ASSESSMENT OF THE ENVIRONMENTAL FACTORS DETERMINING THE VARIABILITY OF RESPIRATORY FUNCTION PARAMETERS BASED ON GENERALIZED REGRESSION MODELS

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High concentrations of air pollutants are characteristic for the vicinities of urban busy roads. Numerous studies show that the concentrations are significantly higher in comparison to areas located in a certain distance from roads and especially to rural areas. Inhabitants living in the proximity of roads are therefore likely to be more exposed to adverse effects of air pollutants.
Basing on data from a study realized in 2008-2012 among nearly 5,000 residents of Warsaw and non-urbanized areas, we used generalized linear regression models (GRM) to identify factors that most significantly influence the variability of respiratory function parameters. GRMs combine multiple classes of models and estimation methods such as simple, multiple or factorial regression, ANOVA, ANCOVA, etc. Therefore they allow to receive results based also on interactions between the independent variables.
This paper presents the results of GRM for the FEV1 distribution. They indicate that the variation of FEV1 is associated with personal factors such as age, height, weight, BMI or sex as well as with factors related to the place of residence: traffic density, period and floor of residence. They clearly show that living in the proximity of busy roads in the city is linked with decreasing values of FEV1.