

Walkability of Schools in Lawrence, MA



Project Description:

The city of Lawrence, Massachusetts has sixteen schools that are for children in kindergarten or first grade through eighth grade. It is important for children to be able to walk to school in order to get exercise as well as cutting back on traffic congestion and pollution due to drop-off and pick-up. The purpose of this project is to find out how many children ages six to thirteen are within walking distance, 400 or 800 meters, to each elementary-middle school.

Methodology:

The GIS Network Analyst tool can select lengths of streets that are within walking distance of each school. The map below illustrates the regions of Lawrence that are within 400 or 800 meters of each school. The light red areas are within 400 meters of a school, indicated by a red dot. The yellow areas are within 800 meters of a school. From the map, it is clear that the northern part of Lawrence, is mostly within walking

distance of a school. Areas south of the Merrimack River, especially the southwest corner of Lawrence, has less walkable access to schools.

The next step is to determine how many children are within the 400 and 800 meter walking radii. The US Census Block data provides information that can aggregate population ages six through thirteen. The map to the right illustrates the density of children age 6-13.

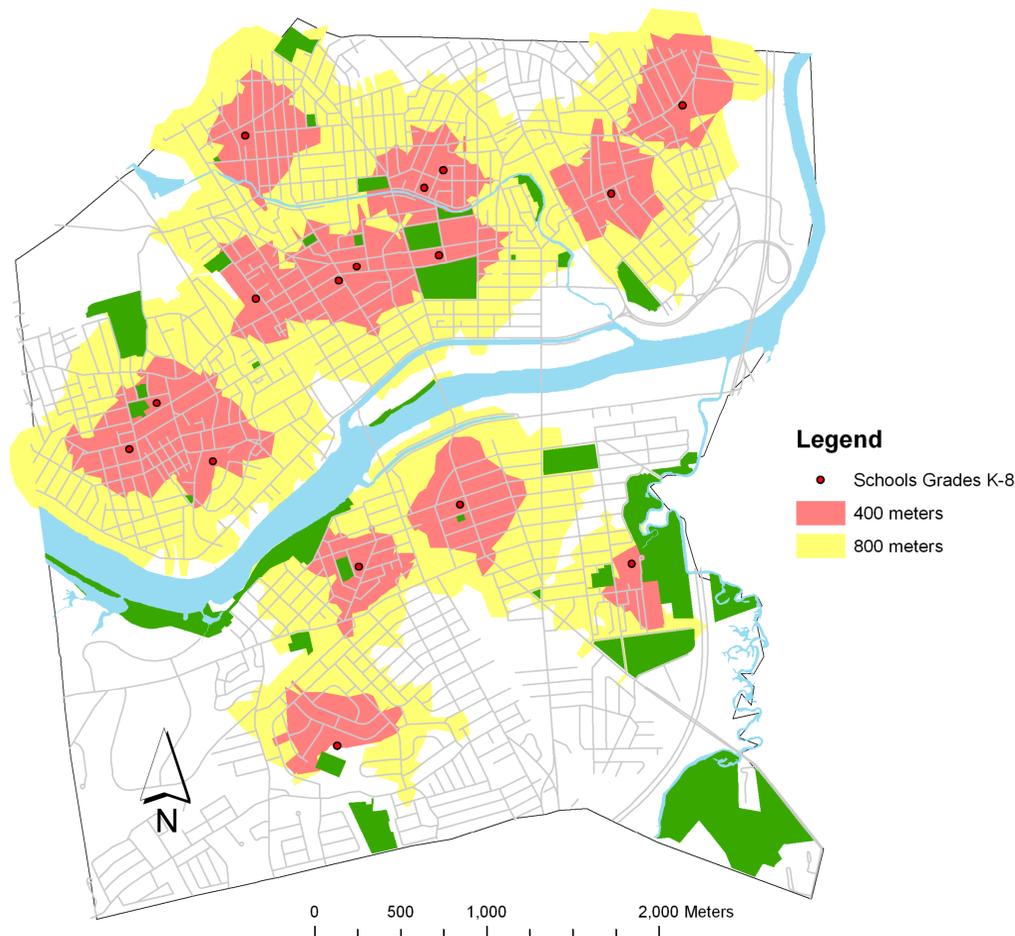
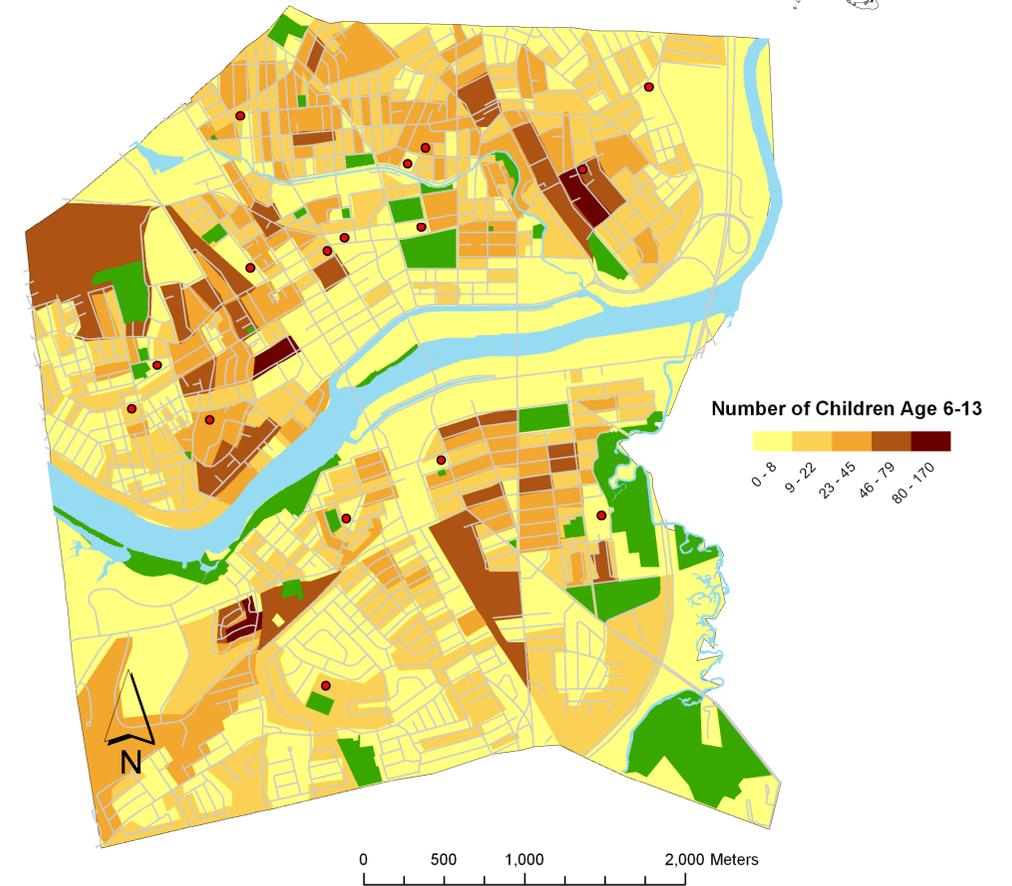
Finally, in order to figure out how many children are in walking distance from each school, GIS can intersect the data between the walking radii and the census data. The table below summarizes how many children are within 400 meter and 800 meter walking distance of each school.

Results:

The tables indicate that the most children, 1,024, live within a 400 meter walking distance of the Guilmette School. The most children, 5,417, live within an 800 meter walking distance of the Lawrence Family Development School.

The St. Patrick's School has the largest walkable area within a 400 meter radius and Community Day Charter School has the largest walkable area within an 800 meter radius.

It is important to note that many of these data overlap. Some children that are within a walking distance of one school are also within a walking distance of another school and so are counted for each school. Additionally, if there is a census block that is only partially within a walking radius, the entire population age 6-13 is counted in the table. Using GIS' symmetrical difference tool and then the statistics tool, GIS calculates that there are 4,217 children age 6-13 that are not in walking distance from any school.



School Name	Children 400 meters	Children 800 meters
Arlington School	882	3671
Bruce School – Upper	930	4314
Community Day Charter School	788	4044
Frost School	140	631
Guilmette School	1024	4477
Holy Trinity School	738	3972
Lawrence Family Development School	746	5417
Leahy School	1008	4425
Oliver School	539	2648
Our Lady of Good Counsel	765	2610
Parthum School	227	790
Rollins School	464	2015
South Lawrence East School	155	677
St. Mary's Elementary School	470	3118
St. Patrick's School	480	1360
Wetherbee School	367	906

Cartographer: Liz Antin
 May 1, 2008
 Sources:
 Population Data: US Census, 2000
 Schools: Massachusetts Institute of Technology, 2007
 Coordinates: NAD 1983 State Plane Massachusetts Mainland FIPS 2001