The Sensitivity of Charitable Giving to the Timing and Salience of Tax Credits

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Abstract
If a taxpayer is able to make charitable donations near the time of filing her tax return, will she give more? To what extent does the salience of tax-induced incentives matter? Previous academic work has focused on estimating the price elasticity of giving and differences between permanent and transitory effects of changes in the price. This paper focuses on the timing and salience of tax incentives for giving. The Quebec provincial government responded to the January 12, 2010 Haiti Earthquake by permitting donations for the relief effort to be reported on the 2009 tax return. Residents in the rest of Canada reported their donations for Haiti relief efforts on their 2010 tax return. This difference in policy as well as the widespread announcement of the Quebec policy provides a natural experiment for testing whether the timing associated with reporting donations on one's tax return and the salience of the announcement of the policy affects charitable giving. In Canada, all tax filers with a tax liability can benefit from the reporting of donations and the credit available for such donations is tied to the level of the reported donations. We find that Quebec tax payers gave more than taxpayers in the rest of Canada during this period and that this effect is driven on both an extensive (increased givers) and intensive (increased giving) margin. This result has important policy implications and contributes to current debates on the use of tax incentives to encourage charitable giving.

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I. Introduction

Canada, the US, and many developed countries use the tax system to encourage giving to charity. In some countries, like the US, these incentives are in the form of a deduction against one's taxable income. In other countries, like Canada, a credit against the donor's computed tax liability is offered. For most countries, there is a sizable lag between when one makes a donation and when one reports it on her tax return.   For example, in the US and Canada, for tax returns filed in April of year t, one may only report donations made in the previous calendar year (t-1). Does a lag of four to sixteen months reduce the full potential of the tax incentive? Previous research has focused on measuring the permanent and transitory effects of a change in the tax price of giving on gifts to charities (see, e.g. Randolph (1995) and Auten, et. al (2002)). This paper focuses on the effect of the difference in timing between when a gift is made and when it is reported on one's tax return. If taxpayers react to better information about the tax price of giving (more salient price), then creating a closer link between the timing of a donation and the reporting of a donation on the tax return could lead to differences in both the number of taxpayers that report their donations and the level of donations to charity.

We study the sensitivity of charitable giving to the salience and timing of tax incentives by exploiting a natural experiment after the Haitian earthquake of 2010. The earthquake occurred in January, near the time when most taxpayers in Canada are preparing their tax returns. Under other circumstances, all donations to support the relief efforts would be reported one year later, when filing the 2010 tax return. One province, Quebec, changed this practice and announced that tax filers could report their donations in support of the relief efforts on their 2009 tax return, effectively changing the timing of reaping the benefits of the credit as well as increasing the awareness that the donations could be reported on one's tax return, especially at the time when

most individuals were preparing their returns. This created a difference in the treatment of donations by those residing in Quebec and those residing in the rest of Canada. Thus, the Quebec provision provides an arguably clean identification strategy for studying how the timing of when a donation is made and when it is reported can affect charitable giving. 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).

The Quebec policy experiment provides us with within country variation in tax incentives, allowing us to test the efficacy of this kind of policy. In addition to changing the timing of the reporting of donations, Quebec's policy increased the visibility, or salience, of the tax credit since through advertising the earlier credit, the government is also advertising that there is a tax credit for donations.[1] Moreover, unlike the US where the tax benefits for donations are tied to itemizing deductions, tax credits for giving is available to all Canadian tax filers provided they incur a tax liability. The level of the credit is tied to the level of the donation, not the tax bracket of the tax payer.

A potential threat to the natural experiment would be if the reaction to the Haiti earthquake by Quebec residents differed from those residing elsewhere given Haiti is a French speaking country a characteristic observed in Quebec but not necessarily in all other parts of Canada. Canada, like the US, however, has been a longtime supporter of Haiti. At the federal level, Canada reacted to the earthquake by announcing a federal government match of donations to a set of charities providing relief efforts in Haiti soon after the devastation of the earthquake

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[1] Results from a survey conducted of donors to an online giving portal suggests that the tax incentive was in fact salient to donors from Quebec. 28.3% of respondents from Quebec were aware of the extra incentive to donors in Quebec, compared to only 1.8% of respondents from the rest of Canada.

became apparent (post January 12th) and continued this match for a 30 day period (Government of Canada, 2010). Donations across Canada poured into many of the key charities responsible for delivering relief efforts. We provide below evidence that support for Haiti was by all Canadians and not just French speaking Canadians. Moreover, under our preferred specification, we study Quebec neighborhoods that were not mostly French and, thus, less susceptible to a "Haiti" effect due to an allegiance to French speaking countries.

Earlier eligibility for tax credits effectively reduces the price of giving as this reduces the period a donor must wait to receive the tax benefit from her gift and it should increase giving on both the intensive and extensive margins. An additional effect of changing the timing of donations is that by linking the timing of the donation to the timing of preparing one's tax return, a taxpayer will be better informed about her tax liability and that could lead to making more informed decisions around charitable giving which could lead to an increase or decrease in giving depending on one's perception of their tax liability prior to completing a return and the actual level of the liability. 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 timing effects. While the design of our study cannot isolate these effects, we can assess the overall effect of a potential policy to change the timing of when charitable donations are reported using the Quebec natural experiment.[2]

We use data that capture information on household income and reported giving on tax returns of individuals aggregated to a relatively small geographic area which broadly represent the geographic boundaries of neighborhoods (representing roughly 7,000 households). We

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[2] In both Canada and the US proposals have been made to extend the deadline for charitable donations to be closer to when taxpayers file their taxes, though neither have been successful as of this writing. See Bill C-458 National Charities Week Act for Canada and H.R.4719 – America Gives More Act of 2014 for the US.

employ a variety of estimation techniques including the propensity score matching estimator to estimate the effect of the Quebec incentive for giving on tax receipted donations. We study three measures of donation activity to understand the effects of the change in tax incentives on giving: the share of tax filers reporting charitable donations, the average donation per donor, and the average donation per tax filer.

We find that the Quebec incentive had a meaningful effect on all measures of donation activity. The incentive increased the share of tax filers reporting a charitable donation from 3 to 4 percentage points. For the 2008 tax year, approximately 25% of Canadian tax filers reported donations on their tax return. Thus the effect of the Quebec incentive if extended to all of Canada would result in a sizable increase in the reporting of donations. We also find that the average donation per donor increased by 8 to 10 percentage points.

The rest of the paper proceeds as follows: in section II we provide details of the natural experiment we exploit and details of how charitable donations are treated under the Canadian tax code. Section III reviews the current literature on the tax-price of giving and tax salience and provides predictions for the effect of this natural experiment. Section IV describes the data and the estimation strategy. Section V presents the analysis and section VI concludes.

II   Tax Credits and 2010 Incentives for Supporting Haiti Earthquake Disaster Relief

In Canada, donations made to registered charitable organizations are eligible for non-refundable provincial and federal tax credits.[3] Reporting donations to claim the tax credit takes place on Schedule 9 of the provincial and federal returns. If a tax filer files a paper return all documentation in the form of receipts must be submitted to Canada Revenue Agency. However, if one files electronically they must simply keep the receipts for up to six years in case there is a request by the tax authority. The value of the tax credit depends on the level of the donation not on the taxpayer's income. The credit is non-refundable and there are rules around the maximum credit available in any given year (typically 75% of reported income). Unused tax credits can be carried forward for up to five years. At both the federal and provincial levels the tax credit is two-tiered and is roughly tied to the minimum and maximum marginal tax rates assessed on income with Quebec, Alberta, and British Columbia being the exceptions. Couples file separate returns but either spouse can claim any donations made by them or their spouse and donations are typically reported by only one spouse given the two tiered credit. The first tier is for donations of less than $200. The second tier is for donations greater than $200.[4] Figure 1 reports the rates for the tax credits available across the provinces. 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 for both tiers followed by Alberta, Saskatchewan, and Nova Scotia. The largest province in Canada, Ontario, provides some of the lowest credits.

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[3] 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.

[4] This is the treatment of most donations. There are extra incentives given for gifts of publicly traded securities, gifts of items considered of significant cultural value, and certain other gifts. See Canada Revenue Agency (2015).

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, with a death toll of 250,000. Bilham (2010) found that the vast extent of the damages and the large death toll appear to have been the result of 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 just over 100 countries made donations to the relief efforts, along with international organizations and private individuals and organizations (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 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 experience in Canada – matches have been offered for the Indian Ocean Tsunami (December 2004), the Pakistani floods (summer 2010), and the Nepal earthquake (2015).[5]

Unique about the Haiti earthquake response is that Quebec, the 2nd largest province in Canada also created an extra incentive for giving to disaster relief. Quebec permitted tax filers to report their donations to the relief effort on their 2009 tax return as opposed to waiting for their 2010 tax return. This unilateral action by Quebec permits us to compare donations from Quebec

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[5] 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

with donations from the rest of Canada given that the extension for reporting donations was done at the provincial level.

III.   Tax Salience and the Timing of Giving

Although donations for Haiti were made at the same time by all donors, the Quebec incentive allowed Quebec residents to recognize the donation a year earlier and near the time of the event, whereas residents of other provinces did not realize their credit until the following year. The Quebec policy affected tax filers under two primary mechanisms. The first is through a price effect given the timing of tax recognition of the donations varied by a year. Since donors in Quebec could claim the tax credit a year earlier than the rest of Canada, a Quebec taxpayer's discounted benefit from the tax credit was larger, effectively lowering the price of giving relative to taxpayers residing outside of Quebec. Intuitively, when the price of a good is reduced, consumers will purchase more of that good, meaning that we would expect to see both more donors and larger donations per donor in Quebec than in the rest of Canada for the period covered by the Haiti relief effort.

There have been numerous studies on the effect of the tax-price of giving on donations, two of the most prominent being Auten et al. (2002) and Randolph (1995). Auten et al. (2002) shows 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 price changes are larger than the responses to permanent price changes. More recently, Bakija and Heim (2011) use data from the US from 1976-1996 and 1999-2005 to estimate the price elasticity of giving. They find 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 transitory 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.

The above referenced studies focus on US taxpayers where donations are eligible for a tax deduction as opposed to a tax credit. Fack and Landais (2010) examine the tax-price of giving in France, where donations are eligible for non-refundable credits in a similar manner to Canada. Fack and Landais (2010) exploit a tax reform and the fact that in France a household's status as taxable or not depends on the number of people in the household. This enables them 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. Like Baikja and Heim (2011) they also find evidence of heterogeneity of the responsiveness of giving to tax price changes. Our study complements this research on the price of giving by addressing the timing of the realization of the tax incentive.

Along with changing the effective tax price, the second mechanism driving a difference in the effect of the Quebec policy is through an increased salience of the tax credit. Following Bordalo et al (2013) we consider a characteristic of a good to be more salient if an individual's attention in 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 the ability of residents to claim their tax credit early in Quebec would draw more attention to the presence of the tax credit. The

policy change that we are considering was officially announced through a Government of Quebec press release (2010) that was subsequently picked up by several major media organizations. Bordalo et al (2013) present a model that produces large responses to unanticipated changes in the price of a good, as large changes in the price make the price more salient. Chetty et al. (2009) show that the more salient is a tax, the more consumers react. The authors use two different settings to measure the effect. The first is done through an experiment where the tax inclusive price is shown on the sticker price of the good. The second involves looking at how consumers react to the excise (included in price) and sales taxes (added at register) on alcohol. They show that consumers react less to sales tax changes, which are less salient, than they do to equivalent changes in excise taxes, which are more salient.

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.

Increased salience of the tax price of giving in Quebec would increase donations in two ways. First, we would expect that those making a contribution to a charity would increase the magnitude of their gifts since an increase in salience of the tax price lowers the perceived price of the donation (intensive margin). In addition we would expect that an increase in the salience would cause some givers who have never reported their donations on their tax returns to now

claim their donations on their individual tax return or those that were not going to give to now

give, since again the perceived price of the gift is lower (extensive margin). Each of these

effects would lead to a positive effect of the policy on giving.

IV. Data and Estimation Strategy

Data and Core Measures of Giving

Our data are derived from the federal individual tax returns for all tax filers in Canada.

Donations for the Haiti relief effort would have been made at the same time across Canada, and

ideally we would like to observe only the donations to Haiti at the time funds were being

collected. Such data are not available. Instead we can observe the donations that are reported on

tax returns and that would benefit from the tax credits offered by the federal and provincial

governments. We observe all donations as reported by tax filers on their tax returns.[6] Thus to

capture donations for the Haiti relief efforts, we must use the information reported on both the

2009 and 2010 tax returns. A critical assumption underlying the use of donations summed over a

two year period is that giving for other causes did not differ across the provinces over this period

in any systematic way. There are always disasters and other events that seek private donations.

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[6] In all provinces except Quebec, the tax filer submits information for provincial and federal taxation on one form and to the federal government. In Quebec, the tax filer submits the federal return to the federal government and the provincial return to Quebec. Technically, the Quebec policy only applied to the provincial tax return. However, Schedule 9, where the charitable donation tax credit was claimed, includes no reference to donations for the Haiti relief efforts on either of the provincial or federal tax returns. Moreover, news media through the federal government's Canadian Broadcasting Corporation and the province of Quebec's own information bulletin publicizing the policy do not make the distinction between making a claim on the provincial return only and not the federal return (see Government of Quebec (2010) and Canadian Broadcasting Corporation (2010)).Thus a resident of Quebec could easily have mistakenly claimed the credit on their 2009 federal return, as the amount claimed on the provincial return was exactly equal to the amount claimed on the federal return in all previous years. Based on our investigation we have concluded that most likely Quebec tax filers did not appreciate this nuance in the policy and reported their Haiti relief donations on their 2009 tax return.

To illustrate this point, Appendix Table 1 provides a listing of events for which the Canadian Red Cross created a special appeal for funding. In 2010, a second major disaster that could have affected giving was the Pakistani floods in the summer of 2010. And throughout the period of our analysis, most notably in 2009 and 2010, Canadians were experiencing the effects of the "Great Recession". Neither of these events were given specialized tax treatment for donations.

We believe the biggest concern from using a two year period might be if there was a differential reaction across provinces to supporting relief efforts from the Pakistani floods versus the Haitian earthquake based on differences tied to ethnicity. To illustrate using an extreme example, if we make a very strong assumption that only donors of Pakistani descent donated to charities providing relief for the floods and those donors were only located in Quebec we might observe greater giving in Quebec for both Haiti and Pakistan and attribute this increased giving to the tax incentives given for Haiti. Based on the 2006 census, the size of the Pakistani population in Canada is approximately the same size of the Haitian population in Canada, less than 0.5 percent of the Canadian population. The bulk of immigrants from Pakistan reside in Ontario (~91,000), followed by Quebec (~12,000) and Alberta (~11,000). If there was a greater reaction in terms of tax receipted giving in Ontario for Pakistan than for Haiti, then we would observe greater overall giving in Ontario for 2010 and our failing to account for this would mean that our estimates would understate the effect of the Quebec policy on donations.[7]

The data from the tax returns were produced by Statistics Canada for the geography known as the forward sortation area ("FSA") which captures the first three characters of the postal code. The FSA is a geography created by Canada Post and is designed to capture the area

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[7] Although not reported in our results, a robustness check of our analysis included shares of the population that are identified as Pakistani. Including this measure as one of the matching indicators did not change the results substantially.

that can be covered by a postal worker. 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. In Canada, almost all adults file a tax return, even those with low or no income because of 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. Moreover, all tax filers can easily report their giving as donations generate non-refundable tax credits versus a deduction off one's income as would be observed in the US. 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).[8]

Our core measures of interest are derived by using a two year sum of the number of tax filers, number of donors (tax filers reporting donations), and level of donations reported. We created three measures for use in our preferred estimation strategy (propensity score matching):

- percentage change share of tax filers reporting donations from the 2007/08 to the 2009/10 periods (extensive margin) ["change in share donors"];

- percentage change in the average donation per donor from the 2007/08 to the 2009/10 periods (intensive margin) ["change in donations by donors"];

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[8] 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.

- and the percentage change in the average donation per tax filer from the 2007/08 to the 2009/10 periods ["change in donations by tax filers"].

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. 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.

Similarly we might want to consider major disasters or events in our control period 2007 and 2008. Again we refer to the description of the events for which the Canadian Red Cross issued appeals that is provided in Appendix Table 1. 2008 is touted as a year of substantial disasters and there was no significant disaster in 2007. In 2008, two notable disasters included an earthquake in China (death toll of 88,000) and a cyclone in Myanmar (death toll 138,000). As discussed further below, the existence of these events provides further support for using a propensity matching estimation technique to allow us to match neighborhoods based on demographic characteristics.

Threats to Measuring Effect of Tax Policy

A natural starting point in the analysis would be to compare our core measures for Quebec and the rest of Canada using a basic difference in differences strategy. One could extend the difference in difference strategy using an OLS framework to control for factors that might affect the propensity to give. The regression results, available from the authors, support the summary statistics differences in means as discussed below.

A core threat to the estimation is that characteristics of the neighborhoods may not be independent and the propensity to support Haiti relief efforts could be tied to the demographic composition of the neighborhoods. Quebec residents differ from residents in the rest of Canada in that the residents of Quebec tend to be primarily French speaking, similar to Haiti citizens. Quebec and Haiti were two of the earliest French colonies in the Americas and therefore Quebec shares a greater cultural proximity to Haiti relative to the other provinces of Canada. In addition, Haitian citizens that immigrate to Canada have a greater likelihood of residing in Quebec, with 90% of Canadians with Haitian ethnicity living in Quebec in 2001 (Government of Canada (2007)). If French-speaking Canadians and/or Haitian immigrants were more likely to donate to the Haiti earthquake relief effort then we might be overstating the effect of the Quebec tax incentive policy on giving. What follows is 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.

We draw from a variety of data sources and arguments to justify our belief that support for Haiti relief efforts was widespread and not limited to French Canadians. First, there is support for the notion that given the geographic location and economic state of Haiti, giving to support the relief efforts was widespread. Canada was not the only country that gave incentives for giving to the Haiti relief efforts. For example, the United States also engaged in promoting substantial support for relief efforts despite a not as large French population in the US.

Second, relying on data from the charity tax returns filed with the Canadian Revenue Agency, we can show that giving across Canada was widespread and increased around the time of the earthquake. In Table 1, we report the levels of tax receipted giving for charities that self-

identified as providing services in Haiti for at least one year between 2009 and 2012.[9] In some

instances a charity reported providing services in Haiti for all years; in other instances a charity

reported providing services for some but not all years. In Table 1 we group the charities based

on if they are a national organization or a local organization/chapter and whether the charity's

address is in Quebec or a province other than Quebec. For each year and grouping we report the

number of charities, the share of charities reporting activities in Haiti in that year and 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. Note that for any given charity, only a portion of their donations

may be used in Haiti. The charity information return does not allow us to isolate the donations

that were given specifically to Haiti. Many charities may provide disaster relief to other

countries, as would be expected by the national organizations such as Canadian Red Cross, Care,

and UNICEF.

Across all groupings of charities, there is an increased presence of charities providing

services in Haiti in 2010 and 2011. In Panel A, we report statistics for national organizations.

There are a total of 186 national organizations that report they provide services in Haiti. Of these

24% are located in Quebec. The bulk of the tax receipted gifts to these charities were to the

organizations located outside of Quebec. For the national organizations located in Quebec, there

is no discernable difference in overall tax receipted giving in 2010/2011 compare to the other

years. For the national organizations located outside of Quebec, there is a substantial increase in

tax receipted giving in 2010 compared to the other years.

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[9] The actual physical location of the charity is confidential and is not released by the CRA, but the data
set 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.

In Panel B of Table 1, we report statistics for local organizations and local chapters of national organizations that report providing services in Haiti. Of the 503 local organizations, 26% are located in Quebec. We observe for both geographies 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.[10]

Third, we examined data from the results of a survey of donors to a Canadian based online giving portal conducted in 2010 by the Public Economics Data Analysis Laboratory at McMaster University.[11] The giving portal is one that allows donors from across Canada to donate to any registered Canadian charity. The survey randomly sampled 170,354 donors and had a response rate of 10%. The response rate by Quebec residents was slightly lower at 8% and these donors represented 7% of the respondents. Most of the respondents resided in Ontario (55%). The survey was conducted in several batches from March to June in 2010, just after the Haiti earthquake. 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% of 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 online

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[10] 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

[11] While it is not clear how representative of the entire population of tax filers our survey respondents are, these data provide some evidence that donors from all across Canada responded to the Haiti earthquake.

giving donors and not necessarily of all tax filers nor of non-donors, the results from this survey is suggestive that of overall support for the relief efforts and a difference in the awareness of the Quebec incentive.

Estimation Strategy

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

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

Where $D_{i,t}$ is one of our three measures of the percentage change in donation activity in FSA i, in year t. $X_{i,t}$ is a vector of control variables that determine donations; α_i are FSA fixed effects; 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.

As there may be differences in the reaction to the Haiti earthquake by tax filers in these two regions due to cultural proximity, despite evidence that all of Canada supported the relief efforts, our primary analysis relies on a propensity score matching method. The advantage to

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this methodology is that we can match Quebec neighborhoods with neighborhoods outside of Quebec based on a set of observable characteristics ("matching measures"). 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:

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

We wish to estimate the function $g(X_{i,t})$ which is the probability of being treated for province 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. When engaging in a matching technique it is important not to try to be exhaustive in the employment of measures to match, otherwise the set of neighborhoods that can be matched will become very limited. We employ two groups of matching measures. The first group pertains to the income and housing prices of the neighborhoods, factors that likely would make a resident more or less sensitive to the tax credits. We use four measures: the average household income, the average value of a house, the 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.[12] 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 French. Thus, we will be matching neighborhoods in Quebec with neighborhoods outside of Quebec based on characteristics that might be tied to having or not having a closer affinity to Haiti.

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[12] 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.

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

assumptions:

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

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

These are the "unconfoundedness" (A1) and "overlap" (A2) assumptions as found in Imbens and

Wooldridge (2009). We believe that these assumptions are reasonable in this context for two

reasons. First, all FSAs in the rest of Canada did respond to the Haiti earthquake through the

federal government's matching grant program. This demonstrates that all FSAs were likely to be

influenced policies designed to incentivize 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. In 2005, after the December 2005 Indian Ocean Tsunami, the

federal government and several provinces (Quebec, New Brunswick, and Ontario) extended the

window for reporting eligible gifts made in early 2006 on the 2005 tax return.[13] 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 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 at the same time that Quebec did.

Another aspect for the propensity matching methodology is to define a trim level, which

defines the quality of matches of one neighborhood to another. One of our concerns is with

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[13] 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).

matching the many neighborhoods in Quebec with a high proportion of the population whose language spoken at home is French. If we do not observe similar neighborhoods outside of Quebec, then our matching estimator could be weakened. Given the linguistic similarities between Quebec and Haiti, as raised above, if there is simply a greater likelihood of donating to the relief effort because of home language then we would overstate the effect of the tax incentive on giving. We therefore adopt three trim levels. The effects of these different trims for matching Quebec neighborhoods is illustrated in Figure 2. For this figure, we group the neighborhoods in deciles based solely on the share of the population whose home language is French. Over half of the 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 (.0001-.9999), most of the neighborhoods are matched. Moving to a narrower ("medium") trim method (.05-.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 high proportion of French speaking individuals. Finally, moving the narrowest trim ("high") (.1 - .9), as suggested by Imbens and Wooldridge (2007), we lose most of the neighborhoods where French is the dominant language spoken at home. Thus, at our high trim, we are capturing mostly the behavior of non-French speakers in our analysis. Using these trim levels ensures that our overlap assumption (A2) is met.

V.   Analysis

Summary Statistics

Table 2 reports the summary statistics for our four years of data on tax filings. In panel A we report the average and standard deviation per neighborhood for those in Quebec (columns 1-4)

and for the rest of Canada (columns 5-8). Starting first with the number of tax filers, the number

of filers ranges from 12,350 to 12,819 in Quebec with slightly high numbers of filers in the rest

of Canada (13,374 to 13,919) and there is slightly more variation in the sizes of the

neighborhoods in the rest of Canada than in Quebec. Given the neighborhoods for the rest of

Canada include both the most and least populated provinces, this is not too surprising. There are

slightly fewer tax-filers reporting donations in Quebec than in the rest of Canada and the average

donation per neighborhood 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.

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 2008 to 2010, reported donations in

Quebec are around $1.8 million and are relatively constant. In the rest of Canada, the average

reported donation per neighborhood falls by $1.5 million, from $6.2 million in 2007 to $5.7

million in 2008, continues to fall further to $5.4 million in 2009 and then rises slightly in 2010 to

$5.6 million.

In panel B of Table 2, we report the change in our key measures of giving which is

calculated as the two year difference between 2009/10 and 2007/08 periods divided by the

2007/08 levels. The most striking difference between Quebec and the rest of Canada is in the

change in tax filers reporting donations. The change in Quebec is relatively flat whereas there is

a four percentage point drop for the rest of Canada. There is a 1 percent difference between

Quebec (higher) and the rest of Canada (lower) in the donations reported per donor. Thus the big

difference in donations per tax filer appears to be driven more by the difference in the share of tax filers reporting donations than in the level of donations.

Difference in Difference Estimates

Table 3 reports the statistics for the basic difference in difference. Across the neighborhoods in Quebec, there is no change between the pre and post Haiti periods whereas in the rest of Canada there is a drop in the average share of tax filers reporting donations of 1% or a change of -4.2%. Conditioning on an individual donating, the average donation in Quebec fell 2.2% or an average of $14 versus a fall of $89 or 5.7% in the rest of Canada. We also observe a sizable difference in the average donation per tax filer.

Propensity Score Matching

As discussed above, Quebec announcing a policy to recognize the donation on the 2009 tax return and the other provinces not making such an announcement is likely not exogenous in that the government likely introduced the policy because they believed that it would resonate with their citizens. In this case the treatment is not randomly assigned. This leads us to use a propensity matching method, as discussed above. 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 the statistics for all Quebec and rest of Canada neighborhoods in our sample. In columns 3 and 4 we report the statistics for those neighborhoods included in the analysis when we use a high trim (.1/.9) in the matching algorithm. In panel A we report the statistics for the measures that are used for 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 there are fewer households with income greater than $100,000

but that the share of households identified as low income is only slightly greater in Quebec. In

panel B, we report the summary statistics for measures capturing ethnicity and language. For the

overall sample the average neighborhood in Quebec has 1.4% Haitians compared to less than

0.10% and the rest of Canada. In the trimmed sample, these averages go up for the rest of

Canada and fall for the Quebec neighborhoods. With respect to home language, not too

surprisingly the share of the population whose home language is French is substantially higher in

Quebec than the average share for neighborhoods and the rest of Canada.

In columns 3 and 4, we report the summary statistics for the neighborhoods if we use the

medium trim (.05-.95). The neighborhoods in Quebec that can be matched falls from 370 to 151.

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. In columns 5 and 6, we report the

summary statistics for the neighborhoods if we use a high trim (.1/.9). The number of Quebec

neighborhoods that can be matched falls to 111 and the averages of the measures for the Quebec

and rest of Canada neighborhoods are much closer.

In columns 7 and 8 of Table 4, we report the coefficients from the program estimates for

the first stage results of the matching. Including only the measures to reflect income and

dwelling values, all coefficients are statistically significant. When we include the additional

measures to reflect ethnicity, and language spoken at home, all of the coefficients are significant

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 reports the results from the propensity score matching.[14] In panel A of Table 5, we report the results from the analysis that compares 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 for matching those measures that reflect income and housing values. Using either the low or high trim method our results are fairly similar, most likely because the trimming does not reduce the number of neighborhoods in Quebec that are studied by a substantial number. Starting first with the dependent variable that reflects the percent change in the share of tax filers that are donors, there is approximately a 4% increase in the share of donors in Quebec relative to the rest of Canada. This suggests the policy affected the extensive margin of giving, by increasing the number of tax filers reporting charitable donations. Moving next to the intensive margin affect, the increase in donations per donor, the coefficient on the treatment effect is positive but not precisely measured. Overall, the combined effect of the two margins increased total donations in Quebec an average of 5% per neighborhood.

Moving next to column 3 of panel A, we report the results when we employ 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. This reduces the number of Quebec neighborhoods that are studied to 100. The estimated treatment effects on all three measures of giving are positive and statistically significant. These results suggest, overall,

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[14] There are many ways we could calculate the standard errors. The results are robust to the different methods. We report the errors 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.

that there is a 4.5% increase in the share of tax filers reporting donations, a 7% increase in donations reported by donors, and an 11% increase in donations across all tax filers.

The results of our preferred specification are reported in columns 4 to 6 of panel A. For these specifications the neighborhoods are matched using neighborhood income and housing values as well as the measures for ethnicity and language spoken at home. Starting first with column 4, we use a low trim to match neighborhoods, allowing us to match 340 Quebec neighborhoods. For all three measures of giving, we observe a statistically significant increase that is 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 (262 for the medium trim and 111 for the high trim) but the results are similar to those reported for the low trim. On average, there is approximately a 3.5% increase in the share of tax filers reporting donations (extensive margin), between 8 and 10% increase in reported donations by donors (intensive margin) and a 10-13% increase in the overall reported donations by all tax filers.

Focusing on our third dependent variable, change in giving by all tax filers in a neighborhood, our analysis suggests an increase in giving of 10-14% is quite sizable. Reported giving per neighborhood ranges from $1.8 million in Quebec to ~$5.5 million in the rest of Canada during this period. Thus an ~13% increase in donations if the policy changed to allow taxpayers to report donations made closer to the time of filing would potentially increase giving by $715,000 per neighborhood in the rest of Canada and closer to $250,000 per neighborhood in Quebec.

Robustness and Extensions

To assess the robustness of our analysis, we explore two different periods of giving. The results of these two different periods are reported in panel B of Table 5. In columns 1 and 2 we use the period 2004 to 2007, using as a control period 2004/05. We chose this period to act as a placebo test of our key results. With respect to natural disasters, in 2004/05 the biggest disaster was the Indian Ocean Tsunami (December 2004) and a subsequent earthquake in the same region (March 2005) affecting Asia. The Canadian government and the provinces of Quebec, Ontario, and New Brunswick permitted donors to the Tsunami relief efforts to report their donations on their 2004 tax return. In addition, during this period there was also some damage to Haiti during this period from flooding and hurricanes as is somewhat typical for that area. In 2006 and 2007 there were various earthquakes and floods that affected various countries/continents (Africa, Peru, China, Mexico). We expect these events to *not* have a discernible differential effect between Quebec and the rest of Canada neighborhoods with respect to reported tax receipted giving. Indeed, using either a medium or high trim to match Quebec neighborhoods with neighborhoods in the rest of Canada, we do not discern any statistically significant difference for our three measures of giving.[15]

In Panel B of Table 5 and columns 3 and 4, we explore the period 2005 to 2008, using as a control the 2005/06 period and as a treatment the 2007/08 period. Again, there were hurricanes affecting Haiti in 2008, various conflicts in Russia, and weather related events affecting China and Myanmar. Using a high trim, we do not observe any discernable differences in our three measures. Under a medium trim, there is a statistically significant increase in the intensive margin with respect to the percent change in donations reported by donors and the percent change in donations reported by tax filers. This could possibly be the result of heterogeneity in

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[15] For this specification, we use the values of the measures as reported on the 2006 Census for the neighborhoods.

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 any of the giving measures 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 for the Haiti relief effort but excludes donations in the rest of Canada for this disaster. Not too surprisingly, under both a medium and high trim, there is a significant increase in the percentage change in donations on both the extensive and intensive margins. Relying on this period, however, would result in over stating the effect of the tax incentives given to Quebec residents as a result of the Haiti earthquake.

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. 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 1.3 to 1.4 percentage points. We, however, do not measure a statistically significant effect on either the average increase in reported donations by donors or overall for all tax filers.

VI. Discussion and Summary

Do tax filers respond to announcements about the availability of tax credits for charitable giving around the time of the filing of one's tax return? Our analysis suggests 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 potentially nudged tax filers to give as well as increased awareness about the benefits of reporting donations on one's tax return.

Studying charitable giving in Canada is ideal given 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 versus the marginal tax rate of the filer. Because the 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 compare this information to that reported on tax filings for the period 2007 and 2008. Our preferred estimation strategy matches neighborhoods in Quebec with neighborhoods located

outside of Quebec using measures that reflect income, house value, ethnicity, and the language spoken at home. Using the most restrictive matching method, a trimming of .10 and .90, we study neighborhoods where most of the residents do not speak French at home, potentially removing biases that might be associated with the fact that Haiti's dominant language is French. We find that giving increased both on an extensive and intensive margin. On average, the percentage change in the share of tax filers reporting donations increased by 3-4 percentage points and the percentage change in the donations reported by donors increased by 8-10 percentage points. This resulted in an observed increase in the percentage change in donations reported by all tax filers of 10-13 percentage points.

Our analysis lends credibility to the potential effects from moving the period for reporting a charitable donation on one's tax return to one that coincides with the filing of the return. Given in most countries giving has 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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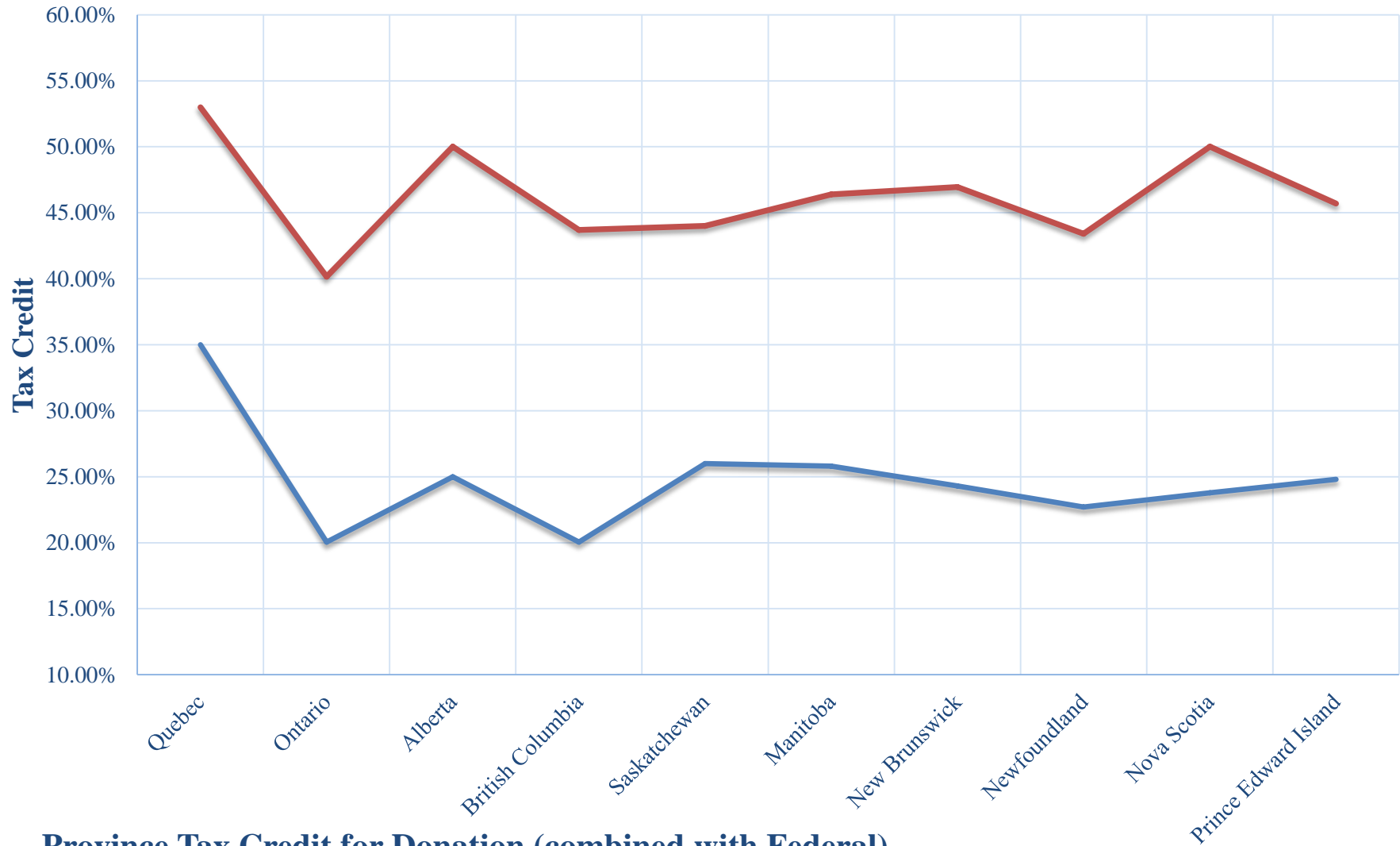
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Appendix Table 1: Special Charity Appeals by the Canadian Red Cross to Illustrate Disasters and Events of Interest to Canadians

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 Columbia 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 862,000 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/destroyed.
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

Figure 1: Comparison of Tax Credits For Giving

Province Tax Credit for Donation (combined with Federal)

—— Donations <=$200 —— Donations After 1st $200

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.

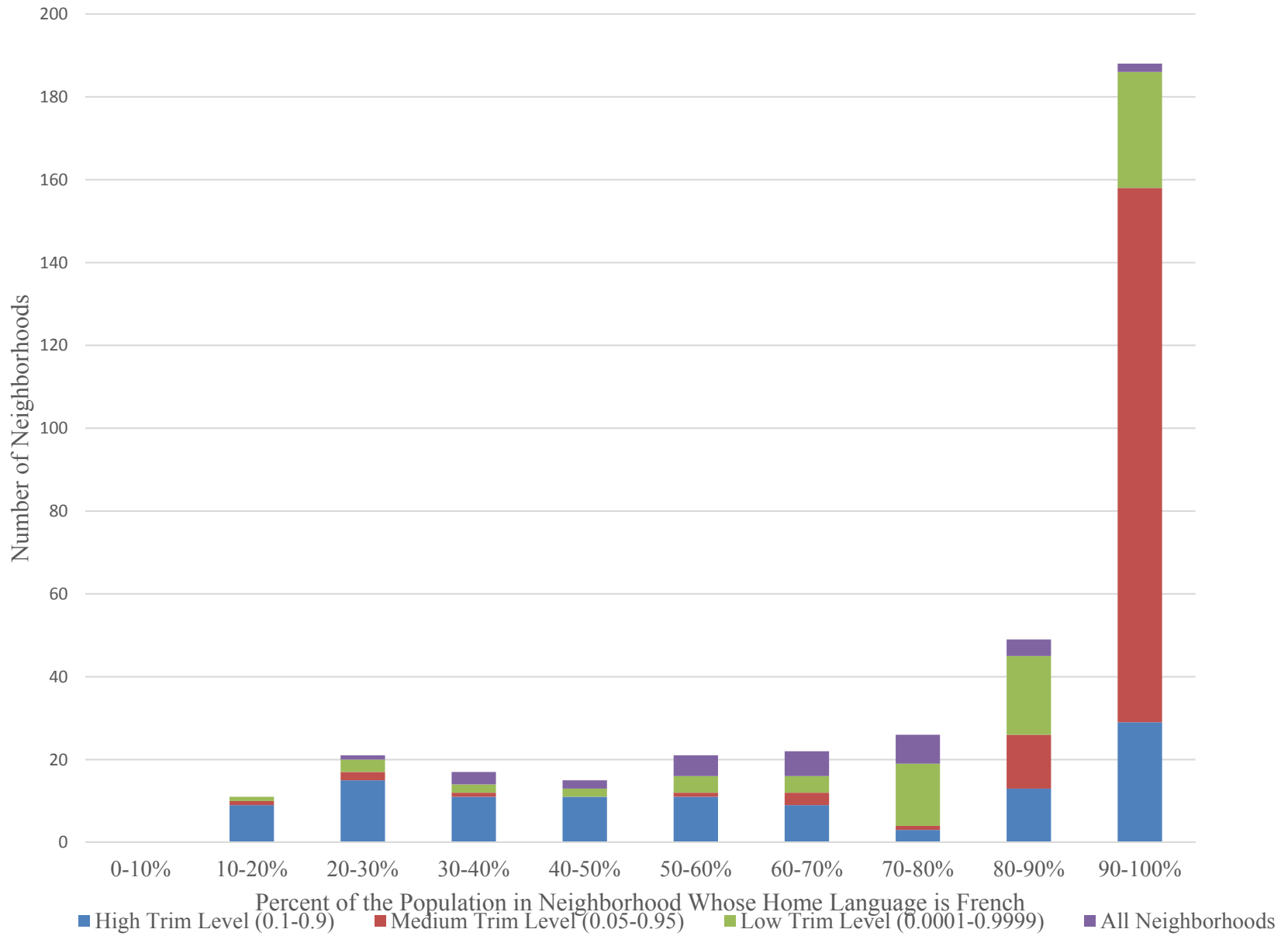Figure 2: Neighborhoods in Quebec by Percent French

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

Panel A: Annual Statistics	Quebec: 370 Neighborhoods				Rest of Canada: 1036 Neighborhoods			
	2007	2008	2009	2010	2007	2008	2009	2010
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Average Number of Tax Filers per Neighborhood	12,350	12,528	12,662	12,819	13,374	13,597	13,807	13,919
(standard deviation)	(7,428)	(7,485)	(7,533)	(7,585)	(10,171)	(10,367)	(10,585)	(10,704)
Average Number of Donors per Neighborhood	2,765	2,801	2,817	2,880	3,350	3,424	3,295	3,372
(standard deviation)	(1,729)	(1,738)	(1,740)	(1,771)	(2,551)	(2,615)	(2,528)	(2,591)
Average Donations ($1000s) per Neighborhood	$1,936	$1,791	$1,782	$1,873	$6,218	$5,669	$5,350	$5,612
(standard deviation)	(3,221)	(2,873)	(2,967)	(3,118)	(7,304)	(6,457)	(6,211)	(6,298)

Panel B: Percent Change 2009/10 v. 2007/08	Overall	Quebec	Rest of Canada
% Change in Share of Donors	-3.0%	0.2%	-4.1%
(standard deviation)	(4.2)	(3.9)	(3.7)
% Change in Donations by Donors	-3.9%	-3.2%	-4.2%
(standard deviation)	(16.6)	(14.2)	(17.4)
% Change in Donations by Taxfilers	-6.8%	-3.0%	-8.1%
(standard deviation)	(16.7)	(14.6)	(17.2)

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. The % change is calculated as the sum of the information for 2009 and 2010 less the sum of the information for 2007 and 2008 divided by the sum of the information for 2007 and 2008. All dollars are in $2010.

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

Measure of Giving	Neighbourhoods	Quebec 370		Rest of Canada 1036		Quebec - Rest of Canada
		Mean	Standard Deviation	Mean	Standard Deviation	
		(1)	(2)	(3)	(4)	(5)
Share of Taxfilers Donating	Pre-Haiti (2007-08)	22.8%	(5.27)	25.3%	(5.45)	-2.5%
	Post-Haiti (2009-10)	22.8%	(5.11)	24.3%	(5.34)	-1.5%
	Percentage Change	**0.0%**		**-4.2%**		**4.2%**
Average Donation per Donor	Pre-Haiti (2007-08)	$643.9	(914.4)	$1,665.0	(1,325.6)	-$1,021.1
	Post-Haiti (2009-10)	$629.9	(987.7)	$1,575.6	(1,220.6)	-$945.7
	Percentage Change	**-2.2%**		**-5.7%**		**3.5%**
Average Donation per Tax filer	Pre-Haiti (2007-08)	$161.8	(317.2)	$450.5	(487.7)	-$8,160.7
	Post-Haiti (2009-10)	$158.2	(332.7)	$408.5	(422.6)	-$7,306.7
	Percentage Change	**-2.3%**		**-10.3%**		**8.0%**

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	370	1036	262	104	111	70		
Panel A: Group A Matching Measures								
Average Household Income	$38,293	$43,099	$38,473	$54,136	$41,910	$51,159	**0.035**	-0.008
	(11,335)	(14,336)	(11,822)	(30,550)	(15,656)	(30,315)	(0.008)	(0.011)
Average Value of Dwellings	$273,407	$375,517	$261,967	$541,874	$330,808	$516,687	**-0.002**	**0.001**
	(124,723)	(233,553)	(135,152)	(515,769)	(168,312)	(559,071)	(0.0003)	(0.000)
Share of Households with Income > $100,000	4.06%	6.13%	3.99%	9.44%	5.44%	8.34%	**-0.089**	**0.067**
	(3.93)	(4.97)	(4.00)	(9.28)	(5.18)	(9.21)	(0.023)	(0.033)
Share of Households with Low Income	15.71%	14.11%	15.02%	15.20%	15.77%	15.52%	**0.019**	**0.020**
	(8.43)	(6.84)	(8.07)	(7.17)	(9.64)	(7.19)	(0.006)	(0.011)
Panel B: Group B Matching Measures								
Share of Population with Ethnicity Identified as Haitian	1.36%	0.06%	0.41%	0.25%	0.64%	0.32%		**0.766**
	(2.77)	(0.33)	(0.66)	(0.71)	(0.76)	(0.81)		(0.088)
Share of Population with Home Language as French	77.72%	6.20%	79.02%	40.12%	60.29%	43.51%		**0.047**
	(25.04)	(16.60)	(26.59)	(37.03)	(28.81)	(34.79)		(0.027)

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	1405	1262	151	1376	366	181
Number of Quebec Neighborhoods	370	364	100	340	262	111
Dependent Variable						
% Change in Share of Donors	4.05%	4.38%	4.48%	3.54%	3.12%	3.61%
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
% Change in Donations by Donors	1.39%	0.92%	6.97%	9.13%	7.91%	9.98%
	(0.244)	(0.334)	(0.022)	(0.035)	(0.103)	(0.009)
%Change in Donations by Tax Filers	5.23%	5.00%	10.77%	12.24%	10.39%	12.96%
	(0.000)	(0.000)	(0.001)	(0.012)	(0.035)	(0.001)

Panel B: Robustness Checks: Alternative Periods Before Haiti Earthquake

Sample Description	Control: 2004/05; Treatment: 2006/07		Control: 2005/06; Treatment 2007/08	
Trimming Level	Medium	High	Medium	High
	(1)	(2)	(3)	(4)
Number of Neighborhoods	348	197	351	198
Number of Quebec Neighborhoods	171	121	178	122
Dependent Variable				
% Change in Share of Donors	-0.23%	-0.17%	-0.24%	-0.80%
	(0.632)	(0.733)	(0.696)	(0.326)
% Change in Donations by Donors	-1.38%	-4.62%	6.64%	3.30%
	(0.688)	(0.257)	(0.016)	(0.380)
% Change in Donations by Tax Filers	-2.00%	-4.87%	5.78%	1.64%
	(0.568)	(0.233)	(0.053)	(0.690)

Panel C: Extensions: Periods Around Haiti Earthquake

Sample Description	Period Including 1st Tax Year That Would include Quebec Contributions to Haiti Control: 2006/07; Treatment: 2008/09		Period Subsequent to Haiti as Treatment Control: 2009/10; Treatment 2011/12	
Trimming Level	Medium	High	Medium	High
	(1)	(2)	(3)	(4)
Number of Neighborhoods	352	198	399	210
Number of Quebec Neighborhoods	179	122	245	136
Dependent Variable				
% Change in Share of Donors	1.81%	1.94%	1.42%	1.29%
	(0.000)	(0.001)	(0.019)	(0.064)
% Change in Donations by Donors	11.63%	8.51%	-0.94%	-0.37%
	(0.000)	(0.001)	(0.748)	(0.921)
% Change in Donations by Tax Filers	12.92%	10.05%	0.41%	0.83%
	(0.000)	(0.000)	(0.889)	(0.815)

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; period around the December 2004 Tsunami is 2002/03 as the control years and 2004/05 the treatment years; period when no major natural disaster is 1997/98 as control period and 1999/2000 as treatment period.