ALASKA OBSERVATIONAL SURVEYS OF SEAT BELT USE 2010

Prepared by

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For the

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EXECUTIVE SUMMARY

The Alaska Highway Safety Office (AHSO) contracted with the Alaska Injury Prevention Center (AIPC) to conduct the 2010 observational surveys of seat belt use in Alaska. The Alaska Highway Safety Office, with support from the National Highway Traffic Safety Administration (NHTSA), participates in nationwide observational surveys of occupant restraint usage on an annual basis. This report details the results of the observational surveys of vehicles and occupants throughout Alaska.

The observations took place from June 1–15, 2010. Seat belt use was recorded for drivers and front seat outboard passengers in passenger cars, trucks, SUVs, vans, as well as helmet use for motorcyclists. A total of 26,731 vehicle occupants: 21,339 drivers and 5,392 outboard passengers were observed. Thirty-five percent (35%) of the observed vehicles were cars, 32% sport utility vehicles (SUV), 26% trucks, and 7% were vans. Motorcycles accounted for 564 of the observations.

A statistical sample of major and rural (i.e. local) roads in communities encompassing 85 percent of the state's population was selected for the surveys. The official "weighted" total share of occupants wearing seat belts in Alaska in 2010 was **86.8 percent**. This is a 0.7 percentage point increase over the observed rate in 2009, and the highest rate ever observed for Alaska. Rates for cars, vans, SUVs, and trucks were also analyzed. Eighty-seven (87%) percent of the front seat outboard "car" occupants, 89% of SUVs, 89% of vans, and 82% of truck occupants were using seat belts during these observations. Truck occupants, once again, had the lowest rate for any of the vehicle categories, but it was the highest usage rate recorded to date.

INTRODUCTION

Background

In June 1984, the Alaska State Legislature passed a law (AS28.05.095) requiring Children ages six and under to be restrained while being transported in a motor vehicle. In addition, children under the age of four years are to be transported in a restraint that complies with federal safety standards. In February of 1989, the Legislature amended the provision to require the use of safety belts by all occupants. To be eligible for certain federal grants, states must document levels of compliance with seat belt laws, as Alaska does annually. Alaska became a primary seatbelt law enforcement state in May 2006.

From 1997 through 2003, the Alaska Highway Safety Office contracted with the University of Alaska's Institute of Social and Economic Research (ISER) to conduct observational surveys of seat belt use in Alaska. The National Highway Traffic Safety Administration pays for observational surveys to be completed annually in each state to

determine the level of seat belt use. In 2004 - 2010, the Alaska Injury Prevention Center (AIPC) was contracted to conduct the observational surveys. The following report details the results of the observational surveys of seat belt use in Alaska in 2010.

DATA COLLECTION

Survey Design

AIPC used a population density, probability-based design to estimate the seat belt usage rates for the state of Alaska. All of the observations were completed in the month of June 2010. Our study design complies with criteria published on the *Electronic Code of Federal Regulations* website, which were updated as of June 24, 2003. The criteria can be found in the *Federal Register* 23 CFR, Chapter III, Subchapter D, Part 1340 – *Uniform Criteria for State Observational Surveys of Seat belt Use*. The e-CFR Data was current as of May 2010.

Primary Sampling Units (PSU) were selected from boroughs in Alaska which totaled more than 85 percent of the state's population and had an even greater percentage of the controlled intersections. All of the boroughs within the 85 percent demographic guideline had a probability of being selected as a PSU, which was proportional to their population and their total traffic volume. Within the boroughs selected, 264 observation sites were chosen in a stratified random sample design. This was done to accurately reflect the Alaska Department of Transportation & Public Facilities (AK DOT&PF) traffic estimates at controlled intersections with high, medium, and low traffic volume roads. The number of sample sites per city was determined by a proportional percentage of the state's average annual daily vehicle volume and by the relative population density of that community. Stratification for traffic volume differences was completed during the design phase by dividing the total traffic volume in each community into three equal strata by traffic volume. Next, an equal number of randomly selected sites from high, from medium, and from low traffic volume intersections were selected. This process provided a greater percentage of sample sites in small communities than in large communities.

The Alaska DOT&PF supplied AIPC with a list of all controlled intersections in the state and their average daily traffic volume (latest data from 2008). From this list, we used a random number generator program to select the specific intersections needed for inclusion in our sample for each community. Once the intersections were identified, AIPC developed observer schedules by randomly assigning the intersections to morning or afternoon shifts, then systematically alternating the direction of traffic flow (i.e., north, south, east, or west) as much as practical for the physical layout of the streets. The survey sites within each community were grouped to reduce driving distances but the first site for each shift was randomly selected.

Trained observers recorded shoulder belt use by drivers and outboard passengers at selected intersections, for forty-five minute periods, between 7:30 a.m. and 9:00 p.m. in June 2010.

Training

The Contractor (Ron Perkins, MPH) individually trained each observer. A training manual was developed and given to each observer. The training covered each section of the manual and required feedback from the observer to ensure understanding of the methodology. Five of the six observers had conducted these observations in previous years. Several sites were visited during the surveys to make sure the observer understood how to read the map, determine the direction of traffic to be measured and where to stand.

Each observer was given a work schedule which included the days, times, locations, and traffic directions to be observed. A detailed map for each site was also included to reduce confusion. Observers were encouraged to call with any discrepancies or questions, and were given instructions on what to do if a site could not be observed. Unannounced visits were made to some of the sites to insure that the observers were at the correct location at the right time.

This was the seventh year for using voice recorders to document seat belt usage rates. This method eliminated the need to look down while writing, and the problems associated with writing in inclement weather. The downside of using recorders was that observations could be made too quickly for computer entry. This problem was overcome by contracting with a transcriptionist who could slow down the tape when necessary.

Observation Methodology

Each observer recorded seat belt use at predetermined intersections for eight, forty-five minute periods per shift. The shifts were either “AM”, from 7:30am to 3:30pm or “PM”, from 1pm to 9pm. Daily observation sites were grouped geographically to facilitate moving from one site to the next within the 15-minute transition time allotted.

Observers used an Olympus DM-520 digital recorder to record their observations. These recorders were introduced this year and were a tremendous asset in facilitating the transcription process. The observers recorded information on each non-commercial, non-emergency passenger vehicle at controlled intersections. Observers were instructed on what to do if traffic was moving too quickly to record information on each vehicle, or if they couldn’t observe at the specified site. Finally, observers recorded any comments they felt might be helpful when interpreting the data.

DATA ANALYSIS

Weighting

Observations at each site were weighted according to the site’s final probability of selection. To accomplish this step, the average annual daily traffic volumes for all of the boroughs in the sample pool were considered and then traffic volumes for each stratum within the borough were calculated. The next step was to calculate each site’s

probability of selection and weight the observations accordingly, using *SPSS 15*. This phase of the process was accomplished by statistician, Ivan Moore.

When selecting the number of observation sites per community, the possibility of disproportionate population and traffic volumes was taken into consideration. To protect against this, the less populated boroughs were over-sampled during the design phase of the study. The Raosoft Sample Size Calculator (www.raosoft.com/samplesize.html) was used to determine the number of intersections that needed to be sampled in each community, based on the margin of error limitations and the total number of intersections available. The number of sample sites required in each borough was then divided evenly among the three strata for random selection.

Intersections were assigned to the observers with respect to time of day, day of week, and average annual daily traffic volume. An equal number of randomly selected survey sites from low, medium, and high traffic volume intersections were selected for sampling within each community.

After data collection was complete, AIPC analyzed the data using *SPSS 15*. SPSS is a program for managing data and performing statistical analyses and it is particularly adept at manipulating data sets with many cases and variables.

Results

The surveyors observed a total of 26,731 vehicle occupants (21,339 drivers and 5,392 outboard passengers) in 2010. Thirty-five percent (35%) of the observed vehicles were cars, 32% sport utility vehicles (SUV), 26% trucks, and 7% were vans.

During the 2010 observation period in Alaska, the weighted data showed that 87.4 percent of the drivers and 84.6 percent of the outboard passengers were wearing seat belts. The total proportion of occupants wearing seat belts was **86.8 percent.** Trucks were the third largest vehicle category and once again had the lowest, although improved, usage rate at 82.2%. There were 564 motorcycles (611 riders) in the sample, with 74.1% of the drivers and 80.9% of the passengers wearing helmets. Motorcycle passengers helmet usage in 2010, dropped by 16% from previous years. Alaska State law requires helmets for passengers but not for drivers of motorcycles.

The following graph shows the trend line of seat belt use in Alaska from 1999 – 2010.

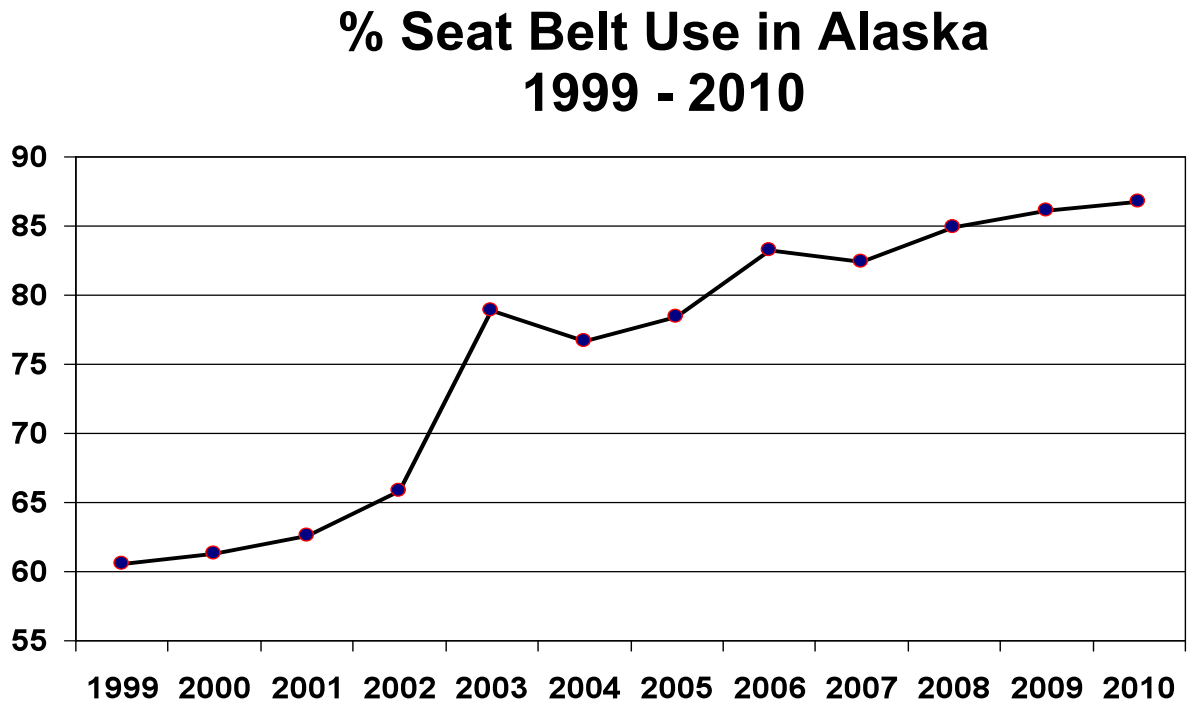

Table 1 shows the percent of drivers, passengers, and combined occupants who were wearing seat belts and the change across study years (weighted).

Table 1: Seat belt Use in Alaska, 2004-2010

		2010	2009	2008	2007	2006	2005	2004
All Vehicles	Share of Drivers Belted	.874	0.866	0.859	0.828	0.834	0.785	0.772
	Share of Passengers Belted	.846	0.841	0.812	0.810	0.825	0.779	0.750
	Share of Occupants Belted	**.868**	**0.861**	0.849	0.824	0.832	0.784	0.767
Cars	Share of Drivers Belted	.879	0.888	0.878	0.856	0.842	0.797	0.798
	Share of Passengers Belted	.852	0.854	0.801	0.828	0.829	0.777	0.756
	Share of Occupants Belted	**.873**	**0.882**	**0.862**	**0.850**	**0.840**	0.793	0.789
Vans	Share of Drivers Belted	.899	0.874	0.898	0.859	0.887	0.838	0.810
	Share of Passengers Belted	.869	0.879	0.864	0.841	0.881	0.837	0.800
	Share of Occupants Belted	**.892**	**0.876**	**0.889**	**0.854**	**0.885**	0.838	0.808
SUVs	Share of Drivers Belted	.898	0.883	0.883	0.854	0.869	0.827	0.812
	Share of Passengers Belted	.876	0.858	0.844	0.834	0.853	0.830	0.786
	Share of Occupants Belted	**.894**	**0.879**	**0.874**	**0.850**	**0.865**	0.827	0.806
Trucks	Share of Drivers Belted	.830	0.813	0.792	0.753	0.770	0.716	0.689
	Share of Passengers Belted	.789	0.782	0.764	0.742	0.761	0.706	0.685
	Share of Occupants Belted	**.822**	**0.806**	**0.787**	**0.750**	**0.768**	0.714	0.689

According to federal guidelines, the reliability of the survey results should be within the 95 percent confidence interval. The **standard error was determined to be 0.002**. The data were analyzed and found to be well within a confidence interval of 95% as required by NHTSA guidelines.

Regional Differences

Survey results reflect restraint use by the driver and outboard passenger in a probability sample of vehicles drawn from the most populated areas of Alaska. Included in the potential sample sites were the Municipality of Anchorage, the Matanuska-Susitna, Juneau, Kenai Peninsula, and Fairbanks North Star Boroughs, as well as the boroughs of Kodiak, Ketchikan, and Sitka, which were not selected, in the random sample.

Table 2 presents the share of drivers, passengers, and occupants who were wearing seat belts, sorted by region and the changes across years. The table presents data from 2004 through 2010.

Table 2: Seat belt Use by Region

All Vehicles		**2010**	**2009**	**2008**	**2007**	**2006**	**2005**	**2004**
All Regions	Drivers Belted	0.874	0.866	0.859	0.828	0.837	0.785	0.772
	Passengers Belted	0.846	0.841	0.812	0.810	0.832	0.779	0.750
	Share of Occupants	**0.868**	0.861	0.849	0.824	0.832	0.784	0.767
Anchorage	Drivers Belted	0.894	0.875	0.874	0.839	0.848	0.821	0.812
	Passengers Belted	0.861	0.853	0.828	0.808	0.838	0.781	0.775
	Share of Occupants	**0.888**	0.871	0.865	0.833	0.846	0.812	0.804
Fairbanks	Drivers Belted	0.844	0.855	0.841	0.822	0.820	0.738	0.692
	Passengers Belted	0.848	0.835	0.783	0.797	0.755	0.675	0.658
	Share of Occupants	**0.845**	0.851	0.828	0.817	0.807	0.724	0.684
Juneau	Drivers Belted	0.803	0.796	0.816	0.770	0.758	0.839	0.724
	Passengers Belted	0.767	0.769	0.814	0.770	0.684	0.813	0.750
	Share of Occupants	**0.797**	0.793	0.815	0.770	0.745	0.833	0.730
Kenai/Soldotna	Drivers Belted	0.842	0.849	0.756	0.729	0.785	0.770	0.765
	Passengers Belted	0.768	0.840	0.709	0.717	0.819	0.797	0.817
	Share of Occupants	**0.823**	0.847	0.745	0.726	0.793	0.777	0.778
MatSu	Drivers Belted	0.823	0.864	0.837	0.803	0.784	0.687	0.767
	Passengers Belted	0.809	0.791	0.795	0.893	0.890	0.803	0.735
	Share of Occupants	**0.819**	0.849	0.826	0.826	0.809	0.716	0.759

Table 2 shows seat belt use in Alaska has risen 11.6 percent from 2004 to 2010. The greatest annual increase was from 2002 to 2003, when seat belt use by all occupants rose by 20 percent. In the 2010 surveys, there were slight changes across the state, but none were significant. Anchorage had the highest seat belt usage of any area in the state since the observational surveys began in 1997.

Table 3 presents the vehicles and the percentage of seat belt use by drivers and passengers in each borough sampled in 2010.

Table 3: Occupant Restraint Use (%) by Vehicle Type & Borough - 2010

	Area Wide		Anchorage	Fairbanks	Juneau	Kenai	Mat-Su
ALL VEHICLES							
Drivers Belted	87.4		89.4	84.4	80.3	84.2	82.3
Passengers Belted	84.6		86.1	84.8	76.7	76.8	80.9
% of Occupants Belted	**86.8**		**88.8**	**84.5**	**79.7**	**82.3**	**81.9**
CARS							
Drivers Belted	87.9		89.8	84.9	82.0	84.0	81.6
Passengers Belted	85.2		87.0	85.1	77.6	73.1	79.6
% of Occupants Belted	**87.3**		**89.3**	**85.0**	**81.3**	**81.3**	**81.2**
TRUCKS							
Drivers Belted	83.0		87.0	77.5	69.7	79.6	78.1
Passengers Belted	78.9		80.9	78.0	58.3	74.4	77.6
% of Occupants Belted	**82.2**		**85.9**	**77.6**	**68.3**	**78.4**	**78.0**
SUVS							
Drivers Belted	89.8		90.5	89.6	85.1	89.2	86.5
Passengers Belted	87.6		87.9	90.2	82.4	82.5	84.1
% of Occupants Belted	**89.4**		**90.0**	**89.7**	**84.7**	**87.5**	**85.9**
VANS							
Drivers Belted	89.9		90.1	91.1	87.5	89.1	89.8
Passengers Belted	86.9		87.9	86.2	85.7	81.5	84.3
% of Occupants Belted	**89.2**		**89.5**	**89.9**	**87.1**	**86.8**	**88.2**
MOTORCYCLES							
Driver Helmeted	74.1		81.7	76.8	72.1	62.4	66.0
Passenger Helmeted	80.9		66.7	100	n/a	87.5	85.7
% of riders Helmeted	**74.6**		**80.8**	**77.5**	**72.1**	**65.8**	**68.4**

Table 3 shows that seat belt usage rates for Juneau “truck” occupants was much lower than the state averages. Juneau’s occupant restraint usage rates continue to lag

behind the other communities in Alaska. Motorcycle helmet use for passengers dropped this year.

Cell Phone Use
To establish a baseline, surveyors in all communities were asked to document cell phone use for the driver of the vehicle. The observed cell phone usage rate for drivers was 5.1% in the 2010 Alaska NOPUS surveys. The observed usage rates by borough were: MatSu 8.0%, Kenai/Soldotna 6.0%, Anchorage 5.0%, Fairbanks 4.9%, and Juneau 2.0%.

Daytime Headlight Use
The use of daytime headlights on motor vehicles is a proven crash prevention strategy, so we measured the frequency of their use: Anchorage 45.5%, Fairbanks 45.3%, Juneau 22.9%, Kenai/Soldotna 29.3%, and MatSu 30.3%. Of the 21,339 cars observed, 42.5% had their headlights on during daylight hours.

Conclusion
The overall observed seat belt usage rate for Alaska increased to its highest level to date in 2010. This rate included slight increases in some areas and declines in other areas. The sampling methods and statistical analyses used in this survey yielded results well within the parameters required by the Alaska Highway Safety Office and the National Highway Traffic Safety Administration. SUV and van occupants were again the leaders for seat belt usage, but some gains were made by truck occupants this year. The lowest seat belt usage rates by vehicle were still truck occupants, but the Juneau rates for truck drivers and especially passengers were very low. With only a couple of exceptions, passenger usage rates were lower than that of the drivers. Overall, there were slight decreases in MatSu, Kenai/Soldotna, and Fairbanks from 2009. One disturbing finding was that cell phone use was highest and motorcycle helmet use was lowest in the rural regions of the state. Rural regions typically have higher crash fatality rates due to high traffic speeds, narrow roads, poor lighting, and animal collisions.

Future interventions may want to target passengers in general, and truck passengers in particular. Motorcycle helmet use, especially for passengers should be increased.

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