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Abstract

If a taxpayer is able to claim charitable donations made near the time of filing her tax return, will she give more? To what extent does the salience of tax-induced incentives matter? This paper explores the role of the timing and salience of tax incentives on reported tax filer giving. As a result of the January 12, 2010 Haiti Earthquake, taxpayers in Quebec, Canada were given an opportunity to report donations that were made near the time of filing on their 2009 tax returns, while taxpayers located elsewhere in Canada were not given this opportunity. We find that moving the timing of reporting of gifts on one's tax returns closer to the timing of giving increases average donations by approximately 9 percentage points. We discuss the policy implications of our results along with the implications for our understanding of the tax price elasticity of charitable giving.

JEL classification: H0, H40, H84
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1. Introduction

Many developed countries use the tax system to encourage giving to charity. In some countries, like the US, the encouragement is in the form of a deduction of the dollar value of the gift from one's taxable income. In other countries, like Canada, a non-refundable credit against the donor's computed tax liability is offered. While each of these policies can motivate more giving from the savvy taxpayer, the efficacy of these tax incentives requires a tax filer to recognize the tax treatment of donations both at the time of making a donation and at the time of filing her return. For example, in the US and Canada, for tax returns filed in April of 2018, one may only report donations made in the previous calendar year, 2017. Does this lag of four to sixteen months reduce the full potential of the tax incentive? As has been noted by Steuerle (2010) and Steuerle (2014) there are a number of reasons to believe that giving would increase if this time interval were shortened.

Our study assesses the overall effect of a potential policy to change the timing of when charitable donations are reported using a policy experiment from Quebec, Canada. This is an important policy to evaluate as there have been proposals made in both Canada and the US to extend the deadline for charitable donations to a date that is closer to when taxpayers file their taxes, though neither have been successful as of this writing. [1]

Closing the interval between donating and reporting can affect giving through a number of channels. First, earlier receipt of the tax credit or deduction effectively reduces the price of giving, provided that donors discount the future receipt of funds. This policy has been advocated by Rees-Jones and Taubinsky (2016) in part because there is evidence that donors are present biased. One example of this evidence is Breman (2011) who, through a series of

[1] See Bill C-458 National Charities Week Act for Canada and H.R.4719 – America Gives More Act of 2014 for the US.

fundraising field experiments, shows that donors appear to discount the future as donations were higher for those participants given an opportunity to delay their gift. Second, by moving the timing of the donation closer to the timing of preparing one's tax return, a taxpayer will be better informed about both the tax credits/deduction available and her tax liability. This information could lead to different decisions concerning her charitable giving. In general this could lead to an increase or decrease in giving depending on the discrepancy between one's perception of both the tax treatment of donations and their tax liability prior to completing a return and the actual level of the liability. Third, reducing the interval between giving and reporting effectively reduces the transaction costs associated with donating and credit claiming. Thus, if the deadline for reporting charitable donations were tied to the timing of when one is preparing one's tax return, we should expect there to be tax price, salience, and transaction cost effects.

We study the sensitivity of charitable giving to the salience and timing of tax incentives by exploiting a policy experiment after the Haitian earthquake of 2010.[2] The earthquake occurred on January 12th, near the time when taxpayers in Canada begin preparing their tax returns for income earned in the previous year. Normally, all donations to support the Haiti relief efforts would be reported one year later, when filing the 2010 tax return in April 2011. However, one province, Quebec, changed this practice by announcing that tax filers could report their donations in support of the relief efforts on their 2009 tax return; simultaneously reducing the time between giving and receiving the tax credit and increasing awareness of the details of the tax credit.[3] This created a difference in the tax treatment of

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[2] We refer to this event as a policy experiment because it was a policy change that was both unanticipated and temporary.

[3] Results from a survey conducted in May 2010 of donors to an online giving portal suggests that the new tax incentive was in fact salient to donors from Quebec. 28.3% of respondents from Quebec

donations made by residents of Quebec and residents of the rest of Canada. Thus, the Quebec policy provides plausibly exogenous within country variation in the time interval between when a donation is made and when it can be reported, allowing for an investigation of the effect of this policy change on charitable giving.[4] Moreover, unlike the US where the tax benefits for donations are tied to itemizing deductions, tax credits for giving are available to all Canadian tax filers provided they incur a tax liability, with the value of the credit determined by the level of the donation, not the tax bracket of the tax payer.

While the decision to extend the giving window in Quebec and not to other provinces of Canada was unexpected, a simple comparison of giving in Quebec to giving in the rest of Canada may be an inappropriate basis for evaluating the efficacy of shortening the time between giving and reporting. In particular, provincial differences in the inclination to give to the disaster relief efforts could bias estimates of the policy effect. To address the selection problem induced by assigning the policy only to residents of Quebec, we employ a propensity score matching estimator that uses characteristics of neighborhoods to predict whether they are in fact located in the province of Quebec, and thus subject to the eligibility of claiming their tax credits for donations to Haiti earlier than those in the rest of Canada. This procedure allows us to compare giving in neighborhoods in Quebec matched to neighborhoods located in the rest of Canada based on characteristics that are strong predictors of giving in general and giving to Haiti in particular.

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were aware that donations to Haiti could be claimed a year earlier, compared to only 1.8% of respondents from the rest of Canada.

[4] While the US enacted a similar provision, an analysis of the US provision would be empirically challenging given it applied to tax filers in all states and, in particular, to only those tax filers who chose to itemize their deductions (Haiti Assistance Income Tax Incentive Act, H.R. 4462 2010).

We find that reducing the interval of time between giving and reporting increased donations. On the extensive margin, the share of households reporting a charitable donation increased by 2 percentage points. For the 2008 tax year, approximately 33% of Canadian households reported donations on their tax return. Thus, extending this policy across Canada and all types of charitable giving would substantially increase the reporting of donations. On the intensive margin, we find, the average donation per donating household increased by 9 percentage points.

The paper proceeds as follows. Section II provides details of the Quebec policy experiment and how charitable donations are treated under the Canadian tax code. Section III reviews the relevant literature. Section IV describes the data and the estimation strategy. Section V presents the analysis. Section VI provide a discussion of the importance of our results, and section VII concludes.

2. Tax Credits and 2010 Incentives for Supporting Haiti Earthquake Disaster Relief

2.1. Tax Credits in Canada

In Canada, nearly all adults file a tax return, even those with low or no income due to the availability of refundable tax credits which includes such things a child benefit tax credit, a working income tax credit, and a sales tax credit. Donations made to registered charitable organizations are eligible for non-refundable provincial and federal tax credits.[5] Tax filers report donations to claim the tax credit on Schedule 9 of the provincial and federal returns. Claiming the non-refundable tax credit only requires stating the total amount of donations, and

[5] This is in contrast to the US where donations are eligible for tax deductions. Tax deductions reduce a taxpayer's taxable income with the benefit of the deduction depending on the taxpayer's income. As such, the US tax price of giving will depend on the tax bracket of the taxpayer.

does not require one to itemize their deductions, as would be the case in the US.[6] The value of the tax credit depends on the level of total annual donations not on the taxpayer's income. Thus, conditional on having a positive tax liability, donors of all income levels face the same incentives.[7] While couples file separate returns in Canada, charitable donations are transferable between spouses allowing either spouse to claim any or all donations made by the couple. At both the federal and provincial levels the tax credit is two-tiered. The first tier applies to total donations of less than $200 and the second tier to total donations greater than or equal to $200. Figure 1 depicts the rates for the tax credits available across provinces for the 2010 tax year.[8] At the federal level the credit is 15% on the first $200 of donations, and 29% for amounts exceeding $200. Across the provinces, Quebec has the highest credit rate for both tiers followed by Alberta, Saskatchewan, and Nova Scotia. The largest province in terms of population, Ontario, provides some of the lowest credit rates.

2.2. Disaster Relief

The January 12th Haiti earthquake caused significant destruction. Cavallo et al (2010) estimated the total damage at between 8.1 and 13.9 billion US dollars, along with 250,000

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[6] If a tax filer files a paper return donation receipts must be submitted to Canada Revenue Agency, however, electronic filers must simply keep the receipts for up to six years in case they are audited by the tax authority.

[7] Unused tax credits can be carried forward for up to five years, and there is a maximum credit available in any given year, typically 75% of reported income.

[8] Over our period of study, 2007-2010 only two provinces changed the rates of their credits. Newfoundland's first tier was 10.12% in 2007 & 2008, 9.65% in 2009 and 9.30% in 2010, and their second tier was 17.26% in 2007, 16.0% in 2008, 15.5% in 2009 and 14.4% in 2010. The second province that had a change was New Brunswick and only for the lower tier which was 10.12% in 2007 & 2008, 9.65% in 2009 and 9.30% in 2010. Our results are not sensitive to the inclusion or exclusion of neighborhoods in these provinces.

deaths.[9] Bilham (2010) found that the vast extent of the damages and the large death toll appear to have been exacerbated by poor construction practices in Haiti. Governments from around the world implemented policies to encourage donors to contribute to the relief efforts. The Financial Tracking Service, indicates that the governments of over 100 countries made donations to the relief efforts, along with numerous international organizations, private individuals, and private organizations/corporations (Financial Tracking Service (2015)).

In the US, President Obama signed the Haiti Assistance Income Tax Incentive Act (HAITI Act, HR. 4462) on January 22, 2010, allowing taxpayers to claim donations made to organizations providing relief efforts in Haiti between January 12, 2010 and February 28, 2010 on their 2009 tax return. The Canadian federal government announced that it would match donations to the Haiti relief efforts that were made between January 12, 2010 and February 12, 2010 (Government of Canada (2010)) but made no provision to permit the claiming of a donations on the 2009 return. Providing matching funds for major catastrophic events has been a common practice by the federal government in Canada – matches have been offered for the Indian Ocean Tsunami (December 2004), the Pakistani floods (summer 2010), and the Nepal earthquake (2015).[10]

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[9] Smith et al. (2017) have found that donor responses to disaster relief campaigns are increasing in the number killed.

[10] Both Canada and the US extended the reporting window for donations associated with relief efforts for the December, 2004 Indian Ocean Tsunami, permitting donors to give into January but still report the donations made for the Tsunami relief effort on the 2004 tax return. Canada also provided matching funds for the Tsunami. http://www.fin.gc.ca/n05/05-001-eng.asp

3. Taxes and the Timing of Giving

3.1. Tax Prices and Transaction Costs

By measuring the effect of reducing the time between giving and reporting charitable donations on donations activity our study complements the literature on the tax price of donations. There have been many studies on the effect of the tax-price of giving on donations. Auten et al. (2002) show that removing the tax deduction for charitable contributions in the US would decrease donations by 25 to 36 percent. Randolph (1995) shows that responses to transitory tax price changes are larger than the responses to permanent tax price changes. More recently, Bakija and Heim (2011) use US data from 1976-1996 and 1999-2005 to estimate the price elasticity of giving, finding estimates of the transitory price elasticity in the range of -0.7 to -0.9. In all of this literature, the uncertainty surrounding the permanence or temporary nature of tax changes creates a problem for estimating the elasticity of giving. Individual donor reactions to changes in tax price depend on a number of factors including whether they expect the price change to be temporary or permanent, and their expectations over their future earnings. This problem is absent in our study as the sudden change in the timing of the tax credit eligibility is clearly a transitory event and is plausibly uncorrelated with donor expectations over their future stream of income. More recently, Hungerman and Ottoni-Wilhelm (2016) use bunching estimation design to exploit a kink in the Indiana College Credit schedule. They estimate the tax price elasticity of charitable giving to be -0.2.

Fack and Landais (2010) study the tax-price of giving in France, where donations are eligible for non-refundable credits in a similar manner to Canada. In France, a household's taxable status depends in part on the number of people in the household. Fack and Landais (2010) exploit this feature and a tax reform to study treatment and control groups with the same levels of household income when evaluating a change in the generosity of tax credits. They estimate that the price elasticity of giving ranges from -0.2 to -0.6. We will refer to these price

elasticity estimates below when discussing the magnitude of the measured effect of obtaining the tax credit for donations a year earlier than normal.

We also complement the recent literature on the salience of taxes. Following Bordalo et al (2013) we consider a characteristic of a good to be more salient if an individual's attention is drawn more to that particular characteristic than to other characteristics of the same good. In this sense, the tax price of giving in Quebec would be more salient than the price of giving in the rest of Canada because the announcement of early credit claiming in Quebec drew more attention to the existence, and details, of the tax credit. We know this to be the case because the Government of Quebec issued a press release announcing the new temporary measure that was subsequently picked up by several major media organizations. Finkelstein (2009) shows that drivers are less responsive to tolls when using electronic payment systems that automatically deduct the payment as the driver proceeds on their journey. Chetty et al. (2009) show that the more salient is a tax, the more consumers react. Using a grocery store experiment and observational data on the sale of alcohol they show that consumers react to the visibility of the tax. Tax inclusive price tags on grocery items in a context where the tax is normally visible only at the register reduces sales; while changes in the more visible excise tax applied to alcohol induce a larger change in alcohol consumption than an equivalent the sales tax that applies to the same good. Researchers have also found that salience is an important characteristic of tax credits. Miller and Mumford (2015) show that US tax filers responded more to the more salient attributes of the 2003 expansion of the Child and Dependent Care Credit, than to the less salient characteristics.

Turning to charitable giving, Goldin and Listokin (2014) study the salience of the charitable tax deduction in the US directly with a survey of tax filers. Goldin and Listokin (2014) refer to salience as cognition; with a tax deduction being less salient the greater is a tax filer's error in understanding their ability to benefit from the deduction. Goldin and Listokin

(2014) find that of the eligible tax filers they surveyed just over half were aware of the deduction and the majority of those underestimated its magnitude. Similarly, Gillitzer and Skov (2013) show that the introduction of pre-populated tax forms with charity reporting of received gifts lead to an increase in claimed charitable contributions. The increased reported giving may be some combination of a lack of salience of the policy and the presence of transaction costs to claim the tax benefit. Huck and Rasul (2010) conducted a field experiment in which potential donors received treatments that varied the transaction costs of giving, finding that pre-filled forms increased the number of donors, but had little impact on the intensive margin. Meer and Rigbi (2013) in a field experiment find that reducing transaction costs, by translating requests for cash transfers, increased giving. Similarly, Knowles and Servatka (2015) find that the presence of transaction costs can lead to less giving through procrastination and Meer (2013) shows that there is evidence of habit formation in giving – which is a possible artifact of the presence of transaction costs, The sudden ability for Quebec donors to claim donations early reduces the transaction costs associated with record keeping, which, as noted by Benzarti (2015), can be quite costly.

Given the presence of transaction costs, one may be concerned that an effect of changing the reporting window may merely induce donors to shift donations forward in time resulting in no change in total giving. Scharf et al. (2017) show that there is some shifting of donation activity in the short run (six months) in response to disaster relief campaigns, but that this shift may not be present over a longer time horizon (twenty months). In our analysis we mitigate the potential for reporting shifted donation activity by using two year averages of our measures of donation activity.

4. Data and Estimation Strategy

4.1. Data and Measures of Giving

Our measures of interest are constructed using the two-year sum of the number of households, and level of donations reported within a neighborhood. Specifically, we focus on:

i. **Change in proportion of donating households**: percentage change in the share of households reporting donations from 2007/08 to 2009/10 (extensive margin)

ii. **Change in donations per donating household**: percentage change in the average donation per donating household from 2007-08 to 2009/10 (intensive margin)

We use a percentage change to capture the relative differences between the period for reporting donations for Haiti relief efforts and the period prior to the Haiti earthquake.

Our measures of giving are neighborhood level averages based on the federal individual tax returns for all tax filers in Canada. These measures are aggregated at the household level as we would expect only one spouse to claim all donations for the household in order to benefit from the increasingly generous nature of the two-tiered tax credit. Ideally, we would only measure the donations specifically given to the Haiti relief efforts during the period of the federal government sponsored national matching of donations. We could then compare giving to the relief efforts in Quebec with giving to the relief efforts in the rest of Canada. Unfortunately, such data are not available. Instead we observe total reported donations to the Federal government. While the Quebec policy announcement specifically applied to the Quebec tax credit, and not the federal tax credit, there was no alteration of the tax form to allow tax filers to separately report gifts to the Haiti relief efforts – these gifts were added to all other donations claimed on the 2009 provincial tax return. As we only have the federal tax returns we are unable to determine whether gifts by Quebec taxpayers correctly appear on the 2010 federal tax return or erroneously on the 2009 tax return. To address this shortcoming and

because the timing of reporting donations to Haiti was different for residents of Quebec than in the rest of Canada we use the information reported on both the 2009 and 2010 tax returns to capture donations from all of Canada directed to Haiti relief efforts. While Scharf et al. (2017) found evidence of donors shifting donations in the short run in response to disaster relief efforts, our pooling of the data over a two-year period allows us to rule out erroneously attributing the shifting of donations in time to the effect of the policy. Each of these measurement challenges described above suggests that our estimates should be taken as a lower bound for the effect of changing the timing and salience of the tax credit availability in Quebec.

Our definition of a neighborhood is a geography known as the forward sortation area ("FSA"). The FSA is a geography created by Canada Post and is designed to capture the area that can be covered by a postal worker, corresponding to the first three characters of a six digit postal code. It serves as a good proxy for a neighborhood in that the boundaries typically follow natural (rivers, ravines, etc.) and artificial (highways, major roads) contours. A typical FSA covers approximately 7,000 households. Data at this level of geography are only available for urban areas. We supplemented the data from the tax returns with information from the 2011 Canadian National Household Survey to capture socio-demographic information at the neighborhood (FSA) level such as average household income, house prices, share of the population considered low income, and demographic characteristics of the population (ethnicity, language, immigration status, age, religion).[11]

[11] The 2011 Census has been criticised because the federal government made participation in the "long form" portion of the survey voluntary. Alternatively we could use characteristics of the neighborhoods as they were know in the 2006 Census when the completion of the long form was mandatory. Results using these measures are available from the authors. The results are similar to those reported using the 2011 Census data.

As the tax credits and propensity for giving vary across provinces, our strategy is to compare reported giving in 2009/2010 tax years with the reported giving in the 2007/2008 tax years using this earlier period as a within province control. A critical assumption for using the 2007/08 tax year as a within province control is that other major events that could affect donations reported on the 2007/2008 tax returns resulted in similar behavior across all provinces.

4.2. Threats to Measuring the Effect of Earlier Reporting

A core threat to estimating the effect of the policy is that the characteristics of the neighborhoods in our sample in Quebec may differ systematically from the neighborhoods in our sample from the rest of Canada in a way that is related to their propensity to give to the Haiti relief efforts. In this context Quebec residents may differ from residents in the rest of Canada in two ways. First, Quebec and Haiti may share greater cultural proximity due to similar histories and a shared language we may be concerned that this cultural proximity reduces the social distance that Quebecers feel towards Haitians differently than that felt by other Canadians. While pervious research has found mixed evidence of social distance impacting giving decisions, we take this concern seriously.[12] The second manner with which residents in Quebec may differ in their donation activity in the wake of the Haiti earthquake is through giving proclivity. Turcotte (2012), and Amankwaa and Devlin (2017) demonstrate that residents of Quebec are the least likely to make charitable donations, make lower donations conditional on donating, and are the least likely to report donations compared to residents of

[12] Meer and Rigbi (2013) found that social distance mattered little as there was no within language group bias in their field experiment involving cash transfers to the poor. Brown et al. (2017) find no evidence that social distance as measured by the "local" attribute of a charitable cause impacts giving decisions. Similarly, Agrawal et al (2015) find little effect of social distance after conditioning on pre-existing social networks.

other Canadian provinces. As such, a simple comparison of donation activity by Quebecers with donation activity by other Canadians in response to this tragedy may underestimate the effect of the policy. Here we address these concerns with an analysis to support that donations to support Haiti relief efforts was widespread. Ultimately, however, our propensity score matching will match neighborhoods with similar cultural proximity to Haiti and thus account for any differences in how this proximity affects the reaction to the disaster.

Drawing from a variety of sources we find evidence that the Haiti relief efforts were widespread and not limited to French Canadians. Recall that as noted above, giving to the relief efforts was a global phenomenon. Second, based on data drawn from the tax returns filed by charitable organizations, giving to Haiti relief efforts was widespread across Canada and increased around the time of the earthquake. In Table 1, we report the levels of tax receipted giving to charities that self-identified as providing services in Haiti for at least one year between 2009 and 2012.[13] We categorize charities as national or local organizations/chapters for those whose address is in Quebec or elsewhere in Canada. For each year and grouping we report the number of charities, the share of charities reporting activities in Haiti in that year, the total tax receipted gifts reported by all charities as well as the total gifts to the charities that were working in Haiti in that year. The charity return does not allow us to isolate the donations that were given specifically to Haiti. Many of the included charities provide disaster relief to other countries, as would be expected by the national organizations such as Canadian Red Cross, Care, and UNICEF.

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[13] The physical location of the charity is confidential and is not released by the CRA, but our data contains an address that reflects either the address of the charity or the address where the information return was prepared. The authors have tested the address using a sample of these charities and found the address provided to be the actual physical location of the charity in most cases.

Across all charities, there is an increased number of charities providing services in Haiti in 2010 and 2011. In Panel A, we report on national organizations. There were 186 national organizations that reported service provision in Haiti. Of these 24% are located in Quebec. Most of the tax receipted gifts were made to national organizations located outside of Quebec. For national organizations from Quebec, there was no discernable difference in overall tax receipted giving in 2010/2011 compared to the other years. For national organizations located outside of Quebec, there was a substantial increase in tax receipted giving in 2010 compared to the other years, an increase of nearly $30 million.

Panel B of Table 1 reports the giving to local organizations and local chapters of national organizations that report providing services in Haiti. Of the 503 local organizations, 26% are located in Quebec. For both geographies we see a substantial increase in the level of tax receipted gifts in 2010 with the bulk of the funding going to organizations located outside of Quebec. This information is suggestive that support for Haiti extended far beyond the borders of Quebec.[14]

Finally, we examined a 2010 survey of donors to a Canadian based online giving portal.[15] The giving portal allows donors from across Canada to donate to any registered

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[14] Anecdotally, there were news reports that shortly after the earthquake charities were flooded with donations, so much so their servers were on the brink of collapse. Donations flowed to big organizations such as World Vision Canada, Canada Red Cross, Care Canada, Oxfam Canada, Oxfam Quebec, Save the Children, Doctors without Borders, Humanitarian Coalition, Salvation Army, United Church, Canadian Conference of Catholic Bishops, and the Canadian Catholic Organization for Development and Peace, and so forth. See, e.g. http://www.cp24.com/canadian-donations-to-haiti-so-massive-they-crash-agency-s-web-servers-1.473714

[15] This survey was conducted by the Public Economics Data Analysis Laboratory at McMaster University. While it is not clear how representative the survey respondents are, these data provide some evidence that donors from all across Canada responded to the Haiti earthquake.

Canadian charity. The survey was in the field from March to June of 2010 and had a 10% response rate from a random sample of 170,354 donors. Respondents were asked whether they had donated to the Haiti relief efforts and whether they were aware of the tax policy for Quebec residents. Of the Quebec respondents, 62% reported giving to support the relief efforts and 29% reported being aware of the Quebec policy. In contrast, 58% respondents from the rest of Canada respondents reported supporting the relief efforts and less than 2% were aware of the Quebec policy. While this survey is representative of donors who gave online and not necessarily of all tax filers nor of non-donors, the results from this survey are suggestive of overall support for the relief efforts and a greater awareness of the tax incentive for residents of Quebec.

4.3 Estimation Strategy

We are interested in estimating the effect of receiving the treatment of an adverstised early tax credit for donations, *T*, on each of: the percentage change in households reporting donations, average donation per donating household, and average donation per household in each two-year interval for each neighborhood (FSA). To this end we would like to run a regression of the following form:

$$D_{i,t} = f\left(X_{i,t}\right) + \delta T_{i,t} + \epsilon_{i,t} \qquad (1)$$

Where $D_{i,t}$ reflects donation activity in FSA i, for the two-year period t. $X_{i,t}$ is a vector of control variables that likely affects donations in the FSA; and $\epsilon_{i,t}$ is a random error. $T_{i,t}$ is a binary indicator of the treatment of the more salient early tax credit and δ is the parameter of interest in our specification: the average treatment effect of an early tax credit on charitable

donations. Since $T_{i,t} = 1$ for all FSAs in Quebec and $T_{i,t} = 0$ for all FSAs outside of Quebec we employ a research design of selection on observables through propensity score matching to address the potential that confounding factors associated with being in the province of Quebec may contaminate our estimate of the effect of early tax credits, δ. The advantage to this method is that we can match Quebec neighborhoods with neighborhoods outside of Quebec based on a set of observable characteristics ("matching measures"). Specifically, for each set of matching measures we use propensity score matching to estimate the probability that a neighborhood receives the treatment of an early tax credit:

$$T_{i,t} = g(X_{i,t}) + \mu_{i,t} \qquad (2)$$

We wish to estimate the function $g(X_{i,t})$ which is the probability of being treated for FSA *i* in time *t*; that is the probability of $T_{i,t} = 1$. We control for characteristics of the neighborhood that would influence both the overall level of charitable giving and the neighborhood's response to the Haiti earthquake. We employ two groups of matching measures. The first group uses measures that capture income and housing prices of the neighborhoods, factors that likely would make a resident more or less sensitive to the tax credits. This group uses four measures: average household income, average house value, share of residents with a reported income greater than $100,000, and the share of residents classified as low income as defined by Statistics Canada.[16] The second group uses the measures in the first group and adds the share of residents identified as Haitian and the share of residents whose primary language is

[16] In Canada low-income-cutoffs are designated by Statistics Canada and vary across census metropolitan areas depending on the number of members of the household and the population of the census metropolitan area.

French. Thus, we match neighborhoods in Quebec with those outside of Quebec based on characteristics that can capture a neighborhood's cultural proximity to Haiti. Both groups of matching measures are reasonable in that they are good predictors of both donations and whether a community lies within the boundaries of the province of Quebec.

To obtain consistent estimates of δ from (1) we require the following identifying assumptions:

$$\{D_{i,t}(T_{i,t}=0), D_{i,t}(T_{i,t}=1)\} \perp T_{i,t}|g(X_{i,t}) \qquad \text{(A1)}$$

$$0 < Pr(T_{i,t}=1|X_{i,t}) < 1 \qquad \text{(A2)}$$

These are the "unconfoundedness" (A1) and "overlap" (A2) assumptions as found in Imbens and Wooldridge (2009). These assumptions are reasonable in this context for two reasons. First, households in all FSAs in the rest of Canada had an incentive to donate to the Haiti relief efforts given the federal government's matching grant program. This demonstrates that all households were likely to be influenced by policies designed to promote giving (A1). Second, Quebec's decision to extend the window for reporting eligible gifts on the 2009 tax return while unique for the Haiti earthquake is not unique for other disasters. After the December 2005 Indian Ocean Tsunami, the federal government and three provinces (Quebec, New Brunswick, and Ontario) extended the window for reporting eligible gifts made in early 2006 on the 2005 tax return.[17] One could consider Quebec's decision to introduce such a policy as no more or less likely than the decision of another province to introduce a policy designed to increase

[17] The announcements of these provincial policies to extend the giving window can be found in the References for Government of Quebec (2005), Government of New Brunswick (2005), and Government of Ontario (2005).

donations to Haiti. What was unique about the policy environment in response to the Haiti earthquake was that the rest of Canada did not proceed with an extension of the window for eligible gifts for the tax credit at the same time that Quebec did.

The propensity score matching method requires the researcher to specify a trim level, which determines the quality of matches of one neighborhood to another. The trim refers to the bounds on the propensity score of the included neighborhoods, with a "low" trim meaning a more inclusive sample, and a "high" trim referring to a more restrictive sample. We adopt three trim levels: low, medium, and high, and display the consequences for our estimating sample in Figure 2. Here, we group neighborhoods in deciles based on the share of the population whose home language is French. Over half of the Quebec neighborhoods fall into the top decile, where 90 to 100% of the population's home language is French. If we use a wide ("low") trim method (including neighborhoods with propensity scores between 0.0001-0.9999), most of the top decile neighborhoods are matched. Moving to a narrower ("medium") trim method (including neighborhoods with propensity scores between 0.05-0.95), we continue to match most of the neighborhoods where the French population is less than 70% but we start to lose the neighborhoods with a higher proportion of French speaking individuals. Finally, we use a more restrictive trim ("high") (including neighborhoods with propensity scores between 0.1 - 0.9), which is suggested by Imbens and Woldridge (2007).

Using the high trim level provides us with the most confidence that our overlap assumption (A2) is met. However, using bounds between 0.1 and 0.9 severely restricts our sample. For this reason, we also report he medium and low trims, which give us a less precise estimate, but include more neighborhoods. At our high trim, we are mostly capturing the behavior of non-French speakers in our analysis, since most of the unmatched neighborhoods are those where French is the language spoken at home. Thus, in our description of our findings below, we focus primarily on the high trim estimates.

5. Analysis

5.1. Summary Statistics

Table 2 reports summary statistics for our four years of data on tax filings. We report the annual average and standard deviation per neighborhood for those in Quebec (Panel A) and for the rest of Canada (Panel B). For the sample period, starting first with the number of households, the number of households ranges from 8,728 to 9,109 in Quebec with slightly higher numbers of households in the rest of Canada (9,121 to 9,478) and there is slightly more variation in the sizes of the neighborhoods in the rest of Canada than in Quebec. Given that neighborhoods in the rest of Canada include both the most and least populated provinces, this is not too surprising. There are slightly fewer households reporting donations in Quebec than in the rest of Canada and the average donation per household is also lower in Quebec than in the rest of Canada. In national surveys and other research on giving, there is a general consensus that giving in Quebec is typically lower than in many other provinces in Canada and we see this in Table 2 (see Reed and Selbee (2001)).

Our treatment period captures the recession experienced in many countries. Thus, instead of expecting donations to increase, we might expect donations to fall. In Quebec, the average reported donation falls less than in the rest of Canada. From 2007 to 2010, reported donations in Quebec are around $2 million and are relatively constant. In the rest of Canada, the average reported donation per neighborhood falls by $0.6 million, from $7.2 million in 2007 to $6.6 million in 2008, continues to fall further to $6.2 million in 2009 and then rises slightly in 2010 to $6.5 million.

5.2. Unconditional Difference in Means

Table 3 reports estimates of the unconditional difference in means between Quebec and the rest of Canada. Across the neighborhoods in Quebec, there is a small change between the pre and post Haiti periods of -0.6% while in the rest of Canada there is a drop in the average share of tax filers reporting donations of 1 percentage point or a change of -4.1%. Conditioning on a household donating, the average donation in Quebec fell 1.0% or an average of $8 versus a fall of $128 or 7.1% in the rest of Canada. We also observe a sizable difference in the average donation per tax filer. This unconditional difference in means analysis could be extended to a difference in differences, analysis as a means of obtaining credible estimates of the policy effects. Unfortunately the data limits the suitability for this analysis. In order for a difference in differences estimator to be valid, a parallel trend assumption must hold.

Figure 3a shows the pre-treatment years for all three measures. There is little evidence that the parallel trend assumption holds for all three measures, as such we move to a propensity score matching method of estimating the treatment effect. While we refrain from discussing difference in difference estimates as this method is invalid in this context, the results from employing a conditional regression difference in difference estimator are available to readers in Appendix Table 3. Figure 3b presents the same series as in Figure 3a, however we now weight our measures by the propensity scores using the high trim sample. This weighted presentation of our measures of giving activity demonstrates the effectiveness of our propensity score matching estimator: the weighted sample series of each measure are more similar for Quebec neighborhoods and the rest of Canada, than the unweighted series.

5.3. Propensity Score Matching

In Table 4, we report the summary statistics for the two groups of measures used to match neighborhoods. In columns 1 and 2 we report statistics on all neighborhoods in our sample. In columns 3 and 4 report on those neighborhoods included in the analysis when we

use a medium trim (0.05/0.95) in the matching algorithm, and estimates from columns 5 and 6 report apply to the high trim (0.1/0.9). Panel A contains estimates for the measures used in our baseline analysis, focusing on measures that reflect household income and dwelling values. Overall, the average neighborhood in Quebec has a lower household income and a lower dwelling value. We also observe fewer households with income greater than $100,000 while the share of households identified as low income is only slightly greater in Quebec. Panel B presents summary statistics for measures capturing ethnicity and language. The average neighborhood in Quebec has 1.3% Haitians compared to 0.05% in the rest of Canada. However, in the trimmed sample, these averages go up for the rest of Canada and fall for the Quebec neighborhoods. Not surprisingly, the share of the population whose home language is French is substantially higher in Quebec than the average share for neighborhoods in the rest of Canada.

Columns 3 and 4, report summary statistics for the neighborhood using our medium trim (.05-.95). The number of matched neighborhoods is 270 in Quebec and 108 in the rest of Canada. The Quebec neighborhoods are poorer compared to the rest of Canada and we observe a narrowing of the difference between proportions of the population that are Haitian and/or French between the Quebec and rest of Canada neighborhoods. Finally, columns 5 and 6, report the summary statistics using a high trim (.1/.9). The number of matched neighborhoods falls to 104 in Quebec and the averages for Quebec and rest of Canada neighborhoods are much closer.

Figure 4a-4f displays maps of neighborhoods in Canada. These maps show the neighborhoods that are matched at each trim level, showing both the size and location of these neighborhoods. It is visibly clear that a large number of the treated neighborhoods are in either Montreal or the National Capital Region (Ottawa/Gatineau). In particular, the National Capital Region has many neighborhoods, both in the treated and control groups. New Brunswick,

Canada's only officially bilingual province has a large number of neighborhoods included in the high trim level, while Vancouver and the Greater Toronto Area both provide many neighborhoods in the low trim level, but few in the high trim level.[18]

In columns 7 and 8 of Table 4, we report the coefficients from the probit estimates for the first stage results of our matching estimator. Including only the measures to reflect income and dwelling values, all variables appear to be important predictors of a neighborhood's likelihood of receiving treatment, or in other words, the likelihood of being in Quebec. When we include the additional measures to reflect ethnicity, and language spoken at home, all of the coefficients are significant at the 10% level except for average household income The important measures appear to be the average value of dwellings, the share of households with income greater than $100,000, the share of the population identified as Haitian.

Table 5 presents the results from our propensity score matching estimator.[19] In panel A we report the results comparing giving in the period of the Haiti disaster (2009 and 2010) with giving in the period prior to the disaster (2007 and 2008). Columns 1 and 2 report the results when we use matching measures that reflect income and housing values. Our results are similar for the low and high trim specifications. This is likely because trimming only reduces the number of neighborhoods included from Quebec from 406 to 397. The percent change in the share of households that are donors increases by approximately 4% in Quebec

[18] See Table A2 for the number of neighborhoods in each trim level by province.

[19] There are many ways we could calculate the treatment effect. The results are robust to the different methods. We report the results using an inverse propensity score weighting for the high and medium trim levels. As suggested by Robins and Ritov (1997) and Imbens and Wooldridge (2007), the double robustness of the inverse propensity regression adjustment model implies that if either the model for the propensity score or the regression model is correctly specified then the estimator of the treatment effect is consistent. For the low trim samples, we use bootstrapped standard errors from propensity score matching.

relative to the rest of Canada. This suggests that the policy affected the extensive margin of giving, by increasing the number of households reporting charitable donations. Moving next to the intensive margin, the percentage change in donations per donating household, the treatment effect is positive but small and imprecisely measured.

Moving next to column 3 of panel A, we report the results when using a high trim (.1/.9) matching technique and use only the measures that reflect the proportion of the population that are Haitian and the proportion of the population that speak French at home, our Group B matching measures. This reduces the number of Quebec neighborhoods that are studied to 101. The estimated treatment effects on both measures of giving are positive and statistically significant. These results suggest, overall, that there is a 3 percentage point increase in the share of households reporting donations, and a 8 percentage point increase in donations per donating household.

The results with our preferred specification are reported in columns 4 to 6 of panel A. Here neighborhoods are matched using neighborhood income and housing values (Group A) as well as the measures for ethnicity and language spoken at home (Group B). Starting first with column 4, we use a low trim to match neighborhoods, allowing us to match 376 Quebec neighborhoods. For all three measures of giving, we observe no effect associated with the Quebec policy to permit the reporting of gifts for Haiti relief effort on the 2009 tax return. Using a medium (.05/.95) or a high (.10/.90) trim estimation strategy decreases the number of Quebec neighborhoods that can be matched: 270 for the medium trim and 104 for the high trim. Using either trim there is approximately a 2 percentage point increase in the share of households reporting donations (extensive margin), and between 7 and 9 percentage point increase in reported donations per donating household (intensive margin).

5.4. Robustness and Extensions

Our first robustness check uses a placebo test for different periods of giving. In columns 1 and 2 we use the period 2007 to 2008 as our treatment and 2005 to 2006 as a control period. We chose this period to act as a placebo test of our key results. With respect to natural disasters, in 2005/06 the biggest disaster was the earthquake in Indonesia on May 27th, 2006. In 2007 and 2008 there were various earthquakes and floods that affected various countries/continents, the worst being the earthquake in China that killed 80,000 people. We expect that these events do not systematically affect giving in Quebec differently than in the rest of Canada. Indeed, using both our medium and high trim to match Quebec neighborhoods with neighborhoods in the rest of Canada, we do not find robust evidence of giving differences for our measures of giving. Using a high trim, we observe a 2 percentage point increase in the share of households donating, and a 2 percentage point decrease in donations per donor household. Ideally our placebo test would produce a null effect, but this positive treatment effect is likely the result of an increase in the tax credit for residents in Quebec starting in 2006. Under a medium trim, there is a statistically significant increase in the percent change in donations per donating household and the percent change in donations per household. This could possibly be the result of heterogeneity in the response to changes in the tax treatment of charitable donations at the federal level. The year 2006 saw gifts of publicly listed securities made fully exempt from capital gains taxation (Government of Canada (2015)). This dramatically reduced the price of giving for donations of securities and would have had different effects in different neighbourhoods depending on the wealth holdings of residents. However, under a high trim, there is no statistically significant difference for the intensive margin, or the overall effect between Quebec and the rest of Canada.

Finally, in Panel C of Table 5, we explore different periods around the time of the 2010 Haiti earthquake. In columns 1 and 2 we exclude the 2010 tax year and use instead the 2008 and 2009 tax years as the treatment for Haiti. This effectively includes donations in Quebec if there are donors who are erroneously claiming donations on their federal return in 2009 for the Haiti relief effort but excludes donations in the rest of Canada for this disaster. There is a significant increase in the percentage change in donations on the extensive margins when we employ the medium trim, but no effect on the intensive margin. When we use the high trim, we find similarly sized effect as our primary specification on the extensive but a smaller effect on the intensive margin.

In columns 3 and 4 of Panel C of Table 5 we explore the extent to which there are lasting effects of the Quebec policy for reporting donations for Haiti relief efforts on an earlier year's returns. Recall, the policy potentially drove a change in donating and reporting behavior for two reasons. First was the immediacy / price effect from being able to report close to the time of the donation, which is purely transitory. Second was the salience aspect, increasing awareness about tax credits for giving. From a salience perspective, the policy could have lasting effects to the extent that once a tax filer understands the benefit of the tax credit she is more likely to pursue the use of the tax credit. Using both a medium and high trim for the matching of neighborhoods, the results suggest there is a lasting effect, albeit modest, on the extensive margin, the share of tax filers reporting tax receipted donations. On average, there is a percentage change increase in the share of tax filers reporting tax receipted giving of 2 percentage points. We, however, do not measure a statistically significant effect on an increase in reported donations per donating household.

6. Discussion

We find robust evidence that the announced shortening of the time interval between giving and reporting increases tax receipted giving on both the extensive and intensive margins

as predicted by economic theory and prior research. But what do our point estimates imply about the tax price elasticity of giving? One would hope that the implied elasticities of our estimates would be consistent with those found in the existing literature – or at least not dramatically inconsistent. Table 6 reports the author's calculations of the implied arc elasticities using our estimates from our preferred estimator: the high trim level including both sets of matching measures. As noted above, prior estimates of the tax price elasticity of charitable giving range from -0.2 to -0.9. While these estimates are direct parameter estimates of a point elasticity, we believe they serve as the best basis of comparison for these purposes.

In order to calculate an arc elasticity we use the formula below:

$$\eta = \frac{\%\Delta D}{\%\Delta P} \qquad (3)$$

Here our measures of the percentage change in donations (the numerator in equation 3 above) comes directly from our estimates: the percentage change in the share of households donating, and the percentage change in the average donations per donating household. In order to complete the calculation, we must make some assumptions about the value to place in the denominator. If donors (and potential donors) were previously optimizing with full information of the availability of tax credits in the absence of the change in the interval between giving and reporting, then the percentage change in the price from this policy is the discount rate that they apply to future benefits. We believe 0.05 is a conservative discount rate, but also calculate these price elasticities using a much higher discount rate of 0.3, a value measured by Pleeter and Warner (2001). As there were no changes in the legislated tax price, the percentage change in the price would be 5% and 30%, respectively. In this case we have estimates of the extensive margin tax price elasticity ranging from -0.07 to -0.44; and intensive margin tax price elasticities ranging from -0.3 to -1.8. Notice that the smaller is the perceived change in the price, the larger is our elasticity calculation given our estimated changes in giving.

If the policy announcement raised the salience of the tax price, then the perceived change in the tax price could be anything. However, a reasonable assumption would be that in the absence of knowing the tax price donors and potential donors believe that their donations are ineligible for the tax credit and they bear the full price. For our partially informed calculations of the tax price elasticity the tax price of donations changes from $1 to $1 minus the appropriate tax credit rate. Since there are two potentially applicable tax credit rates we present each of these as possibilities for our tax price elasticity calculations. Here we calculate extensive margin estimates ranging from -0.04 to -0.06, and intensive margin estimates ranging from -0.17 to -0.23. These calculations under the assumption that the salience of the tax credit increased 100% are much smaller because the now visible tax prices are far from our assumed reference price. Thus, our fully and partially informed optimization exercises serve as bounds on the implied tax price elasticity.

Are these large or small numbers? We believe these magnitudes to be appropriate considering the likelihood of donor heterogeneity that is masked by our neighborhood level analysis. Some donors may have been fully informed and have quite low discount rates – in which case our estimated elasticities are -0.44 and -1.8 – and these are large relative to those found in the literature. However, if others may have been less well informed about the tax credits and may discount the future benefit more greatly, we calculate much lower elasticities in absolute value. While these calculated elasticities are all within reasonable range, these tax price elasticities be interpreted with caution as they are derived and presented without standard errors.

7. Conclusion

Did tax filers respond to an announcement of the ability to claim tax credits for charitable giving around the time of the filing of one's tax return? Our analysis indicates yes. In January 2010, there was widespread devastation from an earthquake in Haiti. In response

to the disaster, charitable donations and government support poured in from Canada and many other countries. Federally, the government of Canada announced it would match donations made by Canadians. The provincial government of Quebec enhanced the incentives for giving by permitting tax filers to report their support for relief efforts a year early, on the 2009 tax returns that were in the process of being filed at the time of the earthquake. This incentive both nudged tax filers to give and increased the awareness of the tax credit available for donors.

Studying charitable giving in Canada is ideal given that all tax filers with positive tax liability can benefit from the tax credit and the tax credit is tied to the level of the gift and independent of the marginal tax rate of the filer. Because residents of Quebec could report their donations for Haiti relief efforts in 2009 and the residents in the rest of Canada could not report their donations for these efforts until 2010, we group the information from tax filings using a two year period (2009 and 2010) and compared this information to that reported on tax filings for the period 2007 and 2008. Our preferred estimation strategy matched neighborhoods in Quebec with neighborhoods located outside of Quebec using measures that reflect income, house value, ethnicity, and the language spoken at home. We find that giving increased both on an extensive and intensive margin. On average, the percentage change in the share of households reporting donations increased by 2 percentage points and the percentage change in the donations per donating household increased by 9 percentage points. While these numbers are suggestive of a tax price effect that is much larger than previous findings for the tax-price elasticity of donations, we feel that this is explained by the increased salience of the tax credit. Chetty et al. (2009) shows that individuals react much more to commodity taxes that are more salient, so our results are not unexpected given the large increase in the salience of the tax credit.

Our analysis lends credibility to the potential effect of moving the period for reporting a charitable donation on one's tax return to coincide more closely with the filing of the return.

With giving in many countries having remained relatively flat despite significant increases in GDP, a simple policy such as that studied in this paper could play a role in encouraging greater giving by tax filers. A limitation of this paper, however, is that we studied giving as it relates to a natural disaster. We leave for future study evaluating the effects of timing and salience on general giving.

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Appendix Table 1: Special Charity Appeals by the Canadian Red Cross to Illustrate Disasters and Events of Interest t Canadians

2010	
Canada: New Brunswick Flood	Severe flooding in southwest New Brunswick and Fredericton forcing 100 evacuees from homes. General appeal
Canada: Gaspesie Floods	Heavy rains in December affecting hundreds of people. General appeal
Canada: Hurricane Igor	Eastern Newfoundland and Labrador on September 21; washed out roads, power outages. General appeal
Canada: WesternCanada Severe Weather	British Colombia issues with melting snow, flooding; general appeal
Red Cross response in Haiti	7.0 earthqualke affecting 3 million people and leaving 200,000 homeless
Pakistan Floods	Flooding destroying 1.7 million homes, damaging 5.4 million acres of farmland and affecting 20 million people
China Floods	Flooding July to August causing a massive mudslide destroying homes of 45,000 people
Chile Earthquake	8.8 magnitude killing 700 and affecting 2 million people. International appeal for $7 million
China (Qinghai) earthquake	Qinghai province killing 617 and injuring 10,000, toppled 15,000 residential buildings
Philippines Typhoon	Typhoon Ketsana killing 240 and affecting 1.8 million
Hurricane Season 2010	Hurricane Tomas affecting 1,900 homes located on Caribbean islands plus general appeal
2009	
Canada: WesternCanada Severe Weather	Summer floods, forest fires and tornadoes. General appeal
Canada: Ontario Tornado Appeal	Tornadoes in Vaughan, Ontario on August 20th; 100 residents evacuated from homes
Canada: BC Fires	10,000 people evacuated due to forest fires in British Columbia
Canada: Manitoba Floods	Flooding considered second worst (first worst in 1997)
Hurricane Season 2009	General appeal to support hurricanes in the Caribbean
Pakistan Conflict	Hostilities resulting in 2 million fleeing their homes, need for humanitarian aid
Earthquake in Italy	6.3 earthquake in L'Aquila killing 290, injuring 1,500 and leaving 28,000 homeless
Gaza Crisis	Hostilities killing 1,300 Palestinians, induring 5,500 and destroying or damaging 20,000 houses
Zimbabwe Cholera Crisis	Cholera epidemic resulting in 3,700 deaths and 78,000 illnesses
Democratic Republic of the Congo	Hostilities between the country and its neighbors and natural disasters
Food Security Crisis Appeal	International appeal driven by rising food prices
Americas Floods	Heavy rains in Central and South America displacing 200,000 people
Colombia Floods	Extensive flooding affecting 31,000 people, damaging 100 schools and 1,400 houses, in particular in Narino
2008	
Canada: New Brunswick floods	Appeal tied to flooding along the St. John River in New Bunswick
USA Disaster Relief	Many events including tornadoes, wildfires, floods, hurricanes
Pakistan earthquake	Series of earthquakes killing 160 and displacing 17,000 people
Hurricanes	Haiti (affecting 54,000 homes and 131,000 families), Caribbean (Cuba (destroying 63,000 homes plus farms, schools, etc),
Earthquake in China	7.9 earthquake in Sichuan (south-west province) killing 80,000; induring 374,000 and leaving 15 million homeless
Asia Typhoon	Several events affecting 235 million people
Myanmar: Cyclone Nargis	Cyclone killing 85,000 people and 2.4 million affected
Crisis in Sudan	Darfur, Nazradeen crises affecting delivery of humanitarian aid. International appeal of $30.6 million for Darfur
Georgia/Russia Conflict	Conflict across Georgian, South Ossetian and Russia devastating homes, international appeal of $8 million
Ukraine Floods	Western Ukraine worst floods in 200 years damaging 40,000 homes, farm land, and roads
Eastern Africa Cyclone	Devestating cyclones hitting mostly Madagscar and Mozambique displacing 300,000 and affecting farm land
Chadian Refugee Crisis	Intense fighting between rebel and government forces at least 30,000 refuges went to Cameroon
China Snow Disaster	Unusual cold and heavy snow affecting 19 provinces forcing 1.76 million from their homes, toppling 223,000 houses, and damaging 862,0 homes generating $8.2 billion in economic losses
Southern Africa Floods	Affecting 6 countries most notably Mozambique (55,000 evacuated from homes)
Kenya Crisis	On-going violence affecting 100,000 people (120 killed)
2007	
Canada: WesternCanada Floods & Severe	General appeal tied to extreme weather conditions
Asia Floods	Major flooding in Bangladesh (Cyclone Sidr + monsoons; destroyed 500,000 homes, killed 3,000 affected 6 million people), Nepal (impacting 333,000), India (impacting 14 million people), and Pakistan (affecting 2.5 million people); international appeal $18 million)
Hurricanes	International appeal for $1.4 million for people affected by Hurricane Dean (Carribbean)
Africa Floods	Extensive flooding affecting 1+ million people in 18 countries in East, Central, and West Africa. Canadian Red Cross sent $100,000.
Peru Earthquake	7.0 Earthquake killed hundreds and left 700,000 people homeless. International appeal for $4.8 millioan
China Floods	International appeal for $8.2 million due to flooding that affected 200 million people and leaving 5 million displaced and 500 dead
Mexico Floods	Floods affected 1 million people in Tabasco; International appeal of $973,000; Canadian government gave $100,000 in assistance
Floods in Sudan	Nile river flooded many state in the Sudan, displacing 300,000 people, destroying 60,000 homes. International appeal $4.8 million
Fires in Greece	Forest fires in Greece affecting villages, agriculture
USA Tornado	Tornado in Kansas on May 4th; destroyed homes and business; 9 people confirmed dead
Southern Africa Floods	Widespread flooding in Mozambique; 140,000 people displaced and living in temporary shelters
2006	
Middle East Crisis	Conflicts resulting in evacuations from Lebaonon, assistance in Palestine and other countries
Asia Typhoon Relief	Typhoon Durian affecting 650,000 people (1,050 dead) in the Philippines and Vietnam
Indonesia Earthquake	Earthquake on May 27th of 6.2 in city of Yogyakarta; 6,000 people dead and over 50,000 with injuries; 174,000 houses damaged/destroye
Phillipine Landslide	Massive landslides on February 17th in village of Guinsaugon; confirmed dead 154; affecting 281 houses (8,000 persons)
2005	
South Asia Earthquake (Pakistan)	October 8, 2005, killed 73,000 and made 3.5+ million homeless
Southern Africa Food Crisis	Serious drought affecting 10 million people (on brink of starvation)
Hurrican Stan	Affecting Central America (October). Death tol highest in Guatemala (650 people)
Huricanes Rita and Katrina	Affecting southern US
Guyana Floods	Torrential rainfalls in December affecting more than 150,000 people (shelter, clean water)
2004	
Sudan Crisis	Darfur region, violence and terror affecting 1 million people (moved from homes)
Asia Earthquake and Tsunami	December 26, 2004 (and subsequent earthquake in March 2005)
Hurricane Ivan	Cayman Islands, Cuba, the Dominican Republic and Haiti; Haiti also affected by Tropical Storm Jeanne causing flooding
South Asia Floods	Floods in Bangladesh and Nepal that killed 900 and affected 50 million people.
Hurricane Charley	Affecting Florida, destroyed over 15,000 homes, killed 13 people
Dominican Republic / Haiti Floods	900 died as result of heavy rains, flooding and mudslides, Spring 2004
Earthquake in Morrocco	February 24th damages to several villages with hundreds of people that died

Note: listing of events as provided by Canada Red Cross: http://www.redcross.ca/donate/your-donation-in-action/past-appeals

Table 1: Tax-Receipted Donations for Charities With Operations in Haiti

		2009	2010	2011	2012
		(1)	(2)	(3)	(4)
Panel A: National Organizations Based on Location in Province					
Quebec	# of Charities	45	45	45	45
	Share Reporting Conducting Activities in Haiti in the Given Year	48.9%	55.6%	66.7%	62.2%
	Total Tax Receipted Donations For All Charities	27.7 Million	14.9 Million	12.0 Million	10.7 Million
	Total Tax Receipted Donations For Charities With Haiti Operations in the Given Year	10.14 Million	6.99 Million	9.37 Million	8.93 Million
Rest of Canada	# of Charities	141	141	141	141
	Share Reporting Conducting Activities in Haiti in the Given Year	46.1%	68.1%	68.1%	56.7%
	Total Tax Receipted Donations For All Charities	96.3 Million	106.4 Million	93.1 Million	87.5 Million
	Total Tax Receipted Donations For Charities With Haiti Operations in the Given Year	42.88 Million	72.04 Million	65.73 Million	51.55 Million
Panel B: Local Organizations and Chapters of National Organizations					
Quebec	# of Charities	129	129	129	129
	Share Reporting Conducting Activities in Haiti in the Given Year	55.0%	73.6%	68.2%	63.6%
	Total Tax Receipted Donations For All Charities	22.0 Million	24.0 Million	22.7 Million	23.5 Million
	Total Tax Receipted Donations For Charities With Haiti Operations in the Given Year	13.8 Million	18.39 Million	17.58 Million	18.36 Million
Rest of Canada	# of Charities	374	374	374	374
	Share Reporting Conducting Activities in Haiti in the Given Year	33.2%	60.7%	51.1%	50.8%
	Total Tax Receipted Donations For All Charities	128.24 Million	137.24 Million	127.55 Million	132.14 Million
	Total Tax Receipted Donations For Charities With Haiti Operations in the Given Year	31.57 Million	80.30 Million	64.61 Million	78.13 Million

Note: Dollars are real ($2010)

Table 2: Core Measures of Giving, Summary Statistics

	Quebec: 406 Neighborhoods					
	2007	2008	2009	2010	2011	2012
Panel A: Annual Statistics	(1)	(2)	(3)	(4)	(5)	(6)
Average Number of Tax Filer Households per Neighborhood	8,728	8,896	8,986	9,109	9,230	9,319
(standard deviation)	(6,294)	(6,294)	(6,400)	(6,479)	(6,561)	(6,623)
Average Number of Donor Households per Neighborhood	2,950	2,972	2,970	3,042	2,984	2,945
(standard deviation)	(2,179)	(2,146)	(2,121)	(2,173)	(2,129)	(2,089)
Average Donations ($1000s) per Neighborhood	$2,139	$1,991	$1,950	$2,065	$1,999	$2,067
(standard deviation)	(3,398)	(3,118)	(3,017)	(3,349)	(3,141)	(3,937)
	Rest of Canada: 1177 Neighborhoods					
	2007	2008	2009	2010	2011	2012
Panel B: Annual Statistics	(7)	(8)	(9)	(10)	(11)	(12)
Average Number of Tax Filer Households per Neighborhood	9,121	9,264	9,374	9,478	9,630	9,749
(standard deviation)	(6,652)	(6,761)	(6,854)	(6,940)	(7,050)	(7,145)
Average Number of Donor Households per Neighborhood	3,529	3,601	3,469	3,550	3,543	3,496
(standard deviation)	(2,698)	(2,755)	(2,659)	(2,729)	(2,723)	(2,696)
Average Donations ($1000s) per Neighborhood	$7,233	$6,661	$6,211	$6,517	$6,466	$6,216
(standard deviation)	(8,563)	(7,835)	(7,460)	(7,287)	(7,443)	(7,461)

Notes: Neighborhoods are defined based on the forward sortation area (first 3 characters of the postal code) and cover only urban areas. Tax filer data from the Statistics Canada Summary of Charitable Donors. All dollars are in $2010.

Table 3: Overall Differences in Average Giving in Quebec v. Rest of Canada

Measure of Giving	Neighbourhoods	Quebec 410		Rest of Canada 1181		Quebec - Rest of Canada
		Mean	Standard Deviation	Mean	Standard Deviation	
		(1)	(2)	(3)	(4)	(5)
Share of Households Donating	Pre-Haiti (2007-08)	34.8%	(9.1)	39.5%	(10.2)	-2.5%
	Post-Haiti (2009-10)	34.6%	(8.8)	37.9%	(10.0)	-1.5%
	Percentage Change	**-0.6%**		**-4.1%**		**3.5%**
Average Donation per Donor Household	Pre-Haiti (2007-08)	$723.1	(1123.4)	$1,923.2	(1945.8)	-$1,200.1
	Post-Haiti (2009-10)	$715.8	(1272.2)	$1,795.3	(1723.3)	-$1,079.5
	Percentage Change	**-1.0%**		**-7.1%**		**6.1%**

Table 4: Summary Statistics of Measures and First Stage Results for Matching Neighborhoods

	All Neighborhoods		Neighborhoods Used with Medium Trim (0.05 - 0.95)		Neighborhoods Used with High Trim (0.1 - 0.9)		First Stage Results (Probit Dependent Variable = Treatment Neighborhood)	
	Quebec	Rest of Canada	Quebec	Rest of Canada	Quebec	Rest of Canada	Group A Measures	Group A & B Measures
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Number of Neighborhoods	406	1177	270	108	104	64		
Panel A: Group A Matching Measures								
Average Household Income	$37,561	$42,370	$37,865	$53,658	$41,588	$46,421	**0.038**	-0.013
	(13,944)	(13,944)	(11,742)	(29,849)	(16,204)	(20,649)	(0.008)	(0.011)
Average Value of Dwellings	$263,290	$361,035	$253,869	$533,663	$328,245	$487,000	**-0.002**	**0.001**
	(124,006)	(227,159)	(136,476)	(510,512)	(174,039)	(549,622)	(0.0003)	(0.000)
Share of Households with Income > $100,000	3.84%	5.91%	3.81%	9.23%	5.57%	7.54%	**-0.974**	**0.073**
	(3.81)	(4.84)	(3.97)	(9.11)	(5.22)	(8.36)	(0.023)	(0.033)
Share of Households with Low Income	15.80%	13.88%	15.00%	14.91%	16.62%	15.53%	**0.024**	**0.021**
	(8.15)	(6.74)	(7.77)	(7.06)	(9.65)	(7.27)	(0.006)	(0.010)
Panel B: Group B Matching Measures								
Share of Population with Ethnicity Identified as Haitian	1.25%	0.05%	0.38%	0.24%	0.66%	0.34%		**0.740**
	(2.67)	(0.31)	(0.66)	(0.69)	(0.76)	(0.84)		(0.087)
Share of Population with Home Language as French	78.64%	5.99%	78.94%	38.96%	56.73%	43.30%		**0.048**
	(24.65)	(15.88)	(26.27)	(35.62)	(26.81)	(32.50)		(0.025)

Note: Matching measures all derived from the 2011 Canadian National Household Survey. Standard deviations reported in parentheses for columns 1-6; standard errors reported in parentheses in columns 7 & 8. High Trim uses a 0.1 / 0.9 trimming rule in the matching algorithm. Reported are the neighborhoods used for matching. Coefficients in bold in columns 5 and 6 are statistically signficant for $p<0.10$

Table 5: Effect of Tax Incentives on Measures of Giving, Propensity Score Matching

Panel A: Core Analysis

Sample Description	2007-2010 Haiti Group A Matching Measures		2007-2010 Haiti: Group B Only Matching Measures	2007-2010 Haiti: Group A & B Matching Measures		
Trimming Level	Low	High	High	Low	Medium	High
	(1)	(2)	(3)	(4)	(5)	(6)
Number of Neighborhoods	1582	1401	154	1553	378	168
Number of Quebec Neighborhoods	406	397	101	376	270	104
Dependent Variable						
% Change in Share of Households Donating	3.49%	3.82%	3.27%	-1.70%	1.71%	2.20%
	(0.000)	(0.000)	(0.000)	(0.410)	(0.008)	(0.000)
% Change in Donations per Donating Household	0.16%	0.87%	7.63%	-3.07%	7.39%	9.01%
	(0.891)	(0.326)	(0.008)	(0.562)	(0.010)	(0.001)

Panel B: Robustness Checks: Period Before Haiti Earthquake

Sample Description	Control: 2005/06; Treatment 2007/08	
Trimming Level	Medium	High
	(3)	(4)
Number of Neighborhoods	378	168
Number of Quebec Neighborhoods	270	104
Dependent Variable		
% Change in Share of Households Donating	1.47%	2.33%
	(0.131)	(0.017)
% Change in Donations per Donating Household	6.47%	-2.63%
	(0.056)	(0.552)

Panel C: Extensions: Periods Around Haiti Earthquake

Sample Description	Period Including 1st Tax Year That Would include Quebec Contributions to Haiti		Period Subsequent to Haiti as Treatment	
	Control: 2006/07; Treatment: 2008/09		Control: 2009/10; Treatment 2011/12	
Trimming Level	Medium	High	Medium	High
	(1)	(2)	(3)	(4)
Number of Neighborhoods	378	168	378	168
Number of Quebec Neighborhoods	270	104	270	104
Dependent Variable				
% Change in Share of Households Donating	0.59%	1.94%	1.77%	1.68%
	(0.513)	(0.001)	(0.001)	(0.006)
% Change in Donations per Donating Household	13.86%	5.09%	-0.31%	-0.29%
	(0.000)	(0.228)	(0.910)	(0.937)

Table 6: Implied Tax Price Elasticities

	Extensive Margin	Intensive Margin
Fully Informed Optimization		
Discount Rate = 0.05	-0.44	-1.8
Discount Rate = 0.3	-0.07	-0.3
Partially Informed Optimization		
Discount Rate = 0.05; High Tax Credit Ra	-0.04	-0.16
Discount Rate = 0.3; High Tax Credit Rate	-0.03	-0.13
Discount Rate = 0.05; Low Tax Credit Rat	-0.06	-0.23
Discount Rate = 0.3; Low Tax Credit Rate	-0.04	-0.17
Note: Authors' calculations. The elastiticy calculations use our High trim		

Table A1: Effect of Tax Incentives on Measures of Giving, Propensity Score Matching with Individual Level Data

Panel A: Core Analysis						
Sample Description	2007-2010 Haiti Group A Matching Measures		2007-2010 Haiti: Group B Only Matching Measures	2007-2010 Haiti: Group A & B Matching Measures		
Trimming Level	Low	High	High	Low	Medium	High
	(1)	(2)	(3)	(4)	(5)	(6)
Number of Neighborhoods	1405	1262	151	1376	366	181
Number of Quebec Neighborhoods	370	364	100	340	262	111
Dependent Variable						
% Change in Share of Donors	4.08%	4.38%	4.45%	3.53%	3.19%	3.58%
	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)
% Change in Donations per Donor	1.48%	0.98%	7.07%	9.11%	7.58%	10.06%
	(0.270)	(0.302)	(0.020)	(0.020)	(0.118)	(0.009)

Notes: p-values in parentheses. The Trimming method for the estimations is defined as: Low: 0.01%/99.99%; Medium: 5%/95%; High: 10%/90%. Measures used for matching neighborhoods. Group A Measures: Average household income, % households with income >$100,000, % of households identified as below the low income cutoff, Average dwelling value; Group B Measures: Those in Group A plus % of the population whose home language is French, % of population whose ethnic origin is identified as Haiti; Standard error calculations: Panel A Columns (1) & (3): bootstrapped standard errors and Panel A Columns (2), (4), (5) and Panel B (all columns): inverse propensity weights with regression adjustment. 2007-2010 Haiti period compares changes from 2007/2008 returns with 2009/2010 period;

Table A2: Control Group FSAs By Province and Trim Level

	Trim Level					
	Low		Medium		High	
Province	Number	Percent	Number	Percent	Number	Percent
Alberta	145	12.3%	4	3.7%	3	4.7%
British Columbia	186	15.7%	16	14.8%	11	17.2%
Manitoba	61	5.2%	1	0.9%		
New Brunswick	109	9.2%	38	35.2%	26	40.6%
Newfoundland	35	3.0%				
Nova Scotia	74	6.3%				
Nunvaut & Northwest Territories	6	0.5%				
Ontario	510	43.2%	49	45.4%	24	37.5%
Prince Edward Island	7	0.6%				
Saskatchewan	45	3.8%				
Yukon	3	0.3%				
Total	1181		108		64	

Notes: Control group for Group A & B matching measures

Table A3: Difference in Difference Estimates of the Effect of Changed Timing and Salience on Giving.

	Share of Households Donating	Donations per Donating Household
Quebec	0.02	-279.54
	(0.00)	(0.01)
Post-Haiti Earthquake	-0.01	-127.20
	(0.00)	(0.02)
Quebec*Post-Haiti Earthquake	0.01	119.40
	(0.01)	(0.12)
Average Household Income	0.00	0.14
	(0.00)	(0.00)
Average Value of Dwellings	-0.00	0.00
	(0.00)	(0.00)
Share of Households with Income > $100,000	-0.17	-19308.2
	(0.24)	(0.00)
Share of Households with Low Income	-0.56	7473.80
	(0.00)	(0.00)
Share of Population with Ethnicity Identified as Haitian	-0.31	-5845.46
	(0.00)	(0.00)
Share of Population with Home Language as French	-0.06	-834.48
	(0.00)	(0.00)
Constant	0.33	-4198.21
	(0.00)	(0.00)
N	3186	3183
R^2	0.53	0.53

Notes: p-values in parentheses. Each regression uses two-year aggregates of the included variables: 2007 and 2008 in the "Pre-Haiti Earthquake" period, and 2009 and 2010 in the "Post Haiti Earthquake" period. The regession of the average donation per donating household has three fewer observations because three communities had zero donating households, making the denominator of the dependent variable 0, and the observation missing.

Table 1: Tax Credit On Charitable Donations

	Reported Donations	
	Less than $200	More than $200
Federal Tax Credit	15.00%	29.00%
Federal & Provincial Combined Tax		
	Less than $200	More than $200
Quebec	35.00%	53.00%
Ontario	20.05%	40.16%
Alberta	25.00%	50.00%
British Columbia	20.06%	43.70%
Saskatchewan	26.00%	44.00%
Manitoba	25.80%	46.40%
New Brunswick	24.30%	46.95%
Newfoundland	22.70%	43.40%
Nova Scotia	23.79%	50.00%
Prince Edward Island	24.80%	45.70%

Note: Rates reported are for donations of cash or items for which there is no capital gain. There are special rules donations of certain things such as publicly traded securities, gifts of ecological land, and works of cultural significance.

	High Trim Level (0.1-0.9)	Medium Trim Level (0.05-	Low Trim Level (0.0001-0.	All Neighborhoods
0-10%	0	0	1	0
10-20%	9	1	1	0
20-30%	15	3	2	1
30-40%	12	1	2	3
40-50%	11	0	2	2
50-60%	10	2	4	5
60-70%	11	2	5	6
70-80%	6	1	15	7
80-90%	19	14	20	4
90-100%	10	142	59	2

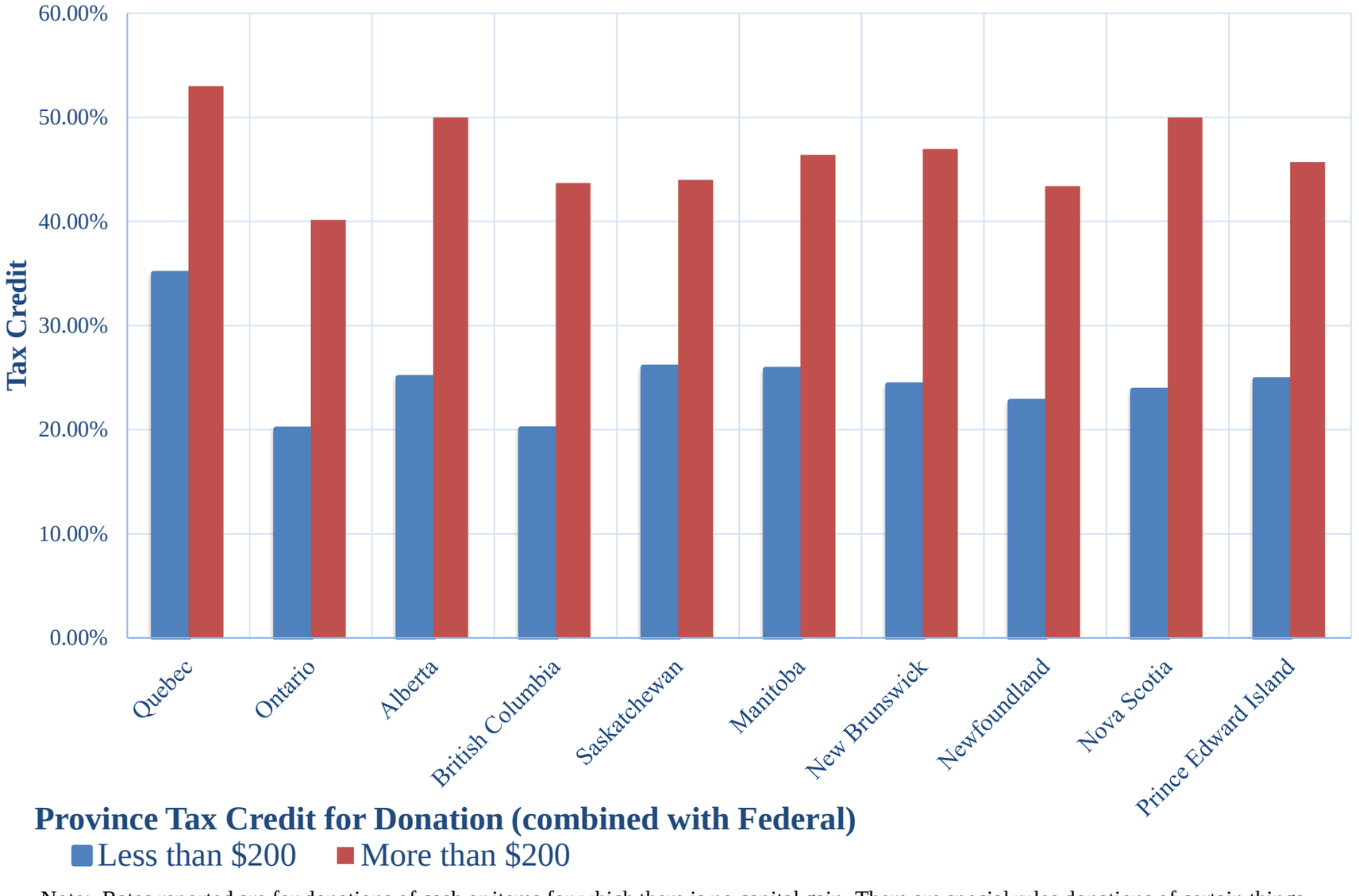
	High Trim Level (0.1-0.9)	Medium Trim Level (0.05-	Low Trim Level (0.0001-0.	All Neighborhoods
0-10%	0	0	1	1
10-20%	9	10	11	11
20-30%	15	18	20	21
30-40%	12	13	15	18
40-50%	11	11	13	15
50-60%	10	12	16	21
60-70%	11	13	18	24
70-80%	6	7	22	29
80-90%	19	33	53	57
90-100%	10	152	211	213
	103	269	380	410

Table 10: Canada Helps Survey Responses

	# of Respondents	Gave to Haiti	Aware of Tax Policy
Quebec	1230	61.63%	28.29%
		(48.65)	(45.06)
Rest of Ca	15859	57.97%	1.80%
		(49.36)	(13.28)

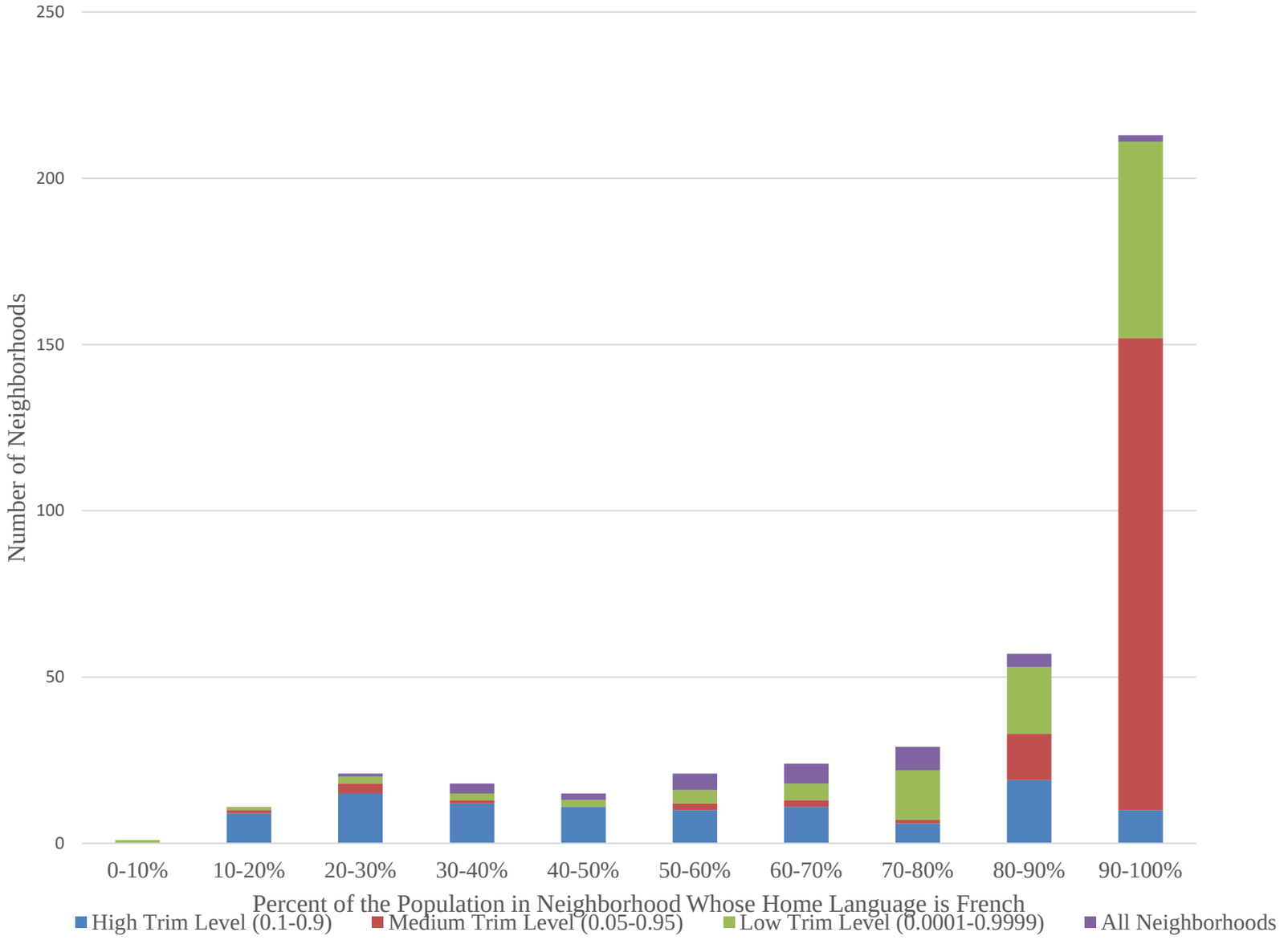
Source: Canada Helps Survey

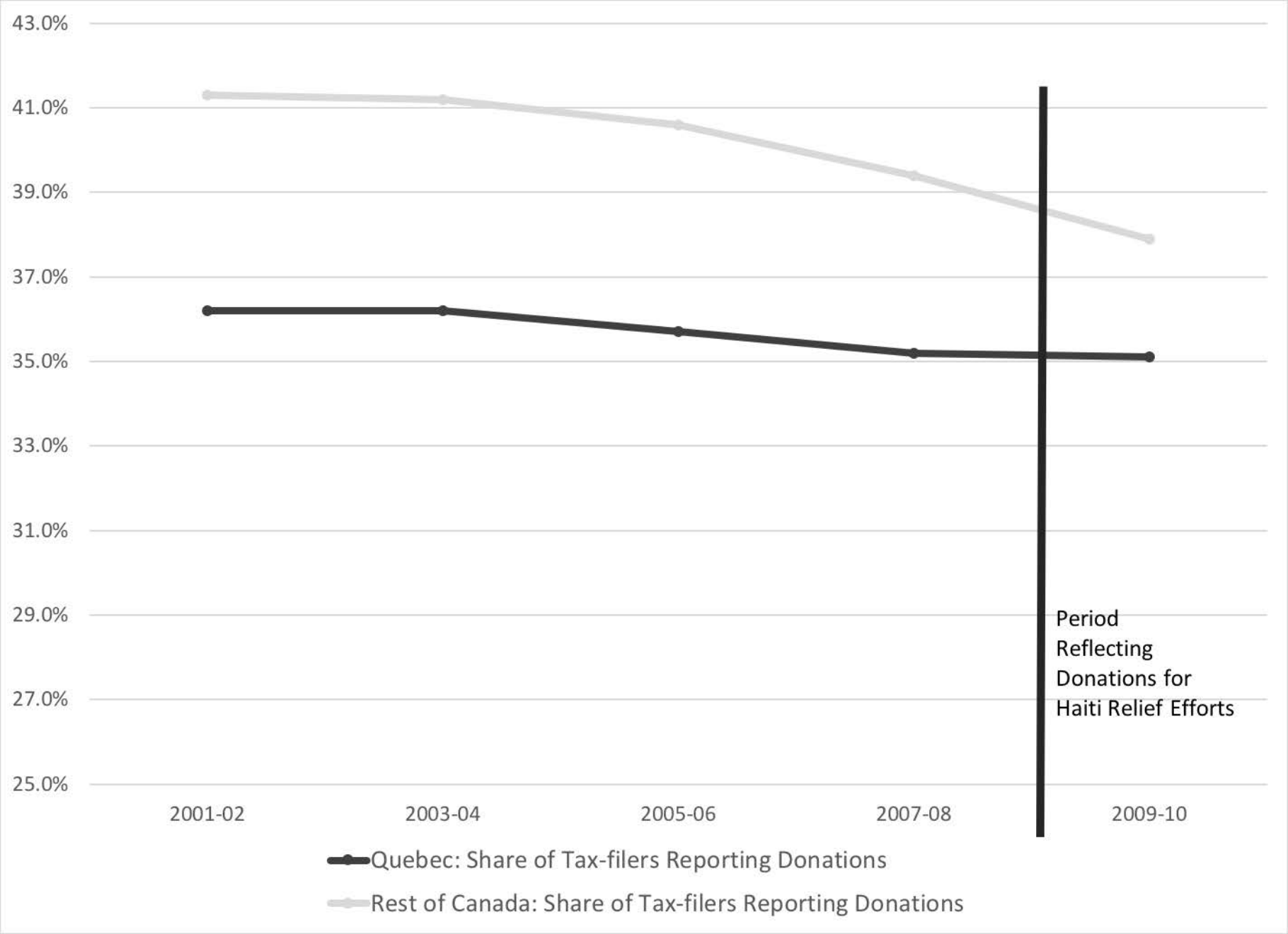
Figure 1: Comparison of Tax Credits For Giving



Note: Rates reported are for donations of cash or items for which there is no capital gain. There are special rules donations of certain things such as publicly traded securities, gifts of ecological land, and works of cultural significance.

Figure 2: Neighborhoods in Quebec by Percent French




43.0%
41.0%
39.0%
37.0%
35.0%
33.0%
31.0%
29.0%
27.0%
25.0%
2001-02
2003-04
2005-06
2007-08
2009-10
Period Reflecting Donations for Haiti Relief Efforts
Quebec: Share of Tax-filers Reporting Donations
Rest of Canada: Share of Tax-filers Reporting Donations

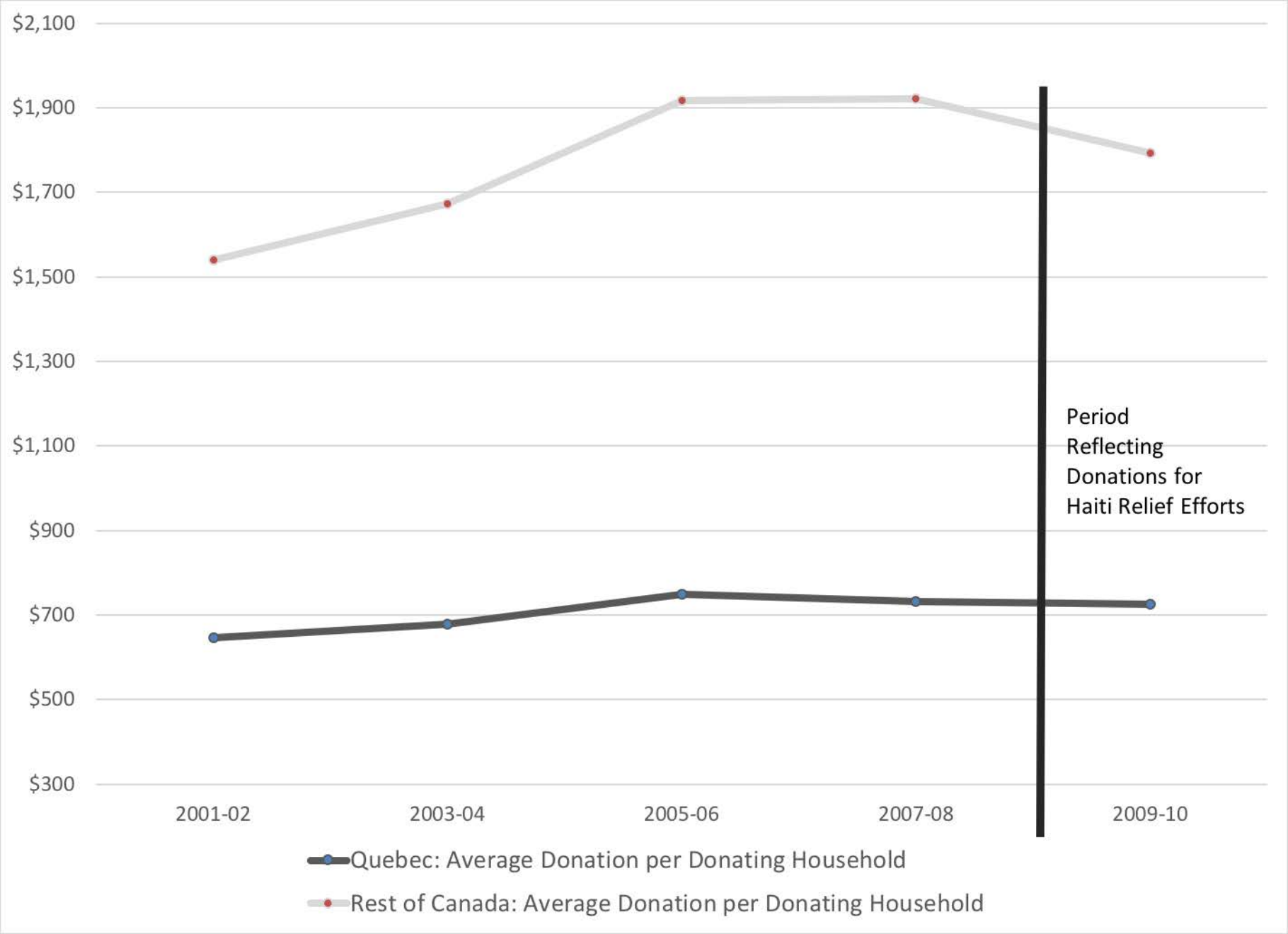

$2,100
$1,900
$1,700
$1,500
$1,300
$1,100
$900
$700
$500
$300
2001-02
2003-04
2005-06
2007-08
2009-10
Period Reflecting Donations for Haiti Relief Efforts
Quebec: Average Donation per Donating Household
Rest of Canada: Average Donation per Donating Household

Figure 4a: Canada

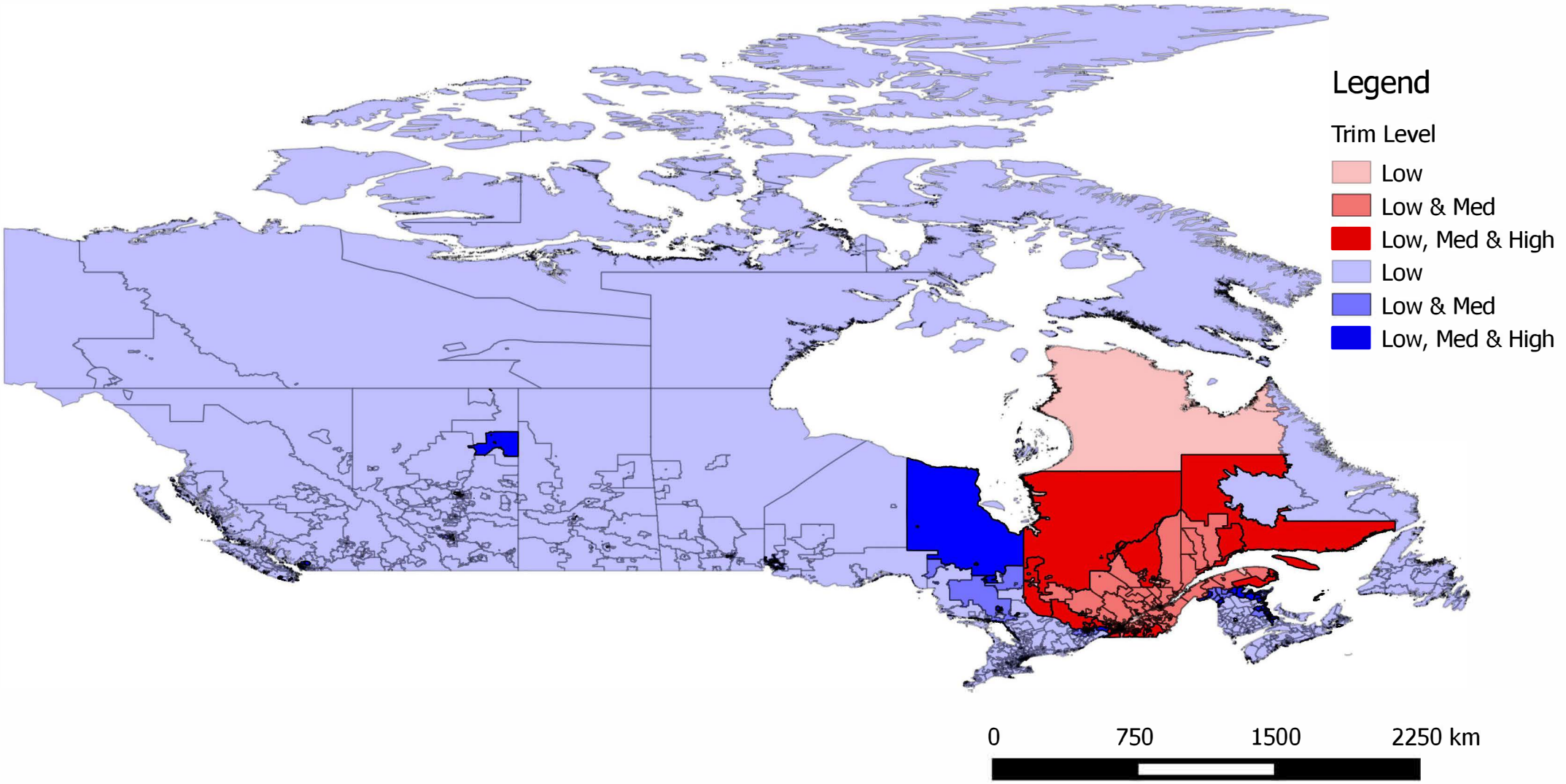


Figure 4b: Montreal

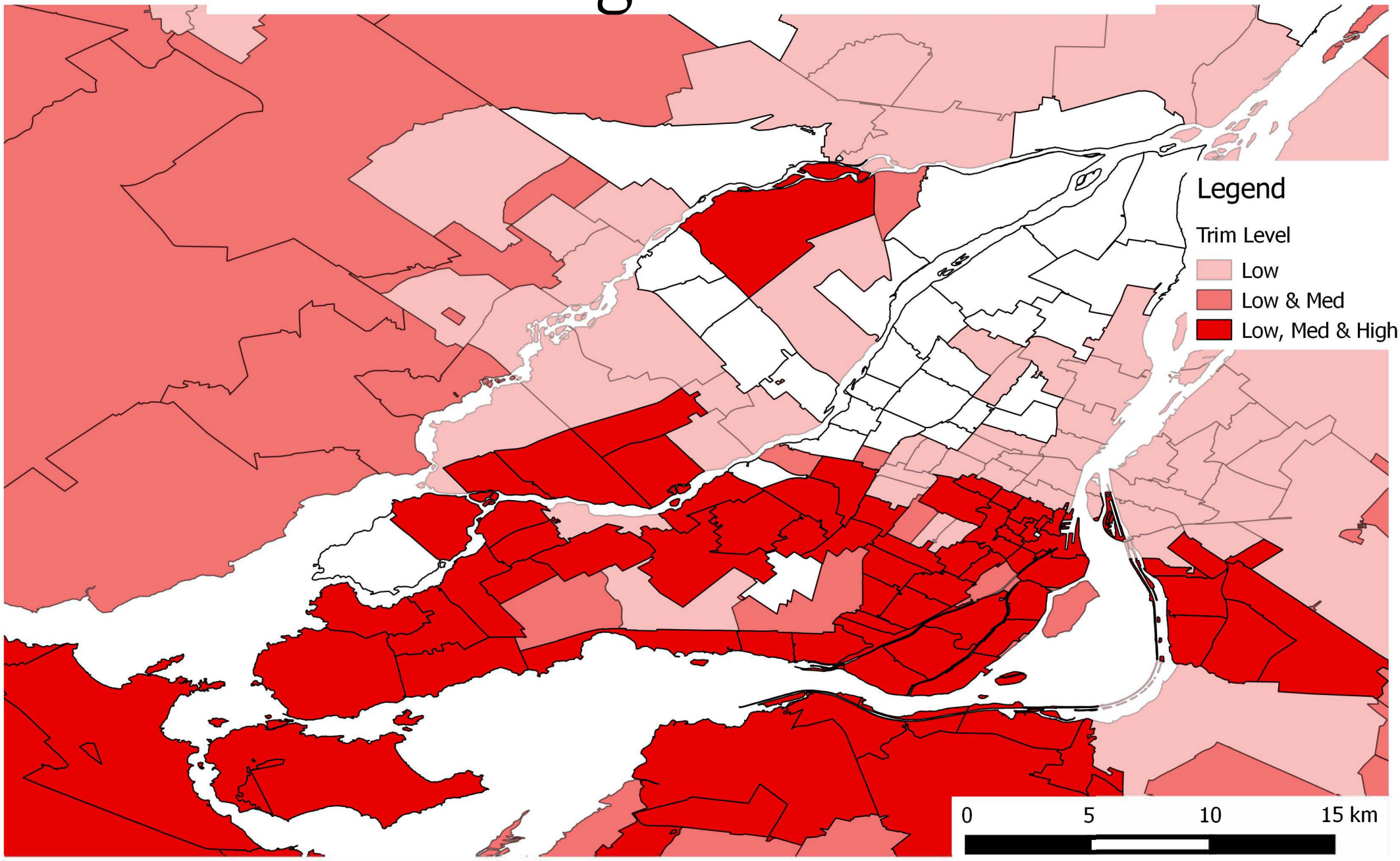


Figure 4c: National Capital

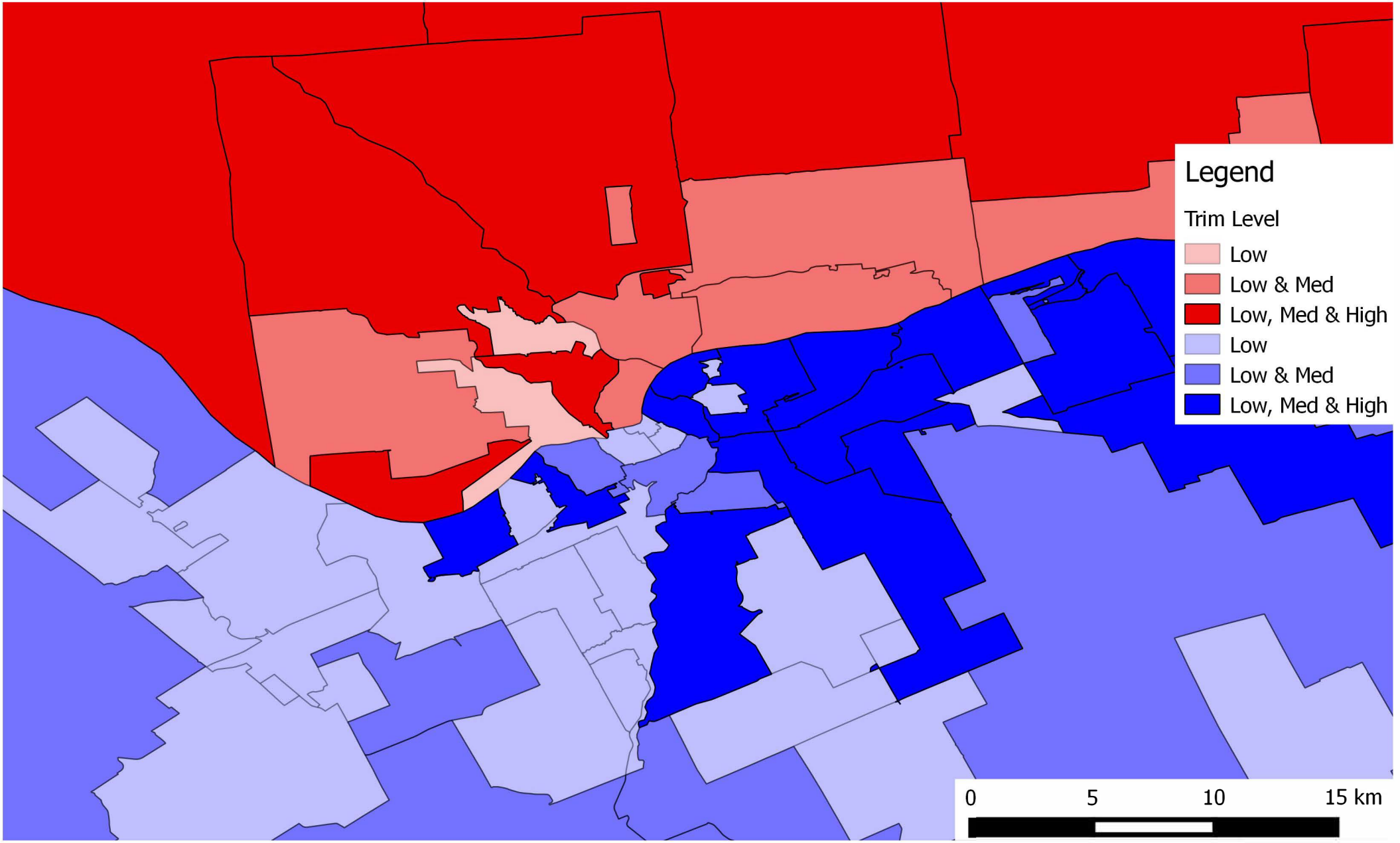


Figure 4d: NB

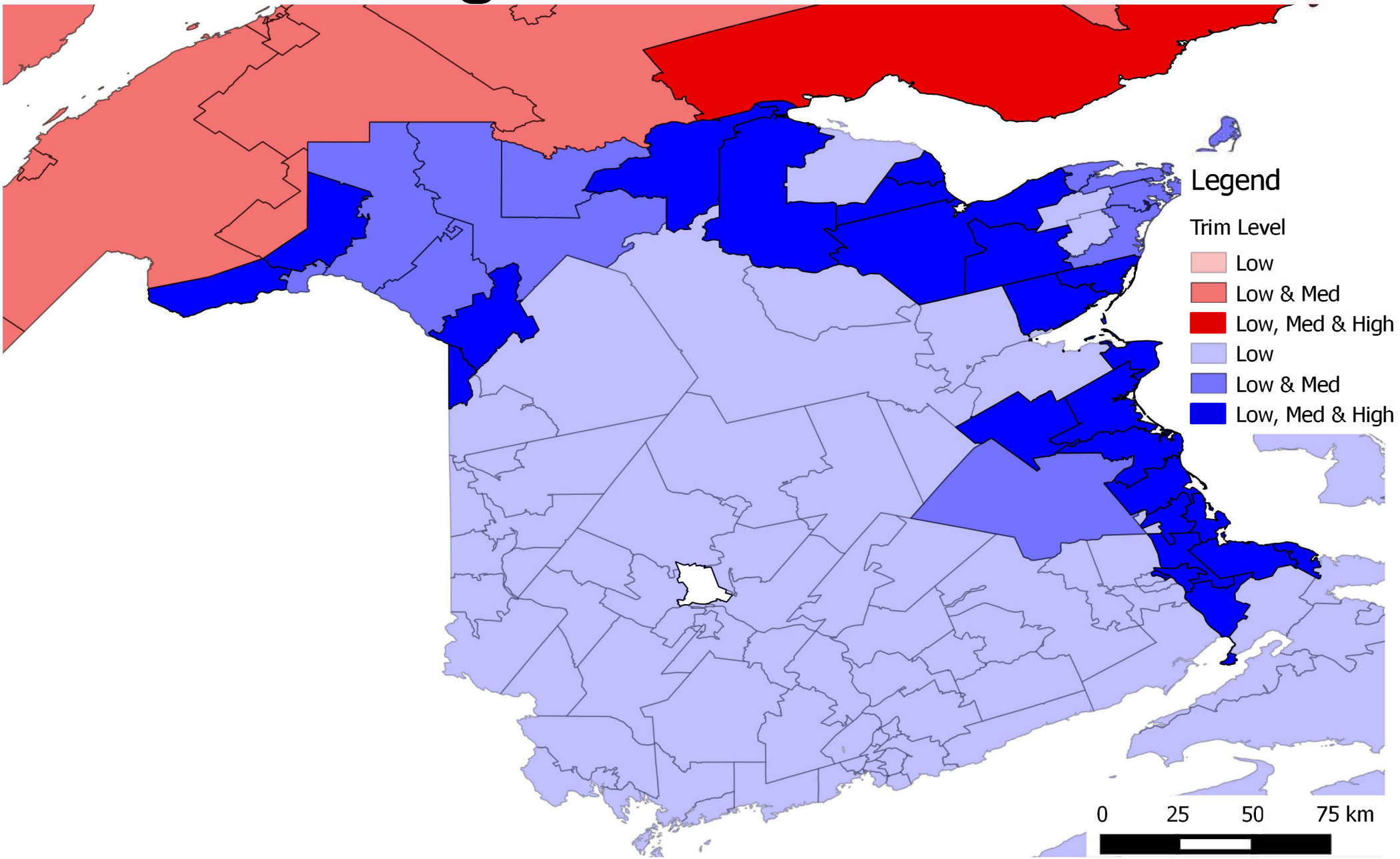

Legend
Trim Level
Low
Low & Med
Low, Med & High
Low
Low & Med
Low, Med & High
0
25
50
75 km

Figure 4e: Toronto Area

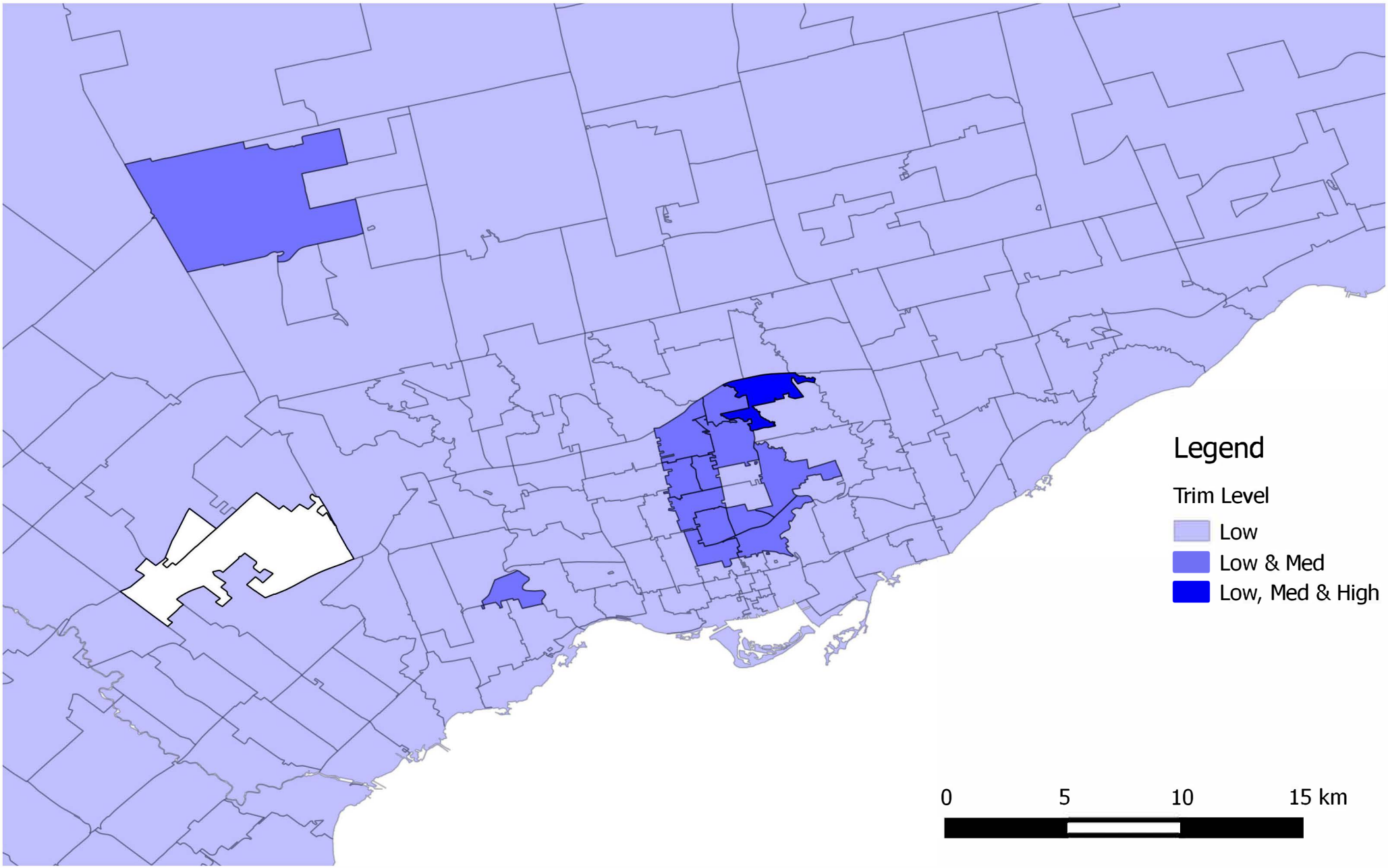


Figure 4f: Vancouver Area