Poverty Dynamics in Canadian Communities: A Place-Based Approach

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February 25, 2006

Abstract: Canadian poverty rates have persisted at disappointingly high levels despite almost 15 years of continuous prosperity. This problem is exacerbated because some communities and neighbourhoods having exceedingly high poverty including very high rates for vulnerable demographic groups such as aboriginals and recent immigrants. We investigate low-income rates (poverty rates) for over 2,400 Canadian communities over the 1981-2001 period. By focussing on communities, we fill a void in the related Canadian literature which tends to examine individuals or more aggregate measures such as provinces. Our approach allows us to assess the role of place-based economic development policies versus those based on demographic characteristics. Particular attention is given to communities with different shares of aboriginals and recent immigrants. One novel feature is our analysis of both "short-term" and "long-term" causes of differential community poverty rates. The results suggest that community poverty rates are more affected by initial economic conditions in the short-term, with certain demographic factors becoming relatively more important in the long-run. The "good" news is that communities with greater shares of aboriginals and recent immigrants appear to experience higher poverty only in the near-term.

We thank Ray Bollman of Statistics Canada for his help and encouragement of this research. Likewise, we appreciate Rose Olfert and Jamie Partridge for their helpful comments.

1. Introduction

The objectives of welfare and equity reflected in the Charter of Rights and Freedoms are well entrenched among Canadians. This commitment was manifested more than 15 years ago when the House of Commons unanimously resolved to eliminate poverty among Canadian children by the year 2000. Yet, despite many years of economic growth with healthy government budgets, poverty retains its stubborn hold (Campaign 2000, 2002). Statistics Canada data indicates that after reaching a low of 14% in 1989, the population share living below the before-tax low-income cut-off (LICO, hereafter referred to as poverty) soared to almost 21% in 1996, before declining to 15.5% in 2001.[1]

Reducing poverty has tangible societal benefits beyond equity concerns. Higher poverty adversely affects the physical health of the workforce, reducing the quality-of-life of poor families (e.g., Hou and Myles, 2004), compromising workplace productivity, and ultimately increasing healthcare and other government expenditures. Another indirect cost of high poverty relates to the link between labour-market conditions and crime (Freeman, 2001). Perhaps the greatest costs of high poverty are intergenerational. The environment created when families face severe financial stress is detrimental for raising children, and there is a growing consensus that income of a child's family has long-term consequences for their health, education, nutrition, and future income as adults (Karoly et al., 1998; Carneiro and Heckman, 2003; Case et al., 2003). This suggests large potential benefits from poverty reduction for children from disadvantaged families, when measured in terms of increased future earnings and reduced social-service expenditures.

Various studies have tried to explain why Canadian poverty rates remain stubbornly high despite steady national economic growth (Osberg and Xu, 1999; Osberg, 2000; Vera-Toscana et al., 2001). Aboriginals, single parents, and immigrants make up the bulk of the poor. For example, Stokes et al. (2004) paint a troubling picture for the approximately 50% of the aboriginal population living in urban centres (Statistics Canada, 2003). In 2000, roughly 42% of aboriginals living in metropolitan areas were in low income households (Heisz and McLeod, 2004). For perspective, Canada ranked fourth in the world on the 2004 United Nations Human Development Index. Yet, if aboriginals were viewed separately, "Aboriginal Canada" would slip to 78th—a rank currently held by Kazakhstan (World Vision, 2005). For these reasons, a recent Aboriginal Summit endorsed a 10-year federal effort to raise their living standards (Canadian Broadcasting

[1]According to Statistics Canada, LICOs are intended to convey the income level at which a family may be in dire circumstances because it has to spend a greater portion of its income on basic necessities (food, clothing and shelter). The LICOs are adjusted for family size and by community size.

Corporation, 2005; Ibbitson, 2005). Likewise, with federal and provincial policy initiatives to increase immigration, improving the welfare of recent immigrants takes on added significance (Canadian Policy Research Network, 2003).

To empirically investigate these issues, we explore the variation in the level of poverty among 2,400 Canadian communities using 1981, 1986, 1991, 1996 and 2001 census data.[2] This place-based approach makes the paper unique, as previous studies on Canadian poverty have mainly emphasized the individual or household. When aggregate measures were used, they were at the national or provincial level. We are unaware of an extensive statistical study that empirically examines the causes of *local* poverty on a Canada-wide basis. In particular, if there are place-based causes such as weak local labour markets, household level studies may provide an incomplete picture of potential solutions. For example, microanalysis may indicate that increasing a disadvantaged individual's education may sufficiently increase their earnings to lift them above the poverty threshold. But Osberg (2000) notes that this may have no impact on the *overall* regional poverty rate, as it may push another person lower in the job queue and into poverty.

Therefore, this study will focus on economic, demographic, and geographic characteristics of regions. The spatial dimensions of poverty and the plight of off-reserve aboriginals and recent immigrants will be highlighted. A particular focus will be on differential causal mechanisms between rural and urban areas, between high and low poverty-rate communities, and between short- and long-run poverty rate determination. In doing so, we will explore whether place-based policies may complement general policies aimed at reducing poverty (Blank, 2005).[3]

2. Conceptual Model of Local Poverty

Local poverty rates, like other local economic indicators, are shaped by the socioeconomic and geographic characteristics of the region. Levernier et al. (2000) argue that poverty rates vary across geographic areas because of differences in both person–specific and place-specific characteristics. For example, the local economic structure can "shield" or "expose" the locality to economic trends. These can affect labour market participation, which is a key determinant of

[2]The specific geographic groupings are Consolidated Census Subdivisions (CCS)—which are approximately communities. A CCS is a grouping of adjacent census subdivisions. Generally the smaller, more urban census subdivisions (towns, villages, etc.) are combined with the surrounding more rural census subdivision to create a geographic level between the census subdivision and larger census division (du Plessis et al., 2002).

[3]There have been many U.S. community level poverty studies (Partridge and Rickman, 2005; Levernier et al., 2000; Weber et al., 2005; Blank, 2005). However, this large U.S. literature does not fully generalize to Canada.

poverty. Moreover, the local industry structure affects the number and quality of job opportunities (Blank, 2005). On a regional basis, agglomeration economies and labour specialization lead to higher wages and potentially better labour market matches in urban communities. Hence, at a conceptual level, communities with favourable economic conditions are expected to have lower poverty rates, all else constant. Yet, newly created jobs in a certain locality may be taken by more-skilled and experienced in-commuters or new in-migrants, especially when local workers cannot meet the skill requirements of these jobs.

Regarding demographic factors, age composition, family structure, and the resulting household dependency rate are all possible determinants of differential local poverty rates. Likewise, at the household level, Finnie and Sweetman (2003) show that family structure affects poverty duration and dynamics. Human capital, represented by average educational attainment, is associated with greater labour-force participation and wages, which in turn affect local poverty rates (Lee, 2000). Sarlo (1996) underscores how more formal education typically yields more secure employment and higher earnings. Schiller (1984) further explains that education appears to have a major impact on income distribution, which further influences the extent of poverty.

The nature of the link between community poverty rates and racial/ethnic composition is an important policy question. Extreme poverty rates among aboriginals, recent immigrants, visible minorities, the disabled, and lone-parent families are evident in scores of communities (Lee, 2000). Labour market discrimination may be among the barriers preventing these groups from achieving adequate incomes (Schiller, 1984).[4] Because these groups may face other employment disadvantages such as a lack of skills or language barriers, a strong labour market may be insufficient to reduce their poverty rates, especially in high-poverty clusters.

Local poverty also has broad regional dimensions that extend beyond a community's borders. For example, spatial mismatch models suggest that proximity to employment opportunities is important—i.e., there is a mismatch between where the jobs are being created (say in the suburbs) versus where the poor families reside (say in the central core) (Levernier et al., 2000; Weinberg, 2004). Likewise, because job creation occurs disproportionately in large urban areas, access to these jobs is critical to the poor. In targeting the poor, place-based policy adherents argue that economic development policies should enhance *local* growth because of factors such as neighbourhood effects, economic-role models, and knowledge spillovers (Fong and Shibuya,

[4]As Schiller (1984) notes, racial/gender discrimination need not covey notions of injustice or injury. It may merely portray selection based on statistical discrimination, though still with adverse consequences.

2003; Frenette et al., 2004; United Way of Toronto, 2004; Partridge and Rickman, 2005). Furthermore, the issue of spatial clustering of low- and high-poverty warrants more attention.[5]

3. Empirical Model

This study adopts the empirical specification used by (Levernier et al., 2000), though our approach differs from their study in orientation and in the nature of the explanatory variables. In this regard, our unit of observation is census consolidated subdivisions (CCSs, see footnote 2). To explore geographic differences, in some cases, we divide the sample into "urban" and "rural" CCSs. The urban set comprises CCSs located in Census Agglomerations (CAs) and Census Metropolitan Areas (CMAs), with rural CCSs being defined as falling outside of CAs and CMAs.[6] To help sort out differing "short" and "long-term" effects, we will estimate both cross-sectional and panel-data fixed effects models (described below).

First, in what we define as a "conservative model," we will cross-sectionally regress the 1996 or 2001 CCS poverty rate—expressed as the percentage of individuals living below the LICO—on explanatory variables measured in 1991. This model explores how changes in initial conditions affect subsequent poverty rates. Because the underlying cross-sectional differences in the variable levels are retained in this model, the results will be interpreted in a long-run fashion (Partridge, 2005). Moreover, the conservative formulation reduces endogeneity concerns because of the predetermined nature of the explanatory variables. The conservative cross-sectional model is shown as follows for CCS i located in province p:[7]

$$(1)\ \text{Poverty}_{ip,t} = \mu + \delta\,\text{Poverty}_{ip,t-\ell} + \varphi\,X_{ip,t-\ell} + \theta\,\text{WPoverty}_{ip,t-\ell} + \alpha\,\text{DIST}_{ip} + \gamma\,\text{PROV}_{p} + \varepsilon_{ip,t}$$

In the above equation, ℓ denotes the lagged number of years (5 or 10); while $Poverty_{t-\ell}$ is the lagged individual poverty rate, which captures mean reversion and any other lagged adjustment effects based on historic poverty levels (Partridge and Rickman, forthcoming). $X_{i,t-\ell}$ includes

[5]Hajnal (1995) argues that in contrast to the intense American debate, the Canadian poverty literature pays less attention to concentrations of urban poverty. He further argues that race and ethnicity are not the primary factors behind concentrated urban poverty in Canada.

[6]Census Agglomeration (CA) and Census metropolitan area (CMA) are defined as consisting of one or more adjacent municipalities surrounding a major urban core. The population required for an urban core to form a CMA is at least 100,000 and at least 10,000 to form a CA. According to Heisz and McLeod (2004), to be included in the CA or CMA, other adjacent municipalities must have a high degree of integration with the central urban area, as measured by commuting flows.

[7]All of the distance measures were derived using Geographic Information Systems at the University of Saskatchewan Canadian Rural Economy Research Lab. All other data were obtained from a special tabulation by Statistics Canada. For the most part, this data is available from the Agricultural Division of Statistics Canada on the *CD-ROM* "Selected Variables from the Census of Population, 1981 to 2001 tabulated within 1996 boundaries for census divisions and census consolidated subdivisions" (contact Ray Bollman). Due to regular boundary changes and amalgamation of local governments, we use 1996 consistent boundaries in our estimation.

lagged economic and demographic characteristics, which are briefly described below.

The key *economic* variables include six CCS industry employment shares and the nonfarm self-employment rate, along with the employment/population rate and the unemployment rate, measured by gender for the prime-age workforce (25-54 years old).[8] In particular, we control for both the unemployment and employment rates to account for regional unemployment differences (among those actively seeking work) and in labour force participation rates (e.g., Atlantic Canada versus Alberta). The employment rate is expected to be inversely related to the poverty rate with the opposite holding for the unemployment rate. Likewise, the self-employment rate considers the role of local entrepreneurship.

The key d*emographic* variables include the percentage of the population that is aboriginal and the share that is recent immigrants.[9] Note that Statistics Canada does not report income measures from reserves, thus we are capturing the one-half of the aboriginal population living off reserve. The local CCS age composition is included to account for the dependency ratio, whereas educational attainment shares control for human capital differences. Other demographic variables include the population shares by place of birth origin (e.g. North America and Western Europe, Latin America, Africa, Oceania etc). In addition, the percentage of the population who speak English, French, or are bilingual (English and French speakers) are also added to the model to capture human capital and immigration effects.

The average poverty rate in surrounding CCSs (*WPoverty)* is included to capture spatial spillovers, poverty clusters, and neighborhood effects. *WPoverty* is measured as the distance weighted average poverty rate in surrounding communities.[10] Several measures of employment accessibility to urban labour markets are also considered (*DIST*). First, we calculated the linear distance and its square from the centroid of the CCS to the centroid of the nearest CMA or CA. For a CCS located in a CA/CMA, this measures accessibility to the core of the urban centre. For example, if spatial mismatch exists between the residents in the core and jobs in the fringe, there

[8]The industry share coefficients are measured relative to the omitted industry category, social services.

[9]Immigrants who were in Canada for more than 5 years are not included as there is more scope for integration.

[10]Specifically, we take $\boldsymbol{W} \times Poverty$, where $\boldsymbol{W}$ is a row standardized distance-smoothing decay weight matrix created using the inverse of the squared distances of neighboring CCSs—i.e. the greater the distance between two CCSs, the weaker the spillover effects. *Poverty* is the corresponding vector of CCS poverty rates. A bandwidth of 880 kilometers is used as a cutoff distance, or areas beyond 880 kilometers are given a zero weight. Explanatory variables from neighboring communities should mitigate community spillovers. As a result, spatial econometric estimation (spatial error model) obtained results that were not significantly different compared to linear regression coefficients and t-statistics adjusted for regional clustering. Thus we decided to adopt the non-spatial econometric regression models with the error terms adjusted for regional clustering.

should be a negative relationship between distance to the core and the urban poverty rate. For rural areas, these distance terms reflect accessibility to jobs in the nearest urban center, and thus, would be positively associated with poverty rates.

As another measure of "thick" regional labour markets or agglomeration, we include the number of people who reside within 100kms of the CCS (one-hour commuting radius) and between 100-200kms of the CCS. We expect the <100km surrounding population term to be inversely related to poverty rates, but the 100-200km is hard to predict *a priori.* Rather than a thick labour market, a greater distance to more populated areas may indicate that the local community is remote, and lacks good access to jobs. For these reasons, these measures are likely more germane for rural communities.

Provincial fixed effects (*PROV*) are included to control for unique provincial characteristics, such as differences in government policies, welfare programs, and culture. Potential cross-sectional correlation in the residuals is accounted by a robust process that assumes that CCS residuals are correlated within a given Census Division (CD), but uncorrelated across CDs.[11]

One weakness of the conservative cross-sectional model is that there could be unmeasured CCS fixed effects that are correlated with the explanatory variables, producing biased results. Thus, we also estimate a CCS fixed effects model by pooling census data for 1981, 1986, 1991, and 1996. The census year 2001 is not included because of inconsistency in the data for the explanatory variables. The alternative fixed effect panel estimation is shown as:

$$\text{Poverty}_{ip,\,t} = X_{ip,t}\,\beta + \sigma_{ip} + \tau_t + \varepsilon_{ip,t}, \tag{2}$$

where X includes the explanatory variables, σ_{ip} denotes the CCS fixed effects, and τ_t is a time dummy for period t (1981 is the omitted period). The time dummies account for national policy changes and business cycle effects that have a common impact across the country.[12]

4. Empirical Results

[11]Statistics Canada defines a CD as a provincially legislated area (such as counties, *municipalité régionale de comté,* and regional districts) or their equivalents. CDs are generally constructed to reflect functional economic regions. There are 288 CDs using 1996 boundaries. The corresponding robust t-statistics are calculated using the STATA econometric software Cluster option.

[12]In this model, the lagged CCS poverty rate and the average surrounding CCS poverty rate are dropped to avoid endogeneity problems, in which the lagged dependent variables are correlated with the CCS fixed effect. That is, including a lagged dependent variable can lead to *dynamic panel model bias* (Greene, 2003). This bias in fixed effects models is due to the correlation of the lagged dependent variable with the disturbances. In this case, using general methods of moments (GMM) with instrumental variables may circumvent problems with correlations of errors. For example, the Arellano and Bond (1991) GMM first-difference estimator can be used to overcome the problem. However, due to a lack of observations per cross-section unit, we did not use GMM estimation.

4.1 Descriptive Statistics

Figure 1 shows the geographical variation of 2001 community poverty rates for the ten provinces (based on 2001 census boundaries). It depicts the spread of low, average and extreme poverty across CCSs. The figure shows high-poverty clusters in parts of Quebec and Atlantic Canada, whereas lower-poverty clusters dominate in southern Ontario. It also depicts mostly medium poverty levels in both British Columbia and Alberta, with exurban Calgary and Edmonton being exceptions. However, there is no clear spatial pattern in Saskatchewan and Manitoba with low poverty and high poverty communities being located near one another.

Our sample includes the 2,607 CCSs using 1996 boundaries. Yet, we omitted observations for which Statistics Canada did not report all of the data, which were primarily CCSs with less than 250 population. As shown Appendix Table 1, when pooling 1981, 1986, 1991, and 1996 together, there are 9,455 observations with complete data. Columns 1 and 2 show selected unweighted descriptive statistics for the full sample while the next four columns report them for the urban and rural sub-samples.

Comparison of the LICO rate in the full-sample and in the sub-samples show that 17% of the population is poor in the entire sample, while the corresponding rates are 13% and 18% for the urban and rural samples respectively.[13] With regards to the economic variables, both male and female employment rates are higher in urban CCSs, which could be attributed to the advantage of agglomeration economies including easier access to jobs. Urban CCSs also have higher average educational attainment. The (off-reserve) population share of aboriginal descent is higher in rural areas, while the percentage of recent immigrants in the urban sample is almost three times that of the rural sample.

4.2 Regression Results

4.2.1 Cross-Sectional Models

The regressions results of equation (1) and (2) are depicted in Appendix Table 2. Columns (1) and (2) report the results of the conservative cross-sectional model that regresses either the 1996

[13]A common question is what is the most appropriate indicator of a poor household? In the absence of an accepted definition of poverty, Sarlo (1996) notes that the most commonly used measure is the poverty rate (percentage of the population that lie below the LICO). In this study, we also deem that the LICO meets our purposes. However, Osberg (2000) notes that this measure does not reflect the degree to which the incomes of the poor fall below the poverty line. He uses a different poverty index that combines the poverty rate, average poverty gap ratio, and inequality in poverty gaps. Though the index proposed by Osberg (2000) is more complete, due to data requirements at the CCS level, we could not use such an index.

or 2001 poverty rate on 1991 values of the explanatory variables.[14] These models are followed by the 1981-1996 fixed effect (FE) results for various specifications.

Comparing columns 1 and 2 illustrates some key patterns. First, the lagged poverty rate (1991) is positive and significant in both cases, illustrating that there is long-run persistence in local poverty rates. One explanation is limited household mobility and within-household transmission effects to children, as well as household "occurrence dependence" (Finnie and Sweetman, 2003). The average (distance weighted) poverty rate in neighboring CCSs is also positive and significant, suggesting that there are negative spillover effects. The good news is that poverty reduction measures in one community will not only improve the situation in the targeted location, but it appears to have additional benefits for neighboring communities as well.

Economic conditions in 1991 tend to have stronger impacts on 1996 poverty than on 2001 poverty, though the significance of the coefficients is generally marginal. For example, the female employment rate is significant (10% level) with the expected negative coefficient in the 1996 model, but insignificant in the 2001 model. Contrary to expectations, the agricultural employment share has a negative and significant effect in both years. The employment share of the other primary sector (fishing, forestry etc), manufacturing, and distribution and personal service sectors are inversely related to the 1996 poverty rate at the 5% level, but are insignificant in the 2001 model. While the local economic structure has medium-run (5-year) impacts, the good news is again that an adverse economic structure does not appear to have large permanent impacts on community poverty rates (10 years). Finally, the percentage of nonfarm self employed in the community has a significantly negative coefficient, supporting the notion that home-grown capital and entrepreneurship reduces local poverty rates.

Consistent with positive agglomeration effects and better commuting linkages, a greater population base within 100kms is associated with less poverty in the 1996 model, supporting claims that thicker regional labour markets improve the prospects of disadvantaged workers. However, being located near a larger population that is 100-200kms away is associated with higher poverty rates, perhaps due to remoteness from larger population centres. The positive own-CCS population density coefficient is consistent with constraints on labour market information and employment accessibility in more dense labour markets (Weinberg, 2004). For example, congestion in large urban centres may limit the ability of the poor to access more

[14]For the conservative models, the unweighted-mean 1996 CCS poverty rate (LICO) for the entire sample is 16.5% (std. dev.=7.6) and the unweighted-mean CCS poverty rate (LICO) for 2001 is 13.4% (std. dev.=6.6).

distant parts of the city, especially if constrained to travel via public transit.

Regarding the demographic variables, the percentage of aboriginals living in the CCS is statistically insignificant in both the 1996 and 2001 models. After controlling for CCS labour market and demographic variables, this result suggests that other community factors are more important in the long-run than the aboriginal population share. The "good" news is that while many off-reserve aboriginals live in communities with challenging circumstances, there is no *additional* "poverty penalty" in communities with a greater aboriginal concentration. These results hold some promise that poor households of aboriginal descent can escape their low-income status in the long run if conditions in their community improve.

The 1991 population share of recent immigrants is also statistically insignificant in both the 1996 and 2001 models after accounting the other community and demographic factors. Likewise, the place of birth measures (not shown) and the language variables are insignificant. The outcome might be unexpected considering that recent immigrants have high poverty rates. However, immigrants have historically had above-average levels of education, though systemic impediments may contribute to a social exclusion for many newcomers (Papillon, 2002). Yet, much like the aboriginal findings just described, if new immigrants get adequate support in their transitional period, they may not be a high-risk poverty group in the long term (or at least their community may not be at higher risk). However, the above-average immigrant poverty rates are disturbing, which will be further explored in the fixed effect models below.

Greater average educational attainment is associated with lower CCS poverty rates (with the percentage with less than 9 years of education as the omitted group). This clearly shows the paramount importance of increasing average education levels as a policy in averting community poverty, especially raising educational attainment above the high school graduate level. [15]

To test for robustness of the cross-sectional results, we first re-estimated the 1996 poverty rate model using 1996 values of the explanatory values (not reported). However these results were not significantly different and they continue to show the relative importance of some key demographic variables, especially the education variables.[16] In addition, because there are clear differences in rural/urban labour-markets and socioeconomic characteristics, we re-estimated

[15]The coefficients on all the provincial dummies are negative indicating that they have lower poverty rates compared to the omitted province, Newfoundland, all else constant (not shown).

[16]A separate regression was also estimated, in which 2001 poverty rates were regressed on the 1996 values of the explanatory variables (not shown). However, the result was consistent with the regression results in Column 1.

these models after dividing the sample between urban and rural CCSs (Lee, 2000) (not reported). In the urban regression, the economic variables were statistically less important in general, while in the rural sample, the results were similar to those in column 1. Rural/urban distinctions will be examined in more detail below.

To summarize, the most striking pattern from the conservative cross-sectional models is the relative unimportance of the economic variables, especially in the 2001 model. In this regard, immediate job creation appears to become less crucial in the long-run, though in the fixed effect models described below, we will explore whether it matters more in the short/medium term. Conversely, using a long-run model that retains cross-sectional variation, demographic factors such as education play a relatively stronger role. In some "promising" news, greater initial concentrations of both recent immigrants and aboriginals had few long-run detrimental impacts on community poverty rates, once other influences are considered.

4.2.2 Fixed Effect Models

By relating the level of the explanatory variables to the future poverty-rate level, the conservative models likely reflect longer-term relationships (Griliches and Mairesse, 1984, 1995; Forbes, 2000). However, to capture more short/medium-run linkages, the five-year census data for 1981-1996 is pooled for fixed effects estimation, which is the model shown in equation 2. Thus, we examine whether a *within-CCS* change in the explanatory variables produces a within-CCS change in the poverty rates.[17] In FE models, all the variables that are constant overtime have to be omitted (for instance distance to the nearest CA or CMA). In addition, the fixed effect models should be cautiously interpreted due to measurement error bias that can attenuate the regression coefficients (Griliches and Mairesse, 1995).

The results of the fixed effect (FE) model are depicted in columns 3-8 for different samples and model specifications. Column 3 reports the FE results using the entire sample. Generally, economic conditions are expected to have stronger *short-term* impacts because there is off-setting longer-term migration and commuting responses, in which jobs are increasingly taken over time by non residents, squeezing out the disadvantaged original residents (Partridge and Rickman, 2005). Thus, it is not surprising that relative to the conservative models, *within-CCS*

[17]The merit of fixed effect estimation is the ability to control for all stable covariates. Fixed effect models essentially difference the dependent and explanatory variables around the respective group means, which subsumes persistent community-level effects into the CCS fixed effect. Hence, fixed effect panel models yield parameters that indicate a short/medium term impact. Because community-level cross-sectional variation is retained in the estimation, cross-sectional (OLS) models generally provide a long-run relationship between the dependent and independent variables.

changes in economic conditions have a much stronger impact in reducing poverty rates over 5-year spans than in the prior models that retained levels. For example, in the FE model, both employment rates are now highly significant with the expected negative sign. However, the male unemployment rate is unexpectedly negative, though the magnitude of its coefficient is overwhelmed by the male employment rate coefficient. Finally, within-CCS decreases in the agricultural employment share are associated with lower poverty rates.

Columns 4 and 5 report the FE results obtained by disaggregating the data into urban and rural CCSs. Consistent with the total sample, the urban and rural regression results indicate that all of the key employment/unemployment variables are significant at the 10% level except the female unemployment rate.[18]

Unlike the cross-sectional and full sample FE results, after controlling for labour market and demographic factors, increasing concentrations of aboriginals in urban communities lead to a higher short-run incidence of poverty. Greater short-run vulnerability to poverty may be more problematic for newly arrived urban aboriginals as community support mechanisms may be inadequate in smoothing the transition from reserves. These support mechanisms warrant special attention as the number of aboriginals arriving in urban Canada continues to climb.

The recent immigrant population share also has a large statistically significant positive impact on short-term (5-year) urban CCS poverty rates. As was the case for aboriginals, these results suggest that concentrations of potentially vulnerable groups in low-income neighborhoods and communities have consequences for short-term poverty rates. This suggests the need for faster integration of these groups into the Canadian mainstream. Yet, as we noted above, the conservative cross-sectional results suggest that the adverse impacts for communities with high shares of immigrants and aboriginals may not endure, which would be somewhat reassuring.

The rural results in column 5 indicate some notable differences compared with urban Canada. For example, in rural Canada, language proficiency plays a more important role. Rural CCSs with increasing population shares that speak the official languages have lower short-run poverty rates, suggesting that enhanced language supports in rural Canada would pay dividends. The language difference may also relate to urban enclave effects where immigrants from the same

[18]Due to lack of data, the percentage of lone-female parent households was not included, though it is possibly an endogenous factor. However, several U.S. place-based poverty studies have found a significant positive association between single female headed households and the level of poverty (e.g. Levernier et al., 2000; Partridge and Rickman, 2005). See Finnie and Sweetman (2003) for micro-level evidence from Canada.

origin country may have better networks for language and cultural integration, but these are weaker mechanisms in rural Canada.[19] Thus, while the recent immigrant share is insignificant, the rural "immigration" effect may be captured by the language variables. Another notable difference between the rural and urban samples is that the percentage of aboriginals living in a rural community is not significant, perhaps because there are stronger networks in rural communities.

Among the demographic factors, the education variables generally have the expected negative and significant coefficients. There is some evidence that the education response is greater in the urban sample—especially at the key high school graduate level. For example, a 1 percentage point increase in the population share that are high school graduates is associated with 0.26% lower short-run poverty rate in urban CCSs, but only 0.10% in rural CCSs. Further research should determine whether greater average educational attainment reduces community poverty rates by raising the labour-force participation rate or by raising the wages of existing workers.

As noted above, poverty rates can be geographically clustered. Partridge and Rickman (2005) found that high-poverty U.S. counties responded differently to the underlying factors than low-poverty counties. Thus, separate regressions were estimated by partitioning the data into high-poverty CCSs using a standard high/low poverty divison point of 20% (Partridge and Rickman, 2005, forthcoming). The "high-poverty" urban and rural regression results are reported in columns 6 and 7.

In both high-poverty regressions, the male labour market responses are about the same as in the corresponding full urban and rural samples. The "good" news is that improved economic conditions for men can improve the prospects of the poor even in the most distressed communities—i.e., any structural community impediments do not appear to limit the ability of poor men (and their families) to participate in economic growth. However, the poverty-reducing effects of a greater female employment rate are much smaller in both high-poverty samples. The smaller response suggests that enhanced (place-based) work supports such as better daycare in high-poverty communities may help ensure that the benefits of economic growth lift families out of poverty. One notable difference between the high-poverty and full rural samples is that educational attainment appears to have smaller poverty-reducing effects in high-poverty

[19] An influx of low-skilled immigrants may increase the local supply of unskilled labour, causing the unskilled labour wage rate to decline, which would harm local (unskilled) native-born Canadians. In this respect, Levernier et al. (2000) argue that native low-skilled labourers may out-migrate in response to greater inflows of immigrants. As a result, where native out-migration occurs, the effect of immigration might have an ambiguous impact on wages.

communities, which could suggest a lack of higher-skilled jobs.

In high-poverty urban CCSs, an increasing aboriginal share of the population has a rather large adverse impact on short-term poverty rates (coefficient = 0.19). This indicates that concentrating disadvantaged aboriginals in high-poverty urban communities has particularly adverse consequences. In fact, when the regression was re-estimated for low-poverty urban areas (not reported), the aboriginal population share had a much smaller coefficient of 0.05 (t=2.01). Likewise, the point estimates also suggest a larger response to greater recent immigrant shares in high-poverty urban CCSs.[20]

In column 8, another regression was estimated on the full sample to explore how the results differ if only the economic variables were included in the model. The rationale is twofold. First, the demographic variables may mask some of the impact of the economic variables. Second, as a policy lever, changing a community's economic conditions may be easier than altering its demographic composition (though both are hard to change).

These results continue to show that many of the economic variables are statistically significant. Surprisingly, the magnitude of the coefficients is similar to their sizes when the demographic variables were included in column 3. Indeed, the general robustness of the economic results when comparing the results to column 3 suggests that multicollinearity is not driving the previous economic findings. The relatively high (within) R-squared statistic in column 8 (0.19) compared to the full model in column 3 (0.23) supports our conclusion that place-based *economic* factors are more important in the short/medium run. Conversely, the cross-sectional results suggested a much smaller role for local economic conditions to persist in the long-run, while the demographic attributes of the community become relatively more important.

5. Policy Discussion and Summary

Using 1981-2001 Census data, this study examined the prevalence of low-income households across over 2,400 rural and urban Canadian communities. Using communities as our unit of observation allows us to sort out the role of place-based economic conditions from demographic characteristics of the population. A particular emphasis was given to decomposing short-term effects (5 years or less) from long-term effects (5 years or more). Because of concerns regarding

[20]Combined with high poverty, spatial segregation of immigrants can be detrimental, perhaps leading to the social exclusion of future generations (Papillon, 2002). Yet, the spatial concentration of immigrants may play an offsetting positive role in minimizing settlement problems faced by new immigrants through networking effects.

the dynamics of poverty, this approach should be especially appealing to policymakers. Among community-based demographic attributes receiving special attention were the population shares that were aboriginal and recent immigrants.

Retaining the cross-sectional differences across communities, the long-run OLS models suggested that some demographic attributes such as the initial level of educational attainment were more closely related to lower poverty rates 5 to 10 years in the future. Conversely, initial labour-market conditions had relatively small long-run effects. Initial industry structure also had small impacts after five years, though inside the five-year window, greater employment shares in manufacturing were also associated with lower local poverty rates. Greater shares of self-employed workers were also associated with lower poverty rates 5-10 years in the future. Finally, there was evidence that local poverty can be persistent and that there are clustering effects where neighbouring community poverty rates have spillover effects.

The *within* fixed effects models suggested that economic conditions had a much greater influence on poverty rates inside a five-year window. In fact, most of the variation in five-year community poverty rates can be explained by the economic variables alone. The results suggest improvements in economic conditions can be effective in reducing poverty rates in the near-term. Yet, unless labour-market conditions are permanently improved, the favourable economic effects appear to decay over time. One possible explanation is that in-commuters and new migrants eventually take most of the newly created jobs in a community (Partridge and Rickman, 2005). Thus, in the long-term, improving certain demographic conditions is relatively more effective in reducing poverty rates—e.g., raising educational attainment. Likewise, increasing self-employment rates through community programs such as micro-financing, business plan instruction, and marketing information may also be effective in the long term.

Poverty rates for communities with higher aboriginal and recent immigrant population shares take on a special dynamic. In the short-term, communities with greater aboriginal population shares experience higher poverty rates. This pattern mostly applies to urban communities and especially those with "high" poverty rates. These results are clearly consistent with the need to facilitate labour-market and community integration for aboriginal families that move from reserves and rural areas to cities. Because so much attention has been focused on the abhorrent conditions on many reserves, the plight of recent urban aboriginal migrants may not be receiving adequate attention. However, the "good" news is that higher initial aboriginal population shares

are not associated with greater long-term poverty rates. These results indicate that communities can adjust, but this adjustment should be accelerated.

Urban communities with greater initial shares of recent international immigrants appear to experience higher short-term poverty rates (especially in high-poverty urban communities), but these effects also diminish in the longer-term. For rural communities, it is not so much an immigrant effect, but rather language proficiency is what affects short-term poverty rates. Again, these results suggest that immigrants need to be more quickly integrated into their community. This concern is heightened because Canadian immigration policy is increasingly receptive to family reunions and refugees relative to the past emphasis on "economic" immigrants (Reitz, 2002; Citizenship and Immigration Canada, 2005). This shift may lead to an influx of less-skilled immigrants that are more vulnerable to poverty. Even higher-skilled immigrants face problems when their credentials from native countries are not recognized. Yet, the "good" news is again that greater recent immigrant shares are not associated with higher long-term poverty rates.

In summary, there are still many questions that need to be addressed. First, even as economic conditions have key short-term impacts, what are the most efficient ways to develop place-based economic policies? Clearly, some areas are too remote or face too many barriers for economic activity to be stimulated in a cost-effective fashion. Second, though this study identified factors consistent with spatial mismatch, the role of accessibility to employment merits more attention. Third, more research is needed to ascertain how neighboring community poverty rates spillover and create geographic clustering. For instance, is it through peer-effects or is it through greater labour market competition among less-skilled workers? Finally, more research should take place using indicators that measure the intensity of community poverty (e.g., Osberg, 2000). Regarding these and other questions, it is hoped that this research stimulates more community-level poverty research.

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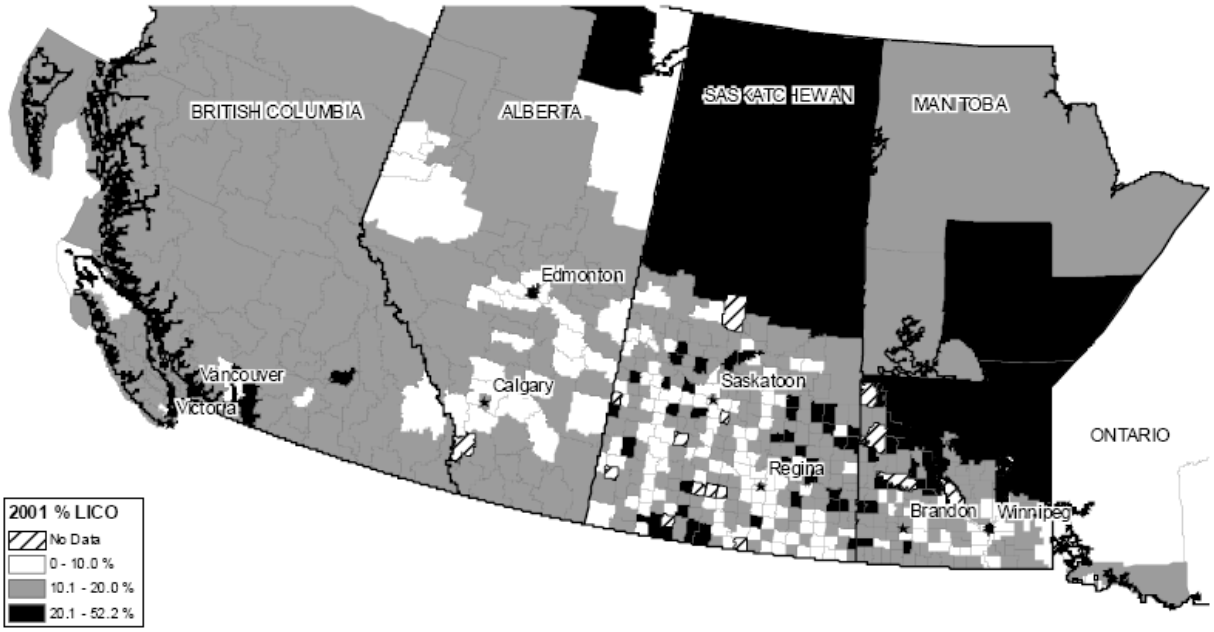
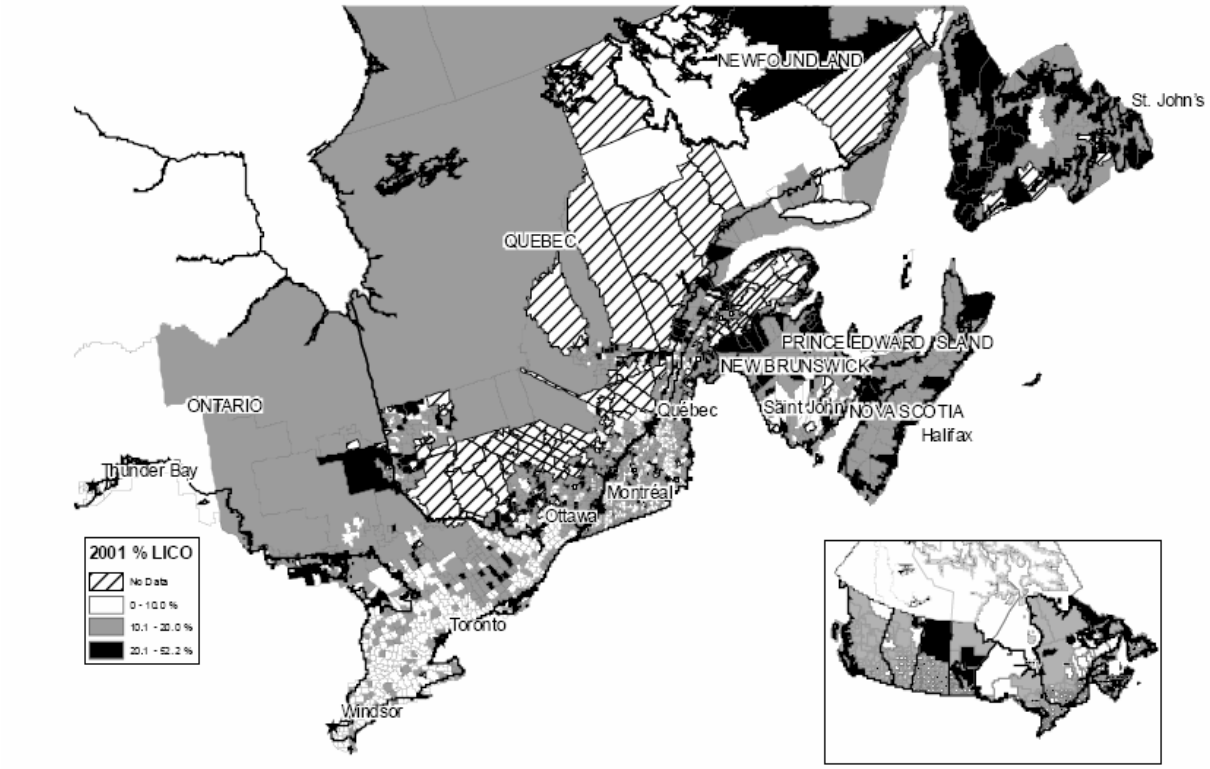
Figure1. The Spatial Dimension of Poverty in Western and Eastern Canada.

Panel A Western Canada



Panel B Eastern Canada



Note: **Panel A** shows poverty rates at the CCS level in western Canada while **Panel B** shows CCS poverty rates in Central and Eastern Canada (using the 2001 LICO and 2001 boundaries). Northern territories are not shown. White is 0-10%, Grey is 10%-20%, and Black is 20%+.

Appendix Table 1: Unweighted Descriptive Statistics for the Pooled Data [a,b]

Variables	Full Sample		Urban		Rural	
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Dependent Variable						
(% Poverty Rate/LICO)	17.03	8.09	13.26	5.96	18.04	8.29
Economic Variables						
% employed males[c]	82.33	13.27	86.67	7.63	81.17	14.18
% employed females[c]	61.49	18.16	65.97	14.50	60.29	18.84
% unemployed males[c]	10.92	10.58	7.72	5.81	11.77	11.37
% unemployed females[c]	11.51	10.25	9.32	5.09	12.09	11.16
% agriculture	15.22	17.92	4.48	6.08	18.08	18.92
% other Primary sectors	4.69	7.83	2.48	5.11	5.27	8.31
% manufacturing	15.18	11.58	16.32	8.88	14.87	12.18
% construction	6.87	4.58	7.3	3.15	6.76	4.89
% distribution and personal services	32.35	9.95	36.72	5.78	31.18	10.49
% producer services	6.27	4.4	9.1	3.8	5.52	4.24
% nonfarm self employed	3.26	1.87	3.63	1.46	3.16	1.95
population density (per km^2)	64.22	312.13	257.94	642.95	12.43	17.04
Demographic Variables						
% university graduates	4.98	3.75	8.05	4.75	4.17	2.93
% with some university education.	5.78	3.32	7.54	3.08	5.31	3.22
% with non university education	22.86	6.35	26.98	4.69	21.76	6.28
% high school grads	13.49	4.8	15.16	3.87	13.04	4.92
% non high school	28.28	7.54	25.9	6.56	28.91	7.65
% aboriginals	2.14	7.42	1.78	4.35	2.24	8.04
% recent immigrants	0.22	0.69	0.46	1.17	0.16	0.46
% bilingual (French and English)	6.42	11.97	8.36	13.39	5.9	11.51
% French only	38.27	43.55	33	40.7	39.68	44.18
% English only	55.02	45.66	58.26	43.75	54.15	46.13
Age Composition						
% 25-59 years old	38.73	23.79	41.09	24.9	38.1	23.45
% 20-24 years old	4.62	3.05	4.76	3.03	4.58	3.05
%10-19 years old	10.99	6.85	10.51	6.4	11.12	6.96
% <10 years old	9.95	6.26	10.08	6.25	9.91	6.26
Place of Birth Origin						
% British Islands, North America and West Europe	98.5	3.37	96.39	6.15	99.06	1.66
% Caribbean /Latin/Central and South American	0.14	0.66	0.31	0.88	0.09	0.57
% East and Southern Europe	0.85	1.83	1.84	3.08	0.59	1.18
% Africa	0.07	0.25	0.19	0.38	0.04	0.19
%West-central Asia and Middle East	0.03	0.19	0.13	0.37	0.01	0.07
Number of Observations	9455		2021		7434	

a. The data for the four census years (1981, 1986, 1991, 1996) are pooled together yielding 9,455 observations for the 2,607 CCCs. Due to concerns about outliers and Statistics Canada data suppression, the territories and CCSs with a population of less than 250 are excluded. Additional CCSs were omitted due to inconsistent or incomplete data (e.g. CCSs with reported income of zero).

b. For the conservative models, the mean unweighted 1996 poverty rate (LICO) for the entire sample is 16.5% (std. dev.=7.6) and the mean unweighted poverty rate (LICO) for 2001 is 13.4% (std. dev.=6.6).

c. The employment rates and unemployment rates are measured for the prime-age workforce, 25-54 years old.

Appendix Table 2: Poverty Regression Results

Variable	1996-1991 (OLS)[a,b]	2001-1991 (OLS) [a,b]	FE Entire Sample [a,b]	FE Urban[a,b]	FE Rural[a,b]	FE Urban High Poverty [a,b]	FE Rural High Poverty[a,b]	Entire Sample Only Econ[a,b]
Lagged Poverty Rate	0.36	0.29						
	(9.93)	(9.61)						
Surrounding Poverty Rate (lagged)	0.44	0.42						
	(5.91)	(5.97)						
% employed male	-1.93	-0.75	-0.16	-0.25	-0.15	-0.23	-0.15	-0.18
	-1.15)	(-0.34)	(-5.66)	(-3.76)	(-5.18)	(-1.91)	(-2.53)	(-5.79)
% employed female	-2.05	-1.33	-0.04	-0.06	-0.04	0.04	-0.01	-0.06
	(-1.66)	(-1.34)	(-2.99)	(-2.50)	(-2.40)	(0.44)	(-0.22)	(-3.78)
% unemployed male	0.54	0.36	-0.08	-0.22	-0.07	0.01	-0.09	-0.10
	(1.66)	(1.23)	(-2.37)	(-2.88)	(-1.93)	(0.05)	(-1.26)	(-2.84)
% unemployed female	0.20	0.21	0.02	0.06	0.02	0.12	0.04	0.01
	(0.73)	(1.07)	(1.01)	(1.58)	(0.89)	(1.21)	(0.99)	(0.44)
% agriculture	-7.82	-5.49	15.17	18.57	13.95	-2.66	7.96	18.62
	(-3.30)	(-2.50)	(4.52)	(2.60)	(3.96)	(-0.13)	(1.50)	(5.73)
% other Primary sectors	-9.05	-2.55	-5.70	-4.40	-5.63	-60.85	-1.33	-3.90
	(-2.86)	(-0.83)	(-1.49)	(-0.57)	(-1.41)	(-2.46)	(-0.23)	(-1.03)
% Manufacturing	-9.22	-3.93	-2.30	-5.55	-1.89	-15.51	2.00	-1.10
	(-3.55)	(-1.62)	(-0.85)	(-1.20)	(-0.64)	(-0.92)	(0.39)	(-0.43)
% Construction	-5.26	-3.13	-5.31	-8.82	-5.18	0.65	-0.57	-3.49
	(-1.44)	(-0.80)	(-1.39)	(-1.23)	(-1.26)	(0.05)	(-0.09)	(-0.95)
% distribution and personal services	-5.81	-1.85	3.19	8.03	2.62	-0.03	0.41	4.53
	(-1.97)	(-0.65)	(1.16)	(1.61)	(0.87)	(0.00)	(0.10)	(1.78)
% producer services	-4.29	-5.37	5.23	7.72	4.93	4.26	5.17	6.57
	(-0.95)	(-1.42)	(1.20)	(1.21)	(1.06)	(0.19)	(0.55)	(1.55)
% nonfarm self employed	-0.20	-0.18	0.07	-0.11	0.08	-0.20	0.15	0.07
	(-2.10)	(-2.03)	(1.15)	-0.80)	(1.19)	(-0.37)	(1.13)	(1.07)
% aboriginals	-0.02	-4.5E-03	0.02	0.08	0.02	0.19	0.02	
	(-0.63)	(-0.18)	(0.78)	(2.73)	(0.53)	(2.16)	(0.69)	
% recent immigrants	0.13	-0.61	0.24	0.52	0.14	1.22	-0.38	
	(0.34)	(-1.61)	(1.05)	(2.94)	(0.47)	(1.67)	(-0.79)	
%Bilingual	0.06	0.40	-0.72	-0.04	-0.74	-1.07	-0.84	
	(0.09)	(1.48)	(-3.07)	(-0.15)	(-3.24)	(-0.39)	(-5.86)	
% French only	-0.39	0.23	-0.68	-0.04	-0.70	-1.08	-0.79	
	(-0.71)	(1.36)	(-2.92)	(-0.13)	(-3.07)	(-0.39)	(-5.33)	
% English only	-0.38	0.23	-0.69	-1.3-E-03	-0.73	-1.14	-0.89	
	(-0.70)	(1.37)	(-2.93)	(0.00)	(-3.16)	(-0.41)	(-6.10)	

% university graduates	-0.21	-0.13	-0.16	-0.31	-0.17	-0.30	-0.07	
	(-3.67)	(-2.24)	(-2.65)	(-3.46)	(-2.42)	(-1.00)	(-0.54)	
% with some university education	-0.21	-0.15	-0.15	-0.11	-0.15	-0.30	-0.08	
	(-3.20)	(-2.08)	(-3.11)	(-1.12)	(-2.89)	(-0.82)	(-0.71)	
% with non university education (e.g., college)	-0.17	-0.15	-0.20	-0.27	-0.18	-0.50	-0.11	
	(-4.96)	(-5.04)	(-6.72)	(-4.10)	(-5.62)	(-2.56)	(-1.74)	
% high school grads	-0.09	-0.15	-0.13	-0.26	-0.10	-0.38	0.01	
	(-1.97)	(-3.79)	(-3.61)	(-3.28)	(-2.61)	(-2.33)	(0.10)	
% ed >8yrs but not HS graduate	-0.04	-0.07	-0.11	-0.17	-0.09	0.10	0.01	
	(-1.21)	(-1.90)	(-3.61)	(-2.58)	(-2.65)	(0.63)	(0.13)	
population density (per km^2)	2.6E-03	2.7E-03	0.01	0.01	0.05	-0.02	0.05	
	(3.16)	(3.18)	(3.79)	(3.74)	(1.77)	(-2.15)	(0.64)	
population within 100KM	-0.97	0.09	1.29	-3.14	0.49	18.72	1.74	
	(-3.69)	(0.41)	(0.60)	(-1.68)	(0.19)	(1.62)	(0.37)	
population between 100KM and 200KM	0.81	0.16	-3.24	3.85	-4.78	12.36	-14.30	
	(4.15)	(0.95)	(-0.86)	(1.25)	(-1.15)	(0.76)	(-1.73)	
distance in kms to nearest/actual CA/CMA	3.3E-03	-4.9E-03						
	(0.42)	(-0.96)						
distance to nearest/actual CA/CMA squared	-2.00-E-05	1.63E-06						
	(-0.63)	(1.62)						
% Age composition variables[b]	Y	Y	Y	Y	Y	Y	Y	N
Place of birth origin variables[b]	Y	Y	Y	Y	Y	Y	Y	N
Provincial Fixed Effects	Y	Y	N	N	N	N	N	N
Time dummy (1986,1991,1996)	N	N	Y	Y	Y	Y	Y	Y
R^{2} [,c]	0.47	0.41	0.23	0.40	0.23	0.74	0.17	0.19
N	2394	2392	9455	2021	7434	242	2510	9455

a. The dependent variable is the poverty rate (LICO). The values in parentheses are robust t-statistics. The robust t-statistics are adjusted for regional clustering of the error terms in all regressions. See the text for details.

b. See the text and Appendix Table 1 for listing of variables.

c. The R^2 statistics for the fixed effect models are the within-CCS measure of explained variation using STATA.