NETHERLANDS INTERDISCIPLINARY DEMOGRAPHIC INSTITUTE

Decomposition of regional convergence in population ageing across Europe

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INTRO

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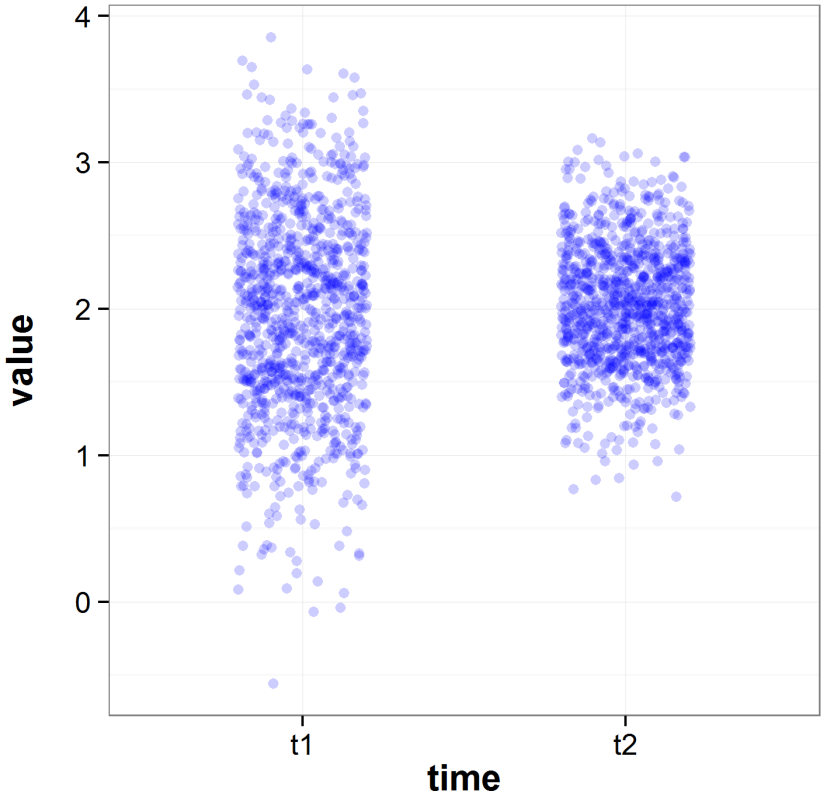
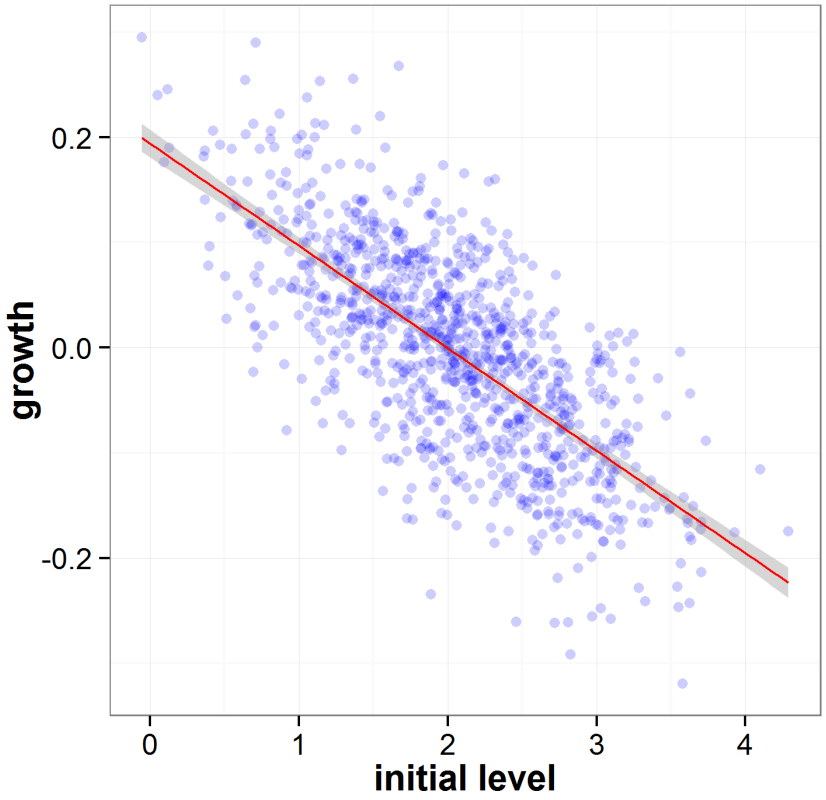
We apply the methodological framework of convergence analysis

INTRO: 2 CONCEPTS OF CONVERGENCE

sigma



beta



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We apply the methodological framework of convergence analysis

Measure variable is Total Support Ratio (*working-age to non-working-age ratio*, inverse of Total Dependency Ratio, 15-64)

DATA

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EU-28, 263 NUTS-2 regions

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Observed period: 2003-2012 (Eurostat + nat.)

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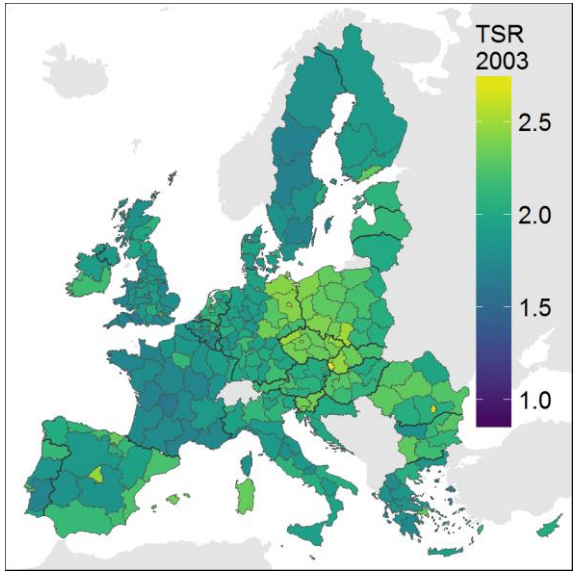

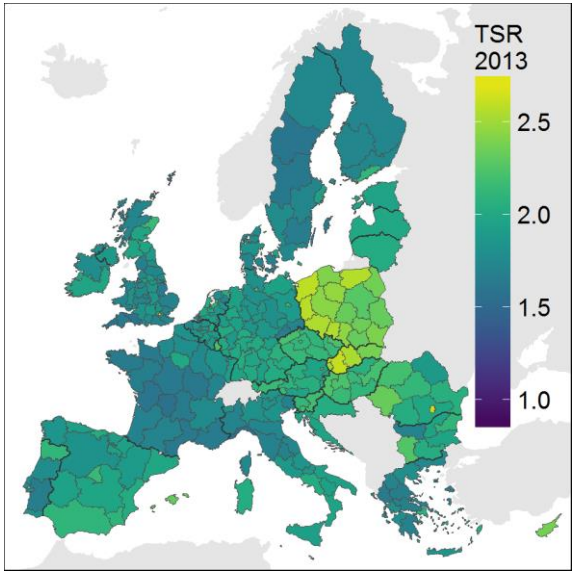

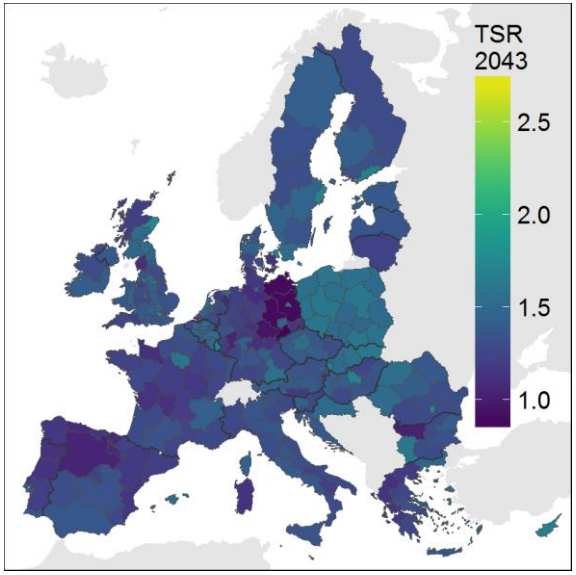

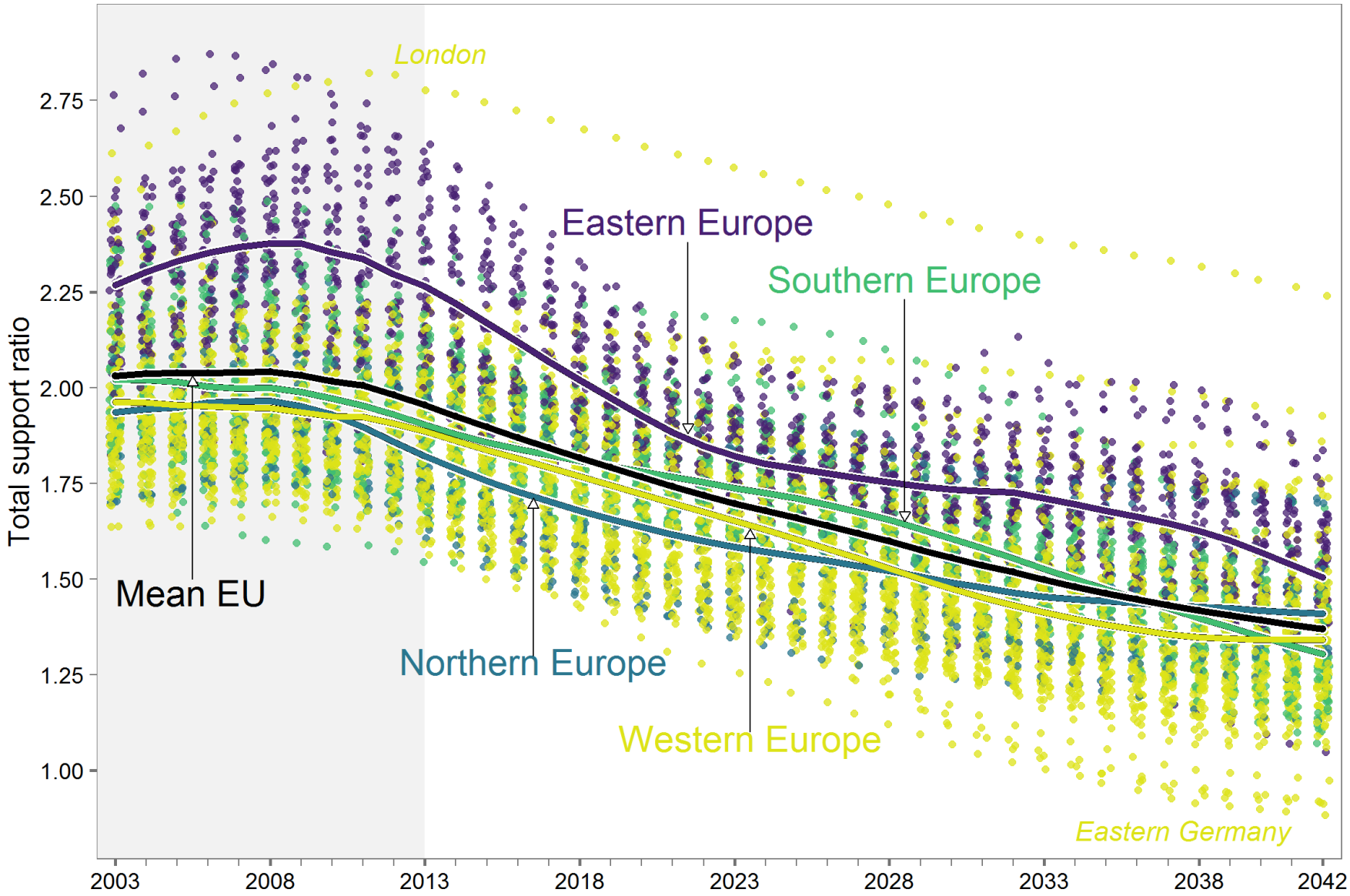
London
Eastern Europe
Southern Europe
Mean EU
Northern Europe
Western Europe
Eastern Germany
Total support ratio
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
2003
2008
2013
2018
2023
2028
2033
2038
2042

METHODS 1 - DECOMPOSITION

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TSR change

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Two-step decomposition of the changes in WR

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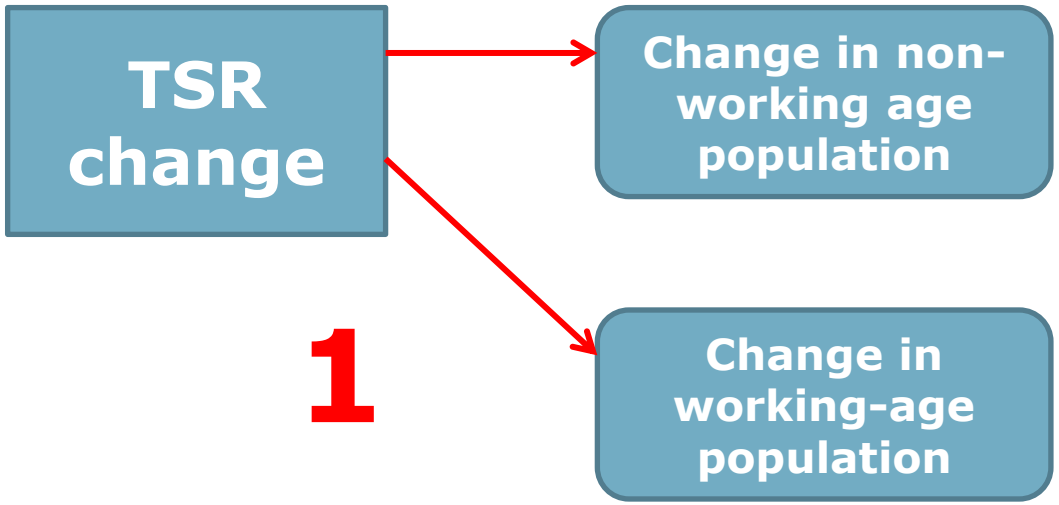

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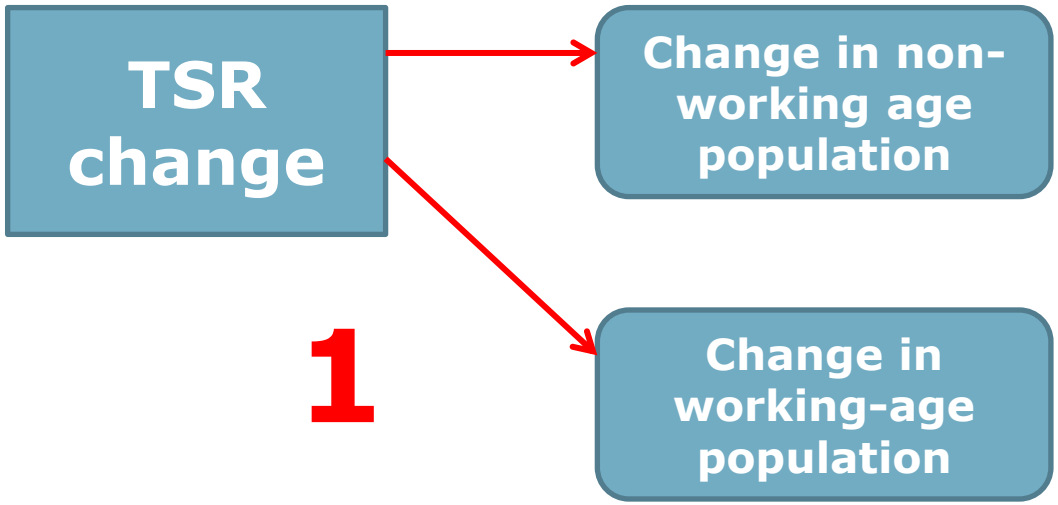
Two-step decomposition of the changes in WR



$$TSR_2 - TSR_1 = \frac{W_2}{NW_2} - \frac{W_1}{NW_1} =$$

$$= \left[\frac{1}{2} * (W_2 + W_1) * \left(\frac{1}{NW_2} - \frac{1}{NW_1}\right)\right] + \left[\frac{1}{2} * \left(\frac{1}{NW_2} + \frac{1}{NW_1}\right) * (W_2 - W_1)\right]$$

DasGupta, P. (1991). Decomposition of the difference between two rates and its consistency when more than two populations are involved. *Mathematical Population Studies* 3(2):105–125. doi:10.1080/08898489109525329.

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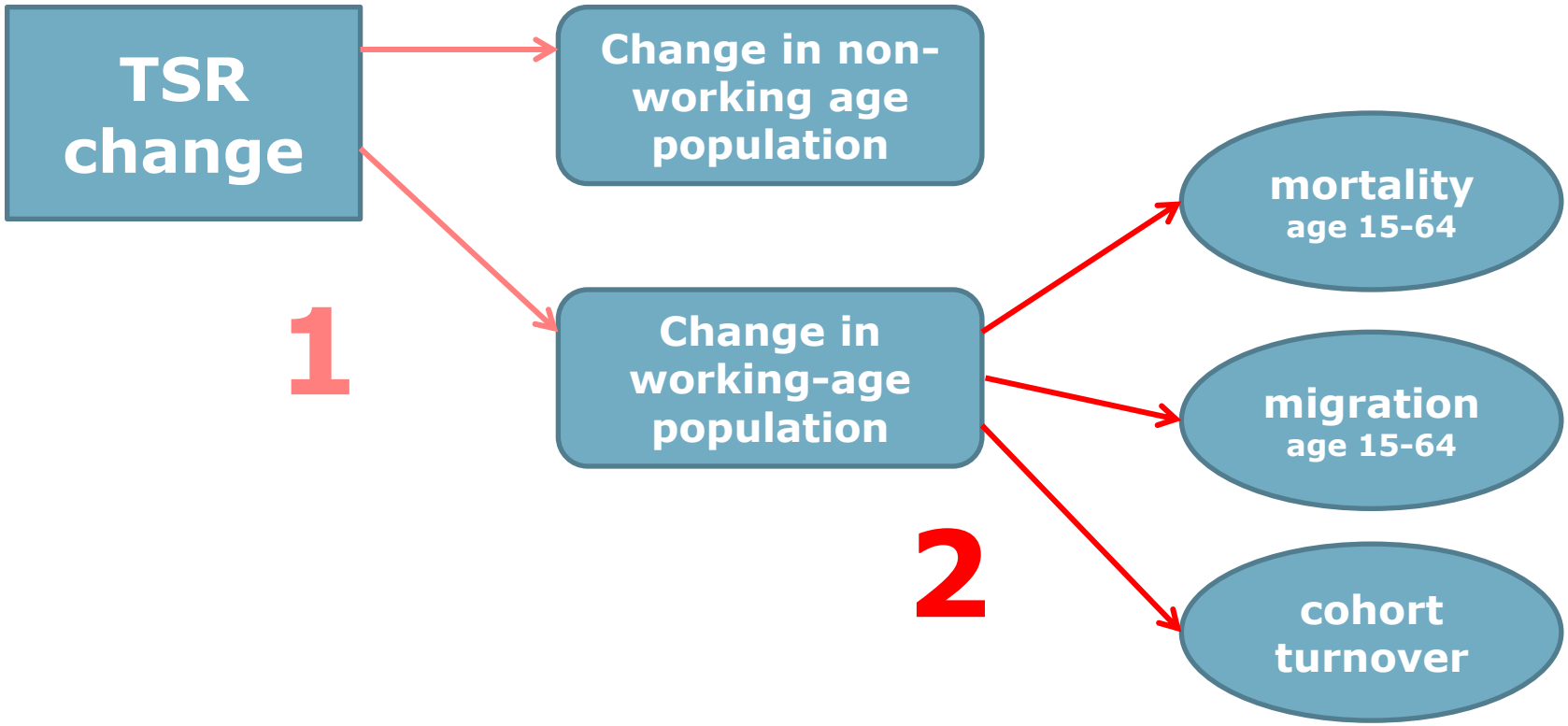
Two-step decomposition of the changes in WR



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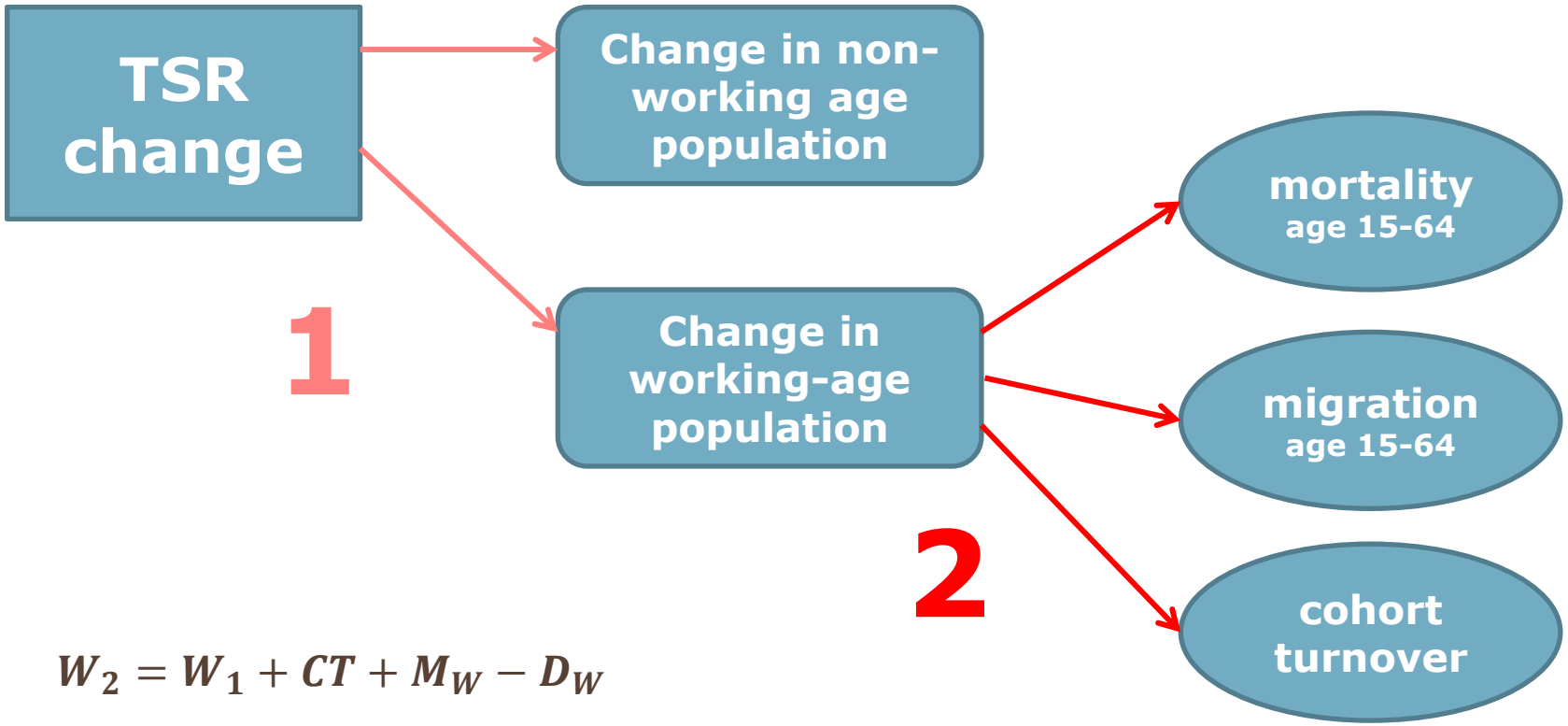
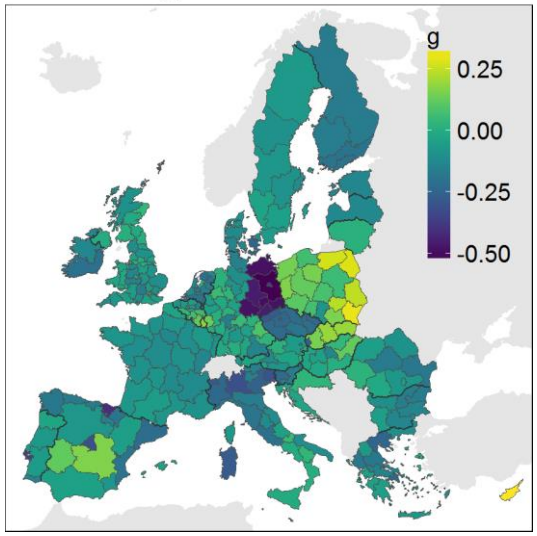


$$W_2 = W_1 + CT + M_W - D_W$$

A. Change in TSR



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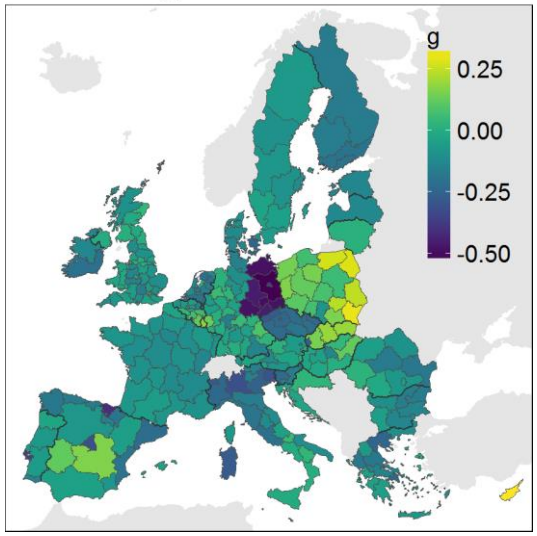
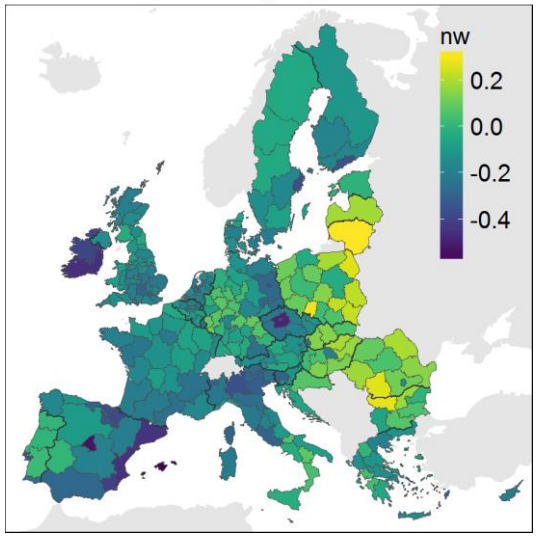
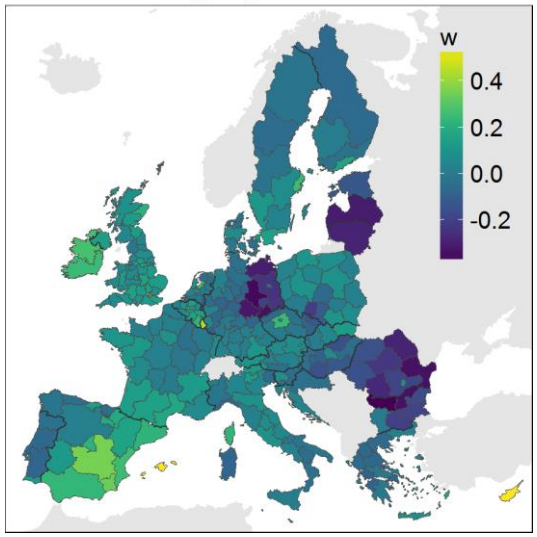


B. Non-working age



C. Working age



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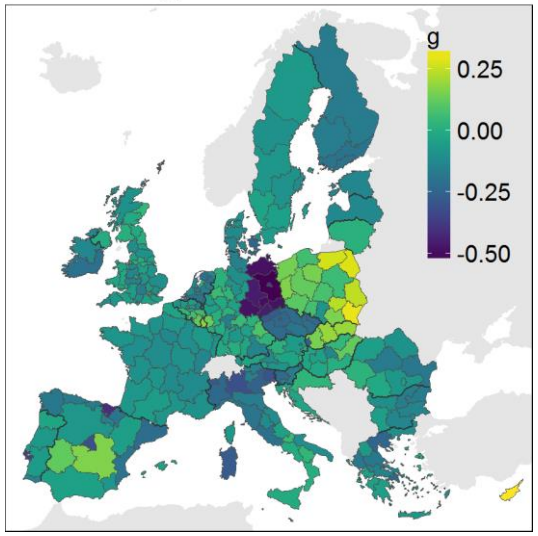

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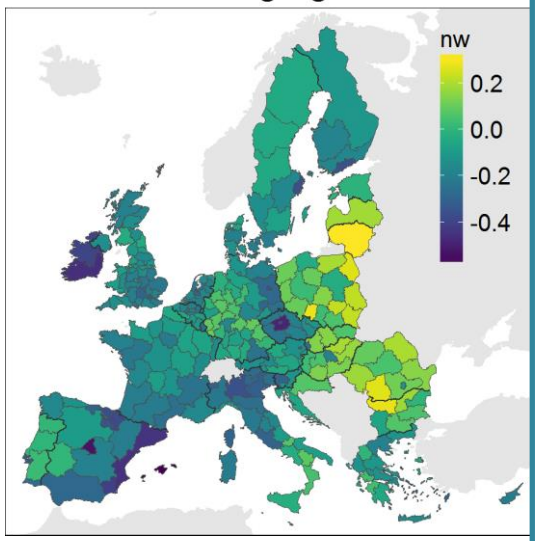

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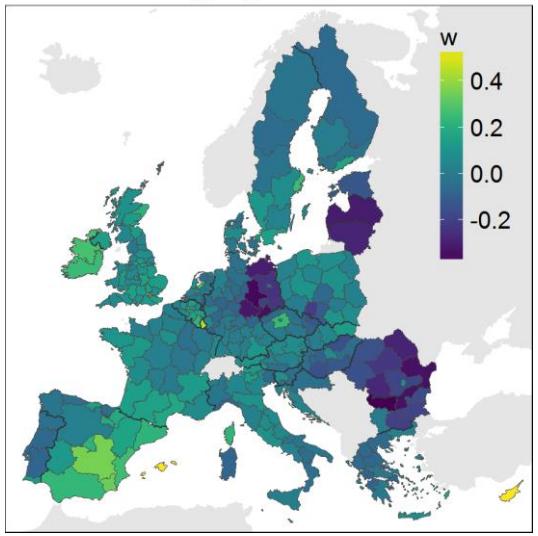
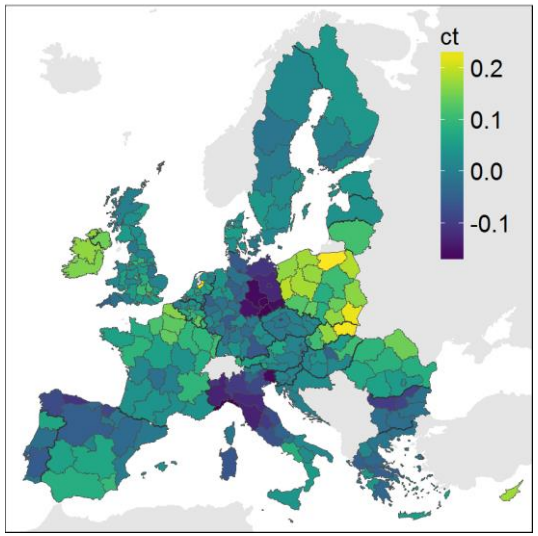
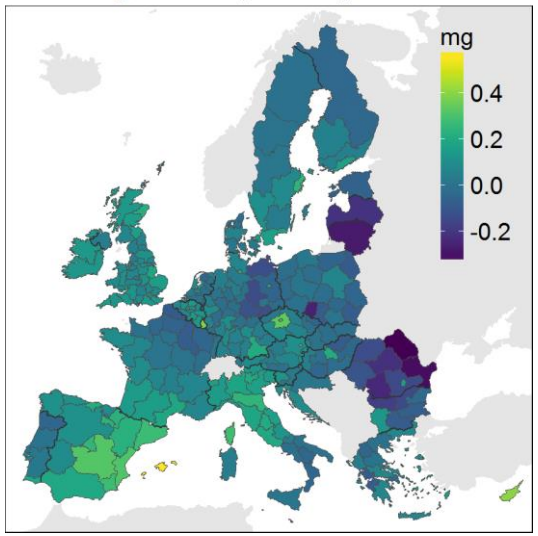


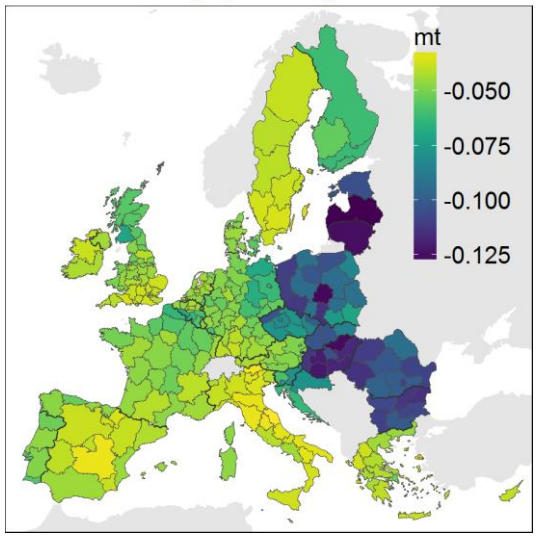
D. Cohort turnover



E. Migration (15-64)



F. Mortality (15-64)



METHODS 2 – BETA-CONVERGENCE

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Classical linear regression model specification

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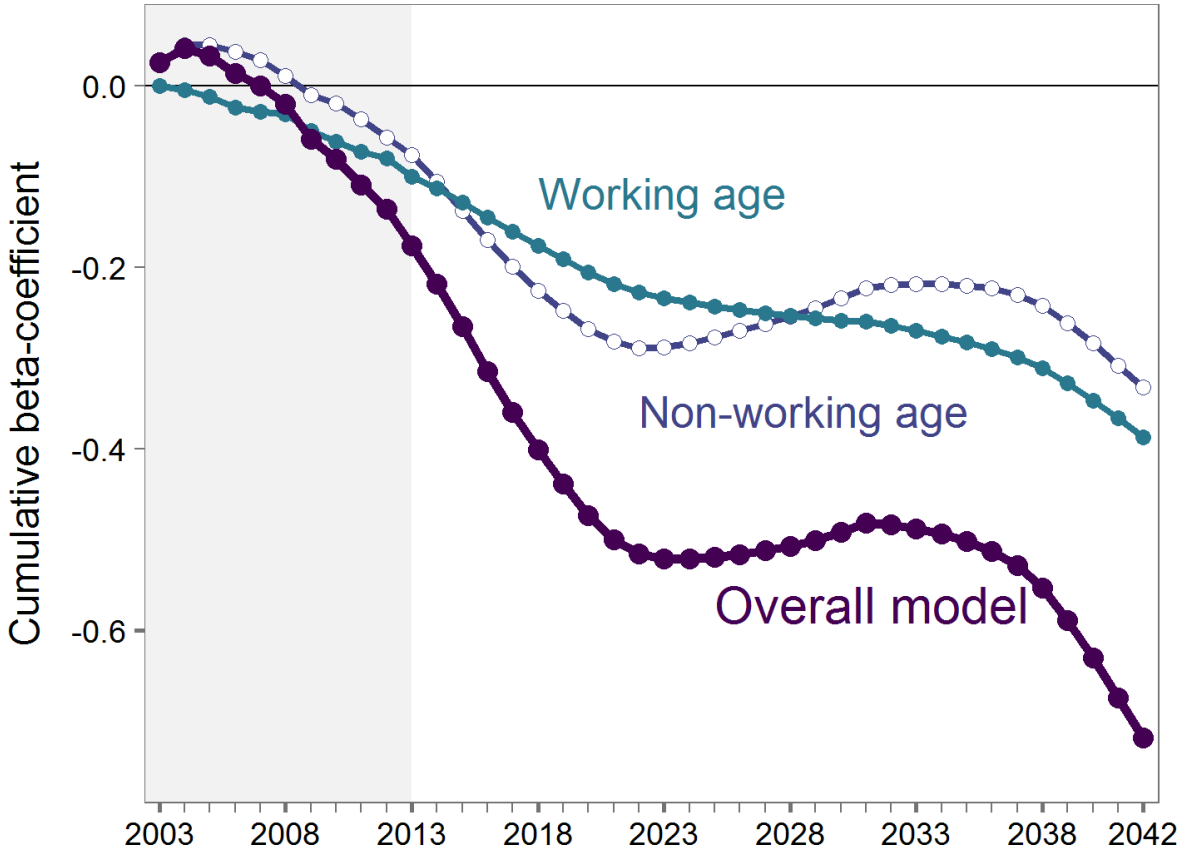
A separate beta-convergence model for each effect and each year

DECOMPOSED EFFECTS

First step



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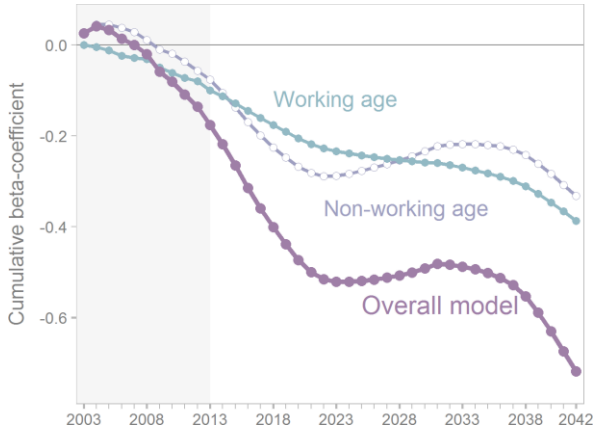
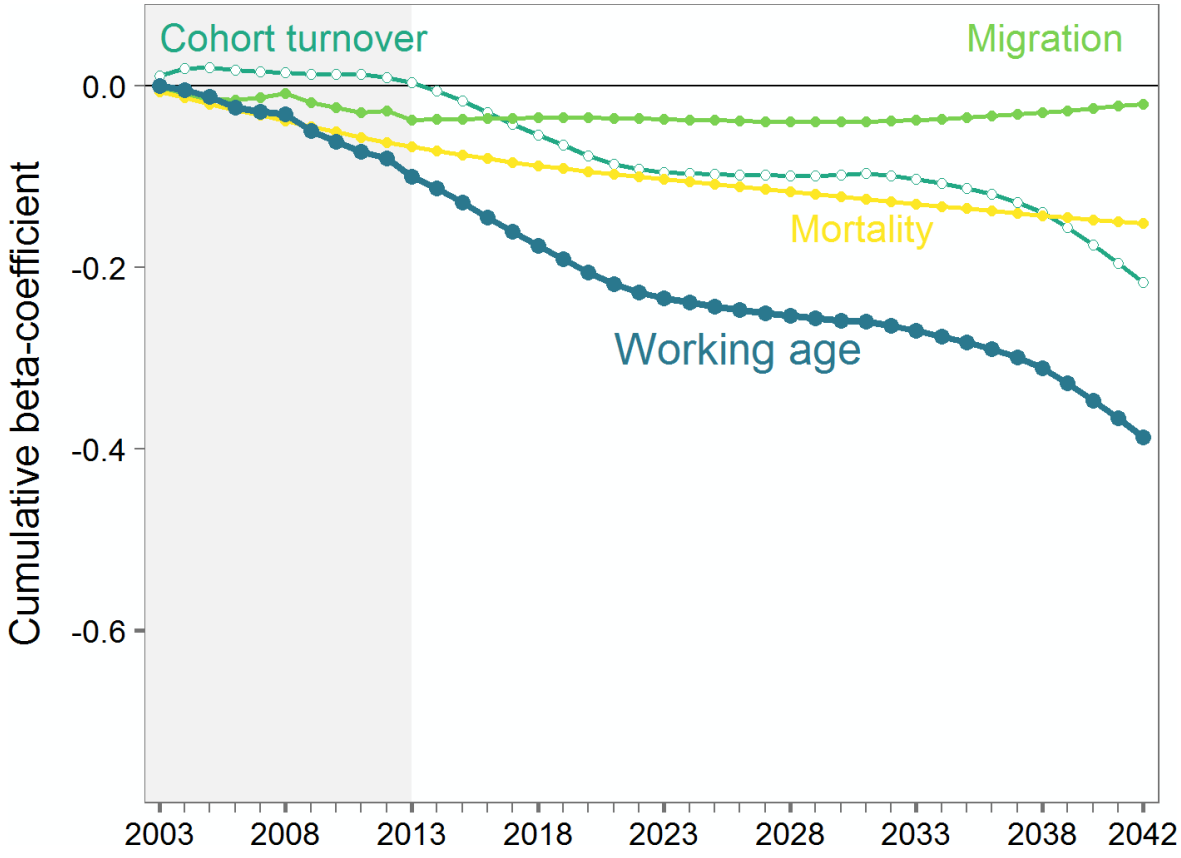


Second step



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The effects of changes in NW and W on TSR are comparable

The effect of working-age population's dynamics on convergence in ageing is mainly driven by mortality; the impact of cohort turnover is expected to rise;
the effect of migration is notable in the observed period and is almost non-existent in the projected period

thank you

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JOOP DE BEER

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KONINKLIJKE NEDERLANDSE AKADEMIE VAN WETENSCHAPPEN

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