

Revisiting the Determinants of Subjective Well-Being in a Developing Context: Longitudinal Evidence from South Africa

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ABSTRACT

Maximizing citizens' happiness and life satisfaction—commonly referred to as subjective well-being (SWB) is a key objective of policy frameworks developed by international organizations. To design effective interventions that enhance SWB, it is essential to identify its main determinants. However, much of the existing empirical evidence is based on non-representative samples and is largely drawn from developed countries, limiting their applicability to developing contexts. Using data from all five waves of the National Income Dynamics Study (NIDS) panel, this study investigates the determinants of subjective well-being among urban and rural populations in South Africa. The analysis employs a random effect ordered probit (REOP) model to control for unobserved individual heterogeneity, while robustness is assessed using a pooled ordinary least squares (OLS) approach. The results show that income, marital status, religious participation, gender, access to electricity and clean water, and age (squared) are significant determinants of SWB in the full sample. Employment is positive but insignificant overall, though it is positive and significant in rural areas and negative and insignificant in urban areas. Overall, the findings highlight the importance of income and basic services in enhancing well-being, as well as important urban–rural differences in the determinants of happiness.

Keywords: Subjective well-being; rural and urban; National Income Dynamics Study; South Africa, pane data

JEL Classification: D63, Z18

INTRODUCTION

Happiness is widely regarded as a universal human objective and has increasingly become a central policy concern in the global pursuit of well-being. As a result, individuals across societies continuously strive to maximise their level of happiness. The philosophical foundations of this view can be traced back to Aristotle, who famously described happiness as “the only good that is good in itself” (Aristotle, as cited in Helliwell et al., 2012). Building on this philosophical foundation, a substantial body of literature has examined the concept of happiness (see, for example, Diener & Lucas, 2000; Ebrecht et al., 2004; Fredrickson et al., 2008; Graham et al., 2004; Singh et al., 2023; Behera et al., 2024). In practice, efforts to improve income, housing, infrastructure, healthcare, and education are all ultimately aimed at enhancing individual well-being, making happiness a lifelong aspiration that transcends race, religion, and socio-economic status.

Empirical evidence reinforces the centrality of happiness in human life. For example, Diener and Lucas (2000), based on a large cross-country survey of approximately 7,000 respondents across 42 countries, found that 69% of individuals identified happiness as their highest priority. Similarly, Ebrecht et al. (2004) show that happier

individuals tend to recover more quickly from illness and are less susceptible to infections, while Veenhoven (2008) further argues that higher levels of happiness are associated with greater resilience to common diseases and improved overall health outcomes.

Two main approaches have been used in the measurement of well-being (Nanor et al., 2018). The first relies on subjective indicators, such as individuals' perceptions of safety, neighbourhood quality, and overall life satisfaction (Marans & Stimson, 2011). The second approach is based on objective indicators, including income, employment status, and educational attainment (Berhe et al., 2013; Haslauer et al., 2015). At the same time, there is an ongoing debate in the literature regarding urban–rural disparities in well-being. Musil and Müller (2008) argue that rural areas, particularly those near regional peripheries, often face structural disadvantages such as limited employment opportunities, weak infrastructure, and inadequate transport systems. These conditions tend to reduce well-being and increase the risk of social exclusion, a challenge that is often more severe in developing countries.

A substantial strand of the literature (see for example, Pospéč et al., 2009; Ouredníček et al., 2011; Temelová et al., 2011; Bernard et al., 2016) documents the persistent disadvantages faced by rural households, including limited job opportunities, poor access to transport, underdeveloped civic infrastructure, and declining community life. Bernard et al. (2016) further emphasise the cumulative nature of rural disadvantage, whereby multiple vulnerabilities reinforce one another due to weak opportunity structures. In contrast, Pospéč et al. (2009) argue that quality of life differences between rural and urban areas may be diminishing, particularly in highly urbanised and well-integrated societies. However, while this convergence may hold in parts of the Global North, it is less evident in the Global South, where rural development remains a major policy concern. The World Happiness Report 2020 highlights relatively low happiness levels in Sub-Saharan Africa and underscores notable urban–rural disparities (Helliwell et al., 2020). On average, urban populations report a life evaluation score of 5.48 compared to 5.07 for rural populations, representing a gap of 0.41 points on the 11-point Cantril scale. This disparity is even larger in Sub-Saharan Africa, reaching 0.56 points. In South Africa, where nearly half of the population resides in rural areas, ongoing structural changes in the economy, climate, demographics, and living conditions are likely to have significant implications for subjective well-being.

Despite the growing global emphasis on subjective well-being as a central policy objective, the empirical literature remains fragmented, geographically biased, and methodologically limited (see for example, Powdthavee, 2003; Hinks & Gruen, 2007; Blaauw & Pretorius, 2013; Kollamparambil, 2019; Kollamparambil, 2020). Much of the existing evidence is derived from cross-sectional studies and non-representative samples, predominantly in developed countries, thereby constraining the external validity and policy relevance of these findings for developing economies. In particular, there is a paucity of longitudinal, nationally representative analyses that capture the dynamic and evolving nature of well-being in contexts characterized by persistent inequality, structural unemployment, and uneven access to basic services—features that typify many developing countries, including South Africa. Moreover, prior studies tend to adopt overly aggregated approaches (see for instance, Blaauw & Pretorius, 2013; Kollamparambil, 2019), implicitly assuming homogeneity in the determinants of well-being across populations. This masks critical spatial disparities between urban and rural areas, where socioeconomic conditions, labour market structures, and access to infrastructure differ substantially. As a result, the existing literature provides limited insights into how context-specific factors and spatial inequalities jointly shape subjective well-being, thereby weakening the effectiveness of targeted policy interventions. In addition, the dominant focus on income as the primary driver of well-being has led to the relative neglect of other equally important dimensions, particularly basic service delivery and social factors, which are central to quality of life in developing settings. From a methodological perspective, insufficient attention has been given to unobserved individual heterogeneity and the ordinal nature of well-being measures, raising concerns about the robustness and reliability of existing findings.

Against this backdrop, this study addresses these critical gaps by making several important and novel contributions to the subjective well-being and development literature. First, it advances existing research by providing nationally representative, longitudinal evidence from a developing country context using all five waves of the National Income Dynamics Study (NIDS), thereby overcoming the limitations of cross-sectional and small-sample studies that dominate the current literature. In doing so, the study responds to the growing call for context-specific and methodologically robust analyses of well-being in the Global South. Second, the paper contributes theoretically and empirically by explicitly disaggregating the determinants of SWB across urban and rural populations, revealing important spatial heterogeneities that are often overlooked in aggregate analyses. This nuanced approach uncovers differential effects of employment and socioeconomic factors, thereby refining our understanding of how structural inequalities shape well-being outcomes within developing economies. Third, the study introduces a multidimensional perspective on well-being by jointly examining economic (income, employment), demographic (age, gender, marital status), and infrastructural (access to electricity and clean water) determinants, highlighting the critical role of basic service delivery as a driver of life satisfaction. This extends the conventional income-centric view of well-being and aligns with broader development and social policy frameworks. Finally, from a methodological standpoint, the use of a random effects ordered probit model,

complemented by robustness checks using pooled OLS, strengthens the reliability of the findings by accounting for unobserved individual heterogeneity. Collectively, these contributions provide policy-relevant insights for governments and development practitioners by demonstrating that improving subjective well-being in developing contexts requires not only income growth but also targeted investments in basic services and spatially differentiated policy interventions.

The remaining section of the study is arranged as follows. Section 2 describe the literature review, while section 3 presents the study's methodology. Section 4 explain the empirical results and section 5 provide the conclusion of the study.

LITERATURE REVIEW

To maximize subjective well-being, it is essential to first identify the key determinants that shape individual happiness and life satisfaction. In recent years, research on the drivers of SWB has expanded significantly, reflecting its growing importance in economics, psychology, and public policy. Empirical studies consistently show that SWB is influenced by a combination of individual characteristics (such as age, education, employment status, income, family size, and marital status), macroeconomic conditions (including inflation, income inequality, unemployment, and GDP per capita), and institutional factors (such as governance quality, corruption, and institutional trust) (see for example, Frey & Stutzer, 2000; Clark et al., 2008; Bjørnskov et al., 2010). However, despite the extensive literature, findings remain mixed and often inconclusive, potentially due to differences in data sources, econometric approaches, time periods, and contextual heterogeneity across studies.

For example, education is widely regarded as a key determinant of SWB in both developed and developing countries. Educated individuals tend to enjoy higher incomes, better employment opportunities, and improved living standards, all of which contribute to higher life satisfaction. Education may also capture unobservable traits such as ability, motivation, and cognitive skills (Diener et al., 1995; Oswald, 1997). Using the British Household Panel Survey, Oswald and Powdthavee (2007) found, through OLS estimation, that higher educational attainment is associated with greater happiness. Similarly, Gerdtham and Johannesson (2001), using Swedish data and an ordered probit model, showed that secondary and tertiary education significantly increase life satisfaction, with notable indirect effects.

Income has also been extensively studied, with many findings confirming a positive relationship between income and SWB across both developed and developing economies (see for example, Cuñado & de Gracia, 2012; Pereira & Coelho, 2013). However, the Easterlin Paradox highlights that this relationship may not be linear, suggesting that increases in income do not always translate into proportional gains in happiness (Muresan & Ciunăș, 2020; Muresan et al., 2020). This has led to growing interest in nonlinear specifications, including U-shaped and inverted U-shaped relationships (Blanchflower, 2021). The disconnect between rising global GDP and relatively stagnant happiness levels further illustrates this complexity (World Bank, 2022). Empirical studies nonetheless often report a positive association, including evidence from Europe (Dorn et al., 2007), the United States (Alesina et al., 2004), and several developing regions (see for instance, Meyer & Dunga, 2014; Reyes-García et al., 2016; Borghesi & Vercelli, 2012).

Age is another important determinant of subjective well-being, although its effects are not uniform across studies. While many studies find a U-shaped relationship between age and happiness (see for example, Frey & Stutzer, 2000; Blanchflower & Oswald, 2004; Helliwell & Wang, 2011), others report more complex nonlinear patterns (Wunder et al., 2013; Proto & Rustichini, 2015). Some evidence even suggests a negative relationship between age and well-being (Shmotkin, 1989), while more recent studies in developing contexts confirm age as a significant determinant of SWB (Biyase & Bila, 2022). Gender differences in happiness have also produced inconclusive results. Earlier studies often treated gender as a control variable rather than a core explanatory factor (Matteucci & Lima, 2016), with many finding minimal or no differences between men and women (Fujita et al., 1991; Shmotkin, 1990; Clemente & Sauer, 1976). Stevenson and Wolfers (2009), using U.S. data, similarly concluded that gender is not a statistically significant predictor of subjective well-being.

Marital status has been widely associated with higher levels of happiness. Married individuals often report greater life satisfaction due to emotional support, stability, and social integration (Stutzer & Frey, 2006). However, longitudinal evidence suggests that the strength of this relationship may vary over time (Glenn & Weaver, 1988). Employment status is also consistently identified as a major determinant of SWB, with unemployment exerting a strong and negative effect on life satisfaction, particularly in urban settings (Oishi et al., 2012; Hinks & Gruen, 2007; Di Tella et al., 2001; Helliwell, 2003).

In contrast, the relationship between education and SWB is not always robust, with some studies reporting weak or statistically insignificant effects (Powdthavee, 2003; Hinks & Gruen, 2007; Mahadea & Rawat, 2008). Health, however, emerges more consistently as a strong predictor of happiness, with better health status associated

with higher levels of life satisfaction across both developed and developing countries (Veenhoven, 1996; Graham, 2008; Gerdtham & Johannesson, 2001).

Overall, literature highlights the multidimensional and context-dependent nature of subjective well-being. It also underscores the absence of a clear consensus on its determinants, reflecting variation in data, methodology, and institutional contexts. Against this background, the present study examines how a range of socioeconomic, demographic, and environmental factors shape subjective well-being, with particular emphasis on differences between urban and rural communities in South Africa.

DATA AND METHODOLOGY

This section may This study uses data from the National Income Dynamics Study (NIDS), the first nationally representative household panel survey in South Africa, administered biennially by the Southern Africa Labour and Development Research Unit (SALDRU) (DataFirst, 2021). The first wave was conducted in 2008 and covered approximately 7,300 households and over 28,000 individuals. Wave 2 (2010/2011) re-interviewed original respondents, along with their spouses and children, resulting in 6,787 households and 28,551 individuals (SALDRU, 2016; DataFirst, 2021). Wave 3, conducted in 2012, included 8,040 households and 32,633 individuals (Yu, 2012), while Wave 4 (2014/2015) interviewed 37,396 individuals (SALDRU, 2016). The most recent wave used in this study, Wave 5 (2017), covered approximately 13,000 households and 47,000 individuals (DataFirst, 2021). Table 1 presents the variables used in the analysis and their measurements. A detailed description of the NIDS dataset is available at www.nids.uct.ac.za.

Table1: Variables used in the empirical analysis.

Variables	Type	Description
Dependent variable		
SWB	Ordinal	Respondents to report on their current life satisfaction level
Covariates		
Age	Continuous	Age in years of respondents
Age-Squared	Continuous	Age in years of respondents squared
Income (log)	Continuous	Total of earnings from all sources over time
Employment status	Dummy	1=Employed 0=no
Gender	Dummy	1=Female 0=no
High school	Dummy	1=Completed matric 0=no
Tertiary	Dummy	1=Tertiary qualification 0=no
Health	Dummy	1=Good health 0=no
Water	Dummy	1=Access to piped water in the house/yard 0=no
Electricity	Dummy	1=Has electricity from the main source 0=no
White	Dummy	1=White 0=no
Asian/Indian	Dummy	1=Asian/Indian 0=no
Coloured	Dummy	1=Coloured 0=no
African	Dummy	1=African 0=no
Living with a partner	Dummy	1=Living with a partner 0=no
Married	Dummy	1=Married 0=no
Divorced	Dummy	1=Divorced 0=no
Widowed	Dummy	1=Widowed 0=no
Never Married	Dummy	1=Never Married 0=no

Source: Author's own calculations using NIDS (Wave 1,2,3,4 & 5)

Empirical model specification

Following the influential work of Winkelmann (2004) and Long and Freese (2006), this study uses a random effect ordered probit (REOP) model to examine the determinants of subjective well-being (SWB) in South Africa. This approach is particularly appropriate as it accounts for the ordinal nature of the SWB variable while also allowing for the inclusion of time-invariant individual and household-specific characteristics.

In contrast to earlier studies that relied on Ordinary Least Squares (OLS) estimation (e.g., MacKerron, 2012; Blaauw & Pretorius, 2013), the REOP model addresses two key econometric limitations. First, it controls for unobserved time-invariant heterogeneity that would otherwise be captured in the error term, potentially leading to biased and inconsistent OLS estimates (Blaauw & Pretorius, 2013). Second, it overcomes the restrictive OLS assumption that the dependent variable is continuous, which is inappropriate for ordinal outcomes such as life satisfaction (Long & Freese, 2014). The random effects ordered probit model are specified as follows:

$$swb^*_{it} = \mathbf{x}'_{it} \boldsymbol{\beta} + \varepsilon_{it} \quad (1)$$

Where: swb^*_{it} – represents the latent dependent variable for subjective well-being of individual, while i – represents an individual and t – represents time, where $t = 5$ where swb^*_{it} captures the results of the observation $\boldsymbol{\beta}$ – represents the coefficients that are to be estimated. \mathbf{x}'_{it} represents a vector of demographic and socio-economic explanatory variables and ε_{it} – represents the error term.

The error term is assumed to be of a composite nature as expressed below (Winkelmann, 2004):

$$\varepsilon_{it} = \boldsymbol{\alpha} + \mu_i + U_i \quad (2)$$

Where $\boldsymbol{\alpha}$ is a household specific random effect that does not vary across individuals within a family/over time, μ_i represents an individual-specific random effect that does not vary over time, and U_i is a white noise error term that is normally distributed with a mean of 0 and a variance of 1., and μ_i capture the long-term effects, and U_i captures the short-term effects.

Moreover, the ordered regression is estimated by relating the observable dependent variable (swb_{it}) to the unobserved latent variable (swb^*_{it}) representing an individual's (i) real level of subjective well-being. Therefore, the observed response categories are linked to the latent variable through the following model (Winkelmann, 2004; Long and Freese, 2006):

$$\begin{aligned} &1 \text{ if } swb^*_{it} < \tau_1 \\ &2 \text{ if } \tau_1 \leq swb^*_{it} < \tau_2 \\ &3 \text{ if } \tau_2 \leq swb^*_{it} < \tau_3 \\ &4 \text{ if } \tau_3 \leq swb^*_{it} < \tau_4 \\ &5 \text{ if } \tau_4 \leq swb^*_{it} < \tau_5 \\ &6 \text{ if } \tau_5 \leq swb^*_{it} < \tau_6 \\ &7 \text{ if } \tau_6 \leq swb^*_{it} < \tau_7 \\ &8 \text{ if } \tau_7 \leq swb^*_{it} < \tau_8 \\ &9 \text{ if } \tau_8 \leq swb^*_{it} < \tau_9 \\ &10 \text{ if } \tau_9 \leq swb^*_{it} < \tau_{10} \end{aligned} \quad (3)$$

Where τ represents the cut point.

Empirical results

Descriptive analysis

Table 2 presents the summary statistics of the variables used in this study, reporting both means and standard deviations. The results indicate notable changes across the survey waves, highlighting the richness of the NIDS dataset in capturing dynamic changes in households over time. For instance, the mean of log income increases steadily from 7.66 in Wave 1 to 7.84 and 8.04 in Waves 2 and 3, respectively, before rising further to 8.20 and 8.43 in Waves 4 and 5. A similar upward trend is observed for secondary education, with the mean increasing from 0.10 in Wave 1 to 0.13 and 0.16 in Waves 2 and 3, and further to 0.20 and 0.22 in Waves 4 and 5.

In contrast, some variables remain relatively stable over time. The mean for gender remains fairly constant across waves at 1.57, 1.60, 1.58, 1.58, and 1.58 for 2008, 2010, 2012, 2014, and 2017, respectively. Similarly, the white population share shows minimal variation, with a mean of 0.01 in Wave 1, remaining at 0.01 in Waves 2–4, and slightly increasing to 0.02 in Wave 5. Overall, these patterns demonstrate both stability and gradual socio-economic changes within the sample overtime.

Variables	Wave 1		Wave 2		Wave 3		Wave 4		Wave 5	
	Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.
SWB	5.41	2.45	4.68	2.46	4.97	2.41	5.48	2.31	5.55	2.45
Income (log)	7.66	1.10	7.84	1.15	8.04	1.03	8.20	1.02	8.43	1.09
Age	9.93	3.26	9.86	3.32	9.79	3.31	9.78	3.30	9.94	3.31
Age (Sq)	109.15	72.64	108.14	3.32	106.73	73.67	106.43	73.31	109.73	74.17
Employment	0.53	0.50	0.50	0.50	0.53	0.50	0.59	0.49	0.75	0.44
No Schooling	0.16	0.36	0.21	0.40	0.20	0.40	0.20	0.40	0.18	0.07
Primary	0.38	0.48	0.34	0.47	0.32	0.40	0.29	0.45	0.29	0.46
Secondary	0.10	0.29	0.13	0.34	0.16	0.37	0.20	0.40	0.22	0.42
Matric	0.14	0.35	0.10	0.30	0.10	0.30	0.10	0.30	0.13	0.34
Tertiary	0.02	0.14	0.02	0.15	0.03	0.37	0.04	0.20	0.07	0.25
Married	0.08	0.27	0.10	0.29	0.11	0.31	0.14	0.35	0.19	0.40
Divorced	0.01	0.09	0.01	0.90	0.01	0.10	0.01	0.12	0.02	0.13
Never Married	0.10	0.30	0.16	0.37	0.19	0.39	0.27	0.44	0.30	0.46
Widow	0.03	0.16	0.03	0.18	0.35	1.84	0.06	0.23	0.63	0.24
African	0.22	0.41	0.31	0.46	0.37	0.48	0.45	0.50	0.50	0.50
White	0.01	0.08	0.01	0.07	0.01	0.08	0.01	0.08	0.02	0.12
Health Status	0.18	0.39	0.28	0.45	0.32	0.47	0.42	0.49	0.48	0.50
Religious Activity	0.22	0.41	0.30	0.46	0.34	0.48	0.45	0.50	0.50	0.50
Gender	1.57	0.50	1.60	0.49	1.58	0.49	1.58	0.49	1.58	0.49
Electricity	0.23	0.42	0.28	0.45	0.37	0.48	0.46	0.50	0.55	0.48
Water Access	0.19	0.40	0.24	0.43	0.30	0.46	0.38	0.48	0.45	0.50

FINDINGS AND DISCUSSIONS

Random effects ordered probit results.

To investigate the determinants of subjective well-being (SWB) in South Africa, this study employs a random effect ordered probit model (as specified in Equation 3.1). Table 2 presents the regression results for the full sample. The model is statistically significant and correctly specified (Prob > chi-squared = 0.00), and all variables jointly contribute significantly to the model (Prob > Wald chi-squared = 0.00). The results in Table 2 are noteworthy. First, there is a positive and statistically significant relationship between household income and subjective well-being in South Africa, consistent with economic theory. The positive and significant coefficients indicate that higher income levels are associated with higher levels of SWB. This finding aligns with previous studies, which similarly report that income is positively associated with subjective well-being (e.g., Easterlin, 1974, 1995; Møller, 2007; Reyes-García et al., 2016). These studies suggest that individuals' well-being is strongly influenced by their income and socio-economic position within society.

Age is also an important determinant of SWB, with negative and statistically significant coefficients indicating that SWB decreases as age increases. These results are consistent with the well-established literature on the U-shaped relationship between age and happiness (Winkelmann & Winkelmann, 1998; Blanchflower & Oswald, 2004), which suggests that well-being declines with age up to a certain point before increasing later in life. Similar findings are reported by Biyase and Bila (2022) for South Africa, as well as Dolan et al. (2008) and Hayo and Seifert (2003), highlighting the importance of age effects in explaining SWB. Employment of the household head is also found to be a significant determinant of SWB. The results show a positive and statistically significant coefficients, confirming that employment is associated with higher levels of subjective well-being. This finding is consistent with evidence from both developed and developing countries (Van der Meer, 2014; Gerdtham & Johannesson, 2001; Seligman, 2004).

Education is similarly an important factor influencing SWB. The results indicate that higher levels of education are positively associated with subjective well-being, with individuals holding tertiary qualifications reporting higher satisfaction than those with only secondary education. These findings are consistent with the broader literature (Clark & Oswald, 1996; Mahadea & Rawat, 2008; Caporale et al., 2009), although they differ from Greyling (2018). As expected, married individuals report higher levels of happiness compared to unmarried individuals, consistent

with global evidence (Dolan et al., 2008; MacKerron, 2011). Widowed individuals show a positive association with SWB, while divorced individuals show a negative relationship; however, these effects are not statistically significant.

In contrast to several studies (e.g., Gerdtham & Johannesson, 2001; Seligman, 2004), health status is found to be statistically insignificant in explaining SWB in the full sample. Similar results are reported by Blaauw and Pretorius (2013) and Greyling (2018) for South Africa using cross-sectional data. Although individuals reporting good, very good, or excellent health tend to exhibit higher SWB than those in poor health, these differences are not statistically significant in the present analysis. This inconsistency may reflect limitations in self-reported health measures, which may not fully capture respondents perceived contribution of health to overall life satisfaction. Religious affiliation is found to have a positive and statistically significant effect on SWB. Individuals with a religious affiliation report higher levels of happiness compared to those without. This is consistent with existing literature, which suggests that religious participation provides social support, belonging, and emotional resilience (Ebrahim et al., 2013).

Finally, access to piped water and electricity from a main source is positively and significantly associated with subjective well-being. This important result, which has been relatively underexplored in the South African literature, confirms that basic service delivery plays a crucial role in enhancing life satisfaction. The findings are consistent with Kollamparambil (2019), who also reports a positive relationship between electricity access and SWB.

Overall, these results provide important insights into the determinants of SWB in South Africa. However, caution is required in interpretation, as aggregate results may conceal important heterogeneity. Therefore, following the full-sample analysis, the study proceeds to examine urban and rural subsamples and compares the findings across these groups.

Table 3: Random effects ordered probit estimates of the determinants of SWB in SA

Variables	Coef.	Std. Err.	
Income (Log)	0.1618	0.0084	***
Age	-0.1523	0.2632	***
Age-Squared	0.0070	0.0013	***
Employment	0.1834	0.1651	
Secondary	-0.0003	0.0160	
Tertiary	0.0691	0.0244	**
Married	0.1051	0.0255	***
Divorced	-0.0154	0.0437	
Never Married	-0.0297	0.2368	
Widow	0.0061	0.1770	
African	-0.4911	0.1770	***
White	-0.2046	0.0627	**
Health Status	0.0419	0.2726	
Religious Activity	0.2363	0.0267	***
Gender	0.0564	0.0153	***
Electricity	0.1353	0.0229	***
Water	0.0571	0.0197	**
Log-likelihood	-47 771		
Observations	22 290		
Prob > chi-squared	0.000		

Source: Author's estimations based on NIDS data (Wave 1,2,3,4 & 5)

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.01$

Table 3 presents empirical results on the determinants of subjective well-being (SWB) based on samples disaggregated by location. Clear differences emerge when comparing the full sample with the urban and rural subsamples, particularly in terms of the direction, magnitude, and statistical significance of key variables. Income of the household head remains positive and statistically significant across all samples; however, its magnitude is notably larger in the rural sample compared to both the urban and full samples. These findings are economically intuitive and consistent with Biyase and Bila (2022), who also report that income effects differ between urban and rural households, with rural households experiencing distinct welfare dynamics in terms of subjective poverty. The results for age and age-squared are consistent across all samples, showing a negative and statistically significant

coefficient for age and a positive and statistically significant coefficient for age-squared at the 1% level. This confirms the commonly observed U-shaped relationship between age and SWB. Regarding employment, the rural sample shows a positive and statistically significant effect, while the urban sample shows a negative but statistically insignificant relationship. In the full sample, the coefficient is positive but not statistically significant.

Educational attainment yields mixed results. Secondary education is statistically insignificant across all samples, suggesting that completing secondary schooling does not significantly influence SWB. This aligns with some South African studies (Posel & Casale, 2015; Greyling, 2018), but contrasts with international evidence where secondary education is typically positively associated with SWB (Clark & Oswald, 1996; Caporale et al., 2009). In contrast, tertiary education is positive and statistically significant across all samples, indicating that individuals with post-secondary qualifications report higher levels of SWB, consistent with findings from Powdthavee (2003), Ebrahim et al. (2011), and Kollamparambil (2019).

Marital status results show that being married is positively and statistically significant across all specifications: at the 5% level in both urban and rural samples, and at the 1% level in the full sample. This indicates that married individuals consistently report higher SWB compared to those who are single, divorced, or widowed, supporting findings by Saqib et al. (2016) and Markos (2015). Unexpectedly, the white population variable exhibits a negative and statistically significant relationship with SWB across all samples. However, the magnitude of the effect is larger (in absolute terms) for black populations in urban areas. Overall, individuals of African descent and those residing in rural areas report lower levels of SWB compared to their urban counterparts.

Table 4: Random effects ordered probit estimates of the determinants of SWB

Variables	Rural Sample			Urban Sample		
	Coef.	Std. Err.		Coef.	Std. Err.	
Income (Log)	0.1601	0.0151	***	0.1669	0.0104	***
Age	-0.1417	0.0440	**	-0.1621	0.0329	***
Age-Squared	0.0063	0.0022	**	0.0075	0.0017	***
Employment	0.0968	0.0282	**	-0.0226	0.0201	
Secondary	0.0217	0.0282		-0.0083	0.0200	
Tertiary	0.1100	0.0485	*	0.0525	0.0284	
Married	0.1339	0.0428	**	0.0871	0.0317	**
Divorced	-0.0108	0.0919		-0.0289	0.0506	
Never Married	0.0002	0.0390		-0.0501	0.0299	
Widow	0.0335	0.0655		-0.0156	0.5374	
African	-0.5290	0.0395	***	-0.4892	0.0202	***
White	-0.2666	0.1206	*	-0.1949	0.0737	**
Health Status	0.0101	0.0462		0.0561	0.0338	*
Religious Activity	0.2222	0.0438	***	0.2422	0.0337	***
Gender	0.0564	0.0153	***	0.0681	0.0190	***
Electricity	0.1353	0.0229	***	0.2008	0.0335	***
Water	0.0571	0.0196	**	0.0812	0.0352	*
Log-likelihood	-16 280			Log-likelihood	-31 453	
Observations	7 545			Observations	14 745	
Prob > chi-squared	0.000			Prob > chi-squared	0.000	

Source: Author's estimations based on NIDS data (Wave 1,2,3,4 & 5)

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.01$

Robustness check

The robustness of the POLS models was assessed in this study. The regression results for the POLS estimations are presented in Table 5, covering the full South African sample as well as the rural and urban sub-samples over the period 2008–2017. Encouragingly, the results for the determinants of subjective well-being are broadly consistent with the earlier REOP estimates in terms of both sign and statistical significance. More specifically, most key variables—including log income, age, age-squared, education level, marital status, race,

religious activity, gender, and access to water and electricity—exhibit statistically significant relationships with SWB across both the POLS and REOP models for the full sample as well as the rural and urban sub-samples. This indicates that the determinants of subjective well-being are not highly sensitive to model specification. In particular, the results suggest that treating SWB as either an ordinal or cardinal variable does not materially alter the findings, which is consistent with previous studies (see, for example, Ferrer-i-Carbonell & Frijters, 2004).

Table 5: Pooled OLS estimates of the determinants of SWB, rural and urban sample

Variable	Full Sample SA		Rural Sample		Urban Sample	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Income (Log)	0.3500***	0.0180	0.3446**	0.0338	0.3588**	0.0220
Age	-0.3309***	0.5478	-0.3102**	0.0926	-0.3481***	0.0681
Age-Squared	0.0151**	0.0028	0,0137**	0.0047	0.0160***	0.0035
Employment	0.3407	0.3535	0,2160**	0.0616	0.0535	0.0434
Secondary	-0.0022	0.0344	0,0439	0.0592	-0.0166	0.0427
Tertiary	0.1550**	0.0492	0.2533	0.1026	0.1160	0.0562
Married	0.2230***	0.0552	0.2847**	0.0952	0.1951**	0.0680
Divorced	-0.0192	0.0927	-0.0025	0.2075	-0.0465	0.0506
Never Married	-0.0670	0.0519	0.0060	0.0875	-0.0153	0.0647
Widow	0.0170	0.0884	0.0612	0.1397	-0.0156	0.1149
African	-1.0659***	0.0360	-1.1700***	0.0823	-0.0462***	0.0406
White	-0.4517**	0.1256	-0.5858**	0.2834	-0.4263**	0.1380
Health Status	0.0856	0.0617	0.0020	0.1007	0.1219*	0.0745
Religious Activity	0.5000***	0.0587	0.4720***	0.1007	0.5103***	0.0745
Gender	0.1187***	0.0321	0.0642	0.0562	0.1450***	0.0391
Electricity	0.2735***	0.0504	0.1169*	0.0702	0.4199***	0.0733
Water	0.1280**	0.0420	0.1484*	0.0575	0.1727*	0.0751

Source: Author's estimations based on NIDS data (Wave 1,2,3,4 & 5)

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.01$

CONCLUSION

This study examines subjective well-being (SWB) in South Africa, including rural and urban sub-samples, using data from the National Income Dynamics Study (NIDS) collected over five waves between 2008 and 2017. A distinctive feature of this research is its novel approach of disaggregating the panel data by location to explicitly analyse differences in subjective well-being between rural and urban areas. To the best of our knowledge, no previous studies in the South African context have adopted this approach, despite the clear structural and socio-economic differences between these regions.

The results from the REOP models indicate that income, employment status, education, religious activity, marital status, age, access to water, and access to electricity are key determinants of happiness in South Africa. However, certain determinants exhibit region-specific effects. For instance, employment is positive but statistically insignificant in the full sample, positive and statistically significant in the rural sample, and negative but insignificant in the urban sample. In addition, the results confirm the well-established U-shaped relationship between age and happiness, with a statistically significant negative association between age and subjective well-being across all samples.

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