BUILDING CONNECTIONS:

POLITICAL PARTICIPATION, SOCIAL CAPITAL AND THE BUILT

ENVIRONMENT IN ST. JOHN'S, NEWFOUNDLAND

by

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ABSTRACT

How does where we live affect how we live? Do characteristics of the built environment affect the civic and social lives of the people living there? This study examines these questions at the neighbourhood scale in the Canadian city of St. John's, Newfoundland.

To do so, it combines data from a survey measuring respondents' social capital (defined as a combination of social participation, social trust, and civic participation) and a "built environment audit" that records the built characteristics of each respondent's neighbourhood.

The study finds a significant, positive relationship between the walkability of a neighbourhood and the social capital of the people living there. This relationship is driven primarily by the effect of the built environment on voluntary participation and relationships with neighbours. The study also tests several methods of measuring walkability, and finds that an objective measure based on street geometry is the best predictor of social capital.

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Finally, I came to Memorial with this project pretty close to fully formed, thanks to the great crowd of people at Happy City St. John's, the advocacy organization which I have had the privilege to lead as Chair for several years now. At Happy City we have built a team of activists passionately *for* something – building a thoughtful, transparent, and resilient decision-making process in our city. That's a rare thing, and these people inspire me every day. The idea for this project was born in a boardroom above a Chinese restaurant as we brainstormed the kinds of research we'd love to have on hand to toss into the municipal mix. Now we have it – here's hoping it gets used.

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Chapter 1: Introduction

1.1 – Background

How does *where* we live affect *how* we live and, more specifically, how we participate in political and social life? Are our interactions with other people really shaped by urban design and architecture? This study examines these questions at the neighbourhood level in St. John's, Newfoundland, using a dataset that combines survey-based measurement of respondents' social capital with an inventory of the features of the built environment around where the respondent lives. Over a period of several months, responses were gathered from almost 100 residents, who were stopped and surveyed in public places all over the city.

The influence of design on behaviour is something taken almost for granted, particularly in architecture and urban planning. Indeed, it can be difficult to pry a theoretical framework for these ideas out of the planning and architecture literature – one standout example, Paranagamage et al. (2010), gets there by looking for the unstated theoretical assumptions (and there are many) buried in a huge range planning literature. The ideas are there – what they are not, by and large, is tested empirically through the kind of quantitative survey-based work that a political scientist would recognize.

Here, it is not only the type of work that might be unfamiliar to a political scientist, but also the subject matter. Municipal affairs remain seriously underrepresented in the political science literature, outweighed massively by studies of provincial, national, and international goings-on. This study is aimed at this gap. As an MA project, it is necessarily a small, pilot study – but one that replicates a new and interesting research design for the first time in a Canadian context. It is among the first survey-based social

capital studies done in a Canadian city, with the only other comparable work being Kitchen et al. (2012), which measured social capital in Hamilton, Ontario. This study is also among the first to explicitly focus on exploring connections between the built environment and political participation – the closest equivalent here is Hopkins and Williamson (2012), which explored this question in the context of American suburbs. More broadly, this thesis is one of the very few studies focused on medium-sized North American cities, and one of the even smaller group of studies focused on the city of St. John's.

Beyond political science, this study also aims to be of some use to two intersecting conversations happening in St. John's, and indeed in cities all over Canada: one about development, density, and urban form in the face of changing demographics and preferences, and another about citizen engagement at the municipal level.

The first conversation, about urban form, has noticeably shifted in recent years. After a long period of declining density (see Fillion et al., 2010, for a discussion of these dynamics in Canada's 4 biggest cities), many city centres are seeing a spurt of residential growth, and there is an increasing amount of attention being paid to concerns around place-making, mixed-use development, walkability, and sprawl (Grant and Bohdanow, 2008: 1), though application of these ideas remain uneven (Ibid.). This conversation is happening at the grassroots amongst citizens and advocacy groups (see McGreal, 2014, and Happy City St. John's, 2014, for examples)**,** within municipal governments (see City of St. John's, 2014: 5, and City of Vancouver, 2014, for examples), and within the literature in fields including community health (see Grant et al., 2010), transportation

planning (see Manaugh and El-Geneidy, 2011), urban planning (see Skaburskis, 2006), and architecture (see Boddy, 2006).

The second conversation, about political participation and citizen engagement, is also happening at several levels. There is a perennial concern about low voter turnout in municipal elections (see Drennan, 2014, for an example of media commentary; in the academic literature, see Bureau of Municipal Research, 1976; Karing and Walter, 1983; Bullock, 1990; Hajnal and Lewis, 2003; Kushner and Seigel, 2006; Trounstine, 2013). There is also a growing interest from both governments and citizens in "engagement," whether that be through more meaningful public consultation processes, more access to information, or the presence of municipal governments on social media (see Meslin, 2012, for a particularly well-developed citizen initiative; for examples of city efforts, see City of Halifax, 2014; City of Edmonton, 2008; City of Saskatoon, 2004). Beyond the direct government-citizen relationship are broader questions around political engagement and social capital at the municipal level. How can communities and citizens be equipped with the tools to understand and articulate their needs and visions? What role do municipal governments have in fostering the conditions for the growth of the connections between people that are the key element in social capital?

Both of these conversations are particularly salient in St. John's at the moment, and their intersection is under-explored. The city is experiencing a boom, fueled by the expanding offshore oil industry (Bailey, 2013). There is a visible increase in affluence and significant development pressure. The built landscape of St. John's is also distinctive; the centre of the city retains much of its Victorian layout and building stock. Neighbourhoods are compact, streets are narrow, and row houses are the norm (Sharpe,

2005: 407). Outside of the historic centre of the city, though, post-Confederation St.

John's has developed on a similar model to other Canadian cities, with expansion through

sprawling, pre-planned suburbs (Collier, 2011). There continues to be significant interest

in greenfield development in the new suburban neighbourhoods of Galway and

Kenmount Terrace (see Galway, 2014, and Atlantic Homes, 2014), as well as a much-

increased interest in dense developments in the city core (see Skyscraperpage, 2014, for a

citizen-maintained inventory of projects), much as other Canadian cities are seeing.

     At the same time, St. John's struggles with low voter turnout – 53% in the most

recent election (Belec, 2013) – and interest in the municipal political process. While

there is a vibrant group of citizens' organizations active in advocacy around locally

relevant issues, anecdotal accounts from these organizations' members suggest that

different parts of the city differ significantly when it comes to the vibrancy of community

life and amount of engagement with local politics. One aim of this study is to capture

empirically the degree to which this is the case, and suggest which areas of the city might

benefit either from further research or special attention from those tasked with developing

and supporting these community ties.

     The under-explored connection here is the connection between the different

patterns of urban development within St. John's (and, indeed, within other Canadian

cities) and their political and social outcomes. Municipal governments carry much

responsibility for the shape of the built environment within their jurisdictions. From road

geometries (FCM, 2006: 8) to zoning bylaws (Ibid.) to the type of windows allowed in a

downtown home (City of St. John's, 2014a), municipal policies and regulations shape

neighbourhoods. Having a clearer idea of how these choices shape the lives of the people

living in these communities would help municipalities realize their commitments to support community-building. If the way a neighbourhood is laid out affects how people connect with each other, then there is also a clear connection to the second ongoing conversation about public engagement and political participation. Are there ways to design, alter, or preserve neighbourhoods so that communities of engaged residents are more likely to emerge there? If so, what are the key choices a municipality needs to make? Suggesting some answers to these questions will be of interest both to municipal officials and the broader community in St. John's.

1.2 – Conceptual Approach

This study uses a social capital framework to understand the political and social implications of connections between people at the local level. As overstretched as this concept may sometimes be in the social sciences, it does work particularly well here. Broadly speaking, "social capital" refers to the benefits that accrue from the web of social relationships into which people are embedded (Claridge, 2004). It is a separate concept from financial capital (money), physical capital (concrete objects), or human capital, which refers to the stock of skills and knowledge contained *within* a person, rather than as a property of their interconnections (Hayami, 2009: 99).

The term "social capital" has long been used in two contrasting ways by different groups of scholars. The present work is grounded in the work of political scientists, sociologists, and others (see Bourdieu, 1986; Brehm and Rahn, 1997; Foley and Edwards, 1999) who view social capital as something that individuals hold in a way at least partly

analogous to physical and financial capital. To quote Bourdieu's definition, social capital in this framing is:

The aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition – or in other words, to membership in a group – which provides each of its members with the backing of the collectivity-owned capital, a 'credential' which entitles them to credit, in the various senses of the word (Bourdieu, 1986: 248).

This perspective is distinct from one that views social capital as part of the structural elements of a community, as envisioned by Coleman (1988) and implied by Putnam's definition of social capital as "the features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam, 1995: 67). Scholars in this tradition have often located the basis of social capital in religious or cultural norms and framed it as something that works to counteract incentives that would lead rational people to avoid cooperation. In effect, these accounts can boil down to saying that communities experience different outcomes because they have different cultures; there is no way presented to model how social capital allocations could shift over time (Jackman and Miller, 1998: 52). As such, this is not a particularly useful perspective through which to examine the questions raised in this study, which is explicitly looking for things that increase or decrease social capital levels in individual respondents.

Drawing this distinction has consequences. From an operational standpoint, it suggests that social capital should be measured through individual survey data (see

Brehm and Rahn, 1997, for a conceptual defense and Onyx and Paul, 2000, for an applied example of this approach). This does not rule out the possibility that social capital is also, in part, a public good. It is easy, for example, to see how having a neighbor with a very strong social network might be of benefit to all the people on the block. Indeed, by tracking more closely to conceptualizations of other types of capital, this version of the social capital approach functions more effectively as a heuristic, suggesting approaches and hypotheses drawn from other disciplines. As Alejandro Portes put it, this approach "places… consequences in the framework of a broader discussion of capital and calls attention to how such non-monetary forms can be important sources of power and influence, like the size of one's stock holdings or bank account" (Portes, 1998: 2).

One conceptual question about social capital stands out here: how does political participation fit in? The case has been made that high social capital *causes* political participation. The argument goes that individuals with high social capital (or, on the Putnam/Coleman model, members of tightly networked communities) have an increased capacity to participate in political activity (see Huckfeldt, 1998; Paxton, 1999). One imagines, for example, that a person who had strong relationships with the neighbours on their street – grown out of sharing the labour of shoveling snow, for example – might find it much easier to mobilize them for a protest or public meeting. The relationship between social capital and associational politics is two-way. Political activity of this sort – attending meetings, organizing with others, writing letters – is a social activity not inherently different from, say, running a soccer league. Participating in this kind of activity generates the "weak ties" (Granovetter, 1973) that generate social capital. Studies that measure social capital through survey data, then, treat some types of political

participation – frequency of meeting attendance, for example – as a *component* of social capital (see Kitchen et al., 2012; Wood et al., 2007; Leyden, 2003; Lund, 2003; Onyx and Paul, 2000). This study follows the lead of this literature and includes measurements of political activities *within* an index that measures overall levels of social capital. This also has an advantage of being more applicable to younger respondents; as noted in Teney and Hanquinet (2012), political participation in young people is made up of a complex mix of activities, and while the relationship with social capital holds, measuring it requires a more complex set of questions. In looking for the influence of the built environment on social capital levels, then, there will emerge some picture of how the built environment affects this kind of multifaceted political participation.

On the other side of the relationship being explored in this study, "the built environment" also requires some definition. This is a term that is more common in the planning and public health literature than in political science. It is also quite broad – the built environment "includes land-use patterns (how land is used); large- and small-scale built and natural features (e.g., architectural details, quality of landscaping); and the transportation system (the facilities and services that link one location to another)" (Brownson et al., 2009: S99). Unsurprisingly, there is a wide range of measurement tools used to quantify and compare built environments. There is a division between subjective and objective measurement strategies, with at least 18 different tools based on self-reporting alone (Brownson et al., 2009: S105).

Using an objective measurement tool allows the built environment measurements to be done by the researcher, rather than the respondent, significantly reducing the length of any questionnaire. The present study takes this objective approach. A set of

measurement tools, collectively labeled "built environment audits," provided the framework to do this. There are a variety of such audits, which are effectively checklists of the presence/absence/frequency of certain key elements of the built environment (Brownson et al., 2009: S108-111). This study used a checklist based on one of the audit tools – the Analytic Audit Tool – which has the best combination of inter-reporter reliability and indicator diversity (Ibid.). In so doing, it adopts a definition of the built environment that includes the elements measured by the tool: land usage, types of local destinations, access to natural features, road/traffic/parking infrastructure, building aesthetics, street furniture, and physical order/disorder (St. Louis School of Public Health, 2003).

1.3 – This study: a roadmap

The next chapter of this study will explore the academic literature around social capital, the built environment, and the connections between the two. Grounded in that literature, the chapter after that will present the key hypotheses that this study tested. After outlining the hypotheses, there will be a detailed exploration of the methods and research design of the study, an in-depth profile of the survey sample, and an extensive look at the shape both of respondents' social capital results and the built environments in which they live. Finally, the "Results" chapter presents the results of a series of regression analyses developed to test the claims emerging out of the literature, and the "Discussion" chapter goes into depth about the findings that emerge from the data.

Over the course of the succeeding sections, this study will flesh out an account of a significant positive relationship between characteristics of the built environment that

encourage casual contact – particularly those that facilitate pedestrian activity – and enhanced social capital in the residents of these neighbourhoods in St. John's. This is an account broadly consistent with the existing literature, which finds a connection between "walkability" and social capital in several other jurisdictions.

Beyond a confirmation of that basic relationship, the data also produce some interesting findings regarding the internal dynamics of this relationship. They show that the walkability-social capital connection is driven primarily by walkability's strong impact on neighbourhood-level social ties and on rates of voluntary participation. Other elements of social capital – including levels of generalized social trust, frequency of social interactions, and (perhaps most interestingly) political participation and efficacy are largely unaffected by built environment in which the respondent lives.

In the process of developing results, this study also develops responses to a number of methodological questions that remain relatively untouched in the literature. First, it tests three distinct ways of measuring "walkability" – as a self-reported assessment, as a score based on distance to destinations (the "WalkScore" results now commonly shown in real estate search engines), and as a score based on the presence of design characteristics that encourage pedestrian traffic (narrow streets, minimal setbacks, and a connected grid). It is this third assessment tool that is the most robust predictor of social capital.

This study takes on another major methodological challenge by attempting to assess empirically the impact of self-selection on the results. It is very tempting to think that the relationship between social capital and walkability is being driven by a tendency for high social-capital people to cluster in certain neighbourhoods, drawn there by a more

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community-minded neighbourhood culture. By asking each respondent to comment about the reasons for their choice of neighbourhood, this study is able to develop some understanding of how much self-selection does impact the results. The answer? Surprisingly little. Instead, it finds that neighbourhoods really do seem to be shaping people's lived experiences. The remainder of this study will explain exactly how.

Chapter 2: Literature Review

2.1 – Factors influencing political participation

There is, unsurprisingly, a vast literature focused on the factors that influence people's social and political participation. A thorough review of that literature is well beyond the scope of this study – but a quick review does provide much important context, particularly when it comes to developing the control variables used in this study. The research design used in this study involves an index variable measuring "social capital" as a combination of social, political, and associational participation. There are distinct literatures attached to each of these components, with numerous commonalities among them. This section will look first at the literature around political participation, then move to factors influencing voluntary/associational participation, before concluding with a look at the landscape of influences on social activity.

When it comes to political participation, education matters. Indeed, Verba, Schlozman, and Burns claim that ''[e]ducational attainment is, in fact, the single most potent predictor of an adult's political activity'' (2003: 13). Numerous studies establish a positive correlation between educational attainment and political participation (see, for example, Nie, Junn, and Stehlik-Barry, 1996; Rosenstone and Hansen, [1993] 2003; Verba and Nie, 1972; Verba, Schlozman, and Brady, 1995; Wolfinger and Rosenstone, 1980). There is a causal story being told here – broadly speaking, the results of these studies have been interpreted to mean that "education confers participation-enhancing benefits, be it through the acquisition of cognitive abilities that enable comprehension of political content, the development of civic skills and civic orientations that foster political

action, or through the attainment of socioeconomic status positions that facilitate mobilization into participation" (Kam and Palmer, 2008: 612). This understanding is, it is worth noting, still debated. An alternative explanation holds that education is actually a proxy for other early-life influences – in other words, that the same factors that lead to educational attainment *also* push people towards political participation, without the causal chain flowing through one to the other (Ibid.: 637). Regardless of the mechanism, though, there is little doubt of the empirical relationship between education and participation – this is clearly an important variable to control for in any empirical work on the topic.

More broadly, education is often modeled as one component of a broader variable: socioeconomic status (SES), which adds in the effects of income. SES studies dominate the study of political participation (Leighley, 1995: 183) There is ample evidence for a positive correlation between SES and political participation, with income typically a weaker influence than education within these models (Ibid.). It is also worth noting that, in general, the effects of SES are consistent across the various types of political participation (Ibid.). In SES models, both income and education are "resources" that can be spent on political participation. Brady, Verba, and Schlozman (1995) expand on this analysis to focus on the role not just of income and education, but also of "civic skills" (Ibid: 271). Their resource model breaks down political participation into component activities that have distinct relationships to these resources. The model also largely dismisses the role of measures of psychological engagement in politics, on the grounds that these measures are both unreliable and not particularly explanatory, with the direction of the causal arrow between attitudes and actions being particularly unclear here

(Ibid: 272). The discussion of "civic skills" here is particularly interesting: development of these skills is seen as a function of the chance a person has to exercise them through their professional and associational life. Here, education does matter – but not uniformly, with certain types of skills (such as within churches) offered up regardless of education, and other types of skills (particularly in the workplace) very dependent on educational attainment (Brady, Verba, and Schlozman, 1995: 275).

Moving beyond socioeconomic status, there are a number of other variables that seem to have an impact on political participation. Participation generally seems to increase with age, although some decline is seen in certain more demanding types of participation amongst senior citizens (see Wolfinger and Rosenstone, 1980, and Jennings and Markus, 1988). Broadly speaking, the causal relationship at work here is usually understood to be associated with the life cycle, wherein older people are less mobile and more integrated with their communities than their younger counterparts. There is also a well-developed literature on the gendered dynamics of political participation, withevidence of slightly lower participation rates, lower levels of political knowledge, and less political efficacy sometimes seen among women (Verba, Burns, and Schlozman, 1997). More recent literature, though, paints a much more complex picture. Gendered differences in political knowledge, for example, may have more to do with survey questions that privilege certain types of understanding than with actual differences; changes in survey design can erase the gender gap (Dolan, 2011: 105). Race is also a factor, though the evidence is mixed as to how being a part of a minority group affects political participation (Leighley, 1995: 184).

There is also a large literature on social-network determinants of political participation. Individual citizens are tied into social networks in many ways, and these ties, unsurprisingly, have impact on how people participate in politics. Of particular interest, given the neighbourhood focus of this study, is how the neighbourhood social context affects political participation. Huckfeldt (1979) finds that social status is the most important factor here, with higher-status people having higher participation rates, and with high-status people who live surrounded by other high-status people being induced to participate even more, while low-status people in high-status neighbourhoods actually participate less (Ibid.: 590). Leighley (1990) also finds a number of ways in which social interaction affects participation – in particular, that the size of one's social network, the degree to which people in that network are politicized, and the diversity of views represented within that network all have statistically significant positive effects on participation (Ibid.: 469).

The social-network approach to understanding political participation brings up an important point: many of the actions that fall under the participation label (attending meetings, signing petitions, etc.) are inherently social acts that depend on the presence of a group to organize the opportunity. With that in mind, the level of "group mobilization" (the ability of groups, such as voluntary associations and political parties, to bring citizens into political processes) has also been cited as an important determinant of political participation among group members, and indeed as a factor that works against the influence of socioeconomic status. Rosenstone and Hansen (1993) give this mobilization thesis a thorough look and conclude that almost half of the decline seen in American political participation between the 1960s and early 1990s is due to changes in

mobilization. How does this counteract the effects of socioeconomic status? Group

mobilization activity mobilizes people who might not otherwise come out. Verba, Nie,

and Kim (1978) find evidence to suggest that group mobilization can explain some of the

differences between countries in how much people of lower socioeconomic status

participate: groups dedicated to getting these people mobilized do seem to have an effect.

Finally, and unsurprisingly, there is a literature that frames political participation

in terms of rational choice. Participation in collective action is often understood as an

irrational act, given the tiny chance that any one individual's participation will decisively

affect the outcome of, for example, an election. The classic example of this kind of logic

is Downs (1957). A variety of solutions to this paradox have been proposed. Perhaps

people value "participating in democracy" itself as an inherent good, making voting a bit

more akin to consumption (see Riker and Ordeshook, 1968, or Crain and Deaton, 1977).

Perhaps the goal of voting is to reduce the chance that the candidate a voter likes least

will win (Ferejohn and Fiorina, 1974) or perhaps it makes sense as a group struggle for

the spoils of power (Uhlaner, 1989).

Each of the ideas raised in this brief look at the political participation literature

has a significant literature of its own, and it is far beyond the scope of this study to delve

into those vast literatures. Nonetheless, taken together, the preceding review paints a

picture of the type of people who are likely to participate and the type who may not. That

older, richer, more educated, and lighter-skinned people participate more in politics is

unlikely to be a surprise to anyone. Equally commonsensical is the idea that an effective

infrastructure of voluntary and civic associations will bring more people into the

participatory fold. While the more complex arguments around rational choice are

somewhat removed from the subject matter of this study, the demographic factors most definitely are not. Without controlling for them, it would be very easy for a geographically-based study of political participation to simply be mapping the geography of privilege.

It is worth noting, before moving on, that the core body of literature on political participation is primarily American – do the dynamics hold in a Canadian context? There is good reason to think that they do, and there are several examples of literature using Canadian data that come to similar conclusions. For example, Rubenson et al. (2004) use Canadian Election Survey data and find turnout increasing sharply with age (Ibid.: 410). They also find that income has a strong effect on participation, and education an even stronger one (Ibid.) just as the literature reviewed in this section would suggest. They find that a significant part of the age gap in participation has to do with age-based differences in levels of political knowledge – a finding not inconsistent with the life-cycle understanding of participation. Further data from the Canadian Election study can be found in Blais et al. (2004), which looks at turnout data between 1968 and 2000. It also confirms the fit of the Canadian data to the theoretical understandings developed in the American literature, particularly with regard to both the life-cycle dynamics of participation and the importance of education (Ibid.: 234).

2.2 – Factors influencing voluntary and associational participation

This study is not only concerned with participation at the ballot box, or with other explicitly political activities such as party membership. Rather, it also includes participation in both social life and voluntary organizations. There is a distinct literature

around the factors influencing both of these kinds of participation that deserves a brief review. This section will look at the literature around voluntary and associational life, with the caveat that, depending on how the literature defines these associations, a bit of political participation may also slip in somewhere.

Participation in voluntary associations differs quite widely across different democratic countries, and there has been a significant amount of work devoted to figuring out where those differences come from. Curtis, Grabb, and Baer (2001) highlights the four main threads in this literature: differences in economic organization (with more industrialized jurisdictions having more associational participation), differences in religious tradition (with Protestant societies showing higher level of participation), differences in political organization (with liberal societies such as England having higher participation than corporatist ones like France), and differences in political stability (with more established democracies seeing more participation).

Moving from the international to the national scale, some of these factors are evident in Canadian data on voluntary participation. In Canada, it does seem that Francophones are slightly less likely to participate than Anglophones (Curtis and Grabb, 2002: 170-71), and that Quebecers are quite a bit less likely to participate than others (Hwang et al., 2007). The default explanation here is, analogously to some of the international studies, the Protestant/Catholic split, though the data also suggest that Francophones in Canada participate less because their lower economic status affords them fewer chances to do so (Lian and Matthews, 1998). Otherwise, in Canada there is relatively little difference in voluntary participation across ethnic groups, though a larger

share of voluntary activity for ethnic minorities happens within ethnically focused organizations (Grabb, Hwang, and Anderson, 2009: 83).

While these factors speak to cross-national and inter-group differences, they say very little about micro-level differences between individuals. Even the factors that could potentially differ at the individual level (e.g., religion) are framed societally. To find micro-level factors influencing voluntary participation, this study needs to turn elsewhere. Smith (1994) provides a comprehensive review of the literature up to the early 1990s, which covers most of the essential ground, albeit largely focused on American data. The factors influencing voluntary participation are not dissimilar from those influencing political activity. Smith organizes them into five categories: context, social background, personality, attitudes, and situation (Ibid.: 244). It is worth diving into these categories in some more detail.

The contextual factors influencing voluntary participation do include some particularly salient points for this study. There is evidence of neighbourhood and city effects – participation is higher in high economic status neighbourhoods, even after controlling for individual socioeconomic status, and smaller cities seem to have higher levels of participation than larger urban centres (Smith, 1994: 245). There is also evidence that being employed in a large corporation encourages participation (perhaps because the corporation itself encourages community service). This is outlined in a study by Hougland and Shepard (1985).

There are also some salient social background variables that impact voluntary participation. Broadly speaking, the thread running through this literature is that people of "dominant status" (in other words, the relatively privileged) are much more likely to be

involved in voluntary activities (Lemon, Palisi, and Jacobsen, 1972). It should come as no surprise that people with higher education, higher-status jobs, nuclear families, and generally settled lives are getting involved more often. Within this broad frame, education is the strongest and most consistent predictor (Smith, 1994: 248). This obviously parallels the political participation literature closely; indeed, it can be difficult to separate the two, inasmuch as voluntary participation may be driving political activity.

Looking to demographics, the age dynamic of voluntary participation is somewhat different than for political participation, with numerous studies that find volunteerism peaking in early middle age (35-45) then declining (Smith, 1994:248). There is no clear picture of the gender dynamic here, with literature suggesting both higher participation for men (e.g., Curtis, Grabb, and Baer, 1992) and higher participation for women (e.g. Hodgkinson, Weitzman, Noga, and Gorski, 1992). Relevant, perhaps, to this study is a finding that voluntary participation increases with having children at home as school-age kids draw their parents into a web of related participatory activities (Berger, 1991). Similarly relevant to this study is the finding that length of residence is associated with higher voluntary participation (Ibid.).

Moving beyond demographics and external context, there are also a variety of personality and attitudinal factors involved in voluntary participation. The (limited) literature here suggests that there is a package of personality traits associated with higher voluntary participation: empathy, morality, emotional stability, and self-esteem or ego strength (Allen and Rushton, 1983). There is more literature around attitudinal variables, though the results often seem self-evident: that people who get more pleasure from participation, care about the issues involved, or feel a sense of civic duty are the ones

getting involved (Smith, 1994: 252). It is also worth remembering that in the case of voluntary participation, one of the most important factors is simply being asked to join a group (Berger, 1991). Finally, voluntary participation is also tightly linked to social participation. People who talk to their neighbours, play sports, and have lots of friends also tend to volunteer. Indeed, it is an open question whether social participation and voluntary participation are really separate spheres; it may make more sense simply to think of people as having higher or lower overall activity levels (Smith, 1994: 254).

The voluntary participation literature contains much of relevance to this study. It reinforces the importance of controlling for education in particular, and brings to the fore the impact of residential tenure on levels of participation. It is also a good illustration of the conceptual tangle that emerges when looking in detail at the factors driving participation – there is by no means clarity on the causal chains involved, or the role of attitudinal differences between individuals. The next section of this literature review will take a brief look at the literature around the final pillar of this study's measure of social capital: social participation and trust.

2.3 – Factors influencing social participation

Social participation is, in many ways, the odd one out of the components of social capital. Volunteerism/associational participation and political participation are closely related. They share a broad conceptual frame, a set of causal factors, and, in many cases, a research literature. This is much less true for social participation (e.g. spending time with friends and family), which is tied to a different set of variables and is not tightly related to other components of social capital, including, interestingly, social trust

(Guillen, Coromina, and Saris, 2011: 344). The literature also comes from different disciplines – most of the discussion of social participation, in particular, is in public health journals.

Within that world, there are some fairly clear points to be made about social participation and the factors that influence it. First, gender does not seem to matter much. Studies like Phillips (1967: 486) find no discernable difference in social participation between men and women. The same study, though, found that education does matter, with higher educational achievement associated with dramatically higher social participation (Ibid.: 487). The mechanism is assumed to be skills-based, with people who have proceeded through schooling better equipped to engage in social life after learning how to manage relationships in school. Environmental factors also seem to matter, particularly for older people who face more barriers to getting out and about. Within this realm, there is literature to support the importance of access to transport facilities (Bannerjee et al., 2010), proximity of local services (Richard, 2009), and neighbourhood affluence (Bowling and Stafford, 2007).   The influence of technology is also a growing factor in studies of social participation, with smartphones and online social networking sites associated with stronger and more diverse social ties (Tseng and Hsieh, 2015).

A bit further removed from the core analysis of this study, but still worth a mention, is the substantial social psychology literature on social integration in communities. A number of factors are widely acknowledged as at least covariant with social integration. These include health, family functioning, adolescent development, competence in old age, and attachment to community. A good summation of the literature on these points is found in Gracia et al. (2004), which goes on to explore the determinants

of social integration in more detail. Unsurprisingly, there is empirical evidence for the

influence of "personality, self-esteem, distress, cognitive processes, locus of control,

community participant's perceptions or personal attitudes" (Ibid.: 3) on levels of social

participation. This study also finds evidence for the key role played by levels of

psychological distress (with people in more distress participating less) and feelings of

support from close friends. (Ibid.: 12). Taken together, this research speaks to the need

for sufficient sample size in any research looking for the causes of participation, lest a

group of unexpectedly happy, depressed, or thoughtful respondents skew the results.

2.4 – Factors influencing social trust

The social capital index developed for this study, though, does not simply

measure the frequency of social participation. Following the lead of many other social

capital indices, it also includes several measures of generalized social trust. There is a

relevant literature here as well. A good overview of the determinants of social trust can

be found in Welch et al. (2005) and Delhey and Newton (2002). Broadly speaking, there

are two schools of thought on social trust: one that grounds its determinants at the

individual level in things like personality characteristics or demographic features, and one

that places more of an emphasis on social systems (Delhey and Newton, 2002: 94).

Individual-level theories of social trust suggest that its origins are as a learned

childhood trait, closely associated with more generalized optimism. There is also a

substantial body of literature suggesting that social trust is a bigger risk for the poor than

the rich, and thus usually lower where incomes or social class are lower (Welch et al.,

2004: 96). There are many empirically grounded findings on the individual-level

determinants of social trust. The more predictable and frequent interactions with other people are, the higher trust goes (Ibid.: 462). Social trust increases when actors have attitudes and characteristics in common, when people are involved in civic organizations, and (it seems) when communities are more ethnically homogenous (Ibid.: 462).

The second branch of social trust literature looks at societal determinants, and finds many – but with much debate about which factors matter (Delhey and Newton, 2002: 97). Membership in voluntary/civic organizations is often suggested, but the empirical evidence is patchy. There is also a strong case to be made for social trust rising with the density of a social network around someone (Ibid.: 99). At the larger scale, there is literature to suggest that the presence of a welfare state and stable state institutions also matters (Ibid.). Much of the discussion around societal causes of social trust has been framed as an inquiry into why it is declining; this is one major theme of Robert Putnam's work, which is some of the most widely disseminated in the social sciences. Reasons advanced for this include time shortages associated with busy modern lifestyles, financial pressures, an increase in female workforce participation, and suburbanization/car culture – though in all of these cases, the evidence is complex and sometimes contradictory (Welch et al., 2005: 459). There also seems to be an idiosyncratic element of social trust, as it fluctuates with world events such as financial crises (Ibid.: 460). Gender, education, and other demographic factors do not seem to have a consistent impact on social trust across different countries (Delhey and Newton, 2002: 100).

Taken together, the literature around social trust does allow for some environmental influences – the density of a social network is, at least in part, a function of the density of the community around a person. Living in a lower-income

neighbourhood might also plausibly affect social trust levels, as might living in an ethnically mixed one. Beyond these factors, though, the other posited determinants of social trust vary on a larger scale than this study is concerned with.

2.5 – Putting it together: determinants of social capital

The past four sections of this literature review have presented a very brief overview of the themes emerging from the multiple bodies of literature that deal with political participation, social participation, voluntary participation, and social trust. Across the board, education is a primary driver of all kinds of participation, and of social trust. Income, too, matters quite consistently. This, of course, is a strong suggestion of what control variables need to be used in any study of the ways that another factor – in this case, the built environment – impacts participation.

As this quick trip through the literature has shown, though, there are also significant differences in the mechanisms and determinants of these four facets of what is most commonly grouped together as "social capital" – and that is an important point. The diversity of factors in the literature makes a solid argument that, prima facie, these are different concepts. The vast majority of the social capital literature certainly assumes that they are, and it is to that literature that the rest of this literature review will now turn.

2.6 – Social capital and the built environment - introduction

With a presence across a huge range of disciplines – political science, sociology, geography, public health, economics, and architecture, to name just a few – "social capital" is one of the most broadly applied conceptual frameworks in the social sciences.

At the broadest level, the term encompasses the web of social relations and associational participation in which people are embedded. Although there is plenty of debate in the literature about how strong the analogy is between social capital and other more "traditional" types of human and financial capital (see Portes, 1998), most uses of the term imagine that there is some equivalence. Unsurprisingly, though, there is plenty of debate about how this plays out. Capturing the full breadth of the conceptual and methodological debate about social capital is well beyond the scope of this literature review, but the first section will present a brief review of some of the critical debates.

Rather than addressing the vast range of social capital studies as whole, this review focuses on one emerging area within the literature: exploring the relationships between social capital and the built environment in urban areas. Is it possible to encourage the growth of social capital through urban design? What needs to be present in a neighbourhood for this to happen? What impedes it? What are the implications for policymaking and politics at the municipal level?

These are fairly obvious questions, and as with many obvious questions, they do not find a comfortable home in the academic literature. Overall, the literature on the topic is thin. Scholars have only really been paying attention to these questions since the early 2000s, and most writing on it is much newer than that. Much of this literature comes out of urban studies journals, but there is also quite a bit from the public health and geography literature. One thing these studies tend to have in common is a strongly applied focus on measurement. There is very little explicitly theoretical analysis of the hypotheses being tested in this work – a shame, as there are some interesting questions raised whenever the theoretical underpinnings are approached.

2.7 – Key theoretical debates

There are two broad schools of thought in social-capital studies. One school, with deeper roots in political science and which includes both James Coleman (1988) and Robert Putnam (1995), sees social capital as a property of a *community*. In this account, social capital is something possessed by a group of people – the archetypical studies here are of immigrant communities in big cities (see Cranford, 2005, for an interesting discussion of how these dynamics can play out in unexpected ways). Putnam's work on Italian regions in *Making Democracy Work* (1993) is the most familiar of the work being done under this umbrella. What ties this type of social capital studies together is the idea that social capital is a useful explanatory factor in thinking out why some communities are more or less successful (by whatever metric is used to measure success). The argument here is easy to understand: a close-knit community of people has a number of ways in which it can reduce transaction costs for its members. Think of ethnically-based trading networks, for example, where money can change hands based on trust alone. In any case, this type of explanation is focused on *structure.* In Putnam's words, social capital is "the features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam, 1995: 67).

This approach to understanding social capital, though, has its critics. Some argue that this approach is a just-so story, a "political culture" argument by another name (Jackman and Miller, 1998: 52). Brehm and Rahn (1997) point out that the constituent elements of social capital – levels of social trust, density of relationship networks, etc. – are all *individual* properties. Thinking about social capital as a community property

misses an important point: that different people within a community can have vastly different experiences of it.

This more individualistic understanding of social capital is usually associated with Pierre Bourdieu, whose definition of social capital emphasizes the ways in which it functions in an analogous way to financial capital: as a tool that individuals can use to achieve their aims. In the applied social capital literature, Bourdieu's approach is by far the more commonly referenced, and with reason. It lends itself to the measurement of social capital based on individual survey data which can then be aggregated to talk about social capital at the neighbourhood, city, or national level.

There is another conceptual debate about social capital that is important to bear in mind when reviewing the literature that uses it operationally: how value-laden its application is. To put this simply (and invoke Godwin's law), what about Nazis? A young skinhead would likely emerge with quite a high social capital score. Their life is likely to be full of social interconnections (although perhaps not that wide-ranging) and in-group social trust. Many uses of social capital – certainly including almost all the applications of it in the urban design context – treat it as something that *should* always be maximized. There are several approaches taken to this within the literature. First, some users of social capital make a very clear distinction between "bridging" (between-group) and "bonding" (in-group) social capital (Hayami, 2009: 111). Taking this approach would suggest that any measurement of social capital should attempt to capture both aspects of social capital, and perhaps address the relative balance of each of them in both the measurement instrument and the studied population.

Making a clear distinction between bridging and bonding social capital, though, is not easy either from a conceptual or measurement standpoint. Most of the academic work that uses social capital simply ignores it, and lumps measurements of both types together in a social capital index (see Lund, 2002, and Leyden, 2003, for typical examples of this approach). This approach scores points for parsimony, but at the expense of some explanatory power. Without the bridging/bonding distinction, these studies cannot distinguish as well between the different paths to a given level of social capital. It is also very easy, when using this lens, to make the jump to portraying all elements of social capital as always positive. While that certainly fits with its common usage, it remains a blind spot. One solution, although not all that common (or defensible), is to remove negative impacts from social capital measures entirely and re-label them as "social liabilities" (Kadushin, 2004: 81).

To blame here is the tangle of competing definitions and usages of the term "social capital." As is often the case, keeping it simple helps. Thinking about social capital as something closely analogous to financial or human capital avoids some of these arguments. Just as money might be used for bridging or bonding, wasted or invested, so might social capital. That is no impediment to investigating the factors that help *generate* that social capital in the first place, just as it would not be an impediment to investigating why some people get rich. Those factors – specifically the ones associated with the built environment – will be the subject of the remainder of this literature review.

2.8 - Social capital and the built environment: theoretical underpinnings

Does where we live affect how we live? The common-sense answer is yes. Conversations about the "good" neighbourhoods are certainly common enough when

choosing a place to live – and a close look at the content of these conversations would likely reveal quite a number of things that could plausibly be captured under the label of social capital. What elements of the built environment might matter here? What are the mechanisms? Paranagamage et al. (2010) approach this question in a particularly useful way: by looking at the *assumed* relationships within modern urban design guidelines and teasing out the mechanisms involved. From a review of a sample of functional urban design guideline documents used by UK planning agencies, they find 12 mechanisms for social capital generation, grouped under 4 broader areas: connectivity; safety; character, and diversity. (Paranagamage et al., 2010: 233). It is worth going through these in some detail, since they capture the potential connections between the built environment and social capital with a level of sophistication not otherwise matched in the literature.

The first path to social capital identified here is movement structure: put simply, the idea is that neighbourhoods that are more walkable (with a good network of pedestrian routes, destinations, and controls on vehicles) tend to generate more interaction on the street between neighbours (Ibid.: 238). This interaction is what generates social capital, as relationships between relative strangers are strengthened. Indeed, this connection – between casual interactions and social capital – is the underlying causal mechanism identified in several other paths to social capital. Mixed-use development can similarly bring it about by creating local employment opportunities that result in more mixing between people of diverse backgrounds (Ibid.: 239). Distinct from the "casual interactions" mechanism here is the idea that having a mix of uses in a neighbourhood also promotes a distinctive sense of neighbourhood identity in residents (Ibid.). It is hard to imagine the growth of local associational life without this sense of

neighbourhood being present. Associational participation also depends on there being places to associate. The presence of these physical spaces is yet another plausible way in which the built environment affects social capital levels (Ibid.: 240).

There are several other plausible mechanisms at work under the broad heading of "safety." A clear sense of ownership over public space – knowing whether a place is public or private, and thus knowing what is acceptable behaviour there – seems to matter. Similarly, "natural surveillance," in the form of eyes on the street and good lighting, also helps create a public realm conducive to social interconnections being formed (Paranagamage et al., 2010: 241). Under the banner of "character" comes the idea that places with a clearly-developed visual and built identity will help communities form bonds of shared affection for that place (Ibid.: 243). Finally, diversity in terms of mixed tenure (rental/ownership) and accommodation of a wide variety of lifestyles (seniors, youth, etc.) help broaden the range of social life and provide an opportunity for more people to tie into social networks (Ibid.: 244).

Taken together, most of these causal mechanisms rest on the assumption that the core constitutive element of social capital is simply putting people into contact with other people. Most of the work in various fields that actually tries to make an empirical connection between social capital and the built environment moves forward from this assumption. Most frequently cited in this literature are Lund (2002) and Leyden (2003). Lund was first in the field with an empirical study, and while not theory-heavy, it is grounded in "strength of weak ties" arguments, drawn from Granovetter (1973), suggesting that these weak ties are highly important in opening up opportunities for individuals to interact. Similarly, Leyden (2003) expects that residents of unwalkable

suburbs would show low social capital levels because "most contemporary suburban subdivisions do little to enable social interaction. Social interaction is more likely to occur by invitation, not by chance encounter." (Leyden, 2003:1546).

The casual-interactions mechanism is also shared by Wood et al. (2012), though they also suggest that walkability can translate into social capital by fostering familiarity with a neighbourhood; they also suggest that the visible presence of pedestrians provides a symbolic cue suggesting safety – this might itself foster more social interactions in a neighbourhood (Ibid.: 2). This is turned on its head by Theall et al. (2009), who point out that certain elements of the built environment (in this case, liquor stores in LA) *impede* social capital development by providing locus points for antisocial behaviour that discourages street life (Ibid.: 331). Francis et al. (2012) focus on the role that the quality of local shops has in generating these very same casual interactions (Ibid.: 404), and Rogers et al. (2012) trace the role those interactions have by comparing walkable and less-walkable neighbourhoods in New Hampshire (Ibid.: 145).

With apologies to the more detailed accounts reviewed in Paranagamage et al., there is a fairly strong consensus that the primary causal mechanism at work here is the degree to which a given built environment can facilitate casual contacts between neighbours. While seemingly uncontroversial, this demands more scrutiny than the literature gives it. There is very little mention of racial or class dynamics made in any of this literature, for example. Is it really tenable to assume that the impact of casual social contacts will be similar regardless of where the people involved sit within a given society's power structure? When race and class do come up, there is often an assumption that social capital is strengthened by urban design elements that encourage mixing. That

may well be – indeed, there is certainly a plausible story there – but making that claim requires evidence. There is a substantial literature in social psychology on this under the heading of "social contact theory." A recent meta-review of this field, covering 713 independent samples from 515 studies (Pettigrew and Tropp, 2006), finds substantial evidence for the power of inter-group contact for reducing prejudice, as per the very influential model built up in Allport (1954). The same review, though, also confirms Allport's contention that the power of contact is strongest when the parties come at it from a position of equal status (Pettigrew and Tropp, 2006: 752). This, then, suggests that societal power structures will indeed have an impact in the degree to which built form can be used to encourage truly productive contact between people.

There is also clearly a need to explore whether there is differentiation within this broad heading of "casual interactions." Are there certain interactions that are particularly good at building social bonds? It is unclear. Indeed, there could be much more overall clarity on how exactly these weak ties translate into resources that people can access – social capital to spend. Under what conditions are people willing to jump into local organizations? Do people really cash in their weak ties for material help, or are they a constitutive element of strong friendships that actually bring in resources? Is the mechanism more of a psychological one, with people who live in a neighbourhood with more "sense of community" simply *feeling* more empowered? All these questions are in need of more exploration – unsurprising in what is, in fact, a very young literature.

2.9 – Empirical evidence

The newness of this literature also means that much of it is devoted to establishing whether the hypothesized relationships between the built environment and social capital

do in fact exist. The first effort here was Lund (2002), who used "sense of community" as a dependent variable. While not quite a social-capital study, most indices of social capital do include a sense-of-community element, making this a reasonable starting point. After controlling for a number of other possible factors, Lund finds a robust relationship between walkability and sense of community (Ibid.: 309). Leyden (2003) finds the same relationship between self-reported walkability and an index of social capital (Ibid.: 1550), as do Hyyppa and Maki (2003), McCulloch (2003), Subramanian et al. (2003) and Sundquist and Yang (2007) . Wood et al. (2012), however, use objective measurements of walkability (based on the shape of the street network) and find a more complex relationship, with conventional suburbs showing a higher level of social capital. This result is a good reminder of how tricky these relationships are to tease out – they point out several examples of differences between the neighbourhoods that they were unable to effectively control for.

Other empirical tests do, however, lend strength to the original claim. Weller and Brugel (2009) find evidence for strong impacts of neighbourhood design on social capital growth in children (Ibid.: 635), while also noting that promoting interactions *based on* children are often core elements of how neighbourhoods can foster social capital in adults (Ibid.: 639). Francis et al. (2012) find a quite robust relationship between sense of community and the *quality* of both local public spaces and local shops, while Rogers et al. (2012) repeat the finding of a strong relationship between walkability and social capital measured from individual survey responses.

At the edges of the literature, a number of *elements* of social capital have been related back to elements of the built environment. Guite et al. (2006) measure feelings of

well-being, which they find most closely tied to the presence of communal parks and facilities, as well as to quiet neighbours (Ibid.: 1124). Cohen et al. (2008) use a measure of "collective efficacy" – a bit more of a narrow concept than social capital – which they find strongly associated again with access to public spaces and negatively associated with the presence of antisocial elements of the built environment, in this case liquor stores (Ibid.: 206), a result confirmed in Theall et al. (2009). Hopkins and Williamson (2012) also find a strong relationship between dense neighbourhood design and likelihood of political participation (yet another component of social capital indices).

A look back at the long list of possible ways in which urban design guidelines suggest the built environment *should* have some influence (see Paranagamage et al., 2010) suggests that there is much empirical work remaining to be done simply to sort through these claims. While doing so, it is also worth taking a good look at some of the challenges and weak points emerging from this literature as it grows. Before diving into the methodology and results of this study, it is worth considering these in some detail.

2.10 – Challenges

The challenges to the literature reviewed here are largely methodological. There are several significant areas of concern. First and foremost, the issue of self-selection is never far from the surface. Before being able to say anything definitive about causality, it is necessary to establish whether elements of the built environment are *generating* social capital, or whether neighbourhoods that already have these assets are simply *attracting* people who already have a well-developed social capital stock. With a few well-placed survey measures, this question is not impossible to answer; Lund (2002), for example, is

convinced that the relationship she finds is robust after adjusting for self-selection (Ibid.: 310). Many other papers looking at similar questions do not explicitly address self-selection in their data, though. Given that it seems highly likely that at least some self-selection is happening in most such cases, this is a troubling oversight.

There are also measurement challenges to address. Surprisingly, this is less on the social-capital side (where there is some consensus on how to build indices of survey questions that measure it) than on the built environment side of the equation. How, for example, should walkability be measured? The authors reviewed in this paper have taken a wide range of approaches, broadly divisible into subjective ones based on participants' assessments of walkability (such as in Lund, 2002, and Leyden, 2003) and objective measurements based on road layout and the like (such as in Wood et al., 2012). Similarly, it is not at all clear what the appropriate way to measure other elements of the built environment might be. Should the focus be on quantitative data (distance to the nearest school, shop, etc.) or subjective understandings of how accessible or present these things might be? What happens when a neighbourhood has all the elements of social capital generation, but the inhabitants don't notice that they're there?

Finally, these studies face a challenge of comparability. The typical approach in the literature in this area has been the small-n comparison, often between just two or three neighbourhoods in the same city that differ in their built form. The question, as always, is the degree to which it is really possible to control away enough of the other potential differences between neighbourhoods to be able to make meaningful conclusions about built form. It also remains an open question the degree to which areas that share broad-brush physical characteristics are really similar when *experienced* by the people living

and working in them. It may be that differences in these experiences and contexts are a hidden driver of variation in social capital – the relationship between it and the actual physical shape of the local environment may yet prove to be largely spurious.

Hanibuchi et al. (2012) make this point effectively in looking at differences in social capital between several Japanese communities that prove to be quite comparable in terms of their physical characteristics, yet vastly different in their social capital dynamics. They trace the origins of this differentiation to the distinctive history of one community that had been founded (and run) as a company town with much more attention paid to the development of associational life (Hanibuchi et al., 2012: 231). It could be that there is a similar story of context or history behind most or all neighbourhood-level differences in social capital levels.

2.11 – Conclusion: this study in context

As an MA thesis project, this study is by definition extremely limited – it cannot address the need for a truly random, large-n study of the social capital-built environment relationship. Nonetheless, it does seek to add to the literature in a few ways. First, by going out into the field to gather survey data, this study has assembled the first Canadian dataset that matches social capital levels to physical locations. Secondly, this study explicitly addresses the question of self-selection that is sometimes glossed over in existing work on the topic. Finally, this study develops and tests several distinct walkability measurement tools, adding to the discussion about how to capture this side of the relationship.

The empirical evidence, such as it is, largely points in the same direction. The built environment does seem to have a robust effect on social capital levels, with "walkability" being by far the most thoroughly explored element of the built environment in this context. With that in mind, this relationship was the primary one tested empirically in St. John's over the course of the study, albeit with attention also paid to the arguments put forward about senses of safety, local character, and other potential drivers of social capital growth. The next sections of this study will outline how this testing was accomplished, and the sometimes surprising results that emerge from the data.

Chapter 3: Research Design

As the literature review made clear, gaining more understanding of the relationships between the built environment and social capital necessarily involves gathering more data on this under-studied area. This meant building a survey tool and getting out into the streets of St. John's. This section will outline the concepts involved in building this tool and explore the choices, opportunities, and constraints involved in the face-to-face surveys that were ultimately selected as the building blocks of this study.

3.1 – Research design: overview

The goal of this study was to build on the existing literature examining the relationships between the built environment and social capital by looking at how those relationships play out in St. John's, Newfoundland. There were several motivations behind the choice of St. John's as the focus of this study. First was simple pragmatism. Doing work in the local community surrounding the university minimized travel time and cost and opened up possibilities for research methods that would not have been feasible had the target city been located elsewhere.

More importantly, though, and as noted in the introduction to this report, this study was developed with the intention of contributing to a specific, ongoing conversation in St. John's about the built form of the city. The city is currently in the process of finalizing a new Municipal Plan and, with the other communities in the region, a Regional Plan. Taken together, these two plans will guide land use and built form in the area for many years. This study aims to make a contribution to this discussion.

To examine the relationship between the built environment and social capital, it was necessary to have access to a dataset that included both measurements of various indicators of social capital and sufficiently accurate location data to allow each response to be mapped at a block-by-block scale. This is the scale above which there is significant variation in built form within St. John's, and indeed within any city; data mapped at a coarser scale (at the neighbourhood or postal zone level, for example) would contain too much variation in the built environment to draw meaningful conclusions about its impact on social capital. Exploratory research confirmed that no such fine-grained dataset existed for St. John's. This study, then, would need to be based on primary data collection – and accomplished on a graduate student budget, ruling out telephone or postal surveys as an option.

An online survey was considered as a low-cost option, but was dismissed on methodological grounds. While cost-effective, online surveys entail particular challenges as regards recruitment of sociologically diverse and representative samples (Malhotra and Krosnick, 2007: 296; also see Blasius and Brandt, 2010; Evans and Mathur, 2005; Orr, 2005). This is particularly true in the case of a social capital study such as this one, as the people receiving and responding to notifications for such an online survey would likely be those already engaged with community groups. This would skew the sample towards higher levels of social capital.

With that in mind, this study was set up as an in-person survey of a stratified convenience sample of St. John's residents. Respondents were approached in public places (see Table 3.1.1 on the next page for an outline of the survey locations) and asked

to complete a brief verbal questionnaire, with the researcher recording their responses

either on paper or on a laptop computer.

Table 3.1.1 – Survey Locations

Location	Rationale for Selection
War Memorial Duckworth Street	Located in the centre of St. John's downtown core and surrounded by shops and cafes as well as a green space, the War Memorial is one of the higher areas of pedestrian traffic in the centre of the city. Notably, this is a gathering place for residents of the downtown core in a way that some other downtown public spaces are not.
Avalon Mall, Kenmount Road	The Avalon Mall is the main indoor mall in St. John's, attracting people from all over the city. Indoor malls are ideal survey-collecting spaces: almost every resident of the city eventually has to go there, and there are ample open spaces for researchers to use. The Avalon Mall is also both a major public transit hub and a major destination for drivers.
Bowring Park, Waterford Bridge Road	This large West-End park is a major destination both for local residents and for people from across the city, with a higher proportion of families with children then at some of the other survey locations.
Atlantic Place, Water Street	This downtown office complex/food court is primarily patronized by people who work in the downtown core but live elsewhere – and so is an efficient place to gather survey responses from a wide range of St. John's residents. It is also one of the few privately owned spaces in the centre of the city that has unrestricted public access.

The survey included questions measuring the respondents' levels of social capital

(these will be outlined in Section 3.2) as well as questions assessing the walkability of the

respondents' neighbourhoods (which the literature strongly suggests as an important

driver of social capital) and capturing a range of control variables. Most importantly for

the analysis, respondents were asked to provide their full postal code. This six-character

code could, when entered into Google Maps, provide the rough location (within a city block) of their residence without disclosing their exact address – an important concession to privacy that facilitated gathering surveys from passers-by.

With a postal code recorded, the second phase of the data collection could then proceed. Using the "street view" function of Google Maps, each response was matched with a "Built Environment Audit" of the area. This is a brief checklist (see Section 3.3 for more detail) that registers the presence, absence, or frequency of potentially salient components of the built environment (parks, sidewalks, local stores, etc.). An online calculator was also used to record a "Walk Score" for each code, providing an objective assessment of that location's access to amenities within walking distance. Taken together, these provided a wealth of potential independent variables that could then be tested for their relationship to the social capital scores of the residents living in each location.

3.2 – Sample selection

With a target *n* of 100, it was important to ensure that the different areas of the city (and different types of built form) were adequately represented. With that in mind, the sample was stratified geographically using postal code areas, with a goal of gathering even numbers of responses from each of the 4 postal code areas (A1A, A1B, A1C, A1E) that encompass urban St. John's (see Canada Post, 2014). While these postal code zones are by no means uniform, they do roughly track recognizable differences in built form. A1C covers most of the pre-World War 2 city, while A1A covers the East End, largely composed of inner-ring suburbs developed in the 1960s and 1970s. A1B has 2 residential components – the 1940s suburb of Churchill Park and the newer suburbs around

Kenmount Road. A1E encompasses the West End of the city, including some pre-WW2

neighbourhoods and Cowan Heights, a large suburb developed in the 1970s and 1980s

(Collier, 2011).

The choice of a stratified convenience sample was primarily due to resource

constraints; administering a survey to a truly random sample at the city scale would

require more time than is feasible for a master's project. As a pilot study, the goal of this

work was in any case exploratory. As noted in Robinson (2013:32), stratification of a

sample is appropriate when there are clear theoretical grounds to expect some variation

along the chosen stratification criteria (in this case, built form). Given that the literature

does show evidence for the built environment's impact on social capital and provides at

least one causal mechanism (opportunities for casual contact), building this variation into

the sample is justified. In an ideal world the stratification might be even more thorough –

establishing a quota of homeowners and renters, for example, or of people who have trees

on their street and those who don't. This level of stratification, though, would be

impractical – either requiring a long series of questions of the respondent, or that the

researcher be willing to eliminate responses from the sample after gathering them if they

are over quota. In neither case would this be a reasonable use of scarce time.

It is important to note that convenience samples do have limitations. The

generalizability of the results is limited by the non-random nature of the sample (Ibid.).

There is reason to be concerned about selection bias if the convenience sample relies on

people volunteering to participate - by responding to a newspaper ad, for example

(Hultsch et al., 2002: 346). While direct empirical comparisons of the two methods are

surprisingly rare, one such comparison found that a convenience sample showed

statistically significant variation from a random sample on less than half the variables measured – in this case, in a health study of older adults (Hultsch et al., 2002: 356). The differences were also relatively small in magnitude, although when they did occur, convenience sample respondents were, on average, more socioeconomically and cognitively advantaged than those in the random sample (Ibid.). As noted in Hultsch et al. (2002), the relatively small variation between convenience and random samples *does not* mean that random and convenience samples are interchangeable. Of primary concern was that their random sample showed a much higher refusal rate for some parts of their survey, suggesting some systematic differences in the two sample groups (Ibid.: 357).

Hultsch et al. also make the point that not all convenience samples are created equal – the degree of variation from a true random sample is at least somewhat dependant on the method by which participants are recruited for the study (Ibid.). This point actually speaks in favour of the design chosen for this survey. Many convenience samples are created by drawing from a population that is physically accessible to the researcher – college students are the classic example (Robinson, 2013: 32). This study, by contrast, brought the researcher out to their population. Surveying locations were carefully chosen and widely dispersed across the city to maximize the diversity of respondents passing by. Similarly, this study minimized the effort required to participate. Unlike convenience samples that require a respondent to actively reach out to the researcher by responding to an ad or clicking a link, this sample was constructed from people who were willing to give up some time *when approached.* This cannot eliminate selection bias entirely, of course, but it should have drawn in some people who would not have been sufficiently motivated to approach a researcher to participate; this also means that the survey was able

to reach people who might not have access or interest in the channels of communication (newspapers, online advertisements, etc.) that would alert them to the existence of the study.

With a solid sampling strategy thus established, it is also important to explore in more depth what exactly was being measured by the survey tools used in this study. The next chapter will explore this in detail.

Chapter 4: Measurement

4.1 – Measuring social capital and political participation

Following on the arguments developed in the literature review, there is an explicit choice at the heart of this study: to view "social capital," broadly defined, as an asset held by individuals in different amounts, rather than as a structural feature of an entire community. Aside from the already-explored conceptual arguments behind this choice, there is also a practical reason: measuring social capital as a community property would not allow an exploration of how it varies at the city-block scale, or in response to different arrangements of the built environment.

With this conceptual background in mind, developing a survey tool to measure social capital was a relatively simple process. For the sake of comparability, this study used as its basis the tools developed by Lund (2002), Leyden (2003), and Wood et al. (2007 and 2010) – all examples of the small number of extant studies that directly address the built environment/social capital relationship. As a rare Canadian example of a survey-based social capital assessment, Kitchen and Williams (2012) was also used as a baseline. All these studies used questionnaires to measure social capital, with responses combined into an index. For easier comparison, Table 4.1.1 (next page) lays out the variables used by these antecedent studies.

Table 4.1.1 – Variables Measured in Existing Studies	
Variable	**Author (s)**
I am quite similar to most people who live here	Lund (2003)
If I feel like talking, I can generally find someone in this neighbourhood to talk to right away	
I don't care whether this neighbourhood does well	
The police in this neighbourhood are generally friendly	
People here know they can get help from neighbours if they're in trouble	
My friends in this neighbourhood are part of my everyday activities	
If I am upset about something personal there is nobody in this neighbourhood to whom I can turn	
I have no friends in this neighbourhood on whom I can depend	
If there were a serious problem in this neighbourhood, the people here could get together and solve it	
If someone does something good for this neighbourhood, that makes me feel good	
In an emergency, people I don't know in this neighbourhood would help	
Think about the neighborhood or area in which you live. In general, how well do you feel you know your neighbors?	Leyden (2003)
Voted in last election	Leyden (2003), Kitchen and Williams (2012)
Volunteered for political party	Leyden (2003)
Contacted an elected official	
Feel like people are fair	
Feel like people can be trusted	Leyden (2003), Kitchen/Williams (2012)
Feel like most people try to be helpful	Leyden (2003)
How often see friends	
How often go out with friends	
How often had friends over	
Living in my neighborhood gives me a sense of community	Wood et al. (2010)
I regularly stop and talk with people in my neighborhood	
It is easy to make friends in my neighborhood	
I regularly seek advice from people in my neighborhood	
I regularly borrow things and exchange favors with my neighbors	
I would be willing to work together with others on something to improve the living environment in my neighborhood	
Generally, to what extent do you agree that you can trust: • Most people living in your section of your street or block • Most people living in your suburb • Most people generally	

Table 4.1.1 (Continued) – Variables measured in existing studies	
Activity undertaken (a) for and (b) by a neighbour or someone living in suburb in the last year: • Looked after house or garden or collected mail while away • Minded, fed or walked their pet • Lent them household or garden items or tools Listened to their problems • Helped them with odd jobs • Provided a lift or transport to shops or school • Cared for, or minded, a child or other family member for them	Wood et al. (2008)
Friendliness Characteristics of this suburb: • People who live here usually say hello to each other if out walking or in their gardens • Neighbours are often seen chatting to each other • A stranger moving into this suburb would be made to feel welcome	
Involvement in following in suburb in the past year: • Attended a local council meeting • Voted in local council election • Written or spoken to council about a local issue • Contacted your local state or federal member of parliament • Signed a petition • Attended a protest or local action meeting • Written a letter to the editor of a newspaper about local issue • Picked up other people's rubbish in a public place • Reported or done something about graffiti or vandalism • Made a donation (e.g., of food, money, blood or other)	
Perceptions of community interest and empowerment: • I am interested in local issues that affect this suburb • If a local park or facility was to be closed down, people in this suburb would pull together to do something about it • It is important for people to get involved in their local suburb	
Frequency of feelings regarding loneliness and support: • Felt lonely • Found it hard to get to know people Wished that you had more help or support from other people	
Do you feel safe walking down your street after dark?	Kitchen and Williams (2012)
Can you get help from friends when you need it?	
Do you think that multiculturalism makes life in your area better?	
In the past 12 months, did you do unpaid volunteer work for any organization?	

The index developed for this study draws on questions from all these examples. It

is most similar to the index used in Leyden (2003), which has a research design that

matches this study quite closely. It is also important to note that these indices (as well as many others from the applied social capital literature) include measures of political participation as variables. Finally, it is worth noting that there is substantial overlap between the variables used by these indices, but not total consistency. This points to an area of inquiry not yet well-developed in the literature: methodological comparisons between different ways of measuring social capital.

With these considerations in mind, the questionnaire developed for this study has, at its core, four groups of questions. The first set of questions measures the strength of social networks in the respondents' neighbourhood. The second set focuses on measuring the respondent's level of generalized social trust, while the third measures their participation in social life. The final group of questions captures a number of facets of the respondents' civic participation and political efficacy. Table 4.1.2 below summarizes the variables used:

Table 4.1.2 Variables used to measure social capital in this study

Component	Variable	Scale
Neighbourhood social network strength	Would you say you know your neighbours well?	**4-point Likert scale:** 1. Strongly Disagree
	There are people in your neighbourhood who you can ask for help in a pinch	2. Somewhat Disagree 3. Somewhat Agree 4. Agree
	How often do you talk to your neighbours about community issues?	**5-point Likert scale:** 1- Never 2- Rarely 3- Sometimes 4 - Often 5- All the time
Generalized Social Trust	You feel like people can generally be trusted	**4-point Likert scale:** 1. Strongly Disagree
	Most of the time, people are fair to others	2. Somewhat Disagree 3. Somewhat Agree
	People can usually be counted on to help each other out	4. Agree

Table 4.1.2 Variables used to measure social capital in this study (continued)		
Component	**Variable**	**Scale**
Social Participation	**How often do you** have friends over?	**5-point Likert scale:** 1- Never 2- Rarely 3- Sometimes 4 - Often 5- All the time
	How often do you get together with friends at their homes?	
	How often do you Go out with friends for a meal, drink, or entertainment?	
	How often do you participate in sports or clubs?	
Civic Participation and Efficacy	When things happen in my community that I don't like, I feel like I have the power to change things.	**4-point Likert scale:** 1. Strongly Disagree 2. Somewhat Disagree 3. Somewhat Agree 4. Agree
	How often do you volunteer with community groups?	**5-point Likert scale:** 1- Never 2- Rarely 3- Sometimes 4 - Often 5- All the time
	How often do you vote in city elections?	
	How often do you contact your councillor about city issues?	
	How often do you talk to your friends about local politics?	
	How often do you write letters to the editor or comment on local news online?	
	How often do you go out to public meetings?	

Given the higher number of variables related to civic participation and efficacy, an unweighted index of these variables skews the index towards a heavier weighting on the "civic" components of social capital, an assumption not grounded in the literature. With that in mind, the index was reweighted to balance the component pieces more evenly. The original and reweighted indices are detailed in Table 4.1.3 below.

Table 4.1.3 – Weightings in the social capital index

Component of Social Capital	Original Weighting (Additive Index)	Revised Weighting
Neighbourhood social network	16.45%	25%
Social trust	15.2%	25%
Social participation	25.3%	25%
Civic participation/efficacy	43%	25%

4.2 – Independent variables: measuring walkability and the built environment

There is a rough consensus emerging from the small body of literature in this area that the primary causal driver for a relationship between the built environment and increased social capital is casual contact between neighbours. Broadly speaking, this argument (see Paranagamage et al., 2012, and Wood et al., 2010) says that neighbourhoods that are built in such a way as to facilitate unplanned interactions between residents are the neighbourhoods that facilitate the development of social capital. This is primarily a "weak ties" argument – neighbours need not be best friends, but the neighbor you can count on to watch your cat may also be the neighbor who gets you to sign a petition. Relationships like this are, effectively, a "capital stock" that residents can draw on when in need.

There are a number of ways that this casual contact could be encouraged by elements of the built environment: through the presence of diverse destinations within walking distance, through design elements that encourage the creation and use of public space, through design elements that keep eyes on the street and generate a sense of safety, or through design elements that facilitate easy and visually interesting travel in the area. Consequently, it was important that this study include a measurement tool that cast a wide enough net to capture any potentially salient features of the built environment. Indeed, the approach taken by this study was to use three complimentary approaches to capturing these variables.

First, bearing in mind the relationships established in the literature between the walkability of a neighbourhood and the social capital of its residents, this study looked to measure the walkability of each respondent's neighbourhood. On the face of it,

walkability is a quite simple concept. Drawing from the planning literature, walkability is a characteristic of a geographic area that increases with the presence of destinations reachable on foot, a network of pedestrian routes, and controls on vehicle traffic (Paranagamage et al., 2010: 233). This, at least, is the objective definition of walkability. Objective measurements of walkability vary, though in recent years the WalkScore index has become increasingly common – real estate listings, for example, typically have a walk score rating. WalkScore results are calculated from proximity to 13 amenities: grocery stores, coffee shops, restaurants, bars, movie theatres, schools, parks, libraries, book stores, fitness centres, drug stores, hardware stores, and clothing/music stores (Carr et al., 2010: 1144). While the Walk Score calculations do seem to accurately capture proximity when tested against GIS data (Ibid.: 1146), they do not directly capture other objectively measurable elements of walkability such as route networks or controls on traffic. An alternative approach to objectively measuring walkability is taken in Wood et al. (2012), who use a measurement of street connectivity (counting intersections, effectively) as an indicator of walkability. This, though, ignores the presence or absence of pedestrian destinations.

There is also a subjective element– is the area *nice* to walk in? Are there interesting things to look at while on the way to pedestrian destinations? Do people feel safe and encouraged to travel on foot? The only feasible way to capture this is with respondents self-reporting the walkability of their area. This method is commonly used in the literature (Carr et al., 2010: 1144), including in most of the studies of the social capital-walkability relationship such as Hyyppa and Maki (2003), McCulloch (2003),

Subramanian et al. (2003) and Sundquist and Yang (2007). As with any subjective

measurement, though, comparability is a challenge.

There is no reason that these two approaches need to be used in isolation. A

combined approach allows for the researcher to identify the extent of correlation between

self-reported and objective walkability and to create a measurement that is somewhat

sensitive to the lived experience of respondents. With that in mind, this study asked about

walkability in several ways.

First, respondents were asked on the questionnaire to rate the walkability of their

neighbourhood on a scale of 1-10, without any further prompts from the researcher. The

goal of this question was to reveal the subjective experience the respondent had with their

neighbourhood, something that plausibly has a powerful impact on how, and how often,

respondents leave their homes on foot. Respondents also provided their postal code,

which was used to generate a WalkScore result for each respondent's home location

using the WalkScore online calculator (see WalkScore, 2015). Finally, as per the method

used in Wood et al. (2012), a second objective neighbourhood walkability indicator was

built by combining indicators for connective street grids, narrow streets, and smaller

building setbacks – a high score on all three of these indicators would be a highly

walkable neighbourhood.

The indicators used for this second measure of objective walkability were drawn

from a broader batch of indicators included in the final tool used to evaluate the built

environment around each respondent's place of residence: the "built environment audit."

"Built environment audit" is a term that is more common in the planning and public health literature than in political science. It is also quite broad – the built environment "includes land-use patterns (how land is used); large- and small-scale built and natural features (e.g., architectural details, quality of landscaping); and the transportation system (the facilities and services that link one location to another)" (Brownson et al., 2009: S99). Unsurprisingly, there is a wide range of measurement tools used to quantify and compare built environments. Once again, there is a division between subjective and objective measurement strategies, with at least 18 different tools based on self-reporting alone (Brownson et al., 2009: S105).

There are a variety of such audits in use, all of which are effectively checklists of the presence/absence/frequency of certain key elements of the built environment (Ibid.: S108-111). This study used a checklist based on one of the audit tools – the Analytic Audit Tool – which has the best combination of inter-reporter reliability and indicator diversity (Ibid.). In so doing, it adopts a definition of the built environment that includes the elements measured by the tool: land usage, types of local destinations, access to natural features, road/traffic/parking infrastructure, building aesthetics, street furniture, and physical order/disorder (St. Louis School of Public Health, 2003). One addition was made to the checklist: a set of questions capturing the presence/absence of local vernacular architecture. These were added as a measure of "sense of place" – something that could plausibly be related to social capital in a neighbourhood. Table 4.2.1 on the next pages lists the items on the built environment audit checklist.

Table 4.2.1 – Built Environment Audit Checklist Items

Section 1: Land Use Environment	
Are residential and non-residential land uses both visible?	❑ Yes ❑ No
What types of buildings or features are visible?	❑ Detached house ❑ Attached house ❑ Multi-family house ❑ Apartment/condo building ❑ Apartment over retail ❑ Mobile home or trailer ❑ Other? Specify: _____
What **types of commercial destinations** are visible?	❑ Gas station ❑ Fast food restaurant ❑ Other restaurant ❑ Convenience or small grocery ❑ Supermarket ❑ Bank or credit union ❑ Pharmacy or drug store ❑ Coffee shop ❑ Laundry or dry cleaners ❑ Movie theater ❑ Other entertainment ❑ Hotel or motel? ❑ Indoor mall or super center ❑ Department store or "big box" store ❑ Strip mall or shopping center ❑ Warehouses, factories, or industrial buildings ❑ Office building ❑ Bar or Liquor store ❑ Auto shop ❑ Other retail ❑ Other services
What types of public or government service destinations are visible?	❑ Post office ❑ Library ❑ Place of worship ❑ Day care or preschool ❑ Elementary school ❑ Middle school, junior high school or high school ❑ Junior college, college or university campus ❑ Health or social services ❑ Airport, train station, bus station, or other transportation facility ❑ Police department or fire department ❑ Museum ❑ Community Center. ❑ Other (courthouse, utilities, real estate, military, prison, sanitation, cemetery)

Table 4.2.1 – Built Environment Audit Checklist Items (continued)	
What **types of recreational facilities/destinations** are visible?	❏ Indoor fitness facility ❏ Park? ❏ Playground ❏ Outdoor pool ❏ Beach ❏ Golf course ❏ Sports/playing field, basketball court or tennis court ❏ Sports track ❏ Marina ❏ Other recreational facility
What other types of destinations are visible?	❏ Parking lot or parking garage ❏ Driveway ❏ Abandoned building or vacant lot ❏ Railroad, bridge, tunnel, highway, or overpass? ❏ Other destination? Specify:_____
What types of natural features are visible?	❏ Large body of water (e.g., ocean, lake, large river) ❏ Small body of water (e.g., pond, stream) ❏ Mountains or canyons ❏ Open natural space (e.g., wooded area, swamp, meadow – not a vacant lot)
Section 2: Transportation Environment	
Transportation modes visible	❏ Presence of sidewalks ❏ Presence of bike lanes ❏ Presence of street shoulders or wide outside lanes ❏ Presence of bus stops or transit stations? ❏ e. Presence of paths or trails (i.e., multi-use, biking, walking) ❏ On-street parking
Street characteristics:	❏ Street type less than or equal to two narrow lanes ❏ Street has good connectivity (i.e., straight with intersections versus cul-de-sac) ❏ Street has other street design characteristics to reduce volume or speed (e.g., roundabouts) ❏ Street has traffic calming devices to reduce volume or speed ❏ Street has crossing aids for pedestrians and bicyclists to cross the street safely. ❏ Street has street lighting for sidewalks, street shoulders, and/or bike lanes at night
Section 3 - Facilities	
Recreational facilities visible?	❏ Yes ❏ No

Table 4.2.1 – Built Environment Audit Checklist Items (continued)	
Types of recreation equipment visible:	❑ Playground equipment (e.g., swings, slide) ❑ "Complete" sports equipment (i.e., all necessary elements arevisible – posts, nets, etc.) ❑ c. "Incomplete" sports equipment (i.e., missing elements)
Service amenities visible:	❑ Equipment rental ❑ Sports stands/seating ❑ Picnic tables and/or grills d. Water fountains ❑ Restrooms ❑ Vending machines ❑ Public telephones ❑ Trash bins
Section 4: Aesthetics & Comfort	
Presence of attractive/comfort features:	❑ Plants and flowers ❑ Shade trees ❑ Public art ❑ Street furniture (benches, tables etc.)
Architectural distinctiveness (presence of elements distinct to St. John's)	❑ Brightly coloured buildings ❑ Clapboard siding ❑ Victorian design elements (mansard roof, sash windows, etc.) ❑ Attached homes
Section 5: Safety & Natural Surveillance	
Physical disorder visible:	❑ Litter/broken bottles/cigarette butts ❑ Drug-related material (needles, etc.) ❑ Graffiti ❑ Broken or boarded windows/doors ❑ Abandoned vehicles
Setback of residential buildings from the street	❑ Minimal (no front lawns or garden) ❑ Small (small gardens or yards) ❑ Medium (large front yards) ❑ Large (Very large yards, parking lots, or institutional green space)
Sight lines from homes to the street	❑ Clear ❑ Obscured by garages or other architectural elements ❑ Obscured by street geometry

The built environment checklist can be filled out through either an in-person visit to each

respondents' residence or through use of the "Street View' function of Google Maps,

which provides a photographic image of what a pedestrian sees in that space. For the sake of time, audits for this study were conducted using Street View.

4.3 – Data collection procedure

Questionnaire responses were collected from October 2014 through the beginning of May 2015. The time commitment required was significant – including preparation and setup time, there was approximately 1 hour of researcher time required per completed response. Interview procedures varied slightly from location to location.

At the Avalon Mall (the main local enclosed shopping centre), mall management required that a table be reserved for specific dates and times. Surveys were collected over a total of 7 days at this facility, with the researcher standing in front of the booked table and asking passers-by whether they would be interested in doing a survey "about neighbourhoods in St. John's." Only people walking alone were approached; while the answers to the questionnaire were not particularly invasive, it was nonetheless important to provide an opportunity for a private conversation between the researcher and respondent.

When a passer-by showed interest in doing the survey, they were invited to sit down at the table, where the researcher first checked their postal code to confirm whether they were in the survey area. At the mall, a significant proportion were not – many people from the surrounding region and farther afield come into the city to shop. Nonetheless, response rates at this site approximated those elsewhere, at about 1 response per hour of researcher time. Once it was confirmed that a respondent was eligible to complete the survey, the researcher asked the questions aloud following a set script (See Appendix A –

Survey for the exact wordings). Responses were recorded directly into the data file on a laptop computer, with most questionnaires taking approximately 5 minutes to complete.

Survey procedures were somewhat different at the other enclosed survey location, the Atlantic Place office complex/food court in downtown St. John's. Building management granted permission for surveys to be conducted on the premises on the condition that they be contained within the large food court/seating area. As an area with many possible entries and exits, it was not feasible for the researcher to be stationary at a table. Instead, respondents were approached as they sat at chairs/tables within the space. As a general rule, respondents were only approached if they were sitting alone (to avoid any bias in responses caused by the presence of a friend/partner/colleague). If a potential respondent was eating, had headphones in, or was in the midst of a telephone conversation they were not approached. Once initial contact was made, the survey proceeded according to the standard script, with the researcher recording answers directly into a data file on a laptop computer.

The remainder of the surveys were completed outside, either on the sidewalk at the War Memorial in downtown St. John's, in the small public square next to the Supreme Court, or on the main path in Bowring Park, a large park in the west end of the city. In all cases, these responses were gathered in a similar manner: passers-by were asked whether they would be interested in completing a quick survey about neighbourhoods in St. John's. After establishing their eligibility, the surveys were conducted orally, with the researcher recording the responses on paper surveys that were then entered into the data file at the end of each session.

After respondents' answers were added to the database, the postal code from each response was then entered into Google Maps to bring up a 360-degree, pedestrian-perspective image of the city block on which they lived. This image was used as the basis of the built environment audit described in the previous section. Completed responses in the dataset contained these data, responses to the social capital measurement questions, and responses to a number of questions (age, income, level of education, etc.) that could then be used as control variables in the analysis.

Chapter 5 – The Sample

A total of 98 questionnaires were collected over the course of the interview phase. Geographic stratification of the sample was close to target – each of the 4 main postal code zones had at least 20% of the responses. As Table 5.1.1 shows, the A1C zone (central city) was slightly overrepresented in the sample, while a few responses came in from the small pieces of other zones that are still within urban St. John's (other).

Table 5.1 – Response Distribution across postal code zones

Postal Code	N	%
A1A	20	20.4
A1B	21	21.4
A1C	33	33.7
A1E	20	20.4
Other	4	4.1
Total	98	100.0

Slightly more than half of the respondents lived in detached homes, with the remainder spread across attached houses, apartments, and apartments in homes. No respondents reported living in a circumstance that would be reported as "other" – trailers, boats, etc. As shown in Table 5.2 on the next page, the distribution in the sample is slightly skewed relative to the overall distribution of housing stock in St. John's (see CMHC, 2015), with fewer apartment-dwellers and more attached-house dwellers than in the city at large.

Table 5.2 – Housing types, St. John's overall vs. survey sample

Housing Type	Sample N	Sample %	Percentage of total housing stock, St. John's
Detached House	52	53.1	57
Attached House	25	25.5	14
Apartment in house	13	13.3	21
Apartment Building	8	8.2	8.8
Total	98	100.0	100

The mean household size in the sample was 2.4, very close to the St. John's mean of 2.5 (Statistics Canada, 2011). The distribution in the sample was quite closely matched to the population, as shown below.

Table 5.3 – Household Size, Sample and Population

Household Size	Sample N	Sample %	St. John's % (2011 Census)
1 Person	17	17.3	23
2 People	35	35.7	35
3 People	23	23.5	19
4 People	16	16.3	16
5 People	5	5.1	4
8 People	1	1.0	-
Total	97	99.0	100.0
Missing	1	1.0	-
Total	98	100.0	

Notes: Mean household size = 2.61 people, Standard Deviation = 1.246.

As Table 5.4 shows on the next page, with 40.8% of the sample, renters are somewhat overrepresented as compared to the city at large (Data from CMHC, 2015), and owners underrepresented. It is worth noting that the questionnaire provided a "live with family" option for younger respondents who neither own nor rent. It is impossible to say anything definitive about the distribution between owned and rented housing within this group.

Table 5.4 Homeownership and rental

Housing arrangement	Sample N	Sample %	St. John's %
Own	51	52.0	70
Rent	40	40.8	30
Live with family	7	7.1	NA
Total	98	100.0	100.0

There was a wide range and lots of variability in the length of time for which respondents had lived in their current residence, with a mean of 7.5 years. There are no population statistics available for comparison here.

Respondents to this survey had significant time commitments, as shown in Table 5.5 on the next page. The mean amount of hours devoted to work or school weekly was close to the full-time threshold, and slightly below the Canadian average hours worked of 36.6 (Statistics Canada, 2011). Just under 20% of the sample reported 0 hours of work or school – either being unemployed, retired, or a full-time caregiver. Since working time and school time were grouped together here, exact comparisons are difficult, but it is worth noting that the overall Canadian employment rate for adults is just over 60% (Statistics Canada, 2011a), suggesting that this sample is slightly more employed than the population average. There was less variability in the average hours spent doing housework – though almost 25% of respondents reported doing none at all. The survey also asked about hours spent taking care of children or older family members, to complete the picture of respondents' time commitments. Just over 25% of respondents spent any time doing so. Table 5.5 on the next page summarizes how much time was committed.

Table 5.5 – Time commitments for survey respondents

Activity	Hours/Week (Mean)	Min	Max	Standard Deviation
Work or school	31.2	0	70	19.1
Housework	7.65	0	40	7.52
Providing care	4.78	0	70	11.4

Given that this study was primarily concerned not with what activities people were doing, but rather with the amount of free time they had available (since that could very plausibly influence the strength of their social participation), an aggregate measure of total committed time was created by adding up reported hours spent on work, school, housework, and caregiving. Respondents were grouped into 3 roughly even categories: not busy (0-35 hours committed), somewhat busy (35-50 hours committed) and very busy (50+ hours committed). The distribution is presented in Table 5.6 below:

Table 5.6 – Overall time commitments - survey respondents

How busy is the respondent?	N	Percent
Not busy (Under 35 hours occupied per week)	29	29.6
Somewhat busy (35-50 hours occupied per week)	38	38.8
Quite busy (50+ hours occupied per week)	31	31.6
Total	98	100.0

The age distribution of the sample skewed older than the distribution in the St. John's CMA (See Statistics Canada 2011b). A major cause of this was the exclusion of respondents under the age of 18. In the age brackets above that, there was an overrepresentation of younger respondents as shown in Table 5.7 on the next page.

Table 5.7 – Age distribution, sample vs. population

Age Bracket	Sample N	Sample %	St. John's CMA %
Under 20	2	2.0	21.6
20-35	42	42.9	22
35-50	26	26.5	22.6
50-65	21	21.4	20.8
65+	6	6.1	12.7
Prefer not to answer	1	1.0	-
Total	98	100.0	100

As Table 5.8 below shows, just over 40% of the sample was born in the city, with the remainder distributed between people originating in and outside of Newfoundland. There are no population-level statistics to compare to, here, but these data were gathered to allow a test of whether local-born people have higher social capital levels than people born outside of the city – this will be discussed in the next subsection.

Table 5.8 – Birthplace of survey respondents

Birthplace	Frequency	%
St. John's	40	40.8
Other NL	32	32.7
Outside NL	26	26.5
Total	98	100.0

The biggest skew in the sample was on education – as Table 5.9 on the next page shows, respondents skewed heavily towards the university-educated, in particular towards those with bachelors' degrees (see Statistics Canada 2011c for the population statistics). It should also be noted that all respondents indicated they had finished high school – though there is a chance this involved some social desirability bias. This is where the non-random nature of the sampling strategy comes through most clearly: it is easy to understand why a response bias might creep in here, as people who have been

through university courses themselves might be predisposed to participating in academic studies.

Table 5.9 – Education (Sample vs. Population)

Highest level of schooling completed	Frequency	Percent	St. John's CMA %
High school	13	13.3	20.6
College/Trade school	12	12.2	36.8
Bachelor's degree	53	54.1	15.4
Masters' Degree	10	10.2	5.7
Doctorate/MD/Law Degree	8	8.2	2.1
Other	2	2.0	-
Total	98	100.0	100.0

The survey also asked about household income. As Table 5.10 shows, the sample skewed slightly low, with 64% coming in at or under the Canadian median household income of $76,000.

Table 5.10 – Income distribution in the sample

Household income	N	%
Under $38,000	32	32.7
$38,000 - $76,000	31	31.6
$76,000 to $116,000	17	17.3
$116,000 and up	14	14.3
Prefer not to answer	2	2.0
Don't know/NA	2	2.0
Total	98	100.0

Finally, the gender presentation of respondents was marked down by the researcher (not explicitly asked as a question). Here, the sample was almost perfectly split, with only a slight skew towards male respondents, as Table 5.11 shows.

Table 5.11 – Gender distribution in the sample

Gender	N	%
Male	50	51.0
Female	48	49.0
Total	98	100.0

Overall, the survey sample is a mixed bag. It is well-distributed geographically, and quite representative of the city when it comes to household size and (albeit slightly less so) type of residence. It does skew fairly heavily towards more educated respondents, although not to higher-income ones. This may reflect misunderstandings on the respondents' part when asked about income. Although they were asked about their *household* income, anecdotally it seems that many replied with their personal income alone. With that in mind, and given that income and education track each other quite closely in general, education will be used as a control variable, rather than income, when developing the regression analyses in Chapter 8.

Chapter 6 - Descriptive Statistics: Social Capital

Respondents' social capital was measured (as described in section 4.1) as an index of 17 component variables under 4 component themes: strength of neighbourhood social networks, social participation, social trust, and civic participation. As noted in section 4.1, variables were reweighted so that each of these 4 component themes made up 25% of the index value, regardless of the number of component variables within that theme.

As Table 6.1 shows, with a mean value of .67 (out of a possible 1), respondents were in possession of quite a bit of social capital. As the low standard deviation shown below indicates, the results were clustered quite tightly around the mean. Only 8 respondents scored higher than .8, and only 4 scored lower than .5.

Table 6.1 – Social Capital Index: Distribution

N	98
Mean	.6734
Std. Deviation	.09972
Minimum	.27
Maximum	.91

Breaking the index down into its component pieces, as in Table 6.2, on the next page, shows some interesting results. Scores on the "social trust" component are consistently high and clustered tightly to the mean – driving both of those dynamics in the overall index. The "neighbourhood social network" variable has a significantly larger standard deviation than the other components, which is unsurprising, given that it has the fewest component questions. Although the "civic participation" component has more

component pieces (and thus less vulnerability to swings based on responses to one

question), its standard deviation is quite close to social trust and social participation.

Table 6.2 – Social Capital Index: Component Pieces

	Neighbourhood Social Networks	Social Trust	Social Participation	Civic Participation
N	98	98	98	98
Mean	.6703	.8257	.6418	.5558
Std. Deviation	.19131	.12498	.13860	.13048
Minimum	.23	.33	.20	.29
Maximum	1.00	1.00	.95	.85

Note: N = 98 (0 missing).

Table 6.3 reveals that almost all of the variable pairs within the social capital

index are inter-correlated with high statistical significance, with the exception of social

participation and social trust. The correlations, though, are not particularly strong, save

for the one between neighbourhood social networks and civic participation.

Table 6.3 – Social Capital Index – Component variable correlations

	Social Trust	Social Participation	Civic Participation
Neighbourhood Social Networks	.280**	.243*	.516**
Social Trust		.081	.167
Social Participation			.286**

** Significant at the 0.01 level (2-tailed).
* Significant at the 0.05 level (2-tailed).

Further question-by-question breakdowns are also interesting. The

"neighbourhood social networks" variable has three component pieces: how well a

respondent knows their neighbours, whether they think there's someone in the area who

could help out in a pinch, and whether they talk to their neighbours about what's

happening in the community. As Table 6.4 on the next page shows, the one "passive"

component (feeling like people are there to help out) had a higher (and more consistent)

score than the two more active components – knowing your neighbours and talking about what's going on locally.

Table 6.4 – Neighbourhood Social Networks – Component pieces

	How well do you know your neighbours?	There are people in your neighbourhood who will help out in a pinch	How often do you talk to your neighbours about what's going on in the community?
N	98	98	98
Mean	2.7959	3.4796	2.4388
Std. Deviation	.99441	.77632	1.29285
Minimum	1.00	1.00	1.00
Maximum	4.00	4.00	5.00

Note: N = 98 (0 missing)

As Table 6.5 shows, the component variables of the "neighbourhood social networks" index correlate in a plausible way, with a strong correlation between knowing neighbours and feeling there is a neighbour who would help out in a pinch. Knowing neighbours also correlates, unsurprisingly, with discussing community affairs with them.

Table 6.5 – Neighbourhood social networks: component correlations

	There are people in your neighbourhood who will help out in a pinch	How often do you talk to your friends about what's going on in the community?
How well do you know your neighbours?	.475**	.216*
There are people in your neighbourhood who will help out in a pinch		.122

** Significant at the 0.01 level (2-tailed).
* Significant at the 0.05 level (2-tailed).

The breakdown of "social trust" into its component variables is also instructive. As Table 6.6 shows, the mean value is very high, above 3 on the 4-point scale, with a fairly small standard deviation. Most people in the sample are, it seems, quite trusting.

Table 6.6 – Social trust: component variables

	You feel like people in general can be trusted	You feel like people are fair to each other most of the time	People can usually be counted on to help each other out
N	98	98	98
Mean	3.3469	3.2041	3.3571
Std. Deviation	.78782	.67288	.61342
Minimum	1.00	1.00	1.00
Maximum	4.00	4.00	4.00

Note: N = 98 (0 missing)

As Table 6.7 shows, all the variable pairs within "social trust" are significantly correlated, though the correlations are not particularly strong – these do seem to be measuring different aspects of it.

Table 6.7 – Correlations, social trust index

	You feel like people are fair to each other most of the time	People can usually be counted on to help each other out
You feel like people in general can be trusted	.235*	.210*
You feel like people are fair to each other most of the time		.421**

** Significant at the 0.01 level (2-tailed).

* Significant at the 0.05 level (2-tailed).

As Table 6.8 shows, a breakdown of the social participation index into its components shows that there is more variability here than in social trust, but that, overall, people considered themselves fairly social, with less participation in organized activities.

Table 6.8 – Social participation index components

	How often do you have friends over?	How often do you visit friends at their homes?	How often do you go out with friends?	How often do you participate in activities like sports and clubs?
N	98	98	98	98
Mean	3.2857	3.4796	3.3061	2.7653
Std. Deviation	1.03545	.87614	.98868	1.33007
Minimum	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00

The components of the social participation index correlate plausibly – the various questions measuring different types of socializing are quite tightly correlated, with participation in group activities moving independently of them, as per Table 6.9.

Table 6.9 – Social Participant Index – Correlations between components

	How often do you go out with friends?	How often do you participate in activities like sports and clubs?	How often do you visit friends at their homes?
How often do you have friends over?	.357**	.087	.279**
How often do you go out with friends?		.236*	.448**
How often do you participate in activities like sports and clubs			.098

** Significant at the 0.01 level (2-tailed).
* Significant at the 0.05 level (2-tailed).
N = 98

The final index variable used to develop the overall social capital measure was

"civic participation/efficacy". This variable had the most component questions of the four

composite variables within the social capital measure. As shown in Table 6.10 below,

there was plenty of variability on the different behaviours classified as "civic". Almost

all respondents reported that they "always" vote in local elections – a highly dubious

claim, given the low turnout in municipal races. It seems quite likely that this question

was affected by social desirability bias: that is, respondents may not have wanted to

admit to an interviewer in person that they don't vote. The mean responses for the other

activities involved in civic participation are more intuitively plausible – attending public

meetings more often than writing letters to the editor, for example.

Table 6.10 – Civic Participation index, component variable distribution

	When things happen in the community that I don't like, I feel like I have the power to change them.	How often do you volunteer?	How often do you vote in city elections?	How often do you write letters to the editor?	How often do you go out to public meetings?	How often do you contact your city councillor?	How often do you talk to your friends about local politics?
N	98	98	98	98	98	98	98
Mean	2.4592	2.8469	4.2551	1.5714	2.3163	2.0816	3.3673
Std. Deviation	.95430	1.38737	1.44530	.93058	1.11778	1.15476	1.16997
Minimum	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	4.00	5.00	5.00	4.00	5.00	5.00	5.00

As Table 6.11 shows, the component variables of the civic participation index are

not very tightly correlated – though a few statistically significant correlations do emerge

that are intuitively plausible (volunteering and attending public meetings, for example).

Interestingly, there are no statistically significant correlations between the *behaviours*

measured here and the *feeling* of political efficacy also included in this composite variable.

Table 6.11 – Civic Participation, component variable correlations

	How often do you volunteer?	How often do you vote in city elections?	How often do you contact your city councilor?	How often do you write letters to the editor?	How often do you go out to public meetings?
When things happen in the community that I don't like, I feel like I have the power to change them.	.147	.041	.162	.015	.114
How often do you volunteer?		.092	.162	.132	.371**
How often do you vote in city elections?			.290**	.074	.154
How often do you contact your city councillor?				.186	.227*
How often do you write letters to the editor?					.231*

** Significant at the 0.01 level (2-tailed).
* Significant at the 0.05 level (2-tailed).

Taken together, these statistics paint a picture of a sample of respondents with a diverse set of plausible behavior patterns. In general, respondents were fairly social, highly trusting, reasonably connected to their neighbours, and widely variable in their civic participation. The succeeding sections of this study will look at the relationships between these behaviours and the built environment around where respondents live – but first it is worth taking a look at the overall picture of what that built environment looks like and feels like to respondents.

Chapter 7 - Descriptive statistics: the built environment

The survey – and associated built environment audit – provided a wealth of both subjective and objective measurements of the built environment. This section will outline the results, beginning with the three measures of walkability used: subjective, WalkScore, and a composite index of neighbourhood design. The distribution of responses to each of these is shown in Table 7.1 below:

Table 7. 1 – Walkability Measures

	How walkable do you think your neighbourhood is? (1-10 scale)	Walkscore for that postal code (0-100 scale)	Walkable Street Design (0-1 scale)
N	98	98	98
Mean	7.3980	59.653	.6003
Std. Deviation	2.45470	26.4836	.33632
Minimum	1.00	1.0	.08
Maximum	10.00	95.0	1.00

To measure the first variable, subjective walkability, all respondents were asked to rate the walkability of their neighbourhood on a 1-10 scale, without further prompting as to the specific definition of walkability. The goal, here, was to get a good sense of their subjective experience. By and large, respondents felt quite good about the walkability of their neighbourhoods, with a mean response of 7.39 out of 10. There was a great deal of variation in the responses, which ranged all the way from 1 to 10 on the scale, with the biggest single cluster of responses at the "8" level.

An online calculator was also used to attach WalkScore results to each respondent, which provided a measurement of the respondent's proximity to a wide range of amenities (see Chapter 3 for an in-depth explanation of the WalkScore method). The

mean WalkScore result for the survey sample was just under 60 (on a 100-point scale) and much more variable than the subjective walkability result.

The final measure used to assess walkability of a neighbourhood was a composite variable that measured the presence of interconnected streets (by measuring if there were intersections visible), streets narrower than 2 normal lanes, and the setback of buildings from the street. The first two variables are binary yes/no responses, while the "setback" question was scored on a 4-point scale, recoded for this index as follows:

1	Large setback (very large lawns/institutional green space)
2	Medium setback (large lawns)
3	Minimal setback (small lawns or gardens)
4	No setback (buildings come right up to the sidewalk).

In the index variable used here, the "setback" responses were weighted equally to the other two variables, so as not to dominate the value. Taken together, these measures seem like a plausible way of describing neighbourhoods that encourage walking by providing a wider range of routes (intersections), slower traffic (narrow streets), and visual interest for walkers (smaller setbacks). Measured this way, the mean walkability for the sample is just above .6 (out of 1), with a similar degree of variability across respondents as with the WalkScore results

These three measures of walkability measure somewhat different things – subjective experience, distance to destinations, and design features generally known to improve pedestrian experiences. With that in mind, it is worth looking at the correlations between the three measures. Table 7.2, on the next page, summarizes them. There is a strong, significant correlation between the WalkScore measure and the neighbourhood design measure – as there should be, since WalkScore results do include scores for street

connectivity and width within them (though they are dominated by destination distance). The odd relationship here is between subjective walkability and the street design variable – the correlation is basically zero, which is a surprise. This may be due to the many sources of variation in the subjective walkability question; with "walkability" not necessarily a concept that people spend much time thinking about, respondents presented with this question and not offered prompts about how to answer it were liable to offer a wide range of answers. That said, there is a less surprising relationship between subjective walkability and WalkScore – it is positive, reasonably strong, and significant.

Table 7.2 – Correlations between walkability measures

	How walkable do you think your neighbourhood is (1-10 scale)	Walkscore for that postal code
Walkable Street Design (0-1 scale)	-.019	.684**
How walkable do you think your neighbourhood is (1-10 scale)		.224*

** Significant at the 0.01 level (2-tailed).
* Significant at the 0.05 level (2-tailed).

The survey also included other subjective assessments of respondents' neighbourhoods, with respondents being asked to assess their feeling of safety in their neighbourhood both during the day and at night. Overall, responses were very high – most people felt quite safe. As would be expected, the mean response for nighttime safety was somewhat lower, as shown in Table 7.3 on the next page.

Table 7.3 – Feelings of safety

	You feel safe outside in the daytime	You feel safe outside at night
N	98	98
Mean	3.8061	3.3469
Std. Deviation	.46878	.76120
Minimum	1.00	1.00
Maximum	4.00	4.00

Turning now to the built environment, the audit tool provided a number of interesting data points. There is little need to report on the dozens of individual variables (is a school visible/is a restaurant visible/is a convenience store visible), if only because they are so subdivided as to produce very small ns for any one category. When aggregated somewhat, though, a number of interesting facts emerge that can paint a picture of the built environment for the sample population. As Table 7.4 shows, a substantial majority (60 %) of respondents lived in single-use residential settings, with no non-residential uses visible from their home.

7.4 – Presence of mixed uses

	Frequency	%
Yes	39	39.8
No	59	60.2
Total	98	100.0

Responses were combined into categories of visible land uses: commercial (shops, offices, etc.), institutional uses (schools, police stations, etc.), recreational uses (parks, sports fields, etc.) and open space (views of the hills/water). All were relatively rare, as Table 7.5, on the next page, shows.

Table 7.5 – Visible land uses

	Visible: any commercial use	Visible: Any institutional use	Visible: any recreational use	Visible: any open space or water
N	98	98	98	98
Mean	.2653	.1122	.1327	.2245
Std. Deviation	.44377	.31729	.34094	.41939
Minimum	.00	.00	.00	.00
Maximum	1.00	1.00	1.00	1.00

Table 7.6 looks at the residential built environment in more detail. Detached houses were by far the most common visible residential use, followed by attached houses, apartments over retail, apartments and multifamily homes, and most rarely, mobile homes.

Table 7.6 – Residential uses

Residential use	% of responses with that use visible
Detached house	82.7
Attached House	51.0
Multifamily house	9.2
Apartment/condo	9.2
Apartment over retail	12.2
Mobile home	1.0

As Table 7.7 shows, a number of the built environment features the audit tool looked for were either very rare or almost ubiquitous. There were very few pieces of street furniture (benches etc.) and almost all streets had lighting and sidewalks. With relatively few varying responses, these cannot easily be used as independent variables in the later sections of this study. The one exception is sidewalks – with 15% of respondents living somewhere without one, there is some hypothesis testing that can be done here.

Table 7.7 Other built features

Built feature	% of responses with that use visible
Sidewalks	85.7
Street furniture	4.1
Public art	2.0
Street lighting	91.8

There were some locally-specific additions made to the built environment audit.
In an attempt to measure the degree to which a neighbourhood "feels" like St. John's,
each location was evaluated for the presence of four key elements of the city's distinct
vernacular architecture: clapboard siding, bright colours, Victorian design elements, and
attached housing. Responses to these questions were combined into an index variable that
measured (on a 0-1 scale) the degree to which a neighbourhood conformed to this look.
Table 7.8 summarizes the results.

Table 7.8 – Presence of Vernacular architecture (0-1 Scale)

N	98
Mean	.3980
Std. Deviation	.41992
Minimum	.00
Maximum	1.00

A number of other items in the built environment audit checklist were sufficiently
rare as to not warrant reporting on – this includes signs of physical disorder (broken
windows, boarded homes, etc.), and commercial signage, which was surprisingly rare.
There were nonetheless a few more variables that *could* be captured for all responses.
One such variable was the setback of buildings from the street. Each location was coded
by the researcher on a 4-point scale, from "minimal" setback" to "large setback" – this
was a subjective coding, since exact measurements were not part of the audit tool. The

distribution of setbacks in the sample is shown in the chart below – there was a balance between minimal, small, and medium setbacks, with very few large ones, as Table 7.9 shows.

Table 7.9 – Building setbacks

Size of setback	N	%
Minimal setback (No front lawn/garden)	38	38.8
Small setback (small garden/yard)	32	32.7
Medium (Large front yard)	26	26.5
Large setback (very large yards, parking lots, institutional green space)	2	2.0
Total	98	100.0

The audit tool also classified each site based on sightlines from the buildings – measuring whether someone inside these structures would have an unimpeded view of the public areas around them. This potentially has implications for the relationships being looked at in this study; urban planning literature suggests that "eyes on the street" are an important element of creating a public realm that is well-used by residents (Paranagamage et al., 2010). If that is an operative factor here, St. John's is well-served. So called "snout-nosed" houses (with the house hidden behind the garage) are rare in the city, as are really densely treed streets (perhaps more sadly). As shown in Table 7.10 below, the sightlines in the sample set of residential sites were overwhelmingly clear.

Table 7.10 – Building Sightlines

Sightlines from homes to street	N	%
Clear	81	82.7
Obscured by garages or architectural elements	4	4.1
Obscured by street geometry	13	13.3
Total	98	100.0

The final universal classification included in the built environment audit was a neighbourhood typology. As Table 7.11 shows, each site was categorized into one of six broad types of neighbourhood present in the city of St. John's. There was a wide distribution, as shown below. This was a subjective assessment based on the visual appearance of the neighbourhood and the location within the city, which was known from the Google Street View audit. The time required to look up actual property records to check time of construction would have been far too much for a study at this scale.

Table 7.11– Neighbourhood types

Type of neighbourhood respondent lives in	N	%
Downtown residential (attached homes; prewar)	37	37.8
Early suburb (Pre-1960)	8	8.2
Inner-ring suburbs (1960-1990)	32	32.7
Newer suburbs (Post 1990)	15	15.3
Multi-building apartments	2	2.0
Mixed-use neighbourhood	3	3.1
Other	1	1.0
Total	98	100.0

Summary: the built environment for survey respondents

The 98 respondents in this study are spread out across all the possible types of built environment present in St. John's; that said, a majority do live in suburban, single-use, single-family neighbourhoods. It is important to recognize that this is very much representative of the city – although the public image is centred almost exclusively on the historic neighbourhoods of the urban core, most people do not actually live there.

Beyond the residential typologies, there is significant variation in the built environment results across the sample, and in the degree to which neighbourhoods are assessed as walkable, either by their residents or by the objective measures used here. With a very plausible connection between walkability and social capital emerging from

the literature, it is important that this be tested using these data. Thanks to the level of detail in the built environment audit checklist, though, it is also possible to take a more exploratory view and look at how other elements of the built environment interact with social capital. There is certainly sufficient data to look at the impact of different types of land uses, access to nature and parks, presence of vernacular architecture, sightlines to the street, and neighbourhood type. The next chapter of this study will lay out the cases for each of these scenarios and develop the regression analyses to test them.

Chapter 8 – Results

The preceding sections of this study have painted a broad picture of the literature that establishes the possibility of relationships between the built environment of a neighbourhood and the social and political lives of the people who live there. The sample developed for the study has a variety of data points on this, including a composite variable that includes the four distinct components of "social capital" as developed here – local social networks, generalized social trust, social participation, and civic participation. The "built environment audit" component of the study has similarly assembled data on a number of plausible causal factors, with a focus on measures of walkability and secondary attention to some specific characteristics of the built environment that could be tied to social and political participation. This section will develop and test a number of specific hypotheses using these data. Before doing so, though, it is important to work through two things: self-selection and plausible control variables.

8.1 – Self selection

One obvious possibility emerged early on in the development of this study as something both plausible and largely passed over in the small literature on the topic: the role of self-selection. On the face of it, it is entirely plausible that the relationship between social and political participation and the built environment could be bidirectional: along with (or instead of) a causal relationship with the built environment as the independent variable, it could well be that the level of social and political engagement in a neighbourhood is a major factor in people's initial choices about where to live. Socially and politically active people might self-select into neighbourhoods full of

like-minded people, or full of elements like parks and shared spaces that would encourage a more communal lifestyle. If this were true of the respondents to this survey, it would be much more difficult to make a case for the ongoing influence of the built environment on how people live. Even if the built environment were a causal variable, it would be difficult to untangle it from the effects of self-selection. Clearly, some measurement of self-selection is, therefore, key to establishing the validity of any of the results in this study.

To get there, an addition was made to the first group of interview questions. Respondents were asked an open-ended question: "When you were choosing a place to live, what made you choose the neighbourhood you're in now?" The interviewer kept point-form notes of the responses, which were then coded for the degree to which the response mentioned anything related to social and political participation. As it turned out, self-selection appears to be a surprisingly minor factor in this study. As shown below, the vast majority of respondents cited nothing related to social and political participation when asked to provide their reasons for their housing choice. Some examples of responses and codings are provided in Table 8.1.1 below.

Table 8.1.1 – Coding for self-selection

Coding	Exemplary response	N
1: No social capital reason	"It was all about the price" "We needed a 3-bedroom place" " It was an easy drive to work"	87
2: Weak social capital reason	"The neighbourhood had lots of young families" "I liked being close to downtown" " I had some friends living nearby"	11
3: Strong social capital reason	"We loved the sense of community in the neighbourhood" "We like running into neighbours" "It seemed like a really progressive community"	0

Note: These exemplary phrases were generated by the study author to illustrate what kinds of phrases would be grouped into each category.

To double-check on the impact of the small number of self-selecting respondents, it was important to compare their average scores on the overall social capital index. As Table 8.1.2 shows, there was a discernable difference in the expected direction – respondents who cited a social capital reason for their housing choice had a slightly higher mean social capital score, with a range that both started and ended higher than the group which had no social capital reasoning involved. The effect on the sample mean is reasonably small, with the overall mean social capital score coming out to .67.

Table 8.1.2: Comparisons of self-selected and non-selected groups, social capital score

	No self-selection	Weak self selection
N	87	11
Mean	.6673	.7216
Std. Deviation	.09438	.13032
Minimum	.27	.48
Maximum	.87	.91

The reason behind the surprising lack of self-selection in the respondent base is quite simple: housing choices are complicated. When asked this question, respondents often discussed their life situation at the time of their choice, and it usually involved balancing the whole basket of factors involved in this major decision. Price, location, short timelines, and interior features of the house came up often. Some respondents noted that they did not consider the neighbourhood in much depth due to these factors, but would have otherwise liked to. These are people who would be prime candidates for self-selection, but simply did not have an opportunity to do so.

8.2 – Control variables

The questionnaire used in this study collected a range of background information on respondents – gender, age, education, place of origin, length of tenure in a neighbourhood, available free time, and income. There is a plausible case for several of these to affect respondents' social capital scores and thus to be controlled for in the regression analysis.

The literature review in Chapter 2 develops a clear case for using income and education as key control variables, but there are some methodological considerations specific to this study to think about here. The questions used to measure income on this survey were brief and at the end of the interview, and were asked about household, rather than individual income. As per the discussion in Chapter 3, the sample is skewed high on education and low on income, relative to the population. This likely reflects the youth of the sample, with an overrepresentation of people in their late 20s and early 30s – people likely to have recently completed their schooling, but not yet advanced very far in their earning potential. The skew may also reflect misunderstandings of the income question – some respondents may have provided their individual incomes instead of a household estimate. With this in mind, and given the tight interrelationship between income and education, education was chosen as a control variable that could also serve as a proxy for income when it comes to effects on political and social participation.

Drawing again from the literature review, there are other plausible factors that would affect the amount of social and political participation a respondent was able to sustain. Available time is one – someone inclined to being more socially or politically engaged might be impeded simply by not having the time if child care or professional

responsibilities intervened. There is a similarly plausible story about the length of a respondent's tenure in the neighbourhood. Social and civic networks can take time to build – it seems very likely that new arrivals to a neighbourhood or a city would not have the same depth of connection to their communities. Place of origin might have a similar effect – perhaps people who are from a given place have an easier time building social and civic networks there. That said, there would only be a case for controlling for this separately if moving into a neighbourhood from elsewhere resulted in permanent social exclusion, and there is no reason to assume that this is the case. That means that length of tenure in the neighbourhood should capture most of this effect and this was included in the controls tested at the beginning of the analysis, along with available free time.

One final potential control is ownership status. There is a body of literature that argues that homeownership is the driving factor behind political participation at the local level (Fischel, 2001, and Dehring et al., 2008). The mechanism here is different than with length of tenure – the idea is that homeowners have a greater incentive to participate, given their financial stake (through property taxes) in the outcomes of municipal decisions.

A basic bivariate correlation was run between each potential control and the social capital index scores of respondents. The results in Table 8.2.1 on the next page show that all of these are correlated in the expected directions, but very weakly (and none with statistical significance). There is a negative correlation between ownership status and social capital due to the coding of status, with owners coded as "1" and renters as "2". Similarly, there is a negative coefficient on age – it would seem that people have less social capital as they get older, broadly speaking. Length of tenure and schooling are

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positively correlated with social capital, as is (interestingly) amount of time occupied –

with the implication that the busier members of the sample are more socially and

politically engaged.

Table 8.2.1 – Control Variable Correlations with social capital

	Length living in current location	Highest level of schooling completed	Age	Hours occupied per week	Social Capital Index Score
Ownership status	-.181	-.083	.039	-.055	-.188
Length living in current location		.066	-.041	-.306**	.072
Highest level of schooling completed			.278**	.052	.144
Age				-.035	-.113
Hours occupied/week					.128

** Significant at the 0.01 level (2-tailed).
 * Significant at the 0.05 level (2-tailed).

Although the bivariate correlations here are weak, it is still plausible that some of

these variables are correlated with social capital in a multivariate setting. With that in

mind, the strategy employed in running the regressions that will be summarized in the

rest of this chapter was to include all the controls in the first run of a model, then drop

any that did not show statistical significance. Models were then re-run with significant

controls only (though, in some cases, these controls lost significance in the second run of

the model – those are visible in the tables ahead).

8.3 – Social capital and walkability

The relationship between the built environment and social capital that is most

clearly established in the literature has walkability as a mechanism. Neighbourhoods built

to be walkable, it goes, encourage people to get out on the streets walking and to consequently have more casual contact with their neighbours and fellow citizens. This casual contact can then form the basis for more developed relationships of mutual aid or enjoyment. Someone who nods at a neighbour when they walk by might have an easier time recruiting that neighbour to sign a petition, or to play a round of tennis. Put more formally, this is the first hypothesis this study will test:

H1: Walkability will drive social capital levels after controlling for education, length of tenure, and available free time.

To test this hypothesis, three models were developed using the three different walkability measures built into this study. Model 1 uses self-assessed walkability as the independent variable, while Model 2 uses WalkScore and Model 3 this study's objective walkability index. The results are presented in Table 8.3.1 on the next page.

A number of things emerge from this first test. First, there is no statistically significant relationship between self-assessed walkability and social capital – and the magnitude of the coefficient is tiny. When WalkScore results are used as a measure of walkability, the results are more clear – there is a statistically significant relationship, but it is very weak. The only statistically significant control variables when using WalkScore as an independent variable were length of residential tenure and amount of time occupied by other activities.

Finally, and most productively, Model 3 used the study's own self-generated objective measure of walkability (a combination of street connectivity, street narrowness, and building setback) as an independent variable predicting social capital score. Here

there is a highly significant relationship, and the model itself has the most predictive

power of the three models tested

Table 8.3.1 – Walkability measures and Social Capital Index Scores (with controls)

Statistic	Model 1 (Self-assessed walkability)	Model 2 (Walk Score)	Model 3 (Objective walkability)
Variable	Coefficients		
Walkability (Self-assessed)	.005	-	-
Walk Score	-	.001*	-
Objective walkability index	-	-	.089**
Hours/week occupied	.001	.001*	.001*
Highest level of schooling completed)	.010	-	-
Length of residential tenure	.010	.018*	.019**
Ownership status	-.017	-	-
R Square	.104	.102	.136
N	98	98	98

** Significant at the 0.01 level (2-tailed).
* Significant at the 0.05 level (2-tailed).
Note on the models: Control variables that did not achieve statistical significance on each model's first run have been dropped.

The results from Model 3, then, deserve a more detailed look. The coefficient of

the walkability-social capital relationship is .089. This means that an increase of 1 unit on

the walkability scale for a respondent generates, on average, an increase of just under one

tenth of the range of the social capital index. While not massive, this is a meaningful

impact – roughly equivalent to a move from the lowest score to the highest on two of the

index's 17 component questions. To raise their social capital score in this way, a

respondent could go from never volunteering and never going out with friends to doing

both of these all the time, other things held constant. They might move from not knowing

their neighbours at all to knowing them well, and go from never talking about local affairs with them to chatting all the time. Whatever the scenario envisioned, the scale of walkability's impact on behavior is far from negligible.

With that in mind, it is worth thinking about what a one-unit increase on the objective walkability scale actually looks like to someone living in St. John's. Since the walkability measure (like the social capital index) is on a 0-1 scale, a one-unit increase is a move from minimum walkability to maximum. This would mean moving from a location with wide streets, no intersections visible, and very large setbacks between buildings and the street to a neighbourhood with intersections, narrow roads, and no setbacks at all. Put into real-world terms, a move from an outer suburban cul-de-sac to a downtown row house would achieve this kind of movement on the walkability scale. In reality, of course, the differences between many neighbourhoods are less drastic – meaning the matching increases or decreases would likely be below the one-tenth unit shift predicted by the model.

It is also worth looking at the two control variables that retained statistical significance in this model. With a coefficient of .019, the model shows that each year of additional residence in a neighbourhood is associated with an increase in a respondent's social capital score of roughly one fiftieth of the range of this variable. Put another way, the boost to social capital associated with a move to a highly walkable neighbourhood is equivalent to the social capital increase created by 4.5 years of residence at a given location. Time occupied also has an impact – though, as noted earlier, busy people seem to be more engaged, with every extra hour occupied each week associated with a tiny increase (1/1000th of the range) in social capital. None of the other potential control

variables (education, ownership status, or age) had a statistically significant impact on the model. To double-check that these results were not being driven by self-selection, the regressions were re-run, omitting all cases where respondents had been coded as self-selecting for higher social capital areas. Using the objective walkability measure from the survey, the results hold, albeit with a smaller coefficient; looking at WalkScore, they are no longer statistically significant.

As Table 8.3.2 shows, this run of models suggests that self-selection is a meaningful factor in the built environment-social capital relationship, but not the driving force behind it – and it is also worth noting that the sample size for self-selectors was particularly small. Once again, there are relatively few significant control variables – in this version of model 3, hours/week occupied drops off, with length of tenure remaining almost unchanged in magnitude and still highly significant.

8.3.2 – Walkability and social capital, self-selectors removed

Variable	Model 2 (Walk Score)	Model 3 (Objective walkability)
	Coefficient	
Walk Score	.001	-
Objective walkability index		.063*
Hours/week occupied	.001*	-
Highest level of schooling completed)	-	-
Length of residential tenure	.019**	.018**
Ownership status	-	
R Square	. 101	.098
N	87	87

** Significant at the 0.01 level (2-tailed).

*   Significant at the 0.05 level (2-tailed).

Note on the models: Control variables that did not achieve statistical significance on each model's first run have been dropped.

Taken together, this is an interesting set of results. These three measures of

walkability measure different understandings of what "walkability" means – and here, it seems that it is street design, rather than subjective experience or proximity to destinations, that drives social and political participation. The discussion section of this study will expand on this at length.

8.4 – Other plausible drivers of social capital

With casual contact being posited as the causal mechanism behind the walkability-social capital relationship, it is also worth looking at another independent variable: sense of safety. The survey asked respondents to rate the degree to which they feel safe in their neighbourhood during the day and at night. These were added together to make a simple composite variable, which was introduced into the regression model as an independent variable with the same controls. As shown below in Figure 8.4.1, there is no statistically significant relationship between sense of safety and social capital.

Table 8.4.1 – Model 4: Sense of safety and social capital

Variable	Coefficients
Sense of safety	.008
Hours/week occupied	.001
Highest level of schooling completed)	011
Length of residential tenure	.010
Ownership status	.022
R Square	.096
N	98

** Significant at the 0.01 level (2-tailed).

* Significant at the 0.05 level (2-tailed).

Note on the models: Control variables that did not achieve statistical significance on each model's first run have been dropped.

Another potential driver of social capital was "sense of place," operationalized

here as the presence of local vernacular architecture in the neighbourhood. Why would

living in a neighbourhood that feels more locally distinctive create social capital? At the

most basic, it may encourage residents to come together around the preservation and

protection of that built environment. It may be that these features create a public realm

that is more inviting. It might also be a less tangible connection between a general

feeling of pride in the city's uniqueness and participation in local affairs. In any case, for

Model 5 (with the presence of vernacular architecture as an independent variable), added

controls were important – since narrow streets, small setbacks and intersections were

already identified as driving factors of social capital under the heading of "objective

walkability", the objective walkability measure was included as a control. This ensures

that vernacular architecture is not just serving as a proxy for neighbourhood layout. As

Tables 8.4.2 and 8.4.3 show, this is likely the story – once these controls are applied, the

architecture-social capital relationship becomes statistically insignificant.

Table 8.4.2 – Social capital and vernacular architecture

Variable	Model 5 (Vernacular architecture0
Presence of vernacular architecture	.06125
Hours/week occupied	.001
Highest level of schooling completed)	.007
Length of residential tenure	.017
Ownership status	-.015
R Square	.146
N	98

** Significant at the 0.01 level (2-tailed).
 *   Significant at the 0.05 level (2-tailed).
 Note on the models: Control variables that did not achieve statistical significance on
 each model's first run have been dropped.

**Table 8.4.3 – Social capital and vernacular architecture with objective walkability
control variable added**

Variable	Model 5 (Vernacular architecture0
Presence of vernacular architecture	.025.5
Objective walkability index	.061
Hours/week occupied	.001*
Highest level of schooling completed)	.009
Length of residential tenure	.018*
Ownership status	-.015
R Square	.163
N	98

** Significant at the 0.01 level (2-tailed).

* Significant at the 0.05 level (2-tailed).

Note on the models: Control variables that did not achieve statistical significance on each model's first run have been dropped.

8.5 – Walkability and the components of social capital

With objective walkability (street design) established as the independent variable with the most consistent explanatory power, further regressions were run on the data to look inside the social capital index and see how walkability affects the component indices measuring neighbourhood social networks, social participation, social trust, and civic participation. The results were quite interesting. When modeled separately like this, the objective walkability measure significantly predicts variation in neighbourhood social networks and, interestingly, civic participation. The relationships with social trust and social participation don't cross the significance threshold. As Table 8.5.1 shows, length of residential tenure is the only significant control in both Model 1 and Model 4.

Table 8.5.1 – Objective walkability and social capital index components

Statistic	Model 1: Social Network Dependent	Model 2: Social Trust Dependent	Model 3: Social Participation Dependent	Model 4: Civic Participation Dependent
Variable	Coefficients			
Objective walkability index	.146*	.035	.052	.097*
Hours/week occupied	-	.001*	.000	-
Highest level of schooling completed)	-	.009	.033**	-
Length of residential tenure	.040**	.006	.002	.021*
Ownership status	-	.008	-.019	-
R Square	.117	. 50	.110	.085
N	98	98	98	98

** Significant at the 0.01 level (2-tailed).

* Significant at the 0.05 level (2-tailed).

Note on the models: Control variables that did not achieve statistical significance on each model's first run have been dropped.

The magnitude of the effect of increased walkability on the individual

components of the index is reasonably large (bear in mind that all these components are

also on a 0-1 scale). A jump from minimum to maximum walkability results in a jump in

the strength of neighbourhood social networks of just under 15% of the variable range

and a jump of nearly a tenth of the range in civic participation. In practical terms, this

equates to a move from minimum to maximum on one of the variables in each index

(with more variables included, each individual component of civic participation is

weighted a bit more lightly). There are some interesting implications to this that will be

drawn out in Chapter 9.

8.6 – Objective walkability and the components of neighbourhood social networks

To explore the data in more depth, regression analyses were run on the individual component variables of each of the component pieces of the social capital index. With the index itself capturing a hugely wide range of behaviours, it is worth looking at which behaviours see variation that can be predicted by looking at the built environment. Table 8.6.1 on the next page breaks down the "neighbourhood social networks" index into three regression models, one for each variable within it.

Two statistically significant models emerge here – Model 1 (Knowing neighbours) and Model 3 (frequency of talking about neighbourhood affairs). In both cases, the magnitude of the relationship is reasonably large, with a jump from minimum to maximum walkability generating an increase of just under 28% of the range of the the "knowing neighbours" and 23.5% of the range of "frequency of talking about neighbourhood affairs". Model 1 is especially strong, with the model predicting more than 22% of the variation in "knowing neighbours" as compared to just over 7% for Model 2. With "knowing neighbours" being measured on a 1-4 scale, the walkability-driven increase is close to one point – the equivalent of moving from "somewhat agree" to "strongly agree" on the statement "You know your neighbours well." With "talking about neighbourhood affairs" measured on a 1-5 scale of frequency, the impact of a jump in walkability is actually similar, at just under one step on the scale (from "sometimes" to "often", for example). These effects are clearly major drivers of the walkability-social capital relationship.

Table 8.6.1 – Objective walkability as a predictor of individual variables (neighbourhood social networks)

Statistic	Model 1: Knowing Neighbours Dependent	Model 2: Sense that neighbours would help out Dependent	Model 3: Frequency of talking about neighbourhood affairs Dependent
Variable	Coefficients		
Objective walkability index	.854**	.205	.938*
Hours/week occupied	-	.001	-
Highest level of schooling completed)	-.139*	.034	-
Length of residential tenure	.296*	.055	.188*
Ownership status		-.005	-
R Square	.229	.017	.073
N	98	98	98

** Significant at the 0.01 level (2-tailed).

* Significant at the 0.05 level (2-tailed).

Note on the models: Control variables that did not achieve statistical significance on each model's first run have been dropped.

Once again, it is worth noting the consistent presence of length of tenure as a significant control. Interestingly, level of education is significant here as well, the first such case in the study. The coefficient, also interestingly, is negative – more education seems to make it *less* likely that someone knows their neighbours. There are some plausible causal stories here that will be explored in the next chapter of this study.

8.7 – Objective walkability and the components of social trust

The social capital index used in this study included 3 measures of generalized social trust – people's sense of whether other people are fair, willing to help, and trustworthy. As shown in section 8.5, there was not a statistically significant relationship

between the overall value of the combined measure of social trust and walkability.

Breaking this combined measure down into separate variables and running a regression

model for each one shows that there is no significant relationship with any of these

component pieces, as shown in Table 8.7.1 below.

Table 8.7.1 - Objective walkability as a predictor of individual variables (social trust)

Statistic	Model 1: Generalized social trust dependent	Model 2: Sense of fairness dependent	Model 3: People are helpful dependent
Variable			
Objective walkability index	.292	-.017	.168
Hours/week occupied	.005	.002	.005*
Highest level of schooling completed)	.037	.065	.021
Length of residential tenure	.070	.007	-.029
Ownership status	-.035	.017	-.069
R Square	.045	.018	.059
N	98	98	98

** Significant at the 0.01 level (2-tailed).
* Significant at the 0.05 level (2-tailed).
Note on the models: Control variables that did not achieve statistical significance on each model's first run have been dropped.

8.8 – Objective walkability and the components of social participation

When broken down into component variables, some interesting relationships

emerge between aspects of social participation and objective walkability. By and large,

there is no significant relationship -- with the exception of participation in organized

activities like sports, clubs, or church services, as shown in Table 8.8.1 on the next page.

Table 8.8.1 - Objective walkability as a predictor of individual variables (social participation)

Variable	Model 1: Frequency of having friends over dependent	Model 2: Frequency of visiting friends dependent	Model 3: Frequency of going out with friends dependent	Model 4: Participating in sports/clubs dependent
Objective walkability index	.021	-.038	.367	.715*
Hours/week occupied	000	.005	.001	-
Highest level of schooling completed)	.235*	169*	.054	.219*
Length of residential tenure	-.084	.030	-.069	.173*
Ownership status	-.314	.106	.066	-
R Square	.113	.065	.043	.089
N	98	98	98	98

** Significant at the 0.01 level (2-tailed).

* Significant at the 0.05 level (2-tailed).

Note on the models: Control variables that did not achieve statistical significance on each model's first run have been dropped.

Looking at Model 4 in more depth, there is limited predictive power (the model only explaining 9% of the variation in participation rates in organized activities). With that said, the coefficient here means that a jump in walkability results in an increase of about 18% on this variable – close to one full step on the 1-5 frequency scale used for it. (a move from "sometimes" to "often," on the question of "how often do you participate in sports and organized activities). It is also worth noting that here again education emerges as a significant control, with more educated people participating more often (as do people who have lived longer in the neighbourhood). There is some impact of tenure,

with each decade in a neighbourhood associated with a jump of just under a fifth of a point on the participation scale.

8.9 – Objective walkability and components of civic participation

The relationship between objective walkability and civic participation, particularly voting, is of special interest in this study. It is easy to see how neighbourhood design that creates more opportunities for casual contact might drive the development of neighbourhood social networks (as the results above have shown). Does this translate to voting behavior, or feelings of political efficacy? This would be an especially interesting result if present in the data – and it appears to be, driven entirely by voluntarism, as Table 8.9.1 on the next page shows.

The first component of the "civic participation" index was a variable measuring political efficacy – whether people felt they could have an impact on the community around them. As per the results of Model 1, objective walkability is not a significant predictor. Interestingly, objective walkability also shows no statistically significant relationship to voting in municipal elections (Model 3) – though it is worth noting that there was very little variation in the sample here. Almost all respondents said they vote "all the time," which is likely inaccurate, given the low turnout rates in municipal elections. Social desirability bias is a convincing explanation here – it may simply have been too embarrassing to admit not voting during an in-person interview.

Table 8.9.1 - Objective walkability as a predictor of individual variables (civic participation)

	Model 1: Political Efficacy Dependent	Model 2: Volunteer Dependent	Model 3: Voting Dependent	Model 4: Councilor Dependent	Model 5: Talk politics with friends Dependent	Model 6: Letter to editor Dependent	Model 7: Public Meeting Dependent
Variable							
Objective walkability index	.235	1.079**	.537	.081	.429	.383	.504
Hours/week occupied	.014**	-	.002	-.005	.006	-.002	.000
Highest level of schooling completed)	.120	-	.158	.062	.156	-.086	.001
Length of residential tenure	.027	-	.312**	.178*	.082	.046	.012
Ownership status	.044	-	-.031	-.009	.307	.414**	-.168
R Square	.127	.068	.117	.074	.066	.104	.032
N	98	98	98	98	98	98	98

** Significant at the 0.01 level (2-tailed).
* Significant at the 0.05 level (2-tailed).
Note on the models: Control variables that did not achieve statistical significance on each model's first run have been dropped

Objective walkability also does not significantly predict the frequency of contacting a city councilor (Model 4), or the frequency of discussing local politics with friends (Model 5). It also fails to significantly predict the frequency of writing letters to the editor (Model 6) or attending public meetings (Model 7).

Walkability is, however, a strong and highly significant predictor of another indicator of civic participation – voluntarism (Model 2). None of the possible control variables were significant in this model. Although the model is not as strong as some of the other component-variable models presented here (accounting for just under 7% of

variation in rates of volunteering), the magnitude is relatively large, with a jump from minimum to maximum walkability generating a move of 27% of the variable range – equivalent to a jump of a bit more than one step on the 1-5 frequency scale.

8.10 Summary of results

The beginning of this chapter laid out the hypothesis for testing: that walkability will drive social capital levels after controlling for education, length of tenure, and available free time. The data support this assertion, with a very important condition: that "walkability" be defined in terms of street layout, using an index that captured the degree of interconnectedness of the streets, their width, and the setback of buildings from them. Alternative measures of walkability – respondents' subjective ratings of their neighbourhood's walkability, or the WalkScore calculator's measure of distance-to-destinations – are not effective predictors of social capital scores in this sample. Other potential independent variables – sense of safety and sense of place – both failed to achieve significance.

The street layout version of walkability has a modest, but consistent and highly significant impact on respondents' overall social capital scores. The relationship is consistent even after accounting for self-selection by removing any cases where the respondent identified a social-capital related reason for moving to that neighbourhood. Most of the posited control variables turned out to lack statistical significance, with the exception of length of tenure in a neighbourhood, which emerged as a secondary driver of social capital.

Since the "social capital" measure was an index variable, it was worth breaking it

down both into its component indices (neighbourhood social networks, social trust, social participation, and civic participation) and further into *their* individual component variables. Regression models were developed for all of these component pieces, and the resulting picture is of a relationship between walkability and social capital driven by two broad components: neighbourhood social networks and civic participation. Social trust was less variable, and does not appear to be particularly driven by walkability. Similarly, most of the measures of social participation showed no significant relationship with walkability, with the exception of participation in organized activities like sports.

Looking in more detail at the component variables, it appears that the relationship between walkability and social capital is driven primarily by a few key relationships. Walkability appears to lead to stronger neighbour-to-neighbour relationships, increased likelihood of talking about local affairs, participation in organized activities, and volunteerism. It does not appear to strongly affect most of the other aspects of civic participation (voting, engagement with elected officials, or attending public meetings, for example), nor does it drive socialization with friends and family.

There are many limitations to the data analyzed here. The sample is relatively small and non-random. The scale of the effects being looked at is moderate. Nonetheless, there does appear to be a consistent, significant relationship emerging from the data, one that fits broadly into the existing literature while expanding on it in some places and challenging it in others. The next chapter will explore the implications of these results both academically and on the streets of St. John's.

Chapter 9: Conclusion

As the journey through the data in the previous section has shown, *where* someone lives, at least in St. John's, does seem to have a measurable impact on *how* they live – and in a way broadly consistent with the small body of literature looking at the built environment-social capital relationship. This final section will pull the data together into a plausible story and examine a number of puzzling results, explore the methodological challenges, and suggest directions both for further research and for municipal policy.

9.1 The causal story

This study tested a single core hypothesis, drawn from the existing literature: that walkability will drive social capital levels after controlling for education, length of tenure, and available free time. At the broadest level, the data show this to be the case – at least within the small, non-random sample used in this study. This, in itself, is significant. This is the first empirical test of this relationship in a Canadian context. With Canadian cities not generally known for their pedestrian-friendliness, it was not a foregone conclusion that this result would hold. If everyone is driving everywhere, would differences in walkability matter? St. John's is certainly not known as a particularly pedestrian-friendly city, at least outside the compact downtown core. It seems, however, that the differences in walkability that do exist between neighbourhoods in St. John's still have an impact.

The more interesting results of this study, though, come from diving a bit deeper into the data. The first stop here is clearly the definition of "walkability". This study was

(perhaps uniquely in the literature) able to test three definitions against each other. The first, and the simplest, was walkability as subjectively assessed by the respondents. Everyone who participated in this study was asked to rate their own neighbourhood on a walkability scale of 1-10. The results here were, put simply, all over the place – uncorrelated with other walkability measures, and highly variable. On the ground, respondents answered this question in a wide range of different ways – the methodological challenges will be discussed at more length a little bit later in this chapter. The dynamics of the other two walkability measures – both based on objective, external data – are in any case more important.

As noted in the "Methods" section of this study, an objective assessment of the walkability of each respondent's neighbourhood was arrived at in two ways. First, their postal code was plugged into an online WalkScore calculator that provides a score (out of 100 points) calculated primarily using measurements of the distance to various common destinations. The second objective walkability measure was constructed using data from this study's built-environment inventory. The inventory recorded street width, the setback of buildings from the street, and the presence of intersections of streets nearby. The "walkability" variable combined these three indicators, based on common understandings of what makes a street pleasant to walk on. Narrower streets mean slower traffic and a visual environment that is dominated more by the buildings along the street than the street itself. The smaller the building setback, the more detail of each building is available to the eye of the passing pedestrian – the idea here being that visual interest is an important part of walkability. Finally, the presence of intersections is an indicator of

variety; having intersections nearby means that pedestrians are likely to have alternate routes available to reach their destination, which makes walking more interesting.

It was this latter measure of objective walkability – based on street design rather than distance to destinations – that was by far the stronger predictor of higher social capital. The implication here is that what matters most is not how *efficient* a neighbourhood is in making it easy to get things done on foot, but how *pleasant* a neighbourhood is to walk around. There is a plausible story here. If (as the literature review suggests), the primary causal mechanism is casual contact between neighbours, then a neighbourhood that encourages, for lack of a better word, "strolling", should actually do more for this kind of interaction than a neighbourhood that facilitates heading quickly off to the store, or to school.

There is another key element to the causal story here, based on a key finding of this study: that self-selection does not seem to be a major factor in the relationship between neighbourhood and social capital score. This is, put simply, a surprise. There is a very plausible-sounding story about how self-selection could play a role: people who are inclined towards a more civically and socially engaged lifestyle might be looking for neighbourhoods that would facilitate it when they look for a place to live. The "feel" or culture of a neighbourhood is certainly something that comes up in conversation when housing choices are being discussed amongst friends. There is also evidence for similar kinds of sorting behaviour – for example, there has been much discussion in recent years of the increasing tendency for people in the United States to sort themselves into ideologically homogenous enclaves (See McDonald, 2011)

Within the survey sample, the people who did identify a social capital-related reason for their choice of neighbourhood showed a distinctly higher than average social capital score – but there were precious few of them. Why might this be? A plausible answer can be framed in terms of four constraints: on information, on choice, on supply, and on survey design.

Accepting, for a moment, that there are people in the housing market who might *want* to self-select into a sociable, engaged neighbourhood, a basic question emerges: could they find one? There is not much in the way of easily accessible objective data about this question. A diligent house-hunter might be able to dig into neighbourhood-level statistics, but that involves a significant amount of research skill. The most reliable way of identifying neighbourhoods like this might be word of mouth – which is fine for people who already have a social network in the city, but not much use to newcomers. Some creative use of Google might reward a house hunter with similar information, but that involves a substantial time commitment and some understanding of how to frame the search terms properly. Real estate agents should also be able to provide some information on the community spirit of a neighbourhood – but agents do not mediate every housing choice, particularly for renters. A walk around the neighbourhood might also provide some insight – but it would only be a snapshot. In any case, while it is impossible to gauge the degree to which imperfect information is a problem without much more research, there are clearly a number of ways in which access to information about the civic and social life of a neighbourhood *could* be constrained.

Imagine, though, that there is something like perfect information in the market here, with house-hunters and renters fully aware of both their own preferences and the

neighbourhoods that would fit them. In such a market, self-selection might still be rare, not because of constraints on information, but because of constraints on choice. The primary constraint here is clearly price. The housing market is just that: a market. Many people might like to live in a neighbourhood with a particular culture, all things being equal – but things are far from equal in the housing market. Choice is constrained first and foremost by price, but also by the location of the home relative to the workplace, by transportation access, by the quality of local schools and services, and a whole host of other factors. This was certainly the dominant thread in respondents' responses to the question ("What made you choose the neighbourhood you live in?") that was used to code for self-selection. By far the most frequent deciding factor was price, followed closely by proximity to work. Pragmatism, it seems, rules the day.

Rolled up inside the "price" constraint is the question of supply and demand. The supply of "active neighbourhoods" is likely quite price inelastic, for the simple reason that it is difficult to build them. The built form that this study associates with high social capital levels – dense neighbourhoods of narrow, interconnected streets with small front yards – is rare in postwar neighbourhoods. Indeed, a common complaint amongst urbanists is that planning rules and building codes have evolved in such a way as to make this kind of neighbourhood not just infrequent, but often illegal. This has the effect of raising the price of housing in these neighbourhoods, pricing people out of the market who might like to self-select into a more community-minded place.

The final constraint on self-selection in this study is of an entirely different sort: a constraint on survey design. This study was based on data collected from respondents who were stopped in public spaces for a brief survey, with no time for follow-up

questions or prompts. The most time-efficient way to get at self-selection was to ask it as an open-ended question about what factors influenced respondents' choice of neighbourhood – the risk, though, is that this captured only whatever factor was immediately top-of-mind. It is possible that, with a bit more digging, self-selection would have been a bigger factor.

That said, it was striking to see how rarely respondents touched on anything related to it, even during relatively extended answers to the open-ended question. This is striking for a number of reasons. Unlike, for example, voting, there is not a clear social pressure to rationalize housing choices in any particular way. Indeed, if there were a social desirability bias at work here, it would likely lead to respondents overstating social capital reasons as they figure out the theme of the study. That clearly did not happen – or if it did, social capital reasons factor in even less than the data show. Housing choices are also usually one of the more thoughtfully considered decisions anyone makes. That suggests that respondents should remember something of the content of that decision-making process, and that if social capital reasons were a major part of it, there is no reason to think that survey respondents would not mention it. It may simply be that a commonplace assumption about how housing choices are made is at least a little bit wrong.

A deeper look into the results provides some further contours to the story. One interesting place to start is the control variables – specifically, the one control variable that was consistent throughout almost all of the regression models built for this study: length of residential tenure. Here, a common-sense intuition (as well as a consistent theme from the literature on all forms of participation) is confirmed, rather than

debunked: the longer a respondent has lived in their neighbourhood, the higher their social capital is, all other things being equal. It would have been surprising *not* to have found this particular result. Social and civic networks take time to build – if this study had showed no impact from length of tenure in a neighbourhood, it would have been reason to question the integrity of the data.

More interesting is a look at the results of the regression models developed to test the influence of different components of social capital. These provide significant insight about how the built environment affects social and civic participation – and equally important, where and how it doesn't. These models show that the relationship between the built environment and social capital is driven by two engines: strengthened neighbourhood social networks, and increased participation in organized activities.

Walkability's powerful impact on neighbourhood social networks further strengthens the case for casual contact as a primary causal mechanism. The data show that, while respondents' broader social lives and friend networks are for the most part uninfluenced by the built environment, people living in more walkable neighbourhoods are knit quite a bit more tightly into social contact with their neighbours. This fits with a "casual contact" thesis, since there is no reason to think neighbourhood design would have a major impact on casual contact with a person's broader social and family circles – but it certainly does have an impact on the frequency of contact with neighbours.

Under the broad heading of "neighbourhood social networks," the survey included indicators measuring how well people know their neighbours, how often they discuss neighbourhood issues and affairs, and their level of comfort and trust in their neighbours. Walkability powerfully drives the first two, while leaving the measure of

trust largely unaffected. This fits with the broader story in both this study's data and the literature, in which social trust is much less variable than other components of social capital at the neighbourhood scale.

When the social capital index is broken down into its component pieces (neighbourhood social networks, social participation, social trust, and civic participation), there are two components that drive the relationship – neighbourhood social networks, as outlined above, and civic participation. Stopping at this level of disaggregation, though, is deceptive. As it turns out, most of the indicators under the broad label of "civic participation" – voting rates, frequency of contact with elected officials, frequency in talking politics with friends – do not have any particular relationship to the built environment. Civic participation is connected to the built environment through only one indicator: participation in volunteering activities. As outlined in Chapter 8, walkability has a strong positive impact on this kind of participation. Indeed, although overall there is no significant relationship between walkability and social participation, once that indicator is disaggregated into its component indicators, the one indicator that does have a statistically significant positive relationship with walkability is participation in organized activities such as sports.

So, why might this be the case? Why would neighbourhood walkability drive people towards participation in organized activities, but not toward greater political involvement? The data from this study cannot really say – this is one place for further investigation. There is, though, a plausible story here about casual contact. Running into neighbours might make it more likely that a person was aware of opportunities for participation in a wider range of activities. If this were the mechanism, the lack of impact

on formal civic participation would make some sense – it seems unlikely that a casual interaction with a neighbour would be the thing that reminded someone that an election was going on.

Taken together, the data make a case, albeit a tentative one, for the ways that walkable neighbourhoods can impact some, but not all, elements of a resident's social capital. Moving someone from an unwalkable neighbourhood to a walkable one should, according to these results, mean that the person gains a significantly stronger local social network, and gets involved in more organized activities. This certainly seems like a plausible story; had the data shown a massive impact on, for example, voting behaviour or social trust, it would have been harder to explain. That said, for a number of reasons these results must be considered tentative at best.

9.2 Weaknesses in the study

This study is far from a definitive look at the ideas it raises. As a Master's Thesis project, that perhaps goes without saying. Nonetheless, it is worth going over some of the particular methodological weaknesses of the study and thinking about how they may have impacted the final results. There were definite weaknesses present in the construction of a sample, in the design of the questions, and the survey procedures – all of which could plausibly have had an impact on the data.

A read through the methods section of this study should make it quite clear that the data is from a nonrandom sample – while some demographic characteristics such as gender were actually balanced quite well, the sample is disproportionately made up of younger people just out of school. It is highly educated and relatively low income. Harder

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to measure are the personality characteristics of the respondents. All the questionnaires were gathered by approaching people in public places; there could be some common characteristic of people who stop for university students bearing clipboards that is also related to social capital. Indeed, it is quite plausible that the people who filled out the survey were unusually participatory – though if this were an across-the-sample skew, it would not necessarily impact the overall results. Anecdotally, in any case, this did not seem to be the case. Respondents were quite diverse in their viewpoints. Some clearly stopped out of curiosity, some out of boredom, and some because they had been students themselves and understood how much of a headache it is to gather survey responses. This, indeed, may explain part of the sample's skew towards the young and well-educated. In any case, there is a clear case to be made for further research using a truly random sample. The sample, of course, was also relatively small: 98 respondents is a good start for a pilot study such as this, but until the results are replicated with hundreds or thousands, nothing definitive can be said.

Some weaknesses in question design also emerged. In particular, open-ended questions about "walkability" seemed to challenge respondents, who had, at times, clearly not spent much time thinking about it. It is also quite likely that respondents felt some social desirability bias in the interview; although the questions were phrased as neutrally as possible, it is not hard to imagine that respondents, stopped on the street for an interview about their levels of participation, would get the idea that participation is good in the eyes of the interviewer. The voting question certainly shows this – almost all the respondents answered that they "always" voted in civic elections, which, given turnout figures, is amazingly unlikely. The overall effect of the question design

challenges is likely quite similar to that of the sampling challenges: an inflation of the overall social capital scores for respondents.

Finally, the study did face some practical challenges that may have impacted the data. The first, appropriately for St. John's, was weather. Several of the survey collection points were located out of doors, and the collection was happening in late winter and early spring – not very pleasant times in St. John's. Although surveys were not collected outside during truly inclement weather, it is possible that the range of weather conditions in the sample did affect the overall mood of the respondents. More directly, it was clear during the survey process that weather was a major part of people's answers to the subjective walkability question. When asked "how walkable would you say your neighbourhood is," numerous respondents replied with something along the lines of "In weather like this? Awful/great/not bad," suggesting that they were thinking about walkability in an extremely time-limited way.

Taken together, these methodological challenges cast some appropriate doubt on the results, although there is no indication that any of them would substantially affect the core causal relationships within the study. The sheer number of indicators used, here, are helpful. Each core variable – on both sides of the relationship – is captured by several indicators. It would take a systematic error across many indicators to induce a major error in the overall results. That all said, there were some head-scratching results. The next section will go over those in a bit more detail

9.3 Puzzles and surprises

One glaring surprise in the data was the correlations (or, rather, the lack thereof) between the different measures of walkability. There was no significant correlation between self-assessed walkability and the objective measure developed based on neighbourhood design. As noted above, though, there were reasons to doubt the results from the subjective walkability question, and to think that the reason for the error was on that side of the correlation. The relationship between the neighbourhood design measure and WalkScore results is much more expected – they are tightly and significantly correlated, as they should be (there are some neighbourhood-design measures used in the WalkScore calculator, although it is dominated by distance-to-destination measures). In any case, subjective walkability is very much the outlier here.

Another surprising result emerges from the breakdown of the "civic participation" variable into its component pieces. Although change in civic participation is a major driver of the social capital-built environment relationship, this is driven solely by the impact of the built environment on voluntarism. Other indicators in the data show that the built environment has a strong impact on how often people talk about neighbourhood affairs. Why would this not translate into action, whether that be voting, contacting a councillor or writing a letter to the editor? It may be a result of respondents understanding the question differently – when asked whether they talked about "what was happening in the neighbourhood," they might have interpreted it as a question about non-political conversations that would not have as strong a connection to other forms of political activity. It is also is quite possible that the last two actions on that list are simply too rare to see a pattern of variation in the size of the sample used for this study. It may

also be that this kind of active political participation is simply not related to contact with other people – it may be more dependent on temperament and preferences. This clearly deserves future research. When it comes to the "did you vote?" indicator, the story is likely one of measurement error. Almost all the respondents said that they voted all the time, which is extremely unlikely, given turnout rates. Given that they were asked the question face-to-face with an interviewer, social desirability bias seems the most likely explanation here.

In a related point, there was no impact between the walkability measures and people's sense of political efficacy – and yet there was strong evidence for walkability being associated with strengthened social networks around these same respondents, which some might be able to leverage for political impact. It may be that respondents do not see the kinds of networks that neighbourhoods promote as useful for political action. It might also be the case that feelings of political efficacy are more psychological than circumstantial.

Another mystery in the data is the role of education as a control variable. As the literature review noted, most of the literature on participation (both social and political), identifies education as the single most important factor. In this study, though, education was almost never a statistically significant control in the regressions. Why might this be? Once again, insufficient variation in the sample seems the likely answer. Fully 54% of people interviewed had a bachelor's degree, far greater than the population average of 15.4%. This, along with the other points raised in this section, clearly push in the direction of further research. The next (and final) section of this study will discuss what

those next steps could look like, and what the practical implications of this study might be.

9.4 Next steps and practical implications

As a pilot study, all the conclusions in these data need to be taken with a quite large grain of salt. Nonetheless, the results are both internally consistent and broadly consistent with the small body of literature already out there. This is a good start. As the last section showed, though, there are clearly mysteries in the data that can only be resolved through a much larger study with a truly random sample. In Canada, this happens to be eminently achievable. Statistics Canada's 2008 General Social Survey on Social Networks has a randomly selected sample of more than 10,000 and contains all the necessary indicators to build an index measurement of social capital quite similar to the one used in this study (Statistics Canada, 2009). Just as importantly, these data can be broken down at the Census Dissemination Area level. This is a geographic unit small enough in size (around 500 people) such that the built environment within that unit is relatively consistent or homogeneous. It should be quite simple to adapt the methodology in this study and check if the conclusions "scale up" and are applicable across other Canadian cities.

Assuming the results in this study do hold, what are the policy implications? It is worth noting here that the core idea for this study emerged from community debates about development policy in St. John's; what do the results add to that conversation? First, they suggest that the current discourse is at least somewhat off-target. The discussion around creating vibrant neighbourhoods has often been framed in the context of increasing the mix of uses in both existing and new neighbourhoods. The new

Municipal Plan for St. John's mentions this numerous times (City of St. John's, 2014). The results from this study, though, suggest that more emphasis should be placed on the social impacts of built form – and specifically on such things as road geometries and widths. There are a number of implications to this shift. On the positive side, these design factors are entirely within control of city planners, in a way that a diversity of uses is not. While planners can (and, indeed, should) be more flexible in zoning to allow diverse uses, simply permitting a use does not make it happen. It is beyond the power of municipal governments to force, for example, a grocery store into a neighbourhood. They are also often at the mercy of other levels of government here – schools are a provincial responsibility, for example.

If social capital can be built into neighbourhoods through road design and layout, cities suddenly have almost total discretion to build neighbourhoods that strengthen social and civic ties. That does not necessarily mean that St. John's, or any other city, will do it. The more technical aspects of city-building (like road design and building setbacks) can be particularly resistant to citizen pressure. These standards are primarily developed internally by engineers and narrowly focused planning staff, who rarely even have direct contact with councilors, or with citizens interested in broader discussions about the impact of design decisions on city life.

There are also some particularly powerful interest groups to contend with in this area. Drivers, of course, are one. The neighbourhoods that scored most highly on the social capital index are not the most car-friendly. Narrow setbacks often mean no driveways, and narrow streets mean challenging street parking conditions. Intersections mean stop signs and traffic lights. Indeed, one of the reasons these kinds of

neighbourhood are often more pleasant to be in is that traffic moves more slowly through them.

A more challenging obstacle may actually be an unexpected one: fire departments and other emergency services. The results of this study suggest that narrower streets with lots of corners are the kind of environment that fosters social capital. It happens, though, that these are not environments that facilitate easy movement of emergency vehicles. Urban issues advocates from around the country often share their stories of running into walls within the fire services and traffic engineering departments of their cities. Indeed, winning an argument with emergency services is a tall order for citizen advocates; it is pretty difficult to argue in public that a city should be willing to accept slower response times when people are in danger for the sake of making a neighbourhood nicer to walk around. Even though fires have become more and more rare (thanks to modern safety codes), cities still carry the memory of earlier days in which catastrophic fires were much more common. St. John's, of course, has burned to the ground several times in its history – so this might prove a particularly difficult obstacle.

That said, there is a recent history in the city of emergency services sitting down with other stakeholders to develop compromise solutions. A quick walk around downtown St. John's (and, indeed, most Canadian downtowns) will pass by many 2-3 story commercial buildings dating from the late 19th and early 20th centuries. Typically made of brick and typically containing ground-level retail, the upper floors of these buildings are also, typically, empty. Modern fire codes forbid their occupation without the addition of expensive (and often impossible-to-build) fire exits, and so they sit empty, all over the country. In St. John's, a multi-stakeholder group worked with fire services to

develop an alternative set of fire-safety regulations for these buildings that provide an alternate (and far cheaper) path to an occupancy certificate (City of St. John's, 2014b). A similar conversation could perhaps be started around road-design solutions that would allow more walkable neighbourhoods, while minimizing the impact on emergency response times.

This line of reasoning is an excellent example of why the results of this study matter. Seemingly small decisions, made by municipal governments operating in a largely nonpartisan context, are not all that often the subject of academic study – but the data gathered in this study suggests that these decisions make a significant impact on the social and civic lives of the people subject to them. These decisions are also often being made in a data-poor context. Municipal governments cannot always afford the time or effort needed to develop in-depth research on the broader implications of their decisions. That is where academic work like this (and, hopefully, follow-up work to generalize and expand on the conclusions) can, and should, fit in.

In a time when "engagement" is the buzzword of the day, citizen advocates can and should make the case that good design is not simply a "nice-to-have" or an aesthetic choice. Instead, it is a simple way to achieve the engaged, vibrant neighbourhoods that every municipal government insists it wants to see.

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