The Study of Public-School Location Associated with Fast-Food Restaurant in Baltimore City, Maryland State

Introduction

The increasing prevalence of overweight and obesity in school-aged children is potentially linked to contextual influences such as the food environment around schools. Recent research finds that the proximity of fast-food restaurants to public schools may enhance access to unhealthy foods and have a negative impact on diet and some research found most school are characterized by a high density of fast-food outlets.

The hypothesis of this project is that school context, which effect by distance to restaurants and population density, may be a factor in student eating habits and health. In the high population density area, students are more likely to walk to school and walk home, so they are more likely to stop at fast food restaurants and buy some unhealthy food. For this reason, this project aims to explore the possibility of using geographic information system to discover specific public schools that were provide candidates that are in “Good” location or schools that are in “Bad” location in Baltimore City for the next stage in the study which is to visit “Good” and “Bad” schools to measure the data may use in the future research.

Methodology

This research plan to find the target schools which can be the candidate school in Baltimore City, Maryland State. To find those areas in Baltimore City, this project use the spatial analysis and raster overlay analysis to create the vulnerability factors by using 2 factors: the distribution condition of fast-food restaurant, and population density.

Distance to restaurant: The 500 meters is less than 10 minutes walking for school students, so the area within 500 meters will be in the bad area and over 1000 meters will be in the good area, so this project using the spatial analysis tool to show and reclassify the score of distances target.

Population density: the area with over 3000 people within the 500 meters will be considered as high population density area. This project using the spatial analysis tool to show the score of population density by polygon raster.

Evaluation

- The distribution of fast food restaurants also related to the commercial land, because some school are located to a commercial area and there will be lots of fast food restaurannts. But in this project, this factor is not include in the model, so this may cause bias.
- The school data is a public-school data, so that include the elementary, middle, and high school. Most elementary school have school lunch program, and elementary school students will not go to the fast-food restaurant by their own and walking, so that may influence the accuracy of research results.

Discussion

This project, the study of public-school location associated with fast-food restaurant in Baltimore city, can be used as a tool to determine the target or candidates location for the next stage of study about childhood obesity and environmental factors. By using the spatial analysis tool in geographic information system, we found two candidates school in Baltimore City which one is “Good” with both excellent score of distance to fast-food restaurant and excellent score of population density and another is “Bad” with not good score of distance to fast-food restaurant and excellent score of population density.

After using the measurements tool in ArcMap to measure the specific distance between the target school and nearest restaurant, we found that Lakeland middle school has five fast-food restaurant around about 250 meters distance to 400 meters distance, and the distance to the nearest restaurant of Mount Saint Joseph’s High School is 1300 meters. In conclusion, those two target school is very good for next stage study.

Literature Source:


Dara Source:


Data Source:


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State Plane Maryland FIPS 1900 (Meters) (NAD 1983) was used for all maps which are constructed in Arc Map.