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Socio-economic and psychological consequences
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How Much Is It Worth Investing in Relationships as a Factor in Preventing Loneliness?

Federico Comes¹, Martina Menon² and Federico Perali³

Summary: In times of pandemic, according to the survey on the living conditions of the elderly and the quality of their relationships recently conducted by the research group of the REDESIGN project, the economic aspects have been significantly influenced especially for the elderly who live alone, objectively more exposed to the risks of the health emergency. From this point of view, the Italian welfare, which prefers the protection of the elderly, seems to have effectively mitigated the economic impact regardless of income and region of residence, but has shown limits in preventing and treating the intangible aspects related to the non-cognitive, affective and relational sphere of the great elderly, especially for the most fragile and lonely. In general, the willingness to pay is associated both with the need for relationships and with the ability to give, for example, on the part of those who are more sociable or place more trust in others, regardless of financial possibilities. The decision on how much to donate seems instead dominated by purely economic variables. The study estimated that the average level of willingness to pay of the elderly for social networks is 94 euros. This could generate potential funding of around €365 million that Italian communities can mobilise. As a lesson for the future, it will be important to understand how communities and philanthropic institutions of financial intermediation, such as community foundations, can foster the development of autonomous networks to improve the quality of life of the elderly and, at the same time, create the conditions to improve the prevention of situations at high risk to health.

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Keywords: Willingness to pay, elderly people, loneliness, social network

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1. Introduction

The recent pandemic has affected the style and quality of life of each segment of the population differently. There is no doubt that the group of the great elderly with more than 75 years has been the most exposed both for the health aspects related to the virulence of the pandemic and for indirect repercussions on the psychological and emotional sphere especially for the frail and lonely elderly. The cohort of the elderly is more economically protected than other sections of the population still active in the labour market and probably better equipped from the point of view of mental solidity than, for example, the adolescent group (Schinka et al. 2012).

The long periods of forced isolation during the pandemic have significantly reduced the opportunities for direct relationships between people. The use of new digital technologies that allow social interactions at a distance is not able to replace the demand for affectively and emotionally close relationships or the need to offer direct help to those in need. This dimension of fragility is exacerbated for people living alone who in many cases can also suffer from loneliness.

Demographic ageing is a great achievement in the history of civilization, but it is also a challenge for modern societies. An increasing number of people are reaching old age and inevitably becoming more fragile. In 2019 Italy was the European country with the highest % of elderly population: 22.8% of the total population was > 65 years with an increase of 2.5 points % in 10 years.

Loneliness is a subjective condition associated with the difference between how much social connection people want and how much they are getting. People need people. Not wrongly, it is often said that humans can survive three minutes without air, three days without water, three weeks without food and, ... three months without company. Cultivating friendships can be an important factor for well-being, while chronic loneliness and social isolation – distinct but interconnected conditions – may be associated with higher rates of heart disease, Alzheimer's disease, and states of depression and anxiety that can also lead to extreme gestures. Many public health studies report that the mortality rate associated with loneliness is comparable to that of obesity and smoking.

Ageing and aging alone and often suffering from loneliness are not quite the same thing. In Europe, an increasing number of older people are single-person households, in particular women, who are a particularly vulnerable group in society at risk of poverty and social exclusion. In Italy, this increase is driven by the increase in the share of singles aged 45-64 from 24.2% in 2010 to 31.9% in 2020. Almost half of the population over the age of 65 is alone in a stable proportion in the last decade, 48.5% in 2010, 48.4% in 2020. In 2020, 62% of women over 65 were alone, compared to 30.5% of men in the same age group (Eurostat 2020).

Loneliness and social isolation are becoming increasingly recognized as public issues that need to be addressed with effective policy interventions. In 2016, around 12% of EU citizens only felt more than half the time. The COVID-19 pandemic has magnified the problem. In the first few months following the COVID-19 outbreak, the proportion of EU citizens who felt lonely more than half the time doubled to around 25%. Loneliness and social isolation are not only detrimental to mental and physical health but can also have significant consequences for social cohesion and community trust.

To grasp the complexity of the socio-economic and psychological consequences of the pandemic in the subpopulation of large elderly people over 75 years of age in Italy, a questionnaire was designed based on Bronfenbrenner's socio-ecological model which, with a holistic approach, considers the complex interaction between factors related to the individual and his relationships with the family, community and society. It allows us to understand the set of factors that expose or protect people to the risk of loneliness or other conditions of malaise. In addition to helping to clarify these factors, the

model also suggests that, in order to prevent loneliness, it is necessary to act simultaneously on several levels of the model if prevention and treatment goals are to be effectively pursued. The design of the research is also inspired by the multipurpose survey model of the World Bank's Living Standard Measurement Study (Deaton 2019, Grosh and Glewwe 2000) which collects data on many dimensions of individual, family, community and social well-being to estimate the standard of living, understand family behavior in response to external policies or events, and to assess the effect of various government policies on people's living conditions. This approach also incorporates the recommendations related to the measurement of well-being of the Commission chaired by Stiglitz, Fitoussi, and Sen (2009) and taken up by the OECD (2018) that call for going beyond monetary measures, such as GDP, to measure the progress of societies. People's subjective perceptions, assessments and experiences as well as the value of unpaid activities carried out in the family to produce family commons are a crucial component of general well-being (Sen, Stiglitz, Fitoussi 2009). This model has also been adopted in studies to understand the causes of juvenile crime in Dalla Chiara and Perali (2022), Menon, Perali, Veronesi (2017), or the living conditions of families who have suffered severe brain injuries (Menon, Giovanis, Perali 2022).

The data were collected in the context of the REDESIGN project, funded by Fondazione Cariplo and coordinated by the Università Cattolica del Sacro Cuore in Milan, in collaboration with the University of Verona and the University of Molise. The national sample consists of 609 observations of large elderly people over 75 years old. The method of administration was CAWI (computer assisted web interviewing) and the survey was carried out by the company SWG (<https://www.swg.it/>), which implemented and administered the questionnaire on a panel of respondents. The surveys were carried out between May and June 2021.

The questionnaire consists of the following sections: a) personal data and composition of the household, b) housing condition, c) consumption of the family with particular attention to consumer goods assignable to individual family members, d) economic situation (income and savings), e) use of time on how the elderly spend the day and on the performance of activities carried out together with other family members, f) health conditions with the EQ5D index, the SELSA (*Social and Emotional Loneliness Scale for Adults*) loneliness index extended to also reflect the dimension of loneliness generated by the use of digital media, the quality of life and the value to social networks. During the questionnaire it is asked for some questions to specify the answer in relation to the pre and post critical event with regard to the covid19 event.

For the methods of administration of the survey and considering the target population (elderly people whose age is between 75 and 84 years), it is necessary to specify that this is not a representative sample of the Italian population of the elderly: our respondents are in fact characterized by a good cultural level, evidenced by mainly medium-high educational qualifications and access to the Internet. The situations of great economic, social and health fragility, however, also escape this survey that involves the great elderly who are part of the networked community of over 60,000 profiled individuals who regularly take part in the quantitative surveys mediated by the web (CAWI) affiliated to the SWG company that conducted the survey. It is important, however, to emphasise that the economic situation of the elderly concerns a fragile subpopulation that is poorly represented in national surveys on consumption, living standards, use of time and aspects of daily life. The sample of large elderly people that was interviewed is a case study that can be compared with the control sample relating to the rest of the Italian population to highlight any causes of the different exposure to the risks of frailty of the elderly.

In the present work we therefore try to document for the great elderly the impact of the pandemic on the many and different social, economic and psychological dimensions that make up the standard of living paying particular attention to loneliness. Considering that in times of stress social support is fundamental through the strengthening of relationship networks, we have also focused on estimating the individual and collective demand for the common good "social network" explaining both the choice whether or not the elderly is available to donate a sum to finance the establishment and maintenance of new social networks and estimating the level of the sum itself. This information is relevant to know how much importance the elderly assign to social networks as a factor in the prevention and treatment of loneliness and how to finance their implementation. The socio-economic and psychological impact, also related to the repercussions in the affective and emotional sphere, will be documented in the first part. Estimates of willingness to pay for social networks will be presented in the next part. Conclusions will follow.

2. Socioeconomic and Psychological Consequences of the Pandemic with Particular Regard to Loneliness

The effects of the pandemic on the standard of living affect to varying degrees the different dimensions related to style and quality of life such as consumption, incomes and savings, time use, health status with regard to mental health, loneliness and non-cognitive psychological characteristics. The holistic design of the research allowed us to measure them and to be able to compare them before and after the critical event. We initially introduce the description of the scale used to measure loneliness to continue with the socioeconomic and psychological consequences.

2.1 The Measurement of Loneliness

The condition of loneliness is an experience, often distressing, with potentially serious health consequences, little studied especially for adulthood (Berg-Weger and Morley 2020), whose incidence and intensity has greatly increased during the pandemic emergency. It is estimated that in normal times one in four people suffer from loneliness (Perlman and Peplau 1981, Peplau and Perlman 1982, Perlman 1988). Loneliness is often associated with lower quality of life satisfaction, greater alcohol consumption and greater psychological and relational difficulties (Dykstra 2009, Fokkema et al. 2012). It is therefore important to understand the causes of loneliness and measure it correctly (Dahlberg et al. 2015). Living alone and suffering from loneliness is not the same thing. As well as many people, regardless of age, they can suffer from loneliness although they do not live alone.

DiTommaso and Spinner (1993, 1997), Cramer and Berry (1999), DiTommaso et al. (2004) and DiTommaso et al. (2015), Kuznier et al. (2016), Russell (1996) studied a multidimensional measure of loneliness, called Social and Emotional Loneliness Scale for Adults - SELSA, which distinguishes the social and emotional dimension, further distinguished into family and affective. In the present study, the technological dimension has also been added in order to make it more suitable to grasp the role of social media in determining the condition of loneliness. The 45tabella 1 reports the extended

⁴ The questions for calculating the SELSA index were set so that the respondent's degree of agreement could be collected for each statement using a scale of 1 to 5, where 1 = Completely disagree and 5 = Completely agree. The order of answer of some questions has been reversed to maintain consistency with the other questions already ordered in order to make a positive contribution to the index.

⁵ The technological component consists of the following affirmations evaluated on a response scale 1 to 5 ranging from complete disagreement to complete agreement: 1. Using the internet allowed me to be closer to friends and family, 2. Social networks (e.g. Facebook, Twitter) make me feel connected to friends and family, 3. Social networks have helped me keep in touch with friends and family I would otherwise have distanced myself from, 4. I would advise others to use the internet to improve their social ties., 5. Technology has made it harder to spend time in person with friends and family.

SELSA loneliness index, aggregated with the Chakravarty technique (2003) described in Appendix I, and the index of the social, family and affective components also aggregated with the same technique. The component with a higher average index is the family member due to a greater agreement of the respondents with the questions asked, while the lowest average index is that relating to the technological component given the prevalence of discordant positions. The components most correlated with the SELSA aggregate index are the social, family and affective (around 0.7), while the technological component is less correlated (0.56). The right column shows the relative contribution of each component. The component of greatest weight is the family (30.3%), while the one of least weight is the technological (21.6%).

Those who live alone are not always accompanied by a condition of loneliness, but it is certainly more likely (Russell et al. 2012). More than half of the elderly (52.9%) feel very lonely according to the extended SELSA scale (Table 2). These are twice as many as those living in pairs (26%). This information is very relevant because it identifies a factor of high vulnerability with great precision and allows you to design targeted policies.

2.2 Socio-economic consequences

2.2.1 Consumption of goods

During the pandemic, the incomes of the elderly, consisting mainly of pension income, have remained almost constant but the long periods of isolation and exposure to high health risk, has changed the pattern of consumption both at family and intra-family level given the distribution of resources among individual members. The comparison between before and after the critical event reveals that the great elderly has donated a share of expenditure greater than about 3% for food and home, about 2.3% for health expenses and a slight increase in expenses for communication and digital technologies (0.5%) induced by the pandemic (Menon and Perali 2022). These higher expenses were offset by a sharp reduction in the share of expenses for meals away from home by about 6% and the share of expenses for private transport (0.7%) and clothing (0.5%). The great elderly, therefore, have put in place reasonable adaptation strategies aimed at maintaining a constant level of well-being by reallocating resources to the most demanded goods during the pandemic.

2.2.2 Time consumption

The use of time has been described through a stylized scheme of the use of time (Kan and Pudney 2008, Dalla Chiara e Perali 2022) compiled by the respondent for each family member with reference to a "typical" day of the week before and after the critical event which is asked to indicate the average time dedicated to each daily activity (for example sleeping, personal care and hygiene, lunch, reading, physical activity, etc.) and the percentage with which each activity is carried out in company. Part of the scheme has been designed to deepen how much time is dedicated to the use of the phone or PC / tablet in a work or study environment and in free time.

Reconstructing a typical day of the week is vital to knowing a person's habits. If a person, for example, always eats and sleeps alone, does not visit family or friends, does not participate in community activities, sporting events or cultural events, then it is reasonable to think that he is a person who has experience, aware of the phenomenon of loneliness. The percentage of each activity carried out in the company allows you to get an idea of when, during a day, the person is alone or together with other people. Excessive use of phones, PCs and tablets in their free time can signal a closure to the outside world to find refuge in the electronic device.

The comparison between the time usage of a large representative pre- and post-critical event elder described in Figure 2 reveals that lifestyles have not changed significantly due to the pandemic. Not being of working age or of intense sporting activity, this evidence is not surprising. If you focus on allocating time in activities carried out in company (Figure 3) the data reveal very different facets. In the pie charts of the left column tiles very lonely people, according to the SELSA Extended loneliness scale that will be described in the next paragraphs, share only 22% of their time, while non-lonely people share 40% of their time with other family members or other acquaintances. Single people, represented in the boxes of the right column, who feel very lonely share only 12.6% of their time with others, while singles who do not feel alone spend about 16% of their time in the company of others. This evidence seems to indicate that the quality of time spent in company is also very important. The box below shows that those who have a high level of anxiety and depression spend relatively fewer hours in company (about 26%) which is a level more comparable to that of people who feel very lonely (22%). People who suffer from anxiety and depression, therefore, are much more exposed to the risk of loneliness.

2.2.3 Income and savings

To understand how the traumatic event generated by the pandemic may have affected the economic situation, it was asked to declare the estimated net household disposable income as the sum of the net income from employment, self-employment and pension of all the individual components thinking about the economic situation before and after this event. The measure of net income was supplemented with the estimation of other transfers of money or annuities such as unemployment benefits, rental/capital income, and other transfers from the state (social pension, citizenship income, and more). Whether economic resources, given household income, were considered adequate, respondents were asked whether they were able to save. In 71.01% of cases the answer was affirmative. After the critical event, the proportion of observations that could afford to be saved decreased (69.15%).

Before and after the critical event, family income remained virtually unchanged, both among couples and among the elderly living alone (average level of income per capita of the elderly couple € 2665.66 and of people living alone € 1832.27). The pandemic does not appear to have affected the proportion of income contribution by members of elderly couples (39% for women, and 61% for men, which does not vary significantly after the critical event). The stability of the participation of both members of the couple in the formation of family income has further protected elderly couples from exposure to the risk of poverty.

2.3 Poverty and income inequality of the great elderly: what happens if alone?

The economic poverty of the elderly in Italy was measured against a relative poverty line equal to 50% of the median income distribution of the entire sample before the occurrence of the stressor deriving from the pandemic (1186 euros). The proportion of families of large elderly people located below the poverty line before the stressor is 9.3%. The level of poverty remains almost unchanged after the stressor of 9.2%. The differences are appreciated if we compare the sub-sample of the great elderly alone with those who live in pairs. The poverty of single individuals is 24.6% compared to 5.9% of couples. The proportion remains unchanged even after the stressor.

The degree of inequality measured by the Gini index also remained the same before and after the stressor of 0.241. However, if single, the degree of income polarization is .256 compared to 0.214 for couples. Compared to the national Gini index of 0.302 (Istat Report on income redistribution in Italy 2021 ⁶<https://www.istat.it/it/archivio/259887>) the degree of inequality is lower for the great elderly further demonstrating the fact that the Italian welfare system carries out more a piggy-bank action that redistributes resources along the life cycle rather than Robin Hood type which instead redistributes resources to the classes that have less. The productive component of the working-age population finances the consumption of the elderly and the less productive young.

The Figure 7 represents the Lorenz curves related to the pre and post pandemic stress. They are very similar to each other. If the elderly person lives alone, the distribution of income is more unequal along the entire curve. The graphs describing the difference between the two Lorenz curves show that for wealthier families post-pandemic inequality is more marked, especially for lonely people.⁷

Being alone in old age, therefore, is a factor of risk of poverty and of very critical distancing and social polarization. The risk is very attenuated for couples of large elderly people. The comparison between the distributions before and after stress shows that the welfare system has managed to guarantee a stable economic situation also considering that the great elderly, not being in working condition, have not run the risk of losing their jobs and the main source of income. For this reason, the survey was also designed to measure non-material aspects related to the state of physical, mental, relational health and perceived well-being in general.

2.4 Income, happiness, health and loneliness: what happens if single?

It is therefore interesting to study the relationship between income, declared happiness, perceived health status, and loneliness. On a scale from 0 to 100 the average happiness of the sample of the great elderly is 52, while the average of the state of health declared according to the EQ-VAS index is 55.5 and the aggregate EQ-5D-3L index is 55 (Dolan 1997). In the sample, 22% are not in good health, while 40% say they have a good (29.9%) or excellent (10%) level of health. Of the 5 dimensions of health (ability to move, personal care, habitual activities, pain or discomfort, anxiety or depression) we describe the dimension of mobility, which makes older people particularly vulnerable, and on the state of anxiety and depression, which is an indicator that well approximates the state of mental health (Crick et al. 2018), directly affected by the pandemic. 62.4% of the great seniors sampled have no difficulty in movement, about 35% have some difficulty, and 2.6% are not autonomous. 44.9% of those who live alone and 29.1% of those who live in pairs, say they have difficulty walking. 54.5% of the sample reveal that they are not anxious or depressed, while 40.7% are moderately depressed. 4.8% declare a very high state of anxiety or depression. About 50.3% of people living alone reveal that they are moderately (43.3%) or extremely (7%) anxious or depressed. 39.4% of respondents living in pairs reveal that they are moderately so while the proportion with a very high state of anxiety or depression is 3%. These two dimensions of the general state of health do not seem to have been significantly affected by the pandemic. For 8.2% of the sample, the situation related to walking difficulty improved and worsened only in 6.4% of cases. As for the state of anxiety

⁶ The Gini index is a measure of statistical dispersion that represents the inequality of the income distribution of a company or social group. It has zero value when incomes are distributed equally among individuals or families, and value one for the situation of maximum inequality where a single individual concentrates all income.

⁷ The Lorenz curve represents what percentage of total income belongs to a given percentage of households. The percentage of households is reported on the abscissa axis, the percentage of income on the y axis.

or depression, the situation has improved for about 12% of the elderly while it has worsened only for 5.6%.⁸

The great elderly who lives alone receive an average income equal to 70% of the couple's income but 40% higher than the equivalent income of a member of the couple (1747 euros vs 1250 euros). These have a happiness level of 47 and a near-average health level of 55. Only 19% of the great seniors who live alone have a happiness level greater than 65, while the great seniors who live in pairs with a happiness level above 65 are almost 30%. In line with the graphic evidence, while the correlation between happiness and health is 0.62, and between happiness and loneliness is 0.45, that between health and loneliness is 0.27, and happiness, health, loneliness with income is very low and equal to 0.11, 0.12 and 0.29 respectively. In addition, it is not significantly different when the elder is alone. These relationships are represented in The Combined Graph 4. The relationships between happiness, health, and loneliness are positive and meaningful. Older adults who declare themselves happier and in better health also feel less alone. Interestingly, neither the state of happiness nor health nor loneliness has a significant relationship with income.

However, the quadratic relationship represented in Figure 5 between happiness and health, happiness and income, and income and health for the entire sample of the great elderly and for the great elderly alone reveals very different trends. The great elderly alone on average enjoy a relatively higher state of health and, given the high positive relationship, also a higher level of happiness (box above). Happiness remains within an intermediate range between a level of 50 and 60 regardless of income (box in the center). In the case of people living alone, the report shows a slight curvature in correspondence with the highest incomes. The level of health does not vary significantly with respect to income for both the entire sample and lonely people (box below).

It would be important to compare this evidence with that of other age cohorts to understand how in different stages of life people's happiness varies with varying income. Easterlin (1995) notes that when income increases, and therefore economic well-being, happiness increases to a certain point and then decreases, in an almost paradoxical way, following a parabola-shaped curve with downward concavity. This trend does not occur for the sample of the great elderly considering that the relationship is linear.

Figure 6 shows the curves that represent the relationship between happiness and loneliness (top box), health and loneliness (center panel), and income and loneliness (bottom box) for the entire sample and the great elderly living alone. The relationship between happiness and loneliness is very similar between the entire sample and large single seniors. The relationship between health and loneliness shows a more arched relationship for singles but above all with a much more index variance, index of greater vulnerability. The wealthier older adults suffer less from loneliness, but the older adults who live alone on lower incomes seem to be much more exposed to the risk of loneliness as the greater curvature in the lower part of the income distribution reveals.

The change in health and happiness before and after the stressor is represented in the Lorenz concentration curves in Figure 9 and Figure 10. For the entire sample both the state of happiness and health do not vary significantly before and after stress. If you look at the sub-sample of the elderly

⁸ The index EQ-5D-3L is an international standard that savvies five dimensions: mobility, self-care, habitual activities, pain/discomfort, and anxiety/depression. Each dimension has 3 levels: no problems, some problems and extreme problems. Levels of the five dimensions can be combined in a 5-digit number describing your health status aggregate of the patient. In the present work the Technique of Dolan (1997) was used. The EQ-VAS records the patient's self-assessed health status on a visual analog scale (*Visual Analog Scale*) vertical where the limits of the interval they are labeled as "Best State of Health Imaginable" and "Worst State of Health Imaginable." The VAS can be used as a quantitative measure of the healthcare outcome that reflects the patient's judgment. This scale has also been validated for Italy by Scalone *et al.* (2013).

who live alone, stress generates a worsening of the state of health. The concentration curve of happiness for couples and individuals overlaps.

2.5 Consequences on Loneliness and Quality of Relationships Before and After the Stressor

If the level of happiness seems to remain almost constant before and after the critical event considered, there are other dimensions of well-being such as relational and loneliness that may have been significantly affected. During the pandemic the social, emotional and technological components were solicited differently (much worse, worse, no change, better, much better). We examine the change after the critical event in relation to income and the condition of living alone.

As for the social dimension, linked above all to the quality of relationships with friends, this worsens in about 50% of cases but is independent of the income range or the condition of living alone. The emotional dimension investigated at the family level worsened in about 20% of cases and improved by about 15%. While the worsening situation occurred mainly in the first two quintiles (39.9%) and last quintiles of income (19.8%), the situation improved especially in the wealthiest families (34.8%). The family emotional situation is much worse in 31% of cases if alone and in 14% if in a couple. If we consider the emotional dimension at the affective level, the affective relationships between partners (or a loved one for lonely people) have worsened and improved in the same proportion equal to about 16% but have worsened especially in the poorest class and improved especially in the richest to the extent of about 40%. While the affective situation remained stable before and after the critical event for couples, affective relationships worsened in 29% of cases with lonely people. The technological dimension, which seeks to grasp above all the importance of social networks and family and friend networks mediated by digital technology, improves on average in 29% of cases while it worsens only in about 7.4% demonstrating the ability to adapt, especially in the highest income brackets, even of the great elderly to the new situation of forced isolation. If the person is alone, the process of adopting digital technologies is less easy, also because it is relatively older, considering that the situation worsens in 13% of cases compared to 25%.

The frequency and quality of relationships and consequently of loneliness (Hawkley et al. 2008) have undergone very significant variations due to the pandemic. The interviewee was asked how often he sees himself with friends in his free time and if there are people who live nearby, excluding relatives, on whom he can count in case of need. If the answer to the latter question is yes, it was also asked how often he spends time with these neighbors. The frequency of meeting with friends decreased at least fourfold from 44% in pre-pandemic to 14% in post-pandemic. The frequency of visits with the closest people you can count on also decreased significantly from 32% to 19%, demonstrating that a stressor that would have occurred during the pandemic would have exposed the great elderly to considerable risks due to lack of help and close contact with friendly networks.

The pandemic has also affected the degree of civic participation of a large elder. We have created a political participation index consisting of the aggregation of answers to the question whether he is a member of political parties, trade unions or professional organizations and an index of participation in volunteering composed of participation in voluntary, ecological or cultural associations. In general, the civilian participation rate among the elderly is 23%, of which 7% in political activities and 16% in volunteering. Before the pandemic, the elderly who feel lonely according to the extended SELSA index do not have a form of political participation in 74% of cases and reveal that they have a good participation only in 6% of cases, while 63% of people who do not feel alone do not participate in

political activities and declare to have a good participation in 11% of cases. Political participation worsens only slightly in the post-pandemic period. Participation in social or ecological or cultural and recreational volunteering activities by large elderly people suffering from loneliness has a distribution very similar to the index of political participation given the generalized absence of relational interaction. For those not alone, participation in forms of volunteering is higher than political participation as more than double (23%) say they have a good participation in volunteering activities. After the pandemic, the distribution of participation in volunteering both alone and not alone has remained almost unchanged.

2.6 Psychological Consequences on Personality Traits in Response to critical event

During a time of crisis, the relatively most advantaged people are those most endowed not only with material but also intangible resources. The character predisposition to react in difficult situations depends very much on the endowment of non-cognitive skills. When the crisis further erodes a low initial endowment of skills, then the person is particularly exposed to the risk of poverty and health fragility. The problem is aggravated when the worsening in response to the event becomes chronic and does not return to the situation before the event. This situation is all the more frequent the longer the duration of the critical event as in the case of the COVID-19 pandemic.

Personality traits were aggregated into a sociability index. This is the result of the sum of the levels of personality traits (amiability, conscientious, extroverted, neurotic, open, confident, resilience and place of control) after assigning the negative sign to the components of each trait that define it in the opposite direction. For example, kindness is composed of a question about the tendency to forgive, a second about the predisposition to be caring and kind, and a third about grumpiness. Similarly, the neurotic being has also been deducted. The latter characteristic was deducted from the sum of the others. The range of the index is from a minimum of 2 to a maximum of 17. In the sample, 32.3% reveal a low sociability index, 43.7% have an average level and 24% a high level. The correlation between sociability and loneliness is significant and positive (0.47) supporting the fact that a older person who is more open, aware, outgoing, lovable, resilient, confident, and with a more internal and less neurotic place of control is more likely to feel less alone.⁹¹⁰

Figure 12 shows the proportion of critical event responses of the non-cognitive characteristics known as the "Figure 12big five" (openness, conscientiousness, extroversion, amiability and irritability) measured with the scales in reduced version described by Gosling, Rentfrow and Swann (2003) depending on whether these have decreased, remained constant or increased. The answers are in line with expectations. About 40% of older adults report no changes in any of the big five. The health emergency has made the elderly slightly more open to change (11% against 8% of those who had a decrease), more conscientious (14% against 2%), less extroverted (15% against 6%), less lovable (11% against 19%), but relatively irritable (19% against 10%). Overall, 12 elderly people (2%) of the sample had changes in all aspects.

⁹ The place of control defines a personal belief that the results of behavior are determined by one's actions or by forces beyond one's control. This personality trait seems to influence important social situations such as education, general health, general satisfaction with life and for this reason it is often used to predict complex phenomena such as social engagement, political participation, unemployment, professional behavior, well-being or health problems, and in our case of interest, loneliness.

¹⁰ The semantic labels associated with the response scale are (1) not at all reflecting my personality; (2) a little; (3) enough; (4) A lot; (5) fully reflects my personality.

Figure 13 shows the proportion of critical event responses of other personality traits such as confidence, resilience (Lockwood et al. 2015), impatience, risk appetite (Albanese et al. 2017) and locus of control (Kovaleva 2012). In general, the stressor resulted in a loss of confidence among older adults in 26% of cases and increased in only 8% of observations. Resilience increased in 15% of cases while it decreased for 8% of families. 23% of cases reacted by investing in patience against 5% who became more impatient. The propensity to expose oneself to risks, given the emergency situation, decreased in 11% of cases but increased in 19% of observations. For the place of control, on the other hand, there was a decrease of 8% and an increase of 16%. About 235 older adults (38%) of the sample report no changes in any of these personality traits.

The evidence described so far shows the importance of loneliness as a factor that makes the great elderly particularly vulnerable both from a socio-economic and psychological point of view. Considering that in the short term it is difficult to make a person feel less alone by making him stronger psychologically by strengthening some deficient personality traits through private meetings with psychologists, despite the contributions to the expenses of the state bonus, it is essential that the community invests in social networks in order to compensate for structural relational deficiencies. The strengthening of social networks, therefore, would seem to be a very effective line of intervention in trying to counteract situations of loneliness and fragility, even economic, in the short term.

For this reason, it is important to know the question of the common good "social network" that reveals how much the great elderly would be willing to contribute financially to activate and maintain services to support relationships in their community or, as was explicitly asked of the interviewees, investing in a community service center to carry out initiatives aimed at strengthening emotional ties and supporting mutual aid actions. Proximity networks are common goods and as such do not have a market value like private goods. The value, or willingness to pay, for a social good must therefore be estimated trying to recreate a context very similar to a market choice, albeit hypothetical. The information described so far is now used as explanatory variables of the willingness to donate or not a sum of money in favor of the social networks used and as potential determining factors of the level of money to be invested in favor of this social purpose. the willingness to pay or the demand for social networks.

3. Willingness to pay in favor of social networks

This study adopts a direct method of estimating the common good. These methods seek to obtain information on the value of the non-market good or service by carrying out field surveys that directly ask the individual for a subjective valuation of the good. The goal is to get a valuation as close as possible to the valuation that would have revealed a hypothetical market. Among these methods we have contingent evaluation and choice modeling. The direct method we have implemented is contingent evaluation. It consists in asking a sample of the population for their willingness to pay (willingness to pay WTP) for the supply of a given good or service in order to elicit a value of the common good contingent to the hypothetical scenario, but similar to a real context, which is presented to the respondents. It is a method traditionally used to estimate the value of an environmental public good, public policies or projects desired, but not implemented. The method is also appropriate for the evaluation of a common good such as a social network, although there are no other known applications that value social or community goods.

The goal now is to implement the econometric analysis of the data collected in our contingent evaluation survey both to explain the choice whether or not to offer a donation and to elicit the value

of the common good. The design of the part of the questionnaire relating to the estimation of willingness to pay and its application are a key part of any contingent assessment study. The maximum likelihood estimation function, in fact, reproduces the process that generates the data determined by the structure of the questions asked to the respondent.

In general, there are three ways to estimate WTP using contingent valuation (Mitchell and Carson 1993). The first is through open-ended questions. In this case, the subject is asked how much he is willing to pay for a non-market good or service that has been previously described together with a hypothetical scenario. In our case the hypothetical scenario is recreated by asking the interviewee to imagine "that the local administration organizes a consultation to understand what the value of relationship networks for you is, asking you how much you would be willing to contribute by paying an annual donation, partly deductible from taxes, to a community service center to carry out initiatives aimed at strengthening your emotional ties and mutual aid actions. When responding, keep in mind your financial resources." Another approach is to use payment cards (Mitchell and Carson 1993), or a list of values with a referendum format (Welsh and Poe 1998, Venkatachalam, 2004), which show the respondent a series of amounts for any payments for the service. The interviewee, or potential user of the asset, always keeping in mind the hypothetical scenario, chooses the card, or the value, that comes closest to his individual evaluation. The third approach, always contingent with respect to the hypothetical context, consists in using dichotomous questions such as "are you willing to pay an amount X, yes, or no?" These questions are limited to a specific interval that is asked twice to refine the estimate and be sure that the revealed availability is true.

The method used for this application combines the second and third methods. Cooper, Perali and Veronesi (2005) call it Fair One and One Half Bound (FOOH). The first stage consists in presenting to the interviewee the list of possible donations (Figure 14) in a Fair way, that is, loyal to the citizen, who is free to choose the offer that is most responsive to his desires and economic possibilities or not to donate anything. In our case the spectrum of values varies from 0 to 400 euros predetermined through a representative pre-test phase. This initial stage is very important especially, in our view, for social public goods that can take on very different values depending on the intensity of the need. In the case of an evaluation of a natural park, for example, we usually ask for the willingness to pay for an entrance ticket of which we generally know in advance an admissible interval that is verified in a pre-test phase of the questionnaire. However, it should be emphasized that the visit to the park is not a necessity and is therefore subject to less variation of the interval. In the case of a relational common good such as a social network that responds to a real need of the citizen, the "fair" departure with a referendum format seems a necessary stage.¹¹

Starting from the level of willingness to pay revealed, in case he is willing to donate, in the second stage questions were asked at a closed interval to increase the accuracy of the estimate and verify the veracity of the declaration. The dichotomous answer is equal to zero if the individual answers no and equal to 1 if the answer is yes, given a question about the payment of an amount greater than that predetermined at the initial stage (

Figure 15, question 1). If the respondent answers yes then the willingness to declare a higher value is verified, if the answer is negative then a lower offer is proposed. A double negative response returns

¹¹ The advantages of the "Fair" approach with payment cards or referendum lists at the first stage are different. First, respondents' WTP values can be determined directly from the original data. Second, respondents tend to declare WTP values they trust transparently (Ready et al., 2001, Cooper, Perali and Veronesi 2005). Moreover, WTP values estimated by an initial PC/Referendum approach are more robust than those based on a dichotomous choice approach (Ready et al., 2001). Last but not least, in the PC/Referendum approach there is no distortion associated with the starting point (Mitchell and Carson, 1986).

to the level declared at the initial stage. For example, if a willingness to pay 10 euros in the first stage was revealed, then an offer of 15 euros is initially proposed. If the answer is positive then it also occurs if it is available to pay 18 euros, if it is negative it asks if available at 13 euros. If the answer was still negative, then we return to the initially declared value of 10 euros.¹²

Before asking the questions related to the elicitation of the value of the asset, the questionnaire presents some questions that help to recreate a context in which the individual must decide if and how much to donate in the most realistic way possible albeit hypothetical. The answer to these questions is also relevant to explain the unwillingness to pay. In order to recreate the most truthful scenario, the sample of large elderly people interviewed was asked for their opinion on the local administration regarding its ability to carry out projects to improve the quality of life. Figure 16 shows that about 52% believe that the local government has done little or nothing, while 38% say it has done neither much nor much. Only 8% believe they have done enough, while none I think much has been done.

The distribution of willingness to pay at the first stage is shown in Figure 17. About 44% of respondents are not willing to donate any amount. The remaining 56% is distributed evenly around 10% between the different donation classes (10 euros, 20-40 euros, 50 euros, 60-100 euros and more than 100 euros). Only about 2% of the 44% who would not donate would have been willing to donate before the critical event. 14% of respondents reveal that they would have donated differently before the critical event. Of these, 18% would have contributed 100 and more euros. Figure 17 also represents the relationship between willingness to pay and income. As is to be expected, the report is positive, demonstrating that those who are less well-off, but often more in need of a help network, are willing to donate less than the richer, but relatively more than their own resources.

If the respondent declares that he would not be willing to contribute, he is initially asked why he would not be willing to contribute by indicating the order of importance. The set of choices concerns "The efforts of the administration are due, they cannot ask me to pay more", "This contribution is an extra tax", "I am not willing to incur any expenses for this issue or I am not interested in donating for this issue", "I cannot afford to pay such a sum."

As shown in Figure 18, in the sample of the elderly, 55% are willing to donate. The 45% who are not willing to donate say they do not do so because they believe that the efforts of the administration are due (12%), think it is an extra tax (15%), are not willing to bear an expense for this issue or are not interested in donating (11%), or can not afford it economically (6%).

Now we describe the decision whether to donate or not to donate with a discrete choice model like logit and explain it using the variables described in the first part of the work summarized for econometric use as reported in the table of descriptive statistics (Table 3).¹³

The results of the logit estimate of willingness to donate are presented in Table 4. Inspection of the table reveals that the willingness to donate is higher among the great elders of the northeast. Even if the respondent is a woman it is a positive and significant factor. Interestingly, income per se is not important in explaining the choice to donate, but they seem to weigh more positively on the ability to save, if you often consume meals outside the home, and if the house has a garden. Willingness to donate is significantly and positively influenced by good health, while it is negatively affected by how happy you feel. Those who feel more anxious or depressed and only tend to be more willing to donate, as they are, probably for opposite reasons, those who hang out with more friends, those who

¹² The specification of the estimated maximum likelihood function is found in Cooper, Perali and Veronesi (2005).

¹³ The education variable was not included because it was significantly correlated with income.

carry out more social activities, are more sociable, place greater trust in others and in the administration and are more prone to risk.

Table 5 presents the estimate of the dichotomous choice of how much to donate. As is reasonable to expect, in the second stage of decision-making economic variables such as income, saving and the presence of a second thing seem to prevail, which is information that well approximates wealth. Among the non-economic variables, only participation in voluntary activities plays a significant role. The great elders of the Northwest are willing to donate a significantly higher amount.

The average level of willingness to pay is 94 euros. Considering that the residents in Italy on 1 January 2019 who have reached the age of 75 are over 7 million (7,058,755) equal to 11.7% of the total population (women in 60% of cases) and that 55% of the sample is willing to donate an average WTP of 94 euros, it can be deduced (Song et al. 2019) that the potential funding base that communities can mobilize in favor of social networks in Italy is around 365 million euros.

4. Conclusions

This study illustrated the socioeconomic and psychological consequences caused by the recent pandemic to the cohort of the great elderly. The "piggy bank" welfare system of the Italian state has been very effective in protecting the great elderly from an economic and social point of view regardless of income and region of residence, but less effective in preventing and treating the intangible aspects related to the non-cognitive and psychological, affective and relational sphere of the great elderly, especially for the most fragile, not in good health and alone more exposed to the risk of loneliness. It would be interesting, as a starting point for future research, to compare the responses to the pandemic of the elderly with those of other cohorts of the population in order to prepare effective public health policies that consider the different needs of each segment of the population by implementing case-control studies.

In general, the willingness to donate is related both to the need for relationships, for example, for those who feel lonely or are depressed or unhappy, and to the attitude to give, for example by those who are more sociable or confident, regardless of economic possibilities. The decision on how much to donate seems instead dominated by purely economic variables.

The study estimated that the average level of willingness to pay of the great elderly is 94 euros. This could generate potential funding for the creation and support of social networks that Italian communities can mobilize around 365 million euros.

This availability of the community of the great elderly to finance relational common goods, which could also be strengthened by high willingness to pay of younger cohorts willing to invest in their future relational well-being, is fundamental since in the short term it is difficult to strengthen the attitudinal kit and the psychological well-being of the individual as a form of contrast to loneliness, despite government support initiatives such as the psychologist bonus, it seems more effective to invest in institutions that improve social interactions by strengthening *social networks* (Silverstein and Chen 1996)

Relational networks, put in place autonomously by local communities, can be a very effective measure of collective resilience. It is important for the foreseeable future to understand how communities can mobilize the estimated potential financial resources. Community foundations could be fundamental in carrying out the activity of financial intermediation between citizen and community in order to foster the development of autonomous networks to improve the quality of life of the elderly and create the conditions to improve the prevention of situations at high risk to their health.

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Appendix I. Methodology for the construction of loneliness indices

Chakravarty (2003) defines a general *achievement* index as:

$$I = \sum_{i=1}^k f((x_i - m_i)/(M_i - m_i)) \quad (1)$$

where x_i is an attribute, k is the number of attributes (dimensions), m_i and M_i are the lower and upper bounds, respectively. The function $f: [0,1] \rightarrow R^1$ is twice differentiable, increasing, and closely concave with $f(0) = 0$ and $f(1) = 1$. This index is limited between zero and one, is increasing in each attribute and is globally translation invariant, that is, the achievement index remains the same if all levels and limits of achievement are scaled by the same absolute quantity. The index is homogeneous of degree zero. If we assume that for the function has exponential form, then the realization index: $f(0) = 0$ and $f(1) = 1$

$$I = \sum_{i=1}^k f((x_i - m_i)/(M_i - m_i)) = \sum_{i=1}^k ((x_i - m_i)/(M_i - m_i))^r, 0 < r < 1 \quad (2)$$

is decreasing in weights (Decancq and Lugo 2013; Anand and Sen 1997). When $r = 1$, then we get the Human Development Index (HDI): $r = 1$

$$I_{HDI} = \sum_{i=1}^k ((x_i - m_i)/(M_i - m_i)) / k \quad (3)$$

Which corresponds to the arithmetic mean of the normalized levels of realization. This output index can therefore be broken down into any total contribution of the attribute to the achievement as:

$$T_i = ((x_i - m_i)/(M_i - m_i)) / k \quad (4)$$

and is the percentage of contribution of the attribute. This decomposition (Chakravarty 2003) is relevant because it measures the relative weight of each dimension for the overall outcome and reveals what attributes policymakers can improve to achieve a higher composite index. $(T_i \cdot k) / I \cdot 100$

Appendix II. Charts and Tables

Figure 1. Redistribution of pre- and post-pandemic expenditure

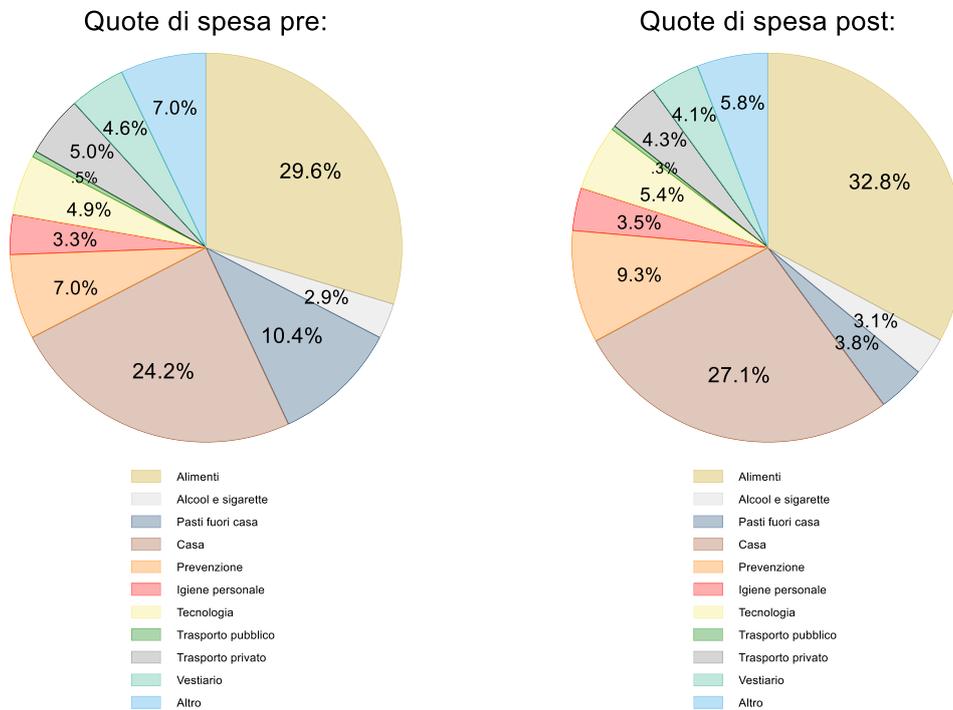
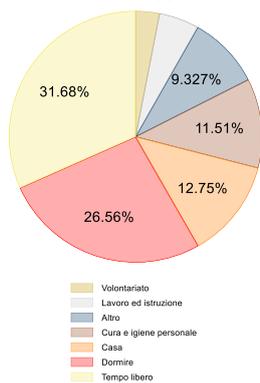


Figure 2. Change in pre- and post-pandemic time consumption for a large representative elderly person

Tempo dedicato alle attività raggruppate per macroaree:



Tempo dedicato alle attività raggruppate per macroaree Post:

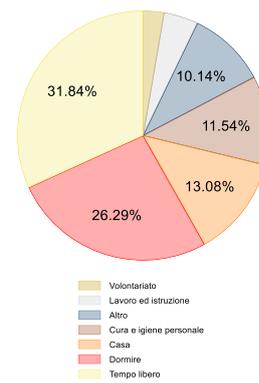


Figure 3. Time consumption: activities carried out in company

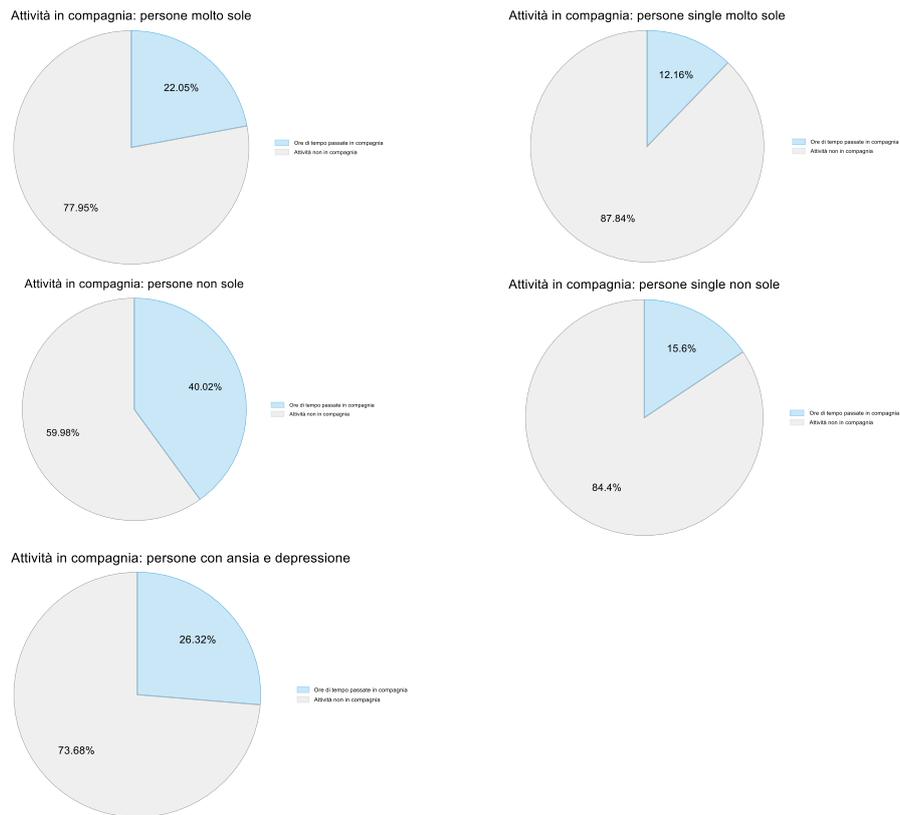


Figure 4. Relationship between Happiness, Health, Loneliness and Income in the Champion of the Great Elderly

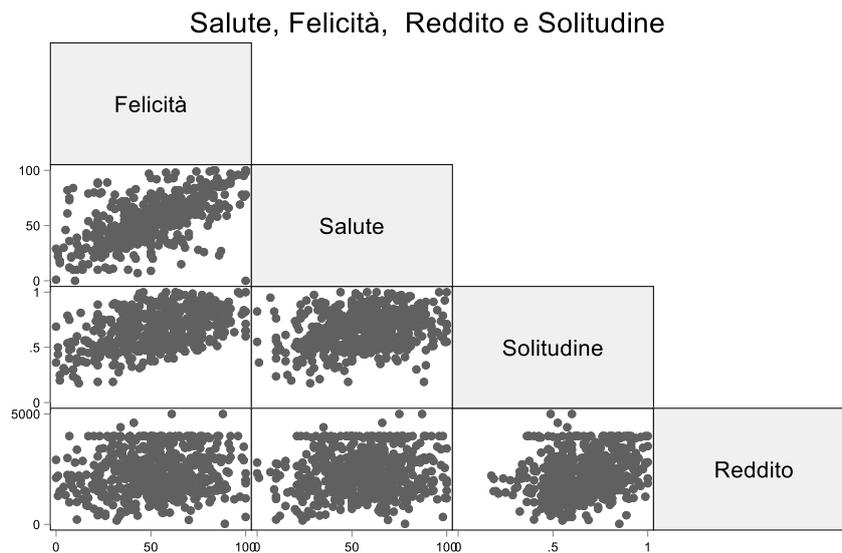
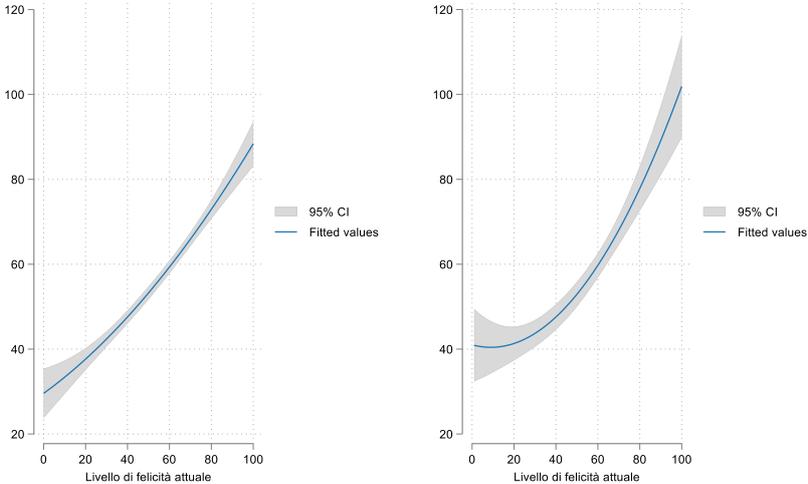
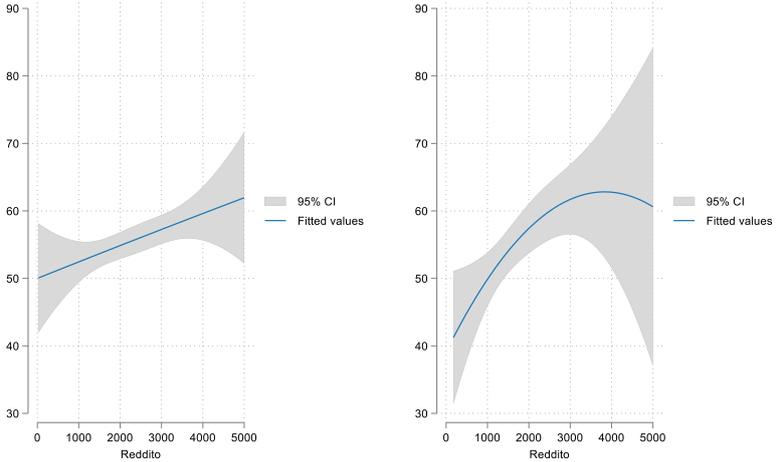


Figure 5. Relationship between Health, Happiness, Income – Entire Sample and Great Single Seniors

Relazione Salute e Felicità - Intero Campione e Persone sole



Relazione Salute e Reddito - Intero Campione e Persone sole



Relazione Felicità e Reddito - Intero Campione e Persone sole

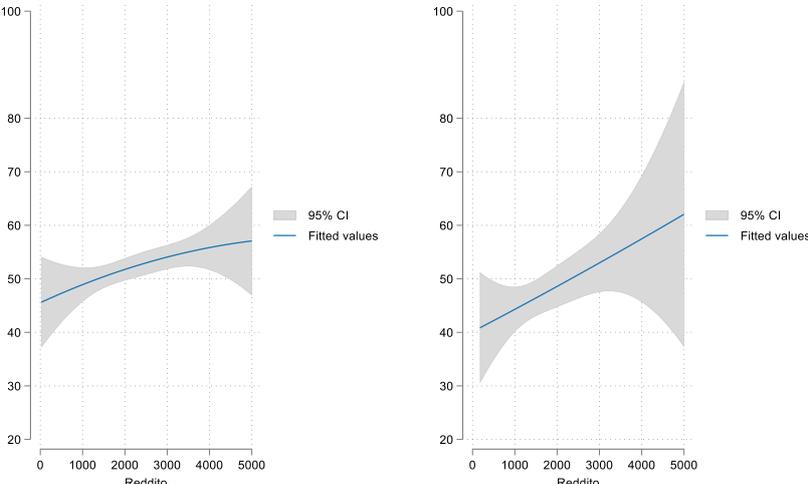
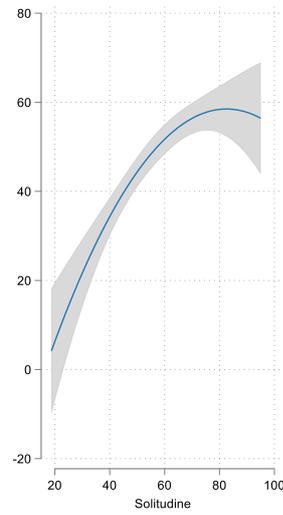
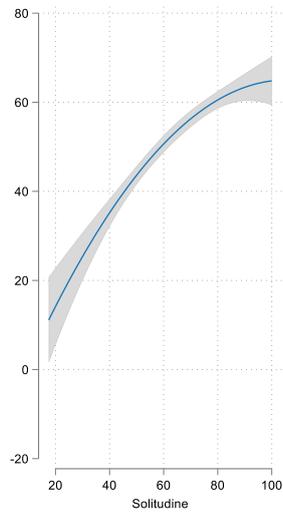
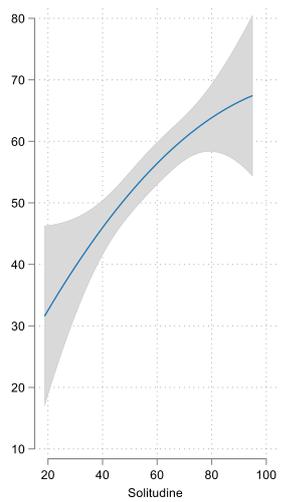
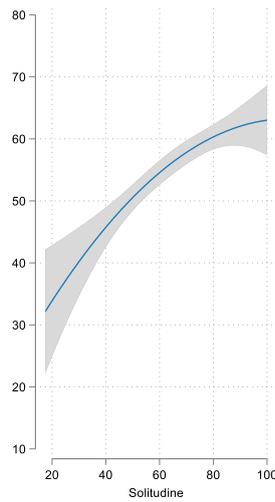


Figure 6. Relationship between Health, Happiness, Income and Loneliness – Entire Sample and Great Single Seniors

Relazione Felicità e Solitudine - Intero Campione e Persone sole



Relazione Salute e Solitudine - Intero Campione e Persone sole



Relazione Reddito e Solitudine - Intero Campione e Persone sole

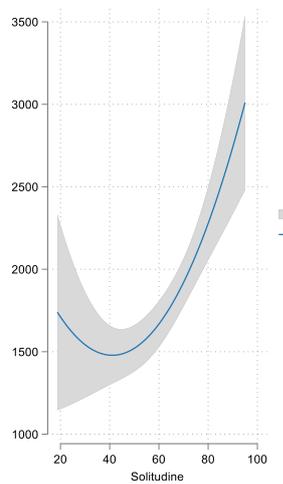
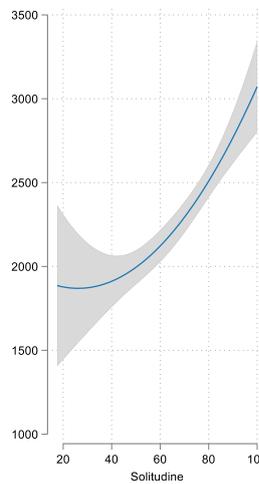


Figure 7. Income Distribution (Lorenz Curves) before and after the Critical Event - Entire Sample

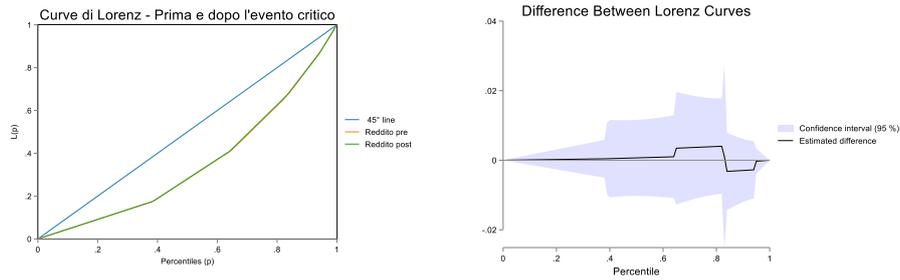


Figure 8. Income Distribution (Lorenz Curves) before and after the Critical Event - Couples and Singles

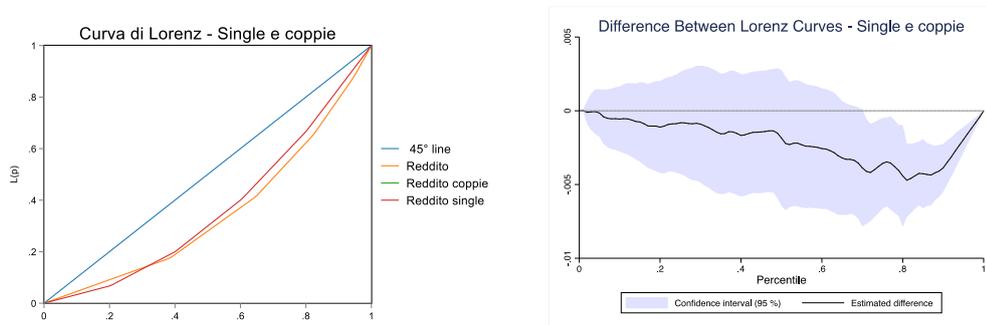


Figure 9. Happiness Distribution (Lorenz Curves) before and after the Critical Event - Entire Sample (left pane), Couples and Singles (right pane)

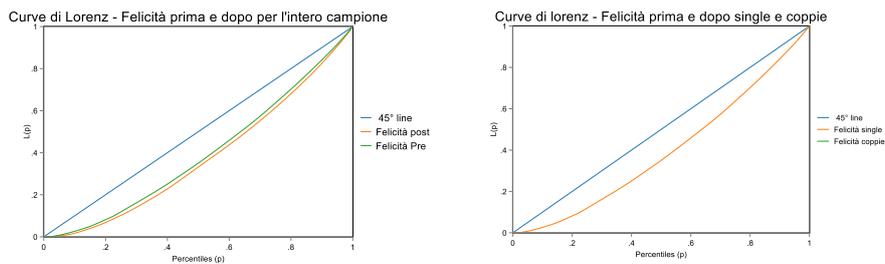


Figure 10: Lorenz curves on health

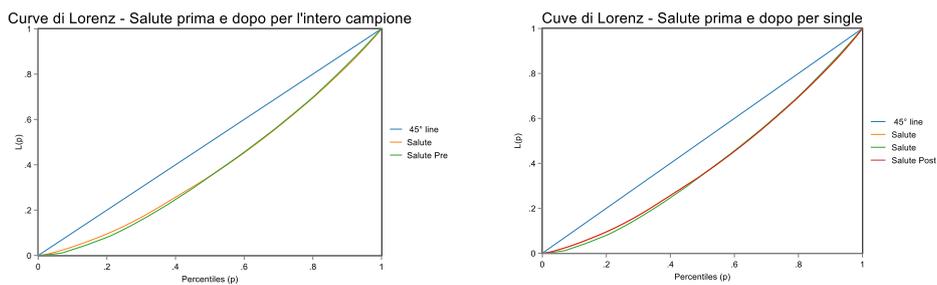


Figure 11: Social participation of the respondent

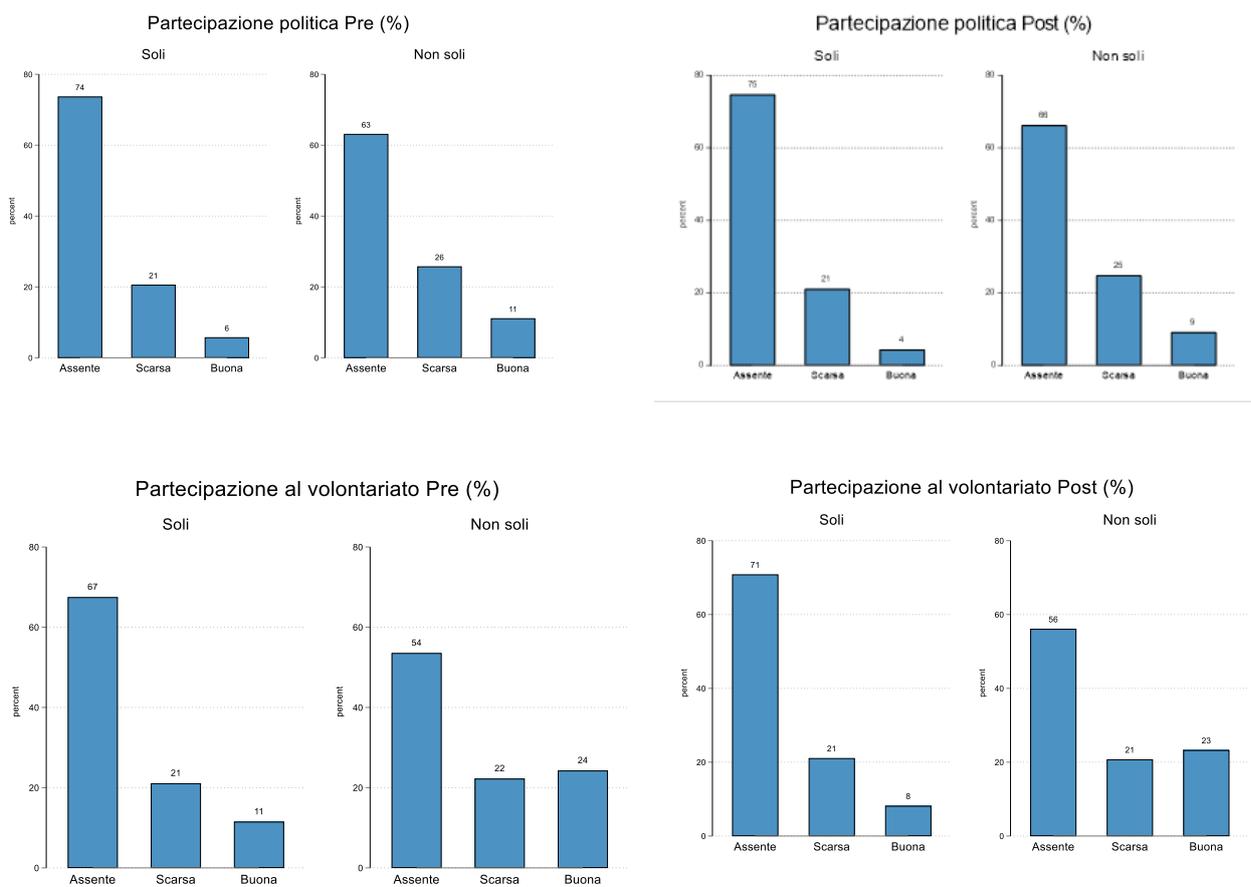


Figure 12: Response to the critical event of the Big Five

Risposta all'evento critico delle Big Five

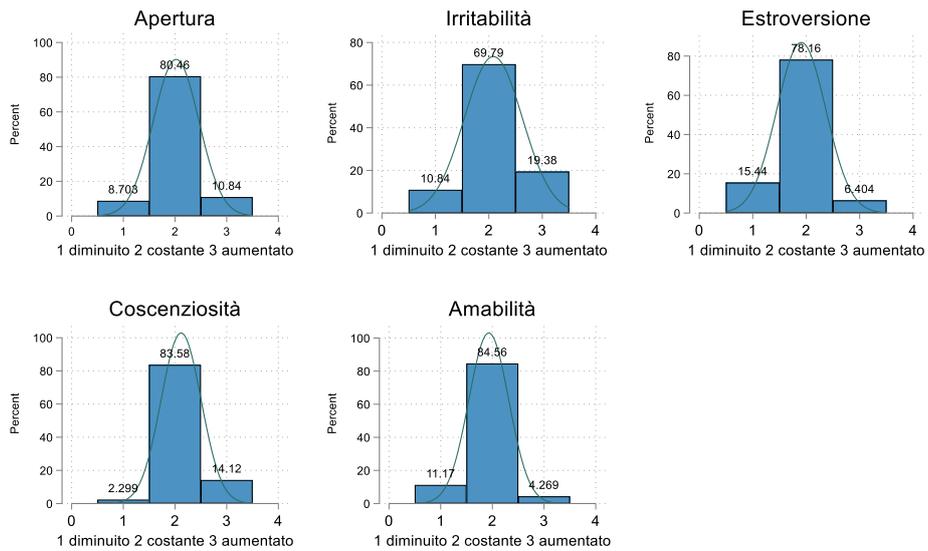


Figure 13: Response to the critical event to other personality traits
 Risposta all'evento critico di altri tratti della personalità

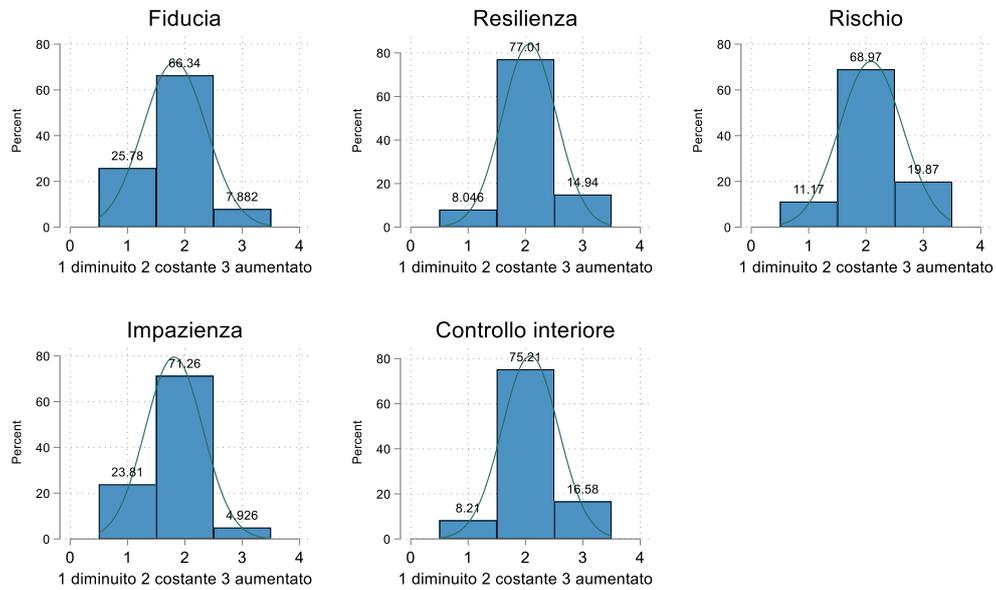


Figure 14. Stage I. Elicitation of the willingness to pay initial with referendum format

Please indicate how much you would be willing to contribute annually to ensure that the services we have talked about are implemented by the administration of your community:

He would be willing to contribute with a donation equal to:	
10	<input type="checkbox"/>
20	<input type="checkbox"/>
30	<input type="checkbox"/>
40	<input type="checkbox"/>
50	<input type="checkbox"/>
60	<input type="checkbox"/>
70	<input type="checkbox"/>
80	<input type="checkbox"/>
90	<input type="checkbox"/>
100	<input type="checkbox"/>
150	<input type="checkbox"/>
200	<input type="checkbox"/>
300	<input type="checkbox"/>
I wouldn't be willing to contribute	<input type="checkbox"/>

Figure 15. Stage II: Questions with a dichotomous structure

If the respondent indicates a contribution among the above, the interviewer takes note of the contribution and asks:

<p>1. Would you be willing to donate a sum of [A] euros?</p> <p><i>(here the interviewer will read the value in column A of Table 1, corresponding to the contribution indicated)</i></p>	<p>Yes 1</p> <p>No 0</p>
<p>2. [If yes question 1] Would you be willing to donate a sum of [B] euros?</p> <p><i>(here the interviewer will read the value in column B of Table 1, corresponding to the contribution indicated)</i></p>	<p>Yes 1</p> <p>No 0</p>
<p>3. [If no question 1] Would you be willing to donate a sum of [C] euros?</p> <p><i>(here the interviewer will read the value in column C of Table 1, corresponding to the contribution indicated)</i></p>	<p>Yes 1</p> <p>No 0</p>

Figure 16. Opinion on the Local Administration regarding its ability to realize Pro Quality of Life Projects

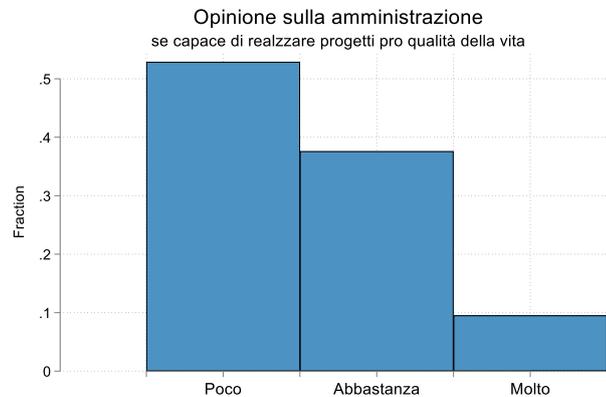


Figure 17. Distribution of Willingness to Pay and Relationship with Income

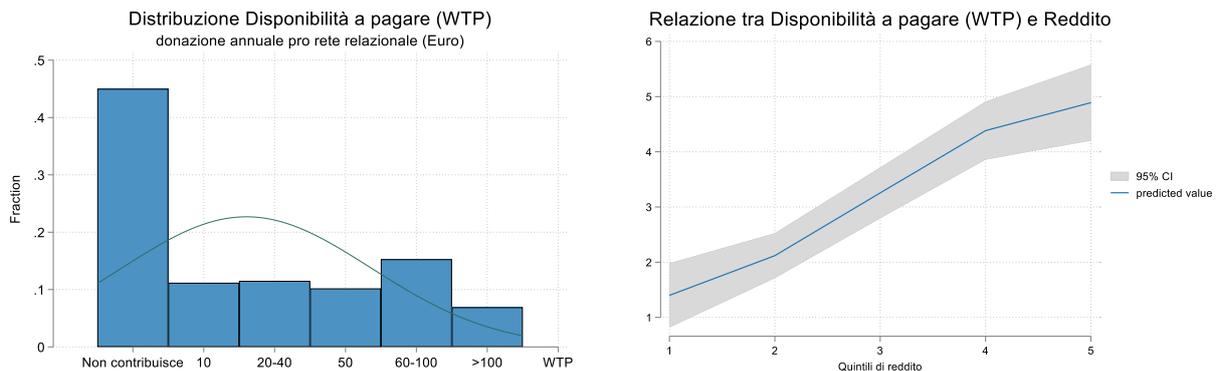


Figure 18. Reasons Why You Are Not Willing to Contribute

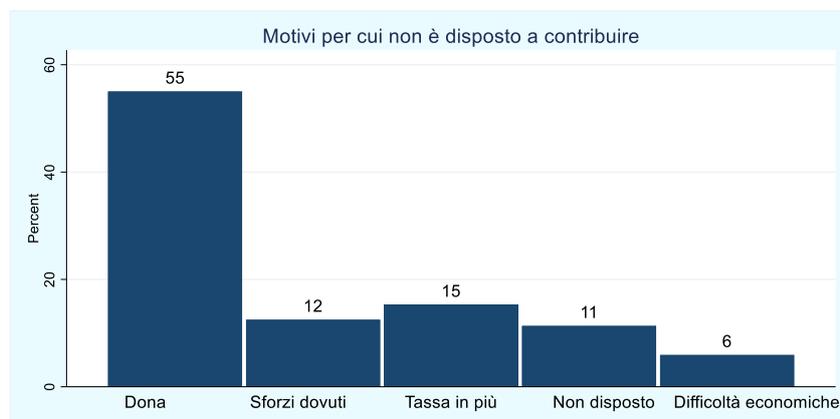


Table 1. Index of Aggregate Loneliness and Social, Family, Affective and Technological Components with Relative Percentage Weights

Variabile	Media	Dev. std	%
Aggregate Loneliness Index (SELSA)	0.66	0.16	
Social component	0.63	0.22	23.78
Family member	0.79	0.22	30.30
Affective component	0.65	0.27	24.31
Technological component	0.57	0.24	21.59

Table 2. Loneliness – Relationship with the family dimension

Lives alone	very lonely	little alone	not only	Total
pair	110	146	166	422
	26.07	34.60	39.34	100
single	99	56	32	187
	52.94	29.95	17.11	100
Total	209	202	198	609
	34.32	33.17	32.51	100

The first line shows the frequencies, the second line the line percentages.

Table 3. Descriptive statistics of variables

Variable	definition	Mean	Std. Dev.	Min	Max
nord_est	Dummy 1 if the interviewee lives in the northeast	0.227	0.419	0	1
nord_ovest	Dummy 1 if the interviewee lives in the northwest	0.309	0.462	0	1
center	Dummy 1 if the interviewee lives in the center	0.176	0.381	0	1
female_d	Dummy 1 if the interviewee is female	0.414	0.493	0	1
single_d	Dummy 1 if the interviewee lives alone	0.307	0.462	0	1
giardino_d	Dummy 1 if the respondent has a garden at home	0.433	0.496	0	1
seconda_casa_d	Dummy 1 if the respondent owns a second home	0.342	0.475	0	1
pastiout_d	Dummy 1 if the respondent spends on meals outside home	0.573	0.495	0	1
qinc_spesatech_r	Thirds of technology and communication expenditure (euro)	1.929	0.809	1	3
ricreazione_d	Dummy 1 if the respondent spends on recreational activities	0.291	0.454	0	1
lny	Logarithm of total revenue (euro)	7.667	0.554	3.37	9.01
risparmio_d	Dummy 1 if the respondent could save money	0.519	0.5	0	1
visitefam_d	Dummy 1 if the interviewee visits family members	0.598	0.491	0	1
eqvas	EQVAS Index on General Health	55.514	19.771	0	100
happiness	State of happiness declared	52.205	20.649	0	100
anxiety	Anxiety and depression	1.502	0.588	1	3
loneliness	SELSA Index of Loneliness	0.658	0.164	0.18	1
amici_d	Dummy 1 if the interviewee is often seen with friends	0.443	0.497	0	1
aiuto_altri_d	Dummy 1 if the respondent has other people to rely on	0.76	0.427	0	1
social_activity_r	Social activity: political, trade union or professional participation	0.351	0.608	0	2
volontariato_r	Volunteering activities: political participation, cultural or ecological	0.544	0.76	0	2
sociality_r	Sociability index	1.916	0.746	1	3
fiducioso_r	Confidence level in	2.046	0.74	1	3
impazienza_r	Level of impatience	1.972	0.776	1	3
rischio_r	Level of risk	1.908	0.77	1	3
rep_amminist_r	Reputation of the administration	1.567	0.661	1	3

Table 4. Determinants of the choice to donate to increase the supply of social networks
(logit model)

If WTP>0, WTP=1	Coef.	St.Err.	t- value	Mr
nord_est	-0.63	0.279	-2.26	**
nord_ovest	-0.253	0.243	-1.04	
center	-0.333	0.282	-1.18	
female_d	-0.479	0.208	-2.31	**
single_d	0.072	0.236	0.31	
giardino_d	0.425	0.196	2.17	**
seconda_casa_d	0.051	0.212	0.24	
pastiout_d	0.678	0.193	3.52	***
qinc_spesatech_r	-0.094	0.123	-0.76	
ricreazione_d	0.38	0.23	1.65	*
lny	-0.064	0.234	-0.27	
risparmio_d	0.57	0.207	2.75	***
visitefam_d	0.224	0.194	1.16	
eqvas	0.012	0.006	2.03	**
happiness	-0.011	0.007	-1.72	*
anxiety	0.44	0.183	2.41	**
loneliness	1.47	0.745	1.97	**
amici_d	-0.394	0.202	-1.95	*
help_altri_d	0.256	0.225	1.14	
social_activity_r	0.373	0.177	2.11	**
volontariato_r	0.054	0.143	0.38	
sociality_r	0.278	0.149	1.87	*
fiducioso_r	0.336	0.139	2.43	**
impazienza_r	-0.183	0.129	-1.42	
rischio_r	0.24	0.127	1.89	*
rep_amminist_r	0.445	0.153	2.92	***
Constant	-3.667	1.847	-1.99	**
Mean dependent var	0.550			
Pseudo r-squared	0.1553			
Number of obs	609			

Nota: *** p<.01, ** p<.05, * p<.1

Table 5. Dichotomous estimation of Willingness to pay (WTP)

	Coefficient	Std. err.	z	P> z	Mr
Beta					
nord_est	9.607	19.670	0.49	0.625	
nord_ovest	32.156	18.311	1.76	0.079	*
center	15.811	21.271	0.74	0.457	
female_d	-15.54	16.512	-0.94	0.347	
single_d	-14.155	17.842	-0.79	0.428	
seconda_casa_d	32.695	15.361	2.13	0.033	**
pastiout_d	23.359	15.375	1.52	0.129	
lny	31.426	16.373	1.92	0.055	**
risparmio_d	33.530	15.328	2.19	0.029	**
eqvas	0.020	0.448	0.05	0.964	
happiness	0.387	0.465	0.83	0.405	
anxiety	-8.237	13.569	-0.61	0.544	
loneliness	-49.432	53.199	-0.93	0.353	
amici_d	9.825	15.440	0.64	0.525	
social_activity_r	-2.194	11.189	-0.2	0.845	
volontariato_r	17.631	9.525	1.85	0.064	**
sociality_r	14.989	10.90	1.37	0.169	
fiducioso_r	3.544	10.362	0.34	0.732	
_cons	-218.087	126.4931	-1.72	0.085	*
Sigma					
_____cons	107.2355	7.478071	14.34	0	
WTP_db_hat	94.52717	7.383644	12.80	0.000	