

# Effects of day care on long run child and mother outcomes

Paul Bingley (SFI)

Vibeke Myrup Jensen (SFI)

Sarah Sander Nielsen (SFI & KU econ.)

# Background & Motivation

- In many countries, a growing % of children are being cared for while their parents work
- Most OECD children under 6 in day care now
- Denmark institutionalized childhood early
- Fortunately, day care expanded differentially
- First exposed cohorts are now aged 30-50
- This is a follow-up study of schooling & earnings

# Outline

- Aim: Want to learn about long run effects of day care availability in Denmark
- What we know from elsewhere – US, Norway
- Danish 1964 day care act – history & roll-out
- Individual administrative records & yearbooks
- Outcomes: offspring schooling, earnings @35; maternal employment & earnings @4 @13
- Which mothers respond & offspring benefit
- Reality checks, perspective & summary

# Early childhood programs – what is known about subsequent outcomes?

- Program types: Targeted vs. Universal
- Study types: Short run vs. Long run follow-up
- Disadvantaged children benefit from access to quality early childhood programs
  - Plenty of evidence of short-run gains
  - Perry Preschool and Abecedarian participants show long run gains (representativeness contested)
- Universal (non-targeted) childhood programs
  - Short-run evidence mixed
  - Long run evidence sparse (US, Norway, *now Denmark*)

# Herbst (2015)

- United States 1943-46 Lanham Act
- Federal works for war-critical infrastructure – included temporary child care as war expedient – agriculture & war-related industry
- Maternal work requirement, not income-related
- Cost \$10 parent + \$20 state per day ages 0-12(6)
- Uses variation in state-level spending & census
- Maternal employment ↑28%
- Offspring high school, college & earnings ↑0.6%
- Earnings squeeze: bottom quartile ↑, top quartile ↓

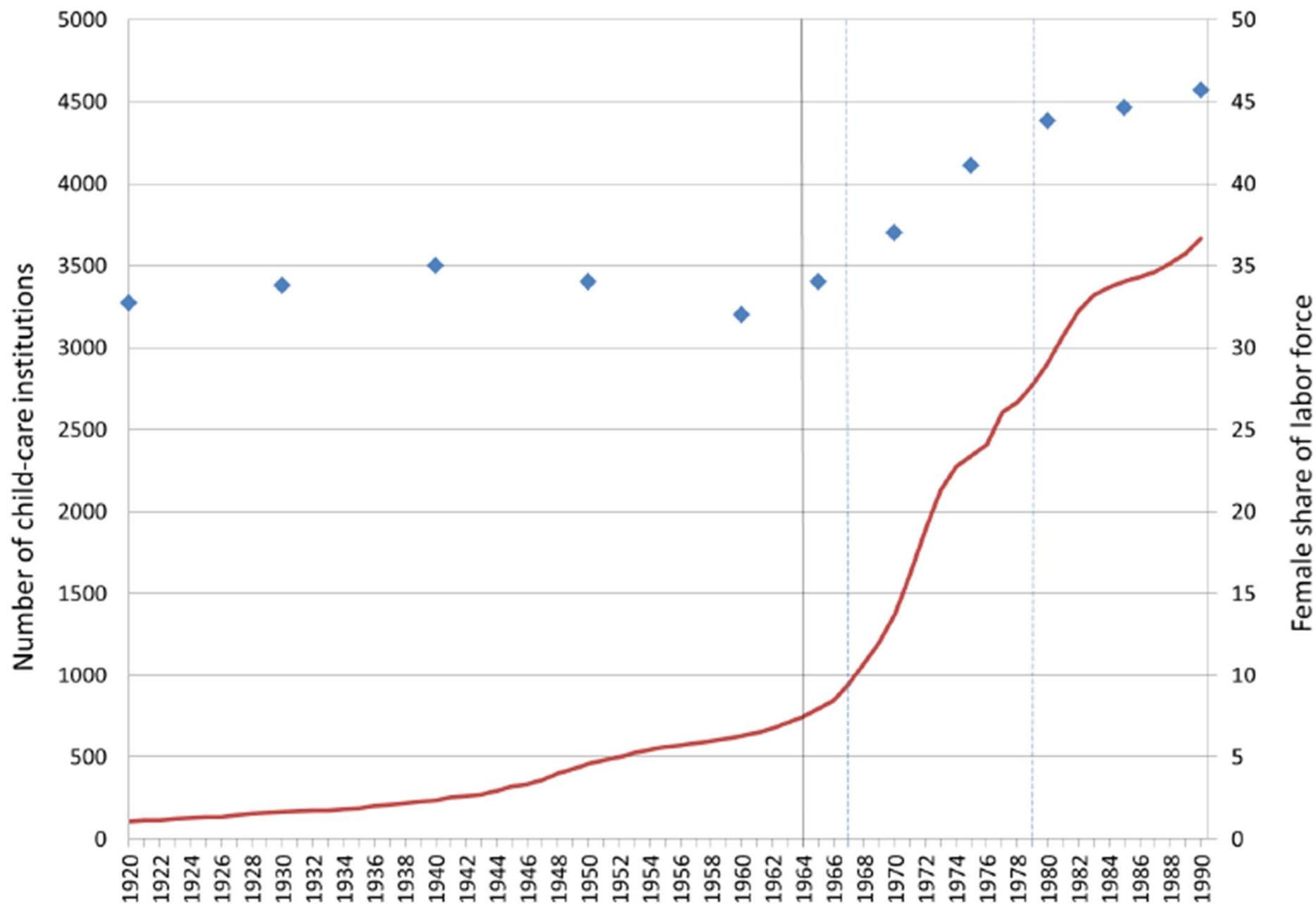
# Havnes & Mogstad (2011)

- Norway 1976 day care reform act
- 1967-76 cohorts exposed 1976-79 age 3-6
- Uses high/low day care municipalities
- Offspring outcomes
  - College ↑6%, high school ↑5%
  - Earnings: bottom quartile ↑4%, top quartile ↓2%
- No maternal employment effect
- Largest effects for girls of mothers without high school degree

# Day care in Denmark

- 1919 small day care subsidies introduced
- 1933 larger subsidy if 2/3 children in poverty
- 1953 licensing of pedagogues (1+1)
- 1964 equalize subsidies & change from social to pedagogical orientation
- 1966 building stop abolished
  - State paid for building
  - Running costs split 40/30/30 state/muni/parents
  - Expansion began

Figure 1: Formal child-care institutions and female share of labor force



# Number of day care places

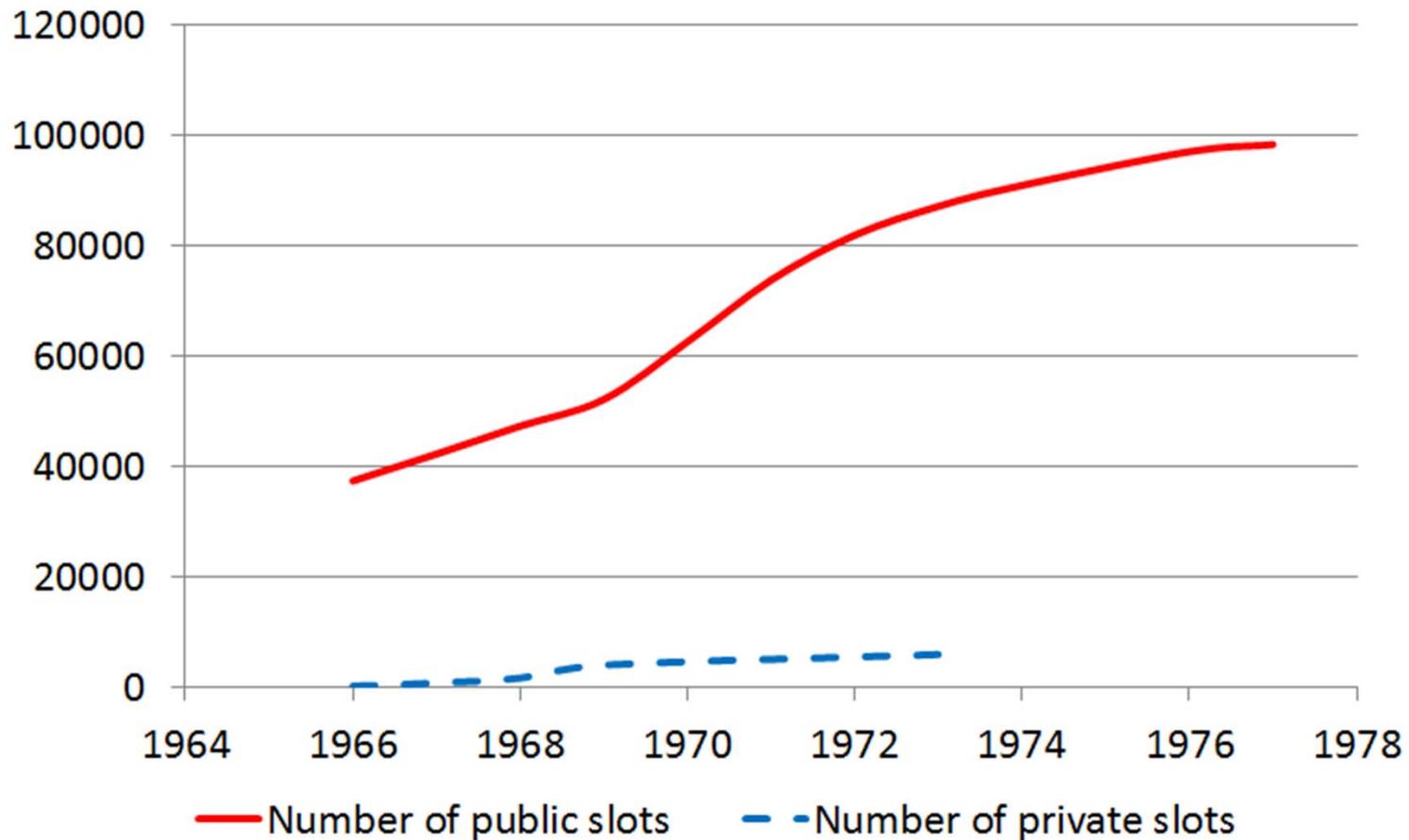
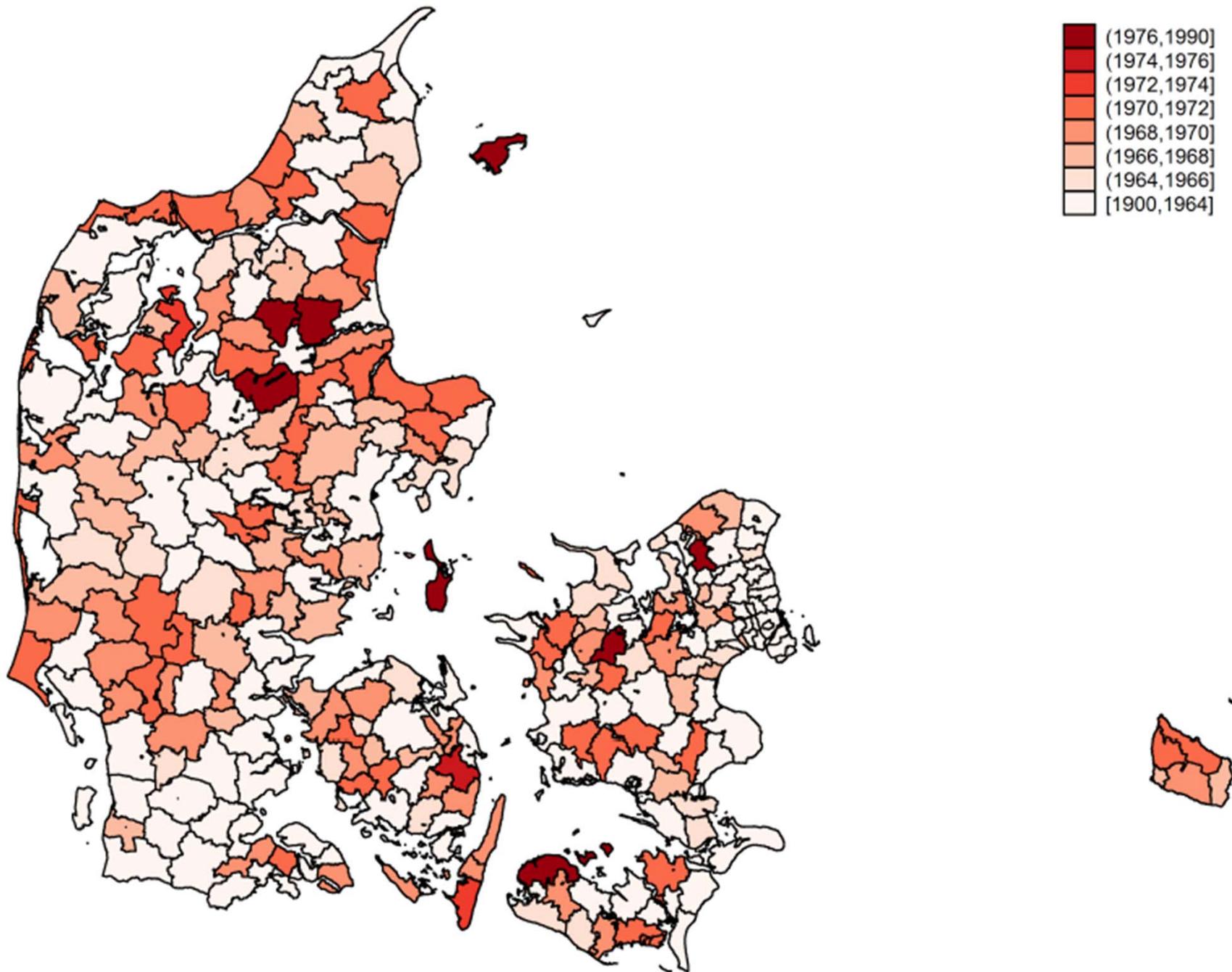


Figure 2: Child-care openings



# Data Construction

- Select ***child birth cohorts 1963-75***
  - Condition on alive & resident at age 35
- ***Parish of birth*** registration
  - Not necessarily mother's house & immobility before 4
- Municipality of day care from 1966
  - Digitized ***day care yearbooks***
  - Existence not attendance
  - Municipality re-grouping 1200 -> 276 in 1970
  - Daycare institution registration change in 1976
- Parent-child link
  - Parish records, census & medical birth register from 1955
- Maternal work from ATP (mandatory pension contributions)
  - From 1964 in 10-19, 20-29, 30+ weekly hours -> annual sums
- Other outcomes are from standard ***administrative records***
- ***725,115 children & 376,454 mothers***

# Description of day care roll-out

- Parents observed when offspring 3
- Offspring observed age 35
- Day care comes to municipality later...
  - Mothers have less employment, especially FT
  - Bigger families
  - Fathers less schooling & more unemployment
  - Offspring lower schooling especially university
  - Offspring lower earnings, more low, less high quartile
- Evaluation requires roll-out “as-good-as random”
  - Use a statistical trick & allow municipal trends

# Offspring outcomes @ 35

- Schooling attainment increased
  - Years of education  $\uparrow 0.057$  years (3 weeks)
  - University graduation  $\uparrow 2.8\%$  (base is 32%)
  - High school graduation  $\uparrow 0.8\%$  (base is 78%)
- Earnings increased (but not compressed)
  - Earnings  $\uparrow 1.3\%$  ( $\uparrow 1.0\%$  ages 30-45)
  - Probability of lowest quartile earnings  $\downarrow 3.6\%$
  - Probability of highest quartile earnings  $\uparrow 1.6\%$
- Suggests effect does not all run through schooling

# Maternal outcomes @4 @13

- When offspring age 4, employment increased
  - Employment ↑12.6% (the base is 42%)
  - Full-time employment ↑12.4% (the base is 12%)
- Suggests care mode: maternal→institutional
  
- When offspring age 13, earnings increased
  - Maternal earnings ↑3.8%
  - Household earnings ↑10.2%
- Suggests mechanism: via household resources

# Which offspring benefit?

- Split offspring outcomes by maternal schooling & offspring gender
  - Driven by mothers with high school & college degrees
  - Effects are found ONLY for boys, NOT for girls
  - ↑ effects for boys as mother schooling ↑
- Contrary to Norwegian findings

# Which mothers respond?

- Split maternal outcomes by maternal schooling & offspring gender
  - Employment effects positive: basic > high school > college
  - Similar response by offspring gender, except...
  - for college mothers, employment ↑ only for mothers of boys, not girls
- Suggests substitution from informal (non-maternal) to institutional day care for college mothers who were already working

# Reality checks

- Balancing – as good as random (with trends)
- Placebo – hypothetical counterfactuals way off
- Birth spacing – big effects >4 years, last & only
- Exposure age – offspring earnings higher later
- Urbanicity – a rural phenomenon, recall map

# Denmark vs. US & Norway

- Smaller offspring schooling effects in DK vs. NO
- Offspring earnings distribution - Denmark ↑  
contra US & Norway earnings equalized
- Offspring effects by gender – Denmark only boys,  
Norway mostly girls
- Offspring effects by maternal schooling –  
Denmark effects ↑ with mother schooling ↑,  
contra Norway
- Maternal employment @ 4 @ 13 Denmark ↑

# Summary of findings

- Offspring long run schooling & earnings benefits
  - Day care itself & via increased household resources
- Response gradient by maternal schooling
  - Less maternal employment response
  - Greater offspring benefits
  - Suggests move from informal (non-maternal) to institutional care most beneficial
- Boys benefit but girls do not (measurably)
  - Consistent with Danish 1995 follow-up SR findings
  - But why only boys? Especially in contrast to Norway