



# Partners for Child Passenger Safety Fact and Trend Report October 2005

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**Child Passenger Safety**  
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The 2005 **Partners for Child Passenger Safety (PCPS) Fact and Trend Report** is the first in what will become an annual publication. The report provides updated facts and trends about children involved in U.S. motor vehicle crashes from 1999 through 2004. PCPS, the world's largest study of children in crashes, is a research partnership between The Children's Hospital of Philadelphia and State Farm Insurance Companies®.

Data from the ongoing PCPS study reinforce the need for continued education on age- and size-appropriate restraint use and rear seating for children, as well as for continued research and development and public policy practices that address the unique safety needs of child occupants.

The report is intended for use by researchers, educators, advocates and people in the media. Please contact Tracey Durham (durhamt@email.chop.edu) on the PCPS research team with any questions about use or interpretation of the data.

Please refer to Page 10 for basic information about study design and the data described in this report, as well as for definitions of technical terminology.

*PCPS, the world's largest study of children in crashes, is a research partnership between The Children's Hospital of Philadelphia and State Farm Insurance Companies®.*

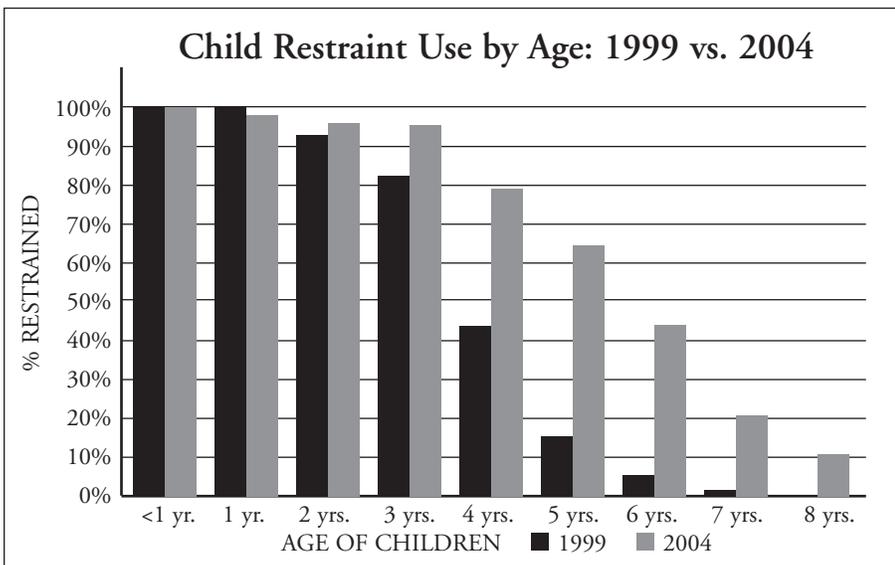
## 1. BACKGROUND

### Current Child Restraint Laws in PCPS States as of July 2005\*

State	Must Be in Child Restraint	Booster Seat Law
Michigan	3 years and younger	no booster seat law
Ohio	3 years and younger or less than 40 lbs.	no booster seat law
Arizona	4 years and younger	no booster seat law
Texas	4 years and younger and less than 36 inches	no booster seat law
Maryland	5 years and younger or 40 lbs.	effective 10/1/03
California	5 years and younger or 60 lbs.	effective 1/1/02
Nevada	5 years and younger and 60 lbs.	effective 6/1/04
Virginia	5 years and younger	effective 1/1/04
Delaware	6 years and younger and 60 lbs	effective 1/1/03
New York	6 years and younger and 4'9"	effective 3/29/05
District of Columbia	7 years and younger	effective 10/16/02
Illinois	7 years and younger	effective 1/1/04
Indiana	7 years and younger	effective 7/1/05
North Carolina	7 years and younger and less than 80 lbs.	effective 1/1/05
Pennsylvania	7 years and younger	effective 2/21/03

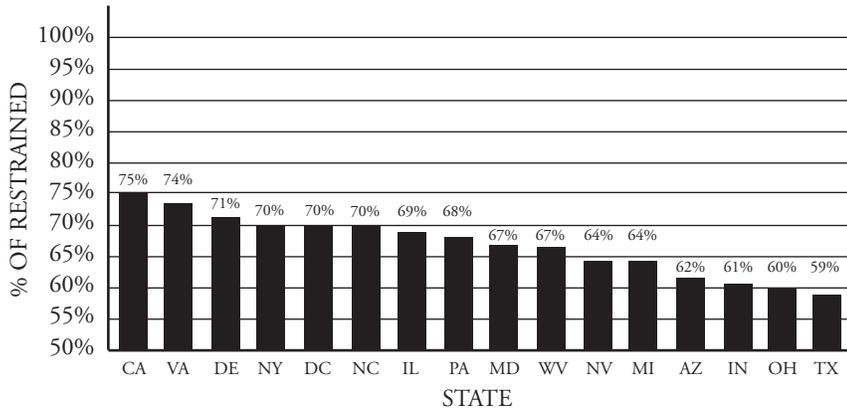
\* Information on child-restraint laws is available on the Insurance Institute for Highway Safety Web site, [www.hwysafety.org](http://www.hwysafety.org). PCPS states are states in which PCPS collects data on children in crashes.

## 2. RESTRAINT USE AND SEATING



- This graph compares children restrained in any type of child restraint system in 1999 vs. 2004.
- For all children through age 8, child restraint use has increased from 51% in 1999 to 69% in 2004.
- Child restraint use has increased most among children ages 4 to 8 years, from 15% in 1999 to 45% in 2004.
- Belt-positioning booster seat use among children ages 4 to 8 years increased from 4% in 1999 to 27% in 2004.

### Child Restraint Use by State, 0 to 8 years: 2003-2004



- In PCPS states, the majority of children (98%) from birth to 3 years were in child restraints.
- Only 45% of children ages 4 to 8 were in child restraints.

#### State Abbreviations

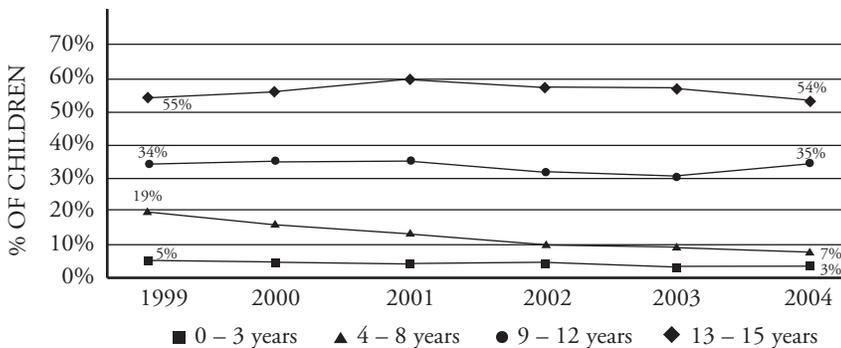
CA - California	MD - Maryland
VA - Virginia	WV - West Virginia
DE - Delaware	NV - Nevada
NY - New York	MI - Michigan
DC - District of Columbia	AZ - Arizona
NC - Carolina	IN - Indiana
IL - Illinois	OH - Ohio
PA - Pennsylvania	TX - Texas

### LATCH and Tether Use

Reported LATCH (see definitions, Page 10) use increased from 10 percent in 2003 to 17 percent in 2004.

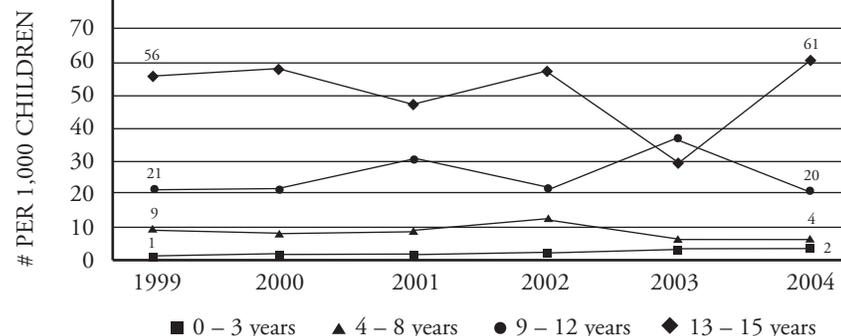
During this same period, tether use increased from 13 percent to 17 percent. The use of LATCH has grown more rapidly than the use of tethers.

### Children Riding in Front Seat: 1999 – 2004



- Overall, 14% of children under age 13 were riding in the front seat in 2004.
- Front seating for children ages 4 to 8 declined from 19% in 1999 to 7% in 2004.

### Exposure to Deployed Airbags: 1999 - 2004



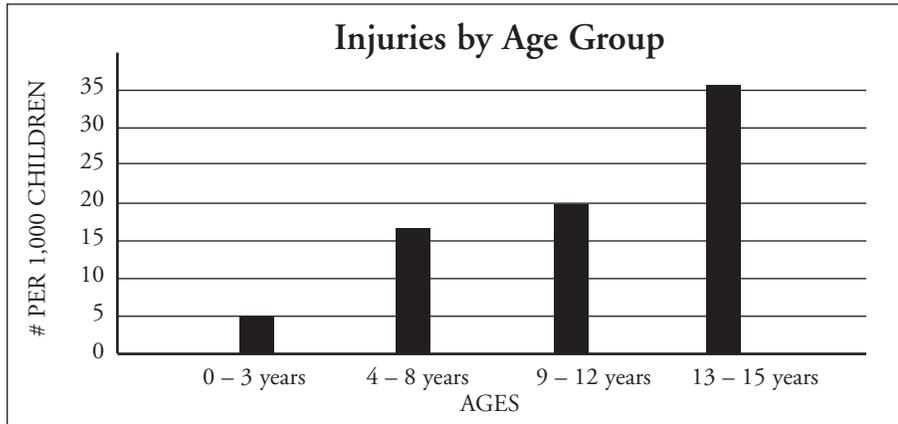
- This graph illustrates trends in the number of children exposed to deployed airbags by specific age groups. (see definitions, Page 10).
- There was little overall change between 1999 and 2004.
- Overall, 1% of children in crashes were exposed to a deployed air bag in 2004.

### 3. INJURIES (2003 – 2004)

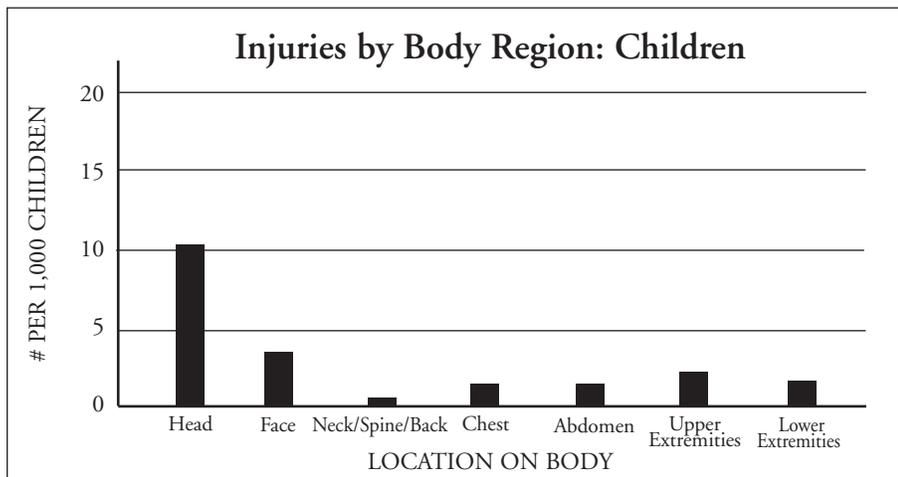
Injuries are defined as all those that are considered clinically significant, including concussions and more serious brain injuries, skull fractures, lacerations to the scalp and face, facial-bone fractures, spine fractures and spinal cord

injuries, injuries to the internal organs, rib fractures and all extremity fractures.

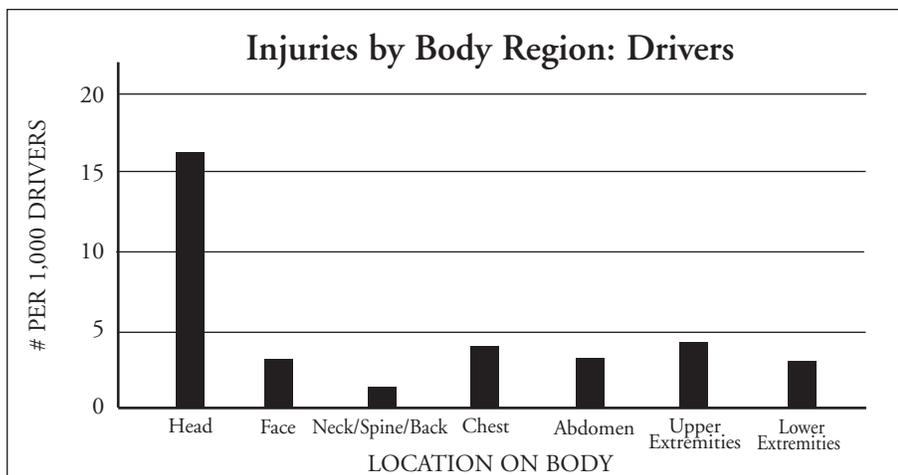
These data exclude lacerations (except on the scalp and face), bumps, bruises and burns.



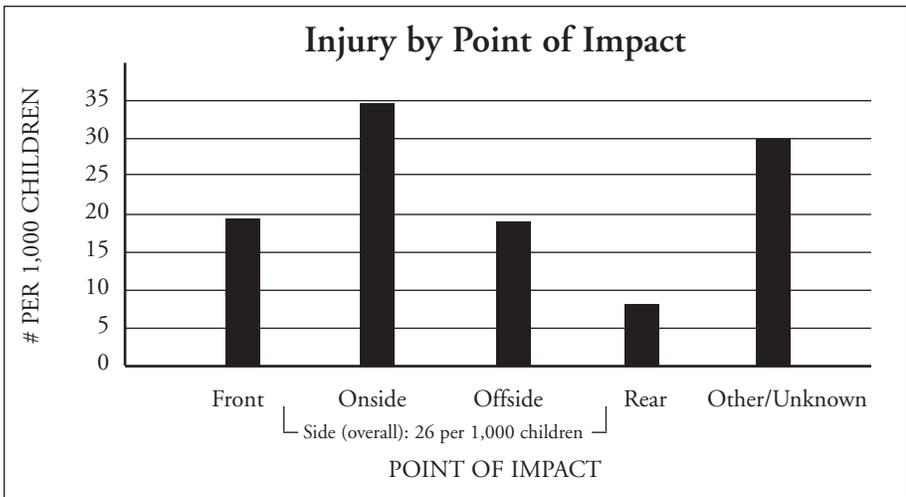
- As children age, their risk of being injured in a crash rises. This is likely associated with high rates of child-restraint use for the youngest children.



- In 2003 and 2004, the overall rate of injuries for children involved in crashes was 18 per 1,000 children.
- Head and face injuries were the most common.



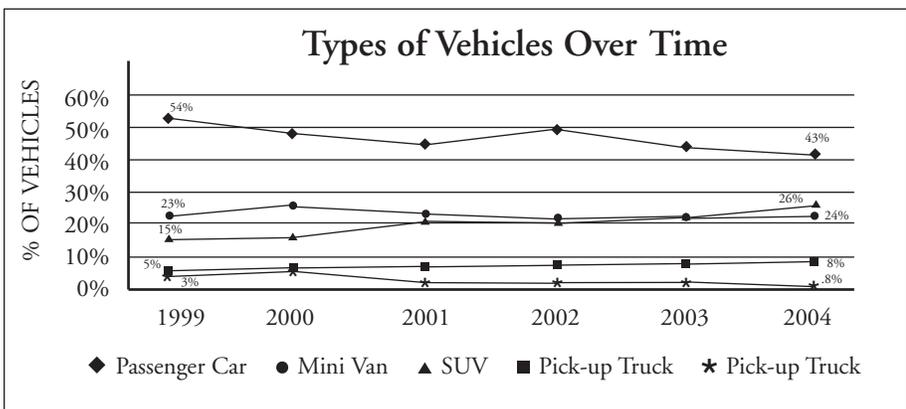
- Overall, the rate of injuries for drivers involved in crashes in the PCPS study in 2003 and 2004 was 36 per 1,000.
- Head injuries were the most common, occurring at a rate of 16 per 1,000 drivers.



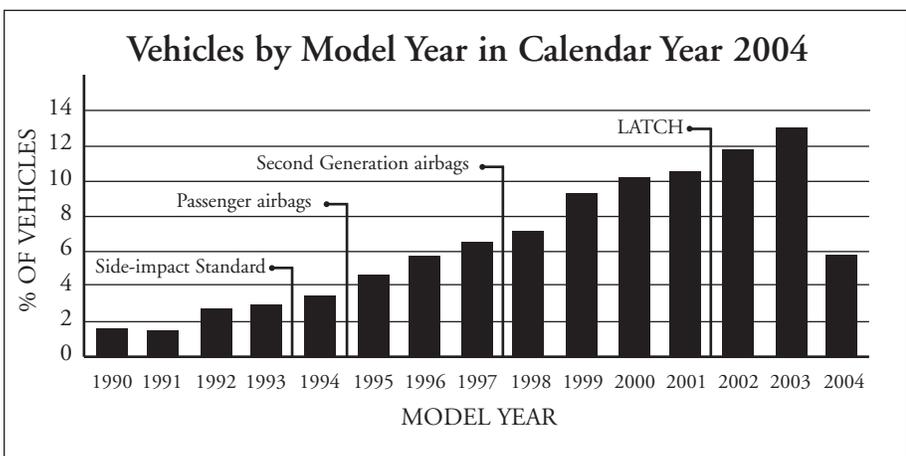
- Overall, injuries to children were most common in side-impact crashes, particularly onside crashes (see definitions, Page 11).
- The “Other/Unknown” category contains rollovers and multiple-impact crashes, which explains the higher rate of injury.

#### 4. VEHICLES

This section describes characteristics of the vehicles involved in crashes in the PCPS study.



- The percentage of SUVs in PCPS crashes increased from 15% in 1999 to 26% in 2004 (surpassing minivans).
- The percentage of passenger cars in child-involved crashes declined from a high of 54% in 1999 to 43% in 2004.



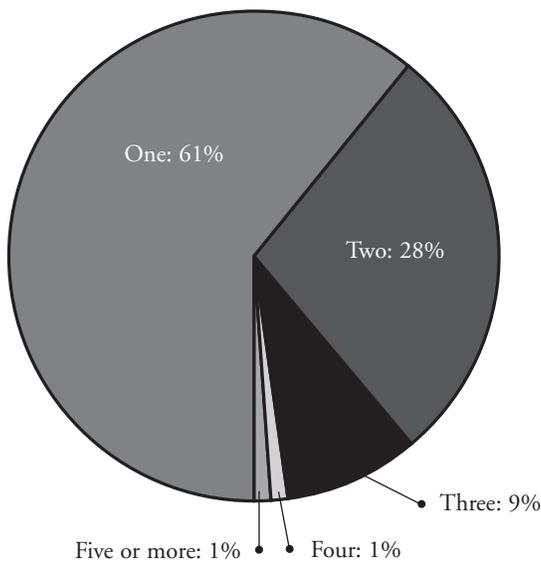
- 93% of vehicles enrolled in 2004 were equipped with driver airbags and 85% with passenger airbags (see definitions, Page 11).
- 69% of the vehicles in 2004 were equipped with second generation airbags.
- 31% of vehicles in 2004 were equipped with LATCH.
- Several safety standards and restraint technologies have been implemented over the past 15 years (see definitions, Page 10).

## 5. PEOPLE

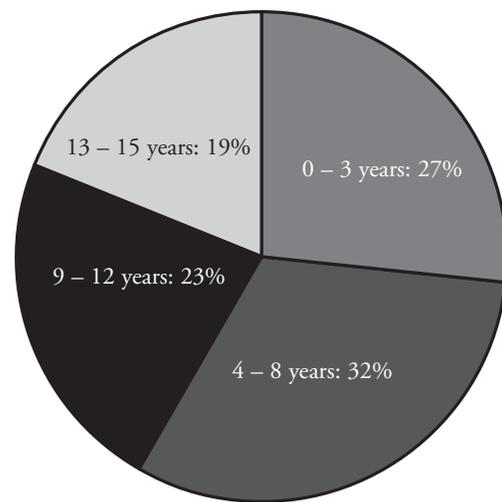
What we know about the study's participants in 2004:

- The majority of crashes occurred with one child passenger.
- Nearly 60% of the children involved in crashes were 8 years old or younger.
- Nearly 70% of the drivers in the PCPS study were between 25 and 44 years old, and 76% of the drivers were parents, stepparents or foster parents.
- Most of the drivers in the study (71%) were women.

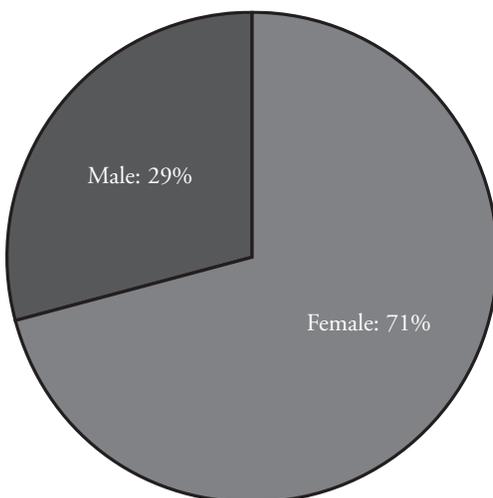
Number of Children in Vehicle



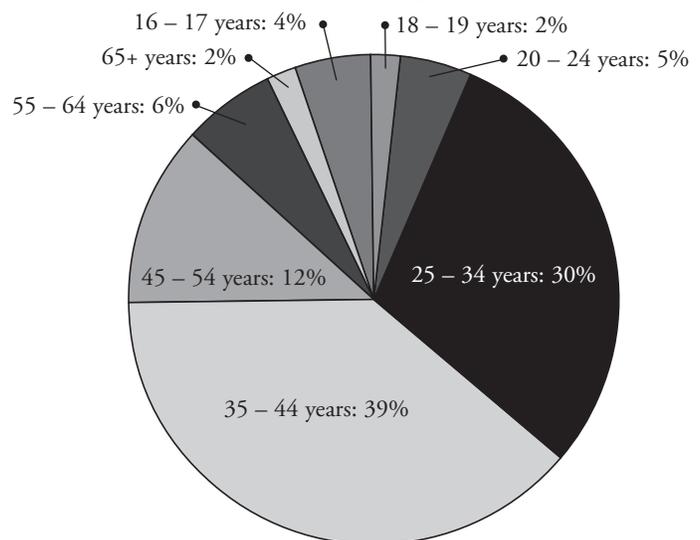
Ages of Children



Driver Gender



Driver Age



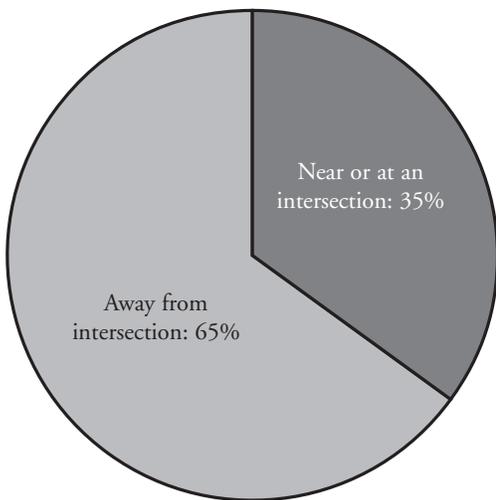
## 6. CRASH CHARACTERISTICS

What we know about the circumstances of the crashes involving children in 2004:

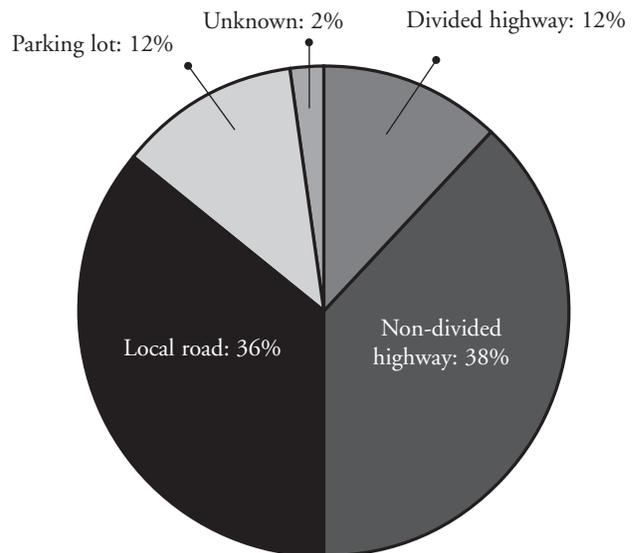
- More than a third of the crashes occurred near or at an intersection.
- Nearly half of the crashes took place on local roads or in parking lots.

- Frontal crashes accounted for the highest percentage of crashes at 45%.
- More than half of crashes occurred on roadways with posted speed limits of less than 45 m.p.h.

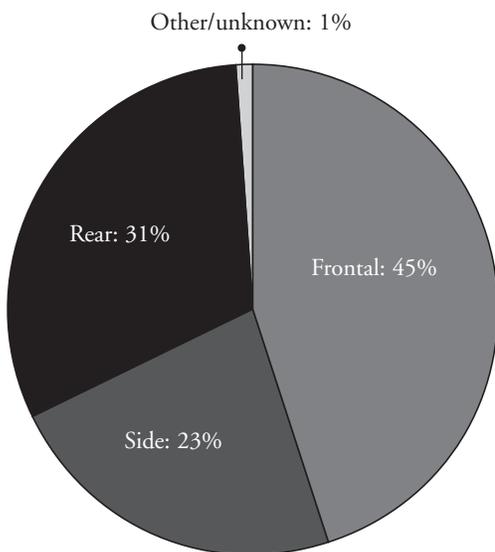
**Location of the Crash**



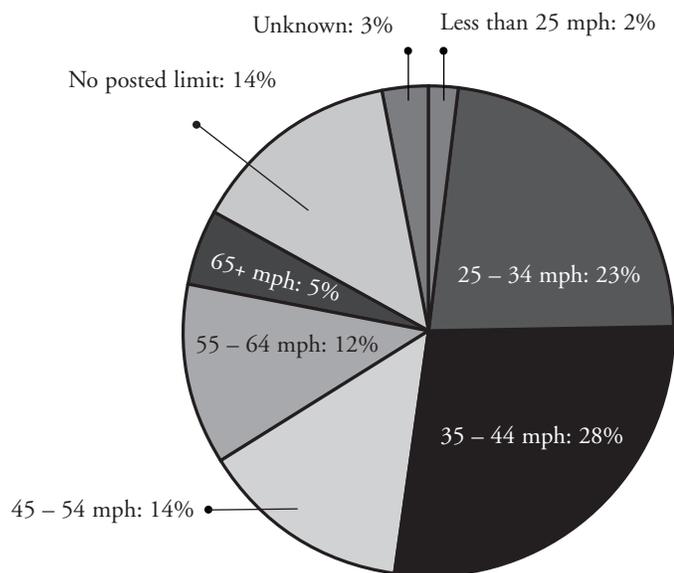
**Type of Road**



**Point of Impact**



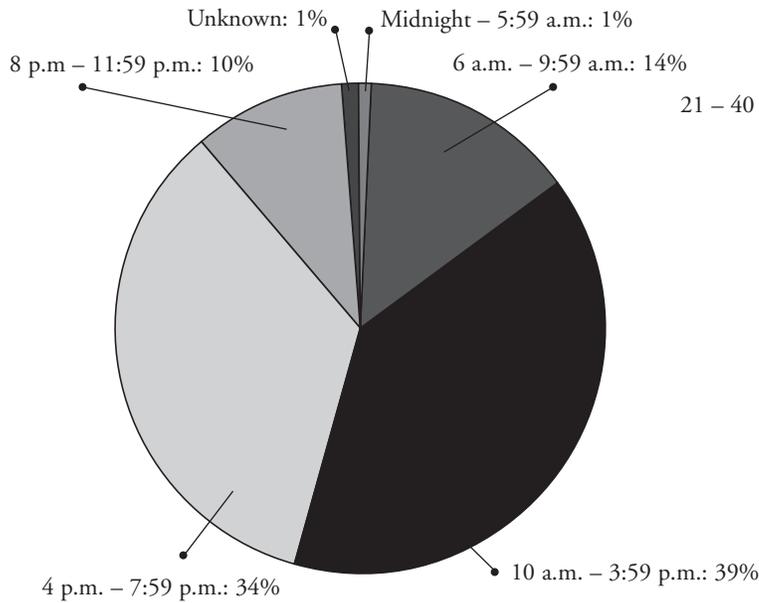
**Posted Speed Limit**



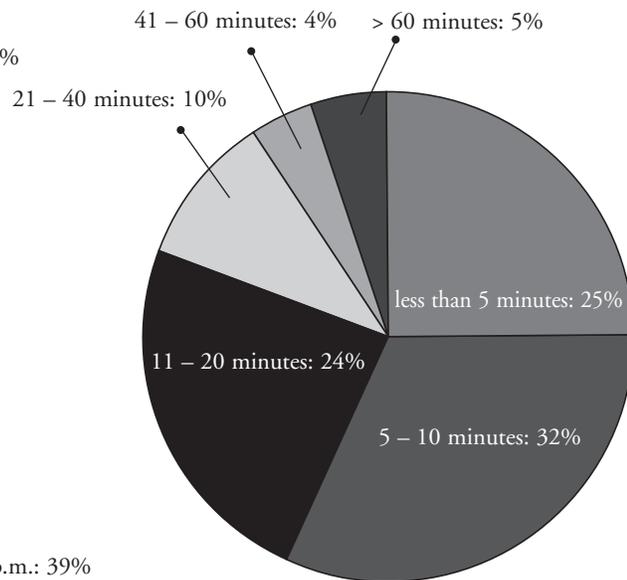
*Crash Characteristics continued*

- Nearly 75% of the crashes occurred between 10 a.m. and 8 p.m.
- Recreational trips and trips involving normal daily activities accounted for the majority of crashes.
- 57% of crashes occurred 10 minutes or less from home; more than 80% occurred 20 minutes or less from home.
- Half of the crashes occurred from Friday through Sunday.

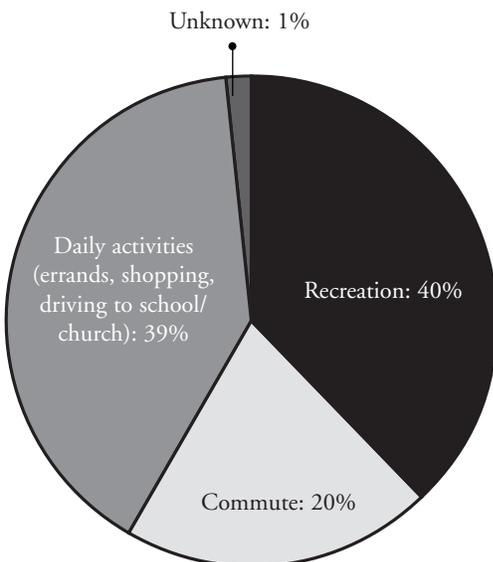
**Time of Day**



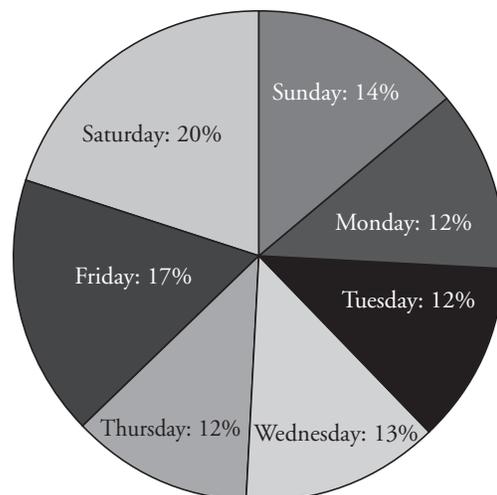
**Distance from Home**



**Reason for Trip**



**Day of Week**



## 7. STUDY DESIGN

PCPS is a research partnership between The Children's Hospital of Philadelphia and State Farm Insurance Companies®. The information represents State Farm-insured children younger than age 16 riding in model year 1990 or newer vehicles. Since 1998, the study has collected information from consenting State Farm Insurance automobile policyholders. The data included are from the District of Columbia and 16 states: Arizona, California, Delaware, Illinois, Indiana, Maryland, Michigan, Nevada, New Jersey (through November 2001), New York, North Carolina, Ohio, Pennsylvania, Texas (since June 2003), Virginia and West Virginia.

A stratified cluster sample is used to select vehicles involved in crashes for inclusion in the study. Vehicles containing

children who received medical treatment are oversampled so that the majority of those injured are selected while still representing the overall population. Those who were selected and agreed to participate took part in a 30-minute telephone interview to give researchers a comprehensive view of crash characteristics and injury severity. On-site crash investigations by researchers provide further information on injury mechanisms.

As of February 2005, more than 377,000 State Farm customers have participated in the study. In all, the crashes represented in the study involved 557,000 children. The study includes 25,000 in-depth interviews and more than 800 crash investigations.

## 8. ABOUT THE DATA

- The data are from Jan. 1, 2004 to Dec. 31, 2004 unless otherwise noted.
- Trend graphs cover the six years of the study through 2004 (Jan. 1, 1999 through Dec. 31, 2004).
- Child restraint use is presented by age of child and not by optimal restraint as defined by the American Academy of Pediatrics (see definitions).
- All of the children in the PCPS study have been involved in crashes.
- These data are from an insured population; uninsured drivers may have different practices.

## 9. DEFINITIONS

**Deployed airbag exposure** – A child was riding in the front seat at the time of the crash and the passenger air bag deployed (went off). Deployment of passenger airbags can cause injury and fatality to children.

**LATCH** – An acronym that stands for “Lower Anchors and Tethers for Children.” It refers to the child restraint anchor system specified in the Code of Federal Regulations’ Standard 225 and the corresponding top tethers and lower attachments identified in Standard 213.

**Onside crashes** – Side-impact crashes in which children sat on the same side as the impact. Offside crashes are side-impact crashes in which children sat on the opposite side of the impact.

**Optimal restraint** – The following guidelines for best child restraint practices were set by the American Academy of Pediatrics:

- Use a rear-facing car seat until the child is at least 1 year and 20 pounds.
- Use a forward-facing car seat until the child is too heavy or tall for the seat. Generally, this is when the child weighs 40 pounds (*usually around age 4*).
- Use a booster seat until an adult seat belt fits the child (*generally, this is when the child's height reaches 4' 9"*).
- For all children too big for car seats or booster seats, use a regular lap-and-shoulder seat belt (*usually older than age 8*).
- All children under 13 should sit in the back seat, not the front passenger seat.

**Passenger airbags** – Supplemental restraints in the right front seat position, which operate best when the occupant is using a seat belt. Airbags rapidly inflate in a collision to cushion the occupant, and help reduce the risk of serious injury by distributing crash forces more evenly across the body.

**Second-generation airbags** – These passenger airbags are designed to deploy with less force than original airbags and are required in all cars manufactured after 1998.

**Side-impact standard** – All passenger cars are required to comply with Standard 214 concerning side-impact protection. The entire structure of all cars must be reinforced according to strict regulations. Currently, this standard does not apply to light trucks (minivans, compact pickups, SUVs). The standards were phased into the U.S. vehicle fleet beginning in 1994, with full compliance required by 1997.

*The results in this report are the interpretation solely of the Partners for Child Passenger Safety research team at The Children's Hospital of Philadelphia and are not necessarily the views of State Farm Insurance Companies.*

# www.chop.edu/carseat



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Information on child passenger safety and videos on child safety seat installation in both English and Spanish.



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In 2005, The Children's Hospital of Philadelphia celebrates 150 years as the birthplace of pediatric medicine in America. Throughout its rich history, a passionate spirit of innovation has driven this renowned institution to pursue scientific discovery, establish the highest standards of patient care and train future leaders in pediatrics. For a century and a half, Children's Hospital has served as a haven of hope for countless children and families worldwide.

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