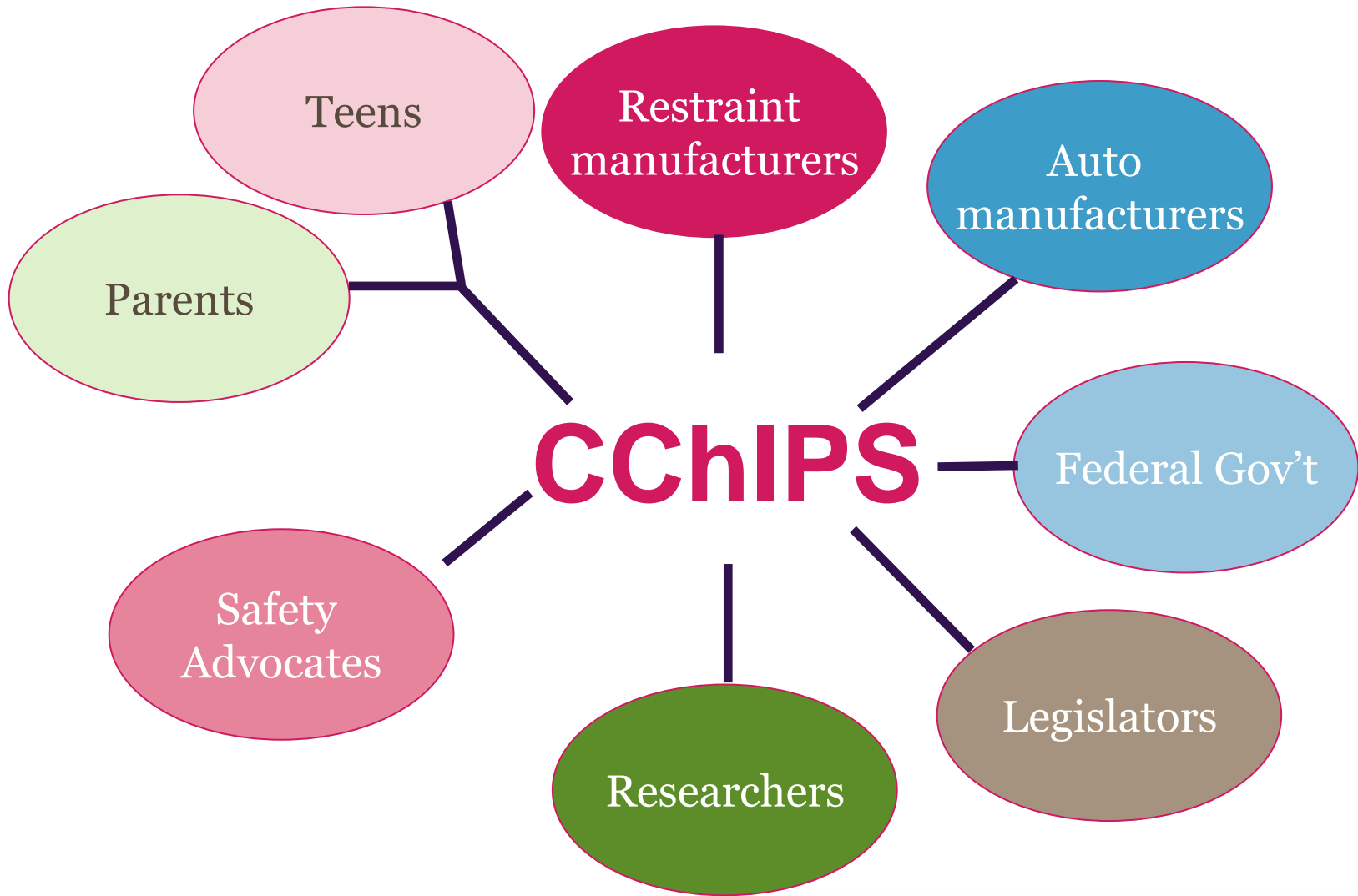




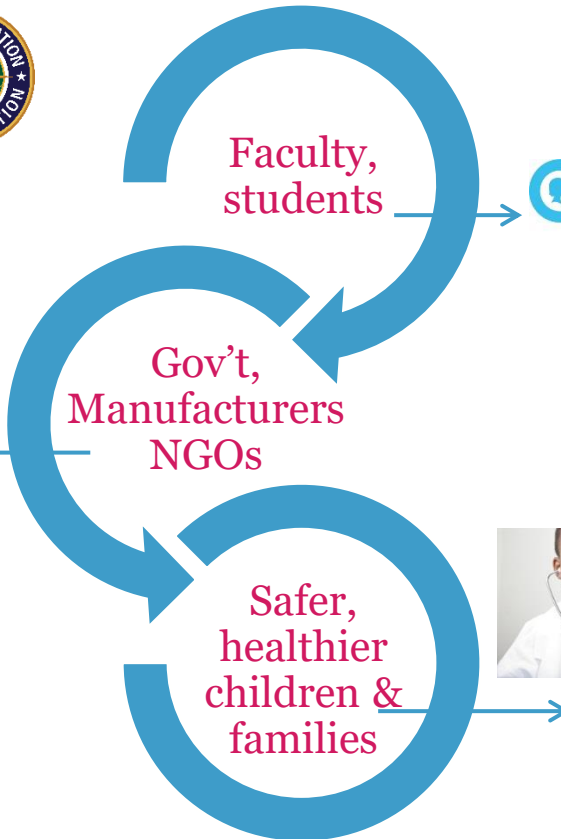
CCHIPS MEMBERSHIP OVERVIEW

CCHIPS BRINGS US TOGETHER



SOLUTIONS REQUIRE PARTNERSHIPS

Our Members



CCHIPS MISSION

"To advance the safety of children by facilitating the conduct of scientific inquiry into childhood injuries and to translate these findings into commercial applications and public education programs for prevention."

...In brief: *Science + Impact*

CENTER FOR CHILD INJURY PREVENTION STUDIES (CCHIPS)

- Founded 2005
- Multi-university center composed of faculty from CHOP/Penn and The Ohio State University
- Administratively run through the Center for Injury Research and Prevention (CIRP) – a Research Institute Center of Emphasis at the Children's Hospital of Philadelphia
 - Flaura Winston, Director; Kristy Arbogast, Co-Director
- Second site – The Ohio State University Injury Biomechanics Research Center
 - Julie Mansfield, Research Assistant Professor
- National Science Foundation (NSF) Industry University Cooperative Research Center (I/UCRC) – 80 centers nationwide
- Industry, government, NGO's serve as member companies
- Conduct research to support industrial R & D

CENTER FOR INJURY RESEARCH AND PREVENTION AT CHOP



Dedicated to advancing the safety of children, youth and young adults through research & action.

<http://injury.research.chop.edu>

- **Comprehensive**
From *Before-the-Injury* prevention
To *After-the-Injury* healing
- **Interdisciplinary**
Clinical medicine, public health, epidemiology, behavioral science & engineering
- **Engaged**
Large network of partnerships with universities, government, industry
- **Translational**
Tangible tools & recommendations grounded in science, designed for impact

SECOND CCHIPS SITE

THE OHIO STATE UNIVERSITY (OSU)

- Led by Dr. Julie Mansfield
 - Research Assistant Professor, School of Health and Rehabilitation Sciences
- Enhances biomechanics capabilities
 - Injury risk and mechanisms
 - Pediatric occupant safety



OSU'S INJURY BIOMECHANICS RESEARCH CENTER



INJURY BIOMECHANICS
RESEARCH CENTER

- Experimental capabilities
 - Gross, micro, modeling capabilities
 - PMHS, volunteer, ATD
- Facilities
 - Pneumatic impacting system, drop tower
 - VICON motion capture system
 - 3D printing
 - Imaging modalities: X-ray, CT, MRI, DXA, microscopy lab
 - Madymo, ADAMS, FE modeling
 - Body donor program – PMHS
- Areas of focus
 - Pediatric, adult, elderly
 - All aspects of the body

CURRENT BROAD AREAS OF RESEARCH

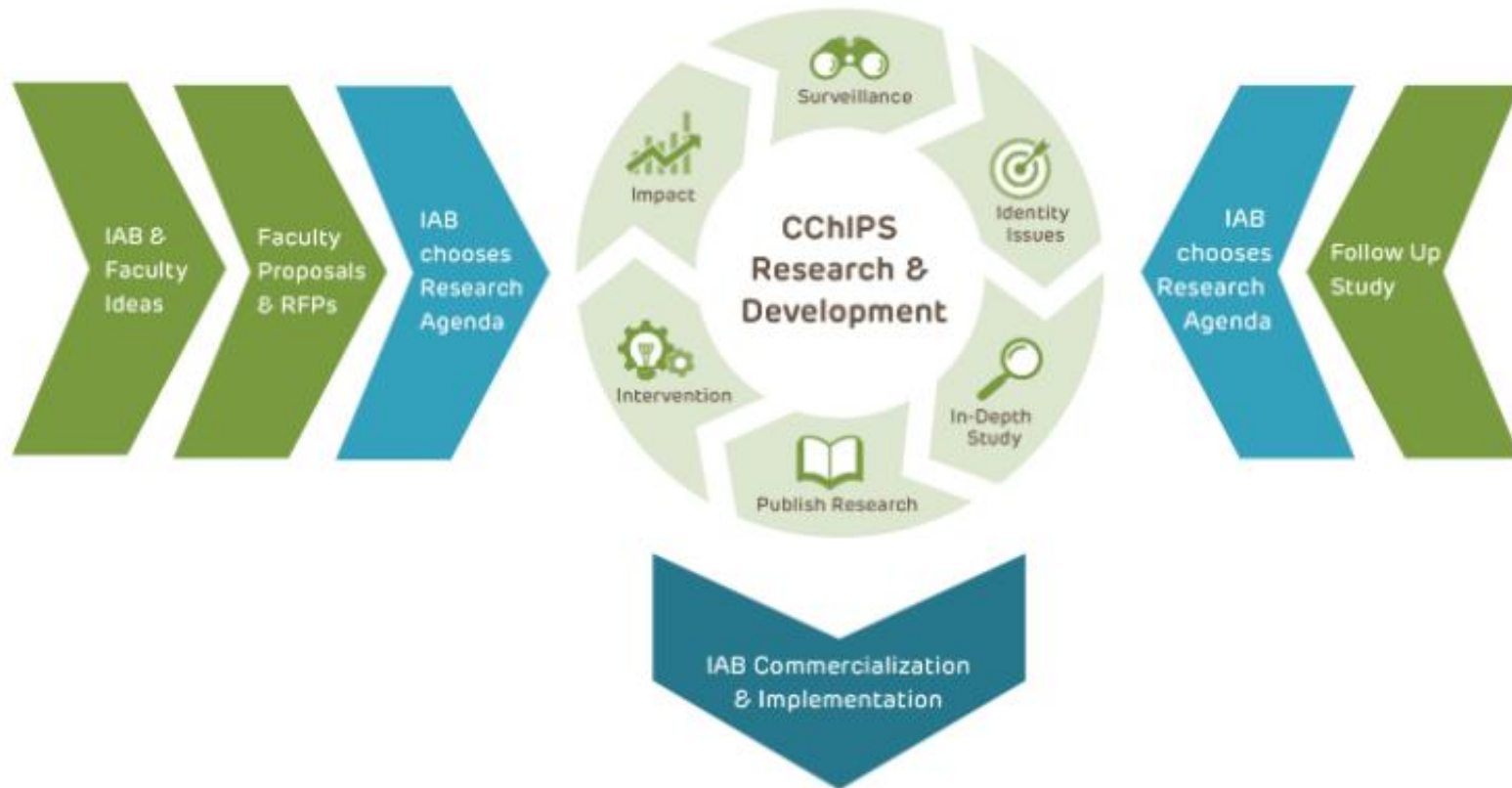
- Injury biomechanics, mechanisms, and tolerance
- Technological solutions (design, development, modeling and testing)
- Human interaction with and behavior related to safety technology
- Safety promotion and education
- Evaluation of safety devices or behavior modification programs



CCHIPS OPERATIONS

- Members provide:
 - Membership fees (source of research funding)
 - Technical support, scientific relevance, mentorship, and direction
- CHOP and OSU provide:
 - Faculty and students: research and innovation
 - Interdisciplinary expertise: research and analysis
 - Administration and fiduciary oversight of CChIPS
 - No overhead on all membership fees as a direct financial contribution
 - Contract and patent management through CHOP's Office of Technology Transfer

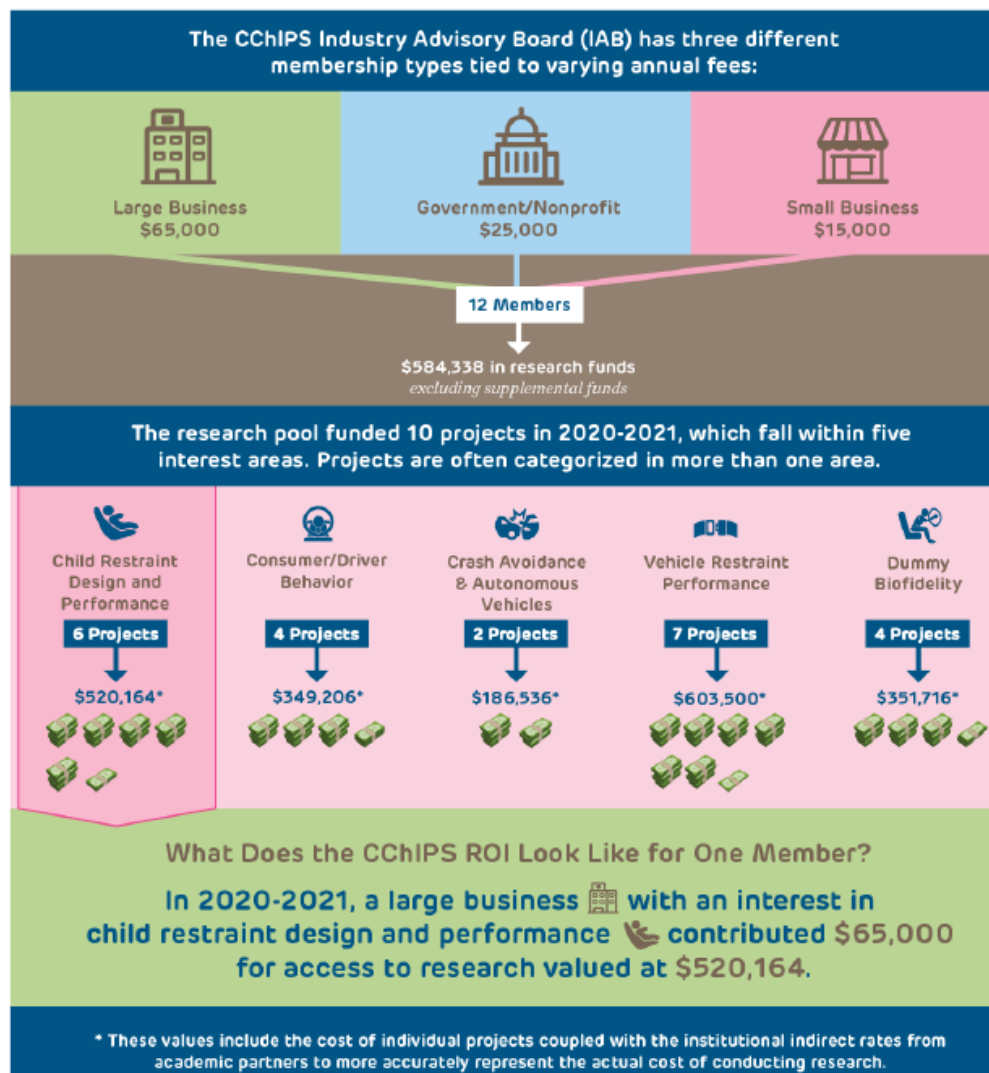
CCHIPS PROCESS



CURRENT MEMBERS FOR 2021-2022



HOW DO WE CALCULATE THE CCHIPS ROI?



RECENT PROJECT THEMES

- **Fit of CRS in vehicles**
 - Quantifying CRS Fit in the Vehicle Seat Environment: Dimensional Comparison and Digitization Approach
 - Compatibility of Belt-Positioning Boosters in Vehicles
 - Influence of CRS Fit on Far-Side Impacts
- **Quantifying the nuances of LATCH performance**
 - Evaluating side impacts with a frontal component for FFCRS
 - Dynamic Strength of Top Tether Anchorages in Various Anchor Locations
 - Effectiveness of Top Tether on Angular Kinematics of CRS and ATD in Side Impacts
 - Measuring the Strength and Stability of LATCH Anchors across a Range of Anchor Spacing
 - Usability of non-standard lower anchor spacing for CRS installations
- **Understanding characteristics of CRS regulations**
 - Fidelity of the Upgraded FMVSS 213 Bench
 - The Roles of Vehicle Seat Cushion Stiffness and Length in CRS Performance
 - Effect of ATD Certification Specification Variance on Full-scale Sled Testing Performance
 - Sensitivity Analysis on Factors that Influence Head Responses of Hybrid III 6-Year-Old ATD
- **Safety of children and youth in autonomous vehicles**
 - Ensuring safety of children in self-driving vehicles – focus groups with parents
 - Biomechanics in Autonomous Vehicles: A Pilot Study to Explore Responses of Pediatric Occupants in Non-traditional Seating Conditions
 - How Do Novel Seat Positions Impact Usability of Child Restraints?

2021-2022 PROJECTS

- Understanding Sources of Disparities in Child Restraint System Behaviors
- Motion of Reclined Booster-Seated Children During Sled-Simulated Lateral Oblique Pre-Crash Scenarios
- IIHS Side Impact Barrier 2.0: Exploring the Effect of the Upgraded Barrier Impact on Naturalistically Seated Pediatric Occupants in Booster CRSs
- Naturalistic Seating Postures in Frontal Impacts – Translating the Effect of ATD Seating Posture to Booster CRS Sled Testing Using the Q6 ATD
- Interactions Between Rear-Facing Child Restraint Systems and the Front Row Seatback in Frontal Impact Sled Tests
- New Insights for the Auto Industry: Identifying Key Eye-Tracking Metrics Associated with Cognitive Control While Driving, Validated by MEG Neuroimaging
- Effects of Temperature and Humidity on Dynamic Test Components
- Investigation on Mitigative Impact of Front Seat Back into Rear Passenger Space and Effects on Front Seat Occupant in Rear Impacts – Year 2
- Load Leg Compatibility with Vehicles
- Usability and Stability of European vs. American Belt Routing for No-Base CRS Installations
- Phase II: Epidemiologic Investigation of Child Restraint Use Injury among Children in Motor Vehicle Crashes

MEMBERSHIP DETAILS

MEMBER BENEFITS OVERVIEW

- Become part of an international community of scientists and engineers
 - Network with complementary companies
 - Interact with CChIPS faculty from CHOP and OSU
 - Access a qualified pool of students for recruitment
- Leverage internal R&D resources
- Set CChIPS research agenda
 - Suggest research ideas
 - Vote on research proposals to develop each year's project portfolio
 - Mentor projects through insight into appropriate methods and interpretation of results
- Access to CChIPS' intellectual resources
 - Obtain royalty-free licenses to intellectual property generated at CChIPS
 - Early notification of research results
 - Receive pre-publication results and technical reports
 - Right to use that information internally for research purposes
 - Members-only website with access to project reports, presentations, and literature updates
- Impact the safety of children

INDUSTRY ADVISORY BOARD (IAB) RESPONSIBILITIES

- Provide feedback on the recommended projects through proposal development, voting and feedback forms
- Serve as a mentor on research projects and help guide research agenda
- Provide feedback at each review meeting on Center activities. This feedback is of critical importance from improving the Center's value to the Center Members
- Recommend Center policy including direction of research, member networking, patent and publication policies, etc.

IAB MEETINGS

- **IAB Meeting Schedule**

- The IAB meetings are held semi-annually, in the Spring (Philadelphia) and Fall (Columbus).
- The Spring Meeting decides the research agenda for the year and the Fall Meeting reviews progress of current research projects and determines which Letters of Intent will be invited for full proposal.
 - The 2021-2022 research portfolio (see Slide 15) was determined via IAB vote at the Spring Meeting held in March 2021.

- **Attendance and Voting at the IAB Meetings**

- Several members per company can attend IAB meetings; however each company has only set of voting points.
 - Voting rights are based on the CChIPS membership options.

- **Ad-hoc conference calls throughout the year**

- **An IAB Chair and Secretary are elected by a majority vote of the IAB members. The IAB Chair serves for a two-year term.**

- Current Chair: Mark LaPlante, Graco Children's Products
- Current Secretary: Susan Mostofizadeh, American Honda Motor Co., Inc.

RESEARCH OPERATIONS

Research Project Mentors

- CChIPS project mentors are IAB members who are in contact with the principal investigators to provide investigators with guidance and assistance on the project.
- IAB members are free to volunteer to be mentors on any project(s).
- The contacts may be initiated by either the PIs or the mentors. As a mentor, the IAB member makes oneself available to the investigators, among other things, as a liaison to the IAB.
- *Quarterly meetings/calls are encouraged between PIs and mentors.*

INTELLECTUAL PROPERTY/ DATA SHARING

- All information and discussions are confidential until published or presented publicly
- All information and discussions are for internal use only
- All IAB Member Organizations are asked to sign a Confidentiality Disclosure Agreement (CDA) with CHOP and OSU to formalize what can and cannot be shared, internally and externally

2021-2022 MEMBERSHIP LEVELS

- Membership Fee of \$65,000/year
 - Select 1 project for funding in 1st membership year
- Non-voting Membership Fee of \$25,000/year
 - Only Nonprofits & Government agencies (e.g., NHTSA, FAA)
- Affiliate membership – only small businesses
 - Reduced membership fee (\$17,250/year)

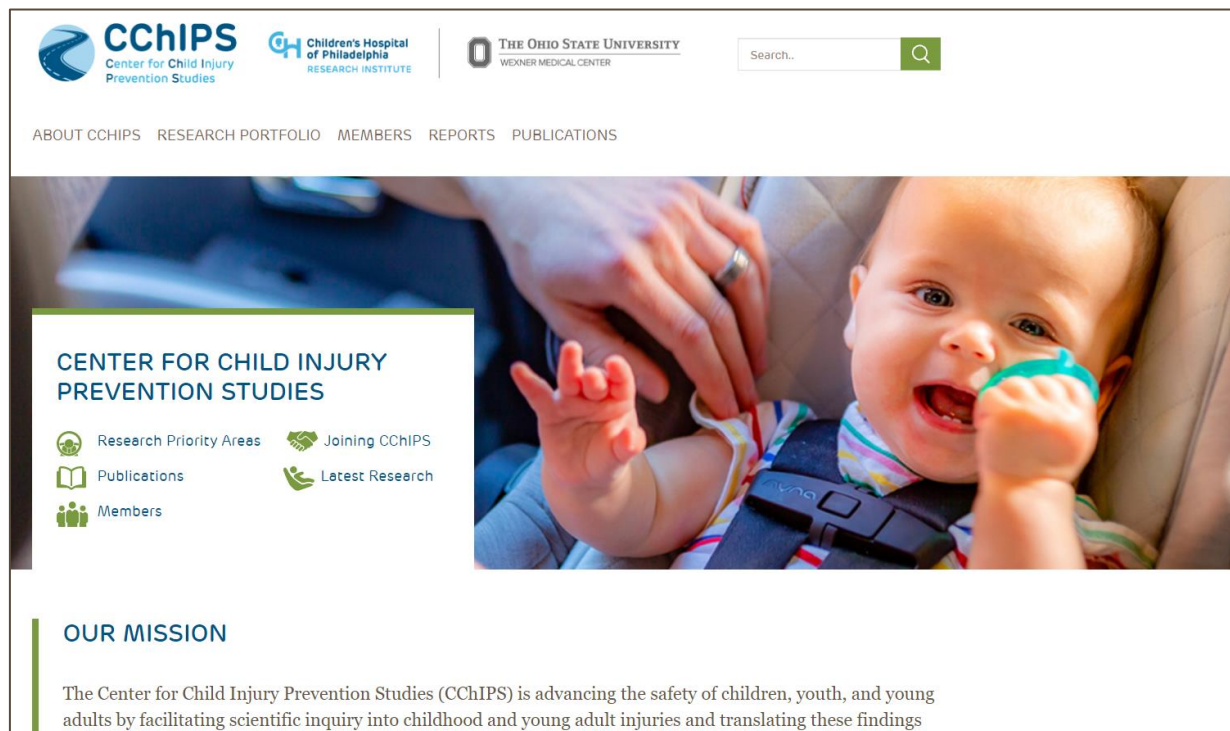
ADDITIONAL OPPORTUNITIES

- Sponsored research projects outside of CChIPS
- Outreach & advocacy within company
- IAB members are encouraged to have relationships and partnerships with CIRP & OSU outside of CChIPS
- Each IAB member company is permitted to fund up to two annual memberships per year
- Opportunity to sponsor ACIP Conference
 - Next conference: June 2022 in Plymouth, MI

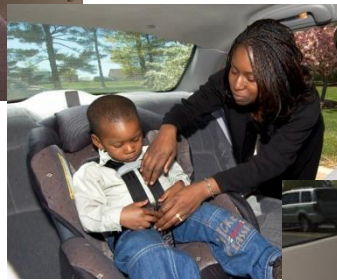
ADDITIONAL RESOURCES

Visit our website to learn more and download our latest Annual Report

<https://cchips.research.chop.edu>



HELP US SAVE CHILDREN'S LIVES



Interested in learning more about CChIPS membership? Contact Lindsey Mitros, CChIPS Manager, at mitrosl@chop.edu