

Abstract

Nowadays exists large amount of data which characterizes environment on base of different parametres. Due to existence of such large amount of data which is difficult to understand and comprehensively visualize, it is necessary to find tools for their proper visualization. The main goal of this thesis is present current environment in place of residence and show possible influence of environmental factors on health. For achieving the goal it was necessary to obtain individual sets of data and prepare them for each analysis and also for their presentation. In thesis there are described various aspects of environment in the area of Příbram region. Also in text is described in detail spatial determined medical data. Thesis contains O2PLS analysis which will create regression model for thyroid function parameters. Output of whole thesis is creating a web application that clearly presents input data (environmental and medical), geostatical and O2PLS analysis. Due to this work has been developed procedure how to prepare a analyze different type of data and also created detailed description of presentation results.

Till now has not been proven what aspects can affect thyroid function. Many diseases are affected by the environment. This thesis focuses on influence of environment on thyroid function. Main goal of this thesis is to propose methodology for spatial and statistical description of medical data, reveals regularity in spatial arrangement and creates a regression model. The spatial arrangement of the data is described by the method of the nearest neighbor and local Moran I. Then O2PLS method is applied and its proposed a regression model. In data was identified clustering in the vicinity of towns. In the thesis regression model which reflects aspects of the environment (concentration of As, Cd, Pb, Pb and Se in water) was proposed. For other environmental parameters has not been proven any evidence of effect on the thyroid function. This work is useful for using spation data analysis in the endocrinology field. Due to this work has been developed procedure how to process medical data and extract information in the context of spation data.

Keywords: GIS, O2PLS, geomedicine, environment, story map, endocrinology