

# Fertility Variation Across Space

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# Fertility Research in Europe

- Research on low fertility in Europe can be divided into two broad categories
- Fertility variation across population subgroups within countries → the effect of individual and household characteristics on fertility behaviour
- Fertility variation across countries → the role of institutional and cultural factors and policies in explaining cross-country variation in fertility levels and patterns

# Fertility Research in Europe

- Little research has explored fertility variation *within* nations
- Historical studies demonstrate the considerable within-nation variation in fertility that existed around the time of the ‘first demographic transition’ (e.g. the Princeton European Fertility Project)
- Knodel (1974): “Urban fertility (both marital and overall fertility) was generally lower than rural fertility, and this already before the transition; urban regions showed earlier fertility decline than rural areas with the largest cities experiencing the earliest decline of all.”

# Fertility Research in Europe

- Spatial fertility variation has been an under-researched topic
- Coleman (1996): “Regional and urban-rural variation in fertility levels declined and demographic convergence increased within European countries in the 1970s and 1980s.”
- Lack of data on residential changes

# Objectives

- Examine spatial fertility variation in Nordic countries and the causes of the variation
- Focus on fertility variation between urban and rural areas and within urban regions

# Data and Methods

- The data from the population registers of Denmark, Finland, Norway and Sweden
- Annual number of births by age of mother across municipalities for the period from 1975 to 2003; female population (annually) by age across municipalities
- Annual age-specific fertility rates and the total fertility (TFR) for various settlements

# Data and Methods

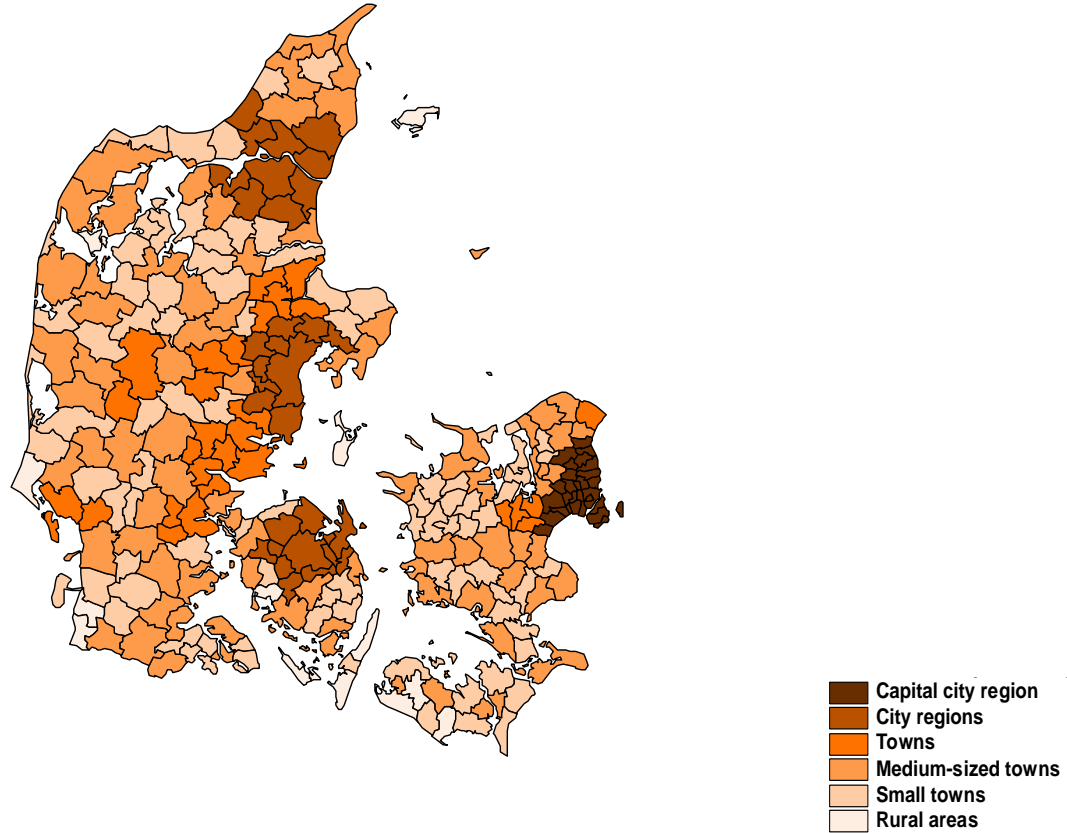
- Individual childbearing records from Swedish population registers on all Swedish women born in 1945 and later
- Parity-specific (occurrence-exposure) fertility rates across settlements, with and without controlling for socio-economic characteristics of women

# Definition of Settlement Type

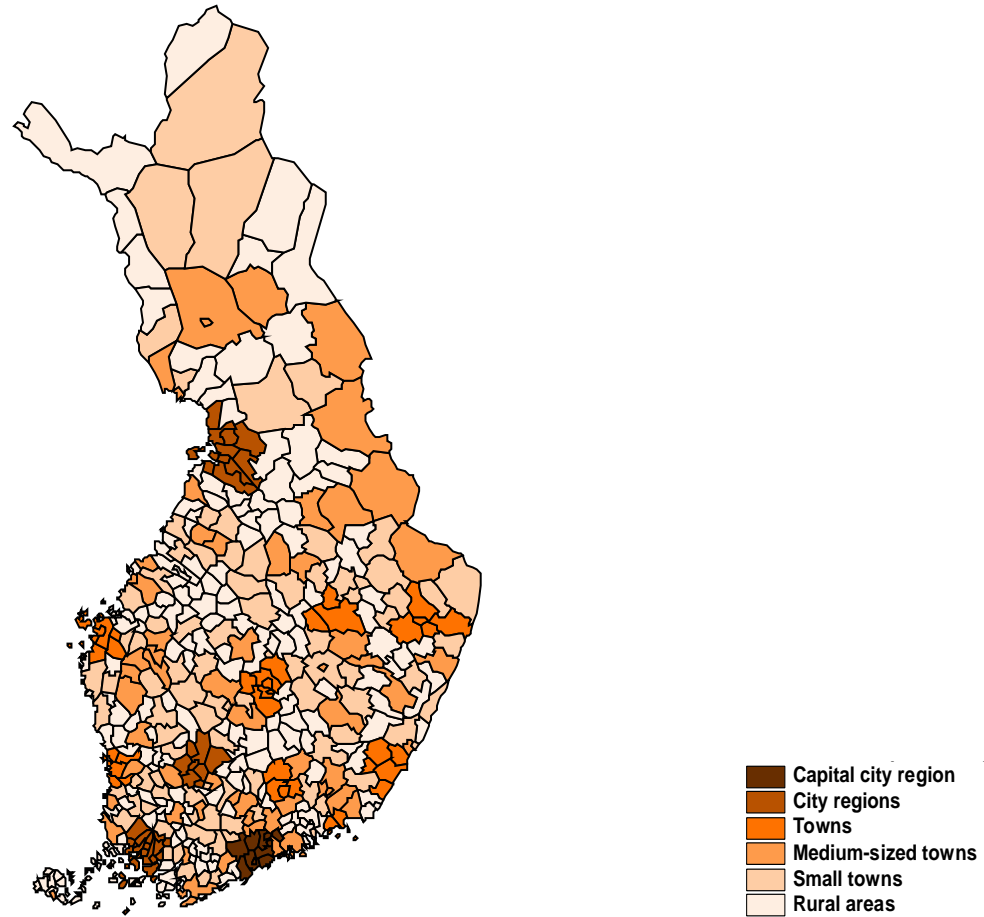
- Size of municipality:
  - 1) Capital city (more than 400,000 inhabitants)
  - 2) Other cities (100,000-400,000 inhabitants)
  - 3) Towns (50,000-100,000 inhabitants)
  - 4) Medium-sized towns (10,000-50,000 inhabitants)
  - 5) Small towns (5,000-10,000 inhabitants)
  - 6) Rural areas (less than 5,000 inhabitants)
- Suburban municipalities defined as part of the urban region; criteria: 20% of employed population commute to work in the neighbouring city or town



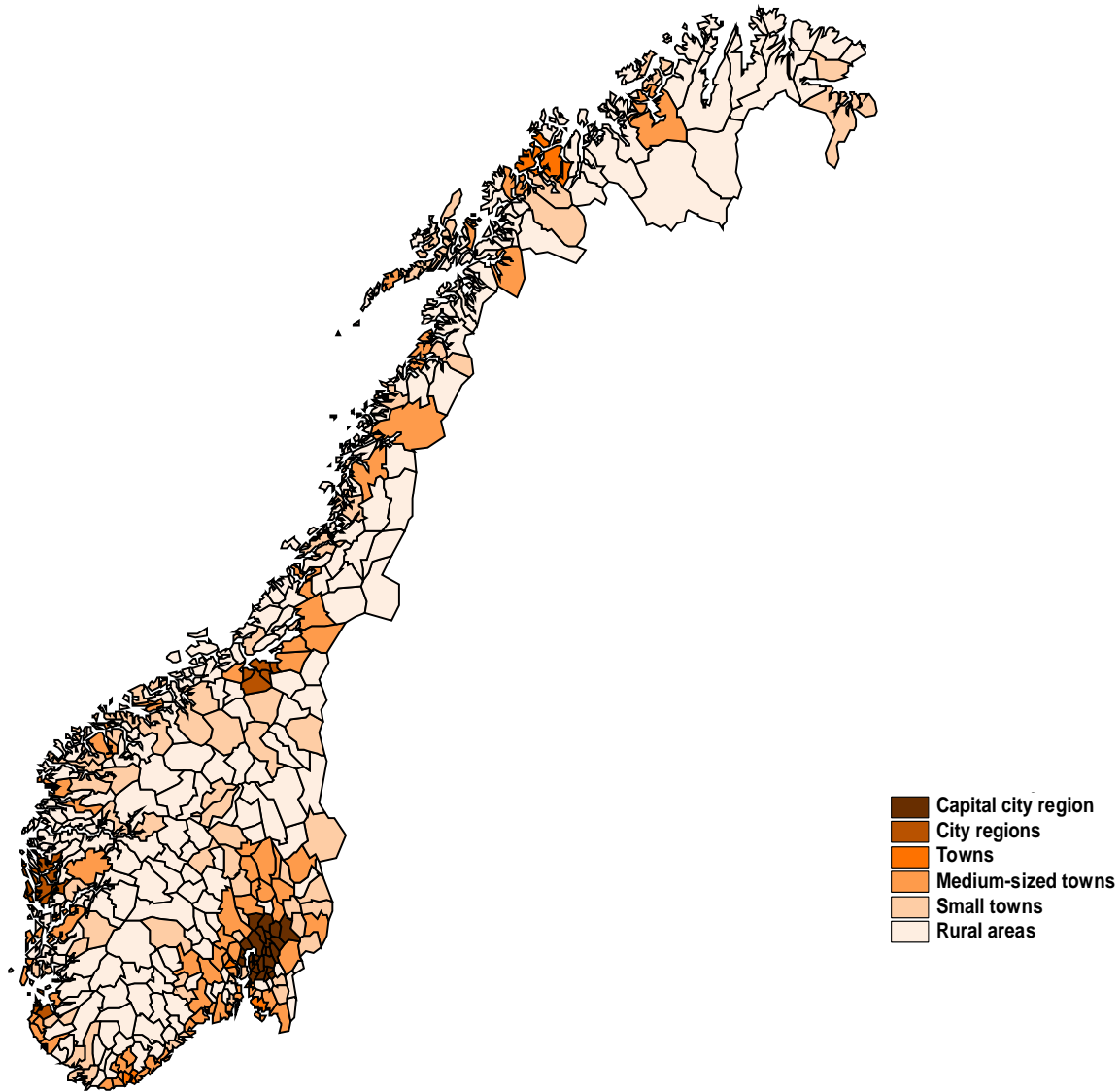
# Municipalities of Denmark by Size



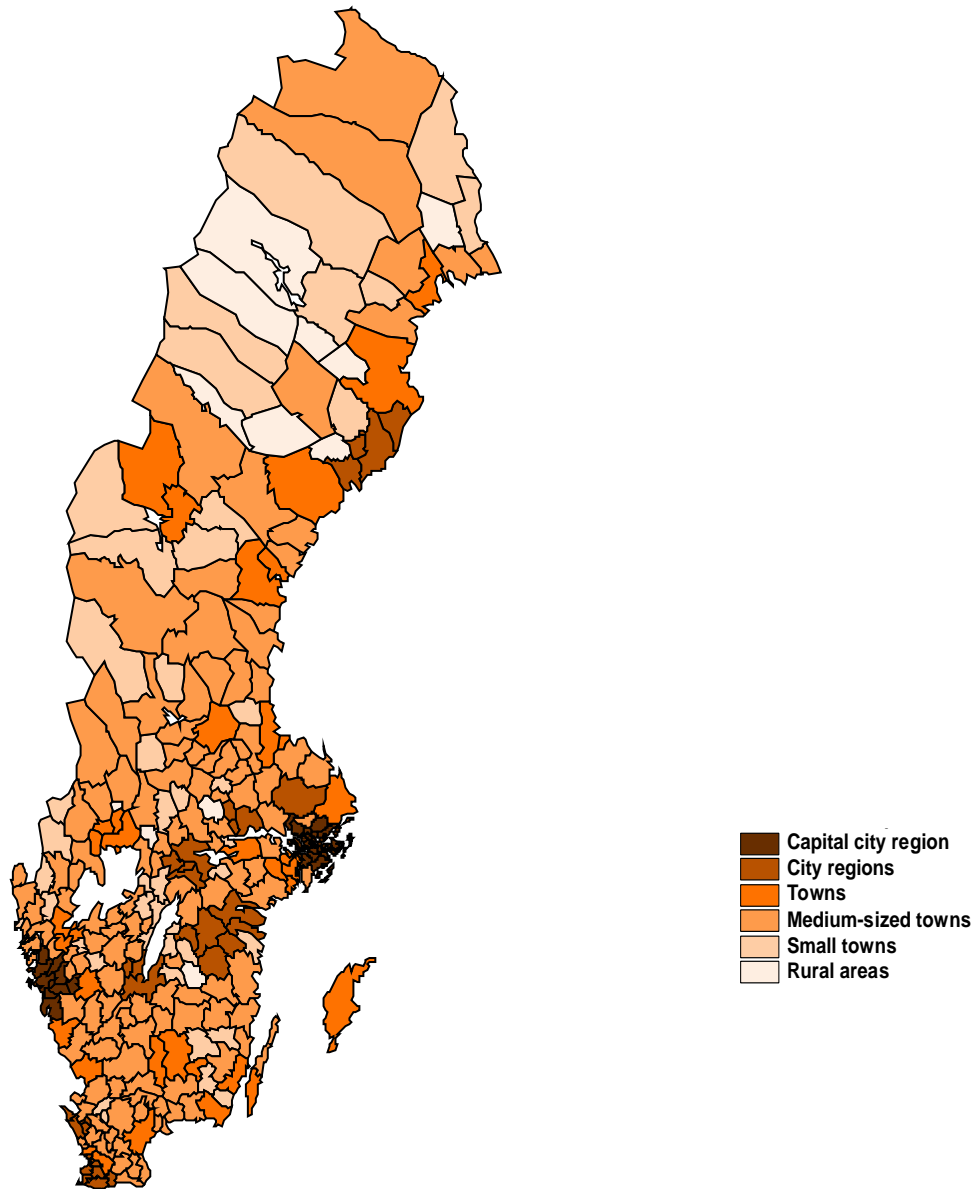
# Municipalities of Finland by Size



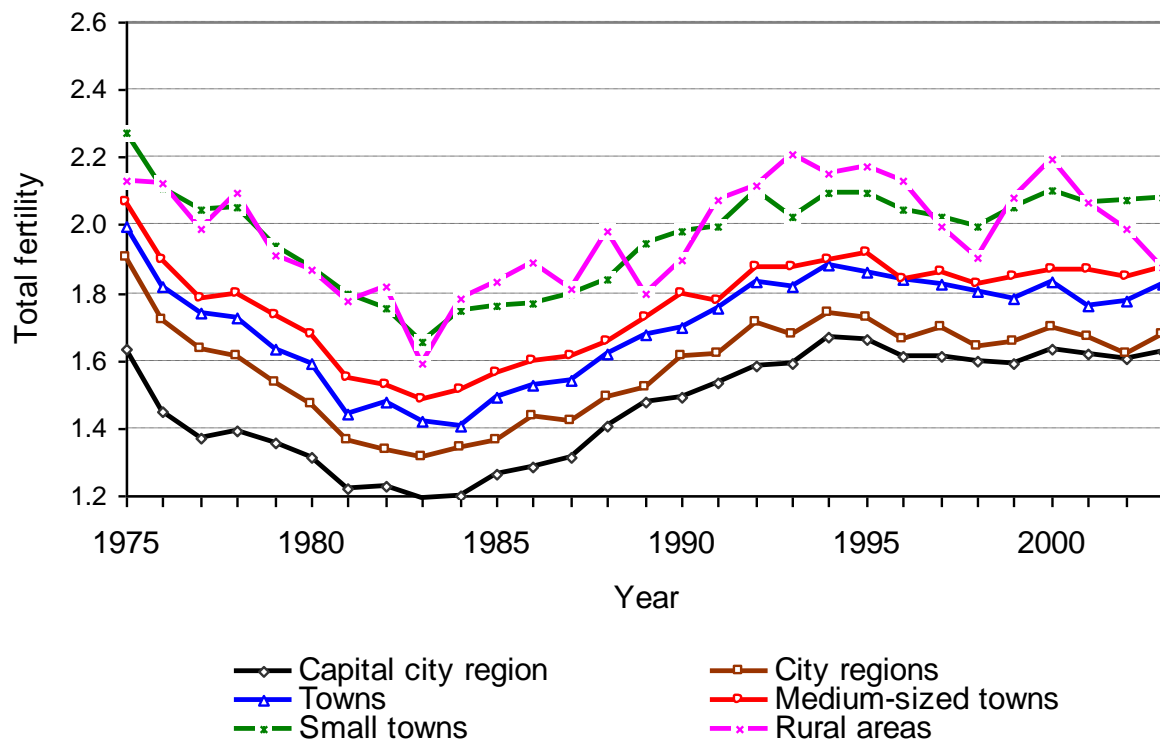
# Municipalities of Norway by Size



# Municipalities of Sweden by Size



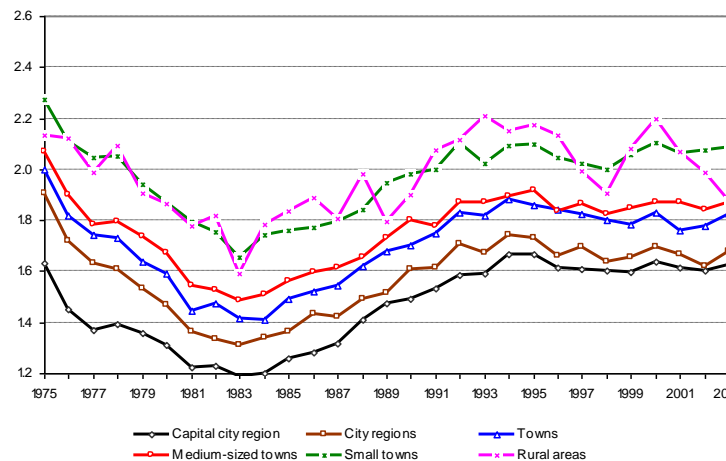
# Total Fertility (TFR) in Denmark by Place of Residence



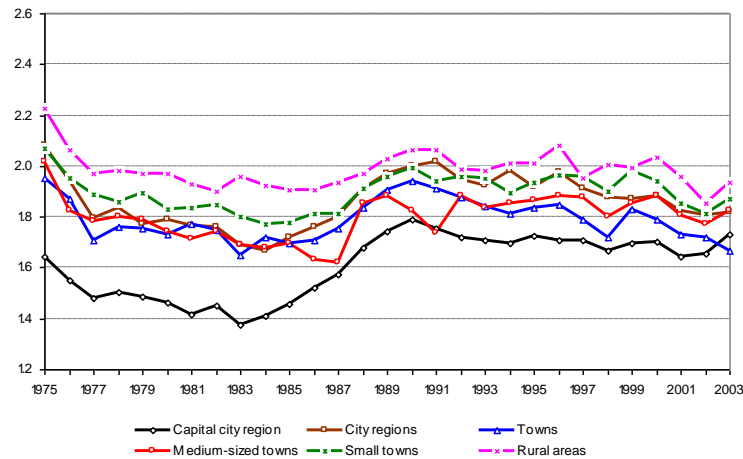
Source: Kulu, Vikat and Andersson 2007, *Population Studies*

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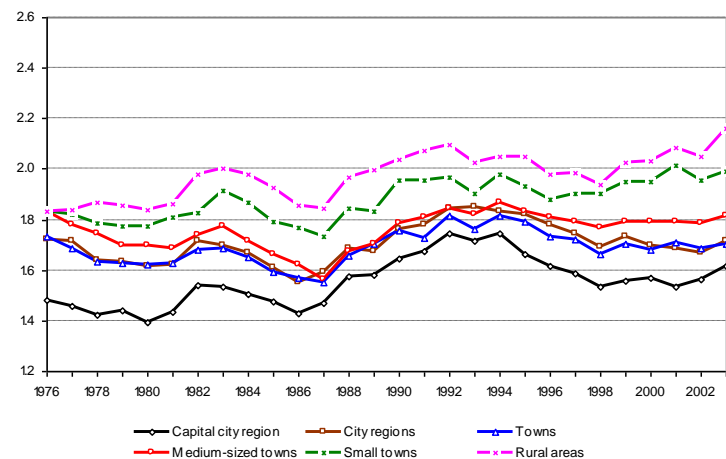
## Denmark



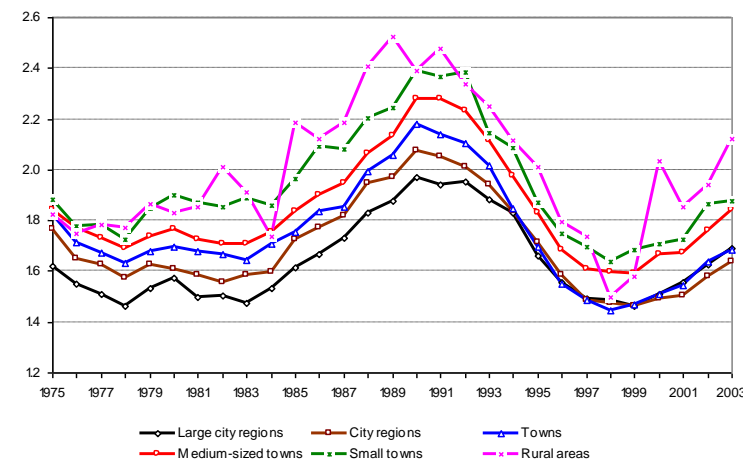
## Norway



## Finland

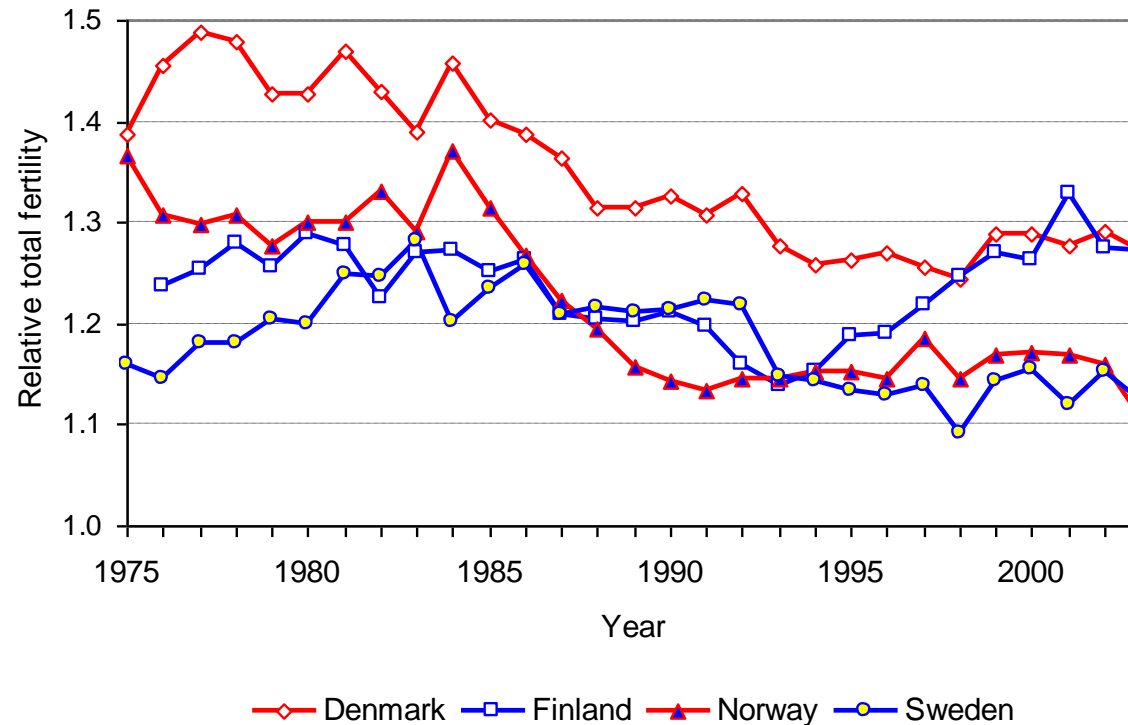


## Sweden



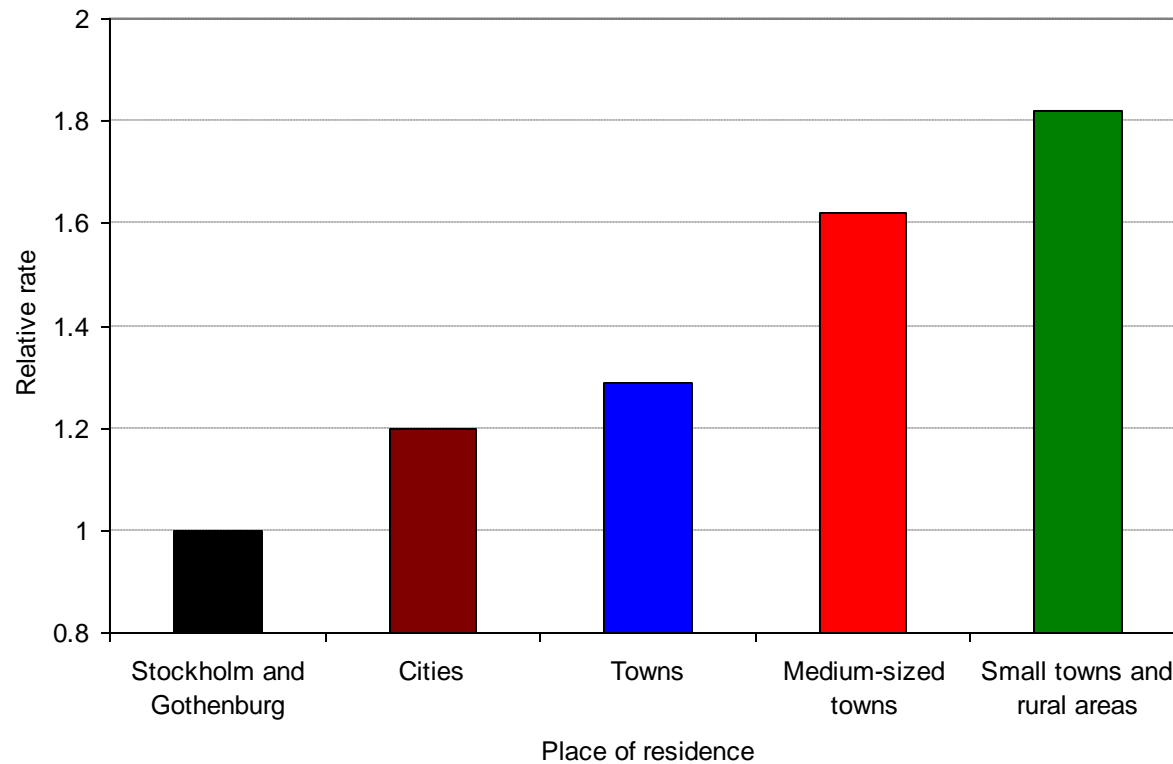
Source: Kulu, Vikat and Andersson 2007, *Population Studies*

# TFR in Capital City Regions Relative to TFR in Small Towns and Rural Areas



Source: Kulu, Vikat and Andersson 2007, *Population Studies*

# Relative Rates of First Birth at Ages 15-29 by Place of Residence

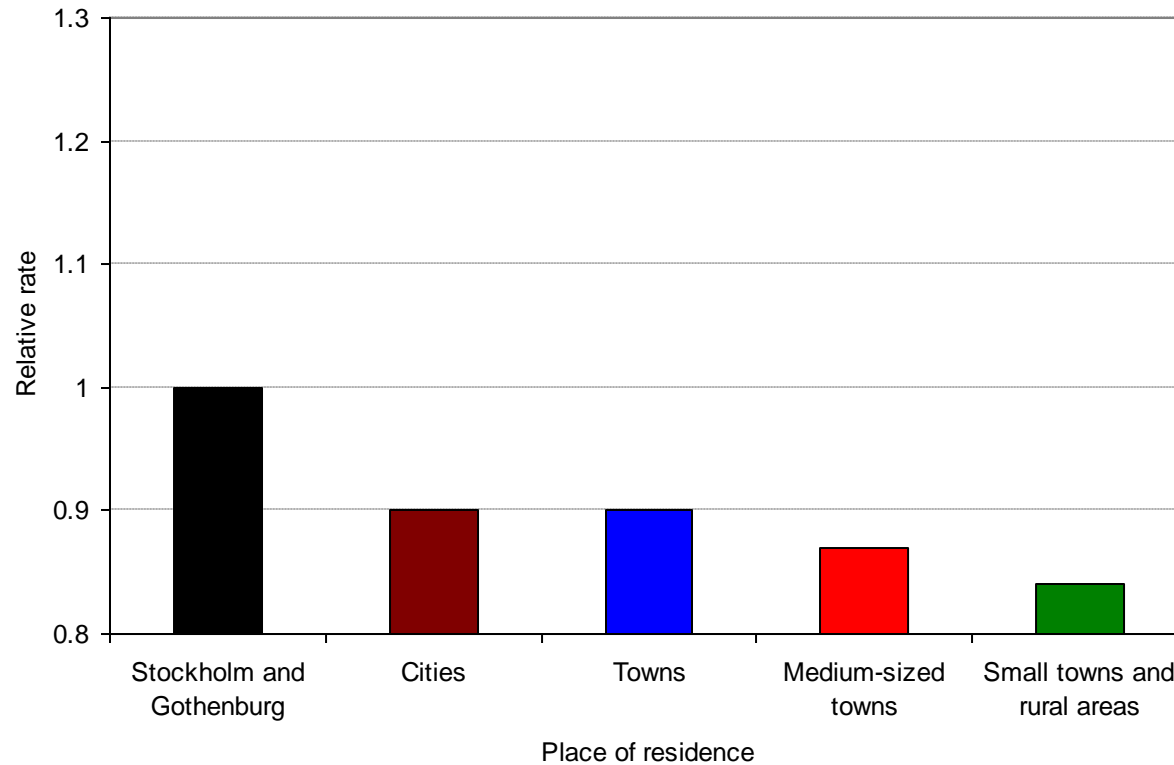


Standardised for age of woman

Data: Population Register of Sweden, 1990-99



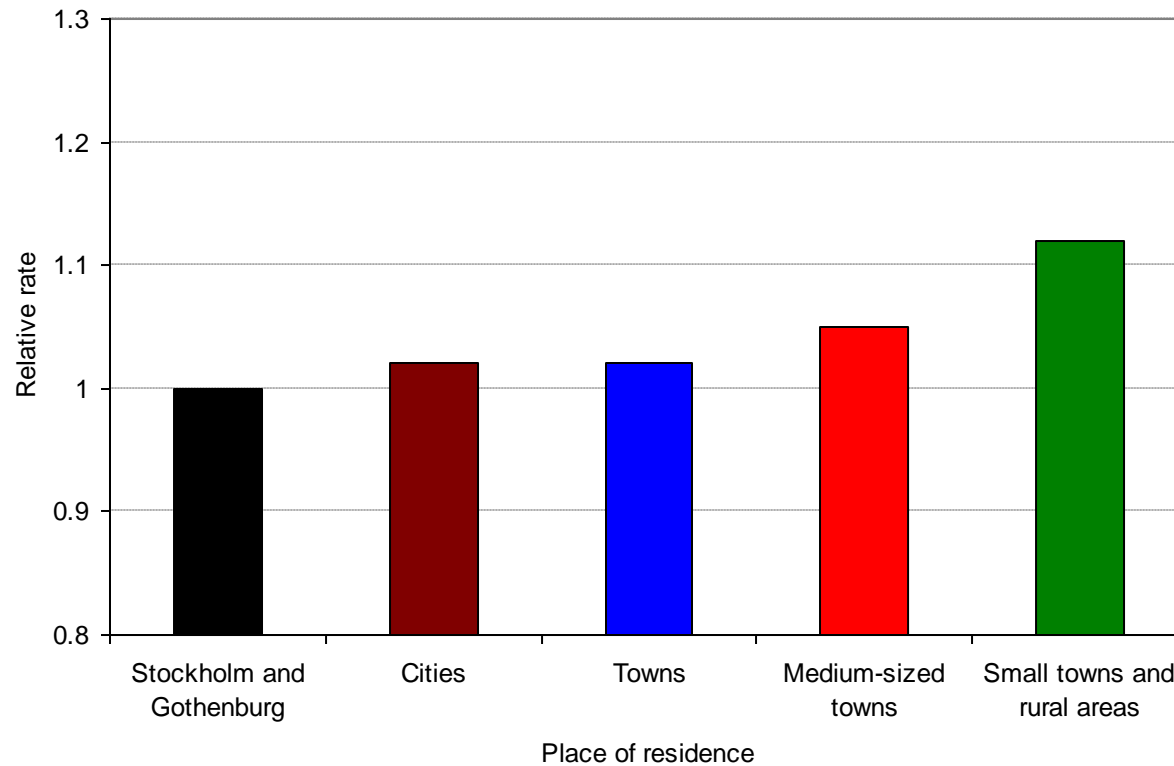
# Relative Rates of First Birth at Ages 30-45 by Place of Residence



Standardised for age of woman

Data: Population Register of Sweden, 1990-99

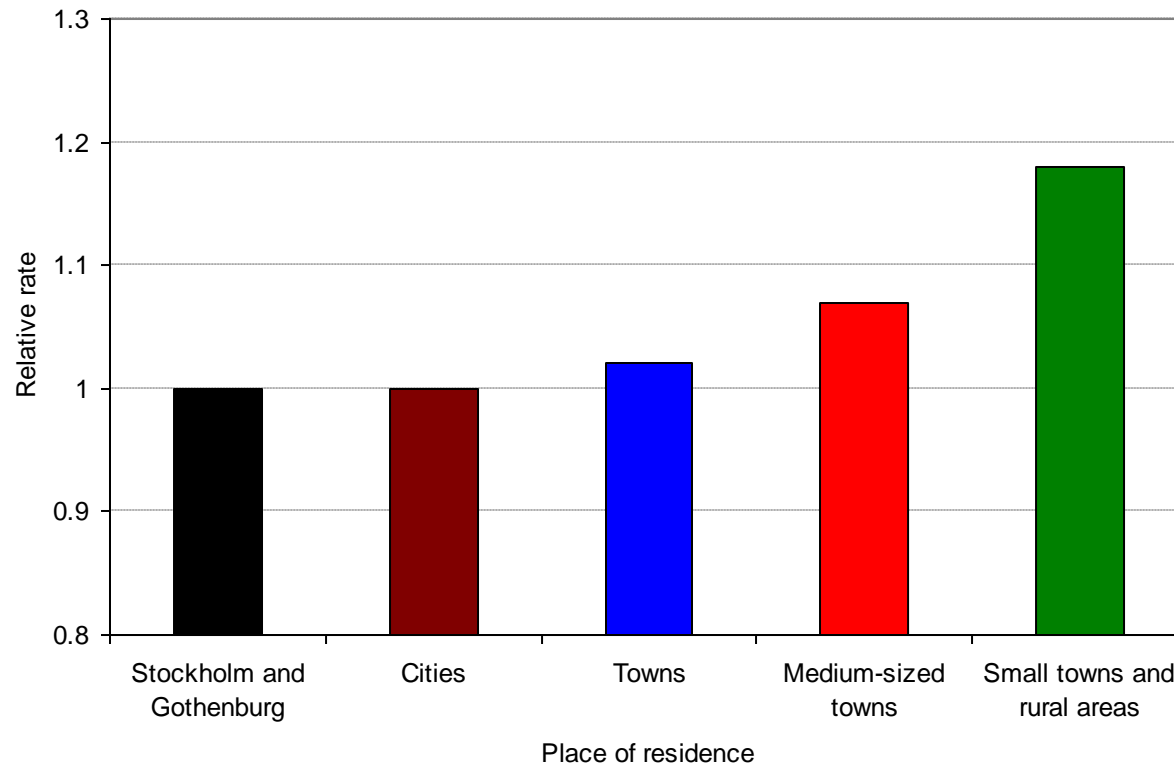
# Relative Rates of Second Birth by Place of Residence



Standardised for age of woman and age of the first child

Data: Population Register of Sweden, 1990-99

# Relative Rates of Third Birth by Place of Residence



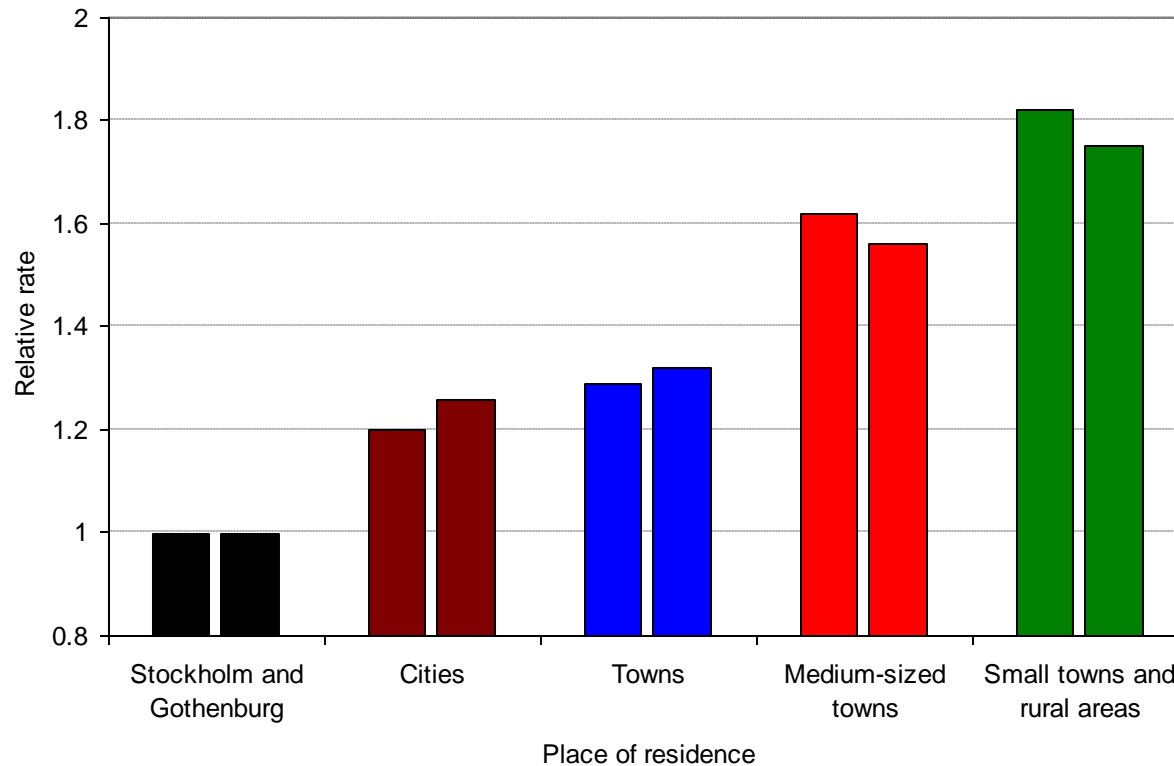
Standardised for age of woman and age of the second child

Data: Population Register of Sweden, 1990-99

# Summary

- A significant fertility variation across settlements in all four Nordic countries – the larger the settlement the lower fertility
- The variation in fertility has decreased over time, but significant differences between settlement types have persisted
- Sweden: All parity-specific fertility varies across settlements
- Do socio-economic characteristics of population account for fertility variation across settlements?

# Relative Rates of First Birth at Ages 15-29 by Place of Residence

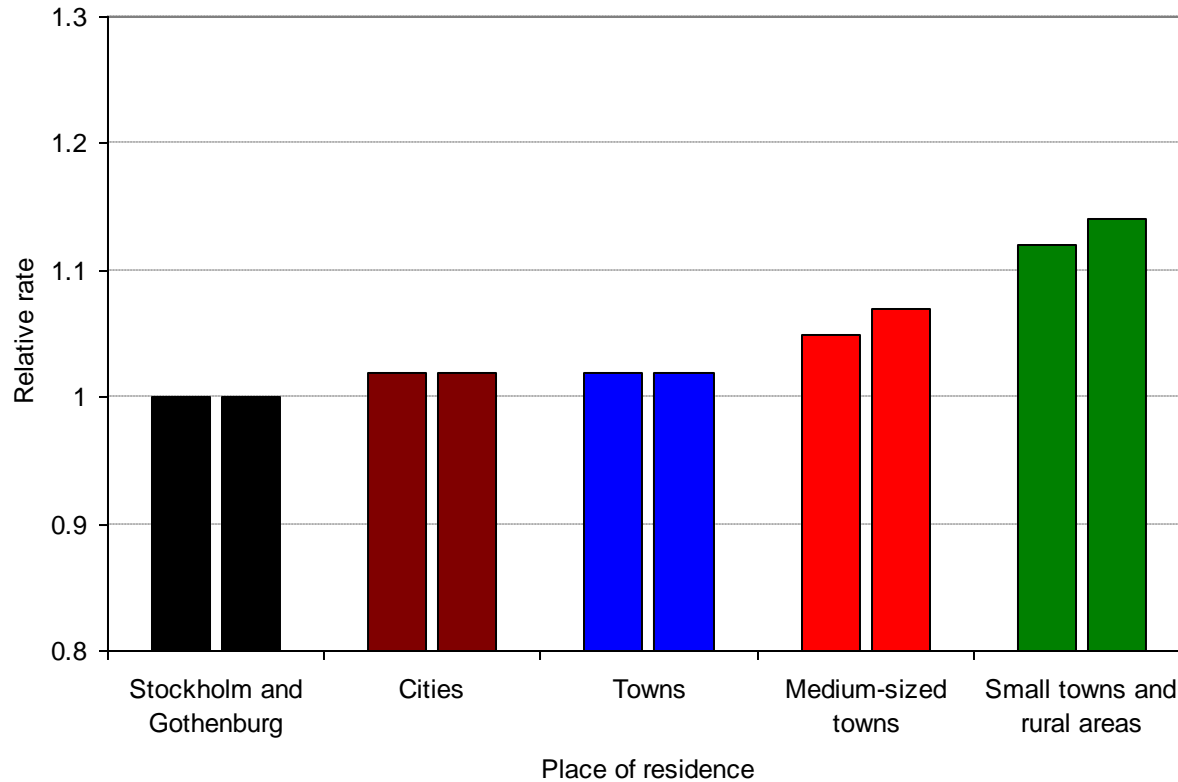


Model 1 (left): Standardised for age of woman

Model 2 (right): Additionally standardised for educational enrolment and attainment, and for earnings

Data: Population Register of Sweden, 1990-99

# Relative Rates of Second Birth by Place of Residence

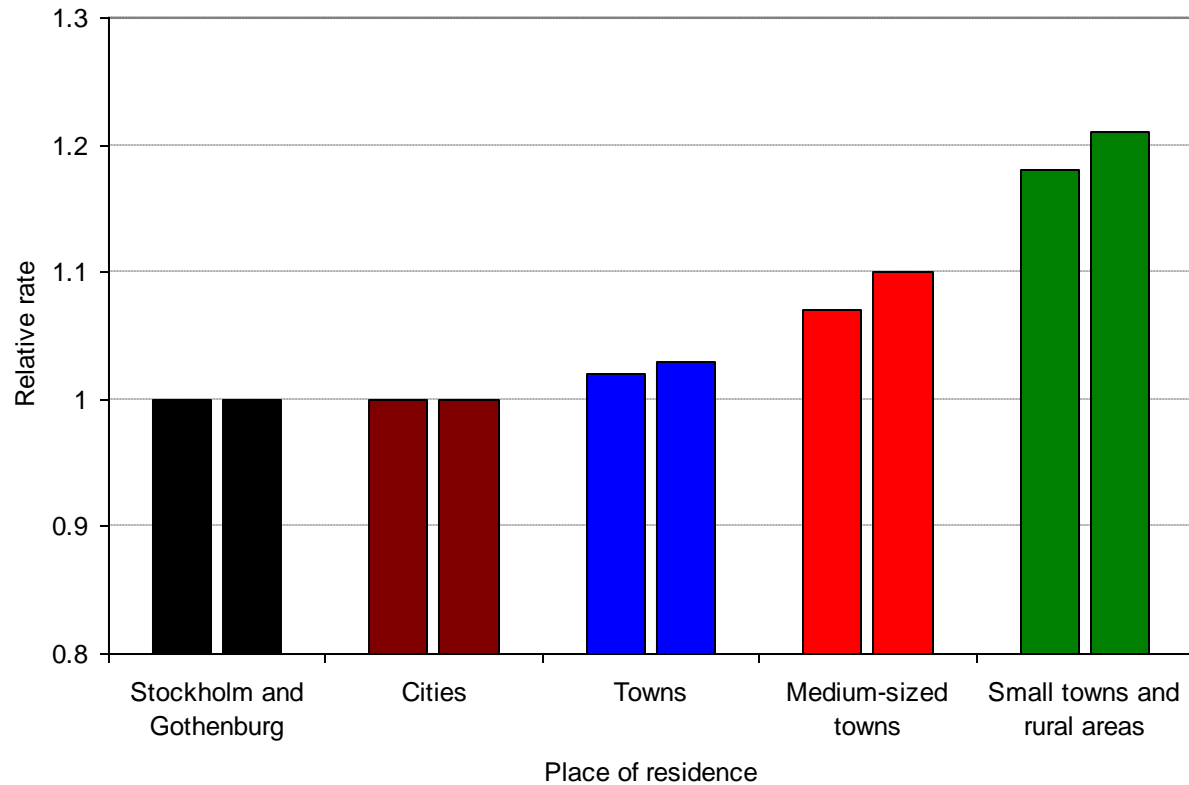


Model 1 (left): Standardised for age of woman and age of the first child

Model 2 (right): Additionally standardised for educational attainment

Data: Population Register of Sweden, 1990-99

# Relative Rates of Third Birth by Place of Residence



Model 1 (left): Standardised for age of woman and age of the second child

Model 2 (right): Additionally standardised for educational attainment

Data: Population Register of Sweden, 1990-99

# Compositional Effects?

- Sweden: Socioeconomic characteristics account only for a small part of fertility variation across settlements



# Selective Migrations?

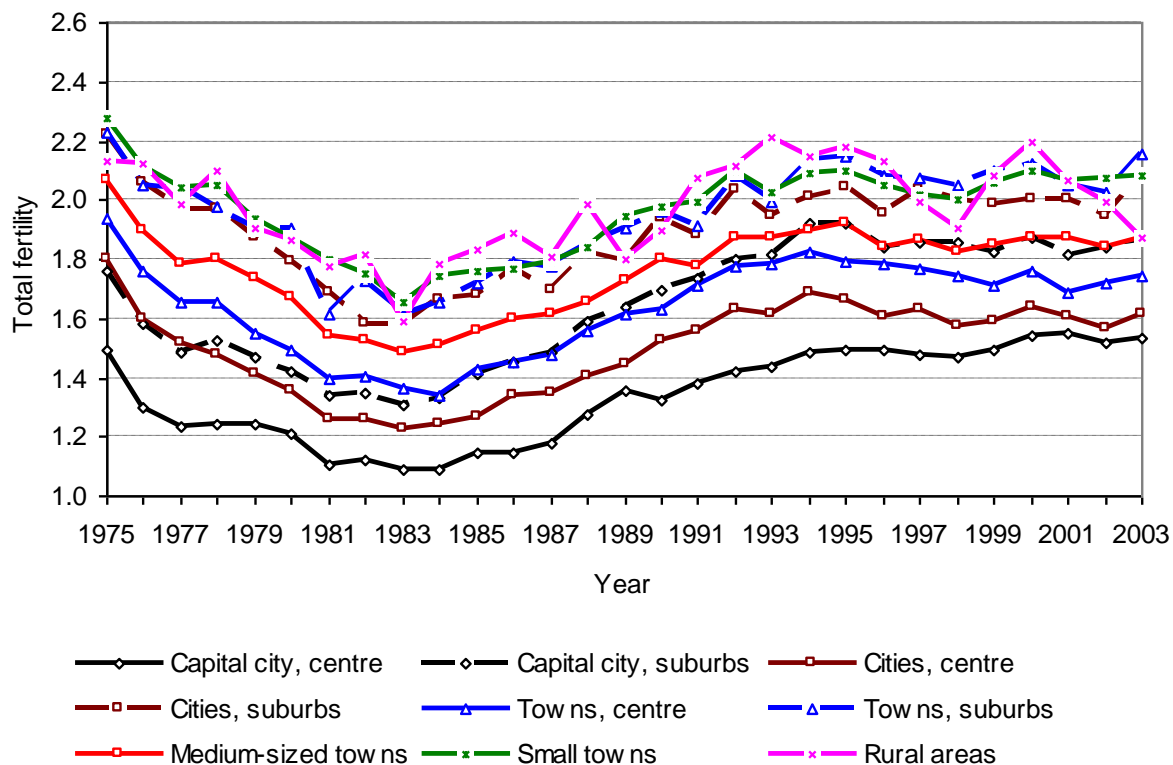
- Couples planning to have a child (or another child) may decide to move from urban to rural areas
- Finland: Couples who have moved from larger to smaller settlements have higher birth rates; however, the share of such migrants is small

Source: Kulu 2012, *Regional Studies*

# High Suburban Fertility?

- Fertility levels are high in rural areas and small towns
- The share of population living in (remote) rural areas and small towns is negligible (10-20%) in most European countries
- A return to the traditional rural society is not very likely
- Are there any 'modern' places where fertility is high?
- How about suburbs of the cities and towns?

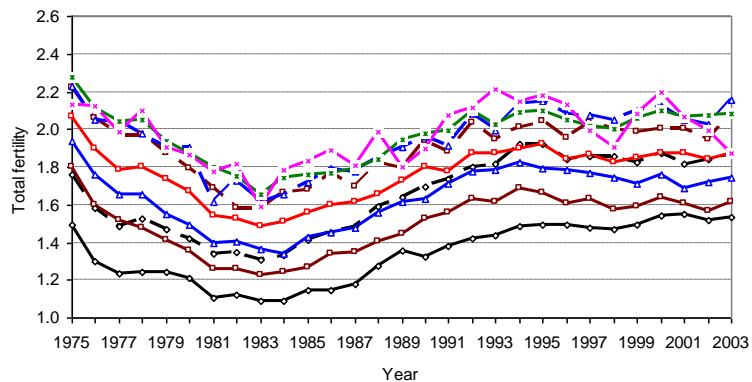
# Total Fertility (TFR) in Denmark by Place of Residence



Source: Kulu, Boyle and Andersson 2009, *Demographic Research*

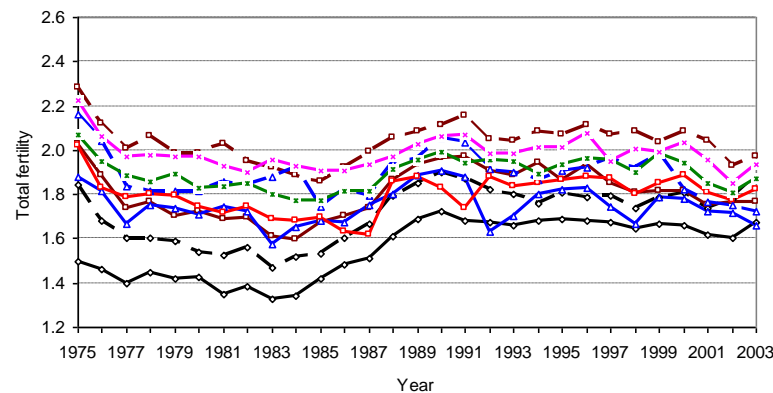
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## Denmark



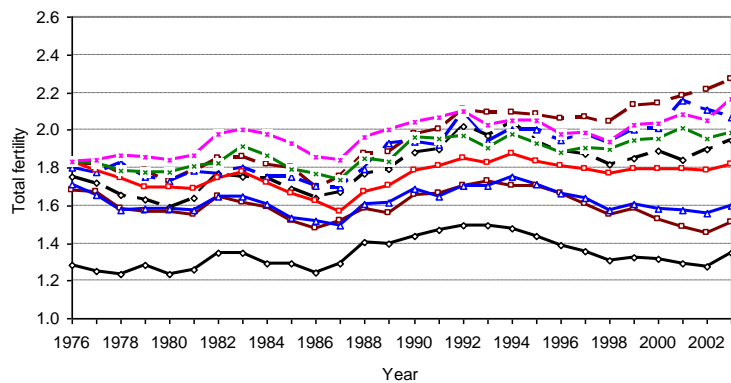
—◇— Capital city, centre    —◇— Capital city, suburbs    —◇— Cities, centre  
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## Norway



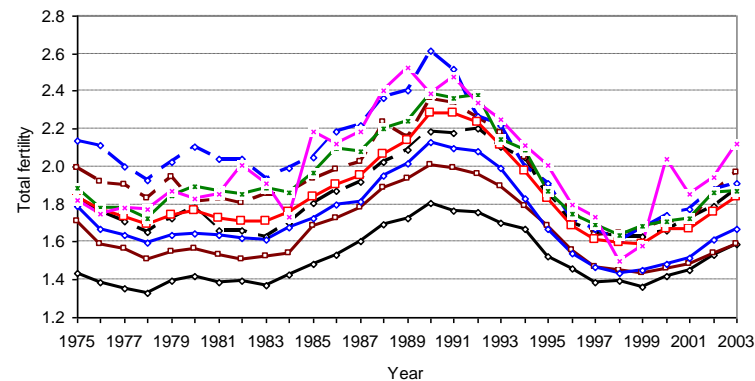
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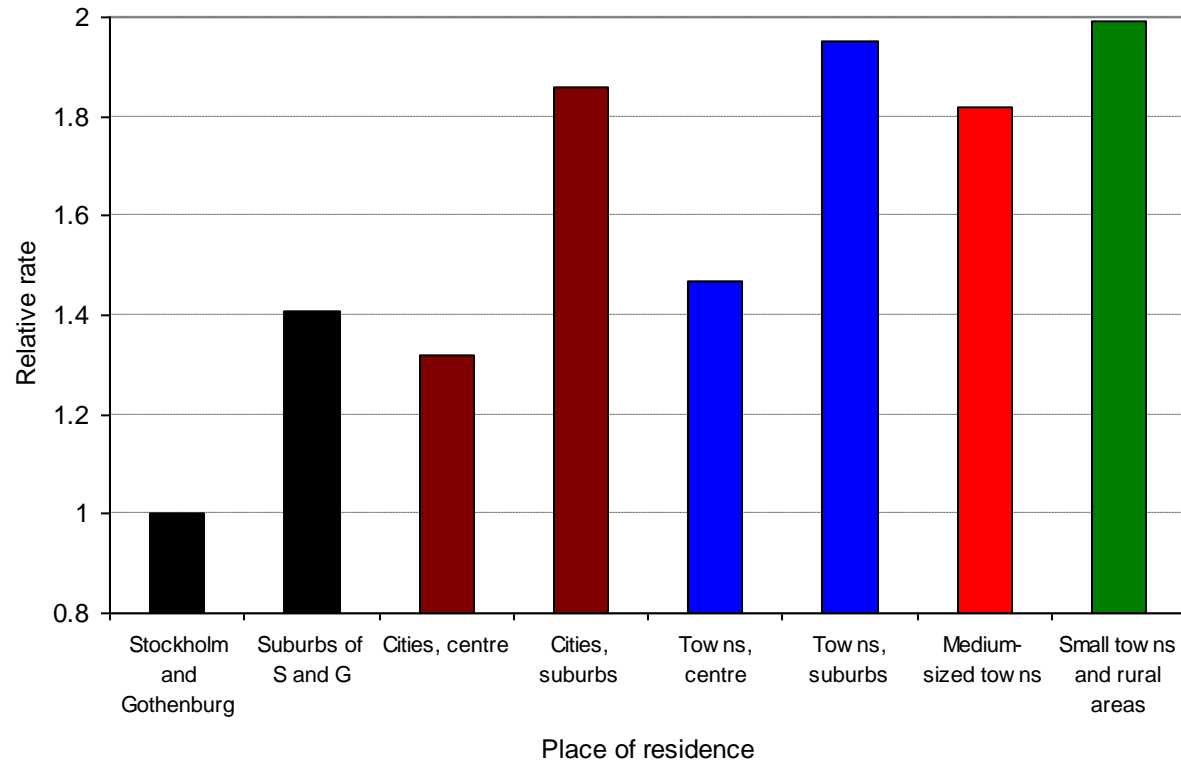
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## Sweden



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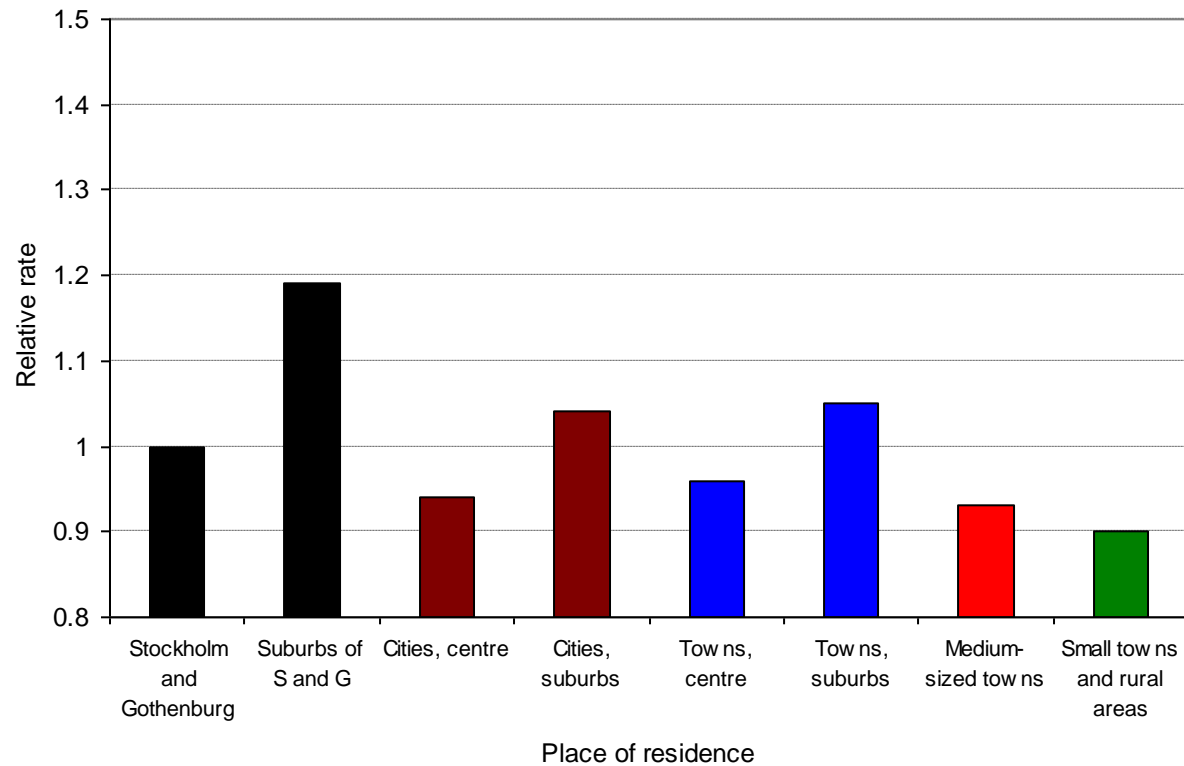
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Standardised for age of woman

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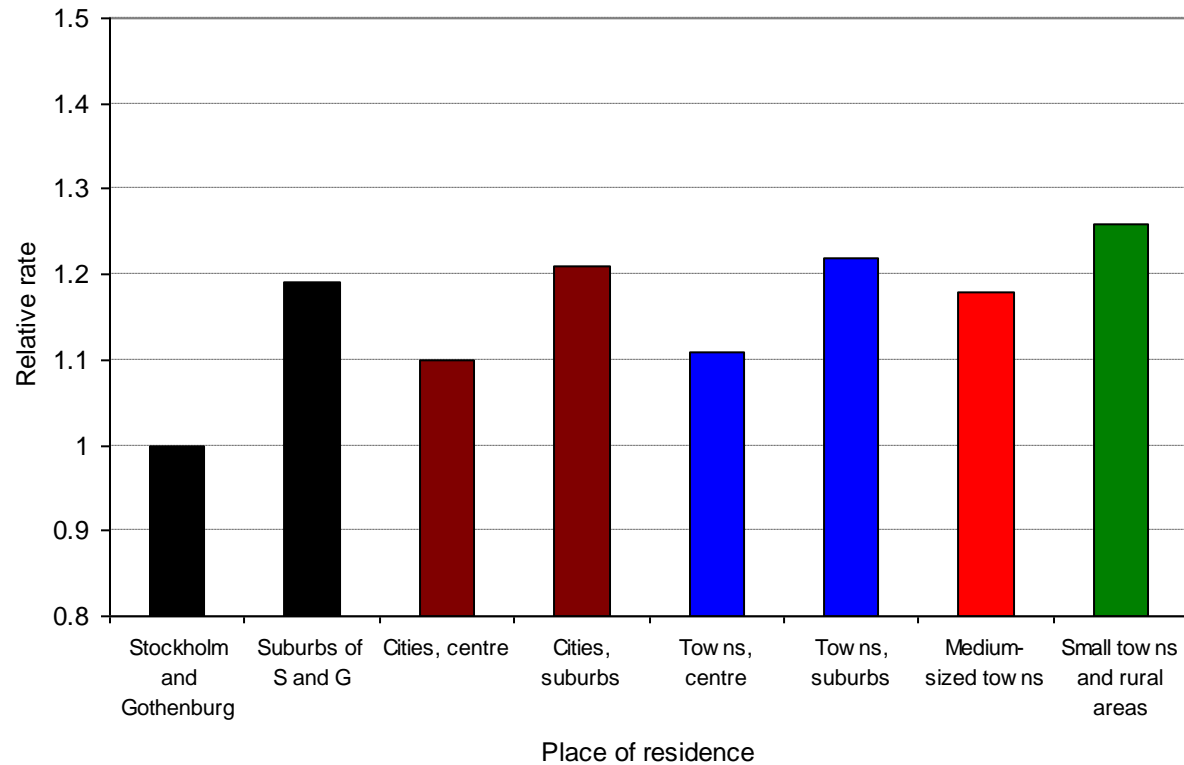
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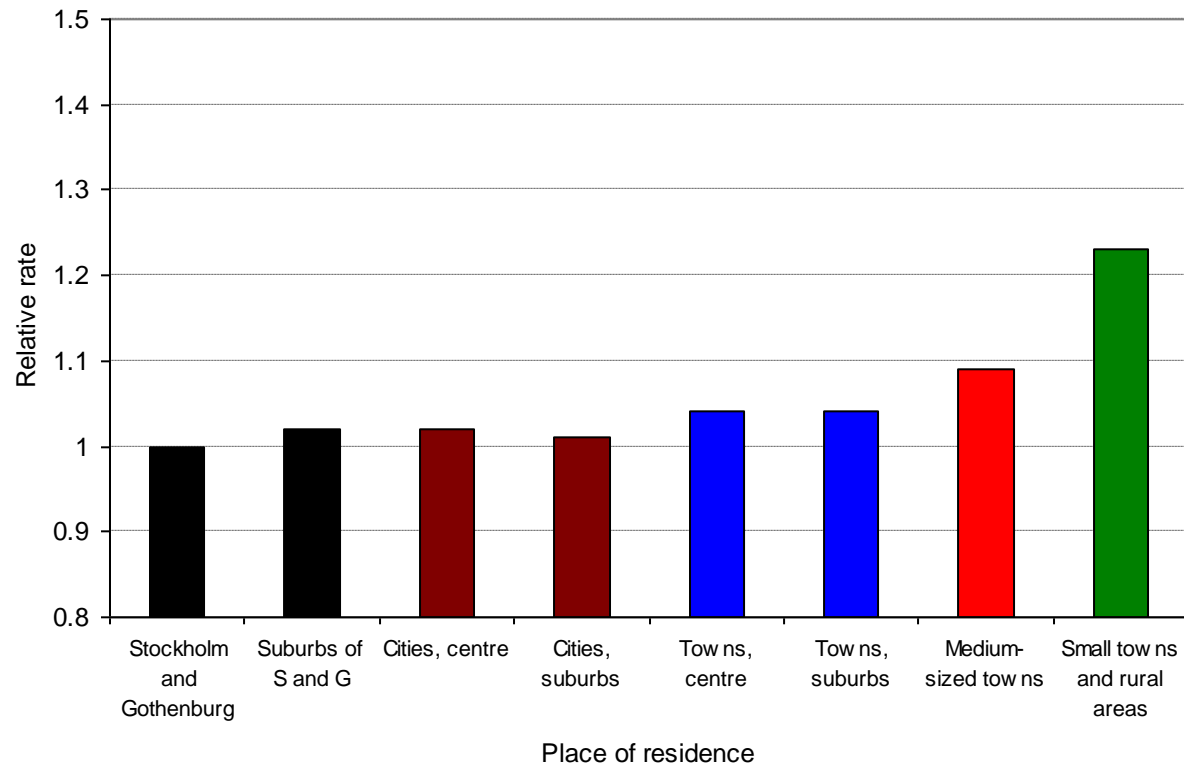
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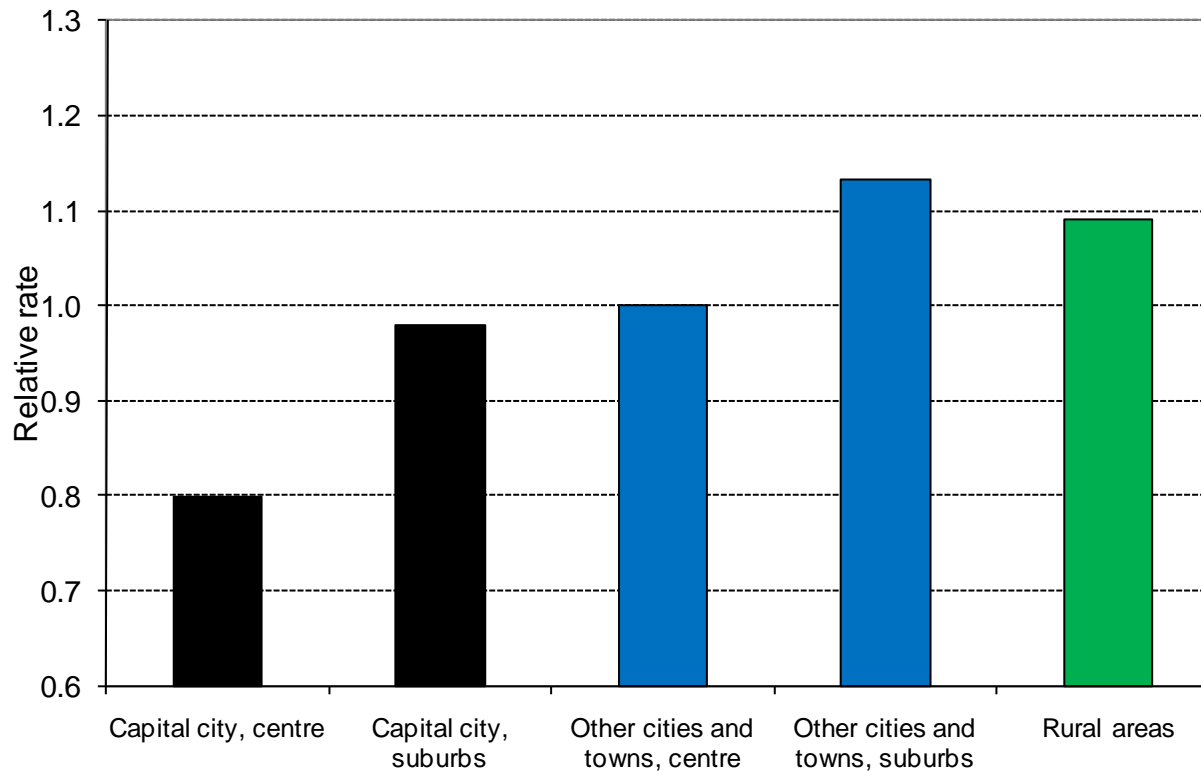
# Summary

- Fertility levels are significantly higher among women in suburbs than those living in urban centres; this pattern has persisted over a quarter of a century for all four countries
- Sweden: Much of the variation in total fertility between central cities and suburbs is attributed to relatively high first- and second-birth propensities in the suburbs
- Fertility variation between the central cities and suburbs persists after controlling for women's socio-economic characteristics

# Selective Residential Moves?

- Couples planning to have a child (or another child) may decide to move from central cities to suburbs

# Relative Rates of First Birth in Finland by Place of Residence

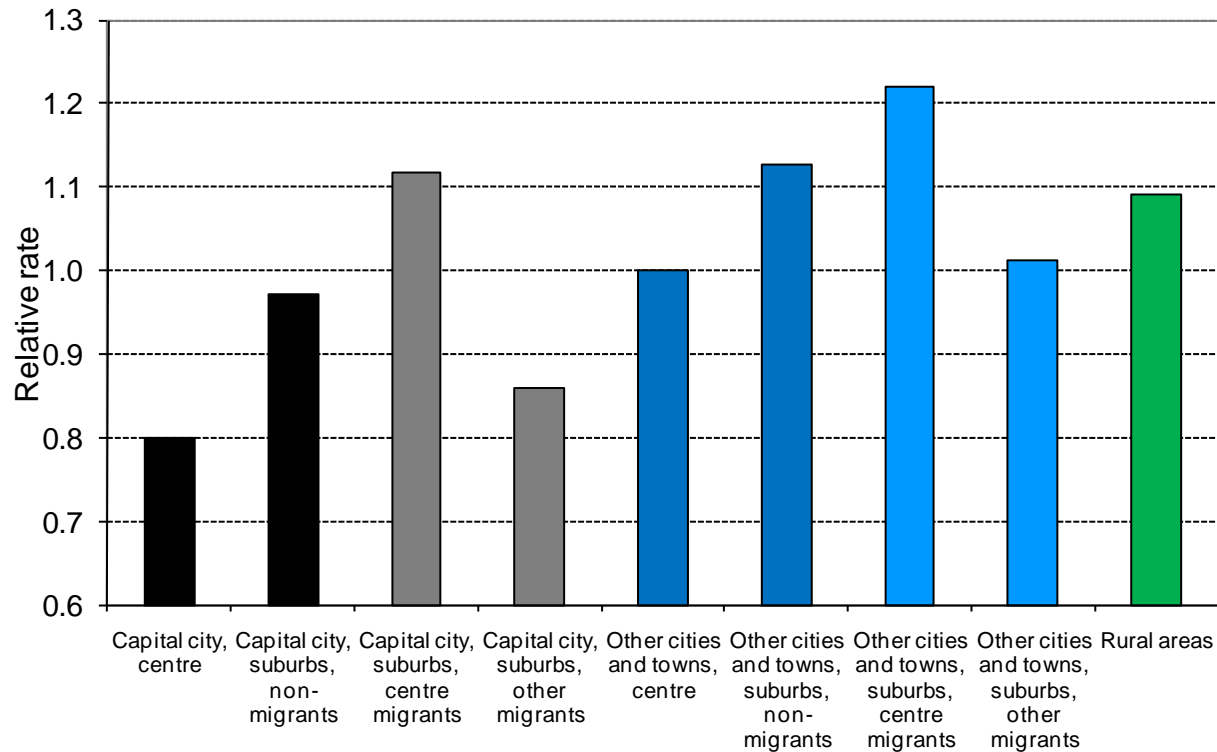


Standardised for age of woman, calendar time, language, educational enrolment and level, and earnings

Data: Finnish Longitudinal Fertility Register, 1988–2000

Source: Kulu and Boyle 2009, *European Journal of Population*

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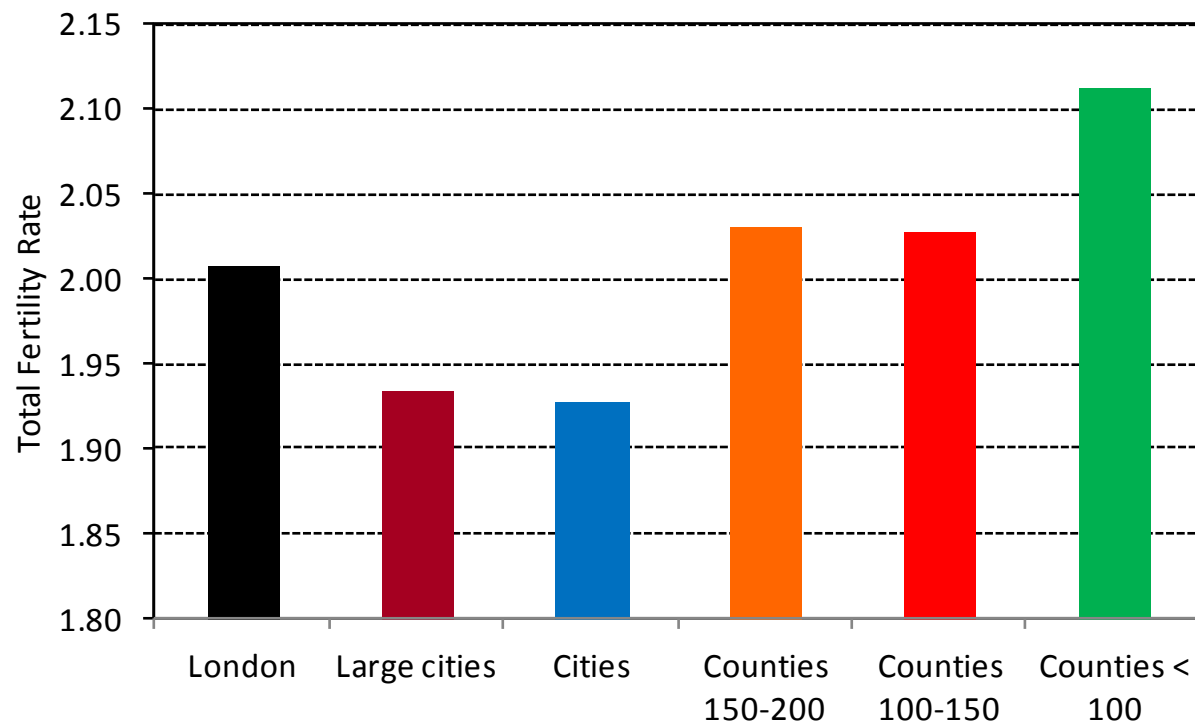
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# The Causes of Fertility Variation Across Space

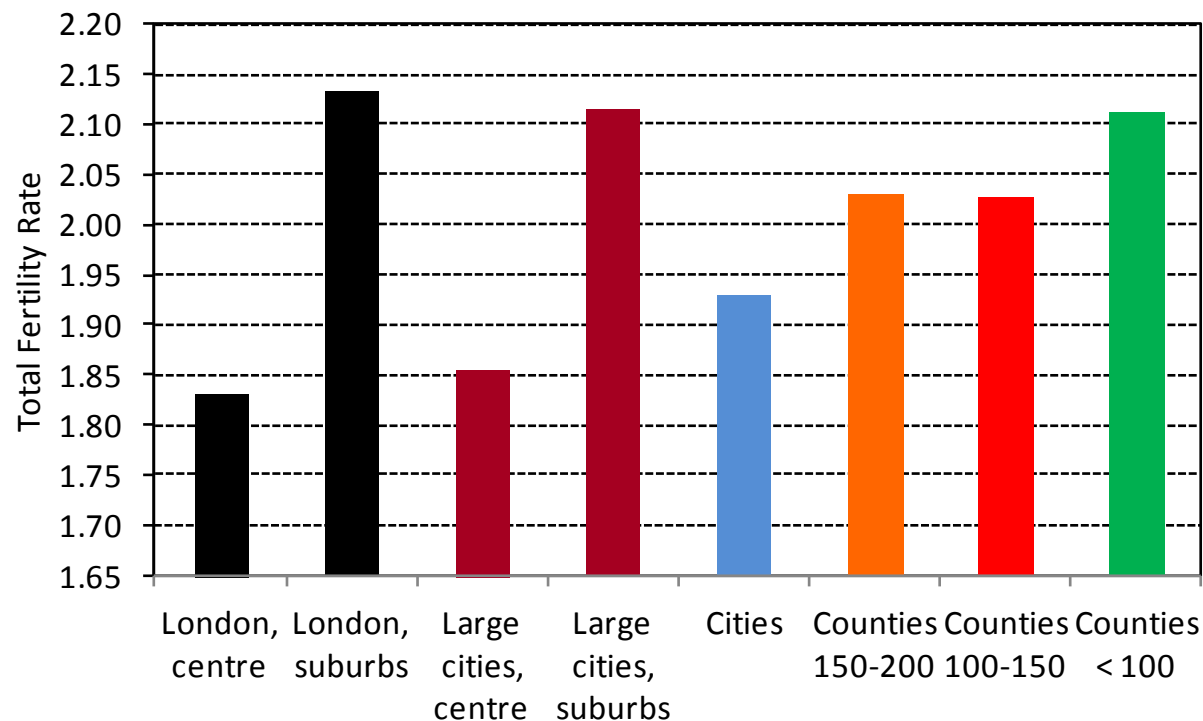
- Rural and small-town population is a sub-culture with a value orientation towards large families?
- Difficult to afford the 'proper' housing (and status) in large cities?
- Many families with children in rural areas and small towns and in suburbs of the cities?

# TFR in England and Wales by Place of Residence, 2010



Data: Live births and female population by local authority districts, Office of National Statistics, 2010

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**Thank you!**



# Literature

1. Kulu, H., Vikat, A. and Andersson, G. 2007. Settlement size and fertility in the Nordic countries. *Population Studies* 61:3, 1–21.
2. Kulu, H., Boyle, P. J. and Andersson, G. 2009. High fertility in city suburbs: evidence from four Northern European countries. *Demographic Research* 21:31, 915–944.
3. Kulu, H. and Boyle, P. J. 2009. High fertility in city suburbs: compositional or contextual effects? *European Journal of Population* 25:2, 157–174.
4. Kulu, H. 2012. Why do fertility levels vary between urban and rural areas? *Regional Studies* (advanced online publication).