CREATING A SAFE ROUTE TO MAPLE AVENUE MIDDLE SCHOOL: NOT AS EASY AS IT SEEMS

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Abstract

We participated in the Saratoga Safe Routes to School group to expand the ability for students to walk or bike to Maple Avenue Middle School. By conducting applied research and meeting with key stakeholders, we analyzed the environmental, economic, political, legal, and cultural obstacles in changing school transportation policies.

Introduction

The latter part of the 20th century has been dominated by an auto-centric lifestyle. Cars and fuel became inexpensive and readily available, and as such, this means of transport influenced design. Examples can be seen through sprawling suburbia and vast parking lots all over our country, yet there is one local example we have chosen to look at. The Maple Avenue Middle School exists as a geographic island amongst the towns of Saratoga Springs, Greenfield, and Wilton. The roads that lead to and from the school are heavy use, high volume roads—the kinds that are not conducive to walking or bicycling. This has meant that students living even very close to the school are driven very short distances to and from school by their parents. This is not the way it always was for the citizens of Saratoga and their children. The Lake Avenue Elementary School, located in downtown Saratoga Springs, was the former junior high's home. This location represented an ideal spot for a school in Saratoga, as it was easily accessible to all living downtown and offered an array of amenities all within a half-mile (See Appendix 2). Lake Avenue students were able to walk or bike to school, and visit parks, eateries, libraries, and more all within a short distance. As the population of the city grew, so too did the need for a new middle school, thus Maple Avenue was created. We chose to observe Maple Avenue Middle School because of the sharp contrast it represents to its predecessor on Lake Avenue. Once easily accessible by all, the new middle school provides little to no ability for students to get there, other than to be driven (See Appendix 3). In fact, due to its location and the considerable dangers of biking on Route 9, Maple Avenue banned bicycling to school. This achieved some local attention when, in 2009, a student and his mother chose to bike to school despite the ban and were subsequently accosted by a school official and state police officer. Subsequent to this event, an article was published in the Times Union Newspaper. Initially a local story, ex-speaker of the House, Newt Gingrich found about the incident and wrote an enraged letter to the school board in which he disparaged the school's policy banning biking to school. He expressed the concern that there is a national obesity epidemic, and that students who demonstrate healthy lifestyles by biking to school should be commended rather than punished. Partly due to this national attention the school decided to lift the ban, albeit begrudgingly so. Unfortunately, problems like this one are not unique, and it is a trend that is happening all over the United States. In fact, one in two Americans live in a suburb (Frumkin 2002). Suburban sprawl and vehicle dependency cause decisions like these to be made, where public spaces like schools are placed in locations only accessible by car. Studies show that "the number of vehicle miles traveled increased from 718 billion per year in 1960 to more than two trillion per year in 1999" (SRTS) and 21 to 27

percent of peak traffic is due to parents dropping children off at school (Appleyard, 2003). The year 2000 saw a mere 13% of children walking or biking to school, in comparison to 66% in 1970 (Clifton and Kreamer-Fults, 2007). In other words, in the United States today, over 85 percent of children are chauffeured to and from school each day (SRTS; Appleyard, 2003).

This is not only unnecessary; it is also creating a myriad of related issues. First of all, this reliance on automobiles has influenced a decrease in the amount of physical activity undertaken by the students. This historical change from walking and biking to school to being driven there, along with other activity choices, has led to an obesity epidemic among our nation's youth. The amount of overweight children in America has risen from 6% in 1976-1980, to a startling 15% in 1999-2000 (Braza et al., 2004). Studies show that going to school on foot or bike can provide a significant amount of a child's daily physical activity, and can also lead to greater amounts of energy expenditure (McDonald, 2007; Mota, et al, 2009). Additionally, studies show that each additional km walked per day can reduce a child's likelihood of obesity by 4.8% (Frank et al., 2004). A second concern is the absolute disconnection from nature that these habits are creating. Studies show that the changing nature of school journeys, from on foot to in car, eliminates a daily commute that is capable of serving as an integral part of a child's imaginative and active relationship with their environment (Ross, 2007). Children leave their homes and sit in a minivan on the way to school, and, once there, they sit inside all day until they are picked up again by the minivan and driven home where most of them will play videogames or go online until it is time to go to bed, wake up, and do it all over again the next day. Third, the amount of unnecessary vehicle traffic to and from the school is creating an enormous amount of carbon emissions. Because there is no way to access a school when it is located far away or around major highways, parents are forced to drive children to school and school districts are using more and more diesel-powered school buses. Here in the Northeast, green house gases (GHG) have caused average temperatures to rise by 2˚F since 1970, and winter temperatures to rise by twice as much (U.S. Global Change Research Program). Studies show that choosing to leave a car at home two days a week reduces GHG emissions by an average of 1,600 pounds per year (EPA). Considering 25% of all trips in America are less than 1 mile, 75% done by car, this should be a seemingly easy task (Frumkin, 2002). At a time where oil dependency is causing gas prices to rise by the day, the economic costs of driving to and from school are of great concern, where here in New York they have just surpassed the four-dollar mark.

Fortunately, there is a national organization that works to mitigate all of the problems associated with the decrease in walking and biking to school among students across the country. Safe Routes to School (SRTS) is a federal program that uses federal funding through the Department of Transportation (DOT) to encourage infrastructural and policy changes that facilitate walking and biking to school. SRTS programs attempt to change these patterns of vehicle reliance and lack of physical activity; according to their national website they seek to "enhance children's health and well-being, ease traffic congestion near the school and improve air quality and improve community members' overall quality of life" (SRTS). These programs are gaining recognition and spreading throughout the nation, utilizing money through the current federal bill, SAFETEA-LU, which includes $612 million in aid for these programs over the next 5 years (McDonald,

2007). Of all these programs, a few success stories stand out. A school in Marin County, California used the program to great effect. Through improvements like more sidewalks and better street crossings, combined with promotional activities, they were able to influence a 64 percent increase in walking and a 114 percent increase in cycling to school (Sallis and Glanz, 2006; Staunton, et al. 2003). Another project that is similar to our situation with Maple Avenue Middle School is that of Green River, Wyoming. The Safe Routes to School chapter of Green River used federal funding to improve an existing pathway that would not only enrich local students commute to school, but also serve the community as a local trail (Johnson, 2007). The National Center for Safe Routes to School has three goals, to "enable and encourage children to walk and bicycle to school" to "improve the safety of children walking and bicycling to school" and to "facilitate projects and activities that will reduce traffic, fuel consumption, and air pollution near schools" (SRTS). SRTS programs seek to make these alternative means of transportation more appealing to children and reassure parents that their young will be safe in doing so. Seeing as children spend up to 6 hours a day, 5 days a week, 9 months a year, in the classroom, schools can play a critical role in restructuring habits and improving mental and physical health in children (Hollar et al., 2009). There is currently a Safe Routes to School program in Saratoga Springs.

While it seems as though the current location of Maple Avenue Middle School has closed the door to walking and biking, there is actually an alternative. Maple Avenue students have an opportunity to take advantage of an existing local asset, which can bring them to school safely and provide the necessary physical outdoor exposure they need. After North Broadway passes the entrance to Skidmore College, it becomes an unmaintained dirt road, known as the Glen Mitchell Road. This dirt road leads directly to the back of the Maple Avenue Middle School, and for students living on the East side of town, this road represents a direct, safe route to school (See Appendix 1). The answer seems easy: if we could make it possible for kids to use this road, and encourage such use, we would be able to increase their health through physical activity, reduce carbon emissions, and help them reconnect with the outdoors. Therefore, our study investigates what the obstacles are in facilitating and promoting the use of this road as an alternate route to the Maple Avenue Middle School. Additionally, we investigate what economic, legal, bureaucratic, and political factors get in the way of making this connection, seemingly easy to implement and providing an array of benefits, actually happen.

Data Collection and Analysis

ACCESSIBILITY TO THE GLEN MITCHELL ROAD:

Because distance plays a major role in how many students are driven to school, we needed to find out how far students live in relation to Maple Avenue Middle School (Braza et al., 2004; Jensen, 2008). We used ArcGIS and United States Census records to study how many students live within certain limits of Maple Avenue Middle School. We applied radiuses around the school of 0.5 miles, 1.0 miles, 1.5 miles, 2.0 miles, and 2.5 miles in order to generate a visual of accessibility to the Glen Mitchell Road, and thus the school. We further used GIS to plot where all the houses are located in relation to Maple

Avenue (See Appendix 4). To do so, we used a process called geocoding. Essentially, the process entailed creating a map of the area that has certain information encoded on it. This information defines the city, state, and zip code of the region, as well as the names and numbers of the streets, specifically what numbers are on each side of any given road. This information was necessary so that when we plugged in all of the addresses in the area, the software would know where to place them on the map; this process is known as creating an address locator. We used an address locator built into Arc10, and plugged in the census data to map where all of the registered voters in the area are located. This process created dots on the map where every one of the 18,000 registered voters in Saratoga Springs live. This was only step one in the process however, because the number of registered voters is not the same as the number of school aged children. Because we could not obtain data specific to the location of students, we used this voter data to determine relative density of housing in the city of Saratoga Springs. The next piece of information we plugged into the software was also from the census, and this information told how many children aged 5-17 live in four different regions in the city, called block groups. The final piece of information we needed to take into account were the threshold radius distances from the school. However, not every student living within these threshold distances can safely reach the school, so we decided to create an area from which to draw that represents the places where students can reach school safely and directly. This area is outlined on the map in turquoise. Within this outline, there are no major roadways to cross, and there are safe and direct connections to the school. With all of this information it was time to calculate how many voters were contained in each block group. Each block group is divided into pieces by the thresholds. By determining the total number of voters in each block group and then dividing the number of voters within each section by the larger whole you get a relative density of each threshold section of the block groups. Then, by applying this percentage to the number of children 5-17 in each block group we came up with a number for the total children 5-17 in each subsection of the thresholds. By repeating this process for all of the block groups we came up with a rough estimate for the number of children aged 5-17 contained in each radius—0.5, 1.0, 1.5, 2.0, and 2.5. To get a final number for the number of middle school aged children we assumed middle school ages were 11-13. This is 3 years out of the total of 8 years, which gave us 37.5%. Then, applying this percentage to the total number of kids 5-17 we got a good estimate of the number of middle school aged kids who live within each radius.

Table 1: Number of children living within different threshold radiuses of Maple Avenue Middle School, using U.S. census data.

	Ages 5-17	Ages 11-13 est.
0.5 mile radius	0	0
1.0 mile radius	15	3
1.5 mile radius	100	23
2.0 mile radius	500	115
2.5 mile radius	871	200

These numbers, though rough, provide us with the maximum number of potential students who could use the Glen Mitchell Road to get to school. We found that 0 students

live within 0.5 miles of the school, and 3 students live within 1.0 mile of the school, supporting the initial image of Maple Avenues isolated location (See Appendix 3). Much of the literature suggests than 1 mile is the furthest that students are able and willing to walk to get to school in the morning and back in the afternoon. This means that unless students are willing to walk further, the Glen Mitchell Road is not a viable means for students to walk to school. Expand the thresholds out to 2.5 miles however, and the story is very different. The literature suggests that 2 miles is a reasonable distance for kids to bike to school. (McDonald and Aalbor 2009) This means that if all students were to bike to school, and were willing and able to bike 2.5 miles, 200 students could potentially use the trail to get to school in the morning. This is assuming that 100% of students who can bike to school will do so, and this is not the case. These numbers suggest that this project is worth the effort it would take to create and maintain the trail. By combining the health and educational benefits of the trail use with the carbon that could be offset by that number of students biking rather than walking, some numbers emerge that present real incentive for the trail to be built. However, even though we have established that a meaningful number of students could use the trail, and that this use would have positive effects across the board, its implementation is far from guaranteed, as there are many other forces working to influence the decision.

ECONOMIC COSTS OF BUSING AND DRIVING:

We used publically available information from the city of Saratoga Springs to acquire data on how much money the city spends on transportation. The Saratoga Springs City School District website provides yearly expenditures and projected spending for the upcoming year. The school district's most recent estimated general fund for 2011-2012 is $108,500,005. This represents a zero percent increase from 2010-2011, where the funds were exactly the same. As a result, the transportation costs should have remained the same because the overall school district fund did not increase, but pupil transportation costs are projected to increase by $121,293 for 2011-2012 due to the rise of diesel fuel costs and contract transportation costs.

We discovered that transportation is the third highest expenditure of the Saratoga Springs City School District. Based on school district data of the projected 2011-2012 expenditures, the highest spending is designated for instruction and benefits. Although these costs are broken down into two separate categories, respectively, we group them into one expense encompassing all educational services. The second highest spending is for plant and debt, or the operation and maintenance of school buildings and the debt associated with them. These costs are also broken down into two separate categories originally but are grouped together into one building-related expense. This makes the money spent on transportation the third highest in the school board budget. At 4.17 percent of the estimated general fund the school board spends $4,529,814 a year on the daily transportation of 6,862 students. This money pays for 92 buses and two Suburbans, the fuel they need to drive to 1100 field trips, athletic events, and the expensive distance of 110 miles a day. It pays for the maintenance of vehicles, driver salaries and assistant salaries. Additionally, there is a proposal to replace the vehicles that are over ten years old and have high mileage. Cyclically replacing these seven buses and one Suburban is estimated to cost an additional $765,160, or $375,951 with State Aid (Saratoga Springs City School District). Through the school district website we found that the most recent

available enrollment rate at Maple Avenue was 1,642 on October 1, 2010. Therefore, for our calculations we rounded this number to 1,600 students, which represents 23.31 percent of the total students in the Saratoga Springs school system. We therefore assume that Maple Avenue uses 23.31 percent, or $1,055,899, of the total annual school board transportation budget (Saratoga Springs City School District).

Aside from the money spent by the city on transportation, we used average fuel economy rates and average distances to Maple Avenue to estimate how much a typical parent spends on gasoline to drive their child to and from school. Although Maple Avenue Middle School draws from the towns of Saratoga Springs, Wilton, and Greenfield, we calculated how much a parent would spend from 1 mile away and 3 miles away, as our study focuses on students that can walk or bike to school. We did not calculate spending for parents that live further away as these students would most likely need to cross a highway to get to school and therefore do not have a safe route to walk or bike. In order to calculate these costs we used an average fuel price of $3.57 per gallon (Fuel Economy Guide, 2011). We paired this expense with an average large car getting 15 MPG and an average small car getting 30 MPG. We determined how much is spent by an individual on these distances per day (Table 2) and for the 182-day school year (Table 3). Parents that currently drive their children these short distances could save money should their children shift to walking or biking.

Table 2: Money spent on fuel by an individual driving to and from Maple Avenue from various distances on a daily basis, using the average fuel price of $3.57 per gallon of unleaded regular gasoline.

	1 mile	3 miles
Large car (15 MPG)	$0.48	$1.44
Small car (30 MPG)	$0.24	$0.72

It is assumed that the distance one lives from the school is doubled for driving both to and from the school, which is reflected in the dollar amounts.

Table 3: Money spent on fuel by an individual driving to and from Maple Avenue from various distances for the 182-day school year, using the average fuel price of $3.57 per gallon of unleaded regular gasoline.

	1 mile	3 miles
Large car (15 MPG)	$87.36	$262.08
Small car (30 MPG)	$43.68	$131.04

It is assumed that the distance one lives from the school is doubled for driving both to and from the school, which is reflected in the dollar amounts.

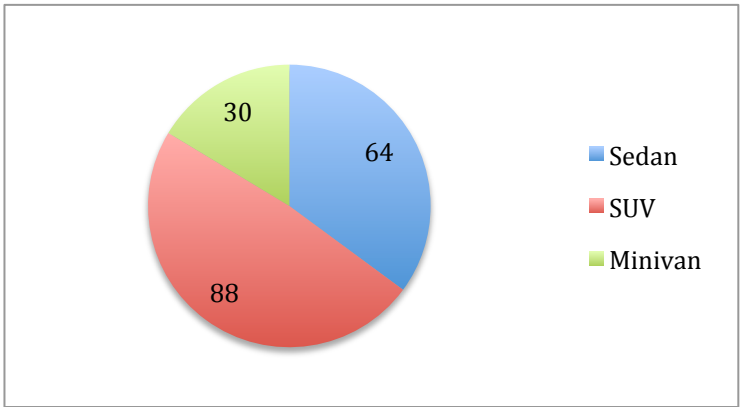
It is important to note that these cost estimates are extremely conservative, as the majority of students live much further than 3 miles from Maple Avenue as seen in the GIS map, and that gas prices are continuing to rise. In actuality, these costs are not prohibitive at the moment, but will become so as gas becomes more and more expensive. The real issue here is less the cost than the misconception of safety. Many parents feel that biking to school is a much more dangerous way to get there, and because of this are willing to spend a lot of money on gas to drive their children to and from school. This is

not entirely true, as your risk of death and injury increases exponentially as you travel faster. Additionally, drivers pose the main danger for bicyclists, so if students get off dangerous roads like Route 9 and onto connections like the Glen Mitchell Road, the risks of automobile-bicycle accidents would drop significantly. Additionally, we feel that the ways in which money are spent by the school district could be improved. We suggest taking a small amount of the total funding and hiring a full-time mobility coordinator for the school. This person could do what the SRTS group can't—devote the time and energy necessary to create change and solve the problem of biking and walking to school.

ENVIRONMENTAL COSTS OF DRIVING:

In collecting our own data, we conducted observational studies at the school that we used to calculate environmental and economic estimates. We used our own automobile to drive to Maple Avenue on a number of school days in order to observe the amount of vehicles dropping children off at the school, the types of vehicles used, and the idling time of each car. These studies were conducted in a variety of weather conditions, first on March 9, 2011, then on March 22, 2011, and again on April 14, 2011 after snow had melted (See Appendix 5). We then calculated the average number of sedans, SUVs and minivans (Figure 1). These numbers added up to an average of 181 cars a day at Maple Avenue.

Figure 1: Average number of vehicles a day at Maple Avenue Middle School



Through our observations of the cars at Maple Avenue, we discovered that on average there are almost double the amounts of large cars (minivans and SUVs) as there are small cars (sedans). Additionally, it is important to note that almost all of these cars were transporting just one child. For those living beyond the limits of walking and biking to school, or living on the other side of a major highway, we recognize that these parents have no other choice but to drive their children to Maple Avenue because of its location. However, we recommend that these parents should carpool to prevent congestion at the school, increased carbon emissions, and to save money on gas. In terms of congestion at the school, we also noted that the average time a car spends in line at the school idling is about 10 minutes. Now that we knew how many cars there were at Maple Avenue on an average day, we decided to calculate how much carbon dioxide they were emitting to get a true understanding of the environmental impact of transportation at the school.

The 2011 Fuel Economy Guide states that every gallon of gasoline releases about 20 pounds of carbon dioxide into the atmosphere (Department of Energy, EPA). However, carbon emissions vary depending on the miles per gallon (MPG) a vehicle gets. For instance, a vehicle that gets 15 MPG emits about 12.4 tons a year on average, whereas a vehicle that gets 30 MPG emits about 6.2 tons a year (Department of Energy, EPA). Additionally, emissions for a vehicle depend on how far they drive. It is for these reasons that we calculated how much carbon is emitted for an individual driving to and from Maple Avenue for a 182-day school year. In order to calculate the metric tons of carbon emitted for a single car, we used an equation provided by the U.S. Voluntary Reporting of Greenhouse Gases Program (Carbonfund.org), as follows:

Number of miles driven / MPG = Number of gallons per year

(Number of gallons per year * 8.87kg) / 1,000 = Metric tons of CO_2

We chose to calculate the emissions for an individual living 3 miles away from the school. Therefore, emissions were based upon an individual driving 6 miles a day, 182 days a year (1,092 miles). Because emissions vary based on the fuel economy of a car, we obtained results for both a large car (15 MPG) and a small car (30 MPG), as we did with our fuel price calculations. The number of gallons per year was divided by 8.87kg because unleaded gasoline has 8.87kg of carbon per gallon. The outcome of our results shows not only the tons of CO_2 an individual car emits per school year, but also the sum of all the cars on an average day. Based on our observations from Maple Avenue, these sums are broken down into large cars (SUVs and minivans) and small cars (sedans). Thus, the total number of large cars was 118 and the total number of small cars was 64, as indicated in Table 4.

Table 4: Metric tons (MT) of carbon dioxide emitted by an individual living 3 miles from Maple Avenue Middle School for a 182-day school year, and for the sum of cars on an average day based on observational results.

	Individual car	Sum of cars
Large cars (15 MPG)	0.646 MT	117.57 MT (118 cars)
Small cars (30 MPG)	0.323 MT	58.79 MT (64 cars)

It is assumed that the distance one lives from the school is doubled for driving both to and from the school, which is reflected in metric tons of CO_2.

Motor vehicles are also a major source of other greenhouse gases including methane, nitrogen oxides, and volatile organic compounds. Automobile traffic accounts for about 26% of U.S. greenhouse gas emissions (Frumkin 2002).

ANALYSIS OF HEALTH ISSUES:

We quantitatively analyzed the benefits of walking or biking to discover how physical and mental health can be compromised by lack of activity and how increasing bicycling and walking trips to school can mitigate the negative outcomes of childhood and teen obesity. Literature shows that, "Schools can play a crucial role in improving the health of children… because children generally attend school 5 days per week, during 9

months of the school year" (Hollar, 2009). In other words, "the decrease in walking represents an important loss of everyday physical activity for American students, as traveling to and from schools accounts for 20 minutes of physical activity on average" (McDonald, 2007). Because the decreasing rates of bicycling and walking to school correlate with the rise in national obesity rates, we recognized that schools are an optimal place to mitigate these trends (McDonald, 2007; Mota, et al. 2009).

From prior methodical studies we discovered the obesity rates among middle-schoolers in the United Sates, and the consequences of being obese at a young age. We also incorporated New York State obesity rates amongst people under 18 and Saratoga County obesity rates for adults, in order to provide a more local understanding of the issue. We coupled this information with scholarly analysis and findings about increases in beneficial imaginative engagements and increased mental awareness due to physical activity. An article by Nicola J. Ross from "Children's Geographies" specifically addresses the meaning of the trip to school, and how traveling to school independently leads to stronger mental engagement. This data was used to present the benefits of walking and biking to school, not just on the environment, but for the children's mental and physical well-being.

Because the breakdown of national age groups in national examination is not according to school year, we focused on childhood and adolescent obesity in general. We found that adolescents ages 12 to 19 have experienced an overwhelming increase in obesity rates, in that a mere 4.6 percent in 1963-1965 has escalated to 17.4 percent in 2003-2004 (Clark et al., 2008). Combining this with the younger age group of 6 to 11—whose rates increased from 4.2 percent in 1963-1965 to 18.8 percent in 2003-2004—this represents a 400 percent increase in obesity within 40 years (Clark et al., 2008). In other words, "about nine million students in the United States who are over the age of 6 meet the Centers for Disease Control and Prevention definition of obesity" (Clark et al., 2008). More locally, the New York State Department of Health estimates that one in four citizens under age 18 are clinically obese, and a 2007 survey showed that 62 percent of students "do not meet recommended levels of physical activity" (New York State). Obesity statistics for Saratoga County indicate that the percentage of adults who are overweight or obese—having a BMI of 25 or higher—is estimated to be 61 percent, where the overall percentage for New York state adults that are overweight or obese is 59.3 percent (NY State Department of Health).

The issue of obesity at a young age is not just the obvious impediments to daily life, but the future health complications that may arise as well. Being obese at a young age causes an individual to run the risk of health concerns such as "cardiovascular disease, high blood pressure, high cholesterol levels, abnormal glucose tolerance, asthma, hepatic steatosis, sleep apnea, and Type 2 diabetes" (Clark et al., 2008). Studies show walking or biking to school can provide a significant amount of a child's daily physical activity, and can also lead to greater amounts of energy expenditure (McDonald, 2007). By achieving a healthy body weight and good blood pressure through biking or walking to school rather than being driven or bussed, children have the option of being healthier now and in the long run.

In addition to physical well-being, regular activity also contributes to increased mental and social wellness. This includes increased awareness at the beginning of the school day, an increase in imaginative and active relationship with the environment. Ross

notes that, “the route to school has potential for encapsulating the wonder of the moment”. Allowing children to embark on a walk or bike ride to school in the morning gives them the opportunity of creating a relationship between themselves and the outdoors. Some studies have even proven that academic grades and test scores decrease as weight increases (Clark et al., 2008). The relationship between weight and academic performance has not been linked to any specific indicators, but may be due to the increased alertness that comes with a healthy body weight and blood pressure. Cleary, children who are active have better physical and mental health. This activity can be provided through the daily commute to and from school, and here in Saratoga, there already exists a safe route that can be used to provide this activity. Not only could the Glen Mitchell Road provide more convenient access for students, it could also increase their physical and mental health.

PARTICIPATORY PERCEPTION OF SARATOGA SAFE ROUTES TO SCHOOL:

In order to gain information about the overall movement of walking and biking to school, we attended monthly Safe Routes to School meetings with the local Saratoga chapter. As such, we used a methodology known as participatory action, which “is exceptional for studying processes, relationships among people and events, the organization of people and events, continuities over time, and patterns, as well as the immediate sociocultural contexts in which human existence unfolds” (Jorgensen, 1989). This applies directly to our project because the problem we are focusing on, the issue of biking and walking to school, is the purpose of the local Safe Routes to School group. Therefore, we took participatory action by attending the monthly Safe Routes to School meetings. In doing this, we gained access to the appropriate setting, where we were able to observe the program’s goals, organization, and strengths and flaws. We gained entrée through an “overt” method because we obtained consent to participate through our observational and investigational studies. Jorgenson notes that this is the preferred method of entrée because, “it raises few ethical problems, is less difficult than other approaches, and, when granted, tends to provide adequate access to phenomena of interest.” In the meetings we attempted to see the problem from their point of view by investigating the meanings and interactions of walking and biking to school, and what they see as the challenges in promoting these activities. In our case, we took on the role of the observer-as-participant. By acting mainly as participants, we were able to, “gain a more comprehensive and accurate picture of what is happening simply by observing, but also by developing relationships with different people” (Jorgensen, 1989). By participating in the Safe Routes to Schools meetings as contributing members we were able to acquire necessary qualitative data and gain valuable insight into how the program is functioning.

The Saratoga SRTS group is a small, local chapter of the national SRTS program, and they were first organized in April 2010. Safe Routes to School is a federal program created to help foster local initiatives that encourage children to walk and bike to school. SRTS was established by the Department of Transportation (DOT) under the Federal Highway Administration, where the DOT funds the SRTS program and this national fund metes out grants to local chapters that apply for funding. In addition to funding, the SRTS program has a website that provides helpful contacts, information on how to get started locally, and a list of local chapters that have sprung up all over the country. As it exists

now, the Saratoga SRTS group has a membership of around thirty, but at any given meeting there are usually around 10 people present, depending upon the topic at hand and people's schedules. The de-facto leader of the group is a woman by the name of Caroline Stem who usually chairs the meetings and keeps the minutes. The rest of the members represent a diverse slice of the Saratoga community. There are parents, teachers, health workers, members of the police department, school board officials, city planners, engineers, and various other community members who attend the meetings, all with differing stakes, but a common goal. This kind of diversity of membership draws strength from the various expertise that each person can bring to the group, but it also poses a problem. These are all very busy people, and because of this, the group only meets once a month for two hours. From the very start, this infrequency of meeting impedes progress. There is little sense of continuity in the process, as so much time elapses between meetings that even things discussed in one meeting may be forgotten by the subsequent one. Another impediment to progress is the fact that the group has several goals.

We first met with this group on January 20, 2011. We had gained access to the group through Susan Steer, Bob Turner's wife. She was a member of the group, and she introduced our capstone project to the group before we met them all in person. At the first meeting we were met with friendliness and interest, and after we were introduced to those present we explained what our project was about and how we were hoping to fit into the SRTS group. Our focus in the beginning was purely the Glen Mitchell Road, but as we observed the meeting we realized this was not their only objective. For instance, one of the items on the agenda regarded a crosswalk that was put in on Union Avenue at the request of parents and was then subsequently removed by the city. This crosswalk was initially put in because parents wanted their children to be able to cross the street safely on their way to school. However, at this meeting, Sergeant Andy Presti explained what had happened and why, particularly from the viewpoint of the city. He had spoken to Mark Benacquista, the city's traffic control technician, who explained that very simply it came down to the issue of funds. While the yearly pavement marking budget was down by 13%, projects were up by 5%, and this was simply not something they could afford. The crosswalk had cost $1,300 to put in, and if it had stayed it would have required more money in maintenance every year. According to Presti, Benaquista is the boss at this point, the budget person, and to paraphrase, he believes that SRTS is a great idea, but is simply not economically feasible at this time. This example is an important one because it highlights two problems with the Saratoga SRTS group. First of all, there is a lack of organization and technical knowledge, the lack of which leads to things like the costly installation and subsequent removal of the crosswalk. Secondly, the interests of the city are often very different from the interests of the group as a whole, and this creates conflict.

There are also projects concerned with bike rodeos, awareness campaigns, and art projects. Although each of these may serve an important purpose, there is no project that is receiving sustained, focused energy. Nevertheless, there has been some significant work done by this group, particularly in regards to the Glen Mitchell Road. One of the biggest issues with the road is ownership and liability. At the outset of the groups' formation, there was confusion as to who actually owned the road, important information that would determine how to proceed. Kate Maynard, Principal Planner for Saratoga, did a significant amount of work looking up maps of the area, some of them going back 50 or

60 years. Based on a number of these maps the group determined that the Glen Mitchell Road is actually a public right of way owned by the city of Saratoga Springs. This means the road is owned by the city, but the ownership of the land bordering the road is not so straightforward. If Skidmore College had never moved its location, the road would be bordered on both sides by the town of Greenfield, but when Skidmore annexed the land from Greenfield to build the college, the eastern border of this land became the road. This means the land on the east side of the road is owned by Greenfield, and on the west by Saratoga Springs. Liability was another concern raised by the group, but there was little we were able to learn from them specifically. Rather, we discussed this issue with Kate Maynard and Superintendant Janice White, which can be seen subsequent interviews.

As our project evolved, we became more and more interested in why walking and biking was not happening already, and what could be done to change it. To understand this, we knew we would need to understand things from a parent and student perspective. Fortunately, this was a concern of the SRTS group as well, and they are in the process of creating a survey. In fact, the survey has been finished since February, but is not going to be distributed until May. This was frustrating because we had wanted to collect data from a survey as well, and the survey they had created was exactly what we had in mind. It made sense to use theirs, but we could not wait until May. When asked why there were waiting to administer their survey they told us they wanted to wait until the weather warmed up. Knowing we could not wait that long we went about creating our own, ultra-condensed version. We contacted the Maple Avenue principal to get permission to hand it out, and were redirected to Mike Picarillo, Assistant Superintendent. We attempted to contact him five times, both by phone and email, but he never got back to us. This meant we were unable to distribute a survey. This problem was just one more on top of all the others we had experienced already, and provides a good snapshot of the group.

After working with the SRTS group for two semesters and becoming involved in their struggles, we came to understand the issue more completely. The Saratoga Safe Routes to School group are the biggest advocates for walking and biking to school in the area, and yet, as we have seen, they are unable to create any real change. This is mostly due to the fact that the group exists on a volunteer basis and they only meet once a month. When they do meet, attendance is unreliable, so it is hard to sustain issues and solutions from one meeting to the next. They are all very busy people, so it is hard to make issues like these a priority when they are already juggling their jobs, families, and other responsibilities. They are not all bad however, they have done a significant amount of work to understand the forces at work here, and this helped us greatly in our project. Our involvement in the group taught us that until we tried to change a problem we could not understand why it was so hard to do so. Going into the year, we thought all that had to be done was to put some sustained effort into it and we could create real change. Our experience with SRTS showed us otherwise. Through them we came to understand the opinion of the city and the school board, as well as the overwhelming social norms that are hindering biking and walking to school. Some of the projects they have undertaken include bike rodeos and poster contests. We believe SRTS decided to undertake these projects because they saw them as quick and easy projects, and didn't know how else to spend their time and money to affect a more lasting change. We have several suggestions for actions the group could be taking. First of all, they need to create a real plan for the Glen Mitchell Road. In our interview with Kate Maynard, she told us that until a solid

plan, with costs and designs, was presented to the city, they wouldn't even consider taking action. This should be their number one priority if they want the trail ever to be built. Instead of spending their money on a bike rodeo, they should instead hire an architect or planner to create these plans. We also believe the SRTS group should be trying to involve parents in a more significant way. The parents should be included in the process, and should be informed of all the positive effects of walking and biking to school. Until this happens, the social norms surrounding driving to school will never change, and the idea of walking and biking to school won't even enter the foreground of parents' thought processes. One of the ways this could happen would be the survey they have been working on for so long. This survey needs to be distributed as soon as possible, and until it does, the conversation won't even start. Essentially, the group has good intentions, and the expertise to back these intentions up, but they are misguided and loose around the edges. They need to create solid plans for real change and then work together to implement these plans.

PERCEPTION OF THE CITY OF SARATOGA SPRINGS:

In addition to participating in the Safe Routes to School meetings, we conducted interviews with various stakeholders. We felt this was a necessary way to gain knowledge about the issue of biking or walking to school because we could see it from different points of view. Should we have focused all of our efforts on participating in the Safe Routes to School group, we would have gathered one-sided thoughts on the issue and the Glen Mitchell Road.

To try and understand the viewpoint of the city, we interviewed Kate Maynard. Kate is the Principal Planner for the city of Saratoga Springs, and also a member of the Safe Routes To School group. We asked her to comment on what she thought were the biggest impediments to the Glen Mitchell Road becoming a viable way for kids to walk and bike to school. She stressed that the very biggest concern was liability. She feels that as soon as you do anything to improve the road for use, you are then liable for anything that goes on. She expressed several fears of the city in terms of liability. First of all, someone could get injured while using the trail. Secondly, there is the risk of assault or sexual predation, and this is of big concern especially for parents. The third biggest concern of the city is money. There are many different levels of improvement that could be applied to the road, from simply clearing of it rocks, to paving it and creating switchbacks or changing the entire grade of the hill. In her opinion, the latter options are simply far too expensive and will never be paid for by the city. There are other options for funding however, as the national SRTS program has money obtained through the Department of Transportation. When asked about this funding, she told us that there are two different sources of potential funds for a project like this. The first is the SRTS money. Essentially, there was one grant round in which each state was given a certain amount of money that was then meted out to individual projects. The Saratoga group missed this first round of funding, but there is an expectation that another round of grant allotment will occur in the next year or so. If and when this happens, Kate is optimistic that Saratoga Springs will qualify for some of this funding. The second source of funding comes from the Transportation Enhancement Program, but she was unsure of the process involved in getting money from that source.

Beyond liability and financial concerns, there is simply the issue of how best to go about improving the trail. One problem is that there is currently no lighting on the trail, so at night, or during the winter months. use would be very dangerous. However, there is an advantage to not being lit. She explained that if there were lights, this would only encourage night use, and this could result in dangerous situation. Some of these are simply problems with seeing where you are going, but there are also concerns with unsavory characters hanging out on the trail at night if it were lit. Based on all of these concerns, her personal preferred option would be to make minimal improvements on the road, and leave it unlit. Furthermore, she believes that any improvements of the road should appear to be done for the sake of the entire community rather than just of the students, because if it appears that the city is promoting its use as a means of getting to school, it would be put in a bad situation if something were to happen. Perhaps the most interesting piece of information we gleaned from this interview was her explanation of another option we did not know about before.

This option involves invoking something called the Hold Harmless Clause. Your use of land held under this clause means that you are using it at your own risk and won't sue if something happens to you. In order for this clause to take effect, someone must agree to sponsor the land. There is a local example of this at the Saratoga Mountain Bike Association Land. The land used for these mountain bike trails is actually owned by the Finch Pruyn Paper Company, who have a Hold Harmless Clause on the land. This seems like a very good option for the Glen Mitchell Road, but Kate was unsure of who would agree to sponsor such an agreement.

Kate worked in Clifton Park before she came to Saratoga Springs and we asked her if she ever encountered a situation like this in her previous position. In fact, there was a similar situation that occurred there when the community was attempting to create a trail between the elementary school and the nearby library. This project went forward successfully and the trail was built, but the conditions were different. Here the trail was on level ground and the distance covered was only a quarter-mile. Nevertheless, the project was okayed by the city, and it still exists today. In this case, they chose not to use lighting, for the same reasons they would probably not do so for the Glen Mitchell Road.

Finally, we asked her for her frank opinion on the project in general. First, she said that the city was not going to do anything until someone approached them with a concrete plan. No one has done so yet, but she feels confident they would be receptive to a proposal as long as it was well researched and thought out. Surprisingly, in the year since the Saratoga chapter of SRTS has been active, no plan has been created or brought before the city counsel. Lastly, she told us she thought that even if the trail were improved, there would never be throngs of students using it. This is worth noting because if the people who are in control of making the decisions to approve this project don't believe that it will be used, then it is unlikely to happen. This is an interesting viewpoint, and one that will be reconciled with the different viewpoints we gleaned from our discussion with the middle-schoolers.

PERCEPTION OF MAPLE AVENUE STUDENTS:

We conducted a small focus group of eight boys at Spring Street Deli on March 25, 2011. Of the eight, seven of the boys were current 8th graders at Maple Avenue, and

one was a 7th grader at the school. In interviewing current students our intention was to understand what a middle-schooler's social perception of biking or walking to school is.

When we asked the boys how they arrived to school each morning, they all told us that they took the bus. We inquired if any of their friends get driven to school, and if so what they think about it. They responded in saying that none of their friends were driven to school and that they perceive these people as "lazy". They informed us that the bus ride is rather short and they enjoy it because they get to spend time with their friends outside of the classroom. We then asked them about biking to school as an alternative way to get to school while also spending time with their friends, and they nodded their heads in approval at the idea. We discussed this idea further in order to learn their feelings towards walking and biking to school.

The boys told us that they would like to bike to the school, but that they might arrive at school late if they did, which ultimately results in detention if occurring five times. Bringing up the idea of the Glen Mitchell Road, they told us that they know about it but don't use it very often, and never use it to get to school. When asked if they feel the trail is safe to be used to get to school they all said that they did, but it should be cleaned up a little. They were excited about the idea of using the trail, telling us that they definitely would like to because they love to bike recreationally. We brought up the idea that some parents might not think it would be safe for kids to ride on alone, and would want to supervise the trail or stand on it in case of an emergency. The boys told us that they think the fun would be taken out of biking to school if adults were supervising them and telling them to slow down.

Moving on to what it would take to get them to ride their bikes to school, we discovered that the main motivation they would need to do it was simply their friends doing it, too. Another motivator they mentioned would be food, bringing up how bagels used to be offered to students at the school, and if they were given to kids who biked they would be more inclined to do so. We asked them about the idea of using incentives to get them to bike to school, such as programs used by other Safe Routes to School groups. These encouraging efforts have included getting a sticker or a stamp each time one bikes to school, which results in a prize for the students who bike most.

This focus group revealed a number of findings about the way middle school students feel about biking or walking to school. First, we discovered that they actually have a desire to do it, but do not do so due to social norms. These norms are based in the fact that the students are not doing it because none of their friends are. Should they start to do it as a group, it would instantly become more appealing. Also, the views expressed by students stand in sharp contrast to the opinions held by the city. Maynard felt that students would not use the trail in meaningful numbers, but seen here in our focus group, they actually have a great deal of enthusiasm for the project, and would be excited to use the trail. This shows that the city is misinterpreting the views of the students. Until they start understanding these views better, the issue will continue to remain in the back seat.

PERCEPTION OF THE SCHOOL BUREAUCRACY:

Because the Saratoga Springs School Board must first approve anything that occurs at Maple Avenue, we thought it would be beneficial to meet with a member of the Board of Education. Although our study focuses on activity outside of school, the classroom has been shown to be an important place to impact daily student activity and

behavior. In talking to them our hope was to gain the perspective of the stakeholder responsible for children while at school.

We met with the School Board Superintendant, Dr. Janice White, on March 30, 2011 to discuss her knowledge and opinion concerning the Glen Mitchell Road and walking and biking to school in general. Upon beginning our interview, Dr. White informed us of Maple Avenue Middle School's history with the controversy of walking and biking to school. The school, constructed in the early 1990's, has made national news due to their previous biking policies. In the past, the school restricted students biking to the school for safety purposes, and this restriction remained in place until community members disputed it. The school board established a committee to review the issue on a K-12 level where recommendations to revise the policy resulted in the policy shift. The current biking policy is restricted based on individual school planning teams that determine whether or not it is safe to bike there. Maple Avenue's planning team modified their policy to allow students to bike to school with proper permissions from a parent or guardian, due to their location on Route 9. All of the elementary schools, located in downtown Saratoga, have policies that allow biking to school.

When we asked Dr. White about the current state of biking to Maple Avenue Middle School, issues of safety, liability, and risks were brought up. She informed us that the high traffic content on Route 9 exists only twice a day, when parents are dropping and picking students up by car. This was discovered by the school board when they applied to the Department of Transportation (DOT) for a traffic study to be done at the Maple Avenue entrance, in hopes of getting a traffic light placed on Route 9 for safer pedestrian access. Because heavy traffic only exists at this location twice a day, the DOT determined that it was not an adequate project for the amount of funding that would be needed for a traffic light.

We then brought up the idea of the Glen Mitchell Road, suggesting that it is a safer route to Maple Avenue for students coming from Saratoga, due to its directness and absence of vehicles. Dr. White told us that not only does this option need funding as well, but that the main problem with the trail lies in legal responsibility. By promoting the trail, the school board takes on the risk of liability if something bad were to happen on the trail. She informed us of some similar cases, where a school district encouraged the use of an alternative route to school that resulted in the death of a student and an aggressive lawsuit against the school district. We posed the question of what type of things she anticipated could happen on the trail that would result in school action. She told us that if bullying were to occur on the trail, Maple Avenue could use their disciplinary abilities to resolve the problem. In a more extreme case of a stranger on the trail, the police department would interfere. As such, it seems that there would be no actual difference if the school promoted the trail, because these cases would not be warranting extensive school action. Ultimately, she expressed that the school board believed the traffic light to be the most realistic option that would allow for students to walk and bike to the school.

In 2009, when Newt Gingrich wrote his letter to the school board, they decided to lift the ban on biking, but you would only be allowed to do so with a signed permission slip. This permission slip had to be filled out by both parents and students, and is filled with rules and lines for signatures. The language of the form seems prohibitive, and you get the impression they are doing everything they can to dissuade students from biking to school. Second of all, even if a student and their parents decide to go through filling out

the forms and actually bike to school, there are no bike racks there to lock your bikes to. There used to be one, but they just recently took it out. Seeing as one of the rules on the permission slip is that your bike must be locked up once you get it to school, not providing a bike rack does not seem fair.

We moved on to the topic of student health, discussing the school board's stance on nutrition and physical activity. Dr. White told us that schools are required to abide by certain rules according to the Federal Wellness Policy and School Nutrition Act, which promote healthy lifestyles. She told us that Saratoga schools have chosen to focus most of their efforts on nutrition awareness and food distribution, but that they currently have some physical activity programs in place. The main effort she emphasized was an in-process plan where physical education teachers get trained in bike safety and teach it to their students in gym class. This program is only in the beginning stage of training one or two Saratoga physical education teachers, and has not gotten to the point of educating students yet. The health of students is certainly a priority of the school board because mental and physical well-being contributes to student learning, and ultimately the core mission of the school board is to educate students. Dr. White expressed this to us, but that in theory the first step of educating their students is to get them to school safely. This quote provides some insight into the opinions of walking and biking to school that exist today. It is clear that Dr. White and others feel that biking and walking to school is not as safe as being driven there, and this belief is hardwired into the decision making process. Until we come to understand that these two forms of transportation are actually much safer given the right connections and behavior, the school board policy will likely budge little if at all.

Conclusions

In the beginning of our studies, our project was focused on the Glen Mitchell Road. We had hoped that by the time we were writing this paper, the road would be improved and students would be using it en mass. This change seemed like an obvious one and one that could be achieved easily. However, over the course of the year we have come to understand that creating real change here in Saratoga is extremely difficult and is influenced by a variety of factors. Until we set out to create this change, we didn't understand what the obstacles truly were. We found that the problem is not student interest, a discovery we reached through the focus group we held at Spring Street Deli. Rather, we found that the city and school bureaucracies are not interested in taking the effort to work on the trail. The city feels that the project is too expensive, and their budget could never allow for something like improving the Glen Mitchell Road. This goes deeper than money however, because even if they could afford it they do not feel it is necessary or useful, and there are many other projects they would choose to undertake before looking at this one. This is confounded by the fact that they are misinterpreting the children's interest, as Kate Maynard told us she thought it would never enjoy heavy use even with improvements. We also found that the school bureaucracy was opposed to the idea. They simply do not want kids to bike to school, and the only reason they are allowed to now is because the issue received such national attention. Even the Saratoga Safe Routes to School group, the project's biggest advocate is ill equipped to affect real

change. They do not have the time or vision necessary to make lasting change. Controlling all of these different aspects is also the problem of path dependence. We have found that it is very hard to fix a bad problem once its happened already because the controlling forces do not want admit they had made a mistake and spend the time and money necessary to correct it. These are all problems that get in the way of the Glen Mitchell Road, but the real issue is much more fundamental—Maple Avenue Middle School is in the wrong place. It is located on traffic heavy Route 9, and is far from where students actually live. In the past, when the middle school was located on Lake Ave, it was easily accessible by foot or bicycle for nearly all of the kids who went there. Now, even with the trail opened, there are only about 200 kids who could use the trail within two and half miles. This number is the maximum potential, and the actual use numbers would be much lower. The decision to build Maple Ave where it is today was based on money, the land was cheap and easy to build on. This financially motivated decision has rendered the school all but inaccessible by any other form of transportation but car and bus. Nearly eight months after starting our project, the Glen Mitchell Road is in the same condition, and attitudes have changed little, if at all. Until social norms change, and our dependency on automobiles for transportation lessens, the trends we are seeing nationwide will continue, with detrimental health effects for our children. In the future, issues of access must be hardwired into the design of our public spaces—children should never be forced to be driven to school in a city like Saratoga Springs.

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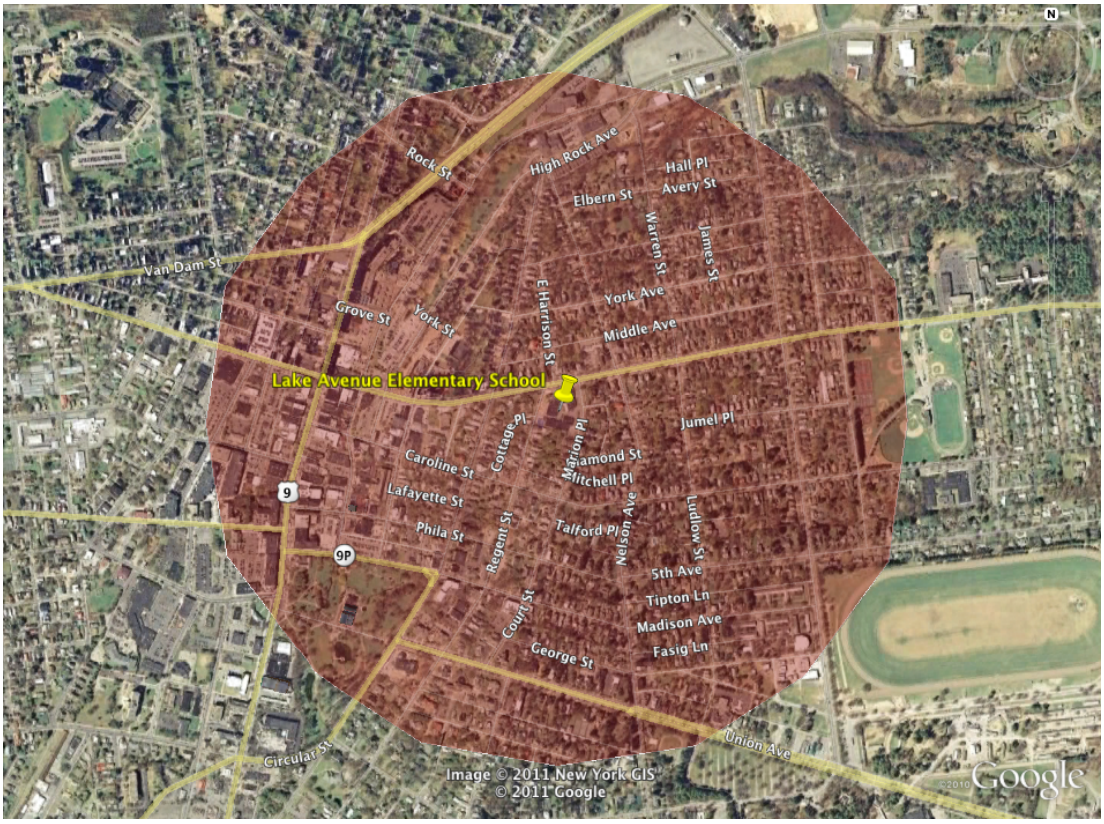
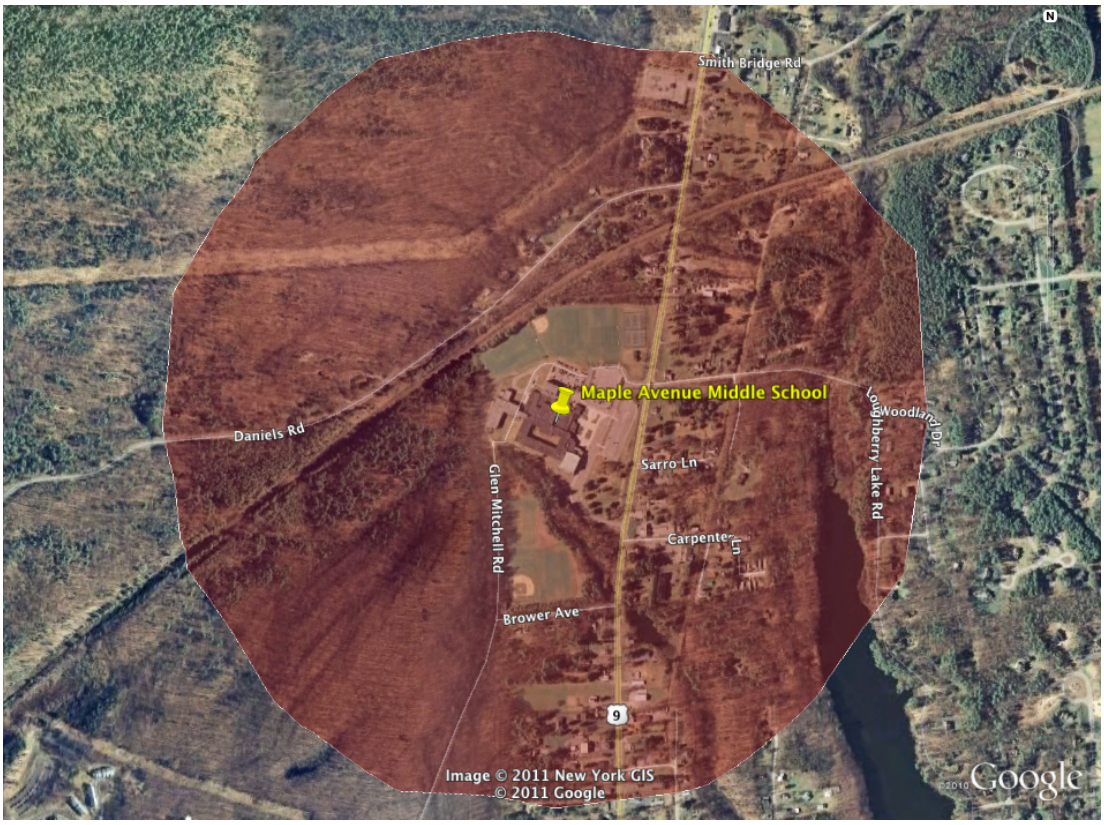
Appendix 1: Satellite image where yellow line indicates the Glen Mitchell Road

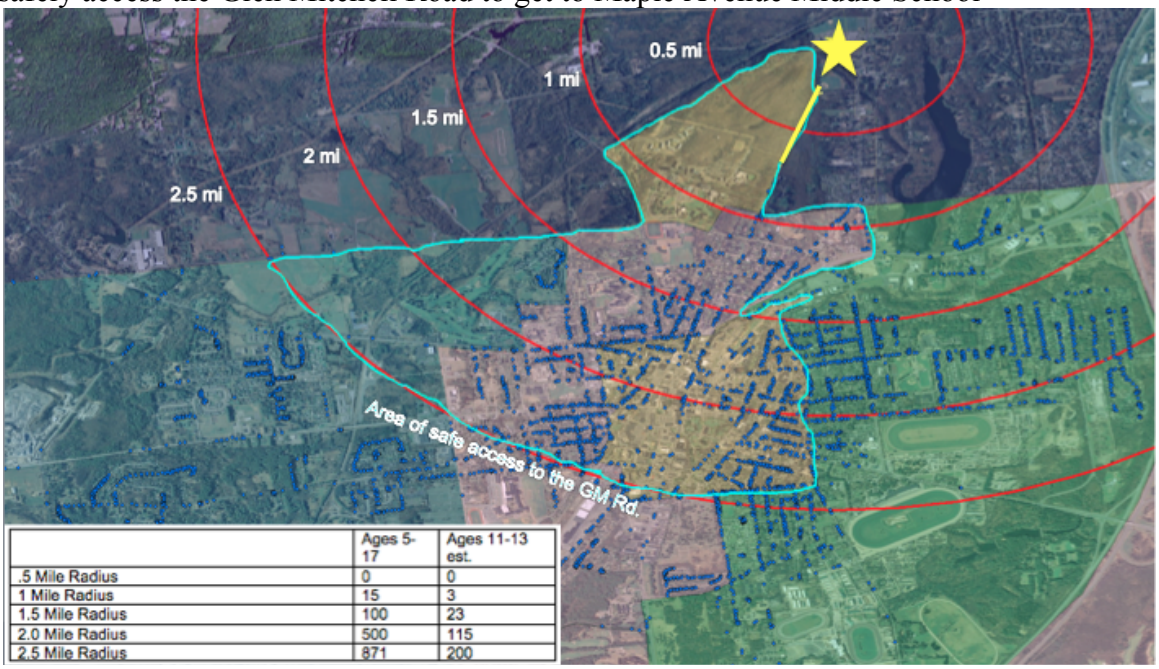
Appendix 2: Satellite image of Lake Avenue Elementary School with applied half-mile radius



Appendix 3: Satellite image of Maple Avenue Middle School with applied half-mile radius



Appendix 4: GIS map indicating number of students at different mile thresholds that can safely access the Glen Mitchell Road to get to Maple Avenue Middle School



	Ages 5-17	Ages 11-13 est.
.5 Mile Radius	0	0
1 Mile Radius	15	3
1.5 Mile Radius	100	23
2.0 Mile Radius	500	115
2.5 Mile Radius	871	200

Appendix 5: Number of cars observed at Maple Avenue Middle School, broken down by car type.

Wednesday March 9, 2011

Car Type:	Number of Cars:
Sedan	68
SUV	89
Minivan	28
TOTAL CARS:	185

Tuesday March 22, 2011

Car Type:	Number of Cars:
Sedan	59
SUV	92
Minivan	31
TOTAL CARS:	182

Thursday April 14, 2011

Car Type:	Number of Cars:
Sedan	64
SUV	83
Minivan	30
TOTAL CARS:	177

CUMULATIVE AVERAGES

Car Type:	Number of Cars:
Sedan	64
SUV	88
Minivan	30
TOTAL CARS:	181