Background

Road traffic injuries constitute a major public health concern with consequences on mortality and morbidity, according to WHO. Globally, approximately 1.35 million people die each year as a result of traffic crashes, approximately 25% where motorcycle drivers

Methods

Traditional helmets cover the ears and dramatically reduce hearing acuity, listening to danger can be as important as seeing it. For this, a helmet with a system that improves hearing acuity without affecting impact protection was designed, patented, prototyped and tested in a certified through calculations of measures of central tendency for frequency by analysis of variance (ANOVA) with a confidence interval of 95%, (p <0.05). For the study of laterality, a Binomial analysis was applied to verify the probability of error and success with a confidence level of 95%.

Results

The research showed that the use of our Hearing Helmet gave the user an average sound source localization of 90%. For the full-face Helmet user, it presented an average of 67%, it presented difference on the precision of localization source between both helmets.

Conclusion

The awareness in real time of the surroundings that Hearing Helmet returns to motorcycle drivers, allows to have agile responses in the situations of the road. Implementing this solution will increase road safety and help reduce worldwide accidents.

Learning Outcomes

By improving hearing acuity while wearing a Hearing Helmet, accidents can be reduced and save lives. Hearing Helmet is a solution for road safety on populated urban areas. That is SDG 3.6.1 and our mission too.

Background

The increased risky use of bicycles in China lead to growing bicycling injuries. We report the incidence of five unsafe bicycling behaviors in Changsha, China: not wearing helmets (A), violating traffic lights (B), riding in a direction opposite (C), holding the handlebar with one or no hands (D), and riding in a non-bicycle lane (E). Chi-square tests examined differences in unsafe cycling behavior incidence between shared versus personal lane (E). Logistic regressions quantified the association between unsafe cycling behaviors and both type of riders and areas cycled in.

Results

The incidences of A, B, C, D, E were 99.28% (95% CI: 99.14%-99.41%), 19.57% (95% CI: 18.50%-20.64%), 13.73% (95% CI: 13.19%-14.27%), 2.57% (95% CI: 2.32%-2.82%), and 64.06% (95% CI: 63.16%-64.96%), respectively. Compared to personal bicycle riders, shared bicyclists had higher incidence rates of A and C (AOR= 18.97, 2.08) but lower incidence of B (AOR= 0.63) (p<0.05). Across the types of cycling areas, the university, commercial and office area had the highest incidence of A, C and B, respectively (p<0.05).

Conclusion

Cyclists using shared and personal bikes were observed behaving in unsafe manners frequently, especially rarely wore helmets.

Learning Outcomes

It highlights the unsafe cycling behaviors in urban China, and the high incidence of not wearing helmets are needed to be interpreted.