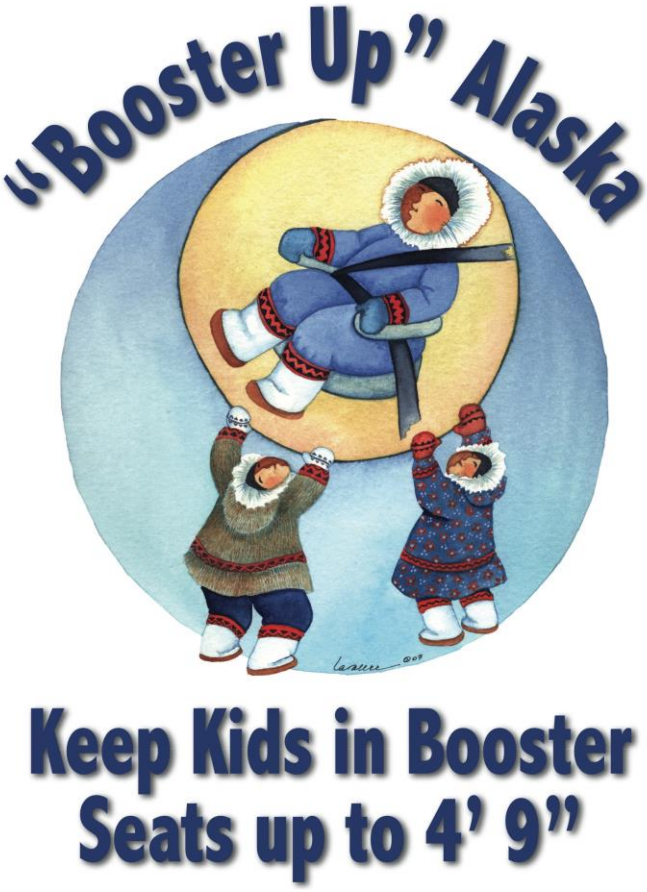
Alaska Booster Seat Use 2009-2018

A Nine-Year Follow-Up Observational Study of Child Passenger Safety Device Use



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Executive Summary

The purpose of this study was to observe and assess the child passenger safety practices of children four to seven years old (defined as booster seat aged children) in six communities across Alaska. This study will also serve as a follow up to previous booster seat observation studies conducted in the Anchorage Borough by the Center for Safe Alaskans (Safe Alaskans).[1]

Data from this study were collected at nine supermarkets located in the Alaskan Boroughs of Fairbanks North Star, Juneau, Anchorage, Matanuska-Susitna and Kenai Peninsula. Based on the responses provided by their caregivers, children between the ages of four and seven, under 65 pounds, and under 4'9" were included in the study sample. A total of 311 children were included in the statewide analysis. The statewide age-adjusted prevalence of children appropriately restrained in a booster seat using a lap and shoulder belt or a five-point harness car seat was 70.9% (*n* = 218). Ninety-five percent of children were seated in the back seat. In Anchorage, appropriate use started with a low of 48% in 2009, peaked in 2013 at 84% and decreased to 65.8% in 2018.

Introduction

Children that have outgrown forward-facing car seats, but are still less than 4'9" should use a booster seat, as seat belts are not designed for children. Booster seats position children so the seat belt fits over the strongest bones of the body. Children aged 4 to 8 using booster seats are 45% less likely to sustain injuries in a motor vehicle crash than children in the same age range using only the seat belt (Arbogast, K.B., Jermakian, J.S., Kallan, M.J., & Durbin, D.R, 2009).

In September 2009, Alaska law began requiring children over 4 years and less than 8 years of age who are under 4'9" and less than 65 pounds to be properly secured in a car seat or booster seat (AS 28.05.095). Prior to the law going into effect the Center for Safe Alaskans, along with multiple partners, conducted a pre-legislation observational study in the Municipality of Anchorage to determine a baseline measure of appropriate child passenger safety restraint use for children within that population. After the law went into effect and a multi-media promotional campaign had been implemented, additional observational studies were conducted in October 2009 and July 2010 and 2011. In July and August 2013, a four-year follow-up observation was conducted. In June 2018, a nine-year follow up observation was conducted using the same methodology in the Anchorage Borough and expanded to include the following Boroughs: Juneau, Fairbanks Northstar, Matanuska-Susitna, and the Kenai Peninsula.

The Center for Safe Alaskans and statewide partners plan to utilize the results of the booster seat observation studies to demonstrate the efficacy of child passenger safety restraint laws,

[1] At the time of previous studies, the Center for Safe Alaskans was operating as the Alaska Injury Prevention Center (AIPC). In 2018 AIPC began doing business as the Center for Safe Alaskans (Safe Alaskans). Throughout this report, the name Center for Safe Alaskans (Safe Alaskans) will be used to reference both current and past work.

develop media campaigns and educational programs, as well as to set priorities and goals for future efforts.

Methods

Each of the observations of child passenger safety practices were conducted at nine supermarkets across the State located in the Boroughs of Fairbanks North Star, Juneau, Anchorage, Matanuska-Susitna, and Kenai Peninsula. Based on the responses provided by their caregivers, children between the ages of four and seven, under 65 pounds, and under 4'9" were included in the study sample. Descriptive statistics and frequency analyses were assessed for all study variables.

The store locations were chosen to capture socioeconomic diversity across neighborhoods within each community. Prior to the observations, the Center for Safe Alaskans obtained permission from the Carrs Safeway Alaska District Office to conduct booster seat observations at select Carrs Safeway locations throughout Alaska. After obtaining permission from the Carrs Safeway District Office each store manager was notified of the study. Prior to beginning their observations, observers contacted store managers at each of the nine selected stores to receive permission at the individual store level.

Certified Child Passenger Safety Technicians trained on observation and study protocol completed the booster seat observations. Where possible, two observers were assigned to each location so that multiple store entrances could be observed. Observers watched store doors to identify caregivers exiting the store with at least one child who appeared to be between the ages of four and eight years old. Observers approached the caregiver and asked the caregiver if they were willing to answer three questions regarding car seat safety. Caregivers that agreed to answer were asked the child's age, weight, and height. The observer then noted the child's seating position in the car, the type of child passenger safety restraint used, and the child's gender.

Child passenger safety restraints were categorized as: a lap only seat belt, a shoulder lap seat belt, a car seat with harness (3pt, 5pt, tray, shield or vest), a no back booster with a shoulder lap seat belt, a no back booster with a lap only seat belt, a high back booster with shoulder lap seat belt, a high back booster with lap only seat belt, or a shield booster. As Certified Child Passenger Safety Technicians, all observers were previously trained to recognize all child passenger safety and seat belt types. The survey did not assess whether the child restraint or booster was properly installed. Both caregivers that refused and those that answered the survey questions were thanked for their time and offered an educational pamphlet. After obtaining permission from their caregiver, Center for Safe Alaskans Observers gave children a sticker promoting booster seat use.

Only children that met inclusion criteria were included in the analysis. In keeping with Alaska booster seat law, children were excluded from analysis if they were over 65 pounds, over 4'9", younger than 4 or older than 8. Statistical analyses were performed using IBM SPSS Statistics

Version 23.0. Descriptive statistics and frequency analyses were assessed for all study variables.

Results

A total of 290 children meeting inclusion criteria were observed during the 2018 booster seat use observations in 5 Boroughs across Alaska.

Statewide

Statewide, 49.5% of youth observed were males (*n* = 154) and 50.5% were females (*n* = 157). Ages of youth observed ranged from 26% were 4-years-old (*n* = 81), 28% were 5-years-old (*n* = 87), 20.9% were 6-years old (*n* = 65) and 24.4% were 7 years old (*n* = 76). See Table 1.

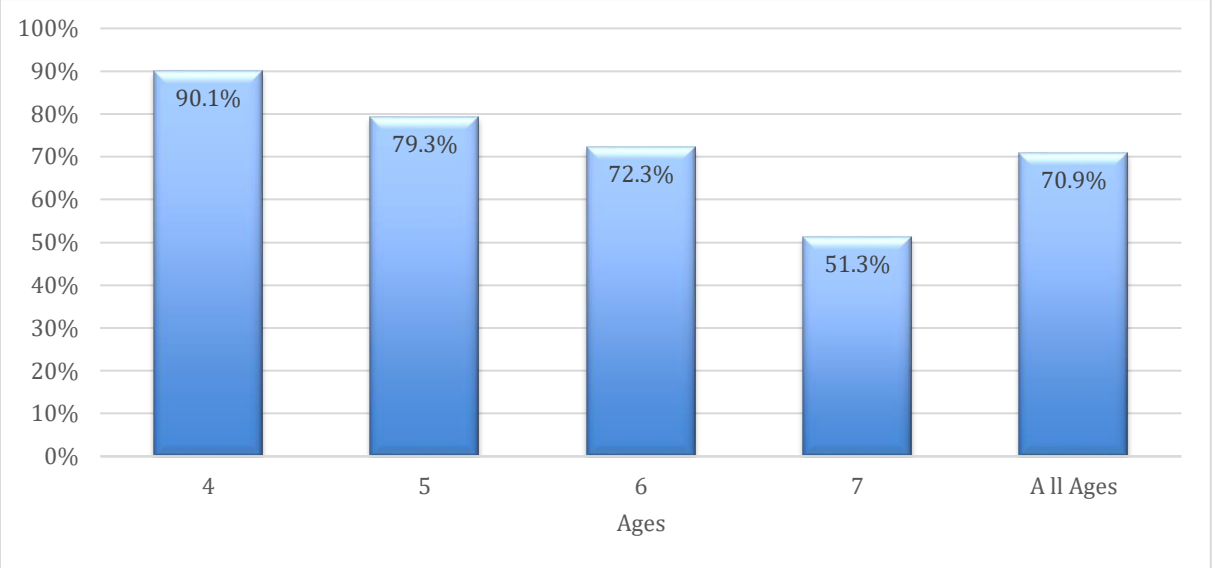
Table 1. Demographic Characteristics of Children Observed Statewide

Gender	Frequency (*n*)	Percent
Male	154	49.5
Female	157	50.5
Total	290	100.0

	Count and Percent by Age Per Location				
	4	**5**	**6**	**7**	**Totals by Community**
Anchorage	*n* = 39, 24.8%	*n* = 48, 30.6%	*n* = 35, 22.3%	*n* = 35, 22.3%	N = 157 50.5%
Fairbanks North Star	*n* = 13, 23.6%	*n* = 19, 34.5%	*n* = 6, 10.9%	*n* = 17, 30.9%	N = 55 17.7%
Juneau	*n* = 9, 20.9%	*n* = 8, 18.6%	*n* = 10, 23.3%	*n* = 16 37.2%	N = 43 13.8%
Kenai Peninsula	*n* = 12, 44.4%	*n* = 2, 7.4%	*n* = 11, 40.7%	*n* = 2, 7.4%	N = 27 8.7%
Matanuska-Susitna	*n* = 9, 31%	*n* = 11, 37.9%	*n* = 3, 10.3%	*n* = 6, 20.7%	N = 29 9.3%
Statewide Totals by Age	N = 81, 26%	N = 87, 28%	N = 65, 20.9%	N = 76, 24.4%	N = 311 100%

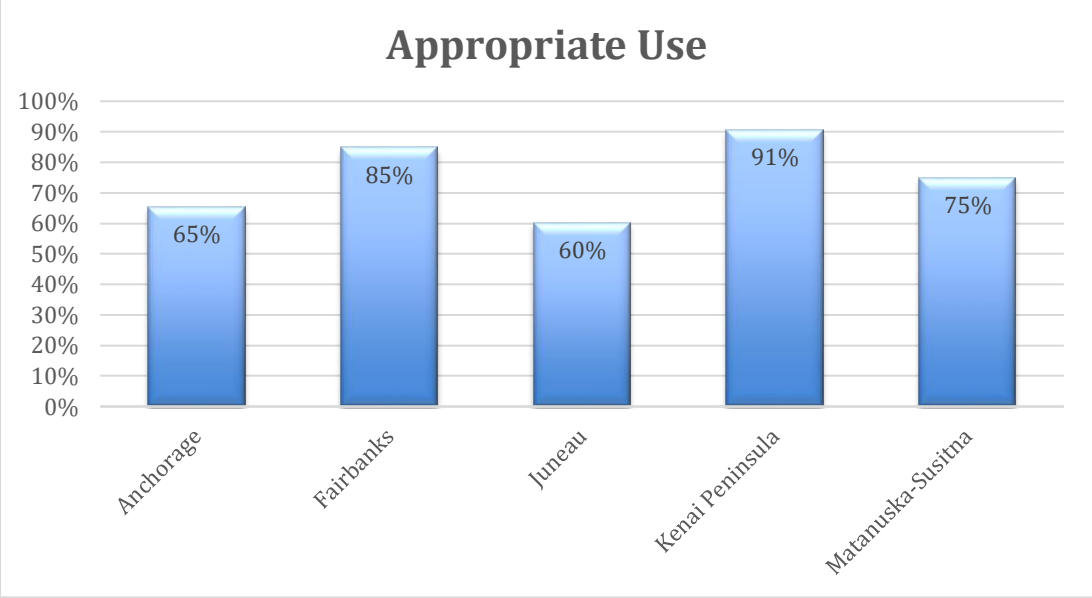
There was a significant difference in appropriate restraint use between ages at the 5% level (χ^2 = 33.308, p < .000). Four-year olds were the most likely to be appropriately secured (90.1%), followed by 5-year-olds (79.3%), 6-year-olds (72.3%) with the lowest rate among 7 year olds (51%). Because of the imbalance in the number of children observed in the different ages, age-adjusted data were analyzed and revealed that the prevalence of statewide appropriate restraint was 70.9%. See Figure 1.

Figure 1. 2018 Statewide Age-Adjusted Prevalence of Appropriate Child Restraint Use by Age



Analysis was conducted to determine prevalence of appropriate use at the borough level. Figure 2 below displays those findings. Data limitations regarding these analyses are found below in the conclusion section.

Figure 2. Statewide Age Adjusted Prevalence of Appropriate Child Restrain Use by Borough



Anchorage 2018

Using similar methods as described in this report the Center for Safe Alaskans also conducted booster seat observations in the Anchorage Borough in: June 2009, October 2009, July 2010, July 2011, and July 2013.

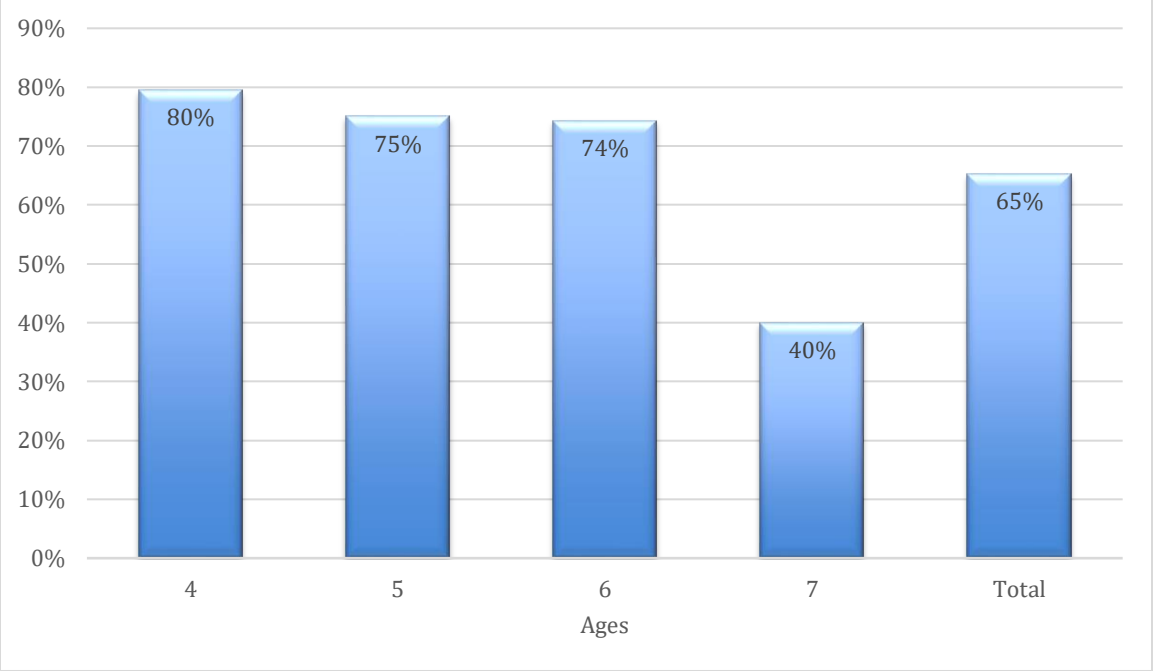
Table 2. Demographic Characteristics of Children Observed in Anchorage in 2018

Gender	Frequency (*n*)	Percent
Male	77	49.0
Female	80	51.0
Total	157	100.0

Age	Frequency (*n*)	Percent
4	39	24.8
5	48	30.6
6	35	22.3
7	35	22.3
Total	157	100.0

In 2018, the Anchorage age-adjusted prevalence of appropriately restrained youth was observation 65.6% of observed children were appropriately restrained, in a booster seat or five-point harness car seat. Of these, 4, 5 and 6-year old children had similar usage rates (80%, 75%, and 74% respectively). A dramatic drop occurred for 7-year old children with appropriate restraint use at 40%. See Figure 3.

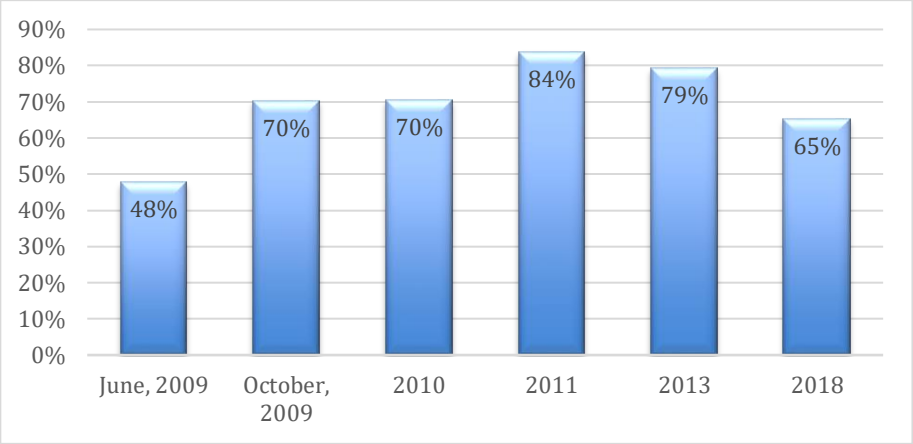
Figure 3. 2018 Anchorage Age-Adjusted Prevalence of Appropriate Child Restraint Use



Anchorage 2009 - 2018

Figure 4 displays the age-adjusted prevalence of appropriate child passenger safety device usage rates from 2009 through 2018. Differences in appropriate restraint use between observation periods were found to be statistically significant (χ^2 (5, *N* = 1073) = 61.541, p=.000

Figure 4. Anchorage Age-Adjusted Prevalence of Appropriate Child Restraint Use



NHTSA recommends that all children under 13 be restrained in the back seat of a vehicle. Figure 2 shows the percentage of children seated in the back seat of the vehicle across all six of the Center for Safe Alaskans' booster seat observations. In 2018, 99% of children were seated in the back seat of the vehicle—the highest rate observed to date. Results from a chi-square analysis show that differences in seating position across observations are statistically different (χ^2 (4, *n*=1050) =11.189, p=0.048).

Figure 5. Anchorage Age-Adjusted Prevalence of Children in the Back Seat of the Vehicle

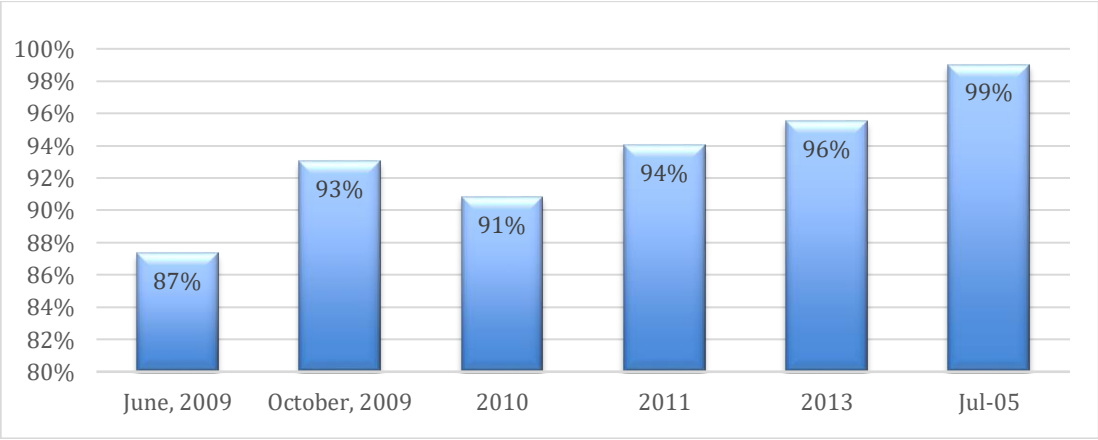
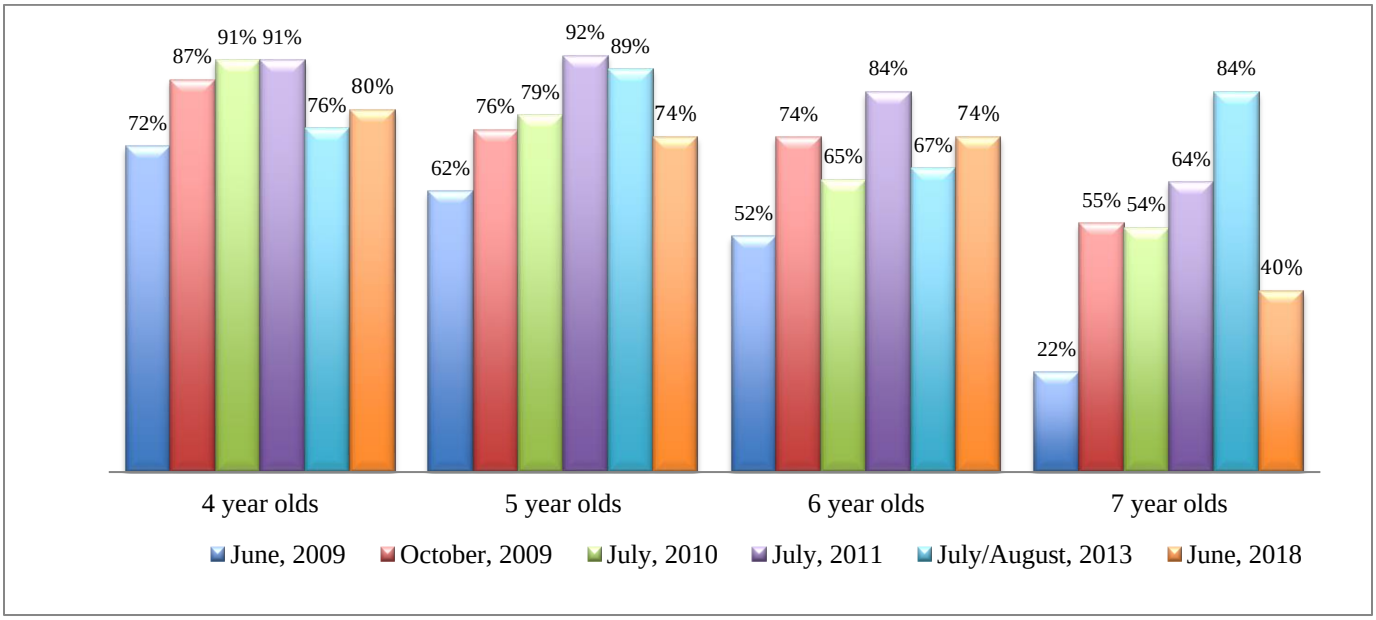


Figure 6 compares appropriate restraint usage rates of children by age for all six of the Center for Safe Alaskan's booster seat observation studies in the Anchorage Borough within the past decade. Prior to Alaska's booster seat law going into effect, 72% of four-year olds observed in Anchorage were appropriately restrained; one month and one year after the law went into effect, 87% and 91% of four-year olds observed were appropriately restrained, respectively. According to the Center for Safe Alaskan's 2018 booster seat observation study, restraint use among four and six-year olds in Anchorage had increased from 2013 at 80% for four-year olds and 74% for six-year olds. However, restraint use for five and seven-year olds reflect a downward trend, with 74% of five-year olds in 2018, down from 89% in 2013 and only 40% of seven-year olds appropriately restrained in 2018, down from 84% in 2013.

Figure 6. Anchorage Age-Adjusted Prevalence of Appropriate Child Restraint Use by Age and Time



Conclusions

The dramatic increase in appropriately restrained children ages 4 to 7 in the Anchorage area between June 2009 and October 2009 can likely be attributed to the change in law and a corresponding multi-media promotional campaign promoting booster seat use. While more booster seat age children, of all ages are appropriately restrained now than prior to the law going into effect, use of age appropriate restraint systems by children between the age of 4-7 has steadily declined in Anchorage since 2011.

Statewide usage was not observed prior to the law. This is the first year observations were conducted outside the Anchorage Borough. There are important limitations in the data which make asserting the statewide rate, and local rates in the smaller communities problematic.

First, when a caregiver refused to participate, their information was not collected, nor included in the analysis. Some communities had a higher level of refusals than others, potentially skewing their results. It is possible that those who refused may not have their children appropriately secured in the car. The second is the low number of observations in Juneau (*n* = 31), Kenai (*n* = 27) and Mat-Su (*n* = 29). The limited number of observations may not provide enough information to allow generalized analysis.

The 2018 findings clearly indicate the need for a renewed statewide campaign to promote and enforce appropriate child passenger safety use for children between four and seven years.

A qualitative study should be undertaken to gain better understanding of the barriers and motivators affecting caregivers concerning the appropriate use of child safety restraints in cars. Results from a qualitative study should then be used to guide the design of future campaigns and promotion**.**

References

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