

# GIS Supported Decision Making Model to Housing Suitability Assessment

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**Key words:** Affordable housing; Geoinformation/GI; Valuation

## SUMMARY

Housing is one of the most important investments of people and states. Researches based on housing choice are generally based on studies on housing economics. In the choices of housing, both the individual choice and the spatial structure of the housing market should be considered together and physical characteristics, environmental characteristics, transportation mode and accessibility should be evaluated together. For this reason, housing choice is not a decision as randomly. Many different factors should be considered together. Evaluating of the housing suitability has a main importance due to the following reasons: The implementation of planned urbanization, the selection of residential settlements, the comparison of the costs of internal and external connection between these regions, economical evaluating of the development plans, the clarification and securing of real estate markets, and the monitoring of housing markets.

Decision making is the determination of the option or options giving the most appropriate result by evaluating of the all aspects of problems which has to be finalized against situation or events encountered in the every management level. The Analytical Hierarchical Process (AHP) method was first developed by Saaty and it is a multi-criteria decision making technique which is the well-known for decision support systems. In addition, spatial decision making support systems, which combination Geographic Information System (GIS), that designed based on location, and decision making techniques, are frequently used today. Weighted Linear Combination (WLC), which is one of the location based evaluation methods, is based on the weighted average concept that the criteria are standardized in a common numerical range. The total score of each alternative is derived from the sum of the weight values determined for the criteria and the score value products calculated within the scale for all criteria. Suitability values are calculated for all alternatives and the alternative with the highest suitability value is chosen as the best

choice.

The 19 criteria that can affect the housing suitability value in the study were evaluated by the AHP method and weighed on the basis of the formulation of the method by creating binary comparison matrices. Using ArcGIS software, the location of 400 houses was marked as point-based on the Kayseri province satellite map. Then, the information of the 19 criteria of houses was entered in the attribute table. WLC score for 400 houses were calculated by means of WLC scale based each criterion. Raster maps were created for each criterion by using WLC method on the software and suitability values were obtained by entering weights. In this method, Values close to 1 indicate values appropriate for the decision maker; however values close to 0 indicate inappropriate values for the decision maker. Housing suitability map was produced by interpolation methods taking advantage of these values.