# Erbil Polytechnic University
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# "Highway Safety in Erbil City using HCS Software"

## Abstract

In Erbil city, highway safety and road accidents are pressing concerns due to rapid urbanization and growing traffic volume. Understanding the factors contributing to accidents is crucial for implementing effective safety measures. This research aims to examine the prevalence of road accidents, identify contributing factors, and propose evidence-based initiatives to improve highway safety in Erbil city and prevent environmental pollution by knowing the Average Annual Daily Traffic on the roads and at the same time the HCS software calculates the crash cost by crash severity, that is the fatal/injury cost and property damage cost.

This study examines to evaluate the Highway Capacity Software (HCS) for estimating highway safety in Erbil city using field data. The primary objectives are assessing the suitability of the software for representing Erbil's conditions and exploring the potential for calibrating models to better reflect local road conditions, assessing the current state of highway safety, identify potential risk factors, and propose strategies for improvement.

Methodologically, the study seeks to observe and calculate Crash Frequency for urban highways under different conditions: observed crash frequency obtained from the Traffic Police Directorate, predicted crash frequency under base conditions, and predicted crash frequency under local (site) conditions. The three models are compared to determine their effectiveness in representing Erbil's road safety dynamics.

Results reveal critical insights into traffic behavior and that in the three models local predicted crash frequency values are higher than observed and base predicted crash frequency values because of high AADT value and this cause a higher risk of crashes. This research contributes valuable insights to the field of transportation planning, the performance of (HCS) software and offers actionable recommendations for policymakers and urban planners striving to create safer road environments.