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TITLE: National Quality Assurance Frameworks

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National Quality Assurance Frameworks

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OUTLINE

- Quality and Dimensions of Quality
- Quality Assurance
- NQAF
- Available tools

What is QUALITY?

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- A rather vague concept, has different meanings depending upon the context

- In the NSO context, QUALITY is defined as FITNESS FOR USE, in terms of user needs
  - how well do the agencies' products meet user needs?
  - are they "fit for use" or fit for the purpose for which they are to be used?

- The NSO's product is the INFORMATION it disseminates (facts to be used for decision-making by governments, businesses, institutions, the public)
  - the focus here is on Information Quality.

3

What is QUALITY?

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FITNESS FOR USE

This definition is broader than in the past when quality was equated with **accuracy !**

Now it is recognized that there are other important dimensions.

Can data be said to be of good quality when:

ACCURATE – but produced too late to be used?
ACCURATE – but can't be found, accessed, or totally understood?
ACCURATE – but conflict with other data?
ACCURATE – but from unknown or unverifiable sources?
ACCURATE – but not provided on a regular basis?
ACCURATE – but not really shows what is needed?

Thus QUALITY needs to be looked at as a multi-faceted, multi-dimensional concept

Some models/frameworks existed already that addressed these concerns

4

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Intermission:

A (very) short history of the

National Quality Assurance Frameworks (NQAF)

5

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Expert Group

- UN Statistical Commission 2010
  - QUALITY - was the programme review (discussed for the first time)
- Report concludes there can be no single “generic” national quality assurance framework
- Instead, a template for a generic NQAF was proposed (recognizing that a one-size-fits-all framework was not feasible)
- Statistical Commission supported the establishment of an expert group to develop this

6

Expert Group

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- Starting point – 3 proposals for generic template (DQAF, StatCan, CoP)
  - Agreed to develop a 4th variation of these proposals
- EG's NQAF template basically incorporates all of the elements of the DQAF, the CoP and Statistics Canada's framework

Important:

- Work was driven by countries for application at the national level

7

Expert Group

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First outputs of the EG's work:

- NQAF template
- A "Guideline document" (90+ pages)
  - Check list
- Mapping of the NQAF to other frameworks
- Glossary
- Online inventory of national and int'l quality-related references

All are available on our Website

8

Dimensions of quality

QUALITY DIMENSIONS (COMPONENTS)

Dimensions or components to be considered when assessing the quality of data outputs (i.e. product quality), according to the NQAF:

- 1. Relevance **(covered in NQAF14)**
- 2. Accuracy and reliability **(covered in NQAF15)**
- 3. Timeliness and punctuality **(covered in NQAF16)**
- 4. Accessibility and clarity **(covered in NQAF17)**
- 5. Coherence and comparability **(covered in NQAF18)**

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Quality is not just about outputs

- To have high quality outputs we need to consider:
  - inputs and processes
    - we need to consider the quality of these as well
  - quality of the organization responsible for the processes (institutional environment)
  - quality of the NSS

11

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Quality assurance

A system of coordinated methods and tools to ensure a sustainable level of quality of outputs and processes where:

- products/outputs: their quality requirements are explicitly documented
- processes: are defined and made known to all staff and their correct implementation is monitored
- users: are informed about product quality and possible limitations
- improvement measures: procedures are in place to guarantee that the necessary steps are planned, implemented and evaluated

12

Quality assurance frameworks

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Objective - have in place an overarching framework or structure that will:

- provide context for quality concerns, activities and initiatives
- explain the relationships between the various quality procedures and tools

- Serves as “umbrella” to record, reference and organize the full range of quality concepts, policies, tools and practices

- Forward looking – addresses improvements
  - Not simply an assessment

13

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What is included in NQAF ?

14

NQAF

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- 1. Quality context
- 2. Quality concepts and frameworks
- 3. Quality assurance guidelines
  - 3a. Managing the statistical system
  - 3b. Managing the institutional environment
  - 3c. Managing statistical processes
  - 3d. Managing statistical outputs
- 4. Quality assessment and reporting
- 5. Quality and other management frameworks

15

NQAF

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- Provides detailed criteria for each of these areas
  - 19 NQAF lines, 200+ elements, 100+ mechanisms
- Can be customized to particular use
  - Country-specific
  - Targeted at specific statistical programmes
    - Allows for necessary detail to be added
- This is still a **template**
  - Countries/NSOs will build their own framework based on this

16

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What kind of tools are available?

17

NQAF template

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Back

1. Quality context
- 1a. Circumstances and key issues driving the need for quality management
- 1b. Benefits and challenges
- 1c. Relationship to other statistical agency policies, strategies and frameworks and evolution over time

2. Quality concepts and frameworks
- 2a. Concepts and terminology
- 2b. Mapping to existing frameworks

3. Quality assurance guidelines

3a. Managing the statistical system
- [NQAF 1] Coordinating international statistical system
- [NQAF 2] Managing relationships with data users and data providers
- [NQAF 3] Managing statistical standards

3b. Managing the institutional environment
- [NQAF 4] Assuring professional independence
- [NQAF 5] Assuring impartiality and objectivity
- [NQAF 6] Assuring transparency
- [NQAF 7] Assuring statistical confidentiality and security
- [NQAF 8] Assuring the quality commitment
- [NQAF 9] Assuring adequacy of resources

3c. Managing statistical processes
- [NQAF 10] Assuring methodological soundness
- [NQAF 11] Assuring cost-effectiveness
- [NQAF 12] Assuring soundness of implementation
- [NQAF 13] Managing the respondent burden

3d. Managing statistical outputs
- [NQAF14] Assuring relevance
- [NQAF15] Assuring accuracy and reliability
- [NQAF16] Assuring timeliness and punctuality
- [NQAF17] Assuring accessibility and clarity
- [NQAF18] Assuring coherence and comparability
- [NQAF19] Managing metadata

4. Quality assessment and reporting
- 4a. Measuring product and process quality - use of quality indicators, quality targets and process variables and descriptions
- 4b. Communicating about quality – quality reports
- 4c. Obtaining feedback from users
- 4d. Conducting assessments; labelling and certification
- 4e. Assuring continuous quality improvement

5. Quality and other management frameworks
- 5a. Performance management
- 5b. Resource management
- 5c. Ethical standards
- 5d. Continuous improvement
- 5e. Governance

18

Guideline document and Check list

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NQAF 15: ASSURING ACCURACY AND RELIABILITY	15.1	Statistical procedures (e.g. compilation, data adjustments and transformations, statistical analysis, etc.) employ internationally recognized statistical techniques.	Yes	No	Partially	NA			
	15.2	Source data, intermediate results and statistical outputs are regularly assessed and validated.	Yes	No	Partially	NA			
	15.2a	Systems for assessing and validating **source data** are developed and managed.	Yes	No	Partially	NA			
	15.2b	Systems for assessing and validating **intermediate** results are developed and managed.	Yes	No	Partially	NA			
	15.2c	Systems for assessing and validating **statistical outputs** are developed and managed.	Yes	No	Partially	NA			
	15.2d	Procedures and guidelines for data quality **assessment** are in place and address accuracy issues.	Yes	No	Partially	NA			
	15.2e	Source data and statistical outputs are compared with other sources of information in order to ensure validity.	Yes	No	Partially	NA			
	15.3	Sampling and non-sampling **errors** are measured, evaluated and systematically documented.	Yes	No	Partially	NA			
	15.3a	Procedures and guidelines are available on how to measure and reduce **errors**.	Yes	No	Partially	NA			
	15.3b	Statistical discrepancies in intermediate results are assessed and investigated.	Yes	No	Partially	NA			
	15.3c	A quality assurance plan is in place that describes the quality control actions to prevent, monitor and evaluate the **errors**.	Yes	No	Partially	NA			
	15.3d	The sampling and non-sampling errors are analysed over time and improvement actions are taken as a result.	Yes	No	Partially	NA			
	16.3a	Periodic **quality reporting on accuracy**, serving both producer and user perspectives, is in place.	Yes	No	Partially	NA			
	15.3f	Methods and tools for preventing and reducing sampling and non-sampling **errors** are in place.	Yes	No	Partially	NA			
	15.4g	A **revision** policy, which is made known publicly, is in place and states the principles and procedures, the timing of revisions, their reasons, and the nature of the **revisions**.	Yes	No	Partially	NA			
	15.4h	The **revision** policy follows standard and transparent procedures.	Yes	No	Partially	NA			
	15.4i	Information on the size and direction of **revisions** for key indicators is provided and made known publicly.	Yes	No	Partially	NA			
	15.4j	An analysis of **revisions** is performed and used to improve the statistical process.	Yes	No	Partially	NA			
		IF APPLICABLE to your programme/agency/country: Add other elements that are related to or important for assuring accuracy and reliability							
		Included in other NQAFs, also related to or important for assuring accuracy and reliability are: *10.8 The methodologies of surveys and the use of administrative data are evaluated periodically to guarantee high quality statistical outputs.* *6.6 Advance notice of major revisions and changes in methodology, source data, and statistical techniques is given and explained to users.* *6.7 Errors that are detected are corrected as soon as possible and users are informed about those errors that affected the released data.* *16.10 Preliminary data, when released, are clearly identified as such, and users are provided with appropriate information to be able to assess the quality of the preliminary data.*							
NQAF 16: TIMELINESS AND PUNCTUALITY	16.1	A release policy is defined and published; it distinguishes between different kinds of statistical outputs (press releases, statistics specific reports or tables, general publications, etc.) and their corresponding release procedures.	Yes	No	Partially	NA			
	16.2	The timeliness of the agency's statistics comply with IMF data dissemination standards or other relevant timeliness targets.	Yes	No	Partially	NA			
	16.3	A published release calendar announces in advance the dates, and times if applicable,	Yes	No	Partially	NA			

Check list - analytics

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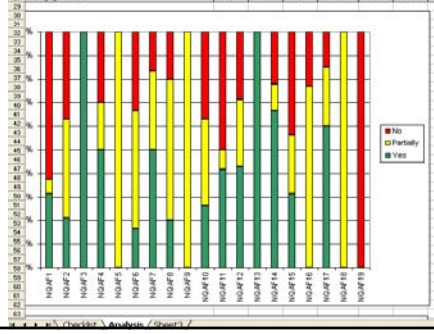
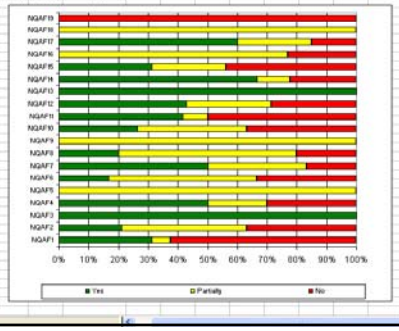
	Answers					Scores			Implementation Yes=0.5*Partially
	Yes	No	Partially	Not applicable	Totals	Yes	No	Partially	
Managing the statistical system	29	17	9	0	54	53.95%	31.48%	16.67%	69.99%
Coordinating the national statistical system	5	10	1	0	16	31.25%	62.50%	6.25%	34.38%
Managing relationships with data users and data providers	4	3	8	0	15	21.05%	36.84%	42.11%	42.11%
Managing statistical standards	19	8	8	0	19	100.00%	0.00%	0.00%	100.00%
Managing the institutional environment	16	11	35	0	62	25.81%	17.74%	56.45%	54.03%
Assuring professional independence	5	3	2	0	10	50.00%	30.00%	20.00%	60.00%
Assuring impartiality and objectivity	0	0	7	0	7	0.00%	0.00%	100.00%	50.00%
Assuring transparency	1	2	3	0	6	16.67%	33.33%	50.00%	41.67%
Assuring statistical confidentiality and security	6	2	4	0	12	50.00%	16.67%	33.33%	66.67%
Assuring the quality commitment	4	4	12	0	20	20.00%	20.00%	60.00%	50.00%
Assuring adequacy of resources	0	0	7	0	7	0.00%	0.00%	100.00%	50.00%
Managing statistical processes	26	17	12	0	55	47.27%	30.91%	21.82%	58.18%
Assuring methodological soundness	5	7	7	0	19	26.32%	36.84%	36.84%	44.74%
Assuring cost-effectiveness	5	6	1	0	12	41.67%	50.00%	8.33%	45.83%
Assuring soundness of implementation	6	4	4	0	14	42.86%	28.57%	28.57%	57.14%
Managing the respondent burden	10	0	0	0	10	100.00%	0.00%	0.00%	100.00%
Managing statistical outputs	23	21	33	2	79	29.97%	27.27%	42.86%	51.30%
Assuring relevance	6	2	1	0	9	66.67%	22.22%	11.1%	72.22%
Assuring accuracy and reliability	5	7	4	2	18	31.25%	43.75%	25.00%	43.75%
Assuring timeliness and punctuality	0	3	10	0	13	0.00%	23.08%	76.92%	38.46%
Assuring accessibility and clarity	12	3	5	0	20	60.00%	15.00%	25.00%	72.50%
Assuring coherence and comparability	0	0	13	0	13	0.00%	0.00%	100.00%	50.00%
Managing metadata	0	6	0	0	6	0.00%	100.00%	0.00%	0.00%





Check list - analytics

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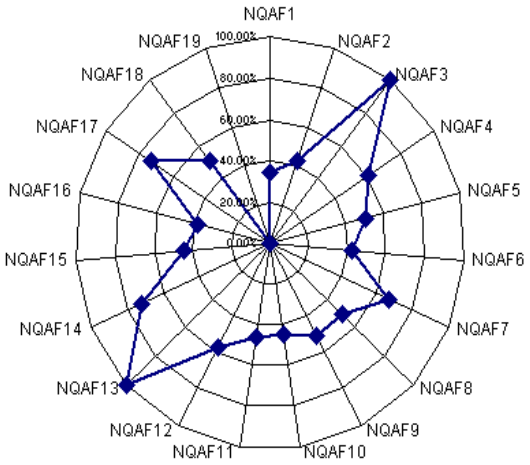

21

Check list - analytics

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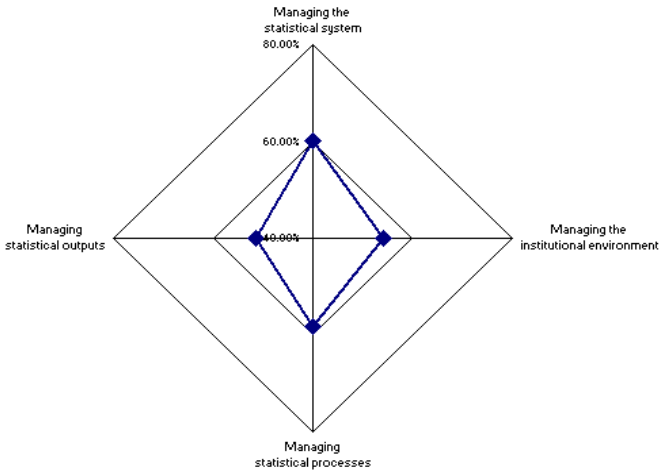

22

NQAF - mapping to other frameworks

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Correspondence between the Generic National Quality Assurance Framework Template and the CoP, DQAF, LAC proposal and StatCan

Generic National Quality Assurance Framework Template (NQAF)	European Statistics Code of Practice (CoP)	International Monetary Fund's Data Quality Assessment Framework (DQAF)	Latin America and the Caribbean Regional Code of Good Statistical Practice (LAC proposal)	Statistics Canada Quality Assurance Framework (StatCan)
3a. Improving the statistical system				
NQAF1. Coordinating the national statistical system	CoP. 2.1 CoP. 2.2 CoP. 2.3 CoP. 3.3 CoP. 3.4	DQAF. 0.1.1 DQAF. 0.1.2	LAC. 2.1 LAC. 2.2 LAC. 2.3 LAC. 2.4 LAC. 3.1 LAC. 3.2 LAC. 3.3	CAN 2
NQAF2. Managing relationships with data users and data providers	CoP. 2.3 CoP. 7.7 CoP. 9.1 CoP. 9.2 CoP. 9.3 CoP. 9.4 CoP. 9.5 CoP. 9.6 CoP. 11.1 CoP. 11.2 CoP. 11.3 CoP. 15.6 CoP. 15.7	DQAF. 5.3.1	LAC 2.4 LAC 3.3	CAN 1

Mapping to existing frameworks / EG and ESS CoP / EG and IMF / EG and LAC / EG and Canada / NQAF / ESCoP / IMF's DQAF / LAC / CANADA

NQAF - References

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National Quality Assurance Frameworks

Search Data Quality References by Country or Organization...

A B C D E F G H I J K L M N O P Q R S T U V W X

New Zealand

- Principles and Protocols for Producers of Tier 1 Statistics (2007)
- Respondent Load Strategy
- Website of Statistics New Zealand

Norway

- Developing Methods for Assessing Perceived Response Burden, by Dan Hedlin, Statistics Sweden; Trine Dale and Gustav Haraldsen, Statistics Norway; Jacqui Jones, Office for National Statistics, UK, 2005
- Systematic quality work in Statistics Norway
- Website of Statistics Norway

Organisation for Economic Co-operation and Development (OECD)

- Data and metadata requirements for building a real-time database to perform revisions analysis, Technical Report, OECD/Eurostat Task Force on "Performing Revisions Analysis for Sub-Annual Economic Statistics", McKenzie, R. and Gamba, M. (2008)
- Generic Statistical Business Process Model, Version 4.0 (UNECE, OECD, Eurostat)
- International Standard Cost Model Manual
- Interpreting the results of Revision Analyses: Recommended Summary Statistics, Technical Report, OECD/Eurostat Task Force on "Performing Revisions Analysis for Sub-Annual Economic Statistics", McKenzie, R. and Gamba, M. (2008)
- Quality Framework and guidelines for OECD Statistical Activities, Version 2003/1
- Quality Framework for OECD Statistical Activities, 17 January 2012
- Short-Term Economic Statistics (STES) Timeliness Framework
- The OECD Project on Revisions Analysis: First Elements for Discussion, OECD Short-term Economic Statistics Expert Group (STESEG), 27-28 June 2005, Di Fonzo.

Poland

- Quality framework of public statistics

Terminology: Glossary compiled by the EG

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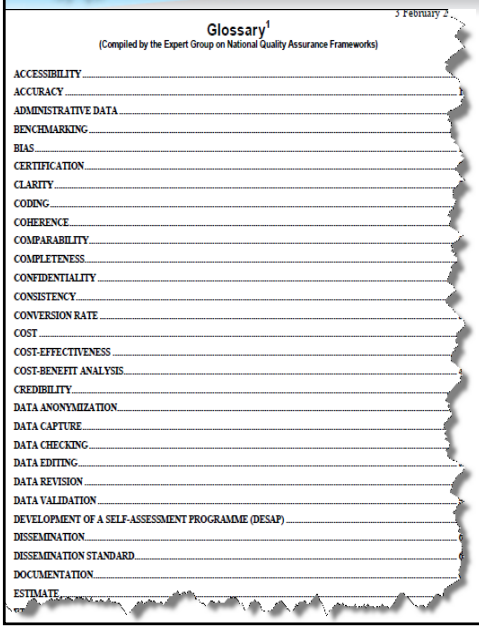
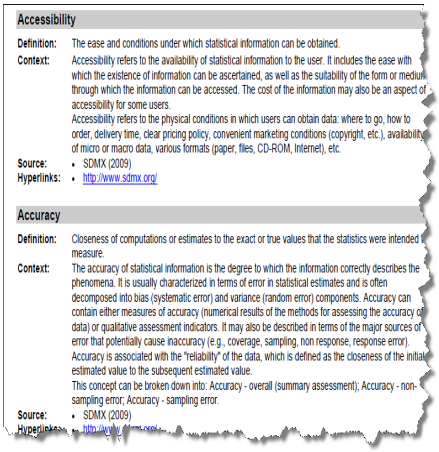


3 February 2

Glossary[1]

(Compiled by the Expert Group on National Quality Assurance Frameworks)

ACCESSIBILITY
ACCURACY
ADMINISTRATIVE DATA
BENCHMARKING
BIAS
CERTIFICATION
CLARITY
CODING
COHERENCE
COMPARABILITY
COMPLETENESS
CONFIDENTIALITY
CONSISTENCY
CONVERSION RATE
COST
COST-EFFECTIVENESS
COST-BENEFIT ANALYSIS
CREDIBILITY
DATA ANONYMIZATION
DATA CAPTURE
DATA CHECKING
DATA EDITING
DATA REVISION
DATA VALIDATION
DEVELOPMENT OF A SELF-ASSESSMENT PROGRAMME (DESAP)
DISSEMINATION
DISSEMINATION STANDARD
DOCUMENTATION
ESTIMATE



Accessibility

Definition: The ease and conditions under which statistical information can be obtained.

Context: Accessibility refers to the availability of statistical information to the user. It includes the ease with which the existence of information can be ascertained, as well as the suitability of the form or medium through which the information can be accessed. The cost of the information may also be an aspect of accessibility for some users.

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.

Source: • SDMX (2009)

Hyperlinks: • http://www.sdmx.org/

Accuracy

Definition: Closeness of computations or estimates to the exact or true values that the statistics were intended to measure.

Context: The accuracy of statistical information is the degree to which the information correctly describes the phenomena. It is usually characterized in terms of error in statistical estimates and is often decomposed into bias (systematic error) and variance (random error) components. Accuracy can contain either measures of accuracy (numerical results of the methods for assessing the accuracy of data) or qualitative assessment indicators. It may also be described in terms of the major sources of error that potentially cause inaccuracy (e.g., coverage, sampling, non response, response error).

Accuracy is associated with the "reliability" of the data, which is defined as the closeness of the initial estimated value to the subsequent estimated value.

This concept can be broken down into: Accuracy - overall (summary assessment); Accuracy - non-sampling error; Accuracy - sampling error.

Source: • SDMX (2009)

Hyperlinks: • http://www.sdmx.org/

25

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The way forward...

26

The way forward

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- Data quality is part of discussions at the international level
  - Coordination among agencies (UNSC, CCSA)
  - Harmonization of quality frameworks
  - Assistance to countries in their implementation is next
- NQAF provides a template
  - Tailoring it to ICT needs is possible and desirable
  - Detailed, quantifiable indicators can help with monitoring and improving quality over time

27

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More information:

http://unstats.un.org/unsd/dnss/QualityNQAF/nqaf.aspx

28