

Doc. Eurostat/A4/Quality/03/Glossary

Working Group "Assessment of quality in statistics" Sixth meeting Luxembourg, 2-3 October 2003 at 9 h 30 Room Ampere, Bech building

ITEM 4.2C: METHODOLOGICAL DOCUMENTS GLOSSARY

Glossary of Quality Terms

This glossary covers the main technical words used in the Eurostat handbook "How to make a Quality Report" (draft October 2003). It is intentionally limited to a short text for each definition including the source used. Readers who would like to obtain more complete understanding should refer to the main document. It replaces the Eurostat Glossary from May 2002 (Eurostat/A4/Quality/02/General/Glossary).

NAME	DEFINITION	SOURCE
Accessibility	Accessibility refers to the physical conditions in which users can obtain data: where to go, how to order, delivery time, clear pricing policy, convenient marketing conditions (copyright, etc.), availability of micro or macro data, various formats (paper, files, CD-ROM, Internet), etc	Eurostat, Oct. 2003, "DEFINITION OF QUALITY IN STATISTICS", (Eurostat/A4/Quality/03/General/ Definition)
Accuracy	Accuracy in the general statistical sense denotes the closeness of computations or estimates to the exact or true values.	F.H.C. Marriott, 1990, A dictionary of statistical terms, Longman Scientific & Technical, Fifth edition, p.223
Bias	Generally, an effect which deprives a statistical result of representativeness by systematically distorting it, as distinct from a random error which may distort on any one occasion but balances out on the average.	F.H.C. Marriott, 1990, A dictionary of statistical terms, Longman Scientific & Technical, Fifth edition, p.223
Clarity	Clarity refers to the data's information environment whether data are accompanied with appropriate metadata, illustrations such as graphs and maps, whether information on their quality also available (including limitation in use) and the extend to which additional assistance is provided by the NSI.	Eurostat, Oct. 2003, "DEFINITION OF QUALITY IN STATISTICS", (Eurostat/A4/Quality/03/General/ Definition)
Coding	Coding is a technical procedure for converting verbal information into numbers or other symbols, which can be more easily counted and tabulated	Federal Committee on Statistical Methodology, December 1978, - Glossary of Nonsampling Error Terms: An Illustration of a Semantic Problem in Statistic, Statistical Policy Working Paper 4.
Coding error	The attribution of an incorrect code to a survey response.	Glossary, Previous version
Coefficient of variation	A measure of spread for a set of data defined as the ratio of the standard deviation to the mean.	B.S.EVERITT, 2002,The Cambridge dictionary of Statistics, Cambridge Univercity Press. Second edition, p. 410
Coherence	Coherence of statistics is their adequacy to be reliably combined in different ways and for various uses. It is, however, generally easier to show cases of incoherence than to prove coherence. When originating from a single source, statistics are normally coherent in the sense that elementary results derived from the concerned survey can be reliably combined in numerous ways to produce more complex results. When originating from different sources, and in particular from statistical surveys of different nature and/or frequencies, statistics may not be completely coherent in the sense that they may be based on different approaches, classifications and methodological standards. Conveying neighbouring results, they may also convey not	Eurostat, Oct. 2003, "DEFINITION OF QUALITY IN STATISTICS", (Eurostat/A4/Quality/03/General/ Definition)

NAME	ALTERNATIVE NAME	DEFINITION	SOURCE
		completely coherent messages, the possible effects of which, users should be clearly informed of.	
Comparability		Comparability is the extent to which differences between statistics from different geographical areas, non- geographical domains, or over time, can be attributed to differences between the true values of the statistics	Eurostat, Oct. 2003, "DEFINITION OF QUALITY IN STATISTICS", (Eurostat/A4/Quality/03/General/ Definition)
Completeness	i	Completeness is the extend to which all statistics that are needed are available. It is usually described as a measure of the amount of available data from a statistical system compared to the amount that was expected to be obtained	Eurostat, Oct. 2003, "DEFINITION OF QUALITY IN STATISTICS", (Eurostat/A4/Quality/03/General/ Definition)
Confidence Interval		A a% confidence interval for an unknown population parameter θ , is an interval, calculated from sample values by a procedure such that if a large number of independent samples is taken, a% of the intervals obtained will contain θ .	Oxford dictionary of statistics"
Consistent estimator		An estimator which converges in probability, as the sample size increases, to the parameter of which it is an estimator.	F.H.C. Marriott, 1990, A dictionary of statistical terms, Longman Scientific & Technical, Fifth edition, p.223
Constant scope		Constant scope refers to a frame population. It should not include births, deaths, mergers and demergers and the population should be identical for both periods from which indexes are estimated. The contrary of full scope.	Glossary, Previous version
Coverage error		Coverage error is the error associated with the failure to included some population units in the frame used for sample selection (undercoverage) and the error associated with the failure to identify units represented on the frame more than once (overcoverage). The source of coverage error is the sampling frame itself.	Statistical Policy working paper 31, "Measuring and reporting sources of error in survey", FCSM, Subcommitte on Measuring and Reporting the Quality of Survey Data
Cut-off threshold		A cut-off threshold is used, mainly for cost or burden reasons, to exclude from the target population (hence from the frame) units contributing very little to the requested statistics, small businesses for instance. the contribution from the population below the threshold can either be deemed negligible or be estimated by using a model	Glossary, Previous version (revised)
Editing, Edits		Data <i>editing</i> is the application of checks that identify missing invalid or inconsistent entries or that point to data records that are potentially in error.	, (Statistics Canada Quality Guidelines, 3rd edition, October 1998, page 35)
Electronic data interchange (EDI)	Electronic document interchange	Electronic Data Interchange (EDI) is the computer-to- computer exchange of business data in a publicly published and globally standardised format.	Wikipedia, the free encyclopedia available athttp://www.wikipedia.org/
Error		In general, a mistake or error in the colloquial sense. There may, for example, be a gross error or avoidable mistake; an error of reference, when data concerning one phenomenon are attributed to another; copying errors; an error of interpretation. In a more limited sense the word error is used in statistics to denote the difference between an occurring value and its true or expected value. There is here no imputation of mistakes on the part of a human agent; the deviation is a chance effect. In this sense we have, for example, errors of observations, errors in equations, errors of the first and second kinds in the testing hypothesis, and the error band surrounding an estimate; and also the Normal curve of errors itself.	F.H.C. Marriott, 1990, A dictionary of statistical terms, Longman Scientific & Technical, Fifth edition, p.223
Estimate		In the strict sense an estimate is the particular value yielded by an estimator in a given set of circumstances.	F.H.C. Marriott, 1990, A dictionary of statistical terms, Longman Scientific &

NAME	ALTERNATIVE NAME	DEFINITION	SOURCE
			Technical, Fifth edition, p.223
Estimator	expectation	An estimator is a rule or method of estimating a constant of a population. It is usually expressed as a function of sample values and hence is a variate whose distribution is of great importance in assessing the reliability of the estimate to which it leads.	F.H.C. Marriott, 1990, A dictionary of statistical terms, Longman Scientific & Technical, Fifth edition, p.223
Value	value, expectation	the survey all conducted under the same essential conditions.	Methodology, December 1978, - Glossary of Nonsampling Error Terms: An Illustration of a Semantic Problem in Statistic, Statistical Policy Working Paper 4.
Frame		The frame consists of previously available descriptions of the objects or material related to the physical field in the form of maps, lists, directories, etc., from which sampling units may be constructed and a set of sampling units selected; and also information on communications, transport, etc., which may be of value in improving the design for the choice of sampling units, and in the formation of strata, etc.	eFederal Committee on Statistical Methodology, December 1978, - Glossary of Nonsampling Error Terms: An Illustration of a Semantic Problem in Statistic, Statistical Policy Working Paper 4.
Full scope		Full scope refers to a frame population, it should cover births, deaths, mergers and demergers, during the period from which indexes are estimated. The contrary of constant scope.	Glossary, Previous version
Hedonic Method		The hedonic method is a regression technique used to estimate the prices of qualities or models that are not available on the market in particular periods, but whose prices in those periods are needed in order to be able to construct price relatives.	UN, Statistics Division, Glossary, available at <u>http://unstats.un.org/unsd/s</u> <u>na1993/glossary.asp</u>
Imputation		<i>Imputation</i> is the process used to resolve problems of missing, invalid or inconsistent responses identified during editing. This is done by changing some of the responses or missing values on the record being edited to ensure that a plausible, internally coherent record is created.	(Statistics Canada Quality Guidelines, 3rd edition, October 1998, page 38)
Inlier		An inlier is a data value that lies in the interior of a statistical distribution and is in error. Because inliers are difficult to distinguish from good data values they are sometimes difficult to find and correct. A simple example of an inlier might be a value in a record reported in the wrong units, say degrees Fahrenheit instead of degrees Celsius.	UNECE, CES, 1997, Work Session on Statistical Data Editing, Working Paper 22, PROBLEMS WITH INLIERS, US Bureau of Census, William E. Winkler.
Interviewer error		Interviewer error are associated with effects on respondents' answers stemming from the different ways that interviewers administer the same survey. Examples of these errors include the failure to read the question correctly (leading to response errors by the respondent), delivery of the question with an intonation that influences the respondent's choice of answer, and failure to record the respondent's answer correctly.	Paul P. Biemer, Robert M. Groves, Lars E. Lyberg, Nancy A. Mathiowetz, Seymour Sudman,1991,"Measurement errors in survey", John Wiley & Sons, p. 760
ltem non- response		Item non-response occurs when a respondent provides some, but not all, of the requested information, or if the reported information is not usable.	Statistical Policy working paper 31, "Measuring and reporting sources of error in survey", FCSM, Subcommitte on Measuring and Reporting the Quality of Survey Data
ltem respons rate	e	The item response rate is the ratio of the number of eligible units responding to an item to the number of responding units eligible to have responded to the item.	Madow, W., Nisselson, H., and Olkin, I., 1983, Incomplete Data in Sample Surveys, New York: Academic Press
Marco-editing]	A macro-edit detects individual errors by checks on	UNECE, Glossary of Terms on

NAME	ALTERNATIVE	DEFINITION	SOURCE
	NAME		
		aggregated data, or checks applied to the whole body	Statistical Data Editing, CES
		of records. The checks are typically based on the	Methodological material, Geneva,
		models, either graphical or numerical formula based,	bttp://amrads.irc.cec.eu.int/k-
		that determine the impact of specific fields in individual	base/glossary/g-source.htm
		records on the aggregate estimates.	Saco, globoal y, globoal de la commune
Mean square		The expected value of the square of the difference between	B.S.EVERITT, 2002,The
error		an estimator and the true value of a parameter. If the	Cambridge dictionary of
		the variance of the estimator. For a biased estimator the	Statistics, Cambridge
		mean squared error is equal to the sum of the variance and	Univercity Press. Second
		the square of the bias.	edition, p. 410
Measurement		Measurement error refers to error in survey responses	Paul P. Biemer, Robert M.
error		arising from the method of data collection, the respondent, or	rGroves, Lars E. Lyberg, Nancy A.
		the questionnaire (or other instrument). It includes the error	Mathiowetz, Seymour
		in a survey response as a result of respondent confusion,	Sudman,1991,"Measurement
		Ignorance, carelessness, or disnonesty; the error attributable	Sons n 760
		inadequate training, prior expectations regarding	Solis, p. 700
		respondents' responses, or deliberate errors; and error	
		attributable to the wording of the questions in the	
		questionnaire, the order or context in which the questions	
		are presented, and the method used to obtain the	
		responses.	
Micro editing		Finding errors by inspection of individual observations.	UNECE, Glossary of Terms on Statistical Data Editing CES
		Editing done at the record, or questionnaire level.	Methodological material Geneva
			2000. also available at
			http://amrads.jrc.cec.eu.int/k-
			base/glossary/g-source.htm
Misclassificati	İ	Misclassification refers to allocating statistical units in a	Glossary, Previous version
on		wrong class, in relation to a given classification. For	
		Instance, a business is classified in Trade Instead of	
Model		Model assumption are errors that occur due the use of	Glossary, Previous version
assumption		methods, such as calibration, generalized regression	
error		estimator, calculation based on full scope or constant scope,	
		benchmarking, seasonal adjustment and other models not	
		included in the preceding accuracy components, in order to	
		calculate statistics or indexes.	
Non	Non-random	Non-probability Sample is a sample in which the	ESOMAR, Glossary of Marketing
sample	Sample	selection of units is based on factors other than	
Sample		random chance, e.g. convenience, prior experience or	<u>http://www.esomar.nl</u>
		the judgment of the researcher. Examples of non-	
		probability samples are: convenience, judgmental,	
Non reenence		quota and snowball.	Carl Frik Caradal Danat
Non response		surveys. Nonresponse means failure to obtain a	Swensson Jan Wretman 1002
		measurement on one or more study variables for one or	"Model assisted survey
		more elements k selected for the survey. The term	sampling". Springer - Verlag New
		encompasses a wide variety of reasons for nonobservation:	York, p.694
		"impossible to contact", "not at home", "unable to answer",	
		"incapacity", "hard core refusal", "inaccessible", "unreturned	
		questionnaire", and others. In the first two cases contact with	1
Non response			
bias			
Non response	1	Nonresponse errors, which occur when the survey fails to	Statistics Canada, October 1998,
error		get a response to one, or possibly all, of the questions.	"statistics Canada Quality

NAME	ALTERNATIVE	DEFINITION	SOURCE
	NAME		Outidations all And
		Nonresponse causes both an increase in variance, due to	Guidelines", 3rd
		the decrease in the effective sample size and/or due to the	VIE p 101
		respondents and respondents differ with respect to the	λie, ρ. 101
		characteristic of interest	
Non sampling		An error in sample estimates which cannot be attributed to	EHC Marriott 1990 A
error		sampling fluctuations. Such errors may arise from many	dictionary of statistical terms
		different sources such as defects in the frame, faulty	Longman Scientific &
		demarcation of sample units, defects in the selection of	Technical Fifth edition n 223
		sample units, mistakes in the collection of data due to	rechnical, r nin edition, p.225
		personal variations or misunderstandings or bias or	
		negligence or dishonesty on the part of the investigator or of	
		the interviewee, mistakes at the stage of the processing of	
0		the data, etc.	
Out of scope		Units that should not be included in the sampling frame	Glossary, Previous version
units		reference period. If enumerated, they cause over coverage	
Outlier		In a sample of <i>n</i> observations it is possible for a limited	EHC Marriott 1990 A
Junio		number to be so far separated in value from the remainder	dictionary of statistical terms
		that they give rise to the question whether they are not from	Longman Scientific &
		a different population, or that the sampling technique is a	Toobaical Eifth adition a 222
		fault. Such values are called outliers.	rechnical, Filtredition, p.225
Over coverage		Over-Coverage arises from the presence in the frame of	Ad-Hoc
		units not belonging to the target population and of units	
		belonging to the target population that appear in the frame	
		more than once.	
Population		Population is the total membership or population or	(United Nations Glossary of
		There are two types of people, objects of events.	by the Expert Group on
		survey population. A target population is the population	International Economic and
		outlined in the survey objects about which information is to	Social Classifications Available
		be sought and a survey population is the population from	at:
		which information can be obtained in the survey. The target	www.un.org/Depts/unsd/class/glo
		population is also known as the scope of the survey and the	ssary short.htm)
		survey population is also known as the coverage of the	
		survey. For administrative records the corresponding	
		populations are: the "target" population as defined by the	
		relevant legislation and regulations, and the actual "client	
Deede a ballita a		population".	Oral Fells Orangelek Danset
Probability		Probability sampling is an approach to sample selection that	Carl-Erik Sarndal, Bengt
sample		elements directly from the population, are described as	"Model assisted survey
		follows: 1)we can define the set of sample (S1, S2, Sm)	sampling" Springer - Verlag New
		that are possible to obtain with the sampling procedure, 2)a	York, p.694
		known probability of selection $p(s)$ is associated with each	, p
		possible sample s. 3) the procedure gives every element in	
		the population a nonzero probability of selection. 4)we select	
		one sample by a random mechanism under which each	
		possible s receives exactly the probability p(s). A sample	
		realized under these four requirements is called probability	
		sample.	
Processing		Once data have been collected, they pass through a range	Giossary, Previous Version
enor		coding keying editing weighting tabulating ato Errors	
		introduced at these stages are called processing errors	
Punctuality		Punctuality refers to the time log existing between the estua	Eurostat Oct 2002
anduality		delivery date of data and the target date when it should have	DEFINITION OF QUALITY IN

NAME		DEFINITION	SOURCE
		been delivered, for instance, with reference to dates	STATISTICS".
		announced in some official release calendar, laid down by	(Eurostat/A4/Quality/03/General/
		Regulations or previously agreed among partners.	Definition)
Quality control	bl	A replicated survey carried out on a small scale by very	Glossary, Previous version
survey		experienced staff in order to obtain some "zero-default"	
		results with which the actual results of the survey can be	
Quality index		A one-dimension synthetic information on quality possibly	Glossary Previous version
Quality macx		calculated as a weighted mean of all available quality	Clossary, 1 revious version
		indicators.	
Reference	reference time	The period of time for which data are collected	F.H.C. Marriott, 1990, A
period			dictionary of statistical terms,
			Longman Scientific &
			Technical, Fifth edition, p.223
Refusal rate		In the sampling of human populations, the proportion of	F.H.C. Marriott, 1990, A
		individuals who, through successfully contacted, refuse to	dictionary of statistical terms,
		give the information sought. The proportion is usually and	Longman Scientific &
		the total number of the sample which it was originally desired	Technical, Fifth edition, p.223
		to achieve.	•
Register		A written and complete record containing regular entries of	COMMON TERMINOLOGY OF
J		items and details on particular set of objects. Administrative	METIS, Version of: 29
		registers come from administrative sources and become	September, 1999 Page: 7 Editor:
		statistical registers after passing through statistical	Daniel W. Gillman & ad hoc
		processing in order to make it fit for statistical purposes	addition
Deletive		(production of register based statistics, frame creation, etc.)	Netional contantantan
Relative		Ine relative standard error (RSE) is a measure of an estimate's reliability. The PSE of an estimate is obtained by	statistics "Data definitions"
Stanuaru en or		dividing the standard error of the estimate (SE(r)) by the	http://www.ada.gov/paba/d
		estimate itself (r). This quantity is expressed as a percent of	<u>mup.//www.cdc.gov/ncns/d</u>
		the estimate and is calculated as follows: RSE=100 x	atawh/nchsdefs/list.htm
		(SE(r)/r).	
Relevance		Relevance is the degree to which statistics meet current and	Statistics Canada, October 1998,
		potential users' needs. It refers to whether all statistics that	"statistics Canada Quality
		are needed are produced and the extent to which concepts	Guidelines", 3rd
		used (deminitions, classifications etc.) reflect user freeds.	XIF n 101
Reweighting		Reweighting consists of raising the original weights for the	Glossary, Previous version
		respondent values when estimates are computed.	, ,
		Reweighting concerns mainly unit non-response. It may also	
		be used to increase precision through the use of auxiliary	
		information. Standard methods include post-stratification,	
Sampling		Calibration and response propensity modelling.	ELLC Marriett 1000 A
error		estimate thereof derived from a random sample which is	dictionary of statistical terms
circi		due to the fact that only a sample of values is observed: as	Longmon Scientific 8
		distinct from errors due to imperfect selection, bias in	Technical Fifth edition in 223
		response or estimation, errors of observation and recording,	reclinical, r nur eution, p.223
		etc.	
Standard erro	r	The positive square root of the variance of the sampling	F.H.C. Marriott, 1990, A
		distribution of a statistic.	dictionary of statistical terms,
			Longman Scientific &
		· · · · · · · · · · · · · · · · · · ·	Technical, Fifth edition, p.223
Statistical	-	A numerical value (like turnover, average income) defined by	Glossary, Previous version
characteristic	5	a statistical measure that is used to summarise the values	
		income) for all statistical units in a specific group	
Statistical		A summary (mean, mode, total, index, etc.) of the individual	Glossary, Previous version
measure		quantitative variable values for the statistical units in a	,
-			

NAME	ALTERNATIVE	DEFINITION	SOURCE
	NAME		
		specific group (study domains).	
Statistical unit		An object of statistical survey and the bearer of statistical	COMMON TERMINOLOGY OF
		statistical observation within a statistical survey	September 1999 Page: 7 Editor:
		statistical observation within a statistical survey	Daniel W Gillman
Study		Statistics are presented for different sub-groups of the	Glossary, Previous version
domains		population, so called study domains. These study domains	
		are usually defined according to some classification (e.g	
<u> </u>	<u> </u>	territorial units, economic activity etc.)	
survey design	Sampling plan,	Survey design defines the fixed properties of the data	1)Model assisted survey
	Sample design	measurement environment. The usage is not uniform as	Benat Swensson Jan Wretman
		regards the precise meaning of this and similar terms like	& 2)Federal Committee on
		"sample plan," "survey design," "sample plan" or "sampling	Statistical Methodology,
		design." These cover one or more parts constituting the	December 1978, - Glossary of
		entire planning of a (sample) survey inclusive of processing,	Nonsampling Error Terms: An
		etc. The term "sampling plan" may be restricted to mean all	Illustration of a Semantic Problem
		design" may cover in addition the method of estimation; and	In Statistic, Statistical Policy
		"survey design" may cover also other aspects of the survey	Working raper 4.
		e.g. choice and training of interviewers, tabulation plans, etc.	
		"Sample design" is sometimes used in a clearly defined	
		sense, with reference to a given frame, as the set of rules or	
		specifications for the drawing of a sample in an unequivocal	
Target		The target population is the population we wish to study that	Carl-Frik Sarndal Bengt
population		is the set of elements about which estimates are required.	Swensson, Jan Wretman, 1992.
population			"Model assisted survey
			sampling", Springer - Verlag New
			York, p.694
Timeliness		Timeliness of information reflects the length of time between	Eurostat, Oct. 2003,
		its availability and the event or phenomenon it describes	"DEFINITION OF QUALITY IN STATISTICS"
			(Furostat/A4/Quality/03/General/
			Definition)
True value		The actual population value that would be obtained with	Glossary, Previous version
		perfect measuring instruments and without committing any	
		error of any type, both in collecting the primary data and in	
Undor		Lindercoverage results from the omission from the frame of	Ad boo
coverage		units belonging to the target population.	Ad-110C
Unit non		Unit non response is a complete failure to obtain data from a	Statistical Policy working paper
response		sample unit.	31, "Measuring and reporting
			sources of error in survey",
			FCSM, Subcommitte on
			Quality of Survey Data
Unit response		The ratio, expressed in percentage of the number of	Ad-hoc
rate		interviews to the number of eligible units in the sample. The	
		weighted response rate calculates the ratio using the inverse	
		probability of inclusion in the sample as a weight for each	
		unit. In some occasions a value that reflects the importance	
		of the unit is also used as a weighting factor (like size of workforce for establishments)	
User		A statistical survey aiming to assess the satisfaction of users	Glossary Previous version
satisfaction		of statistics.	
survey		· · · · · · · · · · · · · · · · · · ·	
Variance		The variance is the mean square deviation of the variable	Glossary, Previous version
		around the average value. It reflects the dispersion of the	

NAME	ALTERNATIVE	DEFINITION	SOURCE
	NAME		
		empirical values around its mean.	
Variance estimation		The task of estimating the value of the variance of an estimate. Methods employed are commonly classified in: - analytic methods: use and compute the proper formulae of the variance - approximate methods: methods which use approximations for complex and multi-stage sample designs. These methods can classified in three categories: - simplifying assumptions: setting assumptions which allow use of straightforward formulae (as if an analytic method could be applied) Taylor's linearisation techniques: estimation of non-linear statistics is simplified in using a Taylor's development of the concerned statistics Replication or re-sampling methods: a large number of sub-samples are derived from the initial sample and variance is estimated from the variability of the results in this set of sub-samples. Several methods are based on re-sampling, such as the jackknife, the bootstrap and the balanced repeated replication methods (BRR).	Glossary, Previous version
Working group "Assessment of Quality in Statistics"		Eurostat modified in spring 1998 the terms of reference of the former Working Group on the quality evaluation of structural business statistics, thereby creating the « Working Group on Assessment of Quality in Statistics ». The mandate of the WG is to: 1. harmonise the definition of quality in statistics, 2. standardise Quality Reports, 3. address methodological problems for measuring the quality of statistics, and 4. co-ordinate all activities related to quality within Eurostat and the NSIs.	Glossary, Previous version

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