Internet and the elderly in Spain: Time dedicated to search and communications

Molina, Jose Alberto and Campaña, Juan Carlos and Ortega, Raquel

University of Zaragoza and IZA, University of Zaragoza, University of Zaragoza

10 October 2016

Internet and the elderly in Spain: Time dedicated to search and communications*

José Alberto Molina
University of Zaragoza, Spain
IZA, Germany

Juan Carlos Campaña
University of Zaragoza, Spain

Raquel Ortega
University of Zaragoza, Spain

Abstract

Internet use reduces the isolation or exclusion of individuals in specific socio-economic groups and, consequently, increases the quality of life, with this being especially the case for the elderly. Knowing that the elderly are becoming particularly active in dedicating time to the Internet, we provide evidence of the time that Spanish individuals aged 65 and older dedicate to two online activities: search and communications. Thus, our work contributes to the central objective of the Digital Agenda for Europa, which sets out to ensure universal broadband coverage across the European Union. We estimate a simultaneous SUR model with data from the 4,036 individuals aged 65 years (inclusive) and older from the Spanish Time Use Survey for 2009-2010. Results indicate that being male has a positive influence on the time devoted to search on the Internet, whereas age has a negative effect. Time devoted to both Internet activities increases with higher levels of education and at the highest level of individual health. By contrast, a greater number of family members has a negative influence on the time spent on search and, more so, on communications. Finally, living in a larger city produces a positive effect on the time dedicated to search.

Keywords: Elderly, Internet, Time use, SUR model, Digital Agenda for Europa

JEL Classification: D12, J14, J22

* This paper was partially written while Raquel Ortega was Visiting Scholar at the Carroll School of Management of Boston College (US), to which she would like to express her thanks for the hospitality and facilities provided. This paper has benefited from funding by the Regional Government of Aragon, as well as from the European Fund for Regional Development, and the European Social Fund.

Corresponding author. J.A. Molina. Email: jamolina@unizar.es. Telephone: 34 976 76 18 18. Fax: 34 976 76 19 96. Web: http://dae.unizar.es/jamolina/

Introduction

This paper analyzes the socio-demographic determinants of the time that Spanish individuals aged 65 and older spend on two Internet activities: search and communications. With millions using the Internet every day around the world, it is essential to recognize the dramatic growth in Internet usage during the last few years for all ages, and the subsequent economic and social implications (Madden and Savage, 2000). Specifically, Goel et al. (2006) compute demand elasticities for Internet services for the OECD countries, showing, among other results, that the demand appears to be price inelastic and that income elasticity is at or above unity, with this indicating that Internet service is unlikely to be considered a "necessity" in the classical sense. Recently, Pantea and Martens (2016) calculate the value of the Internet as entertainment for five European countries, showing that the consumer surplus for each country amounted to between €18 billion (Italy) and €44 billion (Germany), thus confirming that access to the Internet leads to important welfare gains and underlining the importance of existing policies of improving access to the internet for households.

In addition to the proven fact that the use of the Internet stimulates economic growth, it is particularly interesting from a social perspective that online access reduces the isolation or exclusion of individuals in specific socio-economic groups and, consequently, increases the quality of life. This can be particularly the case for the elderly, with the socio-medical literature indicating that social support network size, and satisfaction with that social support, affect health and well-being outcomes. In this context, the elderly are becoming particularly active and heavy Internet users, with greater access to the Internet than most other population segments, and there is increasing evidence that technology and the media are becoming a significant part of this elderly group's lifestyle. Gatto and Tak (2008) provide information about Internet and e-mail use among older adults, concluding that online training and support for older adults will provide clear benefits in the future for computer-business professionals. Wright and Hill (2009) examine specifically the effects of disability and income on computer access and Internet use among the elderly, revealing that disability and income have a negative impact on computer use and Internet access. Hogeboom et al. (2010) provide information about Internet use and social networking among older adults, finding significant associations between measures of social networking and Internet use for adults over the age of 50.

As indicated, one well-studied topic on Internet use among older adults is the relationship to the well-being of older individuals, with the literature suggesting positive effects on psychological well-being (White el al., 1999; Wright, 2000) and, specifically, older Internet users being more positive than non-users concerning psychological well-being and personal characteristics (Chen and Persson, 2002). White et al. (2002) expand their previous pilot study to show that older adults appear to gain from Internet use in several ways, including self-efficacy, mastery, and empowerment. Thus, the internet expands the constrained boundaries of older users, including more contacts with family and friends, new opportunities to pursue former interests, as well as avenues to meet new friends and to "visit" new places that may no longer be accessible due to age-related limitations. Eastman and Iyer (2005) discuss the impact of the cognitive age of American consumers aged 65 or older on their Internet use, with results indicating that seniors with lower cognitive age will use the Internet more than seniors who are older in cognitive age. Shapira et al. (2007) show how to promote older adults' well-being through Internet use, concluding that when older people have the willingness to engage, and the potential for computer activity, they can successfully employ this potential and achieve both direct (searching for information and communicating with relatives), and indirect goals (a higher sense of control and a decreased feeling of loneliness).

Against this background, it is clear that the Internet has become part of the daily life of the elderly today and that this age group uses the Internet as a medium to browse and explore issues of interest, with search and communications with others being two of the fundamental aspects of their entertainment activities. For the case of Spain, historical data for the last decade confirms the increasing older population who use the Internet, with the percentage of users over 65 almost doubling, from 5.3% in 2008 to 10% in 2016 (Media General Study-*Estudio General de Medios*, 2016).

To the best of our knowledge, very few prior papers have addressed the impact of socio-demographic variables on the different uses of the Internet by the elderly population. National evidence of the determinants of the elderly's use of the Internet has been provided for the case of the US, using 2,284 individuals from the 2004 wave of the Health and Retirement Study (Hogeboom et al., 2010), while other empirical evidence is based on a sample of 58 older individual in the US (Gatto and Tak, 2008), and on a very small sample of 22 older people surveyed in Israel (Shapira et al., 2007). Thus, the information provided by the 4,036 Spanish individuals aged 65 (inclusive) and older

used in our study allows us to delineate the importance of this research in understanding the elderly's interactions with the Internet in Europe. Specifically, we explore the determinant of the time that the elderly in Spain spend on two online activities: search and communications. Thus, our evidence shows how older adults interact online, according to certain socio-demographic variables. This will be useful to policy-makers who wish to assess the recently-proven "beneficial" use of online activities, by devising policy instruments to increase the at-home demand for such online activities, in order to contribute to the central objective of the Digital Agenda for Europe, which sets out to ensure universal broadband coverage across the European Union.

To that end, we estimate a SUR model using a sample of 4,036 individuals who are aged 65 years (inclusive) and older from the Spanish Time Use Survey-STUS for 2009-2010.[1] The use of the STUS constitutes one of the important advantages of our study, given the significant amount of information provided by the large number of older individuals involved. This Survey is included in the Multinational Time Use Study (MTUS), with this being an ex-post harmonized cross-time, cross-national comparative time-use database, and is coordinated by the Center for Time Use Research at the University of Oxford. It is constructed from national random-sampled time-diary studies, with common series of background variables and total time spent in a number of activities.

Our approach is in line with other papers that have also used time variables on Internet use (Goolsbee and Klenow, 2006; Pantea and Martens, 2016). We seek to make a complementary contribution focusing us on providing estimates for the determinants of time use for the elderly in Spain. In our Time Use Survey, each interviewee fills in a time sheet, covering the 24 hours of a day, from 6 a.m. to 6 a.m. the following day. This dataset computes the total hours devoted to different activities throughout the day. Thus, the STUS allows us to estimate simultaneous model of different time uses, depending on demographic, educational, and family variables, providing exhaustive evidence on the determinants of the time that the elderly dedicate to a range of online activities.

The next section describes the current Spanish Internet situation. Data and variables are introduced in the subsequent section. We next describe the econometric

[1] The SUR model has been used to describe the simultaneity of consumption goods (see, for example, for the case of Spain, Molina, 1994, for food; Molina, 1997, for transport goods; Molina, 1999, for leisure, Molina, 2002, for all consumer goods; and Molina et al., 2016 for cultural goods).

model that explains the time that the elderly spend on the two online activities. Finally, we close the paper with our conclusions and some policy implications.

Internet use in Spain

Table 1, using data provided by the Media General Study (*Estudio General de Medios*, 2016), allows us to see changes and trends in the use of the internet in Spain over a period of 10 years (2006-2016). We can see that the number of Spaniards who use the Internet has increased more than 300 percent in this period (8,317,000 individuals in 2006, compared to 28,231,000 individuals in 2016). As can be seen in Table 1, the use of the internet by men in 2006 was greater (58.40%) than by women (41.60%), but this difference has decreased over the years since then. In 2016, 50.05% of men and 49.95% of women used the internet. Individuals aged 25 to 34 and 35 to 44 years use the internet the most in this 10-year period, but our study sample (individuals aged 65 and older) show considerable growth in Internet use, from 5.3% in 2008 to 10% in 2016.

With respect to the location of general access for Internet use, the home has been the most preferred option, with an increasing trend (from 78.3% in 2006 to 96.8% in 2016), while access to the Internet from work has declined (from 26% in 2006 to 16% in 2016). Another growing trend is observed in the use of the internet in the street and on public transport (from 21.5% in 2013 to 41% in 2016). As for devices used to access the Internet, the use of a personal computer (PC) has declined (from 54% in 2012 to 36.85% in 2016). In 2016, 92.9% of Spaniards who connect to internet do it through their smartphones.

(Table 1 about here)

Data and variables

We examine diary data from the Spanish Time Use Survey from 2009-2010. We restrict our sample to the 4,036 individuals who are aged 65 years (inclusive) and older, and we focus on analysing the time dedicated by those surveyed to two principal activities: searching for information with the computer and computer communication. In these surveys, each interviewee fills in a diary for a specific day of the week, indicating what activities were done during the course of the day, in intervals of 10 minutes, for a total

of 144 intervals. Time-use surveys provide information on time use per individual and are the typical instrument used to analyse time-allocation decisions (Aguiar and Hurst 2007; Giménez-Nadal and Sevilla 2012). Furthermore, an extensive literature confirms the validity and reliability of data from diaries and its advantages over other time-use surveys based on simple questions, in which those being surveyed are asked to estimate the time dedicated to a certain activity on a "typical day" or during a "typical week"; for example, the hours that the person surveyed has worked the day or the week before, etc. (Bianchi et al. 2006; Kalenkoski and Pabilonia 2012).

For the variables that could influence whether those being surveyed dedicate more or less time to these two activities, we use: age and age squared divided by 100 (Kalenkoski et al., 2005; Aguiar and Hurst 2007; Giménez-Nadal et al., 2011), in order to take into account the allocation of time to an activity over the whole life cycle. The gender variable is important in that free time preferences vary with gender (Giménez-Nadal and Sevilla 2012). We control for three levels of education, as in Campaña et al., (2015), Primary education (less than a secondary school diploma), Secondary education (a secondary school diploma), and University education (more than a secondary school diploma). Education influences the distribution of time that individuals allocate to different activities (Kalenkoski et al., 2005; Guryan et al. 2008; Giménez-Nadal & Molina, 2013, 2014; Campaña et al., 2015, 2016).

We consider whether the individuals surveyed are living together in couple, since this can influence the time dedicated to these activities. Studies such as Giménez-Nadal and Molina (2015) show that an individual's good health can lead to the individual dedicating more time to market work and less time to leisure activities, so we control for the state of health of the individual (self-reported) with five levels (1=very good health, to 5=very poor health). The number of household members is also included and we consider the size of the municipality where the interviewees live, with five classifications: municipality with a population greater than 100,000, municipality with a population of between 50,000 and 100,000, municipality with a population of between 20,000 and 50,000, municipality with a population of between 10,000 and 20,000, and municipality with a population of less than 10,000 (Molina et al., 2016).

Table 2 shows the descriptive statistics for the average time that those interviewed dedicated, in hours per day, to search and communication, as well as the descriptive statistics for our socio-demographic variables; Column 1 for men, Column 2

for women, and Column 3 for the whole sample. With respect to the time dedicated to search, men devote more time (0.06 hours per day) than do women (0.01 hours per day) to this activity, with this being similar to the time spent by men (0.02 hours per day) and women (0.01 hours per day) in communication. The average age is 74.39 years for men and 75.20 years for women. Concerning education levels, the majority of the individuals have had a primary education (85%). We observe also that 80% of men and 48% of women live with a partner. As for their state of health, 37% of the men report being in good health, while 36% of the women report being in acceptable health. With regard to household characteristics, there is an average of more than two inhabitants per household. Furthermore, the majority of men and women included in our study (44%) live in a municipality with a population of more than 100,000.

(Table 2 about here)

Methodology and results

Hamermesh and Lee (2007) argue that time is scarce and people suffer from lack of sufficient time to carry out all desired activities, and we know that men and women may have different preferences at different stages of their lives (Molina, et al 2016). Because each individual reports two uses of time and, as in other time-use studies (Giménez-Nadal and Molina 2013, 2015; Molina et al., 2016; Campaña et al., 2016), we estimate a SUR (seemingly unrelated regressions) model for the time that men and women spend in search and in computer communication.

The statistical model is as follows: For an individual "*i*", T_{si} and $T_{ci,}$ represent the hours reported by those individuals dedicated to search and to communication. X_i is the vector of the characteristics of the household and of the individuals, and ε_{si} and ε_{ci}, represents the random variables for unmeasured factors. Thus, we estimate the following two equations:

$$T_{si} = \beta X_i + \varepsilon_{si} \quad (1)$$

$$T_{ci} = \beta X_i + \varepsilon_{ci} \quad (2)$$

Concerning the specification of the error terms for each individual, we permit the correlations in the unobserved determinants of the activities, and the error terms are normally distributed as a whole, without restrictions in the correlation. This

specification shows the time limitation that could lead individuals to spend more time on one activity, and less time on another. Moreover, we assume that the error components are independent:

$$\begin{pmatrix} \varepsilon_{si} \\ \varepsilon_{ci} \end{pmatrix} \sim N \left(\begin{pmatrix} 0 \\ 0 \end{pmatrix} \quad \begin{matrix} \sigma^2_{si} & \rho_{sici}\,\sigma_{si}\sigma_{ci} \\ \rho_{cisi}\,\sigma_{ci}\,\sigma_{si} & \sigma^2_{ci} \end{matrix} \right)$$

Columns 1 and 2 of Table 3 show the results of our estimations for the time dedicated to search and communication in Spain. As shown, gender influences the time spent on search, in that being a man generates a positive influence on the time devoted to search. In terms of age, we found, as expected, a negative effect on the time dedicated to search (Madden and Savage, 2000; Chen and Persson, 2002; Wright and Hill, 2009). With respect to education, we find that the time devoted to search and communication increases at higher levels of education. We assume that individuals who have spent time in a university environment could have been regular users of the Internet, given the growth of online services on campus (Kelly and Lewis, 2001).

(Table 3 about here)

Health status shows a significant influence on the time dedicated to search and communication, in that individuals with better health spend more time in these activities. This is in line with Wright and Hill (2009), who show that being disabled, specifically, having a limited physical mobility, and being restricted to the house, have negative impacts on computer use. As for the number of household members, a greater number of household members influences individuals to spend less time on both search and communication. With respect to the size of the municipality, we see significant and positive values for municipality size 1 (municipality with a population greater than 100,000) and significant and negative values for municipality size 3 (a municipality with a population between 20,000 and 50,000) in the time devoted to search. Thus, living in larger cities produces a positive effect on the time dedicated to this activity, with this evidence being in line with the related literature (Kelly and Lewis, 2001).

Conclusions

It is clear that while increasing the access of the elderly to the use of online resources, policy-makers must bear in mind the need to act to protect this vulnerable elderly segment. In this context, we provide evidence of the socio-demographic determinants of time that the elderly dedicate to two online activities: search and communications. To that end, we estimate a simultaneous SUR model with data from the Spanish Time Use Survey for 2009-2010.

Our results indicate that being a man has a positive influence on the time devoted to search, whereas we find that age has a negative effect. Time devoted to search and communication increases at the highest level of education. Health status shows a significant and positive influence on the time dedicated to both Internet activities. A greater number of household members influences individuals to spend less time on search and communication and, with respect to the size of the municipality, living in larger cities produces a positive effect on the time dedicated to looking for information.

One limitation of our study is that, although the STUS contains time use information for all family members older than 9 years of age, we cannot account for unobserved heterogeneity in preferences for household production or leisure, since the STUS does not have a panel data structure.

It is a fact that the Internet has become an integral part of the daily life of the elderly, and the World Wide Web has attracted, and continues to attract, more and more of the elderly. Exploring the determinants of Internet use is important in designing policies to improve the provision of online services for the elderly. In this way, we provide evidence that contributes to the central objective of the Digital Agenda for Europe, which sets out to ensure universal broadband coverage across the European Union. Thus, it is critical to stimulate the elaboration of further studies that provides information from European (and other) countries that will assist in understanding the interactions with the Internet of the elderly, one of the fastest-growing online user groups.

In the context of this general debate on policies, certain recommendations can be derived from our empirical results for the case of Spain. Thus, if individuals at home behave according to certain socio-demographic variables, policy makers may have an

influence on the "beneficial" use of online activities by devising policy instruments to increase the in-home demand for such activities. Thus, computer training, development of Internet-accessible educational materials, and online social support are among the interventions that can benefit older adults. Additionally, our results can also open a discussion about encouraging private contributions and public subsidies. Our results can be used to shed light on the design of fiscal measures seeking to levy or raise taxes on Internet services. In any case, and given the scarcity of evidence on the use of the Internet by the elderly, it is timely to provide new, rigorous statistical information that contributes to clarify the nature of the elderly's interactions with the Internet.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

Aguiar, M., & Hurst, E. (2007). Measuring trends in leisure: the allocation of time over five decades, *Quarterly Journal of Economics*, *115*, 969–1006.

Bianchi, S. M., Robinson, J. P., & Milkie, M. A. (2006). *Changing Rhythms of American Family Life*, Russell Sage, New York.

Campaña, J., Giménez, J. I., & Molina, J. A. (2015). Gender differences in the distribution of total work-time of Latin-American families: the importance of social norms. IZA DP No. 8933

Campaña, J., Giménez, J. I., & Molina, J. A. (2016). Increasing the human capital of children in Latin America: The role of parent's time into childcare, *Journal of Development Studies*, DOI: 10.1080/00220388.2016.1208179

Chen, Y., & Persson, A. (2002). Internet use among young and older adults: relation to psychological well-being, *Educational Gerentology*, *28*, 731-744.

Eastman, J.K., & Iyer, R. (2005). The impact of cognitive age on Internet use of the Elderly: an introduction to the public policy implications, *International Journal of Consumer Studies*, *29 (2)*, 125-136.

Gatto, S.L., & Tak, S.H. (2008). Computer, Internet, and e-mail use among older adults: Benefits and Barriers, *Educational Gerontology*, *34*, 800-811.

Giménez-Nadal, J. I., & Molina, J. A. (2013). Parents' education as a determinant of educational childcare time, *Journal of Population Economics*,*26(2)*, 719-749.

Gimenez-Nadal, J. I., & Molina, J. A. (2014). Regional unemployment, gender and time allocation of the unemployed, *Review of Economics of the Household*, *12*, 105-127.

Giménez-Nadal, J. I., & Molina, J. A. (2015). Health status and the allocation of time: Cross-country evidence from Europe, *Economic Modelling*, *46*, 188-203

Giménez-Nadal, J. I., & Sevilla, A. (2012). Trends in time allocation: a cross-country analysis, *European Economic Review*, *56*, 1338–59.

Giménez-Nadal, J. I., Molina, J. A., & Ortega, R. (2011). Self-employed mothers and the work-family conflict, *Applied Economics*, *44(17)*, 2133-2147.

Goel, R.K., Hsieh, E.T., Nelson, M.A., & Ram, R. (2006). Demand elasticities for Internet services, *Applied Economics*, *38*, 975-980.

Goolsbee, G., & Klenow, P.J. (2006). Valuing consumer products by the time spent using them: an application to the Internet, *American Economic Review*, *96(2)*, 108-113.

Guryan, J., Hurst, E, & Kearney, M. (2008). Parental education and parental time with children, *Journal of Economic Perspectives*, *22*, 23–46

Hamermesh, D. S., & Lee, J. (2007). Stressed out on four continents: Time crunch or yuppie kvetch?, *The Review of Economics and Statistics*, *89(2)*, 374-383.

Hogeboom, D.L., Mc Dermott, R.J., Perrin, K.M., & Osman, H. (2010). Internet use and social networking among middle age and older adults, *Educational Gerontoloy*, *36*, 93-111.

Kalenkoski, C. M., & Pabilonia, S. W. (2012). Time to work or time to play: the effect of student employment on homework, sleep, and screen time, *Labour Economics*, *19*, 211–21.

Kalenkoski, C., Ribar, D., & Stratton, L. (2005). Parental child care in single parent, cohabiting, and married couple families: time diary evidence from the United Kingdom, *American Economic Review: Papers and Proceedings*, *95*, 194–8.

Kelly, R.E. & Lewis, P.E.T. (2001). Household demand for Internet connection, The *Journal of Media Economics*, *14(4)*, 249-265.

Madden, G., & Savage, S.J. (2000). Some economic and social aspects of residential Internet use in Australia, *The Journal of Media Economics*, *13 (3)*, 171-185.

Media General Study-*Estudio General de Medios* (2016). **http://www.aimc.es/-Audiencia-de-Internet-en-el-EGM-.html**.

Molina, J.A. (1994). Food demand in Spain: an application of the Almost Ideal System, *Journal of Agricultural Economics*, *45*, 252-258.

Molina, J.A. (1997). Two-stage budgeting as an economic decision making process for Spanish consumers, *Managerial and Decision Economics*, *18*, 27-32.

Molina, J.A. (1999). Is leisure weakly separable from consumption goods in Spain?, *Economie Appliquée*, *52*, 125-143.

Molina, J.A. (2002). Modelling the demand behavior of Spanish consumers using parametric and non-parametric approaches, *Journal for Studies in Economics and Econometrics*, *26*, 19-36.

Molina, J. A., Campaña, J. C., & Ortega, R. (2016). What do you prefer for a relaxing time at home: reading, watching TV or listening to the radio?, *Applied Economics Letters*, *23 (18)*, 1278-1284.

Pantea, S., & Martens, B. (2016). The value of the Internet as entertainment in five European countries, *Journal of Media Economics*, *29 (1)*, 16-30.

Shapira, N., Barak, A., & Gal, I. (2007). Promoting older adults' well-being through Internet training and use, *Ageing & Mental Health*, *11 (5)*, 477-484.

White, H., McConnell, E., Clipp, E., Branch, L.G., Sloane, R., Pieper, C., & Box, T.L. (2002). A randomized controlled trial of the psychosocial impact of providing Internet training and access to older adults, *Ageing & Mental Health*, *6(3)*, 213-221.

White, H., McConnell, E., Clipp, E., Bynum, L., Teague, C., Navas, L., et al. (1999). Surfing the net in later life: A review of the literature and pilot study of computer use and quality of life, *Journal of Applied Gerontology*, *18*, 358-378.

Wright, K. (2000). Computer-mediated social support, older adults, and coping, *Journal of Communication*, *50(3)*, 100-118.

Wright, D.W., & Hill, T.J. (2009). Prescription for trouble: Medicare Part D and patterns of computer and Internet access among the elderly, *Journal of Aging and Social Policy*, *21*, 172-186.

Table 1. Internet users in Spain

Years	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Users	8317	9944	11443	13525	15127	16768	18437	21.116	24.076	26.496	28.231
Gender											
Male	58.40	58.00	56.60	55.20	56.10	55.20	54.30	52.60	51.30	50.47	50.05
Female	41.60	42.00	43.40	44.80	43.90	44.80	45.70	47.40	48.70	49.53	49.95
Age											
14 - 19	15.3	14.9	12.3	11.9	11.1	10.7	10.5	10.0	9.3	8.7	8.4
20 - 24	15.0	13.4	11.0	11.3	11.0	10.2	9.8	9.1	8.6	8.0	7.3
25 -34	30.3	28.6	27.6	28.1	27.0	26.1	25.3	23.5	21.6	19.5	18.3
35 - 44	20.6	22.2	22.0	22.2	23.5	23.8	24.3	24.7	25.0	24.6	23.9
45 -54	12.3	13.6	14.3	14.0	14.6	15.1	15.4	16.1	17.3	18.8	19.6
55 - 64	5.0	5.7	7.4	7.3	7.5	8.1	8.4	9.0	10.0	11.1	12.7
Since 65	-	-	5.3	5.2	5.4	5.9	6.4	7.6	8.1	9.2	10.0
Access											
Home	78.3	83.3	85.2	88.6	90.4	91.9	92.2	92.6	94.0	95.1	96.8
Work	26.0	23.5	22.0	19.2	17.9	15.7	15.0	13.9	14.6	15.8	16.0
University/Study center	4.3	3.1	2.5	2.5	2.2	2.6	2.2	2.7	3.0	2.9	3.1
Street/transport means	-	-	-	-	-	-	-	21.5	36.2	39.5	41.0
Another place	6.4	4.9	4.7	3.9	4.5	3.9	8.9	11.2	11.2	8.2	8.9
Devices											
PC	-	-	-	-	-	-	54.0	52.7	46.2	42.1	36.85
Netbook	-	-	-	-	-	-	58.6	61.7	60.4	56.1	54.15
Smartphone	-	-	-	-	-	-	31.6	57.3	81.3	90.6	92.9
Tablet	-	-	-	-	-	-	5.6	17.5	26.4	29.9	29.1
Smart TV	-	-	-	-	-	-	0.4	2.2	3.6	4.5	18.95

Note: Own elaboration based on the Internet audience in the General Media Study (EGM) from Spain **http://www.aimc.es/-Audiencia-de-Internet-en-el-EGM-.html**. **Users** individuals in thousands (Base: users yesterday). **Gender** individuals in percentages (Base: users yesterday). **Age** individuals in percentages (Base: users yesterday). **Access** individuals in percentages (Base: users yesterday) The sum of the digits for each of the access points is greater than 100 because some individuals use more than one access point. **Devices** individuals in percentages (Base: users last month). The sum of the digits for each of the devices is greater than 100 because some individuals use more than one device. The value for 2015 corresponds to the mean of the waves of the months of February/March, April/May and October/November. The value for 2016 corresponds to the mean of the waves of the months of February/March and April/May.

Table 2: Descriptive statistics

	Men		Women		Total	
Variables	Mean	SD	Mean	SD	Mean	SD
Search (daily hours)	0.06	(0.353)	0.01	(0.160)	0.03	(0.262)
Computer comunication (daily hours)	0.02	(0.185)	0.01	(0.132)	0.02	(0.157)
Age	74.39	(6.823)	75.20	(7.052)	74.85	(6.965)
Primary education	0.81	(0.394)	0.89	(0.312)	0.85	(0.352)
Secondary education	0.10	(0.302)	0.06	(0.241)	0.08	(0.269)
University education	0.09	(0.288)	0.05	(0.213)	0.07	(0.249)
Living as a couple	0.80	(0.397)	0.48	(0.500)	0.62	(0.486)
Very good health	0.06	(0.229)	0.05	(0.211)	0.05	(0.219)
Good health	0.37	(0.483)	0.29	(0.456)	0.33	(0.469)
Acceptable health	0.35	(0.478)	0.36	(0.479)	0.35	(0.478)
Poor health	0.18	(0.386)	0.24	(0.427)	0.21	(0.411)
Very poor health	0.04	(0.201)	0.07	(0.247)	0.06	(0.229)
No. household members	2.35	(1.032)	2.12	(1.137)	2.22	(1.099)
Municipality size 1	0.42	(0.494)	0.46	(0.499)	0.44	(0.497)
Municipality size 2	0.09	(0.292)	0.09	(0.282)	0.09	(0.286)
Municipality size 3	0.11	(0.312)	0.09	(0.289)	0.10	(0.299)
Municipality size 4	0.10	(0.295)	0.09	(0.286)	0.09	(0.290)
Municipality size 5	0.28	(0.450)	0.27	(0.444)	0.28	(0.447)
Observations	1734		2302		4036	

Note: Standard deviations in parentheses. Data from the Spanish TUS 2009-2010. The sample is restricted to individuals aged 65 and older. Primary education is equivalent to having less than a secondary school diploma. Secondary education is equivalent to having a secondary school diploma. University education is equivalent to having more than a secondary school diploma. Municipality size 1 is equivalent to a municipality with a population greater than 100,000, municipality size 2 is equivalent to a municipality with a population between 50,000 and 100,000, municipality size 3 is equivalent to a municipality with a population between 20,000 and 50,000, municipality size 4 is equivalent to a municipality with a population between 10,000 and 20,000, and municipality size 5 is equivalent to a municipality with a population less than 10,000.

Table 3. Estimations of the SUR model

Variables (Adults since 65 years)	(1) Search	(2) Computer communication
Male	0.0360***	0.00274
	(0.00833)	(0.00513)
Age	-0.0154*	-0.00719
	(0.00914)	(0.00763)
Age squared	0.00857	0.00431
	(0.00571)	(0.00501)
High school degree	0.0644**	0.0301**
	(0.0254)	(0.0120)
Some college	0.0934***	0.104***
	(0.0304)	(0.0263)
Living as a couple	0.0102	0.00203
	(0.00667)	(0.00467)
Very good health	0.0682*	0.0437*
	(0.0357)	(0.0246)
Good health	0.00116	0.00399
	(0.0168)	(0.00786)
Acceptable health	-0.0140	-0.00216
	(0.0153)	(0.00691)
Bad health	-0.00660	-0.00394
	(0.0157)	(0.00662)
No. household members	-0.00430*	-0.00400***
	(0.00253)	(0.00149)
Municipality size 1	0.0299***	-0.00228
	(0.00789)	(0.00537)
Municipality size 2	0.000389	0.00816
	(0.0148)	(0.0116)
Municipality size 3	-0.0128**	0.00844
	(0.00563)	(0.00943)
Municipality size 4	0.0180	0.00557
	(0.0147)	(0.00927)
Constant	0.658*	0.296
	(0.366)	(0.291)
R-squared	0.042	0.044
Observations	4,036	4,036

Note: Robust standard errors in parentheses. Data from the Spanish TUS 2009-2010. The sample is restricted to individuals aged 65 and older. Primary education is equivalent to having less than a secondary school diploma. Secondary education is equivalent to having a secondary school diploma. University education is equivalent to having more than a secondary school diploma. Municipality size 1 is equivalent to a municipality with a population greater than 100,000, municipality size 2 is equivalent to a municipality with a population between 50,000 and 100,000, municipality size 3 is equivalent to a municipality with a population between 20,000 and 50,000, municipality size 4 is equivalent to a municipality with a population between 10,000 and 20,000, and municipality size 5 is equivalent to a municipality with a population less than 10,000. Sunday taken as a reference day. * Significant at 90%. ** Significant at 95%. *** Significant at 99%.