

Running head: KIDS IN HOT CARS

Kids in Hot Cars:

Can the Daytona Beach Fire Department Decrease the Hyperthermia Danger?

Kristine M. Gray

Daytona Beach Fire Department, Daytona Beach, Florida

CERTIFICATION STATEMENT

I hereby certify 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.

Signed_____

ABSTRACT

The problem discovered was that young children have been inadvertently left in vehicles in Daytona Beach and have suffered from heat exposure. The purpose of this research project was to identify approaches to reduce the risks to children who might be left in a vehicle. Through descriptive analysis, existing prevention or awareness programs at national, state, and local levels were reviewed, contact was made with other departments to determine their level of involvement, and a survey and experiment were conducted to evaluate the awareness that parents have of the dangers of leaving a child unattended in a vehicle. It was discovered that there is little done to promote awareness and there are uninformed parents that need educating. The recommendations were that Daytona Beach Fire Department would work with other agencies and businesses to enhance our community by preventing future occurrences of children suffering in heated vehicles through aggressive public relations awareness programs.

TABLE OF CONTENTS

Certification Statement.....	2
Abstract.....	3
Table of Contents.....	4
Table of Figures	
Table of Tables	
Introduction.....	5
Background and Significance.....	6
Literature Review.....	9
Procedures.....	13
Results.....	16
Discussion.....	19
Recommendations.....	25
References.....	27
Appendix A.....	29
Appendix B.....	30
Appendix C.....	31

INTRODUCTION

The City of Daytona Beach is touted as the World's Most Famous Beach and is located on the east coast of central Florida. The city is surrounded by the Atlantic Ocean on the east and small communities to the north and south. To the west is some wild land interface that borders towns which are considered suburbs of Orlando. Two major highways run through Daytona Beach, Interstate 4 heading east and west and Interstate 95 which travels north and south.

Our local population is 66,941 (US Census, 2000). Statistically, Daytona Beach is below the national average for the population of children under age five. However, according to Halifax Area Chamber of Commerce (2009) during the work week, the population doubles to approximately 130,000. During special events, such as the Daytona 500 NASCAR race and college spring break that draw national attention, our population explodes to over 300,000 people.

Few people are seen riding bicycles or walking to work or to drop off their children at childcare or school. Parking is usually free and easily accessible throughout the city. People bring their children to daycare; mostly via personal vehicle. The population increase during the work week can be attributed to parents who live in another nearby city come to Daytona Beach to work. They may choose a child care facility in the town where they work. The limited hours of operation of many daycares would make that a logical option in order to decrease the time that the child would be at the facility.

The problem is young children have been inadvertently left in vehicles in Daytona Beach and have suffered from heat exposure. The purpose of this research project is to identify approaches to reduce the risk to children who might be left in a vehicle. This research will utilize descriptive methods to answer the following questions: (a) What national, state, or local

programs that raise awareness or prevent injuries already exist?; (b) What are departments of similar size doing to prevent injury or death to children being left in a vehicle?; (c) What factors might contribute to children being left in vehicles?

BACKGROUND AND SIGNIFICANCE

Decals that read “Protectors of Life and Property” are boldly displayed on the side of Daytona Beach Fire Department apparatus. It is a motto that reflects the commitment the department has toward the people served by the firefighters.

The Daytona Beach Fire Department (DBFD) has one hundred and twenty four employees distributed over five divisions; Operations, Training, Emergency Management, Fire Safety, and Administration. One hundred and twelve of those are firefighter/EMTs and forty two of those employees are paramedics. There are seven fire stations that house seven advanced life support (ALS) engine companies, three ALS transport capable rescue trucks, one basic life support (BLS) tower truck, and one battalion command vehicle. The department has many special teams that require specialty training.

The city of Daytona Beach is approximately sixty five square miles in size. The population is 66,941. The median age is thirty six and household income in 2007 inflation-adjusted dollars is \$30,532 (U.S. Census, 2000). The annual average high temperature is 81 degrees Fahrenheit which is derived from computerized weather stations located at 2 of the DBFD fire stations.

DBFD responded to seventeen thousand three hundred and sixty seven calls in 2008 (DBFD, 2009). DBFD responds to an average of two calls per month where a child is locked in a vehicle. (2009) In August of 2001, two year old Zaniyah Hinson died when she was left in the daycare van at Abundant Life Academy of Learning in Daytona Beach (CourtTV, 2003). The

first firefighters to arrive on scene will never forget that incident. On several other lock in type calls, the reports state that the child was overheated to include symptoms such as vomiting. Many times the parent or guardian refuses medical treatment.

Fire fatalities of children and injuries to children from fire in Daytona Beach are very low although DBFD had an increase in 2008 because of a significant fire. (DBFD Firehouse, 2008) Fire prevention programs are conducted almost daily to young children in the community by the engine companies and the public information officer (PIO). Fire extinguisher and other fire safety programs are taught to area adults at home shows, neighborhood watch meetings, and by individual request. A program for car safety awareness does not exist at DBFD.

Only fourteen states have laws about leaving children unattended in vehicles. In Florida, there is a state law that prohibits children under age six from being left alone in a motor vehicle for a period in excess of fifteen minutes if the motor is not running. Also, if the motor is running or the health of the child is in danger, a child under the age of six may not be left in a motor vehicle for any length of time. The fines range from fifty dollars to five hundred dollars if the motor is running or not more than one hundred dollars if the motor is not running (F.S. 316.6135). The fact that leaving the motor running to keep the vehicle cool with the air conditioner is not allowed indicates that this law was enacted for child safety reasons other than hyperthermia.

The consequences for children left unattended in vehicles are typically death or injury from temperature extremes. There are also statistics that link the deaths to suffocation from a child being trapped in a trunk. One of the very few sources to track this type of data is the National Safety Council Injury Facts. In the 2008 edition, it lists two hundred mechanical suffocation deaths due to unintentional public injury in 2006. Temperature extremes caused two

hundred and fifty three or forty six percent of weather-related deaths for 2006 (National Safety Council, 2008). However, it does not break the statistics down into the specific causes so these numbers are not truly representative of the facts desired.

According to an article from an expert meteorologist, from 1998 to 2008, there were forty fatalities due to hyperthermia in a vehicle in the state of Florida. In the first three years of the 1990's, there were only eleven known deaths of children from hyperthermia. Then, auto manufacturers posted warnings that children should not ride in the front seat. Now, the average number of hyperthermia deaths of children left in cars is thirty eight per year. In 2008, the number was forty two. (Null, 2009)

The statistics that describe the circumstances that lead to these unfortunate deaths can be prevented. Fire Departments respond to emergencies of every sort. Progressive fire departments embrace multi-hazard awareness and prevention training. This challenge to educate and prevent deaths to children requires both technical and adaptive change. "Without learning new ways-changing attitudes, values, and behaviors- people cannot make the adaptive leap necessary to thrive in the new environment." (Heifetz & Linsky, 2002). This quote comes from the pre-course reading material for the Executive Leadership course. Proactive leaders can incorporate change to include new prevention ideas in fire departments.

Fire departments are taking on more responsibilities every day. Emergency management for Daytona Beach is coordinated through DBFD. Medical transport is being added to the DBFD agenda. The trend of the all encompassing fire department leads to an evolution of the fire department prevention and awareness protocol. As in any change, there will be a need to follow the APIE model reviewed in the first Executive Fire Officer class. This paper itself adheres to that process. The problem is made known and analyzed, planning is done after thorough

research and narrowing of options, implementation of a solution or solutions, and an evaluation is conducted to ensure the solution is meeting the goals. (NFA, 2008).

This topic supports more than one of the U.S. Fire Administration (USFA) operational objectives. Although, not from fire, a hopeful resolution or a plan to prevent vehicle-related hyperthermia deaths would reduce the loss of life in the age group fourteen years old and below. The basic idea of this paper is to promote within Daytona Beach a portion of a comprehensive, multi-hazard risk-reduction plan lead by DBFD. Also, DBFD would be responding appropriately in a timely manner to this emerging issue that was broadcast on the Oprah Winfrey show in September of 2008.

LITERATURE REVIEW

Finding multiple sources for statistics involving children being left in vehicles is not as readily assessable as one might think. There are many newspaper articles that describe specific circumstances. Just recently, there have been newspaper editorials and even talk show hosts debating this phenomenon and what can be done to prevent future occurrences. Data entry concerns make finding the information in local sources complicated. Overall, the information gathered in this study has helped to answer the research questions which deal with existing programs and contributing factors.

Nationally, Safe Kids, USA has state chapters and local coalitions. In a visit to the local coalition, Safe Kids Volusia/Flagler Counties, Deborah Susswein provided three safety brochures that incorporated some tips on preventing dangers to children left in vehicles. It was combined with other safety information dealing with vehicles hazards such as backing over children, trunk dangers, and proper buckling. The pamphlets were sponsored by Chevrolet GM. Some car manufacturers are investing money into child safety awareness.

Globally, there has been a lot of awareness this past year due to the Oprah Winfrey Show. The segment aired in September of 2008 and was focused on overwhelmed mothers. The guest, Brenda Slaby, was a mother who made a sad and fatal mistake when she forgot her child was in the car with her. Two year old Cecilia was strapped in her child seat when she was discovered eight hours later. The temperatures that August day of 2007 had reached one hundred degrees. She died of a heat stroke.

Brenda was an assistant principle of a school. This tragic day started with stressful anticipation of a critical workday and her morning routine had been changed. Her husband typically took Cecilia and her sister to the sitter and preschool. Her mind was busy planning her day. She was distracted with her many responsibilities and forgot that her youngest daughter was in her car.

Oprah interviewed Norman Fischer, a Zen teacher. He spoke of an epidemic of overwhelmed people. His advice for people is “stop trying to reach perfection and focus more on their happiness, attitude, and state of mind.” (Oprah, 2008) The main focus during this program was it can happen to anyone who is juggling a busy schedule. So, the recommendations for prevention were for parents to concentrate more on their children and ask for help if they notice the feeling of being overwhelmed.

In an article in the Star Tribune (Chanen, 2001), child psychiatrist Carrie Borchardt believes part of the problem is sleep deprivation. Parent work hard and try to fit a lot into each day. Today’s society seems so busy that sleep is not the top priority. Lack of sleep, in her opinion, can cause serious lapses in memory to include forgetting whether or not the child has been safely delivered to child care.

The Washington Post (2009) shed more light on this newly emerging problem with an article called Fatal Distraction. It starts discussing a story of a father from Virginia who is being prosecuted for getting distracted and leaving his son in the child seat to die of hyperthermia. The author, Gene Weingarten, states that this happens to otherwise loving and attentive parents because they get busy, distracted, upset, or confused because of a change in routine about twenty-five times a year. Weingarten also states that this did not happen twenty years ago when car seats could be placed in the front seat of vehicles. The airbag dangers pushed children into the back seat and out of visual of the driver. Basically, relating the epidemic to the out of sight out of mind theory. The problem crosses all ages, ethnicities, and jobs.

Surprisingly, some of the caregivers are charged with crimes and while in virtually the identical circumstances, other caregivers are not charged. In most cases, there was no intent to harm the child so the charges are dropped. Not all states have laws regarding children in vehicles. The state of Florida has a statute that outlines the law and penalty. Children under age six shall not be left unattended in a motor vehicle for more than fifteen minutes or at any time if the motor vehicle is running or the health of the child is in danger. The fine is less than one hundred dollars or not less than fifty but up to five hundred if the vehicle is running or the child's health is in danger. (FSS 316.6135).

David Diamond is interviewed in the Washington Post article (2009). Diamond is a professor of molecular physiology, a memory expert. Part of the human brain works as sort of an auxiliary autopilot as we complete routine tasks such as driving to work. Meanwhile the more complex portions of our brain are planning our day. In normal conditions, the mind can easily handle multitasking and maintain memory of what is happening at all levels. In studies, Diamond found that added stress, however, can decrease the functioning of the brain and that the

autopilot takes over and completes that task with which it is familiar. This is how people forget that there is a child in the vehicle. Something stressful or out of the ordinary, can disrupt their brain functioning.

However, this article points out that not all cases are accidental. Some are cases of neglect. Locked cars have been used as a substitute for a babysitter. Sometimes, substance abuse fogs the brain of a caregiver. There is no government agency that keeps track of the actual facts and data involving cases of child hyperthermia. The nonprofit organization based out of Kansas maintains the data related to such deaths. It is called Kids and Cars and they lobby for increased car safety for kids.

This same article interviewed Janette Fennel who runs Kids and Cars. She believes the answer to the problem is not punishment to parents; it is improved car safety features and increased public awareness. In 2008 she tried to lobby for a law requiring sensors in the back seat of vehicles to determine if a child's weight remained in the seat after the vehicle was turned off. It did not make the final bill.

There was a product invented by NASA engineers that was relatively inexpensive and simple to use and placed in any vehicle. It was patented. The device is not for sale at stores because no manufacturer was willing to produce the device. The explanation was the huge liability if it malfunctioned. Some companies just thought it would not sell because people do not think they would ever forget their child in the car.

The internet blogs following an article about a father who left his child unattended shows how closed minded many people are to this growing epidemic. People chose to pass judgment and reason that a good parent would not forget a child. More judgmental comments are posted on news web sites in reference to similar circumstance with other parents. According to this

article, no one wants to admit to vulnerability and that is why they react as if they are nothing like that parent who left their child to bake.

One EFO paper was found related to children in vehicles. The author reported that in a nationwide survey, only six departments or less than five percent of fire departments has some type of awareness program (Shelley, 2007).

Overall, the literature retrieved for this project was not very abundant. Despite the lack of published information, all sources were confident that child hyperthermia cases from being left in a vehicle can be prevented. Each piece was also passionate that more needs to be done. Technology, awareness education, and vigilance can help reduce this type of tragedies. Some progress is being slowly made to promote prevention. More work is needed in this child advocacy area. Some creative inventions to decrease the risk to children have been designed but need more penetration in the real world.

PROCEDURES

Descriptive research was used in this study. In order to determine what should be done, what is known or current has to be determined. The first research question was able to be answered mostly with the literature review. However, emails were sent to multiple car manufacturing companies and some child seat manufacturers. They were asked directly if there was any current or future technology or awareness program to prevent hyperthermia to children who may be left unattended in a vehicle. The second question entailed emailing fire departments in Florida. The third research question involved a random survey to parents of young children to determine the general knowledge base regarding the safety of children left in vehicles. A blank survey can be found in Appendix A. A simple experiment was conducted to test one of the survey questions.

As a starting point, research had to be conducted to reinforce the problem statement. Personal stories from several firefighters triggered the thought process that there is a concern about this issue at the Daytona Beach Fire Department. Then, a public records search of available information was done.

Since the current data surrounding these cases are entered into the DBFD computer system by the engine crew, the call type can be entered differently depending on the perspective taken by the person entering the report. Hence, querying the data becomes a guessing game.

Data was compiled from our computer using the National Fire Incident Reporting System code for Lock-In. There is a possibility that if a child was treated by the crew, that the incident may have a different code such as a medical call. Another similar code is the Lock-Out. Depending on who entered the data, the code for that type of call might vary. The data collected is a minimum number that might be higher if a different code was used to enter the report.

Next, thirty three individual fire departments in the state of Florida that were approximately the same size as Daytona Beach were contacted to determine if they had any awareness programs. A nationwide contact was not done because the previously mentioned EFO paper had reported finding only five percent of departments had any type of awareness program. That research is enough to compare with the results of this study.

Simultaneously, parent surveys were created and distributed. A very brief survey was distributed to determine what parents know about the dangers to children in vehicles and what they feel might contribute to children being left in vehicles. Although over five hundred surveys were distributed between the multiple locations, very few were completed. The sample size may or may not reflect appropriately the general population of parents. The estimate for children under age five in this city is 3372 (U.S. Census, 2000). That means that there are 3372 parents

or less if a parent has more than one child under age five. So the thirty three survey respondents are equivalent to at the least one percent or maybe two percent. The margin of error might be quite high with that small of a sample.

Some of the questions might have had other wording options. Survey question one is somewhat misleading because of the time limit that is in the statute. Survey question two has a possible flaw in the semantics of the question but may actually provide valuable insight because of that fact. Contributing factor may have been a more suitable word than reason. Some people seemed to associate reason with acceptable excuse.

Jennifer Mudge of the Early Learning Coalition of Volusia and Flagler Counties; Judy Ryan, RN of the Florida Department of Health; Sue Ignash, RN specializing in brain and spinal cord injury; and the City Island Library staff were very instrumental in disseminating the parent survey. Networking in areas where children and parents frequent was helpful in narrowing the population for the survey to parents that have children young enough to be affected by this study.

At this same time, emails were sent to some car manufacturers. When Toyota was contacted via their website, the question presented was “Do you have any current or future programs or technology that reduce the risk to children that might suffer from heat related injuries if left unattended in a vehicle?” Not all car manufacturers were contacted. However, none contacted seemed ready to divulge information on future technology. The same is true for child safety seat manufacturers. No feedback was given after an inquiry was posted through their respective websites.

Lastly, the experiment included a two year old child and his mother. The child was wearing weather appropriate clothing. So, he wore long pants on the cooler days and shorts for the two warmer days. A 2006 Dodge Ram Mega Cab pickup truck was driven until cooled to a

comfortable temperature for the parent driver. The external temperature was recorded based on the vehicle's digital temperature gauge. The ignition was turned off and the parent got out of the driver's seat through the door and into the back seat next to the child. The timer was started at the point when the vehicle was turned off. The timer was stopped when the child started to form sweat on his head or complained of being too hot. The parent monitored the child throughout the testing. The child was rewarded with a Popsicle. The test was conducted several times on three different days at different times of the day in the same sunny location of an open parking lot at a park behind a fire station. Future suggestions might be to have an internal temperature for the vehicle and a child thermometer to confirm those temperature readings. Then the literature that states that at specific temperatures that the body compensates by sweating would be validated as well.

RESULTS

As stated in the background section of this report, DBFD responds to approximately 2 calls per month to assist in removing a child from a vehicle. Many of the comments listed on the narratives for the reports, state that it was an accident; that the parent went to get an item from inside or simply did not realize that they locked the door with the keys inside when they got out and tried to get the child from the seat. It is unknown how many times children are left unattended and the fire department is not called such as when a spare key is found.

The first research question is to identify what national, state, or local awareness or prevention programs already exist. During the literature review, it is clear that there is no governmental agency to oversee documentation of this type of program. However, the Safe Kids organization has pamphlets that are distributed at the local level as well as a website that has safety tips including awareness of this issue. Kids and Cars is the nonprofit organization that

tracks and lobbies for child safety in and around vehicles. They have started a sunshade awareness campaign. For five dollars a parent can purchase a sunshade for the windshield of the car. If it is placed in the back seat and the parent retrieves it to place it in the window each day, the parent will have an opportunity to ensure the child is not in his car seat and the others in the parking lot that read the sunshade will be reminded to check their child seats as well. In February, 2008, a law was passed to create a federal database for statistics on injury and death in non-crash, non-traffic incidents. (Safe ride news, March/April 2008)

The lack of response from the different manufacturers was not a result that was expected. The response from Toyota was, “At this time, Toyota has does not have technology which would prevent closed vehicle temperature from rising while parked.” (Mouton, March 27, 2009) In this example, this car manufacturer is not showing a priority in child safety as compared to Chevrolet GM. The pamphlets sponsored by Chevrolet GM implied that the manufacturing companies did have some investment in awareness programs.

The results for the second research question are sad. None of the departments contacted reported having any such program. This is below the five percent reported nationwide. One of the respondents did ask for more information from this project.

The third research question implores what contributes to the action of leaving a child in a vehicle. A table of the compiled results of the random parent survey is in Appendix B. Although over five hundred surveys were distributed between the multiple locations, very few were completed. The first question was: Is it legal to leave a child under age six unattended in a car for any amount of time in the state of Florida? Five people said yes while twenty eight people said no. The correct answer is yes, provided that the child’s health is not at risk and it is less than fifteen minutes. Therefore, eighty five percent of the people got that question wrong.

The second question was: What would be a reason that a person might leave a child in a car? Various options were listed and a line to add any other reasons. While some people checked all of the circles available, others stated that there was no reason. The most commonly checked reason was to unload groceries. The number two reason cited as why a person might leave a child in a car was neglectful or intentional. Number three was to get something from the store, house, or a friend. Number four was to let the child nap. Number five was that the adult forgot the child was there. Tied at with the least responses was that there was no sitter or anyone to watch the child or other. Additional reasons added to the survey were none or stupidity.

The third question was: Have you ever done it or know of someone who has? One third admitted to either knowing someone or actually doing it themselves. Most wrote in the margin that it was not them but someone they knew. Two thirds said that they have never left a child unattended in a vehicle nor did they know anyone who had ever done so.

The fourth question was: Approximately how long does it take for a child to get overheated in a confined child seat in an enclosed car in mild 80 degree weather? Of the five choices available, no one thought a child could remain unharmed for fifteen minutes. Forty-five percent chose three minutes. Thirty percent picked only one minute. Eighteen percent thought it would be six minutes. Only six percent felt ten minutes was the approximate length of time before a child becomes overheated.

The experiment result table can be located in Appendix C. The child started to form sweat beads on his nose in approximately two minutes or less. The child stated he was warm shortly after perspiration occurred. The temperature outside was not as warm as the survey question for each day but the results show that even cooler temperatures have a short timeframe if a vehicle is in direct sunlight. Most parking lots have little shade to protect the vehicle from as

much sun exposure. The parent noticed that when the direct sun was shining right on the subject, complaints were quicker.

DISCUSSION

Sadly, there seems to be a lack of interest in the prevention of hyperthermia in children due to being left in a vehicle. The fact that less than two months ago a law was passed to require a federal database (saferidenews, 2009) shows that there may be some momentum in addressing this emerging epidemic.

As mentioned earlier, Oprah Winfrey aired a show (2009) and suggested that parents need to slow down and reprioritize their lives in order to keep their children safe. That is wise information to any human. Often times it is a caregiver who has left the child. The caregiver is the one who is paid for the sole purpose of keeping the child safe. Again, focusing on the priorities is the optimal solution. How to get people all over the world or at least in our community to do that is the other side of the coin. Another flaw in this line of thinking is that the parent has the ability to decrease the rest of their responsibilities. Sometimes, that is not an option. So, there needs to be other measures taken to prevent children being left in vehicles and suffering heat related injuries.

First of all, this national outreach that Oprah started is a step in that direction. The more aware people are that it does happen to people of all circumstances, the more everyone will be extra vigilant in protecting children who may fall into these unfortunate conditions. Although there are exceptions, few of the cases studied involved a conscious decision to leave the child behind. As studied in the Executive Development course at the NFA, there are moral and ethical dimensions of decision making. (NFA, 2008) In most cases, there was no motive to commit this terrible act of hurting a child. So, again, finding ways to prevent these tragedies is the main goal.

Janette Fennell of Kids and Cars makes a statement in the Washington Post article. “Fennell believes that prosecuting parents in this type of case is both cruel and pointless: It’s not as though the fear of a prison sentence is what will keep a parent from doing this.” (Weingarten, 2009). The article continues to point out that she believes the answer lies in greater public awareness and improved car safety features.

In another national campaign, the push that Kids and Cars has done to get the government to start maintaining statistics by creating a federal database is another huge milestone in the right direction (Safe Ride News, 2008). Although none of the bills that require auto manufacturers to build in safeguards have made it through congress, the momentum is started.

Some auto manufactures are making strides to introduce safety features each year. Concept cars do not always make it to the retail market. In an article in the Detroit News (Lienert, 2002) a concept car is described with many safety features including a heartbeat monitor to alert parents who have left a child behind in a hot car. There is also a ceiling-mounted camera that projects the faces of kids in the rear seats onto a screen on the dashboard so parents can see what is going on in the back seat. Reality is the fact that these cars are not on the market and who could really afford to buy one with all of the added features.

General Motors has pioneered a low-energy radar sensor that detects motion as subtle as the breathing of an infant sleeping in a rear-facing child safety seat (GM, 2001). Once a movement inside the vehicle is detected, the car horn will sound. It will send a signal that sounds like an SOS call for help. Amazingly, these are not readily available to be purchased yet even though it has been eight years since the technology was developed.

There are a few after market items that will soon be available to purchase. Each product is a way to alert the driver that there is someone still in the vehicle. The names and prices will be posted on the Kids and Cars website, kidsandcars.org.

During the time it will take to increase safety in vehicles, awareness programs need to be the leading voice. The programs will also push the need to keep caregivers from getting a false sense of security because of technology. As much as TV should not be a babysitter, neither should a safety feature be the only vigilance afforded to children. Cautious care giving should be the priority.

Does everyone know how to keep children safe? That is a question that asked at every level. The state coalition Safe Kids has nice pamphlets dealing with child safety in and around cars. While reading them, the statements seem so obvious and common sense. However, the fact remains that there continues to be children sent to the hospital.

On April 2, 2009, one of our local clinics, the Children's Medical Services held a Child Car Seat Check Up Event. For four hours, experts were available to ensure car seats were installed properly. They also gave away seats. They had the brochures from SafeKids that were mentioned earlier in this paper on site to educate the people who used child seats. So, locally, there is some small progress in awareness. DBFD has had no involvement in preventing children from suffering in hot cars.

Based on the research found, other fire departments in Florida are not doing anything in this area either. Local support of national programs would be very simple. Much work has already been done. Now spreading the news to the local community can continue through local efforts. In conclusion of the first research question, progress is being made in the national, state, and local awareness and prevention programs but much more needs to be done.

Secondly, the fact that none of the departments contacted had any such program shows that more work should be done. The national statistics derived by Shelley (2007) state that there are departments, albeit only five percent, that are conducting some sort of program. It takes a village is the old saying. The fire service is much more than just the fire service. Progressive all-hazard departments realize that whenever anyone needs help of any sort, the fire department is on the way. Specific training or not, the firefighters will find a way to solve the problem or make the situation as safe as possible. It should be no different for this global problem that seems statistically significant in Daytona Beach. DBFD has responded to at least one death from hyperthermia (CourtTV, 2003) and approximately two close calls per month (DBFD Firehouse, 2008). DBFD should lead the way for Florida.

The final research question will help to determine what people know about this topic and therefore what will be needed in an awareness program. Based on the survey, if each person was honest in their answers, there are a lot of uninformed people in the city of Daytona Beach.

Since the first question was slightly ambiguous in the time frame allowed, it is difficult to know if the parent really knew the answer or if they thought it was acceptable for any length of time. Regardless, eighty-five percent thought that it was illegal for any length of time. That would be an error on the safe side. Those that got that one wrong would at least feel compelled to never leave a child alone because they thought it was illegal in any circumstance.

The second question was in hopes of finding contributing factors that a reasonable parent might feel would be involved in a tragic case of someone leaving a child unattended in a car. Many people did not feel that there was an acceptable excuse for doing so and therefore, they stated there was no reason for leaving a child. The question did not state it had to be a good reason or even a legal reason. It was attempting to find out the mindset of parents that might

know why someone might leave a child alone in a vehicle. The responses make it appear that these survey respondents thought that they would never be capable of making such a mistake. They would never do it so; it could never happen to them. This shows a complete lack of understanding by these people behind the majority of these fatal errors. The campaign would need to address this basic train of thought that it can happen to anyone.

The third survey question was seeking honest feedback on frequency of occurrences that may go unreported. Most who said yes they or someone they know has left a child unattended clarified their answer in the margin. They stated it was not them but someone they knew. Again, this type of response displays that it could never happen to them because they would never leave their child in the vehicle.

The final survey question was refreshing that everyone agreed that a child would suffer if left for more than fifteen minutes in a confined child seat in an enclosed vehicle in eighty degree weather. Most people felt it was between one and three minutes. Based on the final experiment, the correct answer is less than three minutes before a child will start to feel the effects of the heat buildup in the vehicle. In most situations it would be only about one to two minutes before a child started to sweat. As the temperature in the vehicle rises, the child will not be able to compensate.

There have been many studies on how hot a vehicle gets over certain durations. Tests set up to record temperatures outside and temperatures inside taken to determine if there is less danger during cooler months of the year. Tests done in the sun versus in the shade to see how hot a vehicle might get. However, there were no published tests conducted that monitored how long a child would be able to tolerate the change in temperature in a confined seat as compared to an average person sitting in the regular seat next to that child safety seat. So, even an attended

child could potentially suffer if an adult thinks the child should feel the same comfort level as the adult not in a child restraint seat.

In the experiment, the child with good communication skills and plenty of energy was closely monitored by an Emergency Medical Technician. At no time was the child in any danger or left alone for this test. The length of time it took for him to develop beads of sweat on his nose was shorter than his desire to state he was getting warm. The child did not notice or feel too uncomfortable before his body stated to compensate with the sweating.

There are a lot of variables, as in any experiment, that could change these times. The type of vehicle, window tint, objects in the vehicle, type of child seat, and the child itself could all make the times shorter or longer depending upon the setup involved. According to an article that was published in a weather forum and later published to a pediatric magazine for its solid information (Null, 2009), children are not able to regulate body temperature as well as adults. Their body temperature rises at a rate of three to five times faster than an adult's.

Also, not knowing the internal starting temperature of the vehicle would reduce the effectiveness of this test. Anyone who desires to conduct this type of test would be wise to take internal vehicle temperatures as well as verifying the temperature of the child at the start and end of the trial. Different times were selected because there were no significant time patterns indicated for when hyperthermia incidents occur.

Assuming that the parent was on the way to work at seven, eight, or nine in the morning would not be realistic. With businesses and companies open at all hours, the parent could easily be going in to work at any hour. The caregiver may have been running errands or on a field trip to the museum so this test was to show that there is not any better time to leave a child unattended in a vehicle.

RECOMMENDATIONS

Based on all of the research for this project, recommendations will be made to the Fire Chief of DBFD to create an awareness program. Once the Fire Chief decides that this is a worthy cause, he can decide how much funding could be set aside for a program. The funding will likely drive much of what can be done. The point of contact for the fire department would most likely be the Public Information Officer. However, the approach to the program is important.

Partnerships will work wonderfully for this situation. Collaboration with the police department, the local Safe Kids coalition, libraries, grocery stores, auto sales, insurance companies, and other local businesses will make the program very successful. Buy in from the Mayor and City Manager on this campaign would lead to great public relations for everyone involved.

Slogans and ideas could be gathered from various contestants that would have their idea on billboards or posters. The numerous ways to publicize the idea would have to be chosen by the Fire Chief or the City Manager. Messages could be placed on the city website, television channel, utility bills, and in advertisements through all different media. The local newspaper could run an article. Window clings, magnetic signs, and handouts can be on every city vehicle.

The handouts could be key chains that serve as a reminder to check the back for the child or window shades or just a simple window cling. Other ideas might be items that a parent could place in their workspace that would remind them to double check their vehicle to ensure the child is not still there. If it is a caregiver, the item could be a bracelet or pin to wear. If the bracelet is on, check the car for the child. When removing the child, put the item in the diaper bag. The

fabric wrapped metallic slap bracelets are inexpensive and pop on and off with ease. If there is enough money to buy a carbineer type reminder, that might be easier to transfer.

Encouraging walking or riding bicycles might be another approach taken to reduce these occurrences. The city has an urban development department that is working on neighborhood improvements that would include stores so people do not have to drive as much. With the harsh economy today, it won't be hard to convince people to find other means of transportation.

The mission of the Daytona Beach Fire Department is to protect lives and property through an unwavering commitment to all. DBFD can be very instrumental in saving lives of small children and infants through an aggressive awareness campaign in the city of Daytona Beach. Disseminating the information as widely as possible should be the goal to preventing unnecessary hyperthermia deaths to children who are left unattended in vehicles.

REFERENCE LIST

- 4 R Kids Sake. (2006). Retrieved April 3, 2009 from <http://www.4rkidssake.org>
- Chanen, D. (2001). *Kids and cars; In the wake of a local tragedy, a look at cases of other children who died in hot vehicles reveals a few patterns and a warning*. Star Tribune: Minneapolis, MN. Retrieved July 24, 2008 from <http://find.galegroup.com/itx/retrieve.do>.
- Court TV. (2003). *Daycare center blamed in tot's van death*. Retrieved October 19, 2008 from <http://www.courttv.com/trials/taped/abundant>.
- Daytona Beach Fire Department. (2008). Retrieved from departmental records database. Accessible by public records request, (386) 671-8000.
- Florida State Statute 316.6135 (2009). *What Florida Law says about...* Retrieved March 28, 2009 from <http://www.flhsmv.gov/fhp/html/floridalaw/fllaw.html>.
- General Motors Announced Important New Technology...to help save children trapped in hot cars. (2001, May 3). Retrieved April 3, 2009 from <http://4rkidssake.org/GMsensor.htm>.
- Halifax Area Chamber of Commerce. (2008). Retrieved October 19, 2008 from <http://www.daytonachamber.com>.
- Heifetz, R. A. & Linsky, M. (2002). *Leadership on the Line*. Boston: Harvard Business School Press.
- Kids And Cars (2009). Kids And Cars National Database 2001-2009. Retrieved March 28, 2009 from <http://www.kidsandcars.org>.
- Lienert, A. (2002, June 5). *Concept car pushes right buttons for safety*. The Detroit News. Retrieved April 3, 2009 from <http://4rkidssake.org/safety-volvo>.
- National Fire Academy. (2008). *Executive Development Student Manual*. Emmitsburg, MD: Author.

- National Safety Council. (2008). *Injury Facts, 2008 edition*. (pp. 124-152). Itasca, IL: NSC Press.
- Null, J. (2009). *Hyperthermia Deaths of Children in Vehicles*. Retrieved March 28, 2009 from <http://ggweather.com/heat>.
- Othon, N.L. (2006). Students aim to save babies-FAU Animators creating film to stop neglect. *South Florida Sun-Sentinel*, Local Section, 3B.
- Safe Ride News. (2008, March/April). Retrieved March 22, 2009 from <http://www.saferidenews.com/SRNDNN/SafetyTopics/OtherTransportationSafetyIssues/>.
- Shelley, C. (2007). *Children Left in Unattended Vehicles...Raising Awareness for This Silent Killer*. Emmitsburg, MD: National Fire Academy.
- U.S. Census Bureau. (2000). *American FactFinder*. Retrieved April 3, 2009 from <http://factfinder.census.gov/servlet>.
- Weingarten, G. (2009, March 8). *Fatal Distraction*. The Washington Post. Retrieved March 16, 2008 from <http://www.washingtonpost.com>.

APPENDIX A

Random Survey
Kids in Hot Cars

1. Is it legal to leave a child under age 6 unattended in a car for any amount of time in the state of Florida?

Yes or No

2. What would be a reason that a person might leave a child in a car?

- ☐ Unload groceries/items from vehicle
- ☐ Let baby nap in car seat
- ☐ Get something from the store, house, friend
- ☐ Forgot the child was there
- ☐ No babysitter/no one to watch child
- ☐ Neglectful/intentional
- ☐ Other_____

3. Have you ever done it or know of someone who has?

Yes or No

4. Approximately how long does it take for a child to get overheated in a confined child seat in an enclosed car in mild 80 degree weather?

- ☐ 1 minute
- ☐ 3 minutes
- ☐ 5 minutes
- ☐ 10 minutes
- ☐ 15 minutes

THANK YOU!!!!

APPENDIX B

Random Parent Survey
Kids in Hot Cars

1. Is it legal to leave a child under age 6 unattended in a car for any amount of time in the state of Florida?

YES	NO
5	28

2. What would be a reason that a person might leave a child in a car?

Unload	Nap	Grab	Forgot	No sitter	Neglect	Other *	None *	Stupid *
15	10	11	8	7	13	7	6	1

3. Have you ever done it or know of someone who has?

YES	NO
11	22

4. Approximately how long does it take for a child to get overheated in a confined child seat in an enclosed car in mild 80 degree weather?

1 minute	3 minutes	5 minutes	10 minutes	15 minutes
10	15	6	2	0

APPENDIX C

Kids in Hot Cars Experiment

April 7, 2009 through April 9, 2009

Outside Temperature	Time of day and date	Length of time until too hot
60 degrees F	1100 AM 4/7/2009	2 minutes 5 seconds
60 degrees F	1215 PM 4/7/2009	2 minutes 2 seconds
63 degrees F	1330 PM 4/7/2009	1 minute 50 seconds
60 degrees F	1230 PM 4/8/2009	2 minutes 2 seconds
63 degrees F	1430 PM 4/8/2009	1 minute 48 seconds
67 degrees F	1500 PM 4/8/2009	48 seconds
70 degrees F	1040 AM 4/9/2009	25 seconds
76 degrees F	1155 AM 4/9/2009	20 seconds
78 degrees F	1240 PM 4/9/2009	10 seconds