

Literature Review

Group C

Research Paper Title: Application of Macroscopic Modeling in Assessing Noise Levels in Urban Areas

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This literature review focuses on the application of macroscopic modeling in assessing noise levels in urban areas, specifically using the example of the demonstration corridor of the European project Civitas ELAN in the city of Zagreb. The paper discusses the negative effects of increased motorization, such as noise pollution, and the importance of considering noise levels in determining the location and reconstruction of traffic facilities.

The European Union has adopted directives related to permissible noise emissions from motor vehicles since the 1970s. Member states have also established permissible noise levels based on land allocation, and measures for noise protection have been implemented more intensively. The paper describes the methodology of evaluating noise levels using the macro-simulation software tool PTV Visum, based on German and Nordic guidelines.

The study highlights that ambient noise, particularly from motor vehicles, is a significant source of noise in urban areas. Factors contributing to increased traffic noise include traffic volume, speed, heavy vehicles, and faulty equipment. The consequences of exposure to excessive noise levels include a reduced quality of life, health problems, annoyance, sleep disturbance, and activity disturbance.

The European Commission has recognized noise as a major environmental problem and has introduced directives to address noise issues, including sound level limits for road vehicles and the strategic noise mapping of major roads, railways, airports, and agglomerations. The paper provides an overview of the noise mapping in London as an example.

The research focuses on the Civitas ELAN project in Zagreb, which aims to improve urban mobility and reduce congestion, accidents, and pollution. The paper outlines the objectives and measures implemented in Zagreb, such as energy recovery systems, clean public transport strategies, cycling improvements, and comprehensive safety strategies. The specific measure of interest in this study is the study of congestion charging and dialogue on pricing, with a focus on noise emission within the demonstration corridor.

To assess noise levels, the researchers utilized the macroscopic simulation software tool PTV Visum. A traffic model of the Savska Road corridor was developed based on traffic counts and an origin-destination trip matrix. The software calculates noise levels based on the number of vehicles, the share of heavy vehicles, longitudinal gradient, and road surface type. The study compares two procedures for noise emission calculation: Noise-Emis-RLs90 based on German guidelines and Noise-Emis-Nordic based on the Nordic Council of Ministers model.

In conclusion, the paper demonstrates the application of macroscopic modeling using PTV Visum to assess noise levels in urban areas. The study provides insights into the importance of considering

noise pollution in transportation planning and highlights the use of simulation tools for estimating noise levels and evaluating the effectiveness of noise reduction measures.

Reference:

Novačko, L., Petrović, M., & Barić, D. (2014, March). APPLICATION OF MACROSCOPIC MODELLING IN ASSESSING NOISE LEVEL IN URBAN AREAS. INTERNATIONAL JOURNAL FOR TRAFFIC AND TRANSPORT ENGINEERING, 4(1), 117–127. [https://doi.org/10.7708/ijtte.2014.4\(1\).09](https://doi.org/10.7708/ijtte.2014.4(1).09)