THE COMMUNITY CONSEQUENCES OF SCHOOL CLOSURE AND REUSE

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ABSTRACT

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This study examines the community consequences of school closure and reuse. Specifically, this dissertation uses parallel mixed methods to contribute to the extant literature on school closure by addressing two gaps in the research: (1) how does school closure impact property values of proximal homes? And (2) how do neighborhood residents experience school closure and reuse over the long run?

I examine the first research questions by deploying a two-way fixed effect identification strategy in a hedonic capitalization model to estimate how school closure impacts neighborhood housing prices. I studied the second question using a qualitative retroactive multiple case study method to understand how neighborhood residents experience school closure over time. Used in tandem, quantitative and qualitative methods allow for a deeper understanding of how closure impacts communities.

Results of the quantitative inquiry show that school closure resulted in a statistically significant decline in residential property values of about 13%. Additionally, when the school closure effect was allowed to vary for each individual school closure, estimates ranged from a penalty of 3% to 25%—heterogeneity that suggests that some unobserved phenomenon may be moderating the relationship between school closure and housing value.

Qualitatively, residents reported experiencing school closure as a deeply emotional issue. Residents were clear that their neighborhood schools played an important role in the community,

beyond their formal educational responsibility; the schools acted as social infrastructure where neighbors could meet and build community. When the schools were closed, their roles in their communities were diminished. After closure, the schools were purchased by private companies that made substantial changes to the school properties without consulting neighborhood residents. Residents resisted these changes an never fully internalized that the once public schools were now private property. These qualitative findings suggest that school property reuse is difficult and may be the variable that moderates the heterogeneous relationship between school closure and housing value found in the quantitative study.

This dissertation contributes new evidence that schools provide important non-educational benefits to communities and that their removal has meaningful and measurable consequences.

For Ellyn by my side and Myles on the way.

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I entered the education policy PhD program straight out of undergraduate. I was reasonably smart and curious, but also brash and naïve. For me, graduate school has been as much about building a set of expertise as it has been about figuring out who I want to be in the world. On this journey, I have been raised by a village of scholars that are intelligent, humble, and kind. They have pushed me from restless devil's advocate to competent analyst to scholar; though, I am still working on seeing the forest for the trees. The completion of this dissertation is a testament to the unending support I have received from these mentors, friends, and family. It is exceedingly difficult to express my appreciation for these people. The following words are but a shadow of the gratitude I feel.

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individual accolade, it has been the work of a village that has brought me here. I am deeply indebted to you all. Thank you.

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Chapter 1: Introduction

Between 2004 and 2017 more than 23,000 schools were closed across the United States (U.S. Department of Education, 2019).[1] On average, these closures displaced more than a quarter-million students every year. Moreover, research has shown that school closure disproportionately impacts non-white and poor students bringing up significant equity issues (Brummet, 2014; Han et al., 2017; Lee & Lubienski, 2017). School closure is ubiquitous; it intersects with issues of equity as well as the public good, and it deserves attention.

Schools are distinctive institutions in American society which play a pivotal role in the social and economic life of the country. Even those skeptical of public subsidy recognize the need to invest in education because of the "neighborhood effect" (Friedman, 1955). That is, schools generate positive externalities that impact not just those who receive schooling, but all of society. Because the individual incentive to acquire education is lower than the socially efficient amount, it is necessary to subsidize education. In modern political discourse, the benefits of education have largely collapsed around academic achievement in service of the *social efficiency* or *social mobility* goals of education (Labaree, 1997). The benefits of education—and of educational institutions—are greater than the social mobility advantaged gained when a student improves their academic achievement. Where the metric of student achievement captures the private benefit gained through education, this dissertation looks to examine the literal neighborhood effect of schools as places of both education and community development.

The American educational enterprise is not just about students, but also about the communities in which they live. Arguably no other institution is more significant for community

[1] Table available at this link: https://nces.ed.gov/fastfacts/display.asp?id=619

life. Indeed, research shows strong and consistent support for public schools and opposition to perceived threats to those institutions (Henig, 1995; Howell & West, 2009; Jacobsen & Saultz, 2012). Yet, the "neighborhood effect" of schools is often taken for granted. For community members, schools may be a place to meet, interact with, and build trust in neighbors. These social interactions might not occur if a school is located outside of the neighborhood. Additionally, schools provide meeting spaces promoting the formation of neighborhood organizations that would be difficult without access to the physical infrastructure schools provide. In this way, schools may act as *anchor institutions* or what Klinenberg (2018) calls *social infrastructure*. These physical and social anchors are necessary for the sustained health of communities (Clopton & Finch 2015; Kearns et.al. 2009).

Research suggest that the community consequences of school closure may be both broad and deep (Deeds & Pattillo, 2015; Jaquelyn Oncescu & Giles, 2014; Witten et al., 2007). Increasingly, however, the discourse around school closure has focused on a narrow set of metrics, with student academic achievement foremost among them. In many ways, the narrowing of metrics has played into the narrowing of educational goals contrary to the desires of citizens which has been observed by scholars (e.g., Jacobsen & Rothstein, 2008). The narrowing of educational goals has deemphasized the role public schools play in advancing *democratic equality* (Labaree, 1997). Schools contribute to the public good in many ways beyond their formal role in educating students. By narrowing educational goals, we stymie the possibilities of school to create a more perfect union. If we only look at a handful of limited metrics, we will never understand the true impact of school closure. This dissertation aims to reframe school closure by measuring its impacts using a different set of metrics. By expanding the ways we

measure the impacts of closure, we can gain a more holistic view of how school closure impacts communities and what neighborhood schools mean to communities.

School Closure and Reform Movements

For much of the 20th century, school closure focused on closures as the result of district consolidation (Reynolds, 2002). At the time, district consolidation was purported to improve the quality and efficiency of schools through economies of scale (Berry & West, 2008; G. P. Green, 2013). Larger-enrollment districts could offer a wider range of courses and extracurricular opportunities to better meet students' needs and they could do so at lower per-pupil cost because fixed costs were spread over more students thereby increasing efficiency. Between 1920 and 1960, the United States went from 110,000 districts to 20,000 districts—an 80% decline (Howley et al., 2011). District consolidation did not always mean school closure, but consolidation entailed school closure in many rural communities (England & Hamann, 2013; Hyndman et al., 2010; J. Johnson, 2006; Post & Stambach, 1999). Thus, the district consolidation reform movement provided a policy rationale for imposing the removal of institutions in rural communities where few alternative existed.

In the last quarter century, school closure has been recast by reformers as a constructive intervention to improve academic achievement (e.g. Carlson & Lavertu, 2015; Kemple, 2015). From this perspective, closure is an ultimate and prudent consequence for schools that fail to improve under test-based accountability or fail to successfully compete in a local education market. In the forward of their piece "School Closures and Student Achievement," Carlson and Lavertu (2015) assert that:

> Bad schools rarely die… Policymakers, district officials, and charter authorizers should not shy from closing bad schools. Though fraught with

> controversy and political peril, shuttering bad schools might just be a saving grace for students who need the best education they can get.

Much of the discourse around school closure tacitly accepts the premise that the only valid policy outcome in education is student achievement. This view largely ignores the role schools play in public life. Instead, school closure is a policy lever to attain marginal benefits to student achievement.

When open, schools can act as social anchors in communities (Kanters et al. 2014). When a school closes, the relationship between schools and the community changes and may affect the vitality of the neighborhood. The implications of school closure go beyond the classroom into residents' homes, neighborhoods, and municipalities. Accountability and school choice policies redirect the goals of education away from these important functions. For policymakers to make informed decisions about school closure, more research, which looks at a broader set of policy outcomes, is needed to understand if closing a school serves the public good.

Research Context

There are two well developed, but disparate, sets of literature on the topic of school closure. The first uses quantitative methods to evaluate the relationship between school closure and academic achievement (e.g., Brummet, 2014; Carlson & Lavertu, 2015; Han et al., 2017; Kemple, 2015). The second employs qualitative methods to understand how closure impacts communities (e.g., Aggarwal et al., 2012; Deeds & Pattillo, 2015; Witten et al., 2001). While research studying other questions around school closure exists, they are less well developed. This gulf between quantitative work examining achievement and qualitative work looking at communities is problematic. Although these literatures ostensibly examine the same issue, they largely speak past one another. I attempt to bridge this gap in the extant research by examining

the community consequences of school closure using a mixed methods approach. Specifically, I use hedonic capitalization methods to estimate the relationship between school closure and neighborhood housing values as a proxy for neighborhood vitality. In parallel, I conducted a qualitative retroactive case study to understand how neighborhood residents experience school closure over the long-term. Both studies are set in Lansing, Michigan. Together, the combination of these methods studying one area allows for a deeper understanding of the community consequences of school closure.

In this paper, reforms such as school turnaround, reconstitution, restart, transformation, and takeover are not considered school closures because they are primarily reorganizations of staff and organizational structure. In this dissertation, "school closure" is understood to occur when a building transitions from a place of direct instruction to another use or non-use. This narrower conception of school closure is taken to focus attention on schools as social institutions as well as educational ones.

Chapter Organization

This dissertation is organized as follows. Chapter two reviews the existing literature on school closure. Special attention is paid to five topics in the literature: (1) dimensions of school closure, (2) how closure has intersected with the district consolidation, accountability, and school choice reform movements, (3) does school closure save districts money, (4) does school closure improve academic achievement, and (5) what are the community consequences of school closure. Chapter three provides a description of my conceptual framework, the study context (i.e., Lansing, Michigan), and the methods for the dissertation's quantitative and qualitative empirical work. Chapter four presents the quantitative findings of the school closure capitalization study. Chapter five describes my qualitative results. This chapter explores the

impact of school closure and reuse on residents of two neighborhoods over an extended period of time. Finally, chapter six contains a discussion of the research findings contained in chapters four and five as well as how this research expands the current literature on school closure.

Chapter 2: Literature Review

The research literature on school closure is diverse. It ranges from positivists estimating causal effects to critical scholars elevating the voices of the marginalized. This literature review attempts to bridge this scholarly divide and develop a holistic understanding of the topic.

First, I evaluate the literature around the dimensions of school closure—how characteristics and context of school closures intersect with research design and our understanding of the phenomenon. Then, I address policy logics of school closure. This section looks to understand the differing rationales for closing schools as manifest in education reform movements—namely district consolidation, accountability, and school choice. Next, I review the limited evidence on which schools close and who those closures impact. I then review research on the outcomes of closure. I start by unpacking the scant evidence on an important question: does closing a school building save money? Although the rationale for closure is often financial, there is little systemic evidence that closure produces financial savings in the long-term. Next, I review the substantial body of research on the impact of school closure on student academic achievement. Finally, I review the diverse base of research exploring the community consequences of school closure.

Dimensions of Closure

Closure is a multidimensional phenomenon. Like many education policies, the consequences of school closure depend on context and policy design. This variation in closure 'kind' generates an inherent trade-off in research design— between internal and external validity. Studies focusing on one or a small set of places may have higher internal validity than those that look at many settings, but weaker external validity. That is, studying smaller scales often allows researchers to be more confident in the 'kind' of closure they are studying. Small

contexts permit researchers the opportunity to identify the features of context and policy design that condition the relationship between school closure and its consequences that cannot be done at larger scales. At smaller scales, however, external validity decreases permitting researchers less confidence in the generalizability of their findings. Conversely, studies that examine whole or multiple states such as those conducted by Han and colleagues (2017) and Brummet (2014) will inevitably be less able to identify the reason for, and context around, closures.

Community Context

Theory indicates that schools as social institutions function differently depending on the community context in which they reside. Whereas many rural communities may have few alternative social institutions, urban or suburban areas typically have greater access to replacement institutions, potentially lessening the importance of the school as a social institution. Yet, this kind of variation is not well understood because research on school closure is bifurcated between rural and urban settings (Tieken & Auldridge-Reveles, 2019). Little work has examined suburban contexts, where many closures occur (Gallagher & Gold, 2017) or conducted studies across different community types. Moreover, it is unclear whether the work examining rural communities applies to urban settings, or if work on either rural or urban settings applies to suburban contexts where there is a dearth of research.

Within urban contexts, research has often centered on the most aggressive forms of school closure as the direct result of accountability policy, most notably in New York and Chicago (Kemple, 2015; Marisa Torre & Gwynne, 2009). While these policy interventions draw researchers because they are dramatic and offer a convenient identification strategy, they are not necessarily generalizable to most school closures that do not occur because of accountability policy.

Closure Rationale

Closures occur for many different reasons. While some districts might choose to close a school through a strict accountability framework, others close due to underutilization of space or the construction of a new facility. These differences in "policy design" are difficult to observe at scale but are theoretically important dimensions of closure. For example, while accountability-based closures may have a positive effect on student outcomes, closure as the result of declining enrollment may not. If studied individually, researchers may be able to understand how one 'kind' of closure is different from another. When studies fail to account for important information about policy design, the true relationship might be misidentified (Bifulco & Schwegman, 2019). Perhaps this is why most studies of school closure are conducted at small scales. In fact, only three of the fourteen studies attempting to estimate the achievement effects of school closure address contexts other than large urban districts alone (Brummet, 2014; Han et al., 2017). Similarly, the literature focusing on the community consequences of school closure is composed almost entirely of qualitative case-studies, often focusing on a single school (e.g. Deeds & Pattillo, 2015; Kearns, Lewis, McCreanor, & Witten, 2009).

School Closure and Education Reform Movements

Tieken and Auldridge-Reveles (2019) identify three basic rationales for school closure: *cost efficiency*, *academic performance*, and *equality*. These underlying rationales for closure can be observed in several major education reform movements, namely district consolidation, test-based accountability, and school choice.

District Consolidation

District consolidation has a long history in the US starting as early as 1800 (Reynolds, 2002). Up until the 1930's most school districts in the United States were small community

institutions typically with only a single teacher (Berry & West, 2008). In 1920, there were over 110,000 school districts. By 1960, just forty years later, that number had fallen by more than 80% to just over 20,000 (Howley et al., 2011). While district consolidation did not necessitate school closure per se, closure was a common consequence of district mergers (England & Hamann, 2013; Hyndman et al., 2010; J. Johnson, 2006; Post & Stambach, 1999)

This dramatic change in the provision of American education was the result of a shift in thinking and power away from democratic governance by lay people and towards scientific management by experts (Surface, 2011). At the time, reformers made three main arguments for rural district consolidation (Cubberley, 1922): district consolidation would improve (1) efficiency by reducing the administrator teacher ratio, (2) instruction by allowing teachers to specialize in grade and subjects, and (3) facilities (Berry & West, 2008). Larger districts could bring more economies of scale because fixed costs would be spread across more students. These economies of scale would improve educational opportunities because districts would be able to offer increased breadth and depth of curriculum and funnel additional resources into more productive activities (G. P. Green, 2013). To reformers, district consolidation directly served the goals of cost efficiency and equality while implying improvements to academic performance.

Although the progressive movement started in urban areas, with the installment of professional superintendents over lay leadership, reformers soon took district consolidation to rural areas. Interestingly, early reformers saw the root of the problem as the existence of the democratic governance itself, an issue that would remerge decades later in the school choice movement (Cubberley, 1922). District consolidation was also one of the first reform efforts directed by state departments of education. In this way, “consolidation” could be understood as a double entendre for the merging of smaller districts into larger ones and also the accumulation of

education power in the hands of the state (Berry & West, 2008). To accomplish consolidation, state governments took multiple approaches. In some instances, states used direct power, such as mandating district size or course offerings to supplant local governance directly enforcing consolidation. In others, states leveraged their financial support of districts to induce consolidation (Hooker & Mueller, 1970; Strang, 1987). Researchers would eventually show district consolidation to be a limited tool to improve efficiency and student achievement.

Early research from the 1930's through the 1970's seemed to confirm reformers' expectation that consolidated districts decreased costs and improved students' learning opportunities (Berry & West, 2008). Research since the 1970's, however, has seemed to refute many of the arguments made by consolidation proponents. One set of findings showed that larger schools districts did not necessarily increase the course offerings that students took as was assumed during the district consolidation movement. In fact, in terms of courses offered, schools as small as 400 students compared quite well with much larger ones (Monk, 1987). Cotton (1996) showed that a 17% increase in high school courses offered was associated with a 100% enrollment increase. The assumed negative relationship between per-pupil cost and district size has also been challenged. A review of the literature as early as the 1980's revealed a u-shaped relationship between district size and per-pupil cost (Fox, 1981). Both economies and diseconomies of scale posed efficiency concerns for districts. More modern research has supported this u-shaped relationship with the most efficient districts being about 1,000 to 2,500 students in size (Duncombe & Yinger, 2001). The implications of those findings suggest that while consolidation in the early years produced efficiency gains those opportunities are limited and of less policy concern than diseconomies of scale of very large districts (T. Zimmer, DeBoer, & Hirth, 2009).

Today, district consolidation is largely a thing of the past, with states maintaining roughly the same number of districts since the 1970's (Berry & West, 2008). School closure, however, has reemerged as a 21st century reform strategy in conjunction with accountability and school choice policies. The dual levers of direct control and financial incentives, evident in the district consolidation movement, are mirrored today in the accountability and school choice reform movements, respectively.

Accountability

Since the beginning of the 21st century, the policy logic of accountability has been enshrined in state and federal laws. The 2001 reauthorization of the Elementary and Secondary Education Act, No Child Left Behind (NCLB) was a ground shift in federal policy prescribing school closure as the ultimate consequences for continued low performance. NCLB also marked a shift in power both from local district to states and from states to the federal government. This mirrors the shift in power from the local to the state level during the district consolidation movement. While NCLB did not mandate "closure" as defined in this paper—that is when a building transfers from educational to non-educational use—it pushed states in that direction by linking school outcomes with this ultimate sanction.[2]

The Obama administration also pushed for the use of closure as a reform strategy. Race to the Top (RTTT) and school improvement grants (SIG) leveraged a relatively small sum of $4.3 and $3 billion respectively incentivizing states to implement reforms, including outright

[2] Under NCLB, schools that failed to meet adequate yearly progress (AYP) for five consecutive years would be forced to implement one of five restructuring plans. The options provided under NCLB included: (1) turnover to the state, (2) private management, (3) reopening as a charter school, (4) reconstitution (replacing some or all of the teaching and administrative staff), and (5) "any other," which was the most common restructuring plan used by schools (Sunderman & Payne, 2009).

closure, on the country's lowest-performing schools (Sunderman & Payne, 2009).[3] Where NCLB did not explicitly advance complete closure as a policy solution for under-performance, RTTT did.[4]

The logic of accountability policy supports school closure in three-ways. First, the threat of school closure, like other accountability policy sanctions acts as an inducement for school and district staff to improve. Even if a school never closed, this could increase achievement at the threatened school by encouraging staff to adopt better practices. (Sunderman et al., 2017).[5] Second, school closure could improve student achievement by sending displaced students to better schools (Han et al., 2017; Steiner, 2009; Stuit, 2012; Sunderman et al., 2017; Marisa Torre & Gwynne, 2009).[6] Third, future students who would have attended a low-achieving school had it not closed would be automatically diverted into a different higher-performing school. Proponents of accountability have argued that these school closures are necessary to save the most racially and/or economically marginalized students from low-performing schools (Dowdall, 2011; England & Hamann, 2013; Jack & Sludden, 2013; Strange, 2013; Williams, 2013). In

[3] RTTT proposed four "turnaround" models: (1) turnaround: replace the principal and rehire at least half of the staff (which was effectively a rebranding of reconstitution under NCLB); (2) restart: transfers control of a school to a different, likely charter, operator; (3) transformation: replace the principal and implement a series of institutional reforms; and, (4) school closure: closure of the school and transfer of the student enrollment to a higher-achieving school (Kutash et al., 2010).

[4] For some reformers, the incentives and turnaround strategies implemented by the Bush and Obama administrations did not go far enough. Indeed, some argued that school turnaround was impossible or unscalable advocating instead for increased school closure of the lowest-performing schools alone (Smarick, 2010). This claim has some empirical support with one study fining that less than 1.5% of low-performing schools were able to turnaround over a six year time period (Stuit, 2012).

[5] While some research does suggest that accountability pressure, though not specific to closure, can induce staff to work harder, other research suggests that these changes may improve academic achievement at the expense of other student outcomes such as social or emotional wellbeing (Hawkes, 2011; Rice & Malen, 2010; Rouse et al., 2013).

[6] High-quality receiving schools will have higher-quality teachers and peers (as measured in value-added). Much research has shown the important role peers (Borman & Dowling, 2010; Hanushek et al., 2004; Zimmer & Toma, 2000) as well as teachers play in academic achievement (Chetty et al., 2014).

these ways, accountability policy espoused the academic performance and equality rationales of school closure.

School Choice

The policy logic of school choice closely mirrors that of accountability, but in this case, closure is seen as the ultimate consequence of schools' failure to compete in an educational market. Like accountability policy, the logic of school choice predicts that threat of closure will force low-performing schools to improve. If they fail, the school will close, and students will benefit by attending a higher-quality school. Importantly, school closure also provides space in the market for new educational providers to enter, innovate, and ultimately improve the educational sector. In this view school closure is necessary for the virtuous cycle of "creative destruction" that might bring reform to an industry that continually fails to turnaround (Smarick, 2010).

Choice policy implicitly changes the people involved in governing school operations and shifts the role of parents and students from citizen to consumer. By allowing parents to choose where to send their child to school regardless of zip code, underserved families would be liberated from the "monopoly" of traditional schools, potentially improving educational equity. Thus, school choice represents all three rationales for closure—cost efficiency, academic performance, and equity.

Unlike accountability policy, it is difficult to link closure directly to school choice. Instead, the impacts of competition are incorporated into the myriad of factors local decision makers use to determine if a school should be closed. Competition may change enrollment patterns, finances, or utilization rates resulting in school closure, but choice itself is not typically a singular cause. For these reasons, it is difficult to attribute closure directly to school choice.

Interestingly, school choice seems to be both reversing and completing the vision advanced by the district consolidation movement. On the one hand, school choice, has led to the unlikely increase in the number of districts across the country. In Michigan, the number rose from about 550 traditional public-school districts in the mid-1990's to about 850 traditional and charter districts by 2020—more than a 50% increase in the number of districts over a quarter century. This is a clear reversal of the pattern of district consolidation experienced through much of the 20th century. Still, school choice shares a goal of district consolidation in constraining the power of local democratic decisionmakers. For district consolidation, replacing lay leaders with "experts" was an avenue for increased quality and efficiency. Similarly, school choice aims to shift authority from elected boards to appointed boards and private owners.

While closure researchers frequently frame their work in light of national policy reforms such as accountability or choice, it is unclear what role these reforms have played. Some scholars have attributed the uptick in school closures from the mid-1990's to the 2000's as the result of accountability and choice, but that relationship is untested (e.g. Sunderman, Coghlan, & Mintrop, 2017). One major problem with interpreting changes in the aggregate trend of closures over time is that the accountability and choice reform agendas coincide with the national economic decline as well as population shifts. A mix of accountability and school choice have resulted in massive school closures in a handful of major cities, namely New York, Chicago, Philadelphia, and Detroit. These closures have received disproportionate attention in the literature, with scholars framing their work explicitly around these national reform movements. Despite its common use in the literature, research has not provided convincing empirical evidence that accountability or choice policies themselves have substantially changed the practice of school closure across the country.

The district consolidation, accountability, and school choice reform movements share underlying rationales for closure including cost efficiency, academic performance, and equality. They contend that students will be better served by different schools (Sunderman & Payne, 2009). Absent from this conversation is what will happen to the local communities. A consequence of these movements has been the stigmatization of some schools deemed "backwards" or "unfixable" and the application of state power to remove community institutions from some of the most vulnerable populations in the country. The common denominator is the realignment of community institutions away from public and social ends and towards private educational ones.

Which Schools Close?

The extant literature suggests that school closure is not occurring evenly across the country. Scholars have identified important district-level predictors of closure including declining enrollment and reduced financial resources (e.g. Billger & Beck, 2012; Brummet, 2014; DeYoung, 1995; Lipman & Haines, 2007; M Torre et al., 2015; Williams, 2013). School closure is often the result of a district's "strategic" plan, which recommended closure in under-enrolled or low-performing schools (Deeds & Pattillo, 2015; Jack & Sludden, 2013; Lee & Lubienski, 2017; Lipman & Haines, 2007; Marisa Torre & Gwynne, 2009). Interestingly, closure typically cannot be explained by low-performance alone (Tieken & Auldridge-Reveles, 2019). While these predictors suggest that increased pressure through accountability or choice policies may play a role in school closure, that theoretical link is still without strong empirical backing in the literature.

Some studies have found that these patterns disproportionately impact non-white and poor students (Brummet, 2014; Engberg, Gill, Zamarro, & Zimmer, 2012; Han et al., 2017; Lee

& Lubienski, 2017; Lipman & Haines, 2007; Paino, Boylan, & Renzulli, 2017; M Torre et al., 2015). Han and colleagues (2017), studying closure in 26 states, found that schools serving poor students were much more likely to be closed than those serving wealthy students even when controlling for student achievement. These findings, however, are not necessarily representative of all school closures across the United States. They reflect the populations from which their samples were drawn—typically a single urban district. For example, research on Chicago consistently finds that closures disproportionately impact non-white students (e.g. Torre et al., 2015), but a study examining all non-Chicago school closures in Illinois found that student demographics were unrelated to school closures (Billger & Beck, 2012).

Much is still unknown about the basic facts of school closure. While the research is almost exclusively focused on rural and urban areas (Tieken & Auldridge-Reveles, 2019), the limited exploration of national trends suggests that most schools close in suburban places (Gallagher & Gold, 2017). In fact, researchers from the Urban Institute found that between 2003 and 2013, nearly twice as many suburban schools closed as did rural ones and almost three times more than urban (Gallagher & Gold, 2017).[7] The attention the research has paid to urban places has caused some scholars to make erroneous claims. In fact, Green (2017) asserts that school closures disproportionately impact urban communities[8] and that closures have reached "historic

[7] The methods used in the Urban Institute's tabulation of school closures by community types are not entirely clear (Gallagher & Gold, 2017). The Urban Institute scholars use enrollment numbers from the national Common Core of Data to infer school closure. Essentially, they count a school closure when there is no longer enrollment at a given entity. The problem, however, is that a given school may be assigned a new entity code if it is renamed, its grades reconfigured, or even if it undergoes sizeable infrastructure changes. The extent to which these data ambiguities generate "fake" school closures is unclear.

[8] Green (2017) claims that "school closures have disproportionately occurred in urban districts of color", citing two non-empirical pieces for this claim. The first is an introductory article to a special issue of a journal on school closure by Fine (2012). The other is an op-ed in the Washington Post by (Layton, 2014). Neither of these sources provide an empirical basis to claim that school closure disproportionately impacts urban places. What evidence does exist on the distribution of school closures across community types (i.e. rural, suburban, and urban) shows that closures occur most often in suburban places (Gallagher & Gold, 2017).

levels,"[9] both of which are unsupported by the available data. Yet, both statements are understandable given the state of the literature, which often examines closure as if it were a phenomenon that only impacted major cities or the smallest rural villages. It is still unclear whether school closure is occurring disproportionately in rural, urban, or suburban contexts (Tieken & Auldridge-Reveles, 2019). Where schools close and who they impact is an important unresolved question in the field.

Does Closing Schools Save Money?

Despite district leaders commonly citing financial pressures as the reasons for school closure, research seems to show limited financial savings. In Tieken and Auldridge-Reveles's (2019) review of the school closure literature they found no comprehensive evaluation of the financial effects of school closure. Available research finds minimal savings (Dowdall, 2011; Finnigan & Lavner, 2012; Killeen & Sipple, 2000; Valencia, 1984).

Early evidence from 60 internal district evaluations showed that districts estimated costs savings between $30 and $140 thousand per building (1974 dollars) but when they conducted actual costs savings analysis, districts typically found lower savings with two-thirds finding no savings or even cost increases (Andrews, 1974). Valencia (1984) reaffirmed these findings showing that closure had little ability to significantly reduce costs and that district that consolidated were unable to document any savings at all. One of the few modern studies

[9] Green (2017) states that "school closures are occurring at historic rates.". While he backs these claims with data, the percentage changes he reports seem cherrypicked. this claim of historically high school closures is only plausible if one takes a narrow understanding of "history" to only go as far back as the 1990's. In fact, the district consolidation movement saw declines in the number of districts by an order of magnitude? with correspondingly high school closure rates. In the 1920's there were approximately a quarter-million schools in the United States. By 1960, that number had fallen below 100,000 implying an average school closure rate of about 3,750 schools per year for forty consecutive years (Howley et al., 2011). In comparison, the average school closure rate between 1920 and 1960 was approximately 70% higher than the highest year between 1996 and 2017 making the claim of historic school closure fall flat.

examining the relationship between school closure and district savings was conducted in Philadelphia (Dowdall, 2011). Dowdall found that closures in the district saved less than $1 million per building, often considerably less than the district estimated.

While school buildings represent a substantial economic investment when built (Filardo, 2016) resale seems to present little if any economic benefit to local districts. Examining 12 urban places, Dowdall and colleagues found that many closed buildings do not sell quickly remaining vacant for years or decades and that those that do sell are often sold far below valuation of the property (Dowdall & Warner, 2013).

School facilities represent significant economic investments in neighborhoods. By one estimate, about a quarter of all state and local infrastructure investments are made in K-12 schools (Filardo, 2016). Neighborhood schools, especially elementary schools were often built in the heart of the neighborhood (Chung, 2002). Additionally, schools are typically large buildings with specific forms uncommon in other buildings (e.g., large public spaces, lockers, layout). These features of location and design creates serious problems for reuse (Simons et al., 2016). Consequently, when schools are closed, they are typically difficult to sell and often become dilapidated vacant eyesores (Dowdall & Warner, 2013). Resales tend to be low in part because school design differs from the organization of other types of buildings which limits reuse possibilities (Dowdall & Warner, 2013). Problems with school resale value include large unusable public spaces such as gyms and excessively large hallways, and age of the facilities.

Retired, Rehabbed, Reborn, a book by Simons, Ledebur, and DeWine (2016), studies the adaptive reuse of derelict religious and school building. Using a dataset of 126 religious buildings and 83 schools, Simons and Choi analyze which post closure uses are most common (e.g., retail, office, residential, or cultural use) based on building characteristics (e.g., building

age, size, or distance to other points of interests such as parks, highways, and airports). One interesting finding is that religious buildings were more likely to be reused across all categories suggesting that repurposed schools were less marketable than religious buildings. Results also suggest that newer and smaller buildings were more easily repurposed.

While cost savings remains a persistent rationale for school closure among districts, little research documents substantial savings over time. In part, this may be the result of the cost burden of education being primarily in personnel (Valencia, 1984). So, when school closures are accompanied by layoffs there may be substantial financial savings. When layoffs do not occur, however, financial savings will likely be quite limited. Staff are typically reassigned to other buildings and districts sometimes do not account for increased transportation cost.

Despite financial savings being a primary driver of school closure, there is little evidence to suggest that it leads to substantial savings in the long run. While this finding undermines the rationale districts often give for closing school buildings, closure may still be a positive policy intervention if it improves student performance. The next section summarizes the literature on the academic impacts of school closure.

There are numerous important subtopics on this question that have virtually no attention in the literature. Whether school closure saves a district money likely depends on the state's system of education finance, school choice, how much the district can resell the building for, the transition costs of closing a school, and how much the fixed costs of keeping the building open. For example, if a state has a local system for revenue generation such as a guaranteed tax base, closing a school would likely decrease costs and would not impact revenues even if students opted to use school of choice to leave the district. Conversely, if a state employed a foundation formula or weighted formula scheme, as in Michigan, loss of students as the result of school

closure would have a direct negative consequence on a district's budget.[10] These questions are important and form a distinct and major gap in the literature.

Does Closing Schools Improve Student Achievement?

The research on the academic impacts of school closure is much more developed than that on financial consequences. Research has shown that the impact school closure on students is complicated and conditional on policy design and context (Sunderman et al., 2017). Back in the early 2000's when pressure from school choice and accountability policies to close low-performing schools ramped up, there was little evidence on the effects of school closure on student outcomes. Fortunately, scholars have made great strides. Since then, several studies have attempted to understand and subsequently measure the impact of school closure on student outcomes.

Before research on school closure began to develop, scholars and policymakers relied on competing theories of how school closure would impact students derived from research on teacher and peer effects along with the mobility literature. Research has consistently shown that teachers are the most important school factor in student learning (Aaronson et al., 2007; Goldhaber, 2016; Rivkin et al., 2005; Rockoff, 2004; Sanders & Rivers, 1996). Additionally, the impact of teachers on students has important long-run impacts on students' economic success. Chetty and colleagues estimate that replacing a poor teacher (lowest 5% of value-added) with an average teacher could increase classroom lifetime income by $250,000 (Chetty et al., 2014).

[10] A foundation formula system allocates state dollars to districts based on the number of students in the district. Foundation system often have a weight system which assigns a per pupil weight for students with added needs. Michigan does not have a weight-based system. Instead, the state allocates funds for added needs students through a series of sperate categoricals.

The peer effect is also well understood. Since the Coleman report,[11] scholars have known that both students' individual background and the background of other students in a school impact achievement (Coleman et al., 1966; Diamond, 2006; Diamond et al., 2007; Gamoran, 1996; Jencks & Mayer, 1990). Modern research has refined our understanding of peer effects by showing that higher average levels of peer achievement is related to increased achievement growth especially for low-achieving students (Borman & Dowling, 2010; Hanushek et al., 2004; Zimmer & Toma, 2000). These powerful and consistent findings on the effects of teachers and peers on student achievement make getting students into "better" classrooms an important goal of education policy aimed at boosting student achievement.

While the literature on teachers and peers might suggest a positive effect of school closure, work on student mobility offers a contrasting hypothesis. Indeed, school closure can be understood as a form of forced student mobility. While the research on the impact of school closure on students is still growing, the literature on student mobility is quite well developed. In short, the literature examining student mobility consistently shows negative outcomes for students with declining student achievement and a pronounced decline in graduation rates (Hanushek et al., 2004; Rumberger & Larson, 1998; Welsh, 2017; Xu et al., 2009).

Student mobility, however, does not just impact mobile students. Rather, mobility may also have a spillover effect negatively impacting non-mobile students as well (Kerbow, 1996; Rumberger et al., 1999). The mobility literature also shows how the effects mobility on academic achievement are moderated by frequency, timing (i.e. middle or end of school year), nature (i.e.

[11] The Coleman report was a foundational study in education policy mandated by the Civil Rights Act of 1964. The study's principal findings were that variation in school inputs had relatively little influence over a student's outcomes when compared to that student's background and the impact of the schools composition (which would later be studied as the "peer effect."

within same school district or not), grade, reason, and background (Welsh, 2017). One worry in the mobility literature is that the research may overstates the negative consequences of changing schools since school mobility is often concurrent with residential mobility and changing family circumstances (Welsh, 2017).

The research on the teacher and peer effect along with the student mobility literature, are not perfect for predicting outcomes of closure. For one, it is unclear whether a student will enroll in a school with higher-quality students and staff after closure. Additionally, the transfer of many students may change the nature of those receiving schools. For instance, school closure might impact how resources are distributed, where staff are assigned, and how the system operates (Sunderman & Payne, 2009). The general equilibrium effect of school closure then may be dependent on how the receiving schools adjust to the changing student population. If they simply take on the same teachers from the closed school, it undermines the theory of action of school closure (Bross et al., 2016). Still, the student mobility literature provides a useful research basis for understanding the potential impacts of school closure on students.

Following the hypotheses coming out of the teacher quality, peer-effects, and mobility literatures respectively, research estimating the impact of school closure on student achievement has focused on three groups of students: (1) *displaced students*: students that are displaced because of school closure (Marisa Torre & Gwynne, 2009), (2) *future students*: students that would have gone to a school had it not closed, and (3) *receiving students*: students in schools receiving displaced students due to school closure. Most of the work studying school closure on student achievement has focused on the displaced students experiencing closure itself (Bross et al., 2016). The following sections outline the methods and results of research studying school closure on student outcomes. International studies are largely excluded from this portion of the

paper because large differences in contexts make these inter-country comparison fraught (Beuchert et al., 2018; Grau et al., 2018; Thorsen, 2017).[12]

Displaced Students

Kirshner and colleagues (2010), demonstrated that the "closure effect" was composed of the announcement and transition effect. The announcement effect consists of changes in student achievement in the year that closure is announced (Brummet, 2014; Gordon et al., 2018; B. Kirshner et al., 2010; Sherrod & Dawkins-Law, 2013; Marisa Torre & Gwynne, 2009). Brummet (2014) provides three possible explanations for this dip prior to closure: (1) possible drop in student or teacher morale, (2) students and/or staff selectively transfer out of the threatened school prior to closing, or (3) schools are chosen for closure because of the dip in achievement. This follows the logic of the Ashenfelter dip (Ashenfelter & Card, 1985). Qualitative work by Kirsner et al. (2010) suggest that the announcement year effect may be fueled by student or teacher anger from the announcement.

The transition effect might be thought of as the primary impact of school closure on displaced students. It refers to the actual outcomes for displaced students transferring to another school. Research on this subject is somewhat mixed with a majority of studies showing negative effects of closure (Engberg et al., 2012; Gordon et al., 2018; Han et al., 2017; B. Kirshner et al., 2010; Larsen, 2014; Ozek et al., 2012; Stroub & Richards, 2016), some mixed or null results (Bifulco & Schwegman, 2019; Bross et al., 2016; Sherrod & Dawkins-Law, 2013; Marisa Torre

[12] For example, Grau and colleagues study school closure and subsequent takeover in Chile. There, nearly 10% of the TPS in the country were closed being replaced by charter and private schools, a contextual feature that has little parallel in the US (Grau et al., 2018). While the empirical work there is solid and important the contexts are just too different for meaningful comparisons. A similar argument by Bifulco about the differing 'quality' of school closures is well taken (Bifulco & Schwegman, 2019). Not all closures are alike. Scholars should be careful when comparing studies with different contexts, policy designs, and implementations.

& Gwynne, 2009), and a few positive student achievement outcomes due to school closure (Brummet, 2014; Carlson & Lavertu, 2015, 2016; Kemple, 2015).

While at first these findings may appear to be contradictory, a closer inspection of the context and policy design helps reconcile these differences. Theory predicts that when displaced students are enrolled in higher achieving schools where closure may have a positive impact on the student. A complicating factor in synthesizing these results, however, is that the policy being studied corresponds to the methods used. Where districts made intentional decisions about closing schools based on a rubric with cutoffs, researchers were able to use quasi-experimental designs with higher levels of internal validity such as RD and IV (e.g. Bifulco & Schwegman, 2019; Carlson & Lavertu, 2015). In contrast, larger scale studies examining schools closed for a variety of reasons or those in districts that did not have an explicitly criteria for closure were forced to rely on difference-in-differences (DID) or matching to identify the closure effect (e.g. Brummet, 2014; Han et al., 2017). For these reasons, it is difficult or impossible to disentangle some of the methodological choice made by scholars from the policy context itself.

Studies finding a positive transition effect on displaced students have largely examined places where the policy design of school closure is focused on the lowest achieving school and students are directed into substantially higher performing alternatives. Carlson and Lavertu (2015) highlight the potential for school closure to improve student achievement in an analysis of eight Ohio urban areas where students in low-performing closing schools were directed to higher-performing receiving schools. The authors do not highlight their findings that are arguably more generalizable, which they conducted at the state level. These state level findings, which were buried in an appendix, showed that school closure has a net negative impact on

student achievement across the state. So, while under ideal circumstances closure can positively impact student performance, the overall impact on the state was negative.

Carlson and Lavertu (2016) also study closures of charter schools mandated by the state of Ohio (using a RD approach). Again, these closures targeted the lowest-performing schools and resulted in displaced students attending higher-quality programs. They found large and positive impacts of 0.2- 0.3 standard deviation increases in reading and math achievement growth, which they attribute largely to the receiving school of displaced students? (Carlson & Lavertu, 2016).

Like Carlson and Lavertu (2015), Kemple's (2015) findings show positive student outcomes due to school closure under perhaps the best possible circumstances. Closures in New York City were done carefully to minimize disruptions to displaced students and were targeted at the lowest-performing schools.

Despite finding positive effects of school closure, Brummet (2014) did not study school closure under the 'ideal' circumstances. Rather, he studied more than 200 school closures in Michigan which closed for unknown and variable reasons across many contexts. Still, he found gains for transferring students after an initial setback. He also found an offsetting peer effect among students in receiving schools whose achievement growth suffered because of lower-performing students transferring to their school. He concluded that "while closing low-performing schools may generate some achievement gains for displaced students, it is unlikely that these policies can improve average student achievement district-wide." These findings suggest an important nuance in the school closure debate. While school closure may function to improve student achievement at the district level, in the right context, with careful policy design, and committed implementation, it may fail to improve student achievement at scale.

Researchers at Stanford's Center for Research on Education Outcomes (CREDO) studied the impact of more than 1,500 school closures on student achievement across 26 states (Han et al., 2017). Although their identification strategy was somewhat lackluster (a virtual twin matching design), the size of their sample provides some of the most generalizable findings. They show that on average school closure negatively affected student achievement. Moreover, they also show that these results are driven by the quality of the receiving school where displaced students enroll. While those displaced students enrolling in superior schools increased academic growth, those that went to inferior schools saw large declines in growth.

Fading. A number of studies showed that the initial shock of school closure and transition may fade out over time (Larsen, 2014; Ozek et al., 2012; Marisa Torre & Gwynne, 2009). While the shock of the announcement and transition may negatively impact student achievement in the short run, some studies show that the long-term impacts become null (Ozek et al., 2012; Marisa Torre & Gwynne, 2009). Engberg et al. (2012) find no fading of the transition effect propagating the negative closure effect over time. Still another study by Stroub and Richards (2015) shows a more disturbing picture in which students' learning trajectories are permanently lowered.

Students in lower grades benefit more, or were harmed less, by school closure because they have more time to recover after the initial shock. Larsen's (2014) paper examining high schools showed fading. Because that shock occurred towards the end of his sample's K-12 academic career, some students never fully recovered from the initial school closure. Consequently, school closure negatively impacted the graduation and college attendance rates of the students in his sample by 10 and 3-4% respectively. Research on the long-term consequences of school closure is sparse, but Larsen's findings suggest possible long-lasting adverse student

impacts. Other studies showed that the learning trajectories of displaced students were flatter than those of students in the receiving schools suggesting that students may never recover from school closure shock (Stroub & Richards, 2016; Marisa Torre & Gwynne, 2009).

Receiving Students

While the primary emphasis of research on the student outcomes of school closures is estimating the effect on displaced students, receiving students may also be impacted. Peer effects work both ways. While low-achieving students may benefit from school closure by being in classrooms with relatively higher-achieving peers, the reverse is also true: receiving students may be academically harmed by the peer effects of lower-performing displaced students. Alternatively, spillover effects of school closure may manifest as a result of how the receiving schools adjust to new students (Bross et al., 2016).

The literature examining the impact of school closure on receiving students is smaller than that on displaced students (e.g. Bifulco & Schwegman, 2019; Brummet, 2014; Engberg, Gill, Zamarro, & Zimmer, 2012; Gordon et al., 2018). Most studies seem to suggest a negative spillover effect due to school closure (Brummet, 2014; Gordon et al., 2018; Larsen, 2014) with others finding null results (Bifulco & Schwegman, 2019; Engberg et al., 2012).

Research has also displayed the heterogenous impact of school closure by student characteristics as well as the conditions under which these relationships exist. In many instances, differences between research context, policy design, and implementation help explain the substantive gaps between research findings. In short, while under the right conditions closure can improve student achievement, in practice, it often hurts the most vulnerable students and communities. This is largely because displaced students typically do not transfer to significantly better schools (Han et al., 2017).

Future students

The number of displaced students is limited; the number of future students, however, is likely much larger. Even if there are small gains for future students because they attend a different school, those gains may occur for cohorts of student's years or decades after the closure. At the same, when a school is closed, the enrollment composition of other schools also changes. While scholarship on displaced students is well developed other groups of receiving and future students need more study to understand the holistic impact of school closure on the educational environment for those that see the downstream consequences of closure.

Two studies have examined the academic effects for future students who never attend a school because it closed (Bifulco & Schwegman, 2019; Kemple, 2015). Both studies are within the context of New York City, which specifically targeted the lowest-performing schools for closure and funneled displaced students into better schools. Kemple (2015) found that future students improved performance due to closure while Bifulco and Schwegman (2019) found mixed evidence. While high-performing students benefited from the closures, low-performing students were academically hurt. Despite the high methodological rigor of these studies their external validity is limited by their context. New York City is a system of education quite unlike most in the United States. Even when policy is designed to direct students into higher-quality schools, research provides mixed evidence.

Non-academic Outcomes

Far less research has studied the non-academic outcomes of school closure than the academic ones. What research does exist is largely associative (e.g. Engberg, Gill, Zamarro, & Zimmer, 2012; Kirshner, Gaertner, & Pozzoboni, 2010; Larsen, 2014). Studies have researched absenteeism, student relationships, school travel, and extracurricular activities.

One study found that absenteeism for displaced students increased by 13% in the first year of the transition, (Engberg et al., 2012). Like some findings of academic outcomes, however, the absenteeism effect faded out over time. Similarly, Larsen (2014) found that closure decreased attendance by 3.2 percentage points. He hypothesizes that increased school travel time may be one potential reason for increased absenteeism. In fact, school closures do typically increase the amount of time it takes students to get to school (Killeen & Sipple, 2000; Lee & Lubienski, 2017; M Torre et al., 2015). Moreover, travel time, by definition, reduces the amount of time students can spend on other more productive activities. Consequently, increased travel time may reduce uptake in extracurricular activities. Some research has shown that after closure, students participate less often in these activities (Graham et al., 2014; Lipman et al., 2014).

Finally, qualitative work has shown that school closure can fracture student/teacher relationships (Deeds & Pattillo, 2015; Gordon et al., 2018; B. Kirshner et al., 2010; Lipman et al., 2014) and that school closure can negatively influence sense of belonging and increase stress in students (Lipman & Person, 2007). Many of the findings here among absenteeism, travel time, extracurricular participation, and student relationships appear linked. Yet, it is unclear how this fuller environment of student outcomes functions, whether there are identifiable causal pathways, or whether closure results in an endogenous system of disruption.

Moderators

A moderating variable *z* effects the strength of the relationship between a dependent variable *y* and an independent variable *x*. The extant literature suggests that several features of context moderate the relationship between school closure and student outcomes. Potential moderators include student characteristics, grade level, and community type.

Some studies have highlighted that school closure may have differential effects by student sub-groups (Bifulco & Schwegman, 2019; Han et al., 2017; Ozek et al., 2012; Marisa Torre & Gwynne, 2009). In this way, a students' race, socioeconomic status, or achievement level may moderate the effects of school closure. While Bifulco and Schwegman (2019) find no net school closure effect for displaced student, they do find impacts when disaggregated by baseline achievement levels. While high-performing students transferred into superior receiving schools thereby experiencing larger achievement gains, lower-achieving students typically transferred to similar or lower-performing schools resulting in lower achievement gains than expected. The CREDO study (2017) also found differential impacts based on student characteristics. Black students, low-socioeconomic status black students, and white students all performed lower than their virtual twin in non-closed low-performing schools (though the effect sizes are rather small, all under 0.02 standard deviations). Other groups performed about the same as their virtual twin.

Together, these findings suggest a troubling reality that seemingly small effects sizes produced by many school closure studies may obscure negative impacts on the most vulnerable student populations. There are two possible explanations for these findings. First, more privileged students may be better able to cope with the transition from their closed school to their new school due to social and economic support systems outside the school system. Second, in systems which provide families with a great deal of choice and which do not direct low-performing students that experience closure to higher achieving schools, students may self-sort by achievement level and thus aggravate the achievement gap. Regardless of the underlying cause, these findings pose a potentially serious policy trade-off where school closure may boost achievement for already high-scoring students and suppress it for lower performing students.

As noted earlier, one repeated finding in the literature is that school closure results in a negative shock to displaced students, but that effect often fades out over time (Larsen, 2014; Ozek et al., 2012; Marisa Torre & Gwynne, 2009). As Larsen (2014) showed, however, if a high school is closed, students may not have enough time to catch up. Thus, the grade level of the closed school may moderate the relationship between closure and student outcomes based on the number of years students have to recover.

Community type might also moderate the effects of school closure (i.e., urban, suburban, or rural). Most of the research on this topic studies closure in an urban context (e.g. Kemple, 2015; Torre & Gwynne, 2009). It is worth noting that the two studies that looked across multiple contexts found net negative effects of closure (Brummet, 2014; Han et al., 2017). The evidence, however, is unclear. It is possible that community type may moderate the closure effect, but this should be understood as a hypothesized moderator, not an established finding.

Mediators

Mediating variables are the mechanisms by which a policy effects an outcome of interest. The most important mediator of school closure on academic achievement is the quality of the receiving school displaced students attend. The research consistently shows that positive student outcomes are likely to occur if a student attends a higher-performing receiving school (e.g. Bross et al., 2016; Engberg et al., 2012; Han et al., 2017; Stroub & Richards, 2016; Marisa Torre & Gwynne, 2009). Bross et al. (2016) who study school closure and charter takeover in New Orleans and Baton Rouge find different results in each city greatly dependent on the quality of receiving school. While students transferred to better schools in New Orleans resulting in positive closure effects, Baton Rouge students did not, leading to negative academic outcomes.

Bross and colleagues conclude that “the benefits for students are seemingly proportional to the school quality improvement they experience.”

Unfortunately, even when the policy design of school closures is aimed at increasing student performance, often displaced students do not end up going to better schools (Ewing, 2018; Han et al., 2017; Sherrod & Dawkins-Law, 2013; Marisa Torre & Gwynne, 2009). The CREDO study, which is most generalizable because of its large sample covering over half the country, found that less than half of displaced student ended up attending an academically superior school. Additionally, they found that students who attended a superior receiving school saw a boost of 0.03 to 0.09 standard deviations in academic achievement gains. Conversely, students that went to inferior receiving schools saw larger declines between 0.07 to 0.19 standard deviations (Han et al., 2017). On the whole, researchers agree that when students attended a worse performing school than the one they were displaced from, their academic growth was often poorer than had the school not closed (Engberg et al., 2012a; Han et al., 2017). Only one study questioned the finding that superior receiving schools improved performance, producing mixed to null effects (Larsen, 2014).

Student dislocation also mediates the effects of school closure on student outcomes. Research suggests that closure is better (or perhaps less bad) when it minimizes disruptions to students (Bross et al., 2016). These findings mirror the consensus in the student mobility literature that dislocation negatively impacts students outcomes (e.g. Hanushek et al., 2004).

Using survey data, interviews, and a focus group, Kirshner and colleagues (2010) studied how students experienced school closure. Their findings show that students had strong teacher and peer relationships in their former school and experienced severe disruption to these networks once it was closed. At the receiving school, students found it hard to fit in and felt that they were

being stereotyped because they had attended the school that had closed. Similarly, Lipman & Person (2007) show how an influx of students due to school closure can change a school's climate and culture negatively affecting classroom instruction, safety, and discipline.

Studies of phase-out closures have tended to show more positive student outcomes than immediate closure (Bifulco & Schwegman, 2019; Kemple, 2015). By slowing down the process of closure, phase-out policies can soften the impact by promoting a smooth transition from the closed to receiving school. These underlying mechanisms behind the "school closure effect," or rather effects, are important to understand because they highlight the ways differences in policy can impact students. While school closure in practice tends to be somewhat harmful to student, better policy can mitigate, or in some contexts, reverse those impacts generating achievement gains. While school closure can improve student performance under the right context and policy conditions it is limited in its capacity to positively boost student achievement at scale.

What Happens to Communities when Schools Close?

The research investigating the relationship between school closure and student achievement is well defined and sophisticated methodologically, resulting in nuanced yet clear findings. The extant research on the community consequences of closure, however, is much more diverse in perspective, method, and context. In some cases, the positivist paradigm is rejected for interpretive and/or critical perspectives. This diversity provides both benefits and drawbacks. Whereas this literature broadens the conceptual understandings of the phenomenon of school closure it can also be difficult to synthesize the findings since the outcome of interest, focus of research, and methods often vary considerably from study to study. Still, this literature provides a necessary base of knowledge on the reactions to school closure as well as social and economic outcomes.

Reaction to Closure

Survey research has consistently shown robust support for public schools as well as antipathy to perceived threats (Henig, 1995; Howell & West, 2009; Jacobsen & Saultz, 2012). In practice, communities have often opposed and resisted school closure (DeYoung, 1995; Jack & Sludden, 2013; Lipman et al., 2014; Lipman & Haines, 2007; Sell & Leistritz, 1997; M Torre et al., 2015). While surveys clearly show broad public support for public schools, the criteria by which communities value schools, and their closure is less clear. In contrast to the quantitative focus on achievement measures, one of the main themes of this literature is the recognition of schools as social institutions with a broad range of outcomes.

Communities may oppose closure because of inconvenient travel time (M Torre et al., 2015), loss of staff relationships (B. Kirshner et al., 2010; Post & Stambach, 1999), lack of democratic participation (Lipman & Haines, 2007), or perceived racism (Briscoe & Khalifa, 2015; Ewing, 2018). Moreover, the process by which a school gets closed is inherently linked to how stakeholders understand closure, what their reaction to the decision is, and the ultimate consequences of the policy.

Perspectives on Closure. Research has shown that closure is a subjective and an interpretive enterprise, shaped by race, class, and politics (Deeds & Pattillo, 2015; Good, 2017; Valencia, 1984). "Failure" is often the ostensible reason for closure. Yet, "failure" itself is a also a subjective process that varies based on perspective (Aggarwal et al., 2012). So, while district administrators may see low test scores, underutilization, or finances as the basis for school closure, families may see the school as a successful resource in their community (Deeds & Pattillo, 2015). Deeds and Pattillo (2015) phrase it this way:

> Although schools are certainly places of learning for students, they are also places of employment for teachers and noninstructional personnel; physical plants that districts must manage and maintain; public organizations supported by local, state, and federal funds; and places that parents use for child care. Given this context, it should come as no surprise that schools are subjected to more than one evaluative criterion to determine value and success.

Schools are not just places of education but also physical assets, emotional support, and informational resources to parents and community members alike (Witten et al., 2001). Given this difference in perspective on the value of public schools, it is understandable why community members would resist closure even when policymakers consider the school to be a "failing" institution.

Studying an elementary school closure in Newark, Deeds and Pattillo (2015) follow 13 teachers and 18 families as they experience closure. The school served the community for over 100 years enrolling a student population that was almost 100% black and eligible for free or reduced-price lunch. Using an institutional pluralism framework, they uncovered the different criteria by which stakeholders valued schools. While administration valued test scores, building utilization, and costs, teachers thought the school had been showing steady improvement and worried about losing their jobs along with their community and social support. Students were worried about losing their relationships with peers and teachers. Parents saw the school as stable, familiar, safe, and convenient, which if gone, would disrupt their daily lives (Deeds & Pattillo, 2015). These different frames were antagonized by miscommunication between administration, teachers, and parents resulting in demoralization. Deeds and Pattillo's (2015) study succinctly convey many of the reoccurring themes that emerge from the literature on this subject.

One of the most compelling findings from this literature is the contrasting ways in which school district leaders and community members conceptualize schools. While teachers, parents, and students tended to understand schools as community institution with a broad range of goals, administrators were narrowly focused on achievement along with secondary goals such as student behavior, building utilization, and cost (Briscoe & Khalifa, 2015; Deeds & Pattillo, 2015; Vaughan & Gutierrez, 2017). Administrators also leaned on "objective" forms of knowledge and dismissed community members frames for understanding and valuing their schools (Briscoe & Khalifa, 2015; Vaughan & Gutierrez, 2017).

Differences in conceptual frames around the purposes of schools as institutions create the foundation for conflict between district leaders and community members. Research shows that miscommunication further fueled tension between those responsible for closure and those experiencing it (Ayala & Galletta, 2012; Briscoe & Khalifa, 2015; Deeds & Pattillo, 2015; Irwin & Seasons, 2012; Vaughan & Gutierrez, 2017). In some cases, it was not clear whether district leaders were miscommunicating with the public or engaging in a strategy of intentional deception or obfuscation (e.g. Kretchmar, 2014). In fact, research shows that attempts by districts to avoid an authentic democratic decision making process enraged community members (B. Kirshner et al., 2010; Ben Kirshner & Pozzoboni, 2011; Pappas, 2012; Valencia, 1984; Witten et al., 2003). In some cases, district leaders attempted to circumvent the democratic process by appealing to "objective" measures (Briscoe & Khalifa, 2015; Finnigan & Lavner, 2012; Vaughan & Gutierrez, 2017) relying on overly formalistic bureaucratic processes for communication (Briscoe & Khalifa, 2015; Finnigan & Lavner, 2012), exclusive committee membership (Finnigan & Lavner, 2012), and creating symbolic processes with no real power (Kretchmar, 2014). Regardless of intention, many studies report that stakeholders feel excluded from the

school closure decision making process (Bard et al., 2006; DeYoung, 1995; Ewing, 2018; Gaertner & Kirshner, 2017; Ben Kirshner & Gaertner, 2015; Lipman et al., 2014; Siegel-Hawley et al., 2017; Vaughan & Gutierrez, 2017)

Finnigan and Lavner (2012) worked to understand community participation in the school closure process in one anonymous urban district. They note that:

> While School Board members recognized that certain community members were disenfranchised, little was done to enlist their involvement. To move beyond symbolic attempts at political participation, districts … may need to find additional ways of seeking input and making the 'rules of the game' transparent. Distrust and detachment from schools will persist until all community members perceive that their voices will be heard. (Finnigan & Lavner, 2012)

This was especially apparent when the closure process excluded poor and non-white community members (Ayala & Galletta, 2012; Briscoe & Khalifa, 2015; Finnigan & Lavner, 2012; Kretchmar, 2014; Lipman & Haines, 2007). Green (2017) poses school closure as "a manifestation of structural racism" because the impacts on students of color, often in low-income neighborhoods is the greatest.

This notion, that a person's race helps construct their understanding of school closure is supported by a survey of attitudes in Chicago (Nuamah, 2017). Nuamah found that whites expressed high levels of support for closure despite not experiencing it as often as other groups. At the same time black and Latino people, who experience school closure more often purported low levels of support. Interestingly, race was a stronger predictor of closure attitudes than actually experiencing a closure. In the full model, being a parent and living in a neighborhood threatened by closure was not significantly related to attitudes towards school closure. Rather,

race and low-income status (under $50,000) were most strongly associated with opposition to closure (Nuamah, 2017). The findings on stakeholder frames, from both survey data and interviews seems to show that an individual's perspective on closure is driven by two characteristics: their position to the school (i.e., administrator, teacher, parent, student, or community resident), and their position within society (i.e., race and socioeconomic status).

Another potential reason for deep reactions against school closures is that community members often see closure in a longer historical frame (Ayala & Galletta, 2012; Briscoe & Khalifa, 2015; Vaughan & Gutierrez, 2017). Viewing failure of schools through an ahistorical lens ignores the conditions under which school were allowed, or perhaps designed, to fail (Green, 2017). From the perspective of non-white community members, the closure of a school often is not considered a single act, but one act in a history of disinvestment and oppression. In fact, the race of individuals helped shape their conceptual frames in understanding school closure with black and Latino families often seeing closure as a consequence of racism (Briscoe & Khalifa, 2015; Vaughan & Gutierrez, 2017). Thus, the literature here suggests that an individual's understanding of school closure is shaped by both their relation to the school (e.g., student, parent, teacher, administrator, or community member) and by their macro-sociopolitical power (i.e., race, gender, and socioeconomic status).

Resistance to Closure. The qualitative literature documents a diverse array of methods community members use to resist school closure. Perhaps the most common mode of resistance was to show up at school board meetings (e.g. Briscoe & Khalifa, 2015; Green, 2017; Kretchmar, 2014). Mass demonstrations were also common in urban areas (Ewing, 2018; T. Green, 2017; Jack & Sludden, 2013; Lipman et al., 2014; Siegel-Hawley et al., 2017; M Torre et al., 2015). Some forms of protest were more severe with parents, grandparents, teachers, and

other community members resisting 50 school closures in Chicago by conducting a 34-day hunger strike (Vaughan & Gutierrez, 2017). Other research finds community members attempt to influence the closure process in more nuanced ways. High-income individuals were more effective at influencing school closure decision making through formal and informal, but relatively congenial methods, whereas lower-income people partnered with external groups to put pressure on school leaders (Finnigan & Lavner, 2012).

Despite the variety of methods, resistance against school closure rarely results in non-closure. Work examining district consolidation shows that historically resistance rarely succeeded (Monk & Haller, 1986; Peshkin, 1982; Tyack, 1974). Still, there are some examples in the literature where a school closure decision was reversed because of resistance. For example, Green (2017) found that strong social networks and social capital within a broad-based community coalition enabled stakeholders to effectively advocate for the reopening of a high school. While they were ultimately successful, the process took more than five years and was extremely difficult.

Not all community members threatened by school closure opposed it. Parents experiencing school consolidation in rural Nebraska were supportive of consolidation because they perceived it benefitting their children academically and athletically. Despite perceived educational benefits, residents were still concerned with the prospect of losing an important community institution (Surface, 2011). When community members opposed closure, not all district leaders reverted to exclusionary practices. Indeed, some districts have organized substantial community input by putting closure to a public vote, holding meetings, or forming local councils (DeYoung, 1995; Ewing, 2018; Good, 2017; Hyndman et al., 2010; B. Kirshner et al., 2010; Kretchmar, 2014; Pappas, 2016)

When schools close, students, parents, teachers, and community members may attempt to resist closure. While this resistance almost invariably fails, the way it fails matters. If community members are allowed a voice and feel heard, the trauma associated with the loss of a community institution can be mitigated. The impact of school closure on neighborhoods during the closure decision-making process is only the beginning. Social and economic consequences of school closure play out in the years after the building is shuttered.

Social Outcomes

While qualitative work has explained the process of and responses to school closure from the perspectives of different stakeholders, less work has addressed the community consequences after closure occurs (Tieken & Auldridge-Reveles, 2019). Research documenting the social and political drama that often unfurls during the school closure decision making process provides necessary context for future study. In comparison, the long-term community consequences of closure have proven more difficult to capture. Much of the research studying the broader social outcomes of school closure employ a case studies approach on a relatively narrow time between the announcement of a closure and the transition to a new school. Typically, these studies examine no more than three years and often focus on perspectives of students, parents, and teachers (e.g. Deeds & Pattillo, 2015; Lipman & Haines, 2007; Witten et al., 2001). Still, this developing line of research provides some initial evidence on the social outcomes of closure.

The research that does exist shows that schools are important community institutions, often acting as hubs in community networks, serving as venues for social interaction and thereby helping cement place-based community groups (e.g. Deeds & Pattillo, 2015; Jaquelyn Oncescu & Giles, 2014; Witten et al., 2007). When open, schools can provide a diverse set of assets including emotional support, informational resources, and economic stability to students, parents,

and community members alike (Witten et al., 2001). Closure can fracture communities through a process of "slow violence" (Aggarwal et al., 2012). These consequences are emotional but also tangible. After closure, research has shown that families can feel socially excluded and experience economic difficulties having to do with transportation and paying for school supplies Witten et al., 2001, 2003, 2007).

Negative feelings towards school closure often manifest as declines in community participation In rural communities, scholars have shown that school closures can destroy relationships vital for community life (Blauwkamp et al., 2011) and is associated with lower levels of participation in community organization (Post & Stambach, 1999), decreased sense of community (Jacquelyn Oncescu & Giles, 2012), and declining social cohesion (Egelund & Laustsen, 2006; Witten et al., 2001).

In a series of studies, Oncescu and Giles capture the impact of closure on non-parent adult residents in one rural Canadian town outlining how resilience may help rebuild communities after their school is closed (Jacquelyn Oncescu, 2014; Jacquelyn Oncescu & Giles, 2012; Jaquelyn Oncescu & Giles, 2014). They find that closure impacted adults without school-aged children in three ways: closure (1) lessened individuals' sense of community, (2) produced fear for the communities' future, and (3) motivated community members to rebuild social infrastructure through other channels (Jacquelyn Oncescu & Giles, 2012). The school closure was difficult, but because the community was resilient they found ways to mitigate the loss through recreational activities and repurposing the closed school building (Jacquelyn Oncescu, 2014). So, while school closure represented a community threat and removal of an important institution, aspects of resilience and response to closure may partially counteract the negative social consequences of school closure. While this case study produced theoretically intuitive

findings this research, and most others in this vein, only investigated the social impacts of closure over a short period of time after the building is shuttered providing little evidence on the long-term consequences.

While the short-term impacts of school closure are well documented in the empirical literature only a handful of scholars have studied neighborhoods over the long-term (e.g. Ayala & Galletta, 2012; Surface, 2011). In one of the only studies of the long-term community consequences of school closure, Surface (2011) showed that multiple rural Nebraskan communities experienced social decline post closure. After the school closed due to district consolidation, social capital declined sharply due to lost community events and traditions. (Surface, 2011). A study revisiting the neighborhood where a school closed ten years prior showed that "survivors" of closure may undergo grief similar to bereavement (Ayala & Galletta, 2012; Doka, 2011) and that closure can leave "ghosts of institutional memory" that remain dormant but which can arise when triggered through conflict or community trauma (Ayala & Galletta, 2012).

The preliminary findings of research studying the short-term social outcomes of school closure seem to negatively impact communities in a variety of ways. While the long-term study of school closure is even less well developed than short-term studies, this research seems to suggest that the initial impacts of closure on communities may develop and change over time. Unfortunately, these studies are of varying quality with different measures of outcome, context, and policy being studied making it difficult to surmise any solid conclusions from this literature other than closure likely has some negative social impact on communities. Future research might benefit from studying closure over a longer period and investigating more "objective" or tangible measures of community health using quantitative data to augment this qualitative literature.

Economic Outcomes

While qualitative research excels at generating new theories and conceptualizations about how a phenomenon might work, quantitative analyses on financial data provide a tangible hold on intuitive outcome measures. While the research on the economic impact of school closure is quite thin, it provides a set of useful methods that might be employed in future work.

Schools may play an important role in local economies and may damage the local community when closed. Unfortunately, the research on the economic consequences of school closure is limited. What does exist can be split into two categories. First, a small set of studies look to investigate the relationship between school closure and/or district consolidation on broad measures of economic development such as retail sales, income inequality, and payroll. This set of work is correlational without convincing causal relationships. The second set of studies uses capitalization methods to understand the role of public goods on private home values. While the research in this literature provides promising examples of what may be done in the future, there has been no research that has explicitly estimated the capitalization of school closure into housing values with modern identification strategies.

Research suggests that school closure is broadly associated with community economic decline. A number of studies have showed that rural school closures can have a negative impact on economic stability because when the school is closed, events and activities that used to bring people into the community and generate economic activity no longer do (Bushrod, 1999; Kearns et al., 2009; Martz & Sanderson, 2006; Witten et al., 2001). Studying six rural counties in Minnesota, Sederberg (1987) discovered that schools made up between 4 and 9% of payroll and between 1 and 3% of retail sales could be traced to district expenditures. Similarly, Petkovich and Ching (1977) used a survey of rural communities to show that high school closure reduced

retail sales by 8%. Lyson, studying rural communities in New York, found that the presence of a school was associated economic benefits including, housing values, infrastructure, occupations, income inequality, and welfare uptake (Lyson, 2002). While the research studying school closure and district consolidation on economic activity in the local community is thin, what extant literature does exist suggests some potentially broad and serious threats to a community's economic wellbeing.

The second set of studies uses capitalization methods to understand the relationship between public goods and private home prices. The study of capitalization of public goods or services into housing value has a long history in both education policy (Nguyen-Hoang & Yinger, 2011) and social science more broadly (Rosen, 1974). House prices can be understood as the sum of the quality of the physical aspects of the home itself and the neighborhood, including public services within that neighborhood. In this way, home prices can be used as a proxy measure for neighborhood vitality. Essentially, capitalization methods are used to estimate the social value of a public good as reflected in the prices of the housing stock.

Capitalization has been used widely in social science to evaluate the social cost/benefit of public services. Most research in the field of education policy employing capitalization methods examine the impact of school quality (i.e. test scores or test score growth) on residential property value (e.g. Nguyen-Hoang & Yinger, 2011; Wen, Xiao, & Zhang, 2017). This literature is well established and has produced consistent outcomes: school quality impacts housing value with higher achieving schools increasing demand, and therefore prices, in the accompanying housing

stock.[13] While this literature does not explicitly acknowledge school closure, it provides useful methods to assess the valuation of public assets.

Significantly less attention has been paid to the impact school closure may have on residential property values. Johnson (1978) made one of the first attempts to study the property value effects of school closure when Seattle closed several elementary buildings. To do so he compared four closed schools with similar schools that remained open. He found no evidence of community deterioration associated with closure or property value decline but did little more than a tabulation on a particularly small data set by modern standards.

Colwell and Guntermann (1984) attempted to estimate the capitalization of a neighborhood public school closure on residential properties. Despite this intriguing premise, these scholars did not actually examine school closure. Rather, they evaluated how housing prices vary by the distance from schools (conditional on covariates). They then extrapolated these findings to produce an estimate of the total neighborhood decline in home values for a theoretical school closure. They found a decline in total property value for the 2,003 houses in the neighborhood to be about $2.6 million or about a 4.5% decline in property value for the neighborhood in total. While Colwell and Guntermann asked an interesting question, their methods and data, which only covers some 1,044 property sales surrounding eight schools is underwhelming, providing unclear evidence on the capitalization of school closure.

Other scholars have used more advanced methods to study topics with similarities to school closure capitalization. Bogart and Cromwell (2000) attempted to estimate the

[13] Nguyen-Hoang and Yinger (2011) provide a comprehensive review of the methods and results of this literature between 1999 and 2011. There have also been a number of school quality capitalization studies since 2011 (e.g. Dhar & Ross, 2012; Gibbons, Machin, & Silva, 2013; Imberman & Lovenheim, 2016; Jacobson & Szczesek, 2013; La, 2015; Schwartz, Voicu, & Horn, 2014; Wen, Xiao, & Zhang, 2017).

capitalization of redistricting in the Cleveland area. The authors operationalized redistricting as a change in the school's composition whereas the school would no longer exclusively serve resident students and would undergo substantial change in racial composition due to bussing. Using a difference-in-differences approach they showed that the redistricting of a neighborhood school was associated with a 9.9% reduction in house price.

Hu and Yinger (2008) studied the capitalization of district consolidation in New York State on housing prices using first differencing and 2SLS between 1990 and 2000. They found that consolidation increased home values by about 25% in very small districts, but that the effect declines with enrollment and becomes indistinguishable from zero at about 1,700 pupils. At the same time, district consolidation had a negative impact for the highest value properties. Like Bogart and Cromwell (2000), Hu and Yinger provide interesting evidence on consolidation but it is not clear if their findings apply in the case of school closure.

Scholars have hypothesized that closure negatively impacts housing value but there has been little attempt to estimate the effect (Lyson, 2002; Lytton, 2011). What research does attempt to estimate the capitalization of closure into housing values is old and uses unconvincing methods (Andrews, 1974; H. Johnson, 1978). For example, Johnson simply compared the property values in a single neighborhood with a closed school to a single neighborhood with an open school. While his design was reminiscent of a difference-in-difference strategy, regression was not employed, and no controls were used. The capitalization of school closure into housing value is a major gap in the literature that may provide community stakeholders with a quantitative way to show how communities are impacted by closure. Modern data and methods can update this literature and deliver potentially meaningful quantification of a ubiquitous concern of residents threatened by school closure.

The relationship between school closure and residential housing values is an interesting question because housing sales provide a tangible and reliable measure of one aspect of community vitality. Despite this potential, the research on this topic is severely underdeveloped with a few older studied examining the topic with poor methods and more modern studies looking at different, though related, policy contexts.

Summary of Literature Review

The literature on school closure is as diverse in method as it is in topic. Several conclusions from this literature are important to note. First, the benefits of school closure are limited. What little research exists examining the question of whether school closure saves financial resources is mixed showing little savings due to building closure and low resale values. The research on the achievement effects of school closure is much more developed. The conclusions, however, are quite similar. While school closure can improve academic achievement when closures are carefully designed to do so, routine closure generally do not produce meaningful achievement benefits across students in a district.

Second, research examining the community consequences of closure show that shuttering a school can have both broad and deep effects. Almost all the research on this topic is qualitative. Additionally, most of this research focuses on a relatively short time period around the closure and on the experiences of students, parents, and staff—but not the broader community. Very little research exists using quantitative methods to measure the impact of school closure on communities or qualitative methods to examine the long-term impact of school closure. This dissertation works to fill that gap in the literature.

Chapter 3: Methods

The literature review in Chapter 2 reveals two gaps in the literature on school closure, which this dissertation aims to fill. Specifically, this dissertation studies two research questions:

1. How does school closure impact property values of proximal homes?
2. How do neighborhood residents experience school closure and reuse over the long run?

I answer these research questions using mixed methods. Before describing the quantitative and qualitative methods respectively, I develop a conceptual framework to guide the inquiry theoretically and provide a description of the study context (Lansing, Michigan).

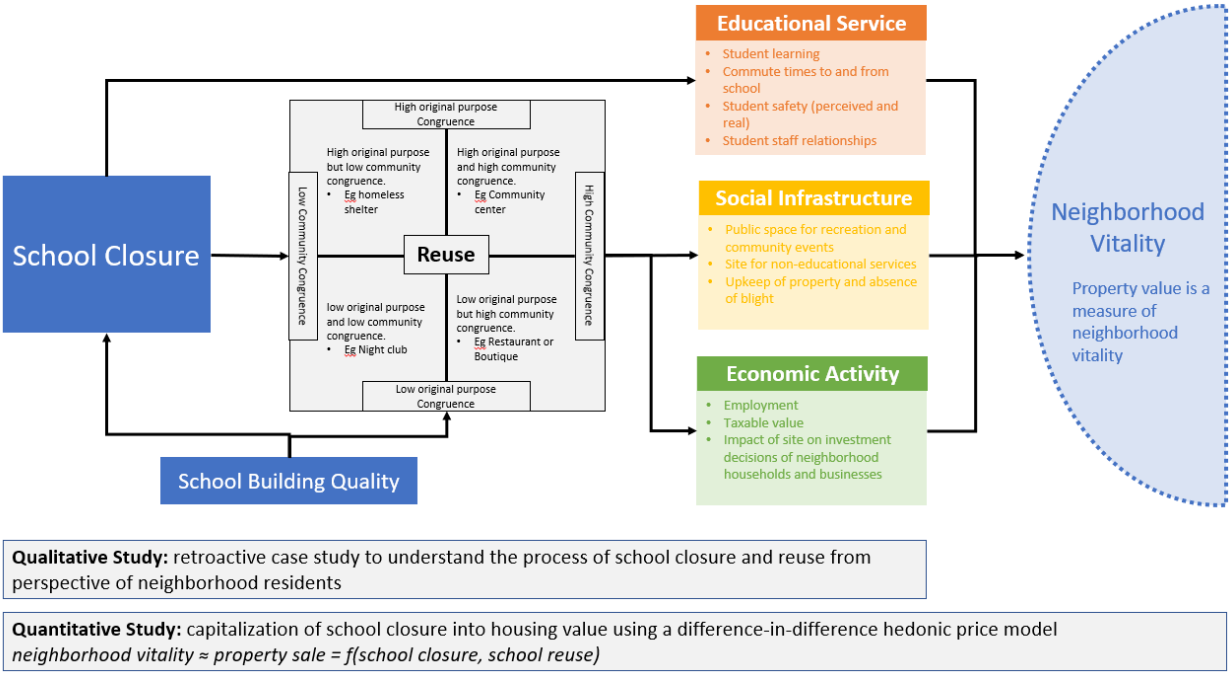
Conceptual Framework

The literature in chapter 2 informs a conceptual framework that, in turn, informs both the quantitative and qualitative methods of this dissertation. The conceptual model in Figure 3.1 hypothesizes that school closure impacts a neighborhood's educational services, social infrastructure, and economic activity and that these consequently shape the vitality of the neighborhood. In other words, these concepts of the change in educational services, social infrastructure, and economic activity moderate the relationship between school closure and neighborhood vitality. The model also hypothesizes that the quality of the school building and the reuse of the that building after it is shuttered also plays a moderating role. This dissertation does not investigate every aspect of this conceptual model; rather, it uses the theoretical framework to guide the empirical inquiry. The remainder of this section describes each components of the conceptual model in Figure 3.1.

This work uses mixed methods. The conceptual framework below is designed to accommodate both inductive qualitative and deductive quantitative methods. The quantitative portion aims to estimate a causal relationship between school closure and housing values. The

qualitative research looks to understand the long-term process of school closure and reuse from the perspective of neighborhood residents. In this way, both modes of inquiry are designed to generate complimentary findings and lead to a deeper understanding of how school closure impacts communities.

Figure 3.1: Conceptual Model



Note. Reuse matrix reproduced from Simons et al., 2016

School Closure

Despite its intuitive meaning, school closure has been operationalized in the academic literature in conflicting ways. In this work, reforms that change the organization or governance of a school site but do not close the physical site as a place of education such as, school turnaround, reconstitution, restart, transformation, and takeover, are not considered school closures. While these reforms are important and worthy of study, they are primarily reorganizations of school staffing not the removal of the school as an institutional asset in the neighborhood.

Most districts at one time or another decide to permanently shutter a school building. These "routine" closures have received relatively little study. For these reasons, I define "school closure" as occurring when a building transitions from a place of direct instruction to another use or non-use. This narrower conception of school closure is taken to focus attention on schools as physical social institutions with potentially broad social outcomes.

Neighborhood Vitality

Neighborhood vitality is easily intuited yet difficult to define. The concept has been operationalized in different ways by researchers. Measures for neighborhood vitality have included composite census metrics, economic data, demographic trends, and housing value (University of Pennsylvania Social Impact of the Arts Project and Reinvestment Fund, 2016). While these various measures each capture some aspects of neighborhood vitality they are lacking as measures. Alternatively, neighborhood vitality might be better thought of as an emergent or latent construct born from an ecology of factors that bring about vibrant places of residence.

In this dissertation, neighborhood vitality will be measured using capitalization of public goods (i.e., the school) into housing value. This measure of neighborhood vitality, like others, is imperfect. Still, home values are a reasonable measure. As noted earlier, capitalization methods have a wide use in the social science research. Neighborhood property sales reflect or proxy neighborhood vitality because the price of residential properties captures both the quality of the home and other amenities in the area. By controlling for the quality of the home, property value can be used to measure the externality generated by the school closure.

Educational Service

Access to education is perhaps the most overt benefit a school provides to a neighborhood. As addressed in the literature review, school closure can have negative consequences for student learning. The quality of the receiving school and level of dislocation experienced by students play important mediating roles in this relationship. Closure, however, may influence education in neighborhoods in other ways as well.

While no student loses access to education altogether when a particular building is closed, access location may have important consequences to students and communities. Research suggests that parents and students often oppose closure because of inconvenient travel time (M Torre et al., 2015), and loss of staff relationships (B. Kirshner et al., 2010; Post & Stambach, 1999). Increased transportation times induced by school closure may negatively impacts parents and students. Longer travel times may impact the ability of students to participate in before and/or after-school activities. Additionally, changes in student catchment zones due to school closure, may shift parental perceptions of the academic quality or safety of the new school their child attends. This in turn could result in parental dissatisfaction and neighborhood exit. Alternatively, changes in catchment zone could direct students into safer and more rigorous schools generating increased parental satisfaction.

Social Infrastructure

Social capital is a powerful concept in the social science literature. Unfortunately, the idea is often conceptualized aspatially. Social capital arises from interactions between people in specific places. In this way, schools may act as *anchor institutions* or what Klinenberg (2018) calls *social infrastructure*. That is, schools are venues for social capital formation, which anchors communities and promote neighborhood vitality (Clopton & Finch 2015; Kearns et.al. 2009).

When open, schools are inherently social institutions acting as important venues for social interaction. These interactions can take place during athletic events, casual parent conversations, community meetings, in green spaces/parks that often accompany public schools, or a host of others. When closed, schools may retain some or all these venues depending on the reuse of the property. These social interactions might not occur if a school is located outside of the neighborhood. Schools provide meeting spaces promoting the formation of neighborhood organizations that would be difficult without access to the physical infrastructure schools provide, especially in the most disadvantaged places where few alternatives exist.

Economic Activity

Economics and education policy research has established education's role in producing human capital that benefits individuals in the labor market and fosters economywide growth (Schultz, 1971). Schools, however, also play other, more immediate, roles in the economies of local communities. School districts are typically among the largest employers in any local community. As a result, districts have large payrolls supporting many stable middle-class and working-class families. Depending on how many staff are retained after a school is closed there may be reductions in the district's total payroll. This reduction in payroll may decrease the economic activity in the local area. Even if district-wide payroll is not substantially reduced, businesses nearby a closed school may experience declines in sales as school employees, parents and students shift to another school location. Still, decline of traffic in one neighborhood, likely led to increased traffic in the receiving school neighborhood.

Schools might also be conceptualized as amenities drawing people into the community (Cucchiara, 2013). This notion of a school is not unlike a park, museum, or other public infrastructure. School closure then may also be a signal of disinvestment. When a school is

closed, residents and business owners may understand the decision as a sign of neighborhood decline and governmental disinvestment. Disinvestment through school closure may make businesses less likely to invest in the neighborhood. Conversely, if a school property is repurposed in a way that is beneficial to a neighborhood, residents may gain value from the reuse and/or see it as a positive signal of investment and growth in the neighborhood.

Building Reuse

What happens to schools once they are no longer schools likely plays a role in the relationships between school closure and how that school property impacts social infrastructure and the economic activity of a neighborhood. Simons and colleagues (2016) provide a helpful conceptual framework to understand the relationship between communities and reuse of schools (or other community institutions). There model is reproduced and contextualized within the "reuse" portion of Figure 3.1. Simons et al. hypothesize that the reuse of a school facility can be understood through congruence with the original purposes of the building and congruence with the needs of the local community. In this framework, original purpose congruence is when the reuse replicates some of the former function of the building. For example, a community center or day care might be congruent with the original use of a school building by providing a public service. Alternatively, office space or condominiums may be incongruent because they serve a private, non-educative, purpose. Community congruence has to do with the needs of the local community. In other words, how much do residents value the reuse of the school property, regardless of whether it replicates some function of the former institution. Where community members may value the school being reused as a boutique, housing, or a restaurant, they might not approve of it reopening as a liquor store or homeless shelter. These two dimensions can be

understood in tandem as a two-by-two matrix that predicts how community members understand and respond to the reuse of school properties.

Study Context

Over the past half century, the city of Lansing largely fits the narrative of the rust belt city with a declining manufacturing sector and loss of population and employment to its suburbs. The Lansing School District once served as a pipeline to well-paying jobs in manufacturing (L. Fine, 2008). While General Motors still operates a factor in the city, this pipeline is a shadow of what it was throughout much of the 20th century (McClelland & McClelland, 2013). A declining and aging population, and the exodus of many of the middle-class auto plant jobs that were the bedrock of Lansing's economy has coincided with an erosion of the population. Between 1970 and 2018, the population of Lansing declined by 10%, even as Ingham County (the county in which Lansing is located) grew by 12%. Over this time, the county and the City of Lansing grew older and less white. Table 3.1 provides more demographic information.

Table 3.1: Lansing and Ingham County Demographic Trends

	Lansing			Ingham County		
Year	**Total Population**	**% white**	**% under 18**	**Total Population**	**% white**	**% under 18**
1970	130,211	91%	36%	261,039	94%	33%
1980	130,414	78%	28%	275,520	86%	26%
1990	127,321	74%	27%	281,912	84%	22%
2000	119,128	65%	27%	288,298	79%	27%
2010	114,017	60%	24%	280,812	77%	21%
2018	117,388	62%	24%	292,735	74%	20%

Source. U.S. Census Bureau Decennial Census 1970, 1980, 1990, 2000, 2010; U.S. Census Bureau American Community Survey 5-year Estimates 2018

Enrollment Loss. In 1970, the Lansing School District (LSD) was the 5th largest in the state with over 33,000 students (Michigan State Board of Education, 1970). At that time, Lansing schools were state of the art and served a thriving auto town (McClelland & McClelland, 2013). By 2018, however, the district had fallen to the 14th largest in the state with less than 11,000 students. LSD's drastic enrollment decline outpaces the city's general population loss. From 1970 to 2018, Lansing's population declined by 10% with a decline in the youth population (aged 18 and under) of 41%. In that same time the Lansing School District lost 68% of its enrollment. The faster decline in Lansing School District's enrollment is largely due to the introduction of school choice in the mid-1990's both with the expansion of interdistrict choice and creation of charter schools.

In the early 2000's, school choice appeared to be leveling a moderate impact on the Lansing School District with a number of students through both interdistrict choice and to charter schools. While there was some movement of students out of the LSD, this activity did not substantially impact the district's ability to operate (Arsen et al., 2002). In 2002, the Lansing

School District lost 1,206 resident students to neighboring districts through interdistrict choice while attracting only 287 from other districts (Strum, October 15, 2003). This net enrollment loss (about 6.6% of resident students) generated an annual financial loss of about $6.3 million.

This relatively modest enrollment loss through school choice ballooned throughout the next two decades (including both interdistrict and charter school enrollment). By the 2018-19 school year the Lansing School District lost 6,428 FTE students while only taking in 254 (Michigan's Center for Educational Performance and Information, 2019). This net loss of 6,173 students amounts to a loss of over $50 million that year. By 2018-19 only 10,600 of the 16,800 students living in the city of Lansing (37%) attended LSD (CEPI, n.d.).

Over the last two decades, declining enrollment and substantial revenue loss led the Lansing School District to close many schools. Between 2000 and 2015, the LSD closed about a third of its schools serving PK-12. While almost all these buildings were vacant at some time in their history, many have been redeveloped into businesses, community centers, and other services. How closure and reuse of these schools has impacted neighborhoods in Lansing is unknown.

Site of Study. Lansing provides an excellent site of study because it is an understudied community type (small city) and because the types of closure that occurred in the city. While the extant research is almost exclusively focused on rural and large urban areas little work assesses the impact on small cities or suburban places (Tieken & Auldridge-Reveles, 2019). Additionally, much of the literature examines school closure as the result of district consolidation (in rural contexts) or the enforcement of accountability policies (in large urban contexts). While closures due to direct policy intervention through strict accountability systems, mayoral control, or some combination are important, they likely do not make up most school closings. In this way, the

closures that occurred in Lansing represent a more typical, or "routine" closure context. Unlike many rural studies, schools in Lansing are not the only community institution available to citizens, and, unlike many studies of large urban cities, school closures in Lansing have largely been a reaction to wider state policy context rather than the direct result of policy looking to proactively improve conditions in the district. That is, school closure in Lansing has not been the direct result of reform, but rather the downstream consequences of state policy and demographic change in the city. These features make the closures in Lansing arguably more typical than that of many studies examining closure in more dramatic contexts. For these reasons, both quantitative and qualitative studies will be focused on the city of Lansing.

The choice to study Lansing also stems from both my academic orientation and practical concerns. It is my belief as a scholar and member of a land grant institution that I have a responsibility to give back to my state and community. After all, it is only because of the state's investment in me that I have the opportunity to go to graduate school at all. The choice of Lansing as a subject of study is part of that mission to give back to a state and a city where I live. More practically, studying Lansing also made frequent observations less costly.

Methods

This dissertation uses a parallel mixed methods design. The quantitative work uses quasi-experimental design to estimate the impact of school closure on housing value. The qualitative work investigates the factors that potentially mediate or moderate the relationship between school closure and neighborhood vitality. Although both studies fit within one conceptual framework, the methods used are distinct and necessitate separate treatment. The following two sections describe quantitative and qualitative methods in turn.

Quantitative Methods

This section presents methods to conduct a capitalization study of school closure to answer the research question: how does school closure impact property values of proximal homes? I use a two-way fixed effect difference-in-differences identification strategy within a traditional hedonic capitalization model to estimate the capitalization of school closure into neighborhood housing value.

Research studying the impact public goods or services into housing values, known as capitalization, in both the education policy literature (Nguyen-Hoang & Yinger, 2011) and social science more broadly (Rosen, 1974). While this literature does not explicitly acknowledge school closure, it provides useful methods to assess the valuation of public assets into housing prices. The literature shows that a difference-in-differences (DID) within a hedonic capitalization framework can help identify the effect of a policy on housing prices.

In a traditional difference-in-difference model, researchers use the timing of a policy to examine pre- and post-outcomes for a group that experienced and did not experience the treatment. This method would work with a single school closure. The conventional DID framework, however, does not accommodate applications where the treatment occurs in multiple time periods and across multiple groups. In the case of multiple school closures, it would be impossible to accurately assign "post" to the never-closed control group. The econometric solution is to simulate a difference-in-differences design with a two-way fixed effect (TWFE). A TWFE model is one which includes a fixed effect for both the group and time. Like DID, the TWFE approach retains the parallel trends assumption, but allows for more variation in research design, which is necessary in the case of multiple school closures.

The school capitalization literature provides a useful framework for conducting a school closure capitalization study. Capitalization studies suggest exploiting school and property location to identify residential properties, using property quality covariates when available in a hedonic price model rather than the repeated sales model, and employing a TWFE identification strategy when the treatment varies over time.

Data. Data for the quantitative portion of this project come from several sources. The main secondary data set employed in this work contains the full record of every residential property sales for the City of Lansing, Michigan between 2002 and September 2017. This includes more than 50,000 property sales. This data set contains information about sale date and sale price (which will be deflated using the Detroit based CPI), address, grantor, grantee, and parcel number. These data also include information about the property quality or housing characteristics. These data include information on total acres, property class, floor area, garage area, basement area, foundation size, year built, occupancy, and number of bathrooms. These variables serve as controls in the hedonic model.

The State of Michigan's Educational Entity Master data (EEM) include information on the location, type, and status of school buildings. Importantly, this database tracks when a school is closed. This source provides a comprehensive list of schools in the Lansing School District as well as the date of closure, which is necessary for the TWFE strategy. It is important to note that "closures" as reported by the EEM are different from the conceptualization of closure in this dissertation. For instance, the EEM data reports that a school is "closed" when it changes grade configuration, name, or has an instructional programmatic change. This study conceptualizes closure as a building going from an active educational facility to an inactive or non-educational

use. For this reason, each "closure" reported by the EEM was check and coded individually to ensure it met my definition of closure.

Finally, geographic shape files for all parcels in Lansing enable the identification of the school closure variable based on the distance of each property to the nearest school. This geographic data on the location of each parcel of land in the city of Lansing can be used in conjunction with school building addresses to create variables denoting the distance from each school building in the city to each parcel.

During the data cleaning process, a few analytic decisions were made. First, house sales that occurred within 1 year of each other were removed from the sample. This short period of time between sales suggests that the property might have been "flipped." When houses are bought and sold in a short amount of time, investors often improve the quality of the property between buying and selling the house, changes which cannot be observed in the data. Removing these observations from the data may help mitigate omitted variable bias. Second, properties that were sold for under $5,000 were removed from the sample. I considered sales below this $5,000 threshold to be non-market, or non-arm's length, sales and thus would not reflect the actual value of the property.

Data Analysis. Data analysis relied on the spatial relationship between schools and residential properties to identify the capitalization of school closure into housing values using a TWFE design. The following sections review the models employed in the analysis.

Identification. The treatment group was identified by the distance between property *i* and school *k.* These distances were generated by geocoding the school addresses in the EEM data to spatially locate each school. Then, using geographic information systems (GIS), a distance matrix was generated between all residential properties and all schools in the city of Lansing.

This process enabled the identification of properties based on their spatial proximity to a school to generate school-neighborhoods. Thus, these school-neighborhoods are defined spatially and resemble a voronoi diagram. Each parcel *i* is linked to the nearest school property *k*. School closure were defined dichotomously for school-neighborhood groups *k* in time *t*.

Model. The equation below shows a hedonic price model using a TWFE strategy to identify the impact of school closure on housing value:

$$(1)\ y_{ikt} = \beta_0 + \beta_1 Close_k + \beta_2 SchDist_{ik} + \beta_3 (Close_k * SchDist_{ik}) + \beta_4 CloseYears_{kt} + PropChar\ \boldsymbol{\beta}_5 + \alpha_k + \alpha_t + \varepsilon_{ikt}$$

In this model, y_{ikt} represents the sale price of residential property *i* proximal to school *k* at time *t. Close* is the identification of the treatment and control groups as described in the identification section above and displays the average school-neighborhood impact of school closure on housing value. *SchDist* is the distance in meters from property *i* to school *k* regardless of whether school *k* is open or closed in time *t.* The interaction between *Close* and *SchDist* controls for the fact that the distribution of distance between properties and schools in always open and ever close school-neighborhoods is different. *CloseYears* controls for the number of years since the closure of school *k*. *PropChar* is a vector of hedonic covariates, including measures of age, floor area, garage area, basement area, total acres, number of fireplaces, number of full bathrooms, number of half bathrooms, whether the property has an apartment number, the building class of the property, the number of stories of the property, measures of the heating system, location of the seller, and the school district of the property (these variables are described in greater detail in chapter 4). α_k and α_t are the school-neighborhood group and time fixed effects, respectively. Finally, ε_{ikt} is the error term.

Limitations. Given the data available, the methods presented above pose some challenges to causal inference. First, the limited geographic scope of the data presents both an empirical and conceptual problem. The data can be thought about at three levels: property, school, and city. At the property level, there is plenty of variation and large numbers of observations. At the school level, variation declines with only 37 unique school-neighborhood observations. Because the treatment occurs at the school-neighborhood level not the property level, clustering standard errors should be considered. Typically, if standard errors are not clustered at the level of the treatment in a DID framework, results could return misleadingly small standard errors overstating the precision of the estimator. Robust clustered standard errors, however, are usually employed in cases where there are more than 50 unique groups. To avoid overestimating the precision of my estimator, I will employ robust clustered standard errors.

Qualitative Methods

This section presents the qualitative case study methods used to investigate the community consequences of school closure and reuse to answer the research question: how do neighborhood residents experience school closure and reuse over the long run?

Whereas much of the qualitative research on school closure looks to understand closure over a relatively short time-period, this work aims to build a chronological framework connecting the use and reuse of the former school property to the lived experiences of neighborhood residents. To structure this task, I develop stages of school closure and reuse from the perspective of community members. This involved tracking the chronology of events over time and linking those events to the ways neighborhood residents interpreted their meaning.

Data Collection. Because neighborhoods are a complex unit of analysis, this research used multiple sources of data to triangulate and validate findings. Data includes semi-structured

interviews of neighborhood residents and leaders, neighborhood observations, as well as tabulations of quantitative data from school administrative and census sources.

Site Selection. About a dozen neighborhoods in Lansing have experienced school closure in the past two decades. Investigating each neighborhood experiencing closure in the city would have been prohibitively time intensive. Instead, two neighborhoods were chosen for the study: Elm and Brook.[14] Elm and Brook were purposefully chosen based on knowledge of context of each closure, presence of neighborhood organizations (as points of entry), as well as demographic data. Elm has a higher proportion of low-income and minority households as well as a lower home ownership rate. The demographics in the Brook neighborhood more closely reflect the state with higher income, proportion of white residents, and owner-occupied housing (see Table 3.2). Both neighborhoods are mixed demographically in terms of income and race and both experienced a school closure of an elementary school between 2005 and 2010.

[14] "Elm" and "Brook" are pseudonyms to mask the neighborhoods under study.

Table 3.2: Neighborhood Demographic Data

		Elm	Brook	Lansing
Total population	2000	2,800	6,000	119,128
	2017	2,100	5,300	114,773
	Change	-25%	-10%	-4%
Population under 18	2000	750	1500	31894
	2017	550	905	27419
	Change	-25%	-40%	-14%
White	2000	1,700	4,900	77,766
	2017	1,200	4,000	70,236
	Change	-30%	-15%	-10%
Percent white	2000	60%	80%	65%
	2017	55%	75%	61%
Median income	2000	$27,500	$99,500	$34,833
	2017	$24,000	$41,000	$36,851
	Change	-10%	-60%	6%

Source. U.S. Census Bureau Decennial Census 2000; U.S. Census Bureau American Community Survey 5-year Estimates 2017.

Selection of Interview Subjects. Unlike the study of school closure's impact on students, research examining communities is almost completely qualitative (Tieken & Auldridge-Reveles, 2019). One of the primary tasks of qualitative work is to study culture. Spradley (1979) defines culture as: "The acquired knowledge that people use to interpret experiences and generate social behavior… [and that] ethnography … seeks to document the existence of alternative realities and to describe these realities in their own terms." Moreover, these cultural systems exist in both macro and micro settings. So, where national or racial identity may inform an individual's interpretation of experience so too might their employment in a specific industry, enrollment in a specific school, or residence on a particular block. These micro *cultural scenes* are useful when exploring the relationship between schools and neighborhood communities. Both micro and macro social explanations can be useful in understanding the ways stakeholders experience school closure. Individuals interpret reality

through the social position they occupy. A major task of qualitative work is to investigate how perspectives vary by that position.

In the quantitative tradition, sampling is designed with the goal of generalizing to the population. Thus, quantitative research typically seeks a representative sample. While diverse in methods the qualitative tradition is generally more interested in conducting research on a highly informative sample; not all participants are created equal. Some participants are more able to illuminate the phenomenon of study (Spradley, 1979). For this reason, participants were not selected at random but intentionally sought out for their lay expertise and their tacit knowledge of the social scene that evolved after closure. Thus, participants for interviews were selected using both purposive and "snowball" sampling the former selecting participants based on a predetermined criteria and the later leveraging entre developed during initial interviews to find other participants meeting the criteria (Glesne, 2016).

To find informative participants, I read the non-technical literature (i.e., local newspapers) to build general knowledge of the community and identify key players in the neighborhood. I also attended community meetings to build relationships with neighborhood residents and gain entre. This process resulted in a list of over fifty contacts for potential interviews. I contacted over thirty-five people for interviews. Two types of interviews comprised the main source of data for the qualitative portion of this dissertation— interviews with city leaders (i.e., school district administration, city government, or business owner) and interviews with neighborhood residents. In total, I conducted 17 interviews with 15 different participants producing more than 15 and ½ hours of recordings. Table 3.3 displays information on each interview subject and Table 3.4 produces interview participant summary statistics.

Table 3.3: Interview Participants

Participant	Neighborhood	Social Position	Formal relationship to closed school	Relationship to School	Gender	Person of Color
A	Brook	Neighborhood resident	No	Resident	Man	No
B	Brook	Neighborhood resident	No	Resident	Woman	No
C	Brook	Neighborhood resident	Yes	Former student, Resident	Man	Yes
D	Brook	Neighborhood resident	Yes	Former parent, Resident	Man	No
E	Brook	Neighborhood resident	Yes	Former parent, Resident	Woman	No
F	Elm	Neighborhood resident	No	Resident	Man	No
G	Elm	Neighborhood resident	No	Resident	Man	No
H	Elm	Neighborhood resident	No	Resident	Woman	No
I	Elm	Neighborhood resident	Yes	Former parent, Resident	Woman	Yes
J	Elm	City leader		Owner of former school	Woman	No
K	Neither	City leader		City government	Woman	No
L	Neither	City leader		City government	Woman	No
M	Neither	City leader		Non-profit	Man	No
N	Neither	City leader		School district	Man	No
O	Neither	City leader		School district	Man	Yes

Table 3.4: Interview Participant Summary Statistics

	Number	Percent
Demographic		
Women	7	46%
Persons of color	2	13%
Neighborhood residents	9	60%
Elm neighborhood	4	27%
Brook neighborhood	5	33%
Formal relationship to school	4	27%
City leaders	6	40%
City government	2	13%
School district	2	13%
Business owner	1	7%
Non-profit organization	1	7%

Interviews with city leaders were conducted with those in positions of authority around the issue of school closure and reuse. Interviews were conducted with school board members, school district administrators, city bureaucrats, and owners of the former school buildings. These interviews helped illuminate how different understandings of the value of the school. Additionally, these interviews aided the analytic process by presenting different perspectives by which to understand the events surrounding school closure and reuse.

For the resident interviews I looked for long-term resident of the Elm or Brook neighborhoods. I aimed to interview participants with both formal and informal relationships to the closed school as well as different races, and genders. Residents with a formal connection to the closed school such as students, parents, and teachers likely have stronger relationship to the facility than those that did not. Because the aim of this work is to understand schools as social institutions, not just educational one, sampling of participants included both people with formal and non-formal relationships with the former school.

Interview Questions. The interviews protocols used with both city leaders and neighborhood resident are provided in Appendix A. Interviews were conducted in a place of the interviewees choosing where they felt comfortable. The semi-structure interview protocols were designed to take about 45 to 60 minutes.

Interviews with city leaders focused on the reuse of the school building, the challenges and advantage that came therein, as well as the political consequences of school closure and reuse policies made by the district and city, respectively. Additionally, I looked to understand how the goals of those in positions of power differed from neighborhood residents who experienced the closure in their daily lives. Each interview was tailored to the position and experience of the interviewee.

Interviews with residents focused on their experiences living in the neighborhood, with the school before it closed, after closure, and its reuse. Descriptive questions such as the grand tour[15] were used to bring out stories around the process of closure and reuse. Structural questions helped to confirm the way the informant conceptualizes this process with contrasting question helping to hone and specify those concepts (Spradley, 1979).

In conjunction with more traditional structured-interview questions, I used graphical elicitation techniques to establish higher internal consistency and validity (Barton, 2015; Copeland & Agosto, 2012). Graphical elicitation techniques can help expand the conceptual scope of an inquiry beyond the theoretical framework imposed by the researcher allowing for interviewees to help guide the data generation process. Witten et al. (2001), who studied school

[15] The grand tour is an ethnographic interview question that aims to elicit response that describe places, people, and/or time periods (Spradley, 1979). For example, “could you describe a typical day in your neighborhood?” Specifically, I used the following grand tour question in my interviews with neighborhood residents: “I'm interested in knowing all the steps between when the school was open and now. Could you start with some date in the past when the school was open, and then list all the steps that occurred until you get to the present?”

closure in New Zealand, used a street map to allow participants to reference significant locations as they conducted their interviews. In interviews with neighborhood residents, I asked residents to comment on a map of their neighborhood. Open-ended questions with the map helped prompt responses that might not have occurred without the physical aid. Additionally, the maps allowed me to address the state of the neighborhood more systematically by asking questions related to their spatial relationship to the school and other focal points in the neighborhood.

Documents and Observation. While interviews comprised most of the data in qualitative portion of this dissertation, other sources of data help build a base understanding of the neighborhoods under study as well to help validate and triangulate data produced during interviews. Essentially, background research helped me to ask the "right" questions and to connect to interviewees with specific details about the school and neighborhood sites. While gathering the data, I documented my experiences through memos and recordings. Table 3.5 outlines the data source other than interviews that were investigated for this work.

Table 3.5: Qualitative Data Sources

Data Source	Reason for Data Source
Newspaper articles	• Identify potential resident interview participants • Outline a chronology of events to triangulate with interviewees
Sales records	• Confirm school sale price and sale date
Census demographic data	• Understand how the neighborhood has changed demographically since school closure • Compare cases to broader state and national trends to understand similarities and differences
School district administrative data	• Tack enrollment and achievement trends of district and schools that closed • Compare closed schools to schools that remain open
Neighborhood documents	• Provide contemporaneous documentation of events during school closure process • Show neighborhood perspective on school property changes
Physical and virtual observation	• Observe the physical landscape of the school and neighborhood over time • Observe how the reuse has or has not altered the physical presence of the school property in the neighborhood
School District administrative data	• Understand how school district leaders understood the reason for school closure • Examine the demographic makeup of the school prior to closure as compared to other schools
City documents	• Understand the city's position on the closure and reuse of the school property • Document potential political conflicts around the school building

Data Analysis. Analysis of the qualitative data was iterative and drew on analytic procedures developed by Marshall and Rossman (1999), Spradley (1979), Corbin and Strauss (2014), Glesne (2016) as well Saldaña (2015) to guide the inquiry, develop themes, and insights about the stages of school closure and reuse.

Coding the interview and other data occurred in two cycles as described by Saldaña (2015). These cycles of coding while conceptually distinct were, in practice, often interrelated and overlapping. Additionally, the coding scheme used a constant comparative method where codes were continually evaluated compared to existing codes and the data itself. During data collection and analysis, I reflected on data by writing memos and diagraming as described in Saldaña (2015). These notes comprise an internal record of the research process and helped in the analytic process.

In the first cycle of coding, I used elemental methods consisting of structural, descriptive, and in vivo codes (Saldaña, 2015). Table 3.6 below outlines the use of each coding type employed in the first stage of coding.

Table 3.6: First Stage Codes

Code Type	Description	Example
Structural	Categorizes the passage based on content or emergent concepts	"Ways to resist reuse", "how to mitigate closure", "interested in economic development"
Descriptive	Links similar content in word or phrase	"school property", "city politics", "business", "vacant property"
In vivo	Uses quotation of participant as a description of passage	"abuse of process", "not being a school", "we were powerless"

This fluid initial cycle of coding permitted creativity allowing for a flexible understanding of the data. Special attention was paid to how interviewees categorize the stages of school closure and reuse as well as the impacts of this process on educational access, social infrastructure, and economic development. While these concepts provided a framework, codes

were not determined a priori but derived from the data generated during interviews and document analysis.

The second cycle of coding looked to reorganize the data and existing codes along thematic or conceptual similarities. In this stage, first stage codes were split, merged, grouped into hierarchies, or dropped all together. This coding cycle relied on pattern, focused, and process codes described in Table 3.7 (Corbin & Strauss, 2014; Saldaña, 2015).

Table 3.7: Second Stage Codes

Code Type	Description	Example
Pattern	Categorizes first stage codes into a smaller number of concepts.	"going to city council meeting" and "writing op-ed against reuse" might get categorized as "methods of resistance"
Focused	Reuses most frequent or significant codes from first stage based on which makes most analytic sense.	[merging and/or deleting existing codes]
Process	Describes stages or phases in the context of a site under study	"resistance to school closure", "vacant school building", "excited about reuse of school", "resistance to school reuse"

While pattern and focused codes helped build out the conceptual categories of the data, process codes helped generate the stages of school closure and reuse as experienced by neighborhood residents.

Positionality. It is important to reflect on my positionality to understand potential sources of bias in both data collection and analysis. School closure is often framed as an injustice to those who experience it. This draws scholars to the study, but also often impacts their relationship with the topic. In fact, many scholars using qualitative methods to examine school

closure admit that they are not trying to take a neutral look at the subject. Work in the field is often participatory (e.g., Lipman & Haines, 2007; Lipman & Person, 2007) or critical in nature (e.g. Ayala & Galletta, 2012; Kretchmar, 2014). Researchers in this tradition may have orientations towards their work that diverging from the quantitative and positivist paradigm. They may understand themselves as "scholar-activist" or action researchers (Vaughan & Gutierrez, 2017) whose purpose is to provide a platform for local knowledge that, without legitimization by researchers, may be discredited as invalid.

These forms of inquiry are sometimes cast as "biased" and therefore illegitimate. Yet, this conception of "bias" misunderstands the purpose and use of their work as researchers. There is a difference between bias and accuracy (Stoecker, 2012). While these concepts are often conflated, they represent quite different ideas. A scholar need not be a neutral party to produce accurate research. Indeed, neutrality itself may prevent some researchers from accessing differing viewpoints. Scholars should, when provided sufficient evidence, take stances on public issues. Many qualitative scholars studying closure do just that.

My position in this research is not unbiased or neutral. Rather, my social position and experience color both the data collection and analysis. By recognizing how my social position and life experiences impact my conceptualization of this work I can act to produce more accurate results that reflect the reality of school closure as experienced by the neighborhood residents I study. While this dissertation is neither fully participatory nor critical in design, I take local knowledge seriously and understand my role as a researcher in legitimizing the perspectives of my research subjects—especially marginalized groups who may feel the full impact of policy decisions.

From a macro perspective, my social position as a young, white, upper-middle-class, heterosexual, cis-gendered, male may have both advantages and disadvantages for my research. These identities impact both how I think and interact with participants and subject material but also how participants perceive me and thus what data we are able to produce together. On the one hand, my privileged social position may allow me to be an advocate for less privileged groups. At the same time, this position may make me less able to meet, built trust with, and therefore document the perspective of the least privileged groups in US society.

My position in relation to the communities I am studying is also important to the work I produce. Although I have lived in the city of Lansing, and in one of the two neighborhoods under study, I did not grow up in Lansing. Additionally, I am a student at Michigan State University, which carries with it some negative and some positive connotations in the community. For these reasons, I am neither a complete insider nor a complete outsider. Rather, like many qualitative scholars, I straddle the line between and insider and outsider perspective and attempt to translate insider knowledge to an external audience.

My experience with school closure has also impacted how I conduct my work. The neighborhood elementary school where I attended kindergarten through second grade closed while I was attending it. Had it not closed I would have attended Whitman Elementary school from Kindergarten till 5th grade. While it may seem that this experience negatively influences my views of closure, in fact, the closure of my first elementary school was a positive development in my early life. At Whitman, I had developed a negative reputation due to constant in-class outbursts as well several physical altercations with fellow students resulting in regular disciplinary actions. So, when my first elementary school closed it was less a tragic loss for me than a fresh start.

Even though the school's closure benefited me educationally and socially, it still had an impact on my neighborhood. The sledding hill, which had attracted neighborhood kids was truncated as the university, which bought the school property, decided to put a parking lot at the bottom. Similarly, the university tore down the playground, which had effectively served as the neighborhood park. Still, kids continued using the sledding hill despite the concrete ending and even without a playground, the rather expansive school grounds continued to remain open, at least in practice, to public use. Finally, the building was bought by Northern Michigan University (NMU) a trusted public institution in Marquette. So, while the physical space of the property was changed it remained under the control of a public institution.

…

The conceptual framework and methods presented in this chapter are the foundation of the empirical work conducted in this dissertation. The next two chapters present the empirical results quantitative and qualitative studies, respectively.

Chapter 4: Quantitative Results

The extant research literature has examined the relationship between school quality and housing value in depth (e.g. Black, 1999; Downes & Zabel, 2002; Figlio & Lucas, 2004; Gibbons et al., 2013; Imberman & Lovenheim, 2016; Kane, 2006; Machin, 2011; Nguyen-Hoang & Yinger, 2011; Wen et al., 2017). In contrast, very few studies have examined the impact of school closure on housing values. What research does exist on the topic of school closure capitalization uses outdated methods (e.g. Johnson, 1978) or does not study school closure itself (e.g. Bogart & Cromwell, 2000; Colwell & Guntermann, 1984). This chapter estimates the relationship between school closure and property value. I employ a two-way fixed effect model within a hedonic capitalization framework to produce results that have plausibly causal interpretations. This chapter starts with an introduction to the data and summary statistics. Then, I present and interpret regression results. Finally, I briefly summarize the findings.

Data and Summary Statistics

The primary data for this study cover all residential property sales in the city of Lansing between 2002 and 2017—15 years of longitudinal data covering nearly 50,000 observations across 37 school-neighborhoods. The traditional hedonic capitalization model employs as many measures of property quality as are available (Nguyen-Hoang & Yinger, 2011). The data available provide many traditional measures of property quality (e.g., floor area, number of bathrooms, etc.) as well as a few novel covariates (e.g., seller location and distance to central business district). Table 4.1 provides a description as well as the data source for each variable used in the regression models.

Table 4.1: Data Descriptions and Sources

Variable	Description	Units	Data Source
SalePrice	The sale price of property *i* adjusted for inflation. Dependent variable in all regression models.	Dollars	Lansing Residential Property Values
Close	Indicator variable for if the property is in a school-neighborhood *k* that is closed. Primary policy variable of interest.	Indicator	Educational Entity Master
SchDist	Distance of property *i* to the closest school property *k*.	Meters	Calculation based on geography
CloseXSchDist	Interaction term: Close * Distance_to_School	Meters	Calculation
CloseYears	Number of years since school closure	Years	Educational Entity Master
CBDDist	Distance to Lansing's Central Business District	Meters	Calculation based on geography
Property Characteristics			
EffAge	Effective age of building	Years	Lansing Residential Property Values
FloorArea	Floor area of building	Square feet	Lansing Residential Property Values
TotalAcres	Total acres of property	Square feet	Lansing Residential Property Values
GarageArea	Garage area of building	Square feet	Lansing Residential Property Values
BasementArea	Basement area of building	Square feet	Lansing Residential Property Values
Fireplace	Number of fireplaces in building	Number	Lansing Residential Property Values
Fullbath	Number of full bathrooms in building	Number	Lansing Residential Property Values
Halfbath	Number of half bathrooms in building	Number	Lansing Residential Property Values
Apartment	Indicator for if property address has an apartment number	Indicator	Lansing Residential Property Values
Distance to CBD	Distance to Lansing's Central Business District	Meters	Calculation based on geography
Building Class			
A	Class A properties, low density single family	Indicator	Lansing Residential Property Values
B	Class B properties, low density single family	Indicator	Lansing Residential Property Values
BC	Class BC properties, moderate density two-family	Indicator	Lansing Residential Property Values
C	Class C properties, moderate density two-family	Indicator	Lansing Residential Property Values
CD	Class CD properties, moderate to high density two-family	Indicator	Lansing Residential Property Values
D	Class D properties, high density. From 11.4 to 19.8 dwellings per acre.	Indicator	Lansing Residential Property Values
Building Style			
1 Stry	Indicator variable for if property is 1 story	Indicator	Lansing Residential Property Values
1 1/2 Stry	Indicator variable for if property is 1 and 1/2 stories	Indicator	Lansing Residential Property Values
2 Stry	Indicator variable for if property is 2 stories	Indicator	Lansing Residential Property Values
Bi/Tri Level	Indicator variable for if Bi or Tri level	Indicator	Lansing Residential Property Values
Other	Indicator variable for if property a different configuration	Indicator	Lansing Residential Property Values
Heat			
Forced Air	Indicator variable for if property has forced air heating	Indicator	Lansing Residential Property Values
Forced Heat & Cool	Indicator variable for if property has forced air heating and cooling	Indicator	Lansing Residential Property Values
Wall/Floor Furnace	Indicator variable for if property has a wall or floor furnace	Indicator	Lansing Residential Property Values
Forced Hot Water	Indicator variable for if property has forced hot water heating	Indicator	Lansing Residential Property Values
Forced Air w/o Ducts	Indicator variable for if property has forced air without ducts	Indicator	Lansing Residential Property Values
Other	Indicator variable for if property has other heating system	Indicator	Lansing Residential Property Values

Table 4.1: (cont'd)

Variable	Description	Units	Data Source
Seller Location			
Owner Occupied	Indicator variable for if the property seller lives in the property	Indicator	Lansing Residential Property Values
In Lansing	Indicator variable for if the property seller does not live in the property but does live in Lansing	Indicator	Lansing Residential Property Values
In Area	Indicator variable for if the property seller does not live in Lansing but does live in Ingham County	Indicator	Lansing Residential Property Values
In State	Indicator variable for if the property seller does not live in Ingham County but does live in Michigan	Indicator	Lansing Residential Property Values
Out State	Indicator variable for if the property seller does not live in Michigan	Indicator	Lansing Residential Property Values
School Districts			
Lansing	Indicator variable for if parcel is in the Lansing School District	Indicator	Lansing Residential Property Values
Waverly	Indicator variable for if parcel is in the Waverly School District	Indicator	Lansing Residential Property Values
Holt	Indicator variable for if parcel is in the Holt School District	Indicator	Lansing Residential Property Values
E. Lansing	Indicator variable for if parcel is in the East Lansing School District	Indicator	Lansing Residential Property Values
Okemos	Indicator variable for if parcel is in the Okemos School District	Indicator	Lansing Residential Property Values

Many hedonic capitalization studies rely on a suboptimal data. For instance, dependent variables for capitalization studies have employed measures of housing value including aggregated values by area, mean or median averages, house price indexes, owner-reported houses values, advertised house price, and actual sales. Data on the actual sales of each property is preferred (Nguyen-Hoang & Yinger, 2011). Similarly, aggregated data on property characteristics have also been used. Fortunately, my data are at the parcel level avoiding many of the methodological issues that come with less detailed data.

Table 4.2 presents descriptive statistics for each variable used in the regression models, for the full sample as well as in neighborhoods in always-open school-neighborhoods and those in ever-closed school-neighborhoods. I defined always-open school-neighborhoods as all the sold parcels *i* most proximal to school *k* in which the school remains open during the entire time frame of the study. Conversely, an ever-closed school-neighborhoods is one in which the sold

parcels *i* most proximal to school *k* that experiences a school closure during the time period of the study. While most of the variables in Table 4.2 are self-explanatory, a few benefit from additional context.

Table 4.2: Descriptive Statistics

	All					Always Open					Ever Close				
Variables	**N**	**Mean**	**Std. Dev.**	**Min**	**Max**	**N**	**Mean**	**Std. Dev.**	**Min**	**Max**	**N**	**Mean**	**Std. Dev.**	**Min**	**Max**
SalePrice	44,133	80,256	51,917	5,047	382,888	36,072	85,441	52,234	5,047	382,888	7,921	56,052	42,367	5,047	334,643
Close	44,133	0.18	0.3842	-	1	36,072	0	0	0	0	7,921	1	-	1	1
SchDist	44,133	592	398	50	5,433	36,072	611	421	50	5,433	7,921	505	249	52	2,109
CloseXSchDist	44,133	93	223	-	2,109	36,072	2	40.2312	0	1045	7,921	505	249	52	2,109
CloseYears	44,133	0.83	2.21	-	12	36,072	0	0.452351	0	12	7,921	4.49	3.16	0	12
Property Characteristics															
CBDDist	44,133	4,696	2,626.77	5	10,363	36,072	4,846	2,531	28	10,330	7,921	4,014	2,931	5	10,363
EffAge	44,133	62	27	0	131	36,072	59	26	0	131	7,921	75	28	0	131
FloorArea	44,133	1,102	515	0	16,864	36,072	1,090	466	0	8,432	7,921	1,163	678	0	16,864
TotalAcres	44,133	0.1913	0.3207	0	33	36,072	0	0.3488	0	33	7,921	0.1539	0.1094	0	3
GarageArea	44,133	263	228	0	2,203	36,072	272	229	0	2,203	7,921	228	222	0	1,828
BasementArea	44,133	652	382	0	3,984	36,072	650	391	0	3,984	7,921	667	327	0	3,960
Fireplace	44,133	0.2145	0.4761	0	15	36,072	0.2218	0.4851	0	15	7,921	0.1846	0.4346	0	4
Fullbath	44,133	1.1134	0.4084	0	8	36,072	1.0998	0.3979	0	8	7,921	1.1491	0.4379	0	8
Halfbath	44,133	0.2729	0.4982	0	5	36,072	0.2829	0.5074	0	5	7,921	0.2283	0.4530	0	3
Apartment	44,133	0.0178	0.1323	0	1	36,072	0.0172	0.1301	0	1	7,921	0.0187	0.1354	0	1
Building Class															
A	44,133	0.0001		0	1	36,072	0.0002		0	1	7,921	0		0	-
B	44,133	0.0049		0	1	36,072	0.0053		0	1	7,921	0		0	-
BC	44,133	0.0046		0	1	36,072	0.0054		0	1	7,921	0.0010		0	1
C	44,133	0.3577		0	1	36,072	0.3530		0	1	7,921	0.3799		0	1
CD	44,133	0.1950		0	1	36,072	0.1946		0	1	7,921	0.1985		0	1
D	44,133	0.4377		0	1	36,072	0.4415		0	1	7,921	0.4189		0	1
Stories															
1 Stry	44,133	0.5413		0	1	36,072	0.5605		0	1	7,921	0.3784		0	1
1 1/2 Stry	44,133	0.2211		0	1	36,072	0.2182		0	1	7,921	0.2370		0	1
2 Stry	44,133	0.1892		0	1	36,072	0.1721		0	1	7,921	0.2654		0	1
Bi/Tri Level	44,133	0.0339		0	1	36,072	0.0348		0	1	7,921	0.0304		0	1
Other	44,133	0.0144		0	1	36,072	0.0143		0	1	7,921	0.0888		1	
Heat															
Forced Air	44,133	0.7736		0	1	36,072	0.7628		0	1	7,921	0.8325		0	1
Forced Heat & Cool	44,133	0.1505		0	1	36,072	0.1605		0	1	7,921	0.1014		0	1
Wall/Floor Furnace	44,133	0.0261		0	1	36,072	0.0274		0	1	7,921	0.0203		0	1
Forced Hot Water	44,133	0.0215		0	1	36,072	0.0195		0	1	7,921	0.0304		0	1
Forced Air w/o Ducts	44,133	0.0154		0	1	36,072	0.0164		0	1	7,921	0.0042		0	1
Other	44,133	0.0131		0	1	36,072	0.0134		0	1	7,921	0		0	1

Table 4.2: (cont'd)

	All					Always Open					Ever Close				
Variables	**N**	**Mean**	**Std. Dev.**	**Min**	**Max**	**N**	**Mean**	**Std. Dev.**	**Min**	**Max**	**N**	**Mean**	**Std. Dev.**	**Min**	**Max**
Seller Location															
Owner Occupied	44,133	0.5160		0	1	36,072	0.5437		0	1	7,921	0.3936		0	1
In Lansing	44,133	0.1640		0	1	36,072	0.1534		0	1	7,921	0.2099		0	1
In Area	44,133	0.1077		0	1	36,072	0.1024		0	1	7,921	0.1295		0	1
In State	44,133	0.0736		0	1	36,072	0.0692		0	1	7,921	0.0941		0	1
Out State	44,133	0.1388		0	1	36,072	0.1312		0	1	7,921	0.1728		0	1
District															
Lansing	44,133	0.9838		0	1	36,072	0.9815		0	1	7,921	1		1	1
Waverly	44,133	0.0007		0	1	36,072	0.0008		0	1	7,921	0		0	0
Holt	44,133	0.0093		0	1	36,072	0.0114		0	1	7,921	0		0	0
E. Lansing	44,133	0.0025		0	1	36,072	0.0030		0	1	7,921	0		0	0
Okemos	44,133	0.0038		0	1	36,072	0.0032		0	1	7,921	0		0	0

The descriptive statistics in Table 4.2 show noteworthy differences between properties sold in always-open school-neighborhoods and those sold in ever-closed school-neighborhoods. First, the housing stock in ever-close school-neighborhoods appears to be of lower quality than that in always-open school-neighborhoods. The average sale price of homes in an ever-closed school-neighborhoods is about $30,000 lower than in school-neighborhoods that have an always-open school. It appears as if schools in the Lansing School District were more likely to be closed in school-neighborhoods with lower property values. Also, ever-closed school-neighborhoods have fewer owner-occupied sales by about 15 percentage points compared to sales in always-open school-neighborhoods. Additionally, properties in ever-closed school-neighborhoods are on average 15 years older than those in always-open school-neighborhoods. The lower sale price, fewer owner-occupied sales, and higher property age seems to add to the picture of schools in the Lansing School District being closed in less affluent parts of the community. Although the evidence here is far from conclusive or causal these observations show a pattern of differences between always-open and ever-closed school-neighborhoods. Which way causality flows, or if the apparent relationship is simply idiosyncratic, is unclear from this simple analysis.

Second, the distance to school is higher in always-open school-neighborhoods but has a much higher standard deviation. This shows that the distance between parcel *i* to school property *k* have a different distribution in always-open and ever-closed school-neighborhoods respectively. This observation justifies the inclusion of school-property distance measures in the regression analysis presented later in this chapter.

Third, none of the parcels in the ever-closed school-neighborhoods are in districts other than the Lansing School District. While this may simply be a geographic coincidence, it is also

possible that the Lansing School District has intentionally avoided closing schools near their border to better compete in the local education market.

Independent Policy Variable (School Closure)

Now, I turn to a more detailed examination of the independent policy variable of interest, school closure. My sample includes 37 school-neighborhoods, 12 of which have a closed school and 25 of which remain open throughout the sample period. Table 4.3 displays when each school in my sample was closed and describes what happened to the building after it was closed.

Table 4.3: Lansing School Closures

Name	Year Closed	Use after closure Notes
Allen	2005	Reused as a tech company. Maintains positive relationship with neighborhood.
Maple Grove	2005	Vacant and in particularly bad condition. Purchased in 2012 by a Church, sold bad to the bank, then resold to a different church in 2018.
Verlinden	2005	Repurposed as a day care in 2007.
Walnut	2005	Reused as a tech company in 2006.
Hill Center	2005	Leased to Lansing Police Department.
Grand River	2009	Sold to CACS Headstart in 2017
Moores Park	2009	Purchased by tech company in 2014.
Woodcreek	2011	Remains in use by the LSD as a blended online program center.
Bingham	2012	Sold to Sparrow Health Systems in 2012. Demolished and replaced with the Herbert Herman Cancer Center and a parking garage.
C.W. Otto	2012	Still owned by the LSD but remains vacant.
Elmhurst	2012	Repurposed by LSD as a community learning center.
Wainwright	2012	Converted by the LSD into special education offices.

Five closures occurred in 2005, two in 2009, one in 2011, and four in 2012. After the schools were closed, they had varying levels of reuse. While some were immediately purchased, and reused others were left vacant for the entire duration. Even within the categories of "reused" and "vacant" significant qualitative variation exists. For instance, C.W. Otto Middle School has been vacant since its closure in 2012, but the building has been maintained meticulously by the Lansing School District. Although the property is not used, it is not blighted (e.g., no broken windows, the roof and boiler are still functional). At the other end of the spectrum, although

Maple Grove School has changed hands several times since its closure, it has been completely vacant since 2005 and is in very bad condition: windows are broken and boarded up; the grounds are full of weeds unkept and unmown; the roof and ceiling have serious structural damage. Virtually every aspect of the school has been vandalized or is in a state of disrepair. Still the community uses the playground and outdoor basketball court despite the building's condition. While there have been several community efforts, led by churches, to renovate and revitalize the property, the financial resources necessary to carry it out has never materialized.

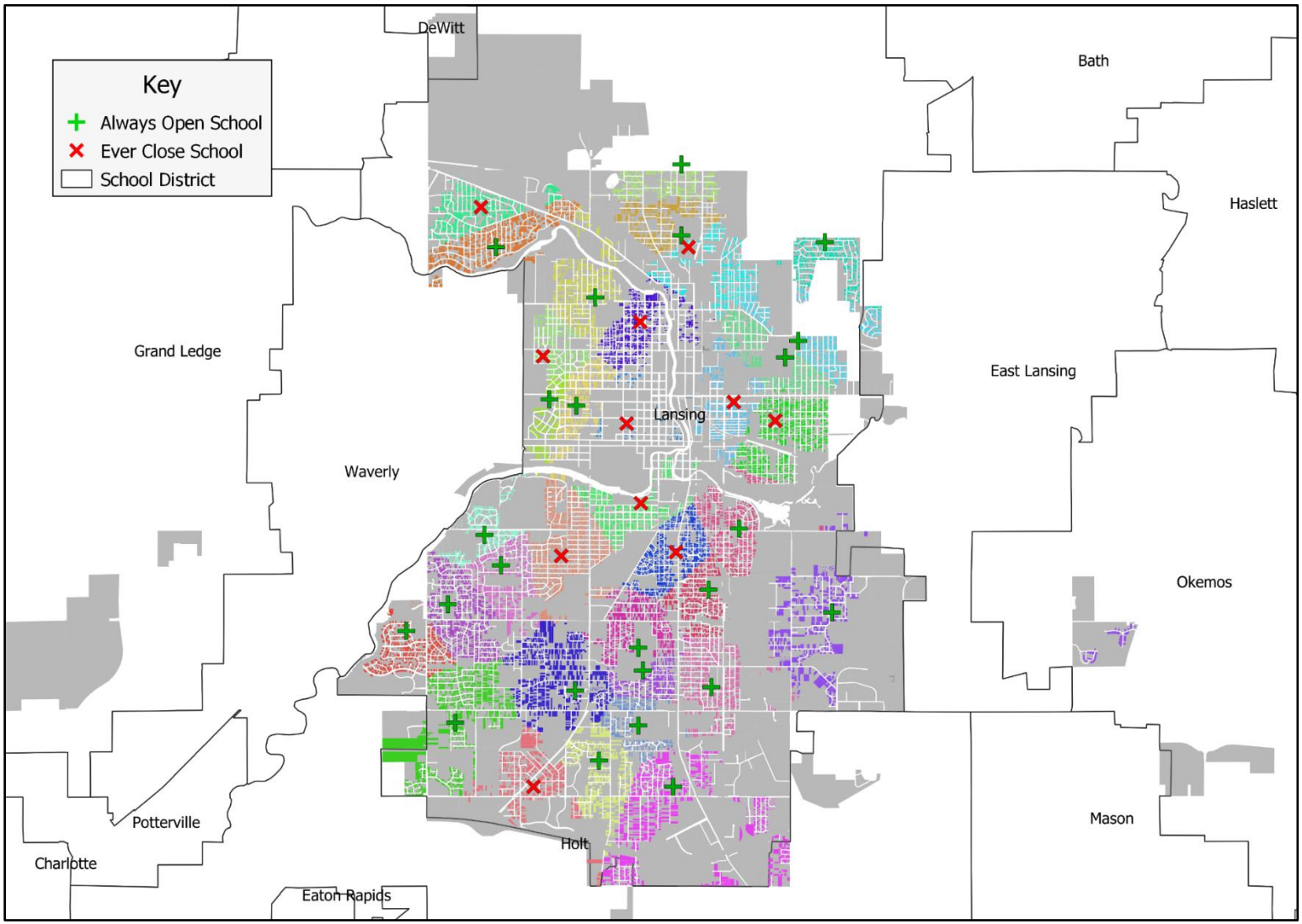
Repurposed properties also differ significantly in their use. For example, Verlinden was closed in 2005, left vacant for two years, and then repurposed as a day care. Despite being repurposed, the building still maintained its basic social purpose: caring for children. While the building changed owners, and was no longer public, the change in it use likely caused little disruption to the neighborhood. By contrast, Bingham School once provided neighbors with a baseball diamond, playground, and community garden. However, after the building was closed and sold to Sparrow Health System in 2012, it was demolished and replaced by a towering parking garage. While the data do not provide enough power to disentangle the relationship between school reuse and property values, the qualitative work presented in chapter five provides a description of how vacancy and reuse is experienced by neighborhood residents.

Geography of Closure

Figure 4.1 shows the geography of always-open schools, ever-closed schools, school-neighborhood sales, and the boundaries of the area's school district as well as the boundaries of the city of Lansing. Green "pluses" represent always-open schools and red "exes" represent ever-closed schools. Colored area represents distinct school-neighborhoods. Gray area represents

parcels in the city of Lansing that either did not sell during the sample period or are not residential properties.

Figure 4.1: Lansing Closure and School-Neighborhood Map

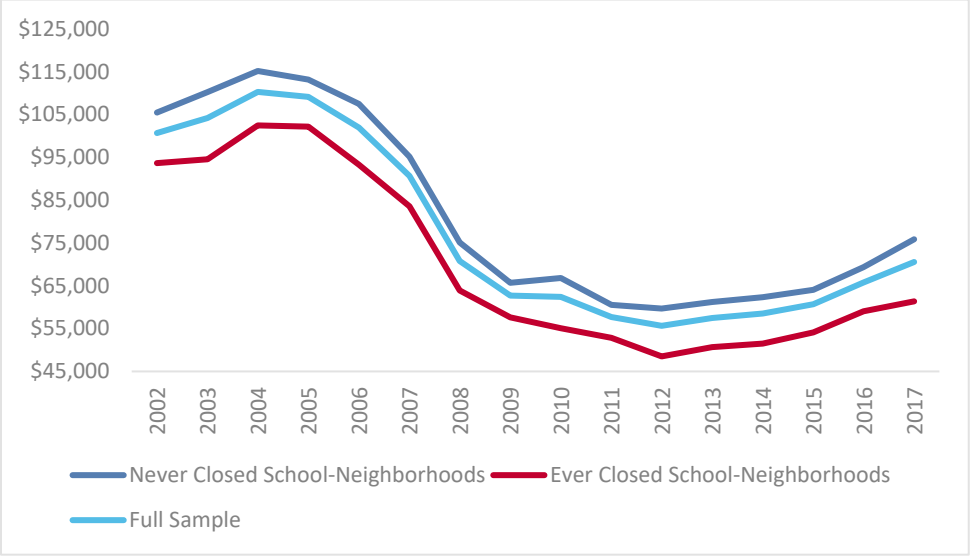


A few points in Figure 4.1 are worthy of note. First, Lansing's school closures are clustered around the central business district. In comparison, relatively few schools were closed in south Lansing. It also appears that schools were often closed in areas where another school is somewhat close. In fact, only three closed schools are closer to another closed school than they are to an open school.

Dependent Variable (Sale Price)

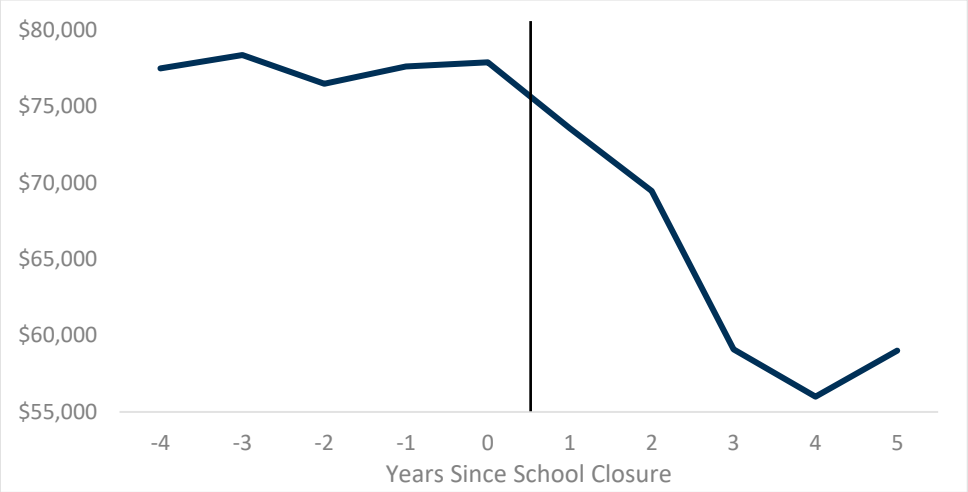
Figure 4.2 shows the average price of housing sales in Lansing between 2002 and 2017 for properties in always-open and ever-closed school-neighborhoods as well as for the full sample. The Great Recession had an outsized impact on the Lansing housing market. Both always-open and ever-closed school-neighborhoods experienced a serious decline in average housing sale during the Great Recession. Although housing values have increase since the end of the Great Recession, gains have been very limited and remain about 35% lower than they were in 2004 (the peak of home value in the sample).

Figure 4.2: Average Sale Price by Closure (2018 dollars)



Schools closed in four different years, 2001, 2005, 2009, and 2012 making it difficult to see if there is any relationship between school closure and average housing value in Figure 4.2. To examine the relationship between school closure and housing value, I recenter the data for ever-closed school-neighborhoods based on time *t* where *t* is the number of years till the school-neighborhood experiences a school closure and then how many years have elapsed since a school closure has taken place. The year of school closure is zero. Figure 4.3 shows average price over *t*.

Figure 4.3: Average Sale Price Before and After School Closure (2018 dollars)



In the four years proceeding school closure and the closure year itself average housing value was roughly stable. In the five years after school closure, average housing value declined by 24%. Figure 4.3 suggests a decline in housing values following a neighborhood school closure, but correlation is not causation. Importantly, five of the school closures in the sample were shuttered in 2005. The Great Recession, which dramatically reduced housing values for ever-closed and always-open school-neighborhoods alike likely obscures the true relationship between closure and housing value. More rigorous methods are needed to investigate this relationship.

Regression Results

I present multiple regression models. Models 1 through 4 estimate the average treatment effect (ATE) of school closure on housing value. These four models display how the inclusion and exclusion of school-neighborhood and year fixed effects as well as the specification of the dependent variable as a log transformation influence the interpretation of the variable of

interest—school closure.[16] Model 1, 3, and 5 are additive models. Models 2, 4, and 6 are log models. The log transformation of the dependent variable is appropriate when the good being capitalized cannot be easily restocked producing non-linear distribution of prices such as the case of housing markets (Sopranzetti, 2015). Model 5 and 6 replicates Models 3 and 4 respectively but breaks out the closure variable by school allowing it to vary for each individual closure. Table 4.4 displays the covariates included in each of the three regression results displayed in Table 4.5 and Table 4.6. All models, 1 through 6, use cluster-robust standard errors at the level of treatment—the school-neighborhood group.

Table 4.4: Model Specification

	Neighborhood and Year Fixed Effects	Log Model	Heterogeneous Treatment Effect
Model 1			
Model 2		✔	
Model 3	✔		
Model 4	✔	✔	
Model 5	✔		✔
Model 6	✔	✔	✔

Table 4.5 displays Models 1, 2, 3 and 4. The dependent variable in each model is the price of residential parcel *i* in time *t* in school-neighborhood *k*. The policy variable of interest is *Close* indicating if parcel *i* was sold in a school neighborhood *k* at a time *t* when the school property was closed. The following sections interpret the coefficients of important variables as they change over the three models.

[16] Model parsimony was a factor when considering the inclusion or exclusion of individual variables For example, the inclusion of a month fixed effect to combat potential seasonality in housing sales was considered, but ultimately removed from the final models because its inclusion failed to meaningfully change other point estimates or change the adjusted R squared value.

Table 4.5: Model 1, 2, 3, and 4 Regression Results

	Model 1		Model 2		Model 3		Model 4	
	y = sale price		y = log(sale price)		y = sale price		y = log(sale price)	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Close	-21022.9***	(4910.4)	-0.310**	(0.100)	-5991.5	(3473.8)	-0.138**	(0.0466)
SchDist	-5.971*	(2.478)	-0.000134**	(0.0000418)	-8.028**	(2.901)	-0.000170***	(0.0000467)
CloseXSchDist	13.42*	(5.337)	0.000156*	(0.0000639)	13.40*	(4.967)	0.000174*	(0.0000648)
CloseYears	-825.8	(434.6)	-0.0220*	(0.00998)	713.8	(458.1)	-0.00440	(0.00384)
CBDDist	-1.165	(0.716)	0.000000775	(0.00000946)	2.393	(1.925)	0.0000678*	(0.0000319)
Property Characteristics								
EffAge	-511.4***	(69.37)	-0.00653***	(0.000897)	-357.8***	(42.81)	-0.00450***	(0.000550)
FloorArea	12.39**	(3.963)	0.000180***	(0.0000456)	13.73**	(3.900)	0.000205***	(0.0000486)
TotalAcres	9555.0***	(1758.3)	0.0627**	(0.0181)	10057.2***	(1867.7)	0.0759***	(0.0205)
GarageArea	17.52***	(2.502)	0.000283***	(0.0000329)	18.96***	(2.065)	0.000310***	(0.0000241)
BasementArea	15.28***	(1.606)	0.000241***	(0.0000232)	15.28***	(1.291)	0.000243***	(0.0000185)
Fireplace	10508.7***	(1405.9)	0.119***	(0.0178)	8195.9***	(1256.7)	0.0873***	(0.0163)
Fullbath	6153.3**	(2126.5)	0.0371	(0.0283)	4756.1*	(1992.8)	0.0214	(0.0258)
Halfbath	4270.9**	(1445.2)	0.0144	(0.0172)	3658.6***	(981.7)	0.0158	(0.0125)
Apartment	-15776.2	(9812.2)	-0.150	(0.133)	-13303.8	(9522.6)	-0.102	(0.112)
Building Class								
A	0	(.)	0	(.)	0	(.)	0	(.)
B	-34138.4	(55601.4)	0.305	(0.422)	-35935.0	(50639.7)	0.235	(0.367)
BC	-62402.7	(50141.8)	0.150	(0.439)	-71387.5	(44967.7)	0.00235	(0.384)
C	-94232.2	(56780.5)	0.0328	(0.464)	-101269.7	(52431.1)	-0.128	(0.413)
CD	-106216.3	(56322.3)	-0.124	(0.461)	-107809.5*	(52253.5)	-0.209	(0.413)
D	-108205.8	(56374.7)	-0.177	(0.461)	-113623.7*	(52155.6)	-0.310	(0.414)
Stories								
1 Stry	0	(.)	0	(.)	0	(.)	0	(.)
1 1/2 Stry	3916.6**	(1101.9)	0.0437*	(0.0170)	2577.0**	(887.3)	0.0230	(0.0139)
2 Stry	2404.5	(2643.2)	0.0292	(0.0407)	1222.3	(2008.5)	0.0180	(0.0291)
Bi/Tri Level	9173.0*	(4056.1)	0.148**	(0.0520)	10642.7**	(3158.6)	0.174***	(0.0385)
Other	9482.0	(26896.8)	-0.193	(0.268)	7927.2	(24264.3)	-0.209	(0.248)
Heat								
Forced Air	0	(.)	0	(.)	0	(.)	0	(.)
Forced Heat & Cool	3695.7	(2629.7)	0.0409	(0.0327)	4758.0*	(2158.4)	0.0671*	(0.0283)
Wall/Floor Furnace	27.00	(1592.9)	-0.0469	(0.0309)	-2317.1*	(1127.7)	-0.0804**	(0.0232)
Forced Hot Water	3678.0	(1983.0)	0.0471	(0.0326)	1632.3	(1955.9)	0.0165	(0.0263)
Forced Air w/o Ducts	51908.7*	(25225.3)	0.784*	(0.312)	56643.6**	(20357.1)	0.870**	(0.268)
Other	-2016.3	(2233.6)	-0.0412	(0.0376)	-3933.0*	(1836.1)	-0.0746*	(0.0295)
Owner Occupied	0	(.)	0	(.)	0	(.)	0	(.)
Owner Location								
In Lansing	-13651.8***	(1274.2)	-0.244***	(0.0176)	-7834.7***	(941.9)	-0.157***	(0.0133)
In Area	-14451.4***	(1212.2)	-0.261***	(0.0187)	-8732.5***	(831.9)	-0.175***	(0.0139)
In State	-20844.5***	(2005.0)	-0.365***	(0.0249)	-11305.7***	(1446.5)	-0.218***	(0.0169)
Out State	-35273.5***	(1043.5)	-0.617***	(0.0193)	-24668.1***	(649.4)	-0.450***	(0.0150)
School District								
Lansing	0	(.)	0	(.)	0	(.)	0	(.)
Waverly	20633.3***	(4399.7)	0.150**	(0.0450)	26156.3***	(2968.8)	0.183***	(0.0352)
Holt	28227.5***	(5305.4)	0.327**	(0.0988)	28980.1***	(4452.0)	0.333***	(0.0838)
East Lansing	35832.8***	(5369.5)	0.324***	(0.0641)	24387.2***	(5620.6)	0.125	(0.0639)
Okemos	90472.1***	(12536.8)	1.339***	(0.202)	93333.9***	(13708.4)	1.392***	(0.173)
Constant	192730.2**	(55403.6)	11.28***	(0.464)	184995.7***	(49686.6)	11.17***	(0.412)
Observations	43993		43993		43993		43993	
Adjusted R^2	0.402		0.334		0.468		0.412	

Impact of Closure

The interpretation of the focus variable, *Close,* changes over the four models presented in Table 4.5. In Model 1, houses in neighborhoods with closed schools sold for nearly $21,000 less than those in neighborhoods with an open school and was statistically significant at the 99.9% confidence level. Model 2, which replicates Model 1 but with a logarithmic dependent variable indicates a 31% decline in housing value associated with school closure. These two models are traditional hedonic capitalization model but do not include the school-neighborhood fixed effect nor the year fixed effect. Consequently, Model 1 and 2 do not employ the TWFE strategy and thus should not be interpreted to reflect causation.

Model 3 and 4 in Table 4.5 include TWFE, which permits plausibly causal interpretation of the estimate of closure on residential property values. Model 3 shows that school closure results in a reduction in residential property sales by $5,991, but that this estimate is statistically insignificant at the 95% confidence level. Model 4 replicates Model 3 but with a logarithmic dependent variable. The transformation of this variable results in a estimates that can be read as approximate percentage changes for every unit change in the independent variable. [17] Model 4 shows that housing value declines by about 14.8% in neighborhoods with a school closure and is significant at the 99% confidence interval.

The change in the significance between Model 3 and 4 can be accounted for by the characteristics of a log structural hedonic pricing model. Unlike the linear additive models (Models 1, 3, and 5), a log price model allows the value of a variable to change proportionally with other variables. For example, in the additive models, one extra bathroom in a home with

[17] To be read exactly as percentage changes the coefficients in the log models need to be adjusted $e^b - 1$ where b is the coefficient of interest.

7,00 square feet of space is worth the same as one extra bathroom in a house with 2,000 square feet of space. Because of the logarithmic transformation of the dependent variable in Model 4, each estimated coefficient is allowed to vary proportionally with the value of other variables. Consequently, the use of a log model as opposed to an additive model is not simply a change in units from the levels to percent change (Sopranzetti, 2015). Rather, it changes the structure of the estimated coefficients, in this case, resulting in a statistically significant estimate of *Close* on housing value.

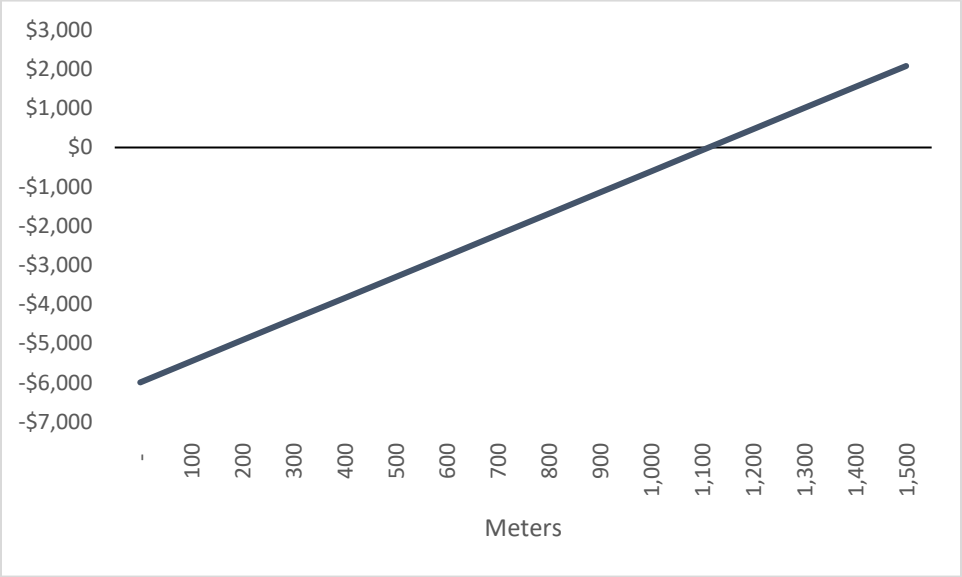
Distance to School

The variable *SchDist* and its interaction with closure, *CloseXSchDist,* also have interesting interpretations. *SchDist* is a property's distance in meters from school property *k* where *k* could be either an open or closed school building. Across all four models, distance to school (*SchDist*) is negative and statistically significant (at the 95% significance level). Model 3 shows that housing values decline by about $8 for every additional meter a house is away from a school property. Similarly, Model 4 housing value declines by 0.017% for every additional meter further from a school property. The implication here is that school properties have a positive association with property values that are physically close relative to those that are far away.

When *SchoDist* is interacted with closure, *CloseXSchDist*, the coefficient is positive implying that houses sold farther away from a closed school building sell by about $13 less per meter in Model 3 and 0.017% per meter in Model 4. Unlike the *Close* variable, the distance closure interaction remains statistically significant across all three. This stability is reassuring. While *Close* is a blunt measure that treats the impact of school closure on the values of homes 50 meters away the same as 2 kilometers away, the distance-closure interaction measures dosage of the treatment.

Taken together, the interpretation of the closure variable along with the distance and distance closure interaction provide a consistent and intuitively plausible finding: the impact of closure on housing value fades out the farther a house is away from the closed school. Figure 4.4 shows the relationship between school closure and distance using the *Close* variable as the y-intercept for Model 3.

Figure 4.4: School Closure Effect by Distance



Although the ATE of school closure is not precisely estimated in Model 3, the results suggest that any impact of closure might fall to zero for houses that are about 1.1 km away from the closed school.

Closure Years

In Model 3, the *CloseYears* variable has a positive but statistically insignificant coefficient. This implies that whatever ATE that might exist, however imprecisely measured, may fadeout over time. If the *Close* and *CloseYears* estimates in Model 3 approximates the true effect of closure on property value, it implies that the closure effect fades out after about eight and a half years. In contrast, Model 4, which uses a logarithmic dependent variable, displays a

negative and statistically insignificant coefficient for the *CloseYears* variable indicating that the closure effect may persist over time. Regardless, the estimate of *CloseYears* in both Model 3 and 4 are statistically insignificant and thus should not be taken as evidence that the closure effect fades out over time. Rather, this hypothesis should be tested in future research.

Property Characteristics

In general, coefficients on the measures of property quality go in expected directions. For example, the coefficient on the effective age (*EffAge*) of the primary building on the property is negative; for each additional year of a properties age, the sale price was reduced by about $357 in Model 3 and about 0.45% in Model 4. Similarly, as the number of full bathrooms (*FullBaths*), half bathrooms (Half*Baths*), fireplaces increase (*Fireplace*), so too does a home's sale price (though not all of these estimates were statistically significant). Likewise, total floor area (*FloorArea*), garage area (*GarageArea*), basement area (*BasementArea*), and acres (TotalAcres) are all positively associated with housing values. Although the measurement of the *Apartment* variable is suboptimal,[18] the coefficient shows that these properties are associated with lower property values. The building class dummy variables also have a straightforward interpretation, though with very limited statistical significance (likely due to the low amount of variation in the sample). Building class is a measure of the zoned density allowed by the city. The lower the

[18] One distinctive characteristics of the Lansing housing market that sets it apart from many communities is the high proportion of renters. Across Michigan, US Census data show that about 71% of households live in an owner-occupied dwelling. In Lansing, only about 50% households live in an owner-occupied dwelling (American Community Survey, 2017). Considering this context, the mean of Apartment appears too low. This is because there is not a consistent measure of whether a building is a rental property or is owner occupied. Instead, I used the only available option, which was a variable denoting whether the sold parcel had an apartment number in its address. This is why the less than 2% of the home sales were apartments, but a full half of Lansing residents rent rather than own. Despite its flaws, *Apartment* was left in because it is the only measure available for whether the property is primarily a rental property.

building class, and consequently the higher the allowed residential density, the lower the sale price.

Unlike, the property quality covariates described above, there is no clear interpretation of the *Story* dummy variables. Compared to a single-story house, houses with an additional half story get a $2,577 premium in Model 3, but two-story houses do not get a statistically significant increase. Additionally, Bi- and Tri-level houses get a large boost of about $10,642.

Interpretation of the *Heat* dummy variables is also somewhat perplexing. Compared to a traditional forced air heating system, adding air conditioning is associated with more than $4,758 increase to housing value. This makes sense since the addition of air condition to a home can be quite expensive. The only other *Heat* dummy variable to have statistical significance was the *Forced Air w/o Ducts*. That magnitude on this variable is suspiciously high at $56,643. Why this type of heating is associated with a near doubling of property values is unknown. Interestingly, this type of heating system is present in less than 1.5% of properties in the sample. In general, heating and cooling systems without ducts offers some important benefits as they are usually quieter than a traditional duct-based furnace, allow for individual room heating and cooling, and are less expensive to run. One, perhaps more probable interpretation, is that this variable is correlated with unobserved variation in property quality.

Seller location

The set of dummy variables denoting the seller's location (owner occupied, in the Lansing area, in state, or out of state) are statistically significant across all four models and follow a hierarchy: the further away the owner lives from the property, the lower the sale price. I offer two plausible and nonexclusive explanations for this interesting finding. First, owners who live farther away from their property may be willing to accept a lower sale price than those who

live closer. Second, the owners who live farther away from the property may take worse care of the property they are selling decreasing the quality of the property in ways that are unobserved. In this case, the *Seller Location* variables would capture unobserved variation in property quality. Regardless, the data and identification in this study do not permit us to clearly distinguish between these or other possible interpretations.

School Districts

Less than 2% of sales in my sample were sold in a district other than the Lansing School District. The districts of Waverly, Holt, and East Lansing border the Lansing School District. Several small areas within the municipal boundaries of the City of Lansing are not within the catchment area of the LSD but rather suburban districts. The City of Lansing has six "islands" that are not geographically connected to the main city. Only one of these islands, an island in Okemos, contain residential properties that have recorded sales between 2002 and 2017.

Properties sold outside of the Lansing School District experienced a statistically significant premium over the properties in the Lansing School District. Additionally, the range of estimates across the three models is relatively consistent: the greater the socioeconomic status of the suburb the higher the premium. Neither the magnitude nor statistical significance of coefficients changes enough to invalidate the inference of closure if properties outside the Lansing School District are removed from the sample. For this reason, these observations were left in the sample along with the district dummy variables.

Heterogeneous Closure Impacts

Model 1, 2, 3, and 4 estimate the ATE of school closure on property values. One distinct possibility is that some unknown and unobserved phenomenon moderates the relationship between school closure and housing values. If this were the case, school closure might have a

large impact in one some neighborhoods but little to none in others. In other words, school closure may have a heterogenous impact on neighborhood housing value. To explore this possibility, I replicate Model 3 and 4 in Model 5 and 6 respectively allowing the treatment to vary for each school closure. Instead of grouping all closures together to estimate the ATE, I allow the effect to vary across schools by interacting closure with the school-neighborhood. Model 5 and 6, in Table 4.6 allows each school closure to have its own separately estimated impact on property values.

Table 4.6: Model 5 and 6 Regression Results

	Model 5		**Model 6**	
	y = sale price		**y = log(sale price)**	
	Coef.	**SE**	**Coef.**	**SE**
School Closures				
Allen	1780.8	(3389.1)	-0.0975*	(0.0403)
Grand River	-262.2	(2906.4)	-0.250***	(0.0391)
Bingham	-342.6	(2567.0)	-0.111**	(0.0381)
Otto	-4741.3	(3046.2)	-0.201***	(0.0452)
Elmhurst	-11478.9**	(3424.1)	-0.0511	(0.0489)
Maple Grove	-11131.0**	(3557.8)	-0.0968*	(0.0441)
Moores Park	-5740.1	(3546.6)	-0.126*	(0.0480)
Verlinden	-15407.1***	(3398.3)	-0.139**	(0.0396)
Wainwright	-10325.0**	(2914.7)	-0.174***	(0.0424)
Walnut	-5051.6	(2967.3)	-0.0993**	(0.0353)
Hill	-11235.7**	(3399.3)	-0.0321	(0.0496)
Woodcreek	-12548.8***	(2964.7)	-0.0868	(0.0473)
SchDist	-8.233**	(2.888)	-0.000167**	(0.0000473)
CloseXSchDist	14.91**	(5.130)	0.000154*	(0.0000677)
CloseYears	596.6	(367.0)	-0.00411	(0.00449)
Property Characteristics				
CBDDist	2.444	(1.921)	0.0000675*	(0.0000318)
EffAge	-356.5***	(42.81)	-0.00451***	(0.000550)
FloorArea	13.73**	(3.901)	0.000205***	(0.0000485)
TotalAcres	10043.8***	(1853.8)	0.0761***	(0.0207)
GarageArea	18.95***	(2.055)	0.000311***	(0.0000241)
BasementArea	15.26***	(1.291)	0.000243***	(0.0000185)
Fireplace	8184.4***	(1253.4)	0.0873***	(0.0163)
Fullbath	4808.8*	(1984.6)	0.0207	(0.0259)
Halfbath	3678.9***	(979.8)	0.0156	(0.0124)
Apartment	-13399.2	(9553.4)	-0.101	(0.112)

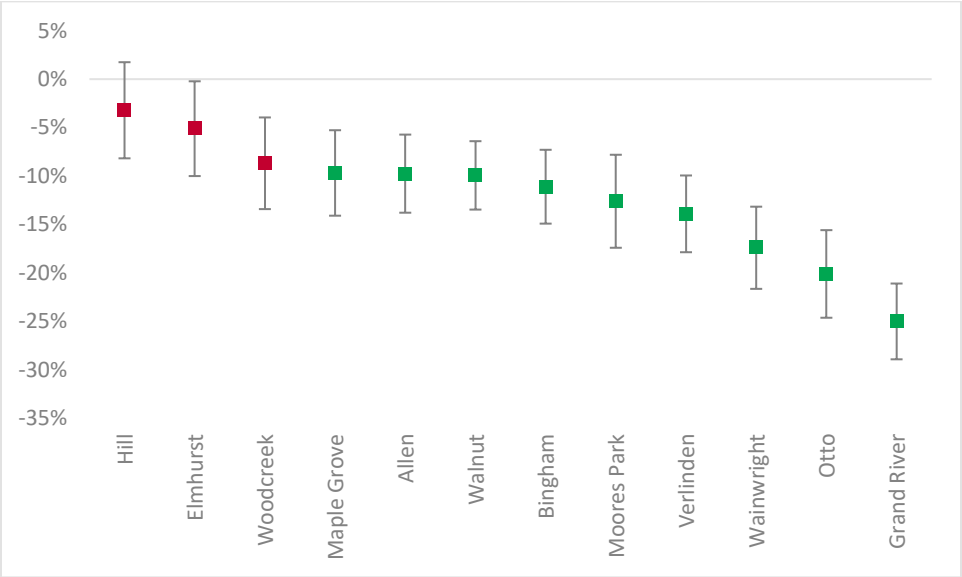
Table 4.6: (cont'd)

	Model 5		Model 6	
	y = sale price		y = log(sale price)	
	Coef.	SE	Coef.	SE
Building Class				
A	0	(.)	0	(.)
B	-36159.8	(50584.1)	0.237	(0.367)
BC	-71674.1	(44894.0)	0.00538	(0.385)
C	-101542.7	(52361.1)	-0.125	(0.414)
CD	-108061.6*	(52186.8)	-0.206	(0.414)
D	-113895.5*	(52087.9)	-0.307	(0.414)
Stories				
1 Stry	0	(.)	0	(.)
1 1/2 Stry	2519.2**	(891.3)	0.0230	(0.0139)
2 Stry	1220.5	(2006.7)	0.0177	(0.0291)
Bi/Tri Level	10616.4**	(3159.7)	0.175***	(0.0385)
Other	8117.7	(24279.9)	-0.211	(0.247)
Heat				
Forced Air	0	(.)	0	(.)
Forced Heat & Cool	4801.2*	(2153.3)	0.0671*	(0.0283)
Wall/Floor Furnace	-2433.1*	(1130.2)	-0.0805**	(0.0233)
Forced Hot Water	1559.2	(1942.4)	0.0155	(0.0265)
Forced Air w/o Ducts	56737.8**	(20359.7)	0.869**	(0.268)
Other	-4015.7*	(1819.9)	-0.0758*	(0.0291)
Owner Location				
Owner Occupied	0	(.)	0	(.)
In Lansing	-7788.3***	(939.1)	-0.158***	(0.0133)
In Area	-8619.3***	(832.5)	-0.175***	(0.0139)
In State	-11292.2***	(1439.7)	-0.218***	(0.0168)
Out State	-24595.3***	(651.9)	-0.450***	(0.0151)
School District				
Lansing	0	(.)	0	(.)
Waverly	26161.3***	(2959.2)	0.182***	(0.0353)
Holt	29118.3***	(4457.4)	0.331***	(0.0838)
East Lansing	24478.9***	(5591.0)	0.124	(0.0644)
Okemos	93834.2***	(13649.3)	1.385***	(0.174)
Constant	185073.9***	(49630.3)	11.17***	(0.412)
Observations	43993		43993	
Adjusted R^2	0.469		0.413	

Of the twelve school closures in the sample, Model 5 shows that six were statistically significant and negative, five were statistical insignificant and negative, and only one was statistically insignificant and positive. Additionally, the statistically significant coefficients show large penalties to school closures of more than $10,000 per property. Model 6 shows all are negative with nine statistically significant. These results provide additional evidence of a negative relationship between school closure and housing values. They also suggest that this relationship is heterogeneous in nature and that some other unobserved phenomenon may be moderating the relationship between closure and housing value. Figure 4.5 shows the estimated

coefficient and the standard errors from Model 6 for each individual school closure effect. Green squares represent statistically significant results with red squares representing statistically insignificant results.

Figure 4.5: Model 6 Effect and Standard Deviation by Closed School



Limitations of Two-Way Fixed Effect Identification

The TWFE strategy is a common method to remove both group and time invariant confounders. This strategy, however, is subject to assumptions that, if not met, can lead to bias in the estimate and invalidate casual inference. To understand the inherent limitations of TWFE, it is important to have an intuitive understanding of what is 'happening' with the estimator. TWFE model are a common alternative to the classic difference-in-differences estimation strategy when the timing of the treatment varies. Essentially, a TWFE is estimating all possible DID and then using a weighting average based on group size and treatment variance to estimate an ATE. In the simplest case where there are two periods, the DID and TWFE estimators are equivalent. If the TWFE includes more than two time-periods, however, the TWFE estimator is not equivalent to DID (Kropko & Kubinec, 2020). The key assumption in the DID framework is that the treated

and control groups have common pre-treatment trends. The TWFE relies on a similar but slightly less restrictive variance weighted common trends assumption (Cunningham, 2021).

The TWFE also relies on an assumption that the treatment effect does not vary over time. If there is a heterogeneous treatment effect over time, the TWFE will likely be biased. Moreover, accounting for a heterogeneous treatment effect is not possible within the standard TWFE design. This poses a serious problem in the school closure context. For example, if a school was closed and then became vacant it may drag down home prices more over time. The change in the treatment effect overtime could vary with the upkeep of the property. Alternatively, if a school closed, but was then reused in a way that benefited the community the positive impact of closure could increase over time as residents become more familiar with the new neighborhood asset. Theoretically, there are many avenues by which the school closure effect could vary over time and thus many reasons to be skeptical that the TWFE strategy estimates an unbiased ATE of closure on housing value.

Discussion

Descriptive statistics show that the value of homes in neighborhoods where schools closed are substantially below those where the neighborhood school remained open. To disentangle the causal impact of school closure on housing values, I employed a TWFE strategy within a hedonic capitalization framework. Model 3 shows that housing value is about $6,000 lower in school-neighborhoods with a closure than in those where the school is still open but is statistically insignificant at the 95% confidence level (though it is significant at the 90% confidence level). Model 4 shows that residential housing value is about 14.8% lower in neighborhoods where a school has closed than in neighborhoods where no closure took place. While these results suggest a negative relationship between school closure and housing value, the

relationship may be heterogeneous and/or moderated by some unobserved phenomenon. This interpretation is reinforced by the results of Models 5 and 6, which estimates the effect of each school closure individually. While half of the school closures have statistically insignificant coefficients in Model 5, all but one of these is negative. Additionally, half of the school closings estimated in Model 5 show a strong and statistically significant penalty on housing values after a school is closed.

The results presented in this chapter are broadly consistent with the hypothesis that school closure negatively impacts housing value. Considering these findings in light of the conceptual model presented in Figure 3.1, we now have evidence of some relationship between closure and neighborhood vitality, but do not yet understand how this relationship is propagated. Qualitative inquiry, presented in chapter 5, helps explore the mechanisms behind school closure's impact on neighborhood vitality.

Chapter 5: Qualitative Results

Understanding what school closure means to local residents is the puzzle at the heart of this chapter. While the education policy issues surrounding school closure have been examined at length in the extant literature (and discussed in chapter two), less work has studied how school closure intersects with the public good (e.g. Green, 2013; Jaquelyn Oncescu & Giles, 2014). This dissertation looks to reframe schools as social infrastructure that have community consequences beyond education.

To neighborhoods, school closure represents two major changes. First, closure is often the loss of a place-based anchor institution in a neighborhood making the development of social capital more difficult as the venue and connective tissue necessary for those interactions is removed (Clopton & Finch, 2011; Klinenberg, 2018). Second, closure is followed by the whether and how the school property is reused or redeveloped. The practical policy problem of school reuse is perhaps best summarized by one of the study participants:

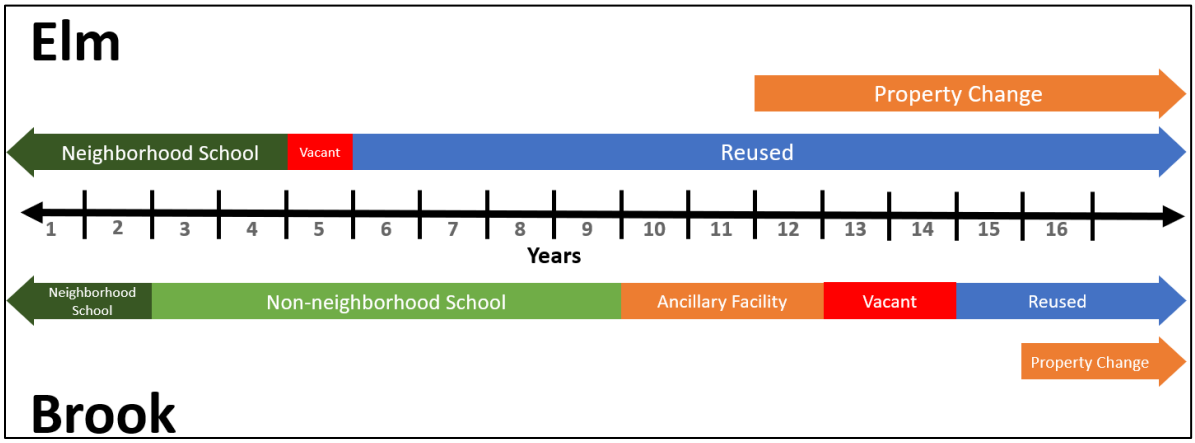
> Schools were built for such a purpose… How do you turn them into other things and what are the options? Because they were built to be part of the community… What is economically viable? … How do we do this? How do we not make things worse in neighborhoods?

Neighborhood schools, especially elementary schools, were often built in the heart of the neighborhood. Unlike other social institutions, which are often separated from residential spaces (e.g., courthouses, libraries, businesses), local schools are more intimate because of their physical proximity. Their location also creates serious problems for reuse. What is the right use of an industrial-sized building in a residential neighborhood? Moreover, this public policy problem continues long after the school board has seceded control of the property.

To disentangle the community consequences of school closure, I explore how the closure and reuse of two elementary schools unfolded in Lansing's Elm and Brook neighborhoods. While both neighborhoods have unique contexts, each experienced and reacted to school closure in somewhat similar ways. The remainder of this chapter outlines the experience of residents before school closure, after school closure, and after the school-property has been reused—covering about 15 years of local history. While these experiences of school closure and reuse are by no means universal, they frame a conceptual path by which residents may experience school closure over the long-term given the conditions of their neighborhood. By considering the perspective of neighborhood residents, with a deep connection to place and a long-time horizon, different policy implications of school closure begin to emerge. Hopefully, the inclusion of these perspectives and a better understanding of how closure functions will help school districts, city governments, and businesses become better neighbors.

Figure 5.1 displays a chronology of uses of the two school-properties under study. While they do share some similarities, the length of time for each use/non-use as well as the ways each property were reused differ. For instance, where the Elm school transitioned directly from a neighborhood school to vacancy, the Brook school transitioned from a neighborhood school to a school serving primarily non-neighborhood residents, and then transitioned to vacancy. Additionally, the Brook school-property was also retained by the Lansing School District for a longer period of time being used as an ancillary facility (i.e., primarily used for storage and briefly as a warming station for Lansing City police). Though the Brook school was used as an ancillary facility, residents described this as vacancy.

Figure 5.1: School Closure and Reuse Timeline



This research adds to the limited body of work on the impacts of school closure on local communities (e.g. Irwin & Seasons, 2012; Kearns et al., 2009). The consequences of school closure are broader, deeper, and more long-term than is typically acknowledged. For policymakers to make informed school closure decisions, it is important to understand holistically how these decisions impact both students and communities. The first step in improving conditions for communities with closed schools is studying how residents experience school closure and reuse.

This chapter is organized roughly chronologically. Before describing school closure, I present a portrait of Elm and Brook to provide readers with context. Next, I describe how residents viewed the school and neighborhood before the school closure occurred. Then I show how perceptions of the neighborhood changed after the school closed and how reuse of the property further complicates the way school closure impacts neighborhoods. I end with brief summary and discussion of the findings.

Neighborhood Portraits

The next two sections provide a portrait of the Elm and Brook neighborhoods. I describe the borders of the neighborhood, the streetscape, the quality of the housing stock, the points of interest (i.e., landmarks), as well as the school property itself. While I spent considerable time in both neighborhoods, my knowledge of the Elm neighborhood is more complete because I lived there for four years.

Elm

Elm is a rectangular neighborhood of about 90 acres of land spread across 24 blocks. The borders of the neighborhood are defined on each side. A river defines both the northern and eastern borders. Each has a bridge to connect the neighborhood with the rest of the city. The southern border is defined by a large road with high traffic flow that splits two distinct residential corridors. The western border is less tangible and has more to do with social geography than physical geography. Elm's western border effectively ends at a road that separates less socioeconomically advantaged residents outside the neighborhood, from somewhat higher socioeconomic residents in the neighborhood. Socioeconomic status here is relative. In fact, the Elm neighborhood has quite low measures of socioeconomic status relative to the nation or Michigan (e.g., race, income, educational attainment, and rental).

In the summer, the streets and sidewalks of Elm are shaded by large, mostly deciduous trees that line the streets. Many of the sidewalks have cracks with expanding roots of the mature trees. Some lawns are mowed like clockwork others grow long with weeds throughout the summer. In front of many of the houses, trash carts sit on the curb despite the city's policy that trash carts are to be removed from the curb after collection. Similarly, cars often are parked on

the street, regardless of season, often out of an apparent lack of parking despite the city's winter parking ban.

The housing stock in the Elm neighborhood is decidedly mixed. Architecture in the neighborhood varies between large beautiful early 20th century single family homes, many of which have been retroactively converted into duplexes or triplexes, to smaller uninspiring homes constructed in the latter half of the century. Most of the houses are two stories, but several one- and three-story houses are sprinkled in as well. In Elm, it is not uncommon to see a house that has recently been renovated across the street from a house that is visibly neglected. Most property parcels in the neighborhood are long, thin, and small (almost universally under a quarter acre). Very few houses have a garage, but many share a driveway to parking in the backyard with their neighbor. Some of these driveways have disintegrated to dirt but other are well kept and a few look to have recently poured asphalt. Shared driveways are mostly a product of the density of the neighborhood with houses that are often quite close together, many spread no wider than the shared driveway itself. Yet, this density is artificially punctuated by suspiciously vacant plots of land where a blighted house had been demolished. While some of these vacant plots are used by adjacent residents, others appear unkept and overgrown.

Points of interest primarily fall around the border of the Elm neighborhood with just a few non-residential buildings falling inside the neighborhood. A dilapidated shopping plaza including coin laundry, an auto shop, and a small grocery store, sits on Elm's northern border (though the grocery store was closed and has remained vacant for about the last five years). Across the street from the shopping plaza is an independent fast-food restaurant, that despite its somewhat rough appearance almost always has a line of cars coming out of the drive through and bustles with activity. Just inside the neighborhood's northern border lies a hole-in-the-wall

bodega, a rundown liquor store plastered with advertisements for cheap alcohol, and a now-vacant pot shop. The eastern border has several formerly residential properties that have been converted into offices for law firms, political consultant and an interest groups. A prominent music shop sits on the north-eastern edge of the neighborhood with visitors from the neighborhood and around the city. Across the east river, there is a commercial center that has seen significant development in the last twenty years with independent restaurants, boutiques, and breweries. The commercial center is a five- or ten-minute walk from middle of the Elm neighborhood. The Elm elementary school lies in the middle of the neighborhood across the street from a large church whose parishioners typically come from outside the neighborhood.

The central location of the Elm school provided its neighbors with the only real public land in the neighborhood. The two-story brick school has impressive architectural structures, and evoke a sense of history, which is fitting since the Elm school was first constructed in the 1890's and expanded in the 1900's, and 1930's (MacLean & Whitford, 2003).

Brook

The Brook neighborhood covers about 230 acres over 60 blocks. The neighborhood is rectangular except for its northern border which follows an irregular curve with the river. The remaining eastern, southern, and western borders are comprised of high traffic streets that separate the Brook neighborhood from other residential and commercial areas. Centrally located in the neighborhood, the Brook park spans about a third the length of the neighborhood and is centered along the northern border.

Tall trees hang over the streets and sidewalks throughout the neighborhood. Speed bumps mark the entrance on the eastern, southern, and western sides along with accompanying signs. The neighborhood association has also erected several signs of their own throughout the

neighborhood. One central sign welcomes people to the Brook neighborhood. Another sign points the direction of points of interest from the community garden. The frontage of most houses is well kept, and flower gardens are common.

The housing stock in the Brook neighborhood is newer, less dense, and in better condition than the Elm neighborhood. There are a mix of single and two storied houses almost entirely constructed in the second half of the 20th century. Houses have larger parcels than in the Elm neighborhood and thus have more space between the structures. Shared driveways are uncommon, and houses have considerable space between them. That space is often filled with trees or other greenery. Although several houses are multiple-family dwellings, the vast majority are single-family occupied. Houses along the periphery of the neighborhood tend to be smaller and in worse condition. In contrast, houses that are proximal to the Brook park are generally better kept than those towards the south of the neighborhood. Only a handful of properties are in noticeable disrepair and none are visibly vacant or derelict. Single car garages are common, most of which are tucked away behind the house of in an alley. Though the neighborhood has several alleys, they are not used for garbage collection.

Brook has many community institutions spread throughout the neighborhood as well as access to a nearby commercial district. Perhaps the most important social space is the central Brook park, which anchors the neighborhood and is surrounded by other public assets. The park has many trees, a sledding hill for the winter, access to fishing, a playground, basketball courts, and a small soccer field. Bordering the Brook park and sandwiched between the river to the north and the Brook school-building to the south is a public swimming pool with a long history in the neighborhood (constructed in the 1920's). There are three churches in the neighborhood one of which includes an attached parochial school. The western border of the neighborhood had a

community-oriented charter school. Unlike many charter schools, the charter school in Brook was regularly engaged with the community, especially with Black residents (though this charter school has closed recently). The Brook neighborhood also boasts a community run youth art studio, which provides students with afterschool enrichment activities. In fact, the art studio exists as an outgrowth of a program that the Brook school had helped incubate. The Brook neighborhood is also close to a new commercial district that has developed in the last ten years. This district has trendy, casual eateries, second-hand boutiques, and commercial space.

The single-story Brook School sits atop a picturesque bluff overlooking the central park. Brook elementary school was originally constructed around 1905 with a second story added in the next decade. The original building was replaced by the current structure in the mid-1950's (MacLean & Whitford, 2003). Although the school's updated2 architecture is unremarkable, its setting is appealing. The school is nestled amongst trees with a view of the river, the park, and the public pool.

The Brook school has a small parking lot directly adjacent. This is important because the next closest public parking lot is at the other end of the park, a quarter of a mile away. The pool, which sits next to the school has no independent parking lot since it was built before it was common for residents to have cars (circa 1920). Until the school closed, the parking lot was used by residents to access the pool and the park. Additionally, the parking lot was accessible from both the north and the south. This was important because it acted as a small road between two streets in the Brook neighborhood. Without this parking lot road, residents would need to drive all the way to the eastern border of the neighborhood to access the north-eastern most corner of the neighborhood.

Before Closure

Schools are both place of formal education and places of informal social interaction that bind communities together. The Elm and Brook elementary schools played an important role in fostering social cohesion in their respective neighborhoods before they closed. Understanding what functions they played before closure is important in understanding how closure might have changed that relationship. This section outlines how residents perceived their neighborhood schools as sites of student learning and non-educational community amenities.

School Quality

Both parent and non-parent interview participants had opinions about the quality of the former Elm and Brook neighborhood schools before they closed. One memory shared by a former parent of a Brook school student said, "the teachers that we had at [Brook] school were incredible." Still, even when reminiscing, residents acknowledged the context of the school. "I loved it [the school]; the neighborhood loved it, but it was more of a school for poor people." In this way, participants often talked about the quality of the school under the condition that it served disadvantaged students or focused on the non-academic positive aspects of the institution.

In many ways, the quality of Lansing's schools seems to be understood by its residents in contrast to outlying suburban communities with whiter, wealthier, and more academically accomplished schools. One resident described Lansing in contrast to other suburban districts: "there are people from [communities closed to Lansing] that view [Lansing] as inner city… This is just mixed neighborhoods—mixed in terms of income, ownership, and rental." One of the way this comparative understanding of school quality manifests was through discussions about interdistrict school choice. One resident described the personal pressure they experience to use school choice:

> There were a number of parents back then and now that use schools of choice… I just have a very strong deep conviction to be a part of the public-school system. And I think the Lansing school district faces a lot of challenges, in part, because parents that care and have the resources are going to other schools and it's leaving an urban school district without some of those resources…I think the [Lansing] school district faces a lot of challenges…I got flak from friends … 'why would you put your kids in the [Lansing] school district.' There's this reputation of it being rough or academically not on top of things.

For this resident, they experienced both external pressures to exit due to perceived inferiority of LSD schools as compared to neighboring districts as well as internal desire to stay to support the community. Interestingly, the respondent's rationale for staying in the Lansing School District was not that it was that it was academically superior. Rather, they made an argument about the impact of collective disinvestment on the district. Her assessment of the academic quality of the school district was less important than its role in the community.

Other participants talked about the reason for sending their child(ren) out of the districts. Occasionally, when residents talked about school choice, the topic of race was just beneath the surface. For instance, one elderly white resident focused on the disciplinary aspects of the Brook school which led them to look outside the district, saying: "my kids were very smart, and I didn't want them getting in trouble everyday… my kids were not a good fit for [Lansing] schools… [Brook school] would just feel, not the way I'd like a school to feel—too regimented." In other parts of the interview, the respondent brought up issues of discipline and safety that made the school the wrong fit for her children. In this example, the white parent had a rationale for exiting the Lansing school district which relied on negative racial stereotypes. To participants, "school

quality" was not limited to academic achievement alone. In fact, both parents and non-parents alike did not seem particularly concerned with the academic quality of their neighborhood school. Instead, school quality was largely discussed in terms of the social and behavioral characteristics of students. In fact, residents rarely brought up test scores or other "accountability" measures. Rather, they often made comparison between the Elm and Brook schools and suburban alternatives in terms of the socioeconomic characteristics of their students and perceptions of where their own children best fit in.

Social Infrastructure

While residents had mixed feelings about the educational quality of their neighborhood schools, residents in both Elm and Brook valued those schools as neighborhood assets, or as one resident described a "neighborhood fixture," prior to closure. This positive orientation towards the former school was present even when participants chose to send their children to schools outside of the neighborhood or district. Residents talked about how the school helped to foster social capital and community identity. This physical infrastructure created a space for residents to interact and added value to the community as a venue for social interaction. While relationships developed in and around the school did not necessarily lead to close friendships, many residents noted how the school enhanced neighborhood relationships: "We're not necessarily friends in hanging out at each other's houses but knowing that we all kind of lived or used to live in… [Elm] and is that was something that I appreciated because it's its own network." The school helped build a loose connection of parents as well. Another resident reinforced this notion when he explained that: "everybody kind of knew each other… and I still see adults I can remember, you see them at Meijer or somewhere. So, it was kind of seemed like a neighborhood." Despite the looseness of the relationships, both Elm and Brook were able to

create a common familiarity among residents. Resident parents also talked about how the formal educational institution connected them to other families in the neighborhood:

> At the elementary level, generally parents aren't moving their kids all around. Kids are learning 1, 2, 3's.... When they're this age people are involved. you know "look at my baby; my baby did this; my baby did that. There were just all kinds of different programs.

Parents whose children once attended the neighborhood schools mentioned that it gave them greater connection to other children in the neighborhood. One resident from the Elm neighborhood said:

> When you go to a PTA meeting in your neighborhood the people that are going to that school live in your neighborhood and their kids are doing things like kicking over porta-potties, but you know their mother and you can go knock on their door. If you go to a school [other than your neighborhood school] you don't know who that mother is or where she lives.

By having a loose connection with other parents in the neighborhood, adults could play a more supportive role in the lives of other resident's children than when the school closed. While residents typically understood the relatively poor educational outcomes of each elementary relative to those in the surrounding suburbs, they were consistent in reporting that the school stood as an anchor institution in their neighborhood.

Other residents, especially those without children or whose children did not attend the neighborhood school, emphasized the non-educational assets that the school property provided to residents before closing. Prior to closure, the properties had many non-academic uses. These uses

fall into four categories in the interview data: organized school activities, organized neighborhood activities, organized school-neighborhood activities, and unorganized neighborhood activities. These uses can be mapped onto the conceptual framework outlined in chapter three. Table 5.1 lists uses of the schools, aside from formal instruction, identified by study participants. All of the uses described in Table 5.1 would eventually be eliminated from the Elm and Brook schools after closure and reuse.

Table 5.1: Pre-closure School Uses

		Educational Service	**Social Infrastructure**	**Economic Activity**
Organized school activities	• Parent Teacher Organization (PTO)	Yes	Yes	
	• Tutoring / Volunteering to help students	Yes		
	• School plays		Yes	
	• DARE meetings	Yes		
	• Yearly Halloween party		Yes	
	• Bake sales / book fairs		Yes	Yes
Organized neighborhood activities	• Neighborhood meetings		Yes	
	• Voting place		Yes	
Organized school-neighborhood activities	• Planting flowers in the adjacent park		Yes	
	• Neighborhood art show		Yes	
	• Food distribution			Yes
Unorganized neighborhood activities	• Play on the playground or ball field		Yes	
	• Use of grounds as a dog park		Yes	
	• "Pass through" to other neighborhood assets		Yes	
	• Parking lot on weekends		Yes	Yes
	• Aesthetic and historic draw of property and architecture		Yes	Yes

One resident without children emphasized the physical assets of the school property.

> It was a baseball diamond... We used to walk our dogs there [and] throw the frisbee. There were…100-year-old oak trees…beautiful oak trees… It was a cool little spot that you could meet your neighborhoods and walk your dog and things like that.

While the formal educational role connected neighborhood parents together, the physical public space provided a venue that could be enjoyed by all. Schools play an often underappreciated in providing a venue for both organized and unorganized social interaction in neighborhoods.

The neighborhood school gave volunteering opportunities to parents, grandparents, and residents with and without children alike. In fact, volunteering came up in most resident interviews. Before the schools closed, neighborhood groups volunteered to plant flowers, help with field trips, put on school plays, teach after school art lessons, run food services, and more. Because the topic of volunteering came up consistently, without it being a part of the interview protocol, it is difficult to attribute these volunteering activities to virtue signaling of the participants alone. Still, volunteering may have come up so often because a large portion of the resident participants were currently or formerly active members in their respective neighborhood associations. In this way, volunteering was an activity by which the school acted as a social bridge between parent and non-parent residents in the neighborhood.

The Brook school also activated and connect other pieces of the neighborhood together. As noted earlier, the school in the Brook neighborhood occupied and important location in the neighborhood because the property physically separates part of the neighborhood from the rest. Without the school parking lot, one of the streets in the Brook neighborhood is inaccessible from the rest of the neighborhood. For years, residents had used the Brook school parking lot, which

has a northern and a southern entrance as a "pass through" to access a part of the neighborhood that would otherwise be cut off. The school parking lot functioned as a road connecting two otherwise separate parts of the neighborhood. The school is also located directly adjacent to a public pool, which the neighborhood enjoys immensely. Because of the school's location, many people would park at the school when going to the pool since no dedicated pool parking exists. In these ways, the school in the Brooks neighborhood was both an asset in of itself and a way of accessing other community assets.

Pre-Closure Change

The Brook school, unlike Elm, experienced significant change before its closure in the mid 2000's. During most of its history, the Brook school drew its enrollment from the local neighborhood. As district enrollment declined, fewer than 200 students were left in the neighborhood school. Meanwhile, Lansing School District was looking for ways to respond to competitive pressures and enrollment loss due to school choice. These factors resulted in the decision to turn the Brook school into a magnet school specializing in early reading interventions. This flipped the enrollment pattern of the school resulting in only a small minority of students from the neighborhood attending the school in the last few years of it being open.

This reconfiguration changed the way residents viewed the school. One concrete issue was that the school infrastructure was not designed to accommodate the number of busses needed to get students to the school.

> The people who lived there didn't like the busses because there would be lots of busses and then there'd be the parents picking up and they'd be all in front of people's driveways and people were saying it doesn't feel safe. For one bus would be okay, but with multiple buses and cars wanting to pick up their children.

These sorts of logistical problems masked another issue. The Brook school transformed from a neighborhood asset to a district asset that happened to be located in the neighborhood. The replacement of neighborhood kids with students from around the city resulted in dissociation of the school from the neighborhood.

> I think people missed, people I knew had children that went there, and people felt like it wasn't the same as it was. You didn't know the people because they weren't in your neighborhood. Like when they would have the winter concerts and stuff like that… now it's all busses going to different schools in different places. I don't know. It's just not as much knowing people.

In this way, the change in the enrollment composition gave the Brook neighborhood a taste of what was to come when the building would be shuttered for good. It also gave the neighborhood time to accept the loss of their neighborhood institution. This change to a magnate school also suggests a conditioning factor on schools as a social anchor. The neighborhood-school connection is stronger when the school serves children in the surrounding neighborhood. Residents value schools that serve *their kids* even when they do not have children in school.

After Closure

Despite signs that the schools in the Brook and Elm neighborhoods might close, the final decision to close the schools was difficult for neighborhood residents. Local news reports at the time of closure indicate that the closure of both schools was due to the same pressures facing the rest of the district: enrollment decline and financial stress. They explained that the district's decision to close Brook elementary was due to low enrollment and that the district could save $300,000 a year by closing the building. Residents typically had a solid understanding of the

district's rationale for closing both Brook and Elm schools. One resident explained the closure rationale in this way:

> Because of the decrease in the students that were going and being students there and because it was costing the city or the education I guess … They [the school district] get a stipend I guess. The money that runs the schools comes from taxes based on how many children or how many students. Because the student population went down and there's a school on [close by][19]… so that was close enough that kids didn't have to be bussed…Schools were closing all over.

In this one quote, the participant demonstrated a relatively clear understanding of the underlying policy leading to school closure in the LSD. Declining enrollment, partially due to interdistrict choice, resulted in less funding from the state, which forced the district to close schools. While this depth of understanding was certainly not universal amongst the participants the basics were: declining enrollment necessitated school closure. Regardless of their understanding of the policy precursors, participants lamented the loss to their children specifically and the community more broadly. As the resident noted later in the interview, "even the frickin Mayor sent his kids to East Lansing." The flow of enrollment, and therefore revenue, out of the district was the ultimate reason for school closure in Lansing.

Sense of Loss

Interview participants invariably talked about school closure as a loss. Even though these schools offered unexceptional education (in terms of standardized test scores), communities valued these public institutions. A typical participant's response: "when the school closed… it

[19] Exact name of proximate school was removed to improve confidentiality.

was really sad because, I mean any neighborhood, there's something about having a neighborhood school that's kind of special." Another participant said that "the worst thing about living in [Elm] neighborhood is that we don't really have a public school. That's one of the worst things about this neighborhood." Yet this resident did not have school-aged children. Many of the respondents had difficulty putting their finger on exactly why the closure made them feel the way it did, instead leaning on generalities. Still, some participants explained their sense of loss poignantly. One said:

> I was very sad. It's a part of my neighborhood. There's something about history that really that I love, but I did understand with school choice people were not coming into our district. I voted yes on every bond issue for our district. I truly believe that education is so important. Education is so important.

This kind of response suggest two sources of negative feelings around school closure. First, the loss of a shared history embodied by the physical structure of the school. Second, despite continually supporting the Lansing school district in the ways they knew how, they felt that closure was a defeat.

Another respondent said that "school closure matters to a lot to people... To people it would be an emblem of defeat like a surrender somehow." In this way, school closure not only represents the actual loss of a neighborhood institution, but also a signal of loss and decline that went beyond the closure of that particular school. Closure was more than just the loss of a neighborhood asset; it was a symbol. The response also suggests that this participant did not

understand that school operating revenue is determined by the state, with virtually no local control. All bonds they voted for were district capital millages—most of which did not pass.[20]

Demographics Change

After the closure of the Elm and Brook schools, residents noticed demographic changes in their neighborhoods. One resident said that when the school was open:

> Kids played out in the school yard and it was a nice thing…When you close a school like that, a neighborhood school, the kids have to go to school somewhere. So, there's not a real reason to have kids here anymore. So, there aren't that many kids here really. It seems like it's mostly adults…when the kids went to school here it kind of helped the whole neighborhood… it was pretty cool in those days.

Another participant remarked on the way school closure changed the demographic landscape of their neighborhood.

> This neighborhood probably has become a little more young adult. There's so many more young hipsters. People are not walking their children… There used to be a lot of kids around here. They used to be blocking the streets playing football in the streets, skateboarding in the streets, doing all kinds of things. Trying to play baseball because the street wasn't that busy.

These perception were accurate. Indeed, there was a decline in the school-age population in both neighborhoods beyond the decline in the city at large. While the city of Lansing's school-aged population declined by 14% between 2000 and 2017, declines in Elm and Brook were 25% and

[20] A large capital millage, marketed as the Lansing Pathway Promise, did pass in the Lansing School district in May of 2016. The bond will generate over $120 million.

40%, respectively (U.S. Census Bureau, 2000, 2017). While it is unclear what direction if any this relationship goes—whether school population led to fewer children or whether fewer children led to school closure—the relationship observed by residents is born out in the demographic data.

Social Change

Residents also expressed how school closure changed the social makeup of their neighborhood. One participant described how the school used to draw families looking to live in a vibrant neighborhood:

> People moved here because of the school and it's just they started taking away all the programs for the kids. So, now when you don't have programs for kids you don't have kids outside playing because parents don't know each other. So, most of the times when you create relationships in communities, they start with the school. You're all waiting there for your kids to come out and your kids are hugging someone else's kids and you're like oh my god Suzy lets go for a play date or let's go to the park. We don't have that. We stopped having that which is the reason why people didn't keep within this current environment.

Another resident made a similar statement:

> When the school closed… it was really sad because, … there's something about having a neighborhood school that's kind of special … and a school building there's kids involved and parents. It's always easier to meet people I think when you have kids, because your kids meet other kids and you meet their parents and that's how I met a lot of my neighbors: through kids.

These residents emphasized how the school acted as a social anchor in their community and how its removal diminished social capital in the neighborhood. The schools not only served children that happened to live in the neighborhood but was an active draw for perspective families looking for a place to live as well as venue for building bridging social capital. Because of fewer services for children and families, fewer children and families wanted to live in the neighborhood. From the perspective of residents, the presence of the school brought families in and its absence repelled.

When the school closed, avenues for social interaction and community building were shut off. One resident noted how other community organizations tried to fill the community building hole left by the school's closure: "When the school closed: children were split to schools and that certainly made for less connections between people. The neighborhood organization became more important when the school closed to hold the neighborhood together." This local point of view, fits neatly with work by Oncescu's studies of rural school closures, which found that interpersonal relationships among elderly people helped mitigate the negative social consequences of school closure (Jacquelyn Oncescu, 2014; Jacquelyn Oncescu & Giles, 2012; Jaquelyn Oncescu & Giles, 2014). When one social institution is removed others become more important and maintaining and building social capital.

Education Decisions

School closure generated sad emotional reactions from residents, coincided with demographic change in the neighborhood, and removed an important local venue for social interactions. Closure also had another important impact; it pushed some parents to use school choice to enroll their child outside of the Lansing School District. The following series of questions highlight how the thought process played out for one resident:

Interviewer: So, if the [Elm] school had been open but you had known about [the charter school] which school would you have had your child attend?

Participant: I probably would have just gone to [Elm].

Interviewer: Why is that?

Participant: Because it's the school in my neighborhood. But if I don't have an option I would have preferred to just walk to school saw my little apples on the window and just picked up my children from school close to home. Because this is what I know. If it was there, it would have been there.... are you looking for a new car when you have a car that works? I mean you don't have to look around for anything if it's there for you.

From this exchange, two things become apparent. First, the parent seems to value proximity very highly. The context of this conversation is that after the Elm school had closed, the parent sent their child to a charter school (referenced in the dialogue) with a specialty curriculum, which she valued very highly. Given this context, it is surprising that geographic proximity was more highly valued by this parent. Second, it is evident that the forced mobility caused by closure pushed this parent to consider sending her child(ren) outside of the LSD. The great irony here is that this parent's first choice of schools, Elm, was closed as a downstream consequences of school choice.

The important question of whether school closure in the Lansing School District increased exit is beyond the scope of this dissertation. Still, the possibility is concerning. The LSD closed Elm and Brook schools (and several others) for financial reasons. If closure of these

schools increased student exit from the district, the district may have inadvertently worsened their situation.

Vacancy

Neither Elm nor Brook schools were purchased immediately after they closed. Consequently, both became vacant—Elm for one year and Brook for five years—before they were reused. The problems and perceptions that emerged from both neighborhood residents and city leaders around vacancy are informative.

Despite losing the building as a school, both the Elm and Brook school properties remained largely public. In both neighborhoods, the former schools were still used for many of the non-educational uses described in Table 5.1. In the Brook neighborhood, the school-property still was able to connect the two physically separate parts of the neighborhood as well as continuing to provide needed public parking for the pool and passthrough to the other part of the neighborhood. The park and ball field that accompanied the Elm school also remained open to the public similar to when the property was a school. Although neither property was used as a place of formal education, they both still provided public value to the neighborhoods.

Although some aspects of the vacant school buildings remained unchanged everyone interviewed wanted the property to be reused in some way. These perceptions largely fell into two non-exclusive categories: positive possibilities of the property and fear of long-term vacancy.

Reuse

Property Possibilities

Some people imagined how the closed school could become a neighborhood asset if it were reused appropriately. One resident was able to list the possible ways the school property might be used that would benefit the neighborhood.

> I would like to see diverse food options in my neighborhood. A grocery store would be key for all of the new tenants with limited incomes and no vehicles. I would like to see a neighborhood center where parents could enjoy time with their children or engage in healthy activities.

This list of possible uses that would most benefit community members similar to the notion of community congruences as described in Simons et al. (2016). An important piece of context is that a local grocery store, a couple blocks away from the former school, had closed about a year before this interview leaving little access to fresh food close to the neighborhood. Even though the closure of the school represented a defeat it held the potential to fill some of the gaps made by decades of underinvestment.

In the Elm neighborhood, residents worked together to mitigate negative effects of the school's vacancy. They maintained the exterior of the property by volunteering to rake, mow the lawn, and plant flowers. They did so because they felt the school district was not keeping up the property enough and they wanted to maintain it so it could continue to be a community asset. This understanding of the vacant school property as an asset, however, was a minority opinion amongst both residents and city leaders.

Fear of Long-Term Vacancy

Most participants were worried about the school remaining vacant for too long. Despite remaining largely public, residents were eager to fill the space so it would not become an "eye-sore" and community liability. One participant said:

> The school closed and it had been sitting there for a while, and we wanted to have it repurposed for sure because we know that like any place that if its run down and it doesn't get taken care of its going to fall apart and a lot of other issues are going to yeah.

From this point of view, a vacant property would create "issues" that would hurt the neighborhood. Residents also understood that reuse options were limited, and that the property was not particularly valuable given other properties in the city. In this vein one participant enumerated reuses that were not available in the Elm neighborhood:

> It's not like anybody was suggesting we should tear this all down and build town houses and luxury condos and mixed use and some senior apartments. Nobody was talking like that. Nobody talks about let's build some single family four squares.

Rather the consensus around filling the space was driven by fear of what could happen to a vacant building, not by a hope of what it could become. This fear of long-term vacancy left residents eager for anyone willing to maintain the property. This point of view showed a kind of desperation amongst neighborhood residents to reuse the school property.

> [Elm school] eventually vagrants will get in there and, you know, if it's sitting longer and longer they're going to have to patrol it and it's going to become an eye sore… so it can't sit too long… but you can get somebody in there—anybody.

The worry about long-term vacancy was shared by city and district leaders . One city leader said "we don't want vacant buildings, big buildings in the middle of neighborhoods. We know what that does to neighborhoods (Tagharobi, 2012). Another said: "you definitely don't want boarded-up buildings just standing there" (Morgan, 2005). A district leader emphasized the desire to get rid of the liability quickly: "the outcome school and city officials dread most is prolonged vacancy. We want to avoid maintaining the buildings when they are empty" (Cosentino January 26 2005). Finally, this desire to reuse former school properties was frequently linked to the larger economic prosperity of the city on both the employment and housing markets.

In the long-term, the solution to everyone interviewed was to fill the school properties. When the properties were vacant little emphasis was put on who or what might become of the property. Rather, the focus was on getting 'anybody in there.' In retrospect, however, participants were more careful about how they talked about the reuse of the property.

> We [neighborhood organization] were going to be supportive of somebody that was going to be coming in, taking care of the property, being a good neighbor, we thought it would be awesome and also so that we would have somebody in there.

Looking back on vacancy, respondents put more emphasis on their interest in getting a "good neighbor" to reuse the property. The difference between being put to any use and being put to a "good" use would become clearer to residents only after the properties were sold to private owners.

Sale

What little literature exists on the sale of school buildings suggests that doing so is difficult and that the sale price is typically low (Dowdall, 2011; Dowdall & Warner, 2013; Simons et al., 2016). Despite the Elm and Brook school properties containing tens of thousands of square feet on large plots in the middle of each neighborhood, both schools sold for the price of a typical single-family home in one of the city's suburbs ($200,000 - $300,000). In an interview the eventual owner of the Elm school said: "Dollar per square foot, we couldn't beat this [Elm school property]. So, really it was a win-win. The school district was happy to sell it…" While the sale of Elm and Brook schools was certainly a "win" for the new private owner, it is unclear how beneficial the sale was for the school district and local community. To put this in perspective, the Elm and Brook schools were sold for approximately $5 and $13 per square foot to their private owners. Once privately owned, the Brook school would be sold again just four years later to another private company for about twice as much as the district received from the original sale (this later sale took place after most of the data collection for this study was finished).

Another feature of the Brook sale is that a community group tried to acquire the building before the district sold it to the eventual private owner. The district was unwilling to essentially hand the school building for free to a community group that had a standing relationship with both the school district and local neighborhood. Instead, they sold the building to a for-profit company with no connection to the district or neighborhood for a price that was a mere fraction of the building's original cost.

Honeymoon period. Regardless of the sale price, residents were initially excited that the previously vacant schools were to be occupied again. Both neighborhoods welcomed the new owners of the school property into their respective neighborhoods.

> [The school had been] vacant for some period of time and then I mean I felt like the consensus was "oh this company is buying it and that's probably a good thing and they're using it they're maintaining it it's a cool building it's not going to have broken out windows and being used and put to a new use is the only way it survives.

One resident said, "we welcomed them to the neighborhood and it…looked like it was a good thing." In the beginning the businesses were quite communicative with the neighborhood organizations. In the Elm neighborhood, the business owners took pictures with neighborhood leaders outside the former school. In the Brook neighborhood, business owners went to several neighborhood meetings to introduce themselves to the residents. In short, residents saw the new owners of the school properties as "good neighbors." Over time, however, engagement and interaction between the neighborhood and business declined. While in the beginning businesses were engaged, it became clear to residents that the businesses saw their facilities as private, not public assets.

This relationship suited many residents. One resident said that "they [the business] were quiet and stuck to themselves which is what every neighbor hopes you have next door." The businesses took care of the property but did not interfere with other positive aspects of the school property. For instance, in the Elm neighborhood, the business occupied the school building, but allowed residents to continue to use the back field, which had a ballpark as a place to meet as they had done while the school was open. In the Brook neighborhood, residents continued to use

the school's parking lot as a "pass through" to another part of the neighborhood and to park in the parking lot to access the community pool on the weekends. So, while private businesses occupied these formerly public spaces, some of their non-educational neighborhood assets remained somewhat intact. This eroded over time, however, as both private companies asserted their property rights more aggressively in the near future.

Change

After some time, the businesses that moved into the Elm and Brook schools decided to make sizable changes to the properties. This triggered significant backlashes from neighborhood groups. In the Elm neighborhood, the business constructed a large (approximately three stories and 15,000 square ft) pole barn in place of the baseball field and park. The facility eliminated these assets and created an eye sore. One resident described the change:

> Then at some point you're walking by and you see that there's marks painted on the lawn. Because that was the ball field and the playground and that whole side and they cut these big maples down. And you're like "what is going on"? and the answer was "well we're building a little shed." And that's what people were told. And we were like "that is not a foundation for a shed? That's the foundation for an enormous building." And how is this possible in that the circular sort of out of the planning department and out of the mayor's office and the mayor's staffers "it's a minor addition". Where'd you get that. I mean its huge. That's a minor addition?

Many residents saw the construction of the "pole-barn" as not fitting in aesthetically with the neighborhood or the school and as taking away a formerly public asset. They also took issue with the process. Where residents were used to having some modicum of control over the public

school, the private business was not subject to their oversight. The residents expected a democratic process but effectively had no say in whether the pole barn would be permitted to be constructed; residents wanted communication, negotiation, and partnership. Instead, the construction was rushed through to meet external deadlines with little concern for the neighborhood.

The Brook neighborhood experienced a similar but less severe change. The private owners of the Brook school started experiencing minor acts of vandalism on their property (e.g., small amounts of graffiti). To protect their investment, the business erected a large black fence with over 20 "no trespassing signs" around the perimeter of the property. They also gated the parking lot and blocked it completely from one side. This change made a space that was once public and inviting, private and exclusive (shown in Figure 5.2). Furthermore, because the property was previously used as a "pass-through" to access another part of the neighborhood, this change acted as wall separating neighbors. One resident described the situation:

> We had specifically said as a neighborhood 'no, don't fence it in because that's a pass through and we like to get access to the pool that way.' But they went ahead and build the fence and at that point they really didn't become communicative with the neighborhood organization.

Like in the Elm neighborhood, residents in Brook were upset by the process as well as the result. Residents expect these businesses to be more involved and engaged with the neighborhood because of their central location in a residential area and, importantly, because the of their occupation of a public building—a school. Explaining how they would like the business to interact with the neighborhood, one resident said: "I'd like them to contact us and show us

they're interested in being a part of the neighborhood. I may end up contacting them and say, 'excuse me, but we're a neighborhood here, and we care.'"

To the businesses, the property was private and could be changed in whatever manner they saw fit. To the residents, it was still a public school that just happened to be occupied by a private business. While residents understood that the former school was privately owned, their feelings and later actions, indicate that they expected to have a voice in a public process over the use of space they still considered part of their domain.

Figure 5.2: Brook School Property Change

Resistance

Changes made by the businesses to the physical property seemed to catalyze a local backlash and resistance by community members. In this way, the changes to the physical property acted as a focusing event on each neighborhood bringing neighbors together in opposition to the owners of the former schools. While resistance seemed to focus on the recent physical changes to the school property, residents expressed many perceived problems with the

new building use and private ownership. Resident concerns included fear of declining neighborhood property values, changes in traffic patterns (e.g., large trucks dropping off supplies), mismatching aesthetic, and the creation of an unwelcoming atmosphere in the neighborhood. The honeymoon phase that marked the beginning of the relationship between the private owners and residents faded. Residents in both neighborhoods began to see the business owners as "bad neighbors" and felt compelled to do something about it. While both the Elm and Brook neighborhood resisted changes made by the private owners, they did so in different ways and with different intensities. For this reason, the following two subsections describe the residents' resistance in each neighborhood separately.

Resistance in Elm. In the Elm neighborhood, the pole barn construction was done quickly and without consultation of neighborhood residents. As the pole barn went up, long-term neighborhood assets were removed (e.g., public field and large trees). In response, the neighborhood association held public meetings inviting the school property owners. While residents had many different complaints about the property's use, the neighborhood rallied around the need to change the aesthetic of the recent addition of a large 3-story pole barn. For residents, this was a step too far.

One of the main arguments Elm residents made was that the construction of the pole barn broke the zoning ordinance. While the city had granted the company a variance for the building's use, the function and size of the pole barn seemed outside the scope of the variance granted by the city. To many residents, the explanation from both the private owner and the city seemed to defy logic leading to further outrage:

> It's not a shed. It was Orwellian. How are we in this process. "It isn't because it isn't because it isn't." Then you start saying it isn't because the mayor said it isn't

> … The message was very clear: this is going to happen this is a great thing and cut the red tape and make it so.

Residents felt that they deserved to have some level of input or at least a rational explanation for why a giant pole barn was permitted to be constructed in the middle of a residential neighborhood. To that end, the neighborhood association began to engage with local policy makers on city council. For the most part, city council members took the side of local residents. Despite this support from city council members, there was little they could do. The variance had already been granted; the pole barn was already built. Many of the residents interviewed focused on what they saw as a corrupt and broken process that valued economic development over local residents. On resident said: "For me it was always because it was an abuse of the process and the insulting things that the previous mayor and his administration about this being a shitty neighborhood anyway." Elm residents often blamed the mayor for the problems with the private owner. While the mayor is on record praising the private owners for bringing jobs to the city, it is unclear from the record what role if any the Mayor had in bringing in and keeping the business in the Elm neighborhood. In this instance, school closure, an education policy made by a single-purpose governing organization resulted in long-term political liability, not for the school district, but for the city council and mayor.

Without successful intervention by local government, residents mounted a public pressure campaign. Elm residents protested at city hall, wrote opinion pieces in the newspaper, garnered support from other neighborhood associations, made yard signs, and even built a miniature version of the pole barn on a movable trailer. They parked the miniature pole barn in front of the private owner's house in a neighboring suburb as well as in front of the Mayor's

home. The point was to show those in power what it would be like to have an “eye-sore” in front of their house without notice or the power to stop it.

After multiple years of resistance by residents and mediation by a local economic development group, the private owner and residents finally reached an agreement. The company promised to make changes to the exterior of the pole barn to fit in with the aesthetic of the school building and the rest of the neighborhood in exchange for local tax breaks. With plans drawn up to completely change the exterior of the building, residents were finally able breathe a sigh of relief. Their effort had paid off. They still had a say in their neighborhood school. Although the private owner received the tax breaks, they never completed the changes to the exterior of the building saying they ran out of money and could not complete the project. Neighborhood residents tried to mount a renewed public pressure campaign, but by that time, most residents were burnt out.

Resilience in Brook. The reaction by neighborhood residents to school closure and reuse was markedly different in the Brook neighborhood. Residents in Brook took a less activist stance and attempted to work with the business to remove the fence. One resident explained their approach to the issue saying, “we have always been a neighborhood that has a reputation of working with the city as opposed to just somebody that complains.” After communications back and forth between the neighborhood and business it became clear that the business would not make changes willingly. To put additional pressure, residents in the Brook neighborhood began to seek the help of city council as well as writing a public letter in protest.

While residents did make an effort to remove the fence, they realized that neither the city nor the school district had control of the property. The formerly public space was now private and out of their hands. Additionally, while residents disliked the physical changes to the

property, the changes were not as nonconforming as in Elm. Rather than removing a community asset, changes to Brook School simply made access to community assets less convenient. There was also less concern about safety or adverse impacts on property values than in the Elm neighborhood. A final explanation of the different scope of resistance between Elm and Brook could be the makeup of the community itself. While many residents in the Brook neighborhood are involved in city politics in one way or another, the Elm neighborhood had few political connections leading to a more adversarial stance.

While Elm residents rallied to mount a sizeable resistance effort over several years, the Brook neighborhood was less engaged. Brook residents did try to mitigate the property change, but their efforts did not rise to the same level as in the Elm neighborhood. This raises a significant question: why do some school reuses elicit strong public resistance and others do not? Perhaps a key difference lies in how the former school properties are reused. Where Elm lost a significant neighborhood asset, Brook's loss was less severe because it maintained access to a large adjacent park and pool that preserved some of the school's role as a community center.

Resentment

After unsuccessfully resisting changes to their respective neighborhood schools, the feelings of residents of Elm and Brook hardened into resentment. In the Elm neighborhood the conflict over the pole barn created a lasting rift in the neighborhood: "The [pole barn] thing really beat us down… we just basically got slapped down, got nothing out of it. It was very discouraging. The neighborhood group kind of folded in after that." Even years after the pole barn conflict, one resident said he had to stop talking about the issue for a while because it made him too angry. He said the "company…cares absolutely nothing about our neighborhood and really cheated us and was kind of just a pariah really." In Elm, resentment about the pole-barn

continues to taint the mood of the community organization. As residents walk past the pole-barn they are reminded of the fight they lost and feel that their neighborhood might be in decline. One resident said: “I took out an enormous loan, bought a house in the neighborhood I've grown to love and if I was looking today, I probably wouldn't buy a house two doors down from this defense installation [the pole-barn].” Indeed, when asked residents of Elm reported that uncertainty about the direction of the neighborhood was one of the worst things about living there.

In contrast, the Brook neighborhood was able to rebound from their conflict with the business. While residents there were certainly upset about the process and result, their neighborhood organization avoided the downward spiral that occurred in Elm. Residents in Brook were able to transition away from the narrow focus on the fence. There are two potential reasons for this difference. First, in contrast to Elm, the fence was not as obtrusive to the community. While the installation emphasized the privateness of the formerly beloved public school, it did not remove any neighborhood assets outright. Rather, the fence only made using other neighborhood assets less convenient. That is, one would have to walk around the property, rather than through, to get to several points of interest on the other side.

Second, Brook was more integrated into city politics. In Elm, residents took the pole-barn defeat as a signal that the city did not care about the neighborhood. Alternatively, Brook had more relationships with city officials and regularly received small grants for neighborhood projects. Instead of understanding this defeat as a signal of a downward trajectory, residents in Brook were able to understand the school closure and reuse in a broader perspective and see it as one of many issues in the neighborhood.

In both Elm and Brook, resistance and resentment grew out of substantial changes to the physical property and the indifference of businesses towards neighboring residents. Ultimately, this tension posed problems for local political leaders who were unable to persuade residents how limited their power and resources were. Neighborhood residents found it difficult to reorient their perceptions of the former school as a private rather than public space. A response from the owner of the Elm school helps illustrate the tension in the private ownership of a community institution. In response to a question about neighbors' opposition to the property's reuse, the owner was somewhat empathetic but ultimately unwilling to change:

> You can see on the internet that they weren't happy about the facility we put up. So, you know I'm sorry that that didn't go a little better and I understand how they feel about it. You know we're trying not to bother them. We're trying to just grow a business. You know they didn't like the look of the building. I think they would all admit that we don't have any interference with them that would kind of hurt their quality of life or disrupt them at all.

While neighborhood residents saw the former school as a quasi-public space, the private owner did not. The former school was just that—a *former* school. Now, private ownership gave them the rights to utilize the property as they wished.

Discussion

How residents talk about their neighborhood school is strikingly different than the way schools are often discussed in education policy circles. In the academic literature, school quality often becomes synonymous with some measure of academic achievement. While residents in this study occasionally mentioned academic rigor, they were far more focused on the racial and

socioeconomic characteristics of students in Lansing's schools in comparison to schools in East Lansing, Waverly, and Holt.

In Lansing's case, the impetus for school closure appears to have a strong connection to school choice. Perceptions of school quality are constructed in comparison to other districts in the area. Additionally, residents seemed to suggest that school choice was both a cause of and consequence of closure. The impact was twofold and cyclical. School choice syphoned students away from the Lansing School District, reducing the enrollment and consequently the district's financial resources. Falling enrollment and mounting financial pressures forced the district to "right size" by closing schools, which in turn left parents in those schools less attached to the Lansing School District and willing to enroll their child in a charter or nearby district through interdistrict choice policies. In this way, the school closures in the Elm and Brook neighborhoods can be viewed as a downstream consequence of state school choice policy.

What is apparent in my data is that the consequences of school closure are far reaching. The neighborhood effect of public schools does not end when the school is closed; it changes. The impacts of school closure on residents unfold over a much longer timeframe than has previously been studied. While the moment of closure itself is important, how the building is reused or not, changes the neighborhood's relationship with the institution. While it is hardly revolutionary to claim that schools play a role in their community beyond their formal educational function, the surprising result of this research suggest that the social anchoring role does not end when the school is closed. Instead, the school could still act as a central hub through its outdoor assets and the memories of community residents.

The way a school is closed as well as the socioeconomic status of the neighborhood appears to mediate the relationship between school closure and neighborhood vitality. In the

Brook neighborhood, the school went through a transition first from a neighborhood school, then to a school serving primarily non-resident students. Residents from Brook made it clear that there is a difference between a school in a neighborhood and a neighborhood school. The Brook school then had another gentle transition as the building was closed, used by the Lansing School District as an ancillary facility, and then finally became vacant. These steps preceded the reuse of the school building by a private company. In contrast, the Elm school was closed, vacant for a year, and then immediately reused by a private company. These transitionary steps seem to have mitigated some negative reactions by residents. In effect, the additional time and steps in the Brook neighborhood seem to have given residents the space to adjust to change. Similarly, the socioeconomic status of the neighborhoods seems to have mattered. In the Elm neighborhood, changes to the school property were taken as an offense and the residents reacted defensively. In Brook, where residents were on average more privileged, resistance to change occurred through more formal genial channels. Although neither group was successful, the Elm neighborhood association collapsed on itself whereas their counterparts in Brook were able to maintain their community group despite the loss.

Regardless of the time span, neither the Elm nor Brook communities ever truly felt that *their* neighborhood schools stopped being public. Even when the public school was closed and sold to a private interest, community members still expected that their voices would matter. They expected their democratic input to be heeded because they still felt that even though the public school was no longer a school, it was still public. Furthermore, this friction between the actual ownership of the building and how residents perceived it eventually resulted in community resistance to change in the property.

While the findings of this inquiry provide some insight into how school closure impacts a community over the long run, it is important to view this work with some skepticism. This inductive work should be understood, not as a complete or concrete description of a phenomena, but as a set of hypotheses in need of testing. These results come out of two specific contexts that may be drastically different in other places. Future work should look to expand on the concepts developed here and test if and in what conditions they hold up.

Chapter 6: Summary, Analysis, and Conclusions

There is a gulf in the research literature between how quantitative and qualitative studies treat the topic of school closure. Quantitative studies of school closure have focused on its effect on student achievement (e.g., Bifulco & Schwegman, 2019; Brummet, 2014; Carlson & Lavertu, 2015; Han et al., 2017). In contrast, a diverse set of scholars have used qualitative methods to examine the community consequences of closure (e.g., Deeds & Pattillo, 2015; Witten et al., 2001). This dissertation has sought to bridge the gulf between these two literatures by studying the community consequences of closure, employing both quantitative and qualitative methods.

This dissertation contributes to the extant literature in two separate but intertwined inquiries. First, I employ quantitative methods to investigate the relationship between school closure and neighborhood vitality. To do this, I use a TWFE strategy in a hedonic capitalization model to estimate how school closure impacts neighborhood housing values. Second, I document how closure and reuse is experienced by community residents. In so doing, I broaden the conception of the relevant stakeholders and lengthen the period of time over which school closure's impacts were observed. Used in tandem, quantitative and qualitative methods provide a fuller understanding of how closure impacts communities. This research aims to recenter schools as social infrastructure that generates social goods beyond the learning that happens within their walls.

Quantitative

In the quantitative portion of my dissertation, I set out to estimate the capitalization of school closure into housing value—a question that little research has investigated. While Scholars have hypothesized that closure negatively impacts housing values, very little work has

attempted to estimate the effect empirically. This dissertation is the first to employ modern econometric techniques to this question.

Unlike school closure capitalization, a significant body of work has studied how student achievement impacts housing values (e.g. Black, 1999; Figlio & Lucas, 2004; Gibbons et al., 2013; Imberman & Lovenheim, 2016; Wen et al., 2017) as well as how school closure effects student achievement (e.g., Bifulco & Schwegman, 2019; Brummet, 2014; Engberg et al., 2012a; Han et al., 2017). My research combines elements of both these literatures to study the capitalization of school closure into housing value. This dissertation expands on both these sets of literature by investigating both a new outcome of school closure but also by suggesting that other aspects of education policy, other than student achievement and tax rates, impact residential housing values. Similarly, this dissertation adds to this literature by expanding the studied outcomes of closure. School closure does not just impact achievement but other relevant outcomes as well, including housing value.

This dissertation shows that school closure led to a decline of residential housing value of about 13%. Additionally, after allowing the coefficient for each school closure to vary independently, I found that the closure effect was heterogeneous across school-neighborhoods.

Limitations

In studies of school closure, like other empirical inquiries, there is a trade-off between prioritizing internal or external validity. For instance, I could have conducted a much larger study using average housing value and property characteristics as measured in the census. This choice may have increased the study's external validity; the findings would be more generalizable. Doing so, however, would have generated several important sacrifices to internal validity. In the context of capitalization studies, the detail of parcel level data is superior to

aggregated data (Nguyen-Hoang & Yinger, 2011). One important feature of parcel level data in my research was the ability to quantify the distance of the parcel from the school property as well as its interaction with closure. These variables would have been significantly less precise without individual property data. Second, the school closure data in Michigan is imperfect and thus requires manual adjustment. For example, school buildings that are renamed, change grade configurations, or which are substantially upgraded are often recorded as "closed" in the data, where in fact the school property has remained open and active. These are closures in a technical sense but not in a theoretical sense. With under fifty schools, I could manually account for the differences between these false closures compared to actual closures over the fifteen-year time frame of my study. Doing so across a state or the country, however, would require more intensive labor or some method of identifying different closure 'types' in the data. Failure to do so could lead to the mismeasurement of closure in the average treatment effect decreasing the internal validity of the inference.

The limitations of this work largely represent trade-offs between external and internal validity as well as practical considerations. I am confident in the inferences drawn from this research that there is a negative relationship between closure and housing value. I am more cautious, however in generalizability of these findings. More research is needed to understand how the relationship between school closures and housing values works in different contexts and what moderates the relationship.

Qualitative

Unlike the quantitative literature, many qualitative studies have examined the community consequences of school closure. Research studying the community effects of closure, however, typically examine less than three years after the event and often focused exclusively on

perspectives of students, parents, and staff . Only a handful of studies examine closure over a longer time period or with groups outside those with formal connections to the school (e.g., Ayala & Galletta, 2012; Doka, 2011; Jaquelyn Oncescu & Giles, 2014). This dissertation contributes to the existing qualitative literature by expanding both the scope of who is included in the notion of 'community' and in the time frame in which closure is studied. I examine school closure across a fifteen-year time frame and include the voices of neighborhood residents with less formal connection to the school in my research.

Parallels Between Closure and Reuse

Because my study was retrospective, much of the animus and tension around the school closure described in the literature had faded. Instead, residents repeatedly brought up how the school-property's reuse impacted their lives. The fact that residents had strong reactions to the reuse of a school-property, long after it had stopped serving its primary educational purpose is itself evidence that schools play a broad role in communities. In many ways, the reactions of community residents to school closure and reuse in this study are compatible with the extant qualitative literature on school closure, including issues of resistance, miscommunication, and different ways of valuing the school.

Forms of resistance described in previous school closure studies were employed by residents of the Elm neighborhood as they resisted large changes to their former neighborhood school. For instance, they would routinely show up to board meetings (city rather than school boards in this case), and conduct demonstrations (Ewing, 2018; T. Green, 2017; Jack & Sludden, 2013; Lipman et al., 2014; Siegel-Hawley et al., 2017; M Torre et al., 2015). Another similarity between the school closure and school reuse conflicts was around differing modes of resistance amongst higher and lower socioeconomic groups. In the literature, higher socioeconomic-status

communities were less likely to engage in aggressive protest and more likely to attempt to influence the decision-making process through more congenial methods during the closure process. A similar pattern played out between the Elm and Brook neighborhood during the conflict over school property reuse. Where Elm took a defensive and hostile stance towards the school-property reuse, the higher socioeconomic status Brook neighborhood, attempted to influence closure and reuse through connections with city government (similar to Finnigan & Lavner, 2012).

My research also parallels the existing literature on closure through communication and decision-making process. In both Elm and Brook, miscommunications between the building owners and the neighborhood heightened tension (similar to Deeds & Pattillo 2015). Additionally, it was never completely clear if "miscommunication" was accidental or tactical (similar to Kretchmar, 2014). While community members expected their voices to be heard, attempts to avoid democratic decision making enraged community members. (similar to Kirshner et al., 2010; Kirshner & Pozzoboni, 2011; Pappas, 2012; Valencia, 1984; Witten et al., 2003).

Through the negotiations over school property reuse, it was clear that the school district, city leaders, the new owners, and residents valued the school property differently. While school district leaders appeared to care deeply about the community, they understood their first priority was to their students and to LSD's finances. That is, school closure was ultimately viewed as a strategy to improve the district's finances by eliminating the costs of maintaining the schools and selling the properties. The city shared this goal but emphasized the need to leverage the property for economic growth. Unfortunately, the commercial reuse options for school buildings located in residential neighborhoods are limited (Simons et al., 2016). Consequently, private companies have had leverage over both the school district and the city to extract low prices for school

buildings as well as tax incentives, both of which occurred in Elm and Brook as well as other former school properties in Lansing.

In contrast to the district, city, and new private owners, residents viewed the school building reuse from a much longer and personal perspective (similar to Ayala & Galletta, 2012; Briscoe & Khalifa, 2015; Vaughan & Gutierrez, 2017). In the Elm neighborhood, residents viewed the school's reuse as part of long-term pattern of disinvestment. To neighborhood residents, the school never stopped being *theirs*; it never stopped being a community institution that provided public benefits. So, when private property owners began to change the property without their input or consent, it prompted resistance and struggle.

One difference between the reactions to school closure and reuse documented here in Lansing and the school closure literature more broadly is the impact on other community organizations. Post and Stambach (1999) found that school closure was associated with lower levels of participation in community organization. My findings run counter to this conclusion. In Elm there was increase in neighborhood association participation to fight reuse of the school property. When the group failed to attain its objectives, however, it splintered. In Brook, the community group grew continued and even grew in participation despite the school closure.

The qualitative work in this dissertation contributes to the literature on school closure by expanding the timeline to include the reuse of the school building and including the voices of neighborhood residents. The social conflict that accompanied school reuse paralleled that described in the school closure literature closely. The impacts of school closure are not finished when the school district sells the building. Instead, it accentuates the cleavage between residents' deep feelings that the school property is *theirs*, with the reality that what was once public is now private.

Analysis

Most of the results in the quantitative and qualitative portions of this dissertation were discussed separately. This is because the study diverged in unexpected ways making their synthesis difficult. While the quantitative portion of the dissertation remained focused on school closure, resident participants pulled the qualitative study towards the topic of school building reuse. Still, several issues relating to both studies deserve treatment, namely the potential reason for the heterogeneous closure effect, where responsibility for school closure lies, and framing the findings of this dissertation.

Closure Heterogeneity

The quantitative portion of this dissertation showed that there is a large and statistically significant penalty on residential home prices in neighborhoods where a school closes—about 13%. It also showed high levels of variation of this school closure effect between different neighborhoods. Individual school-neighborhood estimates ranged from a decline of 3% to a decline of 25%. This finding suggests that some unobserved phenomenon may be moderating the relationship between school closure and housing value. The qualitative portion of this dissertation sheds light on what this unobserved phenomenon may be. In the two neighborhoods I studied, the reuse of the school building played an outsized role in how residents experienced school closure over the long run. Reuse might be the unobserved phenomenon that explains the heterogeneity in the school closure effect discovered in the quantitative portion of this dissertation.

Responsibility

Viewed in isolation, it might be easy to blame the negative consequences of school closure in Lansing on the body that made the decision to close these schools: the Lansing School

District. The district chose to close many schools and those closures led to significant declines. Assigning blame solely to the local school district, however, would misallocate the source of this decline. In fact, the decisionmakers in the Lansing School District were severely constrained in the decisions they were permitted to make.

The school closures in the Lansing School District were not the direct result of school choice. Rather, closure was the downstream effect of choice policies and the state's education finance system. School choice made it possible for students to continue to be residents of the Lansing School District but to enroll in other districts or charter schools. Some participants in the qualitative study acknowledged that school closure pushed them to enroll their child in a school outside of the Lansing School District. The same set of state policies tied resources to district enrollment. As enrollment in the Lansing School District declined due to school choice so too did the resources of the district. Both these factors pushed the district to close school buildings. This poses a worrying possibility of a positive feedback loop in which school closure exacerbate student exodus from a district leads to additional closures.

The underlying reason for school closure in Lansing was declining enrollment and reduced financial resources. Because of Michigan's system of state control, the LSD had very limited power to influence either enrollment or their finances and have been forced to manage decline in a system in which they are structurally disadvantaged. In this way, school closure is tightly interconnected with other education policy, namely school choice and education finance.

Framing these Findings

The results of this dissertation provide evidence to a truth that virtually every educator already knows: schools support their communities and school closure hurts those communities. In contrast to this view, the trend in research on education has been to elevate achievement as the

objective measure which can be used to evaluate the efficacy of schools. If one assumes that the only relevant outcome of education is student achievement, the results of this research are startling. The neighborhood effect—the positive externality generated by schools—is not limited the education they provide to students. Rather, schools serve as social infrastructure that act as a venue for social capital formation; the positive externality extends to communities. The removal of these institutions leaves lasting scars in both the housing market and in the memories of neighborhood residents. I assert that these consequences of education policy—housing market capitalization and resident experience—are not secondary to achievement. The study of school closure benefits from evaluating a wider range of costs and benefits. Additionally, this lesson applies to education work beyond that on school closure. More research should work to understand how education policy impacts communities by using a broad set of metrics.

Implications for Practice

This dissertation has been written for an academic audience paying close attention to the existing scholarly literature and technical aspects of research methods that may be esoteric or removed from the concerns of nonacademic readers. The following sub-sections synthesize the dissertation's finding for two key sets of decision makers, school district leaders and city planners.

School District Leaders

The current policy discourse around school closure suggests that measures of student academic achievement should figure prominently in these decisions. This dissertation, however, shows that school closure has significant community impacts that are not captured in student test scores. Certainly, many school leaders understand this, even if their decisions are strongly—perhaps decisively—shaped by state accountability systems, school choice, and funding policies.

The insight here is that schools affect communities in ways that these state policies overlook. When a school closes, the surrounding neighborhood's physical and social landscape changes. Consequently, school closure and resale decisions should account for a fuller range of the associated public costs and benefits. In short, school closure and reuse generate negative externalities that district leaders should consider when making these decisions. On average, school closure in the Lansing School District led to a 13% decline in housing value compared to neighborhoods that had an open school.

Whether for declining enrollment, lack of funds, or both, sometimes a district needs to close a school. This dissertation does not contest that point. Rather, it aims to provide guidance to districts on what to do once they have made their decision. What choices a district makes about the upkeep and/or resale of school building matters to neighborhoods. Evidence from the research literature as well as this dissertation suggests that the resale of school buildings tends to be for a mere fraction of the original cost of the building and that repurposing can often be challenging (Dowdall & Warner, 2013; Simons et al., 2016).

District leaders are responsible for being faithful financial stewards of the resources entrusted to them by their community. A district's responsibilities, however, do not end with their short-run financial balance sheet. They are also stewards of school buildings, which are also public assets. Unlike a traditional market sale of private property, school districts should be concerned with how closed schools are reused—not only to appease nearby residents, but also to chart promising longer-term visions for local community development. Districts should not simply accept the highest offer on the sale of a school building. Rather, they should weigh the financial benefits of selling a school against a full range of financial and nonfinancial costs and benefits associated with the change. If the potential sale price of a school is low, conditional on

the property's reuse, it very likely will not compensate for substantial costs experienced by nearby property owners and community members. District leaders should consider selling or leasing their school properties under market value to organizations that will provide public benefits to the local community. Because school building sale price is typically low, the opportunity cost is low, and the potential public benefits are high.

City Leaders

It is not a novel finding of this research that the vitality of a city's schools is tied to the vitality of the city itself. Still, it is important to reiterate that schools play an important role in communities both in providing an educational service but also by shaping the physical and social landscape of neighborhoods. School closures can have large negative impacts on property values. The reuse of school buildings can also spillover into city politics. In Elm and Brook, the conflict around school building reuse was directed at city leaders. Resistance and resentment grew out of substantial changes to the physical property and the mounting indifference of businesses towards the communities. Ultimately, this tension posed significant problems to local political leaders who were unable to show residents how limited their power and resources were. Additionally, neighborhood residents found it difficult to reorient the former school as a private rather than public space. To the residents, the property never became a business, it was always their school.

This dissertation highlights the need for increased coordination between school districts and the municipalities in which the reside. School districts may face circumstances in which schools must be closed. However, decisions about which buildings are closed and how they are reused are extremely important. Municipal governments and school districts should collaborate closely on school closure planning, because good decisions require a holistic assessment of impacts on both students and communities.

Future Research

The topic of school closure is ripe for additional research. Despite the large potential impacts of school closure, relatively little research has systematically investigated how school closure effects communities. Future quantitative work on school closure could benefit by focusing on three areas that are underdeveloped in the extant literature: (1) description of school closure, (2) school closure capitalization, and (3) other social outcomes of school closure. The literature could also benefit from additional qualitative research. Future qualitative work could benefit by studying on the reuse of schools over a longer time period.

School Closure Description

Our basic understanding of how many schools close, where they close, and who those closures impact is quite limited. The first obstacle to this is the data. The Common Core of Data can be used to track school closures by observing when enrollment in a school falls to zero (e.g. Gallagher & Gold, 2017). The problem with this method is that if a school is renamed, or goes through a grade-reconfiguration, it might appear in the data as a school closure. That is, one "school's" enrollment would fall to zero and a different "school" would replace it. To my knowledge, no study has adjusted for these false closures in research at the state or national level. Consequently, most studies that examine school closure beyond a single district use a measure of closure that is quite likely inaccurate. One potential method to mitigate the problem of false closures would be to cross-reference school closure with their geography. The Common Core of Data includes information on the enrollment of each school but also the school's address. This information can be used to geocode each school building. Future research could then define rules that classify false closures as schools where enrollment falls to zero, but a "new" school is created within a small distance of the false closure. While this method is still imperfect, it could

be a significant contribution to our understanding of where school closure happens and who it impacts—answering a set of basic questions that are still largely unanswered.

Capitalization

Future work should replicate and expand on the school closure capitalization study conducted in this dissertation. More evidence is needed about the relationship between school closure and residential housing values. Bigger data sets with more closures in different contexts could enhance our ability to generalize about the school closure effect. Future work could also benefit from longitudinal data on school zoning boundaries.

Future closure capitalization studies might try using a boundary fixed effect identification strategy. Doing so might help unpack the mechanisms behind the school closure effect. I was unable to differentiate between the impact of closure on educational service from its role as social infrastructure. Information on a district's school zone boundaries could be used to decipher whether the school closure effect is driven by the change in school access or by the change in social infrastructure. Researchers could do this by examining properties near the school zone boundary. Theoretically, properties within the school boundary would be effected by both the social infrastructure of the school as well as the educational service where as properties just outside of the school zone boundary would only be impacted by the social infrastructure. This design creates a neat counterfactual that may be able to probe the mechanisms of how closure impacts communities. Still, future researchers should be cautious about the BFE identification strategy. My work shows that the school closure effect is highly sensitive to distance away from the school. By definition, studies relying on a BFE identification strategy examine a sample of properties that are relatively far away from the school itself. While the BFE strategy might be helpful for uncovering the mechanisms within the school closure effect

identified in this dissertation, it might alternatively be unable to pick up the closure effect if properties near the boundary do not benefit from the social infrastructure of the school.

Future capitalization studies might consider using identification alternative identification strategies in addition to the TWFE. Although the TWFE have been a standard way for researchers to conduct DID-like estimator with multiple treatment periods, future methods may improve on the limitations of TWFE, principally the assumption of a time-invariant treatment effect that likely does not hold in the school closure context. It seems increasingly likely that the traditional TWFE model used today, will be replaced by a better estimator in the future. Today, however, no clear replacement exists. Future work may consider alternatives to the traditional TWFE design.

Other Outcomes of School Closure

Future quantitative work should look to study outcomes of school closure that are not typically considered. For example, research could examine how closure impacts the demographic and economic makeup of a neighborhood overtime. Does the closing of a school building disincentivize families living in a neighborhood? Does it change the racial or income composition of a neighborhood? Future research could also look to evaluate whether closure "saves" money at the district level. This is an important question since many districts that close schools do so with the exception that closure will have a positive impact on their budget. What research on this topic exists shows that financial savings are limited if they exist at all (Dowdall, 2011; Valencia, 1984).

Another potential area of research is the intersection of school closure and school choice. Findings in the qualitative portion of this dissertation generated a number of hypotheses about how school closure and school choice intersect. Does school closure increase student uptake of

school choice options? Conversely, does increased school choice lead districts to close schools. These hypotheses should be tested empirically. Importantly, the hypotheses listed above were generated in the Michigan context. School choice is not a homogenous policy across states. How a state's school choice policy is defined likely impacts how it intersects with school closure. In other words, the rules matter (Arsen et al., 1999). Consequently, these hypotheses may not make sense in other contexts.

School Reuse

Most qualitative work studying school closure examines a relatively small amount of time around the closure itself. This was one of the main reasons I decided to conduct a retroactive case study for this dissertation. It offers a method to look back at what happened over time. When I started my research in the Elm and Brook neighborhood, I was not intending to focus on the reuse of each school. The reason this dissertation shifted towards the study of school closure *and reuse* was because residents repeatedly brought up the continuing problems posed by reuse in their neighborhoods. The social unrest document in the qualitative literature around school closure does not end when the school is finally shuttered. Rather, vacancy and reuse adds another dimension to school closure that continue to impact neighborhoods over the long run.

Unfortunately, the research on school property reuse is very thin. Only a handful of studies exist on the topic (e.g., Dowdall & Warner, 2013; Simons et al., 2016) Potential questions for research include: how much are districts able to sell a school building for relative to the original price of construction? Are private organizations able to sell former school properties for a higher price than school districts? How have school properties been reused? On average, how long are closed school properties left vacant? How do neighborhood residents want closed

school properties to be reused? These are just a handful of unanswered questions on a topic of research that has received very little attention despite potentially large social impacts.

Conclusion

This dissertation contributes to the extant literature on school closure in two ways. First, it conducts the first capitalization study of school closure. Second, it adds to the body of qualitative scholarship on the impacts of school closure on local communities. The consequences of school closure and reuse are broader, deeper, and more long-term than is typically acknowledged.

More research is needed on school closures from quantitative, qualitative, and mixed methods researchers. Additional capitalization studies will help establish the average impacts of closure on housing values and how those impacts are conditioned by contextual factors. Housing values offer one highly attractive metric of neighborhood vitality and health. Additional qualitative work is also needed to investigate the broad and lasting community consequences of school closure and reuse. This dissertation aimed to bridge the gap between quantitative and qualitative research on school closure to bring a fuller, more integrated, understanding of these important policy decisions.

APPENDIX

Resident Interview Protocol
Lansing School Neighborhood Project (LSNP)
Tanner Delpier
9-7-2018
Michigan State University

Neighborhood

1. To start off, I'd like to hear about how you came to live in [neighborhood]. How long have you lived here and what brought you to [neighborhood]?
    a. Have you lived in the same place the whole time?
2. I'd like to try a couple fill in the blanks.
    a. The best thing about living in [neighborhood] is _____.
    b. The worst thing about living in [neighborhood] is _____.
    c. The [neighborhood] is different from other neighborhoods in Lansing because _____.
3. I have a map of [neighborhood] here. Could you show me the different areas in your neighborhood? [give map and pen]
    a. I'm interested to know what you think of your neighborhood and what things are of interest to you.
    b. Have any of these areas changed since you've lived here?
4. If a person knocked on your door and said they were thinking about moving into the neighborhood and wanted to know what the neighborhood was like, what would you say?
    a. Would your answer change if they were thinking about moving to a <u>different part of the neighborhood</u>?

Stages

5. I'm interested in knowing all the steps between when the school was open and now. Could you start with some date in the past when the school was open, and then list all the steps that occurred until you get to the present?

Pre

6. Now, I want to ask you about the [neighborhood school], and what it was like when it was open.
    a. What did you think about the school when it was open?
        i. Do you think students received a good education at the school?
    b. Did you have children that went to the [neighborhood school]?
7. Schools educate students, but sometimes they can also be used for things that aren't part of schooling. Could you list all the ways you and your neighbors used the school?
    a. Of those uses, which can you no longer do because the school was closed?

Interview Protocol
Lansing School Neighborhood Project (LSNP)
Tanner Delpier
9-7-2018
Michigan State University

I'm interested in understanding the process of school closure and reuse. To do that, I've been reading old stories from LSJ and city pulse as well as talking to residents about the old [school] and its reuse by [a business]. I'm interested in getting some of your thoughts on that process and fact checking some of the things that I've heard so far. I'm not a journalist. What you say will be confidential.

Background

1. Do you live in Lansing?
    a. If so for how long?
2. Could you talk about your career in Lansing city government?
    a. How long have you been in city government?
    b. Could you describe your role and responsibilities in city government?
3. From [your position in city government], how do you think of the [neighborhood] compared to other neighborhoods in Lansing?
4. I have a map of the neighborhood here. I'm interested to know what you think of the neighborhood and what things are of interest to you from the planning office.
    a. Have any of these areas changed since you've been in the [your position in city government]?
5. How do you think about [the business in the school]?
    a. Does it contribute to Lansing?
    b. Does it contribute to the [neighborhood]?

Positions

1. Now, I have several positions that residents of the [neighborhood] have described to me. I'm going to describe the position, and I want to hear your response.
    a. There was a feeling that zoning [the business] as [non-residential] was wrong. Residents say that [the business] is a manufacturer and shouldn't be allowed in their neighborhood.
    b. Residents say that [the business] was zoned as a [non-residential] and allowed to locate in the [neighborhood] because of pressure from the Mayor.
    c. Residents characterize the mayor as trying to generate economic growth regardless of the consequences.
    d. Residents of the [neighborhood] describe their actions as resistance to [the business]. What was this like from your point of view? Did people here know about or care about what residents in the [neighborhood] were doing?
2. Is there anything else about the school closure or [the business] that you'd like to share?

Business Leader Interview Protocol
Lansing School Neighborhood Project (LSNP)
Tanner Delpier
10-10-2018
Michigan State University

Personal

1. When did you start working at [business]?
    a. How long have you been working in this facility?

Location

2. Fill in the blanks
    a. The best thing about [business] locating in this building is _____?
    b. The most challenging thing about [business] locating in this building is _____?
3. How did business decide to locate here (former school)?
    a. Did you or [business] look at other locations?
    b. Could you walk me through the steps of deciding to locate in a former school?
4. I'm interested to know what advantages and/or challenges [business] has faced by locating in a former school.
    a. Could you list all the advantages you see to this location?
    b. Could you list any disadvantages or challenges you've faced because of your location in a former school?

Physical Plant

5. How has [business] changed the physical plant to suit its needs?
    a. Has there been major issues in converting the former school to meet your needs as a business?

Neighborhood

6. I'd like to hear you talk about any interaction you or [business] has had with the surrounding community.
    a. Have you had any interaction with the neighborhood?
    b. Could you list all the times you are [business] has interacted with the neighborhood?
        i. What have those interactions been about?

End

7. Is there anything else about [business] or this neighborhood that you'd like to share?
    a. Finally, is there anyone else that might be willing to talk with me?

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