Problem Statement

The neighborhood school model has dominated urban landscapes in the U.S. for over a century, from Clarence Perry’s notion of the neighborhood unit, in which self-contained neighborhoods cluster around a centrally-located school, to more recent New Urbanism concepts of community development. School facilities can provide parks and open space within a neighborhood, serve as community centers, promote healthy walking and biking habits, increase accessibility to extracurricular activities, and provide numerous other benefits to a community. Proximity to a “high quality” school often significantly factors into housing choice. However, the neighborhood school model can have undesirable consequences, such as low enrollments and inefficient use of resources, student populations segregated by class and race, and educational inequity among schools. “Low quality” schools can be perceived as disamenities in housing choice.

In 2010, the neighborhood school concept became a highly contentious issue in the City of Dubuque, Iowa after the release of a 20-year facilities plan by the Dubuque Community School District (DCSD), which included proposals to close certain schools within the community. The plan included eight scenarios, from keeping all schools open to closing 9 of the 18 total public schools. Many of the scenarios entailed closure and consolidation of existing schools to four entirely new schools. The plan addressed changing demographics in Dubuque, the need for fiscal efficiency due to operational budget shortfalls, and the uneven distribution of students eligible for free and reduced lunch among the existing elementary and middle schools. However, the prospect of closing a long-standing neighborhood school evoked strong emotions from the
community, and some residents loudly vocalized their opposition to the plan. City administrators also expressed concerns about the negative impact of school closures on neighborhood integrity, prompting Mayor Roy Buol to write a letter to the DCSD requesting that they reconsider closing any existing schools. The facilities plan has since been scrapped, according to the school district superintendent, and no new plan has been released thus far.

This research examines the relationship between neighborhood schools and community development in Dubuque, particularly as it affects student academic achievement. The purpose of the research is to inform the Dubuque community about the issue and to provide objective analysis to policy-makers. The research examines two primary questions:

1) Do neighborhoods impact academic achievement for public elementary students in Dubuque, Iowa?

2) Do neighborhood schools impact community development in Dubuque, particularly in the immediate surrounding neighborhoods?

The hypotheses are that a) the neighborhood school model does impact academic achievement for public elementary students and b) neighborhood schools do impact community development and the quality of a surrounding neighborhood.

Theoretical Framework

A large body of research supplies the framework for understanding the impacts of school quality on student outcomes, as researchers have long attempted to understand how commonalities among school-aged children explain school performance. A 1967 report commissioned by the U.S. Department of Education, famously known as “the Coleman Report”, concluded that “children from a given family background when put in schools of different social
compositions will achieve at quite different levels” (Coleman, p.22). More than per pupil spending, educational experience and performance outcomes closely reflect the socio-demographic composition of a school. The Coleman Report and extensive subsequent research suggests that student outcomes are a function of various inputs, many of which can be directly influenced by school district policies and decisions, as well as community planning and development.

The inextricable link between housing and school enrollment may be a significant contributor to educational inequality in a community. The 2007 report Housing Policy is School Policy asserts “housing and education traditionally have been considered the primary instruments of social mobility in the US” (Schwartz, 2011). Affordable housing options are often confined to geographic pockets within a metropolitan area, and the cost of housing otherwise excludes low-income populations from more affluent neighborhoods. Consequently, housing patterns throughout the country can essentially segregate populations based on class or income, resulting in neighborhood schools that reflect the predominant socio-economic characteristics of the surrounding households. Economically segregated neighborhoods lead to similarly segregated neighborhood schools. The implications to children in those schools may come at the expense of academic success. Research suggests a “strong relationship between concentrated school poverty and low achievement” (Orfield, G. and Lee, C., 2005). The “Coleman Report” found that student achievement is more impacted by the social composition of a school than the quality of a school (Coleman, 1966). In other words, students that attend schools with high concentrations of poverty tend to perform worse than students at more affluent schools, and the likelihood of lower test scores does not apply only to low-income students. Affluent students in schools with high poverty rates are more likely to perform worse than if they had attended a
school with low poverty rates. As a result, the neighborhood school model can potentially produce educational inequity, even within a single school district, as children who live in neighborhoods with high levels of poverty may have a completely different educational experience than students from middle-class or wealthy neighborhoods. Furthermore, because poverty and minority status are often strongly correlated in urban areas, non-white students are often disproportionately affected by the negative consequences of high poverty schools. Blacks and Hispanics are most likely to be negatively affected (Orfield, G. and Lee, C., 2005).

Methodology

Data shows that neighborhoods and elementary schools in the City of Dubuque exhibit unique characteristics. A simple model for student outcomes considers the influence of neighborhood characteristics and school characteristics on academic achievement, as shown in the formula \( A = f(S_1, ..., S_n, N_1, ..., N_n, F, \mu) \), where \( A \) equals some measurement of student output or achievement, \( S_1, ..., S_n \) equal variables measuring school characteristics, \( N_1, ..., N_n \) equal variables measuring neighborhood characteristics, \( F \) represents family inputs, and \( \mu \) represents innate ability of the student. For the purposes of our research, family inputs and innate ability are held constant.

A 2011 study establishes a link between graduation rates and one early signal of academic performance, 3rd grade reading proficiency, indicating that “those who don’t read proficiently by third grade are four times more likely to leave school without a diploma than proficient readers” (Hernandez, 2011). Considering the long-term impacts on student performance, as well as the recent legislation emphasizing that all students be proficient readers before graduating to 4th grade (IA File 2284), this research uses 3rd grade reading proficiency as the dependent variable.
in the model. Variation in identified variables allows for comparisons among neighborhoods and schools. Observations of building-level school data over a ten year period, in particular, illustrate the degree of variation among Dubuque’s elementary schools.

For this project, we considered a neighborhood based on census tract boundaries. Sensitivity analysis shows that results do not deviate significantly when defining neighborhoods by elementary school catchment areas or one mile buffers around the schools.

Neighborhood quality is quantified by variables related to four overarching neighborhood development themes: sense of community, the built environment, stability, and neighborhood character. A similar conceptual framework is used to quantify the many significant components of school quality. The four intersecting themes include school facilities, programs offered, faculty and volunteers, and characteristics of the student population. Rather than assuming that a single model would universally apply to all communities, we started with the “kitchen sink” approach and identified variables and sources relevant for both schools and neighborhoods in Dubuque.

Next, we derived an understanding of the impact of an elementary school on a neighborhood using data to quantify the value of a school within the neighborhood context. A hedonic statistical model is used to analyze the choices consumers make when buying a house. While a hedonic model is done at the individual house level, the amenities associated with a given house include neighborhood characteristics. The results of the hedonic model provide the implicit values of elementary school characteristics (Taylor, 2003), which will allow for a quantifiable understanding of the impact elementary schools have on neighborhoods. The model responds to local government assertions that schools are unequivocally positive influences in a neighborhood.
School quality input data was supplied primarily from the DCSD for each of the 13 elementary schools, either provided directly from district staff or acquired from the school website. School data was also downloaded from the Iowa Department of Education (IDED) website, which reports on education in Iowa comprehensively and at the district and building levels. Neighborhood quality data came from the 2006 – 2010 American Community Survey (ACS) estimates.

Research Findings

Neighborhoods on the east side of Dubuque, which is the city’s the downtown area, have the highest proportions of residents living below the poverty line, with poverty rates between 30% and 40%. The same neighborhoods have the highest proportions of non-white residents. Four of the thirteen public elementary schools in the district are located in the downtown area.

Dubuque has had dramatic increases in the number of non-white residents over the last decade, particularly in the Black and Pacific Islander populations, which grew 230% and 312%, respectively, between 2000 and 2010.

School enrollment numbers show that as the demographic landscape of Dubuque has changed, the proportion of minority students in four downtown schools (Prescott, Lincoln, Fulton, and Audubon) has also risen rapidly. Much of the change reflects an increase in the number of non-white students in the downtown schools, but there has also been a sharp decrease in the number of white students enrolled in those schools. The number of white students enrolled in the four downtown schools dropped from 1,108 in the 2001-2002 academic year to 661 in the 2011-2012 academic year. The number of non-white students in the same schools rose from 181 to 491 in the same period of time.
Regression analysis of school and neighborhood inputs explains, in large part, the variation in student outcomes among Dubuque elementary schools. In Dubuque, like many other communities, the percentage of a school building that qualifies for free and reduced lunch is a strong predictor of 3rd grade reading proficiency ($r^2 = .62$). The neighborhood characteristics regressed include: % renter, % minority and median income of the catchment area of the school. These variables tended to not be strongly correlated with reading test scores, with a correlation coefficient of less than .5. However, the median household income of a neighborhood has been found to be a significant independent variable in a number of regression models. For example, median household income of a neighborhood and the % of the school body that is minority can closely replicate the constructed variable of free and reduced lunch when predicting reading scores ($r^2 = .39$). The model that seems to explain the most variance in test scores uses total teacher experience, % mobility, and the median household income of a catchment area. These independent variables explain about 66% of the variance in 3rd grade reading proficiency. Teacher experience and % mobility were significant at the 95% confidence level. The trends of the above results reflect that of other research, suggesting that socio-economic status and attendance play a large role in the prediction of student achievement.

Households with a high demand for school quality will pay more for housing in order to live near a high quality school. Controlling for all other variables, the preliminary hedonic model results identify that people paid more for a house in a neighborhood with a "high quality school" (defined by higher reading and math proficiency scores, lower poverty, lower free and reduced lunch, lower minority, low mobility) than for a house with the same characteristics in a neighborhood with a relatively lower quality school (defined by lower reading and math
proficiency scores, higher poverty, higher free and reduced lunch, higher minority, high mobility). The model explains 22% of housing sale prices in Dubuque over a 10-year period.

School choice may appear to break the link between school enrollment and housing patterns that segregate populations by income or race. The DCSD has an open enrollment policy in which families can opt for a school outside of their designated catchment area and, as one school official explained, requests for open enrollment are typically approved as long as a space exists in the preferred school. The policy is intended to “permit a wide range of education choices for students and to maximize the ability of parents/guardians to use those choices” (DCSD 2012). Open enrollment policies can provide disadvantaged students the opportunity to enroll in better-performing schools in hopes of a better educational experience. However, outgroup avoidance theory suggests that school choice programs can also make it “easier for white or otherwise advantaged parents to avoid schools with high concentrations of minorities or other disadvantaged students whom they choose to avoid” (Bifulco et. al., 2009). Disadvantaged families may not have the resources, in terms of family support, finances, transportation, and so on, in order to send their children to a more distant school building. Therefore, when white families and advantaged families open enroll out of an elementary school, the result could mean a higher proportion of low-income minorities and, consequently, further increased likelihood that they will have disproportionately worse educational experiences.

**Conclusion**

No quick fix exists to resolve problems of concentrated poverty and educational inequality, and various policy changes can lead to even more complications. School closures could further deteriorate already struggling neighborhoods, and potentially eliminate the opportunity for those facilities to double as community centers. Consolidation and boundary changes would inevitably
introduce new challenges to some families and residents, even as they enhance opportunities for others. For example, increased distance decreases walkability and may increase school bus transportation time and costs. Diversifying schools would most likely mean that students attending the downtown schools would enroll in the more privileged schools, placing the burden of transportation time and costs on the most vulnerable populations. Additionally, families with limited transportation options would have more difficulty participating in extra-curricular activities.

Optimally, cities would have diverse neighborhoods with housing opportunities to suit all sorts of people, and neighborhood schools would represent balanced diversity throughout the community. The City of Dubuque can play an important role in school enrollment through land development and zoning practices, and policies that guide diversity in community development should be considered. Inclusionary zoning practices, for example, often require that new developments devote a certain percentage to affordable housing.

Whether the community would support policies that balance diversity in the school district and among the neighborhoods is not quite clear. Based on conversations with Dubuque community leaders, “political feasibility” is one of the major obstacles to long-term sustainable educational equity. Because a few outspoken voices can and often do influence the decision-making process for elected officials, “feasibility” may not always reflect the preferences of the community.

Since the 2010 facilities plan was retracted, neither the school district nor the City have made new proposals to address educational inequity and declining enrollments among the public elementary schools. Maintaining the status quo, which means a) keeping existing schools open b) adhering to the same district boundaries and c) limiting affordable housing options throughout
the city, is not sustainable and does not align with the city’s sustainability value for “education, empowerment and engagement to achieve economic prosperity, environmental integrity and social/cultural vibrancy” (City of Dubuque, 2012). Socio-economic (and racial) integration in Dubuque’s elementary schools is no sure-fire way to resolve all the inequity of the broader society, but the community should not dismiss the negative consequences of concentrated poverty within the district. Certainly, policy-makers should avoid scenarios that exacerbate the problems of educational inequity and should consider policies that reduce harm to those most impacted.

The community should develop short-term and long-term goals and strategies to address and mitigate sources of educational inequity and, moreover, to take advantage of the educational benefits of cultural diversity for all students regardless of income or race. Public participation and transparency will be vitally important to the process, and particular efforts should be made to engage the minority and immigrant populations in Dubuque. Surely, all would agree that sustainable, high quality elementary schools that provide equal educational opportunities for all children ultimately supports a brighter future for Dubuque.
Appendix

Figure 1
Percent of Non-White Residents Relative to Location of Public Elementary Schools in Dubuque by 2010 Census Tract

Figure 2
Percent of Residents Living Below the Poverty Line Relative to Location of Public Elementary Schools in Dubuque by 2010 Census Tract
# Figure 3
Variation of School Characteristics Among Public Elementary Schools in Dubuque for the 2009-2010 Academic Year

<table>
<thead>
<tr>
<th>Rank</th>
<th>Highest % Minority</th>
<th>Highest % Poverty</th>
<th>Highest % Free and Reduced Lunch</th>
<th>Highest % Mobility</th>
<th>Lowest 4th Grade Reading Proficiency</th>
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<tbody>
<tr>
<td>1</td>
<td>PRESCOTT 56%</td>
<td>PRESCOTT 90%</td>
<td>PRESCOTT 90%</td>
<td>AUDUBON 25%</td>
<td>LINCOLN 53%</td>
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<td>FULTON 40%</td>
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<td>FULTON 25%</td>
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<td>IRVING 9%</td>
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<tr>
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<td>BRYANT 33%</td>
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</tr>
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1. 2009-2010 school year is used due to data availability. Current data is not yet available for all variables.
2. Source: Iowa Department of Education
Sources


