Saint Paul Recreation Centers:

A Spatial Analysis of the Distribution and Accessibility of Student-Centered Programs and Services

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Macalester College

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The authors of this report were enrolled in *GIS: Concepts and Applications*, a course in the Macalester College Geography Department during the fall semester of 2008.

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Executive Summary

The report that follows is the result of work completed between September and November 2008 by the *GIS: Concepts and Applications* class at Macalester College in collaboration with Saint Paul Parks and Recreation (SPPR) and Saint Paul Public Schools (SPPS). Our task was to provide city demographic information and identify service gaps within Saint Paul Parks and Recreation programming by mapping public school students in relation to current and planned programming and other available resources.

This report is divided into four sections: Demographics and Reference Information, SPPR Summer Meal Programming, Student Access to SPPR Resources, and the SPPR Mobile Recreation Program. Our objectives were to generate informational maps regarding offered programming options in relation to student population demographics, accessibility, and relevant community resources.

Demographics

The characteristics of the Saint Paul Public School student body are mapped according to a number of different variables: non-white students, students receiving free and reduced lunch, first language, foreign born students, and median family income. Analyses of these data provide insight into the different relationships existing between student populations within Saint Paul. Specifically, programming offered by SPPR was linked with targeted student populations, identifying the areas of "highest need," while also highlighting other trends and pockets of valuable demographic information within the data. Specifically, the highest populations of non-English speakers were found near the University Avenue corridor, while areas around the Baker Recreation Center were made up of predominantly Spanish-speaking households.

Summer Meal Program

The Summer Meal Program is a USDA funded initiative designed to provide subsidized summer meals to qualified students. Analysis of student demographics in relation to the offered summer meal programming pinpoints trends within the student data. While the current programs do a good job of serving at risk populations of students, our analysis identifies several improvement opportunities that should be considered. Our analysis of underserved areas suggests high levels of disparity between students most likely to utilize the free lunch program and students with the highest level of food insecurity. We found that participation levels do not necessarily appear to affect the number of meals served at a given site. Additionally, certain recreation centers located within areas where high proportions of students qualified for free and reduced meals during the school year did not offer summer meals.

Access

For the purposes of this study, access was defined as the ability of a student to walk or bike to a Saint Paul recreation center, specifically traveling distances of one half mile or one mile. Using service areas, student populations with "access" to recreation centers were identified in addition to those populations of students without access (those who fell outside of the service areas). In some cases, recreation

centers with few proximate users were in areas with high levels of foreign language speakers, suggesting the possibility of language or other cultural barriers to program attendance in addition to simple access issues. It was also found that a significant child population exists in the Northwest and Southwest areas, providing the opportunity for program expansion and future program development.

Mobile Recreation

By providing additional summer recreational opportunities to students, the mobile recreation program is a valuable resource for serving neighborhoods that would not otherwise receive programming. Our analysis specifically targeted certain parks that offer mobile recreation activities in order to better understand who the targeted population should be. These case studies varied widely, but offer insight into ways the program can be improved. Additionally, the Circulator Bus route was analyzed in relation to student populations residing near each bus stop to determine how accessible the bus service is to students, along with analysis for which resources could be increasingly utilized using the route.

Conclusions and Recommendations

We offer several recommendations for the SPPR:
1) Improve services based on population characteristics.
   a) Tailor recreation center programs to identifiable neighborhood characteristics.
   b) Improve service areas through the use of mobile recreation
   c) Utilize the Circulator to a greater degree by designing around its availability.
   d) Increase alternative language or multilingual programming.
2) Increase overall participation through programming and offered services, particularly in relation to food insecurity.
   a) Increase the number of centers with meal programs or expand the existing offered meal programs.
   b) Increase public awareness regarding free meal offerings.
   c) Coordinate meal type and service at all possible venues.
   d) Diversification and expansion particularly of free meals, especially in low-income areas.

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Terms

Food Security: "A household-level economic and social condition of limited or uncertain access to adequate food." (Nord, Andrews, Carlson 2006)

Service Areas for Saint Paul Public School Students: 0.5 and 1 mile distances around recreation centers

Service Areas for Recreation Center Program Participants: 0.5, 1, 2, 3 mile distances around recreation centers

Other Languages: Saint Paul Public School Students who speak any language other than Spanish, English or Hmong as a first language.

Recreation Center Program Participants: Children who attended summer recreation center programs not including field trips or teen or adult programs, only programs that had enrollment of more than 5 students.

Recreation Center Programs: Programs offered in summer 2008 categorized by sports; arts and crafts; music dance and theater, with participants between the ages of 6-19.

Poverty: "The data on poverty status is defined at the family level and not the household level, the poverty status of the household is determined by the poverty status of the householder. Households are classified as poor when the total 1999 income of the householder's family is below the appropriate poverty threshold." (US Census Selected Appendixes, 2000)

Block Groups: Geographic unit, the smallest of published sampled data (between the census tract and census block) based on the US Census Bureau and identified by numbers. (US Census Appendix A, 2000)

Census Tracts: Geographic region defined for Census data collection, subdivided by block groups and census blocks. Usually corresponds with boundaries of cities, towns or other administrative areas. (US Appendix A, 2000)

Geographic Information System: "A geographic information system (GIS) integrates hardware, software and data for capturing, managing, analyzing and displaying all forms of geographically referenced information." (ESRI, 2008)

Introduction and Objectives

In 2007, Macalester College Geography Department GIS partnered with Saint Paul Parks and Recreation (SPPR), Saint Paul Public Schools (SPPS), and the City of Saint Paul Mayor's office. This project continues our relationship with these partners to address a different set of issues. In order to build on our past success we focus on programs which were offered by SPPR, specifically food programs for K-12 and mobile recreation programs. From this base, questions and final analyses emerged from available data and desires from SPPR.

The *GIS: Concepts and Applications* class at Macalester College utilized a Geographic Information System (GIS) to assess access to recreation centers and summer food programs. A GIS is a database of information connected to features in a map (Longley et. al). Using GIS, multiple characteristics and specific pieces of information can be visually portrayed to gather information and suggest policy decisions. *GIS: Concepts and Applications* students at Macalester College, under the direction of Assistant Professor Holly Barcus have been working on this project since September 2008.

Data for this project come from several sources including Saint Paul Public School enrollments, Saint Paul Parks and Recreation Department Master Reserve System, US Bureau of Census and GeoLytics. SPPS data include all students enrolled in SPPS schools in October 2008 who resided within Saint Paul city limits. Data from the Saint Paul Parks and Recreation Department Master Reserve System were provided by Parks and Recreation partners. Finally, several variables come from the 2000 US Census. Since these data are now eight years old, where possible, data were supplemented by 2006 population estimates purchased from GeoLytics.

This project was divided into four sections, with one group of students working on each section. These groups included:

1) Demographics Group:
   Demographic information about students

2) Food Group
   Information about free and reduced meal programs and food insecurity

3) Access Group:
   Information about access of students to recreation centers and after-school programs

4) Mobile Recreation Group
   Information about mobile recreation programs for students

In this report we will first outline the procedure we followed in mapping and analyzing the questions of interest to our partners. After meeting with our partners from Parks and Recreation several research questions were formulated to carry us through our research. These include:

1) Demographics Group:
   What are the demographic characteristics of Saint Paul and the students attending Saint Paul public schools?

2) Food Group:
   Which areas are over or under served in terms of meal programs?

   Which meals are offered at each location?

   What is the relationship between food-insecurity and free meal programs?

   How do free meal programs compare with other programs at each center?

3) Access Group:
   How accessible are recreation centers based on physical distance?

   What are the types, ages, and cost of available programs?

4) Mobile Recreation Group:
   Where are the students participating in mobile recreation coming from?

   Are programs reaching targeted groups?

   Where are roaming recreation programs by neighborhood in relation to demographic characteristics of each neighborhood?

Using these research questions, data, and suggestions from our partners, our analysis provides a series of maps portraying characteristics of public school students in Saint Paul and recreation centers. In addition we propose a series of policy recommendations to improve and enhance the Parks and Recreation Programs in the City of Saint Paul.

Demographics

Introduction

Understanding the demographics of the students in Saint Paul Public Schools was integral to our research process. As of October 2008 there were 37,094 students enrolled in Saint Paul Public Schools in grades K-12, who are included in this analyses (See Technical Appendix for details). In order to spatially display characteristics of the Saint Paul student body we mapped several variables: non-white students, students receiving free and reduced lunch, first language, foreign born students, and median family income. The main objective of creating these maps was to link areas of targeted students with the appropriate after school and meal program. Also we used these data to determine where the areas with the students of the "highest need" were located. From this we were able to discern pockets and spatial clusters of certain demographic characteristics.

To begin this process, each of the student addresses was mapped using a GIS. From this we were able to pinpoint each address and the corresponding characteristics of each student. Data from the Saint Paul Public Schools as well as GeoLytics data were aggregated by US Bureau of Census block group or census tract. Mapped areas depended on available information and privacy protection for students while still being able to discern meaningful spatial patterns.

Map Analysis and Evaluation

Median Household Income in Saint Paul – Map 1

For Saint Paul as a whole, the estimated median household income by block group for 2006 ranged from $10,280 to $108,634. The median income for St Paul as a whole, according to the US Census Bureau, was $38,774 in 2000. Higher incomes are most concentrated in the southwest section of the city, with smaller concentrations appearing along the northwest border of the city. There is a large area in the center of the city and the area south of the Mississippi River with heavy concentrations of low income.

Non-White Students in Saint Paul – Map 2

In Saint Paul, the distribution of students of color, by block group, range from 0 – 100%. The neighborhoods known as Como, Saint Anthony, Summit Hill and Macalester Groveland are areas on the map with few non-white students (mostly 1 – 40%). Northern and Eastern Saint Paul show an opposite dominance, lying in the mostly 81 – 100% range of non-white students. Overall there is spatial variability in areas of white and students of color in Saint Paul which is important to keep in mind when developing program and staffing initiatives.

Foreign Born Population in Saint Paul – Map 3

Using data from the 2000 census at the block group level, the foreign born population ranges from 1.2 – 47.5% in St Paul. In general there are larger foreign born populations in northern St Paul. The areas with the highest percent of foreign born population are located in the West Side, Highland Park and Summit-University neighborhoods. On the other hand, in western St Paul the neighborhoods of Macalester Groveland, Merriam Park and Summit Hill neighborhoods have the lowest percentage of foreign born populations ranging between 1.2 – 6.4%. As a result this map highlights different areas of diversity within Saint Paul, which is important to recognize when planning programs and staffing.

Household Languages in Saint Paul – Maps (4-8)

These maps, all entitled "Household Language by Census Tract", are based on sample data from the 2000 US Census. By the Census definition,

> "In households where one or more people (5 years old and over) speak a language other than English, the household language assigned to all household members is the non-English language spoken by the first person with a non-English language in the following order: householder, spouse, parent, sibling, child, grandchild, in-laws, other relatives, stepchild, unmarried partner, housemate or roommate, and other nonrelatives. Thus, a person who speaks only English may have a non-English household language assigned to him/her in tabulations of individuals by household language." (US Census 2002, B-31)

Thus, although some household members may speak English, the household language is assigned based on the non-English language spoken by at least one member of the household. For more information on the language classification techniques employed by the US Census, please see the web link in the bibliography. The following maps depict each of the major language groups as defined by the Census, and may be useful for targeting recreation center programs to particular minority areas.

Although pockets of higher concentrations exist in census tracts across the city, some of the highest concentrations of non-English speaking households are located in areas in the general vicinity of Dunning, Jimmy Lee, Scheffer, and Mount Airy recreation centers, near the University Avenue corridor. The areas surrounding El Rio Vista and Baker Recreation Centers are notable for their high density of Spanish-speaking households. Given the diversity of languages spoken in the city, it is important for nearly all recreation centers to consider language in their program planning. Household language is an important consideration—even if children are multilingual, it is quite possible that their household is not.
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English – Map 4

The highest concentration of English-speaking households (88.4-94.5% per census tract) is present in the city's southwestern quarter, including the Macalester-Groveland and Summit Hill neighborhoods, as well as parts of the Summit University and Highland neighborhoods. In every populated census tract in the city, a minimum of 41.9% of households speak English. Note: For a

reference map of Saint Paul neighborhoods, please see the bibliography (Saint Paul Neighborhood Reference Map).

Spanish – Map 5

Up to 38.6% of households in some census tracts speak Spanish. The highest proportions are concentrated in the West Side, surrounding the El Rio Vista and Baker Recreation Centers. Lowest concentrations include the city's southwestern corner, where a large proportion of households speak English.

Asian and Pacific Island Languages – Map 6

Up to 42.5% of households in some census tracts speak Asian and Pacific Island Languages (US Census 2000). Highest concentrations in this category include the immediate environs of the Scheffer, Mount Airy, Sylvan, and McDonough Recreation Centers. Lowest concentrations are present in areas including the city's southwestern quarter, where percentages range from .4% to 4.9%.

Other Indo-European Languages – Map 7

Other Indo-European languages, which include languages other than English and Spanish that are of Indo-European origin, are spoken by up to 17.8 percent of households in some census tracts. These include, but are not limited to, French, Italian, Portuguese, German, Scandinavian Languages, Armenian, Hindi, and Urdu. Concentrations are scattered across the city without much discernable pattern, but some of the highest concentrations include parts of the city's southwestern corner.

Other Languages – Map 8

"Other languages" includes languages not included in the other categories, such as African Languages, Arabic, Native North American Languages, and others. Up to 26% of households in some census tracts fall into this category, with the highest concentrations present near the Dunning, Jimmy Lee, and Martin Luther King Recreation Centers. Many areas of the city contain low concentrations of households in this category, including much of Saint Paul's southwest and northeast quarters.

Total Households in Saint Paul, by Block Group – Map 9

This map displays the total projected housing units in Saint Paul for 2006, by census block group. The central business district, the East side and North side have large numbers of households, even though the sizes of block groups are variable. Overall, there is a fairly even residential distribution in Saint Paul.

Percent of Non-owner Occupied Households – Map 10

This map displays the number of non-owner occupied households divided by the total number of households by census block group. The central business district and the neighborhoods directly adjacent have a large concentration of non-owner occupied households. The same is true for Frogtown and the

industrial areas north of University Avenue. The Southwest portion of Saint Paul also has a large number of non-owner occupied housing.

Percent Vacant Households – Map 11

This map displays the number of vacant households divided by the total number of households in a census block group. There are not many areas with high vacancy rates, but they often are telling of areas that have experienced extreme urban blight. Areas of between Frogtown and the Capital are high in vacancies, as are block groups just east of the central business district.

Conclusion

This group of demographic maps serves as reference maps and supporting information for the other sections of the report. The variables mapped use data from Saint Paul Public Schools and Census (GeoLytics) aggregated to the block group or census tract level. Variables mapped in this section of the report are: median household income, non-white students, housing characteristics, language, and foreign born residents. These distributions can show general needs for the entire city or particular areas that have high concentrations of a certain characteristic.

Estimated Median Household Income, 2006
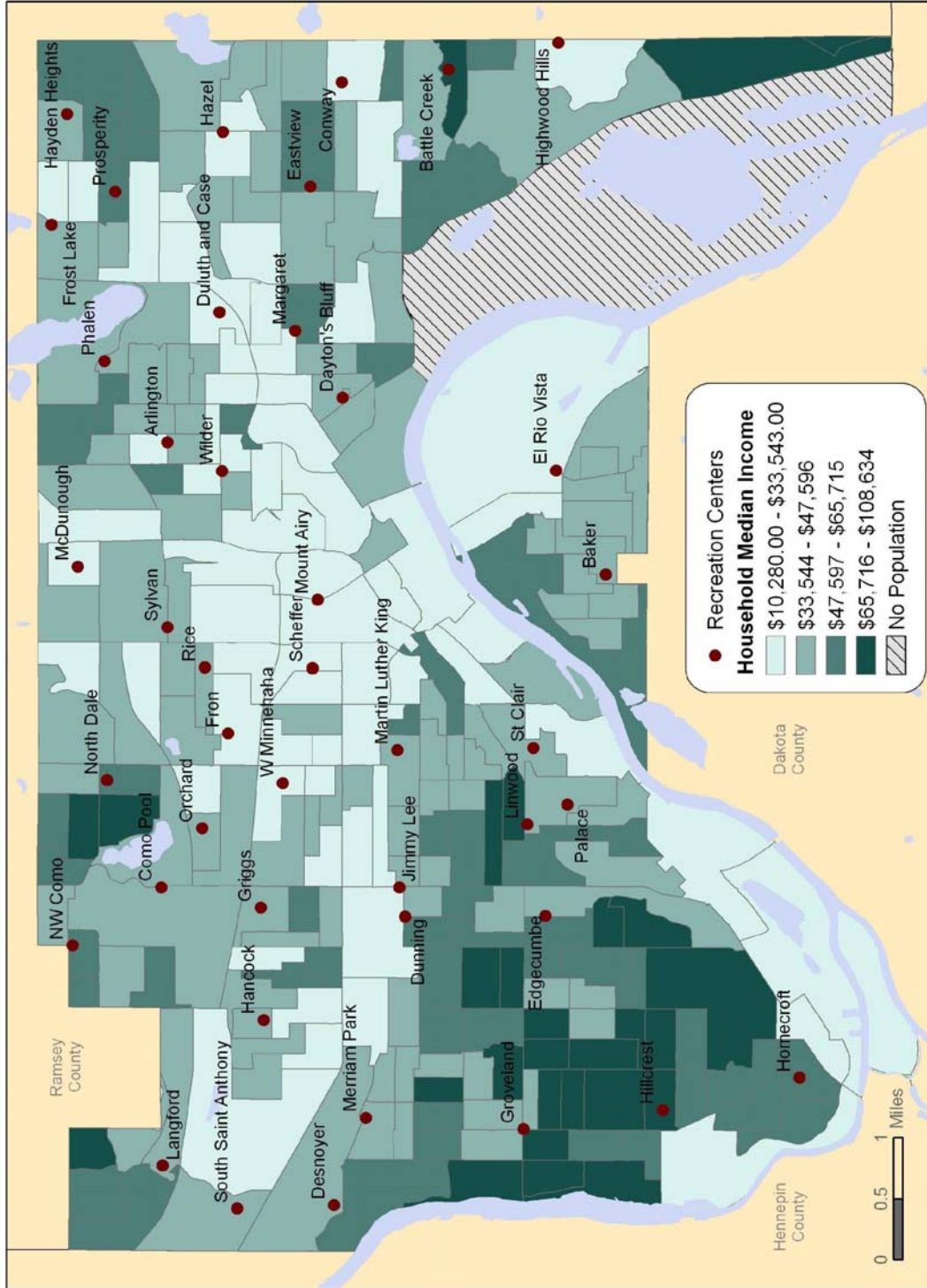
Map 1

Cartographer:Louise Sharrow; Data Sources: Geolytics, Met COuncil, ESRI; November 2008

Recreation Centers

Household Median Income
- $10,280.00 - $33,543.00
- $33,544 - $47,596
- $47,597 - $65,715
- $65,716 - $108,634
- No Population

Labels on map: Hayden Heights, Prosperity, Hazel, Eastview, Conway, Battle Creek, Highwood Hills, Frost Lake, Phalen, Duluth and Case, Margaret, Dayton's Bluff, Arlington, Wilder, McDunough, Sylvan, Mount Airy, Scheffer, El Rio Vista, Rice, Fron, Martin Luther King, Baker, North Dale, W Minnehaha, Orchard, Jimmy Lee, St Clair, Como Pool, Griggs, Linwood, Palace, NW Como, Hancock, Dunning, Edgecumbe, Merriam Park, Groveland, Hillcrest, Homecroft, Langford, South Saint Anthony, Desnoyer

Ramsey County, Hennepin County, Dakota County

Miles: 0, 0.5, 1

Non-White Students in Saint Paul Public Schools

Percent Non-White Students in Saint Paul Public Schools

- 1 - 40
- 41 - 60
- 61 - 80
- 81 - 100
- no data
- • Recreation Center

Hayden Heights
Conway
Battle Creek
Highwood Hills
Hazel
Eastview
Frost Lake
Prosperity
Duluth and Case
Margaret
Dayton's Bluff
Phalen
Arlington
Wilder
El Rio Vista
McDonough
Mount Airy
Baker
Sylvan
Rice
Martin Luther King
Front
Scheffer
St. Clair
North Dale
West Minnehaha
Linwood
Palace
Orchard
Jimmy Lee
Como Pool
Griggs
Edgcumbe
N. W. Como
Dunning
Hancock
Merriam Park
Homecroft
Groveland
Hillcrest
Langford
South Saint Anthony
Desnoyer

Ramsey County
Dakota County
Hennepin County

0   0.5   1   Miles

Cartographer: Emily Dunn;   Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census Block Groups 2000;   December 2008

Map 2

Foreign Born Population in Saint Paul, 2000

Foreign Born Population (%)

- 1.2 - 6.4
- 6.5 - 12.4
- 12.5 - 21.9
- 22.0 - 30.9
- 31.0 - 47.5
- No Data

Ramsey County

Hennepin County

Dakota County

0   0.5   1 Mile
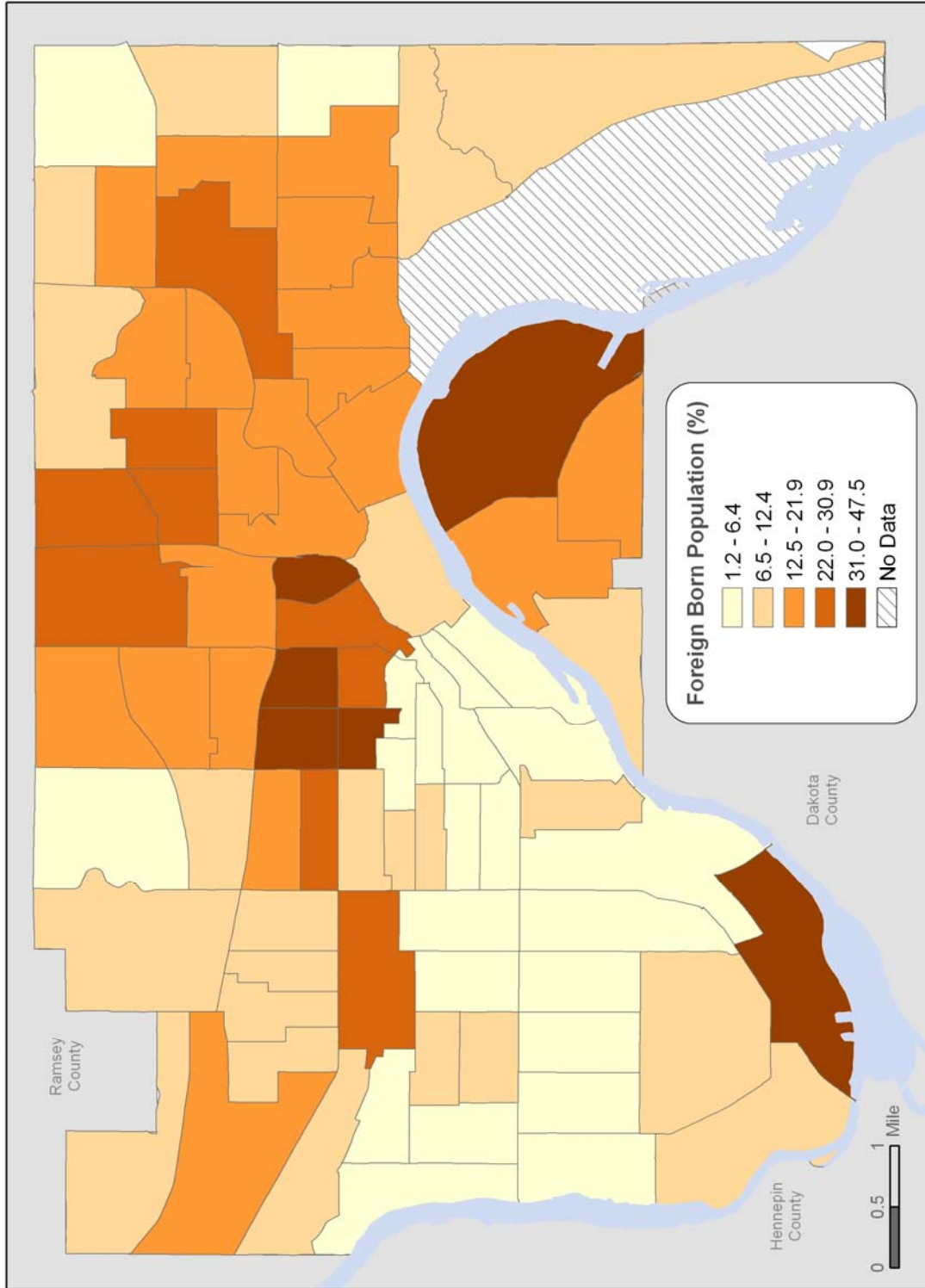
Map 3

Cartographer: Anna Popinchalk; Data Sources: ESRI, U.S. Census Bureau, U.S. Census Tracts; December 2008

Household Language by Census Tract

Percentage Speaking English

- Recreation Center
- No Data
- 41.9% - 67.1%
- 67.2% - 80.9%
- 81% - 88.3%
- 88.4% - 94.5%

Hayden Heights
Conway
Prosperity
Hazel
Eastview
Battle Creek
Frost Lake
Highwood Hills
Duluth and Case
Margaret
Phalen
Dayton's Bluff
Arlington
Wilder
McDonough
El Rio Vista
Mount Airy
Sylvan
Scheffer
Rice
Martin Luther King
Baker
Front
West Minnehaha
North Dale
St. Clair
Palace
Como Pool
Orchard
Jimmy Lee
N. W. Como
Griggs
Linwood
Dunning
Edgcumbe
Hancock
Merriam Park
Groveland
Homecroft
South Saint Anthony
Desnoyer
Hillcrest
Langford

Ramsey County
Hennepin County
Dakota County

Miles
0 0.5 1

Cartographer: Dillon Teske; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census 2000; December 2008

Map 4

Household Language by Census Tract

Percentage Speaking Spanish

- • Recreation Center
- No Data
- 0.9% - 4.9%
- 5% - 9.6%
- 9.7% - 17%
- 17.1% - 38.6%

Hayden Heights
Prosperity
Frost Lake
Phalen
Hazel
Conway
Eastview
Duluth and Case
Margaret
Dayton's Bluff
Battle Creek
Highwood Hills
El Rio Vista
Baker
Arlington
Wilder
McDonough
Mount Airy
Scheffer
Martin Luther King
Sylvan
Rice
Front
West Minnehaha
North Dale
Orchard
Griggs
Jimmy Lee
St. Clair
Palace
Linwood
N. W. Como
Como Pool
Hancock
Dunning
Edgcumbe
Merriam Park
Groveland
Hillcrest
Homecroft
South Saint Anthony
Desnoyer
Langford

Ramsey County
Hennepin County
Dakota County

0   0.5   1
Miles

Cartographer: Dillon Teske; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census 2000; December 2008

Map 5

Household Language by Census Tract

Percentage Speaking Asian and Pacific Island Languages

- • Recreation Center
- No Data
- 0.4% - 4.9%
- 5% - 11.5%
- 11.6% - 22.6%
- 22.7% - 42.5%

Hayden Heights
Prosperity
Frost Lake
Hazel
Conway
Phalen
Duluth and Case
Eastview
Battle Creek
Highwood Hills
Arlington
Margaret
Wilder
Dayton's Bluff
McDonough
Mount Airy
El Rio Vista
Sylvan
Scheffer
Rice
West Minnehaha
Martin Luther King
Baker
North Dale
Front
Orchard
St. Clair
Como Pool
Griggs
Jimmy Lee
Palace
N. W. Como
Hancock
Linwood
Dunning
Edgcumbe
Merriam Park
Homecroft
South Saint Anthony
Desnoyer
Groveland
Hillcrest
Langford

Ramsey County
Hennepin County
Dakota County

0   0.5   1
Miles

Map 6

Cartographer: Dillon Teske; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census 2000; December 2008

Household Language by Census Tract

Percentage Speaking Other Indo-European Languages

- Recreation Center
- No Data
- 0.6% - 2%
- 2.1% - 3.7%
- 3.8% - 6.2%
- 6.3% - 17.8%

Note: "Other Indo-European Languages" includes languages other than English and Spanish that are of Indo-European origin and not included in the "Other" category.

Map 7

Cartographer: Dillon Teske; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census 2000; December 2008

Hayden Heights
Prosperity
Frost Lake
Hazel
Conway
Eastview
Battle Creek
Highwood Hills
Duluth and Case
Margaret
Dayton's Bluff
Phalen
Arlington
Wilder
El Rio Vista
McDonough
Mount Airy
Sylvan
Scheffer
Baker
Rice
West Minnehaha
Martin Luther King
Front
North Dale
St. Clair
Orchard
Palace
Como Pool
Jimmy Lee
Linwood
N. W. Como
Griggs
Hancock
Dunning
Edgcumbe
Merriam Park
South Saint Anthony
Desnoyer
Groveland
Hillcrest
Homecroft
Langford

Ramsey County
Dakota County
Hennepin County

Miles
0   0.5   1

Household Language by Census Tract

Percentage Speaking Other Languages

- Recreation Center
- No Data
- 0.2% - 1.6%
- 1.7% - 4.6%
- 4.7% - 9.3%
- 9.4% - 26%

Hayden Heights

Prosperity

Hazel

Conway

Battle Creek

Highwood Hills

Frost Lake

Duluth and Case

Eastview

Margaret

Phalen

Dayton's Bluff

Arlington

Wilder

El Rio Vista

McDonough

Mount Airy

Baker

Sylvan

Scheffer

Rice

West Minnehaha

Martin Luther King

North Dale

Front

St. Clair

Orchard

Palace

Como Pool

Jimmy Lee

N. W. Como

Griggs

Linwood

Hancock

Dunning

Edgcumbe

South Saint Anthony

Merriam Park

Groveland

Hillcrest

Homecroft

Desnoyer

Langford

Ramsey County

Hennepin County

Dakota County

0   0.5   1

Miles

Cartographer: Dillon Teske; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census 2000; December 2008

Map 8

Total Housing Units, 2006 by Block Group

Total Households

- 0 - 370
- 371 - 550
- 551 - 900
- 901 - 1,614

No Data

Ramsey County

Hennepin County

Dakota County

0   0.5   1
Miles

Cartographer: Eli Popuch; Data Sources: Geolytics, ESRI; November 2008.

Map 9

Percent Vacant Houses, 2006 by Block Group
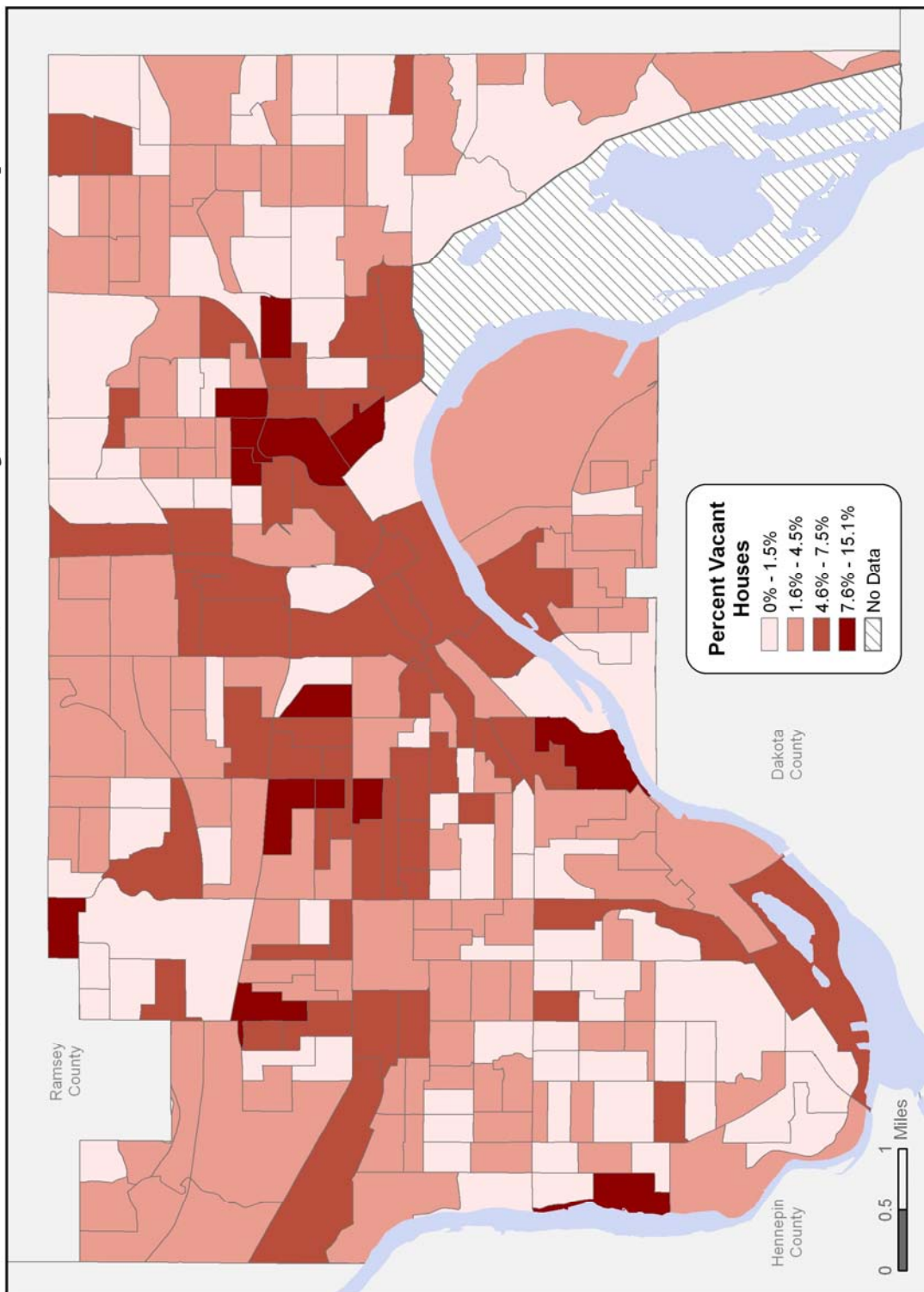
Map 10

Percent Vacant Houses
- 0% - 1.5%
- 1.6% - 4.5%
- 4.6% - 7.5%
- 7.6% - 15.1%
- No Data

Ramsey County

Hennepin County

Dakota County

0   0.5   1
Miles

Cartographer: Eli Popuch Data Sources: Geolytics, ESRI; October 2008

Percent of Non-Owner Occupied Housing Units, 2006 by Block Group
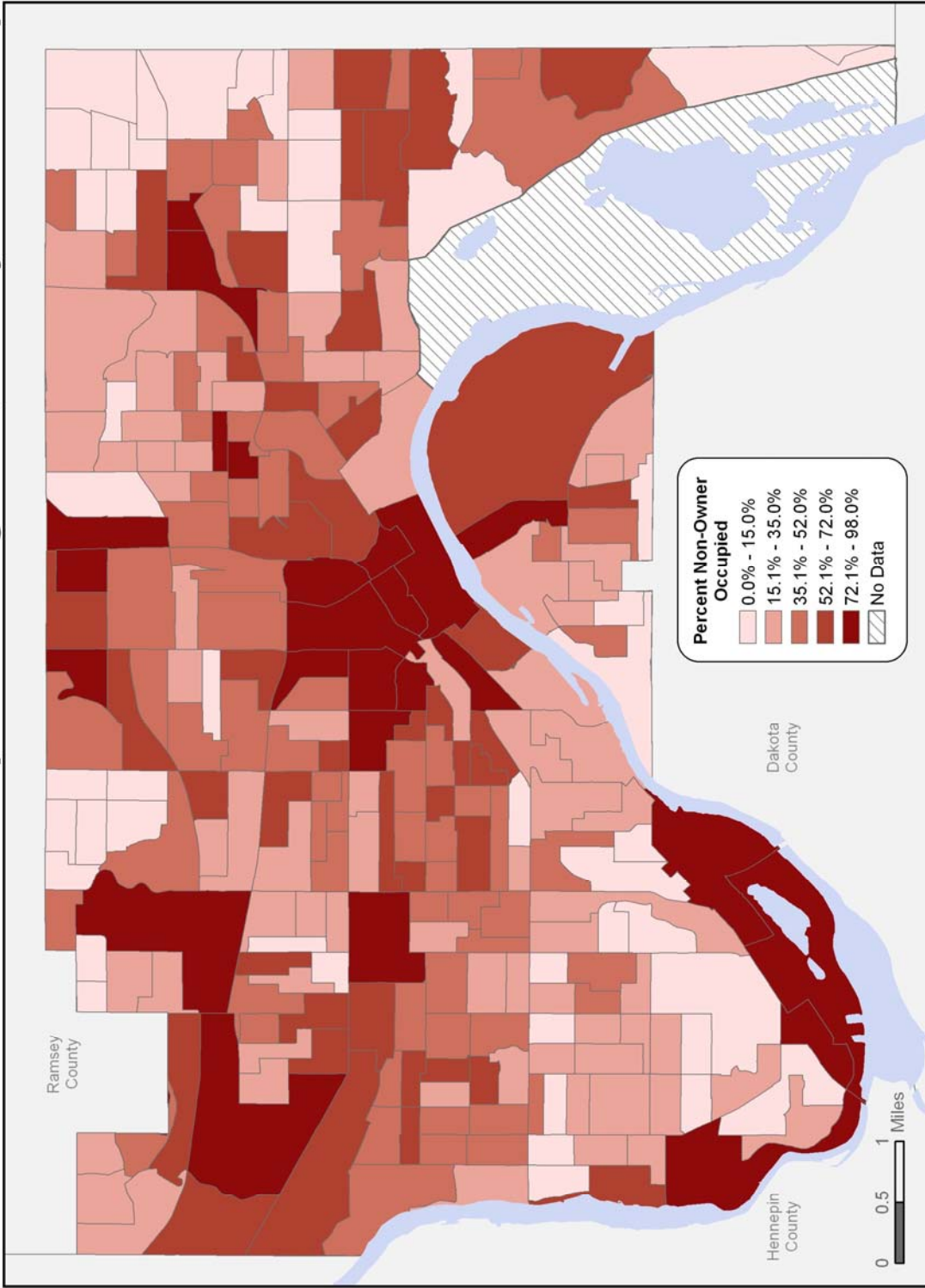
Map 11

Percent Non-Owner Occupied
- 0.0% - 15.0%
- 15.1% - 35.0%
- 35.1% - 52.0%
- 52.1% - 72.0%
- 72.1% - 98.0%
- No Data

Ramsey County

Hennepin County

Dakota County

0 0.5 1 Miles

Cartographer: Eli Popuch; Data Sources: Geolytics, ESRI; October 2008.

Summer Meal Program

Introduction:

A central goal of this project is to analyze the efficacy of Summer Meal programs held at Saint Paul recreation centers. The Summer Meal Program is a USDA funded initiative to ensure that public school students who are eligible for free lunch during the school year can receive subsidized meals during the summer months (USDA, 2008). Because more than 70% of Saint Paul Public School students are eligible to receive free lunch, it is exceptionally important to maintain a summer meal program that meets the needs of students. Conceptualizing the spatial distribution of summer meal programs and the population that the programs are intended to serve is a large endeavor, but it is one that can be effectively accomplished using GIS mapping and analyses.

There are four central questions that informed our research objectives. First, which areas of Saint Paul are underserved in terms of meal programs relative to the demographic characteristics of the area? Second, which centers serve which types of meal (breakfast, lunch, or dinner)? Third, what is the relationship between the Summer Meal Program and other activities offered by recreation centers? Finally, what is the relationship between neighborhoods with a high potential for food insecurity and recreation center meal distribution?

Our most pertinent data sources reflect our interest in understanding the spatial relationship between recreation centers, meal programs, student populations and area demographic characteristics. Using an encrypted database of the home locations of Saint Paul Public School students, we were able to create an address file of the home locations of students eligible for free and reduced lunch. We created an address file of all recreation centers, integrating information on the number and types of meals served by each recreation center. We then used data from the Reserve Master System, maintained by SPPR, to measure enrollment in recreation center activities during the summer of 2008. Finally, we incorporated census demographic information – percent households in poverty, percent female headed households, and percent non-white population – into our analysis.

The methodology for the project closely resembled our initial research questions. The first aspect of the project assessed the relationship between recreation center usage (as measured by program enrollment) and the number of meals served at recreation centers. Next, we chose to analyze the characteristics of food insecurity and compare the areas of Saint Paul that have a high potential for food insecurity with recreation center meal service. Food insecurity is defined by the USDA as being "a household-level economic and social condition of limited or uncertain access to adequate food" (CITATION). The aforementioned census demographic data were incorporated into the analysis of food insecurity. Another measure of food insecurity was to examine the spatial distribution of students who are eligible for free and reduced lunch and to compare that with recreation center meal service. Finally, we assessed the types meals served (breakfast, lunch, or dinner) found at each recreation center.

Review of Literature:

Food security is defined by the USDA as being "a household-level economic and social condition of limited or uncertain access to adequate food" (Nord, Andrews, Carlson 2006). The US Census Bureau annually collects food insecurity data through a yearly survey of 45,000 households. Food security is closely related to hunger. While food security takes a household approach to looking at access to food, hunger measures "an individual-level physiological condition that may result from [prolonged] food insecurity" (Nord, Andrews, Carlson 2006).

According to the USDA, the amount of spending per person per week is a consistently reliable indicator of the likelihood that a household will be food insecure. For instance, in 2006, the median food secure household spent 31% more per person per week than the median food insecure household with an equivalent family size. Households found to be at the greatest risk of being food insecurity include households below the poverty level, households headed by single women, and minority households. Compared to the national average of 10.9%, 36.3% of households below the poverty level, 30.4% of households headed by single women, 21.8% of black households, and 19.5% of Hispanic households were found to be food insecure (Nord, Andrews, Carlson 2006).

Numerous research papers have reported that low income and minority households are less likely to be located near adequate grocery stores and consequently are more likely to suffer from food insecurity (Bartfeld and Wang 2006) (Chang & Myers 2005) (Frazier et al. 2003). For instance, Bartfeld and Wang (2006) found that for every mile from a grocery store a person is, they will be 2% more likely to suffer from food insecurity (Chang and Myers). In addition, Chang and Myers (2005) found that large grocery stores were less likely to be located in low income neighborhoods, so low income households had to pay more for food, while Frazier et al. (2003) found that African Americans lived disproportionably far from large grocery stores as compared to other groups.

Map Descriptions & Analyses

Saint Paul Summer Meal Program – Map 12

This map shows which centers serve meals, how many they served over the summer, and which meal(s) they served. Lunch and snack appear to be the most-served of the four meals with only four centers serving breakfast (North Dale, Hancock, Dayton's Bluff, and Margaret) and only two serving dinner (Arlington and El Rio Vista). Dinner at these two centers makes up the majority of their meals served. Also the majority of the served meals are concentrated in the core of the city. By rule no more than two meals may be served by any recreation center and all Recreation Centers appeared to serve meals at the same time period throughout the summer.

Saint Paul Summer Meal Program

Map 12

Cartographer: Carson Gorecki; Saint Paul Public Schools, ESRI, US Census Block Groups, Saint Paul Parks and Recreation; November 2008

Count and Meals Served by Recreation Center – Map 13

This map compares the number of meals served by recreation center and the number of participants each center had based on roster information from summer 2008. The map shows little correlation between the number of roster participants at a center and the number of meals that the center served. This leads the group to believe that the number of programs that a recreation center has a minimal effect on the number of children who will take part in the free lunch program available at the center.

Attendance by Block Group and Meals Served – Map 14

This map compares the number of meals served by recreation center and the number of participants by census block group based on where the participants listed their home address on the roster. The map shows little correlation between the number of meals served at a recreation center and the number of participants in block groups near the center. This leads the group to believe that participating in a Saint Paul Parks and Recreation program does not necessarily lead to higher participation in meal plans.

Students Eligible for Free and Reduced Lunch and Rec Center Enrollment – Map 15

This map shows a patterned and measured background of the percent of SPPS students who are eligible for free and reduced lunch by block group while graduated symbols represent program enrollment by Rec. Centers for summer 2008. Because so many SPPS students are eligible for free lunch, there are many areas in the highest measured category. The areas between University/Snelling and the Capital have high numbers of students eligible for free lunch. The same is true for the East side and for West Saint Paul recreation centers in areas with large numbers of free lunch eligible students often had lower attendance numbers.

Attendance by Block Group and Households Below the Poverty Level – Map 16

This map compares the percentage of households below the poverty level and the number of participants each center had based on roster information from summer 2008. In general, roster counts seemed to be higher in areas of higher income, than in lower income areas. For instance, recreation centers close to areas of high poverty such as Dunning, Jimmy Lee, Wilder, Mount Airy Boys and Girls Club, Highwood Hills, and McDonough, demonstrated a low amount of recreation center attendance. Roster data are available only for programs that require registration. In some neighborhoods, recreation center attendees have much higher drop in rates than registration rates. Therefore it is unclear to what extent this roster data adequately represents recreation center attendance across Saint Paul.

Percent of Students Eligible for Free Lunch and Recreation Center Participants – Map 17

This map displays the percentage of students eligible for free and reduced lunch by block group. It also shows the number of recreation center attendees coming from each block group. The negative correlation between the two variables is quite apparent. Most block groups with larger amounts of recreation center attendees have lower percentages of students eligible for free and reduced lunch. Obviously, looking at recreation center program enrollment as a proxy for total usage has limitations. Many people who use the recreation centers do not sign up for programs. However, the spatial difference between participants and free lunch eligible students should not be ignored.

Roster Count and Meals Served by Rec. Center*

Hayden Heights

Hazel

Frost Lake

Prosperity

Eastview

Conway

Duluth and Case

Margaret

Battle Creek

Dayton's Bluff

Highwood Hills

Phalen

Arlington

Wilder

Mount Airy
Boys and Girls Club

El Rio Vista

McDonough

Sylvan

Rice

Front

Martin Luther King

Baker

North Dale

Scheffer

St. Clair

Orchard

N. W. Como

West
Minnehaha

Jimmy Lee

Linwood

Palace

Como Pool

Griggs

Dunning

Edgcumbe

Hancock

Merriam Park

Groveland

Hillcrest

Homecroft

Langford

Desnoyer

South St. Anthony

Ramsey County

Hennepin County

Dakota County

Meals Served

- 0
- 1 - 776
- 777 - 1,446
- 1,447 - 3,347
- 3,348 - 5,946

Roster Count

- 0 - 32
- 33 - 104
- 105 - 225
- 226 - 310
- 311 - 542

Miles

0   0.5   1

*Meal Count represents summer 2008 meals. Attendance is from rosters of programs in summer 2008.

Map 13

Attendance by Block Group and Meals Served*
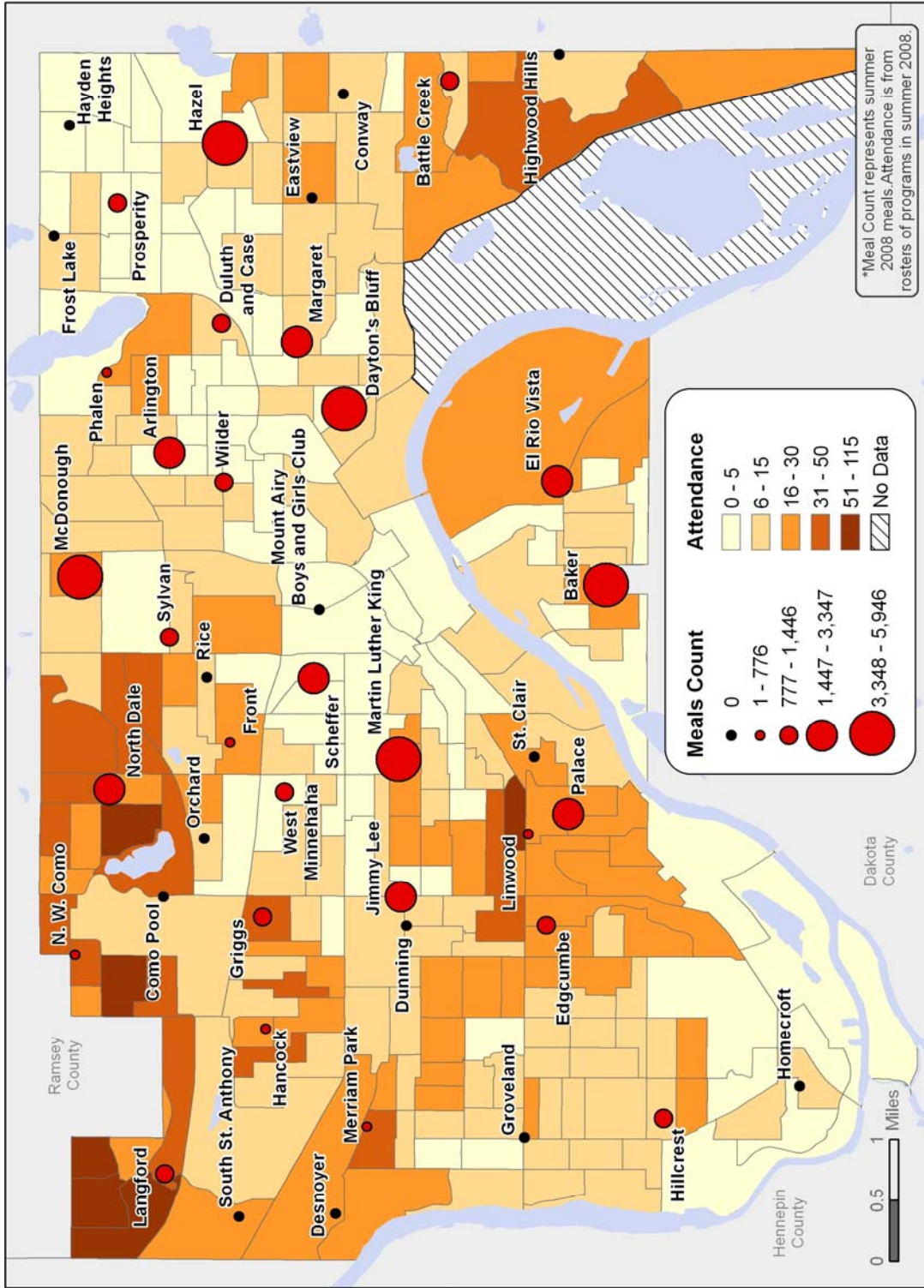
*Meal Count represents summer 2008 meals. Attendance is from rosters of programs in summer 2008.

Map 14

Attendance
- 0 - 5
- 6 - 15
- 16 - 30
- 31 - 50
- 51 - 115
- No Data

Meals Count
- 0
- 1 - 776
- 777 - 1,446
- 1,447 - 3,347
- 3,348 - 5,946

Cartographer: Michael Samuelson; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation: November

Students Eligible for Free Lunch and Rec. Center Participants*

*For 2008. Students receiving free lunch and Rec Center participant home locations are aggregated to Census Block Groups.

Map 15

Students Receiving Free Lunch

- 0% - 13.9%
- 14.0% - 33.3%
- 33.4% - 53.5%
- 53.6% - 70.7%
- 70.8% - 90.3%

Rec Center Participants

- 0 - 5
- 6 - 20
- 21 - 40
- 41 - 115
- No Data
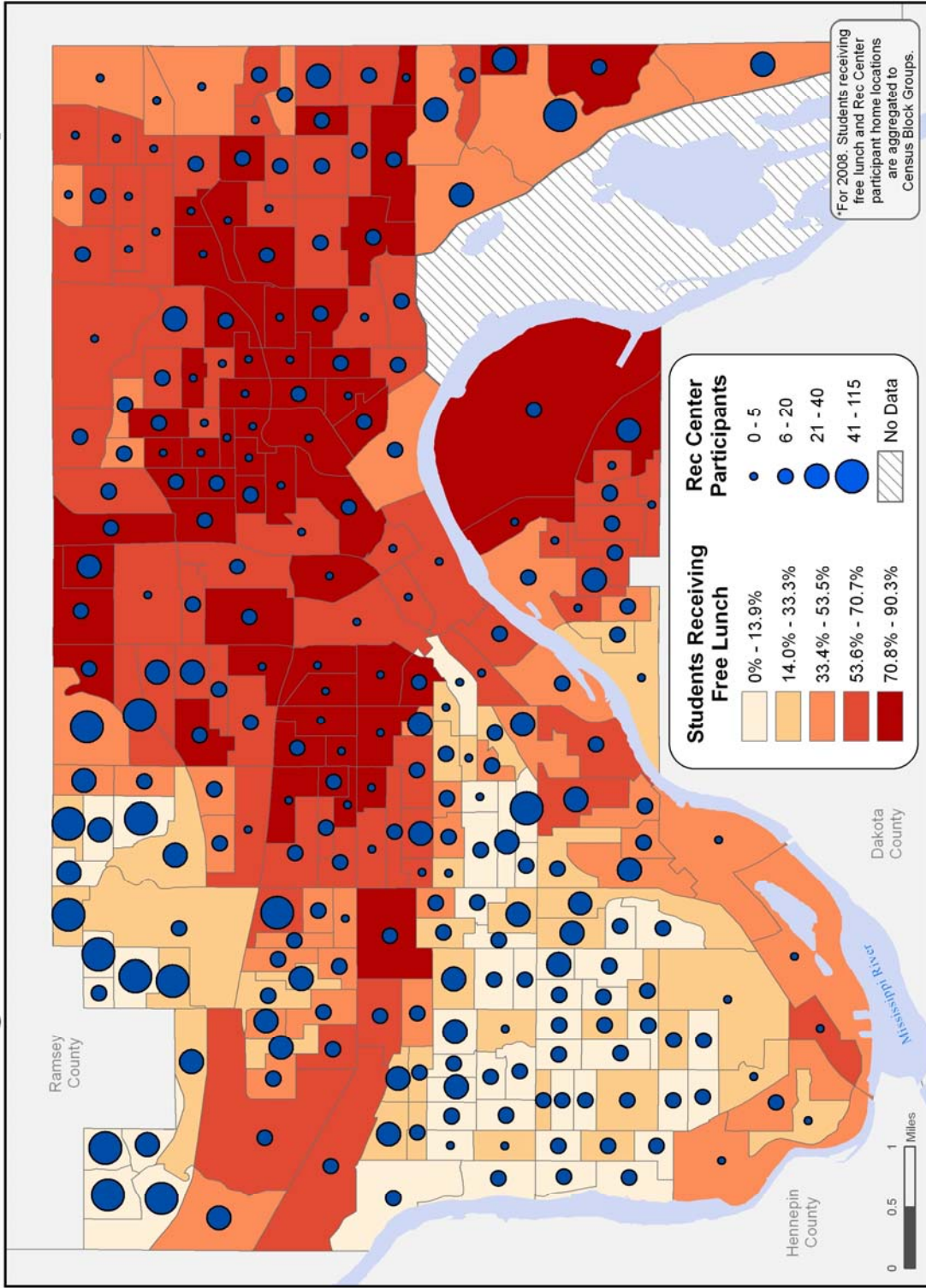
Cartographer: Eli Popuch; Data Source: Saint Paul Public Schools, Saint Paul Parks and Rec, Metropolitan Council; November 2008.

Ramsey County

Hennepin County

Dakota County

Mississippi River

Miles
0   0.5   1

Rec. Center Roster* & Households Below Poverty Level

Households Below Poverty Level
- 0%
- 0.1% - 8.2%
- 8.3% - 18%
- 18.1% - 42.7%
- 42.8% - 76%
- No Data

Roster Counts by Rec. Center
- 0
- 1 - 50
- 51 - 125
- 126 - 300
- 301 - 542

*Roster Count is from rosters of programs in Summer 2008
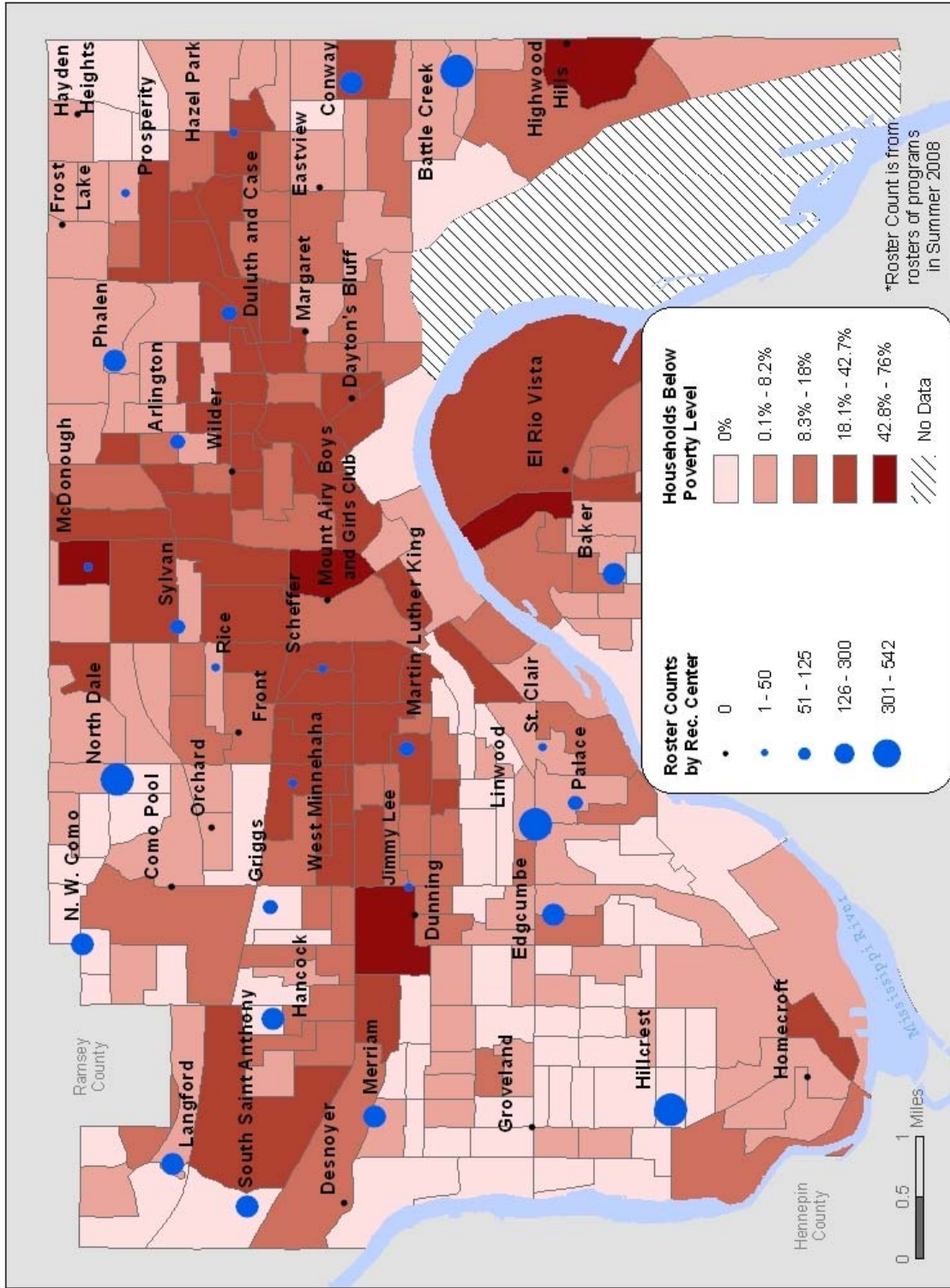
Cartographer: Rebecca Orrick; Data Sources: US Census by Block Group (2000), ESRI, Saint Paul Parks and Recreation; December 2008

Map 16

Percent of Students Eligible for Free Lunch and Rec. Center Enrollment*

Ramsey County

Hayden Heights
Prosperity
Hazel
Eastview
Conway
Battle Creek
Highwood Hills

Frost Lake
Phalen
Duluth and Case
Margaret
Dayton's Bluff

Arlington
Wilder

El Rio Vista

McDonough

Sylvan
Mt. Airy

Baker

Rice
Scheffer
Front
Martin Luther King

North Dale
West Minnehaha
St. Clair
Palace

N. W. Como
Como Pool
Orchard
Griggs
Jimmy Lee
Linwood

Hancock
Dunning
Edgcumbe

Langford
South Saint Anthony
Merriam Park
Desnoyer
Groveland
Hillcrest
Homecroft

Hennepin County

Dakota County

Mississippi River

Free Lunch
- 0.0% - 14.0%
- 14.1% - 34.0%
- 34.1% - 53.0%
- 53.1% - 70.0%
- 70.1% - 90.3%
- No Data

Total Enrollment
- No Enrollment
- 1 - 104
- 105 - 225
- 226 - 310
- 311 - 542

Miles
0   0.5   1

* For 2008. Students eligible for free lunch are divided by Census Block Group.

Cartographer: Eli Popuch; Data Sources: Saint Paul Public Schools, Saint Paul Parks and Rec, Metropolitan Council, ESRI; November 2008.

Map 17

Food Insecurity

Meal Count and Households below Poverty Level, Percent Non-White Residents and Total Recreation Center Meals Served, 2008, and Meal Count and Female Head of Household – Maps 18-20

Based on the 2006 USDA Household Food Security report, households below the poverty level, minority households, and female headed households were most likely to be vulnerable to food insecurity. Compared to the national average of 10.9%, households below the poverty level, minority households, and female headed of households, experienced food insecurity at rates of 36.3%, 20.65%, and 30.4% respectively (Nord, Andrews & Carlson 2006). To measure the relationship between meals served at recreation centers and food insecurity, demographic maps displaying these characteristics were made that also visually displayed the number of meals at each recreation center.

As these maps show, areas with the highest number of female headed households, households below the poverty line, and minority households are centered between Frogtown and the Capital, and in West Saint Paul. Generally speaking, recreation centers serve more meals in areas with large percentages of female headed households, households below the poverty level, and minority households. However, there are a few areas that appear to be underserved based on these risk factors. For instance, no meals are served at Highwood Hills, Mount Airy Boys and Girls Club, and Dunning. All are situated in or near block groups with high levels of female heads of households, high levels of poverty, and high levels of minority households. As a result of this, it appears that it would be highly beneficial to the surrounding populations to serve meals at these recreation centers.

Summer Meal Program with Students F.R.M Qualified - Map 21

This map shows the percentage of SPPS students who are eligible for free and reduced lunch by block group with graduated symbols of the number of meals served by Rec. Centers. The areas between University/Snelling and the Capital have high numbers of students eligible for free lunch. The same is true for the East side and for West Saint Paul. Generally, the areas with the highest numbers of free lunch eligible students have high numbers of recreation center meal service. However, there are a few areas that are situated in an area where a large percentage of children receive free and reduced meals in which no meals are served. As a consequence of this there is a potential greater demand for meals than is currently being met in certain areas.

Households Below Poverty Line and Grocery Stores, Free and Reduced Meals and Grocery Store Location, Food Insecurity and Grocery Store Location – Maps 22, 23, and 25

As these maps show, the highest concentration of grocery stores in Saint Paul is located along University Avenue. Food insecurity also occurs at a higher level in this area than it does in other areas of Saint Paul. These findings indicate that in Saint Paul grocery stores do not appear to be a risk factor for food insecurity.

Food Security and Meals Served by Recreation Center, Food Insecurity and Grocery Store Location, and Food Insecurity Index and Total Rec. Center Meals Served – Maps 24-26

 These raster-analysis maps compare the number of meals served per recreation center in relation to food security in Saint Paul. The map *Food Insecurity Index and Total Recreation Center Meals Served (26)*

incorporated the three demographic variables discussed above that are highly coordinated with food insecurity – percent of households in poverty, percent non-white residents and percent of female headed households – along with the percent of SPPS students eligible for free lunch and areas that had students living outside of "Recreation Center Service Areas" in a weighted analysis. Evaluating these variables together allows the map reader to see areas where the population would be most in need of meals at recreation centers, and be more likely to be underserved in terms of their access to a recreation center. In contrast the map *Food Security and Meals Served by Rec. Center (24)* and *Food Insecurity and Grocery Store Location (25)* relies solely on the USDA demographic food insecurity variables. In all three maps areas that showed high levels of Food Insecurity were Frogtown, and many parts of the East side, and West Saint Paul. As the maps show, while recreation centers located in or near areas of high food insecurity have high meal counts, there are also several areas of high food insecurity that do not offer meal service. Recreation centers that are located in food insecure areas but that also have low meal counts include Mt. Airy, Battle Creek, Conway, Dunning and Highwood Hills. As a consequence of this, we would recommend that more meals be served in these recreation centers to offer meal service to those children who most need it.

Meal Count* & Households Below Poverty Level

Meals Served

.	No Meals Served
.	1 - 800
•	801 - 1,460
●	1,461 - 3,300
⬤	3,301 - 5,946

Households Below Poverty Level (%)

	0%
	0.1% - 8%
	8.1% - 21.8%
	21.9% - 42.7%
	42.8% - 76%
	No Data

* Total Meals served at St. Paul Recreation Centers in Summer 2008

Cartographer: Rebecca Orrick; Data Sources: US Census by Block Groups (2000), ESRI, Saint Paul Parks and Recreation; December 2008
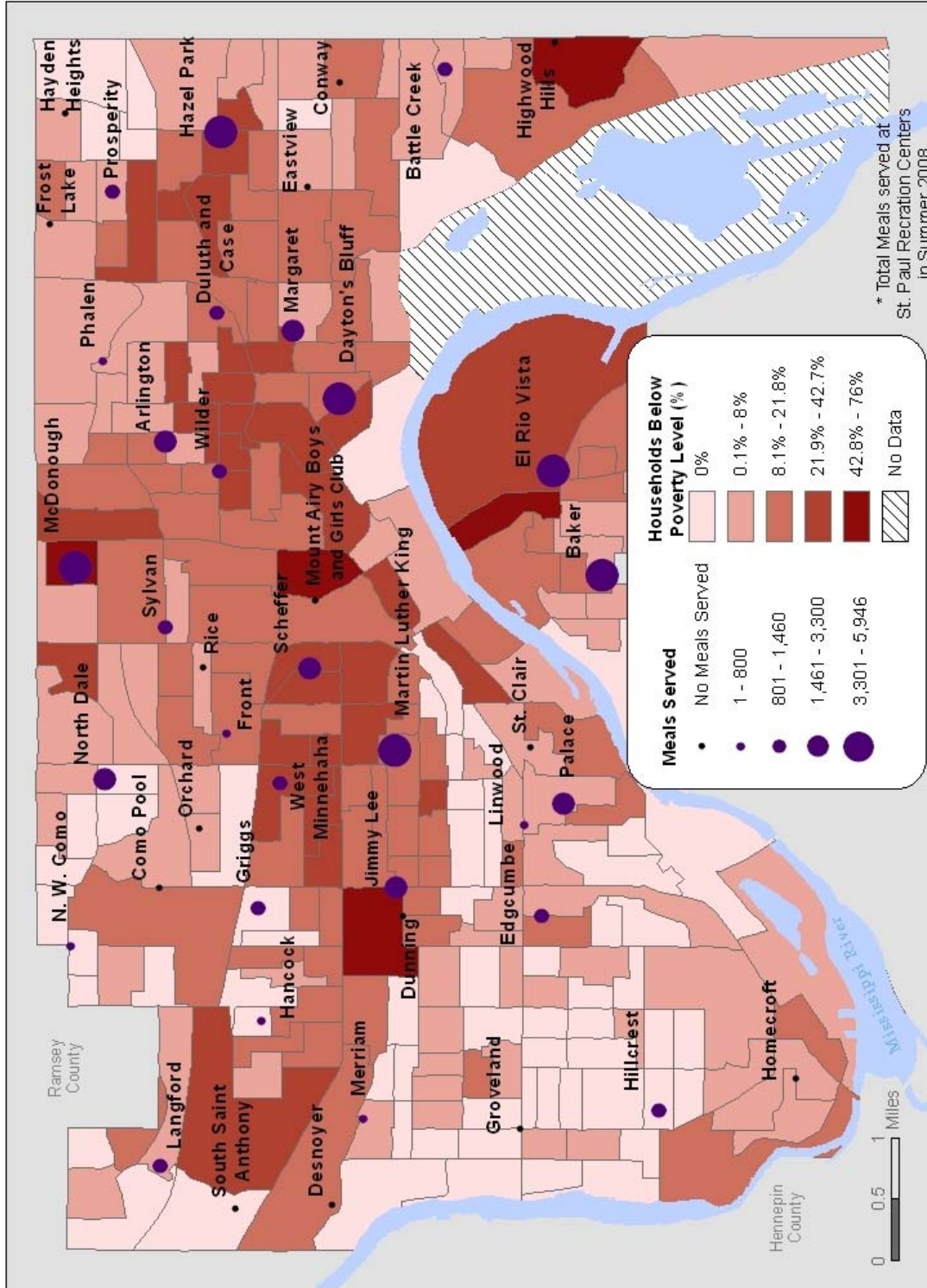
Map 18

Percent Non-White Residents and Total Rec. Center Meals Served

Map 19
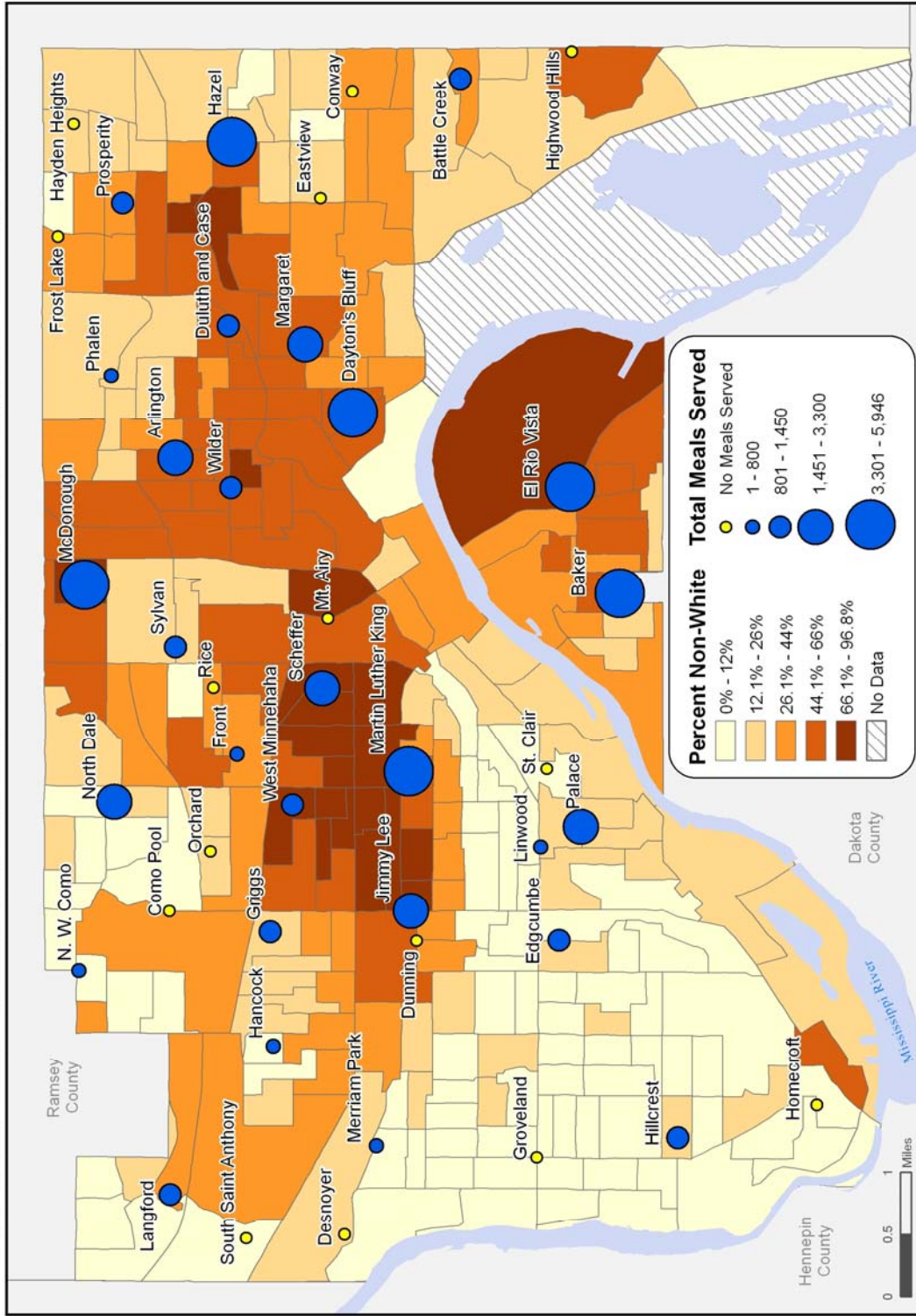
Cartographer: Eli Popuch; Data Sources: Saint Paul Public Schools, Saint Paul Parks and Rec, Metropolitan Council, ESRI, Us Census Block Group: November 2008

Percent Non-White
0% - 12%
12.1% - 26%
26.1% - 44%
44.1% - 66%
66.1% - 96.8%
No Data

Total Meals Served
No Meals Served
1 - 800
801 - 1,450
1,451 - 3,300
3,301 - 5,946

Meal Count* & Female Head of Household
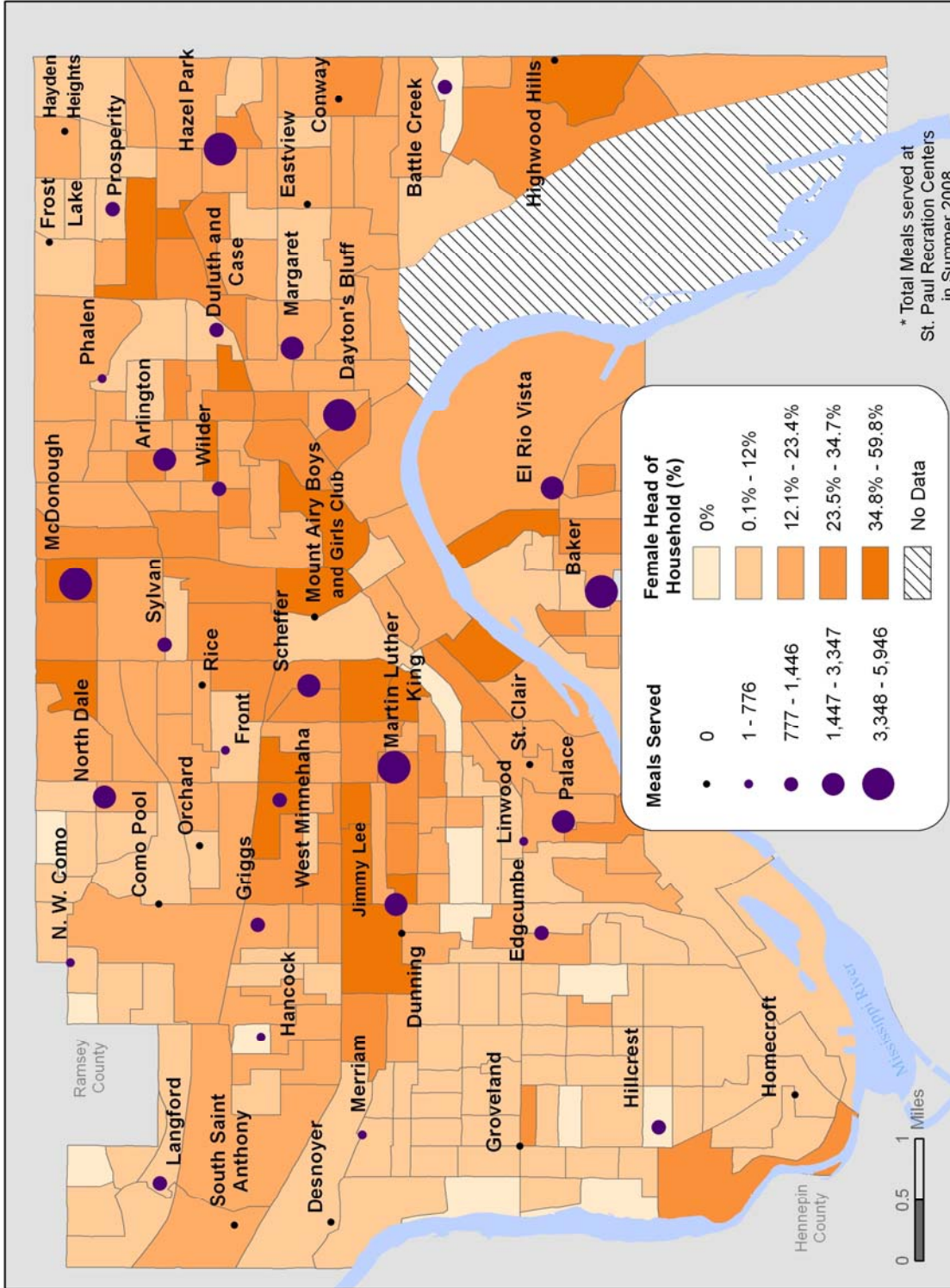
Female Head of Household (%)

- 0%
- 0.1% - 12%
- 12.1% - 23.4%
- 23.5% - 34.7%
- 34.8% - 59.8%
- No Data

Meals Served

- 0
- 1 - 776
- 777 - 1,446
- 1,447 - 3,347
- 3,348 - 5,946

* Total Meals served at St. Paul Recreation Centers in Summer 2008

Map 20

Summer Meal Program with Students F.R.M.* Qualified

Total Meals Served

- No Meal Service
- 1 - 776
- 777 - 1,446
- 1,447 - 3,347
- 3,348 - 5,946

F.R.M. Qualified (%)

- 0.0 - 17.3
- 17.4 - 36.4
- 36.5 - 55.2
- 55.3 - 71.0
- 71.1 - 90.9
- No Data

*F.R.M. = Free or Reduced Meal from SPPS data.

Map 21

Cartographer: Carson Gorecki; Data Sources: Saint Paul Public Schools, ESRI, US Census Block Groups, Saint Paul Parks and Recreation; November 2008

Households Below Poverty Level and Grocery Stores

Households Below Poverty Level (%)
- 0% - 4.4%
- 4.5% - 11.8%
- 11.9% - 21.8%
- 21.9% - 42.7%
- 42.8% - 76%

- Grocery Store
- No Data

Ramsey County

Hennepin County

Dakota County

Mississippi River

Miles
0 0.5 1
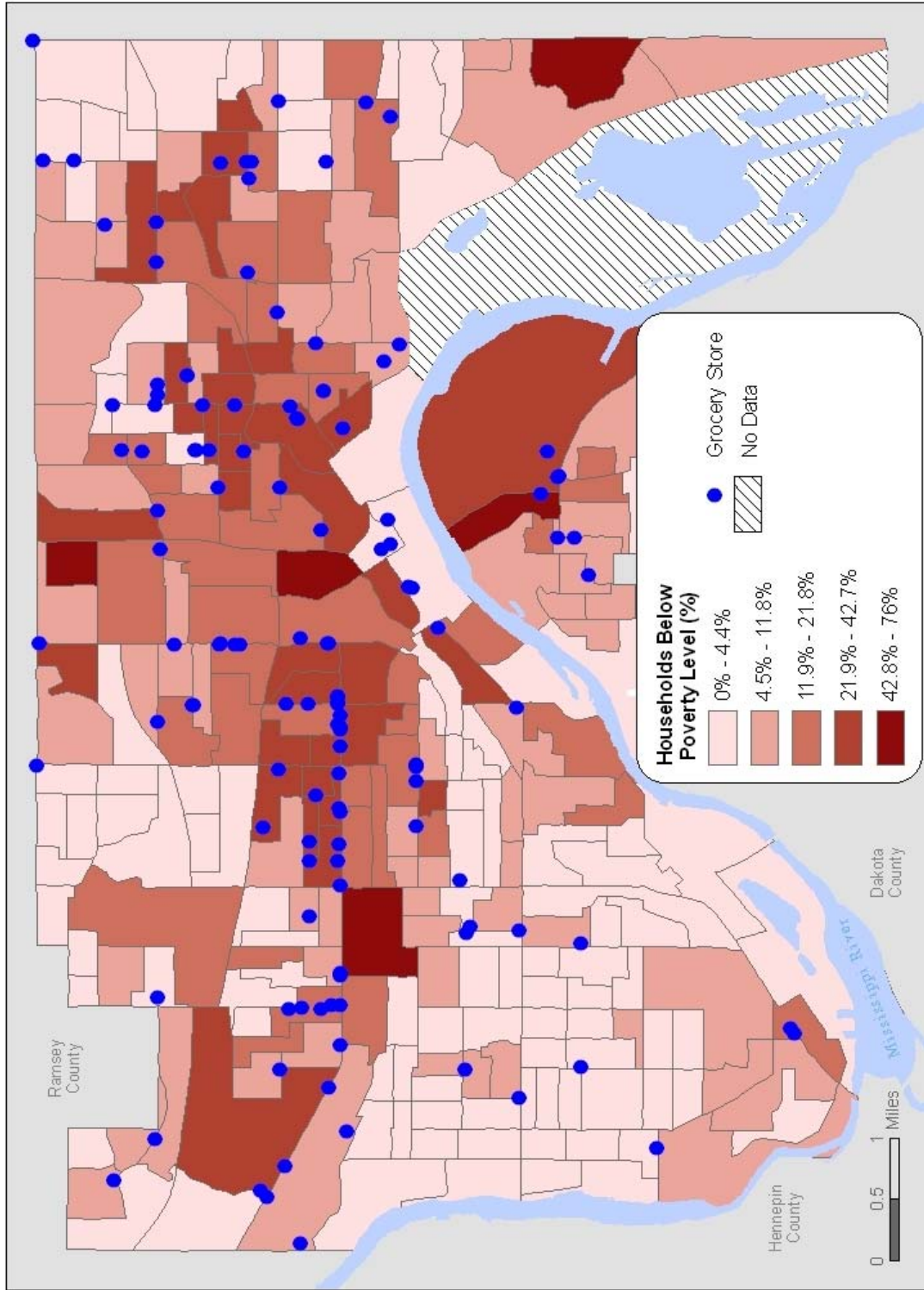
Cartographer: Rebecca Orrick; Data Sources: Yellowpages.com and other online yellowpage directories maintained by Info USA and Bell South, US Census, Block Groups (2000), ESRI; December 2008

Map 22

Free and Reduced Meals and Grocery Store Location

Students Recieving Free and Reduced Meals

- 0% - 13.9%
- 14% - 33.3%
- 33.4% - 53.5%
- 53.6% - 70.7%
- 70.8% - 90.3%

No Data

- Grocery Store

Ramsey County

Hennepin County

Dakota County

Mississippi River

Miles
0   0.5   1

Map 23

Food Security and Meals Served by Rec. Center*
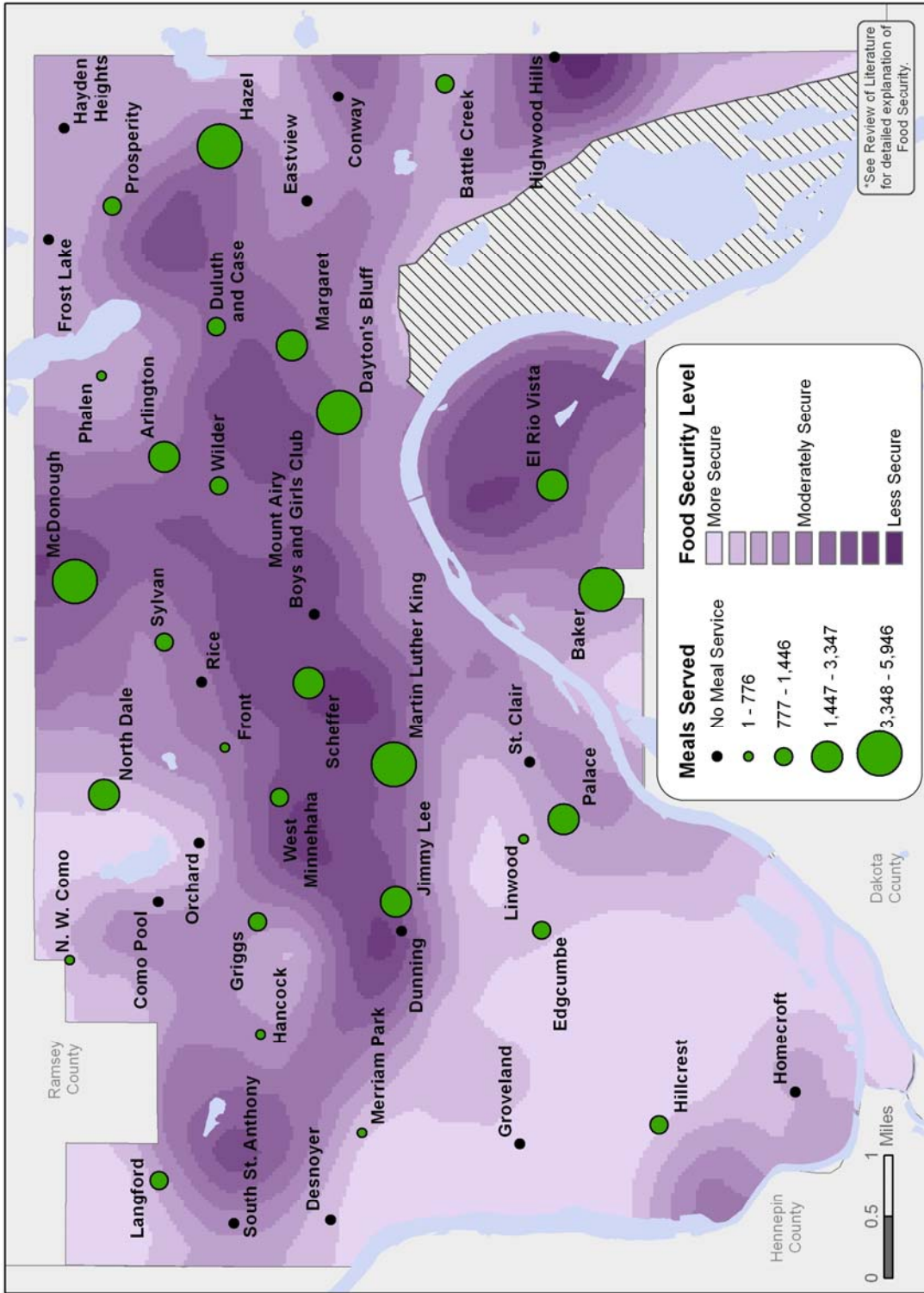
Meals Served
- No Meal Service
- 1 - 776
- 777 - 1,446
- 1,447 - 3,347
- 3,348 - 5,946

Food Security Level
- More Secure
- Moderately Secure
- Less Secure

Cartographer: Michael Samuelson; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; November 2008

*See Review of Literature for detailed explanation of Food Security.

Map 24

Food Insecurity* and Grocery Store Location

Ramsey County

Hennepin County

Mississippi River

Food Insecurity Value

High Food Insecurity

Low Food Insecurity

No Data

● Grocery Store

*Food Insecurity is defined by the USDA as being "a household level economic and social condition of limited or uncertain access to adequate food." Here it is calculated using a weighted average of demographic risk factors for food insecurity including % below the poverty level, % female head of household, and % minority.

0   0.5   1   Miles
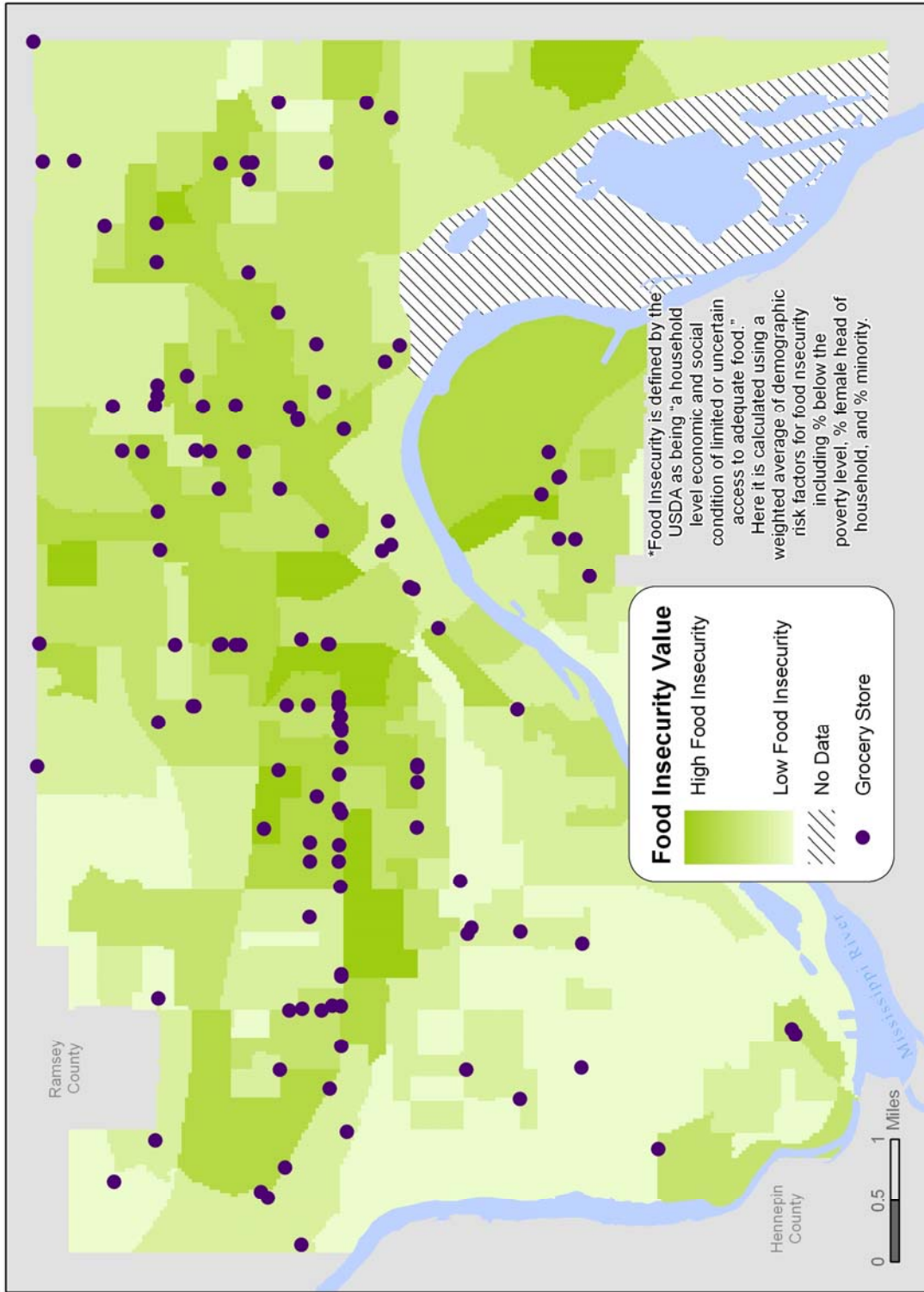
Cartographer: Rebecca Orrick; Data Sources: Yellowpages.com and other online yellow page directories maintained by Info USA and Bell South, US Census 2000 by Block Groups, ESRI; December 2008

Map 25

Food Insecurity Index and Total Rec. Center Meals Served*

Food Insecurity
- Very Low
- Low
- Moderate
- High
- No Data

Total Meals Served
- No Meals Served
- 1 - 800
- 801 - 1,450
- 1,451 - 3,300
- 3,301 - 5,946

*For 2008. Index is a combination of USDA food insecurity variables plus students eligible for free lunch and students outside of Rec. Center service areas.
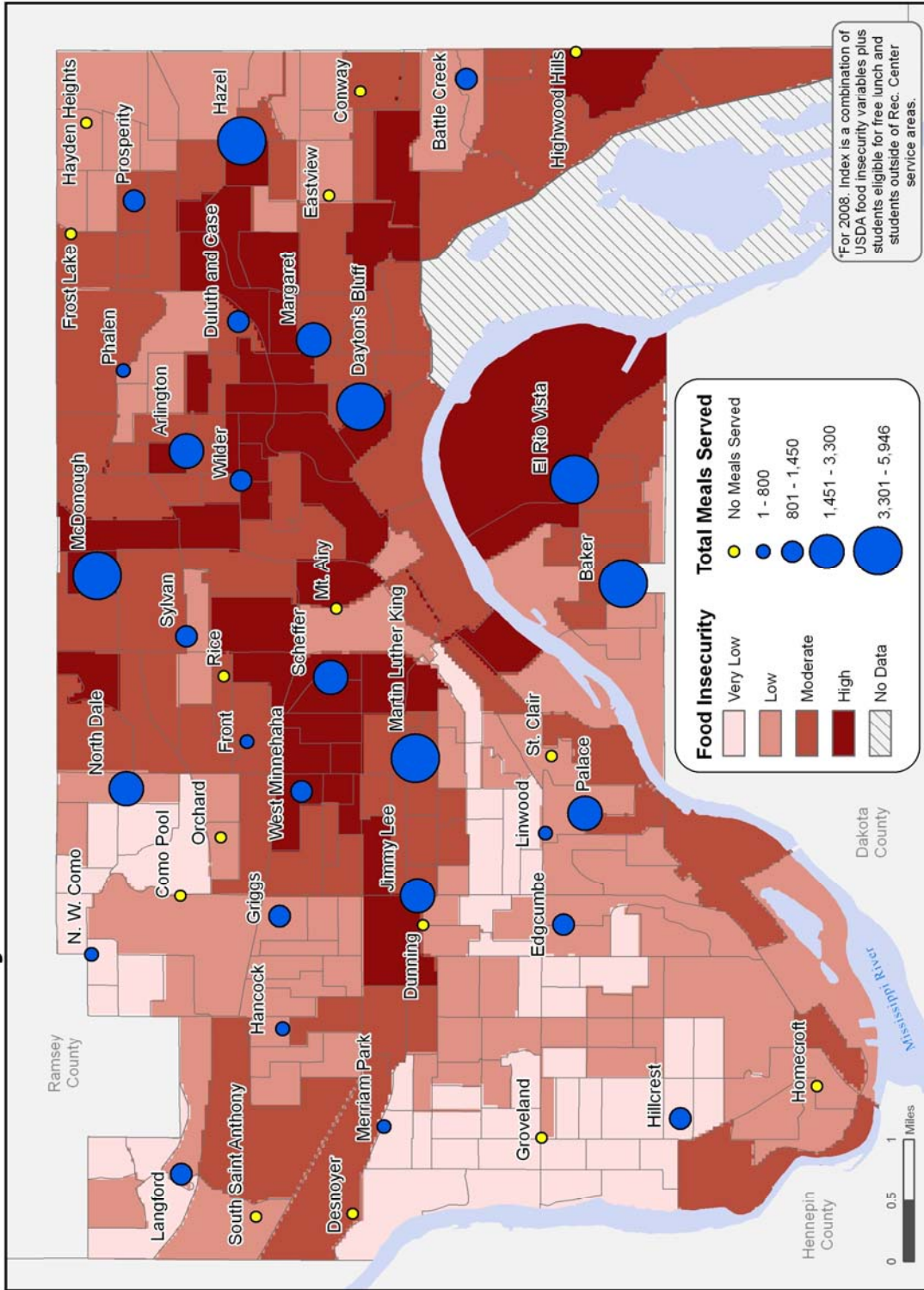
Cartographer: Eli Popuch; Data Sources: Saint Paul Public Schools, Saint Paul Parks and Rec, US Census Block Group, Metropolitan Council, ESRI; November 2008

Map 26

Conclusions and Recommendations

The analysis of Saint Paul Parks and Recreation summer meal program has uncovered some interesting trends. The data point to some recreation centers which seem to be situated in areas where there is a high demand for the Summer Meal Program, while other recreation centers that are located in neighborhoods with little or no demand for the Summer Meal Program offer meals. We found high levels of spatial disparity between those children that participated in programs at recreation centers, and thereby were the most likely to engage in the program, and those children who were most in need of free meals due to their potentially high risk for food insecurity.

The first aspect of this section was looking at general recreation center usage compared to the number of meals served. Two aspects of general usage were examined and compared to the number of meals served at each recreation center. First we examined the number of c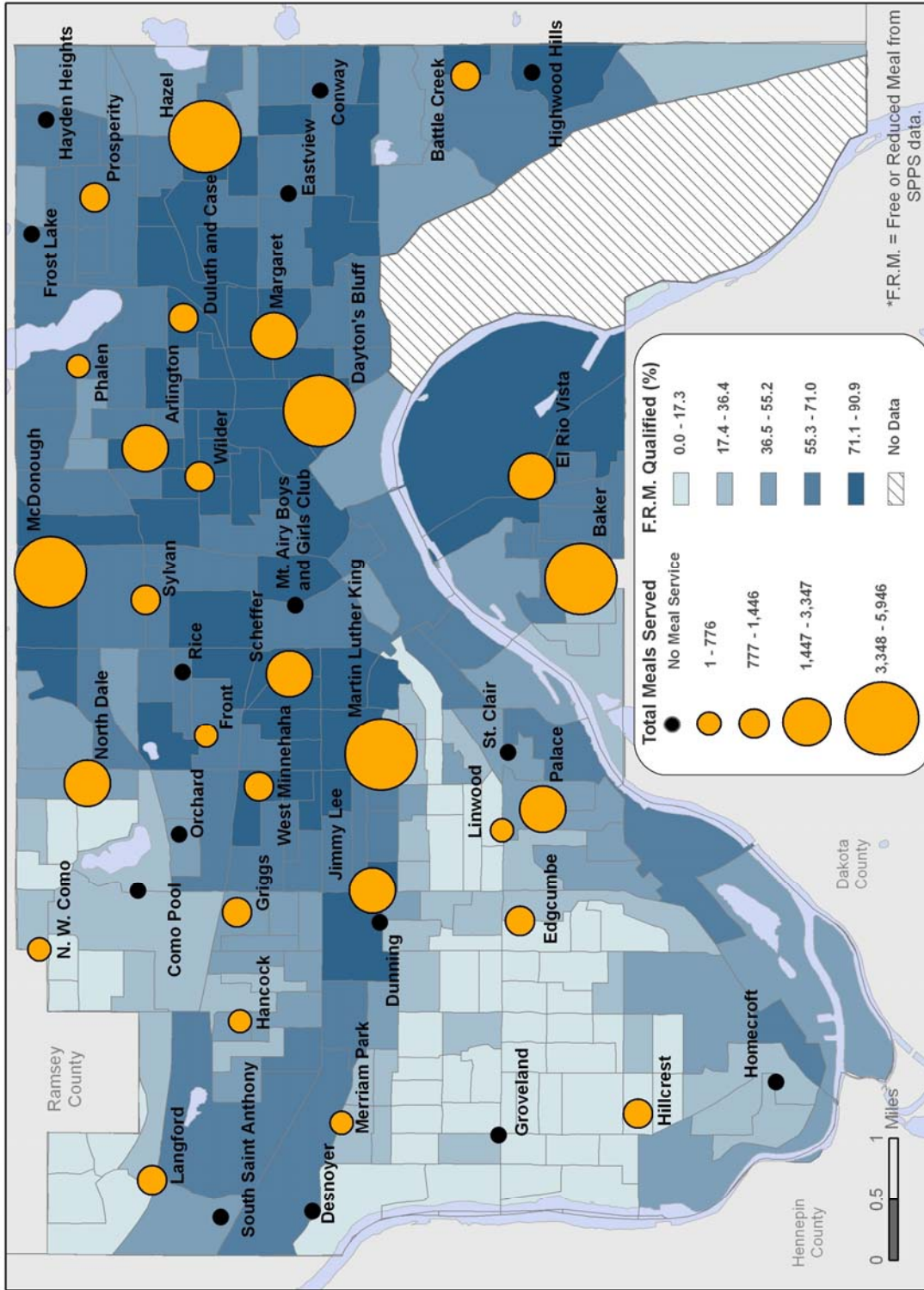hildren who participated in programs by using rosters provided by each recreation center. In addition, we compared the home location of those children who participated in programs with recreation center meal counts, since children do not always attend the recreation center closest to their home. In both cases, there is little correlation between the number of meals served and program participation. High participation in programs does not appear to cause an increase in the number of meals served, nor does low participation necessarily equal fewer meals served. There are several recreation centers, such as Conway and South Saint Anthony, which have a large number of students that participate in programs but do not offer any meal service. Additionally, there are other recreation centers, such as Desnoyer and Como Pool, which are located in areas with a high amount of neighborhood participation in programs who also do not offer meal service.

The next aspect of the project analyzes the relationship between food security and meal service, to investigate whether meals are available in the communities that need them the most. While some of the most food insecure areas, as defined by the USDA, are well served, several recreation centers that are located in areas of high food insecurity do not offer meal service. Recreation centers such as Dunning, Highwood Hills, Mount Airy, and South Saint Anthony are located in areas with high levels of food insecurity but offer no meal service. These centers should strongly consider adopting the summer food program, given that the households around them are some of the most food insecure in the city. Hancock, Front, West Minnehaha, and Wilder all offer meal service but serve a low number of children considering they are located in or near areas of high levels of food insecurity. These recreation centers should consider greater promotion of their summer food program in order to attract more children who are at risk; they might consider discussing promotion strategies with some of the staff from centers that currently serve large numbers of children for the summer meals program (Baker, Dayton's Bluff, McDonough, Hazel, and MLK).

Another way to measure food security is examining the number of children who are on free and reduced meals during the school year. In addition to the recreation centers mentioned above, Rice, Front, Hayden Heights, Eastview and Frost Lake are all located in places with a high percentage of children who qualify to receive free and reduced meals, yet none of them offered meal service during the summer of 2008. Along with the centers mentioned above, Phalen and Desnoyer should consider enhanced promotion of their food program, as they are located in an area with a high percentage of free and reduced meals.

The last part of this section compared the types of meals served at each recreation center. Only four recreation centers (North Dale, Hancock, Dayton's Bluff, and Margaret) serve breakfast and only two

(Arlington and El Rio Vista) serve dinner, all the rest serve lunch or a snack. There does not appear to be very much coordination between recreation centers in terms of which meals they serve. Coordination could serve two purposes. First, it would allow children to eat more than one free meal per day if they are located near multiple recreation centers that coordinate to serve meals at different times. Second, it could allow recreation centers to promote another center's meal service if other meal times are offered.

Our general analysis found that the meal program does an adequate job of serving those children in Saint Paul who are most at risk. Based on their neighborhood's food needs, several recreation centers that currently offer no service should look into offering meals. Additionally, several recreation centers appear to be under-serving their neighborhoods, and should look to increase the promotion of their food service in order to attract more children. Finally, recreation centers should coordinate with each other to serve a greater variety of meals where possible, in order to allow children to receive more than one free meal per day.

Access

Introduction

An important measure of the effectiveness of public recreation centers is how accessible they are to the population they are hoping to serve. "Equitable distribution entails locating resources or facilities so that as many different spatially defined social groups as possible benefit--i.e. have access" (Talen 1998). In this study, access was defined as the ability for a student to walk or bike to a Saint Paul Recreation Center as these are the most common forms of transportation a child can utilize. In other studies of green space accessibility, 0.5 mile was used as a cut-off for proximity because "pedestrian access and data from surveys indicate that most users who live further than one-half mile drive rather than walk to trails"(Lindsey et al. 2001). Since the target group in this study was children, the study was expanded to incorporate their alternate form of transportation: biking. Walking distance was defined as one-half mile from the home address listed in the Saint Paul Public School database and biking distance as 1 mile from the home address. Student data was analyzed at the individual level and aggregated to the census block group level or to the service area polygons in order to maintain the confidentiality of the students.

With these distance restrictions, Service Areas were chosen to assess access of Saint Paul Public School Students and program participants from Recreation Center rosters. These service areas followed the roads of Saint Paul and calculated 0.5 mile and 1 mile distances around each recreation center. These service areas were then analyzed to determine the composition of the Saint Paul Public School students and their characteristics: language spoken, race, and whether they qualify for free and reduced lunch. The same characteristics were analyzed for students falling outside of the Service Areas. Those characteristics were then examined in order to study areas that do not have the same access to Recreation Centers as students in other areas. The service areas were expanded to 3 miles to examine how far program participants currently travel to attend programs.

Another important step, when considering accessibility, is to examine the characteristics of the programs currently being offered by the recreation centers. Accessibility to recreation centers was examined in terms of the types of programs offered, the average fee charged for programs, and the number of free programs offered at each location. These measurements were compared to the number of households below the poverty line as provided by the US Bureau of Census.

Accessibility, as defined by physical distance and program provisions of recreation centers, shows that certain areas in Saint Paul have relatively low access to these facilities. This can be seen in the GIS maps created to measure accessibility. The maps in this section begin with general location of Saint Paul Public School Students, examine SPPS Student characteristics within Service Areas, characteristics of SPPS students living outside of service areas, programs offered by recreation center (type and fees), and case studies of recreation center program participants in larger service areas.

Map Analysis and Evaluation

Saint Paul Public School Students – Maps 27 and 28

The first two maps display separately the total and percent of Saint Paul Public School Students by census block group. In both instances, the number and concentration of students is identical, and they are most heavily concentrated in the Northeast portion of the City of Saint Paul. The West Side has the lowest concentration of public school students. The number of students ranges from the lowest, the yellow block groups, to the highest, the dark blue block groups.

Service Area and Saint Paul Public School Student Characteristics

These service area maps all address issues of accessibility to the recreation centers in the City of Saint Paul. They also demonstrate the characteristics of Saint Paul Public School students who reside within the recreation center zones.

Recreation Service Areas– Maps 29-38

These maps display the Service Areas for the centers, which are measured in two ranges, 0.5 miles and 1 mile from the recreation centers. Most of the public school students that are English Language Learners (ELL), Non-White, who qualify for free and reduced lunch, who speak Hmong, or who speak Spanish, are concentrated in the Northeast and Central parts of Saint Paul with little concentration in the West. The students who are White or speak English are most highly concentrated on the West side of the city and decrease in concentration towards the Northeast. The total number of Saint Paul Public School students and those who speak a language other than Spanish, English, or Hmong are rather evenly dispersed throughout the city, with pockets of concentration, for example, in the North.

Characteristics of Students outside Service Areas

The Outside Service Area maps demonstrate the characteristics of the 1,985 Saint Paul Public School students who reside outside of the 0.5-mile and 1 mile service areas for the Saint Paul Recreation Centers.

Students Who Live outside Service Areas – Maps 39-43

This map shows that most of the students are located in block groups near recreation centers but fall just short of the accessibility measure. The block groups are located around the River in the Southeast, in the North, and in the West and Southwest. The highest percentages of Saint Paul Public School Students living outside of Service Areas are on the Southeast side as well as around North Dale Recreation Center. These areas also have the highest number and percentage of non-white students, and the highest numbers of students qualifying for free and reduced lunch. The students living outside of the service areas that qualify for free and reduced lunch, however, are rather dispersed throughout the city, although block groups near North Dale Recreation Center still have a high percentage of qualifying students, as do block groups near Hazel Recreation Center.

Recreation Center Programs Offered

Total Programs Offered – Map 44

The Total Programs Offered map shows the number of summer programs offered at each recreation center and the number of students residing in each block group. It appears that, in most areas, the recreation centers located within block groups with a large number of students tend to offer more programs than other recreation centers. However, there are a couple areas with a high concentration of students that do not have many programs offered to them by their nearest recreation centers. For example, Homecroft, El Río Vista, and Highwood Hills recreation centers offer few programs during the summer, although they have large numbers of students living in the block groups included in their service area.

Total Programs Offered by Type – Map 45

The Total Programs Offered by Type map divides the programs offered at each recreation center into three categories: sports; arts and crafts; music, theater and dance. It is apparent that sports programs are most commonly offered throughout Saint Paul. The music, theater and dance category has the least amount of programs offered.   About half of the recreation centers only offer one of the categories. For example, the East Side of Saint Paul offers mostly sports programs, and several of the recreation centers only offer sports.

Recreation Center Program Fees

Average Program Fees by Recreation Center – Map 46

The average fees map illustrates the average cost of programming provided by each Saint Paul Recreation Center in comparison to the percent of Saint Paul households living below the poverty level. One major trend this map illustrates is the majority of inexpensive programs are located in areas consisting of lower income households.   Similarly, more affluent areas contain more expensive Recreation Center programs.   However, cases in the Northwestern corner of Saint Paul, both the Langford and South Saint Anthony Recreation Centers do not compare to this trend. These Recreation Centers border both wealthy and poor areas and yet, their average program fees are in the highest costing category, twelve to twenty dollars. In areas such as in the Northwest with households coming from diverse economic backgrounds, recreation centers should accommodate these differences by lowering program average fees.

Free Programs by Recreation Center – Map 47

The map of free programs portrays the relationship between the number and type (sports; arts and crafts; music, dance and theater) of free programs offered at each Saint Paul recreation center and the percent of Saint Paul households living below poverty level. Areas with a high concentration of households living below the poverty level, such as East Saint Paul, have an increased number of free programs, most falling within the sports category. Similarly, areas such as Northwest and Southwest Saint Paul do not have free programs offered. Sports programs have the highest number of free programs followed by arts and crafts and music, dance and theater having the least. Recreation centers

already offering free programs to lower income areas such as in East Saint Paul could attract more participants by expanding the type of programs from sports to also include arts and crafts, and music, dance and theater.

Recreation Center Programs With and Without Fees – Map 48

The Recreation Center Programs With and Without Fees map shows the programs that charge a registration fee at each recreation center and those that do not charge a registration fee. It also shows the percentage of the population residing in each block group that is living below the poverty level. The majority of the recreation centers offering mostly fee-based programs are located in areas with very few people living below the poverty level. There are a couple recreation centers that do not offer free programs that are located within or nearby block groups that have a significant percentage of the population living below the poverty level. For example, El Río Vista and Scheffer recreation centers may want to consider offering some free programs because the block groups that fall within their service areas have many people living below the poverty level that may be discouraged from participating in a program because of its fee.

Participants by Service Area

Participants by Service Area-Maps – Maps 49, 50

The individual service area maps for the 12 recreation centers are a way to examine how far people are traveling to participate in programs offered at particular recreation centers. Twelve centers were chosen by St Paul Parks and Recreation as case studies for this analysis. For these centers, data on who registered for programs were obtained from Reserve Master, limiting to summer 2008 programs that had an enrollment of 5 people or more, and excluding teen and adult programs and field trips. For each recreation center, the residence address of the students who attended programs at that center was aggregated to a service area designation of .5 mile, 1 mile, 2 mile and 3 mile distance from the center (See 'Recreation Center Service Areas for Case Studies'- map 49).

The resulting maps show the distribution of distances, as well as the proportion of students attending programs who live farther away than the 3 mile limit of the designated service area (indicated by the graduated dot symbol). These maps are not completely representative of the user population of the recreation centers because they include only those children who registered for programs, and do not take into account drop- in attendance. Because many of the service areas overlapped, the centers are mapped according to the Parks and Recreation Service's designation of 5 corridors (See 'Corridor Designations of Saint Paul Recreation Centers'- Map 50).

Participants in Rec. Center Programs, Service Area by Corridor- Map 51 - 53

These 3 maps show the service areas for the 12 case studies. The color gradation within the service area designations indicate percent of participants living within that section of the service area. Palace, Hancock, and Griggs all follow an expected distribution with the majority of participants living within the closest areas, and the percentage increasing with distance, although Palace does have a larger percentage living outside the 3 mile boundary. The other centers show much more variability in participant proximity. Hillcrest, Battle Creek, Phalen, and West Minnehaha all draw less than 10% of

participants from the first half-mile around the Center, and Martin Luther King, Battle Creek, and Hillcrest draw more than 25% from farther than 3 miles away. When compared with the maps of Saint Paul Public School students, it appears that the Battle Creek, Phalen, and West Minnehaha Centers are all within areas that have a high ELL population, and a medium amount of students qualifying for free and reduced lunch. A lack of participation from the close distances may indicate that the programs offered do not appropriately serve the surrounding population. It could also indicate that the center is not located in a residential area, in which case the promotion efforts may need to be more rigorous. Programs in areas with high ELL counts should consider offering increased language options, and even culturally appropriate options that may appeal to a new demographic. If the center is not currently offering a free meal program, that is also an avenue to consider.

Rec. Center	Total Children Attending Programs	Number of Participants Living Within .5 miles of Center	Number Living Between .5 and 1 Mile	Number Living Between 1 and 2 Miles	Number Living Between 2 and 3 Miles	Number Living Farther Than 3 Miles	% Living Farther than 3 Miles
Griggs	64	43	<10	<10	<10	<10	6.25%
Edgecumbe	225	48	36	80	38	23	10.22%
Phalen	146	<10	46	50	29	19	13.01%
Hancock	159	61	33	21	22	22	13.84%
W Minnehaha	11	<10	<10	<10	<10	<10	18.18%
Linwood	446	67	98	123	67	91	20.40%
Merriam Park	277	34	66	61	50	66	23.83%
North Dale	542	100	121	121	69	131	24.17%
Palace	63	20	12	12	<10	16	25.40%
Hillcrest	264	18	28	70	49	99	37.50%
Martin Luther King	56	20	<10	<10	<10	22	39.29%
Battle Creek	383	28	48	63	87	157	40.99%
TOTAL	2636	442	504	617	421	652	24.73%

This table represents the actual counts of participants living within each section of the service area. Because the total number of participants varies widely between the recreation centers (from 11 at West Minnehaha to 542 at North Dale), the numbers can be more revealing than percentages for some of the smaller centers. There does not appear to be a direct relationship between total number of participants or to the total number of programs and percentage who come from farther than 3 miles away. This indicates that it is not only the largest recreation centers which people travel to. This is another motivation for offering a meal program, allowing children from farther away to remain at the center for longer.

Conclusions and Recommendations

Service Areas

Although the service areas encompass much of the student population in Saint Paul, there are areas that have visible gaps in service. Particularly, block groups surrounding Pig's Eye Park and especially those students located near Battle Creek and Dayton's Bluff Recreation Centers have student populations that are more than 1 mile from these centers. In these cases, because there is a large park surrounding the students, as well as relatively close recreation centers, it might be worthwhile to focus outreach to these areas or to develop alternate forms of transportation such as extending the Dayton's Bluff Circulator into these areas. These areas also have high percentages of students who qualify for free and reduced lunch and would thus benefit greatly from having a meal program provided by a recreation center.

The general characteristics of Saint Paul Public School children reveal a very diverse population, economically, racially, and linguistically. The area in the NE corner and North side of Saint Paul has the most diversity. This includes large Non-White, Hmong, Spanish, and other foreign language speaking populations. This means that recreation centers may need to have employees familiar with these languages in order to include all students. These areas also include the most public school students who qualify for free and reduced lunch. These areas should have the most meals offered during the summer in order to address the population they are serving.

Individual recreation centers appear to be drawing program participants from a wide-spread area of the city, not just from service areas. This suggests that strict neighborhood boundaries do not hold true for recreation center use. For some centers, it may suggest that the immediate population is not being well served. The variety of distances traveled by current students could reflect any number of explanations. Recreation centers with small numbers of participants coming from the immediate half mile and mile would do well to examine the other dynamics explored in this study. It appears that some of the centers with small percentage of proximate users are in areas with high levels of foreign languages spoken, so creating programs in these languages or that include cultures of the neighborhood could increase participation. Perhaps these are centers in low-income areas that do not offer free programs, or do not offer languages that cater to the immediate population. It could also be useful to conduct recreation center promotion on fairly wide scales, not just restricted to immediate neighborhoods.

Programs Offered

Although the majority of the recreation centers with a high number of programs offered are located within or near block groups that have a high child population, there are a couple of areas that are left without many programs available during the summer. The West Side of Saint Paul has two recreation centers, El Río Vista and Baker, which do not offer many registration-based programs although there appears to be a large number of children residing in the area. It would be highly recommended to encourage the planning of additional programs at those recreation centers.

There is also a significant child population in the Northwest and Southwest areas of Saint Paul. We recommend providing more programs to those areas. Desnoyer and Merriam Park Recreation Centers in the Northwest and Homecroft recreation center in the Southwest offer between zero and three programs although the nearby block groups have between approximately 300 and 1000 children. We

recommend that recreation center staff reach for a program-child ratio similar to Edgecumbe or Linwood, who offer more programs although their nearby block groups have a smaller child population.

The majority of the registration-based programs offered throughout Saint Paul fall within the sports category. This is reasonable because various sports are often the most popular pastimes among children. However, the popularity of sports should not deter the recreation centers from offering other types of programs. It is probable that if other types of programs were offered, they would be well-attended as well. For example, the music, theater and dance programs would not be continually offered during the summer at other recreation centers if they were not popular. Increasing the number of recreation centers that offer programs from more than one category is highly recommended. For example, recreation centers McDonough and El Río Vista only offer sports programs, but are located in areas with a relatively large child population. Perhaps offering programs from other categories, such as arts and crafts, would attract a larger percentage of the nearby child population because they would be catering to a wider population with distinct interests and hobbies. They may also try offering programs for different age groups if the current programs ones are not well-attended.

Program Fees

In order for the recreation centers to be as accessible as possible to their surrounding student population, centers should consider income levels of nearby families. In general, it appears that the recreation centers located in lower income areas do offer more free programs than the recreation centers located in higher income areas. There are, however, some low income areas that do not have free programs available to them, and therefore children may be less likely to attend these centers. Langford and South Saint Anthony recreation centers in the Northwest and El Río Vista recreation center in the West Side do not offer free programs. We recommend increasing the number of free programs. The McDonough and Jimmy Lee recreation centers are located within or near block groups where 36 to 70 percent of the population lives below the poverty level, yet the majority of their programs have a registration fee. We recommend that they offer more free programs.

The relationship between recreation center program costs and Saint Paul households living below the poverty level is strong. More costly recreation center programs are located in areas of more affluent populations and vice versa. However, it is important to recognize the area surrounding recreation centers and its compliance with its neighborhood characteristics, in this case with the population's general economic status. Regardless of the recreation center's location within a wealthy or poor neighborhood, its services should be versatile and available to people of all income levels. Income should not be a deterring factor for low-income populations. Therefore, we highly recommend that recreation centers offer a varied range in program costs. In particular, recreation centers such as Langford and South Saint Anthony that border contrasting high to low income neighborhoods lower their program average fee to better serve its diverse immediate-surrounding populations.

The number and types of free programs offered by Saint Paul Parks and Recreation correlates with the percent of Saint Paul households living below the poverty level. However, sports are predominantly offered as free, often without any free programs offered of another type. It would be beneficial to provide more diverse selection of free programming such as in the arts at each recreation center, so as not to deter interest or participation. Recreation centers offering numerous free programs should embrace the diversity of program types even more so. For instance, Sylvan Recreation Center offers the highest number of free programs in Saint Paul, but only in sports. In this case, Sylvan could benefit from

incorporating other types of programs for example, programs in arts and crafts, and music, dance and theater without compensating its generous number of free programs offered.

Total Saint Paul Public School Students by Block Group

Total Students

- 1 - 98
- 99 - 197
- 198 - 348
- 349 - 757
- No Population
- ● Recreation Center

Hazel
Conway
Hayden Heights
Eastview
Battle Creek
Highwood Hills
Frost Lake
Prosperity
Duluth and Case
Margaret
Phalen
Dayton's Bluff
Arlington
Wilder
El Rio Vista
McDonough
Sylvan
Baker
Rice
Scheffer
Mt. Airy Boys and Girls Club
Front
Martin Luther King
North Dale
West Minnehaha
St. Clair
Orchard
Jimmy Lee
Linwood
Palace
N. W. Como
Griggs
Como Pool
Dunning
Edgcumbe
Hancock
Merriam Park
Groveland
Homecroft
South Saint Anthony
Hillcrest
Desnoyer
Langford

Ramsey County

Dakota County

Hennepin County

Cartographer Laura Cullenward; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census Block Groups; December 2008

Map 27

Miles
0   0.5   1

Percent of Saint Paul Public School Students by Block Group*

Total Students

- 0.01% - 0.27%
- 0.28% - 0.54%
- 0.55% - 0.94%
- 0.95% - 2.05%
- No Population
- Recreation Center

Hazel
Conway
Battle Creek
Highwood Hills
Hayden Heights
Eastview
Frost Lake
Prosperity
Duluth and Case
Margaret
Phalen
Dayton's Bluff
Arlington
Wilder
El Rio Vista
McDonough
Sylvan
Mt. Airy Boys and Girls Club
Baker
Rice
Scheffer
Martin Luther King
North Dale
Front
St. Clair
Orchard
West Minnehaha
Linwood
Palace
N. W. Como
Griggs
Jimmy Lee
Como Pool
Dunning
Edgcumbe
Hancock
Homecroft
Merriam Park
Groveland
Hillcrest
South Saint Anthony
Desnoyer
Langford

Ramsey County
Hennepin County
Dakota County

Miles
0   0.5   1

*Percent by Block Group represents the percent of students in each block group out of the total number of St. Paul Public School students

Cartographer Laura Cullenward; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census Block Groups; December 2008

Map 28

Recreation Center Service Areas

Service Areas

0.5 miles
1 miles
Recreation Center
Park

Frost Lake
Prosperity
Hazel
Eastview
Conway
Battle Creek
Highwood Hills
Hayden Heights
Duluth and Case
Margaret
Dayton's Bluff
Phalen
Arlington
Wilder
McDonough
Sylvan
Scheffer
Mt. Airy Boys and Girls Club
Martin Luther King
El Rio Vista
Baker
Rice
Front
West Minnehaha
St. Clair
North Dale
Orchard
Jimmy-Lee
Linwood
Palace
N. W. Como
Como Pool
Griggs
Dunning
Edgcumbe
Hancock
Merriam Park
Groveland
Hillcrest
Homecroft
Langford
Desnoyer
South Saint Anthony

Ramsey County
Hennepin County
Dakota County

Map 29

Cartographer: Laura Cullenward. Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, December 2008

0   0.5   1   Miles

Page **61**

Students Within Recreation Center Service Areas*

Map 30

Students in Service Areas

- 9 - 247
- 248 - 437
- 438 - 672
- 673 - 1058
- Park
- Recreation Center

*Service Areas are 0.5 and 1 mile zones surrounding Recreation Centers

Cartographer: Laura Cullenward. Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, December 2008

SPPS Students Who Qualify for Free and Reduced Lunch by Service Area*

Qualifying Students
- 5.9% - 29.5%
- 29.6% - 55.3%
- 55.4% - 70.8%
- 70.9% - 89.5%
- Park
- Recreation Center

*Service Areas are 0.5
and 1 mile zones surrounding
Recreation Centers

Cartographer: Laura Cullenward. Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, December 2008

Map 31

White SPPS Students by Service Area*

Map 32

White Students
- 2.2% - 15.0%
- 15.1% - 31.2%
- 31.3% - 59.1%
- 59.2% - 85.5%
- Park
- Recreation Center

*Service Areas are 0.5 and 1 mile zones surrounding Recreation Centers

Cartographer: Laura Cullenward. Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, December 2008

SPPS Minority Students by Service Area

Non-White Students

- 14.5% - 36.6%
- 38.7% - 64.6%
- 64.7% - 83.8%
- 83.9% - 97.8%
- Park
- ● Recreation Center

*Service Areas are 0.5 and 1 mile zones surrounding Recreation Centers

Cartographer: Laura Cullenward. Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, December 2008

Map 33

SPPS Students Who Are English Language Learners by Service Area*

Map 34

English Language Learners
3.4% - 17.7%
17.8% - 34.6%
34.7% - 51.2%
51.3% - 70.2%
Park
Recreation Center

*Service Areas are 0.5 and 1 mile zones surrounding Recreation Centers

Cartographer: Laura Cullenward; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; December 2008

SPPS Students Who Speak English by Service Area*

Students Who Speak English
22.1% - 39.0%
39.1% - 57.3%
57.4% - 77.3%
77.4% - 93.1%
Park
Recreation Center

*Service Areas are 0.5 and 1 mile zones surrounding Recreation Centers

Cartographer: Laura Cullenward; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; December 2008

Map 35

SPPS Students Who Speak Hmong by Service Area*

Students Who Speak Hmong
- 0.0% - 5.7%
- 6.8% - 20.5%
- 20.6% - 34.8%
- 34.9% - 54.6%
- Park
- ● Recreation Center

*Service Areas are 0.5 and 1 mile zones surrounding Recreation Centers

Map 36

Cartographer: Laura Cullenward. Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, December 2008

Ramsey County

Hennepin County

Dakota County

Highwood Hills
Frost Lake
Conway
Prosperity
Hazel
Eastview
Battle Creek
Hayden Heights
Duluth and Case
Margaret
Dayton's Bluff
Phalen
Arlington
Wilder
El Rio Vista
McDonough
Sylvan
Mt. Airy Boys and Girls Club
Baker
Rice
Scheffer
Martin Luther King
St. Clair
West Minnehaha
Jimmy Lee
Linwood
North Dale
Orchard
Front
Palace
N. W. Como
Como Pool
Griggs
Dunning
Edgcumbe
Merriam Park
Hancock
Groveland
Hillcrest
Langford
South Saint Anthony
Desnoyer
Homecroft

Miles
0   0.5   1

SPPS Students Who Speak Spanish by Service Area*

Spanish Speaking Students
- 0.0% - 4.3%
- 4.4% - 9.8%
- 9.9% - 18.7%
- 18.8% - 32.4%
- Park
- Recreation Center

*Service Areas are 0.5 and 1 mile zones surrounding Recreation Centers

Cartographer: Laura Cullenward Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, December 2008

Map 37

SPPS Students Speaking Foreign Languages Other Than Hmong or Spanish by Service Area*

Students Speaking Other Languages

- 2.3% – 9.9%
- 10.0% – 18.6%
- 18.7% – 34.7%
- 34.8% – 64.5%
- Park
- Recreation Center

*Service Areas are 0.5 and 1 mile zones surrounding Recreation Centers

Cartographer: Laura Cullenward. Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, December 2008

Map 38

SPPS Students Who Live Outside Service Areas

Map 39

Legend:

Total Students
- 0.05% - 0.76%
- 0.77% - 1.96%
- 1.97% - 3.83%
- 3.84% - 7.81%

- No Students / Outside Service Area
- No Data
- Recreation Center

Labels on map: Conway, Hazel, Eastview, Battle Creek, Highwood Hills, Hayden Heights, Duluth and Case, Margaret, Prosperity, Frost Lake, Dayton's Bluff, Phalen, Arlington, Wilder, El Rio Vista, McDonough, Mt. Airy Boys and Girls Club, Baker, Sylvan, Scheffer, Rice, Martin Luther King, Front, North Dale, West Minnehaha, St. Clair, Orchard, Linwood, Palace, Jimmy Lee, N. W. Como, Griggs, Como Pool, Dunning, Edgcumbe, Hancock, Merriam Park, Homecroft, South Saint Anthony, Groveland, Hillcrest, Desnoyer, Langford, Ramsey County, Hennepin County, Dakota County

Cartographer Laura Cullenward; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census Block Groups; December 2008

Scale: 0, 0.5, 1 Miles

SPPS Students Who Live Outside Service Areas

Map 40

Total Students
- 1 - 15
- 16 - 39
- 40 - 76
- 77 - 155
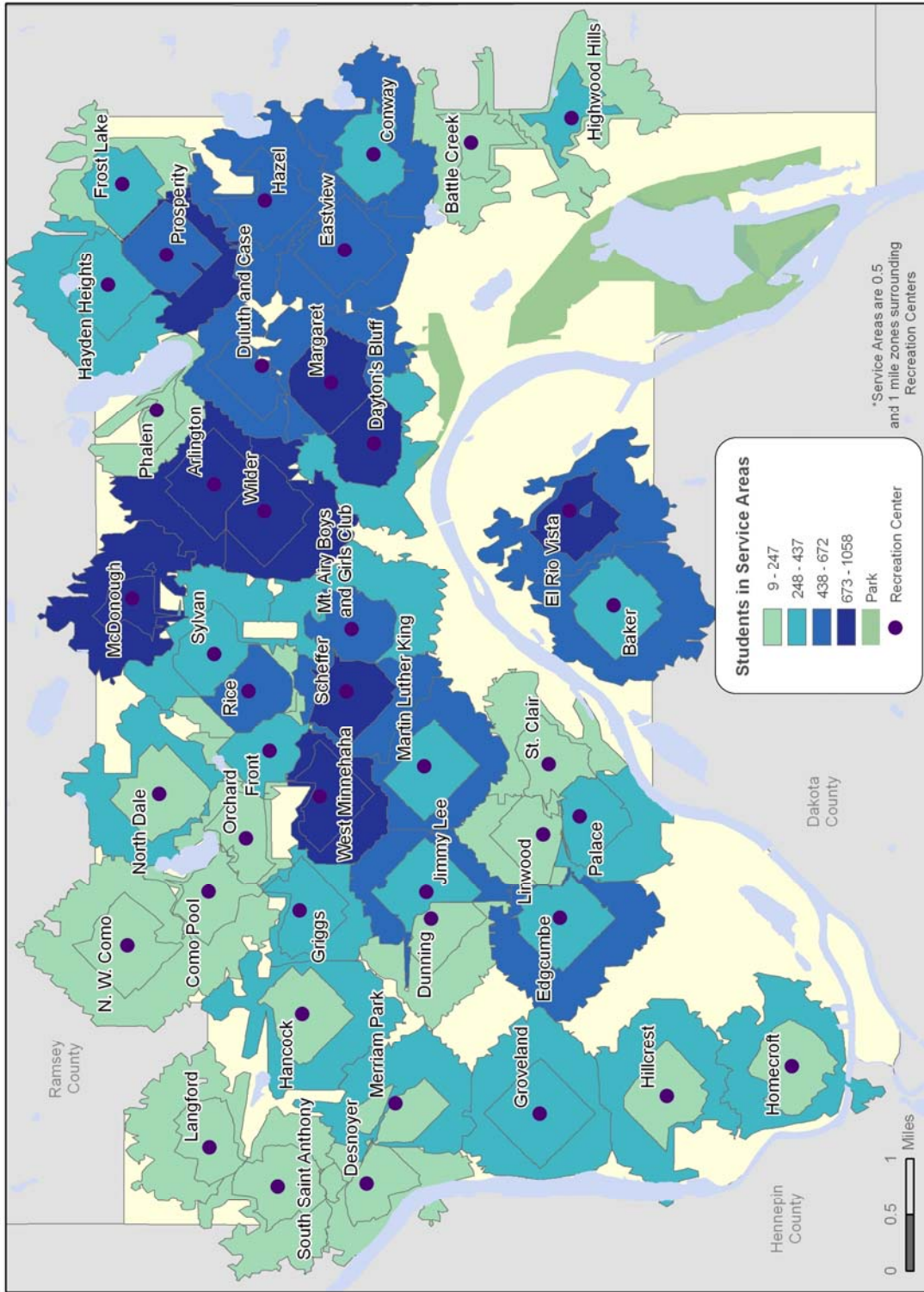
No Students
Outside Service Area

No Data

● Recreation Center
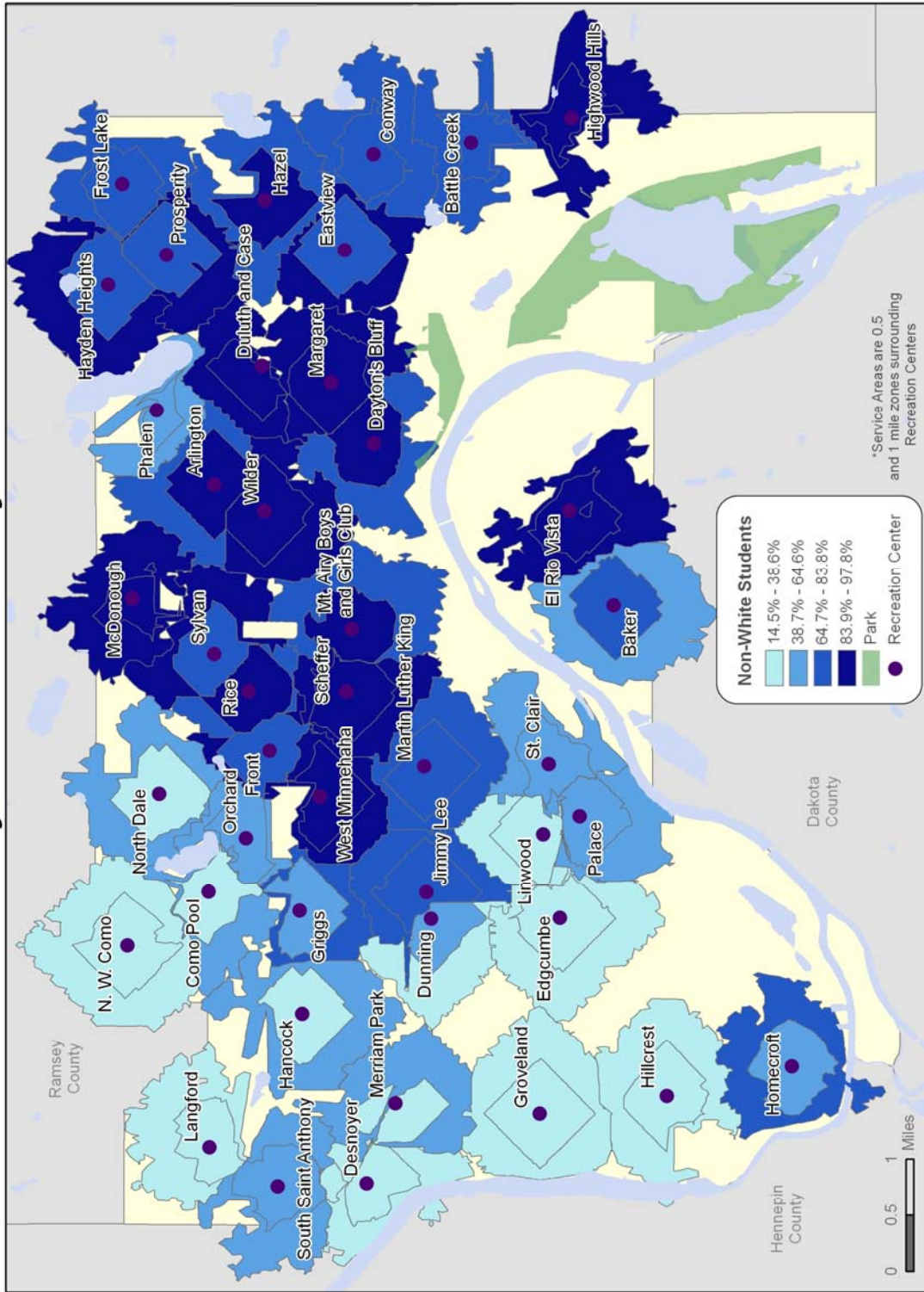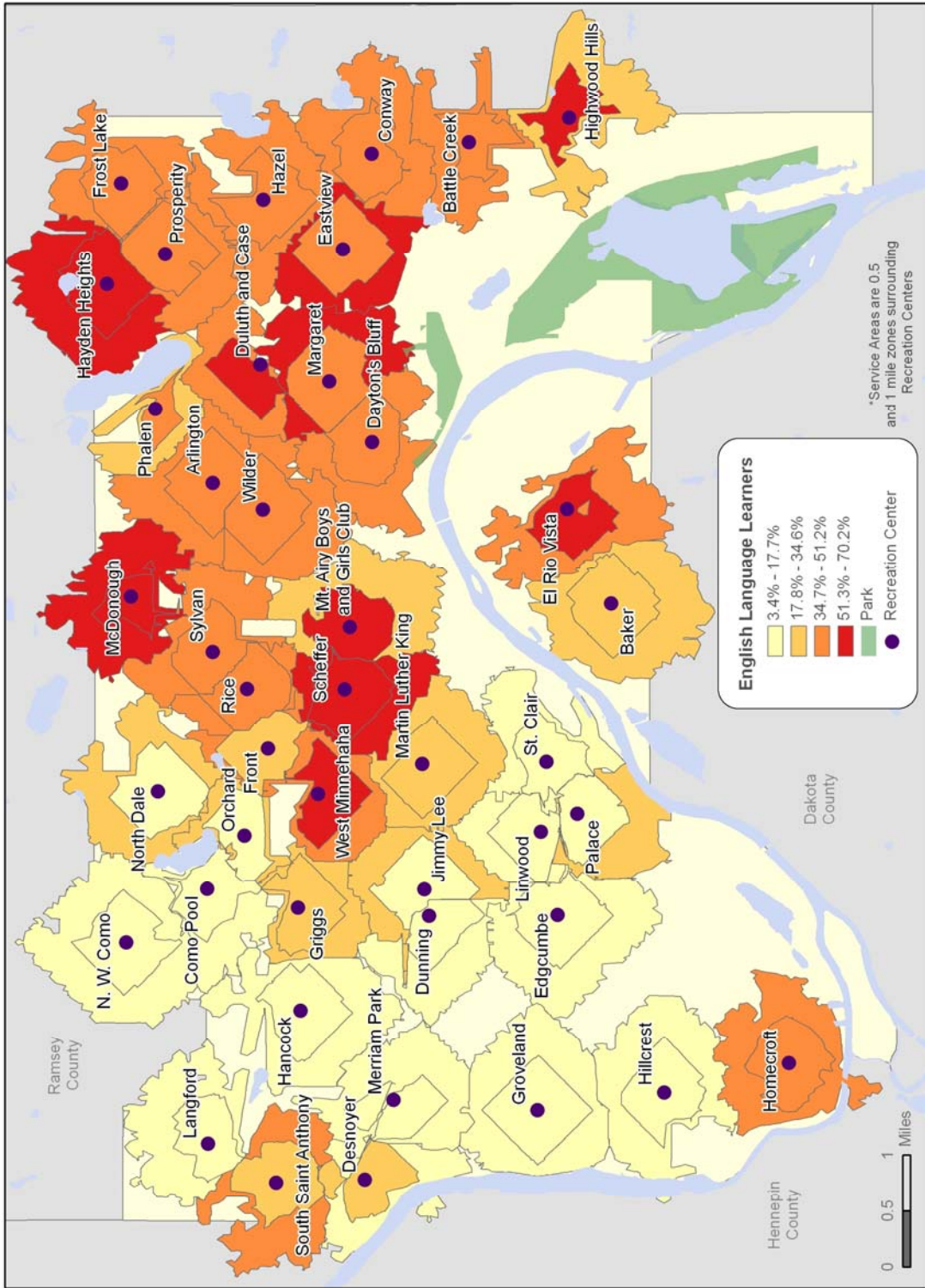
Cartographer Laura Cullenward; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census Block Groups; December 2008

Ramsey County

Dakota County

Hennepin County

Hazel
Conway
Eastview
Battle Creek
Highwood Hills
Hayden Heights
Frost Lake
Prosperity
Duluth and Case
Margaret
Dayton's Bluff
Phalen
Arlington
Wilder
El Rio Vista
McDonough
Mt. Airy Boys and Girls Club
Baker
Sylvan
Scheffer
Martin Luther King
Rice
St. Clair
Front
West Minnehaha
North Dale
Orchard
Linwood
Palace
Griggs
Jimmy Lee
N. W. Como
Como Pool
Hancock
Dunning
Edgcumbe
Merriam Park
Groveland
Hillcrest
Homecroft
South Saint Anthony
Desnoyer
Langford

0   0.5   1
Miles

SPPS Students Living Outside Service Areas Qualifying for Free and Reduced Lunch

Hazel
Conway
Highwood Hills
Eastview
Battle Creek
Hayden Heights
Frost Lake
Prosperity
Duluth and Case
Margaret
Dayton's Bluff
Phalen
Arlington
Wilder
El Rio Vista
McDonough
Mt. Airy Boys and Girls Club
Baker
Sylvan
Rice
Scheffer
Martin Luther King
Front
St. Clair
North Dale
West Minnehaha
Orchard
Jimmy Lee
Linwood
Palace
Griggs
N. W. Como
Como Pool
Dunning
Edgcumbe
Hancock
Merriam Park
Groveland
Hillcrest
Homecroft
Langford
South Saint Anthony
Desnoyer

Ramsey County
Dakota County
Hennepin County

Qualifying Students

	0
	1 - 11
	12 - 32
	33 - 53
	54 - 87

	No Students
	Outside Service Area
	No Data
•	Recreation Center

0   0.5   1 Miles

Map 41

SPPS Students Living Outside Service Areas Qualifying for Free and Reduced Lunch

Qualifying Students

- 0.0%
- 0.1% - 25.0%
- 25.1% - 44.4%
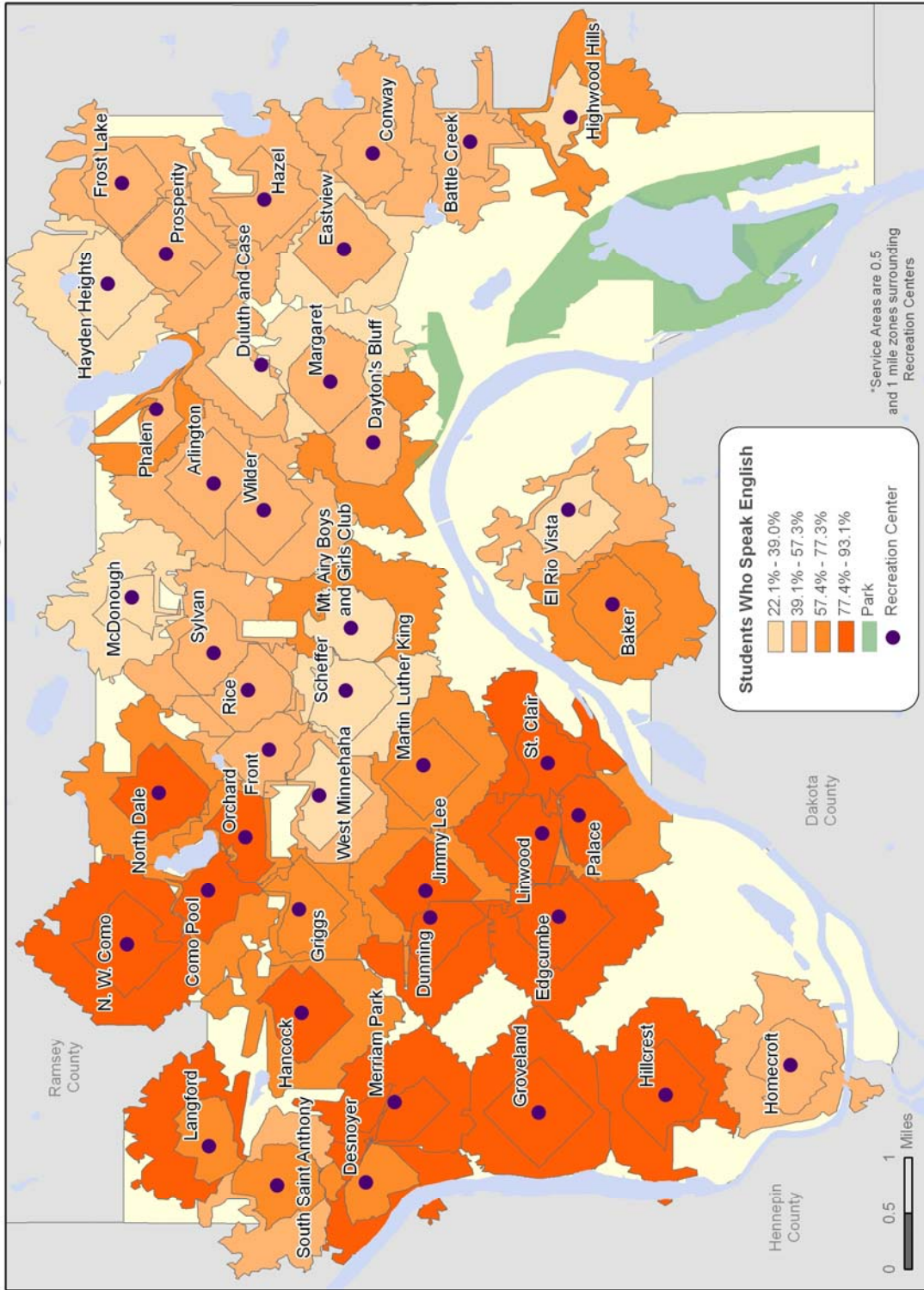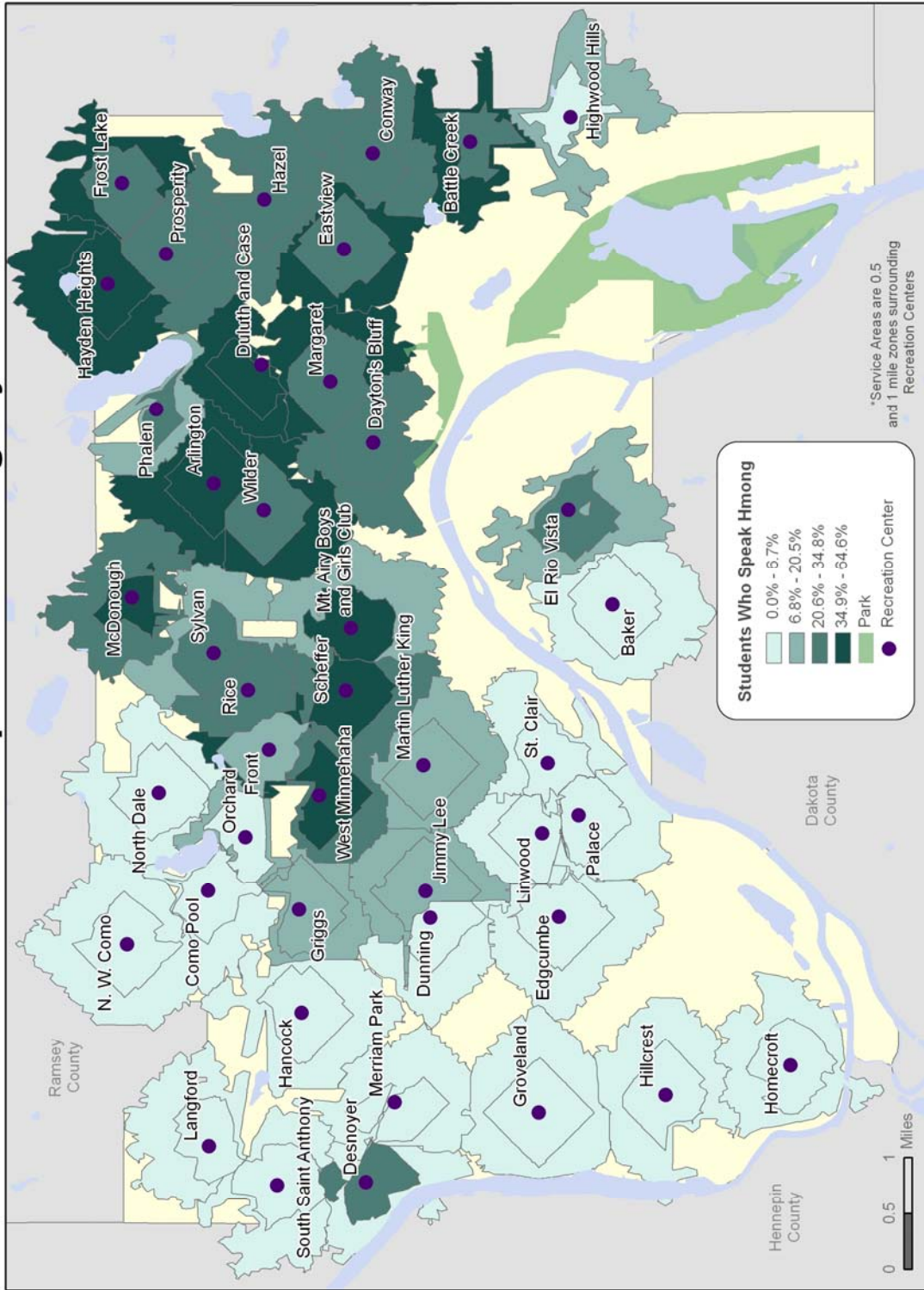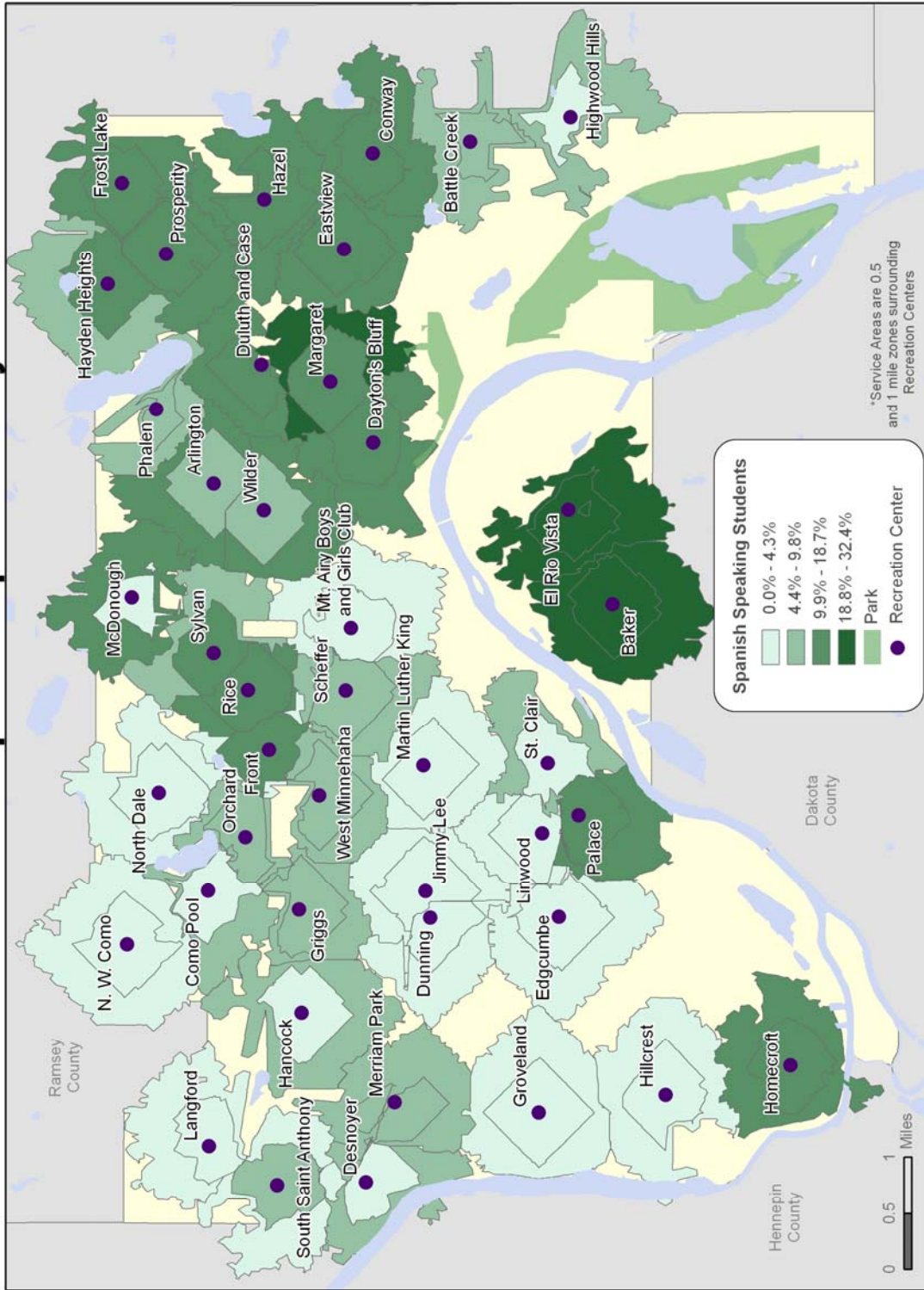- 44.5% - 60.9%
- 61.0% - 100%

No Students
Outside Service Area

No Data

● Recreation Center

Cartographer Laura Cullenward; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census Block Groups; December 2008

Map 42

SPPS Students Living Outside Service Areas Who Are Minority
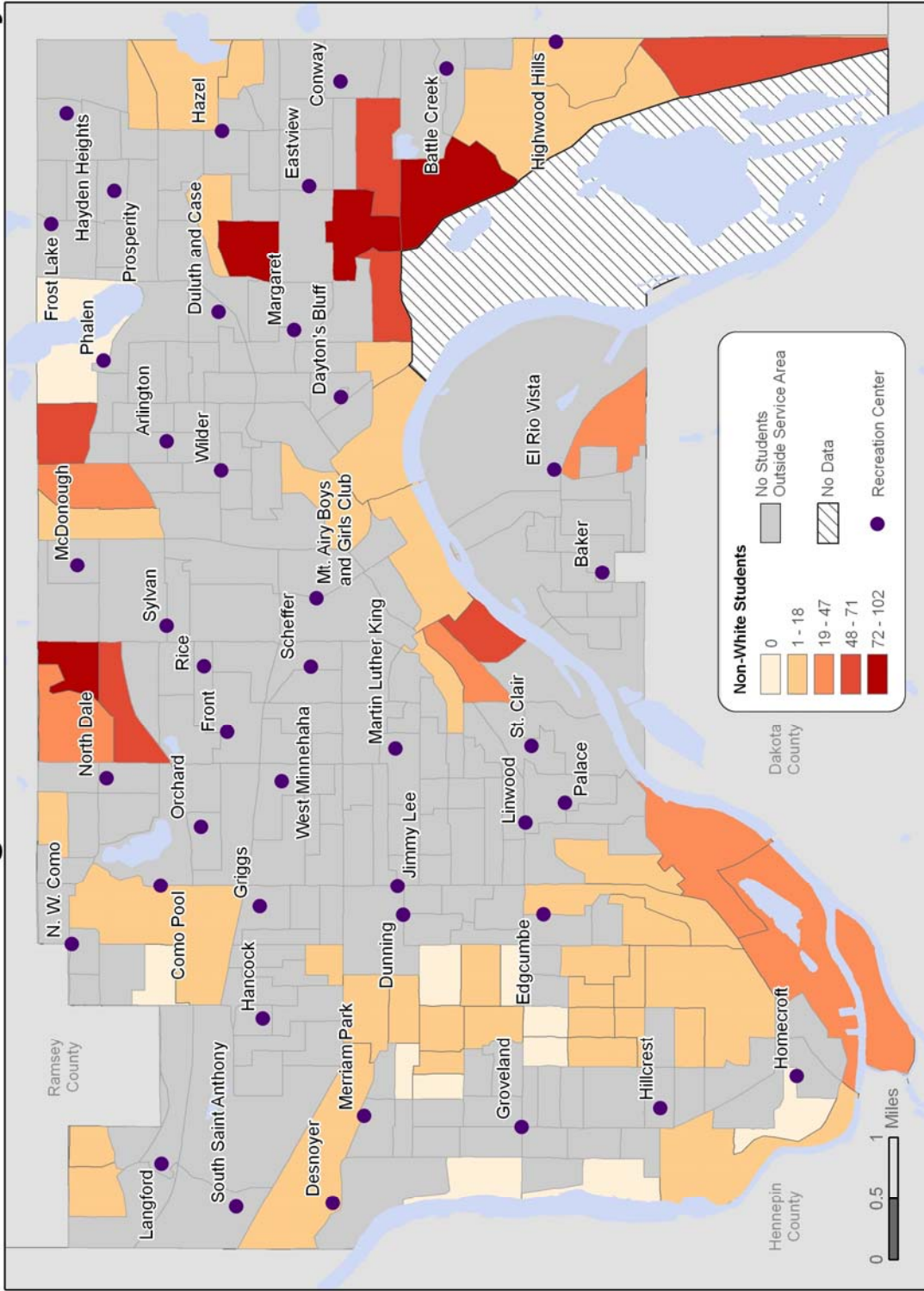
Map 43

Non-White Students

- 0
- 1 - 18
- 19 - 47
- 48 - 71
- 72 - 102

No Students
Outside Service Area

No Data

• Recreation Center
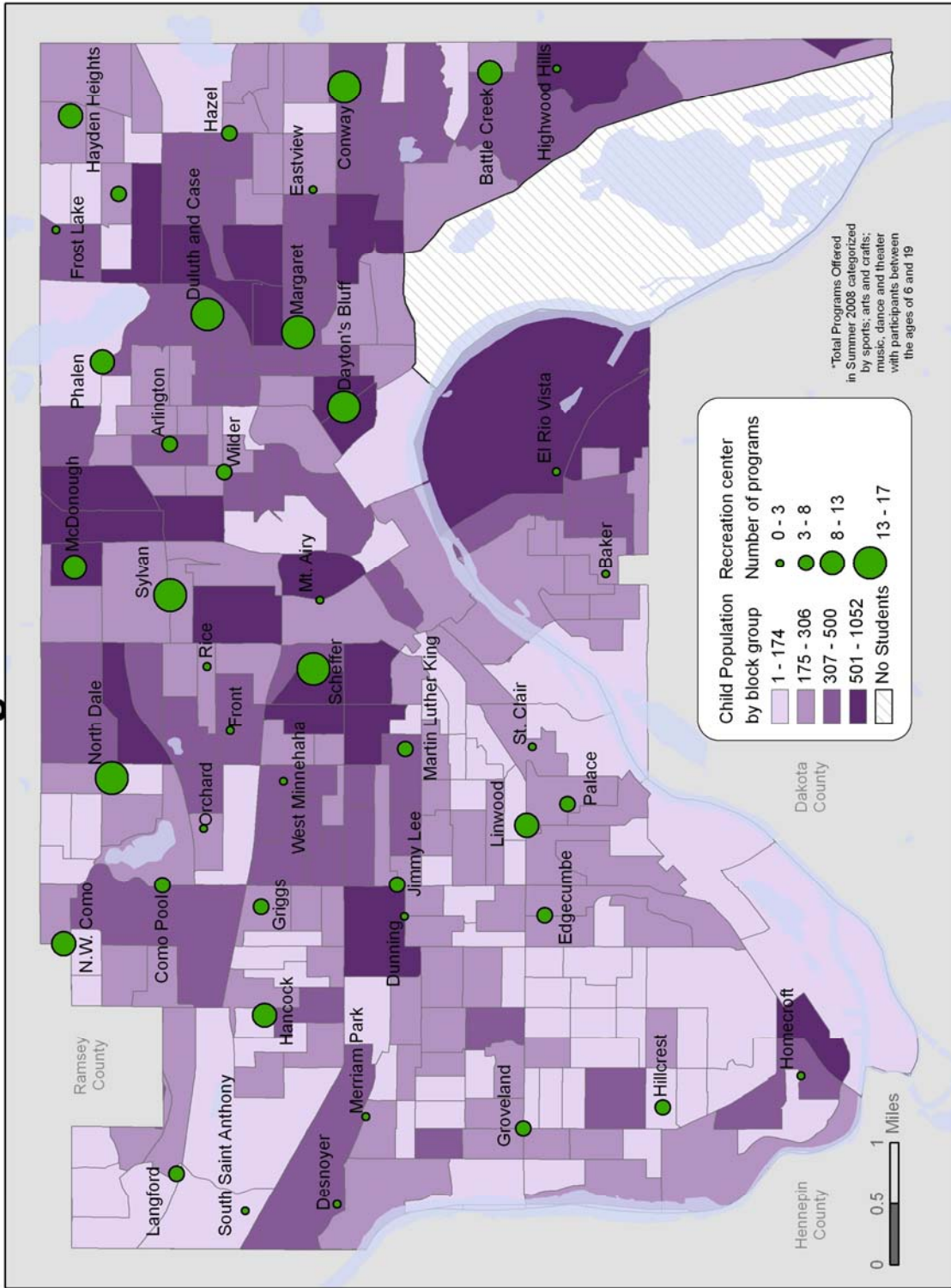
Cartographer Laura Cullenward; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census Block Groups; December 2008
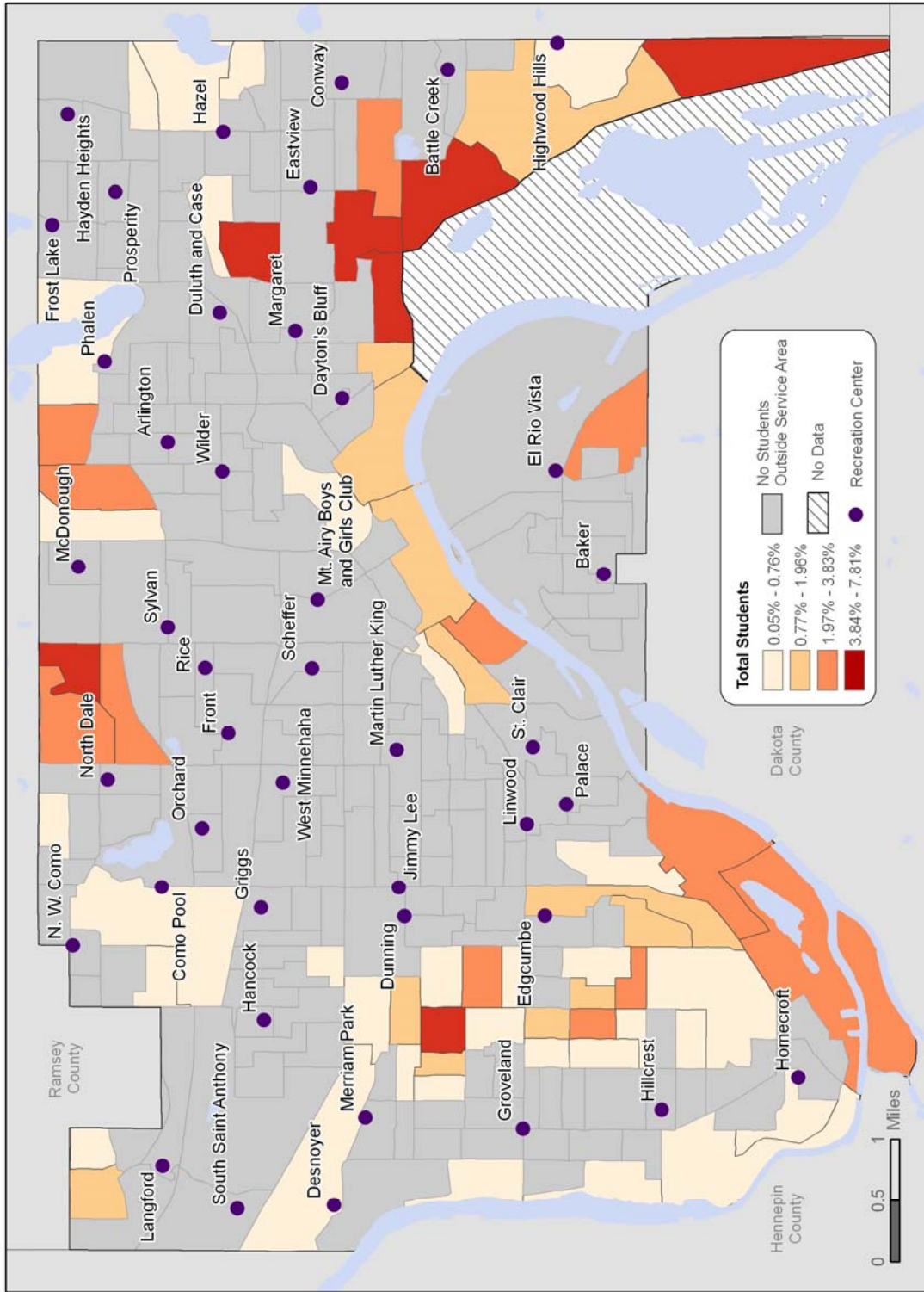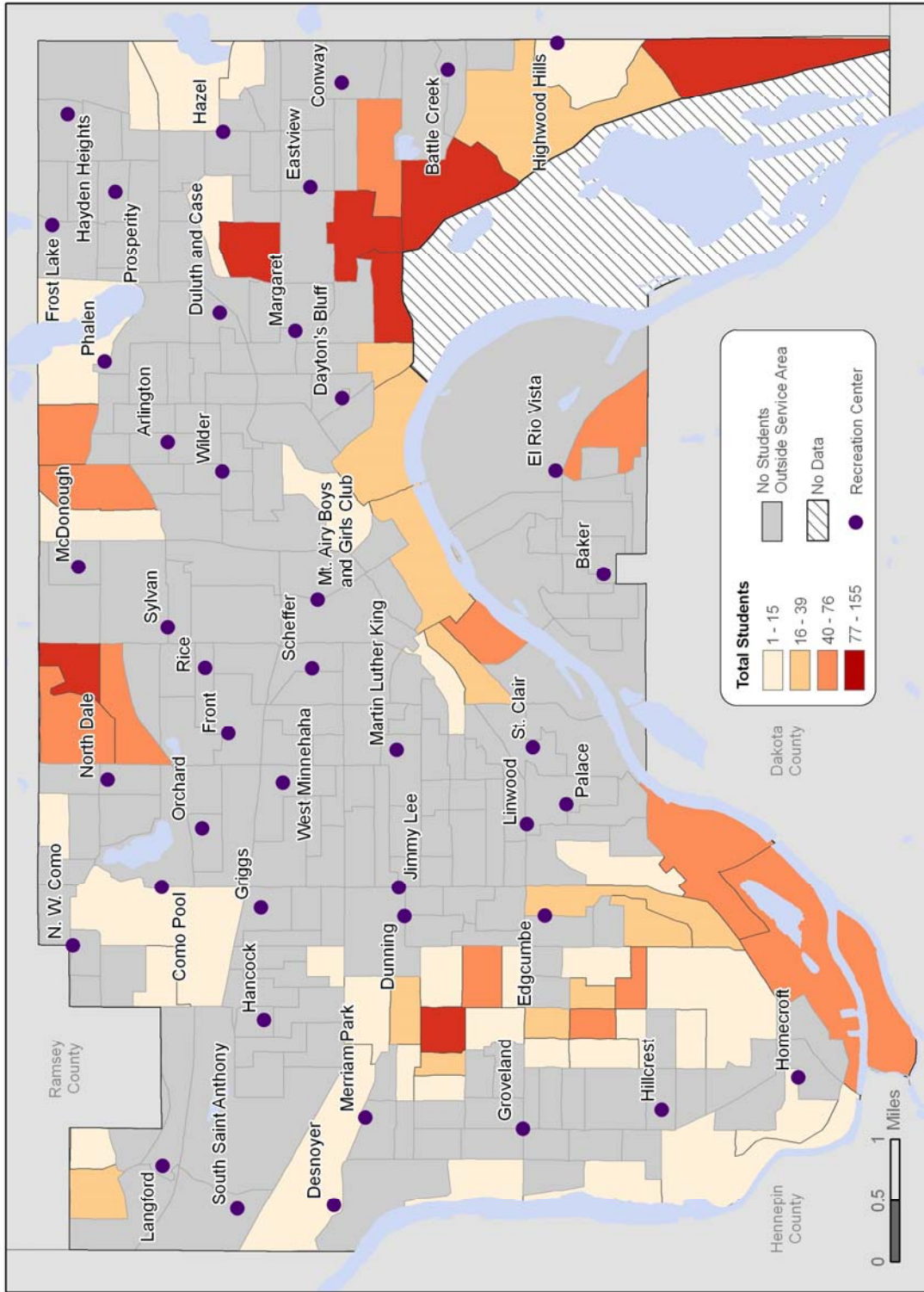
Total Programs Offered*

Cartographer: Elizabeth Diaz; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, GeoLytics, US Census Block Groups: October 2008

Map 44

*Total Programs Offered in Summer 2008 categorized by sports; arts and crafts; music, dance and theater with participants between the ages of 6 and 19

Child Population by block group

- 1 - 174
- 175 - 306
- 307 - 500
- 501 - 1052
- No Students

Recreation center Number of programs

- 0 - 3
- 3 - 8
- 8 - 13
- 13 - 17

Total Programs Offered* By Type

Map 45

Recreation Center
- Sports
- Arts, Crafts
- Music, Theater, Dance
- No Programs

*Total Programs Offered in Summer 2008 with participants between the ages of 6 and 19

Child Population by block group
- 0 - 138
- 139 - 233
- 234 - 369
- 370 - 726
- No Data

Cartographer: Elizabeth Diaz; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, GeoLytics, US Census Block Groups; October 2008

Average Program Fees* by Rec. Center

Program Average Fee

- $0 - $2
- $3 - $7
- $8 - $11
- $11 - $20

Population Below Poverty Level

- 0% - 5.9%
- 6% - 17%
- 17.1% - 35.9%
- 36% - 76%
- No Data

*Total programs offered in summer 2008 categorized by sports; arts and crafts; music, dance and theater with participants between the ages of 6 and 19

Ramsey County

Hennepin County

Dakota County

0   0.5   1   Miles

Map 46

Cartographer: Cathleen Torres Parisian; Data Sources: ESRI, Saint Paul Parks and Recreation, Geolytics; US Census; December 2008

Free Programs* by Rec. Center

Ramsey County

Hennepin County

Dakota County

Free Programs
- Sports
- Arts, Crafts
- Music, Dance, Theater
- No Free Programs

Population Below Poverty Level
- 0% - 5.9%
- 6% - 17%
- 17.1% - 35.9%
- 36% - 76%
- No Data

0   0.5   1   Miles

*Total programs offered in summer 2008 categorized by sports; arts and crafts; music, dance and theater with participants between the ages of 6 and 19
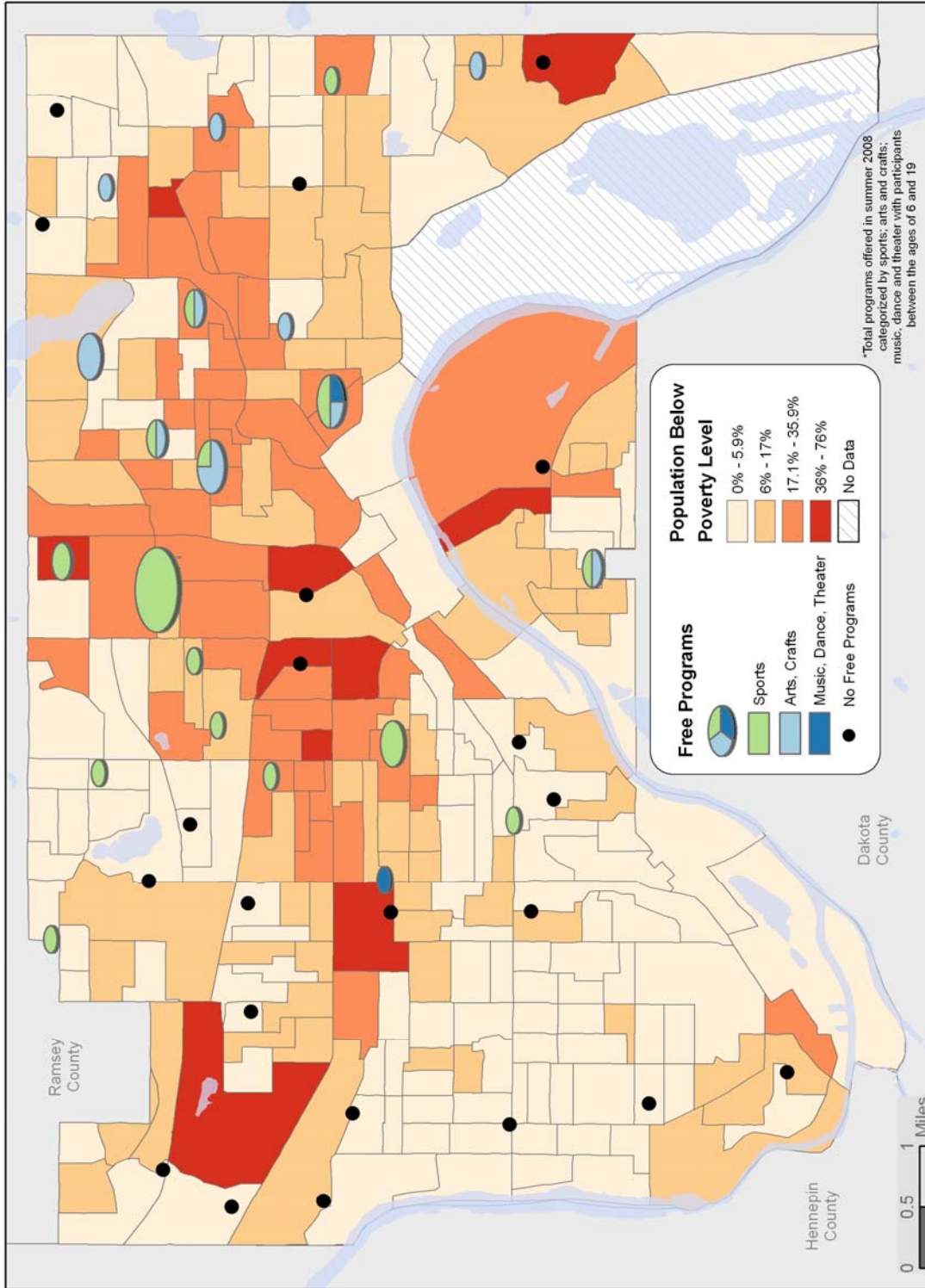
Cartographer; Cathleen Torres Parisian; Data Sources: Geolytics, ESRI, Saint Paul Parks and Recreation, US Census; December 2008

Map 47

Recreation Center Programs* With and Without Fees
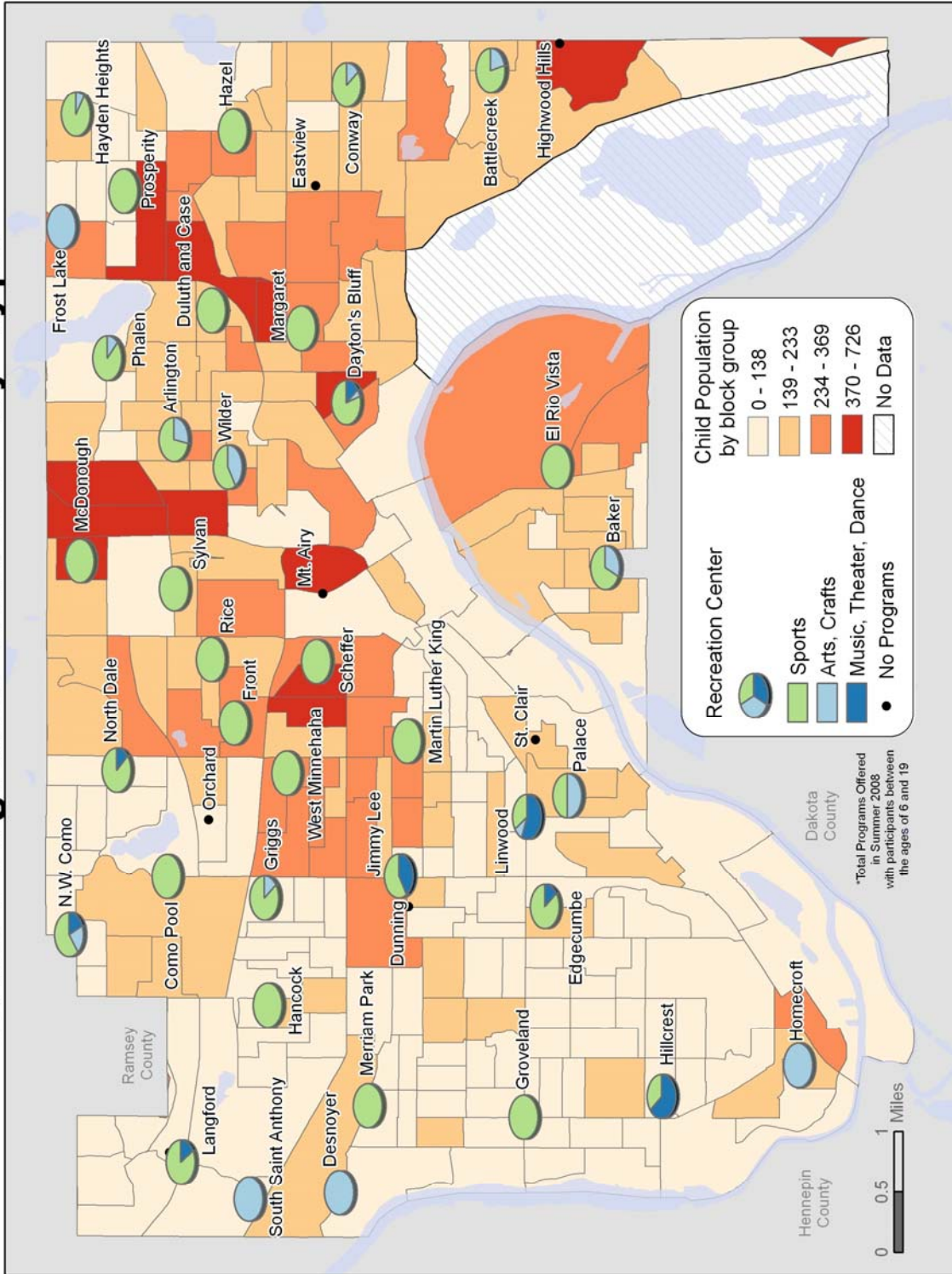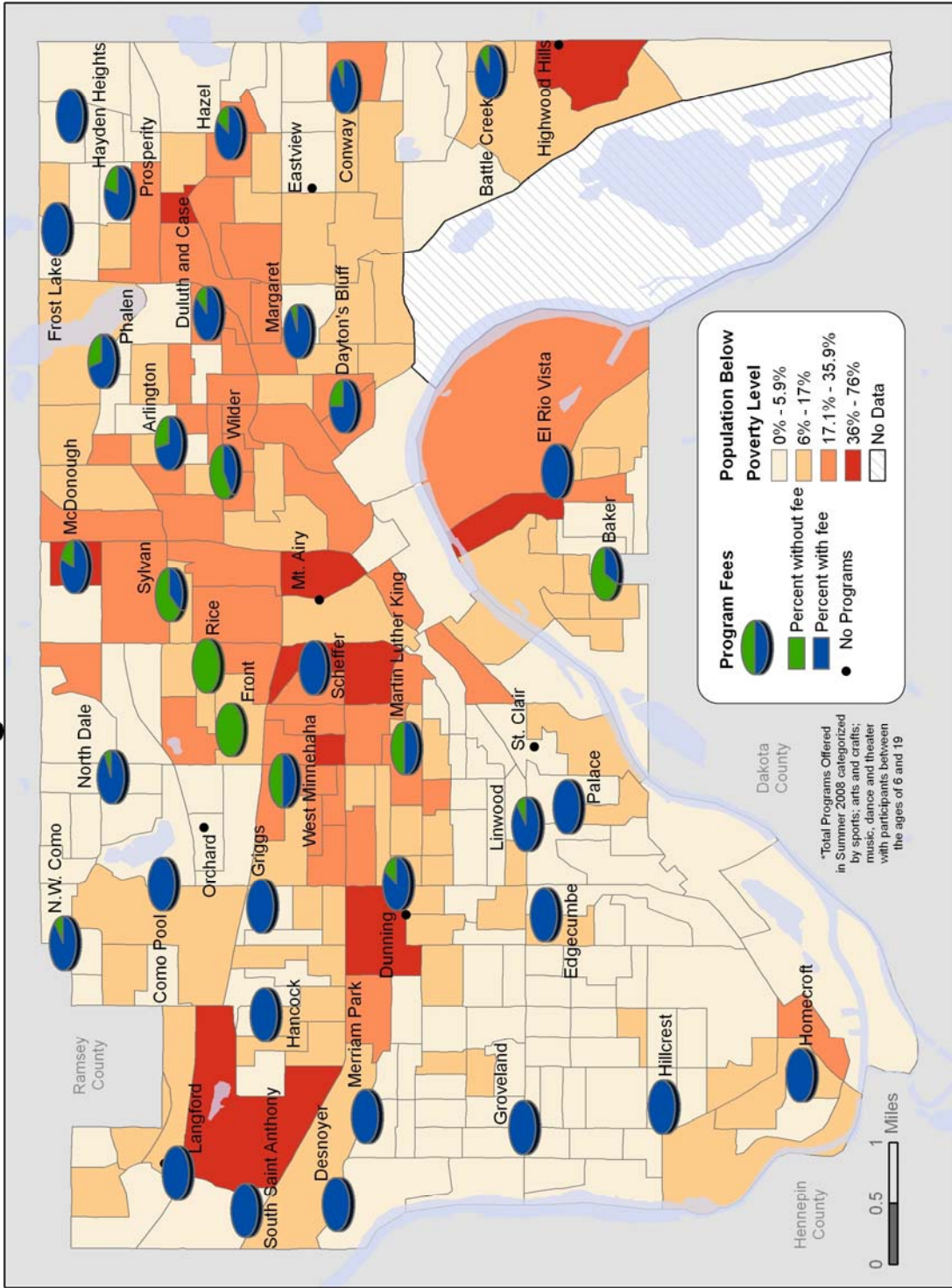

Map 48

Cartographer: Elizabeth Diaz; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, GeoLytics; October 2008
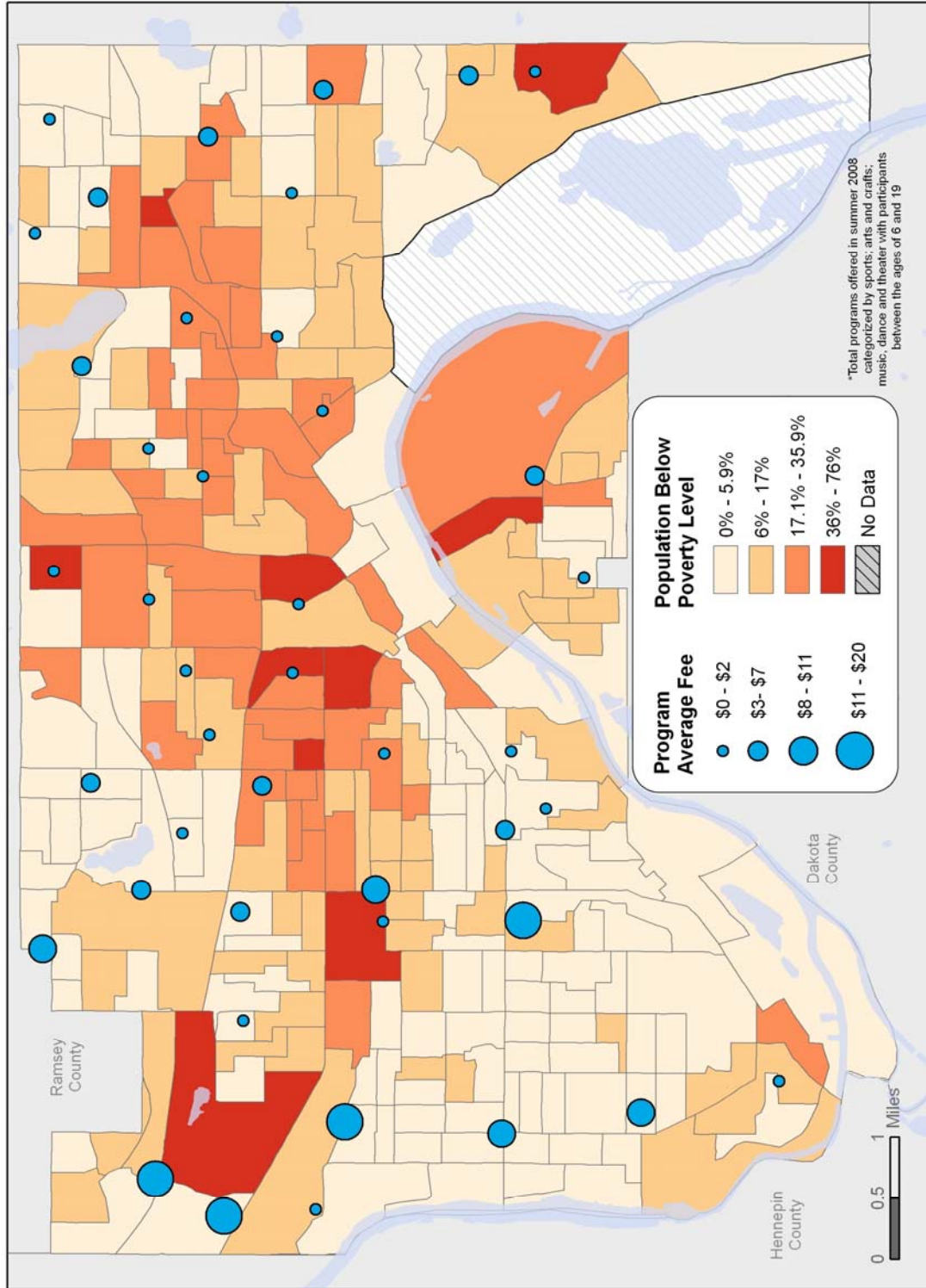
Program Fees

- Percent without fee
- Percent with fee
- No Programs

Population Below Poverty Level

- 0% – 5.9%
- 6% – 17%
- 17.1% – 35.9%
- 36% – 76%
- No Data

*Total Programs Offered in Summer 2008 categorized by sports; arts and crafts; music, dance and theater with participants between the ages of 6 and 19

Rec. Center Service Areas for Case Studies

Service Area
Designations
Distance from
Rec Center (Miles)
- 0 - 0.5
- 0.5 - 1
- 1 - 2
- 2 - 3

Battle Creek

Phalen

North Dale

W Minnehaha

Martin Luther King

Griggs

Hancock

Merriam Park

Linwood

Palace

Edgecumbe

Hillcrest

Ramsey County

Hennepin County

Dakota County

0   0.5   1
Miles

Cartographer:Louise Sharrow; Data Sources:ESRI, Saint Paul Parks and Recreation; December 2008

Map 49

Corridor Designations of Saint Paul Recreation Centers

Legend

Center Selected for Case Study

	Corridor
✳	Center Selected for Case Study
●	Central Corridor
■	East Corridor
◀	Northwest Corridor
⬟	Southwest Corridor
◆	West Side/Phalen Corridor

Hayden Heights
Hazel
Eastview
Conway
Highwood Hills
Battle Creek
Frost Lake
Prosperity
Duluth and Case
Margaret
Dayton's Bluff
Phalen
Arlington
Wilder
McDunough
El Rio Vista
Mount Airy
Sylvan
Rice
Scheffer
Baker
Front
Martin Luther King
North Dale
W Minnehaha
Orchard
St Clair
Linwood
NW Como
Como Pool
Griggs
Jimmy Lee
Palace
Hancock
Dunning
Edgecumbe
Langford
Merriam Park
Groveland
Hillcrest
Homecroft
South Saint Anthony
Desnoyer

Ramsey County
Hennepin County
Dakota County

0   0.5   1   Miles

Cartographer/Louise Sharrow; Data Sources: Saint Paul Parks and Recreation Map of Feb 2007 by Ger Pha, ESRI; December 2008

Map 50

Southwest Corridor Rec. Center Program Participants by Service Area
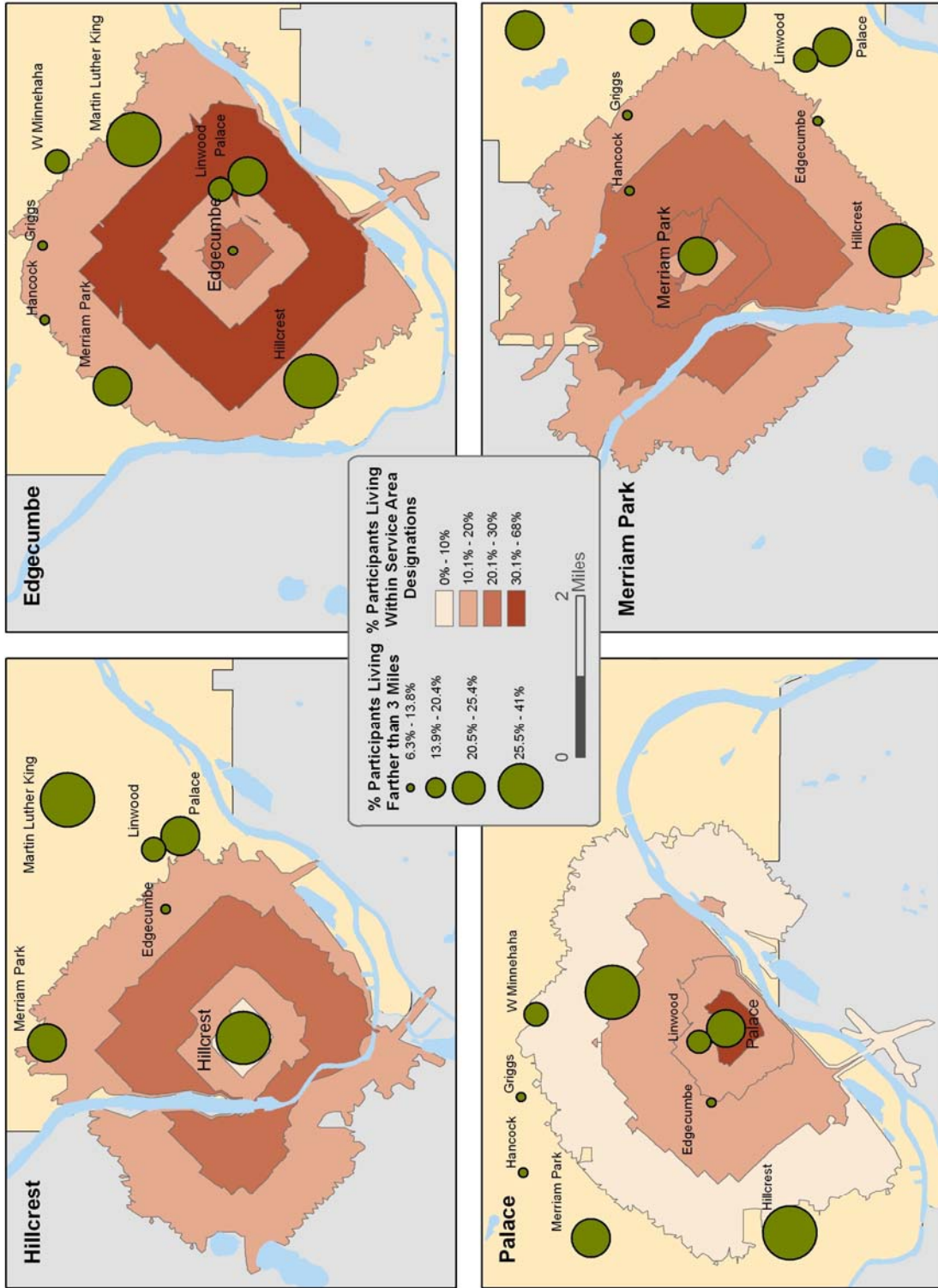
Edgecumbe

Merriam Park

Hillcrest

Palace

% Participants Living Within Service Area Designations
- 0% - 10%
- 10.1% - 20%
- 20.1% - 30%
- 30.1% - 68%

% Participants Living Farther than 3 Miles
- 6.3% - 13.8%
- 13.9% - 20.4%
- 20.5% - 25.4%
- 25.5% - 41%

0   2 Miles

Cartographer: Louise Sharrow; Data Sources: Saint Paul Rec Reserve Master,ESRI; December 2008
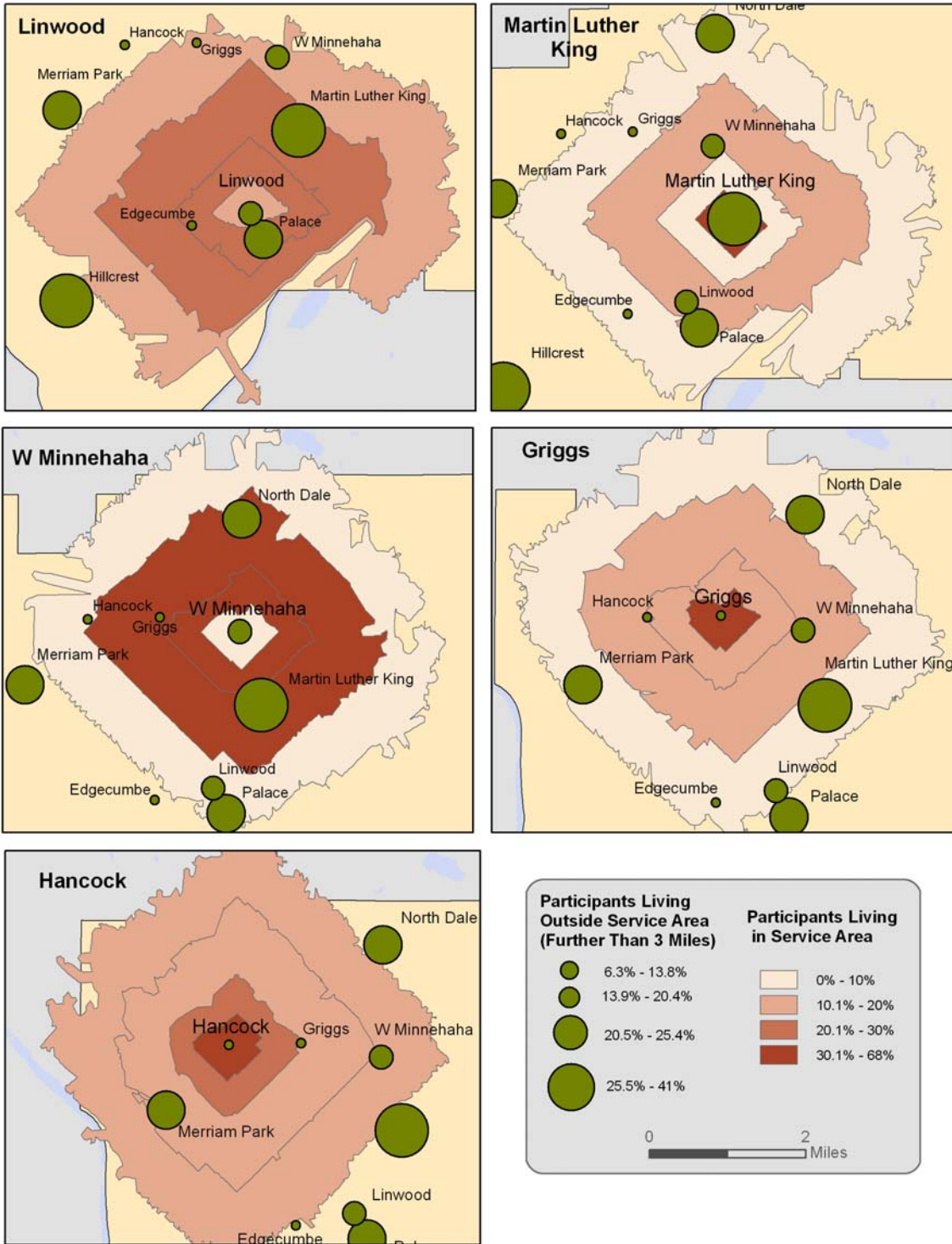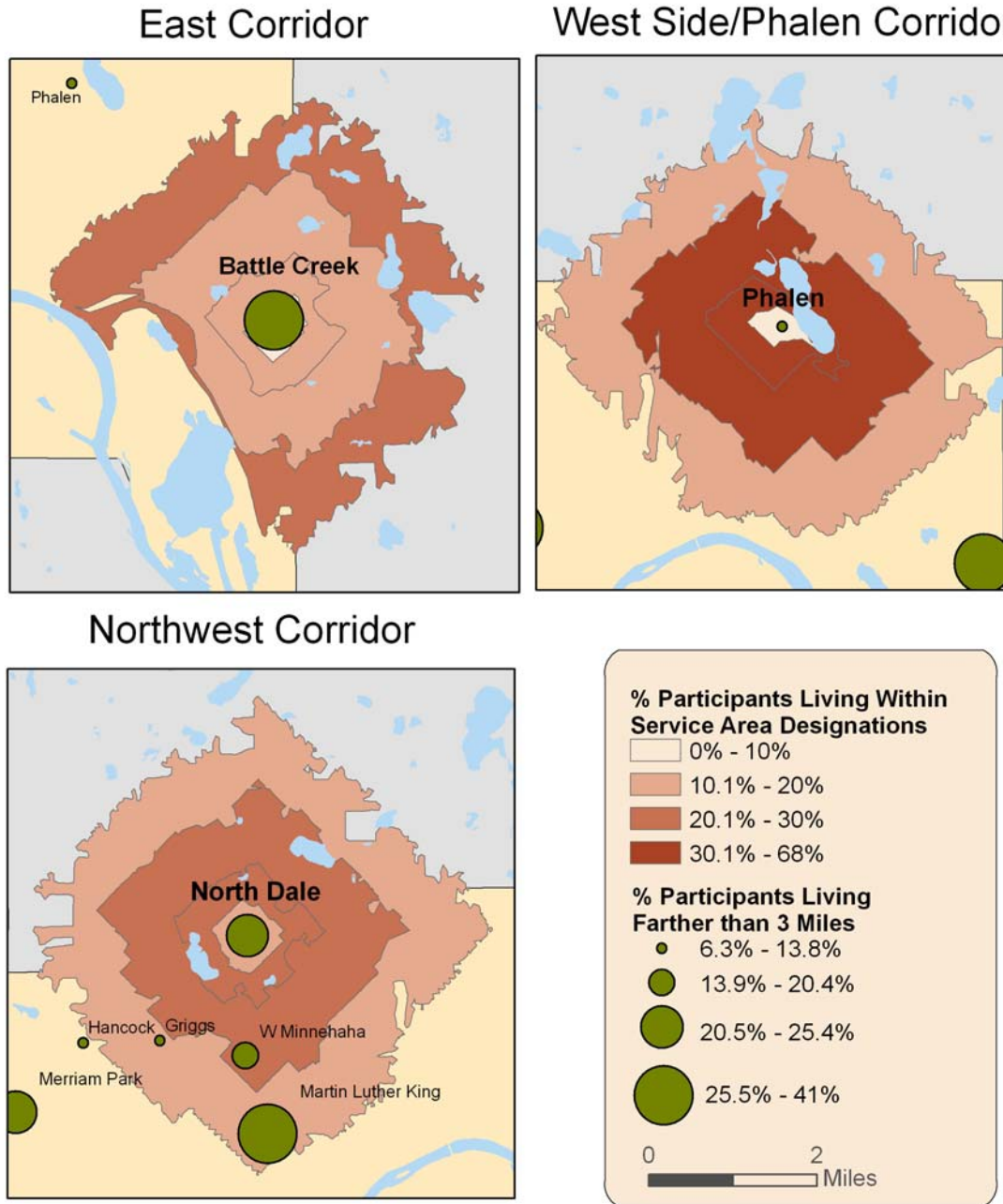
Map 51

Central Corridor Rec. Center
Program Participants by Service Area

Cartographer: Louise Sharrow; Data Sources: Saint Paul Rec Reserve Master, ESRI; December 2008

Map 52

Participants in Rec. Center Programs by Service Area
(Corridors With Single Center Chosen for Case Study)

East Corridor

West Side/Phalen Corridor

Northwest Corridor

% Participants Living Within Service Area Designations
- 0% - 10%
- 10.1% - 20%
- 20.1% - 30%
- 30.1% - 68%

% Participants Living Farther than 3 Miles
- 6.3% - 13.8%
- 13.9% - 20.4%
- 20.5% - 25.4%
- 25.5% - 41%

0   2 Miles

Cartographer: Louise Sharrow; Data Sources: St Paul Rec Reserve Master, ESRI; December 2008

Map 53

Mobile Recreation

Introduction

According to Saint Paul Parks and Recreation (SPPR), mobile recreation provides recreational opportunities during the summer for kids who might not have access to them otherwise. Mobile recreation sites are parks and recreation centers throughout the city where additional staff and activities are available for neighborhood children. SPPR staff bring athletic equipment and other materials such as a mobile climbing wall to each site during a specified time during the day and are available to organize games and help children with the other equipment.

Our objective was to find out where mobile recreation sites exist and which areas of the city may be over- or underserved by SPPR facilities and whether these facilities are effectively reaching their target populations. A major part of our research and analysis involved creating service areas for each mobile recreation site in relation to recreation centers. We also used data from Saint Paul Public Schools (SPPS) to find out where students of particular age groups and sexes live in relation to these sites. This allows us to make some determinations about whether mobile recreation and recreation center programs have the potential to reach their target age groups. Finally, we completed case studies for mobile recreation sites of interest to SPPR. These case studies look more closely at seven sites with attention to age, sex, and languages spoken by children within each site's service area.

Service areas were defined as a one-mile distance from each park, with additional marks at ½ and ¼ mile. Our case studies looked at Aldine Park, Cayuga Park, Hamline-Hague Park, Lewis Park, Ryan Park, Tilden Park, and Weida Park. For citywide age and sex maps, we used student demographic data from SPPS and joined this to Saint Paul block groups so we were able to calculate values (i.e., percentage of 1st-2nd graders out of all students) for each block group.

Mobile recreation maps are organized as follows: first is a map of the service areas of all mobile recreation sites in relation to recreation centers. Second we have maps showing the number of students in each site service area and the numbers of attendees at each site for the summer of 2008. There are also additional total attendance maps broken down for under 7 year olds, 8-11 year olds and 12-14 year olds. Third is a map of recreation centers and mobile recreation sites in relation to various amenities, such as libraries. Fourth are a series of maps looking at the spatial distribution at the block group level of student age and gender data. Fifth, we have case study maps for the seven parks mentioned above that look specifically at the gender, age and language distribution of the students in the service area. Finally, we have maps that look closely at two circulator bus routes that run between recreation centers, libraries, community centers, and nonprofits. The circulator maps show how many students live in the service areas for each bus stop, and where the circulators run in relation to mobile recreation sites and recreation centers.

Maps Analysis and Evaluation

Service Maps

Mobile Recreation Site Service Areas – Map 54

This map shows the areas served by mobile recreation in Saint Paul. The sites are represented with dots, and the shaded polygons represent distances of ¼, ½, and 1 mile from each site. Many areas of Saint Paul lie within 1 mile of a mobile recreation site, with evident underserved spots in western areas of the city south of University Avenue and in the northeast.

Mobile Recreation Students Served – Map 55

This map uses proportional symbols to show the number of students living within the service areas for each mobile recreation site, ranging from 412 to 3200. The sites with the highest number of students in the service area were Carty Park and Lockwood Park, and the lowest were Tilden Park and Aldine Park.

Attendance Maps

Total Attendance at Mobile Recreation Sites, Summer 2008 – Map 56

This map uses proportional symbols to show the number of attendees at each site in summer 2008. The total attendance at mobile recreations sites during the summer of 2008 ranged from 48 – 781 participants. The sites with the highest attendance included Sibley Manor Apartments, Highwood Hills and Carty Park. Other parks with relatively high overall attendance include McDonough Recreation Center, Lockwood Park, Scheffer Recreation Center and Burns Avenue Park.

Total Attendance of Under 7 Year Olds at Mobile Recreation Sites, Summer 2008 – Map 57

For attendance by under 7 year olds, the number of students ranged from 15 – 296 with Highwood Hills having the highest number of attendees followed by Carty Park, Sibley Manor Apartments, Lockwood Park and Burns Avenue Park.

Total Attendance of 8 – 11 Year Olds at Mobile Recreation Sites, Summer 2008 – Map 58

For attendance by students between the ages of 8 – 11, the range was between 11 – 306 students with the most popular sites being Highwood Hills, McDonough Recreation Center, Scheffer Recreation Center, Sibley Manor Apartments and Carty Park. Overall there were a higher number of sites that have a larger attendance by this age group compared to other age groups. In particular, sites that had notably higher attendance in this age group included Torres San Miguel Homes, Ryan Park and Weida Park.

Total Attendance of 12- 14 Year Olds at Mobile Recreation Sites, Summer 2008 – Map 59

Attendance by 12 – 14 year olds was the lowest out of the three age categories, with attendance ranging from 3 – 159 in total. Highwood Hills, Sibley Park, McDonough Recreation Center, Skyline Tower Apartments and Scheffer Recreation Center had the highest number of attendees. Sites that had notably higher attendance in this age group were Skyline Tower Apartments and Weida Park.

Mobile Recreation Maps

Mobile Recreation Sites in Relation to First and Second Graders – Map 60

This map shows the concentrations of 1st and 2nd graders as a fraction of the total number of students in a block group. Overall the concentration of 1st and 2nd graders ranged from 3.6 – 27.6 percent but in general this map serves more as a general reference map as there is no specific spatial pattern to the distribution of students. However his map does highlight where higher concentrations of specific aged children are, which can help in determining age-appropriate activities for mobile recreation Sites.

Mobile Recreation Sites in Relation to Third and Fourth Graders – Map 61

This map shows the concentrations of 3rd and 4th graders as a fraction of the total number of students in a block group. Overall the concentration of 3rd and 4th graders ranged from 7.3 – 30.3 percent but in general this map serves more as a general reference map as there is no specific spatial pattern to the distribution of students. However his map does highlight where higher concentrations of specific aged children are, which can help in determining age-appropriate activities for mobile recreation Sites.

Mobile Recreation Sites in Relation to Fifth and Sixth Graders – Map 62

This map shows the concentrations of 5th and 6th graders as a fraction of the total number of students in a block group. Overall the concentration of 5th and 6th graders ranged from 2.9 – 42.9 percent but in general this map serves more as a general reference map as there is no specific spatial pattern to the distribution of students. However his map does highlight where higher concentrations of specific aged children are, which can help in determining age-appropriate activities for mobile recreation sites.

Mobile Recreation Sites in Relation to Seventh to Twelfth Graders – Map 63

This map shows the concentrations of 7th – 12th graders as a fraction of the total number of students in a block group. Overall the concentration of 7th – 12th graders ranged from 20.7 – 60.3 percent but in general this map serves more as a general reference map as there is no specific spatial pattern to the distribution of students. However his map does highlight where higher concentrations of specific aged children are, which can help in determining age-appropriate activities for mobile recreation sites.

Recreation Sites, Libraries and Dairy Queens – Map 64

This map shows the locations of mobile recreation sites, public libraries and Dairy Queens in Saint Paul.

Recreation Centers and Boys and Girls Clubs – Map 65

This map shows locations of recreation centers and the three Boys and Girls Club locations in Saint Paul. Mount Airy Boys and Girls Club is both a recreation center and a Boys and Girls Club.

Case Study Maps

Ages and Languages of Students Within One Mile of Aldine Park – Map 66

 Almost 85% of students in this service area speak English as their primary language.   There are 42 Spanish speakers and 16 Hmong speakers in the area. A further 66 students' primary language was

classified as "Other." About half of the service area's students are in grades 7 through 12, with the remaining students split nearly evenly between grades 1-2, 3-4, and 5-6.

Male Students in Aldine Park Service Area – Map 67

In the areas within a mile of the park, there are block groups in which girls outnumber boys almost 2 to 1. This mobile recreation site could perhaps see a higher attendance rate if it tailored some programs towards girls in the future.

Ages and Languages of Students Within One Mile of Cayuga Park – Map 68

Within the one mile service area of Cayuga Park, the languages most represented are English and Hmong, with each being spoken by about 33 percent of students. Spanish is spoken by less than 10 percent of students, with "other" languages accounting for the remainder. About half of the service area's students are in grades 7 through 12, with the remaining students split nearly evenly between grades 1-2, 3-4, and 5-6.

Male Students in Cayuga Park Service Area – Map 69

In the block group containing Cayuga Park, which includes most of its .5 mile service area, there are slightly more female students present than male, as it falls into the category containing between 42.2 and 49 percent males. Within its one mile service area, which contains parts of block groups to the south, west, and southwest of Cayuga Park, the opposite is true. To the west and south, these block groups contain between 49.1 and 55.6 percent male students; to the southwest, this block group contains 55.7-73.7 percent male students.

Ages and Languages of Students Within One Mile of Lewis Park – Map 70

Just under half of the students in this service area have English as their primary language, and a significant portion (about 30 percent) speak Hmong. The remaining students, a little less than a quarter of the total, speak Spanish or other languages. Half the students in this service area are in grades 7-12, while the remaining students are split evenly between grades 1-2, 3-4, and 5-6. There are 1,933 students in this service area.

Male Students Within One Mile of Lewis Park – Map 71

Overall, the gender distribution in block groups contained in the service area is even. Boys represent just under half of the students in all but one of the block groups contained in the service area. This service area contains 1,933 students.

Ages and Languages of Students Within One Mile of Hamline-Hague Park Service Area – Map 72

The majority of students in this area, over 75 percent, are English speakers, with Hmong being the next most commonly spoken language.   A significant portion of students in the area speak unspecified languages different from the three listed. The majority of students in this area are also beyond grade 7, although this majority proportion makes up less than half of the total students. The remaining students in the area are evenly split between the distinctions within the map (Grade 1 & 2, 3 & 4, 5 & 6).

Male Students in Hamline-Hague Park Service Area – Map 73

The male students within the service area are somewhat underrepresented, with around half of the block groups showing male student populations around 40 percent. Meanwhile the other block groups within the service area have student populations ranging only as high as 54 percent male.

Ages and languages of Students Within One Mile of Ryan Park – Map 74

Just over 50 percent of students in this area are listed with English as their primary language. 30 percent (893 students) of students list Hmong as their primary language. This mobile recreation site could increase attendance rates if it offered programs instructed in Hmong. About half of the service area's students are in grades 7 through 12, with the remaining students split nearly evenly between grades 1-2, 3-4, and 5-6.

Male Students in Ryan Park Service Area – Map 75

Overall, the gender distribution in block groups contained in the service area is even. The lowest rate of boys is 45 percent and the highest is 59 percent, although this block group is located on the edge of the service area. This service area contains 2,950 students.

Ages and Languages of Students Within One Mile of Tilden Park – Map 76

The majority of students in this area (around 80 percent) have English as their primary language. Seventh through 12th graders make up under half the students, while the rest are split evenly between 1st-2nd graders, 3rd-4th graders, and 5th-6th graders.

Male Students Within One Mile of Tilden Park – Map 77

Overall, the gender distribution in block groups contained in the service area is even. Boys represent just under half of the students in most of the block groups contained in the service area, mostly between 37 and 48 percent. This service area contains 412 students.

Male Students in Weida Park Service Area – Map 78

There is a somewhat even distribution of gender in this service area. The percentage of students that are boys ranges from 44 to 55 percent. There is a block group located on the edge of the service area in which 60 percent of the students are boys.

Ages and Languages of Students within One Mile of Weida Park – Map 79

Half the students in this service area are listed as having English as their primary language. A third of the students are listed as having Hmong as their primary language. This mobile recreation site could benefit if it offered some of its programs in Hmong. About half of the service area's students are in grades 7 through 12, with the remaining students split nearly evenly between grades 1-2, 3-4, and 5-6.

Circulator Bus Routes

Payne-Phalen Circulator – Students within ½ mile of each stop – Map 80

On this map, the number of students within ½ mile of each stop on the Dayton's Bluff Circulator is represented by a circle of corresponding size. There was quite a variation in the student population at each stop, the largest student populations were in the northwest corner of the route, with the Arlington Hill Library stop having the highest student population at 1,144 students. Merrick Community Center had the fewest students with 178.

Dayton's Bluff Circulator – Students within ½ mile of each stop – Map 81

On this map, as was the case with the Payne-Phalen Circulator, the number of students within ½ mile of each stop on the Dayton's Bluff Circulator is represented by a circle of corresponding size. The stop with the most students within its service area is Margaret Recreation Center, with 1,161; the stop with the fewest students is the Young Artists Initiative, with 304 students. There are 9 stops in total.

Conclusions and Recommendations

Looking at the total attendance of students at mobile recreation sites during the summer 2008 highlights which centers attract the highest number of students. The high attendance at Sibley Manor Apartments, Carty Park and Highwood Hills across all age groups shows both the popularity and the importance of these mobile recreation sites. In addition, with these three programs serving three different geographic areas it shows how these programs serve very distinct areas of the city. As a result, future programming for all ages should be sure to include these three sites as they are obviously important facilities within their neighborhoods. Overall total attendance was highest among 8 -11 year olds, with a higher number of mobile recreation sites having higher numbers of attendance than any other age groups. This pattern emphasizes the general age group that is generally more attracted to these programs and therefore activities for this age group should be seriously considered.

Finally while overall most parks do attract children all age groups, looking closely at places like Skyline Tower Apartments which attracts significantly more 12- 14 year olds can provide valuable insight about what activities these sites should have in order to gear to a specific age group. In addition, looking at these total attendance maps in comparison to the distribution of the different student ages in the Twin Cities can provide valuable information when planning programming. However although these spatial patterns are important to acknowledge, since the mobile recreation attendance data is based on drop-in numbers and not actual registration, there is no guarantee that these patterns will be duplicated. Overall however they do provide some insight when compared to other demographic maps which hopefully will allow for informed programming decisions.

There is a wide variation in the number of students in the service areas of each mobile recreation site: the smallest has just over 400 students while the largest serves over 3200. These numbers, together with the information on actual attendance last summer, offer some insight into areas of the city that may be over- or underserved and will help in deciding if mobile recreation sites should remain where they are or be moved, and if they should be moved, what locations would be best.

The high attendance at Sibley Manor Apartments, Carty Park and Highwood Hills across all age groups shows both the popularity and the importance of these mobile recreation sites. In addition, with these three programs serving three different geographic areas shows how these programs serve very distinct areas of the city. While overall most parks do attract children from all age groups, looking closely at

places like Skyline Tower Apartments which attracts more 12-14 year olds, in conjunction with the distribution of the different student ages in the Twin Cities will help highlight where age-specific programs may be beneficial for mobile recreation.

The differences in student populations within the service areas of the Circulator Bus stops offers insight into the levels of access provided by each route, and the likelihood that the buses are used by youths within the neighborhoods. Possible adjustments to the routes could be recommended based on student populations as well as recreation center location and usage or enrollment.

Mobile Recreation Service Areas

Map 54

Distance to Site
- < 1/4 mile
- < 1/2 mile
- < 1 mile
- Mobile Rec Site
- Recreation Centers

Burns Ave Park
Lockwood Park
Weida Park
Cayuga Park
Torre De San Miguel Homes
Dunedin Terrace Apartments
Lewis Park
Marydale Park
Central Village Park
Carty Park
Ryan Park
Skyline Towers Apartments
Jimmy Lee
Hamline Park
Tilden Park
Aldine Park
Hamline-Hague Park
Sibley Manor Apartments
Dakota County
Hennepin County

Cartographer: Caroline Rendon; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; December 2008

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Number of Students Served by Mobile Recreation Sites*
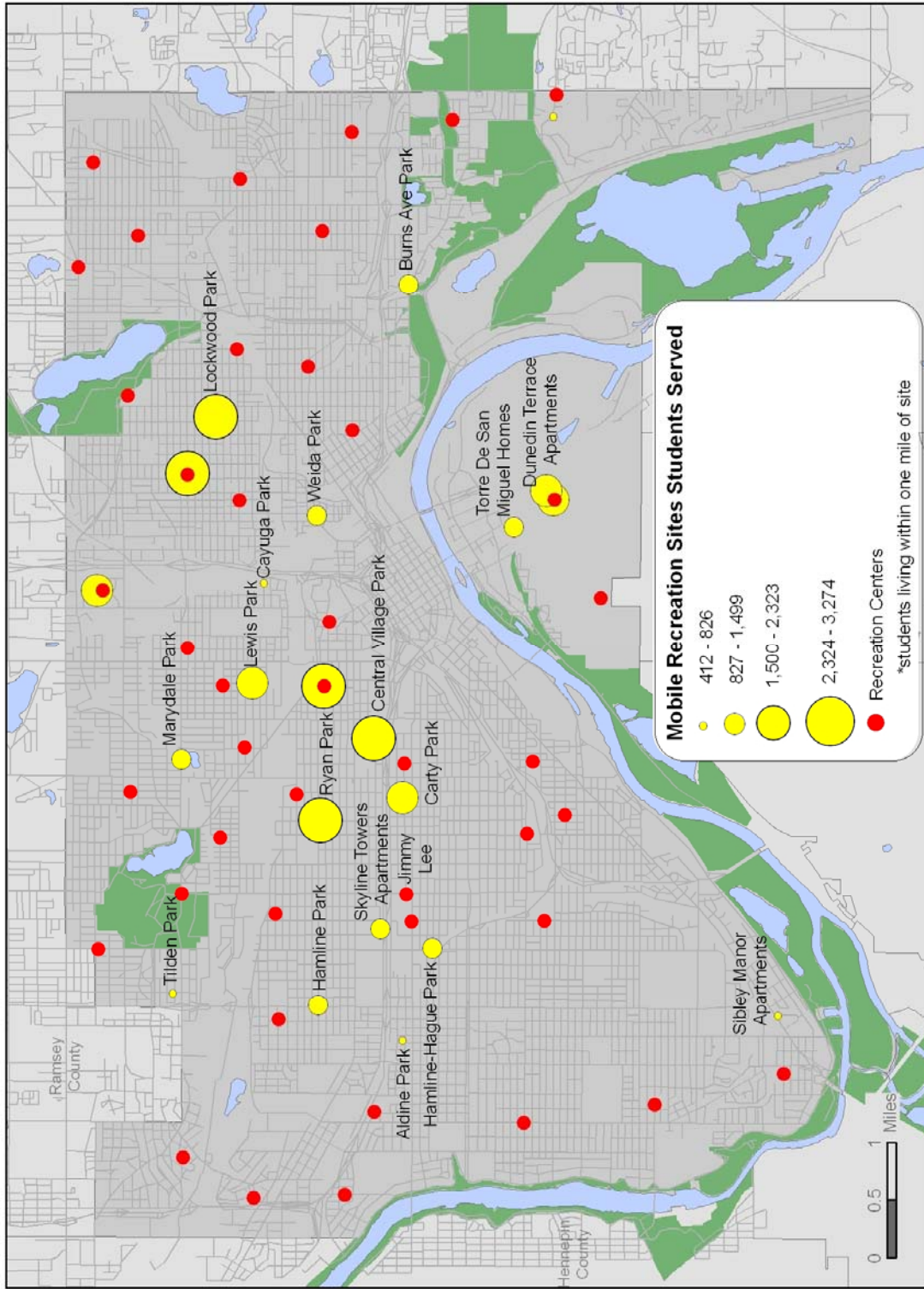
Map 55

Cartographer: Caroline Rendon; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; December 2008

Mobile Recreation Sites Students Served

412 - 826
827 - 1,499
1,500 - 2,323
2,324 - 3,274

Recreation Centers

*students living within one mile of site

Total Attendance at Mobile Recreation Sites, Summer 2008

Highwood Hills

Burns Ave Park

Lockwood Park

Arlington

McDonough

Weida Park

Cayuga Park

Lewis Park

Maryland Park

Scheffer

Central VillagePark

Orchard

Ryan Park

Carty Park

Tilden Park

Hamline Park

Skyline Towers Apartments

Aldine Park

Hamline-Hague Park

Torre De San Miguel Homes

El Rio Vista

Dunedin Terrace Apartments

Sibley Manor Apartments

Total Attendance
- No Data
- 48 - 131
- 132 - 240
- 241 - 389
- 390 - 781

Ramsey County

Hennepin County

Dakota County

0   0.5   1 Mile

Map 56

Total Attendance of Under 7 Year Olds at Mobile Recreation Sites, Summer 2008

Highwood Hills

Burns Ave Park

Lockwood Park

Arlington

McDonough

Weida Park

Cayuga Park

Marydale Park

Lewis Park

Scheffer

Orchard

Central VillagePark

Ryan Park

Carty Park

Tilden Park

Skyline Towers Apartments

Hamline Park

Aldine Park

Hamline-Hague Park

Torre De San Miguel Homes

El Rio Vista

Dunedin Terrace Apartments

Sibley Manor Apartments

Ramsey County

Dakota County

Hennepin County

Total Attendance for Under 7 Year Olds

- No Data
- 15 - 36
- 37 - 110
- 111 - 188
- 189 - 296

0   0.5   1   Mile

Map 57

Total Attendance of 8 - 11 Year Olds at Mobile Recreation Sites, Summer 2008

Highwood Hills

Burns Ave Park

Lockwood Park

Arlington

McDonough

Weida Park

Cayuga Park

Torre De San Miguel Homes

El Rio Vista

Dunedin Terrace Apartments

Lewis Park

Scheffer

Marydale Park

Central VillagePark

Orchard

Ryan Park

Carty Park

Tilden Park

Hamline Park

Skyline Towers Apartments

Aldine Park

Hamline-Hague Park

Sibley Manor Apartments

Ramsey County

Hennepin County

Dakota County

Total Attendance for 8-11 Year Olds

- No Data
- 11 - 34
- 35 - 63
- 64 - 126
- 127 - 306

0   0.5   1 Mile

Cartographer: Anna Popinchalk; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, U.S. Census Buraeu Block Groups; December 2008   Map 58

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Total Attendance of 12- 14 Year Olds at Mobile Recreation Sites, Summer 2008

Map 59
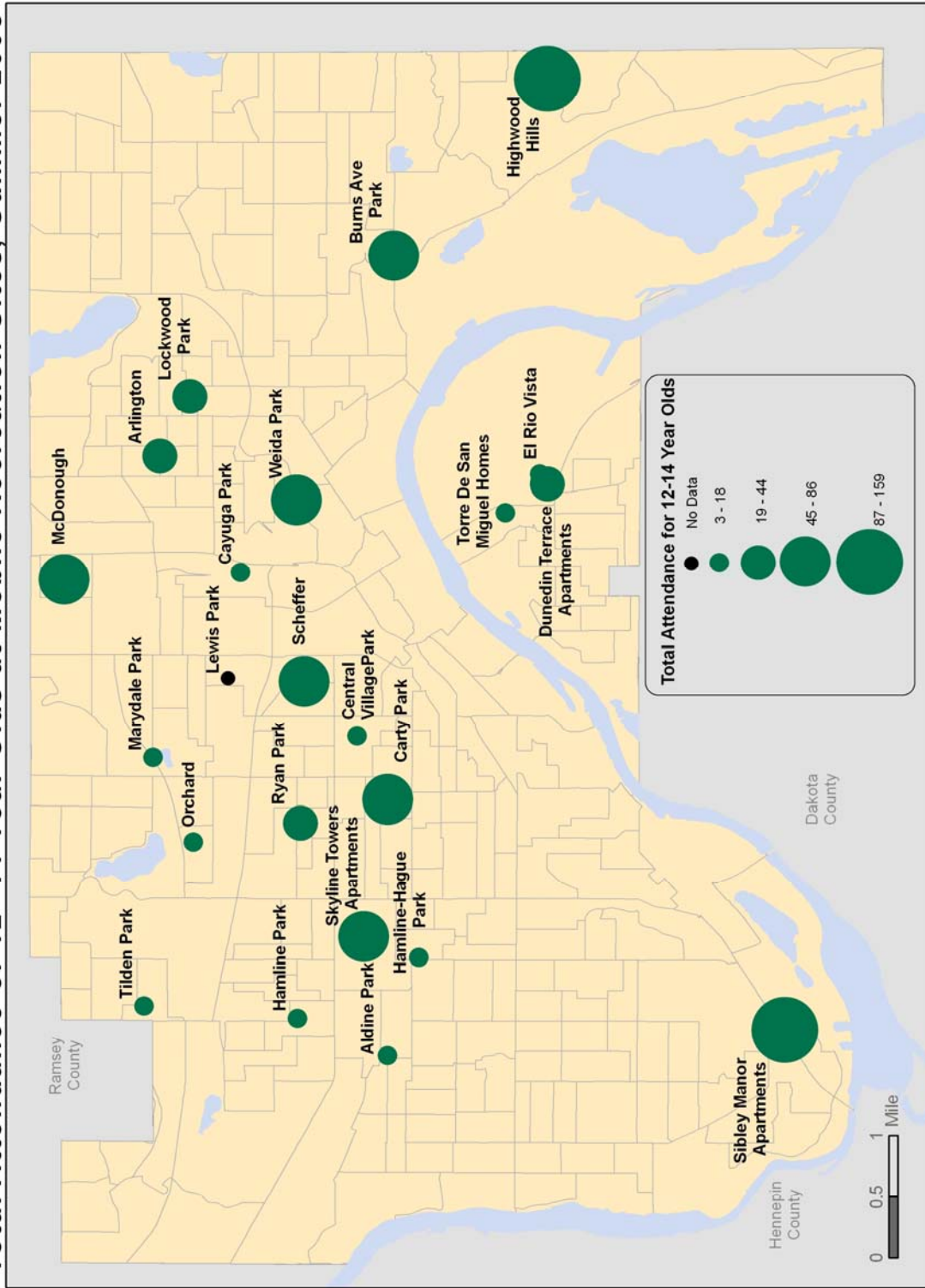
Cartographer: Anna Popinchalk; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, U.S. Census Bureau Block Groups; December 2008

Total Attendance for 12-14 Year Olds

No Data
3 - 18
19 - 44
45 - 86
87 - 159

Highwood Hills

Burns Ave Park

Lockwood Park

Arlington

Weida Park

McDonough

Cayuga Park

Lewis Park

Scheffer

Marydale Park

Central VillagePark

Carty Park

Ryan Park

Orchard

Skyline Towers Apartments

Hamline Park

Hamline-Hague Park

Tilden Park

Aldine Park

Sibley Manor Apartments

Torre De San Miguel Homes

El Rio Vista

Dunedin Terrace Apartments

Ramsey County

Hennepin County

Dakota County

0   0.5   1   Mile

Mobile Recreation Sites in Relation to First and Second Graders

First and Second Graders (%)
- 3.6 - 12.1
- 12.2 - 15.8
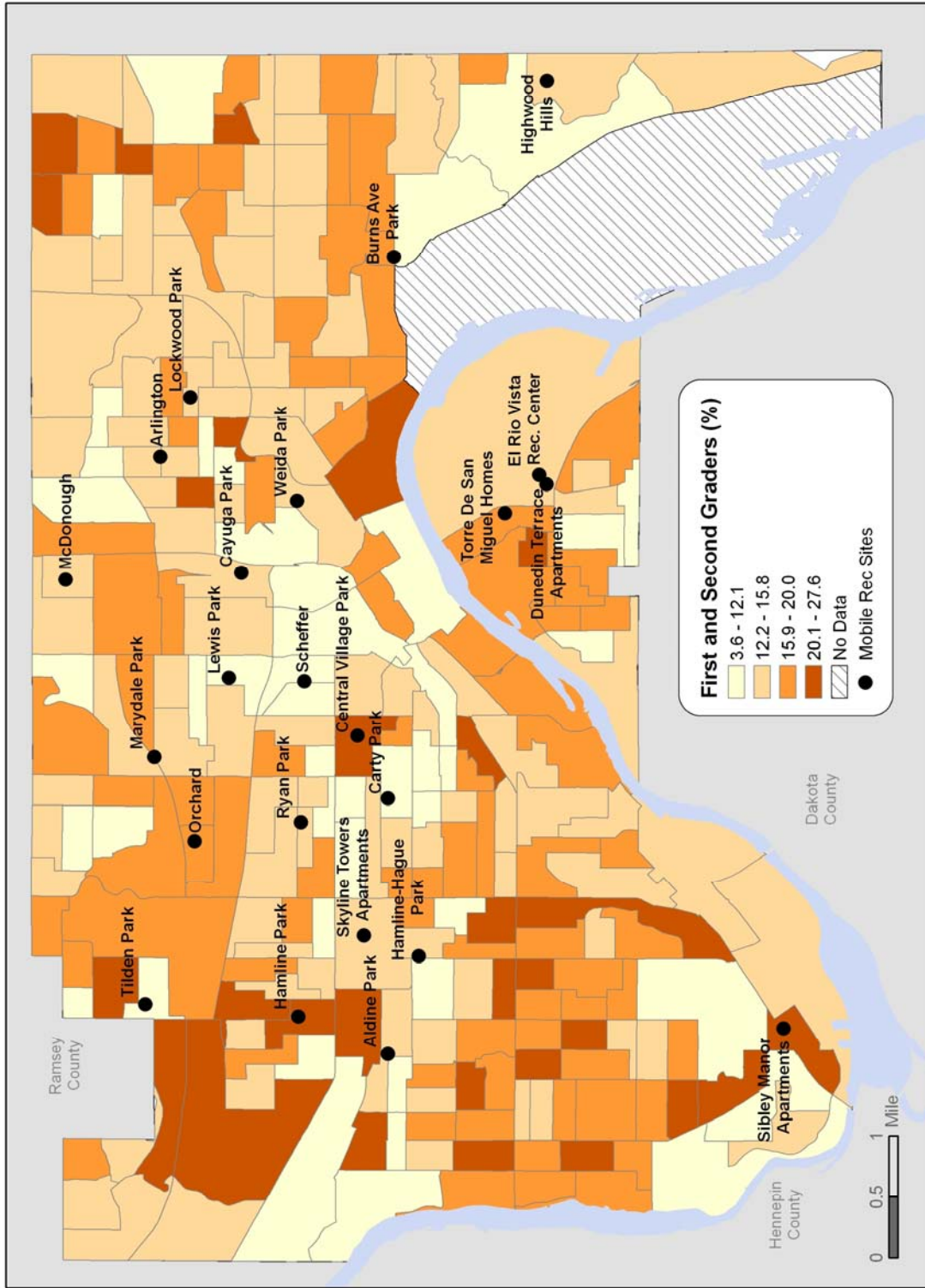- 15.9 - 20.0
- 20.1 - 27.6
- No Data
- Mobile Rec Sites

Cartographer: Anna Popinchalk; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, U.S. Census Bureau Block Groups; December 2008   Map 60
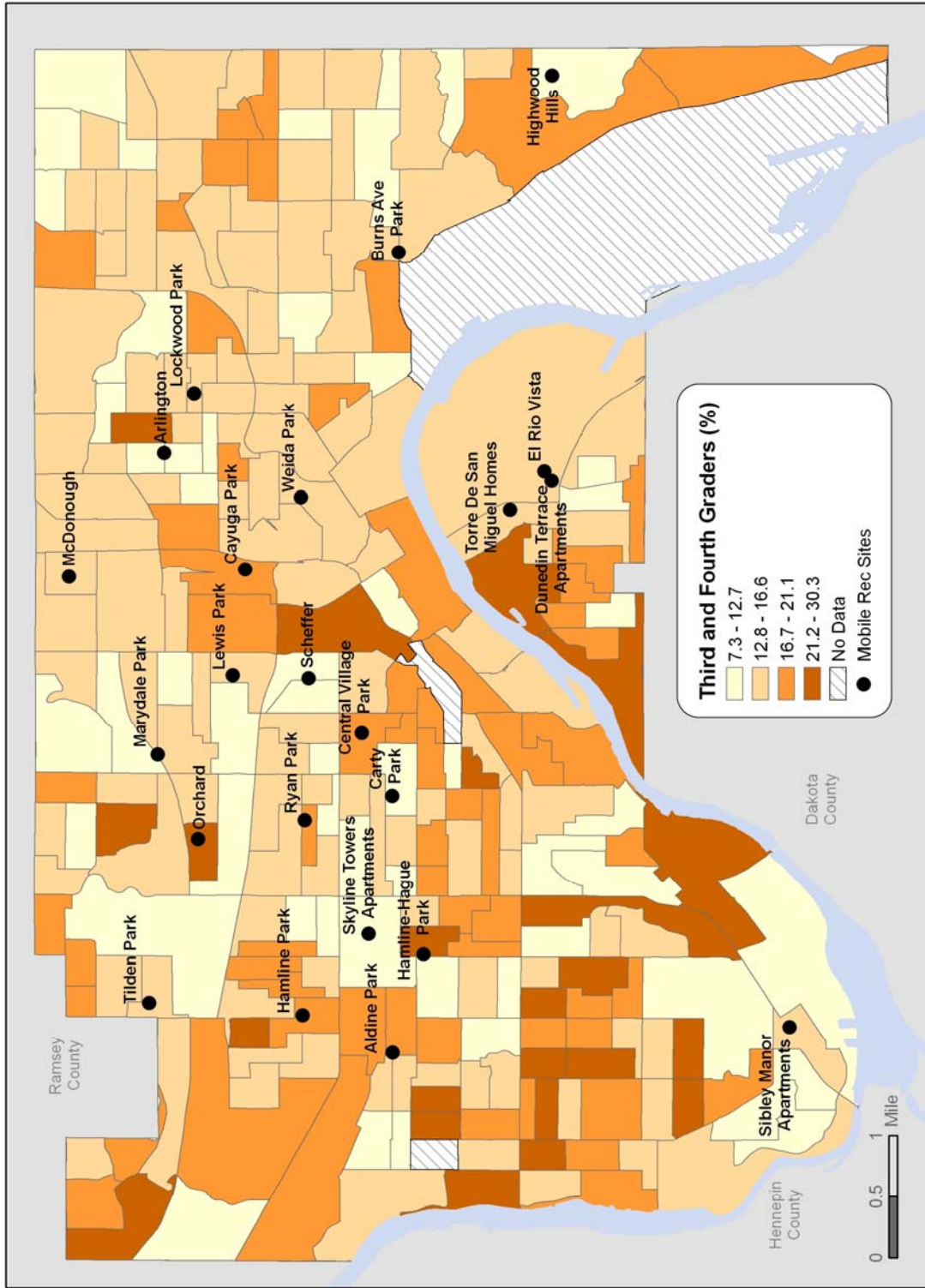
Mobile Recreation Sites in Relation to Third and Fourth Graders

Third and Fourth Graders (%)

- 7.3 - 12.7
- 12.8 - 16.6
- 16.7 - 21.1
- 21.2 - 30.3
- No Data
- Mobile Rec Sites

Highwood Hills

Burns Ave Park

Lockwood Park

Arlington

El Rio Vista

Weida Park

Torre De San Miguel Homes

McDonough

Cayuga Park

Dunedin Terrace Apartments

Lewis Park

Scheffer

Marydale Park

Central Village Park

Orchard

Ryan Park

Carty Park

Skyline Towers Apartments

Hamline Park

Hamline-Hague Park

Tilden Park

Aldine Park

Sibley Manor Apartments

Ramsey County

Hennepin County

Dakota County

0   0.5   1 Mile

Cartographer: Anna Popinchalk; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, U.S. Census Bureau Block Groups; December 2008   Map 61
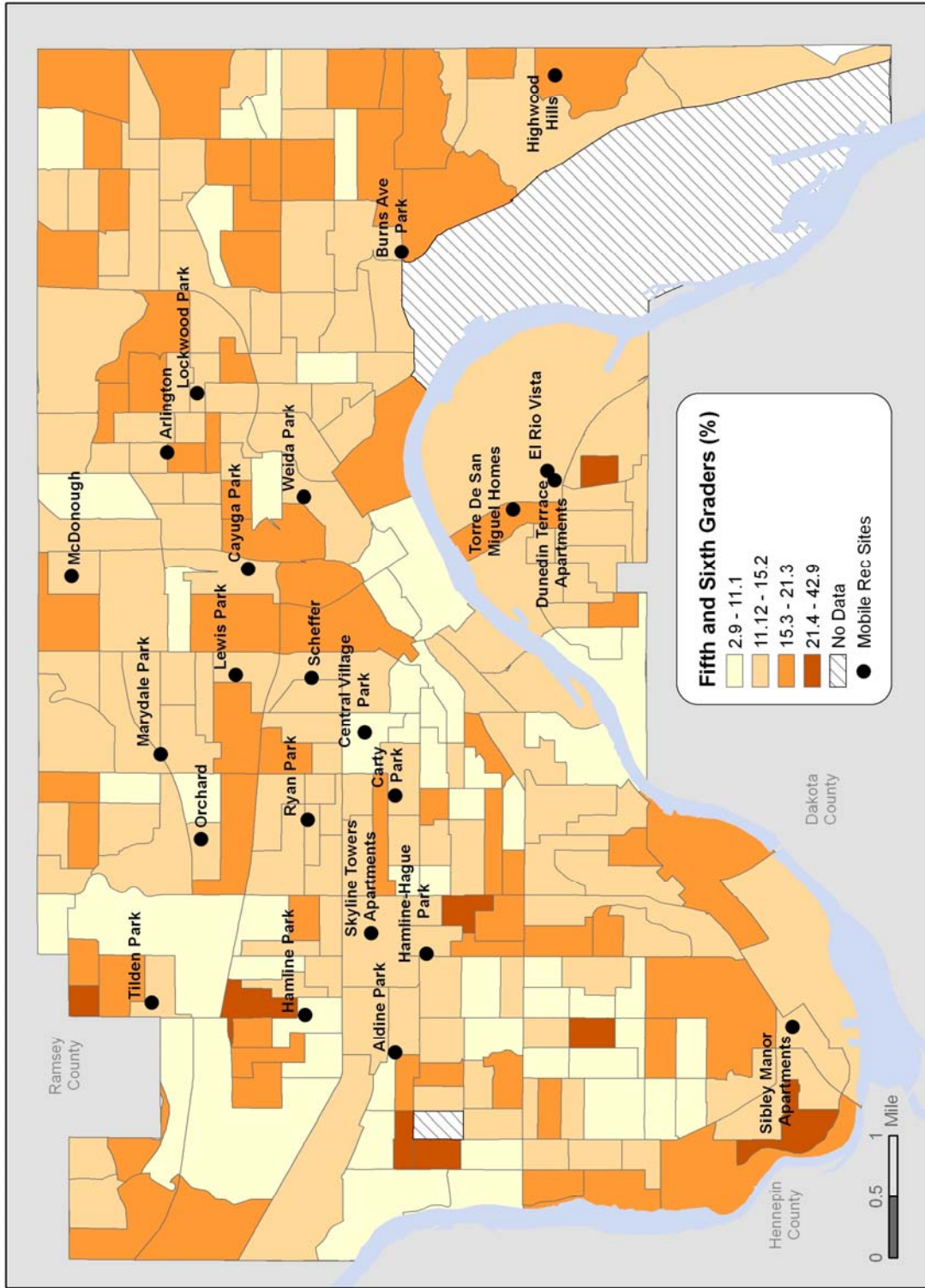
Mobile Recreation Sites in Relation to Fifth and Sixth Graders

Fifth and Sixth Graders (%)

- 2.9 - 11.1
- 11.12 - 15.2
- 15.3 - 21.3
- 21.4 - 42.9
- No Data
- ● Mobile Rec Sites

Highwood Hills

Burns Ave Park

Lockwood Park

Arlington

Weida Park

McDonough

Cayuga Park

Torre De San Miguel Homes

El Rio Vista

Dunedin Terrace Apartments

Lewis Park

Scheffer

Marydale Park

Central Village Park

Orchard

Ryan Park

Carty Park

Skyline Towers Apartments

Hamline-Hague Park

Tilden Park

Hamline Park

Aldine Park

Sibley Manor Apartments

Ramsey County

Hennepin County

Dakota County

0   0.5   1 Mile

Cartographer: Anna Popinchalk; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, U.S. Census Bureau Block Groups; December 2008   Map 62
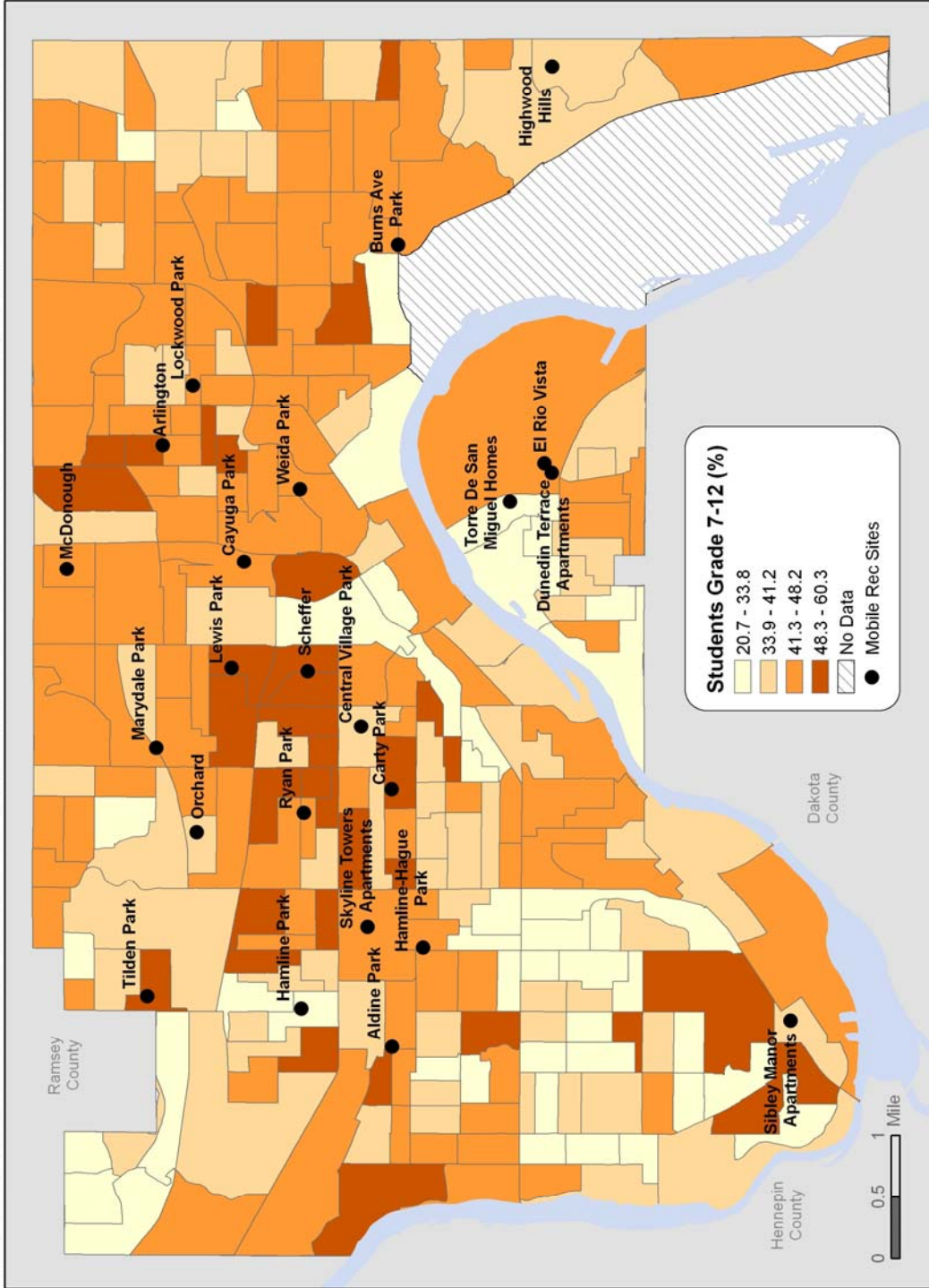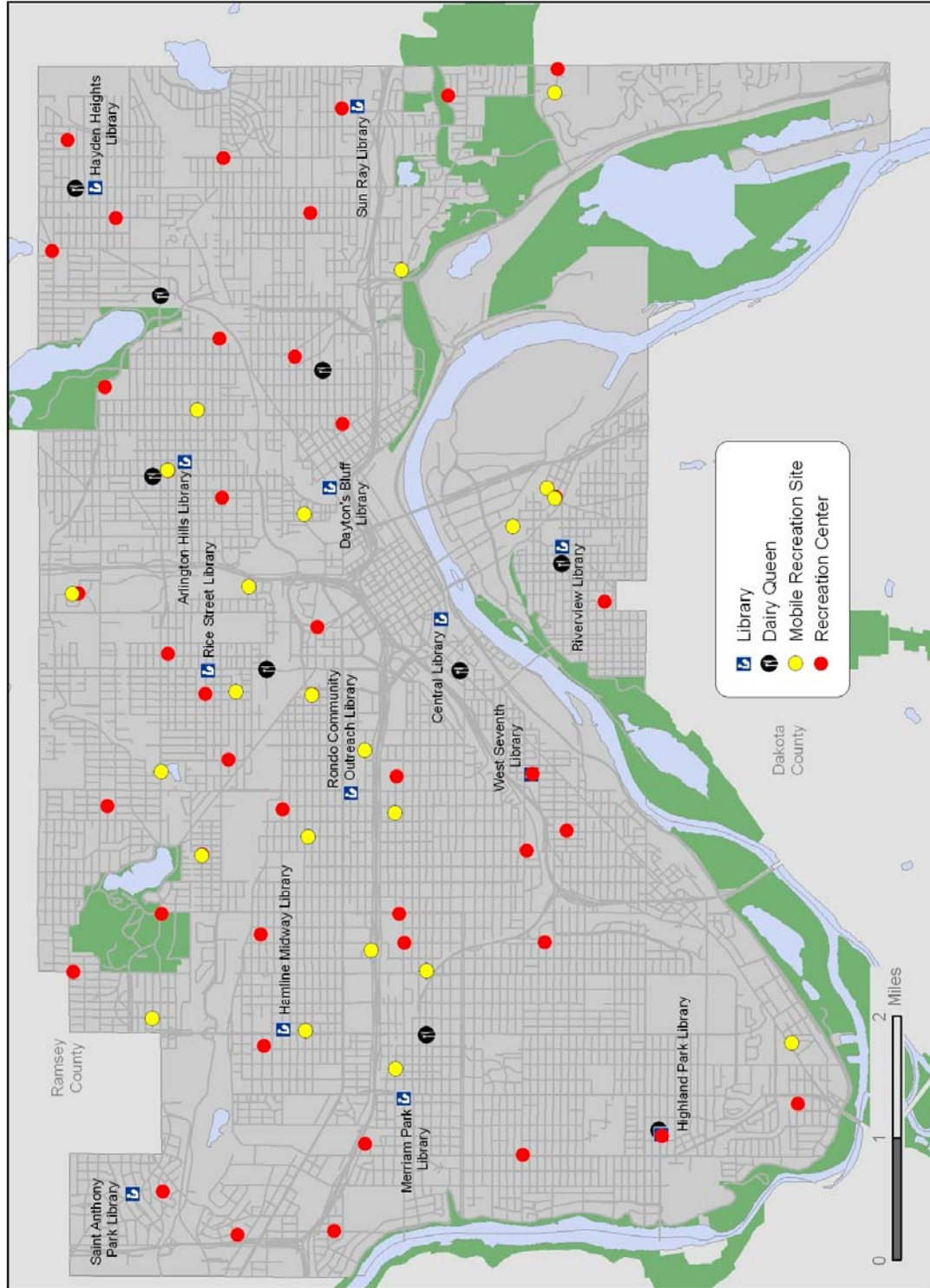
Mobile Recreation Sites in Relation to Students Seventh to Twelfth Grade

Students Grade 7-12 (%)
- 20.7 - 33.8
- 33.9 - 41.2
- 41.3 - 48.2
- 48.3 - 60.3
- No Data
- ● Mobile Rec Sites

Highwood Hills

Burns Ave Park

Lockwood Park

Arlington

McDonough

Weida Park

Cayuga Park

Torre De San Miguel Homes

El Rio Vista

Dunedin Terrace Apartments

Lewis Park

Scheffer

Central Village Park

Marydale Park

Ryan Park

Carty Park

Orchard

Skyline Towers Apartments

Hamline-Hague Park

Tilden Park

Hamline Park

Aldine Park

Sibley Manor Apartments

Ramsey County

Dakota County

Hennepin County

0 0.5 1 Mile

Cartographer: Anna Popinchalk; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, U.S. Census Bureaeu Block Groups: December 2008   Map 63
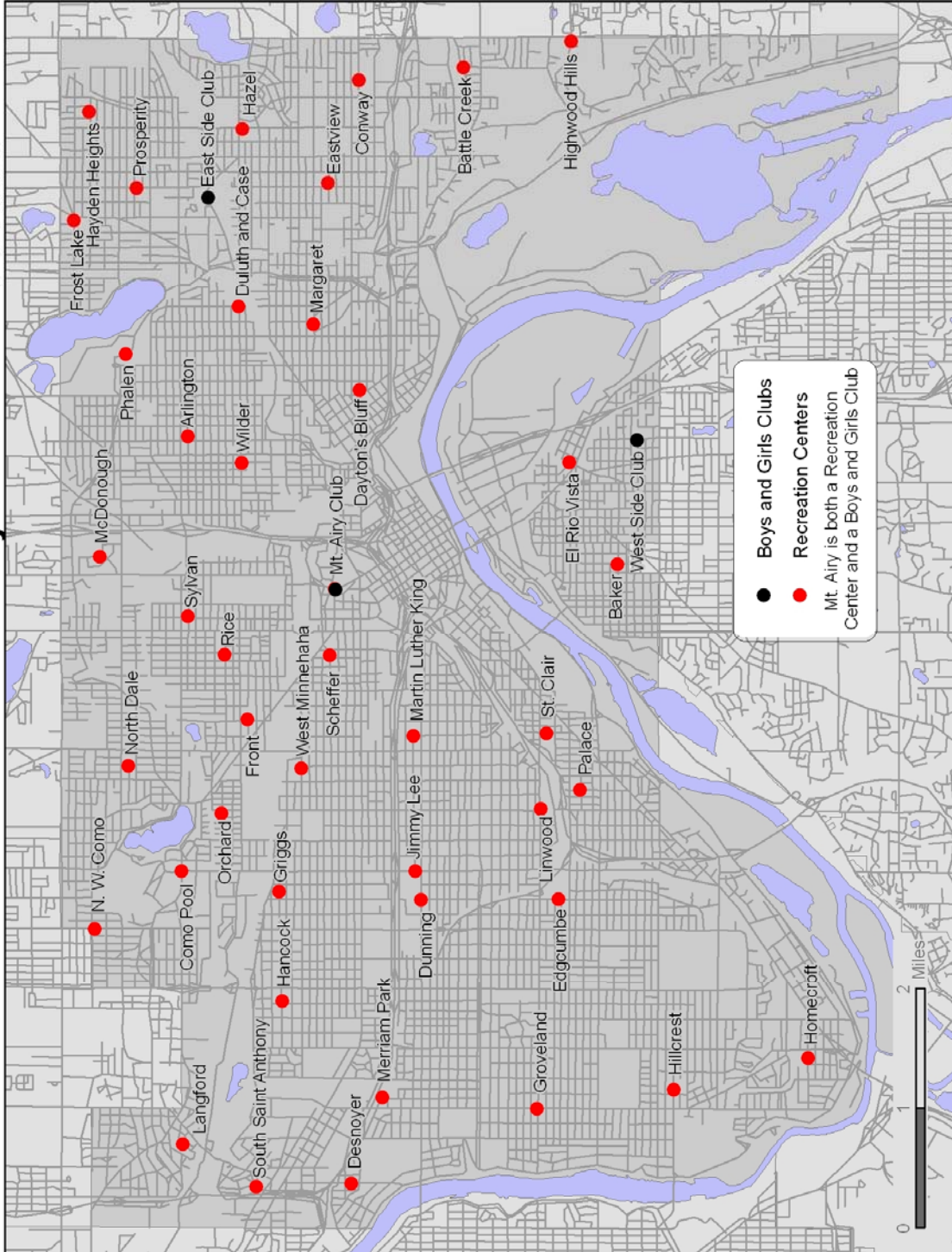
Page **102**

Recreation Sites, Libraries, and Dairy Queens

Hayden Heights Library

Sun Ray Library

Arlington Hills Library

Rice Street Library

Dayton's Bluff Library

Riverview Library

Rondo Community Outreach Library

Central Library

West Seventh Library

Hamline Midway Library

Highland Park Library

Merriam Park Library

Saint Anthony Park Library

Ramsey County

Dakota County

Legend
- Library
- Dairy Queen
- Mobile Recreation Site
- Recreation Center

Cartographer: Caroline Rendon; Data Sources: ESRI; Saint Paul Parks and Recreation; Saint Paul Public Library; Dairy Queen; December 2008

Map 64

0 1 2 Miles

Recreation Centers and Boys and Girls Clubs

Frost Lake
Hayden Heights
Prosperity
East Side Club
Hazel
Duluth and Case
Eastview
Conway
Margaret
Battle Creek
Highwood Hills

Phalen
Arlington
Wilder
McDonough
Dayton's Bluff
Mt. Airy Club
Sylvan
Rice
West Minnehaha
Scheffer
Front
North Dale
Martin Luther King
St. Clair
El Rio Vista
West Side Club
Baker
Palace
Orchard
N. W. Como
Como Pool
Griggs
Hancock
Jimmy Lee
Linwood
Dunning
Edgcumbe
Langford
South Saint Anthony
Merriam Park
Desnoyer
Groveland
Hillcrest
Homecroft

Boys and Girls Clubs
● Boys and Girls Clubs
● Recreation Centers
Mt. Airy is both a Recreation
Center and a Boys and Girls Club

Miles
0   1   2

Map 65

Ages and Languages of Students Within One Mile of Aldine Park

Grade
- Grade 1-2
- Grade 3-4
- Grade 5-6
- Grade 7-12

Primary Language
- English
- Hmong
- Spanish
- Other

Distance from Aldine Park
- <1/4 Mile
- <1/2 Mile
- <1 Mile

- Mobile Recreation Sites
- Recreation Centers

Total Students: 793
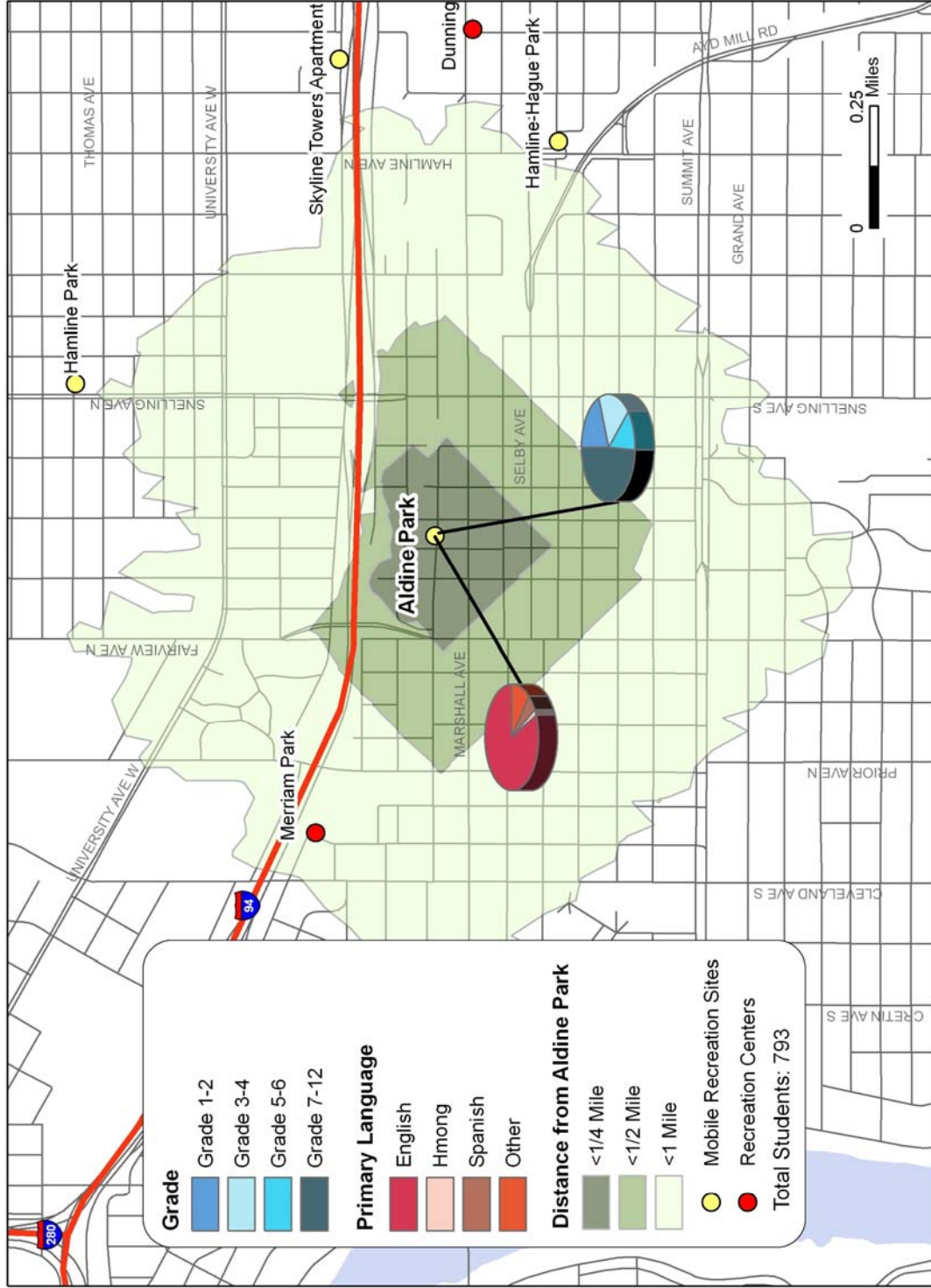
Cartographer: Luke Benson; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; December 2008
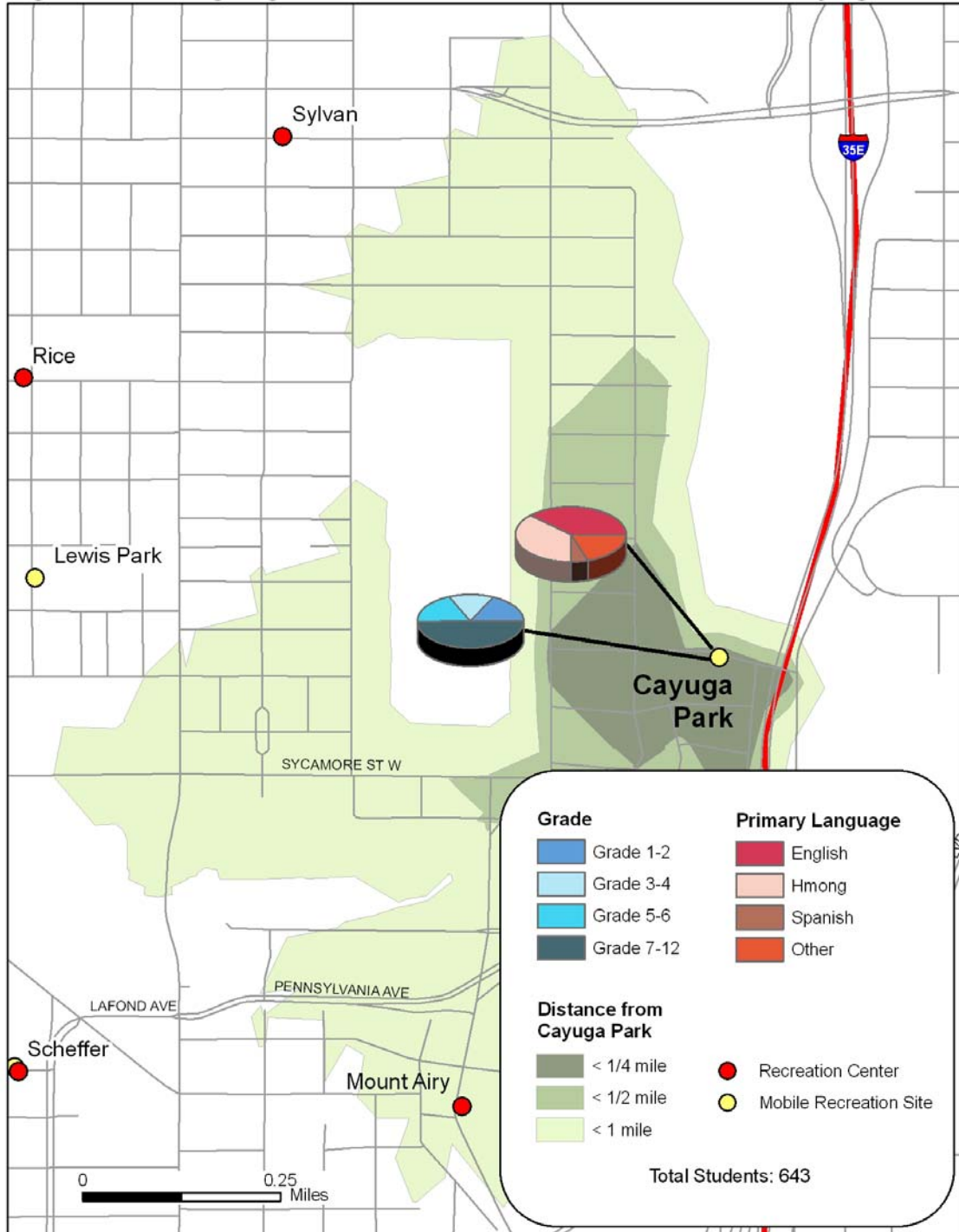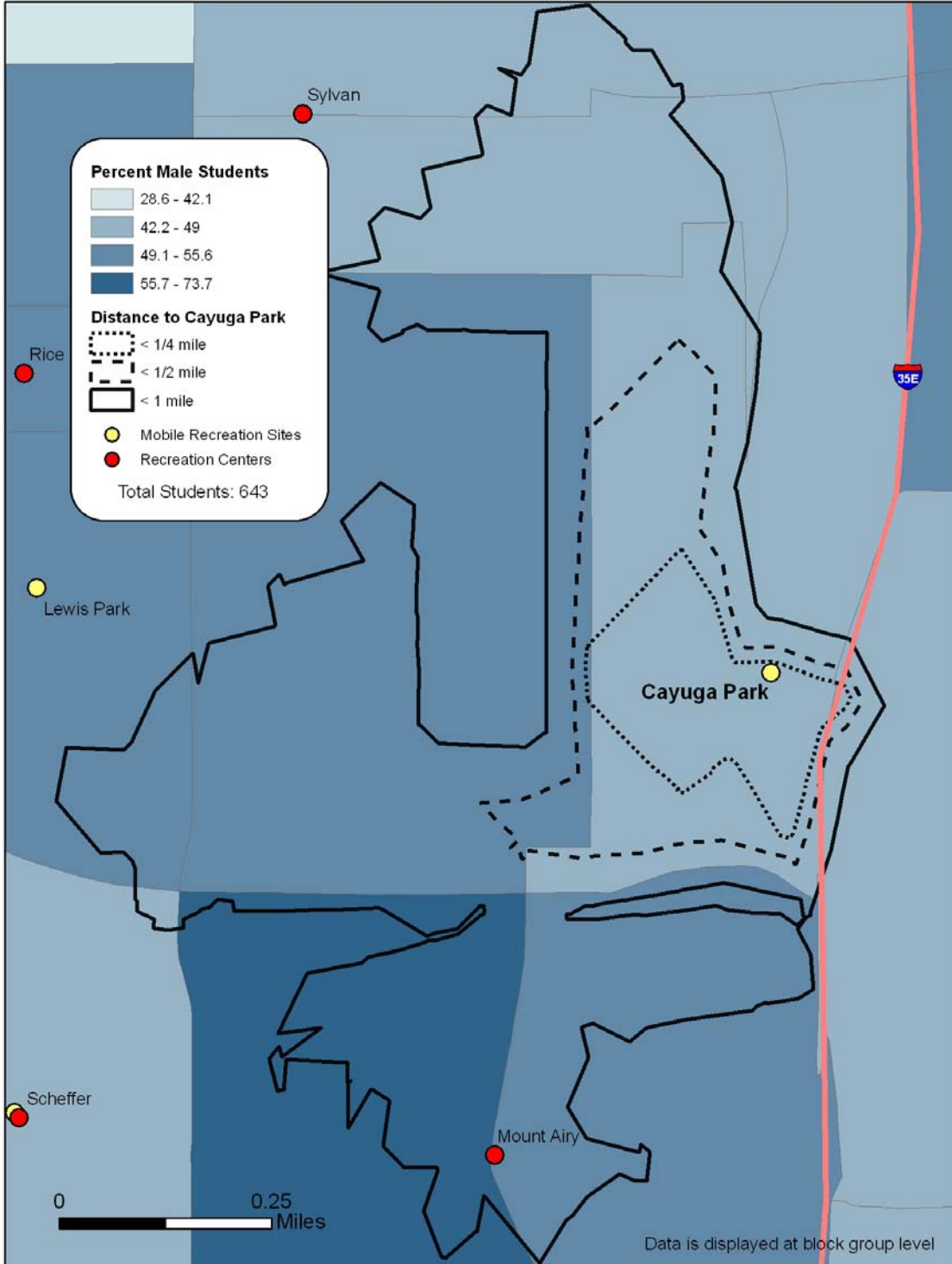
Map 66

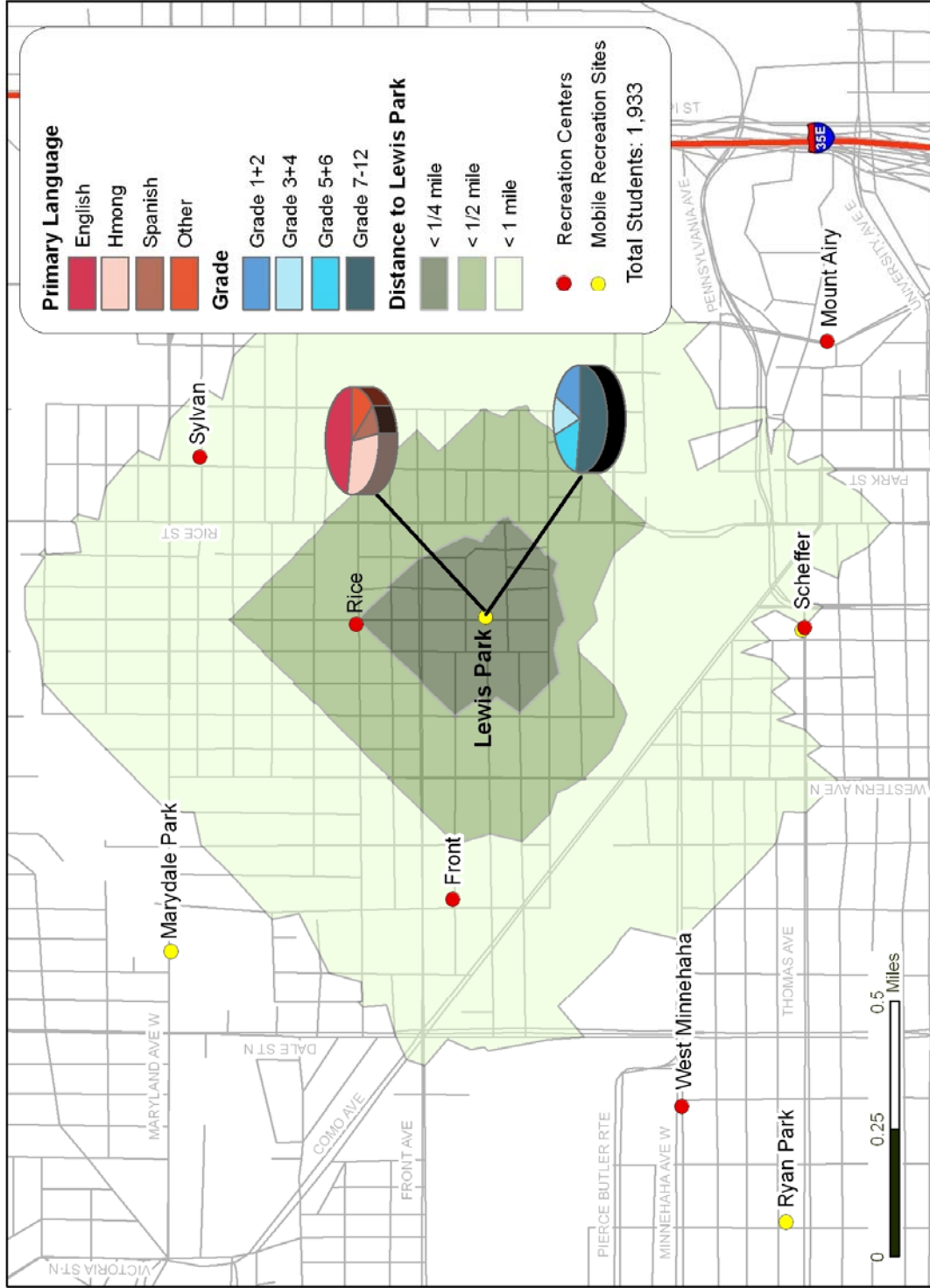# Male Students in Aldine Park Service Area
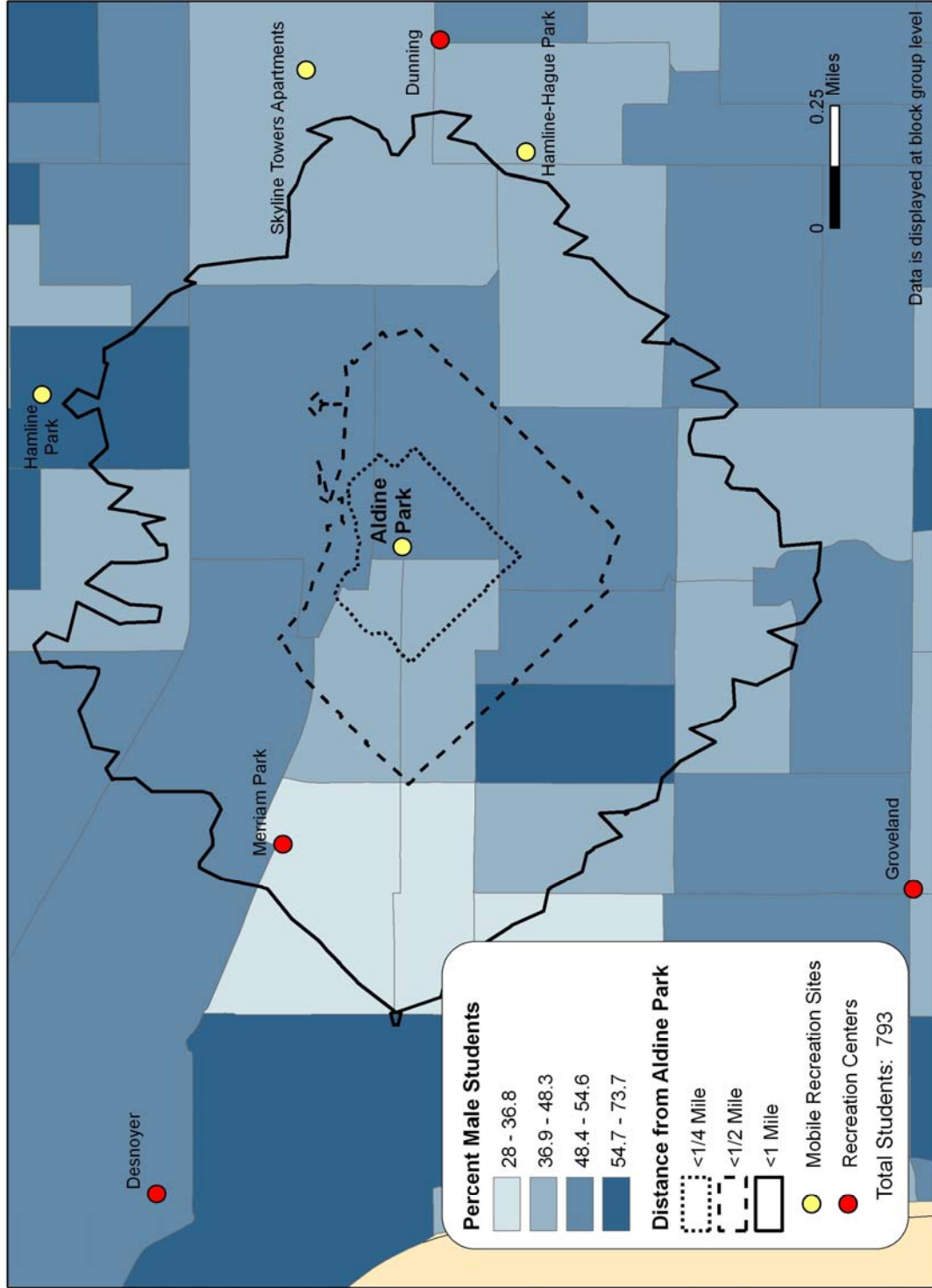
Percent Male Students
- 28 - 36.8
- 36.9 - 48.3
- 48.4 - 54.6
- 54.7 - 73.7

Distance from Aldine Park
- <1/4 Mile
- <1/2 Mile
- <1 Mile

Mobile Recreation Sites

Recreation Centers

Total Students: 793

Cartographer: Luke Benson; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; December 2008

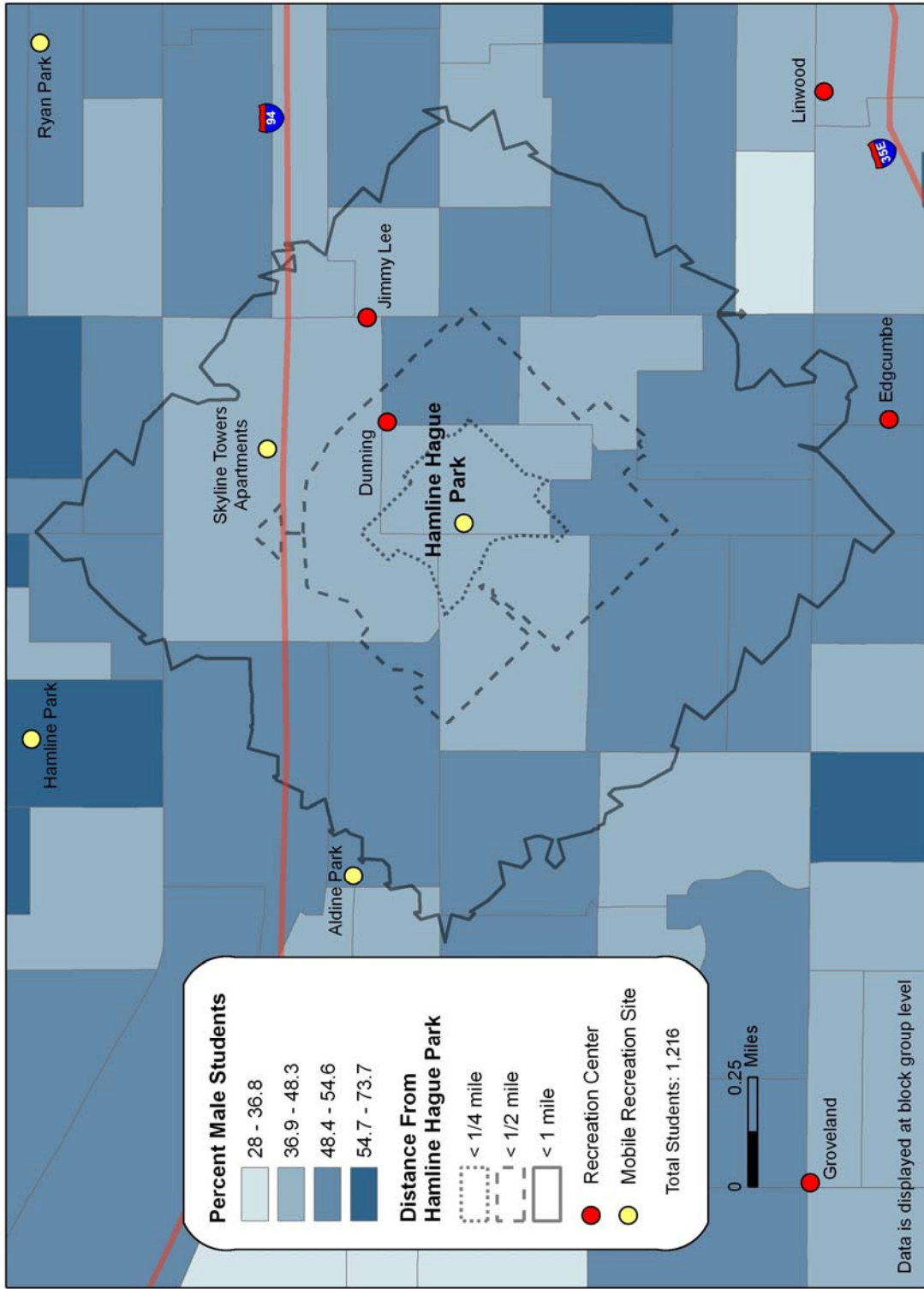Data is displayed at block group level

Map 67

Ages and Languages of Students Within One Mile of Cayuga Park

Sylvan

Rice

Lewis Park

Cayuga Park

SYCAMORE ST W

Grade
- Grade 1-2
- Grade 3-4
- Grade 5-6
- Grade 7-12

Primary Language
- English
- Hmong
- Spanish
- Other

Distance from Cayuga Park
- < 1/4 mile
- < 1/2 mile
- < 1 mile

- Recreation Center
- Mobile Recreation Site

Total Students: 643

PENNSYLVANIA AVE

LAFOND AVE

Scheffer

Mount Airy

0   0.25
       Miles

Cartographer: Dillon Teske; Data Sources: Saint Paul Public Schools, ESRI, Metropolitan Council, Saint Paul Parks and Recreation; December 2008

Map 68

Male Students Within Cayuga Park Service Area

Percent Male Students

- 28.6 - 42.1
- 42.2 - 49
- 49.1 - 55.6
- 55.7 - 73.7

Distance to Cayuga Park

- < 1/4 mile
- < 1/2 mile
- < 1 mile

- ○ Mobile Recreation Sites
- ● Recreation Centers

Total Students: 643

Sylvan

Rice

Lewis Park

Cayuga Park

Scheffer

Mount Airy

35E

0   0.25
Miles

Data is displayed at block group level

Cartographer: Dillon Teske; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; December 2008
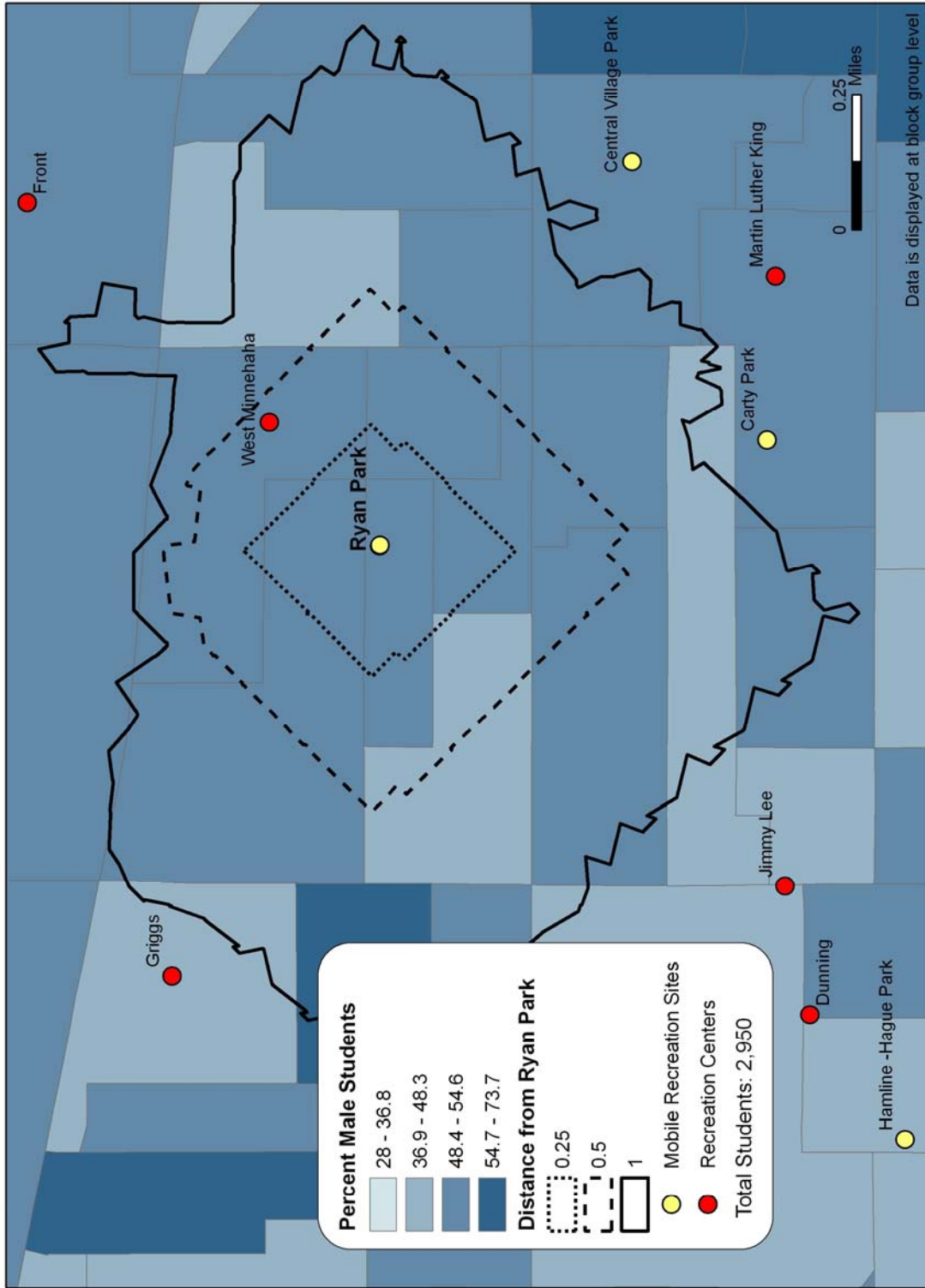
Map 69

Ages and Languages of Students Within One Mile of Lewis Park

Map 70

Cartographer: Caroline Rendon; Data Sources: Saint Paul Public Schools; ESRI; Saint Paul Parks and Recreation; December 2008

Primary Language
- English
- Hmong
- Spanish
- Other

Grade
- Grade 1+2
- Grade 3+4
- Grade 5+6
- Grade 7-12

Distance to Lewis Park
- < 1/4 mile
- < 1/2 mile
- < 1 mile

- Recreation Centers
- Mobile Recreation Sites

Total Students: 1,933

Male Students in Lewis Park Service Area
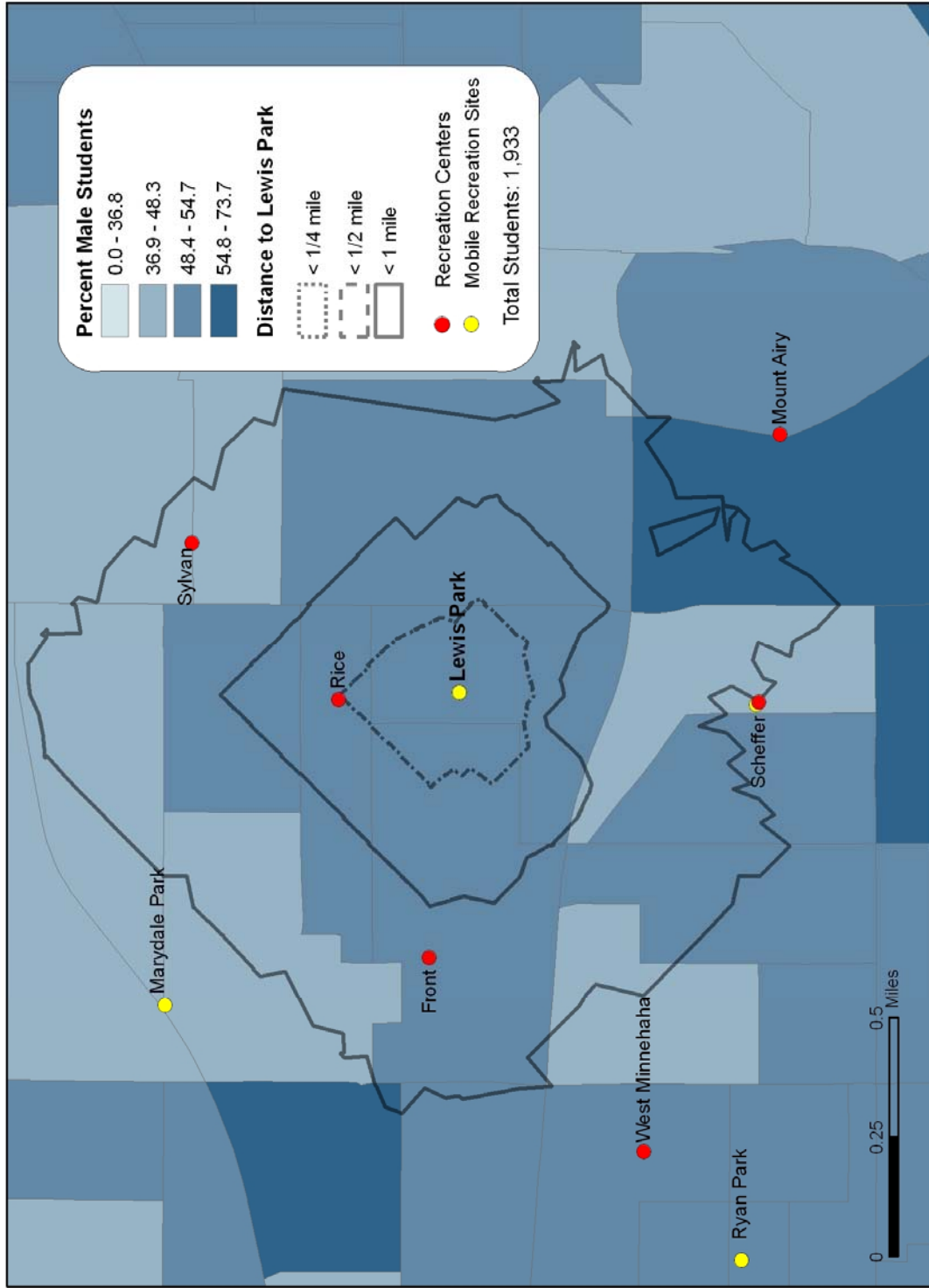
Percent Male Students

- 0.0 - 36.8
- 36.9 - 48.3
- 48.4 - 54.7
- 54.8 - 73.7

Distance to Lewis Park

- < 1/4 mile
- < 1/2 mile
- < 1 mile

- Recreation Centers
- Mobile Recreation Sites

Total Students: 1,933

Marydale Park

Sylvan

Rice

Lewis Park

Scheffer

Mount Airy

Front

West Minnehaha

Ryan Park

0   0.25   0.5   Miles

Cartographer: Caroline Rendon; Data Sources: Saint Paul Public Schools; ESRI, Saint Paul Parks and Recreation; U.S. Census Block Groups; December 2008
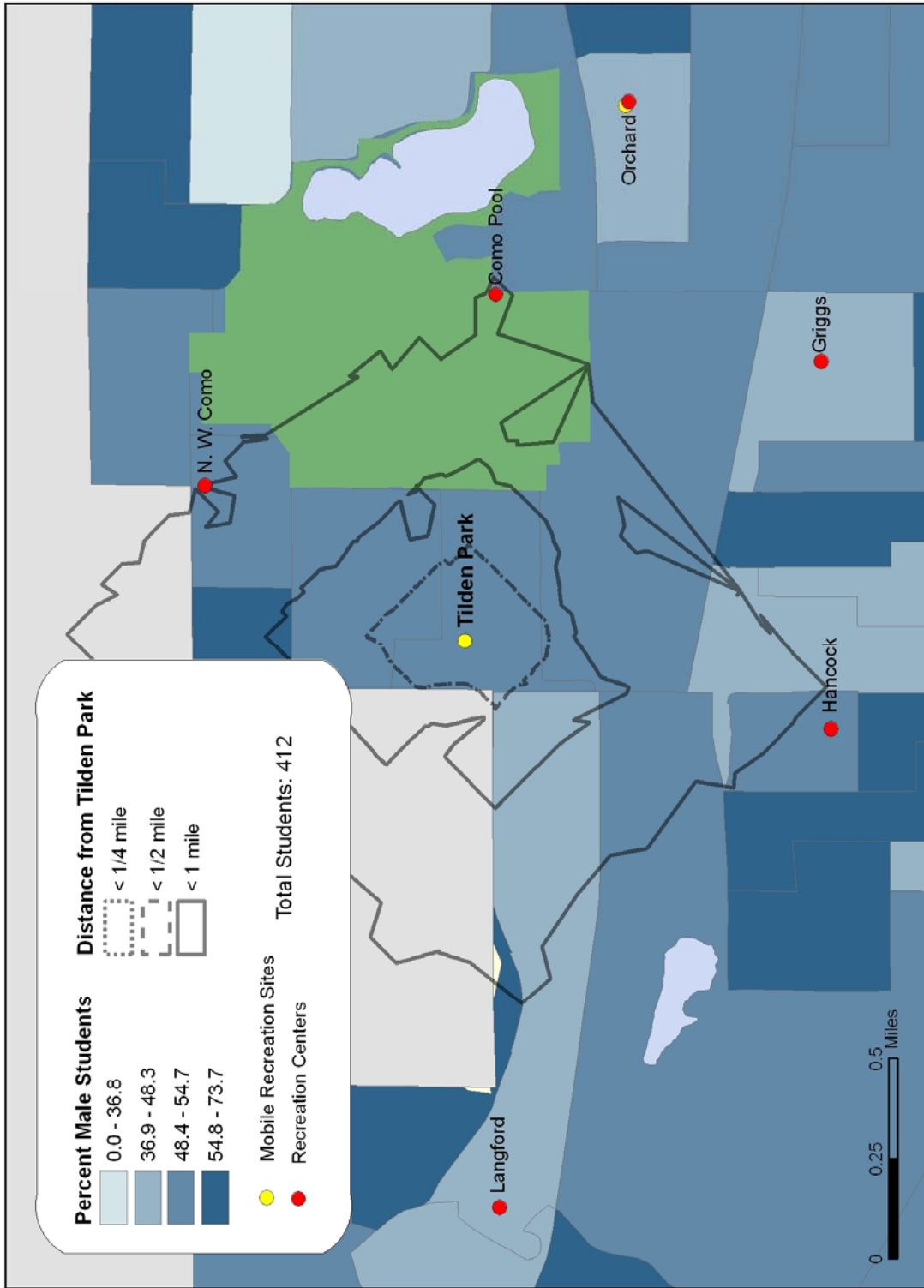
Map 71

Age and Language of Students Within One mile of Hamline Hague Park
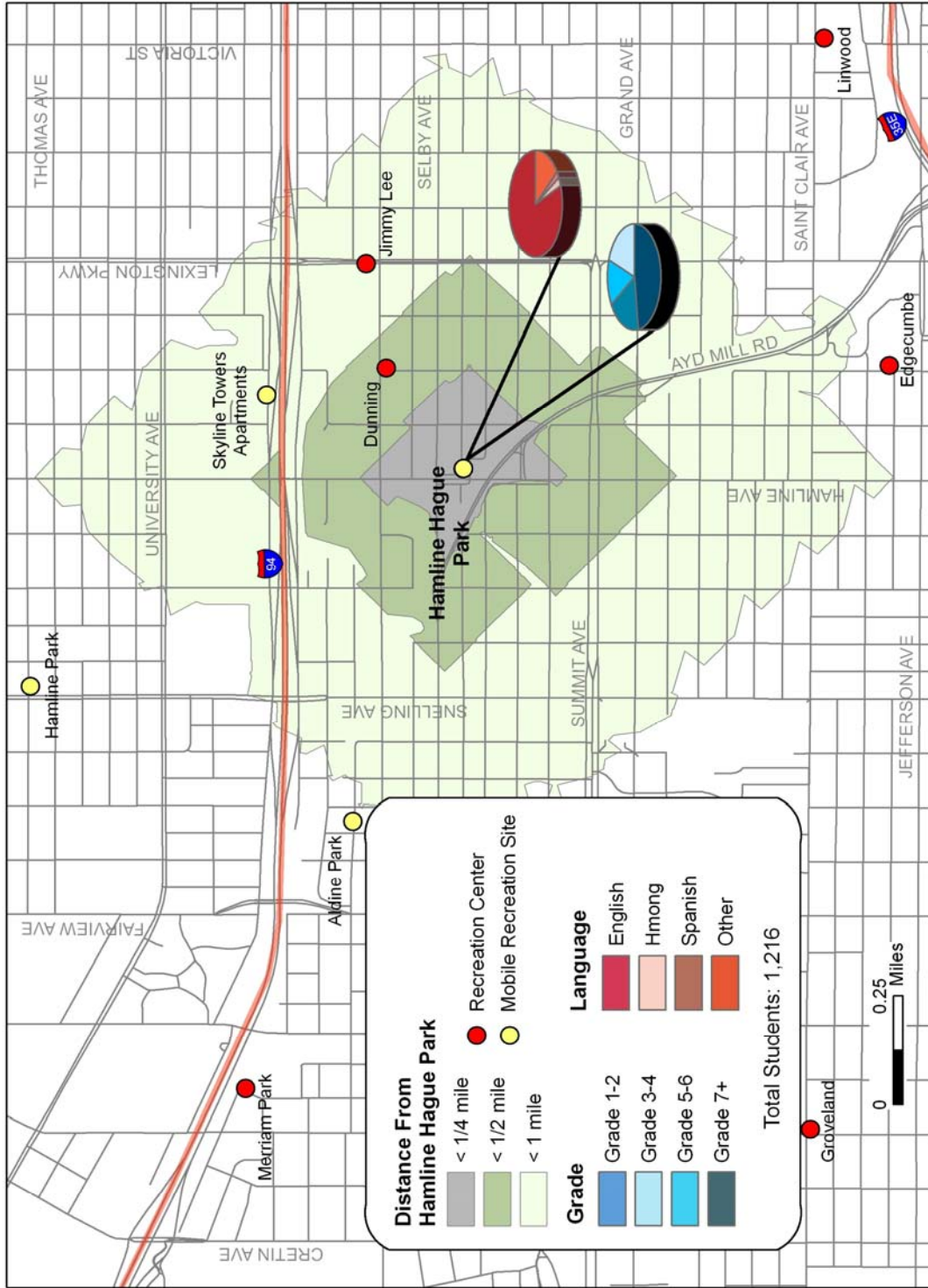
Cartographer: Andrew Yokom; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census Bureau Met Council; December 2008

Map 72

Male Students in Hamline Hague Park Service Area

Percent Male Students
- 28 - 36.8
- 36.9 - 48.3
- 48.4 - 54.6
- 54.7 - 73.7

Distance From Hamline Hague Park
- < 1/4 mile
- < 1/2 mile
- < 1 mile

- ● Recreation Center
- ● Mobile Recreation Site

Total Students: 1,216

0   0.25
Miles

Ryan Park

Jimmy Lee

Skyline Towers Apartments

Dunning

Hamline Hague Park

Hamline Park

Aldine Park

Linwood

Edgcumbe

Groveland

Data is displayed at block group level

Ages and Languages of Students Within One Mile of Ryan Park

Grade
- Grade 1-2
- Grade 3-4
- Grade 5-6
- Grade 7-12

Primary Language
- English
- Hmong
- Spanish
- Other

Distance from Ryan Park
- <1/4 Mile
- <1/2 Mile
- <1 Mile

- Recreation Center
- Mobile Recreation Site

Total Students: 2,950

Cartographer: Luke Benson; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; December 2008
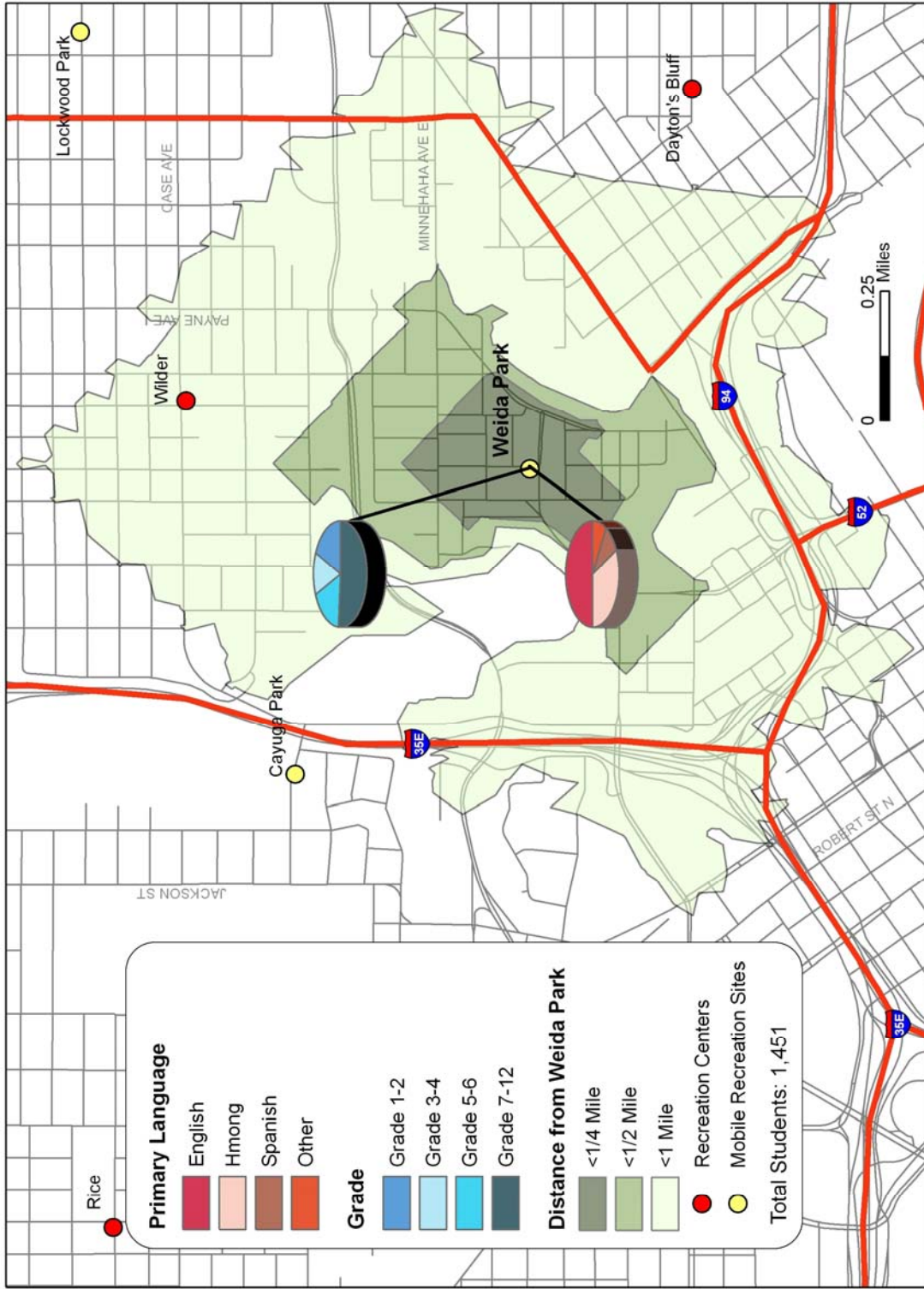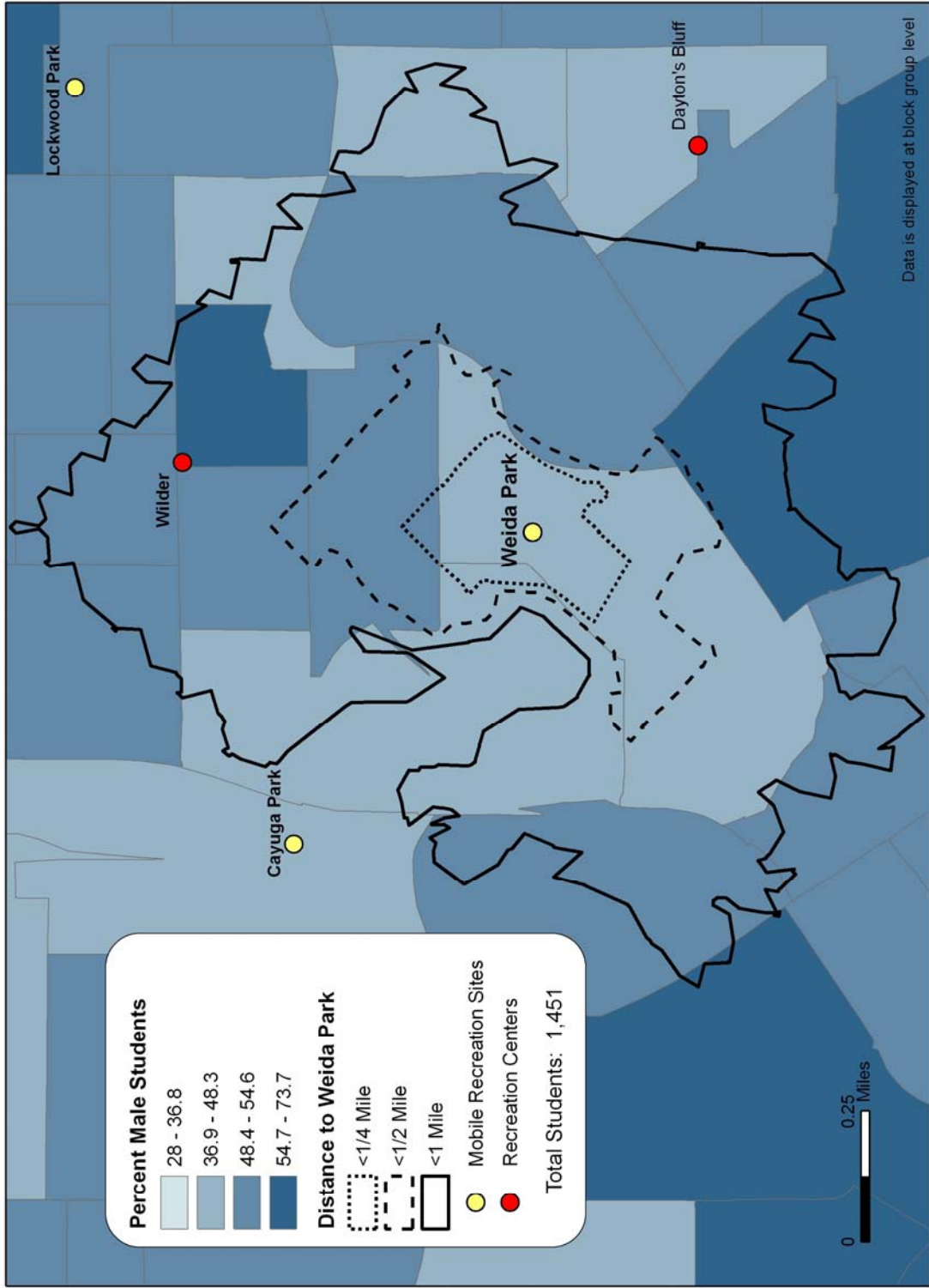
Map 74

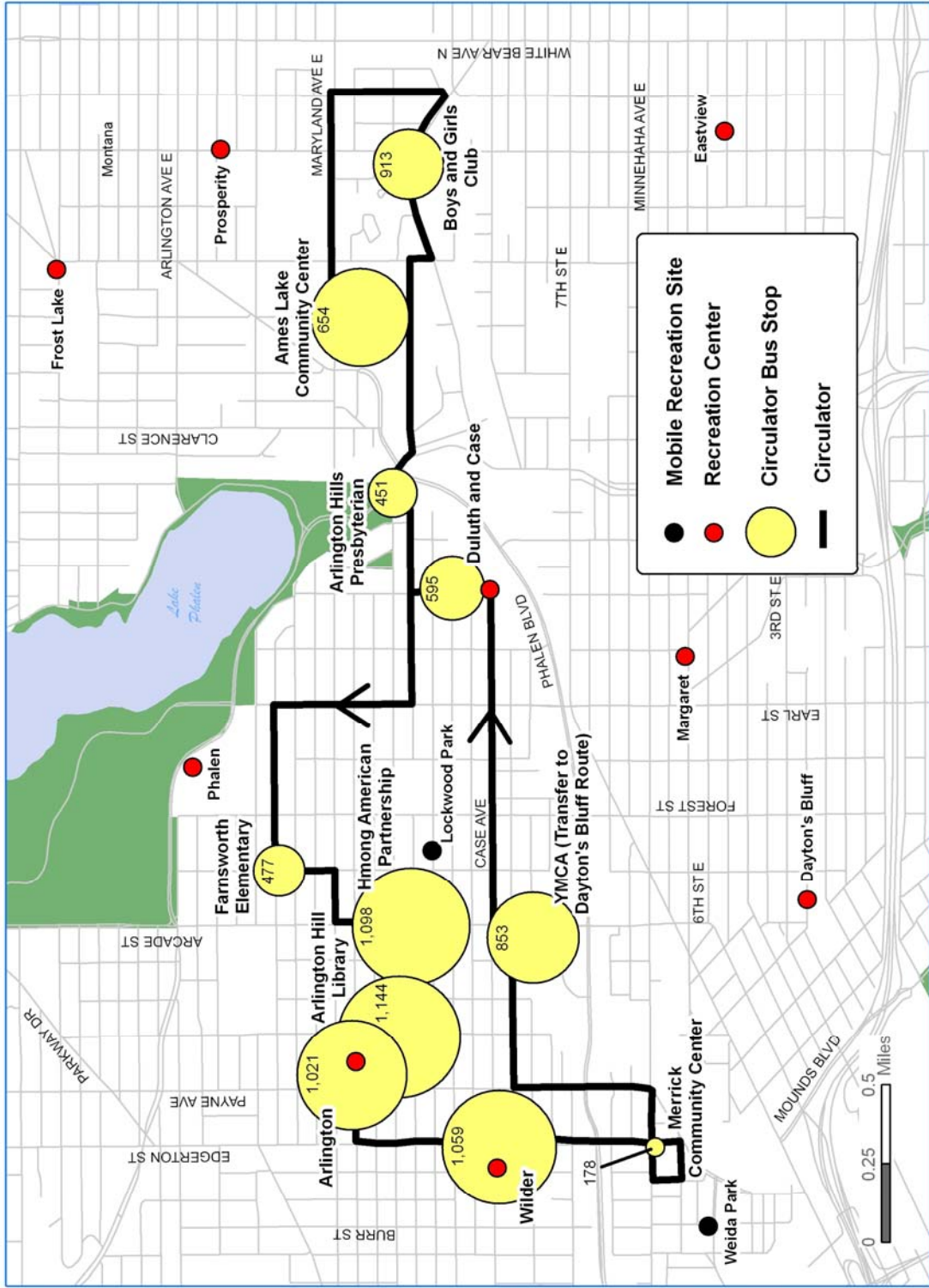# Male Students in Ryan Park Service Area

Front

West Minnehaha

Ryan Park

Griggs

Jimmy Lee

Dunning

Hamline -Hague Park

Central Village Park

Martin Luther King

Carty Park

Percent Male Students

28 - 36.8

36.9 - 48.3

48.4 - 54.6

54.7 - 73.7

Distance from Ryan Park

0.25

0.5

1

Mobile Recreation Sites

Recreation Centers

Total Students: 2,950

0   0.25   Miles

Data is displayed at block group level

Map 75

Cartographer: Luke Benson; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census Bureau; December 2008
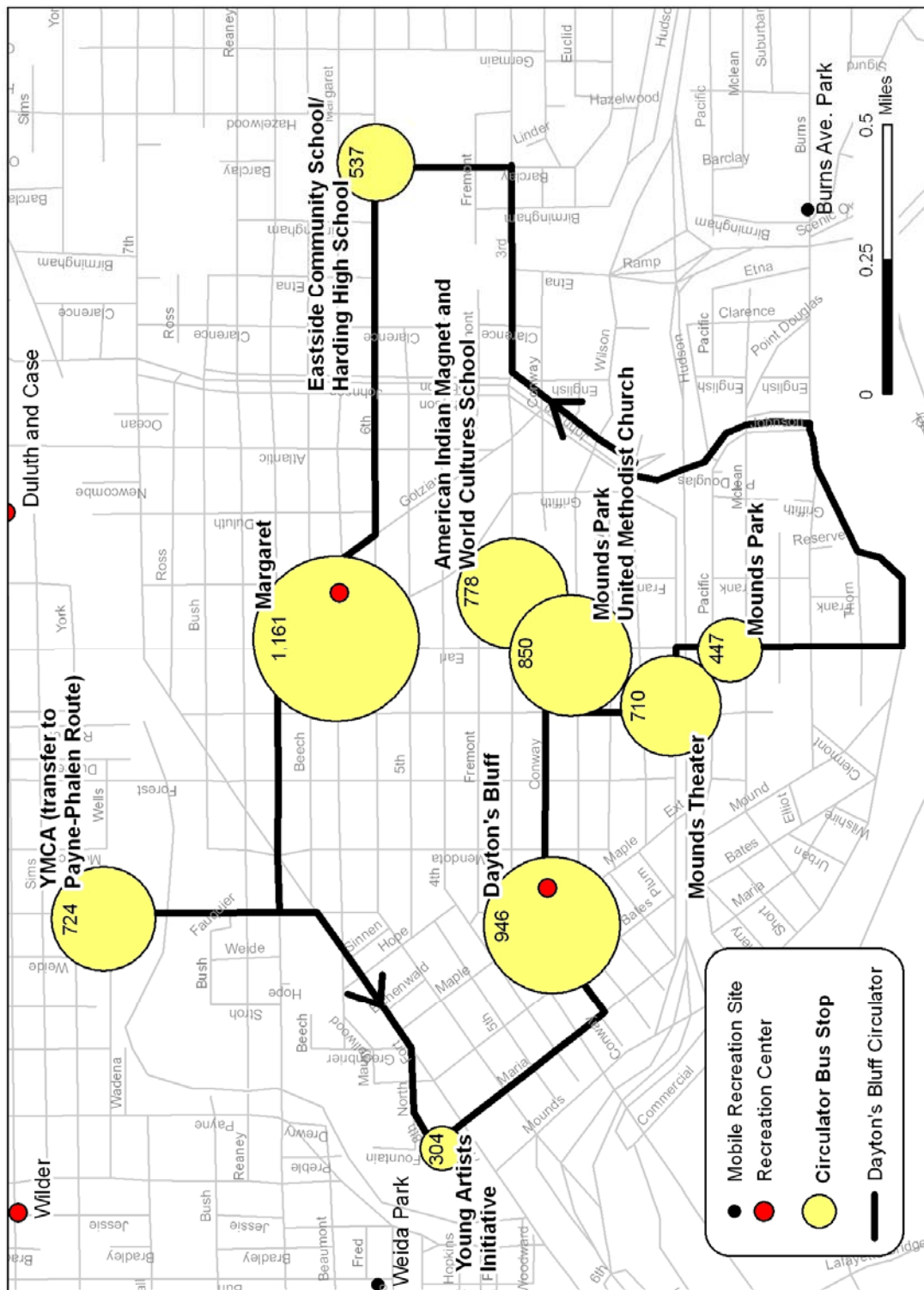
Ages and Languages of Students Within One Mile of Tilden Park
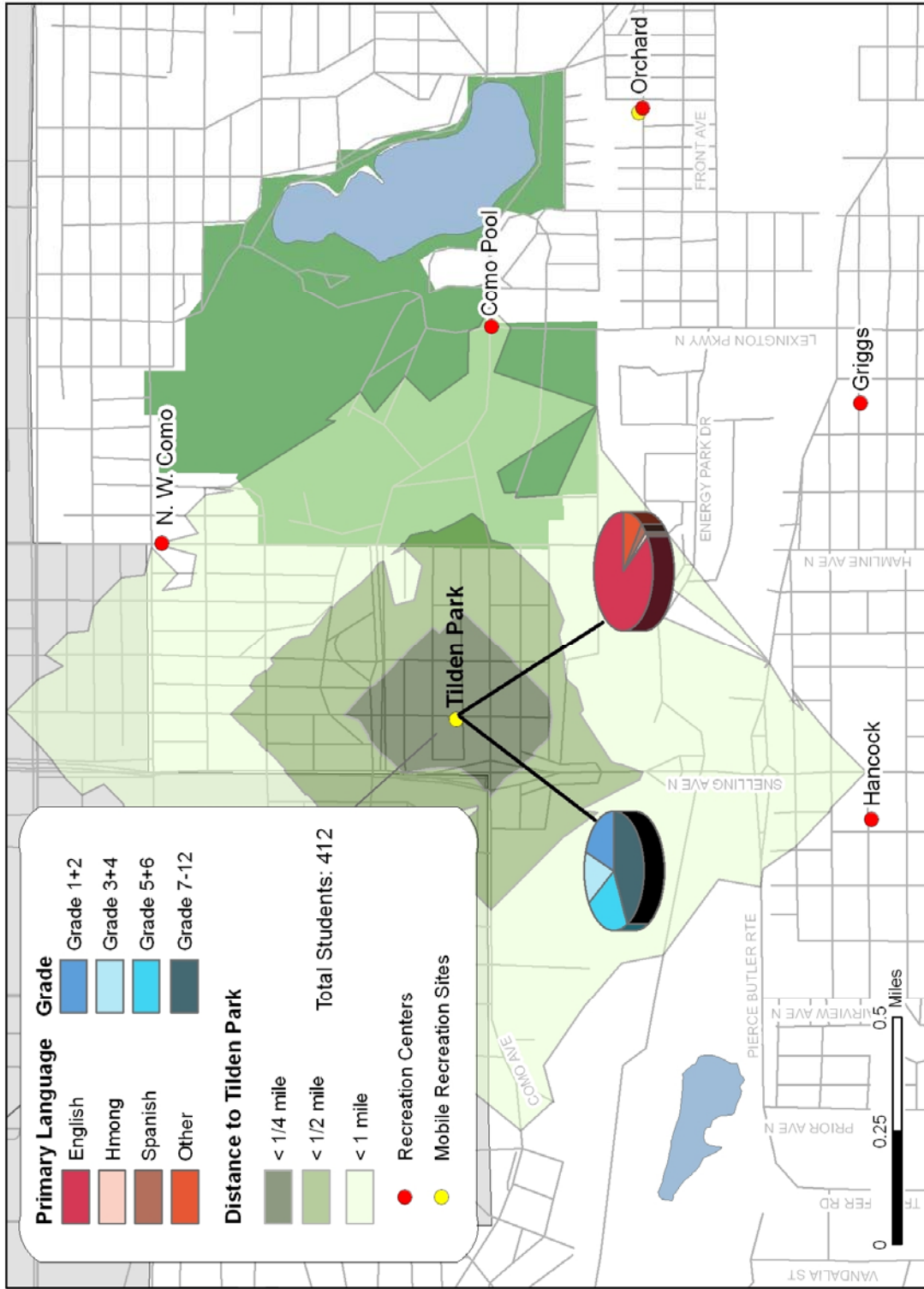
Primary Language
- English
- Hmong
- Spanish
- Other

Grade
- Grade 1+2
- Grade 3+4
- Grade 5+6
- Grade 7-12

Distance to Tilden Park
- < 1/4 mile
- < 1/2 mile
- < 1 mile

Total Students: 412

- Recreation Centers
- Mobile Recreation Sites

Orchard

Como Pool

N. W. Como

Griggs

Tilden Park

Hancock

FRONT AVE

LEXINGTON PKWY N

ENERGY PARK DR

HAMLINE AVE N

SNELLING AVE N

COMO AVE

PIERCE BUTLER RTE

FAIRVIEW AVE N

PRIOR AVE N

VANDALIA ST

Miles
0   0.25   0.5

Map 76

Cartographer: Caroline Rendon; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; December 2008

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Male Students in Tilden Park Service Area

Percent Male Students

- 0.0 - 36.8
- 36.9 - 48.3
- 48.4 - 54.7
- 54.8 - 73.7

Distance from Tilden Park

- < 1/4 mile
- < 1/2 mile
- < 1 mile

○ Mobile Recreation Sites
● Recreation Centers

Total Students: 412

Orchard

Como Pool

Griggs

N. W. Como

Tilden Park

Hancock

Langford

0   0.25   0.5   Miles

Cartographer: Caroline Rendon; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; U.S. Census Block Groups; December 2008

Map 77

Ages and Languages of Students Within One Mile of Weida Park

Legend

Primary Language
- English
- Hmong
- Spanish
- Other

Grade
- Grade 1-2
- Grade 3-4
- Grade 5-6
- Grade 7-12

Distance from Weida Park
- <1/4 Mile
- <1/2 Mile
- <1 Mile

- Recreation Centers
- Mobile Recreation Sites

Total Students: 1,451

Cartographer: Luke Benson; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; December 2008

Map 78

0   0.25   Miles

Male Students in Weida Park Service Area

Percent Male Students

- 28 - 36.8
- 36.9 - 48.3
- 48.4 - 54.6
- 54.7 - 73.7

Distance to Weida Park

- <1/4 Mile
- <1/2 Mile
- <1 Mile
- Mobile Recreation Sites
- Recreation Centers

Total Students: 1,451

Lockwood Park

Wilder

Cayuga Park

Weida Park

Dayton's Bluff

0   0.25
Miles

Cartographer: Luke Benson; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, US Census Bureau; December 2008

Data is displayed at block group level

Map 79

Payne-Phalen Circulator - Students within 1/2 mile of Each Stop

Legend:
- Mobile Recreation Site (black dot)
- Recreation Center (red dot)
- Circulator Bus Stop (yellow circle)
- Circulator (black line)

Labels on map:
- Frost Lake
- Prosperity
- Montana
- ARLINGTON AVE E
- MARYLAND AVE E
- WHITE BEAR AVE N
- 913 Boys and Girls Club
- 654 Ames Lake Community Center
- CLARENCE ST
- Lake Phalen
- 451 Arlington Hills Presbyterian
- Duluth and Case
- 595
- PHALEN BLVD
- Eastview
- MINNEHAHA AVE E
- 7TH ST E
- 3RD ST E
- Margaret
- EARL ST
- Phalen
- Farnsworth Elementary
- 477
- Hmong American Partnership
- Lockwood Park
- CASE AVE
- 1,098
- Arlington Hill Library
- 1,144
- 853
- YMCA (Transfer to Dayton's Bluff Route)
- FOREST ST
- Dayton's Bluff
- 6TH ST E
- ARCADE ST
- PARKWAY DR
- PAYNE AVE
- EDGERTON ST
- 1,021
- Arlington
- 1,059
- Wilder
- Merrick Community Center
- 178
- MOUNDS BLVD
- Weida Park
- BURR ST
- 0 0.25 0.5 Miles

Cartographer: Andrew Yokom; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation, Met Council; December 2008

Map 80

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Dayton's Bluff Circulator - Students within 1/2 mile of each stop

Eastside Community School/ Harding High School — 537

Margaret — 1,161

American Indian Magnet and World Cultures School — 778

Mounds Park United Methodist Church — 850

Mounds Park — 447

710

YMCA (transfer to Payne-Phalen Route) — 724

Dayton's Bluff — 946

Mounds Theater

Young Artists Initiative — 304

Duluth and Case

Wilder

Weida Park

Burns Ave. Park

Mounds Park

Cartographer: Dillon Teske; Data Sources: Saint Paul Public Schools, ESRI, Saint Paul Parks and Recreation; December 2008

Map 81

Miles

0   0.25   0.5

Legend

- ● Mobile Recreation Site
- ● Recreation Center
- ○ Circulator Bus Stop
- — Dayton's Bluff Circulator

Conclusions and Policy Recommendations

While many of the recreation centers and mobile recreation sites are successfully providing services for the surrounding population, there is room for improvement. Steps could be taken to better tailor recreation center programs to the characteristics of the population they serve. Distance, income, and language spoken at home all appear to have spatial correlation to the use of recreation centers. By addressing these factors, recreation centers would be able to increase total attendance and better serve their immediate community.

A large number of Saint Paul Public School students fell outside of the designated 1 mile service area. These students are more likely to be unable to reach a recreation center without the aid of transportation. The mobile recreation program can alleviate some of these gaps, but it is important to place these sites carefully according to the areas with greatest need. Increasing the coverage of the circulator buses would allow more areas to have access to recreation centers and therefore mobile recreation service could be more focused in other areas.

Increasing participation can be accomplished by providing a wider range of services. Food insecurity is one issue that recreation centers are well-poised to help alleviate. While some insecure areas are well served, not all are. Increasing the number of centers with meal programs and number of meals offered, promotion of current programs, and coordination of type of meal are all avenues to pursue. This would address food insecurities and would be likely to increase total participation in recreation center programming. Free programming would also increase participation. Recreation centers in low-income areas have a high rate of free programming, but some recreation centers in other areas could reach a larger percentage of their service area by increasing the number of free programs. Diversifying the type of programs offered (both with and without fees) is also an opportunity to attract wider interest and participation.

Saint Paul's population speaks a wide variety of languages. Even though children may speak English as a second language, offering programs in the languages of the community would likely attract more interest. The underserved areas as well as areas with low levels of current participation both appear to have high numbers of families speaking foreign languages. Community relationships could be built through an increase in language capacities.

This study cannot address all the dynamics at work in the City of Saint Paul Public school students are not the only children utilizing recreation centers, and a complete picture of the hour-to-hour use of the recreation centers is unavailable. Additionally, program analysis is limited to those programs that require registration and cannot account for drop-in programs. However, the factors examined can still give valuable insight into ways for services to better reflect the needs and demographics of the surrounding communities. Recreation centers serve many valuable purposes to all types of Saint Paul households. An increase in these services and the promotion of both new and existing programs would increase participation, benefitting the population and the recreation centers themselves.

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Technical Appendix

SPPS Data

SPPS data come from the Saint Paul Public School system Research, Evaluation and Assessment department. These data represent all students living in Saint Paul and enrolled in a Saint Paul Public School in October 2008. These data included addresses for all students. These addresses were geocoded using ArcGIS. Of the original 39,697 original student records, 1,515 were viable for matching meaning that they had full addresses (not PO Boxes or missing information) or were not duplicate records. Of these remaining records, 37,989 were positively geocoded; 895 did not have demographic information and so were not included. The final number of students included in the analysis was 37,094.

Demographics

Estimated Median Household Income – Map 1

Estimated Median Household Income data for 2006 was downloaded from the Geolytics program into an Excel file. This was joined to the block groups of the City of Saint Paul.

The data was classified into 4 classes using the Natural Breaks method, and the Pig's Eye block group excluded because it contains no population. The hydro_luse2000 layer was downloaded from the Met Council to show the lakes and rivers, and the geocoded recreation centers were added for context.

Non-White Students in Saint Paul Public Schools – Map 2

First added shapefiles: rec_centers (shows location of recreation centers, found by geocoding), water_luse2000, SPPS_data (data file from Saint Paul Public Schools, here I used the students race column (1=non-white student, 2=white student), blockgroup_2000, Saint_Paul_clip (clipped layer just showing Saint Paul block groups).

Next spatial joined blockgroup_2000 and SPPS_data, select: add field (select integer, precision 50) to aggregate the number of "1" or "2" students per block group (1=nonwhite, 2=white). Select data→ export data→ add layer to map document. Right click: properties of new shapefile → symbology → nonwhite variable over "count" of total students→ manual breaks, separate no data and 0 quantities

Household Languages – Maps 4-8

The Saint Paul "Household Language by Census Tract" maps were made based on downloaded spreadsheets from the US Census website. A base layer of all the census tracts in Saint Paul was downloaded from the Metropolitan Council. Data was matched and clipped in Microsoft Access
It is shown spatially in a choropleth map, with all zero and "no data" values omitted.

Total Households, Percent Vacant Households, Percent Non-Owner Occupied Households – Maps 9-10

Using Geolytics Software, select geography: Minnesota, Ramsey County, block for sub area. Query Fips code, Total Households, Total Vacant Households, and Total Renter-Occupied Households. Export to Access. Create percent counts by dividing Vacant Households and Renter Occupied Households by the Total Households Category. Bring up StPaul_blkgrp shapefile on ArcMap and join Geolytics table using the common FIPS code column. Create new shapefile titled "housing_tenure". Add shapefile in ArcMap, go to properties, symbology and choose graduated colors. Chose variable *Percent_vacant* for vacant households map and *Percent_NOO* for non-owner occupied map. For Total Number of Households, pick graduated symbols in symbology and choose *Tot_HH* variable. Add River, Lakes, background, and scale bar and legend for visually appealing map.

Summer Meal Program

Saint Paul Summer Meal Program – Map 12

This map was created using data provided by Saint Paul Parks and Recreation on the number of participants in the Summer Meal Program Of the 43 total Centers 28 participated in the Meal Program in the summer of 2008. Meals that were served included breakfast, lunch, snack, and dinner. This meal type data was displayed using a proportion al pie chart symbol representing each specific meal count. The pies were then graduated to represent the total number of meals served. Recreation centers without any meals served during the summer of 2008 were represented using different symbols.

Roster Count and Meals Served by Rec. Center – Map 13

Geocode all Saint Paul recreation centers using Addresses from Saint Paul Parks and Recreation. Create a new data field in the attribute table for 2008 summer meal count using Data from Saint Paul Parks and Recreation. Create a new data field in the attribute table for 2008 roster counts using roster information from Saint Paul Parks and Recreation Reserve Master. Only use programs that have at least five participants. In cases where children registered a one recreation center to participate in a program at a different recreation center, their information is connected to the recreation center where the actual program took place.

Add two separate shape files of the geocoded recreation centers: one to display the roster counts and one to display the meal counts. For the meal counts layer, use graduated symbols in the properties menu. The symbol should be circles with all colors the same except for the "0" count, which should be a different color. For the roster counts layer, use graduated symbols in the properties menu. The symbol should be a hollow square, with all colors the same.

Attendance by Block Group and Meals Served – Map 14

Geocode all Saint Paul recreation centers using Addresses from Saint Paul Parks and Recreation. Create a new data field in the attribute table for 2008 summer meal count using Data from Saint Paul Parks and Recreation. Geocode all addresses of roster participants from Saint Paul Parks and Recreation master liSaint Only programs that had at least 5 participants were considered in this analysis. In cases where children registered a one recreation center to participate in a program at a different recreation center, their information is connected to the recreation center where the actual program took place.   Join the geocoded roster addresses with Saint Paul block groups. Meal Counts should be graduated symbols. Five classes, all the same color except for one symbol which should represent no meal service offered and be a different color. Attendance should be graduated colors with 5 classes.

Students Eligible for Free Lunch and Rec. Center Participants – Map 15

Take the point file of all student addresses and select by attributes students receiving free lunch (signified by a "1"). Export to a shapefile. Spatially join the total student addresses to a block group polygon shapefile and the students receiving free lunch shapefile to a block group polygon shapefile, summing the counts both times. Then join the polygon shapefiles by their common block group FIPS code, add a new field (double, with 50 precision/50 scale) and calculate field geometry for the count of

students receiving free lunch (Count_1) divided by total students (Count_) times 100. Go to properties Free Lunch Shapefile, symbology, graduated colors and select Percent_FR variable. Then add the Geocoded_roster_block_group shapefile. Go to properties, symbology, proportional symbols and select Count_ variable. This provides the count of the rec center attendees whose home locations are in block groups. Add River, Lakes, background, and scale bar and legend for visually appealing map.

Attendees by Rec. Center and Households below Poverty Level – Map 16

Roster information is from Saint Paul Parks and Recreation Master Reserve. Only programs that had at least 5 participants were considered in this analysis. Roster counts include the total number of children registered in all program at each recreation center. In cases where children registered a one recreation center to participate in a program at a different recreation center, their information is connected to the recreation center where the actual program took place. Used the editor tool bar to manually enter the roster count at each recreation center.
The data for the % below the poverty level was taken from the 2000 US Census Summary file 3. Geo within geo was searched for, and all block groups within Saint Paul were chosen. The poverty risk factor was taken by dividing Families: Income in 1999 below poverty level by total Households in that block group.

Percent of Students Eligible for Free Lunch and Rec. Center Enrollment – Map 17

Take the point file of all student addresses and select by attributes students receiving free lunch (signified by a "1"). Export to a shapefile. Spatially join the total student addresses to a block group polygon shapefile and the students receiving free lunch shapefile to a block group polygon shapefile, summing the counts both times. Then join the polygon shapefiles by their common block group FIPS code, add a new field (double, with 50 precision/50 scale) and calculate field geometry for the count of students receiving free lunch (Count_1) divided by total students (Count_) times 100. Go to properties Free Lunch Shapefile, symbology, graduated colors and select Percent_FR variable. Then add the recreation center point shapefile. On Rec Center shapefile go to symbology, select proportional symbol for total recreation center attendees for summer 2008 ("attendees"). Add River, Lakes, background, and scale bar and legend for visually appealing map.

Meal Count by Rec. Center and HHs below Poverty Level – Map 18

The data for the Household Food Security index was taken from the 2000 US Census Summary File 3. Geo within geo was searched for, and all block groups within Saint Paul were chosen. The poverty risk factor was calculated by dividing "Families: Income in 1999 below poverty level" by total Households in that block group.

To get the meal count for Saint Paul recreation centers, recreation centers were all geocoded using addresses from Saint Paul Parks and Recreation. A new field was created in the attribute table for 2008 summer meal count. Using the editor toolbar, the number of meals (Saint Paul Parks and Recreation data) was manually entered.

Percent Non-White Residents and Total Rec. Center Meals Served – Map 19

Using census website, go to 2000 decennial census SF1. Choose variable *P6. Race* for block groups in Ramsey County. Download to excel. Add all non-white population counts together and divide by total population count. Add Stpaul_blkgrp to ArcMap and join tabular census data using common FIPS code. Export to a new shapefile, *census_variables*. Add recreation centers layer. Go to properties, *census_variables* shapefile, symbology, graduated colors and select non_white variable. On recreation centers shapefile go to symbology, select proportional symbol for total meals served (tot_2008). Add River, Lakes, background, and scale bar and legend for visually appealing map.

Meal Count by Rec Center and Female Head of HH – Map 20

The data for families with a female head of household was taken from the 2000 US Census Summary file 3. Geo within geo was searched for, and all block groups within Saint Paul were chosen. The female householder risk factor was taken by adding "Families: Income in 1999 At or Above poverty level, Female householder, no husband present" and "Families: Income in 1999 Below poverty level, Female householder, no Husband present" and dividing that value by total households. The result of this was to get a shapefile yielding all female headed households as a percentage of all households.

To get the meal count for Saint Paul Recreation centers, all the recreation centers were geocoded using addresses from Saint Paul Parks and Recreation. A new field was created in the attribute table for 2008 summer meal count. Using the editor toolbar, the number of meals (Saint Paul Parks and Recreation data) was manually entered.

Summer Meal Program with Students Free and Reduced Meal (F.R.M.) Qualified – Map 21

Data from the Saint Paul Public Schools on the number of students qualifying for free of reduced meals was used as a percentage by block group in Saint Paul. The result was displayed as a choropleth map and classified into five groups using the Natural Break (Jenks) system.

The Summer Meal Program portion of the map was created by using a graduated symbol to represent the total number of meals served by each recreation center. This data was grouped into five classifications, again by using Natural Breaks (Jenks). The lowest grouping contained those recreation centers with a value of 0. These recreation centers were represented using a symbol different from the other four graduated symbols.

Households below Poverty Level and Grocery Stores – Map 22

Data taken from the 2000 Census- P3 geo within geo- all block groups within Saint Paul)
(Families: Income in 1999 below poverty level/ Households: Total)

Grocery stores were geocoded from a combination of my grocery stores I got off of yellowpages.com, and grocery stores that Joel Larson got off of other online yellow page directories maintained by Info USA and Bell South.

Free and Reduced Meals and Grocery Store Location – Map 23

Data was received from Saint Paul Public Schools. The data was normalized by total students, so it was the percentage receiving free and reduced meals out of all students in Saint Paul.

Grocery stores were geocoded from a combination of my grocery stores I got off of yellowpages.com, and grocery stores that Joel Larson got off of other online yellow page directories maintained by Info USA and Bell South.

Food Security and Meals Served by Rec. Center - Map 24

Geocode all Saint Paul recreation centers using Addresses from Saint Paul Parks and Recreation. Create a new data field in the attribute table for 2008 summer meal count using Data from Saint Paul Parks and Recreation. Create a food security raster layer using Data layer based on Household Food Security in the United States, 2006, (Nord, Andrews, and Carlson 2007) which states that the three most closely correlated demographic variables associated with food insecurity were having a household that was below the poverty line (36.3 percent more likely to suffer from food insecurity than the national average), a minority population (20.65 percent), and having a female head of household (30.4 percent). These values were converted into a ratio based on their relative percentages out of 100 with percentage female head of household counting for 24 percent, percentage minority race counting for 35 percent, and percentage below the poverty line counting for 41 percent.

The data for the Household Food Security index was taken from the 2000 US Census Summary file 3. Geo within geo was searched for, and all block groups within Saint Paul were chosen. P90 and P6 tables were selected. The poverty risk factor was taken by dividing families with incomes Families: Income in 1999 below poverty level by total Households in that block group. The race risk factor was created by dividing subtracting total population by the percentage of white alone, and then dividing that value by total population. The female householder risk factor was taken by adding "Families: Income in 1999 At or Above poverty level, Female householder, no husband present" and "Families: Income in 1999 Below poverty level, Female householder, no Husband present" and dividing that value by total households.

Meal Counts should be graduated symbols. Five classes, all the same color except for one symbol which should represent no meal service offered and be a different color. Level of Food Security should be graduated colors with 9 classes. It should not be labeled with numbers in the legend; instead it should say where areas are high, medium and low levels of food insecurity.

Food Insecurity and Grocery Store Location – Map 25

According to *Household Food Security in the United States, 2006,* (Nord, Andrews, and Carlson 2007) in 2006, the three most closely correlated demographic variables associated with food insecurity were having a household that was below the poverty line, a minority population, and having a female head of household. Households below the poverty line were 36.3 percent more likely to suffer from food insecurity than the national average, minority households were 20.65 percent more likely to suffer from food insecurity, and female head of householder were 30.4% more likely to have a family that suffered from food insecurity. These values were converted into a ratio based on their relative percentages out of 100 with percentage female head of household counting for 24 percent, percentage minority race counting for 35 percent, and percentage below the poverty line counting for 41 percent and calculated using the raster calculator.

See above sections for how the shapefiles of the percentages female heads of household, the percentage of households below the poverty level, and the percentage of minority households were created.

Grocery stores were geocoded from a combination of grocery stores taken off of yellowpages.com, and grocery stores that Joel Larson got off of other online yellow page directories maintained by Info USA and Bell South.

Food Insecurity Index and Total Meals Served – Map 26

This map integrated 5 variables using a weighted overlay to create a food security index for areas of Saint Paul. The 5 variables are: percent female headed households, percent in poverty, percent non-white, percent of students eligible for free lunch and percent of students outside of rec center service area (all by block group). Using the three versions of *census_variables* shapefile I was able to create percent female headed households, percent in poverty, percent non-white. The "students outside of service area" shapefile was created in the same way that the students receiving free lunch shapefile was created (see above). All were then turned into raster data using spatial analyst. The raster data was combined in a weighted overlay (Spatial Analyst toolbox, overlay, weighted overlay). When adding the variables to the overlay the following percentages were applied:
-percent female headed households: .15
-percent in poverty: .15
-percent non-white: .15
-percent of students eligible for free lunch: .33
-percent of students outside of recreation center service area: .22
New raster is called *weight_spps2*. Add *weight_spps2* to Arc map and display using classified color ramp. Add River, Lakes, background, and scale bar and legend for visually appealing map.

Accessibility

Saint Paul Public School Students – Maps 27, 28

We geocoded all of the Saint Paul recreation centers (addresses from Saint Paul Parks and Recreation) and the Saint Paul Public School Students (addresses from Saint Paul Public Schools).

We spatially joined the point layer of all the student addresses to the Census 2000 block groups for the city of Saint Paul by selecting "Sum" to aggregate the points to polygons. The resulting shapefile added itself to the map and included the original attributes of the table, summarized into the 293 block groups. We selected "Count" in the properties menu to display the total number of students.

To create a percentage, we used the aggregated Saint Paul Public School Students polygon and created a new data field in the attribute table for the percentage of total students by block group. We used the field calculator to normalize the count of students per block group by the total number of Saint Paul Public School students * 100. We then selected "perc_tot" in the properties menu to display the percentage of students by block group.

Saint Paul Recreation Center Service Areas – Maps 29-38

We geocoded all of the Saint Paul recreation centers (addresses from Saint Paul Parks and Recreation) and the Saint Paul Public School students (addresses from Saint Paul Public Schools).

Through Network Analyst, we created our Service Areas by loading all the recreation center locations, and then outlined the Service Area Properties by designating a distance in the analysis setting at 0.5 miles and 1 mile away from the facilities. We allowed U-turns, honored one-way restrictions, and ignored invalid locations. Then, in the Polygon Generation tab, we clicked "Generalized for Polygon Type" and "Non-Overlapping Facilities Options". We then clicked "Solve" and created 0.5 mile and 1 mile service areas around the Recreation Centers. We selected by location all the students that were completely within the service area polygons and exported the data file. We spatially joined the point layer of all the student addresses to the polygons by selecting "Sum" to aggregate the points to polygons.

For the SPPS characteristics, we "Selected by Attributes" the desired distinction (e.g. White Students, Spanish Speaking Students etc.) and exported this shapefile. We then spatially joined the point layer by checking "Sum" to aggregate the points to polygons. Then we joined the FID of the polygon shapefile of the specific student attribute to the general students within service area polygon shapefile and exported the file to create a normalized table.

Saint Paul Public School Students outside Service Areas – Maps 38-43

We geocoded all the Saint Paul recreation centers (addresses from Saint Paul Parks and Recreation) and the Saint Paul Public School Students (addresses from Saint Paul Public Schools). Then we "Selected by Location" the Saint Paul Public School Students that fell completely within polygons and switched the selection to determine the points of the students falling outside of the Service Area. We then exported

this file and spatially joined the point layer of all the student addresses to the Census 2000 block groups for the city of Saint Paul by checking "Sum" to aggregate the points to the polygons.

For the SPPS characteristics, we "Selected by Attributes" the desired distinction (e.g. White Students, Spanish Speaking Students etc.) and exported this shapefile. Then we spatially joined the point layer of all the student addresses to Census 2000 block groups for the city of Saint Paul by checking "Sum" to aggregate the points to polygons.

Recreation Center Program Cost and Type – Maps 44-48

All of the Saint Paul recreation centers (Addresses from Saint Paul Parks and Recreation) were geocoded. Data was collected for each recreation center from the Reserve Master on programs that were offered in the summer of 2008 for ages between 6 and 19, including: total number of programs offered, number of programs offered by type (sports; arts and crafts; music, dance and theater), and program cost (including free programs). Using Excel, the following fields were calculated for each recreation center: the sum of programs, sum of programs by type, percent of programs by type, sum of free programs, percent of free programs, average cost of total programs and average cost of total programs by type. To compare the recreation center program costs and types to the general economic status of Saint Paul populations, the percentage of Saint Paul households living below the poverty level were downloaded from the Geolytics program into an Excel file. This was joined to the US Census block groups for the City of Saint Paul. The Pig's Eye block group was excluded since it has no population. To show the percentage of households below the poverty level, the field was categorized into four classes by the Natural Breaks method using graduated symbols. The hydro_luse2000 layer was downloaded from the Metropolitan Council to show the lakes and rivers.

To show the average cost of programs by recreation center, the field was categorized into four classes by the Natural Breaks method in the map using proportional symbols.

To show the number and type of free programs by recreation center, the sum of free programs by type were categorized into a pie chart in divisions of sports; arts and crafts; and music, dance, theater. The size of the pie chart reflects the number of free programs at each recreation center.

To show the total number of programs at each recreation center, the field was divided up into four categories using natural breaks to show how many programs each Recreation Center offers in comparison to the other centers. To show the total number of children residing within each block group, data showing the number of children ages 6 – 17 was downloaded from Geolytics.

To show the number of free programs and the number of programs that charge a registration fee at each recreation center, each recreation center was represented as a pie chart divided into two sections: programs with fees and programs without fees. To show the total number of students residing within each block group, data showing the number of students ages 6 – 17 was downloaded from Geolytics.

To show the number and type of programs by recreation center, the sums of the programs by type were categorized into a pie chart in divisions of sports; arts and crafts; and music, dance, theater. To show the total number of students residing within each block group, data showing the number of students ages 6 – 17 was downloaded from Geolytics.

Recreation Center Participants by Service Area – Maps 49-53

The 12 selected and geocoded recreation centers were exported. Using Network Analyst, service areas were created – u-turns allowed, measured by distance in miles (.5, 1, 2, 3), distance to center. Data from Saint Paul Recreation Reserve Master was downloaded and the addresses of the participants registered for the programs (only used programs with more than 5 people enrolled, did not include teen and adult programs or field trips) were geocoded. These addresses were separated by recreation center attended, and the service areas were separated for each center. The addresses were then aggregated to the corresponding service area, using a spatial join with Sum. To show the percentage of students not aggregated to a service area because they fall outside of it, the numbers were calculated from the attribute table and made into a new field. This field was then mapped using graduated symbols. In order to create consistency between the different service areas, they were manually adjusted so that the colors fit percentages of 0-10, 10-20, 20-30, and 30-70 classification (the 30-70 percentage designation is because almost ALL the percentages were under 40 percent, except for one recreation center which had a 67 percent).

Mobile Recreation

Service Areas - 54

We geocoded addresses for each mobile recreation site and used Network Analyst to calculate service areas for all sites. We have divisions for ¼, ½, and one mile. We also geocoded addresses for each recreation center to show where these are in relation to mobile recreation sites and their service areas.

Students Served – Map 55

For the first map, we calculated the number of students in each service area by clipping the layer of all SPPS students by each service area to create a new layer of students living within the one-mile limit of each site. Then we used proportional symbols to represent these numbers. For the second map, we used data provided by SPPR regarding attendance at each mobile recreation site for the whole summer of 2008 and used proportional symbols in the same way as above.

Total Attendance – Maps 56-59

For the first map, we calculated the number of students in each service area by clipping the layer of all SPPS students by each service area to create a new layer of students living within the one-mile limit of each site. Then we used proportional symbols to represent these numbers. For the second map, we used data provided by SPPR regarding attendance at each mobile recreation site for the summer of 2008 and used proportional symbols to represent the varying numbers in attendance. The remaining maps used proportional symbols to show attendance in the same way but used age specific attendance data. The attendance data was taken from the mobile recreation roster for the summer of 2008.

Site Location in Relation to Student Grade Level – Maps 60-63

Using data from SPPS, we geocoded addresses for each student. We then made a spatial join between this layer and a layer for Saint Paul block groups. Next, we summed the quantities of students in each grade, as well as the total number of students. This allowed us to calculate the percentages shown on the map, which are represented by graduated colors, with darker colors showing higher concentrations.

Amenities – Maps 64, 65

For these maps, we geocoded addresses of various amenities, using addresses found online.

Case Studies – Maps 66–79

For these maps, we clipped the citywide service area layer created to each case study site so that we had individual distance polygons for these sites. We spatially joined these to the clipped student layers created for the students served maps. The resulting layers allowed us to calculate age and language percentages for each service area. We used this data to create pie charts for each service area. For the sex maps, we used the same layer created for the citywide sex maps and added the single service area layer on top. We also labeled major streets, using data from the Metropolitan Council.

Eastside Bus Circulator – Maps 80, 81

Using Network Analyst, we digitized both of the circulator bus routes individually using a Ramsey County streets data layer. Once our routes were complete we created half mile service areas centered on each stop, again using Network Analyst. Using our geocoded student data we selected all those students who were spatially located within each service area to get a total count by bus stop. We then manually assigned proportional symbols to represent the number of students located within the service area of each stop.