WORKING PAPER

Living conditions and quality of life

# Evaluating composite indicators in the European Quality of Life Survey 2016: Review of Eurofound reports and external studies

European Quality of Life Survey 2016: Quality of life, quality of public services and quality of society

**Authors:** Francesco Mattioli and Letizia Mencarini (Bocconi University)

**Research manager:** Massimiliano Mascherini

**Eurofound reference number:** WPEF24069



*Research carried out prior to the UK's withdrawal from the European Union on 31 January 2020, and published subsequently, may include data relating to the 28 EU Member States. Following this date, research only takes into account the 27 EU Member States (EU28 minus the UK), unless specified otherwise.*

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency established in 1975. Its role is to provide knowledge in the area of social, employment and work-related policies according to Regulation (EU) 2019/127.

**European Foundation for the Improvement of Living and Working Conditions**

**Telephone:** (+353 1) 204 31 00

**Email:** information@eurofound.europa.eu

**Web:** www.eurofound.europa.eu

# Contents

# Introduction

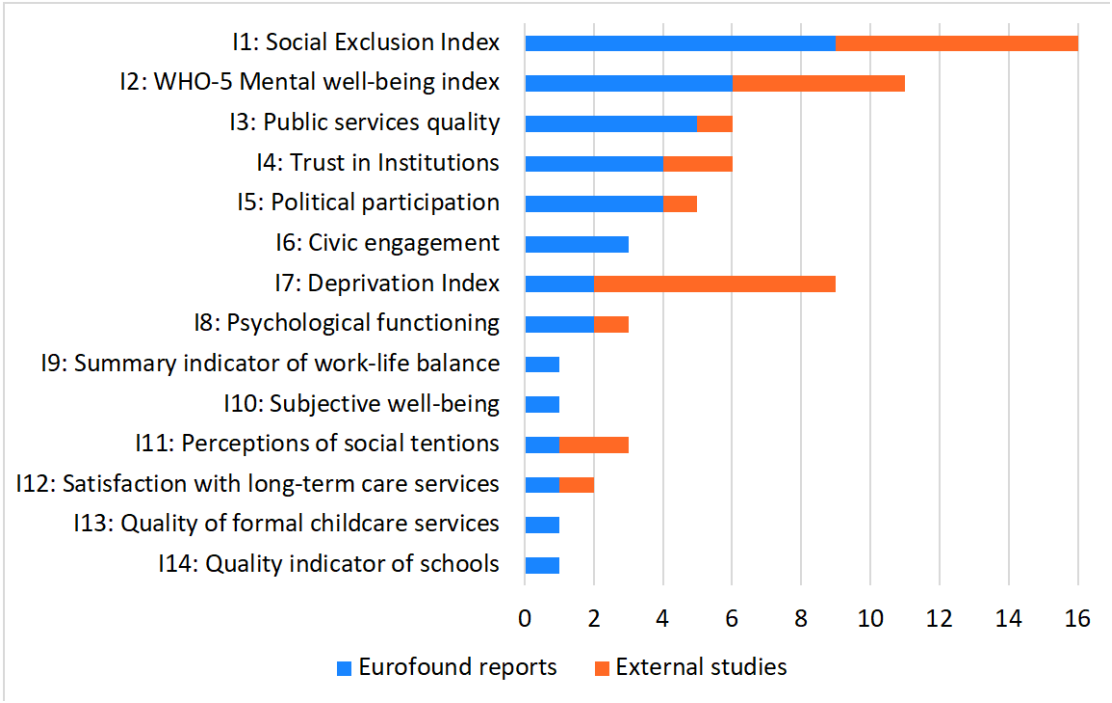
This report provides an in depth analysis of the statistical properties of composite indicators based on the fourth edition of the European Quality of Life Survey (EQLS) that was carried out in 2016[1]. The analysis considers composite indicators developed and used in 12 Eurofound reports, all based on the EQLS 2016 survey. In addition, 19 additional external papers were identified that also used this survey to construct and apply indices in their analysis.

In the context of this report, an indicator is defined as composite if it results from the aggregation of at least three variables (i.e. items). The set of items used to create a specific composite indicator can be the same or very similar across different sources. In such cases we refer to and evaluate a single, comprehensive indicator, disregarding varying modes of aggregation employed in different sources (e.g. sum, simple or weighted average, maximum across items, factor analysis). In total we identified 23 unique composite indicators. Out of the total, 14 have been retrieved from the Eurofound reports and external sources (i.e. core composite indicators), whereas the remaining 9 indicators were used exclusively in the articles identified externally. The core indices are presented starting from the most to the least recurring in the Eurofound reports, as summarized in Figure 1.

Overall, the most recurring indicator is about social exclusion and measures to what extent people feel disconnected from society: it appears in 9 Eurofound reports and 7 external studies. External sources employ as many times an index of deprivation that measures whether and how many basic goods people are able to afford. The second most frequent indicator that appears in Eurofound reports (6; third in external sources – 5) is a 5-item scale developed by the World Health Organization aimed at measuring mental well-being and the risk of depression. Following, there are indicators of public service quality, institutional trust, political participation, civic engagement, and psychological functioning, which occur in at least two Eurofound reports. Finally, indicators of work-life balance, subjective well-being perceptions of social tensions, satisfaction/quality of specific services only appear in one Eurofound report each. Additional five indicators have been defined and employed in Eurofound reports, but we exclude them from the assessment because they were built using only two items. In fact, there is no obvious way to assess the statistical properties of two-item indices.

[1] The first edition dates back to 2003, followed by a second and a third edition occurred, respectively, in 2007 and 2012.

**Figure 1: Core composite indicators identified in Eurofound or external sources**




An in-depth statistical analysis of the chosen indicators is listed in the appendix of this document. For each composite indicator, we provide the text of the question(s), items, and the range of possible answers underlying the variables used in the construction of the indicator. We also provide the polychoric correlation matrix and the results of Principal Component Analysis (PCA), including the screeplots. Finally, a table reports a series of statistics that summarize whether the items are suitable to be employed in the construction of the composite indicator. The overall conclusion from this assessment is that the indices constructed and used, all based on the EQLS 2016, tend to be of good quality.

# Identification of studies

The studies produced by Eurofound using the EQLS 2016 include six research reports, five policy briefs, and one flagship report published between January 2018 and January 2020. The full list of reports is publicly available on the Eurofound website[2].

The identification of external studies has been conducted borrowing from the reporting standard used for systematic reviews and meta-analyses as summarized in Figure 2, i.e. the PRISMA 2020 statement and flow diagram[3]. The identification of records occurred on May 15th 2024, and was carried out using the advanced search builder on two electronic databases: Web of Science[4] and PubMed[5]. Relevant keywords and their permutations were identified in title or abstracts of records and operationalized according to specific search strings (Box 1).

**Box1. Search strings used to identify studies**

*Web of Science*: TS=("eqls" OR "european quality of life survey*")

*PubMed*: "eqls"[Title/Abstract] OR "european quality of life survey*"[Title/Abstract]

The initial search identified a total of 98 records in Web of Science and 28 in PubMed. This consisted of a variety of research output produced independently by academics, scholars and practitioners. In particular, only records published from 2017 were initially retained, as the scope of the assessment is restricted to composite indicators built using the EQLS 2016. They were imported in the reference management software Zotero. Out of the combined total of 126 records, 25 were identified as duplicates and removed. This initial step left 101 records for the screening stage, in which titles and abstracts of the studies identified were screened to determine their relevance. A series of inclusion/exclusion criteria were adopted in this stage to identify the set of references eligible:

- *Relevance to quality of life*: references in which quality of life is the central topic of research; in 5 references EQLS is an abbreviation used to label concepts and phenomena pertaining to physics;
- *Written in English:* references using English as the language for publication; 6 references were published either in Spanish or in Turkish;
- *Availability of abstract*: references including abstracts as meta-data to be screened; 7 references did not present an abstract upon import in Zotero;

[2] http://eurofound.link/efs002

[3] https://www.prisma-statement.org

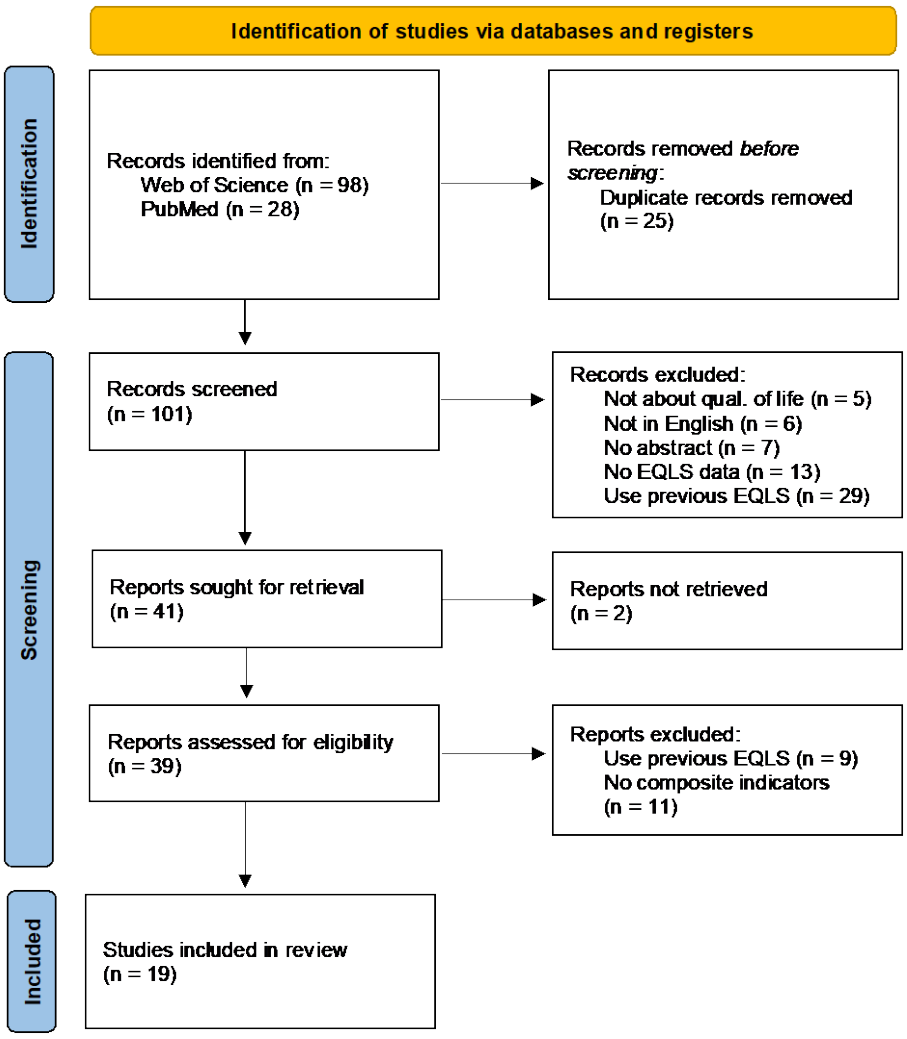
[4] https://clarivate.com/products/scientific-and-academic-research/research-discovery-and-workflow-solutions/webofscience-platform/

[5] https://pubmed.ncbi.nlm.nih.gov

- *Analysis of EQLS data*: references that employ EQLS data in analysis, a necessary condition to find composite indicators to be assessed; in 13 references EQLS was simply cited as a source, e.g. papers in which survey data were collected borrowing from the EQLS questionnaire;
- *EQLS 2016 analyzed*: references that employ the fourth wave of the survey; 29 references indicated the use of earlier EQLS waves in their abstracts.

Only two records of those retained after the first screening stage could not be retrieved either through online libraries or the web. The eligibility assessment was conducted on 39 retained referenced by reading full texts. In the eligibility stage 9 more studies were excluded because their analyses were based on previous EQLS waves, which was not reported in the abstract. Finally, 11 studies performed data analyses of EQLS 2016 without creating composite indicators, but rather single or double items. As a result, 19 studies have been included in this document and their composite indicators assessed. The full list of these studies is reported in the references.

**Figure 2: PRISMA 2020 flow diagram for the identification of relevant studies**



# Methods

This section describes how the statistical assessment of the composite indicators has been carried out. While we synthetize the main results of the assessment in the main text of the document, the appendix presents, for each indicator, the text of question(s) and items, a correlation matrix of items, a screeplot resulting from PCA, and a list of item factor loadings, uniqueness values, and reliability coefficients. A brief description of the assessment methods is provided in what follows[6].

Pearson's correlation between two variables assumes that the distributions are continuous, a feature that extends to the case of several variables, which will then generate a correlation matrix. The correlation coefficients in the matrix range between –1 (perfect inverse correlation) and +1 (perfect direct correlation), with values closer to zero indicating a weak association between items. It is not uncommon to use the Pearson correlation when the variables can take 10 or more discrete values. However, when looking across the 23 indicators analyzed in this report, few of them take as many as 10 values. As a result, we rely on the polychoric variant of Pearson's correlation coefficient (Olsson, 1979; Kolenikov & Angeles, 2009): all the variables considered are measured using ordinal discrete scales (e.g. Likert scales), but where many of them have less than 10 discrete values. Note that the polychoric variant of the Pearson's correlation converges to the original version when the number of possible values is 10 or more. In these cases, there is very little difference between the two. When dichotomous variables occur, tetrachoric correlations are computed.

PCA is a statistical technique aimed at reducing the dimensionality of a set of items by uncovering their underlying structure. To the extent that $n$ starting items share common variation (i.e. they measure similar constructs), PCA allows to extract $m$ factors, or principal components that explain a significant proportion of the overall initial variability. While as many factors as initial items are extracted ($m = n$), this technique maximizes the variability explained by each factor extracted successively (i.e. the first factor retains a larger portion of variation than the second and so on) such that only a few factors extracted first are substantively relevant and should be retained ($m < n$). Each factor is associated to an eigenvalue, a number that expresses the proportion of total variability retained by the respective factor. Several "stopping rules" can be adopted as to how many factors to be retained on the basis of their eigenvalues. We combine the use of a scree plot, the Kaiser criterion, and the percentage of explained variance. The former prescribes to plot consecutive eigenvalues and retain those that precede a drop in the line. The latter suggests retaining factors associated to an eigenvalue larger than one. The result is a simpler data structure where the few retained factors are sufficient to measure what many more items were measuring initially. The figure included in the document is a scree plot showing on the $y$-axis the eigenvalue associated to each factor ordered consecutively on the $x$-axis. The proportion of variation retained by factors are printed next to the marker in the body of the plot.

We report factor loadings, the values of uniqueness, and reliability coefficients. Factor loadings correspond to correlation coefficients between the items and the factor(s) extracted after PCA. The higher the loading, the more strongly the item is associated to the latent construct that the factor is measuring. A vector of loadings is shown for each factor extracted upon performing PCA. Uniqueness is a number ranging between 0 and 1 that expresses how much of the item's variation is

[6] For a comprehensive review of the methods see OECD (2008).

not in common with other items. Higher values indicate that the item does not contribute to the measurement of a latent construct. The reliability coefficient corresponds to the ordinal version of Cronbach's alpha and is used to assess how well the set of items measures the latent construct. It ranges between zero and one, and higher values indicate that individual indicators are highly correlated, i.e. that the composite indicator is reliable (a common rule of thumb to assess adequate reliability is a coefficient above .[7]). Reliability of the composite indicators is showed at the bottom of the table, whereas the reliability that would result by omitting a certain item from the set of items used to build the composite indicator is shown next to the respective item.

# Results

## Core composite indicators

### Indicator 1: Social Exclusion Index

As reviewed in Eurofound (2017), the European Commission identifies 'social isolation' as a significant contemporary risk factor alongside issues like mental illness, substance abuse, criminality, and insecurity in its reflection paper on the social dimension of Europe (European Commission, 2017a).

The Disability Strategy also seeks to reduce social exclusion through targeted actions supported by the European Social Fund (Eurofound, 2018a). Social exclusion, which involves people feeling marginalized from society, poses a severe threat to well-being and indicates deep social divisions when widespread. The SEI emphasizes perceived social exclusion, based on individuals' feelings about their societal position and challenges, rather than objective measures like the at-risk-of-poverty rate, following recommendations by Stiglitz et al. (2009) on the value of subjective accounts.

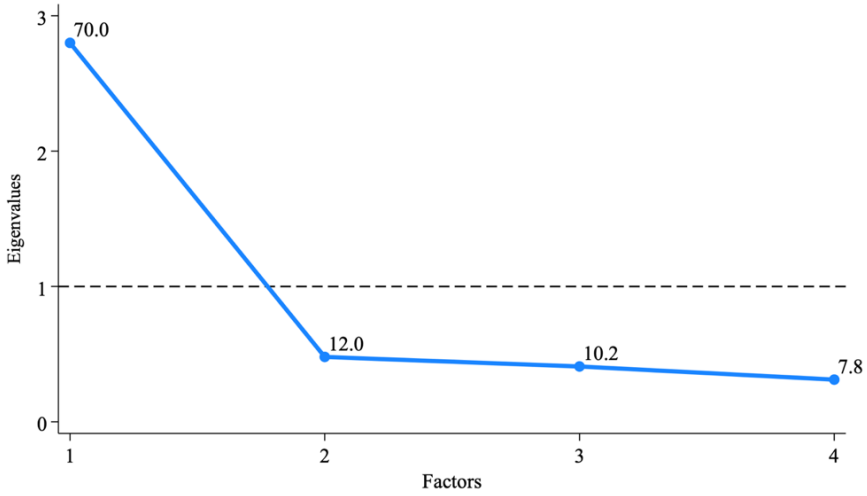
Research reviewed in Eurofound (2019a) indicates that feeling excluded increases sensitivity to social threats (Baumeister et al., 2002; Gerber and Wheeler, 2009; Riva et al., 2017). Analysis of the 2016 EQLS shows that perceptions of exclusion rise significantly with lower interpersonal trust and mental well-being. A German study found that social exclusion is also associated with accidents at home among older people and can lead to increased health spending (Hajek and König, 2017).

The EQLS 2016 includes four items aimed at assessing individuals' sense of connection to society, forming the Social Exclusion Index (SEI):

- I feel left out of society
- Life has become so complicated today that I almost can’t find my way
- I feel that the value of what I do is not recognised by others
- Some people look down on me because of my job situation or income

Statistical analysis shows pair-wise polychoric correlation coefficients steadily above 0.5. PCA suggests that a unique factor exists, capturing 70% of total variation. Factor loadings from all items are above 0.8, ranging from 0.811 to 0.847. The reliability of the indicator is at 0.903, and does not improve by removing any item. The performance of this indicator is excellent.

**Figure 3: PCA screeplot of Indicator 1**




## Indicator 2: WHO-5 Mental wellbeing index

Mental well-being is described as a 'dynamic state that refers to individuals' ability to develop their potential, work productively and creatively, build strong and positive relationships, and contribute to their community' (Beddington et al., 2008, p. 1057). Stressing its importance, in Eurofound (2019a) it is pointed out that the lack of mental well-being can lead to diseases and mental disorders (Wittchen and Jacobi, 2005).

As reported in Eurofound (2018b), subjective well-being encompasses people's subjective experiences of their quality of life. This approach, developed in the 1970s in the United States, is based on individuals' perceptions and evaluations of their own lives (Campbell et al., 1976). It goes beyond objective information about living conditions and resources, positing that quality of life is ultimately a personal assessment. The value of this approach, as compared to objective measures, has been recognized by policymakers worldwide. Research on subjective well-being typically covers two internal dimensions: emotions and satisfaction. The former, including both positive emotions like enthusiasm and negative ones like sadness, reflect a more immediate and transitory state of well-being, whereas the latter represents a more cognitive and lasting state. Thus, emotional experiences are usually surveyed over shorter time frames (e.g., the past two weeks), unlike satisfaction.

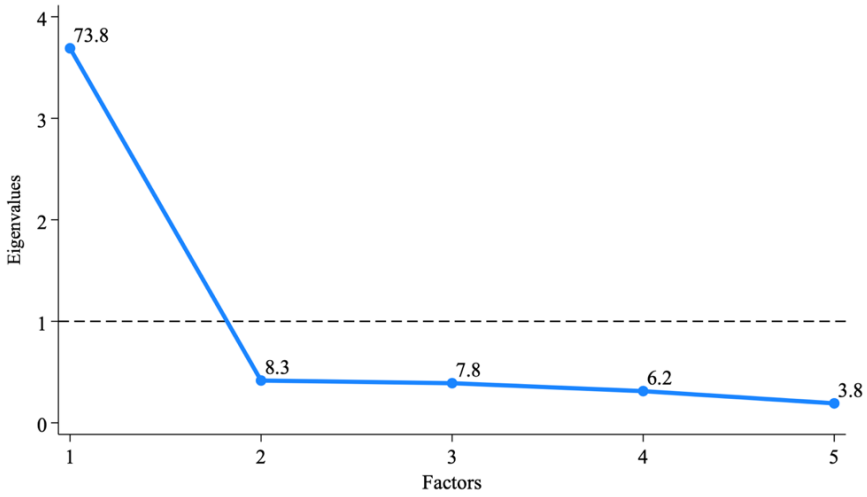
Regarding mental health and well-being, the EQLS includes several questions that can be used to create a mental health indicator based on the WHO Mental Well-being Index (WHO-5). On a scale from 0 to 100, individuals with a WHO-5 score of 50 or below are considered at risk for depression (Topp et al., 2015).

The items in the EQLS 2016 were:

- I have felt cheerful and in good spirits
- I have felt calm and relaxed
- I have felt active and vigorous
- I woke up feeling fresh and rested
- My daily life has been filled with things that interest me

As can be seen from the appendix, also the performance of this index is excellent. Pair-wise polychoric correlations steadily exceed 0.6, all the items load highly on to one index capturing more than 70% of total variations, with loadings in the PCA ranging from 0.825 to 0.885. The high reliability of 0.933 would not improve by removing any item.

**Figure 4: PCA screeplot of Indicator 2**




## Indicator 3: Quality of public services

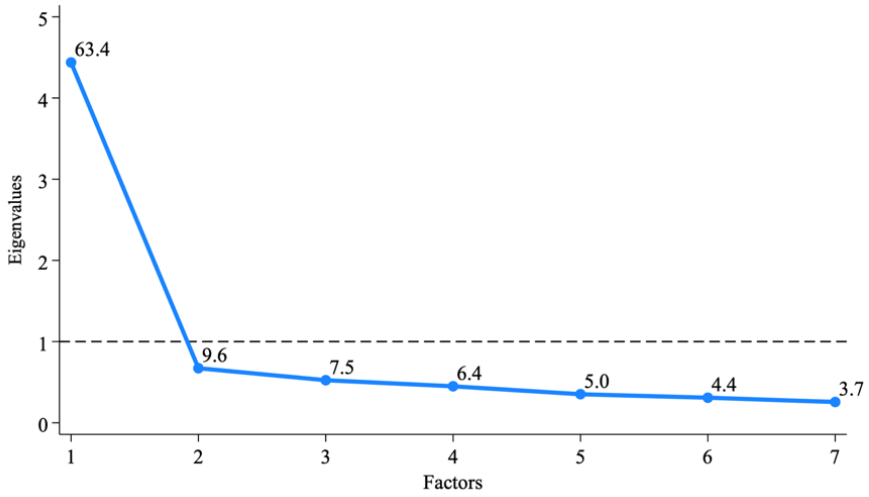
As stated in Eurofound (2018c), the perception of the quality of public services has previously been identified as a significant predictor of trust in institutions. This is because such perceptions serve as an indicator of the effectiveness and outcomes of institutional functions. High-quality public services can enhance the credibility and trustworthiness of institutions in the eyes of the public, as they demonstrate the institutions' capacity to meet the needs and expectations of citizens. Conversely, poor quality in public services can undermine trust, revealing inefficiency, incompetence, or neglect. This relationship underscores the importance of public service quality as a key component in building and maintaining institutional trust, making it a crucial area of focus for policymakers and administrators aiming to foster public confidence in governmental and civic institutions.

The EQLS 2016 asked respondents to rate for their country on a scale from 1 to 10 on seven public services. Respondents were asked for their opinion, regardless of whether they use a particular service or not (2017). By gathering input from the entire sample population, the EQLS aims to provide a comprehensive overview of public perception concerning the quality of these services, reflecting a broader societal perspective rather than limiting the data to only those with direct experience. The seven items were:

- Health services
- Education system
- Public transport
- Childcare services
- Long term care services
- Social/municipal housing
- State pension system

Polychoric correlation coefficients are generally higher than 0.5. The exception is state pension system, opinions about which seem to be less related to the remaining services. PCA suggests a strong first factor that measures 63% of total variation. While factor loadings on all items are higher than 0.7, state pension system emerges as the service that is least related with the resulting indicator of public service quality, in accordance with previous correlational analysis. The same holds true also for public transport. Although the variation of these two items is relatively less shared and more unique than the other items, the reliability of the composite indicator is above 0.9 and could not be improved. The performance of this indicator is good, and it can be used in analysis bearing in mind that the overall quality of public services reflects to a smaller extent opinions about state pension system and public transport.

**Figure 5: PCA screeplot of Indicator 3**




## Indicator 4: Trust in Institutions

As reviewed in Eurofound (2017), trust is considered a vital societal resource, a key component of social capital that fosters cooperation among citizens and is crucial for the effective functioning of social institutions, including government.

The interest in studying trust stems from recognizing it as a powerful indicator of well-being at both individual and societal levels, and as a fundamental prerequisite for collective action and cooperation (Kahan, 2001; Tyler, 2011; Eurofound, 2013; OECD, 2013a). Citizens' trust in public institutions is seen as a measure of support for, or legitimacy of, the political sphere (Levi and Stoker, 2000): trust is the expectation that the object of trust (such as a person or institution) will produce positive outcomes. Thus, trust or confidence is regarded as an attitude. However, the nature of support expressed by trusting attitudes is debated. Trust in institutions should be viewed as a phenomenon that is complex, differentiated, context-dependent, and dynamic (Eurofound, 2018c).

It has been argued that economic performance issues alone do not fully explain the noticeable decline in trust. Therefore, trust data should be considered when evaluating the quality of governance and public integrity more broadly (Mungiu-Pippidi et al., 2015). Monitoring trust and its determinants as 'weak signals' – early indicators of emerging changes – can be useful for anticipating

shifts and developing future scenarios (European Commission, 2017b). Concerns about trust in public institutions are valid, given the need for public endorsement of policies and the overall democratic legitimacy of social and political systems.

The EQLS 2016 includes eight institutional trust items:

- [NATIONALITY] parliament
- The legal system
- The news media
- The police
- The government
- The local (municipal) authorities
- Banks
- Humanitarian or charitable organizations

Pair-wise correlations are uniformly above 0.5, with the exception of trust in banks and trust in humanitarian organizations which correlate less strongly with other items. The PCA analysis suggests one index capturing 60% of total variation. Loadings on the unique factor are lowest for both the two trust items weakly correlated with the others, thus implying their relatively high unique variance. The reliability of the composite trust indicator is at 0.925, yet overall trust reflects less respondents' attitudes towards banks and humanitarian organizations. Reliability would be affected very little by removing these two items. This indicator's performance is good.

It should be noted that studies have also employed a 5-item version that encompasses only the first five institutions listed above. The reduced composite trust indicator performs better than the 8-item indicator, as the unique factor measures 69% of total variation rather than 60%. Trust in news media and in the police appear to be less correlated with the factor, and reliability would slightly improve or remain the same by removing these two items from the reduced version. Trust in the parliament, in the legal system and in the government are the items that have most variation in common, and the most reflected by either version of the composite trust indicator.

**Figure 6: PCA screeplot of Indicator 4-8**

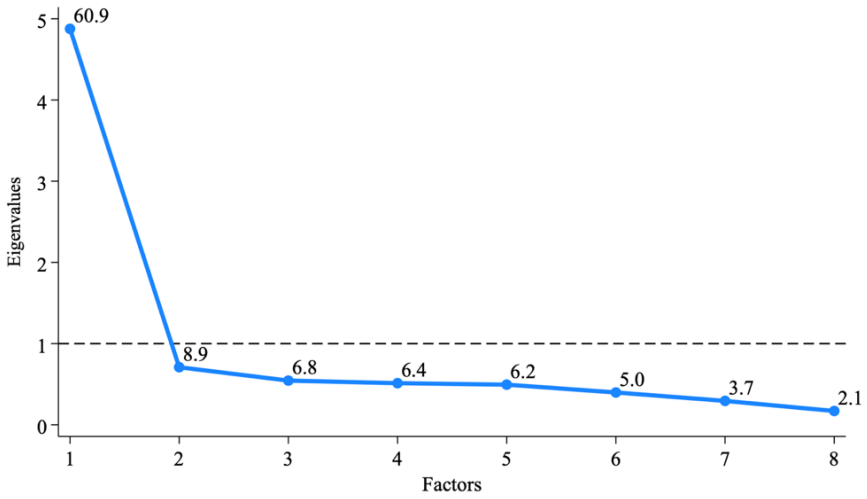
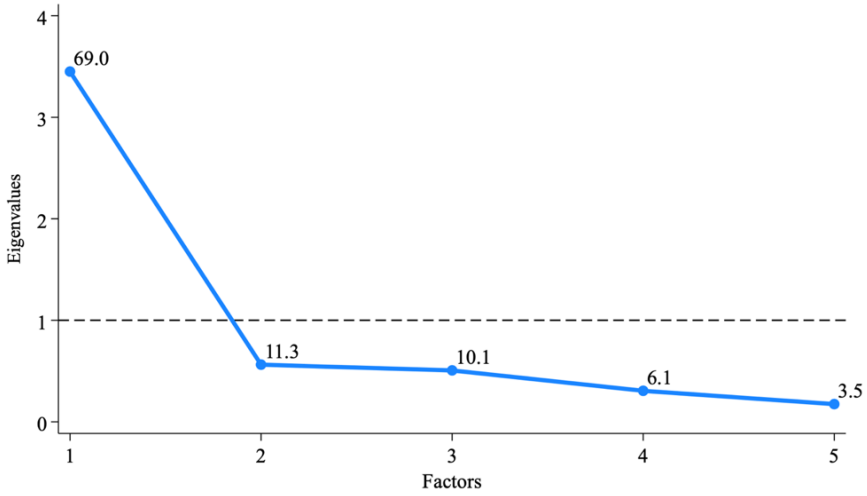


**Figure 7: PCA screeplot of Indicator 4-5**




## Indicator 5: Political participation

Civic engagement in voluntary associations and participation in political activities are fundamental characteristics of a cohesive society (Eurofound, 2018b). When citizens engage in clubs, associations, or political activities, they form strong connections with one another, fostering a sense of community and shared purpose. This engagement is crucial for combating social exclusion, as it encourages individuals to be active participants in their society rather than passive observers. By promoting participation in these activities, society can help individuals feel more integrated and valued. Moreover, through their active involvement, citizens not only express but also develop a deeper concern for the well-being of others and the public good, strengthening the social fabric and enhancing collective well-being.

As stated in Eurofound (2019a), participation and involvement in local activities are essential for fostering social cohesion, especially in rural areas where community ties are often the strongest. Engaging in local activities provides individuals with a sense of belonging and identity within their community. This sense of belonging is vital for building a supportive and united community, as it encourages individuals to take an active interest in the welfare of their neighbors and the overall health of their community. By participating in local events, volunteer opportunities, and community organizations, residents can cultivate relationships and networks that enhance mutual support and cooperation. This, in turn, contributes to a more cohesive and resilient community, capable of facing challenges together.

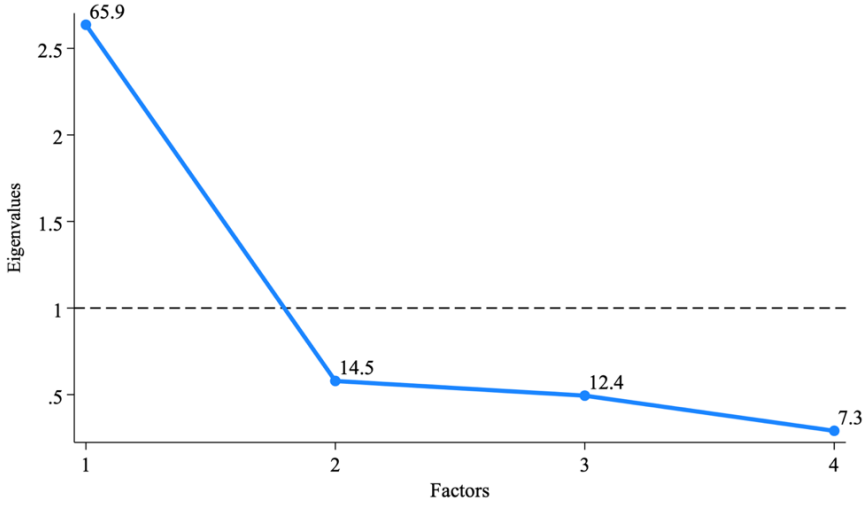
The EQLS 2016 asks for four items:

- Attended a meeting of a trade union, a political party or political action group
- Attended a protest or demonstration
- Signed a petition, including an e-mail or on-line petition
- Contacted a politician or public official (other than routine contact arising from use of public services)

Polychoric correlation coefficients range from 0.453 to 0.624. PCA produces one factor capturing 66% of total variation. All four items load strongly and very similarly on the factor extracted, with

loadings ranging from 0.791 to 0.824. The reliability of the composite index is 0.89 and would decrease by removing any item. Taken together, the analyses show that the performance of the indicator is very good.

**Figure 8: PCA screeplot of Indicator 5**




## Indicator 6: Civic engagement

Civic engagement in voluntary associations and participation in political activities are essential components of a cohesive society. When citizens engage in clubs, associations, or political activities, they build strong connections with others, fostering a sense of community and belonging (Eurofound, 2018b). This is a key reason why promoting societal participation is viewed as a vital strategy to combat social exclusion. EU policies recognize the crucial role of citizen engagement in enhancing the quality of society within Member States and advancing the European project as a whole. Citizen engagement is generally seen as a positive development, contributing significantly to both quality of life and societal well-being (Eurofound, 2017). Such involvement not only enriches the individual lives of citizens but also strengthens the social fabric, fostering a more vibrant and interconnected community across Europe.

Active participation encourages individuals to become involved in the collective life of their society, allowing them to express and develop their concern for the well-being of others and the public good. Through these activities, citizens not only contribute to the common welfare but also reinforce the bonds that hold society together, creating a more inclusive and supportive environment for all. Civic engagement in voluntary associations and participation in political activity are two key characteristics of a cohesive society.

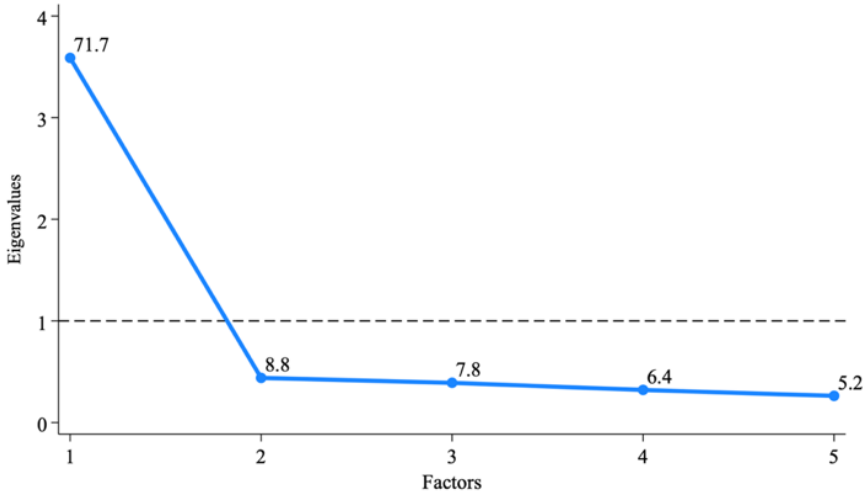
The EQLS 2016 asked respondents about their participation in five activities listed below:

- Community and social services (e.g. organisations helping the elderly, young people, disabled or other people in need)
- Educational, cultural, sports or professional associations
- Social movements (for example environmental, human rights) or charities (for example fundraising, campaigning)
- Political parties, trade unions

- Other voluntary organisations

All items are strongly correlated among themselves (polychoric correlation coefficients never fall below 0.59). A single strong factor emerges from the PCA, capturing almost 72% of total variation. All loadings of the items are above 0.8 and similar across them, showing that the composite indicator weights equally engagement on either organization. A Cronbach's alpha of 0.927 indicates a strong reliability that does not improve by dropping any item. The indicator performs in an excellent way.

**Figure 9: PCA screeplot of Indicator 6**




## Indicator 7: Deprivation Index

Eurofound (2019b) presents a measure of financial hardship, known as deprivation, that reveals some intriguing differences between rural and urban residents who are not in work. Deprivation is determined by evaluating the inability of a household to afford basic items, which serve as indicators of basic living standards. This measure provides a nuanced understanding of financial hardship, going beyond simple income metrics to capture the actual material conditions that people face. By comparing the levels of deprivation between rural and urban non-working populations, we can gain insights into the distinct challenges these groups encounter and tailor interventions more effectively to address their specific needs.

High levels of material deprivation and difficulty in making ends meet are identified in Eurofound (2019c). High deprivation calls for urgent action through the implementation of comprehensive anti-poverty measures. These measures should be designed to alleviate the hardships faced by those most affected by financial insecurity. The social protection system must prioritize support for the most vulnerable groups, ensuring that they receive adequate assistance to improve their standard of living. This involves not only providing financial aid but also addressing the root causes of material deprivation. Addressing deprivation is necessary to move towards a more equitable society where everyone has the opportunity to live with dignity and security. The commitment to reducing material deprivation will require coordinated efforts from policymakers, social service providers, and community organizations to create sustainable solutions that uplift the most disadvantaged members of society.

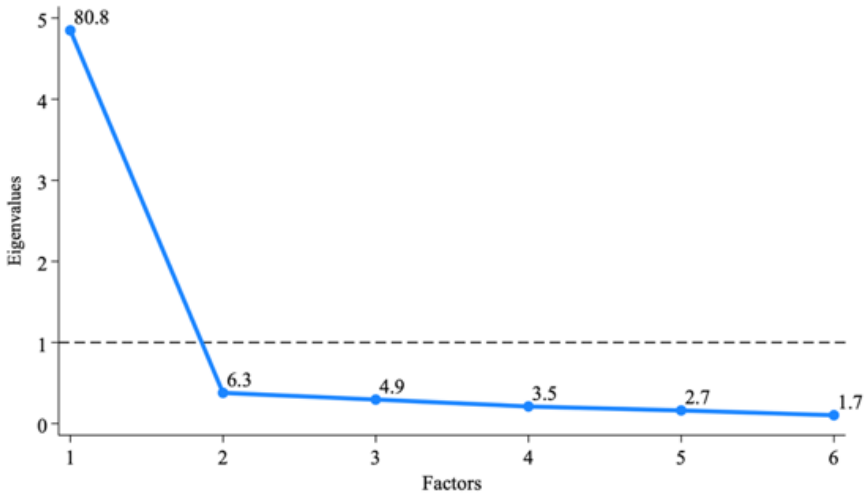
The construction of deprivation indices is well established. Several other surveys offer similar items that can be used for its measurement. As with many other surveys, the question is stated as: “There are some things that many people cannot afford, even if they would like them. For each of the following things on this list, can I just check whether your household can afford it if you want it?”. The items were as follows:

- Keeping your home adequately warm.
- Paying for a week's annual holiday away from home (not staying with relatives).
- Replacing any worn-out furniture.
- A meal with meat, chicken, fish every second day if you wanted it.
- Buying new, rather than second-hand, clothes.
- Having friends or family for a drink or meal at least once a month.

Note that respondents were requested to state whether they could afford it – or not.

All pair-wise correlation coefficients are high, systematically above 0.68. PCA suggests extracting a single, very strong factor that captures almost 81% of total variation. Factor loadings are very high across items, with “warm home” standing out as the least related to the composite indicator. Reliability amounts to 0.962 and would only get slightly larger should the “warm home” item be isolated from the other five. The performance of this indicator is excellent.

**Figure 10: PCA screeplot of Indicator 7**




## Indicator 8: Psychological functioning / Perceived resilience

An important concept in subjective well-being research is represented by psychological functioning – also known as eudaimonic well-being (OECD, 2013b). As noted in in Eurofound (2018b), unlike emotions or life satisfaction, which represent specific internal states, eudaimonic well-being encompasses a broader range of factors that contribute to an individual's sense of fulfilment and purpose. This dimension of subjective well-being is usually assessed through self-reports, where individuals reflect on various aspects of their lives that psychologists consider essential for personal growth and flourishing. For example, these aspects include the feeling of having a purpose in life, a sense of meaning, personal growth, autonomy, and the realization of one's potential. This approach

provides a more comprehensive understanding of well-being, capturing deeper aspects of human happiness and life satisfaction.

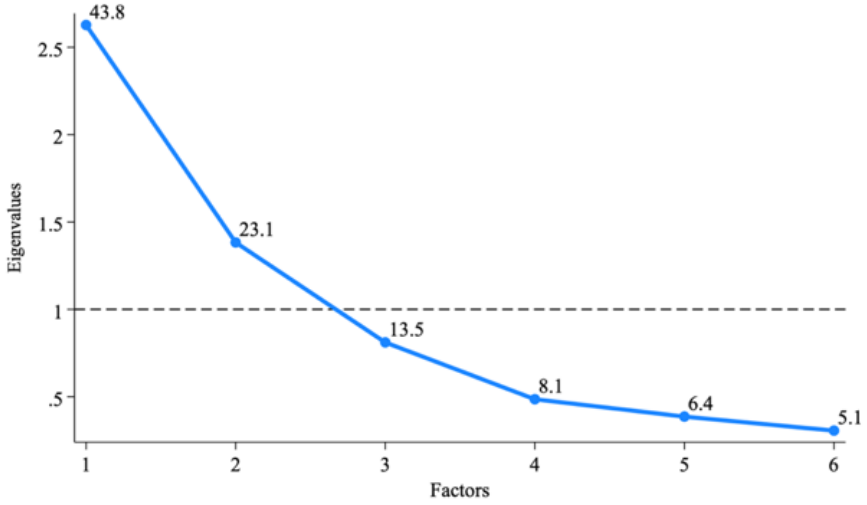
Insecurities can really impact quality of life, but their effects can be reduced with the right support. The review in Eurofound (2018a) suggests that people handle hard times better when they have personal resources, strong support networks, and reliable public services. These factors boost confidence in overcoming challenges. Personal resources include financial stability, education, and health. Support networks come from family, friends, and the community. Public services provide social safety nets, healthcare, and job support. Taken together, these elements help people deal with insecurities and maintain a good quality of life, even in tough times.

The EQLS included six items to capture this concept:

- I am optimistic about my future.
- I generally feel that what I do in life is worthwhile.
- I feel I am free to decide how to live my life.
- In my daily life, I seldom have time to do the things I really enjoy.
- I find it difficult to deal with important problems that come up in my life.
- When things go wrong in my life, it generally takes me a long time to get back to normal.

The polychoric correlation matrix shows that several entries have coefficients smaller than 0.3, point to limited overall common variance. The PCA suggests here two indices as opposed to one, a first capturing 43.8% of total variation, and a second one capturing an additional 23%. With a two-component solution, the rotated matrix of factor loadings clearly shows that items cluster in different components: the first three in the list above measure in fact a dimension that is different from the one measured by the other three. The last two items are like the Connor-Davidson CD-RISC two item resilience scale (Connor and Davidson, 2003). They both load strongly onto the second component. It also correlates with “time scarcity”, but the three items take together are rather different from the first three. It seems that the first component captures respondents’ perception about their life in general. The last two, refers instead to how one copes with shocks and disturbances, and are therefore more aligned to the concept of individual resilience. The item about “time scarcity” emerges as the one sharing the least with other items. The overall reliability of 0.872 would increase by removing this item. The performance of the composite indicator is fair, although this analysis suggests to unpack the overall indicator into two sub-indicators.

**Figure 11: PCA screeplot of Indicator 8**




## Indicator 9: Work-life balance

As reviewed in Eurofound (2017), reconciling work and life has represented a long-standing concern of the European institutions. This issue has been addressed with a variety of policy proposals over time, and it remains a priority in the most recent policy initiatives. The European Pillar of Social Rights sets out to tackle the gendered division of unpaid work – particularly responsibilities for the care of children and the elderly (European Commission, 2017c). In addition, policy suggestions have been put forward to introduce family-related and care-related leave in the EU legal framework (European Commission, 2017d).

The term 'balance' somewhat masks the difficulties and conflicts that are inherent to reconciliation (Guest, 2002). Balance can be seen as 'satisfaction and good functioning at work and at home with a minimum of role conflict' (Clark, 2000, p. 751). To achieve balance, it is important to have resources – in particular, time – as well as having the means to address conflicting demands and the related stress. At the same time, it has been shown that having multiple roles in a desired balance is beneficial. So, for example, having work and dealing with care responsibilities can be more beneficial for general well-being than engaging in care duties only (Linville, 1987; Wiese and Freund, 2000). To measure work–life balance requires getting information on time spent on various life domains as well as on preferences, but also on existing responsibilities and related stress that may affect both work and life beyond work.

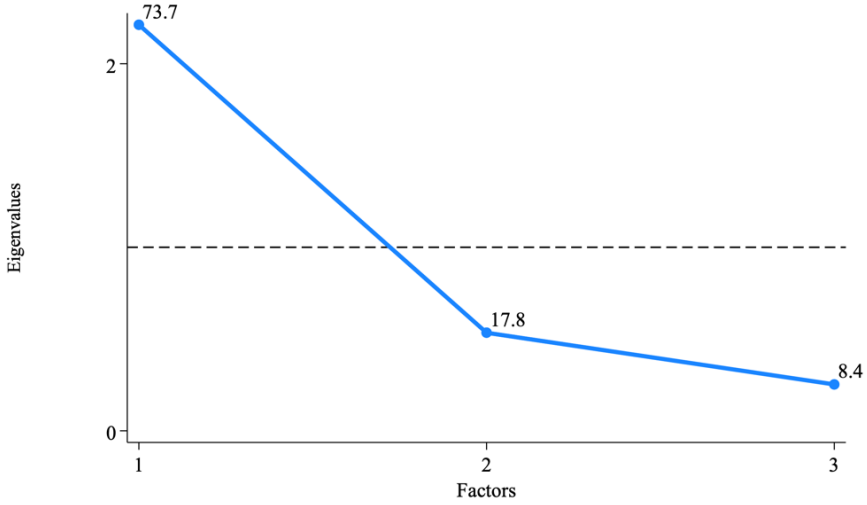
The EQLS 2016 captures respondents' perception of work-life balance through three items:

- I have come home from work too tired to do some of the household jobs which need to be done.
- It has been difficult for me to fulfil my family responsibilities because of the amount of time I spend on the job.
- I have found it difficult to concentrate at work because of my family responsibilities.

Out of three correlation coefficients computed, two exceed 0.65 and one falls below 0.5. PCA suggests a unique strong component capturing almost 74% of total variation. All items load high on the single component, in particular the second item (loading of 0.918). A Cronbach's alpha of 0.893

suggests high reliability, which would drop should the second item be removed. The performance of the indicator is very good, although it reflects relatively more respondents' ability to fulfil family responsibilities compared to other perceptions.

**Figure 12: PCA screeplot of Indicator 9**




## Indicator 10: Subjective well-being (negative emotions)

Eurofound (2018b) traces back the origins of research approaches to subjective quality of life, as seen for Indicator 2 about mental well-being. The modern approach to the study of subjective wellbeing rests on the idea that, ultimately, quality of life is in the eyes of the beholder. Rather than relying on objective information about living conditions and resources, the modern approach draws on citizens' individual perceptions and evaluations of their lives and has been recognised by key policymakers around the world. Research on subjective well-being covers two different internal dimensions: emotions and satisfaction. The EQLS asks questions about both, thereby following Veenhoven (2012) by considering citizens' evaluations of life as a whole. Emotions – including positive emotions such as enthusiasm and negative ones such as sadness – are seen to reflect the more corporeal and transitory state of well-being, whereas satisfaction is understood as being a more cognitive and lasting state. As such, the experience of emotions is typically surveyed with reference to a shorter time frame (such as the past two weeks).

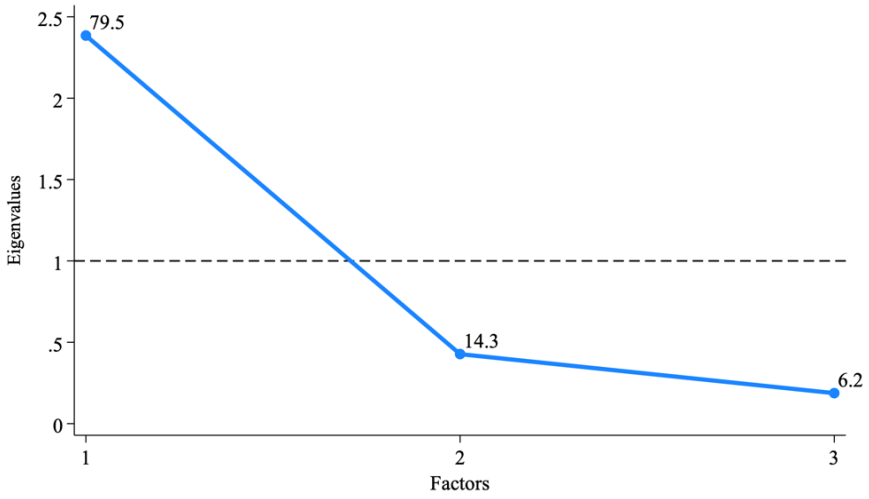
Whereas Indicator 2 considered transitory well-being in terms of positive emotions, Indicator 10 is about transitory negative emotions. The EQLS 2016 includes three items of negative emotions, measured on a six-point scale:

- I have felt particularly tense
- I have felt lonely
- I have felt downhearted and depressed

The third item about depression correlates strongly with the other two, whereas the two other items correlate relatively weakly with each other. PCA indicates the existence of a single strong component capturing 79.5% of total variation. all three items seem to contribute to the variation of the composite indicator, in particular depression. The first item about feeling of tension is the least related to overall subjective wellbeing, but only in a relative sense. The reliability of the indicator is

at 0.92. It would slightly increase by excluding the first item. Overall, the performance of this indicator can be considered very good.

**Figure 13: PCA screeplot of Indicator 10**




## Indicator 11: Perceptions of social tensions

Spruyt et al. (2018) review extensively the literature on the perceptions of social conflict and argue that conflict thinking can be seen as an uncertainty reduction strategy adopted, in particular, by vulnerable people (which manifests itself in support for populism, welfare chauvinism, ethnic prejudice, etc.). The authors note that people may be inclined to perceive the world through the lens of social conflict simply because conflicts are highly salient in public discourse. Indeed, 'cultural politics' has been on the rise for a long time in Western societies (Achterberg, 2006) with the consequence that political parties increasingly rely on discourses that acutely distinguish groups of people from other groups. Reliance on conflict frames, where the focus is on emphasizing 'conflict between individuals, groups, or institutions as a means to capture audience interest' (Semetko and Valkenbrug, 2000, p. 95), is not only visible in politics but also in journalism (Bartholomé et al., 2017). Because they are easy to comprehend and they also evoke strong emotions, conflict frames are capable of capturing people's attention. Insights from the literature on populist attitudes and ethnic prejudice confirm that conflict frames resonate among the public at large. This evidence motivates the construction of a comprehensive indicator that reflects the amount of perceived social conflict in society. In fact, 'the questions derived from the literature on populism and ethnic prejudice become more pressing as soon as one takes into account that attitudes which contain a conflict element are often strongly correlated' (Spruyt et al., 2018, p. 18). For example, Derks (2006) found that attitudes like populism, ethnic prejudice, social-darwinism and authoritarianism are strongly interrelated, also after accounting for socio-economic conditions. There must be a common trait that binds these attitudes together which cannot simply be reduced to the social position of its beholder. Spruyt et al. (2018) conclude that this trait is conflict thinking.

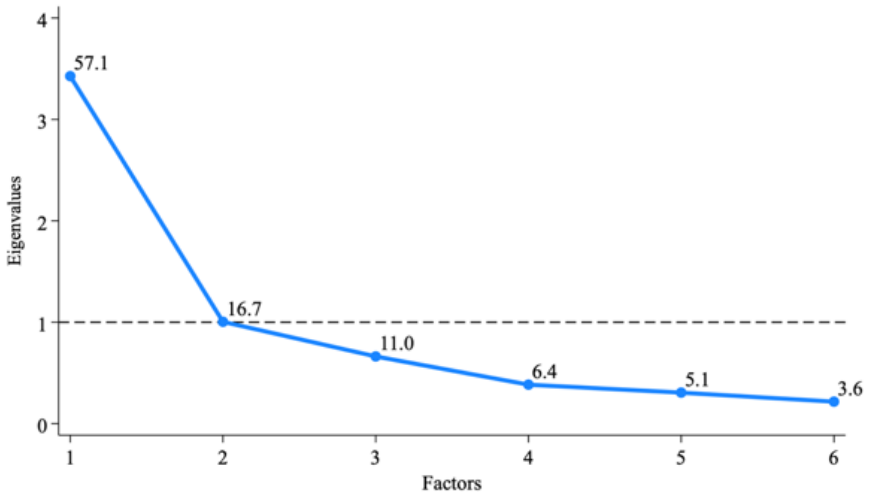
The EQLS 2016 includes seven items about perceived tensions between different groups in society:

- Poor and rich people
- Management and workers

- Men and women
- Old people and young people
- Different racial and ethnic groups
- Different religious groups
- People with different sexual orientations

The analysis in Eurofound (2018c) employs only the first six, whereas external papers considered have used all seven items. The assessment produced here is based on the 6-item composite indicator. The polychoric correlation matrix highlights strong heterogeneity, as some items shows coefficients above 0.5 while other show little correlation (especially 'racial/ethnic groups' and 'religious groups' items). PCA delivers two components, one capturing 57% of total variation, the other 16.7%. After rotating the factor matrix, the first four items appear to load high on the first component, which may refer to tension between socio-economic groups (assuming men vs women would refer to societal gender differences), whereas the following two items (i.e. racial/ethnic and religious) show very high loadings on the second component, which may refer to ideological differences. The two-component solution is highly robust and clearly taps into different underlying concepts. The composite indicator has a high reliability of 0.93. The performance is fair, but we recommend creating indicators that separate the two dimensions of social tensions among groups based on socio-economic and ideological divides.

**Figure 14: PCA screeplot of Indicator 11**




## Indicator 12: Average user satisfaction with medical care services provision

Mazzoni et al. (2022) use the EQLS to measure patient involvement in the healthcare sector. Concepts like patient's involvement (Vahdat et al., 2014), patient's engagement (Higgins et al., 2017; Manafo et al., 2018; Mazzoni et al., 2018), shared decision making and patient-doctor communication have become increasingly popular (Cutica et al., 2014; Marton et al., 2020). Their literature review highlights that positive social relations can reduce the adverse effects of chronic disease on individuals' well-being (Wills & Ainette, 2012; Knoll et al., 2019). More specifically, feelings of being socially included have positive consequences on individuals' well-being, whereas feelings of being socially excluded may threaten fundamental psychological needs, with negative

consequences on emotional well-being (Baumeister & Leary, 1995; Leary, 1990; Williams, 2009). Patients' involvement has shown to have significant therapeutic advantages.

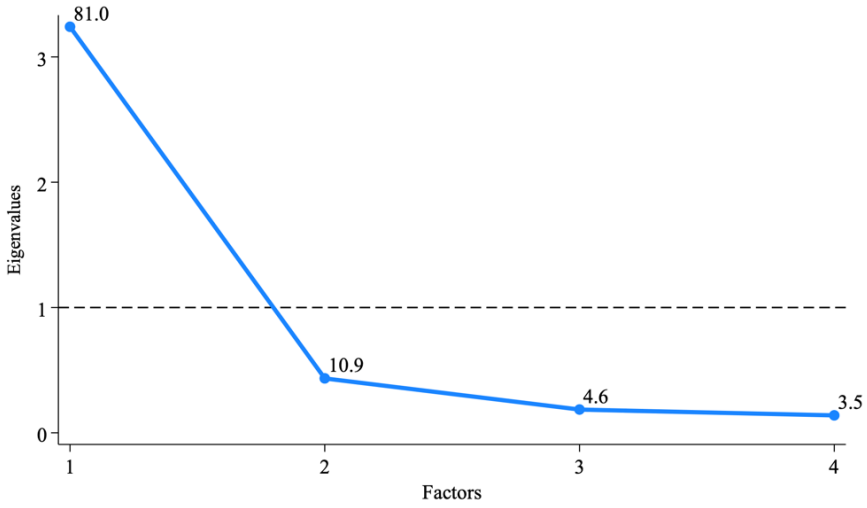
The positive impact of patients' relationships depends on the fulfilment of their psychological needs. Williams (2009) identifies four fundamental psychological needs: the need to maintain reasonably high self-esteem (Steele, 1988; Tesser, 1988), the need to belong (Adler, 1970; Baumeister & Leary, 1995), the need to perceive control over one's social environment (Burger, 1992; Seligman, 1975), and the need to feel recognized for existing and being worthy of attention (meaningful existence; Greenberg et al., 1986, 1990, 1992). Unsatisfactory levels of any of these four constructs (e.g. lacking social connections) result in psychological and physical suffering. On the contrary, their satisfaction positively contributes to individuals' psychological well-being (Molet et al., 2013; Riva & Eck, 2016; Williams, 2009; Williams & Nida, 2011).

The EQLS 2016 has four items that refer to satisfaction with healthcare services. User satisfaction is asked both with respect to the general practitioner/family doctor/health centre or to hospital/medical specialists. In Eurofound (2019d) only the latter is considered, and the following analysis is consistent with this approach. Indicator 16 analyses the former. Note however, that the questions were asked only in case the respondent reported that these services were used (also reflected in the lower sample size). Answers were given on a 10-point scale. The items are as follows:

- Quality of the facilities (building, room, equipment)
- Expertise and professionalism of staff
- Personal attention you were given, including staff attitude and time devoted
- Being informed or consulted about your care

The four items are highly correlated, with all coefficients above 0.6. Only one, very strong component is extracted after PCA, which captures 81% of total variation. All items load highly on the composite indicator. Whereas three items have loading higher than 0.91, the first item related to quality loads slightly below at 0.81. This results in an index with high reliability (Cronbach's alpha of 0.94), which would increase by removing the quality item. Overall, the performance of the indicator is excellent.

**Figure 15: PCA screeplot of Indicator 12**



## Indicator 13: Average rating of the quality dimensions by users of formal childcare services

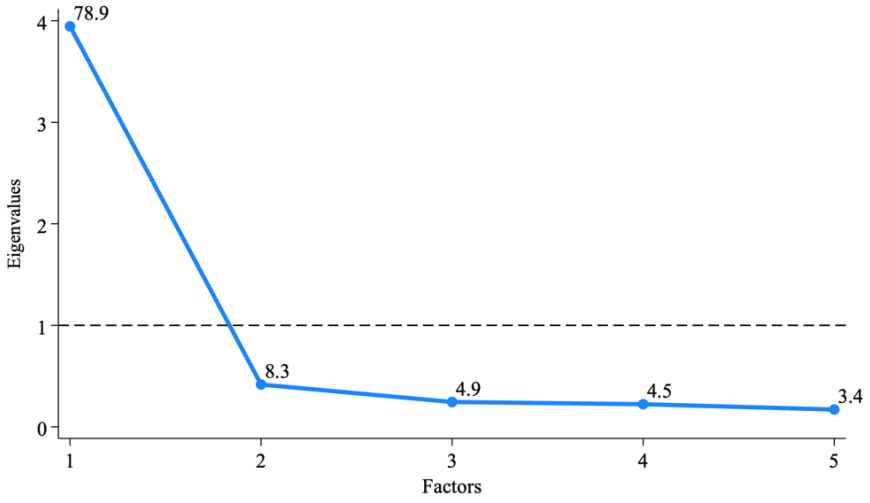
The importance of childcare services in the EU is illustrated in Eurofound (2019d). Childcare services have been on the EU policy agenda for a long time. In the nineties, a focus on labour market outcomes prevailed and availability of childcare places was a primary concern. The importance of childcare for the improvement of work–life balance for working parents continues to be highlighted in recent policy documents. Over the last decade, there has also been an increasing emphasis on the quality of the services. The focus on quality allows to fully reap the long-term benefits of early childhood education and care (ECEC) to society. Social policy initiatives in line with the social investment approach refer to positive impacts of high-quality ECEC. This includes an equitable distribution of welfare (SPC, 2017), as well as a way to promote the social inclusion of disadvantaged children (European Commission, 2013). As EU targets and benchmarks regarding enrolment are being met slowly over time, there have been recent calls to focus more on other aspects of service provision, including quality (European Commission, 2018a).

To measure overall quality, the EQLS 2016 uses here five items. Note that the question is posed to only those reporting experience with formal childcare, which is also here reflected by lower sample (see Appendix for details). Answering on a ten-point scale, the items are:

- Quality of the facilities (building, room, equipment)
- Expertise and professionalism of staff/carers
- Personal attention the child was given, including staff/carers' attitude and time devoted
- Being informed or consulted about the child's care
- The curriculum and activities

The polychoric correlation coefficients are all above 0.63, at times reaching levels above 0.8. PCA suggests clearly a single component that captures 79% of total variation. All five items load highly on the component (loading on average at 0.9), except for the first item about quality of building/room/equipment (which loads a bit lower at 0.81, thus proving to have relatively more unique variation). The reliability is very high at 0.949 and would only slightly increase by removing the first item. Overall, this composite indicator shows an excellent performance.

**Figure 16: PCA screeplot of Indicator 13**



## Indicator 14: Quality indicator of schools

Access and quality of education services are reviewed in Eurofound (2019e). The importance of the school system is motivated by the fact that education affects life in multiple ways beyond increasing competence and adaptability, and education certificates often serve as a proxy for skills (Jackson et al, 2008). Various other outcomes at later stages in life (e.g. health outcomes) are also highly correlated with educational attainment, directly or indirectly (e.g. through income). In addition, education is correlated with a whole range of non-economic aspects, including attitudes by facilitating the evaluation of complex social situations, widening the individual's knowledge and horizon of experiences, and promoting civic rights and responsibilities (EENEE, 2018). Research on the connection between education and quality of life is abundant. Education is key in promoting social inclusion and learning about European integration (Edgerton et al, 2012; European Commission, 2018b).

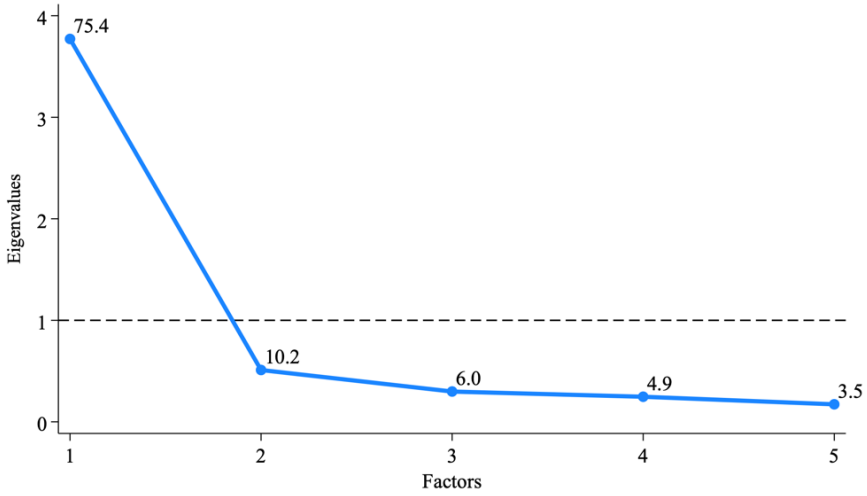
Education systems vary between countries and sometimes within. Each system prescribes when and according to which criteria pupils are separated and selected to go to different types of school. Comparative research has concluded that a substantial share of the quality of national education systems is determined by differences in the institutional context across countries (Bishop and Wössmann, 2001). Among the key factors are the size and type of public and private schools, the role of the governance and autonomy of schools and the opportunity for school choice.

The EQLS 2016 includes five items on respondents' satisfaction with schools. Again, note that the questions are only asked to respondents who had children in schools, hence the relatively small sample size. Responses are made on a 10-point scale. The items are:

- Quality of the facilities (building, room, equipment)
- Expertise and professionalism of staff/teachers
- Personal attention you were/ this person was given, including staff/teachers' attitude and time devoted
- Being informed or consulted about this person's education
- The curriculum and activities

As for the previous indicators measuring overall quality, also in this case the polychoric correlation matrix shows high coefficients, slightly smaller than 0.6 for the 'quality of facilities' item. A single strong component is suggested by PCA, capturing 75.4% of total variation. All items load strongly onto one index. The item referring to satisfaction with quality (i.e. the first item) is the only with a loading lower than 0.8, similarly to what seen for indicators 12 and 13. Reliability is at 0.938, pointing to an excellent performance which could only slightly be improved by removing the quality item.

**Figure 17: PCA screeplot of Indicator 14**



# Composite indicators developed in external studies

## Indicator 15: Exclusion from neighbourhood

Aartsen et al. (2023) document the work by Walsh and colleagues (2017) to develop a comprehensive framework for understanding old-age exclusion, which comprises six key dimensions and numerous subdimensions. These dimensions, essential to our study, include material resources, social relations, services, civic and political participation, and neighbourhood and community aspects. Each dimension contributes to a nuanced understanding of how exclusion manifests among the elderly.

Drawing on Connerly and Marans' (1985) definition, Ambrosetti and Paparusso (2023) interpret the perceived quality of the neighbourhood as the subjective assessment of the characteristics and services available in one's immediate living environment, also known as neighbourhood satisfaction. This definition helps frame our investigation into how individuals evaluate their local surroundings.

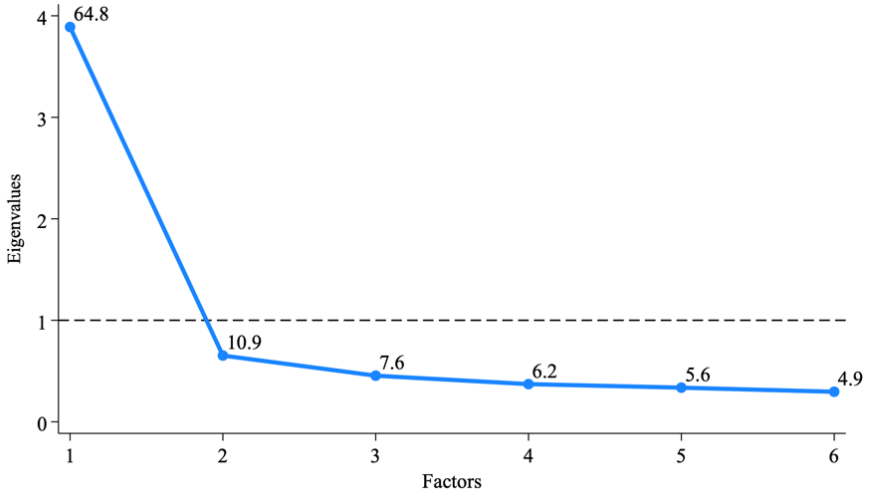
Precupetu et al. (2019) frame social exclusion as a multifaceted issue encompassing various domains such as exclusion from social relations, economic resources, health and social services, and civic participation (Walsh et al., 2017). By acknowledging the multidimensional nature of social exclusion, they incorporate multiple domains where exclusion can occur as identified in Walsh et al.'s (2017) study: social relations, civic participation, health and social services, material and financial resources, socio-cultural aspects, and neighbourhood and community. The significance of neighbourhood and community is further emphasized, with some scholars suggesting it is the most effective area for fostering social connections and re-engaging individuals (Moulaert, Wanka, & Drilling, 2017). Research highlights that crucial elements of the neighbourhood and community include the built environment, socio-political structures, and fear of crime (Walsh et al., 2017). Additionally, studies have shown that neighbourhood exclusion is linked to poor wellbeing among older adults, particularly in rural areas (Dahlberg & McKee, 2018).

The EQLS 2016 follows up with six items referring to the characteristics of the place where respondents reside. They all have a four-point scale. The items are as follows:

- Banking facilities (e.g bank branch, ATM)
- Public transport facilities (bus, metro, tram, train etc.)
- Cinema, theatre or cultural centre
- Recreational or green areas
- Grocery shop or supermarket
- Recycling services including collection of recyclables

Correlation coefficients are satisfactorily high on average, with only two falling below 0.5. PCA delivers only one factor that captures 64.8% of total variation. Factor loadings are above 0.8 with the slight exceptions of the items about recreational and recycling activities. A Cronbach’s alpha of 0.917 suggests high reliability. The composite indicator performs in an excellent way.

**Figure 18: PCA screeplot of Indicator 15**



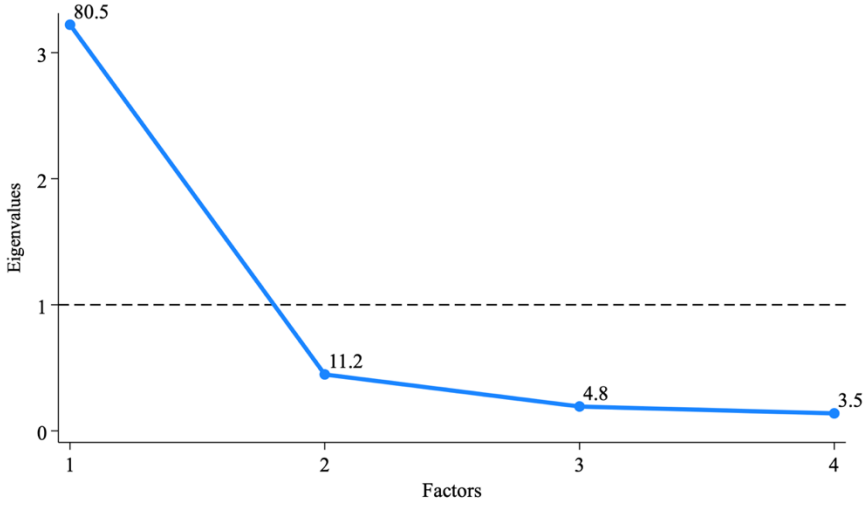

## Indicator 16: Satisfaction with the General Practitioner

The theoretical framework behind this indicator is shared with indicator 12. However, while the items analyzed for indicator 12 relate to user satisfaction both with respect to hospital/medical specialists, in this case the reference is to the general practitioner/family doctor/health centre. Responses are made on a 10-point scale, and it is only asked to those who reported to have seen their doctor. Since a large proportion did indeed see their doctor, the sample size is relatively large. The items are:

- Quality of the facilities (building, room, equipment)
- Expertise and professionalism of staff
- Personal attention you were given, including staff attitude and time devoted
- Being informed or consulted about your care

The items are highly correlated, with all coefficients above 0.6. PCA suggests extracting only one strong component, which captures 80.5% of total variation. All items load highly on the composite indicator. Whereas three items have loading higher than 0.91, the first item related to quality loads slightly below at 0.81. The index has a reliability of 0.94, which would slightly increase by removing the quality item. Overall, the performance of the indicator is excellent.

**Figure 19: PCA screeplot of Indicator 16**




## Indicator 17: Objective material deprivation (arrears in payment)

In addition to the subjective measures of deprivation (Indicator 7), the EQLS also ask about objective measures. They predominantly focus on financial problems, i.e. whether the household has had experienced problems in terms of payment arrears.

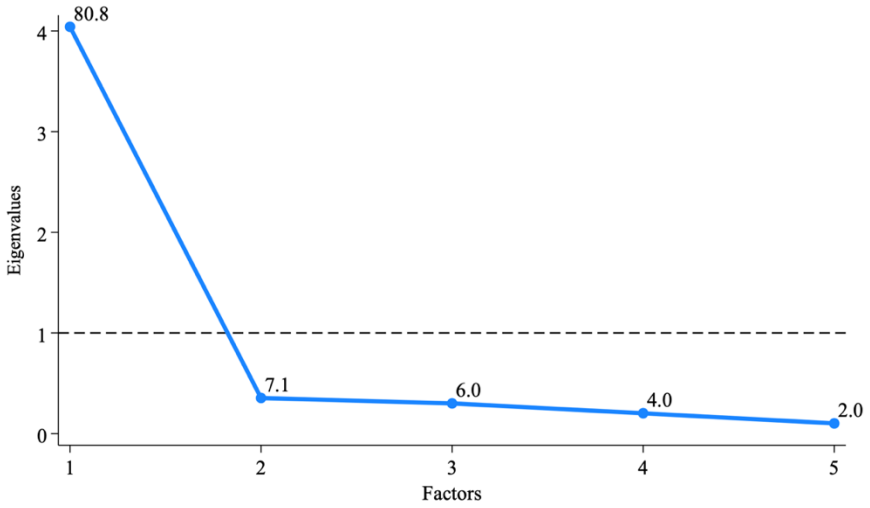
The theoretical framework behind this indicator is explained in Ramia and Voicu (2022). The relationship between money and wellbeing has been widely explored in research, particularly through the lens of Easterlin's paradox (Easterlin, 1974). This paradox reveals that while money can enhance life quality, its benefits are limited. Initially, higher income can significantly improve living standards by meeting basic needs such as food, shelter, healthcare, and education. However, once these needs are met and a certain level of economic comfort is achieved, the additional impact of income on subjective wellbeing (SWB) starts to diminish (Clark et al., 2005). This idea of diminishing returns means that after reaching a certain financial level, more money doesn't lead to significantly greater happiness. Beyond financial stability, other factors like social relationships, personal achievements, and health become more crucial for long-term happiness. Thus, while having enough money is essential for improving life up to a point, it's not the sole factor in achieving lasting wellbeing. In essence, money is important, but it's not everything. After basic needs and economic security are ensured, what truly contributes to our overall happiness are things like strong relationships, personal growth, and good health. These aspects play a larger role in our wellbeing once financial worries are put to rest.

There are five items, and they are asked on a two-point scale (i.e. whether they experienced the stated problem or not). The items are:

- Rent or mortgage payments for accommodation
- Utility bills, such as electricity, water, gas
- Payments related to consumer loans, including credit card overdrafts (to buy electrical appliances, a car, furniture, etc.)
- Telephone, mobile or internet connection bills
- Payments related to informal loans from friends or relatives not living in your household

Polychoric correlations among the five items are very high, all above 0.7. The PCA suggest clearly one index, capturing 80.8% of total variation. The lowest loading is 0.872 and the highest is 0.919, meaning that all the items adequately contribute to the construction of the index. The overall reliability score of 0.955 means that the index is highly reliable. The statistical performance is excellent. Of course, the implication here is that in so far the respondent express problem in paying one of the items, they are also very likely to face problem in paying the other items too.

**Figure 20: PCA screeplot of Indicator 17**



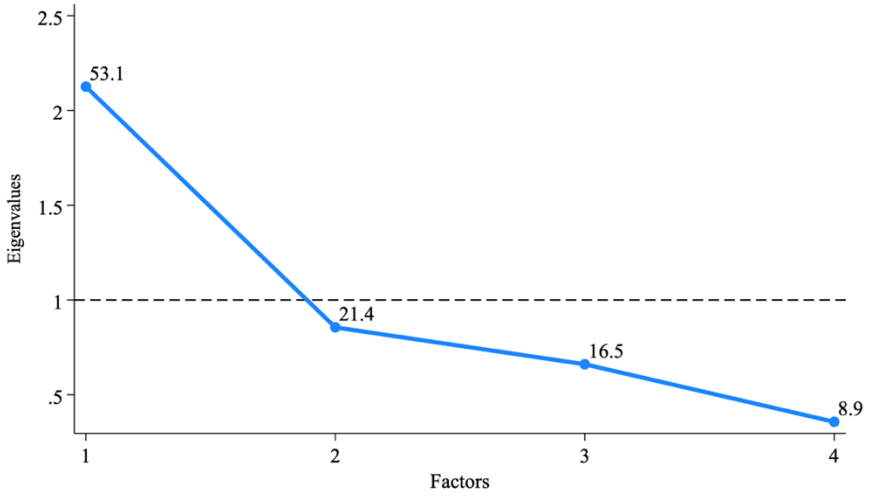

## Indicator 18: Exclusion from social relations

The theoretical framework underlying this indicator is retrieved from Precupetu et al. (2019). Exclusion from social relations can exacerbate feelings of loneliness and result in a lack of social support, both of which are widely recognized as risk factors for diminished wellbeing (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015; Ong, Uchino, & Wethington, 2016; Prince, Harwood, Blizard, Thomas, & Mann, 1997). Loneliness is associated with various adverse health outcomes, including heightened morbidity, increased depressive symptoms, compromised physical health, impaired daytime functioning, decreased physical activity, and lower subjective wellbeing (Ong et al., 2016). Furthermore, a lack of social support has been linked to a higher risk of premature mortality among older adults, regardless of gender (Holt-Lunstad et al., 2015). This highlights the critical role that social connections and support systems play in maintaining overall health and wellbeing, particularly among older populations.

The EQLS 2016 included two questions about frequency of (i) direct contact or (ii) indirect contact with (a) family members or relatives or (b) friends and neighbours. The combination of the two elements creates four items to be analyzed.

Pair-wise polychoric correlations are low on average, with only one coefficient above 0.578. The PCA suggest one index capturing 53% of total variation. factor loadings range between 0.631 (direct contact with family) and 0.801. The overall reliability is at 0.816 and would improve slightly by removing direct contact family item. The performance of this indicator is fair. However, overall social exclusion captures to a small extent direct contact with family.

**Figure 21: PCA screeplot of Indicator 18**



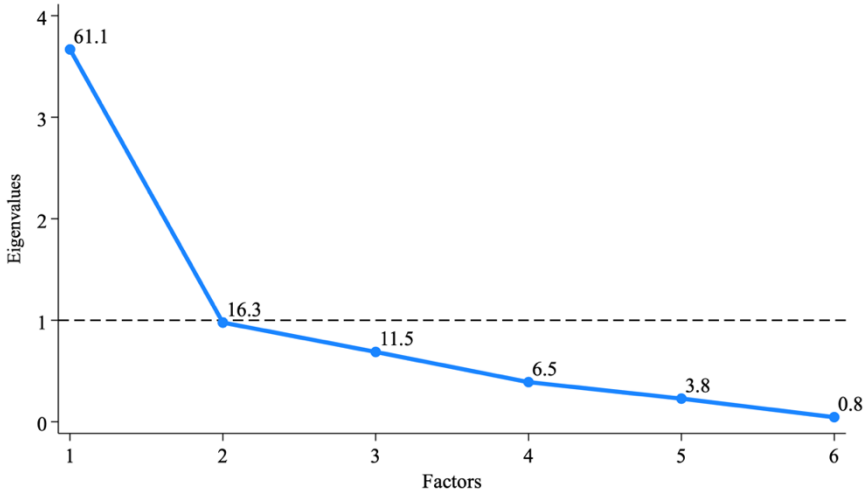

## Indicator 19: Objective material deprivation (shoddy accommodation)

This is another index of objective deprivation (in addition to Indicator 7 – subjective assessment, and indicator 17 – financial arrears). The theoretical ground to create an indicator of deprivation is the same as highlighted for the other two indicators. However, here the question refers to the accommodation where the respondent lives. The answers are binary, i.e. whether the accommodation suffers or lack the said item, or not. The items are:

- Shortage of space
- Rot in windows, doors or floors
- Damp or leaks in walls or roof
- Lack of indoor flushing toilet
- Lack of bath or shower
- Lack of facilities (heating or cooling) to keep a comfortable temperature at home

The polychoric correlation matrix shows significant variation in its entries: some items correlate very strongly (having a shower and a toilet – 0.95), others very weakly (being in shortage of space and keeping comfortable temperature – 0.31). PCA suggests extracting only one component, capturing 61% of total variation, although the second component is at the threshold of inclusion since its eigenvalue falls just below 1. There is wide heterogeneity also among factor loadings, with the lowest loading (0.535) on the 'shortage of space' item and the others ranging between 0.76 and 0.88. The overall reliability score is 0.899, and would improve by removing the item with the lowest loading. In fact, while space represents a structural feature of an accommodation that might not in the possibilities of respondents to ameliorate without moving to a different place, the other items refer to features that can be improved within the accommodation.

**Figure 22: PCA screeplot of Indicator 19**




## Indicator 20: Neighbourhood problems

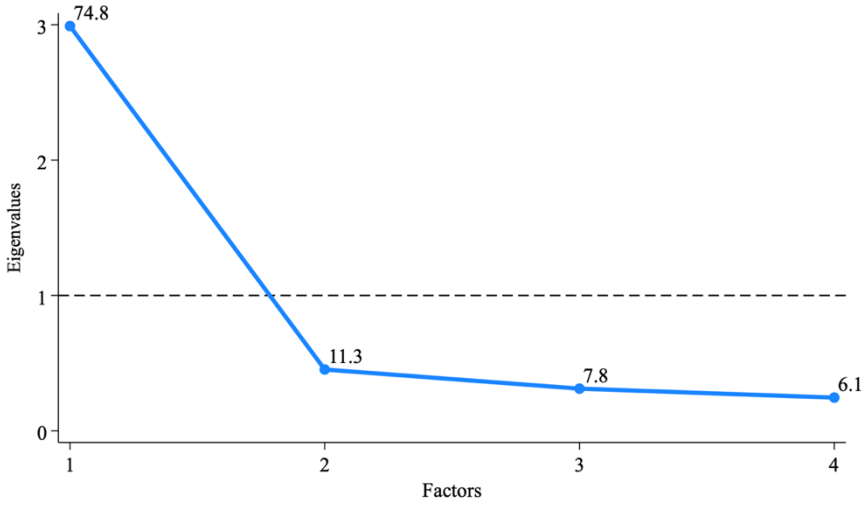
Ambrosetti and Paparusso (2023) explore the theoretical foundations behind the construction of an indicator that measures neighbourhood problems. Drawing upon the framework outlined by Connerly and Marans (1985), discussing the perceived quality of a neighbourhood aims to capture the subjective evaluation of various factors within the immediate community where individuals reside. This evaluation encompasses what we term as 'neighbourhood satisfaction,' which includes an assessment of the characteristics and services available locally. Additionally, it extends to the broader sense of belonging and connection individuals feel towards their neighbourhood (attachment to the neighbourhood).

There are four items, each with a four-point scale. The items are:

- Noise
- Air quality
- Litter or rubbish on the street
- Heavy traffic in your immediate neighbourhood

Items show high correlations among them, with all coefficients above 0.58. PCA extracts a single strong component that captures 74.8% of total variation. All items load equally high on the extracted component, as. Loadings range between 0.822 and 0.883. Cronbach's alpha amount to 0.922, making this a reliable indicator with an excellent performance in statistical terms.

**Figure 23: PCA screeplot of Indicator 20**




## Indicator 21: Exclusion from services

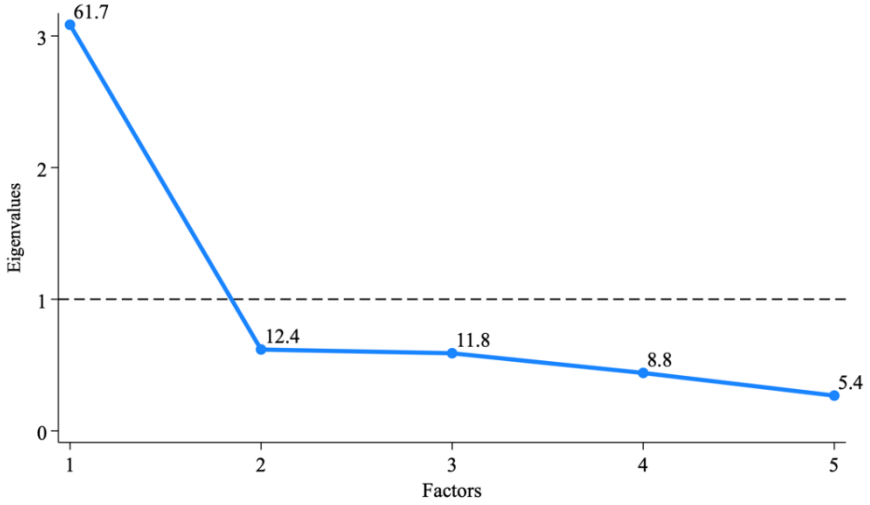
Precupetu et al. (2019) highlight that discussing exclusion from services requires delving into various essential areas such as healthcare, social care, access to new technologies, transportation, and mobility. This form of exclusion has been identified as a significant factor impacting the wellbeing of older individuals residing in both urban and rural settings. Interestingly, research suggests that this type of exclusion carries more weight in urban areas (Dahlberg & McKee, 2018). This finding underscores the critical role that access to services plays in shaping the overall wellbeing of older populations, highlighting the importance of addressing disparities in service accessibility across different geographical contexts.

The EQLS 2016 includes a 5-item question, where answers are given on a three-point scale. The items are:

- Distance to GP/doctor's office / health centre
- Delay in getting appointment
- Waiting time to see doctor on day of appointment
- Cost of seeing the doctor
- Finding time because of work, care for children or for others

Correlation coefficients show high heterogeneity, ranging between 0.39 (between 'distance' and 'finding time'). A single component results from PCA, capturing 61.7% of total variation. 'Distance' and 'finding time' represent also the two item that load relatively weakly on the extracted component (loadings of 0.724 and 0.732, respectively), while the other loadings are around 0.8. Overall reliability amounts to 0.888 and does not improve by removing the two weakly correlated items. The indicator measuring exclusion from services performs in a good way.

**Figure 24: PCA screeplot of Indicator 21**




## Indicator 22: Indicator of active ageing

Ramia and Voicu (2019) review the theoretical framework underlying an indicator of active ageing. Several studies support what's known as the 'cumulative hypothesis,' suggesting that individuals engaged in one activity are more likely to participate in other activities as well (Arpino and Bordone 2018; Hank and Stuck 2008; Kohli et al. 2009). This hypothesis is rooted in the role-extension theory (Choi Namkee et al. 2007), which posits that engaging in one role provides opportunities for involvement in other activities. Essentially, individuals tend to master a portfolio of interconnected activities throughout their lives. Therefore, active aging is not confined to just one activity but encompasses a variety of different engagements. Understanding the relationship between active aging and quality of life requires consideration of the diverse activities in which older adults participate. However, the measurement of active aging often focuses on individual activities, and some studies even view these activities as competing rather than interconnected (e.g., Warr et al. 2004; Jang et al. 2009).

The concept of active aging emerged at the intersection of the 'productive aging' perspective and a human rights approach to aging. Productive aging emphasizes the continued participation of older individuals in the labor market and other productive activities, driven partly by economic concerns about the aging population's impact on public spending. This perspective has been championed by international organizations like the EU and OECD as well as national governments. In contrast, the human rights perspective prioritizes the respect for older adults' rights, emphasizing their quality of life. The World Health Organization (WHO) aligns with this perspective, defining active aging as continuing participation in social, economic, cultural, spiritual, and civic affairs, beyond just physical activity or labor force participation (WHO 2002). According to WHO, active aging aims to optimize opportunities for health, participation, and security to enhance quality of life as people age.

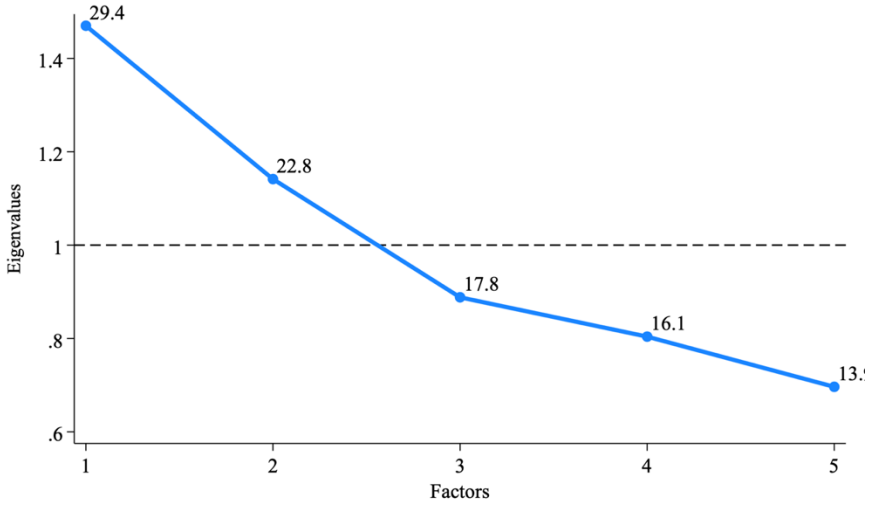
Thus, active aging encompasses various activities such as volunteering, household chores, caregiving, and engagement in paid work (WHO 2012). This comprehensive approach recognizes the multidimensional nature of aging and emphasizes the importance of maintaining meaningful engagement across different life domains for overall wellbeing in older adults.

The study uses a combination of EQLS 2016 questions to create an active ageing index and considers a sample of respondents above 65 years of age. A combination of questions is used to build the indicator (details in the Appendix), such as a binary variable indicating whether respondents are in paid employment or not, whether they have been recently involved in recurrent voluntary work in any organization, whether they are involved in the following activities outside of paid work:

- Caring for and/or educating your children
- Caring for and/or educating your grandchildren
- Cooking and / or housework
- Caring for disabled or infirm family members, neighbours or friends under 75 years old
- Caring for disabled or infirm family members, neighbours or friends aged 75 or over

In total, five items are created and aggregated to build the indicator. Polychoric correlation coefficients are very low, as none of them is higher than 0.3. PCA extracts two components capturing 29.4% and 22.8% of total variation, respectively. The rotated factor matrix suggests that 'volunteering', 'caring for children or grandchildren', and 'caring for sick or disabled' load relatively highly on the first component, whereas 'being in paid employment' and 'doing housework' load highly, although in opposite direction, on the second component. However, even after rotation the distinction between the two components is not as marked as usually expected. Overall reliability is at 0.713. The performance of this composite indicator is poor.

**Figure 25: PCA screeplot of Indicator 22**




## Indicator 23: Subjective quality of life

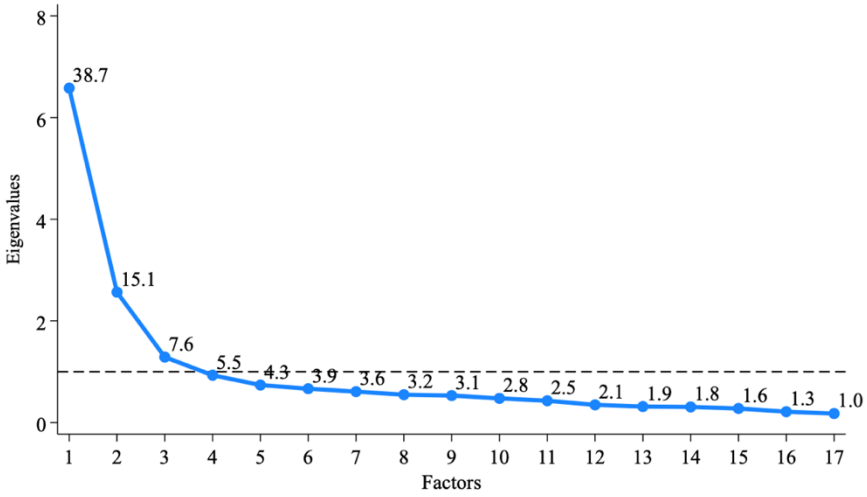
Sánchez-Sellero et al. (2021) investigate subjective quality of life tracing back the origins of the concept. They argue that Stiglitz-Sen-Fitoussi Report (2009) emerged as a significant initiative aimed at enhancing how the state of the economy and social welfare are measured. Recognizing the limitations of traditional economic indicators, the report proposed a more comprehensive approach. It suggested that objective indicators of quality of life, such as income levels and employment rates, should be complemented with subjective measurements. These subjective indicators include people's personal assessments of their wellbeing, happiness, and overall life satisfaction. By

integrating both objective and subjective data, the report aimed to provide a fuller and more accurate picture of societal welfare and economic health.

The indicator is built by aggregating 17 items measured from a variety of questions, such as life satisfaction, happiness, satisfaction with personal education, standard of living, accommodation, family life, place of living, democracy, economy, trust in parliament, in the legal system, in the government, quality of health, education, public transport, pension system, and finally ability to make ends meet.

Correlation coefficients are extremely heterogeneous, ranging from 0.1 to 0.8. The high number of items included produces a three-factor solution after performing PCA. The rotated factor matrix shows that items tend to cluster according to the set of questions they were taken from. The first component relates to satisfaction with aspects of personal life, and captures about 39% of total variation. The second component, capturing almost 16% of the residual variation, measures satisfaction with aspects of public/social life and trust in institutions. The last factor, capturing less than 8% of variation, correlates highly with quality assessments of public services such as education, health and transport. Rotation is unable to clearly assign specific items to any component, such as perceived quality of the pension system and ability to make ends meet. The reliability of the composite indicator is at 0.911. The overall performance is fair, although this analysis suggests splitting the items in three different sub-indicators.

**Figure 26: PCA screeplot of Indicator 23**



# Conclusions

This report provides an overview of the statistical properties of composite indicators derived from the fourth edition of the European Quality of Life Survey (EQLS). We analyzed indicators used in 12 Eurofound reports and 19 additional external papers, identifying a total of 23 composite indicators. Of these, 14 were found in Eurofound reports (some also used in external studies), while the remaining 9 were exclusive to external studies.

The most frequently recurring indicator concerns social exclusion, measuring the extent to which people feel disconnected from society. It appears in nine Eurofound reports and seven external studies. The second most common indicator in Eurofound reports is a 5-item scale developed by the World Health Organization to measure mental well-being and the risk of depression.

Other recurring indicators in at least two Eurofound reports include those measuring public service quality, institutional trust, political participation, civic engagement, and psychological functioning. Lastly, indicators of work-life balance, subjective well-being, perceptions of social tensions, and satisfaction/quality of specific services each appear in only one Eurofound report.

The analysis suggests that most of the indicators are of high quality. The more established ones, i.e. those indicators used more frequently, all have excellent statistical properties. It is also the case that the majority of the indicators are based on a relatively small number of items, and in most cases, the PCA analysis suggest only one indicator.

Out of the 14 core composite indicators identified in Eurofound reports, 7 show an excellent statistical performance, 5 perform either good or very good, and only 2 perform fairly.

In summary, the first seven indicators, namely, *Social Exclusion*, *WHO-5 Mental Wellbeing*, *Public Services Quality*, *Trust in Institutions*, *Political Participation*, *Civic Engagement* and *Deprivation Index*, all collapse to one indicator, and they all perform satisfactorily. Obviously, there might be deviations here when considering specific country groups or when considered by any other characteristics of the respondents (e.g. gender or age-groups).

The eight' indicator, which we referred to as *Psychological Functioning/Perceived Resilience*, factors into two indicators, however. Moreover, one item (Time Scarcity) does not correlate strongly with the other items. This composite index should consequently be used with caution, or it should be split into two sub-indicators.

Next, indicators 9 and 10, here referred to as Work-Life Balance and Subjective wellbeing, respectively, both work in a very good way.

Indicator 11 is referred to as *Perceptions of social tensions*. Here we see a clear difference between perceived tension between typical social relations and group tension defined over racial, ethnic or religious characteristics. In other words, caution is needed here as these items taken together clearly factor into two distinct indices.

Indicators 12 to 14 are referred to as *Satisfaction with long-term care services*, *Quality of formal childcare services*, *Quality of schools*, all have one factor solutions, and the indices are all high quality.

Turning to the 9 additional composite indicators developed in external studies, 5 have a good or excellent performance, 2 perform fairly, whereas one has poor statistical quality. Indicators 15 to 17,

namely *Access to neighbourhood services*, *Satisfaction with the GP*, and *Objective material deprivation* all factor into one dimension and perform in an excellent way.

Indicator 18 is referred to as *Exclusion from social relations*. The items factor into one indicator, but where two of the items have relatively large levels of uniqueness. Here some caution is needed.

The next indicator, *Material deprivation of the dwelling*, describes the condition of the house where the respondent lives. Here one should note that one item stands out with a very large level of uniqueness. If used in other cases, one should consider excluding the item that refers to the space of the dwelling.

Indicator 20 refers to *Neighbourhood problems* (i.e. level of traffic or air pollution) factors into one index in a satisfactory way. The same goes for indicator 21, which refers to *Exclusion from (or difficulties in accessing) health services*. This also performs well.

Indicator 22, which is supposed to be an index of active ageing, performs less well. It is based on a sociodemographic question about employment status and two additional survey questions (i.e. a total of five items). It appears to factor into two indicators, but where the loadings do not suggest unambiguity. Here caution is needed.

The last indicator is referred to as *Subjective quality of life*. It consists of many items and our analysis suggest a three factors solution. We would not recommend using these indicators without more in-depth analysis.

# References

Aartsen, M., Vasile, M., Tufa, L., Dumitrescu, D., Radogna, R., Woern, J., & Precupetu, I. (2023). Patterns and correlates of old-age social exclusion in the Balkan states. *European Journal of Ageing*, *20*(1).

Achterberg, P., 2006. Class voting in the new political culture: economic, cultural and environmental voting in 20 Western countries. *Int. Sociol*. 21 (2), 237–261.

Ambrosetti, E., & Paparusso, A. (2023). What is the Relationship Between the Perceived Quality of Neighbourhood and the Self-reported Life Satisfaction in Immigrants Versus Natives in Europe? *Journal of International Migration and Integration*.

Amendola, A., Dell'Anno, R., & Parisi, L. (2022). Why some people are not as happy as they could be: The role of unobservable subjective factors. *International Journal of Happiness and Development*, *7*(1), 40–63.

Bartholomé, G., Lecheler, S., de Vreese, C., 2017. Towards a typology of conflict frames. *Journal. Stud*. 1–24.

Baumeister, R. F., Twenge, J. M. and Nuss, C. K. (2002), 'Effects of social exclusion on cognitive processes: Anticipated aloneness reduces intelligent thought', *Journal of Personality and Social Psychology*, Vol. 83, No. 4, pp. 817–827.

Berde, É., & Tokés, L. (2021). Employment and happiness of the older people in Romania and the Visegrad countries: analysis of the European Quality of Life Surveys. *Studia Universitatis Vasile Goldis Arad Seria Stiinte Economice*, 31(2), 80–97.

Bishop. J. H. and Woessmann, L. (2001), *Institutional effects in a simple model of educational production*, IZA, Bonn.

Campbell, A., Converse, P. E., and Rodgers, W. L. (1976), *The quality of American life: Perceptions, evaluations and satisfactions*, New York, Russell Sage Foundation.

Chevalier, T. (2023). Can the welfare state reduce youth poverty? The determinants of material deprivation and subjective poverty among young people in Europe. *Journal of European Social Policy*, *33*(3), 285–300.

Clark, S. C. (2000), 'Work/family border theory: A new theory of work/family balance', *Human Relations*, Vol. 53, No. 6, pp. 747–770.

Connor, KM, Davidson, JR. (2003). Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depress Anxiety*, 18(2):76-82.

Dahlberg, L., & McKee, K. (2018). Social exclusion and well-being among older adults in rural and urban areas. *Archives of Gerontology and Geriatrics*, 79, 176–184.

Derks, A., 2006. Populism and the ambivalence of egalitarianism. How do the underprivileged reconcile a right-wing party preference with their socio-economic attitudes? *World Polit. Sci. Rev*. 2 (3), 175–200.

Drishti, E., Shkreli, Z., Zhllima, E., & Gerdoçi, B. (2023). Deprivation, Social Mobility Considerations, and Life Satisfaction: A Comparative Study of 33 European Countries. *Comparative Economic Studies*, *65*(3), 511–550.

Edgerton, J., Roberts, L. W. and Von Below, S. (2012), 'Education and quality of life', in Land, K. C., Michalos, A. C. and Sirgy, J. (eds.), *Handbook of social indicators and quality of life research*, Springer, The Netherlands, pp. 265–296.

EENEE (European Expert Network on Economics of Education) (2018), *Education externalities: What they are and what we know*, EENEE Analytical Report No. 34, February, Publications Office of the European Union, Luxembourg.

Eurofound (2013), *Political trust and civic engagement during the crisis*, Publications Office of the European Union, Luxembourg.

Eurofound (2017). *European quality of life survey 2016: Quality of life, quality of public services, and quality of society*. Publications office of the European Union, Luxembourg.

Eurofound (2018a). *Social insecurities and resilience*. Publication office of the European Union, Luxembourg.

Eurofound (2018b). *Social cohesion and well-being in Europe*. Publication office of the European Union, Luxembourg.

Eurofound (2018c), *Societal change and trust in institutions*, Publications Office of the European Union, Luxembourg.

Eurofound (2018d), *The social and employment situation of people with disabilities*, Publications Office of the European Union, Luxembourg.

Eurofound (2019a), *Age and quality of life: Who are the winners and losers?*, Publications Office of the European Union, Luxembourg.

Eurofound (2019b), *Is rural Europe being left behind?*, European Quality of Life Survey 2016,

Eurofound (2019c), *Life and society in the EU candidate countries*, European Quality of Life 2016 series, Publications Office of the European Union, Luxembourg.

Eurofound (2019d), *Quality of health and care services in the EU*, Publications Office of the European Union, Luxembourg.

Eurofound (2019e). *Challenges and prospects in the EU: Quality of life and public services*. Publication office of the European Union, Luxembourg.

European Commission (2013), *Investing in children: Breaking the cycle of disadvantage*, C(2013)778 final, Brussels.

European Commission (2017a), *Reflection paper on the social dimension of Europe*, Brussels.

European Commission (2017b), *Trust at risk: Implications for EU policies and institutions*, Publications Office of the European Union, Luxembourg.

European Commission (2017c), 'Commission Recommendation (EU) 2017/761 of 26 April 2017 on the European Pillar of Social Rights', *Official Journal of the European Union*, L 113, 29 April.

European Commission (2017d), *An initiative to support work–life balance for working parents and carers*, COM(2017) 0252 final, Brussels.

European Commission (2018a), *Peer Review on Germany's latest reforms of the long-term care system, Berlin, Germany, 11-12 January 2018 and Peer Review on Improving reconciliation of work and long-term care' Berlin, Germany, 24-25 September 2018*, DG Employment, Social Affairs & Inclusion, Brussels.

European Commission (2018b), *Education and training in the EU: Where do we stand?* Education and Training Monitor 2018, factsheet, Brussels.

Gadermann, A. M., Guhn, M., & Zumbo, B. D. (2019). Estimating ordinal reliability for Likert-type and ordinal item response data: A conceptual, empirical, and practical guide. *Practical Assessment, Research, and Evaluation, 17*, 1–13.

Gerber, J. and Wheeler, L. (2009), 'On being rejected: A meta-analysis of experimental research on rejection', *Perspectives on Psychological Science*, Vol. 4, No. 5, pp. 468–488.

Guest, D. E. (2002), 'Perspectives on the study of work– life balance', *Social Science Information*, Vol. 41, No. 2, pp. 255–279.

Hajek, A. and König, H. H. (2017), 'The association of falls with loneliness and social exclusion: Evidence from the DEAS German Ageing Survey', *BMC Geriatrics*, Vol. 17, No. 1, p. 204.

Jackson, M., Luijkx, R., Pollak, R., Vallet, L. A. and Van de Werfhorst, H. G. (2008), 'Educational fields of study and the intergenerational mobility process in comparative perspective', International Journal of Comparative Sociology, Vol. 49, Nos. 4–5, pp. 369–388.

Jami, W., & Kemmelmeier, M. (2021). Remnants of Communism and Present-Day Inequality. *Cross-cultural Research*, *55*(1), 58–91.

Kahan, D. M. (2001), 'Trust, collective action, and law', *BUL Rev.* 81, p. 333.

Kolenikov, S., & Angeles, G. (2009). Socioeconomic Status Measurement with Discrete Proxy Variables: Is Principal Component Analysis a Reliable Answer? *Review of Income and Wealth*, *55*(1), 128–165.

Kwarcinski, T., & Ulman, P. (2020). Quality of life paradox. Well-being ranking of the selected European countries based on hybrid well-being approach. *Economics & Sociology*, *13*(2), 160–180.

Levi, M. and Stoker, L. (2000), 'Political trust and trustworthiness', *Annual Review of Political Science*, 3(1), pp. 475–507.

Linville, P. W. (1987), 'Self-complexity as a cognitive buffer against stress-related illness and depression', *Journal of Personality and Social Psychology*, Vol. 52, No. 4, pp. 663–676.

Maguire, R., Hanly, P., & Maguire, P. (2019). Beyond care burden: Associations between positive psychological appraisals and well-being among informal caregivers in Europe. *Quality of Life Research*, *28*(8), 2135–2146.

Mazzoni, D., Monzani, D., Riva, P., & Pravettoni, G. (2022). Does being involved by doctors satisfy patients' fundamental psychological needs? A study on a large European sample. *Psychology Health and Medicine*, *27*(6), 1397–1409.

Mungiu-Pippidi, A., Dadašov, R., Fazekas, M., Tóth, I. J., Kocsis, G., Jancsics, D. et al (2015), *Public integrity and trust in Europe*, Hertie School of Governance, Berlin.

OECD (2008) *Handbook on Constructing Composite Indicators: Methodology and User Guide*, Paris, OECD Publishing.

OECD (2013a), *Government at a glance*, Paris, France: OECD Publishing.

OECD (2013b), *OECD guidelines on measuring subjective well-being*, Paris, OECD Publishing.

Olsson, U. (1979). Maximum likelihood estimation of the polychoric correlation coefficient. *Psychometrika*, 44(4), 443–460.

Precupetu, I., Aartsen, M., & Vasile, M. (2019). Social Exclusion and Mental Wellbeing in Older Romanians. *Social Inclusion*, 7(3), 4–16.

Ramia, I., & Voicu, M. (2022). Life Satisfaction and Happiness Among Older Europeans: The Role of Active Ageing. *Social Indicators Research*, *160*(2–3), 667–687.

Riva, P., Montali, L., Wirth, J. H., Curioni, S. and Williams, K. D. (2017), 'Chronic social exclusion and evidence for the resignation stage: An empirical investigation'. *Journal of Social and Personal Relationships*, p. 34, No. 4, pp. 541–564.

Sánchez-Sellero, M., García-Carro, B., & Sánchez-Sellero, P. (2021). Synthetic indicators of quality of subjective life in the EU: rural and urban areas. *Prague Economic Papers*, *30*(5), 529–551.

Semetko, H.A., Valkenbrug, P.M., 2000. Framing European politics: a content analysis of press and television news. *J. Commun*. 50 (2), 93–109.

SPC (2017), *Annual report 2017*, Publications Office of the European Union, Luxembourg.

Spruyt, B., Van Droogenbroeck, F., & Kavadias, L. (2022). The perceived quality, fairness of and corruption in education in Europe. *Oxford Review of Education*.

Spruyt, B., Van Droogenbroeck, F., & van Noord, J. (2018). Conflict thinking: Exploring the social basis of perceiving the world through the lens of social conflict. *Social Science Research*, *74*, 16–29.

Steckermeier, L. (2021). The Value of Autonomy for the Good Life. An Empirical Investigation of Autonomy and Life Satisfaction in Europe. *Social Indicators Research*, *154*(2), 693–723.

Stiglitz, J. E., Sen, A. and Fitoussi, J. P. (2009), *Report by the Commission on the Measurement of Economic Performance and Social Progress*, Commission on the Measurement of Economic Performance and Social Progress, Paris.

Topp, C. W., Østergaard, S. D., Søndergaard, S. and Bech, P. (2015), 'The WHO-5 well-being index: A systematic review of the literature', *Psychotherapy and Psychosomatics*, Vol. 84, No. 3, pp. 167–176.

Tyler, T. R. (2011), *Why people cooperate: The role of social motivation*, Princeton University Press, Princeton, New Jersey.

van Drunen, Y., Spruyt, B., & Van Droogenbroeck, F. (2021). The Salience of Perceived Societal Conflict in Europe: A 27 Country Study on the Development of a Measure for Generalized Conflict Thinking. *Social Indicators Research*, *158*(2), 595–635.

van Noord, J., Spruyt, B., Kuppens, T., & Spears, R. (2023). In the Shadow of the Schooled Society: Feelings of Misrecognition and the Education Ladder. *Social Problems*, *70*(3), 831–848.

Vasile, M., Aartsen, M., Precupetu, I., Tufa, L., Dumitrescu, D., & Radogna, R. (2024). Association Between Social Isolation and Mental Well-Being in Later Life. What is the Role of Loneliness? *Applied Research in Quality of Life*, *19*(1), 245–267.

Veenhoven, R. (2012), 'Happiness: Also known as "life satisfaction" and "subjective well-being"', in K. C. Land, A. C. Michalos, and M. J. Sirgy (Eds.), *Handbook of social indicators and quality of life research*, pp. 63–77, Dordrecht, Springer.

Wiese, B. and Freund, A. (2000), 'The interplay of work and family in young and middle adulthood', in Heckhausen, J. (ed.), *Motivational psychology of human development: Developing motivation and motivating development*, Elsevier, Oxford, pp. 233–249.

Wittchen, H. U. and Jacobi, F. (2005), 'Size and burden of mental disorders in Europe: A critical review and appraisal of 27 studies', *European Neurospsychopharmacology*, Vol. 15, No. 4, pp. 357–376.

# Appendix

## Indicator 1: Social Exclusion Index

Q36: To what extent do you agree or disagree with the following statements?

a. I feel left out of society [**Left out**]
b. Life has become so complicated today that I almost can't find my way [**Feel lost**]
c. I feel that the value of what I do is not recognised by others [**Unrecognised**]
d. Some people look down on me because of my job situation or income [**Looked down at**]

Answers: 1 (Strongly agree), 2 (Agree), 3 (Neither agree nor disagree), 4 (Disagree), 5 (Strongly disagree)

**Ind. 1: Polychoric correlation matrix (obs. 35,795)**

| | a | b | c | d |
|---|---|---|---|---|
| Left out [a] | 1 | | | |
| Feel lost [b] | .664 | 1 | | |
| Unrecognized [c] | .581 | .624 | 1 | |
| Looked down at [d] | .585 | .540 | .604 | 1 |

**Ind. 1: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Left out | .847 | .282 | .888 |
| Feel lost | .847 | .282 | .889 |
| Unrecognized | .840 | .295 | .890 |
| Looked down at | .811 | .342 | .899 |
| Overall scale | | | .903 |

## Indicator 2: WHO-5 Mental Well-being

Q51: Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks.

a. I have felt cheerful and in good spirits [**Cheerful**]
b. I have felt calm and relaxed [**Calm and relaxed**]
c. I have felt active and vigorous [**Active and vigorous**]

d. I woke up feeling fresh and rested [**Fresh and rested**]
e. My daily life has been filled with things that interest me [**Life filled**]

Answers: 1 (All of the time), 2 (Most of the time), 3 (More than half of the time), 4 (Less than half of the time), 5 (Some of the time), 6 (At no time)

**Ind. 2: Polychoric correlation matrix (obs. 36,590)**

| | a | b | c | d | e |
|---|---|---|---|---|---|
| Cheerful [a] | 1 | | | | |
| Calm and relaxed [b] | .792 | 1 | | | |
| Active and vigorous [c] | .705 | .668 | 1 | | |
| Fresh and rested [d] | .632 | .677 | .689 | 1 | |
| Life filled [e] | .661 | .621 | .654 | .620 | 1 |

**Ind. 2: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Cheerful | .885 | .217 | .920 |
| Calm and relaxed | .878 | .230 | .921 |
| Active and vigorous | .866 | .251 | .923 |
| Fresh and rested | .841 | .293 | .928 |
| Life filled | .825 | .320 | .930 |
| Overall scale | | | .933 |

## Indicator 3: Public services quality

Q58: In general, how would you rate the quality of each of the following public services in [COUNTRY]? Please tell me on a scale of one to 10, where one means very poor quality and 10 means very high quality.

a. Health services
b. Education system
c. Public transport
d. Child care services
e. Long term care services
f. Social/municipal housing
g. State pension system

Answers: 1 (Very poor quality) – 10 (Very high quality)

**Ind. 3: Polychoric correlation matrix (obs. 20,988)**

| | a | b | c | d | e | f | g |
|---|---|---|---|---|---|---|---|
| Health services [a] | 1 | | | | | | |
| Education system [b] | .678 | 1 | | | | | |
| Public transport [c] | .529 | .556 | 1 | | | | |
| Childcare services [d] | .581 | .645 | .598 | 1 | | | |
| Long term care services [e] | .608 | .588 | .557 | .690 | 1 | | |
| Social housing [f] | .547 | .526 | .507 | .582 | .698 | 1 | |
| State pension system [g] | .529 | .485 | .431 | .478 | .568 | .620 | 1 |

**Ind. 3: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Health services | .804 | .354 | .914 |
| Education system | .806 | .351 | .914 |
| Public transport | .746 | .444 | .920 |
| Childcare services | .825 | .319 | .912 |
| Long term care services | .850 | .277 | .910 |
| Social housing | .805 | .352 | .914 |
| State pension system | .731 | .465 | .921 |
| Overall scale | | | .923 |

## Indicator 4: Trust in institutions

Q35: Please tell me how much you personally trust each of the following institutions. Please tell me on a scale of 1 to 10, where 1 means that you do not trust at all, and 10 means that you trust completely.

a. [NATIONALITY] parliament
b. The legal system
c. The news media
d. The police
e. The government
f. The local (municipal) authorities
g. Banks

h. Humanitarian or charitable organizations

Answers: 1 (Do not trust at all) – 10 (Trust completely)

**8-item indicator**

**Ind. 4-8: Polychoric correlation matrix (obs. 33,248)**

| | a | b | c | d | e | f | g | h |
|---|---|---|---|---|---|---|---|---|
| Parliament [a] | 1 | | | | | | | |
| Legal system [b] | .739 | 1 | | | | | | |
| News media [c] | .548 | .546 | 1 | | | | | |
| Police [d] | .532 | .630 | .511 | 1 | | | | |
| Government [e] | .813 | .683 | .559 | .555 | 1 | | | |
| Local authorities [f] | .618 | .618 | .508 | .578 | .659 | 1 | | |
| Banks [g] | .491 | .505 | .498 | .468 | .529 | .522 | 1 | |
| Hum. organizations [h] | .445 | .480 | .460 | .471 | .462 | .487 | .474 | 1 |

**Ind. 4-8: Factor loadings**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Parliament | .844 | .288 | .913 |
| Legal system | .843 | .290 | .913 |
| News media | .738 | .456 | .920 |
| Police | .760 | .423 | .918 |
| Government | .855 | .270 | .912 |
| Local authorities | .804 | .353 | .915 |
| Banks | .710 | .496 | .922 |
| Hum. organizations | .671 | .550 | .924 |
| Overall scale | | | .925 |

**5-item indicator**

**Ind. 4-5: Polychoric correlation matrix (obs. 34,932)**

| | a | b | c | d | e |
|---|---|---|---|---|---|
| Parliament [a] | 1 | | | | |
| Legal system [b] | .739 | 1 | | | |
| News media [c] | .543 | .542 | 1 | | |

| | | | | | |
|---|---|---|---|---|---|
| Police [d] | .530 | .627 | .509 | 1 | |
| Government [e] | .810 | .680 | .553 | .556 | 1 |

**Ind. 4-5: Factor loadings**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Parliament | .883 | .220 | .896 |
| Legal system | .871 | .242 | .897 |
| News media | .745 | .445 | .920 |
| Police | .767 | .411 | .916 |
| Government | .876 | .232 | .897 |
| Overall scale | | | .916 |

## Indicator 5: Political participation

Q30: Over the last 12 months, have you done any of the following activities?

a. Attended a meeting of a trade union, a political party or political action group [**Meeting**]
b. Attended a protest or demonstration [**Protest**]
c. Signed a petition, including an e-mail or on-line petition [**Petition**]
d. Contacted a politician or public official (other than routine contact arising from use of public services) [**Contact**]

Answers: 1 (Yes), 2 (No)

**Ind. 5: Polychoric correlation matrix (obs. 36,253)**

| | a | b | c | d |
|---|---|---|---|---|
| Meeting [a] | 1 | | | |
| Protest [b] | .590 | 1 | | |
| Petition [c] | .453 | .587 | 1 | |
| Contact [d] | .624 | .477 | .541 | 1 |

**Ind. 5: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Meeting | .824 | .321 | .870 |
| Protest | .818 | .331 | .871 |

| | | | |
|---|---|---|---|
| Petition | .791 | .375 | .879 |
| Contact | .814 | .337 | .872 |
| Overall scale | | | .885 |

## Indicator 6: Civic engagement

Q29: Please look at the list of organisations and tell us, how often did you do unpaid voluntary work through the following organisations in the last 12 months?

a. Community and social services (e.g. organisations helping the elderly, young people, disabled or other people in need) [**Social services**]
b. Educational, cultural, sports or professional associations [**Ed./cult./spor./prof. assoc.**]
c. Social movements (for example environmental, human rights) or charities (for example fundraising, campaigning) [**Social movements**]
d. Political parties, trade unions [**Political parties**]
e. Other voluntary organisations [**Other voluntary org.**]

Answers: 1 (Every week), 2 (Every month), 3 (Less often/occasionally), 4 (Not at all)

**Ind. 6: Polychoric correlation matrix (obs. 36,473)**

| | a | b | c | d | e |
|---|---|---|---|---|---|
| Social services [a] | 1 | | | | |
| Ed./cult./spor./prof. assoc. [b] | .622 | 1 | | | |
| Social movements [c] | .713 | .670 | 1 | | |
| Political parties [d] | .596 | .593 | .681 | 1 | |
| Other voluntary org. [e] | .651 | .591 | .681 | .667 | 1 |

**Ind. 6: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Social services | .847 | .284 | .917 |
| Ed./cult./spor./prof. assoc. | .818 | .332 | .923 |
| Social movements | .887 | .213 | .909 |
| Political parties | .834 | .304 | .920 |
| Other voluntary org. | .848 | .281 | .917 |
| Overall scale | | | .927 |

## Indicator 7: Deprivation Index

Q89: There are some things that many people cannot afford, even if they would like them. For each of the following things on this list, can I just check whether your household can afford it if you want it?

a. Keeping your home adequately warm. [**Warm home**]
b. Paying for a week's annual holiday away from home (not staying with relatives). [**Annual holiday**]
c. Replacing any worn-out furniture. [**Replace furniture**]
d. A meal with meat, chicken, fish every second day if you wanted it. [**Meat/fish consumption**]
e. Buying new, rather than second-hand, clothes. [**New clothes**]
f. Having friends or family for a drink or meal at least once a month. [**Inviting others**]

Answers: 1 (Yes, can afford if want), 2 (No, cannot afford it)

**Ind. 7: Polychoric correlation matrix (obs. 34,915)**

| | a | b | c | d | e | f |
|---|---|---|---|---|---|---|
| Warm home [a] | 1 | | | | | |
| Annual holiday [b] | .699 | 1 | | | | |
| Replace furniture [c] | .703 | .884 | 1 | | | |
| Meat/fish consumption [d] | .702 | .754 | .777 | 1 | | |
| New clothes [e] | .684 | .805 | .854 | .823 | 1 | |
| Inviting others [f] | .682 | .774 | .781 | .791 | .813 | 1 |

**Ind. 7: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Warm home | .823 | .322 | .964 |
| Annual holiday | .913 | .166 | .955 |
| Replace furniture | .929 | .136 | .953 |
| Meat/fish consumption | .899 | .192 | .956 |
| New clothes | .926 | .143 | .953 |
| Inviting others | .898 | .193 | .956 |
| Overall scale | | | .962 |

## Indicator 8: Psychological functioning / Perceived resilience

Q7: To what extent do you agree or disagree with the following statements?

a. I am optimistic about my future [**Optimism**]
c. I generally feel that what I do in life is worthwhile [**Worthwhile**]
d. I feel I am free to decide how to live my life [**Freedom**]
e. In my daily life, I seldom have time to do the things I really enjoy [**Time scarcity**]
f. I find it difficult to deal with important problems that come up in my life [**Face problems**]
g. When things go wrong in my life, it generally takes me a long time to get back to normal [**Back to normal**]

Answers: 1 (Strongly agree), 2 (Agree), 3 (Neither agree nor disagree), 4 (Disagree), 5 (Strongly disagree)

**Ind. 8: Polychoric correlation matrix (obs. 36,055)**

| | a | b | c | d | e | f |
|---|---|---|---|---|---|---|
| Optimism [a] | 1 | | | | | |
| Worthwhile [b] | .588 | 1 | | | | |
| Freedom [c] | .497 | .578 | 1 | | | |
| Time scarcity [d] | –.009 | –.027 | –.107 | 1 | | |
| Face problems [e] | –.269 | –.261 | –.257 | .289 | 1 | |
| Back to normal [f] | –.284 | –.258 | –.238 | .256 | .692 | 1 |

**Ind. 8: PCA scale and item statistics**

| Item | Factor 1 load. | Factor 2 load. | Uniqueness | Reliability |
|---|---|---|---|---|
| Optimism | **.818** | .139 | .312 | .866 |
| Worthwhile | **.856** | .121 | .253 | .858 |
| Freedom | **.788** | .162 | .353 | .867 |
| Time scarcity | –.143 | **.644** | .565 | .914 |
| Face problems | .211 | **.846** | .241 | .831 |
| Back to normal | .216 | **.829** | .266 | .837 |
| Overall scale | | | | .872 |

*Notes:* factor loadings resulting after orthogonal varimax rotation

## Indicator 9: Work-life balance

Q20: How often has each of the following happened to you during the last 12 months?

a. I have come home from work too tired to do some of the household jobs which need to be done [**Do household jobs**]
b. It has been difficult for me to fulfil my family responsibilities because of the amount of time I spend on the job [**Fulfill responsibilities**]
c. I have found it difficult to concentrate at work because of my family responsibilities [**Concentrate at work**]

Answers: 1 (Every day), 2 (Several times a week), 3 (Several times a month), 4 (Several times a year), 5 (Less often/rarely), 6 (Never)

**Ind. 9: Polychoric correlation matrix (obs. 17,661)**

| | a | b | c |
|---|---|---|---|
| Do household jobs [a] | 1 | | |
| Fulfil family resp. [b] | .682 | 1 | |
| Concentrate at work [c] | .466 | .664 | 1 |

**Ind. 9: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Do household jobs | .832 | .307 | .908 |
| Fulfil family resp. | .918 | .157 | .846 |
| Concentrate at work | .822 | .324 | .914 |
| Overall scale | | | .893 |

## Indicator 10: Subjective well-being (negative emotions)

Q52: Please indicate for each of the statements which is closest to how you have been feeling over the last two weeks.

a. I have felt particularly tense [**Tense**]
b. I have felt lonely [**Lonely**]
c. I have felt downhearted and depressed [**Depressed**]

Answers: 1 (All of the time), 2 (Most of the time), 3 (More than half of the time), 4 (Less than half of the time), 5 (Some of the time), 6 (At no time)

**Ind. 10: Polychoric correlation matrix (obs. 36,600)**

| | a | b | c |
|---|---|---|---|
| Tense [a] | 1 | | |
| Lonely [b] | .583 | 1 | |
| Depressed [c] | .700 | .789 | 1 |

**Ind. 10: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Tense | .847 | .282 | .944 |
| Lonely | .890 | .209 | .919 |
| Depressed | .936 | .125 | .884 |
| Overall scale | | | .920 |

## Indicator 11: Perceptions of social tensions

Q34: In all countries there sometimes exists tension between social groups. In your opinion, how much tension is there between each of the following groups in this country?

a. Poor and rich people [**Poor vs rich**]
b. Management and workers [**Management vs workers**]
c. Men and women [**Men vs women**]
d. Old people and young people [**Old vs young**]
e. Different racial and ethnic groups [**Racial/ethnic groups**]
f. Different religious groups [**Religious groups**]

Answers: 1 (A lot of tension), 2 (Some tension), 3 (No tension)

**Ind. 11: Polychoric correlation matrix (obs. 32,678)**

| | a | b | c | d | e | f |
|---|---|---|---|---|---|---|
| Poor vs rich [a] | 1 | | | | | |
| Management vs workers [b] | .676 | 1 | | | | |
| Men vs women [c] | .478 | .506 | 1 | | | |
| Old vs young [d] | .522 | .482 | .636 | 1 | | |
| Racial/ethnic groups [e] | .428 | .425 | .406 | .407 | 1 | |
| Religious groups [f] | .382 | .374 | .404 | .373 | .779 | 1 |

**Ind. 11: PCA scale and item statistics**

| Item | Factor 1 load. | Factor 2 load. | Uniqueness | Reliability |
|---|---|---|---|---|
| Poor vs rich | **.785** | .255 | .318 | .875 |
| Management vs workers | **.783** | .248 | .325 | .876 |
| Men vs women | **.751** | .273 | .362 | .877 |
| Old vs young | **.773** | .242 | .344 | .877 |
| Racial/ethnic groups | .243 | **.909** | .115 | .876 |
| Religious groups | .187 | **.928** | .104 | .881 |
| Overall scale | | | | .929 |

*Notes:* factor loadings resulting after orthogonal varimax rotation

## Indicator 12: Average user satisfaction with medical care services provision

Question: You mentioned that you used hospital or medical specialist services. On a scale of 1 to 10 where 1 means very dissatisfied and 10 means very satisfied, please tell me how satisfied or dissatisfied you were with each of the following aspects the last time the service was used:

a. Quality of the facilities (building, room, equipment) [**Quality**]
b. Expertise and professionalism of staff [**Expertise**]
c. Personal attention you were given, including staff attitude and time devoted [**Attention**]
d. Being informed or consulted about your care [**Information**]

Answers: 1 (Very dissatisfied) – 10 (Very satisfied)

**Ind. 12: Polychoric correlation matrix (obs. 11,590)**

| | a | b | c | d |
|---|---|---|---|---|
| Quality [a] | 1 | | | |
| Expertise [b] | .697 | 1 | | |
| Attention [c] | .652 | .836 | 1 | |
| Information [d] | .621 | .804 | .854 | 1 |

**Ind. 12: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Quality | .815 | .336 | .960 |
| Expertise | .931 | .134 | .925 |

| | | | |
|---|---|---|---|
| Attention | .934 | .129 | .925 |
| Information | .916 | .161 | .931 |
| Overall scale | | | .944 |

## Indicator 13: Average rating of the quality dimensions by users of formal childcare services

Q81: You mentioned that the main form of childcare received by the youngest child is [Q78 = 3. Childminding with a formal agreement or contract / Q78 = 4. Childcare facility (e.g. kindergarten, creche, nursery, playgroup, daycare centre) or after-school care / Q78 = 5. Other]. On a scale of 1 to 10 where 1 means very dissatisfied and 10 means very satisfied, please tell me how satisfied or dissatisfied you were with each of the following aspects.

a. Quality of the facilities (building, room, equipment) [**Quality**]
b. Expertise and professionalism of staff/carers [**Expertise**]
c. Personal attention the child was given, including staff/carers' attitude and time devoted [**Attention**]
d. Being informed or consulted about the child's care [**Information**]
e. The curriculum and activities [**Activities**]

Answers: 1 (Very dissatisfied) – 10 (Very satisfied)

**Ind. 13: Polychoric correlation matrix (obs. 2,086)**

| | a | b | c | d | e |
|---|---|---|---|---|---|
| Quality [a] | 1 | | | | |
| Expertise [b] | .694 | 1 | | | |
| Attention [c] | .658 | .821 | 1 | | |
| Information [d] | .648 | .768 | .800 | 1 | |
| Activities [e] | .637 | .763 | .781 | .777 | 1 |

**Ind. 13: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Quality | .812 | .341 | .954 |
| Expertise | .913 | .166 | .937 |
| Attention | .918 | .158 | .936 |
| Information | .902 | .187 | .939 |

| | | | |
|---|---|---|---|
| Activities | .893 | .202 | .941 |
| Overall scale | | | .949 |

## Indicator 14: Quality indicator of schools

Q85: You mentioned that your child or someone in your household attended school. On a scale of 1 to 10 where 1 means very dissatisfied and 10 means very satisfied, please tell me how satisfied or dissatisfied you were with each of the following aspects.

a. Quality of the facilities (building, room, equipment) [**Quality**]
b. Expertise and professionalism of staff/teachers [**Expertise**]
c. Personal attention you were/ this person was given, including staff/teachers' attitude and time devoted [**Attention**]
d. Being informed or consulted about this person's education [**Information**]
e. The curriculum and activities [**Activities**]

Answers: 1 (Very dissatisfied) – 10 (Very satisfied)

**Ind. 14: Polychoric correlation matrix (obs. 8,461)**

| | a | b | c | d | e |
|---|---|---|---|---|---|
| Quality [a] | 1 | | | | |
| Expertise [b] | .630 | 1 | | | |
| Attention [c] | .601 | .815 | 1 | | |
| Information [d] | .563 | .744 | .795 | 1 | |
| Activities [e] | .557 | .715 | .741 | .734 | 1 |

**Ind. 14: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Quality | .758 | .425 | .947 |
| Expertise | .904 | .183 | .922 |
| Attention | .917 | .160 | .920 |
| Information | .889 | .210 | .925 |
| Activities | .866 | .250 | .929 |
| Overall scale | | | .938 |

## Indicator 15: Exclusion from neighbourhood

Q56: Thinking of physical access, distance, opening hours and the like, how easy or difficult is your access to the following services?

a. Banking facilities (e.g bank branch, ATM) [**Banking**]
b. Public transport facilities (bus, metro, tram, train etc.) [**Transport**]
c. Cinema, theatre or cultural centre [**Culture**]
d. Recreational or green areas [**Recreational**]
e. Grocery shop or supermarket [**Grocery**]
f. Recycling services including collection of recyclables [**Recycling**]

Answers: 1 (Very difficult), 2 (Rather difficult), 3 (Rather easy), 4 (Very easy)

**Ind. 15: Polychoric correlation matrix (obs. 31,292)**

| | a | b | c | d | e | f |
|---|---|---|---|---|---|---|
| Banking [a] | 1 | | | | | |
| Transport [b] | .656 | 1 | | | | |
| Culture [c] | .643 | .630 | 1 | | | |
| Recreational [d] | .537 | .471 | .548 | 1 | | |
| Grocery [e] | .662 | .658 | .564 | .547 | 1 | |
| Recycling [f] | .541 | .493 | .515 | .614 | .575 | 1 |

**Ind. 15: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Banking | .841 | .292 | .903 |
| Transport | .813 | .339 | .906 |
| Culture | .809 | .346 | .907 |
| Recreational | .763 | .418 | .912 |
| Grocery | .833 | .306 | .903 |
| Recycling | .769 | .409 | .911 |
| Overall scale | | | .917 |

## Indicator 16: Satisfaction with the GP

Q62: You mentioned that you used GP, family doctor or health centre services. On a scale of 1 to 10 where 1 means very dissatisfied and 10 means very satisfied, tell me how satisfied or dissatisfied you were with each of the following aspects the last time that you used the

service.

a. Quality of the facilities (building, room, equipment) [**Quality**]
b. Expertise and professionalism of staff [**Expertise**]
c. Personal attention you were given, including staff attitude and time devoted [**Attention**]
d. Being informed or consulted about your care [**Information**]

Answers: 1 (Very dissatisfied) – 10 (Very satisfied)

**Ind. 16: Polychoric correlation matrix (obs. 23,287)**

| | a | b | c | d |
|---|---|---|---|---|
| Quality [a] | 1 | | | |
| Expertise [b] | .682 | 1 | | |
| Attention [c] | .644 | .838 | 1 | |
| Information [d] | .610 | .798 | .852 | 1 |

**Ind. 16: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Quality | .807 | .349 | .959 |
| Expertise | .928 | .138 | .923 |
| Attention | .934 | .127 | .922 |
| Information | .914 | .165 | .929 |
| Overall scale | | | .942 |

## Indicator 17: Objective material deprivation (arrears in payment)

Q93: Has your household been in arrears at any time during the past 12 months, that is, unable to pay as scheduled any of the following?

- Rent or mortgage payments for accommodation [**Accommodation**]
- Utility bills, such as electricity, water, gas [**Utilities**]
- Payments related to consumer loans, including credit card overdrafts (to buy electrical appliances, a car, furniture, etc.) [**Consumer loans**]
- Telephone, mobile or internet connection bills [**Communication**]
- Payments related to informal loans from friends or relatives not living in your household [**Informal loans**]

Answers: 1 (Yes), 2 (No)

**Ind. 17: Polychoric correlation matrix (obs. 33,275)**

| | a | b | c | d | e |
|---|---|---|---|---|---|
| Accommodation [a] | 1 | | | | |
| Utilities [b] | .756 | 1 | | | |
| Consumer loans [c] | .740 | .741 | 1 | | |
| Communication [d] | .719 | .892 | .763 | 1 | |
| Informal loans [e] | .713 | .730 | .795 | .750 | 1 |

**Ind. 17: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Accommodation | .872 | .240 | .953 |
| Utilities | .918 | .157 | .945 |
| Consumer loans | .898 | .193 | .948 |
| Communication | .919 | .155 | .944 |
| Informal loans | .887 | .214 | .950 |
| Overall scale | | | .955 |

## Indicator 18: Exclusion from social relations

Q38: On average, how often do you have direct face-to-face contact with the following people living outside your household?

a. Any family members or relatives [**Dir. contact (family)**]
b. Any of your friends or neighbours [**Dir. contact (neighbours)**]

Answers: 1 (Every day or almost every day), 2 (At least once a week), 3 (One to three times a month), 4 (Less often), 5 (Never)

Q39: And on average, how often do you have contact with friends or family living outside your household by phone, the Internet or by post?

a. Any family members or relatives [**Ind. contact (family)**]
b. Any of your friends or neighbours [**Ind. contact (neighbours)**]

Answers: 1 (Every day or almost every day), 2 (At least once a week), 3 (One to three times a month), 4 (Less often), 5 (Never)

**Ind. 18: Polychoric correlation matrix (obs. 36,232)**

| | a | b | c | d |
|---|---|---|---|---|
| Dir. contact (family) [a] | 1 | | | |
| Dir. contact (neighbours) [b] | .378 | 1 | | |
| Ind. contact (family) [c] | .372 | .319 | 1 | |
| Ind. contact (neighbours) [d] | .190 | .393 | .578 | 1 |

**Ind. 18: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Dir. contact (family) | .631 | .601 | .828 |
| Dir. contact (neighbours) | .707 | .500 | .803 |
| Ind. contact (family) | .802 | .357 | .782 |
| Ind. contact (neighbours) | .765 | .415 | .800 |
| Overall scale | | | .816 |

## Indicator 19: Objective material deprivation (shoddy accommodation)

Q25: Do you have any of the following problems with your accommodation?

a. Shortage of space [**Space**]
b. Rot in windows, doors or floors [**Fixtures**]
c. Damp or leaks in walls or roof [**Walls**]
d. Lack of indoor flushing toilet [**Toilet**]
e. Lack of bath or shower [**Shower**]
f. Lack of facilities (heating or cooling) to keep a comfortable temperature at home [**Temperature**]

Answers: 1 (Yes), 2 (No)

**Ind. 19: Polychoric correlation matrix (obs. 36,639)**

| | a | b | c | d | e | f |
|---|---|---|---|---|---|---|
| Space [a] | 1 | | | | | |
| Fixtures [b] | .394 | 1 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Walls [c] | .406 | .761 | 1 | | | |
| Toilet [d] | .294 | .522 | .427 | 1 | | |
| Shower [e] | .332 | .543 | .466 | .951 | 1 | |
| Temperature [f] | .318 | .537 | .520 | .655 | .700 | 1 |

**Ind. 19: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Space | .535 | .714 | .916 |
| Fixtures | .805 | .353 | .880 |
| Walls | .759 | .424 | .886 |
| Toilet | .851 | .276 | .880 |
| Shower | .880 | .227 | .875 |
| Temperature | .813 | .339 | .883 |
| Overall scale | | | .899 |

## Indicator 20: Neighbourhood problems

Q54: Please think about the area where you live now – I mean the immediate neighbourhood of your home. Do you have major, moderate or no problems with the following?

a. Noise [**Noise**]
b. Air quality [**Air quality**]
c. Litter or rubbish on the street [**Litter**]
d. Heavy traffic in your immediate neighbourhood [**Traffic**]

Answers: 1 (Major problems), 2 (Moderate problems), 3 (No problems)

**Ind. 20: Polychoric correlation matrix (obs. 36,666)**

| | a | b | c | d |
|---|---|---|---|---|
| Noise [a] | 1 | | | |
| Air quality [b] | .707 | 1 | | |
| Litter [c] | .583 | .671 | 1 | |
| Traffic [d] | .737 | .670 | .609 | 1 |

**Ind. 20: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Noise | .878 | .229 | .908 |
| Air quality | .883 | .220 | .905 |
| Litter | .822 | .324 | .924 |
| Traffic | .874 | .237 | .909 |
| Overall scale | | | .922 |

## Indicator 21: Exclusion from services

Q61: Thinking about the last time you needed to see or be treated by a GP, family doctor or health centre, to what extent did any of the following make it difficult or not for you to do so?

a. Distance to GP/doctor's office / health centre [**Distance**]
b. Delay in getting appointment [**Delay**]
c. Waiting time to see doctor on day of appointment [**Waiting time**]
d. Cost of seeing the doctor [**Cost**]
e. Finding time because of work, care for children or for others [**Time available**]

Answers: 1 (Very difficult), 2 (A little difficult), 3 (Not difficult at all)

**Ind. 21: Polychoric correlation matrix (obs. 32,089)**

| | a | b | c | d | e |
|---|---|---|---|---|---|
| Distance [a] | 1 | | | | |
| Delay [b] | .500 | 1 | | | |
| Waiting time [c] | .468 | .730 | 1 | | |
| Cost [d] | .521 | .537 | .528 | 1 | |
| Time available [e] | .395 | .485 | .512 | .513 | 1 |

**Ind. 21: PCA scale and item statistics**

| Item | Factor loadings | Uniqueness | Reliability |
|---|---|---|---|
| Distance | .724 | .475 | .887 |
| Delay | .840 | .295 | .866 |
| Waiting time | .836 | .302 | .866 |
| Cost | .789 | .378 | .874 |
| Time available | .732 | .465 | .886 |

| | |
|---|---|
| Overall scale | .888 |

## Indicator 22: Indicator(s) of active ageing

HH2d. Which of these categories best describes your situation?

1. at work as employee or employer/self-employed
2. employed, on childcare leave
3. employed, on other special leave (e.g. sickness; not holiday)
4. in receipt of retirement pension and at work as employee or employer/self-employed
5. at work as relative assisting on family business or farm*
6. unemployed less than 12 months
7. unemployed 12 months or more
8. unable to work due to long-term illness or disability
9. retired
10. Full-time homemaker / fulfilling domestic tasks
11. in education (at school, university, etc.) / student
12. other (NOT ASKED/NOT ON CARD)
13. child is under

1., 2., 3., 4. [**In paid employment**]

Q29: Please look at the list of organisations and tell us, how often did you do unpaid voluntary work through the following organisations in the last 12 months?

a. Community and social services (e.g. organisations helping the elderly, young people, disabled or other people in need)
b. Educational, cultural, sports or professional associations
c. Social movements (for example environmental, human rights)or charities (for example fundraising, campaigning)
d. Political parties, trade unions
e. Other voluntary organisations

Answers: 1 (Every week), 2 (Every month), 3 (Less often/occasionally), 4 (Not at all)

1 or 2 in at least one of a.–c. [**Volunteering**]

Q42: In general, how often are you involved in any of the following activities outside of paid work?

a. Caring for and/or educating your children
b. Caring for and/or educating your grandchildren
c. Cooking and / or housework
d. Caring for disabled or infirm family members, neighbours or friends under 75 years old
e. Caring for disabled or infirm family members, neighbours or friends aged 75 or over

Answers: 1 (Every day), 2 (Several days a week), 3 (Once or twice a week), 4 (Less often), 5 (Never)

1, 2 or 3 in at least one of a. or b. [**Caring for grand/children**], c. [**Doing housework**], d. or e. [**Caring for sick/disabled**]

**Ind. 22: Polychoric correlation matrix (obs. 5,945)**

| | a | b | c | d | e |
|---|---|---|---|---|---|
| In paid employment [a] | 1 | | | | |
| Volunteering [b] | .137 | 1 | | | |
| Doing housework [c] | -.108 | .038 | 1 | | |
| Caring for grand/children [d] | .021 | .126 | .089 | 1 | |
| Caring for sick/disabled [e] | .082 | .246 | .196 | .175 | 1 |

**Ind. 22: PCA scale and item statistics**

| Item | Factor 1 loadings | Factor 2 loadings | Uniqueness | Reliability |
|---|---|---|---|---|
| In paid employment | .225 | **.764** | .366 | .683 |
| Volunteering | **.628** | .336 | .493 | .635 |
| Doing housework | .424 | **-.657** | .388 | .665 |
| Caring for grand/children | **.538** | -.101 | .701 | .732 |
| Caring for sick/disabled | **.746** | -.054 | .441 | .653 |
| Overall scale | | | | .713 |

## Indicator 23: Subjective quality of life

Q4: All things considered, how satisfied would you say you are with your life these days? Please tell me on a scale of 1 to 10, where 1 means very dissatisfied and 10 means very satisfied.

Answers: 1 (Very dissatisfied) – 10 (Very satisfied) [**Life satisfaction**]

Q5: Taking all things together on a scale of 1 to 10, how happy would you say you are? Here 1 means you are very unhappy and 10 means you are very happy.

Answers: 1 (Very unhappy) – 10 (Very happy) [**Happiness**]

Q6: Could you please tell me on a scale of 1 to 10 how satisfied you are with each of the following items, where 1 means you are very dissatisfied and 10 means you are very satisfied?

a. Your education [**Education (S)**]
c. Your present standard of living [**Standard of living (S)**]

d. Your accommodation [**Accommodation (S)**]
e. Your family life [**Family life (S)**]
f. Your local area as a place to live [**Local area (S)**]

Answers: 1 (Very dissatisfied) – 10 (Very satisfied)

Q31: On the whole, how satisfied are you with the way democracy works in [country]? Please tell me on a scale of 1 to 10, where 1 means very dissatisfied and 10 means very satisfied.

Answers: 1 (Very dissatisfied) – 10 (Very satisfied) [**Democracy (S)**]

Q32: On the whole, how satisfied are you with the present state of the economy in [country]? Please tell me on a scale of 1 to 10, where 1 means very dissatisfied and 10 means very satisfied.

Answers: 1 (Very dissatisfied) – 10 (Very satisfied) [**Economy (S)**]

Q35: Please tell me how much you personally trust each of the following institutions. Please tell me on a scale of 1 to 10, where 1 means that you do not trust at all, and 10 means that you trust completely.

a. [NATIONALITY] parliament [**Parliament (T)**]
b. The legal system [**Legal system (T)**]
e. The government [**Government (T)**]

Answers: 1 (Do not trust at all) – 10 (Trust completely)

Q58: In general, how would you rate the quality of each of the following public services in [COUNTRY]? Please tell me on a scale of one to 10, where one means very poor quality and 10 means very high quality.

a. Health services [**Health (Q)**]
b. Education system [**Education (Q)**]
c. Public transport [**Public transport (Q)**]
g. State pension system [**Pension system (Q)**]

Answers: 1 (Very poor quality) – 10 (Very high quality)

Q88: A household may have different sources of income and more than one household member may contribute to it. Thinking of your household's total monthly income: is your household able to make ends meet….?

Answers: 1 (Very easily), 2 (Easily), 3 (Fairly easily), 4 (With some difficulty), 5 (With difficulty), 6 (With great difficulty) [**Make ends meet**]

**Ind. 23: Polychoric correlation matrix (obs. 27,786)**

| | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Life satisfaction [a] | 1 | | | | | | | | | | | | | | | | |
| Happiness [b] | .8 | 1 | | | | | | | | | | | | | | | |
| Education (S) [c] | .4 | .4 | 1 | | | | | | | | | | | | | | |
| Standard of living (S) [d] | .7 | .6 | .5 | 1 | | | | | | | | | | | | | |
| Accommodation (S) [e] | .4 | .4 | .4 | .6 | 1 | | | | | | | | | | | | |
| Family life (S) [f] | .4 | .5 | .4 | .5 | .5 | 1 | | | | | | | | | | | |
| Place of living (S) [g] | .4 | .4 | .3 | .4 | .5 | .4 | 1 | | | | | | | | | | |
| Democracy (S) [h] | .4 | .3 | .2 | .4 | .2 | .2 | .2 | 1 | | | | | | | | | |
| Economy (S) [i] | .4 | .3 | .2 | .4 | .2 | .1 | .2 | .7 | 1 | | | | | | | | |
| Parliament (T) [j] | .3 | .2 | .2 | .3 | .2 | .1 | .1 | .6 | .6 | 1 | | | | | | | |
| Legal system (T) [k] | .3 | .3 | .2 | .3 | .2 | .1 | .2 | .6 | .5 | .7 | 1 | | | | | | |
| Government (T) [l] | .3 | .2 | .2 | .3 | .2 | .1 | .1 | .6 | .6 | .8 | .7 | 1 | | | | | |
| Health (Q) [m] | .3 | .3 | .2 | .3 | .2 | .1 | .2 | .4 | .4 | .4 | .4 | .4 | 1 | | | | |
| Education (Q) [n] | .3 | .3 | .2 | .3 | .2 | .2 | .2 | .4 | .4 | .4 | .4 | .4 | .7 | 1 | | | |
| Public transport (Q) [o] | .2 | .2 | .2 | .2 | .2 | .1 | .2 | .3 | .3 | .3 | .3 | .3 | .5 | .5 | 1 | | |
| Pension system (Q) [p] | .3 | .2 | .1 | .3 | .2 | .1 | .1 | .4 | .5 | .5 | .4 | .5 | .5 | .5 | .4 | 1 | |
| Make ends meet [q] | -.5 | -.4 | -.3 | -.6 | -.4 | -.3 | -.3 | -.3 | -.4 | -.3 | -.3 | -.3 | -.3 | -.2 | -.2 | -.3 | 1 |

**Ind. 23: PCA scale and item statistics**

| Item | Factor 1 loadings | Factor 2 loadings | Factor 3 loadings | Uniqueness | Reliability |
|---|---|---|---|---|---|
| Life satisfaction | **.741** | .321 | .066 | .343 | .903 |
| Happiness | **.755** | .222 | .041 | .379 | .904 |
| Education (S) | **.596** | .075 | .127 | .623 | .910 |
| Standard of living (S) | **.782** | .280 | .127 | .293 | .902 |
| Accommodation (S) | **.747** | .013 | .188 | .407 | .906 |
| Family life (S) | **.720** | -.029 | .111 | .468 | .908 |
| Place of living (S) | **.625** | -.033 | .274 | .533 | .908 |
| Democracy (S) | .204 | **.772** | .145 | .341 | .903 |
| Economy (S) | .233 | **.762** | .154 | .342 | .903 |
| Parliament (T) | .080 | **.854** | .202 | .223 | .901 |
| Legal system (T) | .135 | **.765** | .242 | .339 | .902 |
| Government (T) | .065 | **.827** | .207 | .270 | .902 |
| Health (Q) | .137 | .347 | **.739** | .314 | .903 |
| Education (Q) | .154 | .287 | **.778** | .288 | .903 |
| Public transport (Q) | .112 | .158 | **.773** | .366 | .907 |

| | | | | | |
|---|---|---|---|---|---|
| Pension system (Q) | .109 | **.499** | .494 | .496 | .906 |
| Make ends meet | **-.557** | -.383 | -.037 | .542 | .941 |
| Overall scale | | | | | .911 |

**WPEF24069**

**The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency established in 1975. Its role is to provide knowledge in the area of social, employment and work-related policies according to Regulation (EU) 2019/127.**