Volunteer Activity and Retirement

by

Yan Zhang

(2918597)

Major Paper presented to the

Department of Economics of the University of Ottawa

in partial fulfilment of the requirements of the M.A. Degree

Supervisor: Professor David Gray

ECO 7997

Ottawa, Ontario

January 2004

TABLE OF CONTENTS

Page

Abstract iv

I. INTRODUCTION AND THEORETICAL FRAMEWORK 1

II. DATA AND EMPIRICAL METHODOLOGY 5

III. TABULAR RESULTS: PROPORTION OF ENGAGING IN VOLUNTEER ACTIVITY 11
- III.1 Comparisons between Persons Age 15-49 and 50 and Over 11
- III.2 Non-retirement Variables 13
- III.3 Retirement Status Variables 18

IV. TABULAR RESULTS: TIME SPENT BY VOLUNTEERS 23
- IV.1 Comparison between Persons Age 15-49 and 50 and Over 23
- IV.2 Comparison between Quantity Supplied of Volunteer Services and Probability of Volunteer Participation 25

V. TABULAR RESULTS: TIME SPENT BY ALL PERSONS 28

VI SUMMARY OF TABULAR RESULTS 29

VII ECONOMETRIC RESULTS 31
- VII.1 Regression Estimates of Probability of Volunteer Participation 33
- VII.2 Regression Estimates of Conditional Hours Spent on Volunteer Activity 37
- VII.3 Regression Estimates of Unconditional Hours Spent on Volunteer Activity 40

VIII. SUMMARY AND CONCLUSIONS 43

REFERENCES 48

APPENDIX 1: CROSS-TABULATIONS 51
- TABLE 1A - Proportion of persons who spent some time on volunteer activity 51
- TABLE 1B - Time spent on Volunteer on volunteer activity by those who engaged in volunteer activity (Hours per 7 day week) 53
- TABLE 1C - Time spent on Volunteer on volunteer activity by all persons (Hours per 7 day week) 55

APPENDIX 2: ECONOMETRIC TABLES 57
- TABLE 2A-1: Impact of individual characteristics on Probability of engaging in Volunteer Activity, Persons Age 50 and over (LPM analysis) 57

TABLE 2A-2: Impact of individual characteristics on Probability of engaging in Volunteer Activity, Persons Age 50 and over (Logit) 59
TABLE 2A-3: Impact of individual characteristics on Probability of engaging in Volunteer Activity, Persons Age 50 and over (Probit) 61
TABLE 2B: Impact of individual characteristics on Conditional Hours per Week of Volunteer Activity, Persons Age 50 and over (OLS) 63
TABLE 2C: Impact of individual characteristics on Unconditional Hours per Week of Volunteer Activity, Persons Age 50 and over (OLS) 65
TABLE 2D: Impact of individual characteristics on Unconditional Hours per Week of Volunteer Activity, Persons Age 50 and over (Tobit) 67

ABSTRACT.

Volunteering is a substantial input into the Canadian economy. Governments are seeking to cut spending on social and other services, while an aging population generate a growing need for a strong support structure. Older people have not only created a growing need for volunteer services, but have also increased the potential supply of volunteer labour, especially for those who enjoy good health and increasing leisure time. Volunteer activity can facilitate their transition from working to retirement. Noticing this important role that they play in volunteer issues, this study focuses on volunteer activity among older people and retired persons.

What determines people's choice of whether to volunteer or not and how much time to volunteer? What can be done by policy intervention to efficiently encourage the potential volunteer labour force composed of old persons to meet the increased demand of volunteer activities? This study addresses the above questions with the use of a 1994 micro data set, and examines the determinants of volunteer activity in general and the relationship between volunteer activity and retirement in particular. Three measures of volunteer activity are used as dependent variables: the probability of volunteer participation; the hours spent by existing volunteers (conditional on positive hours); and the hours spent by all persons (unconditional, including both volunteers and non-volunteers).

This paper uses both simple cross tabulation methodology and more sophisticated econometric methods for analysis. Conclusions are made based on comparisons of the results for three kinds of dependent variables generated by different methods. It indicates that the probability of older people to do volunteer activities varies significantly across different

characteristics, but the time contributed by existing volunteers is relatively constant. This suggests that in order to increase volunteer supply, more attention should be paid to attracting more potential volunteers into this labour market rather than trying to increase the amount of volunteering hours from existing volunteers. Government policy can be carried out through eliminating barriers of access to volunteer participation, for instance, through specific mechanisms of encouraging networking and providing relative information to demanders and potential suppliers of volunteer activity.

I. INTRODUCTION AND THEORETICAL FRAMEWORK

Volunteers make an important contribution to the economy and to Canadian society. They volunteer time to churches, charities, cultural organizations, hospitals, or colleges, raising funds, or helping those institutions carry out their respective functions. Many of these activities are very similar to services that are provided by governments. It is increasingly treated as a third sector of economy that supplements the government sector and the private sector[1]. In this sense, volunteer services may substitute or complement government programs. For example, volunteers may counsel the sick and the elderly at a publicly-funded rest home.

Because of fiscal and regulatory restraints, governments are seeking to cut spending on social and other services that provide assistance to the disadvantaged, such as health care, education, and other social programs. On the other hand, the proportion of aging population is increasing over time in Canada. In such an environment, one would expect a greater demand for volunteer services as a complement to government programs[2].

Meanwhile, the potential supply of volunteer labour is also increasing. For younger people, volunteer activities can help them to transit from school to work, and from unemployment to employment through résumé building and establishing networks. The commonly increasing non-standard employment in the initial stages of their careers, such as part-time work and contract work, may be conducive to an increasing supply of volunteer labour from the young adults.

For older people, volunteer activities can help them to transit from working to

---

[1] Burton a weisbrod (1987), "Toward a Theory of the Voluntary Non-Profit Sector in a Three-Sector Economy."

[2] The research of Day and Devlin (1996) found that the cutback of government spending on social services or education are likely to increase the number of volunteers from those who may provide certain non-essential services which is previous provided by professionals.

retirement[3]. The ageing population, together with increased life expectancy and earlier retirement, indicate both a larger portion of the population that is retired and a longer period of transition, particularly for the professional and white-collar workers who have relatively high intrinsic job satisfaction but relatively low physical demands. This will also increase the supply of volunteer labour from the older people, especially those who enjoy good health and increasing leisure time. In this sense, older people have not only created a growing need for volunteer services, but also increased the potential supply of volunteer labour to meet it.

What can be accomplished by policy intervention to efficiently encourage the potential volunteer labour force from old persons to meet the increased demand of volunteer activities? To answer this question, a research of the causal determinants of volunteer activity is required. This study focuses on volunteer activity among older people.

Although there are many relative economic literatures on voluntary activity, most of them restrict their attention to contributions of money rather than time[4]. In fact, relatively few studies have investigated the determinants of volunteer work using Canadian data[5]. There is one research report (Jones, 1999) and three unpublished papers (Gunderson 2000, 2001, 2003) dealing with volunteer activities among older people.

The empirical analysis that follows makes use of the 1994 General Social Survey – cycle9 (GSS9) conducted by Statistics Canada. In it, I examine the determinants of volunteer activity in

---

[3] Studies that emphasize that transition include Cliff (1991), Doeringer (1990), Elder and Pavalko (1993), Gower (1995), Hayward and Hardy (1985), Honig (1985), Honig and Hanoch (1985), Marshall (1995), McGoldrick and Cooper (1998), Monette (1996), Mutchler, Burr, Pienta and Massagli (1997), Paracchi and Welch (1994), Ruhm (1990), Schell, Lebrasseur and Renaud (1989).

[4] Most studies focus on private contributions of money, for instance, Abrams and Schmitz (1984), Kingma (1989), Roberts (1984), and Schiff (1985).

[5] Gunderson (2000, 2003), Day and Devlin (1996),Vaillancourt(1994), Vaillancourt and Payette(1986) uses Canadian data.

general, and the relationship between volunteer activity and retirement in particular, following similar estimating strategies as Gunderson (2001). Although the same data set was used as Gunderson (2001), this paper treated missing values more carefully so that more useful information can be included, and did more sophisticated econometric analysis than Gunderson. Three measures of volunteer activity are used as dependent variables: the probability of volunteer participation; the hours of volunteer activity for existing volunteers (conditional on positive hours offered); and the hours of volunteer activity for all persons (unconditional, including both volunteers and non-volunteers).

Two dimensions of economic theory are used to orient this analysis: the time allocation/household production function model, and the human capital model, as Gunderson (2000, 2001, and 2003), Day and Devlin (1996), Menchik and Weisbrod (1987), and Mueller (1975) have appealed to both of these two approaches.

Many people volunteer because being asked to do so in the case of "conscience good", as suggested by Freeman (1996). People also accept a request to volunteer because of social pressures, as outlined in Ben-Porath (1980). These are two important demand side factors.

On the supply side, according to the time allocation function, individuals will allocate time to leisure activities, workplace, or productive activities in the household (non-labour-market work, including volunteer activity) until the marginal returns of volunteer activity equal that from other types of time use. People might decide to engage in volunteer activity because of altruism (i.e. to help a cause). They also might be motivated by investment in human capital to accumulate productive skills through "on-the-job" training that is provided by the volunteer organization, and to aid in job search through networking. Or they might volunteer because of impure altruism –

"people derive some utility from the act of giving"[6].

This theoretical framework indicates that cost-benefit analysis can be linked to the relationship between individual characteristics and his/her choice of whether or not to volunteer and choice of how much volunteer activity to provide. Thus it can be linked to empirical analysis.

Household wealth or non-labour income of the potential volunteers is expected to have a positive effect on volunteer labour supply, ceteris paribus. This is known as the income effect in labour economics, based on the assumption that charitable activity is a "normal" good.

On the other hand, wage of the potential volunteers is expected to have a negative effect on volunteer labour supply, since higher wages mean higher opportunity cost, ceteris paribus. This is known as the substitution effect in labour economics. However, higher wage also implies higher wealth, holding working hours constant, and thus it will increase volunteer labour supply through the income effect. Since individuals cannot volunteer more time at the same time that they are working and earning higher wage, the income effect is subdued as no wage income would occur when they volunteer. Thus we might expect a negative effect of wage on volunteer activity through substitution effect dominating income effect.

From the demand side, the value of volunteer time may also be high for individuals with high wage since a high wage is correlated with high human capital and thus high productivity for volunteer organizations. So, the high-productivity volunteers are able to volunteer fewer hours than the low productivity ones while they contribute higher value of such activity[7]. High wages might therefore make them more likely to be asked to do volunteer.

---

[6] James Andreoni, "Giving with Impure Altruism: Applications to Charity and Ricardian Equivalence", Journal of Political Economy, 1989.

[7] Freeman (1997) found that volunteers with high human capital/opportunity cost of time contribute a higher value to charities than others when individual differences overwhelm substitutions effects.

Volunteer activities are also possibly jointly-determined by all family members. Having family members who require them spending time at home (e.g., elderly parents, sick spouse) might restrict individuals' time availability and thus reduce their volunteer activity in terms of time. On the other hand, Vaillancourt (1994) indicates that individuals whose family or career is likely to benefit are more likely to do volunteer work. To the extent that this applies, individuals who have family members that need volunteer service are more likely to volunteer.

In this paper, both simple tabulation analysis and econometric methods are applied. In contrast with Gunderson's study, this paper also employs the Probit and the Tobit models to identify the relationship between determining various generic factors and volunteer activities. After a comparison of the results generated by different methods and the results pertaining on three kinds of dependent variables (i.e. the probability of volunteer participation, the conditional hours spent by volunteers, and the unconditional hours spent by all persons), the paper concludes with a summary and a discussion of possible practice on policy issues.

II. DATA AND EMPIRICAL METHODOLOGY

The data used in this empirical analysis, which is coming from the 1994 General Social Survey – cycle9 (GSS9), were collected by Statistics Canada through Random Digit Dialling method from January to December 1994, with a small "supplementary" sample from the Labour Force Survey added to the RDD sample[8]. The sample size is 11,876 including 10,381 in the RDD

[8] GSS9 focuses on post retirement activities, hence on people who had retired relatively recently. So, if only the regular RDD sample were used, there would be too few respondents (to get reliable estimates) would be obtained from this special target group. That's why a supplementary sample is used. The supplementary sample was selected from those households that had at least one member between the ages of 54 and 74 years inclusive (the age group that was considered to correspond best to recent retirees). The data source of it is households that had recently been in the Labour Force Survey as the data source.

sample and 1,495 in the supplementary sample.

The GSS9 focuses on work and retirement activity and uses a representative RDD sample[9] of all persons 15 years of age and over (respondents are categorized into 15 5-year-age groups, from 15-17 to 80 and over[10]) in Canada, excluding residents of the Yukon and Northwest Territories and full-time residents of institutions. Thus the data is ideally suited for this analysis. Furthermore, since the data set includes detailed information on the characteristics of both volunteers and non-volunteers, we are able to examine the factors that influence the decision to volunteer separately from the determinants of the supply of volunteer hours.

The data on volunteering activity are derived from the following question:

During the past 7 days, how many hours did you spend doing volunteer activities for a non-profit organisation, a religious organisation, a charity or a community group? (Some examples include organising a special event, advocating for a cause, canvassing or fundraising, coaching or teaching, serving on a committee or board of directors).

In this question, volunteer activity only refers to *formal* activity and therefore excludes unpaid family member care and house work for others on the volunteers their own.(Duchesne, 1989)(discussed in more detail subsequently).[11]

There is another question which is asked on unpaid activities at an earlier point in the survey than the volunteer activity question. The unpaid activities refer to looking after

---

[9] Since RDD is a telephone sampling method, households without telephones were therefore excluded from the survey. However, persons living in such households represent less than 2% of the target population. Hence our results are representative of the behavior of Canadians, given the survey estimates have been weighted to include persons without telephones.

[10] In this research paper, the age category is recoded in to 12 5-year-age groups, from 15-19 years to 70 and over, to simplify the analysis.

[11] Duchesne, D. Giving Freely, Volunteers in Canada. Catalogue no. 71*535*MPE. No. 4 Ottawa: statistics Canada 1989.

children, housework, and care to seniors for members of one's own household or others (without being able to separate the two in the data)[12]. These informal unpaid activities do not correspond to traditional formal volunteer activities performing through a group or organization. Since this analysis focuses on volunteer activity, rather than informal unpaid activity, these measures are not used here.

In the GSS9 data set, hours spent on volunteer activity in the past 7-days were coded into 4 categories. These categories were recoded by the mid-point of each nonzero range: 2.5 hours for 'less than 5 hours'; 7 hours for '5 to 9 hours'; and 15 hours for '10 hours or more' (since the last category includes the smallest respondents number, only 4.2%, a higher weight was given for recode). This recoding basically assumes that the hours volunteered are distributed uniformly over the respective interval. This is the same strategy that was used by Gunderson, "Respondents in the categories 'did not know' (0.4 % of respondents) and 'not stated' (2.3% of respondents) were omitted from the analysis". Thus the total sample size valid for our analysis is 11,550, while the sub-sample size is 6,833 for the young group (age 15-49) and 4,717 for the old group (age 50 and over).

The survey is a good resource of various factors relevant to the transition to retirement, which may influence the degree of volunteer activity. The following factors are used in this paper: factors related to retirement, including retirement status, reasons for retirement[13], the nature of work for those who return to work after retirement[14]; and other

---

[12] Based on discussions with Pierre Turcotte of the General Social Survey Housing, Family and Social Statistics Division of Statistics Canada.

[13] Reasons for retirement are categorize as mandatory retirement and voluntary retirement, while the later includes health, personal choice, old enough, unemployment, family responsibilities, early retirement, technology, spouse retired, and other reasons

[14] This includes employee/self-employed, permanent/temporary, full-time/part-time/other.

factors of personal characteristics and financial status that can influence volunteer participation, including gender, age, immigrant status, educational attainment, religious attendance, health status, interest income, homeownership status, employer pension plan, industry, occupation, and province of residence.

In the data set, missing values exist in most of these explanatory variables but not necessarily for the same records. If observations with missing value for one variable are omitted, then all other useful information of those observations will also be omitted. To avoid this problem, the following strategies were used to deal with the data. As Gunderson did not mention how he treat with missing values in explanatory variables, the strategies used in this paper are possibly different from those in Gunderson (2001).

1. For the religion characteristic, those respondents in the category "not applicable" (i.e. those who don't have any religion) were treated same as those respondents in the categories "no religious attendance", basically assuming that someone who doesn't have any religion won't attend any religious activity. An "unknown" category was created for those respondents in the categories "did not know" and "not stated".

2. For the Industry characteristic, a "Not available" category was created for those respondents in the category "not applicable" (i.e. those who didn't hold a job at the time of the survey).

3. For the Occupational Prestige index, in order to treat it as a continuous variable ranged from 1 to 16, the value of those respondents in the category "not applicable" (i.e. respondents except those who held a job just before retiring, which is 59% of the sub-group

age 50 and over) was replaced with the mean of occupational variable of all included observations.

4. For all other survey questions of interest, respondents in the categories "did not know" and "not stated" were replaced with the mean of each characteristic of all included observations. For binary variables, they were replaced with the mean probability of a person to be in the relative category.

For an initial descriptive analysis, a simple univariate cross-tabulation approach is first applied. Three kinds of tabulations were used for comparison of two sub-samples: age 15 – 49, and age 50 and over. First, the proportion of persons who spent any time in volunteer activity (i.e., more than zero hours during the past 7-day) was tabulated by the various factors which may influence the degree of volunteer activity. Second, the conditional average hours spent on volunteer activity by those who did volunteer with the same characteristic are used. Third, unconditional average hours spent on volunteer activity by all persons (including both persons who spent 0 hour on volunteer activity and those who spent more than 0 hour on such activity) are calculated.

As a next step, five methods of multiple regression analysis are used by modeling the same variables as a function of many regressors in a multi-variate framework. OLS technique is applied for continuous dependent variable (i.e., conditional and unconditional hours spent on volunteer activity), involving analyses of both the hours of volunteer activity conditional upon the person engaging in some volunteer activity and the unconditional hours averaged among the entire age-50-and-over subgroup of both those who provided zero hours and those who contributed positive hours. Linear Probability model (LPM), Logit model, and Probit

model are applied for the dichotomous dependent variable (either volunteer or not) to analyze the probability of engaging in volunteer activity. The dependent variable for probability analysis takes the value one for those doing volunteer work and zero otherwise. A comparison of the results from these three methods for discrete variable is presented. Finally, Tobit model, which is a method for estimation in the presence of censored cases, is practised for the analysis of unconditional hours spent on volunteer activity in order to correct the high heteroscedasticity generated from the high proportion of the observations with no volunteer activity (about 80%). More description of Tobit model is given in section VII.3.

The similar strategy as Gunderson was used here in the presentation of the results "to focus on the simplest procedure that gives the correct picture that is backed up by the more sophisticated econometric procedures". The simpler univariate cross-tabulation approach is more obvious and thus easy to understand; however, it should be supported by the more sophisticated approaches with comparable results presented. In this analysis, the simple tabulations are treated first followed by a presentation of the OLS regression to see if similar results can be generated compared to the univariate ones. Some more complicated multi-variate estimates are applied to examine the robustness of the results that emerge from the OLS analysis. When differences occur, they are discussed. Moreover, as an extension of the econometric procedures that Gunderson didn't use, the Probit and a more elaborate censored regression analysis (the Tobit) is estimated. Differences between the results of these analysis methods will be discussed.

III. TABULAR RESULTS: PROPORTION OF ENGAGING IN VOLUNTEER

ACTIVITY

Table 1A presents the simple cross-tabulation results for the proportion of individuals who spent a positive number of hours per week on volunteer activity in the past 7 days prior to the survey according to different characteristics. Two types of characteristics are listed in the table: the retirement related factors which are specifically refer to the older group (age 50 and over), and the general factors associated with personal characteristics and financial status, which is relevant to the comparison between the older group and the younger group (age 15-49). The results of this part are quite similar to those reported by Gunderson, except for the variables of interest income, home ownership, coverage by employer pension plan, industry, and retirement status.

III.1 Comparisons between Persons Age 15-49 and 50 and Over

While this analysis is focussed on the older people and retired persons, it is instructive to report the results obtained separately for both older (age 50 and over) and younger (age 15-49) individuals to allow a comparison of these two sub-groups, and thus making the results of this research comparable to other empirical studies, such as Day and Devlin (1996) and Vaillancourt (1994), which sampled all age groups, in their data sets.

The sample size is 6,833 for the younger group (age 15-49) and 4,717 for the older group (age 50 and over). As Table 1A indicates, the proportions of persons who engaged in volunteer activity is very similar for young persons age 15-49 (20.3%) and older persons age 50 and over (20.8%). These two figures also indicate that most of the people do not engage in volunteer activity, regardless of their age category. Furthermore, the overall proportion of 20.3% for the

younger group and 20.8% for the older group can serve as good points of reference to judge to what extent the proportion of people who engage in volunteer activity fluctuates by various characteristics listed in the table.

A comparison of the proportion among the younger group with the proportion among the older group in each of the categories reveals that some differences do exist. First, men participate ambiguously less frequently in volunteer activity than women in the younger group (20.4% vs. 20.3%), but a little more frequently than women in the older group (21.5% vs. 20.3%)[15]. Second, the proportion increases with age before 50 and then decreases with age. This finding is consistent with those obtained by Vaillancourt (1994) and Day and Devlin (1996) in the age trend. Third, widowed people engaged most in volunteer activity among the younger group(25%), while married or common-law people is the most active sub-group among the older persons(23%)[16]. Fourth, the incidence of volunteer participation among the older group increases more noticeably with education than is the case in the younger group. A possible reason is that the older cohort grew up and was educated in a society where altruism was perhaps more prevalent. This conjecture can be best studied with longitudinal data but not with cross-sectional data that this paper used. Last, in the younger group, the incidence of volunteer participation is quite similar for people who are in poor health and for those who are in fair health (15% vs. 14%); in contrast, in the older group, this incidence for people who are in poor health decreases to only half of the proportion for people whose health is fair (7% vs. 15%)[17].

---

[15] Both Vaillancourt (1994) and Day and Devlin (1996), which sampled all age groups in their data sets, report a lower participation rate of men in volunteer activity than women. The different results obtained in this paper may lie in different sample method as I mentioned before.

[16] This finding dovetails with Vaillancourt (1994) and Day and Devlin (1996) in the way that marriage increases the tendency to volunteer (i.e. Single person who have never been married is the most unlikely to volunteer).

[17] The result of overall effect of health on the participation decision is same as that reported in Vaillancourt

However, the proportion who participate in volunteer activity varies in a similar direction according to most of these different characteristics for the older and for the younger groups. In other words, when the proportion of persons who engage in volunteer activity is higher for a category (e.g., university graduates) among the older group, it is most likely to be higher among the younger group too. Since this analysis focuses on the pattern for older people and retired persons, only persons age 50 and over will be discussed in the following parts of this paper. But the patterns of variation are similar for younger persons under age 50 for most of the characteristics.

III.2 Non-retirement Variables (Analysis Restricted to Older Workers)

1. *Sex of Respondent*

The participation rate is only a little higher for men (21.5%) than for women (20.3%). This result is quite different from those reported by other empirical researchers, such as Vaillancourt (1994) and Day and Devlin (1996). The difference might result from the sample selection, as my analysis is restricted to older persons aged 50 and over were in this section, while all age groups are pooled together in Vaillancourt (1994) and Day and Devlin (1996).

2. *Age*

The proportion of persons who engage in volunteer activity decreases with age, starting from 24.3% at age 50-54 down to 17.9% at age 70 and over. Meanwhile, the mixed pattern for the intermediate age groups should be noticed, especially the increase to 24.1% for the

---

(1994) and in Day and Devlin (1996). That is, the proportion of engaging in volunteer activity increases with a better state of one's health. The difference is that the state of health has a stronger effect for the older than for the younger. This may be due to a higher correlation between age and health state among the older.

individuals in the 65-69 age group. This might occur as a result of the usual retirement age of 65, especially for those workers subject to mandatory retirement.

3. *Immigration Status*

Immigrants have a somewhat lower proportion of participation in volunteer activity (18%) than do non-immigrants (i.e. natives) (21.5%). This fact may relate to attributes of the immigrants, such as languages, that could limit their contributions, and to social networks which might restrict their access to volunteer networks outside their ethnic community.

4. *Marital Status*

People's tendency to volunteer varies somewhat according to marital status: only 17.8% (lower than the total average rate for the entire older group) amongst single persons, but it increases to 19.5% for persons who are separated or divorced, and 22.6% among persons who are married or living common-law.

5. *Religious Attendance*

The data show a strong positive relationship between engaging in volunteer activity and religious attendance. The incidence of participation varies significantly among the different categories of this factor. Only 12.7% of persons who have no religious attendance engaged in volunteer activity. This proportion increases to 18.9% among people who attend religious events once or a few times a year, and almost triples to 31.9% among those who attend religious events at least once per week. This indicates that once someone reports some religious attendance, the probability of volunteer attendance also increases, and the more frequent the religious activity, the more likely they are to engage in some volunteer activity. There are two possible interpretations: individuals with high religious attendance might be more willing to volunteer; on

the other hand, they are more likely to be asked to volunteer since the volunteer organization may not want to request help from those who, in their perception, are not likely to answer 'yes' to volunteer.[18]

6. *Education*

The proportion of people who engage in volunteer activity also increases significantly with the highest level of education that they received.[19]. Volunteer activity consumes time that is allocated to non-market labour activity, and thus it incurs an opportunity cost. As the wage increases, this would involve a negative substitution effect on hours of volunteer activity. On the other hand, an increase in non-market income or wealth might exert a positive income effect on the quantity supplied of volunteer activity. Persons who have some post-secondary education are more than twice as likely to engage in volunteer activity as those who have less than high school education (29.3% vs. 14%). This probability increases further to 34.4% for university graduates.

7. *Health Status*

A strong positive relationship is also indicated between the incidence of engaging in volunteer activity and health status. Among persons in poor health, only 7% of them engaged in volunteer activity. This proportion rose to 14.6% for persons in fair health and to 28% for those who reported that their health is excellent.

8. *Wealth*

The inclusion of wages as an explanatory variable may give rise to the econometric problem of endogeneity since volunteering actually can increase an individual's earnings. So,

---

[18] Richard B. Freeman, "working for nothing: the supply of volunteer labors".

[19] These findings with respect to the effect of educational attainment do dovetail with Vaillancourt (1994) and Day and Devlin (1996).

wages are not included as explanatory variable in this paper although it is related to wealth. Instead, three indicators are used to reflect wealth: interest income, home ownership, and coverage by a private pension plan. A discrepancy that emerges with Gunderson's results occurs for the interest income variable. I did obtain a stronger positive relationship between engaging in volunteer activity and one's wealth, as reflected in all three indicators, but Gunderson reports an ambiguous relationship for the variable of interest income. The results reported in this analysis suggest that the income effect dominates the substitution effect in most of the cases. This is reasonable because once interest income is considered, it is less likely to be associated with an opportunity cost associated with volunteer activity. Usually volunteer activity would occupy people's time spent on labour market, thus incurring an opportunity cost. That does not apply to interest income, however. In addition, there is another possible interpretation for the effect of home ownership other than wealth: individuals who are home-owners may be more likely to volunteer since they are tied to their local community in the long run. If so, the pure effect of wealth indicated by home ownership on volunteer participation might be overestimated since the effect of being tied to local community is compounded with it.

9. *Industry Classification*

This is another factor for which my results differ from those reported by Gunderson's. Fortunately, although the magnitude is different for all industrial categories, the pattern of my results is similar to the pattern of Gunderson. Individuals who are working in the health and education sectors and in the public administration sector exhibit the highest proportion of involvement in volunteer activities (27.5% and 26.5%, respectively). This fact can be explained by appealing to both the supply side and the demand side of volunteering activity. Individuals in

the health and education sectors and in the public administration sector might have a higher personal preference to do some volunteer work. On the other hand, the organizations that utilise volunteer labour may be more interested in recruiting those who have such kind of service skills that can easily be used by them.

10. *Region*

Residents in Quebec and Ontario present the lowest incidence of engaging in volunteer activity (17% and 19.3%, respectively). Meanwhile, residents in Atlantic provinces and Alberta show the highest proportion of such activity (23.1% and 22.7%, respectively), similar to Manitoba/ Saskatchewan region and British Columbia (22.2% and 22.4%, respectively). These results are consistent with those obtained by Vaillancourt (1994). This regional variation can be explained by the heterogeneity of demand for collective good - the greater the heterogeneity[20], the larger the non-governmental sector (i.e. the private sector and the voluntary sector). If so, it is not surprising to find that the volunteer activity provision is higher in a more heterogeneous region such as the Atlantic provinces, where religious preferences and cultural heterogeneity are far more diverse. Similarly, it is not surprised to find that the volunteer activity provision is lower in a region where virtually the entire population shares one religion and race (e.g. Quebec).

In addition, as indicated by Gunderson, the high proportion found in the Atlantic provinces can also reflect a variety of factors: "time availability from the high unemployment; a history of community and social involvement in part as insurance against the economic instability; and the voluntary 'trades' or quid pro quos that can exist in an underground economy where paid employment leads to a loss of unemployment insurance." (Gunderson, 2001, p17) This

[20] The degree of "heterogeneity" of the population of a province is the degree of income inequality, diversity of cultural heritage or other demand-determining variables (Weisbrod, 1975).

explanation is more reasonable, however, for the younger population rather than for the older population which this paper focuses on.

III.3 Retirement Status Variables

Three issues related to retirement behaviour are considered here: retirement status, reasons for retirement, and the nature of work for those who return to work after retirement. First, the difference between older persons who have retired at least once and who have never retired will be discussed. Then the retired group will be separated according to their different motivations, namely mandatory retirement and voluntary retirement; while the voluntarily retired group is further separated by their reason for retiring. Finally, individuals who retired and remained retired are compared to those who returned to work after retirement, while the latter is further examined by the different nature of the work to which they returned (including employee/self-employed, permanent/temporary, and full-time/part-time/other work).

There is only a small difference in the proportion engaging in volunteer activity between older people who have retired at least once and those who have never retired (22.7% vs. 19.3%). It is a little surprising to find such a small discrepancy. A possible interpretation is that older people might desire to retire not only from paid work but also from other kind of activities such as volunteer work. This desire counteracts some of the effect of having more spare time after the transition into retirement. Thus these two opposing forces together generate only a small positive net effect on the incidence rates for volunteer activity.

Among those who have retired at least once, the difference in the proportion engaging in volunteer activity is between those who retired voluntarily (23.2%) and those who retired because

of mandatory retirement (19.9%). Usually a higher participation rate is expected for persons who retired due to mandatory policy if one assumes that persons in this category have a higher willingness to keep on working, while "volunteer activity provides a form of continued activity and perhaps networks and even training to gain re-entry", (as suggested by Gunderson). But what if there are some more important intrinsic reasons that motivate older people to engage in volunteer activity other than extrinsic policy reasons (e.g. mandatory policy)? If so, then mandatory retirement policy will not have a strong effect on older people's decisions to volunteer, and thus more attention should be paid to other factors that may reflect these intrinsic reasons. Research by Frank Jones (1999) based on National Survey of Giving Volunteering and Participating (1997)[21] may provide some illumination. He compared the reasons given by the respondents for volunteering, and found that the most important reason that motivates older people to volunteer was to support a cause in which they personally believed (98%). More than two thirds of the respondents refer to the reason of using skills and experience and the reason of being personally affected by the cause of an organization. In contrast, fewer than 10% persons age 55-64 mentioned improved job opportunities as a motivation to volunteer. In this sense, my results are consistent with that of Jones.

The participation proportion varies significantly among older people who retired voluntarily according to different reasons. The lowest proportion presents among those who voluntarily retired for reasons of ill-health is sensible (14.9%), which is even lower than the proportion among those who have never retired (19.3%). This is consistent with the health pattern that I discussed previously. Older people who reported that their spouse retired as their own

[21] Frank Jones(1999), "Seniors who volunteer", Statistics Canada

reason for retirement represents the second lowest incidence of engaging in volunteer activity at 15.2%. This possibly reflects the fact that the event of engaging in volunteer activity among spouses is most likely to occur when either both husband and wife volunteer, or neither of them volunteer[22]. Thus understandably, if one of the spouses retires because the other has retired, they might want to attend some activities together. Thus the low incidence of volunteer activity for the group of jointly retired couples indicates that most of the spouses retired together are more likely to pursue some joint activities other than volunteer activity in their retirement.

In contrast to that situation, 30.4% of retired persons who retired as a matter of personal choice engaged in volunteer activity, which is significantly higher than both the average proportion among all retired persons (22.7%) and that among the voluntarily retired sub-group (23.2%). There are many possible reasons behind this fact: sufficiently good health and opportunity to engage in volunteer activity, as indicated by Gunderson. In addition, those who retired as a matter of personal choice are more likely to benefit from an adequate pension, and thus more likely to volunteer, all other factors held constant. This is highlighted by a comparison of the three indicators of wealth listed below. It can be similarly applied to the group that retired due to early retirement, which has also a large proportion engaging in volunteer activity (27.4%).

	Received interest income	Home owner	Employer pension plan
% within persons who retired as personal choice	59.60	80.50	50.40
% within persons who retired due to early retirement	62.70	82.90	86.00

30.1% of persons who retired due to family responsibilities engaged in volunteer activity. Persons in this category are likely to engage in both informal unpaid work due to the demands of

[22] Freeman(1996), 'Working for nothing: the supply of volunteer labor", p148

caring for their families, and formal volunteer activities for organizations. This result is consistent with the findings of Jones (1999) that are based on a more current data set (1997 national survey) in the sense that older people who volunteer informally (i.e. not through an organization) are more likely to volunteer formally (i.e. through an organization) than those who do not volunteer at all, even if informally.

For the group of those who are returning to work after having retired, although my results are different in magnitude with Gunderson's, the pattern is similar. The rate of volunteer participation among those who returned to work after retirement is 24.6%. This proportion is, although lower than the result reported by Gunderson (30.2%), higher than the portion of persons who retire and remain retired (22%), which is also higher than the incidence rate of persons who are not retired (20%). On one hand, those who returned to work might not have enough time to contribute to volunteer activity due to time constraints. On the other hand, they may have come out of retirement in part because they anticipated remaining active, and their possible choice includes both returning to paid work and engaging in unpaid volunteer activity. In addition, it is also possible that those who returned to work are healthier, more active and have more networking opportunities, which make themselves more likely to be asked to volunteer. In this sense, volunteer activity tends to complement other activities after retirement, such as returning to work, rather than substitute for them. Another possible reason lies in unobservable preferences of individuals in this category. As Gunderson indicated in his paper, due to the small sample size of retired persons who returned to work (only 6% of the older group), the results should be interpreted very carefully.

The participation incidence varies significantly according to the nature of the work for

those who return to work after retirement. Older people who returned to work as self-employed individuals are more likely to engage in volunteer activities than those who returned as an employee for a firm (32.1% vs. 28.3%). There are three possible reasons for this fact. First, persons who returned to labour market activity as self-employed tend to be more flexible in time and wealthier, which makes it more affordable to engage in volunteer activities than those returned as employees. Second, a self-employed person might be motivated to invest in volunteering in order to promote their business venture, just as some corporations integrate philanthropy into their marketing operations. Finally, self-employed persons are more likely to have a broad network of contacts and thus have a greater opportunity to engage in volunteer activity. This is consistent with the incidence of volunteer participation among those self employed professionals (50%), which is far greater than the overall average rate of all persons age 50 and over.

Persons who returned from retirement to a temporary job also report a higher rate of volunteer participation (35.1%) than those who returned to a permanent job (26.4%). Surprisingly, only an ambiguous difference lies between persons who returned to a full-time job (30%) and persons who returned to a part-time job (29.9% in my results, compared to 30.7% in Gunderson's). Persons who work part-time have more free time and might thus be expected to be more likely to volunteer. It is possible that individual's choices of whether to engage in volunteer activities or not are influenced by other factors, such as tastes, rather than time availability among persons who returned to work after retirement..

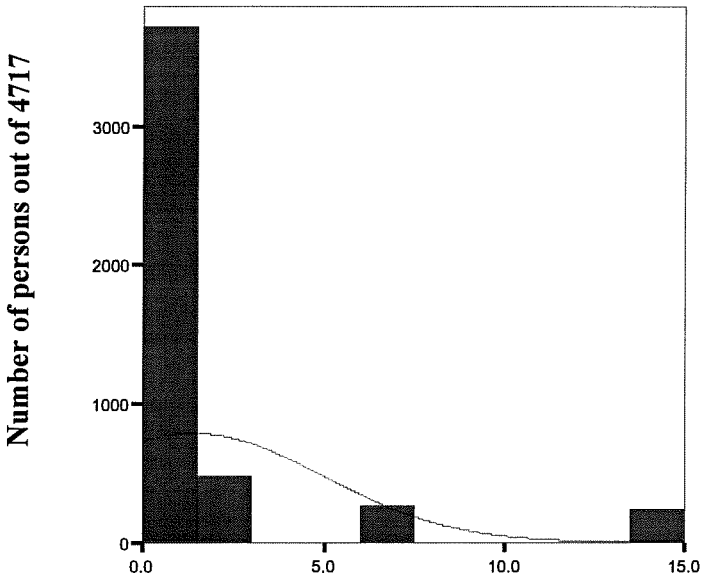
IV. TABULAR RESULTS: TIME SPENT BY VOLUNTEERS

In the previous section, I examined how the proportion of people who engage in any

formal volunteer activity varies across different characteristics. Now, I examine how time spent on volunteer activities by people who actually engaged in such activities varies across the same set of variables and characteristics as in the previous section. Will the quantity of hours that an individual volunteer supplies vary in the same way as the probability of individual decision to volunteer? That is the purpose of this section. Thus the sample is restricted only to those who did engage in volunteer activity during the past 7 days of the survey, which are 1,390 for persons age 15-49, and 983 for persons age 50 and over. The results of this section are almost the same as Gunderson's except for the effect of industrial sector, which will be discussed later.

IV.1 Comparisons between Persons Age 15-49 and 50 and Over

As indicated in Table 1B, the average time spent on volunteer activities by people who actually engaged in such activities is 5.826 hours per week for persons age 15 to 49, versus 6.73 hours per week for persons age 50 and over. Although the younger group tends to contribute fewer hours, a common pattern prevailed among both the younger group and the older group: persons who did volunteer contributed a substantial quantity of volunteer labor supply in terms of time. Considering that only about 1/5 of the population engaged in volunteer activity for both the younger group and the older group, "volunteer activity is concentrated in a small proportion of the population who do a substantial amount of such activity" (Gunderson p22). This is shown clearly in the following histogram graph.



Hours spent on volunteer activity (7 days before the survey)

Besides this common pattern, a small difference between these two groups should be noticed. Older volunteers tend to contribute more hours (6.73) than younger volunteers (5.826). This indicates a similar pattern that was also discerned for the probability of individuals to volunteer; the incidence of volunteer participation among persons age 50 and over is also slightly higher than that of persons under age 50 (20.8% vs. 20.3%).

There is another interesting difference between the older group and the younger group: hours spent on volunteer activity increase with a better state of health among older persons, while decreases among younger persons, although this effect has a low magnitude. This fact confirmed to some extent in my previous findings in the incidence analysis that the state of health has a stronger effect for the older than for the younger individuals due to a higher correlation between age and health state among the older group.

Following the structure of the preceding presentation, I will focus on the older group

comprised of persons age 50 and over in the following sections.

IV. 2 Comparison between Quantity Supplied of Volunteer Services and Probability of Volunteer Participation

After careful scrutiny, two common patterns of the quantity of volunteer supplied also apply to the incidence of volunteer participation across different individual characteristics. First, quantity supplied varies slightly across different categories of included explanatory factors, while proportion of volunteer participation varies a lot. For instance, the proportion of older people who engaged in volunteer activity among those with excellent health is about 4 times the proportion among those with poor health and almost twice as the proportion among those with fair health (28% vs. 7% and 15%). In contrast, the time that they spent on volunteer activity provided that they did volunteer is not significantly different (7.451 vs. 6.179 and 6.275). For non-retirement variables, the variation of conditional hours (condition on persons who did volunteer) is less across different categories of all other explanatory factors than is the case across different levels of health status. It appears that there is greater variation in the influence of factors on the incidence of participation than on the influence of factors on the number of hours of volunteer work conditional on positive hours. In this part, I obtained a similar pattern as Gunderson.

Second, although the time contribution of persons who did volunteer varies slightly across different characteristics, Gunderson indicates that it varies generally in a similar (but more subdued) pattern as the variation of incidence of engaging in volunteer activity. In other word, if the incidence of volunteer participation is high among persons with a particular characteristic, then those persons contribute more hours if they do volunteer, ceteris paribus. I find that the time

contributed by volunteers does vary somewhat similarly to the incidence of engaging in volunteer activity according to the factors of age, immigrant status, education status, health status, and employer pension plan status. However, it is difficult to draw such a conclusion for the factors of marital status, religious attendance, interest income, home ownership, and region of residence. In fact, the pattern exhibited for incidence is the opposite of the patterns exhibited for conditional hours for the variables of gender, reason for retirement, and industry. In this sense, one cannot conclude that if a person with a kind of characteristic is more likely to engage in volunteer activity, then that person is also likely to volunteer more hours.

Because hours of volunteer activity only varies slightly in response to changes in variables and characteristics, and the variation does follow somewhat the same pattern as the variation of the proportion of volunteer participation for some factors, only those factors that present a dissimilar pattern will be discussed in this section, as the general conclusions presented in the previous section might not hold for them.

1. *Gender*

Male volunteers contributed slightly fewer hours (6.599) than female volunteers did (6.836). In contrast, men are a little more likely to participate in volunteer activities than women, as I indicated before. Taking into consideration that the variation across gender is very small in the case of hours of volunteer activity and in the case of the incidence of volunteer participation, the effect of gender is ambiguous for both of these variables. Therefore, no conclusion can be drawn that they might follow a similar pattern with respect to gender.

2. *Industry*

As indicated in a previous section, individuals who are working in the health and

education sectors and in the public administration sector represent the highest incidence of engaging in volunteer activities (27.5% and 26.5%, respectively). But in this section, I find that those who did volunteer in these two groups tend to volunteer fewer hours (6.111 and 6.396). The highest number of hours is contributed by volunteers working in manufacturing industry (6.731). On the other hand, persons working in this industry represent the lowest incidence of volunteer participation (15%). Clearly, pattern prevailed in hours spent by volunteers is dissimilar to that in the incidence of volunteer participation with respect to industrial status.

3. *Retirement related factors*

Older people who retired due to mandatory retirement policy contributed more hours than those who retired voluntarily (7.75 vs. 6.84) if they did volunteer, although the incidence of participation in volunteer activities is lower among older people in this category.

As I mentioned in the previous section, the incidence of participation in volunteer activities is the lowest among older people who retired due to a retired spouse. But if they did volunteer, older people in this category contribute the greatest amount of hours (8.00) compared to others. Freeman indicates that volunteer activity is jointly determined among spouses: "the most common pattern is for both husband and wife to volunteer or for neither to volunteer.....spouses in families in which both volunteer contribute more volunteer hours per person than spouses in families with only one volunteer."(Freeman, 1996, p148). My finding is consistent with this assertion.

Older people who retired due to family responsibilities contribute the least amount of hours (6.25) if they did volunteer, although they are in the group which is most likely to engage in volunteer activity (30%). It is understandable as they are more likely to be restricted by time due

to other obligations.

Older people who returned to temporary job after retirement, which is the group that is most likely to engage in volunteer activity, do contribute the most volunteer hours once they volunteered. But those who returned as self-employed, who are more likely to participate than those who returned as employees, tend to volunteer far fewer hours if they did volunteer. This is understandable since although self-employed persons have more flexibility in working hours, their spare time is usually less than in the case of employees.

V. TABULAR RESULTS: TIME SPENT BY ALL PERSONS

In previous section, I discussed the probability of volunteer participation in volunteering activities and the quantity supplied of volunteer activity, while the latter is the conditional hours spent on volunteer activity by those who did engage in such activity. In this section, I turn to an analysis of the unconditional hours spent on volunteer activity by all persons – including both those who did volunteer and those who did not. For a large majority of the sample, a 0 value is entered.

Comparing the results of unconditional hours with the results of proportions who engage in volunteer activity, a careful scrutiny reveals that the average number of hours spent on volunteer activity among both volunteers and non-volunteers combined vary across different variables and characteristics in quite similar patterns to the results found for the incidence of volunteer participation. This phenomenon can be attributed to the fact that the unconditional hours are the product of probability of volunteer participation and the conditional hours spent on volunteer activity. Since nearly 80% of the population did not do

any volunteer activity, the average hours spent by all persons on volunteer activity will be determined mainly by the probability of volunteer participation. Furthermore, the conditional hours spent on volunteer activity by those who did volunteer are relatively constant, concentrated from 6 to 7 hours per week across most of the included explanatory factors. This implies that most of the variation in unconditional hours is generated from the variation of the probability of volunteer participation. Thus the results for unconditional hours will largely imitate the results for the proportion of persons who engaged in volunteer activities. The pattern that prevailed in the previous discussion dealing with the incidence of volunteer participation also generally applies in the situation of unconditional hours. As such, a separate discussion of the variation in the patterns of unconditional hours is not provided here. The same general conclusions provided in the previous section dealing with probability of volunteer participation usually hold.

One fact that should be mentioned is that the coefficient of variation is very high for unconditional hours among people age 50 and over (higher than 2 for almost all characteristics), while relatively low for conditional hours (around 0.7-0.8 for most of the characteristics). These figures are a reflection of the fact that volunteer activity is concentrated in a small proportion of the population who do a substantial amount of such activity.

VI. SUMMARY OF TABULAR RESULTS

- Only about 1/5 of the population engaged in volunteer activity for both the younger group and the older age group. But those who did volunteer contributed a substantial quantity of volunteer labour supply in terms of time (almost a day per week).

- A similar pattern generally prevailed amongst persons under the age of 50 and persons age 50 and over, except that the proportion of volunteer activity across different 5-year age groups and the conditional hours across different health statuses among the older group varies in an opposite fashion compared to the younger group.
- The incidence of volunteer participation varies considerably across different characteristics; but the variation in conditional hours is relatively low and constant, generally varying little across the factors of age, immigrant, education, health, and coverage by employer pension plan. The pattern exhibited for incidence is the opposite of the patterns exhibited for conditional hours for the variables of gender, reason for retirement, and industry. The variation in unconditional hours follows a quite similar pattern as the variation in the proportion of volunteer participation across almost all variables and factors.
- As for the non-retirement factors, the probability of engaging in volunteer activity among persons age 50 and over is positively affected by the events of marriage, religious attendance, educational attainment, quality of health, level of wealth, employment in the sectors of health, education or public administration, and living in a heterogeneous region (e.g. Alberta), and it is negatively affected by age and immigrant status. Males and females do not exhibit a significant difference in their probabilities of engaging in volunteer activity. Persons working in manufacturing industry exhibit the highest level of conditional hours of volunteering activities across different industry sectors, although persons in this category represent the lowest probability of engaging in volunteer activity.
- As for the retirement related factors, the incidence of volunteer participation is slightly

higher among older people who are retired, and higher still among those who retired voluntarily, than it is among those who never retired. Among those who retired voluntarily, this proportion is high among those who retired as a matter of personal choice, due to family responsibilities, or through early retirement, and it is low among those retired due to health reasons or because their spouse retired. In contrast, if older people did volunteer, those who retired due to mandatory policy volunteer more hours; and persons retired due to a retired spouse contribute the most hours, while older people retired due to family responsibilities contribute the least number of hours among voluntarily retired persons. Retirees who return to work after having retired, especially if they return as self-employed or on a temporary job, are more likely to do some volunteer work. However, if they did volunteer at all, those who returned to a labour market activity as employees contribute more hours.

VII. ECONOMETRIC RESULTS

My previous results are based on a simple, univariate cross-tabular approach, through which I can only capture the gross effect of different characteristics on the dependent variables (including probability of engaging in volunteer activity, conditional hours, and unconditional hours). However, econometric techniques are required to assess the net effect of a specific explanatory variable on the dependent variable to verify if the empirical results derived from simple tabular approach still hold. In this case, five methods of multiple regression analysis are applied: the Linear Probability model (LPM), the Logit model, the Probit model, ordinary least squares (OLS), and the Tobit model.

This regression analysis is based on an approach that is similar to that adopted in Day and Devlin (1996) and Vaillancourt (1994), whose analyses are based on the Survey of Volunteer Activity taken in 1987. Following Gunderson, I choose the number of hours itself rather than the log of them when the dependent variables are continuous variables (i.e. the conditional hours measure and unconditional hours measure), since the units of measurement of the dependent variables (hours per week) are not very different from the measurement of the independent variables[23].

In the following sections, the LMP, Logit, and Probit results modelling the probability of volunteer participation are discussed first, followed by the OLS results dealing with conditional hours, and finally the results of unconditional hours estimated by OLS and the Tobit approach. In each table containing regression results, asterisks (*) and double asterisks (**) are used to indicate coefficient estimates that are significant at 10% and 5% levels of significance, respectively.

A careful scrutiny reveals that the multiple regression estimates generally confirm the pattern that prevailed in the previous analysis based on the simple cross-tabulation analysis in both the signs and relative magnitudes. In other words, if the coefficient was relatively large in the regression analysis, then the relative importance of independent variable was also large in the cross-tabulation analysis. These empirical patterns suggest that there is not a high degree of correlation among the included regressors, or at least that the standard error correlations are not affecting the estimated effects to any great extent. Patterns that were discerned in the univariate analysis are also applicable in the multi-variate analysis. In this section, therefore,

[23] In Day and Devlin (1996) and Vaillancourt (1994), the dependent variable is annual hours of volunteer work. Hear they are weekly and are reported for a reference week.

results will be discussed only briefly unless divergence exists between the econometric results and the cross-tabulation results.

The regression results of this research are different in magnitude from those obtained by Gunderson, although most of the signs are similar. My analysis also reveals some discrepancies in significance patterns. These differences are possibly generated from the potentially different method of data treatment as previously mentioned in section II. The data treatment issues turn out to be important, especially in how missing entries for relevant explanatory variables are dealt with. More detailed discussion will be presented in the following analysis.

VII.1 Regression Estimates of Probability of Volunteer Participation

Table 2A-1 gives the estimates based on Linear Probability Model (LPM), which is essentially the OLS estimates of the effect of the different variables on the probability of participating in any volunteer activities for persons aged 50 and over. Table 2A-2 gives the corresponding Logit estimates, and Table 2A-3 gives the Probit results for the same endogenous and exogenous variables.

Qualitatively, the results of these three models are similar in that almost all of the included explanatory variables present the same signs, relative magnitudes, and individually statistically significance levels among these three models, especially at the 5% significance level. Also, together the explanatory variables have a significant impact on probability of volunteer participation, as the F-statistic is 12.774 with a p-value of 0.000 in LPM results, and likelihood ratio statistic have values of 559.736 and 559.950 with a p-value of 0.000 in Logit and Probit results, respectively.

In both the Logit and the Probit models, the slope coefficient can all be interpreted as the rate of change in the probability, but due to the non-linear nature of the model, those calculations depend on the values of all the regressors. In the LPM, the slope coefficient directly measures the change in the probability associated with a unit change in that variable, ceteris paribus, and thus only the relevant regressor is involved in computing the changes in probability.

Since the estimates based on LMP are fairly similar to the Logit and the Probit results, the regression coefficient from the linear probability estimates are discussed in the following analysis, unless a noteworthy difference exists between these specifications. In this section, only differences between my results and Gunderson's results are discussed.

1. *Sex of Respondent*

Males are more likely to participate in volunteer activities, but this effect is not significant. This difference between results obtained from this research and those of Vaillancourt (1994) and Day and Devlin (1996) might result from the different year of data collection and the differing sample selection criteria, as only persons aged 50 and over were sampled in this analysis. More specifically, women were more involved in the labour force in 1994 than in 1987, and older women are less likely to be involved in the care of children than the entire age group. Therefore, the effect of sex on the volunteer participation rate among the older group is reduced comparing to those obtained by Vaillancourt (1994) and Day and Devlin (1996).

2. *Age*

According to my findings, age has a negative effect on the probability of engaging in volunteer activity. The insignificant coefficient for age group 65-69 years indicates that there

might be some reason other than age that affects their decision to participate, such as the usual retirement age of 65. My results are a little different from Gunderson's in that age effect he obtains is more significant.

3. *Immigration Status*

Immigrants are significantly less likely than native born Canadians to participate in volunteer activities.

4. *Marital Status*

Persons who are married or live in common-law relationship and persons who are separated or divorced are more likely to do some volunteer work than are single people.

5. *Religious Attendance*

Older people who attended religious events at least once a month and those who attended at least once a week have a significantly higher probability to do volunteer work than are those who did not attend any religious events at all.

6. *Education*

Every level of education attainment has significantly positive effect on the probability of volunteer participation meaning that the higher the level of educational attainment, the higher the propensity to volunteer.

7. *Health Status*

Every level of health status has significantly positive effect on the probability of volunteer participation relative to the base category of 'poor health', meaning that the better the health status, the more likely they are to volunteer. The only exception is that the category of 'fair health', which is not significant even at the 10% level in the LPM results, but is very

significant at the 5% level in Logit and Probit results, although it has the same sign in all three models. Compared to the cross-tabulation results, I think the result based on Logit and Probit model is more suitable. That is, having 'fair health' status does have an effect on older people's decision to do volunteer.

8. *Wealth Levels*

Wealthier persons, indicated by the receipt of interest income, home ownership, or being covered by an employer pension plan, are more likely to engage in volunteer activity than those who do not have these three indicators of wealth, although the coefficient for being covered by an employer pension plan is very insignificant.

9. *Industry Classification*

The estimated coefficients of almost all industry sectors are insignificant. Although Gunderson reported a significant coefficient for the public administration sector at 5% level, it is not that significant in my results. In fact, only for the Logit results can I report that working in the 'health and education sectors' is significant at the 10% level.

10. *Region of Residence*

Residence in Alberta and British Columbia, which are thought to be the more heterogeneous regions where religious preferences and cultural heterogeneity are far more diverse, are significant in improving the probability of participation at 10% and 5% level, respectively, compared to residence in Ontario. Residents in Quebec, a less heterogeneous region where a majority of the population shares one religion and race, are less likely to engage in volunteer activity than residents in Ontario (the reference group).

11. *Retirement Status Variables*

Persons who retired as a voluntary, personal choice and who retired due to family responsibilities are significantly more likely to do volunteer work. It is interesting to find that those non-self-determined reasons for retirement, such as mandatory policy, health related issues, and displacement by new technology, are all insignificant; while the significant variables mentioned above are both somewhat related to personal, intrinsic preferences. This finding indicates perhaps the existence of differences among retired persons in tastes.

A difference between the regression results and the previous cross-tabulation results should be noted: the effect of retirement through the channel of early retirement on the probability of engaging in volunteer activity compared to those who have never retired (the reference group) is very insignificant. This finding is very different from the cross-tabulation results, which shows that the rate of participation among persons who retired due to early retirement is much higher than the rate among persons who have never retired. In this case, the gross effect diverges from the net effect and confirms my previous conjecture that some other factors among the early retirement group other than the retirement itself raised their probability of doing volunteer work. These influences were masked for the univariate results.

VII. 2 Regression Estimates of Conditional Hours Spent on Volunteer Activity

Table 2B lists the OLS estimates of the effect of the different variables on the conditional hours spent on volunteer activity by those who do volunteer for positive hours. Note that this estimating sample is restricted to only about 20% of the entire sample, as all of those not volunteering at all are excluded from it.

The explanatory power of the regression estimates of conditional hours is extremely low.

Most of the explanatory variables have individually insignificant coefficients (indicated by t-statistics), although with the expected signs. Also, all the coefficients are jointly statistically insignificant since the value of the F statistic is 1.046 with a p-value of 0.392. Furthermore, the squared correlation between actual and fitted values, reported as adjusted R^2, is very low. These results indicate that variation across the different characteristics have little effect on the quantity of individual volunteer labour supplied, which is consistent with the previous results based on simple cross-tabulated tabular analysis.

As indicated at the top of regression results section, the results based on the OLS regression analysis are also consistent with those based on the cross-tabulated analysis in that the signs and the relative magnitudes of the relationships were generally similar. In this sense, no detailed discussion will be given in this section.

It is notable that qualitatively, the results for the conditional hour regression are not very similar to those for the decision to volunteer. Most of the factors seem to have somewhat different impacts on the discrete decision to volunteer or not and the number of volunteer hours supplied, except for the indicators for marital status, immigrant status, coverage by employer pension plan, and the occupational prestige index. This is consistent with my previous finding that no obvious similar pattern prevails among the results for the probability of volunteering and the results for the quantity of volunteer labour supplied conditional on participation.

There are two important differences between my results in this section and Gunderson's results. My results reported a positive sign for the coefficient on the occupational prestige index as well as negative signs for the coefficients on reasons for taking retirement due to

health issues, personal choice, a reason labelled 'old enough to retire', and family responsibilities: Gunderson reported coefficients in the opposite direction. As indicated earlier, these differences are possibly generated from the different methods of data treatment as mentioned in the section of data and methodology. Since Gunderson did not document how he treated with those missing values in explanatory variables, it is difficult to judge whose results are more accurate.

Why is there so little variation across the different characteristics in the quantity of individual volunteer labour supply compared to that in the probability of participation? Why do the same characteristics seem to have different effect on the supply of volunteer hours and the decision to volunteer?

One factor to consider is that perhaps there are reporting errors in our data set. The question of whether or not an individual participated is easy for the respondents to answer and is likely to be reported quite accurately. However, the number of hours volunteered is relatively difficult to measure. Since it was reported by categories (as opposed to continuously) in the questionnaire, it is possible for the respondents to answer it inaccurately and thus introduce some noise. Furthermore, since the figure enters the empirical analysis as the mid-point of each range, basically assuming that the hours volunteered are distributed uniformly over the respective interval or are all clustered at the mid-point, it also probably introduces measurement error if the assumption is violated. Thus the estimates might exhibit attenuation bias, i.e. the coefficient is possibly underestimated.

It is more likely, however, that there are some reasons that made people restrict their supply of volunteer services if they are already involved in volunteer activity. Some illumination can be

obtained from a related research of Frank Jones (1999) based on a more current data set in 1997[24]. He reported several main reasons noted by older volunteers, such as 'already made contribution', 'no extra time' and 'unwilling to make year-round commitment' were three of the most important reasons for not volunteering more time, following by health problems, giving money instead, and not being asked.

Gunderson also indicated that this puzzle could also result from two kinds of possible barriers. One is the fairly high fixed costs associated with volunteering, which may inhibit most people from participation. Once people overcome those barriers or fixed costs and participate, then they intend to contribute fairly substantial amounts of time. The other is that people seldom participate in volunteer activity unless being asked to do so (Freeman 1996). If so, there may be barriers working through two channels. On the one hand, volunteer organisations may not want "involuntary volunteers", which make them tend to ask a small number of potential volunteers to contribute one day per week, rather than to ask a large number of people, including those who are not likely to say "yes" to their request, to work fewer hours. On the other hand, there might exist some potential volunteers who are willing to volunteer but do not have the sufficient social network, ability, or wealth, and thus have less access to get information or requests from volunteer organizations. All of these factors might explain why the incidence of volunteer activity is low, and also why the variation of hours among those who do volunteer is pretty low.

VII. 3 Regression Estimates of Unconditional Hours Spent on Volunteer Activity

Table 2C presents the OLS regression results for the unconditional hours of volunteer

[24] Frank Jones (1999) used the data set from National Survey of Giving Volunteering and Participating (1997).

time spent by the entire sub-sample of persons age 50 and over, including both the volunteers and the non-volunteers. That is, the dependent variable for this equation is the number of hours spent on volunteer activity by all persons, with continuous positive hours for volunteers and 0 hours for non-volunteers. The latter accounts for almost 80 % of all the included respondents.

This is a censored, limited dependent variable regression model. The true regressand (number of volunteer hours) is continuous, but only fully observable when it is positive (20% of total observations) and unobservable when it theoretically can assume negative values. In the latter case, it is reported as having a value of 0 (80% of total observations). The OLS estimates of the parameters will biased even asymptotically as it fails to account for the potentially censored data. In this case we are including all observations, but we impose a linear relationship on the number of hours of volunteer activity for the entire range, from zero hours offered to the maximum value. Given the barriers to entry into volunteer activity that were discussed above, it might be reasonable to expect a non-linear effect in and around the cluster of individuals located at zero hours of volunteer activity. To address this non-linearity issue, the Tobit model, which can be expressed as

$$Y_i = \beta_1 + \beta_2 X_i + u_i \qquad \text{if RHS} > 0,$$

$$= 0 \qquad \text{otherwise}$$

is applied (Table 2D) and estimated using maximum likelihood estimation. However, like the linear specification, the Tobit approach is still based on a heteroskedastic disturbance term, and the normal distribution is imposed as the parametric form for all parts of the distribution.

Both the Tobit specification and the linear equation impose the constraint that the coefficients that generate the decision to participate or not are equal to the coefficients that

determine the number of hours served. In order to test for the validity of that restriction, an "eyeball" test can be used: comparing the ratio $\hat{\beta}_T / \hat{\sigma}_T$ to the Probit estimate of the same coefficients, $\hat{\beta}_P / \hat{\sigma}_P$, which can be indicated by the z-stat as reported in the table. If they are very different, it suggests that the Tobit is misspecified.[25] After a careful comparison, it suggests that Tobit seems appropriate in this case. The fact that the Tobit treats the effect on participation decision in the same way as the marginal effect on the volunteering hours of someone who already participates is not misspecification.

In this regression section, one finds once again that the analysis focuses on unconditional hours yield remarkably similar qualitative results to the analysis focusing on the probability of participation regarding included different characteristics. Most of the explanatory variables are individually significant at similar level with the same sign (Table2C and Table 2D). Also, collectively, all the coefficients are statistically significant, as indicated by the F-statistic generated from OLS approach (Table2C), just as they were in Table 2A.

The coefficients of the Tobit results on unconditional hours can indicate the net result of effects – that is, if a specific factor has an effect on the probability of volunteering and the conditional hours working in the same direction, the Tobit results will have a coefficient with the same sign and a higher absolute value than the OLS results on conditional hours (e.g. coefficient of immigrant status is -0.214, -0.520, -2.156 for the results of the Probit, OLS on conditional hours, and the Tobit, respectively); if a specific factor has opposite effects working on the probability of volunteering and the conditional hours, the Tobit results will report a

---

[25] Jack Johnston and John Dinardo, *Econometric methods*, 4th edition, 1997, 439-440. This strategy is based on the fact that the Probit models the decision to participate for the entire sample using the normal distribution.

T. Fin and P. Schmidt, "A Test of the Tobit Specification against an Alternative Suggested by Cragg," Review of Economics and Statistics, 66, 1984, 35-57.

coefficient with the same sign as the dominated effect (e.g. coefficients of retired due to early retirement are -0.012, 0.248, -0.159 for the results of the Probit, OLS on conditional hours, and the Tobit, respectively. This indicates that the effect of change in probability dominated the effect of change in conditional volunteer hours.).

A careful comparison reveals that the effect of changes in probability of participation almost always dominated the effect of changes in conditional volunteer hours, except for the indicator for retirement due to 'old enough to retire'. Persons retired due to 'old enough to retire' are slightly more likely to engage in volunteer activities with a coefficient of 0.007 in Probit results. But if they did volunteer, they intend to contribute 0.181 fewer hours per week than did those who have never retired. These two effects combine to generate an effect of 0.159 fewer hours of volunteering among all persons in this category compared to those who have never retired (including both the volunteers and the non-volunteers), which indicates that the effect of changes in conditional volunteer hours dominated the effect of changes in probability of participation in that rather exceptional case.

VIII. SUMMARY AND CONCLUSIONS

A number of factors influence the volunteer activities of individuals. This paper focuses on the decision of volunteer participation, the amount of time supplied conditional on having volunteered, and the amount of time supplied among all persons (volunteers and non-volunteers). Since old and retired persons are given special attention in this paper, the analysis is restricted to persons aged 50 and over, and many factors related to retirement behaviour are included in addition to general possible explanatory factors. The results are

summarized below:

- A similar pattern generally prevailed amongst persons under the age of 50 and persons aged 50 and over. For persons aged 50 and over, only a small portion (20.8%) engaged in volunteer activity through organizations. However, if they did volunteer, they tended to contribute a substantial amount of time on such activity (6.73 hours) on average.
- The multiple regression estimates generally confirm the pattern that prevailed in the analysis based on simple cross-tabulations, both in terms of the signs and magnitudes.
- The probability of volunteer participation varies considerably across different characteristics; but the variation in conditional hours is relatively low. Due to the concentration of that distribution, it is problematic to explain its fluctuations as a function of attributes and variables.
- The variation in unconditional hours spent on volunteer activity by all persons aged 50 and over follows a pattern that is quite similar to the variation in the probability of volunteer participation across almost all factors. This pattern of unconditional hours can indicate the net result of the effect on the probability of volunteering and the effect on conditional hours. The effect on probability almost always dominates the effect on conditional volunteer hours, with a notable exception for one variable: retirement due to 'old enough to retire'.
- As for the non-retirement factors, the quantity of individual volunteer time supplied by all persons age 50 and over is significantly and positively affected by the factors of being younger(with exception of the age 65-69 group), non-immigrant, married or living common-law or separated or divorced, attending religious services at least once a month or

more, being highly educated, being in better health, having relatively high wealth (as indicated by interest income and home ownership), working in a higher occupational position, and living in a more heterogeneous region (Alberta and British Colombia). Male older people and female older peoples do not exhibit a significant difference in their probability of engaging in volunteer activity.

Older peoples who have ever retired, especially those who retired voluntarily, are more likely to volunteer, although they tend to contribute fewer hours if they do so. Among those who retired voluntarily, the unconditional number of hours spent by volunteers and non-volunteers is greater among those who retired due to personal choice, unemployment, family responsibilities, and technology, and fewer among those who are retired due to the reasons of ill health, being 'old enough to retire', early retirement, and having a retired spouse. However, only the effects of having retired due to personal choice and having retired due to family responsibilities are significant.

Retirees who return to work after retirement, especially if they return as self-employed or to a temporary job, are more likely to do some volunteer activity. However, if they did volunteer, those who returned as employees contribute more hours.

The results of this paper show that the decision to engage in volunteer activity can be explained in part through economic analysis. Both consumption-based objectives and altruism play a role in the choices of individuals. Impure altruism is also a possible factor. But the investment motivation, which is cited as a possible determinant in the case of younger individuals, might not be relevant in my analysis, which targets the old and retired group.

The improvement of people's life spans and health status over time due to medical progress, together with demographic reasons such as the large retiree population that resulted from the baby-boom generation and early retirement, suggest an increasing potential volunteer labour force. Improved health status and transition into retirement also allow older people who are already involved in volunteer activities to devote more time. All of these factors working together will increase the quantity of overall supply of volunteer services. This analysis indicates that volunteer activity can facilitate the transition to retirement, since more retirees are engaging in such activity, and retired volunteers are shown to contribute more hours than non-retired persons, although only to a slight degree.

Based on this analysis, since the effect of the explanatory variables on the probability almost always dominated the effect on the number of volunteer hours conditional on participating, it may well be the case that the decision of an individual to volunteer is more important in determining total volunteer hours in the economy (i.e. total unconditional hours) than is the quantity supplied of volunteer hours (i.e., conditional hours). This suggests that in order to increase the supply of volunteer services, more attention should be paid to attracting more potential volunteers into this labour activity, rather than trying to increase the quantity supplied of volunteer services from existing volunteers.

Retirement due to personal choice or family responsibility rather than due to policy, physical, or other extrinsic reasons (e.g. due to mandatory retirement policy, ill health, and displacement by technology), has significant effect on older people's probability of volunteer participation. Older people who returned to work after retirement are more likely to do volunteer work and devote more time if they did.

Most of the factors that have significant effects on overall supply of volunteer services are generally not within the domain of policy makers. However, in order to meet the increasing demand for volunteer services, policy could focus on eliminating two kinds of possible barriers: the fixed costs associated with volunteering, which may inhibit most people from participation, and the fact that individuals do not take the initiative. A good topic for future research might be: why does the initiative seldom come from the supply side? For the latter, 'specific mechanisms to encourage more volunteers by older people and retirees could include encouraging networking, and simply providing the information on the need and availability of volunteer activity" (Gunderson 1999). For the former, unfortunately, the data here does not provide relative information about the nature of the fixed costs. Since there are possibly fixed costs, and perhaps different tastes which make older volunteers different from older non-volunteers, identifying them is an area that merits more attention and possible research. Gathering additional economic information of this nature is a task for the designers of future surveys of volunteerism.

The proportion of volunteer engagement varies significantly across different characteristics, but once people do volunteer, persons with different characteristics tend to restrict their volunteering time to a relatively constant amount. On the methodological side, this indicates that the Tobit might be inappropriate since it treats the effect on participation decision in the same way as the marginal effect on the volunteering hours of someone who already participates. In future research, more robust techniques should be applied to the model of the number of hours of volunteer activity that take into account the nonlinear effects that act around the threshold of zero versus hours of volunteer services.

REFERENCES

Andreoni, J. (1989). "Giving with Impure Altruism: Applications to Charity and Ricardian Equivalence", *Journal of Political Economy*, (97). no. 6, 447-458

Abrahams, B. and M. Schmitz (1984). "The Crowding-Out Effect of Government Transfers on Private Charitable Contributions," *National Tax Journal* (37) 563-568.

Ben-Porath, Y. (1980). "The F-Connection: Families, Friends and Firms, and the Organisation of Exchange," *Population Development Review* (6) 1-30.

Cliff, D. (1991). "Negotiating Flexible Retirement: Further Paid Work and the Quality of Life in Early Retirement," *Aging and Society* (11) 319-340.

Day, K. and R.A. Devlin. (1996). "Volunteerism and Crowding Out: Canadian Econometric Evidence," *Canadian Journal of Economics* (29) 37-53.

Doeringer, P. (1990). *Bridges to Retirement*. Ithaca, N.Y.: ILR Press.

Duchesne, D. Giving Freely, Volunteers in Canada. Catalogue no. 71*535*MPE. No. 4 Ottawa: statistics Canada 1989..

Elder, G. and E. Pavalko (1993). "Work Careers in Man's Later Years: Transition, Trajectories, and Historical Change," *Journal of Gerontology* (48) 180-191.

Fin, T. and P. Schmidt (1984), "A Test of the Tobit Specification against an Alternative Suggested by Cragg," *Review of Economics and Statistics*, 66, 35-57.

Freeman, R. (1996). "Working for Nothing: the Supply of Volunteer Labor," *National Bureau of Economic Research Working Paper* 5435.

Gomez, R. and Gunderson, M.(2000). "Volunteer Activity Amongst Seniors and Retirees *[vol-retires004]*

Gomez, R. and Gunderson, M. (2003). "Volunteer Activity and the Demand of Work and Family", *[vol-wkfam309]*

Gower, D. (1995). "Men Retiring Early: How Are They Doing," *Perspectives on Labour and Income* (7) 30-34.

Gunderson, M. (1998). "Flexible Retirement as an Alternative to 65 and Out;" *C.D. Howe Institute Commentary 106*

Gunderson, M. (1999). "Retirement and Return to Work Decisions of Retirees," *Ottawa: Human Resources Development Canada.*

Gunderson, M. (2001). "Volunteer Activities amongst Seniors and Retirees," *Ottawa: Human Resources Development Canada*

Hayward, M. and M. Hardy (1985). "Early Retirement Process Among Older Men: Occupational Differences," *Research on Aging* (7) 491-515.

Honig, M. (1985). "Partial Retirement Among Women," *Journal of Human Resources* (20) 613-621.

Honig, M. and G. Hanoch (1985). "Partial Retirement as a Separate Mode of Retirement Behavior," *Journal of Human Resources* (20) 21-46.

Jones, F. (1999), "Seniors who volunteer", *Statistics Canada* 75-001XPE

Johnston, J. and J. Dinardo (1997), *Econometric methods*, 4th edition, 439-440.

Kingma, R. (1989). "An Accurate Measure of the Crowd-Out Effect, Income Effect , and Price Effect for Charitable Contributions," *Journal of Political Economy* (97) 1197-1207.

Lowe, G.S. (1991). "Education, Work, Computers, and Retirement, Challenges for the 1990s" *Perspectives on Labour and Income* (3) No.3, *Statistics Canada*, 75-001E

Marshall, V. (1995). "Rethinking Retirement," in *Rethinking Retirement.* Edited by E. Gee and G. Gutman. Vancouver: Gerontology Research Centre, Simon Fraser University.

McGoldrick, A. and C. Cooper (1988). *Early Retirement.* Aldershot: Gower.

Menchik, P. and B. Weisbrod (1987). "Volunteer Labour Supply," *Journal of Public Economics* (32)159-183.

Monette, M. (1996). *Canada's Changing Retirement Patterns*. Ottawa: Ministry of Industry.

Mutchler, J., J. Burr, A. Pienta, and M. Massagli (1997). "Pathways to Labour Force Exit: Work Transitions and Work Instability," *Journal of Gerontology* (52) 4-12.

Mueller, M. (1975). "Economic Determinants of Volunteer Work by Women," *Signs* (1) 325-38.

Peracchi, F. and F. Welch (1994). "Trends in Labour Force Transitions of Older Men and Females," *Journal of Labour Economics* (12) 210-242.

Roberts, R. (1984). "A Positive Model of Private Charity and Public Transfers," *Journal of Political Economy* (92) 136-148.

Ruhm, C. (1990). "Bridge Jobs and Partial Retirement," *Journal of Labour Economics* 8(4):482-501.

Schell, B., R. Lebrasseur and R. Renaud. (1989). "Predictors of Acceptance of Early Retirement Offers for Workers," *Relations industrielles/ Industrial Relations* (44) 376-92.

Schiff, J. (1985). "Does Government Spending Crowd Out Charitable Contributions," *National Tax Journal* (38) 535-546.

Vaillancourt, F. and Micheline, P. (1986). "The supply of volunteer work: the case of Canada," *Journal of Voluntary Action Research* 15, 45-56.

Vaillancourt, F. (1994). "To Volunteer of Not: Canada, 1987," *Canadian Journal of Economics* (27) 813-825.

Weisbrod, B. (1975). "Toward a Theory of the Voluntary Non-Profit Sector in a Three Sector Economy," *Altruism, Morality and Economic Theory*, Edited by E. Phelps. New York: Russel Sage Foundation.

APPENDIX 1: CROSS-TABULATIONS

Table 1A - Proportion of persons who spent some time on volunteer activity

	age 15-49	age 50 and over
Sample size	6,833	4,717
All persons	20.3	20.8
Sex Of Respondent		
(Female)	20.4	20.3
Male	20.3	21.5
Age Of Respondent - 5 Year Age Group		
age 15-19	18.7	n.a.
age 20-24	14.7	n.a.
age 25-29	14.9	n.a.
age 30-34	20.6	n.a.
age 35-39	23.6	n.a.
age 40-44	24.9	n.a.
age 45-49	23.6	n.a.
(age 50-54)	n.a.	24.3
age 55-59	n.a.	19.9
age 60-64	n.a.	21.2
age 65-69	n.a.	24.1
age 70 and over	n.a.	17.9
Immigrant Or Not		
(Non-Immigrant)	20.7	21.5
Immigrant	18.5	18.1
Marital Status Of Respondent		
(Single)	16.6	17.8
Married Or Common-Law	23.0	22.6
Widowed	25.0	18.1
Separated Or Divorced	19.4	19.5
Religious Attendance: Last 12 Months		
(No Religious Attendance)	13.4	12.7
Once Or A Few Times Per Year	18.9	14.1
At Least Once A Month	23.8	18.9
At Least Once A Week	38.5	31.9
Unknown	11.1	17.9
Highest Level Of Education Attained		
(Less Than High School)	14.4	14.0
High School Graduate	18.1	21.9
Some Post Secondary	22.0	29.3
Comm College/Voc.Ed.	21.6	26.5
University Graduate	27.0	34.4
Health Status, Compared To People Same Age		
(Health Poor)	15.4	7.1
Health Fair	13.7	14.6
Health Good	19.9	20.8
Health Very Good	20.9	23.9
Health Excellent	21.9	27.7
Health Unknown	15.8	15.2
Past 12 Months: Received Income From Interest		
(No Interest Income)	18.4	16.8
Received Interest Income	28.1	27.7

Dwelling Owned By A Member Of The Household		
(No Home)	16.8	14.4
Home Owner	22.5	22.9
Past 12 Months: Received Income, Private Pensions		
(No Plan)	20.2	19.7
Employer Pension Plan	26.9	24.5
OCC. Prestige index	n.a.	n.a.
Standard Industrial Class. Codes(18) - Current Job		
(Manufacturing Industry)	17.3	15.2
Primary Industry	28.7	18.9
Construction Industry	18.7	21.1
Service Industry	17.8	23.2
Health & Education	29.1	27.5
Public Administration	21.4	26.5
Not Available	19.4	20.0
Province Of Residence Of Respondent		
(Ontario)	17.4	19.3
Atlantic	24.5	23.1
Quebec	14.4	17.0
Manitoba/Sask.	21.4	22.2
Alberta	22.7	22.7
British Colombia	24.4	22.4
Retirement Factors		
(Never retired)	n.a.	19.3
retired at least once	n.a.	22.7
(never retired)	n.a.	19.3
Retired due to mandatory policy	n.a.	19.9
Retired voluntarily	n.a.	23.2
Retired due to health	n.a.	14.9
Retired as personal choice	n.a.	30.4
Retired since old enough	n.a.	20.3
Retired due to unemployment	n.a.	23.1
Retired due to family responsibilities	n.a.	30.1
Retired due to early retirement	n.a.	27.4
Retired due to technology	n.a.	25.0
Retired because Spouse retired	n.a.	15.2
Retired for other reasons	n.a.	23.1
(not retired)	n.a.	20.0
retired and remained retired	n.a.	22.0
returned to work after retirement	n.a.	24.6
(not retired)	n.a.	20.0
retired and remained retired	n.a.	22.0
returned as employee	n.a.	28.3
returned as self-employed	n.a.	32.1
returned to permanent job	n.a.	26.4
returned to temporary job	n.a.	35.1
returned to full-time job	n.a.	30.0
returned to part-time job or other job	n.a.	29.9

Table 1B - Time spent on Volunteer on volunteer activity by those who engaged in volunteer activity (Hours per 7 day week)

	age 15-49		age 50 and over	
	Average hours	coefficient of variation	Average hours	coefficient of variation
Sample size	1,390		983	
All persons	5.826	0.810	6.730	0.749
Sex Of Respondent				
(Female)	5.584	0.825	6.836	0.737
Male	6.104	0.792	6.599	0.764
Age Of Respondent - 5 Year Age Group				
age 15-19	5.257	0.839	n.a.	n.a.
age 20-24	5.382	0.812	n.a.	n.a.
age 25-29	5.672	0.806	n.a.	n.a.
age 30-34	5.769	0.834	n.a.	n.a.
age 35-39	6.119	0.813	n.a.	n.a.
age 40-44	6.275	0.763	n.a.	n.a.
age 45-49	5.718	0.814	n.a.	n.a.
(age 50-54)	n.a.	n.a.	6.493	0.775
age 55-59	n.a.	n.a.	6.956	0.731
age 60-64	n.a.	n.a.	6.438	0.769
age 65-69	n.a.	n.a.	7.320	0.684
age 70 and over	n.a.	n.a.	6.452	0.788
Immigrant Or Not				
(Non-Immigrant)	5.847	0.807	6.812	0.745
Immigrant	5.695	0.830	6.322	0.768
Marital Status Of Respondent				
(Single)	6.078	0.787	6.000	0.844
Married Or Common-Law	5.641	0.823	6.832	0.740
Widowed	4.423	1.061	6.457	0.759
Separated Or Divorced	6.422	0.780	7.244	0.718
Religious Attendance: Last 12 Months				
(No Religious Attendance)	5.950	0.810	6.635	0.754
Once Or A Few Times Per Year	5.489	0.795	7.099	0.747
At Least Once A Month	5.657	0.831	6.087	0.832
At Least Once A Week	6.075	0.811	6.825	0.731
Unknown	5.667	0.765	5.658	0.813
Highest Level Of Education Attained				
(Less Than High School)	5.552	0.832	6.677	0.774
High School Graduate	5.734	0.805	6.181	0.769
Some Post Secondary	5.702	0.823	7.375	0.724
Comm College/Voc.Ed.	6.111	0.804	6.758	0.716
University Graduate	5.849	0.798	6.951	0.739
Health Status, Compared To People Same Age				
(Health Poor)	7.295	0.774	6.179	0.753
Health Fair	6.079	0.811	6.275	0.811
Health Good	5.732	0.835	6.659	0.736
Health Very Good	5.837	0.825	6.371	0.766
Health Excellent	5.785	0.775	7.451	0.715
Health Unknown	4.000	0.650	9.300	0.593
Past 12 Months: Received Income From Interest				
(No Interest Income)	5.875	0.810	6.753	0.753
Received Interest Income	5.988	0.795	6.749	0.745

Dwelling Owned By A Member Of The Household				
(No Home)	6.273	0.775	6.888	0.733
Home Owner	5.636	0.825	6.709	0.751
Past 12 Months: Received Income, Private Pensions				
(No Plan)	5.907	0.806	6.638	0.760
Employer Pension Plan	5.828	0.830	7.053	0.717
OCC. Prestige index	n.a.	n.a.	n.a.	n.a.
Standard Industrial Class. Codes(18) - Current Job				
(Manufacturing Industry)	6.079	0.807	6.731	0.803
Primary Industry	6.132	0.801	6.589	0.798
Construction Industry	4.979	0.803	6.531	0.718
Service Industry	5.451	0.835	5.955	0.757
Health & Education	5.639	0.804	6.396	0.775
Public Administration	6.439	0.754	6.111	0.841
Not Available	6.198	0.799	6.961	0.737
Province Of Residence Of Respondent				
(Ontario)	5.858	0.837	6.397	0.758
Atlantic	6.291	0.782	7.023	0.725
Quebec	5.697	0.779	6.922	0.737
Manitoba/Sask.	5.708	0.802	6.156	0.814
Alberta	5.653	0.822	6.808	0.726
British Colombia	5.343	0.848	7.051	0.744
Retirement Factors				
(Never retired)	n.a.	n.a.	6.53	0.761
retired at least once	n.a.	n.a.	6.94	0.735
(never retired)	n.a.	n.a.	6.532	0.761
Retired due to mandatory policy	n.a.	n.a.	7.750	0.650
Retired voluntarily	n.a.	n.a.	6.841	0.748
Retired due to health	n.a.	n.a.	6.740	0.778
Retired as personal choice	n.a.	n.a.	6.544	0.759
Retired since old enough	n.a.	n.a.	6.561	0.752
Retired due to unemployment	n.a.	n.a.	7.357	0.713
Retired due to family responsibilities	n.a.	n.a.	6.250	0.822
Retired due to early retirement	n.a.	n.a.	7.150	0.767
Retired due to technology	n.a.	n.a.	7.700	0.587
Retired because Spouse retired	n.a.	n.a.	8.000	0.649
Retired for other reasons	n.a.	n.a.	7.726	0.661
(not retired)	n.a.	n.a.	6.693	0.756
retired and remained retired	n.a.	n.a.	6.780	0.739
returned to work after retirement	n.a.	n.a.	7.399	0.745
(not retired)	n.a.	n.a.	6.693	0.756
retired and remained retired	n.a.	n.a.	6.780	0.739
returned as employee	n.a.	n.a.	7.776	0.694
returned as self-employed	n.a.	n.a.	6.077	0.862
returned to permanent job	n.a.	n.a.	6.845	0.766
returned to temporary job	n.a.	n.a.	8.000	0.705
returned to full-time job	n.a.	n.a.	7.370	0.729
returned to part-time job or other job	n.a.	n.a.	7.240	0.750

Table 1C - Time spent on Volunteer on volunteer activity by all persons(Hours per 7 day week)

	age 15-49		age 50 and over	
	Average hours	coefficient of variation	Average hours	coefficient of variation
Sample size	6,833		4,717	
All persons	1.185	2.673	1.403	2.546
Sex Of Respondent				
(Female)	1.140	2.689	1.389	2.568
Male	1.236	2.652	1.420	2.520
Age Of Respondent - 5 Year Age Group				
age 15-19	0.983	2.845	n.a.	n.a.
age 20-24	0.789	3.208	n.a.	n.a.
age 25-29	0.847	3.168	n.a.	n.a.
age 30-34	1.191	2.684	n.a.	n.a.
age 35-39	1.443	2.457	n.a.	n.a.
age 40-44	1.561	2.314	n.a.	n.a.
age 45-49	1.347	2.460	n.a.	n.a.
(age 50-54)	n.a.	n.a.	1.575	2.364
age 55-59	n.a.	n.a.	1.387	2.586
age 60-64	n.a.	n.a.	1.363	2.551
age 65-69	n.a.	n.a.	1.766	2.254
age 70 and over	n.a.	n.a.	1.156	2.835
Immigrant Or Not				
(Non-Immigrant)	1.208	2.644	1.467	2.493
Immigrant	1.051	2.853	1.142	2.792
Marital Status Of Respondent				
(Single)	1.008	2.959	1.070	2.925
Married Or Common-Law	1.295	2.510	1.544	2.418
Widowed	1.106	2.701	1.171	2.772
Separated Or Divorced	1.247	2.696	1.416	2.596
Religious Attendance: Last 12 Months				
(No Religious Attendance)	0.797	3.368	0.844	3.364
Once Or A Few Times Per Year	1.040	2.759	1.001	3.167
At Least Once A Month	1.346	2.470	1.149	2.818
At Least Once A Week	2.337	1.819	2.179	1.951
Unknown	0.630	3.606	1.014	2.855
Highest Level Of Education Attained				
(Less Than High School)	0.799	3.277	0.937	3.223
High School Graduate	1.038	2.846	1.355	2.500
Some Post Secondary	1.254	2.573	2.161	2.049
Comm College/Voc.Ed.	1.323	2.569	1.791	2.170
University Graduate	1.578	2.250	2.392	1.868
Health Status, Compared To People Same Age				
(Health Poor)	1.122	3.047	0.436	4.578
Health Fair	0.833	3.323	0.917	3.212
Health Good	1.143	2.740	1.386	2.530
Health Very Good	1.219	2.655	1.520	2.377
Health Excellent	1.265	2.514	2.067	2.108
Health Unknown	0.632	2.739	1.409	2.774
Past 12 Months: Received Income From Interest				
(No Interest Income)	1.080	2.829	1.135	2.885
Received Interest Income	1.680	2.194	1.868	2.148

Dwelling Owned By A Member Of The Household				
(No Home)	1.056	2.917	0.992	3.108
Home Owner	1.268	2.543	1.536	2.415
Past 12 Months: Received Income, Private Pensions				
(No Plan)	1.196	2.672	1.307	2.647
Employer Pension Plan	1.567	2.290	1.730	2.274
OCC. Prestige index	n.a.	n.a.	n.a.	n.a.
Standard Industrial Class. Codes(18) - Current Job				
(Manufacturing Industry)	1.054	2.917	1.023	3.117
Primary Industry	1.759	2.170	1.247	2.753
Construction Industry	0.932	2.783	1.375	2.476
Service Industry	0.970	2.923	1.382	2.402
Health & Education	1.641	2.158	1.760	2.193
Public Administration	1.380	2.511	1.618	2.324
Not Available	1.203	2.727	1.395	2.587
Province Of Residence Of Respondent				
(Ontario)	1.017	2.965	1.234	2.674
Atlantic	1.540	2.362	1.622	2.367
Quebec	0.818	3.189	1.174	2.843
Manitoba/Sask.	1.223	2.581	1.365	2.547
Alberta	1.283	2.525	1.543	2.393
British Colombia	1.306	2.455	1.580	2.434
Retirement Factors				
(Never retired)	n.a.	n.a.	1.26	2.677
retired at least once	n.a.	n.a.	1.58	2.403
(never retired)	n.a.	n.a.	1.262	2.677
Retired due to mandatory policy	n.a.	n.a.	1.544	2.475
Retired voluntarily	n.a.	n.a.	1.584	2.394
Retired due to health	n.a.	n.a.	1.002	3.125
Retired as personal choice	n.a.	n.a.	1.992	2.043
Retired since old enough	n.a.	n.a.	1.332	2.583
Retired due to unemployment	n.a.	n.a.	1.698	2.347
Retired due to family responsibilities	n.a.	n.a.	1.879	2.135
Retired due to early retirement	n.a.	n.a.	1.959	2.185
Retired due to technology	n.a.	n.a.	1.925	2.078
Retired because Spouse retired	n.a.	n.a.	1.217	2.850
Retired for other reasons	n.a.	n.a.	1.787	2.278
(not retired)	n.a.	n.a.	1.340	2.617
retired and remained retired	n.a.	n.a.	1.494	2.452
returned to work after retirement	n.a.	n.a.	1.823	2.302
(not retired)	n.a.	n.a.	1.340	2.617
retired and remained retired	n.a.	n.a.	1.494	2.452
returned as employee	n.a.	n.a.	2.202	2.055
returned as self-employed	n.a.	n.a.	1.951	2.096
returned to permanent job	n.a.	n.a.	1.808	2.233
returned to temporary job	n.a.	n.a.	2.809	1.804
returned to full-time job	n.a.	n.a.	2.211	2.022
returned to part-time job or other job	n.a.	n.a.	2.168	2.050

APPENDIX 2: ECONOMETRIC TABLES

TABLE 2A-1: Impact of individual characteristics on Probability of engaging in Volunteer Activity, Canada, 1994, Persons Age 50 and over (LPM analysis)

	Coefficient	Std. Error	t-Stat.	Prob.	
Constant	-0.164	0.050	-3.295	0.001	**
Sex Of Respondent					
(Female)					
Male	0.018	0.014	1.323	0.186	
Age Of Respondent - 5 Year Age Group					
(Age 50-54)					
Age 55-59	-0.049	0.020	-2.419	0.016	**
Age 60-64	-0.045	0.022	-2.054	0.040	**
Age 65-69	-0.022	0.023	-0.937	0.349	
Age 70 And Over	-0.075	0.023	-3.292	0.001	**
Immigrant Or Not					
(Non-Immigrant)					
Immigrant	-0.057	0.015	-3.797	0.000	**
Marital Status Of Respondent					
(Single)					
Married Or Common-Law	0.038	0.022	1.753	0.080	*
Widowed	0.023	0.024	0.991	0.322	
Separated Or Divorced	0.064	0.027	2.358	0.018	**
Religious Attendance: Last 12 Months					
(No Religious Attendance)					
Once Or A Few Times Per Year	0.009	0.016	0.569	0.569	
At Least Once A Month	0.075	0.020	3.764	0.000	**
At Least Once A Week	0.202	0.015	13.687	0.000	**
Unknown	0.065	0.041	1.580	0.114	
Highest Level Of Education Attained					
(Less Than High School)					
High School Graduate	0.053	0.018	2.971	0.003	**
Some Post Secondary	0.114	0.025	4.497	0.000	**
Comm College/Voc.Ed.	0.078	0.016	4.899	0.000	**
University Graduate	0.146	0.021	6.976	0.000	**
Health Status, Compared To People Same Age					
(Health Poor)					
Health Fair	0.035	0.024	1.458	0.145	
Health Good	0.069	0.023	3.008	0.003	**
Health Very Good	0.079	0.023	3.389	0.001	**
Health Excellent	0.104	0.025	4.202	0.000	**
Health Unknown	0.027	0.073	0.376	0.707	
Past 12 Months: Received Income From Interest					
(No Interest Income)					
Received Interest Income	0.056	0.013	4.321	0.000	**
Dwelling Owned By A Member Of The Household					
(No Home)					
Home Owner	0.034	0.014	2.336	0.020	**

Past 12 Months: Received Income, Private Pensions					
(No Plan)					
Employer Pension Plan	0.005	0.016	0.316	0.752	
Occ. Prestige Index	0.008	0.003	3.034	0.002	**
Standard Industrial Class. Codes(18) - Current Job					
(Manufacturing Industry)					
Primary Industry	0.021	0.044	0.478	0.633	
Construction Industry	0.063	0.053	1.178	0.239	
Service Industry	0.049	0.034	1.450	0.147	
Health & Education	0.061	0.038	1.598	0.110	
Public Administration	0.072	0.049	1.471	0.141	
Not Available	0.060	0.033	1.807	0.071	*
Province Of Residence Of Respondent					
(Ontario)					
Atlantic	0.022	0.018	1.220	0.223	
Quebec	-0.017	0.019	-0.939	0.348	
Manitoba/Sask.	0.031	0.020	1.575	0.115	
Alberta	0.039	0.022	1.799	0.072	*
British Colombia	0.053	0.020	2.653	0.008	**
Retirement Status					
(Never Retired)					
Retired Due To Mandatory Rule	-0.002	0.028	-0.065	0.948	
Retired Due To Health	-0.003	0.021	-0.140	0.889	
Retired As Personal Choice	0.061	0.022	2.734	0.006	**
Retired Since Old Enough	0.005	0.030	0.162	0.871	
Retired Due To Unemployment	0.034	0.031	1.102	0.271	
Retired Due To Family Reasons	0.085	0.031	2.694	0.007	**
Retired Due To Early Retirement	0.011	0.036	0.304	0.761	
Retired Due To Technology	0.015	0.087	0.177	0.859	
Retired Because Spouse Retired	-0.060	0.058	-1.039	0.299	
Retired For Other Reasons	0.010	0.035	0.275	0.783	
R-squared	0.114	F-statistic		12.774	
Adjusted R-squared	0.105	Prob(F-statistic)		0.000	
Total obs	4,717	Mean dependent var		0.208	

TABLE 2A-2: Impact of individual characteristics on Probability of engaging in Volunteer Activity, Canada, 1994, Persons Age 50 and over (Logit analysis)

Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Stat.	Prob.	
Constant	-4.393	0.391	-11.241	0.000	**
Sex Of Respondent					
(Female)					
Male	0.135	0.093	1.448	0.148	
Age Of Respondent - 5 Year Age Group					
(Age 50-54)					
Age 55-59	-0.320	0.134	-2.388	0.017	**
Age 60-64	-0.303	0.144	-2.099	0.036	**
Age 65-69	-0.152	0.153	-0.993	0.321	
Age 70 And Over	-0.518	0.154	-3.356	0.001	**
Immigrant Or Not					
(Non-Immigrant)					
Immigrant	-0.372	0.106	-3.500	0.001	**
Marital Status Of Respondent					
(Single)					
Married Or Common-Law	0.252	0.154	1.637	0.102	*
Widowed	0.129	0.169	0.761	0.447	
Separated Or Divorced	0.470	0.194	2.419	0.016	**
Religious Attendance: Last 12 Months					
(No Religious Attendance)					
Once Or A Few Times Per Year	0.105	0.127	0.827	0.409	
At Least Once A Month	0.598	0.145	4.123	0.000	**
At Least Once A Week	1.348	0.107	12.540	0.000	**
Unknown	0.522	0.290	1.802	0.072	*
Highest Level Of Education Attained					
(Less Than High School)					
High School Graduate	0.374	0.122	3.067	0.002	**
Some Post Secondary	0.742	0.160	4.637	0.000	**
Comm College/Voc. Ed.	0.550	0.107	5.162	0.000	**
University Graduate	0.879	0.133	6.631	0.000	**
Health Status, Compared To People Same Age					
(Health Poor)					
Health Fair	0.564	0.230	2.455	0.014	**
Health Good	0.837	0.217	3.852	0.000	**
Health Very Good	0.901	0.218	4.134	0.000	**
Health Excellent	1.029	0.223	4.611	0.000	**
Health Unknown	0.613	0.551	1.113	0.266	

Past 12 Months: Received Income From Interest					
(No Interest Income)					
Received Interest Income	0.379	0.086	4.392	0.000	**
Dwelling Owned By A Member Of The Household					
(No Home)					
Home Owner	0.265	0.107	2.480	0.013	**
Past 12 Months: Received Income, Private Pensions					
(No Plan)					
Employer Pension Plan	0.037	0.105	0.358	0.721	
Occ. Prestige Index	0.042	0.017	2.527	0.012	**
Standard Industrial Class. Codes(18) - Current Job					
(Manufacturing Industry)					
Primary Industry	0.219	0.317	0.692	0.489	
Construction Industry	0.502	0.368	1.367	0.172	
Service Industry	0.391	0.248	1.575	0.115	
Health & Education	0.446	0.271	1.646	0.100	*
Public Administration	0.530	0.328	1.613	0.107	
Not Available	0.459	0.247	1.861	0.063	*
Province Of Residence Of Respondent					
(Ontario)					
Atlantic	0.148	0.123	1.206	0.228	
Quebec	-0.116	0.133	-0.873	0.383	
Manitoba/Sask.	0.206	0.133	1.544	0.123	
Alberta	0.255	0.147	1.732	0.083	*
British Colombia	0.392	0.136	2.885	0.004	**
Retirement Status					
(Never Retired)					
Retired Due To Mandatory Policy	-0.055	0.198	-0.277	0.782	
Retired Due To Health	-0.075	0.161	-0.469	0.639	
Retired As Personal Choice	0.327	0.144	2.278	0.023	**
Retired Since Old Enough	0.026	0.206	0.128	0.898	
Retired Due To Unemployment	0.198	0.205	0.963	0.336	
Retired Due To Family Responsibilities	0.494	0.196	2.518	0.012	**
Retired Due To Early Retirement	0.021	0.227	0.092	0.927	
Retired Due To Technology	0.180	0.541	0.333	0.740	
Retired Because Spouse Retired	-0.430	0.441	-0.974	0.330	
Retired For Other Reasons	0.062	0.231	0.271	0.787	
LR statistic (47 df)	559.951	Probability	(LR stat)	0.000	
Obs with Dep=0	3,734	Total obs		4,717	
Obs with Dep=1	983	Mean dependent var		0.208	

TABLE 2A-3: Impact of individual characteristics on Probability of engaging in Volunteer Activity, Canada, 1994, Persons Age 50 and over (Probit analysis)

Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	β/σ	z-Stat.	Prob.	
Constant	-2.511	0.212	-6.560	-11.821	0.000	**
Sex Of Respondent						
(Female)						
Male	0.083	0.053	0.217	1.561	0.118	
Age Of Respondent - 5 Year Age Group						
(Age 50-54)						
Age 55-59	-0.176	0.077	-0.459	-2.272	0.023	**
Age 60-64	-0.165	0.083	-0.430	-1.985	0.047	**
Age 65-69	-0.080	0.088	-0.208	-0.902	0.367	
Age 70 And Over	-0.295	0.088	-0.770	-3.335	0.001	**
Immigrant Or Not						
(Non-Immigrant)						
Immigrant	-0.214	0.060	-0.558	-3.560	0.000	**
Marital Status Of Respondent						
(Single)						
Married Or Common-Law	0.137	0.087	0.359	1.586	0.113	
Widowed	0.065	0.095	0.170	0.686	0.493	
Separated Or Divorced	0.257	0.109	0.670	2.356	0.019	**
Religious Attendance: Last 12 Months						
(No Religious Attendance)						
Once Or A Few Times Per Year	0.050	0.069	0.131	0.723	0.469	
At Least Once A Month	0.321	0.081	0.837	3.960	0.000	**
At Least Once A Week	0.762	0.059	1.991	12.825	0.000	**
Unknown	0.296	0.162	0.773	1.824	0.068	*
Highest Level Of Education Attained						
(Less Than High School)						
High School Graduate	0.224	0.069	0.586	3.259	0.001	**
Some Post Secondary	0.426	0.094	1.112	4.547	0.000	**
Comm College/Voc. Ed.	0.315	0.061	0.822	5.146	0.000	**
University Graduate	0.511	0.077	1.336	6.637	0.000	**
Health Status, Compared To People Same Age						
(Health Poor)						
Health Fair	0.305	0.119	0.796	2.560	0.011	**
Health Good	0.454	0.112	1.185	4.036	0.000	**
Health Very Good	0.503	0.113	1.314	4.458	0.000	**
Health Excellent	0.573	0.116	1.497	4.930	0.000	**
Health Unknown	0.280	0.309	0.731	0.904	0.366	

Past 12 Months: Received Income From Interest						
(No Interest Income)						
Received Interest Income	0.213	0.050	0.556	4.286	0.000	**
Dwelling Owned By A Member Of The Household						
(No Home)						
Home Owner	0.140	0.060	0.365	2.347	0.019	**
Past 12 Months: Received Income, Private Pensions						
(No Plan)						
Employer Pension Plan	0.035	0.060	0.092	0.588	0.556	
Occ. Prestige Index	0.026	0.010	0.067	2.649	0.008	**
Standard Industrial Class. Codes(18) - Current Job						
(Manufacturing Industry)						
Primary Industry	0.107	0.177	0.279	0.604	0.546	
Construction Industry	0.256	0.209	0.668	1.223	0.222	
Service Industry	0.207	0.138	0.539	1.502	0.133	
Health & Education	0.244	0.152	0.637	1.610	0.108	
Public Administration	0.281	0.187	0.735	1.503	0.133	
Not Available	0.259	0.136	0.676	1.905	0.057	*
Province Of Residence Of Respondent						
(Ontario)						
Atlantic	0.084	0.070	0.220	1.197	0.231	
Quebec	-0.057	0.075	-0.149	-0.760	0.447	
Manitoba/Sask.	0.114	0.076	0.298	1.494	0.135	
Alberta	0.144	0.085	0.375	1.700	0.089	*
British Colombia	0.223	0.078	0.582	2.871	0.004	**
Retirement Status						
(Never Retired)						
Retired Due To Mandatory Policy	-0.051	0.113	-0.132	-0.448	0.654	
Retired Due To Health	-0.047	0.089	-0.124	-0.531	0.595	
Retired As Personal Choice	0.181	0.083	0.474	2.175	0.030	**
Retired Since Old Enough	0.007	0.118	0.017	0.056	0.955	
Retired Due To Unemployment	0.093	0.119	0.244	0.787	0.431	
Retired Due To Family Responsibilities	0.271	0.116	0.707	2.330	0.020	**
Retired Due To Early Retirement	-0.012	0.132	-0.032	-0.093	0.926	
Retired Due To Technology	0.078	0.317	0.204	0.247	0.805	
Retired Because Spouse Retired	-0.239	0.242	-0.625	-0.991	0.322	
Retired For Other Reasons	0.033	0.132	0.087	0.251	0.802	
LR statistic (47 df)	559.736	Probability(LR stat)			0.000	
Obs with Dep=0	3,734	Total obs			4,717	
Obs with Dep=1	983	Mean dependent var			0.208	

TABLE 2B: Impact of individual characteristics on Conditional Hours per Week of Volunteer Activity, Canada, 1994, Persons Age 50 and over (OLS analysis)

	Coefficient	Std. Error	t-Stat.	Prob.	
Constant	4.955	1.741	2.846	0.005	**
Sex Of Respondent					
(Female)					
Male	-0.451	0.401	-1.124	0.262	
Age Of Respondent - 5 Year Age Group					
(Age 50-54)					
Age 55-59	0.356	0.567	0.627	0.531	
Age 60-64	-0.497	0.613	-0.810	0.418	
Age 65-69	0.279	0.645	0.432	0.666	
Age 70 And Over	-0.590	0.651	-0.906	0.365	
Immigrant Or Not					
(Non-Immigrant)					
Immigrant	-0.520	0.456	-1.140	0.254	
Marital Status Of Respondent					
(Single)					
Married Or Common-Law	1.291	0.683	1.890	0.059	*
Widowed	0.513	0.749	0.684	0.494	
Separated Or Divorced	1.354	0.837	1.619	0.106	
Religious Attendance: Last 12 Months					
(No Religious Attendance)					
Once Or A Few Times Per Year	0.652	0.585	1.114	0.266	
At Least Once A Month	-0.622	0.649	-0.958	0.338	
At Least Once A Week	0.251	0.469	0.535	0.593	
Unknown	-1.285	1.281	-1.003	0.316	
Highest Level Of Education Attained					
(Less Than High School)					
High School Graduate	-0.530	0.528	-1.004	0.316	
Some Post Secondary	0.553	0.663	0.834	0.405	
Comm College/Voc.Ed.	0.017	0.463	0.036	0.971	
University Graduate	0.427	0.548	0.780	0.436	
Health Status, Compared To People Same Age					
(Health Poor)					
Health Fair	-0.051	1.099	-0.046	0.963	
Health Good	0.468	1.038	0.451	0.652	
Health Very Good	0.104	1.039	0.100	0.921	
Health Excellent	1.297	1.046	1.240	0.215	
Health Unknown	3.499	2.518	1.390	0.165	
Past 12 Months: Received Income From Interest					
(No Interest Income)					
Received Interest Income	-0.012	0.365	-0.034	0.973	

Dwelling Owned By A Member Of The Household				
(No Home)				
Home Owner	-0.293	0.489	-0.600	0.549
Past 12 Months: Received Income, Private Pensions				
(No Plan)				
Employer Pension Plan	0.164	0.444	0.370	0.712
Occ. Prestige Index	0.019	0.068	0.279	0.781
Standard Industrial Class. Codes(18) - Current Job				
(Manufacturing Industry)				
Primary Industry	-0.083	1.404	-0.059	0.953
Construction Industry	-0.001	1.614	-0.001	0.999
Service Industry	-0.921	1.097	-0.840	0.401
Health & Education	-0.689	1.176	-0.585	0.559
Public Administration	-0.814	1.416	-0.575	0.566
Not Available	0.393	1.089	0.360	0.719
Province Of Residence Of Respondent				
(Ontario)				
Atlantic	0.631	0.515	1.225	0.221
Quebec	0.359	0.579	0.620	0.536
Manitoba/Sask.	-0.181	0.560	-0.323	0.747
Alberta	0.715	0.622	1.148	0.251
British Colombia	0.769	0.579	1.329	0.184
Retirement Status				
(Never Retired)				
Retired Due To Mandatory Policy	1.270	0.883	1.439	0.151
Retired Due To Health	-0.030	0.710	-0.043	0.966
Retired As Personal Choice	-0.462	0.591	-0.782	0.435
Retired Since Old Enough	-0.181	0.892	-0.203	0.840
Retired Due To Unemployment	0.419	0.856	0.490	0.624
Retired Due To Family Responsibilities	-0.216	0.800	-0.270	0.787
Retired Due To Early Retirement	0.248	0.941	0.264	0.792
Retired Due To Technology	0.885	2.306	0.384	0.701
Retired Because Spouse Retired	1.862	1.965	0.947	0.344
Retired For Other Reasons	1.105	0.965	1.145	0.253
R-squared	0.050	F-statistic		1.046
Adjusted R-squared	0.002	Prob(F-statistic)		0.392
Total obs	983	Mean dependent var		6.730

TABLE 2C: Impact of individual characteristics on Unconditional Hours per Week of Volunteer Activity, Canada, 1994, Persons Age 50 and over (OLS analysis)

	Coefficient	Std. Error	t-Stat.	Prob.	
Constant	-1.397	0.447	-3.127	0.002	**
Sex Of Respondent					
(Female)					
Male	0.042	0.123	0.340	0.734	
Age Of Respondent - 5 Year Age Group					
(Age 50-54)					
Age 55-59	-0.260	0.182	-1.434	0.152	
Age 60-64	-0.394	0.195	-2.022	0.043	**
Age 65-69	-0.067	0.209	-0.320	0.749	
Age 70 And Over	-0.611	0.205	-2.987	0.003	**
Immigrant Or Not					
(Non-Immigrant)					
Immigrant	-0.482	0.136	-3.550	0.000	**
Marital Status Of Respondent					
(Single)					
Married Or Common-Law	0.439	0.193	2.272	0.023	**
Widowed	0.229	0.211	1.085	0.278	
Separated Or Divorced	0.666	0.244	2.732	0.006	**
Religious Attendance: Last 12 Months					
(No Religious Attendance)					
Once Or A Few Times Per Year	0.121	0.146	0.831	0.406	
At Least Once A Month	0.397	0.178	2.235	0.026	**
At Least Once A Week	1.389	0.132	10.498	0.000	**
Unknown	0.158	0.367	0.431	0.667	
Highest Level Of Education Attained					
(Less Than High School)					
High School Graduate	0.242	0.159	1.519	0.129	
Some Post Secondary	0.935	0.228	4.096	0.000	**
Comm College/Voc. Ed.	0.527	0.143	3.676	0.000	**
University Graduate	1.090	0.188	5.808	0.000	**
Health Status, Compared To People Same Age					
(Health Poor)					
Health Fair	0.213	0.217	0.981	0.327	
Health Good	0.522	0.206	2.539	0.011	**
Health Very Good	0.519	0.209	2.484	0.013	**
Health Excellent	0.977	0.222	4.398	0.000	**
Health Unknown	0.778	0.654	1.190	0.234	
Past 12 Months: Received Income From Interest					
(No Interest Income)					
Received Interest Income	0.366	0.117	3.132	0.002	**

Dwelling Owned By A Member Of The Household					
(No Home)					
Home Owner	0.175	0.130	1.347	0.178	
Past 12 Months: Received Income, Private Pensions					
(No Plan)					
Employer Pension Plan	0.070	0.139	0.504	0.614	
Occ. Prestige Index	0.063	0.023	2.733	0.006	**
Standard Industrial Class. Codes(18) - Current Job					
(Manufacturing Industry)					
Primary Industry	0.166	0.394	0.421	0.674	
Construction Industry	0.432	0.478	0.904	0.366	
Service Industry	0.119	0.304	0.391	0.696	
Health & Education	0.261	0.343	0.759	0.448	
Public Administration	0.275	0.437	0.631	0.528	
Not Available	0.501	0.297	1.684	0.092	*
Province Of Residence Of Respondent					
(Ontario)					
Atlantic	0.254	0.162	1.569	0.117	
Quebec	-0.066	0.167	-0.393	0.695	
Manitoba/Sask.	0.158	0.175	0.898	0.369	
Alberta	0.364	0.195	1.867	0.062	*
British Colombia	0.492	0.179	2.740	0.006	**
Retirement Status					
(Never Retired)					
Retired Due To Mandatory Policy	0.226	0.254	0.892	0.373	
Retired Due To Health	0.000	0.193	0.001	1.000	
Retired As Personal Choice	0.321	0.202	1.595	0.111	
Retired Since Old Enough	0.017	0.269	0.062	0.951	
Retired Due To Unemployment	0.367	0.277	1.328	0.184	
Retired Due To Family Responsibilities	0.442	0.282	1.564	0.118	
Retired Due To Early Retirement	0.111	0.319	0.348	0.728	
Retired Due To Technology	0.286	0.780	0.367	0.714	
Retired Because Spouse Retired	-0.239	0.521	-0.459	0.646	
Retired For Other Reasons	0.290	0.313	0.928	0.353	
R-squared	0.078	F-statistic		8.439	
Adjusted R-squared	0.069	Prob(F-statistic)		0.000	
Included observations:	4,717	Mean dependent var		1.403	

TABLE 2D: Impact of individual characteristics on Unconditional Hours per Week of Volunteer Activity, Canada, 1994, Persons Age 50 and over (Tobit analysis)

Left censoring (value) at zero
Estimation settings: tol= 0.00010, derivs=accurate mixed (linear)
Initial Values: C(1)=-1.39674, C(2)=0.04178, C(3)=-0.26041, C(4)=
-0.39355, C(5)=-0.06695, C(6)=-0.61115, C(7)=-0.48182,
C(8)=0.43908, C(9)=0.22919, C(10)=0.66612, C(11)=0.12099,
C(12)=0.39739, C(13)=1.38927, C(14)=0.15814, C(15)=0.24185,
C(16)=0.93463, C(17)=0.52703, C(18)=1.09039, C(19)=0.21333,
C(20)=0.52215, C(21)=0.51931, C(22)=0.97662, C(23)=0.77825,
C(24)=0.36619, C(25)=0.17496, C(26)=0.07020, C(27)=0.06330,
C(28)=0.16568, C(29)=0.43161, C(30)=0.11901, C(31)=0.26069,
C(32)=0.27550, C(33)=0.50085, C(34)=0.25380, C(35)=-0.06554,
C(36)=0.15757, C(37)=0.36372, C(38)=0.49155, C(39)=0.22610,
C(40)=0.00011, C(41)=0.32138, C(42)=0.01656, C(43)=0.36718,
C(44)=0.44155, C(45)=0.11089, C(46)=0.28628, C(47)=-0.23909,
C(48)=0.29017, C(49)=3.44645
Convergence achieved after 9 iterations
Covariance matrix computed using second derivatives

	Coefficient	Std. Error	β/σ	z-Stat.	Prob.	
Constant	-25.456	2.209	-7.393	-11.526	0.000	**
Sex Of Respondent						
(Female)						
Male	0.678	0.526	0.197	1.288	0.198	
Age Of Respondent - 5 Year Age Group						
(Age 50-54)						
Age 55-59	-1.474	0.762	-0.428	-1.933	0.053	*
Age 60-64	-1.659	0.820	-0.482	-2.023	0.043	**
Age 65-69	-0.569	0.869	-0.165	-0.655	0.512	
Age 70 And Over	-2.962	0.873	-0.860	-3.392	0.001	**
Immigrant Or Not						
(Non-Immigrant)						
Immigrant	-2.156	0.596	-0.626	-3.615	0.000	**
Marital Status Of Respondent						
(Single)						
Married Or Common-Law	1.652	0.865	0.480	1.911	0.056	*
Widowed	0.678	0.949	0.197	0.715	0.475	
Separated Or Divorced	2.875	1.081	0.835	2.659	0.008	**
Religious Attendance: Last 12 Months						
(No Religious Attendance)						
Once Or A Few Times Per Year	0.660	0.692	0.192	0.954	0.340	
At Least Once A Month	2.886	0.812	0.838	3.556	0.000	**
At Least Once A Week	7.316	0.608	2.125	12.023	0.000	**
Unknown	2.414	1.629	0.701	1.482	0.138	
Highest Level Of Education Attained						

(Less Than High School)						
High School Graduate	2.025	0.687	0.588	2.949	0.003	**
Some Post Secondary	4.276	0.918	1.242	4.659	0.000	**
Comm College/Voc. Ed.	3.067	0.608	0.891	5.043	0.000	**
University Graduate	4.928	0.760	1.431	6.487	0.000	**
Health Status, Compared To People Same Age						
(Health Poor)						
Health Fair	3.190	1.201	0.926	2.657	0.008	**
Health Good	4.820	1.136	1.400	4.244	0.000	**
Health Very Good	5.217	1.141	1.515	4.573	0.000	**
Health Excellent	6.335	1.172	1.840	5.406	0.000	**
Health Unknown	4.202	3.024	1.220	1.389	0.165	
Past 12 Months: Received Income From Interest						
(No Interest Income)						
Received Interest Income	2.016	0.491	0.586	4.103	0.000	**
Dwelling Owned By A Member Of The Household						
(No Home)						
Home Owner	1.177	0.594	0.342	1.981	0.048	**
Past 12 Months: Received Income, Private Pensions						
(No Plan)						
Employer Pension Plan	0.456	0.590	0.132	0.772	0.440	
Occ. Prestige Index	0.234	0.094	0.068	2.480	0.013	**
Standard Industrial Class. Codes(18) - Current Job						
(Manufacturing Industry)						
Primary Industry	1.100	1.763	0.319	0.624	0.533	
Construction Industry	2.434	2.079	0.707	1.171	0.242	
Service Industry	1.645	1.372	0.478	1.199	0.231	
Health & Education	2.088	1.505	0.606	1.387	0.166	
Public Administration	2.396	1.857	0.696	1.290	0.197	
Not Available	2.701	1.354	0.784	1.995	0.046	**
Province Of Residence Of Respondent						
(Ontario)						
Atlantic	1.028	0.691	0.299	1.487	0.137	
Quebec	-0.332	0.742	-0.096	-0.448	0.654	
Manitoba/Sask.	1.001	0.755	0.291	1.326	0.185	
Alberta	1.567	0.833	0.455	1.881	0.060	*
British Colombia	2.437	0.767	0.708	3.178	0.002	**
Retirement Status						
(Never Retired)						
Retired Due To Mandatory Policy	-0.142	1.114	-0.041	-0.127	0.899	
Retired Due To Health	-0.506	0.889	-0.147	-0.570	0.569	
Retired As Personal Choice	1.354	0.818	0.393	1.655	0.098	*
Retired Since Old Enough	-0.066	1.168	-0.019	-0.056	0.955	
Retired Due To Unemployment	1.007	1.161	0.293	0.867	0.386	
Retired Due To Family Responsibilities	2.241	1.134	0.651	1.976	0.048	**

Retired Due To Early Retirement	-0.159	1.292	-0.046	-0.123	0.902
Retired Due To Technology	1.130	3.114	0.328	0.363	0.717
Retired Because Spouse Retired	-1.797	2.379	-0.522	-0.755	0.450
Retired For Other Reasons	0.767	1.293	0.223	0.593	0.553

Error Distribution

SCALE:C(49)	10.515	0.279		37.695	0.000

R-squared	0.080	Mean dependent var	1.403
Adjusted R-squared	0.071	S.D. dependent var	3.572
S.E. of regression	3.443	Akaike info criterion	2.124
Sum squared resid	55339.400	Schwarz criterion	2.191
Log likelihood	-4961.019	Hannan-Quinn criter.	2.148
Avg. log likelihood	-1.052		

Left censored obs	3,734	Right censored obs	0
Uncensored obs	983	Total obs	4,717