



Injury Prevention Policy Brief

Bicycle Helmet Laws: Protecting Young Minds

SEPTEMBER 2012

SUMMARY

- Traumatic brain injury (TBI) is the leading type of serious bicycle-related injury.¹
- Nearly 60% of all bicycle-related deaths are due to head injuries.²
- Bicycle helmets can reduce the risk of TBI in a crash by up to 88%.¹
- Bicycle helmets laws are an effective method of increasing bicycle helmet usage among youth, especially when paired with educational interventions.^{3 4}

BICYCLE AND WHEELED SPORTS HEAD INJURIES

Bicycling is an excellent form of exercise for people of all ages, however, it is important remember that it is not without risk of injury, especially for children. Fortunately, many serious bicycle-related injuries can be prevented by simply wearing a helmet. Bicycle helmets are highly effective at preventing injuries to the head and face and can keep children cycling for many years to come.

OHIO FACTS

- More than 5 Ohioans under the age of 18 died each year from bicycle-related TBIs from 1999 to 2007.⁵
- From 2002 to 2009, 7,629 young Ohioans were treated in emergency departments and 723 were hospitalized for bicycle-related TBIs.⁶
- Emergency department visits and hospitalizations for youth bicycle-related TBIs cost Ohioans more than \$28 million dollars in direct medical costs between 2002 and 2009.⁶



BICYCLE AND WHEELED SPORTS HEAD INJURIES

- Bicycles are associated with more injuries to children than any other consumer product except motor vehicles.⁷
- Each year in the US, an estimated 389,000 children and teens 18 years of age and younger are treated in hospital emergency departments (EDs) for bicycle-related injuries. One-third (33.8%) of these injuries are to the face or head.⁸
- The majority (68.4%) of bicycle-related head injuries to children are diagnosed as concussions, contusions, or internal organ injuries.⁸
- Children with bicycle-related head injuries are over 3 times as likely to require hospitalization and nearly 6 times more likely to die from their injuries than children with injuries to other body parts.⁸
- Skateboards, non-motorized scooters and skates are also significant sources of injury, resulting in a total of more than 167,000 injuries annually among children younger than 15 years.⁷

DID YOU KNOW?



Although an estimated 70% of Ohio children ages 5-14 years ride a bicycle regularly, only 10-20% wear a helmet when they ride.⁹



Bicycle helmets are 88 percent effective in mitigating head injuries, making the use of helmets the single most effective way to reduce head injuries and fatalities resulting from bicycle crashes.¹

EFFECTIVENESS OF BICYCLE HELMET LAWS

Bicycle helmet laws for children have been found to be highly effective in promoting helmet use and reducing head injuries. At least 15 published peer-reviewed studies have shown that bicycle helmet laws increase helmet usage, and at least 6 studies have shown that bicycle-related TBIs decreased following the enactment of a bicycle helmet law. One study found that the presence of a bicycle helmet law increased helmet usage by approximately 18% among children younger than 16 years of age.¹⁰ Other studies have shown much higher increases, in some cases greater than 55%.¹¹

45%

Bicycle-related head injury rates among children have decreased by up to 45% following the passage of bicycle helmet legislation.^{12 13}

Bicycle helmet laws alone are effective at increasing helmet usage rates, even with minimal enforcement, but the effect is broader when paired with community education and support by law enforcement.^{3 4 14} The impact of a bicycle helmet law is most pronounced in communities with lower baseline helmet rates and in low income areas.^{14 15}

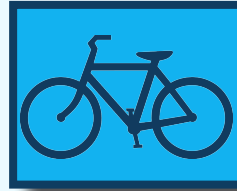
OHIO PARENTS SUPPORT BICYCLE HELMET LEGISLATION



Ohio parents support youth bicycle helmet legislation. Statewide data from two Ohio Polls found that more than 75% of parents support a mandatory bicycle helmet law for children younger than 18 years. This included a significant majority of the respondents in all subpopulation groups, regardless of age, race, education, income, and other demographics.¹⁶ These polls are consistent with results from other parts of the U.S.¹⁷

CURRENT BICYCLE HELMET LAWS

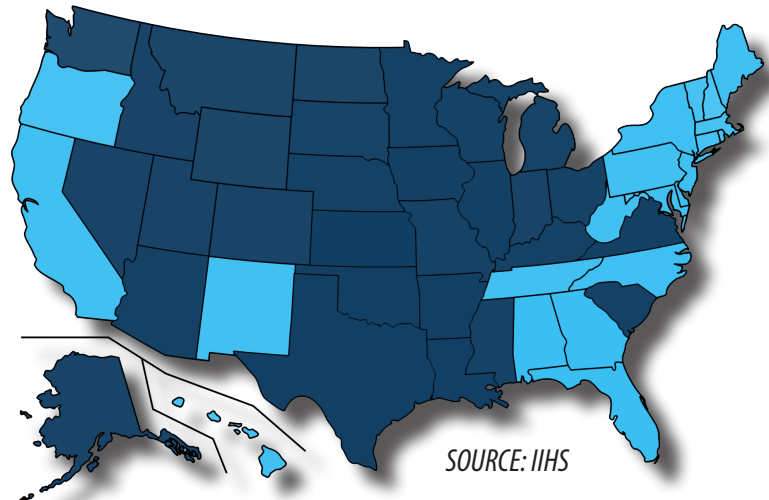
OHIO: Does not have a state law requiring the use of bicycle helmets, however, 24 local jurisdictions in the state have ordinances requiring their use by children.¹⁸ Although these jurisdiction include 4 of the state's 10 largest cities, only 15% of Ohio children live in communities covered by such laws. Among Ohio communities with a bicycle helmet ordinance, 42% also require the use of helmets for other wheeled sports, such as in-line skates, skateboards and non-motorized scooters.¹⁸



Universal bicycle helmet use by children 4 to 15 would prevent 39,000 to 45,000 head injuries, and 18,000 to 55,000 scalp and face injuries annually.¹⁹

NATIONALLY: Currently 21 states and the District of Columbia have state-wide bicycle helmet laws. Although most cover only children, a few cover adults as well. In addition, there are more than 200 local bicycle helmet ordinances in the US.¹⁸ This means that half of the children in the US live in communities with youth bicycle helmets laws. Eight states and the District of Columbia also require helmet use for children participating in other wheeled sports.⁷

21 STATES AND THE DISTRICT OF COLUMBIA HAVE STATE-WIDE BICYCLE HELMET LAWS



STATE WITHOUT A STATE-WIDE LAW

STATE WITH A STATE-WIDE LAW

BICYCLE HELMET MODEL LEGISLATION

Although bicycle helmet laws are relatively common throughout the country, they vary widely in their parameters. Many differences exist with regard to where, when and to whom the laws apply. The following best practice recommendations were developed by leaders in the injury prevention field:

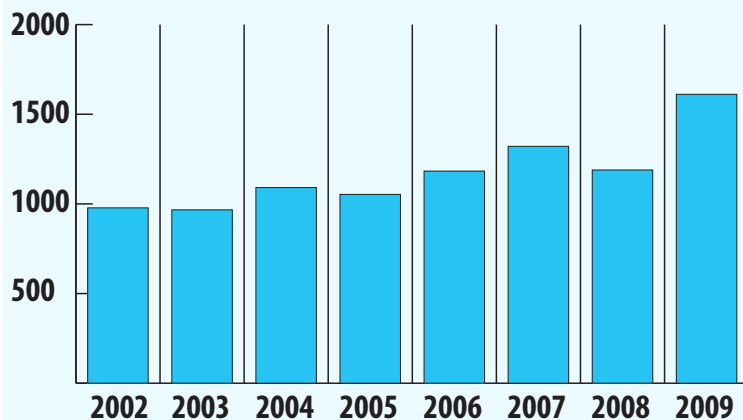
- **AGE:** Youth helmet laws should apply to all minors under the age of 18 years. This allows for maximum protection for teens as well as younger children.
- **PASSENGERS:** Passengers should be required to wear helmets too. (Note: infants younger than 1 year of age do not have the neck strength to support the added weight of a bicycle helmet and cannot safely ride as passengers on bicycles.)
- **OTHER WHEELED SPORTS:** It is important to consider including other wheeled sports such as skateboarding, skating, or using a non-powered scooter in any proposed bicycle helmet legislation. Children can sustain serious brain injuries or even die from crashes while riding on these items as well, even at slow speeds.
- **BICYCLE HELMETS:** Helmets should meet US Consumer Product Safety Commission standards, fit properly, and be fastened under the chin.
- **FINES:** Many jurisdictions place collected fines in a bicycle helmet fund to be used to purchase helmets for children who cannot afford one. Fines are often waived in lieu of proof of purchase or procurement of a bicycle helmet.



DID YOU KNOW?

The purchase of a \$10 bicycle helmet saves Ohioans approximately \$50 in direct medical costs. In addition, every helmet saves health insurers \$57 and auto insurers \$17.⁷

FROM 2002 TO 2009, EMERGENCY DEPARTMENT VISITS FOR YOUTH BICYCLE AND WHEELED RECREATION RELATED HEAD INJURIES INCREASED 65 PERCENT



NUMBER OF ED VISITS FOR PEDAL CYCLE AND WHEELED RECREATION RELATED TRAUMATIC BRAIN INJURIES AMONG 18 YEAR OLD AND YOUNGER, OHIO, 2002-2009

SOURCE: OHIO HOSPITAL ASSOCIATION

CONCLUSION

- Bicycle helmets are the single most effective way to reduce head injuries and fatalities resulting from bicycle crashes.
- Bicycle and wheeled sport helmet laws can significantly increase helmets use among children and thereby prevent life-altering TBIs and even death.
- Many local jurisdictions in Ohio have helmet laws currently on record, but these laws cover only 15% of Ohio's children.
- Expanding bicycle helmet law coverage to all children in Ohio would result in substantial increases in helmet usage and lower rates of bicycle-related fatalities and TBIs.

Disclaimer: The policies featured in this publication do not necessarily reflect the views of the Ohio Department of Health or any other state agency. Allowable activities related to contact with public policy makers vary by state; therefore it is important to consult internal agency rules, state laws, and (where applicable) federal laws to ensure full compliance.

HELMET FIT IS IMPORTANT

Make sure the helmet fits and your child knows how to put it on correctly. A helmet should sit on top of the head in a level position, and should not rock forward, backward or side to side. The helmet straps must always be buckled but not too tightly.²⁰ To ensure a proper fit, try the eyes, ears and mouth test:



EYES CHECK: Position the helmet on your head. Look up and you should see the bottom rim on the helmet. The rim should be one to two finger-widths above the eyebrows.



EARS CHECK: Make sure the straps of the helmet form a “V” under your ears when buckled. The strap should be snug but comfortable.



MOUTH CHECK: Open your mouth as wide as you can. Do you feel the helmet hug your head? If not tighten those straps and make sure the buckle is flat against your skin.

FOR MORE INFORMATION ON BICYCLE AND WHEELED RECREATION INJURY

OIPP, Child Injury Action Group
www.healthyohioprogram.org/vipp/ciag/ciag.aspx

Ohio Department of Health
www.healthyohioprogram.org/vipp/child/tbi.aspx

National Highway Traffic Safety Administration
www.nhtsa.gov/Bicycles/

American Academy of Pediatrics
www.healthychildren.org

Safe Kids USA
www.safekids.org

Center for Injury Research and Policy of the Research
Institute at Nationwide Children's Hospital
www.nationwidechildrens.org/injury-research-and-policy

Bicycle Helmet Safety Institute
www.bhsi.org

OHIO INJURY PREVENTION PARTNERSHIP CHILD INJURY ACTION GROUP



**OHIO INJURY PREVENTION
PARTNERSHIP**

Child Injury Action Group

Through a Centers for Disease Control and Prevention Core Injury grant, the Ohio Violence and Injury Prevention Program established the Ohio Injury Prevention Partnership (OIPP) in November of 2007. The purpose of the OIPP is to bring together a group of multi-disciplinary professionals from across the state to identify priority injury issues and develop strategies to address them. Child injury is one of the OIPP's priorities and the members recommended the formation of the Child Injury Action Group (CIAG). The CIAG has identified five focus areas to address in their five-year strategic plan including: teen driving safety, bicycle and wheeled sports helmets, infant sleep-related suffocation, sports-related traumatic brain injury, and child restraint/booster seat law review/revision. For more information about the OIPP or the CIAG including how to join, please visit www.healthyohioprogram.org/vipp/oipp/oipp.aspx.

References

- 1) Thompson RS, Rivara FP, Thompson DC. (1989). A case-control study of the effectiveness of bicycle safety helmets. *New England Journal of Medicine*, 320, 1361-7; 2) [Preventinjury.org: http://www.preventinjury.org/PDFs/BICYCLE_INJURY.pdf](http://www.preventinjury.org/PDFs/BICYCLE_INJURY.pdf); 3) Rivara FP, Thompson DC, Patterson MQ, Thompson RS. (1998). Prevention of bicycle-related injuries: Helmets, Education, and Legislation. *Annual Review of Public Health* 1998, 19, 293-318; 4) Cote TR, et al. (1992). Bicycle helmet use among Maryland children: effect of legislation and education. *Pediatrics*, 89(6), 1216-1220; 5) Ohio Department of Health, Office of Vital Statistics; 6) Ohio Hospital Association; 7) Safe Kids USA. (2011). Bicycle, Skate and Skateboard Safety. <http://www.safekids.org/assets/docs/ourwork/research/2011-bicycle.pdf>; 8) Mehan TJ; Gardner R; Smith GA; McKenzie LB. (2009). Bicycle-related injuries among children and adolescents in the United States. *Clinical Pediatrics*, 48(2), 166-73; 9) Ohio AAP. (2012). Ohio Bike Helmet Safety Awareness Coalition Fact Sheet. <http://www.ohioaap.org/files/2012%20Fact%20Sheet.pdf>; 10) Rodgers GB. (2002). Effects of state helmet laws on bicycle helmet use by children and adolescents. *Injury Prevention*, 8, 42-6; 11) Schieber MJ, Kresnow JJ, Sacks EE, Pledger JM, O'Neil JM, Toomey KE. (1996). Effect of a state law on reported bicycle helmet ownership and use. *Archives of Pediatrics and Adolescent Medicine*, 150(7); 12) Pardi LA, King BP, Salemi G, Salvador AE. (2007). The effect of bicycle helmet legislation on pediatric injury. *Journal of Trauma Nursing*, 14(2); 13) Macpherson AK, Macarthur C, Wright JG, Parkin PC. (2002). Impact of mandatory helmet legislation on bicycle-related head injuries in children: A population-based study. *Pediatrics*, 110(5), e60; 14) Karkhanavaz M, Kalenga J-C, Hagel BE, Rowe BH. (2006). Effectiveness of bicycle helmet legislation to increase helmet use: A systematic review. *Injury Prevention*, 12, 76-82; 15) Parkin PC, Khambalia A, Kmet L, Macarthur C. (2003). Influence of socioeconomic status on the effectiveness of bicycle helmet legislation for children: A prospective observational study. *Pediatrics*, 112, e192-e196; 16) Institute for Policy Research at the University of Cincinnati. (2000). The Ohio Poll; 17) National Highway Traffic Safety Administration. (2008). Summary Report National Survey of Bicyclist and Pedestrian Attitudes and Behavior; 18) Bicycle Helmet Safety Institute. <http://www.helmets.org/mandator.htm>; 19) National Highway Traffic Safety Administration. (2008). Bicycle Helmet Use Laws; 20) Safe Kids USA. *Bicycling and Skating Tips*. www.safekids.org. Accessed 7/11/12.