

Trends and Determinants of Road Accident Outcomes in Bangladesh: A Statistical Analysis of Deaths, Injuries, and Accidents

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Abstract

Road accidents are a significant public health issue in Bangladesh, leading to substantial fatalities and injuries annually. This study examines trends in road accidents, deaths, and injuries in Bangladesh from 2015 to 2023, identifying key concerns and providing evidence-based recommendations to enhance road safety. To assess the annual trends in road accidents, fatalities, and injuries from 2015 to 2023, identify correlations, and explore underlying causes to inform policymakers on effective interventions. A retrospective analysis of road accident data from 2015 to 2023 was conducted using descriptive and inferential statistical methods. The dataset includes annual records of accidents, deaths, and injuries. Data visualization techniques, such as line graphs were employed to enhance interpretability. The analysis revealed a significant increase in the number of accidents, deaths, and injuries during the period 2015–2021, peaking in 2020–2021, followed by a slight decline in subsequent years. While the number of accidents increased by over 70% from 2015 to 2021, injuries and deaths followed a similar trajectory. The decline observed in 2022–2023 may be attributed to improvements in road safety measures or changes in traffic patterns. The findings highlight the need for stricter traffic regulations, public awareness campaigns, and improved emergency response systems to reduce road accidents and associated casualties. Further research is recommended to explore contributing factors and evaluate policy interventions.

Keywords

Accident, Injury, Traffic, Bangladesh.

Biographies

Rumaiya Rashid Ema is a dedicated student in Electrical and Electronics Engineering at American International University -Bangladesh. Known her inscription and consistently fight for her academic and personal achievement.

She also passionate about technology and machine learning. She is obvious to learn programming and increased her decision making skill. Her peers and professors appreciate for her constant honesty, attachment and also commitment to her project.

Prasanta Jit Paul is a highly motivated and enthusiastic Computer Science student attends American International University-Bangladesh. He has a great enthusiasm for machine learning, AI, data science and statistical analysis and dedicated to discovering solution to everyday challenges. He is dedicated to learn high level knowledge and skills in these areas to support decision making. His enthusiasm for learning and dedication to his studies place him as a highly promising individual in the changing field of computer science.

MD. Mosaddek Muttakey is a passionate student at the American International University-Bangladesh with a deep interest in the world of automobiles. His focus lies in understanding and exploring the dynamic field of automotive technology, where he seeks to apply innovative ideas and solutions. He is particularly interested in how advancements in automotive design, engineering, and sustainability can drive the future of transportation. His academic journey is driven by a commitment to discovering new ways to enhance vehicle performance, safety, and efficiency, with the goal of making a meaningful impact on the automotive industry.

Sakib Hossain Abir is a dedicated student in Computer Science Engineering at American International University - Bangladesh. Known his inscription and consistently fight for his academic and personal achievement. She also passionate about technology and machine learning. He is obvious to learn programming and increased her decision making skill. Her peers and professors appreciate for her constant honesty, attachment and also commitment to her project.

Mst. Ruban Taheya Zisa is an undergraduate student, Computer Science and Engineering Department, American International University-Bangladesh Passionate about technology and creativity. Zisa aims to build a strong foundation in computer science principles and their real-world applications, fueled by a deep-seated interest in technology and creativity. Her academic trajectory has been a model of excellence prompt, disciplined, hard-working. Zisa enjoys software development, data science, and exploring new technologies. Her teamwork spirit and detail-oriented approach to work make her a valuable contributor to team projects, team research.

Md. Mortuza Ahmmed a Statistician with an extensive range of research interests. His interests are mainly application based -- how to apply different statistical techniques in different sectors to perform more accurate and precise analyses as well as projection. His core academic research areas are public health, education and machine learning. One of his primary goals concerning students is to assist them with technical knowledge to turn their thoughts into successful outcomes to form a modern society.