

7 November 2019

Well-being Index 2004-2018

The Well-being Index maintains the recovery started in 2013, mainly due to the Material living conditions Index improvement

The Portuguese Well-being index (WBI) evolved positively between 2004 and 2018, having registered an inflexion in 2007, 2008 and 2012. It recovered the following year, and growth is expected to continue to 2018. However, from 2016, this upwards trend has been progressively less strong.

The WBI illustrates developments of the well-being using two synthetic indices which in turn reveal two dimensions: *Material living conditions* and *Quality of life*.

Between 2007 and 2008, and between 2010 and 2013 these two indices evolved in opposite directions. In the first period, the *Material living conditions* showed an increasing trend while *Quality of life* decreases, reversing this situation in the second period. From 2013 onwards, they changed in the same direction.

Among the ten domains integrating the WBI, *Personal Safety* and *Education, knowledge and skills* are the best performing components during the period under review.

Inversely, *Employment* and *Economic vulnerability* are the worst-performing components, although they have been recovering since 2013.

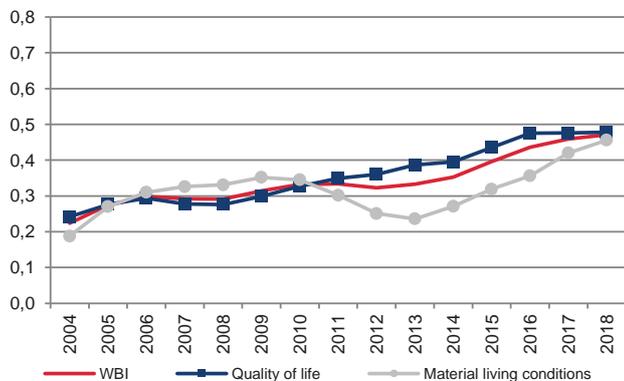
Statistics Portugal releases the main results of the seventh edition of the *Well-being index for Portugal* (WBI), for the period 2004-2018. This index has been the subject of a methodological review in this issue. This index is based on methodologies and conceptual frameworks adopted by a group of international organisations, namely the OECD and Eurostat, and other statistics offices (see Technical note).

1. Global analysis

Preliminary data for 2018 point to a slight WBI increase, explained by a small improvement in the *Quality of life*, and a large increase of *Living conditions*. In 2018, the WBI peaked at 0.471 (on a scale from 0 to 1), continuing the recovery started in 2013.

According to the methodological review adopted, if the value of a given indicator or index in a given year is close to 1, this means that this value is close to the maximum value over the entire period under review for that indicator in a set of reference countries (see Technical note). If this value is close to zero, this means that it is close to the minimum value for that same set of countries. This means that the closer it is to 1, the better it is the Portugal position vis-à-vis this set of countries, for that indicator and for that year.

Figure 1 - Well-being index (IBE): global and by Perspective



Between 2004 and 2018, the WBI changed from 0.224 to 0.471. This development was mostly due to progress in the *Quality of Life* (except in 2007-2008) and the *Material living conditions* (except in 2010-2013).

The WBI in Portugal recorded almost always positive developments between 2004 and 2018. It has only reduced in the period 2007-2008 and in 2012.

The two perspectives of analysis of well-being – reflected in the composite indices *Material living conditions* and *Quality of life* – experienced different behaviours. *Quality of life* has always been higher than the *Material living conditions*, except for the 2006 to 2010 period, during which these indices reversed their positions.

Both indices evolved in opposite directions in the 2007-2008 and 2010-2013 periods. While the *Material living conditions* index developed negatively in the period 2010-2013, reaching its minimum value, of 0.236, in 2013, the *Quality of life* index showed a negative evolution in the years 2007-2008. From that period onwards, it showed a continuously positive evolution. However, the decreases in these indices in those periods have different magnitudes: the index of material living conditions showed an accumulated

negative evolution higher than that of the quality of life index (-0.116 versus -0.018), as is apparent in Figure 1.

The *Material living conditions* index grew gradually less since 2004 and decreased effectively from 2010 to 2013. From 2014 it has grown, and it is estimated that the uplift continued in 2018 although with a slight deceleration.

The analysis of developments in the 2004-2008 (pre-crisis) and 2008-2016 periods shows that the positive evolution of 0.143 in the *Material living conditions* index recorded in the first period was followed by a less favourable value of 0.004 in the period 2008-2016. However, it is estimated that in 2018 the *Material Living Conditions* index will be about 0.268 above the 2004 level.

On the other hand, from a *Quality of Life* perspective, the moderate positive evolution between 2004 and 2008 explained by a total variation of 0.034, was followed by an equally positive and sharper evolution, of 0.176, in the period 2008-2016. It is estimated that in 2018 the index quality of life is situated about 0.236 above the level found in 2004.

Obtained results originate from different evolutions in time, from the domains that underpin the two perspectives considered. In the evolution of material living conditions, there are three distinct periods. Between 2004 and 2009, the index shows a positive evolution, resulting from the contribution of the evolution of the *Economic well-being* domain. This change happened despite the decreases in the same period of the *Employment* and *Economic vulnerability* indices. A second period, from 2010 to 2013, in which the index shows a negative evolution, as an outcome of the very sharp decreases in the *Employment* and *Economic Vulnerability* indices. And finally, a period of

positive evolution from 2014, as a result of the positive evolution of the indices of the three domains.

The *Economic well-being* index has grown almost continuously since 2004 (only with the slight exception of the period from 2010 to 2012). It is the domain that in the period under review showed the most considerable growth (0.288).

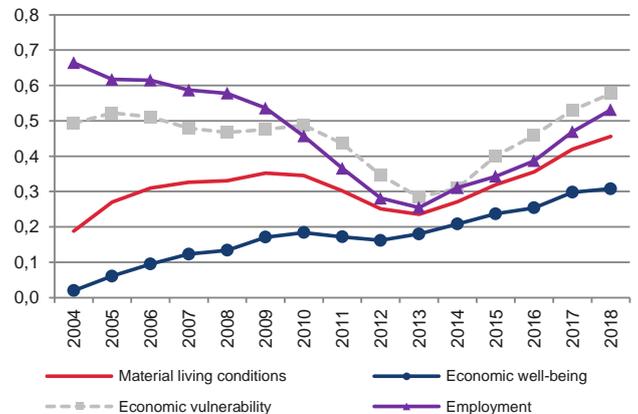
In virtually every year since 2006, the *Economic Vulnerability* index has worsened, reaching the lowest level in 2013: 0.284¹. The index has been growing since this year, and it is estimated that this growth continued in 2018. In the overall context of the review period (2004-2018), it showed a variation of 0.084.

The *Employment* domain contributed significantly to the decrease in the synthetic index of *Material Living Conditions*, with a decrease of 0.133 between 2004 and 2018. However, similarly to what happened with the domain of *Economic vulnerability*, the *Employment* index, after reaching a minimum value in 2013, grew in the following years, projecting new growth for 2018.

It should be noted, that the *Economic well-being* index shows an approximately linear positive evolution, unlike the other two domains. Its values are consistently lower and therefore correspond to lower well-being levels.

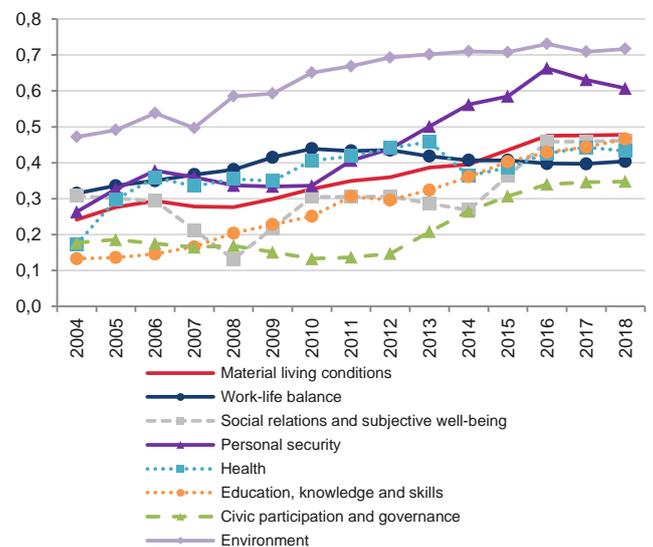
¹ A rise in the indexes always denotes an improvement in well-being, while a decline denotes the worsening of well-being. Thus, the decrease of the *Economic vulnerability* index means a greater economic vulnerability and therefore worsening of well-being.

Figure 2 - IBE: Material living conditions and their domains



Two of the seven domains of *Quality of life* made a significant contribution to the overall positive developments of this component.

Figure 3 - IBE: Quality of life and their domains



First, the *Personal security* domain, which since 2006 has come down to a minimum value in 2009, has grown from that year to a maximum in 2016, decreasing slightly from that year.

Second, the *Education, knowledge and skills* domain had a development very close to the domain referred above. It grew continuously in the period under study,

except for the year 2012. Since 2015, however, it has shown a smoother growth trend.

The indexes of the remaining domains had an evolution below the overall performance of the *Quality of life* perspective.

The *Health* domain index also tended to increase.

The evolution of the *Environment* domain index was similar, except for showing a more significant decrease in 2007. It should be noted, however, that throughout the period, this domain had the highest index values, thus reflecting a relevant international position of Portugal in this matter.

In the 2004-2018 period, the domains *Civic participation and governance* and *Social relations and subjective well-being* exhibited similar behaviours.

Work-life balance is the domain of the perspective of *Quality of life* that grew less in the period.

Overall, a review of the 2004-2008 and 2009-2018 periods highlights five groups of domains, depending on their behaviour (Table 1): the group that showed a consistently positive trend in both periods; the one that have gone from a null trend in the first period to a positive evolution in the second; the group that has gone from a negative trend in the first period to a positive evolution in the second; and finally, the two groups that have gone from a positive or negative evolution to a null trend between the first and the second periods under review.

Table 1 - Evolution of the annual rate of change by domain in 2004-2008 and 2008-2018

2004-2008	2009-2018		
	Positive	Null*	Negative
Positive	Economic well-being; Health; Personal security; Education, knowledge and skills; Environment	Work-life balance	
Null*	Civic participation and governance		
Negative	Economic vulnerability; Social relations and subjective well-being	Employment	

* |Average annual change| < 0,004

2. Material living conditions

2.1. Economic well-being

The *Economic well-being* domain grew considerably up to the start of the economic crisis, reversing that trend after 2010 until 2012 and beginning a recovery since then. It should be stressed in this recovery the favourable evolution of the inequality and concentration indicators and the individual consumption expenditure by households. These indicators and the satisfaction with standard of living showed the most favourable evolution between 2004 and 2018. The indicators on assets were not only the ones that had the slowest evolution, but also those that showed the lowest values during the period.

Although the *Economic well-being* index and its respective indicators have shown a generally positive trend, it should be noted that they start from shallow values in 2004, reaching in 2018 only to values that are, on average, in the vicinity of 0.3 (on a 0 to 1 scale). This fact reveals Portugal's position in this matter vis-à-vis the set of countries that serve as a reference in this analysis.

Figure 4 - Economic well-being and its indicators

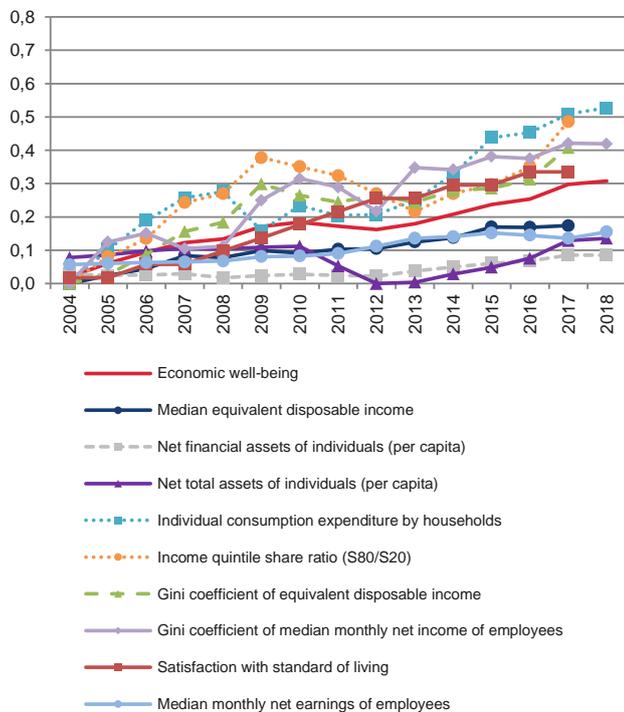
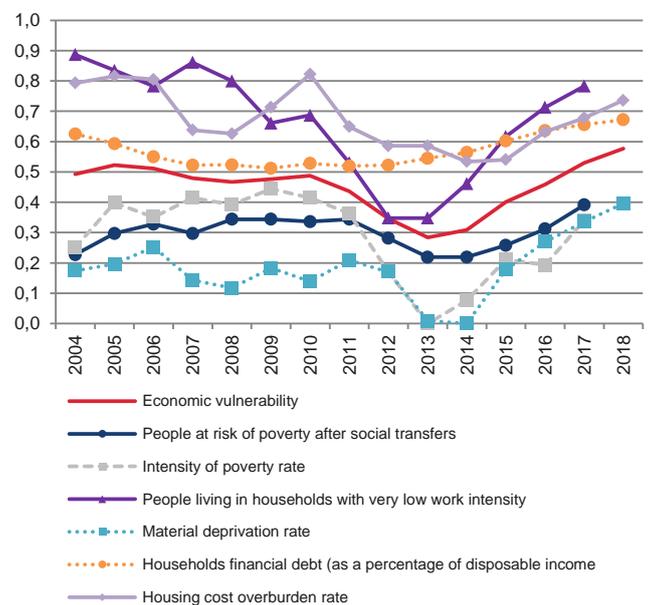


Figure 5 - Economic vulnerability and its indicators



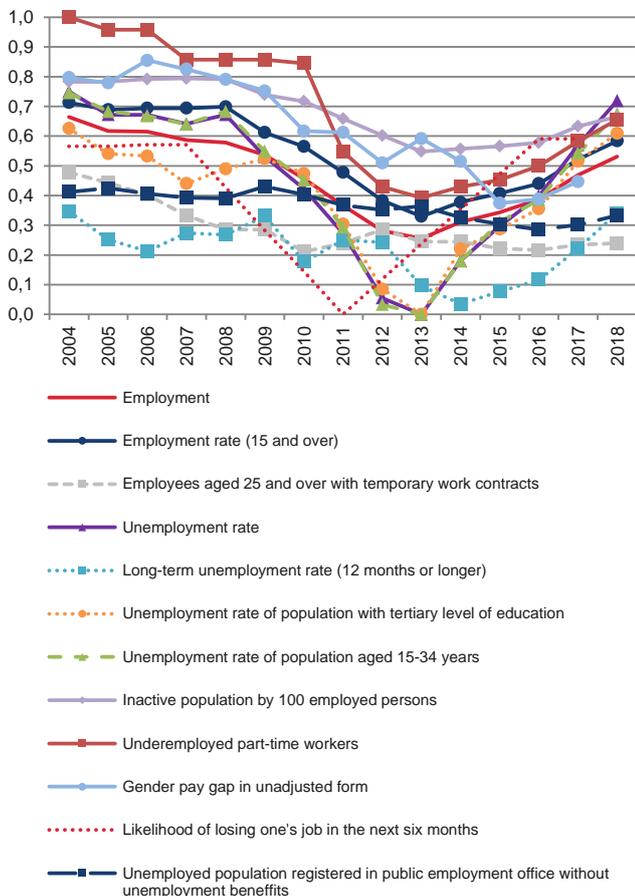
2.2. Economic vulnerability

The *Economic vulnerability* domain ranks second among the domains with the worst performance throughout the period under review, reflecting a growing vulnerability of households, induced by their detachment from the labour market, and greater difficulty in meeting housing-related commitments. From 2004 to 2010, the indicators in this domain declined smoothly, and over the next three years, they decreased sharply. However, there have been positive developments since 2014, mainly due to the rate of material deprivation, to the rate of intensity of poverty and very low labour *intensity*. As of that year, all the indicators in this area showed a favourable evolution.

2.3. Employment

Employment is the well-being domain with the worst performance, mostly due to a rise in unemployment, and other variables related to it, which was intensified from 2009. From 2013 there is a reversal of this trend. It is projected for 2018 the continuation of this improvement. The indicators of this domain with the worst performance were the underemployment of part-time workers and the gender pay gap. The indicator with the best improvement, although very slight, was the likelihood of losing one's job in the next six months.

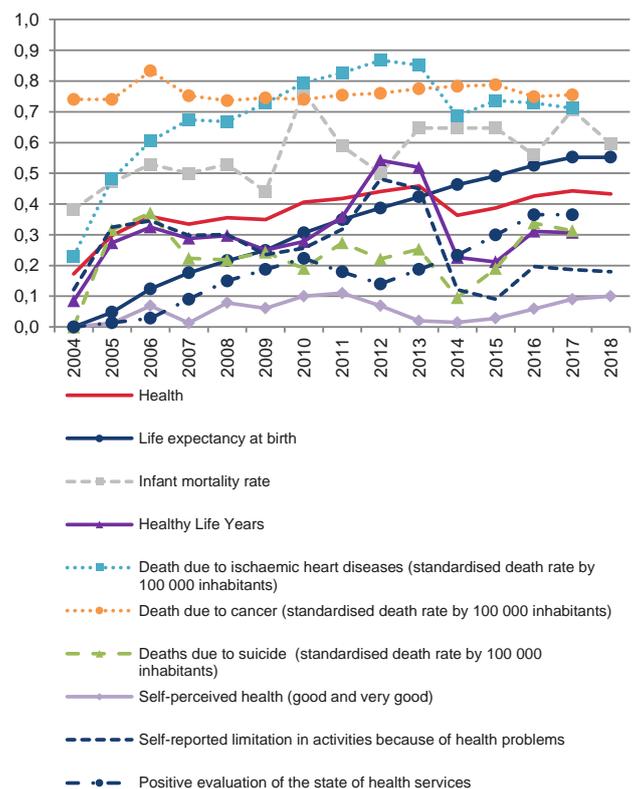
Figure 6 - Employment and its indicators



2004-2018: life expectancy indicator, revealing almost a linear evolution, followed by death due to ischaemic heart diseases, the evaluation of the state of health services and suicide rate.

From another perspective, distinct from the analysis of the evolution of the indicators, it should be mentioned the higher rank of death due to ischaemic heart diseases and death due to ischaemic heart diseases. In the opposite position, it should be observed the low values of self-perceived health.

Figure 7 - Health domain index and its indicators



3. Quality of life

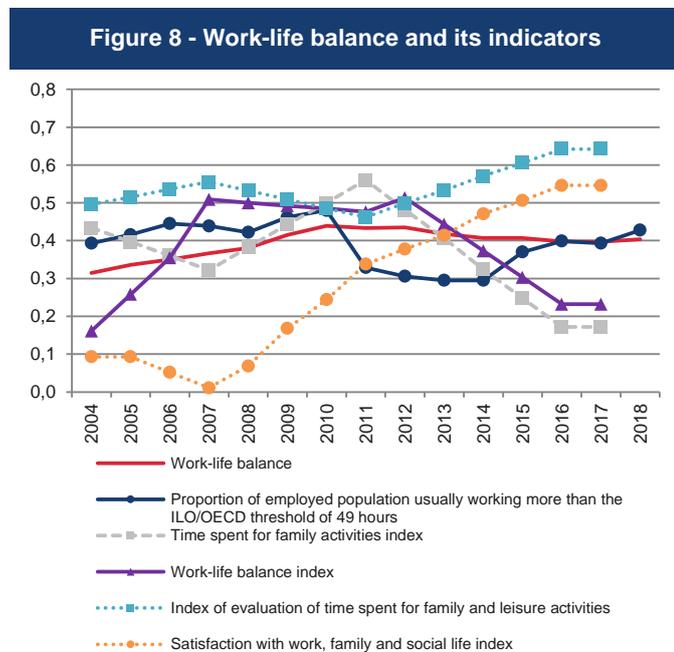
3.1. Health

Showing a favourable evolution in the period 2004-2018, it is estimated that the *Health* domain, occupies the third place of the seven domains that constitute the *Quality of Life* perspective. This evolution was very sharp until 2006, mildest since that year until 2013, with a steeper decline in 2014 (mainly due to the negative evolution of the self-reported limitation in activities because of health problems and of the healthy life years) and growing back smoothly from there. These four indicators outperformed the domain index, showing the best performance in the period

3.2. Work-life balance

Capacity to reconcile time dedicated to working with other aspects of personal life, such as family, friends or leisure in general, is a critical characterisation factor of well-being.

Work-life reconciliation evolved positively during the whole period, more pronounced until 2011. Since this year it has been decreasing slightly. This recent decrease results from the movement in opposite directions of the following indicators: the unfavourable evolution of the time spent for family activities index and work-life balance index; this development has not been sufficiently compensated by the evaluation of time spent for family and leisure activities index and the satisfaction with work, family and social life index.



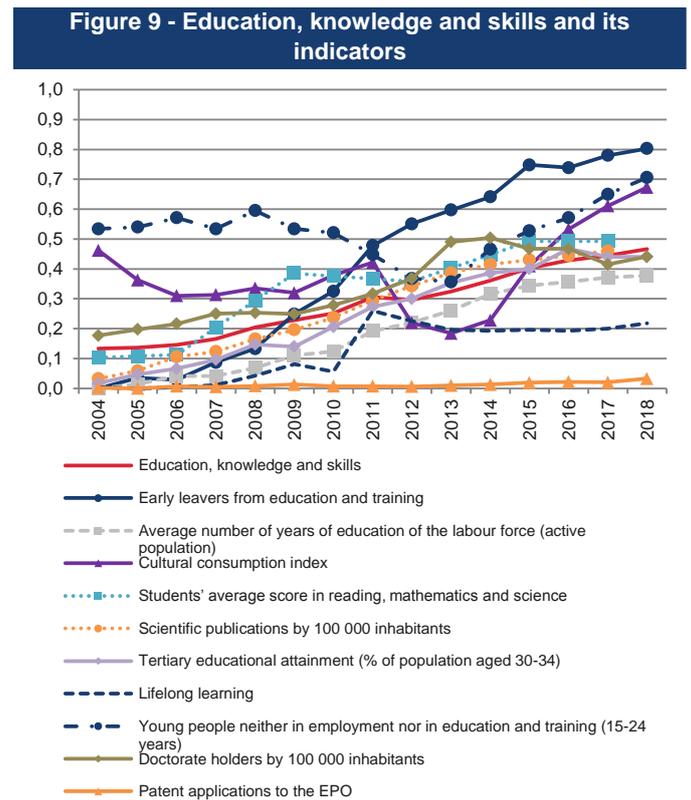
3.3. Education, knowledge, and skills

Education was the well-being component with the second-best performance. This index had a positive evolution every year from 2004 to 2018, except for a small decrease in 2012. Since 2015, there is, however, a slowdown in the evolution of this index.

The very sharp and positive evolution of the early leavers from education and training indicator is the main responsible for the positive progress of the index.

Well-being Index – 2004-2018

The role of indicators such as scientific publications and the tertiary educational attainment, should also be noted for their positive evolution. The evolution of the indicator on patents stands out for negative reasons, with small values throughout the period.



3.4. Social relations and subjective well-being

The change in the 2004-2018 period in the *Social relations and subjective well-being* domain was positive, although revealing oscillations (decrease between 2006 and 2008). The favourable evolution since 2014 results mainly from the overall life satisfaction and happiness indicators. Regardless of the analysis of their contribution to the evolution of the index, it should be stressed the almost permanent low values of the social trust index and the regular high

values of social meetings with family, friends, relatives or colleagues.

Figure 10 - Social relations and subjective well-being and its indicators

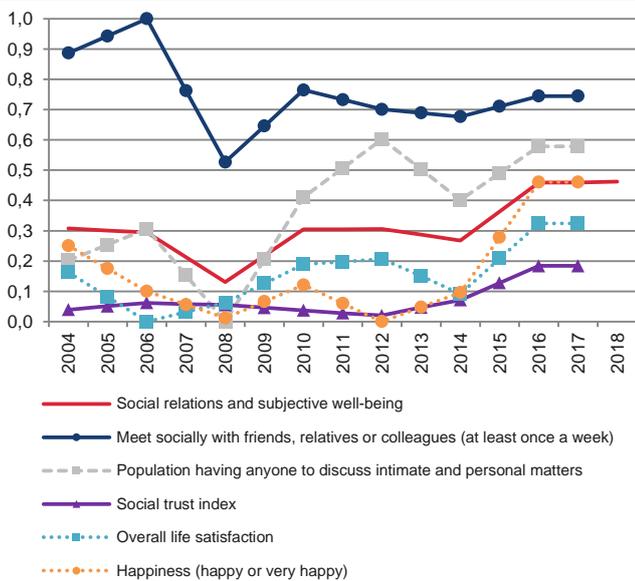
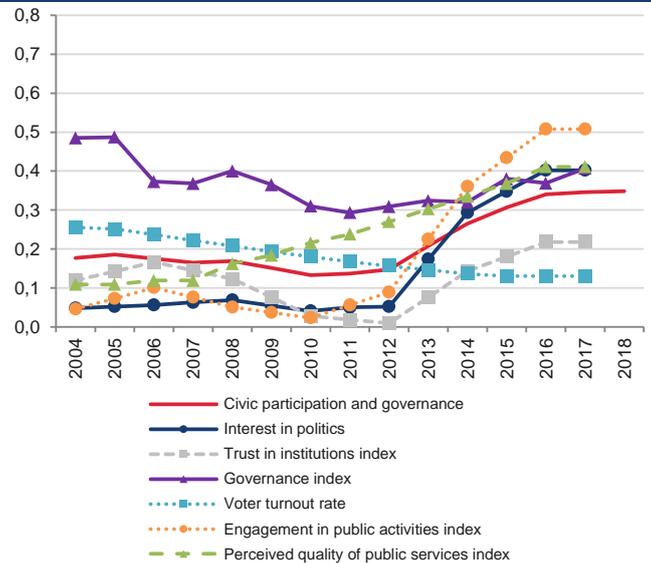


Figure 11 - Civic participation and governance and its indicators



3.5. Civic participation and governance

This domain decreases smoothly until 2010 and grows from thereon, increasingly from 2013.

This positive evolution, after 2013, results mainly from the engagement in public activities index and the degree of interest in politics.

From another perspective, the governance index should also be highlighted, as it is almost always higher than the other indicators in the period.

3.6. Personal security

Personal safety is the domain with the best performance among the ten domains of the WBI.

There are three distinct phases in the variation of this domain: an initial positive growth until 2006, for which the main contribution is the evolution of deaths on roads accidents and to a lesser extent the trust in the police; a second phase of relative stability between 2007 and 2010, which results from symmetrical behaviours of the before mentioned trust in the police indicator (which grows to 2008 and decreases after that) and the indicator of the population feeling safe when walking alone in their area after dark (which decreases until 2008 and then grows); finally, as of 2010, most indicators show positive developments.

Figure 12 - Personal security and its indicators

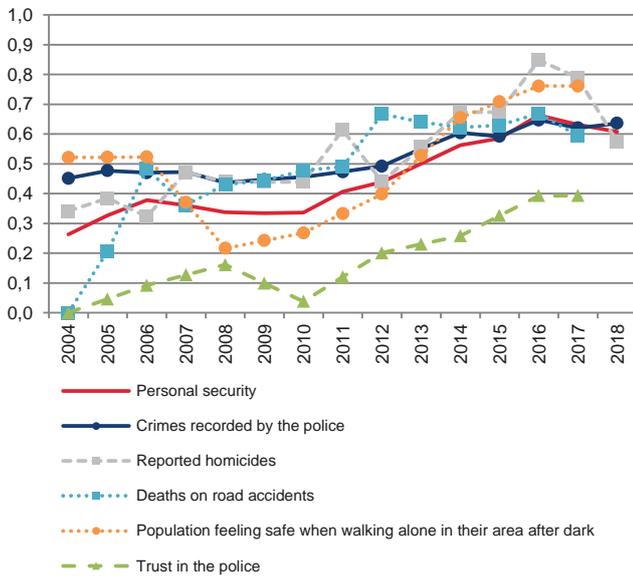
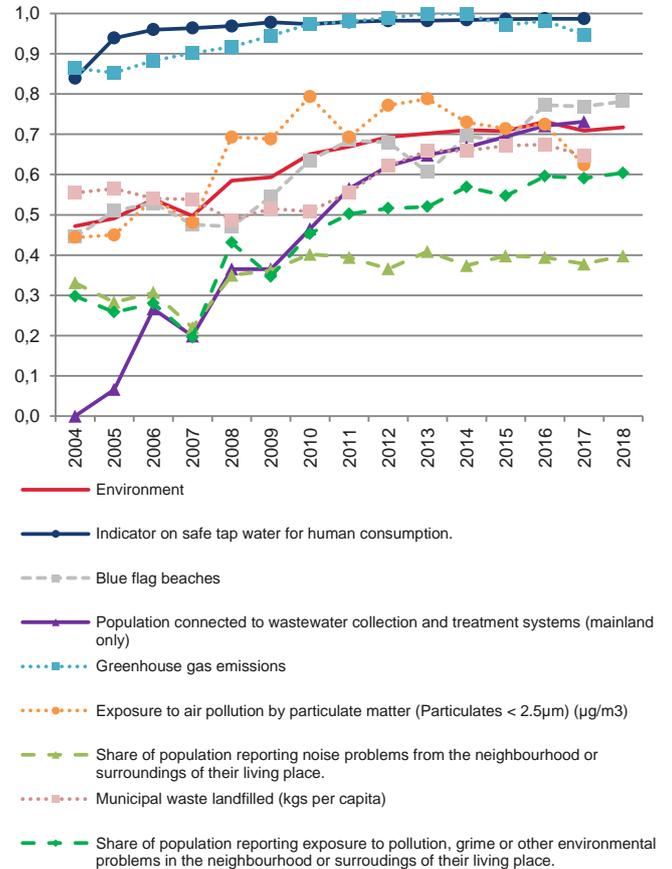


Figure 13 - Environment and its indicators



3.7. Environment

The *Environment* domain shows positive developments with small fluctuations (a slight decrease in 2007 due to the negative evolution of six of its eight indicators that year).

The indicator with the greatest contribution to the positive evolution of the index was the population connected to wastewater collection and treatment systems.

With positive, albeit minor, contributions, it is possible to point out the evolution of the indicators on Blue Flag beaches and the population reporting exposure to pollution, grime or other environmental problems in the neighbourhood or surroundings of their living place.

Finally, the positive values of safe tap water and greenhouse gas emissions should also be mentioned.

TECHNICAL NOTE

Methodology

The Well-being index (WBI) is an annual statistical study whose geographical scope is the country. The variables integrating the construction of the WBI stem from administrative procedures and statistical operations developed within the scope of the National Statistical System, the European Statistical System, the World Bank, and others.

This edition of WBI is the result of a methodological review, inspired by best practices (see Bibliography). This review went through:

- a) assessing the internal consistency of the indices by changing the analysis framework as a result of detecting the presence of problems of predominance, noise or classification of the indicators in the respective domains;
- b) normalization of the base variables, using the min-max method and corresponding adjustment of the direction of the variables, so that their highest values correspond to the best performance (and vice versa). The use of minimums and maximums external to the series for Portugal allows their comparability with a set of countries taken as a reference;
- c) analysis of the role played by compensation between indicators, and the respective choice of aggregation methods for the calculation of the indexes at the different hierarchical levels (IBE, perspective, domain);
- d) change in the method of projection of indicators with last year missing data.

However, the conceptual structure of the WBI remained in terms of its dimensioning in perspectives and domains.

From the conceptual viewpoint, household material living conditions and quality of life were considered as key perspectives in the assessment of well-being change. In this context, the intention was that every perspective was represented with indicators, which can be found in the attached Tables, grouped into domains, which would correspond as faithfully as possible to the definition set out.

From the **Material living conditions** perspective, consideration has been taken of three domains, which aggregate 26 indicators:

- **Economic well-being** – capturing current and future possibilities of consumption, material well-being, and inequality in income distribution;
- **Economic vulnerability** – measuring monetary poverty, material deprivation, indebtedness and housing vulnerability;
- **Labour and income** – assessing participation and social inclusion, labour vulnerability, and gender pay gap, as well as quality of work.

From the **Quality of life** perspective, an account has been taken of seven domains, which aggregate 48 indicators:

- **Health** – through health result indicators and assessment of the provision of health services;
- **Work/life balance** – through assessment of the reconciliation of time allocated to family and work and the subjective assessment of the work/life balance;
- **Education, knowledge, and skills** – by characterising formal education, lifelong learning, quality of education and level of skills acquired and production of knowledge and innovation;
- **Personal security** – through assessment of crime and subjective assessment of personal security;
- **Civic participation and governance** – through assessment of civic and political participation and trust in institutions;
- **Social relations and subjective well-being** – through assessment of social subjective well-being and individual subjective well-being, dimensions that for being specific will not be subject to joint analysis;
- **Environment** – through assessment of water and air quality, perceived noise intensity, analysis of the final destination of waste and subjective assessment of environmental quality.

Part of these 74 indicators, defined after a coherence analysis of the set of indicators in each domain, are the result of the aggregation of a second level of indicators.

(to be continued)

(continuation)

The variables considered in each domain are expressed in different measurement units, amplitudes and scales. The adopted method of normalization was the min-max method.

Each indicator has a positive or negative polarity. If an indicator has a positive polarity such as employment rate, it has a direct relationship with well-being. If it has a negative polarity, such as unemployment rate, it has an inverse relationship with well-being: when unemployment increases, well-being decreases.

In this normalization method, each positive-polarity indicator for each year is calculated from the ratio of the difference between the value of that base indicator and the minimum value, and the total amplitude of the indicator value over the time period considered. In case the indicator has negative polarity, the result of normalization is the complement to the unit obtained in the before mentioned ratio.

The maximum and minimum values used to normalize each indicator are derived from the same indicator data for a set of reference countries for the period under review: Denmark, Finland, Sweden, Austria, Belgium, Germany, France, Luxembourg, the Netherlands, Ireland, the United Kingdom, Italy, Malta and Spain. The definition of this set of countries resulted from a typology of countries created by Eurofound to study the quality of life in Europe. This means that the importance given to the indicators, after rescheduling, reflects Portugal's position in relation to this set of countries. The identification and exclusion of outliers (except when the outlier is Portugal) was performed prior to the determination of the definitive maximums and minimums.

Each normalized indicator ranges from 0 to 1. An indicator closer to 1, is an indicator that is near to the maximum value that the indicator may have, in the period under review, for the set of reference countries. On the contrary, if it is close to 0, it is near the minimum value for those countries.

All indicators and domain indices have the same weight. The aggregation functions used were the arithmetic mean for the aggregation of indicators in each domain index, and geometric mean for the aggregation of domains by perspective and domains in the WBI.

The projection of each domain for year $t+1$ result from the projections of the indicators belonging to this domain. From each indicator for which the value for year $t+1$ is unknown, a projection is computed using exponential smoothing based on the Holt method, using as a smoothing parameter $\alpha=0.98$, given that the most recent years have the greatest importance for the projection.

The methodological options underlying the design and operationalisation of the WBI are described in the Methodological Document available at www.ine.pt, under Metadata.

Roundings

Any calculations made from published figures may differ by decimal rounding.

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