CSLS Conference on the State of Living Standards and the Quality of Life in Canada

October 30 - 31, 1998 Château Laurier Hotel, Ottawa, Ontario

Centre for the
Study of Living Standards
Centre d'étude des
niveaux de vie

Neighbourhoods, Social Capital and the Long-term Prospects for Children

Miles Corak
Statistics Canada

Andrew Heisz
Statistics Canada

Session 4 Sustainability II: Intergenerational Bequests and the Well-being of Children
October 30 2:15 PM - 4:15 PM

NEIGHBOURHOODS, SOCIAL CAPITAL, AND THE LONG-TERM PROSPECTS OF CHILDREN

Miles Corak and Andrew Heisz

Statistics Canada
24F R.H. Coats Building,
Ottawa Ontario K1A 0T6
Voice: (613) 951-9047 FAX: (613) 951-5403
Internet: coramil@statcan.ca

PAPER PREPARED FOR THE CSLS CONFERENCE ON THE
STATE OF LIVING STANDARDS AND THE QUALITY OF LIFE IN CANADA

October 1998

Neighbourhoods, Social Capital, and the Long-Term Prospects of Children

Any discussion of the quality of life in a society must take into account the well-being of its children; not only their well-being as citizens like any other group of citizens, but also their future well-being—that is, their preparedness for adulthood. In fact, the reason "child poverty" has such a resonance among policy makers, and indeed among Canadians in general, has in part to do with the potential long-term consequences of experiencing low-income during childhood. Does being raised by low-income parents scar individuals so that they go on to become low-income adults in their turn? Conversely, do the children of the well-to-do rise to the top of the income distribution as adults? Is the underlying process determining outcomes of these sorts fair? An issue that evokes these kinds of questions touches upon what we must in some sense mean by the "quality of life."

The process determining the capacity of children to become successful and self-sufficient adults is complicated and involves not just parental income, but also the broader functioning of the family, as well as the roles of community and state. Communities and neighbourhoods play a variety of roles in preparing children for adult life. These span both economic and social factors; a neighbourhood is where individuals live, but it is also the connections and relationships they have to the others around them. Our objective in this paper is to examine the relationship between the long-term labour market prospects of children—their earnings and market incomes as adults—and the characteristics of the neighbourhood in which they lived, focusing on what we refer to as

economic conditions and social capital in the neighbourhood. The analysis begins with a short review of what is known about the relationship between family income and the adult incomes of children in Canada. However, the specific question motivating our research is: what role does "neighbourhood"—both the geographic and the social space—play in determining the adult labour market success of children?

This question has received a great deal of attention among social scientists in the United States in part because of the long-lasting concern in that country with the plight of inner-city neighbourhoods and the development of a so-called "underclass." In particular, neighbourhood influences have received increasing emphasis as a result of the work of William Julius Wilson (1987, 1996) who detailed the degradation of inner-city areas of Chicago associated with structural changes in employment, the migration of middle-class residents, as well as the resulting decline in community infrastructure and norms of behaviour. As a result there has been a plethora of research including most recently that by: Aaronson (1996), Akerlof (1997), Brooks-Gunn et al. (1993) (1997a,b), Case and Katz (1991), Corcoran et al.(1992), Evans et al.(1992), Gaviria and Raphael (1997), Solon et al. (1997). It is difficult to offer a definitive summary of this literature, but the general picture to emerge would seem to suggest that neighbourhood influences do not represent a major influence on child attainments when data representative of the entire country are used. The empirical research is not nearly as developed in Canada in spite of the fact that public policy debates increasingly use the term "social capital," a phrase that refers, like "neighbourhood," to the role of community in determining the prospects of children.

We address this gap in knowledge by grouping Canadian neighbourhoods along economic and social dimensions, and examining the adult labour market outcomes of teenagers according to the economic conditions and social capital of the area in which they grew up. We find that their ultimate adult incomes and earnings is only loosely tied to the income of their parents. In the large, the Canadian labour market is characterized by a good deal of equality of opportunity. But this overall result is misleading as we also find that the influence of parental income is strongly conditioned by the characteristics of the neighbourhood in which the children are raised. Neighbourhood economic conditions and social capital—as we define these terms—are particularly important in understanding the income disparities between the members of the next generation of young adults. Adult labour market outcomes differ between teenagers raised in different neighbourhoods in a way that has little to do with the differences in average parental income. In particular, our results suggest that: [1] economic conditions in the neighbourhood, as reflected mainly in the neighbourhood unemployment rate and youth unemployment rate, have a strong association with adult incomes and earnings of teenagers; [2] the social capital of the neighbourhood, as reflected in the educational attainment of the adults and the affluence of the neighbourhood, also displays such a relationship, though perhaps not as strong; and [3] social capital at the individual level, as measured in the strength of the child's ties to the neighbourhood, also has a noteworthy association with earnings and income in adulthood. These factors—neighbourhood economic conditions and social capital, as well as the capacity of children to access them—are so strong that differences in parental income play a distinctly secondary role in determining the pattern of relative advantages in the next generation. There are certain caveats associated with this interpretation of our

findings, but if these can be shown in future work to be minor, then the results suggeset that if government policy is concerned about the long-term prospects of children it needs to address more than simply the level of family income, and recognize the importance of the local macroeconomic and social climate in which children are raised.

1. Methods

Our starting point is the growing literature on intergenerational income and earnings mobility, surveyed in for example Björklund and Jäntti (1998), Mulligan (1997, chapter 7), and Solon (1997). The major analytical approach in this literature is based on the estimation of a simple linear model linking a child's income (as an adult) to his or her parents' income. If *y* reprsents the natural logarithm of permanent income, *t* the child's generation, and *t-1* the parents' generation then the standard approach is to use least squares to estimate:

$$y_i(t) = \beta_0 + \beta_1 y_i(t\text{-}1) + \varepsilon_i \qquad (1)$$

where the data are at the individual level with *i* representing a parent-child pair, and ε_i is a random component usually assumed to be distributed as $N(0, \sigma^2)$. The constant term (β_0) represents the change in income common to generation *t*, while the coefficient β_1 indicates the extent to which income is associated with that of the parents', that is the extent of intergenerational mobility.[1] If β_1 is less than one the income distribution is said to regress to the mean: while parents with incomes above (or below) the mean will have

[1] This coefficient is often called the intergenerational income elasticity, and is related to the correlation between parent and child incomes by the standard deviation of the logarithm of incomes:

$$\beta_1 = \rho\ \sigma[y(t)] / \sigma[y(t\text{-}1)]$$

where $\sigma[\ ]$ signifies the standard deviation. Since the standard deviation of the logarithm of incomes is an index of inequality, β_1 will equal ρ if the degree of income inequality is the same between the generations.

children with above (or below) average income levels the deviation from the mean will not be as great. (If it is greater than one the deviation from the mean will be even greater in the next generation.) The larger β_1 (even if it is less than one) the more likely that an individual as an adult will occupy the same economic position as his or her parents, that is the greater the persistence in intergenerational incomes. Even small values of β_1 can be associated with substantial advantages for the children of the well-off. For example, the income advantage associated with having a high-income father relative to having a low-income father is $(Y^H / Y^L)^{\beta_1}$, where the upper case Y denotes the level of income. In Canada, the ratio of the average income of men (working full-year full-time) in the top quintile to those in the bottom quintile during 1981 was 3.84. This would imply an income advantage in the next generation of 14% if β_1 were 0.1. This is a substantial difference, but it becomes even more so with higher values: 31% if β_1 were 0.2 and over 70% if it were as high as 0.4.[2]

It is easy to understand, therefore, why an accurate estimate of β_1 has been the main concern of studies that adopt this approach. However, the implicit assumption often made is that both β_0 and β_1 are the same for all children regardless of their place in the income distribution. There are both strong theoretical reasons and, at least for Canada, strong empirical results to suggest that this assumption may not be valid.[3] In particular, if

[2] The emerging consensus seems to be that 0.4 (or even higher) is not a bad estimate of the intergenerational earnings elasticity in the United States and the United Kingdom, while 0.2 or perhaps even less seems appropriate for Canada and some European countries. See Corak and Heisz (1998) and Fortin and Lefebvre (1998) for Canadian evidence.

[3] For example, Mulligan (1997) offers a clear exposition of various models of intergenerational mobility and points out the possibility of non-linearities. In particular, β_1 will be higher for those parents who are borrowing-constrained and cannot make the optimal level of investment in the education of their children. Durlauf (1996) offers a model of non-linearities based upon neighbourhood differences. Corak and Heisz (1998a) illustrate that the value of β_1 varies across the income distribution in Canada in a way that can be interpreted by the borrowing-constraints model.

neighbourhoods differ in social capital and if social capital is an important influence on the long-term prospects of children—over and above the fact that average family income varies between neighbourhoods—then this would be reflected in different values of β_0 and β_1. Neighbourhood differences in β_1 reflect differences in how family income is transformed into the economic status of the next generation; differences in β_0 reflect differences in the factors common to all members of the neighbourhood. If this is the case then the income advantage of someone from a high status neighbourhood relative to someone from a low status neighbourhood would be:

$$\frac{Y_t^H}{Y_t^L} = \frac{e^{\beta_0^H}}{e^{\beta_0^L}} \times \left(\frac{Y_{t-1}^H}{Y_{t-1}^L}\right)^{\beta_1^H} \times Y_{t-1}^{L\left(\beta_1^H - \beta_1^L\right)} \qquad (2)$$

The relative incomes of the children in adulthood is the result of three factors as reflected in the three terms of this equation: differences in β_0 between the neighbourhoods in which they were raised, differences in the incomes of their parents, and differences in the β_1 between their neighbourhoods. The first and third terms offer a means of assessing the relative importance of neighbourhood characterisitcs, beyond the fact that average incomes vary.

Equations (1) and (2) form the analytical framework for our research. Using equation (1) we estimate values for β_0 and β_1 by neighbourhood, and then use equation (2) to assess the relative advantage of individuals living in a reference neighbourhood relative to all others. The analysis is based upon income tax information on a cohort of young men and women in 1995 and upon similar information on their parents during the late 1970s and early 1980s. Briefly, we select a sample of individuals aged 16 to 19 years

of age in 1982, who filed an income tax return in that year (while still living with their parents) and who are therefore 29 to 32 years of age in 1995. We relate the adult earnings and market income (defined as the total of earnings, self-employment income, asset income and other market incomes) of the chidren to that of their parents between 1978 and 1982. [4] The sample size is very large, numbering up to almost 850,000 parent-child pairs, and not subject to problems of attrition or reporting errors that are endemic to survey data. We attach census geographic codes to this information by using the postal code reported on the parents' 1982 T1 form.[5] This permits us to link neighbourhood characteristics from the 1981 census to the individual parent-child pair.

2. The Definition of Neighbourhoods

The first challenge in implementing the framework described in equation (2) concerns how to define a neighbourhood in terms of "social capital." While this is an often used term, it is not clearly defined nor easily measured. Becker (1996, p.4) simply states that social capital "incorporates the influence of past actions by peers and others in an individual's social network and control system." Portes (1998) offers a broad review of the concept, noting in particular the difficulty of extending it from an individual asset to a feature of communities and nations. One of the clearest definitions probably belongs to Coleman (1988, 1990) who considers social captial to have three dimensions: the set of expectations and obligations (essentially reputations) that develop in a community, the set

[4] The construction of the data is described in the Appendix to Corak and Heisz (1998b). The data used here is an updated version of that employed in Corak and Heisz (1998b) in that it uses 1995 incomes of the children, and includes individuals who were raised in lone-mother households. For a discussion of data quality and the potential for sample selection bias see Corak and Heisz (1988a).

[5] The way in which this is accomplished is described in an appendix available from the authors.

of information channels, and the set of norms or sanctions that exist at the community level. While all three are important in the intergenerational mobility of children, he focuses on the conditions that allow the latter to arise. A well-established set of norms or sanctions can serve to reinforce parental human capital investment in children. In particular, he suggests that this will be strongest when the relationship between children, say in the context of a school, is mirrored at the level of the parents so that the parents' friends are also the parents of their children's friends. He refers to this as "intergenerational closure." In this sense, social capital might be considered as an aspect of network or peer group effects, as in Becker's interpretation.

While Coleman does not offer a direct measure of intergenerational closure he suggests that an apporpriate proxy is the number of times the child has moved, in particular the number of school changes, as this indicates a lack of continuity and hence the breaking up of networks. Parents who have moved into a new neighbourhood are likely, in Coleman's argument to not have as much information or be as well connected as those who are long-term residents. Nonetheless, social capital as defined is not tangible and inherently difficult to measure with the kind of data sets generally available to analysts. [6] Accordingly our approach is rather eclectic. We use information from the 1981 Canadian Census at the Census Tract (CT) and Provincial Census Tract (PCT) level. These categories are defined by Statistics Canada to correspond to what roughly might be considered a neighbourhood, and they certainly capture important aspects of geographic but probably also of social space. Even so it should be recognized that CTs

[6] Since social capital is also related the amount of time invested in children by parents Coleman suggests that the number of siblings, the presence of a working mother, or being raised in a lone-parent family are relevant measures: more siblings, a two-earner family, or a single parent family leading to inferior child outcomes.

and PCTs may not reflect the neighbourhood as experienced by residents, who may relate to smaller areas within it or to areas outside of it (Furstenberg Jr. and Huges 1997, p.34). This being said the advantage of using the 1981 census is that all areas of Canada are tracted, either as CTs or as PCTs. The Provincial Census Tract program has since been discontinued so that only larger urban areas are tracted in other censuses. All 24 Census Metropolitan Areas (CMAs) and 12 of the 88 Census Agglomerations (CAs) are census tracted in the 1981 Census, while the remaining 76 CAs and all rural areas are provincially census tracted. Thus the availability of PCTs allows us to distinguish neighbourhoods in smaller urban areas (the CAs), and also to include rural areas in the analysis. There are 4,967 geographic units used in our analysis with an average population of 4,833, varying from 262 to a maximum of 20,483.[7]

Our approach is to: first, define a host of characteristics for each CT/PCT that may relate to the characteristics of the neighbourhood important in determining child attainments; second, to use factor analysis to group these characteristics into a small number of factors and score each CT/PCT along these fewer dimensions; third, to cluster

[7] A Census Tract refers to a permanent small geostatistical area established in large urban communities with the help of local specialists interested in urban and social science research. Census Tracts are reviewed and approved by Statistics Canada according to the following criteria: (1) the boundaries must follow permanent and easily recognized lines on the ground; (2) the population must be between 2,500 and 8,000 with a preferred average of 4,000 persons, except for Census Tracts in the central business district, major industrial zones, or in peripheral rural or urban areas that may have either a lower or a higher population; (3) the area must be as homogeneous as possible in terms of economic status and social living conditions; (4) the shape must be as compact as possible. Provincial Census Tracts exist in the area not included in the Census Tract programme. The populations captured in PCTs vary between 3,000 to 8,000, with a preferred size of 5,000. As much as possible boundaries of PCTs follow permanent physical features and /or geographic units suggested by the provinces.

Overall there are 5,088 Census Tracts and Provincial Census Tracts. We excluded 117 of these because the population of 15 to 19 year olds was less than 50, and a further four because they had missing values for at least one of the characteristics used in the analysis (in all cases this was the average value of dwellings). The reason for the first exclusion was the need to ensure that derived characteristics were reasonably accurate, especially those pertaining to the cohort of main interst. These exclusions have a minimal effect on our estimate of the total Canadian population leading to an underestimate of only about 78,500 from the total of 24,084,000. Of the 4,967 geographic units used in our analysis 3,185 are census tracts, and 1,782 provincial census tracts.

the almost 5,000 neighbourhoods into a smaller number of like groupings; and finally to estimate equation (1) using the administrative income tax data for each cluster and to use these estimates in equation (2) to quantify the impact of neighbourhoods. Although the administrative data on individual parent-child incomes is large the sample sizes per CT/PCT can be quite small. Factor analysis and clustering is used to develop a grouping of neighbourhoods permitting large enough samples to obtain reasonably accurate estimates of β_0 and β_1.

In defining the relevant neighbourhood characteristics we roughly follow the general framework offered by Brooks-Gunn, Duncan, Leventhal, and Aber (1997, pp. 289-93), and consider neighbourhood variables that measure: (1) income/affluence; (2) employment and education; and (3) social integration.[8] The descriptive statistics of the 14 variables used is presented in Table 1.

It is difficult to characterize these variables as representing exclusively social capital or economic conditions. Neighbourhood affluence is measured by the low-income rate (the proportion of economic families with income below Statistic Canada's Low-Income Cut-off), the proportion of well-to-do families in the CT/PCT (those with 1981 incomes above $40,000, the average Canadian family income being about $26,700), and the average value of owner occupied dwellings. All of these variables relate to peer groups and networks, but also to the local property tax base, child-care settings, school quality, and the quality of other economic and social infrastructure. In fact, Brooks-Gunn et al. (1997) suggest that the concentration of poor and affluent neighbours may have differential influences on adolescent development, and that these variables are correlated

[8] Our characterization omits measures of community participation and safety, two additional categories outlined by Brooks-Gunn, Leventhal and Aber.

with other measures of socio-economic status. In a similar way the six variables under the rubric of employment and education relate to the economic conditions in the neighbourhood, but also more broadly to human and social capital. Three unemployment rates are used to, one the one hand, capture the economic opportunities in the neighbourhood, but also peer group effects. It is for this reason that the youth unemployment rate and the proprotion of youth receiving unemployment insurance are defined for the population 20 to 24 years old, the cohort slightly older than the group of adolescents at the heart of the analysis. The three remaining variables may offer proxies for the role models or peer groups influencing educational decisions of youths: the proportion of the adult population with univeristy education, the proportion with less than high school education, and the proportion of youths not attending school. All of these variables are also associated with the economic status of the neighbourhood. Finally, social integration refers to a group of variables that attempt to measure the ethnic and religious aspects of the community (the proportion of immigrants and the proportion belonging to the two most homogenous religious groups that could be readily identified in the Census). These might be taken to offer an indication of the extent of closure in Coleman's terms, but they could certainly also be associated with economic conditions. In addition, Borjas (1992, 1993) points out the importance of "ethnic capital" in referring to the impact of the environment in which immigrant families pass their skills and attitudes along to their children. He argues that the labour market skills of the next generation depends not just on investments made by parents, but also on the average quality of skills in the ethnic community.[9] This "ethnic capital" seems to be another

[9] His analysis of data from the U.S. suggests that "the intergenerational progress of workers belonging to ethnic groups that have relatively low levels of human capital is retarded by the low average quality of the

dimension of social capital. The proportion of immigrants in the population may be a rough indicator of degree of the strength of these community ties, and the proportion of the population speaking a non-official language may indicate the skill level or at least signal the challenges the community may have in relating to the wider society and political system. Finally, adapting Coleman's emphasis on residental moves, the proportion of the population that did not reside in the same CT/PCT during the last Census (five years earlier) may reflect the degree to which networks are underdeveloped in the community. That being said it may also reflect economic conditions, newer or more affluent neighbourhoods attracting families able to move up, and less affluent neighbourhoods attracting those experiencing declines in their economic well-being.

The use of factor anlysis reveals that these 14 dimensions can be reduced to three separate factors. We refer to these as social capital, economic conditions, and ethnic capital. The factor loadings underlying this characterization are presented in Table 2. We call that term determined for the most part by the education variables, the proportion of affluent, and the dwelling value as Social Capital, and the term driven by the overall unemployment rate and the youth unemployment rate as Economic Conditions. The third term is associated pretty well exclusively with the proportion of immigrants and the proportion speaking a language other than French or English, and therefore referred to as Ethnic Capital. These factor loadings are scored and used to develop three indices, each centered around a mean of zero and with a standard deviation of one; higher values of each index indicating either more social capital, better economic conditions, and more ethnic capital.

---

group." (Borjas 1992, p.124)

These indices are used to partition the 4,967 CT/PCTs into 100 clusters. A broad picture of the nature of these clusters is presented in Table 3. On average there are 50 CT/PCTs per cluster, but this varies from a minimum of one (10 cases) to a maximum of 454. Clusters have on average a total population of 240,050, and an average 15 to 19 year old population of 22,986.

3. Results

Following Corak and Heisz (1998a), we undertake two sets of analyses: one based on the relationship between parent-child earnings, another on parent-child market incomes. As mentioned earlier, market income is a concept broader than earnings, incorporating self-employment income, asset income (interest, divididends, and rental income), and other incomes with market sources. These are all defined as reported on the T1 form that Canadians are required to submit to the tax authorities. Market income is probably a better measure of the total purchasing power available to the household. It should be noted that we explicitly exclude all non-market sources of income, that is government transfers. We do this because our focus is on the ability of the next generation to succeed in the marketplace. However, the distinction between market income and earnings may be important in understanding the role of self-employment and the direct transfer of financial resources in the intergenerational process.[10]

[10] As such our analysis does not address issues asssociated with the intergenerational transmission of the reliance on government support. This issue, however, might be considered to fall into the scope of our study in two ways: as a direct indication of the self-reliance of adult children, but also as an assessment of the long-term implications government transfer payments. A complete analysis is precluded by the fact that Income Assistance payments generally are not reported to Revenue Canada, this is particularly so during the period in which we capture parental incomes.

The descriptive statistics associated with the data used in the regressions are presented in Table 4 for both the sample using market income and that using earnings. To be included in the analysis individuals had to have an income/earnings level of at least $1,000.[11] (All incomes are measured in 1986 constant dollars using the Canada-wide Consumer Price Index as the deflator.) A host of other variables are also included in the regression analysis to control for differences in social capital at the individual level, that is to capture the functioning of the family. These follow, for the most part, the suggestions of Coleman discussed in footnote 6 and include: indicator variables for whether the family was headed by a single parent; the number of children (present in the household); two separate indicators of whether the family changed residence between 1978 and 1982 (moved once, and moved twice or more often); and controls for the child's gender as well as the child's and the parents' age and age squared. These last variables are included to control for gender and life-cycle differences in incomes.

The sample of individuals used in the analysis are found in all but one of the 100 neighbourhood clusters. This cluster (which happens to be in Kamloops BC) is relatively small, accounting for a total population of 609. Some preliminary least squares regression results at the Canada-wide level are presented in Table 5. The intergenerational income elasticity is 0.163 when no other controls are used, while the intergenerational earnings

[11] Parental income/earnings are measured as the average annual value between 1978 and 1982. To be included in the analysis either one of the parents had to have filed an income tax return for at least three of these five years. An average of both their incomes was taken over the total number of years one or the other filed, and if this average was below $1,000 the observation was excluded. The logarithm of the average is then used in the regression anslysis. Estimates of β_1 may be downwardly biased due to measurement errors arising from temporary income fluctuations. A multi-year average income is closer to the permanent income of the parents, and thereby helps to reduce this bias. See Solon (1989, 1992), Zimmerman (1992), and the exploration of this issue with our data in Corak and Heisz (1998a).

elasticity is somewhat lower at 0.115 (see columns [1] in the Table).[12] The results using controls for family background are presented in columns [2] and lead to a higher market income elasticity (0.187), but not much change in the earnings elasticity. With the exception of coming from a single parent family, all of the individual level measures of social capital have the expected negative sign. The greater the number of siblings the lower the adult income and earnings. Further, experiencing a residental move also lowers adult income through an impact on β_0, the intercept. This impact is even greater for those experiencing two or more moves, and this experience may also dampen the elasticity with respect to parental income, β_1. Indices for the social capital, economic conditions, and ethnic capital in the cluster of residence are included in columns [3] and [4], the latter column including controls for the population of the cluster and the proportion of rural neighbhourhoods. Social capital, economic conditions, and ethnic captial are all positvely related to adult incomes and earnings. Furthermore, including these neighbourhood characterisitics in the model significantly reduces the value of β_1: for market income from 0.187 to 0.148; and for earnings from 0.118 to 0.0849. These differences are statistically significant.

Least Squares regression of the model presented in columns [2] of the table were performed for subsets of the data divided into each of the 99 neighbourhood clusters. A partial summary of these results is presented in Table 6.[13] There are some clusters in which a negative value of β_1 is estimated (three in the case of market income). In all cases

[12] Both of these results are much lower than estimates generally offered for the United States. See Mulligan (1997, table 7.6).

[13] These findings are not weighted in any way. However because of concerns over the reliability of the resulting estimates we excluded two clusters from further analysis because they contained fewer than 25 children.

these are due to small sample sizes (for example, ranging from 89 to 114), and the 95% confidence interval for the estimate includes positive values. Even so there is significant variation in the value of β_1 across neighbourhoods, with the highest market income value being almost 0.47, and the highest earnings value about 0.54. The same conclusion holds with respect to the impact of residental moves, with about 25% of the clusters actually having positive point estimates.

A sense of how the β_0 and β_1 estimates vary by neighbhourhood characteristics is depicted in the panels of Figure 1a and 1b, which present scatter plots of the estimates against the associated value for each of Social Capital, Economic Conditions, and Ethnic Capital. These diagrams also present an estimate of the kernal density smooth. The intercept term is postively related to social capital and economic conditions, and the relationship seems to be linear, particularly for earnings. The relationship with ethnic capital is not as clear cut, possibly being positive at low levels and then negative (or neutral) at higher levels. The correlation between β_1 and these indices is not as strong but would appear, if anything, to be slightly negative. These univariate results suggest that neighbourhoods differ in their value of β_0, but not so much with respect to β_1.

A multivariate version of these relationships is presented in Table 7, and confirms this finding. This table offers weighted least squares estimates of the regression of each parameter— β_0, β_1, but also the moved once variable, and the moved twice or more variable—against the indices of neighbourhood quality and interactions of them. The regressions are weighted by the number of observations in each cluster. (Thus small neighbourhood clusters with less reliable pararmeter estimates are given less weight.) Higher values of the indices are associated with larger values of β_0, most strongly with

economic conditions and least with ethnic capital. (All of these relationships seem to be slightly stronger with respect to the earnings model.) The proportion of the total variance explained by these variables is about 80 to 85%, implying that variation in the β_0's is closely related to neighbourhood conditions. The partitioning of the CT/PCTs by the Social Capital, Economic Conditions and Ethnic Capital indices is being reflected in the intercept term. Futher, the intergenerational elasticities seem to be negatively associated with the neighbourhood indicators. Higher Social Capital, better Economic Conditions, and higher Ethnic Capital seem to reduce the association between parent child incomes. The adult outcomes of individuals coming from lower quality neighbourhoods has a tighter association to their parents' income/earnings than for those from high quality neighbourhoods. Even so the variation of the β_1's is less clsoely to tied to neighbourhood characteristics than the variation in the β_0's, with less than 50% of the total variance being explained in the case of market incomes and less than 40% in the case of earnings. Finally, higher social capital seems to attenuate, but not completely eliminate, the negative impact of moving on child incomes. The other variables do not seem to play a role, and with one exception none of the indices are statistically significant for the coefficient associated with the individual moving twice or more. These models fit even less well than the others suggesting that much of the variation in the moves parameter has little to do with neighbourhood quality. Moving has an impact on the long-term prospects of children that is not linked to the quality of the neighbourhood being moved into.

The impact of these results is more clearly illustrated by using them in equation (2). We predict the income advantage of someone living in the cluster with the greatest population relative to each of the other 96 clusters by using the relevant parameter

estimates and setting the income levels to the average incomes in the cluster. We then repeat the calculation three times: once letting only the intercept terms differ between the clusters, once letting only average incomes vary, and finally letting only the intergenerational elasticities vary. In other words, each of the three terms in equation (2) take their predicted value, while the others are set to one. The results are depicted in Figure 2 for market income, and Figure 3 for earnings. In both figures the clusters are ordered by the magnitude of the total effect. Individuals in about 7 clusters obtain less than 80% of the income of those residing in the modal cluster, and those in about 10 are in same situation with respect to earnings. In fact, the individuals from a few neighbourhoods have less than 60% of the income/earnings of the reference case.

Each of the three other lines in the Figures can be interpreted as what the total relative advantage of those in the modal cluster would be if the other two factors played no role. (The product of these three lines equals the total impact.) The first implication is that differences in β_1 between neighbourhoods make little difference to the income advantage of living in any particular neighbourhood. Rather, differences in neighbourhood incomes and differences in β_0 are the major correlates of the differences in child outcomes across neighbourhoods. In the case of earnings the impact of differences in intercepts tracks the total impact very closely with the possible exception of the very bottom and top extremes. Even in these clusters, however, it remains the dominant influence. The disparity in average income between the worse off neighbourhoods and the modal neighbourhood would lead to an earnings difference of only about 10% in the next generation. The fact that children from these neighbourhoods end up earning 20 to 45% less than their counterparts has much more to do with a broader

set of forces than simply the earnings of their parents. A similar conclusion holds for the earnings advantage of those at the top end of the earnings distribution.

In the case of market income it would appear that differences in β_0 are more important in determining the relative disadvantage of those not doing as well as the modal cluster, while income disparities are as important or more important in determining the relative advantage of those doing better, especially those at the very top. A relative market income advantage of 30 to over 50%—as predicted for the top three neighbourhoods— has a great deal to do with the second term of equation (2).[14] This differs from the results for earnings. In an accounting sense relative neighbourhood incomes are more important in characterizing the circumstances of those from well-to-do neighbourhoods because market income can be so much larger than earnings. For example, the parents in the top neighbourhood cluster have an average market income of over $118,000, and the ratio used in the second term of equation (2) is 3.73. In contrast, the parents in the top earnings cluster have an average earnings of about $68,000, and the equivalent earnings ratio is 2.61. However, the more substantive implication has to do with the fact that those with substantial market incomes have more avenues to affect an intergenerational transfer to their children. The successful self-employed can transfer an "entrepreneurial" capital to their offspring (Dunn and Holtz-Eakin, 1996). This may include a set of attitudes that encourage self-employment, a set of contacts or networks

[14] In fact, to suggest that differences in β_1 do not matter may be a simplification. The formulation of equation (2) is such that the second term implies that β_1 changes with each comparison being made. This does not seem to make a difference in the analysis of earnings, but it does for some market income clusters. Both differences in income and differences in β_1 are driving the sharp rise in the impact of relative incomes depicted in Figure 1 for the top four or five neighbourhoods. However, reconfiguring equation (2) so that the β_1 in the second term remains constant at the value for the reference neighbourhood leads to a pattern that does not change the substantive conclusion described in the text. (However, the income advantage of the most advantaged individuals is, at slightly over 30%, not as great.)

that reduce the difficulties to self-employment, as well as financial resources that ease financial barriers to pursuing self-employment. In a similar vein, those with significant incomes and assets are in a position to have made an optimal amount of investment in the education of their children. As suggested by Becker and Tomes (1986) this would imply that further investments are made as direct financial transfers so that the children end up having significant levels of assets and derive an income from them. All of these arguments imply that the relative role of neighbourhoods—as reflected in β_0—is diminished.

Figures 4 and 5 depict the impact on β_0 of our other individual level measure of social capital, experiencing a move. The relative income advantage/disadvantage due to differences in β_0 from Figures 2 and 3 are juxtaposed with an estimate of the first term in equation (2) for individuals experiencing two or more moves. (The results, not shown, for those experiencing one move are the same, but not as great in magnitude.) The reference case throughout is an individual from the modal cluster who did not experience a move as a child. The major conclusion to be drawn from these figures, which is foreshadowed in Table 7, is that residential moves are associated with inferior child outcomes regardless of the quality of the neighbourhood. Someone raised in the modal cluster who experienced two or more moves as a young teen earns about 10% less than his or her counterpart who did not experience a move. This relative disadvantage is roughly the same throughout the distribution of neighbourhoods (the exception being the very top and very bottom clusters). In general, children who have moved are at a disadvantage as adults regardless of to which neighbourhood they moved.

4. Conclusions and Caveats

BIBLIOGRAPHY

AARONSON, Daneil (1996). "Using Sibling Data to Estimate the Impact of Neighbourhoods on Children's Educational Outcomes." Federal Reserve Board of Chicago, unpublished.

AKERLOF, George A. (1997). "Social Distance and Social Decisions." *Econometrica*. Vol. 65, No.5, pp. 1005-27.

BECKER, Gary S. (1996). *Accounting for Tastes.* Cambridge Massachusetts: Harvard University Press.

_____ and Nigel Tomes (1986). "Human Capital and the Rise and Fall of Families." *Journal of Labor Economics.* Vol. 4, No.3 part 2, pp. S1-S39.

BJÖRKLUND, A. and M. Jäntti (1998). "Intergenerational Mobility of Economic Status: Is the United States Different?" Stockholm University, Swedish Institute for Social Research Working Paper.

BORJAS, George J. (1993). "The Intergenerational Mobility of Immigrants." *Journal of Labor Economics.* Vol.11, No.1, pp.113-35.

_____ (1992). "Ethnic Capital and Intergenerational Mobility." *Quarterly Journal of Economics.* Vol. 107, No.1, 123-50.

BROOKS-GUNN, Jeanne, Greg J. Duncan, and J. Lawerence Aber (1997a) (editors). *Neighbourhood Poverty. Volume I Context and Consequences for Children*. New York: Russell Sage Foundation.

BROOKS-GUNN, Jeanne, Greg J. Duncan, and J. Lawerence Aber (1997b) (editors). *Neighbourhood Poverty. Volume II Policy Implications in Studying Neighbourhoods.* New York: Russell Sage Foundation.

BROOKS-GUNN, Jeanne, Greg J. Duncan, Tama Leventhal and J. Lawerence Aber (1997). "Lessons Learned and Future Directions for Research on the Neighborhoods in Which Children Live." In BROOKS-GUNN, Jeanne, Greg J. Duncan, and J. Lawerence Aber (editors). *Neighbourhood Poverty. Volume II Policy Implications in Studying Neighbourhoods.* New York: Russell Sage Foundation.

BROOKS-GUNN, Jeanne, Greg J. Duncan, Pamela Kato Klebanov, and Naomi Sealand (1993). "Do Neighbourhoods Influence Child and Adolescent Development?" American Journal of Sociology. Vol. 99, No.2, pp. 353-95.

CASE, A.C. AND Lawerence J. Katz (1991). " The Company You Keep: The Effects of Family and Neighbourhood on Disadvantaged Youth." NBER Working Paper No. 3705.

COLEMAN, James S. (1990). *Foundations of Social Theory*. Cambridge Massachusetts: Harvard University Press.

_____ (1988). "Social Capital in the Creation of Human Capital." *American Journal of Sociology*. Vol. 94 Supplement, pp. S95-S120.

CORAK, Miles and Andrew Heisz (1998a). "The Intergenerational Earnings and Income Mobility of Canadian Men: Evidence from Longitudinal Income Tax Data." *Journal of Human Resources.* Forthcoming.

_____ (1998b). "How to Get Ahead in Life: Some Correlates of Intergenerational Income Mobility in Canada." In Miles Corak (editor). *Labour Markets, Social Institutions, and the Future of Canada's Children.* Ottawa: Statistics Canada, Catalogue No. 89-553-xpb.

CORCORAN, Mary, Roger Gordon, Deborah Laren, and Gary Solon (1992). "The Association Between Men's Economic Status and Their Family and Community Origins." *Journal of Human Resources*. Vol. 27, No. 4, 575-601.

DURLAUF, Steven N. (1996). "A Theory of Persistent Income Inequality." *Journal of Economic Growth.* Vol. 1, No.1, pp. 75-94.

EVANS, William N., Wallace E. Oates, and Robert M. Schwab (1992). "Measuring Peer Group Effects: A Study of Teenage Behavior." *Journal of Political Economy*. Vol. 100, No. 5, pp. 966-91.

FORTIN, Nicole M. and Sophie Lefebvre (1998). "Intergenerational Income Mobility in Canada." In Miles Corak (editor). *Labour Markets, Social Institutions, and the Future of Canada's Children.* Ottawa: Statistics Canada, Catalogue No. 89-553-xpb.

GAVIRIA, Alejandro and Steven Raphael (1997). "School-based Peer Effects and Juvenile Behavior." University of California, San Diego. Discussion Paper 97-21.

MULLIGAN, Casy B. (1997). *Parental Priorties and Economic Inequality*. Chicago: University of Chicago Press.

PORTES, Alejandro (1998). "Social Capital: Its Origins and Applications in Modern Sociology." *Annual Review of Sociology*. Vol. 24, pp. 1-24.

SOLON, Gary, Marianne E. Page, and Greg J. Duncan (1997). "Correlations between Neighboring Children in Their Subsequent Educational Attainment." Unpublished.

SOLON, Gary (1997). "Intergenerational Mobility in the Labor Market." Fothcoming in David Card and Orley Ashenfelter (editors). *Handbook of Labor Economics.* Amsterdam: North Holland.

_____ (1992). "Intergenerational Income Mobility in the United States." *American Economic Review.* Vol. 82, No.3, pp. 393-408.

_____ (1989). "Biases in the Estimation of Intergenerational Earnings Correlations." *Review of Economics and Statistics*. Vol. 71, No.1, pp. 172-74.

WILSON, William Julius (1996). *When Work Disappears: The World of the New Urban Poor*. New York: Alfred A. Knopf.

_____ (1987). *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press.

ZIMMERMAN, David J. (1992). "Regression Toward Mediocirty in Economic Stature." *American Economic Review.* Vol. 82, No.3, pp. 409-29.

Table 1
CHARACTERISTICS OF CENSUS TRACTS AND PROVINCIAL CENSUS TRACTS

		Average	Minimum	Maximum
1.	INCOME / AFFLUENCE			
	Proportion of Economic Families below the LICO	0.138	0	0.703
	Proportion of Census Families with Income above $40,000	0.163	0	0.866
	Average Value of Dwellings	$72,747	0	$545,030
2.	EMPLOYMENT AND EDUCATION			
	Unemployment Rate	7.9	0	43.6
	Unemployment Rate of 20 to 24 year olds	12.2	0	100
	Proportion of 20 to 24 year olds receving UI	0.156	0	0.753
	Proportion of Population 25+ with a University Education	0.169	0	0.757
	Proportion of Population 25+ with Less Than Grade 9 Education	0.257	0	0.710
	Proportion of 15 to 19 year olds not attending school	0.316	0	0.924
3.	SOCIAL INTEGRATION			
	Proportion of Population who are Immigrants	0.160	0	0.713
	Proportion of Population who speak a non-official language	0.131	0	0.872
	Proportion of Population who are Catholic	0.481	0	1.0
	Proportion of Population who are Jewish	0.12	0	0.905
	Proportion of Population 5+ who moved since last Census	0.531	0	0.846

Note: Total Sample size is 4,967 Census Tracts and Provincial Tracts from the 1981 Census, consisting of 3,185 Census Tracts and 1,782 Provincial Census Tracts. The total population varies from 262 to 20,483 with an average of 4,833. All dollar values are based on 1981 information.

Table 2
RESULTS FROM THE FACTOR ANALYSIS OF NEIGHBOURHOOD CHARACTERISTICS

		Social Captial	Economic Conditions	Ethnic Capital
1.	INCOME / AFFLUENCE			
	Proportion of Economic Families below the LICO	-0.558	0.408	0.256
	Proportion of Census Families with Income above $40,000	0.876	-0.204	0.110
	Average Value of Dwellings	0.640	-0.277	0.396
2.	EMPLOYMENT AND EDUCATION			
	Unemployment Rate	-0.263	0.857	-0.138
	Unemployment Rate of 20 to 24 year olds	-0.043	0.815	-0.167
	Proportion of 20 to 24 year olds receving UI	-0.325	0.484	-0.385
	Proportion of Population 25+ with a University Education	0.801	-0.196	0.198
	Proportion of Population 25+ with Less Than Grade 9 Education	-0.694	0.567	0.103
	Proportion of 15 to 19 year olds not attending school	-0.587	0.003	0.039
3.	SOCIAL INTEGRATION			
	Proportion of Population who are Immigrants	0.158	-0.353	0.803
	Proportion of Population who speak a non-official language	-0.123	-0.269	0.813
	Proportion of Population who are Catholic	-0.229	0.530	-0.145
	Proportion of Population who are Jewish	0.315	0.036	0.302
	Proportion of Population 5+ who moved since last Census	-0.012	0.380	-0.174
	Variance Explained by each Factor	3.329	2.904	1.933

Note: Table entries are Factor Loadings from….

Table 3
DESCRIPTIVE CHARACTERISTICS OF NEIGHBHOURHOOD CLUSTERS

	Average	Standard Deviation	Minimum	Maximum
Total Population per Cluster	240,050	458,331	609	2,239,280
Total 15 to 19 year old Populaton per Cluster	22,987	44,245	58	217,101
Number of CT/PCTs per Cluster	49.7	89.2	1	454
Social Capital	0.410	1.759	-2.557	5.283
Economic Conditions	0.582	1.315	-2.690	5.365
Ethnic Capital	0.956	1.394	-1.724	4.492

Table 4
DESCRIPTIVE STATISTICS OF PARENT CHILD DATA USED IN THE REGRESSION ANALYSIS

	Market Income					Earnings				
	Average	Median	Standard Deviation	Minimum	Maximum	Average	Median	Standard Deviation	Minimum	Maximum
	Number of observations = 849,662					Number of observations =750,534				
Child's 1995 Income	22,606	20,764	66,757	1,000	58,297,015	22,458	21,178	17,329	1,000	3,692,884
Averge Parental Income[1]	41,323	36,897	39,829	1,000	8,105,157	36,019	34,253	24,659	1,000	1,945,390
Log(Child's Income)	9.756	9.941	0.810	6.908	17.881	9.773	9.961	0.793	6.908	15.122
Log(Parents' Income)	10.394	10.516	0.746	6.908	15.908	10.245	10.441	0.819	6.908	14.481
Daughter	0.431			0	1	0.436			0	1
Single Parent Family	0.120			0	1	0.115			0	1
Number of Children[2]	2.560			1	19	2.546			1	19
Moved Once	0.161			0	1	0.164			0	1
Moved Twice or More Often	0.055			0	1	0.056			0	1
Moved Once*Parent Income	1.670			0	14.5	1.681			0	14.2
Moved Twice*Parent Income	0.561			0	15.3	0.568			0	14.5
Child's Age	30.6		1.1	29	32	30.6		1.1	29	32
Child's Age Squared	936		67	841	1,024	935		67	941	1,024
Parents' Age[3]	48.2		6.6	28	72	47.9		6.5	28	72
Parents' Age Squared	2,363		653	784	5,184	2,343		642	784	5,184
Social Capital	0.064	-0.124	0.902	-2.864	5.284	0.075	-0.110	0.896	-2.864	5.284
Economic Capital	-0.076	-0.242	0.868	-2.734	5.603	-0.077	-0.239	0.865	-2.734	5.603
Ethnic Capital	-0.086	-0.313	0.901	-1.778	4.784	-0.078	-1.778	0.905	-0.302	4.784
Observations per Cluster	8,582	1,604	16,587	14	79,932	7,581	1,469	14,507	13	70,004

Notes: (1) Income from both parents averaged over 1978 to 1982. (2) Number of Children present in the Household . (3) Age of the eldest parent.
The moved variables are defined as any residental move between 1978 and 1982.

Table 5
INTERGENERATIONAL INCOME AND EARNINGS MOBILITY FOR CANADA: LEAST SQUARES ESTIMATION RESULTS

	Market Income				Earnings			
	[1]	[2]	[3]	[4]	[1]	[2]	[3]	[4]
Constant	9.795	9.955	9.952	9.959	9.801	9.972	9.967	9.969
Log(Parents' Income)	0.163	0.187	0.148	0.146	0.115	0.118	0.0849	0.0842
Daughter		-0.352	-0.356	-0.357		-0.348	-0.354	-0.355
Single Parent Family		0.0983	0.0624	0.0608		0.0192	-0.00947	-0.0103
Number of Other Siblings		-0.00485	-0.00265	-0.00221		-0.00705	-0.003645	-0.00352
Moved Once		-0.0223	-0.0380	-0.0386		-0.0215	-0.0419	-0.0417
Moved Twice or More Often		-0.0619	-0.0799	-0.0804		-0.0606	-0.0844	-0.0844
Moved Once*Parent Income		-0.00424	0.00432	0.00617		0.00184	0.00843	0.00909
Moved Twice*Parent Income		-0.0148	-0.00278	-0.000698		-0.00497	0.00399	0.00477
Social Capital			0.0480	0.0380			0.0550	0.0542
Economic Capital			0.0501	0.0445			0.0699	0.0702
Ethnic Capital			0.0413	0.0380			0.0474	0.0462
Proportion Rural				-0.0251				-0.00718
Population of Cluster				-0.000903				-0.00188
R^2	0.0226	0.0725	0.0800	0.0801	0.0140	0.0649	0.0776	0.0777
Number of Observations		849,662				750,534		

The dependent variables are the natural logarithms of total market incomes and earnings of children in 1995, at the age of 29 to 32. All dollar values are measured in 1986 constant dollars using the CPI as the deflator. The models also include the age and age squared of the child (in 1995) and the eldest parent (in 1982). Standard errors are calculated to be robust to heteroscedasticity, with shading indicating that an estimate is NOT statistically significant, having a p-value greater than 0.05.

Table 6
SUMMARY OF ESTIMATED PARAMETERS FROM LEAST SQUARES ESTIMATION AT THE NEIGHBOURHOOD LEVEL

	Mean	Minimum	5th Percentile	25th Percentile	Median	75th Percentile	95th Percentile	Maximum
1. Market Income								
Constant (β_0)	9.950	9.477	9.662	9.872	9.955	10.028	10.213	10.346
Intergenerational Elasticity (β_1)	0.154	-0.028	0.043	0.118	0.148	0.173	0.289	0.469
Moved Once	-0.055	-0.528	-0.316	0.078	-0.040	-0.012	0.126	0.561
Moved Twice or More Often	0.025	-0.637	-0.342	-0.122	-0.079	0.003	0.322	6.121
2. Earnings								
Constant (β_0)	9.969	9.443	9.629	9.872	9.990	10.054	10.279	10.367
Intergenerational Elasticity (β_1)	0.085	-0.370	-0.011	0.059	0.084	0.110	0.230	0.542
Moved Once	-0.056	-0.779	-0.304	-0.087	-0.041	0.003	0.130	0.466
Moved Twice or More Often	-0.008	-0.881	-0.434	-0.144	-0.084	-0.027	0.286	7.105

Table entries are descriptive statistics of the estimated least squares coefficients for 97 neighbourhood clusters.

Table 7
SECOND STAGE LEAST SQUARES ESTIMATION RESULTS OF INTERGENERAIONAL PARAMETERS

	Market Income				Earnings			
	β_0	β_1	Moved Once	Moved Twice	β_0	β_1	Moved Once	Moved Twice
Constant	**9.967**	**0.157**	**-0.048**	**-0.071**	**9.975**	**0.099**	**-0.055**	**-0.066**
Social Capital	**0.027**	**-0.012**	**0.014**	0.007	**0.037**	**-0.010**	**0.021**	0.006
Economic Conditions	**0.060**	**-0.018**	-0.005	-0.021	**0.078**	**-0.022**	-0.005	-0.021
Ethnic Capital	0.012	**-0.007**	0.001	-0.004	**0.026**	**-0.010**	0.001	-0.009
Social * Economic	0.001	-0.009	0.001	-0.008	-0.003	-0.001	0.006	-0.005
Social * Ethnic	0.002	**0.008**	0.002	0.000	0.004	0.001	-0.002	0.003
Economic * Ethnic	0.009	-0.007	-0.004	-0.010	0.004	-0.002	-0.001	-0.005
Proportion Rural	-0.058	-0.029	0.033	-0.011	-0.28	**-0.048**	**0.053**	-0.046
Population of Cluster	-0.005	**0.009**	0.000	0.012	-0.006	**0.009**	-0.002	0.009
R^2	0.791	0.385	0.159	0.048	0.849	0.469	0.24	0.06
Number of Observations	97				97			

The dependent variables are parameter estimates from the least squares model of intergenerational mobility at the neighbourhood cluster level. Table entries are regression results from weighted least squares, with shading indicating that the p-value is less than 0.05 and **bold** with shading indicating a p-value less than 0.01.