



Statistiska centralbyrån Statistics Sweden

Quality Assessment of Indicators and Trade-offs Between Quality Dimensions

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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





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No one-number quality indicator

such as a quality index that encompasses all the quality dimensions



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Quality assurance and quality control system

Exempel from Statistics Sweden

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



Self Assessment





Sources of error by product

Product	Error Sources
<i>Survey Products</i> 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
<i>Registers</i> Business Register (BR) Total Population Register (TPR)	Specification error Frame: Overcoverage Undercoverage Duplication Missing Data Content Error
<i>Compilations</i> 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	Communication	Available Expertise	Compliance with standards & best practices	Plans or Achievement towards mitigation of risks	Risk to data quality
Accuracy (control for error sources)	Specification error	70	70	🟢	🟢	🟢	🟢	🟢	L
	Frame error	58	58	🟢	🟢	🟢	🔴	○	L
	Non-response error	52	58	○	○	🟢	🔴	🟢	H
	Measurement error	68	70	🟢	🟢	🟢	○	🟢	H
	Data processing error	62	62	○	○	🟢	🟢	🟢	M
	Sampling error	80	80	🟢	🟢	🟢	🟢	🟢	M
	Model/estimation error	64	64	○	○	🟢	🟢	🟢	M
	Revision error	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total score	64,3	66,0						

Scores					Levels of Risk			Changes from round 2	
🔴	🔴	○	🟢	🟢	H	M	L	🟢	🔴
Poor	Fair	Good	Very good	Excellent	High	Medium	Low	Improvements	Deteriorations





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, $\text{BMI} \geq 30$

Face to face

18%

Telephone

13%

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



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

