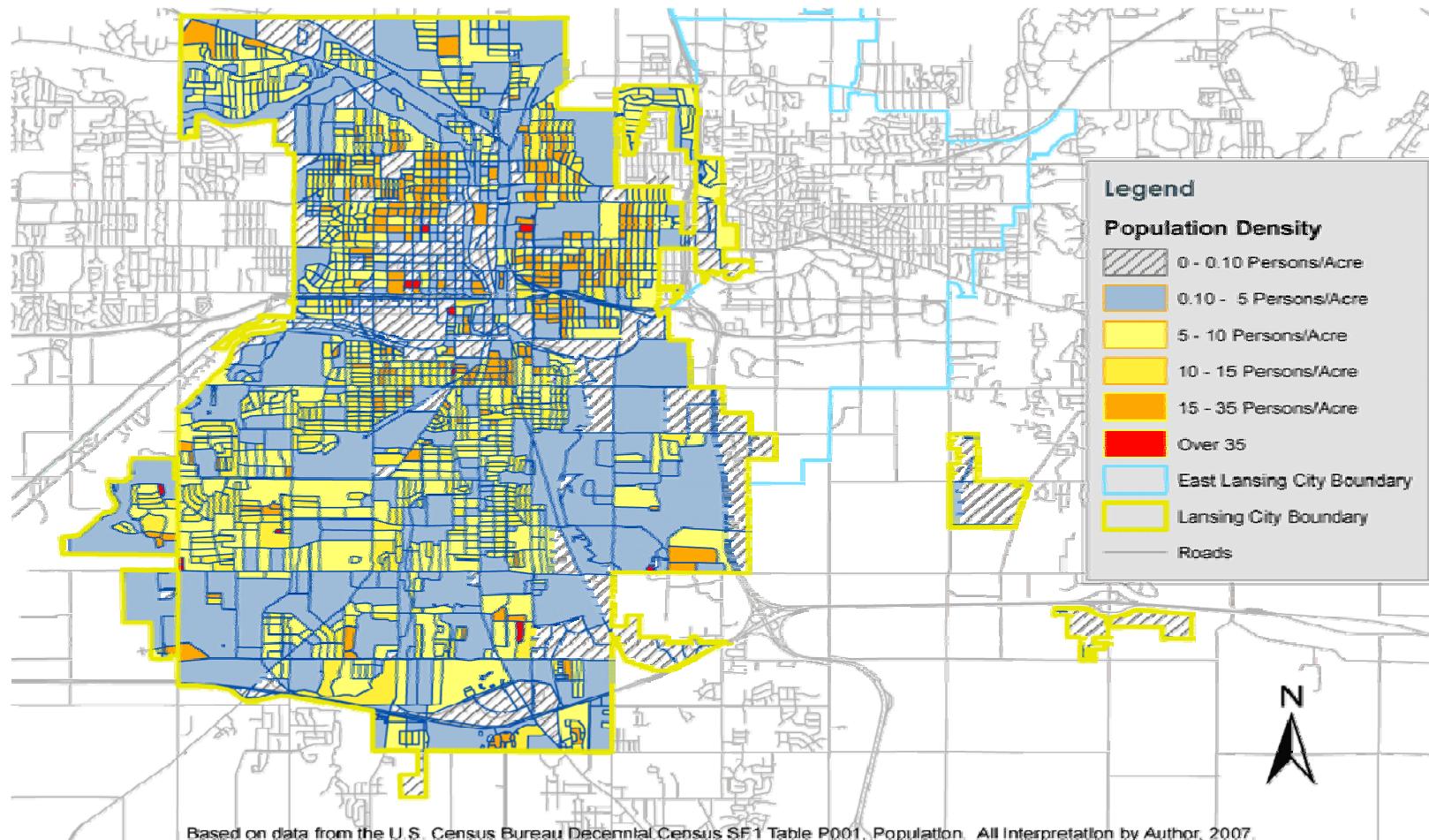


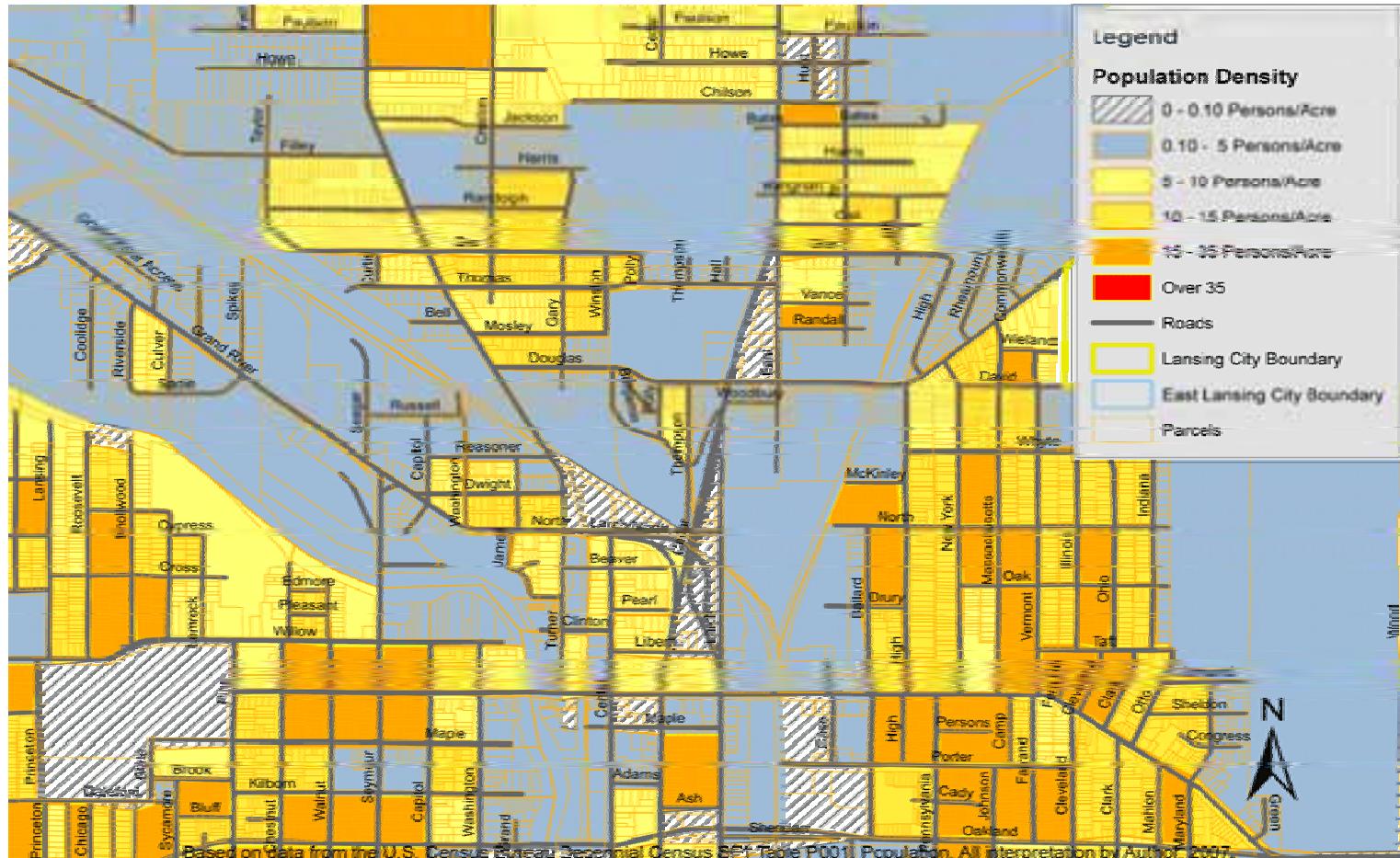


Existing Conditions: Population Density





Existing Conditions: Population Density





It should be noted that this pattern does not develop in a set of strictly geometric concentric circles or rings: higher density blocks and neighborhoods also appear to cluster around major automobile thoroughfares especially Grand River, Saginaw, Michigan, Pennsylvania, Cedar, and Martin Luther King Jr.

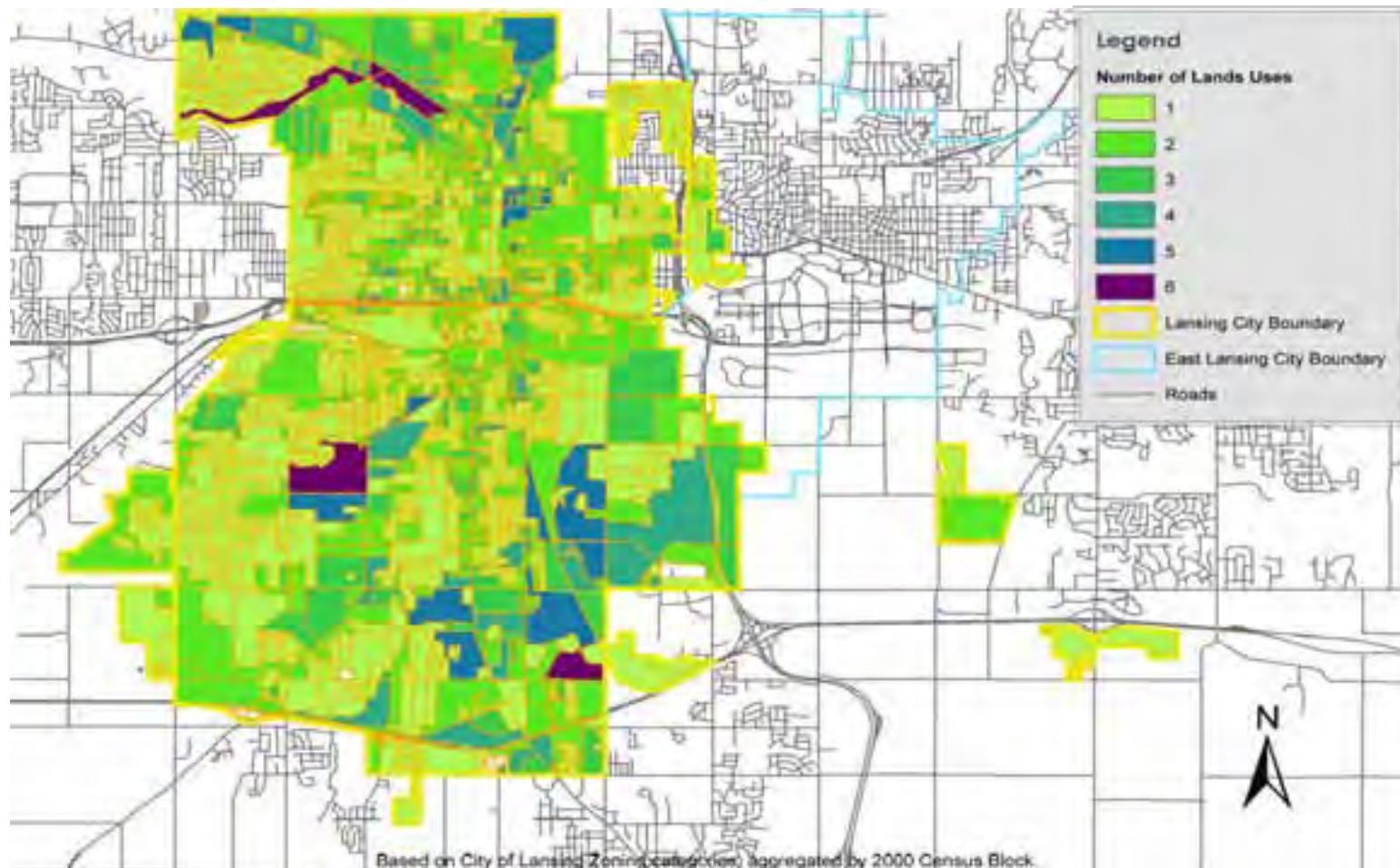
Land use diversity, the final land use component considered in this report, adds another layer of description to these observations. Land uses within the city appear to be quite segregated from one another. Even within many higher density, high connectivity neighborhoods or districts, individual blocks tend have few land uses: they are either residential or commercial. In fact, the mode for the distribution of land use diversity values was 1. This value is not an index—it represents the actual number of land uses indicated on the City zoning map within a given census block. Looking at the *Land Use Diversity* map confirms this statistic.

Although land uses within and across Lansing's neighborhoods do not appear to be very integrated on a citywide scale, it is important to acknowledge the types of places where they are integrated. Census blocks exhibiting greater land use diversity do seem to cluster around major arterials like Cedar on Lansing's south side or Grand River on the city's north side. The *Land Use Diversity* close up map of Lansing's Old Town neighborhood confirms this observation: land uses along Grand River tend to be more integrated as demonstrated by a higher number of land uses present in a given census block. Moving away from the thoroughfare, however, the number of land uses/census block drops.



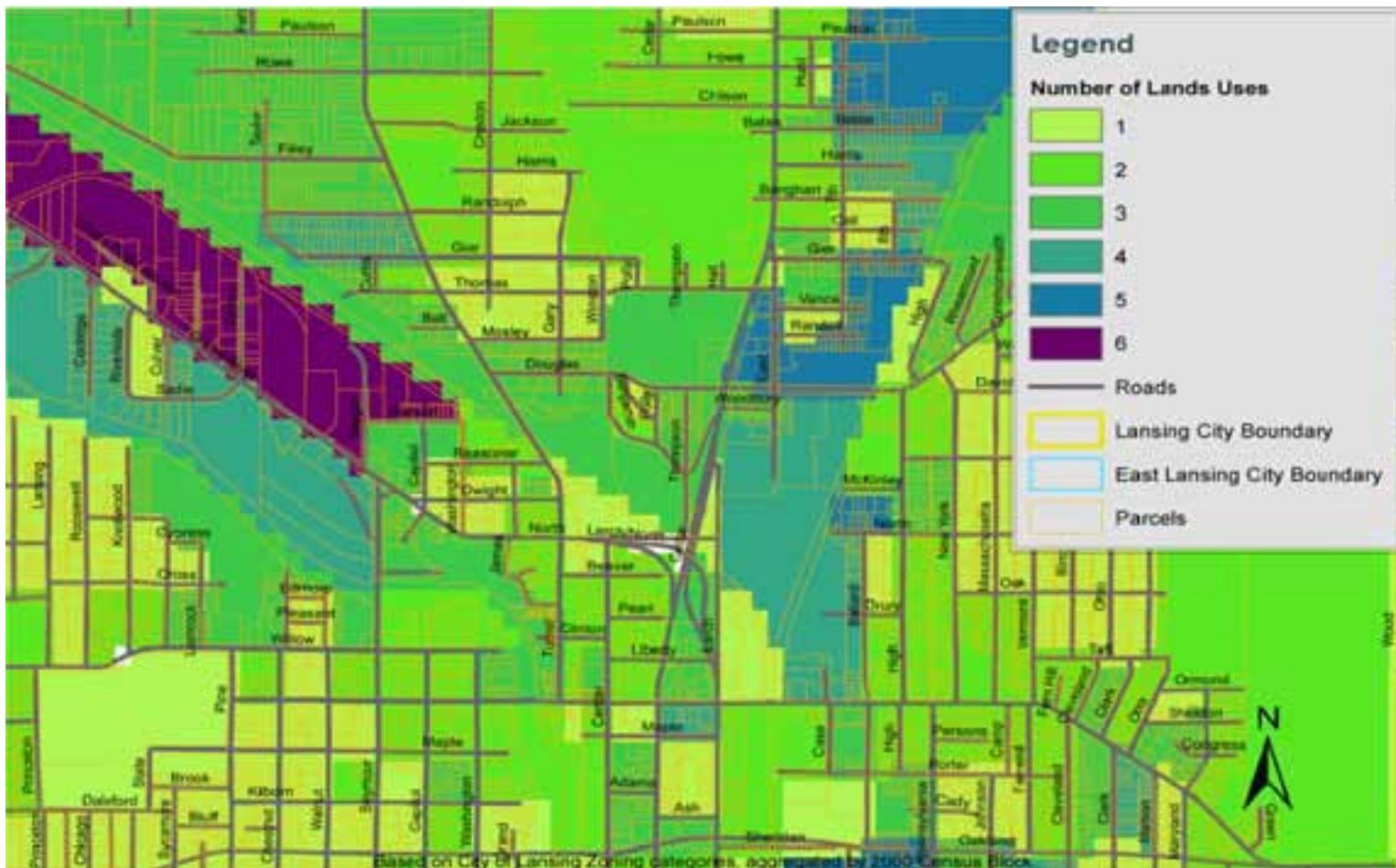


Existing Conditions: Land Use Diversity





Existing Conditions: Land Use Diversity





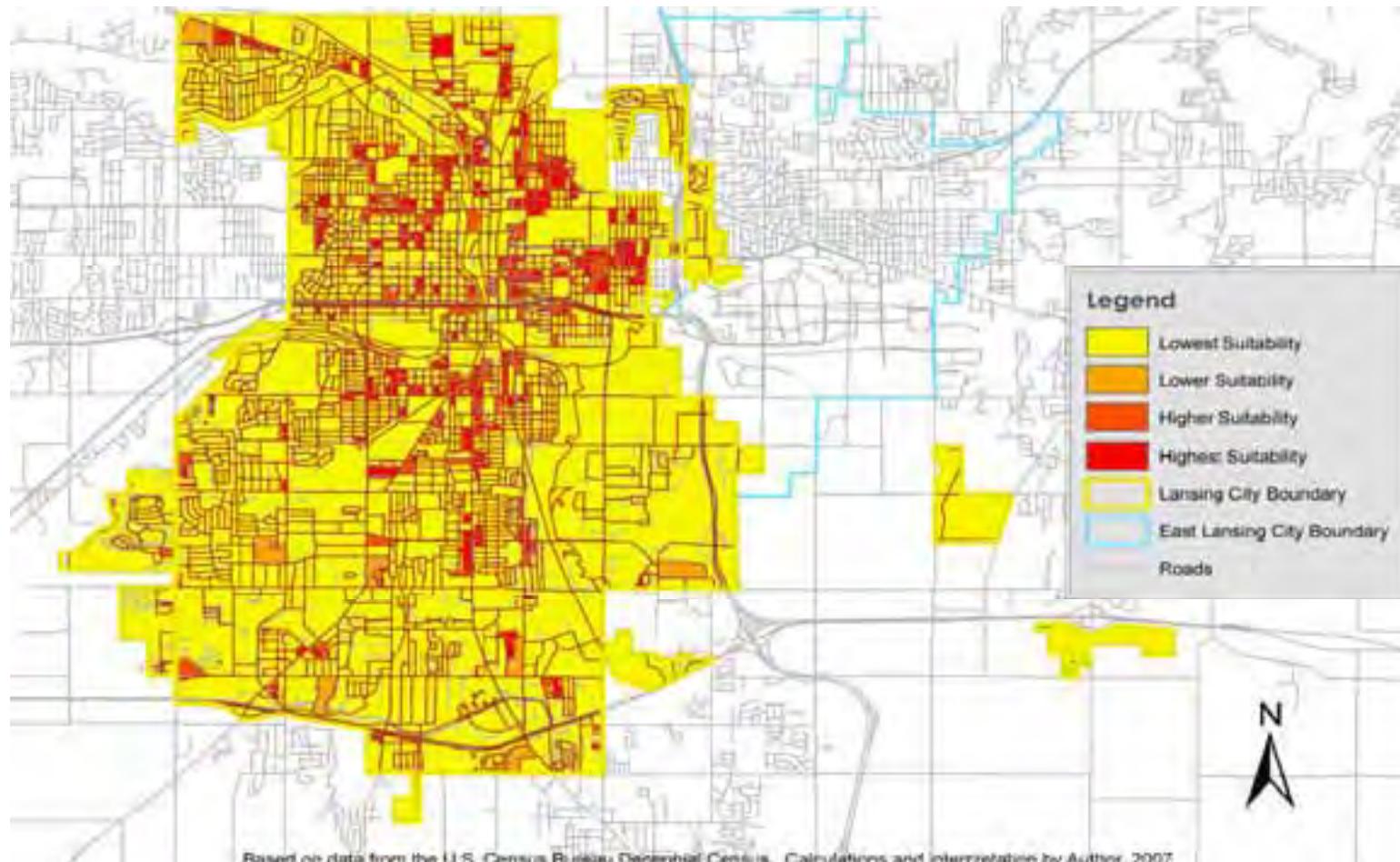
These three land use features have been compiled in several maps including *Pedestrian/Bicycle Suitability* and *TCRPC Proposed Facilities*, *Pedestrian/Bicycle Suitability*, *Pedestrian/Bicycle Suitability (North)*, and *Pedestrian/Bicycle Suitability (South)*. These maps show the results of a compositing process in which the three land use variables (Connectivity, Population Density, and Land Use Diversity) are added together and ranked. The (very few) census blocks in red are those possessing higher than average scores in all three categories. Subsequent categories scored above average in fewer of these categories and have been ranked lower to reflect this. The utility of these maps may be constrained by the limitations imposed by the nature of underlying data and methods used to derive meaningful information, but they do raise several important issues.

- Despite the paucity of highest and higher suitability blocks, there are some areas where land uses appear to be more suitable for NMT.
- These areas tend to cluster around larger thoroughfares.
- Higher suitability areas seem to correspond with NMT components proposed by the TCRPC for future construction/enhancement.
- Judging by the information on average block size presented above, Lansing's older, gridded street pattern seems to be conducive to greater NMT activity.



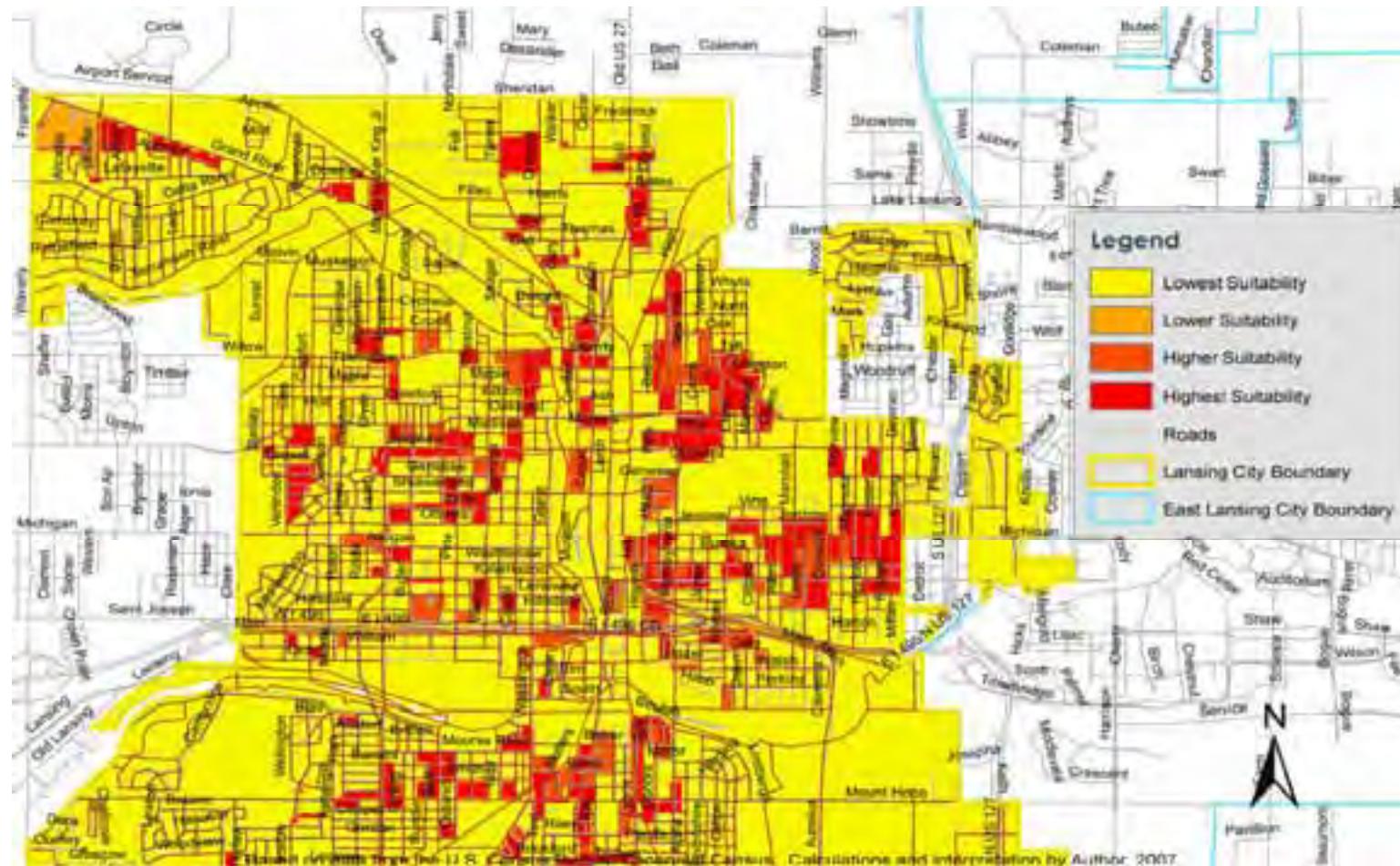


Pedestrian/Bicycle Suitability



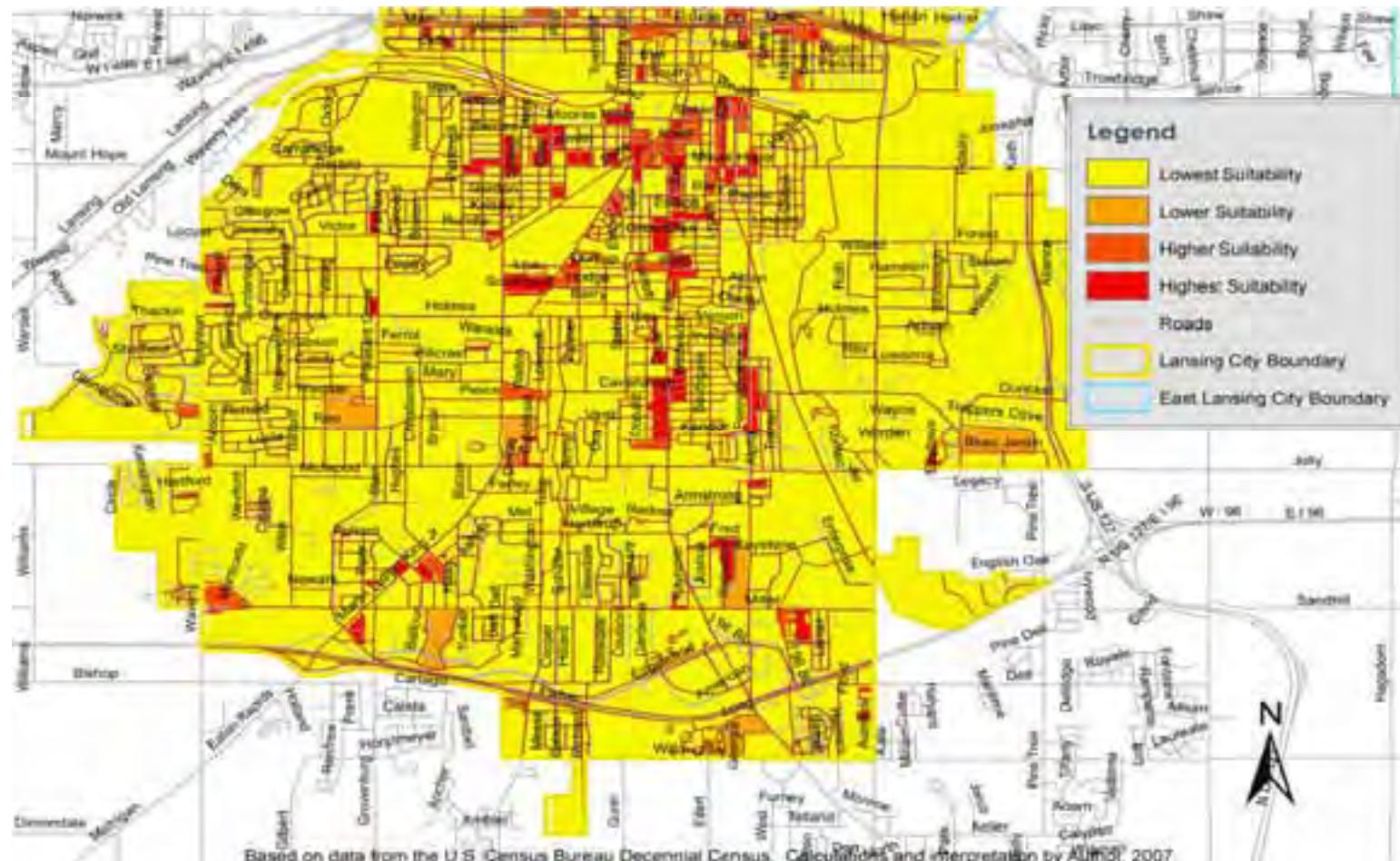


Pedestrian/Bicycle Suitability (North)



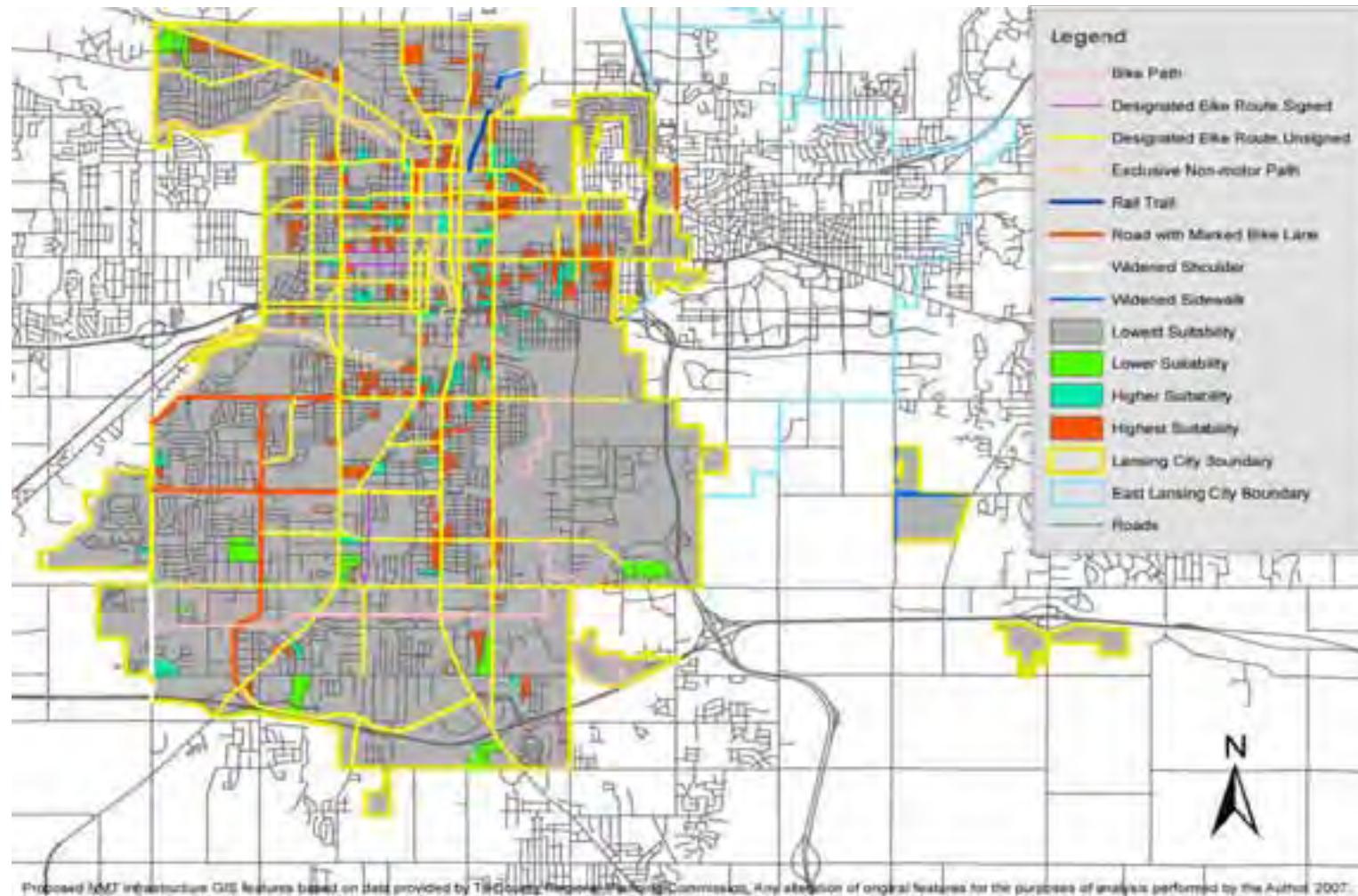


Pedestrian/Bicycle Suitability (South)





Pedestrian/Bicycle Suitability and TCRPC Proposed Facilities



Proposed MDT infrastructure GIS features based on data provided by The Greater Lansing Housing Commission. Any alteration of original features for the purposes of analysis performed by the Author, 2007.





3.3.E. Conclusions

Taken together, land use and the features of the built environment strongly affect the prospects of NMT systems in communities throughout the United States. Although the task may seem daunting, and the time horizon for progress in this area may appear much longer term, thoughtful planning now can do much to guide Lansing toward land use patterns conducive to walking and bicycling. For an NMT plan to be successful in Lansing, a strong commitment must be made to address these “big” issues. Several important lessons for communities who are in the process of planning for NMT can be drawn from the findings of the research discussed above:

- 1.** Traditional neighborhoods generate more pedestrian trips for utilitarian purposes than do modern neighborhoods. Whether this is a matter of self-selection (pedestrians choosing to locate in traditional neighborhoods because they better facilitate pedestrian travel) or directional causality (walkable neighborhoods encourage walking), pedestrian facilities need to be planned for and maintained in traditional neighborhoods. The Pedestrian/Bicycle Suitability and TCRPC Proposed Facilities Map provides a sketch of where some of these neighborhoods might be.
- 2.** Communities interested in long term, permanent modal shift away from privately owned automobiles should seriously consider the type of development they are encouraging through their land use regulations and development programs. Higher density, infill development is preferred.
- 3.** Higher density infill alone does not guarantee NMT friendly urban environments. Communities should be mindful of the quality of such environments and strive to ensure that development is visually pleasing and offers real opportunities for spontaneous social interaction and convenient pedestrian and bicycle travel between broad ranges of destinations. High quality, accessible public space is highly desirable. This is where local knowledge is indispensable, and the Team strongly encourages the Task Force to seek the advice of local residents in defining NMT needs and desires.
- 4.** Because land use patterns in the city of Lansing are shaped by its receding past in heavy industry, closer observation of land use patterns within individual neighborhoods should be performed in order to gain a richer and more accurate understanding of connectivity, population density, and land use diversity and potential consequences for walkability/bikeability.





(3.4) Schools

As mentioned in several places above, the presence of school aged children is an important consideration for non-motorized transportation planning. In a time when children attended schools near their homes and fewer families owned fewer automobiles, they relied on buses, walking, and bicycles to get their children to school. Frank, Engelke, and Schmid (2003) have found that children's use of NMT has "declined by 40 percent from 1977 to 1995."¹⁰³

Instigated by a variety of factors, the national average count per person of "total hours of traffic delay" rose from 0.7 billion in 1982 to 3.6 billion in 2002, representing over a 500% increase (Schrank & Lomax, 2005). Included in these numbers, children are now driven to nearly all their activities, and most now also find other ways to commute to school besides walking or biking. The tables below (See Table 4, next page) is the data collected by Michigan State University students with funding by the Michigan Department of Transportation representing the number of students walking, biking, riding the bus, or being dropped off or picked up by a parent or guardian.

¹⁰³ Frank, D., P. Engelke, and T. Schmid. (2003). *Health and Community Design*. Washington D.C.: Island Press.





Table 4

Method of Commuting to and from School by Rural/Suburban and Urban Schools				
	Method of Commuting	Community Type	No. of Classrooms	% of Mean
Morning	Walking	Rural/Suburban	51	5.8%
		Urban	45	17.1%
	Biking	Rural/Suburban	51	1.4%
		Urban	45	0.9%
	School Bus	Rural/Suburban	51	55.0%
		Urban	45	37.0%
	Parent's Car	Rural/Suburban	51	33.8%
		Urban	45	38.3%
	Someone Else's Car	Rural/Suburban	51	3.9%
		Urban	45	6.2%
Afternoon	Other Means	Rural/Suburban	51	0.1%
		Urban	45	0.2%
	Walking	Rural/Suburban	51	0.6%
		Urban	45	20.1%
	Biking	Rural/Suburban	51	1.2%
		Urban	45	0.9%
	School Bus	Rural/Suburban	51	60.8%
		Urban	45	37.5%
	Parent's Car	Rural/Suburban	51	27.7%
		Urban	45	34.4%
Someone Else's Car	Rural/Suburban	51	3.3%	
		Urban	45	6.4%
Other Means	Rural/Suburban	51	0.3%	
		Urban	45	0.5%





- ➲ The use of automobiles for transportation to/from school has increased from 16% in 1969 to 46% in 2001 (unpublished data from NPTS and NHTS).
- ➲ The number of cars on the road between 7:15 and 8:15 a.m. increases 30% during the school year (Travel and Environmental Implications of School Siting, 2003).
- ➲ 20–25% of morning traffic during the school year is parents driving kids to school (Kallins, SR2S).

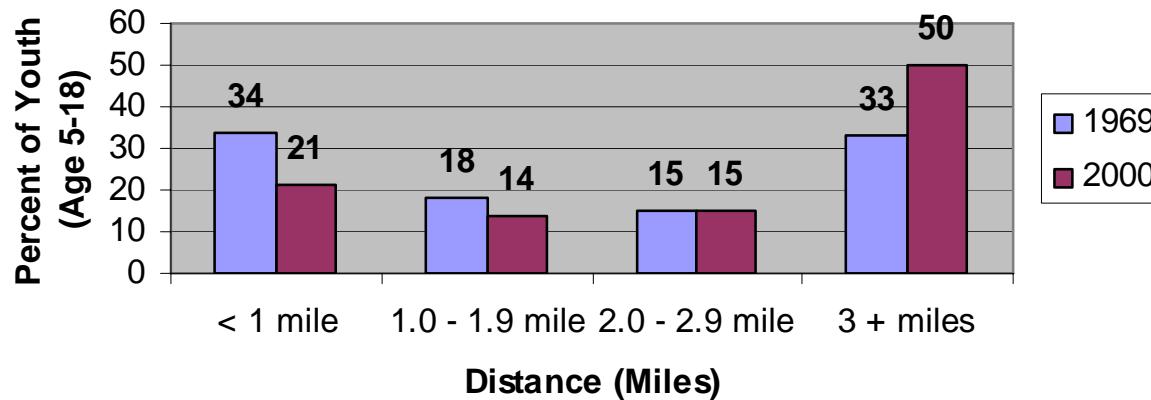
The distance to school for youth 5-18 years of age in 1969 versus the distance to school for youth 5-18 years of age in 2000 (See Figure 29, next page).¹⁰⁴ A smaller percentage of now children live within 1 mile (34% compared to 21%) and 2 miles (52% compared to 35%) of school. This could account for a correlation in the decline of non-motorized transportation to school. In addition, the figure also offers no explanation for the fall in active transportation to school by children who live less than 1 or 2 miles from school.

¹⁰⁴ "Kids Walk to School: Then and Now. Barriers and Solutions" Center for Disease Control. Online: http://www.cdc.gov/nccdphp/dnpa/kidswalk/then_and_now.htm.





Figure 29
Youth Distance to School



The reason for this is mainly that the journey from home and school has become longer and is often perceived to be not as safe due auto-oriented suburbanization. Consider the following statistics

- 0% of children hit by cars near schools are hit by cars driven by parents of students (Kallins, SR2S)
- In 1999, a national Safe Kids Campaign survey found 2/3 of drivers exceeded the posted speed limit in school zones during the 30-minute period before and after school. (National Safe Kids Campaign, 2002)
- A national observational survey found that many motorists at intersections in school zones and residential neighborhoods violated stop signs (pedestrian injury fact sheet, 2004): 45% by not coming to a complete stop, 37% by rolling through, 7% by not even slowing down.





Considering the customary barriers that have been highlighted, and keeping in mind the concerns of parents, it is important to establish ways to increase the number of children that participate in safe alternatives to motorized transportation. Safe Routes to School is federal program that encourages and gives the opportunity to children, including those with disabilities, to walk and bike to school. The program is promising because it facilitates the planning and developing aspects as well as the implementation of projects that will add to the community's safety. SRTS works simply; schools form local teams, which consists of school administrators, teachers, parents, students, local law enforcement officers and really anyone who is interested in the health and safety of children. The teams work together to address the behaviors of both parents and students and how they get to and from school. The teams than create specific recommendations as they pertain to a particular school districts that eventually lead to plans for making improvements. Each state is responsible to administrating its own SRTS, in Michigan the Safe Routes to School Program is managed by the Michigan Department of Transportation with training, logistical, administrative and technical support from the Governor's Council on Physical Fitness, Health and Sports located in Lansing.

As of January 2007, there are 121 Michigan schools registered for Safe Routes to School. Bingham Elementary School (K-5) is the Lansing School Districts lone representative. At this current time Bingham Elementary SRTS program is in its pilot stage, as they are currently putting together a team of school officials, parents, students and volunteers. They hope to program have the implemented by August of 2007.

Across the country and around Michigan there are a number of comparable and complimentary programs to that of SRTS that are showing signs of great success. "I walk" or the international Walk to School Day and Week, is a partnership for a Walkable America that started in the U.S in 1997. The first National Walk Our Children to School Day was set in Chicago and was modeled after the United Kingdom's success. It started as a day to bring community leaders and kids together and create a sense of awareness for the communities and its need to be walkable. In 2002 just 5 years after its introduction to the U.S, all 50 states have





bought into the program in some degree and the "I Walk" program has just under 3 million walkers around the world.¹⁰⁵

Another program that is generating a lot of attention for its success is the "Walking School Bus" program, which works hand in hand with SR2S. A walking school bus is a group of children walking to school with one or more adults. It is simple and it is practical. It can be as informal as a couple of neighborhood families taking turns escorting their children to school or as structured as a set daily route with timed pick-up points and a regular rotated schedule of parents and caretakers. This program is also a great starting point for a community in developing and implementing non-motorized transportation because it is so simple and it is ideal for a city like Lansing. And besides the obvious health benefits of walking for the students and the environment, there could also be a financial benefit to Lansing School District. There would be a real potential for a good cost savings with the elimination of just one bus and one route. A spin off of this great program is the "Bicycle Train". The Bicycle Train is parallel to the Walking School Bus, but with children riding their bikes to school and still escorted by a parent or trained volunteers.

As mentioned previously, 15% of Lansing residents live at or below the federal poverty level (see section 3.1.C). Of the nine schools identified in the map above, four (Reo, Bingham, Willow, Sheridan) are located in areas that have an above average poverty level. Two of these schools (Reo, Bingham) are also located within areas that have below average levels of access to at least one vehicle (see map *Schools with >=80% Non-Bused Students Over Vehicle Access* map).

Although the data for the percentage of Lansing School District students who walk or bike to school was not obtainable, the available data gathered suggests; above average poverty levels along with low vehicle access in areas where at least 80% of students are not bused, leads to a greater need for the usage of NMT to and from school.

¹⁰⁵ National Center for Safe Routes to School <http://www.walktoschool.org/about/index.cfm>





Figure 30

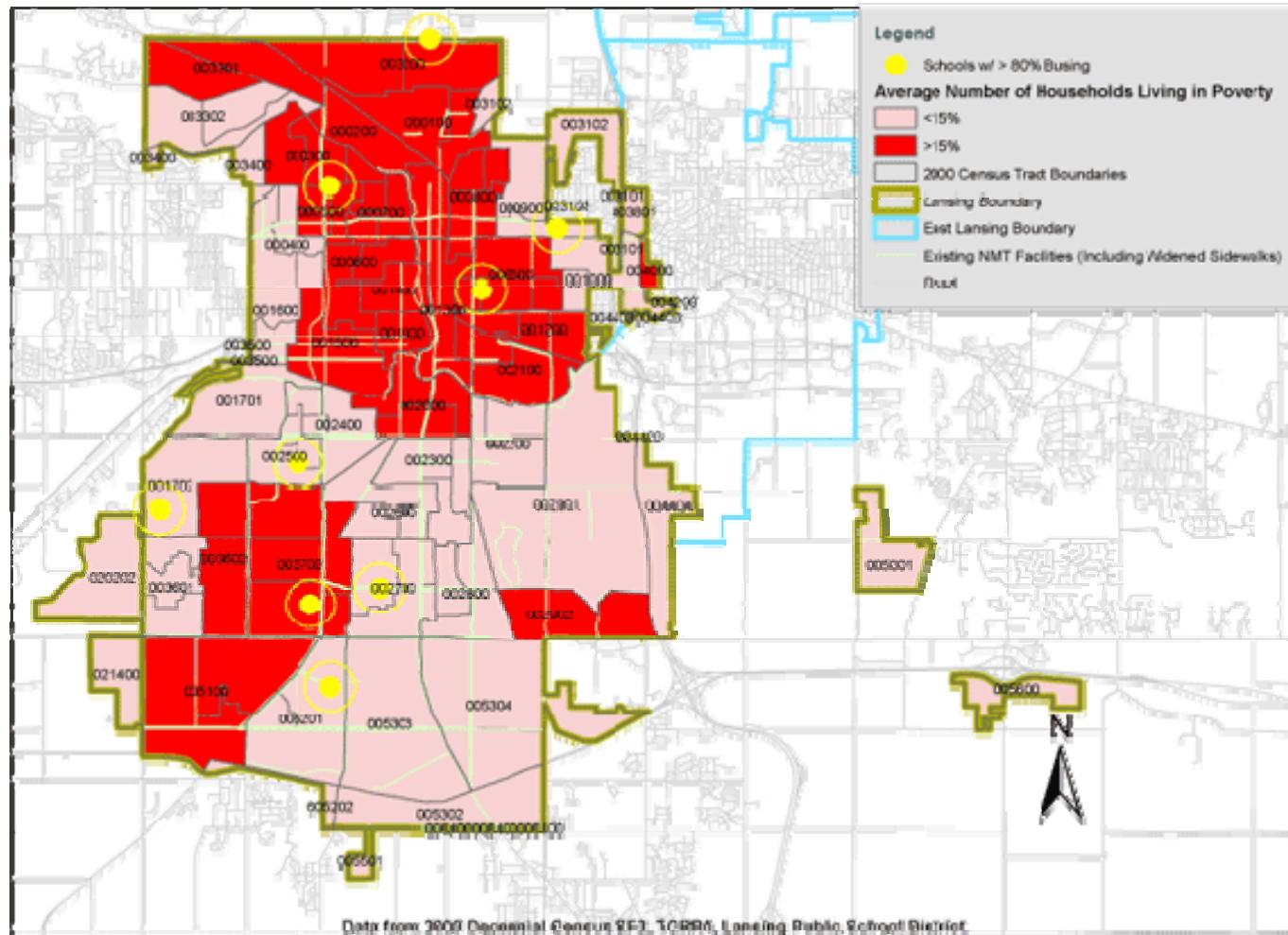
Insights from Parents: Walking or Biking to School

	Enhancers	Inhibitors
Urban Schools	<ul style="list-style-type: none">• Creates opportunities to enjoy the outdoors – 72%• Develops a healthy lifestyle – 70%• Develops self-reliance in deared children – 66%• Increases independent thinking in children – 62%• Trains children to walk or bike safely – 52%	<ul style="list-style-type: none">• Cars going too fast – 55%• Strangers – 54%• Too many cars near the school – 40%• Sidewalks/pathways not in winter – 34%• Scary dogs





Existing Conditions: Schools with Over 80% of Students Not Bused





Existing Conditions: Schools with Over 80% of Students Not Bused

