

## Intergenerational Private Transfers in Canada Retirement, Transfers in Time and Well-Being

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### Abstract

The central question to investigate is: what are the modifications in well-being of the individuals and households after the transition from labor market to retirement? Time use is an essential element in the evaluation of these modifications, in accordance with two possible outcomes: first, the elderly contribute to the family's well-being by providing care; secondly and leisure activities and received care.

The consideration of both time and money *inter vivos* intergenerational transfers, analyzed through altruism and exchange models, is scarce in the literature, and the lack of information in time transfers is one of the reasons. This paper, focusing on models using time use data drawn from the two last Canadian time use surveys helps to address that shortfall.

The transfer of time decision for analytical purposes must be separated in two stages: the decision of make a transfer or not and, if to be made, the decision about the transfer amount. This separate and sequential approach is adopted on the paper estimating first Probit models and after Tobit models for Canada and comparing with results for other countries. The estimate main predictors associated positively with the intergenerational transfer are educational level and being female.

Keywords: *Time use; Well-being; Elderly; Retirement; Time Allocation; Intergenerational inter vivos private transfers*

### Introduction

The trends in family size, composition and ties and the present debate on increasing the normal retirement age, call for the need for a better knowledge of the effects on individuals and households of the work to retirement transition.<sup>1</sup>

Time use is an essential element in the evaluation of these modifications, in accordance with two possible outcomes: first, the elderly, even after retiring from the labor market, can contribute to the family's well-being by providing care; secondly, leisure activities and receiving care are associated with a higher level of well-being. Two theoretical areas converge in our study: the *inter-vivo* private transfers as stimulants and creators of well-being, and the evaluation of that well-being.

<sup>1</sup>'Transition' is considered in this paper as a change of state in a moment  $t$ . Note that the expression work to retirement transition is used in different ways. This paper researches the before and after moments (comparative static) not the complete trajectory (dynamic) as done for example by Stone (2006).

To answer the research question, the present paper brings together information from two main sources (micro data bases): the Multinational Time Use Study (MTUS) and the American Time Use Survey (ATUS - BLS).

The empirical analysis is conducted through descriptive analysis and private transfers' models estimation (Probit and Tobit).

The present paper combines two types of information in order to create a more complete picture of the total transfers associated with well-being; one concerning income sources and money transfers and the other time use and associating well being.<sup>2</sup>

The family as an entity, which consumes trains and supplies labor and produces non-market goods, has long been considered by economists to be homogeneous. Within the family, however, decisions are taken by each of the family members and these decisions influence the behavior of the other members and the aggregate family behavior. The decisions taken within the household<sup>3</sup> are related to income, wealth and time distribution and re-distribution intra-household and inter-households, fertility choices, human capital investment, labor market participation and retirement.<sup>4</sup>

Non-unitarian household models, have contributed to a better understanding of household decisions.<sup>5</sup> Private transfers, in money, time or kind (e.g. meals, clothes) are important because they contribute to both the objective and subjective well-being of the individual, either as receiver or as donor, and affect the final outcome of public policies of distribution, fertility decisions, inequality or equality across generations, saving and wealth accumulation. (Shoeni, 1997)<sup>6</sup>.

Intergenerational households, defined as households in which different generations are co-residents, are analyzed in more detail in this paper in order to understand the private transfers across generations. One particular group of family members is studied in more depth: elderly individuals and, if the latter are labor market participants, their pre-retirement and post-retirement status.

The consideration of both time and money households and intra-household transfers, as far as we know, is relatively scarce in the economics literature. Altonji *et*

<sup>2</sup> Household production and well-being or quality of life evaluation are identified topics of research in the surveys of time use research. (For example: Andorka (1987), Juster and Stafford (1991), Harvey (1999)). The Folbre and Bittman Eds (2004) book points out the importance of time of family care. The work of Hamermesh and Pfann Eds. (2005) includes several economic approaches using time use data, but the perspective of *inter vivos* private transfers are not considered.

<sup>3</sup> In this paper we will use *family* and *household* terms with similar meaning. The definitions of households presented in Appendix 1 Table 2 allow in most of the cases the equivalence.

<sup>4</sup> Gronau and Hamermesh (2003) survey the household time allocation theories. For a good summary of household theory until 80's see Gronau (1986). The same author has a seminar article on intra-family time allocation (Gronau, 1973).

<sup>5</sup> Game theory applied to intra-household relationships has also proven useful for the understanding of fertility, consumption, saving and time and financial resources allocation.

<sup>6</sup> The selection of the author of this text for the present research topic was born after reading the R.F. Shoeni article published in the Review of Income and Wealth on 1997.

al. (1996) and Schoeni (1997) pioneered the empirical analysis in this field using PSDI-supplement 1988 survey data.<sup>7</sup> They considered 'inter vivos' transfers<sup>8</sup> and tested altruism and exchange models, concluding that there was some evidence of altruistically motivated transfers.

A recent literature survey (Laferrère and F.C. Wolff, 2006) in this domain considers the lack of information in general and in time transfers in particular one of the reasons for inconclusive empirical results about transfer models. The same problem was identified by Cox (1997).

This paper, focusing on time use data drawn from time use surveys or other databases, helps address the information shortfall.<sup>9</sup>

The paper is organized as follows. **Section 1** presents the theoretical background of transfers and related well-being. The international databases are characterized and empirical strategies are presented and discussed in **Section 2**. Next, in **Section 3** some life cycle time use profiles by age are presented. The **Section 4** tests models of private giving of time using Probit and Tobit models. Empirical results are presented and discussed. Finally, **Section 5** concludes and suggests future research avenues.

## 1. THEORETICAL BACKGROUND

Time use studies and well-being studies converge in different ways: time allocation data is used in non-market production evaluation,<sup>10</sup> leisure time is included as a component of quality-of-life indexes, information on the perception of stress, lack of free time and self-reported well-being contribute to a broader analysis of well-being.<sup>11</sup>

Elderly economic well-being is frequently centered in the income level and distribution after retirement.<sup>12</sup> The replacement rate, quasi replacement rate and the regularly calculated by Eurostat and OECD, are the most frequent economic

indicators which evaluate the economic changes after retirement.<sup>13</sup> This paper analyses other components of the well-being, for example, different types of leisure time. Time allocation and employment status are important because after retirement, time eventually becomes a less scarce resource for each individual. The reallocation of the previous working time can combine selfish with altruistic behaviors, contributing to increased well-being of the individual, household members, relatives or friends.

The empirical tests of models of *inter vivos* private transfers in money or time require however detailed information that is seldom available. It is a difficult task to obtain data from intergenerational private transfers and time use data contributes to fill the gap<sup>14</sup> as this paper intends to show.

### *Intergenerational private transfers in money and time*

From the economics literature on intergenerational transfers, seven motivations for transfer are identified: altruism, in which the utilities of donors and receivers are connected; exchange, which considers separate utilities for donors and receivers; insurance, which is related with income fluctuations; access to credit;<sup>15</sup> comparative advantage of the family members; 'warm glow', which considers the donor's behavior, independent of the receiver's needs; demonstration effect for the next generation.<sup>16</sup>

These motivations have inspired alternative private transfer's models, which differ in several respects: the reasons for the transfers; the agents between whom the transfers take place (e.g. parents and adult children); the transfer flux direction (e.g. from adult children to parents, or vice versa); the nature of the transfers (e.g. financial, in kind, care time or other); the dynamics and elasticity of the transfers according to the changes occurring in donors' or receivers' characteristics (e.g. positive or negative).

There are two main private transfer models: the altruistic with many variants and the exchange model. There are also other mix models that combine elements of both. The altruistic model assumes that transfer is done (for example from parent to children)

<sup>7</sup> PSDI 1988 was used by several authors in the transfer models empirical analysis.

<sup>8</sup> To be distinguished from bequests.

<sup>9</sup> Is the case for example of SHARE data base presented in Appendix 1, which allow a detailed study of well-being production and distribution, as the research of Attias-Donfut *et al.* (2005) illustrates.

<sup>10</sup> See Ironmonger (1989) for a summary of this evaluation methodologies.

<sup>11</sup> Time use information is included for example in quality of life indexes (Glatzer *et al.* 2004) objective and subjective measures of well-being and happiness (GPI,2005; Kahneman and Krueger, 2006; Michelson, 2005; E.N. and Zacharias, 2003).

<sup>12</sup> Caner and Wolff, E. (2004) and Wolff, E. (2002) and Weller and Wolff, E. (2005) point out the importance of further aspects which contribute for the elderly well-being analyzing the US case. Förster and Ercole (2005) compare about thirty developed countries concerning poverty and elderly poverty and refer the limits of the income as the only measure of well being.

<sup>13</sup> OECD (2005), Eurostat (2006), Förster and Ercole (2005), Blondal and Scarpetta (1999). The values of those indicator for the countries analyzed in the present paper are shown on Appendix 5.

<sup>14</sup> The contribution of time use data in general and ATUS in particular to the knowledge of time allocation within households is discussed by Schwartz and Frazis (2002) answering Winkler (2002).

<sup>15</sup> A mixture of altruistic and exchange motivations, as in motivation three above and the following, motivation five.

<sup>16</sup> The six first motivations were enounced in a seminar article of Cox (1987) and later developed by Altonji *et al.* (1996) the last motive was empirically tested using French data by Wolff, FC (2001). Cox and Stark (2005) also study the demonstration effect.

independently of present or future reciprocity. The donor increases the well being of the recipient but is not expecting any present or future compensation for it. The exchange model considers that present transfers (for example from parent to children) ( $T_i$ ) are done for the latter ‘acquisition’ at  $t+n$  of old age support. So, in this case, the transfer includes a *qui pro quo*.

Following the presentation of Cox (1987) and Cox *et al.* (2004) the two competitive models could be represented :

$$U_d = U ( C_d, s, V( C_r, s ) )$$

The utility of the donor ( $U_d$ ) depends of the donor consumption ( $C_d$ ), and the recipient well-being ( $V$ ). Both utilities are also dependent of  $s$ .

The  $s$ , labeled as ‘services’, could represent future financial transfers from the present receiver ( $r$ ) to the present donor ( $d$ ). But, what is more interesting because related directly with time allocation, the  $s$  could also represent the help with home production and other aspects and services not provided by the market such as affection and companionship.<sup>17</sup>

The budget constrains of the donor and the receiver are respectively  $C_d = I_d - T$  and  $C_r = I_r + T$  where  $I_i$  are the pre-transfer income and  $T$  are the financial transfers. Note that the author does not include in the expression the time budget constrain.

For summarizing the intergenerational transfer’s categories, we propose an input-output matrix format (*Table 1*). That format is useful for the organization of the literature/models and for the identification of information needs.

*Table 1* is a proposal for representing in a matrix format, all the possible private transfers considering three generations ( $G1$ ,  $G2$  and  $G3$ ) and an additional category called ‘Other’ if the ‘from who’ or ‘to whom’ transfers are unknown.  $G1$  is associated with Grandparents,  $G2$  with Parents and  $G3$  with Children. The transfers can be interhouseholds or intrahousehold, between co-residents or not.

Each generation could be either a receiver, a donor or both.  $MT$  denotes money transfers and  $TT$  denotes time transfers. The main diagonal of the squared matrix represents the transfers between those who generally belong to the same generation (e.g. brothers, sisters, spouses) and is not relevant to the current research. All the other cells represent transfers among generations using the usual input-output notation.

<sup>17</sup> Cox (1987) considered that child care had no effective equivalents on market services.

**Table 1 – Intergenerational private transfers in money and time**

	<b>G1</b> receives from...	<b>G2</b> receives from...	<b>G3</b> receives from...	<b>O</b> receives from...
<b>G1</b> gives to...	(*) $MT_{11}, TT_{11}$	[1] $MT_{12}, TT_{12}$	[2] $MT_{13}, TT_{13}$	[7] $MT_{14}, TT_{14}$
<b>G2</b> gives to...	[3] $MT_{21}, TT_{21}$	(*) $MT_{22}, TT_{22}$	[4] $MT_{23}, TT_{23}$	[8] $MT_{24}, TT_{24}$
<b>G3</b> gives to...	[5] $MT_{31}, TT_{31}$	[6] $MT_{32}, TT_{32}$	(*) $MT_{33}, TT_{33}$	[9] $MT_{34}, TT_{34}$
<b>O</b> gives to...	[13] $MT_{41}, TT_{41}$	[12] $MT_{42}, TT_{42}$	[11] $MT_{43}, TT_{43}$	[10] $MT_{44}, TT_{44}$

(\*) Transfers between the same generations, represented on the main diagonal are ignored on the present research.

The indexes  $i$  and  $j$  associated with  $MT_{ij}$  and  $TT_{ij}$  represent the individuals, donors or receivers, who belong to a specific generation. By convention the rows are represented by ‘ $i$ ’ and the columns by ‘ $j$ ’. For example, the cell [1], with  $MT_{12}, TT_{12}$ , represents the fluxes from generation  $G1$  to generation  $G2$ . For example, the cell [3], with  $MT_{21}, TT_{21}$ , represents, reciprocally, the fluxes from generation  $G2$  to generation  $G1$ . The column  $G2$  represents all the fluxes that  $G2$  receives from all generations and by others. The line  $G2$  represents all the donors made by  $G2$  to all the generations ( $G1$ ,  $G2$  and  $G3$ ) and to others unknown ( $O$ ).

It is not our intention to present a review of the literature on private transfers<sup>18</sup> but only to illustrate some recent empirical results obtained from other authors who use money and time transfers concerning the private transfer models and assumptions. There is a predominance of studies in relation to the transfers between parents and children ( $G2$  and  $G3$ ), while transfers between  $G1$  and  $G3$  are rare. One reason for this could be found in the scarcity of panel data covering a long time span. There is longitudinal data for the United States from the Health and Retirement Study (HRS). The European Community Household Panel (ECHP) data does not fill the information

<sup>18</sup> For reviews of literature see Cox (1997) and LaFerrere and Wolff, FC (2006).

gap because it has only 8 waves and does not include specific questions about donors and receivers, despite yielding information about private transfers.<sup>19</sup>

Table 2 illustrates some recent studies on transfers considering generation ( $G_n$ ) as criterion. Any private transfer implies at least two agents: the donor and the receiver who could be members of the same generation or not. Some results of empirical studies between 1987 until 2002 are summarized by Laferrere and Wolff (2006 :71). A summary of some results published between 1983 and 1996 is shown by Shoeni (1997: 426). In this paper is considered only the recently published research not included in those two reviews.

That transfer could be: reciprocal, there are transfers in both directions (for example  $M_{32}$  and  $M_{23}$  exist); balanced when the transfer amount is equal in both directions (e.g. the amount of both flux are equal,  $M_{32} = M_{23}$ ); synchronic when the transfers occur at the same moment  $t$ . The timing of the transfer is not represented on Table 1. The theory frequently empathizes the distance in time between the gift moment for example and the inverse flux. This aspect is important for example when game theory is applied.

The economic models of private transfers consider different assumptions concerning these aspects. Altruistic models stress the non-reciprocal transfers, while on the contrary, exchange models consider mainly the balanced transfers. The intergenerational transfer models, a particular type of transfer model developed in order to explain private transfers between different generations generally linked by family ties, place particular emphasis on the unsynchronical transfers (e.g. there is a transfer in period  $t$  from the parental generation to the generation of their children, whereas in period  $t+n$ , a transfer will take place from the adult child to the parents).

This paper will estimate for different countries and types of households, models of time transfer between generations using time use data and other survey results. The altruistic person is also done.

<sup>19</sup> However the Eurostat' survey which is substituting ECHP includes receipts and also expenditures in private transfers. For a comparison between the two surveys see Eurostat (2005).

**Table 2 – Intergenerational Private Transfers (Money and Time)**

**Recent Studies<sup>20</sup> and Data Sources**

	Generation G1 receives from...	Generation G2 receives from...	Generation G3 receives from...	Others Unknown receives from...
Generation G1 gives to...	Cardia and Ng (2003) HRS* and others	Attias Donfut et al. (2005) – SHARE* Cardia and Ng (2003) HRS* and others	Cardia and Ng (2003) HRS* and others	
Generation G2 gives to...	Attias Donfut et al. (2005) – SHARE* Cardia and Ng (2003) HRS* and others Jellal and Wolff (2002)- CNAV*		Attias Donfut et al. (2005) – SHARE* Cardia and Ng (2003) HRS* and others Kuhn and Stillman (2004)RS* Litwin (2004) IES*	
Generation G3 gives to...	Cardia and Ng (2003) HRS* and others	Attias Donfut et al. (2005) – SHARE* Cardia and Ng (2003) HRS* and others Sloan, Zhang and Wang (2002) HRS* Kuhn and Stillman (2004) RS* Litwin (2004) IES* Cox and Stark (2005) NSFH* Wolff (2001) CNAV*		
Others Unknown gives to...				Cox et al. (2004) PS*

Author' construction. (\*) Symbol refers to database used in the empirical research . CNAV= ; IES= ; HRS= Health and Retirement Study ; NSFH= ; PS= ; SHARE= Survey on Health, Aging and Retirement in Europe ; RS= ;

**Well-being concepts and measurements**

This research is not only concerned with economic well-being as it is measured by income and distribution variables, but also with the concept of extended well-being. The inclusion of other variables besides income in the well-being concept is accepted by many authors, while the lack of data on certain variables, for example leisure, precludes their inclusion in the usual measures of poverty and well-being.

The replacement rate is used for the evaluation of economic well-being after retirement. The replacement rate is the percentage of the wage that is covered by the pension. It is calculated as the quotient between the value of the retirement pension and the salary received prior to retirement. The quasi- replacement rate is an approximate

<sup>20</sup> Some results of empirical studies between 1987 until 2002 are summarized by Laferrere and Wolff (2006 :71). A summary of some results published between 1983 and 1996 is shown by Shoeni (1997: 426). In this paper is considered only the recently published research not included in those two reviews.

## 2. DATA AND METODOLOGIES

measure of the replacement rate calculated as the quotient between the value of the retirement pension and the value of the salaries of elderly workers (Forster and Ercole, 2005).<sup>21</sup> It is to be stressed that the replacement rate is calculated whenever possible taking into account the family circumstances of the retired person.<sup>22</sup>

The concepts of well-being and quality of life and the ways of evaluating it include the time spent on leisure activities and on the production of well-being and the transfer of time associated. Home production and its respective accounting for the creation of well-being must be also considered.

Some particular economic behaviors are affected by age and life cycle. The models for the allocation of time (Becker, 1974; Hamermesh and Pfann, 2005; Gronau and Hamermesh 2001; Pollack, 2003) and income (Modigliani, 1981) during the course of the life cycle contribute for a better understanding of them. The analysis of the supply of labor and the decision to retire as well as other crucial options during the life span also contribute to the understanding of the characteristics of the well-being of elderly people before and after the processes of transition to inactivity.

The growing availability of time use data and the trends to their harmonization contributes to an increase of time allocation research in general and time allocation amongst the elderly. Gauthier and Smeeding (2000a,2000b) analyzed the time allocation of old people according different activities, and the same authors researched the trends for some countries including Canada. Gauthier and Smeeding (2001).

Stone and Harvey (1999) studied for Canada the total work retirement. Total work defined as the sum of market and non market work, considering that retirement from the first is different from retirement of both. (Stone and Harvey 1999).

The economic well-being of the elderly in a comparative perspective across countries was studied by Disney and Whitehouse (2002)

The measure of well-being combining time use data and subjective measures of satisfaction associated at each activity was applied by Juster (1981)<sup>23</sup> and was recently reexamined by Osberg and Sharp (2002) constructing an indicator of well-being at a macroeconomic level. The measurement of subjective well-being proposed by Kahneman and Krueger (2006) associate time allocation and self-satisfaction.

The present study uses four micro databases that have in common the inclusion of time allocation variables and other well-being<sup>24</sup> and contextual related variables. Technical characteristics of data used in the present research, some of them made available very recently<sup>25</sup> are summarized on *Appendix*.

The main variables sources of information used in the study are: from MTUS<sup>26</sup>, from ATUS<sup>27</sup> the time spent on market and non-market activities, including secondary time with child care.

It must be pointed out that country coverage, sample size, variables related with well-being, age intervals, household categories and retirement concept among other aspects vary across the data bases of each country considered as shown in *Appendix*. The relevant variables for the study of private transfers and well-being are also presented in *Appendix* for each of the data sources considered.

The empirical evidence on intergenerational transfers is difficult to test because the information is either scarce, of weak quality, or unrepresentative of the population as a whole.<sup>28</sup> The data of transfers of time among individuals, from most of the sources has shortcomings: it does not specify the specific receiver of assistance with time, nor does it identify completely the specific donor. Furthermore, the status of co-residence between donors and receivers is not clarified.

The methodologies adopted in this paper, which are highly dependent upon the nature and availability of data, include descriptives and model estimation.

The time use data present specific difficulties in their statistical and econometric treatment, as has been underlined by several authors (for example Klevmarken, 1999 and 2005; Apps, 2003; Apps and Rees 2005).<sup>29</sup>

The measurement of well-being and the quality of life involves other aspects besides the economic ones, although, in recent years, it has earned growing attention on the part of economists, particularly with regard to the inclusion of subjective aspects in

<sup>24</sup> Life satisfaction and health feeling are included aspects in ECHP and SHARE databases.

<sup>25</sup> Last update of data from American Time Use Survey (ATUS) from Bureau of Labor Statistics was at 27 July 2006 and the last release of Multinational Time Use Studies data was on 15 October 2005.

<sup>26</sup> Documentation on line at Essex University, ISER Site. (information referred to 30 July).

<sup>27</sup> For a brief presentation of ATUS and ATUS development, additionally to on line documentation [www.bls.org]: Horrigan and Herz (2005) and Stewart and Hamermesh (2006).

<sup>28</sup> The data from Survey on Health, Aging and Retirement in Europe (SHARE) [<http://www.share-project.org>] has detailed information on transfers, but covers mainly persons with 50 years old or upper. A similar problem exists with the Health and Retirement Study (HRS) in US [<http://hrsonline.isr.umich.edu/>].

<sup>29</sup> The User' guide of MTUS data also call the attention for this aspect namely in relation to the use of multivariate methodologies.

<sup>21</sup> OECD(2005).

<sup>22</sup> The existence of economies of scale in the family is discussed in the OECD and also in Atkinson

<sup>23</sup> Juster and Stafford edited one of the reference books in the area of time use studies (Juster and Stafford, 1985) and published the first economic review of the literature on economics of time use (Juster and Stafford, 1991).

the behavior patterns of economic agents. Frey (2000) and Kahneman and Kruger (2006) research those aspects.

One of the central concerns in this paper was to select, from amongst the multi-dimensionality of well being, those aspects open to interpretation through the results of time use surveys, seeking to develop measurements that had been created and tried out earlier. The information available about time use allows us to draw closer to the aspects of well-being both through the records of time spent in activities that provide individual well-being (such as leisure time, free-time or personal time activities) and through the inclusion of questions on the perception of well-being and stress which could be associated with the activities. (Michelson, 2005; Michelson and Crouse, 2002; Gershuny, 2004)

The empirical analysis proceeded in two stages: first, a description of time allocation by age and in particular of elderly people, stressing the well-being activities and considering the period before and after the retirement age is presented.<sup>30</sup> Data for Canada are based on MTUS .

After, for Canada and other countries private transfer of time models are discussed and estimated in order to find the predictors of participation (probit models) and the explanation for the amount of time transferred (tobit models).

### 3. DESCRIPTIVES

The diversity of leisure activities is also reduced. According to some authors, this narrower range of activities undertaken is accompanied by negative effects on well-being, assessed both objectively and subjectively. In relation to this particular aspect, see the work of Hammermesh (2005b: 80), Winston (1982), Glatzer, Von Below and Stoffregen (2004), and NSF (2003).<sup>31</sup> Some leisure activities are absent from the everyday habits of retired people, in some cases because they did not exist before retirement or were of very little importance.

<sup>30</sup> Under the assumption of retirement age at 65 years old. According OECD (2005) retirement age (legal) are for the most part of the countries analyzed 65 year. OECD publishes relevant research results related with ageing. For example for early retirement see Blondal and Scarpetta (1999).

<sup>31</sup> For a general comparison between US and Europe concerning leisure see Alesina *et al* (2005). The project ESAW results will be considered in future research by the author ( ESAW – Ageing Well: European Study of Adult Well-being (ESAW Project <http://www.bangor.ac.uk/esaw>) .

**Table 3 – Personal Care by Country <sup>(a)</sup> - Retired +50 years old**

(b)		Man		Woman		Total	
		Mean	Std. D	Mean	Std. D	Mean	Std. D
3	Austria	755,8	125,5	743,6	140,6	748,5	134,8
10	<b>Canada</b>	<b>644,5</b>	<b>111,4</b>	<b>651,3</b>	<b>130,7</b>	<b>648,0</b>	<b>121,9</b>
2	France	760,2	137,7	764,4	146,9	762,5	142,7
5	Germany	710,6	107,4	692,3	108,0	699,6	108,1
1	Italy	788,0	126,5	758,3	137,1	773,4	132,7
6	Netherlands	688,8	100,2	697,8	96,2	693,2	98,1
9	Norway	658,1	97,6	662,9	95,9	660,8	96,6
7	Slovenia	693,3	118,2	681,1	120,2	686,5	119,4
4	S. Africa	760,9	149,9	718,7	138,3	737,0	144,6
8	UK	666,7	111,9	662,9	105,5	664,4	108,1
11	USA	637,9	129,4	645,2	126,4	642,2	127,6
	Total 11 countries	722,5	131,6	707,7	133,2	714,1	132,7

Source: author computations based on MTUS (r.15/10/2005) microdata.

(a) Data are referred to different years, see Appendix 1 for details. (b) Country ranking for Personal Care activity

**Table 4 – Other Activities by Country <sup>(a)</sup> - Retired +50 years old**

	Leisur	TV	HousW	Educ	Soci	ChildC	MedCar	
<b>Canada</b>	<b>286</b>	<b>219</b>	<b>231</b>	<b>0</b>	<b>43</b>	<b>5</b>	<b>7</b>	
France	173	184	270	0	35	6	7	
Netherlands	250	157	240	1	72	7	6	
Norway	251	180	262	1	76	2	3	
UK	227	203	278	0	55	1	5	
USA	218	236	257	0	64	1	20	
Italy	223	153	239	0	43	5	3	
Germany	243	154	289	2	45	7	0	
Austria	204	164	262	0	45	6	10	
South Africa	193	79	282	2	137	6	3	
Slovenia	264	169	289	0	13	9	8	
Total 11 countries								
Men	<i>Mean</i>	249	193	217	0	46	4	6
	<i>N</i>	13781	13781	13781	13781	13781	13781	13781
	<i>Std. D</i>	163	130	161		85	23	32
Women	<i>Mean</i>	206	163	304		44	6	7
	<i>N</i>	18005	18005	18005	18005	18005	18005	18005
	<i>Std. D</i>	149	119	158		77	29	33
Total	<i>Mean</i>	225	176	266		45	5	6
	<i>N</i>	31786	31786	31786	31786	31786	31786	31786
	<i>Std. D</i>	156	124	165	7	80	27	32

#### *Activities of Canadian Retired and non Retired Old People (MTUS data)*

In the group of eleven countries considered here and for the periods shown in Appendix the population aged over 54 corresponds to roughly 23% of the sample, whilst individuals aged over 65 amount to only 7%. In the total of the sample as a whole, roughly 12.7% of respondents were retired.

The category of retired persons is not considered in the same way in all European countries: in some cases, it is a question of self-classification, and in other countries it is determined indirectly when respondents state that they are receiving a retirement pension (MTUS, 2005). The differences in the share of retired people by gender reflect the female and male activity rates in the different countries.<sup>32</sup>

The variables considered in relation to well-being, also labeled on the present study as “pleasurable activities” are: active leisure, passive leisure, socialization and child care and are represented on *Figures 1 to Figure 9*. The activities considered on the data source were aggregated in other categories: personal care, leisure without TV, TV leisure, educational activities, childcare and personal time with medical care. (*Tables 3 and 4*)

*Educational activities* (formal education only<sup>33</sup>) reflect the actual life-long-learning characteristics of this segment of population.

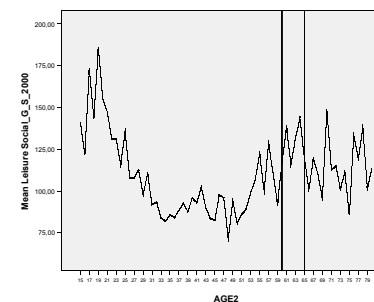
*Childcare* occupies little time in the time allocation of the elderly, but they are included in the study because they could represent the well-being transmission between generations.

*Medical care* was included as a *proxy* for health status. Health in general and physical and mental health in late stages of life strongly determine well-being directly and also indirectly. However, because of the lack of information, it was not possible to ascertain the situation regarding the health of each individual.<sup>34</sup> This is clearly something that restricts the group of activities carried out and, in the more serious cases, may be the fundamental reason for retirement before the average or legally imposed age.<sup>35</sup> Although there is a question in the MTUS relating to the extent and seriousness of existing incapacity, the data are not comparable among countries (Fisher, 2004).<sup>36</sup>

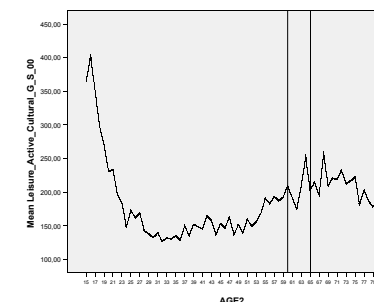
In the universe of retired persons, it can be seen that the number of sick or incapacitated people increases with age. In the case of those aged over 80, roughly 100% of individuals are incapacitated in some way.<sup>37</sup>

It should be noted that, as has been shown in other studies using different methodologies (Eurostat, 2006; Blondal and Scarpetta, 1999; OECD, 2005) the actual retirement age is systematically lower than the legal retirement age,<sup>38</sup> even when this does not have any compulsory nature. The retirement ages and social security systems in the different countries and years analyzed are summarized by OECD (2005).

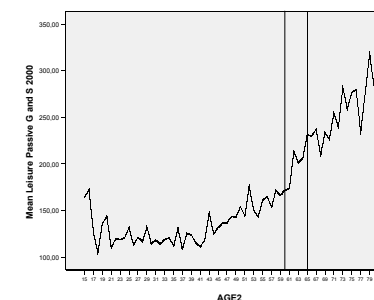
**Figure 1 – Time use and Activities Related with Well-Being by Age Social Leisure Canada 1998**



**Figure 2 – Time use and Activities Related with Well-Being by Age Active and Cultural Leisure Canada 1998**



**Figure 3 – Time use and Activities Related with Well-Being by Age Passive Leisure Canada 1998**



<sup>32</sup> In the sample by countries, the number of retired persons is higher than 1000. One exception is the case of South Africa, which is therefore removed from the data when the non-parametric analysis is carried out.

<sup>33</sup> Fahar (2005) defines as informal education the reading of newspapers. This kind of activities are included in the present article as Active Leisure activities.

<sup>34</sup> One exception is ECHP where there are several questions (objective and subjective) related with health status of the respondent.

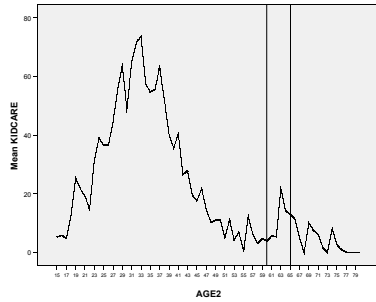
<sup>35</sup> The results of LFS do not confirm this...

<sup>36</sup> This question also had a very high number of missing answers on MTUS.

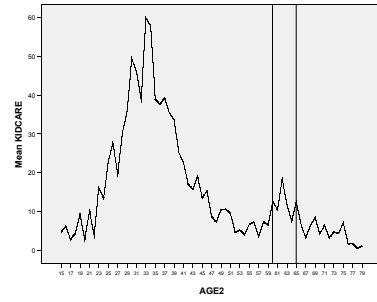
<sup>37</sup> The upper limit age is different by country survey. The comparisons include, in general 80 years of age as upper limit. It could be discussed if, in order to offset any possible bias in the results through the inclusion of the behavior patterns of individuals with serious physical or mental limitations, all individuals aged over 80 should be removed from the sample, and because they represent less than 1% of respondents.

<sup>38</sup> The announcement of the raising of the age of retirement has led to an increase in the number of early retirements in some countries. This phenomenon occurred in the recent past in Portugal. This particular aspect of behaviour based on expectations was not incorporated into this analysis. It is an interesting topic for future analysis. (a natural experiment?). Ver Eurostat (2005).

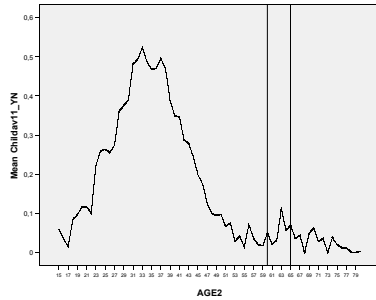
**Figure 4 – Time use and Activities Related with Well-Being by Age Child Care Canada 1998**



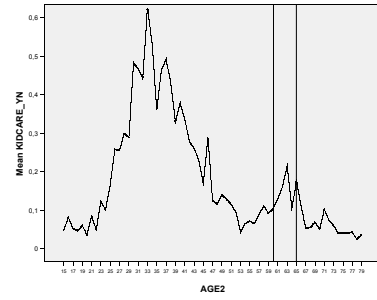
**Figure 5 – Time use and Activities Related with Well-Being by Age Child Care France 1998**



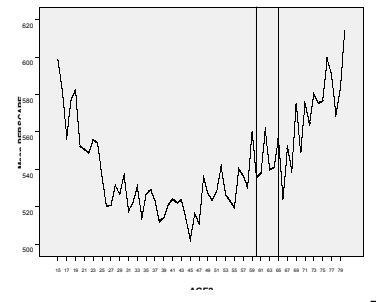
**Figure 6 – Time use and Activities Related with Well-Being by Age Child Care (participation) Canada 1998**



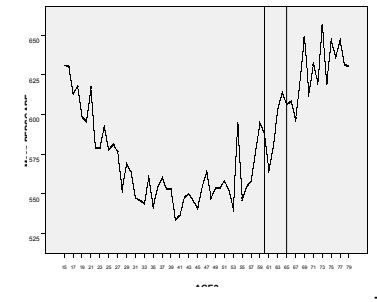
**Figure 7 – Time use and Activities Related with Well-Being by Age Child Care (participation) France 1998**



**Figure 8 – Time use and Activities Related with Well-Being by Age Personal Care Canada 1998**



**Figure 9 – Time use and Activities Related with Well-Being by Age Personal Care France 1998**



Source: Author tabulations of the MTUS data files; Canada and France ; N=16383. Age in years; time use in minutes. Age 65

The analysis by family type that is carried out later on allows for a contemplation of the results when only the individual is considered. The life cycle categories proposed by Apps and Rees (2005) help to partially solve this data shortcoming.

The data analyzed correspond to the average score for every day of the week, which leads to a bias in the comparison between retired and non-retired persons, for the latter display different behavior patterns between weekends and other days<sup>39</sup> (Bittman, 2003 and 1998).

Based on MTUS data for eleven countries, the sample was divided into two groups according to the respondents' situation regarding retirement, so that there were then two sub-samples for each age interval: one for retired persons and another for non-retired persons. Time allocation was compared for people who were of the same group age but had a different situation in relation to the labor market.<sup>40</sup>

Comparison between the age group immediately before retirement and that of retired persons (note that the retirement age is different for each of the countries) shows the following changes, which will be analyzed firstly with regard to the main groups of activities and then in a more detailed form and by gender.

The transition from active involvement in the labor market to retirement gives rise to very significant alterations in time allocation. The time that was previously taken up with paid activity and transport to and from work – the *contracted time* according to the classification of Aas.<sup>41</sup>

*Personal time* increased in an identical manner in all countries, rising by between one hour and one and a half hours, with housework (in different ways for men and women) and leisure time also increasing, and, in particular, passive leisure activities such as *watching TV and video*, which increased by between one and two hours. In the case of the United States, the current situation (BLS, 2004 and 2005) is not very different from the one previously analyzed in the 1980s and 1990s (see for example Hill, 1985, and Robinson and Godbey, 1999). However, the definition of “retired” is different in the case of the United States, so that it was decided to display this country in

<sup>39</sup> For Australia for example the difference ...

<sup>40</sup> The category of inactivity is not relevant for the present study, because the goal is related with the situation before and after retirement. Our focus is on individuals which had crossed the frontier between market work and market work inactivity. When retirement status information is not included some studies overcome that problem of missing information considering only the old male. In an international comparison, because total, male and female participation rate varies across countries, adopting that approach for retirement status is not appropriate.

<sup>41</sup> An identical classification was adopted by Aas and Petrushev and later tested by the BLS according to Horrigan and Herz (2005) – began to be distributed amongst other activities, thereby leading to increases in “committed time”, “personal time” and “free time”. A discussion of the different classifications of activities and their suitability in terms of data and research objectives is need but not presented here.



a separate table.<sup>42</sup> On average, retired persons spend 7.3 hours per day in *leisure and sport* (7.77 hours in the case of men and 6.96 hours in the case of women). The largest proportion of such leisure, roughly 80%, corresponds to *watching television*. In the United States, where time use surveys have been carried out for several decades,<sup>43</sup> the activity of watching television – as the main activity. It must be pointed out that time use surveys inquire about the main activity and, in some cases, also about the secondary activity, or, in other words, the activity that is undertaken at the same time as the primary activity has been progressively gaining ground in detriment to other leisure activities, such as reading newspapers or magazines.

A third aspect which explains the brevity of time spent on child care is related to the state of health of the elderly and their need to devote more time to taking care of themselves (an increase of between 13% and 21%), as we have analyzed earlier.

Despite the fact that the contribution to the well-being of the younger generations is not great in quantitative terms, it can nevertheless be important in qualitative and strategic terms. The latter has been analyzed in studies that associate patterns of fertility with the availability of family support, in particular that of the grandparents.

In countries in which the rate of female participation in the labor market is high, modifications in the age of retirement in general, and of women in particular, insofar as they affect the availability of grandparents to look after their grandchildren, can influence the decision to have children. This aspect has received scant attention in the economics literature researching fertility.

As a variable predicting behavior patterns and attitudes, and therefore also time allocation, age presents a number of limitations, having been considered a “false” variable in time use surveys carried out during the 1960s and 1970s, as was stressed by Robinson and Godbey (1999: 202). In fact, this variable was found to be closely linked to other variables, such as the educational level, health and income of individuals.

In most of the countries studied, the age group representing the elderly (those over 65) is the one displaying the lowest levels of income and education, whilst also being the one in which retired people are most heavily concentrated. Besides its association with other variables, age is also seen to be linked to age-cohort effects, combining these with life-course effects, in which people with the same age at a given moment have

either had or passed through similar life experiences (Gershuny, 2000: 189). In this way, it is difficult to separate the age effect or vintage effect (Hill 1985: 154), as well as the ageing effect, from the effects of historical changes, namely with regard to the standard of living and well-being and the individual’s social and family role (Roberts, 1999: 112) and Blanchflower(2007).

#### 4. TRANSFER MODEL

##### *Private transfers and well being – Canada and other Countries*

As outlined by Cox (1987) and followed by posterior analysis<sup>44</sup>, the transfer decision for analytical purposes must be separated in two stages: the decision of make a transfer or not and, if to be made, the decision about transfer amount.<sup>45</sup> This separate and sequential approach is adopted in the present paper estimating first Probit models for the decision of participate or not in time transfer activities and after a Tobit models for the amount of transfers.<sup>46</sup>

The countries and years considered for our estimations are: US (2003), South Africa (2000), Slovenia (2000), Canada (1998), France (1998), UK (1995), Netherlands (1995), Germany (1992), Austria (1992), Norway (1990) and Italy (1989).

The justification of the selection of each variable is presented below.

##### ***Dependent Variables:***<sup>47</sup>

Two dependent variables were considered: the participation in care activities (a yes or no variable) and the amount of time spent on care activities. The main source considered was time use data. For Canada and other ten countries the intergenerational transfer studied are from adults to children. Additionally, for the US case the existence of transfers was associated to time spend on care activities to children (infant or adult) and care activities to elderly.

##### *Participation in Care Activities and Amount of Time Spent on Care*

In the case of Canada and other 10 countries, the intergenerational transfer considered was in respect of time transferred by adults to children (assumed as being mainly parental time or grandparental time).

<sup>42</sup> For a definition of retired, see BLS (2005: 6) and CPS definitions.

<sup>43</sup> Time use surveys on US.

<sup>44</sup> Some of that studies listed on this paper (Section 1, Table 2).

<sup>45</sup> (Cox 1987: 518).

<sup>46</sup> Only time transfer were considered at this stage of the research. SHARE database is the only considered base which allows the estimation also for financial transfers. (See *Appendix 3 – Questions related with transfers and altruism*).

<sup>47</sup> See also *Appendix 3 – Variable Descriptions and construction*.

As ATUS has separate information for care for adults and that for children (as the primary and secondary activity), the indicator ‘transfer of time’ was obtained by adding together the time caring for adults and for children. In the case of children care time were considered both as the primary activity and as a secondary activity. The secondary activity is considered for the total amount, weighted by 0.5.<sup>48</sup>

### ***Independent variables***

#### *Income*

The incomes of the donor and the receiver are important explanatory elements in the theory on private transfers. The income<sup>49</sup> of the donor (person or household) and the income of the receiver are crucial information for the testing of transfer models in particular in what concern the elasticity for different levels of income.

The available data only allows us to analyze the income of the donor in this paper and not that of the receiver. For the purpose of simplification, it was assumed that all receivers under the age of 18 would not have any income<sup>50</sup>. Information is available on the income of the donor, but for all the countries only scales of income, not the income in a continuous form.

MTUS data base has two income measures, the original measure for each country and another which is grouped into the 25% lowest, the 50% middle and the highest 25% income groups. ATUS data for the US includes the income of the donor, measured by two ways: 16 levels of income intervals and also by quartiles. Permanent income, a more suitable measure of income for this research proposes, only can be computed with panel data.

#### *Intergenerational Household*

The identification of intergenerational household families is presented in *Table 2 Appendix 1*. The family or household categories are frequently included in the models. It was assumed that intergenerational transfers are more likely to occur in intergenerational households.<sup>51</sup> The estimations considers intergenerational households which were identified combining the information of household categories with the information of household size and the age of children members.

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<sup>48</sup> Data about child care as a secondary activity is only available for US. The ATUS collect information of childcare as secondary activity for children under age 13. On ATUS the household children includes children under 18 years old. Published data categorizes into two groups: children under 6 and children between 6 and 17 years old.

<sup>49</sup> Or alternatively, the well-being as proxy for the utility of each agent participating on the transfer.

<sup>50</sup> This hypothesis is supported by the fact that the percentage of under 18s who work, according to the databases of the different countries is not statistically significant in the majority of them.

<sup>51</sup> The data of time use, usually include information about transfers without specifying to whom the time help or attention is done. Some time use surveys also include transfer received and given between families, as is the case of Portuguese TUS (INE,1999).

#### *Household size*

Household size influences the existence and amount of time transfers, because members of the household could share the care needs of the other members. The size could be measured in multiple perspectives. For example: number of adults, number of dependent children or elderly, OECD equivalent scale<sup>52</sup>, number of labor force members.

#### *Wealth*

The income and the wealth are restrictions and also motivations to the financial transfers. However, wealth is very difficult to evaluate.<sup>53</sup> The existence of own home could be considered a *proxy* to wealth and was tested in the case of US. This aspect is particular important for elderly people. For example poverty measures computed in UK include before and after payment of rents, because rents have high weight in total budget of old people (Förster and Ercole, 2005).

#### *Education*

The transmission of time, in particular to children directly or indirectly related with learning activities contributes to growing human capital for the next generation. It is expected that an increase in the educational level of the donor, also increase the participation and amount of parental, grandparental or similar time because those individual are more aware of the importance of human capital formation.

#### *Employment status*

The situation in relation to the labor market influences the transfers of time at least in two aspects: the employed person probably has more money<sup>54</sup> and less free time available to give. Working or not and duration of working time, influences time transfers. The study of the transition from work to retirement must focus on this aspect.

#### *Age*

The relation between age and the potential activity as a giver or a receiver as many researches show is not linear. The patterns during the life cycle concerning income or saving investments for example differ and the same happens with private transfers *inter vivos*. This aspect together with employment status is stressed in this present research.

#### *Health Status*

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<sup>52</sup> ECHP includes several measures of household size. OECD equivalent scale and OECD correct equivalent scale are computed.

<sup>53</sup> Many authors call the attention for the difficulty of evaluating wealth and the bias results on well-being and inequality measures only computed from income values proposing more accurate measures. For example Wolff, E. (2002) and Wolff, E and Zacharias (2003).

<sup>54</sup> If wealth and other incomes than wages are ignored

Good health status of the donor influences positively the donations in time. Poor health status of the receiver increases the amount need of care and help time.

#### *Female*

The motherhood and grand motherhood as well as widow's female bias contributes, among other factors (e.g. cultural and legal aspects), for the higher participation and levels of transfers of time to descendants, ascendants and spouses.

#### *Race and ethnicity*

Particularities associated with race and ethnicity, namely demographic characteristics and cultural aspects could influence the private transfers in time and money.

#### *Geographical distance between giver and receiver*

It is considered that the physical proximity, and at an extreme the co-residence increase the private transfers in time and money.<sup>55</sup>

#### **Results**

The results converge to what is expected according the theory, which admits divergent results associated with income. It must however be noted that the theories explaining the inter vivo transfers include both incomes: the donor income and the receiver income.

When income and donations in the form of time are considered together, there is a negative relation between the 2 variables . However, if they are considered by income scales, the relation between income and time transfers shows evidence of a non-linear behavior. This relation is generally U-shaped, in which the first and last income quartile display the highest time transfer values between generations.

Considering the sub-population of the retired, the *inter-vivo* transfers in time (time caring for the elderly, for example a spouse, or caring for children, for example grandchildren) present a strongly negative relation between time donated and income. In other words, “non-retired donors give money relative to time and retired people give more time relative to money”, because has more available (non committed time using the Aas category) time.

#### ***From parents and grand parents to children (Private inter vivos time transfers)***

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<sup>55</sup> There is none or very little information on this issue in the micro databases available.

#### ***Probit models***

The predictors for the participation in money transfers are estimated for several countries and the main estimations are presented in *Appendix* . For the US, because the available information is different, the estimation is made in separately. Tables show results respectively for two groups of intergenerational families: with children less than 18 and wuith children less than 13. (*Appendix*)

The predictors that are associated positively with the intergenerational transfer for all the countries considered (Canada, France, Italy, Slovenia and US) are: being female (*female\_YN*), educational level (*edu*) , children under 18 years old living at home (*nchildren18\_YN*). For the US, being owner of the habitation (*ownhome\_YN*) has also a positive association.

The predictors associated negatively in all countries estimates are: participating in the labor market (*paid\_YN* or *empstat\_YN*). The results for other variables differ among countries considered or, for the same country, depending on the model considered.

Being retired (*retired\_YN*) exhibits more often a positive association and the income level ( *incomeG* or *incomeqt*) a negative association. Household size (*hhsize* or *nadults*) shows mixed effects. It must be pointed out that the comparison across the countries must be done very carefully, because the concepts, categories and codes classification differ on the surveys.<sup>56</sup>

The values of the coefficients in the case of Probit model, could not be interpreted as the OLS coefficients. In the case of the Probit model the relevant information obtained indirectly from the coefficients are the marginal effects. *Table 6* shows the marginal effects of each of the predictors in the case of *Model 1* for Canada<sup>57</sup>. The value about 12 for *female\_YN* means that being a female increase the probability of give child care by about 13% per day. And being retired (*retired\_YN*) decrease that probability by about 13% also (see *Table 6*).<sup>58</sup>

#### ***From parents and grand parents to children (Private inter vivos amount of time transfers) Tobit models***

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<sup>56</sup> Documentation related with MTUS call the attention for this important aspect.

<sup>57</sup> All other marginal effects data available (STATA format) under request from the author.

<sup>58</sup> The values obtained assume that the other predictors are equal to each mean value. The researcher could modify this assumptions. The coincidence of the two values (13%) is only a coincidence. Any kind of trade off is involved.

Our empirical results show that there is a non-linear association between the level of income and non-financial donations (in kind, time), as asserted by Cox, among others.

The Tobit censored<sup>59</sup> estimates are not very strong. The pseudo R squared is respectively 0,0341 and 0,0568 for US and France. The coefficient values for the variable female (*female Y\_N*) for US and France are similar<sup>60</sup>. It must be pointed out that they are obtained from databases with different structures and dates (USA from ATUS 2003 and France TUS-MTUS 1998). The value around 87 is interpreted as follows<sup>61</sup>: the partial effect evaluated at the sample mean values of the other values of independent variables represents that being female is estimated to increase expected time care by about 39, 2 minutes per day.

## 5. CONCLUSIONS AND FUTURE AVENUES OF RESEARCH

The paper analyzed the time allocation after the retirement and the behavior of transfer in time between generations with special focus in Canada. The results shed some light on the effects on well-being of retirement status and the potential consequences for different countries of the raising of the retirement age for the target group and the associated household. Transfers of time and money between family members were evaluated and transfer models were estimated.

Compared with the other ten countries, the elderly retired people in Canada presented in 1998. more time of leisure and passive leisure and less time of household work. This result converge with other economic indicators of elderly well-being.

The life cycle profile of time allocation for different activities seems to be affected by the actual and formal retirement age. For the same year, the averages of type spent in several activities by age were compared between Canada and France. the personal care is a U shaped curve. The active and cultural leisure has a very different behavior of the passive leisure, which increase sharply after the 50's.

The participation in child care and the time allocated to that activity decrease with age, but has a brief sudden pick around the retirement moment.

From the computed marginal effects based on Probit model the gender is very important has predictor of the intergenerational transfer of time. The educational level also influence positively. The income, considering three income groups, show a inverse relation as predictor of the care of children. The same occurs with the participation in labor market.

The time use data represents an original data source of transfers between and within households, particularly time and in-kind transfers; it is also an original source for well-being evaluation.

The prediction of transfers in time were estimated separately. No clear empirical evidence was found concerning the influence of age, but employment status are good predictors. The results for the sign of some estimates are inconclusive

When income and donations in the form of time are considered together, there is a negative relation between the two variables. If they are considered by income groups

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<sup>59</sup> Left censored at zero.

<sup>60</sup> The value from a study, where dependent variable of Tobit model is also amount of time for the US (PSID supplement data 1988) is equal to 89,617 with a t-statistic of 1,88 (Schoeni, 1997: Table 6 last 2 columns). But the coefficients are not comparable because are reposted as "annual time received from parents non co-residents"

<sup>61</sup> Note: interpretation of the Tobit censored coefficient to be confirmed with other econometric tests instead of the application of rule of thumb (beta plus 0,451) from Wooldridge (2003:571). And also confronted with data.

**Table 5 – Probit Model of the Time Transfers– 10 Countries (Dependent Variable : Transfer in Time Yes=1 No=0<sup>62</sup>)**

Independent Variables	Canada (1998) Mod.1 N=7,260	Canada (1998) Mod.2 N=7,260	France (1998) N=14,961	Slovenia (2000) Mod.1 N=9,970	Slovenia (2000) Mod.2 N=9,970	Italy (1989) N=37,764
<i>female_YN</i>	.5338767 (.0402527)	.5393032 (.0468725)	.7253154 (.0290711)	.4692495 (.0354316)	.4690718 (.0354273)	.5932934 (.0194696)
<i>hhsize_m</i>	.5502686 (.0167912)	.0992057 (.0238657)	b)	-.0069787 (.0145638)	c)	-.0712917 (.0084269)
<i>married_YN</i>	-.410838 (.0462359)	-.3692512 (.0581994)	-.7440039 (.033283)	-.8555057 (.0404523)	-.8559736 (.0404397)	-1.067584 (.0215901)
<i>retired_YN</i>	-.6378046 (.0859495)	.1467747 (.0941994)	.1896064 (.0449892)	.1137568 (.0483063)	.1153944 (.0481738)	.1328023 (.0353797)
<i>incomeG_m</i>	-.2677695 (.0284434)	-.2191482 (.0332086)	-.193061 (.0238211)	-.1391062 (.0294536)	-.1437084 (.027848)	d)
<i>educ_cat</i>	.2398383 (.0257466)	.2304561 (.0293426)	.1985163 (.0214072)	.2998861 (.0266301)	.3025986 (.0260195)	.3235762 (.0167112)
<i>paid_YN</i>	-.0890651 (.0403042)	-.1437103 (.0471582)	-.1752591 (.0307417)	-.1894638 (.0378484)	-.1892339 (.0378396)	-.0478516 (.0218408)
<i>nchild18_YN</i>	a)	2.17268 (.0668061)	1.488617 (.0354524)	1.238602 (.0461484)	1.228584 (.0410964)	1.339579 (.0253707)
<i>constant</i>	-2.447369 (.10176)	-2.492514 (.125143)	-1.867047 (.0687576)	-1.834097 (.0843445)	-1.85029 (.077278)	-1.982673 (.0446984)
Pseudo R-squared	0.2898	0.4711	0.2694	0.2292	0.2292	0.2780
Log-Likelihood Value	-2813.6517	-2095.6329	-5437.1078	-3415.4456	-3415.5606	-12305.155
Percent Correctly Predict	81.82%	86.91%	85.38%	85.08%	85.10%	85.85%

Author computations . Models tested output (Stata format) available upon request. Data base: MTUS microdata base.

Note: Standard errors in parentheses below the estimates. a) Not included; b) Tested and excluded; c) Excluded from Model 1 because P>z, [95% Conf.Interval]= 0.632; d) Income quartile data not available for Italy.

<sup>62</sup> Variable name kidcare\_YN;

**Table 6 - Marginal effects after probit**

Canada (Model 1)

variable	dy/dx	Std. Err.	z	P>z	[ 95% C.I. ]	X
Female~N*	.126922	.00933	13.61	0.000	.108639 .145205	.526446
hhlsiz~m	.1326544	.00423	31.37	0.000	.124366 .140943	2.58375
Marrie~N*	-.0952288	.01015	-9.38	0.000	-.115121 -.075337	.405234
Retire~N*	-.1200518	.01173	-10.24	0.000	-.143039 -.097065	.141185
Income~m	-.0645518	.00687	-9.40	0.000	-.078015 -.051088	1.95179
Educ_cat	.0578183	.00622	9.30	0.000	.045637 .07	2.35496
PAID_YN*	-.021477	.00973	-2.21	0.027	-.040553 -.002401	.50303

(\*) "dy/dx is for discrete change of dummy variable from 0 to 1" Author computations . Marginal effects for all the models estimated , output (Stata format) available upon request from the author. Data base: Canada Time Use survey 1998 as available on MTUS.

Author computations . Models tested output (Stata format) available upon request. Data base: ATUS 2003 for US and MTUS microdata base for other countries. Notes: a) 9966 left-censored observations at *totcare1st502* <= 0, 9697 uncensored observations, 0 right-censored observations; b) 12001 left-censored observations at *time child* <= 0, 2960 uncensored observations, 0 right-censored observations

(low, middle and high), the relation between income and time transfers shows evidence of a non-linear behavior. This relation is generally U-shaped, in which the first and last income quartile display the highest time transfer values between generations. Considering the sub-population of the retired, the *inter-vivo* transfers in time (time caring for the elderly, for example a spouse, or caring for children, for example grandchildren) present a strongly negative relation between time donated and income. In other words, “non-retired donors give money relative to time and retired people give more time, because has more available (free) time. In general when the income (of the donor, because the income of receiver is unknown) is lower and she/he gives more time and when the income is higher gives less time.

The results suggest that those who consider themselves to be in a positive situation in terms of well-being (from both a subjective self- perception perspective and an objective economic perspective) are more likely to act as donors. One explanation for the low percentage of retired people as donors could be related with this situation.

For the retired people, and according to the ‘replacement rate’ and ‘quasi replacement rate as defined by OECD the decrease of income is accompanied by an increase in leisure and pleasant activities.

The present research shows that some of the data sources available could be used for the empirical testing of certain assumptions related to intergenerational behavior. The household categories in official statistics are generally organized in such a way as to make it difficult or even prevent more thorough research into private transfers.

Moreover, it is not updated in terms of the new/evolving patterns of household arrangements. Recent demographic trends in families (e.g. increasing divorce, decrease of family size, the delay of adult children in leaving the nest)

The majority of the categories of households are focused on the existence or non-existence of children and alternatively, do not consider the presence or non-presence of elderly members.

Cultural and institutional cross country aspects seem to have more influence on labor market characteristics and behavior of employed than on the behavior of retirees after the transition for retirement.

The influence of family context and income on well-being is not empirically shown for all the countries. At the late stage of life, intergenerational support care is not very frequent when evaluated by time allocation.

The data obtained on time use are a valuable aid for assessing the well-being of individuals and societies however, the information about elderly and retirees is difficult to compare among countries as a result of different concepts adopted and also because the upper extremes of age intervals vary across surveys. A better statistical coverage of elderly people is recommended when that is a growing part of the population. In order to be used in a suitable form in the study of well-being, time use data must be associated with subjective questions about the perception of well-being that accompanies the activities undertaken.

The model for the allocation of wealth and income over the life-course, formulated by Becker and others is mirrored by time allocation along the life span.

Despite the diversity of models for social security and retirement age and levels of development, the elderly population displays very similar patterns in the different countries (except for a sub-group of European countries) as far as time use is concerned. Most leisure time after retirement is taken up in a similar way in all countries. The well-being associated with leisure may only be fully assessed if data are included that relate to the perception of well-being and to the quality of the most common practices.

### ***Some Shortcomings and limitations***

This paper has several shortcomings and limitations, which the author intends to overcome in a future improved version.

Some of the shortcomings and limitations already identified are:

- the *comparability* between countries using time use data is to be looked/should be carefully reviewed, because the methods, categories, samples and variables intervals differ for each time use survey. They also differ for the same country across the time. This problem is not specific to time use data;

- the *information on income* is available from MTUS in 2 formats : the original income categories of income in each country survey and the harmonized intervals computed by the MTUS Project. In the paper, in general, only the second classification was used. It is difficult to carry out a more detailed analysis by family/household type in each country using this option. For example, there is no possibility of an accurate, or even approximate, measure of income *per capita*

-not all of the data refers to the *same period* of time. We have endeavored to choose the most recent data for every country ;

- *the status of retired* is considered in some countries as self-declared, while in others it is established by the crossing of sources. We excluded from the sample all those who, although retired, declared that they were engaged in some of paid working time. This is a very frequent occurrence in many countries (namely on US). One common explanation is that after retiring, the individuals initiate their own small businesses;

- with the exception of one source, we had no detailed data on the *receivers* of time transfers (in particular, the income level of receivers);

- the *categories of households* considered in the majority of the inquiries are not adequate/appropriate for this type of study on intergenerational families. The basis of classification is essentially whether there are, or are not, children present in the family. With the exception of the ECHP, there is no database that takes into account the presence, or non-presence, of elderly individuals in the family. The increasing importance of this demographic group in most of the developed countries signifies that an alteration of the classification of the family is strongly advisable. (Footnote: the alteration should also be extended to include other types of reconstructed families, as well as those which could be described as 'non-classic', which are not yet represented in the databases with sufficient statistical weight .

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**MICRODATA BASES**

**MTUS - Multinational Time Use Study**

**Multinational Time Use Study**, Version 5.5.2 (released 14 October 2005). Created by Jonathan Gershuny, Kimberly Fisher and Anne H. Gauthier, with Alyssa Borkosky, Anita Bortnik, Donna Dosman, Cara Fedick, Tyler Frederick, Sally Jones, Tingting Lu, Fiona Lui, Leslie MacRae, Berenice Monna, Monica Pauls, Cori Pawlak, Nuno Torres and Charlemaigne Victorino. [ <http://www.timeuse.org/mtus/> ]

**AHTUS - American Heritage Time Use Study**

American Heritage Time Use Study, release 1 (May 2006). Created at the Centre for Time Use Research, United Kingdom, by Kimberly Fisher, Muriel Egerton and Jonathan Gershuny, with Nuno Torres and Andreas Pollmann, and contributions from Anne H. Gauthier and John Robinson. Created for Yale University with initial funding from the Glaser Progress Foundation and supplementary funding from the ESRC

**AHTUS - American Heritage**

*“Conclusions in this research are those drawn by the authors, and may not reflect the views of the creators or funders of AHTUS or the collectors of the original surveys harmonised in this dataset.”*

**MTUS - Multinational Time Use Study**

*“This document presents results drawn from the Multinational Time Use Study (MTUS), but the interpretation of this data and other views expressed in this text are those of the author. This text does not necessarily represent the views of the MTUS team or any agency which has contributed data to the MTUS archive. The author bears full responsibility for all errors and omissions in the interpretation of the MTUS data.”*

**Table 1 [Appendix 1] - Household Categories and Size by Data source Intergenerational Households(\*)**

ATUS <sup>63</sup>		MTUS <sup>64</sup>	
2003 - ; US; N=19,663 (2003)		Several ys; 12 countries; N=268,257	
<i>famstat:</i>	<ul style="list-style-type: none"> <li>• Adult aged 18 to 39 with no co-resident children &lt;18</li> <li>• Adult 18+ living with 1+ co-resident children aged &lt;5</li> <li>• Adult 18+ living with 1+ co-resident children 5-17, none &lt;5*</li> <li>• Adult aged 40+ with no co-resident children &lt;18</li> <li>• Respondent aged &lt;18 and living with parents or guardians*</li> </ul>	<i>individual level family status:</i>	<ul style="list-style-type: none"> <li>• Aged 18 to 39 with no co-resident children &lt;18</li> <li>• Aged 18+ living with 1+ co-resident children aged &lt;5</li> <li>• Aged 18+ living with 1+ co-resident children 5-17, none &lt;5*</li> <li>• Aged 40+ with no co-resident children &lt;18</li> <li>• Aged &lt;18 and living with parent(s)/guardian(s)*</li> <li>• Aged &lt;18, living arrangement other or unknown</li> </ul>
<i>hhtype:</i>	<ul style="list-style-type: none"> <li>• married with child*</li> <li>• married without child</li> <li>• female hh with child*</li> <li>• female hh without child</li> <li>• male hh</li> <li>• single male</li> <li>• single female</li> <li>• other</li> </ul>	<i>hhtype</i>	<ul style="list-style-type: none"> <li>• One person household</li> <li>• Married/cohabiting couple alone</li> <li>• Married/cohabiting couple + others</li> <li>• Other household types</li> </ul>

(\*) the intergenerational households=\* ; potential intergenerational households are not signaled.

<sup>63</sup> American Time Use Survey (ATUS) has some variables which are ATUS-CPS variables. The variables and the categories shown on this table result of the combination of original micro file variables as included in ATHUS.

<sup>64</sup> Some variables could not be created for some countries and years. Original household income groups, educational groups and others differ across the countries and the surveys for the same country.

Table 1(cont.) [Appendix 1]– Household Categories and Size by Microdata source

	ATUS	MTUS
<b>Household Size</b>	<ul style="list-style-type: none"> <li>• N of adults in hh</li> <li>• N under 18 years old</li> <li>• N under 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>• N people in hh</li> <li>• child under 18 in hh</li> <li>• Unmarried child in parental home</li> <li>• Diarist a single parent</li> </ul>
<b>Includes Relational (familiar relationship information? Yes=1 ou No=0)</b>	1	1

Table 2[Appendix 1]– Time Transfers, Financial Private Transfers and Well-being information on data sources

	ATUS	MTUS
<b>Time Transfers</b>	<ul style="list-style-type: none"> <li>• Non market work</li> <li>• Care hh members</li> <li>• Child care (1st activ.)</li> <li>• Child care (2nd activ)</li> </ul> <p>n.a. in ATUS<sup>1</sup></p>	<ul style="list-style-type: none"> <li>• Non market work</li> <li>• Child Care</li> </ul>
<b>Financial Transfers</b>	<ul style="list-style-type: none"> <li>• Income</li> <li>• Leisure Time (Act.&amp;Pass)</li> </ul>	<ul style="list-style-type: none"> <li>• Income</li> <li>• Leisure Time (Act.&amp;Pass)</li> </ul>
<b>Well-being</b>	<ul style="list-style-type: none"> <li>• Personal time</li> <li>• Family Type and Size</li> <li>• Income ( x Groups)</li> </ul>	<ul style="list-style-type: none"> <li>• Personal time</li> <li>• Family Type and Size</li> <li>• Income groups</li> </ul>
<b>Contextual Variables</b>	<ul style="list-style-type: none"> <li>• Education</li> <li>• Age</li> <li>• Employment Status</li> <li>• Ethnic Group</li> </ul>	<ul style="list-style-type: none"> <li>• Income groups (dist: L25, M50, H25)</li> <li>• Education</li> <li>• Age</li> <li>• Employment Status</li> </ul>

APPENDIX 2

Table 1 [Appendix 2] Activities associated with well-being

ACTIVE and CULTURAL LEISURE	SOCIAL LEISURE
AV04 SCHOOL OR CLASSES	AV22 RELIGIOUS ACTIVITIES
AV08 ODDJOBS	AV25 DANCES, PARTIES
AV09 GARDENING, PETS	AV26 SOCIAL CLUB
AV17 LEISURE TRAVEL	AV27 PUB
AV18 EXCURSIONS	AV28 RESTAURANT
AV19 ACTIVE SPORT	AV29 VISITING FRIENDS
AV21 WALKS HOBBIES	AV37 CONVERSATION
AV24 CINEMA, THEATRE	AV38 ENTERTAINING FRIENDS
AV33 STUDY	
AV34 READING BOOKS	
AV35 READING PAPERS, MAGAZINES	<b>PASSIVE LEISURE</b>
AV39 KNITTING SEWING	AV20 PASSIVE SPORT
AV40 OTHER HOBBIES AND PASTIMES	AV30 LISTENING TO RADIO
	AV31 TELEVISION, VIDEO
	AV32 LISTENING TO TAPES ETC
	AV36 RELAXING

Source: Gauthier and Smeeding (2000), p.22; Categories AV\_N as MTUS database.

APPENDIX 3

Table 1 [Appendix 3]- Variable Descriptions

Variables	Description	Obs.
<b>Dependent variables (in Probit and Tobit Models)</b>		
<i>totcare_1st2nd_YN</i>	=1 if respondent spend time on care (children or other; main activity and main and second activity for children care), 0 otherwise	b)
<i>totcare_1st2nd</i>	time spent on care (children or other; main activity and main and second activity for children care) (in minutes per day)	b)
<i>time_child</i>	time spent on children care (in minutes per day)	a)
<b>Independent variables</b>		
<i>female_YN</i>	=1 if respondent is female, 0 otherwise	a) b)
<i>hhsize_m</i>	number of members of the hh	a)
<i>married_YN</i>	=1 if respondent is married, 0 otherwise	a) b)
<i>retired_YN</i>	=1 if respondent is retired, 0 otherwise	a)
<i>incomeG_m</i>	income ( in -25 50 +25 groups and categories)	a) b)
<i>educ_cat</i>	education level (categories)	a) b)
<i>paid_YN</i>	=1 if respondent has a paid work, 0 otherwise	a)
<i>nchild18_YN</i>	=1 if household has members <=18, 0 otherwise	a)
<i>ownhome_YN</i>	=1 if respondent is owner of the home, 0 otherwise	b)
<i>empstat_YN</i>	=1 if respondent is at labor market, 0 otherwise	b)
<i>age</i>	age (in years)	a)b)
<i>nadult</i>	number of adults of the household	b)
<i>empsp_YN</i>	=1 if respondent' spouse is in labor market, 0 otherwise	b)
<i>incomeqt_m-s</i>	income ( in quartiles and 16 categories)	b)

Note: a) defined for 10 countries; b) defined for US based on ATUS 2003.

Table 2 | Appendix 3|– Summary Statistics (USA 2003)

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>income03_m~s</i>	17331			1	16
<i>incomeqt_m~s</i>	17331	2.536149	1.131771	1	4
<i>empsp_YN</i>	11914	.6847406	.4646386	0	1
<i>empstat_YN</i>	19663	.6591568	.4740048	0	1
<i>ageyngst_b~N</i>	8670	.0882353	.2836531	0	1
<i>ageyngst_~s</i>	8670			0	17
<i>agryngst_s~l</i>	8670	8.009689	5.111054	1	18
<i>under5_YN</i>	19663	.1737273	.3788845	0	1
<i>under18_YN</i>	19663	.4409297	.4965111	0	1
<i>ethnic_whi~N</i>	19663	.8361389	.3701589	0	1
<i>ownhome_YN</i>	19663	.7501907	.4329135	0	1
<i>urban_YN</i>	19613	.7992658	.4005598	0	1
<i>tmain33_in~N</i>	19663	.1161064	.3203606	0	1
<i>tmain34_ol~N</i>	19663	.1093933	.3121399	0	1
<i>tmain40_ad~N</i>	19663	.1997152	.3997964	0	1
<i>totttime_c~40</i>	19663	43.10868	92.91222	0	1280
<i>tottcare_YN</i>	19663	.4000915	.4899291	0	1
<i>tcarec_2nd</i>	19663	151.3401	257.4196	0	1230
<i>tottcare_1~d</i>	19663	194.4488	298.2219	0	2299
<i>income0~1516</i>	17303			1	14
<i>tcare502nd</i>	19663	75.67007	128.7098	0	615
<i>totcare1~502</i>	19663	118.7787	179.4945	0	1714
<i>totcare_1s~N</i>	19663	.4931597	.4999659	0	1
<i>wchild_YN</i>	19663	.4873621	.499853	0	1
<i>age</i>	19663	46.9998	16.3729	18	80
<i>sex</i>	19663	1.566851	.4955233	1	2
<i>ethnic</i>	19663	1.230891	.5937557	1	4
<i>ethnic2</i>	19663	1.210446	.5092559	1	3
<i>hispc</i>	19663	.1093424	.3120763	0	1
<i>educ</i>	19663	3.882114	1.326221	1	6
<i>civstat</i>	19663	1.829273	1.168229	1	4
<i>famstat</i>	19663	2.036414	1.03945	0	3
<i>hhtype</i>	19663	2.855617	2.046369	1	8

Table 3 | Appendix 3|– Summary Statistics – All sample  
Canada, France, Netherlands, Norway, United Kingdom, Italy,  
Germany, Austria, South Africa, Slovenia

COUNTRY(year)	N	mean	sd	max	min
<b>Canada(98)</b>					
<i>child_time</i>	10726	26.21182	72.97845	920	0
<i>Female_YN</i>	10726	.5482006	.4976945	1	0
<i>Age_rec</i>	10726	44.67686	17.66683	80	15
<i>hhsize_m</i>	10726	2.578408	1.377595	8	1
<i>Nchild18_m</i>	10726	.5830692	.9559767	6	0
<i>NCHILD18_YN</i>	10726	.3309715	.4705847	1	0
<i>Married_YN</i>	10696	.4491399	.4974298	1	0
<i>Retired_YN</i>	10049	.1775301	.3821357	1	0
<i>IncomeG_m</i>	7290	1.951852	.7757205	3	1
<i>Disability_YN</i>	9905	.1793034	.3836255	1	0
<i>PAID_YN</i>	10726	.4660638	.4988703	1	0
<i>KIDCARE_YN</i>	10726	.2040835	.4030491	1	0
<i>Childav11_YN</i>	10726	.2040835	.4030491	1	0
<b>France(98)</b>					
<i>child_time</i>	15318	16.44079	46.81956	610	0
<i>Female_YN</i>	15318	.5282021	.4992203	1	0
<i>Age_rec</i>	15318	45.63337	18.82219	103	15
<i>hhsize_m</i>	15318	2.954433	1.450365	12	1
<i>Nchild18_m</i>	15318	.8933281	1.297033	10	0
<i>NCHILD18_YN</i>	15318	.4035775	.4906306	1	0
<i>Married_YN</i>	15318	.337642	.4729212	1	0
<i>REL_INTERG_YN</i>	15318	.1597467	.3663829	1	0
<i>Retired_YN</i>	15318	.2454629	.4303753	1	0
<i>IncomeG_m</i>	14961	2.091037	.6724132	3	1
<i>Disability_YN</i>	15268	.2247839	.4174536	1	0
<i>PAID_YN</i>	15318	.4149367	.4927272	1	0
<i>KIDCARE_YN</i>	15318	.1954563	.3965645	1	0
<i>Childav11_YN</i>	15318	.1954563	.3965645	1	0
<b>Netherlands(95)</b>					
<i>child_time</i>	3227	26.25349	51.26238	460.7143	0
<i>Female_YN</i>	3227	.5444685	.4980958	1	0
<i>Age_rec</i>	3227	38.82646	15.70484	90	12
<i>hhsize_m</i>	3223	2.881787	1.375493	9	1
<i>Nchild18_m</i>	3227	1.039975	1.177102	7	0
<i>NCHILD18_YN</i>	3227	.5144097	.4998698	1	0
<i>Married_YN</i>	3209	.3374883	.4729267	1	0
<i>Retired_YN</i>	3227	.0867679	.2815383	1	0
<i>IncomeG_m</i>	2592	2.347222	.7338904	3	1
<i>Disability_YN</i>	na	na	na	na	na
<i>PAID_YN</i>	3227	.7424853	.437333	1	0
<i>KIDCARE_YN</i>	3227	.3929346	.4884782	1	0
<i>Childav11_YN</i>	3227	.3929346	.4884782	1	0

**Table 3 (cont.) | Appendix 3]– Summary Statistics – All sample  
Canada, France, Netherlands, Norway, United Kingdom, Italy,  
Germany, Austria, South Africa, Slovenia**

<i>COUNTRY(year)</i>	<i>N</i>	<i>mean</i>	<i>sd</i>	<i>max</i>	<i>min</i>
<b>Norway(90)</b>					
<i>child_time</i>	6129	29.55458	70.93123	675	0
<i>Female_YN</i>	6129	.5232501	.4994999	1	0
<i>Age_rec</i>	6129	41.18584	16.5872	79	16
<i>hhsize_m</i>	6129	3.006526	1.348637	10	1
<i>Nchild18_m</i>	6129	.6640561	.9766607	5	0
<i>NCHILD18_YN</i>	6129	.3860336	.4868782	1	0
<i>Married_YN</i>	6123	.3171648	.4654102	1	0
<i>Retired_YN</i>	6055	.1398844	.3468957	1	0
<i>IncomeG_m</i>	4457	1.913619	.7264778	3	1
<i>Disability_YN</i>	6111	.0594011	.2363932	1	0
<i>PAID_YN</i>	6129	.5020395	.5000366	1	0
<i>KIDCARE_YN</i>	6129	.2574645	.4372731	1	0
<i>Childav11_YN</i>	6129	.2574645	.4372731	1	0
<b>UK(95)</b>					
<i>child_time</i>	1906	28.46537	79.81256	960	0
<i>Female_YN</i>	1906	.5409234	.4984532	1	0
<i>Age_rec</i>	1905	48.28661	18.87864	94	16
<i>hhsize_m</i>	1906	2.413956	1.257917	8	1
<i>Nchild18_m</i>	1906	.5482686	.9351854	6	0
<i>NCHILD18_YN</i>	1906	.3095488	.4624289	1	0
<i>Married_YN</i>	1903	.4277457	.4948818	1	0
<i>REL_INTERG_YN</i>	1905	.0740157	.2618653	1	0
<i>Retired_YN</i>	1906	.2371459	.4254441	1	0
<i>IncomeG_m</i>	1817	1.90699	.7122594	3	1
<i>Disability_YN</i>	na	na	na	na	na
<i>PAID_YN</i>	1906	.3898216	.4878377	1	0
<i>KIDCARE_YN</i>	1906	.2072403	.4054356	1	0
<i>Childav11_YN</i>	1906	.2072403	.4054356	1	0
<b>Italy(89)</b>					
<i>child_time</i>	37764	13.9065	44.24258	810	0
<i>Female_YN</i>	37764	.520734	.4995765	1	0
<i>Age_rec</i>	37764	37.07497	20.70782	98	3
<i>hhsize_m</i>	37764	3.618128	1.368749	10	1
<i>Nchild18_m</i>	37764	.7196801	.8358436	8	0
<i>NCHILD18_YN</i>	37764	.5222434	.4995116	1	0
<i>Married_YN</i>	37764	.4600943	.4984116	1	0
<i>REL_INTERG_YN</i>	37764	.3598401	.4799597	1	0
<i>Retired_YN</i>	37764	.1361349	.3429363	1	0
<i>IncomeG_m</i>	na	na	na	na	na
<i>Disability_YN</i>	32143	.0098311	.0986647	1	0
<i>PAID_YN</i>	37764	.2725876	.4452964	1	0
<i>KIDCARE_YN</i>	37764	.1671168	.3730851	1	0
<i>Childav11_YN</i>	37764	.1671168	.3730851	1	0

**Table 3 (cont.) | Appendix 3]– Summary Statistics All sample  
Canada, France, Netherlands, Norway, United Kingdom, Italy,  
Germany, Austria, South Africa, Slovenia**

<i>COUNTRY(year)</i>	<i>N</i>	<i>mean</i>	<i>sd</i>	<i>max</i>	<i>min</i>
<b>Germany(92)</b>					
<i>child_time</i>	25775	27.65063	63.92178	900	0
<i>Female_YN</i>	25775	.5227158	.4994934	1	0
<i>Age_rec</i>	25775	39.76679	16.70679	75	13
<i>hhsize_m</i>	25775	3.328031	1.347416	7	1
<i>Nchild18_m</i>	25775	.9877789	1.095451	5	0
<i>NCHILD18_YN</i>	25775	.557517	.4966904	1	0
<i>Married_YN</i>	25775	.3539864	.4782143	1	0
<i>REL_INTERG_YN</i>	25775	.2311542	.421579	1	0
<i>Retired_YN</i>	25775	.1168186	.3212103	1	0
<i>IncomeG_m</i>	23329	2.18222	.6883182	3	1
<i>Disability_YN</i>	na	na	na	na	na
<i>PAID_YN</i>	25775	.5641125	.4958822	1	0
<i>KIDCARE_YN</i>	25775	.3102231	.4625938	1	0
<i>Childav11_YN</i>	25775	.3102231	.4625938	1	0
<b>Austria(92)</b>					
<i>child_time</i>	25162	19.15746	59.2203	780	0
<i>Female_YN</i>	25162	.5428821	.4981676	1	0
<i>Age_rec</i>	25162	43.38113	19.91814	98	10
<i>hhsize_m</i>	25162	3.342938	1.605451	11	1
<i>Nchild18_m</i>	25162	.5822669	.9368649	9	0
<i>NCHILD18_YN</i>	25162	.3523965	.4777261	1	0
<i>Married_YN</i>	25162	.433789	.4956066	1	0
<i>REL_INTERG_YN</i>	25156	.2417316	.428141	1	0
<i>Retired_YN</i>	25162	.2469994	.431275	1	0
<i>IncomeG_m</i>	na	na	na	na	na
<i>Disability_YN</i>	na	na	na	na	na
<i>PAID_YN</i>	25162	.4915746	.4999389	1	0
<i>KIDCARE_YN</i>	25162	.1641364	.3704067	1	0
<i>Childav11_YN</i>	25162	.1641364	.3704067	1	0
<b>South Africa(00)</b>					
<i>child_time</i>	14217	14.53049	48.88594	720	0
<i>Female_YN</i>	14217	.5375958	.4986021	1	0
<i>Age_rec</i>	14209	33.55155	17.24781	99	10
<i>hhsize_m</i>	14217	4.288387	2.509879	24	1
<i>Nchild18_m</i>	14217	.7712598	1.013004	8	0
<i>NCHILD18_YN</i>	14217	.5020046	.5000136	1	0
<i>Married_YN</i>	14179	.5989844	.4901214	1	0
<i>Retired_YN</i>	14217	.019132	.1369938	1	0
<i>IncomeG_m</i>	13455	2.017689	.6590549	3	1
<i>Disability_YN</i>	14217	.0069635	.0831594	1	0
<i>PAID_YN</i>	14217	.5082648	.4999493	1	0
<i>KIDCARE_YN</i>	14217	.1446156	.3517252	1	0
<i>Childav11_YN</i>	14217	.1446156	.3517252	1	0

**Table 3 (cont.) | Appendix 3]– Summary Statistics – All sample  
Canada, France, Netherlands, Norway, United Kingdom, Italy,  
Germany, Austria, South Africa, Slovenia**

<i>COUNTRY(year)</i>	<i>N</i>	<i>mean</i>	<i>sd</i>	<i>max</i>	<i>min</i>
<b>Slovenia(00)</b>					
<i>child_time</i>	12273	15.8315	55.0238	790	0
<i>Female_YN</i>	12273	.5294549	.499152	1	0
<i>Age_rec</i>	12273	40.69152	18.48136	95	9
<i>hhsize_m</i>	12273	3.861322	1.442961	10	1
<i>Nchild18_m</i>	12273	.7421168	.9419597	5	0
<i>NCHILD18_YN</i>	12273	.4633749	.4986771	1	0
<i>Married_YN</i>	12273	.4082132	.491523	1	0
<i>REL_INTERG_YN</i>	12269	.3773739	.4847494	1	0
<i>Retired_YN</i>	12273	.218447	.4132092	1	0
<i>IncomeG_m</i>	9970	2.11986	.6721438	3	1
<i>Disability_YN</i>	12273	.0978571	.2971334	1	0
<i>PAID_YN</i>	12273	.3791249	.485189	1	0
<i>KIDCARE_YN</i>	12273	.1585594	.3652796	1	0
<i>Childav11_YN</i>	12273	.1585594	.3652796	1	0

Author's calculations from the MTUS database

**Table 4 | Appendix 3]– Summary Statistics – Sub-sample (Households with children –less  
18 years old) Canada, France, Netherlands, Norway, United Kingdom, Italy,  
Germany, Austria, South Africa, Slovenia**

<i>COUNTRY(year)</i>	<i>N</i>	<i>mean</i>	<i>sd</i>	<i>max</i>	<i>min</i>
<b>Canada</b>					
<i>Child_time</i>	3550	70.88732	103.9908	920	0
<i>Female_YN</i>	3550	.5659155	.4957059	1	0
<i>Age_rec</i>	3550	34.94592	9.629947	70	15
<i>hhsize_m</i>	3550	3.87662	1.061634	8	2
<i>Nchild18_m</i>	3550	1.76169	.8275323	6	1
<i>Married_YN</i>	3550	.2622535	.4399217	1	0
<i>Retired_YN</i>	3359	.0044656	.0666858	1	0
<i>IncomeG_m</i>	2629	2.120578	.7551892	3	1
<i>Educ_cat</i>	3385	2.286854	.8485255	3	1
<i>Disability_YN</i>	3318	.1088005	.3114357	1	0
<i>PAID_YN</i>	3550	.5515493	.4974056	1	0
<i>CHILD_TIME_YN</i>	3550	.5656338	.4957433	1	0
<b>France</b>					
<i>Child_time</i>	6182	33.66063	63.1545	610	
<i>Female_YN</i>	6182	.5184406	.4997002	1	0
<i>Age_rec</i>	6182	34.35361	11.46187	94	15
<i>hhsize_m</i>	6182	4.177289	1.177204	12	2
<i>Nchild18_m</i>	6182	2.213523	1.116289	10	1
<i>Married_YN</i>	6182	.2698156	.4438998	1	0
<i>Retired_YN</i>	6182	.0124555	.110916	1	0
<i>IncomeG_m</i>	6096	2.24836	.5975042	3	1
<i>Educ_cat</i>	6182	2.122291	.7000992	3	1
<i>Disability_YN</i>	6159	.1303783	.3367465	1	0
<i>PAID_YN</i>	6182	.524264	.4994513	1	0
<i>CHILD_TIME_YN</i>	6182	.3955031	.488998	1	0
<b>Netherlands</b>					
<i>Child_time</i>	1660	47.04217	63.02814	460	
<i>Female_YN</i>	1660	.5746988	.4945376	1	0
<i>Age_rec</i>	1660	34.08373	12.1715	78	12
<i>hhsize_m</i>	1659	4.022303	.8415387	9	3
<i>Nchild18_m</i>	1660	2.021687	.8416592	7	1
<i>Married_YN</i>	1651	.2683222	.4432205	1	0
<i>Retired_YN</i>	1660	.0114458	.106403	1	0
<i>IncomeG_m</i>	1252	2.496805	.6490399	3	1
<i>Educ_cat</i>	1658	1.809409	.7673848	3	1
<i>Disability_YN</i>	na	na	na	na	na
<i>PAID_YN</i>	1660	.7957831	.4032497	1	0
<i>CHILD_TIME_YN</i>	1660	.6271084	.4837193	1	0

**Table 4 cont | Appendix 3]– Summary Statistics – Sub-sample (Households with children – less 18 years old) Canada, France, Netherlands, Norway, United Kingdom, Italy, Germany, Austria, South Africa, Slovenia**

<b>Norway</b>				
Child_time	2366	74.49281	96.35655	675
Female_YN	2366	.5824176	.4932648	1 0
Age_rec	2366	35.67244	9.121152	67 16
hhsize_m	2366	3.975909	.9924933	10 2
Nchild18_m	2366	1.720203	.8087195	5 1
Married_YN	2366	.1322908	.3388783	1 0
Retired_YN	2348	.0170358	.1294322	1 0
IncomeG_m	2018	1.965808	.6843533	3 1
Educ_cat	2336	2.086901	.6315608	3 1
Disability_YN	2356	.0343803	.1822427	1 0
PAID_YN	2366	.5346577	.4989028	1 0
CHILD_TIME_YN	2366	.6453931	.4784952	1 0
<b>UK</b>				
Child_time	590	84.17797	121.2259	960
Female_YN	590	.5711864	.4953265	1 0
Age_rec	590	34.5661	10.38911	80 16
hhsize_m	590	3.747458	1.054839	8 1
Nchild18_m	590	1.771186	.8117455	6 1
Married_YN	589	.2886248	.4535082	1 0
Retired_YN	590	.0152542	.1226664	1 0
IncomeG_m	570	1.889474	.7429065	3 1
Educ_cat	589	2.108659	.5135011	3 1
Disability_YN	na	na	na	na na
PAID_YN	590	.4779661	.4999381	1 0
CHILD_TIME_YN	590	.5694915	.4955675	1 0
<b>Italy</b>				
Child_time	19722	23.8382	56.03871	810
Female_YN	19722	.5035493	.5000001	1 0
Age_rec	19722	27.10678	15.50782	80 3
hhsize_m	19722	4.149528	1.059797	10 2
Nchild18_m	19722	1.378055	.6560992	8 1
Married_YN	19722	.4283034	.4948454	1 0
Retired_YN	19722	.0134368	.1151386	1 0
IncomeG_m	na	na	na	na na
Educ_cat	19722	1.20865	.4968541	3 1
Disability_YN	14106	.0030483	.0551296	1 0
PAID_YN	19722	.26691	.4423562	1 0
CHILD_TIME_YN	19722	.2836933	.4508012	1 0

**Table 4 cont | Appendix 3]– Summary Statistics – Sub-sample (Households with children – less 18 years old) Canada, France, Netherlands, Norway, United Kingdom, Italy, Germany, Austria, South Africa, Slovenia**

<b>Germany</b>				
Child_time	14370	45.74878	77.80811	900
Female_YN	14370	.5200418	.4996156	1 0
Age_rec	14370	32.40912	12.87833	75 13
hhsize_m	14370	4.09318	1.033378	7 2
Nchild18_m	14370	1.771747	.873729	5 1
Married_YN	14370	.3482255	.4764245	1 0
Retired_YN	14370	.0200418	.140148	1 0
IncomeG_m	12757	2.278827	.6279032	3 1
Educ_cat	14370	2.106402	.7185206	3 1
Disability_YN	na	na	na	na na
PAID_YN	14370	.6197634	.4854618	1 0
CHILD_TIME_YN	14370	.5066806	.4999728	1 0
<b>Austria</b>				
Child_time	8867	40.31578	81.76303	630
Female_YN	8867	.5268975	.4993042	1 0
Age_rec	8867	29.72403	14.82742	96 10
hhsize_m	8867	4.498929	1.33498	11 1
Nchild18_m	8867	1.652306	.8500912	9 1
Married_YN	8867	.4532536	.4978381	1 0
Retired_YN	8867	.0454494	.2082995	1 0
IncomeG_m	na	na	na	na na
Educ_cat	8867	1.235254	.5076962	3 1
Disability_YN	na	na	na	na na
PAID_YN	8867	.597158	.4904972	1 0
CHILD_TIME_YN	8867	.3299876	.4702347	1 0
<b>South Africa</b>				
Child_time	7137	24.40101	62.17749	720
Female_YN	7137	.6016534	.4895919	1 0
Age_rec	7135	27.02887	13.79204	89 10
hhsize_m	7137	5.20765	2.267009	24 1
Nchild18_m	7137	1.53636	.9320236	8 1
Married_YN	7126	.587707	.4922819	1 0
Retired_YN	7137	.0061651	.0782809	1 0
IncomeG_m	6755	2.011103	.6667099	3 1
Educ_cat	7113	1.257416	.61634	3 1
Disability_YN	7137	.0053244	.0727788	1 0
PAID_YN	7137	.5449068	.4980142	1 0
CHILD_TIME_YN	7137	.235393	.4242739	1 0



**Table 4 cont | Appendix 3|– Summary Statistics – Sub-sample (Households with children – less 18 years old) Canada, France, Netherlands, Norway, United Kingdom, Italy, Germany, Austria, South Africa, Slovenia**

<b>Slovenia</b>				
Child_time	5687	29.83999	74.72232	790
Female_YN	5687	.5222437	.4995489	1 0
Age_rec	5687	33.25761	15.86349	95 9
hhlsize_m	5687	4.668015	1.315457	10 2
Nchild18_m	5687	1.601547	.7337292	5 1
Married_YN	5687	.3898365	.4877559	1 0
Retired_YN	5687	.0858097	.2801075	1 0
IncomeG_m	4644	2.191645	.6242697	3 1
Educ_cat	5687	1.449094	.6578903	3 1
Disability_YN	5687	.0580271	.2338152	1 0
PAID_YN	5687	.4337964	.4956413	1 0
CHILD_TIME_YN	5687	.2846844	.4513037	1 0

**Table 5 | Appendix 3]– Summary Statistics – Sub-sample (Households with children –0-13 years old) Canada, France, Netherlands, Norway, United Kingdom, Italy, Germany, Austria, South Africa, Slovenia**

<i>COUNTRY (Year)</i>	<i>N</i>	<i>mean</i>	<i>sd</i>	<i>max</i>	<i>min</i>
<b>Canada(98)</b>					
Child_time	2604	94.05223	109.8366	920	0
Female_YN	2604	.5844854	.4929052	1	0
Age_rec	2604	35.73041	6.777932	61	15
hhsize_m	2604	3.926267	1.047809	8	2
Nchild18_m	2604	1.961214	.8437432	6	1
NCHILD18_YN	2604	1	0	1	1
Married_YN	2604	.1647465	.3710229	1	0
Retired_YN	2447	.0016347	.0404061	1	0
IncomeG_m	2056	2.111868	.7526984	3	1
Educ_cat	2479	2.458653	.7584637	3	1
Disability_YN	2419	.0979744	.2973415	1	0
PAID_YN	2604	.5422427	.498308	1	0
Child_time_YN	2604	.7415515	.4378659	1	0
<b>France(98)</b>					
Child_time	4314	45.5007	70.3767	610	0
Female_YN	4314	.524803	.4994423	1	0
Age_rec	4314	34.36208	9.677077	89	15
hhsize_m	4314	4.281409	1.231623	12	2
Nchild18_m	4314	2.308994	1.179576	10	1
NCHILD18_YN	4314	1	0	1	1
Married_YN	4314	.1882244	.3909366	1	0
Retired_YN	4314	.0092721	.0958556	1	0
IncomeG_m	4247	2.216623	.5945082	3	1
Educ_cat	4314	2.138387	.7171806	3	1
Disability_YN	4299	.125378	.3311855	1	0
PAID_YN	4314	.5122856	.499907	1	0
Child_time_YN	4314	.5169217	.4997715	1	0
<b>Netherlands(95)</b>					
Child_time	1114	67.62118	67.09959	460	0
Female_YN	1114	.5825853	.493354	1	0
Age_rec	1114	34.88869	8.345859	66	12
hhsize_m	1114	4.06912	.8294218	9	3
Nchild18_m	1114	2.06912	.8294218	7	1
NCHILD18_YN	1114	1	0	1	1
Married_YN	1110	.1243243	.3300999	1	0
Retired_YN	1114	0	0	0	0
IncomeG_m	904	2.469027	.6530724	3	1
Educ_cat	1112	1.869604	.7823967	3	1

Disability_YN	0	.	.	.	.
PAID_YN	1114	.7809695	.4137751	1	0
Child_time_YN	1114	.8456014	.3614927	1	0

**Table 5 cont. [ Appendix 3]– Summary Statistics – Sub-sample (Households with children –0-13 years old) Canada, France, Netherlands, Norway, United Kingdom, Italy, Germany, Austria, South Africa, Slovenia**

<b>Norway(90)</b>					
Child_time	1729	98.83169	101.2195	675	0
Female_YN	1729	.5945633	.4911184	1	0
Age_rec	1729	34.57548	7.234914	67	18
hhsize_m	1729	4.023135	1.005504	9	2
Nchild18_m	1729	1.916715	.8298563	5	1
NCHILD18_YN	1729	1	0	1	1
Married_YN	1729	.0780798	.2683748	1	0
Retired_YN	1719	.0127981	.1124353	1	0
IncomeG_m	1497	1.912492	.6749611	3	1
Educ_cat	1709	2.135167	.5955418	3	1
Disability_YN	1725	.0365217	.1876388	1	0
PAID_YN	1729	.5037594	.5001305	1	0
Child_time_YN	1729	.8143436	.3889417	1	0
<b>UK(95)</b>					
Child_time	435	108.2414	130.9684	960	0
Female_YN	435	.5908046	.4922515	1	0
Age_rec	435	33.69425	8.875007	75	16
hhsize_m	435	3.790805	1.075452	8	1
Nchild18_m	435	1.896552	.8537594	6	1
NCHILD18_YN	435	1	0	1	1
Married_YN	434	.2396313	.4273511	1	0
Retired_YN	435	.0114943	.106716	1	0
IncomeG_m	422	1.919431	.7411564	3	1
Educ_cat	434	2.16129	.4774588	3	1
Disability_YN	0	.	.	.	.
PAID_YN	435	.4666667	.4994621	1	0
Child_time_YN	435	.6896552	.4631674	1	0
<b>Italy(89)</b>					
Child_time	16989	27.43787	59.44988	810	0
Female_YN	16989	.5030902	.5000052	1	0
Age_rec	16989	25.63294	14.89501	80	3
hhsize_m	16989	4.170875	1.069158	10	2
Nchild18_m	16989	1.4271	.6861063	8	1
NCHILD18_YN	16989	1	0	1	1
Married_YN	16989	.4340456	.4956455	1	0
Retired_YN	16989	.0082406	.0904057	1	0
IncomeG_m	0	.	.	.	.
Educ_cat	16989	1.218377	.5059001	3	1
Disability_YN	11374	.0027255	.0521376	1	0

PAID_YN	16989	.2598152	.438546	1	0
Child_time_YN	16989	.3229148	.4676042	1	0

**Table 5 cont. [ Appendix 3]– Summary Statistics – Sub-sample (Households with children –0-13 years old) Canada, France, Netherlands, Norway, United Kingdom, Italy, Germany, Austria, South Africa, Slovenia**

<b>Germany(92)</b>					
Child_time	4740	94.93143	100.0147	685	0
Female_YN	4740	.5208861	.4996163	1	0
Age_rec	4740	32.49409	9.140285	75	13
hhsize_m	4740	4.336498	1.108418	7	2
Nchild18_m	4740	2.043671	1.033921	5	0
NCHILD18_YN	4740	.9755274	.1545274	1	0
Married_YN	4740	.1632911	.3696701	1	0
Retired_YN	4740	.0139241	.1171882	1	0
IncomeG_m	4227	2.234918	.6059584	3	1
Educ_cat	4740	2.298101	.6650125	3	1
Disability_YN	0	.	.	.	.
PAID_YN	4740	.571308	.4949413	1	0
Child_time_YN	4740	.8004219	.3997254	1	0
<b>South Africa(00)</b>					
Child_time	2755	53.55354	86.13864	720	0
Female_YN	2755	.6569873	.4748019	1	0
Age_rec	2753	32.81329	8.926827	78	10
hhsize_m	2755	5.028312	2.136058	24	1
Nchild18_m	2755	2.045372	1.138762	8	1
NCHILD18_YN	2755	1	0	1	1
Married_YN	2752	.296875	.456964	1	0
Retired_YN	2755	.0029038	.0538185	1	0
IncomeG_m	2633	1.997341	.6726816	3	1
Educ_cat	2747	1.420459	.7428637	3	1
Disability_YN	2755	.0054446	.0736001	1	0
PAID_YN	2755	.4504537	.4976294	1	0
Child_time_YN	2755	.477677	.4995921	1	0

**Table 5 cont. [ Appendix 3]– Summary Statistics – Sub-sample (Households with children –0-13 years old) Canada, France, Netherlands, Norway, United Kingdom, Italy, Germany, Austria, South Africa, Slovenia**

<b>Slovenia(00)</b>					
Child_time	3781	43.85083	87.90076	790	0
Female_YN	3781	.5218196	.4995897	1	0
Age_rec	3781	33.41682	15.7996	95	9
hhsize_m	3781	4.86538	1.415567	10	2
Nchild18_m	3781	1.80402	.7673528	5	1
NCHILD18_YN	3781	1	0	1	1
Married_YN	3781	.3321873	.47106	1	0
Retired_YN	3781	.0938905	.2917149	1	0
IncomeG_m	3098	2.232085	.6297261	3	1
Educ_cat	3781	1.491933	.675537	3	1
Disability_YN	3781	.053954	.2259567	1	0
PAID_YN	3781	.4274002	.4947666	1	0
Child_time_YN	3781	.4041259	.490787	1	0

**Table 6 [ Appendix 3] Households with retired persons by household type and country**

Country	Retired	Total	% of Retired	Household Type (%)		
				Inter-generational <sup>(b)</sup>	One person household	Married/cohabiting couple alone
Canada	1544	9957	16	17	30	53
France	3674	15318	24	14	29	56
Netherlands <sup>(a)</sup>	377	3227	12			
Norway	1043	6046	17	15	28	57
UK <sup>(a)</sup>	372	1905	20			
Italy	6162	37765	16	46	19	35
Germany	6157	25778	24	20	37	43
Austria	6047	25163	24	34	33	33
South Africa <sup>(a)</sup>	312	14218	2			
Slovenia	3008	12276	25	51	19	31
	28696	151653				

Author computations based on MTUS (r.15/10/2005) database. (a) Excluded from the analysis because <400 observations. (b) Intergenerational households includes 'Married/cohabiting couple more others' and 'Other household types'.

**Table 7 [ Appendix 3] Households with persons with pre-retirement (and retirement age ) by country and hh type**

	Age		Household Type							
			N		One person household		Married/cohabiting couple alone		Inter-generational <sup>(b)</sup>	
	55-64 n	65+ n	Total ages	% 65+	55-64	65+	55-64	65+	55-64	65+
Canada	1176	1575	10725	15	17	34	55	49	29	18
France	1746	2983	15319	19	15	32	58	55	27	12
Netherlands <sup>(a)</sup>	354	459	3228	14						
Norway	717	997	6128	16	15	28	57	59	28	13
UK <sup>(a)</sup>	241	383	1904	20						
Italy	4429	5780	37765	15	9	25	30	35	62	40
Germany	3904	4601	25779	18	15	40	53	45	32	15
Austria	2979	4322	25163	17	14	38	39	36	48	26
South Africa	795	896	14217	6	9	8	13	13	78	79
Slovenia	1469	1838	12275	15	9	24	31	32	60	44

Author computations based on MTUS (r.15/10/2005) database. (a) Excluded from the analysis.

(b) Intergenerational households includes 'Married/cohabiting couple more others' and 'Other household types'.

**Table 8 [ Appendix 3] – Retired an Household Income Level by Country**

	Retired Total <sup>(a)</sup>	Retired <sup>(b)</sup> excluding missing obs. on income		1	2	3
		N	N			
Canada	1496	884		50	35	14
France	3571	3450		34	52	14
Netherlands	302	267		25	40	35
Norway	1005	613		75	22	3
UK	361	332		41	54	5
Italy	5579					
Germany	5728	5522		44	45	11
Austria	5466					
South Africa	219	200		8	79	14
Slovenia	2737	2327		33	47	20

Author computations based on MTUS (r.15/10/2005) database. (a) The number of retired was considered selecting retired respondents who also declared not having a paid work.

