Racial diversity, minority concentration, and trust in Canadian urban neighborhoods

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ABSTRACT

Using a sample of 42,329 respondents nested within 4,254 Canadian urban neighborhoods, this study demonstrates the conceptual and empirical importance of making a distinction between neighborhood racial diversity and minority concentration, and examines how each is uniquely associated with trust. Our analysis shows that at a given level of racial minority concentration, Whites are more trusting when their minority neighbors are more evenly distributed across racial minority groups. Meanwhile, Whites are less trusting as the neighborhood share of racial minorities increases. Overall, the effect of racial minority concentration tends to prevail over that of racial diversity.

Keywords: racial diversity, minority concentration, trust, neighborhood effects

1. Introduction

As international migration has become a major means of alleviating the pressure of low fertility and labour shortages, many developed countries face mounting challenges to manage and adjust to rising racial/ethnic diversity. In recent years, across Western societies, there has been a growing preoccupation in public debates and policy initiatives regarding the possible barriers to social cohesion represented by increasing racial and ethnic diversity (Soroka, Johnston, and Banting, 2007). In the U.K., for example, a number of government initiatives and policy documents in the early 2000s were centered on the assumption that limiting the social relevance of racial/ethnic diversity is a key condition for prosperity and strengthening the social fabric in British society (Cheong et al., 2007; Letki, 2008).

In the U.S., some studies have associated racial/ethnic diversity with a general decline in civic engagement, less efficient public policies, less provision of public goods, lower participation in social activities, and issues of trust across American cities (Alesina, Baqir, and Easterly, 1999; Alesina and La Ferrara, 2000; Alesina and La Ferrara, 2002; Alesina and La Ferrara, 2005; Costa and Kahn 2003a, 2003b)[1]. More specifically, recent empirical research in Canada, the U.S., U.K., and Australia found that trust is negatively associated with racial diversity or minority concentration within neighborhoods (Leigh, 2006; Letki, 2008; Putnam, 2007; Soroka, Helliwell, and Johnston, 2006; Stolle, Soroka, and Johnston, 2008). These results have been interpreted to suggest that racial/ethnic diversity reduces levels of trust, at least in the short term.

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[1] Some studies show that racial divisions seem to have more negative effects than diversity along ethnic ancestries (see Alesina and La Ferrara 2005 for a review). However, there is evidence suggesting that diversity along culture dimensions such as language and lifestyle is linked to better amenities, higher productivity, and more innovations in American cities (Florida 2002a; 2002b; Ottaviano and Peri 2006).

In this study, we question the interpretations of previous studies on the premise that they did not distinguish neighborhood racial diversity from racial minority concentration. These two constructs are conceptually distinct and should be treated as such. Racial diversity, as it is commonly measured in the trust literature, captures both the variety of racial groups and the spread of population distribution among racial groups within a neighborhood. Higher diversity is observed in places where more racial groups are present and their relative group sizes are more similar. The importance of this measure resonates with the intensifying multiracial/ethnic nature of North American metropolises. A low level of racial minority concentration reflects the local dominance of the majority group (Whites) relative to the population size of racial minorities. The neighborhood dominance of the majority group creates a demographic context that may affect majority group members' perception of their surroundings. For example, research has shown that White population's negative attitudes towards Blacks are associated with local concentrations of Blacks (Oliver and Wong, 2003; Stein, Post, and Rinden, 2000; Taylor, 1998). Given the different connotations associated with racial diversity and minority concentration, whether trust is negatively associated with neighborhood racial diversity or with minority concentration carries different social implications. Should mixed communities be promoted as a corrective for intergroup conflict and an avenue of social interaction among people with diverse racial/ethnic background (Stein, Post, and Rinden, 2000)? Does residential segregation increase or lessen racial discord (Glaeser, Scheinkman, and Shleifer, 1995)?

In this paper, we demonstrate the conceptual and empirical importance of making a distinction between neighborhood racial diversity and minority concentration. Using national data from a sample of 42,329 respondents nested within 4,254 Canadian urban

neighborhoods, we show that trust is associated positively with neighborhood racial diversity, but negatively with minority concentration, and that these associations exist primarily among the White population.

2. Diversity, minority concentration and trust: Theoretical issues

Trust is an important foundation for human relations of all kinds, making social life more predictable, and easing people's working relations (Misztal, 1998). Trust lubricates the functioning of public institutions and facilitates economic transactions (Alesina and La Ferrara, 2002; Marschall and Stolle, 2004; Ross, Mirowsky, and Pribesh,,2001). Empirical studies have linked trust with effective public policies and better economic outcomes (Fukuyama, 1995; Knack and Keefer, 1997; La Porta et al.,1997). For some, trust is a measure of belief in the honesty and cooperative behavior of others, and is a predisposing factor leading to the creation of social capital (Fukuyama, 1995; Subramanian, Lochner, and Kawachi, 2003). For others, trust is an individualistic behavioral tendency to voluntarily place one's resources at the disposal of others (Coleman, 1990; Woolcock, 2001) and, thus, a close consequence or a measure of social capital (Putnam, 2001; Woolcock, 2001). Uslaner (2002; 2008) distinguishes between moralistic trust that is rooted in beliefs about others and strategic trust that is based on individuals' experiences (also see Soroka et al., 2006).

In addition to the impact of trust, recent research also examines the determinants of trust and explores why it is more prevalent in some communities than in others. Researchers have found that the development of social trust is shaped by both individual characteristics and the socio-economic environment (Alesina and La Ferrara, 2002; Gustavsson and Jordahl, 2008; Ross et al., 2001). In particular, the rising social diversity across Western societies, the

9/11 terrorist attacks in the U.S., and riots and protests by minorities in some European countries have stimulated a surge of interest in the association between racial/ethnic diversity and trust. This association has been empirically tested across geographic areas as large as countries or as small as individuals' immediate neighborhoods (Alesina and La Ferrara, 2002; Delhey and Newton, 2005; Marschall and Stolle, 2004; Putnam, 2007).

There are two theories on the relationship between trust and racial/ethnic diversity that constitute the conceptual understanding of intergroup relations and racial attitudes in the literature. The contact hypothesis posits that living in racially diverse communities increases intergroup interaction. Intergroup contact, intergroup cooperation under the condition of common goals, equal status, and authority sanction obscure the in-group/out-group distinction, reduce prejudice, and promote tolerance and understanding (Pettigrew, 2008; Vaisey, 2007). In the terminology of social capital literature, "bridging ties", or contact with diverse others, is important for fostering an overarching identity and a trust that transcends group boundaries (Stolle et al., 2008). People who are alike tend to gravitate toward and interact with each other, a phenomenon known as homophily (McPherson, Smith-Lovin, and Cook, 2001). Since race is one of the great divides in social networks in the U.S., individuals from the same racial group can easily develop in-group affection and out-group hostility. However, direct contact and positive experience with members of other groups serves to diminish in-group bias and fosters more favourable perceptions of out-groups. Such contact and interaction is more likely to occur in diverse settings where both daily informal/casual encounters happen and participation in more formal neighborhood associations take place (Marschall and Stolle, 2005).

However, the potential for contact does not necessarily lead to interaction and interaction per se does not necessarily create cross-group bridging (McPherson et al., 2001; Vaisey 2007). The group conflict hypothesis argues that the majority group (e.g., Whites in the U.S.) becomes more racially hostile as the size of a minority group increases in their community (Oliver and Wong 2003; Schneider 2008). Social disorganization theory also suggests that greater levels of racial/ethnic heterogeneity in a community reduce the frequency of residential interactions and the degree of cohesiveness (Hipp, 2007; Sampson, Raudenbush, and Earls, 1997).

A substantial body of American research finds that Whites residing in areas with high concentrations of Black populations have substantially more negative attitudes towards Blacks and minority-based public policies than their counterparts residing in areas with a low concentration of Blacks, although the link is not consistent with other minority groups (Oliver and Wong, 2003; Stein, Post, and Rinden, 2000; Taylor, 1998). For instance, in a study of Whites' reaction to the racial composition of the local population, Taylor (1998) found that the local percentage of Blacks was significantly associated with three dimensions of racial views among Whites: traditional prejudice, opposition to race-targeting, and policy-related beliefs. She concluded that it is not economic or political threats that dominate Whites' reactions to location concentrations of Blacks. It appears that White racial attitudes are related to psychological responses to economic and physical duress, or pre-existing "racial resentment" such as threats to status and culture or physical threats (Oliver and Mendelberg, 2000; Oliver and Wong, 2003; Schneider, 2008). Closely related to this perceived "threat" argument, Alesina and La Ferrara (2002) describe the negative association between diversity and trust in terms of "aversion to heterogeneity," whereby individuals trust those more similar

to themselves. In experimental settings, people tend to show less trust toward members of a different race (Glaeser et al., 2000). In, perhaps, the most comprehensive study of racial diversity and trust, Putnam (2007) found that diversity reduces trust toward both in-group members and out-group members. He reasons that the negative relationship between diversity and trust is not because diversity triggers intergroup division, but because it promotes social isolation.

Both the contact hypothesis and the group conflict hypothesis focus on the response of majority-group members to the relative size of a minority group. Related research on intergroup relations and racial attitudes centers on the impact of the varying share or distribution of minorities across communities (Dustmann and Preston, 2001; Schneider, 2008). Along this line of inquiry, some recent studies on trust merely shift the focus from the relative size of minorities to racial/ethnic diversity, while others simply treat the relative size of minorities and diversity as two interchangeable concepts. For example, Putman (2007) is aware that in the U.S. context, racial diversity may primarily reflect the concentration of racial minorities. Hence, he treats the latter as a specific type of diversity, and argues that the variance in racial diversity among U.S. neighborhoods can be partitioned into two components: the percentage of Blacks and percentage of immigrants (made up mostly of Latinos and Asian-Americans). He found that each of these measures has an independent negative effect, but never considered racial diversity and the share of minorities in the same regression model. Similarly, a Swedish study uses the proportion of foreign born and ethnic diversity as alternative measures, and finds that the former is associated with trust, but the latter is not (Gustavsson and Jordahl, 2008). Again, both variables were not considered in the same model.

Broadly speaking, the proportion of minorities and diversity are closely related. In a society where one group dominates, increases in the size of minorities leads to rising diversity. Several decades ago when research focused on Black-White relations in the U.S. and when other racial minorities were noticeable in only a few local areas, the distinction between the proportion of racial minorities and diversity may not have been practically useful. However, two recent developments make this distinction imperative. First, the large in-flow of non-European immigrants, who typically are concentrated in large metropolitan areas, has fundamentally changed the nature of diversity from a two-dimensional to a multi-dimensional reality. Second, with the continuing out-migration of Whites from immigrant gateway cities and from neighborhoods with a rising presence of racial minorities within these cities, the previous majority group (i.e. Whites) has become a minority in an increasing number of neighborhoods (Frey, 1995; Hou and Bourne, 2006). These developments complicate the association between diversity and the proportion of minorities, particularly at the neighborhood level.

Diversity, as commonly measured by the Herfindahl index (also known as the Simpson index in the biological literature), is a function of both the number of groups in the neighborhood and the relative size between groups (Alesina and La Ferrara, 2005; Ottaviano and Peri, 2006). For example, a neighborhood with 5 equally sized groups is more diverse than one with 2 equally sized groups. Similarly, a neighborhood with 3 equally sized groups is more diverse than one with 3 unevenly distributed groups. The predominance of any particular racial group, be it Whites, Blacks, Asians, Aboriginals, or other racial minorities, creates a non-racially diverse neighborhood. When the majority group dominates in the neighborhood, diversity rises as the share of minorities increases. However, when the

majority group in the society is actually a minority in the neighborhood, diversity decreases as the share of racial minorities increases. Moreover, the rapid emergence of multi-racial neighborhoods in large U.S. and Canadian cities implies that the diversity measure is increasingly affected by the number of groups in the neighborhood (Alba et al., 1995; Hou, 2006).

More importantly, the distinction between racial diversity and racial minority concentration goes well beyond the issue of empirical correlation. These constructs point to different spatial processes of intergroup relations. Rising racial minority concentration reduces the local dominance of the majority group in terms of population size. Racial diversity captures both the variety of racial groups and evenness of population distribution among racial groups within a neighborhood. It indicates the extent to which multiple racial groups in a local environment are mixed and the demographic potential that multidimensional contact is made among these groups.

Distinguishing between diversity and concentration is critical for testing the contact hypothesis against the conflict theory. Although higher diversity increases the potential of intergroup contact, whether contact actually occurs and has positive effects depends on the relative social status of each group in the society. For example, a neighborhood with 80% Whites, 15% Asians, and 5% Blacks is just as diverse as a neighborhood with 80% Asians, 15% Blacks and 5% Whites, or as a neighborhood with 80% Blacks, 15% Whites and 5% Asians. Obviously, the relative presence of Whites and racial minority groups in these neighborhoods is very different, and has a profound impact on intergroup contact. Intergroup contact of Whites is more likely to have a positive effect on their attitudes towards minorities in the first scenario than in the second and third. It is the relative presence and social status of

these racial groups in society that determine the context and consequences of intergroup contact. In general, with the same level of diversity, members of a racial group may feel less threatened in surroundings where their group prevails in numbers. Conditional on the same share of minorities, diversity is high in neighborhoods where the number of minority groups is great and the groups are more evenly distributed in size. For instance, in two neighborhoods each with each 70% Whites, diversity is lower in the one with 30% Blacks than the one with 10% Blacks, 10% Asians and 10% other groups. In the latter case, the majority group members may feel less threatened by any one particular group.

It is important to note that we do not assume that the majority group and minorities respond to racial diversity and minority concentration in the same manner. The spatial assimilation model suggests that economically successful and culturally assimilated minority-group members tend to move into neighborhoods with better amenities where the majority group often dominates in size. Because minority-group members actively seek to move into these mixed neighborhoods, they are presumably prepared to live with diversity. In the same process, it is the members of the majority group whose status quo is being challenged and who are more likely to be concerned. Indeed, some U.S. studies on racial attitudes and trust indicate that neighborhood racial composition only affects Whites, and has little impact on other racial groups (Alesina and La Ferrara, 2002; Stolle et al., 2008).

This study contributes to the literature in three important ways. First, our analysis makes the crucial distinction between neighborhood racial diversity and minority concentration, and examines how each is uniquely associated with localized trust. Second, we determine whether these relationships, if they exist, vary between the White population and racial minorities. Third, our empirical analysis uses a nationally representative sample of

individuals and neighborhood units, which is much larger than in previous studies[2].

Additionally, with these rich data sources, we are able to carefully address several unresolved

methodological issues in the literature, including selectivity, collinearity, and the multi-level

nature of the data, which we discuss in detail below.

3. Data and methods

3.1. Data

This study draws nationally representative micro-level data from three sources: a) the

2002 Ethnic Diversity Survey (EDS), b) the 2003 General Social Survey on Social

Engagement (GSS–SE), and c) the 2001 Canadian Census (20% sample microdata file).

The EDS collected a nationally representative sample of 42,476 Canadian residents

aged 15 years or older. It excluded persons living in collective dwellings, persons living on

Indian reserves, persons declaring an Aboriginal origin or identity in the 2001 Census, or

persons living in northern and remote areas. The survey was designed to provide information

to better understand how Canadians of different ethnic backgrounds interpret and report their

ethnicity and how people's backgrounds affect their participation in the social, economic, and

cultural life of Canada. For these purposes, the survey covers a wide range of topics including

ethnic ancestry, ethnic identity, place of birth, racial minority status, immigrant generation

status, knowledge of languages, family background, social networks, life satisfaction, and

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[2] Our study sample contains 42,329 respondents nested within 4,254 urban neighborhoods. In comparison, Leigh's (2006) sample included 6,500 individuals in 690 neighborhoods; and Letki's (2008) sample was made up of 15,100 individuals in 840 neighborhoods. Putnam's (2007) analysis used data from 23,260 individuals with an unspecified number of neighborhoods. Both Soroka et al. (2006) and Stolle (2008) used data from samples of about 4,800 individuals in roughly 1,600 neighborhoods.

socio-economic activities. The overall response rate was 76% (see Statistics Canada, 2002, for details on the survey design and survey methodology).

The GSS-SE is also a nationally representative survey with the same target population. It collected data from 24,951 Canadian residents, 15 years of age and over. The purpose of this survey was to collect information on the ways that Canadians engage in civic and social life. The content of the survey includes well-being, social and civic participation, trust and values. The overall response rate of the survey was 78% (see Statistics Canada, 2003, for details on the survey design and survey methodology).

In this study, we combined the data from the two surveys for three reasons. First, the two surveys complement one another in the coverage of geographic areas and population groups. The EDS over-sampled racial minority groups and thus had relatively large sub-samples to allow comparisons between minority groups, and between more-established, large ethnic communities on various characteristics (Statistics Canada, 2002). Over-sampling minority groups implies that large metropolitan areas and neighborhoods where racial minorities are concentrated were also over-sampled. In contrast, the GSS-SE over-sampled small provinces and small metropolitan areas.[3] Second, the combined dataset increases the sample size, and improves the reliability of multi-level regression estimates (see discussion below). In particular, the large number of neighborhood units (over 4,000, a significantly larger number than previous studies) and the fact that our neighborhood variables are estimated from an independent, reliable data source (census), are crucial for dealing with collinearity among neighborhood-level variables. Third, the two surveys used the same

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[3] For instance, the three largest census metropolitan areas (CMAs) account for 34% and three largest provinces account for 75% of Canada's population aged 15 and over in the 2001 census. In the GSS-SE, the three CMAs only account for 29% of the total sample and the three provinces account for 64%.

instruments (questions) for trust and other explanatory variables that were used in this study. We replicated our analysis separately with the EDS and GSS-SE, and found no substantive differences in main findings from the separated analyses compared to those reported in this study.

Our study sample includes 42,329 respondents ($N = 28,042$ in the EDS, and $N = 14,287$ in the GSS-SE), aged 15 and over, residing in 4,254 urban neighborhoods across Canada's 27 Census Metropolitan Areas (CMAs). In 2001, approximately 95% of Canada's visible minority population resided in these CMAs. The proportion of visible minorities at the CMA level ranges from less than 1% (in a few CMAs in the province of Quebec) to about 37% in Toronto and Vancouver, with an overall average of 20%. Within the CMAs, the share of visible minorities also varies greatly between neighborhoods (Hou, 2006). These cross-CMA and cross-neighborhood variations in the presence of visible minorities provide the basis for estimating how trust is associated with neighborhood racial diversity and concentration.

Neighborhood characteristics were calculated directly from the 2001 Census Master Microdata File. Following prior neighborhood studies (Alba et al., 1995; Hou, 2006), we used census tracts to define (measure) neighborhoods. Census tracts are small geographic areas with relatively homogeneous physical characteristics and social living conditions. They have carefully designed attributes and allow for national and historical comparisons. A typical neighborhood consists of about 4,000 individuals. The 2001 Canadian Census drew a 20% random sample of the entire population, and our neighborhood-level variables were estimated based on an average sample size of 800 individuals. The derived neighborhood attributes from

the census were then matched to the records of each respondent in the EDS and GSS-SE, using census and survey geographic identifiers.

3.2. Measures

The outcome variable, trust in neighbors, is based on the following identical question in both surveys, "Using a scale of 1 to 5 where 1 means cannot be trusted at all and 5 means can be trusted a lot, how much do you trust people in your neighborhood?"[4] Compared with the commonly-used generalized trust question, the localized question specifies the group of people (neighbors) whose trustworthiness is being evaluated, and thus is most appropriate for examining the impact of the neighborhood context.[5] Studies have shown that community context is more strongly associated with specific trust (e.g., trusting neighbors or police) than with generalized trust (e.g., Letki, 2008; Soroka et al., 2006). For example, Soroka and colleagues (2006) found that the percentage of racial minorities in Canadian neighborhoods is negatively associated with specific trust, but not with generalized trust. In contrast, Putnam (2007) found that community diversity is similarly related to trusting neighbors and generalized trust. In our study, one quarter of the respondents (25%) report that they trust their neighbors a lot, while a small group (4.4%) report that they do not trust their neighbors at all.

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[4] Glaeser et al. (2000) demonstrate that the usual survey questions on trust can capture perceptions of neighbors' trustworthiness, but not necessarily the level of trust respondents feel toward neighbors.

[5] The typical question asked for generalized trust is, "Generally speaking, would you say that most people can be trusted or that you cannot be too careful in dealing with people?"

Our primary independent variables are neighborhood racial diversity and minority

concentration. We used the Herfindahl index to measure racial diversity (Leigh, 2006;

Putnam, 2007). The diversity index is defined as:

$$D_j = 1 - \sum_i p_i^2, \quad j = 1, 2, ..., 5$$

where p_i is the proportion of the ith racial group in a given census tract. The value of this

index ranges from 0 (all people in the neighborhood belong to one racial group) to $(1-1/n)$

when the n racial groups have the same population share in the neighborhood.

Following Putnam (2007), the racial diversity index in this study has 5 groupings:

Whites, Asians, Blacks, other racial minorities (Hispanics and people reporting multiple racial

minority identities), and Aboriginals.[6] Among the 4,254 census tracts that contain respondents

from our study sample, the average shares of these groupings are 79% (ranging from 2.6% to

100%), 14.4% (0 to 90.4%), 3.2% (0 to 47.6%), 1.9% (0 to 25.1%), and 1.6% (0 to 54.3%),

respectively.

To examine whether the categorization of race and ethnicity influences the association

between diversity and trust, we constructed four alternative diversity indexes. The first

(referred to as ethnic diversity thereafter) divides the Whites into 10 ethnic origins: British,

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[6] In Putnam's study, the groups are non-Hispanic Whites, Blacks, Hispanics, and Asians. The addition of an extra group (Aboriginals) in our study should not affect its comparability with Putnam's index since Aboriginal peoples, on average, account for 1.5% of the population in all census tracts in the study and in only 14 (of 4,245) tracts are Aboriginal peoples' shares over 30%. The grouping in our study is similar to that used in a series of studies by Alesina and associates (e.g., Alesina and La Ferrara, 2002). In studies based on US census data, "Whites" typically refer to non-Hispanic Whites. In recent Canadian censuses, "White" and "Latin American" are among the 15 mark-in response categories listed in the question about visible minority status and respondents can mark all applicable categories. In our analysis, "Whites" include those who identify themselves as "White" only, thus the definition is similar to the US "non-Hispanic White" category.

French, German, Italian, Ukrainian, Dutch, Polish, Jewish, Portuguese, and other European origins, while retaining the other four groups in the diversity index. Compared with our racial diversity index, this alternative measure focuses more on ethnic diversity among the White population. It is moderately correlated with the racial diversity index (Pearson's $r = .51$).

The second alternative index divides the three racial groups into 10 more homogeneous groupings: Black, Chinese, South Asian, Filipino, Arab/West Asian, Japanese, Korean, Southeast Asian, Hispanic, and other racial minorities, while keeping Whites and Aboriginals unchanged. This measure focuses more on diversity among racial minorities. Since it is almost identical to our main racial diversity measure ($r = 0.98$), no further tests were conducted with this alternate measurement.

The third alternative index (referred to as birth-country diversity thereafter) is based on the 20 most popular countries of birth among the Canadian population.[7] The fourth alternative index (referred to as linguistic diversity thereafter) is based on the 20 largest linguistic groupings.[8] These two measures are similar to the ones used by Leigh (2006). In our data, the third alternative is highly correlated with the percentage of immigrants ($r = 0.97$), and thus primarily reflects neighborhood concentration of immigrants. The fourth index captures diversity of linguistic groups. Both measures are strongly correlated with our original diversity measure ($r = 0.86$ and 0.73, respectively).

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[7] They are Canada, the UK, China (plus Hong Kong and Taiwan), Italy, India, Philippines, the US, Poland, Portugal, Viet Nam, Germany, Jamaica, Sri Lanka, Pakistan, Guyana, Korea, Greece, Iran, France, and Netherlands.

[8] They include English, French, Mandarin, Cantonese, Italian, Punjabi, Spanish, Arabic, Portuguese, Polish, Vietnamese, Tagalog (Filipino), Tamil, Persian, Korean, Russian, Greek, Urdu, German, and Gujarati. These groups are constructed from the language spoken most often or on a regular basis at home.

Our second focal neighborhood variable, racial minority concentration, is measured as the percentage of racial minorities at the census-tract level. The mean percentage of racial minorities among the 4,254 census tracts is 19.5%, and ranges from 0 to 97.4%.

In our analysis, we considered a number of individual-level control variables that are known to influence trust (see, e.g., Alesina and La Ferrara, 2002; Putnam, 2007), including age, sex, place of residence, family structure, education, family income, racial groups, home language, immigrant status, mobility (stayer = 1 if length of stay/residence in the neighborhood is at least 1 year, or 0 otherwise), and homeownership. The coding and descriptive statistics of these variables are provided in the Appendix – Table 1.

In addition, following the literature, we considered several neighborhood-level control variables (e.g., Putnam, 2007; Ross et al., 2001). They include: family income inequality (the coefficient of variation), low-income rate (percent of individuals living in low-income families as defined by Statistics Canada's low income cut-offs), percent of adults with university degrees, percent of non-movers (those who did not change address in the previous 5 years), percent of homes owned by the residents, percent of seniors (aged 65 or over), and population density (the logarithm of number of people per square kilometers). The bivariate correlation between these seven neighborhood variables ranges from low ($r = 0.03$) to moderate ($r = .51$), with the exception of a strong correlation between low-income rate and percent of homeowners ($r = -0.84$). Descriptive statistics for these variables are also shown in the Appendix – Table 1.

3.3. Statistical Methods

The outcome variable, localized trust, is an ordinal variable. It has been modeled either as a continuous (e.g. Putnam, 2007) or categorical variable (e.g. Leigh, 2006) in prior studies. We adopted various strategies to model it: as a continuous, ordinal, and binary variable. As a binary variable, we created two separate dummy variables. The first is trust neighbors a lot (5) vs. others (1, 2, 3, and 4); and second, trust neighbors at least somewhat (4, 5) vs. the rest. In general, results from these models show that the choice of categorization does not make substantive difference in regression estimates of our two focal neighborhood variables. We focus on the findings from models treating the dependent variable as continuous, and discuss differences in results from various other modeling strategies.

As noted in the literature (e.g., Dustmann and Preston, 2001; Putnam, 2007), the endogeneity of location choices may bias regression estimates of neighborhood effects. For example, if people with a lower tendency to trust prefer to live in neighborhoods with fewer racial minorities, a potentially negative association between racial minority concentration and trust would be estimated toward zero. Similarly, if people with a lower tendency to trust prefer to live in more homogeneous neighborhoods, a potentially negative association between racial diversity and trust may be underestimated.

To address the issue of endogeneity, we used the instrumental variable approach proposed by Dustmann and Preston (2001), and subsequently used by Leigh (2006). This approach is built on the assumption that individuals' residential mobility is constrained by the need to remain close to the place of work or the desire to be near families or friends. Although individuals or families can move freely between neighborhoods as a response to their preference for certain neighborhood characteristics, their mobility tends to be bounded at the regional level. In addition, neighborhoods vary greatly in characteristics within a large region,

so individuals can usually find a neighborhood that meets their specific needs without moving beyond the regional boundary, provided such local preference is the primary motive to move. For these reasons, Dustmann and Preston (2001) suggest that attributes at a higher geographic level can serve as reasonable instruments for neighborhood level attributes. Using the British Social Attitudes Survey, they instrument racial composition at the ward level (with an average of about 5,000 people) with racial composition at the district level (with an average of about 120,000), and then at the county level (an average of about 1 million population). Their analysis shows that spatial sorting of individuals according to their attitudes toward minorities leads to a downward bias in regression estimates when ward-level data on ethnic concentration are used.

In our study, we used racial diversity and percent of visible minorities measured at the municipality level (with an average population of 110,000) as the instruments for the same variables measured at the census tract level.[9] This is equivalent to estimating a two-stage model:

Stage 1: $\quad D_{ij} = a' + b'X_i + c'Z_j + i'D_k + m'R_k + v_i$, and

$$R_{ij} = a^* + b^*X_i + c^*Z_j + i^*D_k + m^*R_k + \mu_i$$

Stage 2: $\quad Y_i = a + bX_i + cZ_j + i\hat{D}_{ij} + m\hat{R}_{ij} + e_i$

where X_i denotes individual-level characteristics; Z_j refers to neighborhood-level control variables; D_{ij} and D_k are racial diversity measures at the neighborhood- and the municipality-level, respectively; R_{ij} and R_k are the proportions of racial minorities at the neighborhood- and municipality-level, respectively; Y_i is the outcome variable. The parameters a, b, c, i, and m (with or without superscripts) are the regression coefficients associated with the corresponding variables. $\hat{D}_{ij}$ and $\hat{R}_{ij}$ are the predicted values from stage 1 models. These predicted values are linear combinations of their municipality level counterparts and other exogenous variables in the stage 2 model. To evaluate the viability (strength) of these instruments, we performed the Cragg-Donald test ($F = 145$, c.v. $= 7.03$). The test result supports the use of these instruments.[10] Furthermore, the joint F-test shows that the two focal regression estimates (racial diversity and minority concentration) in the IV model are significantly different from those in the OLS model, indicating the inconsistency of OLS estimators and, again, supporting the use of the instruments (see Davidson and Schaffer, 1993).

Another methodological issue is the multi-level nature of our data. To address this issue, in all regression models, we computed robust standard errors that take into account cluster effects (correlated errors within neighborhoods and unequal variances across neighborhoods) arising from multi-level data (Steenbergen and Jones, 2002). Such a model is equivalent to a fixed-intercept model with level-1 covariates within the framework of hierarchical liner models (HLM) (Raudenbush et al., 2000). Using this model, we first

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[10] In stage 1 model for racial diversity, adding the instrumental variables raises the proportion of variance explained (R^2) from 56.4% to 75.23%. The corresponding figures for the racial minority concentration model are 61.4% and 71.8%.

estimated the mean outcome (trust) for each neighborhood adjusted for differences in individual-level characteristics across neighborhoods, and then regressed the mean outcome on neighborhood-level predictors. In doing so, the model assumes that the estimated mean outcome for each neighborhood is the true (population) mean, which may be unrealistic as the average sample size within neighborhoods is small (about 10). The model also assumes that the effects of explanatory variables (e.g., education) do not vary across neighborhoods. To evaluate these model assumptions, we estimated a random-intercept and random-coefficient model using the HLM5 (Raudenbush et al., 2000). We found that the estimated mean outcomes between neighborhoods have a moderate average reliability (0.49), and that the effects of several control variables (age, women, homeownership, long-term residence in the neighborhood, immigrant status, and two education dummies) do vary across neighborhoods. Yet, the effects of our two focal independent variables (diversity and concentration) change very little for the model that only corrects for cluster effects.[11]

Additionally, we examined the possibility of non-linear associations of racial diversity and racial minority concentration and potential multicollinearity among neighborhood variables (as discussed below).

4. Results

4.1. Differentiating neighborhood racial diversity and minority concentration

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[11] The regression estimate for racial concentration changed from -.143 (SE = .077) in Table 3 to -.133 (SE = .072) in a random-intercept and random-coefficient model, and the comparable figures for racial diversity are -.026 (SE = .082) and -.038 (SE = .073).

In Canada's urban neighborhoods, low levels of racial diversity correspond well with a high concentration of the White population, but high levels of racial diversity do not necessarily correspond to a high concentration of racial minorities. These observations are drawn from Table 1, which shows the share of various racial groups by quintile of the racial diversity index. In all neighborhoods in the bottom two quintiles of racial diversity, the White population accounts for 90% of the overall population (see panel 1). The average share of the White population is 98% in the lowest quintile and 94% in the lower-middle quintile. In the highest quintile, the White population remains the majority group in 495 neighborhoods; in only 356 neighborhoods do Whites account for less than 50% of the population.

<Table 1 About Here>

Although population share of racial minorities increases generally with the level of racial diversity, the highest racial diversity could exist in neighborhoods where racial minorities either dominate or only have a minor presence (see panel 2 in Table 1). Among the 851 neighborhoods in the top quintile of racial diversity (see the last row in panel 2), over half (492 or 57.8%) contain racial minorities in the 25% to 50% range, while 325 (or 38.2%) contain racial minorities over 50%. The share of racial minorities is below 25% in 34 neighborhoods. Among the eight neighborhoods where racial minorities account for at least 90% of the population (see the second last column in panel 2), only one falls in the highest quintile of racial diversity. Among the 87 neighborhoods where racial minorities account for 75% to 90% of the population, only about half are in the highest quintile.

Neighborhoods with the highest racial diversity in Canadian metropolitan areas can be characterized as ones where all racial minority groups are frequently over-represented relative to their share in the total population, yet none of them predominates in size. Neighborhoods in

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the highest quintile of racial diversity, on average contain 50% Whites, 36% Asians, 8% Blacks, 4% other racial minorities, and less than 2% Aboriginals (see the last columns in Table 1). No one group accounts for over 75% of the population in these neighborhoods. When one group accounts for 50-75% of the neighborhood population, it is either Whites or Asians. In neighborhoods where Asians account for over 75% of the population, the racial diversity is in the middle to upper-middle range. With one exception (Aboriginals in the last row of Table 1), there are no neighborhoods where Blacks or other non-Asian racial minorities account for over 50% of the population. Thus, the dynamics of neighborhood racial diversity and concentration in Canada are considerably different from those in the U.S., where Blacks and Hispanics are often "hyper segregated" (Iceland, Weinberg, and Steinmetz, 2002; Massey and Denton 1993). This difference must be recognized in cross-country comparisons.

Racial diversity and minority concentration not only differ in that the most highly diverse neighborhoods vary greatly in the share of racial minorities groups, they also differ in their correlations with other neighborhood variables. Table 2 shows that racial diversity has a stronger positive correlation with neighborhood low-income rate and population density, and a stronger negative correlation with neighborhood stability and homeownership than racial minority concentration does. In other words, racially diverse neighborhoods are more likely to possess other attributes (high low-income rate, high population density, instability, and low homeownership) that often lead to low levels of trust, than neighborhoods where racial minorities are highly concentrated. As a result, it is possible that the effect of racial diversity on trust is more likely to be mediated by other neighborhood characteristics than the effect of racial minority concentration.

<Table 2 About Here>

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4.2. Trust, racial diversity and minority concentration

At the bivariate level, both racial diversity and minority concentration are negatively related to trust. Figures 1a and 1b reveal that across over 4,200 neighborhoods the percent reporting "trust neighbors a lot" decreases with racial diversity and the percent of racial minorities. The zero-order correlation of trust with racial diversity is -0.12 ($p < 0.001$), and -0.11 ($p < 0.001$) with percent of racial minorities.

Table 3 presents the results from the multivariate models. The baseline model estimates robust standard errors and within-neighborhood dependence, while the instrumental variables (IV) model corrects for neighborhood sorting. In the baseline model, neither the estimates on racial diversity nor racial minorities are statistically significant ($p > 0.05$). In the IV model, however, racial diversity is positively associated with trust, while percent of racial minorities is negatively associated with trust. These (IV model) results hold when trust is modeled as a continuous variable (see Table 3), as binary variables (see Appendix Tables 2, 3), or as an ordinal variable (see Appendix Table 9).

<Table 3 About Here>

The different regression estimates from the baseline model and the IV model suggest that people with lower tendencies to trust are more likely to move away from neighborhoods where racial minorities are concentrated, or alternatively, more trusting people are more likely to move into neighborhoods highly concentrated with minorities. They also suggest that people with lower tendencies to trust are more likely to move to more diverse neighborhoods, most likely from neighborhoods where racial minorities are concentrated. These results imply

that without correcting for such neighborhood sorting, we would underestimate the effects of neighborhood racial diversity and minority concentration.

To examine whether the effects of diversity and concentration vary between the White and racial minority populations, we re-estimated the IV model by minority status, and present the results in Table 4. It is clear that the significant associations of racial diversity and minority concentration with trust and the estimated neighborhood sorting are observed primarily in the White population. For Whites, the estimate on racial diversity shows that the mean trust score is about 0.45 higher in neighborhoods with the highest possible diversity than in neighborhoods consisting of only a single racial group. In the same model, the estimate on racial minority concentration indicates that a one percentage-point increase in the share of racial minorities is associated with a greater change in trust than a one percentage-point change in other neighborhood variables.

<Table 4 About Here>

To further illustrate the estimated association of racial diversity and minority concentration with trust, Table 5 presents predicted percent of reporting "trust neighbors a lot" among the White population based on the IV probit model shown in Appendix Table 4. We chose various combinations of racial diversity and minority concentration levels based on what we observed from the data as shown in the second panel of Table 1. In predicting the level of trust, we held all remaining explanatory variables fixed at their mean values.

<Table 5 About Here>

We found that, holding racial diversity constant, the predicted percent reporting "trust neighbors a lot" in the White population decreases by 4 to 6 percentage points for every 20

percentage points increase in the level of racial minority concentration.[12] In comparison, holding racial minority concentration constant, the predicted level of trust increases by 1 to 3 percentage points from a lower quintile to a higher quintile in the racial diversity index.[13] The results in Table 5 suggest that the effect of racial minority concentration prevails over that of racial diversity as the rise in trust associated with changes in racial diversity is dwarfed compared to the decrease in trust associated with changes in racial minority concentration.

In Table 6, we present the predicted trust levels for selected control variables in the model. For continuous variables in the model, we predicted the percent of reporting "trust neighbors a lot" at three levels: low, middle, and high. The middle level is close to the mean of the variable in the sample, while the low and high levels are approximately one standard deviation below or above the mean. For categorical variables, predicted outcomes are reported for each category. In predicting the effect of each selected variable, all remaining explanatory variables are fixed at their mean values. The change in reporting "trust neighbors a lot" across the levels of homeownership is about 3 percentage points. In comparison, for other neighborhood variables, changes in percent reporting "trust neighbors a lot" are less than 2 percentage points.

<Table 6 About Here>

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[12] Realistically, this may occur, for example, when the share of white population decreases from 60% to 40%, while the share of racial minority increases from 40% to 60%. It may also occur when the racial minority population becomes concentrated among one racial group. For instance, for two neighborhoods with the same level of racial diversity, one can have 30% of racial minority population who are evenly distributed among three racial minority groups, the other can have 50% of racial minority population concentrated in one racial minority group.
[13] Holding racial minority concentration constant, the level of racial diversity rises when the number of racial minority groups in the neighborhood increases and/or the racial minority groups are more evenly distributed.

Table 6 also shows that the level of trust varies significantly by some individual-level variables. Age strongly influences trust, with 35% of 60-year olds report "trust neighbors a lot", but only 13% among 20-year-olds. Women are more likely to "trust neighbors a lot" than men. The divorced or separated are less likely to trust neighbors than people in other marital statuses. Individuals living in families with the highest income tend to be more trusting than those with less family income. Additionally, people who did not report their family income are less trusting than those living in families with the highest income.[14] Not surprisingly, residents who recently moved into the neighborhood trust neighbors less than long-term residents; while homeowners trust their neighbors more than renters.

4.3. Robustness tests

Functional forms of the dependent variable. Since our dependent variable is ordinal with limited categories, it is important to examine whether the choice of its functional forms affects the regression estimates. We first estimated a series of ordered logit models (Appendix Table 9). We also estimated a series of logit models predicting "trust neighbors a lot" and "trust neighbors at least somewhat" with results reported in Appendix Tables 2 to 5. In general, the direction and statistical significance of the association between the outcome variable and the two focal neighborhood variables remain unchanged in models treating the

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[14] One reviewer commented that the causal direction may actually run from "income not reported" to trust, i.e., those who are less trusting are less likely to report their income, and suggested that we consider imputing the missing values (rather than grouping them into a dummy). We followed the multiple imputation procedure (Rubin, 1987), and re-estimated our IV models in Table 3 using the imputed data sets. We found no substantive differences between the two sets of the estimates, and decided not to report the findings from the imputed data.

outcome as a continuous, ordinal, or dichotomized variable. However, there is one exception. The estimate on racial minority concentration in the models for racial minorities is not significant when trust is treated as a continuous variable, ordinal, or dichotomized as "trust neighbors somewhat or a lot" vs. others (see Table 4 and Appendix Table 5 & 9), but is significant ($p < .05$) when trust is dichotomized as "trust neighbors a lot" vs. others (see Appendix Table 4).

The functional form of trust also has little impact on the direction and significance of most control variables. Once again, there is one exception. Higher educational level is associated with higher level of trust in models where trust is treated as a continuous, ordinal, or is dichotomized as "trust neighbors somewhat or a lot" vs. others (see Table 3 and Appendix Table 3 & 9). However, level of education is negatively associated with reporting "trust neighbors a lot" ($p < .05$) (see Appendix Table 4). These differences may suggest that people with higher educational levels are less likely to distrust neighbors in general, but are also less likely to trust neighbors unequivocally.

Non-linear functions of racial diversity and minority concentration. Figure 1a and 1b indicate that both racial diversity and minority concentration are linearly correlated with trust at the bivariate level. This may not be the case in multivariate models. To test this hypothesis, we regrouped both racial diversity and minority concentration into quintiles and created dummy variables for these quintiles. The results show that difference in trust changes monotonically and in a similar magnitude across quintiles (results not shown). Thus, using either linear function form or quintile dummies provides the same conclusion. We elected not to use quintile dummies in our IV models because it becomes problematic constructing instrumental variables for a large number of dummy variables.

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Collinearity. Since neighborhood racial diversity and percent of racial minorities are highly correlated ($r = .85$), and both are also moderately correlated with other neighborhood variables (see Table 2), it is important to examine whether our regression estimates are compromised due to collinearity. Strong collinearity causes least-squares estimates to be unstable, i.e., they can change erratically with small changes in the data. Collinearity also elevates standard errors and widens confidential intervals for regression estimates.

Two most common diagnostic measures for collinearity are the variance inflation factor (VIF) and the condition index. A general rule is that a VIF value of 10 or higher indicates considerable collinearity. The threshold value of the condition index is also arbitrary, ranging from 20 to 100 (Freund and Littell, 2000; Greene, 2003; Myers, 1990). In our OLS models, VIF values are generally small (ranging from 1.2 to 5.4), and the largest condition index is 6.5 (see Table 3). In the IV models, the VIFs for racial diversity and racial minority concentration are 11.4 and 19.7, while the largest condition index is 12.1. These diagnostic statistics suggest that collinearity is not likely an issue in the OLS models, but there is moderate (based on the condition index) to considerable collinearity (as indicated by VIF values) in the IV models.

There are good reasons to believe that our estimates on the two focal neighborhood variables are not seriously comprised in the presence of collinearity, and that our estimates are unbiased and generally accurate. First, it is important to note that, by definition, IV models are associated with some level of collinearity because the IV estimator is a linear combination of the instrumental variable and other independent variables in the model. The standard errors of IV estimators are commonly many times larger than OLS standard errors, and the

corresponding larger confidence intervals of IV estimators is a price one must pay to address the issue of endogeneity in regression models (Wooldridge, 2003; Murray, 2006).

Second, the presence of collinearity, even when the value of VIF is over 20 or higher, does not necessarily compromise regression estimates (O'Brien, 2007). Indeed, as Belsley et al. (1980) demonstrate, when the estimates are sufficiently precise such that the estimates are statistically significant, even in the presence of collinearity (i.e., standard errors are inflated), the OLS estimates retain their optimal properties. In our case, the estimates of racial diversity and racial minority concentration are statistically significant despite collinearity in our IV models.

Third, we have shown that the estimates on the two focal neighborhood variables are highly stable across various model specifications. The estimates are generally consistent in models where we alter the functional forms of the outcome variables (Table 3, Appendix 2 to 5, and Appendix 9), and in the model where we limit the analysis to residents in the eight largest metropolitan areas (Appendix Table 6). To further test the sensitivity of these estimates, we made various changes in model specifications by removing one neighborhood variable at a time, and by using subsamples of the original data. We report these results in Appendix Table 10. Clearly, the regression estimates (and standard errors) change very little from those reported in Table 3.

Fourth, we performed two additional tests. The first determines whether one of the two variables is redundant, i.e., in the presence of one variable, adding the other does not increase the explanatory power. Our finding ruled out this possibility.[15] The second test

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[15] The *F*-values for the two scenarios are 4.4 and 12.0 for alternately adding racial diversity and minority concentration, respectively.

examines whether our original model, with both racial diversity and racial minority

concentration included, improves a reduced model where the two variables are combined (see

Fox, 1997). Our result (F =19.6) confirms that our original model fits better.

       There are remedial strategies when collinearity is present. One common approach is to

drop one or more of the highly correlated variables or combine these variables into a single

measure. This approach is useful for avoiding "partialling fallacy" when the highly correlated

variables are conceptually equivalent (Gordon, 1968). However, in our study, racial diversity

and racial minority concentration are two conceptually distinct constructs. Dropping one from

the model would commit the specification error of omitting a relevant (right-hand side)

variable. We also did not resort to other remedial steps, such as ridge regression and

incomplete principal component regression, since regression estimates from these models are

biased and cannot be interpreted in any meaningful way (Freund and Littell, 2000; Greene,

2003).[16]

       The effect of racial diversity without controlling for minority concentration. As

discussed earlier, previous studies failed to consider the effects of racial diversity and

minority concentration in the same model. To replicate these studies, we estimated models

that include either racial diversity or minority concentration as an explanatory variable (see

Appendix Table 7). When racial minority concentration is not controlled and neighborhood

sorting is not taken into account, as in the OLS model, racial diversity is negatively and

significantly associated with trust. This finding is consistent with Putnam (2007). Without

controlling for racial minority concentration, but taking into account neighborhood sorting, as

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[16] Fox (1997, p. 377) also commented that "methods that are commonly employed as cures
for collinearity – in particular, biased estimation and variable selection – can easily be worse
than the disease".

in the instrumental variables model, the effect of racial diversity remains negative but becomes non-significant. When racial diversity is not controlled for, racial minority concentration is negatively and significantly related to trust in both the OLS and IV models, although the magnitude of the estimate is much smaller than when racial diversity is controlled for (as in Table 3).

Alternative measures of diversity. We replicated models in Table 4 for Whites and racial minorities using three alternative diversity measures: ethnic diversity, birth-country diversity, and linguistic diversity (as discussed earlier). Similar to the results in Table 4, none of these alternative measures is significant in the models for racial minorities (results not shown). Utilizing these alternative measures also does not alter the significance of racial minority concentration. For the White population, the estimates on ethnic diversity index and birth-country diversity index are positive and highly significant ($p < .001$) (see models 1 and 2 in Appendix Table 8). In comparison, linguistic diversity is not significantly associated with trust (see model 3). It is possible that the measure of linguistic diversity does not reflect racial/ethnic diversity to the same extent as the other measures. There are two reasons for this conjuncture. First, for the Canadian born, regardless of their racial or ethnic origins, most speak English or French at home. Second, among some immigrant groupings, such as Blacks, English or French is the main home language. Overall, these results suggest that exposure to different ethnic/racial groups may promote trust, but linguistic diversity does not have a similar effect.

5. Discussion and conclusion

This paper demonstrates the conceptual and empirical importance of making a distinction between neighborhood racial diversity and racial minority concentration in studies of neighborhood racial composition and trust. Conceptually, racial diversity refers to the extent of mixing of multiple racial groups in a local environment and the demographic potential of multi-group contact, while racial minority concentration is two-dimensional and focuses on the relative local dominance of racial minorities and the majority group (Whites). Empirically, we have shown that high levels of racial diversity do not necessarily correspond to high concentrations of racial minorities in Canada's urban neighborhoods. By treating racial diversity and minority concentration as two comparable measures, previous research may have either overstated the negative association of racial diversity with trust or misinterpreted the negative association between racial minority concentration and trust as the effect of racial diversity.

Our results show that, with the same level of racial diversity, rising shares of minorities in the neighborhood are significantly associated with lower levels of trust in the White population. In contrast, with the same level of racial minority concentration, an increase in neighborhood racial diversity is significantly associated with an increased trust in neighbors in the White population. This suggests that, in the White population, exposure to racial minorities has a positive effect on trust in neighborhoods where the White population remains dominant and the minority neighbors are relatively evenly distributed across multiple racial categories rather than concentrated in only one or two groups.[17] While in most cases

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[17] We thank an anonymous reviewer for suggesting this interpretation. This is consistent with the argument that a community composed of many small ethnic/ racial groups may be more viable than one with two equally sized groups (Alesina and La Ferrara 2005). The same reviewer also points out that racial diversity in Canada's urban neighborhoods is different from that in the US. In the US, racial diversity often means the inclusion of Asians in

higher racial diversity is associated with rising neighborhood racial minority concentration, the effect of racial minority concentration on trust among Whites is more pronounced than that of racial diversity.

Our regression models failed to support the same conclusion in the racial minority population. However, the non-significant relationships between racial diversity/minority concentration and trust are consistent with prior studies on racial attitudes and trust (Alesina and La Ferrara, 2002; Soroka et al., 2006; Taylor, 1998). In line with the spatial assimilation hypothesis, these findings may suggest that economically successful and culturally assimilated racial minority-group members may actively seek to move into mixed neighborhoods, and are prepared to live in more racially diverse environments.

The results of our instrumental variables models suggest that Whites tend to move away from neighborhoods with high concentrations of minorities or, alternately, that more trusting Whites are more likely to move into neighborhoods highly concentrated with minorities. These findings are consistent with the literature. For example, Hou and Picot (2004) found that many neighborhoods with a large presence of racial minorities in Canada's three largest metropolitan areas (Toronto, Montreal, and Vancouver) were established through a rapid residential turnover, in which many White residents moved out while racial minorities moved in. Their study also demonstrates that the residential concentration of minorities in Canada, to a large extent, is a voluntary neighborhood transformation, which reflects the willingness and ability of racial minorities to congregate in neighborhoods. Our finding of

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neighborhoods where Blacks and Latinos are more numerous. In addition, Alba et. al (1995) show that Asians and Hispanics are much more likely than Blacks to live in racially diverse neighborhoods. In Canada, racial diversity is often the result of the inclusion of Blacks and other small minority groups in neighborhoods where Asians have a large presence.

neighborhood sorting in the White population suggests that the out-movement of Whites, in response to the rising presence of minorities, provides opportunities for further concentration of minorities in certain urban neighborhoods.

Like earlier studies on this topic, our study is limited by making an inference on the basis of cross-sectional data. With cross-sectional data, we cannot say much about causal chains and directions. For this reason, we want to emphasize that our findings offer evidence on the two-way associations of our main variables. To better understand the effects of racial diversity and minority concentration on a range of outcomes, it is necessary to undertake longitudinal studies that simultaneously track changes in neighborhood racial composition and individual-level outcomes. Other in-depth investigations may also shed light on untangling the causal chains. One such study, conducted by Sanjek (2001), details the process of transformation of a New York city neighborhood from White dominance to an intensely multi-racial, multi-ethnic, and multi-lingual community where intergroup interactions flourish and inclusive social organizations exist. Studies such as these are crucial to understand the actual process, and the long-term consequences of the trends and patterns of racial/ethnic diversity and minority concentration observed in many post-industrial societies.

REFERENCES

Alba, R.D., Denton, N.A., Leung, S.J., Logan, J.R., 1995. Neighborhood change under conditions of mass immigration: the New York City region, 1970-1990. *International Migration Review* 29, 625-656.

Alba, R.D., Logan, J.R., Stults, B.J., 2000. The changing neighborhood contexts of the immigrant metropolis. *Social Forces* 79(2), 587-621.

Alesina, A., Baqir, R., Easterly, W., 1999. Public goods and ethnic division. *The Quarterly Journal of Economics* 114, 1243-1284.

Alesina, A., La Ferrara, E., 2000. Participation in heterogeneous communities. *The Quarterly Journal of Economics* 115, 847-904.

—. 2002. Who trusts others? *Journal of Public Economics* 85, 207-234.

—. 2005. Ethnic diversity and economic performance. *Journal of Economic Literature* 43, 762-800.

Belsley, D.A., Kuh, E., Welsch, R.E., 1980. Regression Diagnostics: Identifying Influential Data and Sources of Collinearity. New York: Wiley.

Cheong, P.H., Edwards, R., Goulbourne, H., Solomos, J., 2007. Immigration, social cohesion and social capital: A critical review. *Critical Social Policy* 27, 24-49.

Coleman, J., 1990. *Foundations of Social Theory*. Cambridge, MA: Harvard University Press.

Costa, D., Kahn, M., 2003a. Civic engagement and community heterogeneity: An economist's perspective. *Perspectives on Politics* 1, 103-111.

—.2003b. Understanding the American decline in social capital, 1952-1998. *Kyklos* 56, 17-46.

Davidson, R., Schaffer, J.G., 1993. *Estimation and Inference in Econometrics*. New York: Oxford University Press.

Delhey, J., Newton. K., 2005. Predicting cross-national levels of social trust: Global pattern or Nordic exceptionalism. *European Sociological Review* 21, 311-327.

Dustmann, C., Preston, I., 2001. Attitudes to ethnic minorities, ethnic context and location decisions. *The Economic Journal* 111, 353-373.

Florida, R., 2002a. Bohemia and economic geography. *Journal of Economic Geography* 2, 55-71.

—. 2002b. The economic geography of talent. *Annals of the Association of American Geographers* 92, 743-755.

Fox, J., 1997. Applied Regression Analysis, Linear Models, and Related Methods. Thousand Oaks, CA: SAGE publications Ltd.

Frey, W., 1995. Immigration and internal migration 'flight' from US metropolitan areas: Towards a new demographic Balkanization. *Urban Studies* 32, 747-757.

Freund, R.J., Littell, R., 2000. SAS System for Regression. 3rd edition. Cary, NC: SAS Institute INC.

Fukuyama, F., 1995. *Trust: The Social Virtues and the Creation of Prosperity.* New York: The Free Press.

Glaeser, E., Laibson, D., Scheinkman, J., Soutter, C., 2000. Measuring trust. *The Quarterly Journal of Economics* 115, 811-846.

Glaeser, E., Scheinkman, J., Shleifer, A., 1995. Economic growth in a cross-section of cities. *Journal of Monetary Economics* 36,117-143.

Gordon, R., 1968. Issues in multiple regression. *American Journal of Sociology* 73 (5), 592-616.

Greene, W., 2003. Econometric Analysis. 5th edition. New Jersey: Prentice Hall.

Gustavsson, M., Jordahl, H., 2008. Inequality and trust in Sweden: Some inequalities are more harmful than others. *Journal of Public Economics* 92, 348-365.

Hipp, J.R., 2007. Block, tract, and levels of aggregation: Neighborhood structure and crime and disorder as a case in point. *American Sociological Review* 72, 659-680.

Hou, F., 2006. Spatial assimilation of racial minorities in Canada's immigrant gateway cities. *Urban Studies* 43, 1191-1213.

Hou, F., Bourne, L.S., 2006. The migration-immigration link in Canada's gateway cities: A comparative study of Toronto, Montreal, and Vancouver. *Environment and Planning A* 38, 1505-1525.

Hou, F., Picot, G., 2004. Visible minority neighborhoods in Toronto, Montreal and Vancouver. *Canadian Social Trends* Spring 2004, Catalogue No 11-008.

Iceland, J., Weinberg, D.H., Steinmetz, E., 2002. *Racial and Ethnic Segregation in the United States: 1980-2000.* Washington, DC: U.S. Government Printing Office.

Knack, S., Keefer, P., 1997. Does social capital have an economic payoff? A cross-country investigation. *The Quarterly Journal of Economics* 112, 1251-1288.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1997. Trust in large organization. AEA Papers and Proceedings 87, 333-338.

Leigh, A., 2006. Trust, inequality and ethnic heterogeneity. *Economic Record* 82, 268-280.

Letki, N., 2008. Does diversity erode social cohesion? Social capital and race in British neighborhoods. *Political Studies* 56, 99-126.

Marschall, M., Stolle, D., 2004. Race and the city: Neighborhood context and the development of generalized trust. *Political Behavior* 26, 125-153.

—. 2005. Seeing or living diversity - Contact with diverse others and the development of generalized trust. Paper presented at Canadian Political Science Association Annual Meeting - workshop on "Social Capital and Diversity". London, Ontario.

Massey, D.S., Denton, N.A., 1993. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, Mass.: Harvard University Press.

McPherson, M., Smith-Lovin, L., Cook, J., 2001. Birds of a feather: Homophily in social networks. *Annual Review of Sociology* 27, 415-44.

Misztal, B., 1998. *Trust in Model Societies: The Search for the Bases of Social Order.* Cambridge, MA: Polity Press.

Murray, M., 2006. Avoiding invalid instruments and coping with weak instruments. *Journal of Economic Perspectives* 20(4), 111-132.

Myers, R.H., 1990. Classical and Modern Regression with Applications. 2nd edtion. Boston: PWS and Kent Publishing Company, Inc.

O'Brien, R.M., 2007. A caution regarding rules of thumb for variance inflation factors. *Quality and Quantity* 41, 673-690.

Oliver, E., Mendelberg, T., 2000. Reconsidering the environmental determinants of White racial attitudes. *American Journal of Political Science* 44, 574-589.

Oliver, E., Wong, J., 2003. Intergroup prejudice in multiethnic settings. *American Journal of Political Scienc*e 47, 567-582.

Ottaviano, G., Peri, G., 2006. The Economic value of cultural diversity: Evidence from US cities. *Journal of Economic Geography* 6, 9-44.

Pettigrew, T., 2008. Future directions for intergroup contact theory and research. *International Journal of Intercultural Relations* 32(3), 187-199.

Putnam, R., 2001. Social capital: Measurement and consequences. *ISUMA: Canadian Journal of Policy Research* 2, 44-51.

—. 2007. E Pluribus Unum: Diversity and community in the Twenty-first century. The 2006 Johan Skytte prize lecture. *Scandinavian Political Studies* 30, 137-174.

Raudenbush, S.W., Bryk, A.S.. Cheong, Y.F., Congdon, R.T., 2000. *HLM5 Hierarchical Linear and Nonlinear Modeling.* Lincolnwood, IL: Scientific Software International, Inc.

Ross, C., Mirowsky, J., Pribesh, S., 2001. Powerlessness and the amplification of threat: neighborhood disadvantage, disorder, and mistrust. *American Sociological Review* 66, 568-591.

Rubin, D. B., 1987. *Multiple Imputation for Nonresponse in Surveys*. New York: Wiley.

Sampson, R.J., Raudenbush, S.W., Earls, F., 1997. Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science* 277, 918-923.

Sanjek, R., 2001. Color-full before color blind: The emergence of multiracial neighborhood politics in Queens, New York City. *American Anthropologist* 102:762-772.

Schneider, S.L., 2008. Anti-immigrant attitudes in Europe: Outgroup size and perceived ethnic threat. *European Sociological Review* 24, 53-67.

Soroka, S., Helliwell, J., Johnston, R., 2006. Measuring and modeling interpersonal trust. Pp. 95-132 in *Social Capital, Diversity and the Welfare State*, edited by F.M. Kay and R. Johnston. Vancouver: UBC Press.

Soroka, S., Johnston, R., Banting, K., 2007. Ties that bind? Social cohesion and diversity in Canada. in *Belonging? Diversity, Recognition and Shared Citizenship in Canada*, edited by T. C. K. Banting and L.Seidle. Montreal: Institute for Research on Public Policy.

Statistics Canada, *2002. Ethnic Diversity Survey -- User Guide*. Ottawa: Statistics Canada, Housing, Family and Social Statistics Division.

Statistics Canada, 2003. *General Social Survey Cycle 17: Social Engagement -- Public Use Microdata File Documentation and User Guide.* Ottawa: Statistics Canada, Housing, Family and Social Statistics Division.

Steenbergen, M., Jones, B., 2002. Modeling multilevel data structure. *American Journal of Political Science* 46, 218-237.

Stein, R., Post, S.S., Rinden, A., 2000. Reconciling context and contact effects on racial attitudes. *Political Research Quarterly* 53, 285-303.

Stolle, D., Soroka, S., Johnston, R., 2008. When does diversity erode trust? Neighborhood diversity, interpersonal trust and the mediating effect of social interactions. *Political Studies* 56, 57-75.

Subramanian, S.V., Lochner, K., Kawachi, I., 2003. Neighborhood differences in social capital: A compositional artifact or a contextual construct. *Health & Place* 9, 33-44.

Taylor, M., 1998. How white attitudes vary with the racial composition of local populations: Numbers count. *American Sociological Review* 63, 512-535.

Uslaner, E., 2002. *The Moral Foundations of Trust*. Cambridge: Cambridge University Press.

—. 2008. The foundations of trust: Macro and micro. *Cambridge Journal of Economics* 32:289-294.

Vaisey, S., 2007. Structure, culture, and community: The search for belonging in 50 Urban Communes. *American Sociological Review* 72, 851-873.

Woolcock, M., 2001. The place of social capital in understanding social and economic outcomes. *ISUMA: Canadian Journal of Policy Research* 2, 65-88.

Wooldridge, J., 2003. Introductory Econometrics- A Modern Approach. 2nd edition. Mason, Ohio: Thomson South-Western.

Figure 1a. Racial diversity and trust of neighbors

Figure 1b. Racial concentration and trust of neighbors

Table 1

neighborhood distribution by quintile of racial diversity index and percentage of racial groups

	Percentage of a racial group in the neighborhood						Average %
Quintiles of racial diversity index	<10	10-20	25-50	50-75	75-90	>=90	
	Number of neighborhoods						
Panel 1: Whites							
Lowest	0	0	0	0	0	850	97.9
Lower middle	0	0	0	0	0	851	93.5
Middle	2	4	0	0	714	131	87.2
Upper middle	5	42	13	251	540	0	72.2
Highest	1	47	308	495	0	0	50.3
Panel 2: All racial minorities (not including Aboriginals)							
Lowest	850	0	0	0	0	0	1.5
Lower middle	851	0	0	0	0	0	5.1
Middle	361	484	0	0	4	2	10.9
Upper middle	39	561	191	17	38	5	25.8
Highest	6	28	492	279	45	1	47.8
Panel 3: Asians							
Lowest	850	0	0	0	0	0	0.8
Lower middle	851	0	0	0	0	0	3.2
Middle	694	151	0	0	5	1	7.5
Upper middle	192	563	36	36	24	0	19.7
Highest	23	216	461	151	0	0	36.0
Panel 4: Blacks							
Lowest	850	0	0	0	0	0	0.4
Lower middle	851	0	0	0	0	0	1.2
Middle	843	8	0	0	0	0	2.1
Upper middle	805	45	1	0	0	0	3.7
Highest	613	205	33	0	0	0	7.6
Panel 5: Other racial minorities							
Lowest	850	0	0	0	0	0	0.3
Lower middle	851	0	0	0	0	0	0.7
Middle	851	0	0	0	0	0	1.3
Upper middle	847	4	0	0	0	0	2.4
Highest	802	48	1	0	0	0	4.2
Panel 6: Aboriginals							
Lowest	0	0	0	0	0	0	0.6
Lower middle	0	0	0	0	0	0	1.4
Middle	832	19	0	0	0	0	1.9
Upper middle	808	40	3	0	0	0	2.0
Highest	804	30	16	1	0	0	1.8

Data sources: the 2001 census 20% sample micro data file.

Note: * each quintile contains 850 or 851 census tracts (neighborhoods).

Table 2

The correlation of racial diversity and minority concentration with other neighborhood variables

	Racial diversity	% of racial minorities	Difference in correlation (1) -(2)
	(1)	(2)	(3)
neighborhood variables			
% of racial minorities	0.85		
Income inequality	0.07	0.05	0.02 *
Low-income rate	0.42	0.37	0.04
% with university degrees	0.09	0.10	-0.01 ns.
% of non-movers	-0.30	-0.23	-0.07
% of homeowner	-0.29	-0.21	-0.09
Population density	0.47	0.41	0.06
% of seniors	-0.10	-0.11	0.01 ns.

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.

Notes: ns. - not significant at p<.05; * p <.05; all other statistics are significant at p<.001. The significance test of two non-independent correlation r_1 and r_2 is based on t = (r_1-r_2)*SQRT$((n-3)*(1+r_{12})/(2*(1-r_1^2-r_2^2-r_{12}^2+2*r_1*r_2*r_{12})))$.

Table 3
Regression models predicting trust in neighbors from individual and contextual variables

	Baseline model			IV estimates		
	Coefficient	Robust standard error	Variance inflation factor	Coefficient	Robust standard error	Variance inflation factor
Neighborhood variables:						
Racial diversity	-0.026	0.082	4.41	0.312 *	0.148	11.43
% of racial minorities	-0.143	0.077	4.98	-0.603 ***	0.172	19.69
Income inequality	-0.017	0.012	1.32	-0.021	0.012	1.34
Low-income rate	-0.639 ***	0.167	5.26	-0.424 *	0.194	7.90
% with university degrees	0.539 ***	0.080	1.76	0.587 ***	0.082	1.84
% of non-movers	0.165 *	0.066	1.66	0.169 *	0.068	1.69
% of homeowner	0.151 *	0.072	5.40	0.243 **	0.080	6.77
Population density	-0.018 **	0.006	1.78	-0.017 *	0.007	1.91
% of seniors	0.537 ***	0.136	1.40	0.516 ***	0.137	1.47
Individual level variables:						
Toronto	-0.138 ***	0.026	2.55	-0.108 **	0.032	3.69
Montreal	-0.236 ***	0.027	1.77	-0.233 ***	0.027	1.78
Vancouver	-0.011	0.030	1.74	0.018	0.035	2.21
Other large CMAs	-0.079 ***	0.022	1.83	-0.086 ***	0.022	1.87
Age	0.014 ***	0.001	1.92	0.014 ***	0.001	1.92
Woman	0.041 **	0.014	1.04	0.040 **	0.014	1.04
Widowed	-0.023	0.039	1.25	-0.024	0.039	1.25
Divorced or separated	-0.155 ***	0.029	1.15	-0.159 ***	0.029	1.15
Single	-0.075 ***	0.021	1.72	-0.075 ***	0.021	1.73
University degree	0.106 ***	0.018	1.45	0.104 ***	0.018	1.46
Some postsecondary education	0.031	0.017	1.29	0.032	0.017	1.29
Lowest income	-0.188 ***	0.039	1.33	-0.190 ***	0.039	1.33
Low middle income	-0.134 ***	0.028	1.69	-0.134 ***	0.029	1.70
Middle income	-0.095 ***	0.024	1.69	-0.095 ***	0.024	1.69
Upper middle income	-0.060 **	0.021	1.83	-0.060 **	0.021	1.83
Income not reported	-0.157 ***	0.022	2.40	-0.157 ***	0.022	2.40
Asians	-0.004	0.024	1.69	0.032	0.028	2.19
Blacks	-0.161 **	0.057	1.09	-0.147 *	0.058	1.11
Other visible minorities	0.164 **	0.054	1.07	0.179 **	0.054	1.08
Aboriginals	-0.226 **	0.066	1.02	-0.233 ***	0.067	1.02
Immigrants	0.017	0.017	1.70	0.016	0.017	1.73
Home language not English/French	-0.058 *	0.028	1.37	-0.047	0.029	1.40
Stayers	0.162 ***	0.024	1.08	0.165 ***	0.024	1.08
Homeowners	0.209 ***	0.019	1.43	0.206 ***	0.019	1.43
Constant	2.910 ***	0.102		2.778 ***	0.111	
The largest condition index	6.530			12.147		
R-squared	0.138			0.137		
Individual level sample size	42329			42329		
Number of neighborhoods	4254			4254		

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.

Table 4

Instrumental variable regression models predicting trust in neighbors for whites and racial minorities

	Whites		Racial minorities	
	Coefficient	Robust standard error	Coefficient	Robust standard error
Neighborhood variables:				
Racial diversity	0.449 *	0.211	-0.198	0.319
% of racial minorities	-0.755 **	0.268	-0.252	0.279
Income inequality	-0.018	0.014	-0.024	0.024
Low-income rate	-0.575 **	0.215	0.026	0.496
% with university degrees	0.609 ***	0.091	0.472 *	0.183
% of non-movers	0.200 *	0.081	-0.037	0.142
% of homeowner	0.203 *	0.090	0.347	0.210
Population density	-0.016 *	0.007	-0.017	0.019
% of seniors	0.565 ***	0.153	0.131	0.387
Individual level variables:				
Toronto	-0.110 **	0.034	0.003	0.106
Montreal	-0.223 ***	0.029	-0.173	0.092
Vancouver	0.030	0.040	0.093	0.096
Other large CMAs	-0.084 ***	0.023	0.035	0.085
Age	0.015 ***	0.001	0.007 ***	0.002
Woman	0.076 ***	0.016	-0.126 ***	0.033
Widowed	-0.037	0.041	-0.008	0.119
Divorced or separated	-0.160 ***	0.031	-0.088	0.086
Single	-0.075 **	0.023	-0.070	0.049
University degree	0.094 ***	0.020	0.113 **	0.041
Some postsecondary education	0.044 *	0.019	-0.044	0.042
Lowest income	-0.228 ***	0.044	-0.013	0.083
Low middle income	-0.152 ***	0.032	0.017	0.064
Middle income	-0.124 ***	0.027	0.095	0.057
Upper middle income	-0.086 ***	0.023	0.127 *	0.054
Income not reported	-0.178 ***	0.024	-0.024	0.052
Immigrants	-0.003	0.019	0.147 **	0.043
Home language not English/French	-0.060	0.040	-0.032	0.041
Stayers	0.162 ***	0.027	0.156 **	0.058
Homeowners	0.229 ***	0.022	0.096 *	0.043
Constant	2.725 ***	0.120	2.979 ***	0.313
R-squared	0.148		0.070	
Individual level sample size	32790		8898	
Number of neighborhoods	4214		2694	

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.

Table 5

Predicted levels of trust among the white population by neighbourhood racial diversity and minority concentration, holding other characteristics at their respective means

		% of racial minorities in the neighborhood				
		5	20	40	60	80
Racial diversity index						
Quintiles	Typical values	% of reporting "trust neighbors a lot"				
Lowest	0.05	26.3				
Lower middle	0.10	27.0				
Middle	0.20	28.4	24.1			
Upper middle	0.35	30.7	26.2	20.8	16.1	12.2
Highest	0.55		29.1	23.4	18.4	14.0

Data sources: estimated from IV Probit model for the white population in Appendix 4.

Note: some cells are left blank as these combinations are not or rarely observed in the data.

Table 6

Predicted % of reporting "trust neighbors a lot" among the white population by holding other characteristics at their respective means

By neighborhood variable	% of reporting trust neighbors a lot	By individual level variable	% of reporting trust neighbors a lot
% with university degrees		Age	
10	25.0	20	12.7
20	26.3	40	22.5
30	27.8	60	35.4
% of non-movers		Sex	
50	25.7	Men	24.2
60	26.4	Woman	28.1
70	27.0		
% of homeowners		Marital status	
45	23.1	Widowed	26.9
70	25.9	Divorced or separated	20.8
95	29.0	Single	25.6
Population density (log)		Married	27.1
6	27.0	Family income	
7.5	26.1	Lowest income	22.9
9	25.2	Low middle income	27.3
% of seniors		Middle income	25.4
5	25.1	Upper middle income	25.0
10	25.9	Highest income	28.9
15	26.7	Income not reported	25.7
		Mobility	
		Stayers	26.8
		Movers	19.6
		Homeownership	
		Owners	27.4
		Renters	22.4

Data sources: estimated from IV Probit model for the white population in Appendix 4.

Appendix table 1
Coding and descriptive statistics of variables

Variable type	Variable name	Variable coding	mean (standard deviation) or freqency distriution
Outcome			
	Trust neighbors	1. cannot be trusted	4.4%
		2	8.1%
		3	29.6%
		4	33.1%
		5. turst a lot	24.9%
Individual level	Location	Toronto	24.9%
		Montreal	18.2%
		Vancouver	10.7%
		Other large CMAs*	26.2%
		Small CMAs ®	20.0%
	Age	Age	43.0 (17.3)
	Sex	Woman	51.2%
	Family structure	Widowed	4.6%
		Divorced or separated	8.1%
		Single	29.5%
		Married ®	57.9%
	Education	University degree	25.0%
		Some postsecondary education	35.4%
	Family income	Lowest income (<$20,000)	4.0%
		Low middle income ($20,000-39,999)	11.3%
		Middle income ($40,000-59,999)	13.9%
		Upper middle income ($60,000-99,999)	21.3%
		Income not reported	32.2%
		Highest income (>=$100,000) ®	17.4%
	Racial group	Asians	13.4%
		Blacks	1.9%
		Other visible minorities	1.4%
		Aboriginals	1.7%
		Whites ®	81.7%
	Immigrant status	Immigrants	29.3%
	Home language	Home language not English/French	8.5%
	Mobility	Stayers	90.0%
	Homeownership	Homeowners	70.3%
neighborhood level		Racial diversity	0.273(.189)
		% of racial minorities	0.191(.203)
		Income inequality	1.706(.732)
		Low-income rate	0.168(.112)
		% with university degrees	0.194(.116)
		% of non-movers	0.562(.128)
		% of homeowner	0.696(.233)
		Population density	7.529(1.458)
		% of seniors	0.118(.062)

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.
Note: ® reference group. * large CMAs include Ottawa, Calgary, Edmonton, Winnipeg, and Hamilton

Appendix table 2
Probit models predicting "trust neighbors a lot" for all populations

	Probit estimates		IV Probit estimates	
	Coefficient	Robust standard error	Coefficient	Robust standard error
Neighborhood variables:				
Racial diversity	0.013	0.113	0.450 *	0.204
% of racial minorities	-0.205	0.107	-0.997 ***	0.248
Income inequality	0.004	0.013	-0.003	0.013
Low-income rate	-0.329	0.215	0.164	0.252
% with university degrees	0.370 **	0.112	0.458 ***	0.114
% of non-movers	0.220 *	0.090	0.204 *	0.092
% of homeowner	0.283 **	0.097	0.462 ***	0.106
Population density	-0.021 *	0.008	-0.017	0.009
% of seniors	0.541 **	0.184	0.441 *	0.188
Individual level variables:				
Toronto	-0.173 ***	0.036	-0.097 *	0.044
Montreal	-0.287 ***	0.037	-0.283 ***	0.037
Vancouver	-0.090 *	0.044	-0.023	0.049
Other large CMAs	-0.108 ***	0.029	-0.116 ***	0.030
Age	0.019 ***	0.001	0.019 ***	0.001
Woman	0.105 ***	0.020	0.104 ***	0.020
Widowed	-0.004	0.046	-0.004	0.046
Divorced or separated	-0.217 ***	0.040	-0.219 ***	0.040
Single	-0.057	0.029	-0.055	0.029
University degree	-0.118 ***	0.026	-0.122 ***	0.026
Some postsecondary education	-0.082 **	0.024	-0.083 ***	0.024
Lowest income	-0.125 *	0.056	-0.128 *	0.056
Low middle income	-0.024	0.040	-0.028	0.040
Middle income	-0.077 *	0.035	-0.080 *	0.036
Upper middle income	-0.078 *	0.031	-0.079 *	0.031
Income not reported	-0.074 *	0.030	-0.077 *	0.030
Asians	-0.029	0.033	0.042	0.039
Blacks	-0.019	0.075	0.016	0.075
Other visible minorities	0.221 **	0.078	0.260 **	0.078
Aboriginals	-0.174	0.095	-0.176	0.096
Immigrants	0.062 **	0.023	0.066 **	0.024
Home language not English/French	-0.070	0.040	-0.047	0.041
Stayers	0.222 ***	0.039	0.227 ***	0.039
Homeowners	0.142 ***	0.028	0.140 ***	0.028
Constant	-1.838 ***	0.139	-2.073 ***	0.151

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.

Appendix table 3
Probit models predicting "trust neighbors somewhat or a lot" for all populations

	Probit estimates		IV Probit estimates	
	Coefficient	Robust standard error	Coefficient	Robust standard error
Neighborhood variables:				
Racial diversity	0.011	0.101	0.482 *	0.195
% of racial minorities	-0.237 *	0.094	-0.898 ***	0.230
Income inequality	-0.024	0.014	-0.030 *	0.014
Low-income rate	-0.615 **	0.208	-0.290	0.246
% with university degrees	0.765 ***	0.104	0.838 ***	0.107
% of non-movers	0.322 **	0.093	0.330 ***	0.095
% of homeowner	0.119	0.094	0.252 *	0.104
Population density	-0.024 **	0.009	-0.022 *	0.009
% of seniors	0.619 **	0.186	0.581 **	0.189
Individual level variables:				
Toronto	-0.165 ***	0.034	-0.122 **	0.041
Montreal	-0.318 ***	0.034	-0.315 ***	0.034
Vancouver	-0.022	0.039	0.021	0.044
Other large CMAs	-0.088 **	0.029	-0.100 **	0.029
Age	0.014 ***	0.001	0.014 ***	0.001
Woman	0.024	0.018	0.023	0.018
Widowed	-0.061	0.048	-0.063	0.048
Divorced or separated	-0.197 ***	0.036	-0.204 ***	0.036
Single	-0.102 ***	0.026	-0.102 ***	0.026
University degree	0.157 ***	0.025	0.153 ***	0.025
Some postsecondary education	0.049 *	0.022	0.049 **	0.022
Lowest income	-0.214 ***	0.049	-0.217 *	0.049
Low middle income	-0.207 ***	0.036	-0.207 ***	0.036
Middle income	-0.193 ***	0.033	-0.192 ***	0.033
Upper middle income	-0.117 ***	0.030	-0.118 ***	0.030
Income not reported	-0.224 ***	0.030	-0.225 ***	0.030
Asians	-0.005	0.030	0.048	0.036
Blacks	-0.119 *	0.060	-0.097	0.061
Other visible minorities	0.216 **	0.065	0.238 ***	0.065
Aboriginals	-0.214 **	0.081	-0.228 **	0.081
Immigrants	-0.019	0.022	-0.020	0.022
Home language not English/French	-0.037	0.034	-0.020	0.035
Stayers	0.183 ***	0.030	0.187 ***	0.030
Homeowners	0.242 ***	0.024	0.237 ***	0.024
Constant	-0.543 ***	0.128	-0.736 ***	0.141

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.

Note: * p <.05; ** p<.01; *** p<.001.

Appendix table 4

Instrumental variables Probit models predicting "trust neighbors a lot" for whites and racial minorities.

	Whites		Racial minorities	
	Coefficient	Robust standard error	Coefficient	Robust standard error
Neighborhood variables:				
Racial diversity	0.482	0.283	-0.107	0.416
% of racial minorities	-0.979 **	0.367	-0.892 *	0.373
Income inequality	0.006	0.015	-0.033	0.032
Low-income rate	-0.080	0.275	0.908	0.635
% with university degrees	0.478 ***	0.127	0.162	0.258
% of non-movers	0.209	0.108	-0.026	0.190
% of homeowner	0.403 **	0.119	0.663 *	0.270
Population density	-0.020 *	0.010	0.024	0.027
% of seniors	0.541 **	0.209	-0.618	0.497
Individual level variables:				
Toronto	-0.130 **	0.048	0.185	0.139
Montreal	-0.282 ***	0.040	-0.050	0.121
Vancouver	0.010	0.057	0.119	0.131
Other large CMAs	-0.114 ***	0.032	0.017	0.111
Age	0.020 ***	0.001	0.012 ***	0.002
Woman	0.136 ***	0.022	-0.070	0.046
Widowed	-0.006	0.049	-0.094	0.145
Divorced or separated	-0.225 ***	0.043	-0.070	0.101
Single	-0.049	0.033	-0.068	0.067
University degree	-0.140 ***	0.030	-0.113 *	0.056
Some postsecondary education	-0.078 **	0.026	-0.151 **	0.056
Lowest income	-0.208 *	0.066	0.209	0.118
Low middle income	-0.053	0.046	0.177	0.091
Middle income	-0.116 ***	0.040	0.185 *	0.084
Upper middle income	-0.131 ***	0.034	0.277 **	0.081
Income not reported	-0.106 **	0.034	0.144	0.075
Immigrants	0.041	0.027	0.177 **	0.057
Home language not English/French	-0.002	0.055	-0.077	0.056
Stayers	0.262 ***	0.045	0.048	0.078
Homeowners	0.173 ***	0.032	0.005	0.062
Constant	-2.101 ***	0.165	-1.975 ***	0.411

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.

Appendix table 5

Instrumental variables Probit models predicting "trust neighbors somewhat or a lot" for whites and racial minorities

	Whites		Racial minorities	
	Coefficient	Robust standard error	Coefficient	Robust standard error
Neighborhood variables:				
Racial diversity	0.577 *	0.283	0.386	0.385
% of racial minorities	-1.068 **	0.361	-0.532	0.345
Income inequality	-0.025	0.017	-0.042	0.025
Low-income rate	-0.527	0.277	0.310	0.584
% with university degrees	0.867 ***	0.124	0.692 **	0.234
% of non-movers	0.328 **	0.113	0.182	0.187
% of homeowner	0.214	0.119	0.426	0.250
Population density	-0.018	0.010	-0.033	0.026
% of seniors	0.632 **	0.216	0.490	0.465
Individual level variables:				
Toronto	-0.121 **	0.046	-0.061	0.125
Montreal	-0.304 ***	0.037	-0.259 *	0.106
Vancouver	0.046	0.051	0.026	0.115
Other large CMAs	-0.097 **	0.031	0.011	0.099
Age	0.015 ***	0.001	0.005 **	0.002
Woman	0.057 **	0.021	-0.133 **	0.038
Widowed	-0.082 *	0.052	0.030	0.132
Divorced or separated	-0.214 ***	0.040	-0.067	0.091
Single	-0.094 **	0.029	-0.134 **	0.055
University degree	0.156 ***	0.029	0.123 **	0.049
Some postsecondary education	0.075 **	0.024	-0.075	0.048
Lowest income	-0.263 ***	0.056	-0.025	0.100
Low middle income	-0.228 ***	0.041	-0.028	0.080
Middle income	-0.226 ***	0.037	0.012	0.077
Upper middle income	-0.139 ***	0.033	0.024	0.070
Income not reported	-0.261 ***	0.033	-0.021	0.067
Immigrants	-0.033	0.026	0.101 *	0.050
Home language not English/French	-0.057	0.049	-0.004	0.048
Stayers	0.182 ***	0.035	0.213 **	0.065
Homeowners	0.257 ***	0.028	0.135 **	0.050
Constant	-0.791 ***	0.158	-0.651	0.388

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.

Appendix table 6

Regression models predicting trust in neighbors from individual and contextual variables for all residents in 8 largest CMAs

	OLS estimates		IV estimates	
	Coefficient	Robust standard error	Coefficient	Robust standard error
Neighborhood variables:				
Racial diversity	-0.043	0.087	0.260	0.165
% of racial minorities	-0.178 *	0.081	-0.604 **	0.192
Income inequality	-0.018	0.013	-0.022	0.014
Low-income rate	-0.491 **	0.188	-0.235	0.227
% with university degrees	0.522 ***	0.087	0.574 ***	0.090
% of non-movers	0.184 *	0.072	0.187 *	0.074
% of homeowner	0.189 *	0.078	0.288 **	0.090
Population density	-0.017 *	0.008	-0.016 *	0.008
% of seniors	0.462 **	0.156	0.415 **	0.158
Individual level variables:				
Toronto	-0.049 *	0.023	-0.014	0.031
Montreal	-0.164 ***	0.026	-0.155 ***	0.027
Vancouver	0.071 *	0.028	0.104 **	0.034
Age	0.014 ***	0.001	0.014 ***	0.001
Woman	0.049 **	0.016	0.050 **	0.016
Widowed	-0.033	0.046	-0.033	0.046
Divorced or separated	-0.130 ***	0.032	-0.134 ***	0.033
Single	-0.054 *	0.023	-0.054 *	0.023
University degree	0.115 ***	0.021	0.114 ***	0.021
Some postsecondary education	0.032	0.020	0.033	0.020
Lowest income	-0.190 ***	0.044	-0.193 ***	0.044
Low middle income	-0.119 ***	0.033	-0.119 ***	0.033
Middle income	-0.067 *	0.027	-0.067 *	0.027
Upper middle income	-0.052 *	0.024	-0.053 *	0.024
Income not reported	-0.157 ***	0.024	-0.159 ***	0.024
Asians	0.005	0.026	0.041	0.031
Blacks	-0.179 **	0.060	-0.165 **	0.061
Other visible minorities	0.170 **	0.056	0.185 **	0.057
Aboriginals	-0.307 ***	0.077	-0.315 ***	0.077
Immigrants	0.015	0.019	0.014	0.019
Home language not English/French	-0.052	0.030	-0.041	0.030
Stayers	0.159 ***	0.028	0.162 ***	0.028
Homeowners	0.199 ***	0.021	0.197 ***	0.021
Constant	2.769 ***	0.118	2.622 ***	0.133

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.

Appendix table 7
Regression models predicting trust in neighbors with racial diversity or minority concentration, for total population

	Model with racial diversity				Model with minority concentration			
	OLS model		Instrumental variables model		OLS model		Instrumental variables model	
	Coefficient	Robust SE	Coefficient	Robust SE	Coefficient	Robust SE	Coefficient	Robust SE
Neighborhood variables:								
Racial diversity	-0.126 *	0.062	-0.094	0.095				
% of racial minorities					-0.161 **	0.058	-0.286 *	0.112
Income inequality	-0.016	0.012	-0.015	0.012	-0.017	0.012	-0.018	0.012
Low-income rate	-0.711 ***	0.160	-0.737 ***	0.168	-0.640 ***	0.167	-0.514 **	0.192
% with university degrees	0.524 ***	0.079	0.523 ***	0.079	0.541 ***	0.080	0.557 ***	0.080
% of non-movers	0.163 *	0.066	0.165 *	0.067	0.167 *	0.066	0.153 *	0.067
% of homeowner	0.123	0.070	0.122	0.070	0.153 *	0.072	0.195 *	0.077
Population density	-0.018 **	0.006	-0.018 ***	0.007	-0.019 **	0.006	-0.015 *	0.007
% of seniors	0.547 ***	0.135	0.565 ***	0.136	0.541 ***	0.135	0.504 ***	0.137
Individual level variables:								
Toronto	-0.148 ***	0.026	-0.153 ***	0.029	-0.139 ***	0.025	-0.115 ***	0.032
Montreal	-0.237 ***	0.027	-0.237 ***	0.027	-0.236 ***	0.027	-0.237 ***	0.027
Vancouver	-0.021	0.030	-0.025	0.032	-0.012	0.030	0.009	0.035
Other large CMAs	-0.076 ***	0.022	-0.076 **	0.022	-0.079 ***	0.022	-0.078 ***	0.022
Age	0.013 ***	0.001	0.013 ***	0.001	0.014 ***	0.001	0.014 ***	0.001
Woman	0.041 ***	0.014	0.040 **	0.014	0.041 **	0.014	0.040 **	0.014
Widowed	-0.023	0.039	-0.022	0.039	-0.023	0.039	-0.022	0.039
Divorced or separated	-0.154 ***	0.029	-0.156 ***	0.029	-0.155 ***	0.029	-0.157 ***	0.029
Single	-0.075 ***	0.021	-0.075 ***	0.021	-0.075 ***	0.021	-0.074 ***	0.021
University degree	0.107 ***	0.018	0.108 ***	0.018	0.106 ***	0.018	0.106 ***	0.018
Some postsecondary education	0.031	0.017	0.032	0.017	0.031	0.017	0.032	0.017
Lowest income	-0.187 ***	0.039	-0.186 ***	0.039	-0.188 ***	0.039	-0.189 ***	0.039
Low middle income	-0.134 ***	0.028	-0.132 ***	0.028	-0.134 ***	0.028	-0.134 ***	0.028
Middle income	-0.094 ***	0.024	-0.094 ***	0.024	-0.094 ***	0.024	-0.095 ***	0.024
Upper middle income	-0.060 **	0.021	-0.060 **	0.021	-0.060 **	0.021	-0.060 **	0.021
Income not reported	-0.157 ***	0.022	-0.156 ***	0.022	-0.157 ***	0.022	-0.158 ***	0.022
Asians	-0.016	0.024	-0.018	0.024	-0.003	0.024	0.012	0.027
Blacks	-0.166 **	0.057	-0.168 **	0.057	-0.162 **	0.057	-0.151 **	0.057
Other visible minorities	0.159 **	0.054	0.157 **	0.054	0.164 **	0.054	0.174 **	0.054
Aboriginals	-0.225 **	0.066	-0.231 **	0.067	-0.226 **	0.066	-0.232 **	0.067
Immigrants	0.017	0.017	0.017	0.017	0.016	0.017	0.020	0.017
Home language not English/French	-0.062 *	0.028	-0.063 *	0.028	-0.058 *	0.028	-0.054	0.029
Stayers	0.162 ***	0.024	0.162 ***	0.024	0.163 ***	0.024	0.163 ***	0.024
Homeowners	0.210 ***	0.019	0.209 ***	0.019	0.209 ***	0.019	0.208 ***	0.019
Constant	2.948 ***	0.099	2.940 ***	0.099	2.907 ***	0.101	2.850 ***	0.105

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.

Appendix table 8

Instrumental variable regression models predicting trust in neighbors with alternative diversity measures, for the White population

	Model 1		Model 2		Model 3	
	Focusing on diversity within the white population		Diversity by birth country		Linguistic diversity	
	Coefficient	Robust SE	Coefficient	Robust SE	Coefficient	Robust SE
Neighborhood variables:						
Racial diversity index	0.704 ***	0.147	0.639 ***	0.143	0.179	0.111
% of racial minorities	-0.613 ***	0.152	-0.989 ***	0.222	-0.443 *	0.185
Income inequality	-0.024	0.014	-0.026	0.014	-0.016	0.014
Low-income rate	-0.343	0.222	-0.348	0.225	-0.626 **	0.215
% with university degrees	0.642 ***	0.091	0.524 ***	0.091	0.561 ***	0.090
% of non-movers	0.223 **	0.080	0.190 *	0.083	0.148	0.083
% of homeowner	0.240 **	0.090	0.231 *	0.090	0.186 *	0.090
Population density	-0.017 *	0.007	-0.021 **	0.007	-0.013	0.007
% of seniors	0.433 **	0.156	0.176	0.178	0.514 **	0.156
Individual level variables:						
Toronto	-0.079 *	0.035	-0.150 ***	0.035	-0.115 **	0.034
Montreal	-0.206 ***	0.029	-0.215 ***	0.028	-0.260 ***	0.034
Vancouver	0.082	0.043	0.016	0.040	0.026	0.040
Other large CMAs	-0.083 ***	0.023	-0.068 **	0.022	-0.080 ***	0.023
Age	0.015 ***	0.001	0.015 ***	0.001	0.015 ***	0.001
Woman	0.075 ***	0.016	0.076 ***	0.016	0.076 ***	0.016
Widowed	-0.038	0.041	-0.031	0.041	-0.034	0.041
Divorced or separated	-0.161 ***	0.031	-0.157 ***	0.031	-0.157 ***	0.031
Single	-0.076 ***	0.023	-0.075 ***	0.023	-0.074 ***	0.023
University degree	0.095 ***	0.020	0.096 ***	0.020	0.094 ***	0.020
Some postsecondary education	0.047 *	0.019	0.045 *	0.019	0.043 *	0.019
Lowest income	-0.222 ***	0.044	-0.220 ***	0.044	-0.228 ***	0.044
Low middle income	-0.148 ***	0.032	-0.147 ***	0.032	-0.151 ***	0.032
Middle income	-0.120 ***	0.027	-0.117 ***	0.027	-0.122 ***	0.027
Upper middle income	-0.083 ***	0.023	-0.084 ***	0.023	-0.085 ***	0.023
Income not reported	-0.176 ***	0.024	-0.178 ***	0.024	-0.179 ***	0.024
Immigrants	-0.007	0.019	-0.019	0.019	-0.004	0.019
Home language not English/French	-0.058	0.041	-0.072	0.040	-0.073	0.041
Stayers	0.161 ***	0.027	0.159 ***	0.027	0.158 ***	0.027
Homeowners	0.226 ***	0.022	0.229 ***	0.022	0.232 ***	0.022
Constant	2.256 ***	0.162	2.699 ***	0.119	2.790 ***	0.116
R-squared	0.148		0.148		0.149	
Individual level sample size	32790		32790		32790	
Number of neighborhoods	4214		4214		4214	

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.

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Appendix table 9
Ordered logit regression models predicting trust in neighbors from individual and contextual variables

	Baseline model		IV estimates	
	Coefficient	Robust standard error	Coefficient	Robust standard error
Neighborhood variables:				
Racial diversity	-0.027	0.148	0.567 *	0.272
% of racial minorities	-0.292 *	0.139	-1.198 ***	0.324
Income inequality	-0.030	0.021	-0.038	0.021
Low-income rate	-1.122 ***	0.303	-0.649	0.350
% with university degrees	1.020 ***	0.143	1.117 ***	0.146
% of non-movers	0.384 *	0.121	0.375 *	0.124
% of homeowner	0.269 **	0.131	0.459 **	0.144
Population density	-0.035 **	0.012	-0.031 *	0.012
% of seniors	1.015 ***	0.255	0.945 ***	0.259
Individual level variables:				
Toronto	-0.267 ***	0.047	-0.196 **	0.058
Montreal	-0.468 ***	0.049	-0.463 ***	0.049
Vancouver	-0.053	0.057	0.016	0.065
Other large CMAs	-0.157 ***	0.041	-0.169 ***	0.042
Age	0.026 ***	0.001	0.026 ***	0.001
Woman	0.079 **	0.026	0.076 **	0.026
Widowed	0.024	0.079	0.023	0.079
Divorced or separated	-0.316 ***	0.052	-0.324 ***	0.052
Single	-0.112 ***	0.037	-0.111 ***	0.037
University degree	0.136 ***	0.034	0.132 ***	0.034
Some postsecondary education	0.017	0.032	0.018	0.032
Lowest income	-0.299 ***	0.072	-0.303 ***	0.072
Low middle income	-0.203 ***	0.052	-0.204 ***	0.052
Middle income	-0.167 ***	0.044	-0.167 ***	0.044
Upper middle income	-0.108 **	0.038	-0.108 **	0.038
Income not reported	-0.251 ***	0.040	-0.252 ***	0.040
Asians	-0.021	0.043	0.055	0.051
Blacks	-0.262 **	0.098	-0.228 *	0.100
Other visible minorities	0.324 **	0.098	0.358 **	0.099
Aboriginals	-0.376 **	0.123	-0.391 ***	0.123
Immigrants	0.035	0.031	0.037	0.032
Home language not English/French	-0.110 *	0.052	-0.086	0.052
Stayers	0.293 ***	0.042	0.297 ***	0.042
Homeowners	0.379 ***	0.035	0.373 ***	0.035
Constant 1	-1.863	0.186	-1.599 ***	0.202
Constant 2	-0.673	0.184	-0.409	0.200
Constant 3	1.111	0.183	1.375	0.200
Constant 4	2.701	0.184	2.965	0.201
Pseudo R-squared	0.053		0.053	
Individual level sample size	42329		42329	
Number of neighborhoods	4254		4254	

Data sources: the 2001 census 20% sample micro data file, the 2002 Ethnic Diversity Survey and the 2003 Social Engagement Survey.

Appendix table 10

The coefficients of racial diversity index and racial minority concentration in instrumental variables models alternative to that in Table 3.

		Coefficient	Robust SE
I. Reduce neighborhood variables			
Income inequality removed			
	Racial diversity index	0.300 *	0.148
	% of racial minorities	-0.597 ***	0.172
Low-income rate removed			
	Racial diversity index	0.335 *	0.147
	% of racial minorities	-0.679 ***	0.158
% with university degrees removed			
	Racial diversity index	0.238	0.147
	% of racial minorities	-0.368 **	0.169
% of non-movers removed			
	Racial diversity index	0.268	0.147
	% of racial minorities	-0.563 ***	0.174
% of homeowner removed			
	Racial diversity index	0.318 *	0.149
	% of racial minorities	-0.574 ***	0.169
Population density removed			
	Racial diversity index	0.250	0.146
	% of racial minorities	-0.612 ***	0.173
% of seniors removed			
	Racial diversity index	0.338 *	0.149
	% of racial minorities	-0.624 ***	0.172
II. Randomly reduce sample size by			
5%			
	Racial diversity index	0.285	0.151
	% of racial minorities	-0.603 ***	0.177
10%			
	Racial diversity index	0.343 *	0.156
	% of racial minorities	-0.639 ***	0.179
15%			
	Racial diversity index	0.311	0.161
	% of racial minorities	-0.679 ***	0.184
20%			
	Racial diversity index	0.389 *	0.163
	% of racial minorities	-0.570 ***	0.193

Note: the alternative specifications were based on the IV models in table 3.