# CLUSTER ANALYSIS APPLYING FOR LAND CADASTRE DATA PROCESSING

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The article aims to analyze a possibility of using a cluster analysis method towards land cadastre data, since assessment of virtually all categories of lands involves clustering of assessed objects. Necessity in obtaining of reliable assessed price of land plots is understood by both state and municipal executive authorities at the board of land resources and private subjects of land law when performing land operations of any nature.

Object of research is the land cadastre data.

Subject of research is a k-means intellectual analysis method and its use to cluster land plots of the district.

Main purpose of the article is to develop methods to cluster land plots with the use of intellectual data analysis. Clustering is made to reduce the scope of works performed and increase accuracy of evaluation model. In the result of clustering, assessed objects are integrated into clusters basing on property values which influence on formation of market price of assessed objects. Here are the tasks defined by this purposes:

- research and provision of basis for possible using of methods and means of data intellectual analysis in the processes of land plot pricing,
- modelling of cadastre data analysis processes with the use of cluster analysis method,
- development of order for land plot cluster formation basing on models based on k-means method use,
- testing of solutions developed on the basis of land cadastre data of Stryi district of Lviv region.

Academic novelty here is in cluster analysis of land cadastre data and estimated prices for assessed objects received in each cluster.

Practical utility is in development of an automated data processing system. In order to implement an expert pecuniary assessment basing on comparison of selling prices for similar plots, there was collected information about price of plots in Stryi district with application of cluster analysis method to cluster typical plots with indicated price.

Conclusions:

The k-means analysis method described herein allows us to cluster lands of inhabited locations of Stryi district and receive in each cluster estimated prices for assessed objects in order to make an expert pecuniary assessment by comparing prices for similar plots.

Location area has a key role in land plot pricing. In the result of clustering there were received four clusters with estimated prices for land plots. First cluster involved land of Morshyn town, their price varying within UAH 440-480 per square meter. Despite the fact that those land plots are located pretty far from a regional centre, their price if the highest, since Morshyn is inhabited location with special status (health resort).

This method has advantages which are easy and speed of use, understability and transparency of algorithm.

Its disadvantages are sensitivity to selection of initial values of cluster centres and necessity to specify quantity of clusters in advance.

Keywords – land cadastre, data mining, forecasting, cluster analysis.