



بسم الله الرحمن الرحيم  
الآيه

قال تعالى :

[الذي جعل لكم الأرض مهذاً وجعل لكم فيها  
سبلاً لعلكم تهتدون]

الزخرف (10)

صدق الله العظيم

# **Dedication**

To my parents, sisters and brothers who have continuously encouraged and patiently.

.

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## **ABSTRACT**

Recently there has been much concern about investigation of the problem of road traffic safety and, particularly prevention of traffic accidents. The importance of this research arose as a result of the excessive increase in traffic accidents and the resulting injuries and fatalities. Data from various sources were carefully examined and analyzed using ANN covering the period from 1991 to 2012, for comparative purposes Multiple Linear Regression (MLR) and Statistical Package for Social Science (SPSS) techniques were applied to fit the same data. Forecast for the years 2010 to 2020 were made using ANN, SPSS and MLR. The main objective of each of the methods was to fit a reliable prediction model. The adequacy of such model is typically measured either by the coefficient of determination ( $R^2$ ) as well as comparing actual accidents against predicted values. ANN resulted high values of  $R^2$  and better prediction capabilities.

## التجريد

ان الاهتمام بموضوع السلامة المرورية عامة والوقاية من حوادث المرور بصفة خاصة يعد من الموضوعات الحديثة واثت اهمية هذا البحث نتيجة للتزايد المفرط فى حوادث المرور سواء كان فيما يخلفه من ضحايا او وفيات. ويهدف البحث الى تحليل بيانات الحوادث المرورية لمعرفة الوفيات والضحايا المستقبلية باستخدام برنامج الشبكات العصبية الاصطناعية من عام 1991 الى 2012. لغرض المقارنة تم استخدام النماذج الاحصائية للتنبؤ بحوادث الطرق من عام 2010 الى 2020 والهدف الاساسى لكل طريقة من الطرق ترجع لتحديد دقة النموذج الامثل للتحليل والتنبؤ بالحوادث. وقد دلت النتائج على ان الشبكات العصبية الاصطناعية تقدم النموذج الامثل للتنبؤ بحوادث الطرق والضحايا (الوفيات والاصابات)

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## List of Abbreviations

ANNs	Artificial Neural Networks
MLR	Multiple Linear Regression
SPSS	Statistical Package for Social Science
RTAs	Road Traffic Accidents
DCs	Developing Countries
IDCs	Industrialized Developing Countries
NZ	Newzeland
M	Malawi
S	Sudan
SO	Sultan of Oman
VBR	Vehicle Based Rate
PVBR	Population Vehicle Based Rate
BP	Back-Propagation
LMS	Least Mean Square Error
POP	Population
G.D.P	Growth Domestic Product
NOCR	Number of Car Registered
NKPR	Number of Car Per kilometer
D.G.T	Directorate General Traffic
RMSE	Root Mean Square Error
MAPE	Mean Absolute Percentage Error
MAE	Max Absolute Error
MAXAPE	Maximum Absolute Percentage Error
MAXAE	Maximum Absolute Error