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Prepared Written Testimony
Senate Subcommittee on Consumer Affairs, Foreign Commerce, and Tourism
April 24, 2001

Good morning, Mr. Chairman, members of the Committee. Thank you for the opportunity to speak.

My name is Dr. Flaura Koplin Winston. I am a practicing pediatrician at The Children's Hospital of Philadelphia, a faculty member at the University of Pennsylvania School of Medicine, a biomechanical engineer, a clinical researcher, and a mother of two boys, Zachary and Andrew, who inspire my research to make every ride safe for children. The Children's Hospital of Philadelphia is a Level One Pediatric Trauma Center, designated to care for the most seriously injured children, but much of our work is devoted to preventing injury. We realize that the best way to care for our children is to keep them safe, avoiding the physical and emotional pain and suffering that accompany every childhood injury.

I am the Principal Investigator of Partners for Child Passenger Safety, the world's largest surveillance system for children in automobile crashes. Begun in 1997, Partners for Child Passenger Safety, a collaboration between State Farm Insurance Companies, the University of Pennsylvania, and The Children's Hospital of Philadelphia, is the first comprehensive research study of how and why children are injured or killed in motor vehicle crashes.

Each day the Partners research team receives information, with privacy safeguards, from State Farm on nearly 200 children involved in crashes in 15 states (AZ, CA, DE, IL, IN, M.D., MI, NC, NJ, NY, NV, OH, PA, VA, and WV) and the District of Columbia. The research team conducts in-depth telephone interviews and on-site crash investigations in order to

estimate the number of children in crashes; identify specific safety problems for children in motor vehicles; suggest solutions to those problems; and evaluate real-world effectiveness of vehicle and restraint system features.

In this testimony, I will describe the national problem of children in motor vehicle crashes in terms of the number of crashes involving children and the number of children who are injured in these crashes. I will also describe the high proportion of children who are inappropriately restrained for their age and size and the mechanism of injuries due to

inappropriate restraint. The key message is that the vast majority of parents across the country are not adequately protecting their 4-to-8-year-old children in crashes. These parents can do a better job by appropriately restraining these children in belt-positioning booster seats in the rear seat of their vehicles on every ride.

With just two years of data collection, Partners for Child Passenger Safety has collected information on more than 90,000 crashes involving roughly 137,000 children under age 16. Based on these numbers, we estimate that each year in the United States, more than 1.5 million children are passengers in motor vehicle crashes. More than 750 children will be injured today, nearly 100 of these children will be seriously injured. Unfortunately, the most common serious injuries are to the brain, which can lead to devastating long-term disabilities.

Motor vehicle crashes are very violent events that occur in milliseconds, in the blink of an eye. Our data indicate that nearly half of crashes involving children occur within seven minutes from home. All it takes is a split second for an errand, a car pool, or a family outing to turn into tragedy.

Last summer we learned of a tragic case in which a 7-yea- old, we'll call him Jared, was the only fatality. On a warm June evening in Arizona, Jared's father swerved and crossed the center line of the highway and struck a pickup truck head-on. There were no airbags in the vehicle, yet Jared's father survived this serious crash without brain, spinal cord, or organ injury. Jared, unfortunately, was inappropriately restrained in a lap-shoulder belt in the front seat of his father's mid-size sedan. During the crash, his sub-optimal restraint allowed him to move forward and strike the windshield. Jared suffered a lethal injury to his cervical spine -- a fracture with complete dislocation. If Jared had been restrained in a belt-positioning booster seat in the back seat of his father's car, he likely would have survived. His younger siblings in the rear seat survived the crash. A simple action-- using the appropriate restraint and placing the child in the rear seat- could have likely prevented a family's lifetime of mourning.

Just a few months ago, I learned of another preventable tragedy. At 7:00 in the morning, a 5-year old girl from Ohio, let's call her Latasha, was the only passenger injured in a moderate severity crash. Her 22-year old mother was driving their full-size sedan when another vehicle made a left turn into the path of their vehicle, impacting the right side. Latasha's mother, who was wearing her lap and shoulder belt, was uninjured. Latasha's 18-month-old sister, who was appropriately restrained in her child safety seat in the rear seat, was uninjured. Latasha, who was sitting in the right rear seat next to her sister,

was inappropriately restrained in a lap-shoulder belt. Latasha suffered bilateral severe kidney damage. Our investigation indicated that the inappropriate restraint caused the serious injuries known as "seat belt syndrome." If Latasha had been restrained in a belt-positioning booster seat, she would likely have been uninjured.

Preventable injuries such as these occur every day.

Our data indicate that most parents ensure that their children are restrained. The simple act of restraining a child makes it three times less likely that that child will be injured in a crash. Many parents further protect their children by placing them in the back seat, thereby making it an additional two times less likely that their children will be injured in most vehicles. Further, most parents ensure that their youngest children are restrained in child safety seats. Accordingly, these children have the lowest chance of getting injured of any age group.

However, I am particularly concerned with children between age 3 and 8 years. That is where our data show an alarming decrease in recommended restraint use [refer to recommended restraint use chart-Attachment A]. Note the u-shape in this graph of recommended restraint use by age. More than 80 percent of children through age 2 years are appropriately restrained. Beginning at age 3, appropriate restraint drops to 52 percent. By age 4, the most prevalent form of restraint is the adult seat belt. Only 24 percent of children age 4 are in booster seats. By age 7, virtually no children are in booster seats. Instead of using car seats or belt-positioning booster seats, many children ages 3-to-8 years old are inappropriately restrained in adult seat belts. For optimal protection during crashes, children should ride in child safety seats with full harness until the seat is completely outgrown based on manufacturer height and weight limits. This is usually around 4 years old and 40 pounds, at which point children should be placed in belt-positioning booster seats. They should remain in the belt-positioning booster seat until they are big enough for the adult seat belt to fit correctly. Correct adult seat belt fit is not achieved

until a child is at least 4 feet 9 inches tall and 80 pounds, often around the age of nine.

Last June, Partner's for Child Passenger Safety published an article in the journal *Pediatrics* about the risk of premature graduation of children to adult seat belts. We found that 2-to-5-year-old children who were placed in adult seat belts were 3.5 times more likely to suffer significant injury and four times more likely to suffer head injury when compared to children in the same age group who used car or booster seats. There is a 50 to 75 percent reduction in serious injuries to child passengers who are placed in belt-positioning booster seats rather than seat belts alone.

Why are booster seats so much more effective than adult seat belts in protecting 4 to 8-year-olds in car crashes? Standard equipment vehicle seat belts are designed for adults. During a crash, adult seat belts spread the forces of the crash over the strong, hard, bones the hips, shoulders and chest - and keep the occupant in place so that the head, face, and chest are less likely to strike the inside of the vehicle. An adult seat belt fits correctly when the lap portion of the belt rides low over the hips and the shoulder portion of the belt crosses the sternum and shoulder. Correct seat belt fit is not usually achieved until a child is 9 years old, the age at which the child's thigh is long enough for the child to sit against the back of the seat, the hips are sufficiently developed to anchor the belt, and the child's sitting height is sufficient for the shoulder belt to fit properly over the shoulder and sternum.

When a child is "prematurely graduated" to an adult seat belt, the lap portion of the belt rides up over the soft abdomen and the shoulder portion crosses the neck or face, causing many children to move the shoulder belt behind their back or under their arm. Incorrect fit of the vehicle belt places the child at risk for "submarining" or sliding out of the lap belt during a crash. Rapid, "jack-knife" bending around a poorly positioned vehicle adult seat belt increases the risk of intra-abdominal and spinal cord injuries, also known as "seat belt syndrome" and brain injury due to impact of the head with the child's knees or the vehicle interior.

Our data indicate that the majority of the injuries to children prematurely graduated to seat belts are to the head, likely due to excessive head excursion. In addition, Partners data show that children in adult seat belts suffered the only reported cases of abdominal injuries, including intestinal, liver, and spleen injuries.

Let me demonstrate the safety advantage of a belt-positioning booster seat by this crash simulation. [Booster seat crash simulation computer model] The above simulation shows a 6-year-old child properly restrained in a belt-positioning booster seat. This child barely moves

during the 35 m.p.h. crash. This same child is represented in the below simulation of the same crash. She is improperly restrained in an adult seat belt. Like many children, she has slipped the shoulder portion of the belt behind her back. As you can see, she is thrown forward dramatically. The inappropriate fit of the adult seat belt and lack of upper body restraint puts the child at risk for severe head, spine, abdominal and brain injury.

What is at stake is the safety of our children. Under contract to the National Highway Traffic Safety Administration, we conducted focus groups and in-depth discussions with parents about the barriers to using belt-positioning booster seats. There are many reasons

parents give for prematurely placing their child in vehicle seat belts. Some parents are unaware of the likelihood of crashes and the injuries that can result. Others are not aware
of current best practice regarding child passenger safety. Still others do not realize that children are actually more comfortable in belt-positioning booster seats rather than in adult seat belts alone. Clearly, education is needed.

Parents with older vehicles face additional challenges in finding a child restraint compatible with vehicles that only have lap belts in the rear seat. Clearly, there is a role for new technologies.

However, many parents of 4-to-8-year-old children are aware of the risks of crashes, are aware of the injuries, know that belt-positioning booster seats can reduce the risk of injuries, and have vehicles that can accommodate belt-positioning booster seats in the rear. Yet, they fail to use these devices. According to parents in our focus groups, the only strategy to ensure that these parents are optimally protecting their children is through strong laws that are enforced.

Our current laws are not in alignment with best practice recommendations from theNational Highway Traffic Safety Administration and the American Academy of Pediatrics and this serves as a source of confusion for parents. Much of the opposition to closing the gaps in child passenger restraint laws concerns the inconvenience and cost to adults to comply with these laws. My question to you, Senators, is this: What value do we, as a nation, place in the life of a child? A backless belt-positioning booster seat costs less than $20 at my local retailer.

I am happy to say that State Farm Insurance Companies and The Children's Hospital of Philadelphia are doing their part. We have collaborated in many efforts to get the appropriate restraint message to parents and have now collaborated to produce the nation's first in-school curriculum, called *Safe Cruisin' with the Good Neigh Bear*, to

educate young children about booster seats. We regularly share our study data with doctors, advocates, regulatory agencies, and manufacturers. In 2001 we will be producing state-specific fact sheets on each state involved in the Partners study to aid advocates in their educational efforts. But there is much more to be done.

Efforts such as these have resulted in an increased awareness of booster seats. For the first time, Partners data is showing a trend of increased booster seat use. Maybe the climate is right for closing the gap in occupant restraint laws to require booster seats for older children.

If parents continue to restrain their young children in vehicle seat belts or, worse, not restrain them at all, we will continue to have tragic, preventable, costly injuries to our children, our most precious resource. As a pediatrician, pediatric injury researcher, and mother of two young children, I am here to provide a voice for children, all children. They need our protection. They need appropriate restraint on every ride.

Mr. Chairman, I am ready to respond to any questions the committee might have.