

**SCHOOL OF SERVICE:
EFFECTS OF SCHOOL-ORIENTED DEVELOPMENT TYPOLOGY
ON LOCAL CIVIC AND POLITICAL ENGAGEMENT**

by

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The school-oriented development hypothesis developed by Carolyn Reid and Emily Talen has thus far been tested only in suburban neighbourhoods. This study attempts to ascertain the impact of various design elements of the school-oriented development hypothesis on political and civic participation in the Homewood community in Pittsburgh, using a mixed methodology. Only one of the public schools in the study demonstrated a significant impact on political and civic participation in the surrounding blocks, and though this school also best followed the physical criteria of the school-oriented development typology, none of the other data warranted a conclusion favourable to the school-oriented development hypothesis. At the same time, however, greater attention must be paid to factors such as homeownership, whose effects were much greater and more significant than the presence of schools, and to the academic programmes in each school, which have the most direct impact on students and on the community as a whole. Greater communication between academic, design and community institutions is highly recommended.

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1.0 EDUCATION AND THE BUILT ENVIRONMENT.

Civic engagement in poor and underserved neighbourhoods is an on-going problem, and there are indeed suggestions among social scientists studying the subject that the gap between the social capital of American families of upper- and middle-class backgrounds and that of American families of working-class backgrounds is widening, producing fears of a Sybillian society similar to the ‘two nations’ portrayed in Benjamin Disraeli’s *roman à these*, characterised by the increasing affluence and integration of wealthy sectors of the country and the increasing poverty and alienation of the poorer sectors, with the split also often having a racial factor (Disraeli 1845; Massey 1990; Sander and Putnam 2010). Questions of how to produce, sustain and strengthen social networks in working-class neighbourhoods are urgent, particularly in areas like Pittsburgh’s Homewood neighbourhood. Special attention must be paid not only to general economic, political and educational factors, but also to the degree to which the *built environment* serves the needs of residents (Talen 2008). Urban planners have to some extent begun to address the specific problems of how civic engagement is influenced by the built environment, but there remains friction between urbanist practitioners, theorists and researchers with regard to what research means for design, let alone how research, design or policy should be carried out (Brain 2005; Bess 2006).

Nonetheless, one aspect of urban planning which has garnered some attention at the most recent Congress of New Urbanism is ‘school-oriented development’, abbreviated SOD (Reid

2010), which combines urbanist planning principles with various educational initiatives in order to use extant school facilities to service community needs. As described above, one of the normative aims of school-oriented development (and of New Urbanism more generally) is to create more civically-engaged and closer-knit neighbourhoods (Talen 2008; Brain 2005). To these ends, and in accordance with the traditional (and new) urbanist idea that public monuments are of particular importance in community life (Bess 2006), one of the design ‘targets’ for nucleating such neighbourhoods is the public school. An early and influential urbanist platform for using schools in such a way was Roy Strickland’s City of Learning (Strickland 2003), which incorporated ten basic principles: (1) integrate stakeholders into the planning process; (2) break out of the ‘big box’ school; (3) use strategic planning to coordinate school projects; (4) use local resources to create lesson plans; (5) co-opt local sites and buildings for educational and recreational use; (6) mix uses at school sites; (7) coordinate public funds and sources strategically to contribute to school projects; (8) arrange leases for private-sector facilities and services; (9) include learning space in built space of all types; (10) adopt new technologies for support and supervision.

The smart-growth movement has given attention to the better design and placement of schools as well, with the ends of student health and environmental concerns as well as civic ends in mind (Lawrence-Hurt 2008). These principles were the primary inspiration behind the school-oriented development typology, which focuses on *opening the school site to broader use by outside communities* and transforms the school into a site of public service for purposes other than just learning. Reid presents three models for such school use: as a neighbourhood centre, as a family-support school and as a cultural hub (Reid 2010).

The research question that bears asking, then, is: how do the general elements of the school-oriented development typology impact community engagement in the surrounding blocks in a neighbourhood like Homewood? Pittsburgh itself, and Homewood in particular, presents a good opportunity to study some specific impacts of school facility design and use (particularly in parallel with those advocated by Reid) on civic engagement, because the community-school phenomenon is relatively new in Homewood. The Homewood YMCA has recently partnered with Westinghouse High School in Homewood-Brushton to create the arts-oriented after-school Lighthouse Project. More importantly, though, Reid's advocacy of school-oriented development is primarily directed at suburban sprawl repair (particularly in her home university's backyard of suburban Arizona), but her program highlights potential brownfield urban applications as well (Reid 2011), which this author believes have yet to be fully explored. This being a new approach synthesizing various disciplines and several branches of social science (not to mention planning practices!), this paper tentatively seeks to provide insight into just this question. It cannot be stressed sufficiently that this research is venturing into territory which has not yet been charted, which poses a number of methodological questions and limitations, to be discussed later. This study will, given the exploratory, inductive nature of the question and given the multiple disciplines and community actions to which this study may be relevant, make use of a mix of both quantitative and qualitative methods to assess the impact of school design and activities on civic and political engagement.

The independent variables related to the school-oriented development typology are: (1) the number and type of organised extracurricular programs taking place on school facilities; (2) the size and use of physical space at the school itself (the 'footprint' of the school buildings and of the land allocated to the school, to be mapped and instrumentalised using ArcGIS 10); and (3)

Table 1. Study variables and descriptions.

Variable name	Variable description
Block-school distance	Length measure of the Euclidean distance (in US feet) between the nearest school and the block centroid, numerical value ($\{x_{1,2,3,4} \in \mathbb{R} : 0 < x_{1,2,3,4}\}$)
School design variables	
Extracurricular activities	Total number of activities, numerical value ($\{z_1 \in \mathbb{N}\}$)
Walkability	Street Smart Walk Score, numerical value ($\{z_2 \in \mathbb{R} : 0 \leq z_2 \leq 100\}$)
Size of school grounds	Area in square feet, numerical value ($\{z_3 \in \mathbb{R} : 0 < z_3\}$)
Complement of isoperimetric quotient of school 'footprint'	$1 - [4\pi(\text{Area in square feet}) / (\text{Perimeter in feet})^2]$, numerical value ($\{z_4 \in \mathbb{R} : 0 < z_4 < 1\}$)
Homeownership rate	Households reporting ownership of homes in 2010 US Census, normalised by total households, by block, numerical value ($\{h \in \mathbb{R} : 0 < h < 1\}$)
Violent crime incidence	Mean number of incidents per year, 2008-2010, by block, numerical value ($\{v \in \mathbb{N}\}$)
Estimated participation at PSCC meetings	Number of parents in regular attendance at structured parent-teacher events at school, estimated numerical value from qualitative sources ($\{y_1 \in \mathbb{N} : 0 \leq y_1\}$)
	Parental engagement in school (y_2 a qualitative measure)
Voter turnout	Mean number of residents who voted in 2009-2011 primary and general elections, normalised by total residents, numerical value ($\{y_3 \in \mathbb{R} : 0 \leq y_3 \leq 1\}$)

the walkability of the environment immediately around the school (for example, using the beta version of the Street Smart Walk Score instrument, which traces distances between an address and various amenities along street centrelines). In addition, propinquity being a concern in assessing neighbourhood effects, (4) distance between the residential block and the school will be accounted for as an independent variable in the model; as will (5) incidence of violent crime, by block, over the past three years. The schools of interest to our study are Faison K-8 Primary Campus, Lincoln K-8 Intermediate Campus, the Student Achievement Centre and Westinghouse High School.

The specific dependent variables being used in this study (and thus, the methodologies by which they will be measured) are listed in the table below. For the quantitative measurements, on account of Homewood's small size, the data will be both measured and spatially arranged according to their blocks, which are relatively dense by Pittsburgh standards. These dependent variables are: estimated turnout at parent-teacher organisation meetings at each school; parental interest in and participation in these meetings; and mean turnout, by block, in the past three city-level elections. The election data will come from the Allegheny County Department of Elections, and from PNCIS. However, the second participation variable (and very possibly the first), however, will incorporate qualitative methodologies and the data will come from structured interviews with teachers and administrators at each school.

The usefulness of this observational study will, of necessity, have some limitations in terms of its broader applicability. One difficulty with research done on urbanist design projects is that all of its design propositions are fundamentally value-laden with a given end in mind; one of the constraints of social science research is that we have to assume value neutrality, or at least be reasonably good at hiding the value-laden nature of our assumptions (Brain 2005). The findings gathered in these sets of observations would, naturally, be externally valid only in other brownfield urban sites, and possibly then only in other Rust Belt cities affected by the patterns of job loss and population loss that Pittsburgh has suffered in decades past. Even though Carolyn Reid insists that school-oriented development is suitable to urban redevelopment and infill as well as new developments and suburban sprawl repair, it may very well be the case that a design program aimed primarily at suburban sprawl repair is ineffective or has different effects in established urban environments such as Pittsburgh; the intent of this paper is to discover those effects.

However, it is the hope of the author that this research will be useful to the Homewood Children's Village, the University of Pittsburgh's UCSUR and other institutions dealing with urban schooling issues generally, in demonstrating the value of actual school facilities and school-based programming beyond merely their specified educational functions. As one of the few remaining recognizable public buildings which serve also as civic and community centres, alongside post offices (Langdon and Steuteville 2009), this is a question which affects many urban communities across the Rust Belt and outside it. The importance of public schools to the built space of urban neighbourhoods should be ascertained and highlighted.

1.1 A BRIEF HISTORY OF HOMEWOOD.

The story of the neighbourhood of Homewood is, at many points, an all too sad and familiar one in Midwestern post-industrial cities; a built environment which continues to be impacted by the disastrous legacies of urban renewal, of white flight and of the flight of industry from the Rust Belt. The neighbourhood of Homewood began in the mid-19th century as a suburb east of Pittsburgh on the Pennsylvania Railroad, and served as the abode of a substantial number of Pittsburgh's economic elites and their estate labourers. These labourers, mostly black, lived close to the railroad tracks, while their wealthy employers lived in estates further away. This railroad suburb eventually transformed into a streetcar suburb at the turn of the century, attracting a greater diversity of people, ranging from working-class to petit-bourgeois (Sapolsky and Roselli 1987). In addition, further influxes of migration from the South at the turn of the century added significantly to the black community already existing in Homewood-Brushton (Cunningham 1981).

Though Homewood appeared prima facie to be a very ethnically and socioeconomically diverse neighbourhood with strong social ties among its residents, the geography and structure of the surrounding city created a sense of apathy to the affairs of the neighbourhood. Urban renewal programmes demolished several black neighbourhoods in the Hill District to create space for the Civic Arena, causing a large influx of displaced residents from that neighbourhood and thereby causing poverty and crime rates to climb dramatically in both neighbourhoods such that by the late 1960's, the US Catholic Historian could claim quite easily that '[n]early all Pittsburgh's crime was [...] mainly confined to [...] Homewood and the Hill District' (Heineman 2004). Though by Kenneth Heineman's reckoning, the increase in crime and poverty rates led to an increased concern for black poverty amongst the Catholic clergy in Homewood, middle-class residents were abandoning Homewood throughout the 1950's. Homewood's overall population declined from 34,355 in 1950 to 30,523 in 1960; by contrast, in 1950 22% of Homewood residents were black, and by 1960 this figure had tripled. Homewood continued to decline in population as businesses moved away following the riots after the assassination of Dr Martin Luther King, Jr, and as black residents who were affluent enough to move out did so, empowered by the Civil Rights Act of 1968 (Green 2007, Allegheny County DHS 2010).

In spite of efforts to revitalise and rebuild Homewood after the 1960's, particularly on the part of Mulugetta Birru's Homewood-Brushton Revitalisation and Development Corporation (which had managed to start a newspaper and a radio station, developed a set of ambitious housing projects and attracted a Dairy Queen and a Rite-Aid to the neighbourhood), population still continued to decline and violent and property crimes (including gang-related violence) continued to grow. Pittsburgh's steel industry was quickly drying up and withering away, propitiating a further exodus from Homewood (as from all of Pittsburgh). Robberies and

property crimes smothered the sprouting retail sector before it could develop properly, and the Homewood-Brushton Revitalisation and Development Corporation never recovered (Green 2007). In its place, however, are the East Side Community Collaborative and Operation Better Block, which provide emergency shelter and more permanent housing for families and general community development, respectively (Welsch 2000, Manta 2012).

1.1.1 Challenges in the Schools.

There are still a great number of immense challenges to development in Homewood generally, but particularly in the schools. In recent years – particularly in 2010 and 2011 – there have been immense and drastic changes to the school structure throughout the public school system in Pittsburgh. Several schools nearby (Peabody High School in East Liberty and Schenley High School in Shadyside among them, along with the Early Childhood Centre in Homewood itself) have been shut down completely and their students relocated to nearby schools. Homewood Montessori has been relocated to Friendship neighbourhood. Faison and Lincoln K-8 have had their sixth through eighth grades relocated to Westinghouse High School, which now functions as a K-12 school. In addition, the school board mandated for this past school year that Westinghouse High School reorganise as two separate single-gender schools on a trimester system: the Young Men’s Academy and the Young Women’s Academy (Chute 2011, Chute 2011, Rosenthal 2011).

This last reorganisation in particular has been cited as a massive failure in its execution. Scheduling changes had not been finalised, nor had teachers been assigned for classes at the two new Academies, resulting in many classes simply not being taught, with students hanging out in hallways and with altercations becoming more frequent. In the end, the single-gender academies

Table 2. Timeline of recent school changes in Homewood.

<i>Date</i>	<i>Event</i>
June 2006	Homewood Montessori moved to Friendship
August 2008	Schenley High School moved to East Liberty
June 2011	Schenley High School in East Liberty closed Peabody High School in East Liberty closed Faison K-8 reconfigured as K-5, grades 6-8 to Westinghouse Lincoln K-8 reconfigured as K-5, grades 6-8 to Westinghouse Homewood Early Childhood Centre closed moved to former Faison K-8 intermediate campus
September 2011	Westinghouse High School closed; reopened as Young Men's Academy and Young Women's Academy
January 2012	Young Men's and Young Women's Academy rejoined as Westinghouse Academy
September 2012 (planned change)	Peabody High School to reopen for International Baccalaureate Programme

were merged, the middle school classes were separated from upper-level high school classes and the traditional semester system once again replaced the trimester system (Chute 2012). The superintendent of the Pittsburgh Public Schools, Linda Lane, has formally apologised to the parents, teachers and administrators of Westinghouse High School (Pittsburgh Public Schools 2012) for the ill-informed and ill-executed decision.

1.2 THEORY.

Behold, these are the instruments of the spiritual art, which, if they have been applied without ceasing day and night and approved on Judgement Day, will merit for us from the Lord that reward which He hath promised... [b]ut the workshop in which we perform all these works with diligence is the enclosure of the monastery, and stability in the community.

Benedict of Nursia, *The Holy Rule of St Benedict*, Chapter IV

One of the major purposes of school-oriented development is as a form of ‘urban acupuncture’ within suburban areas in alignment with the aims of the new urbanist design movement to create high-density, mixed-use, mixed-income, walkable urban neighbourhoods. The partially-explicit sociology and political goals of the new urbanism (and, by extension, school-based development) are communitarian: they are aimed at creating a polis which has a greater endowment of social capital available to all its members. The difficulties of doing social-science or political-science research on the impact of new urbanist design principles has been well-documented (Brain 2005; Bess 2006), both in terms of its intended audience, and in terms of its proponents to either collapse their working sociology (only partially made explicit) into a crude environmental determinism, or to make claims for their project which are empirically unsupported. David Brain recommends a social-scientific theoretical basis which is ‘historically grounded’ and ‘more precise in qualifying its generalizations’ in order to communicate more easily with practitioners, while he calls upon design practitioners to think in analytical terms more native to the social sciences.

There is already a very well-developed body of literature which relates citizen participation to the built environment, which shows causal relationships going in the other direction, and which is primarily concerned with means of reconciling the visions of planners and public administrators with the will of an actively-engaged populace. Assessing environmental factors in relation to citizen participation, particularly in urban planning literature, is a bit sparser, but it does certainly exist. The 2008 paper by Dekker and van Kempen is a good recent example of this sort of literature; though it was primarily focussed on the impact of national-level institutions and policy-making on local civic participation, environmental factors

and social indicators (such as involvement in social organisations, or share of owner-occupied housing) were incorporated in their analysis as well (Dekker and van Kempen 2008).

There are two broad schools of explanation for civic participation. One predicts it by using individual-level factors such as human-capital goods (income, education, homeownership) and social status (age, gender, ethnicity). The other, following queues from theorists such as Alexis de Tocqueville and Robert Putnam, predicts civic and political participation by using social-capital goods and community cohesion. It is worth very careful note that these two schools are far from being mutually exclusive, since individual-level human-capital goods have been interpreted as causal mechanisms for indicators of social capital: Olsen and Peleman predict that people with low levels of human capital will tend to build more social capital as a coping mechanism, relying on the goods of their family, friends and neighbours when their own goods are insufficient. Conversely, however, Ross believes that low levels of human capital lead to greater social distrust. In partial agreement with Ross, Putnam believes the individual factors and the socio-economic factors are linked, and that the causal mechanism is bidirectional: low levels of social trust and connexion with one's friends, family and neighbours lead to fewer means of access to the economic opportunities, education and skills which constitute human capital (following the studies of Wial, Granovetter and Dickens emphasising the role of social networks in achieving success in labour markets), which in turn causes further decline in social capital (Tocqueville 1835, Putnam 1995, Putnam 2000, Dickens 1999, Wial 1988, Granovetter 1974, Olsen 1972, Peleman 2002, Ross 2001).

The individual and the socio-economic factors in the two closely-linked bodies of theory discussed above are heavily person-based rather than place-based. Spatial mismatch in job markets (and the social skills needed to successfully enter them) is discussed by Dickens; and

homeownership as a predictive mechanism for civic participation is considered heavily by Dekker and van Kempen, with the theoretical basis from the property-rights economic literature that individual homeownership causes one to have greater incentives to invest, and thus to have greater interest in civic and political affairs in the community (Dickens 1999, Dekker and van Kempen 2008). However, an alternative explanation exists: the overall structure of communities having an impact on individual involvement in the community is indeed touched upon both by Brain and Bess, but the primary theorist in the literature on how human geography impacts civic and political participation is geographer John Agnew, who writes:

[H]ome, work, schools, church, and so on form nodes around which human activities circulate and which can create a sense of place, both geographically and socially. Place, therefore, refers to discreet if 'elastic' areas in which settings for the constitution of social relations are located and with which people can identify. The 'paths' and 'projects' of everyday life [...] provide the practical 'glue' for place in these three senses. (Agnew 1987)

Drawing upon this basic framework, Walter Nicholls argues that the built environment is (at the very least) a catalytic factor in the formation of networks of trust and solidarity, particularly in a socio-political context, and moreover argued that such place-based networks of trust and solidarity played a key role in determining the depth (how much of one's material and social well-being one is willing to risk) of social and political commitments. 'Concrete' attachments to place outweigh the more abstract attachments to class, race or gender identity (Nicholls 2003; Nicholls 2009). This particular place-based theory is bolstered by the work of Polanyi and Granovetter on 'embeddedness', suggesting that economic engagement follows from (as opposed to being a causal factor for) engagement in a social network (Granovetter 1985; Polanyi 1944).

The theory being presented here, following from Agnew, will have relevance (as far as this study is concerned) specifically to schools serving brownfield locations which have been subject to abandonment by large industry in the way that Pittsburgh has. If what we are measuring are the place-based, geographical effects on civic and political participation of both the physical school building and the institutions associated with it, the first variable to be considered must be the distance of the block under consideration from the school. It is an assumption among the new urbanists that the sorts of socialization that lead to increases in civic participation and social capital depend on the propinquity of a certain set of shared goods in the built environment (such as public school facilities). Thus, it can be expected that the greater the distance between a residential block and the nearest school building, the lower the levels of civic and political participation will be.

A set of variables will be compiled into an index corresponding to the school-oriented development typology. The first school-index variable to be studied here takes into account organised extracurricular programs taking place at the school: the number and the type of extracurricular activities. The categorical values for the type of extracurricular activity would be: recreational, academic (after-school study), correctional, child-care, civic (scouting, volunteerism, &c.), or multiple-type (YMCA). It is proposed that if a school has a working relationship with a voluntary community organization or business of any sort, which leads to an organised activity on campus, this will have the effect of drawing larger numbers of students, parents and community members onto campus to coordinate these events. The school would then possess a greater function as a community centre, landmark and ‘enclosure’ (or ‘node’, to use Agnew’s term) for propinquitous socialization – to ‘honour the aged [and] love the young’ (Benedict 530, Agnew 1987) – apart from normal academic activities (including PSCCs and field

trips) and the regular school day. We would expect to see political engagement in the surrounding blocks and civic involvement in the school rise accordingly, particularly with those extracurricular activities associated with involvement in voluntary associations.

The second school-index variable to be considered is the walkability of the physical area immediately around the school (that is, the distance along established walking paths between the school and nearby places of residence and business, as per, for example, the Street Smart Walk Score). The theory behind walkability follows from the same principles: the closer a physical place of civic engagement (such as a school) is to the workplace and to the home, the less costly it is in terms of time and effort to participate in activities there, and the more likely a person will be to participate in said activities. The particular situation of Homewood, however, is that walking is a necessity where private and public automotive transportation are difficult to attain.

The third set of school-index variables to be observed, while very closely related to the second, is actually distinct. It is more directly related to new urbanist architectural principles, and involves the actual use of space on school grounds. Does the school conform to the ‘big box’ model popular in suburban areas or does the school-owned land have a smaller ‘footprint’ with a campus-style ground plan? Are there outdoor courtyards or publicly-accessible playgrounds? What proportion of the real estate granted to the school is actually used for some directed purpose? The general theory behind this distinction between ‘big box’ schools ‘float[ing] in an expanse of empty space’ (Reid 2010) and school sites which use space more effectively and have less fortress-like architecture is that the latter are both physically and formally more inviting to participation by outside actors, and do not draw such hard-and-fast spatial and institutional separations between the people formally involved in the school and ‘outsiders’ – which is one of the effects that Strickland’s ‘City of Learning’ project attempts to

counter (Strickland 2003). It is expected that the design elements which correspond to the 'big box' format will correlate negatively with civic involvement in the neighbourhood surrounding the school, for these very reasons.

As a counterpoint to the school-oriented development typology, another independent variable to be considered is how many of the residents in each block actually own the house they live in, as opposed to rental. The rationale for the inclusion of this variable follows directly from the 'economic' theories of civic and social participation cited by Dekker and van Kempen (Dekker and van Kempen 2008), which postulate that the investment incentives arising from homeownership are directly tied to how involved one will be in the social networks in one's immediate neighbourhood. If a household has ownership over its own home, the more likely the household is to stay in one place over an extended period of time, the more its members will care about what happens to the neighbourhood, and the more they will participate in local civic activities and social networks, such as PSCC meetings and voting for local officials.

The last independent variable to be considered is violent crime. In Homewood, crime and the expectation of crime are still very major problems, and are very disruptive to neighbourhood activities – even things as simple as walking to school are made difficult by high levels of violent and property crime (HCV 2011; Teixeira 2011). It is very common in the social-capital literature to assert that crime is negatively indicated by social capital (Putnam 2001) or that high social capital has the effect of reducing crime of all kinds (Akçomak and ter Weel 2008). The reason for this is that strong social networks not only deter the likelihood of successful crime, but also remove psychosocial factors strongly associated with crime: broken homes, domestic abuse, social alienation and belligerence. Crime, in turn, is an obstacle to the healthy and proper development of social capital; as Lopez and Teixeira suggest, it creates

spaces where being in public is considered too dangerous. As such, it is likely that there is a double causal effect, but the theoretical literature is quite clear that violent crime and social capital are highly negatively correlated with each other.

1.3 QUANTITATIVE MEASUREMENT AND MODELLING.

What this study attempts to measure are the neighbourhood effects of schools with particular traits: extracurricular activities; pedestrian-friendly location; and effective and inviting use of physical space. To get a proper understanding of the neighbourhood effects of school design, particularly in a physically small neighbourhood such as Homewood, it will be necessary to model the data in two stages. First, the effect of the presence of the school must be ascertained, controlling as mentioned above for homeownership rates and violent crime. For this purpose, the dependent-variable data must be organised and collected at the individual level, spatially by block – particularly since attempting to measure neighbourhood effects at lower degrees of resolution (block groups, census tracts and above) has proven problematic (Sampson, Morenoff and Gannon-Rowley 2002), largely because such resolutions have no way of measuring spill-over effects from boundary neighbourhoods – the findings in the literature, interestingly enough, suggest that some neighbourhood effects’ area-of-effect ignores to some extent the political boundaries imposed either by the Census or by local administration (Sampson, Morenoff and Earls 1999).

For the purposes of this study, therefore, each block will accordingly be assigned a value corresponding to the distance (in US feet) to the geographically closest school, between its centroid and the school address along the shortest possible straight-line path (as a viable proxy

for walking distance in a dense neighbourhood such as Homewood). In order for this propinquity variable to be useful in a linear regression, however, it may prove necessary to manipulate the data. It may be reasonably expected, if a point-source model is a viable one for measuring neighbourhood effects, that the effects *diminish* with increasing distance from the source. Though the calculus which goes into an individual decision to become involved civically is not amenable to observation, spatial effects of social factors are in fact measurable, as is the impact of distance from a physical nexus of social activity. In this study, the natural log of block-school distance for each school (x_1, x_2, x_3, x_4) will be used in relation to participation in voting, following the precedent of Bryce Ward's study of distance effects on participation in student activities at Harvard University (Ward 2006). The natural log measure is useful, as well, because it allows for greater variance in voting rates at greater distances where the school's presence might have less impact.

Household ownership by block will be very straightforward to measure using US Census data from 2010. Consistent definitions of household ownership already exist through the US Census, and the data itself comes directly from the 2010 US Census. It is available at the block level in Pittsburgh via the updated American FactFinder website, and will be measured as a ratio of how many households in each block are counted in ownership of their homes, normalised by the total number of households in the block.

Violent crime, however, will be measured by total number of incidents, by block, per year, over the last three years. The reason that I do not choose to use crime *rate* (with total violent crime incidents normalised by population) rather than the raw number of total crime incidents has to do with *perception* of crime as well as the actual probability of incidence. It is very reasonable that (to give a hypothetical example) parents are more likely to have their

children avoid a block on their way to school on which six shootings have been committed than a block on which just one person got beaten up three years ago; it is rather far-fetched to believe that it will contribute in any conceivable measure to their greater peace of mind that the block with six shootings also has a population twelve times greater than the block with one beating (and thus, half the violent crime rate). Police records should have all incidents of violent crime over the past three years already spatially accounted-for; and PNCIS should have that data readily on file – measurement should not be a particularly thorny issue regarding violent crime incidence. It seems vastly more theoretically supportable, however, to use population-normalised data for voter turnout by block.

The effects of the presence of the schools, along with homeownership and violent crime on the number of residents who voted in the past six local elections (from 2009-2011) are reflected in the first analysis. The multiple regression formula for the first analysis is as follows:

$$y_3 = a_1 + b_1 \ln x_1 + b_2 \ln x_2 + b_3 \ln x_3 + b_4 \ln x_4 + b_5 v + b_6 h$$

Once the above regression has been completed, it can be determined if the presence of each school has a significant impact on voter turnout once violent crime and homeownership rates have been accounted for, and (if so) what the estimated coefficients are ($b_{1,2,3,4}$). This being done, the second model will attempt to discern whether the quantitatively-measurable principles of school design borrowed from the school-oriented development typology have had any significant impact on the neighbourhood effects of the public schools, by comparing the best-fit OLS linear coefficients garnered above and comparing them with an index of school design variables, to ascertain if the selected principles of school design have any correlation with the magnitude of the school's voter turnout effects.

Included in this index will be measurements of all school-related measures aforementioned (number of extracurricular activities; walkability; size of school grounds; and shape of school ‘footprint’). To attain the number of extracurricular activities organised at each school, the Human Services database (which contains up-to-date information on extracurricular activities and social programmes at a wide variety of locations around the country) will be consulted.

Walkability of the surrounding blocks from the school will be measured according to the (still in beta testing, at this point in time) Street Smart Walk Score instrument, at <http://www.walkscore.com>. This instrument determines the locations of various nearby amenities (groceries, restaurants and bars, shopping, coffee, schools, parks, books, entertainment and banking) and generates a real-numeric score ranging from 0 to 100, based on the presence of amenities and the walking distance along street centrelines of the address specified from these amenities.

Size of the school grounds will be relatively straightforward to measure; that data is a matter of public record and is accessible through downloadable parcel-level shapefiles from the Allegheny County website. Building ‘footprint’ shapefiles are available for download as well, and these will be useful in determining the ‘boxiness’ of each school, through a measurement called the isoperimetric quotient, which relates the perimeter of an enclosure to its area. The most efficient use of a perimeter to enclose an area is to arrange it in a perfect circle; thus, measurements of efficiency of perimeter use of a polygon will conform to the equation:

$$Q = \frac{4\pi A}{L^2}$$

Where A is the area of the polygon, L is the perimeter of the polygon, and Q is the quotient of the polygon’s actual use of space over the optimal area of a perfect circle with the

same perimeter. The higher the Q , the ‘boxier’ the building is (ironically, using this definition, the Litchfield Towers would each be considered ‘boxier’ than Posvar Hall); the final analytical tool will therefore have to take the expected negative correlation into account.

Household ownership by block will also be very straightforward to measure. Consistent definitions of household ownership already exist through the US Census, and the data itself comes directly from the 2010 US Census. It is available at the block level in Pittsburgh via the updated American FactFinder website, and will be measured as a ratio of how many households in each block are counted in ownership of their own homes (whether ‘free and clear’ or with an active mortgage), normalised by the total number of households in the block.

Because of the small size of the population studied at the school level, statistical analysis will not be appropriate given the number of variables that need to be tested and correlated and the lack of degrees of freedom in such a case. Instead, the school-design index data which has been gathered for this study will be described empirically on a case-by-case basis, the effects of each school individually ascertained and patterns (if there are any) identified across schools.

In addition to these traditional descriptive and quantitative analytical tools, a series of choropleth maps from ArcGIS 10 will also be provided in this research to illustrate these effects spatially, across all three administrative divisions of Homewood. The qualitative analysis will depend on a description of the levels of participation in each school, and what the site visits and interviews reveal about the beliefs concerning the most important issues for the schools in question.

1.4 QUANTITATIVE RESULTS.

In the three neighbourhoods of Homewood there are 277 blocks listed on the 2010 US Census. Of these, 214 blocks were inhabited, making their data useable for the current study. Shapefiles and other spatial and geographical information were used, wherever possible, from the 2010 US Census, because these data were the most recent data available for public use and because the data came embedded with information which made geocoding and address matching possible in ArcGIS 10 (for voter turnout in each election and for violent crime incidence). Voting rates were low, as shown above, with a mean of roughly 27% on a strongly right-skewed distribution in the entire Homewood neighbourhood. Homeownership rates (including mortgages with payments pending) were surprisingly high; it should be noted, however, that the people most likely to own homes in Homewood are the older, baby-boom generation, who are themselves among the likeliest voters.

The results from the multivariate OLS regression, seen in the table above, were somewhat surprising: the only school in the study which has any statistically significant ($t = -3.03$) or appreciable impact on voter turnout by virtue of its presence is Faison K-5, though the direction of the correlation was as expected (with a coefficient of $b_3 = -0.072$). It may be said with a very strong degree of certainty that the closer one lives to Faison K-5, the more likely one is to vote. However, none of the other schools in the study were shown to have any statistically significant impact on or correlation with voter turnout at all.

Equally surprising is that the incidence of violent crime in Homewood likewise has no statistically significant impact on voter turnout. However, the single greatest (and most significant) predictor of voter participation in Homewood, by block, is what proportion of the properties on that block is owned ($b_6 = 0.226$; $t = 5.33$). This result would appear to lend

Table 3. Summary statistics.

Name of statistic	Summary Statistics		
	Mean (SD)	Range (Min, Max)	n
Voting rate (avg. per election)	0.271 (0.200)	1 (0, 1)	215
Homeownership rate	0.478 (0.307)	1 (0, 1)	214
Violent crime rate (avg. per year)	0.703 (1.085)	6.67 (0, 6.67)	277

decided support to the economic model of civic participation postulated by Dekker and van Kempen – that if a person is a stakeholder in the community with actual, grounded physical investments, one is much more likely to care about the affairs of that community and to take active interest in community life (including, in this case, voting). However, there may also be a form of selection bias at work – the people who are the most likely to buy houses are also already the most likely to vote (see the design concerns below).

The differences between the schools form another section of the study, and may shed some light on why Faison K-5 has such a strong correlation with public participation, whilst the other public schools in this study appear to have none at all. The school design variables are described above, in Table 3; as can be seen, Faison K-5 is located in an incredibly walkable and convenient area of Homewood (more so than any other school in the study), and also has the lowest isoperimetric quotient (and thus the least ‘boxy’ design) of any school in the city. However, it is also the school which has one of the fewest extracurricular activities attached. It would be tempting to conclude from the school data presented here that school layout and walkability do indeed have a positive influence on the civic engagement of the surrounding community, but to do so would mean to ignore the other schools which have no impact

Table 4. Primary multivariate OLS regression analysis.

	Average voting rate (by block)		VIF
	Coefficient	Student's <i>t</i>	
Natural log of distance (ft) from Lincoln K-8	0.0390 (0.0550)	0.71	3.23
Natural log of distance (ft) from Westinghouse 6-12	0.0039 (0.0311)	0.12	2.67
Natural log of distance (ft) from Faison K-5	-0.0721*** (0.0238)	-3.03	1.18
Natural log of distance (ft) from Student Ach't Ctr	0.0215 (0.0289)	0.74	2.03
Homeownership rate	0.2262*** (0.0426)	5.33	1.09
Violent crime rate	-0.0105 (0.0122)	-0.86	1.08

whatsoever. Given the small n of this case study, for example, it would not be appropriate to extrapolate too heavily from this data to the outside, nor would it be called-for to make a deterministic attribution of all of the variance in distance effect merely to walkability and the isoperimetric quotient of the public school. This is not only because of the inherent problems in drawing conclusions of this sort from small- n data sets, but also because of the theoretical objections to discounting exogenous influences on civic and social engagement (Sampson, Morenoff and Earls 1999). Thus, we must conclude – albeit tentatively – that the school-oriented development hypothesis simply does not hold up in the Homewood environment.

1.4.1 Design Concerns.

The most glaring theoretical concern and possible conceptual objection to this study's basic validity regards the correlation between school proximity and voting, and how it impacts

the usefulness of this study in regard to measuring social capital. The objection is thus: because schools (along with churches) are very commonly used across the country (not just in Pittsburgh) as polling places during elections, we could be observing, rather than the formation of social capital, the effects of mere convenience: because the residents in question are closer physically to the polling site, their time-and-effort costs of voting are substantially lowered and they will be more likely to vote. The model, therefore, would resemble this:

$x_{1,2,3,4}$ (**presence of school**) $\rightarrow y_3$ (**voter turnout**) but *not* $x_{1,2,3,4} \rightarrow y_{1,2}$ (**school participation**)

This objection is not particularly troublesome to the present study, since according to the Allegheny County Board of Elections only one of the schools in this study doubles as a polling place: the Student Achievement Centre on Brushton Avenue (a school whose presence, as was noted above, had no discernible impact whatsoever on voter turnout). In general, not schools but rather other community centres and public buildings (YMCA's, libraries, churches, other local associations the Kingsley House in East Liberty) serve as the polling places in this section of Pittsburgh. The objection does, however, bring to light another very important question regarding the study's validity: *how effective an indicator of social capital is voting?*

The greatest objections to the use of voting as an indicator of social capital or civic-mindedness are that using voting as an indicator of social capital carries a risk of selection bias, that there is an endogenous relationship between voting and social capital (Condon 2009) or that it is a 'thin' measure of social capital in that it requires very little time, effort or money. On the other hand, the last objection may be the saving grace of voting-as-social-capital-indicator,

Table 5. School design variables and impact on voting.

	Lincoln K-8	Westinghouse 6-12	Faison K-5	SAC
Street Smart Walk Score	64	54	78	58
Number of extracurricular activities	5 (2011)	5 (2009)	2 (2009)	1 (2008)
Isoperimetric quotient	0.3595	0.5102	0.2021	0.2542
Area of parcel (ft ²)	76,239	363,352	224,205	39,659
Distance effect on voting (<i>t</i> score)	0.0390 (0.0550)	0.0039 (0.0311)	-0.0721*** (0.0238)	0.0215 (0.0289)

because the (relatively) costless nature of voting makes it both a good baseline indicator of social trust and trust in institutions, and one that is very easily and very readily measurable (Letki 2003). For the purposes of this paper, we are concerned primarily with the effects of the uses of a particular built space (public schools) on civic and political participation, so the causal inference we want to make is:

$$z_{1,2,3,4} \rightarrow y_{1,2,3}$$

It seems, following Letki (and Granovetter), that the interrelationship between voting and other forms of civic participation is probably not the foremost of this paper's concerns, particularly when the propinquity (and thus convenience) of the physical facility of the school for civic activities of *any* kind (voting included) is precisely what the research question asks, and precisely what the study ought most to set out to measure. The inclusion of voting as a dependent variable still seems quite prudent (insofar as it remains an easy-to-measure and basic measurement of civic participation), but the conclusions drawn by this study should certainly address this concern, particularly in the event that we find a significant relationship between school attributes and voting, but no significant relationship between school attributes and

participation in the PSCC meetings. In this case, voting centres do not correspond to schools (with the exception of the Student Achievement Centre), but are rather located in YMCAs, churches or other community centres; this raises the additional question – not addressed here – of what impact these other civic structures have on the community life in their immediate vicinity.

Another facet of the study to which attention should be drawn is that of multicollinearity between some of the independent variables. For example, violent crime rates might be inversely correlated with homeownership rates because homeowners might be more invested in neighbourhood watches. Another threat of multicollinearity resides in the possible relationship between walkability, school ‘footprint’ and size of school grounds – all of which are in some measure a function of city block size (though size of school grounds and a school’s isoperimetric quotient could well be expected to have a positive correlation with block size whilst walkability would have a negative correlation). As we can see from the VIF scores in Table 4 above, however, multicollinearity is not a particularly dire issue for any of the independent variables in the regression (and given that no statistical tests were run on the school-oriented development variables, multicollinearity was not an issue).

The more dire threat to inference with which this paper should be much more closely concerned is the latter one raised by Meghan Condon (albeit in reference to voting as a measure of social capital): to wit, selection bias. It might well be the case that, rather than the physical facility of the school being a ‘pressure point’ for social activity by which ‘urban acupuncture’ may be practiced, people for whom civic engagement is *already important* tend to prefer to live near public schools with a certain set of characteristics. The flip-side of (and all-too-natural objection to) this paper’s Benedictine conceit that a public space dedicated specially to study but open also to other civic uses, such as a school, will have positive externalities on ‘the stability of

the community’, is to say ‘naturally! but it is also the case that the monastic life attracts a very specific breed of person!’ In such a case, the model would look thus:

$$y_{1,2,3} \rightarrow x_{1,2,3,4}, z_{1,2,3,4}$$

The susceptibility to selection bias is one of this study’s definite weaknesses. If more resources and time were available, it would be prudent to run a comprehensive survey directed to a random sample of Homewood residents to ascertain how long they had lived in their current home, in order to assess the possibility that the presence of the school had been a magnet for migration; however, this is not a feasible option for a number of reasons. Homewood as a neighbourhood also has a very high rate of housing turnover, even though the migration is generally confined to a very narrow geographic space (UCSUR 2011). As such, it may be necessary to devise another instrument to control for selection bias or to suggest another direction for research regarding this particular question, as a comprehensive survey is well beyond the scope of the current study.

1.5 QUALITATIVE STUDY.

On 16 February 2012, I attended the Parent School Community Council meeting at Westinghouse 6-12 Academy at the invitation of one of the parents at the school. The meeting took place in the school cafeteria, where some refreshments (punch, fruit, crackers and cheese) were served, and ran from 6:00 PM to a little past 9:00, with roughly 60 people in attendance (parents, community members, school staff, journalists, volunteers and several students like me with research or journalistic interests in the PSCC meeting). The reason for the high attendance was that this PSCC meeting was the one scheduled for Superintendent Linda Lane of the

Pittsburgh Public Schools to give a formal and public apology to the Westinghouse community for the premature and ill-considered attempt at creating sex-segregated classes. The meeting opened with an introduction from the school principle, Ms Crenshaw, who introduced the teachers and staff who were present at the meeting (about 15), along with three AmeriCorps members who assisted at the school, and then after several announcements and requests from community members for supporting several school initiatives (including transportation of students), gave the floor to Superintendent Lane.

Ms Lane's apology was unconditionally contrite and succinct, if a bit formal, to the point where several parents and community members felt that the apology and subsequent statement she gave was slightly generic and did not sufficiently address the Homewood community's specific concerns about Westinghouse. She did, however, address the issues of how the sex-separated class structure was not well-implemented, with no master class schedule and an incomplete curriculum, and how it had cost the students half a year of schooling, and when she addressed the Homewood community, she highlighted a need for its many community programmes to begin working together. She took roughly twelve minutes for her apology and remarks, after which a spirited and lengthy question-and-answer session followed.

One school board member, Mr Brentley, was in attendance and spoke on behalf of the Pittsburgh School Board with a yet more contrite apology for 'what [the School Board] did to you'. The Westinghouse Alumni Association's representative attempted to present a list of 40 questions to Superintendent Lane, though he was dissuaded from asking them all – his concerns were largely with the role the Alumni Association was being allowed to play in decision-making about school improvements, particularly (but not solely) concerning the school building. One of the parents present spoke up about the need for greater attention to the mental health problems at

Westinghouse and the struggles being encountered by current service providers at the school. There was a call for the entire school board to come in person to Westinghouse and apologise in person to the student body of Westinghouse as well as the parents, and the Q-and-A session was concluded by an older alumnus saying that the community needs to be able to put aside their differences, stop assigning blame for what was clearly a great mistake, place a greater priority on the students and cooperate in achieving educational goals on their behalf.

After the PSCC meeting was concluded, I met up with one of the parents at the school, Ms G, to interview her about her own take on the meetings and on parental involvement in the schools. Ms G has been a very active member of the school community, is a member of Operation Better Block, and has had two children in the school system, one of whom goes to Westinghouse; as she was concerned not just for her child's academic success but for her physical and psychological well-being, she thought that ultimately the best thing for her child would probably be to leave the school. That said, she is quite concerned about the quality of the teaching and about the quality of the programmes at the school, including the mental health services for the students who need it.

When the questions of what causes parental involvement at the school were raised, Ms G pointed out very firmly that this meeting was not a normal one, and that only about 10 or so of the 60 people in attendance at the PSCC meeting we had just attended were parents, and that she was surprised more parents hadn't shown up. Normally, she believes, between 15 and 20 people in total (usually less than half of whom are parents) show up to PSCC meetings at Westinghouse – and if there is an aberrance from that (such as the PSCC meeting I attended), it is usually because there is a 'hot-button issue' on the agenda. When asked what she believes causes parents and community members to become involved in the schools, she was very much

theoretically on the side of Dekker and van Kempen: she believed that parents and community members are only liable to get involved when their property has been vandalised or when they have been in some other way inconvenienced by occurrences of crime or of insufficient public goods in Homewood. She volunteered that she felt the Alumni Association were *too* concerned with the school building, and that more attention ought to be paid to school programming and community involvement in the lives of the students, rather than merely in renovating the school building, and that she felt that the academic interest in Homewood ought to be translated into a real dialogue between the academic community, public officials, community leaders and Homewood residents – that policy-makers and academics should actually *ask* what Homewood residents think about these issues and take action accordingly. This was just as true of the schools as of any other issue.

1.6 CONCLUSIONS AND RECOMMENDATIONS.

Both the quantitative and qualitative findings of this paper have been largely in support of the hypothesis that homeownership is a major contributing factor to civic participation by residents in Homewood, and that the presence and design of schools is practically insignificant, with the presence of only one school (Faison K-5) producing any significant effect on voter turnout. Even though this school's effects were as predicted, largely in support of the school-oriented development criteria (the neighbourhood surrounding Faison K-5 is highly walkable, its campus is very spacious and is built on a parcel with plenty of green open space, and the building itself is emphatically *not* a big-box school), the school-oriented development hypothesis cannot be supported in this neighbourhood due to the lack of effect from other similar schools,

even those with more extracurricular activities to serve as civic ‘magnets’. It may, however, be worth studying other local edifices to determine their worth as centres of civic engagement – particularly churches, community centres, YMCAs and local businesses such as hairdressers.

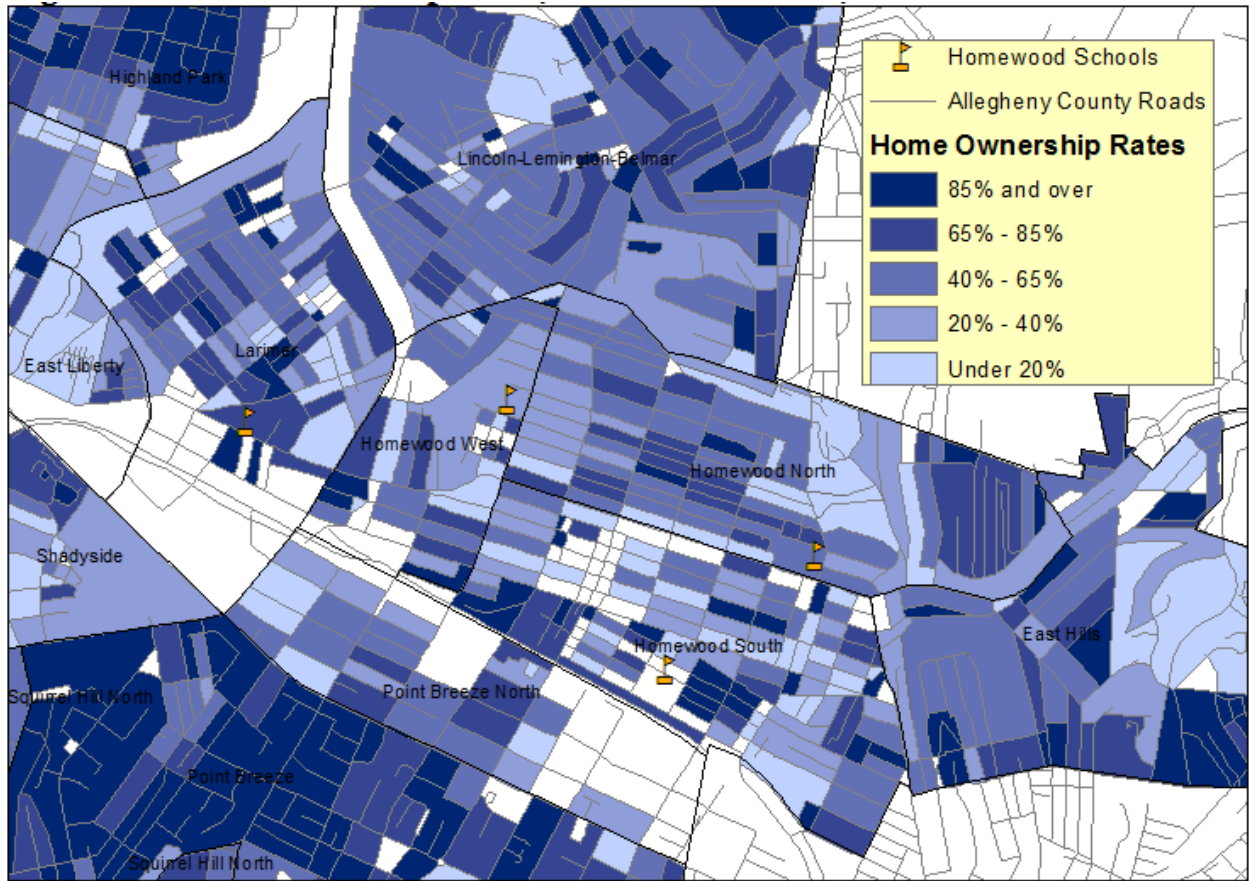
This study demonstrates the need for greater communication and collaboration between designers, academics and the communities which they serve. Even though Ms G was very good about agreeing to be interviewed by me and was generally willing to help University of Pittsburgh graduate students (not just me, but two others who were in attendance at the PSCC meeting) with their Homewood-related research projects, our interview nonetheless made reference to a general attitude of *ennui* in the Homewood community with regard to the research conducted by students and researchers from the University of Pittsburgh, Carnegie Mellon University and elsewhere. The difficulties encountered in this study in securing interviews also attest to this fact. There is absolutely a positive direction which community-based research can take in communities like Homewood, as the example of Homewood Children’s Village has demonstrated (Soska 2011). But such an approach is likely to be more successful because it requires a willingness to listen to resident concerns on the part of academics, and a willingness to make the results open and accessible to the communities they serve.

APPENDIX A

MAPS

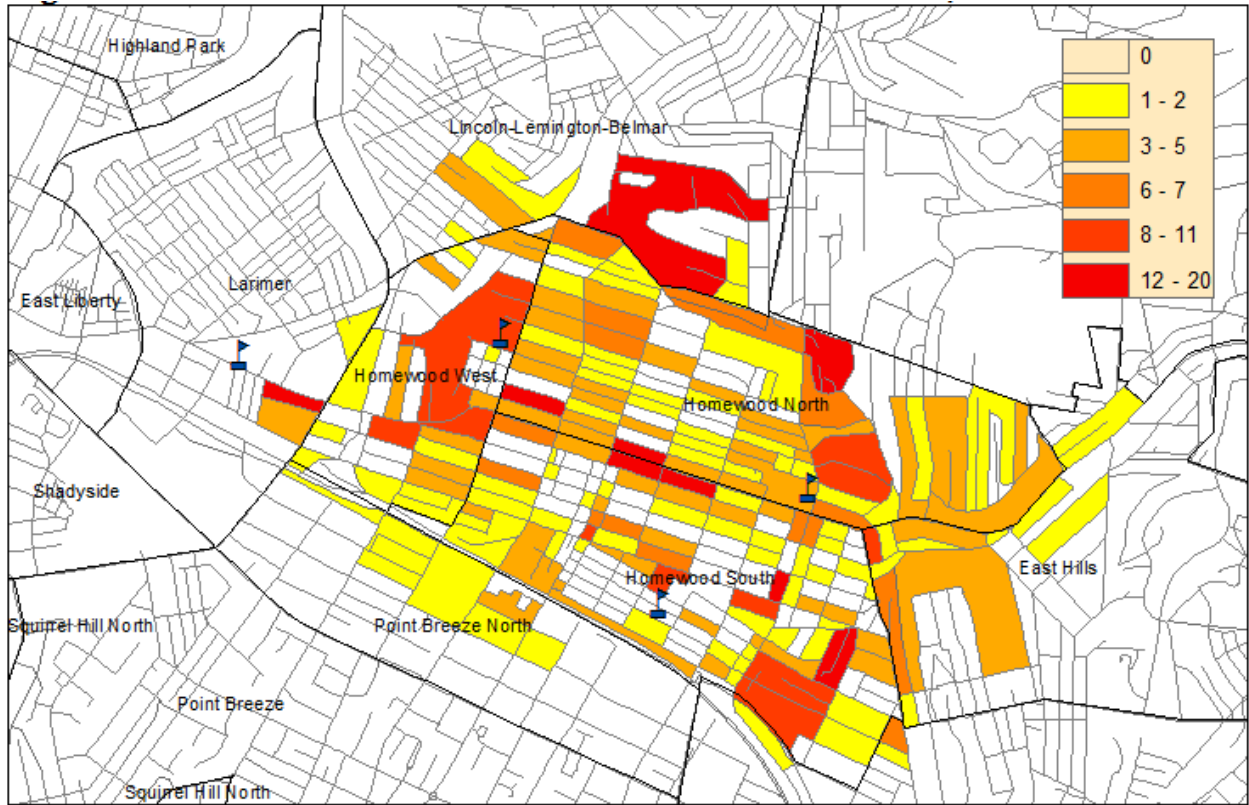


Figure 1. General neighbourhood maps (City of Pittsburgh 2012).



Data Source: US Census, 2010

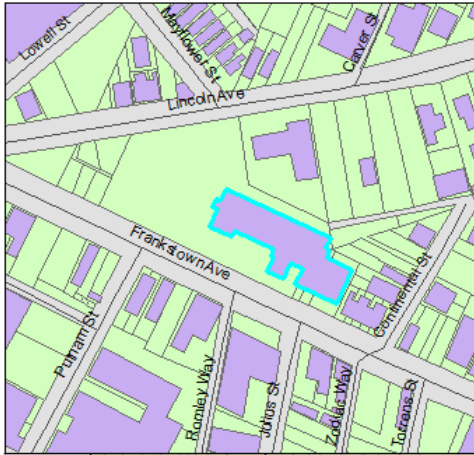
Figure 2. Home ownership rates in Homewood.



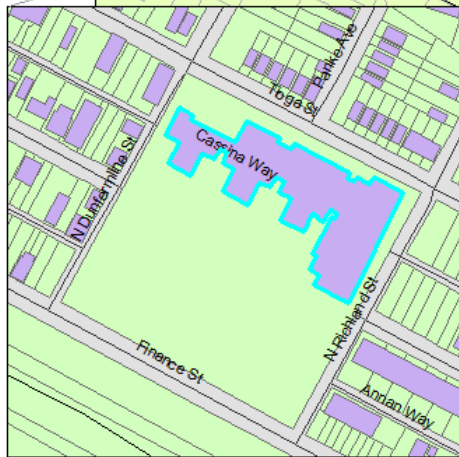
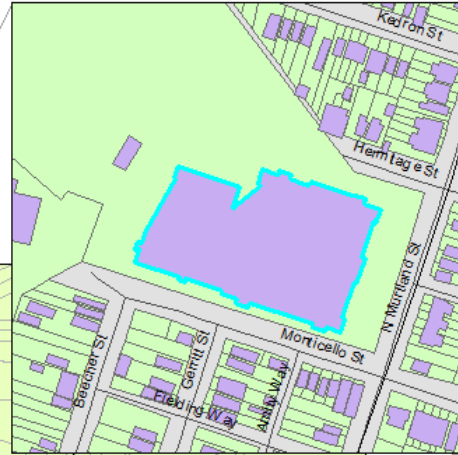
Data Source: PNCIS, 2012

Figure 3. Violent crime rates in Homewood, 2008-2010.

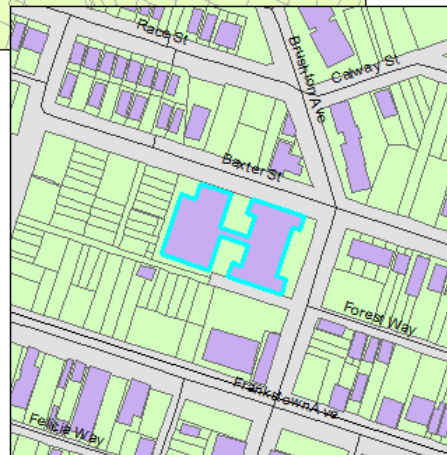
Lincoln K-8 School Building



Westinghouse Academy 6-12 School Building

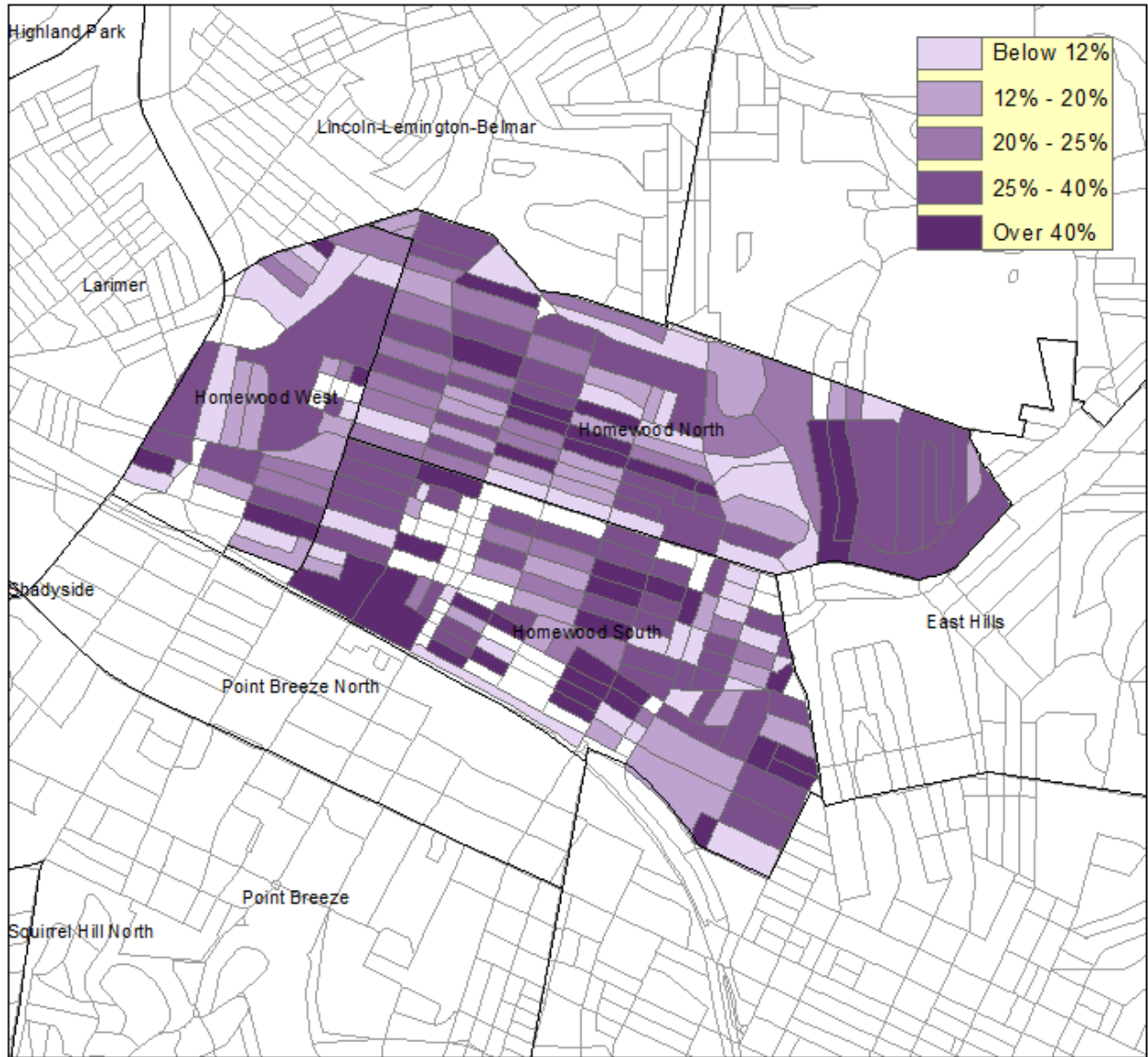


Faison K-5 School Building



Baxter Student Achievement Centre School Building

Figure 4. Locations and footprints of Homewood public schools.



Data Source: Allegheny County Department of Elections, 2011

Figure 5. Voting rates in Homewood, 2009-2011.

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