

# The National Survey of the Use of Booster Seats (NSUBS)

Data and Research  
New Booster Seat Research Session  
Presented at Lifesavers 2008  
DOT HS 810 951

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# Outline

- Background
- Survey design & methodology
- 2006-2007 NSUBS results
  - ◆ National estimate of booster seat use
  - ◆ Restraint use by age & race/ethnicity
  - ◆ Premature graduation of children to restraint types that are inappropriate for their height or weight.



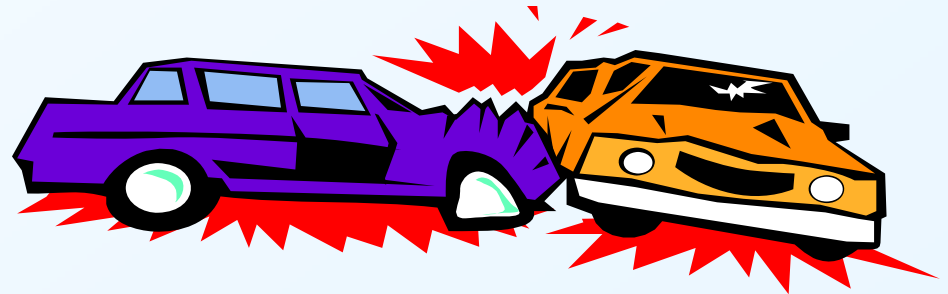
# Background



## Booster Age Children – An Area of Particular Concern

Each year, among children age 4 to 7

- **Fatalities**
  - 350 child occupants die in vehicle crashes
  - Only 49% of them are restrained
- **Injuries:** 49,000 are injured.



# A Data Need



- Transportation Recall Enhancement, Accountability, and Documentation Act of 2000 (TREAD) directed DOT to develop a five-year strategic plan to reduce by 25% deaths and injuries among 4- to 8-year-olds caused by failure to use booster seats.
- Thus DOT needed data on who are and who are not using booster seats in order to target outreach programs.

# This Data Did Not Exist

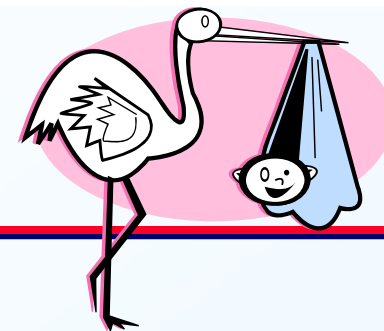
Previous estimates of booster seat use were not sufficiently reliable.

- **Some were obtained from nonprobability samples**
  - Results might not be representative.
  - Can't measure error.
- **Others were obtained via telephone surveys.**
  - Respondents might be reluctant to say their children were not in booster seats.
  - Observing use is preferable.

**NOPUS only provides partial information on booster seat use.**

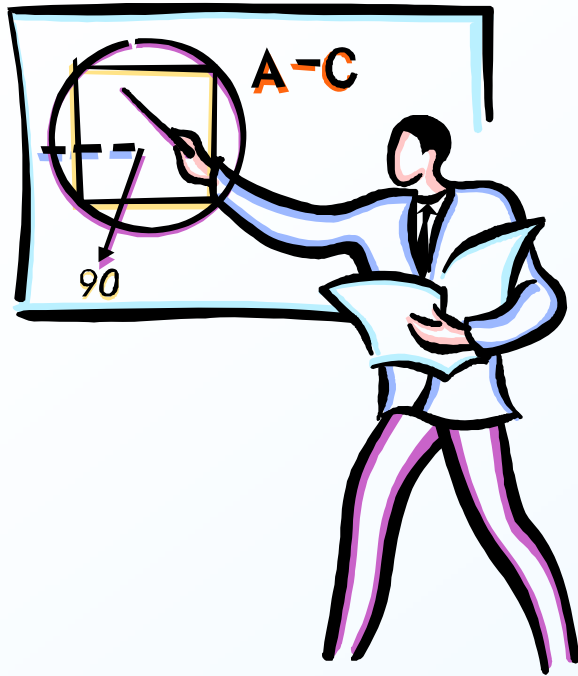
- **NOPUS provides estimated use of high-backed (but not backless) booster seats among children 4 to 7.**

## And Thus the NSUBS Was Born



The NSUBS fixes the shortcomings of the prior attempts to estimate booster use:

- ◆ **A survey collecting data via face-to-face interviews combined with observation.**
  - Interviews to get age, height, & weight
  - Observation to get restraint use
- ◆ **Conducted at a probability sample of nationwide sites.**

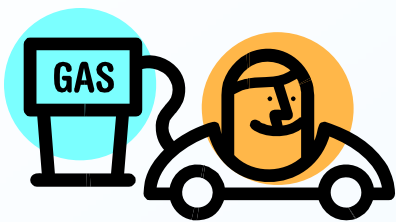


# NSUBS – Survey Design & Methodology



# Data Collection Sites

- Four types of sites
  - ◆ Gas stations, recreation centers, daycare centers, and fast-food restaurants



## • Why these types?

- ◆ Need to observe stopped vehicles
- ◆ Want to go where kids are

# Data Collection

- Data collectors approached all vehicles that appeared to have at least one child under the age of 13.
- Data collectors observed some data and recorded other data via interview...



# Data Collection

## Data collected by observation

- Restraint type
- Gender, seating position
- Vehicle type, site type, urbanization, weather, date, time; age group for occupants age 13+

## Data collected by interview

- Race/ethnicity
- Age, height, & weight of children up to age 12
- Interview conducted with an adult occupant



Note: Data collected on up to 9 occupants in first 3 rows of seats.

# 2007 NSUBS Survey

- Selected a probability sample of 675 sites in 16 geographical areas, each of which comprises one or more counties.
- Collected data from 430 sites.
  - ◆ **Site cooperation rate: 64%**
  - ◆ **Out of the 430 sites**
    - Daycare centers: 38
    - Fast-food restaurants: 134
    - Gas stations: 218
    - Recreation centers: 40



# Dates and Counts (2007)

## Dates of observation

July 19 – August 2, 2007

## We observed

430 sites

4,828 vehicles

7,518 children up to age 12

4,828 drivers and 1,810 other occupants



## We interviewed (questions directed to an adult)

4,431 children age 0-12

Age less than 1: 330

Age 1-3: 1,494

Age 4-7: 2,471

Age 8-12: 2,265

# 2006-2007 NSUBS Results



# Booster Seat Use: The National Estimate



## Booster Seat Use – the National Estimate

**37%**

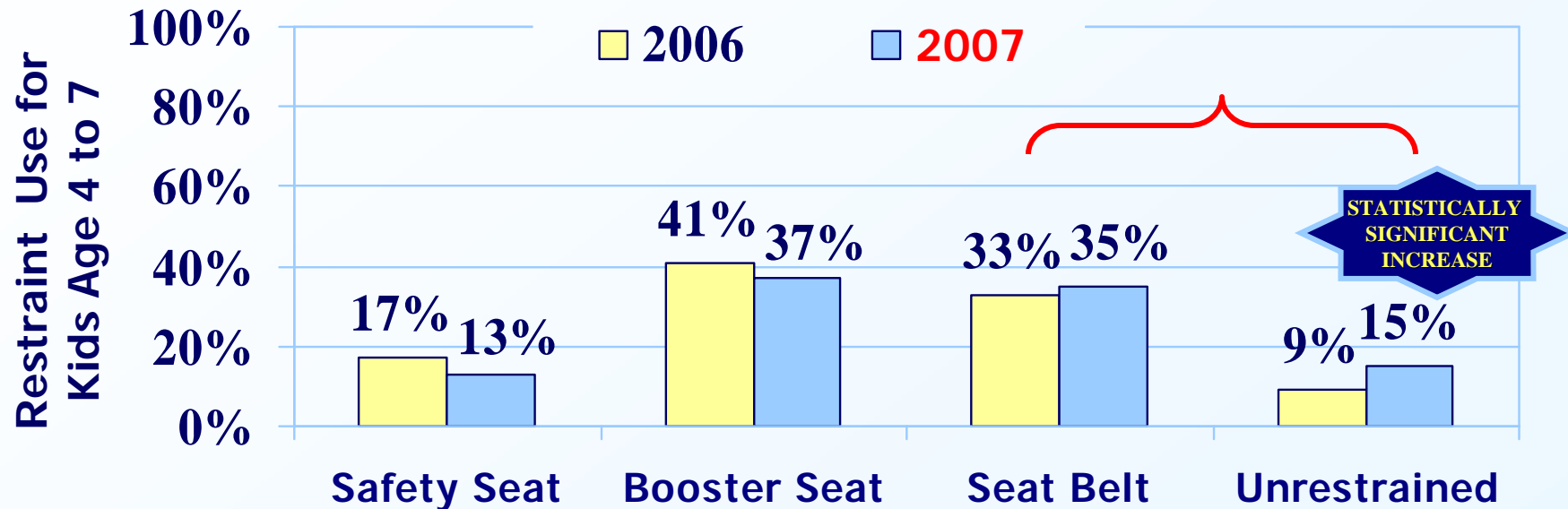
- 37% of children age 4 to 7 were restrained in booster seats in 2007, slightly decreased from 41% in 2006. The decrease is NOT statistically significant.
  - 46% of children age 4 and 5 were restrained in booster seats in 2007.
  - 25% of children age 6 and 7 were restrained in booster seats in 2007.



# Booster Seat Use – the National Estimate



## Distribution of Restraint Types Among Children Age 4 to 7 in 2006 and 2007



As many as one-half of children age 4 to 7 were not being properly protected in 2007.

# Restraint Use by Age & Race/Ethnicity



# NSUBS Race/Ethnicity Protocols



- NSUBS collects race/ethnicity of all occupants.
- 10 Race/Ethnicity Categories\*
- For reporting purposes, some categories are collapsed.

## Hispanic or Latino and

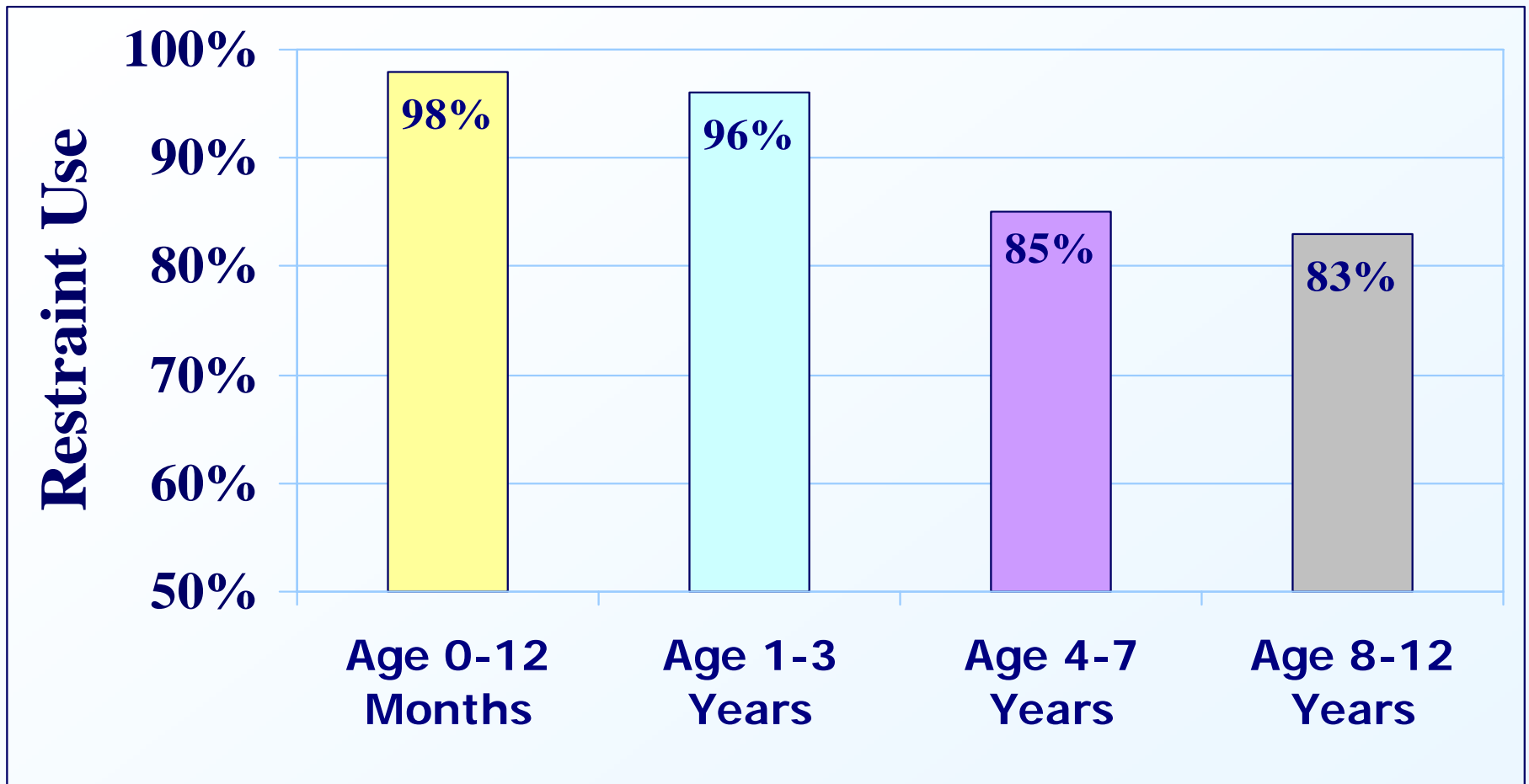
- American Indian or Alaska Native
- Asian
- Black or African-American
- Native Hawaiian or Pacific Islander
- White

## Not Hispanic nor Latino and

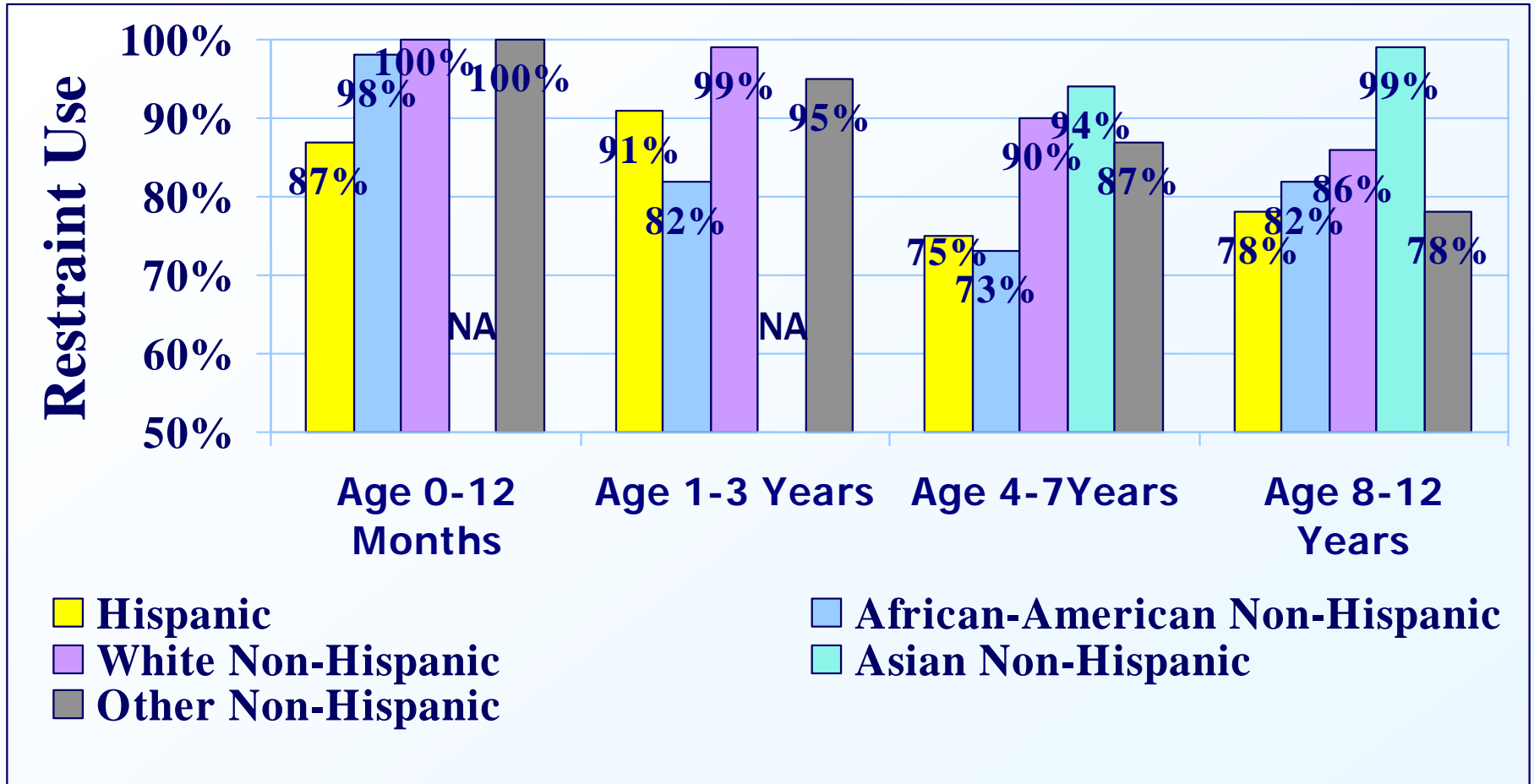
- American Indian or Alaska Native
- Asian
- Black or African-American
- Native Hawaiian or Pacific Islander
- White

**\*OMB standard**

# Child Restraint Use by Age in 2007



# Child Restraint Use by Age and Race / Ethnicity in 2007



Note: Multiracial children excluded

NA: Insufficient data for reliable estimate



# Premature Graduation *of Children up to Age 12*



# Premature Graduation Out of Rear-Facing Safety Seats

## NHTSA Recommendation

Infants should be kept in the back seat in rear-facing child safety seats as long as possible, up to the height or weight limit of the particular seat. At a minimum, infants should be kept rear-facing until at least age 1 and at least 20 pounds



## NSUBS Findings

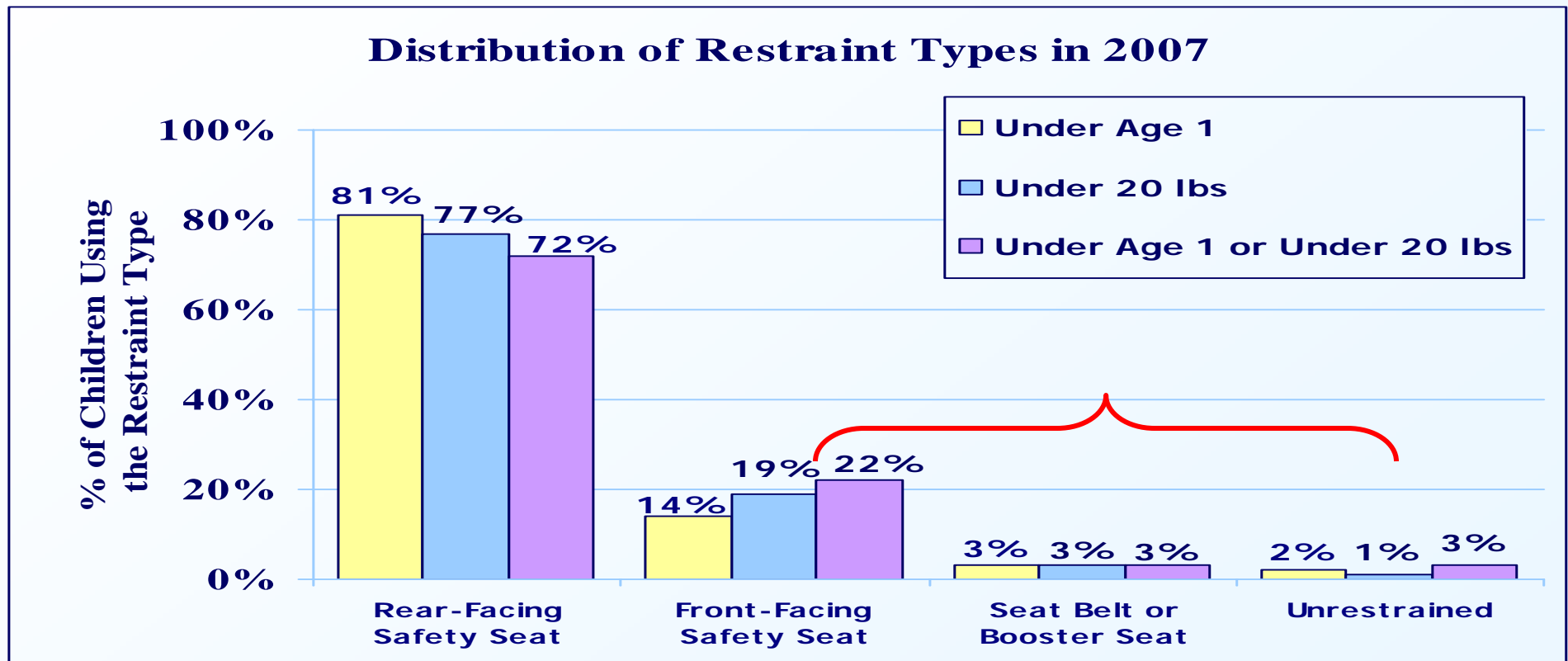
- About one-fifth (19%) of children under age 1 were not in rear-facing seats in 2007.
- About one-quarter (23%) of children under 20 pounds (age 0-12) were not in rear-facing seats in 2007.
- Over one-quarter (28%) of children who are under age 1 or under 20 pounds were not in rear-facing seats in 2007.

Reminder: These findings are based on reported age & weight.

# What Were These Kids In?



As expected, most of the premature graduation for these children was to front-facing safety seats.



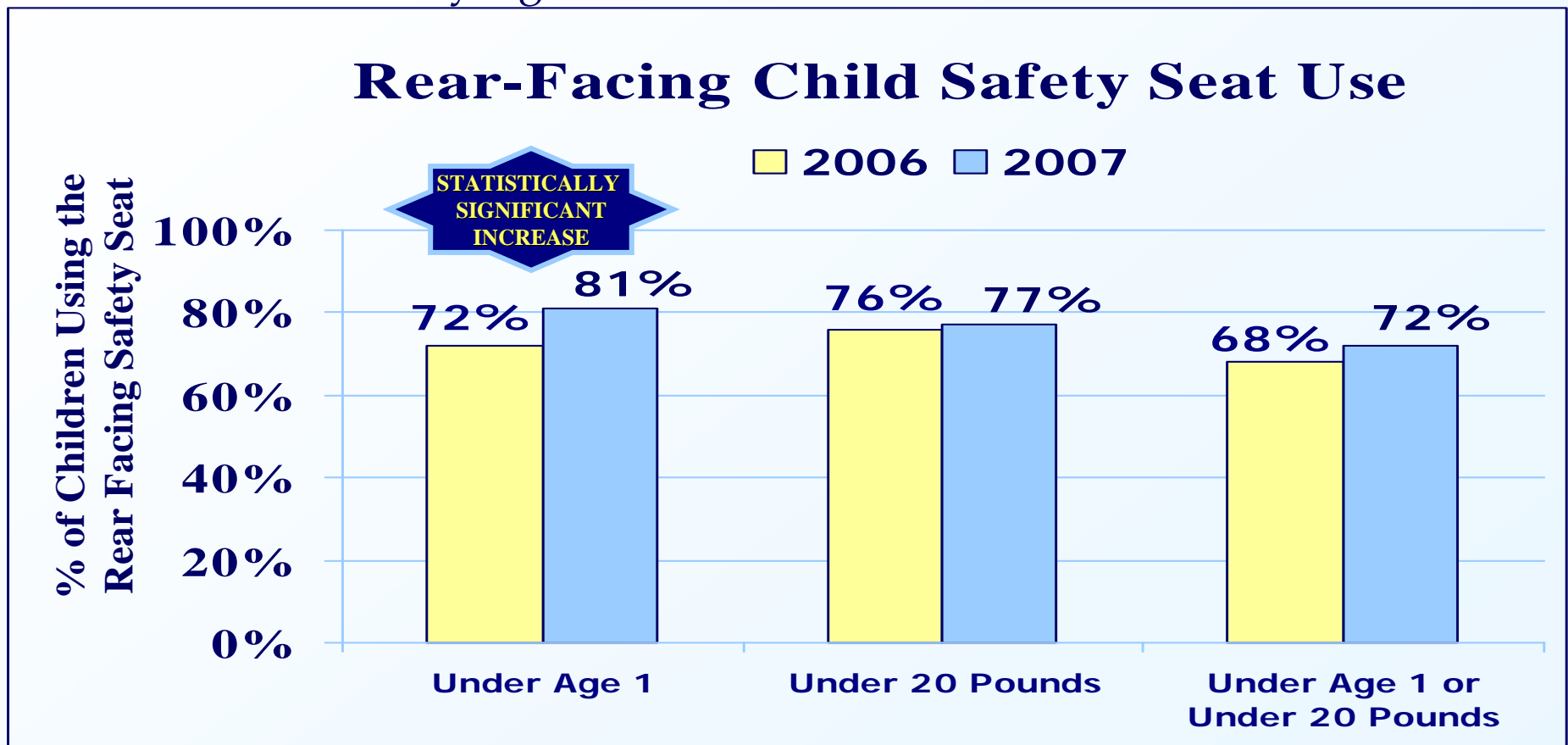
Note: Percentages may not add up to exactly 100% due to rounding



# 2006-2007 Changes



**Good news:** More children under age 1 were restrained in rear-facing child safety seats in 2007 and this 9-percentage-point increase from 2006 to 2007 is statistically significant.



# Premature Graduation Out of Front-Facing Safety Seats

## NHTSA Recommendation

When children outgrow their rear-facing seats (at a minimum age 1 **and** at least 20 pounds) they should ride in front-facing child safety seats, in the back seat, until they reach the upper weight or height limit of the particular seat (usually at around age 4 and 40 pounds).

## NSUBS Finding

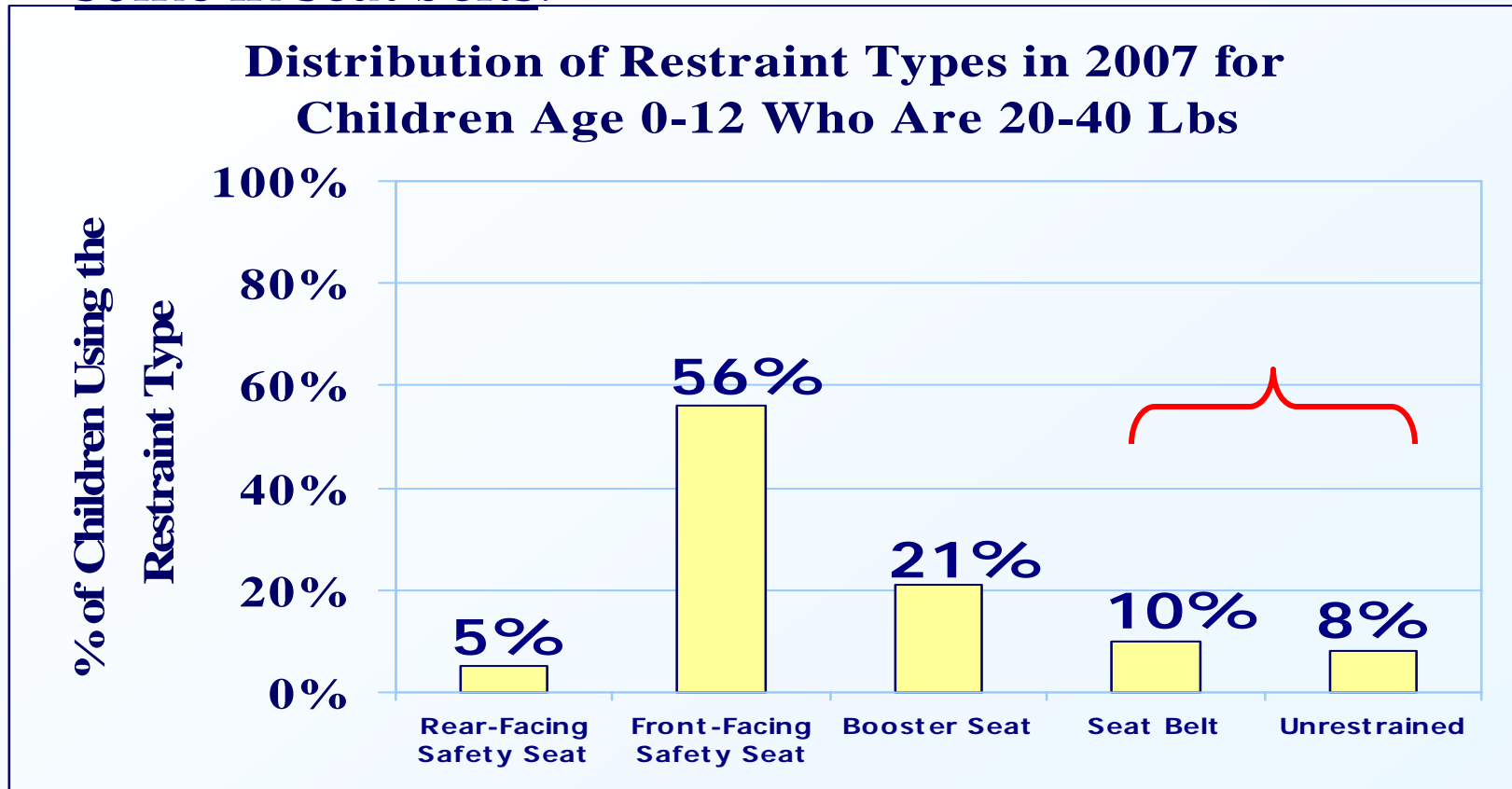
- Almost half (44%) of children age 0-12 who are 20-40 pounds were not in front-facing seats in 2007.
- Note: Some 20-40 pound children could be infants, which should be rear-facing in 2007.



# What Were These Kids In?



Some of these children were in booster seats and some in seat belts.



Note: Some booster seats have lower weight limits in the 20- to 40-pound range.

# Premature Graduation to Seat Belts

## NHTSA Recommendation

Once children outgrow their forward-facing seats (usually at around age 4 and 40 pounds), they should ride in booster seats, in the back seat, until the vehicle seat belts fit properly. Seat belts fit properly when the lap belt lays across the upper thighs and the shoulder belt fits across the chest (usually at age 8 or when they are 4'9" tall).

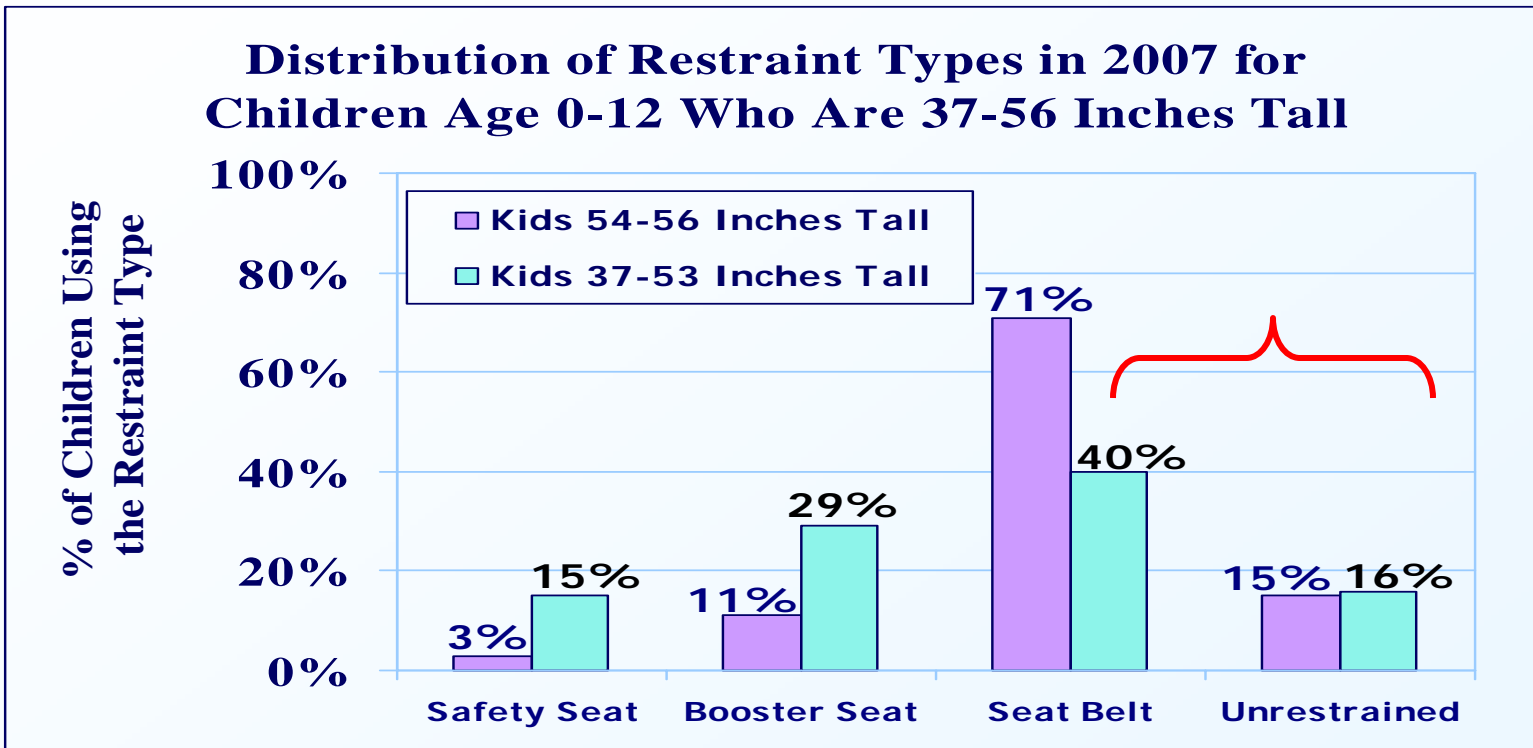
## NSUBS Findings

- Over half (56%) of children age 0-12 who are 37 to 53 inches tall were not in safety seats or boosters in 2007.
- More than 8 in 10 (86%) children age 0-12 who are 54 to 56 inches tall were not in safety seats or boosters in 2007.

# What Were These Kids In?



Many were in seat belts and a fair number were unrestrained.



Note: 71% of children 54 to 56 inches tall were in seat belts instead of boosters. However, since 54 to 56 inches is marginally below NHTSA's recommended height limit for seat belts, it might not be significant as a public safety result.



- **Technical Report (upcoming)**
  
- **Research Notes**
  - ◆ **Booster Seat Use in 2007 (2006)**
  - ◆ **Child Restraint Use in 2007 (2006) – Demographic Results**
  - ◆ **Child Restraint Use in 2007 (2006)– Use of Correct Restraint Types**
  - ◆ **Seat Belt Use in 2007 – Race and Ethnicity Results Among Occupants Traveling With Children**

# End of Presentation