

Evaluating the Feasibility of Implementing a Child Safety Seat Installation Program within the
Chesterfield-Union Township Fire Department

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Certification Statement

I hereby testify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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Abstract

Each year improperly or unrestrained juveniles are killed in motor vehicle collisions. Had they been properly restrained, their chances of survival would have greatly increased. The problem is that poor and inconsistent child seat usage within the Chesterfield-Union Township Fire Department's response district leads to an increased potential for juvenile injuries or deaths from motor vehicle collisions. The purpose of the research was to identify areas in which the Chesterfield-Union Township Fire Department could improve the safety of juveniles in motor vehicles and to evaluate the feasibility of a community car seat installation program. Using the descriptive research method the following questions were asked: What does national data show regarding juvenile injuries due to improper child seat usage? What have other departments done to reduce the number of juvenile injuries due to motor vehicle collisions? What agencies, if any, in Madison County provide child seat installation, and what qualifications do they have? Using the data collected from citizens, what is the community's attitude toward using the assistance of a child seat installation program? What obstacles could possibly affect the successful implementation of a child seat installation program by the Chesterfield-Union Township Fire Department? A literature review, a citizen survey, and a Chesterfield-Union Township Fire Department membership survey were used to research this problem. The results showed there is a significant need for the Chesterfield-Union Township Fire Department to implement a car seat installation program, residents are willing to participate in the program, and members are willing to volunteer their time to become certified car seat technicians. It was recommended that the Chesterfield-Union Township Fire Department implement a car seat installation program by becoming a permanent car seat installation site sponsored by the Automotive Safety Program of Indiana.

Table of Contents

Certification	2
Abstract	3
Table of Contents	4
Introduction.....	5
Background and Significance	6
Literature Review.....	9
Procedures.....	17
Results.....	22
Discussion.....	27
Recommendations.....	31
Reference List.....	35
Appendices	
Appendix A: Interview Questions for Fire Departments.....	38
Appendix B: Interview Questions for Madison County Safe Kids.....	39
Appendix C: Citizen Car Seat Survey	40
Appendix D: CUTFD Car Seat Survey.....	41
Appendix E: Graphic Results of Citizen Car Seat Survey.....	42
Appendix F: Graphic Results of CUTFD Car Seat Survey	45

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Ever since the first motorized vehicle rolled off the assembly line over a century ago, passengers have been involved in collisions. Over the years the number of injuries and deaths due to motor vehicle collisions has continued to increase, and the amount involving juvenile motor vehicle passengers has been particularly disturbing. Numerous efforts have been made to greatly reduce the number of juvenile injuries or deaths due to motor vehicle collisions, such as seat belt implementation, child safety seat restraint mandates, vehicle crash technology, and air bag installation. Some vehicle safety systems are armed just by turning on the vehicle, which takes away a large amount of human error. However, other safety devices, such as seat belts and child safety restraints, need to be applied properly each time in order to work correctly. The problem is that poor and inconsistent child seat usage within the Chesterfield-Union Township Fire Department's response district leads to an increased potential for juvenile injuries or deaths from motor vehicle collisions.

The purpose of the research was to identify areas in which the Chesterfield-Union Township Fire Department can improve the safety of juveniles in motor vehicles and to evaluate the feasibility of a community car seat installation program. The following questions were answered using the descriptive research method: 1. What does national data show regarding juvenile injuries due to improper child seat usage? 2. What have other departments done to reduce the number of juvenile injuries due to motor vehicle collisions? 3. What agencies, if any, in Madison County provide child seat installation and what qualifications do they have? 4. Using the data collected from citizens, what is the community's attitude in using the assistance of a child seat installation program? 5. What obstacles could possibly affect the successful

implementation of a child seat installation program by the Chesterfield-Union Township Fire Department?

Research was conducted using a literature review, a survey to obtain the overall attitude of the public toward this issue, and a survey taken by the Chesterfield-Union Township membership to attain their willingness and availability to implement any necessary changes.

Background and Significance

The Chesterfield-Union Township Fire Department (CUTFD) is located in Madison County, Indiana, consisting of 45 volunteers. The Chesterfield-Union Township Fire Department provides patient transportation and basic life support with two in-house ambulances. There is one part-time emergency medical technician who staffs an ambulance on weekday mornings. The Chesterfield-Union Township Fire Department also provides fire suppression, utilizing two engines, a 100-foot aerial ladder truck, a heavy rescue truck, a brush truck, a 3000-gallon water tender, and an incident command vehicle. The incident command vehicle is staffed during evening and overnight hours by a volunteer fire officer. All other apparatus positions are filled by volunteers as needed depending on the call type.

The Chesterfield-Union Township Fire Department offers specialty rescue operations in the form of water rescue and hazardous materials operation response. The department's dive team consists of five certified rescue divers and a dive trailer, which includes a 14-foot inflatable Zodiac boat with motor. All CUTFD personnel are trained to the operations level in water rescue and hazardous materials response.

According to the 2010 Census (2011), CUTFD provides these services to the nearly 9,000 citizens that make up Union Township and the Town of Chesterfield. The district contains

three miles of Indiana State Highway 32, three miles of Interstate 69, and approximately 50 miles of county roads.

The Chesterfield-Union Township Fire Department averages 750 calls a year for service, with approximately 8% of them being motor vehicle collisions (MVC). Over the last 10 years CUTFD has responded to 390 motor vehicle collisions within its jurisdiction. Of these, 118 collisions involved juveniles under the age of 18. Digging deeper into the statistics reveals that an alarming 20 of the 118 juveniles had no safety restraints in use at the time of the collision (Firehouse (Version 7.2), 2005). This statistic does not account for the number of juveniles that had seat restraints in use but used improperly.

Two specific motor vehicle collisions involving juveniles stand out in CUTFD's history over the past seven years. In April of 2005 CUTFD responded to a single-vehicle MVC. As rescue and emergency medical service companies arrived, they found an SUV on its roof, having rolled over numerous times. With debris stretched over an eighth of a mile on Interstate 69, emergency personnel began to triage the situation. Seven people had been riding in the SUV—four teenagers and three adults. Two of the juveniles and one adult were unrestrained and were ejected, while the other two juveniles and adult were restrained. Ultimately the ejected adult and one ejected teenager, along with the one restrained adult, all lost their lives, while serious injuries were sustained by the other four riders.

When dealing with seatbelt usage in general, the National Highway Traffic Safety Administration (NHTSA) (2008) research concludes that when a front-seat vehicle occupant is properly restrained, the chance of fatality is reduced by 45 percent when involved in a serious motor vehicle collision. Additionally, the research reports on the staggering statistics regarding ejection:

Ejection from the vehicle is one of the most injurious events that can happen to a person in a crash. In fatal crashes in 2008, 77 percent of passenger vehicle occupants who were totally ejected from the vehicle were killed. Seat belts are effective in preventing total ejections: only 1 percent of the occupants reported to have been using restraints were totally ejected, compared with 30 percent of the unrestrained occupants. (National Highway Traffic Safety Administration, 2008, p. 3)

This information indicates that if ejection can be prevented, then a person's chance of survival when involved in a serious motor vehicle collision increases. This statistic holds true when dealing with people of any age, including juveniles. Had everyone in the rolled SUV in the above incident been properly restrained, the likelihood of these fatalities occurring would have been greatly decreased.

The Chesterfield-Union Township Fire Department responded to another incident in March 2004, involving a mini-van that struck the side of a single-family residence. The adult driver had a seizure and lost control of his vehicle, imbedding the front end of the vehicle into a local garage. The driver was properly restrained, but his legs were pinned by the displaced firewall. His two sons, ages five and nine, were not restrained. As the van came to a sudden stop, both boys were thrown forward from the rear of the vehicle, causing neck and spinal trauma. If these juveniles had been properly restrained, they might not have sustained such serious injuries.

When looking at statistics collected regarding children and restraint use, the severity of the problem becomes clear. According to the NHTSA (2009), the leading cause of death for juveniles between the ages of 3 and 14 is motor vehicle collisions. In fact, in 2008 the United States averaged 4 juvenile deaths a day due to trauma caused by an MVC (National Highway

Traffic Safety Administration, 2009). The NHTSA (2009) also reported that of the nearly 6,000 juveniles 14 and younger that were involved in a motor vehicle collision in 2008, 23% were unrestrained. When looking at this age group's fatalities, 46% were unrestrained.

The key to minimizing juvenile injuries and fatalities is simple—find a way to get citizens to properly restrain juvenile motor vehicle passengers. If CUTFD does not take an active role in the education of its citizens in proper car seat usage in some form, one can expect devastating results. Conversely, if CUTFD can effectively help increase the number of properly restrained juveniles, lives will be saved. Therefore, because of the direct impact on the lives of CUTFD's citizens, this subject area and research specifically meets the United States Fire Administration's strategic goal to "reduce risk at the local level through prevention and education" (United States Fire Administration, 2010, p. 13). This topic also ties directly to the National Fire Academy's Executive Analysis of Community Risk Reduction curriculum because in order for CUTFD to develop a successful child safety seat campaign, the community risk reduction module must be followed as outlined in class.

Literature Review

Nationally, there is still an epidemic of poor child safety seat usage and the statistics are there to prove it. Nearly 1,400 juveniles lost their lives in motor vehicle collisions in 2005 across the country, with almost 700 of them being unrestrained (Safe Kids USA, 2009). In addition to negligence, unintentional misuse is also a large problem. According to Safe Kids USA (2009), a leading advocate and education agency for the safety of children, during routine car seat checks 84% of all child car seats "showed critical misuse," while booster seat misuse was found to be 41% (p. 1). These staggering findings are not just for younger juveniles. They also hold true for older juveniles that meet the criteria for normal seatbelt use. The NHTSA

(2009) reports that “in 2008, 70 percent of the passenger vehicle occupants ages 13 to 15 killed in traffic crashes were not restrained—the highest percentage out of all age groups” (p. 2).

However, these devastating results are preventable. Research shows that when properly restrained, an infant has a 71% increase in survival if involved in an MVC, while a toddler has an increased survival rate of 54% (National Highway Traffic Safety Administration, 2009, p. 4). Proper booster seat usage reduced the probability of injury for juveniles aged four to seven by 59% (Durbin, Elliott, & Winston, 2003). Juveniles of seat belt age also have a 45% increase in survival rate when wearing a seat belt properly (National Highway Traffic Safety Administration, 2009, p. 3).

Evaluation of the NHTSA (2009) report further reveals that the country has made great strides in increasing the proper use of child safety seat and seat belt usage since 1975. Between 1975 and 1997 an estimated 4,439 children’s lives were saved due to being properly restrained in a car seat. This total has nearly doubled to 8,959 lives saved in the following eleven years (National Highway Traffic Safety Administration, 2009, figure 2). Regular seat belt usage has saved even more lives. Approximately 100,000 lives of all ages were saved between 1975 and 1997. However, between 1998 and 2008 an additional 155,000 lives were estimated to be saved, which includes the above-mentioned, problematic age group of 13 to 15 year olds (National Highway Traffic Safety Administration, 2009, figure 1).

The logical question based on the above statistics is “why did the public’s habits of properly restraining juvenile passengers increase during the last thirteen years?” The answer to this question is three-fold. The first of these is that by 1988 all fifty states had adopted child safety seat laws (Wohleber, 2006). These laws impact the public’s usage habits greatly when it comes to securing juveniles in vehicles. According to compiled findings published by a task

force led by the Center for Disease Control's Division of Unintentional Injury Prevention (2011), laws mandating car seat use have reduced fatal injuries by a median 35%. Furthermore, observed child seat use increased a median 13% (Center for Disease Control, 2011). A review of Indiana State Law (2004) confirms that juveniles from the ages of zero to 16 are required to be properly secured (Passenger Restraint Systems for Children, 2004).

The second reason for the increase in child seat usage is that car seats have become easier to install. On September 1st, 2002 the Lower Anchors and Tethers for CHildren (LATCH) system became federally mandated to be installed in all vehicles made or imported into the United States (National Highway Traffic Safety Administration, n.d.). Also in 2002, the NHTSA (n.d.) started an "Ease of Use" rating system that rates how easily a certain make and model of car seat or booster seat is to manipulate. This system allows purchasers to choose a seat that fits their needs and wants, which in turn improves the chances they will take the time to use the seat properly.

The third reason for this dramatic increase in proper child safety seat usage is the development of child safety seat installation programs. These programs began to gain popularity in the mid 1990s and are effective in modifying the behavior of the public. A study completed by the University of Hawaii (2010) showed that parents who were shown how to install their car seat correctly are four times more likely to be able to install it correctly themselves than if they had not been shown at all (Tessier, 2010). Safe Kids Worldwide also shares similar success with their installation programs. In a report published by Safe Kids Worldwide in February 2007, "child passenger safety checkup events successfully and positively changed parents' behavior and increased their knowledge" (p. 2).

The aforementioned statistics barely begin to shed light on the impact a successful installation program can have on a community. It is the success stories of installation programs saving lives that show the greatest benefit. A car seat installation program provided by the Harris Methodist Erath County Hospital in Stephenville, Texas proved its worth when a family, including 3-month old, was involved in a severe motor vehicle collision. Two months before, the family had taken their car seat and had it installed by a certified car seat technician. They were also shown how to properly secure their infant in the car seat. The family believes that if it wasn't for the expert advice given and procedures carried out by the technician, their daughter would have been fatally injured ("HMEC Car," 2008).

A similar story unfolded in Michigan when a mother got her infant car seat checked by a technician at Mott's Children's Hospital, who moved the seat to a center location in the vehicle. Three weeks later she was struck by a driver directly in the place her daughter was previously sitting. There is no doubt that this installation saved the life of a child (Drouillard, 2007).

These successes are not just for hospitals. Fire departments across the country have successful programs as well, modeling effective ways to provide car seat installation service. Crown Point Fire Department in Crown Point, Indiana is a combination department serving approximately 30,000 citizens. Deputy Chief Michael Parks (2011) described their program as a "difference maker." The Crown Point Fire Department's program is provided by appointment only. This allows an off-duty child safety seat technician to be dedicated to the person and not have to leave if the department has an emergency call. He recommended becoming a Safe Kids permanent fitting station, which opens the doors to some basic funding needs. One dilemma their program is facing right now is that they are overwhelmed by the amount of calls for seat installs. Part of this is due to the local hospital referring parents to their program. They are

working with the hospital to secure more funding to handle the large increase in car seat installation requests. Another challenge he identified is that once you get certified as a car seat technician, it requires quite a lot of time and work to maintain the certification so they have had some certifications lapse. They continue to meet with local entities to help make the program better (M. Parks, personal communication, March 7, 2011).

The Wyoming Department of Fire and EMS also provides a car seat installation program. Wyoming is a combination department just outside of Cincinnati, Ohio serving a population of 20,000. Paramedic Gary Taylor (2011) stated that they install approximately 50 car seats a year and also schedule by appointment only. Their program originally started with six certified cars seat technicians but has since dwindled to four. Their program, however, has a true success story. It started when a local parent had her child safety seat installed by Mr. Taylor, who is one of the Wyoming Department of Fire and EMS's certified cars seat technicians. Several months later, the family was involved in a rollover accident on Interstate 71. The child was unhurt in the incident. They credit Wyoming's car seat installation program for saving their child's life. In fact, the family even came back and requested Mr. Taylor to install the new car seat (G. Taylor, personal communication, March 15, 2011).

Funding is a major component of a successful car seat installation program. In a document written by the California Department of Health Services (2002) that describes a step by step process of building your own car seat installation program, the suggestion is made to pair up with a local agency such as Safe Kids USA. This tactic allows the newly forming program to use their already secured funds as well as marketing strategies. If a local coalition cannot be found, it is suggested that local fire departments get together and pool their funding resources (Weiss & Davis, 2006).

Another common challenge is a lack of certified car seat technicians. Riley Fire Department in Riley, Indiana echoes the sentiment that the other two previously interviewed departments described in that it is difficult to find members willing to get certified and stay certified. According to Kevin Murphy (2011) the Riley Fire Department has only two certified car seat technicians. Appointments are hard to schedule during shift hours due to the possibility of needing to go on an emergency call (K. Murphy, personal communication, March 7, 2011). In fact, in Homewood, Alabama the local fire department had to discontinue its program altogether. The Homewood Fire Department had only one certified car seat technician. Battalion Chief Rusty McCombs stated that “the ability to schedule people with just one man was too much, so we decided to discontinue the program” (Singleton, 2011, para. 3).

The three departments above all use an appointment-only system to handle their citizens’ car seat installation needs. This is not the only approach. The Lynn Fire Department in Lynn, Massachusetts takes its program to citizens by having drive-through car seat checkups. People were able to stop by without an appointment to allow flexibility (Liscio, 2010).

On March 11th, Joanne Amick of Madison County Safe Kids was contacted to gain more information on the state of local car seat installation programs. Mrs. Amick oversees the Madison County Safe Kids coalition through Community Hospital of Anderson, Indiana. Mrs. Amick confirmed that there is no other organization in the county that offers a car seat installation service. Originally the Madison County Safe Kids coalition had six car seat technicians during its inception in the year 2000; however, Mrs. Amick is now the only technician left due to a lack of interest in recertification. Mrs. Amick explained that she installs approximately 100 car seats a year in the county and will regularly go out to local community

child care facilities upon request in order to educate, inspect, and install car seats (J. Amick, personal communication, May 11, 2011).

Overall management and funding for Madison County Safe Kids is provided by the Automotive Safety Program at Riley Hospital for Children (J. Amick, personal communication, May 11, 2011). This program was founded in 1981 and has the sole mission “to reduce injuries and fatalities resulting from motor vehicle crashes in Indiana” (Indiana University School of Medicine, n.d, para. 1). Mrs. Amick stated that the Automotive Safety Program gives each permanent Safe Kids car seat installation site a sufficient grant to get started, mainly for advertising and to purchase car seats for low-income citizens. Each year the installation sites are given follow-up funds based on the receipts returned and the amount of seats installed (J. Amick, personal communication, March 11, 2011).

In order to examine the specific requirements to become a permanent car seat installation site for the Automotive Safety Program, Marnita Louzon, a state supervisor of the program, was contacted. Ms. Louzon described the basic requirements: have at least one certified car seat technician, be able to offer at least 10 hours a month where citizens can make appointments for car seat installations, have a sheltered facility in which to perform the installation, and submit monthly and yearly reports concerning funding use and the number of car seat installations. A simple application and commitment sheet is all that is needed to receive start-up funding once the four requirements are able to be met (M. Louzon, personal communication, March 14, 2011).

Grant funding available through the Automotive Safety Program to launch a permanent car seat installation site is \$2000. Receipts are then forwarded to the Automotive Safety Program for items purchased through the grant, such as car seats for low-income families, office supplies, advertising costs, and installation supplies. Continuing annual funding is given based

on the number of seats installed the previous year. Last year, in order to receive the highest continuing grant of \$2000, a permanent car seat installation site needed to averaged 30 installations per month (M. Louzon, personal communication, March 14, 2011).

Training to become a certified car seat installation technician is fairly accessible. In order for the Automotive Safety Program to commit to bringing the 32-hour car seat technician course, the host organization must have a minimum of five students, a training room, and a facility to house a community car seat check-up event. The class costs \$75 per student and is held over a four-day period, eight hours each day. The Automotive Safety Program will supply the needed instructors and work with the host organization to schedule the class during a time that is most available to the prospective students (A. Brooks, personal communication, March 14, 2011).

Upon review of the above references, as well as the national statistics regarding child seat use, three main ways stand out that would impact car seat usage: adopting and enforcing state child restraint laws, making car seats easier to install and use, and providing car seat installation education to the citizens of the community. Obviously the focus of the literature review and subsequent research is directed to what the fire department can directly impact, and that is the development of a successful car seat installation program. When referencing materials on this subject, challenges such as funding and staffing became evident. Options on program delivery are diverse and can be tailored to the needs of the community. Possibilities exist in becoming a permanent car seat installation site through the Automotive Safety Program offered through the Riley Hospital for Children in Indianapolis, Indiana. For these reasons, the remaining research will be two-fold: evaluate the community's car seat usage habits and willingness to use a car seat

installation program, and determine if CUTFD's membership involvement would support the development of a car seat installation program.

Procedures

The research to help answer the questions concerning the feasibility of the Chesterfield-Union Township Fire Department providing a car seat installation program started with a literature review. The National Fire Academy's Learning Resource Center houses one of the world's largest collections of emergency responder references (Federal Emergency Management Agency, n.d.). While on site in Emmitsburg, Maryland for the second-year of the Executive Fire Officer Program, a search of these materials within the Learning Resource Center yielded many sources.

Sources for the literature review were also found using the Internet. This allowed current sources to be found from references outside the realm of emergency services. Also, the Internet was very helpful in finding and studying statistics published by the National Highway Traffic Safety Administration, which was the main focus of the first research question.

The second and fifth questions were also answered with the literature review. An Internet search was done of two databases: the Automotive Safety Program database, which displays primarily permanent Safe Kids car seat installation sites in Indiana, and the National Highway Traffic Safety Administration database of car seat installation sites. From these databases, three departments were chosen that mirrored the size and makeup of CUTFD most closely, and their car seat installation program contacts were interviewed over the telephone. Each interview consisted of four questions, which are included as Appendix A, and lasted approximately 10 minutes.

Research question three deals specifically with Madison County, Indiana. The director of the Madison Country Safe Kids coalition, Joanne Amick, was selected for an interview because of her expert knowledge in the field of juvenile safety. A meeting was scheduled for March 11th, 2011, at her office at Community Hospital in Anderson, Indiana. Seven questions were asked pertaining to other agencies in the county delivering car seat installation services, obstacles to program implementation and maintenance, and training resources. The interview questions are included as Appendix B. The meeting lasted approximately 30 minutes.

The limitations of the interviews were minimal. The main limitation was that only two databases were found which listed agencies, including fire departments, that deliver car seat installation services in Indiana. There could very well be additional fire departments in the state that were not able to be identified that mirrored CUTFD better than the ones interviewed.

Based on the feedback received from the literature review and interviews, two surveys were developed to answer question four and expand on question five's results. In order to answer question four, which pertains to the community's attitude about using a car seat installation program if offered by CUTFD, a six-question survey was constructed. Five questions were multiple-choice with one answer possibility, and the other question was multiple-choice with the possibility of multiple answers if needed. The first question asked about the jurisdictional residency of the survey taker. The following four questions were asked to gain an understanding of the individual's car seat usage habits and confidence. The final question asked if they would utilize a car seat installation program if offered by CUTFD.

A summary was written at the top of the survey as an introduction as to why the Chesterfield-Union Township Fire Department needed the community's help in gathering this vital information. It explained that any individual that transports a child in a motor vehicle

should fill out his or her own survey because different people might have different car seat use habits, even if related or living in the same household. Also, it clearly stated that the survey was anonymous. This community car seat survey is included as Appendix C.

In order to disseminate the survey effectively, the editor of the *Chesterfield Weekly*, Joey Cooper, was contacted about publishing. The *Chesterfield Weekly* is a free weekly newspaper that prints 2,100 copies and reaches an estimated 4,000 of the 10,000 residents of CUTFD's jurisdiction (J. Cooper, personal communication, March 10, 2011). Mr. Cooper agreed to print the survey in two papers, free of charge to the department. When editing, he placed the survey at the corner of a page to allow for easy removal.

Instructions were also written that explained the three options for submitting the survey. The first option was clipping the completed survey from the *Chesterfield Weekly* and mailing it directly to CUTFD's address on the form. The second option was allowing surveyors to drop the same form in the mailbox at CUTFD's fire station. The final option was to electronically take the survey on CUTFD's website. To accomplish this final submission method, an account was set up at <http://www.surveymonkey.com>. Using the website's tools, an identical survey to the survey in the newspaper was created and was placed on CUTFD's website through the website address <http://www.cutfd.org/survey>.

The *Chesterfield Weekly* placed the survey in two newspapers. The first published survey was delivered to residents on Thursday, February 10th, 2011, with the second running of the survey arriving in the Thursday, February 24th, 2011 edition. Remarkably, the first running of the survey yielded zero paper returns and only five electronically-completed surveys. The second newspaper publishing resulted in zero returned surveys of any type.

Realizing that these scarce results were not acceptable, a more proactive approach was taken to obtain completed surveys. The survey was taken to Bethany Christian Church on the morning of Saturday, February 26th, 2011, where a community juvenile basketball program was being held. This program had approximately 100 children participating, from the ages of three to five. As families arrived and collected their children's nametags, they were asked to complete a survey. The response to this method of survey delivery was good, with 46 surveys being completed at the event.

Another proactive method used to collect data through this survey was to take it to two local daycare facilities within CUTFD's jurisdiction. Parents were asked to complete the survey by the daycare facilitator, and it was requested that each individual parent complete a survey. Blank surveys were dropped off at the two institutions on Friday, March 4th, 2011, and completed surveys were retrieved one week later on Friday, March 11th, 2011. Between the two daycare facilities, a total of 26 surveys were completed and returned.

The final way used to increase the number of returned surveys was to post it on the social network Facebook. It was posted to friends so that they could disseminate it to individuals that lived in the Chesterfield, Indiana area. This strategy resulted in another 13 electronically-submitted surveys.

One limitation of the survey was that it did not reach as diverse a population as intended. Originally, all adult readers of the *Chesterfield Weekly* were surveyed. This group includes individuals that consistently transport juveniles by motor vehicle and also people who do not transport juveniles by motor vehicle on a regular basis. This would have warranted a more diverse collection of results. Instead, the active approaches to gaining the desired information dealt primarily with parents who transport juveniles on a regular basis. Furthermore, it is

assumed these individuals have at least one child in the zero to five-year-old age group for juveniles in daycare or a three to five-year-old range for the basketball program. This does not mean that these same individuals are not transporting older juveniles, but it does possibly exclude those that only transport older juveniles.

Another limitation to this survey was that although the survey was anonymous, surveyors might have tended to score themselves higher in regard to their own car seat usage habits. For instance, when asked how often the individual takes the time to properly secure the juvenile into the car seat, a surveyor might have answered “Most of the time (75-99% of vehicle rides)” when they actually fell into the category of “Sometimes (25-74% of vehicle rides).” This could have been due to the fact that the individual was in denial of their car seat usage habits or just had a difficult time approximating their car seat usage habits. Also, some surveyors might have chosen an answer that better reflected their intentions than reality.

A final limitation of this survey, and probably with most surveys, was that there was no way to eliminate repetition in results. Both electronic submissions and paper submissions are nearly impossible to collect without the possibility of an individual taking a survey more than once.

The fifth question, asking what obstacles CUTFD could face by implementing a car seat installation program, warranted a survey of the CUTFD membership. This survey consisted of three questions and was written to attain each member’s attitude and willingness to volunteer his/her time to a possible car seat installation program. This survey is included as Appendix D.

The Chesterfield-Union Township Fire Department meets the first Monday of the month for a membership meeting and the second Monday of the month for fire training. On Monday, March 7th, 2011 the membership survey was handed out to all CUTFD emergency personnel in

attendance. All 19 members completed and returned the survey. On Monday, March 14th, 2011 members that had not yet completed a survey were asked to submit their data. This second round of results yielded two more completed surveys, bringing the total number of completed and returned membership surveys to 21.

There were two limitations to this survey. The first was that the results did not include all members of CUTFD. It was mostly the active members in the department that were the ones taking the survey, since they had the time to show up for CUTFD's scheduled meeting and/or fire training. This left out members due to a number of circumstances, such as work schedules, vacations, or lack of interest. The second limitation was that individuals completing the survey were asked about their willingness to volunteer their time to the program if given the opportunity, which only polled their attitude and willingness at the present time. If the time comes to actually get personnel trained or to assist with the program on a greater level, the members' willingness might have changed.

Results

The first research question asked what national data shows regarding juvenile injuries due to improper child seat usage. This question was answered primarily through the literature review. Improperly or unrestrained juveniles traveling in a motor vehicle is still a major problem in the United States. In 2008, 1347 juveniles aged 14 and younger were killed in motor vehicle collisions with 46% of these young passengers being unrestrained (National Highway Traffic Safety Administration, 2009).

As juveniles grow older, the public becomes more lackadaisical in making sure young occupants are properly restrained. In a study by the National Highway Traffic Safety Administration (2009), motor vehicle collisions in which a fatality has occurred show juveniles

less than one year old were unrestrained 13% of the time. This statistic more than doubles to 30% for juveniles eight to 14 years old involved in fatal collisions (National Highway Traffic Safety Administration, 2009, table 1). This trend of child seat use regression as a juvenile ages crosses racial and ethnic boundaries as well. African-American, Asian, Hispanic, and white ethnicities were studied, and, although the research showed some discrepancies between the groups on child seat usage, all groups showed a reduction in child seat usage as their juvenile passengers aged (National Highway Traffic Safety Administration, 2009, table 3).

Research question two asked what other departments had done to reduce the number of juveniles injured due to motor vehicle collisions. This question was also answered mainly by the literature review. Fire departments across the nation have turned to a proactive approach in educating its citizens about proper child seat usage. Hands-on car seat installation programs are the primary way a fire department can impact the behavior of its citizens on this issue. Citizens who are trained by a car seat installation technician are four times more likely to properly restrain their juveniles than those who have not been taught through an installation program (Tessier, 2010). Even more importantly, fire departments like the Wyoming Department of Fire and EMS outside of Cincinnati, Ohio have proven that car seat installation programs save the lives of juveniles because of their real-life success stories.

The third research question asked what, if any, agencies within Madison County, Indiana provide a child seat installation program, and if so, what their qualifications are. By interviewing Joanne Amick of Community Hospital in Anderson, Indiana, it was obtained that she was the only certified child seat technician in the county and thus the only agency offering this service. Community Hospital's program is a Safe Kids coalition permanent child seat installation site, which is funded by the Auto Safety Program through Riley Hospital for Children (J. Amick,

personal communication, March 11, 2011). Child seat technicians are certified through a 32-hour course taught by Automotive Safety Program instructors (A. Brooks, personal communication, March 14, 2011). Once an agency has at least one technician, they are eligible to become a Safe Kids permanent car seat installation site, in turn opening up funding provided by the Automotive Safety Program (M. Louzon, personal communication, March 14, 2011).

Research question four sought out the community's attitude toward a child seat installation program if one were offered in the future. This data was collected through the use of a six-question citizen survey. Overall, 75 surveys were completed. The first citizen survey question simply identified the community in which the survey taker lives. The town of Chesterfield had six citizen responses, while 11 Union Township residents also completed the survey. Middleton warranted two responses, and residents of the city of Anderson completed 32 responses. Twenty-four surveys were completed by citizens outside the previously listed jurisdictions. The Chesterfield-Union Township Fire Department covers both the town of Chesterfield and Union Township, so only 22.7% of the completed surveys came from residents within CUTFD's jurisdiction. This means that 77.3% of responses came from outside CUTFD's district.

The second citizen survey question asked how often a juvenile was transported within their vehicle. One survey returned an answer of "never," while four replied "less than once a week." Eighteen citizens answered that they transport a juvenile "several times a week," but overwhelmingly, 51 (68.9%) responses answered "every day."

When citizens were asked how often they took the time to properly seatbelt their child in their vehicle, 69 out of 75 (93.2%) responded that they do this "every time." However, five surveyors replied "most of the time," which was described to be 75-99% of the time.

Question four on the citizen survey sought to find out for what reasons surveyors decided not to take the time to restrain their juvenile in a motor vehicle. This question allowed multiple responses in a checkbox-style format. Two citizens replied they were “not sure how to do it correctly,” and two more responses were it “takes too much time.” Two other respondents checked that they “don’t have a child safety seat or booster seat.” Sixty-seven responses were “not applicable” because of the previously answered question regarding how often they restrained their juvenile passenger. Two citizens failed to give a response for this question.

The fifth citizen survey question asked about the confidence level of the adult once they had restrained the juvenile in the motor vehicle. Sixty citizens (80%) claimed they were “100% confident that he/she is properly restrained.” However, fifteen survey takers (20%) responded that they were not 100% confident in their abilities to properly restrain their juvenile passenger.

The final question on the citizen car seat survey was asked to see if citizens would use a car seat installation program if offered by the Chesterfield-Union Township Fire Department. Overwhelmingly, 62 of the 75 citizens (82.7%) answered that they would use the services of the car seat program. Thirteen completed surveys (17.3%) showed that they would not use such a service if offered by CUTFD. Results from the citizen car seat survey are depicted graphically in Appendix E.

Although the last question on the citizen car seat survey was the only question on the survey specifically regarding the use of a CUTFD car seat installation program, the other five questions were included in order to gather data regarding the community’s attitude about car seat usage and define their car seat usage habits. This data is valuable because questions can be cross referenced to allow the best possible educational strategies to be developed if a program were to be recommended.

The fifth research question asked what obstacles could possibly affect the successful implementation of a child seat installation program by the Chesterfield-Union Township Fire Department. Interviews within the literature review identified two main obstacles to program implementation: funding and personnel. Deputy Chief Michael Parks of Crown Point Fire Department in Indiana described a lack of funding with his program in order to pay for car seat technicians to come in off shift to meet the demands of an increased number of installation appointments (M. Parks, personal communication, March 7, 2011). Joanne Amick, of the Madison County Safe Kids coalition, identified that at one time she had five other car seat technicians working for her organization, but she is now the only one certified due to lack of interest (J. Amick, personal communication, March 11, 2011). One department had to stop offering their car seat installation program because of a lack of qualified technicians (Singleton, 2011).

In order to research the level of involvement the CUTFD membership was willing to take, and thus be able to examine the feasibility of providing a car seat installation program in regards to an adequate number of car seat technicians, a survey was developed. The membership survey included three questions and yielded 21 responses. The first membership survey question asked if they would be willing to take a 32-hour installation class in order to become a certified car seat technician if offered within a reasonable distance. Seventeen members said they would be willing, while four were not. When asked if they would be willing to travel and stay overnight in order to attend a car seat technician class, nine answered that they would be willing, whereas twelve would not attend. The final membership survey question asked if personnel would be willing to assist the car seat program by volunteering their time even if they were not able to get certified as a car seat technician. All but one of the members who completed the

survey were willing to assist in a future car seat program. Results from the CUTFD membership survey are depicted graphically in Appendix F.

Discussion

The national statistics regarding properly restraining juveniles are staggering. With 700 unrestrained juveniles losing their lives in motor vehicle collisions in 2005 (Safe Kids USA, 2009), there is work to be done. Unfortunately, in addition to this being a national problem, it is also a local problem. The Chesterfield-Union Township Fire Department has had juvenile fatalities in the past due to motor vehicle collisions where the victims were unrestrained.

Since juveniles are not legally responsible for ensuring they are properly restrained in a motor vehicle (Passenger Restraint Systems for Children, 2004), it seems logical to curtail this issue by educating the drivers who transport juveniles. This tactic has proven effective with agencies, including fire departments, across the nation by providing car seat installation programs. Car seat installation programs have made a dramatic impact on society by saving juveniles lives as referenced by the literature review.

There is a significant need to provide a car seat installation program for the citizens of east-central Madison County, including CUTFD's jurisdiction. With Joanne Amick of the Madison County Safe Kids coalition being the only certified car seat technician in the county, a similar program developed by CUTFD would not duplicate efforts. In fact, when asked if a car seat installation program instituted by CUTFD would impede the progress of the Madison County Safe Kids coalition she replied, "Absolutely not," and she would welcome any help it could give the citizens of Madison County in this program area (J. Amick, personal communication, March 11, 2011).

Additionally, the results of the citizen car seat survey prove there is a local need for a car seat installation program. Out of the 75 responses to these surveys, approximately 7% admitted to not restraining their juvenile passengers every time they travel in a motor vehicle. Narrowing these results even more, to just CUTFD's jurisdiction, this statistic inflates to nearly 12%, with two of the 17 surveys reporting that they do not restrain their juveniles every time. It is important to note that this percentage does not include the number of survey takers who think they restrain their juveniles properly in a motor vehicle but unknowingly do not. Nationally, three out of every four juveniles are improperly restrained (National Highway Traffic Safety Administration, n.d.). Statistics that show what the percentage of car seat misuse is for CUTFD's jurisdiction is not obtainable until there is an installation program to record such data. One can assume, however, that it is close to the national average.

Coinciding with the subject of car seat misuse as outlined above is the area of confidence in the survey taker's ability to properly restrain a juvenile in a motor vehicle. The citizen car seat survey reports that overall, 20% do not feel confident that they restrain their juvenile passengers properly. This means that citizens are identifying the problem themselves.

To take things one step further, the results of the citizen car seat survey identified that approximately 83% would participate in a free program that makes sure car and booster seats are properly installed, if offered by the Chesterfield-Union Township Fire Department. Furthermore, 94% of citizens within CUTFD's jurisdiction affirmed they would utilize a car seat installation program.

All the data above shows that there is a definite need to help area citizens in proper usage of juvenile restraints. In addition, citizens who reside both inside and outside CUTFD's

jurisdiction are willing to utilize a car seat installation program to ensure the safety of their juvenile motor vehicle passengers.

Two main obstacles to providing a car seat installation service were identified through the research. One obstacle is securing funding to establish and maintain a program. Funding is needed to properly advertise a car seat program, purchase car seat supplies, such as pool noodles and towels, and obtain initial car seat technician certification for members. Funding is also sometimes secured to purchase car seats from local retailers in order to provide for citizens that cannot afford them.

The Chesterfield-Union Township Fire Department does not have a line item in the 2011 budget year for public education (Chesterfield-Union Township Fire Department, 2011). If no outside help were available, this would be detrimental to the formation of a CUTFD car seat installation program. This main obstacle, however, becomes nearly obsolete if CUTFD is able to secure funding through the Automotive Safety Program run by the Riley Hospital for Children. The \$2000 initial grant provided by this program is adequate funding to provide for advertising, supplies, and even purchase car seats for distribution to needy families. Annual grant renewal is available to all Automotive Safety Program permanent car seat installation sites based on the numbers of installations during the previous year (M. Louzon, personal communication, March 14, 2011). This means that CUTFD would not have to amend its budget to accommodate this program from year to year.

The initial \$2000 grant given by the Automotive Safety Program to become a permanent car seat installation site is not allowed to be allocated to the cost of obtaining initial car seat technician certification (M. Louzon, personal communication, March 14, 2011). However, unlike funding for public education programs, CUTFD currently budgets \$3,000 a year for the

education of its members (Chesterfield-Union Township Fire Department, 2011). It costs \$75 for each student to become a certified car seat technician through the Automotive Safety Program. There are also separate grants available through the Automotive Safety Program specifically for funding the education of new car seat technicians (A. Brooks, personal communication, March 14, 2011). This grant is competitive and is given on a first-come, first-served basis. Because of the availability of funding, obtaining initial training should not pose as significant an obstacle for the Chesterfield-Union Township Fire Department.

The other main obstacle to car seat installation program implementation identified by the research is obtaining and maintaining car seat technicians. Approximately half of the members of the Chesterfield-Union Township Fire Department completed a survey to gather information regarding their willingness to become car seat technicians and/or help with the program. Of the 21 completed surveys, 17 members answered that they would be willing to become a certified car seat technician, if held within a reasonable distance, knowing it is a 32-hour course. Nine of those same members also agreed to become a car seat technician, even if it meant staying overnight to complete the 32-hour class. This data proves that CUTFD members stand behind this program and are willing to put forth the effort to become certified technicians. Since running a successful and lasting program hinges mainly on the number of car seat technicians actively participating in the program (M. Louzon, personal communication, March 14, 2011), CUTFD would be in good shape if even only a small fraction of these volunteers could be trained as such.

In order to get trained as a car seat technician through the Automotive Safety Program, a four-day class, consisting of eight hours each day, must be completed. This training is readily available. April Brooks of the Automotive Safety Program explained that they have done classes

for groups as small as five students and as large as 20 students (A. Brooks, personal communication, March 14, 2011). Since CUTFD is a volunteer fire department, a majority of the members' free time is during weeknights and weekends. Hosting a class at CUTFD over two weekends is a possibility (A. Brooks, personal communication, March 14, 2011). This would maximize the number of members available for the class and thus maximize the number of certified car seat technicians within CUTFD's program. If for some reason CUTFD is unable to host a technician class, there is a large pool of nine members that might be available to travel to one of the classes held around the state of Indiana every year.

In addition to the number of members willing to become car seat technicians, an even greater number of members, 20, affirmed they would be willing to help the car seat inspection program by volunteering their time in some way. This data shows that 95% of the department polled stands behind the implementation of a car seat program.

The implications of the Chesterfield-Union Township Fire Department ignoring the research and data collected could be severe. Improperly or unrestrained juveniles have a greater chance of significant injury or even death when riding in a motor vehicle. The Chesterfield-Union Township has experienced this devastation firsthand on previous emergency runs. In order to reduce the probability of juvenile injury or death due to a motor vehicle collision, an active approach must be taken immediately to educate the citizens of the community.

Recommendations

The recommendation for the Chesterfield-Union Township Fire Department is simple: become a permanent car seat installation site under the Automotive Safety Program. The steps to this process are three-fold: train willing members to become car seat technicians, apply for and

secure initial grant funding through the Automotive Safety Program, and maintain an active car seat installation site.

In order to train the most number of willing members to become certified car seat technicians, it is recommended that CUTFD host a 32-hour technician class. Members should be surveyed to obtain when the most number of volunteers would be available to attend class. The Chesterfield Union Township Fire Department should strive to certify 10 technicians within the first year of program implementation. This will ensure that there is a variety of times and days a citizen could make an appointment for a car seat install. Furthermore, it is recommended that CUTFD look into adding non-emergency members to the certified car seat technician pool, possibly through the use of the CUTFD Auxiliary program. This would leave emergency personnel available to respond to a call, while making certain the car seat customer is receiving the care and attention they expect.

After one group of car seat technicians has been trained, it is recommended that CUTFD apply to become a permanent car seat installation site through the Automotive Safety Program run by the Riley Hospital for Children. The Chesterfield-Union Township Fire Department will need to appoint a program coordinator. Once accepted, funds become available to integrate the program into the community. If possible, CUTFD should invest some of the funds into the purchase of car seats for needy families. These seats should be given out based on guidelines provided by the Automotive Safety Program. It is also imperative that CUTFD uses funding for the investigation and implementation of several strategies for advertising this newly-provided service. Citizens need to know that the program is available and what can be gained if they choose to participate. They should also be made aware of what is at risk if they choose not to participate.

Finally, once the car seat inspection program has been implemented, it is imperative that CUTFD continues to maintain its number of certified car seat technicians. Recertification needs to take place once a year, but it is free (M. Louzon, personal communication, March 14, 2011). It is recommended that CUTFD host a recertification class whenever possible in order to maintain the necessary skills to adequately provide this service to the community.

Since the research shows that there is a tendency for car seat technicians to lose interest as a program progresses, incentives should be researched, such as providing pay for the technicians for each car seat appointment. This pay could be taken from the monthly emergency run stipend that members receive for responding on a call. Other incentives for maintaining certification could include annual recognition at the Chesterfield-Union Township awards banquet and/or allowance of hours spent working within the car seat program counting toward mandated EMS hours for a given month.

Future readers exploring the implementation of a car seat installation program in their own organizations are recommended to research their geographic area for existing car seat installation sites. A duplication of efforts could waste resources if two separate programs are established. Investigate the possibility of joining your resources with the existing agency's resources to supplement their program. If no such program exists, identify if a host organization exists, such as the mentioned Automotive Safety Program, whose sole purpose is to support smaller permanent car seat installation sites. Survey and prepare your organization to ensure that members are willing to support such a program.

The Chesterfield-Union Township Fire Department exists primarily to protect the lives within the community. The data shows poor and inconsistent child seat usage is a problem, both nationally and locally, that the Chesterfield-Union Township Fire Department can directly

influence. The citizens have identified the same problem and are willing to seek the help of professionals. By implementing a car seat installation program, the Chesterfield-Union Township Fire Department will be able to educate its citizens and in turn protect the precious lives of its youngest motor vehicle travelers.

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Appendix A: Interview Questions for Fire Departments

1. Is your car seat installation program run only by your department or does it receive any aid through a partnership with another organization?
2. Did your program hit any obstacles during the implementation and/or delivery phases?
3. How many seats do you install a year?
4. Do you have any success stories?

Appendix B: Interview Questions for Madison County Safe Kids

1. How many car seat installation programs are currently offering services in Madison County, Indiana?
2. What level of service are you able to provide? Are you able to give away seats when needed?
3. What obstacles do you foresee CUTFD facing when starting and maintaining a program?
4. What are the benefits of being sponsored by Safe Kids?
5. Are there any car seat technician courses being offered in the area and what is the cost?
6. How many car seats do you install a year?
7. Do you have any success stories?

Appendix C: Citizen Car Seat Survey

The Chesterfield-Union Township Fire Department is currently examining child safety seat and seatbelt usage in the community. Our goal is to better protect our younger generation from injury if involved in a motor vehicle collision. Thank you for taking a moment to complete the survey below to assist CUTFD in this project.

You may complete this paper survey by mailing to CUTFD, 207 East Main Street, Chesterfield, IN 46017 or by dropping it in the station's mailbox. If you would prefer, you may submit the survey electronically by going to www.cutfd.org/survey.

Each person that transports a child in a vehicle may submit his/her own survey. This survey is anonymous.

1. In which community do you live?
 - a. Chesterfield
 - b. Union Township
 - c. Middletown
 - d. Anderson
 - e. Other
2. On average, I transport a child in a personal motor vehicle _____.
 - a. Never
 - b. Less than once a week
 - c. Once a week
 - d. Several times a week
 - e. Every day
3. How often do you take the time to properly seatbelt the child in your vehicle?
 - a. Every time (100% of vehicle rides)
 - b. Most of the time (75-99% of vehicle rides)
 - c. Sometimes (25-74% of vehicle rides)
 - d. Hardly ever (1-24% of vehicle rides)
 - e. Never (0% of vehicle rides)
4. For what reason(s) do you not properly restrain a child every time you ride in a vehicle?
Choose all that apply.
 - Not sure how to do it correctly
 - Takes too much time
 - Don't think it's important
 - Don't have a child safety seat/booster seat
 - Not applicable (I restrain a child correctly every time.)
5. Once the child is fastened in his/her seat, whether in a car seat or booster seat, do you feel 100% confident that he/she is properly restrained?
 - a. Yes
 - b. No
6. If offered by the Chesterfield-Union Township Fire Department, would you participate in a free program that makes sure car seats and booster seats are properly installed?
 - a. Yes
 - b. No

Appendix D: CUTFD Car Seat Survey

CUTFD is currently examining the feasibility of providing a child safety seat installation program. Please answer the following questions to help in our evaluation.

1. Would you be willing to take a 32-hour car seat technician class to become certified to install car seats if held within a reasonable distance?

- Yes
- No

2. Would you be willing to travel and stay overnight to get certified as a car seat technician?

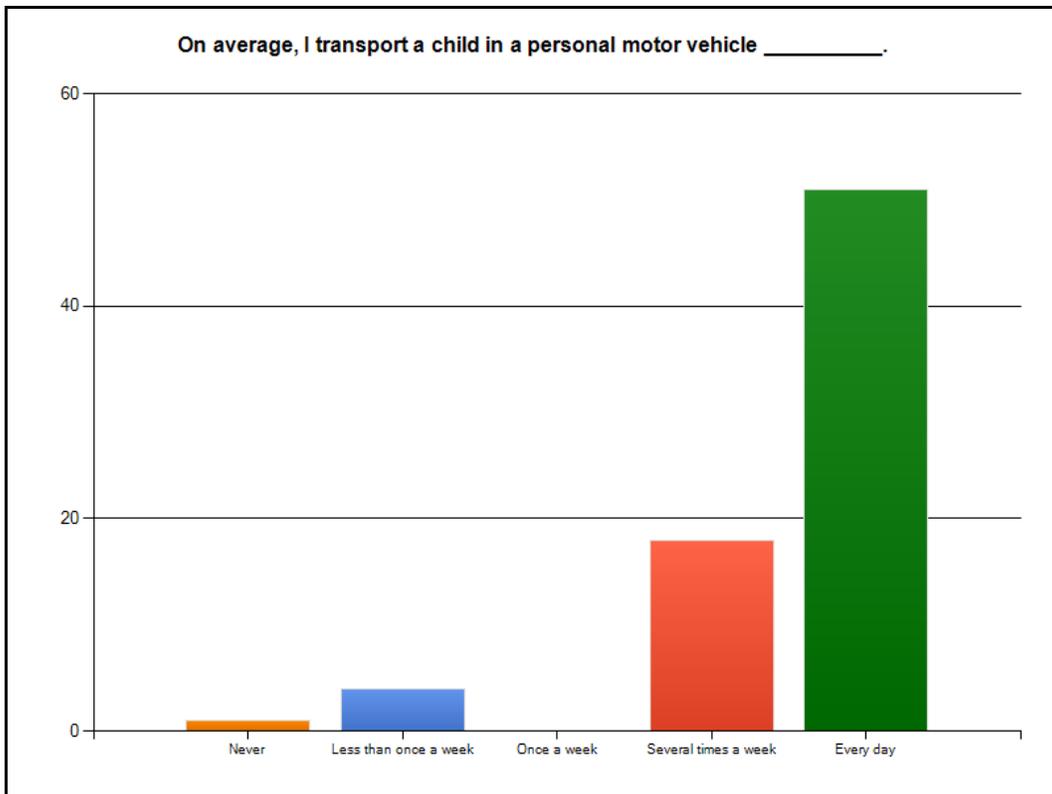
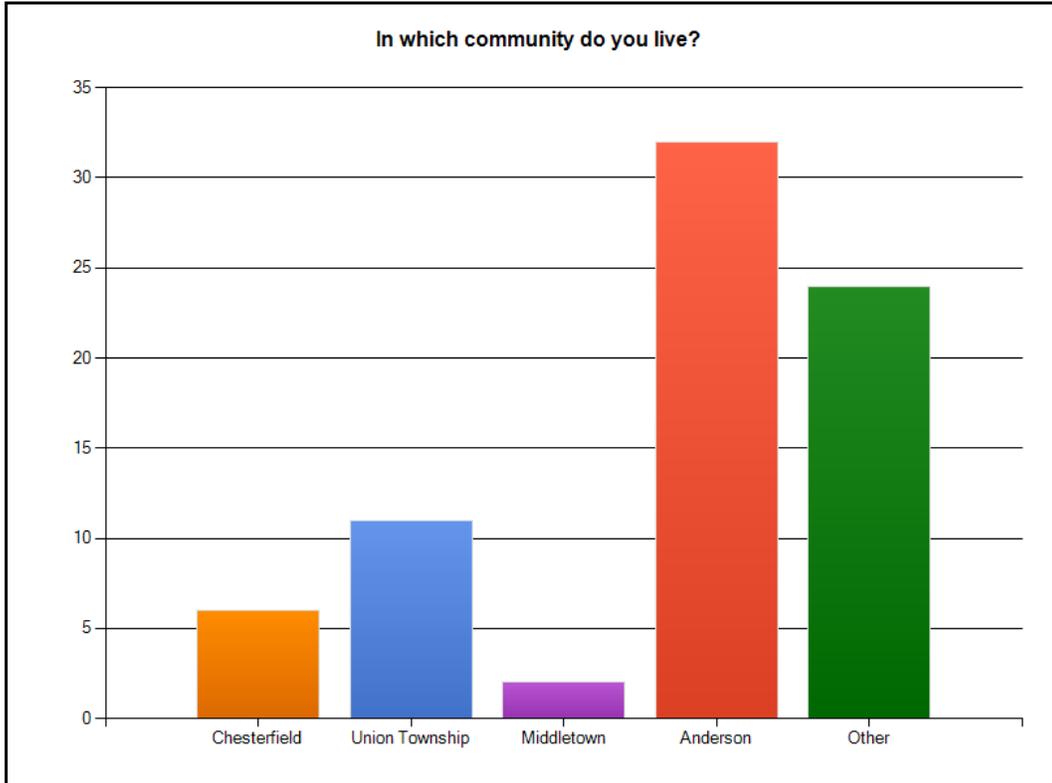
- Yes
- No

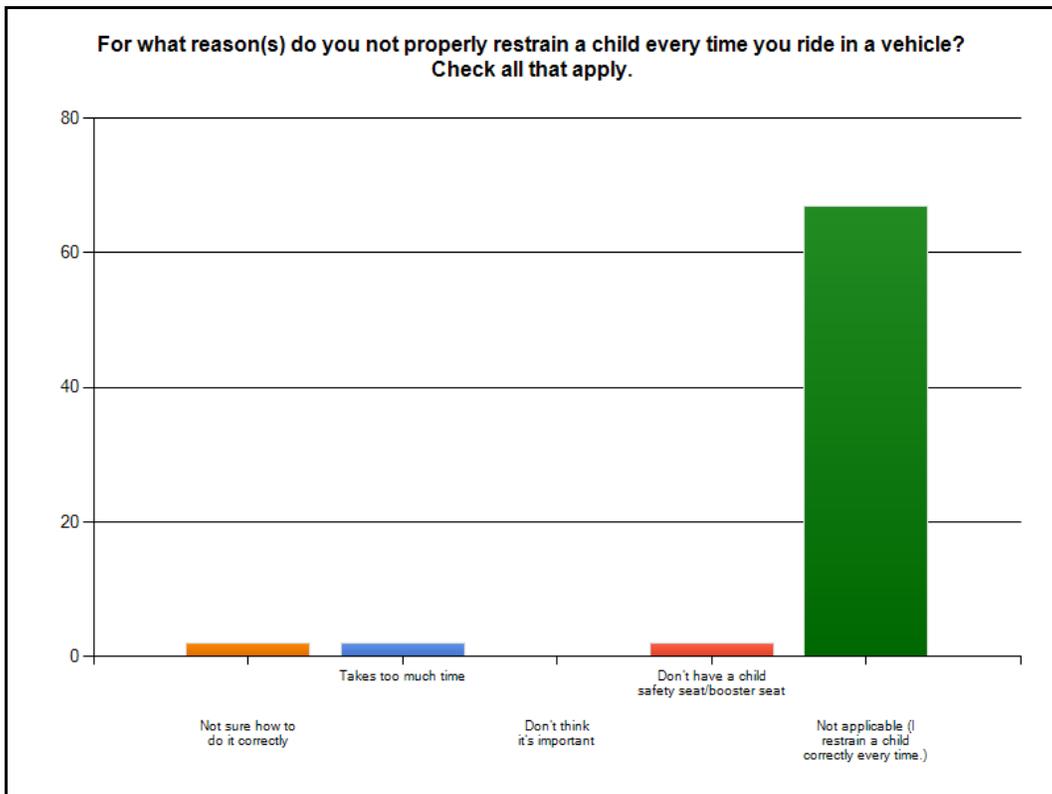
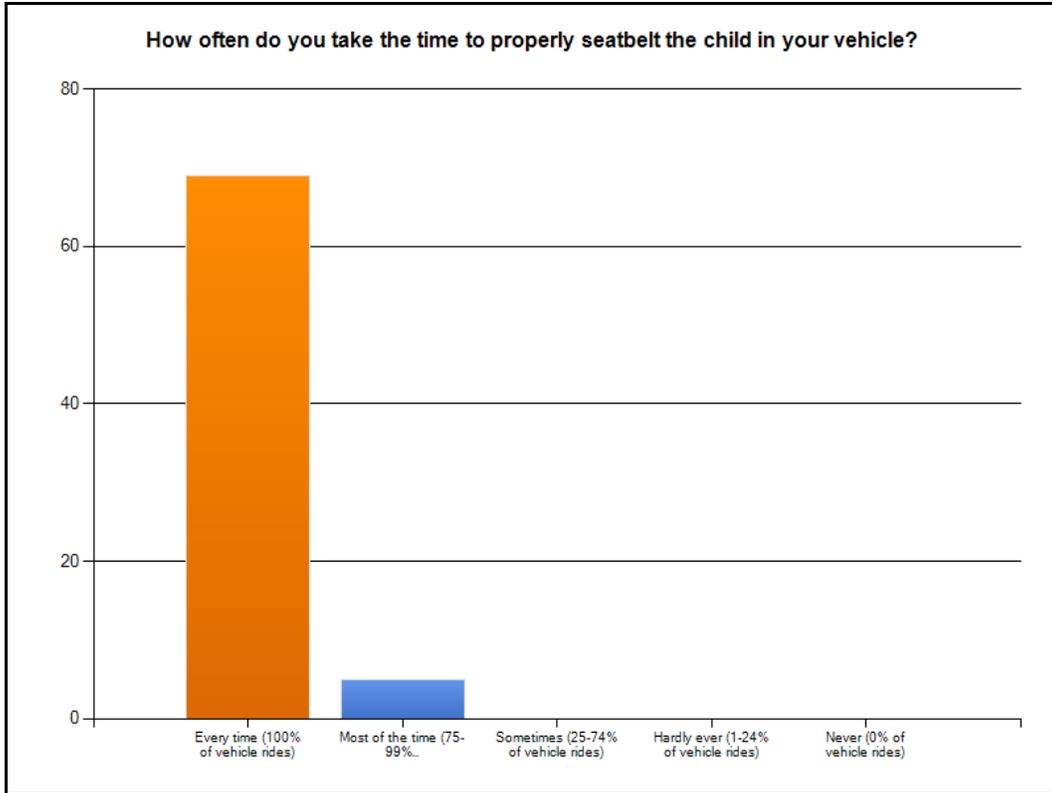
3. Would you be willing to assist by volunteering your time to an installation program if you were not a certified car seat technician?

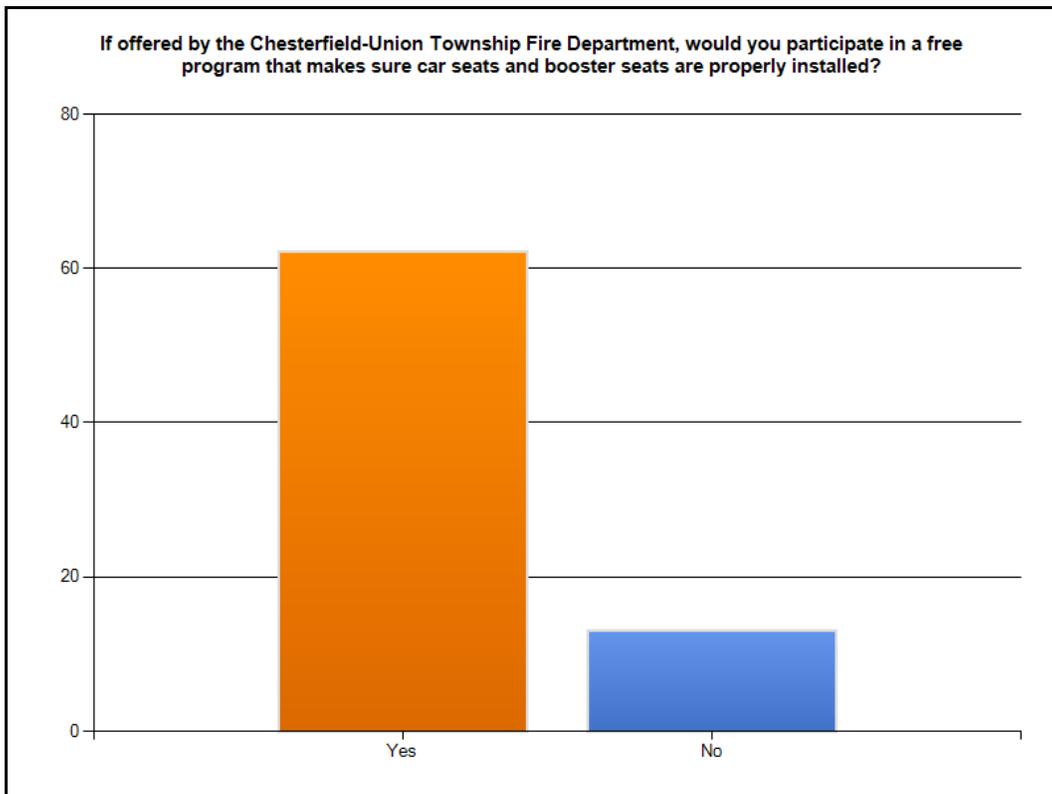
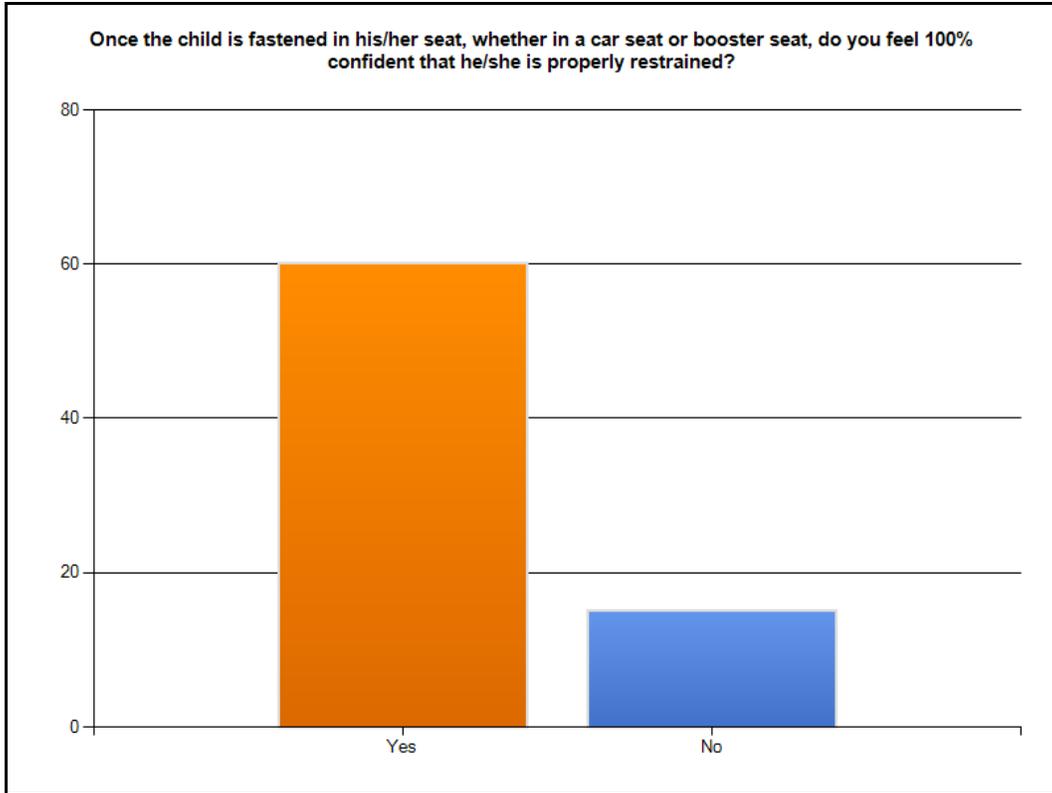
- Yes
- No

Thank you for your participation in this survey.

Appendix E: Graphic Results of Citizen Car Seat Survey







Appendix F: Graphic Results of CUTFD Car Seat Survey

