

The Importance of Head Protective Gear Use During Motorcycle Operation

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Intro & Background:

Neighborhoods and the built environments that people inhabit majorly impact their health and safety. My group focused on researching injury prevention in motor vehicle crashes.

In 1967, the United States enacted a universal helmet safety law requiring all motorcycle owners to wear a helmet while driving. Within the last twenty years there has been a push to remove this law. Opponents believe it a personal choice to wear a helmet or not. Since this movement, there has been studies to show the increased risk of mortality and head injuries. We sought to explore the relationship between motorcycle helmet use and head injuries.

PICO Question:

P: Adults who ride motorcycles

I: Head protective gear

C: Compare those who do and don't wear head protective gear

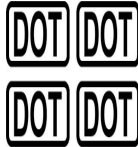
O: Lead to an decrease in motorcycle related head injuries

Significance of:

- Fatality rate significantly increases in motorcycle crashes where the rider was not wearing a helmet (Notrica et al., 2020)
- Repeal of Michigan's Helmet law resulted in a 3% decrease in helmet use (Carter et al., 2017)
- When given the option to wear a helmet, only 46% of riders wore one in a study in California (Kraus et al., 1995)
- After the law was passed, 99% of riders reported wearing a helmet (Kraus et al., 1995)
- More than 100,000 citizens have died in motorcycle crashes (Houston & Richardson, 2007)

Design and Implementation:

- There are two types of helmet laws
 - Full helmet laws associated with a decreasing mortality rate (Notrica et al., 2020)
 - Partial helmet laws are found to be associated with an increasing mortality rate (Notrica et al., 2020)
 - Using a full law will decrease mortality rate amongst riders
- Using a DOT approved helmet will increase survival rate for those in a crash (Houston & Richardson, 2007)
 - The Department of Transportation (DOT) demands a level of safety from helmet manufacturers
- In our community, awareness should be spread of the risk of not wearing a helmet
 - Risks include: head injury, spinal injury, other body injury, and fatality (Carter et al., 2017)
 - Risks can be limited using proper headgear and instilling full helmet laws



Outcomes:

- The repeal of helmet laws has significantly increased the incidence of head injury and death
- It resulted in a 24% to 27% helmet use decline among riders in crashes and a 14% increase in head injury (Carter, et al., 2017).
- Universal helmet laws are associated with a 36% to 45% decline in motorcycle crash mortality (Notrica, et al., 2020)
- Only 0.5% of motorcycle crashes with head protective gear receive severe head trauma (Dutra, et al., 2014)
- Not using head protective gear is directly related to increased risk of injury and death

Summary:

Roadway safety is a critical aspect of creating healthy built environments. The use of helmets when riding a motorcycle helps to maintain these safe environments. Helmet use among motorcyclists caused a 36-45% decrease in motorcycle crash fatalities (Notrica et al., 2020). Research showed that the absence of head protection leads to an increased risk of death and injury. There is a relationship between the use of motorcycle helmets and safe roads.



References:

- Bachynski, K., & Bateman-House, A. (2020). Mandatory bicycle helmet laws in the United States: Origins, context, and controversies. *American Journal of Public Health, 110*(8), 11198-1204. <https://doi.org/10.2105/AJPH.2020.305718>
- Carter, P. M., Buckley, L., Flannagan, C.A., Cicchino, J.B., Hemmilla, M., Bowman, P.J., Almani, F., & Bingham, R. (2017). The impact of Michigan's partial repeal of the universal motorcycle helmet law on helmet use, fatalities, and head injuries. *American Journal of Public Health, 107*, 166-172. <https://doi-oro.ezproxy.gvsu.edu/10.2105/AJPH.2016.303525>
- Dutra, V., Caregnato, R., Figueiredo, M., & Schneider, D. (2014). Craniocerebral trauma in motorcyclist: relation of helmet use and trauma severity. *SciELO*. <http://dx.doi.org.ezproxy.gvsu.edu/10.1590/1982-0194201400079>
- Gordon-Larsen, P., Boone-Heinonen, J., Sidney, S., Sternfeld, B., Jacobs, D. R., Jr, & Lewis, C. E. (2009). Active commuting and cardiovascular disease risk: the CARDIA study. *Archives of Internal Medicine, 169*(13), 1216No
- -1223. <https://doi.org/10.1001/archinternmed.2009.163>
- Houston, J. D., & Richardson, E. L. (2007). Motorcycle safety and the repeal of universal helmet laws. *American Journal of Public Health, 97*(11), 2063-9.
- Kraus, F. J., Peek, C., & Williams, A. (1995). Compliance with the 1992 California motorcycle helmet use law. *American Journal of Public Health, 85*(1), 96-9.
- Notrica, D. M., Sayers, L. W., Krishna, N., Davenport, K. P., Jamshidi, R., & McMahon, L. (2020). Impact of helmet laws on motorcycle crash mortality rates. *The Journal of Trauma and Acute Care Surgery, 89*(5), 962-970. <https://doi.org/10.1097/TA.0000000000002861>