

Designing noise maps using traffic noise models for routes A20 and A4 in the Netherlands

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Abstract

The purposes of this study are to design and compare noise contour plots (noise maps) by the use of three various road traffic noise models for routes A20 and A4 in the Netherlands. In this research, traffic data come from the monitoring system of Rijkswaterstaat (Ministry of Infrastructure and Water Management of the Netherlands) and contain data of flow and speed per minute per lane for every couple of hundred meters. Two months data have been provided including March 2017 and March 2018 related to two routes A4 from The Hague (Den Haag) to Schiedam and A20 from Kethelplein to Gouda. The raw traffic data are processed to obtain the required flows and speeds. Using these flows and speeds in three different traffic noise formulas (models), noise contour plots along the two routes, are generated. These noise contour plots based on the two months and the three different formulas are compared. While no significant differences between the corresponding noise maps of March 2017 and March 2018 are observed, there are significant differences between the noise maps based on their implemented traffic noise models. All the noise maps show that traffic noise levels in the routes A20 and A4 are higher than the World Health Organization (WHO) guidelines. In the current article, the data, approach, results, comparisons, and finally some recommendations are given.

Key words: Noise map, The Netherlands, Traffic data, Traffic noise model.

1. Introduction

Even in the developed countries such as Germany and the Netherlands, people encounter noise pollution which disturbs everyone's life. Road traffic can be considered as the most troublesome source of noise pollution in the Netherlands. Research revealed that in 2003, 29% of the Dutch people aged 16 years and older were exposed to traffic noise pollution. Moreover in developed and developing European countries it was estimated that up to 30% of European individuals in 2003 were bothered enormously by the traffic noise and regarding the fast urbanization, traffic noise nuisance may rise in urban areas (Jakovljevic et al., 2009; Wismans, 2012).