



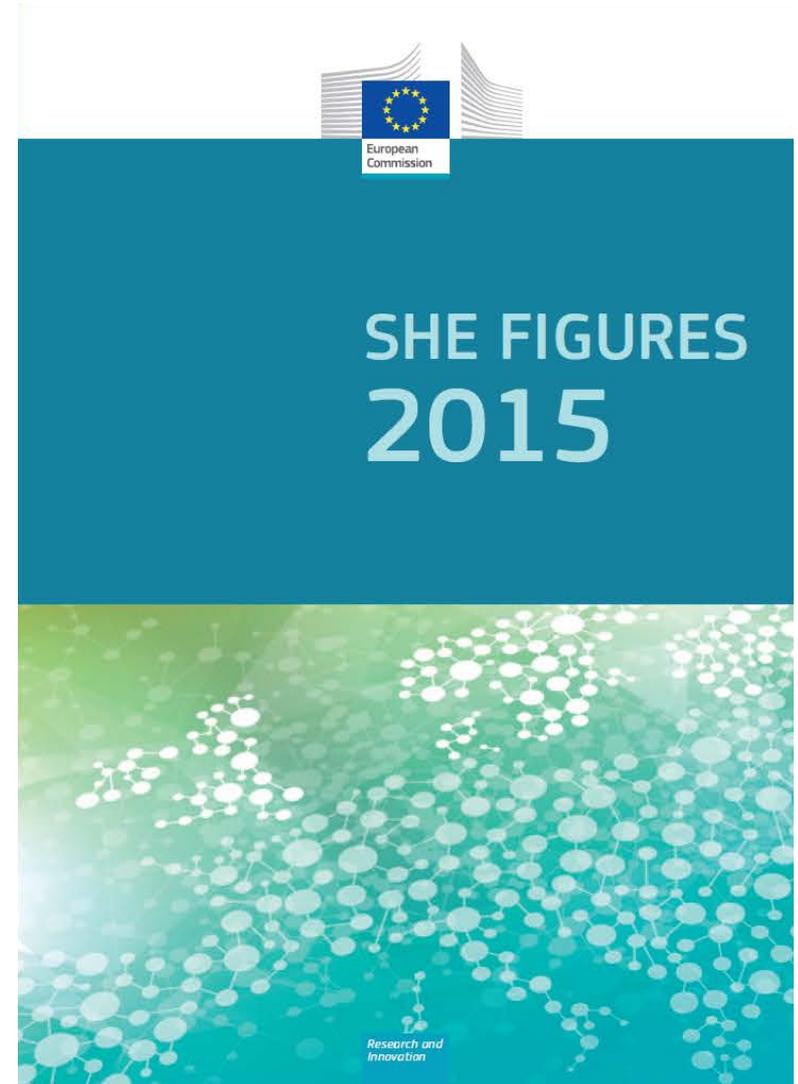
Science-Matrix

She Figures: data gaps, lessons & future directions
Plenary: Improving quality of STEM gender equality indicators
GS9-Brussels, November 8th, 2016





- Pool of graduate talent
- Participation in S&T occupations
- Labour market participation as researchers
- Working conditions of researchers
- Career advancement & participation in decision-making
- Research and innovation outputs

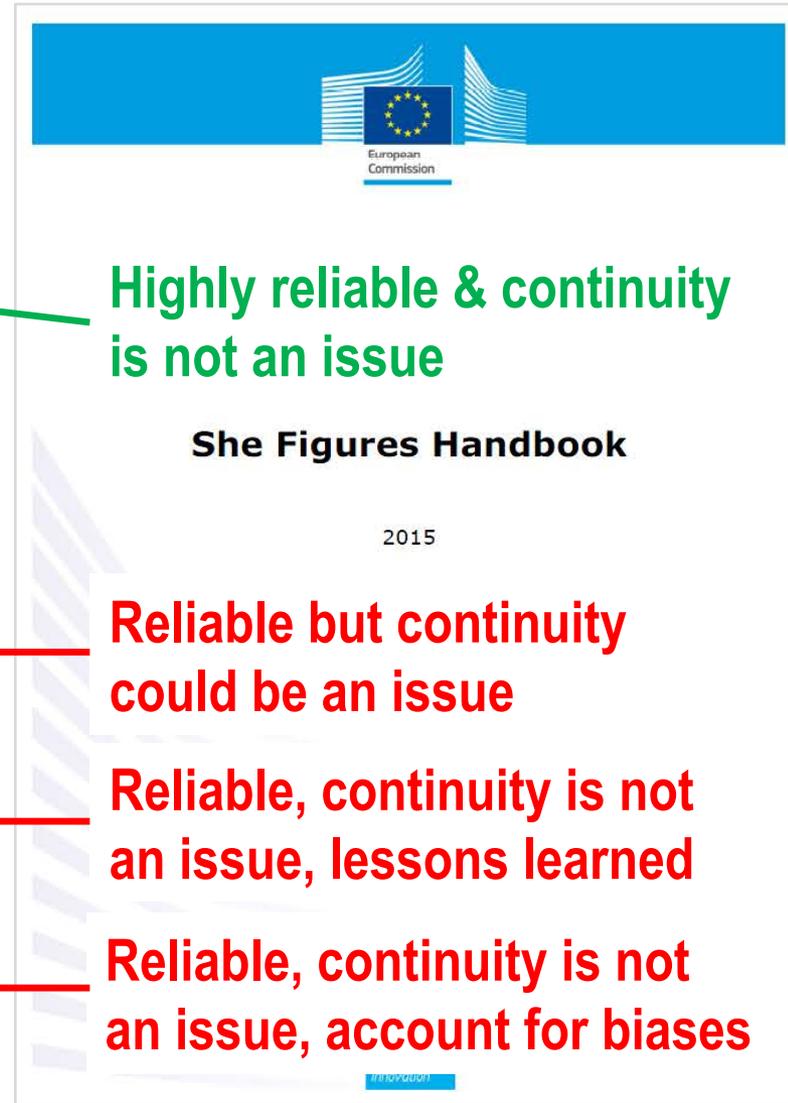
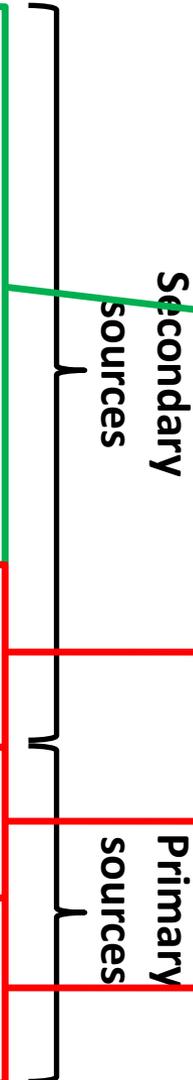




She Figures Data Sources



- Eurostat (**38 indicators**):
 - Education Statistics (**6**)
 - HRST(**8**)
 - High-tech Industry and knowledge-intensive services (**2**)
 - R&D Statistics (**20**)
 - Structure of earnings survey (**2**)
- MORE2 Survey (**4**)
- ERA Survey 2014 (**3**)
- Women in Science (WiS) questionnaire (**13**)
- Web of Science (WoS) (**8**)
- PATSTAT-EPO (**2**)





ERA Survey - discontinued in 2016 ERA monitoring exercise

Continuity will be an issue for $\sim 30\%$ of the figures in the Working Conditions chapter of SF2018

Alternatives?

Change in methodology \rightarrow New data likely not comparable to old data

MORE3 Survey - results for 2016 expected to be released end 2016

Continuity will not be an issue for SF2018



Example of alternatives for gender equality plans in RPOs:

- **JRC policy repository (Nat'l. level only):**
 - Legal/policy initiatives and incentives related to women researchers' recruitment, retention and career progression
 - Policies/measures supporting cultural and institutional change on gender
- **Integration into WiS questionnaire:**
 - **Advantage:** Eliminate continuity/dependency issue, reducing the risk of future break in time series for monitoring progress
 - **Disadvantage:** Increase Statistical Correspondent workload (already very tight data collection timeframe)



Feasibility of integration in WiS

Indicator	% of respondents who know of pre-existing natl. data (N=32)	% of respondents who could send a questionnaire to RPOs in different sectors			
		HES	GOV	BES	PNP
Existence of Gender Equality Plan or equivalent within RPOs	16%	38%	28%	22%	19%
Share of RPOs overall R&D budget allocated to the Gender Equality Plan or equivalent	0%				
Existence of specific measures/actions introduced by RPOs to support the Gender Equality Plan or equivalent	9% (or 60%)				

Unpublished data



- **Perceived barriers** to integration of questions on gender equality plans in WiS questionnaire:
 - Low perceived relevance where plans are mandatory or not explicitly encouraged

Availability of reliable and timely indicators is at greatest risk for the chapter on working conditions

- EU statistics on income and living conditions (EU-SILC)
- **Issue:** Eurostat does not provide the data at the adequate aggregation level → sample size too small → low reliability of estimates



- WiS questionnaire and guidelines revised with feedback from plenary and steering group meetings
 - Revised data collection structure in Excel → prefilled questionnaires
- 10-week data collection period
- Single, centralised email address for all outgoing and incoming exchanges between study team and SCs
 - Automatically forwarded to two team members who were then responsible for responding depending on the question
 - Issues with the questionnaire itself (e.g. formatting, more columns needed)
 - Content-related questions (e.g. uncertainty about how to fill a table, questions related to guidelines)
- Biweekly email reminders sent from central address



- Excel provides great flexibility but increases the workload of the study team at the validation and computation stages
 - Managing flags was challenging → two separate sheets were used (data and flags) increasing the risk of processing errors
 - Flagging empty cells was inconsistent/incomplete making it difficult to distinguish missing data from 0s
 - Locked sheets to maintain the integrity of the questionnaire → ad-hoc adjustments necessary in specific cases → multiple back and forth with SC
- Differences in the interpretation of the guidelines ↓ intl. comparability
- Mass emails are not the most efficient/effective way of making decisions or sharing information
 - Balance between not overloading people with emails, and trying to ensure that any response relevant to all SCs was circulated



WiS Data Collection: Ideas for improvement?



Online platform with multiple windows

Guidelines

Data capture

Seamless integration of data & flag (prefilled)

If no data is captured flag is set to (:)

Worksheet structure allows filling multiple cells at once

Discussion forum

Engage SCs in discussing the guidelines & their issues

Moderated by 2 study team members → homogeneous interpretation

No need to overload SCs with mass emails

Fast response rate & transparent communications

Validation toolkit

Outliers in time series and across countries

Breaks in time series

Better quality of submitted data ↗ intl. comparability

Fewer issues ↘ workload of study team and SCs

Easier to meet the tight project schedule

Sign-off by SCs

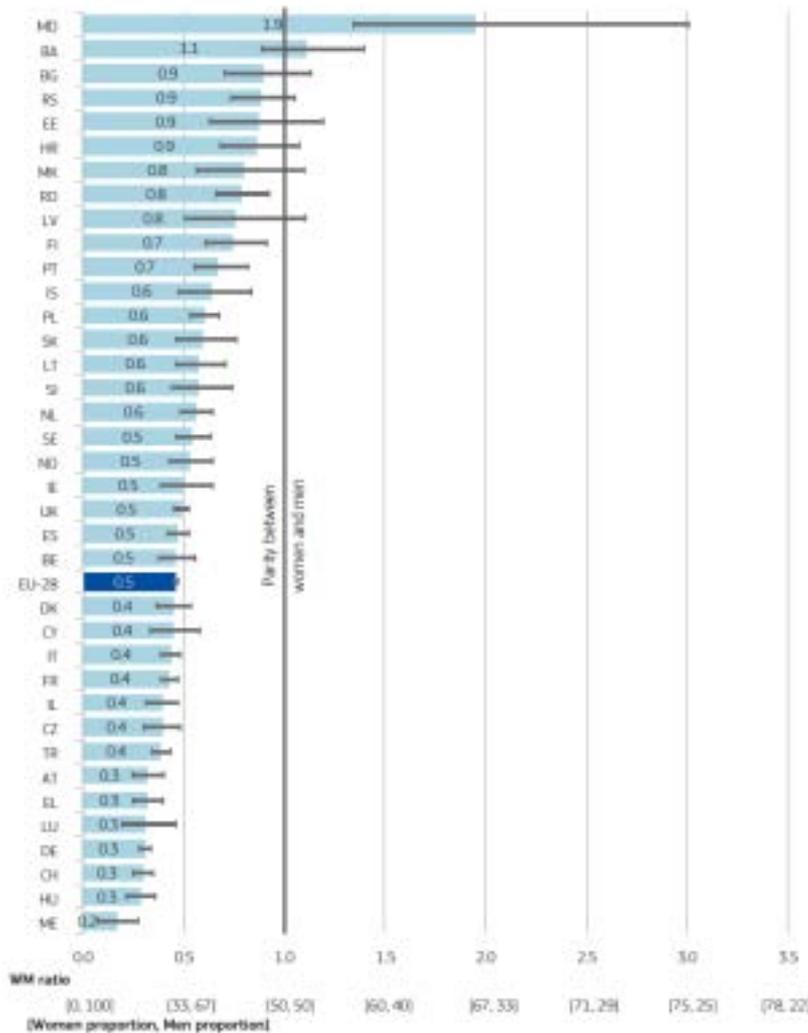
Feeds directly into the validation and computation procedures implemented in MSSQL



Future directions: R&I indicators



Figure 7.1. Women to men ratio of authorships (when acting as corresponding author) in all fields of science, 2011–2013



- More or less confirms the under-representation of women amongst researchers **consistent with Eurostat data** showing under-representation of women amongst researchers
- Increasing value of data:** Reporting on differences between the average production size of women and men researchers
- Data need:** # of researchers by sex by subfield
 - Output size varies across subfields



Table 7.10. Proportion of a country's scientific publications including a gender dimension in their research content, by field of science, 2002–2005 and 2010–2013

	Natural sciences		Engineering and technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	02–05	10–13	02–05	10–13	02–05	10–13	02–05	10–13	02–05	10–13	02–05	10–13
World	0.1	0.2	0.0	0.1	2.8	3.9	0.0	0.0	6.8	7.2	3.9	3.9
EU-28	0.1	0.2	0.0	0.1	2.5	3.8	0.0	0.0	5.6	6.2	2.7	3.2

- The % of publications with a gender dimension is highest in the SS, H and MS, and lowest in NS, ET, and AS
- Relevance is not uniform across fields → different baselines are observed and no targets established → if targets were set, they should vary across fields
- Aggregated data for all fields should account for differences in the specialisation patterns of countries
- **Future work:** GDRC in H2020 projects and relative contribution of women/men researchers to various policy issues (GDRC, Open Access, etc.)



Special Thanks!



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