ANALISA TITIK RAWAN KECELAKAN LALU LINTAS MENGGUNAKAN METODE BATAS KONTROL ATAS BERBASIS SISTEM INFORMASI GEOGRAFIS

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ABSTRACT

This study analyzes traffic accidents along the National Road in Bangko Pusako District, Rokan Hilir Regency, Riau Province, during the 2019–2023 period. The aim is to reduce accident rates using Geographic Information Systems (GIS). Accident data obtained from the Rokan Hilir Traffic Police were analyzed using ArcGIS and QGIS software. The 34.353 km road segment was divided into 2 km intervals to identify high-risk accident zones. The analytical methods employed include Equivalent Accident Numbers (EAN), Upper Control Limit (UCL), Pearson correlation, The EAN and UCL analysis identified five segments as accident-prone zones (black spots): STA 0+000–2+000, 10+000–12+000, 16+000–18+000, 24+000–26+000, and 30+000–32+000. Accidents were predominantly caused by motorcycles, with minor injuries being the most frequent outcome; however, the fatality rate was also significant (r = 0.960). This study highlights the urgent need for traffic safety interventions in Bangko Pusako District. Recommendations include the installation of additional traffic signs, improved road markings, enhanced lighting at black spots, and data-driven strategies to reduce accidents and fatalities. The findings provide essential information for road safety planning in the region.

Keywords: Spatial Analysis, Geographic Information Systems (GIS), Accident-Prone Areas, Equivalent Accident Numbers (EAN), Bangko Pusako District.