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## Validating Trip Travel Time Provided by Smartphone Navigation Applications in Jordan

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**Abstract:** This research aimed to validate the trip travel time provided by three selected navigation applications, through examining the error in the Estimated Time of Arrival (ETA) provided. The ETA was compared with the actual travel time measured from 204 selected urban and rural road segments in Jordan. The overall trip travel time accuracy was 70%, 57%, and 52% for the Google Maps, Here-WeGo, and Waze applications, respectively. Analysis results showed that the three applications' ETA measures vary from actual trip time with different error levels ranging from minor errors of less than 10% to significant errors of more than 40%. It was found that Google Maps has the most distinguished accuracy, yet the provided information by Google Maps contains a certain amount of error in the ETA. Also, ANOVA test showed that there was no statistically significant difference between Google Maps and Waze-ETA mean errors, while Here-ETA means error significantly differs from both applications. The significant contribution of this research is the detailed evaluation process of the estimated journey times using field-data that were collected by trained drivers instead of crowdsourcing data. The usage of such applications will get the attention of individuals, organizations, and agencies in different related sectors.