# HEALTH INEQUALITIES IN EUROPE

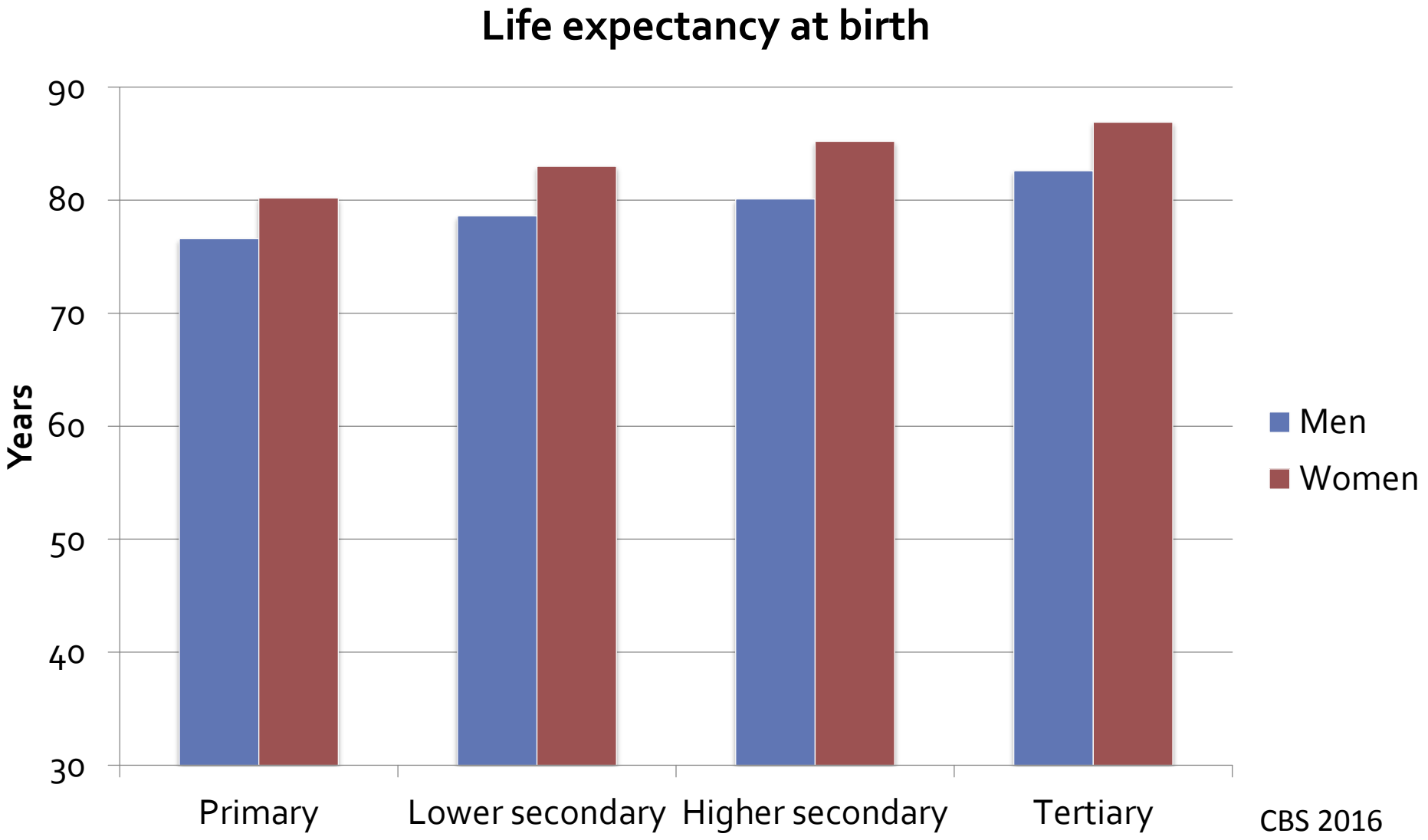
## why so persistent?

Johan Mackenbach
Erasmus MC

# FLAT, FLATTER, FLATTEST

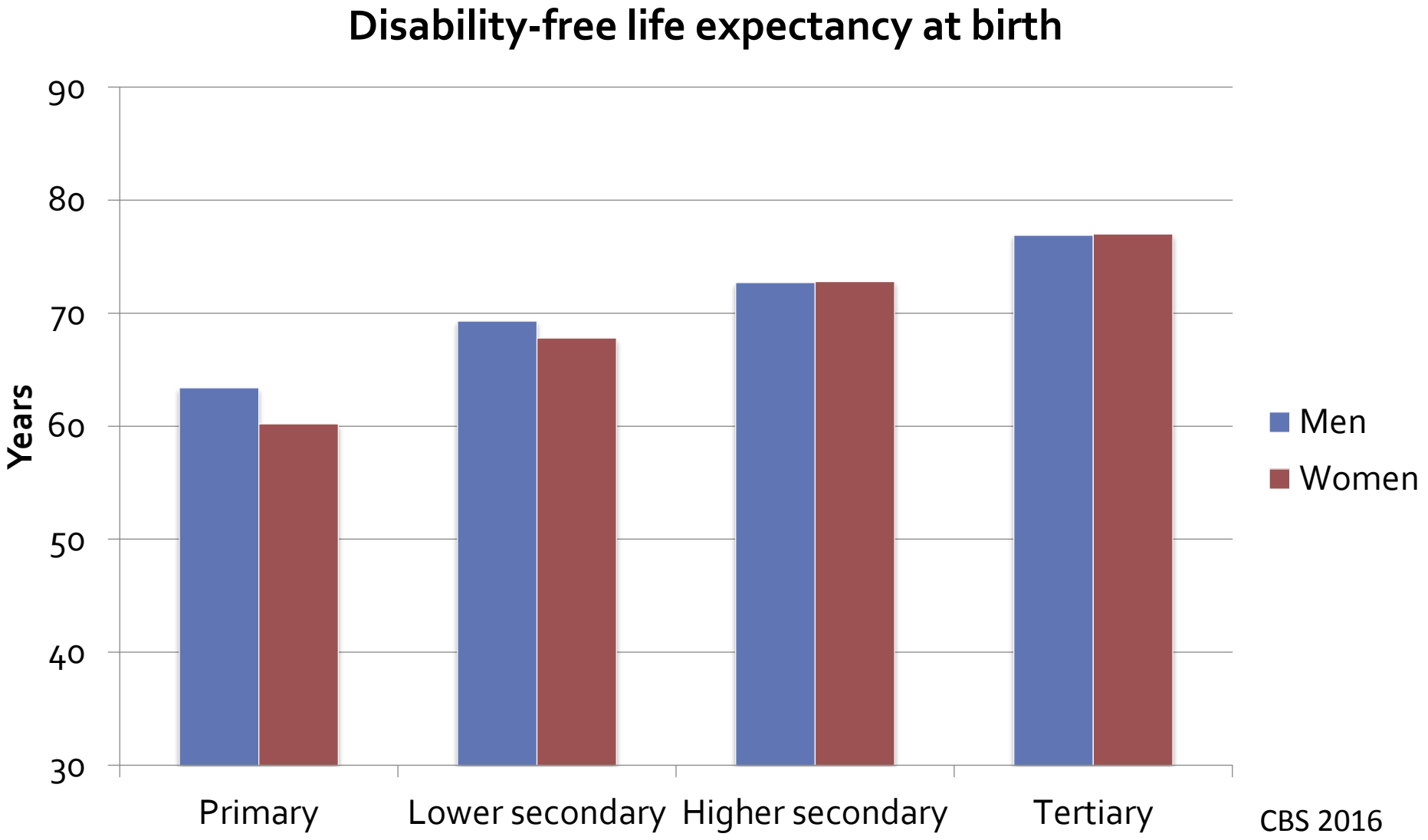
# LIFE EXPECTANCY BY EDUCATION

## The Netherlands, 2011-2014

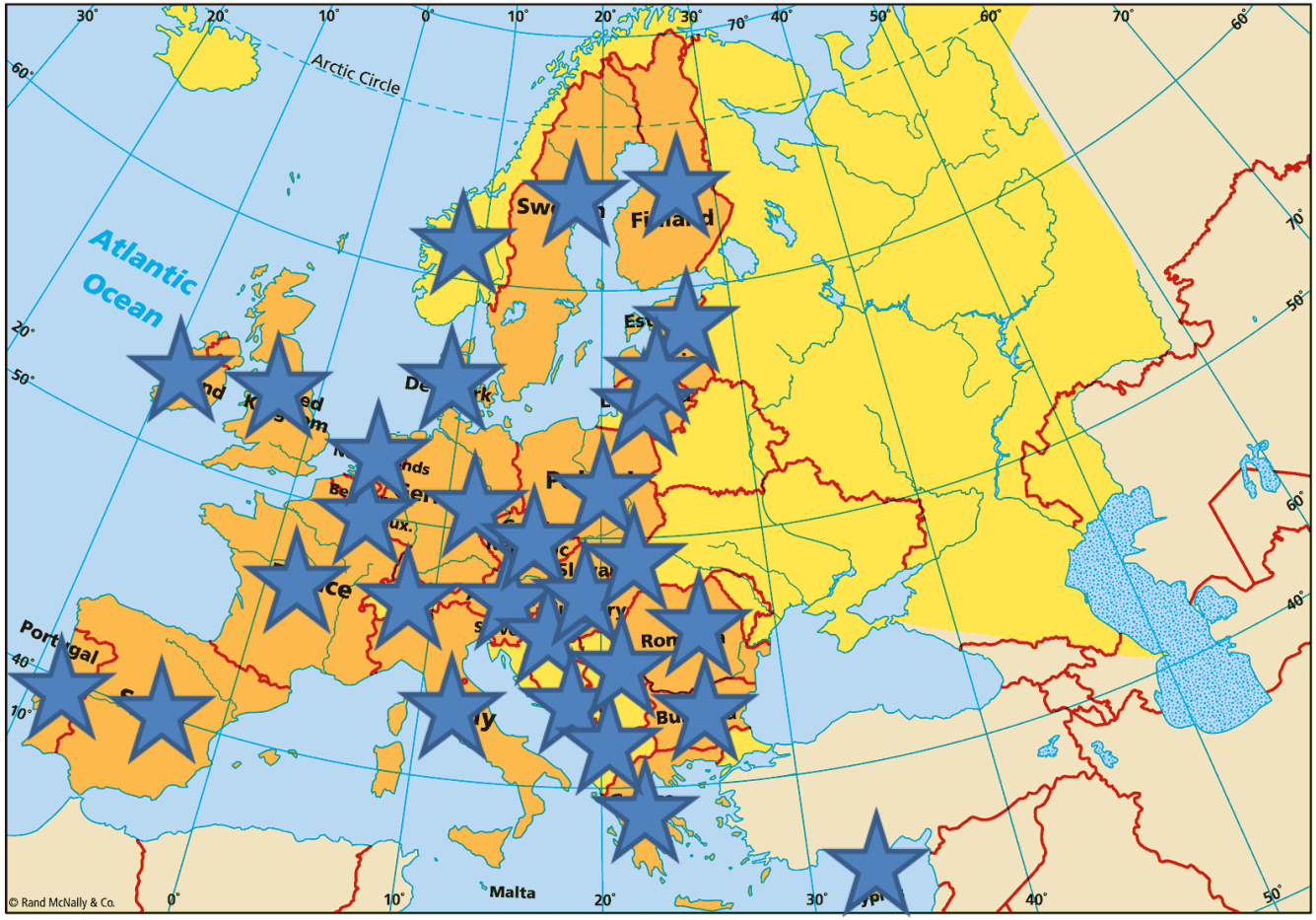


# DISABILITY-FREE LIFE EXPECTANCY

## The Netherlands, 2011-2014



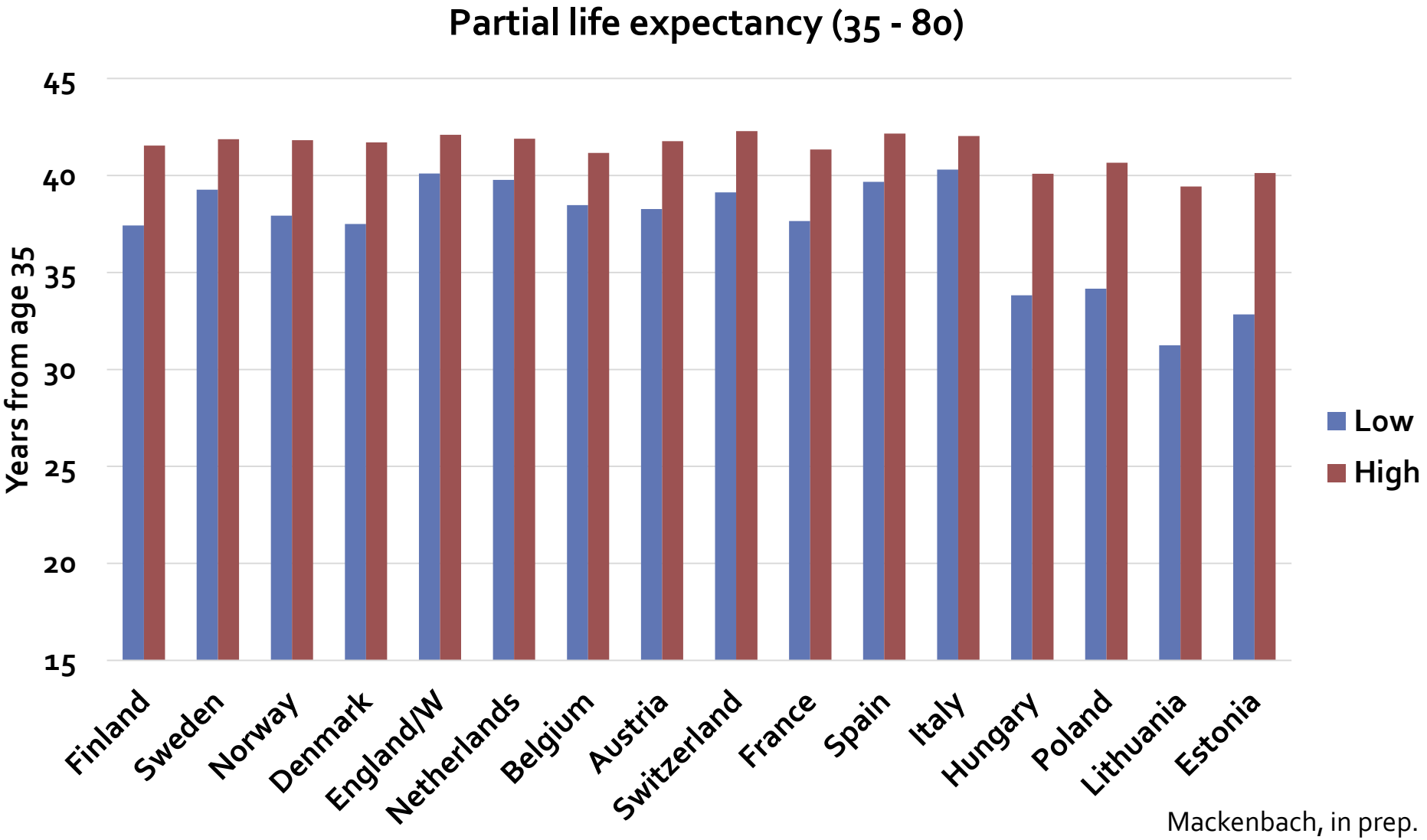
# DATA ON HEALTH INEQUALITIES




Demetriq

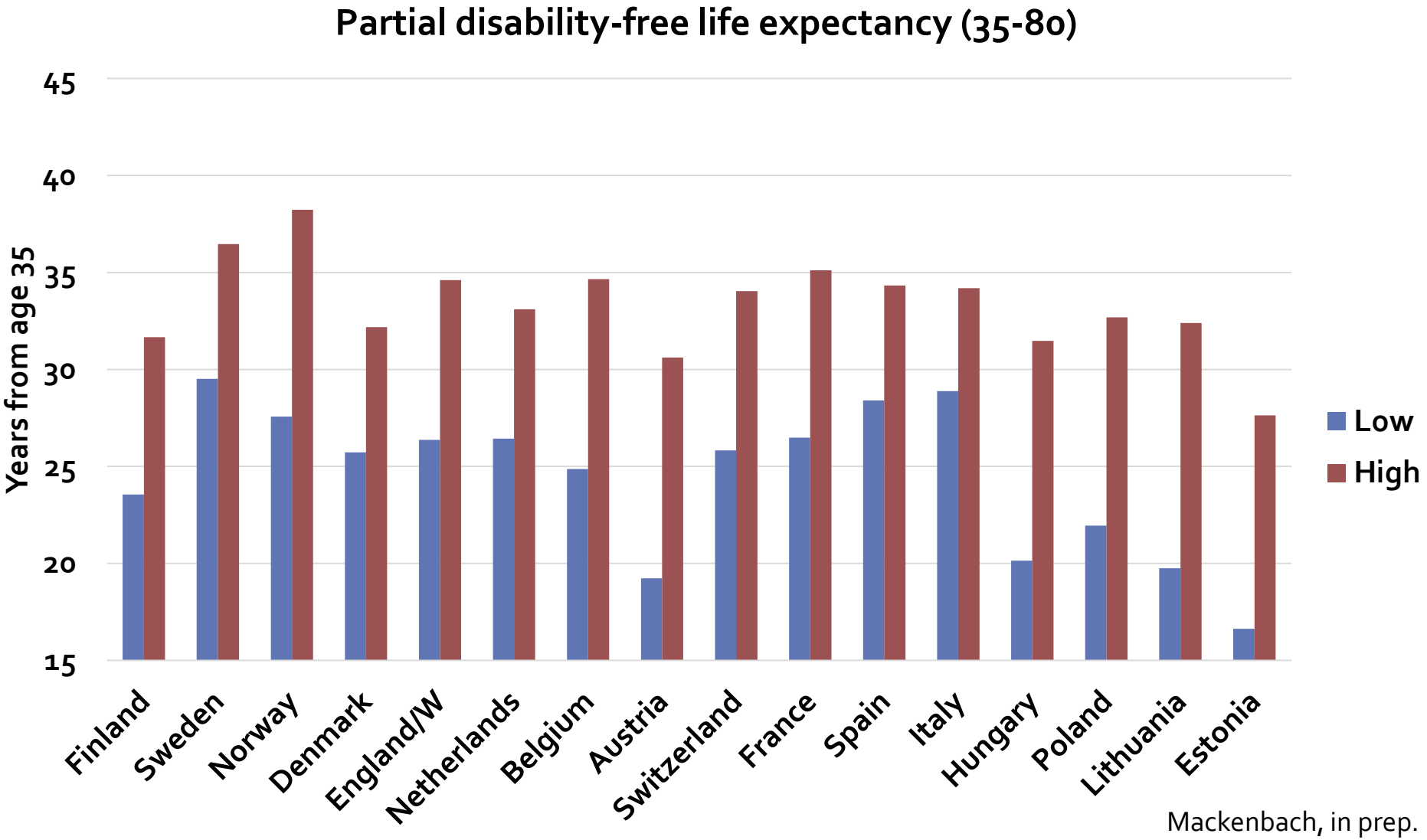
LIFEPATH

# LIFE EXPECTANCY BY EDUCATION
# Europe, men, ca. 2010



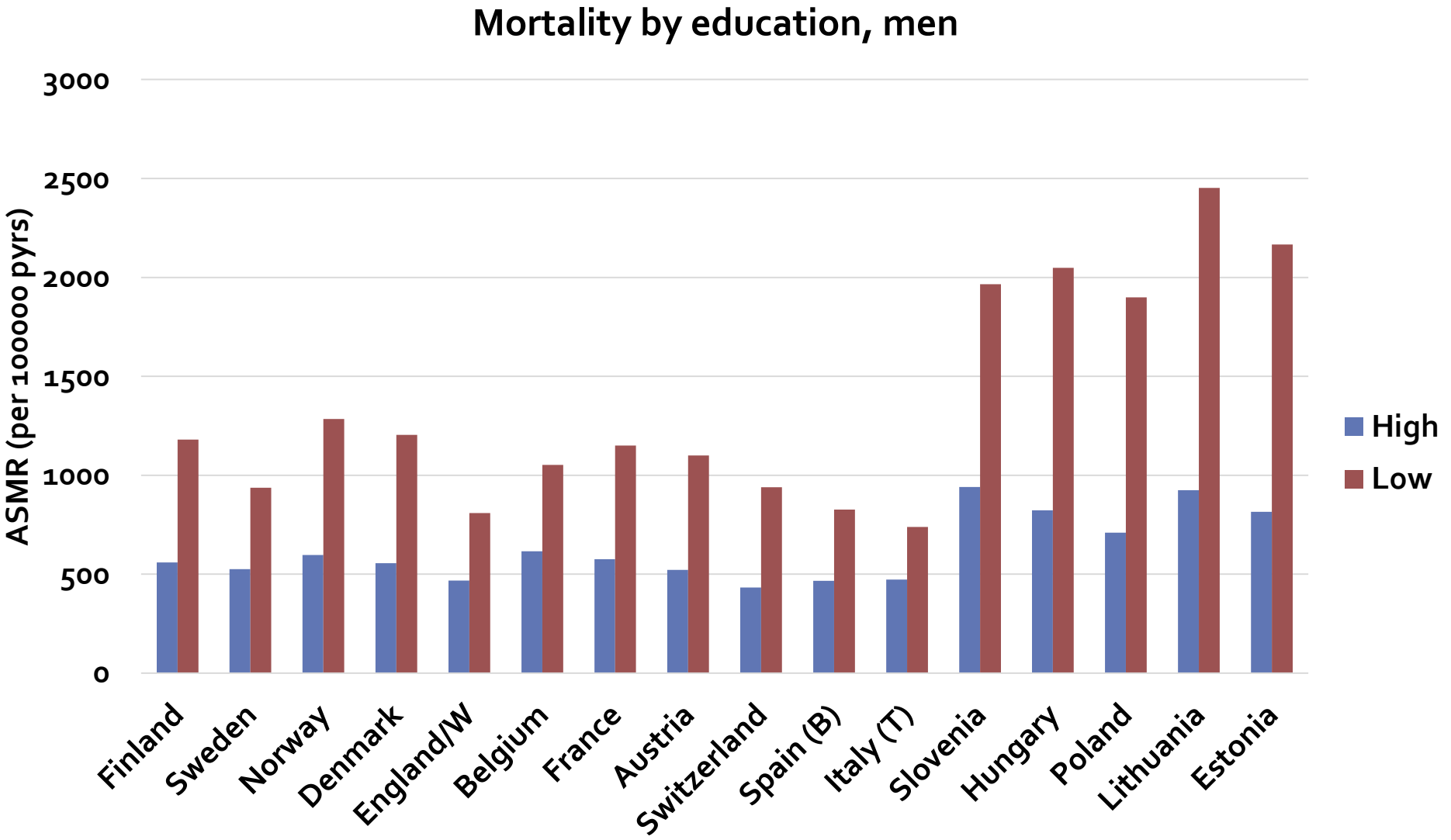

Mackenbach, in prep.

# DISABILITY-FREE LIFE EXPECTANCY
## Europe, men, ca. 2010

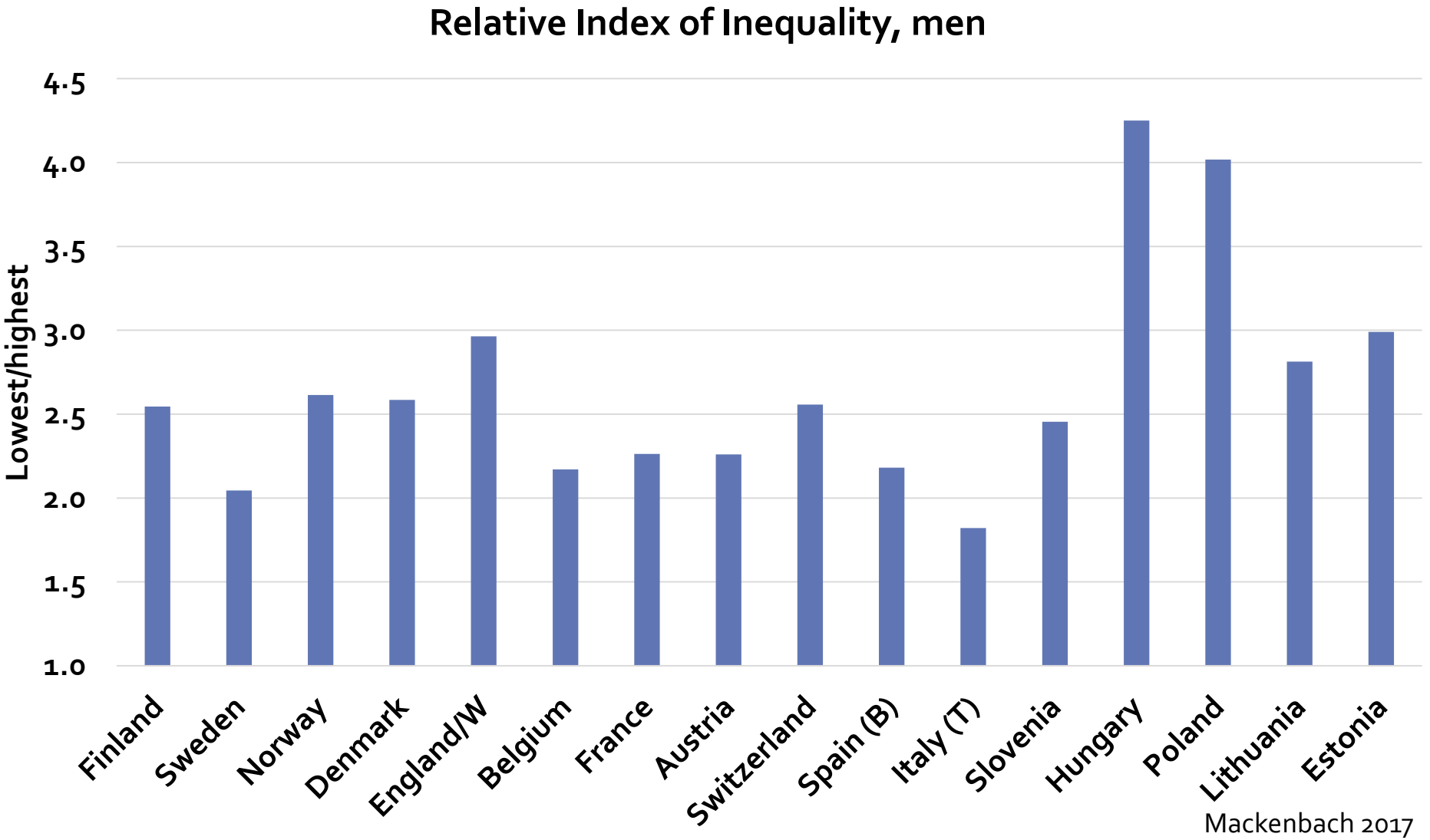



Mackenbach, in prep.

# MORTALITY BY EDUCATION
## men, ca. 2010



# RELATIVE INEQUALITIES IN MORTALITY, men, ca. 2010

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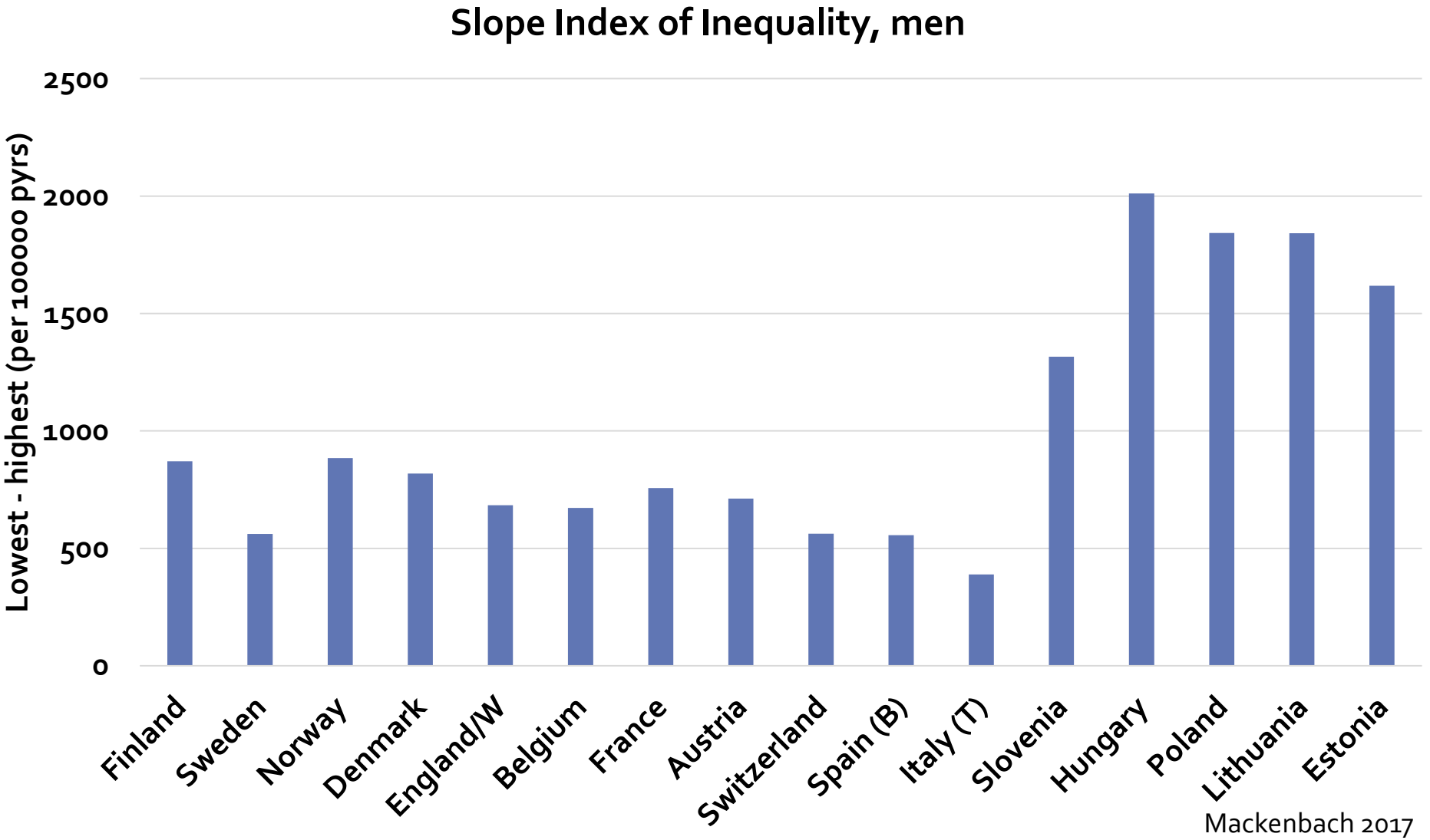
# ABSOLUTE INEQUALITIES IN MORTALITY, men, ca. 2010

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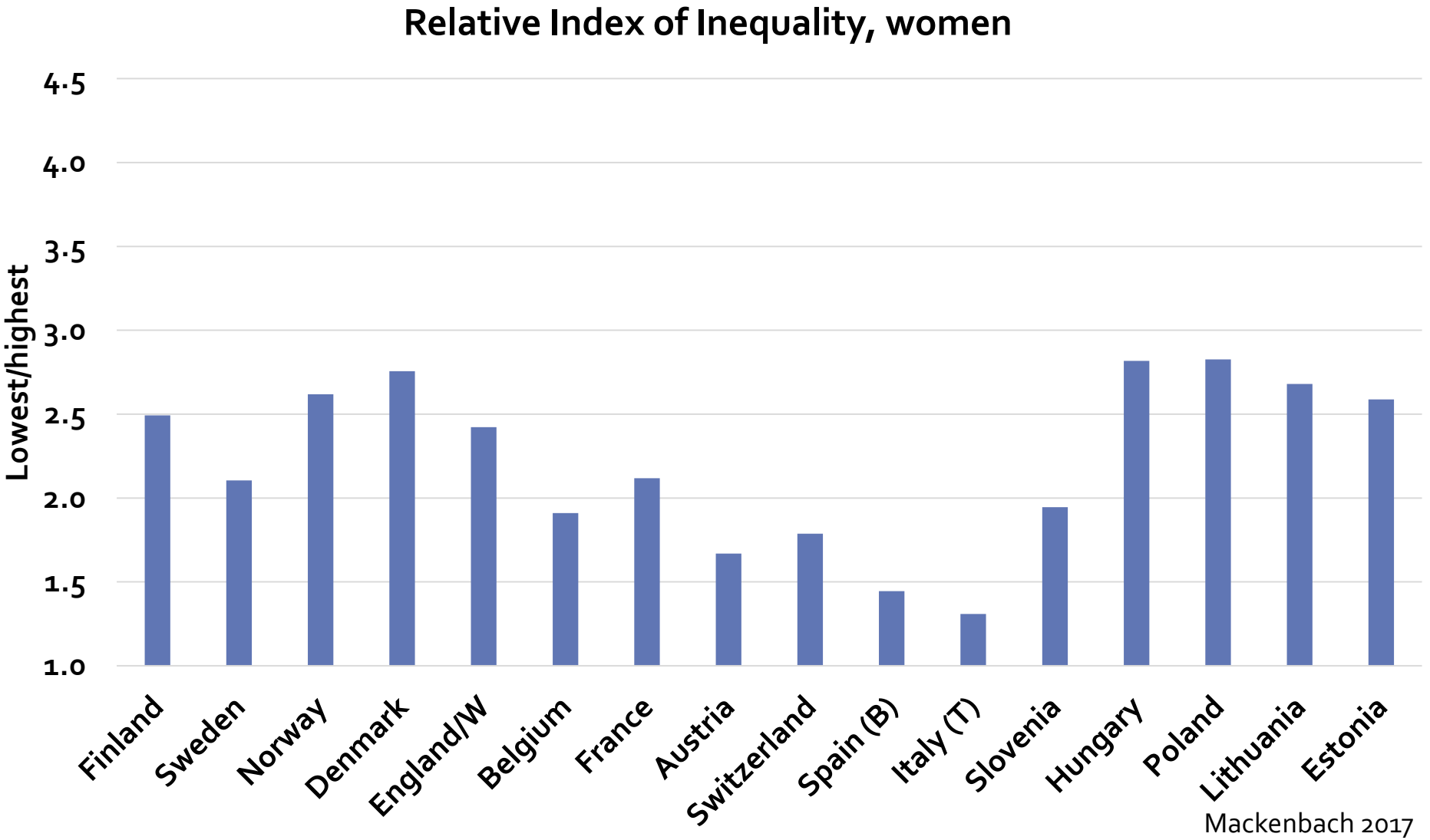
# RELATIVE INEQUALITIES IN MORTALITY, women, ca. 2010

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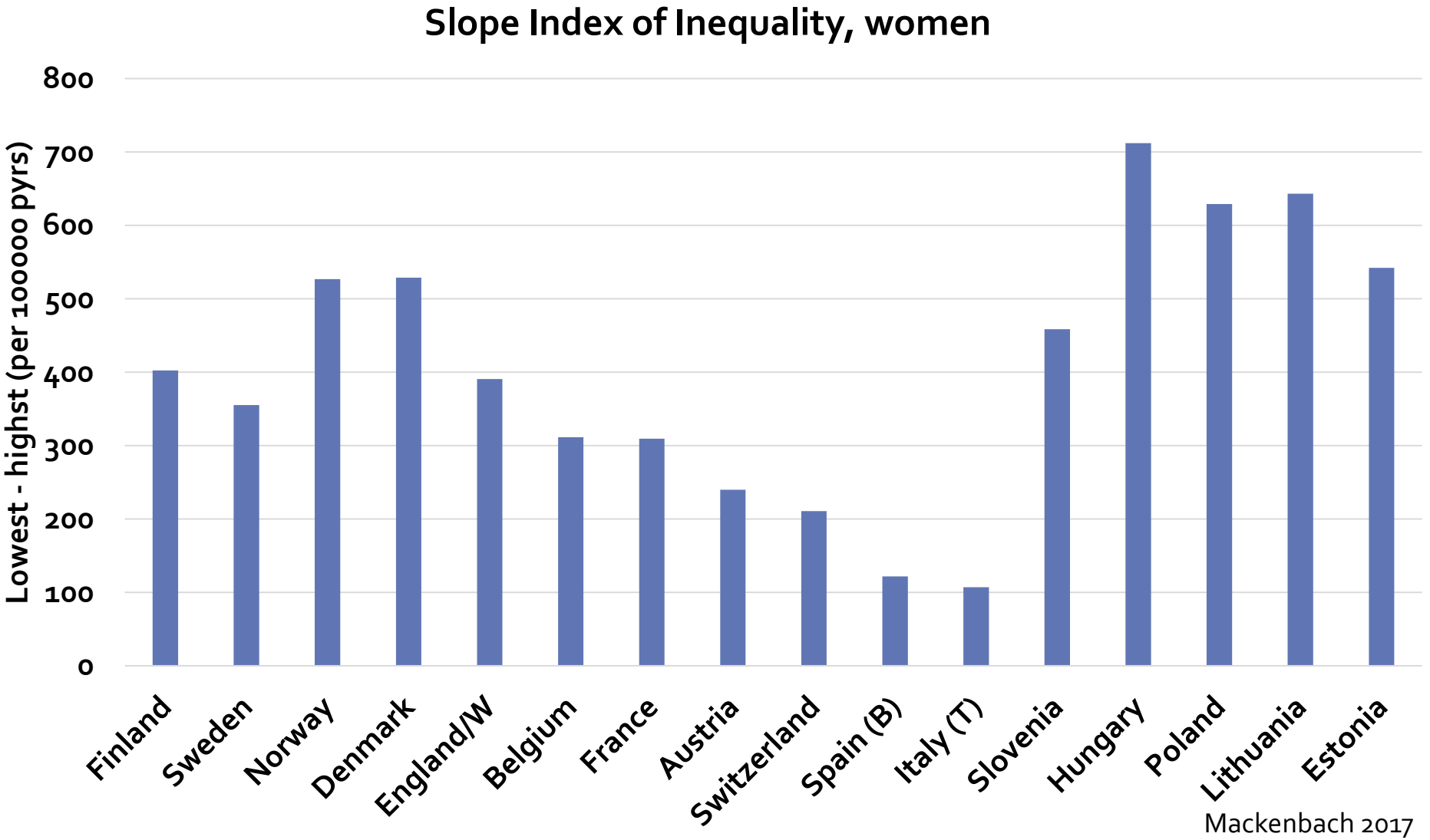
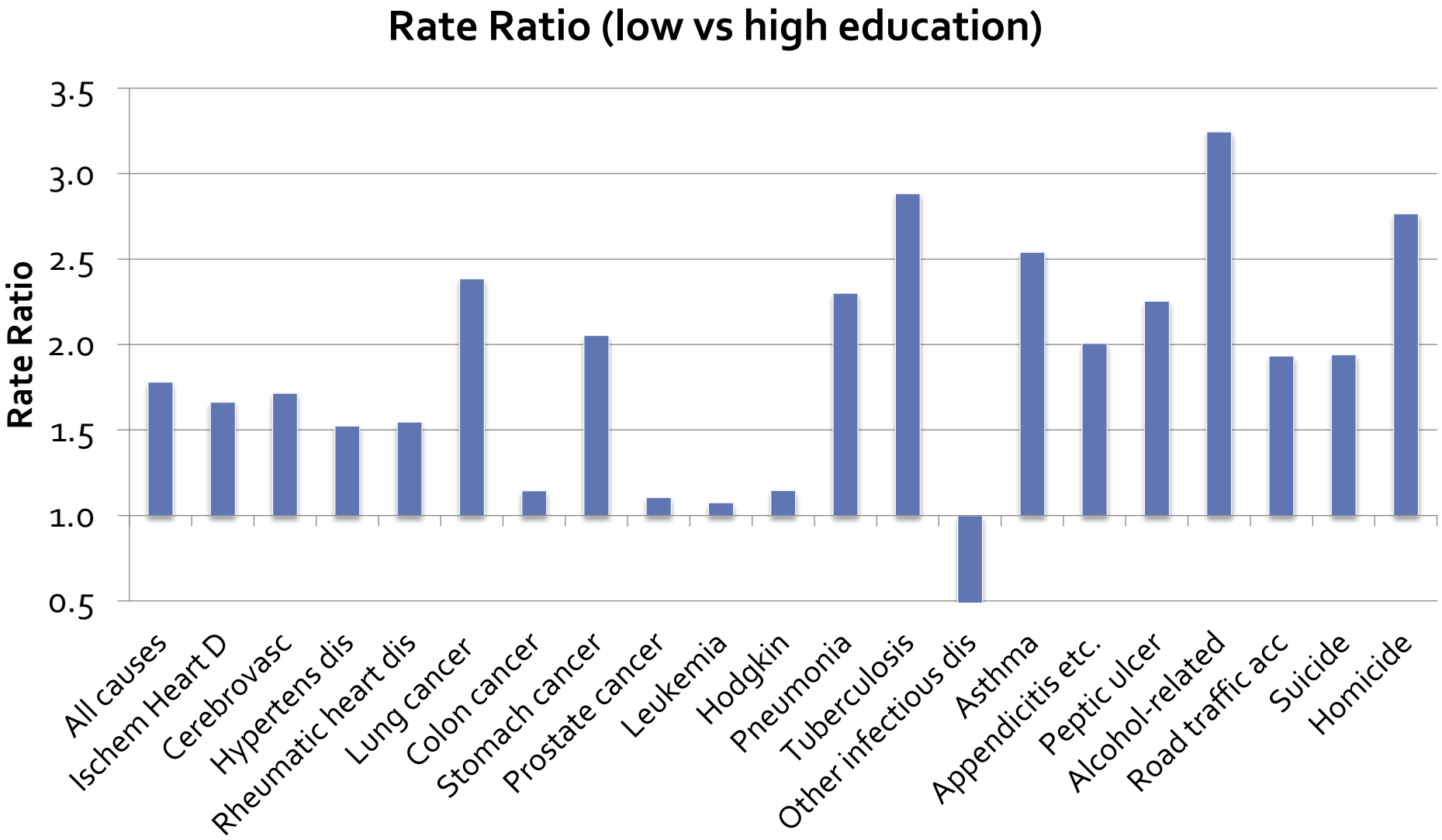
# ABSOLUTE INEQUALITIES IN MORTALITY, women, ca. 2010



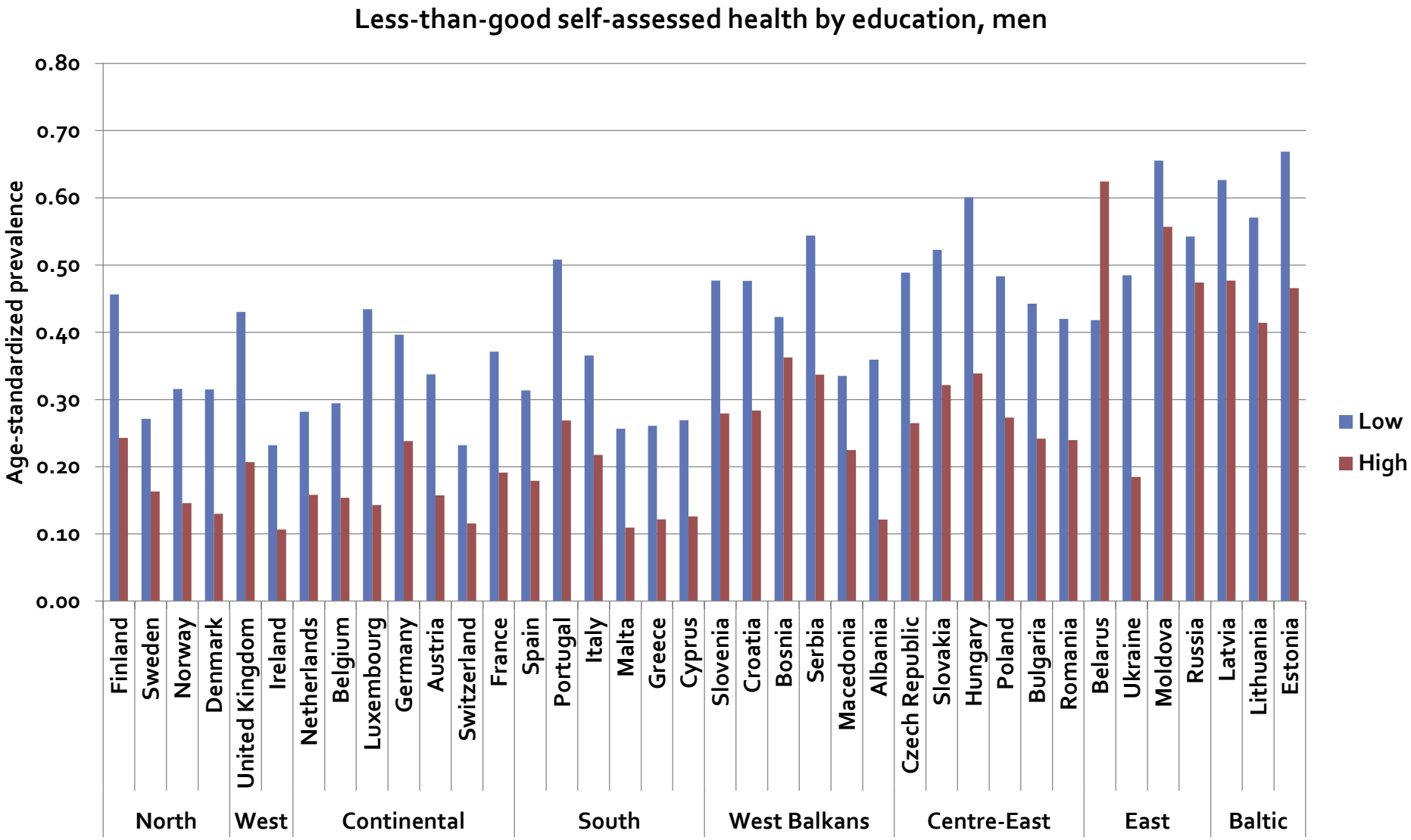

Mackenbach 2017

# INEQUALITIES IN MORTALITY

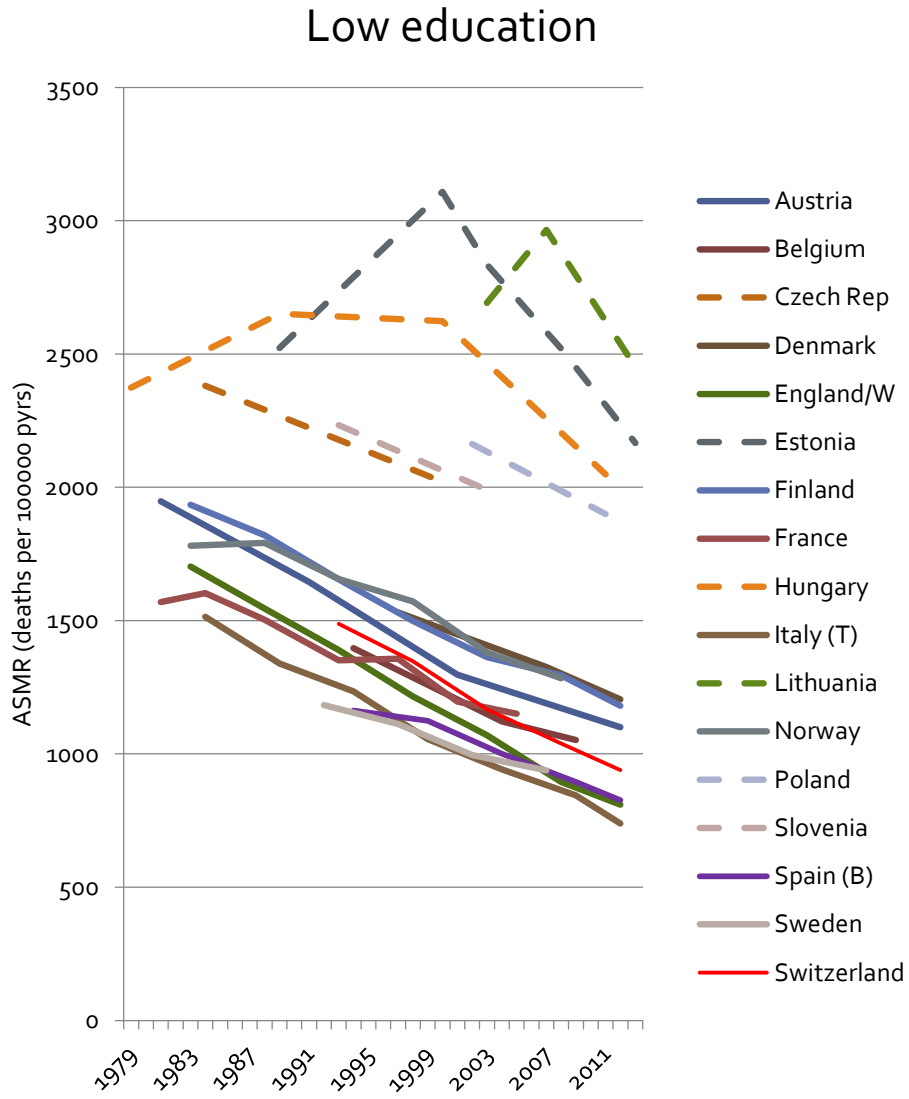
## Europe, men, ca. 1980-2010

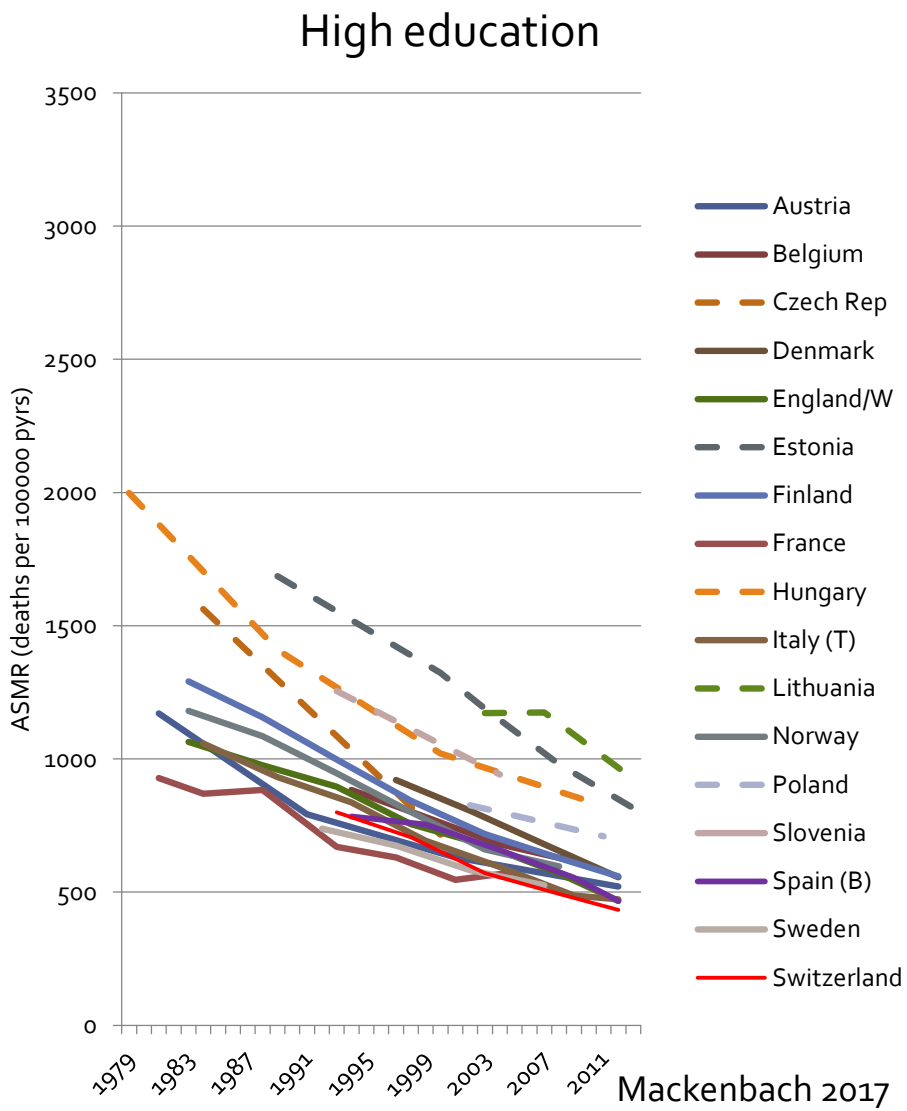


# SELF-ASSESSED HEALTH BY EDUCATION, men, ca. 2010



# TRENDS IN MORTALITY BY EDUCATION, men, ca. 1980-2015

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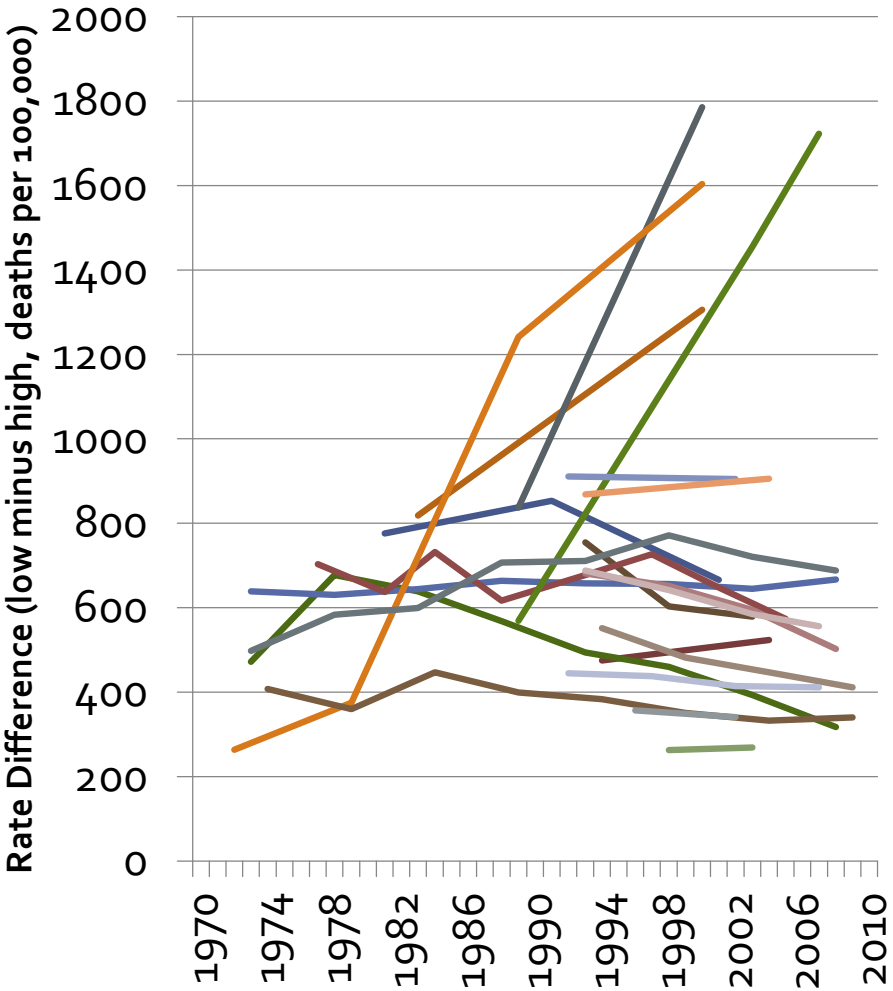
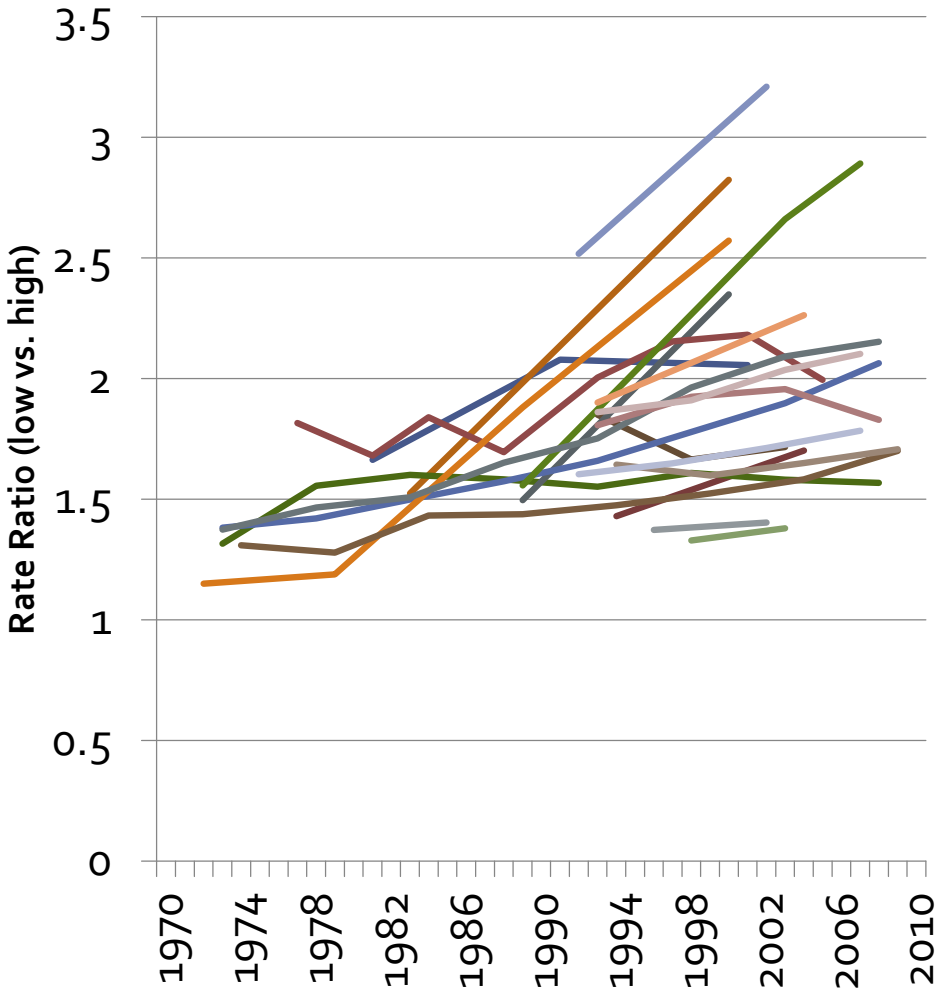
# TRENDS IN INEQUALITIES IN MORTALITY, men, ca. 1970-2010

## Rate Difference, men

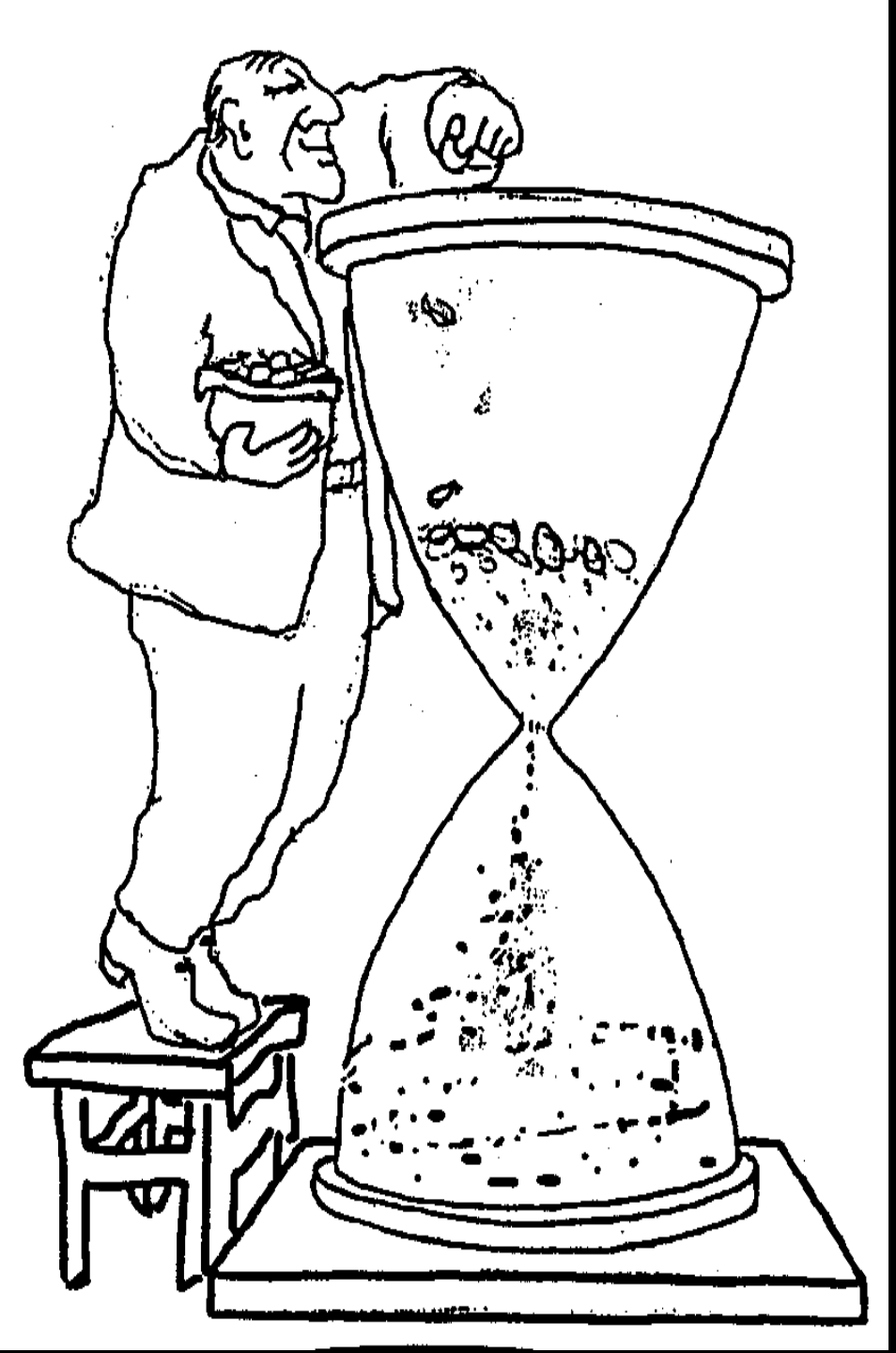



## Rate Ratio, men



# EXPLANATORY STUDIES

- There are many different pathways from social to biological, e.g. via health-related behavior,  working conditions, stress response, access to health care, …
- Reverse pathways from biological to social are also important, e.g. via health-related social mobility, discrimination in the labor market, genetics of cognitive ability, …



**But what explains persistence of health inequalities in modern welfare states?**

**And why are health inequalities not smaller in countries with more generous welfare states?**

# WHY HEALTH INEQUALITIES PERSIST DESPITE THE WELFARE STATE

- Changes in the structure of society have changed the composition and relative (dis)advantage of lower and higher socioeconomic groups
- Inequalities in material and non-material resources are still very large, even in the most generous welfare states
- There have been massive health improvements, but these partly depend on behavior change which is easier for higher socioeconomic groups

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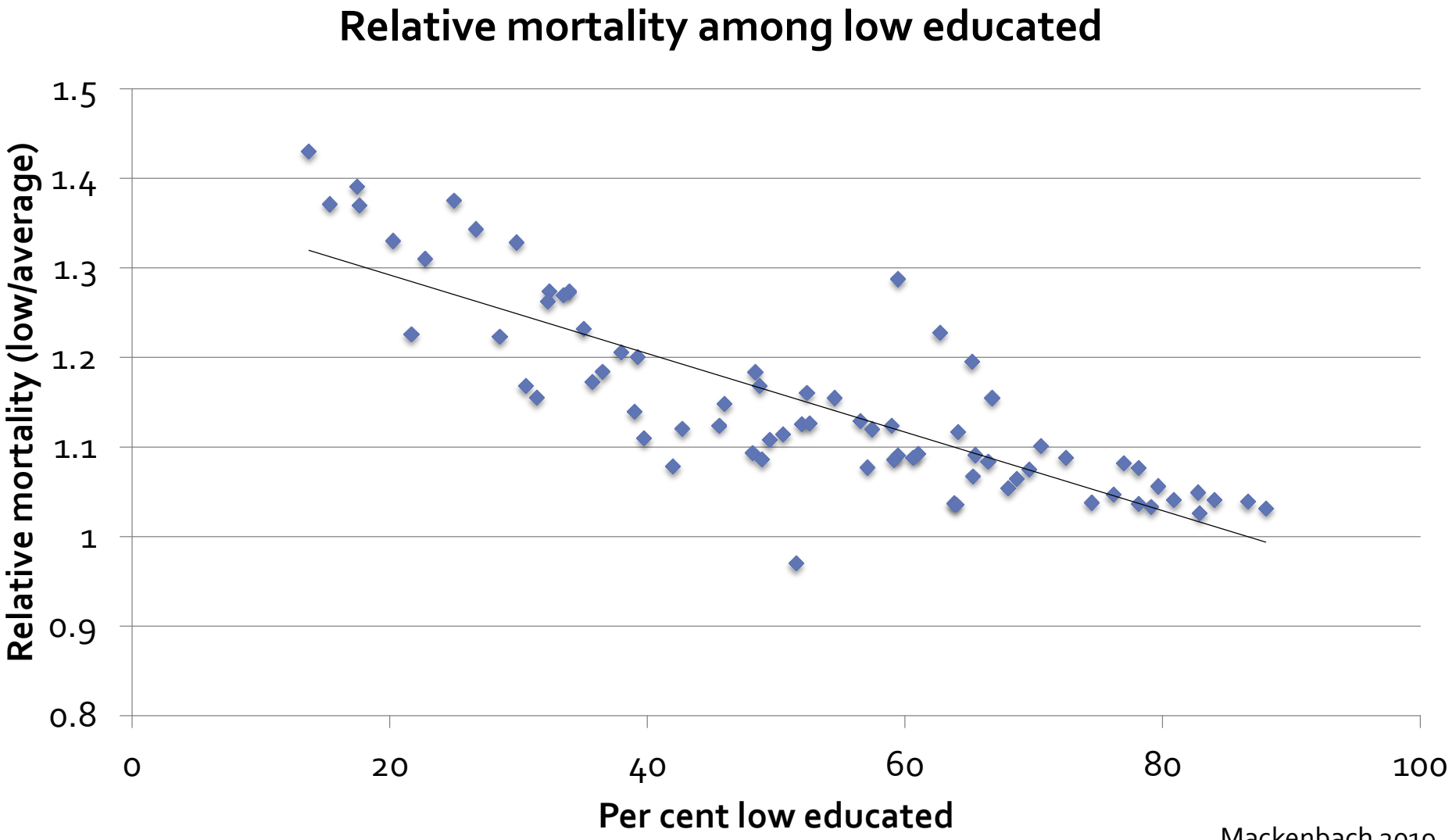
# EDUCATIONAL EXPANSION AND SOCIAL MOBILITY

- Educational expansion and upward social mobility have shrunk the lower, and enlarged the higher educated groups
- These changes have increased the relative mortality disadvantage of lower educated, without decreasing the relative mortality advantage of higher educated
- Educational expansion and upward social mobility partly explain wider inequalities in mortality in socially advanced countries, and widening inequalities in mortality over time

# MORTALITY BY POPULATION SHARE men, ca. 1980-2010

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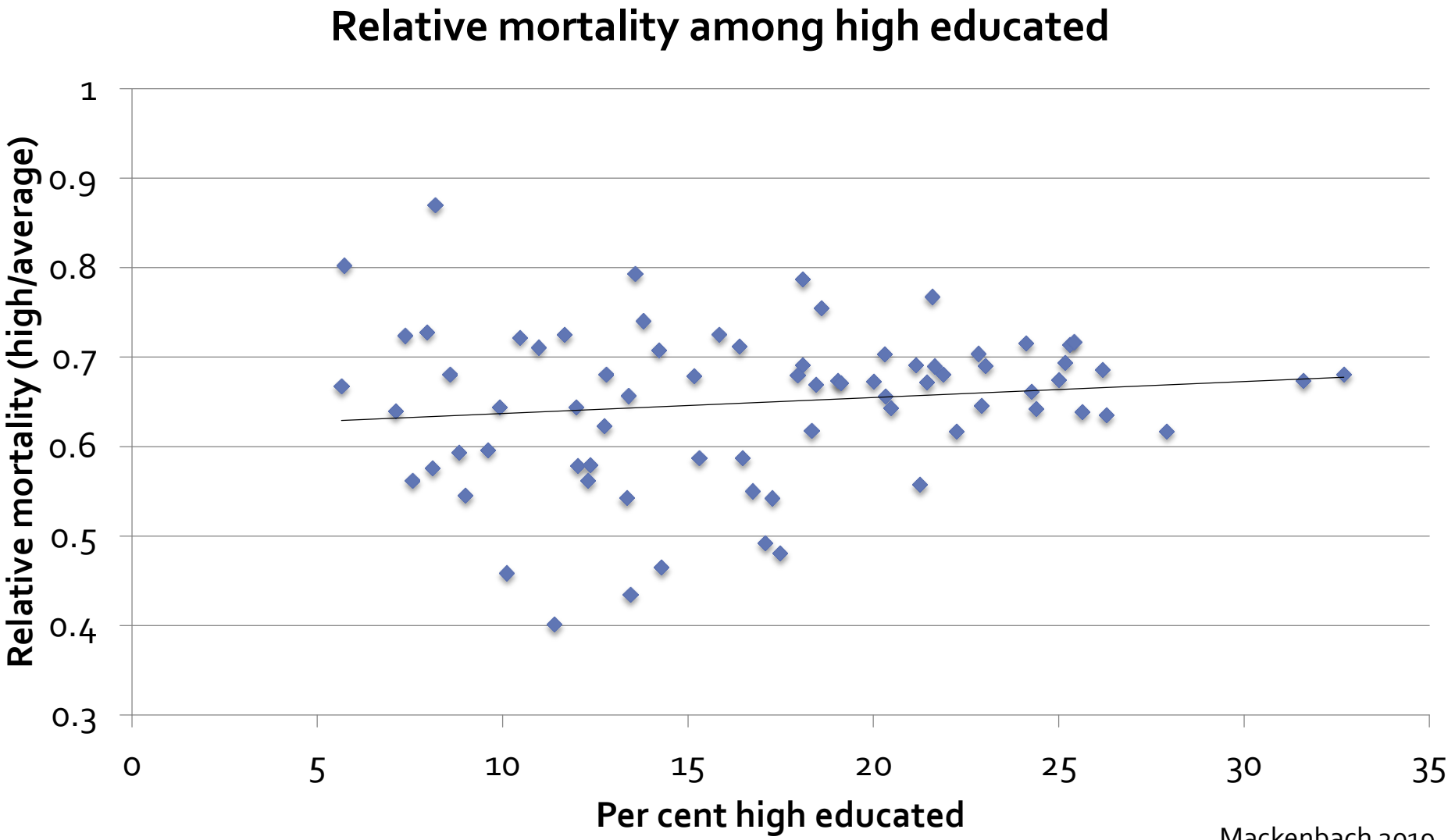
# MORTALITY BY POPULATION SHARE men, ca. 1980-2010

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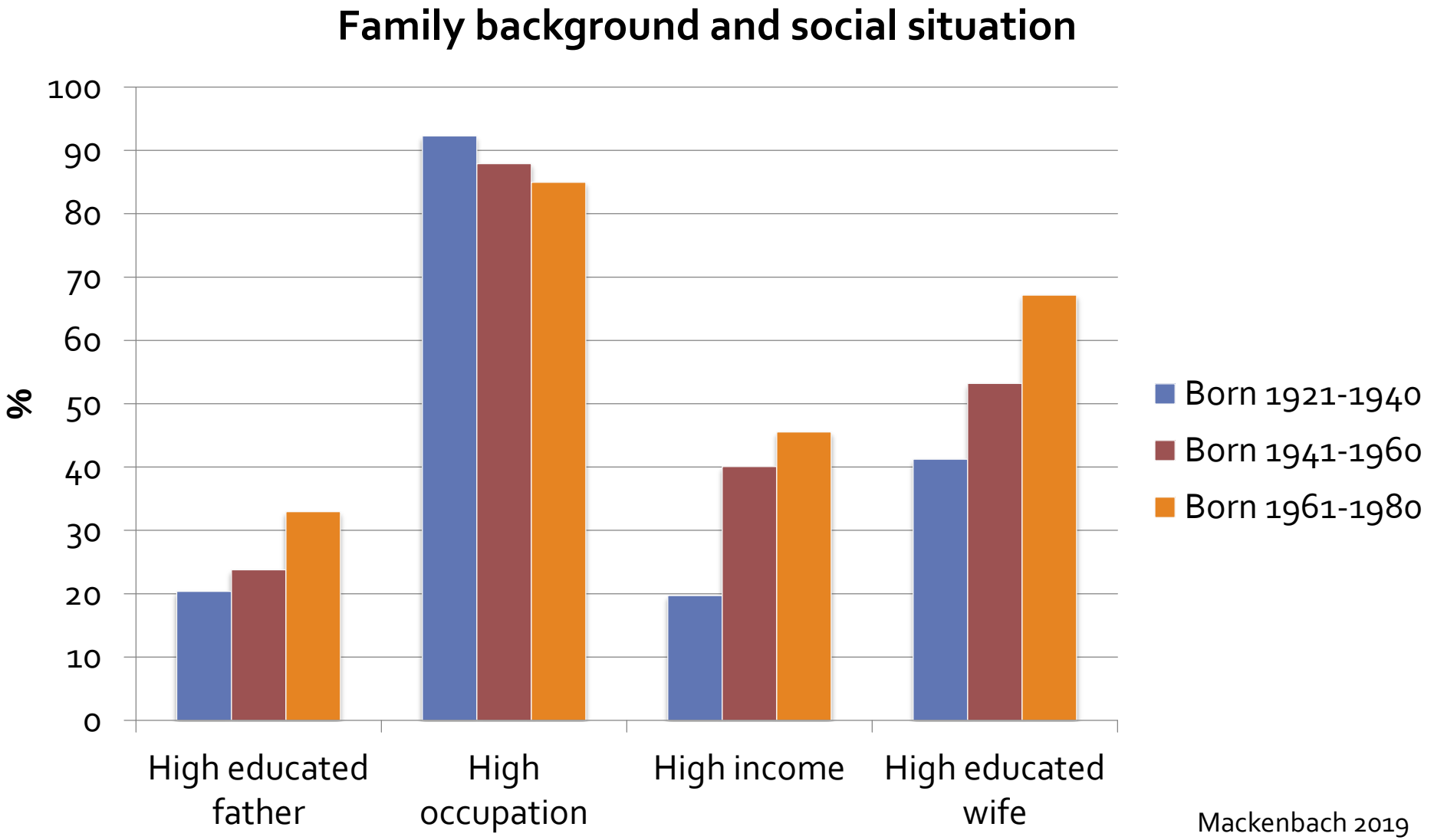
# COMPOSITION OF HIGH EDUCATED GROUP
## Europe, men born 1921-1980

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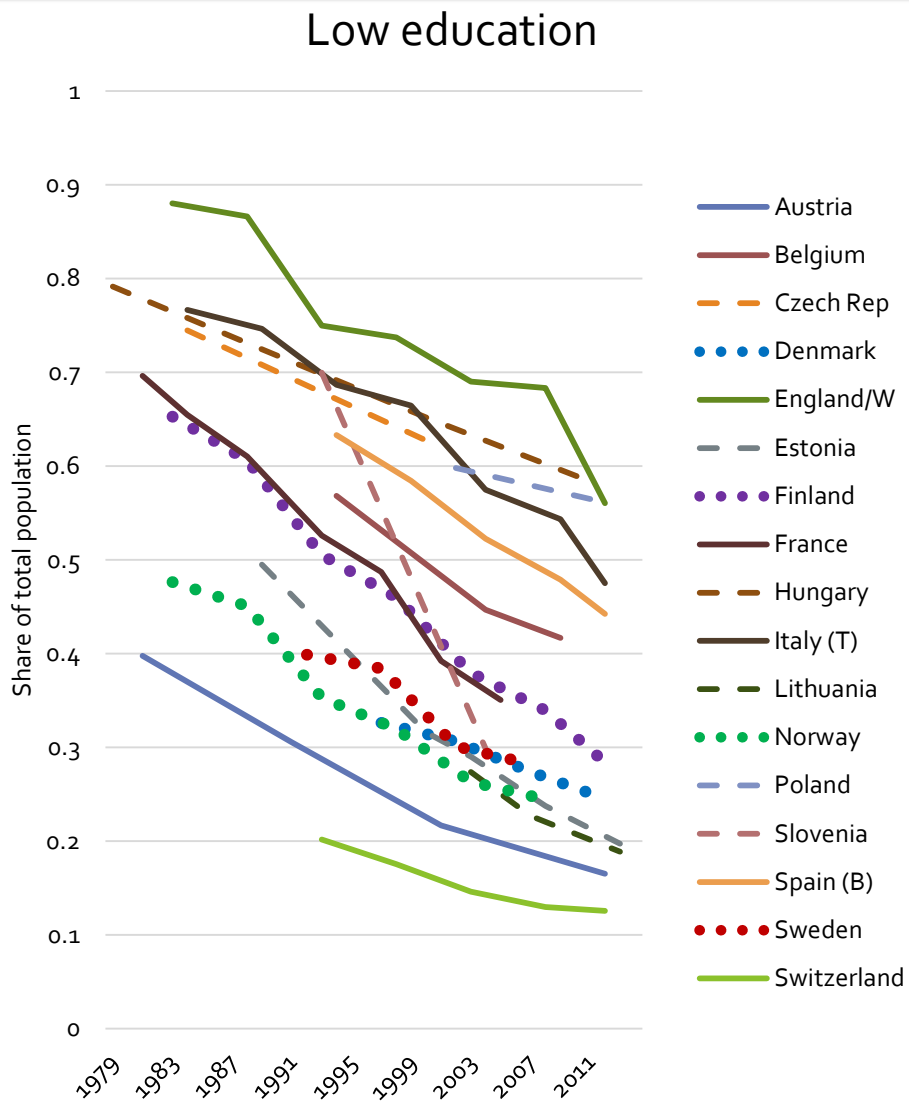
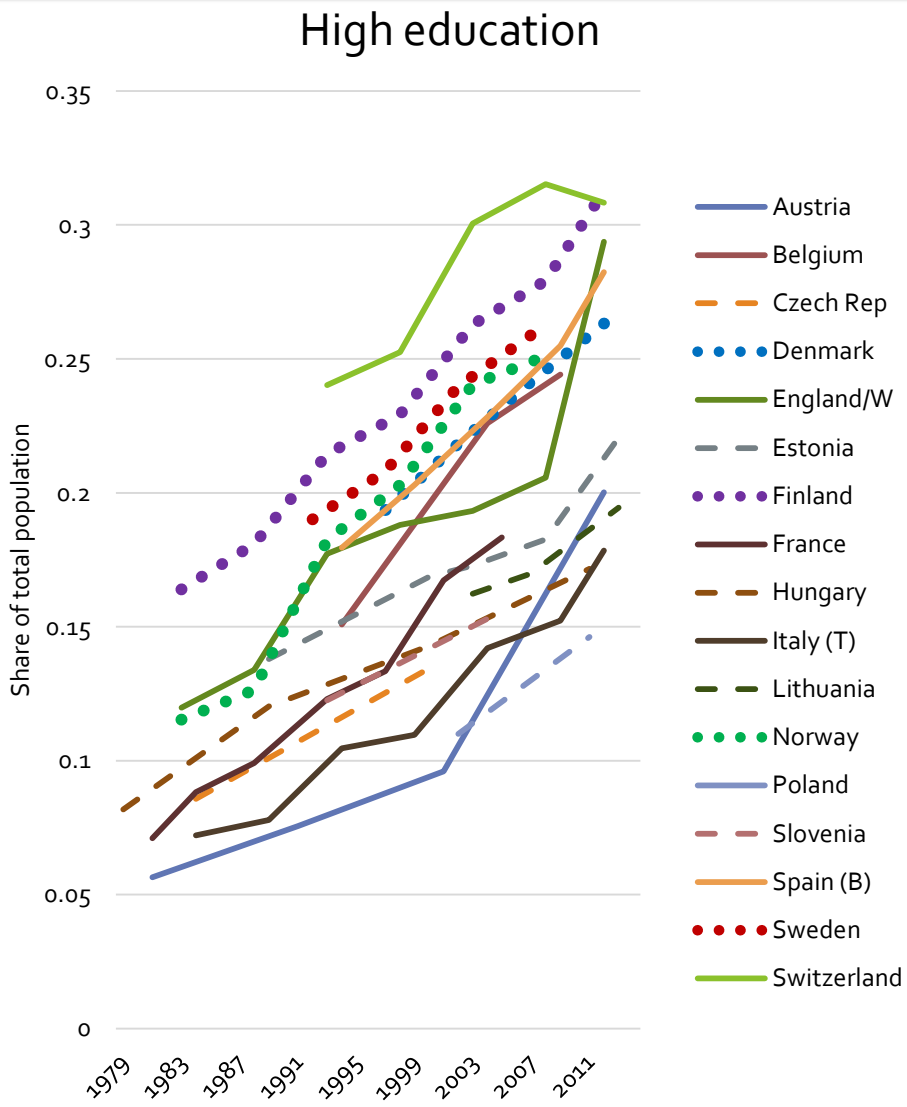
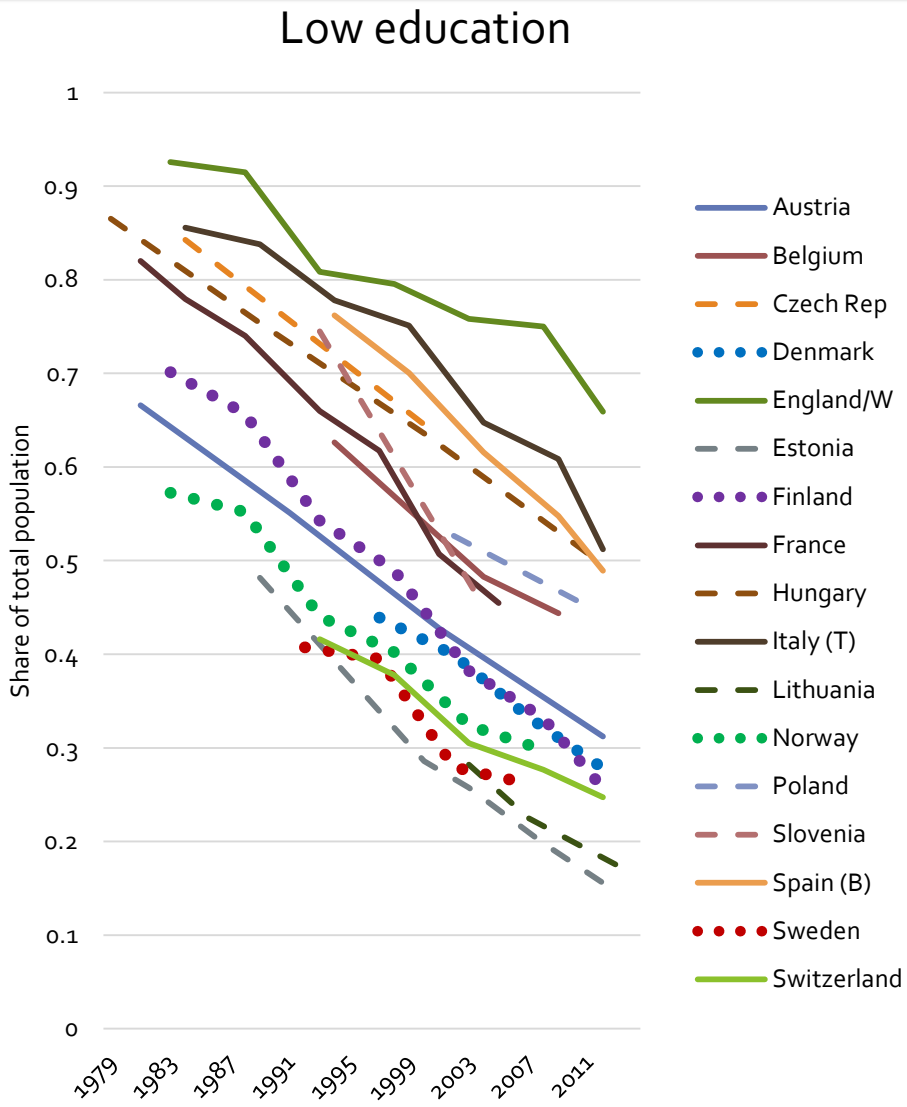
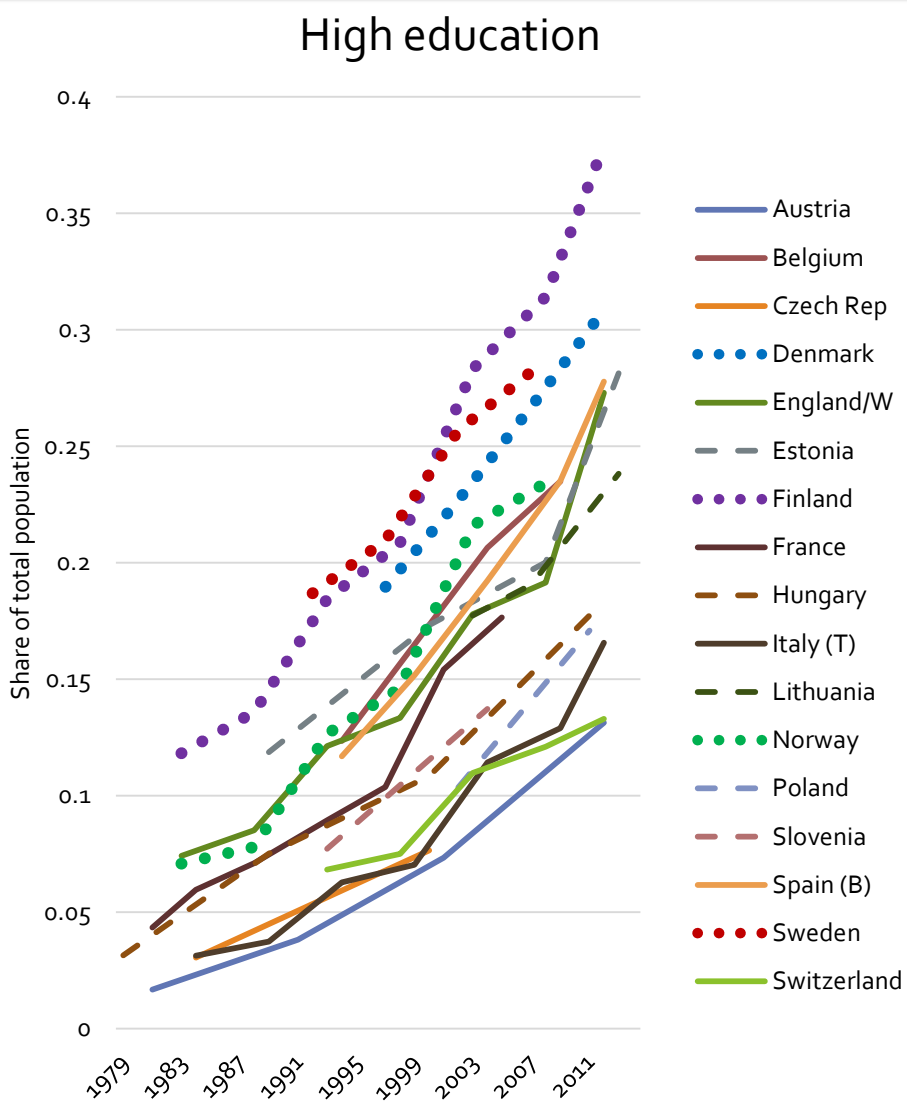
# TRENDS IN POPULATION SHARE BY EDUCATION, men, ca. 1980-2015



# TRENDS IN POPULATION SHARE BY EDUCATION, women, ca. 1980-2015



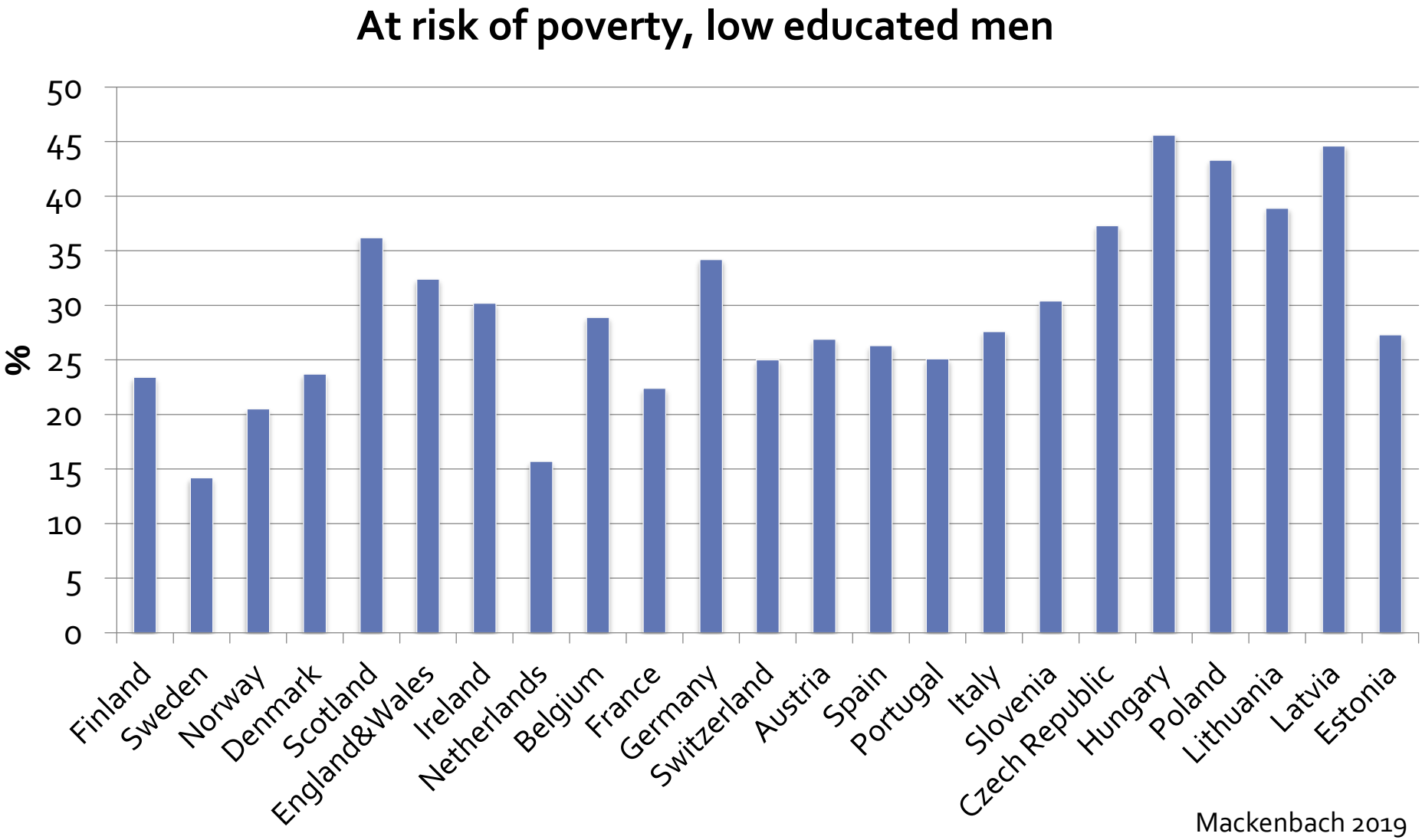



# CONTINUING INEQUALITIES IN MATERIAL LIVING CONDITIONS

- Poverty is important at individual level, but does it also explain inequalities in mortality at population level?
- Yes, 'ecological' effect of poverty appears to partly determine magnitude of inequalities in mortality, but mainly among men
- Larger/widening inequalities in poverty partly explain larger/widening inequalities in mortality in Eastern Europe

# POVERTY

## Low educated men, Europe, ca. 2010

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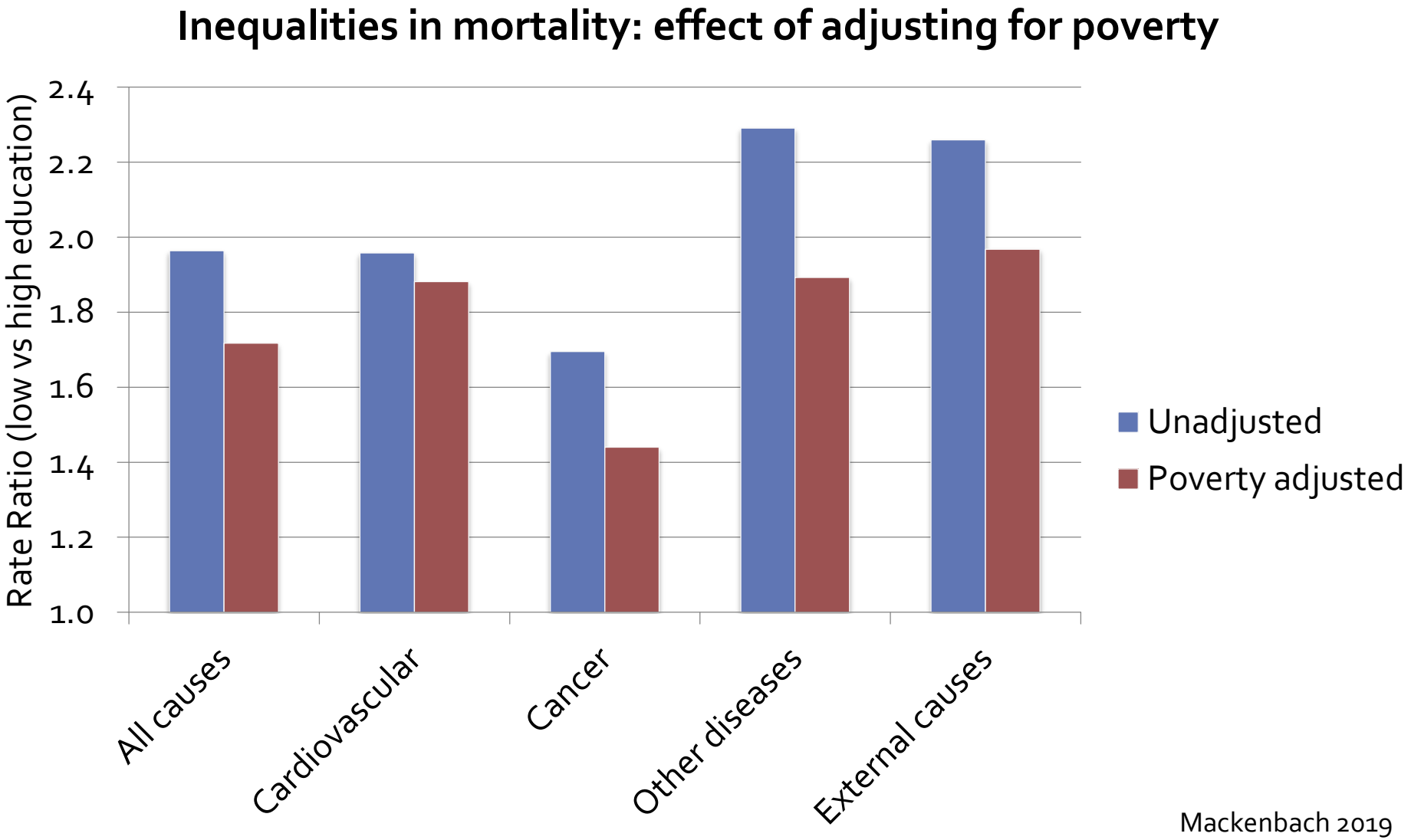
# POVERTY AND MORTALITY

## Europe, men, ca. 2000-2010

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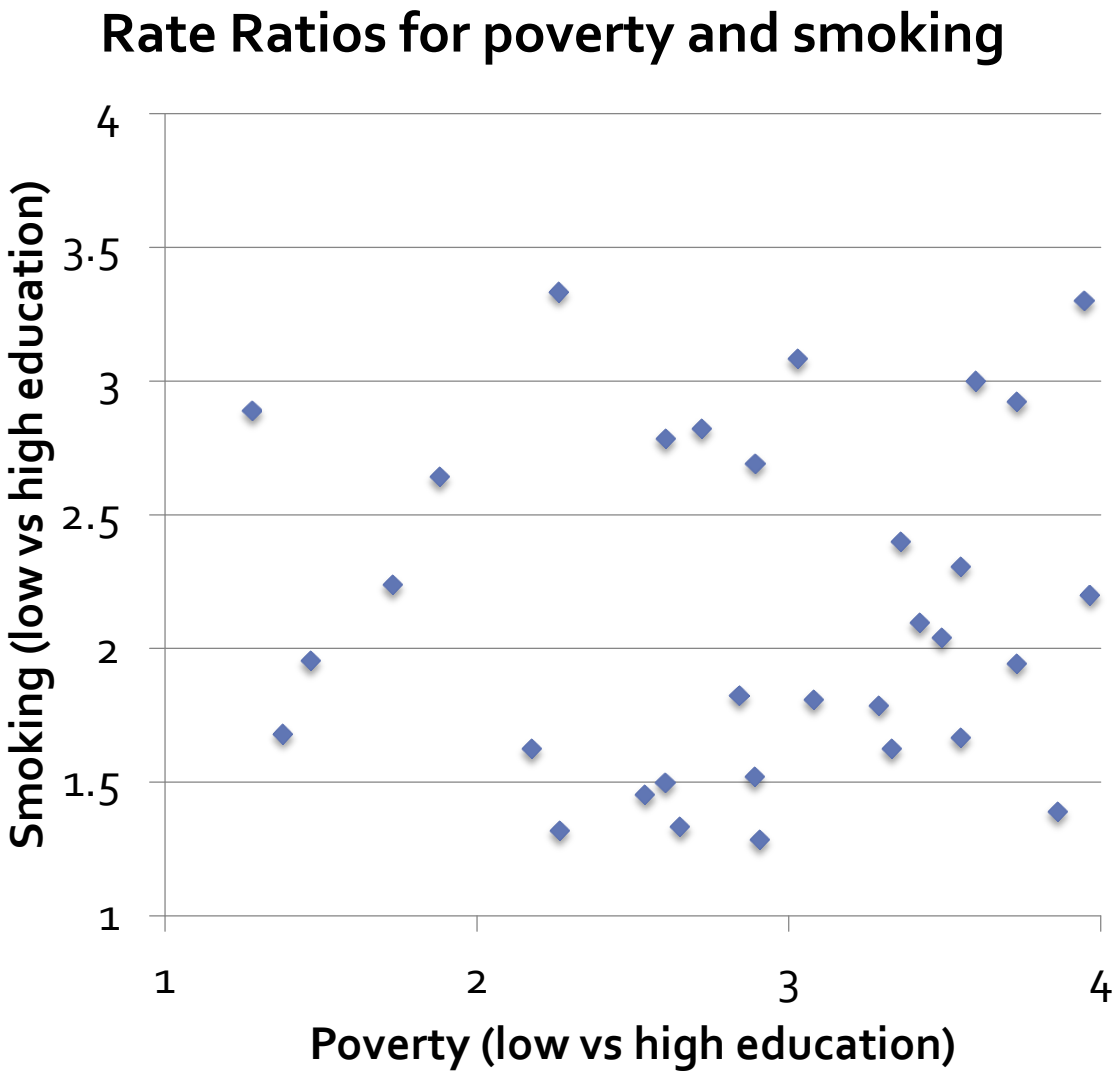
# HEALTH IMPROVEMENTS PARTLY DEPENDENT ON BEHAVIOUR CHANGE

- Smoking is important at individual level, but does it also explain inequalities in mortality at population level?
- Yes, 'ecological' effect of smoking appears to partly determine magnitude of inequalities in mortality among men and women
- (Trends in) inequalities in smoking partly explain larger inequalities in mortality in Eastern and Northern Europe, and widening of inequalities in mortality over time

# INEQUALITIES IN POVERTY AND SMOKING
## Europe, men, ca. 1980-2010

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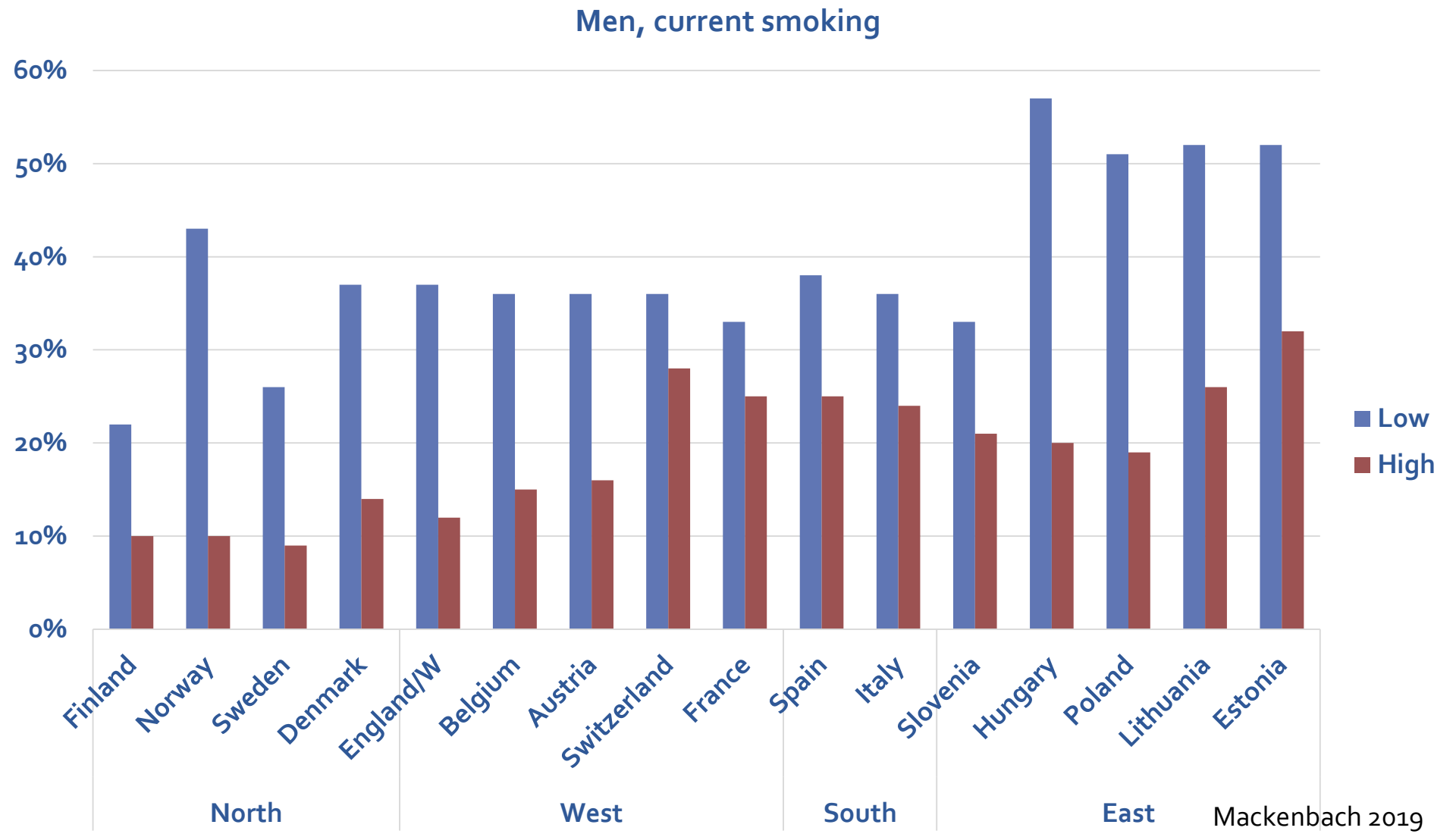
# INEQUALITIES IN SMOKING
## men, ca. 2010

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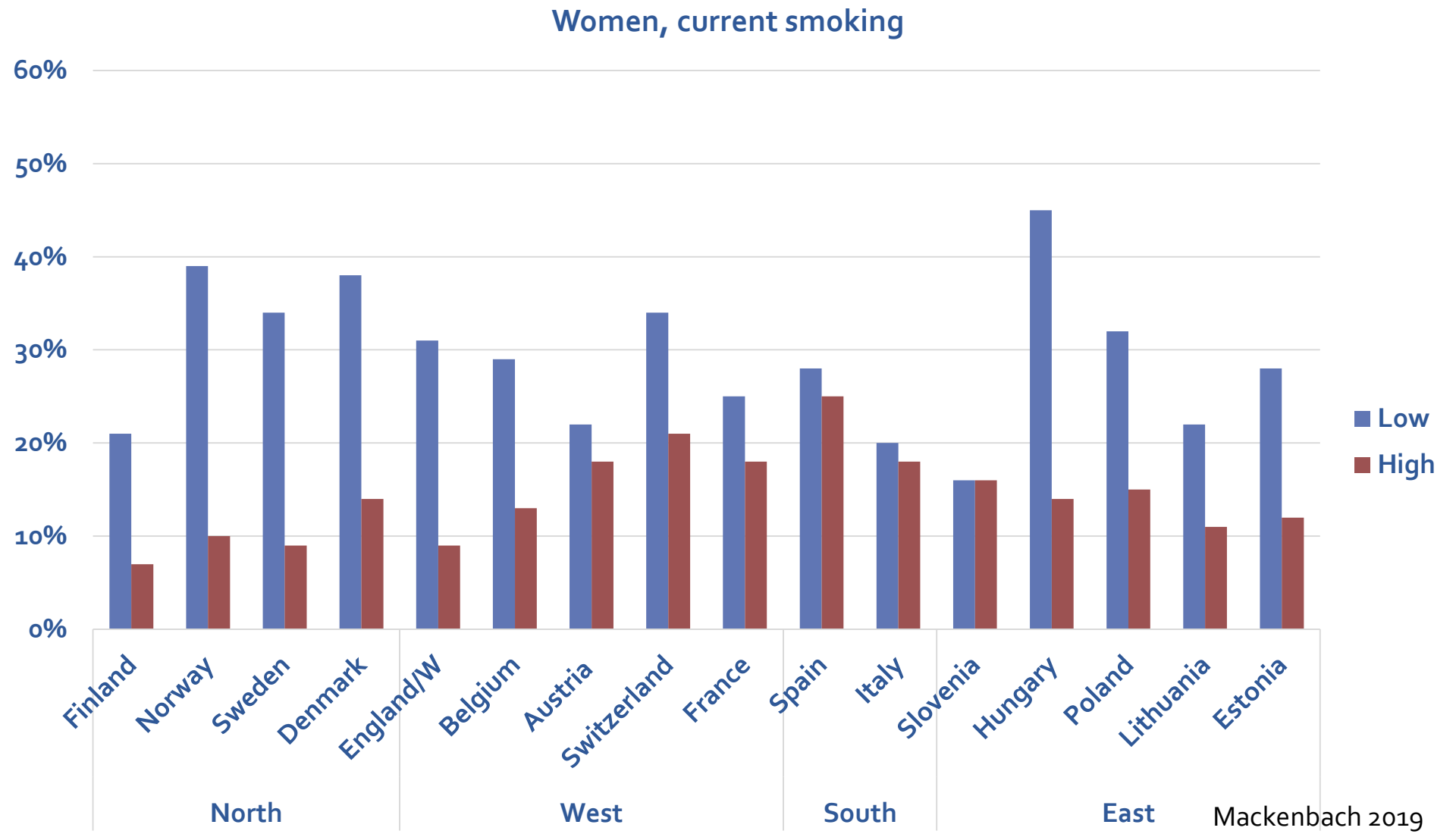
# INEQUALITIES IN SMOKING
## women, ca. 2010

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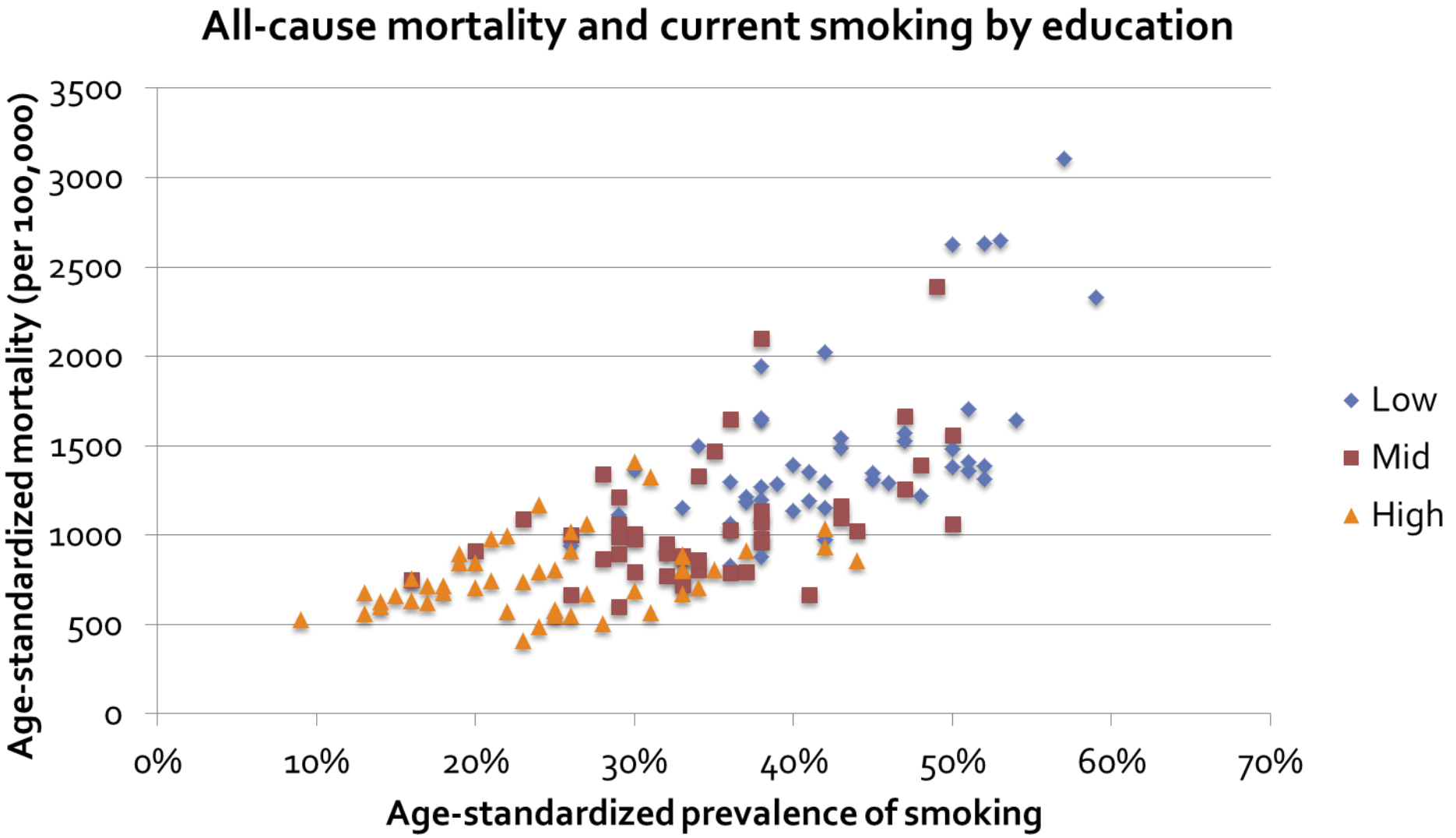
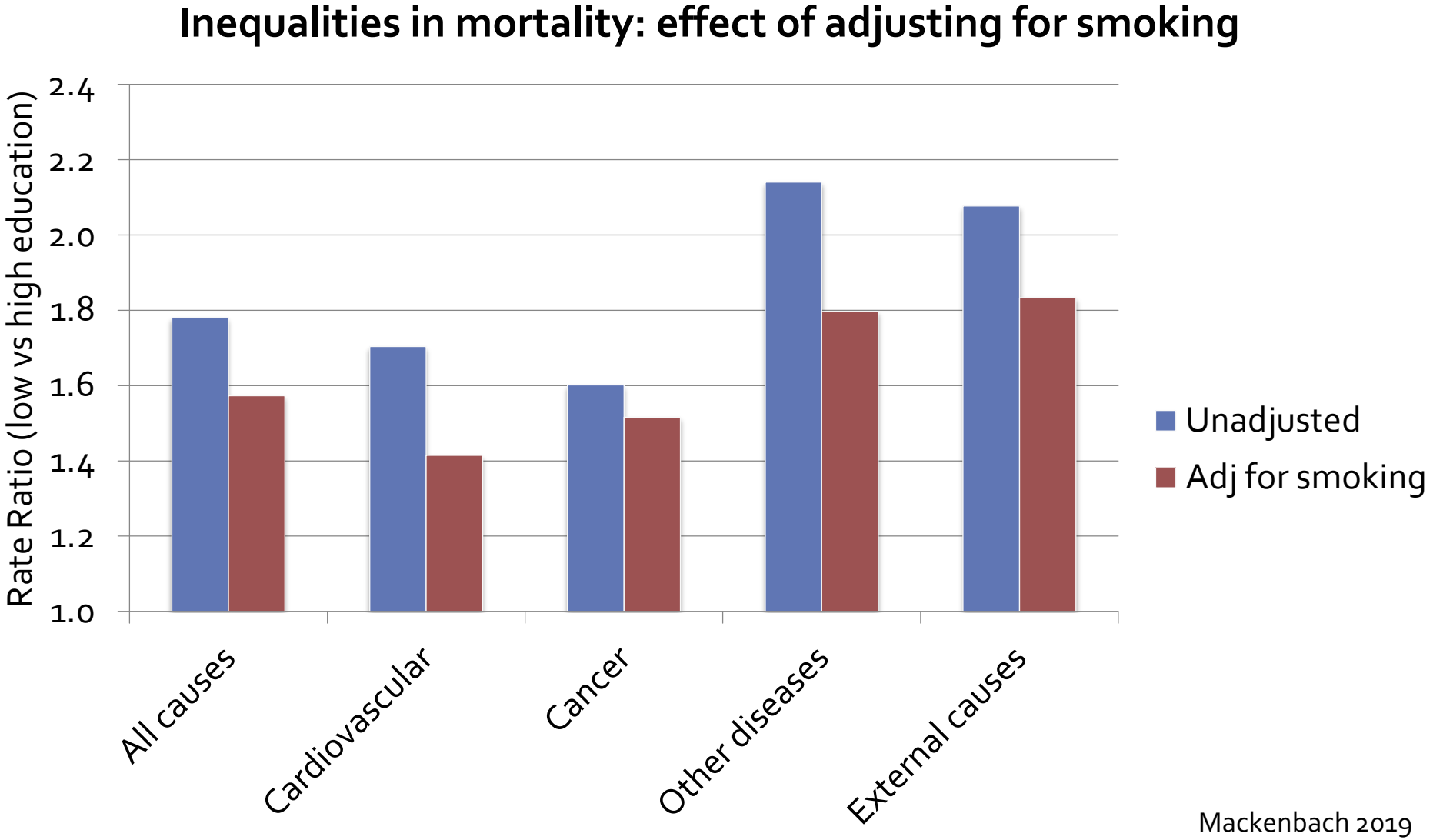
# SMOKING AND TOTAL MORTALITY
## Europe, men, ca. 1980-2010



# SMOKING AND MORTALITY

## Europe, men, ca. 1980-2010

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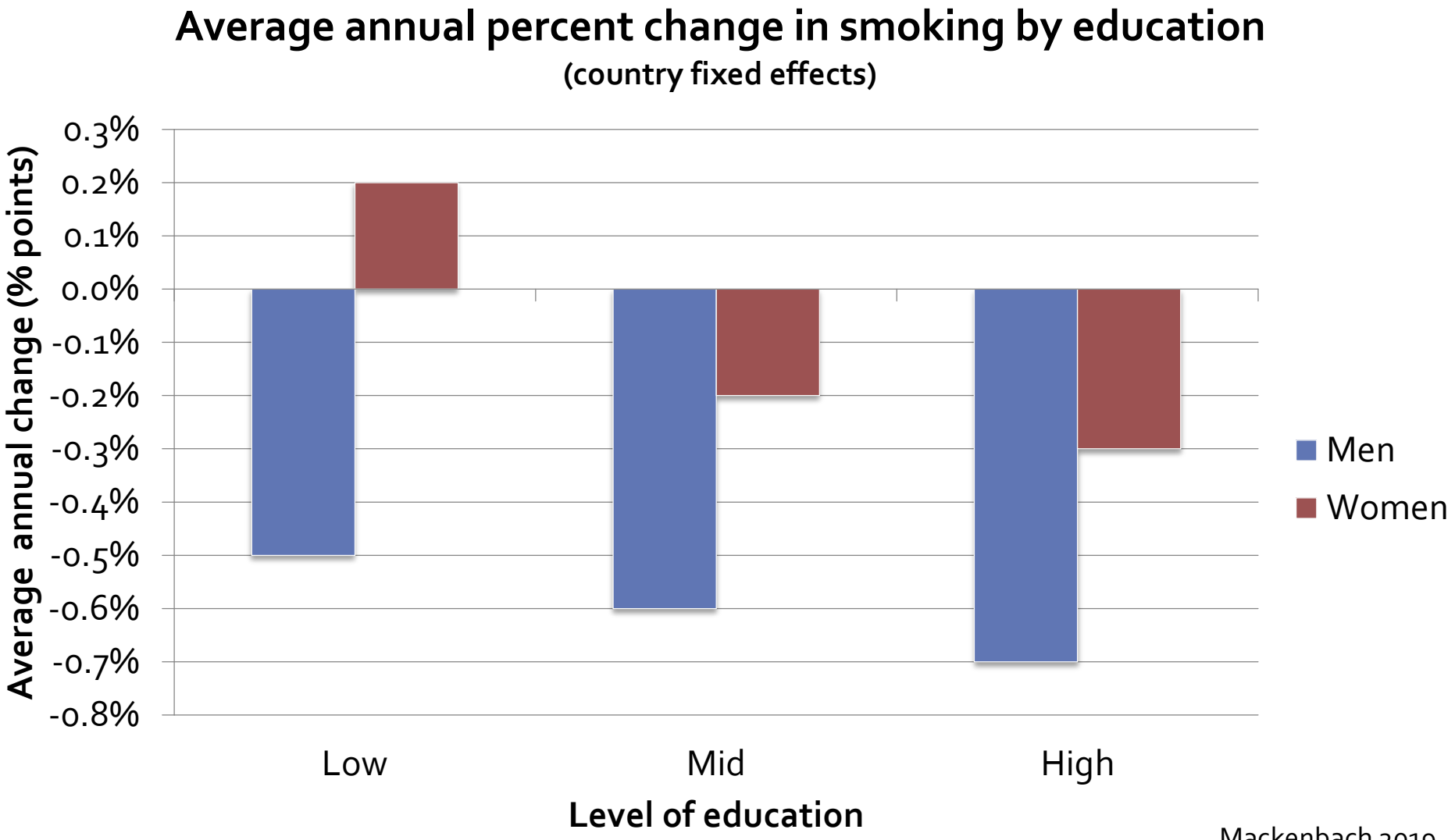
# TRENDS IN SMOKING IN EUROPE
## men and women, ca. 1980-2010

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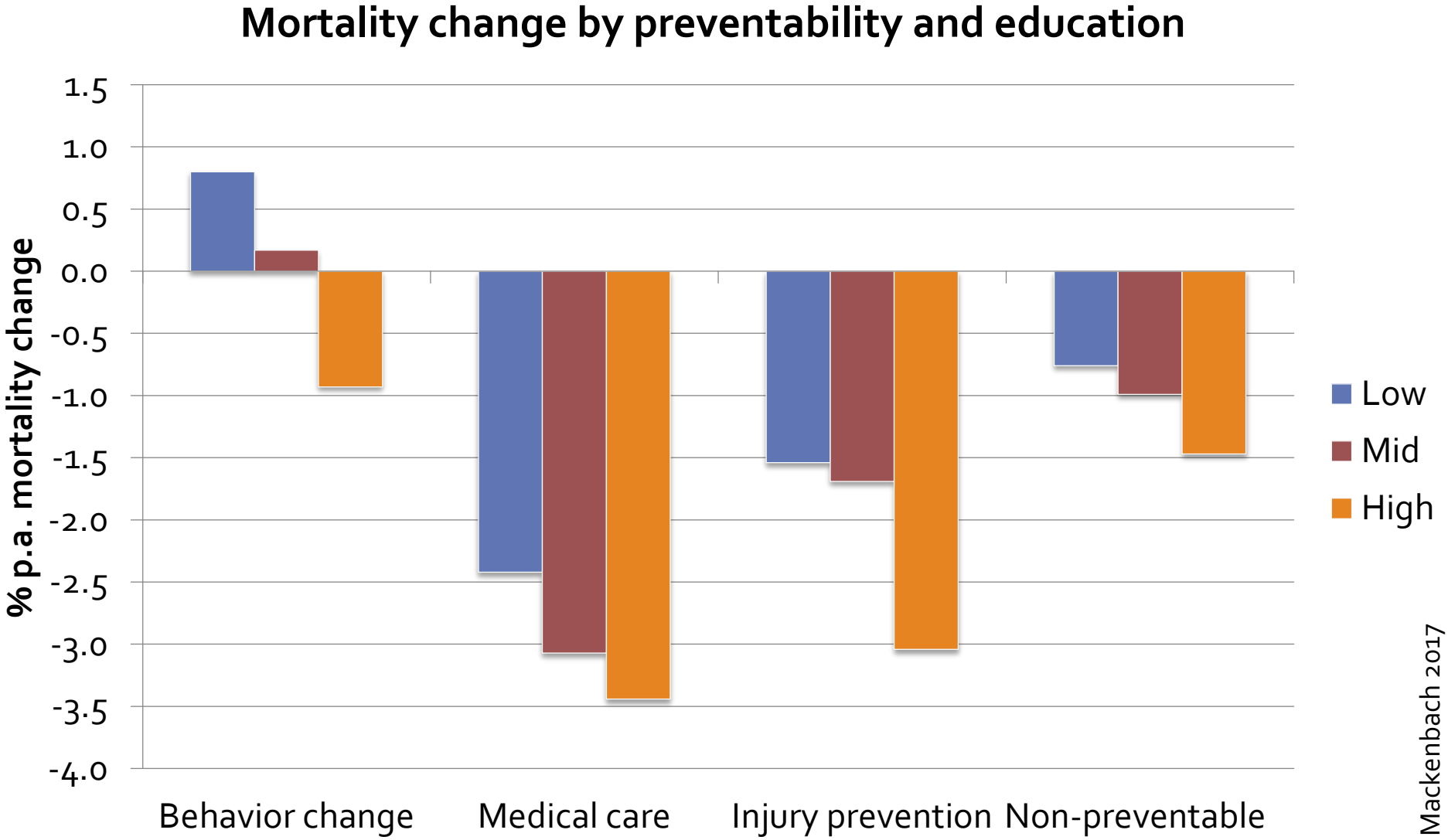
# INEQUALITIES IN MORTALITY TRENDS

## Europe, men & women, ca. 1980-2010

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# A WIDER PERSPECTIVE

- Where do inequalities in poverty and smoking come from?
- 'Upstream' economic, cultural, policy and political determinants of health inequalities
- These will affect health inequalities if their effect is different between education groups

# 'UPSTREAM' DETERMINANTS INCLUDED IN THE ANALYSIS

- Economic: national income, income inequality
- Cultural: secular-rational values; self-expression values
- Policy: social transfers; health care expenditure
- Political: level of democracy; left party government

# DIFFERENTIAL MORTALITY EFFECTS BY EDUCATION

| Country-level variables | Main effect* | Differential relative effect** |
|---|---|---|
| **National income (GDP per capita)** | **Down** | **Yes** |
| Income inequality (Gini for net household income) | Down/up | Yes |
| Self-expression values (Inglehart) | None | N/A |
| Secular values (Welzel) | Up | Yes |
| Level of democracy (Polity_2) | Up | Yes |
| Left party government (cumulative years) | None | N/A |
| Social transfers (%GDP) | None | N/A |
| **Health care expenditure (%GDP)** | **Down** | **No** |

* Statistically significant effect among low or high educated in country- and period-fixed effects analyses controlling for GDP
** Statistically significant interaction term and consistent difference between low and high educated in stratified analysis

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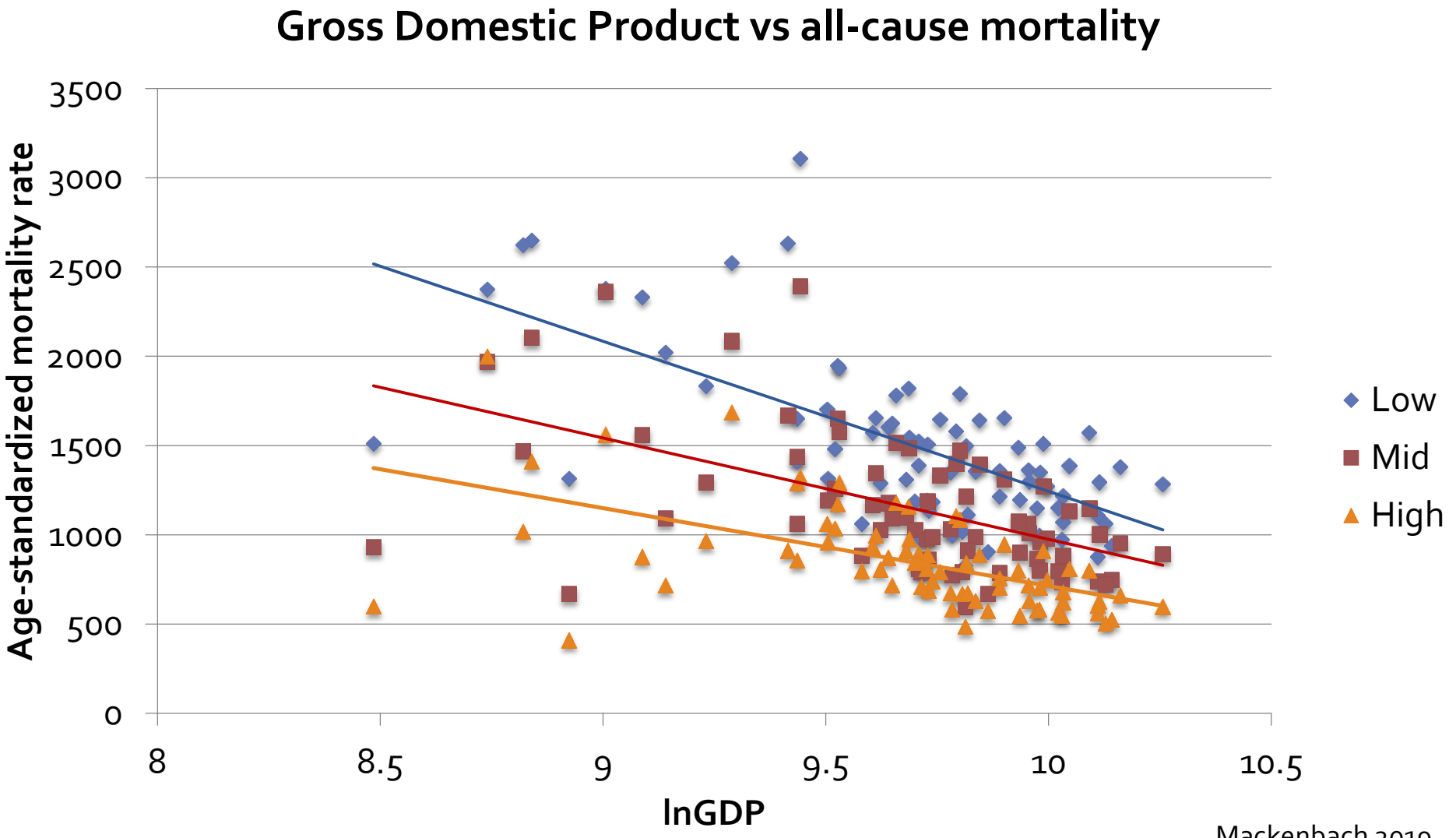
# MAIN FINDINGS FOR NATIONAL INCOME

- Higher national income reduces mortality, but more so in relative terms among high educated, and more so in absolute terms among low educated

- This helps to understand larger absolute inequalities in Eastern Europe, and larger-than-expected relative inequalities in Northern Europe, and widening of relative inequalities in mortality over time

# NATIONAL INCOME AND MORTALITY, men, ca. 1980-2010

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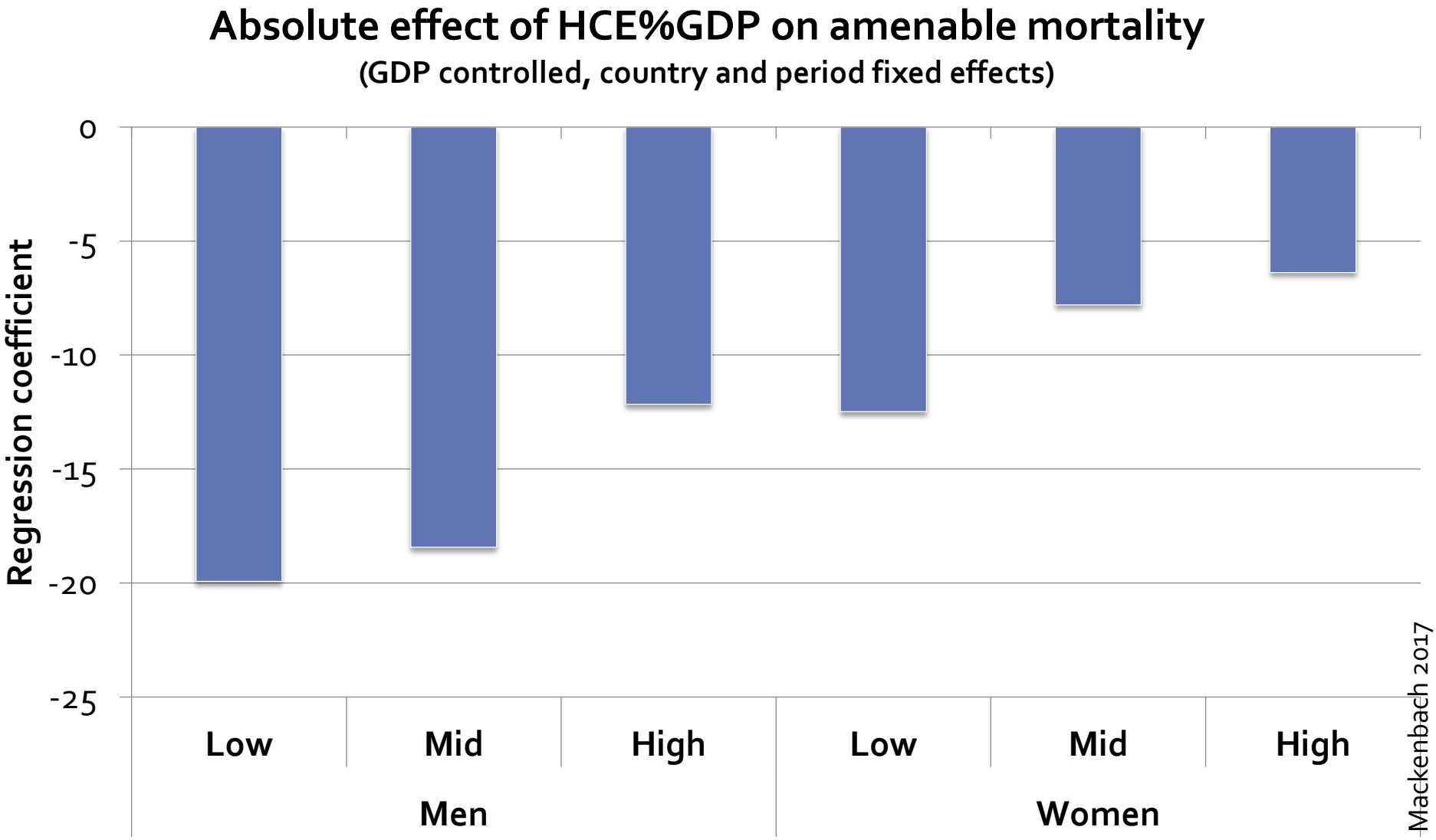
# MAIN FINDINGS FOR HEALTH CARE EXPENDITURE

- Higher health care expenditure reduces mortality from amenable causes, but more so in absolute terms among low than among high educated, and equally so in relative terms

- This implies that higher health care expenditure helps to reduce absolute inequalities in mortality – but leaves relative inequalities untouched – in a context of universal health care coverage

# HEALTH CARE EXPENDITURE AND MORTALITY
## Europe, men & women, 1980-2010



# CONCLUSIONS

- Health inequalities are frustratingly persistent even in the most generous welfare states, but at the same time highly variable and dynamic
- They are difficult to eliminate, as they result from complex interactions between social and biological, individual and collective factors
- Absolute health inequalities can be reduced by ensuring that effective health interventions have sufficient reach in lower socioeconomic groups

# THANK YOU


- Thank you to: Wilma Nusselder, José Rubio Valverde and Yannan Hu for data and analytical support

- Thank you to the many members of the DEMETRIQ and LIFEPATH consortiums who contributed data to this analysis

# SOME RECENT PUBLICATIONS


- Mackenbach JP. *Health inequalities; persistence and change in European welfare states*. Oxford University Press, 2019.
- Mackenbach JP, et al. *Health inequalities before and after the financial crisis: trend study of 27 European countries.* Proceedings of the National Academy of Sciences 2018 (in press).
- Mackenbach JP, et al. *"Fundamental causes" of inequalities in mortality: an empirical test of the theory in 20 European populations*. Soc Health Illness 2017 Sep;39(7):1117-1133.
- Mackenbach JP, et al. *Determinants of the magnitude of socioeconomic inequalities in mortality: A study of 17 European countries*. Health Place 2017 Sep;47:44-53
- Mackenbach JP, et al. *Trends In Inequalities In Mortality Amenable To Health Care In 17 European Countries.* Health Affairs 2017 Jun 1;36(6):1110-1118
- Ostergren O, et al. *Educational expansion and inequalities in mortality-A fixed-effects analysis using longitudinal data from 18 European populations.* PLoS One 2017 Aug 23;12(8):e0182526
- Mackenbach JP. *Persistence of social inequalities in modern welfare states: Explanation of a paradox.* Scand J Publ Health 2017 Mar;45(2):113-120
- Gregoraci G, et al. *Contribution of smoking to socioeconomic inequalities in mortality: a study of 14 European countries, 1990-2004*. Tob Control. 2017 May;26(3):260-268.
- Mackenbach JP, et al. *Changes in mortality inequalities over two decades: register based study of European countries*. BMJ. 2016 Apr 11;353:i1732.