

Alaska Crash Outcomes Pilot Project: Data Linkage Project

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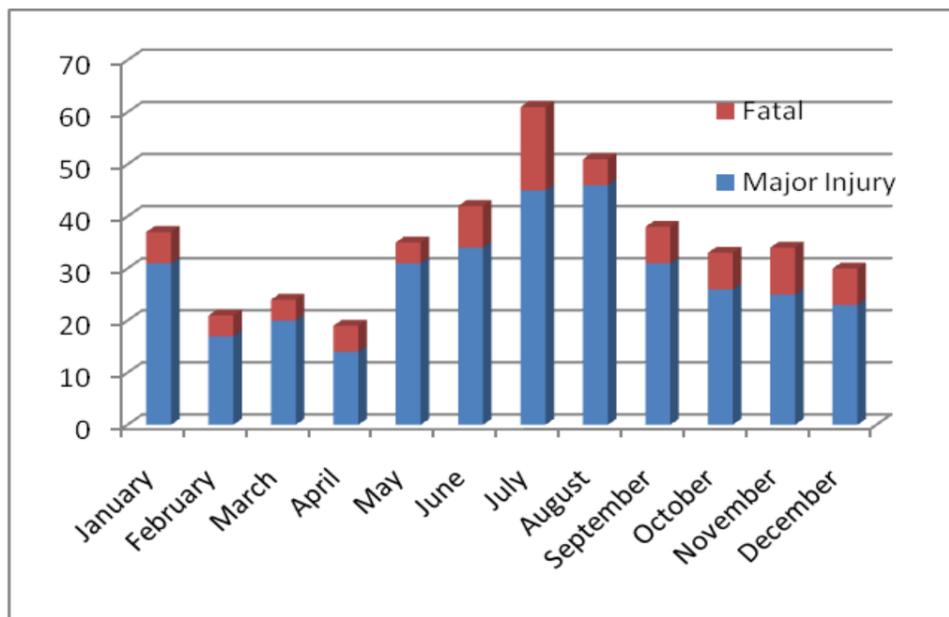
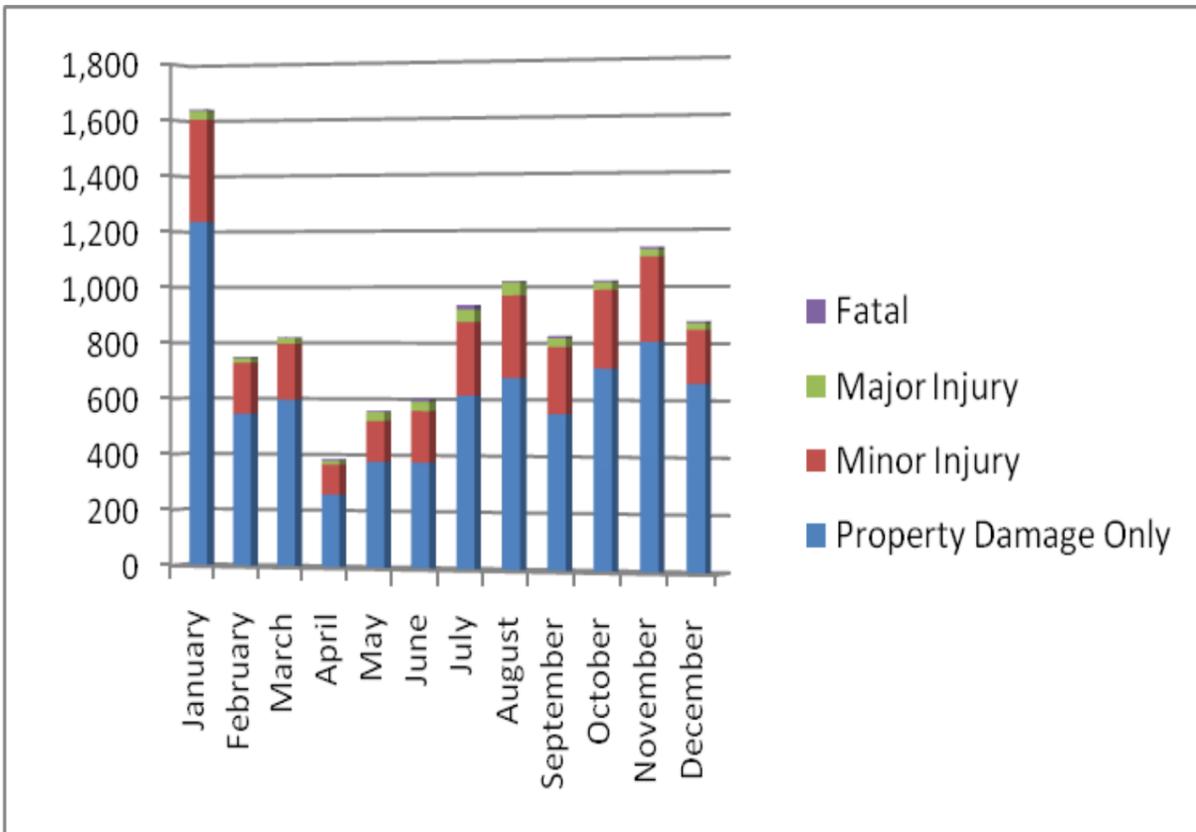
Project Objectives

1. Analyze characteristics of the crash, vehicles, and persons involved in crashes in relation to outcomes, to enable highway safety planners to prioritize strategies to reduce motor vehicle crash incidence; develop, post, evaluate and refine (with Advisory Committee input) regular reports;
2. Analyze, report, and post data on crash conditions and outcomes to identify potential strategies to reduce deaths and severity of injury; and
3. Demonstrate efficiency and efficacy of application of the accepted analytical software using Alaska data resources

Data from Alaska DOT, Public Safety, DHSS/DPH and ACOPP Project -- crash data, vital statistics, trauma registry and hospital discharge data.

Links: <http://dot.alaska.gov/stwdplng/hwysafety/index.shtml>, <http://www.hss.state.ak.us/dhcs/healthplanning/ACOPP/default.htm>

Alaska Crashes in 2007 – by month and injury severity



Source: Alaska Crash Data – Highway Analysis System (HAS)

Motor vehicle crash information is first recorded on an accident report form by the Alaska State Troopers, local police officers, or the accident participants. Law enforcement agencies and participants forward the reports to Driver Services, Division of Motor Vehicles (DMV), Alaska Department of Administration. DMV forwards a copy of each accident report to ADOT&PF's Division of Program Development, Highway Database Section.

Parks Highway Crash – at Fishhook-Willow Road, August 23, 2009

“Two taken to Mat-Su Regional Hospital...**non-life-threatening injuries**...**100 gallons of fuel spilled**...It was one of five accidents in the Willow area on Sunday and the only one with injuries, troopers said.

“Most of the accidents in the area [including this one] were caused by **impatient drivers** not slowing down in the rain, but **two were caused by drivers asleep at the wheel**...”



Outcomes of this crash included two people taken to the hospital who should show up on an ambulance run (or two), emergency department, and possibly in-patient service.

Anchorage Daily News, August 24

Outcomes – Examples

Depending on injuries, there may be charges that can be documented:

- Ambulance run \$
- Emergency Room \$
- In-patient stay \$
- Surgery, X-Ray, Lab Work, Procedures \$



Other charges/costs not reported (unless

Medicaid claims):

- Rehabilitation \$
- Physician or other clinician \$
- Time lost from work \$
- Other costs to individual, family, business \$
- Equipment or prostheses \$



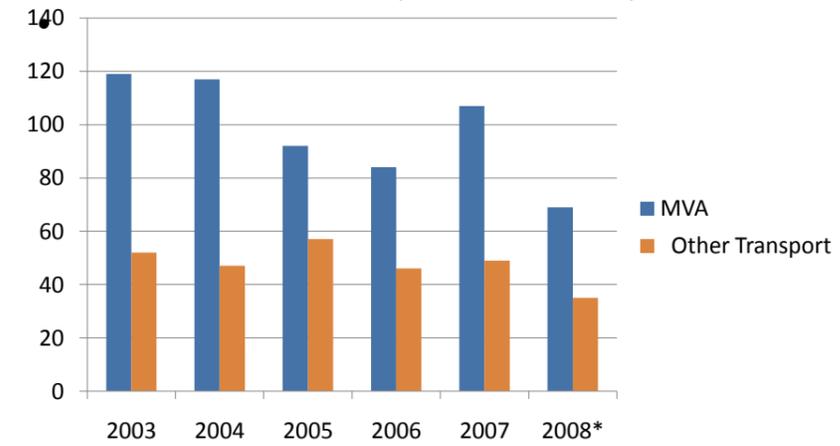
“Two Teens Die in Seward Highway Head-on”

Anchorage Daily News August 7, 2009

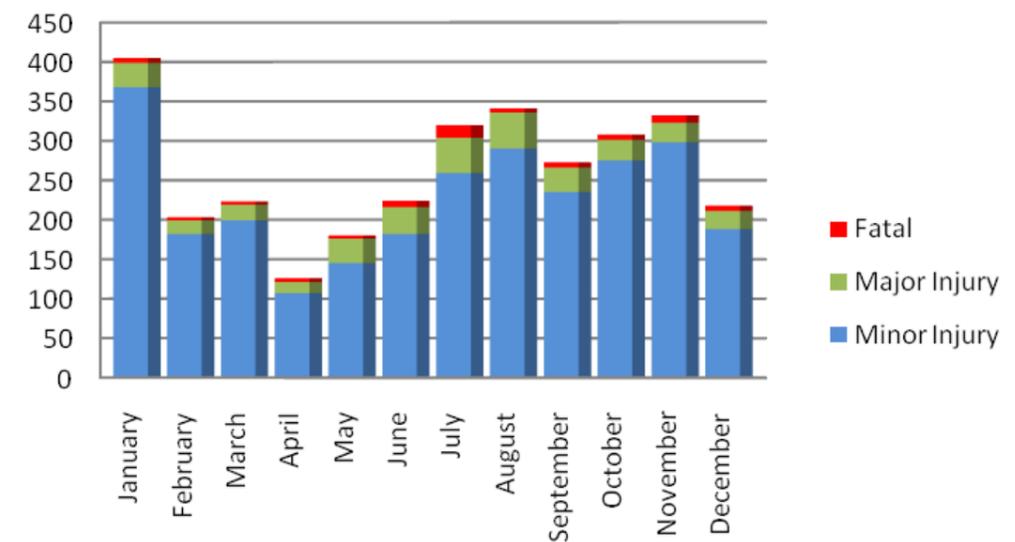


The teens did not cause the crash – a truck attempting to pass a long line of cars (in a passing zone) could not get back in line when opposing traffic appeared. The blue sedan was behind the U-Haul trailer that was knocked off the road by the first collision.

Deaths to Alaska Residents, due to Motor Vehicle Crashes and Other Transport Related Causes, 2003-2008 (Vital Statistics)



2007 Crashes by Severity of Injuries

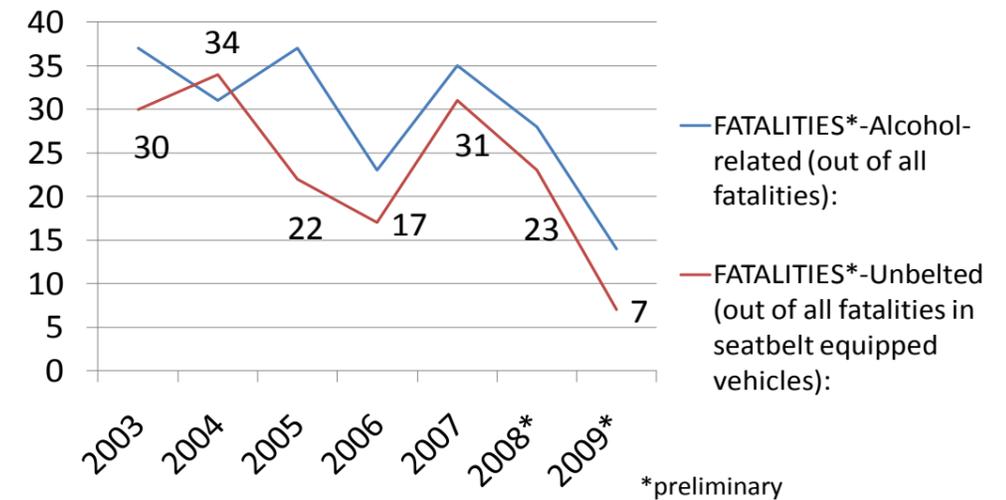


30% of crashes result in reported minor or major injury or death (crash reports to Alaska DMV, 2007)



Alcohol Use and Failure to Use Seat Belts Contribute to Fatalities

MVA Fatalities – Alcohol Related and Unbelted – in Alaska, by Year (FARS)



Data Sources:

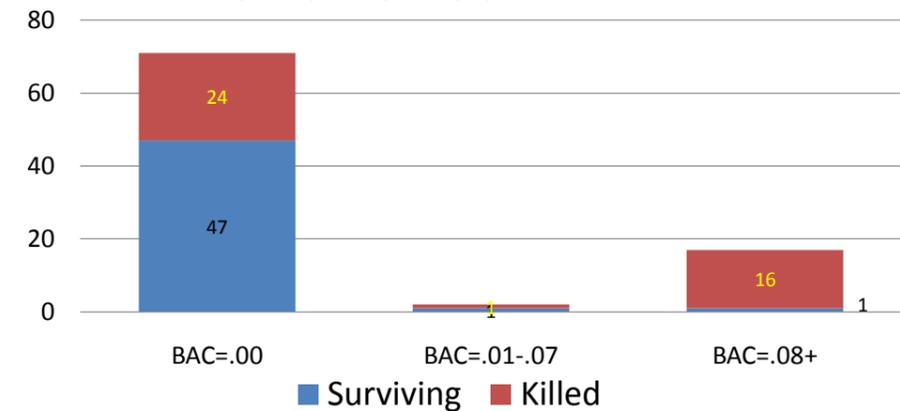
Highway Analysis System – Crash Reports (vehicle, person, roadway components)

Fatality Analysis Reporting System (FARS) – USDOT National Highway Traffic Safety Administration; AKDOT compiles/enters the data; includes all fatal crashes in Alaska

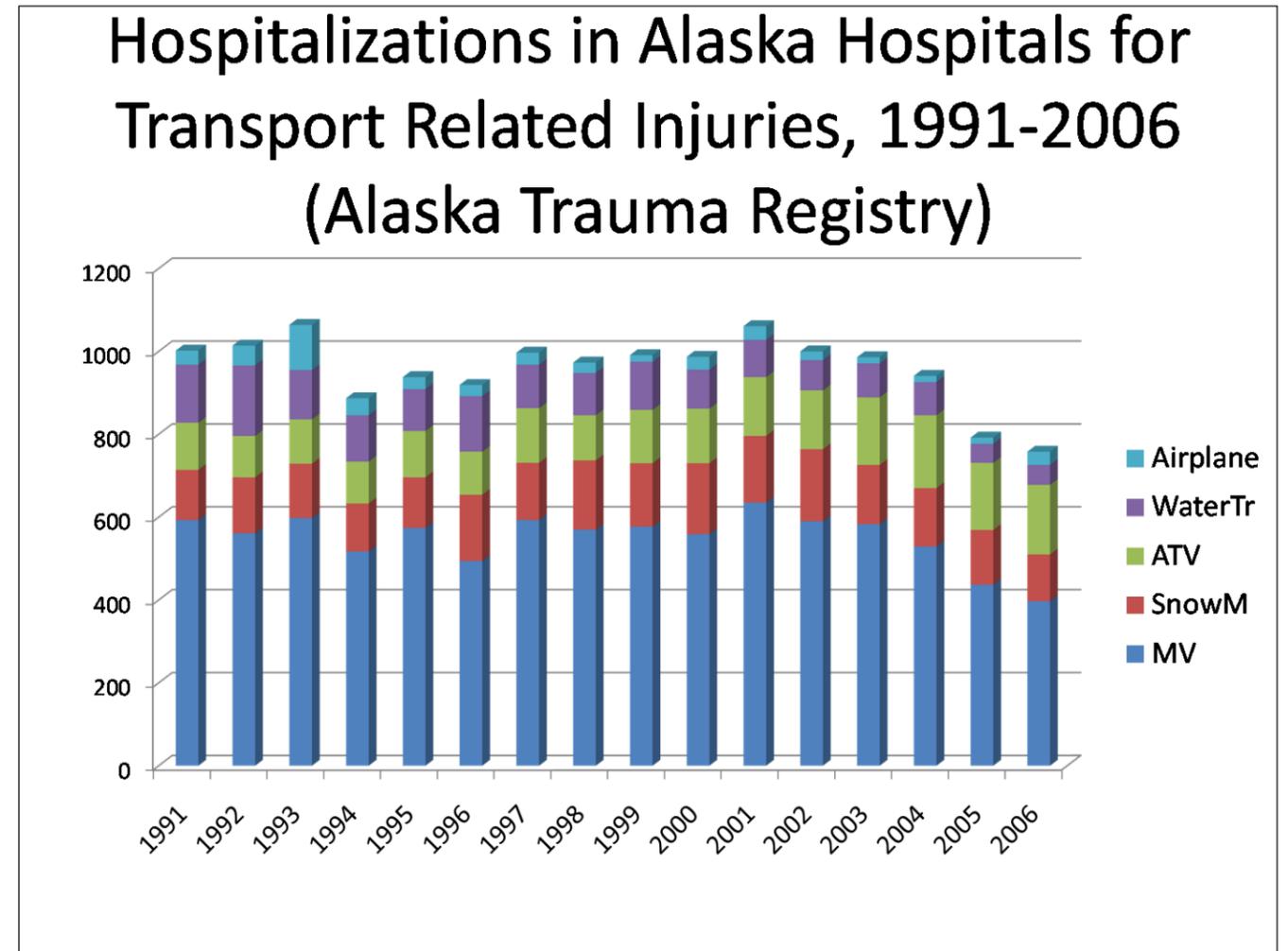
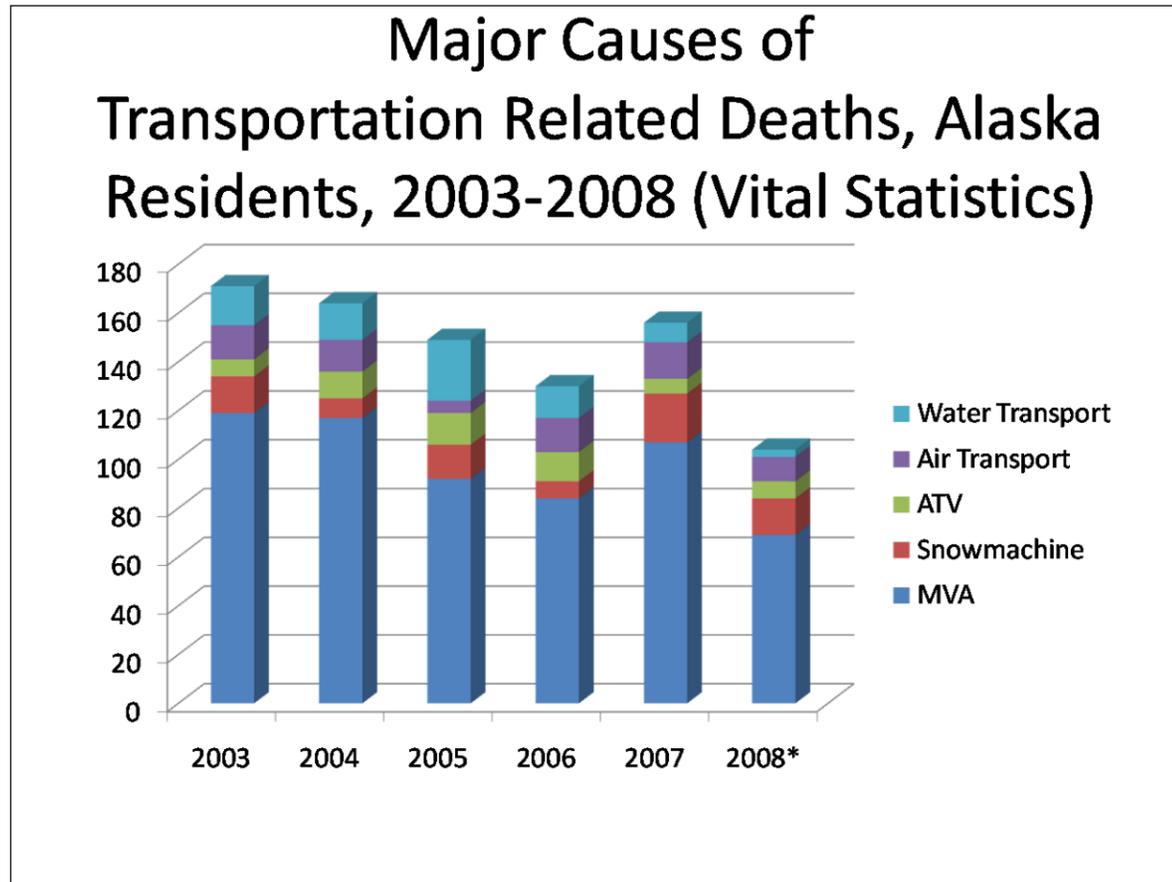
Alaska Department of Health and Social Services: Bureau of Vital Statistics, Alaska Trauma Registry, Hospital Discharge Data System, National EMS Information System (2009 forward).

Significance of Alcohol

Drivers Surviving or Killed, by Blood Alcohol Level (BAC)
Fatal Crashes in Alaska, 2008
(Fatality Analysis Reporting System, USDOT NHTSA)



Relation of Motor Vehicle Crash Injuries to Other Transportation Injuries



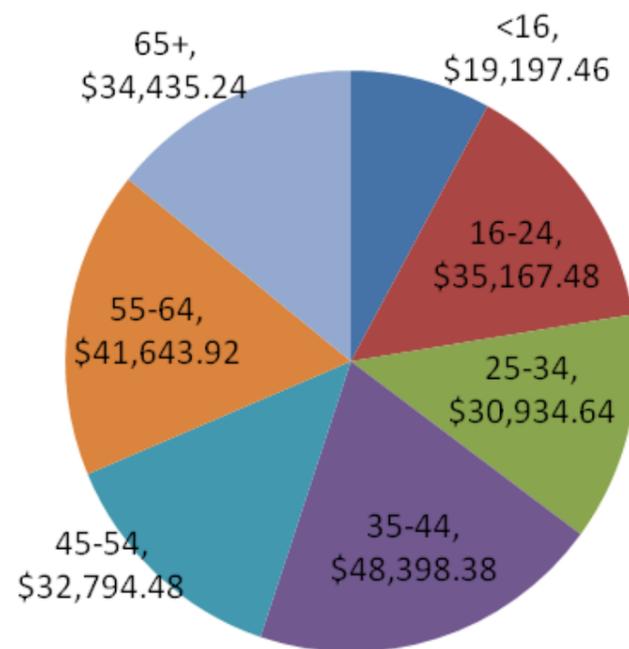
- ***Motor Vehicle Crash deaths and air and water transport hospitalizations and deaths have been generally coming down in the last five years.***

- ***All Terrain Vehicle and Snowmachine deaths and hospitalizations are increasing.***

Trauma Registry has Hospital Charge Data for about 80% of Hospitalizations

Young Adults Account for higher proportion of hospitalizations, but lower percentage of charges, than older victims

**Charges for MVA Related Injuries
2006, Alaska Hospitals
(Total=\$12.3M, Average \$35,683)**



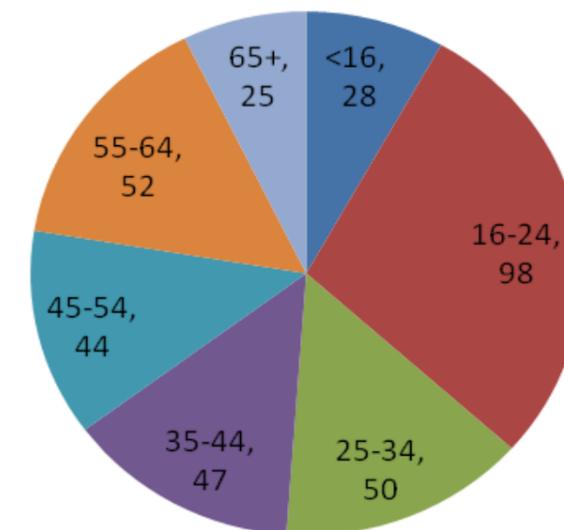
Intensive Care Unit (ICU) Patients: 25% spent time in an ICU. For those who spent any time in the ICU (2006):

\$7.6 million (more than half of the \$12.3 million total)

Average charge: \$87,497 (more than double the average of all MVA patients)

Discharge status: 34% were discharged to another acute care hospital; 16% to skilled nursing facility; 8% died (compared with 6% for all MVA patients).

**Alaska Trauma Registry
Hospitalizations 2006 for MVA
Injuries, by Age Group (N=344)**



(Note: some hospitalizations are not included here due to lack of charge information.)

“Crash Outcomes Data Evaluation System” – Data Linkage – Sponsored by National Highway Traffic Safety Administration and Alaska Highway Safety Office

Nineteen states are funded to use CODES Software, while Alaska and others are using “Linksolv” software to do probability matching of crash reports with hospital discharges. Alaska can use both Alaska Trauma Registry data which includes a narrative about the injury cause, and is based on an abstract of the medical record, and Hospital Discharge Data, based on billing records, and limited to the 16 of 22 acute care hospitals that are reporting.

Starting with 2008, Emergency Department data is available from ten hospitals, permitting additional analysis of visits that do not result in a hospital stay.

Emergency Medical Services in Alaska began reporting “pre-hospital” data about EMS visits and ambulance runs to the National EMS Information System (NEMIS) in 2009, so “pre-hospital” data will soon be available.

All data are “de-identified” so that individuals are not identified, and analysis aggregates the data so that tracking of particular cases will not be possible. Instead, analysis will focus on questions such as:

- Is there a match between the crash report assessment of “injury severity” and the actual amount of medical care obtained? How about other measures of “outcome” such as discharge status – to another hospital or nursing home, or to home health care?
- What are the associations between weather conditions, driver age, drug or alcohol involvement, use of restraints, season, road condition, and other factors and the severity of injuries and outcomes for the victims?
- Can the results be used by transportation safety engineers and injury prevention specialists to design effective programs?

Alaska Department of Transportation is upgrading traffic records systems and supporting a variety of efforts to improve planning, design, signage, and driver education and skills, to improve safety for people using the highways.



HSIP Tunnel Vision



Other Activities to Improve Safety: Road Surface Improvements, Sign and Signal Placement, Traffic Flow Re-design, Planning, Analysis...



Health and Safety Infrastructure. Workforce needs include health care, emergency services, public safety, highway/civil engineers, information technology workers, and mapping professionals.



Graph 1:

Most auto crashes occur during the winter months. In 2007, January saw over 1,600 auto crashes while April, the lowest month, registered fewer than 400. The summer driving peak saw July with 900 crashes and August with 1,000. Most winter crashes result in property damage only, while summer accidents have much higher rates of major injury and fatalities.

Graph 2:

In 2007, July and August saw the highest number of major injuries and fatalities resulting from auto accidents. July saw 60 cases, while August registered 50. January, which was the peak winter month saw only 35 major injuries or fatalities, while February had only 20 such cases.

Photo:

A white pickup truck with a large camper is shown driving the Parks Highway. It is autumn, with golden trees and a dramatic mountain range in the background.

Photo:

The photo taken near Willow shows a truck and trailer lying on its side in the ditch, with a second trailer still upright blocking a lane of traffic. An Alaska Trooper vehicle is on the scene and three emergency workers are in attendance.

Photo:

The photo shows a vehicle on its side and a U-Haul trailer upside down blocking the highway. A second severely damaged vehicle with its top torn away, passenger door open and personal items scattered in the ditch is in the foreground. Three Alaska State Troopers are examining the accident scene.

Graph 3

The graph shows deaths due to motor vehicle accidents and compares them with those due to other transport related causes from 2003 through 2008. Motor vehicle related deaths have shown a steady decline from 120 in 2003 to fewer than 70 in 2008. While the pattern is quite consistent, 2007 was an exception and showed a spike upward to over 100 motor vehicle related deaths. Deaths attributed to

other transport remains relatively flat over this time period, and usually registers between 40 and 60 such deaths per year.

Graph 4

This graph shows the number crashes and severity of injuries by month for the year 2007. While January has by far the highest total number of crashes with injuries with just over 400, over 370 of these are minor injuries. The period from February through June shows a dramatic drop in crash related injuries, with most months seeing about 200 total accidents involving injuries. The period of July through November shows a large increase in the number of accidents with injuries, with every month except September showing over 300 incidents. The severity of injuries and related fatalities also peak during this summer-autumn time frame.

Photo

The photo shows two emergency workers loading a patient into an ambulance. The caption of the photo deals with the fact that thirty percent of motor vehicle accidents involve minor or major injury or fatalities.

Graph 5

The graph shows the number of motor vehicle fatalities in accidents associated with alcohol and the number of deaths in accidents associated with not wearing seat belts over the period 2003 through 2009. Both show declines from the mid thirties per year in 2003, to less than 15 by 2009. It should be noted that both 2008 and 2009 are based on preliminary data. Still, there does seem to be a significant decline in both alcohol related fatalities and those associated with not wearing seat belts.

Graph 6

This graph shows the significance of alcohol in auto accidents in terms of drivers surviving crashes. Of the 71 auto accidents that involved fatalities in 2008 where the driver had consumed no alcohol, only 24 drivers died. Of the 17 fatal crashes where the driver's blood alcohol content was over .08, sixteen drivers died.

Graph 7

The graph shows the number of deaths associated with various forms of transportation from 2003 through 2008. While the total number of transportation related deaths shows a steady decline from 160 in 2003 to only 100 in 2008, almost all of the decline can be attributed to fewer auto related deaths. The number of snowmobile and all terrain vehicle deaths have remained more or less constant, while water and air transport deaths have fluctuated from year to year.

Graph 8

This graph show the number of hospitalizations in Alaska hospitals for transport related injuries from 1991 through 2006. From 1991 through 2001, the total number of such hospitalizations fluctuated from 900 to 1,000 each year. Auto accidents accounted for 500 to 600 of hospitalizations in this time frame.

The number of hospitalizations resulting from auto crashed fell from over 600 in 2001 to less than 400 in 2006. This accounted for the overall decline in hospitalizations from just over 1,000 in 2001 to approximately 750 in 2006.

Graph 9

The graph show the total cost of motor vehicle related hospitalizations in 2006 as being \$12.3 million, with an average cost being \$36,683 per hospitalization. It further shows the average cost per hospitalization by age group. For those under 16, the average cost per hospitalization is \$19,197, for those in the 16-24 age group it amounts to \$35,167, for those in the 25-34 age group the average amount is \$30,934 while those in the 35-44 age group average \$48,398. For those in the 45-54 age group the average cost is \$32,794, for those in the 55-64 age group it is \$41,643 and finally for those over 65, the average cost of a motor vehicle related hospitalization amounts to \$34,435.

Graph 10

This graph shows the number of motor vehicle related hospitalizations by age group in 2006. They are: In the under 16 age group there were 28 hospitalizations, in the 16 to 24 age group there were 98. In the 25 to 34 age group there were 50, while in the 35 to 44 age group there 47. The 45-54 age group accounted for 44, while the 55-64 age group accounted for 52. Finally, those over 65 accounted for only 25 hospitalizations.

Photo

This photo shows the Steven Richard traffic signal. As with the next photos, it shows how such things as regulating traffic speed and flow patterns can reduce the likelihood and severity of accidents.

Photo

This photo shows highway workers installing rumble strips on the edge of a northern region highway that will alert sleepy drivers if they stray onto the shoulder.

Photo

This photo shows a police vehicle parked on a snowy highway with an officer nearby. It is intended to show the role of enforcement in reducing accidents

SEWARD HIGHWAY: POTTER MARSH TO GIRDWOOD (MP 87) - 2006-2009* FATAL CRASH LOCATIONS - Post TRAFFIC SAFETY CORRIDOR DESIGNATION

(Including Major Injury Crashes) * from May 26, 2006 until October 13, 2009

Seward Highway Major Realignments

Timeline

- Potter South MP 111-115.2: Complete Fall, 1981
- Bird Flats to MP 111: Complete October 1983
- Bird Point to Girdwood: Complete June, 1996

- = Crash Occurred following TSC Designation
- = Major Injury Crash (2006-2009)

