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With or Without You? Measuring the Quality of Relational Life Throughout the World

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Measuring the Quality of Relational Life
Throughout the World

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Abstract

This paper proposes a new method for the measurement of the quality of relational life. Building on the recent literature on the determinants of subjective well-being, we use implicit valuations estimated from microeconometric life-satisfaction equations to weigh and aggregate scores on several dimensions of relational life. We apply the proposed method to a large sample of individuals from 82 countries, to construct indicators that focus on three dimensions of interpersonal relations: friends, family, and society. We use the constructed indicators to compare the quality of relational life across countries throughout the world and to explore its determinants at individual and country level. Overall, the results indicate that, ceteris paribus, better economic conditions are associated with higher quality of interpersonal relationships.

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1 Introduction

Although the analysis of the social dimension of economic behavior has an old tradition, economics started only recently to explore the links between interpersonal relationships, economic behavior, and well-being. Frequent and positive interactions with family, friends and neighbors are generally found to be positively related to both economic performance and well-being, controlling for demographic, socio-economic, personality and environmental characteristics.[1] Building on these recent findings, a *relational* explanation has been proposed for the Easterlin paradox:[2] lower quantity and quality of interpersonal relationships may contribute to offset the impact of higher income levels on well-being. This mechanism can be interpreted as a *relational treadmill*, that operates in addition to the well-known effects of adaptation, aspirations and social comparison. As a society becomes more affluent, the effect of improved economic conditions on individual happiness is counterbalanced by less frequent interpersonal interactions and lower consumption of relational goods (see e.g. Diwan, 2000).[3]

Despite this renewed attention for interpersonal relationships within economics, relatively little is known at the empirical level about the measurement and determinants of relational capital. A large body of literature has investigated the definition, constituent elements and effects of social capital (e.g. Stone, 2001, Bjornskov, 2003, 2007, Sabatini, 2005). However, this literature has generally focused on aspects such as trust, social norms and

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[1] Aslam and Corrado (2007) investigate the effects of social interactions on well-being across European regions. Bruni and Stanca (2008) find a positive and large effect of relational goods on life satisfaction at individual level. See also Winkelmann (2004) and Haller and Hadler (2006).

[2] The expression "Easterlin paradox", or income-happiness paradox, refers to the finding that, although higher income is generally associated with higher subjective well-being across individuals and across countries, *over time* happiness does not grow with income (e.g. Easterlin, 1974, Veenhoven, 1994, Oswald, 1997). Easterlin (1974) found that in thirty national surveys over 25 years per capita real income rose by more than 60 per cent, whereas the proportion of people who rated themselves as "very happy", "fairly happy" or "not too happy" remained almost unchanged.

[3] Diwan (2000, p.305) provides a description of the relational treadmill mechanism based on three elements: "1) our human and national welfare depends on both material and relational wealth [...]. 2) There is a tension between material and relational wealth. As material wealth increases beyond a certain level, it impinges on relational wealth. 3) Our current economic practices and policies concentrate on the maximization of material wealth only with minimal concern for its negative effects."

associational activity, whereas relatively little evidence is available about interpersonal relationships. As observed by Vemuri and Costanza (2006, p.132), "work to create an adequate index of social capital that captures the importance of friends and family at the national scale would likely improve our ability to explain individual life satisfaction".

In order to fill this gap, this paper proposes a new method for measuring the quality of relational life (henceforth, QRL). We value and aggregate scores on different dimensions of relational life using implicit valuations estimated from microeconometric life-satisfaction equations. The proposed method is applied to a large sample of individuals from 82 countries, representing about 85 per cent of the world population, to construct indicators that focus on three dimensions of interpersonal relations: time spent with others, family relations, and active participation to voluntary organizations. We use these relational indicators to provide a characterization of QRL throughout the world and to explore its determinants at both individual and country level. We find that, at individual level, higher income is positively and strongly significantly related to all indicators of QRL. At county level, GDP per capita is not significantly related to QRL, while it is positively and significantly related to the quality of time spent with friends. Overall, the results indicate that, ceteris paribus, better economic conditions are generally associated to higher quality of interpersonal relationships.

The paper is structured as follows. Sections 2 briefly reviews the related literature on the use of subjective well-being to value non-market resources. Section 3 presents the methodology, while section 4 describes the data used for the empirical analysis. The results are presented in section 5. Section 6 concludes with a discussion of the main implications of the analysis.

2   Related Literature

Data on self-reported well-being have been used increasingly in recent years to value goods that do not have a monetary price, thus providing important indications for public policy (see Van Praag and Ferrer-i-Carbonell, 2004, Frey et al., 2004, and Di Tella and MacCulloch, 2006, for a discussion). Subjective assessments of well-being have been used as a proxy measure for utility in order to estimate the monetary value of a wide range of environmental and social factors, such as pollution, terrorism, and chronic diseases. The Life Satisfaction Approach (Frey, 2008) has become widely accepted as

an alternative to the traditional methods of preference measurement based on contingent valuation or revealed preferences.

Welsch (2002, 2006) uses data from happiness surveys to estimate the impact of economic and environmental conditions on self-reported well-being, finding that a large monetary valuation can be attributed to improved air quality. Van Praag and Baarsma (2005) use self-reported life satisfaction to quantify the impact of airport noise in the Amsterdam area. Frey et al. (2007) adopt the life satisfaction approach to assess the costs of terrorism, finding that the loss of utility deriving from terrorist activities significantly exceeds the purely economic costs. Van den Berg and Ferrer-i-Carbonell (2007) estimate the monetary value of providing informal care by assessing the compensating variation necessary to maintain the same level of well-being when a care-taker provides an extra hour of informal care. The shadow pricing method is used by Moore and Shepherd (2006) to estimate the economic costs of the fear of crime.[4]

A similar approach has also been used recently to value interpersonal relationships. Clark and Oswald (2002) use happiness surveys to estimate the monetary value of different life events. Marriage, in particular, is found to produce each year the same happiness as having an extra income of £70,000 per annum, while widowhood would be compensated by an extra income of £170 000 per annum. Powdthavee (2008) applies the shadow pricing method to individual data from the British Household Panel Survey, in order to estimate the monetary value of interactions with friends, relatives and neighbors. His findings indicate that interactions with friends and relatives can be attributed a large and significant monetary value.[5]

In this work, we use implicit valuations estimated from microeconometric life-satisfaction equations to weigh different dimensions of relational life and aggregate them to obtain indicators of QRL. In particular we focus on three dimensions of interpersonal relations: time spent with others (relatives, friends, colleagues, people at church, people at service organization); relationships within the family (marital status and number of children), and social relationships, measured by active involvement in volunteering activities (church-religious, sport-recreation, art-educational, labor union, political

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[4]Isacsson et al. (2008) use life satisfaction and job satisfaction data to estimate the value of commuting time, working time and household working time.

[5]For example, a move from "seeing friends or relatives less than once a month" to "seeing friends or relatives on most days" is found to be equivalent to an extra income of £85,000 a year.

party, environmental, professional, charity). The details of the method are discussed in the next section.

3 Methodology

The analysis follows a three-step methodology. In the first step, life-satisfaction equations are estimated at the micro-level for the whole sample, in order to obtain a measure of the contribution of different components of relational life to subjective well-being. We assume that individual life satisfaction (LS) depends on indicators of relational life (REL), demographic factors ($DEMO$), socio-economic conditions (SEC), and personality traits ($PERS$):

$$LS_{ij} = \beta_0 + \beta_1 REL_i + \beta_2 DEMO_i + \beta_3 SEC_i + \beta_4 PERS_i + \varepsilon_i \qquad (1)$$

Relational variables fall within three groups. First, time spent with each of the following groups: (a) parents or other relatives, (b) friends, (c) colleagues from work or profession, (d) people at church, (e) people at service organization.[6] Second, family relationships, measured by marital status and the number of children. Third, interpersonal relationships within society, measured by active involvement in the following voluntary activities: (a) church-religious, (b) sport-recreation, (c) art-music-educational, (d) labor union, (e) political party, (f) environmental, (g) professional, (h) charity.[7] It is important to observe that we focus on an indicator aimed at capturing the net effect of the relational component of voluntary activities (actual involvement), over and above the effect of membership only.

Demographic factors include age and gender, socio-economic indicators include income, employment status, education, and freedom. Personality traits are captured by trust in others. The set of regressors also includes country dummy variables to control for environmental characteristics and time dummy variables to allow for heterogeneity between different WVS waves (see below). Equation (1) is estimated either by OLS or with an ordered

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[6]These variables are constructed on the basis of answers to the question "How often do you spend time with" (1=not at all, 2=only a few times a year, 3=once or twice a month, 4=weekly).

[7]This information is based on the questions "To which of the following voluntary organizations, if any, do you belong to?" and "For which of the following voluntary organizations, if any, are you currently doing unpaid voluntary work?".

probit estimator, to take into account the ordinal nature of the dependent variable.[8] We also consider a specification based on happiness, rather than life satisfaction, as a dependent variable, to assess the robustness of the results.

In the second step, the implicit valuations estimated in step one are used to weigh and aggregate scores on different dimensions of relational life at individual level and construct appropriate indicators for three specific dimensions of interpersonal relations: friends, family and society. The indicators are constructed at individual level by weighting the individual relational items with the corresponding estimates from step one. Individual-level indicators are then averaged at country level, and the relational indicators thus obtained are used to compare QRL across countries.

In the third step, we examine the determinants of QRL, both at the individual level and at the country level. At the micro-level, the indicators of QRL are modelled as a function of income and employment conditions, in addition to a number of socio-demographic control variables. At the macro-level, we calculate average values at country-level for each of the indicators of QRL, and regress them against a set of macroeconomic indicators and socio-demographic control variables.

4   Data

The data source for the micro-level data is the World Values Survey (WVS), a compilation of surveys conducted in more than 80 countries representing about 85 per cent of the world's population (see Inglehart 2000). The VWS provides information on individual beliefs about politics, the economy, religious, social and ethical topics, personal finances, familial and social relationships, happiness and life satisfaction. Within each country, samples are selected randomly "from all administrative regional units after stratification by region and degree of urbanization" (Inglehart 2000, p. 7). Four WVS waves are currently available (1980-82 1990-91 1995-97 and 1999-2001), for a total of about 270,000 observations.[9] There are 82 different countries

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[8]See Bruni and Stanca (2008) for results based on instrumental variables to take into account the endogeneity of the relational variables.

[9]The first wave (1980-82) covers 23 countries (mostly OECD, about 11 per cent of the total number of observations), the second (1990-91) 43 countries (about 22 per cent), the third (1995-97) 50 countries (about 29 per cent), and the fourth wave (1999-2001) 68

represented in at least one of the four waves.

Individual well-being is measured by life satisfaction, based on the question: "All things considered, how satisfied are you with your life as a whole these days?".[10] We also considered happiness as an alternative indicator of well-being, based on the question: "Taking all things together, would you say you are very happy, quite happy, not very happy, or not at all happy?". Income is measured by self-reported deciles in the national distribution of income, so that income levels expressed in relative terms are comparable across countries and individuals. Freedom is defined as the degree of freedom of choice and control an individual has over his life, on a 1 to 10 scale (1=none at all, 10=a great deal). Educational levels are captured by three dummy variables for low (inadequately completed or completed elementary education, incomplete secondary school), medium (complete technical/vocational secondary school, incomplete or complete university-preparatory secondary school) and high education (some university with or without degree/higher education). The trust dummy takes the value 1 for those who think that "in general people can be trusted" (0 if "you cannot be too careful when dealing with people"). Summary statistics for all the variables used in the micro-level analysis are reported in tables 1 to 2.

The data source for the country-level data is the World Development Indicators database (World Bank, 2006). The (log of) GDP per capita is measured at constant 2000 US dollars. The inflation rate is measured as the annual percentage change of the consumer price index. Government size is defined as general government final consumption expenditure as a percentage of GDP. Trade openness is measured as the sum of total exports and imports as a percentage of GDP. Urban population is the percentage of total population living in city or town, including metropolitan areas and suburban areas. All variables are expressed as long-run averages (over the period 1960-2004). Summary statistics for the variables used in the macro-level analysis are reported in table 3.

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countries (about 38 per cent).

[10]The original answers on a scale 1 (dissatisfied) to 10 (satisfied) were multiplied by 10 in order to ease interpretation of regression results. See for example Frey and Stutzer (2002a) for a discussion of the use of reported subjective well-being as an empirical approximation of individual happiness.

5 Results

5.1 Valuing interpersonal relationships

Table 4 presents estimation results for equation (1). The dependent variable is life satisfaction (measured on a scale from 10 to 100). We start by considering the results for the control variables in order to provide a preliminary assessment of the empirical specification. Higher relative income is associated with higher subjective well-being, although the effect is relatively small: moving up by one decile in the relative income scale is associated with a strongly significant increase in life satisfaction of about one point (on a scale 10 to 100). The freedom indicator has a large and highly significant positive coefficient. Being unemployed is associated with large and significant drop in life satisfaction. Education has a positive and significant effect on well-being. As for personality characteristics, individuals who think that in general people can be trusted report systematically higher satisfaction levels.

Column 1 presents OLS estimation results for individual indicators of relational time.[11] Time spent with the family (parents and other relatives) has the largest effect on life satisfaction. Time spent with friends and with people from sport-service activities also have positive and significant coefficients. The coefficients for time spent with colleagues and with people from church are not statistically significant. Column 2 presents results for individual indicators of family relationships. In the results for marital status the baseline group is "being single". Being married or living as if married have a positive and significant effect on life satisfaction (3.41 and 0.99, respectively). Conversely, being separated or divorced has a large and significant negative effect on life satisfaction (-3.95 and -1.68, respectively). The number of children is positively (negatively) and significantly related to life satisfaction for individuals above (below) 30 years of age. Column 3 presents results for active participation to voluntary organizations. Active involvement in religious and charity organizations has a positive and significant effect on life satisfaction (1.36 and 0.91 points, respectively). It is interesting to observe that

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[11]Relational time indicators are only available in wave 4, which explains the drop in sample size to 35,000 observations. The sample in column 1 includes the following countries: Spain, United States, Canada, Japan, Mexico, South Africa, Argentina, South Korea, Puerto Rico, Nigeria, Chile, India, Pakistan, China, Peru, Philippines, Moldova, Serbia, Montenegro, Macedonia, Bosnia-Hercegovina, Albania, Algeria, Indonesia, Iran, Jordan, Morocco, Vietnam, Zimbabwe, Uganda and Egypt.

membership or active involvement in unions and political parties are negative related to life satisfaction. This seems to suggest that it is the activities where intrinsic motivation plays a prominent role that matter most for life satisfaction.

5.2   Measuring the quality of relational life

Tables 5 to 7 report country rankings for three indicators of QRL: time spent with friends, relationships within the family (marital status and number of children), and relationships within society (active participation to voluntary organizations). The corresponding geographical maps, both at world-wide level and for Europe, are presented in figures 1 to 6.

The indicator of the quality of relationships with friends, reported in table 5 and figures 1-2, can be interpreted as the life satisfaction that, in a given country, the average individual obtains by spending time with friends. The indicator is highest in Indonesia (1.68) and among the few African countries available in the sample (Uganda, 1.66, and Nigeria, 1.65). Interestingly, it is relatively high in the United States (1.53) and Canada (1.49). It is instead very low in China and Japan. Within Europe, the quality of relationships with friends is highest in Greece (1.58), the United Kingdom (1.55) and the countries formerly belonging to Yugoslavia (Bosnia-Hercegovina, Croatia, Serbia). Very low scores are observed for Eastern European countries such as Romania (1.10), Poland (1.13), the Russian Federation (1.13) and Hungary (1.14).

The indicator of the quality of family relationships, reported in table 6 and figures 3-4, can be interpreted as the life satisfaction that, in a given country, an average individual obtains by not being single and by having children. At world-wide level, the quality of relationships within the family is highest in Asia, with particular reference to Islamic countries, and lowest in Latin America (El Salvador, 1.21, Colombia, 1.29, Dominican Republic, 1.35, Venezuela, 1.41). Within Europe, the quality of relationships within the family is highest in Spain (2.74), Ireland (2.64), and Italy (2.59), and relatively low in formerly Soviet republics (Latvia, 1.92, Estonia, 1.83, Georgia, 1.93). Both the United States and Canada display relatively low scores (2.01 and 2.14, respectively).

The indicator of the quality of relationships in society, reported in table 7 and figures 5-6, can be interpreted as the life satisfaction that, in a given country, the average individual obtains by actively participating to voluntary

association. The quality of interpersonal relationships within society is highest in Africa and the Americas, while particularly low in Eastern European countries, such as Romania (1.10), Poland (1.13), the Russian Federation (1.13) and Hungary (1.14).

Table 8 reports country rankings for the overall indicator of the quality of relational life, obtained by summing the indicators for friends, family and society. This overall indicator can be interpreted as the well-being that, in a given country, the average individual obtains by spending time with friends, having a family, or actively participating to voluntary associations. The corresponding geographical maps, both at world-wide level and for Europe, are presented in figures 7-8. African countries, such as Nigeria and Tanzania, and Asian countries, such as China and India, display the highest QRL. Within Europe, Spain and Ireland are the countries with the best QRL.

5.3 Explaining the quality of relational life

In this section we investigate the determinants of QRL, focusing in particular on the role of economic conditions. We exploit the indicators constructed above to assess whether the evidence is consistent with the hypothesis that better economic conditions are associated with worse quality of relational life. We conduct the analysis both at the individual level, focusing on the effect of microeconomic conditions, and at the aggregate level, focusing on the effect of a set of indicators of macroeconomic performance.

Table 9 reports estimation results for the micro-level analysis. Each of the three indicators of QRL, and the overall index, is modelled as a function of income and employment conditions, in addition to a number of socio-demographic control variables. The results indicate that income is positively and strongly significantly related to all indicators of QRL. Contrary to the relational treadmill explanation of the Easterlin paradox, this result indicates that better economic conditions are associated to better interpersonal relationships. The results for employment conditions are instead less clear-cut. In particular, being unemployed is negatively related to relationships within the family, but positively related to relationships with friends and people in voluntary associations.

Table 10 reports estimation results for the macro-level analysis. Average values at country-level for each of the indicators of QRL are modelled as a function of a set of macroeconomic indicators: GDP per capita, unemployment rate, inflation rate, government size and trade openness. The

equations also include geographical coordinates, urban density and TV set density, to control for countries geographical and social characteristics. The results indicate that macroeconomic conditions are positively but not significantly related to QRL. In particular, GDP per capita is positively and significantly related only to the quality of time spent with friends. On the whole, however, as for the micro-level analysis, the results do not support the hypothesis of a negative relationship between economic conditions and QRL.

We carried out a number checks to assess the robustness of the results. In particular, we examined how the country rankings for the different relational indicators are affected when microeconomic equations are estimated by ordered probit, to take into account the ordinal nature of the dependent variable, and when the four-item happiness variable is used instead of life satisfaction as an indicator of subjective well being. We also checked the robustness of the results to the use of weights are estimated by individual country rather than for the whole sample. We found that the results are qualitatively robust to all these alternative specifications.

6   Conclusions

Three main types of explanations have been offered for the income-happiness paradox: hedonic theories, based on adaptation (e.g. Kahneman, 1999); satisfaction theories, based on the effect of growing aspirations (Frey and Stutzer, 2002b); positional theories, based on social comparison (e.g. Frank, 2000). Recently, an additional explanation has been proposed, based on the concept of relational treadmill. Within this view, higher income levels are associated with a tendency to over-consume material goods and under-consume interpersonal relationships, an important determinant of subjective happiness, so that the net effect of income on happiness is relatively small (e.g. Diwan, 2000).

This paper proposed a new method for the measurement of the quality of relational life, using implicit valuations estimated from microeconometric life-satisfaction equations to weigh and aggregate scores on several dimensions of relational life. We applied this method to a large sample of individuals from 82 countries, to provide a description of the quality of relational life throughout the world. We then investigated the determinants of the quality of relational life, both at the individual level and at the country level, in

order to assess the relational explanation of the income-happiness paradox. The results indicate that, at the individual level, higher income is positively and strongly significantly related to all indicators of the quality of relational life. Across countries, GDP per capita is positively and significantly related to the quality of time spent with friends, and also positively related, although not significantly, to the composite index of the quality of relational life.

Overall, the results indicate that, ceteris paribus, better economic conditions are generally associated to better quality of interpersonal relationships. This suggests that explanations of the income-happiness paradox based on the hypothesis of a trade-off between standards of livings and quality of interpersonal relationships may be overemphasized. As observed by Frey (2008, p. 43), "the notion that people in poor countries are happier because they live under more natural and less stressful conditions is a myth".

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Table 1: Descriptive statistics, relational indicators

Variable	Mean	Std. Dev.	Min.	Max.	N
Time spent: relatives (never)	0.03	0.16	0	1	53501
Time spent: relatives (yearly)	0.12	0.33	0	1	53501
Time spent: relatives (monthly)	0.2	0.4	0	1	53501
Time spent: relatives (weekly)	0.65	0.48	0	1	53501
Time spent: friends (never)	0.05	0.23	0	1	94007
Time spent: friends (yearly)	0.13	0.34	0	1	94007
Time spent: friends (monthly)	0.3	0.46	0	1	94007
Time spent: friends (weekly)	0.52	0.5	0	1	94007
Time spent: colleagues (never)	0.3	0.46	0	1	77759
Time spent: colleagues (yearly)	0.19	0.4	0	1	77759
Time spent: colleagues (monthly)	0.22	0.41	0	1	77759
Time spent: colleagues (weekly)	0.28	0.45	0	1	77759
Time spent: church (never)	0.42	0.49	0	1	76920
Time spent: church (yearly)	0.18	0.38	0	1	76920
Time spent: church (monthly)	0.14	0.35	0	1	76920
Time spent: church (weekly)	0.26	0.44	0	1	76920
Time spent: service (never)	0.54	0.5	0	1	76472
Time spent: service (yearly)	0.16	0.36	0	1	76472
Time spent: service (monthly)	0.15	0.36	0	1	76472
Time spent: service (weekly)	0.15	0.36	0	1	76472
Marital status: Married	0.6	0.49	0	1	265180
Marital status: As married	0.04	0.2	0	1	265180
Marital status: Single	0.24	0.43	0	1	265180
Marital status: Separated	0.02	0.13	0	1	265180
Marital status: Divorced	0.04	0.19	0	1	265180
Marital status: Widowed	0.07	0.25	0	1	265180
Number of children (age below 30)	0.24	0.72	0	8	205229
Number of children (age above 30)	1.96	1.74	0	8	205229
Active involvement in: Church	0.13	0.33	0	1	226894
Active involvement in: Sport	0.1	0.3	0	1	229967
Active involvement in: Art	0.07	0.25	0	1	227264
Active involvement in: Union	0.04	0.19	0	1	229753
Active involvement in: Party	0.04	0.19	0	1	231050
Active involvement in: Environment	0.03	0.17	0	1	229882
Active involvement in: Production	0.04	0.2	0	1	229875
Active involvement in: Charity	0.06	0.23	0	1	228352

Note: Source: World Values Survey.

Table 2: Descriptive statistics, individual level

Variable	Mean	Std. Dev.	Min.	Max.	N
Life satisfaction	66.33	24.9	10	100	265123
Happiness	30.2	7.38	10	40	260003
Income	4.72	2.53	1	10	225964
Freedom	6.64	2.45	1	10	250912
Age	40.91	16.41	15	101	261612
Male dummy	0.48	0.5	0	1	265364
Trust in others	0.3	0.46	0	1	257204
Employment status: Unemployed	0.08	0.27	0	1	257393
Employment status: Full time	0.39	0.49	0	1	257393
Employment status: Part time	0.07	0.26	0	1	257393
Employment status: Self employed	0.09	0.28	0	1	257393
Employment status: Retired	0.13	0.34	0	1	257393
Employment status: At home	0.14	0.35	0	1	257393
Employment status: Student	0.07	0.26	0	1	257393
Employment status: Other	0.02	0.13	0	1	257393
Education level: lower	0.26	0.44	0	1	268799
Education level: middle	0.49	0.5	0	1	268799
Education level: upper	0.26	0.44	0	1	268799

Note: Source: World Values Survey.

Table 3: Descriptive statistics, country-level

Variable	Mean	Std. Dev.	Min.	Max.	N
GDP per capita (logarithm)	8.04	1.41	5.32	10.25	81
Unemployment rate	0.09	0.06	0.01	0.33	81
Inflation rate	0.54	1.19	0.02	5.62	81
Government size	0.16	0.05	0.06	0.3	81
Trade Openness	0.70	0.42	0.16	2.1	81
Urban population (per cent)	58.04	20.92	9.74	100	81
TV set per 1000	0.28	0.17	0.01	0.70	81
Longitude (x)	45.38	40.63	1.21	171.22	81
Latitude (y)	36.86	16.95	1.28	67.78	81

Note: Source: World Bank (2006).

Table 4: Estimated effects of relational indicators on SWB

	Friends	Family	Society
Time spent: relatives (yearly)	2.99**		
Time spent: relatives (monthly)	4.30**		
Time spent: relatives (weekly)	4.87**		
Time spent: friends (yearly)	0.86		
Time spent: friends (monthly)	0.94		
Time spent: friends (weekly)	1.83**		
Time spent: colleagues (yearly)	-0.60		
Time spent: colleagues (monthly)	0.06		
Time spent: colleagues (weekly)	0.04		
Time spent: church (yearly)	-0.13		
Time spent: church (monthly)	0.37		
Time spent: church (weekly)	1.37**		
Time spent: sport-service (yearly)	0.86**		
Time spent: sport-service (monthly)	1.53**		
Time spent: sport-service (weekly)	2.09**		
Marital status: Married		3.41**	
Marital status: As married		0.99**	
Marital status: Separated		-3.95**	
Marital status: Divorced		-1.68**	
Marital status: Widowed		-0.51	
Number of children (age below 30)		-0.91**	
Number of children (age above 30)		0.13**	
Active involvement in: Church			1.36**
Active involvement in: Sport			0.17
Active involvement in: Art			0.42
Active involvement in: Union			-0.62*
Active involvement in: Party			-0.22
Active involvement in: Environment			0.63
Active involvement in: Production			0.43
Active involvement in: Charity			0.91**
Age	0.03**	0.06**	0.01
Male dummy	-2.06**	-1.08**	-0.33**
Income	1.54**	1.10**	1.08**
Freedom	3.09**	3.09**	3.25**
Trust in others	0.98**	2.16**	2.12**
Employment status: Unemployed	-3.80**	-5.32**	-5.27**
Education level: middle	0.96**	0.85**	0.76**
Education level: upper	0.97*	0.89**	0.49**
R2	0.28	0.32	0.33
Number of observations	36543	152193	158773

Note: Dependent variable: Life satisfaction. OLS estimates, t-statistics reported in brackets (heteroskedasticity-robust standard errors). * indicates $p < 0.05$, ** indicates $p < 0.01$.

Table 5: Quality of Relational Life: Time spent with friends

Rank	Country	Quality	Rank	Country	Quality
1	Indonesia	1.68	34	Germany	1.33
2	Uganda	1.66	35	Morocco	1.33
3	Nigeria	1.65	36	Belgium	1.32
4	Greece	1.58	37	Czech Republic	1.30
5	Bosnia-Her.	1.56	38	Slovakia	1.30
6	Ireland	1.55	39	Estonia	1.29
7	Croatia	1.55	40	Argentina	1.27
8	United Kingdom	1.55	41	Algeria	1.27
9	United States	1.53	42	Korea-North	1.25
10	Sweden	1.52	43	Egypt	1.25
11	Serbia	1.50	44	Philippines	1.24
12	Netherlands	1.50	45	Ukraine	1.24
13	Canada	1.49	46	Venezuela	1.22
14	Luxembourg	1.49	47	Jordan	1.22
15	Iceland	1.48	48	Lithuania	1.20
16	Finland	1.48	49	Latvia	1.20
17	Spain	1.47	50	Moldova	1.20
18	Turkey	1.47	51	Iran	1.19
19	Denmark	1.45	52	India	1.18
20	Zimbabwe	1.44	53	Peru	1.15
21	Italy	1.44	54	Albania	1.15
22	Portugal	1.43	55	Pakistan	1.14
23	Montenegro	1.43	56	Puerto Rico	1.14
24	Tanzania	1.42	57	Hungary	1.14
25	France	1.42	58	Russian Fed.	1.13
26	Slovenia	1.42	59	Poland	1.13
27	Macedonia	1.41	60	Malta	1.12
28	Austria	1.40	61	China	1.12
29	Bulgaria	1.38	62	Japan	1.11
30	Singapore	1.36	63	Romania	1.10
31	Belarus	1.34	64	Mexico	1.08
32	South Africa	1.34	65	Viet Nam	1.04
33	Bangladesh	1.33	66	Chile	0.98

Note: Source: World Values Survey (ICPSR).

Table 6: Quality of Relational Life: Family

Rank	Country	Quality	Rank	Country	Quality
1	Iran	3.25	42	Lithuania	2.26
2	China	3.18	43	Sweden	2.25
3	Korea-South	3.16	44	Hungary	2.23
4	Algeria	3.11	45	Slovakia	2.20
5	Jordan	3.06	46	Belarus	2.19
6	Japan	3.03	47	France	2.16
7	Egypt	3.01	48	United Kingdom	2.15
8	Pakistan	3.00	49	Denmark	2.14
9	Taiwan	2.98	50	Canada	2.14
10	India	2.98	51	Finland	2.12
11	Azerbaijan	2.95	52	Uruguay	2.11
12	Viet Nam	2.76	53	Czech Republic	2.10
13	Spain	2.74	54	Brazil	2.10
14	Norway	2.66	55	Mexico	2.05
15	Armenia	2.65	56	Argentina	2.04
16	Ireland	2.64	57	Iceland	2.03
17	Turkey	2.60	58	Chile	2.02
18	Albania	2.59	59	United States	2.01
19	Italy	2.59	60	South Africa	2.01
20	Bulgaria	2.54	61	Nigeria	2.00
21	Switzerland	2.51	62	New Zealand	2.00
22	Poland	2.50	63	Russian Fed.	1.96
23	Romania	2.50	64	Georgia	1.93
24	Montenegro	2.49	65	Latvia	1.92
25	Slovenia	2.48	66	Luxembourg	1.88
26	Macedonia	2.48	67	Estonia	1.83
27	Korea-North	2.44	68	Zimbabwe	1.78
28	Ukraine	2.43	69	Singapore	1.68
29	Moldova	2.42	70	Morocco	1.63
30	Croatia	2.42	71	Tanzania	1.63
31	Serbia	2.41	72	Peru	1.61
32	Australia	2.40	73	Puerto Rico	1.48
33	Austria	2.40	74	Ghana	1.43
34	Netherlands	2.37	75	Greece	1.42
35	Bosnia-Her.	2.31	76	Venezuela	1.41
36	Portugal	2.31	77	Dominican Rep.	1.35
37	Belgium	2.30	78	Indonesia	1.34
38	Philippines	2.30	79	Colombia	1.29
39	Malta	2.30	80	El Salvador	1.21
40	Germany	2.27	81	Uganda	0.88
41	Bangladesh	2.26			

Note: Source: World Values Survey (ICPSR).

Table 7: Quality of Relational Life: Society

Rank	Country	Quality	Rank	Country	Quality
1	Tanzania	1.27	37	Ireland	0.19
2	Nigeria	1.27	38	United Kingdom	0.19
3	Puerto Rico	0.85	39	Argentina	0.19
4	Dominican Rep.	0.79	40	Belgium	0.19
5	Zimbabwe	0.79	41	Bosnia-Her.	0.18
6	Uganda	0.78	42	Iceland	0.18
7	South Africa	0.72	43	Germany	0.17
8	Bangladesh	0.72	44	Finland	0.17
9	United States	0.67	45	Norway	0.16
10	Korea-North	0.53	46	Macedonia	0.16
11	China	0.51	47	Taiwan	0.15
12	Venezuela	0.51	48	Austria	0.15
13	Australia	0.51	49	Italy	0.14
14	Viet Nam	0.47	50	Czech Republic	0.12
15	Philippines	0.45	51	Slovenia	0.12
16	Peru	0.41	52	France	0.11
17	Brazil	0.40	53	Portugal	0.11
18	Canada	0.38	54	Japan	0.10
19	Albania	0.37	55	Latvia	0.09
20	Mexico	0.37	56	Denmark	0.08
21	Colombia	0.37	57	Hungary	0.08
22	Chile	0.35	58	Armenia	0.08
23	Singapore	0.35	59	Montenegro	0.08
24	India	0.32	60	Poland	0.07
25	Uruguay	0.29	61	Georgia	0.07
26	Netherlands	0.28	62	Morocco	0.06
27	Greece	0.27	63	Estonia	0.06
28	Korea-South	0.26	64	Lithuania	0.06
29	Slovakia	0.26	65	Belarus	0.04
30	Spain	0.25	66	Serbia	0.04
31	Moldova	0.25	67	Turkey	0.04
32	Malta	0.25	68	Bulgaria	0.03
33	Sweden	0.23	69	Ukraine	0.03
34	Croatia	0.21	70	Romania	0.02
35	Switzerland	0.21	71	Azerbaijan	0.02
36	Luxembourg	0.20	72	Russian Fed.	-0.00

Note: Source: World Values Survey (ICPSR).

Table 8: Quality of Relational Life: Overall

Rank	Country	Quality	Rank	Country	Quality
1	Nigeria	4.92	31	Portugal	3.85
2	China	4.81	32	Belgium	3.81
3	India	4.47	33	Germany	3.78
4	Spain	4.46	34	Finland	3.77
5	Ireland	4.39	35	Slovakia	3.76
6	Bangladesh	4.32	36	Poland	3.71
7	Tanzania	4.31	37	France	3.69
8	Viet Nam	4.26	38	Ukraine	3.69
9	Japan	4.24	39	Iceland	3.69
10	Korea-North	4.22	40	Denmark	3.68
11	United States	4.21	41	Malta	3.67
12	Croatia	4.19	42	Romania	3.61
13	Italy	4.16	43	Belarus	3.58
14	Netherlands	4.15	44	Luxembourg	3.56
15	Albania	4.11	45	Czech Republic	3.53
16	Turkey	4.10	46	Lithuania	3.52
17	South Africa	4.07	47	Argentina	3.51
18	Bosnia-Her.	4.05	48	Mexico	3.50
19	Macedonia	4.05	49	Puerto Rico	3.47
20	Slovenia	4.02	50	Hungary	3.45
21	Sweden	4.01	51	Singapore	3.40
22	Canada	4.01	52	Chile	3.35
23	Zimbabwe	4.01	53	Uganda	3.32
24	Montenegro	4.00	54	Greece	3.28
25	Philippines	3.99	55	Latvia	3.21
26	Serbia	3.95	56	Estonia	3.18
27	Bulgaria	3.95	57	Peru	3.18
28	Austria	3.95	58	Venezuela	3.14
29	United Kingdom	3.88	59	Russian Fed.	3.09
30	Moldova	3.87	60	Morocco	3.02

Note: Source: World Values Survey (ICPSR).

Table 9: Microeconomic conditions and quality of relational life

	Friends	Family	Society	Overall
Income	0.00**	0.15**	0.01**	0.17**
	(2.58)	(65.27)	(14.60)	(44.74)
Employment status: Unemployed	0.03**	-0.51**	0.02**	-0.29**
	(3.59)	(-23.08)	(2.72)	(-9.11)
Employment status: Part time	0.02*	0.09**	0.06**	0.18**
	(2.44)	(4.40)	(9.22)	(5.34)
Employment status: Self employed	0.02*	0.02	0.06**	0.16**
	(2.28)	(1.08)	(10.06)	(4.88)
Employment status: Retired	0.06**	-0.90**	0.03**	-0.86**
	(8.38)	(-47.39)	(4.51)	(-25.69)
Employment status: At home	-0.05**	0.54**	0.02**	0.61**
	(-7.59)	(32.23)	(4.08)	(19.06)
Employment status: Student	0.14**	-1.21**	0.08**	-0.61**
	(19.59)	(-56.48)	(10.98)	(-21.22)
Employment status: Other	-0.00	-0.26**	0.07**	-0.18**
	(-0.27)	(-6.47)	(6.08)	(-2.85)
Age	-0.01**	0.04**	0.00**	0.04**
	(-40.50)	(84.75)	(21.57)	(58.21)
Male dummy	0.08**	0.61**	-0.04**	0.49**
	(20.87)	(54.42)	(-13.10)	(27.10)
Freedom	0.01**	0.00	0.01**	0.03**
	(13.54)	(0.29)	(11.60)	(7.36)
Trust in others	0.05**	0.05**	0.05**	0.09**
	(11.72)	(4.35)	(13.71)	(4.83)
Education level: middle	0.02**	-0.01	0.02**	0.08**
	(3.03)	(-0.48)	(5.11)	(3.53)
Education level: upper	0.04**	-0.03*	0.10**	0.00
	(5.84)	(-2.20)	(19.22)	(0.07)
Constant	1.70**	0.18**	0.20**	1.21**
	(87.78)	(3.78)	(13.66)	(11.07)
R2	0.15	0.18	0.16	0.17
Number of observations	74968	152825	159369	60513

Note: Dependent variable: Indicators of quality of relational life. OLS estimates, t-statistics reported in brackets (heteroskedasticity-robust standard errors). * indicates $p<0.05$, ** indicates $p<0.01$.

Table 10: Macroeconomic conditions and Quality of Relational Life

	Friends	Family	Society	Overall
GDP per capita (logarithm)	0.08*	0.02	0.02	0.08
	(2.60)	(0.28)	(0.54)	(0.87)
Unemployment rate	-0.51	1.21	-0.71	0.44
	(-1.84)	(1.29)	(-1.72)	(0.53)
Inflation rate	0.02	0.03	-0.04**	-0.03
	(1.17)	(0.69)	(-2.93)	(-0.90)
Government size	1.37**	0.31	1.08	1.71
	(2.75)	(0.20)	(1.89)	(1.28)
Trade Openness	-0.06	0.04	-0.07	-0.17
	(-1.13)	(0.27)	(-1.40)	(-1.58)
Latitude (y)	-0.01*	0.02**	-0.01**	-0.00
	(-2.50)	(3.43)	(-4.36)	(-0.34)
Longitude (x)	-0.00	0.00	0.00	0.00
	(-1.95)	(1.77)	(0.22)	(0.46)
Urban population (per cent)	-0.01**	-0.00	-0.00	-0.01**
	(-3.19)	(-0.51)	(-1.63)	(-2.79)
TV set per 1000	0.23	-0.92	-0.03	0.38
	(0.94)	(-1.25)	(-0.11)	(0.67)
Constant	1.07**	1.38*	0.74*	3.72**
	(4.77)	(2.59)	(2.25)	(5.29)
R2	0.40	0.23	0.55	0.26
Number of observations	65	80	71	59

Note: Dependent variable: Quality of relational life indicator. OLS estimates, t-statistics reported in brackets (heteroskedasticity-robust standard errors). * indicates $p<0.05$, ** indicates $p<0.01$.

Figure 1: Quality of Relational Life: Time spent with Friends
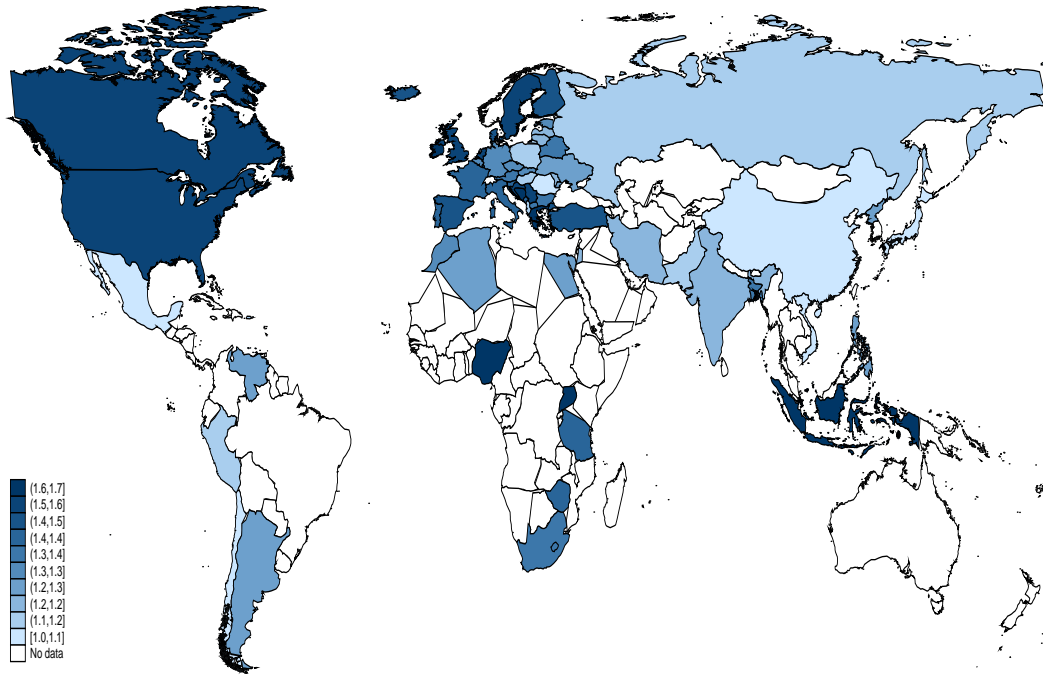

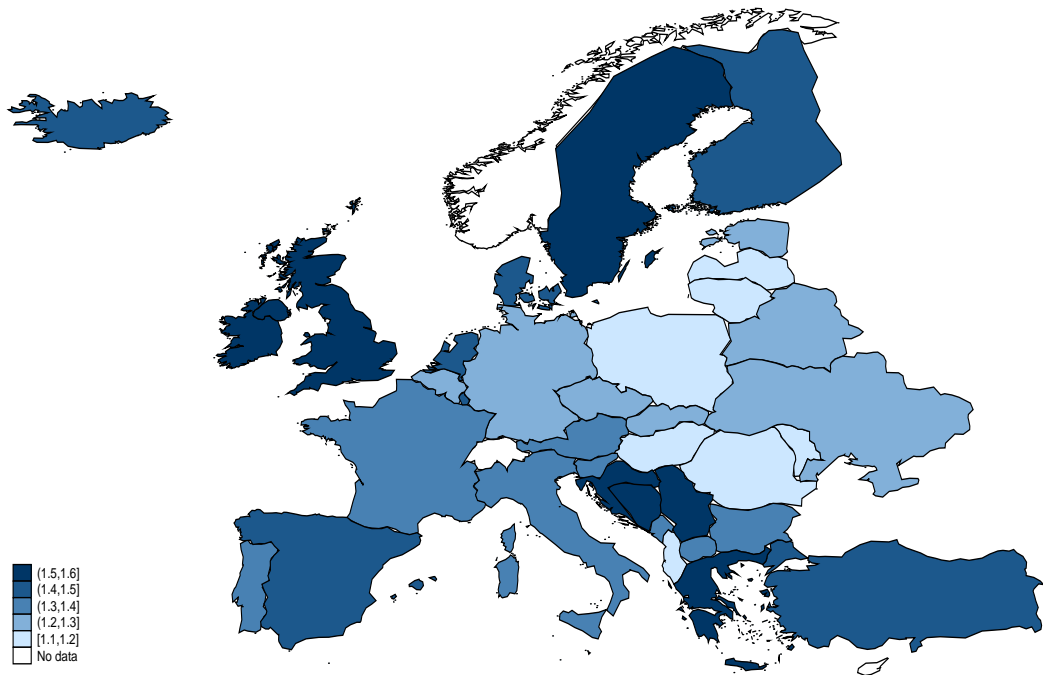Figure 2: Quality of Relational Life: Time spent with Friends
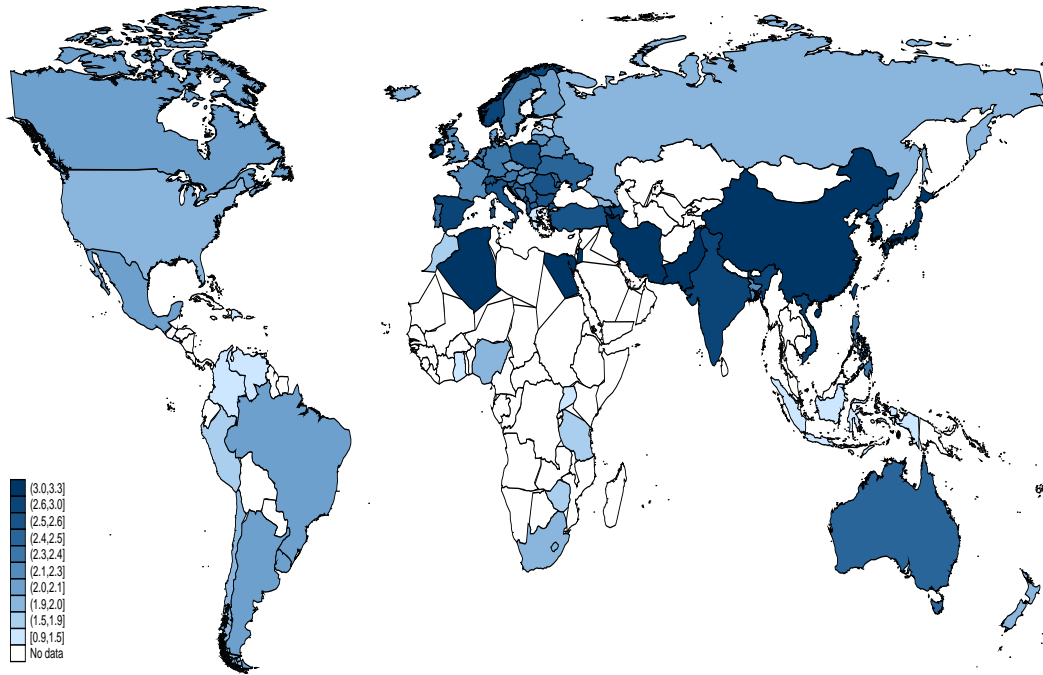
Figure 3: Quality of Relational Life: Family

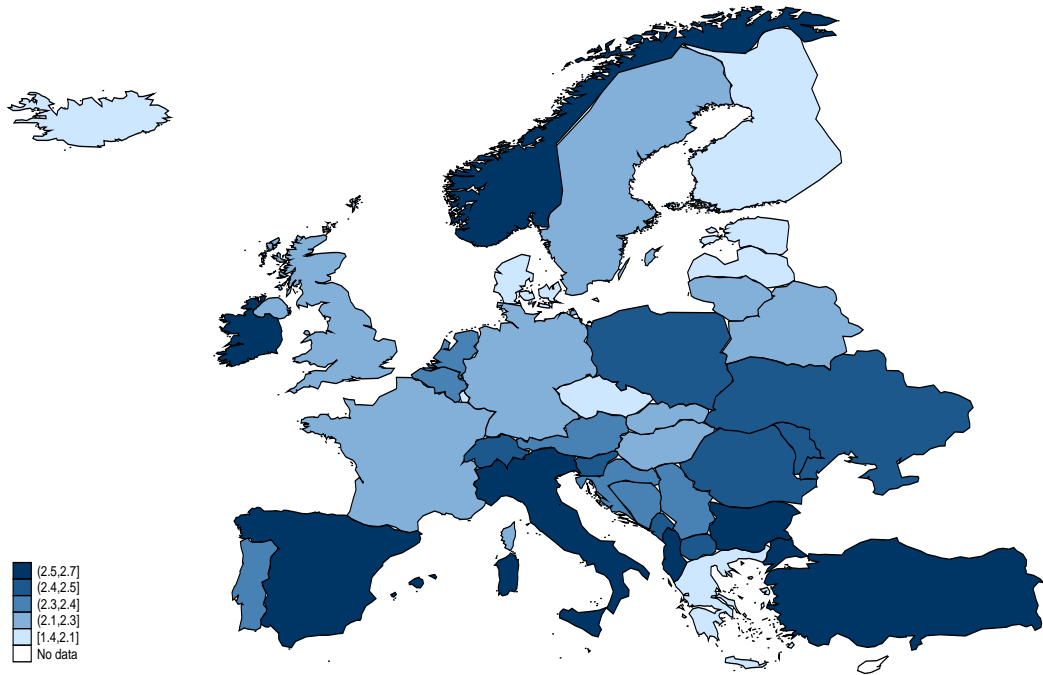Figure 4: Quality of Relational Life: Family

Figure 5: Quality of Relational Life: Society
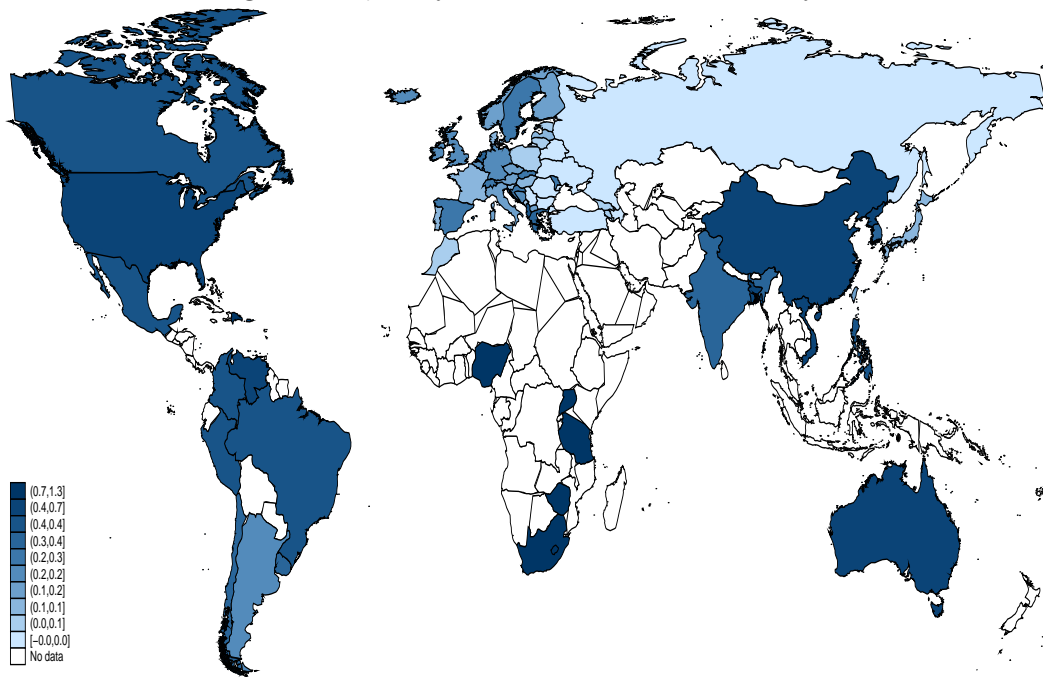

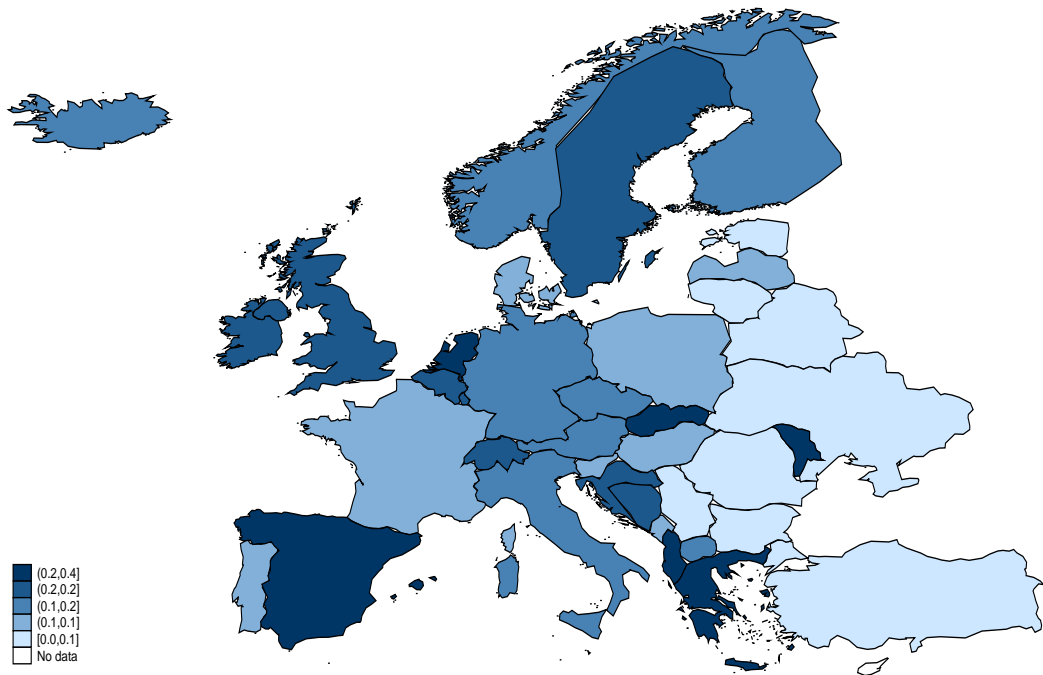Figure 6: Quality of Relational Life: Society
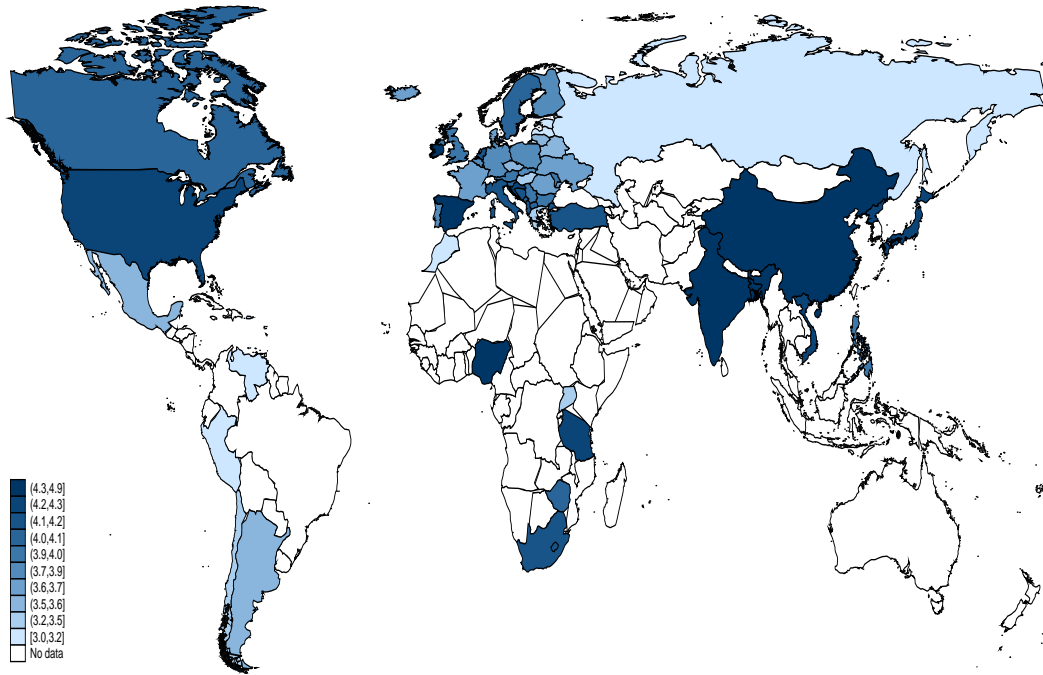
Figure 7: Quality of Relational Life: Overall

Figure 8: Quality of Relational Life: Overall