

Neighbourhood Effects in Canada: A Critique

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De plus en plus de chercheurs et de décideurs se préoccupent des effets possibles, sur les gens qui habitent des communautés où l'on observe un haut taux de pauvreté, de vivre dans ce type d'environnement. Dans cet article, je donne une vue d'ensemble de la littérature disponible dans ce domaine, présentée sous l'angle des politiques publiques au Canada. Ensuite, je tire trois conclusions. Premièrement, le risque, pour les ménages canadiens, d'être exposés à la pauvreté est largement inférieur à celui des ménages américains. Deuxièmement, beaucoup d'études canadiennes réalisées sur ce phénomène (appelé « effets de proximité » ou « externalités de voisinage ») ont été faites au moyen d'analyses de régression ; or, cette méthode donne lieu à des biais et à de fausses interprétations. Troisièmement, jusqu'à maintenant, les études les plus concluantes suggèrent que c'est en matière de santé mentale et de propension à la criminalité que l'environnement résidentiel a l'influence la plus importante sur les individus. Par contre, elle n'est que très peu marquée en ce qui a trait à l'autonomie et au développement des enfants ; sur ce plan, des milieux d'interaction plus restreints – les camarades de classe ou les camarades de chambre, par exemple – semblent avoir plus d'effets.

Mots clés : effets de proximité (ou externalités de voisinage), ségrégation par le revenu, capital social, politiques publiques, biais d'omission de variable

A growing number of researchers and policy-makers concern themselves with the possible effects of living in areas with high concentrations of poverty. This paper provides an overview of such literature from a Canadian policy perspective. I draw three conclusions. First, household exposure to concentrated poverty is substantially less than in the United States. Second, much of the existing Canadian research on neighbourhood effects relies on regression analysis, which is prone to bias and misinterpretation. Third, the most persuasive research to date suggests that residential environment matters most to an individual's mental health and exposure to crime, but has little influence on self-sufficiency or child development. Smaller spheres of interaction, such as at the classroom or roommate level, appear to matter more.

Keywords: neighbourhood effects, income segregation, social capital, public policy, omitted variable bias

INTRODUCTION

We interact with people every day. The people we meet can influence us in both positive and negative ways by helping to shape our goals and attitudes, and even by affecting our socioeconomic

well-being. Individuals who are employed may influence their unemployed friends to find jobs, just as young people who smoke cigarettes may influence their peers to smoke, too. Many social scientists and policy-makers are intrigued by the possibility that positive social interactions may be more likely

to happen in some neighbourhoods than in others. While most social programs target individuals and households, programs that target particular communities have the potential to benefit a large number of people more effectively than those that target individuals separately.

Widespread interest in neighbourhoods has grown largely out of concerns for residents living in high-poverty neighbourhoods in the United States. William J. Wilson (1987) was one of the first American sociologists to suggest the notion of a cyclical pattern, wherein crime, unemployment, and poverty perpetuate a poor quality of life for low-income households living in low-income areas. Wilson argues that adults in such impoverished neighbourhoods experience a social isolation that excludes them from the job network system permeating other neighbourhoods, and that children in these communities interact mainly with people who belong to families headed by unemployed parents, with those on social assistance, and with discouraged teachers. Redevelopment, relocation, or subsidizing job and business creation within these communities might help reverse these trends.

Canadian cities also experience substantial levels of neighbourhood segregation by income and ethnicity. A growing number of researchers question whether Canadian social scientists should likewise spend more time thinking about the importance of local communities. As in the United States, no consensus exists over the merits of community-targeted policies. The goal of this paper is to provide a discussion that links theory, evidence, and policy of neighbourhood effects. Although several recent review articles on this topic already exist,¹ this paper aims to provide a primer on neighbourhood effects from a uniquely Canadian policy perspective.

I define *neighbourhood effects* as social interactions that occur in close proximity to an individual's residence, and that affect social and economic well-being. Neighbourhoods differ across many categories, but I focus mostly on differences by af-

fluence and poverty. My goal is to consider potential policies for improving outcomes for residents of these poor neighbourhoods, including relocation policies that aid low-income households in moving to less segregated areas; redevelopment policies that improve the conditions of existing neighbourhoods; and community intervention programs that provide resources at the local, rather than at the family or individual, level.

In the next section, I explore the state of concentrated poverty among neighbourhoods in Canada, and compare this poverty to neighbourhoods in the United States. The comparison is useful for discerning the extent of distressed areas in Canadian cities. The poorest neighbourhoods in Canada differ in at least two major respects from those in the United States: low-income segregation and violent crime both occur much less frequently in Canada. These differences should be kept in mind when trying to extrapolate US conclusions to Canadian contexts.

Theories that suggest neighbourhood effects matter are discussed in the third section. It is also important to consider why neighbourhood conditions may not matter, or may not matter enough for policies directed at communities to have a large effect. I describe how social interactions may strongly influence career and school success, although this does not necessarily translate into important overall effects at the local community level.

The fourth section describes Canadian and American empirical evidence for neighbourhood effects, with results coming from studies using non-random or quasi-random experiments. One of the main goals of this paper is to convey the difficulty in determining whether neighbourhoods matter at all. This research still struggles to identify whether links between neighbourhood conditions and outcomes are actually due to social interactions among neighbours or to underlying family circumstances that brought families to these neighbourhoods in the first place. I argue against regression methods that use observational data. Experimental and ethnographic methodologies

produce more convincing and interpretable results. The paper concludes with a policy-oriented discussion and suggestions for further research.

CONCENTRATED POVERTY IN CANADA AND IN THE UNITED STATES

Before its demolition, Chicago's Robert Taylor Homes public housing development represented one of the poorest neighbourhoods in the United States.² The development included 28 16-storey high-rise apartments, which essentially acted as a concrete "curtain" between these units and traffic passing by on a nearby expressway. In 1999, 95 percent of the housing development's 20,000 residents were without work, and 75 percent of households were single parent. All residents were black, and 82 percent of households were classified as being below the poverty line. The housing project experienced an escalation in crime in the 1980s, and several major street gangs began to regularly occupy the property. Tenants described the gang and drug problem as one of total disruption to everyday life.³ Beatings, shootings, and various other violent crimes happened regularly, which tenants often witnessed (and experienced) first hand.

Just as this Chicago development is among America's most impoverished, Toronto's Regent Park housing project represents one of Canada's poorest neighbourhoods. Regent Park was built around the same time as the Robert Taylor Homes (in the late 1950s) and adopted a similar architectural style as a self-contained downtown community, with no through traffic and little open space.⁴ The project currently houses approximately 7,500 residents in 2,087 high- and low-rise apartment units. In 2001, 67 percent of Regent Park households fell below Statistics Canada's Low-Income Cut-Off (LICO), 56 percent were single parent, and 59 percent of residents had no earnings.⁵

In contrast to the total racial segregation in the Robert Taylor Homes, only 16.5 percent of Regent

Park's population in 1996 were black. The project now comprises mostly immigrants (69 percent), many of whom are recent immigrants, hailing from a wide range of countries including Somalia, Bangladesh, the Congo, Vietnam, China, and Latin America. It is difficult to obtain data to determine the extent of criminal activity by neighbourhood in Canada. However, what little data does exist suggests that Regent Park's residents experience significant crime and drug activity, but at levels that appear much lower than experienced by those living in the Robert Taylor Homes. In 1992, there were 55 reported assaults causing bodily harm on Regent Park property, a rate of about 15 per 1,000 residents (26 per 1,000 households). That number is much higher than the 1995 rate of 1.7 assaults per 1,000 residents in the Toronto Census Metropolitan Area, but it is approximately the same rate for the entire population of Chicago (14.3 aggravated assaults in 1995).⁶

In order to further discuss the state of concentrated poverty nationwide in Canada, we need a metric that applies consistently to thousands of local communities. Census tracts, containing between 2,500 and 8,000 residents, are used most frequently—in part because census tracts are designed to capture geographic and social boundaries that represent common impressions of neighbourhoods, but also in part because they are usually the smallest areas for which descriptive data are available. For a preschooler who has spent most of her young life within a close radius of her home, the neighbourhood of potential influence may consist of an area no larger than the block around her house. For a teenager attending high school, the relevant area of interest may be mainly his school district. In each of these examples, the areas of influence pertaining to the child do not necessarily correspond to the census tract to which the child belongs.

The common practice in the United States is to classify high-poverty neighbourhoods as census tracts with more than 40 percent of households below the poverty line.⁷ The distribution of the poverty

rate by census tract area is not bimodal, with one group of “good” neighbourhoods below this threshold and a separate group of “bad” neighbourhoods above. However, based on site visits and local citizens’ subjective opinions, Jarkowsky (1997) argues that using a 40 percent poverty rate cut-off comes close to matching areas that are “predominantly minority [and] have a threatening appearance, marked by dilapidated housing, vacant units with broken or boarded-up windows, abandoned and burned-out cars, and men ‘hanging out’ on street corners.” Large public housing projects, such as the Robert Taylor Homes development, tend to dominate the few census tracts, with poverty rates above 60 percent.

Table 1 shows the high-poverty neighbourhood incidence for selected cities in the United States and Canada. Using data from Jarkowsky (2003), the table shows that the United States experienced a notable decline in the number of high-poverty city census tracts between 1990 and 2000, falling 27 percent from 3,414 to 2,510. The decline implies a substantial change in US concentration levels of poverty during the 1990s, and suggests that strong economic growth over this period may have helped to reduce city poverty and poverty concentration.

A number of researchers have produced similar results for Canada, defining high-poverty neighbourhoods as census tracts with more than 40 percent of households below the LICO (e.g., Hajnal 1995; McDonnell, Embuldeniya, and Ratanshi, 2004). Table 1 uses this definition to display high-poverty neighbourhood incidence for selected Canadian metropolitan areas between 1990 and 2000, with data from Heisz and McLeod (2004).⁸ In 2000, approximately 900,000 Canadians lived in 234 high-poverty neighbourhoods, with a disproportionately large number of these neighbourhoods located in Montreal. In contrast to the United States, the number of high-poverty neighbourhoods in Canada increased slightly over the decade. For all 27 Canadian metropolitan areas, the fraction living in these areas increased from 4.0 to 4.6 percent, and the frac-

tion in these cities living below the LICO and in a high-poverty census tract increased from 10.6 to 11.9 percent. Using the four censuses over the 1980 to 2000 period, Heisz and McLeod (2004) find that both the portion living in high-poverty areas and the portion of low-income households living in high-poverty areas fluctuated in a see-saw pattern.

Unfortunately, the LICO and the US poverty line are not directly comparable. It should not be assumed that Canadian census tracts that contain more than 40 percent of households below the LICO exhibit similar levels of distress as US census tracts with more than 40 percent of households below the poverty line. I am not aware of any Canadian ethnographic analysis, such as the American ones by Anderson (1999), Jarkowsky and Bane (1991), and Kirschenman and Neckerman (1991), that assesses by case examples the quality of life for residents in these areas. A comparative ethnographic analysis would be extremely helpful in determining just how unfavourable some areas are in Canada relative to the United States; such analysis could provide a better understanding of the quality of life for Canadian residents.⁹

At least one key difference exists between very low-income neighbourhoods in the United States and in Canada: black and Hispanic segregation is crucially intertwined with income segregation in the United States, whereas this is not the case in Canada. Table 2 shows average characteristics of individuals and households within high-poverty neighbourhoods. Labour market outcomes and education attainment vary significantly between poor and non-poor neighbourhoods in similar ways for both countries, but not with respect to ethnic composition. In 2000, half of the American population in high-poverty neighbourhoods were black, and another 28 percent belonged to other visible minorities (largely Hispanic). In other words, about three-quarters of the population living in high-poverty areas in the United States were either black or Hispanic, while only 18 percent of those living in other city neighbourhoods were made up of non-white residents.

TABLE 1
Frequency of High-Poverty Census Tracts in the United States and Canada
Selected Metropolitan Areas for 1990 and 2000

	No. Poor CTs 1990	No. Poor CTs 2000	CMA Pop in Poor CTs 1990 (%)	CMS Pop in Poor CTs 2000 (%)	Poor Living in Poor CT 1990 (%)	Poor Living in Poor CT 2000 (%)	Visible Minority in Poor CT 1990 (%)	Visible Minority in Poor CT 2000 (%)
United States								
New York	279	253	10.2	10.1	31.3	24.9	40.1/40.9	32.5/32.2
Detroit	150	53	9.9	2.4	36.0	10.4	53.9/36.1	16.4/6.9
Chicago	187	114	5.5	2.8	26.4	13.7	45.3/12.4	26.4/4.7
Los Angeles	56	137	3.0	5.9	9.0	14.9	17.3/9.1	21.3/16.9
Seattle	9	4		0.6	5.0	2.4	6.8/8.1	3.4/1.3
All 330 CSMA	3,417	2,510	5.2	3.5	15.0	10.0	30.4/21.5	18.6/13.8
Canada								
Montreal	117	108	9.2	10.9	21.3	24.8		19.3
Ottawa-Hull	12	10	4.0	4.1	11.0	11.1		20.0
Toronto	9	23	1.7	2.7	5.3	7.8		38.8
Edmonton	7	4	4.6	2.4	10.5	6.2		12.8
Vancouver	7	9	2.5	2.4	7.7	6.1		22.7
All 27 CMAs	230	234	4.0	4.6	10.6	11.9		17.8

Notes: High-poverty neighbourhoods are defined as 40 percent or more of households in tracts below the US poverty line or Canadian LICO. CT = census tract. CMA = census metropolitan area.

Source: US figures from Jarkowsky (2003); Canadian figures from Heisz and McLeod (2004).

TABLE 2
Selected Characteristics of Households Residing in High-Poverty and Other Neighbourhoods
Selected Metropolitan Areas for 2000

	Working Age Adults Not Employed (%)		Unemployment Rate		Adults Without High School Education (%)		Black (%)		Visible Minority (%)	
	High-Poverty CTS	Other CTS	High-Poverty CTS	Other CTS	High-Poverty CTS	Other CTS	High-Poverty CTS	Other CTS	High-Poverty CTS	Other CTS
All US CSMA s	59.1	39.4	10.5	4.3	51.7	22.3	49.7	10.3	77.5	17.9
Montreal	49.6	35.4	10.2	5.4	48.3	37.2	5.9	2.4	23.1	8.2
Ottawa-Hull	47.7	39.6	9.0	4.8	43.7	28.6	8.6	2.0	24.7	9.4
Toronto	47.5	32.4	9.9	4.9	45.6	35.6	14.8	5.1	54.2	26.7
Edmonton	40.2	28.2	7.7	4.3	53.4	42.0	2.3	1.0	25.2	12.6
Vancouver	45.2	32.4	9.5	4.5	46.7	34.8	1.8	0.8	41.3	28.6
All 27 CMAS	48.9	32.7	9.7	4.8	47.5	37.1	6.0	2.3	26.8	14.5

Notes: High-poverty neighbourhoods are defined as 40 percent or more of households in tracts below the US poverty line or Canadian LICO. CT = census tract.

Source: US figures from Jarkowsky (2003); Canadian figures from Heisz and McLeod (2004).

In Canada, only 6 percent of the 1996 population in high-poverty neighbourhoods were black, and less than 30 percent of all visible minorities (mainly immigrants from many different origins) resided in these areas, compared to 15 percent of all visible minorities in other neighbourhoods. Thus, the relationship between ethnic segregation and income segregation is much less in Canada, partly because many recent immigrants first settle in poor immigrant enclaves but later move to more affluent neighbourhoods, where their population share scarcely differs from that of the city as a whole. In addition, many Canadian immigrants living in poor ethnic enclaves share their community not only with their own minority group but also with low-income migrants from many other visible minorities.

Another key difference between Canada and the United States is crime. Gannon (2001) documents much higher rates of violent crime in 2000 for US cities than for Canadian ones. In US cities, for example, per capita homicides and aggravated assaults were 3.1 and 2.6 times higher, respectively. In the three largest cities of each country, homicides in the United States exceeded those in Canada by a factor of 4.5. No existing study to my knowledge compares concentrated neighbourhood crime, but the well-documented finding that most violent crime remains heavily concentrated in low-income neighbourhoods at least suggests that high-poverty areas in the United States and Canada also differ significantly by crime intensity.¹⁰

Concerns about high-poverty neighbourhoods also depend on how long individuals who move to these places stay. Most new entrants into high-poverty neighbourhoods leave within five years. Frenette, Picot, and Sceviour (2004) find that individuals and families who move into high-poverty neighbourhoods in Montreal, Toronto, and Vancouver stay for an average of 3.8 years before moving to less concentrated areas. However, the longer the period of time that households live in high-poverty neighbourhoods, the less likely they are to leave. Approximately one-third of households moving into

these places stay past six years. Quillian (2003) obtains similar results for the United States: among low-income blacks, he estimates that more than half of those entering high-poverty neighbourhoods leave within three years. Accounting for re-entry, he estimates that the mean length of stay for entrants into high-poverty neighbourhoods is 5.4 years over a 10-year period.

So, to set the scene before examining evidence of neighbourhood effects, we should keep in mind that many neighbourhoods in Canadian cities are certainly poor, yet do not exhibit the same degree of crime and racial segregation that occur in high-poverty neighbourhoods in the United States. High-poverty neighbourhoods in Canada contain more immigrants (especially recent immigrants), most of whom move out of these neighbourhoods within five years.

WHY MIGHT NEIGHBOURHOODS MATTER (AND WHY NOT)?

A neighbourhood effect can be discussed more broadly as a type of group effect. A group effect is a social interaction that occurs within a group that affects social and economic well-being. Individuals can be classified into many groups. Beyond the classification of where an individual lives, she can, for example, be classified according to race, ethnicity, family, friends, classroom, and occupation. The main idea is that at least some members of a group have significant influence on other members' outcomes. Theorists who study group effects still use models in which individuals take into account their own preferences, beliefs, and constraints. What's added is the possibility that group members can influence these characteristics.¹¹

Perhaps the most intuitive explanation as to why social interactions affect outcomes comes from using peer group or role model effects. Role model effects occur when individuals in a group are influenced by earlier behaviour or characteristics of older

members in the group. Peer effects differ from role model effects in that they occur contemporaneously, so that one individual may cause another in the group to change her behaviour, which, in turn, may cause another group member to change his behaviour, and so forth. This “social multiplier” process makes it possible for a single member or for multiple members to change accepted norms for the entire group.

Researchers such as Akerlof and Kranton (2000) and Durlauf (2002) have proposed several underlying explanations as to why role model and peer effects produce imitative behaviour. The most common explanation is that people derive happiness from the feeling that they belong to a group. According to this model, people make decisions based not only upon economic opportunity but also upon whether their decisions conform to (or deviate from) choices made by others with whom they identify. There is a wealth of evidence within the body of psychology and sociology literatures on the importance of these effects (e.g., Haslam 2004).

Neighbourhood effects are often thought of by researchers as group effects at the residential level. Epidemic theory is of particular interest in regard to high-poverty neighbourhoods (Schelling 1978; Wilson 1987; Wilson and Kelling 1982). In epidemic models, neighbour interactions are not important enough to influence socioeconomic well-being until residential conditions deteriorate past a particular threshold, or “tipping point.” The rate of deterioration escalates after neighbourhoods at the tipping point experience a small rise in crime, vacancy, or unemployment, which triggers flight among the more affluent and working-class households, thus leaving behind a disproportionate number of poor and unemployed residents.

The existence of epidemics has important implications for policy. If tipping points exist, then addressing social problems in communities around this break point would go a long way toward preventing a multiplier effect of worsening outcomes.¹² On the other hand, if social interactions matter

within both poor and rich neighbourhoods, it is unclear whether helping relocate poor families to more affluent neighbourhoods would reduce overall exposure to unemployment and crime. Positive group effects for some families may be offset by negative group effects for residents of the neighbourhoods into which these families move.

In addition to role model and peer effects, another explanation as to why group effects may occur at the residential level is that people gather opinions and beliefs from what they observe at the neighbourhood level. The information that an individual uses to draw inferences (about career opportunities and returns to education, for example) may differ depending on where she lives. Wilson (1987) describes how high-poverty neighbourhoods may affect a person’s beliefs:

The patterns of behaviour that are associated with a life of casual work (tardiness and absenteeism) are quite different from those that accompany a life of regular or steady work (e.g., the habit of waking up early in the morning to a ringing alarm clock). In neighbourhoods in which nearly every family has at least one person who is steadily employed, the norms and behaviour patterns that emanate from a life of regularized employment become part of the community gestalt. On the other hand, in neighbourhoods in which most families do not have a steady breadwinner, the norms and behaviour patterns associated with steady work compete with those associated with casual or infrequent work. (as cited in Durlauf 2002)¹³

While group effects may be large, group effects at the neighbourhood level need not be. For social interactions to matter at the neighbourhood level, social contact must depend significantly on where an individual resides, and neighbour relationships must be important enough to influence social and economic well-being. Compared to the entire set of people we regularly connect with in important ways, encounters due to residential location may be small. Let us consider my own census tract as an example: there are

about 4,000 people in my tract, a number that is higher since we include people who not only live in this area but also those who work in this area. I know perhaps 100 of them by face, and 15 or so by name. If I choose to limit my exposure to these people, it is relatively easy for me to do so. Contact with others outside my community (e.g., at running practice, work, parties, and so forth) may be more important. Examining my census tract illuminates another complication in measuring neighbourhood effects: that is, these tracts may matter to some individuals, but not to most. In this case, average neighbourhood effects may be small, which makes the task of measuring neighbourhood effects and interpreting them all the more difficult, since estimates are often recorded as averages.

An understanding of the importance of neighbourhood effects should take into account how people decide where to live and when to move. Income and wealth clearly help predict where individuals reside, and a growing body of research documents peoples' preferences for living close to work, as well as close to individuals with the same ethnic background (e.g., Bayer, McMillan, and Rueben 2002). This pattern of similar people residing in similar neighbourhoods severely complicates the estimation of neighbourhood effects. Neighbours may have similar peers and role models, not because they live together, but because they come from similar backgrounds. Addressing this complication often involves understanding why some people with similar backgrounds live in different neighbourhoods. Unfortunately, these reasons are often unknown. Because of these difficulties, most empirical papers on this topic focus on estimating whether neighbourhood effects exist at all, rather than attempting to further disentangle the kinds of neighbourhood effects that are most salient. Some progress has been made, and this is discussed in the next section.

EVIDENCE OF NEIGHBOURHOOD EFFECTS

Ethnographic Studies

Some of the most persuasive evidence supporting the importance of neighbourhoods comes from

ethnographic studies vis-à-vis case study observations and interviews. Ethnographers working on this subject follow residents of high-poverty neighbourhoods and assess how living arrangements affect them. Anderson's (1999) conclusion in his study of inner-city violence exemplifies the sorts of insights that one can glean from these studies:

Neighbors in the inner city are encouraged to choose between an abstract code of justice and a practical code geared toward survival in the public spaces of their community. Increasingly, inner-city residents are opting for the code of the streets, either as a conscious decision to protect themselves and their self-esteem or as a gut reaction to a suddenly dangerous situation. Children growing up in these circumstances learn early in life that this is the way things are, and the lessons of those who might teach them otherwise become less and less relevant. Surrounded by violence and what many view as municipal indifference . . . the decent people are finding it increasingly difficult to maintain a sense of community. . . . A vicious circle has thus been formed. (324-5)

Other examples in support of the importance of neighbourhoods include Wilson (1987), who documented the exodus of middle-income blacks from inner cities in the 1980s as neighbourhood conditions deteriorated. A student of Wilson's, Sudhir Venkatesh, spent over a year living with gang members in Southside Chicago in the high-poverty neighbourhood of Robert Taylor Homes. Venkatesh's (2000) research paints a fascinating picture of community dynamics among various groups of tenants. More recently, Klinenberg (2003) interviewed low-income blacks and Hispanics, who describe how social isolation worsened the impact of a 1995 heat wave. Most of these studies describe neighbourhood effects working via role model influences and social support networks, although none are written with the express purpose of discerning which effects are most important.

Ethnographic studies are limited by their specificity. From them, we cannot predict how

similar persons would have fared in different environments, or how different persons would have fared in similar environments. Both consciously and unconsciously, ethnographers' prior beliefs determine what subject matter they include (and exclude) in their reports. Nonetheless, studies such as those by Anderson (1999), Klinenberg (2003), and Venkatesh (2000) offer persuasive examples of the important roles that neighbourhoods play in affecting well-being. Since all these studies focus on the poorest residential areas in the United States, they may not relate well to the Canadian context. Similar ethnographic studies using Canadian neighbourhoods would be valuable but, unfortunately, I am not aware of any that exist.

Statistical Analyses

It has proven difficult to produce convincing evidence of neighbourhood effects using formal statistical analyses. For us to try to understand why this difficulty exists, consider the following typical example in Kohen et al. (2002). Here, the authors estimate neighbourhood effects on preschool behaviour problems and verbal ability. First the authors split their sample of children by preschoolers residing in low-, middle-, or high-income neighbourhoods (they classify neighbourhoods by the proportion of households in a city block with incomes less than \$20,000). Their study concludes that children in high-income areas outperform children in low-income areas.

In order to account for the obvious fact that households differ across neighbourhoods, the authors employ multivariate regression to create better comparison groups. The objective of this methodology is to predict how performance would differ if a child who lived in a low-income neighbourhood instead lived in a high-income neighbourhood, *with all other family circumstances intact*. Essentially, multivariate regression attempts this thought experiment by matching individuals with similar observable characteristics, yet who live in different neighbourhoods, thus attributing outcome differ-

ences to neighbourhood effects. Using this approach, Kohen et al. (2002, 108) conclude:

Neighbourhood conditions have an impact on young children's competencies and exert their effects prior to the beginning of formal education. Findings from this study suggest that neighbourhoods must provide resources for families and be safe and free of violence, with additional benefits accruing to those that have shared values and expectations.

The matching analogy applies only when there exists a considerable overlap of individuals with similar characteristics living in different neighbourhoods. If individuals living in different neighbourhoods are not observationally similar, then regression analysis relies heavily on the assumption that other individual background effects on outcomes are linear. The linear-estimated relationship between the outcome and individual characteristics for people within the same neighbourhood is used to control for outcomes across neighbourhoods. However, any non-linear relationship violates this model and biases the neighbourhood effect estimate. The fewer the number of similar individuals across neighbourhoods, the less credible regression analysis becomes.

The main problem with regression methodology is that it is unlikely that family circumstances are the same among those living in significantly different neighbourhoods. Those who use regression must assume that the reasons why observationally equivalent individuals live in different neighbourhoods are unrelated to subsequent performance. Controlling for more and more family background circumstances only increases the mystery as to why similar families would reside in different places (especially if neighbourhood effects do matter). In the private housing market, we should expect individual characteristics to differ across neighbourhoods, whether or not we observe them. If we cannot explain exactly how similar households end up in contrasting neighbourhoods, we cannot exclude the possibility

that unobservable reasons that account for residential differences also explain outcome differences.

Another problem with regression analysis is that background controls may be measured with error, which leads to systematically overestimating neighbourhood effects. Consider the example of using parental income as a control variable for children's education attainment while estimating the effect from living in a wealthy neighbourhood. Suppose there really is no neighbourhood effect, but that children from wealthy families tend to attain more schooling than those from less wealthy families. We should control for parental wealth, not income, since wealth better captures financial status of the parents and also better predicts neighbourhood location. Annual income proxies for wealth but is measured with error: some years annual income is above normal, some years below.

The regression analysis controlling for income treats a wealthy family who is living in a wealthy neighbourhood, yet who has a temporarily low income, as though they were a less well-off family living with more well-off neighbours. Based on income alone, the regression application predicts that a child from this family will attain fewer years of schooling than other children in the same neighbourhood. If we controlled correctly for wealth, we would predict the same number of years. Instead, regression analysis attributes the child's better-than-predicted performance to living in a wealthy neighbourhood. When control variables that help to predict both neighbourhood sorting and the outcomes of interest are measured with error, we generally end up with biased neighbourhood effect estimates.

The bulk of the literature using regression and hierarchical linear models finds evidence of neighbourhood effects.¹⁴ Often cited examples from the United States include Brooks-Gunn et al. (1993), Corcoran et al. (1992), Crane (1991), and Datcher (1982). Canadian studies tend to focus more on child

development and health. More recent research includes Boyle and Lipman (1998); Curtis, Dooley, and Phipps (2004); Dunn and Hayes (2000); Hertzman, Brooks-Gunn, and Kohen (1999); Hou and Myles (2004); Kohen et al. (2002); Lytton and Pyryt (1998); Ma and Klinger (2000); Romano et al. (2005); Tremblay et al. (2001); Wheaton and Clarke (2003); and Wilson et al. (2004).

A policy-maker with a strong prior belief that neighbourhood effects matter would not have that belief seriously challenged by this body of work. However, many of these studies do not make explicit the assumptions required to draw causal inferences, nor do they address head-on the potential for biased estimates. Ginther, Haveman, and Wolfe (2000) show that the magnitude and statistical significance of regression estimates are often not robust to different choices of neighbourhood quality and family background controls. Nor do these estimates aid in understanding what policies would be effective if neighbourhoods did, indeed, matter, since explanations as to why similar individuals end up living in different neighbourhoods remain unknown. Without plausible reasons why similar households sort into neighbourhoods for reasons unrelated to the outcomes that interest us, regression analysis thus acts on the faith (assumption) that bias from omitted variables and measurement error is negligible. Studies that fail to address the pitfalls of regression will produce neighbourhood effect estimates that continue to generate grave skepticism among many social scientists and statisticians.¹⁵

Experiments with Random or Quasi-Random Assignment

With random or quasi-random assignment, the reasons why similar families end up in different neighbourhoods are known. This knowledge helps substantially when estimating neighbourhood effects, understanding why they occur, and drawing policy conclusions. Individuals randomly assigned to live in or to move to "good" environments versus others selected to live in "bad" ones are initially (on

average) both the same. Subsequent differences in outcomes between these two groups can credibly be interpreted as having been caused by the original difference in location assignment.

Opportunities to carry out such evaluations are rare. Sometimes organizations sponsor social experiments that randomly select families or communities to participate in programs that could potentially generate benefits for them; researchers monitor outcomes of both those who are chosen for the program and those who are not. Occasionally, natural experiments happen when a particular event occurs or a program is set up in such a way that generates changes to residential environments, as if those changes happened by chance.

Random assignment eliminates biased neighbourhood effect estimates that arise from choice in the housing market; however, there are drawbacks to this approach. The results from an experiment apply only to the affected group; therefore, such results cannot be extrapolated to a more general population. The experiment also does not provide information on the overall impact were it to be implemented on a larger scale. For random assignment into different neighbourhoods, it is impossible to determine which aspects of the different neighbourhoods lead to improved outcomes. Meyer (1995) critiques the benefits and pitfalls of experimental studies in more detail. Several natural and true experiments that look for evidence of neighbourhood influence are discussed below.

1. Housing Vouchers and Building Demolitions to Housing Projects in Chicago. Most black families who are given housing vouchers that would allow them to leave highly segregated public housing projects do not end up in substantially different neighbourhoods. Jacob (2004) examines families who were offered housing vouchers allowing them to move from buildings in Chicago housing projects set for demolition (including Robert Taylor Homes discussed previously). Many families chose to transfer to other public housing units. Families who did

take up the voucher relocated close to their original residence, and therefore very few students changed schools. Nevertheless, average census tract poverty rates for families given the vouchers did fall significantly. Jacob compares education attainment outcomes for children who moved because of building closures. After five years, he finds that building closures had no impact on children's math test scores, attendance, retention, or dropout rates.

2. The Moving to Opportunity Program. The US Department of Housing and Urban Development created the Moving to Opportunity (MTO) Program specifically to examine neighbourhood effects.¹⁶ Volunteers (mostly black and Hispanic single mothers) from some of the largest public housing projects in five major US cities (Boston, New York, Baltimore, Chicago, and Los Angeles) were randomly assigned into three groups. The Section 8 group was offered vouchers to help subsidize rental apartments on the private household market. The experimental group was given vouchers only for apartments in census tracts where fewer than 10 percent of households were below the poverty line. Initially, most families resided in census tracts with more than 50 percent poor inhabitants. The control group was not given any vouchers, and had to move without assistance if they wanted to leave.

There are two very important characteristics of the MTO program. First, MTO was a true experiment: families who were offered vouchers and assistance to move from their current public housing project residence were randomly selected from a set of volunteers who wanted to participate in the program. Second, the program targets the most disadvantaged families living in some of the most disadvantaged places. The literature on neighbourhood effects stems from concern for people living in extremely poor and distressed neighbourhoods, and the MTO program targets exactly these residents. If neighbourhood differences matter at all, neighbourhood effects should show up in the MTO experiment. The program was thus set up to generate a contrast where one would expect to see an effect.

By far, the single most important reason that residents wanted to participate in the MTO study was their desire to move away from crime-ridden areas. Not surprisingly, perhaps the most dramatic effects of the experiment were on parents' responses to neighbourhood satisfaction, feelings of safety, and mental health. When comparing parents in the control group to parents selected for the experimental group who moved under the program, the share who reported feeling safe at night climbed from 55 percent to 86 percent five years after the move. The number of parents who witnessed illegal drug activity in the past 30 days fell from 45 percent to 20 percent. The share who reported being satisfied or very satisfied with the current neighbourhood increased from 48 percent to 77 percent. Parents were also 5 to 10 percent more likely to report feeling calm, rather than feeling worried or depressed.

Aside from these gains, however, the MTO experiment found virtually no other positive effects from moving to a low-poverty neighbourhood after four to seven years. The offer of a housing voucher had no effect on adult earnings, employment, or receipt of public assistance. Children in the treatment group also showed no improvement in a wide range of school performance measures, which included achievement scores, high school dropout rates, and post-secondary enrolment. There were, however, some important gender differences in the effects on a variety of behavioural and health outcomes. Some girls in the treatment group experienced moderate reductions to their levels of stress and depression, perhaps due to the decrease in arrests for violent crime. Meanwhile, boys experienced an increase in behaviour problems and drug use, along with a rise in arrests for property crimes.

Clearly, at least some families benefited from the relocation. However, these gains need to be weighed against the financial costs of the program, and against the potential negative effects on residents of the census tracts into which the MTO families moved. While MTO families in the treatment group felt safer and were generally pleased with their neighbourhood, this is most likely in direct contrast

with how neighbours would feel if the MTO program were implemented on a larger scale.

While the MTO program offers some of the most definitive evidence of the existence of neighbourhood influences, there are some important limitations. First, the program estimates treatment effects based on low-income adults and children who had been living in highly segregated areas for potentially quite some time; it is possible that the impact from having lived in very distressed housing projects dwarfs subsequent impacts from moving. Second, the experiment involved moving to better neighbourhoods for both the Section 8 and the experimental groups, while the control group did not have to move. There may be additional effects from having to relocate that cannot be disentangled from the independent effects of the change in neighbourhood environment. Third, not every family randomly assigned to receive a voucher was able to find a unit into which they wanted to move, that met the Section 8 Housing Quality Standards and, lastly, that had a landlord who would accept the voucher.¹⁷ About 47 percent of the families assigned to the experimental group moved under the program, while 62 percent of the families assigned to the Section 8 group participated. Families who moved may have been exceptionally motivated, and so the effects of moving may not reflect the effects for the entire sample. Fourth, participants in the Section 8 and the experimental groups moved to substantially less poor neighbourhoods, but not to ones that were substantially less segregated by race. Thus, the experiment cannot explore the effects of moving to substantially less racially segregated areas upon mostly black families. Fifth, the average difference in neighbourhood conditions between those who were offered the voucher and those who were not narrowed somewhat after subsequent moves by both groups. However, the conditions still remained significant. After four to seven years, the average neighbourhood poverty rate for the control group was 39 percent, while the average for the experimental group who initially moved was 20 percent. Sixth and finally, the MTO studies do not extensively

investigate the potential negative impact on the households in neighbourhoods into which MTO participants move.

3. Living in Large and Small Public Housing Projects in Toronto. The varied types of public housing projects in Toronto provide another way for us to examine neighbourhood effects in a quasi-experimental setting. Before the early 1980s, Toronto public housing applicants were assigned points in a system based on housing need and financial distress. Those individuals who were deemed most in need of subsidized housing (those with the most points) were offered units as they became available. Applicants had virtually no control over which project was offered to them. Some people ended up in one of the few very large projects accommodating several thousand residents, such as Regent Park; others ended up living in townhouses, lodging far fewer inhabitants, in projects near more residential and middle-income areas. City-block and census tract characteristics varied considerably across each project. In census tracts surrounding the eight largest projects, the share of households below the LICO was more than double that of the smallest projects (61 percent versus 25 percent, respectively).

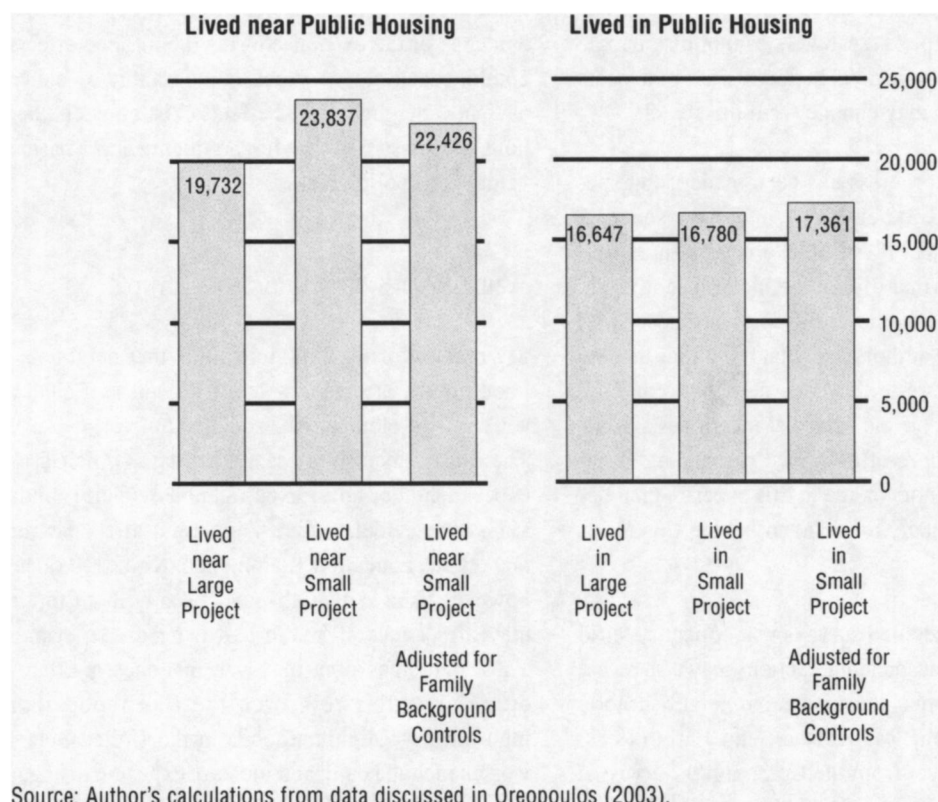
In a previous paper (Oreopoulos 2003), I used administrative data to track children who grew up in these projects, data which followed them until they were more than 30 years of age. The data and the quasi-experimental nature of the application process provided a unique opportunity to compare long-term measures of total income, wages, and public assistance among children who grew up in substantially different housing projects. The analysis found no difference in these outcomes across projects. While living conditions and exposure to crime varied substantially, no differences were found in eventual earnings, unemployment likelihood, and public assistance (even among youths who lived in projects for more than five years).

However, not everyone in the sample ended up poor. Some youths from public housing went on to

do quite well as adults in the labour market, with wages well above the city average. When a child from a family living in public housing grows up to escape poverty, chances are good that siblings will do the same. For example, the correlation between the earnings of two brothers was .26; this indicates that approximately 26 percent of the total variance in earnings in the sample of children from public housing can be accounted for by characteristics common among siblings—characteristics that we may or may not be able to observe. This number is similar to the correlation between brothers' earnings over the entire city. However, earnings correlations among children from the same project are zero. Therefore, while the fact that some children ended up earning high wages as adults and others ended up earning low wages can largely be attributed to family differences, none of this variation can be accounted for by project differences.

Figure 1 offers an example wherein a causal interpretation of regression results goes astray. The first and second bars show average adult earnings among children who lived in low- and middle-income census tracts in Toronto, respectively. Those from low-income neighbourhoods lived close to the seven largest housing projects in the city. Sixty-one percent of households in these low-income tracts were below the LICO, whereas only 25 percent were below the LICO in the middle-income tracts. Comparing the two bars shows that the earnings of adults from the high-poverty neighbourhoods are 19 percent lower than that of adult wage earners from the middle-income neighbourhoods. For the third bar, I first regress earnings with respect to the neighbourhood in which a child grew up, plus family background controls for parental income, parental marital status, years any parent was on social assistance, and family size at the time the sampled individuals were teenagers. I then estimate from this the conditional earnings difference predicted between similar families living in the two neighbourhoods. The result suggests that growing up in low-income Toronto neighbourhoods, on average, lowers adult annual earnings by 12.8

FIGURE 1
 Estimated Average Annual Earnings of Adults Ages 29–35 Who Once Lived near and in Toronto Public Housing



Source: Author's calculations from data discussed in Oreopoulos (2003).

percent. Literally speaking, if we were to move a child from a poor area to a middle-income neighbourhood, that child would be much more likely to earn substantially more money as an adult.

The right-hand set of bars shows the same analysis for the sample of children who actually lived in public housing projects in both neighbourhoods. In contrast to the previous findings, children from the large and small housing projects earned, on average, the same amount (whether or not taking into account family background). The main difference between the two samples is that little is known about the circumstances by which children in the first sample ended up living in these contrasting neigh-

bourhoods; in contrast, children in the second sample were likely assigned to the different neighbourhoods, since families applying for public housing had no say as to which apartment was offered them. The quasi-experimental nature of the public housing sample leads to fewer biases from unobservable neighbourhood selection and, in this case, to dramatically different conclusions about the extent of neighbourhood influence on earnings.

New Data Sources

The pathways through which neighbourhood characteristics affect outcomes are not well understood. Few papers link specific theories as to how residential environment influences behaviour. Most

researchers struggle to produce credible evidence of the very existence of neighbourhood effects, let alone attempting to explain *why* they exist. By randomly assigning families to different neighbourhoods, for example, researchers cannot disentangle peer effects from role model effects, since both peers and role models may change from the switch.

Some recent progress has been made using specially designed experiments and data sources. Bobonis and Finan (2006) make use of an experiment in Mexico that offered financial incentives to encourage low-income children to attend school more often. The authors find that moderate-income children who were in the same neighbourhood but who did not receive the financial incentives also attended school more often. Since parents and other role models did not change in this experimental design, the most likely mechanism behind this result is peer effects.

Analysis of detailed surveys that collect specific information about social interactions may also reveal more about the mechanisms behind neighbourhood effects. Sampson, Raudenbush, and Earls (1997) used a new dataset from the Community Survey of the Project on Human Development in Chicago Neighbourhoods (PHDCN) to measure collective efficacy (which they define as a combination of social trust, common values, and social interaction within neighbourhoods). The PHDCN collected neighbourhood quality data by videotaping street and housing conditions from a surveillance camera located in a van. Researchers later coded the videotapes, noting many specific levels of distress and social activity.

The project also interviewed almost 9,000 respondents from all neighbourhoods, asking them questions about social interactions, such as, "About how often do you and people in your neighbourhood do favours for each other?" The project has found that, after controlling for social composition, collective efficacy relates strongly to neighbourhood levels of violence, personal victimization, and homi-

cide. This relationship could still be due to non-random sorting across neighbourhoods, but the findings offer new insights about how neighbourhood social interactions occur. Quasi-experimental evidence of the existence of neighbourhood effects combined with survey and ethnographic evidence as to *how* neighbourhood effects exist may together hold the most promise for producing information valuable to policy-makers.

WHERE DOES THE EVIDENCE STAND?

My reading of the literature finds that neighbourhood effects are less important to self-sufficiency and child development than many intuitively believe. The most persuasive research to date, which uses experimental or quasi-experimental evidence, finds almost no evidence that neighbours affect labour market and education attainment outcomes. It does, however, find that high-poverty neighbourhoods may affect mental health and exposure to crime. These outcomes alone may warrant concern. Ethnographic studies reinforce the likelihood that high-poverty neighbourhoods in the United States worsen mental health and increase exposure to negative role models. These studies offer no further information about whether such effects extend to high-poverty neighbourhoods in Canada, or to more moderate- and high-income areas. Canadian evidence relies mostly on regression. Studies that use regression with non-experimental data should not be given much weight because of their likelihood for bias, often toward the conclusion that neighbourhoods matter. Establishing a pilot project, like the Moving to Opportunity Program, would offer fascinating new insights on the importance of neighbourhoods in Canada and, in my opinion, would be well worth the cost. More studies that use natural experiments would also help us draw stronger conclusions.

Evidence of group effects appears more conclusive when looking at classmates, roommates, and friends, as opposed to neighbours. At the classroom

level, for example, Hoxby (2000) finds that Grade Three boys and girls perform better when a class contains (for idiosyncratic reasons) a higher portion of girls. Graham (2007) also finds large peer group effects after random assignment of better performing students into different classrooms. At the roommate level, Sacerdote (2001) finds small but significant effects of roommates' grade point average (GPA) on one another. Kremer and Levy (2003) also find that males are more likely to score low on their GPA when randomly assigned to roommates who reported drinking in the year prior to entering university. Carrell et al. (2006) exploit random assignment of students into squadrons and dorm rooms at the US Air Force Academy; students spend virtually all of their time interacting within a squadron in their first year of the program. The authors find large peer effects on academic and athletic performance from squadron and leader assignment, although not from roommate assignment.

The disparity between small group effects at the neighbourhood level as compared to large group effects at the classroom and roommate levels may be reconciled by noting that individuals have more control over their social interactions in a neighbourhood setting. Roommates and classmates are harder to avoid.

CONCLUSIONS

Researchers' interest in neighbourhoods is building within Canada; this is in keeping with an increased focus on the importance of social networks in promoting well-being and growing ethnic diversity within large cities. In some cases, policies directed at reinforcing positive social interactions within communities may offer more potential for improving well-being than would spending the same resources on individuals directly. Redevelopment or relocation, for example, may help prevent a neighbourhood from becoming infested by crime and decay, and strengthen positive community relations. However, this paper argues that there are a number

of important issues to consider before implementing such community-based policies.

First, household exposure to high-poverty neighbourhoods in Canada is small. About 10 percent of all low-income households live in low-income areas where more than 40 percent of residents fall below the LICO. The average length of time spent in these neighbourhoods is approximately four years. About one-third of households living in low-income neighbourhoods leave within two years, but another third remain after six years. Much of the research on high-poverty areas is American in origin, but the level of distress within high-poverty neighbourhoods in Canada is not the same as in the United States: Canadian low-income neighbourhoods experience much lower levels of crime and visible-minority segregation than is experienced in US low-income neighbourhoods. Many households living in Canadian low-income areas are recent immigrants who move out of such areas within five years.

Second, much of the existing Canadian research on neighbourhood effects relies on regression analysis, which is prone to bias and misinterpretation. Essentially, regression analysis requires an assumption that similar households living in different neighbourhoods do so for reasons that do not alter subsequent outcomes of interest. This assumption is tenuous, since the many location options that face households and the many factors that determine the location decision cannot be observed by researchers. Most researchers have moved away from using this approach to test for the significance of neighbourhood effects. The potential for measurement error and omitted variables bias are difficult to overcome. Alternative approaches, such as using natural experiments, instrumental variables, and detailed ethnographic studies, offer more convincing results.

Third, the most persuasive research to date suggests that the residential environment matters most to an individual's mental health and exposure to crime, yet has little influence on self-sufficiency and

child development. Studies that exploit random or near-random assignment into different public housing environments find almost no difference in subsequent earnings, education attainment, unemployment, and social assistance outcomes. Among low-income households, avoiding crime appears to be the dominant factor influencing families' decisions to move away from high-poverty neighbourhoods. Poor families able to move away from low-income areas were much more likely to report feeling safe, calm, and more satisfied with their residential environment. However, relocation had no impact on other parental socioeconomic outcomes, and, furthermore, the move had a potentially negative impact on boys' behaviour. Overall family differences seem to be much more important determinants of career success and job security, while social interactions at the classroom level seem to matter more than at the neighbourhood level.

Missing from much of this analysis are the potential costs involved in relocation or redevelopment policies. Costs arise not only from financing community-related projects but also from externalities exerted upon neighbours that arise from implementing such policies. Subsidizing low-income families to live in better suburban communities would obviously impact the families currently living in these areas. Redevelopment of low-income communities might alter housing prices, making it more difficult for the families who were originally targeted to live in the area to afford such homes. Removing or retrofitting public housing projects might also lead to fewer available affordable housing options.

The current research on neighbourhood effects in Canada offers no clear suggestions for improving socioeconomic well-being through community-based policies. New data and new experimental designs would greatly help to improve our knowledge on this issue. Relying exclusively on US studies is not recommended, since neighbourhood segregation in the two countries differs substantially. We should continue to investigate the importance of reinforcing positive and negative social environments.

Recent evidence, however, suggests that these forces might matter less than previously supposed.

NOTES

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¹ See Brock and Durlauf (2001), Duncan and Raudenbush (1999), Moffitt (2001), and especially Durlauf (2002) and Dietz (2002) for American reviews. Beauvais and Jenson (2003) provide a Canadian review. For a review of earlier literature, see Jencks and Mayer (1990).

² It is worth mentioning that the initial plan to demolish Robert Taylor Homes did not arise from public pressure to desegregate the project. Several heating pipes burst in the winter of 1999, causing the Chicago Housing Authority to evacuate families in four high-rises, and later permanently relocate them via transfer or housing vouchers (Jacob 2004).

³ Venkatesh (2000), who befriended many Robert Taylor tenants and lived there, provides an excellent description of life in an American ghetto.

⁴ A revitalization project of Regent Park is underway that will demolish several buildings, provide more open space, and increase access to neighbouring streets.

⁵ Calculated by the author using the 20 percent sample of the 2001 Census. A household falls below the LICO if they spend more than 20 percentage points above the average comparative household on food, clothing, and shelter. For example, if the average Canadian family spends 35 percent of before-tax income on food, clothing, and shelter, a family that spends more than 55 percent of before-tax income on these items falls below the LICO.

⁶ The housing project data come from previous Metro Toronto Housing Corporation security tabulations. Toronto and Chicago assault tabulations are from Statistics Canada (1995) and the US Federal Bureau of Investiga-

tion (1995), respectively. See Oreopoulos (2003) for more details.

⁷ The official US poverty line was established in 1963 to reflect a rough threshold defining poverty, based largely on the ability to afford food and housing, and it is adjusted by such factors as family size, state, family composition, and number of children. The US Census Bureau updates the poverty line each year, based on changes in the Consumer Price Index. See <http://www.census.gov/hhes/www/poverty/poverty.html>.

⁸ I thank the authors for generously giving permission to use their results.

⁹ Myles, Picot, and Pyper (2000) propose documenting neighbourhood inequality using the distribution of mean family-adjusted income across census tracts within cities. Such an approach could be used to isolate distressed areas. Interestingly, they find that the main source of neighbourhood income inequality occurs not from a substantial fall in mean income for the poorest neighbourhoods, but from a sharp spike in mean income for the richest.

¹⁰ For a spatial analysis of city crime, see Anselin et al. (2000); Pierce, Spaar, and Briggs (1988); Sherman, Gartin, and Buerger (1989); and Weisburd and Green (1994). Sherman, Gartin, and Buerger, for example, find that 3.3 percent of street addresses and intersections in Minneapolis generated 50.4 percent of all dispatched police calls for service. Perception of crime as a problem also varies by low-income and high-income neighbourhoods (DeFrances and Smith 1998).

¹¹ For a more detailed introduction on the theoretical foundations of group effects, see Blume and Durlauf (2001).

¹² Wilson and Kelling (1982) suggest basic street maintenance and broken window repair may help prevent an area from rapid decay and escalating crime.

¹³ A related influence to neighbourhood interdependencies in information transmission is how proximity of available jobs affects employment. The spatial mismatch hypothesis, first suggested by Kain (1968), arises when fewer jobs per worker in high-poverty areas make finding work more difficult. The hypothesis focuses mostly on inner-city minorities in the United States and how access to transportation and migration of jobs from

the city to the suburbs affects job prospects. The mechanisms by which employment is affected happen independently of social interactions and so are not considered here as group effects. See also Ihlanfeldt and Sjoquist (1998) for a review. I am not aware of any study that looks at the spatial mismatch hypothesis in Canada.

¹⁴ The hierarchical linear model (and, more generally, the random effects model), measures how much of the variation in the outcome variable can be attributed to variation in neighbourhood location (without actually defining what neighbourhood quality is). The approach often produces more precise standard errors for family effect estimates. For causal inference, however, the model still relies on the crucial assumption that unobservable individual influences are unrelated to neighbourhood influences, something that is not likely to be the case. The concern about biased estimates using this approach is similar to the concern about using regression.

¹⁵ As Durlauf (2002) puts it, "With very few exceptions . . . empirical studies of neighbourhood effects based on observational data have failed to deal seriously with the possible statistical biases induced by self-selection into neighbourhoods." Cochran (1955) also summarizes this point well: "If nature mixes things up thoroughly, as she sometimes seems to do, statistical methods will not sort them out very well." See also Freedman (1991) and Oakes (2004) for criticisms on using regression to estimate neighbourhood effects.

¹⁶ See Kling, Liebman, and Katz (2007). Also see the Moving to Opportunity Research website at www.mtoresearch.org for all recent and previous MTO studies.

¹⁷ Through the US federal government, a Section 8 voucher provides rent subsidies to eligible low-income families and individuals. Rather than being provided a specific unit at a subsidized housing site, Section 8 participant-tenants are free to use their voucher to locate and contract for housing within a network of participating landlords throughout a particular region.

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