

# Noise estimation using road and urban features

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## Abstract

Noise pollution must be considered to achieve sustainable cities because current levels of exposure to environmental noise are a considerable risk to the health and quality of life of citizens. Urban features and sound levels were registered in 150 streets in the Chilean cities of Talca and Valdivia to analyze the relationship between both types of variables. Urban variables related to street location, urban land use, street geometry, road traffic control, and public and private transportation showed very significant correlations with the noise levels, and multiple regression models were developed from these variables for each city. Models using only urban variables in Valdivia and Talca explained 71% and 73%, respectively, of the variability of noise. The prediction error was similar in the different types of urban roads and did not exhibit significant differences between models developed in different cities. The urban models developed in one city could, therefore, be used in other similar cities. Considering the usefulness of these variables in urban planning, these models can be a useful tool for urban planners and decision-makers to implement action plans regarding noise pollution.

## Author keywords

Environmental noise  
Noise measurements  
Urban noise  
Urban noise planning