CALIBRATION BY AGE GROUP AND ITS IMPACT ON KEY LABOUR MARKET INDICATORS

7th European Workshop on LFS-Methodology
10 - 11 May 2012, Madrid

The German case

Two different weighting schemes incl. different calibrations

Monthly estimates   and   Quarterly/yearly estimates

1) - - -

2) Calibration to <u>auxiliary variables</u> of the current population statistics, etc.
-› weighting factors are estimated using generalized regression estimators
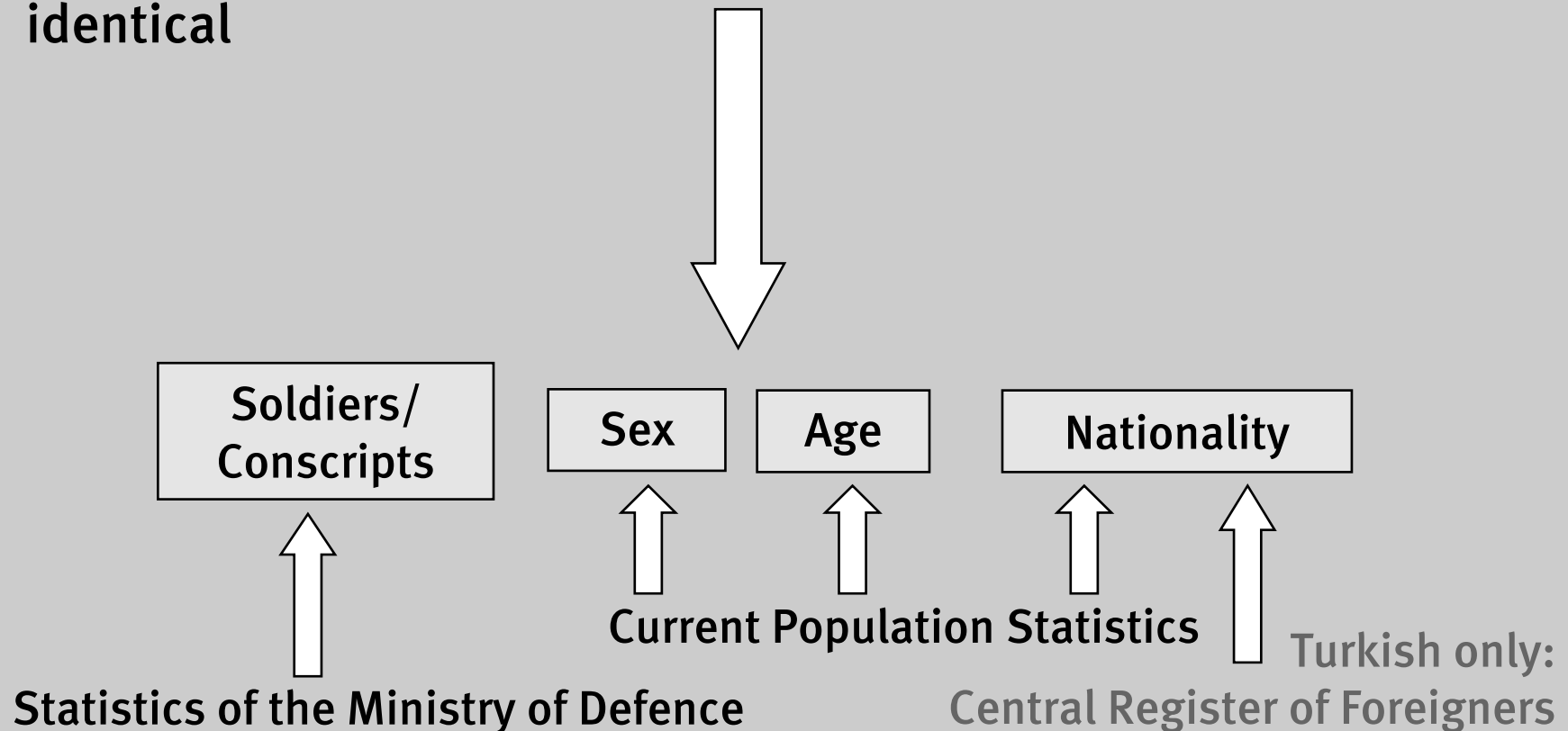
1) Non-response compensation

2) Calibration to <u>auxiliary variables</u> of the current population statistics, etc.
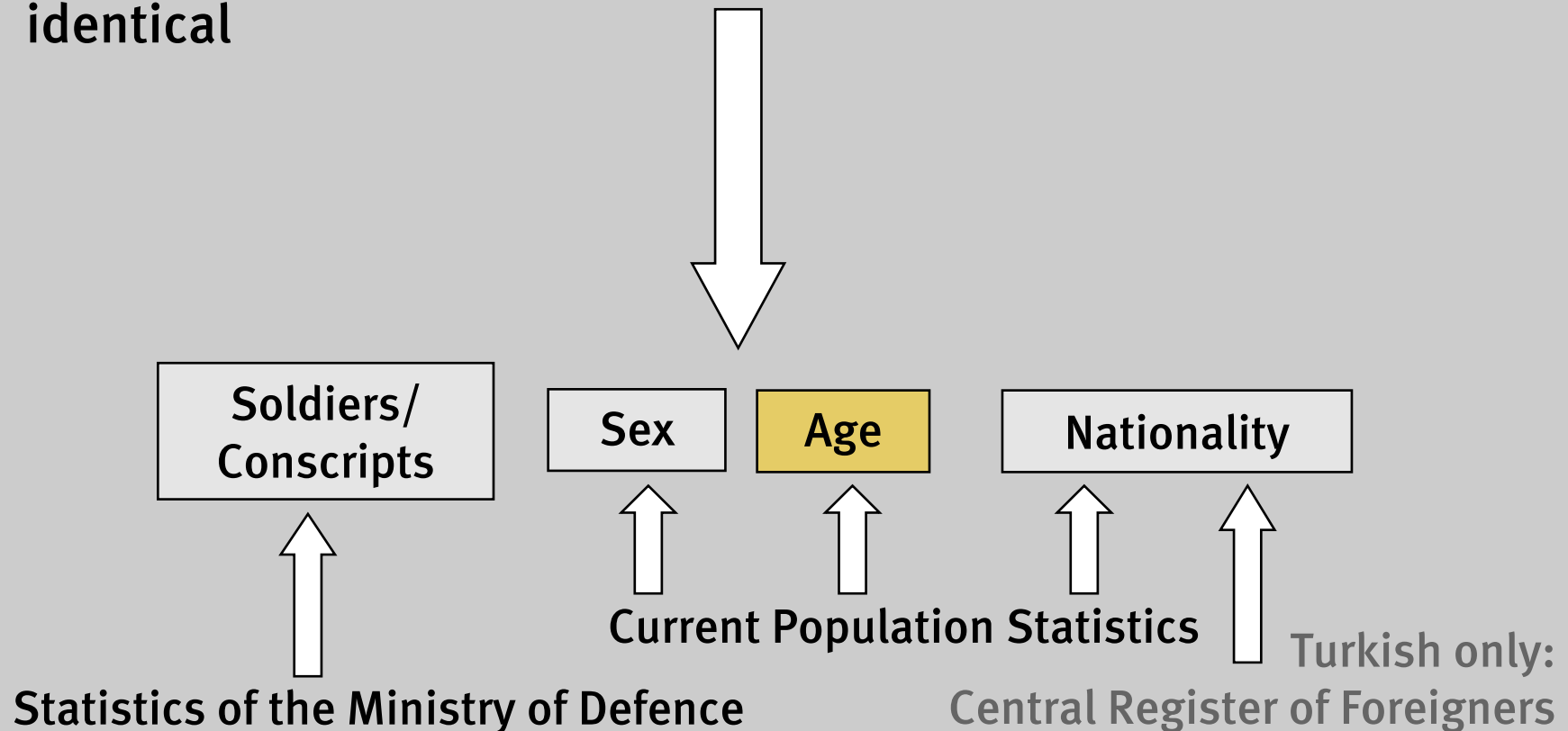-› weighting factors are estimated using generalized regression estimators

The German case

2nd step *"Calibration to <u>auxiliary variables</u> "* seems to be identical

| Soldiers/ Conscripts | Sex | Age | Nationality |

Current Population Statistics

Statistics of the Ministry of Defence

Turkish only:
Central Register of Foreigners

The German case

2nd step *"Calibration to auxiliary variables "* seems to be identical

Soldiers/ Conscripts

Sex

Age

Nationality

Current Population Statistics

Statistics of the Ministry of Defence

Turkish only:

Central Register of Foreigners

Calibration items in the weighting scheme

Regional unit	Monthly estimates
Federal republic	• 13 Age groups x Sex • calibration to weeks
2 units (East - West)	• 2 Nationality classes x Sex
8 Nielsen-regions	• 6 Age groups x Sex
16 Bundesländer (NUTS1)	• Sex
39 administrative regions (NUTS2)	no calibration
132 regional units	no calibration

Simplified illustration

Calibration items in the weighting scheme

Regional unit	Monthly estimates	Quarterly/yearly estimates
Federal republic	• 13 Age groups x Sex • calibration to weeks	no calibration
2 units (East - West)	• 2 Nationality classes x Sex	no calibration
8 Nielsen-regions	• 6 Age groups x Sex	no calibration
16 Bundesländer (NUTS1)	• Sex	• 3 Age groups x Sex • 4 Nationality classes x Sex • Soldiers, Conscripts • Total monthly population
39 administrative regions (NUTS2)	no calibration	• 2 Nationality classes x Sex
132 regional units	no calibration	• Total population

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Simplified illustration

Calibration items in the weighting scheme

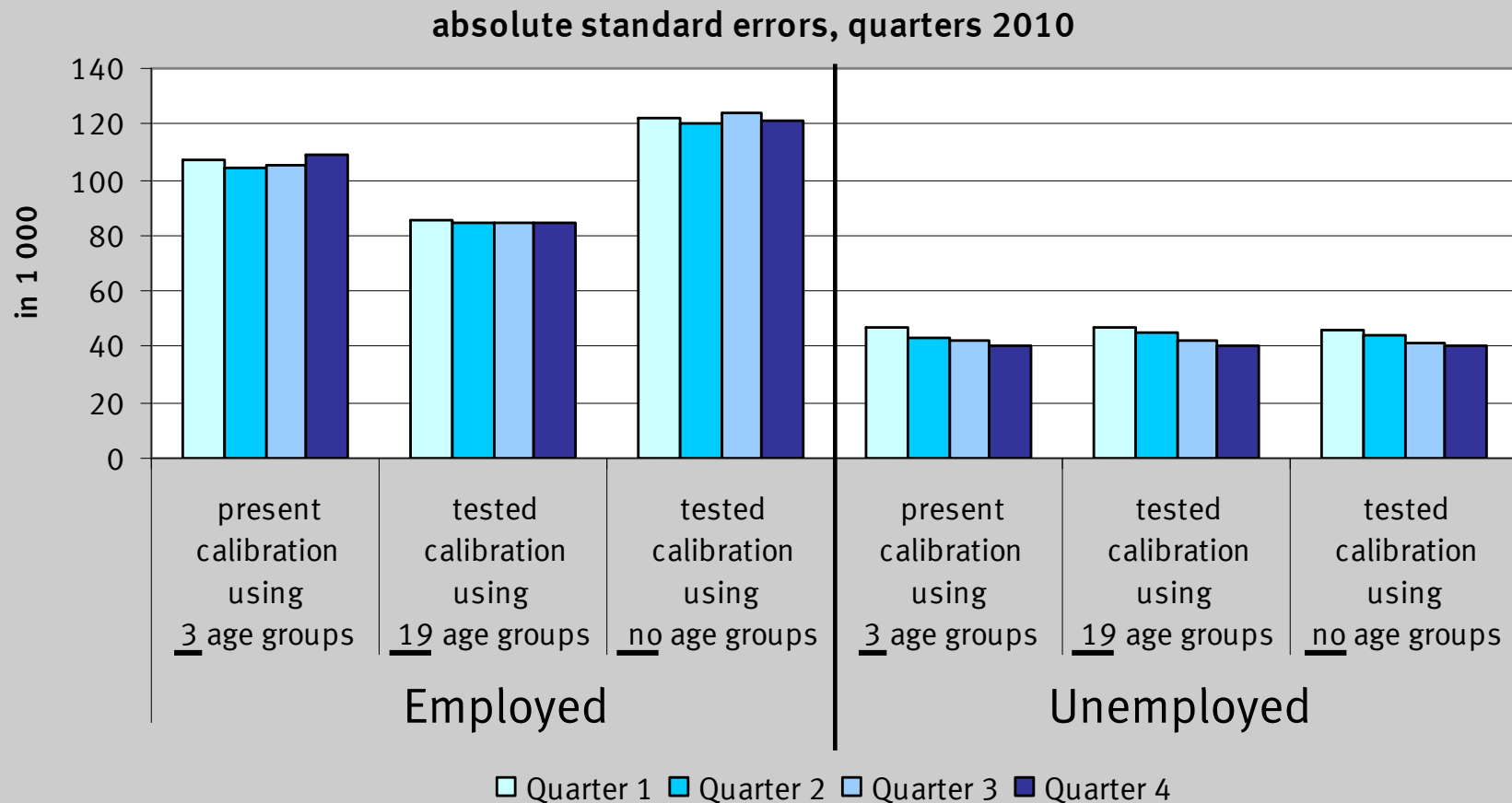| Regional unit	Quarterly/yearly estimates	tested estimates
Federal republic	no calibration	no calibration
2 units (East - West)	no calibration	no calibration
8 Nielsen-regions	no calibration	no calibration
16 Bundesländer (NUTS1)	• 3 Age groups x Sex • 4 Nationality classes x Sex • Soldiers, Conscripts • Total monthly population	• **19 Age groups** x Sex resp. **no age** groups x Sex • 4 Nationality classes x Sex • Soldiers, Conscripts • Total monthly population
39 administrative regions (NUTS2)	• 2 Nationality classes x Sex	• 2 Nationality classes x Sex
132 regional units	• Total population	• Total population

Simplified illustration

Why testing an estimation using different calibration to age groups?

- **produce coherent results for monthly and quarterly/annual figures**
- **improve the quality of the LFS**
- **Regulation (EG) Nr. 577/98 , Article 3 (5) demands calibration to 13 age groups**
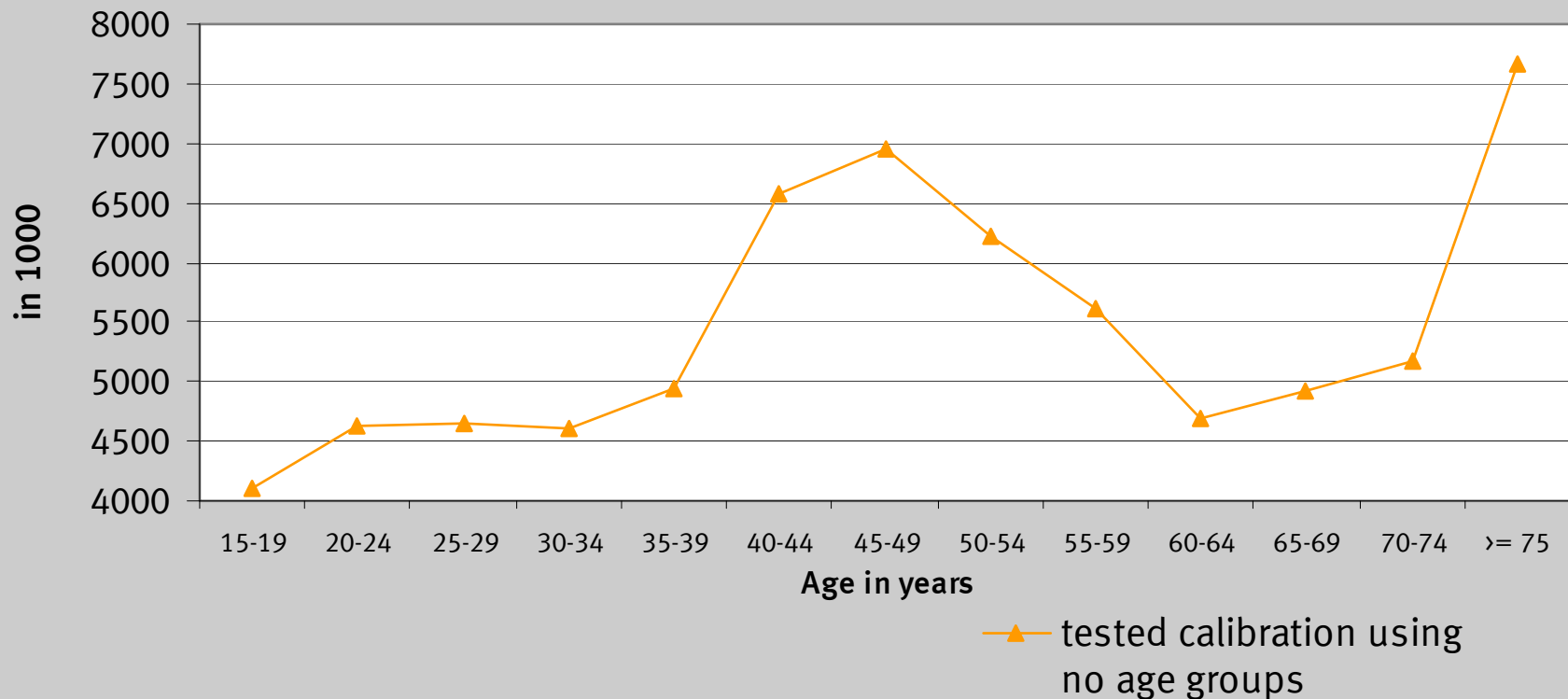- **produce coherence to population statistics**

What does it change?

1) Standard errors

2) Age structure of the population

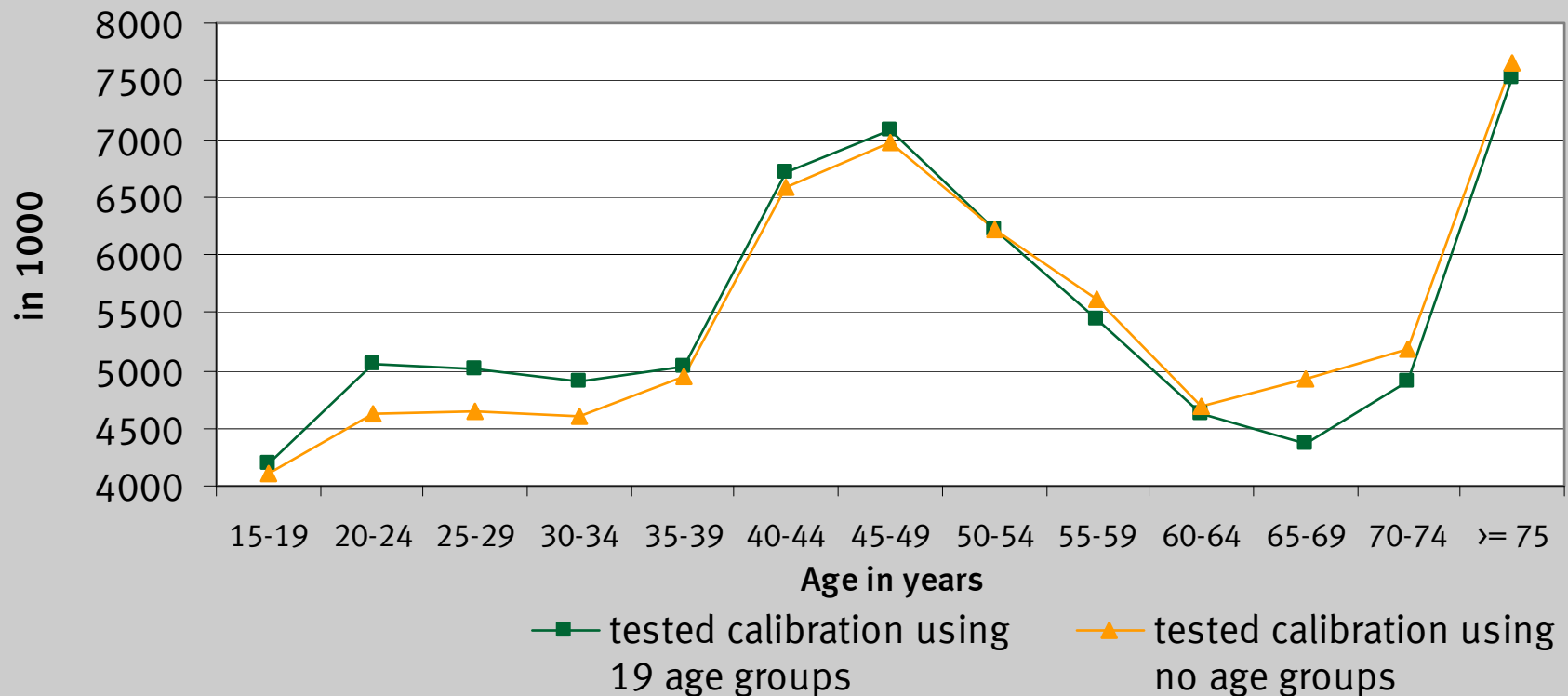3) Results (on labour market indicators)

Comparison of the standard errors

absolute standard errors, quarters 2010

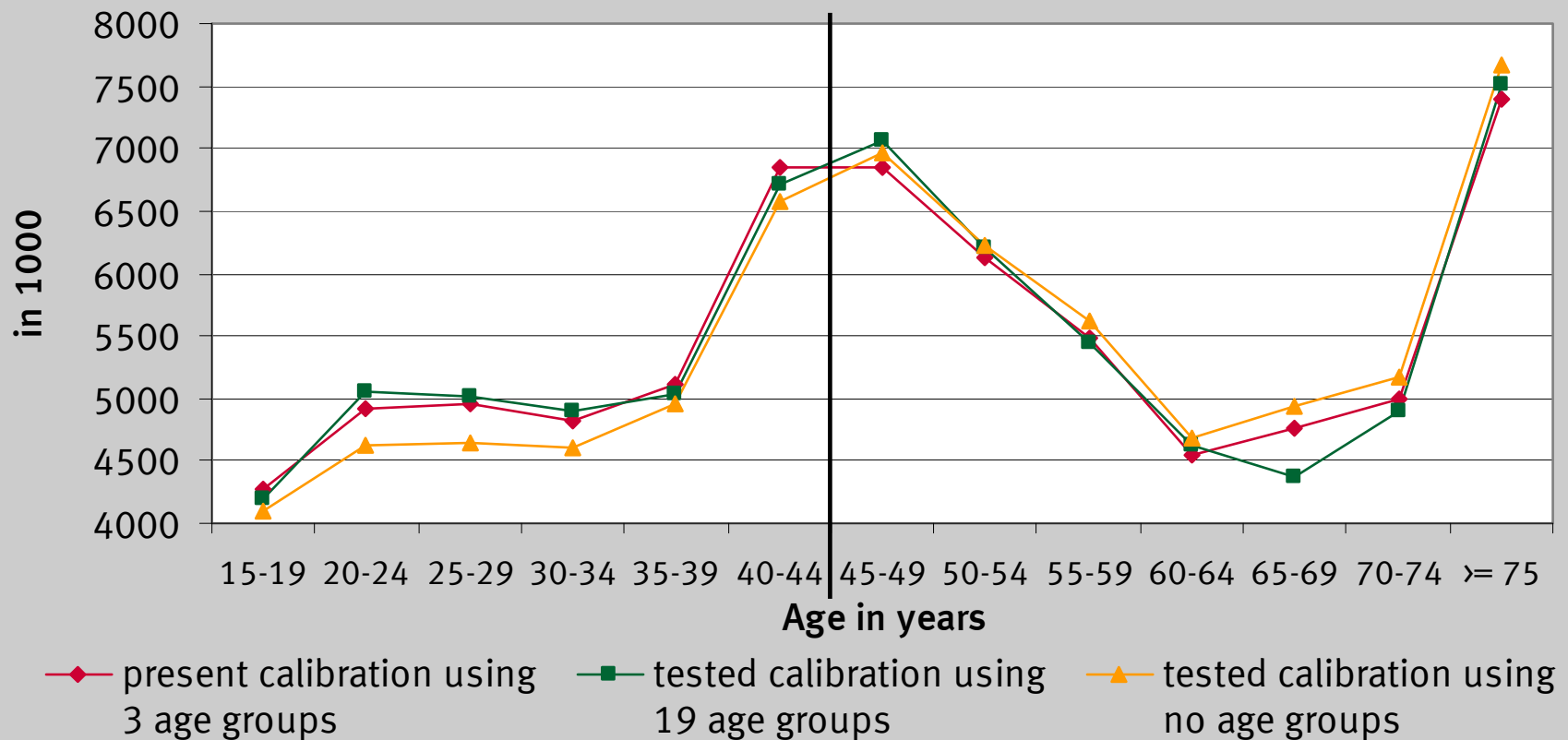# Age structure of the population

Population by age groups, 2010

Age structure of the population

Population by age groups, 2010

Legend:
- tested calibration using 19 age groups
- tested calibration using no age groups

X-axis: Age in years (15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, >= 75)

Y-axis: in 1000 (4000, 4500, 5000, 5500, 6000, 6500, 7000, 7500, 8000)

Age structure of the population

Population by age groups, 2010

Age structure of the employed population

LFS: Underestimation of the younger population (15-44 years) by Ø 3.4% , resp 2.0%

LFS: Overestimation of the older population (45-74 years) by Ø 3.3%, resp 4.4%
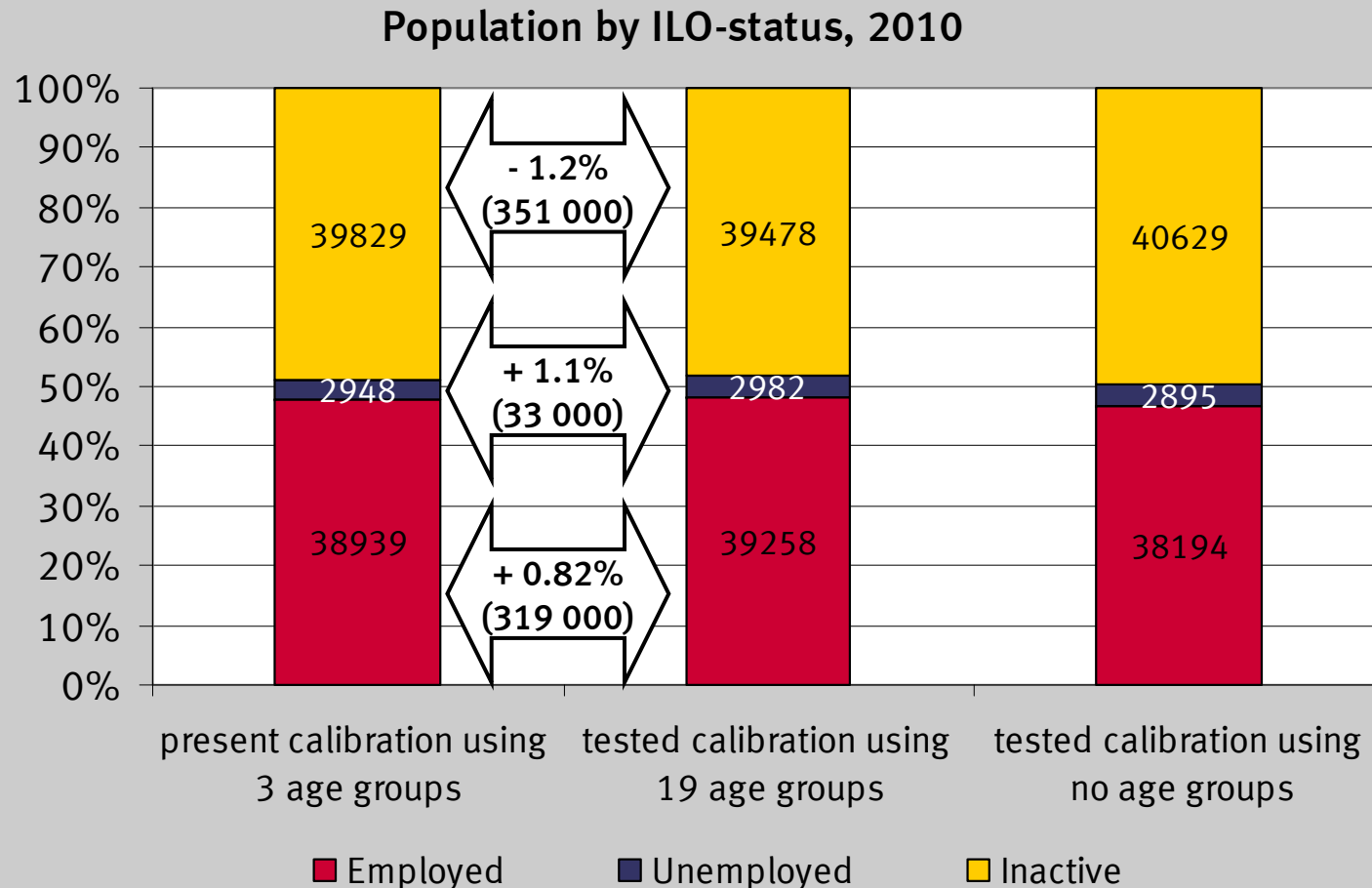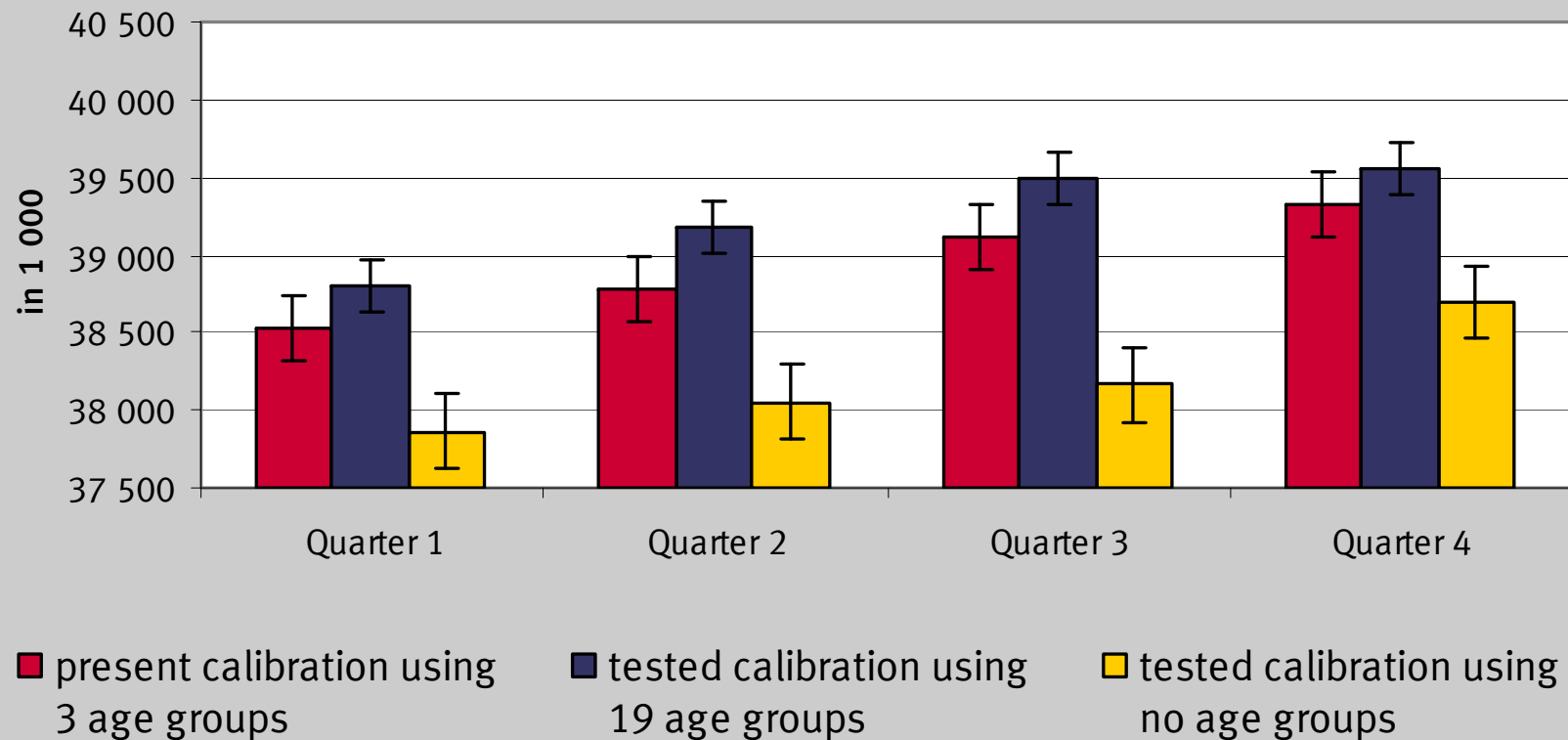
Age in years

□ Difference of "non calibrated results" minus "results calibrated to 3 age groups"
■ Difference of "non calibrated results" minus "results calibrated to 19 age groups"

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Data: LFS 2010   Slide 14

How much does this affect the results?

Population by ILO-status, 2010

Chart: Stacked bar chart showing population by ILO-status (2010) across three calibration methods.

- **present calibration using 3 age groups**: Employed 38939, Unemployed 2948, Inactive 39829
- **tested calibration using 19 age groups**: Employed 39258, Unemployed 2982, Inactive 39478
- **tested calibration using no age groups**: Employed 38194, Unemployed 2895, Inactive 40629

Differences between first two columns:
- Inactive: − 1.2% (351 000)
- Unemployed: + 1.1% (33 000)
- Employed: + 0.82% (319 000)
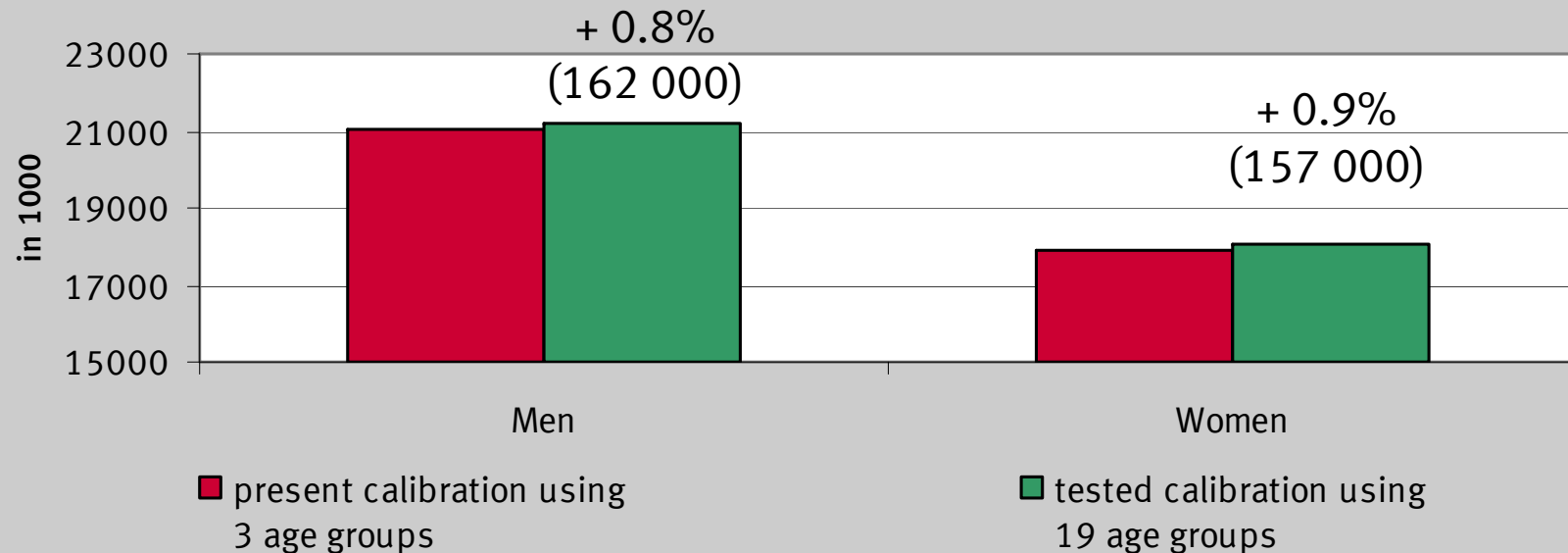
Legend: ■ Employed ■ Unemployed ■ Inactive

Range of confidence intervals for employed using different calibrations to age

Number of employed with 95% confidence intervals

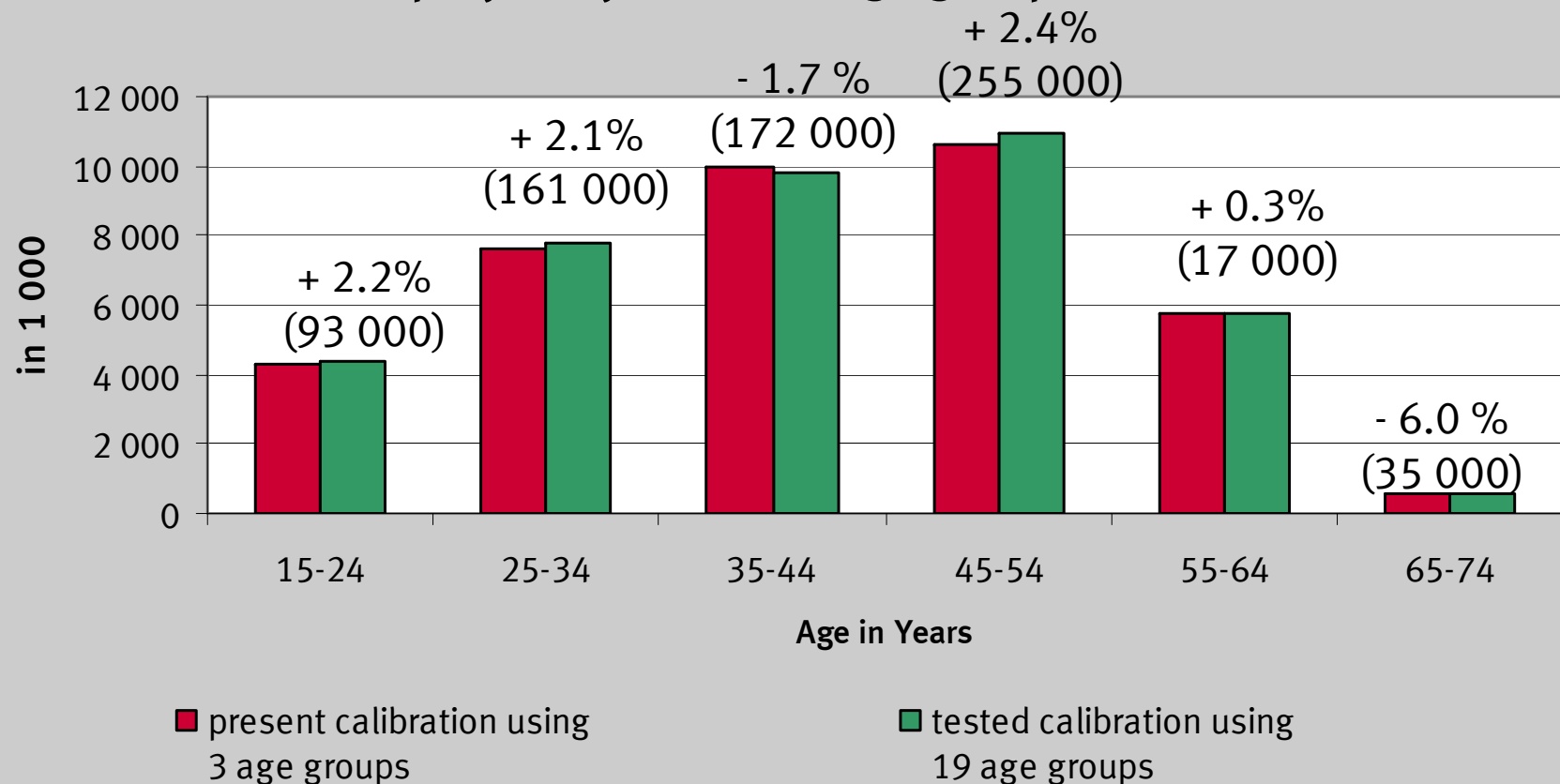present calibration using 3 age groups · tested calibration using 19 age groups · tested calibration using no age groups

Effects on labour market indicators

Employed by sex, 2010

Effects on labour market indicators

Employed by different age groups, 2010

in 1 000 (y-axis)

- 15-24: + 2.2% (93 000)
- 25-34: + 2.1% (161 000)
- 35-44: - 1.7 % (172 000)
- 45-54: + 2.4% (255 000)
- 55-64: + 0.3% (17 000)
- 65-74: - 6.0 % (35 000)

Age in Years

■ present calibration using 3 age groups

■ tested calibration using 19 age groups

Effects on labour market indicators

No specific effects to be seen for

- Full- and part-time

- Occupational status

- Economic sectors

Summary

Calibration by age has considerable impact upon key labour market indicators!

The test showed that it is possible to
- ✓ be in accordance with the EU regulation
- ✓ to increase methodological coherence to the monthly results
- ✓ to increase the coherence to population statistics
- ✓ to have more precise results on specific subgroups of the population
- ✓ to reduce the standard error
- ✓ no drawback concerning deeply regionalised results

Do it right or don't do it at all

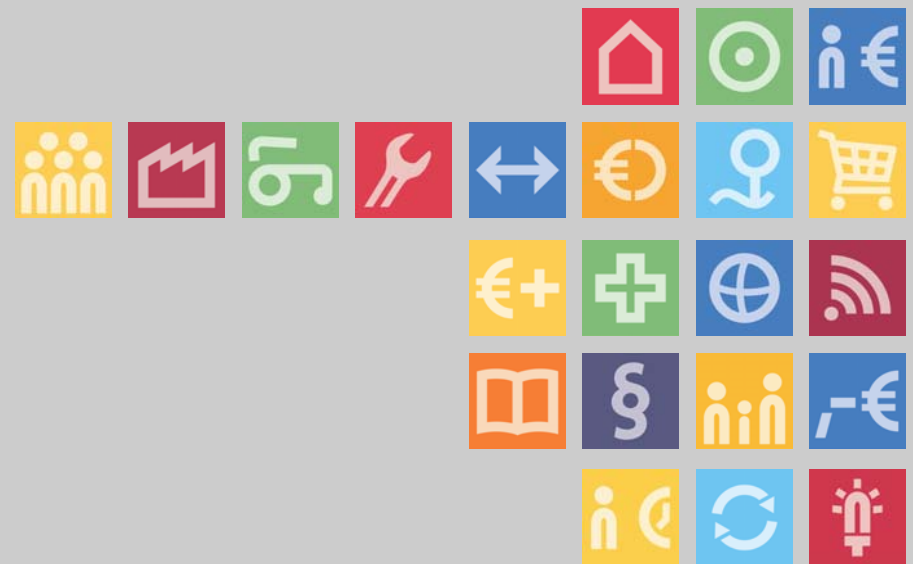Up to date there is no possibility to calibrate to other benchmarks then the ones we have.

It may be possible to introduce the calibration to 13 age groups in the future, because the household statistics are reorganised

But:

Population statistics need to provide us with good quality data on a (at least) quarterly level.

And apart from that – what do you recommend?

THANKS FOR YOUR ATTENTION!

Katharina Puch

Katharina.puch@destatis.de