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Discovering public preferences for school location in Surabaya

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Abstract

Public school in Surabaya became the major choice for Surabaya citizen in schooling their children. Their zero tuition fee, good quality, and good facilities are the strong attraction. However, the school's location is not well spread in whole city location, especially the secondary level and high level schools. Some analysis to improve this spread has been conducted and good new school location has been noted. Nevertheless, whether this new school location is accepted by the public, moreover, the good school spread is important or not for the public have not been discovered. This research uses Public Participatory GIS concept to discover public preferences in choosing school location. Using web base application at <http://participatorygis.net>, an online survey has been run about a year. By analyzing the collected data with some programming and spatial analysis tools, it can be seen the preferences level of a whole area in the city. This preferences level area will explain the public acceptance of current condition or the proposed new school location.

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1. Introduction

1.1. Background

Surabaya is one of the most education focused cities in Indonesia as reflected in its educational sector budget which more than 30%. The most prominent action taken by Surabaya city government is removing the school cost in public schools. Surabaya has 492,495 school aged citizens with 270,076 citizens at the elementary school age, 114,733 at secondary school age, and 107,686 at high school age. There are 1,622 schools at the elementary level, consisting of 564 public schools, and 1,058 private schools. At the secondary level, there are 42 public schools and 300 private for

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a total of 342 schools. At the high school level, there are 257 schools, of which 33 are public and 224 are private. Because of the high proportion of elementary school students, about five times of secondary school and seven times of high school, there are more schools built to accommodate these levels. Due to this fact, there exists a scarcity of educational institutions at the higher levels, making it common for students travelling much longer distances as they move to higher levels of study.

The Surabaya city government now trying to make quality of all public schools equally in order deliver the standardized service and provide the same facilities to citizens. However, public school service seems can not reach equally by citizens in term of accessibility. The spread of school, especially in secondary and high school level, does not divide the area of Surabaya city evenly. By performing simple spatial functions to the school point layer, how this spread's characteristic can be explained. The first function is by creating a Thiessen polygon of school location in each school level. At Primary school level, the minimum Thiessen area is 368 m², maximum is 15.321.375 m², and average is 787.514 m². At Secondary school level, the minimum Thiessen area is 366.061 m², maximum is 46.698.376 m², and average is 6.830.480 m². At High school level, the minimum Thiessen area is 117.781 m², maximum is 43.948.779 m², and average is 10.796.564 m². There is considerable margin between the minimum area, average, and the maximum area at all school levels. The second function is calculating the number of schools in the administrative area. Primary school calculates in sub-district boundary while Secondary and High school calculates in district boundary. This calculation result shows there are significant differences between administrative boundary in term of the number of schools which were there. Figure 1 shows the result of the above Thiessen function and calculating function.

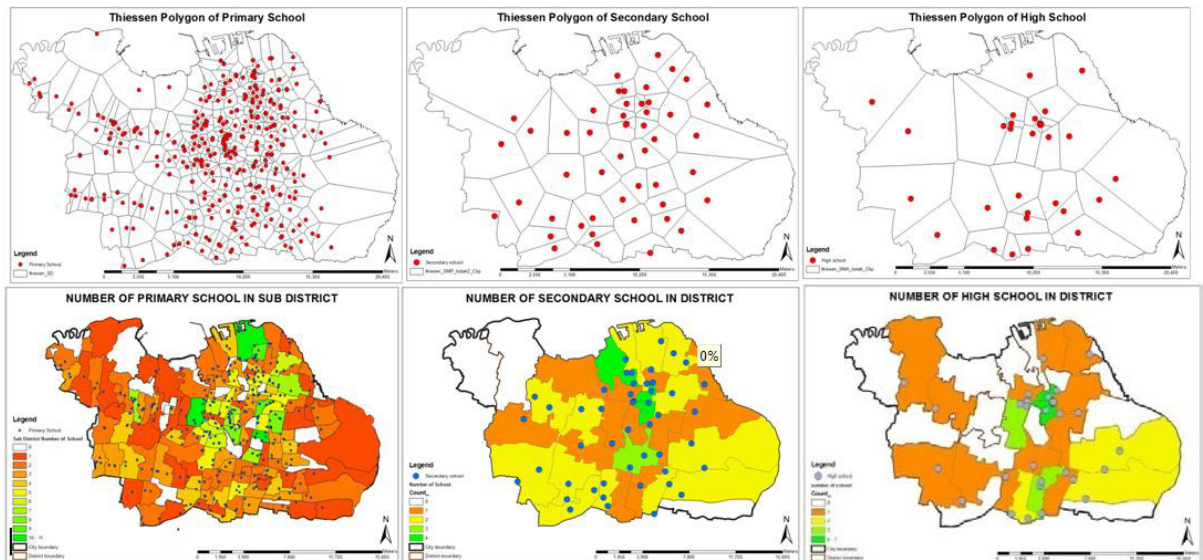


Fig. 1. Thiessen Polygon map and number of schools in administrative boundary, in three levels of school

Several spatial and statistical analysis have been conducted in order to find the best location. Those processes include some other layers like population, public transport accessibility, student flow pattern, and others layers which linked to the education sector. The result shows some areas in Surabaya cities. There are area with potential value and poor value. Areas with potential value can be recognized as places to build new schools. Areas with poor value can be used to evaluate the recent schools condition. However, are public have the same opinion with the result or not are not yet discovered. Are public really want that school's location spread evenly within the city are not well understood.

This research's aim is to discover public preferences of school location. This research uses web base application to collect user opinion. This web based application also provide interactive maps to inform what schools are suitable with their preferences. A public participation GIS concept is used in this application.

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