



What makes cities happy? Factors contributing to life satisfaction in European cities

European Urban and Regional Studies
2023, Vol. 30(4) 319–342

© The Author(s) 2023

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/09697764231155335

journals.sagepub.com/home/eur



Chiara Castelli

The Vienna Institute for International Economic Studies, Austria

Beatrice d'Hombres

European Commission, Joint Research Centre (JRC), Ispra, Italy

Laura de Dominicis

Lewis Dijkstra

European Commission, Directorate-General for Regional and Urban Policy, Brussels, Belgium

Valentina Montalto 

EIREST – Université Paris I Panthéon-Sorbonne, France

Nicola Pontarollo 

University of Brescia, Italy

Abstract

The purpose of this study is to identify the main factors of city life satisfaction across Europe. Data come from the recent fifth survey on quality of life in European cities and cover 83 cities located in the European Union, the European Free Trade Association countries, the United Kingdom, the Western Balkan Region and Turkey. In addition to running classical econometric analysis, we quantify the relative importance of the various determinants of overall satisfaction with life in cities, thus offering novel insights to shape evidence-based urban policies. The results highlight that two main policy-relevant areas contribute to the satisfaction with city life: the presence of amenities, on the one hand, and the inclusiveness and safety feeling, on the other hand. Socio-economic characteristics are generally not relevant, with the exception of economic insecurity.

JEL Codes: R10, R58, I31

Keywords

Cities, Europe, quality of urban life, regression analysis, subjective indicators

Introduction

Over the years, the study of quality of life (QOL) and its determinants has attracted the attention of researchers from a wide range of academic disciplines (from psychology to economics to geography,

Corresponding author:

Nicola Pontarollo, Department of Economics and Management,
University of Brescia, Brescia, 25122, Italy.

Email: nicola.pontarollo@unibs.it

for a review see Marans and Stimson, 2011a) as well as the interest of planners, politicians and policy-makers (e.g. European Commission, 2020).

Despite the growing body of research in this area, however, QOL remains a largely elusive concept, often used interchangeably with the notions of *well-being*, *satisfaction* and *happiness* (for a review of main terms used see, for instance, Veenhoven, 2000), and whose multidimensional nature is affected by both objective elements and subjective perceptions.

Accordingly, we can distinguish between two main streams of QOL research (Ballas, 2013). The first one privileges an ‘objective’ approach by making use of a number of quantifiable social and economic indicators such as employment and income (Chadi, 2014; Clark et al., 2010; Shields et al., 2009; Stavrova et al., 2011). The second (and more recent) one emphasises the ‘subjective’ experience of QOL, based on self-reported levels of fulfilment with various dimensions of life such as socio-economic conditions and accessibility to amenities and services (Gidlöf-Gunnarsson and Öhrström, 2007; Perucca, 2018).

Although economists tend to equate life quality with material and measurable aspects such as income, this approach is increasingly unveiling its shortcomings in capturing such a complex and multifaceted notion. The income–QOL relation, usually positive and statistically significant, may indeed be affected by other variables, such as the relative position of an individual in the national income distribution (Clark, 2003; Clark and Oswald, 1998; Ferrer-i-Carbonell, 2005; Luttmer, 2005) or changing aspirations in the life cycle (Easterlin, 2001). Also, above a certain level of income, individuals’ subjective well-being is influenced by factors other than wealth (Kahneman and Deaton, 2010). The role of inequality has also been examined (Ballas et al., 2007; Rözer and Kraaykamp, 2013; Zagorski et al., 2014). Recent studies report that income inequalities reduce the well-being of individuals if opportunities in a country are low, whereas this is not the case when opportunities are high (García-Muñoz et al., 2019).

In addition, under the influence of new theories about human life and development, QOL studies are increasingly integrating subjective perceptions.

Sen’s (1985) capability approach, for instance – which relates development to people’s freedom of action and access to both economic and sociocultural opportunities – has been influential in the construction of the UN’s Human Development Index as well as in all those analyses that intend to complement economic indicators of well-being (e.g. Tovar and Bourdeau-Lepage, 2013).

The use of ‘geographical lenses’ is another major emerging trend in QOL studies, especially from a city-level perspective. A fundamental assumption of the geographical approach is that, in a context of advanced economies where most people live in urbanised areas, cities may be designed to increase the residents’ level of satisfaction with life. In other words, as cities become major economic, innovation and policy hubs, they can increasingly act to attract people, thus affecting demographic differential dynamics.

This stream of research, mostly related to the urban geography field, explores the links between cities’ measurable characteristics (size, density, income, inequality, etc.) and perceived quality of (urban) life (QOUL).

However, QOUL is not the same as QOL. While QOL looks at life satisfaction, QOUL more specifically looks at satisfaction with life in a specific place. Empirically, the relation between the life satisfaction and satisfaction with city life is in fact positive but weak,¹ as proven by our association tests run on our set of micro-data of 83 European cities.

Investigating QOUL is important not only because it may affect how people behave but also because it has policy implications. Understanding what affects QOUL can indeed underline demand for policy action (Dahmann, 1985; Lu, 1999) on aspects that directly affect the liveability of a city (Marans, 2003), thus making cities more desirable to individuals and influencing their location choices (Faggian et al., 2012; Nowok et al., 2018).

Even if personal traits remain the main determinants of life satisfaction (see Ballas and Tranmer, 2012 and, more extensively, Veenhoven, 2014 and Michalos, 2014), the context does also affect well-being, as proven by recent literature. Węziak-Białowolska (2016), for instance, analysing a sample of 79 European cities, finds that dissatisfaction with

the availability of a number of amenities (e.g. public transport, cultural facilities, retail outlets, green space) contributes significantly to dissatisfaction with life in a city and that cities with high percentage of people satisfied with safety in a city tend to be those in which citizens were also more satisfied with life in a city. Similarly, Moeinaddini et al. (2020) identify five main determinants of urban life satisfaction in a sample of 112 European cities, that is, feeling safe in the city, satisfaction with healthcare services, satisfaction with the state of streets and buildings in the neighbourhood, satisfaction with public transport and availability of retail shops. In Dunedin, New Zealand, Insch (2010) instead detects four main drivers of residents' satisfaction, namely perceived work–life balance, the city's personal and public safety, the natural environment and the presence of community assets. Cultural and artistic activities in the cities can also affect urban life satisfaction (Insch and Florek, 2008; Zenker et al., 2013).

Various authors have in particular explored the relation between QO(U)L and the size of a city. However, results are mixed. In the work of Royuela and Suriñach (2005), for instance, the city dimension is found to be a determinant of the costs and benefits of urban life. That is, although larger cities share better-connected public transportation systems and offer higher demographic potential – especially in terms of birth rates and young population – they also register higher congestion costs for the provision of essential social services such as education and health. Okulicz-Kozaryn and Valente (2020) find a negative correlation between city size and QOL and Okulicz-Kozaryn and Valente (2019) with both QOL and QOUL. Zenker et al. (2013) instead show that the size of the city and the range of activities such as cultural events or shopping activities can increase citizens' satisfaction. At the same time, Goerlich and Reig (2021) find that large cities score best on socio-economic and liveability aspects, although the correlation of these variables with the population size is ultimately not so strong. Furthermore, research on the local administration performance finds in the city dimension a lowering factor in terms of perceived citizens' participation and government effectiveness (Hansen, 2015; Mouritzen, 1989). Other authors also consider the level of development of countries,

finding that levels of reported happiness are lower in large cities of developed countries (Berry and Okulicz-Kozaryn, 2009, 2011; Okulicz-Kozaryn and Valente, 2021). Similarly, Berry and Okulicz-Kozaryn (2011) also mentioned that urban size and well-being relationship can be affected by the development rate and for higher income countries, with higher dissatisfaction expected for the metropolitan residents.

The research presented in this article builds on the existing stream of work on QOUL. Compared with existing evidence, we take several steps further in the analysis. First, instead of focusing on general life satisfaction or subjective well-being as done in most of the reviewed studies, this article analyses why people are satisfied to live *in their city*. We select this indicator because it is important, yet overlooked target for direct policy intervention (Insch, 2010; Insch and Florek, 2008) and more likely to be directly influenced by the quality of the services and amenities of a city. In other words, the analysis of this specific dependent variable may ultimately have broad implications for migration patterns and economic growth (Kemp et al., 1997). Second, in addition to studying the contribution of different amenities to QOUL, we quantify their relative importance, thus providing novel and more precise insights to shape evidence-based urban policies (Marans and Stimson, 2011b). To do this, we distinguish amenities according to two main areas of policy interest and action (sociocultural amenities and inclusiveness aspects, such as perceived trust). Third, we take into account the role of city size to specifically analyse its role in shaping citizens' satisfaction *with their city*. Last but not least, we study the determinants of perceived QOUL across Europe by using a sample of 83 cities in the European Union (EU), the European Free Trade Association (EFTA) countries, the United Kingdom, the Western Balkans Region and Turkey of different size, thus enriching the currently limited evidence available for multi-country contexts. Data come from the recent fifth survey on QOL in European cities (European Commission, 2020).

Next to this introduction, the following section presents and discusses perceived satisfaction with city life in the 83 European cities in the survey.

The third section explains the methodology and presents the empirical results. Finally, the fourth section concludes and draws policy implications.

QOL in European cities: 2019 survey

Since 2004, the European Commission monitors, every 3 years, the QOL in a number of European cities through a dedicated survey. The survey exclusively focuses on perceived QOL, showing how satisfied people are with various aspects of urban life, such as employment opportunities, public transport, quality of public administration as well as perceived safety and inclusiveness.² For the 2019 edition, 700 complete interviews were carried out between July and September 2019 for each of the 83 cities surveyed, for a total of 58,100 completed interviews. The complete list of cities is provided in Table 2 in Appendix 1.

This section presents some descriptive results on residents' satisfaction with living in their city. The 2019 survey asked people whether they agreed with the following statement: I am satisfied to live in my city. Respondents could answer: (1) strongly agree, (2) somewhat agree, (3) somewhat disagree or (4) strongly disagree. For our analyses, we grouped the four potential answers into two groups and labelled them as follows: (1) total agree/total satisfied and (2) total disagree/total not satisfied.³

Results from the survey show that nine out of ten people in Europe are satisfied to live in their city (Figure 1).⁴ More people are satisfied in cities located in the EU, the EFTA and the UK, while fewer are satisfied in cities located in the Western Balkans and Turkey. Among EU cities, the percentage of satisfied people is highest in those located in northern and western EU (94% and 92%, respectively). On average, cities in southern EU Member States score lower (83%) due, in particular, to the low scores in Greece and the southern Italian cities. Overall, non-capital cities (at 91%) score higher than capital cities (87%). While capital cities may offer more employment opportunities and amenities, they are also perceived as providing public services of poorer quality and less affordable housing opportunities (Eurofound, 2021).

A number of studies show that in more developed countries, happiness or subjective well-being is often higher in smaller cities than in larger ones (Burger et al., 2020). This is also what we observe. Around 90 per cent of people living in a city with less than 1 million inhabitants are satisfied with living in that city. This drops to 87 per cent for cities with a population between 1 and 5 million. The average of the three cities with over 5 million inhabitants (Istanbul, London and Paris) is even lower (82%), mainly because of Istanbul's low score, at 66 per cent.

There is a large variation in terms of satisfaction, both across the sampled cities and among cities in the same country (Figure 1). Among the 83 cities included in the survey, Copenhagen (DK) and Stockholm (SE) are ranked first with around 98 per cent of residents satisfied with living in their city. Zurich (CH), Gdańsk (PL), Braga (PT) and Oslo (NO) are close behind, with around 97 per cent of residents satisfied with life in their cities. In contrast, Belgrade (RS), Palermo (IT), Athens (EL) and Istanbul (TR) are found in the bottom of the distribution with less than 67 per cent of the residents being satisfied with their city life.

The largest within-country differences are observed in Italy, Turkey and Greece. In Italy, the percentages of residents satisfied with the city where they live range between 93 per cent in Bologna and 64 per cent in Palermo, a difference of 29 percentage points (pp). Only 66 per cent of people living in Istanbul are satisfied with living in their city compared with 91 per cent of those living in Antalya. The two Greek cities in the survey score below the overall average, with the lowest percentage found in Athens (64%), and the highest in Heraklion, where 82 per cent of the residents are satisfied with living in their city.

What makes people satisfied to live in their city? Determinants of city life satisfaction

To analyse the determinants of perceived QOL, using micro-data coming from the 2019 survey, we estimate the following equation

$$Y_{ijc} = X_{ijc}\beta + A_{ijc}\alpha + I_{ijc}\delta + Z_{jc}\theta + C + \epsilon_{ijc} \quad (1)$$

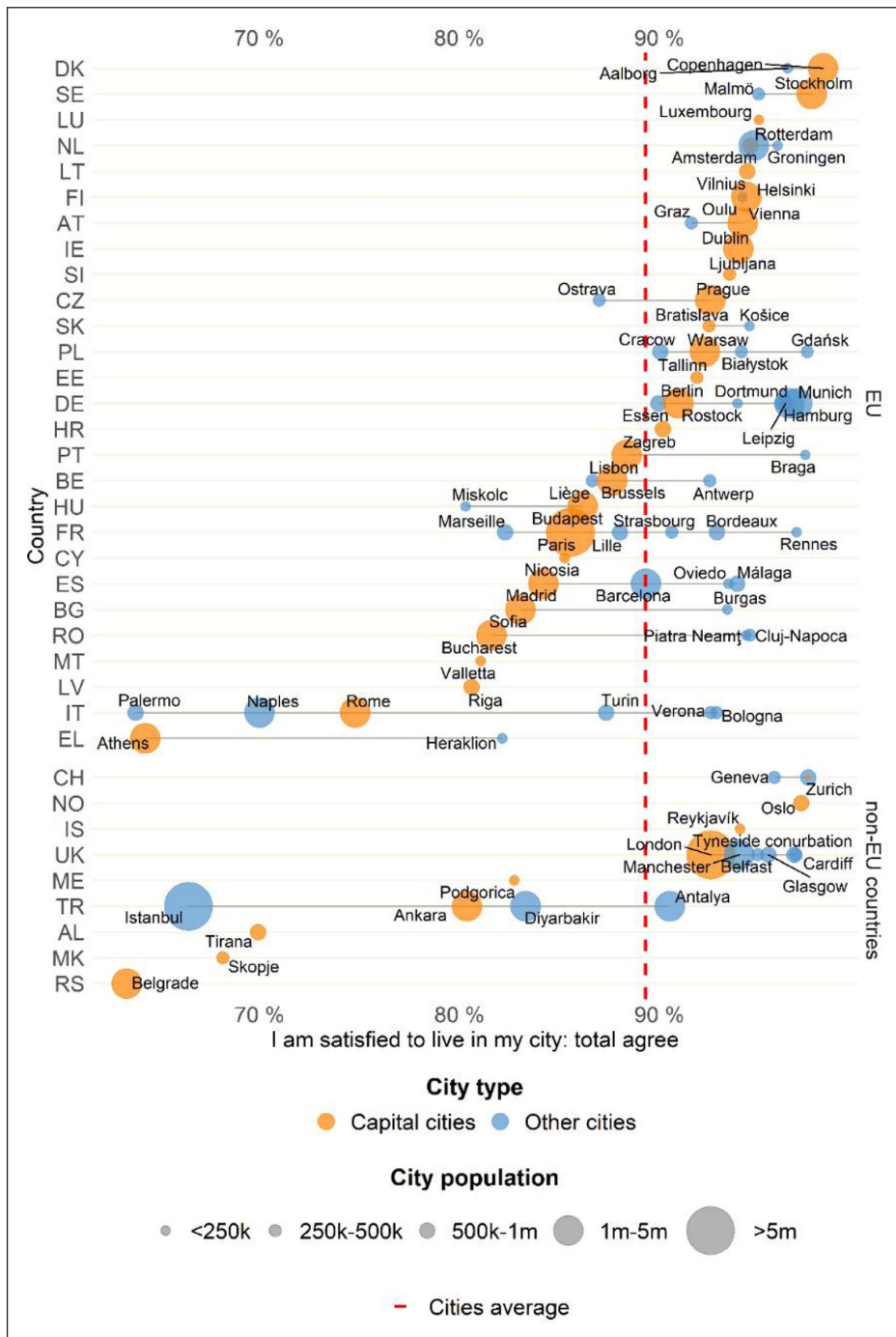


Figure 1. Share of respondents satisfied to live in their city.

Source: EC/DG REGIO Quality of life in European cities survey, 2019.

Percentages are based on all respondents (excluding don't know/not answered).

where Y_{ijc} is a variable equal to one if the respondent i living in the city j of country c strongly agrees or somewhat agrees with the statement 'I'm satisfied to live in my city', zero otherwise. The set of covariates includes X_{ijc} , a vector of variables capturing the socio-economic status as well as the demographic and household characteristics of individual i , while A_{ijc} and I_{ijc} measure the evaluation by respondent i of respectively the amenities and the level of inclusiveness of the city j in country c . Z_{jc} accounts for additional city characteristics, as further detailed below. Finally, C is a country or city dummy and ϵ_{ijc} the i.i.d. error term.

More specifically, the set of socio-economic characteristics X_{ijc} includes information on gender, age, migration background, educational level, labour market status and the financial situation of individual i as well as some information on the household composition (presence of children).

Vector A_{ijc} covers the respondents' assessment of a number of cities' amenities, namely public transport, healthcare services, cultural facilities (e.g. concert halls, theatres, museums and libraries), green spaces (e.g. parks and gardens), public spaces (e.g. markets, squares and pedestrian areas) and cleanliness of the city. The subjective evaluation of each amenity is measured with a dummy variable equal to one if the respondent declares to be satisfied or very satisfied with the amenity under scrutiny, zero otherwise. Cities have a multitude of functions, and need to meet the needs and aspirations of their residents who should live in well-functioning cities. The underlying assumption is that the positive assessment of these cities' domains should contribute to the overall city satisfaction.

Vector I_{ijc} includes indicators on the perceived inclusiveness of the city, and in particular a measure of generalised trust, two indicators of crime victimisation and safety perception as well as two variables capturing whether respondents perceive their cities to be welcoming towards immigrants from other countries and gay and lesbian people. The latter is measured with two dummy variables equal to one if the respondents report that their city is 'a good place to live' for respectively immigrants and gay and lesbian people, zero otherwise. The safety variable indicates if the respondent agrees or somewhat agrees that he

or she feels safe walking alone at night in the city whereas crime victimisation is an indicator equal to one if, within the last 12 months, the respondents or any member of his or her household had any money or property stolen. Finally, generalised trust is equal to one if the respondent strongly agrees or somewhat agrees that most people in his or her city can be trusted, zero otherwise.

Finally, among the additional city characteristics included in vector Z_{jc} , we have one variable on city size or, alternatively, a variable indicating whether the city is a capital as well as two indicators taking the value one if the respondent believes that (1) it is easy to find good housing in the city at a reasonable price and/or (2) there is corruption in the local public administration, zero otherwise.⁵

Equation (1) is estimated with a linear probability model, based on an ordinary least square (OLS) estimator. The use of an OLS allows us to quantify the relative importance of the socio-economic characteristics of the respondents, cities' amenities and inclusiveness variables in shaping overall city satisfaction. This is operationally obtained through a decomposition of the explained variance, or, equivalently, the R^2 , as proposed by Grömping (2006, 2015) and Budescu (1993) and based on Lindeman et al. (1980). More specifically, the method quantifies the relative contribution of each variable in the right-hand side of equation (1) to the model's total explanatory power. This approach is based on the estimation of $n!$ models (with n being the number of regressors) and their respective partial R^2 . Each estimation corresponds to a different permutation of the regressors (see Budescu, 1993). The contribution of each covariate (average of the $n!$ partial R^2) is calculated considering all possible degrees of contribution of this variable in all $n!$ models. The advantage of the method proposed by Lindeman et al. (1980) is that it removes the dependence on orderings that bias stepwise regression by averaging over orderings, as the order of the regressors in any model is a permutation of the available regressors. Furthermore, it is particularly suitable if explanatory variables involve multicollinearity (Bi, 2012).

The results corresponding to the estimation of equation (1) are reported in Table 1. In Column 1, we consider the city fixed effects, whereas in Column 2

Table 1. Determinants of city satisfaction.

	(1) OLS + city FE	(2) OLS + country FE	(3) Linear multilevel + city and country RE
Constant	0.493*** (0.013)	0.543*** (0.012)	0.579*** (0.012)
<i>Socio-economic characteristics</i>			
Sex: female	0.006** (0.002)	0.006** (0.002)	0.006** (0.002)
Lived in other cities	−0.007*** (0.002)	−0.006*** (0.002)	−0.007*** (0.002)
Difficulty in paying bills	−0.033*** (0.003)	−0.033*** (0.003)	−0.034*** (0.003)
Age: 25–39 years	−0.022*** (0.005)	−0.022*** (0.005)	−0.022*** (0.005)
Age: 40–54 years	−0.018*** (0.005)	−0.017*** (0.005)	−0.018*** (0.005)
Age: >55 years	−0.019*** (0.005)	−0.019*** (0.005)	−0.019*** (0.005)
<i>Education (reference group: primary education)</i>			
Secondary education	−0.001 (0.004)	−0.001 (0.004)	−0.001 (0.004)
Tertiary education	0.003 (0.004)	0.003 (0.004)	0.003 (0.004)
Household with children below 25 years	−0.0003 (0.003)	−0.001 (0.003)	−0.0005 (0.003)
Household with children above 25 years	−0.004 (0.004)	−0.003 (0.004)	−0.004 (0.004)
<i>Working status (reference group: employed full-time)</i>			
Employed part-time	−0.002 (0.004)	−0.002 (0.004)	−0.002 (0.004)
Unemployed	−0.030*** (0.005)	−0.030*** (0.005)	−0.030*** (0.005)
Retired	0.012*** (0.005)	0.012*** (0.005)	0.012*** (0.005)
Other status	−0.001 (0.005)	−0.002 (0.005)	−0.001 (0.005)
<i>Amenities of the city</i>			
Public transport	0.048*** (0.003)	0.052*** (0.003)	0.049*** (0.003)
Health system	0.047*** (0.003)	0.049*** (0.003)	0.047*** (0.003)
Cultural facilities	0.062*** (0.004)	0.063*** (0.004)	0.062*** (0.004)
Green spaces	0.059*** (0.003)	0.063*** (0.003)	0.060*** (0.003)
Public spaces	0.047*** (0.003)	0.050*** (0.003)	0.047*** (0.003)
Cleanliness	0.035*** (0.003)	0.038*** (0.003)	0.035*** (0.003)

(Continued)

Table 1. (Continued)

	(1) OLS + city FE	(2) OLS + country FE	(3) Linear multilevel + city and country RE
<i>Inclusiveness and safety of the city</i>			
Trust	0.046*** (0.003)	0.046*** (0.003)	0.046*** (0.003)
Safety perception	0.061*** (0.003)	0.064*** (0.003)	0.061*** (0.003)
Crime victimisation	-0.026*** (0.005)	-0.028*** (0.005)	-0.026*** (0.005)
Inclusive city for immigrants	0.015*** (0.003)	0.015*** (0.003)	0.016*** (0.003)
Inclusive city for gay and lesbian people	0.023*** (0.004)	0.023*** (0.004)	0.024*** (0.004)
<i>Other city characteristics</i>			
Capital		-0.015*** (0.003)	0.002 (0.009)
Availability of affordable housing	0.021*** (0.003)	0.017*** (0.003)	0.020*** (0.003)
Absence of corruption	0.015*** (0.003)	0.017*** (0.003)	0.016*** (0.003)
City size		-0.008*** (0.001)	-0.006*** (0.002)
City FE/RE	Yes	No	Yes
Country FE/RE	No	Yes	Yes
σ^2			0.08
τ_{00_city}			0.001
$\tau_{00_country}$			0.003
Observations	56,198	56,198	56,198
R^2	0.152	0.146	
Adjusted R^2	0.150	0.144	
AIC	23,153.5	23,461.7	23,713.9

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; Standard errors in brackets.

OLS: ordinary least squares; FE: fixed effects; RE: random effects; AIC: Akaike information criterion.

For all variables, the answer category 'don't know/refuses' has been included as a separate one to preserve the sample size. For the sake of brevity, these variables are not reported in the tables. Standard errors are in parentheses. A variable combining the design weight and the post-stratification weight has been used as weighting variable for each of the estimations reported in the table.

we consider the country fixed effects. Column 3 presents the same estimates but using a multilevel model with city and country random effects. To further test the robustness of the findings, results based on the estimation of probit or ordered probit variable are displayed in Tables 4 and 6 in Appendix 1.

Signs and size of the coefficients reported in Table 1 are almost identical across the columns, and their statistical significance does not change.

Keeping this in mind, to compute the relative importance of the three main policy-relevant areas accounted in equation (1), we rely on the results displayed in Column 2. This is because this method is suitable only with OLS estimates.⁶ Note that we get similar results if we use instead the coefficient reported in Column 1. The main policy areas considered for the decomposition include the individuals' socio-economic characteristics, perceived amenities



Figure 2. Relative importance of city satisfaction's drivers.

(a) Relative importance by macro group, (b) amenities and (c) inclusiveness and safety. Relative importance calculated based on Column 2 in Table 1.

and inclusiveness of the cities. The category 'additional city characteristics' accounts for 'residual' aspects, not falling in the previous policy areas.

Overall, the satisfaction with the city's amenities and its inclusiveness and safety is what contributes most to Y_{ijc} . As shown in Figure 2(a), almost 90 per cent of the predicted variation in city satisfaction is due to these two categories of factors. Results in Table 1 are coherent with the ones from the relative importance analysis

The socio-economic characteristics of the respondents are not particularly important in explaining the variation across the sample in terms of satisfaction and this is confirmed by results in Table 1. While the estimated coefficients associated with age, sex, working status and having lived in another city are statistically significant, household composition,

education and working part-time are not (for the full list of variables included in the group *socio-economic status*, see Table 1). In the remaining of the section, variables belonging to each area are analysed separately and in detail.

Amenities

As expected (see Figure 2(b)), the evaluation of city amenities by the respondents is a key component of city satisfaction. The six categories of amenities included in vector A_{ijc} in equation (1) are all statistically correlated with city satisfaction and account, overall, for almost 50 per cent of the sample variation in city satisfaction. Country fixed effects account for about 15 per cent of the predicted variation.

First, respondents satisfied with public transport in their city also report higher city satisfaction (Insch and Florek, 2010; Türksever and Atalik, 2001). This is not surprising, as transport is an important component of the daily life. This also suggests that problems such as congestion, road accidents and noise and air pollution as well as greenhouse gas emissions typically related to private transport may be at least partially overcome by an efficient public transport system. The relative importance of this amenity is also apparent in Figure 2(b) as almost one-tenth of the variation of \bar{Y}_{jc} across the sample is explained by the satisfaction with public transport.

Second, city satisfaction also positively correlates with the appreciation of the health infrastructure of the city (Zenker et al., 2013), with the latter accounting for around 7.4 per cent of variance of \bar{Y}_{jc} . With an ageing population, there is a growing concern for the population to have a health care system that responds to their expectations (EC, 2018).⁷ The COVID-19 pandemic has highlighted even further the importance of having a well-functioning health system.

Third, citizens' satisfaction with local cultural facilities goes hand in hand with city satisfaction. Cultural and artistic activities can stimulate people's imagination and emotional responses (e.g. Ascenso et al., 2018), foster social interaction or healthy lifestyles (e.g. Jones et al., 2013) as well as help raise cognitive, creative and relational capabilities which ultimately contribute to their individual and collective well-being (e.g. Blessi et al., 2016; Fancourt and Steptoe, 2018; Grossi et al., 2012, 2019). This explains why the satisfaction with local cultural facilities is another important determinant of satisfaction with city life, accounting for 7.5 per cent of the R^2 of equation (1) – being equally important than transport (7.9%) and slightly more important than satisfaction with healthcare facilities (7.4%).

Fourth, people tend to be more satisfied in cities with greater access to green urban areas. Green urban areas can contribute to the QOL in cities (e.g. Bonaiuto et al., 2015; Gidlöf-Gunnarsson and Öhrström, 2007; Pretty, 2007) at all life stages (Douglas et al., 2017), for instance by providing places to relax and socialise or to do sports in a more natural setting (Zenker et al., 2013; Zhang et al.,

2017). As shown in Figure 2(b), accessibility to green areas is the city amenity contributing most to city satisfaction, with 10.7 per cent of total R^2 explained by this component.

Fifth, satisfaction with respect to markets, squares and pedestrian areas in the city is also an important element when judging about the QOL in the city. In the ancient Greece, the *agorà* (i.e. the main square) was already the centre of city life. Today, or 2500 years later, markets and squares still remain the most vibrant part of cities as they offer room for creativity, social interactions and economic activities. Along this line, Olsen et al. (2019) show that more even distribution of land cover/uses within a city was associated with lower levels of socio-economic inequality in life satisfaction.

The COVID-19 outbreak, however, is likely to permanently affect the way we perceive and interact with public (green) spaces, as highlighted by the most recent literature on the topic (e.g. Honey-Rosés et al., 2021).

Finally, people satisfied with the cleanliness of the city also report higher city satisfaction (Zenker et al., 2013). Cleanliness is likely important for citizens' perception about the liveability of their surroundings.

Inclusiveness and safety of the city

All variables included in equation (1) related to perceived inclusiveness and safety of the city are statistically associated with city satisfaction (Table 1).

As for the amenities, the introduction of country or city fixed effect does not have any substantial consequence on the magnitude and significance of the estimated coefficients.

Figure 2(c) suggests that perceived safety is, overall, the strongest predictor of city satisfaction, contributing to 10.3 per cent of the explained variation in city satisfaction (Clifton et al., 2008; Moeinaddini et al., 2020). Generalised trust also matters. People indicating that most people can be trusted report higher city satisfaction (Węziak-Białowolska, 2016), whereas the opposite is found for those having experienced crime in the past 12 months. There is an ample literature documenting that both social capital and personal safety are

positively associated with life satisfaction. Social capital also contributes to foster bond between individuals, which, in return, facilitates cooperation and happiness (Helliwell and Putnam, 2004; Rodríguez-Pose and Von Berlepsch, 2014). Similarly, the perception of insecurity also induces a reduced autonomy in the living environment. Individuals having experienced crime or fearing crime have been found to engage less in outdoor activities, and to report higher distress and lower levels of well-being (Brereton et al., 2008; Denkers and Winkel, 1998; Hanslmaier, 2013). However, it has to be highlighted that crime victimisation is far less important (1%) than trust and safety perceptions.

City inclusiveness – measured by two variables indicating to which extent people perceive that their city is a good place to live for immigrants and gay and lesbian people – is also positively associated with the QOL in the city and supports previous research on tolerance and openness to different cultures as positive drivers of citizen satisfaction (Zenker et al., 2013). However, the relative contribution of these two proxies to \bar{Y}_{jc} is low (around 2% each) in comparison with the contribution of the indicators of safety and trust.

Individual socio-economic variables and other city characteristics

As displayed in Table 1, the seven socio-economic characteristics included in the analysis cumulatively explain just 7 per cent of R^2 . Unemployed respondents as well as those having difficulties to paying monthly bills report significantly lower city satisfaction. Labour market status is particularly relevant as it explains around 6 per cent of the R^2 . This is in line with findings at the national level and for life satisfaction in general (Eurostat, 2016). There seems also to be a gradient with respect to the age of the respondents. Retired people as well as the young adults (15–24 years) tend to be more satisfied in comparison with the working-age group (thus providing evidence in favour of the ‘U-shape’ relationship between well-being and age found in Blanchflower and Oswald, 2008 and Graham and Pozuelo, 2017). Difficulties in achieving work–life balance could be a reason behind this finding. Being

able to combine work, family commitments and personal life is indeed important for people’s well-being (OECD, 2011). Females report slightly higher city satisfaction than men while having lived in another city is associated with lower satisfaction.⁸

Other city characteristics

Finally, as shown in Figure 2(a), variables grouped in the ‘Other city characteristics’ category only marginally contribute to the variation of \bar{Y}_{jc} across the sample (6%). Yet, we note from Table 1 that satisfaction decreases with city size, and that people living in capitals are comparatively less satisfied than those living in other cities. However, while city size contributes to 2.1 per cent to the R^2 , the variable capital city contributes only for 0.5 per cent. City size has always been considered an important factor impacting happiness. Large labour markets, for instance, are beneficial for increasing productivity and income in large and dense areas (Puga, 2010), which may increase well-being and satisfaction with life in the city. Nevertheless, urban growth may be accompanied by a number of negative externalities, including congestion, pollution, a less efficient administration and increased living costs (Dijkstra et al., 2013; Glaeser and Kahn, 2010). More recently, Lenzi and Perucca (2021) explain higher levels of life satisfaction in smaller cities as depending on proximity to larger urban centre, allowing people to access the agglomeration advantages of large urban areas (i.e. amenities, shops), without having to face its disadvantages.

In addition, our results show that affordable housing and the presence of corruption in the local public administration are also respectively positively and negatively associated with city satisfaction (Holmberg et al., 2009; Park and Blenkinsopp, 2011; Zenker et al., 2013).

Tables 4 and 6 in Appendix 1 show the results described above are robust to alternative estimation methods (logit and ordered logit).

Conclusion

In this article, we analyse the determinants of city satisfaction across a sample of 83 cities located in

the EU, the EFTA countries, the UK, the Western Balkans Regions and Turkey. Data are drawn from the fifth survey on QOL in European cities (European Commission, 2020) with the estimates reported in the study being based on a sample of more than 58,000 individuals, representative of the population of each city. Beside the results of our econometric analysis, robust to various specifications, we exploit a technique proposed by Grömping (2006, 2015) to quantify the relative importance of different QOL determinants, still not addressed in the literature (Marans and Stimson, 2011b). This allows us to offer novel insights to shape evidence-based urban policies.

The main outcomes support the strand of literature that emphasises the importance of ‘subjective’ experience of QOL, based on self-reported levels of fulfilment with various dimensions of life (Gidlöf-Gunnarsson and Öhrström, 2007; Perucca, 2018). In particular, in our work, we focus on self-reported levels of satisfaction with city life and on those city’s characteristics local policymakers are able to influence, and improve, through their decisions. Notably, we find that satisfaction with city’s amenities as well as the perceived inclusiveness and safety of the city account for almost 60 per cent and 30 per cent, respectively, of the predicted variation across the sample in city life satisfaction. Satisfaction with green spaces is what matters the most to explain city life satisfaction, although the positive evaluations of the other amenities covered in the analysis, namely public spaces, health system, public transport, cultural facilities and cleanliness, are close behind. All the city characteristics included in the estimates and linked to inclusiveness and safety are significantly (with the expected signs) associated with city life satisfaction. However, it is interesting to notice that it is not so much the capital status that determines people’s satisfaction with a city but rather its capacity to provide an easier access to services and opportunities.

Yet, only safety perception and trust have a relative importance above 10 per cent. Instead, crime victimisation and the perceived inclusiveness of the city towards immigrants as well as gay and lesbian people account all together for around 7 per cent of the predicted variation across the sample in city life

satisfaction. Finally, the importance of the socio-economic characteristics comparatively with the other two areas discussed above is very low.

Our results invite policymakers to make sure cities offer a diverse set of amenities (from health infrastructure to green areas) – the most important QOL determinant, according to our empirical findings. If, on the one hand, (territorial) health facilities are going to acquire even more importance with the world-wide spread of the COVID-19 pandemic, on the other, as highlighted by Klinenberg (2018), the general provision of cosy and accessible amenities is key for the development and maintenance of social connections. Amenities like public spaces can for instance facilitate social relations, communities of place and a sense of belonging (Eyles and Litva, 1998), providing access to ‘social capital’, building trust, participation and perceptions of safety (Hawe and Shiell, 2000). This result, coherent with the other main results of our analysis, that is the importance of trust and safety perception, puts emphasis on the role of public infrastructures as ‘social glue’ and calls for an active role of local public administrations that represent the most public face of the state (Walker and Andrews, 2015). At the same time, the confirmed relevance of amenities invites policymakers to reflect around the need to invest in facilities that can more effectively balance socialisation and health needs, under the new pandemic scenario(s).

Another relevant aspect to be accounted for is the economic insecurity, which may be related to various factors such as the rising cost of living and the within city inequality leaded by various phenomena, among which we can cite gentrification processes (Florida, 2017). In this sense, policymakers should carefully prevent ‘the production of urban space for progressively more affluent users’ (Hackworth, 2002: 815) and rather prioritise collective needs. Rent control could help affordability in the short run for current tenants but Diamond et al. (2019) demonstrate that, in the long-run, it decreases affordability, fuels gentrification, and creates negative externalities on the surrounding neighbourhood. The less distortionary solution suggested by the authors is to offer subsidy in the form of a government subsidy or tax credit.

Finally, as future developments of our work we would like to extend our analysis to account for the time dimension, eventually looking at how results may change over time, in function of the changes in the socio-economic environment. Another step ahead would be to look at what determines city life satisfaction in people living in cities belonging to different continents or to countries at different stages of development.

Declaration of conflicting interests

Opinions expressed herein are those of the authors only and do not reflect the views of, or involve any responsibility for, the institutions to which they are affiliated.

Funding

The author(s) received no financial support for the research, authorship and/or publication of this article.

ORCID iDs

Valentina Montalto  <https://orcid.org/0000-0002-8690-2018>

Nicola Pontarollo  <https://orcid.org/0000-0001-8498-0840>

Notes

1. We computed the Cohen's kappa and Cramer's V statistics to measure the association between 'satisfaction with the city' and 'subjective well-being' in our sample of European cities (see the 'QOL in European cities: 2019 survey' section for additional information on the data). Cohen's kappa and Cramer's V indicate fairly weak association between the two variables. In particular, Cohen's kappa is equal to 0.16 when the two variables are dichotomised and to 0.12 when the four answer categories of both variables are considered. Cramer's V is equal to respectively 0.17 and 0.14.
2. The survey employed a dual-frame sampling approach, using both mobile and fixed-line numbers. For more information, see: https://ec.europa.eu/regional_policy/en/information/maps/quality_of_life.
3. Percentages are calculated on all respondents, excluding 'don't know/not answered', that is, we only include in the totals those who have had an opinion.
4. For a full descriptive analysis of the 2019 survey, follow the link in Note 2.
5. Additional information on the definition of each variable, as well as summary statistics, is provided in Table 3 in Appendix 1.

6. In Table 6 in Appendix 1, we compare the relative importance obtained from, respectively, the OLS model with country dummies (Column 2) and the OLS model with city dummies (Column 1). Results are similar.
7. In the EU, one in five people is 65 years or older (Eurostat, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_structure_and_ageing; accessed 22 January 2022).
8. Okulicz-Kozaryna and Valente (2020), using a data set providing a wider set of information, found that what matters is not only if people lived in another city, but if they grew up in a larger or smaller areas. Unfortunately, the data set we used does not provide us such an information.

References

- Ascenso S, Perkins R, Atkins L, Fancourt D and Williamon A (2018) Promoting well-being through group drumming with mental health service users and their carers. *International Journal of Qualitative Studies on Health and Well-Being* 13(1): 1484219.
- Ballas D (2013) What makes a 'happy city'? *Cities* 32(suppl. 1): S39–S50.
- Ballas D and Tranmer M (2012) Happy people or happy places? A multilevel modeling approach to the analysis of happiness and well-being. *International Regional Science Review* 35(1): 70–102.
- Ballas D, Dorling D and Shaw M (2007) Societal inequality, health and well-being. In: Haworth J and Hart G (eds) *Well-Being*. London: Palgrave Macmillan, pp. 163–186.
- Berry B and Okulicz-Kozaryn A (2009) Dissatisfaction with city life: a new look at some old questions. *Cities* 26(3): 117–124.
- Berry B and Okulicz-Kozaryn A (2011) An urban-rural happiness gradient. *Urban Geography* 36(2): 871–883.
- Bi J (2012) A review of statistical methods for determination of relative importance of correlated predictors and identification of drivers of consumer liking. *Journal of Sensory Studies* 27(2): 87–101.
- Blanchflower DG and Oswald AJ (2008) Is well-being U-shaped over the life cycle? *Social Science & Medicine* 66(8): 1733–1749.
- Blessi GT, Grossi E, Sacco PL, Pieretti G and Ferilli G (2016) The contribution of cultural participation to urban well-being. A comparative study in Bolzano/Bozen and Siracusa, Italy. *Cities* 50: 216–226.
- Bonaiuto M, Fornara F, Ariccio S, Ganucci Cancellieri U and Rahimi L (2015) Perceived residential environment quality indicators (PREQIs) relevance for

- UN-HABITAT city prosperity index (CPI). *Habitat International* 45(1): 53–63.
- Brereton F, Clinch JP and Ferreira S (2008) Happiness, geography and the environment. *Ecological Economics* 65(2): 386–396.
- Budescu DV (1993) Dominance analysis: a new approach to the problem of relative importance of predictors in multiple regression. *Psychological Bulletin* 114(3): 542–551.
- Burger MJ, Hendriks M, Pleeging E and Van Ours JC (2020) The joy of lottery play: evidence from a field experiment. *Experimental Economics* 23(2): 1235–1256.
- Chadi A (2014) Regional unemployment and norm-induced effects on life satisfaction. *Empirical Economics* 46(3): 1111–1141.
- Clark A, Knabe A and Rätzel S (2010) Boon or bane? Others' unemployment, well-being and job insecurity. *Labour Economics* 17(1): 52–61.
- Clark AE (2003) Unemployment as a social norm: psychological evidence from panel data. *Journal of Labor Economics* 21(2): 323–351.
- Clark AE and Oswald AJ (1998) Comparison-concave utility and following behaviour in social and economic settings. *Journal of Public Economics* 70(1): 133–155.
- Clifton K, Ewing R, Knaap GJ and Song Y (2008) Quantitative analysis of urban form: a multidisciplinary review. *Journal of Urbanism* 1(1): 17–45.
- Dahmann DC (1985) Assessments of neighborhood quality in metropolitan America. *Urban Affairs Quarterly* 20(4): 511–535.
- Denkers JM and Winkel FW (1998) Crime victims' well-being and fear in a prospective and longitudinal study. *International Review of Victimology* 5(2): 141–162.
- Diamond R, McQuade T and Qian F (2019) The effects of rent control expansion on tenants, landlords, and inequality: evidence from San Francisco. *American Economic Review* 109(9): 3365–3394.
- Dijkstra L, Garcilazo E and McCann P (2013) The economic performance of European cities and city regions: myths and realities. *European Planning Studies* 21(3): 334–354.
- Douglas O, Lennon M and Scott M (2017) Green space benefits for health and well-being: a life-course approach for urban planning, design and management. *Cities* 66: 53–62.
- Easterlin RA (2001) Income and happiness: towards a unified theory. *Economic Journal* 111(473): 465–484.
- Eurofound (2021) *Education, Healthcare and Housing: How Access Changed for Children and Families in 2020*. Luxembourg: Publications Office of the European Union.
- European Commission (2018) *The 2018 Ageing Report: Economic and Budgetary Projections for the EU Member States (2016–2070)*. Luxembourg: Publications Office of the European Union.
- European Commission (2020) *Report on the Quality of Life in European Cities*. Luxembourg: Publications Office of the European Union.
- Eurostat (2016) *Quality of Life, Facts and Views 2015 Edition*. Luxembourg: Publications Office of the European Union.
- Eyles J and Litva A (1998) Place, participation and policy: People in and for health care policy. In: Kearns RA and Gesler WM (eds) *Putting Health into Place: Landscape, Identity and Well-Being*. Syracuse, NY: Syracuse University Press, pp. 248–269.
- Faggian A, Olfert MR and Partridge MD (2012) 'Inferring regional well-being from individual revealed preferences: the "voting with your feet" approach'. *Cambridge Journal of Regions, Economy and Society* 5(1): 163–180.
- Fancourt D and Steptoe A (2018) Community group membership and multidimensional subjective well-being in older age. *Journal of Epidemiology and Community Health* 72(5): 376–382.
- Ferrer-i-Carbonell A (2005) Income and well-being: an empirical analysis of the comparison income effect. *Journal of Public Economics* 89(5–6): 997–1019.
- Florida R (2017) *The New Urban Crisis: How Our Cities Are Increasing Inequality, Deepening Segregation, and Failing the Middle Class – and What We Can Do about It*. New York, NY: Basic Books.
- García-Muñoz TM, Milgram-Baleix J and Odeh-Odeh O (2019) Inequality and life satisfaction in low- and middle-income countries: the role of opportunity. *Societies* 9(2): 37.
- Gidlöf-Gunnarsson A and Öhrström E (2007) Noise and well-being in urban residential environments: the potential role of perceived availability to nearby green areas. *Landscape and Urban Planning* 83(2–3): 115–126.
- Glaeser EL and Kahn ME (2010) The greenness of cities: Carbon Dioxide emissions and urban development. *Journal of Urban Economics* 67(3): 404–418.
- Goerlich FJ and Reig E (2021) Quality of life ranking of Spanish cities: a non-compensatory approach. *Cities* 109: 102979.
- Graham C and Pozuelo JR (2017) Happiness, stress, and age: how the U curve varies across people and places. *Journal of Population Economics* 30(1): 225–264.

- Grömping U (2006) Relative importance for linear regression in R: the package relaimpo. *Journal of Statistical Software* 17(1): 1–27.
- Grömping U (2015) Variable importance in regression models. *WIREs Computational Statistics* 7(2): 137–152.
- Grossi E, Tavano Blessi G and Sacco PL (2019) Magic moments: determinants of stress relief and subjective well-being from visiting a cultural heritage site. *Culture, Medicine and Psychiatry* 43(1): 4–24.
- Grossi E, Tavano Blessi G, Sacco PL, Buscema M, Blessi GT, Sacco PL and Buscema M (2012) The interaction between culture, health and psychological well-being: data mining from the Italian Culture and well-being project. *Journal of Happiness Studies* 13(1): 129–148.
- Hackworth J (2002) Postrecession gentrification in New York City. *Urban Affairs Review* 37(6): 815–843.
- Hansen SW (2015) The democratic costs of size: how increasing size affects citizen satisfaction with local government. *Political Studies* 63(2): 373–389.
- Hanslmaier M (2013) Crime, fear and subjective well-being: how victimization and street crime affect fear and life satisfaction. *European Journal of Criminology* 10(5): 515–533.
- Hawe P and Shiell A (2000) Social capital and health promotion: a review. *Social Science & Medicine* 51(6): 871–885.
- Helliwell JF and Putnam RD (2004) The social context of well-being. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences* 359(1449): 1435–1446.
- Holmberg S, Rothstein B and Nasiritousi N (2009) Quality of government: what you get. *Annual Review of Political Science* 12(1): 135–161.
- Honey-Rosés J, Anguelovski I, Chireh VK, Daher C, Konijnendijk Van den Bosch C, Litt JS, et al. (2021) The impact of COVID-19 on public space: an early review of the emerging questions – design, perceptions and inequities. *Cities & Health* 5(suppl. 1): S263–S279.
- Insch A (2010) Managing residents' satisfaction with city life: application of importance–satisfaction analysis. *Journal of Town & City Management* 1(2): 164–174.
- Insch A and Florek M (2008) A great place to live, work and play: conceptualising place satisfaction in the case of a city's residents. *Journal of Place Management and Development* 1(2): 138–149.
- Insch A and Florek M (2010) Place satisfaction of city residents: Findings and implications for city branding. In: Ashworth G and Kavaratzis M (eds) *Towards Effective Place Brand Management: Branding European Cities and Regions*. Cheltenham: Edward Elgar Publishing, pp. 191–204.
- Jones M, Kimberlee R, Deave T and Evans S (2013) The role of community centre-based arts, leisure and social activities in promoting adult well-being and healthy lifestyles. *International Journal of Environmental Research and Public Health* 10(5): 1948–1962.
- Kahneman D and Deaton A (2010) High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences of the United States of America* 107(38): 16489–16493.
- Kemp D, Manicaros M, Mullins P, Simpson R, Stimson R and Western J (1997) *Urban Metabolism: A Framework for Evaluating the Viability, Livability and Sustainability of South East Queensland*. Brisbane: The Australian Housing and Urban Research Institute.
- Klinenberg E (2018) *Palaces for the People: How Social Infrastructure Can Help Fight Inequality, Polarization, and the Decline of Civic Life*. London: Penguin Books.
- Lenzi C and Perucca G (2021) Not too close, not too far: urbanisation and life satisfaction along the urban hierarchy. *Urban Studies* 58(13): 2742–2757.
- Lindeman RH, Merenda PF and Gold RZ (1980) *Introduction to Bivariate and Multivariate Analysis*. Glenview, IL: Scott, Foresman and Company.
- Lu M (1999) Determinants of residential satisfaction: ordered logit vs. regression models. *Growth and Change* 30(2): 264–287.
- Luttmer EFP (2005) Neighbors as negatives: relative earnings and well-being. *The Quarterly Journal of Economics* 120(3): 963–1002.
- Marans RW (2003) Understanding environmental quality through quality of life studies: the 2001 DAS and its use of subjective and objective indicators. *Landscape and Urban Planning* 65(1–2): 73–83.
- Marans RW and Stimson RJ (eds) (2011a) *Investigating Quality of Urban Life Theory, Methods, and Empirical Research. (Social Indicators Research Series)*. 1st ed. Vol. 45. Dordrecht: Springer.
- Marans RW and Stimson RJ (2011b) An overview of quality of urban life. In: Marans RW and Stimson RJ (eds) *Investigating Quality of Urban Life: Theory, Methods, and Empirical Research*. Dordrecht: Springer, pp. 1–29.
- Michalos AC (2014) Quality of life, two-variable theory. In: Michalos AC (ed.) *Encyclopedia of Quality of Life and Well-being Research*. Cham: Springer, pp. 5307–5309.

- Moienaddini M, Asadi-Shekari Z, Aghaabbasi M, Saadi I, Shah MZ and Cools M (2020) Applying non-parametric models to explore urban life satisfaction in European cities. *Cities* 105: 102851.
- Mouritzen PE (1989) City size and citizens' satisfaction: two competing theories revisited. *European Journal of Political Research* 17(6): 661–688.
- Nowok B, Findlay A and McCollum D (2018) Linking residential relocation desires and behaviour with life domain satisfaction. *Urban Studies* 55(4): 870–890.
- OECD (2011) *How's Life?: Measuring Well-Being*. Paris: OECD Publishing.
- Okulicz-Kozaryn A and Valente RR (2019) Livability and subjective well-being across European Cities. *Applied Research Quality Life* 14(1): 197–220.
- Okulicz-Kozaryn A and Valente RR (2020) The perennial dissatisfaction of urban upbringing. *Cities* 104: 102751.
- Okulicz-Kozaryn A and Valente RR (2021) Urban unhappiness is common. *Cities* 118: 103368.
- Olsen JR, Nicholls N and Mitchell R (2019) Are urban landscapes associated with reported life satisfaction and inequalities in life satisfaction at the city level? A cross-sectional study of 66 European cities. *Social Science & Medicine* 226: 263–274.
- Park H and Blenkinsopp J (2011) The roles of transparency and trust in the relationship between corruption and citizen satisfaction. *International Review of Administrative Sciences* 77(2): 254–274.
- Perucca G (2018) Residents' satisfaction with cultural city life: evidence from EU Cities. *Applied Research in Quality of Life* 14(2): 461–478.
- Pretty J (2007) *The Earth Only Endures: On Reconnecting with Nature and Our Place in It*. 1st ed. London: Routledge.
- Puga D (2010) The magnitude and causes of agglomeration economies. *Journal of Regional Science* 50(1): 203–219.
- Rodríguez-Pose A and von Berlepsch V (2014) Social capital and individual happiness in Europe. *Journal of Happiness Studies* 15(2): 357–386.
- Royuela V and Suriñach J (2005) Constituents of quality of life and urban size. *Social Indicators Research* 74(3): 549–572.
- Rözer J and Kraaykamp G (2013) Income inequality and subjective well-being: a cross-national study on the conditional effects of individual and national characteristics. *Social Indicators Research* 113(3): 1009–1023.
- Sen A (1985) Commodities and capabilities. Available at: <https://scholar.harvard.edu/sen/publications/commodities-and-capabilities>
- Shields MA, Wheatley Price S and Wooden M (2009) Life satisfaction and the economic and social characteristics of neighbourhoods. *Journal of Population Economics* 22(2): 421–443.
- Stavrova O, Schlösser T and Fetchenhauer D (2011) Are the unemployed equally unhappy all around the world? The role of the social norms to work and welfare state provision in 28 OECD countries. *Journal of Economic Psychology* 32(1): 159–171.
- Tovar E and Bourdeau-Lepage L (2013) Well-being disparities within the Paris region. *Urban Studies* 50(8): 1575–1591. Available at: <https://www.jstor.org/stable/26144310?seq=1>
- Türksever ANE and Atalik G (2001) Possibilities and limitations for the measurement of the quality of life in urban areas. *Social Indicators Research* 53(2): 163–187.
- Veenhoven R (2000) The four qualities of life. *Journal of Happiness Studies* 1(1): 1–39.
- Veenhoven R (2014) Livability theory. In: Alex C Michalos (ed.) *Encyclopedia of Quality of Life and Well-Being Research* (Springer reference series). Dordrecht: Springer, pp. 3645–3647.
- Walker R and Andrews R (2015) Local government management and performance: a review of evidence. *Journal of Public Administration Research and Theory* 25(1): 101–133.
- Weziak-Białowolska D (2016) Quality of life in cities—empirical evidence in comparative European perspective. *Cities* 58: 87–96.
- Zagorski K, Evans MDR, Kelley J and Piotrowska K (2014) Does national income inequality affect individuals' quality of life in Europe? Inequality, happiness, finances, and health. *Social Indicators Research* 117(3): 1089–1110.
- Zenker S, Petersen S and Aholt A (2013) The Citizen Satisfaction Index (CSI): evidence for a four basic factor model in a German sample. *Cities* 31: 156–164. <https://doi.org/10.1016/j.cities.2012.02.006>
- Zhang Y, Van den Berg AE, Van Dijk T and Weitkamp G (2017) Quality over quantity: contribution of urban green space to neighborhood satisfaction. *International Journal of Environmental Research and Public Health* 14(5): 535.

Appendix

Table 2. Sample composition by EU and non-EU countries.

<i>EU countries</i>	
Austria	Graz, Vienna
Belgium	Antwerp, Brussels (Greater), Liège
Bulgaria	Burgas, Sofia
Croatia	Zagreb
Cyprus	Nicosia
Czechia	Ostrava, Prague
Denmark	Aalborg, Copenhagen (Greater)
Estonia	Tallinn
Finland	Helsinki (Greater), Oulu
France	Bordeaux, Lille, Marseille, Rennes, Strasbourg, Paris (Greater)
Germany	Berlin, Dortmund, Essen, Hamburg, Leipzig, Munich, Rostock
Greece	Athens, Heraklion
Hungary	Budapest, Miskolc
Ireland	Dublin
Italy	Article I. Bologna, Naples (Greater), Palermo, Rome, Turin, Verona
Latvia	Rīga
Lithuania	Vilnius
Luxembourg	Luxembourg
Malta	Valletta (Greater)
Netherlands	Amsterdam (Greater), Groningen, Rotterdam (Greater)
Poland	Białystok, Cracow, Gdańsk, Warsaw
Portugal	Braga, Lisbon
Romania	Bucharest, Cluj Napoca, Piatra Neamț
Slovakia	Bratislava, Košice
Slovenia	Ljubljana
Spain	Article II. Barcelona (Greater), Madrid, Málaga, Oviedo
Sweden	Malmö, Stockholm (Greater)
<i>Other countries</i>	
Albania	Tirana
Iceland	Reykjavík
Republic of North Macedonia	Skopje
Montenegro	Podgorica
Norway	Oslo
Serbia (RS)	Belgrade
Switzerland	Geneva, Zurich
Turkey	Ankara, Istanbul, Antalya, Diyarbakır
The United Kingdom	Belfast, Cardiff, Glasgow, London (Greater), Manchester (Greater), Tyneside conurbation (Greater)

EU: European Union.

Table 3. Description of the variables.

<i>Dependent variable</i>	
City satisfaction	Variable equal to one if the respondent strongly agrees or somewhat agrees to the statement 'I'm satisfied to live in my city', zero otherwise
<i>Covariates – socio-economic characteristics</i>	
Age: 25–39 years	Three dummy variables equal to one if the respondent is aged respectively (1) between 25 and 39 years old, (2) between 40 and 54 years old, (3) 55 or more, zero otherwise
Age: 40–54 years	
Age: >55 years	
Female	Dummy variable equal to one if the respondent is a female, zero otherwise
Lived in other cities	Dummy variable equal to one if the respondent has ever lived in another city for at least 1 year, zero otherwise
<i>HH composition</i>	
HH with children below 25 years	HH children below 25 is equal to one if the HH is composed of a lone parent or a couple with at least one child aged less than 25 years, zero otherwise
HH with children above 25 years	HH children above 25 is equal to one if the HH is composed of a lone parent or a couple with all children aged 25 or more, zero otherwise
HH others	HH others is equal to one if the HH is composed of one person, a couple without any children or does not correspond to any of the categories defining the first two HH dummies, zero otherwise
<i>Education</i>	
Secondary education	Secondary education is equal to one if the respondent completed a lower or upper secondary education ISCED 2/3, 0 otherwise
Tertiary education	Tertiary education is equal to one if the respondent completed a post-secondary non-tertiary (?), a short-cycle of tertiary education, a bachelor (or equivalent), a master (or equivalent) or a doctoral (or equivalent) degree, zero otherwise
<i>Working status</i>	
Employed part-time	Employed part time is equal to one if the respondent reports to be employed or self-employed part time, zero otherwise
Unemployed	Unemployed is equal to one if the respondent is unemployed (looking actively or not for a job), zero otherwise
Retired	Retired is equal to one if the respondents are retired, zero otherwise
Other status	Other status is equal to one if the respondent declares to be unable to work due to long-standing health problems, a student (at school, university, etc.), full-time homemaker, doing the compulsory military or civilian service or others, zero otherwise
Difficulty in paying bills	Financial situation is equal to one if the respondent reports to have had difficulties most of the time or from time to time to pay bills at the end of the month, zero otherwise

(Continued)

Table 3. (Continued)

<i>Amenities of the city</i>	
Public transport	Dummy equal to one if the respondent reports to be very satisfied or rather satisfied with the public transport in his/her city or area, zero otherwise
Health system	Dummy equal to one if the respondent reports to be very satisfied or rather satisfied with the health care services, doctors and hospitals in his/her city or area, zero otherwise
Cultural facilities	Dummy equal to one if the respondent reports to be very satisfied or rather satisfied with cultural facilities such as concert halls, theatres, museums and libraries in his/her city or area, zero otherwise
Green spaces	Dummy equal to one if the respondent reports to be very satisfied or rather satisfied with green spaces such as parks and gardens in his/her city or area, zero otherwise
Public space	Dummy equal to one if the respondent reports to be very satisfied or rather satisfied with public spaces such as markets, squares and pedestrian areas in his/her city or area, zero otherwise
Environment: cleanliness	Dummy equal to one if the respondent reports to be very satisfied or rather satisfied with cleanliness or air quality
<i>Inclusiveness and safety of the city</i>	
Trust	Dummy equal to one if the respondent strongly agrees or somewhat agrees that most people in his/her city can be trusted, zero otherwise
Safety perception	Dummy is equal to one if the respondent agrees or somewhat agrees that he/she feels safe walking alone at night in the city, zero otherwise
Crime victimisation	Dummy is equal to one if the respondent reports to have been assaulted or mugged in his/her city within the last 12 months, zero otherwise
Inclusive city for immigrants	Dummy equal to one if the respondent reports that the city is a good place to live for immigrants from other countries, zero otherwise
Inclusive city for gay and lesbian people	Dummy equal to one if the respondent reports that the city is a good place to live for gay and lesbian people, zero otherwise
<i>Other city characteristics</i>	
Capital	Capital is equal to one if the respondent lives in a capital city, zero otherwise
Affordable housing	Housing situation is equal to one if the respondent agrees or somewhat agrees that it is easy to find good housing in the city at a reasonable price, zero otherwise
Corruption	Corruption is equal to one if the respondent reports that he/she disagrees or strongly disagrees that there is corruption in the local public administration, zero otherwise
City size	City population in 2018

Note: For all covariates described above, the answer category 'don't know/refuses' has been included as a separate one to preserve the sample size. For the sake of brevity, these variables are not reported in the tables.

HH: household; ISCED: International Standard Classification of Education.

Table 4. Determinants of city satisfaction, logit models.

	(1) Logit + city FE	(2) Logit + country FE	(3) Logit multilevel + city and country RE
Intercept	-0.945*** (0.130)	-0.832*** (0.150)	-0.320** (0.126)
<i>Socio-economic characteristics</i>			
Sex: female	0.052* (0.031)	0.052* (0.031)	0.053* (0.031)
Lived in other cities	-0.089*** (0.031)	-0.075** (0.031)	-0.084*** (0.031)
Difficulty paying bills	-0.351*** (0.033)	-0.350*** (0.033)	-0.036*** (0.033)
Age: 25–39 years	-0.215*** (0.058)	-0.222*** (0.057)	-0.211*** (0.058)
Age: 40–54 years	-0.157*** (0.057)	-0.152*** (0.057)	-0.155*** (0.058)
Age: >55 years	-0.166** (0.065)	-0.166** (0.065)	-0.171*** (0.066)
<i>Education (reference group: primary education)</i>			
Secondary education	-0.034 (0.050)	-0.039 (0.050)	-0.043 (0.051)
Tertiary education	0.025 (0.052)	0.018 (0.051)	0.014 (0.052)
Household with children below 25 years	0.015 (0.039)	0.014 (0.039)	0.009 (0.040)
Household with children above 25 years	-0.040 (0.050)	-0.033 (0.050)	-0.047 (0.051)
<i>Working status (reference group: employed full-time)</i>			
Employed part-time	0.006 (0.051)	0.002 (0.051)	0.012 (0.052)
Unemployed	-0.253*** (0.059)	-0.248*** (0.059)	-0.248*** (0.060)
Retired	0.197*** (0.057)	0.191*** (0.057)	0.200*** (0.058)
Other status	0.055 (0.057)	0.047 (0.056)	0.065 (0.057)
<i>Amenities of the city</i>			
Public transport	0.475*** (0.035)	0.494*** (0.034)	0.476*** (0.035)
Health system	0.472*** (0.034)	0.485*** (0.033)	0.478*** (0.035)
Cultural facilities	0.488*** (0.037)	0.493*** (0.036)	0.487*** (0.037)
Green spaces	0.511*** (0.034)	0.532*** (0.034)	0.515*** (0.035)
Public spaces	0.391*** (0.034)	0.409*** (0.033)	0.399*** (0.034)
Cleanliness	0.417*** (0.034)	0.458*** (0.033)	0.418*** (0.034)

(Continued)

Table 4. (Continued)

	(1) Logit + city FE	(2) Logit + country FE	(3) Logit multilevel + city and country RE
<i>Inclusiveness and safety of the city</i>			
Trust	0.495*** (0.033)	0.497*** (0.033)	0.503*** (0.034)
Safety perception	0.551*** (0.033)	0.575*** (0.033)	0.552*** (0.034)
Crime victimisation	-0.170*** (0.053)	-0.182*** (0.053)	-0.180*** (0.054)
Inclusive city for immigrants	0.142*** (0.036)	0.145*** (0.036)	0.147*** (0.037)
Inclusive city for gay and lesbian people	0.191*** (0.041)	0.184*** (0.040)	0.202*** (0.041)
<i>Other city characteristics</i>			
Capital		-0.041 (0.041)	0.056 (0.094)
Availability of affordable housing	0.264*** (0.036)	0.222*** (0.035)	0.248*** (0.036)
Absence of corruption	0.207*** (0.037)	0.219*** (0.036)	0.210*** (0.037)
City size		-0.049*** (0.008)	-0.049*** (0.022)
City FE/RE	Yes	No	Yes
Country FE/RE	No	Yes	Yes
σ^2			3.29
τ_{00_city}			0.11
$\tau_{00_country}$			0.05
Observations	56,198	56,198	56,198
AIC	33,775.4	33,997.8	30,328.9

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; Standard errors in brackets.

FE: fixed effects; RE: random effects; AIC: Akaike information criterion.

For all variables, the answer category 'don't know/refuses' has been included as a separate one to preserve the sample size. For the sake of brevity, these variables are not reported in the tables. Standard errors are in parentheses. A variable combining the design weight and the post-stratification weight has been used as weighting variable for each of the estimations reported in the table.

Table 5. Determinants of city satisfaction, ordered logit models.

	(1) Ologit + city FE	(2) Ologit + country FE	(3) Ologit multilevel + city and country RE
<i>Socio-economic characteristics</i>			
Sex: female	0.099*** (0.018)	0.099*** (0.018)	0.099*** (0.018)
Lived in other cities	-0.074*** (0.018)	-0.061*** (0.018)	-0.072*** (0.018)
Difficulty in paying bills	-0.221*** (0.020)	-0.226*** (0.020)	-0.222*** (0.020)
Age: 25–39 years	-0.207*** (0.034)	-0.206*** (0.034)	-0.206*** (0.034)
Age: 40–54 years	-0.224*** (0.033)	-0.217*** (0.033)	-0.223*** (0.033)
Age: >55 years	-0.107*** (0.038)	-0.102*** (0.038)	-0.107*** (0.038)
<i>Education (reference group: primary education)</i>			
Secondary education	0.034 (0.029)	0.033 (0.029)	0.034 (0.029)
Tertiary education	0.087*** (0.030)	0.084*** (0.030)	0.087*** (0.030)
Household with children below 25 years	-0.021 (0.023)	-0.020 (0.023)	-0.022 (0.023)
Household with children above 25 years	-0.043 (0.029)	-0.040 (0.029)	-0.044 (0.029)
<i>Working status (reference group: employed full-time)</i>			
Employed part-time	-0.008 (0.030)	-0.010 (0.030)	-0.008 (0.030)
Unemployed	-0.121*** (0.039)	-0.110*** (0.039)	-0.121*** (0.039)
Retired	0.192*** (0.033)	0.190*** (0.033)	0.192*** (0.033)
Other status	0.003 (0.033)	-0.001 (0.033)	0.003 (0.033)
<i>Amenities of the city</i>			
Public transport	0.388*** (0.022)	0.397*** (0.021)	0.390*** (0.022)
Health system	0.402*** (0.021)	0.399*** (0.020)	0.403*** (0.021)
Cultural facilities	0.415*** (0.025)	0.410*** (0.024)	0.416*** (0.025)
Green spaces	0.461*** (0.022)	0.479*** (0.022)	0.464*** (0.022)
Public spaces	0.377*** (0.022)	0.395*** (0.022)	0.379*** (0.022)
Cleanliness	0.382*** (0.020)	0.421*** (0.019)	0.386*** (0.020)

(Continued)

Table 5. (Continued)

	(1) Ologit + city FE	(2) Ologit + country FE	(3) Ologit multilevel + city and country RE
<i>Inclusiveness and safety of the city</i>			
Trust	0.295*** (0.020)	0.321*** (0.020)	0.299*** (0.020)
Safety perception	0.393*** (0.021)	0.436*** (0.021)	0.397*** (0.021)
Crime victimisation	-0.145*** (0.036)	-0.168*** (0.036)	-0.147*** (0.036)
Inclusive city for immigrants	0.219*** (0.022)	0.215*** (0.022)	0.199*** (0.022)
Inclusive city for gay and lesbian people	0.197*** (0.026)	0.191*** (0.025)	0.199*** (0.026)
<i>Other city characteristics</i>			
Capital		-0.022 (0.025)	0.014 (0.021)
Availability of affordable housing	0.165*** (0.020)	0.127*** (0.020)	0.160*** (0.020)
Absence of corruption	0.987*** (0.020)	-0.111*** (0.021)	0.100*** (0.021)
City size		-0.073*** (0.005)	-0.067*** (0.021)
Strongly disagree/somewhat disagree	-0.609*** (0.093)	-1.867*** (0.093)	-1.446*** (0.110)
Somewhat disagree/somewhat agree	0.875*** (0.091)	-0.389*** (0.091)	0.020 (0.109)
Somewhat agree/strongly agree	3.325*** (0.093)	2.037*** (0.091)	2.468*** (0.109)
City FE/RE	Yes	No	Yes
Country FE/RE	No	Yes	Yes
σ^2			3.29
τ_{00_city}			0.09
$\tau_{00_country}$			0.15
Observations	56,209	56,209	56,209
AIC	99,363.7	99,981.1	99,584.7

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; Standard errors in brackets.

Ologit: ordered logit; FE: fixed effects; RE: random effects; AIC: Akaike information criterion.

For all variables, the answer category 'don't know/refuses' has been included as a separate one to preserve the sample size. For the sake of brevity, these variables are not reported in the tables. Standard errors are in parentheses. A variable combining the design weight and the post-stratification weight has been used as weighting variable for each of the estimations reported in the table.

Table 6. Relative importance: decomposition based on the OLS estimates with (1) city FE (Column 1, Table 1) and (2) country FE (Column 2, Table 1).

	OLS + city FE	OLS + country FE
<i>Socio-economic characteristics</i>		
Sex: female	0.00051	0.00053
Lived in other cities	0.00059	0.00040
Difficulty in paying bills	0.04660	0.04813
Age	0.00405	0.00416
Education	0.00072	0.00801
Household composition	0.00129	0.00131
Working status	0.00944	0.00984
<i>Amenities of the city</i>		
Public transport	0.07276	0.07931
Health system	0.06888	0.07412
Cultural facilities	0.07130	0.07517
Green spaces	0.09829	0.10719
Public spaces	0.07797	0.08443
Cleanliness	0.06625	0.07260
<i>Inclusiveness and safety of the city</i>		
Trust	0.07685	0.08046
Safety perception	0.09559	0.10358
Crime victimisation	0.01111	0.01175
Inclusive city for immigrants	0.01698	0.01785
Inclusive city for gay and lesbian people	0.02532	0.02611
<i>Other city characteristics</i>		
Capital		0.00491
Availability of affordable housing	0.00958	0.00828
Absence of corruption	0.02023	0.02168
City size		0.02154
Country dummies		0.14576
City dummies	0.22570	

OLS: ordinary least squares; FE: fixed effects.