Do You See What I See? Diversity, Social Capital, and Attitudes about Immigration

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Abstract

How do people's environments affect their politics? In an online survey in Canada, we use two innovations in the measurement and conceptualization of "ethnic context" to add to the literature linking ethnic diversity with diminished social capital. First, we develop a new map-drawing measure of context that captures respondents' own definitions of their relevant environments; second, we ask respondents to describe their surroundings, such that we have measures of both "subjective" and "objective" contexts. We then use nonbipartite matching to compare people who live in virtually identical neighborhoods in order to separate partially the effects of selection and physical environments from the effects of psychological perceptions. We show that, given two individuals who live in virtually identical diverse local contexts, one who *thinks* she lives with more minorities tends to have different political attitudes and actions than her counterpart. Our study also supports concerns in the literature about sorting and self-selection: we find that individuals who are matched on the numbers of visible minorities in their local environs have virtually the same individual background characteristics.

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Behavior is a function of the person and her environment, where the effect of the environment may be driven by two complementary yet different processes: (1) the process of exposure to a physical, objective milieu that requires no understanding on the part of the person to have its causal effect, and (2) a process requiring the creation of a mental image of her surroundings before an attitude or behavior can be produced. This idea is not new; for example, Lippmann (1922 [1991]*a*) provides compelling arguments and examples showing how people react as much, if not more, to "pseudoenvironments" than "real" environments. In this paper we set out to assess the effects of pseudoenvironments on politics via an analysis of the effects of perceptions of the ethnic group composition of geographic areas. The context effects literature has built a strong theoretical edifice for understanding how environments might influence behavior and attitudes, and we take advantage of that theoretical work to develop expectations for how pseudoenvironments might relate to attitudes and behavior.

Studying pseudoenvironments in the context of inter-group attitudes and local geography raises two challenges. First is the challenge of measurement. How can we glimpse the mental images that people construct of the various groups in a given place? Second is the challenge of isolating the effects of pseudoenvironments from the effects of objective environments. We know that perceptions and understandings of locales lead people to choose to arrive at, stay in, and leave places. So, comparisons of people who perceive differently will not merely tell us about the effects of pseudoenvironments, but also about the effects of objective environments. We confront both of these challenges in this paper; we tackle the first challenge by asking people to draw the boundaries of their "local community" on a map (i.e., to capture the boundaries of a geographic pseudoenvironment) and then by asking them to report on the characteristics of the people in that place. We build on the work on mental mapping pioneered by Lynch, which has continued in geography and sociology and now political science (Lynch, 1973; Grannis, 1998; Tversky, 2000; Garling and Golledge, 2000; Matei, Ball-Rokeach and Qiu, 2001; Coulton et al., 2001; Svendsen, Campbell and Fisher, 2008; Svendsen and Campbell, 2008; Wong et al., 2012).

We confront the second challenge by matching people who live in nearly identical places into

pairs and restricting our analysis to compare differences in perceptions between people within pairs. We show that perceptions can differ greatly — even for people living in virtually the same kinds of places – and that these differences in perceptions of diversity predict attitudes about the social capital of places, as well as policy preferences about immigration and multiculturalism (policies at least partly responsible for the increasing diversity). In addition, we find surprising confirmation that disentangling the effects of objective context from demographic characteristics – at least in a cross-sectional survey – is fraught with difficulties; one cannot "control for" education and income, for example, to determine the independent effect of objective contextual diversity if everyone who lives in the same type of context has the same education and income.

This paper thus suggests that part of the mechanism by which place turns into politics are the perceptions and pseudoenvironments long thought to be operational, but seldom directly studied or isolated from other influences.

1 Diversity, Social Capital, and Immigration Attitudes

People who live in diverse objective environments tend to display less social capital and social trust than people who live in homogeneous environments (Alesina and La Ferrara, 2000; Putnam, 2007; Stolle, Soroka and Johnston, 2008; Fieldhouse and Cutts, 2010; Uslaner, 2012; Dinesen and Sønderskov, 2012; Meer and Tolsma, 2014). The greater the mix of groups in a geographic context the more likely it is that a resident will be surrounded by outgroup members who seem less familiar or recognizable.[1] This lack of familiarity with those who are physically proximate – exacerbated perhaps by in-group biases (and even outgroup hostility) – then leads to less trust overall, inhibits one's ability to predict what someone else will do, and therefore discourages reliance on one another (Marschall and Stolle, 2004; Brewer, 1999). Greater diversity (and the assumed dissimilarity that accompanies it) leads to people "hunkering down," avoiding social and political interactions with both their outgroup and ingroup (Putnam, 2007). Residents of diverse areas are less trusting of everyone, and they therefore volunteer less, donate to charity less, and are disinclined to cooperate with others to solve community problems.

There are other mechanisms that may also explain why diversity tends to be associated with

[1] "Geographic context" refers to spatial areas, places, or "containers" such as governmental administrative units, schools, workplaces, religious institutions, or even informal places.

lower levels of social capital in the aggregate. Research on support for social welfare programs discusses these alternatives, where outgroup members actually have different preferences, social norms, values, and forms of communication than ingroup members (Alesina and Ferrara, 1999; Alesina and La Ferrara, 2002; Costa and Kahn, 2003; Habyarimana et al., 2007). These differences – originating in group-level dissimilarities – diminish people's capacity for collective action (i.e. social capital) and thus these groups show less support for redistributive policies.

In addition, we argue that pseudoenvironments can affect these different mechanisms (Wong et al., 2012). People may misperceive the contexts in which they live, imagining that they live among fewer or more outgroup members than what is reported in the Census (Nadeau, Niemi and Levine, 1993; Sigelman and Niemi, 2001; Wong, 2007). And, people may believe that they do not share preferences, norms, or values with their diverse neighbors (irrespective of evidence in support or to the contrary). Just as the various scholars mentioned above have argued that diversity can diminish norms of reciprocity, civic engagement, and cooperation, we add to the research by stressing how *perceptions* of both diversity and dissimiliarity can diminish social capital and civic engagement as well.

Obviously, ethnic diversity is not exogenous in Canada. Its immigration policies and history are strong contributors to both the country's ethnic diversity and the subsequent concerns arising about the social cohesion and stability of the country in the face of such a variety of cultural traditions and backgrounds. Scholars have shown that the presence of immigrants can lead to feelings of threat, much as previous research about racial threat has shown in the United States (Key, 1949; Blalock, 1967; Oliver and Mendelberg, 2000; Citrin and Sides, 2008; Newman, Hartman and Taber, 2012; Enos, 2014). Furthermore, changes in numbers of immigrants – even more than overall levels – may affect political judgments (Green, Strolovitch and Wong, 1998; Hopkins, 2010). As such, we are also interested in examining the effects of ethnic context – objective and subjective – on preferences about policies affecting this diversity, namely immigration and multiculturalism.

2 Data and Measures

We use data from an online national panel survey in Canada that was conducted in April-July 2012, Mapping Local Communities Canada (MLCC) (Wong, Rubenson and Bowers, 2012). The

MLCC sampling frame came from Vote Compass, a non-partisan electoral education initiative sponsored by the Canadian Broadcasting Corporation (CBC) which allowed respondents to answer about twenty policy questions and place themselves in a policy space relative to the major political parties (which had also completed the survey). Over 1 million Canadians visited the Vote Compass website surrounding the May 2011 federal election. We contacted all of the 80,000 or so respondents of the 2011 Vote Compass who agreed to be contacted for future studies, and about 10 percent agreed to take our survey; 7817 respondents completed the survey. The convenience sample is not representative of Canada as a whole, since respondents will obviously be more likely to be interested in and informed about politics and feel comfortable using technology than the average Canadian.[2] Furthermore, our online survey was only conducted in English (whereas Vote Compass was conducted in both English and French). However, while our respondents' perceptions of their environments are not meant to be generalizable to the nation, our measures of context are broadly applicable, as are the questions our measures raise about standard practices of using pre-existing bureaucratic units as measures of context. We were interested in getting a wide range of responses, which we succeeded in gathering with such a large sample.

While it shares many similarities with other major immigrant-receiving countries, Canada is one of the most urbanized such countries, with about 80 percent of its population living in metropolitan areas (Aizlewood and Pendakur, 2005). "Visible minorities", the Canadian Census term for non-white Canadians, have grown from less than 1 percent of the population in 1971 to about 16 percent in the 2006 Census; about 1 in 5 Canadians is foreign-born. The effect of this diversity is particularly noticeable in Toronto, Montreal, and Vancouver. For example, a 2005 Statistics Canada study projected that by 2017, when racial minorities will make up about 1 in 5 Canadians, both Toronto and Vancouver will likely be majority-minority. Because we are asking questions about reactions to racial/ethnic context, we restrict our analyses in this paper to majority group members (i.e., non-visible minorities).[3]

[2]Compared to the 2006 Census, our respondents are older, better educated, wealthier, and more likely to be men and white.

[3]Future work will look at the reactions to diversity by visible minorities. However, despite having about 1000 minority respondents in our sample, they belong to many different groups and have multiple birthplaces (including Canada).

2.1 What does the Census see? Measures of Objective Context

For our objective context measures, we use data from the 2006 Canadian Census.[4] We created context variables for Census dissemination areas (DA), which are composed of one or more blocks and have 400 to 700 individuals; they are the smallest Census unit for which all information is disseminated.[5]

We created an index of the percentage of visible minorities for DAs following the Statistics Canada definition of "visible minority" (which includes "persons who are non-Caucasian in race or non-white in colour and who do not report being Aboriginal").[6] In 2006, 50% of Canada's roughly 55,000 dissemination areas had less than 6% visible minorities.[7]

2.2 What do people see? Maps in our Heads — Boundaries of Local Communities

To create a measure of personally relevant places that operationalizes our conceptualization of context, we developed a map-drawing addition to a traditional political science survey. So, in addition to answering more traditional survey questions, the respondents are also asked to refer to a few maps. At the start of the survey, they are asked to provide their postal code and check a Google Map that was centered on that postal code to make sure that we had correctly located the respondents. Then, after answering a few questions about how long they had lived in their current home, the location of any previous homes, and whether they were homeowners or renters, they proceed to the next screen with a new map centered again on where they lived. At that point, they are asked to draw their "local community."[8] The map-drawing task is one of the first in the survey, so the

[4] In 2011, the long-form of the Census — which is where Canadians are asked about their ethnicity and race — became voluntary in the newly renamed National Household Survey (Thompson, 2010). The response rate dropped 25 percentage points. The Census summaries for small geographic units (such as dissemination areas) were made particularly imprecise and/or likely to be missing given this change in the Census (Sheikh, 2013).

[5] The MLCC contains 6370 DAs.

[6] Our measure of objective context used the Census reports of responses to the following two questions which were introduced with the following text "Mark more than one or specify, if applicable. This information is collected in accordance with the Employment Equity Act and its Regulations and Guidelines to support programs that promote equal opportunity for everyone to share in the social, cultural, and economic life of Canada." and which then asked: "(1) Is this person an Aboriginal person, that is, First Nations (North American Indian), Metis or Inuk (Inuit)? (2) Is this person: White, South Asian (e.g., East Indian, Pakistani, Sri Lankan, etc.), Chinese, Black, Filipino, Latin American, Arab, Southeast Asian (e.g., Vietnamese, Cambodian, Malaysian, Laotian, etc.), West Asian (e.g., Iranian, Afghan, etc.), Korean, Japanese, Other (specify)."

[7] As a point of comparison, in Canada overall, visible minorities make up 16 percent of the population.

[8] Because we are interested in the boundaries of a psychologically relevant place and the perceptions of the characteristics of this place, we did not define "local community" for respondents.

respondents are not primed to think about particular issues by other survey questions. They can draw any shape they would like, and they could also draw multiple shapes (i.e., there is no requirement to draw compact and contiguous communities). Figure 1 shows an example of 50 such maps drawn by people living in Toronto overlaid on each other and on a Google Map of Toronto.

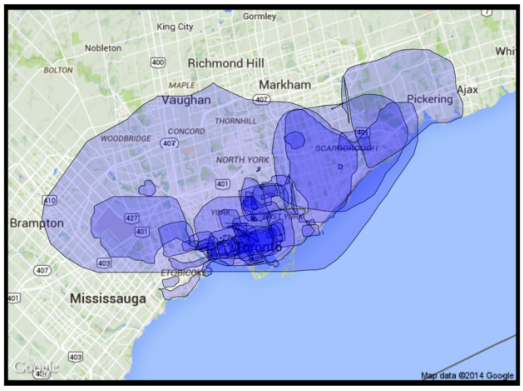

Figure 1: A random sample of 50 "local community" maps drawn by residents of Toronto in the MLCC.

One advantage of asking respondents to draw their own communities is that they define the boundaries of the context that is most salient and central to them; we do not need to assume that governmental administrative units (created by Statistics Canada or Elections Canada, for example) are the most relevant contexts for respondents, simply because objective data are collected at those levels. Furthermore, we are able to sidestep the Modifiable Areal Unit Problem (MAUP) and the Uncertain Geographic Context Problem (UGCop) (Wong, 2009; Kwan, 2012). With these data, we can look at the effect of living in non-modifiable units (i.e, self-drawn "local communities") to see if they affect policy preferences directly.[9]

In addition to asking respondents about the subjective boundaries of their communities, we also asked them to describe the content of those communities. In other words, we have multiple ways to capture people's pseudoenvironments or subjective communities.

[9]The MAUP is a statistical problem of aggregation and scaling of which the problem of ecological inference is a subtype. Basically, one can show that nearly any relationship (correlation, coefficient from a linear or non-linear model) can be generated depending on how lower level units are combined to make higher level units and the relationships between explanatory variables and the units. We sidestep this problem by focusing on maps drawn by individuals — thus the entire analysis of subjective maps is at the individual level and no aggregation problems arise.

2.3 Measures of Subjective Context

After respondents drew their "local community" on the map, they were asked a battery of questions about their perceptions of the relative size of ethnic/racial groups captured in their drawing: "Just your best guess – what percentage of the population in your local community is ..." The list of groups included the following: Blacks, Canadian Aboriginals, Whites, Chinese, Latin Americans, South Asians (East Indian, Pakistani, Sri Lankan, etc.), and Other Asians (Korean, Japanese, Filipino, etc.). The percentage perceived visible minority in a context — following the official Canadian government's definition — was an index adding together responses for Blacks, Chinese, Latin Americans, South Asians, and other Asians.[10]

Later in the survey, we showed respondents a map with one of six geographic areas highlighted at random with equal probability: the respondent's Census units (dissemination area (DA) or subdivision (CSD), corresponding very roughly to neighborhood and city, respectively); forward sortation area (FSA), a postal administrative unit; federal election district (FED); province or territory; or Canada as a whole. Respondents were told what the map represented, and then were asked the same battery of questions about the demographic make-up of this fixed geography. In other words, we have subjective perception measures for each of these contextual units from about 1/6 of our sample and for their "local community" from the entire sample. Thus, we have multiple measures of subjective context for each respondent.

Our respondents overestimate the percentages of visible minorities in their contexts: the median is 37 percent visible minorities for their "local communities" and 30 percent for DAs. This is about 4 or 5 times the percentage reported by the Census.[11]

2.4 Outcomes: Social Capital and Immigration Policy Preferences

To examine the political effects of pseudoenvironments, we focus on social capital, civic engagement, and immigration policies as our outcomes of interest. The MLCC survey contained a number of questions about perceptions of local communities' social capital and community efficacy.

[10] Because people often overestimate the size of these groups, the index often exceeded 100 percent. The question format used an interactive slider, so any response between 0 and 100 was possible. We created a few versions of this index to make sure that our results are robust to different specifications. The version presented runs from 0 to 1, where 0 represents 0 percent and 1 represents all responses that added up to 100 percent or more.

[11] In respondents' "local communities," the median objective context is 9 percent visible minority.

The respondents also were asked to agree or disagree (strongly or not) with the following three statements about the people in the local community they drew:

1. People around here are willing to help others in their community.
2. People in this community generally don't get along with each other.
3. People in this community do not share the same values.

We created an additive index of the three items for a *Social Capital* Index.[12]

Respondents were also asked how likely or unlikely (very or not) the following scenarios would be, given the people in their self-defined local community:

1. If some children were painting graffiti on a local building or house, how likely is it that people in your community would do something about it?
2. Suppose that because of budget cuts the library closest to your home was going to be closed down by the city. How likely is it that community residents would organize to try to do something to keep the library open?

We created an additive *Community Efficacy* index from these 2 items.[13]

To assess the extent to which respondents felt safe and liked their neighborhood and bureaucratic units in which they live, we asked the following:

1. How worried are you about the safety in your neighbourhood?
2. On the whole, do you like or dislike your [DA, CSD, FSA, FED, Province, or Canada] as a place to live?
3. On the whole, do you like or dislike your neighbourhood as a place to live?

We added the latter two together to create a *Like Living Place* index.

Respondents were also asked their ideal housing preferences with a single question: If you could find housing that you liked, would you rather live with neighbours who share your racial and ethnic background, or who represent a mix of racial and ethnic backgrounds, or is it not important to you?

Respondents reported about their civic engagement and vote turnout with the following four questions:

[12] We also replicated all analyses involving indices with the separate composite measures and found similar results.

[13] Sampson, Raudenbush and Earls (1997) used this concept of Community Efficacy in explaining disparate outcomes of otherwise similarly poor neighborhoods in Chicago.

1. During the past 12 months, have you worked with other people to deal with some issue facing your community or schools?
2. During the past twelve months, did you attend a meeting about an issue facing your community or schools?
3. Did you vote in the federal national election in May, 2011?
4. Did you vote in the most recent provincial election?

These participation items were combined in two indices of *Community Participation* and *Vote*.

Because we also want to know how perceptions of the diversity in people's contexts affect their opinions about policies that are related to the sources and consequences of that diversity, we asked the following three policy questions:

1. Do you think the number of immigrants from foreign countries who are permitted to come to Canada to live should be increased a little, increased a lot, decreased a little, decreased a lot, or left the same as it is now?
2. Do you agree or disagree with the following statement? Speaking English or French should be a requirement for immigration to Canada.[14]
3. ...tell us how strongly you agree or disagree. It is better for Canada if different racial and ethnic groups maintain their distinct cultures in a cultural mosaic rather than blend together.

The first ask explicitly about immigration and the third concerns Canada's official multicultural policy.

3 Analysis: How Does Context Affect Political Attitudes and Actions?

If perceptions of context matters for political attitudes and behaviors then a comparison of people who differ in their understandings of their neighborhoods should reveal differences in such outcomes. If two people differ in their perceptions of a place but also differ in the diversity of the place as measured by the Census, then we might wonder whether we have learned about pseudoenvironments or objective environments. However, if two people who do not differ in the diversity of their contexts do differ in perceptions and in outcomes, then we might say that the outcome difference is not due to objective context but rather to the complex processes by which the objective becomes subjective.

[14] 64 percent of respondents agreed or agreed strongly with this statement. However, they are not in general opposed to immigration: 78 percent of respondents supported increasing or maintaining the current level of immigration.

3.1 Design: Matching on Objective Context

What we want to test is whether people's lived experiences of their contexts have an effect, above and beyond objective conditions. Do their perceptions of how many outgroup members live around them affect their attitudes and actions, irrespective of who is, in fact, near them?

If we simply look at the effect of perceptions of context on a range of political attitudes and actions, any relationship could teach us more about the objective conditions, or the underlying characteristics or predispositions that lead people to choose to live where they do, than about people's beliefs about the demographic make-up of where they live. In other words, significant differences in perceptions could be due to differences in objective conditions, which in turn could be due to selection biases (arising from perceptions of the place during the housing search process). Any comparison of perceptions across respondents is confounded unless we can remove from consideration these alternative explanations.

We use nonbipartite matching to determine whether two similar individuals who live in identically diverse contexts have very different outcomes, simply because one *perceives* more outgroup members than the other. We work to clarify our comparisons by matching all of the individuals in our survey into pairs which are maximally similar on the racial/ethnic composition (i.e., percent visible minority) of their Census Dissemination Areas. This "non-bipartite" matching differs from common bipartite (or two-group matching) because we match all of our respondents to each other using a continuous Census measure of the ethnic diversity of a local place. The algorithm that we use for this pair-matching is "optimal" in the sense that it minimizes the sum of the overall differences in percent visible minority within pairs across the whole dataset (Lu et al., 2011, 2001; Rosenbaum, 2009; Wong et al., 2012).

For the analyses, we match on respondents' DAs because the sizes of everyone's DAs are roughly the same.[15] The other main factor we want to address is the population density of the DAs, since living in a rural area that is 10 percent visible minority can be a drastically different experience

[15] In other work, we look at the objective context determined by the boundaries they drew of their local communities. This involves some approximation, since no community drawn corresponds exactly with the boundaries of a government bureaucratic unit. Because community sizes also can vary a great deal – ranging from part of a street to multiple continents – matching on the diversity of respondents' DAs ensures that the areas surrounding their homes are comparably similar in their demographic composition, population size, and land area.

than living in a densely populated urban area that is 10 percent visible minority. Therefore, we encouraged our matching algorithm to avoid pairs which differed by more than 100,000 in municipal (i.e., Census Subdivision or CSD) population by penalizing such matches.[16]

Our matched designs substantially removed differences between people due to objective context: before any matching we would have compared people living in areas with no visible minorities to non-visible minority people living in places with nearly 100% visible minorities; in our preferred design 99 percent of the matches had a difference of less than 0.0049 percentage points, and the maximum difference in percent visible minority is still less than one percentage point (0.0091 percentage points); 50 percent of the matches were identical. The median difference in CSD population between the matches was 8040, and the maximum was 99,995; 30 percent of the matches were identical on municipal population size.

An unexpected benefit of matching on proportion objective visible minority is that our pairs were also very similar on other background characteristics. We assessed balance on age, income, years living in the same residence, area of hand-drawn community (in km), sex, and education (in 8 categories). We also included in this balance assessment, variables indicating missing values on these covariates. For example, we could show that before matching percent visible minority in the DA was strongly related to the number of years a respondent reported living in that location (z-score of -8.1 with $p = 4.0 \times 10^16$) and also to the willingness of a respondent to answer this question ($z = 4.9$ and $p = 1.04 \times 10^6$), but after matching these relationships weakened considerably ($z = -.16, p = .87$ and $z = 1.2, p = .23$ for tenure and missing tenure respectively).[17] Across the different covariates, the z-statistics ranged from 0.05 to 58 before matching but 0.07 to 1.99 after matching. Figure 2 shows this information across all of the covariates.

[16] All of the open-source code required to reproduce this paper will be provided in a github or bitbucket repository so that others may learn how to produce such matched designs.

[17] The balance assessment method of (Hansen and Bowers, 2008) generalizes to continuous explanatory variables directly although the d statistics which summarize differences in means are no longer easy to interpret. Instead, we present z scores and p-values to describe the magnitude and direction of the differences between respondents on a given covariate with and without conditioning on the matched design. Our procedure basically regresses the covariate on the explanatory variable (with adjustments for the stratification induced by the matching) and then calculates a z-score (instead of a t-score) because the probability distribution characterizing our null hypothesis holds the design fixed and simply swaps which member of a pair has the higher value (i.e. it uses the analogy of a repeated experiment to generate the distribution of the z-statistic under the null hypothesis of no effects).

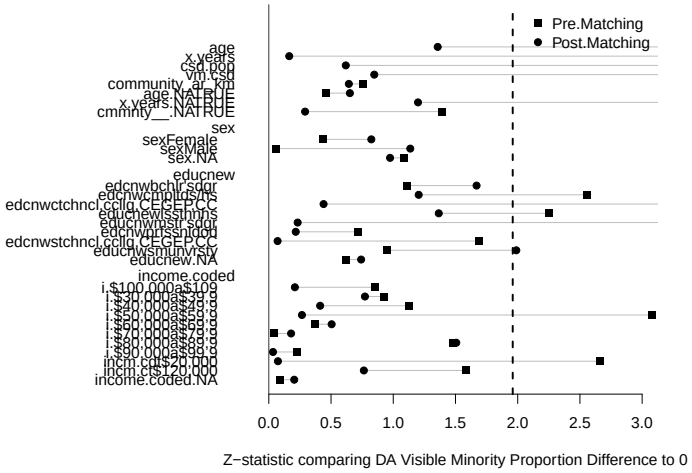

Figure 2: Balance before versus after non-bipartite matching on proportion visible minority in the DA with penalties for matches differing more than 100,000 in municipal population. After matching the z-scores decreased indicating that increased similarity in terms of the covariates.

Can we say that our matched design is "balanced"? One interpretation of this question is to ask whether we could be surprised to see such a configuration of differences in a randomized experiment with the same design characteristics as we see here (same sample size, same individuals paired with each other, same covariates, etc.). An omnibus test of the hypothesis that the mean differences across all of the terms shown in Figure 2 were all zero reported $p = .75$ for this hypothesis conditional on the matched sets but $p = 0$ before matching (Hansen and Bowers, 2008). This hypothesis test compares our observational paired design to the equivalent randomized paired design. We would not be surprised to see such a configuration of differences in a randomized version of our design.[18]

We were prepared to add additional penalties and/or use propensity scores to create balanced matches. However, the omnibus balance test tells us that, without making any other adjustments, we cannot distinguish the pairs on age, income, education, gender, the length of time lived in their current home, the ethnic diversity of their CSD, the population size of their CSD, and the community area drawn from differences that would be typical in a randomized experiment.[19] In other words,

[18]Because these p-values do not take into account any clustering of respondents in DAs and CSDs, they are overly liberal (i.e., too small) and should be corrected following (Hansen and Bowers, 2008).

[19]This similarity fits with what Sampson and his colleagues found: poverty and disorder tend to be highly correlated with racial diversity (Sampson and Groves 1989; Sampson et al. 1997).

simply by matching individuals on the ethnic diversity of their DAs and taking into account whether they are living in more urban or rural areas, we find that they are very similar types of people when it comes to their situations in life. Therefore, we can be confident that if we find effects for perceptions of community diversity, they are not spurious relationships driven by differences in SES, for example, which we know are related to both political information and residential choice. In fact, the matched design confirms that there is a great deal of self-selection when it comes to where people choose to live; they live near others like them, whether that is because they share similar preferences (e.g., housing proximate to schools) or because they simply have the resources to maximize benefits that everyone would prefer (e.g., safe neighborhoods).

Having created a balanced design where we targeted balance on objective context and received, as a side-effect, balance on SES, we turn next to our variable of interest: people's perceptions of the ethnic diversity of their local communities. It is quite possible that after matching individuals on the objective characteristics of where they live — which then automatically pairs individuals of the same life circumstances— there may be little or no difference in their perceptions of their surroundings and thus no information available to disentangle the effects of pseudoenvironments from the effects of objective environments on their attitudes and reported behaviors. Figure 3 plots the respondents to the survey by their objective and subjective context, connecting each matched pair with a line segment. What is clear is that despite similarities in education, income, and gender — variables that scholars have shown are strongly related to political knowledge — respondents exposed to the same objective context still differ a great deal when it comes to their lived experiences. Their views of who lives around them — particularly the proportion of ethnic outgroup members — vary, which means that perceptions of context are not identical to experience of objective context and thus may have explanatory power, independent of objective context as reported by the Census.[20] The fact that the lines are all relatively flat means that the matches are very similar in the diversity of their DAs (another sign that our matched design is helping us compare like with like); the length of the lines tell us that perceptions of these matches — people with similar characteristics living in areas with similar demographics — differ.

[20]We are not focusing on accuracy of the perceptions here. So, the respondent who perceives greater diversity could be more or less accurate than her match. Similarly, both respondents could be quite inaccurate.

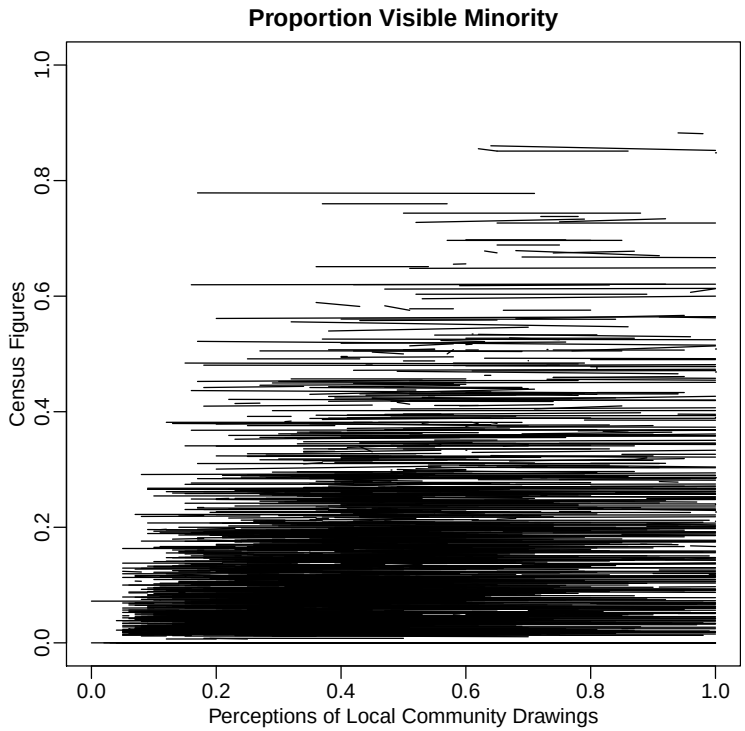

Figure 3: The Objective and Subjective Context of the Matches. The y-axis is the percentage of visible minorities in the Census DAs. The x-axis is the perception of the percentage of visible minorities in respondents' "local communities."

3.2 Subjective Context and Social Capital, Political Participation, and Immigration Policy Preferences

Past research on ethnic context and social capital leads us to expect that people who perceive greater diversity than their paired referents will report comparably diminished civic engagement and trust even though both people are exposed to basically the same objective context. We assessed these effects using multilevel models for respondents $i = 1, \ldots, n$ with crossed random effects for both sets $s = 1, \ldots, S$ and dissemination areas $d = 1, \ldots, D$ and a variety of outcomes measured in the MLCC survey (y_{isd}):

$$y_{isd} = (\alpha_s + \alpha_d) + \beta_1 \text{perceptions}_{isd} + \beta_2 \overline{\text{perceptions}}_s + \tag{1}$$

$$\beta_3 \text{objective}_{sd} + \beta_4 \overline{\text{objective}}_s + u_{isd} \tag{2}$$

$$\alpha_s = \gamma_{s,0} + e_s \tag{3}$$

$$\alpha_d = \gamma_{d,0} + e_d \tag{4}$$

This specification adjusts the estimates of the effects of perceptions for (1) the effects of pairing (α_s) (Smith, 1997) and helps standard errors take into account the fact that the sample is somewhat clustered by DA (α_d).[21] To avoid problems arising from correlations between community perceptions and unobserved DA-level effects (what some call "bias from correlations between error and random effects"), we include in the models the average perceptions for each pair ($\overline{\text{perceptions}}_s$) (Bafumi and Gelman, 2006); because not every match was exactly identical for percent visible minority, we add the objective numbers of visible minorities in the respondents' DAs to the model, along with the average visible minority for the matched pairs ($\overline{\text{objective}}_s$) to again prevent correlation between u_{isd} and α_s which could bias our estimates of β_1. [22]

We begin by looking at the effect of people's pseudoenvironments on their attitudes about social cohesion in their local communities. Figure 4 shows the effect of perceiving more minorities on attitudes relating to the social capital and community efficacy of respondents' local communities, as well as on how much they like and feel safe in their communities.

For two respondents who live in almost identical contexts (and who share many of the same individual-level demographics), the one who perceives more minorities in her local community is more likely to think people who live in that community do not share the same values, do not get along, and would not help each other. The one whose pseudoenvironment is more diverse would also be more likely to think people in her community would not intervene to stop children painting graffiti or act to stop the closing of a library in that community. These results may help explain

[21] Roughly 4900/7000 respondents are the only survey respondents in their DA, but about 940 share a DA with 1 or 2 other respondents, and 40 have 4,5,6 or even 10 other survey respondents in the same DA.

[22] We presume that e_s, e_d and u_{isd} are all Normal and independent of each other.

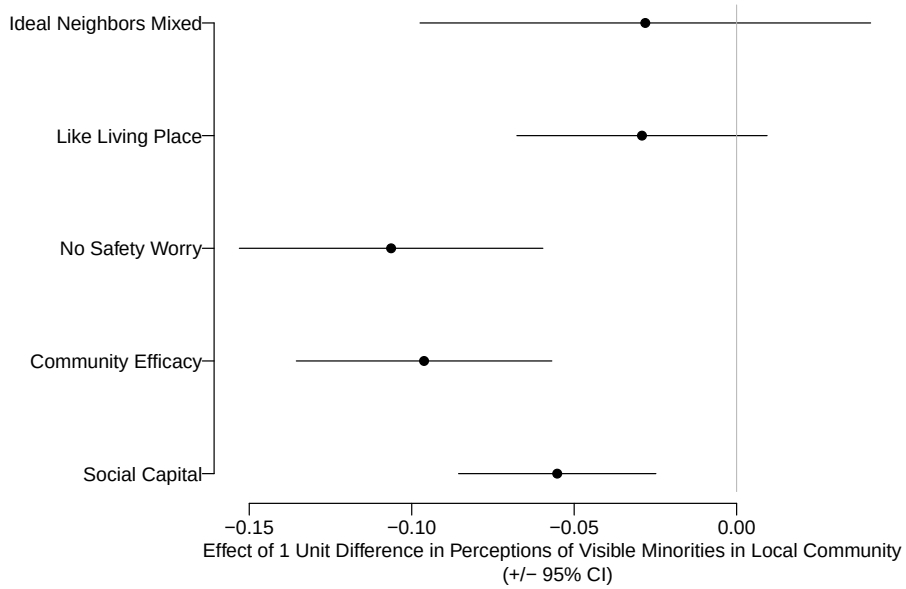

Figure 4: The Effect of Perceptions of Context on Social Capital, Community Efficacy, and Attitudes about Community. Points show the estimated effect of perceptions of visible minorities in the hand-drawn "local community" on outcomes (listed on the y-axis) conditional on matched pair. The segments show 95% profile-likelihood confidence intervals following Bates (2010, 2014).

why diversity diminishes support for social goods provision; the sense of reciprocity and shared preferences is weaker when ingroup members believe they live among more outgroup members.[23]

The social capital and community efficacy indices capture attitudes about what respondents think *other* people in their community would do. However, perceptions of their local community also affect the attitudes of the respondents themselves. If two individuals live in equally diverse areas, the one who perceives her community as more diverse will be more likely to worry about the safety in her neighborhood, she may be a little less likely to like where she lives and her ideal neighbors would share her racial and ethnic background (although neither of these last two effects can be distinguished from zero at $\alpha = .05$).

The effect of perceptions is much more muted for respondents' behaviors, relative to their attitudes. Figure 5 shows that respondents who see more diversity in their communities may be a

[23]Given research by Stolle and Harell, there is reason to believe that our results may be particularly strong because our sample is older. They argue that among younger cohorts, the relationship between diversity and greater antagonism is erased, if not reversed.

little less likely to be politically active in community affairs. (The relationship is negative, which is consistent with previous arguments about "hunkering down" in the face of diversity, but it is also indistinguishable from zero). Subjective community context also does not seem to affect political participation on a larger scale: respondents who picture in their minds greater diversity in their local community are no more likely to vote in provincial and national elections than those who see less diversity (the effect size is close to zero). This relationship is more in line with arguments about threat rather than civic withdrawal, although since neither relationship is strong or precisely estimated, we do not want to make too much of these differences.

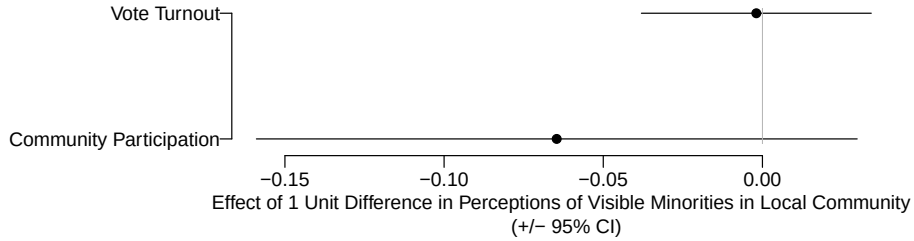

Figure 5: The Effect of Perceptions of Context on Community Participation and Vote Turnout. Points show the estimated effect of perceptions of visible minorities in the hand-drawn "local community" on outcomes (listed on the y-axis) conditional on matched pair. The segments show 95% profile-likelihood confidence intervals following Bates (2010, 2014).

So, while perceptions of one's community's diversity affect attitudes about its social capital, efficacy, and safety, they have limited effects on political behavior. Will these pseudoenvironments affect preferences for policies that address immigration? While these policies are often the source and outcome of Canada's diversity, the policies are also national rather than more local in scope. Figure 6 shows the results of the analyses of the questions regarding immigration policy and multiculturalism. Again, it is clear that perceptions matter. For two respondents who live in identically diverse environments, the one who perceives greater diversity will be more likely to support decreasing immigration numbers and making English or French proficiency a requirement for immigration to Canada. However, for the question regarding Canada's tradition of multiculturalism, seeing more diverse pseudoenvironments may encourage greater support for different racial and ethnic groups maintaining their distinct cultures in a cultural mosaic (rather than blend together in a melting

pot), although the effect is not discernible from zero. There are different interpretations of this result; perceptions of diversity could lead to greater support for Canada's multiculturalist policies, although it is more probable that these perceptions lead respondents to be more pessimistic about the possibilities of achieving the melting pot, given the diverse cultures of Canada's visible minorities.

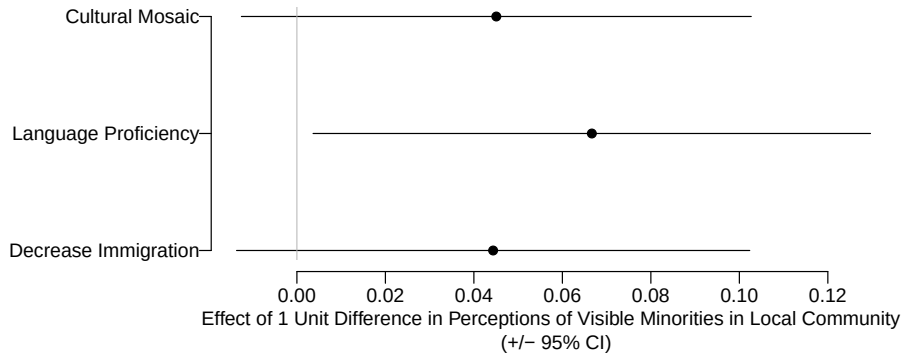

Figure 6: The Effect of Perceptions of Context on Immigration and Multiculturalism Politics. Points show the estimated effect of perceptions of visible minorities in the hand-drawn "local community" on outcomes (listed on the y-axis) conditional on matched pair. The segments show 95% profile-likelihood confidence intervals following Bates (2010, 2014).

3.3 Robustness Check: Perceiving More Diversity in One's Dissemination Area

So far, we have used individuals' own reported perceptions of their own hand-drawn maps because (1) it is the local context most salient and central to our respondents (Wong et al., 2012), and (2) we have data on these perceptions for the entire sample. We also showed that our pairs were fairly well matched on the sizes of maps drawn: after matching the z-score was 0.6 and half of the pairs differed by less than 53 square kilometers in the area of their maps. However, we are still comparing people who drew different maps and reported different perceptions of different objects even if they lived in very similar places. As a part of our study, we randomly assigned each respondent to view the polygon for one of five official Canadian Census geographic units overlaid on a Google Map containing their home and also to report their perceptions of this unit. Thus, for 1/6 of our sample, we have reports of perceptions of their own official Census dissemination areas.

We match again on the percent visible minority as measured by the Census for the respondents' DAs, and penalize matches that differ by more than 100,000 people in municipal population. The

matches are again very well balanced: 20 percent of the matches are identical on their DA level diversity; the median difference in percentage visible minority between matches is .09 percent; 98 percent of matches have a difference of less than .94 percent, and the maximum is 1.2 percent. When it comes to population size, 30 percent of the matches are identical, the median difference is 12,600, and the maximum difference is 99,675.[24] The balance tests, using the same covariates as for the earlier matches, show a marked improvement with matching and even more with the penalty. Before any matching, the omnibus p-value is less than .000; only matching on the percentage of visible minorities in DAs leads to a $p = .783$, and once penalties for CSD population size are added we see $p = .976$. Cross-classified multilevel models using these new matches show very similar results as the analyses run for the previous matches (using all the respondents). We see the same pattern of results: those who perceive a more diverse dissemination area within their pair tend also to be those reporting diminished perceptions of social capital, lower feelings of safety, and less support for immigration (results not shown here).

4 Discussion and Conclusion

There are two kinds of context effects: one kind (the effect of objective context) does not depend on an individual perceiving and/or understanding the character of the context (for example, imagine the effect of registration laws or particulate pollution); another kind, which we propose to call pseudoenvironments following Lippmann (1991*b*), does not have effects on attitudes and behaviors unless it is perceived and judged. This paper adds to the broad literature on context effects (neighborhood effects, ethnic diversity, racial threat ...) by (1) pointing out that one kind of "context effect" is an effect that is individual-specific (i.e., it is the effect of a pseudoenvironment) and by proposing one possible measure for this kind of environment, (2) showing how people living in nearly identical objective environments have quite different pseudoenvironments (Figure 3), and (3) that these pseudoenvironments predict attitudes in the direction expected by past literature even when objective environment is held nearly exactly constant.

Why should we care about pseudoenvironments? From a policy perspective, we are helped

[24] If we matched only on proportion visible minority in the DA without municipal population penalty, 20 percent of the matches are identical in diversity. The median difference is .03 percent, 98 percent of the matches have a difference smaller than .49 percent, and the maximum difference is .88 percent.

because pseudoenvironments are more malleable than objective contexts. If we can influence intergroup relations by changing perceptions, then we will have saved money and time. From a scientific perspective, we can apply what we know about information processing more broadly to our understanding of geography and intergroup relations: pseudoenvironments enhance the relevance of psychology for the study of political geography.

What about self-selection? The research design of this paper does not require random selection of neighborhoods by people (or random assignment of people to neighborhoods) let alone random assignment of perceptions to minds. People do not choose where to live at random; both racial and economic segregation are pronounced across Canada — and our multivariate balance assessment offers dramatic evidence that where a person lives is very highly correlated with many other aspects of that person. Similarly, it is safe to assume that more and less racist individuals have different considerations about what makes a neighborhood "good" or not. People do self-select where they live, but matching individuals on the demographic make-up of their choice of residence allows us to isolate the impact of pseudoenvironments from the impact of objective environments.[25] An experiment randomly assigning perceptions into the heads of individuals would isolate perceptions from all other background factors. However, in this paper, we ask a simpler question: if two people live in nearly identical neighborhoods, but one *perceives* his neighborhood as being much more diverse, will they react differently? We are able to tease out more about the mechanism by which context affects individuals without requiring isolation from all possible other effects.

While scholars of racial context have always been aware of selection biases, our results highlight the extent of homophily. Among non-visible minorities in Canada, once one accounts for the numbers of visible minorities in the DAs in which individuals live, we find that these individuals are essentially the same when it comes to their socioeconomic status, their gender and age, the length of time they have lived in their current home, and the geographic size of their "local community." Even if we suspected that people choose to live with others "like them," we were surprised by the extent to which people of similar characteristics live in the same type of places. Although it was useful for us (we did not need to match on any functions of those covariates themselves), it is, however,

[25] It would be much more difficult to isolate the effect of objective environments from the impact of self-selection.

disheartening from a normative perspective, that the birds that flock together share feathers of race and class and age and gender and definitions of community.[26]

For some outcomes, it is possible that the causal arrow could point in either direction; for example, individuals who are more ethnocentric and/or feel more threatened may "see" more outgroup members in their local community as a result. However, regardless of motivated reasoning, it would be difficult to argue that one's policy preference to require English or French proficiency of all immigrants makes someone perceive more minorities, especially compared to a respondent of similar SES, gender, and age who lives in a very similar context. Furthermore, across a wide range of attitudes, there is a consistent pattern of results: given 2 identically-situated individuals of very similar backgrounds, the person who perceives more outgroup members living in local community has more negative reactions to others in her community, is less likely to be politically engaged in her community, and is more hostile to one major contributor to the diversity, immigrants.

[26]It is possible that with a representative sample of Canada – which would include more young people, VM, and women – ethnic context might not be so tightly linked with demographic characteristics. We will be exploring this more, both in Canada and in other countries.

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