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Introduction

The Limestone District School Board that serves City of Kingston needs to consolidate or close some of their secondary schools (grades 9 – 12) due to declining enrollment. Three schools; KCVI, LCVI, QECVI have been reviewed as part of a school accommodation plan.

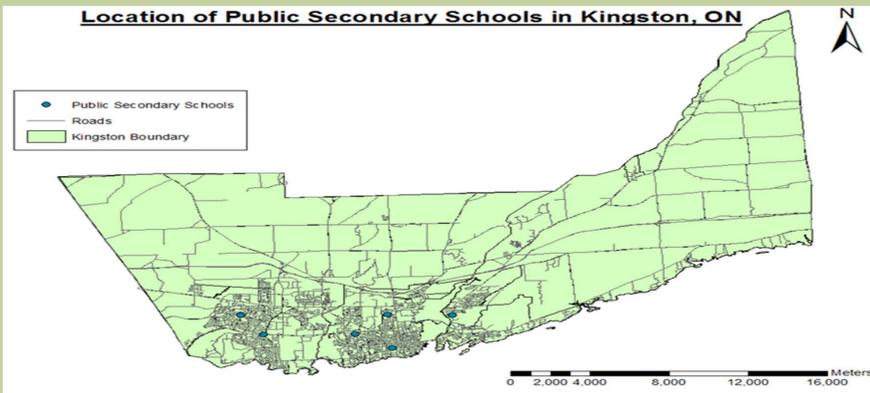


Figure 1: Location of Schools in the Limestone District Schools Board

Initially three potential options were created. The first option considered was to only close KCVI. This would result in: relocating the International Baccalaureate Program to LCVI; relocating the extended French to QECVI; extend QECVI's boundary south; returning 115 former KCVI students to LCVI and 171 students to QECVI. The second option was to only close QECVI. This would result in students being moved from QECVI to LCVI and KCVI. Any new students would attend LCVI. Lastly, the third option was to merge QECVI and KCVI and build a new facility (super-school). Currently potential sites for the new super-school are being explored. Two current options being explored include using the land behind the Kingston Memorial Centre or creating a new facility at the current QECVI facility.

Methods

i. Preprocessing of Data

The data used was collected from a variety of sources including Statistics Canada. The Statistic Canada data was collected using Pcenus. Once all of the data was collected, it was imported into ArcMap. Next, the excel tables were joined with their corresponding shapefiles. Within the attribute tables the area was calculated for the Kingston Boundary layer using the field calculator. After these values were obtained, the population density for Kingston was calculated for the total population, current high school students and future high school students (population aged 15-19 and population aged 10 – 14).

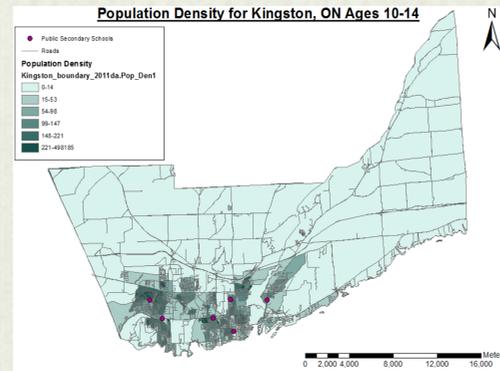


Figure 2: Population Density for Kingston, ON Ages 10-14

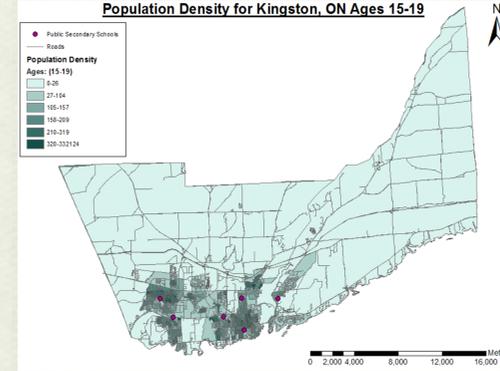


Figure 3: Population Density for Kingston, ON Ages 14-19

Geocoding was then completed. An address locator was created using the US Address – Dual Ranges locator style and the Kingston Road layer. The addresses of the secondary schools and potential candidate sites were then geocoded.

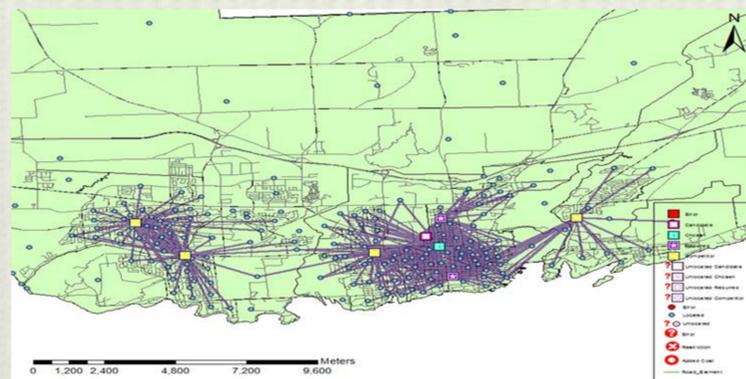


Figure 4: Maximum Market Share

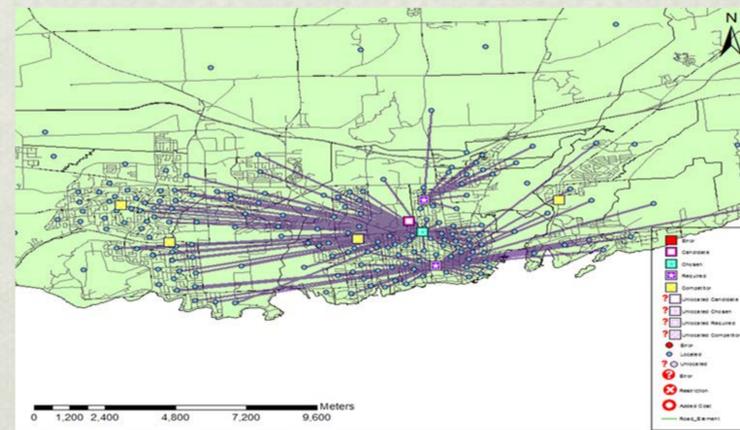


Figure 5: Minimize Facilities

ii. Analysis & Modeling Methods

Three population density maps were created and illustrates the population density distribution of Kingston for the total population, current high school students (population aged 15 – 19) and future high school students (population aged 10 – 14). Next, the location – allocation analysis was completed. To prepare for this analysis, three different point layers were created to represent the three types of facilities being used for the analysis; required, candidate and competitors.

The required facilities were QECVI and KCVI; candidate facilities were the potential locations; and competitor facilities were all other secondary schools run by the Limestone School Board in Kingston (LCVI, Lasalle Secondary School, Bayridge Secondary School and Frontenac Secondary School).

Discussions / Results

This analysis provides a reference point for further research about the relocation of KCVI & QECVI. Any further research will provide a more detailed analysis. For example, this analysis did not examine the influence of transportation on school districts. The candidate locations were chosen based on accessibility to major roads but did not analyze the number of secondary students at KCVI and QECVI that rely on public transportation or private transportation (e.g. school buses) to go to school. This data could largely vary annually depending on the number of students travelling out district for specialty programs such as extended French and the International Baccalaureate program. The year to year fluctuation in the population of students from different surrounding areas will affect the school bus routes used. This analysis did not take into consideration the expense of redeveloping land or any of the other costs that may occur during the consolidation of KCVI and QECVI.

The consolidation of KCVI and QECVI will result in a new school that can better suit the current and future student population demands of the south-west area of Kingston. A new facility should be located north of the current KCVI location and south-west of the current QECVI location. A high portion of the KCVI student body does not live in the immediate area around the current location, so a new location will better suit future students. However, building a super – school at the current QECVI location is not ideal due to the increase in transportation time this will add to all of the KCVI students as a number of students that attend KCVI are originally from the LCVI district. Currently, there is higher enrollment at KCVI than QECVI, so more students will be affected from the KCVI district as a result of this school accommodation changes. Any new school will result in an adjustment period for the residents of Kingston but it is important to try to minimize the disruption to the students being affected. GIS based analysis is a good method to help determine potential sites, however the social affects and beliefs of residents should also be determined before a final decision can be decided.

References

Jackson, D. (Ed.) (2009, May). Kingston community. Retrieved from http://spckingston.ca/kcp/Kingston_Community_Profile_SPC_2009-05-28_BW.pdf.

Save Kingston city schools. (2014). Retrieved April 10, 2014, from <http://www.savekingstoncityschools.com/>.

SOS: KCVI Threatened. (2014). Retrieved April 11, 2014, from <http://www.soskcvl.ca/index.htm>.

Talen, E. (2004). School, community, and spatial equity: An empirical investigation of access to elementary schools in West Virginia. *Annals of the Association of American Geographers*, 91(3), 465-486. doi: 10.1111/0004-5608.00254