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Alternatives in the construction of a multidimensional quality of life indicator

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Keywords

Quality of life indicators, multidimensional measurement, living conditions, society.

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Abstract

Multidimensional measurement of quality of life is one of the aspects with greater future potential in official statistics. Different international initiatives encourage the compiling of reports on this matter and in particular the development of indicators set out to synthesize measurement in a single indicator. We present an analysis of the trend in the quality of life in Spain based on the study of nine dimensions using as sources various surveys, prominent amongst which is the Survey on Income and Living Conditions (EU-SILC). In addition, two alternative ways of synthesizing that measurement are put forward, each with global indicators. Finally, the challenges official statistics are facing in measuring quality of life are examined briefly.

1 Introduction

Over the last few years the general idea has been taking shape amongst the scientific community that the best way of measuring the progress of societies is not achieved through economic output, but rather that emphasis should be laid on measuring the conditions of life of people. Of the various initiatives that have proliferated in recent times it is worthwhile singling out the recommendations of the Stiglitz-Sen-Fitoussi Commission[1] (SSF report), and on the basis of these, the conclusions reached in the European Union within the framework of the Sponsorship Group "Measuring Progress, Well-being and Sustainable Development"[2] (hereinafter we refer to it simply as the Sponsorship Group).

The path that has to be followed until obtaining a quality of life indicator acceptable on an international level is still long. Various countries, however, have put forward studies to offer an initial approach to the multidimensional measurement of quality of life. It is extremely interesting to observe what conclusions are offered by studies of this kind, which, regardless of the fact that international comparability has still not been achieved, offer fresh information on the quality of life in those countries and its evolution in the course of time. In addition, they allow us to study aspects of society still not sufficiently addressed, such as those relating to inequalities, hardships, not only on the economic level (there are many studies of poverty available), but also from a much broader, more "multidimensional" point of view, such as social relations, insecurity or subjective well-being.

Indeed, measuring quality of life has necessarily to be multidimensional. Any attempt to define deprived population on the basis of a measurement confined to any of the dimensions considered leads us to different conclusions. The measuring system we adopt predetermines the population we study enormously *(Lollivier, Verger, 1997)*. If we try and measure well-being, for instance, on the basis of a quantification of the people who are in a more deprived situation in terms of income we find, by way of example, that that population is concentrated much more in the rural environment,

[1] See http://www.stiglitz-sen-fitoussi.fr/en/index.htm
[2] See http://epp.eurostat.ec.europa.eu/portal/page/portal/pgp_ess/about_ess/measuring_progress

whereas if we consider as deprived (or poor) the people living in the worst material living conditions, measured on the basis of domestic amenities or housing conditions, we encounter a much more urban population. Yet if we take as being poor those people who consider themselves as such (subjective poverty), the population is different once again and there appear, to a much greater extent, people who are over-indebted or subjected to a level of spending above their income level, who in many cases would not be regarded as poor either from the point of view of income or from one of material living conditions. Therefore, any approach to the problem of social inequalities wishing to analyse society on an overall basis must do so from a multidimensional standpoint and, furthermore, we have to be capable of measuring the different dimensions at the same time. This is an important question; disadvantages or hardships may accumulate. It would not suffice for us to ascertain what people live in the worst conditions of insecurity, for instance, but it may also be the case that these people are those living in a less healthy environment too or they may be the ones who have the worst working conditions. The opposite may also happen: the effect of a lower level of income, which usually arises in rural environments, is offset by a better quality of life in other aspects, The cumulative effect of situations of disadvantage in various quality of life dimensions may be higher than the sum of individual effects or, to the contrary, it may be lower because positive and negative effects are balanced out.

We propose examining the trend in the quality of life in Spain over the period 2004-2012. The starting year is predetermined by the availability of the main source on which this study is based, the Living Conditions Survey (LCS), the implementation of EU-SILC in Spain. The scope of the study and some methodological aspects are presented in the second chapter. Chapter 3 analyses the trend in the situation in Spain for each of the dimensions considered. Analysis of the data is rounded off in Chapter 4, where an initial approach is made to the choice of a global quality of life indicator based on the simultaneous study of some of the dimensions of the previous chapter. We consider two alternatives, one based on the construction of an indicator composed of the aggregation of components from various sources, and a second alternative based on the construction of a synthetic indicator solely from the LCS. This indicator is limited by the use of a single source, namely the LCS, which does not cover all dimensions.

Lastly, in Chapter 5 we set forth some reflections regarding the foreseeable trend in the measurement of the quality of life within the bounds of official statistics in the world and, in particular, in the European Union.

2 How can the quality of life of a society be measured?

The model for the Multidimensional Measurement of Quality of Life, hereinafter MMQoL, envisages the choice of a limited number of indicators that endeavour to reflect quality of life in each one of the dimensions considered. When it comes to choosing these indicators, there are several principles that we ought to try and take into account at the same time:

- *Measure results only*. The MMQoL avoids the use of indicators typical of reports of the "social indicators" style, such as public spending on a given function, or an available amenity (whether libraries, hospitals, beds or green spaces). It is of interest to ask for the quality assigned by each individual to the education received or his or her present state of health.

- *Construct indicators based on individual data*, not global data calculated for the whole population. Again, the MMQoL approach represents a novelty. The indicators used in their measurement are not constructed from population data but from data that affect the person directly. When considering the security dimension, it is not of so much interest to know the homicide rate, but to know, on an individual basis, whether the person has been the victim of a crime or whether he or she considers the place where he or she lives to be secure.

- *Measure inequalities instead of mean values*. With the foregoing guidelines we can construct both indicators based on mean values and measures of dispersion. The MMQoL model is centred on the latter. Thus, in the material well-being dimension, as an indicator of economic situation it is preferable to know the percentage of people below a certain income threshold than the mean income, or in the dimension *Work* it is preferable to know the percentage of people who are not satisfied with their job than the mean value of job satisfaction.

Another principle, perhaps harder to specify, is to try and choose indicators that may be important for purposes of policies, i.e. that they should be of some importance when it comes to designing policies or courses of action from the public sphere. Therefore, an individual's satisfaction with his or her health seems less important in this respect than the individual's satisfaction with the healthcare system at his or her disposal.

An approach such as this not based on inputs or drivers but on outcomes necessarily means that the number of indicators to be selected is limited. A number of less than four indicators will be chosen in each dimension. In some similar studies, in the absence of other data or in order to complete the image, it becomes necessary to resort to "context" indicators not abiding by the afore-mentioned principles. A typical case is life expectancy, where we may appreciate that it measures outcomes and that it is constructed with individual data but it is not an individual datum but a global one: the life expectancy that we assign to persons is not "their own" but one that is calculated in accordance with the mortality in the society in which they live. In any case, such context variables are not going to be used in this study.

2.1 WHAT DIMENSIONS TO CONSIDER?

In the abundant literature on multidimensional measurement of quality of life the aspects for study are arranged in different dimensions without there being a single classification. Amongst the wide variety of options considered, we have opted for following the recommendations of the *Sponsorship Group* and taking 9 dimensions into account. These are:

1. *Material living conditions*
2. *Work*
3. *Health*
4. *Education*
5. *Social relations*
6. *Insecurity*
7. *Governance*
8. *Environment*
9. *Subjective well-being*

For the choice of indicators we have also followed the recommendations of the *Sponsorship Group* quite closely, although some specific indicators for Spain have been considered in view of the availability of sources that may provide higher quality of richness of analysis. The indicators within each dimension are set out in the following chapter. All indicators constructed measure percentage of people under a threshold or fulfilling a given condition.

2.2 CLASSIFICATION VARIABLES

Choice of the dimensions to be studied is just as important as that of the classification variables chosen. Any study, as is the case of this one, that envisages resorting to various sources at the same time encounters the limitation that not all of them classify the population with the same variables, nor do they have the same design or sampling size. We may therefore find that not all the sources cover the whole population (for instance, it is common for them not to have data on persons under 16 year of age) nor do they all offer data by region (Autonomous Communities in Spain), etc. An attempt has been made, whenever possible, to disaggregate by at least seven classification variables:

- Age (under 16, 16 to 25, 25 to 64 and over 65): as mentioned, the main restriction is that in many cases no data are available on persons under 16 years of age

- Gender.

- Type of household to which the person belongs: for purposes of this analysis we have considered nine types of household representative of the set of households as a whole, but it is not a question of a comprehensive classification. In fact, they cover around 85% of the possible households (rather more than 70% of people). The rest could be classified in an "others" group, but with such a heterogeneous content that it does not appear to offer information of use for drawing conclusions on quality of life, so we have opted for not presenting results for an "others" category. A factor predetermining the choice is the number of households in each category. Thus, the disaggregation of single women into two age groups has not proved possible for men, as there are much fewer men living alone.

- Household income level. The two extremes are taken: poorest households (income level below 40% of the median) and richest (income above 160% of the median).

This will not always be possible as some indicators stem from surveys that do not permit that disaggregation because they simply do not ask for income or because they take predefined intervals. In such cases the values of the upper and lower extremes of income level are considered, as defined for that survey.

- Region (Autonomous Community). Again, in some cases the sampling sizes do not allow information to be offered or this has to be taken with caution.

- Nationality: both Spanish nationals and foreigners are taken, although we are aware of how heterogeneous the categories may be, but with a foreign population bordering on 10% any higher disaggregation in a survey proves risky.

- Size of the municipality. Probably the most significant variable is not the size of the municipality but something more on the lines of what we could term as habitat (urban, rural). Thinking of such dimensions as "environment" or "security": the conditions of life of a resident in Sant Just Desvern (population of approx. 16,000) undoubtedly have more to do with the fact of being in the metropolitan area of Barcelona; in a town of that size relatively isolated from other towns these would be quite different. In any case, the "size of municipality" variable has been taken as a first approach to "habitat".

2.3 TIME SCOPE OF THE STUDY

We study the period 2004-2012, predetermined by the availability of data from the main source, the LCS. We have opted for not presenting annual data but for taking only three points in time, centred on the years 2005, 2008 and 2011. This was done to prevent fluctuations caused to a certain extent by the actual sampling error if data are taken for three years and because, in view of the diversity of sources, not all of them offer data for every year. In the LCS indicators obtained we take the mean of the corresponding period (2004-2006, 2007-2009 and 2010-2012) respectively, taking into account that in some cases not all the observations are taken for various methodological reasons.

In the case of other surveys with other frequencies (they are specified in the next section) representative values are taken for each of the three-year periods chosen. In this way, in the case of the European Social Survey, which is performed every two years in even years (2004, 2006, 2008, 2010), the value for the period 2004-2006 is constructed by taking the mean of the values of 2004 and 2006, for the period 2007-2009 the value of 2008 is taken, and for 2010-2012 the latest one available is taken, which is the one for 2010.

2.4 REGARDING DATA SOURCES

The MMQoL is limited at present, especially by the availability of sources offering adequate sampling sizes, quality guarantees with regard to their methodology, stable series and other features that are normally to be found in official surveys. The main source at the present time is the LCS, which is the Spanish version of the harmonized European EU-SILC survey. But it has certain limitations for purposes of the MMQoL, which are:

- It does not cover all the dimensions but only five of them, and in a very limited way in some cases.
- Data are available for the years 2004 to 2012, but in the latter case there are only certain provisional data available for some indicators.

- In the course of time some minor changes have taken place in the questionnaires and other methodological variations that cause little jumps in the series, which interfere with the annual analysis in certain cases and which are in general avoided in this study so as not to make it too prolix.

Another limitation obviously stems from the actual sampling size, although the survey is extensive, in excess of 33,000 individuals every year.

For the dimensions not covered by the LCS and for more in-depth examination of some of them which it does cover, other sources are considered such as:

- The health surveys: National Health Survey 2006-07 (SNHS) and the European Health Interview Survey 2009 (EHIS-09), both produced by INE and the Ministry of Health,
- The Survey of Information Technologies in the Households, ICT-H, yearly, produced by INE.
- Quality of Life at Work Survey (QLWS), Ministry of Employment and Social Security, yearly (not produced in 2005).
- The European Social Survey (ESocS)[3], alien in principle to official statistics, produced in the academic environment, although in Spain the Sociological Research Centre (CIS) was recently commissioned to produce it, is an operation of proven quality and INE took part in its design.

3 Analysis of the quality of life by dimensions

As already mentioned, for purposes of this study we have considered nine dimensions with which quality of life is characterized, in line with what is proposed by the *Sponsorship Group*. In fact, the number of dimensions considered does not have an excessive effect on the conclusions of the first part of this study, which consists of the independent analysis of each one of the indicators. It has a greater impact when it comes to carrying out the overall analysis of all the dimensions, which appears in Chapter Four.

3.1 MATERIAL LIVING CONDITIONS

This is the most classic dimension in any well-being analysis. In fact, poverty studies during the 20th century focused almost exclusively on measuring economic poverty or material living conditions. There are many indicators that may be selected both from a monetary (income, savings, spending, financial burdens, economic hardship) and non-monetary standpoints (household amenities, quality of the dwelling, comforts,.). We have analysed a number of different indicators outside the proposal of the *Sponsorship Group*, such as "insufficient space in the dwelling", "poor quality of the dwelling", "lack of amenities", "basic expenses vs. overall expenses" and an attempt has been made to group the material shortcomings differently, differentiating between those more directly associated with current income from others more associated with equipment. We have finally come out in favour of using the indicators recommended by the *Sponsorship Group* (population at risk of poverty, population with severe material deprivation) since, on the one hand they are highly consolidated (for example, they form part of the Europe 2020 strategy) and, on the other, the

[3] For further information on the European Social Survey see www.europeansocialsurvey.org

conclusions that are reached by one or the other are highly similar. There is no justification for using indicators different from the Sponsorship Group proposal, which would reduce the comparability of this study, although in some cases they might prove more attractive or even simpler to interpret.

The indicators chosen are as follows:

- ***Population at risk of poverty (indicator D11)***

Source: Living Conditions Survey (INE).

It is the main indicator employed in the European Union in the well-being area. Although there is some discussion as to its usefulness as a tool for measuring the level of poverty as a whole, in a multidimensional approach such as that of this study, its possible bias is diluted insofar as there are many other items that enter into the analysis. It is included, just as defined by Eurostat[4], as the first quality of life indicator. It is, moreover, a Europe 2020 indicator[5]

- ***Population with severe material deprivation (D12)***

Source: Living Conditions Survey (INE).

This situation is considered to include every person living in a household in which there are four of this list of nine shortages:

1) No telephone
2) No TV set
3) No washing machine
4) No car
5) No capacity to afford holiday for at least one week a year
6) No capacity of eating a meal, chicken or fish meal at least every second day
7) No possibility of keep the dwelling at a suitable temperature
8) Arrears in payment of expenses relating to the principal dwelling (mortgage or rent, gas bills, community fees...) in the last 12 months
9) No capacity to meet unexpected expenses

Table 1 shows the detailed results in this dimension. When analysing the results, we should point out that, as a whole, the situation improves in the second period examined (2007-09) and worsens in the period 2010-12 in both indicators. The image that is offered on the quality of life by the economic indicator (D11) is very similar to the one provided by the material deprivation indicator (D12).

The clear improvement in the population over 65 years of age in indicator D11 is due to the fact that in relative terms pensions come closer to job earnings and a considerable proportion of pensioners exceed that threshold of 60% defined by the indicator. If we analyse indicator D12, those are not so sharp. Undoubtedly the single-parent households are the ones that face a worse situation and by nationality we should mention that the percentage of foreigners undergoing severe material deprivation triples that of the Spanish nationals.

[4] A person is considered to be at risk of poverty when his or her "equivalent income per consumption unit" is below 60% of the median. The equivalent income per consumption unit is constructed by taking the whole income of the household where the individual lives, dividing by the number of consumption units according to the Eurostat scale of equivalence (modified OECD) and assigning that amount to all the members.

[5] For further information on the Europe 2020 indicators see:
http://epp.eurostat.ec.europa.eu/portal/page/portal/europe_2020_indicators/headline_indicators

Table 1: Material living conditions. 2004-2012

	(D11) Risk of poverty			(D12) Severe material hardships		
	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12
Total	**19,8**	**19,6**	**21,2**	**3,7**	**3,0**	**4,4**
Age						
Less than 16 years	24,1	23,7	26,0	4,5	3,5	5,3
From 16 to 24 years	18,9	20,7	26,9	4,2	4,0	6,1
From 25 to 64 years	15,9	16,3	19,3	3,4	2,9	4,4
65 years and over	29,8	26,9	19,8	3,7	2,4	2,5
Gender						
Male	18,6	18,4	20,7	3,6	3,0	4,3
Female	21,0	20,8	21,6	3,7	3,0	4,4
Type of household						
Single male	23,9	21,4	20,8	7,4	4,2	4,8
Single female < 65	23,1	24,4	22,7	7,1	3,8	6,3
Single female >= 65	53,0	48,6	27,4	4,9	2,6	3,5
2 adults < 65	10,8	11,5	14,3	2,5	1,9	4,1
2 adults at least one >= 65	29,7	27,1	20,3	3,4	2,2	2,1
2 adults with 1 child	13,3	15,0	17,4	2,2	2,4	3,4
2 adults with 2 children	21,3	20,3	24,4	2,0	1,8	3,3
2 adults with 3 or more children	33,2	39,2	40,8	9,0	7,1	10,4
1 adult with children	32,5	33,5	37,0	10,5	10,3	11,8
Household income level						
Income < 40% median	100,0	100,0	100,0	14,0	12,2	15,0
Income > 160% median	0,0	0,0	0,0	0,2	0,3	0,3
Autonomous Community						
Andalucía	29,5	29,2	30,1	6,0	5,0	5,7
Aragón	13,9	13,3	15,2	1,0	0,4	1,6
Asturias, Principado de	13,8	13,0	12,5	1,9	1,6	1,9
Balears, Illes	14,6	16,1	19,6	3,1	3,9	7,4
Canarias	26,9	26,4	33,9	8,7	6,7	5,0
Cantabria	13,3	13,1	17,4	1,7	1,0	1,6
Castilla - La Mancha	29,6	27,8	20,7	1,1	1,3	1,9
Castilla y León	24,6	20,8	29,7	2,0	1,9	3,9
Cataluña	12,5	13,0	16,0	3,2	2,0	5,3
Comunitat Valenciana	18,8	17,9	20,1	3,2	2,8	3,8
Extremadura	36,8	37,9	35,2	2,6	1,6	3,5
Galicia	21,4	20,4	16,7	4,3	2,8	3,1
Madrid, Comunidad de	11,4	13,8	15,3	3,2	2,9	3,9
Murcia, Región de	25,3	26,3	27,5	5,7	4,6	8,2
Navarra, Comunidad Foral de	10,7	6,7	8,7	0,9	1,5	2,3
País Vasco	10,2	9,8	11,1	1,5	1,5	2,4
Rioja, La	19,4	20,4	21,1	1,4	2,2	4,3
Ceuta	39,6	39,0	31,3	19,8	7,7	11,9
Melilla	28,0	29,0	29,2	8,1	4,9	5,8
Nationality						
Spanish	19,3	18,4	19,3	3,2	2,5	3,5
Foreign	28,1	28,8	37,1	12,6	10,6	13,7
Size of the municipality						
Less than 10,000 inhabitants	28,1	25,7	25,8	3,3	2,0	3,8
From 10,000 to 50,000 inhab.	19,6	20,6	22,8	3,8	3,2	4,4
From 50,000 to 100,000 inhab.	19,2	19,4	21,2	4,1	3,7	4,4
From 100,000 to 500,000 inhab.	17,5	16,7	19,7	4,1	3,5	5,0
500,000 inhab. and over	13,0	14,9	15,1	3,1	2,8	3,9

3.2 WORK

This dimension is probably the one that causes most difficulty when it comes to implementing a MMQoL model insofar as, unlike all the others, only part the population is affected by it, but its impact on that part of the population is considerable. In principle, it seems quite clear neither minors nor elderly people may be associated with a measure of quality of life in the work dimension. We may discuss whether the whole working age population (with the added difficulty of defining those ages) or only the population more directly affected: the working population or even the subset of people who are currently occupied.

Furthermore, as stated in the actual SSF report, remunerated work contributes to quality of life in a positive sense, as it provides income, social position, self-esteem, social relations; but also risks, fears, stress, difficulty of reconciliation with personal life.

As in other dimensions, the MMQoL approach entails avoiding use of global indicators on quality of the work, such as for instance the number of accidents at work, the average number of hours worked, industrial disputes, etc. It is basically a question of finding measures associated with each person that will allow us to construct distribution indicators associated with the quality of life of that person in his or her work dimension.

The *Sponsorship Group* suggests using indicators based mostly on the EU-SILC, such as the work intensity of the household in which the individual lives or the degree of job insecurity as measured by way of such variables as "having an unwanted part-time labour contract" or "having a temporary contract".

We have opted for using one of those indicators and also implementing as a source the Quality of Life at Work Survey (QLWS), which provides information for the population in work on job satisfaction. Accordingly, the indicators chosen are:

- ***Salaried persons aged 16 years old and over with a temporary contract (D21)***

Source: Living Conditions Survey (INE).

- ***Persons in work not satisfied with their job (D22)***

Source: Quality of Life at Work Survey (QLWS). Ministry of Employment and Social Security.

It is constructed as the sum of the persons who respond in the survey that they feel "very dissatisfied", "dissatisfied", "neither satisfied nor dissatisfied".

- ***Unemployment rate (D23)***

Source: Labour Force Survey (LFS). INE.

It is the percentage of people in each category who are in the situation of unemployment. The mean of the four quarters is taken to construct the item for each year. Again, years 2005 and 2006 are grouped below for the first period, 2007 and 2009 for the second, and 2010 and 2011 for the third.

The results are shown in Table 2. The deterioration in the labour market which has taken place in the last few years in the third indicator, the unemployment rates, which show stunning increases for some groups such as young people and the foreign population. It is precisely the increase in unemployment that predetermines the relative decrease in the population with a temporary employment contract, since it is the people with these contracts who enter the situation of unemployment to a greater extent. Job satisfaction is clearly related to income level and it has been improving

slightly over these years, which may prove logical in crisis situations in which the mere fact of having a job is more highly rated.

Table 2: Work. 2004-2012

	(D21) Temporary contract			(D22) Not satisfied with their job			(D23) Unemployment rate		
	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12
Total	**28,7**	**25,4**	**21,6**	**28,0**	**27,4**	**25,6**	**8,8**	**12,5**	**20,9**
Age									
Less than 16 years									
From 16 to 24 years	59,7	57,9	56,5	22,9	26,8	24,5	18,8	26,9	44,0
From 25 to 64 years	24,8	22,3	19,6	28,7	27,0	25,6	7,6	11,0	18,8
65 years and over	20,0	7,5	12,9	..	..	..	2,0	2,2	2,2
Gender									
Male	26,1	23,1	19,9	26,9	27,2	25,9	6,7	11,4	20,5
Female	32,6	28,4	23,7	29,6	27,7	25,2	11,9	14,1	21,3
Type of household									
Single male	22,1	22,7	17,9	..	..	..	..	..	..
Single female < 65	21,2	21,3	21,5	..	..	..	..	..	..
Single female >= 65	15,7	31,0	17,6	..	..	..	..	..	..
2 adults < 65	23,5	23,6	21,1	..	..	..	..	..	..
2 adults at least one >= 65	22,8	21,8	21,3	..	..	..	..	..	..
2 adults with 1 child	22,5	21,8	19,4	..	..	..	..	..	..
2 adults with 2 children	26,4	22,3	18,3	..	..	..	..	..	..
2 adults with 3 or more children	36,9	33,1	22,5	..	..	..	..	..	..
1 adult with children	41,7	32,6	26,3	..	..	..	..	..	..
Household income level									
Income < 40% median	63,7	57,3	54,8	..	41,4	36,7	..	..	..
Income > 160% median	16,1	14,5	12,2	..	13,3	14,6	..	..	..
Autonomous Community									
Andalucía	43,0	38,3	32,5	25,8	28,8	24,1	13,3	18,6	29,2
Aragón	22,2	19,4	18,3	23,5	22,4	22,5	5,7	8,4	15,9
Asturias, Principado de	27,8	28,9	20,8	35,6	25,8	30,7	9,8	10,1	16,9
Balears, Illes	28,5	22,8	25,4	23,8	28,8	23,8	6,8	11,7	21,1
Canarias	34,3	31,0	28,0	21,5	23,2	28,3	11,7	18,0	29,2
Cantabria	22,1	23,2	22,0	30,7	27,4	20,5	7,5	8,3	14,6
Castilla - La Mancha	26,1	22,8	23,2	25,6	27,4	20,2	9,0	12,7	22,0
Castilla y León	30,9	25,7	19,8	28,6	31,8	33,7	8,4	10,2	16,3
Cataluña	20,9	19,4	17,0	22,9	24,3	23,4	6,8	10,6	18,5
Comunitat Valenciana	27,3	25,0	18,9	32,3	26,5	25,5	8,6	14,0	23,9
Extremadura	44,3	36,3	30,8	21,1	25,9	23,0	14,6	16,3	24,1
Galicia	30,1	27,9	21,7	33,6	29,8	29,0	9,2	9,7	16,4
Madrid, Comunidad de	22,7	18,8	16,3	34,5	30,3	28,0	6,6	9,7	16,4
Murcia, Región de	37,4	32,2	27,9	24,3	27,3	20,1	7,9	13,6	24,4
Navarra, Comunidad Foral de	21,5	21,7	18,7	21,7	29,6	24,1	5,5	7,5	12,4
País Vasco	25,4	21,9	17,3	34,1	27,4	25,7	7,2	7,9	11,3
Rioja, La	27,4	21,7	20,4	21,3	24,8	24,6	6,2	8,7	15,6
Ceuta	37,2	22,9	23,9	..	..	..	20,4	18,8	26,7
Melilla	28,3	22,4	29,7	..	..	..	13,7	21,1	24,1
Nationality									
Spanish	27,3	24,0	20,5	..	..	..	8,5	11,3	18,9
Foreign	55,3	46,4	37,5	..	..	..	11,6	19,4	31,5
Size of the municipality									
Less than 10,000 inhabitants	34,2	30,5	26,6	26,9	27,1	26,7	..	..	..
From 10,000 to 50,000 inhab.	29,7	27,2	23,1	28,1	26,9	23,6	..	..	..
From 50,000 to 100,000 inhab.	31,0	25,8	21,1	25,2	27,8	25,0	..	..	..
From 100,000 to 500,000 inhab.	26,1	23,7	20,2	28,4	26,4	25,6	..	..	..
500,000 inhab. and over	23,8	20,4	17,5	33,5	32,7	29,3	..	..	..

(..) not available

3.3 HEALTH

There can be no discussion about considering health as one of dimensions determining quality of life. In fact, in the surveys in which interviewees are asked about which are the most important aspects in life, health is the one normally singled out as the prime item. Analysing the *Health* dimension from a quality-of-life perspective leads us to consider indicators other than those that could be chosen when it is analysed from other standpoints. It is one of the contributions perhaps less known but more intelligent of the multidimensional measurement of quality of life model proposed by the Stiglitz-Sen-Fitoussi Commission. We are not interested in learning such health system data as, for instance, the population covered by public healthcare, or the number of hospital beds, doctors, or the activity of the system, nor economic quantification (medical or pharmaceutical expenditure) either. None of the classic indicators for evaluating the health system is considered in this study, which fixes its attention on the quality of life of people and, therefore, uses different parameters.

The indicators considered in this dimension are all the ones suggested by the *Sponsorship Group*:

- ***Persons aged 16 years old and over who report a poor or very poor state of health (D31)***

Source: Living Conditions Survey (INE).

It may be argued that this indicator, like the next two, should be obtained from other more appropriate sources through having a more specifically health-oriented purpose (National Health Survey); but in addition to the fact that the LCS provides greater frequency (annual) and a more uniform series, another important reason is the potential offered by the joint analysis of dimensions for each person, which is only fully achieved when a single source is used, as appears in Section 4 (synthetic indicator). In any case, it has been confirmed that the results of the LCS and those offered by the previous two surveys are quite close.

- ***Persons aged 16 years old and over with limitation to carry out their daily activity due to a health problem (D32)***

Source: Living Conditions Survey (INE).

In a similar way to that described in the previous indicator, the LCS offers an approach that is certainly less correct than the health surveys, but it is chosen as the source for the reasons mentioned above.

- ***Persons aged 16 years old and over that have not been to the doctor or dentist when in need (D33)***

Source: Living Conditions Survey (INE).

In the LCS the person is asked separately whether he or she visited the doctor or the dentist in the last 12 months; in the event of a negative answer, whether such a visit was needed but not made, and in this case, what the main reason was for not making the visit. Of the eight possible answers, four are considered: *"I could not afford it (too expensive or not covered by my insurance)", "I was on the waiting list", "I didn't have time because of work or other obligations" and "too far to travel / no means of transport"*. Again, it is an indicator open to discussion which certainly may be defined more satisfactorily in the coming years, but in any case it lays emphasis on a very

important aspect for quality of life, namely accessibility of the health system, taking into account various facets, not only the economic one.

- ***Persons aged 16 years old and over with health risk factors (D34)***

Sources: National Health Survey 2006-07 and European Health Interview Survey 2009 (both INE-Ministry of Health).

This synthetic indicator based on the aggregation of four items is implemented. Accordingly, a person is considered at risk for health who suffers from at least one of these four factors: alcohol consumption, smoking, overweight, sedentary life. These four variables are collected accurately in the health surveys, but the drawback exists that in the period 2004-2012 there are only two observations available. Even so, it has been considered useful to include it.

This study has not taken into consideration other "context variables", in *Sponsorship Group* terminology, such as years of healthy life or life expectancy, which are constructed by population groups: life expectancy could be constructed by gender, age and nationality, but we could not obtain it by type of household, for instance. Life expectancy is undoubtedly an important indicator of quality of life, which clearly differentiates some societies from others, but in this study we have opted for only considering individual indicators, in line with the stricter approach of the MMQoL

The main results appear in Table 3. We should mention that this dimension is usually closely associated with age. The first two indicators clearly show a pattern of increase in the percentage of people with age-related health needs, higher for women. This pattern is also revealed in the type of household and affects autonomous communities with an older population, as in the case of the northwest. Indicator D33, however, offers generally more positive results, in view of the features of population coverage of the Spanish health system. We may single out as especially affected groups, as in previous cases, single-parent households and the foreign population.

Indicator D34 shows that in general the situation has improved in the recent years. However the most affected population is the women aged 65 and over.

Table 3: Health. 2004-2012

	(D31) Poor or very poor state of health			(D32) Limitation in their everyday activity			(D33) Cannot afford to visit doctor/ dentist			(D34) With health risk factors		
	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12
Total	**12,7**	**9,3**	**7,9**	**23,0**	**23,6**	**22,0**	**6,1**	**3,8**	**5,1**	**28,1**	**26,8**	**25,4**
Age												
Less than 16 years												
From 16 to 24 years	1,4	0,8	0,6	6,4	6,8	4,8	3,6	2,3	3,4	9,7	8,8	7,8
From 25 to 64 years	8,3	5,8	4,4	18,5	18,5	15,3	6,3	4,2	5,6	23,6	21,8	19,3
65 years and over	35,3	27,1	23,6	49,7	52,0	54,1	7,1	3,7	4,1	56,4	55,4	56,2
Gender												
Male	10,5	7,5	6,6	19,6	20,2	19,2	5,2	3,5	4,6	24,6	23,3	22,2
Female	14,8	11,1	9,1	26,2	26,9	24,6	6,9	4,2	5,5	31,6	30,1	28,4
Type of household												
Single male	13,7	9,7	8,5	24,7	26,5	26,2	6,4	5,8	6,1	30,7	31,8	28,8
Single female < 65	11,6	8,8	5,7	25,8	25,5	21,9	9,3	5,6	7,5	31,6	29,3	29,2
Single female >= 65	38,4	32,8	28,7	56,4	60,9	62,6	8,8	4,6	6,2	62,3	64,2	65,4
2 adults < 65	8,5	6,5	5,2	18,8	19,2	16,8	5,3	4,1	5,1	23,1	22,5	20,8
2 adults at least one >= 65	32,1	23,9	20,5	45,6	46,5	47,9	6,8	3,7	3,8	52,1	50,0	50,2
2 adults with 1 child	6,0	4,1	3,2	15,6	15,7	11,6	5,7	3,8	4,7	20,4	18,7	14,4
2 adults with 2 children	3,8	2,8	1,9	12,0	12,3	9,4	5,3	3,2	5,2	16,3	14,9	13,4
2 adults with 3 or more children	4,2	2,5	1,3	11,3	12,8	8,5	6,4	4,2	6,1	16,5	16,4	13,6
1 adult with children	8,5	5,0	3,1	19,7	18,6	12,5	10,8	8,4	9,9	26,9	25,3	20,5
Household income level												
Income < 40% median	18,2	12,8	7,7	28,0	27,8	19,9	9,4	6,8	9,8	35,1	32,7	27,2
Income > 160% median	5,0	3,7	3,8	14,9	14,0	14,4	2,2	1,2	1,3	16,9	14,9	15,3
Autonomous Community												
Andalucía	13,8	10,4	8,0	23,5	26,0	22,8	6,5	4,5	5,5	29,2	29,4	27,0
Aragón	13,4	9,5	8,3	22,3	22,1	22,2	6,9	2,7	3,0	28,9	24,6	25,0
Asturias, Principado de	13,8	8,7	8,8	26,4	24,3	22,3	3,9	2,2	3,6	30,0	26,5	25,5
Balears, Illes	8,0	6,3	5,3	21,1	22,9	18,7	4,8	3,5	3,8	25,4	25,5	23,2
Canarias	13,2	9,7	7,9	25,0	25,7	25,0	13,2	6,8	6,5	34,0	30,8	28,4
Cantabria	9,4	8,7	8,3	18,1	21,8	21,3	1,7	1,1	4,0	20,7	23,3	23,5
Castilla - La Mancha	13,4	10,0	8,5	23,7	24,5	23,1	4,6	3,7	2,0	28,4	27,6	26,3
Castilla y León	13,6	8,7	6,5	22,3	23,6	21,9	3,9	4,3	3,4	26,1	27,4	24,1
Cataluña	11,5	8,5	7,7	22,6	22,8	20,7	7,0	2,9	5,2	27,7	25,2	22,5
Comunitat Valenciana	12,8	9,9	7,8	24,7	25,3	20,3	7,0	5,4	7,5	29,9	29,4	24,0
Extremadura	12,8	9,9	6,5	22,2	24,8	23,0	4,8	2,0	3,2	26,8	27,0	26,5
Galicia	18,3	14,4	12,9	30,2	29,7	31,6	6,3	2,9	5,3	35,1	32,5	34,6
Madrid, Comunidad de	10,8	6,9	6,4	17,9	18,0	18,4	5,7	4,6	5,5	23,6	21,7	23,3
Murcia, Región de	14,9	10,1	7,5	24,0	23,9	22,0	5,6	3,1	7,9	29,8	27,8	24,6
Navarra, Comunidad Foral de	10,0	7,0	6,0	21,4	20,1	21,4	4,1	1,8	3,3	24,8	22,3	26,3
País Vasco	9,9	8,1	8,3	21,8	20,4	22,4	2,7	1,6	2,8	24,7	22,1	25,5
Rioja, La	9,9	8,6	6,8	22,6	22,3	21,7	3,6	4,1	5,9	25,4	25,9	25,1
Ceuta	19,1	14,8	8,0	23,2	25,5	15,5	11,3	1,8	3,5	33,9	27,2	20,5
Melilla	11,4	8,8	7,7	21,6	20,5	16,8	3,5	2,5	1,9	24,4	23,1	19,4
Nationality												
Spanish	13,0	9,7	8,2	23,3	24,3	22,9	5,9	3,6	4,8	28,4	27,3	26,0
Foreign	4,8	3,2	2,4	13,3	11,2	9,3	10,9	7,8	9,4	23,1	18,3	16,8
Size of the municipality												
Less than 10,000 inhabitants	15,0	11,7	9,3	25,8	26,4	25,1	5,5	3,1	4,7	30,6	29,5	28,4
From 10,000 to 50,000 inhab.	12,7	9,1	7,5	22,9	23,9	21,5	5,4	3,9	5,3	27,7	27,2	24,8
From 50,000 to 100,000 inhab.	10,9	8,1	6,7	21,1	22,2	19,9	7,1	4,0	5,6	26,7	25,1	22,3
From 100,000 to 500,000 inhab.	12,0	9,0	8,2	22,9	22,8	21,6	6,7	4,4	5,4	28,5	26,3	25,7
500,000 inhab. and over	11,9	8,0	7,0	20,9	22,0	20,9	6,3	3,8	4,3	26,2	24,7	24,4

3.4 EDUCATION

Although the inclusion of the *Education* dimension in any quality-of-life analysis appears out of discussion, the choice of indicators does not prove immediate. The quality of the present education system, for example, affects the people who are in it but not those who have already left it. An MMQoL approach should also study Education from a broader viewpoint, which also encompasses ongoing learning, skills and the capacity to understand and interact with the world surrounding us. An indicator that partly covers these aspects is the use of the Internet, although its validity as a quality-of-life indicator is open to discussion, especially for older people.

The following indicators have been chosen:

- ***Persons aged 16 years old and over who have not completed secondary education (D41)***

Source: Living Conditions Survey (LCS). INE.

There are various sources from which this information can be obtained and the LCS is not the survey that offers it in the greatest detail, sample size and quality, but we have opted for using this source on account of the joint analysis with other dimensions.

- ***Persons aged 16 years old and over who have never used Internet (D42)***

Sources: ICT-H Survey. INE.

This indicator is undoubtedly biased in favour of young people, but will probably be so to a lesser extent in the future. Furthermore, we also consider that it is an indicator that allows us to measure those aspects connected with Education in the broad sense, such as knowledge of the world surrounding us, access to information and learning.

Table 4 presents the results for these indicators. As regards indicator D41, our attention is drawn by the spectacular improvement that is observed as the age lowers and as the years pass, something that is logical because generations with superior education gradually go on replacing generations with a lower academic level.

With regard to access to the Internet we observe how the percentage of users is increasing at all ages. Age is undoubtedly the most important differentiating factor: practically no young person between 16 and 24 years of age is alien to its use, while over 90% of people over 65 years old state that they have never used the Internet.

Considering these two indicators as the only ones shaping the quality of life in the area of Education is, to say the least, debateable; but other indicators that we could find (PISA[6] children's test score, leaving school at an early age, PIAAC score, ongoing learning) have other limitations, such as sample sizes or being related to certain ages only. We have preferred to consider these two indicators only in order to find out what type of measurement may be focused on the *Education* dimension in a quality-of-life study, although we are aware that it is approached in a very limited way here.

[6] PISA and PIAAC are the names of two OECD's operations on the assesment of skills and competencies for children and adults respectively. See http://www.oecd.org/pisa/ and http://www.oecd.org/education/highereducationandadultlearning/piaacprogrammefortheinternationalassessmentofadultcompetencies.htm

Table 4: Education. 2004-2012

	(D41) Have not completed secondary education			(D42) Have never used Internet		
	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12
Total	**34,6**	**31,7**	**29,4**	**52,9**	**44,5**	**36,6**
Age						
Less than 16 years						
From 16 to 24 years	9,5	11,5	10,6	11,2	6,4	4,8
From 25 to 64 years	26,4	22,5	19,3	48,3	37,4	33,0
65 years and over	79,8	76,9	74,7	96,4	93,3	91,8
Gender						
Male	31,3	29,0	26,8	48,6	40,3	37,1
Female	37,7	34,2	32,0	57,1	48,6	45,2
Type of household						
Single male	37,0	30,9	29,2	57,4	52,5	50,3
Single female < 65	22,4	21,2	19,9	46,6	38,1	34,9
Single female >= 65	80,8	79,0	78,4	98,0	96,3	95,1
2 adults < 65	22,5	20,9	20,2	46,4	36,6	32,9
2 adults at least one >= 65	72,7	68,6	65,1	95,6	91,1	89,2
2 adults with 1 child	19,9	17,8	13,6	39,4	28,7	25,0
2 adults with 2 children	17,7	14,3	12,0	36,2	25,7	20,9
2 adults with 3 or more children	24,1	24,3	19,4	39,3	29,8	25,8
1 adult with children	19,0	19,4	14,0	33,8	23,5	20,6
Household income level						
Income < 40% median	48,6	42,7	35,2	..	50,3	72,6
Income > 160% median	12,6	10,3	10,1	..	7,9	11,0
Autonomous Community						
Andalucía	41,9	35,4	32,7	58,1	47,8	44,2
Aragón	34,3	28,6	30,2	56,3	44,1	41,3
Asturias, Principado de	34,3	32,9	28,5	54,0	47,4	45,5
Balears, Illes	23,3	26,9	28,8	47,8	38,8	33,5
Canarias	32,7	31,2	31,0	52,3	41,9	40,8
Cantabria	28,5	21,5	19,3	55,0	46,3	42,6
Castilla - La Mancha	41,4	37,4	33,2	58,4	50,0	46,9
Castilla y León	38,8	37,2	33,5	59,6	51,4	46,3
Cataluña	32,8	32,4	30,2	47,2	39,4	35,1
Comunitat Valenciana	33,5	32,4	26,8	53,9	45,0	41,9
Extremadura	38,5	33,6	33,2	61,9	54,6	50,9
Galicia	44,0	42,2	37,2	60,5	55,1	52,3
Madrid, Comunidad de	22,4	22,8	21,2	42,7	34,9	33,0
Murcia, Región de	45,0	31,1	33,3	54,4	50,3	46,1
Navarra, Comunidad Foral de	26,5	27,9	27,8	51,5	41,8	38,9
País Vasco	29,1	20,1	23,4	51,3	42,9	39,4
Rioja, La	32,2	35,7	29,8	56,2	49,1	45,0
Ceuta	43,0	42,2	35,8	54,0	51,3	47,2
Melilla	31,7	29,7	33,7	51,9	40,6	38,1
Nationality						
Spanish	35,1	32,0	29,8	53,3	44,9	41,7
Foreign	22,5	25,4	24,0	46,4	37,7	32,7
Size of the municipality						
Less than 10,000 inhabitants	45,5	42,5	38,5	64,8	55,0	51,7
From 10,000 to 50,000 inhab.	35,8	33,5	30,2	51,9	42,1	38,7
From 50,000 to 100,000 inhab.	30,9	27,7	26,4	51,8	40,8	38,1
From 100,000 to 500,000 inhab.	31,1	28,1	27,3	47,6	40,6	37,4
500,000 inhab. and over	26,0	23,5	22,6	44,4	37,0	34,2

(..) not available

3.5 SOCIAL RELATIONS

In this dimension the amount of data available is poorer than in the previous ones. There are countless indicators on this subject in social research, which do not prove appropriate for an approach like this MMQoL one. We refer to indicators such as the number of people who belong to clubs or associations, or the time spent on volunteer work. The *Sponsorship Group* recommends confining this dimension to a context closer to the individual and, again, based on individual indicators taken from surveys. Accordingly, it is recommended to measure supportive relations and the frequency and quality of the relationship with friends, relatives and the social environment in general.

The LCS included a module of social participation in 2006 from which an initial indicator may be obtained, but its development in the course of time is not available, a very similar indicator is provided by the European Social Survey (ESocS), with the advantage of being able to offer a time series and the afore-mentioned disadvantage of the sample size. The data of both surveys are not wholly reconcilable but we have opted for including both sources.

Health surveys are beginning to collect information on affective support and the function performed by the family, since they are factors that undoubtedly affect health. However, it has not been possible to identify a series of indicators on the basis of these surveys; the only item that we include comes from the EHS-09. The indicators that are included therefore are:

- ***Persons aged 16 years old and over who meet or are in touch with relatives or friends less than once a week (D51)***

Source: Living Conditions Survey (LCS). Social participation module 2006. INE. This module has not been repeated since then (it is scheduled to be carried out in 2015).

- ***Persons aged 16 years old and over whose frequency of meeting up with friends, relatives or colleagues is low (once a month at the most) (D52)***

Source: European Social Survey (ESocS). INE. Data are available for 2004, 2006, 2008, and 2010. The datum for the period 2004-06 is constructed as the arithmetical mean of both years, the 2007-09 datum is that of the ESocS-2008 and that of the period 2010-12 is taken from the 2010 survey.

- ***Persons aged 16 years old and over who in the event of having a serious personal problem of any kind could count on at least three people (D53)***

Source: European Health Interview Survey (EHIS)-2009 (INE-MSPSI). This indicator is drawn from the survey, harmonized for the European setting and carried out in Spain between March 2009 and February 2010.

From the data appearing in Table 5 no immediate conclusions may be drawn. Irrespective of the level that is reflected by the different indicators, it may be clearly observed how contact with close people declines with age. There is no conclusive information that allows us to compare men and women. Again, as happens in almost all the dimensions, income level appears to discriminate a lot. Persons living in households with higher income levels therefore appear to have better family relations, or more frequent at least.

It is also observed that the foreign population suffers a higher degree of isolation from their family environment, which seems natural as this population does not always

have their close ones in Spain. Lastly, indicator D53 is calculated by size of the municipality of residence and it appears to show that the smaller the municipality the richer the family relations.

This aspect, which would indicate a better quality of life for this dimension in the rural environment (taking this to be municipalities with a population of less than 10,000), is going to be repeated in some other dimensions and leads us to draw some interesting conclusions on the quality of life, which match up with other very recent studies[7].

[7] On 24 July 2012 the United Kingdom Office for National Statistics published its first conclusions on a measurement of subjective well-being *First ONS Annual Experimental Subjective Well-being Results*. The main results may be seen in a map produced by the newspaper *The Guardian* (article "Well-being index points way to bliss: live on a remote island, and don't work" published on 24-jul-2012: **http://www.guardian.co.uk/lifeandstyle/2012/jul/24/national-wellbeing-index-annual-results**)

Table 5: Social relations. 2004-2012

	(D51) Less than once a week	(D52) One a month at the most			(D53) Count on at least three people
	2006	2004-06	2007-09	2010-12	2009
Total	**8,6**	**10,4**	**9,6**	**12,0**	**21,8**
Age					
Less than 16 years					
From 16 to 24 years	1,8	2,8	3,2	2,0	16,1
From 25 to 64 years	8,8	19,5	9,8	12,7	21,3
65 years and over	12,2	38,3	13,5	16,4	26,7
Gender					
Male	9,4	9,0	7,6	10,3	20,9
Female	7,8	11,8	11,5	13,4	22,6
Type of household					
Single male	4,9	11,7	10,1	10,7	36,0
Single female < 65	2,5	7,6	13,3	19,0	32,5
Single female >= 65	4,9	20,9	22,5	10,0	32,3
2 adults < 65	6,8	8,3	9,4	9,2	23,1
2 adults at least one >= 65	10,5	18,5	10,8	14,7	27,6
2 adults with 1 child	6,5	6,5	6,3	9,4	19,2
2 adults with 2 children	6,8	8,9	7,3	11,4	15,4
2 adults with 3 or more children	8,8	5,9	15,7	18,3	14,8
1 adult with children	6,1	6,7	10,5	11,2	25,7
Household income level					
Income < 40% median	11,4	..	..	..	34,8
Income > 160% median	6,4	..	..	..	17,0
Autonomous Community					
Andalucía	9,5	..	..	..	21,3
Aragón	6,5	..	..	..	16,7
Asturias, Principado de	6,4	..	..	..	25,5
Balears, Illes	8,5	..	..	..	24,0
Canarias	7,4	..	..	..	35,6
Cantabria	6,8	..	..	..	35,4
Castilla - La Mancha	5,9	..	..	..	17,3
Castilla y León	8,4	..	..	..	16,6
Cataluña	10,1	..	..	..	23,4
Comunitat Valenciana	6,8	..	..	..	22,7
Extremadura	7,4	..	..	..	19,8
Galicia	14,6	..	..	..	15,7
Madrid, Comunidad de	7,7	..	..	..	25,0
Murcia, Región de	9,6	..	..	..	22,8
Navarra, Comunidad Foral de	6,6	..	..	..	11,7
País Vasco	6,5	..	..	..	12,4
Rioja, La	9,0	..	..	..	13,4
Ceuta	10,7	..	..	..	6,3
Melilla	10,9	..	..	..	27,9
Nationality					
Spanish	8,4	10,2	8,9	11,6	18,5
Foreign	14,7	14,3	19,1	16,0	41,6
Size of the municipality					
Less than 10,000 inhabitants	9,1	..	..	..	19,4
From 10,000 to 50,000 inhab.	6,9	..	..	..	20,9
From 50,000 to 100,000 inhab.	9,5	..	..	..	24,2
From 100,000 to 500,000 inhab.	8,8	..	..	..	20,6
500,000 inhab. and over	9,6	..	..	..	25,8

(..) not available

3.6 INSECURITY

The "insecurity" dimension is taken into account in different MMQoL studies, although only considering the concept of physical insecurity (fear of going out at night, presence of local delinquency, victimisation) or else comprised in a broader concept, which also includes insecurity with the economic situation, measured by hardships, or related to the employment, measured by the fear of job loss. Although the *Sponsorship Group* mentions this second broader concept, in this study we have opted only for including physical insecurity indicators, on the assumption that, in principle, the economic or job insecurity indicators seem to fit more naturally in dimensions 1 and 2 respectively.

As occurs with other dimensions, there is abundant statistical information on security, based on police records, on actions by the Prosecutor's Office, court activity, etc. From the MMQoL standpoint, however, information on the population as a whole, such as for instance the number of homicides per 100,000 inhabitants, which is a commonly employed indicator of a country's level of security, is not of such great importance, but rather data associated with each individual person and official statistics do not offer too much information on this subject: we may single out the existence of a question in the LCS on delinquency or vandalism in the area where the interviewees live, which allows us to obtain a complete series for the period being analysed.

Failing a harmonized security survey (which is currently at the design stage), the other indicators are taken from the afore-mentioned European Social Survey. The indicators chosen are as follows:

- ***Persons living in areas with delinquency or vandalism (D61)***

Source: Living Conditions Survey (LCS). This information forms part of the survey household questionnaire and therefore the answer may be assigned to all the members of the household irrespective of their age. It is important to mention, however, that the answer is provided by the respondent of the questionnaire, an adult, and we will be assigning this subjective evaluation to all the household members, some of which could have answered differently.

- ***Persons aged 16 years old and over who do not feel secure walking alone at night in the surroundings (D62)***

Source: European Social Survey (ESocS). The question asked is "To what extent do you feel safe walking alone in your area or neighbourhood at night?" and the persons taken as feeling insecure are those who have responded "insecure" or "very insecure".

- ***Persons aged 16 years old and over who are afraid that their home may be broken into (D63)***

Source: European Social Survey (ESocS). The question asked is "How often are you worried that somebody may break into your home to steal?" and the indicator takes those persons who have responded "all the time or almost all the time".

Table 6 shows the results for these three indicators. In general, there has been an improvement in the sensation of security in the last few years. Indicator D62, which has a greater subjective load than D61, shows a higher percentage of women than men who are afraid of going out at night. It is noteworthy that, as in other dimensions income is a major differentiating factor, but the same does not occur in this factor. In the analysis by nationality, we observe that foreigners are the ones who feel more

secure. In fact, for indicator D63 the difference is considerable. The perception that we have individually regarding risk and security may play a part in this indicator.

In the case of income, we go so far as to presume that people with a higher income have a greater sensitivity with regard to the local problems of delinquency or insecurity (the environment section would lead us to similar conclusions). This is an important factor in the analysis of the quality of life. A study of security based on objective indicators – for example, the number of crimes committed in each district – would certainly lead to conclusions completely different from what is offered by a subjective question (Do you feel secure?), but the latter is what is really of importance for purposes of studying the quality of life.

The "size of the municipality" variable also plays a major role: perceived insecurity is much higher in large municipalities than in small ones, in indicators D61 and D62 at least.

Table 6: Insecurity. 2004-2012

	(D61) Areas with delinquency or vandalism			(D62) Feel insecure walking alone at night in the surroundings			(D63) Afraid that their home may be broken into		
	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12
Total	**19,4**	**16,7**	**11,5**	**23,0**	**24,8**	**18,7**	**9,1**	**6,9**	**8,8**
Age									
Less than 16 years	18,9	16,1	11,2						
From 16 to 24 years	20,1	17,2	11,4	26,2	23,4	21,7	5,6	4,7	6,9
From 25 to 64 years	19,7	17,0	11,7	21,1	23,9	15,1	9,7	7,6	7,9
65 years and over	18,3	15,9	11,1	27,1	28,8	29,5	9,3	6,0	13,8
Gender									
Male	18,9	16,4	11,2	14,7	15,8	12,2	6,7	5,1	6,8
Female	19,8	17,0	11,8	31,1	33,2	24,6	11,3	8,5	10,7
Type of household									
Single male	13,0	15,9	9,1	13,2	17,6	13,4	4,2	3,7	6,6
Single female < 65	19,1	18,1	12,1	24,4	28,5	20,6	14,6	13,8	2,1
Single female >= 65	18,5	15,6	10,8	39,9	38,8	33,8	11,5	5,4	21,1
2 adults < 65	18,8	17,3	12,3	17,3	25,8	13,6	10,9	5,9	8,5
2 adults at least one >= 65	17,5	16,0	11,8	27,0	27,0	25,3	11,2	6,8	11,2
2 adults with 1 child	19,5	15,4	11,4	21,1	22,5	16,8	8,8	7,4	6,7
2 adults with 2 children	18,9	15,8	11,1	22,4	21,6	15,4	10,2	8,2	7,7
2 adults with 3 or more children	18,2	16,4	11,7	23,1	30,1	21,1	12,5	14,8	8,6
1 adult with children	24,4	20,3	12,2	32,2	29,4	30,5	4,3	4,8	5,7
Household income level									
Income < 40% median	18,7	17,8	12,8	..	..	..	..	..	..
Income > 160% median	19,0	14,3	10,7	..	..	..	..	..	..
Autonomous Community									
Andalucía	18,7	17,3	11,6	..	..	..	..	..	..
Aragón	17,2	13,6	9,4	..	..	..	..	..	..
Asturias, Principado de	9,6	6,3	4,5	..	..	..	..	..	..
Balears, Illes	20,6	19,5	11,2	..	..	..	..	..	..
Canarias	21,9	14,8	11,6	..	..	..	..	..	..
Cantabria	9,4	6,3	7,6	..	..	..	..	..	..
Castilla - La Mancha	11,8	10,3	8,3	..	..	..	..	..	..
Castilla y León	9,5	12,8	5,8	..	..	..	..	..	..
Cataluña	20,3	20,1	15,5	..	..	..	..	..	..
Comunitat Valenciana	24,8	21,2	10,7	..	..	..	..	..	..
Extremadura	10,4	11,3	7,8	..	..	..	..	..	..
Galicia	12,4	9,2	6,4	..	..	..	..	..	..
Madrid, Comunidad de	32,4	23,8	16,1	..	..	..	..	..	..
Murcia, Región de	22,9	16,7	11,8	..	..	..	..	..	..
Navarra, Comunidad Foral de	12,4	7,2	8,2	..	..	..	..	..	..
País Vasco	8,9	8,5	11,0	..	..	..	..	..	..
Rioja, La	9,5	10,2	5,8	..	..	..	..	..	..
Ceuta	26,6	16,1	16,8	..	..	..	..	..	..
Melilla	46,5	27,9	16,2	..	..	..	..	..	..
Nationality									
Spanish	19,5	17,0	11,8	23,1	24,9	18,9	9,3	7,2	9,3
Foreign	14,6	12,5	8,7	19,5	22,6	15,2	5,9	2,6	2,1
Size of the municipality									
Less than 10,000 inhabitants	8,3	9,4	5,7	17,0	16,5	14,2	7,0	6,4	10,1
From 10,000 to 50,000 inhab.	15,0	13,8	9,6						
From 50,000 to 100,000 inhab.	21,7	16,8	12,7	22,7	29,1	21,8	9,7	7,0	8,9
From 100,000 to 500,000 inhab.	22,8	19,1	14,0						
500,000 inhab. and over	34,2	26,7	17,2	34,3	35,2	24,1	12,1	8,4	7,3

(..) not available

(*) D62 and D63: the categories are "country village", "town or small city" and "a big city"

3.7 ENVIRONMENT

In accordance with the MMQoL perspective, the environment plays a sufficiently important role as to be considered just another dimension. Under this global content we refer to the neighbourhood where we live, to the green or recreation areas that we have nearby, the quality of the air that we breathe, running water, the noise level that we have to withstand, etc. The SSF talks about "environmental conditions" and mention, amongst others, quality of the water, hazardous substances or noise as prime factors of that definition.

Some studies on this subject, such as the OECD's *How's Life* also gather information on access to green areas. Other studies suggest including such subjective appraisal questions as appreciation of the quality of the physical environment in general.

As occurs with other dimensions that we may consider "novel" in the analysis of the quality of life, not much information is available in official statistics. The LCS contains a question of a very general nature regarding problems in the setting of the dwelling, from which indicator D61 has been drawn. Another source from which an indicator has been drawn is the National Health Survey 2006-07. For the purposes of this study, we have constructed a synthetic indicator based on the aggregation of eight items that became available in the survey questionnaire.

We have chosen the following indicators:

- ***Persons living in areas with pollution or noise (D71)***

Source: Living Conditions Survey (LCS). This information forms part of the survey household questionnaire and the response may therefore be assigned to all the members of the household irrespective of their age (though the answer is given by the survey respondent).

- ***Persons with problems in the surroundings of their dwellings (D72)***

Source: National Health Survey (SNHS 06-07). Again, this information forms part of the survey household questionnaire and the response may therefore be assigned to all the members of the household irrespective of their age. A household is considered to have "problems in its environment" if it declares having 3 of the following 8 problems: noise, bad smells, poor quality water, unsatisfactory street cleaning, industrial air pollution, air pollution for other reasons, lack of green spaces, and animal nuisance factors. Data are only available, therefore, for the year of the survey.

The data appear in Table 7. Again, we are confronted with a different situation from that which may be offered by the material well-being dimension, for instance. It is noteworthy to find that the higher-income households are less satisfied with the environment, on the lines of what occurred in the previous dimension (insecurity). Another prominent aspect is that foreigners again report fewer problems in respect of the environment than the Spaniards.

The people who live in small towns are undoubtedly the ones who rate their environment more highly, which probably lies behind the fact that regions such as Castilla – La Mancha, without big towns, are prominent at least in indicator D71.

Table 7: Environment. 2004-2012

	(D71) Areas with pollution or noise			(D72) Problems in the surroundings of their dwellings
	2004-06	2007-09	2010-12	2006
Total	**33,1**	**29,3**	**20,1**	**13,8**
Age				
Less than 16 years	32,7	28,8	20,5	16,6
From 16 to 24 years	33,8	30,2	20,4	14,1
From 25 to 64 years	34,2	30,5	21,1	14,3
65 years and over	29,6	24,9	16,5	9,4
Gender				
Male	32,4	28,9	19,7	13,1
Female	33,8	29,7	20,6	14,5
Type of household				
Single male	27,3	26,8	16,7	8,9
Single female < 65	42,7	32,0	24,3	17,7
Single female >= 65	28,6	23,3	16,1	8,7
2 adults < 65	37,5	32,6	23,3	13,6
2 adults at least one >= 65	29,9	24,7	16,7	9,6
2 adults with 1 child	35,4	31,5	20,4	15,1
2 adults with 2 children	32,0	28,3	19,9	15,6
2 adults with 3 or more children	31,4	24,6	19,0	14,9
1 adult with children	38,6	29,9	25,1	16,0
Household income level				
Income < 40% median	29,8	29,5	21,1	12,7
Income > 160% median	33,8	29,4	20,4	14,3
Autonomous Community				
Andalucía	32,5	29,8	21,4	16,0
Aragón	29,4	21,2	9,8	13,0
Asturias, Principado de	25,8	25,8	14,7	5,2
Balears, Illes	37,5	30,8	22,5	28,2
Canarias	34,9	30,3	18,3	16,5
Cantabria	26,7	20,7	20,8	5,6
Castilla - La Mancha	26,8	19,7	15,5	6,5
Castilla y León	19,7	23,6	13,2	10,7
Cataluña	35,0	31,8	21,1	14,7
Comunitat Valenciana	40,9	37,2	25,5	23,6
Extremadura	24,7	23,1	18,0	18,3
Galicia	26,2	23,0	18,2	7,1
Madrid, Comunidad de	39,4	33,6	20,8	10,1
Murcia, Región de	34,5	26,3	18,9	15,9
Navarra, Comunidad Foral de	27,6	17,4	17,7	3,8
País Vasco	32,4	28,4	23,6	7,9
Rioja, La	24,9	23,9	17,7	1,7
Ceuta	48,6	40,2	26,3	39,7
Melilla	61,4	42,0	27,6	39,7
Nationality				
Spanish	33,1	29,4	20,0	14,2
Foreign	31,7	29,6	21,1	10,7
Size of the municipality				
Less than 10,000 inhabitants	19,6	17,2	10,9	7,8
From 10,000 to 50,000 inhab.	31,3	28,0	19,4	13,6
From 50,000 to 100,000 inhab.	34,1	28,8	22,0	17,6
From 100,000 to 500,000 inhab.	38,3	35,2	24,3	15,4
500,000 inhab. and over	45,8	38,3	24,9	16,9

3.8 GOVERNANCE

The Sponsorship Group recommends considering this dimension, which it calls "Governance and Basic Rights" in order to encompass such aspects as confidence in the institutions, satisfaction with the public services, and social cohesion.

The source from which information for this dimension has been selected is the European Social Survey, since the official statistical information in this area is confined to studies made by the Sociological Research Centre (CIS); in the course of the last few years various studies have been published on participation and citizenship, which have provided information on public satisfaction with the institutions and with democracy in general. The advantage of the European Social Survey lies in the continuity of the questions and especially in the comparability of the data at European level.

The indicators chosen are:

- ***Persons aged 16 years old and over who have little confidence in the Parliament (D81)***
- ***Persons aged 16 years old and over who have little confidence in the Legal System (D82)***
- ***Persons aged 16 years old and over who have little confidence in the Police (D83)***
- ***Persons who have little confidence in the Institutions (D84)***

Source: European Social Survey. The first three indicators correspond to questions in the questionnaire and the fourth is a synthesis carried out as a mean of the three previous ones.

It is observed that the people who have least confidence in the police are young people, who are however the ones who have most confidence in the legal system. In general, the Spanish population seems to have less confidence in the institutions than the foreign population, even though in the case of the police no clear pattern is observed.

Table 8: Gobernance and participation. 2004-2012

	(D81) Parliament			(D82) Legal System			(D83) Police			(D84) Average of the Institutions		
	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12	2004-06	2007-09	2010-12
Total	**22,2**	**22,9**	**33,0**	**27,1**	**37,1**	**33,4**	**13,9**	**12,8**	**10,6**	**21,0**	**24,3**	**25,7**
Age												
Less than 16 years												
From 16 to 24 years	22,6	16,9	27,6	24,5	31,9	28,0	20,9	15,4	13,1	22,6	21,4	22,9
From 25 to 64 years	22,5	23,1	34,1	27,8	38,4	34,0	13,6	13,5	11,0	21,3	25,0	26,4
65 years and over	20,8	25,8	33,3	26,9	36,7	35,6	10,2	8,4	7,9	19,3	23,6	25,6
Gender												
Male	22,6	24,6	34,9	29,1	39,7	36,6	14,7	13,6	11,9	22,1	26,0	27,8
Female	21,8	21,3	31,2	25,3	34,8	30,4	13,1	12,0	9,7	20,1	22,7	23,8
Type of household												
Single male	23,2	25,7	37,2	30,0	38,3	39,3	16,6	16,1	13,6	23,3	26,7	30,0
Single female < 65	22,1	29,6	21,7	27,1	40,9	30,4	16,2	12,6	6,9	21,8	27,7	19,7
Single female >= 65	18,9	18,0	33,1	19,1	35,0	31,4	9,1	9,9	3,2	15,7	21,0	22,6
2 adults < 65	22,8	26,1	35,6	26,1	40,3	34,8	10,2	14,7	11,5	19,7	27,0	27,3
2 adults at least one >= 65	21,4	24,0	34,2	28,2	36,8	32,4	8,9	7,7	9,8	19,5	22,9	25,4
2 adults with 1 child	21,3	24,8	32,1	26,2	41,4	33,6	15,0	16,6	9,9	20,8	27,6	25,2
2 adults with 2 children	19,0	19,3	31,1	23,4	32,4	32,4	11,8	9,4	8,8	18,1	20,4	24,1
2 adults with 3 or more children	24,5	17,5	20,1	24,9	36,7	29,8	18,3	12,2	6,2	22,6	22,1	18,7
1 adult with children	26,7	18,3	21,6	38,8	31,1	31,2	23,3	15,1	25,5	29,6	21,5	26,1
Nationality												
Spanish	22,5	23,7	34,1	27,4	38,1	34,8	13,9	12,6	10,7	21,3	24,8	26,6
Foreign	17,9	12,5	18,2	22,1	24,7	14,9	12,3	15,5	10,2	17,4	17,6	14,4
Size of the municipality												
Country village	22,8	23,7	33,4	26,9	36,4	34,1	13,2	13,0	10,7	21,0	24,3	26,1
Town or small city	20,0	23,1	32,0	26,5	35,5	32,6	13,8	12,3	10,8	20,1	23,6	25,1
A big city	23,2	21,2	35,0	28,4	39,2	34,1	14,2	12,3	10,9	21,9	24,2	26,7

3.9 SUBJECTIVE WELL-BEING

Subjective well-being is the dimension that is called upon to play a more important role in future quality of life studies. When it mentions the dimensions to be considered, the *Sponsorship Group* talks of 8+1, in reference to the singularity of subjective well-being. In fact, it may be considered an isolated dimension in terms of global assessment of life or the person's state of mind. There may also be a subjective assessment, however, in each of the dimensions studied previously. In fact, some of the indicators explained here are so to a considerable extent: what is the question on "being afraid of going out at night" other than a subjective measurement of insecurity?

In the last few years there has been a proliferation of studies focused on the analysis of subjective well-being from the viewpoint of official surveys aimed at the population. In this way, such terms as "eudemonic well-being" or "affect", which are measurable aspects of subjective well-being, which will surely pass shortly to the corpus of the magnitudes measured by the social surveys as has been the case hitherto of "material poverty" or "confidence in the institutions".

As occurs with the other dimensions "new items" barely has useful statistical information for the purposes of this study, but we have decided to include at least one table with an indicator, perhaps the most obvious one, taken once again from the ESocS.

- ***Persons aged 16 years old and over who do not consider themselves as happy (D91)***

Source: European Social Survey. As indicated always by studies on subjective well-being, the question *"to what extent do you consider yourself to be a happy or*

unhappy person?" produces results highly biased towards happiness. In fact, barely 1% of the population openly declares itself to be "very unhappy" and the proportion that declares being "unhappy" does not reach 5%. As the group with needs in this dimension, we therefore take those who do not declare themselves expressly as being "happy" or "very happy" because these two together amount to around 75%.

It may be observed that happiness declines with age. A notable feature is the households with three children, where the young population predominates, with a small percentage of "unhappy" population. Women over 65 years of age who live alone suffer the worst situation under this head.

Table 9: Subjetive well-being. 2004-2012

	(D91) Persons who do not consider themselves as happy		
	2004-06	2007-09	2010-12
Total	**21,9**	**18,9**	**19,6**
Age			
Less than 16 years			
From 16 to 24 years	10,8	8,4	10,3
From 25 to 64 years	20,9	17,9	18,7
65 years and over	32,5	28,8	29,6
Gender			
Male	19,4	19,0	17,5
Female	24,3	18,9	21,6
Type of household			
Single male	34,0	43,0	34,3
Single female < 65	37,1	31,0	24,9
Single female >= 65	55,6	45,6	46,6
2 adults < 65	17,5	13,1	15,9
2 adults at least one >= 65	28,1	23,8	25,9
2 adults with 1 child	16,7	12,4	14,0
2 adults with 2 children	14,0	8,0	11,5
2 adults with 3 or more children	13,3	9,1	8,6
1 adult with children	29,1	16,0	15,4
Nationality			
Spanish	21,6	18,2	19,5
Foreign	26,3	27,3	20,8

3.10 CONCLUSIONS OF THE ANÁLYSIS BY DIMENSIONS

Surely the first conclusion to be reached is to appreciate the difficulty of drawing conclusions. Different dimensions seem to point in different directions. Not always the same human groups are the ones to declare needs, i.e. needs do not always accumulate, but sometimes they are offset: persons with a higher income have better material well-being, health, work, but they also live in environments that they rate less highly and fear more for their security.

In any case, it appears necessary to make at least one inroad into the search for an indicator that endeavours to show all the dimensions at the same time. The *Sponsorship Group* – so frequently cited- mentions the possibility of presenting these results in the form of radar graphs, as has already been done by some national and international reports, for which purpose it is necessary to choose one or more indicators representative of each dimension. This analysis is addressed in the following chapter.

4 Construction of a global quality of life indicator: alternatives

If we want to ask a question such as "Is the quality of life higher, the higher the income level?" the foregoing analysis, considering separately each one of the quality-of-life dimensions, no conclusions are reached. It is made difficult to assess the global effect of a given variable (even one apparently as clear as monetary income, which is negatively correlated with the environment or security dimension) How can we make a global study of the quality of life, taking jointly into consideration all the dimensions?

There is no currently agreed way as to how to aggregate dimensions. The dimensions could be standardized using a measuring system, assigning weightings to each one of them either depending on common criteria, or else specific ones of each society? The correlation between them could be examined in order to study the effect of each one more precisely. There are many possible approaches. The study of the effect of choosing weightings goes beyond the purpose of this paper. We are going to consider two very simple alternatives, which we will call "composite indicator" and "synthetic indicator", which illustrate two of the many ways in which a global quality of life indicator may be addressed, following two completely different paradigms.

Among its 12 strategic recommendations the *SSF Report* cites the need to carry out a joint analysis of the effect of all the quality of life dimensions (recommendation nº9): "*Statistical Offices should provide the information needed to aggregate across quality-of-life dimensions allowing the construction of different indexes. While assessing quality-of-life requires a plurality of indicators there are strong demands to develop a simple summary measure".*

In addition, this report proposes a particularly interesting recommendation, number 8, which says that *"surveys should be designed to asses the links between various quality-of-life domains for each person.."..* This assertion is crucial for addressing the construction of the second of the global quality-of-life indicators.

4.1 COMPOSITE QUALITY-OF-LIFE INDICATOR (CQoLI)

The first approach would consist of constructing a synthetic quality of life measure by means of an indicator that combines the nine dimensions by aggregation, which we will call CQoLI. For this purpose, it is first of all necessary to have a single indicator for each dimension, "representative sub-indicator of the dimension i" (SR_i). These sub-indicators are going to go, in all cases, from 0 to 100 and they will be constructed as "percentages of persons who comply with a given condition" (so that the value 100 corresponds to the highest quality of life in each indicator and 0 to the lowest). We then construct the composite quality-of-life indicator CQoLI as CQoLI = $\frac{1}{9}\sum_{i=1}^{9} SRi$, where we do not weight each dimension, i.e. implicitly, all the dimensions will be weighted equally.

The indicators chosen are:

- ***Material living conditions:*** $SR_1 = 100 – (D11 + D12)/2$
- ***Work:*** $SR_2 = 100 – D22$
- ***Health:*** $SR_3 = 100 – D35$
  Where D35 is a new synthetic indicator of D31, D32, D33 worked out from the LCS (% of people who state that they have at least one of these three needs)
- ***Education:*** $SR_4 = 100 – D41$
- ***Social relations***: $SR_5 = 100 – D52$
- ***Insecurity***: $SR_6 = 100 – D61$
- ***Environment***: $SR_7 = 100 – D71$
- ***Governance:*** $SR_8 = 100 – D84$
- ***Subjective well-being:*** $SR_9 = 100 – D91$

Naturally, that implicit weighting is already an arbitrary choice, as is the fact of using quality-of-life thresholds in the indicators that we presented in Chapter 3 for each one of the dimensions. Therefore, in the first dimension if we had taken as the risk of poverty threshold 50% of the median income, we would have selected as the population "at risk of poverty" a smaller population and the respective quality-of-life indicator SR_1 would be closer to value 100.

In order to be able to compare between population groups, in those disaggregations for which indicator SR_i can not be obtained, they are assigned the value of the whole of the population for that period.

The results are shown in Table 10. From this we are able to draw such conclusions – which may perhaps appear excessive to the reader, but it is something common to any attempt to aggregate so much information in one indicator – such as that the quality of life as a whole has improved in the last few years, that men enjoy a quality of life somewhat superior to that of women, or that the households where they live best are ones that have children, but not many (one or two).

We may compare the values that that CQoLI offers for different groups or alternatively we may, which proves much more informative, compare the values that the different SR_i components have for each group using radar graphs.

Table 10: Composite Quality of Life Indicator (CQLI). 2004-2012

	2004-06	2007-09	2010-12
Total	**76,9**	**78,2**	**79,8**
Age			
Less than 16 years	76,7	78,1	79,4
From 16 to 24 years	84,0	84,5	85,9
From 25 to 64 years	77,3	79,9	81,5
65 years and over	64,6	68,8	70,3
Gender			
Male	78,3	79,1	80,7
Female	75,4	77,4	78,9
Type of household			
Single male	75,5	75,0	78,1
Single female < 65	75,0	76,2	79,0
Single female >= 65	62,3	64,0	67,7
2 adults < 65	79,8	80,4	81,8
2 adults at least one >= 65	68,6	71,2	72,6
2 adults with 1 child	80,6	81,6	84,0
2 adults with 2 children	81,6	83,6	84,1
2 adults with 3 or more children	79,9	80,1	82,2
1 adult with children	75,1	78,6	80,6
Household income level			
Income < 40% median	69,9	69,7	72,5
Income > 160% median	81,8	85,0	85,7
Autonomous Community			
Andalucía	75,6	76,6	78,7
Aragón	78,4	81,1	81,9
Asturias, Principado de	78,2	80,3	81,3
Balears, Illes	78,6	78,4	80,0
Canarias	76,0	77,8	78,4
Cantabria	80,4	82,3	82,4
Castilla - La Mancha	77,5	78,9	80,9
Castilla y León	79,0	78,1	79,5
Cataluña	77,8	78,4	79,9
Comunitat Valenciana	74,9	76,7	79,8
Extremadura	78,4	78,5	79,4
Galicia	75,8	77,7	78,6
Madrid, Comunidad de	76,4	78,5	80,4
Murcia, Región de	75,0	78,1	79,6
Navarra, Comunidad Foral de	80,9	82,1	81,5
País Vasco	79,1	81,7	80,7
Rioja, La	80,3	79,5	80,8
Ceuta	70,8	74,5	77,4
Melilla	70,7	75,6	78,1
Nationality			
Spanish	76,9	78,3	79,8
Foreign	78,0	78,1	80,8
Size of the municipality			
Less than 10,000 inhabitants	77,8	78,6	79,7
From 10,000 to 50,000 inhab.	77,5	78,4	80,2
From 50,000 to 100,000 inhab.	77,5	78,9	80,2
From 100,000 to 500,000 inhab.	76,3	78,0	79,3
500,000 inhab. and over	74,7	76,9	79,3

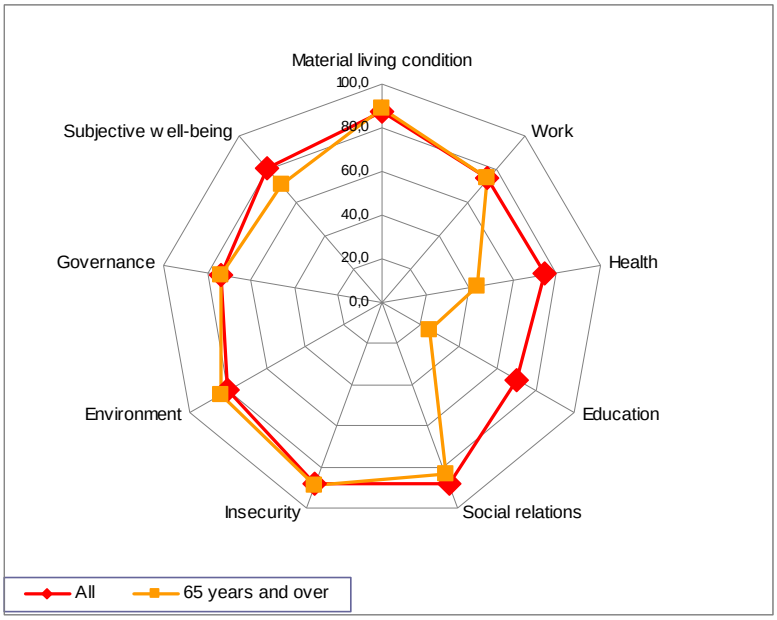
4.1.1 Quality-of-life analysis according to population groups

Some social groups present a major risk of being in a situation of disadvantage in various dimensions of their quality of life. We analyse some of the most notable groups below.

- According to age

The group of people of 65 years of age and over present a situation of disadvantage in relation to the population as a whole in the dimensions of *Education, Health, Social Relations, Subjective Well-being, Insecurity*. With regard to *Environment* their situation is slightly inferior to that of the population as a whole. As for *Material Conditions* their situation is practically the same as for the population as a whole and they present better results in *Governance*.

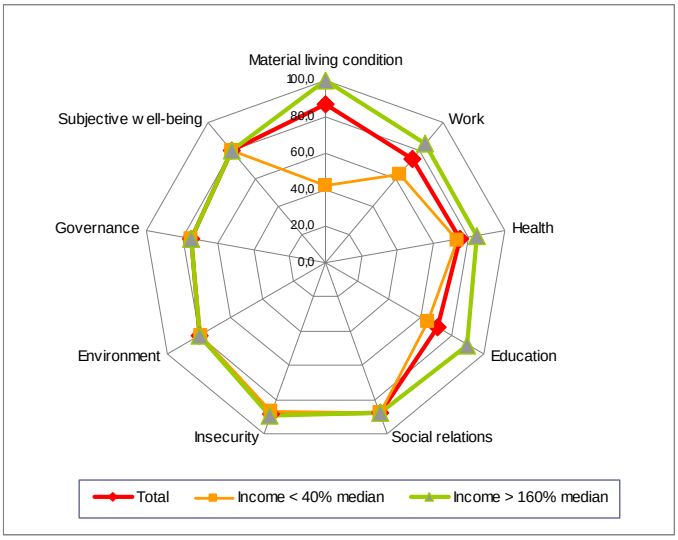
Radar 1. Comparison according to age, 65 and over, all. 2010-2012



- According to extreme income bands

Persons situated at the lower end of the income scale are in a situation of clear disadvantage with regard to *Material living conditions, Work, Education, and Health*. Their situation is practically the same as the situation of the people situated at the upper end of the income scale for the dimensions *Social relations, Insecurity, Subjective well-being, Environment, Governance*.

Radar 2. Comparison according to extreme income bands. 2010-2012

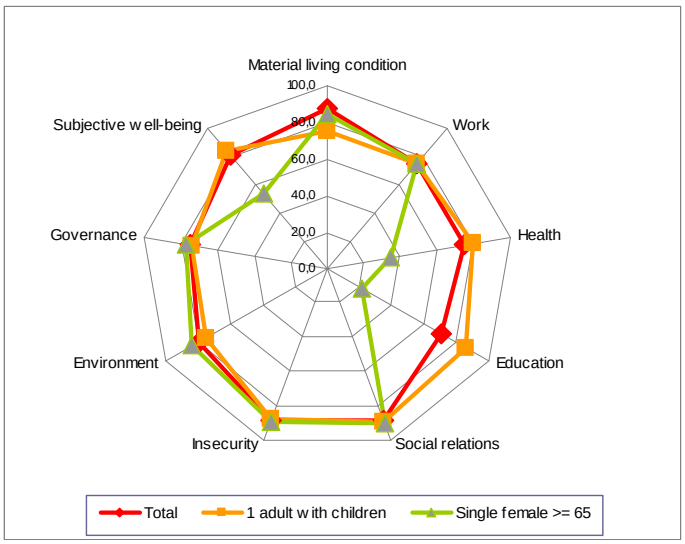


- According to the composition of the household

Among the different type of households, women living alone of 65 years of age and over accumulate disadvantages relating to age in the dimensions: *Education, Health, Subjective well-being*. In the dimension *Material living conditions* their situation is slightly worse than the situation of the population as a whole. In the dimensions of *Environment, Insecurity, Social relations, Governance*, their situation practically matches the situation of the population as a whole.

Families formed by 1 adult with children, which usually correspond to young people, have a situation of disadvantages in the dimension of *Material living conditions*, but they present advantages in the dimensions of *Health* and *Education* on account of their lower age.

Radar 3. Comparison according to type of household. 2010-2012



4.1.2 Time evolution of the CQoLI

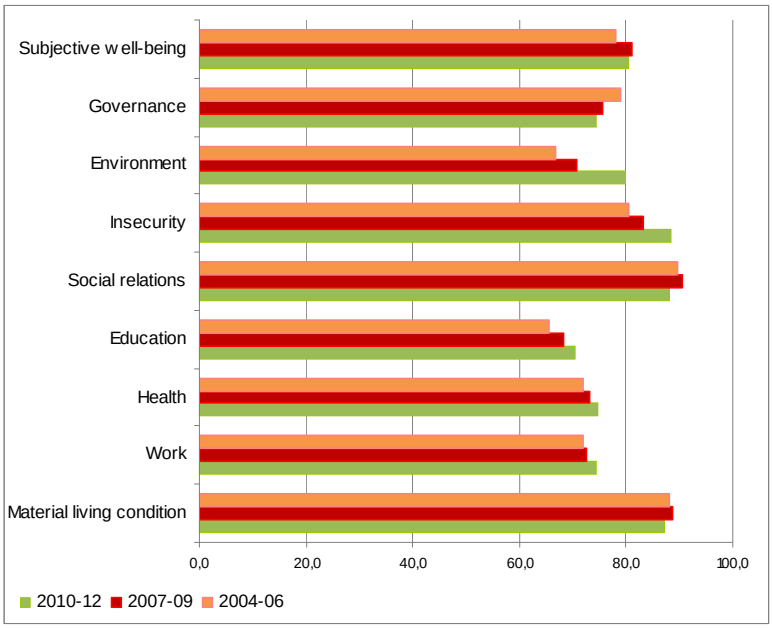
Upon analysing the evolution of the different dimensions of CQoLI in the three periods of time considered, the direction of the change (positive or negative) is different in each one of them. In accordance with the indicators chosen in this article to form the Composite Quality of life Index, a positive change has taken place in the following dimensions: *Environment, Insecurity, Education, Health and Work*.

Without taking into consideration the categories of population to which they belong, the percentage of people living in areas suffering from pollution or noise (*Environment*) and the percentage of people living in areas with delinquency or vandalism (*Insecurity*) have decreased. In relation to the dimensions of *Education* and *Health*, there has been a reduction in the percentage of people who have not completed secondary education and the percentage of persons aged 16 years old and over who report at least one of the three hardships (they declare a poor or very poor health status; limitation in their daily activity due to a health problem; have not been to the to the doctor or dentist when in need). In relation to the dimension *Work,* the percentage of people in work who are not satisfied with their job has decreased.

The dimension of *Subjective well-being* has undergone a positive change between the period 2004-06 and 2007-09 in that the percentage of persons aged 16 years old and over who do not consider themselves happy has declined; but a negative change has taken place between the period 2007-09 and 2010-12, with a slight increase in the percentage of people who do not regard themselves as happy.

The evolution of the dimensions *Governance* (% of persons aged 16 years old and over who have little confidence in the institutions), *Social relations* (% of persons aged 16 years old and over whose frequency of meeting friends, relations or colleagues is low, once a month at the most), *Material conditions* (population at risk of poverty, population with severe material hardships) has been negative in this period of time, with an increase in the percentage of these people.

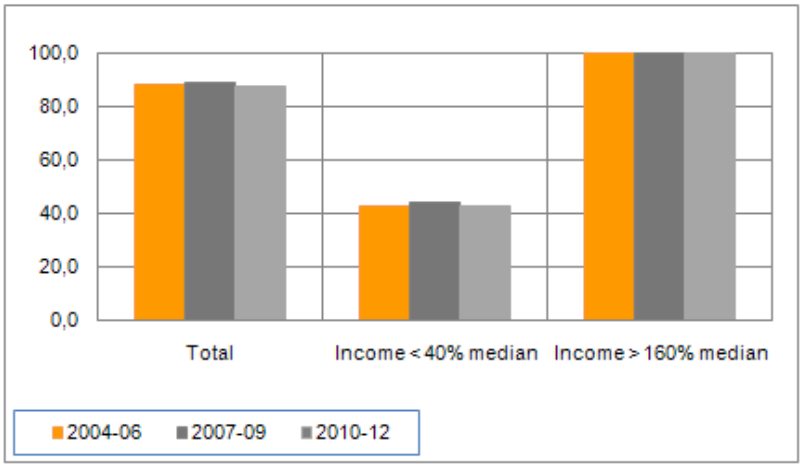
Figure 1. Time evolution of the components of the CQoLI



A more comprehensive analysis of the time evolution of the different dimensions of the CQoLI would entail studying this evolution for the different categories of population (gender, age, income level, type of household, nationality, size of the municipality, etc.), but this goes beyond the purpose of this initial approach to a measurement of the CQoLI.

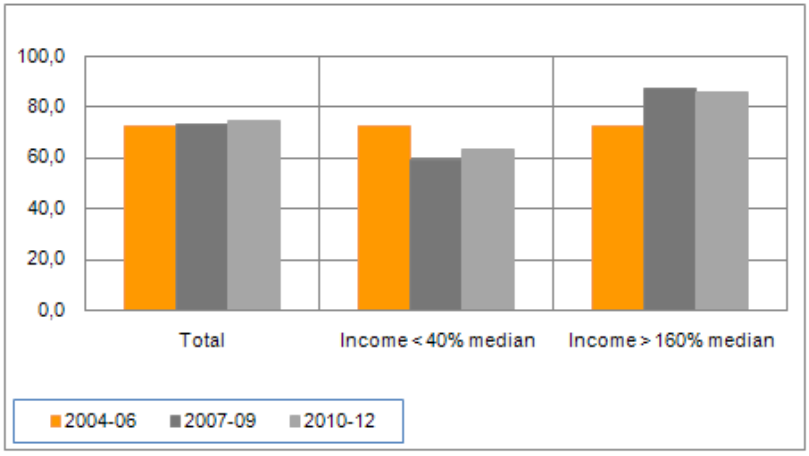
By way of example, we set out below the time evolution of the dimensions *Material living conditions* and *Work* according to income levels.

Figure 2. Time evolution of the material living conditions according to income levels



For the population as a whole there is a very slight decrease in the value of the indicator chosen in a positive sense (population at no risk of poverty, population without severe material shortcomings), but it rises for the population with income levels below 40% of the value of the median.

Figure 3. Time evolution of the work according to income levels

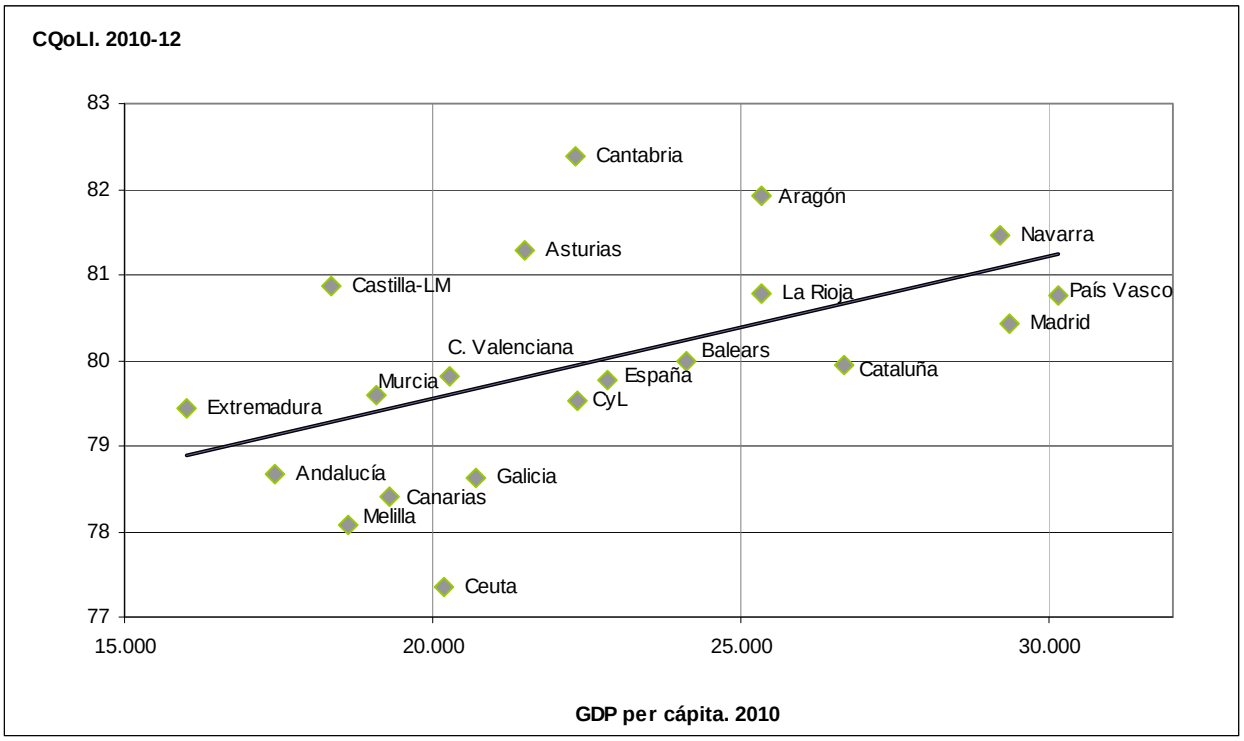


In the population as a whole a positive evolution takes place in the percentage of people in work satisfied with their job, but this is not the case for the population with an income below 40% of the value of the median, which undergoes a decline in the value of the indicator in the period 2007-09 and a slight increase in the period 2010-12, without reaching the value of the period 2004-06.

4.1.3 The CQoLI and the GDP by autonomous community

Through having a numerical datum of the CQoLI by autonomous community we may compare this with the per capita GDP. It may be observed how the conclusions that are drawn from one other indicator differ quite considerably. Although there is a certain correlation between economic level and quality of life measured with the CQoLI, there are cases, such as that of Cantabria or the Canary Islands, which are far from the straight line. In the case of Cantabria, although its per capita GDP even lies slightly below the national value, it stands out in such dimensions as Work (3rd), Education (1st), and Insecurity (5th).

Figure 4. Comparison of the CQoLI 2010-12 with the GDP 2010



4.2 SYNTHETIC INDICATOR (SQoLI)

The SQoLI is constructed following a different approach. We start off from a single source, in this case the Living Conditions Survey. Since the LCS includes questions from 5 of the 9 dimensions, the SQoLI is necessarily limited to these. For each individual in the sample the "hardships" that he or she has are calculated. The hardships will be:

- Be below the poverty threshold (60% of the median of the average income). Dimension 1.
- Suffer from material shortcomings (4 of 9 items). Dimension 1.
- Have health needs (it is the synthetic indicator D35 defined in section 4.1). Dimension 3.
- Have en educational level below secondary. Dimension 4.
- Suffer from local delinquency or vandalism. Dimension 6.
- Suffer from environmental pollution problems. Dimension 7.

As we have defined 6 hardships, we associate each person with one class according to the number of hardships he or she has. Accordingly, we define 4 classes:

- High quality of life (HQL): no hardships.
- Normal quality of life (NQL): 1 hardship.
- Low quality of life (LQL): 2 or 3 hardships
- Very low (VLQL): 4 - 6 hardships

We therefore group the whole population of the sample (persons over 16 years of age) into those four classes and for each human group *h* that we define we create a synthetic quality of life index in the following way:

$$SQoLI_h = (-1)* P_{VLQL} + (-1/2)* P_{LQL} + P_{HQL}$$

Where P_{VLQL} is the percentage of population with a very low quality of life, analogously with all the other classes. Thus, for a human group in which 100% had a very low quality of life, we would get SQLI = -100, and for one in which no person had any hardship, we would get SQLI = 100.

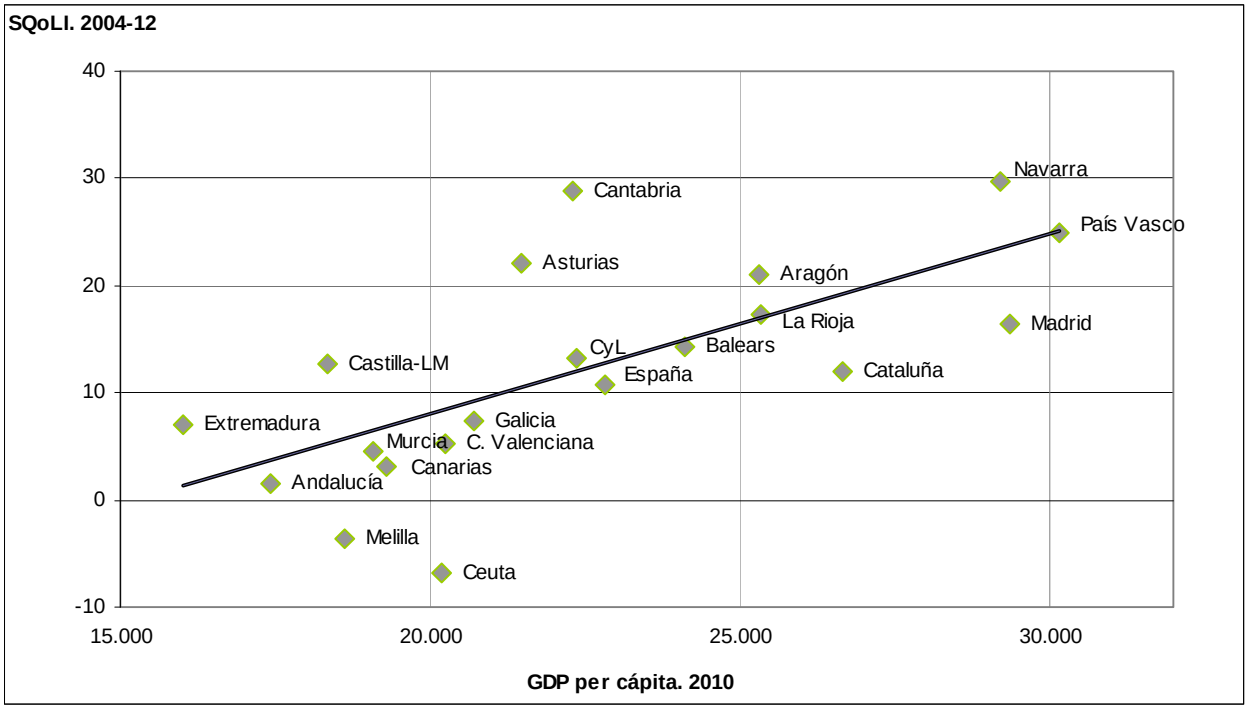
The values of SQoLI for the groups considered in this study are shown below:

Table 11: Synthetic Quality of Live Indicator for 5 dimensions (SQLI). 2004-2012

	2004	2005	2006	2007	2008	2009	2010	2011	2012	Media
Total	**4,5**	**2,0**	**4,4**	**6,8**	**12,9**	**10,6**	**16,0**	**19,6**	**20,2**	**10,8**
Age										
From 16 to 24 years	26,8	24,7	25,0	27,1	30,9	29,1	33,3	37,5	35,1	29,9
From 25 to 64 years	11,0	9,1	12,2	14,2	21,7	19,0	25,4	29,3	30,25	19,1
65 years and over	-33,5	-37,7	-36,3	-32,5	-29,4	-30,2	-26,4	-23,3	-21,3	-30,0
Gender										
Male	9,3	6,5	9,6	11,4	17,0	14,1	19,9	22,9	24,15	15,0
Female	-0,3	-2,3	-0,6	2,2	9,2	7,4	12,2	16,5	16,65	6,8
Type of household										
Single male	-0,9	3,1	10,6	6,4	10,0	7,5	15,6	19,9	21,2	10,4
Single female < 65	1,7	1,8	0,9	4,8	16,0	15,0	19,2	21,5	19,6	11,1
Single female >= 65	-43,9	-46,9	-44,9	-43,2	-40,4	-41,1	-35,9	-29,5	-29,9	-39,5
2 adults < 65	16,0	15,3	16,5	17,8	26,1	20,7	25,2	30,1	33,25	22,3
2 adults at least one >= 65	-28,7	-31,7	-30,7	-25,6	-23,4	-21,7	-17,8	-14,8	-12,2	-22,9
2 adults with 1 child	17,5	14,6	18,8	19,8	27,1	24,0	32,7	40,3	36,55	25,7
2 adults with 2 children	19,3	16,7	20,7	23,3	29,4	27,1	31,1	36,1	35,15	26,5
2 adults with 3 or more children	5,7	12,7	5,7	8,6	12,5	10,3	14,9	17,4	24,9	12,5
1 adult with children	2,7	0,1	-2,1	9,4	11,6	4,8	9,0	23,2	17,45	8,4
Household income level										
Income < 40% median	-46,1	-47,1	-47,2	-45,9	-42,9	-44,3	-39,7	-35,7	-38,2	-43,0
Income > 160% median	33,1	29,1	35,7	38,3	45,5	42,2	49,0	52,7	54,05	42,2
Autonomous Community										
Andalucía	-8,5	-3,4	-5,2	-3,7	5,1	0,1	8,8	7,2	13,5	1,6
Aragón	10,2	2,1	14,7	11,3	28,0	33,3	28,7	30,0	31,9	21,1
Asturias, Principado de	22,0	10,1	9,3	10,8	25,2	24,0	28,1	32,7	36,3	22,0
Balears, Illes	15,9	4,4	8,2	15,5	11,4	15,0	16,2	16,3	26,1	14,3
Canarias	-12,4	-2,1	1,2	4,7	11,4	-3,4	16,1	7,9	4,85	3,1
Cantabria	24,7	20,4	26,6	26,8	40,2	31,3	29,7	27,4	32,9	28,9
Castilla - La Mancha	16,4	12,2	7,3	6,9	9,3	6,2	18,6	16,1	21,05	12,7
Castilla y León	2,7	1,6	5,7	12,2	15,0	18,2	16,4	21,8	26,1	13,3
Cataluña	9,9	2,8	8,9	7,6	14,7	10,3	12,5	25,3	16,45	12,0
Comunitat Valenciana	-3,5	-6,9	-0,5	0,3	-0,4	6,0	15,4	23,0	14,45	5,3
Extremadura	4,1	-2,5	10,5	5,3	4,5	7,7	1,3	10,5	21,4	7,0
Galicia	2,7	1,3	-2,6	4,0	11,1	5,1	14,3	12,7	17,95	7,4
Madrid, Comunidad de	8,9	5,2	8,8	12,6	17,7	14,6	24,0	24,7	31,7	16,4
Murcia, Región de	-1,6	-5,7	-16,7	-1,8	21,5	5,3	7,2	25,4	7,1	4,5
Navarra, Comunidad Foral de	22,2	24,4	19,3	35,6	38,2	33,6	29,5	27,6	37,85	29,8
País Vasco	21,0	13,6	19,0	23,0	27,4	35,9	24,4	29,3	31,3	25,0
Rioja, La	19,9	13,5	16,6	10,0	15,7	14,0	26,8	19,1	20,8	17,4
Ceuta	-36,7	-10,2	-21,5	-18,0	-8,6	10,6	5,0	23,9	-5,05	-6,7
Melilla	-32,2	-25,4	-16,3	-6,5	8,2	-6,9	-5,6	30,5	21,05	-3,7
Nationality										
Spanish	4,5	1,8	4,3	6,7	13,2	10,7	16,2	19,8	21	10,9
Foreign	5,3	8,3	5,7	8,1	9,6	11,1	12,5	15,3	7,7	9,3
Size of the municipality										
Less than 10,000 inhabitants	5,5	0,9	6,2	6,7	10,3	11,3	13,1	16,3	19,8	10,0
From 10,000 to 50,000 inhab.	7,8	4,6	6,8	6,2	13,7	11,2	16,4	19,7	21,3	12,0
From 50,000 to 100,000 inhab.	4,8	6,5	7,7	10,0	16,6	16,8	18,9	20,9	21,1	13,7
From 100,000 to 500,000 inhab.	3,1	0,3	3,9	5,7	14,8	8,0	16,4	17,8	18	9,8
500,000 inhab. and over	-0,2	-1,6	-3,2	6,7	9,8	8,6	16,8	25,4	21,8	9,3

Table 11 permits an analysis of an extraordinary richness. We can compare the quality of life of all the groups chosen. In this way, we would assert that persons with a high income level have the highest quality of life, followed by young people.

Figure 5. Comparison of the SQoLI 2004-2012 with the GDP 2010



The comparison by regions with GDP per capita is very similar to the one made for CqoLI. Again, autonomous communities such as Navarra (now in first position) and Cantabria stand out, while Ceuta and Melilla remain last.

4.3 COMPOSITE OR SYNTHETIC INDICATOR?

Both indicators are just two examples of the many possible indicators that may be constructed. Naturally, they share the limitations that may always be associated with the choice of a single figure to reflect a reality with so many facets as the quality of life, but they also share the attractive advantage of synthesizing the information in one item. There are differences among them worthy of consideration. Furthermore, the composite indicator allows us to gather information from various sources, with different methodologies or in different periods, which seems more in keeping with the idea of multidimensionality. It does not appear logical - if we maintain that the GDP (which is constructed with innumerable sources) is not adequate to reflect the progress of societies – that we should want to replace it with an indicator, which, as in the case of the synthetic one, comes from a single source, which could be a survey. In addition, this synthetic indicator would be contaminated by all the biases, limitations or design defects that the survey had.

On the other hand though, the synthetic indicator reflects more accurately the recommendations on the measurement of accumulation of effects on the same individuals (or the opposite, the compensatory effect). Thus, we may study whether they are the same persons that have at the same time needs in Education, Health, the Environment and Insecurity, or else whether those needs are offset. That analysis of the combined effect of different limitations or needs in the same individuals is not permitted by the composite indicator but it is by the synthetic one.

The effect of the weightings associated with the different dimensions should also be studied when it comes to aggregating in an index, no matter which, and in both

indicators considered in this study there are implicit weightings that the reader may consider debateable.

Furthermore, the synthetic indicator is confined at present to the dimensions contemplated by the survey from which it is constructed, in this case only 5.

Anyway, we should point out that, as may be verified, the comparison that has been made between both and the per capita GDP show significant similarities. Both apparently reflect – with their slight variations – a single underlying phenomenon which, though surely biased and in any case approximate, both are revealing.

5 Construction of quality of life indicators in official statistics: a few reflections

Everything stated here so far only serves to illustrate one of the possible paths that may be taken by public statistics in the measurement of the quality of life in the coming years. What may be assured is that there are going to be advances and decisions on this matter in the next few years. Perhaps the construction of global indicators is not the first of the items to be considered, but it is true that any attempt to present different dimensions at the same time implicitly entails a global indicator, that may be as simple as the size of the area formed by the different indicators chosen in the construction of a mere radar graph.

There are a number of countries that have initiated studies directed towards the multidimensional measurement of quality of life, amongst which we may single out France, the United Kingdom or Australia. At the time of writing this text Eurostat prepares a panel of quality of life indicators. No matter how arbitrary the choice of dimensions, indicators and thresholds may still appear to be, the development of a set of European statistics on this matter is apparently already under way.

In the hypothetical scenario of periodic construction of quality of life indicators, we may ask ourselves about the challenges to be met by official statistical production.

It seems clear that the former would involve a prior modification of the EU-SILC to bring it into line with this new reality by measuring in a more detailed fashion dimensions that are now measured very loosely (insecurity, environment) or simply are not measured (governance, social relations). This seems better than designing new surveys for those ends, which, right from the outset, would involve dispensing with the analysis of the joint distribution that the synthetic indicators obtained from EU-SILC would provide.

It does not seem realistic, however, to consider that EU-SILC is going to become a unique instrument. Even though a part of the dimensions were considered in the yearly EU-SILC survey and other aspects were subject to study in modules of the survey carried out every certain number of years, items would always remain outside EU-SILC. An example is the measurement of subjective well-being that is beginning to produce very clear literature in relation to its measurement and conceptualisation. One of those we could refer to as "sub-dimensions" of the subjective well-being is "affect". One of the clearest indicators for measuring involvement stems from the use-of-time surveys. In the French INSEE survey of 2010 a question is added in the diary of activities on whether each activity performed constitutes a pleasant moment. This type of question opens up a world of possibilities of utilisation and a qualitative leap both for the time use surveys and for the measurement of the quality of life. We may therefore obtain new evidence in connection with the well-being associated with

certain activities. Is leisure always an agreeable activity or only when enjoyed of one's own choice? Is the time spent on travelling a disagreeable time? How to associate work with quality of life? By way of example, does care-giving represent, depending on the case, a burden that is detrimental to the quality of life or quite the opposite?

Present or future surveys about health, security and victimisation, use of technology, amongst others, are going to shed a lot of light on the quality of life, and they should go on to form part of the measurement model.

In any case, measurement of the quality of life should, as we have already pointed out, take a qualitative leap forward, passing from the academic sphere in which it moves basically at the present time to that of the statistical offices, and to this end decisions in defining some terms will have to be made over the next few years. In this respect, nothing differentiates the measurement of quality of life from other concepts employed in harmonized European or world statistics. Is the actual definition of unemployed not an arbitrary decision?

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