

Abstract

The thesis studies the use of existing 3D models as a source of information about the volume of buildings, which is further used in statistical modeling of spatial data. Existing approaches to the spatial data disaggregation are presented, including those utilizing three-dimensional data. The method of obtaining volume information is implemented employing ArcPy libraries for multipatch format. Open source PostgreSQL PostGIS database functions were put in use to retrieve the volumes from rasters containing information about the height of the building. Disaggregation, performed with both 2D and 3D data, is evaluated in terms of accuracy, model performance, and the ability of 3D data to replace some 2D data. The proposed calculation methods and model results are critically evaluated.

Keywords: 3D data, volume, Prague, disaggregation, modeling, ArcPy, PostGIS, machine learning