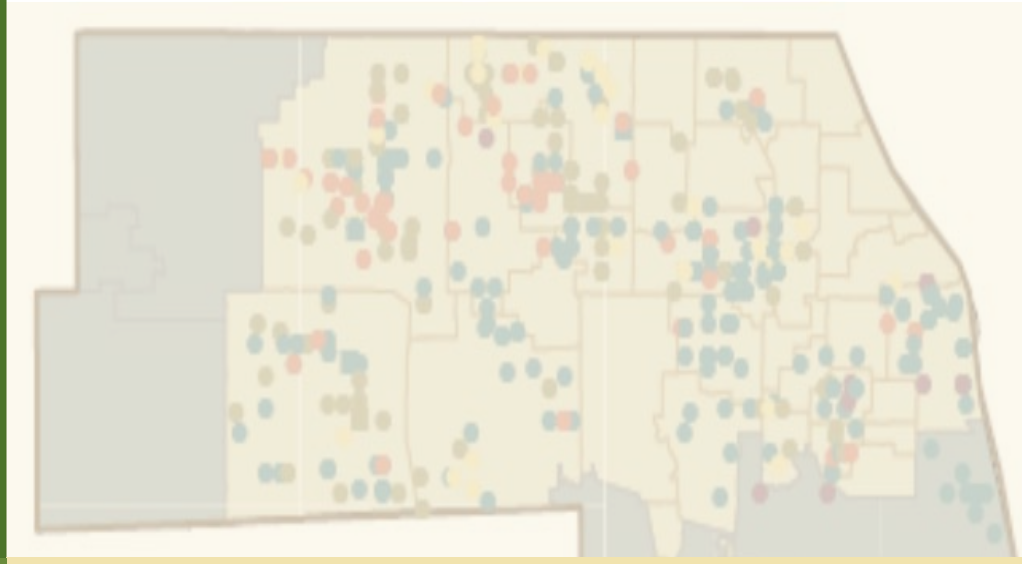
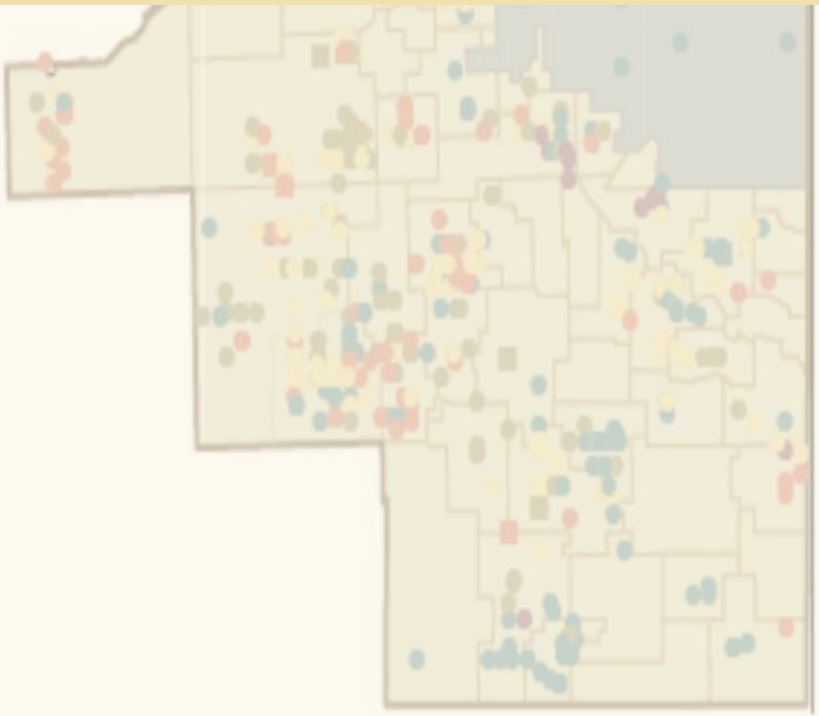


School Safety Busing:

Serious Safety Hazards in Cook County, 1980-2006

Center for Neighborhood Technology

January 2007



Acknowledgements

The Center for Neighborhood Technology (CNT) would like to thank IDOT District One for opening their doors and files to our researchers and John O'Neal of the Chicago Metropolitan Agency for Planning for his analysis of ISBE budgets.

Special thanks to CNT staff who contributed to this report: Ben Helphand, Harley Cooper, Justin Keen, Annette Stahelin, Jill Siegel, Jan Metzger, Peter Haas, and Jacky Grimshaw.

And, to CNT's Board members, for their ongoing support and commitment to CNT and its mission.

About the Center for Neighborhood Technology

The Center for Neighborhood Technology (CNT) was founded in 1978 to research, adapt and test new community revitalization strategies relevant to urban communities, especially strategies that harness the environmental and economic value of the more efficient use of natural resources. Over the years, CNT has worked to disclose the hidden assets of the Chicagoland economy and urban areas more broadly; demonstrate the multi-bottom line benefits of more resource-efficient policies and practices; and show how the value of what we demonstrate could be captured to benefit communities and their residents inclusively. CNT's work, especially in the areas of energy, transportation, materials conservation and housing preservation, has helped fuel a generation of community development institutions and learning, garnering us a reputation as an economic innovator and leader in the field of creative sustainable development.

CNT's mission is to promote the development of more livable and sustainable urban communities. CNT's transportation work is focused on using transportation assets to serve both the environmental and economic development goals of regions and communities. CNT works to boost demand for clean, efficient and affordable mass transit; increase the supply of traditional and non-traditional mass transit services; disclose the linkages between transportation costs and housing affordability; create model value-capture mechanisms that take advantage of the intersection of efficient transportation networks and community economic development programs; and promote policy initiatives that increase public participation in investment decisions and make more resources available for sustainable investments.

More information about CNT is available at www.cnt.org.

CONTENTS

TABLES AND MAPS

APENDICES

EXECUTIVE SUMMARY

Since 1980, as part of the School Safety Busing program, school boards across Illinois have been documenting Serious Safety Hazard Findings and submitting them to their IDOT district office for approval. Thousands of forms were submitted in the last two-and-a-half decades representing an opportunity to document and assess safety hazards affecting children in Illinois: Where do we find most approved hazards? What kinds of approved hazards occur most frequently? Are there particular locations that have a high concentration of approved hazards? The answers to these questions offer valuable information towards improving conditions for walking and biking to school. In the following report we sought to answer some of these questions and identify less obvious questions that may need to be addressed.

In order to be able to analyze the Serious Safety Hazard Finding forms, the Center for Neighborhood Technology created a database combining information from the forms with complete archived Cook County applications. Based upon this information we know that the total number of approved hazards between 1980 and 2006 is 1,434. Thirty-nine of these hazards are for students walking to secondary schools and 1,395 were approved for students walking to elementary schools. Of the four types of hazards, the most frequently approved (663) is for crossing a roadway, followed by walking along a roadway (286) and walking on a roadway (239). The final type, crossing railroad tracks, was the least common (33). Combined hazards were verified in 213 applications. The most common combined hazard is walking along a roadway in conjunction with crossing a roadway. The most common number of points awarded for all single applications was 12, exactly the number needed to qualify. Two additional points are allowed to be awarded by school boards; these are called board judgments. For 696 applications board judgment points were awarded; 256 of these cite snow conditions as contributing to the hazardous condition.

As a result of these hazards, some school districts elect to bus children to school even though they live close because their route to school is considered too dangerous for walking or bicycling. This type of transportation is called hazard busing. In fact, in Illinois, roughly 15% (more than 15,000 students) of all students who ride a bus to school do so because it is too dangerous for them to walk the less than one-and-a-half miles to school.

How much is spent on hazard busing? As part of a 1981 revision to the application form, a "Reimbursement Estimate" was added asking applicants to both approximate how many students will annually be qualified for busing based on the existence of the hazard and how much the busing will cost. Little is to be gleaned from the information gathered; however, because only 534 applicants filled out either the number of students affected or projected costs and the total number of pupils qualified to be bused stands at 16,499 during that 15-year time period. That being said, useful estimates on costs can be extrapolated from available Illinois State Board of Education budget data[1]. Initial estimates show a 53% increase in just over a decade in the number of pupils transported because of hazardous conditions, with a 67% increase in costs since FY 2000.

[1] The Illinois State Board of Education's final general FY07 budget (5/5/06) is summarized at: http://www.isbe.state.il.us/budget/FY07/FY07_final_budget.pdf.

In order to look at the data spatially we attempted to find the geographical location (geocode) of all the approved hazards. Of the approved hazards, we were able to geocode 1,122 or 78%. This is relatively low for typical geocoding results but is a reasonable proportion given the state of the information provided for this particular data set. The difficulty with using a typical geocoding engine with the School Safety Busing database is that the forms (1) do not indicate an address range or street number, (2) inconsistently indicate a street suffix (making it impossible to determine between Smith St. and Smith Ln.) and (3) they inconsistently provide street names as landmarks (e.g., condominium complexes or railroad underpasses were also used).

Using this geographic information we were able to look at different trends in the distribution of hazards. Approved hazards, we learned, are not evenly dispersed throughout Cook County. Higher concentrations are present in the Northwest and Southwest suburbs. Furthermore, the elementary school districts with the highest numbers of approved hazards shared some key characteristics. We found more hazards per students in less dense school districts, where 50 percent or more households have two or more cars. We found a strong correlation between race and the number of hazards approved per elementary school district. Finally, approved hazards are strongly skewed towards middle-income districts, which have more than double the number of hazards than districts with the lowest median income.

We were unable to draw any significant conclusions about land use and development from the findings of this project, although they do suggest that less dense, single-use areas (especially areas with single family residential uses) of Cook County tend to have more approved hazards and that major arterials, such as Waukegan Road, Roselle Rd, and Milwaukee Ave (in suburban Cook County) and Devon Road and Belmont Ave (in Chicago) also tend to have higher concentrations of approved hazards. Of course, there are a number of factors influencing these findings including, but not limited to, a community's ability and capacity to submit an application requesting approval of a hazard.

When approved hazards were mapped in relation to pedestrian crash data we discovered a reverse correlation. While the greatest number of pedestrian crashes is in the City of Chicago and in the western suburbs of Cook County, the approved hazards are concentrated to the Northwest and Southwest. Focusing just on the City of Chicago and weighting the number of hazards by the number of children, several community areas stand out including Armour Square, Lincoln Park, and Lake View. The community areas however, with the most pedestrian car crashes in 2003 were Austin, West Englewood and Humboldt Park.

Summary of Recommendations

Based on the findings of our geocoding and analysis, we are proposing the following recommendations:

- Streamline the application process while providing a valuable, real-time feedback loop for the School Safety Busing program by introducing a web-based application with interactive mapping capabilities.
- Develop aggressive outreach efforts guided by empirical data (e.g., pedestrian crash data) in order to remedy inequitable distribution of approved hazards and better target resources where they are most needed.

- Link the Safety Busing and the new Safe Routes to School programs. Use data collected in the course of the hazard busing program as a way to identify potential projects for Safe Routes to School construction grants.
- Add fields to the application form in order to identify commonly occurring reasons for board judgment points, including snow conditions, high school drivers, truck traffic and store parking lots.
- Hasten implementation of new laws and policies, including Context Sensitive Solutions and Complete Streets, which require the planning of streets to accommodate pedestrians and cyclists.
- Conduct aggressive outreach targeting school districts applying for hazard busing, encouraging them to apply for Safe Routes to School funding.
- Explore the development of new incentives and policies that support a reduction in the number of pupils bused due to hazards including, but not limited to, tying the cost savings in annual reduction in hazard busing to programs like Safe Routes to School.
- Use the protocols and data-collection tools created for this project to replicate the process in other districts and in the remaining counties of District One, using just a sample of available records rather than the complete dataset.

Limitations of Study

This report is limited by a number of factors. Millions of pupils are bused every year to and from Illinois schools. There are two school busing reimbursement programs. Their official names are The Pupil Transportation Reimbursement Program and The Parent/Guardian Transportation Program. The former grants funds to school districts and the latter, to parents. This report deals only with the former and looks at it from its inception in 1980 until 2006. While it is a statewide program this study focuses only on the Illinois Department of Transportation District One. The data we have analyzed comes from archived Serious Safety Hazard Finding forms stored in District One offices. Because of the time to transfer the information from these forms into a database, as well as the volume of forms in existence, we limited the study to Cook County.

It is important to note that this is not an empirical survey of hazards in Cook County. In order for data to have been included in this study a school board had to submit a form requesting approval of a particular hazard. It is highly likely that there are, as a result, many unidentified hazards that escape the purview of the data at our disposal.

INTRODUCTION TO SCHOOL SAFETY BUSING

Under normal, safe conditions Illinois pupils are only bused when they live more than 1.5 miles from school facilities, farther than is considered a reasonable walking or biking distance. In 1980 however, Section 29-3 of the School Code (105 ILCS 5/29-3) declared that when walking conditions either to or from the school is considered a serious hazard to the safety of the pupil local school busing of distances less than 1.5 miles is allowed, though not mandated.

A serious safety hazard can result from the presence of numerous combinations of factors such as high vehicle speeds and volume, wide street crossings, lack of sidewalks and railroad tracks. Just what constitutes a serious safety hazard is determined by the local school board in accordance with guidelines developed by the Illinois Department of Transportation, in consultation with the State Superintendent of Education[2]. In these guidelines serious safety hazards are categorized into four basic types that pupils walking to or from school encounter: walking along a roadway, walking on a roadway, crossing a roadway, and crossing railroad tracks. Each of these types is defined by 5-7 relevant factors, which in combination contribute to creating distinct hazardous situations for pupils.

The four types of serious safety hazard types and their contributing factors are as follows:

> Type I - Walking along a Roadway - Determined by predominant age of pupils, location of walkway, speed and volume of traffic, length of hazardous section.
>
> Type II - Walking on a Roadway - Determined by predominant age of pupils, reason for walking on roadway, speed and volume of traffic, length of hazardous section.
>
> Type III - Crossing a Roadway - Determined by predominant age of pupil, type of intersection controls present, speed and volume of traffic, width of roadway.
>
> Type IV - Crossing Railroad Tracks - Determined by predominant age of pupil, crossing protection and number of tracks, daily number of trains.

Scoring Serious Safety Hazards

The factors contributing to each type of hazard are assigned point values from 0.5 to 5. A serious safety hazard is said to exist if a single hazard totals 12 points or any combination of two hazards total 20 points. A form from the Illinois Department of Transportation provides applying school boards tables to keep track of points and a publication, “School Safety Busing and Instructions for Submitting Findings,” walks them through the application process.

State statute allows school boards to add up to additional 2 points to any hazard. These are known as board judgments. School boards are required to provide a reason for the additional points, which include, but are not limited to, unusual accident experience, inadequate sight distance, railroad switching at a crossing, and a high volume of vehicles crossing the walkway during the time pupils are walking to and from school, such as at a shopping center, major gas

[2] Illinois Department of Transportation, “School Safety Busing: And Instructions for Submitting Findings,” December 2001.

station, etc. As a result of the board judgments, it is possible for hazards to be approved that only have 10 points but are given 2 additional board judgment points, therefore reach the 12-point threshold.

1981 Guideline Revisions

In the 26-year life of the School Safety Busing program the scoring system and application forms have undergone several revisions. The most significant change happened early in the program, less than a year after it was launched. In 1981, responding to early feedback on the application process, IDOT modified the scoring system in a number of areas. The largest change had to do with the number of points awarded for the grade of the pupils affected by the hazard. On the original form the grade of the pupil was broken down between k-2, 3-5, 6-8, 9-12 with a possible 5, 3, 1 and 0 points possible respectively. This was changed to k-8 and 9-12 with 5 or 2 points possible.

Similarly, the number of points given for volume and speed of traffic, railroad tracks, and the length of hazardous road sections was increased. Also, while on the original form it was possible to receive zero points in several fields, on the new form this was changed to 0.5. The result of the combined point changes was a lowering of the threshold for approving hazards. It is important to note, however, that the revisions did not in any way invalidate any previously approved applications. The revisions allow the same, or additional, pupils to qualify as would have qualified under the former guidelines.

PURPOSE AND METHODS

For 26 years school boards across Illinois have been filling out forms for Serious Safety Hazard Findings and submitting them to their IDOT district office for approval. This has resulted in thousands of forms, which represent an impressive cache of unanalyzed data on safety hazards affecting children in Illinois: Where does most hazard busing occur? What kinds of hazards occur most frequently? Are there particular locations that have a high concentration of hazards? Answers to these questions and many others could prove especially useful now with the launch of Illinois' Safe Routes to Schools program in 2006. Data from the Serious Safety Hazard Findings forms could offer a kind of guide to potential candidates for Safe Routes to School construction grants. To be sure, only a fraction of the hazards identified would qualify as some likely no longer exist and others are larger in scale than the grants would allow. Even so, the data collected for the School Safety Busing program has significant overlap with the data required for the Safe Routes to School program.

In order to better understand the potential of this data, the Center for Neighborhood Technology was provided a grant to complete the following tasks:

1) Tabulate existing data from the "Serious Safety Hazard Finding" forms that are stored in hard copy format at District One offices.
2) Analyze and map relevant variables with respect to Safe Routes to School Policy
3) Develop protocols, including spreadsheets and/or databases, which will be turned over to IDOT so that the analysis can be carried out in other areas of the state, if desired.

Creating the Serious Safety Hazard Database

We began our work by creating a draft Microsoft Access database from the known Serious Safety Hazard Finding form. Next we conducted a series of trips to IDOT's District One offices where the forms are archived. Our objectives were to learn how, in practice, the forms had been filled out over the life of the program and to test the inputting the information from the forms into our draft database. The quality and condition of the forms varied dramatically. Some were clean, clear and easy to input. Others were confusing, often straying from the form's own limits. As a result, data entry varied from a few minutes to a half hour. Based upon these early observations we refined our database to capture as much of the relevant information from the forms as possible while not creating undue burden for present or future data entry.

The resulting database template does not capture item-by-item every field present on the Serious Safety Hazard Finding forms. Rather, it is a pared-down version, reducing redundancies and leaving out extraneous or dated fields (Appendix A. Serious Safety Hazard Database Key). The information about the quality, location, and points received for different hazard types were all recorded essentially as they appear on the form. Where we were able to shorten the input process significantly, however, was in the opening and closing sections. We did not record the address of administrative office or the name, title, and phone number of contact representatives. At the end of the form we did not record the finding (questions 33-34) since these could be figured from data already collected. Finally, we decided not to record the names and dates of every signature in the form's processing. Certification, submittal, and approval dates were consistently within several months of each other in the year noted in the annual sequential number. As such, we chose to use the annual sequential number as the primary date and as the index for the database.

This number is made up of three parts— the first part is the school district, the second part is the year and the third part is the submittal number for that year from that district.

Board Judgments

We created several fields in order to deal with board judgments. If the judgments did not add anything that was not already apparent on the form we checked the logical field “board judgment doesn’t add new information.” If it added something new we wrote notes on the judgment. In the course of reading board judgments we started to observe several trends; four or five reasons for board judgments were given time and time again. In order to keep track of their frequency we created checkboxes for these items, which included snow conditions, high school divers, truck traffic, and proximity to store parking lots. Unfortunately, we were not able to add this field into the database at the beginning of the data collection process so this data remains incomplete. Of the added fields “snow conditions” was noticed and added earliest in the process. As a result, its numbers are the most statistically significant.

BASIC FINDINGS

All of the available Serious Safety Hazard Finding forms from Cook County were input into our database. The final tally of hazards is 1,483. Of these, 49 were not approved and ,1434 were approved. Combined hazards are counted as a single hazard because they are in close proximity and work in concert to obstruct a given walking route. Of the approved hazards, we were able to place geographically (or geocode) 1,122 or 78%. Thirty-nine of these hazards are specifically for students walking to secondary schools and 1,395 were approved for students walking to elementary schools. Note that when we calculate percentages based on tabular data from the Serious Safety Hazard Database, we use 1,434 as the total number of hazards. When we calculate percentages based upon spatial data, we use 1122.

Frequency of Hazard Types

Our findings show that the most frequently approved type of hazard, with 663 records, is Type III - Crossing a Roadway, followed by Type I – Walking Along a Roadway with 286 records, and then Type 2 – Walking On a Roadway with 239 records. Type IV – Crossing Railroad Tracks was the least common with only 33 records.

Combined Hazards

213 applications were approved for combined hazards. 198 of these records were approved for elementary school districts and 15 for secondary school districts. The most common combined hazard is Types I and III – Walking Along a Roadway combined with Crossing a Roadway.

Board Judgments

There are 696 hazard records where board judgment points were awarded, representing 48.5% of the 1,434 records. Of the special check boxes we added to the database in order to capture frequently cited reasons given in the board judgment letters only one, snow conditions, resulted in significant numbers. There are 256 records that site snow conditions as part of the hazard. This represents 17.8% of the 1,434 records and would likely have been greater had the checkbox been included from the beginning of our data collection.

The other board judgment check boxes, though added only half-way though the data collection process, resulted in less significant results:

- Truck Traffic – There are 69 records that site truck traffic as part of the hazardous condition (4.5% of the 1,434 records).
- Store Parking Lot – There are 75 records that site traffic near entrances/exits to store parking lots as part of the hazardous condition (5.2% of the 1434 records).
- Temporary Hazard – There are 3 records that site truck traffic as part of the hazardous condition (0.2% of the 1434 records).
- High School Driver - 5 records that site high school drivers as part of the hazardous condition (0.3% of the 1434 records).

Points Awarded

The most common number of points awarded for all single and combined applications was 12—exactly the number needed to qualify. The mode, or most likely value, for all single hazards was 12 and for the most common combined hazard of Types I and III was 20 (Appendix B. Points Awarded to Hazard by Type) .

GEOCODING THE HAZARDS

All paper forms from IDOT were entered into Microsoft Access using a form designed and created by CNT. The paper forms did not provide an exact street address, but rather the name of a road segment indicating *along* which street the hazard occurred and a *from* and an *at* field (e.g., "from Penn Central Underpass at Canal St"). These latter two fields could be either a street name or a place name. Because the hazards were not recorded and could not be entered into the database as standardized addresses, typical geocoding could not be carried out.

Geocoding is a process, using a Geographical Information System, of matching records in a table of standard addresses (i.e., 123 N. Main St. – "Street Number," "Pre Direction," "Street Name," and "Suffix") to the attribute fields in a Road Centerline File (RCL) to locate the exact geographic location of a given address. The difficulty with using a typical geocoding engine with the School Safety Busing database is that the forms (1) do not indicate an address range or street number, (2) inconsistently indicate a street suffix (making it impossible to determine between Smith St. and Smith Ln.) and (3) they inconsistently provide street names as landmarks (e.g., condominium complexes or railroad underpasses were also used).

The example below is used to illustrate the process used. Information from the Serious Safety Hazard Finding forms included:

3. Along "Wallace"
4. Type I from 31st Street to 32nd Street
5. Type II from_____to_____
6. Type III at_____
7. Type IV at_____

This is a Type I hazard that occurs along Wallace between 31st and 32nd St. In the database the fields are entered as:

As entered on form	As entered in database
Along	Along = **Wallace**
Type I from 31st Street to 32nd Street	4)GIS 1st Street=**31st St** 4)GIS 2nd Street=**32nd St**
Type II from_____to_____	5)Street to 6)Street
Type III at_____	7)Street
Type IV at_____	8)Train

To create pseudo intersections, an extra field is inserted before each of the above segment data and concatenated as follows:

GIS A = Along + 4)GIS 1st Street
GIS AA = Along + 4)GIS 2nd Street (this is a backup field in case GIS A does not geocode)
GIS B = Along + 5)Street
GIS BB = Along + 6)Street
GIS C = Along + 7)Street
GIS D = Along + 8)Train

Ultimately, the concatenated fields are the actual fields used in geocoding. Each field (GIS A, GIS AA, GIS B, etc.) is geocoded both automatically through the geocoding engine and by hand to catch any data mismatches. The database was geocoded separately against two road centerline files - a TIGER 2000 file and a modified 1990 TIGER file with the prefixes stripped out of the street names (the latter file was used to catch hazards approved during the beginning of the program, as streets can be renamed and modified of the course of 26 years). The elementary and secondary school district files were used as boundary files in the process. Geocoded results were then spot-checked to ensure data quality and accuracy. It is important to note that because of the pseudo intersections the geocoded points will not fall on the exact location of the hazard, but rather on closest intersection to the hazard.

Geocoding Challenges

Of the approved hazards, we were able to geocode 1,122 or 78%. This is relatively low for typical geocoding results but is a reasonable proportion given the state of the information provided for this particular data set. The intersections that did not geocode did not do so for various reasons:

- The Type IV hazards - Crossing Railroad Tracks are recorded with the street and railroad intersection. Railroad data is not included in the road centerline file and the railroad shape file does not include addressing attribute data. Therefore, none of the Type IV hazards were geocoded the first time around and the points eventually had to be placed by hand (usually by identifying the closest road to the railroad crossing and replacing the name of the rail line with the nearby road).

- Inconsistent use of street names - a similar issue arose when landmarks (schools, names of residential developments, etc) were provided instead of street names. A similar process was required of highways as route names and street names (e.g., Higgins Rd and Route 72 in Hoffman Estates) were used interchangeably on the Serious Safety Hazard Finding forms when only local street names are used in the RCL. There were also roads in the database that were not in the RCL (perhaps newer subdivisions not yet digitized or older roads that have since then been renamed). Another common error that arose was that street names given at intersections frequently did not intersect in the RCL. This is also very possibly an effect of using TIGER 2000 road data, which tends to lack the data accuracy of the Cook County RCL.

REIMBURSEMENT ESTIMATES

It is outside the scope of this study to speculate about how much money has been spent over the life of the Safety Busing Program let alone how much could have been saved, through different infrastructure and non-infrastructure improvements, if students were able to walk or bike to school instead of being bussed. Further, as is stated on the IDOT-issued instruction book: "Reimbursement to school districts for busing is the responsibility of the State Superintendent of Education. For this reason the rules do not address applications for reimbursement, which under statute are made to the State Superintendent, rather than to the Department."[3]

As part of a 1981 revision to the application form, a "Reimbursement Estimate" was added asking applicants to both approximate how many students will annually be qualified for busing based on the existence of the hazard and how much the busing will cost. Little is to be gleaned from the information gathered; however, because only 534 applicants filled out either the number of students affected or projected costs and the total number of pupils qualified to be bused stands at 16,499 during that 15-year time period.

Though conclusions about the costs of hazard busing cannot be made from the information gathered for this report, useful estimates can be extrapolated from available Illinois State Board of Education budget data[4] (Appendix C. Pupil Transportation Reimbursement Program). In FY 1996, 102,870 pupils were transported in hazardous conditions. By FY 2006 this number had swelled to 157,699, representing a 53% increase in just over a decade. If we divide the number of pupils transported who reside less than 1.5 miles from school and who walk through a safety hazard by the total number of students transported and then multiply by the total program cost we will arrive at an estimated cost attributed to "hazard-facing" students statewide. In FY 2000 this estimate was $41,774,974 and increased to $69,808,192 by FY 2006—a 67% increase in seven years.[5]

Since 2000 there has been an estimated $41 to $69 million spent statewide every year to bus pupils who live within one-and-a-half miles of school but face walking hazards. This represents between 117 and 157,000 students who do not gain the benefits of walking to and from school. These numbers are escalating right at a time when they ought to be declining. Obesity is on the rise and the most accessible mode of exercise—walking or biking to school—is not an option. A 10% drop in the number of students bussed around hazards would mean $7 million in avoided costs and 15,770 students who would gain the health benefits of daily walking.

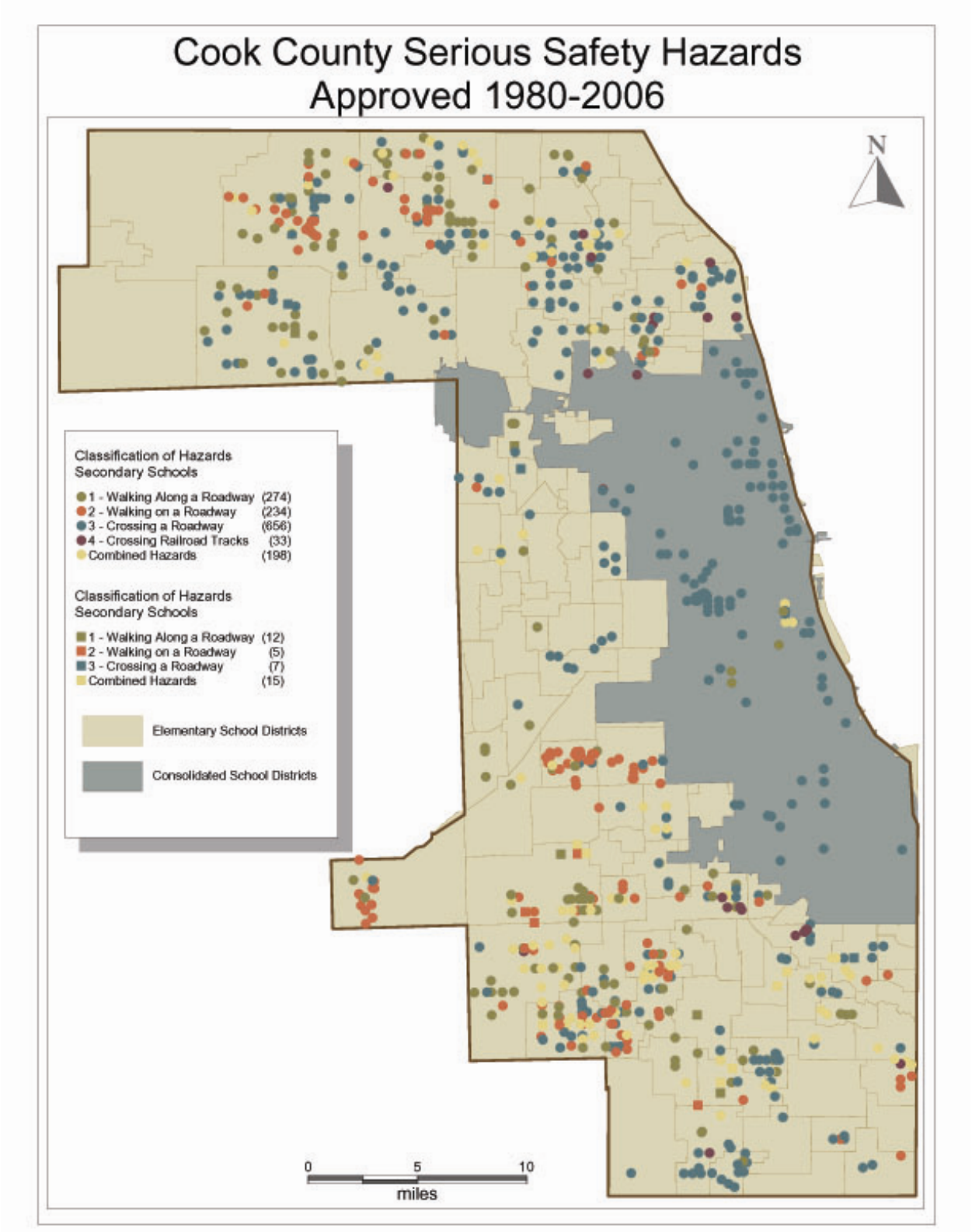
[3] Illinois Department of Transportation, "School Safety Busing: And Instructions for Submitting Findings," December 2001.
[4] The Illinois State Board of Education's final general FY07 budget (5/5/06) is summarized at: http://www.isbe.state.il.us/budget/FY07/FY07_final_budget.pdf.
[5] We would like to thank John O'Neal of the Chicago Metropolitan Agency for Planning for locating and analyzing the ISBE budgets.

MAPPING THE HAZARDS

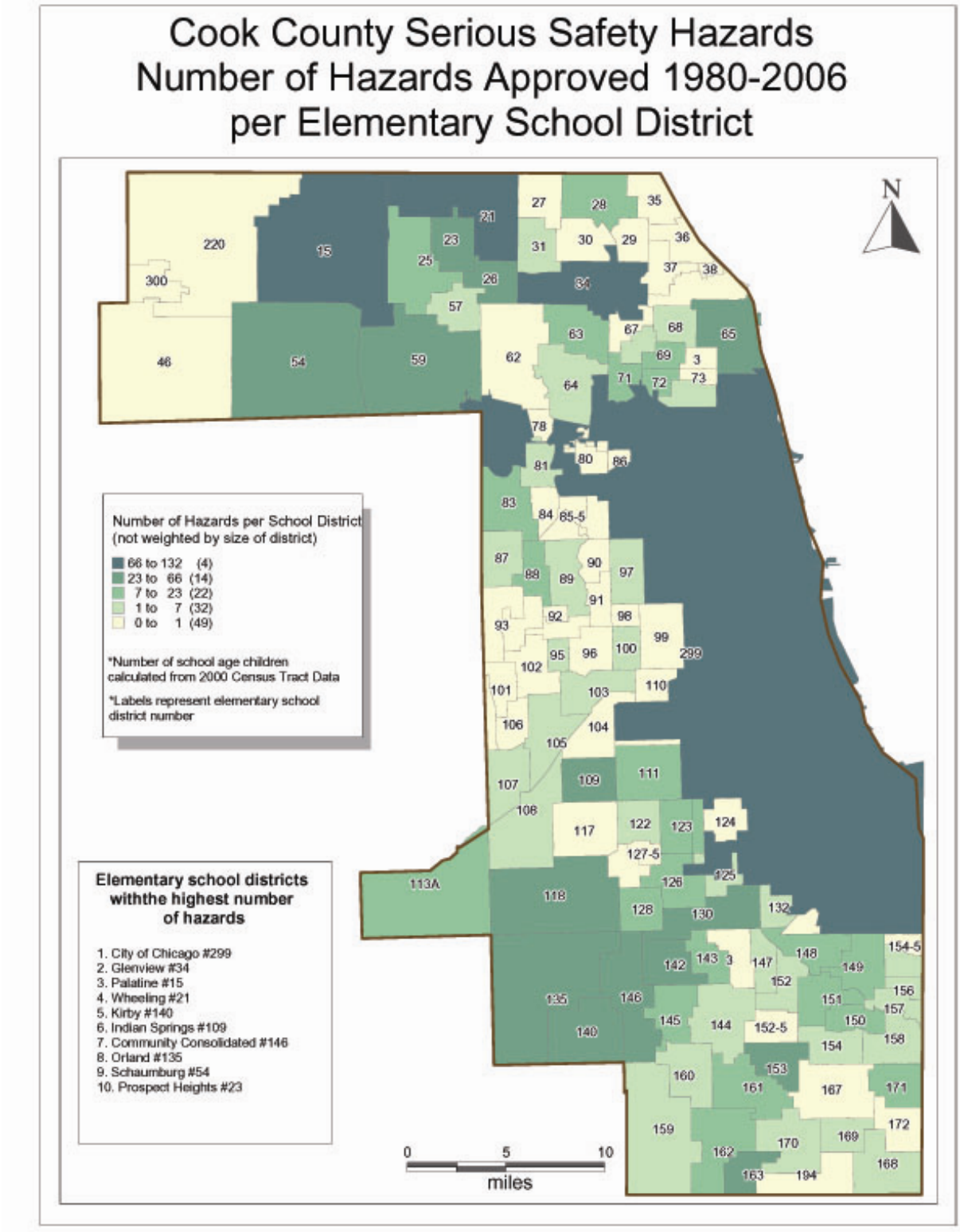
(see Appendix D. for Data Sources for Mapping and Analysis)

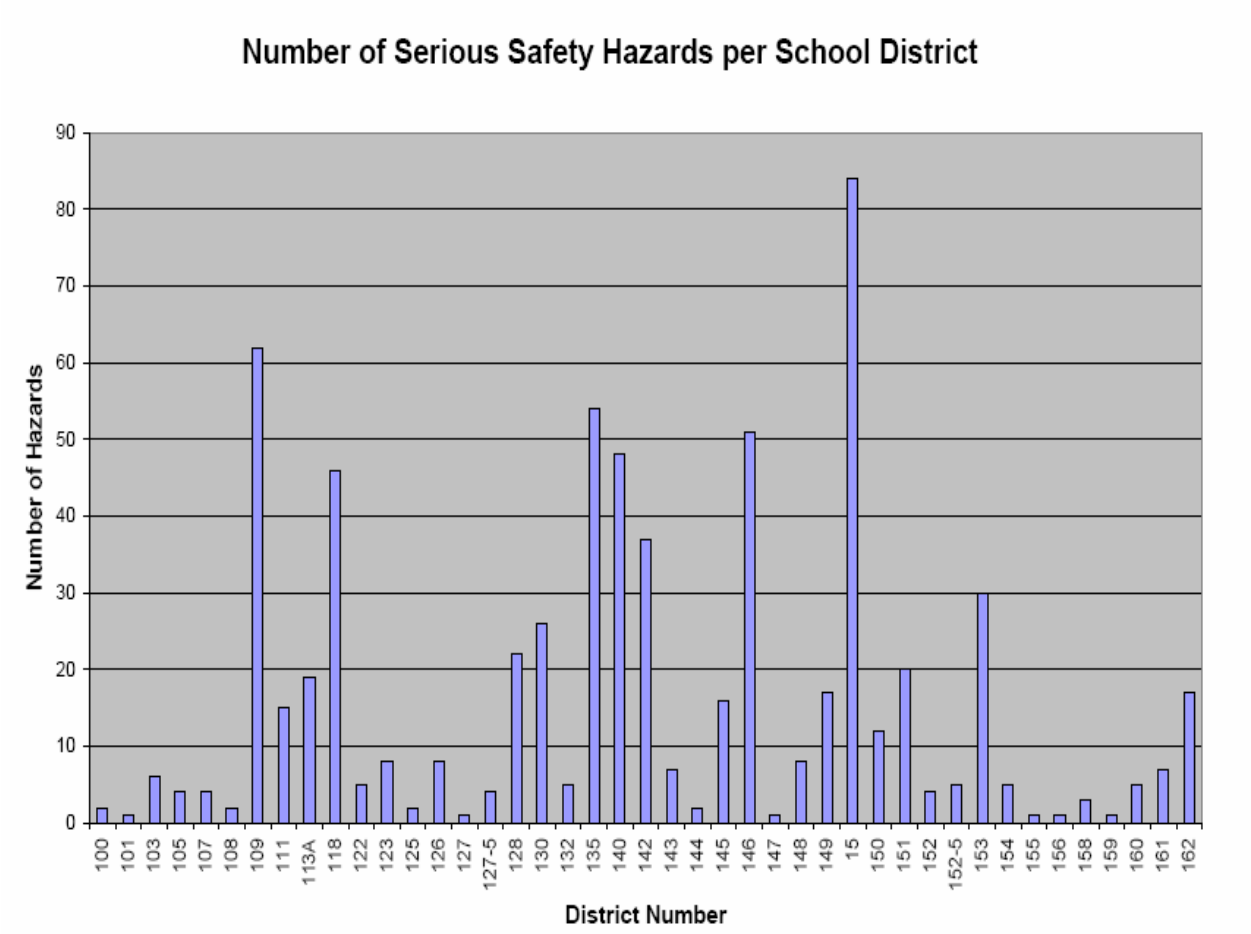
Location and Type of Serious Safety Hazards

The map below, Cook County Serious Safety Hazards Approved 1980-2006, shows where Cook County hazards were approved over the life of the program, by hazard type. Several observations are made from this map. First, hazards are not evenly dispersed throughout the county. Clear concentrations are present to the Northwest and Southwest. Second, there are clear concentrations of hazard types. The City of Chicago has almost exclusively Type III – Crossing a Roadway hazards. Type IV – Crossing Railroad Tracks are nearly absent except for a notable concentration in Cook County School District 130 (Blue Island) and Dolton School District 148 (Riverdale).



The following map, Cook County Serious Safety Hazards: Number of Hazards Approved 1980-2006 per Elementary School District, shows the raw numbers of hazards per elementary school district (Appendix E. Cook Co. Elementary School District Numbers). In this map Chicago, has the greatest number of approved hazards. The two tables following the maps indicate the number of hazards by school district.


Cook County Serious Safety Hazards
Number of Hazards Approved 1980-2006
per Elementary School District
N
Number of Hazards per School District
(not weighted by size of district)
66 to 132 (4)
23 to 66 (14)
7 to 23 (22)
1 to 7 (32)
0 to 1 (49)
*Number of school age children calculated from 2000 Census Tract Data
*Labels represent elementary school district number
Elementary school districts withthe highest number of hazards
1. City of Chicago #299
2. Glenview #34
3. Palatine #15
4. Wheeling #21
5. Kirby #140
6. Indian Springs #109
7. Community Consolidated #146
8. Orland #135
9. Schaumburg #54
10. Prospect Heights #23
0
5
10
miles


Number of Serious Safety Hazards per School District
Number of Hazards
0
10
20
30
40
50
60
70
80
90
100
101
103
105
107
108
109
111
113A
118
122
123
125
126
127
127-5
128
130
132
135
140
142
143
144
145
146
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148
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15
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152
152-5
153
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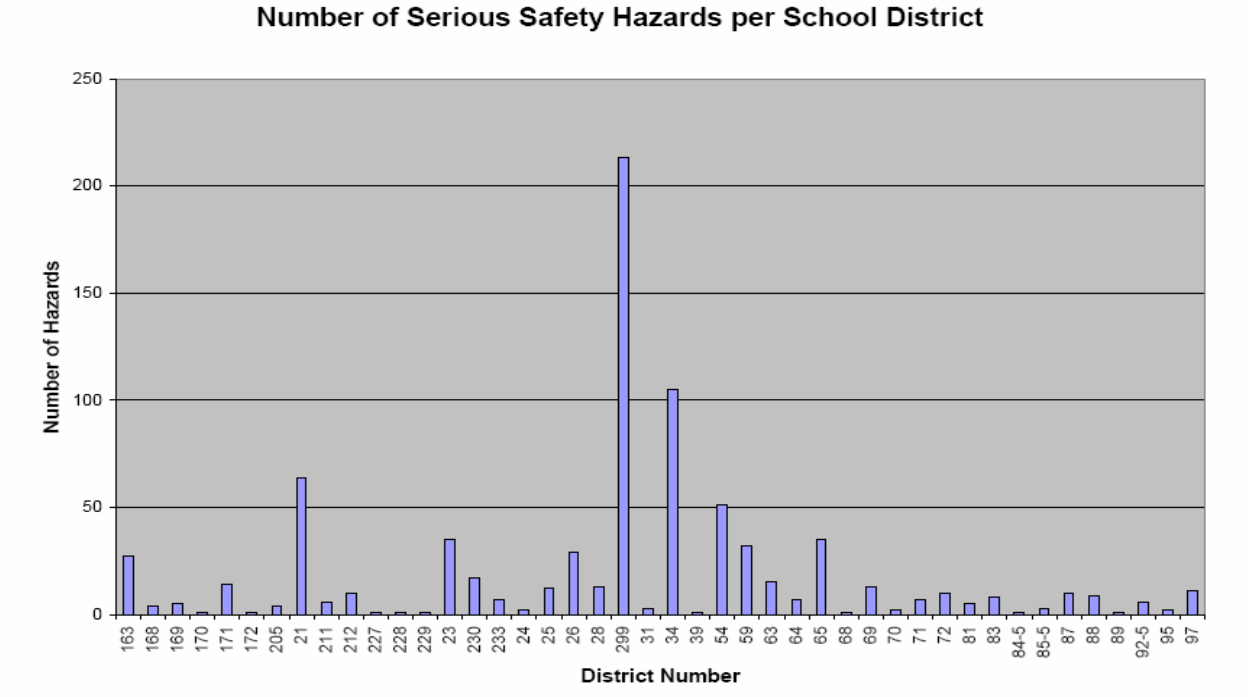
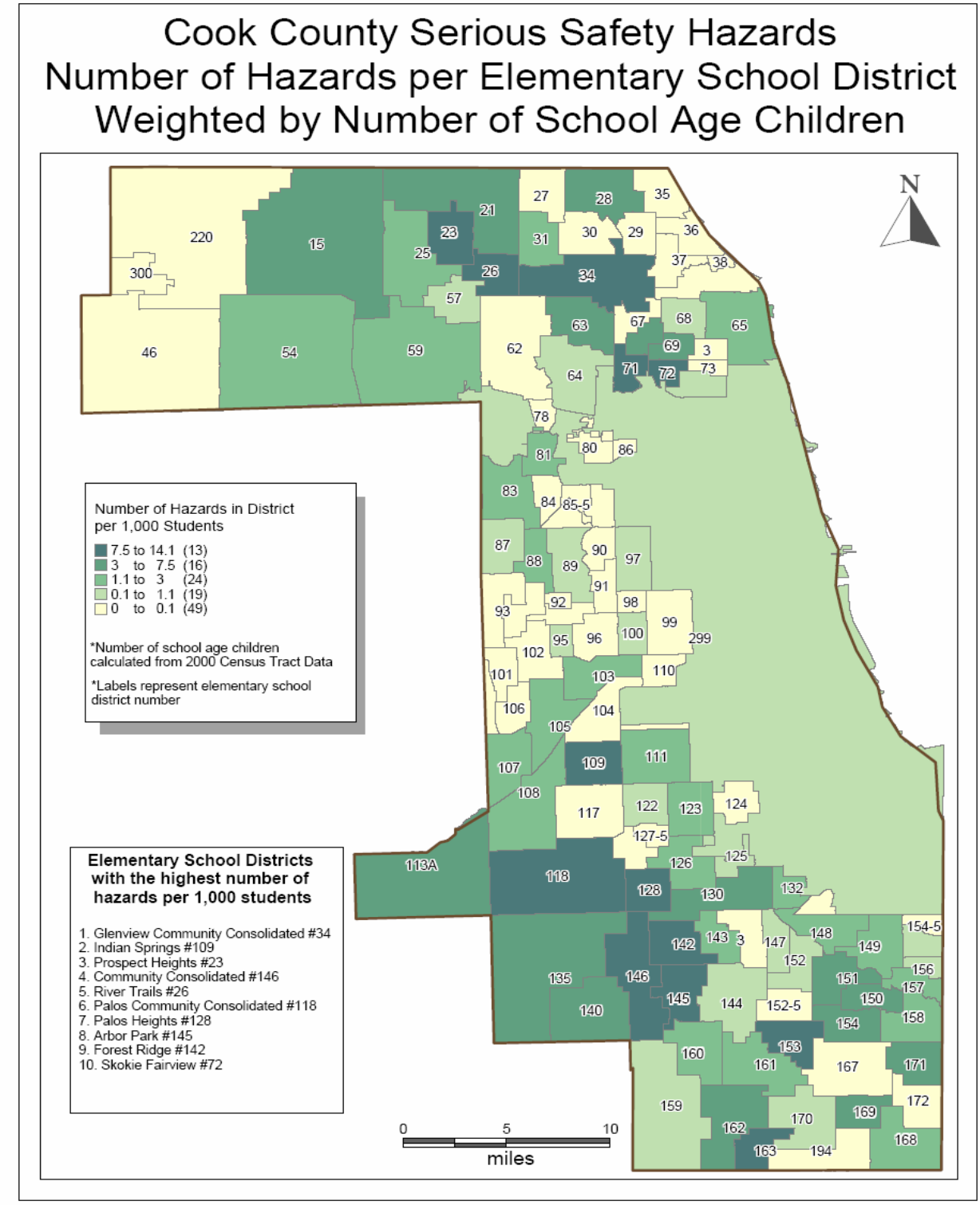
156
158
159
160
161
162
District Number

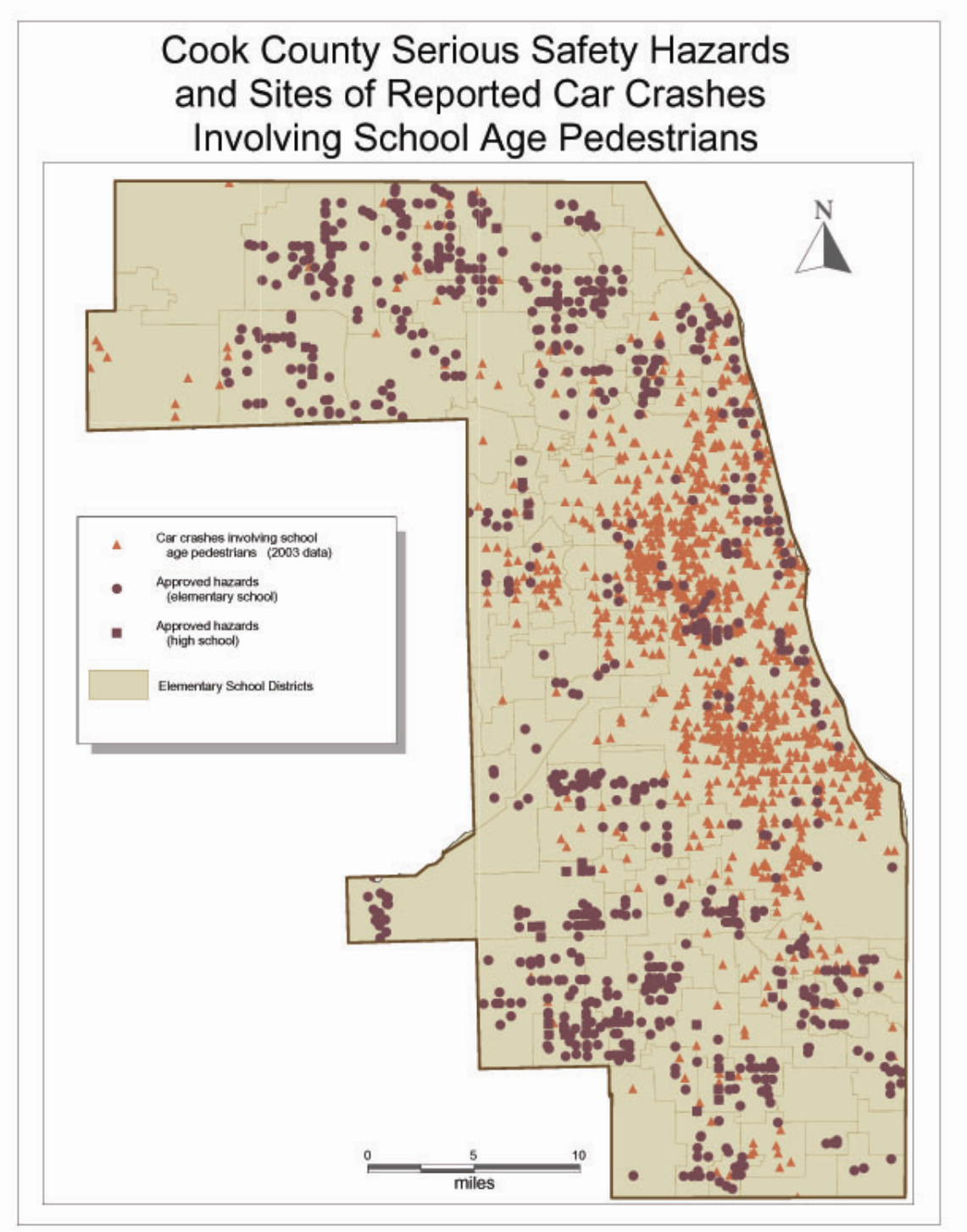

Number of Serious Safety Hazards per School District
Number of Hazards
0
50
100
150
200
250
163
168
169
170
171
172
205
21
211
212
227
228
229
23
230
233
24
25
26
28
299
31
34
39
54
59
63
64
65
68
69
70
71
72
81
83
84-5
85-5
87
88
89
92-5
95
97
District Number

When school districts are weighted to reflect the number of hazards approved by district per 1,000 school-aged children (as in the map below), however, a very different picture is revealed: high concentrations of Serious Safety Hazards approved in the Northwest and Southwest suburbs.



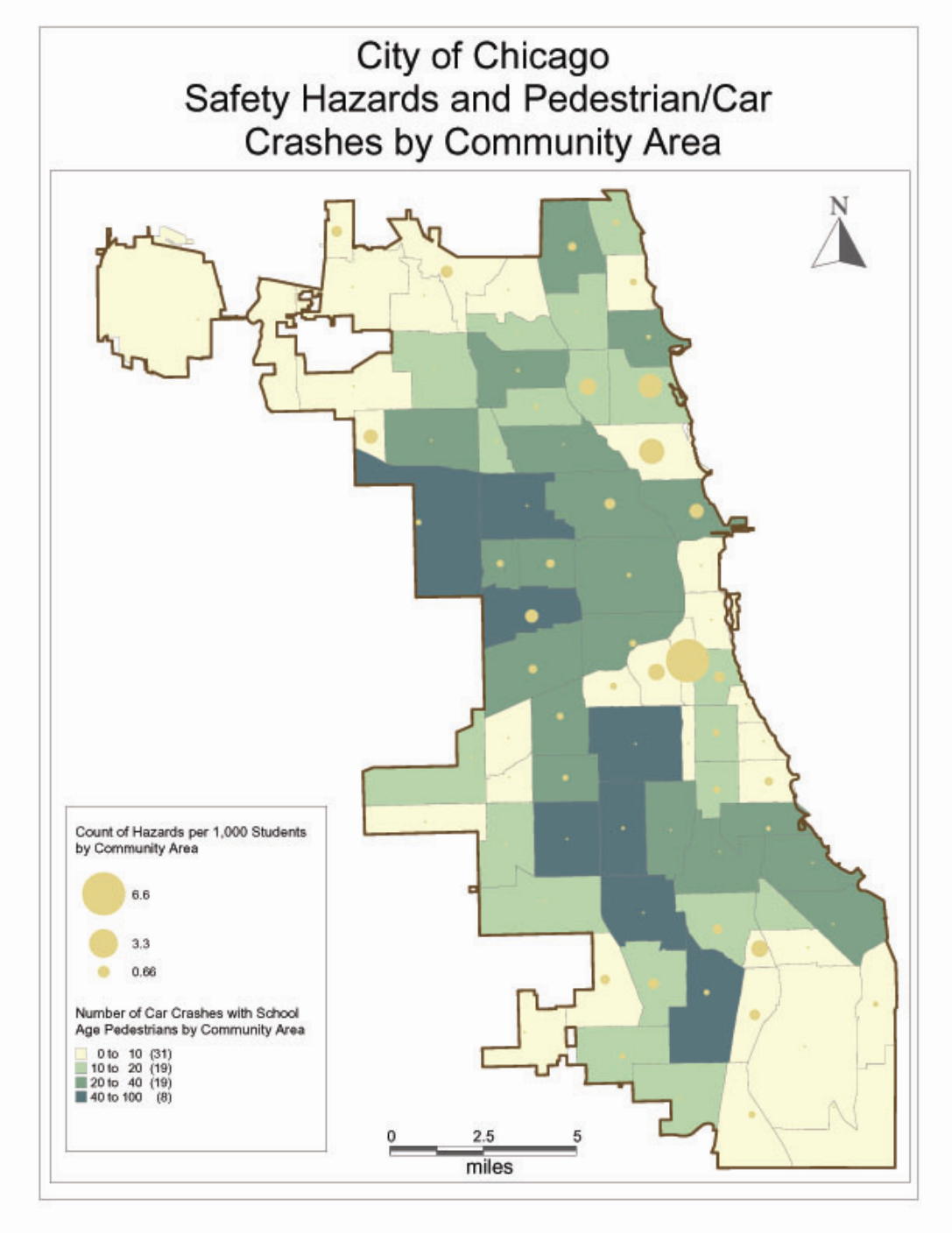
Hazards and Pedestrian Crashes

When approved hazards are mapped in relation to pedestrian crash data (see map below), a reverse correlation becomes apparent. While the greatest number of crashes is concentrated in the City of Chicago and in the western suburbs of Cook County, the approved hazards are concentrated to the Northwest and Southwest. We should note, however, that for the purposes of this study we are comparing hazards over the life of the program against available pedestrian crashes from only one year, 2003. It is possible (however somewhat unlikely, since there is nothing special about the year 2003) that a more complete data set would paint a different picture.



The map below, City of Chicago Safety Hazards and Pedestrian/Car Crashed by Community Area, compares hazards and pedestrian crashes in community areas in the City of Chicago. To prepare this map, we weighted the number of hazards by the number of children in each community area in order to create the graduated symbols. What stands out in this map is Armour Square, southwest of the Loop, where there are 12 approved hazards and eight pedestrian car crashes. The community areas with the most approved hazards per students are: Armour Square (6.15 hazards per 1,000 students), Lincoln Park (2.47), and Lake View (2.40). The community

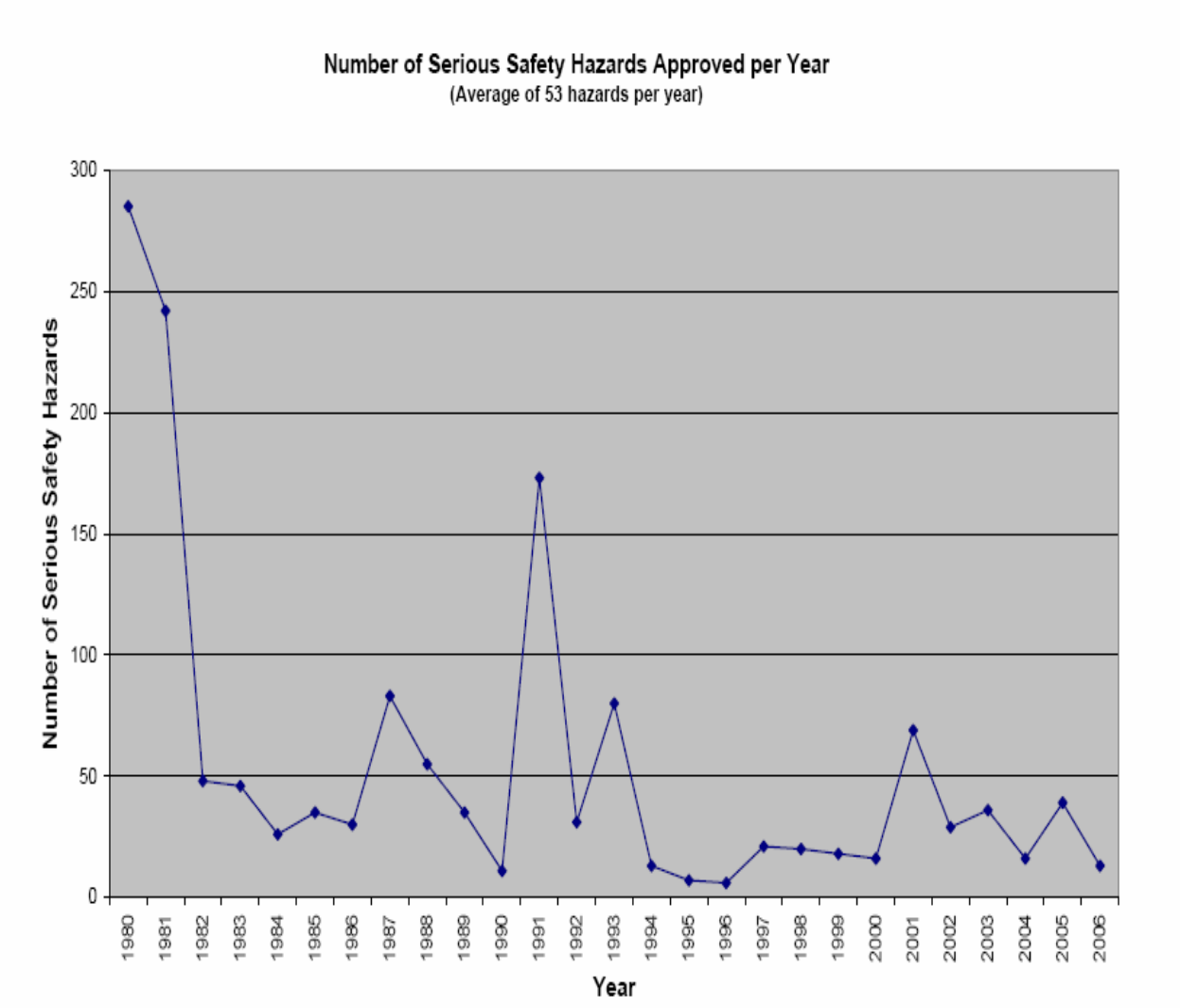
areas with the most pedestrian car crashes in 2003 were Austin, West Englewood, and Humboldt Park.

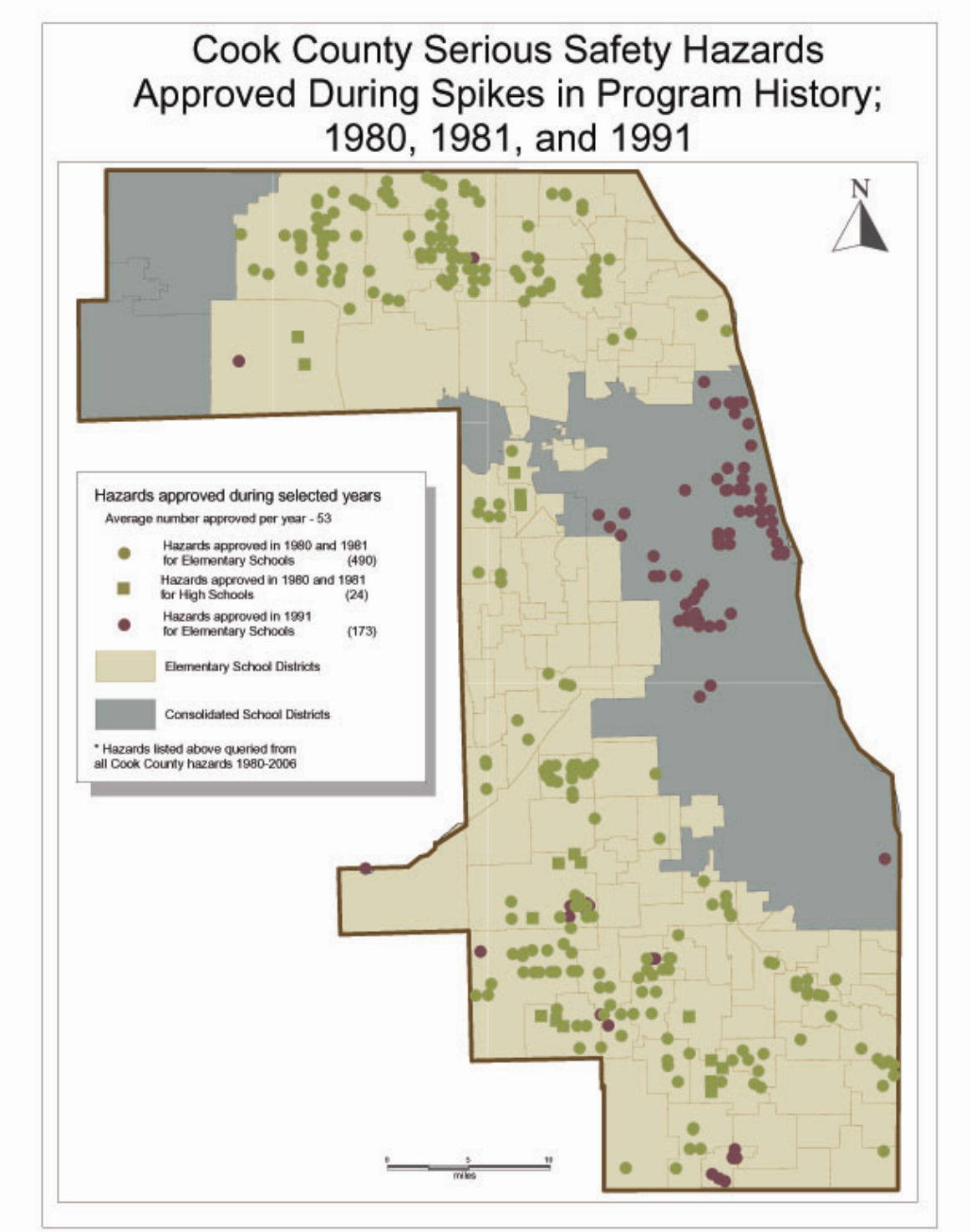


Application Trends in the History of the Safety Busing Program

When we look at application habits in the life of the Safety Busing Program several significant observations can be made. By graphing the number of serious safety hazards approved by year (see graph below), we can see that several spikes appear. While an average of 53 applications were approved per year over the course of the program, in 1980, 1981 and 1991 this number increased markedly to close to 200. Further, when these approved hazards are mapped (see map

on following page), the 1980 and 1981 spikes are almost exclusively in suburban Cook County while the 1991 spike is focused on the City of Chicago.

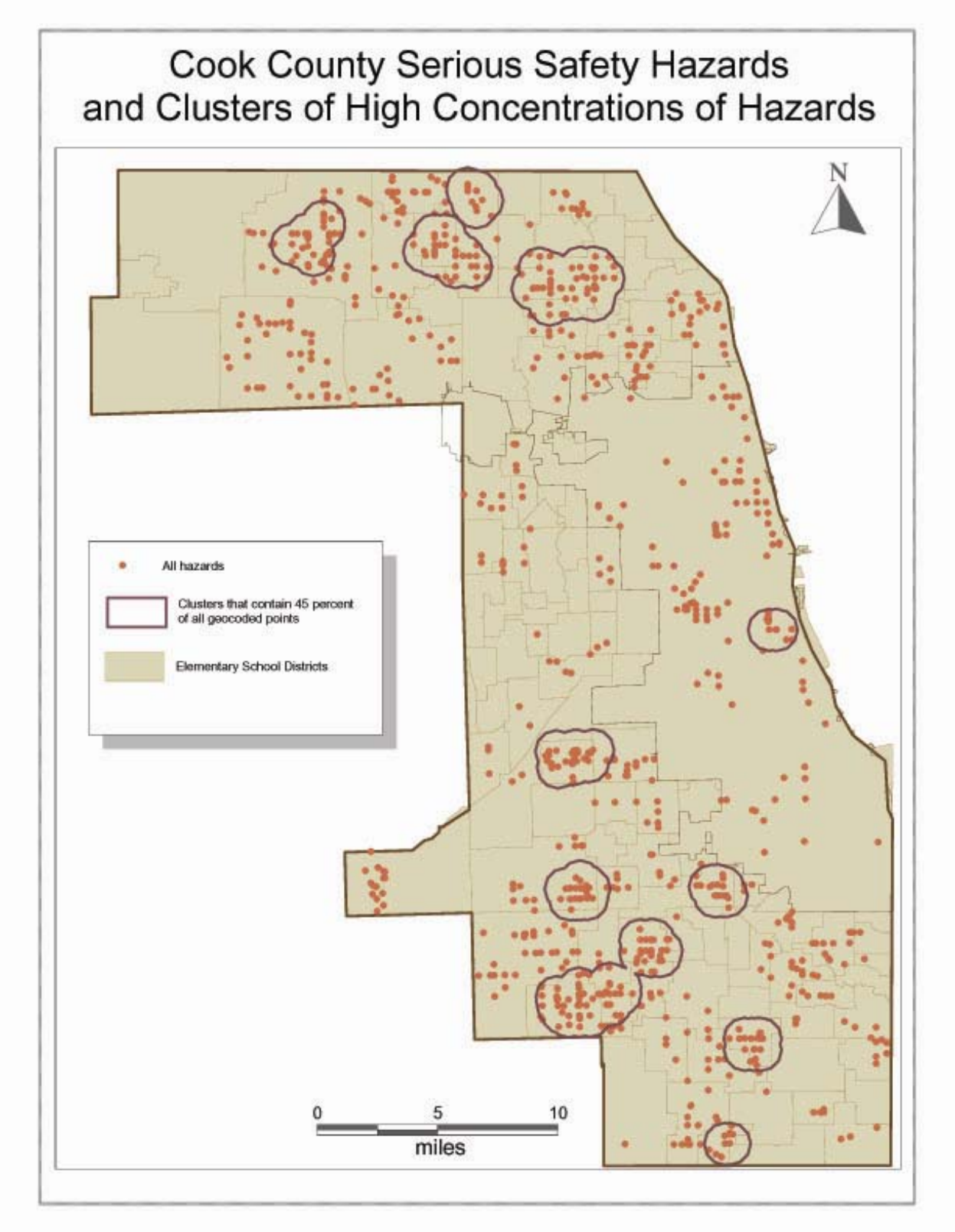




Hazard Clusters and Land Use

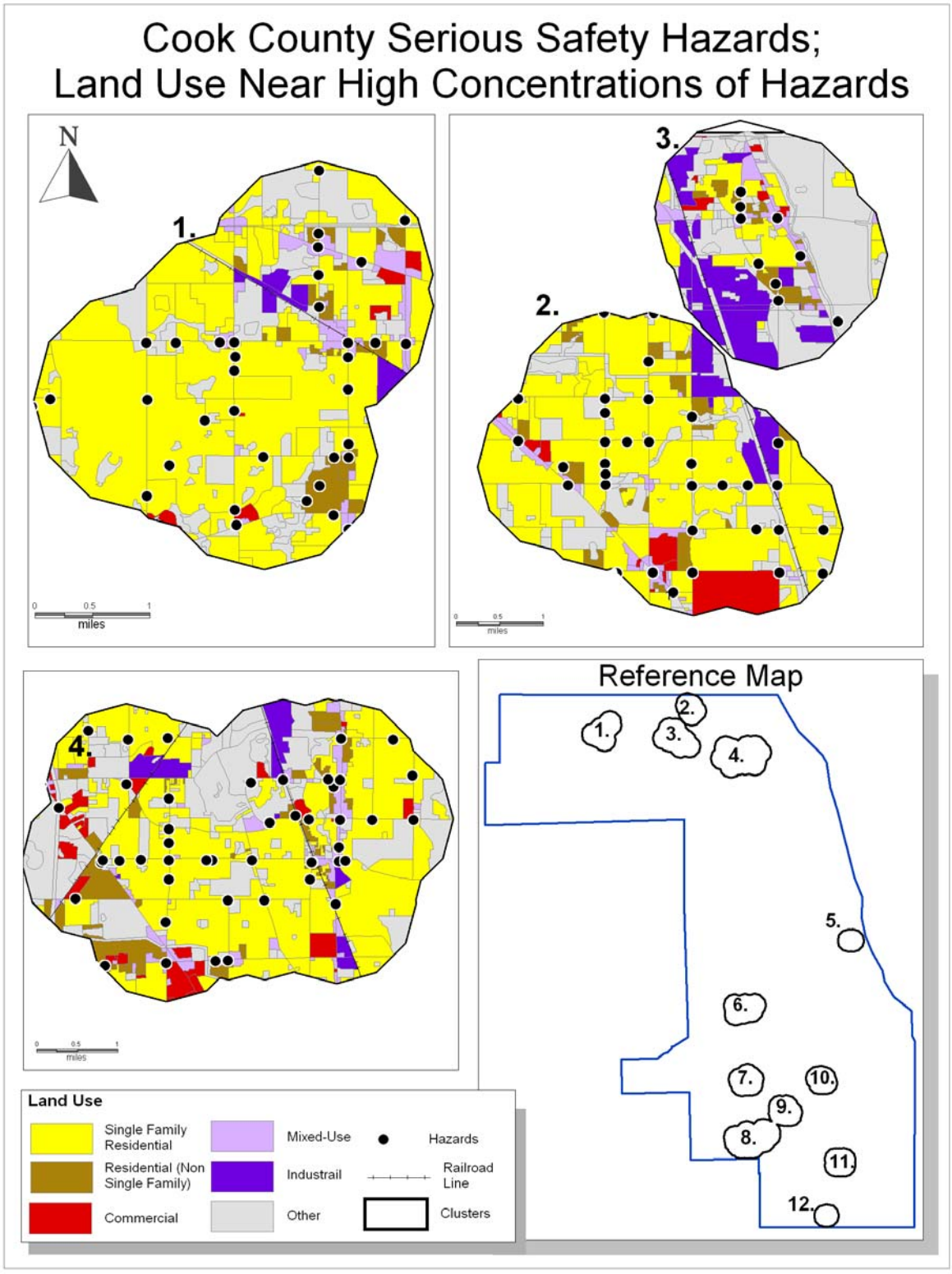
Some approved hazards are relatively isolated from other hazards, but many are grouped tightly together into clusters of hazards. To locate the areas with the highest concentration of hazards, one-mile buffers were created around each geocoded hazard. A field was added to the buffer layer and a count of all the hazards that fell within each buffer was totaled. The number of hazards that fell within each cluster ranged from 1 to 44 (with 3 buffers having a count of 44).

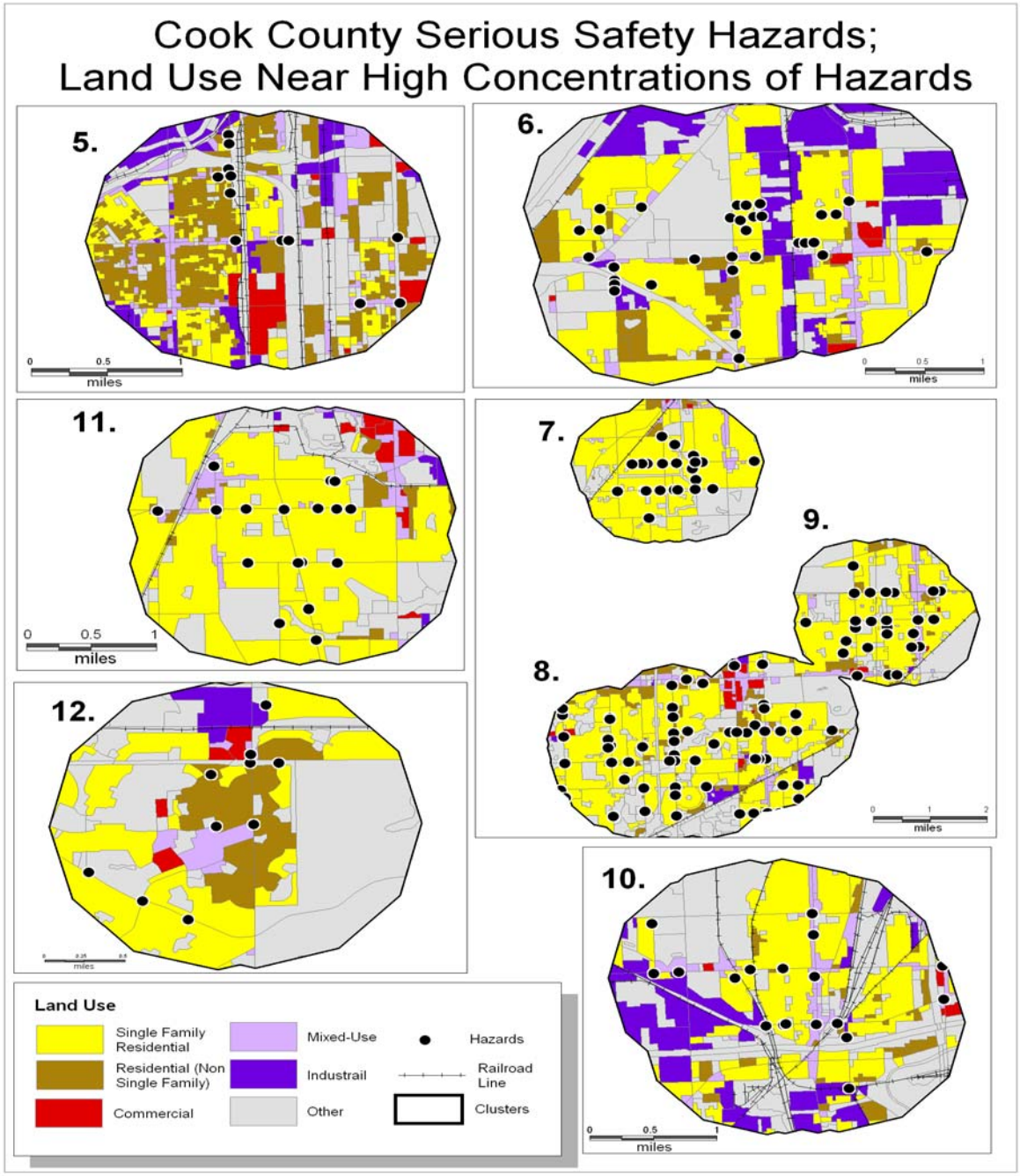
All buffers that contained roughly half of the total count (20 hazards) were merged into one object and stored as the cluster layer. 525 points fall within the final cluster layer, which is 46.7% of the 1,122 geocoded records. The hazard clusters we identified are identified in the map below.



Next we wanted to find out if hazards tended to be approved in certain types of land uses. The 2001 NIPC land use file was used to determine land use patterns. Land uses were generalized as follows and according to land use classification in NIPC metadata and were used to prepare the maps that follow:

Residential (Single-Family)	=	Single, Duplex and Townhouse Farmhouse Mobile Home Parks and Trailer Courts
Residential (Non-Single Family)	=	Multi-Family
Commercial	=	Shopping Malls and Retail Centers Office Campus/Research Park Single-Structure Office Building Business Park Cultural/Entertainment Hotel/Motel
Urban Mix	=	Urban Mix with Dedicated Parking Urban Mix, no Dedicated Parking
Industrial	=	Mineral Extraction Manufacturing and Processing Warehousing/Distribution Center/Wholesale Industrial Park
Other	=	All other land use classes


Cook County Serious Safety Hazards;
Land Use Near High Concentrations of Hazards
N
1.
2.
3.
4.
0 0.5 1
miles
Reference Map
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
Land Use
Single Family Residential
Residential (Non Single Family)
Commercial
Mixed-Use
Industrail
Other
Hazards
Railroad Line
Clusters



The result of our land use analysis shows the highest concentrations of approved hazards in residential neighborhoods, followed by commercial and industrial.

- There are 598 hazards located in residential areas (includes residential farm, multifamily, mobile home, and single family). This group represents 53.2% of the 1,122 geocoded records.

- There are 507 hazards located in residential areas (only single family). This group represents 45% of the 1,122 geocoded records. Single family residential land consists of 232,489.81 acres, which is 38% of the land area of Cook County.

- There are 293 hazards located in urban mixed with areas (includes with and without parking). This group represents 26.1% of the 1,122 geocoded records.

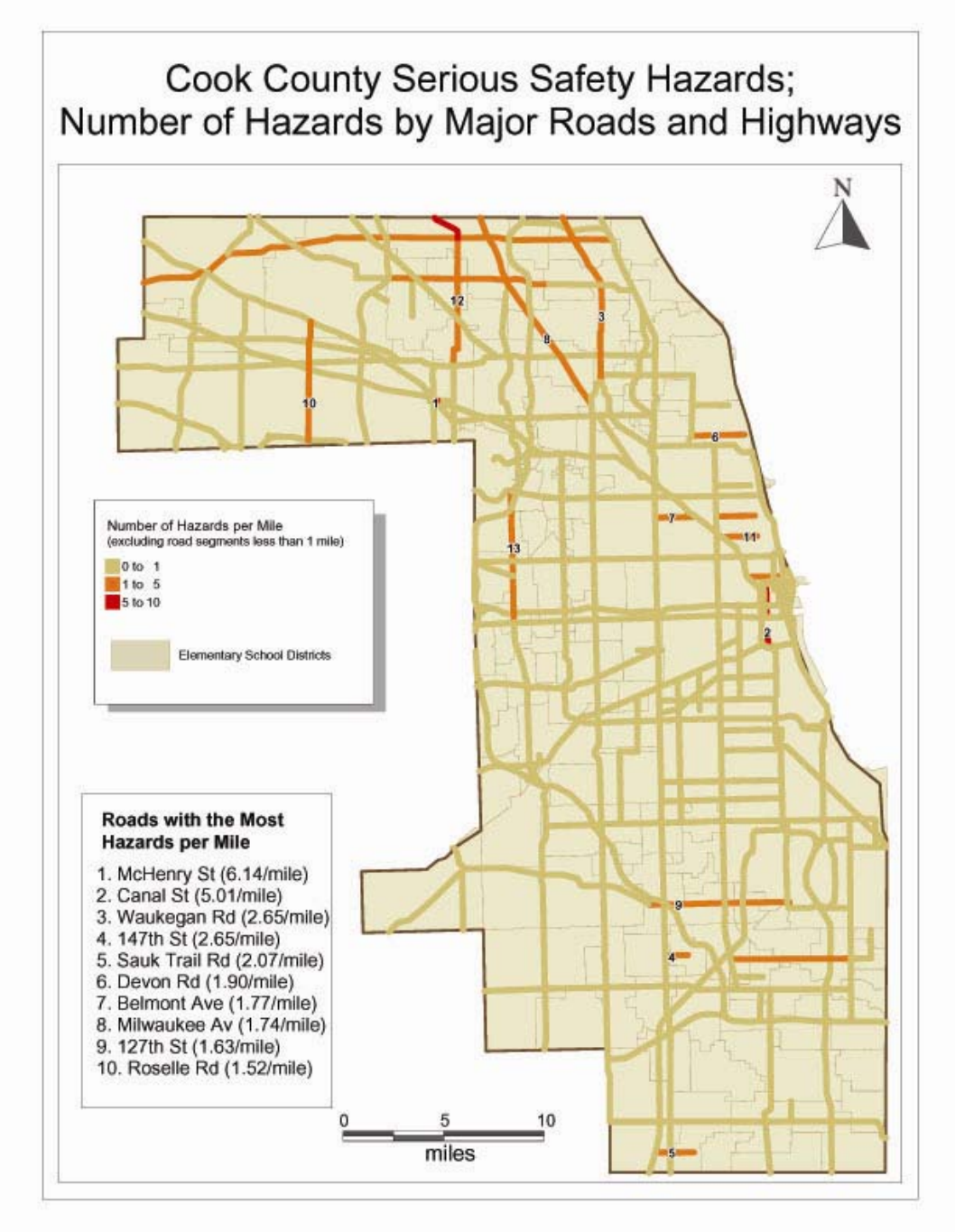
- There are 329 hazards located in commercial areas (this NIPC land use classifications of "Retail Center," Mall," "Office Campus/Research Park," "Single-Structure Office Building," "Business Park," "Urban Mix With Dedicated Parking," "Urban Mix, No Dedicated Parking," "Cultural and Entertainment," and "Hotel/Motel"). This group represents 29.3% of the 1,122 geocoded records. Note that this includes both urban mixed use categories; when single-use commercial is isolated, there are only 36 hazards or 3.2% of the 1,122 geocoded records.

- There are18 hazards located in industrial areas (this includes "Mineral Extraction," "Manufacturing and Processing," "Warehousing/Distribution Center and Wholesale," and "Industrial Park"). This group represents 1.6% of the 11,22 geocoded records.

- There are 89 hazards that are located within 300 feet of a railroad. This group represents 8% of the 1,122 geocoded records.

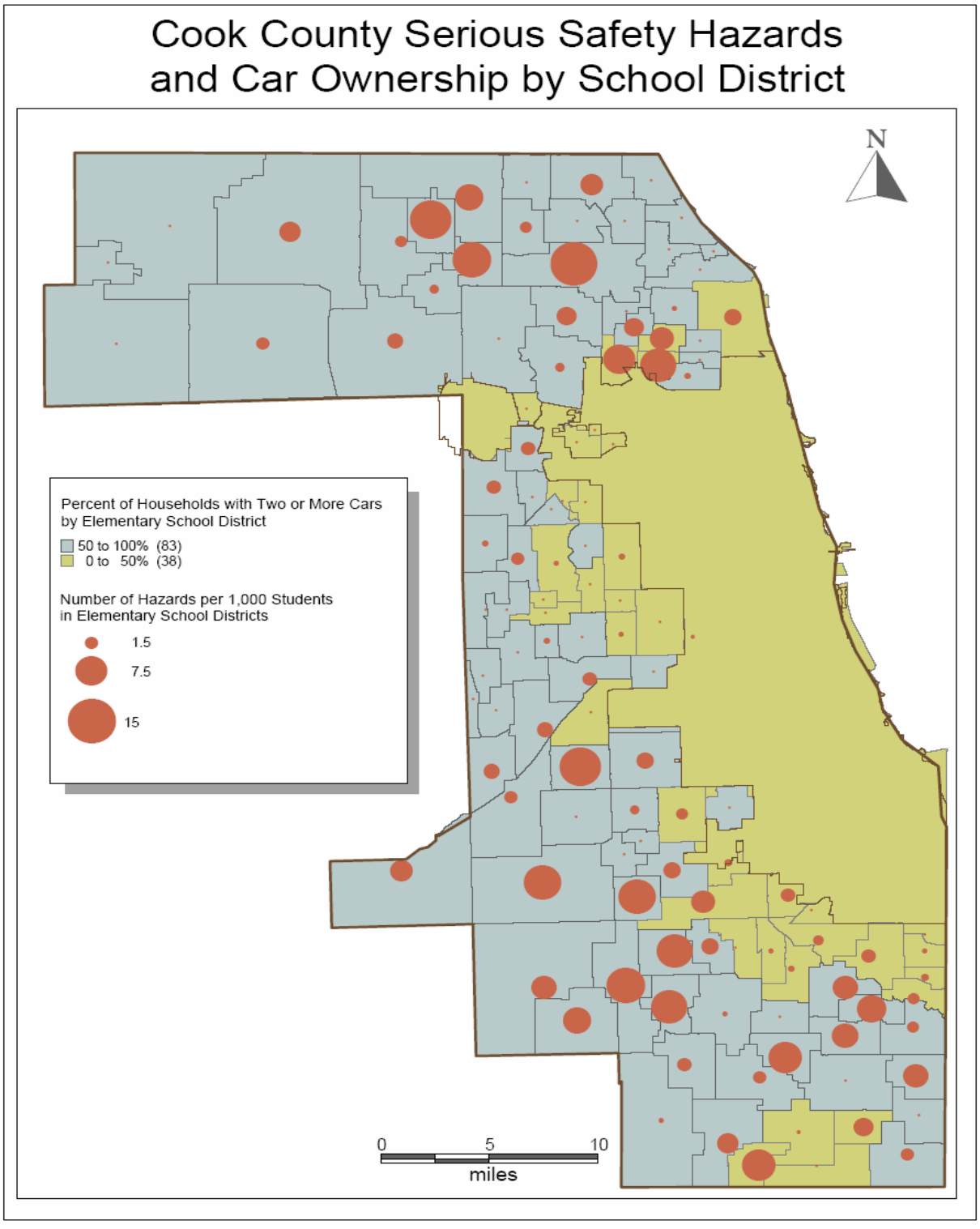
Hazards and Major Roads and Highways

Before mapping the approved hazards, we hypothesized that certain major roads and highways would emerge with high concentrations of hazards. In order to determine whether or not that was true, we created a 300-foot buffer around all major roads and highways. The result is that there are 189 hazards that are located within 300 feet of a highway or major road, representing 16.8% of the 1,122 geocoded records. The 300-foot buffer on major roads and highways constitute 11% of the total land area of the county. This means that 16% of the hazards are on 11% of the land area (69,278 of 611,800 acres). Several major arterials emerged in this analysis as having high concentrations of approved hazards per mile; they are, in decreasing order: McHenry Street, Canal Street, Waukegan Road, 147th Street, Sauk Trail Road, Devon Road, Belmont Avenue, Milwaukee Avenue, 127th Street, and Roselle Road (see map below for exact locations of road segments).



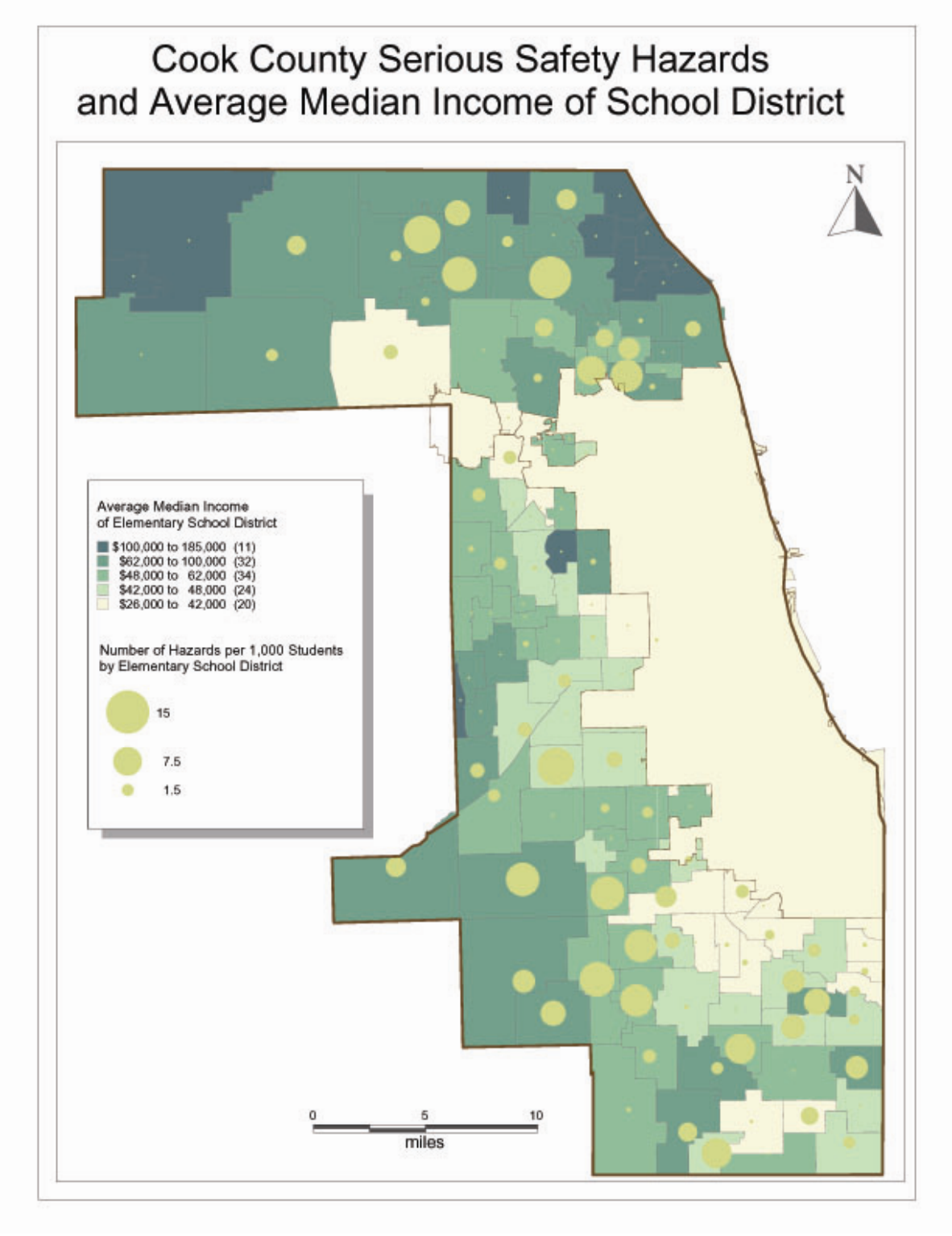
Car Ownership by School District

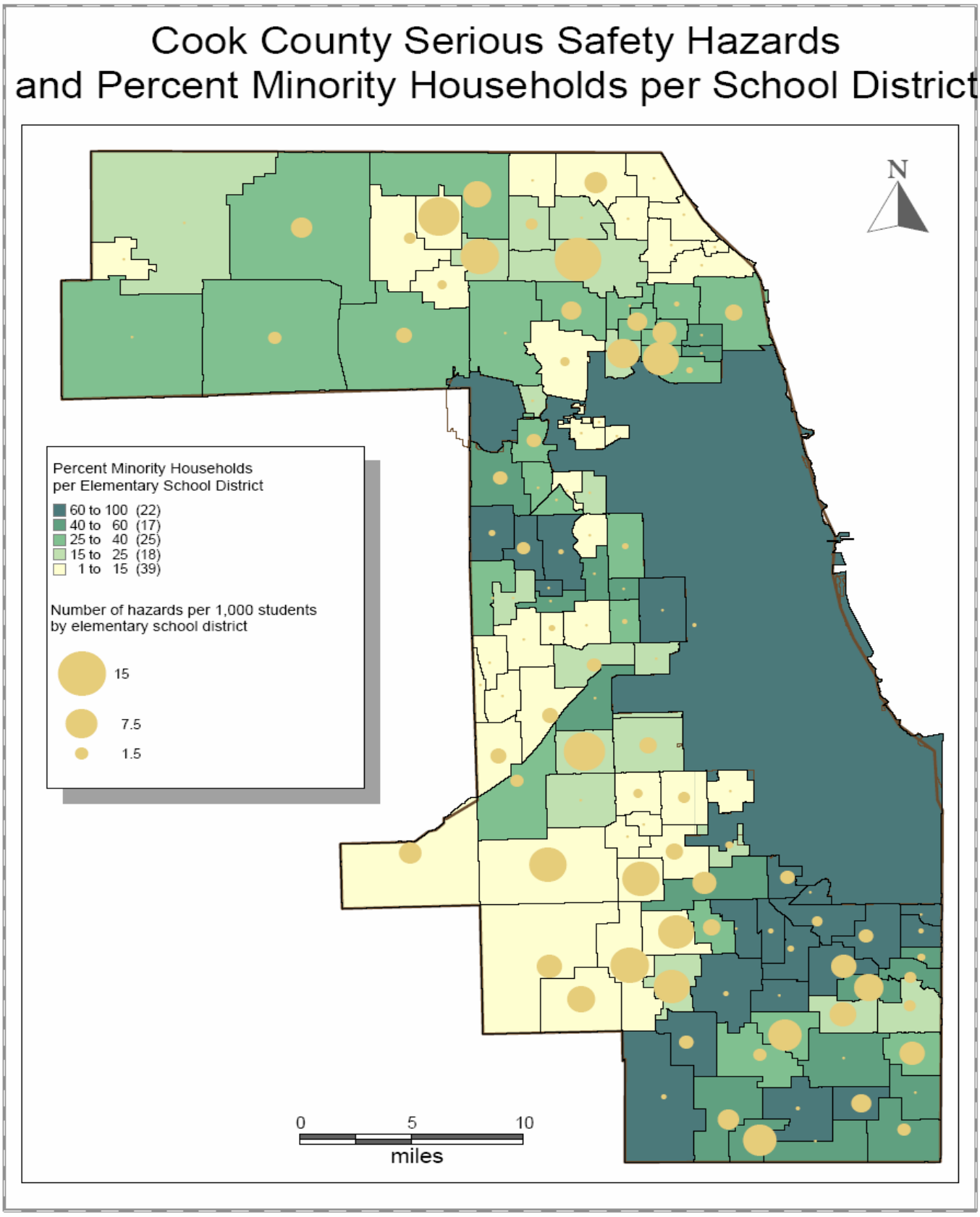
In order to test our assumption that low-density, auto-oriented communities would show a propensity toward approved hazards we mapped car ownership and density by elementary school districts. Low density, land consumptive patterns of growth necessitate household car usage. One can presume that the more cars that are on the road, the more dangerous the roads are for pedestrians and the more development patterns follow auto use rather than pedestrian needs. The map below (Cook County Serious Safety Hazards and Car Ownership by School District) suggests that there is some validity to this hypothesis since there are more hazards per students in less dense school districts, where 50 percent or more households have two or more cars.


Cook County Serious Safety Hazards
and Car Ownership by School District
N
Percent of Households with Two or More Cars
by Elementary School District
50 to 100% (83)
0 to 50% (38)
Number of Hazards per 1,000 Students
in Elementary School Districts
1.5
7.5
15
0
5
10
miles

Hazard in Relation to Income and Percent Minority

We mapped race and income (see maps below) to look at possible equity issues with the program based on the assumption that demographic differences within school districts may influence awareness to or ability to apply for safety funding.




Cook County Serious Safety Hazards
and Percent Minority Households per School District
N
Percent Minority Households
per Elementary School District
60 to 100 (22)
40 to 60 (17)
25 to 40 (25)
15 to 25 (18)
1 to 15 (39)
Number of hazards per 1,000 students
by elementary school district
15
7.5
1.5
0
5
10
miles

Percent Minority

There are 26 elementary school districts in Cook County where 50 percent or more of the total population identifies themselves as a minority race or ethnicity. The average number of approved hazards in these districts is 1.29 hazards per 1,000 students. The average number of approved hazards as calculated from all 121 elementary school districts is 2.08 percent per 1,000 students.

There are 96 elementary school districts in Cook County where 50 percent or more of the total population identifies themselves as non-Hispanic white. The average number of approved hazards in these districts is 2.27 hazards per 1,000 students. There is a 75.9% percent difference between 1.29 hazards per 1,000 students in predominantly minority districts and the 2.27 hazards per 1,000 students in predominantly non-Hispanic white district. This figure suggests a strong correlation between race and the number of hazards approved per district.

Average Median Income

The highest and lowest income elementary school districts have the lowest numbers of approved hazards per 1,000 students. The average median income for all 121 elementary school districts $59,507. None of the twelve districts with the highest median income ($92,467 - $196,605, or 155% to 412.9% of the county average median income) have any approved hazards. The twelve districts with the lowest median income ($27,413 -$39,480, or 45% to 66% of the county average median income) have an average of 0.45 approved hazards per 1,000 students.

The middle income elementary school districts have the highest numbers of approved hazards per 1,000 students. There are 42 school districts with an average median income of $47,605, or 80% of the overall average median income. The average number of hazards is 1.24 per 1,000 students. There are 45 school districts that fall within the middle-income range is $50,219 - $73,995 (85% to 124% of the County average median income). The average number of hazards is 3.3 hazards per 1,000 students.

The school districts in the middle-income bracket have more than double the number of hazards of the districts with the lowest median income; and the county average median income is more than double that of the districts with the lowest median income. The hazards are strongly skewed towards the middle-income bracket. One could only speculate—given the data available at this time—that this is a result of a heightened concern for children's safety in such areas combined with the resources to follow through on such concerns. It is also possible that higher income areas skew lower because resources allow children other means to travel to and from school.

RECOMMENDATIONS AND OPPORTUNITIES

While the hazards that have been identified over the 26-year history of the Safety Busing Program were surely dangerous, our findings show some troubling patterns in the distribution of approved hazards throughout Cook County. When approved hazards are compared with pedestrian crash data there is a stark inverse correlation. In addition, minority-dominated school districts tend to have significantly fewer hazards approved than their counterparts.

- To remedy this inequity and in order to better target resources where they are most needed we recommend that the Illinois Department of Transportation in cooperation with the Illinois State Board of Education start conducting outreach efforts to encourage more school districts to apply for funding. Furthermore, we strongly encourage these outreach efforts to be guided by empirical data to identify school districts most in need of program funds.

The basic process of approving hazards has changed little since it was introduced in 1980. A form is manually filled out and sent to IDOT district headquarters for approval or rejection. As the form requires a map of the hazard(s) in question, it is accompanied by maps of varying quality. Often web-based maps are printed out and the hazard drawn on by hand.

- We recommend that IDOT take full advantage of the online tools at their disposal, including interactive, web-based mapping, in order to streamline the application process. In addition to speeding up the process, an online form using interactive mapping capabilities has the added benefit of capturing data on an ongoing basis. This would provide a valuable, real-time feedback loop for the School Safety Busing program (e.g., an online mapping application could monitor temporary hazards given as board judgments).

About half of all applicants included board judgment. Among these there were some dominant trends that are worthy of highlighting in application materials.

- We recommend that IDOT consider adding fields to the application form in order to identify commonly occurring reasons for board judgment points. These include snow conditions, high school drivers, truck traffic, and store parking lots.

Although the findings of this project cannot draw any significant conclusions about land use and development, they do suggest that less dense, single-use areas (especially areas with single family residential uses) of Cook County tend to have more approved hazards and that major arterials, such as Waukegan Road, Roselle Road, and Milwaukee Avenue (in suburban Cook County) and Devon Road and Belmont Avenue (in Chicago) also tend to have higher concentrations of approved hazards.

- IDOT should hasten implementation of new laws and policies, including Context Sensitive Solutions and Complete Streets, which require the planning of streets to accommodate pedestrians and cyclists. A comprehensive Complete Streets policy would especially impact Type II hazards – Walking on A Roadway.

This year IDOT will launch the new Safe Routes to School program. The main focus of the Safe Routes program is to address serious safety hazards that act as barriers to students walking to and from school. Because of this significant overlap in mission, we see significant opportunities in linking the Safety Busing and The Safe Routes to School programs.

- We encourage IDOT to use data collected in the course of the hazard busing program as a way to identify potential projects for Safe Routes construction grants.

- Aggressive outreach should be conducted to target school districts applying for hazard busing and encourage them to apply for Safe Routes to School funding.

An alignment with the Safe Routes to School program should be just one part of a broader strategy that says, “Fix it first and bus only as a last resort.” To be sure, many hazards necessitate busing for the safety of pupils. Others, however, can be dealt with through sound policies and strategic accommodations.

- We encourage IDOT to explore the development of new incentives and policies that support a reduction in the number of pupils bused due to hazards (e.g., tying the cost savings in annual reduction in hazard busing to programs like Safe Routes to School.

Snow conditions are often cited as a barrier by school boards. As a result of this seasonal hazard pupils are bused year-round.

- We encourage IDOT to explore best practices from other cold-climate regions in order to develop alternative means to address this barrier.

Further research is needed to gain a more complete picture of the School Safety Busing program throughout Illinois. Important research topics include the statewide budgetary impact of busing around potentially remediable hazards and the possibilities for increasing physical activity in school aged populations.

- We recommend that IDOT use the protocols and data-gathering tools created for this project to replicate the process in other districts and in the remaining counties of District One, using just a sample of available records rather than the complete dataset.

Appendix A. Key to Serious Safety Hazard Database

Database Column	Applicable to Hazard Type	Creation	Label on "Serious Safety Hazard Finding" Form if Different	Notes
Name of School District	All	Form		
District #	All	CNT		Created out of the Annual sequential number, to aid in analysis
Name of School	All	Form	Name of School to Which Children are Walking	
2nd and 3rd school	All	Form	Name of School to Which Children are Walking	Most applications were for one school but a few were for more than one
Year	All	CNT		Created from Annual Sequential number to ease analysis
Submittal#	All	CNT		Created from Annual Sequential number to ease analysis
Annual Sequential number	All	Form		The index for the database - the first part is the school district, the second part is the year and the third part is the submittal number for that year from that district
Single/Combo Hazard	Single	CNT	Type of Condition	1=Single Hazard, 2=Double Hazard, Field created during data entry and not found in individual forms
Type	Combination	CNT	Type of Condition	Only for single hazards
Combo_type	Combination	CNT	Type of Condition	First type in a multiple hazard
Along	All	Form		The first value used in all geocoding. All of the street columns have been combed through and cleaned up to make geocoding possible. Will often not read exactly like the forms.

4) 1st street	1	Form	Type I from	First street in linear hazard. In some cases the order has been switched with "4) 2nd Street" to ease the geocoding process.
GIS A	1	CNT		Column for geocoding first point in linear type 1 hazard. Used to geocode hazard as a point based on an intersection of streets.
4) 2nd street	1	Form	To	Second point
GIS AA	1	CNT		Back up geocoding type 1 hazard, used when value in GIS A was unusable.
5) 1st Street	2	Form	Type II from	
GIS B	2	CNT		Primary GIS for type 2 hazard
5) Street	2	FORM	To	
GIS BB	2	CNT		Back up GIS for type 2 hazard
6) Street	3	Form	At	Type 3 second value for geocoding
GIS C	3	CNT		Type 3 geocoding
7)street	4	Form	At	In some instances this is a road in others a rail road line took the road value whenever possible
Notes on address	Select			Used in specialty cases where more roads were written then necessary or in other cases where the data presented didn't fit with our geocoding system.
8 to 14	1	Form	Type 1 - Walking along a roadway	Entered from form. Not completely accurate due to mistakes or unreadable values and occasional typos by applicant.
15-21	2	Form	Type 2 - Walking on a roadway	
22-27	3	Form	Type 3 - crossing a roadway	
28-32	4	Form	Type 4 Crossing Railroad tracks	
Date Submittal	All	Incomplete	Date Submittal Received	Field is incomplete in database as submittal and approval dates were pretty

				consistently within a couple of months of each other in the year noted in the annual sequential number.
Serial No	All	Form		The first number is always 1, the second number is the year, and the 3rd no. is the order that submittal was received in the year of all submittals for that year.
Approved/Disapproved	All	Form		1=approved, 2= Disapproved for corrections, additions, or clarifications noted in transmittal letter. 3=Disapproved for reason or reasons noted in transmittal letter. In cases where a second submittal was made for a disapproved hazard under the same annual sequential number we used the second (and most often approved) form.
Date Signed	All	Form		Incomplete
Approximately how many students will annually for busing	All	Form	Approximately how many students will annually be qualified for busing by this submittal that did not previously qualify for reimbursed bussing?	This column was often not filled in. It was only added to the form with the 1981 revisions
What is the projected additional annual reimbursement that will	All	Form	What is the projected additional annual reimbursement that will result from this submittal.	This column was often not filled in. It was only added to the form with the 1981 revisions.

Board Judgment Points Explanation	Select	Board judgment letter		Summary of board judgment letter. Does not include any information restating other information in the application.
Additional notes	Select	CNT		Notes on applications. In some cases this was used to mark double hazards of the same type, which this database was not created to support.
Board Judgment Contains no new information	Select	Board judgment letter		This was marked in cases that a board judgment letter exists but it did not contain any new information that was not already conveyed in the application.
Snow Conditions	Select	Board judgment letter		Adverse snow conditions were stated as a reason for many board judgment points. This field was checked whenever this reason was given. Field was created towards the beginning of data entry and used consistently thereafter.
High School Drivers	Select	Board judgment letter		High School Drivers were given as a reason for many board judgment points. This field was checked whenever this reason was given. Field was created late in the data entry process and therefore unused.
Truck traffic	Select	Board judgment letter		Truck Traffic given as a reason for many board judgment points. This field was checked whenever this reason was given. Field was created half way

				through data entry and used consistently thereafter
store parking lots	Select	Board judgment letter		Store parking lots were given as a reason for many board judgment points. This field was checked whenever this reason was given. Field was created half way through data entry and used consistently thereafter
temporary hazard	Select	Board judgment letter		not used consistently because it was very difficult to tell in many cases if the application was for a temporary hazard because most often hazards in construction areas had conditions which would continue upon the completion of the construction.
MAPINFO_ID	All	M		Id for mapinfo

Appendix B. Points Awarded to Hazards by Type

Single Hazards

Type 1 – Walking Along a Roadway	
Number of Records	286
Average # of Points	12.6
Highest Number	17
Mode	12

Type 2 - Walking on a Roadway	
Number of Records	239
Average # of Points	13
Highest Number	21
Mode	12

Type 3 – Crossing a Roadway	
Number of Records	663
Average # of Points	12.4
Highest Number	17
Mode	12

Type 4 - Crossing Railroad Tracks	
Number of Records	33
Average # of Points	12.2
Highest Number	15
Mode	12

Combination Hazards

Types 1+2	
Number of Records	9
Average # of Points	21.7
Highest Number	25
Mode	21.5

Types 1+3	
Number of Records	124
Average # of Points	21.1
Highest Number	28
Mode	20

Types 1+4	
Number of Records	10
Average # of Points	21.1
Highest Number	23
Mode	21.5

Types 2+3	
Number of Records	46
Average # of Points	21.8
Highest Number	27
Mode	23.5

Types 2+4	
Number of Records	4
Average # of Points	23.5
Highest Number	25.5
Mode	N/A

Types 3+4	
Number of Records	19
Average # of Points	21.8
Highest Number	25
Mode	21

*** There is one record listed as Type 3+ 3 combination hazard, not included in these figures

Appendix C. Pupil Transportation Reimbursement Program

		FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Number of Students Transported								
A	Total pupils transported	858,954	890,480	902,460	919,109	927,553	951,566	975,890
	Annual % increase:		3.67%	1.35%	1.84%	0.92%	2.59%	2.56%
B	Pupils transported who reside less than 1.5 miles from the school **and** who walk through a safety hazard	117,634	122,505	129,053	139,349	147,547	153,303	157,699
	Annual % increase:		4.14%	5.35%	7.98%	5.88%	3.90%	2.87%
C (B÷A)	Ratio of "hazards-facing" students to total students transported	13.70%	13.76%	14.30%	15.16%	15.91%	16.11%	16.16%
Total Program Costs (Claims)								
D		$305,037,500	$332,360,600	$358,793,000	$375,616,200	$393,535,500	$405,653,600	$431,994,600
	Annual % increase:		8.96%	7.95%	4.69%	4.77%	3.08%	6.49%
Total Program Costs (Appropriation)								
E		$195,716,300	$215,437,500	$227,954,100	$219,908,500	$242,424,000	$261,630,000	$286,118,000
	Annual % increase:		10.08%	5.81%	-3.53%	10.24%	7.92%	9.36%
Locals' Contribution								
F (D-E)		$109,321,200	$116,923,100	$130,838,900	$155,707,700	$151,111,500	$144,023,600	$145,876,600
	Annual % increase:		6.95%	11.90%	19.01%	-2.95%	-4.69%	1.29%
G (F÷D)	Ratio of locals' contribution to total program costs (claims)	35.84%	35.18%	36.47%	41.45%	38.40%	35.50%	33.77%
H (D*C)	Costs Attributable to "hazards-facing" students (statewide)	$41,774,974	$45,723,470	$51,307,884	$56,948,351	$62,600,177	$65,353,232	$69,808,192
	% Increase:		9.45%	12.21%	10.99%	9.92%	4.40%	6.82%
I (H*G)	Locals' costs attributable to "hazards-facing" students (statewide)	$14,971,570	$16,085,330	$18,710,140	$23,607,333	$24,037,493	$23,203,067	$23,572,937
	Annual % increase:		7.44%	16.32%	26.17%	1.82%	-3.47%	1.59%

Appendix D. Cook Co. Elementary School District Numbers

SCHOOL DISTRICT NAME	DISTRICT
ALSIP-HAZLGRN-OAKLWN SCHOOL DISTRICT 126	126
ARBOR PARK SCHOOL DISTRICT 145	145
SUMMIT SCHOOL DISTRICT 104	104
ARLINGTON HEIGHTS SCHOOL DISTRICT 25	25
ATWOOD HEIGHTS SCHOOL DISTRICT 125	125
AVOCA SCHOOL DISTRICT 37	37
BELLWOOD SCHOOL DISTRICT 88	88
BERKELEY SCHOOL DISTRICT 87	87
BERWYN NORTH SCHOOL DISTRICT 98	98
BERWYN SOUTH SCHOOL DISTRICT 100	100
COOK COUNTY SCHOOL DISTRICT 130	130
INDIAN SPRINGS SCHOOL DISTRICT 109	109
LEMONT-BROMBEREK COMMUNITY UNIT SCHOOL DISTRICT 113A	113A
BROOKFIELD SCHOOL DISTRICT 95	95
BURNHAM SCHOOL DISTRICT 154-5	154-5
LINCOLN ELEMENTARY SCHOOL DISTRICT 156	156
CALUMET PUBLIC SCHOOLS DISTRICT 132	132
CHICAGO HEIGHTS SCHOOL DISTRICT 170	170
CHICAGO RIDGE SCHOOL DISTRICT 127-5	127-5
CICERO SCHOOL DISTRICT 99	99
SKOKIE SCHOOL DISTRICT 73-5	3
FORD HEIGHTS SCHOOL DISTRICT 169	169
COUNTRY CLUB HILLS SCHOOL DISTRICT 160	160
DES PLAINES COMMUNITY CONSOLIDATED SCHOOL DISTRICT 62	62
DOLTON SCHOOL DISTRICT 149	149
DOLTON SCHOOL DISTRICT 148	148
EAST MAINE SCHOOL DISTRICT 63	63
EAST PRAIRIE SCHOOL DISTRICT 73	73
LINDOP SCHOOL DISTRICT 92	92
COMMUNITY CONSOLIDATED SCHOOL DISTRICT 59	59
EVANSTON COMMUNITY CONSOLIDATED SCHOOL DISTRICT 65	65
EVERGREEN PARK ELEMENTARY SCHOOL DISTRICT 124	124
SKOKIE FAIRVIEW SCHOOL DISTRICT 72	72
FLOSSMOOR SCHOOL DISTRICT 161	161
FOREST PARK SCHOOL DISTRICT 91	91
FOREST RIDGE SCHOOL DISTRICT 142	142
FRANKLIN PARK SCHOOL DISTRICT 84	84
GLENCOE SCHOOL DISTRICT 35	35
GLENVIEW COMMUNITY CONSOLIDATED SCHOOL DISTRICT 34	34
BROOKWOOD SCHOOL DISTRICT 167	167
NORTHBROOK ELEMENTARY SCHOOL DISTRICT 27	27
HARVEY SCHOOL DISTRICT 152	152
W HARVEY-DIXMOOR PUBLIC SCHOOL DISTRICT 147	147

HAZEL CREST SCHOOL DISTRICT 152-5	152-5
LAGRANGE HIGHLANDS SCHOOL DISTRICT 106	106
HILLSIDE SCHOOL DISTRICT 93	93
HINSDALE COMMUNITY CONSOLIDATED SCHOOL DISTRICT 181	181
HOMEWOOD SCHOOL DISTRICT 153	153
HOOVER-SCHRUM MEMORIAL SCHOOL DISTRICT 157	157
KENILWORTH SCHOOL DISTRICT 38	38
KIRBY SCHOOL DISTRICT 140	140
KOMAREK SCHOOL DISTRICT 94	94
LA GRANGE SCHOOL DISTRICT 102	102
LA GRANGE SCHOOL DISTRICT 105 (SOUTH)	105
LANSING SCHOOL DISTRICT 158	158
LINCOLNWOOD SCHOOL DISTRICT 74	74
LYONS SCHOOL DISTRICT 103	103
MANNHEIM SCHOOL DISTRICT 83	83
NORTHBROOK/GLENVIEW SCHOOL DISTRICT 30	30
PRAIRIE-HILLS ELEMENTARY SCHOOL DISTRICT 144	144
MATTESON ELEMENTARY SCHOOL DISTRICT 162	162
MAYWOOD-MELROSE PARK-BROADVIEW-89	89
MIDLOTHIAN SCHOOL DISTRICT 143	143
GOLF ELEMENTARY SCHOOL DISTRICT 67	67
MORTON GROVE SCHOOL DISTRICT 70	70
MOUNT PROSPECT SCHOOL DISTRICT 57	57
NILES ELEMENTARY SCHOOL DISTRICT 71	71
NORRIDGE SCHOOL DISTRICT 80	80
NORTH PALOS SCHOOL DISTRICT 117	117
NORTHBROOK SCHOOL DISTRICT 28	28
OAK LAWN-HOMETOWN SCHOOL DISTRICT 123	123
OAK PARK ELEMENTARY SCHOOL DISTRICT 97	97
ORLAND SCHOOL DISTRICT 135	135
PALATINE COMMUNITY CONSOLIDATED SCHOOL DISTRICT 15	15
PALOS HEIGHTS SCHOOL DISTRICT 128	128
PALOS COMMUNITY CONSOLIDATED SCHOOL DISTRICT 118	118
PARK FOREST SCHOOL DISTRICT 163	163
PARK RIDGE CONSOLIDATED COMMUNITY SCHOOL DISTRICT 64	64
GENERAL GEORGE PATTON SCHOOL DISTRICT 133	133
PENNOYER SCHOOL DISTRICT 79	79
PLEASANTDALE SCHOOL DISTRICT 107	107
POSEN-ROBBINS ELEMENTARY SCHOOL DISTRICT 143-5	3
PROSPECT HEIGHTS SCHOOL DISTRICT 23	23
RHODES SCHOOL DISTRICT 84-5	84-5
RIDGELAND SCHOOL DISTRICT 122	122
RIVER FOREST SCHOOL DISTRICT 90	90
RIVER GROVE SCHOOL DISTRICT 85-5	85-5
RIVER TRAILS SCHOOL DISTRICT 26	26
RIVERSIDE SCHOOL DISTRICT 96	96

SCHAUMBURG COMMUNITY CONSOLIDATED SCHOOL DISTRICT 54	54
ROSEMONT ELEMENTARY SCHOOL DISTRICT 78	78
SANDRIDGE SCHOOL DISTRICT 172	172
COMMUNITY CONSOLIDATED SCHOOL DISTRICT 168	168
SCHILLER PARK SCHOOL DISTRICT 81	81
ELEMENTARY SCHOOL DISTRICT 159	159
SKOKIE SCHOOL DISTRICT 68	68
SKOKIE SCHOOL DISTRICT 69	69
SOUTH HOLLAND SCHOOL DISTRICT 150	150
SOUTH HOLLAND SCHOOL DISTRICT 151	151
BURBANK SCHOOL DISTRICT 111	111
STEGER SCHOOL DISTRICT 194	194
CENTRAL STICKNEY SCHOOL DISTRICT 110	110
SUNNYBROOK SCHOOL DISTRICT 171	171
SUNSET RIDGE SCHOOL DISTRICT 29	29
THORNTON SCHOOL DISTRICT 154	154
COMMUNITY CONSOLIDATED SCHOOL DISTRICT 146	146
UNION RIDGE SCHOOL DISTRICT 86	86
CALUMET CITY SCHOOL DISTRICT 155	155
WEST NORTHFIELD SCHOOL DISTRICT 31	31
WESTCHESTER SCHOOL DISTRICT 92-5	92-5
WESTERN SPRINGS SCHOOL DISTRICT 101	101
WHEELING COMMUNITY CONSOLIDATED SCHOOL DISTRICT 21	21
WILLOW SPRINGS SCHOOL DISTRICT 108	108
WILMETTE SCHOOL DISTRICT 39	39
WINNETKA SCHOOL DISTRICT 36	36
WORTH SCHOOL DISTRICT 127	127
BARRINGTON COMMUNITY UNIT SCHOOL DISTRICT 220	220
COMMUNITY UNIT SCHOOL DISTRICT 300	300
CITY OF CHICAGO SCHOOL DISTRICT 299	299
SCHOOL DISTRICT 46	46
ELMWOOD PARK COMMUNITY UNIT SCHOOL DISTRICT 401	401

Appendix E. Number of Serious Safety Hazards, Crashes and Students by Chicago Community Area

COMMUNITY AREA	NUMBER of HAZARDS	NUMBER of CRASHES	NUMBER of STUDENTS
Armour Square	12	8	1842
North Lawndale	10	41	11957
Lake View	9	11	3745
Lincoln Park	9	9	3639
West Town	8	24	14202
Bridgeport	8	9	6012
South Lawndale	7	30	19929
Austin	5	99	28628
West Ridge	5	28	12845
Near North Side	5	20	5242
North Center	4	11	3329
Brighton Park	3	30	10281
Lower West Side	3	23	9898
Chatham	3	19	6445
Washington Heights	3	16	5680
Douglas	3	13	4959
Roseland	2	41	11338
West Garfield Park	2	28	6155
Gage Park	2	27	9859
East Garfield Park	2	24	5406
Grand Boulevard	2	15	7193
Rogers Park	2	15	10018
Edgewater	2	5	6168
Beverly	2	3	4574
Forest Glen	2	2	2857
Montclare	2	2	2137
West Englewood	1	50	11876
Belmont Cragin	1	34	16328
Near West Side	1	32	8185
Uptown	1	27	7424
Woodlawn	1	26	6465
Irving Park	1	24	10296
Avondale	1	14	8283
Morgan Park	1	13	5276
Washington Park	1	10	3942
East Side	1	6	5159
Hyde Park	1	5	2819
Riverdale	1	4	3308
McKinley Park	1	4	3407
Burnside	1	3	817
Edison Park	1	2	1627
Pullman	1	1	1872
Humboldt Park	0	49	17478

Chicago Lawn	0	48	15890
Auburn Gresham	0	43	12156
New City	0	42	13772
Englewood	0	38	10759
South Shore	0	38	12166
Logan Square	0	31	16193
Greater Grand Crossing	0	26	8510
South Chicago	0	23	9326
Portage Park	0	18	10471
Hermosa	0	16	6689
Lincoln Square	0	14	6016
West Lawn	0	14	6064
West Pullman	0	12	8849
Albany Park	0	10	11012
Avalon Park	0	10	2070
Garfield Ridge	0	10	6276
Ashburn	0	10	8887
North Park	0	8	3002
Loop	0	8	531
Jefferson Park	0	6	3662
Archer Heights	0	6	2265
Mount Greenwood	0	6	3450
Norwood Park	0	6	4971
Near South Side	0	5	1485
South Deering	0	4	3773
Dunning	0	3	6137
Fuller Park	0	3	794
Calumet Heights	0	3	2624
West Elsdon	0	3	3111
O'Hare	0	3	1245
Clearing	0	1	3646
Kenwood	0	1	2825
Hegewisch	0	0	1711
Oakland	0	0	1742

Appendix F: Data Sources for Mapping and Analysis

Layer Name	Source	Date
CATS 2003 Regional Pedestrian Crash File for Northeastern Illinois	Chicago Area Transportation Study	07/12/2005
"Major Roads and Highways" National Transportation Atlas Databases (NTAD)	Bureau of Transportation Statistics (BTS)	2002
Land Use	Northeastern Illinois Planning Commission (NIPC)	08/2005 (unpublished, Version 1.0)
U.S. Railroads	U.S. Geological Survey	12/1998
Chicago Community Areas	City of Chicago Department of Environment	06/09/2003
Roads	TIGER2000 road file and TIGER 1990 road file (modified)	
School Districts	TIGER2000	
Cook County Boundary	TIGER2000	
Cook County Census Tracts	TIGER 2000	
City of Chicago Boundary	City of Chicago Department of Environment	06/09/2003