Recibido: 28/12/2023 | **Aceptado:** 12/04/2024 | **Publicado:** 18/06/2024

Analyzing the link between subjective well-being and physical social networks in Ecuador: Empirical evidence using cross-sectional data

Analizando el vínculo entre el bienestar subjetivo y las redes sociales físicas en Ecuador: evidencia empírica usando datos transversales

https://doi.org/10.21803/adgnosis.13.13.714

Cristian Ortiz
https://orcid.org/0000-0002-9395-7228
Carrera de Economía y Centro de Investigaciones Sociales y Económicas, Universidad Nacional de Loja, Loja, Ecuador.
Av. Pio Jaramillo Alvarado, Loja 110103. cristian.ortiz@unl.edu.ec

Johanna Alvarado
https://orcid.org/0000-0001-8056-9923
Carrera de Economía, Universidad Nacional de Loja, Loja, Ecuador. Av. Pio Jaramillo Alvarado, Loja 110103. johanna.alvarado@unl.edu.ec

Viviana Huachizaca
https://orcid.org/0000-0002-6608-3545
Carrera de Economía, Universidad Nacional de Loja, Loja, Ecuador.
Av. Pio Jaramillo Alvarado, Loja 110103. viviana.huachizaca@unl.edu.ec

Cómo citar este artículo:
Ortiz; C., Alvarado; J. y Huachizaca; V. (2024). Analyzing the link between subjective well-being and physical social networks in Ecuador: Empirical evidence using cross-sectional data. *Ad-gnosis, 13*(13). *e#714. https://doi.org/10.21803/adgnosis.13.13.714*

Abstract

Introduction: Social networks, as an important dimension of social capital, contribute positively to people's subjective well-being. By having a support network of friends, family or neighbors in difficult moments of life, people can experience greater happiness. **Objective:** The objective of this research is to analyze the relationship between physical social networks and the subjective wellbeing of heads of household in Ecuador. **Methodology:** Data from the National Survey of Employment, Unemployment and Underemployment (ENEMDU) of Ecuador and econometric techniques such as the ordered probit model and quantile regression were used to explore the existing heterogeneity along the distribution of the well-being variable. **Results:** The results reveal that there is a positive and heterogeneous relationship between the variables studied, with the magnitude of the correlation being greater for unhappy heads of household. That is, physical social networks improve well-being in the most unhappy individuals. **Conclusions:** Policy implications highlight that social and recreational centers should be implemented and strengthened, and the quality of services and physical spaces where physical social networks are built should be improved. For example, sports spaces, cultural events and collective activities should be promoted where people can build social networks that lead to social cohesion and promote well-being.

Keywords: *Happiness; Developing countries; Life satisfaction; Social capital; Social networks*
Jell Code: I31. H54. C21. B55.

Resumen

Introducción: Las redes sociales como dimensión importante del capital social contribuyen positivamente al bienestar subjetivo de las personas. Al contar con una red de apoyo de amigos, familiares o vecinos en momentos difíciles de la vida, las personas pueden experimentar mayor felicidad. **Objetivo:** El objetivo de esta investigación es analizar la relación entre las redes sociales físicas y el bienestar subjetivo de los jefes de hogar en Ecuador. **Metodología:** Se utilizaron datos de la Encuesta Nacional de Empleo, Desempleo y Subempleo (ENEMDU) de Ecuador y técnicas econométricas como el modelo probit ordenado y regresión cuantil para explorar la heterogeneidad existente a lo largo de la distribución de la variable bienestar. **Resultados:** Los resultados revelan que existe una relación positiva y heterogénea entre las variables estudiadas, siendo la magnitud de la correlación mayor para los jefes de hogar infelices. Es decir, las redes sociales físicas mejoran el bienestar en los individuos más infelices. **Conclusiones:** Las implicaciones de política destacan que se deben implementar y fortalecer los centros sociales y recreativos, y mejorar la calidad de los servicios y espacios físicos donde se construyen las redes sociales físicas. Por ejemplo, se deben promover espacios deportivos, eventos culturales y actividades colectivas donde las personas puedan construir redes sociales que conduzcan a la cohesión social y promuevan el bienestar.ve competitiveness across different business contexts.

Keywords: *Felicidad; Países en desarrollo; Satisfacción vital; Capital social; Redes sociales.*

Introduction

Over the years, human capacity has allowed countries to achieve economic prosperity. Although it is an important factor in measuring the economic development of nations, this has caused the system to disintegrate or neglect factors linked to well-being. One of the branches within economics that is linked to the human being is subjective wellbeing, from the perspective of happiness, and that currently has been linked to a higher level with the progress of a society (Coad, & Binder, 2014). However, this may vary given the circumstances and have different implications in the economic and public policy sense. In this sense, subjective well-being is strongly influenced by different social aspects. For example, support and trust in society and family (Gülaçtı, 2010) commonly referred to in the literature as social networks. In this sense, physical social networks are understood as intangible elements of human relationships that provide access to social and emotional support.

Various literature has found a significant relationship between subjective well-being and physical social networks. For example, in the UK, Li (2016) analyzed four formal and informal social networks of civic engagement, neighborhood cohesion, diversity and size of social networks, showing that social networks play an important role in well-being, but the impact is much smaller than that of class or intergenerational mobility trajectory given their formal and informal domains. Portela et al., (2013) analyzed a European sample from different dimensions and found that social networks, social trust and institutional trust show a relevant correlation with subjective well-being.

In the same vein, other evidence has shown that social group membership by age and affinity makes social connections stand out in subjective well-being as such. Seki and Dilmaç (2015) show that social relationships directly influence our well-being and behavior as they find a direct effect of social appearance anxiety (caused by phobia of social relationships and how we are perceived) on adolescents' subjective well-being. This evidence has been corroborated by literature showing that even identifying with people from one's own community and country predicts well-being (Hodges, & Gore, 2019). Xiong et al., (2017) have also put interest in the well-being-social networks relationship. They found that, in the context of occupational well-being, people find greater benefit from social networks, this is biased by social status. Other evidence points out that the relationship between social networks and subjective well-being is mediated by idiosyncratic factors such as extroversion and personality (Neira et al., 2018). This evidence strongly motivates the fact that the relationship studied is heterogeneous and average estimates are usually quite general. Analyzing this relationship from this approach allows us to uncover heterogeneous patterns across the welfare distribution.

Therefore, the objective of this research was twofold. The first objective was to analyze the relationship between physical social networks and subjective well-being using discrete choice models to observe the direction and strength of the relationship studied. The second objective was to address heterogeneity in the studied relationship to study the extremes of the distribution of the well-being variable and to understand why these extremes behave differently. In addition, new ideas and hypotheses are proposed to increase understanding for future research and discussion. The main finding is that physical social networks affect individuals differently depending on their initial level of well-being. That is, physical social networks have a significantly greater effect on individuals at lower levels of the welfare distribution than at higher levels.

This research is structured in four sections. The second section contains a review of the theoretical and empirical literature. The third section describes the data and methodology used. The fourth section presents the results found. The fifth section contains the research conclusions and possible policy implications.

Literature review

The literature points out that subjective well-being (SWB) is an alternative measure to measure the development of societies instead of economic growth (Wills-Herrera et al., 2012; Zhang et al., 2022). Various disciplines have been interested in its study, as is the case of economics. Subjective well-being analyzes people's self-evaluations of their satisfaction with their lives (Diener, 1984). Individuals evaluate their lives based on three domains: i) personal characteristics such as age, gender, etc.; ii) economic factors such as income or consumption; and, iii) social factors, such as an individual's social networks (Bian et al., 2018). However, the study of the influence of social factors is scarce (Richards et al., 2016).

Particularly, in this article the analysis focuses on social networks, which are defined as the intangible elements of human relationships that provide access to social and emotional support and social resources (Gray, 2009). Social networks have a dual effect on subjective well-being. The positive effect is because well-connected people can enjoy opportunities to access emotional and instrumental resources (Taylor et al., 2001). Emotional resources refer to social support, whereas instrumental resources, are information, power, wealth, status, and influence from significant others (Bian et al., 2018). In addition, individuals need social networks to cope with daily stressors to maintain physical and mental health and subjective well-being (Glatz, & Bodi-Fernandez, 2020; Hoffman et al., 2023). On the other hand, people identifying with low status, stigmatized or discriminated groups present health problems and low levels of individual well-being (Hoffman et al., 2023). For example, having fewer close friends decreases life satisfaction (Landberg, & Recksiedler, 2018).

Interaction with friends, family and neighbors positively contributes to subjective well-being (Ishiguro, 2023). Shirmohammadi et al., (2016) found that social support from family, friends, and community members provides them with coping strategies that enhance subjective well-being. Cheng et al., (2009) through K-means cluster analysis identified diverse networks, centered on friends and family of Chinese older adults and found that individuals with closer and more diverse social relationships reported higher levels of well-being. On the other hand, Chou (1999) found that satisfaction with family and friendship relationships was consistently associated with subjective well-being. Bian et al., (2018) found that formal networks are important in increasing people's subjective well-being, but greater impacts have informal networks. Formal social networks were measured by group affiliations and informal social networks by personal connections with family, friends, and acquaintances. Specifically, family relationships are important during difficult times in life, while friendships, characterized by providing emotional support (Li, & Cheng, 2015). For their part, Glatz and Bodi-Fernandez (2020) found that contact at least three times a week with close family and friends increases subjective well-being. Larger and more varied social networks help people to overcome various facets of life.

Other research has studied different age groups. For example, recent evidence shows that the family environment becomes a central axis in the promotion of well-being and its influence impacts with more or less intensity depending on age (Roxana, 2013; Li, & Cheng, 2015). Moreover, older adults perceive that the social network positively influences their happiness, this due to perceived social support in terms of less loneliness, less anxiety and greater happiness (Cheng et al., 2022; Becker et al., 2019; Wang, & Yang 2016; Rafnsson et al., 2015; Litwin, & Shiovitz-Ezra, 2011). Likewise, in the very young, emotional support from friends, family and neighbors is critical to ensure successful adulthood maturation (Huxhold et al., 2013).

Likewise, Nguyen et al., (2016) found for a group of African Americans with an average age of 66.7 years that family and friend relationships were positively correlated with well-being. For their part, the results of Schmidt et al., (2023) for two age groups, established adults (30 to 45 years) and middle-aged people (46 to 65 years), showed that friendship quality was significantly associated with quality of life satisfaction in both groups. The authors found no significant results with the number of close friends or the frequency of visits by close friends in established adults, whereas in middle-aged adults it was associated with higher life satisfaction. Contrarily et al., (2017) showed that there is a negligible effect when belonging to a religious organization, due to the perception and boundaries of religion in that country.

It should also be noted that social networks are built more rapidly when there is a feeling of belonging to groups or organizations, such as volunteering. Recent findings found that time spent in social activities and variety are important for subjective well-being, such as participating in organizations like religious groups or volunteering (Lei et al., 2015). Pilkington et al., (2012) showed that people who participate in volunteering have higher life satisfaction and experience positive affect given their higher levels of social exchanges and greater social support from friends and family. Other evidence has shown an increase in subjective well-being when social networks conglomerate into common activity groups (Leck et al., 2015).

This depends not only on the environment but also on factors that affect gender. Social networks differ between women and men (Cohn-Schwartz, & Shimitzh, 2024). For example, Danilchenko (2018) finds a gender-differentiated behavioural feature of social networks. For example, his study shows that, after a divorce, women relate more to friends and parents, while for men it is parents, neighbours and acquaintances.

In general, the literature indicates a positive relationship between social networks and subjective well-being. That is, broader networks of friends and family, membership in social groups, church attendance, frequency of contact, among others, are positively related to subjective well-being (Taylor et al., 2001).

Data and methodology

Survey data

Microdata related to personal sociodemographic characteristics, subjective evaluation of well-be-

ing, quality of life, consumption and housing from the National Survey of Employment, Unemployment and Underemployment (ENEMDU, 2022) were used for the development of the research. The information was collected from September to October 2022 by the National Institute of Statistics and Census (INEC, 2022). The selection of this time period is based on the availability of the data, which are not available in all years, and are freely available and can be found on the INEC website. The ENEMDU was applied to 35,538 heads of household, which represents 117,759 observations throughout the country. After cleaning the database, the final sample was 11,000 observations.

Measurement of the social networks variable

Social capital is an important measure of subjective well-being that has different dimensions (Neira et al., 2018). Particularly, an important dimension is the physical social networks that an individual builds throughout his or her life journey. For example, the positive, everyday support that people feel from neighbors, family and friends raises levels of personal satisfaction (Carter, & Cordero, 2022; Zangger, 2023). Therefore, the independent variable, social networks, was constructed as an index through Confirmatory Factor Analysis (CFA) standardized on a scale of 0 to 1. According to Neira et al., (2018) the social networks dimension is one of many dimensions of social capital.

Table A1 of Appendix A presents the structure of the construction of the social networks variable that contains the construct, the three ENEMDU questions concerning the construct and the coding of each question. Table A2 of Appendix A shows the process of constructing the index and the criteria that validate its construction, such as the Akaike information criterion (AIC), Cronbach's alpha and the Kaiser-Meyer-Olkin coefficient (KMO).

Subjective well-being and other control variables

From an economic approach the best way to measure subjective well-being is through a life satisfaction survey (Veenhoven, 2007). Therefore, as Bartolini and Sarracino (2014); Martínez et al., (2020); Tsurumi et al., (2021); Montgomery (2022) and Wu (2023), the dependent variable was measured by the question: how do you feel about your overall satisfaction with your life, that is, taking into account all aspects of your life, with response to a scale from 0 to 10, where 0 means totally unhappy and 10 totally happy.

In order to enrich the study, and because subjective wellbeing depends on economic, social, cultural and political aspects, ten control variables were added, such as: population density, family size, family income, number of working hours, area, sex, ethnicity, marital status, schooling and age, as shown by various research on the research topic, similar to Aedo et al., (2020); Glatz and Bodi-Fernández (2020); Ortiz and Sarrias (2022); Montgomery (2022). Finally, to provide a better understanding and eliminate outliers, the variables population density and family income were converted into logarithms, and variables such as ethnicity and marital status were dichotomized, as shown in Table 1.

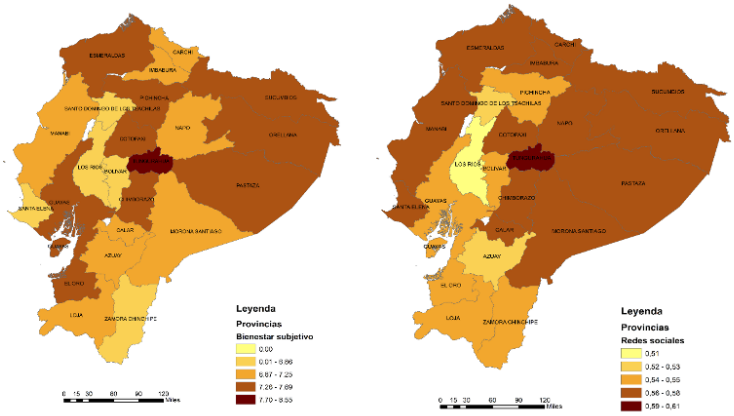
Table 1.
Descriptive statistics

Variable	N	Mean	SD	Min	Max
Subjective well-being (0=totally unhappy or 10=totally happy)	11000	7.378	1.802	0	10
Physical social networks (Index from 0 to 1)	11000	0.760	0.186	0	1
Household income (Dollars)	11000	16.234	10.255	4.605	72.900
Family size (No. of family members)	11000	3.871	1.821	1	17
Working hours (Hours)	11000	40.671	12.756	2	119
Working hours2 (Hours)	11000	1816.832	1133.46	4	14161
Population density (No. of inhabitants)	11000	5.266	1.479	−1.206	8.489
Area (1=urban)	11000	0.767	0.423	0	1
Sex (1=male)	11000	0.720	0.449	0	1
Marital Status (1=married)	11000	0.377	0.485	0	1
Ethnicity (1=indigenous)	11000	0.048	0.213	0	1
Schooling (school years)	11000	11.504	5.032	0	23
Age (years)	11000	47.056	12.942	16	90
Age2 (years)	11000	2381.764	1267.74	256	8100

Figure 1 presents maps of the level of subjective well-being and social networks by province. The heat map presents five shades of orange, from less lit to more lit, where the softer shade indicates less happiness or a lower index of social networks and the more lit shade more happiness or a higher index of social networks, respectively. Consequently, the province with the highest levels of subjective wellbeing is Tungurahua with a range of 7.70 and 8.55 points, followed by several provinces of the highlands and eastern region between levels of 7.26 and 7.69. On the other hand, in terms of social relations, Tungurahua is the only province to have a strong social relations index; likewise, it is observed that the entire Amazon region, with the exception of Zamora Chinchipe, has an acceptable level of social relations, ranging between 0.56 and 0.58. Finally, the provinces with the highest indexes of civic participation are Azuay and Morona Santiago with 0.17 and 0.21 points in this dimension.

Figure 1.

Level of subjective wellbeing and social networks at the provincial level in Ecuador.



Methodology

With the purpose of estimating the relationship between subjective well-being and physical social networks, and, taking into consideration Bartolini and Sarracino (2014); Matsushima and Matsunaga (2015); Aedo et al., (2020); Ma and Chen (2020); and in view that the dependent variable is ordered, a maximum likelihood estimator was applied as is the Ordered Probit (OP) model, an optimal analytical model to estimate the impact of social capital on people's subjective well-being. To solve the model we started with a function of our latent variable, represented in equation (1).

$$BS_i^* = f(RS_i, DP_i, TF_i, HT_i, Y_i, X_i) \quad (1)$$

Where BS_i* corresponds to the dependent variable subjective well-being, which is obtained from the question of people"s general satisfaction with their lives, *f refers* to the function of subjective well-being, RS_i represents the independent variable of social networks, and the control variable DP_i reflects population density, TF_i consists of family size, HT_i evidence to the hours worked, Y_i reference to family income, and X_i refers to a grouping of socioeconomic factors and characteristics of individuals such as: area, sex, age, ethnicity, marital status and schooling.

Taking into consideration several factors that affect subjective well-being that are not included in the variables of the model in equation (1), a linear error term was added, which takes into account those components not shown in the estimation, reflected in equation (2).

$$BS_i^* = X_i'\beta + \varepsilon_i \quad (2)$$

Where X is a vector grouping the components *(CS, DP, TF, HT, Y, X)* explained in previous paragraphs, is a coefficient to be estimated, and which corresponds to the stochastic error term of the model, which, following the strict exogeneity assumption, the correlation between the error term and the x variables must be 0.

The dependent variable of the model consists of a latent variable, in addition, the reference question representing the BS contains categorically ordered responses. Since subjective well-being corresponds to a categorical variable, we will estimate an ordered probit model, where $\varepsilon_i \sim N(0, \sigma^2 = 1)$.

In this sense, in order to estimate the heterogeneous relationship between physical social networks and subjective well-being in Ecuador, and, following the studies of Binder and Coad (2011); Neira et al., (2018); Ngoo et al., (2021), a Quantile Regression (QR) was used, since it is the best oriented econometric model to test and examine the heterogeneous effects on the entire distribution of subjective well-being coming from the social capital index. CR allows us to illustrate the factors affecting subjective well-being in a more complete way, unlike the classical regressions used in econometric estimations, quantile regressions describe the conditional distribution of the dependent variable of the model (Binder, & Coad, 2011). In the first instance, according to Koenker and Bassett (1978) and Binder and Coad (2015), the CR model is shown in eq:

$$y_{it} = x'_{it}\beta_\theta + u_{\theta it} \; con \; quantil_\theta(y_{it}|x_{it}) = x'_{it}\beta_\theta \quad (3)$$

Where y_{it} consists of the dependent variable, x is a vector of regressors, β is the vector of parameters to estimate and u is the vector of residuals, on the other hand, $cuantíl_\theta$ (y_{it} |x_{it}) means the conditional quantile of y_{it} given x_{it}. The CR methodology for the t-th quantile can be demonstrated in equation (4)

In turn, the value $\tau \in [0,1]$ y $\rho_\tau(.)$ value, which is defined as:

$$\rho_\tau(u_i) = \{\tau u_i, y \; si \; u_i \geq 0 \; (1-\tau)u_i, y \; si \; u_i < 0 \quad (4)$$

Because the overall satisfaction with their lives question corresponding to the BS makes little difference in practical terms, we ran the CR model for all scores. Generally, we used the following equation for CR estimation:

$$BS_i = \alpha_i + \sum_{i=1}^{n} \beta_n * X_{n,i} + \sum_{i=1}^{n} \delta_m * RS_{m,i} + \varepsilon_i \quad (5)$$

Where *i refers* to individual data, BS_i is the subjective wellbeing of individuals; $X_{(n,i)}$ are the control variables of the model such as: population density, family size, family income, number of working hours, area, sex, ethnicity, marital status, schooling and age; $RS_{(m,i)}$ are the dimensions of social capital; β_n y δ_m are the parameters to estimate; and finally, ε_i is the error term of the model.

Discussion of results

After estimating the relationship between physical social networks and subjective well-being with a traditional ordered Probit model, the marginal effects were obtained (Table 2), given that the coefficients of the first model are not directly interpreted. It should be noted that a multicollinearity test was previously performed on the variables to rule out estimation problems. This test, called the Variance Inflator Factor (VIF) test, showed that there are no values greater than five, which is the commonly established threshold. In this sense, an estimation was made for each model using period and canton fixed effects, where, in Model 1, a positive relationship was found between physical social networks and subjective wellbeing, this coefficient being 0.464, that is to say that an increase of one standard deviation of the social network index increases the subjective wellbeing of people by 4.64%. In models 2 to 6 a similar behavior of the physical social network"s variable was observed, but with a lower magnitude in the marginal effects calculated, this is basically due to the fact that the control variables subtract magnitude and significance from our variable of interest. These results are consistent with the findings of authors such as Ishiguro (2023), Shirmohammadi et al. et al., (2016) or Cheng et al. et al., (2009), who found a positive relationship between physical social networks and subjective well-being. These results may be

due to the fact that the social support that people receive from friends or family members provides them with a support network to face difficult situations, which translates into higher levels of happiness.

In model 6, which controls for all the observed socioeconomic factors included in the model, it is observed that a one standard deviation increase in the social network index increases people"s subjective wellbeing by 44.5%. These results mainly support both Easterlin"s paradox (1974) and Putnam"s (1993) studies showing that variables related to social capital have a strong positive relationship with subjective well-being or happiness. Likewise, these studies agree with the results of Neira et al. et al., (2017); Neira et al. et al., (2018); Aedo et al. et al., (2020) where by means of ordered logit, OLS and ordered probit models, they obtain coefficients similar to those shown in the present study, where, an increase in physical social networks increases the levels of subjective well-being. Thus, although there are other determinants of subjective well-being, social networks are an important component of people"s happiness.

The control variables in model 6 have the expected sign according to the literature. For example, it is observed that a male head of household has a probability of increasing his subjective well-being by 1.9%. This result agrees with Sulemana (2015) who found that being female decreases the probability of being satisfied with life by 1.3%. Similarly, Ortiz and Sarrias (2022) demonstrate using an ordered probit model that being male increases the probability of being fully satisfied with life by 1.0 %%. However, they disagree with the results of Montgomery (2022), since, in this case, being a woman increases the probability of being satisfied with life by 8.5%. Likewise, Portela et al. et al., (2012) in their study show that the female gender has a probability of 18.88% of being completely happy. These results were probably given in the contexts where the studies were conducted.

In order to capture the decreasing effects of age on subjective wellbeing, age squared was raised, in this case, it was found that as the years pass, the head of household tends to decrease his or her subjective wellbeing by 0.001 %%. However, in Model 3, we can see a difference between these two variables with subjective wellbeing, age presents a negative relationship and age squared a positive relationship. The negative relationship between age and subjective well-being found in this study contradicts authors such as Cheng et al. et al., (2022) who found that as age increases, it is important to have support networks to face this stage of life. In turn, these results agree with the study by Montgomery (2022), since, like our results, age, age squared and subjective well-being have a U-shape, since, as the years go by well-being decreases, however, up to a certain age the levels of happiness begin to increase.

Regarding ethnicity, it is observed that being indigenous has a probability of decreasing subjective wellbeing by 2.7%, a result that agrees with the study by Ortiz and Sarrias (2022), where being indigenous reduces the probability of being satisfied with life by 6.40%. This is due to the fact that there are still problems of discrimination against certain age groups due to socioeconomic conditions and other factors, indigenous ethnicity being one of them. On the other hand, the result of the marital status estimates reflects that being married decreases 0.7% of their happiness, disagreeing with Aedo et al. et al., (2020); Ngoo et al. et al., (2021) and Želinský et al. et al., (2021), where they show that being married increases the levels of subjective wellbeing of people. In addition, Powdthavee (2008) explains that there are large psychological benefits to getting married and living together brings great psychological benefits, as being married increases well-being by an extra income equivalent of $65,000.

Schooling has a certain influence on subjective well-being, since an additional year of schooling correlates with an increase in the happiness of the heads of household, supporting Želinský et al. et al., (2021) and Ortiz and Sarrias (2022) who confirm that having more years of schooling allows people to increase their happiness, since they have a greater probability of having a better quality of life. However, the results disagree with Portela et al. et al., (2012) and Neira et al. et al., (2018) who in their studies using an OLS model show that the level of schooling does not have a significant relationship with subjective well-being. On the other hand, family income has a positive relationship with happiness, where an increase in family income correlates with a 0.02 %% increase in well-being, which is similar with the results of Fang and Sakellariou (2016) and Ortiz and Sarrias (2022) where income positively influences subjective well-being.

As for family size, this variable presents a negative relationship with subjective well-being, indicating that the increase of one individual in the family has a 0.6% probability of decreasing the level of subjective well-being of the heads of household. Work hours and work hours squared, where, mainly the increase in work hours has a 0.1% probability of increasing happiness. However, once squared the result changes, in this case, when the head of household exceeds a limit of working hours subjective well-being tends to decrease. These results support Fang and Sakellariou (2016), due to the fact that, in their study the increase of one hour of work decreases 3.3% the probability of being satisfied with life. Regarding population density, the result indicates that the higher the population in a canton of Ecuador, the greater the correlation with a 2.4% decrease in happiness. On the other hand, individuals residing in the urban area have a 2% increase in subjective wellbeing, due to the fact that, being a central area, there is a greater probability of establishing social networks and increasing their social capital.

Table 2.
Marginal Effects of the Ordered Probit Model

	Model 1 ME/ES	**Model 2** ME/ES	**Model 3** ME/ES	**Model 4** ME/ES	**Model 5** ME/ES	**Model 6** ME/ES
Social networks	0.464***	0.462***	0.443***	0.444***	0.447***	0.445***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.327)
Man		0.019***	0.022***	0.022***	0.023***	0.019***
		(0.004)	(0.004)	(0.004)	(0.004)	(0.015)
Age		−0.001	−0.002*	−0.002*	−0.001	−0.002**
		(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Age^2		0.000	0.000	0.000	0.000	0.000*
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Indigenous		−0.027***	−0.008	−0.008	−0.005	−0.002
		(0.008)	(0.009)	(0.009)	(0.009)	(0.010)
Married		−0.007*	−0.012***	−0.012***	−0.009**	−0.009**
		(0.004)	(0.004)	(0.004)	(0.004)	(0.008)
Schooling			0.006***	0.006***	0.006***	0.006***
			(0.000)	(0.000)	(0.000)	(0.004)
Family income				−0.000	0.000	0.000
				(0.000)	(0.000)	(0.000)

	Model 1 ME/ES	**Model 2** ME/ES	**Model 3** ME/ES	**Model 4** ME/ES	**Model 5** ME/ES	**Model 6** ME/ES
Family size					−0.006***	−0.005***
					(0.001)	(0.004)
Working hours						0.001***
						(0.001)
Working hours2						−0.000
						(0.000)
Population						−0.022*
Density						(0.020)
						0.020***
Urban Sector						(0.016)
N	**11000**	**11000**	**11000**	**11000**	**11000**	**11000**
Fixed effects (period)	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects (canton)	Yes	Yes	Yes	Yes	Yes	Yes
AIC	40109.08	40043.54	39781.03	39782.55	39763.63	39707.50
BIC	41679.80	41650.78	41395.58	41404.40	41392.79	41358.58
R_p2	0.067	0.069	0.075	0.075	0.076	0.077
X2	2850.679	2926.220	3190.730	3191.213	3212.131	3274.257
ll	−19839.540	−19801.770	−19669.51	−19669.27	−19658.81	−19627.75

Note. Standard errors in parentheses. Significance level, *p<0.10, **p<0.05. ***p<0.01

To determine the observed heterogeneity of subjective well-being, we used an extension of the OLS model such as quantile regression, Table 3 shows the results of the estimation of this model. In the columns are expressed the results of an ordinary least squares (OLS) model since we assume cardinality in the subjective well-being scale and the models of the quantiles 10, 25, 50, 75 and 90, where, Q(10) are the least happy and Q(90) totally happy, in addition, all the model estimates were controlled with the fixed effects of the period and the canton of each individual.

When analyzing our variable of interest, which is physical social networks, the values have a distribution from highest to lowest from quantiles 10 to 90, with the greatest impact located in Q(10), i.e., social relationships increase happiness in the least happy people. This evidence is consistent with several authors such as Binder and Coad (2015) and Neira et al., (2018), where, it is shown that the increase in social capital, such as social networks, causes an increase in subjective well-being in people, especially in the less happy ones.

Regarding the control variables of the model, male gender has a greater influence on the least unhappy people (Q10) with an increase of 0.25 well-being units. Disagreeing with Neira et al., (2018), where, gender is mostly distributed in the moderately happy people (Q50), that is, gender is distributed with greater amount in those with a medium level of satisfaction. On the other hand, the age variable is statistically significant only in the 75th and 90th quantiles, both with a negative sign. In Q(75) we find the distribution with the highest amount, that is, the increase in years reduces sub-

jective well-being by 0.036 well-being units. Similarly, age squared is statistically significant in the same quantiles as age, however, in this case age squared has a positive relationship, i.e., when age increases subjective well-being will also increase. Corroborating Binder and Coad (2011); Coad, & Binder (2014) and Ngoo et al., (2021), who find that an increase in years of age causes subjective well-being to decrease. On the other hand, ethnicity is statistically non-significant in all quantiles, which means that being indigenous does not have a significant impact on the variation in subjective well-being.

Regarding the marital status of the heads of household, the results show that being married has a negative relationship with subjective well-being, since, being in marriage decreases well-being in totally happy people (Q90), differing from Fang and Sakellariou (2016); Binder and Coad (2015) and Neira et al., (2018), where they expose that there is only a decrease in subjective well-being in single, divorced or widowed people, since, being in marriage increases social ties, therefore, people's well-being levels. On the other hand, schooling is a statistically significant positive variable in all quantiles, specifically in quantile 25, which indicates that an additional year of schooling has a greater influence on less happy people, that is, schooling increases the levels of well-being, ratifying the results of Ngoo et al., (2021), differing only in that in their study, the greatest amount is found in totally happy people.

On the other hand, family income has a positive relationship with subjective well-being and is statistically significant, however, it presents a distribution with a higher amount in happy people (Q(75). These findings are consistent with Binder and Coad (2011); Coad, & Binder (2014); Neira et al., (2018) and Ngoo et al., (2021) where income influences subjective well-being, however, it has a greater influence on less happy people. Regarding family size, a negative relationship with subjective well-being was obtained in all quantiles, with the highest value in quantile 25. It can be interpreted that overcrowding in the family has a greater negative impact on people who have a regular happiness.

Regarding the variable hours of work, it is not statistically significant at quantile 10, and the highest value is found in Q(75), i.e., happy heads of household. However, when squaring this variable, two differences are found: first, hours squared is statistically significant in the 75th and 90th quantiles and second, it presents a negative relationship with subjective well-being, in other words, the excessive increase in working hours decreases happiness in the heads of household. On the other hand, population density has a positive relationship with happiness, however, it is statistically significant only in the 25th, 50th and 75th quantiles, where, the increase in population increases subjective well-being in moderately happy people (Q(50)). Finally, the area is statistically significant in all levels of happiness of household heads, the distribution with the highest amount is found in the 75th quantile, where, being a resident of an urban area increases the levels of satisfaction in happy people. However, the relationship is positive in all quantiles, therefore, belonging to an urban area increases well-being in both the least happy and the happiest people. rson.

Table 3.
Results of the quantile regression model

	Subjective well-being					
	MCO	**Q(10)**	**Q(25)**	**Q(50)**	**Q(75)**	**Q(90)**
Social networks	0.374***	0.530***	0.423***	0.361***	0.3463***	0.299***
	(0.021)	(0.019)	(0.078)	(0.096)	(0.046)	(0.047)
Man	0.235***	0.251***	0.174***	0.132***	0.130**	0.107**
	(0.054)	(0.072)	(0.053)	(0.047)	(0.057)	(0.048)
Age	0.018**	0.014	0.001	−0.016	−0.036***	−0.023**
	(0.004)	(0.014)	(0.009)	(0.011)	(0.013)	(0.009)
Age2	−0.000***	−0.000	−0.000	0.000	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Indigenous	−0.046*	−0.064	0.041	0.046	0.060	0.064
	(0.021)	(0.188)	(0.081)	(0.087)	(0.144)	(0.081)
Married	−0.061	−0.052	−0.077*	−0.066	−0.032	−0.069***
	(0.063)	(0.078)	(0.040)	(0.046)	(0.043)	(0.024)
Schooling	0.071***	0.054***	0.061***	0.057***	0.048***	0.022***
	(0.006)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)
Family income	0.0013**	0.009**	0.011***	0.010***	0.012***	0.007***
	(0.004)	(0.004)	(0.002)	(0.002)	(0.003)	(0.002)
Family size	−0.069**	−0.098***	−0.101***	−0.070***	−0.062***	−0.010
	(0.031)	(0.029)	(0.023)	(0.017)	(0.015)	(0.010)
Working hours	0.0012*	0.009	0.013*	0.011**	0.016***	0.014***
	(0.004)	(0.012)	(0.007)	(0.005)	(0.004)	(0.005)
Working hours2	−0.000*	−0.000	−0.000	−0.000	−0.000*	−0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population Density	0.008	0.009	0.046***	0.057***	0.033**	0.012
	(0.018)	(0.018)	(0.014)	(0.010)	(0.014)	(0.019)
Urban Sector	0.276**	0.225**	0.206***	0.211***	0.271***	0.107*
	(0.108)	(0.110)	(0.052)	(0.062)	(0.068)	(0.041)
Constant	−2.456***	−1.677***	0.154	2.779***	5.286***	7.396***
	(0.345)	(0.345)	(0.221)	(0.269)	(0.438)	(0.329)
N	11000	11000	11000	11000	11000	11000
Fixed effects (period)	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects (canton)	Yes	Yes	Yes	Yes	Yes	Yes

Note. Standard errors in parentheses. Significance level, *p<0.10, **p<0.05, ***p<0.01

Conclusions and policy implications

Using econometric techniques such as the ordered probit model and quantile regression, the relationship between subjective well-being and physical social networks was determined. In addition, the heterogeneity observed along the distribution of subjective well-being was unraveled. The main contribution of this work is the evidence found in favor of the positive relationship between

subjective well-being and social networks. Therefore, in order to improve the levels of subjective well-being of Ecuadorian households, the formation of physical social networks should be sought as an important component of social capital, which will be reflected in favorable economic development. On the other hand, certain sociodemographic characteristics increase subjective wellbeing, while others have a negative effect on it. It should be noted that after the age of 50, the subjective well-being of family representatives in Ecuador increases, as do individual factors such as level of education, area of residence and income.

Generally speaking, in order to increase subjective well-being, dimensions of social capital such as physical social networks should be enhanced. While it is true that today's world has leaned towards virtual social networks, however, in this paper we highlight the importance of physical social networks and their contribution to better levels of well-being. Therefore, social and recreational centers should be implemented and strengthened, quality and equity educational centers should be established, and the quality of services and physical spaces where physical social networks are built should be improved. For example, sports spaces, cultural events and collective activities should be promoted so that people can build social networks that lead to social cohesion and promote wellbeing. It is emphasized that the implementation of these policies should be comprehensive and sustainable in the long term.

Consequently, the study presented a main limitation in obtaining data, due to the fact that the ENEMDU does not have a wide extension of questions that make up the physical social networks in a broader way, hindering the construction of the index referring to this dimension of social capital. For future research it is necessary to extend the analysis to other dimensions of social capital and to construct the social capital indexes considering a wide extension of questions related to each dimension, in addition, in order to control the estimations, the availability of other variables such as the use of time and citizen security can be taken into account.

References

Aedo, J., Oñate, E., Jaime, M., & Salazar, C. (2020). Capital social y bienestar subjetivo: Un estudio del rol de la participación en organizaciones sociales en la satisfacción con la vida y felicidad en ciudades chilenas. *Revista de Análisis Económico, 35*(1), 55-74. http://dx.doi.org/10.4067/S0718-88702020000100055

Bartolini, S., & Sarracino, F. (2014). Happy for how long? How social capital and economic growth relate to happiness over time. *Ecological economics, 108,* 242-256. https://doi.org/10.1016/j.ecolecon.2014.10.004

Becker, C., Kirchmaier, I., & Trautmann, S. T. (2019). Marriage, parenthood and social network: Subjective well-being and mental health in old age. *PloS One, 14*(7), e0218704. https://doi.org/10.1371/journal.pone.0218704

Bian, Y., Hao, M., & Li, Y. (2018). Social networks and subjective well-being: A comparison of Australia, Britain, and China. *Journal of Happiness Studies, 19,* 2489-2508. https://doi.org/10.1007/s10902-017-9926-2

Binder, M., & Coad, A. (2011). From Average Joe's happiness to Miserable Jane and Cheerful John: Using quantile regressions to analyze the full subjective well-being distribution. *Journal of Economic Behavior and Organization, 79*(3), 275-290. https://doi.org/10.1016/j.jebo.2011.02.005

Binder, M., & Coad, A. (2015). Heterogeneity in the relationship between unemployment and subjective wellbeing: A quantile approach. *Economica, 82*(328), 865-891. https://doi.org/10.1111/ecca.12150

Carter, E. D., & Cordero, M. L. (2022). Salir Adelante: Social capital and resilience during the Covid-19 pandemic in Argentina. Health & Place, 77, 102870. https://doi.org/10.1016/j.healthplace.2022.102870

Cheng, A., Leung, Y., & Brodaty, H. (2022). A systematic review of the associations, mediators and moderators of life satisfaction, positive affect and happiness in near-centenarians and centenarians. *Aging & Mental Health, 26*(4), 651-666. https://doi.org/10.1080/13607863.2021.1891197

Cheng, S. T., Lee, C. K., Chan, A. C., Leung, E. M., & Lee, J. J. (2009). Social network types and subjective well-being in Chinese older adults. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 64*(6), 713-722. https://doi.org/10.1093/geronb/gbp075

Chou, K. L. (1999). Social support and subjective well-being among Hong Kong Chinese young adults. *The Journal of Genetic Psychology,* 160(3), 319-331. https://doi.org/10.1080/00221329909595402

Churchill, S. A., & Mishra, V. (2017). Trust, social networks and subjective wellbeing in China. *Social Indicators Research, 132*(1), 313-339. https://doi.org/10.1007/s11205-015-1220-2

Coad, A., & Binder, M. (2014). Causal linkages between work and life satisfaction and their determinants in a structural VAR approach. *Economics Letters,* 124(2), 263-268. https://doi.org/10.1016/j.econlet.2014.05.021

Cohn-Schwartz, E., & Schmitz, A. (2024). From attitudes to social networks: National gender-role attitudes and gender differences in late-life social relationships. *Social Networks, 76,* 79-87. https://doi.org/10.1016/j.socnet.2023.08.001d=cl5B9Q-cA+5Tsk-rNPV2bjtPZ.undefined

Danilchenko, T. V. (2018). Gender differences of

experiencing of subjective social well-being. *European Journal of Psychology and Educational Research, 1*(1), 1-10. https://dergipark.org.tr/en/download/article-file/477882

Debortoli, D. O., & Brignole, N. B. (2024). Inteligencia empresarial para estimular el giro comercial en el microcentro de una ciudad de tamaño intermedio. Región Científica, 3(1), 2024195. https://doi.org/10.58763/rc2024195

Diener, E. (1984). Subjective well-being. *Psychological bulletin, 95*(3), 542-575. https://doi.org/10.1037/0033-2909.95.3.542

Easterlin, R. A. (1974). Does economic growth improve the human lot? Some empirical evidence. En Paul A. David, & Melvin W. Reder (eds.), *Nations and households in economic growth: Essays in honor of Moses Abramovitz* (pp. 89-125). Academic Press.

Fang, Z., & Sakellariou, C. (2016). Social insurance, income and subjective well-being of rural migrants in China-An application of unconditional quantile regression. *Journal of Happiness Studies, 17,* 1635-1657. https://doi.org/10.1007/s10902-015-9663-3

Ferreira, S., & Moro, M. (2010). On the use of subjective well-being data for environmental valuation. *Environmental and Resource Economics,* 46, 249-273. https://doi.org/10.1007/s10640-009-9339-8

Glatz, C., & Bodi-Fernandez, O. (2020). Individual social capital and subjective well-being in urban-and rural Austrian areas. *Osterreichische Zeitschrift Fur Soziologie, 45*(2), 139-163.

Gray, A. (2009). The social capital of older people. *Ageing and Society, 29*(1), 5-31. https://doi.org/10.1007/s11614-020-00399-9

Gülaçtı, F. (2010). The effect of perceived social support on subjective well-being. *Procedia-Social and Behavioral Sciences, 2*(2), 3844-3849. https://doi.org/10.1016/j.sbspro.2010.03.602

Hodges, J. M., & Gore, J. S. (2019). Social connections and well-being: With whom do you identify and why? *Psychological Studies, 64,* 436-446. https://doi.org/10.1007/s12646-019-00506-1

Hoffman, A., Mehrpour, A., & Staerklé, C. (2023). The many faces of social connectedness and their impact on well-being. En Spini, D., & Widmer, E. Withstanding vulnerability throughout adult life: Dynamics of stressors, resources, and reserves (pp. 169-187). Springer.

Huxhold, O., Fiori, K. L., & Windsor, T. D. (2013). The dynamic interplay of social network characteristics, subjective well-being, and health: The costs and benefits of socio-emotional selectivity. *Psychology and aging, 28*(1), 3-16. https://doi.org/10.1037/a0030170

INEC. (2022). National Survey of Employment, Unemployment and Underemployment (ENEMDU). https://aplicaciones3.ecuadorencifras.gob.ec/BIINEC-war/index.xhtml;jsessioni

Ishiguro, I. (2023). Minimal social interactions and subjective well-being in the Japanese context: Examination of mediation processes using a national representative sample. *Social Sciences & Humanities Open, 8*(1), 100713. https://doi.org/10.1016/j.ssaho.2023.100713

Koenker, R., & Bassett Jr, G. (1978). Regression quantiles. *Econometrica: Journal of the Econometric Society, 46*(1), 33-50. https://doi.org/10.2307/1913643

Landberg, M., & Recksiedler, C. (2018). Number of close friends and their links to life satisfac-

tion over the great recession in Germany. En Melikşah Demir, & Nebi Sümer (eds.), Close relationships and happiness across cultures (pp. 131-149). Springer. https://doi.org/10.1007/978-3-319-89663-2_8

Leck, C., Upton, D., & Evans, N. (2015). Growing well-beings: The positive experience of care farms. *British Journal of Health Psychology,* 20(4), 745-762. https://doi.org/10.1111/bjhp.12138

Lei, X., Shen, Y., Smith, J. P., & Zhou, G. (2015). Do social networks improve Chinese adults' subjective well-being? *The Journal of the Economics of Ageing, 6,* 57-67. https://doi.org/10.1016/j.jeoa.2015.07.001

Li, T., & Cheng, S. T. (2015). Family, friends, and subjective well-being: A comparison between the West and Asia. *En Friendship and happiness: Across the Life-span and cultures* (pp. 235-251). Springer. https://doi.org/10.1007/978-94-017-9603-3

Li, Y. (2016). Social mobility, social network and subjective well-being in the UK. *Contemporary Social Science, 11*(2-3), 222-237. https://doi.org/10.1080/21582041.2016.1190860

Litwin, H., & Shiovitz-Ezra, S. (2011). Social network type and subjective well-being in a national sample of older Americans. *The Gerontologist, 51*(3), 379-388. https://doi.org/10.1093/geront/gnq094

Ma, Y., & Chen, D. (2020). Openness, rural-urban inequality, and happiness in China. *Economic Systems, 44*(4), 100834. https://doi.org/10.1016/j.ecosys.2020.100834

Martínez, L., Valencia, I., & Trofimoff, V. (2020). Subjective wellbeing and mental health during the covid-19 pandemic: Data from three population groups in Colombia. *Data in Brief, 32,* 106287. https://doi.org/10.1016/j.dib.2020.106287

Matsushima, M., & Matsunaga, Y. (2015). Social capital and subjective well-being in Japan. *Volunteers: International Journal of Voluntary and Nonprofit Organizations, 26*, 1016-1045. https://doi.org/10.1007/s11266-015-9581-3

Montgomery, M. (2022). Reversing the gender gap in happiness. *Journal of Economic Behavior and Organization,* 196, 65-78. https://doi.org/10.1016/j.jebo.2022.01.006

Muñoz Bonilla, H. A., Menassa Garrido, I. S., Rojas Coronado, L., & Espinosa Rodríguez, M. A. (2024). La innovación en el sector servicios y su relación compleja con la supervivencia empresarial. Región Científica, 3(1), 2024214. https://doi.org/10.58763/rc2024214

Neira, I., Bruna, F., Portela, M., & García-Aracil, A. (2017). Individual well-being, geographical heterogeneity and social capital. *Journal of Happiness Studies, 19,* 1067-1090. https://doi.org/10.1007/s10902-016-9840-z

Neira, I., Lacalle-Calderon, M., Portela, M., & Perez-Trujillo, M. (2018). Social capital dimensions and subjective well-being: A quantile approach. *Journal of Happiness Studies, 20,* 2551-2579. https://doi.org/10.1007/s10902-018-0028-6

Ngoo, Y. T., Tan, E. C., & Tey, N. P. (2021). Determinants of life satisfaction in Asia: A quantile regression approach. *Journal of Happiness Studies, 22,* 907-926. https://doi.org/10.1007/s10902-020-00257-1

Nguyen, A. W., Chatters, L. M., Taylor, R. J., & Mouzon, D. M. (2016). Social support from family and friends and subjective well-being of older African Americans. *Journal of happiness studies, 17,* 959-979. https://doi.org/10.1007/s10902-015-9626-8

Ortiz, C., & Sarrias, M. (2022). Estimating the non-pecuniary benefit of engaging in pro-environmental behaviors: Incorporating both heterogeneous preferences and income endogeneity. *Journal of Environmental Management,* 302, 114040. https://doi.org/10.1016/j.jenvman.2021.114040

Pilkington, P. D., Windsor, T. D., & Crisp, D. A. (2012). Volunteering and subjective well-being in midlife and older adults: The role of supportive social networks. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences,* 67(2), 249-260. https://doi.org/10.1093/geronb/gbr154

Portela, M., Neira, I., & Salinas-Jiménez, M. D. M. (2012). Social capital and subjective wellbeing in Europe: A new approach on social capital. *Social Indicators Research, 114*, 493-511. https://doi.org/10.1007/s11205-012-0158-x

Powdthavee, N. (2008). Putting a price tag on friends, relatives, and neighbors: Using surveys of life satisfaction to value social relationships. *The Journal of Socio-Economics, 37*(4), 1459-1480. https://doi.org/10.1016/j.socec.2007.04.004

Putnam, R. (1997). The prosperous community: Social capital and public life. Frontier Issues in Economic Thought, 3, 211-212.

Rafnsson, S. B., Shankar, A., & Steptoe, A. (2015). Longitudinal influences of social network characteristics on subjective well-being of older adults: findings from the ELSA study. *Journal of Aging and Health, 27*(5), 919-934. https://doi.org/10.1177/0898264315572111

Richards, D., Richardson, T., Timulak, L., Viganò, N., Mooney, J., Doherty, G., ... & Sharry, J. (2016). Predictors of depression severity in a treatment-seeking sample. *International Journal of Clinical and Health Psychology, 16*(3), 221-229. https://doi.org/10.1016/j.ijchp.2016.02.001

Roxana, P. (2013). Family life-component of quality of life. Procedia-Social and Behavioral Sciences, 82, 266-270. https://doi.org/10.1016/j.sbspro.2013.06.257

Schmidt, M. E., Pellicciotti, H., & Long, R. M. (2023). An exploration of friendship and well-being in established adulthood and midlife. *Journal of Adult Development, 30*(1), 53-63. https://doi.org/10.1007/s10804-022-09421-8

Seki, T., & Dilmaç, B. (2015). Predictor relationships between the values the adolescents have and their levels of subjective well-being and social appearance anxiety: A model proposal. *Education and Science/Egitim ve Bilim, 40*(179).

Shirmohammadi, M., Beigi, M., & Richardson, J. (2023). Subjective well-being among blue-collar immigrant employees: A systematic literature review. *Human Resource Management Review, 33*(1), 100914. https://doi.org/10.1016/j.hrmr.2022.100914

Sulemana, I. (2015). An empirical investigation of the relationship between social capital and subjective well-being in Ghana. *Journal of Happiness Studies, 16*, 1299-1321. https://doi.org/10.1007/s10902-014-9565-9

Taylor, R. J., Chatters, L. M., Hardison, C. B., & Riley, A. (2001). Informal social support networks and subjective well-being among African Americans. *Journal of Black Psychology, 27*(4), 439-463. https://doi.org/10.1177/0095798401027004004

Tsurumi, T., Yamaguchi, R., Kagohashi, K., & Managi, S. (2021). Material and relational consumption to improve subjective well-being: Evidence from rural and urban Vietnam. *Journal of Cleaner Production, 310,* 127499. https://doi.org/10.1016/j.jclepro.2021.127499

Veenhoven, R. (2007). Subjective measures of well-being. En Mark McGillivray (eds.), *Human Well-Being: Concept and measuremen*t (pp. 214-239). Palgrave Macmillan.

Wang, Y. D., & Yang, C. (2016). How appealing are monetary rewards in the workplace? A study of ethical leadership, love of money, happiness, and turnover intention. *Social Indicators Research,* 129, 1277-1290. https://doi.org/10.1007/s11205-015-1160-x

Wills-Herrera, E., Orozco, L. E., Forero-Pineda, C., Pardo, O., & Andonova, V. (2012). The relationship between perceptions of insecurity, social capital, and subjective well-being: Empirical evidences from areas of rural conflict in Colombia. En Dave Webb y Eduardo Wills-Herrera (eds.), *Subjective Well-Being and Security* (pp. 177-196). Springer. https://doi.org/10.1007/978-94-007-2278-1

Wu, M. S. (2023). The effects of Facebook use on network social capital and subjective well-being: A generational cohort analysis from the Taiwan social change survey. *Heliyon, 9*(4), e14969. https://doi.org/10.1016/j.heliyon.2023.e14969

Xiong, A., Li, H., Westlund, H., & Pu, Y. (2017). Social networks, job satisfaction and job searching behavior in the Chinese labor market. *China Economic Review, 43,* 1-15. https://doi.org/10.1016/j.chieco.2017.01.001

Yader Aviles-Peralta, Y. (2024). Salario Emocional: más allá de la compensación tradicional. Región Científica, 3(1), 2024191. https://doi.org/10.58763/rc2024191

Zangger, C. (2023). Localized social capital in action: How neighborhood relations buffered the negative impact of covid-19 on subjective well-being and trust. *SSM-Population Health, 21,* 101307. https://doi.org/10.1016/j.ssmph.2022.101307

Želinský, T., Hudec, O., Mojsejová, A., & Hricová, S. (2021). The effects of population density on subjective well-being: A case-study of Slovakia. *Socio-Economic Planning Sciences, 78,* 101061. https://doi.org/10.1016/j.seps.2021.101061

Zhang, J., Xie, J., Zhang, X., & Yang, J. (2022). Income, social capital, and subjective well-being of residents in western china. *Sustainability, 14*(15), 9141. https://doi.org/10.3390/su14159141

Appendix A

Table A1.
Social networks ENEMDU questions

Construct	ENEMDU Questions	Reply	Coding
Social Networks	If you were in trouble, do you have family or friends to help you whenever you need them? (R_social_1)	Yes=1, No=0	R_social_1
	How do you feel about your involvement within the community, neighborhood and/or ward? (R_social_2)	Totally unhappy=0, Totally happy=10	R_social_2
	In the last 7 days, have you shared a meal with ALL members of your household? (R_social_3)	Yes=1, No=0	R_social_3

Table A2.
Factor analysis and tests of reliability and validity of constructs.

Construct	Questions	Eigenvalue greater than 1	Factorial loading	Uniqueness	AIC	Cronbach's alpha	KMO
Social networks	R_social_1	1	0.569	0.677	0.089	0.226	0.543
	R_social_2		0.492	0.758			
	R_social_3		0.743	0.449			

Note: (AIC) Average interitem covariance; (KMO) Kaiser-Meyer-Olkin.