The Role of SES in Producing Sex Differences in HLE in the US, 1972+

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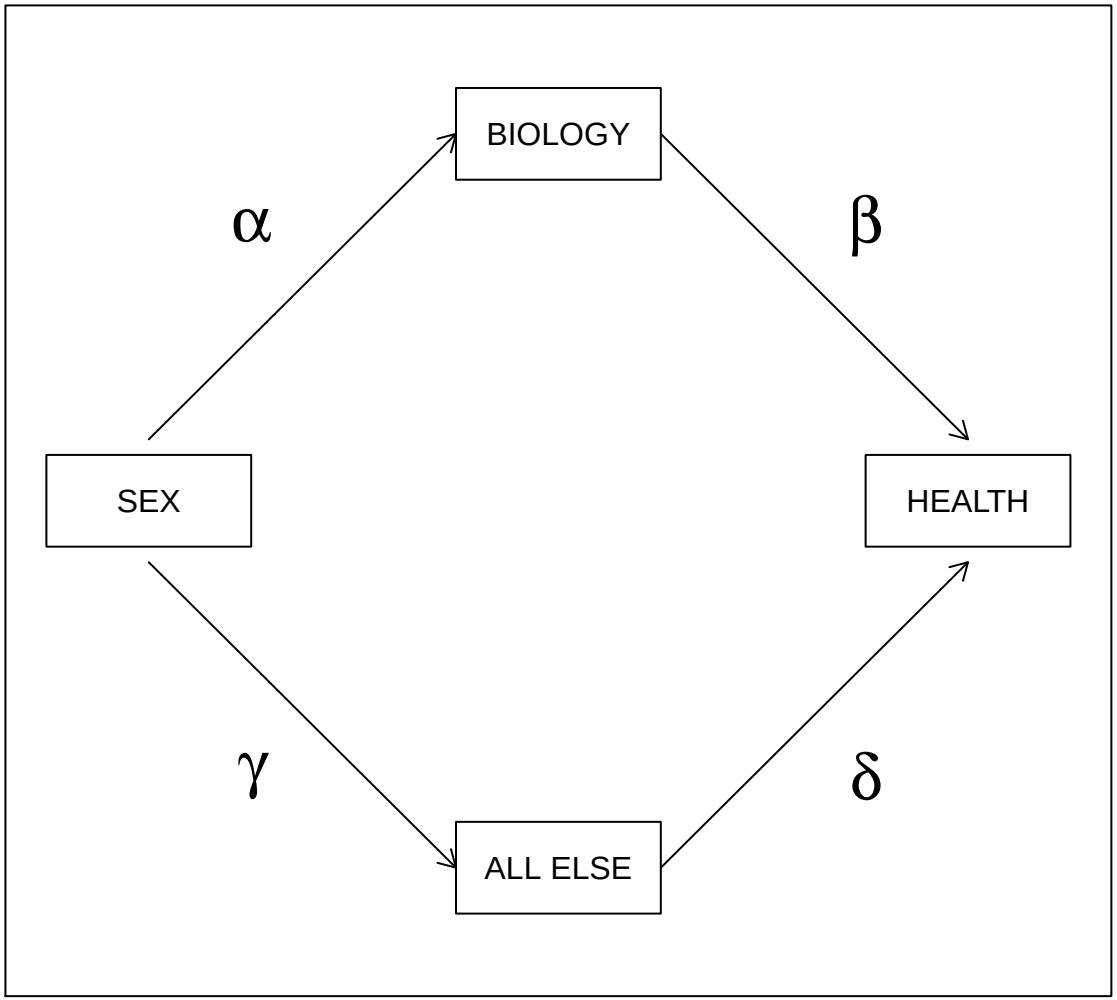
Introduction

- Gender differences in health & mortality are well-known
- Women live longer—consistently 5-7 years
- Women evidence poorer health
- Women get sick; men die
- Question: Is this biological?

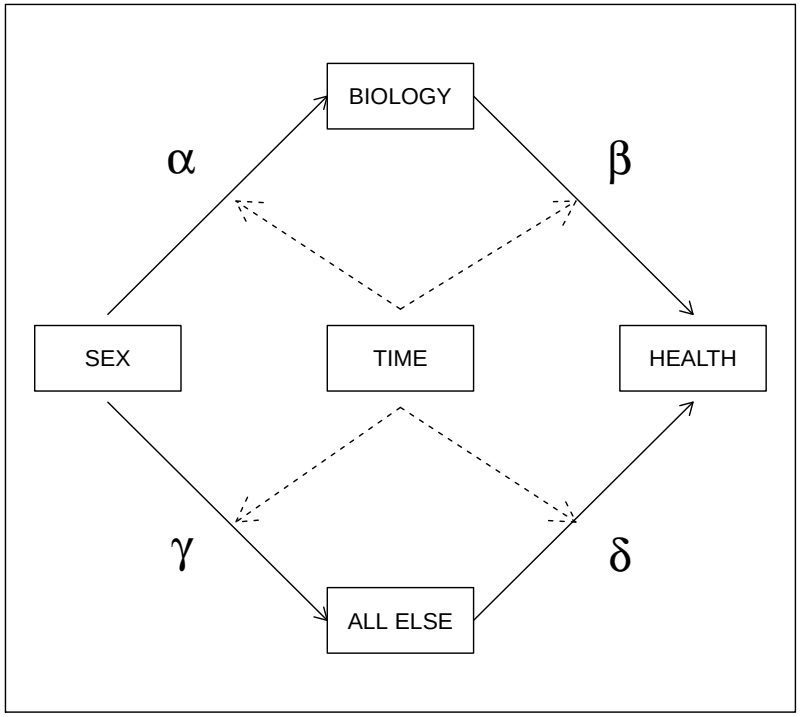
How to disentangle Biology and Else?

- Explain away sex differences via other mediators (e.g., Verbrugge 1984)
- Sex differences in health can be explained via social factors
- Sex differences in mortality remain, but men tend to have fatal diseases

Usual Conceptualization



Problem



- α
  1. Y chromosome is constant
  2. Across age, hormones not
- β
  1. Epidemiologic transition
  2. Aging (conditional on survival)
- γ
  1. SES improvement over time for women
  2. Parental role strain change over age?
- δ
  1. Increased importance of SES across age
  2. Increased importance of SES across time

Today

- Consider HLE from the early 70s to early 00s
- How does HLE change over time for men and women?
- How does the explanatory role of SES change over time?

Data

- National Health Interview Survey 1972-2002
- NCHS life tables by age, sex, & race (q_x)
- $15,000 < n < 40,000$ each year
- Measures
  - Age: 30-84+
  - Sex: Male (38%); Female (62%)
  - Race: Black (12%); White (88%) (else excluded)
  - Region: South (32%); Other (68)
  - Years of Schooling: $\bar{x} = 11.9$, $s = 3.3$
  - Income (Family; $\ln(2008)$): $\bar{x} = 10.54$; $s = .79$ (48k/28k))

Health Measurement

- Dichotomized SRH (E/VG/G vs. F/P)
- Only consistently measured health status item in NHIS
- Good measure (valid/reliable)
- But, may be gender differences in response

Methods

- Cross-sectional multistate life tables (Lynch & Brown 2010)
  1. Merge mortality rate/prob. data into NHIS file by ASR
  2. Set up bivariate probit with SRH and mortality risk as outcomes
  3. Gibbs sample to obtain m sets of model parameters
  4. $\forall m$, generate sets of age-specific prevalence matrices
  5. Use ecological inference to convert prevalence to transition probabilities
  6. Given TPM, generate life tables for desired covariate profile

Strategy for Answering Question

- Estimate MSLT for males (at male SES values)
- Estimate MSLT for females (at female SES values)
- Estimate MSLT for females (at male SES values)
- Compute:

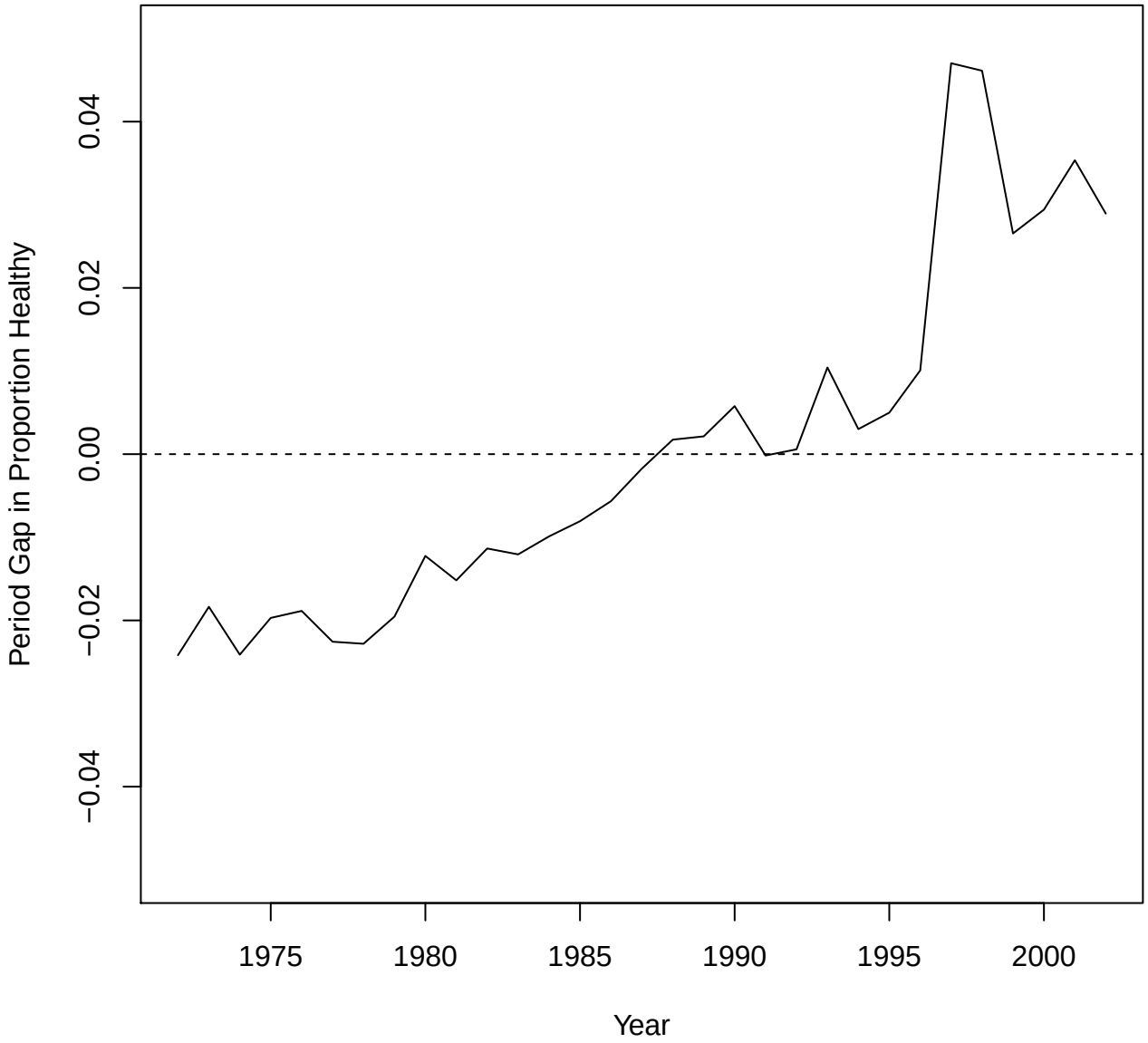
$$P_t = \frac{HLE_{MM} - HLE_{FM}}{HLE_{MM} - HLE_{FF}}$$

- Evaluate $P_{t=0} \ldots P_{t=T}$ for change
- Note: computation assumes $HLE_F < HLE_{FM} < HLE_M$. If not, P_t unrestricted.

Results: Period Health Patterns

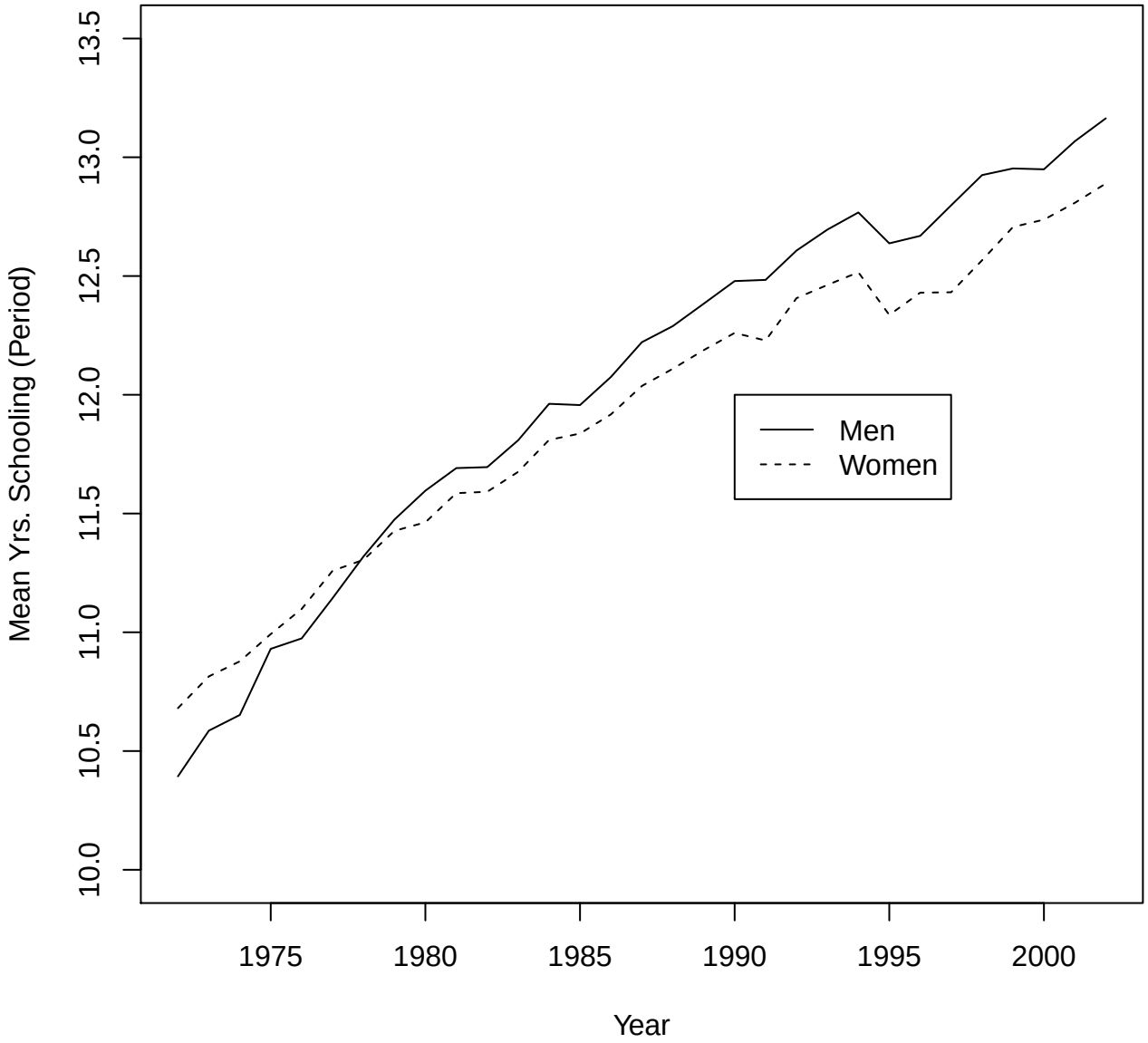
Male and Female Health by Year

Period Health Gap

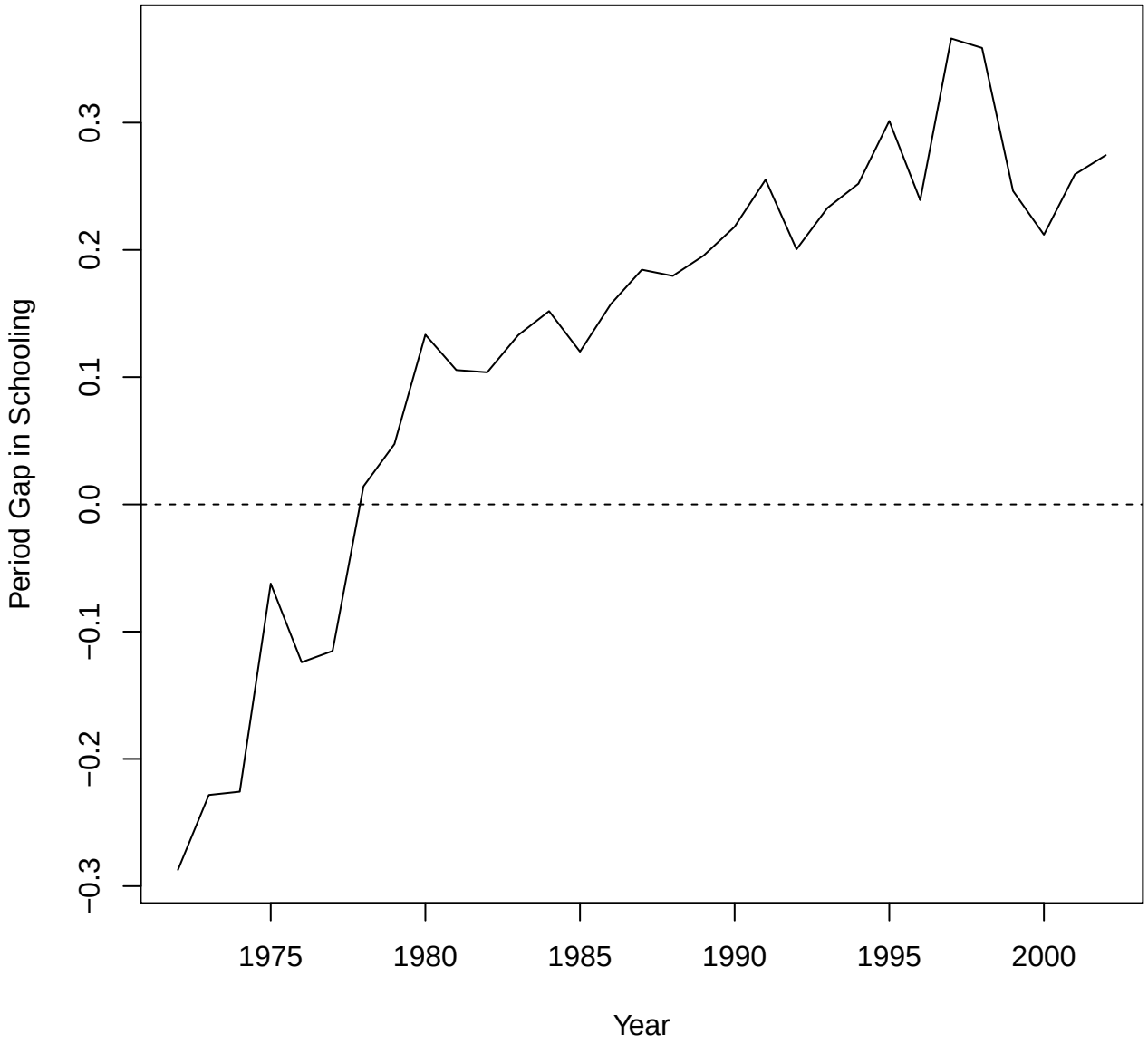


Results: Period Education Patterns

Male and Female Mean Education by Year



Period Education Gap



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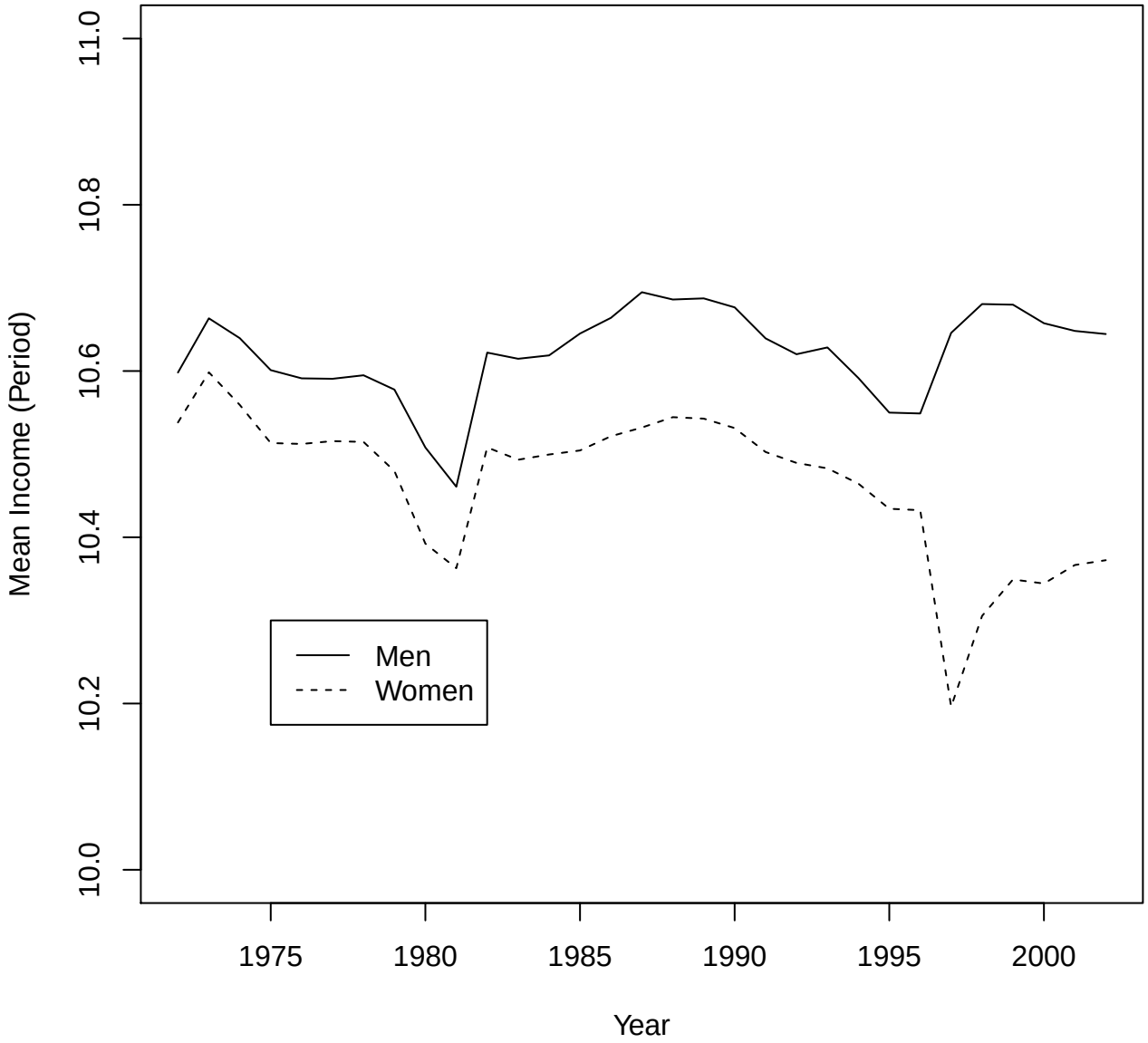
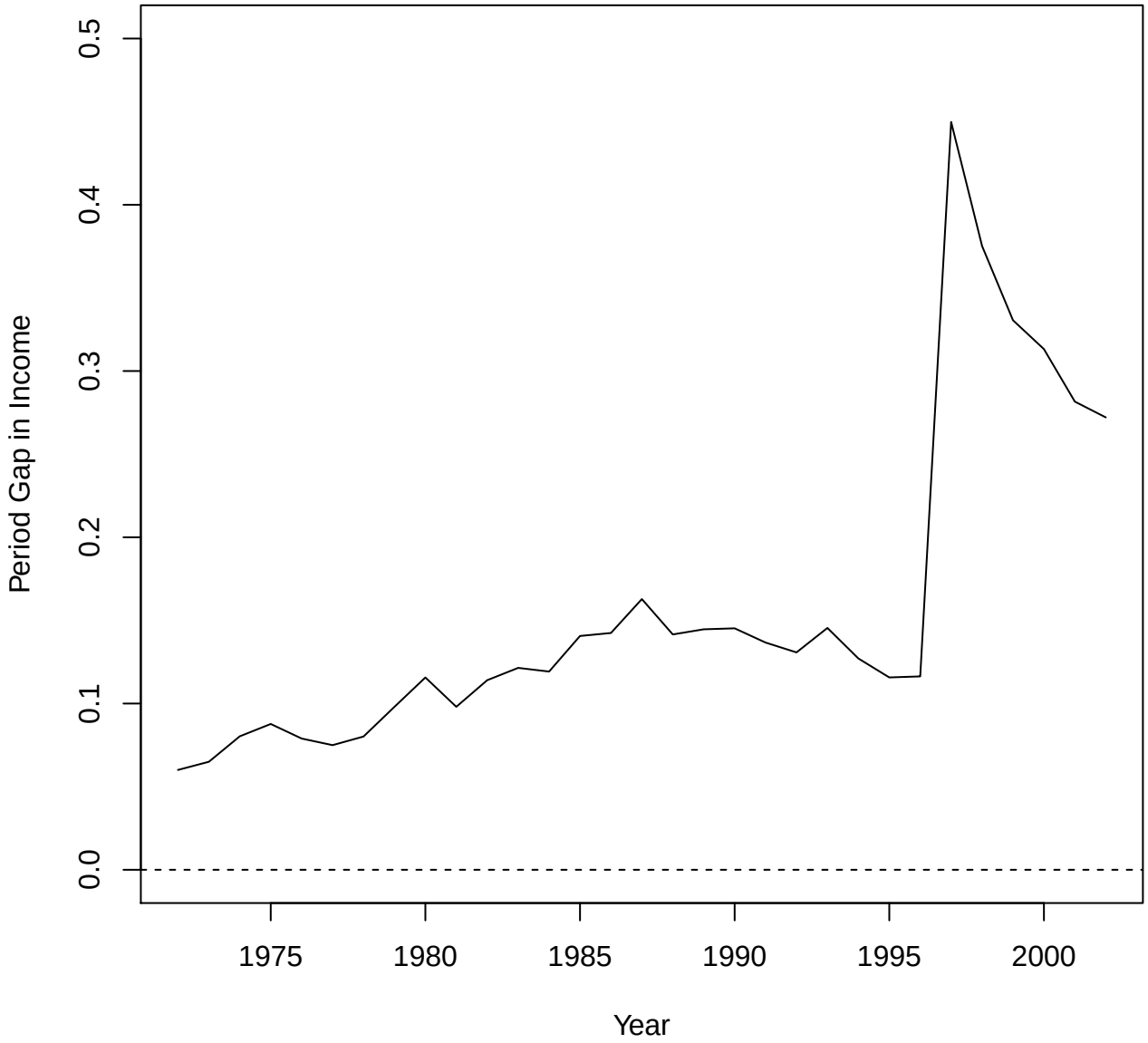
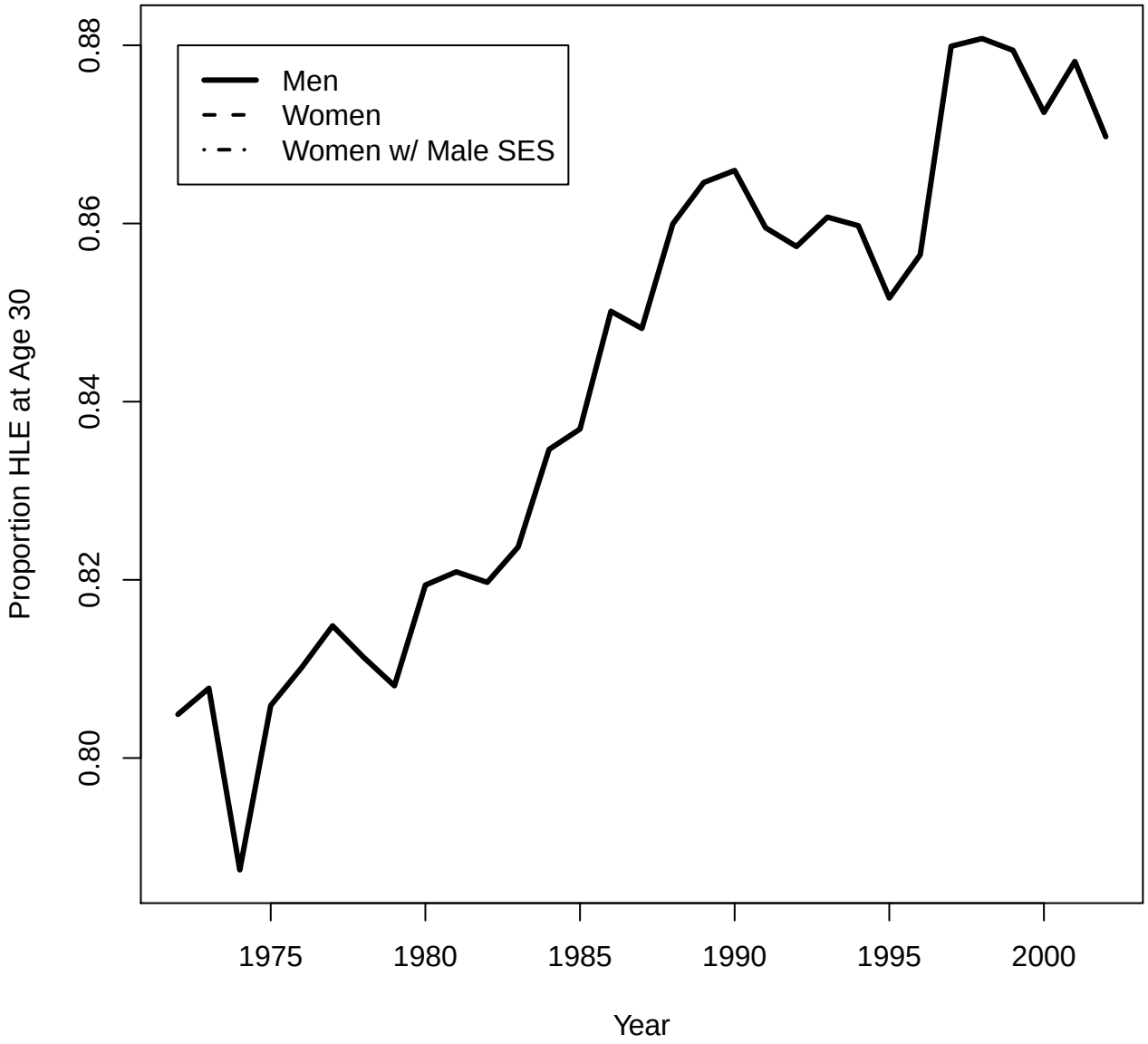


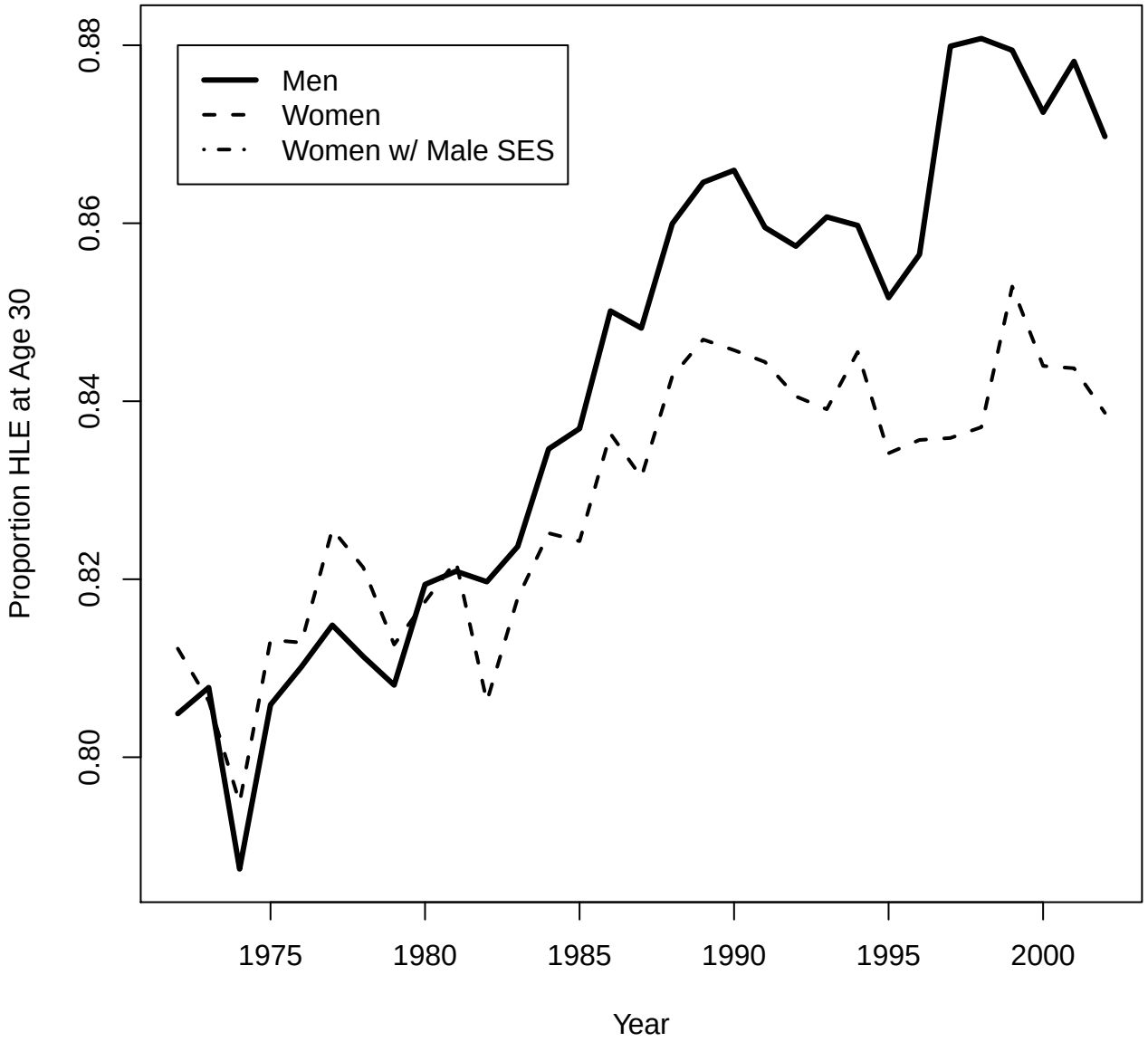
Period Income Gap



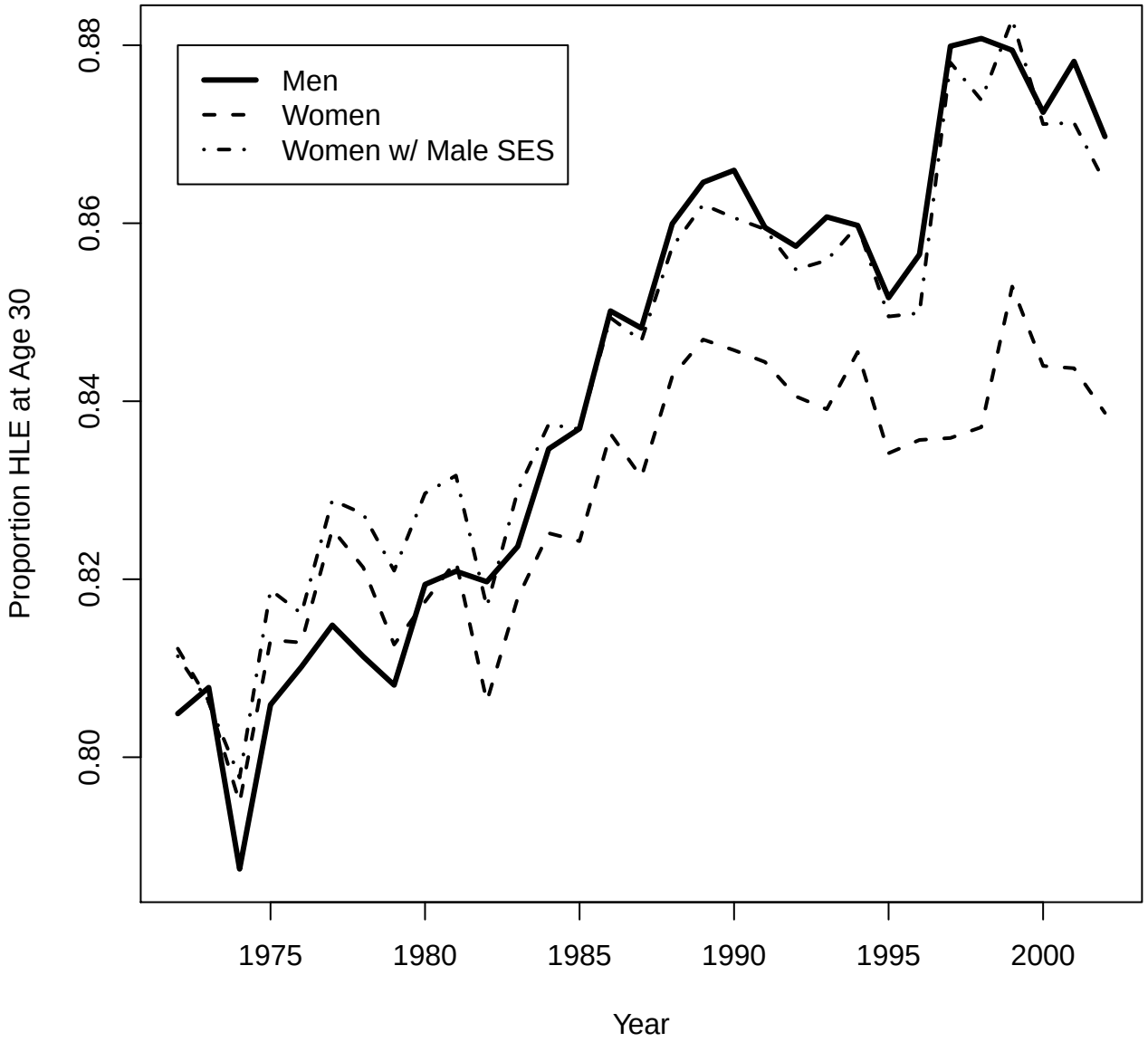
PLE for Males, 1972-2002



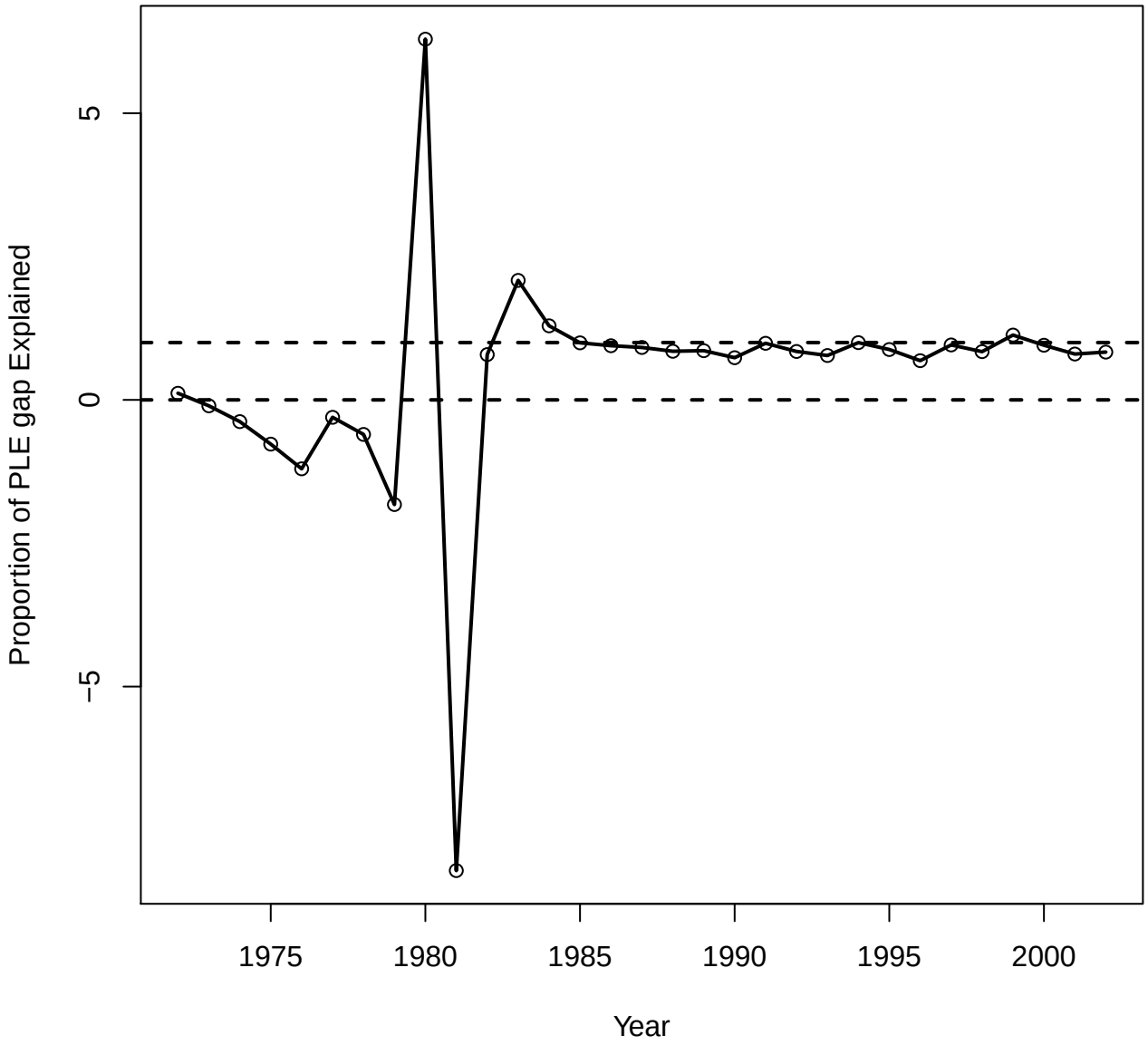
PLE for Males and Females, 1972-2002



PLE for Males and Females +, 1972-2002



% of Sex Difference Explained by SES, 1972-2002



Summary

- Period health favored women ($<'87$) then men
- Period education favors males, with gap increasing
- Period income favors males, with gap increasing
- HLE
  - Prior to 1980, if women had men's SES, PLE gap would be even larger (favoring women)
  - After 1980, if women had men's SES, no PLE gap would exist

Summary, cont'd

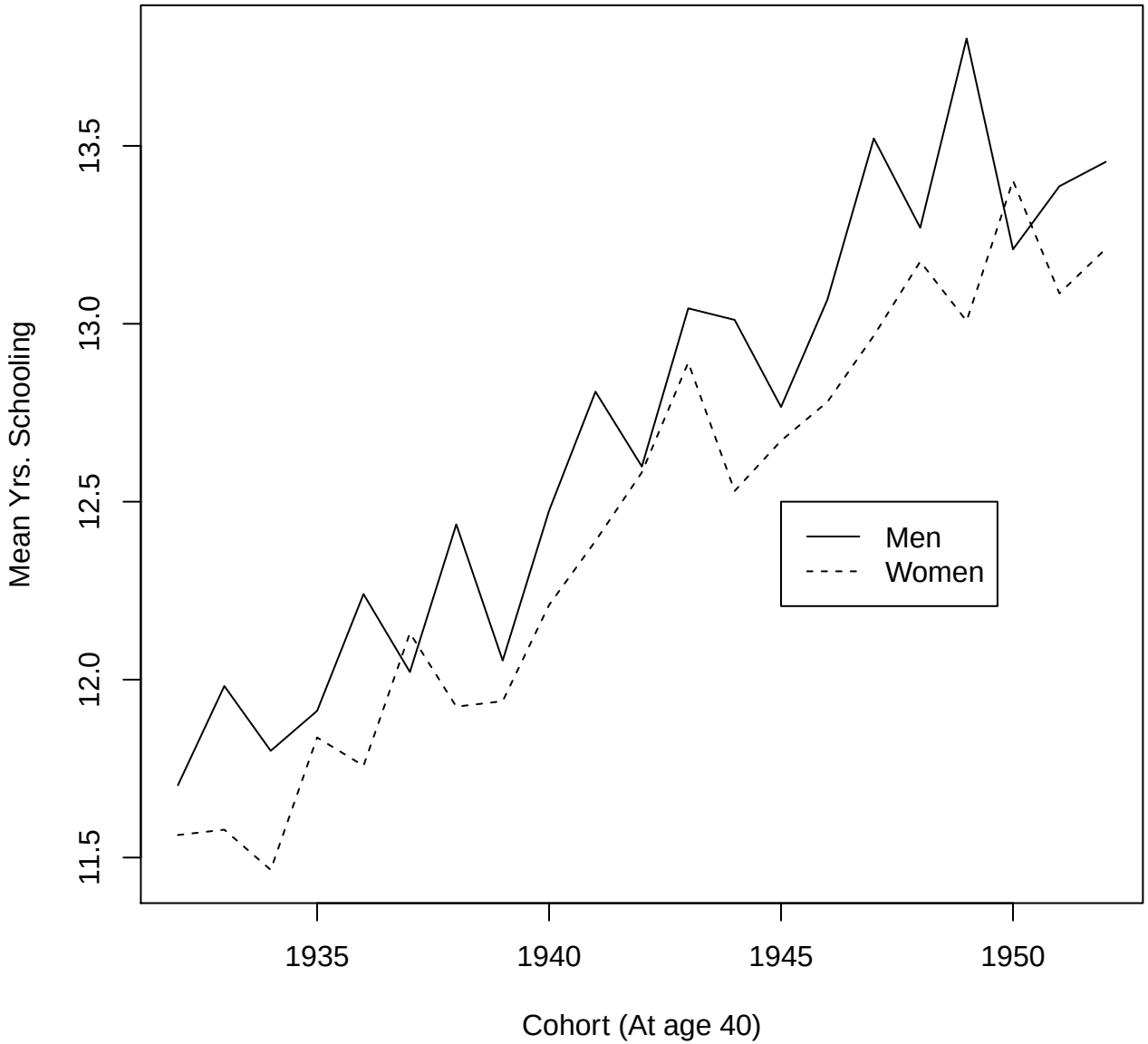
- In other words: no room for biology in PLE

- Issues:
  - Again, measure is SRH; may be sex dependent response
  - Period approach taken here, not cohort
  - Not clear what period approach means
  - By cohort, education and income are improving for women

- Next step: evaluate PLE by cohort over (necessarily) short intervals

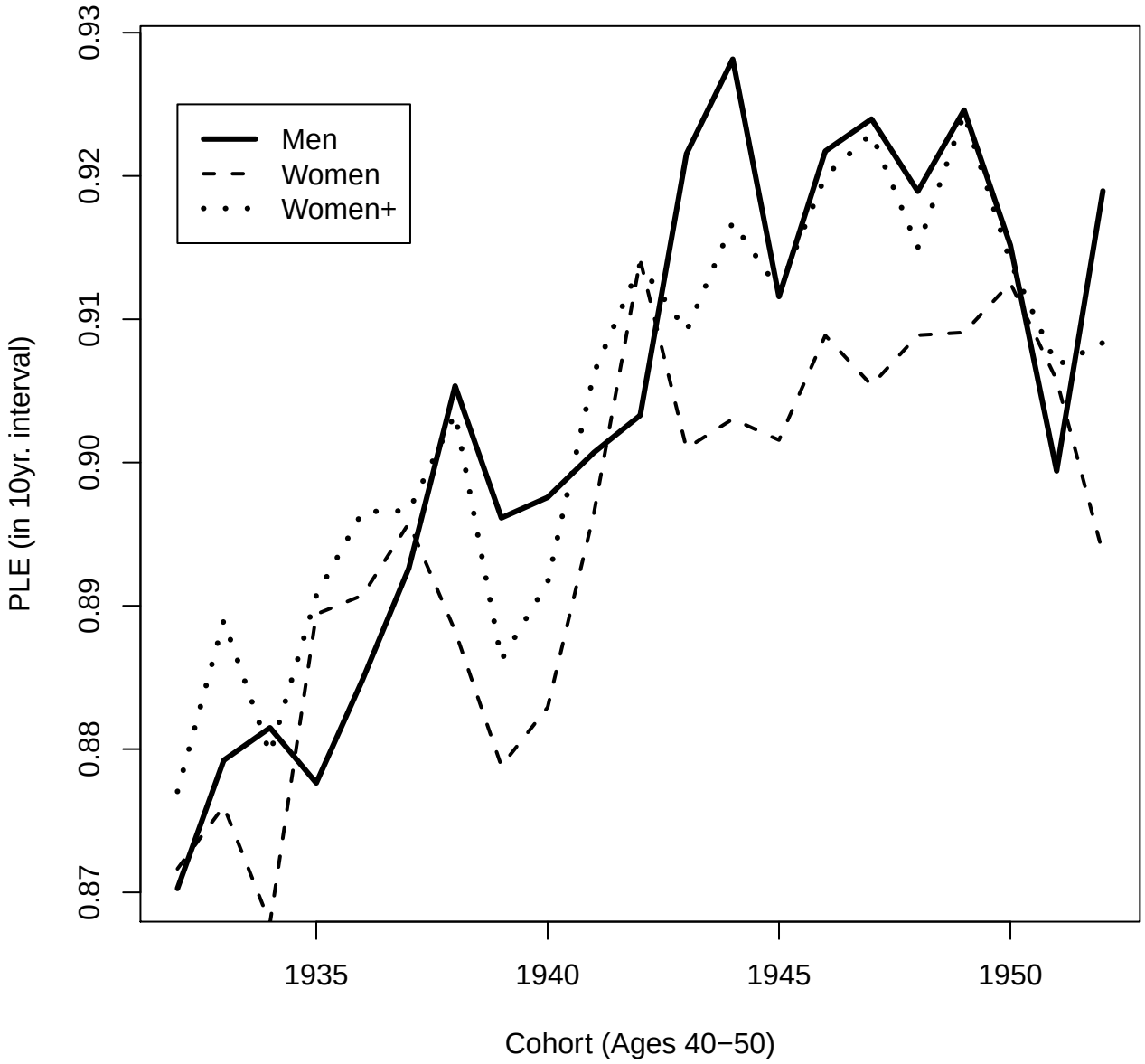
- Consider two sets of cohorts–1932-1952 at 40-50 & 1942-1962 at 30-40
  - What do education & income differences look like?
  - What role do they play in accounting for PLE differences over a 10 year span?

Education at Age 40 by Sex, 1932-1952 Cohorts



Income at Age 40 by Sex, 1932-1952 Cohorts

PLE at Age 40 by Sex, 1932-1952 Cohorts

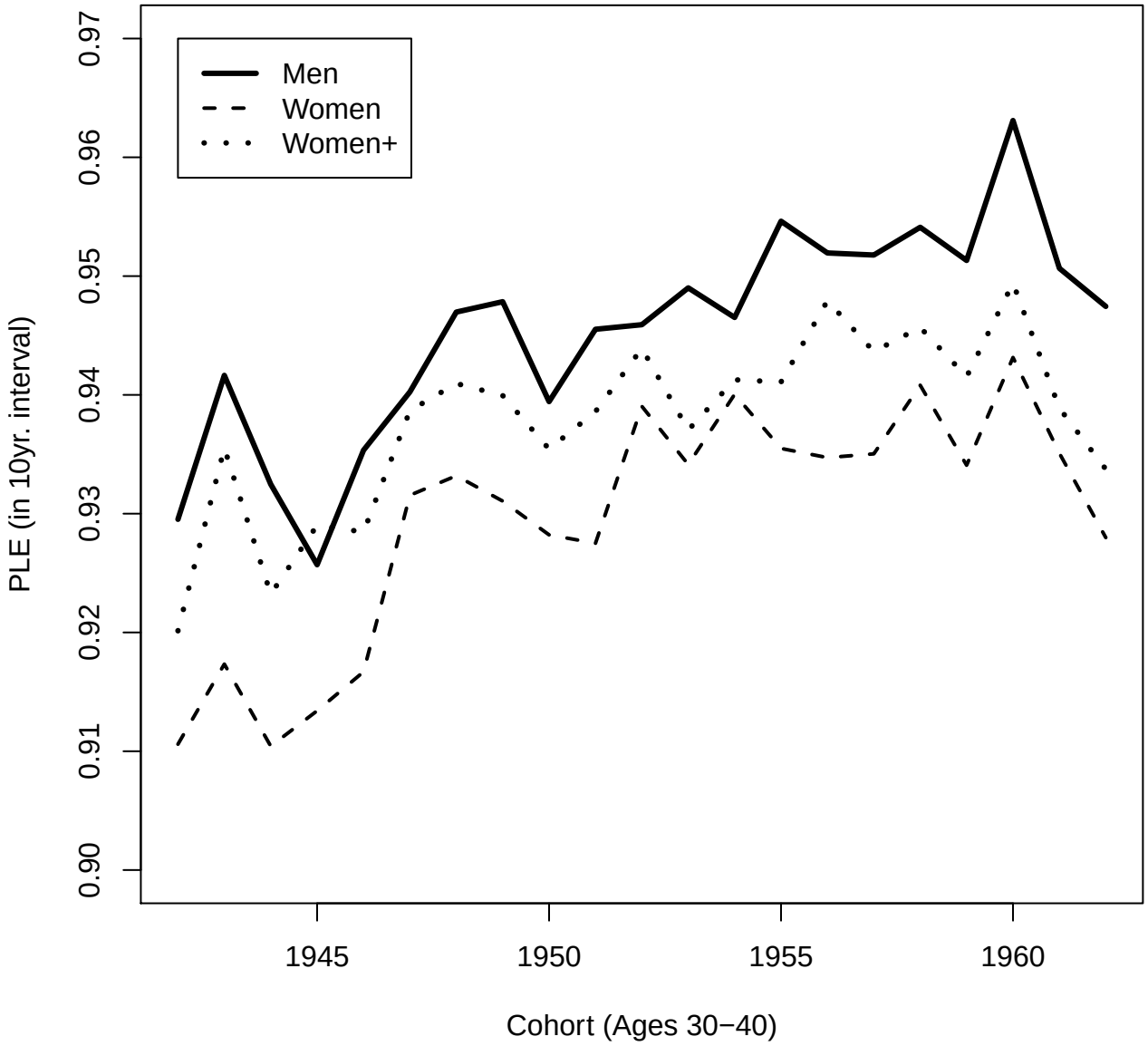


%PLE Explained at Age 40 by Sex, 1932-1952 Cohorts

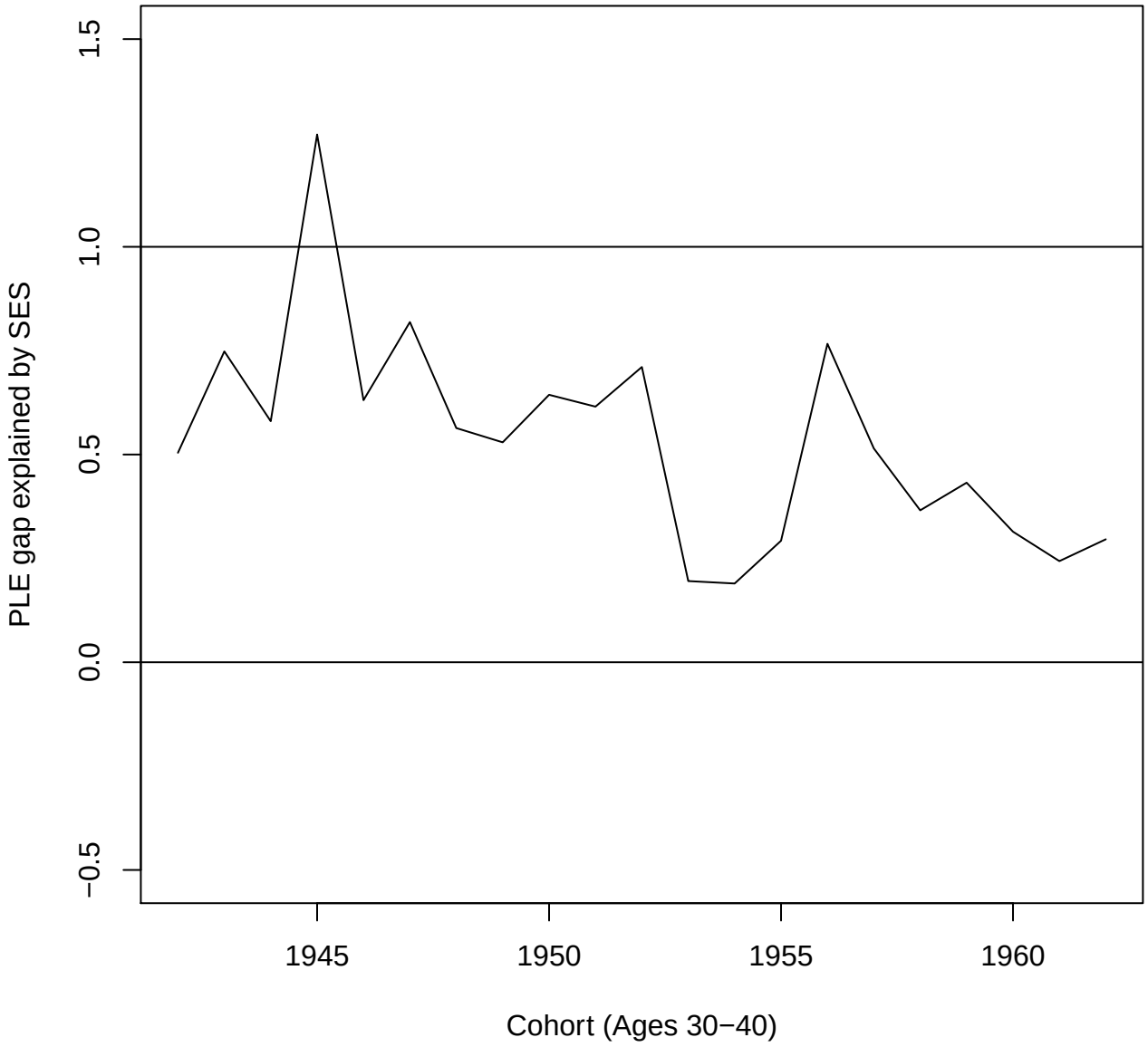
Education at Age 30 by Sex, 1942-1962 Cohorts

Income at Age 30 by Sex, 1942-1962 Cohorts

PLE at Age 30 by Sex, 1942-1962 Cohorts



%PLE Explained at Age 30 by Sex, 1942-1962 Cohorts



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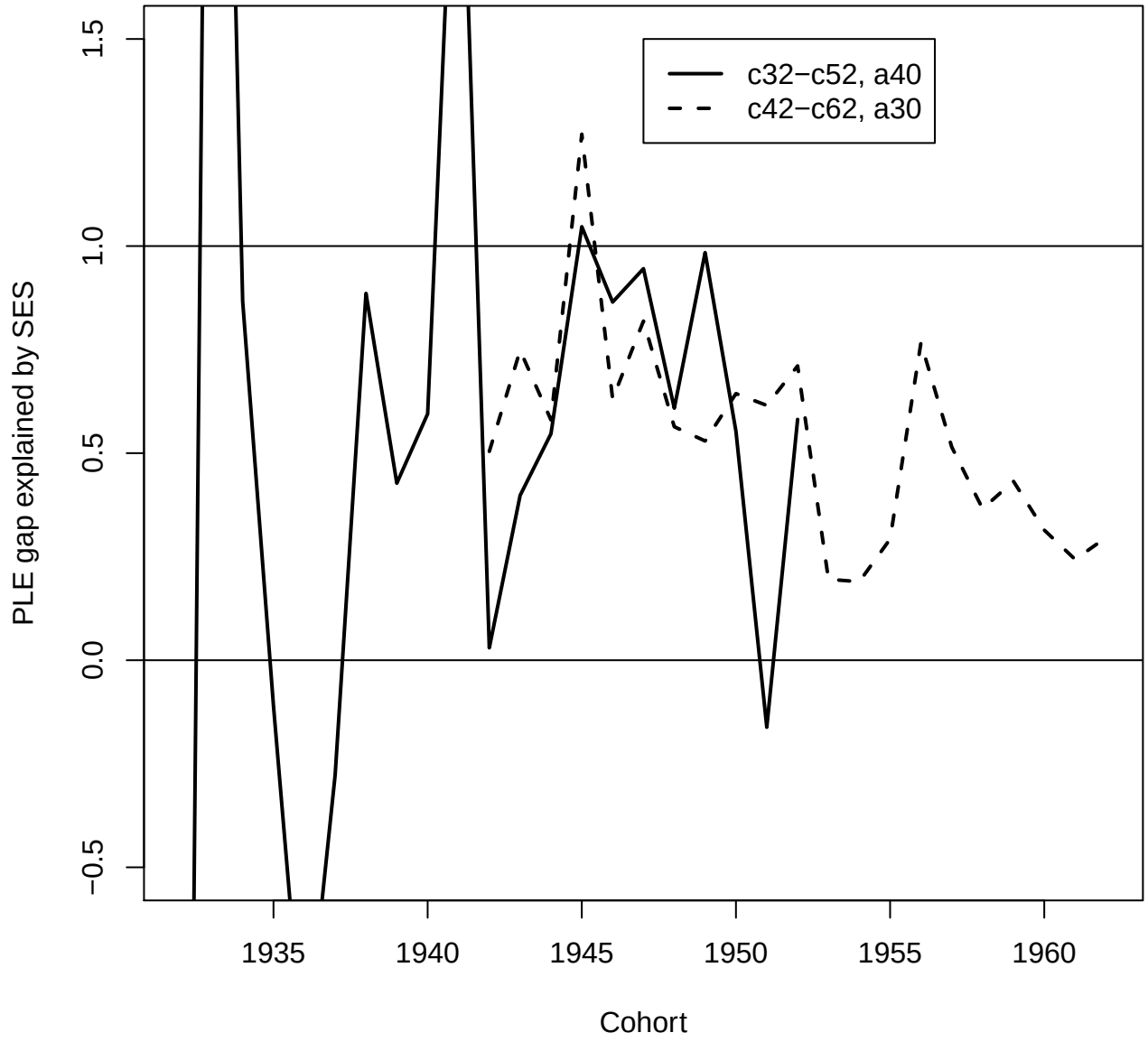

Conclusions

- Period and cohort approaches yield different results
  - Period results suggest virtually all PLE differences can be explained by SES in recent years
  - Older cohort results say an increasing % of PLE differences explainable by SES
  - Younger cohort results say a decreasing % of PLE differences explainable by SES
- WHY?
- Part is that recent cohorts are more equal in SES than older cohorts, so no leverage
- Part is that health is converging?
- Regardless–must pay attention to APC issues in addressing this question