



# The Relationship Between Rural-Urban Place of Residence and Subjective Well-Being is Nonlinear and its Substantive Significance is Questionable

Gabriele Prati<sup>1,2</sup> 

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## Abstract

Research on rural-urban differences in subjective well-being revealed inconsistent findings. I argue that the inconsistencies in the literature may be due to very small effect sizes and nonlinear associations. The aims of the present contribution were twofold: (1) to determine the effect size of the relationship between living in rural-urban areas and subjective well-being; (2) to investigate whether categories of rural-urban areas are nonlinearly related to subjective well-being. The present research used data from 507,452 participants from 115 countries provided by the European Values Study Trend File 1981–2017 and the World Values Survey time-series dataset (1981–2022). Self-reports of satisfaction with life and happiness were used to measure subjective well-being. Multilevel mixed-effects linear regression analysis revealed that, after adjusting for important sociodemographic variables such as gender, age, education, employment status, marital status, and income, the relationship between rural-urban place of residence and subjective well-being was statistically significant. However, the magnitude of these associations (i.e., effect size) was very small or even negligible. Moreover, pairwise comparisons of the estimated marginal means for life satisfaction and happiness revealed a pattern of nonlinear relationships. The results of the current research question the practical significance and usefulness of the relationship between rural-urban place of residence alone and subjective well-being.

**Keywords** Subjective well-being · Happiness · Satisfaction with life · Rural-urban differences · Urban and rural territories

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✉ Gabriele Prati  
gabriele.prati@unibo.it

<sup>1</sup> Department of Psychology, University of Bologna, Bologna, Italy

<sup>2</sup> Dipartimento di Psicologia, Università di Bologna, Piazza Aldo Moro, 90, Cesena, FC 47521, Italy

## 1 Introduction

A major and ongoing trend toward urbanization is observed in all parts of the world. In 1950, the proportion of the global population living in urban agglomerations was 30%, reaching 55% in 2018. By 2050 68% of the global population is projected to be urban (United Nations, 2019). Although a significant diversity in the urbanization levels across different geographic regions must be acknowledged, this critical trend of global urbanization has inspired a large literature examining its environmental, economic, and psychosocial consequences (e.g., Bertinelli and Black, 2004; Clement, 2010; Davis & Henderson, 2003; Marsella, 1998; Moore et al., 2003; Vlahov & Galea, 2002; Wilson, 2002).

Subjective well-being is one of the indicators of quality of life that have been identified as important in understanding the consequences of urbanization. The idea that happiness and life satisfaction may be associated with living in smaller or rural communities can be traced back to the works of classical sociological thinkers such as Durkheim (e.g., the transition from mechanical solidarity to organic solidarity; Durkheim, 1893), Tönnies (e.g., the distinction between *Gemeinschaft* and *Gesellschaft*; Tönnies, 1887/1957), Wirth (e.g., an urban society characterized by the relative absence of intimate personal acquaintanceships and superficial and transitory human relations; Wirth, 1938), and Simmel (e.g., the idea that urbanization is associated with a frenetic and stressed way of life; Simmel, 1903). Taken together, the writings of these thinkers suggest that urbanization is associated with lower levels of social support, social integration, social cohesion, social involvement, and sense of community. This idea that rural dwellers are happier and more satisfied with their lives than urban dwellers did not receive much empirical support. Although research on rural-urban differences in subjective well-being has been relatively sparse (Sørensen, 2014), the existing literature is controversial due to the inconsistent findings.

### 1.1 The Literature on Rural-Urban Differences in Subjective Well-Being

Using data from fifteen countries around the world, Peiró (2006) revealed that the findings do not support the contention that subjective well-being is higher in rural areas. Likewise, using data from twenty-five European Union (EU) member states, Shucksmith et al. (2009) observed no rural-urban difference in subjective well-being. On the other hand, Sørensen (2014) found that rural dwellers from twenty-seven member countries of the European Union report significantly higher life satisfaction than EU city dwellers. Similarly, several studies of single countries documented higher levels of subjective well-being among rural residents compared to urban residents in China (Knight & Gunatilaka, 2010), Finland (Morrison & Weckroth, 2018), the United States (e.g., Berry & Okulicz-Kozaryn, 2011; Okulicz-Kozaryn & Mazelis, 2018; Winters & Li, 2016), New Zealand (Morrison, 2011), and Scotland (Dunlop et al., 2016; Gilbert et al., 2016). To complicate the issue, even more, there is also some evidence showing that subjective well-being is higher among urban dwellers than among rural counterparts. Želinský et al. (2021) demonstrated that

living in denser settlements in Slovakia is linked to higher levels of subjective well-being. Lenzi and Perucca (2016) found that Romanian people living in large cities were more satisfied than those living in rural areas. In addition, Lenzi and Perucca (2021) found a positive relationship between urbanization and individual well-being in the European Union member countries. In a comparative analysis of four different urbanized areas in Italy, Viganó et al. (2019) showed that well-being is higher in urban contexts compared to semi-urban areas. Finally, using data from the Gallup World Poll, researchers have found that urban residents report, on average, higher subjective well-being than rural residents (Burger et al., 2020; Easterlin et al., 2011).

According to Sørensen (2014), one reason for these inconsistencies in the literature is that the rural-urban definitions vary markedly, and, in some cases, a clear definition is missing. Moreover, some studies, such as that of Shucksmith et al. (2009), rely on subjective perceptions of the respondents (e.g., participants were asked to describe the place in which they live). Sørensen (2014) argues that a more objective approach (e.g., asking participants to state the number of inhabitants in the place or town in which they live) would be more appropriate and could reduce the inconsistencies.

Another reason for the inconsistencies in the literature may have to do with the rural happiness paradox (Sørensen, 2021) or the urban paradox (Morrison, 2021). This paradox revolves around the findings that rural inhabitants tend to report higher subjective well-being than their urban counterparts in developed countries, whereas the opposite trend is observed among developing countries (e.g., Berry & Okulicz-Kozaryn, 2009; Easterlin et al., 2011; Requena, 2016; Sørensen, 2021). In a similar vein, Shucksmith et al. (2009) found that urban-rural differences in subjective well-being slightly favor rural areas among the richest countries in the European Union, whereas in the poorer countries of the east and south, subjective well-being was found to be lower in the rural areas. Therefore, in the richest countries, higher levels of subjective well-being in rural contexts may be expected.

## 1.2 Effect Size and Nonlinear Effects

In the present study, I proposed that the inconsistencies in the literature may also be due to very small effect sizes and a nonlinear rather than linear association between the number of inhabitants of the place of residence and subjective well-being. First, the small effect size of the phenomenon may be one possible explanation for the inconsistent results across studies. In the literature on the association between rural-urban context and subjective well-being, researchers tended to use large sample sizes and focus on statistical significance. However, statistical significance should not be confused with substantive or practical significance (Cohen, 1988; Kelley & Preacher, 2012). When using large samples, it is quite possible that negligible associations are statistically significant (e.g., Anderson et al., 2000; Capraro, 2004; Ferguson, 2009; Kirk, 1996; Vacha-Haase & Thompson, 2004). Indeed, statistical significance may limit the interpretations of a finding and cannot evaluate result importance because practical significance requires the evaluation of the effect size defined as “a quantitative reflection of the magnitude of some phenomenon that

is used for the purpose of addressing a question of interest” (Kelley & Preacher, 2012, p. 137). Therefore, because statistical significance alone does not give information about the size or importance of the relationship, it is crucial to focus on the effect size and the concept of practical significance (Ferguson, 2009; Kirk, 1996). In the literature on subjective well-being, Geerling and Diener (2020) stressed the “the importance of thinking critically about the relative impact of these predictor variables on SWB, and urge future researchers to consider calculating effect sizes in order to better understand and communicate the effects of these variables.” According to the authors, a focus on the magnitude of effect sizes represents an important advance in the field. Although there have been previous attempts to estimate the strength of the relationship between rural-urban context and subjective well-being (Sørensen, 2014), the validity of the findings has to be treated with caution. Given the discussion above, the following research question is raised:

Research question 1 (RQ1): What is the effect size of the relationship between living in rural-urban areas and subjective well-being?

Second, in their study on the association between urbanization and life satisfaction in European countries in the period 2004–2011, Lenzi and Perucca (2018) found that life satisfaction is greater in regions characterized by intermediate levels of urbanization. Viganó et al. (2019) showed that well-being is lowest in semi-urban areas compared to rural and urban contexts. The higher subjective well-being among residents in areas characterized by intermediate levels of urbanization could be termed a positive compromise effect. A positive compromise effect suggests that a place will be associated with higher levels of subjective well-being when its attributes are not the extremes of the rural-urban continuum. Such a compromise could be considered a good tradeoff between positive and negative aspects of living in both rural and urban contexts. On the contrary, a negative compromise effect suggests that an intermediate level of urbanization is the worst option because of the imbalance in positive and negative aspects of residing in both rural and urban contexts. A compromise effect indicates that the rural-urban differentials in subjective well-being may be hypothesized as multidimensional in nature, rather than a bipolar continuum ranging from rural to urban. Therefore, based on this evidence, a nonlinear relationship between categories of rural-urban areas and subjective well-being may be expected:

Research question 2 (RQ2): Are categories of rural-urban areas nonlinearly related to subjective well-being?

### 1.3 The Present Study

With the above background, the present research builds on the literature by investigating the relationship between rural-urban residence and subjective well-being. By exploring the magnitude and shape of the relationship between living in rural-urban areas and subjective well-being, the current study takes an important research

gap into account. In the present study, I examined such relationship in 115 countries around the world for the 1981–2022 period. The focus of the present study is on subjective well-being. Specifically, I used reports of happiness and life satisfaction which constitute two major dimensions of subjective well-being (e.g., Diener et al., 1999). The rural-urban location was defined using categories representing the number of inhabitants. According to Sørensen (2014), this definition is less constructivist in nature and can contribute significantly to the research on rural-urban differences in subjective well-being. Taking into account the rural happiness paradox (Sørensen, 2021) and the fact that in the twelve richest countries of the European Union (EU-12 High) the urban-rural differences in subjective well-being slightly favoring rural areas are particularly marked (Shucksmith et al., 2009; Sørensen, 2014), additional analyses were carried out focusing on this cluster of richest EU countries (EU-12 High).

## 2 Method

### 2.1 Data and Methods

The present study used data from the European Values Study (EVS) and the World Values Survey (WVS). Specifically, I used the EVS Trend File 1981–2017 (EVS, 2021) which is constructed from the five EVS waves including 159 surveys and more than 223,000 respondents from 49 countries/regions. The World Values Survey time-series dataset for the period 1981–2022 (Inglehart et al., 2022) was also used. This dataset combines seven WVS surveys including more than 440,000 respondents from 106 countries/regions worldwide. The joint EVS-WVS time-series dataset covers a 41-year period and provides data from 115 countries/regions worldwide. The present study used data from 507,452 participants for whom data on the number of inhabitants in their residence was available.

To measure subjective well-being, participants from both surveys (i.e., EV and WVS) were asked the following two questions:

- “Taking all things together, would you say that you are very happy, rather happy, not very happy, or not at all happy?” (Happiness).
- “All things considered, how satisfied are you with your life as a whole these days?” (satisfaction with life).

A ten-point response option ranging from 1 (*completely dissatisfied*) to 10 (*completely satisfied*) and a four-point response option ranging from 1 (*very happy*) to 4 (*not at all happy*) were used to assess life satisfaction and happiness, respectively. Responses to this question regarding happiness were re-coded so that a high value indicates higher happiness.

In the WVS time-series dataset for the period 1981–2022, settlement size was measured using eight categories: 2,000 or fewer; 2,001–5,000; 5,001–10,000; 10,001–20,000; 20,001–50,000; 50,001–100,000; 100,001–500,000; 500,000 or more. In the EVS Trend File 1981–2017, the level of missingness of the same

variable with eight categories was high (> 50%). Therefore, I decided to use a five-category measure of settlement size (i.e., 5,000 or fewer; 5,000–20,000, 20,000–100,000, 100,000–500,000, 500,000 or more) which had a lower level of missingness in the EVS (i.e., 15%).

Important sociodemographic variables such as gender, age, education, employment status, marital status, and income were included in the analysis. The choice of control variables for inclusion in models was based on the selection of variables with minimal missingness.

## 2.2 Statistical Analysis

Stata v.17 was used. The research questions were answered using hierarchical linear modeling (also known as multilevel analysis or mixed models). I used multilevel mixed-effects linear regression analyses with participants nested within the country. Complete case analyses were conducted (i.e., including participants with complete information on all the variables). However, I tested the robustness of the results using multiple imputations (with 10 imputed data sets) and I obtained results similar to those from the complete case analysis (results are available from the corresponding author upon request). Multilevel mixed-effects linear regression analyses were conducted using the robust or sandwich estimator of variance. To adjust for multiple tests, I used the Šidák correction which is similar to the Bonferroni correction but is slightly less conservative.

As the measure of effect size, explained variance or  $R$ -squared can be used as indices of effect size (Hoffman & Walters, 2022). Specifically, I chose the  $R$ -squared measure provided by Snijders and Bosker (2012) —  $R^2(\text{S\&B})$  — because it is widely used and easy to interpret (LaHuis et al., 2019). According to Cohen (1992), small, medium, and large effects correspond to  $\Delta R^2 = 0.02$ , 0.13, and 0.26, respectively. In addition, according to the guidelines of Ferguson (2009), the recommended minimum effect size representing a “practical” significant effect is  $\Delta R^2 = 0.04$ .

To test for departure from linearity, the NLCHECK module in Stata (Jann, 2008) was used. This module categorizes the predictor into bins creating  $k - 1$  dummy variables, refits the model including dummy variables for the bins, and compares the fit of the more complex model with  $k - 1$  dummy variable with that of the parsimonious linear model. A significant  $F$ -test implies a better fit for the more complex model compared to the linear prediction model. In other words, a significant test result indicates a violation of the linearity assumption.

## 3 Results

Four preliminary tests of the linearity assumption for the relationship between subjective well-being and rural-urban residence were carried out (RQ2). The linearity assumption appeared to be violated when using life satisfaction as the outcome, data from  $\text{EVS} = F(3, 188175) = 266.70$ ,  $p < .001$ , data from  $\text{WVS} = F(6, 314420) = 51.29$ ,  $p < .001$ , as well as when using happiness as the outcome, data from  $\text{EVS} = F(3, 185061) = 224.67$ ,

$p < .001$ , data from  $WVS = F(6, 314676) = 44.60$ ,  $p < .001$ . Therefore, in the present study, rural-urban residence was used as a factor (categorical) variable in multilevel mixed-effects linear regression.

Results from the multilevel analysis using the European Values Study are presented in Table 1 (RQ1). The findings indicate that living in a place with more than 20,000 inhabitants was associated with lower levels of life satisfaction compared to those living in a place with less than 5,000 inhabitants. Life satisfaction did not differ between places with less than 5,000 inhabitants and with 5,000–20,000 inhabitants. Happiness scores were not statistically different when comparing places with less than 5,000 inhabitants and with 5,000–100,000 inhabitants. People living in places with more than 100,000 inhabitants reported lower levels of happiness compared to those living in places with less than 5,000 inhabitants. The change in  $R^2$  (S&B) comparing a model with only control variables and another with rural-urban residence added was very small (0.004 for life satisfaction and 0.002 for happiness).

Table 2 displays the findings from the multilevel analysis using the World Values Survey (RQ1). People living in places with less than 2,000 inhabitants did not report similar scores on life satisfaction compared to the other participants. Rural-urban differentials in life satisfaction were not statistically significant. People living in places with 500,000 inhabitants or more reported lower scores on happiness compared to those living in places with less than 2,000 inhabitants. The change in  $R^2$  (S&B) comparing a model with only control variables and another with rural-urban residence added was negligible (0.000 for life satisfaction and 0.000 for happiness).

Figure 1 (top panel) displays estimated marginal means for life satisfaction and happiness after adjustment for covariates (RQ2). Pairwise comparisons (with Šidák's adjustment for multiple comparisons) of the estimated marginal means for life satisfaction and happiness were used to assess the significance of the differences between the different levels of rural-urban residence (Table 3). Specifically, means that are not statistically significantly different were grouped. Using data from the WVS, findings revealed that people living in places with 5–20,000 inhabitants reported higher levels of happiness compared to people living in places with 500,000 inhabitants or more. In addition, people living in places with 20–50,000 inhabitants reported higher life satisfaction compared to people living in places with 500,000 inhabitants or more. Using data from the EVS, the analyses indicated that participants residing in places with 100,000 inhabitants or less reported higher levels of happiness than people living in places with 500,000 inhabitants or more. Moreover, people residing in places with 5–20,000 inhabitants reported higher scores on life satisfaction compared to people living in places with 20,000 inhabitants or more.

To examine the validity of the strength of the effect regarding the rural-urban difference in subjective well-being, the same analyses were conducted by selecting the cluster of richest EU countries (EU-12 High: Austria, Belgium, Denmark, Germany, Finland, France, Ireland, Italy, Luxembourg, the Netherlands, Sweden, and the UK) that was used by Sørensen (2014). Data from the European Values Study were used for this purpose. Findings from the multilevel analysis among the EU-12 High revealed that the change in  $R^2$  (S&B) comparing a model with only control variables and another with rural-urban residence added was very small (0.003 for life satisfaction and 0.002 for happiness).

**Table 1** Model parameters from multilevel models predicting life satisfaction and happiness using data from the European Values Study (1981–2017)

	Life satisfaction				Happiness			
	<i>b</i>	<i>SE</i>	<i>p</i>	95% CI	<i>b</i>	<i>SE</i>	<i>p</i>	95% CI
Income	0.12	0.01	<0.001	0.11, 0.14	0.03	0.00	<0.001	0.03, 0.04
Gender								
Male <sup>a</sup>	—	—	—	—	—	—	—	—
Female	0.09	0.02	<0.001	0.05, 0.13	0.04	0.01	<0.001	0.03, 0.05
Age	0.00	0.00	0.014	-0.01, 0.00	0.00	0.00	<0.001	0.00, 0.00
Marital status								
Married <sup>a</sup>	—	—	—	—	—	—	—	—
Living as married	-0.08	0.05	0.116	-0.17, 0.02	-0.02	0.02	0.186	-0.05, 0.01
Divorced	-0.46	0.04	<0.001	-0.54, -0.38	-0.21	0.01	<0.001	-0.24, -0.19
Separated	-0.80	0.05	<0.001	-0.90, -0.70	-0.32	0.02	<0.001	-0.36, -0.28
Widowed	-0.44	0.04	<0.001	-0.52, -0.37	-0.24	0.01	<0.001	-0.27, -0.21
Single/Never married	-0.15	0.04	<0.001	-0.23, -0.07	-0.13	0.01	<0.001	-0.15, -0.10
Age completed education								
<=12 years <sup>a</sup>	—	—	—	—	—	—	—	—
13 years	0.13	0.09	0.158	-0.05, 0.30	0.01	0.03	0.663	-0.05, 0.07
14 years	0.29	0.07	<0.001	0.14, 0.43	0.05	0.03	0.040	0.00, 0.11
15 years	0.21	0.07	0.003	0.07, 0.35	0.07	0.02	0.004	0.02, 0.11
16 years	0.20	0.08	0.011	0.05, 0.35	0.06	0.02	0.013	0.01, 0.11
17 years	0.24	0.07	0.001	0.10, 0.38	0.08	0.02	0.001	0.03, 0.13
18 years	0.41	0.08	<0.001	0.27, 0.56	0.12	0.02	<0.001	0.07, 0.16
19 years	0.46	0.08	<0.001	0.31, 0.62	0.13	0.03	<0.001	0.08, 0.18
20 years	0.40	0.08	<0.001	0.25, 0.55	0.13	0.02	<0.001	0.08, 0.18
>=21 years	0.53	0.09	<0.001	0.36, 0.71	0.15	0.03	<0.001	0.09, 0.20
Employment status								
Full time <sup>a</sup>	—	—	—	—	—	—	—	—
Part time	-0.06	0.03	0.084	-0.12, 0.01	0.00	0.01	0.691	-0.02, 0.02
Self employed	0.06	0.04	0.179	-0.03, 0.14	0.02	0.01	0.106	0.00, 0.04
Retired	0.12	0.04	0.005	0.04, 0.21	0.04	0.01	<0.001	0.02, 0.06
Housewife	0.12	0.05	0.012	0.03, 0.22	0.05	0.01	0.001	0.02, 0.08
Students	0.23	0.05	<0.001	0.13, 0.33	0.08	0.01	<0.001	0.05, 0.11
Unemployed	-0.60	0.10	<0.001	-0.79, -0.40	-0.12	0.03	<0.001	-0.17, -0.07
Other	-0.45	0.09	<0.001	-0.62, -0.28	-0.10	0.02	<0.001	-0.15, -0.05
Rural-urban								
< 5,000 <sup>a</sup>	—	—	—	—	—	—	—	—
5,000–20,000	0.01	0.03	0.810	-0.06, 0.07	0.00	0.01	0.563	-0.01, 0.02
20,000–100,000	-0.08	0.04	0.035	-0.16, -0.01	-0.01	0.01	0.634	-0.03, 0.02
100,000–500,000	-0.13	0.03	<0.001	-0.20, -0.07	-0.02	0.01	0.019	-0.04, 0.00
>=500,000	-0.19	0.05	<0.001	-0.29, -0.09	-0.05	0.01	<0.001	-0.07, -0.02

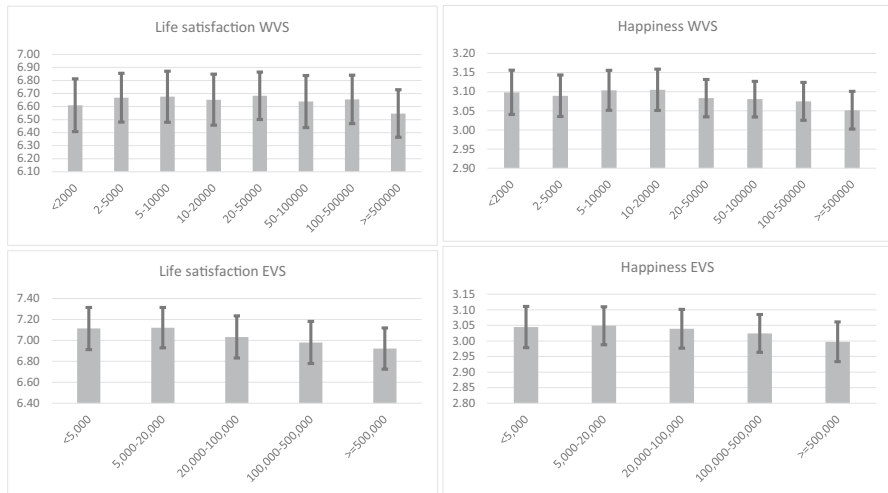
CI = confidence interval; <sup>a</sup> reference category



**Table 2** Model parameters from multilevel models predicting life satisfaction and happiness using data from the World Values Survey (1981–2022)

	Life satisfaction				Happiness			
	<i>b</i>	<i>SE</i>	<i>p</i>	95% CI	<i>b</i>	<i>SE</i>	<i>p</i>	95% CI
Income	0.22	0.01	<0.001	0.19, 0.24	0.05	0.00	<0.001	0.04, 0.05
Gender								
Male <sup>a</sup>	—	—	—	—	—	—	—	—
Female	0.06	0.02	0.001	0.02, 0.10	0.02	0.01	<0.001	0.01, 0.03
Age	0.00	0.00	0.044	0.00, 0.00	0.00	0.00	<0.001	0.00, 0.00
Marital status								
Married <sup>a</sup>	—	—	—	—	—	—	—	—
Living as married	-0.11	0.03	<0.001	-0.17, -0.06	-0.05	0.01	<0.001	-0.08, -0.02
Divorced	-0.42	0.04	<0.001	-0.50, -0.34	-0.21	0.01	<0.001	-0.24, -0.19
Separated	-0.55	0.04	<0.001	-0.63, -0.47	-0.23	0.01	<0.001	-0.25, -0.20
Widowed	-0.29	0.03	<0.001	-0.35, -0.24	-0.19	0.01	<0.001	-0.22, -0.17
Single/Never married	-0.19	0.03	<0.001	-0.26, -0.13	-0.11	0.01	<0.001	-0.13, -0.09
Education level								
Lower <sup>a</sup>	—	—	—	—	—	—	—	—
Middle	0.11	0.05	0.025	0.01, 0.21	0.04	0.01	0.002	0.01, 0.06
Upper	0.16	0.05	0.001	0.06, 0.26	0.05	0.01	<0.001	0.02, 0.08
Employment status								
Full time <sup>a</sup>	0.00	0.00	<0.001	0.00, 0.00	0.00	0.00	<0.001	0.00, 0.00
Part time	0.00	0.03	0.886	-0.06, 0.06	0.00	0.01	0.745	-0.01, 0.02
Self employed	-0.01	0.04	0.824	-0.08, 0.06	0.01	0.01	0.560	-0.01, 0.03
Retired	0.10	0.05	0.045	0.00, 0.21	0.03	0.02	0.040	0.00, 0.06
Housewife	0.08	0.04	0.026	0.01, 0.15	0.03	0.01	0.011	0.01, 0.05
Students	0.18	0.07	0.007	0.05, 0.31	0.07	0.01	<0.001	0.04, 0.10
Unemployed	-0.33	0.04	<0.001	-0.40, -0.26	-0.09	0.01	<0.001	-0.11, -0.06
Other	-0.25	0.08	0.001	-0.40, -0.10	0.00	0.02	0.869	-0.05, 0.04
Rural-urban								
<2,000 <sup>a</sup>	—	—	—	—	—	—	—	—
2–5,000	0.06	0.05	0.206	-0.03, 0.15	-0.01	0.01	0.447	-0.03, 0.01
5–10,000	0.07	0.05	0.185	-0.03, 0.16	0.01	0.02	0.763	-0.03, 0.04
10–20,000	0.04	0.06	0.491	-0.08, 0.16	0.01	0.02	0.694	-0.03, 0.04
20–50,000	0.07	0.05	0.137	-0.02, 0.17	-0.02	0.02	0.320	-0.05, 0.01
50–100,000	0.03	0.05	0.593	-0.07, 0.13	-0.02	0.02	0.305	-0.05, 0.02
100–500,000	0.04	0.05	0.393	-0.06, 0.15	-0.02	0.02	0.169	-0.06, 0.01
>=500,000	-0.06	0.05	0.241	-0.17, 0.04	-0.05	0.02	0.005	-0.08, -0.01

CI = confidence interval; <sup>a</sup> reference category



**Fig. 1** Estimated marginal means for subjective well-being (left panel: life satisfaction; right panel: happiness) by study (top panel: WVS; bottom panel: EVS). *Note:* Error bars represent 95% confidence interval

## 4 Discussion

Living in the countryside has been represented explicitly or implicitly using a romantic and stereotypical imagery associated with quality of life (Želinský et al., 2021). The main aim of the current study was to investigate the shape (RQ2) and the magnitude (RQ1) of the relationship between rural-urban context and subjective well-being. Toward this aim, data from the current study provided two main results. First, after adjusting for important sociodemographic variables, the effect size of the relationship between rural-urban context and subjective well-being could be considered very small or even trivial. Second, nonlinear associations were observed between rural-urban context and subjective well-being. Collectively, these results provide new insights into the rural-urban differentials in subjective well-being.

In the current research, the guidelines of Cohen (1988) for determining the magnitude of the effect size were used and the practical significance of effects was appraised using the recommendations of Ferguson (2009). Despite the statistically significant associations, the magnitude of the effect size was so small or negligible that it could not even be considered of any “practical” significance based on the recommendations of Ferguson (2009). It is interesting to note that the magnitude of the effect of rural-urban residence on subjective well-being was very small even when the analysis was limited to the subsample richest EU countries in which, according to the rural happiness paradox (Sørensen, 2021) or the urban paradox (Morrison, 2021), a stronger rural-urban differential is expected.

A focus on statistical significance may have led to an overestimation of the effects in past research. Statistical significance may have been achieved because of the large sample size which could have overpowered the analyses. The present study evaluated substantive significance above and beyond statistical significance and revealed

**Table 3** Estimated marginal means, standard errors, and pairwise comparisons for associations between rural-urban place of living and subjective well-being (with Šidák's adjustment for multiple comparisons)

	<i>M</i>	<i>SE</i>	Groups
Outcome: Happiness; Data: WVS			
<2,000	3.10	0.03	AB
2–5,000	3.09	0.03	AB
5–10,000	3.10	0.03	B
10–20,000	3.11	0.03	B
20–50,000	3.08	0.03	AB
50–100,000	3.08	0.02	AB
100–500,000	3.07	0.03	AB
>=500,000	3.05	0.03	A
Outcome: Life satisfaction; Data: WVS			
<2,000	6.61	0.10	AB
2–5,000	6.67	0.10	AB
5–10,000	6.68	0.10	AB
10–20,000	6.65	0.10	AB
20–50,000	6.68	0.09	B
50–100,000	6.64	0.10	AB
100–500,000	6.65	0.09	AB
>=500,000	6.55	0.09	A
Outcome: Happiness; Data: EVS			
<5,000	3.04	0.03	B
5,000–20,000	3.05	0.03	B
20,000–100,000	3.04	0.03	B
100,000–500,000	3.02	0.03	AB
>=500,000	3.00	0.03	A
Outcome: Life satisfaction; Data: EVS			
<5,000	7.11	0.10	CD
5,000–20,000	7.12	0.10	D
20,000–100,000	7.03	0.10	BC
100,000–500,000	6.98	0.10	AB
>=500,000	6.92	0.10	A

Means sharing a letter in the group label are not significantly different at the 5% level. WVS=World Values Survey. EVS=European Values Study

that there remains uncertainty as to whether a true relationship exists between rural-urban residence and subjective well-being. According to Ioannidis (2005, p. 0697), “The smaller the effect sizes in a scientific field, the less likely the research findings are to be true.”

I am aware that a certain degree of arbitrariness in defining any cutoff points may exist. Indeed, Cohen's guidelines were based primarily on qualitative impressions. However, it should be noted that methodological studies have been conducted and empirical support for the cut-off value for a small effect size has been provided (Gignac & Szodorai, 2016). I also believe that an overreliance on effect

sizes should be avoided because even a small effect size applied to the whole population could be important. In an effort to avoid such overreliance, it is possible to establish an empirical context for the effect size by comparing the effect of rural-urban residence with that of income (i.e., one well-established socio-demographic correlate of subjective well-being). Geerling and Diener (2020) found that the magnitude of the effect size for the relationship between income and life satisfaction is large. The income effect size was approximately 188% larger than that for rural-urban differences in subjective well-being. Moreover, the magnitude of the relationship between income and happiness (Easterlin, 2001) was approximately 172% larger than that regarding rural-urban differences in subjective well-being.

The analysis of estimated marginal means suggests that intermediate levels of urbanization may be a good compromise between the properties of urban and rural areas. Although less investigated in the literature, the findings of the present study are in line with those of Lenzi and Perucca (2018) who found that the levels of life satisfaction are higher in regions characterized by intermediate levels of urbanization. This good compromise effect may provide new insights for a better understanding of rural-urban differentials in subjective well-being. Notwithstanding, this effect should be treated with caution due to the very small effect size. One of the main contributions of the present research is to show that the relationship between rural-urban residence and subjective well-being may be more often nonlinear than linear.

In the literature on the rural-urban differentials in subjective well-being, many explanations have been provided to account for higher subjective well-being among rural residents, such as higher insecurity (Knight & Gunatilaka, 2010), living close to nature and spatial location satisfaction (Sørensen, 2014), neighborhood/ community satisfaction, perceived safety, noise, and cleanliness (Mouratidis, 2019), intrinsic values focused on the community such as benevolence and conformity (Morrison & Weckroth, 2018), higher access to natural amenities and higher bonding social capital (Sørensen, 2021), migration patterns (Carlsen & Leknes, 2022), selection and composition effects (Burger, 2021), and mental health indicators and perceived loneliness (Weckroth et al., 2022). However, at the same time, different explanations have been proposed for the higher levels of subjective well-being in urban contexts such as better economic prospects and higher living standards (Burger et al., 2020; Requena, 2016). Taken in sum, the evidence points to a wide variety of pros and cons associated with living in rural or urban areas that vary from setting to setting and the effect on subjective well-being could be the result of a complex interplay between these factors. For instance, subjective well-being in rural areas may be similar to those in urban areas if urban problems associated with noise and fear of crime are mitigated (Mouratidis, 2019). In addition, there is evidence of a significant cross-country and cross-regional variation of rural-urban differences in subjective well-being (Easterlin et al., 2011; Navarro et al., 2020; Wang & Wang, 2016). These results of past research as well as the findings of the present study suggest the rural-urban differential in well-being may be the result of a complex multifactorial process rather than a simple direct effect.

## 4.1 Limitations and Strengths

A limitation of the current research was that data were collected using a subjective assessment approach (i.e., interviews and questionnaires). Such subjective assessments may be affected by methodological issues, such as social desirability bias, recall bias, and common methods bias. However, there are also general advantages of using subjective measures of well-being such as the fact that a subjective approach “recognizes that everyone has his or her own ideas about happiness and the good life, and that observed behavior is an incomplete indicator of individual well-being” (Frey, 2008, p. 17). Another limitation is the use of a single question to measure life satisfaction and happiness. It should be noted that the use of a single item to assess a single component of subjective well-being is widely accepted in the literature (e.g., Requena, 2016; Sørensen, 2014) and their psychometric properties are similar compared to the use of multiple-item (e.g., Abdel-Khalek, 2006; Cheung & Lucas, 2014; Jovanović & Lazić, 2020). In addition, tests of measurement invariance are not possible with single items (e.g., Cheung & Rensvold, 2002). Therefore, it cannot be clarified whether the meaning of the items and responses themselves might differ across countries due to methodological reasons. A multi-item assessment to examine the structural equivalence of latent constructs studied across countries might be an avenue for future research examining the study questions. In the present study, I used multilevel mixed-effects linear regression analyses with participants nested within the country. However, coefficients might vary to some extent at different levels (e.g., municipal, provincial, and regional levels). The EVS Trend File 1981–2017 does not provide information about these different levels. Although it is argued that future research should extend the analysis to include additional levels of nesting, I am not aware of any theory which would suggest that such inclusion can influence the effect size of the relationship between rural-urban place of residence and subjective well-being. Finally, it is well known that a cross-sectional design limits any conclusions regarding causal relationships. It should be noted, however, that the investigation of causal relationships is beyond the scope of the present study.

One strength of the current research is the inclusion of countries throughout the world. Another strength of the present study lies in its coverage of a wide time span of 41 years. To my knowledge, to date, no study has investigated rural-urban differentials in subjective well-being using both a large data set including a large number of countries worldwide and observations covering a period of 41 years.

## 4.2 Conclusion

In conclusion, findings from this study indicate that after controlling for covariates, the relationship between rural-urban place of residence and subjective well-being is nonlinear and its magnitude is very small or even negligible. The findings of the current study do not mean that the size of the place of residence does not play a role in subjective well-being. One hypothesis may be that the size of the place of residence represents a distal variable that has an indirect effect on subjective well-being.

Another possibility is that the effect of the degree of urbanization on subjective well-being is a complex interplay of personal and contextual characteristics (i.e., moderation effects). Therefore, this study suggests that it is time to move beyond research approaches that focus solely on the associations between rural-urban residence and subjective well-being. The unraveling of the mediators and the moderators of rural-urban differentials deserves more attention in future research. For instance, the question may be: Why, when, how, and for whom do the well-being advantages of living in rural areas outweigh its disadvantages? What the current study suggests, is that rural-urban residence alone does not explain a significant portion of the explained variance in subjective well-being.

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**Data Availability** The Integrated Values Surveys (IVS) dataset 1981–2022 was constructed by merging the EVS Trend File 1981–2017 (<https://doi.org/10.4232/1.14021>) and the WVS trend 1981–2022 data-set (<https://doi.org/10.14281/18241.23>).

## Declarations

**Ethics Approval** The authors have not collected the data for this study. The data was collected by the World Values Survey. The ethical review and authorization for the World Values Survey wave six study is granted by the World Values Survey Association Secretariat Executive Committee. Informed consent to participate in the study was obtained from participants.

**Conflicts of Interest** The author certifies that he has no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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