

Using Crowdsourced Data to Assess Safety in Developing Countries, The Case Study of Eastern Cairo, Egypt

Authors : Mahmoud Ahmed Farrag, Ali Zain Elabdeen Heikal, Mohamed Shawky Ahmed, Ahmed Osama Amer

Abstract : Crowdsourced data refers to data that is collected and shared by a large number of individuals or organizations, often through the use of digital technologies such as mobile devices and social media. The shortage in crash data collection in developing countries makes it difficult to fully understand and address road safety issues in these regions. In developing countries, crowdsourced data can be a valuable tool for improving road safety, particularly in urban areas where the majority of road crashes occur. This study is the first to develop safety performance functions using crowdsourced data by adopting a negative binomial structure model and Full Bayes model to investigate traffic safety for urban road networks and provide insights into the impact of roadway characteristics. Furthermore, as a part of the safety management process, network screening has been undergone through applying two different methods to rank the most hazardous road segments: PCR method (adopted in the Highway Capacity Manual HCM) as well as a graphical method using GIS tools to compare and validate. Lastly, recommendations were suggested for policymakers to ensure safer roads.

Keywords : crowdsourced data, road crashes, safety performance functions, Full Bayes models, network screening

Conference Title : ICTTE 2024 : International Conference on Traffic and Transportation Engineering

Conference Location : Sydney, Australia

Conference Dates : August 29-30, 2024