

Quality Assessment of Indicators and Trade-offs Between Quality Dimensions

Lilli Japec, PhD Director R&D Department Statistics Sweden Email: lilli.japec@scb.se









Quality in statistics

- Total Survey Error (TSE) all the errors that occur during the statistics production process
- Hard to do measure Total Survey Error (TSE)
- For different steps in the statistics production process
 - we use best practices to minimize errors
 - we standardize the process steps and
 - use methods for quality assurance and quality control to make sure that the process is stable





Quality dimensions (Eurostat)

- Relevance
- Accuracy and Reliability
- Timeliness and Punctuality
- Coherence and Comparability
- Accessibility and Clarity



No one-number quality indicator

such as a quality index that encompasses all the quality dimensions





Quality assurance and quality control system

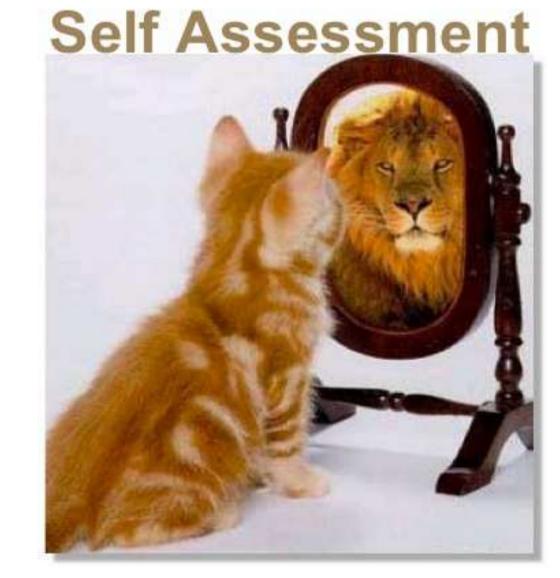
Exampel from Statistics Sweden

- ISO 20252 for market, opinion and social research
- ASPIRE (A System for Product Improvement, Review and Evaluation)





Statistiska centralbyrån Statistics Sweden







Sources of error by product

	Product	Error Sources				
	Survey Products Foreign Trade of Goods Survey (FTG) Labour Force Survey (LFS) Annual Municipal Accounts (RS) Structural Business Survey (SBS) Consumer Price Index (CPI) Living Conditions Survey (ULF/SILC)	Specification error Frame error Nonresponse error Measurement error Data processing error Sampling error Model/estimation error Revision error				
	Registers Business Register (BR) Total Population Register (TPR)	Specification error Frame: Overcoverage Undercoverage Duplication Missing Data Content Error				
	Compilations Quarterly Gross Domestic Product (GDP) Annual GDP	Input data error Compilation error Data processing error Modelling error Balancing error Revision error				



Quality criteria

- Knowledge (of the producers of statistics) of the risks affecting data quality for each error source,
- Communication of these risks to the users and suppliers of data and information,
- Available expertise to deal with these risks (in areas such as methodology, measurement or IT),
- Compliance with appropriate standards and best practices relevant to the given error source, and,
- Plans and achievements for mitigating the risks.



The review process

- 1. Guidelines/checklists
- 2. Self assessment and documentation sent to evaluators
- 3. Quality interview
 - discussion of notable changes,
 - review of quality declarations,
 - progress made on recommendations,
 - assignment of preliminary ratings using the checklists,
 - review of assigned ratings, discussion of results, and recommendations for improvement
- 4. Control, feedback, possible correction and finalising of ratings
- 5. Process repeated annually





Results – Labour Force Survey

Error Source	Average score round 3	Average score round 4	Knowledge of Risks	Communica- tion	Available Expertise	Compliance with standards & best practices	Plans or Achievement towards mitigation of risks	Risk to data quality
Specification error	70	70						L
Frame error	58	58	-	-	-	•	0	L
Non-response error	52	58	0	0				Н
Measurement error	68	70			-	0		Н
Data processing error	62	62	0	0	-		-	м
Sampling error	80	80		0	-	0	-	М
Model/estimation error	64	64	0	0				М
Revision error	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total score	64,3	66,0					1	ľ.

Scores					Levels of Risk			Changes from round 2		
•		0		0	н	M	L			
Poor	Fair	Good	Very good	Excellent	High	Medium	Low	Improvements	Deterioration	

SCB

Strengths and weaknesses of the ASPIRE approach

+ comprehensive covering error sources and their associated risks to product quality

+ it is relatively simple and easily understood by managers

+ has led to changes in products and staff attitude

-does not measure the true accuracy of a statistical product

-relies on the skills and experience of external evaluators, and also on the information provided by the product staff



Comparability – an important dimension

- Comparability between countries joint responsibility of Eurostat and NSI:s
- Trade-off between national and EU interests
- Input and output harmonization





Example: self-reported obesity rate, BMI≥30

Face to faceTelephone18%13%

Béland and St-Pierre (2008). Mode Effects in the Canadian Community Health Survey: A Comparison of CATI and CAPI



Statistics Sweden

Statistiska centralbyrån

Concluding remarks

- Comparability hard to achieve even when we design for comparability
- Strategic discussion on when comparability should be the number one priority
- Get more involved in research groups such as CSDI, comparative survey design and implementation.
- Second International Conference on Survey Methods in Multinational, Multiregional and Multicultural Contexts (3MC), July 2016 Chicago