



# NCSA

National Center for Statistics & Analysis  
of the National Highway Traffic Safety Administration



2004 Native American  
Transportation Safety Conference,  
Worley, Idaho  
May 13, 2004

**Dennis Utter**  
**Chief, Mathematical Analysis Division**



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# *NHTSA's Mission*

National Center for Statistics & Analysis



**Reduce the number of  
deaths and injuries and  
the economic costs that  
result from motor vehicle  
traffic crashes**



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# NHTSA's Organization

National Center for Statistics & Analysis



National Highway Traffic Safety Administration  
Jeffery Runge, MD  
Administrator

Vehicle  
Safety  
Programs

Policy  
and  
Operations

Traffic  
Injury  
Control

National Center For  
Statistics and Analysis  
(NCSA)



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# NCSA's Vision

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Provide the data and the analysis to allow complete understanding of:

- The nature, causes, and injury outcomes of crashes; and,
- The strategies and interventions that will reduce crashes and their consequences.



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# NCSA's Mission

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- Use data:
  - ❖ To quickly identify potential problems
  - ❖ To support decision-making
  
- Promote new technologies to make information more:
  - ❖ Complete
  - ❖ Accurate
  - ❖ Timely
  - ❖ Accessible



# Users of NCSA Data

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- **NHTSA**
  - ◆ Applied Research, Rulemaking, Enforcement
- **Automobile Manufacturers**
- **Universities**
- **States**
- **Highway Safety Community**
  - ◆ IIHS, AAA, Public Citizen, CIREN
- **FHWA, DOT, Congress**
- **General Public**



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# NCSA's Organization

National Center for Statistics & Analysis



National Center for Statistics & Analysis  
Joe Carra, Ph.D.  
Director

Mathematical  
Analysis  
Division

Crash  
Investigation  
Division

State Data  
Reporting  
Systems

Driver Register  
&  
Traffic Records



## ❖ FARS

Fatality Analysis Reporting System

## ❖ NASS

National Automotive Sampling System



❖ GES - General Estimates System

❖ CDS - Crashworthiness Data System

## ❖ SCI

Special Crash Investigations







## ❖ SDS

State Data System

## ❖ NOPUS

National Occupant Protection Use Survey

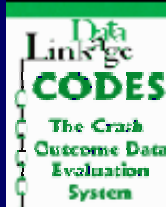
## ❖ CODES

Crash Outcome Data Evaluation System

## ❖ NDR

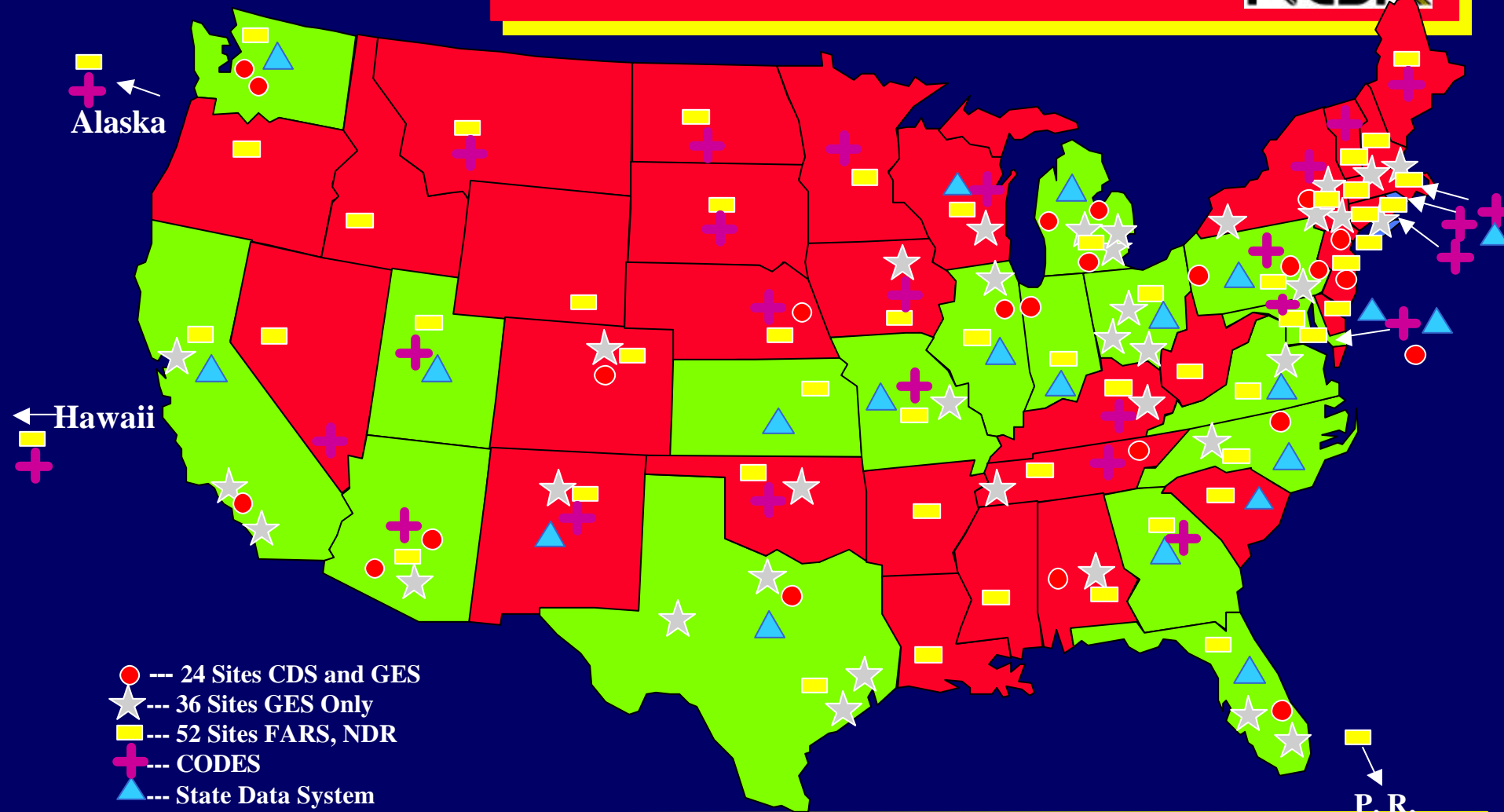
National Driver Register

## ❖ Traffic Records



# NCSA's Data Collection Network

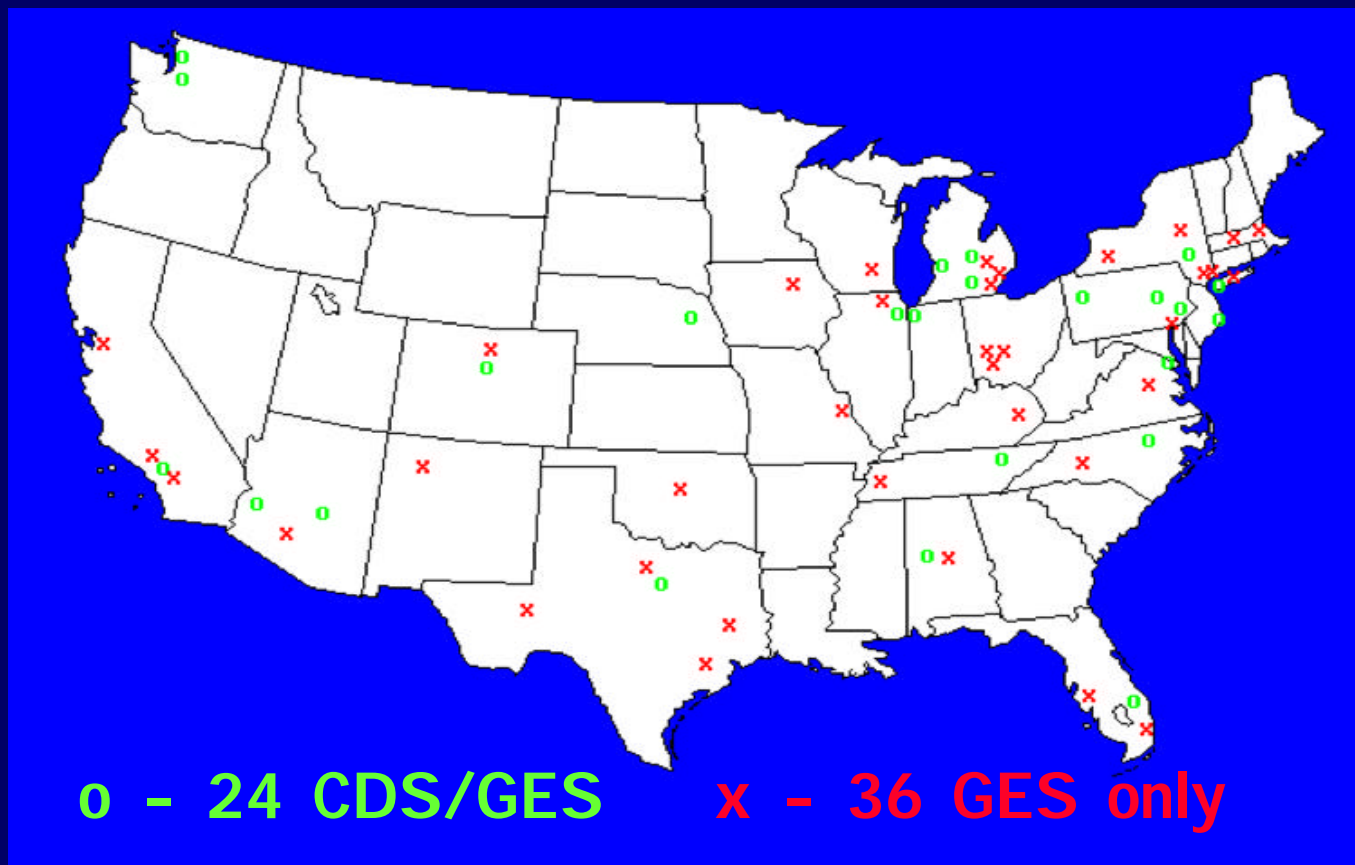
National Center for Statistics & Analysis



- **Two Components**

- ◆ **General Estimates System (GES)**
  - **Track Motor Vehicle Traffic Crash Trends**
- ◆ **Crashworthiness Data System (CDS)**
  - **Evaluate Motor Vehicle Safety Countermeasures**





- Nationally Representative Sample Design
- Data Collection Supervised and Quality Control conducted at 2 Zone Centers



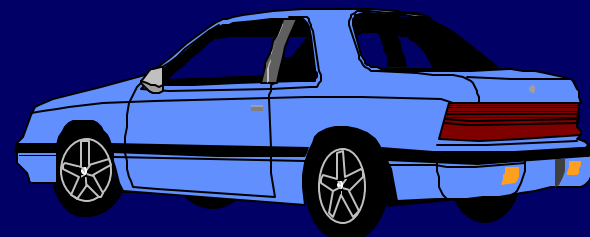
# General Estimates System



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- Provide statistical information from a nationally representative sample of all police reported crashes
- Began Operation in 1988
  - ◆ 55,000 crashes annually
- 90 Data Elements
  - ◆ Crash, Vehicle and Person Level





# Examples of Uses of GES Data



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- Identify highway safety problem areas
- Provide basis for regulatory and consumer information initiatives, and
- Provide basis for cost and benefit analyses of highway safety initiatives

- Latest year data normally available during early summer for public use
  - ◆ For example, 2003 data released in early summer of 2004
  - ◆ Data from 1988 to 2002 available now
- Files placed on FTP site for downloading
  - ◆ <ftp://ftp.nhtsa.dot.gov/GES/>
- Zip files available in two formats
  - ◆ SAS and ASCII



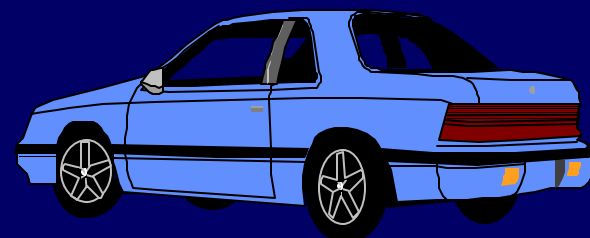
# Crashworthiness Data System



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- **Purpose** - to conduct detailed crash investigations and collect nationally representative data on motor vehicle crashes to be used to evaluate vehicle crashworthiness and occupant protection systems







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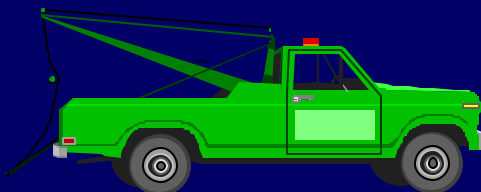
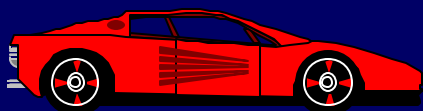
# NASS CDS Scope



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- Nationally representative Police Reported Traffic Crashes
  - ◆ 5,000 crashes
- Passenger Cars, Vans, Utility Vehicles, Pickup Trucks
- Towed Due to Damage
- 67 data collectors, 24 sites, 17 states





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# NASS CDS Data Elements



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- **Over 300 CDS Data Elements Describe ...**
  - ◆ Crash Events
  - ◆ Damage to Vehicle
  - ◆ Crash Forces Involved
  - ◆ Injuries to Victims
  - ◆ Injury Causation Mechanisms





# Uses of CDS Data



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- **Used primarily by NHTSA and Auto Manufacturers to evaluate performance of occupant protection systems**
  - ◆ Safety belts
  - ◆ Air Bags
  - ◆ Child Safety Seats
- **FMVSS**
  - ◆ 208, 213, 214, 301
- **Anton's Law**
- **Rollover Research**
- **Incompatibility Research**



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# Availability of CDS Data

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- Latest year data normally available during summer of following year
  - ◆ For example, 2003 data released in summer of 2004
  - ◆ Data from 1988 to 2002 available now
  - ◆ 2003 data to be released shortly
- Files placed on FTP site for downloading
  - ◆ <ftp://ftp.nhtsa.dot.gov/NASS/>
- Zip files available in two formats
  - ◆ SAS and ASCII

- **Regular & Expanded datasets for 2002**
  - ◆ Expanded info for air bags, EDRs, etc
- On-line case viewer for individual cases available on NCSA website (1997-2002)
- Preliminarily approved case viewer for current year's cases available on-line
- Scanned case reports for limited number of pre-1997 cases on-line

- **Implemented in 1972**
- **Purpose:** examining the safety impact of rapidly changing technology
  - ◆ air bags and alternative fuel systems
  - ◆ redesigned air bag systems
  - ◆ potential vehicle defects
- **Current Focus**
  - ◆ investigation of crashes involving air bag deployment-related fatal and seriously injured occupants and redesigned airbag effectiveness





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# Availability of SCI Data

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- Cases are made public after thorough case review, normally one year after crash.
- Hard copy cases available thru Volpe Center
- NCSA website offers several ways to look at SCI case data
  - ◆ Case criteria selection
    - Technical Reports (1990 – present)
    - Electronic case viewer (1997 – present)
  - ◆ Case viewer of individual cases thru website (1997–present)
  - ◆ Summary tables of ALL cases available on-line
  - ◆ Quarterly reports of ALL cases available on-line

- **Purpose** – Provide an objective basis to evaluate the effectiveness of motor vehicle safety standards and highway safety programs
- **All fatal crashes**
  - ◆ Fatality w/in 30 Days of Crash
    - ~ 37,000/year
  - ◆ Covers All 50 States, DC, and Puerto Rico
- **Began Operation in 1975**
- **Operated Cooperatively with States**







# FARS Data Sources



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- Police Crash Reports
- State Vehicle Registration Files
- State Driver Licensing Files
- State Highway Department Data
- Vital Statistics
- Death Certificates
- Coroner/Medical Examiner Reports
- Hospital Medical Records
- Emergency Medical Services Reports



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# FARS Data Elements



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- **Crash Characteristics**
  - ◆ Describes Crash Environment
- **Vehicle Information**
  - ◆ Characteristics of Vehicles Involved
- **Driver Level**
  - ◆ Driver licensing
  - ◆ Previous violations
  - ◆ Driver zip code
- **Person Level**
  - ◆ Age and sex of driver
  - ◆ Alcohol test results



The image displays a stack of four FARS (Fatality Analysis Reporting System) forms, each representing a different level of data collection:

- ACCIDENT LEVEL:** Includes fields for date, time, location, and severity of the crash.
- VEHICLE LEVEL:** Details information about the vehicles involved, such as make, model, year, and type.
- DRIVER LEVEL:** Focuses on the driver's characteristics, including licensing status, previous violations, and zip code.
- PERSON LEVEL:** Provides personal information about the driver, such as age, sex, and alcohol test results.



# Examples of Uses of FARS Data



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- Fatal crash rates for state and local jurisdictions
- Ascertaining crash and person level alcohol
- Repeat offenders
- Analysis of pedestrian fatalities
- Motorcycle helmet effectiveness
- Relationship between occupant compartment deformation and occupant injury



# Examples of Uses of FARS Data



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- Restraint use patterns
- The 65 MPH speed limit
- Safety design of cars and light trucks
- Safety of large trucks on the highway
- Airbag effectiveness research
- Evaluation of differences between urban and rural crashes



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# Availability of FARS Data

National Center for Statistics & Analysis



- Latest year data normally available during early summer for public use
  - ◆ For example, 2003 data released in early summer of 2004
    - "Final" File for Previous Year also released
  - ◆ Data from 1975 to 2002 available now
- Files placed on FTP site for downloading
  - ◆ <ftp://ftp.nhtsa.dot.gov/FARS/>
- Zip files available in three formats
  - ◆ DBF, SAS and SEQL

- **Police Reported Crash Databases**
  - ◆ 24-State Files Currently Maintained
- **Uses of State Data**
  - ◆ Support Agency Rulemakings
    - Federal Motor Vehicle Safety Standards
  - ◆ Support Enforcement Activities
    - Defects Investigations
  - ◆ Statistical Analysis



# Uses of State Data System



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- The Rollover Propensity of Fifteen-Passenger Vans
- Federal Motor Vehicle Safety Standards: Rollover Resistance
- Crash-Reducing Effectiveness of Daytime Running Lights
- Effectiveness of Lap/Shoulder Belts in the Back Outboard Seating Positions



# Availability of SDS Data

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- SDS Data are available for use by NHTSA or DOT Staff or Contractors
- Because Data are “owned” by the States, Public access is restricted
  - ◆ Researcher must obtain written permission from the state
  - ◆ During approval process, the state is advised of the specific intended use of data by the researcher
  - ◆ If approved, Data provided on CD in SAS Format for small to cover processing fees





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# National Occupant Protection Use Survey (NOPUS)

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- **Moving Traffic**

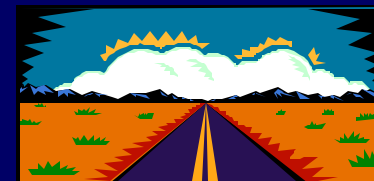
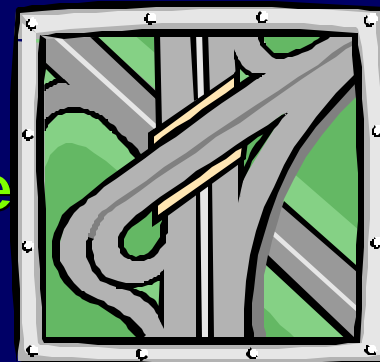
- Driver/Pass Belt Use & MC Helmet Use
- Vehicle Types / Regional

- **Controlled Intersection**

- Demographics
- Child Safety Seat Use

- **Uses**

- Occupant restraint use program
- Lives saved calculations
- special observational studies





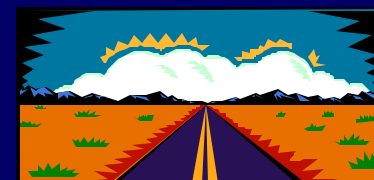
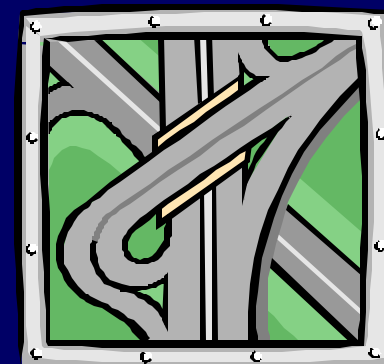
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# Uses of NOPUS Data

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- Support NHTSA occupant restraint use program
- Calculate number of lives saved due to safety belt use
- Use NOPUS infrastructure to conduct special observational studies
  - cell phone study to support DOT cell phone policy research





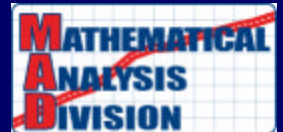
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# Availability of NOPUS Data

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- Reports on Results of NOPUS Surveys available on-line
- Survey Micro-data have not been made available to general public



- **Crash Outcome Data Evaluation System**
  - ◆ State Crash Databases linked to Medical Outcome Data
  - ◆ 27 States have been funded
- **CODES Data network**
  - ◆ Subset of CODES states
  - ◆ Support NHTSA data needs



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# Availability of CODES Data

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- Each CODES state controls release of the linked crash and injury outcome data.
- The CODES contact person in each state can be obtained by logging on to NHTSA's web site
  - ◆ [www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/codes.html](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/codes.html)



# National Driver Register

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- **Identifies problem drivers**

- ◆ File of identification data for drivers with suspended or revoked privilege or convicted of serious traffic safety related violations
- ◆ 2003 - 48 million inquiries from States for driver licensing
- ◆ 0.7 million inquiries from FAA, USCG, FRA, air carriers, & Federal agencies for certification and employment



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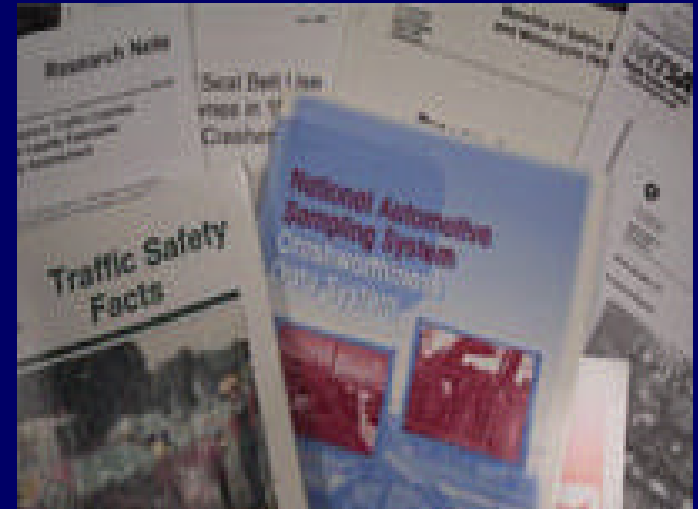
# Traffic Records

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- **Program to support**
  - ◆ State traffic records system
    - **Timeliness, accuracy, accountability**
  - ◆ Data standardization improvement
    - **Crash, EMS, driver licensing, vehicle registration, roadway infrastructure**
- **State record systems**
  - ◆ Determine crash causes
  - ◆ identify transportation safety problems
  - ◆ monitor and measure impact of countermeasures
  - ◆ feed national databases

- **Data Dissemination**
  - ◆ Annual Publications
  - ◆ Other Reports (in 2003)
  - ◆ Customer Service
    - **>10,000 Data Requests Annually**
- **Analytical Support to NHTSA**





- **Annual Publications**
  - ◆ Traffic Safety Facts
  - ◆ Fact Sheets (14)
- **Other Reports (in 2003)**
  - ◆ Nine Reports
  - ◆ Twenty Research Notes
- **>10,000 Data Requests**
- **Analytical Support**



**All Reports Now Available on Internet**



# Example of Use of FARS Data



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**- Recent Report -**

***Fatal Motor Vehicle Crashes  
on Indian Reservations***

***1975 - 2002***

**DOT HS 809-777**

**April 2004**

**Author: Keith Poindexter**



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# A Use of FARS Data



National Center for Statistics & Analysis



## On Indian Reservations Between 1975 and 2002 ...

- 5,962 fatal motor vehicle crashes
  - ◆ 213 fatal crashes per year.
- 7,093 lives lost
  - ◆ 253 fatalities per year.

## Fatalities by Race (1999 - 2002)

- 69 % were American Indian
- 31 % were Other Races



From 1975 - 2002:

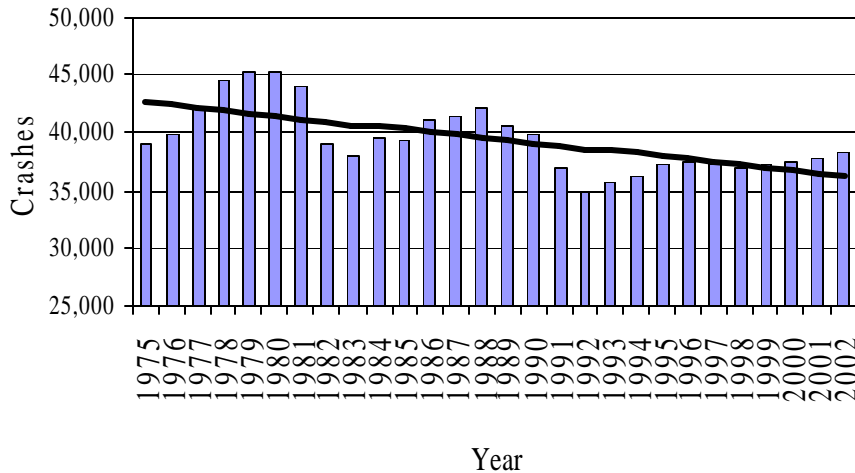
The number of fatal motor vehicle crashes that occurred on roads within Indian reservations increased by 52.5 percent, compared to a decrease of 2.2 percent in the number of fatal crashes in the nation.

# Trend: Decrease Nationally - Increase on Reservations

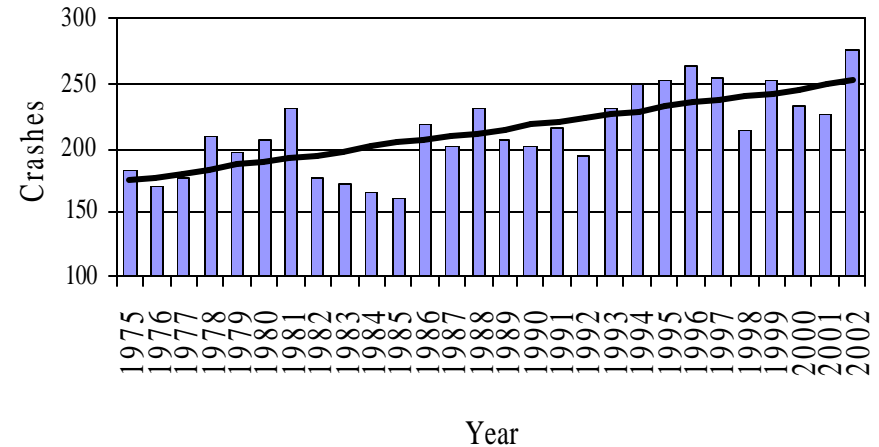
National Center for Statistics & Analysis



Fatal Motor Vehicle Crashes  
in U.S.  
1975 - 2002

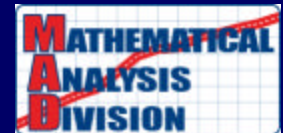


Fatal Motor Vehicle Crashes on  
Indian Reservations  
1975 - 2002



-2.2 percent

+52.5 percent



# *Crash Characteristics*

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## *Reservations Compared to Overall U.S.*



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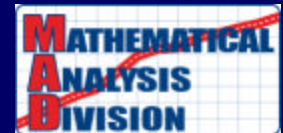
# Crashes by Day of Week



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44 percent of the crashes on reservations occurred on Saturday or Sunday compared to 36 percent of the crashes in the nation occurring on those same days, a difference of 8 percent.





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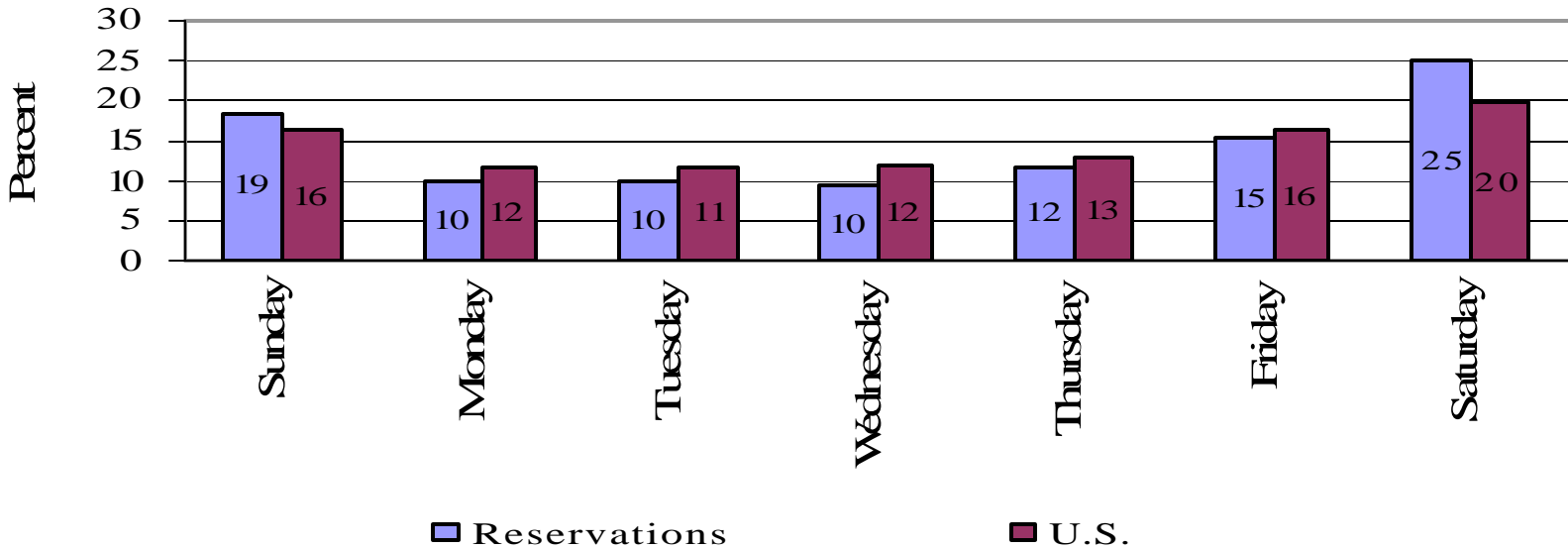
# More Weekend Crashes



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### Fatal Crashes by Day of Week Indian Reservations vs. U. S. 1975 - 2002



**44 percent vs. 36 percent**







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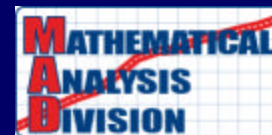
# Crashes by Time of Day



National Center for Statistics & Analysis



Almost a third (32%) of the fatal crashes on reservations and in the nation happened between the hours of 3 pm and 9 pm.



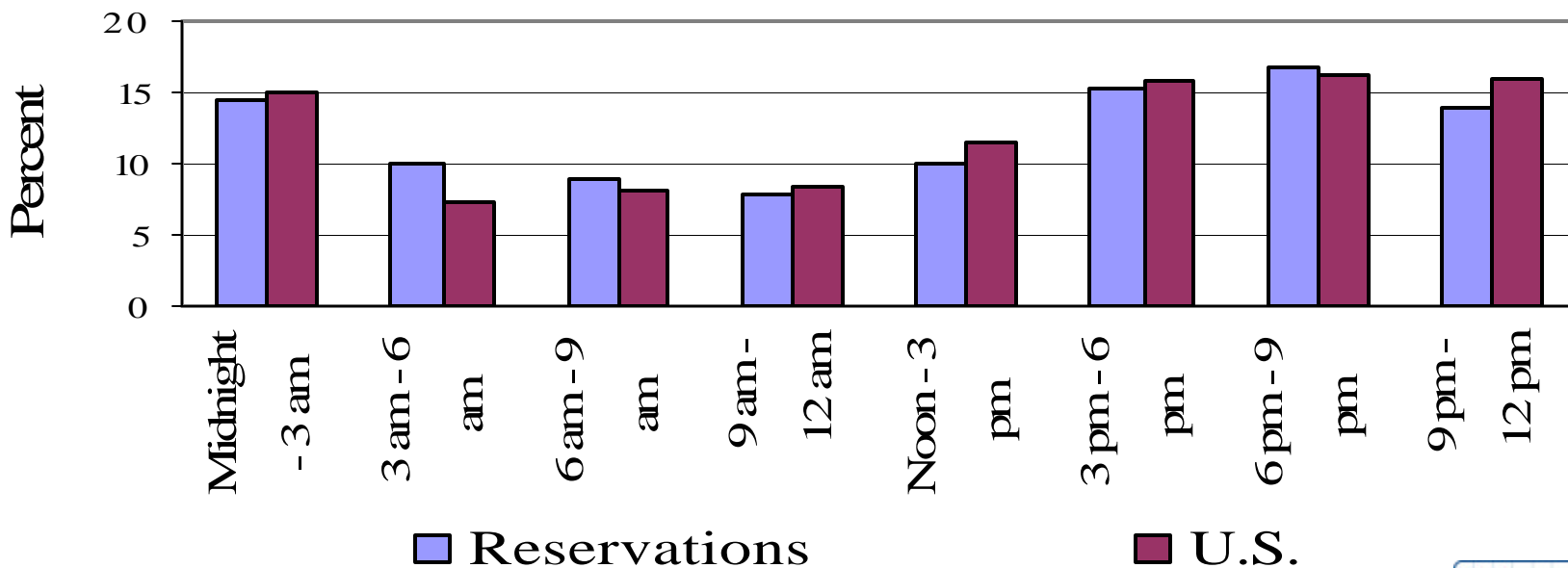
# Comparable by Time-of-Day



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**Fatal Crashes by Time of Day  
Indian Reservations vs. U.S.  
1975 - 2002**



1/3 between 3 p.m. and 9 p.m.



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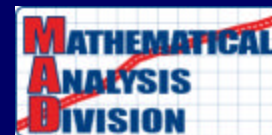
# Crashes by Crash Type



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Almost three fourths (73%) of the fatal crashes on reservations were single vehicle crashes while just over one half (58%) of the crashes in the nation involved one vehicle.



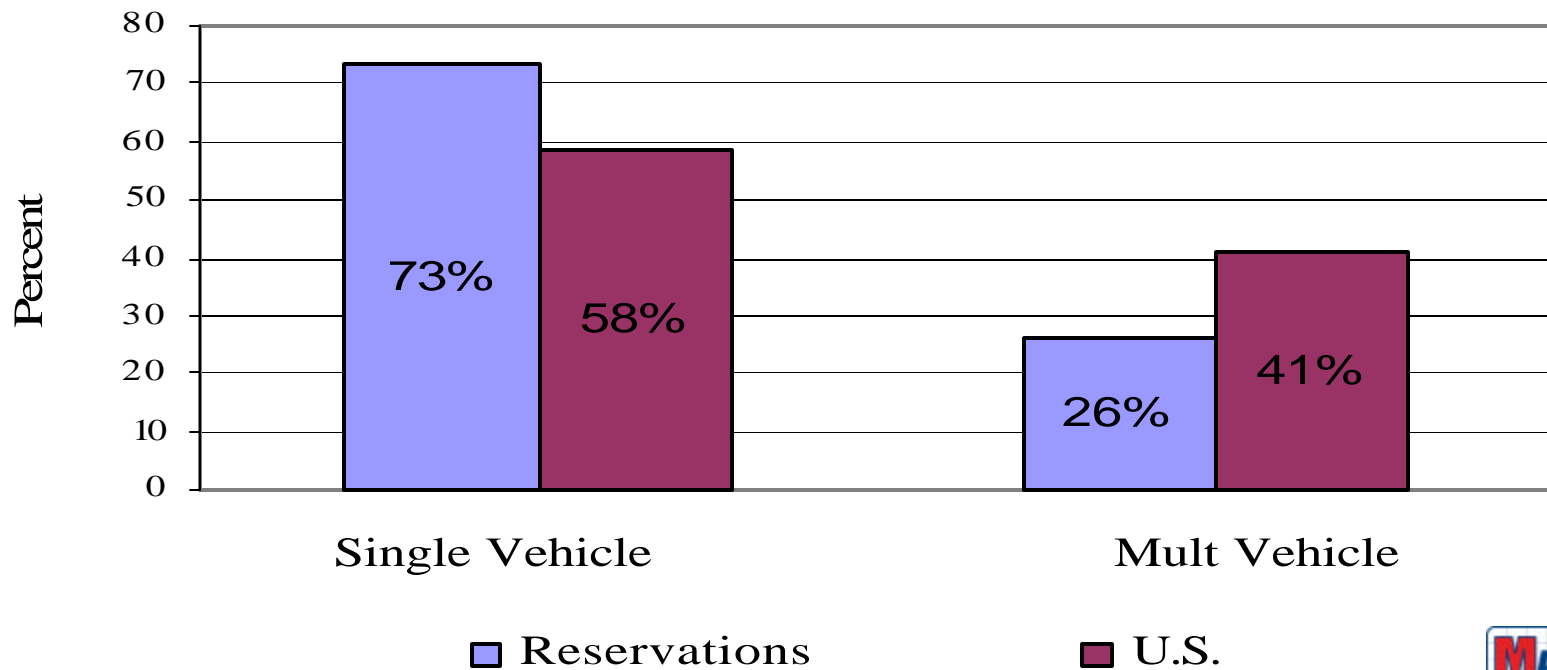
# More Single Vehicle Crashes



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### Fatal Crashes by Crash Type Indian Reservations vs. U.S. 1975 - 2002





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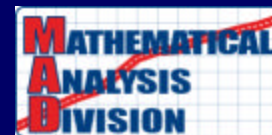
# Fatalities by Person Type



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Of the fatally injured in these crashes;  
3,322 (47%) were drivers, 2,717 (38%)  
were passengers and 1,001 (14%) were  
pedestrians.





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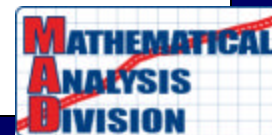
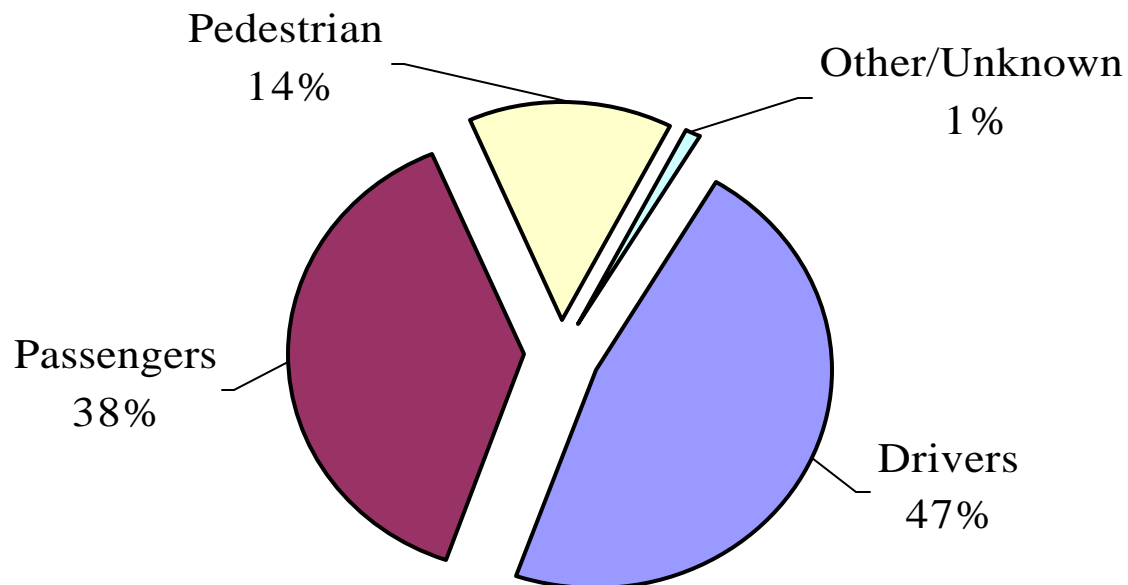
# Fatalities by Person Type



National Center for Statistics & Analysis



## Fatalities in Motor Vehicle Crashes on Indian Reservations by Person Type 1975 - 2002





# Driver Fatalities



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The percentage of drivers killed in crashes on reservations (47%) is much lower than the percentage of drivers killed in crashes in the nation (58%).



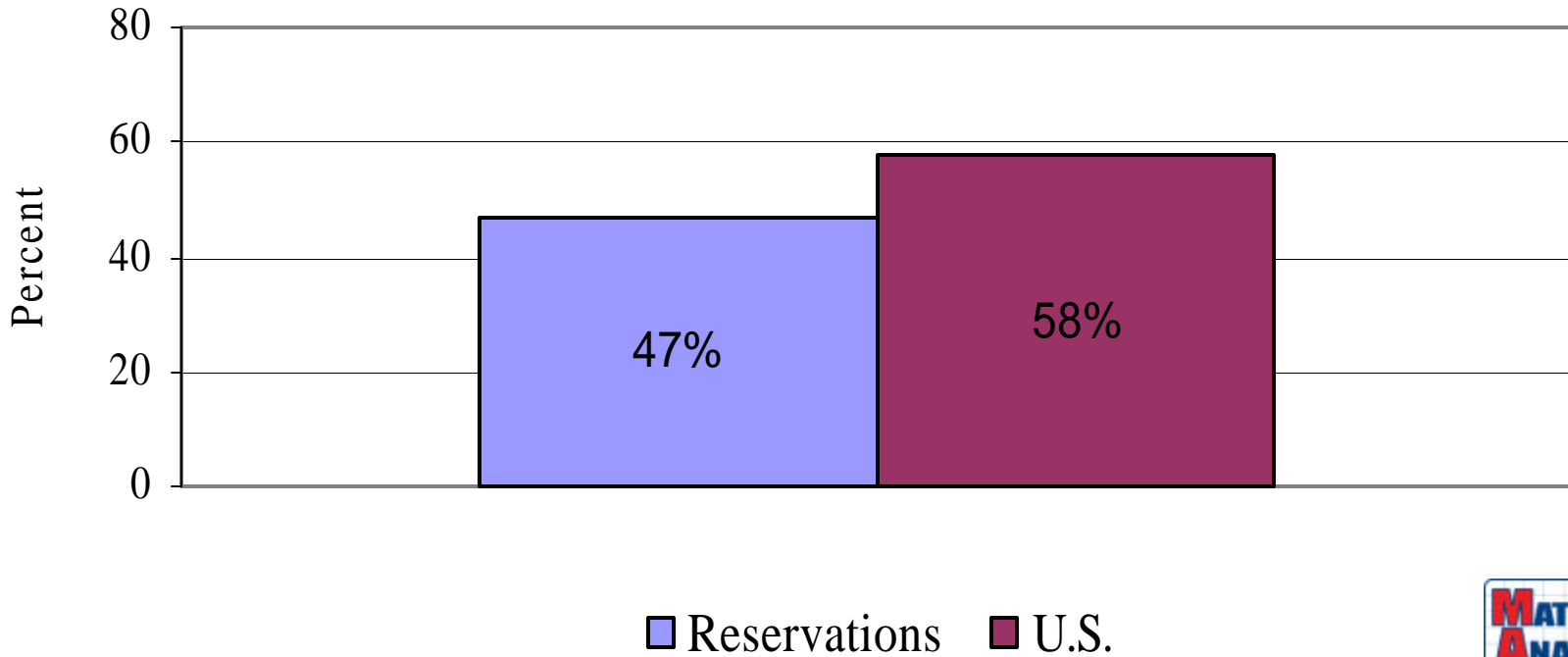
# Fewer Fatalities are Drivers



National Center for Statistics & Analysis



Driver Fatalities as Percent of Total Fatalities  
1975 - 2002







# Passenger Fatalities



National Center for Statistics & Analysis



The percentage of passengers killed in crashes on reservations (38%) is much higher than the percentage of passengers killed in crashes in the nation (26%).



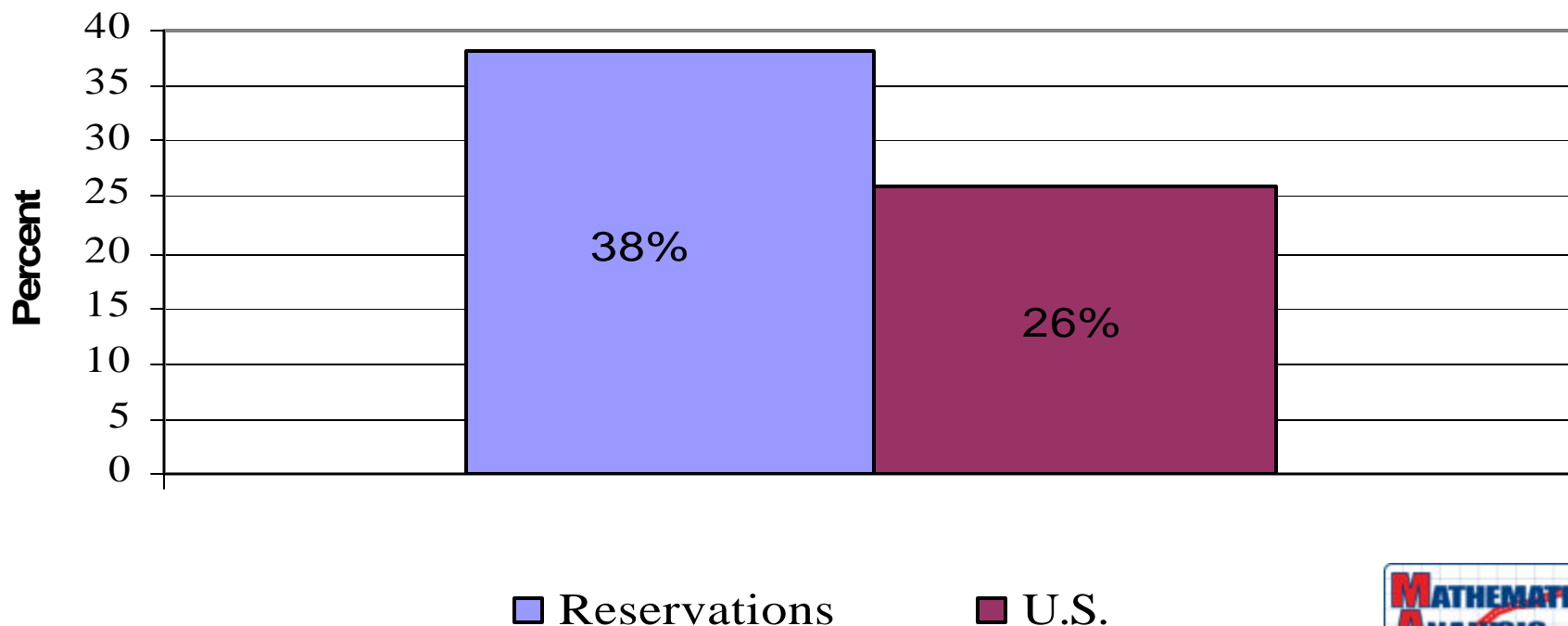
# More Fatalities are Passengers



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## Passenger Fatalities as Percent of Total Fatalities 1975 - 2002





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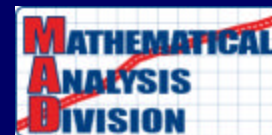
# Fatalities By Age Group



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63 percent of all people killed in crashes on reservations were under 35 years of age compared to 57 percent of all crash fatalities in the nation belonging to the same, under 35, age group.



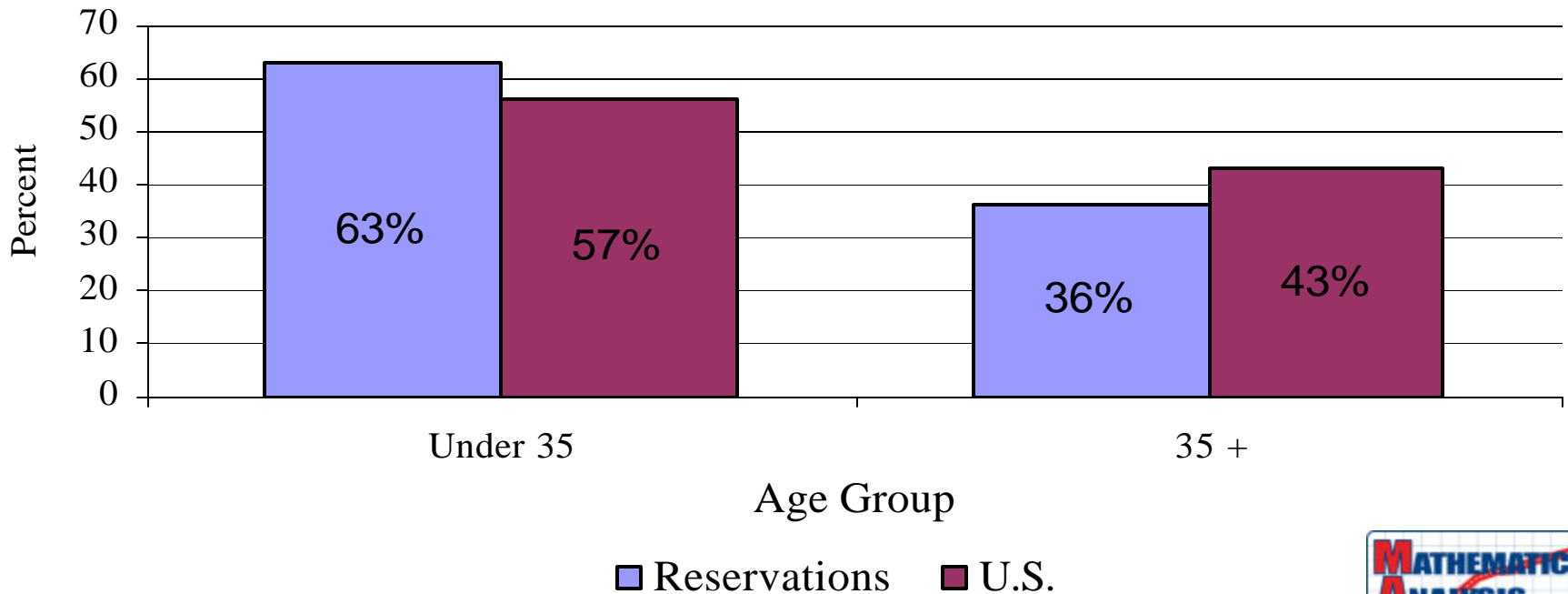
# More Fatalities are Younger People



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**Fatalities by Age Group  
Reservations vs. U.S.  
1975 - 2002**





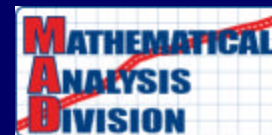
# *Driver Fatalities by Age Group*



National Center for Statistics & Analysis



One third (33%) of driver fatalities on reservations were under 25 years of age which is about the same as the proportion of driver fatalities in the nation (31%).



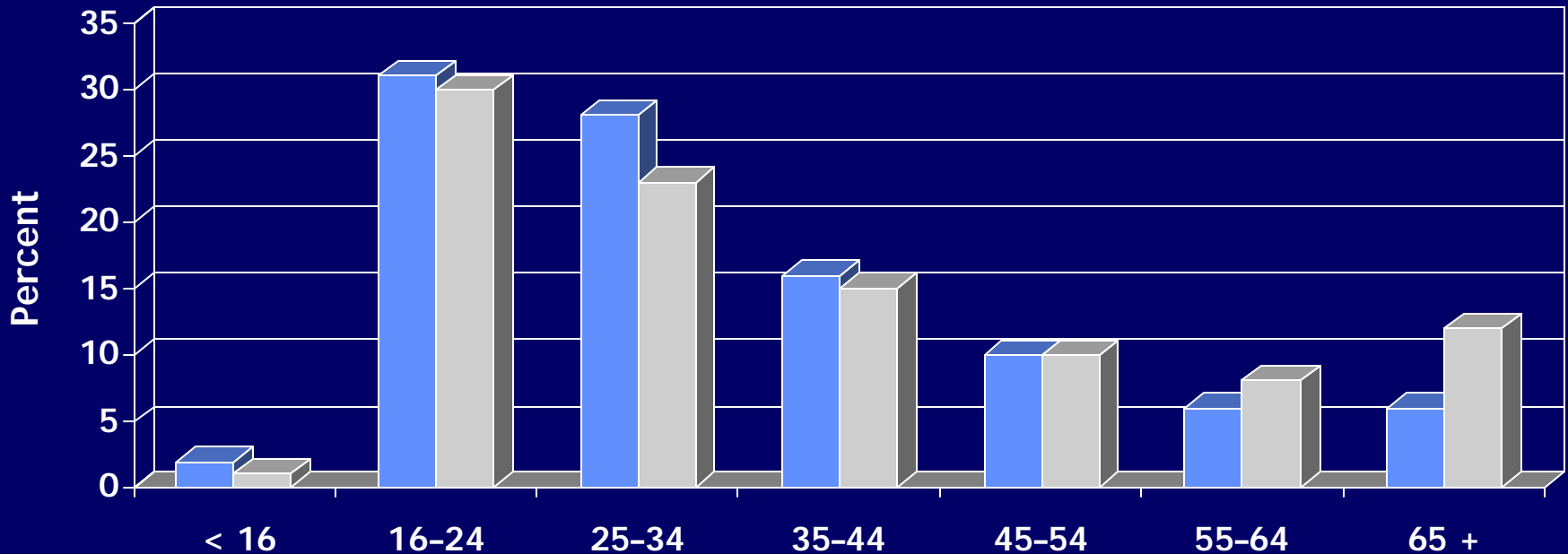
# More Younger Driver Fatalities



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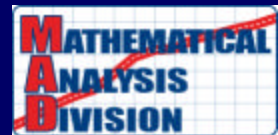


## Percent Driver Fatalities, by Age Group



Under 35 Years

61 percent Vs. 54 percent





# Occupant Fatalities by Restraint Use



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Over three-fourths (76%) of the 5,200 fatally injured passenger vehicle occupants on reservations were unrestrained at the time of the crash compared to 68% of the fatally injured passenger vehicle occupants in the nation.





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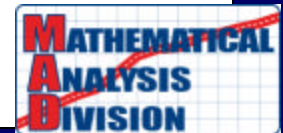
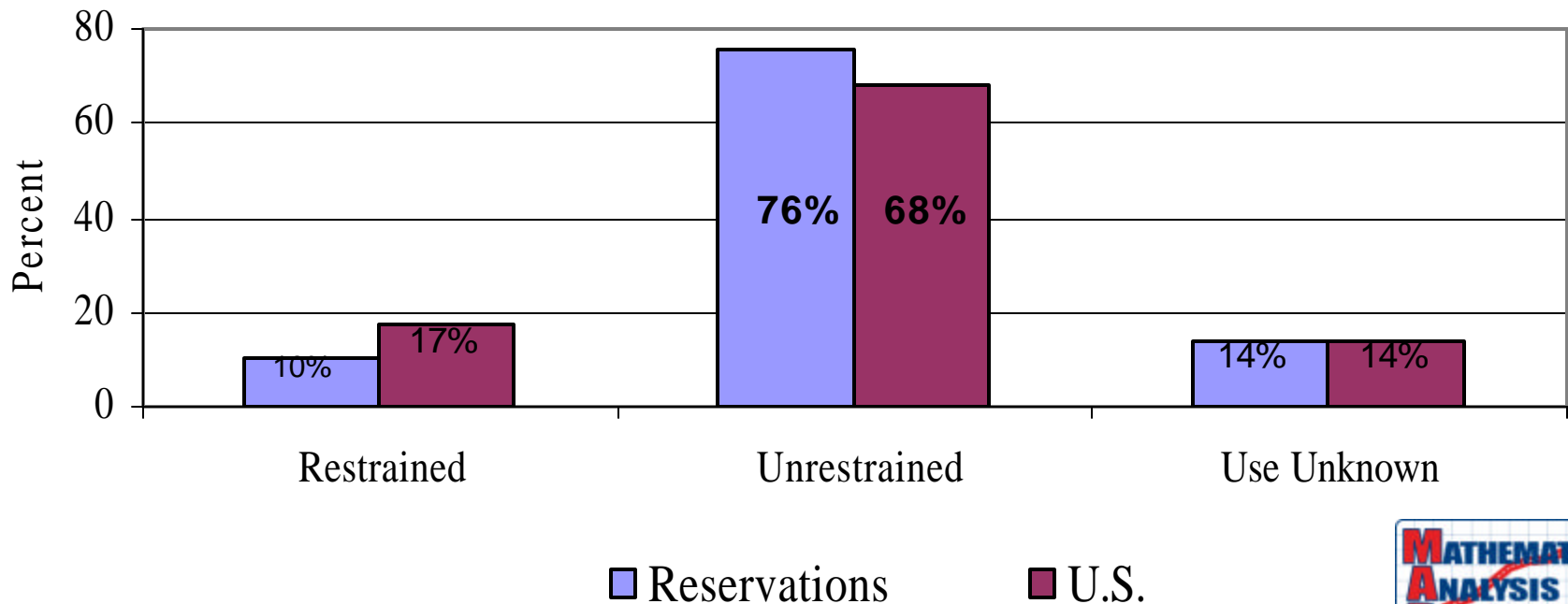
# Higher Percentage of Unrestrained Fatalities



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### Passenger Car and Light Truck Occupant Fatalities by Restraint Usage Reservations vs. U.S. 1975 - 2002





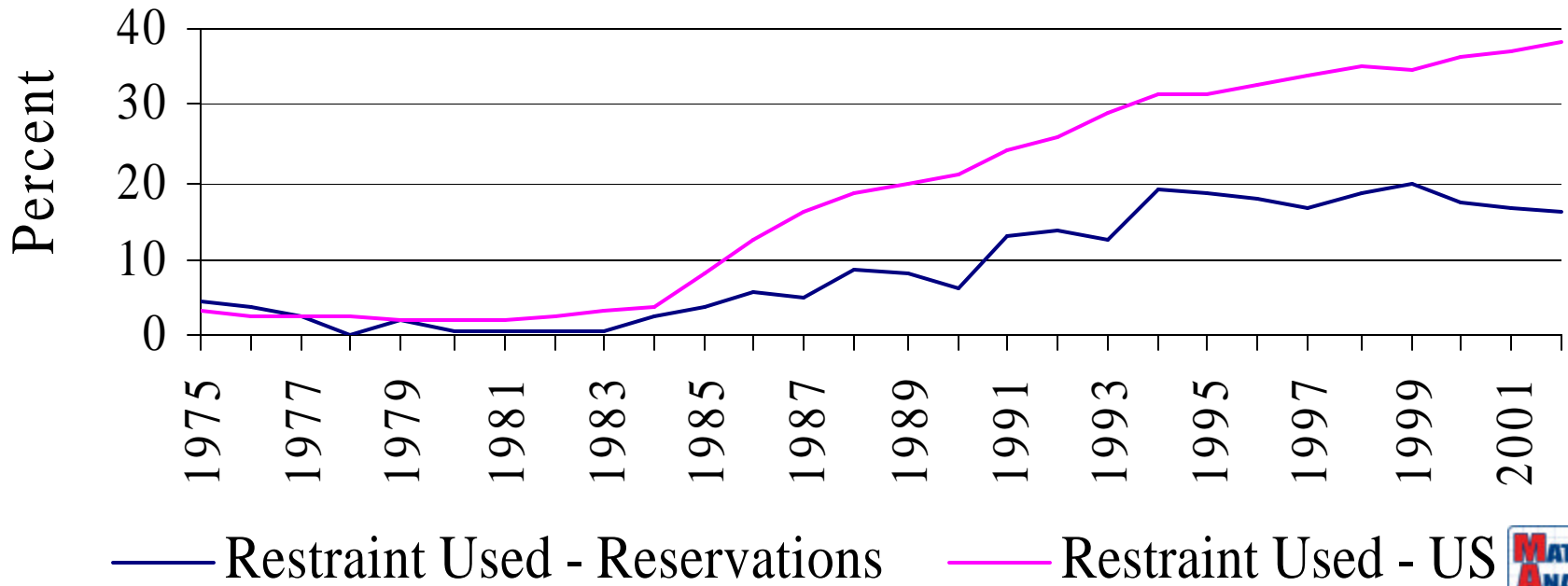
# Trend in Restrained Fatalities Lags



National Center for Statistics & Analysis



**Passenger Car and Light Truck Occupant Fatalities by Restraint Usage, Reservations vs. U.S.  
1975 - 2002**



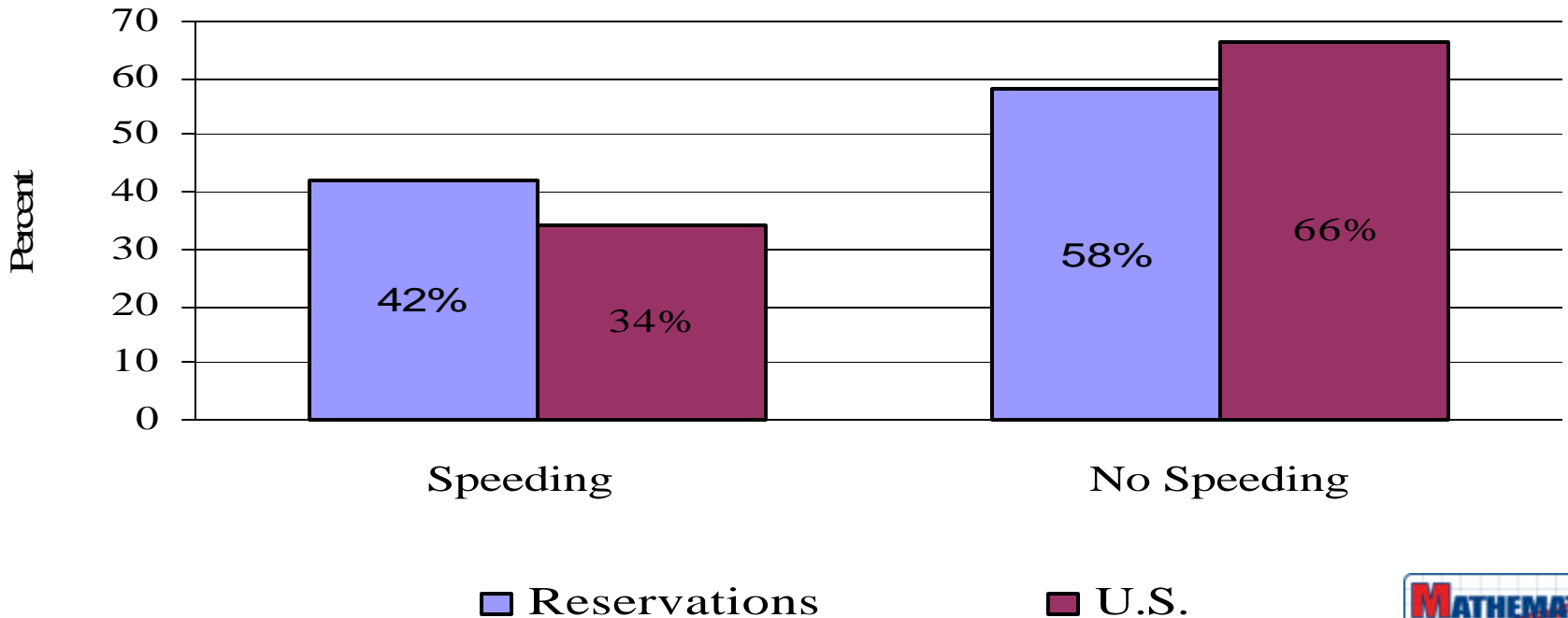
# More Speeding-Related Crashes



National Center for Statistics & Analysis



**Fatal Crashes by Speeding Status  
Indian Reservations vs U.S.  
1975 - 2002**





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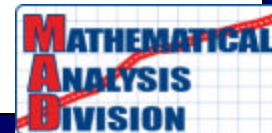
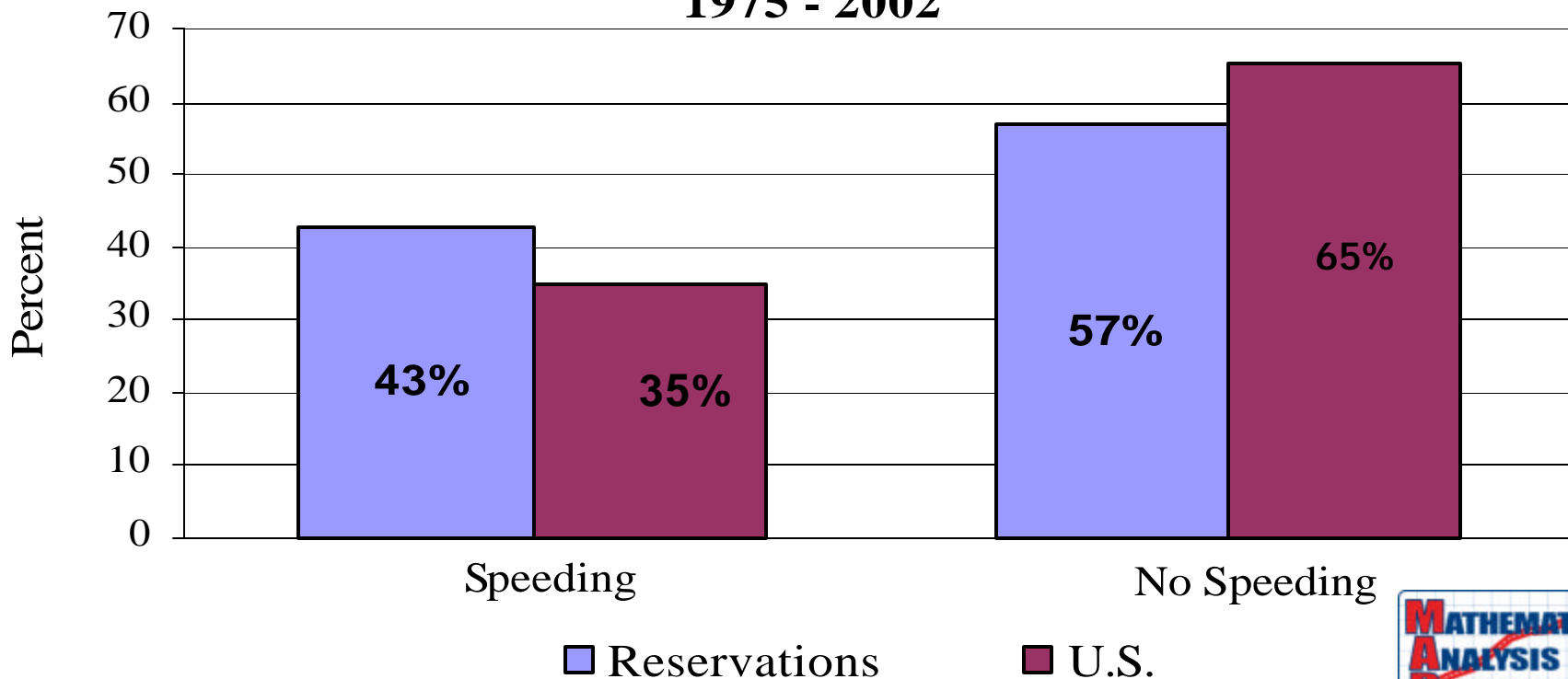
# Consequently, More Speeding-Related Fatalities



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### Fatalities by Speeding Status Indian Reservations vs U.S. 1975 - 2002





# *Trends in Alcohol*

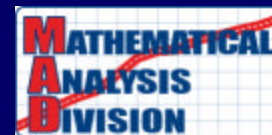


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The percentage of alcohol-related crashes on reservations has dropped from 72% in 1982 to 55% in 2002.

While nationally, the percentage of alcohol-related crashes has dropped 18 percent from 59% in 1982 to 41% in 2002.





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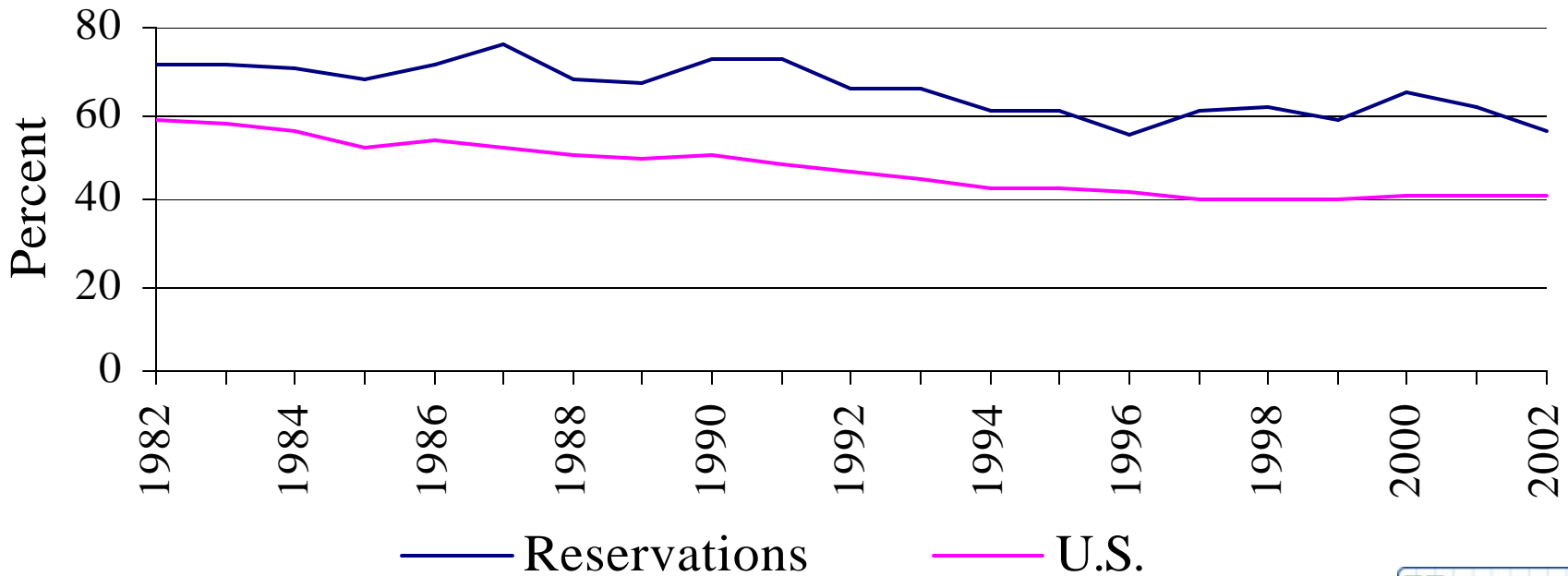
# More Alcohol-Related Crashes, but Trend is Down



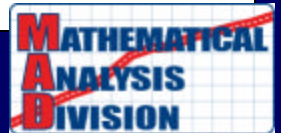
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### Percent Alcohol Related Crashes Reservations vs. U.S. 1982 - 2002



**72% to 55% vs. 59% to 41%**



For high risk Native Americans under 35 years old:

- specific safety programs
- specific education programs
- specific enforcement programs

At the Federal and state level:

- improved data collection
- improved record keeping



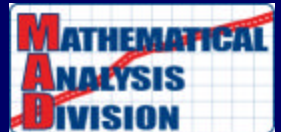
# *Fatal Motor Vehicle Crashes on Indian Reservations 1975 - 2002*



National Center for Statistics & Analysis



Specific safety, education & enforcement programs should be established for high risk Native Americans under 35 years old who make up 63% of the fatalities in motor vehicle crashes on Indian reservations. Also improvements in data collection and record keeping at the Federal and state level could result in better data for the FARS.





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# NCSA Contact Points

National Center for Statistics & Analysis



- **Website**

- ◆ [www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/](http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/)
  - NASS CDS/NASS GES/FARS Data Files

- **Crash Information**

- ◆ [www.nhtsa.dot.gov/people/crash/Index.html](http://www.nhtsa.dot.gov/people/crash/Index.html)

- **Data/Report Requests**

- ◆ Phone - 1.800.934.8517
- ◆ Fax - 202.366.7078
- ◆ Email - [NCSAWeb@nhtsa.dot.gov](mailto:NCSAWeb@nhtsa.dot.gov)

**My Contact Information...**

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