



INCGROSS LFS Methodology Workshop in Lisbon

25th - 26th May 2023

Marina Perez

(Eurostat F3 - Labour Market and Lifelong Learning)

1.- Regulation and definition of INCGROSS.

2.- First quality checks **(ONGOING)**

- Sample size (number of Non Applicable values and INCGROSS values).
- Sources and methods of collection.
- Conversion of non EA countries to euros.
- Conversion of Part-time workers to Full-time.
- Distribution analysis and comparison with SES data.
- Outliers detection.

INCGROSS – Definition

- ✓ 2021 data available for FIRST time available in MARCH 2023 according to **Regulation (EU) 2019/1700 of the European Parliament and of the Council** [LI2019261EN.01000101.xml](#) ([europa.eu](#))
- ✓ Implementing regulation [L_2019336EN.01005901.xml](#) ([europa.eu](#))

INCGROSS - Definition (Explanatory notes LFS 2021 onwards)

- ✓ Gross pay refers to the monetary component of the remuneration of employees in cash payable by an employer to an employee [before deduction of income tax and National Insurance Contributions](#) (after deduction of employers' social insurance contributions).

INCGROSS - Definition

INCGROSS

✓ It **includes** regular overtime, extra compensation for shift work, seniority bonuses, regular travel allowances and per diem allowances, tips and commission and compensation for meals in cash.

The variable collects payments received in the calendar month either preceding or containing the reference week as chosen by the National Statistical Office, but not by the respondent.

If the reference week is spread over two calendar months, one of these two months can be chosen or even the calendar month preceding the beginning of the reference week.

✓ Payments made on a higher than monthly periodicity (e.g. yearly or quarterly payments such as 13th month or holiday pay) would be proportionally included in the gross monthly pay.

In summary, the variable refers to the actual gross monthly payments, plus the monthly part of the payments made on a higher than monthly periodicity.

INCGROSS - Definition

INCGROSS

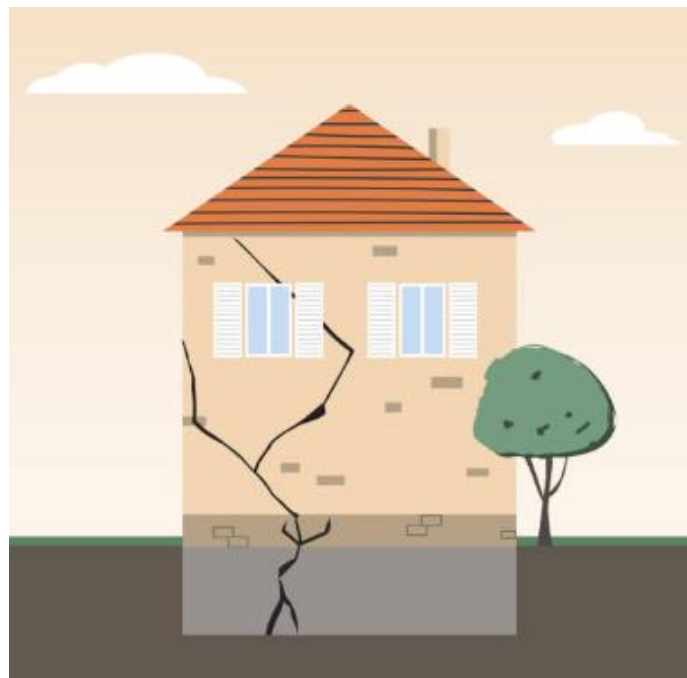
✓ While INCGROSS could be collected in net or gross terms, in the form best fitted to national circumstances, the [transmission to Eurostat should be in gross values](#). Use of register data and models for converting net-to-gross values are allowed.

✓ Proxy responses are allowed.

✓ Imputation is compulsory when item non-response before imputation is more than 5%.

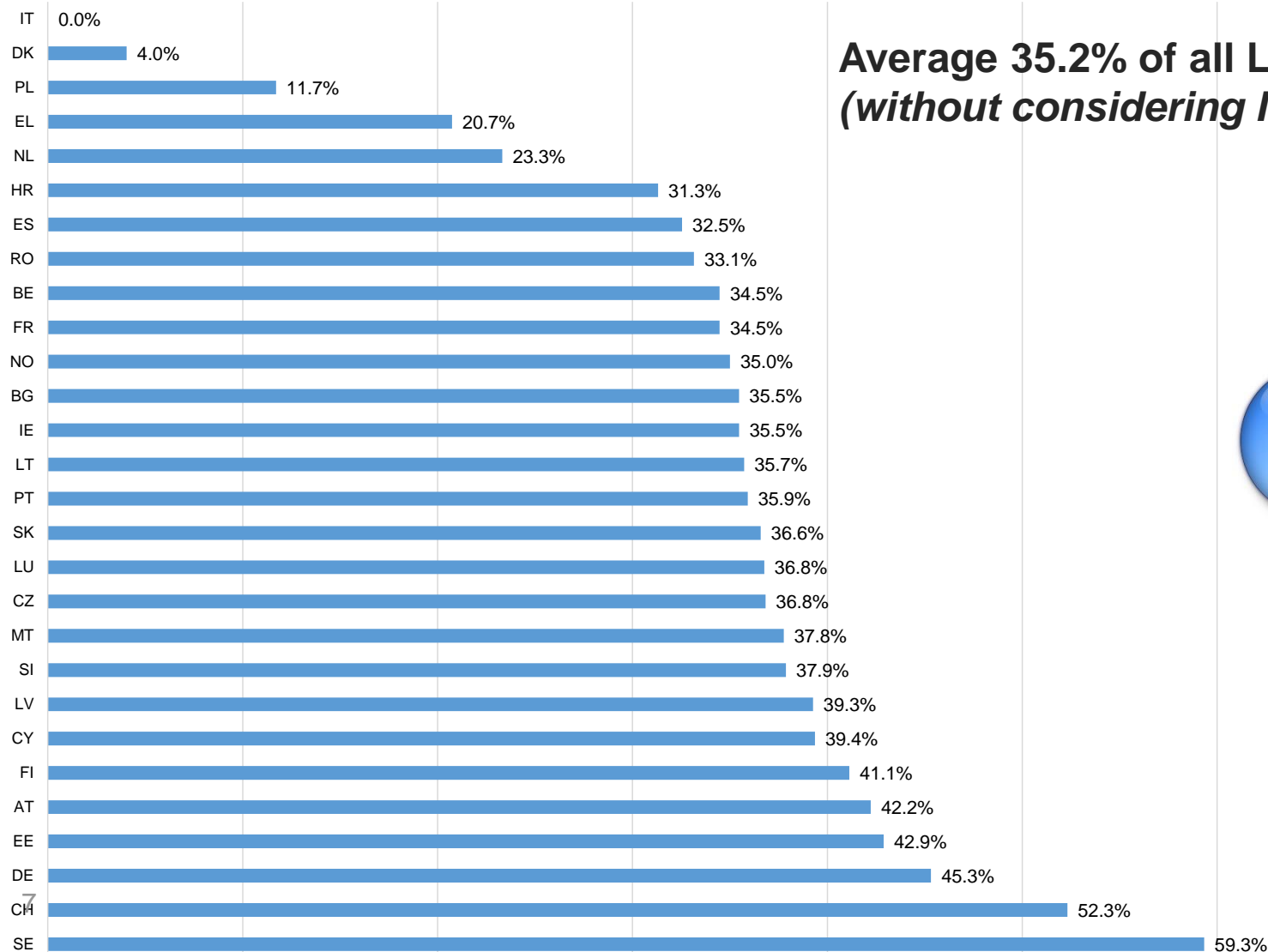
Each country is free to choose the data source and method for imputation. Details on the data source and imputation methods, and when relevant on the net-to-gross conversion model should be described in the quality report

QUALITY CHECKS



✓ Sample Size collected for INCGROSS

% 2021 LFS records applicable for INCGROSS and with information (not blank values)



**Average 35.2% of all LFS records with INFO in INCGROSS
(without considering Italy)**



Different degrees of coverage per countries

Potential issue to “create” a Gender Pay Gap from INCGROSS as in SES, as there will be more reduction in the sample size due to scope filter.

✓ Sources/methods to estimate INCGROSS

INCGROSS

The flag variable (INCGROSS_F) provides two main pieces of information about the gross monthly pay from the main job:

- Whether the income has been recorded in gross or net terms
- Whether the value has been imputed.

When relevant, it also gives

(iii) the imputation source (LFS, administrative data or other source)

(iv) whether the gross income has been directly imputed, or first the net value has been imputed and then the net-to-gross conversion has been applied.



The method of collecting this information may play a role to understand possible differences in the information collected afterwards ?

✓ Sources/methods to estimate INCGROSS

Would the use of more methods improve coverage ?

INCGROSS

	11	12	13	21	22	25
Grand Total	41.7%	2.6%	10.7%	11.4%	12.2%	21.4%
AT	92.1%		7.9%			
BE	96.0%		4.0%			
BG	29.6%	31.1%	3.2%	5.9%	30.2%	
CH	62.7%	1.0%		36.0%	0.3%	
CY	66.6%			33.4%		
CZ		100.0%				
DE						100.0%
DK	100.0%					
EE	88.8%		9.8%	1.4%		
EL			0.0%	54.2%	45.8%	
ES			100.0%			
FI	81.7%		18.3%			
FR				75.4%	24.6%	
IE	70.8%		29.2%			
LU	100.0%					
LV	17.9%	10.3%	71.8%			
MT		100.0%				
NL	100.0%					
NO	100.0%					
PL				100.0%		
PT				71.7%	28.3%	
RO					100.0%	
SE	99.3%		0.7%			
SP			100.0%			
SK						100.0%

Imputation is compulsory when item non-response before imputation is more than 5%.

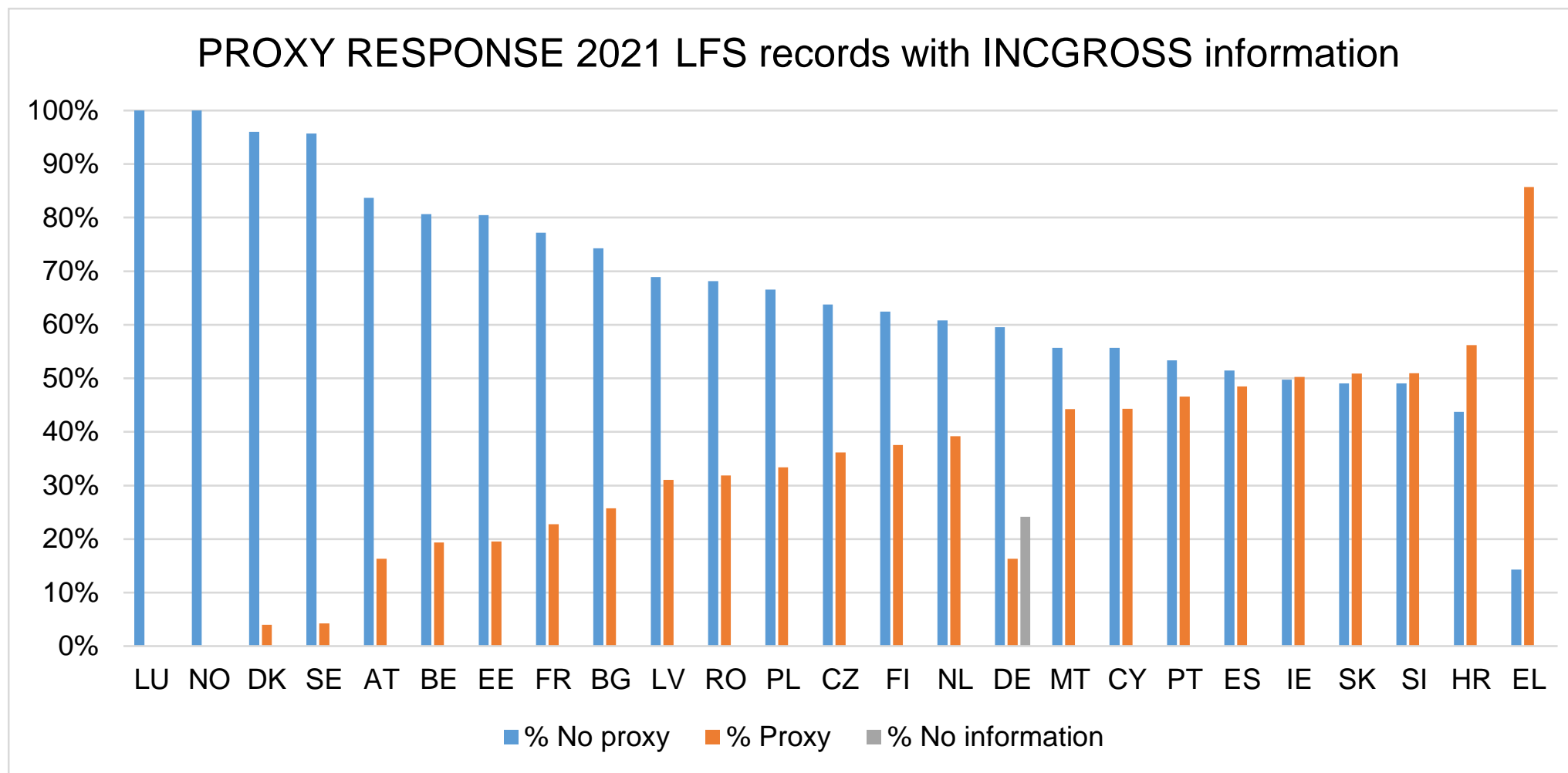
Codes or value

- 11 Gross income collected and no imputation for item non-response/inconsistency
- 12 Gross income collected and imputation for item non-response/inconsistency from the labour force survey (LFS)
- 13 Gross income collected and imputation for item non-response/inconsistency from an administrative data source
- 14 Gross income collected and imputation for item non-response/inconsistency from other data source(s)
- 21 Net-to-gross conversion applied and no imputation (net amount available and no imputation for non-response/inconsistency)
- 22 Imputed net income for item non-response/inconsistency from the LFS and net-to-gross conversion applied (net amount not available and imputation applied for the net value)
- 23 Imputed net income for item non-response/inconsistency from an administrative data source and net-to-gross conversion applied (net amount not available and imputation applied for the net value)
- 24 Imputed net income for item non-response/inconsistency from other data source(s) and net-to-gross conversion applied (net amount not available and imputation applied for the net value)
- 25 Imputed gross income for item non-response/inconsistency (net amount not available and imputation applied directly for the gross value; no net-to-gross conversion applied)
- Blank Not stated
- 99 Not applicable



✓ Proxy response for INCGROSS

INCGROSS



Effect
of
proxy
in
values?

✓ Conversion to euros for NON EA countries

INCGROSS

For comparison among countries, NEED to normalise information for EA countries and Non EA countries.

✓ Approach proposed SIMILAR as in SES data and Gender Pay Gap:

For NON EA countries, apply Average Exchange Rate to EUROS for the year of reference (this time 2021).



✓ Part time and full time workers

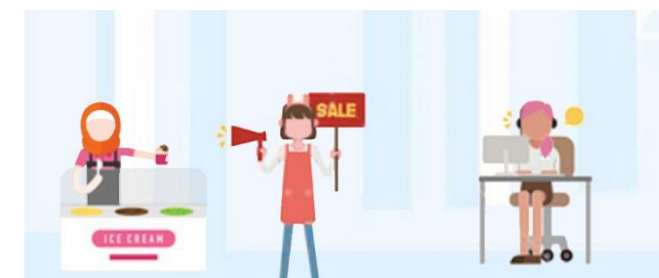
INCGROSS

If interested in [homogeneous comparisons](#), following the approach of SES data, we could convert information about INCGROSS for part time workers to the equivalent in full time.



Reasons:

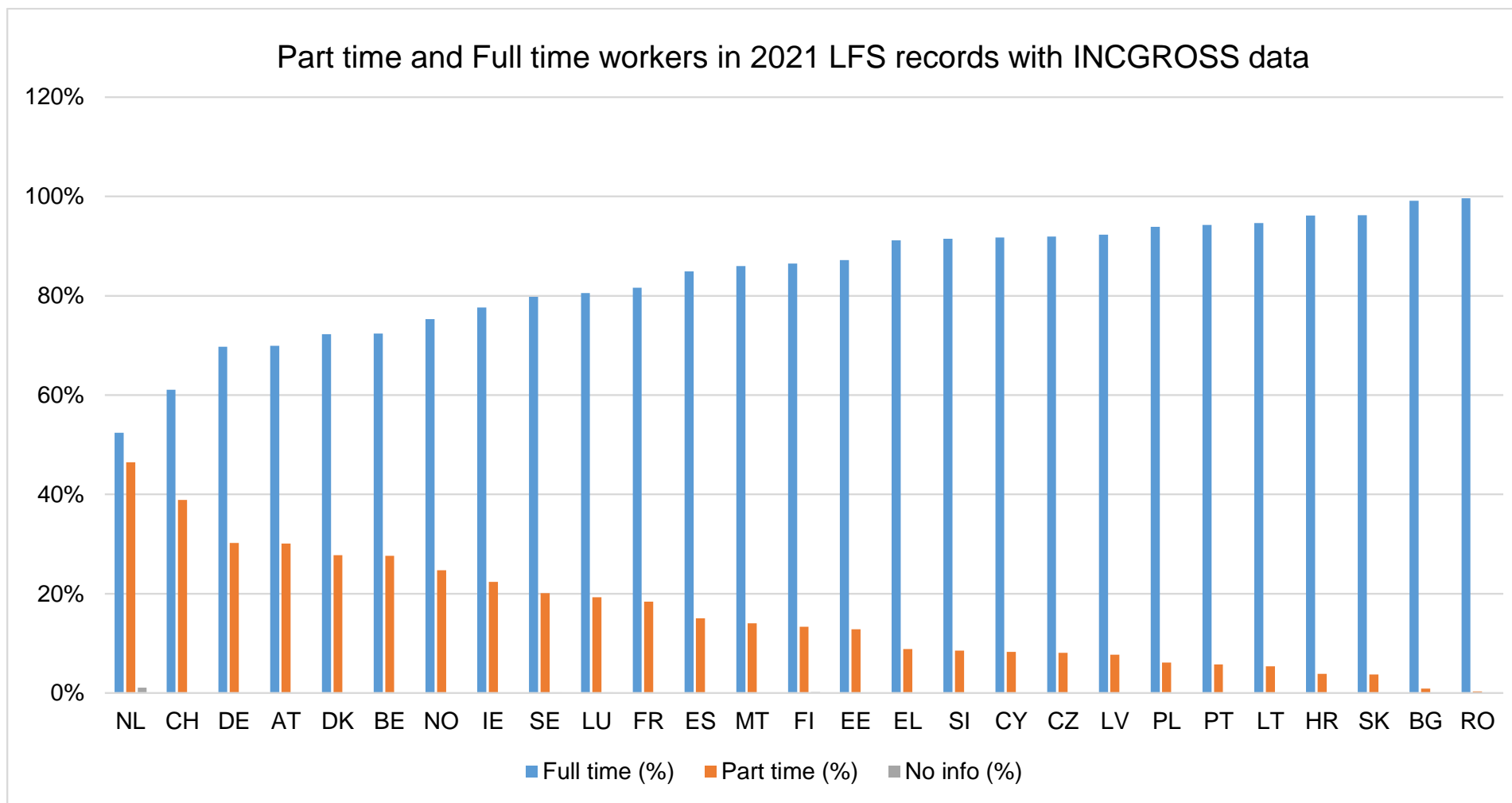
- Homogeneous comparisons among workers
- Avoid identifying part time workers as possible outliers



Nevertheless, it does not prevent tabulating information also with the breakdown working time:
FULL TIME – PART TIME workers.

✓ Part time and full time workers

INCGROSS



**Conversion
potentially
would
affect more
countries
with higher
% of Part
Time
workers**

✓ Part time and full time workers

INGROSS



Estimation of the share of a full time's normal hours following SES Approach to convert incgross

LFS does not collect the **Share of a full-timer's normal hours (expressed in %)**

In SES:

For a full-time employee, this share is always 100 %.

For a part-time employee, the hours contractually worked should be expressed as a percentage of the number of normal hours worked by a full-time employee in the local unit (in a job equivalent to that of the part-time employee). In most cases, this part-time % will be less than 90%.

✓ Part time and full time workers

INCGROSS

Estimated approach to ESTIMATE THE SHARE in LFS based on the hours USUAL worked:

- 1.- Select part- time workers with information in HWUSUAL (not 999,000 and 970)
- 2.- Measure an average (“standard”) number of hours USUALLY worked by full-time employees.
- 3.- Estimate the share as the ratio between the number of hours usually worked by the given part-time employee and the latter “standard” figure.
- 4.- If the estimated share is over 100% (part time workers have more number of hours worked than full time workers), then no conversion, leaving the number of hours worked unchanged.

The shares are with detail SEX * COUNTRY * NACE 1digit * ISCO 3digits

✓ Part time and full time workers

INCGROSS

Results of the conversion

Only 0.7% (995) of part-time workers cannot be converted due to lack of information of hours usually worked

Only 3.3% of part-time workers have estimated share over 100% and remained unchanged.

Total	Over 1	Below 1	% Over 1	% Below 1
12993	423	12570	3.3%	96.7%

Check effect for those countries with higher proportions of part-time workers (NL, CH, AT, DE) (Maximum effect among all countries)



✓ Distribution comparison SES - LFS

INCGROSS



SES

For comparisons reasons between Gross monthly earnings in SES and Gross Monthly Pay in LFS :

- Consider ONLY employees (STAPRO=3)
- Consider already converted values to full time in LFS
- Not consider small enterprises (sizefirm > 9) and NACE2_1D not in (A,O,T, U)



LFS

✓ Checks for ALL countries between SES data and LFS data

INGROSS

Distribution descriptive measures

Differences, in principle **MIGHT** be for several initial reasons:

LFS (2021)	SES (2018)
Self declared gross monthly pay by the worker	Registered gross monthly earnings by the company
Proxy response allowed - effect	No proxy response allowed
Resident population in the country	Employees working in enterprise in the country
Other survey effects (memory, questionnaire, interviewer)	

Outliers detection

For outlier detection and its treatment, Eurostat proposed a similar approach to that applied in SILC and SES. **Detection of possible outliers by Eurostat and treatment by the National Statistical Institutes.**

Considering already converted Part Time workers to Full Time

Calculating q1, q3 and applying the formula

lower boundary: $\text{EXP} [\log Q1 - 3 * (\log Q3 - \log Q1)]$

upper boundary: $\text{EXP} [\log Q3 + 3 * (\log Q3 - \log Q1)]$

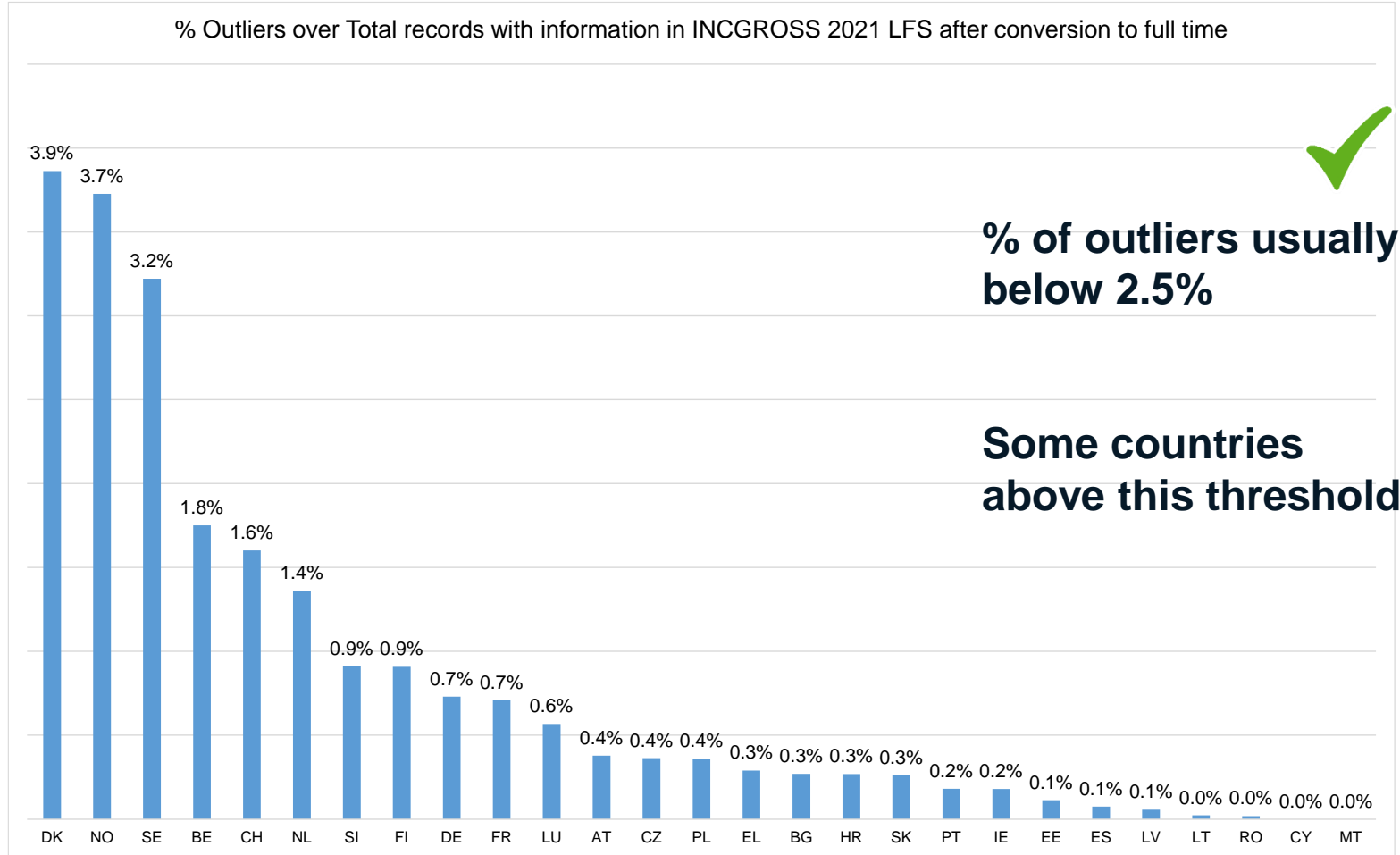
Those registers with INCGROSS < lower boundary or INCGROSS > upper boundary are treated as OUTLIERS

➤ **As an additional benchmark of quality using if available, Minimum Wage**

Outliers detection

INCGROSS

COUNTRY	LOWER BOUNDARY	UPPER BOUNDARY	% OUTLIERS IN TOTAL
DE	462	23147	3.9%
NO	7561	287363	3.7%
SE	6577	200440	3.2%
BE	342	28188	1.8%
CH	683	70472	1.6%
NL	254	47398	1.4%
SI	228	20216	0.9%
FI	511	20753	0.9%
DK	4262	247997	0.7%
FR	378	14580	0.7%
LU	208	97493	0.6%
AT	380	32345	0.4%
CZ	10925	82972	0.4%
PL	801	19613	0.4%
EL	162	9653	0.3%
BG	194	6968	0.3%
HR	1196	26348	0.3%
SK	306	4908	0.3%
PT	108	16344	0.2%
IE	188	67763	0.2%
EE	76	23417	0.1%
ES	211	17678	0.1%
LV	72	15621	0.1%
LT	77	15534	0.0%
RO	704	26158	0.0%
CY	115	19604	0.0%
MT	750	389519	0.0%



✓ Conclusions

- First time countries collected data.
Good start for the data collection.
- 2021 year was not a regular year for the Labour Market.
- On going checking exercise.
- Possible improvements of coverage, results.

INGROSS



marina.perez-julian@ec.Europa.eu
ESTAT-LFS-VALIDATION@ec.Europa.eu

Thank
You



© European Union 2020

Unless otherwise noted the reuse of this presentation is authorised under the [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/) license. For any use or reproduction of elements that are not owned by the EU, permission may need to be sought directly from the respective right holders.

Slide 22: [element concerned](#), source: [e.g. Fotolia.com](#); Slide xx: [element concerned](#), source: [e.g. iStock.com](#)