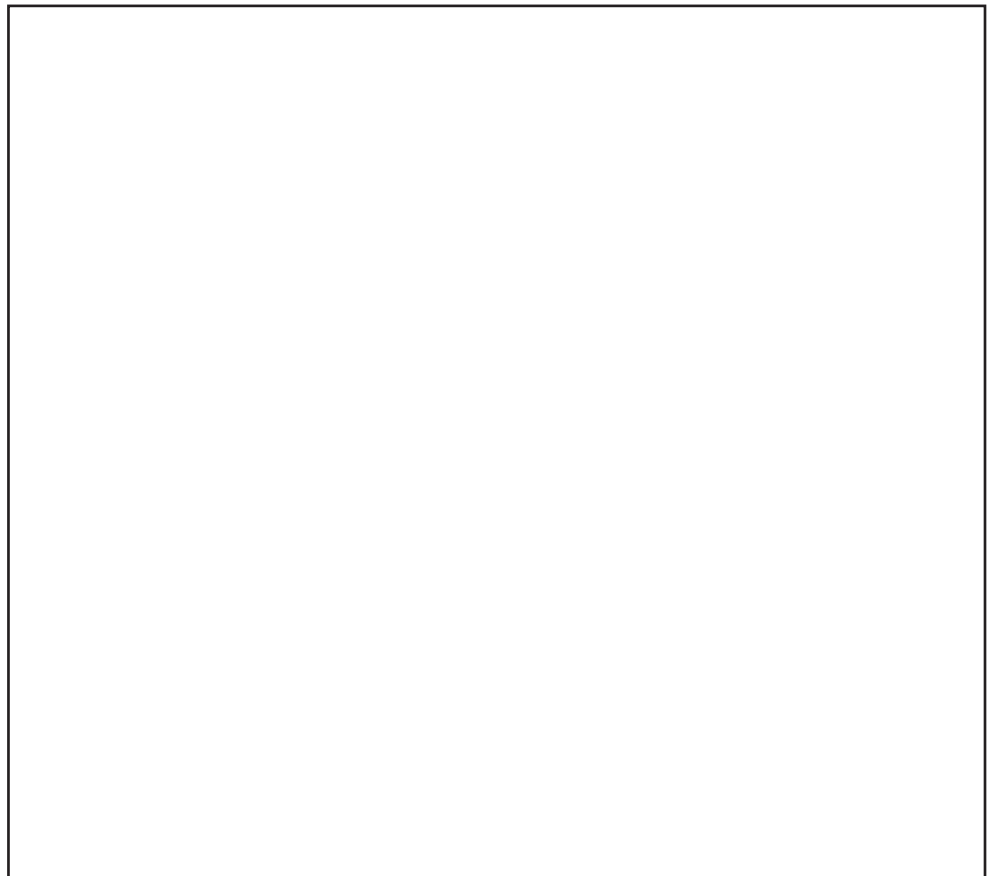




Eurofound

# Quality Assessment of the 2nd European Quality of Life Survey



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# 1 Introduction

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a European Union body with long expertise in monitoring living and working conditions in Europe. By providing timely and in-depth analysis of information related to this area Eurofound contributes to the development of new policies for the improvement of the lives of European citizens.

The European Quality of Life Survey (EQLS) has been carried out every four years by Eurofound. It aims at collecting statistical information on the quality of life in Europe. Quality of life, which has gained prominence in social research study since the 1970s, is a broad concept concerned with overall well-being within the society. It refers to the ability of people to achieve their goals and choose their ideal lifestyle. In that sense, the quality of life concept goes beyond the living conditions approach, which tends to focus on the material resources available to individuals.

EQLS provides a unique coverage of a number of indicators related to quality of life. The dimensions covered by the survey can be summarised as following:

- Economic resources and living standard
- Quality of housing and local environment
- Employment and quality of jobs
- Family life and households
- Work-life balance
- Community life and social participation
- Health and access to health care
- Knowledge, education and training
- Subjective well-being (including happiness/ life satisfaction)
- Quality of society (including quality of public services, trust in democratic institutions, perceived tensions between social groups)

The 1st EQLS was carried out in 2003 covering 28 European countries, i.e. the then EU 15 Member States, the 12 countries that joined EU in 2004 and 2007 and Norway. The 2nd wave of the EQLS was carried out in the end of 2007 in 31 countries, i.e. the 27 EU Member States, the three Candidate countries (Croatia, FYROM and Turkey) and Norway. The target population was all residents aged 18 years and over, having lived in the country for the last six months preceding the survey, speaking the national language and living in private households.

The survey was conducted by face-to-face interviews in the households of respondents. In three countries (Netherlands, Norway and Sweden) potential respondents were first contacted by phone. In most countries, the sample was set to deliver 1000 interviews with the exception of Poland, Italy, France, the United Kingdom (1500 interviews) and Germany, Turkey (2000 interviews).

The present document is reporting on the quality of the 2nd EQLS. It assesses the quality of the survey processes in all its stages, starting from the sampling design to the final dissemination of data. It also assesses the quality of the survey output on the following five key quality components set out by the European Statistical System: Relevance, Accuracy, Timeliness, Accessibility and clarity and Coherency and comparability. On the basis of the assessment it makes recommendations for the forthcoming rounds of the survey.

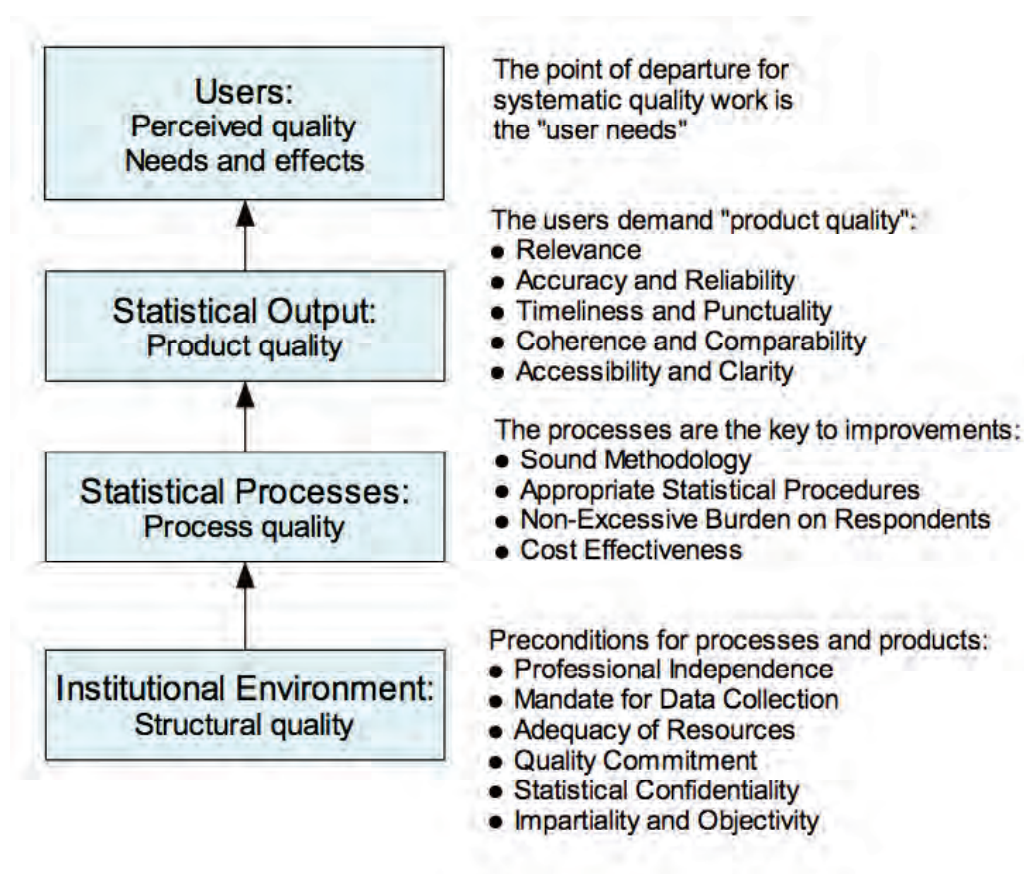
The report is organised as follows: Chapter 2 presents general issues about quality assurance and also introduces the distinction between quality assessment of the survey process and quality assessment of the statistical output. Chapter 3 assesses the quality of the main stages in the survey process based on specific key process variables. Chapter 4 presents the quality assessment of the statistical output of the 2nd EQLS which is made on the basis on the five quality dimensions. Chapter 5 summarises the conclusions extracted from the quality assessment of the 2nd EQLS (both process and output). It also provides recommendations for improvement of the 3<sup>rd</sup> round of the survey which is implemented in 2011.

## 2 Quality Assessment

Quality assessment of a statistical product is very much dependant on the availability of documentation on user needs, statistical processes and the statistical product itself. Figure 1 shows how these three components and the institutional environment of the organisation that produces the statistics are related.

The objective of this report is to analyse information available mainly at the process and product level while user needs have already been analysed in the report 'EQLS data user survey 2010'. The following chapters describe the methods and techniques commonly used for measuring product processes and product quality. The ultimate goal is to suggest improvements on the EQLS survey process that will have an impact on the quality dimensions of the statistical output.

**Figure 1. Model for Total Quality and Code of Practice (Sæbø (2006)<sup>1</sup>**



<sup>1</sup> Seabo, H.V. (2006), 'Systematic quality work in official statistics – theory and Practice, Statistics Norway

### 3 Quality Assessment of the Survey Process

This chapter makes an evaluation of the quality of statistical survey process, covering all stages from the EQLS survey design to the data reporting and dissemination. For the needs of the 2nd EQLS and in order to analyse the quality of the EQLS survey process, this has been decomposed into the following six major stages: (a) Initial Design, (b) Conceptual Design, (c) Survey Implementation, (d) Data Processing, (e) Data Dissemination – Reporting, and (f) Post-Survey Actions. Each one of these processes may be further decomposed into sub-processes.

Monitoring and improving process quality in statistical operations is a key part of achieving continuous quality improvement<sup>2, 3</sup>. Key process variables are defined as “those factors that can vary with each repetition of the process and have the largest effect on critical product characteristics, i.e. those characteristics that best indicate the quality of the product”.

Process variables are in general different from quality indicators, which are more closely related to output quality. Linkage of process variables with the European Statistical System (ESS) quality dimensions, analysed in Chapter 4, will be made where possible. The following table shows the linkage between the five ESS quality dimensions and the six survey processes in the whole survey cycle.

**Table 1. Cross-tabulation of the survey processes with the five ESS quality dimensions**

Survey Process / Quality Dimension	Initial Design	Conceptual Design	Survey Implementation	Data Processing	Data Dissemination - Reporting	Post-Survey Actions
Relevance	Consultations with stakeholders and users/experts	Finalisation of Questionnaire				Further Analysis with focus on special issues
Accuracy	Update of Questionnaire & Update of Methodological Specifications	Finalisation of Questionnaire, Determination of Survey Design, Sampling, Data Collection Design, Data Processing Design	Sample Implementation & Data Collection	Data Input, Data Coding, Data Editing, Weighting & Estimation		Assessment of Measurement Errors, Input for Next Implementation
Timeliness & Punctuality		Data Collection & Data Processing Design	Conformity with Schedule	Time spent in Examination of Questionnaire and Data Editing	Timely Release of Data	Input for Next Implementation
Accessibility & Clarity					Detailed Methodological Description & Other Metadata, Final Survey Dataset	Further Analysis with focus on special issues
Comparability & Coherence			Conformity with Sample Design	Data Coding & Data Editing	Metadata & Final Survey Dataset	Further Analysis with focus on special issues

<sup>2</sup> Morganstein D and Marker D A (1997). Continuous Quality Improvement in Statistical Agencies, in Lyberg L, Biemer P, Collins M, De Leeuw E, Dippo C, Schwarz N, and Trewin D (eds.), Survey Measurement and Process Quality, New York: Wiley, pp. 475-500

<sup>3</sup> Eurostat (2003), “Handbook on improving quality by analysis of process variables”.



In the assessment of the survey process we will assess each process along with its sub-processes separately by presenting key process variables in each stage.

Overall, we suggest that systematic monitoring of process indicators is considered for future implementation of the survey. It is moreover recommended that real-time, rather than post-survey measurement of process variables is considered<sup>4</sup>. Real-time evaluation enables prompt identification and solving of possible problems.

### 3.1 Initial Design

The Initial Design process starts from the point where a decision to undertake a new EQLS round is taken and ends with the selection of survey contractor. This phase mainly involves the consultations with stakeholders and users / experts groups and the update of the survey questionnaire.

The main channel through which Eurofound receives information on users' needs is through meetings with experts from various user organisations. Experts' suggestions on the design and the content are taken into account in the survey design and the questionnaire drafting. This demonstrates a very responsive attitude towards users and their needs and to a large extent assures the continuing relevance of EQLS data. The composition of the expert group includes stakeholders' representatives, statisticians and academics.

During the meetings with experts both methodological and content aspects of the questionnaire are discussed based on proposals from the EQLS team of Eurofound. The group then provides recommendations on issues where consensus has been reached.

The main requirements of users in terms of methodology are:

- Provide results of high accuracy appropriate for policy-making purposes at a European level.
- Achieve sufficient accuracy for detailed figures (by country, age, education, etc.) so that sizeable differences between subpopulations and trends can be identified.
- Produce highly comparable data based on harmonised methodology across member states of the EU, candidate countries and other European countries.
- Adapt the content of the survey to the evolving needs of Eurofound's stakeholders and other users while maintaining, to a limited extent, a core set of variables unchanged so that trends can be identified and estimated.
- Distribute anonymised datasets to interested researchers after a certain period of time.
- Provide extensive documentation on the survey methodology and implementation including quality assessment so that users can make the best use of data for their purposes.
- Meet the aforementioned user needs with a specified budget.

#### 3.1.1 Identification and measurement of key process variables – Initial Design

The following three tables summarise the main findings on the process indicators for each one of the sub-processes of the Initial Design process:

1. Consultations with stakeholders and users / experts
2. Questionnaire / survey re-design
3. Tendering

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<sup>4</sup> Marker D A. *Using Real-Time Process Measures to Improve Data Collection*. Available at [http://epp.eurostat.ec.europa.eu/portal/page/portal/ver-1/quality/documents/USING\\_REAL-TIME\\_PROCESS\\_MEASURES\\_TO\\_IMPROVE\\_DATA\\_COLLECT.pdf](http://epp.eurostat.ec.europa.eu/portal/page/portal/ver-1/quality/documents/USING_REAL-TIME_PROCESS_MEASURES_TO_IMPROVE_DATA_COLLECT.pdf)

During the initial phase, Eurofound has taken into consideration the results from post-survey activities of the previous round. The evaluation of the 1st EQLS and the recommendations proposed for the following round has been summarized into the following documents: ‘Methodological Review of 1st EQLS’ and ‘Recommendations for the Methodology of 2nd EQLS’. Moreover, two written consultations have been prepared addressing policy gaps in the survey. Conceptual review that helped laying the foundation for the content of the survey has been drafted in the paper ‘Monitoring Quality of Life in Europe’<sup>5</sup>.

**Table 2. Initial design – Consultations with stakeholders and users / experts**

Variable	Description	Comments
Level of participation	Number of experts and organisations participating in consultations	The 1st EQLS was discussed in the Living Conditions Advisory Committee. The decision of having the survey in 2007 was embedded in the 4-year work programme <sup>6</sup> .  The EQLS project team (with two Research Managers and the Head of Unit from the Quality of Life team) was responsible of the design of the survey based on the expert reports and Advisory Committee discussions.
Requests for changes	Number of requests for changes recorded during the consultations	Requests for changes refer mainly to the introduction of new questions in the questionnaire to reflect new topics of interest and actions towards overall improvement of quality of the statistical output [4.1.2].
Concerns raised	Number of problems identified during the consultations	Main concerns raised by the users relate to the quality of the statistics, in particular with regard to relevance, accuracy, comparability, accessibility and clarity [4.1.2].

**Table 3. Initial design – Questionnaire / survey re-design**

Variable	Description	Comments
Number of new/modified questions	Number of new and modified questions in the questionnaire	The questionnaire was reviewed and improved in close cooperation with the Social Science Centre (WZB) questionnaire development group. About half of the 2003 questionnaire was retained.  Core questions have remained the same and new questions on the quality of governance, voluntary work, quality of society, health care systems, attitudes towards migrants, mental health, caring and housing have been added.
Time needed to fill in the questionnaire	The estimated average time required to fill in	The questionnaire was designed to fit into a 30 minutes interview.

<sup>5</sup> Available at: <http://www.eurofound.europa.eu/publications/htmlfiles/ef02108.htm>

<sup>6</sup> Available at: <http://www.eurofound.europa.eu/about/work/previous.htm>

	the questionnaire	
User satisfaction	The level of user satisfaction measured by appropriate index and survey (alternative process)	Results of the user satisfaction survey indicate that users have a generally positive view about the EQLS data, where quality is appreciated on all the dimensions. Users have been least satisfied with precision (sample size) and comparability over time. [4.1.2]

**Table 4. Initial design – Tendering**

Variable	Description	Comments
Number of requests for the tender specifications	The number of organisations that asked for the specifications documents	All (100%) organizations that asked for the specifications had got them.
Number of requests for clarification	The number of questions and requests for clarifications that were received by Eurofound	All (100%) of questions that were received regarding additional clarifications on the specifications had been answered.
Number of bids received	The number of consortia that submitted their bids on time.	75% of the tenderers have applied as consortia.
First bidders' score	The technical score that the winning bid received from the evaluators	The technical score (quality points) for the awarded consortium was considerably above the set threshold (70 out of 100).
Ratio of successful bidder's financial offer to estimated budget	The ratio of actual to planned contract value.	Tender specifications did not give budget estimation. Tenderers were asked to propose a budget in their bid.

### 3.1.2 Evaluation – Initial Design

Overall, the Initial Design process is well established: consultations with users and stakeholders on the content and design of the survey are carried out and selection of questions is based on standard criteria (recent policy developments and demands, successful implementation of newly introduced questions in other surveys, etc.). The tendering process is open, announced through various channels as well as through Eurofound website, with well drafted specifications that set out quality and performance standards.

Based on the available, mostly qualitative information some actions are suggested that could be implemented in the future to further promote and develop this process:

- Stimulate greater participation of more users from variety of user organisation to Expert Group meetings
- Improve the focus of the survey:
  - Filter policy requirements and limit revisions of the questionnaire to the extent possible. Keep the core set of variables reasonably large and unchanged. This is mainly to enable comparability over time (e.g trend analysis).
  - The survey covers a wide range of topics. Remove questions/variables from the questionnaire where relevance is outdated with the ultimate goal to reduce response burden.

- Take all the necessary actions (see also below) to improve the quality aspects of the statistical output with which users are least satisfied. Prioritize actions according to the priorities set by the users.
- Carry out post contract evaluation, including detailed costs and timing, in order to learn any lessons for the future and consider adding in the tender specifications indications about cost and time.

## 3.2 Conceptual Design

During this process the questionnaire takes its final form, the survey is designed and the sample/data collection and data processing specifications are made available for network members (fieldwork organisations in each surveyed country) for the subsequent survey implementation.

Most of the steps of the conceptual design have an effect on the Accuracy dimension of the statistical output (Section 4.2). The main accuracy shortcomings identified for the 2nd EQLS are those of the relatively small sample size at national level and low response rate.

The survey design was developed taking into consideration all the discussions and comments received during the meetings with stakeholders and experts (see 3.1 Initial Design). The aim was to establish a design that would provide high quality data reflecting user needs.

### 3.2.1 Identification and measurement of key process variables – Conceptual Design

The following tables summarise the main findings on the process indicators for each one of the sub-processes of the Conceptual Design process:

1. Finalisation of questionnaire
2. Survey design
3. Sampling / data collection design
4. Data processing design

**Table 5. Conceptual design – Finalization of questionnaire**

Variable	Description	Comments
Number of questions	Number of questions in the questionnaire	The EQLS 2007 questionnaire had 71 questionnaires, as opposed to the 65 questions of the EQLS 2003 questionnaire.  The questionnaire was finalised in close cooperation with the contractor (TNS). Contractor was responsible of the fine-tuning as well as the whole translation process. Pre-test and pilot were carried out.
Time to fill the questionnaire	The average time required to fill in the questionnaire	Interview duration varies from 10 to 145 minutes, with average duration 36.1 minutes (the median value being 36 minutes). Response burden is therefore not negligible.

**Table 6. Conceptual design – Survey design**

<b>Variable</b>	<b>Description</b>	<b>Comments</b>
Conformity with specifications	The extent to which specifications are followed	No important deviations with regard to specifications of survey design.
Methodological soundness	The correctness and appropriateness of the selected methodology for the task at hand	<p>The survey covered 31 countries - the EU 27, Croatia, FYR Macedonia, Norway, and Turkey. More than 35,000 respondents aged 18 years or older were interviewed, whose usual place of residence is in the territory of the country included in the survey. Respondents were interviewed face-to-face.</p> <p>TNS-Opinion, contractor of the 2nd EQLS, assigned network members to draw the random samples and conduct the interviews in each country.</p> <p>The relatively small sample sizes do not allow sound and detailed analysis of sub-groups within countries [4.2.1]</p>

**Table 7. Conceptual design – Sampling / data collection design**

<b>Variable</b>	<b>Description</b>	<b>Comments</b>
Conformity with specifications	The extent to which specifications are followed	<p>There are no deviations concerning the sample size per country. For 24 of the countries, the achieved sample size was at minimum 1,000 according to the tender specifications. For France, Italy, Poland and the UK the sample size was at minimum 1,500. In Germany and Turkey it was 2,000 as set by the tender specifications.</p> <p>In most countries respondents were surveyed in line with specifications, i.e. face-to-face. The only deviations were in the Netherlands, Sweden and Norway, where sampling methodology deviates in that (part of) the sample was first recruited by telephone.</p>
Percentage of CAPI Interviews	The percentage of interviews proposed to be done with CAPI	<p>No specifications were given on the extent of CAPI interviewing. The choice between PAPI and CAPI was given with the EF preference of having CAPI wherever possible.</p> <p>CAPI has been used in 19 out of the 31 countries (61.3%).</p>
Average training time	The average time spent on training per interviewer	<p>According to the specifications, specific training must be provided to all interviewers in each country before commencing fieldwork.</p> <p>No detailed information is available on realised average interviewers' training time.</p>

Interviewers' workload	The average number of interviews per interviewer in each country and total.	On average there were approximately 15 interviews per interviewer (the ratio interviews/interviewer ranged from 2 to 58).
Percentage re-interviewing	The percentage of interviews subject to quality control and re-interviewing.	<p>According to the specifications, back-checks (re-interviews) should be carried out on 20% of the realised interviews.</p> <p>Most countries back-checked at least 20% of their interviews (min=14.3%, max=100%). The total median for the survey was 20.7%.</p>

**Table 8. Conceptual design – Data Processing Design**

Variable	Description	Comments
Conformity with specifications	The extent to which specifications are followed	<p>According to the tender specifications the data provided to Eurofound must have been edited and corrected.</p> <p>Simple if-then-else rules were implemented on the micro-data to identify errors. The data was checked by TNS and Eurofound team and subsequently edited and corrected.</p>
Number of edits	Total number of planned edits	<p>Tender specifications did not propose a set number of edits. No editing rules have been described and documented for the identification of missing values (item non-response). Also, there is very little indication about method used to correct the data (estimation/imputation method, automatic corrections, other). However, imputation has been done for income variable only and only for 1/3 of the sample cases (by using mid-point of income in bracket as proxy for the household income).</p>
Number of variables subject to editing	Total number of variables that are subject to editing	<p>According to the tender specifications, edits should be implemented at both variable/question and person (respondent) level.</p> <p>Out of the 71 main questions, edits have been implemented in approximately half of them. Additional edits cover the questions on the household.</p>
Percentage of re-coding	The percentage of assigned codes subject to quality control and recoding.	<p>Not much information is available about re-coding. However, the re-coding has been done on only one variable (national education levels into international classification /ISCED).</p>
Soundness of weighting methodology	The correctness and appropriateness of the selected methodology for the task at hand	<p>According to the description of the weighting methodology applied by TNS: The definition of the target of the EQLS is the adult population in private households. In order to be representative in terms of gender, age, urbanisation level, region and household composition, a weighting procedure in two stages (two types of weighting</p>

		<p>coefficients) has been applied.</p> <p>The number of adults in the household is first applied as a design weight. This pre-weighting is necessary to correct the design effect of the sampling procedures. It equalises unequal selection probabilities for people from households of different size. It is important to underline that only one adult could be selected in the sample regardless of number of adults living in the household.</p> <p>The second stage (main rim weighting) compensates for differential non-response amongst sub-groups (non-response weights). The variables taken into consideration in the weighting procedure were: Age crossed with Gender, Urbanisation level, Region, Household size (adults in size of household).</p> <p>Moreover, rim-weighting has been efficiently applied and with the use of auxiliary information from reliable and up-to-date sources (Eurostat population data or data from national statistical offices) the weighting has diminished differences in the distribution of the weighted sample compared to the population. This conclusion has been drawn based on detailed national figures available. Moreover, generally rim-weighting (also known as raking) allows the inclusion of larger number of auxiliary variables than post-stratification techniques.</p>
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### 3.2.2 Evaluation – Conceptual Design

Overall the survey is designed in line with the tender specifications. However, the data processing design needs to be further established. Better monitoring and documenting of the editing procedures is therefore suggested in order to have a better picture of their impact on accuracy.

More specifically, the following areas for improvement are suggested:

- The wide range of topics covered by the survey has been identified as an advantage. However, greater coverage of topics is at the expense of giving greater detail to particular topics. Eurofound could consider establishing the core questionnaire for the EQLS, with the basic/main variables and have ad-hoc modules to satisfy current user needs. This ad-hoc module does not need to be repeated in every round. This practise has been followed in other surveys, like the LFS (e.g. LFS ad-hoc module of life-long learning, LFS ad-hoc module on the transition from work into retirement).
- Improve pilot testing of new/revised questionnaire in order to have a better estimation of average time needed to complete the questionnaire. The questionnaire was initially designed to fit into a 30-minutes interview, while the realised time was on average 36 minutes, with a non-negligible number of interviews exceeding 45-minutes duration.

- Information on the design of data validation/editing is poor. This does not necessary mean that no edits are carried out. However, the impression is that the design of data editing is not given the necessary attention. Consider introducing more edits to cover all questions/variables for the identification of errors and missing information.
- Add in the specifications that the contractor measures and reports to Eurofound data editing metrics (e.g. percentage of re-coding, ratio between wrongly records to total number of records, item response rate)
- Analyze item non-response: which questions tend to result in high rates of item non-response?

### 3.3 Survey Implementation

During the data collection process the network members (NM) in the countries included in the survey implement the sampling based on the given protocol and collect the actual survey data.

Interviewers were instructed to regularly return completed contact sheets to the national fieldwork organisation so that progress could be monitored. The network members sent an interim contact sheet file to TNS Opinion during fieldwork, so that response rates could be examined at an early stage of the survey (after 20% of the fieldwork was completed).

TNS has also been in close collaboration with Eurofound to discuss emerging issues during fieldwork. Eurofound was given access to a web-based monitoring system to follow-up fieldwork regularly. Eurofound received weekly reports on how many interviews were completed and on which days of the week. Besides meetings between Eurofound team and the contractor were held 3 times during fieldwork.

#### 3.3.1 Identification and measurement of key process variables – Survey Implementation

The following tables summarise the main findings on the process indicators for the Survey Implementation. No sub-processes have been identified.

**Table 9. Survey Implementation**

Variable	Description	Comments
Conformity with sample design	The extent to which sampling plans are followed	<p>Multi stage stratified random sampling has been applied in most countries (exceptions in 2 countries), with degree of urbanisation and region as stratified variables. Random route has been used to select the respondent at the last stage [4.2.1].</p> <p>Face-to-face interviews have been carried out to all countries. In two countries a telephone screening has been used to identify respondents willing to participate.</p> <p>It would be however preferable to use up-to-date sampling scheme (register of persons) wherever possible, as described in the tender specifications, rather than random-route practises or improve the current practise of random-route [4.2.2]</p>



Contact rates	The rate of contacts established with the total number of households selected in the gross sample.	<p>Contacts have been established with on average 87% (median value 88.4%) of the household selected in the gross sample [4.2.2].</p> <p>Overall interviewers have followed the rule: if they visit a house several times, then at least one visit should be in the evening and at least one visit should be at the weekend.</p> <p>However, ways need to be invented to further increase the contact rates. Further there is a lack of information on the contact times of the non-realised interviews for further analysis.</p>
Response rate	The ratio of completed interviews to the total number of contacted households	<p>Average response rate is 58.8%. Moreover, in nine of the countries sampled the response rates are less than 45%.</p> <p>The goal of 50% response rate set in the tender specifications has therefore not been achieved in all countries. Other pan-European social surveys target at even higher response rates: 60% (EU-SILC), 70% (ESS).</p> <p>Measures should be taken in the next round to increase response rates. [4.2.3]</p>
Agreement with re-interviewing	The degree to which initial and repeated interviews agree with each other	<p>The number of inconsistencies found between the initial interview and the back-checks varies between 0 and 171.</p> <p>TNS opinion has carried out a sound analysis of the inconsistencies and has identified the main reasons for them.</p>
Conformity with schedule	The delay in completing the fieldwork in days compared to original schedule	<p>According to the specifications, interviews should be carried out during September and October 2007 (i.e. 2 months).</p> <p>Most countries completed the survey on schedule (20/9 – 20/11/2007). Delays were mainly due to low response rates. One country, FYROM, conducted fieldwork in February 2008 due to delay with the funding for the survey.</p>
Real time quality assessment of fieldwork	Procedures implemented to check quality in real time	<p>Interviewers were instructed to regularly return completed contact sheets to the national fieldwork organisation so that fieldwork progress could be monitored. The network members sent an interim contact sheet file to TNS opinion during fieldwork, so that response rates could be examined at an early stage of the survey (after 20% of the fieldwork was completed).</p> <p>Eurofound and the contractor had 3 meetings where current issues were discussed. Eurofound had access to web-based monitoring system to follow up the fieldwork and Eurofound received weekly reporting on the progress.</p>

### 3.3.2 Evaluation – Survey Implementation

Overall survey implementation is satisfactory but not without problems. The main issues that require further consideration and improvement are the low response rate and the extensive and not always efficient use of the random route approach. The main focus of Eurofound should therefore be drawn to that direction:

- Establish optimal number of re-contacts based on sound analysis. Check the analysis of non-contacts carried out for the ESS<sup>7</sup>, e.g. Optimal Number of Contact Attempts to Maximise Response Rates, Non-contact Rate and Mean Number of Contact Attempts.
- Advocate the use of up-to-date sampling scheme, as described in the tender specifications, which should be preferred to random-route practises. Improve random route process, where applicable. Reduce reliance on ‘random walk’ sampling, where possible in favour of strict probability sampling [see further discussion under Chapter 6).
- Take measures to increase response rates which will have an important effect mainly on accuracy. Start with the identification of the source of response errors (e.g. length of the questionnaire, see if non-respondents share some common characteristics, etc.). Analyse the behaviour of non-respondents (including non-contacts) – e.g. analyse information, if available, on visit dates (day and time) of non-contacts.
- Take the necessary actions - already identified (EQLS Fieldwork report – Interview Back-checking) - to diminish reasons for inconsistencies between initial interview and follow-up interview (carried as back-checking) in future rounds.

## 3.4 Data Processing

During this process the network members (NM) perform processing of the collected data. Data processing includes the implementation of data edits and validation rules, the coding of the raw data and finally the calculation of weights and estimation of results.

### 3.4.1 Identification and measurement of key process variables – Data processing

The tables include the main findings on the process indicators for each one of the sub-processes of the Data Processing:

1. Data entry
2. Data coding
3. Data editing
4. Weighting

Only limited information is available for three of these; data entry, data coding and data editing sub-processes. Better tracking of related-processes variables should be required in future surveys:

1. Data entry

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<sup>7</sup> Matsuo H., Billiet J., Loosveldt G. *Response-based Quality Assessment of ESS Round 4* (2010)

- Data entry error rate: The percentage of data values that were wrongly entered in the initial input
  - Percentage of data that had to be completely re-entered
2. Data coding
- Agreement with specifications: Overall assessment on whether the specifications on coding are met
  - Coefficient of agreement: The ratio of the commonly assigned codes to the total examined based on multiple coding (CA = ‘Common codes’ / ‘All codes’)
3. Data editing
- Agreement with specifications: Overall assessment on whether the specifications on editing are met
  - Failure rate: The rate of edit failures (per variable and country). It is given as the number of records for which an edit failure occurred divided by the total number of records.

Eurofound has not systematically monitored the abovementioned variables. This does not mean that codes have not been checked for errors. According to the specifications the contractor (TNS) will provide the national agencies with precise coding instructions, which are to be strictly respected. The instructions and coding frames should be relayed to Eurofound for information.

The contractor provided Eurofound with edited data. However, besides the contractor (TNS), also Eurofound has carried out a significant amount of data checking. Care has been taken to ensure the quality of the final dataset.

**Table 10. Data processing - Weighting**

Variable	Description	Comments
Agreement with specifications	Overall assessment on whether the specifications on weighting are met	Weighting was done as requested (marginal – RIM – and intercellular weighting) with having the most recent data on the universe (on sex, age, region / NUTS level 2 and size of household) as the minimum requirement for weighting variables [4.2.1].
Distribution of weights	For each country the distribution of weight size.	Weighting ranges vary between countries: from 0.6 - 1.7 (small range of weights) to 0.2 – 3.6 (large range of weights). Maximum value does not go beyond 3.6 (<4).
Proportion of undesirable weights	The percentage of original weights that were considered too large or too small. For each country, this is given as the number of weights above 3 and below 0.3 divided by the total number of weights (percentage).	Detailed figures of the national weights have not been made available to construct this variable.  Weighting effect has been assessed by the TNS in terms of effective sample percentage <sup>8</sup> . Malta, having used three instead of four weighting variables, has the highest effective sample percentage (>90%), 24 countries have effective sample percentage above 70% and 10 countries above 80%.

<sup>8</sup> Effective sample percentage = (100 x B) divided by (N x C), where A = sum of weights, B = squared A, C = sum of squared weights, N = number of questionnaire

### 3.4.2 Evaluation – Data processing

As has been already mentioned, the design of data processing needs substantial development. Very limited information is available to make an assessment of the data processing carried out in the 2<sup>nd</sup> EQLS. Thus recommendations mainly have to do with the design of the data processing, some of which have already been highlighted:

- Consider better tracking of the data processing, data coding and data editing process variables
- Request complete documentation of validation processes implemented and results
- Organise and automate validation and re-weighting processes better (e.g. implementation of international weighting for the calculation of EU aggregates) in order to gain in timeliness; however, actions to be taken should not be at the expense of accuracy. According to Eurofound, fieldwork ended in February 2008 (November 2007 for EU27 countries) and clean dataset was available in August 2008 (a period of about 6 months), which is considered to be a rather long data processing period. However, more details on the process of data validation, involved bodies, and IT infrastructure available for that purpose, etc. need to be made available in order to make a more reliable assessment and to suggest more specific improvements.

### 3.5 Data Dissemination – Reporting

This process ensures that high quality dataset (and accompanying documentation) is produced by the end of the fieldwork contract that allows timely release of results, detailed description of the survey methodology and other metadata as well as final dissemination of survey data set to different users. It also ensures that further analysis of the statistical material and reporting on the key findings will be appropriate and conformant to scientific standards.

Detailed presentation of the available EQLS statistics and publications as well as an assessment of the quality of the statistical output is provided in section 4.4 ('Accessibility and Clarity'). Overall, the impression is that accessibility and clarity of EQLS statistics is quite good, judging also from the increasing requests for the survey micro-data by researchers.

#### 3.5.1 Identification and measurement of key process variables – Data dissemination

In the following tables the main findings on the process indicators for the Data Dissemination process are summarised. No sub-processes have been identified.

**Table 11. Data dissemination – reporting**

Variable	Description	Comments
Time needed to prepare the data files for dissemination	The time needed for release of the data files that are published on Eurofound Survey Mapping Tool or/and used in the 'overview' report.	First set of data files (tables) was released through Eurofound Survey Mapping tool in November 2008, i.e. 6 months after the end of data-cleaning/editing period. This happened simultaneously with the launch of the Resume which is a brief analysis on the selection of key indicators from EQLS-2007.
Time needed to compile the report	The time needed to compile the report.	The Overview Report was published in March 2009, i.e. 4 months after the preparation of the first data files for dissemination or else 13 months after the end of the fieldwork.

		Analytic reports were prepared from October 2009 onwards.
Parties involved in the preparation of reports	Indication of all parties involved in the preparation of reports.	The Overview report is prepared in-house by Eurofound and evaluated by the Advisory Committee before publication. The analytical reports are contracted to experts outside Eurofound.

### 3.5.2 Evaluation – Data dissemination

Overall users are satisfied with the scope and quality of information published. However, timeliness of the published information is perceived as not satisfactory by both users and Eurofound. This is also confirmed by our analysis. Delays in publishing the figures are due to delays in different stages of the data production cycle: fieldwork, data checking/editing, and preparation of files for dissemination or preparing the reports on the results.

It is therefore recommended that Eurofound gives emphasis in identifying the sources of delays in all stages of the data production cycle and makes efforts (e.g. treat non-contacts/non-responses efficiently to reduce time needed for the fieldwork, develop/enhance IT infrastructure for the accommodation and processing of the data, use extra resources or outsource, if possible, for the preparation of the overview report and the analytical reports) to improve timeliness in order to meet the needs of users for timely and accurate statistics. (See recommendations in chapter 5 about timeliness and accuracy.)

## 3.6 Post-survey actions

After dissemination of data, all actions taken to analyse data, as well as to analyse the quality of the statistical output and evaluate the overall exercise with the aim to improve future implementations are referred to as ‘post-survey’ actions.

The preparation of the current report on quality assessment of 2007 EQLS on behalf of Eurofound can be regarded as a post-survey action. Its aim is to identify the scope for improving the statistical output and the survey processes in future rounds of this survey.

In addition to the present report, Eurofound has carried out a Data User Survey and has compiled the findings in the ‘EQLS data user survey’ report, published in May 2010. Moreover, Eurofound tracks the number of citations of the EQLS data. Table 13 summarizes the number of article cuttings and media reach regarding the survey, while Table 14 counts the number of downloads of EQLS 2007 statistics and related publications.

The preparation of the ‘Eurofound Survey Impact Tracking report: 2008 – 2009’ also belongs to the post-survey actions. In the Impact Tracking reports Eurofound summarises qualitative and quantitative data on a number of ‘impact indicators’, monitoring EU policy papers, reports and other sources for evidence of its contributions to EU policy. Moreover, Eurofound presents the findings of the assessment of the quality of the EQLS to the Advisory Committee. Feedback received is also considered for future implementations of the survey.

### 3.6.1 Evaluation – Post-survey actions

Eurofound has analysed the output of the EQLS exercise to a satisfactory extent. However, it is recommended that all these actions are carried out in a more systematic basis under one single quality assurance framework.

## 4 Quality Assessment of statistical output

This chapter provides an overall assessment of the quality of the 2nd European Quality of Life Survey (EQLS) data. It is based on the following five dimensions of quality as these have been defined in the ESS Standard for Quality Reports<sup>9</sup> to assist national statistical institutes meet the European Code of Practice<sup>10</sup>:

- **Relevance:** It is the degree to which statistics meet current and potential user's needs. It includes the production of all needed statistics and the extent to which concepts used (definitions, classifications, etc.) reflects user needs.

The section on relevance involves the identification of the users of EQLS statistics and provides a description of their needs. Findings from the impact tracking and the EQLS user survey are presented with a view to making an assessment of the users' interest and satisfaction with the survey data. Special reference is made to the policy context of the EQLS and the topics covered by the survey.

- **Accuracy:** It denotes the closeness of computations or estimates to the true values. Accuracy is assessed through two types of errors, i.e. the sampling errors and the non-sampling errors. The section provides a full description of the EQLS methodology with emphasis on the sampling characteristics and the data collection. A number of quantitative indicators, such as response rates, are produced in order to assess the implementation of the 2nd wave and identify any challenges.

- **Timeliness and Punctuality:** they refer to time and dates, but in a different manner:
  - Timeliness reflects the length of time between the availability of statistics and the event or phenomenon they describe.  
A timeline of the whole survey cycle is constructed covering all stages. The aim is to examine in which stages there is place for improvement in order to optimise the length of the survey process
  - Punctuality refers to the time lag between the release date of the data and the target date on which they should have been delivered, with reference to dates announced in the official release calendar.

- **Accessibility and Clarity:** They refer to the simplicity and ease for users to access statistics using simple and user-friendly procedures, obtaining them in an expected form and within an acceptable time period, with the appropriate user information and assistance.

A description of all means available for the communication of EQLS statistics is provided followed by an assessment of their quality. The dimension of clarity is assessed through the existence of methodological and explanatory notes that accompany EQLS data publications.

- **Coherence and Comparability:**
  - Coherence reflects the extent to which statistics are in agreement with relevant or related statistics originating from different statistical procedures.
  - Comparability aims at measuring the impact of differences in applied statistical concepts and definitions on the comparison of statistics between geographical areas, non-geographical domains or over time. It is the extent to which differences between

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<sup>9</sup> Eurostat (2009) "[ESS Standard for Quality Reports](#)"

<sup>10</sup> Eurostat (2005) "[European Statistics Code of Practice – for the National and Community Statistical Authorities](#)"

statistics are attributable to differences between the true values of the statistical characteristics.

These two dimensions are easily confused. Coherence refers to the ability to combine, in various ways and for different uses, similar statistics from different sources while comparability refers to the ability to compare statistics about the same characteristic between different points in time, geographical areas or statistical domains.

The assessment of coherence in the EQLS statistics is made through a data comparison with other related surveys for common variables. The surveys used are the European Survey on Income and Living Conditions (EU-SILC), the European Social Survey (ESS), the Labour Force Survey (LFS) and the European Working Conditions Survey (EWCS). Any significant differences may imply different concepts or/and different methodologies between the data sources.

The assessment of comparability is divided into two categories. The first deals with the comparability between participating countries. Here the differences between the countries concerning the implementation of concepts, the coverage, the start-end dates of the survey, etc. and possible effects on outcomes are examined. The second category refers to the comparability over time where the 2nd EQLS is compared with the 1st wave (EQLS 2003) in methodological and conceptual matters.

## 4.1 Relevance

### Coverage of the ‘Quality of Life’ concept

Quality of life (QoL) is a broad concept concerned with overall well-being within society. It refers to a number of aspects of peoples’ life including the ability of people to achieve their goals and choose their ideal lifestyle. EQLS follows a multidimensional approach by measuring a number of dimensions of QoL (please see ‘Introduction’). In order to achieve that, it uses subjective (perceptions) as well as objective concepts. This enables to assess the relevance of objective QoL concepts (e.g. income, employment status, material wealth, etc.) to people’s subjective wellbeing (e.g. life satisfaction), as well as to cover areas which objective concepts are unable to measure properly, thus giving a more complete picture. In academic debate there appears to be a considerable increase in interest, especially among economists, on subjective well-being, during the past decade<sup>11</sup>. This makes the EQLS unique in covering most aspects and dimensions of QoL.

### The increasing policy relevance of EQLS

Although quality of life and subjective wellbeing have been part of the public dialogue for several decades they have recently attracted renewed interest entering centre stage. Since its introduction Gross Domestic Product (GDP) has been extensively used as a proxy of well-being although it was never intended for this purpose. This use has attracted extensive criticism even from an economic point of view (as a measure of economic progress), but most importantly it has been established that it does not cover other aspects such as social progress and well-being. Recently this has come to fore by the increasing adoption of the sustainable development strategy by the EU. In this context the European Commission stressed that more inclusive markers were needed, that go beyond measuring

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<sup>11</sup> Kahneman, D. and Krueger, A.B. (2006) “[Developments in the measurement of subjective well-being](#)”, *Journal of Economic Perspectives*, 20, 3-24.

economic production. This means that Gross Domestic Product (GDP) needed to be complemented with measures of equitability, sustainability and well-being<sup>12</sup>.

These developments have much to do with initiatives like the “Beyond GDP” conference organised by Eurostat in 2006 which emphasises the need to use complementary indicators to GDP in order to measure social progress in number of its dimensions. In this context it is worth mentioning the OECD activity on Global project on Measuring the Progress of Societies which is running since 2008. In the same year (2008) French President Nicolas Sarkozy created a Commission on the Measurement of Economic Performance and Social Progress (CMEPSP – also called the Stiglitz Commission), which issued an extensive report often called the Stiglitz-Sen-Fitoussi (SSF) report, about moving beyond GDP. It recognises the multidimensional aspects of well-being and the importance of both the objective and subjective drivers of well-being. These initiatives have shaped the discussion on the Europe 2020 strategy which was approved in 2010. It is the EU's growth strategy for the coming decade. It sets out three mutually reinforcing priorities: to become a smart, sustainable and inclusive economy and it lists five headline targets. It should help the EU and the Member States deliver high levels of employment, productivity and social cohesion. Supporting the economic recovery and reaching the Europe 2020 headline targets does not only require political support for stronger governance, with improved rules and procedures, but also a sound and up-to-date statistical basis 'fit for purpose'<sup>13</sup>

The above mentioned trends towards multidimensionality in measuring social progress and demand towards using both, subjective and objective indicators have increased the relevance of the EQLS as monitoring instrument uniquely designed to measure multidimensionality of people's life and to narrow the gap which exists in the area of social indicators needed for evidence based policy making at European level.

#### EQLS in the framework of social statistics

As it is already mentioned, EQLS is an important source of information regarding quality of life in Europe. It focuses on a variety of important aspects of people's life and measures them across the member states. There are, however, other European surveys covering some dimensions of quality of life. In order to assess the position of the EQLS a comparison with other cross-national surveys in this field is given in table 12<sup>14</sup>. The surveys used for this comparison are the following:

- EU Statistics of Income and Living Conditions (EU-SILC)
- European Social Survey (ESS)
- Labour Force Survey (LFS)
- Eurobarometer surveys (EB)
- Household Budget Survey (HBS)
- European Household Survey (EHS)-module based

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<sup>12</sup> European Statistical System Committee (ESSC) - Sponsorship Group 'Measuring progress, wellbeing and sustainable development', Sponsorship Task Force 3/ TF3: The draft final report On Multidimensional Measures of Quality of Life, Eurostat 29/03/2011, p.1

<sup>13</sup> Idem, p.2

<sup>14</sup> Findings presented are taken from “The Eurofound's surveys and its competitors: Comparisons with major cross-national European surveys in (and around) the area of living and working conditions”, Mikulić, B. (2009)



**Table 12. Cross-national surveys on 'Quality of Life' (or some dimensions of 'Quality of Life')**

	<b>EQLS</b>	<b>EU-SILC</b>	<b>ESS</b>	<b>LFS</b>	<b>EB</b>	<b>HBS</b>
Degree of harmonisation of national surveys	very high (input)	high (input / output)	very high (input)	high	very high	high / limited
Country coverage: EU Member States	full	full	incomplete / variable	full	full	full
Country coverage: Candidate Countries	full	incomplete	incomplete	full	incomplete	full
Topic coverage (number of domains)	wide range	limited	limited	very limited	very limited	very limited
Total number of indicators in the area	>100	<50	>100	<10	few	few
Number of indicators per topic / dimension	limited	large	large	sufficient	very limited	few
Mix of subjective / objective indicators	very good	only objective	only subjective	only objective	only subjective	only objective
Flexibility of survey (inclusion of incidental modules)	moderate	good	good	good	good	limited
Policy relevance	high	very high	high / medium	very high	high	very high
Comparability of core indicators across countries	full	full (for target primary indicators only)	full	full	full	full (for macro aggregates)
Comparability of indicators over time	full (core part)	full (core part)	full (core part)	full (core part)	limited	limited
Frequency of the survey	every 4 years	every year	every 2 years	quarterly	semi-annual	1-5 years (differs per country)
Sample size (average number of individuals per country)	small (1200)	large (9000)	small / medium (2000)	very large	small (1000)	1300 - 36000 (households)

Precision of indicators: Total country population	good	very good	good / very good	very good	good	good
Precision of indicators at group level / per EU	good	very good	very good	very good	good	good
Precision of indicators at group level / per country	poor	good	poor	good	poor	poor / good

EQLS provides more than 100 indicators on a wide range of dimensions related to quality of life, wellbeing and living conditions while the rest of the surveys are covering a limited number of the topics and dimensions. EQLS is also a survey with a good mix of subjective and objective indicators.

As regards to the implementation of the EQLS, survey instruments (e.g. the questionnaire) are highly harmonised as the survey is designed and co-ordinated centrally. This ensures a good comparability of indicators, both between countries and over time (for the core set of variables).

One of the shortcomings of the survey is its relatively small sample size. Compared with the rest of the surveys, EQLS, along with EB, covers less than 1500 individuals per country (on average). This has an effect on the accuracy of estimations (figures) provided for specific groups of the country population. While it is possible to get an overview of the total population in each country, small samples do not allow detailed analysis of sub-groups within the country, such as unemployed, immigrants, single parent families, etc.

#### 4.1.1 Users of the Eurofound surveys including EQLS

Data from Eurofound surveys<sup>15</sup> and in particular the EQLS are of major importance for the following groups of users:

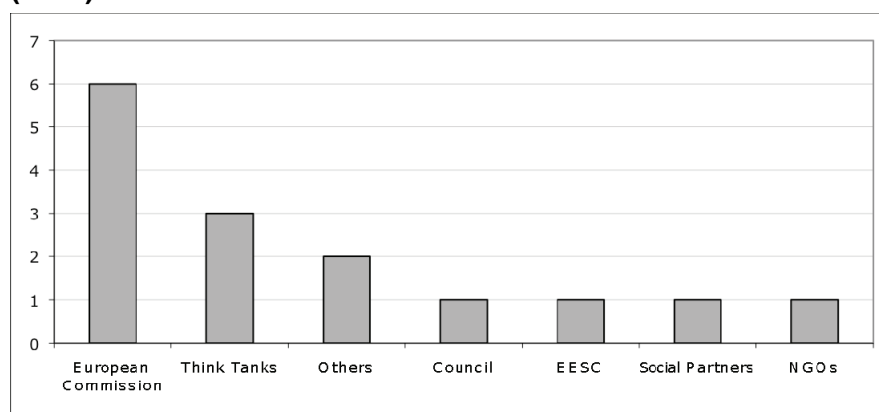
- Eurofound's Stakeholders: these are mainly European Social Partners, the European Commission, the European Parliament and national governments. Evidence of the use of the survey data can be found in the references made in numerous policy documents of the European bodies.

Findings from the last impact tracking report<sup>16</sup> on the use of EQLS statistics show that the number of policy documents with references to EQLS data has increased in 2009. The user who makes the most use of data is the European Commission. In particular, the number of EU policy documents with direct references to EQLS statistics was doubled in 2009 compared to 2008. Figure 2 below presents the number of citations in policy documents per group of users in 2009. It is noted though that these figures refer only to direct quotations in EU policy documents. EQLS statistics have also been used in a range of conferences, workshops and seminars of many EU bodies.

<sup>15</sup> The three surveys carried out by the European Foundation are: the European Company Survey ([ECS](#)), the European Quality of Life Survey ([EQLS](#)) and the European Working Conditions Survey ([EWCS](#)).

<sup>16</sup> Leoncikas, T. and Sandor, E. (2010) "EF Survey Impact Tracking Report 2008-2009"

**Figure 2. Number of references to EQLS in EU policy documents per organisation (2009)**



- International organisations (OECD, WHO<sup>17</sup>, etc.): international organisations are using EQLS data in combination with data from other sources. This holds for their studies, research, and data products with a wider geographical coverage.
- Non-Governmental Organisations (NGOs): there is evidence of some use of EQLS data to set up priorities in their agenda and support their arguments and advance their goals.
- Academia, Researchers: researchers use of EQLS data for carrying out independent research in the broad area of quality of life. Researchers and students use the findings of the survey and they are usually interested in detailed data and metadata. They use the micro-data that is made publicly available after some embargo time.

Their use of data often leads to publications in academic journals. According to the impact tracking report, in the period 2008-2009 there were 43 academic articles in the area of social sciences and health issues with references in EQLS. It is noted though that this figure is not considered to be exhaustive since some references may have remained unregistered, for example from journals that are less circulated on the web.

- Media, the general public: media are the main channels of statistics to the general public. Findings from EQLS are used as an input to public dialogue and debates. International or national media – specialised or for the general public – are interested both in figures and analyses or comments based on EQLS findings.

With reference to the 2nd wave of the EQLS, the interest of media in the survey results has been proved to be high. Table 13 shows the number of article cuttings and media reach regarding the survey launch and the publication of the first findings.

**Table 13. Media monitoring regarding the EQLS 2007 data collection**

Date	Type	Article cuttings	Media reach (estimated public/audience)
25 March 2009	Survey launch event with press release on key results from Overview report	204	10,646,760
18 November 2008	First Findings (resume)	193	10,072,670
<b>TOTAL</b>		<b>397</b>	<b>20,719,430</b>

<sup>17</sup> WHO stands for World Health Organisation

#### 4.1.2 Use of the EQLS products and their assessment by users

In this section a number of indicators are presented that show users' interest in the EQLS. The description is based on the feedback taken from the UK Data Archive (UKDA) where EQLS micro-data sets (2003 and 2007 survey) have been made available.<sup>18</sup> The information is based on to the use of the data sets in the period 2008-2009 including early 2010 in some cases (Table 15).

The assessment of the use of EQLS statistics is based not only on the use of the datasets but also on the use and interest in the web-publications related to the 2<sup>nd</sup> EQLS. The number of downloads of EQLS statistics and of the relevant Eurofound publications by users is shown in Table 14. The overview report on EQLS statistics published in 2009 has by far the highest number of downloads.

**Table 14. Number of downloads of the EQLS 2007 statistics and related Foundation publications and reports**

Indicator	Release date	2008	2009	2010	TOTAL
EQLS 2007 dataset	11 November 2009		32	27	59
First findings: résumé	18 November 2008	1647	2367		4324
Overview report	23 March 2009		2395	567	2962
Quality of Life in Europe (report)	9 December 2009		55	127	182
Quality of Life in Europe (executive summary)	9 December 2009		26	113	139
Living conditions, social exclusion and mental well-being (report)	8 January 2010			507	507
Living conditions, social exclusion and mental well-being (executive summary)	28 January 2010			168	168

<sup>18</sup> Since 2006, the EF survey data files are publicly accessible through UK Data Archive (UKDA) in the University of Essex one of the best known archives for social science data sets. For downloading the data, interested individuals must register at the UKDA. The UKDA provides the EF with information about the data set user profile through quarterly reports.

Table 15 shows the number of downloads of the EQLS macro-datasets (1<sup>st</sup> EQLS in 2003 and 2<sup>nd</sup> EQLS in 2007) by type of user in the period from their release in 2006 and 2009 until end of 2009. These figures cover both EQLS waves.

**Table 15. Distribution (and number) of downloads of EQLS datasets (both waves) by user type [since their release in 2006 and 2009 till the end of 2009]**

Staff at institute of higher & further education	Post-graduates	Under-graduate, Student in further education	Not-for-profit / NGOs	Government staff (mainly central)	Commercial user	Others (school teachers, students, personal users)	TOTAL
39.7% (83)	31.1% (65)	13.9 % (29)	7.2% (15)	4.8% (10)	0.95% (2)	2.4% (5)	100% (209)

Apparently, staff at institutes of higher or further education has shown the greatest interest to download the EQLS datasets which is consistent with the EQLS data user survey where ‘academic or research institute staff’ account for the largest share of users.

#### Findings from the ‘EQLS Data Users’ Survey: assessment of the EQLS by the users

The assessment of the usage of EQLS data and the data users’ satisfaction is based on the findings from the ‘EQLS Data User Survey’<sup>19</sup> carried out in 2010. The aim of this survey was to reveal the user profile and assess their preferences and satisfaction with the EQLS statistics.

Different types of users have downloaded the EQLS dataset. Many of them participated in the ‘User Survey’. More than half (59%) of them are academic / research institute staff, followed by (29%) students. Other users are from EU bodies, national governments or NGOs. The average age of users is 41 years old and almost a half of them are based in the following four countries: the United Kingdom (15%), Germany (11%), Ireland (11%) and Italy (10%). As regards the usage of specific EQLS data, most of the users were interested either in the 1st wave or in the 2nd wave (64 %), and more than one third used the statistics from both waves. The survey also shows that users most often used data and indicators related to the ‘background variables’ (demographics, income, etc.) and data on ‘life satisfaction’ and ‘health and health care’. The indicators that are mostly used by the users are often considered as indispensable and therefore are seen as candidates to be included in future rounds of the EQLS.

The most important feedback from the ‘Data User Survey’ deals with the quality of the EQLS statistics. Table 16 presents the results on the users’ assessment of EQLS data with reference to the following issues:

- Quality and logic of questionnaire
- Sample size
- Accuracy
- Timeliness
- Accessibility
- Comparability over time
- Comparability across countries
- Comparability with other surveys

<sup>19</sup> Leoncikas, T. (2010) “EQLS data user survey”

**Table 16. Overall assessment of the quality of EQLS statistics**

Quality dimension	Very good	Good	Adequate	Poor	Very Poor	No opinion	Response Count
Quality and logic of the questionnaire	46%	41%	9%	0%	2%	2%	54
Sample size	28%	15%	39%	17%	2%	0%	54
Accuracy (includes quality of data collection and dataset)	16%	43%	37%	0%	0%	4%	51
Timeliness (length of time between data collection and its dissemination)	21%	44%	21%	8%	2%	4%	52
Accessibility of data	44%	39%	9%	4%	0%	4%	54
Comparability over time (trend indicators)	15%	46%	15%	12%	0%	12%	52
Comparability across countries	21%	53%	23%	0%	0%	4%	53
Comparability with other surveys	6%	41%	39%	7%	2%	6%	54

Overall, majority of users appear to be satisfied with the quality of the questionnaire and the accessibility of data. Their main concerns are related to the sample size of the survey and comparability of the survey data over time.

#### *4.1.3 Overall assessment of the EQLS relevance*

Analysis on the usage of EQLS statistics reveals that the contribution of EQLS in the field of social statistics is high. EQLS covers a wide range of topics related to quality of life and is considered to be one of the main sources of information in this area.

More and more people are interested in EQLS; there is a constant increase on the number of data downloads as well as on the references to the survey in academic and EU policy documents.

With regard to the 2nd wave of the survey, the high quality of the EQLS questionnaire, the easy accessibility and the high comparability over countries are aspects that have reinforced the interest and satisfaction of users on the EQLS data and the survey as a whole. All these result in a wide use of the survey results and contributed to increase in the relevance of the EQLS statistics.

## 4.2 Accuracy

Accuracy, in the general statistical sense, denotes the closeness of computations or estimates to the exact or true values. A word which is immediately associated with accuracy is “error” since accuracy is used to mean “the inverse of the total error, including bias and variance”. The larger the error is, the lower the accuracy. However, the definition of “error” is wide: it can encompass deficiencies, mistakes, bias, sampling variation etc. The following typology of errors is commonly adopted nowadays in statistics:

- Sampling errors;
- Non sampling errors, which in turn cover:
  - Coverage errors;
  - Measurement errors;
  - Processing errors; and
  - Non response errors.

These various types of errors are analysed in more detail in this section. Quantitative estimates are better than qualitative assessments since we can get an estimation of the extent of the errors. Where it is possible they are computed (even approximately as in sampling errors). However, as it is often the case, it is much easier to assess the cause of error than to assess the error itself.

### 4.2.1 Sampling errors

Sampling errors arise from the fact that not all units of the frame population, but only a sample of them, are included. The statistics produced from a sample survey will differ from the values which would be computed if exactly the same survey operations were applied to the whole frame population (universe). The difference is the sampling error. Before assessing the sampling errors the sampling design in the 2nd EQLS is described.

#### Sample Description

The statistical population of the 2nd EQLS was all residents aged 18 years and over that have lived in the country for the last six months preceding the survey, speak the national language and do not live in an institution.

Most countries used a multi-stage stratified clustered sample with random route for the selection of the respondent at the last stage. The sample was stratified by region (NUTS at level 2) and degree of urbanization (densely, intermediate and thinly populated area). There were only two exceptions, first in Malta, where no stratification was implemented but simple random sampling was used instead, and in Denmark where the sample was only stratified by region.

Additionally, in three countries, the Netherlands, Sweden and Norway telephone screening was used in order to contact the respondents before visiting them at the address. The intention was to increase response rates as in these countries people are less willing to participate in a face-to-face interview without a call notification in advance. In particular, in the Netherlands a large part of respondents was first contacted by telephone (77% corresponding to 773 interviews) while this was applied to only 23% of the sample (227 interviews) in Norway. On the other hand, in Sweden all interviewees were first contacted by telephone.

The target sample size for the 2nd EQLS was set at 1000 interviews in most countries with the exception of Poland, Italy, France and the United Kingdom where 1500 interviews were asked and

Germany and Turkey where the target size was 2000 interviews (reflecting the bigger population size of these countries). These targets were met fully in all the countries.

### Sample design

As it is mentioned above, a multi-stage stratified clustered design was applied in the 2nd EQLS. In each country, a number of clusters were selected within each stratum of the population as defined by the two stratification variables: region and urbanization level. Clusters were thus used as primary sampling units (PSUs) for the selection of respondents.

Table 17 shows the number of clusters used in each country as well as the average cluster size, which is in fact the average number of interviews. It also presents the minimum and maximum cluster size per country. Overall and on average 216 clusters were used per country with an average of 6 interviews per cluster.

**Table 17. Number of clusters and cluster sizes in the EQLS 2007**

Country	Number of clusters	Average cluster size	Minimum cluster size	Maximum cluster size
EQLS 2007	216 (avg.value)	6	1	53
BE	183	6	1	7
BG	151	7	3	7
CZ	399	3	1	10
DK				
DE	366	5	1	13
EE	203	5	2	11
IE	165	6	4	13
EL	106	9	4	13
ES	211	5	1	18
FR	336	5	1	9
IT	231	7	1	53
CY	116	9	5	18
LV	103	10	5	15
LT	114	9	6	10
LU	77	13	1	40
HU	102	10	2	20
MT				
NL <sup>20</sup>	1011	1	1	1
AT	108	10	2	20
PL	300	5	5	5
PT	199	5	1	10
RO	113	9	1	24
SI	182	6	1	8
SK	187	6	1	10
FI	173	6	1	7
SE	106	10	1	13
UK	175	9	2	15

<sup>20</sup> The number of clusters used in the Netherlands equals their sample size (1011), thus in each cluster only one interview was carried out. This shows that in reality no clustering was applied in this country.



HR	156	6	1	12
MK	175	6	5	6
TR	401	5	1	12
NO	129	8	1	17

### Assessment of impact of sample design on accuracy

The design effect can be used as a measure to assess the impact of sample design on the accuracy of EQLS data. The design effect is defined as the ratio of the sampling variance of an estimator using the cluster design to the sampling variance of the same estimator if simple random sampling (SRS) was applied:

$$deff = \frac{Var_{Clust}(\hat{Y})}{Var_{SRS}(\hat{Y})}$$

If the ratio is less than one this indicates that the sample design is more efficient than SRS, while if the ratio is greater than one this indicates that sample design is less efficient than SRS. Design effects can also be used to provide rough estimates of variance. If an estimate of the design effect is available from a previous survey that used the same sample design, it can be used to compute the required sample size of a future implementation of the survey.

Cluster sampling can produce estimates that are more variable than those from simple random sampling. The design effect measures the loss of effectiveness in the estimates by using cluster instead of simple random sampling of the same sample size and it is greater than 1 for cluster designs<sup>21</sup>. In a complex sample design, like in the case of EQLS, the design effect can be calculated as the product of two components, the design effect due to unequal selection probabilities and the design effect due to clustering.

Unequal probabilities have been introduced to allow for different households sizes. More than one person in a household may be eligible to participate in the survey, but only one will be finally selected to respond. Thus selection probability of a unit (i.e. person 18+) is not equal for all units of the sample but it depends on the size of its household.

The second component of the design effect, the one due to clustering, is used to assess the impact of cluster sizes and the variables' association within clusters. Each variable has its own design effect. In the assessment most of the EQLS variables are used and the respective design effects are calculated. The total design effect due to clustering has been computed for each country as the median of all design effects at the variable level. Overall, 124 variables have been included in the assessment<sup>22</sup>. Variables that have been left outside of the analysis contain missing data. Table 18 shows the two components of the design effect and the total design effect per country.

<sup>21</sup> Statistics Canada (2003). Survey Methods and Practices. Catalogue no. 12-587-XPE

<sup>22</sup> Q15, Q16, Q17\_1, Q17\_2, Q17\_3, Q17\_4, Q17\_5, Q17\_6, Q18, Q19\_1, Q19\_2, Q19\_3, Q19\_4, Q19\_5, Q19\_6, Q20\_1, Q20\_2, Q20\_3, Q21, Q22, Q23, Q24\_1, Q24\_2, Q24\_3, Q25\_1, Q25\_2, Q25\_3, Q25\_4, Q25\_5, Q25\_6, Q26, Q28\_1, Q28\_2, Q28\_3, Q28\_4, Q28\_5, Q28\_6, Q28\_7, Q29, Q30, Q31, Q32\_1, Q32\_2, Q32\_3, Q32\_4, Q33\_1, Q33\_2, Q33\_3, Q33\_4, Q34, Q35\_1, Q35\_2, Q35\_3, Q35\_4, Q35\_5, Q36\_1, Q36\_2, Q36\_3, Q36\_4, Q39\_2, Q39\_3, Q39\_4, Q39\_5, Q40\_1, Q40\_3, Q40\_4, Q40\_5, Q40\_6, Q40\_7, Q41\_1, Q41\_3, Q41\_4, Q41\_5, Q41\_6, Q41\_7, Q42, Q43, Q44, Q47\_1, Q47\_2, Q47\_3, Q47\_4, Q48, Q50, Q51, Q52, Q53, Q54\_1, Q54\_2, Q54\_3, Q54\_4, Q54\_5, Q54\_6, Q55\_1, Q55\_2, Q55\_3, Q55\_4, Q55\_5, Q55\_6, Q56\_1, Q56\_2, Q56\_3, Q56\_4, Q56\_5, Q56\_6, Q57, Q58\_1, Q58\_2, Q59, Q60, Q61, Q62, Q63, Q64\_1, Q64\_2, Q64\_3, Q64\_4, Q64\_5, Q64\_6, Q65, Q66, Q69, Q70 and Q71.

**Table 18. Design effects per country in the EQLS 2007**

Country	Design Effect (due to unequal probability sampling)	Design Effect (due to clustering)	Design Effect
BE	1.168	1.390	1.623
BG	1.169	2.305	2.695
CZ	1.196	1.419	1.697
DK	1.139	-	1.139
DE	1.176	1.649	1.940
EE	1.207	1.464	1.768
IE	1.231	1.637	2.014
EL	1.223	2.125	2.600
ES	1.200	1.710	2.052
FR	1.153	1.211	1.396
IT	1.170	2.117	2.478
CY	1.174	1.791	2.103
LV	1.216	2.052	2.496
LT	1.193	1.847	2.204
LU	1.173	1.688	1.980
HU	1.197	2.248	2.691
MT	1.160	-	1.160
NL	1.149	-	1.149
AT	1.142	2.455	2.804
PL	1.223	1.526	1.866
PT	1.179	1.659	1.955
RO	1.216	2.230	2.712
SI	1.227	1.535	1.882
SK	1.194	1.926	2.299
FI	1.129	1.364	1.539
SE	1.109	1.175	1.303
UK	1.205	1.542	1.858
HR	1.217	1.705	2.075
MK	1.183	2.169	2.566
TR	1.194	1.911	2.281
NO	1.140	1.544	1.760

The table shows that the design effects vary across countries. With the exception of Denmark, Malta and the Netherlands where clustering was not used, the smallest design effects have been calculated for Sweden, France and Finland. In half of the countries the design effect exceeds 2.0. This means that the variance of estimators is double the variance that would have been achieved with the same sample size if random sampling were used. In other words, the sample size 'n' of a cluster sample has to be doubled in order to reach the same precision as a simple random sample of size 'n'.

Care needs to be taken to further reduce design effects, especially in cases where these exceed 2.0. Given the fact that cluster sampling is more cost effective and appropriate when dealing with large populations, improvements could be considered in the implementation of clustering and in particular in the selection of clusters, the number of interviews carried out in each point, etc.

Furthermore, the design effect could be used to calculate the effective sample size, as the ratio of the sample size over the design effect:

$$n_{eff} = \frac{n}{deff}$$

### Optimal sample sizes for the EQLS

The sample size that will be chosen in a future should be based on careful consideration of trade offs between important goals of the survey. The most important are:

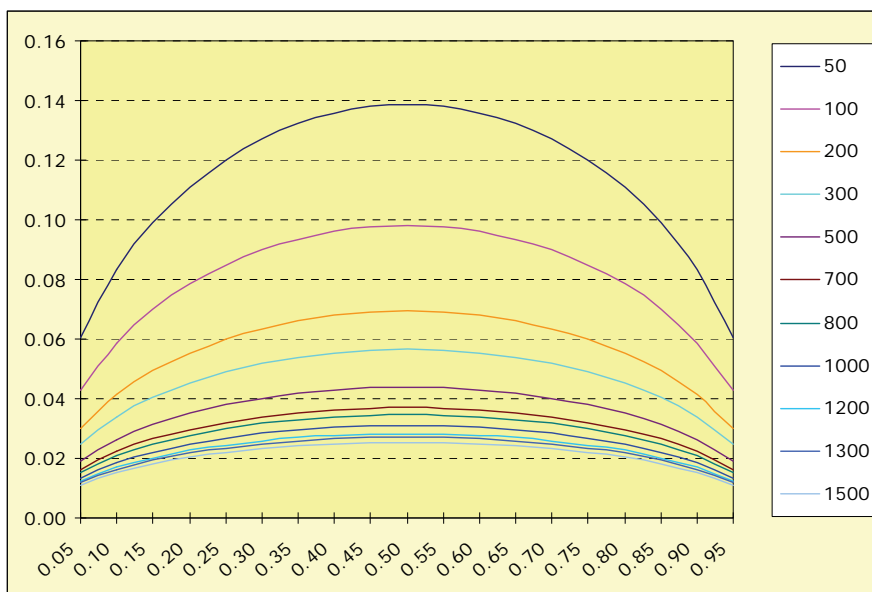
- A. More precise European estimates. Based on this principle the sample size in each country should be proportional to the frame population in each country (i.e. all country people aged 18+). A detailed computation requires a total sample size and the set of countries to be included in the survey.
- B. More precise national comparisons. National comparisons are helped if the sample size is equally distributed among countries.
- C. Compromise solution. In this case a minimum sample size is assigned in each country and then the remaining is proportionally allocated to the countries where the sample size based on (A) is larger than this minimum.

Costs may also be implicated in the computation as these vary widely among countries and it is more efficient to add samples in countries with lower cost per interview than in more expensive ones.

### Limits of sample design and its impact on accuracy of statistical estimates

The limited sample size is an important constraint for the analysis of the data. Small sample sizes may prevent the analysis of specific domains or specific sub-groups of the population as no reliable estimates can be made for these categories. When the total (effective) sample size in each country is between 1000 and 3000 the error of the estimate of the total is between 3.5% and 2% (the larger the sample the lower the sample error). This means that the estimated percentage of the country population that score on an indicator, let say 50% of the total sample in a country with the sample of 3000 reported to be owner-occupier of the dwelling, can range between 48% and 52% since sample error is +/- 2%. This is acceptable if differences that need to be detected are larger than the precision of the estimates. However, for the analysis of subpopulations, the sample size in each subpopulation should be taken into account. Even for the simple case of disaggregation of an indicator by 3 age groups (e.g. 3 equally sized subpopulations) the error of estimates for samples for each subpopulation is substantially larger (e.g. for subsample size of 1000 the precision is +/- 3.5%). Figure 3 shows the precision of estimates for different sample sizes. Precisions (in y-axis) are calculated based on the level of the estimate (proportion in x-axis) and the sample size, indicated by differently coloured line graphs.

**Figure 3. Precision of estimates (extent of ½ CI) for different sample sizes**



## Weighting

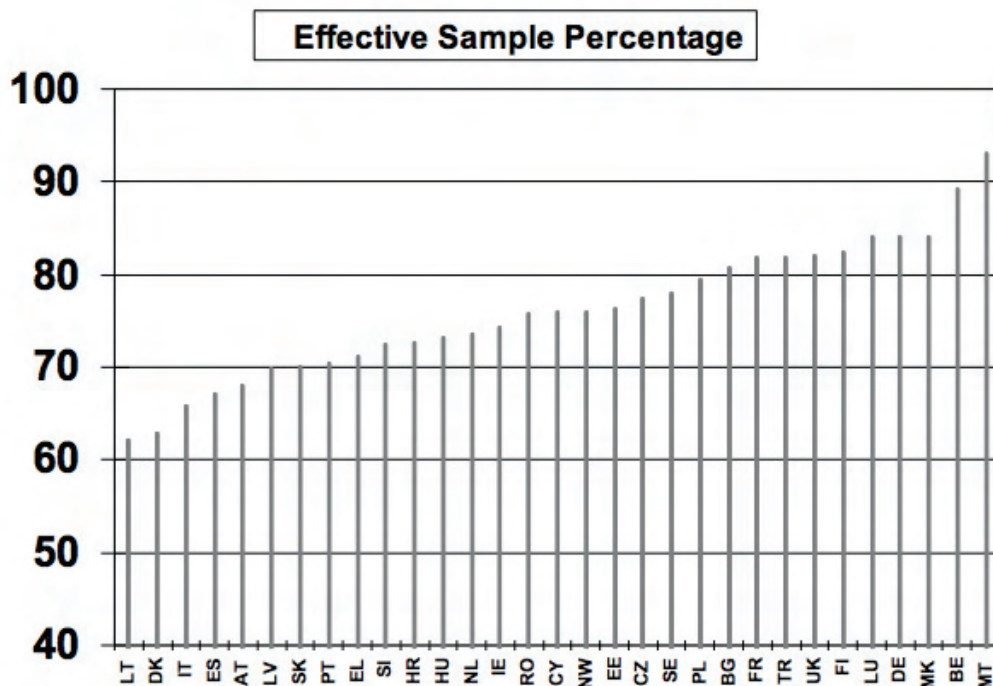
As mentioned before, design weights are used in order to compensate for the unequal probability of selection of sampling units. In the case of EQLS, the number of adults in the household is used to determine the design weights. This pre-weighting is necessary to correct the design effect of the sampling procedures.

Weights are also used in stratification after selection (e.g. post-stratification) and in adjusting for different non-response rates and under/over-coverage in different subgroups of the population. While weighting is beneficial as it removes known biases from the sample, it increases, however, the variance of estimates.

In the EQLS 2007 weighting was based on the following variables: country (for the EU aggregates), region (based on NUTS2), level of urbanisation, age and gender. National weighting procedures were implemented for all countries surveyed based on the universe description on the above mentioned variables. Information on the universe with reference to these variables was provided by Eurostat population data or by the national statistical offices.

In the following paragraphs the second and main stage (rim weighting) of the weighting procedure implemented in the EQLS 2007 is analysed. An assessment of the weighting effect at this stage has already been carried out by TNS (Weighting Section of the Technical Report on the 2nd EQLS). The effective sample percentage has been calculated for each country (see Figure 4). The closer the weights of one country are to 1 (i.e. the perfect weight) the closer the effective sample percentage to 100%. Small effective sample percentages are indicative of instability into the data.

Figure 4. Effective Sample percentage



Source: [EQLS 2007 – Technical report](#)

In order to further analyse the rim-weighting (also known as raking) we have used detailed figures provided by TNS (Annex 4 of the Technical Report on the 2nd EQLS). Rim-weighting has been applied to re-weight non-random samples and get back a representative sample. In the detailed tables provided we get the information on the methodology that has been followed for each country to implement rim-weighting.

The major objective of rim-weighting is to have sample and population (universe) evenly distributed according to a number of variables that are regarded to be important to the phenomenon under investigation (i.e. quality of life). Figures present the distribution of both weighted (i.e. after post-stratification weighting) and un-weighted (realized) samples. Please note that the distribution of the weighted is identical of that of the universe, which was the initial goal of rim-weighting.

For the needs of rim-weighting the sample has been distributed in the breakdowns of the following variables which are believed to be related to quality of life:

- Sex & Gender combination
- Level of Urbanization
- Region (NUTS)
- Population in size of households

Standard breakdowns have been used for the “Sex/Gender” combinations: Man 18-24, Man 25-34, Man 35-49, Man 50 -64, Man older than 65, Woman 18-24, Woman 25-34, Woman 35-49, Woman 50-64, Woman older than 65 and for the “Population in size of households”: 1, 2, 3, 04-99.

Breakdowns for Urbanization and Region (NUTS2) vary between countries.

Table 19 presents results (p-values) from the chi-square test that we implemented to compare the un-weighted (realized) and weighted sample on the abovementioned figures in order to examine the hypothesis that the distribution of the un-weighted sample by key demographic characteristics reflects

that of the universe. Each country has been analysed separately (and therefore the effect of international weighting is not considered).

**Table 19. Chi-square test results (p-value) on the distribution of the weighted and un-weighted sample**

	SEX&GENDER	URBANISATION	REGION (NUTS)	Population in size of households
AT	0.06634	0.2379	0.6252	< 2.2e-16
BE	<b>0.0003175</b>	0.2827	0.1865	0.9257
BG	<b>0.003853</b>	0.07406	1	<b>1.34E-10</b>
CY	<b>1.58E-15</b>	0.411	0.954	<b>1.17E-13</b>
CZ	<b>1.99E-10</b>	0.189	0.03697	<b>1.78E-09</b>
DE	<b>7.94E-06</b>	<b>0.03609</b>	0.2614	<b>4.70E-05</b>
DK	<b>5.72E-06</b>	< 2.2e-16	-	<b>4.43E-07</b>
EE	<b>1.05E-08</b>	0.996	0.9978	< 2.2e-16
EL	<b>0.004747</b>	1	1	< 2.2e-16
ES	0.1865	0.7872	0.9965	< 2.2e-16
FI	<b>4.24E-05</b>	<b>0.000533</b>	0.5062	<b>2.79E-07</b>
FR	<b>2.05E-05</b>	0.3222	0.8597	<b>5.44E-10</b>
HU	<b>5.72E-06</b>	<b>5.57E-08</b>	0.8954	<b>7.25E-16</b>
IE	<b>4.43E-06</b>	0.5304	0.7998	<b>3.08E-13</b>
IT	< 2.2e-16	0.8772	0.987	<b>3.70E-11</b>
LT	<b>9.23E-11</b>	0.9967	1	< 2.2e-16
LU	<b>1.67E-06</b>	0.4106	0.537	<b>0.001843</b>
LV	<b>0.006022</b>	0.6883	0.6345	< 2.2e-16
MT	0.05346	-	-	<b>8.06E-06</b>
NL	<b>1.74E-11</b>	0.2612	<b>0.0006361</b>	0.0841
PL	<b>4.47E-07</b>	0.997	1	< 2.2e-16
PT	<b>0.001813</b>	0.9999	0.9973	< 2.2e-16
RO	<b>0.0271</b>	0.5591	0.5779	< 2.2e-16
SE	<b>2.79E-10</b>	0.7249	0.8696	<b>6.32E-05</b>
SI	<b>2.61E-06</b>	0.442	1	< 2.2e-16
SK	<b>1.26E-15</b>	<b>8.74E-12</b>	<b>0.003626</b>	<b>3.56E-10</b>
UK	<b>3.11E-09</b>	0.8919	0.981	<b>7.17E-12</b>
HR	<b>3.91E-05</b>	1	1	< 2.2e-16
MK	0.08053	0.7866	0.999	-
TR	<b>6.26E-07</b>	0.267	1	<b>5.11E-11</b>
NO	<b>7.35E-05</b>	<b>0.03697</b>	<b>1.52E-06</b>	<b>1.70E-06</b>

P-values smaller than 0.05 (indicated in bold letters) indicate that there is bias in the un-weighted sample. This can be either due to non-response or/and under/over-coverage of sub-groups of the target population categories in the un-weighted sample mainly with regard to the Sex/Gender and the Population in size of households variables.

#### 4.2.2 Non-sampling errors

Non-sampling errors occur in all phases of a survey. They add to the sampling errors (if present) and contribute to decreasing overall accuracy. It is important to assess their relative weight in the total error and devote appropriate resources for their control and assessment.

#### **4.2.2.1 Coverage errors**

Coverage errors (or frame errors) are due to discrepancies between the target population and the frame population. The target population is the population of interest which is supposed to be finally represented by the statistical results. The frame is a physical tool to reach the units to be enumerated, exhaustively or on a sample basis. Three types of coverage error are distinguished: (i) under-coverage, (ii) over-coverage and (iii) multiple listings. Another sort of frame deficiency is misclassification, i.e. incorrect information about frame units which causes other errors than coverage errors.

Coverage errors depend largely on the quality of the sampling frame used for the selection of the sample. In the EQLS 2007, the selection of the sampling units was either based on registers (for five countries) or on the random route procedure.

##### Registers

The use of personal/household/dwelling registers is preferable for a number of reasons including their capacity to allow better stratification, true randomness and central control of the sample selection process (avoid the influence of the interviewers on the sampling process). Use of personal registers is of crucial importance since they often provide not only addresses of individuals but also much additional information (age, sex, nationality, income, etc) and in this way the effect of the post stratification on estimate variance can be minimised.

A particular register may be used as a frame if it meets certain quality criteria:

- Have good coverage of all units in the survey population
- Be often updated with time references on date of registration
- Have a small percentage of erroneous entries
- Do not include units more than once

The national population register is commonly used in sample surveys (registers are usually run by statistical offices or local authorities). However, as to the EQLS 2007, this was the case of Malta and Belgium only since in many countries there was no direct access to official population registers. In Belgium, the national population register is used as a sampling frame for various surveys, for example the European Social Survey (ESS) and the Labour Force Survey (LFS). It is considered to be one of the most accurate registers with excellent coverage and up-to-date. For the register used in Malta no further information was available for the assessment.

The Netherlands, Sweden and Norway used the national phone registers for the selection of respondents. In these three countries potential respondents were first contacted by phone to establish if there is a person eligible for the interview in the household (100% in Sweden, 77% in the Netherlands and 23% in Norway). Telephone registers usually provide a high coverage of the population as they include information on all households with a telephone line. However, the use of telephone registers must be done with caution since they usually exclude persons with mobile phones or those who are registered in a do-not-call list.

The use of registers as sampling frames may improve the quality of the sample. The selection of the sampling units depends only on the quality of the registers and in cases where there is a good coverage of the population there is no need for weighting the results. Post-stratification is only made

for non-responses as these are the only cause of deviations from the population. This results in small weights and small standard errors.

### Random Route

The random route procedure is commonly used for selecting the sample households when reliable registers are not available. The random route is the method, where by following a specific route and rule (e.g. every 3rd address on the right side of the street) a household is enumerated as a sample unit. In most cases, the sample selection is made by the interviewers, either by first collecting the addresses and at another time making the contact, or most frequently by making immediate contact with the identified address, usually referred as “random route light”. If the selection is done by interviewers they may have a motive in influencing the sampling process (neglecting the rules to get interviews easier), especially when their decisions are not properly controlled.

Therefore, it is advisable to use sampling frames (registers) where these are available instead of a random route method. However, when this is not possible, a random route enumeration of addresses in advance should be implemented by a different person that marks the sample units for the interviewer to follow. In this way the full potential of the random route procedure to provide random samples of households can be reaped. This approach will entail more costs as it requires double visits in each cluster of addresses. It is however preferable for all countries where random route is used to decrease possible bias derived from the selection of sampling units.

An alternative is to continue to have interviewers to do both sample selection (enumeration) and interviewing but to separate the two processes. The interviewer should first go to the starting point and draw the sample, marking the sampling units in a sketch map. A copy of the map should be sent to the survey manager for control. After that the interviewer can start the interviews. In this way random routes can be checked in advance for proper implementation of the method and, more critically, the interviewer can not change the random route plan or adjust it to particular circumstances.

As regards the implementation of the random route procedure in the 2nd EQLS and checks done, more information is required in order to assess the effect of the random route enumeration on the quality of sampling.

### **4.2.2.2 Measurement errors**

Measurement errors occur during data collection and cause recorded values of variables to be different from the true ones. Their causes are commonly categorized as:

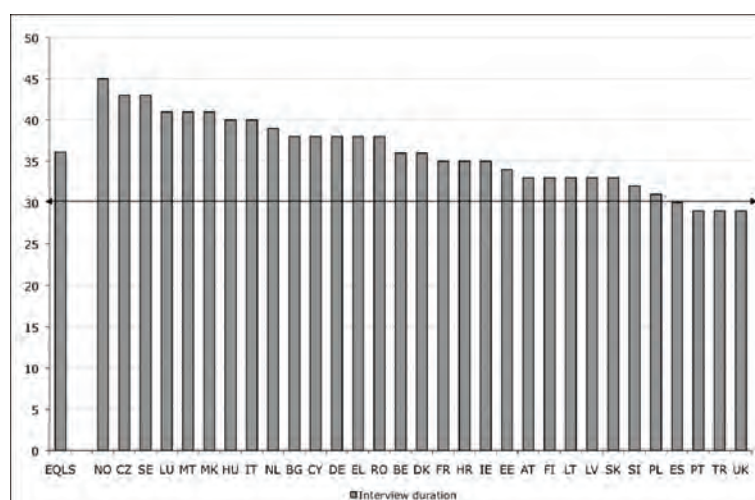
- Survey instrument: the form, questionnaire or measuring device used for data collection may lead to the recording of wrong values.
- Respondent: respondents may, consciously or unconsciously, give erroneous data.
- Interviewer: interviewers may influence the answers given by respondents.

Measurement errors may cause both bias and extra variability of statistical outputs. Bias is usually the main problem. Below we analyse errors that may have occurred during the interviews in the 2nd EQLS. Measurement errors may have also occurred as a result of translations of the questionnaires; however, we lack more detailed information to further analyze this aspect.

During a long interview a respondent can lose concentration or become tired depending on his/her characteristics (age or health status, for example), salience of the topic, rapport with the interviewer, design of the questionnaire, and mode of interview. Interview duration is shown in Figure 5.



**Figure 5. Duration of the interview for the 2nd EQLS**



Note: The vertical line indicates the target duration of the EQLS interview (30 minutes)

The average duration for the 2<sup>nd</sup> EQLS was 36.1 minutes, in five countries the average duration was above 40 minute but in no country the average duration exceeded 45 minutes. With reference to the recommended duration of the EQLS interview (around 30 minutes) four countries met this target. Therefore, the average length of the 2<sup>nd</sup> EQLS interviews is considered to be longer than expected and this should be taken into account in the design of the next wave.

The length of an interview could be improved in various ways. At first, the appropriate infrastructure available for the data collection may facilitate the procedure and result in shorter interviews. As a general rule, interviews that are carried out via CAPI (Computer Assisted Personal Interview) have shorter duration than those realized via PAPI (Paper Assisted Personal Interview). In the 2<sup>nd</sup> EQLS, 19 countries used a CAPI method while the rest of them used PAPI. Figure 5 shows that in countries with average interview duration over 35 minutes mainly PAPI method is used. Notable exception is Turkey, where the average duration is less than 30 minutes despite the use of PAPI.

Another aspect that may affect the duration of the interview, and thus be a cause of measurement errors is the disturbance of respondent during the interview. In most of the countries the interview was not interrupted at all. In case of disturbances, these were mainly caused by the children's presence or the radio / TV being turned on during the interview. Table 20 shows the percentages of disturbances from various factors as well as the proportion of cases with no disturbances per country. Countries are listed in descending order based on the length of the interview.

**Table 20. Disturbances during the interview in the EQLS 2007**

Country	Children around (playing)	Radio/TV on	Pets around	Telephone calls during the talk	Respondent busy with other activities during the talk	Other	No disturbances
EQLS 2007	6.4	5.4	2.0	3.1	1.4	1.3	83.3
NO	8.2	7.5	2.2	3.4	1.4	1.2	80.7
CZ	8.6	10.8	6.8	7.1	2.4	0.2	70.8

SE	2.7	1.0	1.7	2.1	0.1	1.2	92.4
LU	6.4	4.7	2.3	4.0	1.3	1.7	82.8
MK	7.5	8.9	0.6	1.3	1.8	0.7	81.8
MT	8.1	3.9	2.9	2.5	1.8	0.8	83.5
HU	6.1	3.7	1.8	2.4	1.2	0.5	86.9
IT	4.6	4.2	2.1	4.3	1.2	0.5	86.5
NL	6.2	3.6	1.8	2.3	0.1	1.5	86.9
BG	2.8	3.9	2.4	2.6	1.6	0.2	87.2
CY	10.7	12.5	1.5	7.6	3.1	2.3	71.6
DE	5.1	2.4	0.6	1.7	0.9	1.2	89.3
EL	0.6	5.8	1.0	3.4	1.8	0.8	87.1
RO	5.0	3.0	1.6	2.3	1.8	0.8	86.7
BE	7.1	7.0	2.0	2.7	0.9	2.1	82.0
DK	6.2	6.1	4.4	6.2	2.3	1.8	78.7
FR	9.0	3.9	2.0	2.7	0.6	1.8	83.5
HR	7.2	8.2	1.6	2.4	1.4	4.1	79.5
IE	9.2	3.7	2.6	3.1	0.9	1.8	82.3
EE	10.6	11.1	3.3	2.5	1.4	1.8	74.7
AT	5.6	5.8	3.5	9.7	1.2	0.6	76.5
FI	7.9	6.4	1.1	1.5	0.9	0.8	83.0
LT	9.4	6.8	1.2	1.6	1.1	0.7	81.5
LV	6.9	8.2	3.3	1.2	1.5	1.1	80.7
SK	5.9	5.6	1.7	3.7	1.5	0.7	82.5
SI	5.7	5.9	1.0	3.1	2.2	1.4	84.1
PL	5.4	3.2	0.8	1.7	1.9	0.9	87.5
ES	2.9	1.8	0.7	3.4	1.1	1.2	90.1
PT	2.6	1.3	1.4	0.8	2.1	0.3	92.8
TR	6.8	1.0	0.6	1.3	1.5	1.7	87.9
UK	9.2	6.1	2.2	2.3	1.5	2.8	80.0

In most of the countries the interview was not interrupted at all. In case of disturbances, these were mainly caused by the children's presence or the radio / TV being turned on during the interview. This is more apparent in Estonia and Cyprus. Especially, in the latter case, a significant proportion of interviews (7.6%) were also interrupted by telephone calls.

As regards the relation between the length of the interview and the percentage of disturbances the findings are not always consistent. For example, Portugal reports one of the shortest interview duration on average as well as the lowest proportion of disturbances. Furthermore, in Czech Republic, where almost one third of interviews were interrupted, the average length is almost 45 minutes.

However, exceptions are apparent, like it is the case of Sweden. The effect of disturbances on the length of the interview seems to be more of a country-specific matter rather than a general trend.

#### 4.2.2.3 Processing errors

Processing errors may come up during the data entry and the coding of the answers. As to the 2<sup>nd</sup> EQLS, an automated checking program was built for this survey. This program checked the filters of the questionnaire, the coherency between selected set of variables at the record level, the codification and the correct storage of the data. No significant problems were reported.

#### 4.2.2.4 Non-response errors

Non-response is the failure of a sample survey (or a census) to collect data for all items in the survey questionnaire from all the population units designated for data collection. The difference between the statistics computed from the collected data and those that would be computed if there were no missing values is the non-response error. Non-response can affect the quality of survey statistics.

There are two types of non-response:

1. unit non-response which occurs when no data are collected from a population unit designated for data collection, and
2. item non-response which occurs when data only on some but not all the survey (questionnaire) items are collected from a designated population unit.

Unit non-response arises from three reasons:

- Inability to contact and interview the sampled person. Non-contacts arise because interviewers cannot contact the sampling unit, cannot reach anyone at the sampled address or the respondent is away or otherwise unavailable during the interview period.
- Inability of the contacted person to provide responses to the survey (due to illness, language barrier, etc.).
- Refusal of the selected person to the interview request.

In order to assess the effect of non-response errors in the 2<sup>nd</sup> EQLS three indicators are presented, i.e. the response rate, the non-contact rate and the refusal rate. (Table 20) Based on the formula developed by TNS opinion and Eurofound, these rates are defined as following;

$\text{Response rate} = \text{number of completed interviews} / \text{number of net sample}$
--

Net sample is derived from the gross sample dropping out all non-eligible units in the sampling frame (deadwood addresses, addresses without eligible respondents, selected respondents with language difficulties).

**Table 21. Response, refusal and non-contact rates in EQLS 2007 (%)**

Country	Response rate	Refusal rate	Non-contact rate
BG	81.9	15.7	0.4
RO	78.5	10.8	10.8
PT	73.5	20.1	6.4
MK	72.9	24.7	2.4

SK	72.7	21.5	5.9
IE	72.2	15.2	11.7
HU	64.9	34.8	0.4
MT	62.5	22.3	15.3
TR	60.4	38.7	1.0
CY	58.6	37.6	3.8
AT	56.2	28.5	15.3
CZ	55.4	30.9	13.6
SI	51.6	43.3	5.1
HR	49.7	46.7	3.6
BE	49.2	36.1	14.6
LV	48.1	38.4	13.5
EE	48.0	29.2	22.8
DE	47.3	18.7	34.0
LT	46.3	44.0	9.7
PL	41.1	57.1	1.8
IT	41.0	53.6	5.4
NO*	37.2	61.7	1.0
ES	34.9	43.0	22.1
FR	33.6	50.6	15.8
FI	32.9	29.2	37.8
EL	32.7	63.5	3.8
LU	30.4	39.2	30.4
NL*	29.3	50.4	20.3
DK	27.8	36.3	36.0
UK	26.2	52.0	21.9

Note: In the Netherlands and Norway, the figures only pertain to the random route segment of the sample. Sweden is excluded from this table since sampling was carried out through telephone screening.

Response rates are an important indicator which helps assessing data quality. In this section we present a comparison of the response rates between the first wave of the survey (EQLS 2003) and the second wave (EQLS 2007). The aim of this comparison is to highlight whether there were any improvements made concerning the response rates with higher rates contributing to improvement in accuracy. The response rates for the two waves of the EQLS survey are shown in the Figure 6 below. For the comparative purpose, response rates for the EQLS 2007 presented in the following figure have been re-calculated using the method which was applied in the 2003 survey<sup>23</sup>.

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<sup>23</sup> Response rate = eligible sample - refusal rate, where Eligible sample = gross sample - all non contacts.

**Figure 6. Response rates for EQLS 2003 and EQLS 2007**

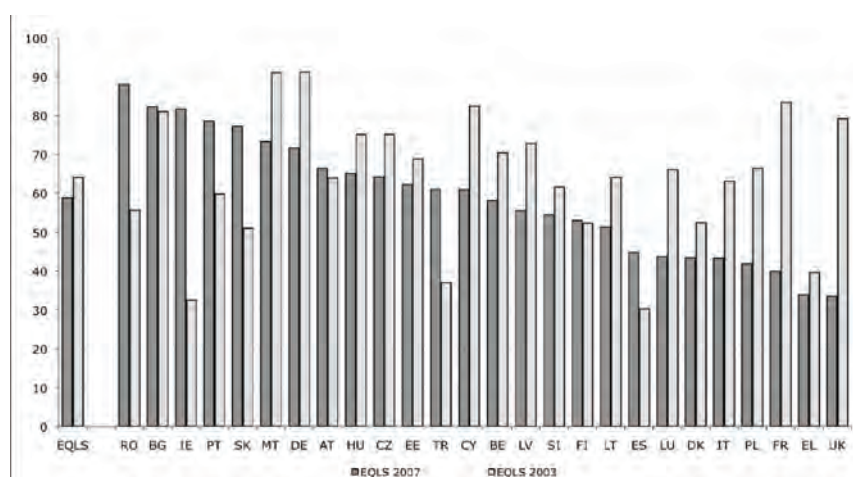


Figure 6 reveals that average response rate was 64.1% in the 1st EQLS, while in the second it dropped to 58.8%. The deterioration is big in the UK and France, where response rates have dropped from 78% and 83% to 33% and 40% respectively. Moreover, in nine countries response rates in 2<sup>nd</sup> round of the survey are below 45%. Also when compared with other household surveys such as EU-SILC, ESS or LFS the response rates in the EQLS are considerably lower (see Annex 1). This all tells us that response rates for the 2nd EQLS are not satisfactory which has been identified as a major challenge for the survey. The reasons behind the low response rates should be further analysed and investigated in view of the next round of EQLS. Possible reasons could be the short fieldwork period and thus short period to convert refusals or reach non-contacts, specific interview mode, etc.

#### 4.2.3 Overall assessment of accuracy in 2<sup>nd</sup> EQLS

Most countries have used a multi-stage stratified clustered sample design with random route for the selection of the respondent at the last stage. The main advantages of cluster sampling as opposed to simple random sampling (SRS) are lower data collection costs as a result of a less dispersed sample than in SRS. It is however less efficient in terms of realised variance of the estimators than SRS; the design effect has been above 2 in half of the countries. For this reason more efforts need to be made in order to make implementation of cluster survey more efficient. To offset efficacy loss Eurofound could consider increasing the number of clusters selected per country.

Sample sizes are regarded to be rather small for the needs of the analysis at national level. The sample is accurate enough to make estimations about overall population in a country, also with the implementation of appropriate weighting; however, the sample is limited when analysing specific sub-groups of the country population.

Weighting has been efficiently applied, with the use of four weighting variables (the two being the stratification variables) so that the weighted samples resemble the distribution of the universe. However, this representativeness has been achieved in a number of countries at the expense of reliability of the data (i.e. extreme weights). Countries could consider in the future trimming the weights. Moreover, the un-weighted sample should be analysed with caution since there is indication that figures are biased mainly with regard to the Sex/Gender and the Population in the size of household variables.

The more extensive use of registers as frame population will not only result in smaller weights and smaller standard errors but will also reduce reliance on ‘random walk’ sampling, a method that has received a lot of criticism mainly for the possible bias introduced during the selection of sampling units.

The length of the EQLS interview is considered longer than expected (initially foreseen to last for 30 minutes) which may have caused measurement errors. Measurement errors may have also occurred as a result of the translations of the questionnaires,.

Finally the survey has low response rates. However, low response rates are indeed a general and increasing problem of social surveys in Europe. Still, response rates of EQLS 2007 were considerably low, even lower than response rates of EQLS 2003. Low response rates have a direct impact on the reliability of the estimates. Thus additional ways to trigger respondents to participate in future data collections should be employed in order to increase reliability of the survey data.

### 4.3 Timeliness and Punctuality

The timeliness of EQLS statistics could be assessed by the time lag between the end of the survey reference period<sup>24</sup> and the date of the first dissemination of data. Here the whole survey cycle from publication of the procurement notice until publishing secondary analyses is included. This could give indication about the stages that could be shortened in next rounds to improve overall timeliness of the survey.

The production cycle of the 2<sup>nd</sup> EQLS lasted approximately two years (leaving out the publication of secondary analysis reports) - see Table 22. The first dissemination of the results (Resume) was made in November 2008, i.e. 12 months after the reference period (November 2007) and 20 months after the work on the questionnaire re-design had started. This time length is considered to be quite long taking into consideration the importance of the EQLS results and the need of users for earlier publications.

It is of great importance to assess the reasons for delays in the survey cycle and in the publication of EQLS results. Firstly, it is worth mentioning that it took quite long time to re-design and update the survey questionnaire: from the beginning of 2007 until mid-August of that year or approximately 8 months. It is true that in the second wave there was intentionally much time devoted to the development of a high quality questionnaire that would better suit information needs of the stakeholders and other survey users. It is expected that this stage will be shortened in next rounds given that the questionnaire would not require significant changes.

Another aspect that could be considered is the time needed until the final micro-data sets are made available to the Eurofound staff for analyses. The time lag between the reference date and data transmission to Eurofound is approximately 6 months. The duration of this stage, which largely concerns the preparation of the dataset, appears to be one of the main reasons for not publishing earlier the EQLS results. Therefore, it is suggested to improve the design and implementation of all procedures during this stage with a view to improving the timeliness of the survey.

**Table 22. Timeline of the survey cycle**

Survey stage	Starting Date	Ending Date	Duration
Publication of procurement notice	9 February 2007	27 March 2007	~1.5 months
Contract beginning	13 June 2007	4 September 2008 (contract sign-off date)	~14 months
Master questionnaire development	January 2007	7 August 2007	~7 months
Pilot survey	7 July 2007	15 July 2007	~1 week
Pre-test of the	20 August 2007	27 August 2007	~1 week

<sup>24</sup> Reference period is defined as the end date for the fieldwork of the 2<sup>nd</sup> EQLS, November 2007 for EU27.

Survey stage	Starting Date	Ending Date	Duration
questionnaire			
Questionnaire translation	6 August 2007	17 August 2007	~1.5 weeks
Briefing of interviewers	4 September 2007	19 September 2007	~2 weeks
Fieldwork period	20 September 2007	20 November 2007 / February 2008	~2 months/5 months
Data-cleaning, weighting etc.	February 2008	May 2008	~4 months
Final data checks	May 2008	June 2008	~2 months
Data set made available to Eurofound staff	July 2008	NA	NA
1st Dissemination of results (Resume)	November 2008	NA	NA
Detailed dissemination (Overview report )	March 2009	NA	NA
Dissemination (Secondary analysis reports)	December 2009→	NA	NA

Overall, timeliness could be further improved. The time lag between the end of 2007 (reference period) and November 2008 when the first results were disseminated makes published figures of lesser interest and importance rather than if being published earlier. Efforts should be made in the future to identify those phase(s) in the production cycle that slow down the preparation of data for publication. Efforts should be focused in the identification of sources of delays in all stages of data production and in particular in the data processing and data dissemination process (see also sections 3.3 and 3.4).

#### 4.4 Accessibility and Clarity

Accessibility and clarity refer to the simplicity and ease for users to access statistics obtaining them in an expected form and within an acceptable time period, with the appropriate user information and assistance: a global context which finally enables the users to make optimum use of the statistics. More precisely:

- Accessibility refers to the physical conditions in which users can access statistics (e.g. micro-data file, tables, charts, other): distribution channels, ordering procedures, time required for delivery, pricing policy, marketing conditions (copyright, etc.), availability of micro or macro data, media (paper, CD-ROM, Internet, etc.), etc.
- Clarity refers to the information and context accompanying the statistics: appropriate metadata (explanations, documentation, methodology, etc); information on the quality of the data (e.g. possible limitations in use); graphs, maps, and other illustrations; and assistance offered to users by Eurofound.

#### Dissemination modes and status

The results of the 2<sup>nd</sup> EQLS made available through different analyses and reports can be downloaded at a dedicated Eurofound EQLS web page. In addition to downloading publications users can easily access most of the key statistics in different forms (map, bar chart, and table) and by country, gender, age or income through [survey mapping tool](#). The aggregate level data can also be downloaded as cvs.file.

The full micro-data set of the 2nd EQLS is available at the UK Data Archive (UKDA) of the Essex University. Users who are interested in obtaining a copy of the dataset can access [the Economic and Social Data Service-international \(ESDS\)](#) website and download the requested data.

The publications currently available for the 2<sup>nd</sup> EQLS are presented in Table 21.

**Table 23. EQLS 2007 publications**

<b>Publications of results</b>
<a href="#">EQLS 2007 – First Findings (Résumé)</a> (published on 18 November 2008 – available in 26 European languages)
<a href="#">EQLS 2007 – Press release</a> (published on 19 November 2008)
<a href="#">EQLS 2007 – Overview report</a> (published on 23 March 2009)
<b>Video presentation of key findings</b>
<b><a href="#">Secondary analysis on key policy themes</a></b>
<a href="#">Living conditions, social exclusion and mental well-being</a> (published on 8 January 2010)
<a href="#">Trends in quality of life in Europe 2003 – 2007</a> (published on 9 December 2009)
<a href="#">Family life and work</a> (published on 24 March 2010)
<a href="#">Subjective well-being</a> (published on 1 March 2010)
<a href="#">Quality of society and public services</a> (published on 24 March 2010)
<b>Documentation on methodology</b>
<a href="#">EQLS 2007 - Fieldwork report</a>
<a href="#">EQLS 2007 – Technical report</a>

Further analysis of the EQLS 2007 data have been (will be) published in 2011:

- Participation in volunteering and unpaid work
- Quality of life in ethnic neighbourhoods in Europe
- Quality of life in Croatia, FYROM and Turkey

#### Explanatory material and methodological information

All analytical and descriptive reports based on 2<sup>nd</sup> EQLS contain short methodological information about the survey. The overview report has a separate section which gives a summary presentation of the way the survey was conducted with the full-size questionnaire attached in the annex. A dedicated section on “[Methodology](#)” is also available on the website of Eurofound covering the main methodological aspects (sampling design, questionnaire, fieldwork, weighting, classifications and quality assurance). Finally, the site contains the survey questionnaires in all languages in which the survey was conducted.

With reference to the EQLS results published at the Eurofound website – via the survey mapping tool – there seems to be lack of meta-information regarding the variables presented in the tool. Eurofound



presents the results divided in thematic sections. The listed variables have the form of questions in the way these are asked in the EQLS questionnaire. However, there is not always complete correspondence between the variable presented in the tool and the respective question in the questionnaire. In that way, it is not straightforward what the variable indicates and this could lead to misinterpretations from users, especially in cases of data comparisons with other relative sources.

In order to illustrate better this argument we present below an example of a question that is formulated differently in the questionnaire and in the survey-mapping tool. This question refers to the respondent's perception of "Problems with crime, violence or vandalism in the neighbourhood". In the EQLS questionnaire, it is asked: "Please think about the area where you live now – I mean the immediate neighbourhood of your home. Do you have very many reasons, many reasons, a few reasons, or no reason at all to complain about crime, violence or vandalism?". Thus the question has four answering categories ('very many reasons', 'many reasons', 'a few reasons' and 'no reasons'). However, in the EQLS website, in the survey mapping tool the above variable is published with a different breakdown (Yes/No). Such differences should be clearly presented and clarified to users of the EQLS results in order to avoid misunderstandings. What may be considered is to include a small methodological note for each group of variables that would provide users with the basic metadata information regarding the published results. This note could include the main definitions of the variables, their breakdowns and any alterations from the questionnaire, etc.

## 4.5 Comparability and Coherence

### 4.5.1 Coherence with other statistics

The coherence of EQLS statistics may be assessed by the comparison with other relevant statistics. In section 4.1 it was already mentioned that many QoL dimensions are also measured in other European surveys. In this section we compare the EQLS variables with common variables from these relevant surveys in order to identify issues with coherence. Deviations in the results taken from different surveys for the same variable are often caused by different methodologies and thus need further examination. Our analysis is based on the following four surveys:

- The EU Statistics on Income and Living Conditions (EU-SILC) with reference year 2007  
EU-SILC is the main source of comparable indicators on social cohesion used for policy monitoring at EU level in the framework of the Open Method of Coordination. It is collecting on an annual basis timely and comparable multidimensional micro-data on income, poverty, social exclusion and living conditions. Every year, both cross-sectional and longitudinal data are collected.
- The European Social Survey (ESS) with reference year 2008  
ESS is an academically-driven multi-country survey, which has been administered in over 30 countries to date. However, the 2008 survey did not cover all the EU Member States. It aims at monitoring and interpreting changes in public attitudes and values within Europe, improving methods of cross-national survey measurement and finally developing a series of European social indicators, including attitudinal indicators.
- The EU Labour Force Survey (LFS) with reference year 2007  
The EU LFS is a quarterly survey covering the population in private households in the EU, EFTA (except Liechtenstein) and Candidate Countries. It provides annual and quarterly results on labour participation of people aged 15 and over as well as persons outside the labour force. In providing data on employment, unemployment and inactivity, the EU LFS is an important source of information about the situation and trends on the labour market in the European Union. EU LFS sample size amounts approximately to 1.5 million individuals each quarter.
- The European Working Conditions Survey (EWCS) with reference year 2005

This is a survey on workers, also conducted by Eurofound every five years from 1990 onwards. EWCS provides an overview of working conditions throughout Europe and indicates changes affecting the workforce and quality of work.

The target populations of the five surveys are similar. The only difference appears on the starting age of the population covered. In addition, EWCS covers only people in employment but it is used in the comparison as being one of the surveys also conducted by Eurofound. With the exception of ESS, all EU-27 countries are covered as well as some or all of the Candidate Countries and the EFTA countries. The frequency of data collection varies among the surveys as well as the total sample sizes. With reference to the latter, the 4<sup>th</sup> EWCS and the 2<sup>nd</sup> EQLS have the smallest sample sizes (below 40.000 respondents in all participating countries).

As regards the sampling method in almost all cases a multi-stage stratified sampling is used. For the data collection there are various modes used. In most cases face-to-face interviews are made either by PAPI or CAPI. The length of the interviews is also variable with the EU-SILC having the minimum average duration (29 min.) and the ESS the maximum (71 min.).

Finally, with reference to the response rate achieved in each survey, LFS and EU-SILC have the highest response rates while EQLS reports an average response rate below 60%. Both EU-SILC and ESS have a threshold for the minimum response rate in the survey (60% in the EU-SILC and 70% in the ESS) that many countries managed to reach. Other main characteristics of the five surveys are presented in Annex 2. It could be used as a reference when comparing data from different surveys.

#### Data comparison for common variables between the surveys

In this section a number of common variables in the 2nd EQLS and in one or more of the aforementioned surveys are presented. Table 24 shows the average values for all countries in the survey for each of the selected variables. When an EQLS variable is encountered in more than one survey two averages are given in EQLS – one for each comparison as the countries included in the average are not the same in all three surveys. This is the case of two variables presented in the table, the ISCED and the health status.

For each pair of estimates the difference between the EQLS and the other source are calculated (given as value in % in the EQLS and value in % in other source) and t-test is applied to check the significance of the reported differences. The detailed results of the t-tests are given in Annex 3.

The test shows that considerable differences appear between the EQLS and the EU-SILC. This is most notable in three variables, i.e. the “Inability to keep home warm”, “Inability to afford a holiday” and “Inability to afford an adequate meal every second day”. The sample design and methodology implemented in the two surveys does not have significant differences. In addition, the target population is the same. Therefore, the differences reported may be due other reasons, for instance due different formulation of the particular variables in the questionnaire or some measurement errors. As it is mentioned above, EQLS provides a uniform questionnaire that is translated in all languages and implemented in all countries included in the survey. On the contrary, the practice followed by EU-SILC is to recommend a way each question could be asked. This leaves a great freedom to all countries to choose their own formulations and develop a questionnaire that it is more country specific. The differences in the total averages, then, are mainly caused by differences in particular countries and it is not easy to make a general statement.

**Table. 24 Data comparison for common variables between the surveys<sup>25</sup>**

Variable	Category	EQLS 2007	ESS 2008	EU-SILC 2007	LFS 2007	EWCS 2005
Level of education (ISCED)	0-2	24.8%	36.6%			
		26.7%			33.9%	
	3-4	49.3%	42.0%			
		50.7%			43.6%	
	5-6	25.9%	21.4%			
22.6%				22.0%		
Marital status	Married or living with partner	65.2%	55.1%			
	Separated or divorced and not living with partner	6.9%	8.6%			
	Widowed	8.6%	9.8%			
	Never married and never in civil partnership	18.5%	26.1%			
Type of employment contract	An indefinite contract	73.5%				75.9%
	A fixed-term contract	9.2%				11.3%
	A temporary employment agency contract	1.1%			7.2%	1.5%
	An apprenticeship or other training scheme	0.3%				0.9%
	No contract	10.4%				8.6%
	Other	4.3%				0.7%
Sector of employment	Private sector	63.2%				63.6%
	Public sector	28.9%				28.1%
	Joint private-public organisation or company	3.5%				4.5%
	Not-for-profit sector, NGO	1.0%				1.3%
	Other	2.1%				1.6%
Second job		7.4%			4.7%	
Home ownership	Own with mortgage	24.8%	24.7%			
	Own without mortgage	56.1%	52.3%			
	Renting	19.1%	23.0%			
Household with financial burden	Heavy financial burden	16.7%	28.3%			
	Somewhat	44.8%	49.3%			

<sup>25</sup> The subtle differences in the survey methodology should be taken into account when drawing conclusions concerning the coherence of 2<sup>nd</sup> EQLS and other European surveys.

	financial burden					
	Not a burden at all	36.5%	22.4%			
Health status	Very good or good	63.1%	63.2%			
		63.7%		64.4%		
	Fair	26.3%	27.5%			
		26.6%		23.9%		
Very bad or bad	10.5%	9.3%				
	9.6%		11.7%			
Happiness index (on a scale from 1 to 10)	1	0.9%	1.9%			
	2	1.0%	1.8%			
	3	1.9%	3.2%			
	4	2.7%	4.1%			
	5	8.7%	12.0%			
	6	8.6%	9.5%			
	7	17.6%	18.9%			
	8	29.1%	25.5%			
	9	17.5%	14.4%			
	10	11.3%	8.6%			
Overall satisfaction with life (on a scale from 1 to 10)	1	2.1%	3.9%			
	2	1.7%	2.9%			
	3	3.8%	4.6%			
	4	4.2%	5.2%			
	5	12.3%	12.9%			
	6	10.0%	9.5%			
	7	17.3%	16.7%			
	8	24.3%	23.5%			
	9	14.1%	12.4%			
	10	9.7%	8.5%			
Household in arrears on paying rent/mortgage		7.0%	3.1%			
Household in arrears on utility bills		11.6%	7.7%			
People with long-standing illness		25.9%		30.1%		
Households unable to keep home warm		10.8%		13.1%		
Households unable to afford a week holiday away from home		32.9%		39.5%		
Households unable to afford a meal		9.4%		11.6%		
Households with neither bath nor shower		5.5%		5.3%		
Households with no indoor flushing toilet		5.4%		5.9%		

#### 4.5.2 Comparability of EQLS results over time

In both waves, the survey examined a wide range of issues such as employment, income, education, housing, family, health, work-life balance, life satisfaction and perceived quality of society.

The number of questions and issues covered has changed to some extent from 2003 to 2007, but a set of core questions has remained the same, in order to study trends in quality of life over the last four years. The 2007 questionnaire has been expanded in relation to a certain number of new areas such as

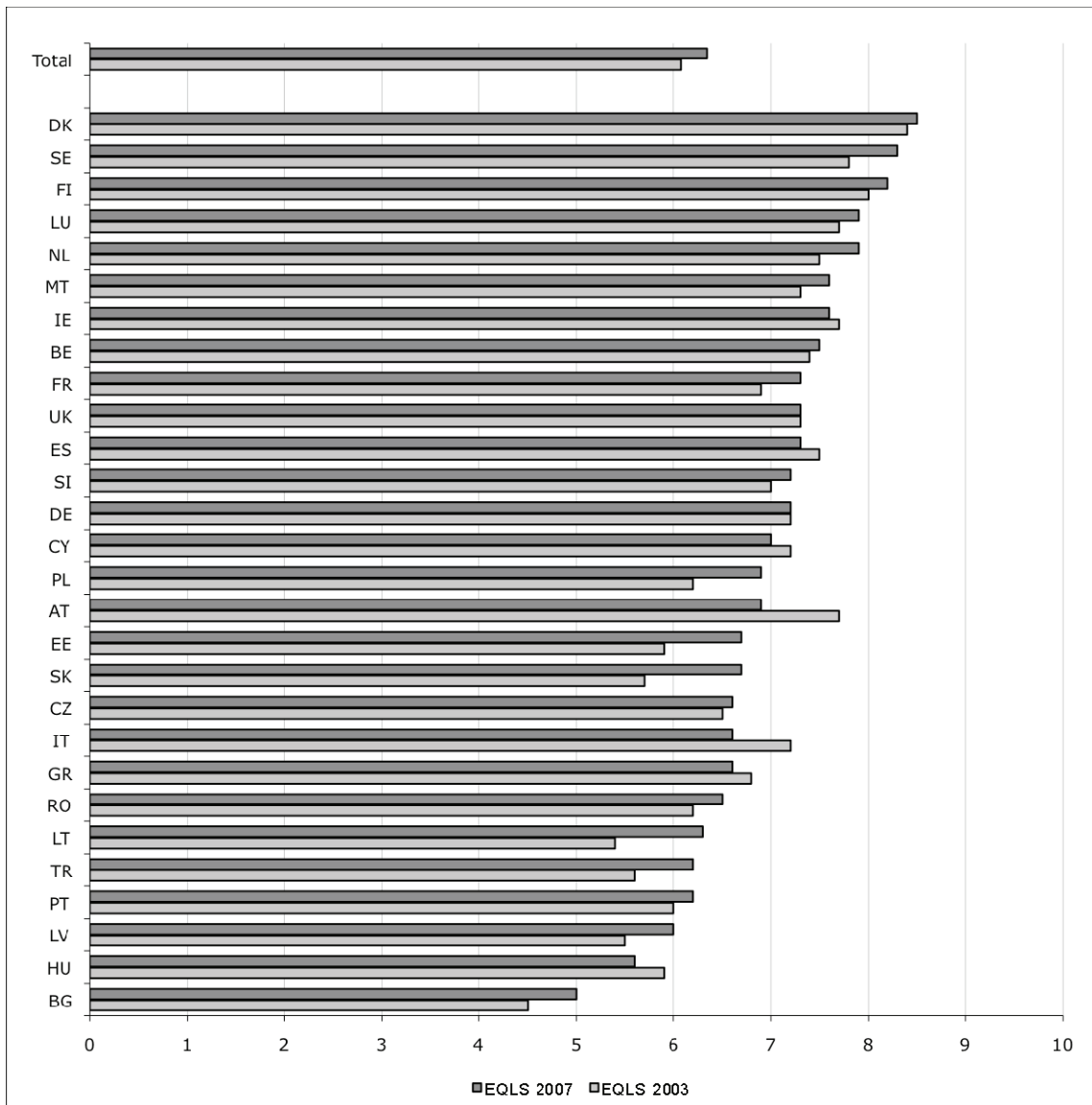
quality of local environment, mental health and attitudes toward migrants. In the case of certain background variables such as education level, occupation and net household income, more adjustments have been done in order to increase quality of analytical variables and the research potential. New questions introduced were, wherever possible, based on questions already successfully used in other similar national surveys.

#### Comparison of EQLS results between the two waves

As mentioned before, more than a half of the variables can be found in both waves of the EQLS. These common variables are intended to measure trends in different aspects of quality of life in Europe. The 2003 and 2007 outcomes on these variables are compared and statistically tested in order to identify if the differences in the common variables are statistically significant. The significance has been checked with the use of t-test. The detailed results per variable are shown in Annex 3.

The results show that the measured values on the selected common variables have improved over time when looking on averages for all countries. This is more apparent in the variables on quality of housing and variables on affordability of basic necessities. Given that the methodological differences between the two waves are not significant, the differences in outcomes (or a large part of them) could be attributed to changes (improvement) in the quality of standard of living.

**Figure 7. Overall satisfaction with life in EQLS 2003 and EQLS 2007 presented in scale from 1 to 10 (1= very dissatisfied and 10= very satisfied)**



However, there are differences between countries. Though the overall situation on number of quality of life indicators in the EU might have improved it does not necessarily hold for all countries. Below the results on the variable ‘Life satisfaction’ are presented as an example where it could be seen that for some countries the outcomes on the indicator has been lower in 2007 than in 2003.

## 5 Conclusions and recommendations

The importance of quality of life indicators has recently attracted more interest from policy makers. The way "well-being" is approached has changed. While in the past interest focused on economic indicators such as GDP, CPI, unemployment rate, level of household income, etc, presently indicators of quality of life are at the centre of attention. These recent trends have considerably increased the relevance of the EQLS as a unique data collection instrument to meet present and future needs for evidence based policy-making as well as provide valuable time series of comparable data for research and analyses on quality of life, well-being and social progress.

Before this study on quality assessment of 2<sup>nd</sup> EQLS was launched, Eurofound already had an idea of data users' perception on the importance and the quality of the survey. According to the users, the EQLS key quality dimensions are rated in the following order of importance: comparability of data over time (trend indicators), accuracy, timeliness, accessibility, comparability of data across countries, quality and content of the questionnaire, and comparability with other surveys. Overall the EQLS data users appear to be satisfied with the quality of the questionnaire, content of the survey and the accessibility of the data. Their main concerns are related to the sample size of the survey and the survey's ability to capture the changes over time.

Findings of our analysis agree to a large extent to data users' perception. Overall quality of the statistical output of the 2<sup>nd</sup> EQLS is good but not without problems. The analysis has found that relatively small sample sizes and high non-response are the major limitations that affect accuracy of the survey data. Although sample sizes are big enough to make a general population profile at the country level, they are too small to allow detailed analysis of sub-groups within countries. Besides, non-response rates are considerably high. Compared with the 1<sup>st</sup> EQLS, response rates of the 2<sup>nd</sup> EQLS have deteriorated. Moreover, they are considerably lower than the response rates achieved in other social surveys, like EU-SILC and the ESS. Given the importance of response for the quality of collected empirical material, a priority should be given to find measures and mechanisms to increase response rates.

The analysis shows that timeliness is another important drawback of the 2<sup>nd</sup> EQLS. The overall survey process, from the publication of the procurement notice until the publication of the first results lasted for over 1.5 years. First results (Resume) were published nine months after the end of fieldwork in all countries. Detailed dissemination came 13 months after the end of fieldwork. One of key reasons for this is a long period of post-fieldwork activities on data. Although most countries have completed fieldwork on time, it appears that data processing for the preparation of data for dissemination has taken longer than expected. Eurofound should identify those processes within its organisation that cause delays in the preparation of data files for dissemination (e.g. adequacy of IT infrastructure, resources available, scope of data editing, etc). Care however needs to be taken so that dissemination is not speeded up at the expense of data accuracy and reliability.

Real time monitoring of process variables and creating a single quality assurance framework are suggested to improve the EQLS survey processes. Real time monitoring has to some extent been realised in the 2<sup>nd</sup> EQLS; Eurofound has been in constant communication with TNS Opinion especially during fieldwork to treat emerging problems and monitor progress. However, more systematic monitoring of process variables presented in this report would facilitate correcting errors in a timely manner.

It is overall suggested that recommendations for improving the survey presented in this report are treated from a holistic point of view. This includes taking into account not only the data users' priorities but also possible trade offs between the quality components as well as the budget for next (the 3<sup>rd</sup>) round of EQLS to be implemented late in 2011. For instance, users' impression is that by increasing the sample size we should expect better overall quality. However, sample size is only one parameter of the survey design and survey quality and should also be looked against cost and timeliness as larger sample size means higher budget and more time for data collection and editing.

### Recommendations for improving the quality of the survey

This section points out main areas for improvements for the EQLS. However, a limitation of our analysis is that it lacks information on the association of the recommendations with anticipated costs for their elaboration. Costs are always linked to the processes, and must always be taken into account when considering quality. There is a balance between product quality and costs. The response burden is also an issue since it is important for the data providers. (see Annex 4 for relation between suggested improvements and quality dimensions)

- Establishment of methodological guidelines for the implementation of the next wave

The guidelines can be used to address:

- Detailed requirements for organisational structure and training needs
- Sampling requirements
- Use of CAPI
- Data collection procedure
- Data processing procedure (data entry, data validation, weighting, estimation)
- Reporting requirements.

- Sampling procedure (registers and random route)

The use of registers is preferable for a number of reasons including allowing better stratification and having true randomness and central control of the sample selection process (avoiding the influence of the interviewers on the sampling process). A particular register may be used as a frame if it meets certain quality criteria.

- Registers must have good coverage of all units in the survey population,
- They must be often updated with time references on date of registration
- Have a small percentage of erroneous entries
- Do not include units more than once.

However, when it is not possible to use a register and random route is used, it is preferable to distinguish the sample selection (enumeration) from interviewing. We suggest a random route enumeration of addresses in advance which should be implemented by a different person that marks the sample units for the interviewer to follow. In this way the sample selection and the interviewing are separated.

This approach will entail more costs as it requires double visits in each cluster of addresses. It is however preferable for all countries where random route will be used. In any case the random route implementation must be thoroughly checked. Fieldworkers doing the household and respondent selection must be given clear instructions on the procedure to be followed as well as a printed lists of starting addresses within each cluster or maps of the sampling area with an indication of the starting point. The random route enumeration should be checked based on a sketch of the implementation on the map as well as by re-contacting respondents (establishing the household composition and checking how the respondent had been selected).

The assessment of the availability of an acceptable register should be done in cooperation with a local contractor that has access to quality information on available registers. The assessment should be based on objective criteria taking into account costs, bias and sampling error.

- Interviewer's training

Highly trained and experienced interviewers tend to obtain higher response rates as well as minimise measurement error. It is therefore important to employ the most experienced interviewers available and assess this in the fieldwork report. It is also important to have a motivated workforce that understands the aims of the survey and its effect on policymaking so that they in turn can "sell" it to the selected respondents. Therefore a well designed training of the interviewers is crucial. During



training the importance of eliciting responses from groups underrepresented in the sample (based on sample vs. population comparisons from previous implementation) should be emphasized. Training should also include, and focus on household selection (random route case), standard contacting procedure, the respondent selection, and contact outcome recording. Finally, training should include techniques to avoid and convert refusals.

- Increasing the contact rate

An important element of non-response is non-contact. While refusal and inability to respond are hard and tricky to address and minimise, non-contact is usually considered tractable if enough time and resources are invested. The usual way to improve contact rates is by adding more recalls/revisits. Indeed more contacts yield more responses but the overall efficiency in the survey is diminishing as the number of recalls increases making the approach less cost efficient.

It has also been suggested that longer fieldwork period, allowing for more time to pass between the first contact and the last, increases the contact rate. Furthermore, indicators on fieldwork outcomes (non-contact, non-response) could be collected and monitored and the strategy can be adjusted accordingly. Weekly reports will be needed for this adjustment to be done effectively. Extending the fieldwork period further should be considered in countries where the contact rate is low.

Furthermore, collected data on non-contacts should be analysed. For instance, it has been observed that non-contact rates are much higher in households living in block-apartments<sup>26</sup>. This has been attributed to different factors, e.g. increased insecurity and introduction of gate-communities whereby these characteristics can correlate with important variables of objective and subjective well-being. As the reported non-contact rates for apartment\_population may be 2-3 times higher, non-contact may introduce bias in the results.<sup>27</sup>

Providing incentives to interviewers that encourage improving the contact rate should also be considered. In the case when interviewers are paid per interview this may be implemented by providing a set number of sampling points (clusters) without issuing additional ones if the contact rate is relatively small.

- Treating trade-off between timeliness and accuracy

Timeliness has been identified as an area where EQLS could be improved. However, it should always be kept in mind that some of the measures taken to improve timeliness might have a negative effect on the quality of other indicators and in particular on accuracy.

In the 2<sup>nd</sup> EQLS considerable time was needed for data editing and processing. A compromised solution might be to publish an early set of estimates and then one or more subsequent revisions. The need for revising the (early set of) data that has been published is an indicator of degree of accuracy that is being sacrificed in order to produce the increased timeliness of the outputs.

Also, data validation processes and systems used inside Eurofound should be re-evaluated in view of reducing the time needed for data editing, processing, validation and preparation for dissemination.

- Non-response rates and non-response analysis

A standard approach to calculating Response Rates is advisable. The American Association for Public Opinion Research (AAPOR) suggests a number of definitions for calculating response rates, cooperation rates, refusal rates and contact rates for household and telephone surveys. These are provided in detail in Annex 5.

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<sup>26</sup> Groves, R. M., & Couper, M. P. (1998). *Non-response in household interview surveys*. New York: Wiley.

<sup>27</sup> Heerwegh, D., Abts, K., and Loosveldt, G., (2007), *Minimizing survey refusal and noncontact rates: do our efforts pay off?* *Survey Research Methods*, Vol. 1, No. 1, pp. 3-10

When the level of non response is high (e.g. 40% or more) or when we believe that non response is not random but is related with a characteristic of living conditions then a non-response analysis should be performed to correct the non-response bias. It should be noted that when non-response is related to living conditions irrespective of the variables used for post stratification (ages, gender, region, economic activity of employer and occupation) non-response analysis is the only way to correct non-response bias.

- Preparation of publications of better timeliness

Eurofound could consider in the future the publication of a shorter report with the key findings of the survey at first and then prepare and disseminate the overview report. This shortest version could be a 10-page paper with tables and figures of the most significant variables with very few commenting on the results. It could also provide just the data itself without any comments / conclusions that will of course be included in the overview report. The approach described above is currently followed by Eurostat in many themes with the publication of the Data in Focus (DiFs). These are usually papers with a length of 4-5 pages that present only tables and figures of key results and a short reference on the methodology.

## Annexes

### Annex 1 Response rates by country

Figure 8. Response rates in EQLS 2007 and EU-SILC 2007 (%)

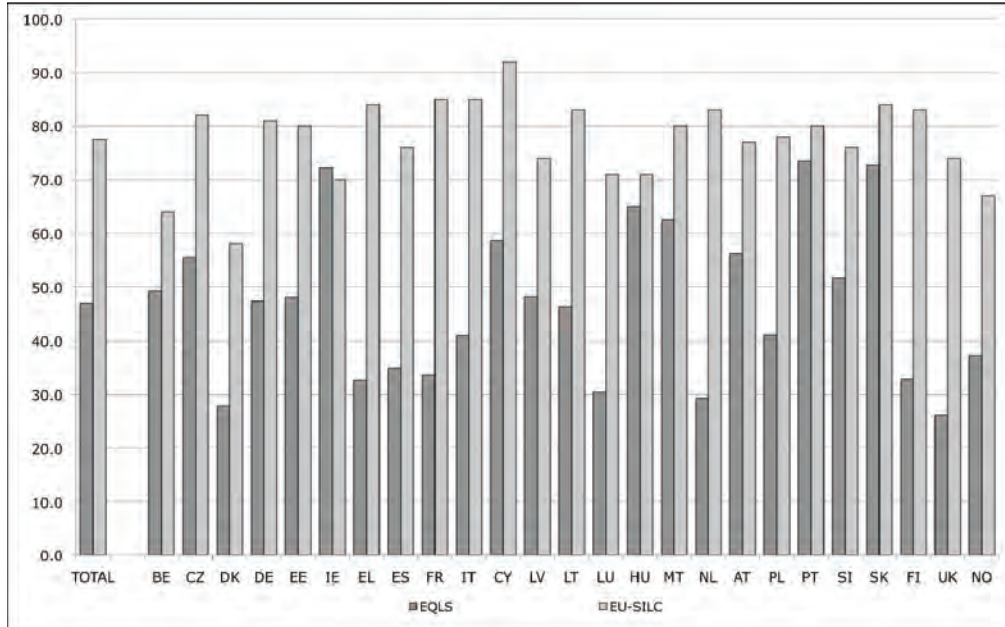
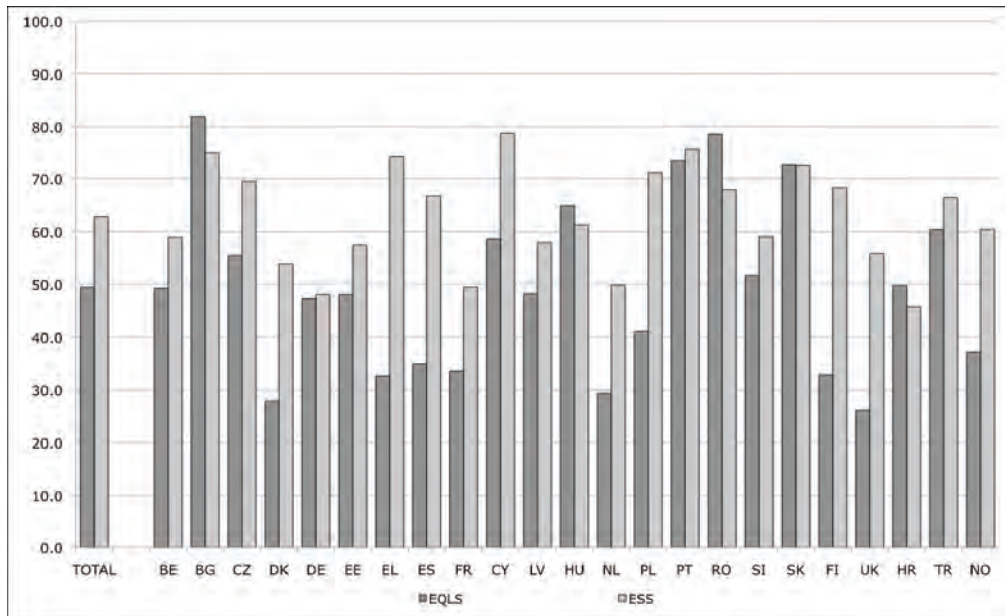
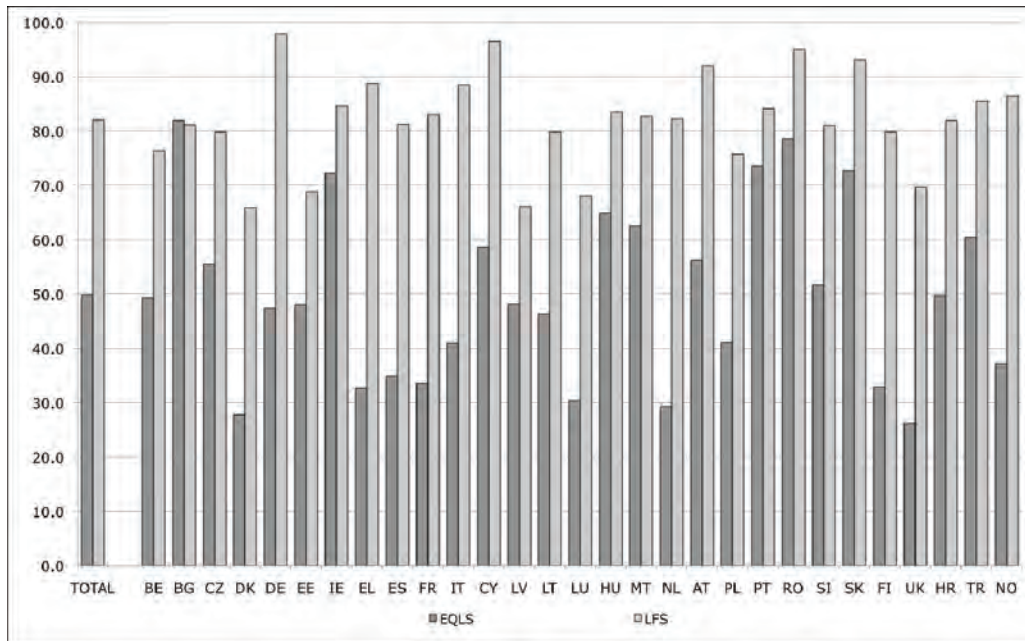


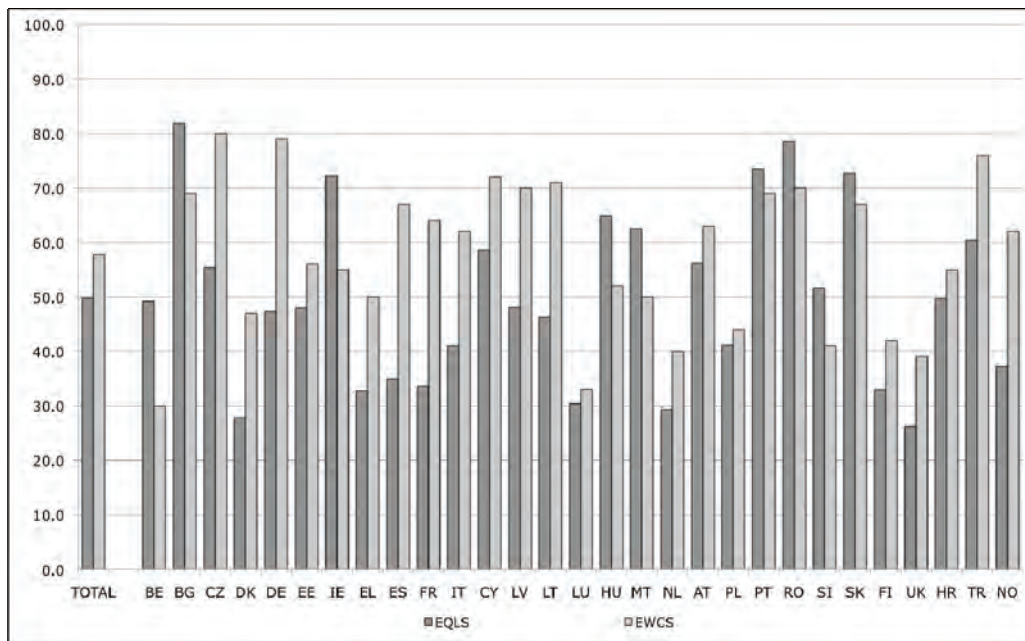
Figure 9. Response rates in EQLS 2007 and ESS 2008 (%)



**Figure 10. Response rates in EQLS 2007 and LFS 2007**



**Figure 11. Response rates in EQLS 2007 and EWCS 2005**



## Annex 2 Main characteristics of EQLS, EU-SILC, ESS, LFS and EWCS

**Table 20. Main characteristics of the five surveys in focus**

	<b>EQLS</b>	<b>EU-SILC</b>	<b>ESS</b>	<b>LFS</b>	<b>EWCS</b>
Target population	All residents aged 18 years and over that have lived in the country for the last six months preceding the survey, speak the national language and not be living in an institution	All persons living in private households	All persons aged 15 and over, residents within private households, regardless of their nationality, citizenship, language or legal status	All persons usually residing in Member States, except for persons living in collective or institutional households. Questions related to labour market status are restricted to those aged 15 years and over	All persons in employment, aged 15 years and over, having worked for pay or profit at least one hour in the week preceding the survey
Geographical coverage	31 countries (EU-27, 3CC and 1 EFTA (NO))	31 countries (EU-27, 1CC (TR) and 3 EFTA (IS, NO and CH))	28 countries (21 EU MS (BE, BG, CZ, DK, DE, EE, EL, ES, FR, CY, LV, HU, NL, PL, PT, RO, SI, SK, FI, SE and UK), 2CC (HR and TR), 2 EFTA (NO and CH) and RU, UA and IL)	33 countries (EU-27, 3CC and 3 EFTA (IS, NO and CH))	31 countries (EU-27, 2CC (HR, TR) and 2 EFTA (NO and CH))
Frequency of the survey	Every 4 years	Every year	Every 2 years	Every quarter	Every 5 years
Reference year	2007	2007	2008	2007	2005
Total sample	35634	448744	54988	1392100	29681
Sampling method	Multi-stage, stratified random sampling with a 'random walk' procedure for the selection of households where no available	Multi-stage stratified sampling (59.9%), Stratified simple random / systematic sampling (22.2%) and Simple random / systematic sampling (18.5%)	Multi-stage stratified random sampling	Multi-stage stratified random sampling	Multi-stage, stratified and clustered design with a 'random walk' procedure for the selection of the respondents at the last stage

	register exists				
Data collection mode	Face-to-face interviews (61.3% CAPI and 30.7% PAPI). Telephone screening used by 3 countries	Four modes of data collection: PAPI (39%), CAPI (34%), CATI (21%) and Self-administered questionnaire (6%)	Face-to-face interviews (57.1% PAPI and 42.9% CAPI)	Three modes of data collection: Face-to-face interviews (either PAPI or CAPI), CATI and Self-administered questionnaires (62.5% mixed-mode, 21.9% only face-to-face interviews, 15.6% only CATI)	Face-to-face interviews (93.5 % PAPI and 6.5% CAPI). Telephone screening used by 4 countries
Average length of interviews*	36	29	71	-	35
Average response rate**	45.5	77.5	62.6	81.0	56.4

Note: The average length of interviews and the average response rate is calculated only for the countries in common. Thus, the first average is based on 15 countries (BE, CZ, DE, EE, EL, ES, FR, CY, LV, HU, NL, PL, PT, SI and SK) and the second on 19 countries (BE, CZ, DK, DE, EE, EL, ES, FR, CY, LV, HU, NL, PL, PT, SI, SK, FI, UK and NO).

### Annex 3 T-test results for the common variables

**Table 26. T-test for the differences in the common variables between EQLS and other relevant surveys**

Survey	Variable	Category	t-value	p-value	95% confidence interval
ESS	ISCED with ESS	ISCED 0	-3.416	<b>0.002</b>	(-0.025, -0.006)
		ISCED 1	-3.031	<b>0.006</b>	(-0.076, -0.014)
		ISCED 2	-2.450	<b>0.022</b>	(-0.106, -0.009)
		ISCED 3	1.395	0.177	(-0.022, 0.115)
		ISCED 4	1.892	0.071	(-0.003, 0.057)
		ISCED 5	2.665	<b>0.014</b>	(0.009, 0.072)
		ISCED 6	1.028	0.315	(-0.004, 0.011)
	Marital Status	Married or living with partner	7.570	<b>0.000</b>	(0.073, 0.129)
		Separated or divorced and not living with partner	-4.545	<b>0.000</b>	(-0.025, -0.009)
		Widowed	-2.336	<b>0.029</b>	(-0.024, -0.001)
		Never married and never in civil partnership	-5.281	<b>0.000</b>	(-0.106, -0.046)
	Health status with ESS	Very good and good	-0.122	0.904	(-0.029, 0.025)
		Fair	-1.201	0.242	(-0.031, 0.008)
		Very bad and bad	2.127	0.044	(0.000, 0.024)
	Happy	1(Very unhappy)	-2.155	<b>0.042</b>	(-0.020, -0.000)
		2	-4.233	<b>0.000</b>	(-0.012, -0.004)
		3	-5.633	<b>0.000</b>	(-0.017, -0.008)
		4	-4.544	<b>0.000</b>	(-0.020, -0.008)
		5	-4.943	<b>0.000</b>	(-0.047, -0.019)
		6	-1.527	0.140	(-0.021, 0.003)
		7	-1.893	0.071	(-0.027, 0.001)
		8	4.254	<b>0.000</b>	(0.019, 0.053)
		9	4.811	<b>0.000</b>	(0.018, 0.045)
		10(Very happy)	4.324	<b>0.000</b>	(0.014, 0.0399)
	Overall satisfaction	1(Very dissatisfied)	-2.850	<b>0.009</b>	(-0.031, -0.005)
		2	-4.956	<b>0.000</b>	(-0.016, -0.007)
		3	-2.940	<b>0.007</b>	(-0.014, -0.002)
		4	-3.863	<b>0.001</b>	(-0.015, -0.004)
		5	-1.164	0.256	(-0.017, 0.005)
		6	1.408	0.173	(-0.003, 0.014)
		7	0.833	0.414	(-0.008, 0.020)
		8	1.242	0.227	(-0.005, 0.022)
		9	2.847	<b>0.009</b>	(0.004, 0.028)
10(Very		1.974	0.061	(-0.001, 0.026)	

		satisfied)			
EU-SILC	Tenure status	Own with mortgage	0.045	0.964	(-0.018, 0.019)
		Own without mortgage	2.132	<b>0.043</b>	(0.001, 0.075)
		Renting	-2.716	<b>0.012</b>	(-0.068, -0.009)
	Arrears on paying rent_mortgage		5.653	<b>0.000</b>	(0.025, 0.053)
	Arrears on utility bills		4.676	<b>0.000</b>	(0.022, 0.057)
	Financial burden	Heavy financial burden	-5.988	<b>0.000</b>	(-0.155, -0.076)
		Somewhat financial burden	-2.292	<b>0.030</b>	(-0.085, -0.005)
		Not a burden at all	5.816	<b>0.000</b>	(0.092, 0.191)
	Health status with EU_SILC	Very good or good	-0.570	0.573	(-0.035, 0.020)
		Fair	2.886	<b>0.008</b>	(0.008, 0.046)
		Very bad or bad	-3.779	<b>0.001</b>	(-0.032, -0.009)
	Long-standing illness		-4.079	<b>0.000</b>	(-0.064, -0.021)
	Inability to keep home warm		-1.209	0.237	(-0.061, 0.016)
	Inability to afford holiday		-6.105	<b>0.000</b>	(-0.088, -0.044)
	Inability to afford a meal		-2.258	<b>0.032</b>	(-0.042, -0.002)
	Neither bath nor shower		0.283	0.780	(-0.009, 0.012)
Not indoor flushing toilet		-0.014	0.989	(-0.011, 0.011)	
LFS	ISCED with LFS	ISCED 0-2	-1.597	0.121	(-0.085, 0.010)
		ISCED 3-4	1.855	0.074	(-0.005, 0.100)
		ISCED 5-6	-0.338	0.738	(-0.042, 0.030)
	Temporary Employees		-7.080	<b>0.000</b>	(-0.078, -0.043)
Second job		4.371	<b>0.000</b>	(0.016, 0.043)	
EWCS	Private sector		-0.426	0.673	(-3.904, 2.556)
	Public sector		1.314	0.199	(-0.602, 2.776)
	Joint private-public organisation or company		-1.501	0.144	(-2.033, 0.311)
	Not-for-profit sector, NGO		-2.150	<b>0.040</b>	(-0.503, -0.013)
	Other sector		0.420	0.677	(-1.183, 1.796)
	An indefinite contract		-1.107	0.277	(-3.038, 0.903)
	A fixed-term		-3.246	<b>0.003</b>	(-2.859, -0.651)



	contract				
	A temporary employment agency contract		-2.044	<b>0.050</b>	(-0.916, 0)
	An apprenticeship or other training scheme		-2.905	<b>0.007</b>	(-0.917, -0.16)
	No contract		0.268	0.790	(-2.561, 3.335)
	Other contract		5.092	<b>0.000</b>	(1.969, 4.605)

**Table 27. T-tests for the differences in the percentages of EQLS 2003 and EQLS 2007**

Variable	Answers	Question number in the EQLS 2007 questionnaire	Total EQLS 2007 – Total EQLS 2003	t -value	p-value	95% confidence interval
Type of job contract	On an unlimited permanent contract	Q4	-3.1	-2.681	<b>0.012</b>	(-5.397, -0.718)
Additional paid job	Yes	Q7	-0.2	-0.466	0.645	(-1.139, 0.717)
Likelihood to lose job	Very or quite likely	Q9	-4.8	-3.433	<b>0.002</b>	(-7.646, -1.925)
Accommodation	Own without mortgage	Q16	2.0	2.142	<b>0.041</b>	(0.084, 3.923)
	Own with mortgage	Q16	4.3	4.947	≈ <b>0.00</b>	(2.523, 6.099)
	Renting	Q16	-6.3	-5.091	≈ <b>0.00</b>	(-8.884, -3.780)
Problems with accommodation	Yes, with the shortage of space	Q17	-1.3	-1.574	0.127	(-2.937, 0.387)
	Yes, with the rot in windows, doors or floors	Q17	-3.4	-2.258	<b>0.032</b>	(-6.455, -0.309)
	Yes, with the damp/leaks	Q17	-2.5	-1.974	0.059	(-5.107, 0.099)
	Yes, with the lack of indoor fl Yes, with the lack of indoor flushing toilet	Q17	-1.5	-4.649	≈ <b>0.00</b>	(-2.153, -0.833)
Afford keeping home warm	No, cannot afford it	Q19_1	-4.8	-2.432	<b>0.022</b>	(-8.837 -0.748)
Afford paying holiday	No, cannot afford it	Q19_2	-4.8	-2.795	<b>0.009</b>	(-8.385, -1.286)
Afford replacing	No, cannot	Q19_3	-6.9	-3.431	<b>0.002</b>	(-11.043, -2.778)

worn-out furniture	afford it					
Afford meal with meat	No, cannot afford it	Q19_4	-4.3	-3.141	<b>0.004</b>	(-7.156, -1.501)
Afford buying new clothes	No, cannot afford it	Q19_5	-5.3	-2.999	<b>0.006</b>	(-8.902, -1.670)
Afford having friends for drink	No, cannot afford it	Q19_6	-3.0	-2.073	<b>0.048</b>	(-5.884, -0.031)
General life satisfaction	Rating 1 (low) to 10 (high)	Q29	0.2	2.500	<b>0.019</b>	(0.036, 0.364)
Marital status	Never married and not living with partner	Q30	-2.2	-3.872	<b>0.001</b>	(-3.361, -1.032)
Job satisfaction	Rating 1 (low) to 10 (high)	Q40_2	0.0	-0.283	0.780	(-0.148, 0.112)
Satisfaction with standard of living	Rating 1 (low) to 10 (high)	Q40_3	0.2	2.055	<b>0.050</b>	(0.0003, 0.393)
Satisfaction with accommodation	Rating 1 (low) to 10 (high)	Q40_4	0.1	1.492	0.147	(-0.043, 0.271)
Satisfaction with family life	Rating 1 (low) to 10 (high)	Q40_5	0.1	1.175	0.250	(-0.069, 0.255)
Satisfaction with health	Rating 1 (low) to 10 (high)	Q40_6	0.0	-0.070	0.945	(-0.109, 0.102)
Satisfaction with social life	Rating 1 (low) to 10 (high)	Q40_7	0.2	1.927	0.065	(-0.010, 0.325)
Happiness	Rating 1 (low) to 10 (high)	Q42	0.1	1.859	0.074	(-0.013, 0.271)
Long-standing illness	Yes	Q44	1.3	0.939	0.356	(-1.482, 3.982)

## Annex 4 Recommendations and their relation to quality dimensions

### Initial Design

	Relevance	Accuracy	Timeliness & Punctuality	Accessibility & Clarity	Coherence & Comparability	Response Burden	Cost efficiency
Stimulate greater participation to Expert Group meetings	<input type="checkbox"/>						
Limit the range and detail of data collected by survey to what is absolutely necessary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prioritize actions to improve overall quality according feedback received by users.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Post contract evaluation, mainly with regard to cost and timing							<input type="checkbox"/>
Add in the tender specifications indications about cost and time scales for the different survey phases			<input type="checkbox"/>				<input type="checkbox"/>

### Conceptual Design

	Relevance	Accuracy	Timeliness & Punctuality	Accessibility & Clarity	Coherence & Comparability	Response Burden	Cost efficiency
Establish a core questionnaire with main variables. Use the practice of ad-hoc modules to meet current policy needs.	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve pilot testing of the questionnaire to make a better estimation of average response time			<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
Put more emphasis on data validation (editing and imputation) practices. (Enhance editing and imputation		<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>

requirements, Request better monitoring of these processes)							
Carry out item non-response analysis; identify questions with high non-response rates		<input type="checkbox"/>					
Consider complementing the existing weighting approach with the application of nonresponse adjustment factors.		<input type="checkbox"/>			<input type="checkbox"/>		

### Survey Implementation

	<b>Relevance</b>	<b>Accuracy</b>	<b>Timeliness &amp; Punctuality</b>	<b>Accessibility &amp; Clarity</b>	<b>Coherence &amp; Comparability</b>	<b>Response Burden</b>	<b>Cost efficiency</b>
Establish optimal number of re-contacts		<input type="checkbox"/>					<input type="checkbox"/>
Advocate the use of up-to-date sampling scheme or/and improve random route processes		<input type="checkbox"/>			<input type="checkbox"/>		
Take measures to increase response rates		<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>
Diminish inconsistencies between initial interviews and back-checks		<input type="checkbox"/>					

### Data processing<sup>28</sup>

	<b>Relevance</b>	<b>Accuracy</b>	<b>Timeliness &amp; Punctuality</b>	<b>Accessibility &amp; Clarity</b>	<b>Coherence &amp; Comparability</b>	<b>Response Burden</b>	<b>Cost efficiency</b>
Improve monitoring of data entry errors		<input type="checkbox"/>					

<sup>28</sup> Limited information is available on ‘Data processing’ process variables; therefore recommendations have merely to do with better monitoring this process rather than an assessment of the process itself.

Better tracking of data processing, data coding and data editing process variables		<input type="checkbox"/>					
Complete documentation on data validation processes		<input type="checkbox"/>					
Better organization and automation of validation and re-weighting processes			<input type="checkbox"/>				<input type="checkbox"/>

#### Data Dissemination – Reporting

	<b>Relevance</b>	<b>Accuracy</b>	<b>Timeliness &amp; Punctuality</b>	<b>Accessibility &amp; Clarity</b>	<b>Coherence &amp; Comparability</b>	<b>Response Burden</b>	<b>Cost efficiency</b>
Identify sources of delays in the data production cycle that lead to delays in the data dissemination-reporting			<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>

#### Post survey actions

	<b>Relevance</b>	<b>Accuracy</b>	<b>Timeliness &amp; Punctuality</b>	<b>Accessibility &amp; Clarity</b>	<b>Coherence &amp; Comparability</b>	<b>Response Burden</b>	<b>Cost efficiency</b>
Post survey action to be put in a more concrete systematic basis under one single quality assurance framework			<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>

## Annex 5 Calculation of response rates

Before giving the definitions recommended by the AAPOR for the calculation of response rates, we first define the following codes:

RR = Response rate

COOP= Cooperation rate

REF = Refusal rate

CON = Contact rate

I = Complete interview

P = Partial interview

R = Refusal and break-off

NC = Non-contact

O = Other

UH = Unknown if household/occupied HU

UO = Unknown, other

e = Estimated proportion of cases of unknown eligibility that are eligible

The above categories serve as the building blocks for calculating the various response rates. Therefore, it is very important to assign the correct code at each sampling unit and be able to distinguish all cases. Firstly, the criteria of whether an interview is considered partial or complete must be declared. At the household level, partial generally means that not all the members of the household who were eligible to be interviewed were interviewed. At the interview level, partial may be used when an interview is broken off and not completed or when certain key questions were omitted.

Moreover, the definition of what consists an “eligible” case must be very clear. Eligibility can be determined based on three levels. The address – identification of private household addresses, the occupancy – determination of whether the address is occupied or not and the respondent – selection of eligible persons within the household. Each level requires an exact definition of eligibility for the interviewers to assign a code.

However, in telephone surveys with random digit dialing (RDD) is not that easy to classify a unit as eligible or not. In these surveys, a large proportion of the telephone numbers generated in the sampling process are not valid numbers, being either business numbers, fax and computer lines or non-working lines. Also, there is always a proportion of telephone numbers that have an unknown eligibility such as numbers that result in either a busy signal or a ring with no answer. Therefore, it is essential to estimate the proportion of cases of unknown eligibility that are in fact eligible, i.e. estimate “e”.

### Estimation of “e”

The calculation of response rates for all surveys and especially RDD telephone surveys depends in part on estimating “e”. According to AAPOR, in estimating e, one must be guided by the best available scientific information on what share eligible cases make up among the unknown cases and one must not select a proportion in order to boost the response rate. There are seven major methods for estimating “e”: 1) minimum and maximum allocation, 2) proportional allocation or the CASRO method, 3) allocation based on disposition codes, 4) survival methods either using only the number of calls or using the number of calls and other attributes of phone numbers, 5) calculations of the number of telephone households, 6) contacting telephone business offices, and 7) continued calling. Although all these methods calculate e, each method has notable limitations. The minimum-maximum method typically produces a very wide range in estimated response rates; the proportional allocation method overestimates “e” and thus underestimates response rates; follow-up methods are time-consuming and expensive, usually do not take time into consideration, and for that and other reasons, may rest on inaccurate data or wrong inferences from the available information; telephone household estimates

may be too imprecise due to sample variance and imperfect external standards, and survival analysis rests on unproven assumptions and perhaps unstable data. At present, none can be considered a gold standard for the calculating “e”. As a result, researchers should use multiple methods to estimate “e” and ultimately calculate the response rate and report a range in the later when estimates of “e” vary.

Following are some proposed formulas for calculating the various rates.

The response rate is defined as the number of complete interviews with reporting units divided by the number of eligible reporting units in the sample and is given by:

$$RR3 = \frac{I}{(I + P) + (R + NC + O) + e(UH + UO)}$$

Alternatively, the response rate can be calculated without including the cases of unknown eligibility, i.e. considering e very close to zero. In this case, the formula used is:

$$RR6 = \frac{(I + P)}{(I + P) + (R + NC + O)}$$

The cooperation rate is defined as the proportion of all cases interviewed of all eligible units ever contacted and is given by:

$$COOP2 = \frac{(I + P)}{(I + P) + R + O}$$

The refusal rate is defined as the proportion of all cases in which a housing unit or the respondent refuses to be interviewed, or breaks-off an interview, of all potentially eligible cases and is given by:

$$REF2 = \frac{R}{(I + P) + (R + NC + O) + e(UH + UO)}$$

The contact rate is defined as the proportion of all cases in which some responsible housing unit member was reached and is given by:

$$CON2 = \frac{(I + P) + R + O}{(I + P) + R + O + NC + e(UH + UO)}$$

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