Evaluation of Racial Differences in Seat Belt and Child Restraint Use: A Review of Current Literature

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16. Abstract

This report presents the results of a literature review conducted to evaluate differences in seat belt use by race. A literature review was conducted to evaluate overall seat belt use, racial differences in seat belt use, overall child restraint use, racial differences in child restraint use, and information about seat belt and child restraint use specific to Iowa. A number of national studies and regional studies were found and are presented.

Mixed results were found as to whether racial differences exist in both seat belt use and child restraint use. However, in the course of the literature review, several items that are of interest to safety in Iowa have emerged, although little data specific to Iowa was encountered. First, national seat belt use appears to be lower among African-Americans than for Caucasians or Hispanics. Second, national crash rates among Hispanics appear to be higher than those for Caucasians, particularly when population and lower vehicle miles traveled (VMT) are considered. One issue that should be considered throughout this literature review is that the Hispanic population may be higher than reported due to large numbers of undocumented persons who do not appear in population estimates, driver's license, or other databases.

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1. EXECUTIVE SUMMARY

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Mixed results were found as to whether racial differences exist in both seat belt use and child restraint use. However, in the course of the literature review, several items that are of interest to safety in Iowa have emerged, although little data specific to Iowa was encountered. First, national seat belt use appears to be lower among African-Americans than for Caucasians or Hispanics. Second, national crash rates among Hispanics appear to be higher than those for Caucasians, particularly when population and lower vehicle miles traveled (VMT) are considered. One issue that should be considered throughout this literature review is that the Hispanic population may be higher than reported due to large numbers of undocumented persons who do not appear in population estimates, driver's license, or other databases.

2. INTRODUCTION

Seat belts are one of the most effective protective devices available to vehicle occupants. The National Highway Traffic Safety Administration (NHTSA) estimates that over the past 26 years, 135,000 fatalities and 3.8 million injuries in the U.S. have been prevented by seat belts. They also estimate that an additional 315,000 fatalities and 5.2 million injuries would have been prevented during this timeframe if all vehicle occupants had used seat belts. In 2001 alone, 13,274 lives were saved in crashes through the use of seat belts, and an estimated 7,334 lives could have been saved during the same time period, had all occupants used seat belts (NHTSA, 2003).

As laws mandating their use have become more prevalent, seat belt usage has risen. However, according to figures complied by the NHTSA, of the 31,910 vehicle occupants killed in vehicle crashes in the United States in 2001, 60% were not wearing seat belts (NHTSA, 2003). This suggests that while the effectiveness of seat belts as a safety device is unquestionable, there are still a number of vehicle occupants who still choose not to use them. Studies have correlated seat belt use to gender, race, type of vehicle driven, primary versus secondary seat belts laws, and race. Differences in population characteristics that are related to seat belt use are important in understanding and targeting resources to improve seat belt use.

Race is one factor that has been evaluated in a number of studies. Racial differences between African-American, Hispanics, and non-Hispanic Caucasians in seat belt and child restraint use have been reported in several studies. African-Americans and Hispanics have been reported to use seat belts and child-restraints less often than Caucasians. These results, however, are not conclusive because other studies have indicated that there is no statistically significant difference. These mixed results may be attributed to the method used to record seat belt use, the type of seat belt law enacted by a state, and the diversity found within the study population.

Racial differences are important in evaluating risk and targeting education and enforcement. In Iowa, differences in seat belt and child restraint use for Hispanics are particularly important since Hispanics make up Iowa's largest minority group. According to the 2000 census, the Hispanic population in Iowa was 82,473 (2.8%) of a total state population of

2,926,324. African-Americans comprised 2.1% of the population (61,853), while other minority groups individually accounted for less than 1.5%. Figures 1 and 2 illustrate the population distribution of Hispanics and African-Americans, respectively, throughout Iowa counties. From 1990 to 2000, Iowa's Hispanic population grew by 153% (Goudy, 2003). This growth in the Hispanic population, a group which past research studies have found to have lower seat belt use rates, could lead to a rise in crash injuries and fatalities in the state of Iowa as the Hispanic population increases. Consequently, this report explores differences in Hispanic seat belt and child restraint use nationally and in Iowa by reviewing related literature on the topic.

This report is organized by topic. First, an overview of seat belt use at the national level is presented in section 3. Next, racial differences in seat belt and child restraint use, as found in studies conducted in different areas of the United States, are presented in Section 4. An overview of seat belt use in Iowa is presented in Section 5. Conclusions drawn from of the literature review are presented in Section 6.

Throughout this report, the term "African-American" will refer to non-Hispanic blacks and "Caucasian" will refer to non-Hispanic whites.

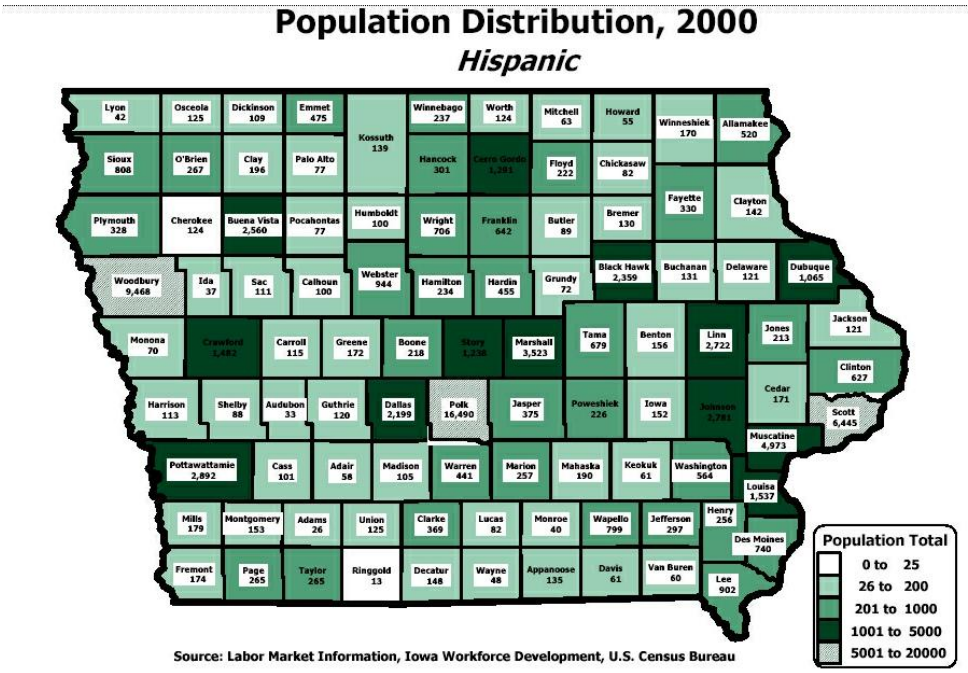

Figure 1. Hispanic population in Iowa by county in 2000

Source: http://www.iowaworkforce.org/lmi/publications/affirm/maps

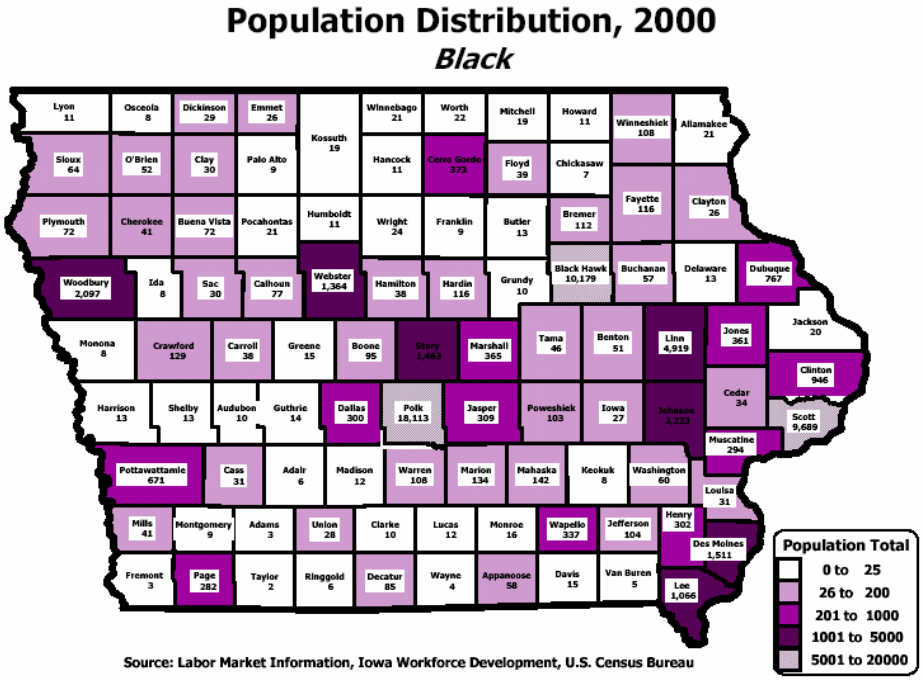

Figure 2. African-American Population in Iowa by county in 2000

Source: http://www.iowaworkforce.org/lmi/publications/affirm/maps

3. NATIONAL OVERVIEW

3.1 Rates

The National Highway Traffic Safety Administration conducts two major surveys of seat belt use nationwide. The Motor Vehicle Occupant Safety Survey (MVOSS) is a national telephone survey completed every two years (NHTSA March 2000). Persons aged 16 years and older are randomly selected to answer questions about their seat belt use and other issues. The 2000 MVOSS results showed that 83% of the participants reported wearing seat belts "all the time" (NHTSA April 2002). The 2002 National Occupant Protection Use Survey (NOPUS), which is a probability-based study in which observers record front seat belt use, reported that only 75% of drivers and front seat passengers wore seat belts (NHTSA September 2002).

Since the MVOSS is a self-reporting survey and NOPUS is an observational survey, it is not surprising that there are differences between the results; the 1998 MVOSS rates are approximately 10% higher than the rates from the 1998 NOPUS. Differences in self-reported and observed seat belt use are common throughout the literature with most comparison studies consistently showing higher self-reported seat belt use (Parada et al, 2001; Stiles and Grieshop, 1999; Ulmer et al., 1995). Since the NOPUS is an observational study, NHTSA (April 2002) believes this survey best represents the national rate for seat belt use.

3.2 Belt Laws

To encourage seat belt use, all states except New Hampshire have seat belt laws, although laws vary from state to state (NHTSA 2001). Each state law falls into one of two categories: primary or secondary. States with primary enforcement laws allow officers to stop a vehicle for an observed belt violation. In states with secondary enforcement laws, an initial stop must be made for another violation before a belt citation can be issued (Ulmer et al. 1995). Several studies have noted the difference in seat belt use in primary states compared to secondary states. According to the 2002 NOPUS, the average seat belt usage rate for states with primary laws is 80% and the average rate for states with secondary laws is 69% (NHTSA September 2002). Wells et al. (2001) studied seat belt use in four cities—two in states with primary laws and two in states with secondary laws—and found that the rates were higher in states with primary laws among all ethnic/racial groups.

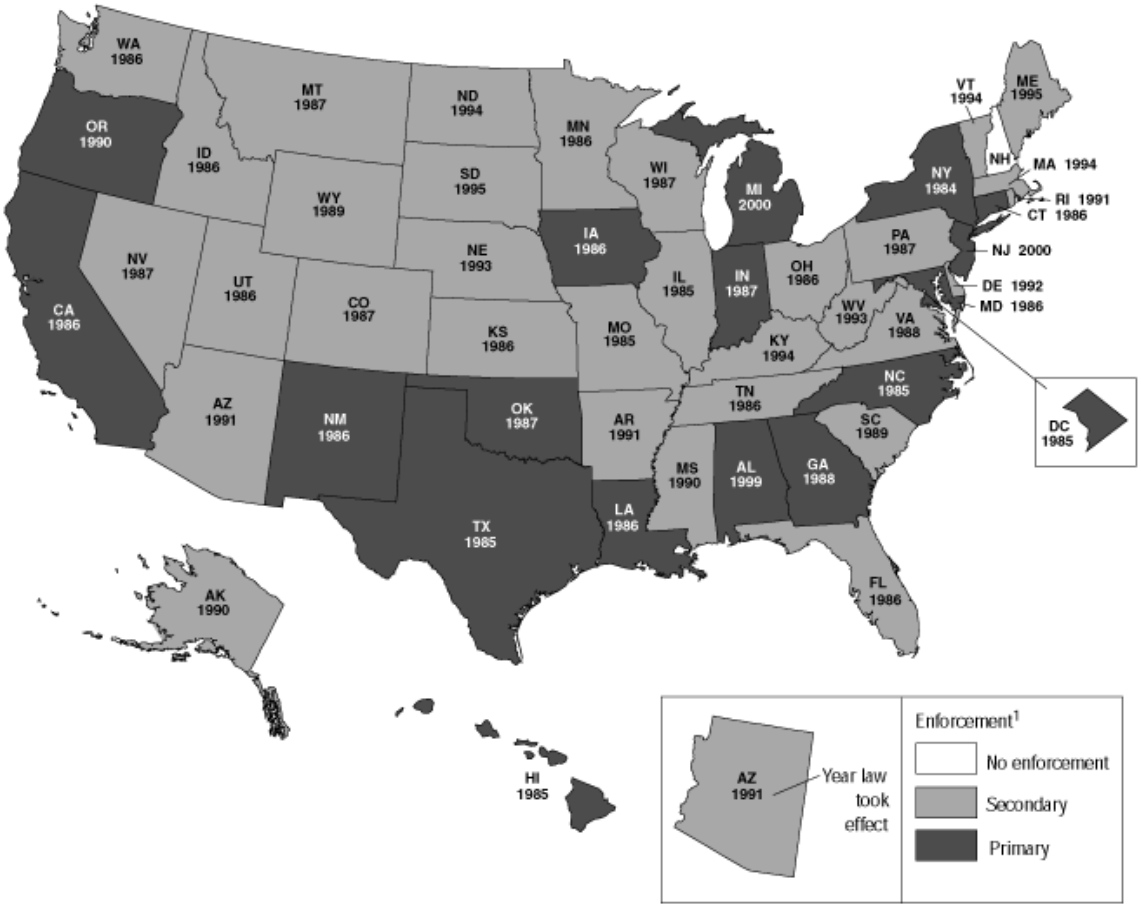

Figure 3. Belt usage laws as of 2000
Source: http://www.bts.gov/publications/tsar/2000/chapter3/occupant_protection_safety_belts_air_bags_and_child_restraints_map2.html

Other studies have noted the change in belt use when a primary law replaces a secondary law. In January 1993, the state of California made the shift from secondary to primary enforcement. Ulmer, Preusser, Preusser, and Cosgrove (1995) examined the impact this change had on seat belt usage in six communities. The percentage of drivers observed using seat belts increased from 58% before the change in the law to 76% following the change. In addition, drivers who were surveyed and had knowledge of the law said they were more likely to use seat belts than they were in the past. When Maryland, Oklahoma, and the District of Columbia changed their laws from secondary to primary, the increases in seat belt rates ranged from 9 to 14 percentage points (NHTSA April 2001). Initial improvements, however, are typically not

sustained. Rates typically drop after the initial surge but remain higher than the rates prior to the enactment of primary enforcement legislation (Ulmer et al. 1995, Eby and Vivoda 2001).

3.3 Characteristics Associated with Belt Use

Certain driver characteristics such as gender, age, education, and income have been linked to low seat belt use. Many studies have determined that females wear seat belts more often than males (FDOT 2001, NHTSA March 2003, NHTSA March 2000). Females have higher rates across all age groups, all vehicle types, all ethnic/racial groups, and in both primary and secondary states (Nelson et al. 1998, Ulmer et al. 1995, Eby and Vivoda 2001, Wells et al. 2002). Seat belt use has also been shown to increase with age, education, and income. Several studies have noted that older drivers tend to be more likely to wear their seat belts (NHTSA March 2000, Ulmer et al. 1995, Williams et al. 1996, FDOT 2001). Higher education levels have also been linked to improved restraint use; the 1998 MVOSS reported that 85% of college-educated persons stated they use seat belts "all the time" compared with 75-78% of persons without a college degree (NHTSA March 2000). In a study by Wells et al. (2002), persons with college degrees had higher rates of seat belt use than persons without college degrees in all race/ethnic and gender categories, although the different types of seat belt laws did slightly affect the rates. The difference in rates between persons with college degrees and persons without college degrees was more significant in cities with secondary belt laws than in cities with primary laws.

Similarly, seat belt rates increased as income increased. According to the 1998 MVOSS (NHTSA March 2000), 74% of people who earn less than $15,000 per year reported using seat belts "all the time" compared with 86% of people who make more than $100,000. Furthermore, alcohol has been shown as a determinant of seat belt use. People were asked in the 1998 MVOSS how many drinks on average they consume on days that they drink. Of people who drink an average of one glass per day, 84% report using a seat belt "all the time" as compared to 53% of people who drink seven or more glasses on average. In another study by NHTSA (April 2003), 12% of drivers involved in fatal crashes while wearing a seat belt had a blood alcohol content (BAC) of .08 or more while 40% of drivers not wearing their seat belts had a BAC of .08 or more.

Seat belt usage is also affected by the type of vehicle. Usage rates in passenger cars, minivans, and SUVs are typically higher than use rates in pickup trucks. The 2002 NOPUS study (NHTSA September 2002) showed a 77% seat belt usage rate for passenger cars, 78% for vans and sport utility vehicles (SUVs), and 64% for pickup trucks. The 1998 MVOSS (NHTSA 2000) reported rates between 80–83% for cars, van/minivans, and SUVs, but 65% for pickup trucks (see also FDOT 2001, Ulmer et al. 1995, Eby and Vivoda 2001, Williams et al. 1996). Studies have also shown that seat belt rates tend to be slightly higher in urban areas than rural areas. About 80% of people in urban areas reported "all the time" use while about 77% in rural areas reported "all the time" use (NHTSA March 2000). According to the 1998 NOPUS study, as cited by the 1998 MVOSS (NHTSA March 2000), 74.5% drivers in urban areas were observed with belts compared with 67% in rural areas. A study by the Florida Department of Transportation (DOT) (2001) determined that the rates in Florida were higher in urban counties than rural counties and slightly higher on urban roadways than rural roadways (see also Williams et al. 1996).

3.4 Reasons for Nonuse

In order to determine reasons for nonuse, the 1998 MVOSS asked participants who reported that they did not always use seat belts why they did not wear seat belts (NHTSA March 2000). The following were the most popular reasons given for nonuse among drivers:

- Only driving a short distance (56%)
- Forgot to put it on (53%)
- In a rush (40%)
- Belt is uncomfortable (37%).

The most popular reason given among drivers who never wear seat belts is that the belt is uncomfortable (65%). Nonusers were more likely to agree with the statements "seat belts are just as likely to harm you as help you" and "putting on a seat belt makes me worry more about being in an accident." Nonusers were also more likely to have a fatalistic attitude, believing that fate determines their destiny, so wearing a seat belt would not matter. This fatalistic attitude occurred less often as the years of formal education increased.

According to Lindly, Brown, and Turner (2001), people who did not use their seatbelts and indicated that they were not willing to change seat belt usage habits were more likely to admit that their reason for nonuse was that the seat belt was “not comfortable.” People who did not use their seatbelts and indicated that they were willing to change were more likely to admit that they did not have a good reason for not using seat belts.

A study of seat belt use in Kansas by Eustace and Bartel (2002) found compliance with the state’s secondary seat belt law was lower than the national average at the time of the study. The authors concluded that Kansas’ low seat belt use stemmed from the lack of a primary enforcement law, as well as the low ($10) fine associated with non-compliance. While not the lowest fine charged for a belt violation among states, this low figure does not provide motorists with an adequate financial penalty for not complying with the law.

3.5 Seat Belt Compliance Programs

To increase belt use rates, several states have instituted publicity and enforcement campaigns. Williams et al. (1996) reported on North Carolina’s implementation of a publicity and enforcement program, which began in the fall of 1993 and was entitled “Click It or Ticket.” The first two weeks of the fall 1993 program focused on informing the public of the importance of wearing seat belts and the upcoming enforcement. The two weeks of publicity were followed by three weeks of enforcement, two weeks without enforcement and one week with enforcement. Radio and television paid advertisements ran throughout the program targeting everyone, but focusing mostly on young males. During this period, almost 60,000 citations for nonuse of seat belts were given. The belt use rate among drivers was 64% before the 1993 program and 80% after the program. The rate dropped to 73% seven months after the program, but rose again to 81% after a short but similar reminder program in July 1994. A follow-up survey of people who still did not use seat belts after the programs indicated that these people would change their habits if driver license points were assessed for violations instead of higher fines. The study also looked at the effects of the campaign on serious and fatal injuries. According to the study, there were fewer serious and fatal injuries from January 1, 1987, through September 30, 1993, than what was predicted had the program not been implemented.

In Elmira, New York, publicity and enforcement programs have been used since 1985. The first campaign occurred in November 1985 for three weeks and increased belt use from 49% to 77%. The rate then dropped to 66% four months later, as cited in Williams et al. (1987) from an earlier Williams et al. report. A reminder campaign occurred in April 1986 and raised the rate to 80%, but the rate dropped to 60% eight months later (Williams et al. 1987). The rate rose slightly to 63% before another three-week campaign took place during October 1999 (Williams et al. 2000). For the October 1999 campaign, the first week focused on publicity while the other two weeks focused on enforcement and publicity. The publicity included a press conference at the first checkpoint, newspaper and radio ads, signs located throughout the city posting the current belt use rate, posters displayed in public buildings and businesses, and ticket flyers placed on vehicles. Over 90% of the tickets were issued at the 32 checkpoints. Observational studies concluded that the belt use rate increased to 90% by the end of the program. Since the rates generally rise during a publicity and enforcement program but fall in the following months, a series of publicity and enforcement programs may be needed to keep belt use rates at a high level (Williams et al. 1987).

3.6 Child Restraints

Child safety seats are a special category of safety restraints. According to standards set by NHTSA (February 2003), infants from 0 to 1 years should be in a rear-facing safety seat, toddlers between 20 and 40 pounds should be in a front-facing safety seat, while children who exceed the safety seat's weigh limit, are under 8 years of age and are under 4'9'' tall should be in a booster seat. Results from the 2002 NOPUS study showed that 99% of infants aged 0 to 1 years were restrained, but 15% were in the front seat; 94% of toddlers aged 1–3 years were restrained but 10% were in the front seat; and 83% of children aged 4–7 years were restrained, but 29% were in the front seat (NHTSA February 2003). Additionally, in each age group, a number of children, although restrained, were not restrained using the appropriate type of restraint. For example, only 32% of infants were restrained in a rear-facing seat and only 66% of toddlers were properly restrained in the appropriate child seat. In the 1998 MVOSS (NHTSA July 2000), 77% of participants with at least one child under 6 years of age reported using car seats (infant, toddler, or booster seats) "all the time," while 22% reported never using a car seat. Almost all of

the participants who responded that they never used car seats reported that the child is now using a seat belt. The data also showed that the percentage of "all the time" car seat users decreased as age and weight increased. To determine reasons for nonuse, part time users were asked to give reasons for not using a child safety seat. The top three reasons given in order were "the child doesn't like it," "the seat isn't available," and "only a short time in car."

Driver characteristics and other factors can also impact child restraint use. Several studies have noted that seat belt use by the driver affects the use of child restraints. According to the 2002 NOPUS, belted drivers use child restraints at a higher rate (92%) than unbelted drivers (72%) for children seven years and younger (NHTSA February 2003). This study follows an earlier study sponsored by NHTSA (1996), which reported that children of unrestrained drivers were more likely to be unrestrained compared with children of restrained drivers. Agran, Anderson, and Winn (1998) studied crash data from the Fatality Analysis Reporting System (FARS) and reported that driver belt use and other factors are associated with child restraint use by children 0 to 9 years of age. Restraint use by the driver was the strongest predictor, but lower rates of child restraints were also reported in association with younger drivers, drivers that had consumed alcohol, and drivers riding in older vehicles. Restraint use also decreased as the number of vehicle occupants increased (see also NHTSA 1996). Additionally, restraint use in large vans (46%) and pickup trucks (42%) was lower than restraint use in automobiles (59%), SUVs (62%), and minivans (63%). Furthermore, children were less likely to be restrained from 3 am to 6 am and in rural settings. In a study by Haaga (1986), the rates of restraint use increased as the number of years of education for the head of the household increased and as the family income increased.

Besides rates of restraint, proper restraint and use of safety devices for children is a concern. NHTSA (1996) summarized an observational study of children in restraints in suburban shopping centers in Mississippi, Missouri, Pennsylvania, and Washington. Almost 80% of the child safety seats observed were misused because the locking clip, harness retainer clip for chest, harness strap, or safety belt were not used at all or were used incorrectly.

4. RACIAL DIFFERNCES IN SEAT BELT AND CHILD-RESTRAINT USE

4.1 Seat Belt Use Rates

Racial differences in seat belt use have been evaluated in a number of different research efforts. Typically African-Americans, Caucasians, and Hispanics are compared. However, research has produced mixed results when comparing seat belt use by different racial groups. Several studies have reported similar usage rates for all three groups. According to the Controlled Intersection Study of NOPUS (NHTSA March 2003), 76% of Caucasians, 77% of African-Americans and 78% of occupants placed in the "other" category were observed wearing their seat belts. Since NOPUS is an observational study, determining ethnicity is difficult; therefore, the "other" category includes occupants considered to be of Hispanic, Asian American, or American Indian origin. The 2000 MVOSS (NHTSA April 2002) results showed that 81% of African-Americans, 88% of Hispanics, and 83% of Caucasians report "all the time" use.

There have also been studies that suggest that Hispanics, as well as African-Americans, have lower seat belt rates than Caucasians. The 2001 *Florida Click It or Ticket Follow-up Seat Belt Observation Survey* (FDOT 2001) reported that Caucasian drivers and passengers had the highest seat belt use rate (72%), while African-Americans (57%) and Hispanics (63%) had lower seat belt use rates. Parada et al. (2001) observed drivers at gas stations in El Paso, Texas. Seat belt use by the drivers was observed and then the drivers answered a question about their seat belt use, which was embedded in a survey about Texas roadways. Hispanics reported wearing seat belts 60% of the time while 70% of Caucasians said they always wore a belt. Harper et al. (2000) used FARS data and death certificates to evaluate fatal crashes for both Hispanic and non-Hispanic motorists in Colorado. FARS data were available for crashes where the driver was fatally injured. Evaluation of the two data sources indicated that Hispanic drivers who were fatally injured were less likely to have been wearing a seat belt as compared to Caucasian drivers. A total of 84% of fatally injured Hispanic drivers were not wearing seat belts compared to 70% of non-Hispanic Caucasians.

Braver (2003) also found differences when comparing rates of seat belt use using FARS data. Braver compared fatalities per 100,000 persons (aged 25 to 64 years) to unit travel by race,

Hispanic origin, and educational level. Comparison of seat belt use by race, gender, and educational level used data from both driver and passenger fatalities. For results where BAC was included as a variable, only data from driver fatalities were included since passenger BAC was rarely reported. Trips were estimated from the 1995 Nationwide Personal Transportation Survey. Overall, both African-American male and female fatalities were less likely to have been wearing a seat belt (78% of males were not wearing seat belts and 62% of females were not wearing seat belts) than Caucasians (72% for males and 55% for females) and Hispanics (71% for males and 52% for females). The study also found that among driver fatalities, Hispanics were more likely to have a BAC greater than 0.10 when the BAC was known. A total of 59% of Hispanic male driver fatalities had high BAC concentrations when the BAC was known compared to 51% of Caucasian males and 47% for African-American males. For women, 35% of Hispanic female driver fatalities had a high BAC compared to 30% of Caucasian females and 20% of African-American females. Overall, 84% of all fatally injured drivers had both a high BAC and were not wearing belts; Hispanic men were more likely to have both risk factors and the combination of risk factors was more likely among fatalities who had not completed high school degrees.

The Florida DOT (2001), while conducting an observational study to evaluate effects of seat belt campaigns, also found racial differences between seat belt users. Sites for observation were randomly selected and data were collected after new seat belt laws were implemented. Table 1 illustrates results by gender and race for front seat occupants. As shown, seat belt usage rates for Caucasian and Hispanic females were similar, with a lower rate for African-American females. Both Hispanic and African-American males had significantly lower seat belt use rates than Caucasian males. Data were also examined by age and race as shown in Table 2. African-Americans had the lowest observed belt use for all ages. The rates for Hispanics were also lower than the rates for Caucasians for all ages.

Table 1. Seat belt use by front seat occupant by race and gender

	African-American	Hispanic	Caucasian
Female	61%	71%	72%
Male	54%	57%	67%

Table 2. Seat belt use by front seat occupant by race and age

Age	African-American	Hispanic	Caucasian
6 to 15	56%	60%	68%
16 to 59	57%	62%	70%
> 59	61%	63%	79%

In contrast, other studies have concluded that Hispanics tend to wear their seat belts more than African-Americans or Caucasians. Nelson, Bolen, and Kresnow (1998) studied Behavioral Risk Factor Surveillance System data, which is a collection of self-reported rates on seat belt use gathered from thirty-three states. Only respondents that reported they always use their seat belts were labeled seat belt users. From 1987 to 1993, Hispanics consistently had higher self-reported seat belt rates than Caucasian and African-Americans. Oguntoyinbo (2001) also reported higher rates of belt use by Hispanics (85%) compared to 76% of Caucasians and 79% of African-Americans when an observational study was conducted by the UNC Highway Safety Research Center in Siler City, North Carolina.

In an attempt to explain some of the different conclusions found in studies on minorities and seat belt use rates, Wells et al. (2002) conducted an observational study in four large cities: Boston, Chicago, Houston, and New York. Houston and New York are located in states with primary laws, while Boston and Chicago are located in states with secondary laws. African-American males had much lower rates (37%) than Hispanic and Caucasian males (52% and 53%, respectively) in cities with secondary laws but had comparable rates in cities with primary laws. African-American females also had lower rates (59%) than Hispanic females (65%) or Caucasian females (66%) when secondary laws were in-place. The study concluded that African-American drivers, especially males, may respond to primary laws more than Hispanic and Caucasian drivers.

The authors reported on another study by Preusser and Preusser (1997) that indicated that African-American drivers might believe that they are more likely to be ticketed. Other studies have shown that Hispanics may worry about being ticketed as well. The 1998 MVOSS (NHTSA March 2000) asked participants how likely they thought they would be to receive a ticket during the next six months for not wearing seat belts. Fifty-six percent of Hispanics, 42% of African-Americans, and 37% of Caucasians said that they would be very likely or somewhat likely to be ticketed. NHTSA (April 2001) summarized a study on the changes from secondary to primary belt laws in Maryland, Oklahoma and the District of Columbia. When the primary laws went into effect, more African-Americans and other non-Caucasians thought they were likely to receive a ticket compared to Caucasians in all three states. Yet, after the primary laws went into effect, no differences were detected between Caucasian ticketing and non-Caucasian ticketing. In a NHTSA study (1995), adult male Hispanic focus group participants commented that they wore seat belts mainly for fear of being stopped by a police officer. This may be due to the fact that many of the focus group participants in Texas and the District of Columbia were driving without driver licenses. One adolescent male stated, “You especially don’t want to be stopped by the police for not wearing a seat belt when you are driving without a license.” In a study on Hispanic migrant farm workers in California, approximately four-fifths of the workers who drive possessed valid driver licenses (Stiles and Grieshop 1999). The focus group participants commented that some Hispanics drive without licenses because the driver’s test is only give in English, the Spanish translation of the driver’s manual is hard to understand, people do not have the proper identification, the cost of a driver’s license and car registration is too expensive, and people may not have a vehicle to use for the driver’s test (NHTSA 1995).

A survey of available literature comparing seat belt use among different racial groups did not result in a consensus as to whether Hispanics and African-Americans are less likely to use seat belts than Caucasians since the different studies resulted in different conclusions. These conflicting conclusions could be attributed to several factors. First, seat belt use rates can be determined from different types of information: self-reporting surveys, observations, and crash data. Second, seat belt use rates may be affected by the type of seat belt law enacted by a state (Wells et al. 2002). Finally, the rates may be affected by the diversity found within the Hispanic

population. One study recognized the diversity of this population by studying Hispanics of Mexican, Central American, Puerto Rican, and Cuban descent (NHTSA 1995). The different characteristics between Hispanics that have been born and raised in the U.S. and Hispanics that are recent immigrants and migrant farm workers may influence study results. In a study by Stiles and Grieshop (1999) for instance, 86% of Hispanic migrant farm workers in California reported wearing their seat belts all the time, but only 37% of long-term Hispanic residents were observed wearing seat belts.

4.2 Reasons

Although the studies for seat belt use among Hispanics are not conclusive, there are factors that could contribute to nonuse of seat belts among Hispanics. According to Ucles (2001), Hispanics who have recently immigrated to the United States may not be familiar with seat belt laws and child restraint laws. Or, according to Oguntoyinbo (2001), they may have trouble understanding the language of the seat belt laws. In some Hispanic countries, safety laws are different and are enforced less often (NHTSA 1995). For example, according to focus group participants, some Hispanics living near the U.S. and Mexico border wear their seat belts in the U.S., but then unbuckle their seat belts when they cross the border. Hispanics living on the American side use their seat belts; Hispanics living across the border do not.

Ucles (2001) also stated that Hispanics tend to drive older cars which may be less likely to have seat belts or seat belts that work because Hispanics are more likely to live in lower economic conditions than non-Hispanics. Studies have indicated that Hispanics also tend to carry more passengers than non-Hispanics, which may result in not having enough seat belts for all the passengers or room for a child restraint (see also Oguntoyinbo 2001, Harper et al. 2000). NHTSA (1995) reported that Hispanics may not wear seat belts because they believe that seat belts are uncomfortable, not safe, unnecessary for short trips and unnecessary for passengers in the back seat. Additionally, other studies have found that some Hispanic male drivers may think that if they wear seat belts, passengers might not trust their driving ability (Ucles 2001) or believe that good drivers don't need to wear seat belts (NHTSA 1995). The 1998 MVOSS (NHTSA March 2000) found that more Hispanics (44%) than African-Americans (25%) or Caucasians (13%) agreed with the statement, “I would feel self-conscious around my friends if I wore a seat belt and they did not.” There have also been concerns that more Hispanics may

believe in the idea of fatalism: you will die when it is your time. According to a NHTSA study (1995), Hispanics may not wear their seat belts because they don't believe that it will matter, but there are conflicting opinions on this matter. The 1998 MVOSS (NHTSA March 2000) asked participants if they agree with the statement “if it is your time to die, you'll die.” According to the survey, 40% of African-Americans, 31% of Hispanics, and 25% of Caucasians agreed with this statement. Byrd et al. (1999) studied the link between belief in fatalism and seat belt use among Hispanics and non-Hispanics. When drivers were asked if they agreed or disagreed with the statement, “I can't change my destiny, so there's no point in wearing seat belts,” more Hispanics agreed with this statement than non-Hispanics. Yet a correlation between fatalism and non-seat belt use was not found.

4.3 Seat Belt Use and Alcohol Use

Several studies have also shown that there may be a connection between Hispanics and alcohol use, which may affect seat belt use. After Highway Safety Research Center (HSRC) researchers studied North Carolina crash data, Oguntoyinbo (2001) reported that 9.3% of crashes involving Hispanics and 4% of crashes involving non-Hispanics were due to alcohol and 83% of Hispanic crash-involved drivers were males compared with 57% of non-Hispanic drivers. The 1996 National Roadside Survey (Voas et al. 1998) reported that the percentage of Hispanics driving with BACs of 0.10 or greater has steadily increased from 1973 to 1996, although the increase is not statistically significant because of the number of Hispanic drivers in the survey is still low.

Using 1995 data from FARS, Braver (2003) reported that a lower level of education resulted in a higher risk of death as a result of a motor vehicle crash; people without a high school diploma were three times more likely to die as a result of a motor vehicle crash. Low levels of education were also associated with high levels of seat belt nonuse and high BACs. The combination of not wearing a seat belt and having a high BAC was also more prevalent among Hispanic men than Caucasian men. This trend may be partially explained by the fact that the Hispanic men and women in the study had lower levels of education than Caucasians. When controlling for levels of education, the percentage of Hispanic males with high BACs was similar to the percentage of Caucasian males.

Harper et al. (2000) also noted the connections between lower levels of education and alcohol use among Hispanics. Based on data on fatally injured drivers, Hispanic drivers tended to be younger and have less education. The study found 89% of the Hispanic fatalities had less than twelve years of education as compared to 15% of non-Hispanic Caucasians. In addition, fatally injured Hispanics drivers were found not only to be more likely to drive while intoxicated (as defined by legal limits), and more likely to speed and drive without a license.

The connections between Hispanics, alcohol, and highway safety have been expressed by agency and organization representatives and focus group participants in a NHTSA study (1995) by stating what they believe are the top two highway safety problems: drinking and driving and seat belt use. Many Hispanic farm worker focus group participants commented that many Hispanic males believe that they or their friends and relatives are still good drivers after drinking. A study by Stiles and Grieshop (1999) showed the difference in opinion on drinking and driving between Hispanic males and females. When Hispanic farm workers were asked to state how many drinks a person could have in one hour and still be able to drive safely, most women did not believe that any drinks were acceptable while most men believed that three drinks were acceptable. According to the representatives and the participants, these problems may be due to lack of education on how alcohol can affect driving skills and how seat belts can benefit lives (NHTSA 1995).

4.4 Racial Differences in Crash Rates

Some research indicates that Hispanics are actually more likely to wear seat belts than Caucasians or African-Americans, although there is still a growing concern about the number of Hispanic deaths due to motor vehicle crashes. In one small Hispanic community located in Siler City, North Carolina, more Hispanics than Caucasians or African-Americans were observed wearing seat belts (Oguntoyinbo 2001). Yet from 1995 to 1997, more than 25% of the deaths of Hispanics were due to motor vehicle crashes in North Carolina compared to 2.2% for Caucasians and 2.5% for African-Americans. Furthermore, another study indicated that Hispanics were more likely to be cited with a violation in a crash (67% vs. 50% for non-Hispanics) (Agran et al, 1998). In California, Stiles and Grieshop (1999) reported that although Hispanics make up only

30% of the population in Central Alley, CA, 45% of crashes and 60% of DUI arrests involved Hispanic drivers and passengers (data from CA Highway Patrol, 1995).

Crash rates among African-Americans and Hispanics may be even higher than reported since both groups may have lower vehicle miles traveled (VMT) than Caucasians. Braver (2003) cites other studies that were not available for review that show that Hispanics and African-Americans have lower rates of car ownership, drive less, and walk and use transit more than Caucasians (Pucer et al, 1998, Zmut and Arce, 1999). The 1998 MVOSS (NHTSA March 2000) also indicates that African-Americans and Hispanics may have higher death rates if the death rates are based on units traveled per racial group and not based on population or general VMT data. More Caucasians (82%) reported driving everyday than Hispanics (65%) and African-Americans (66%). Another factor that contributes to the higher death rates of Hispanics in motor vehicle crashes is that Hispanics tend to operate older vehicles and carry more passengers than other groups (Agran et al. 1998).

Baker et al. (1998), for instance, found a significantly elevated crash rate for African-American and Hispanic teenagers when rates were adjusted for population and exposure. They studied data on mortality from 1989 to 1993 and calculated death rates for Hispanics, African-Americans, and Caucasians. For children aged 5 to 12 years, the death rates based on population were similar among the racial/ethnic groups. But death rates based on billion vehicle-miles of travel showed African-Americans had the highest rate, followed by Hispanics and then Caucasians. For teenagers aged 13 to 19 years, Caucasians had the highest population-based rates followed by Hispanics and then African-Americans. They also adjusted the rates by race using data from the 1990 Nationwide Personal Transportation Survey and 1990 US Census data. When the rates were adjusted to reflect exposure based on billion vehicle-miles of travel, African-Americans had the highest exposure-based fatality rates per billion vehicle-miles of travel, while Hispanic rates were 43% lower than the rate for African-Americans but 72% greater than the rate for Caucasians. For the 13 to 19 year old age group, Hispanics had the highest occupant fatality rate per billion vehicle miles of travel (45) followed by African-Americans (34) and then Caucasians (30). For this age group, the rates for males were substantially higher than

the rates for females. When considering children under 4 years of age, African-Americans had the highest population-based death rate followed by Hispanics.

4.5 Child Restraints

Differences in child restraint use among different racial groups were the initial focus of the literature review presented in this report. Only one study was found that directly compared child restraint use among different racial groups. A study by Texas Transportation Institute (TTI) in 1997 found that only 19% of preschool-aged Hispanic children were restrained as compared to 62% of all races in the rest of the city (as cited in Istre 2002). Another study of a Hispanic neighborhood by Istre (2002) concluded that the use of child safety seats was closely related to the use of seat belts by the driver, although the study did not present rates. A study by Stiles and Grieshop (1999) evaluated why Hispanics may be less likely to use child restraints. Hispanic migrant farm workers were questioned about when a child restraint was not necessary and reported that a child does not have to be restrained if the child is feeling sick, laying down, sleeping, being held in an adult's arms, and if all the seat belts are being used. Although no studies conclusively demonstrated differences in child restraint use between Hispanics, African-Americans, and Caucasians, there appears to be concern that Hispanics are less likely to use child restraints. Consequently, programs to encourage child-restraint use among Hispanics have been implemented in several areas.

To combat low child restraint use in targeted areas, the following studies have focused on programs that aim to raise child restraint use. In one study, Louis and Lewis (1997) divided 53 low-income minority families in Newark, New Jersey, randomly into two groups. To increase the use of restraint use for toddlers, both groups were given child restraint seats and instructions on how to use the child restraint seats, but one group received an additional hour of education on the importance of using child restraint seats. Observations were made immediately after the distribution of seats, four to five months later and one year later. Prior to the distribution of child restraint seats, 6% of the toddlers were in child restraint seats. Immediately after distribution, 83% were in the seats. After one year, 60% of the children were in the seats. Since the rates of use for each group were similar before the distribution of seats and one year later, the one-hour

education program did not seem to make a difference. Therefore, the lack of knowledge may not be a factor for low child restraint use, but the affordability of child restraints may be a factor.

In another study, Istre et al. (2002) incorporated a multifaceted and ongoing educational program to increase the use of child restraints in a Hispanic neighborhood on the west side of Dallas, Texas. The program loaned child safety seats, educated parents in small classes, used mothers as authority figures to help spread the message, discussed the idea of fatalism or destiny, and showed videos to help people understand the impact of a car crash on a child held on an adult's lap. To encourage community involvement, local priests blessed the child safety seats and pamphlets were distributed through local Hispanic stores, churches, and community centers. In 1997, only 19% of preschool-aged Hispanic children were restrained as compared to 62% of children of all races in the rest of the city as measured by a Texas Transportation Institute (TTI) study. By 2000, as a result of the program, child restraint use was 72% for the Hispanic community and 68% for the rest of the city as measured by the TTI study. Finally, Hanfling et al. (2000) focused on a multifaceted approach in an impoverished, multi-ethnic section of Houston. This approach combined efforts of health care centers, schools, law enforcement agencies, private industries, government officials, and the media. The program presented educational materials at health clinics, hospitals, and schools and through print, radio, and television media while the police department handed out rewards for seat belt use and tickets for violations of seat belt use. The study concluded that public safety education combined with economic incentives could increase restraint use.

4.6 Other Safety Programs Targeted to Hispanic Communities

Representatives of highway safety organizations in a NHTSA study (1995) spoke of the many challenges they face when working with Hispanic communities. For example, Texas officials have discovered that many people who speak Spanish cannot read or write in English; therefore, the lack of bilingual staff and inadequate translations of material can hamper outreach programs. Other challenges cited by the NHTSA study include overcoming cultural differences, socioeconomic issues, patterns of alcohol consumption, fear of contact with service providers, immigration patterns, lack of driving instruction, and limited financial resources.

To inform Hispanics of traffic safety issues, organizations should refrain from assuming that all Hispanics are alike and that all Hispanics would prefer to read a brochure in Spanish. They also suggested that since the family is one of the most important aspects in Hispanic communities, programs should focus the health and safety of family members instead of the fines and punishments for not upholding the laws. Finally, programs should include key members of the community. In Siler City, North Carolina, two Hispanic lay health advisors have taken an intensive course to learn about child passenger safety. These two men are now teaching in their communities about proper use of child safety seats (Oguntoyinbo 2001).

Programs based on the El Protector program, which was initiated by the California Highway Patrol, have spread to other states (NHTSA 1997). The El Protector Azul program was created in areas around Los Angeles where 65% of the crashes involved at least one person with a Hispanic surname and 68% of the total DUI arrests and 80% of the DUI arrests made at checkpoints involved Hispanic drivers. The program revolves around a Spanish-speaking officer who promotes the idea of a Hispanic driver caring about his family and traffic safety. The program presents traffic safety workshops in area schools, at parks, in churches, at neighborhood watch meetings, and through television and other media. Within one year of the program, the number of crashes where at least one person with a Hispanic surname was involved decreased from 65% to 29.4% while the proportion of Hispanics that accounted for the total DUI arrests dropped from 68% to 48.4%.

5. IOWA OVERVIEW

At the present time, only a limited number of examinations of seat belt and child seat use have been conducted in Iowa. The first study, which has already been discussed in the text, is the NOPUS, which is conducted by NHTSA on a yearly basis. Results from 2001 and 2002 show that Iowa's seat belt usage rates were 81% and 82%, respectively (NHTSA May 2003). While providing an overview of seat belt usage in the state, the survey does not examine child restraint use, nor break down belt use by race.

The second study in Iowa, conducted by the University of Iowa's Injury Prevention Research Center (UI IPRC), has examined child safety restraint use from 1996 to the present for children under the age of 6. In addition to examining child restraint use, surveyors also attempted to determine if the driver of the vehicle was wearing a seat belt. Usage information was collected by direct observation at 37 sites throughout the state. The surveyors were under time constraints in determining whether a child passenger was present, the passengers' ages, and whether or not the driver was wearing a seatbelt (Lundell, 2003).

Results from IPRC's surveys found that, in 2002, of the 4,893 children under the age of 6 observed, 3,727, or 76.2%, were properly restrained (IPRC, 2002). Additionally, the surveyors observed 81.9% seat belt usage by drivers in 2002 (IPRC, 2002). This figure is nearly identical to the 82% usage rate found by NOPUS. The research was limited as to what it was able to examine, however, as surveyors had only limited time windows during which to ascertain the appropriate information for each vehicle. Additionally, only vehicles containing children were examined, so the results pertaining to seat belt usage rates may be misleading as to the rates for the entire population.

A thorough review of literature, as well as discussions with local contacts, has allowed for a determination to be made that no research has been performed which determined the seat belt and child seat usage rates for Hispanics in Iowa. Local contacts included

- John Lundell, MA; Deputy Director, Injury Prevention Research Center
- Meg Gerrard, Department of Psychology, Iowa State University
- LuAnne Simpson, Governor's Traffic Safety Bureau

- Lisa Lutz, Iowa Department of Public Health
- Kathy Leggett, Iowa SAFE KIDS Coalition Coordinator

The consensus of those contacted was that past examinations for the state have only focused on the overall seat belt and child seat use, with no examination of use by race. In terms of such breakdowns, those contacted were only aware of the research performed in other states, the majority of which was discussed in previous sections of this report. The lack of a breakdown of rates by race has left the question posed in the research hypothesis unanswered: what are the seat belt and child seat usage rates for Hispanics in Iowa?

6. SUMMARY

This report presents results of a literature review conducted to evaluate racial differences in seat belt and child restraint use. Both national studies and information specific to Iowa were evaluated. Very little information was available specific to Iowa. A NHTSA study suggested that Iowa's seat belt use rate was 82% (2002) but no information was available to evaluate racial differences or child restraint use.

Studies conducted in other areas of the country on both belt and child use restraint use as well as racial differences in use were evaluated. A summary of studies is presented in Table 3. As shown, no clear conclusions can be drawn as to whether Hispanics and African-Americans are more or less likely to wear seat belts and use child restraints than Caucasians. Several studies indicate lower use rates while others show similar usage.

A summary of key finding for belt use from the literature include

- Those with higher education levels were more likely to use seat belts.
- Belt use was related to the type of vehicle driven, and was lower for pickups.
- Mixed results were found for differences in use by race.
- Belt use rates differ in states with secondary belt laws versus those that have primary belt laws.
- One startling finding was the unusually high alcohol use while driving and crash rates among Hispanics.
    - 9.3% Hispanics compared to 4% non-Hispanics were involved in alcohol-related crashes according to one study.
    - Fatally injured Hispanic drivers were more likely to be intoxicated over the legal limits.
    - In one North Carolina community, 25% of deaths for Hispanics were a result of motor vehicle crashes compared to less than 3% for Caucasians and African-Americans.
    - In California, a disproportionate number of crashes for the Hispanic population was reported.

Table 3. Summary of seat belt use or non-use among Hispanics, African-Americans, and Caucasians

*****Note that some are reported as belt use and others reported for not using belts**

Study	Type of Study	Findings
NHTSA, 2003	Observational	Hispanic (78%), African-American (77%), Caucasian (76%) all similar
NHTSA, April 2002	Self-Reported	Hispanics (88%) highest, African-American (81%) and Caucasian (83%) similar
FDOT, 2001	Observational	Caucasian (72%) highest, then Hispanic (63%), then African-American (57%)
Parada, 2001	Self-Reported	Caucasians (70%), Hispanic (60%)
Aty and Radwan, 1998	Florida crash data	African-Americans and Hispanics involved in crashes were less likely to use belts than Caucasians
Harper et al, 2000	FARS in Colorado	Fatally injured Hispanic drivers (84%) less likely to wear belts than fatally injured non-Hispanics (70%)
Braver, 2003	FARS	African-Americans less likely (78% male, 62% female) to wear belts than Caucasians (72% male, 55% female) and Hispanic (71% male, 52% female)
FDOT,	Observational	African-American (male 54%, female 61%), Hispanic (male 57%, female 71%), Caucasian (male 67%, female 72%)
Nelson, Bolen, and Kresnow, 1998	Self-reported	Hispanics higher than Caucasians, African-Americans lowest
Oguntoyinbo, 2001	Observational	Higher for Hispanics (85%), 76% Caucasians, African-Americans (79%)
Wells et al, 2002	Observational	Locations with primary belt laws had similar belt use by race; locations with secondary laws African-Americans lowest (male, 37%, female 59%), similar Hispanics (52% male, 65%) and Caucasians (53% male, 66% female)

For child restraint use the following key findings were found in the literature:

- Child restraint use was related to belt use by the driver.
- Children were less likely to be restrained as the child got older.
- Less likely to be restrained as the number of occupants in the vehicle increased.
- Less likely to be restrained in pickups than passenger vans, SUV, or passenger cars.
- Education and income level of parents were related to child restraint use.
- Even when child restraints are used, they are often used incorrectly.

- Little information was available on differences in child-restraint use by race.
- One study by Texas Transportation Institute (TTI) found 19% of Hispanic preschool children were restrained compared to 62% of other races.

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