Road Accident Severity Analysis - Linear Regression Model

1. Introduction

This assignment aims to analyze road accident severity using a linear regression model. The model predicts the severity of accidents based on independent variables such as speed limit, weather conditions, and road type. The analysis uses a dataset containing road accident information, and the trained model helps make predictions for hypothetical scenarios.

2. Dataset Description

We used a dataset that contains details about road accidents, including variables such as speed limit, road type, and weather conditions. These features were selected as independent variables, while accident severity is the dependent variable.

3. Model Creation and Code

A linear regression model was created using Python's scikit-learn library. The dataset was split into training and testing sets, with the independent variables being speed limit, road type, and weather conditions, while accident severity is the dependent variable. The model was then trained and tested for accuracy using Mean Squared Error and R^2 Score.

```
# Python code snippet

from sklearn.linear_model import LinearRegression

model = LinearRegression()

model.fit(X_train, y_train)
```

4. Example Prediction with Hypothetical Data

To demonstrate the model's application, a hypothetical data set was used to predict accident severity. For instance, with a speed limit of 30, clear weather, and urban roads, the model predicted an approximate severity level.

5. Benefits of the Model for Underdeveloped Countries

In underdeveloped countries, this model could assist in traffic accident analysis and prevention. By

identifying high-risk factors, authorities can allocate limited resources effectively to prevent severe accidents and implement data-driven policies for road safety.

6. Conclusion

This assignment demonstrated the application of a linear regression model for predicting accident severity. With proper tuning and additional data, the model could serve as a valuable tool for public safety.

Appendix

GitHub Repository Link: [Provide your link here]