

ROAD SAFETY ACROSS THE LIFESPAN

INTERVENTIONS FROM THE UNIVERSITY OF IOWA INJURY PREVENTION RESEARCH CENTER

Contact Cara Hamann
for more information:
cara-hamann@uiowa.edu



www.uiiprc.org

THE UNIVERSITY OF IOWA
IPRC
INJURY
PREVENTION
RESEARCH
CENTER

Infant – Young Children – Teens

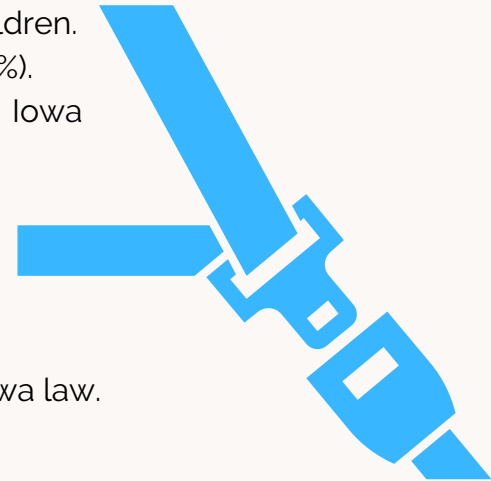
Iowa Child Passenger Survey

What it is: An annual observational child passenger restraint usage survey funded by the Governor's Traffic Safety Bureau within the Iowa Department of Public Safety. The UI IPRC has conducted this survey since 1996 and looks at restraint use in children from birth to 18 years old. From 36 communities across Iowa, ranging from around 1,000 to over 200,000 people, the 2021 survey results show:

- The majority of Iowans understand the importance of restraining their children.
- The overall child restraint use rate continues increasing in year 2021 (96.5%).
- 89.8% of child passengers were properly restrained in accordance with Iowa law in 2021.

Iowa Child Passenger 2021 Survey Results (by specific age group)

- 100% of child passengers less than 2 years old, 81.7% of 2 to 5 years olds,
- 94.5% of 6 to 13 years olds, and
- 88.8% of 14 to 17 years olds were properly restrained in accordance with Iowa law.
- Restraint use decreased as age increased.



Global Child Passenger Survey

What it is: An observational child passenger restraint usage survey translated for studies in China, Romania, and Moldova.



China Findings:

- At the time of the first survey in 2012, fewer than 5% of children were correctly restrained when travelling in a car.
- Effective parental education strategies and mandatory legislation on child safety restraint use could help increase use.

Romania Findings:

- The proportion of restrained child passengers declined with age.
- Child passengers less than 5 years old were almost 5 times more likely to be properly restrained than child passengers who were older.

Young Children – Teens

PedalPortal

What it is: A data acquisition and coding system used to naturalistically study adult and child bicycling behavior and risk exposure. A GPS-enabled camera captures bicycling from the bicyclists' perspective: what they see on the road, what other cars are doing, and how they are riding. PedalPortal has allowed researchers to identify real-world scenarios and then test driver responses to bicyclists using simulation in the world-renowned UI National Advanced Driving Simulator.

PedalPortal data found:

- Children did not seek out and use on-road bicycle facilities as often as adults.
- Children were more likely to ride on sidewalks compared to adults, even when on-road bicycle facilities were present.



**Dr. Peek-Asa and Dr. Hamann
with PedalPortal**

Hank Virtual Environments Lab

What it is: A virtual lab to safely and systematically study perception-action problems with real world consequences. This technology helps us understand what puts child pedestrians and bicyclists at risk when crossing busy roads, i.e., age, social interactions, and Attention Deficit Hyperactivity Disorder.

- Researchers found that child pedestrians did not compensate for their immature movement timing skills by choosing larger gaps in moving traffic until age 12. At age 14, children exhibited pedestrian road-crossing skills similar to adults.



Dr. Plumert at Hank Lab

Inventory of Youth Bicycle Education Programs

What it is: A study that inventoried youth bicycle safety education programs and their content, approaches, and age and developmental considerations. The inventory looked at 89 youth bicycle education programs across the U.S. and internationally through web and database searches and an online survey. It is a resource for educators looking for curricula for teaching children bicycle safety and can be used as a foundation for evaluating and building child bicycle safety education standards. The study found:

- 56.2% of the youth bicycle education programs are not age specific.
- There is currently no “gold standard” or a set of core competencies for any youth bicycle education program.



Parent-Adolescent Communication on Bicycling Behavior

What it is: A study that examined parent-child agreement on bicycle safety instructions and their correlation with the early adolescents' (ages 10 to 15) real-world riding behavior. The study found:

- Agreement between parents and adolescents on reported bicycle safety instructions was low.
- Riding on the sidewalk was reported frequently as a safety instruction, although it is more appropriate for children 10 years and older to ride on the road.
- Parents may benefit from training on effective safety-related communication strategies to assist them in making the most of their parental influence to increase their child's bicycling safety.



Teen Drivers

Steering Teens Safe (STS)

What it is: A parent-based intervention that equips parents with communication skills to talk about, demonstrate, and practice safe driving behaviors and skills with their teens. The UI IPRC developed, tested, and evaluated this program which reduced risky teen driving by about 21%.



Since interventions can be more effective in combination, the UI IPRC also tested STS with an in-vehicle video feedback system. This system uses GPS and in-vehicle technology to detect abrupt changes in speed or steering direction and triggers a recording when the vehicle exceeds a g-force threshold. The teen driver sees a flashing light when the recording is triggered, and parents receive a weekly report card with the videos and a summary. A study found:

- Teen drivers who received the combination of the in-vehicle feedback and STS had nearly a 40% lower driving error rate compared to those who only received no feedback.

The Perceptual-Adaptive Learning Module (PALM)

What it is: A first step towards developing a parent-focused intervention to help teens practice anticipating potential hazards on the road, Teens can practice this skill before they begin to drive without supervision. Researchers are examining parent-teen conversations in response to hazard scenarios delivered via the web.



Example of PALM training program scenario

Despite relatively low crash rates during the supervised learner period of licensure, once teens beginning driving without supervision teen driver crash rates increase sharply. During the first 18 months of independent driving, crash rates slowly and steadily decrease. A large proportion of these crashes occur because teens are not easily able to anticipate potential hazards on the roadway. This indicates that there is a disconnection between what teens are learning while being supervised by parents compared to what they are learning via independent driving experience.

Graduated Driver Licensing Programs (GDL)

What it is: Legislation that limits the conditions that new drivers can drive in during their first months of unsupervised driving, lowering their risk for crashing. The principle of GDL is to maximize experience and minimize risks for all new young drivers. The UI IPRC and partners surveyed parents of teens in Iowa about increasing instruction time, reducing nighttime driving hours, and restricting the number of passengers in the vehicle. In Iowa:



- GDL extended the time required for teens to hold an instruction permit to 12 months (Previous policy required only 6 months).
- GDL increased nighttime driving restrictions so that a teen can only drive between 10:00 p.m. and 5:00 a.m. if accompanied by a licensed adult (Previous policy was 12:30 a.m. until 5:00 a.m.).
- GDL limited passengers to no more than one non-family member under the age of 21 (Previous policy limited passengers to the number of seat belts in the vehicle).

Adults – Age Non-Specific

Farm Equipment Policies

What it is: Many states require farm equipment to have lighting and marking to increase visibility on the roadway, with the goal of reducing crashes. A study compared nine states' policies on lighting and marking on farm equipment with the standards offered by the American Society for Agricultural and Biological Engineers (ASABE) from 2005 – 2010. The study found:



- Both lighting-only and marking-only policies are associated with reduced crash rates.
- Lighting and marking policies that meet federal standards more effectively reduce crash rates involving farm equipment.
- When the state lighting and marking scores increased by 5 units, crash rates were reduced by 17%.

SaferTrek

What it is: A video/GPS system to record vehicle interactions with farm equipment. This technology is used on the back of farming equipment to identify and quantify risk behaviors associated with drivers of rear-approaching vehicles and how they interact with farm vehicles when they are on roadways.



Safer trek on farm equipment

Rural Road Safety Campaign

What it is: A community-level intervention to improve driver behavior around farm equipment. The campaign mainly focuses on 3 target behaviors of vehicle drivers: passing, following too closely, and speeding. An evaluation of the campaign, a partnership between community members and road safety researchers, found that it successfully engaged community advisors in the campaign development and delivery.



Older Drivers

The Enhanced Medical Referral and Evaluation Management System (EMREMS)

What it is: A unique data system in Iowa that tracks medical referrals for fitness-to-drive and the resulting licensure outcomes. One analysis found:



- The majority of adults over age 70 are referred for license review by the Department of Motor Vehicles staff.
- Others are referred by law enforcement (8%) and physicians (2%), and for being in a motor vehicle crash (17%).
- A driver medical referral from law enforcement or a physician is more likely to result in revocation of a driving license than referrals coming from other sources.