

Sports Complex Location Selection for Traditional Games

Bitan Arabnarmi¹, Fateme Khalilian², Siamak Kheybari³, and Alessio Ishizaka⁴

¹University of Neyshabur

²University of Tehran

³University of Cambridge Department of Engineering

⁴NEOMA Business School

February 6, 2023

Abstract

The simultaneous consideration of various economic, social, and environmental factors in determining the proper location for constructing a sports complex for traditional games is crucial to the continuation of such events. This research takes a two-stage approach when studying where to locate such infrastructure. In the first stage, namely, that of ranking the locations, the criteria influencing the evaluation are categorized based on the research literature and on interviews with experts well-versed in social, economic, and environmental questions. The criteria identified in this stage are divided into two broad categories: intra-city (selecting the most suitable city) and inter-city (identifying the most suitable geographic area). The best geographical area for constructing a sports complex is found using intra-city criteria based on expert opinions. These opinions were obtained using an online questionnaire prepared according to the Best Worst Method (BWM), giving the weights of both categories. In an effort to assess the desirability of the cities under consideration, we apply piecewise linear preference functions (PLPFs) to determine the ranges in which each of the items achieve their best score. In the second stage, i.e., the geographical area selection stage, and according to the weighting of inter-city criteria and the ideal distance to each criterion (e.g., fire stations and hospitals), the best geographical area for constructing a sports complex is selected using geographical information system (GIS). The results of this research confirm that social factors are more important than economic and environmental ones in the evaluation phase of the candidates and PLPFs produce different results vis-à-vis the existing linear methods.

Hosted file

Main Text File2.docx available at <https://authorea.com/users/583033/articles/622877-sports-complex-location-selection-for-traditional-games>

Hosted file

Figuers.docx available at <https://authorea.com/users/583033/articles/622877-sports-complex-location-selection-for-traditional-games>