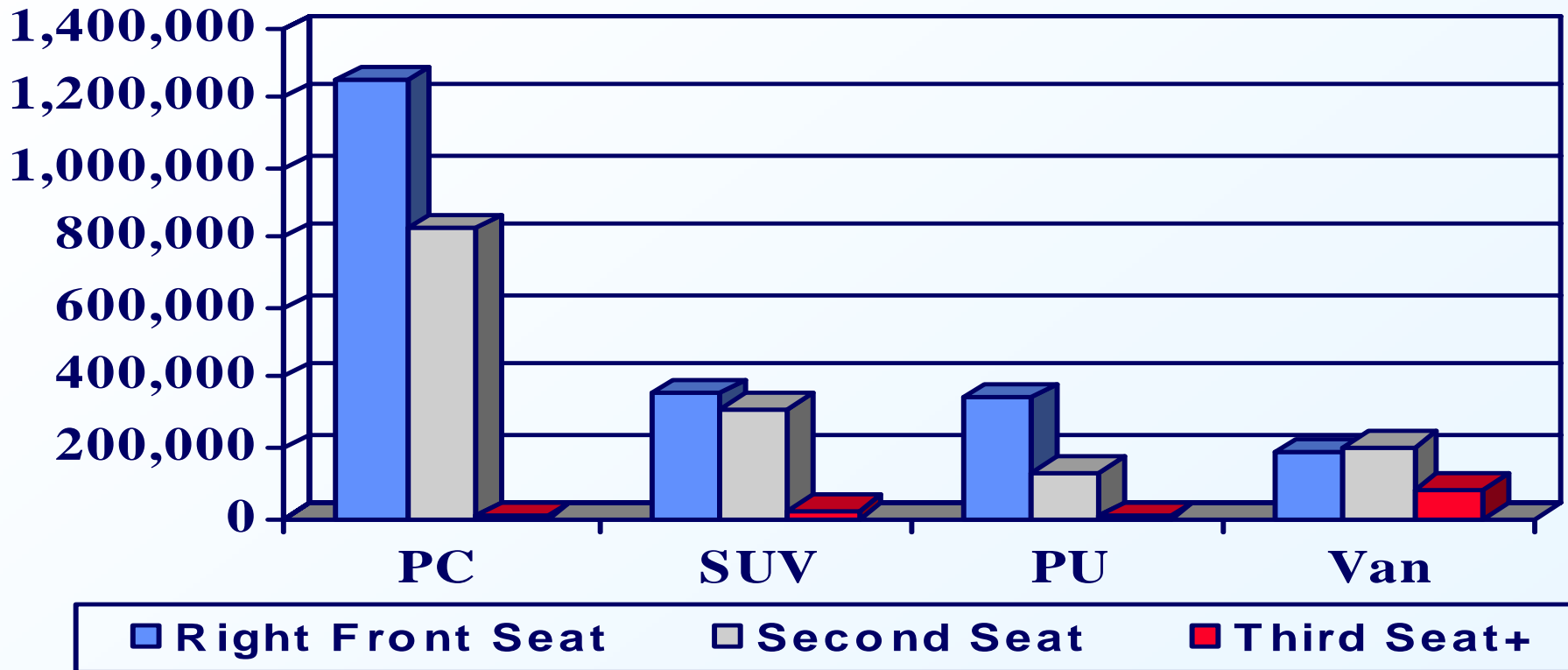
Percent Passenger Vehicle Occupants, by Seating Position



Source: NASS-GES, 2005

But by Number, They're Mostly in Passenger Cars

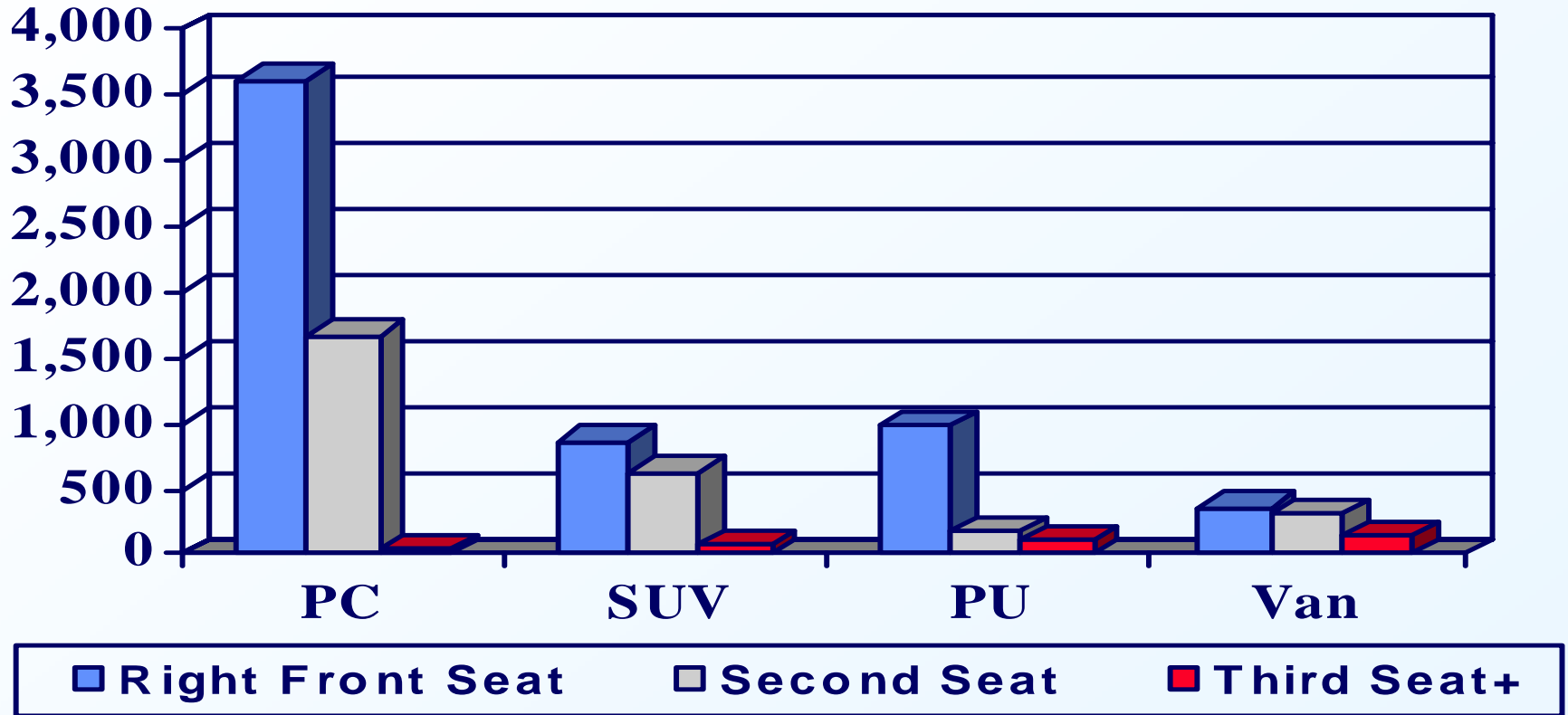
Number of Occupants **Involved in Crashes**, by Body Type and Seating Position



Source: NASS-GES, 2005

And This Is Reflected in the Fatality Data

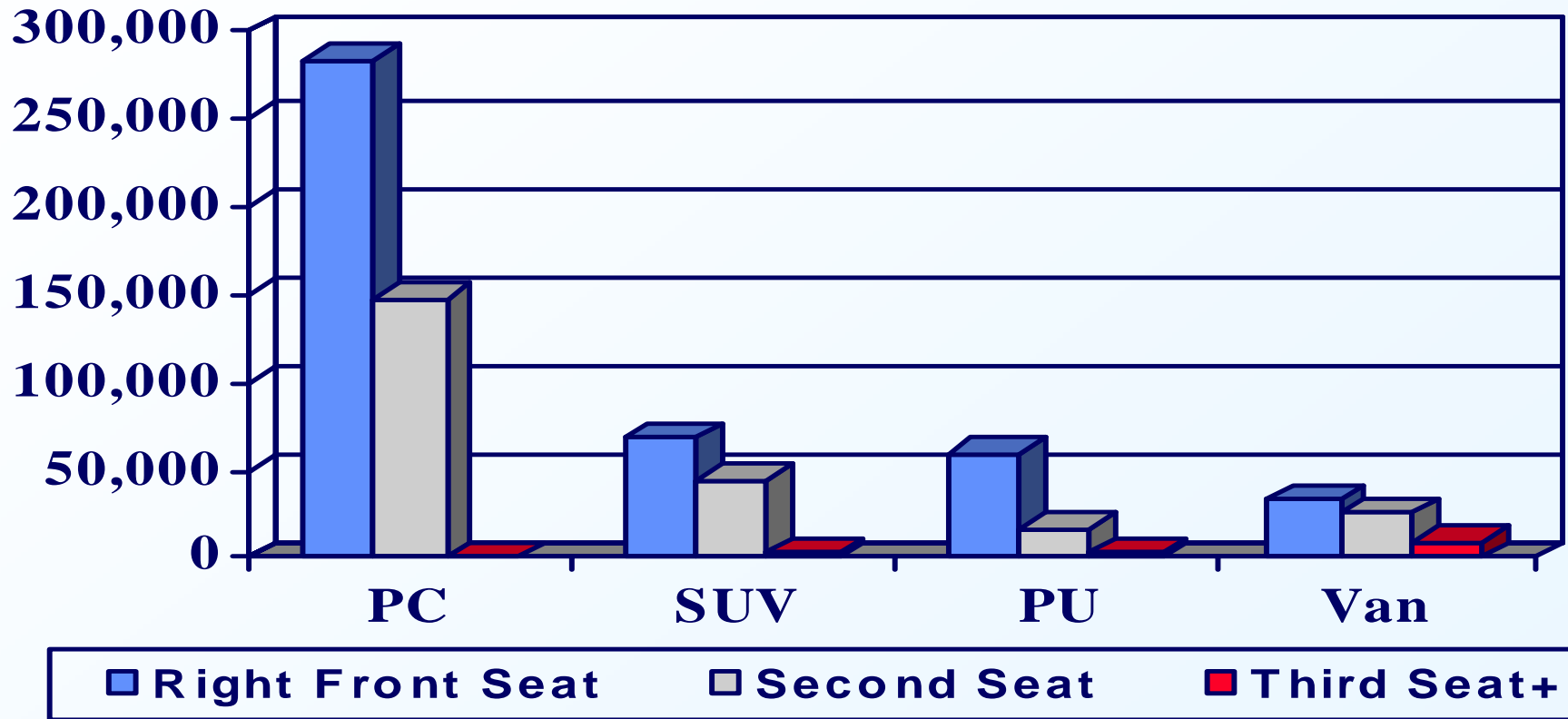
Distribution of Occupants Killed in Crashes, by Body Type and Seating Position



Source: FARS, 2005

And in the Injury Data

Distribution of Occupants **Injured in Crashes,
by Body Type and Seating Position**

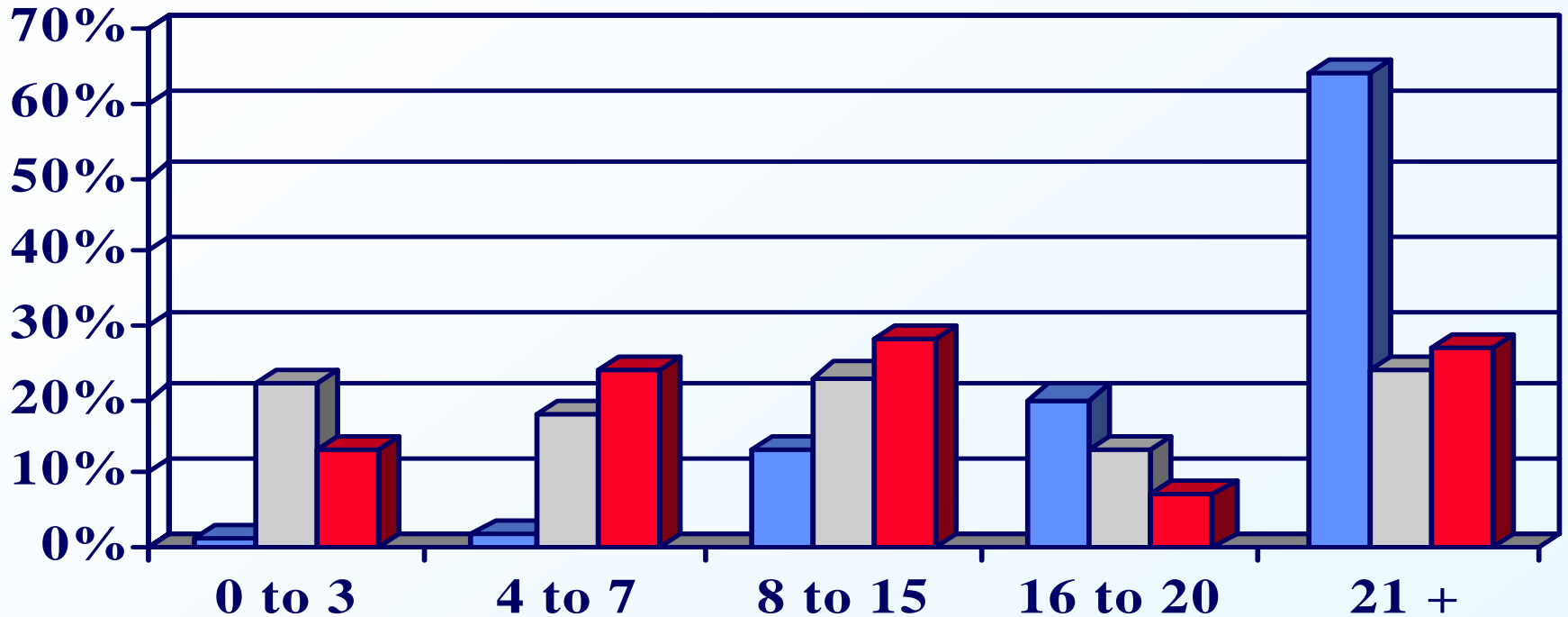


Source: FARS, 2005

Who Are They?

Children Dominate in Rear Seats

Distribution of Right Front and Second Seat + Occupants Involved in Crashes, by Age

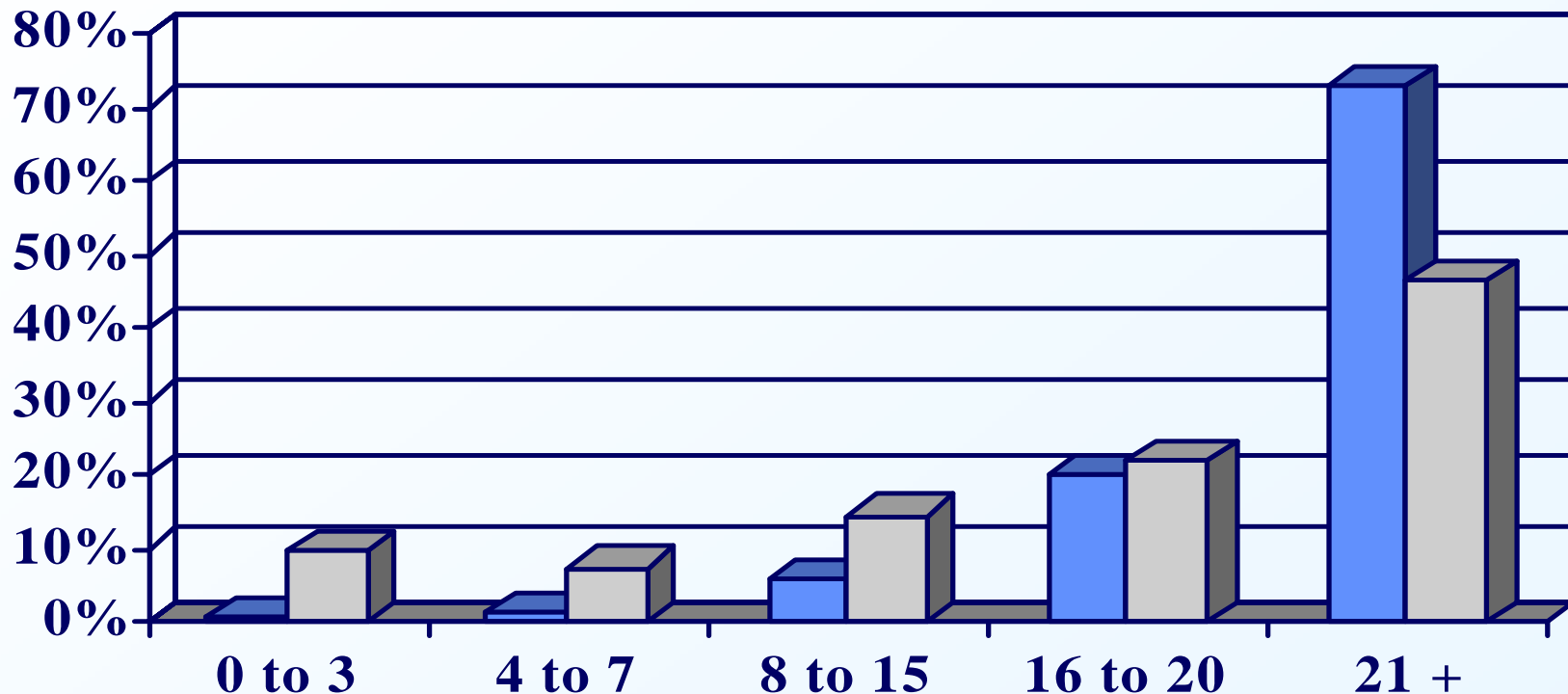


■ Right Front Seat (2,158,000)
 ■ Second Seat (1,491,000)
 ■ Third Seat+ (111,000)

Source: NASS-GES, 2005

This Is Reflected in the Fatality Data

Distribution of Right Front and Second Seat Occupants Killed, by Age

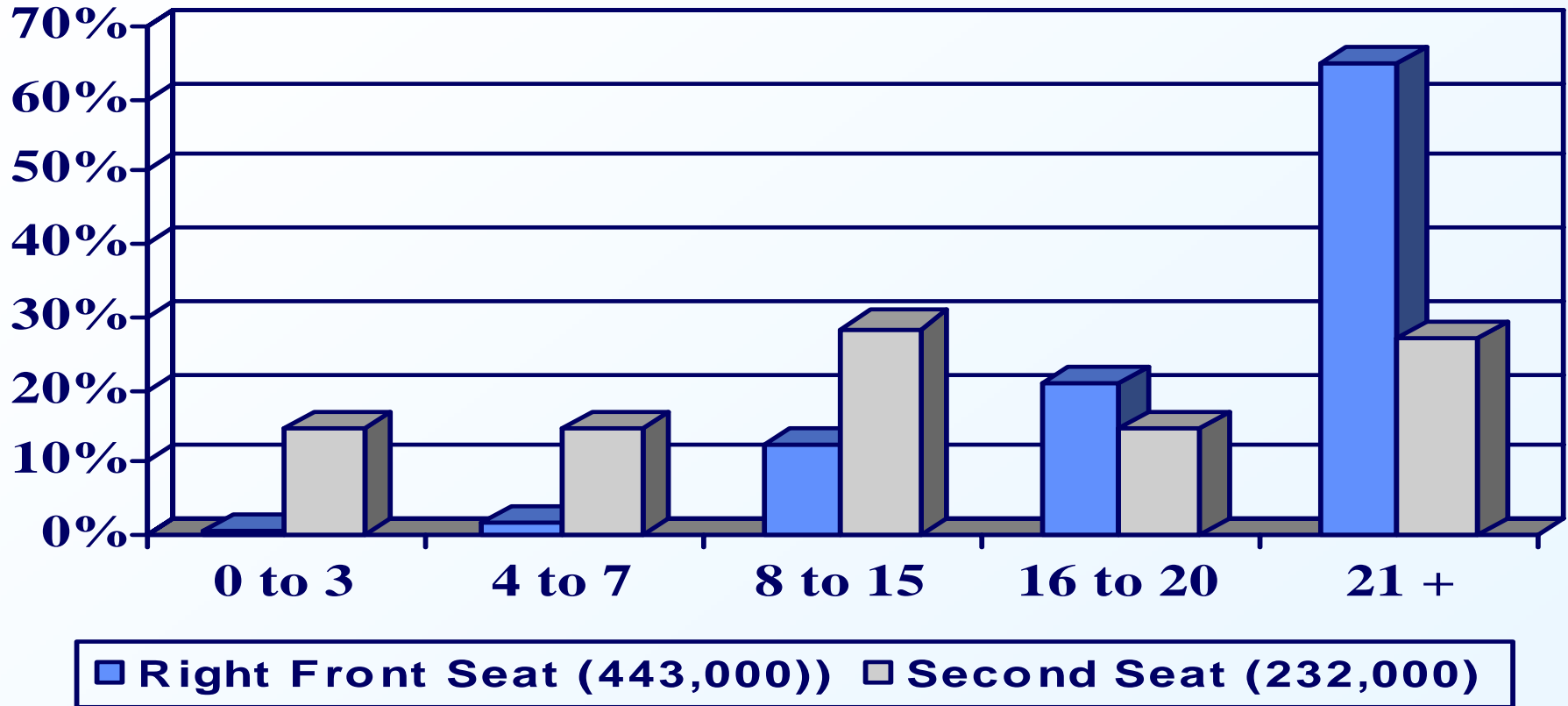


Source: FARS, 2005

■ Right Front Seat (5,817)
 ■ Second Seat (2,786)

And the Injury Data

Distribution of Right Front and Second Seat Occupants **Injured** by Age

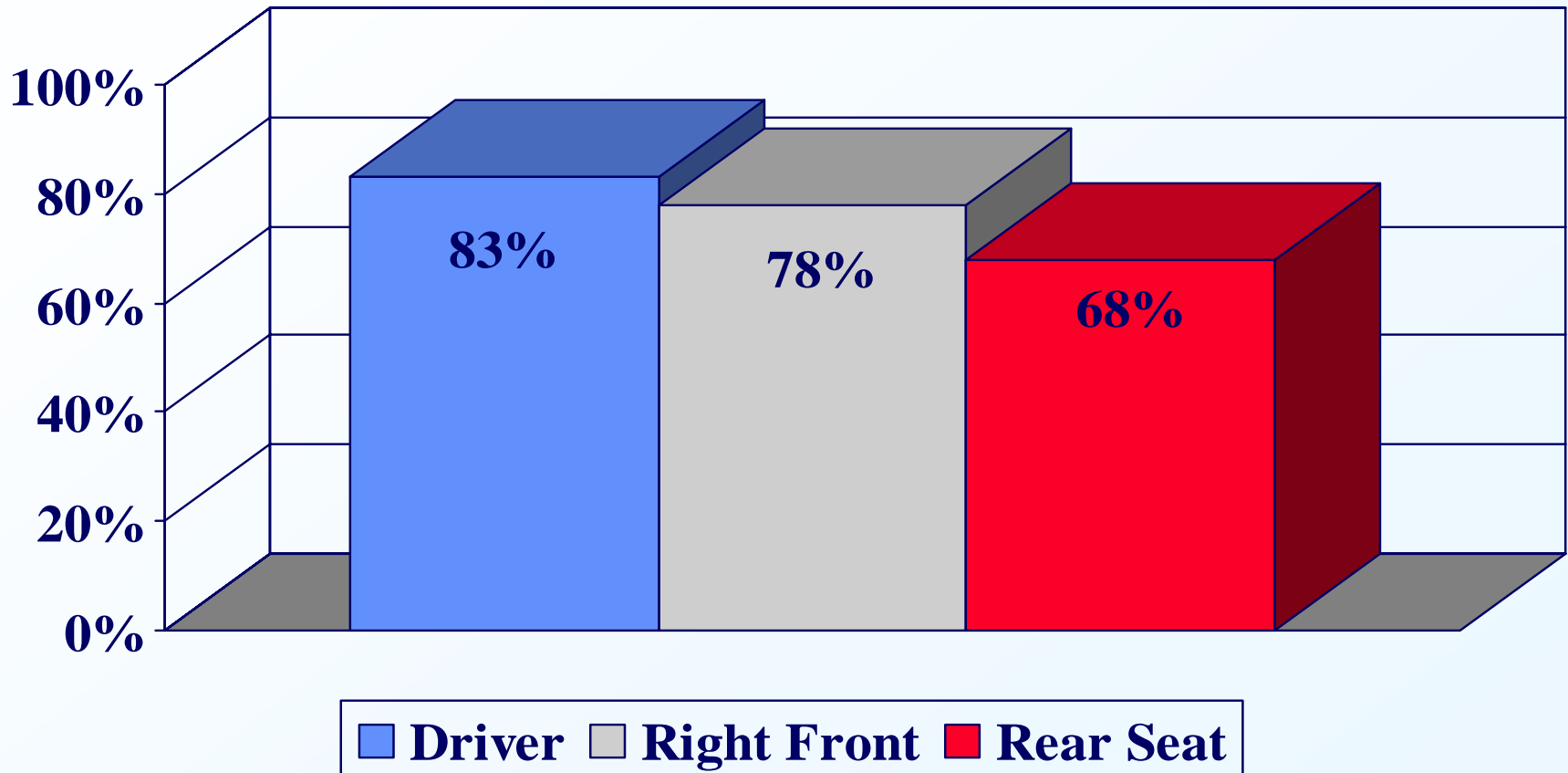


Source: NASS-GES, 2005

What About Restraint Use?

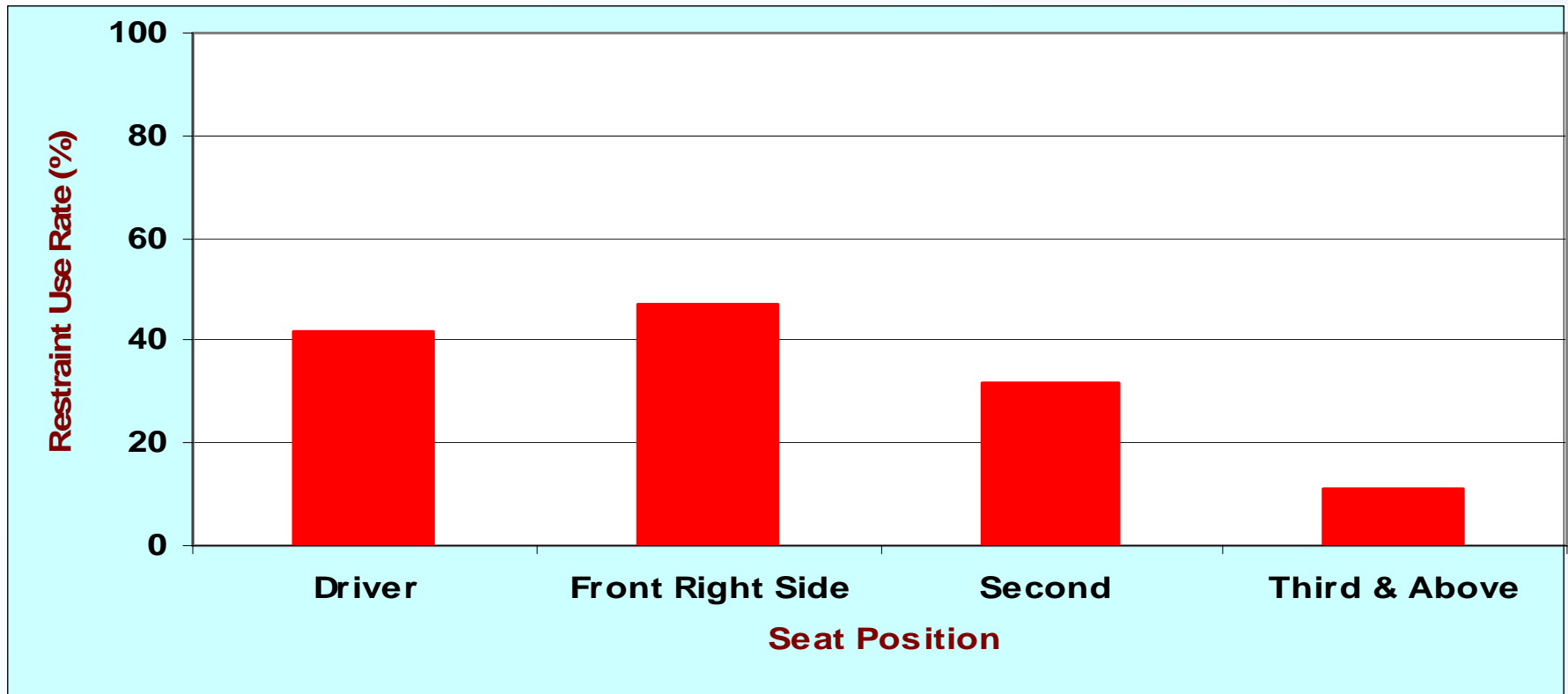
2005 NOPUS Found **Lower** Belt Use in Second Seat

Safety Belt Use, by Seating Position, NOPUS 2005



For Those Killed, Restraint Use Is Lower for Second Seat Passengers

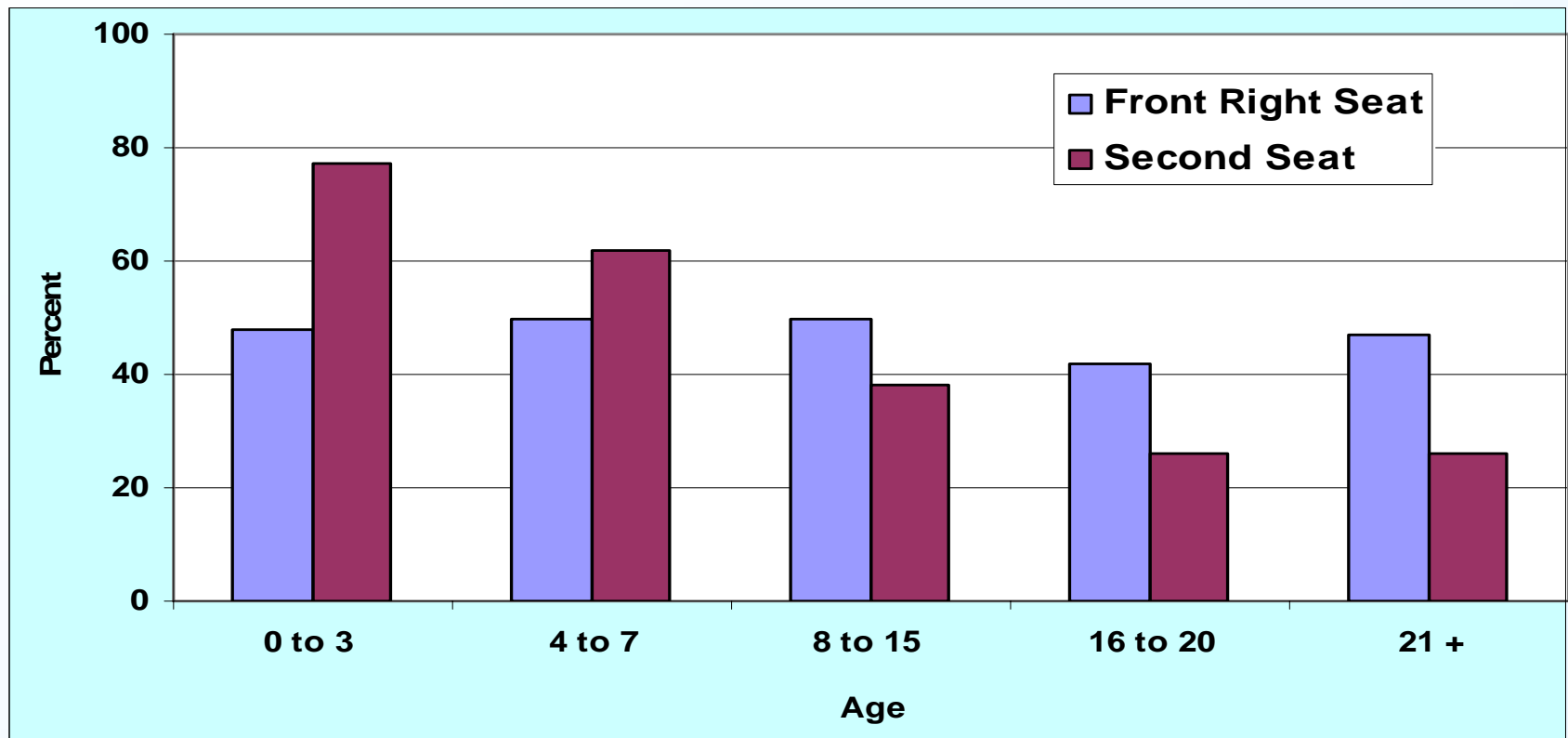
Restraint Use Rate of Passenger Vehicle Occupant Fatalities, by Seating Position



Source: FARS, 2005

Restraint Use in Second Seat Declines With Age

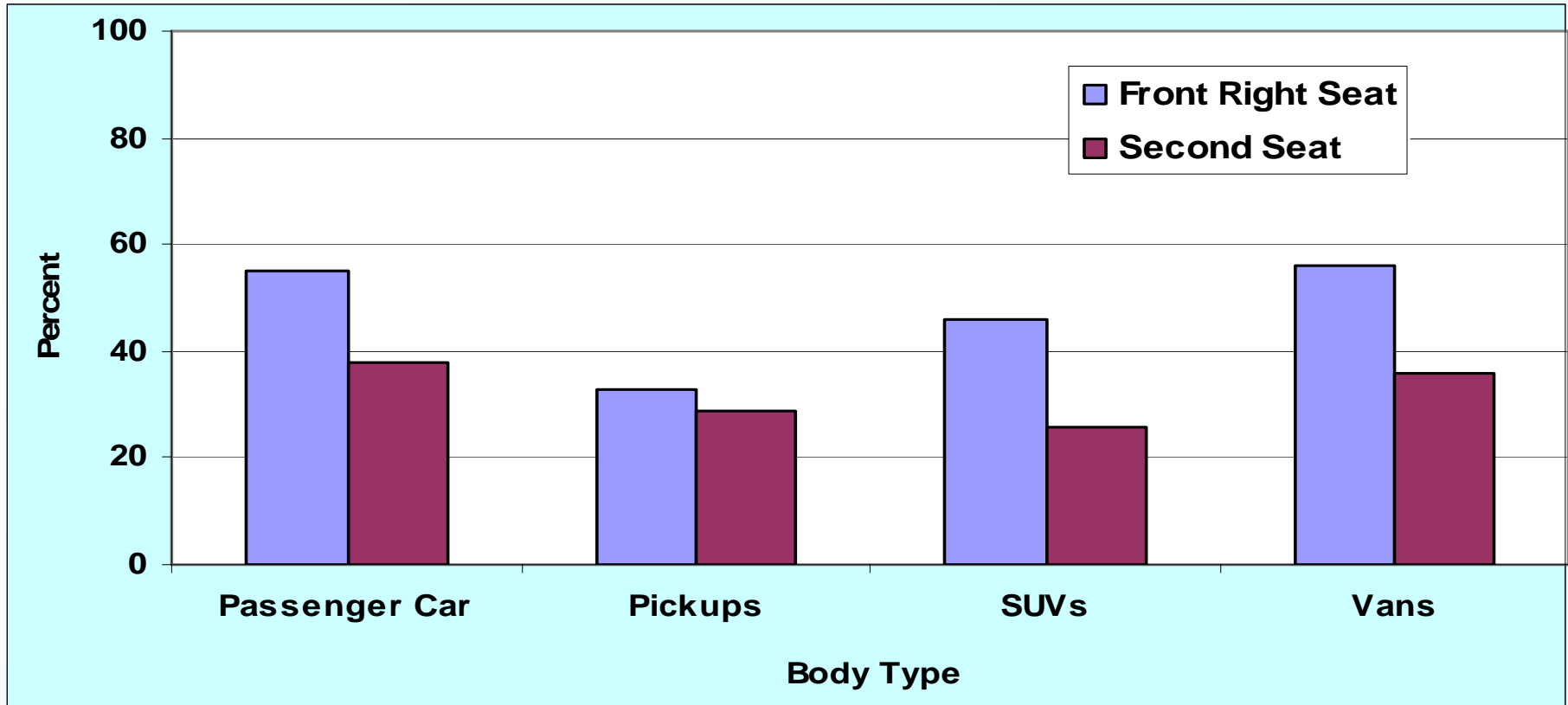
Right Front and Second Seat Passenger Vehicle Occupant Fatalities, by Age and Percent Restraint Use



Source: FARS 2005

Restraint Use Is lower in SUVs

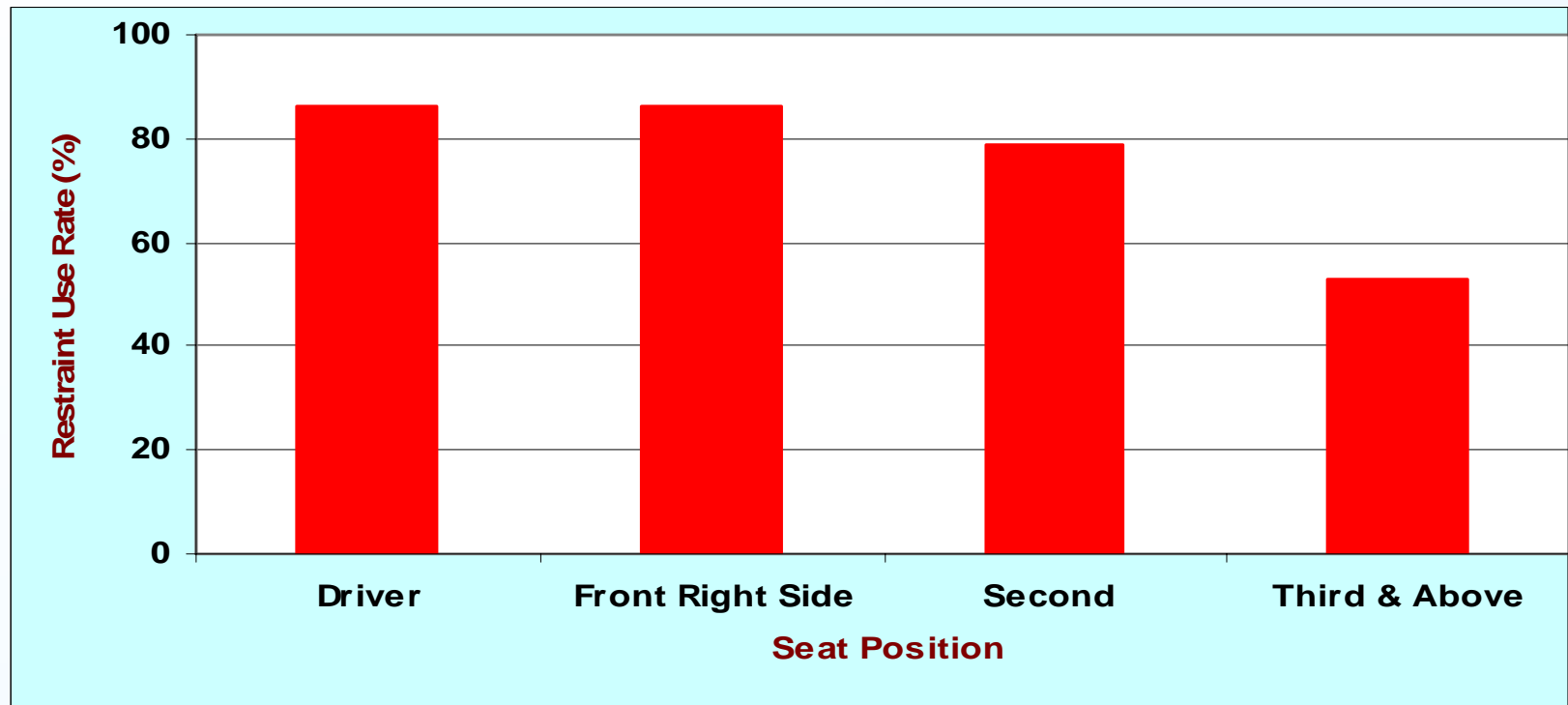
Right Front and Second Seat Passenger Vehicle Occupant Fatalities, by Body Type and Percent Restraint Use



Source: FARS, 2005

Passenger Vehicles Occupants Injured, by Seating Position and Percent Restraint Use

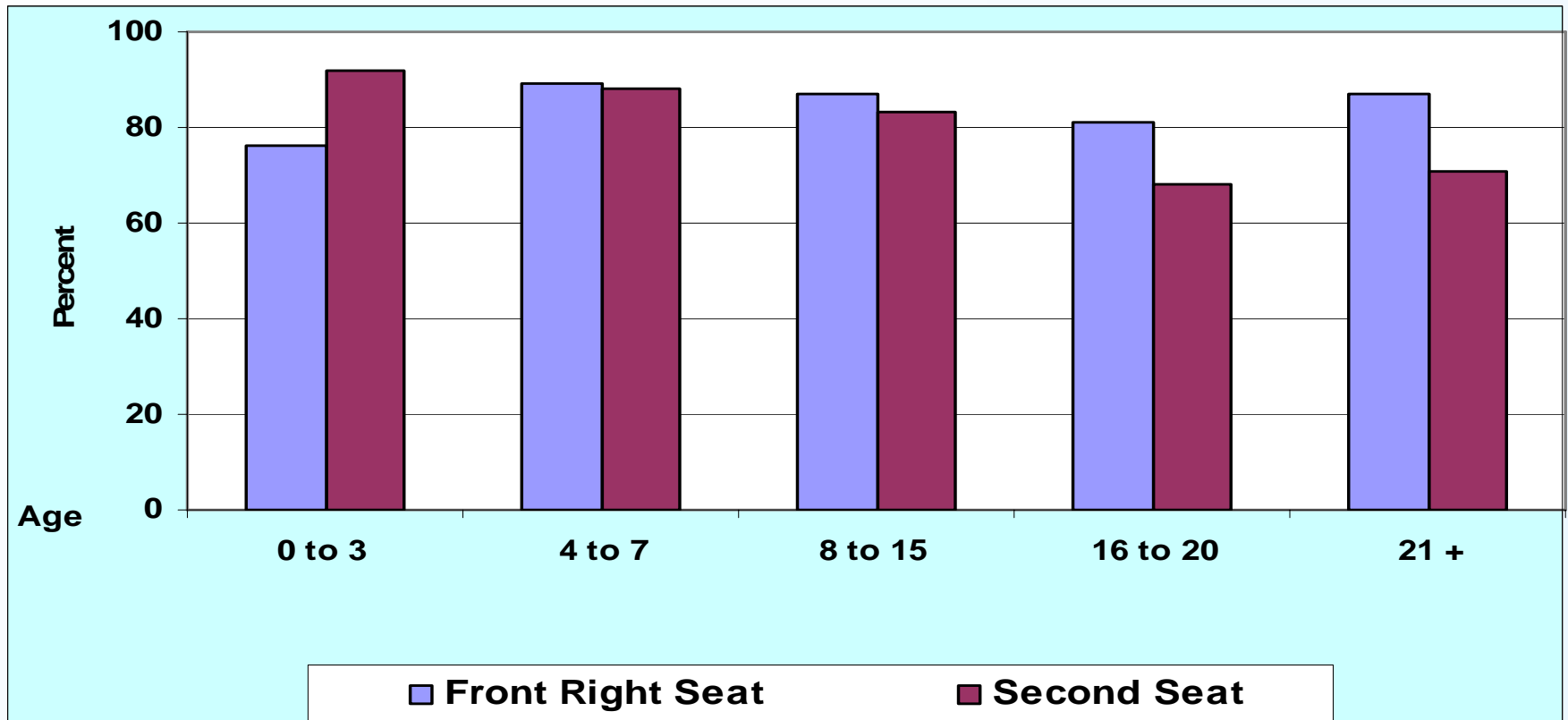
- Restraint use rates are higher in injury crashes, compared to fatal crashes
- Restraint use rate is still relatively low among second-seat passengers, compared to the driver and front-right-side passengers



Source: NASS-GES, 2005

Similar Restraint Use Patterns by Age for Those Injured

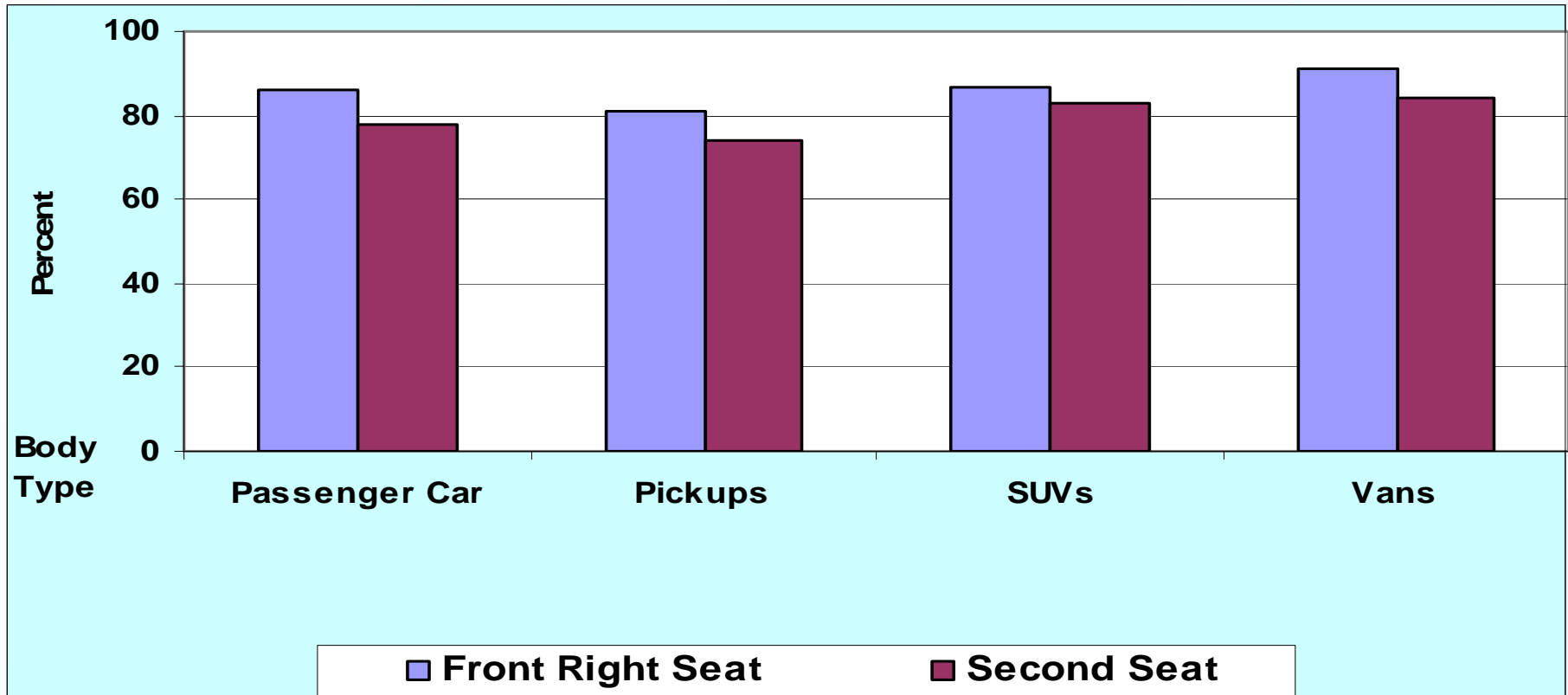
Right-Front and Second-Seat Passenger Vehicles Occupants Injured, by Age and Percent Restraint Use



Source: NASS-GES, 2005

But a Different Restraint Use Pattern for Those Injured by Body Type.

Right-Front and Second-Seat Passenger Vehicles Occupants Injured, by Body Type and Percent Restraint Use



Source: NASS-GES, 2005

Summary – Rear Seats Have ...

- **12 % of Crash-Involved Occupants**
- **Lower Fatality/Injury Rates**
- **Higher Proportion of SUV & Van Crash-Involved Occupants**
 - ◆ **But Passenger Cars Have Higher Number**
- **Higher Proportion of Kids as Occupants**
- **Lower Restraint Use for Teenagers and Adults**

Questions?

