Tohoku Univ. GCOE: The 23rd Monthly Seminar
2011.2.16 Sendai

The Family, Marriage, and Gender Inequality

quantitative analysis of economic situation after divorce

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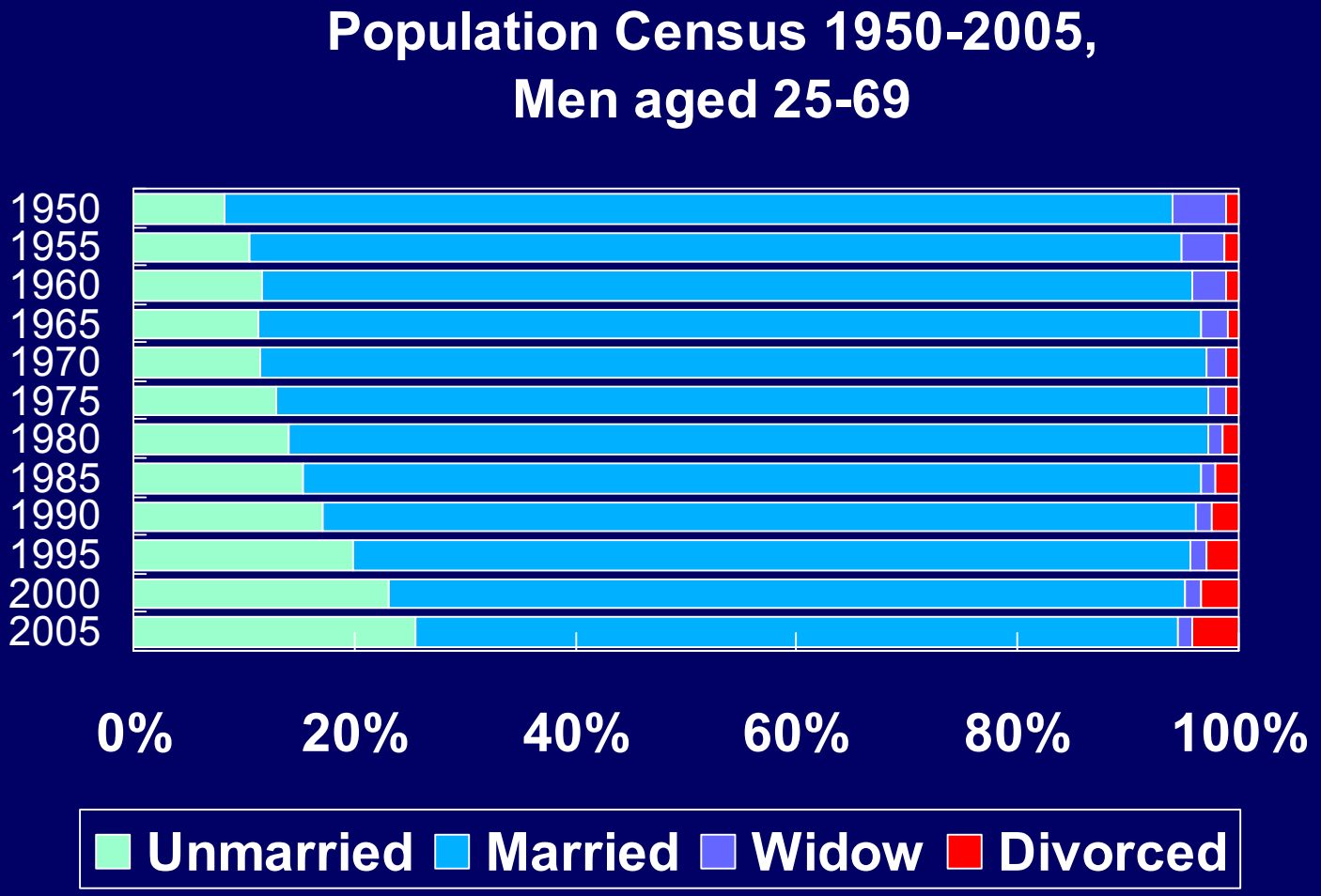
Trend in marital status



Post-Divorce Life

Literature review:

- ✓ No quantitative analysis
- ✓ Research on single-motherhood
- ✓ Hypothesis of marital-life results
- ✓ Pre-marriage effect?

Recent findings

Tanaka (2008): Effect of
interrupted career / young children
after controlling pre-marriage status

Tanaka (2010): Similar results
with more reliable data (NFRJ03)

→ Replication by other data

Contents

1. Sociological theory of inequality
2. Results from data analysis
3. Introduction to quantitative analysis
4. Implication from the findings

Social System Theory

Family	Market	School
State	Local community	……

Interaction between autonomous subsystems

Perspectives to inequality

Inequality:

Uneven distribution of **resources**

Resource:

Something scarce
but needed by people

(1) Resulted distribution

- ✓ Poverty
- ✓ Variance, Gini coefficient, etc…
- ✓ 格差

(2) Discrimination

Different treatment
based on social categories
with no justified reason

No discrimination but .....

Reproduction of meritocracy:

Early socialization by
well-educated parents

→ Good academic performance

→ Good job / high wage

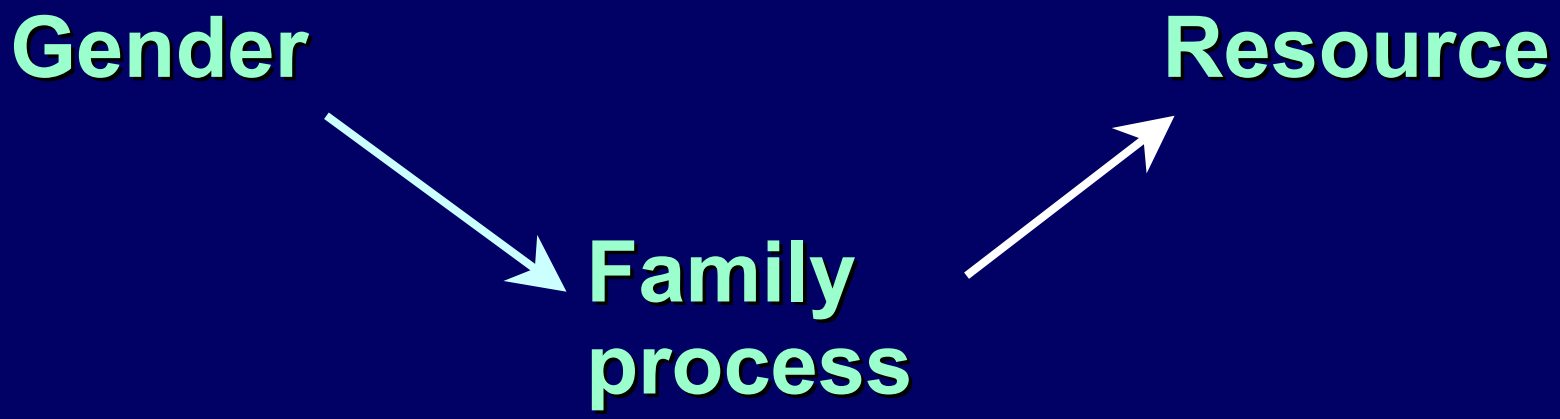
Injustice in this process?

(3) Stratification

Social process allocating people to the hierarchical order of status

Gender stratification

Process of differentiating men/women on the hierarchical order of status



全国家族調査 (NFRJ)

By Japan Society of Family Sociology

★ **Detailed information on kinship and life events**

★ **National representative samples: 1998, 2003, 2008**

★ **Huge number: 473, 494, 463** divorced

Annual household income

NFRJ98: on page 5/25

問15 去年1年間のお宅の収入（生計をともにしている家族全員の収入の合計）は、税込みでは次の中のどれに近いでしょうか。

1	収入はなかった	6	600～799万円台
2	100万円未満	7	800～999万円台
3	100～199万円台	8	1000～1199万円台
4	200～399万円台	9	1200万円以上
5	400～599万円台	10	わからない

NFRJ03: on page 5/18

問8 去年1年間のお宅（生計をともにしている家族）の収入は、税込みでは次の中のどれに近いでしょうか。他の家族の方の収入も含めてお答えください。（○は1つだけ）

1 収入はなかった	7 500～ 599 万円台	13 1100～1199 万円台
2 100 万円未満	8 600～ 699 万円台	14 1200～1299 万円台
3 100～199 万円台	9 700～ 799 万円台	15 1300～1399 万円台
4 200～299 万円台	10 800～ 899 万円台	16 1400～1499 万円台
5 300～399 万円台	11 900～ 999 万円台	17 1500～1599 万円台
6 400～499 万円台	12 1000～1099 万円台	18 1600 万円以上

NFRJ08: on page 23/24

問18 去年1年間のお宅（生計をともにしている家族）の収入は、税込みでは次の中のどれに近いでしょうか。他の家族の方の収入も含めてお答えください。（○は1つだけ）

1 収入はなかった
2 100 万円未満
3 100～129 万円台
4 130～199 万円台
5 200～299 万円台
6 300～399 万円台
7 400～499 万円台
8 500～ 599 万円台
9 600～ 699 万円台
10 700～ 799 万円台
11 800～ 899 万円台
12 900～ 999 万円台
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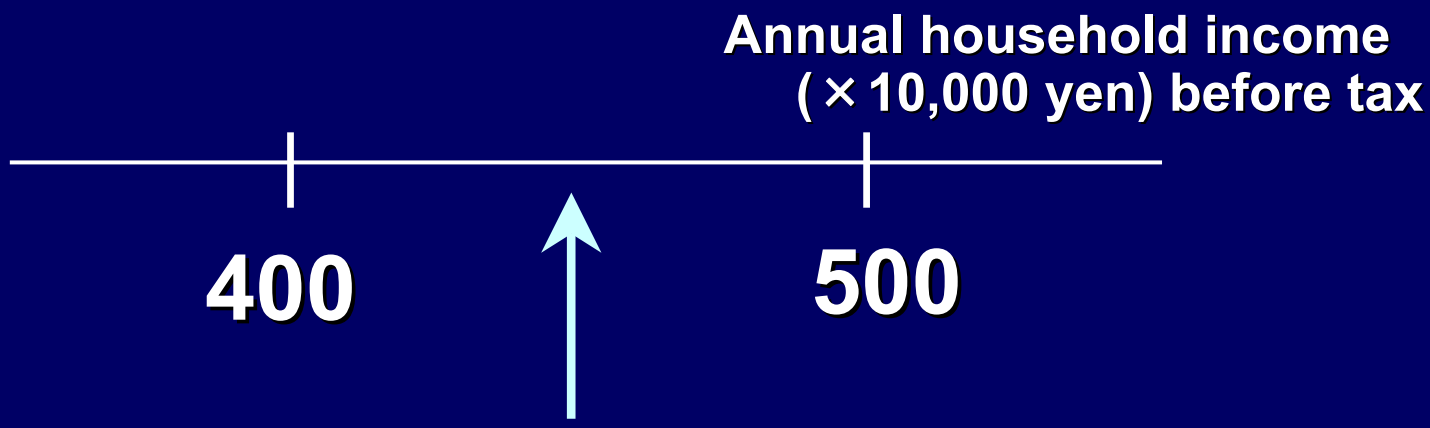
18 1500～1599 万円台
19 1600 万円以上

Equivalent household income



$$\frac{\text{Midpoint}}{\sqrt{\text{Household Size}}}$$

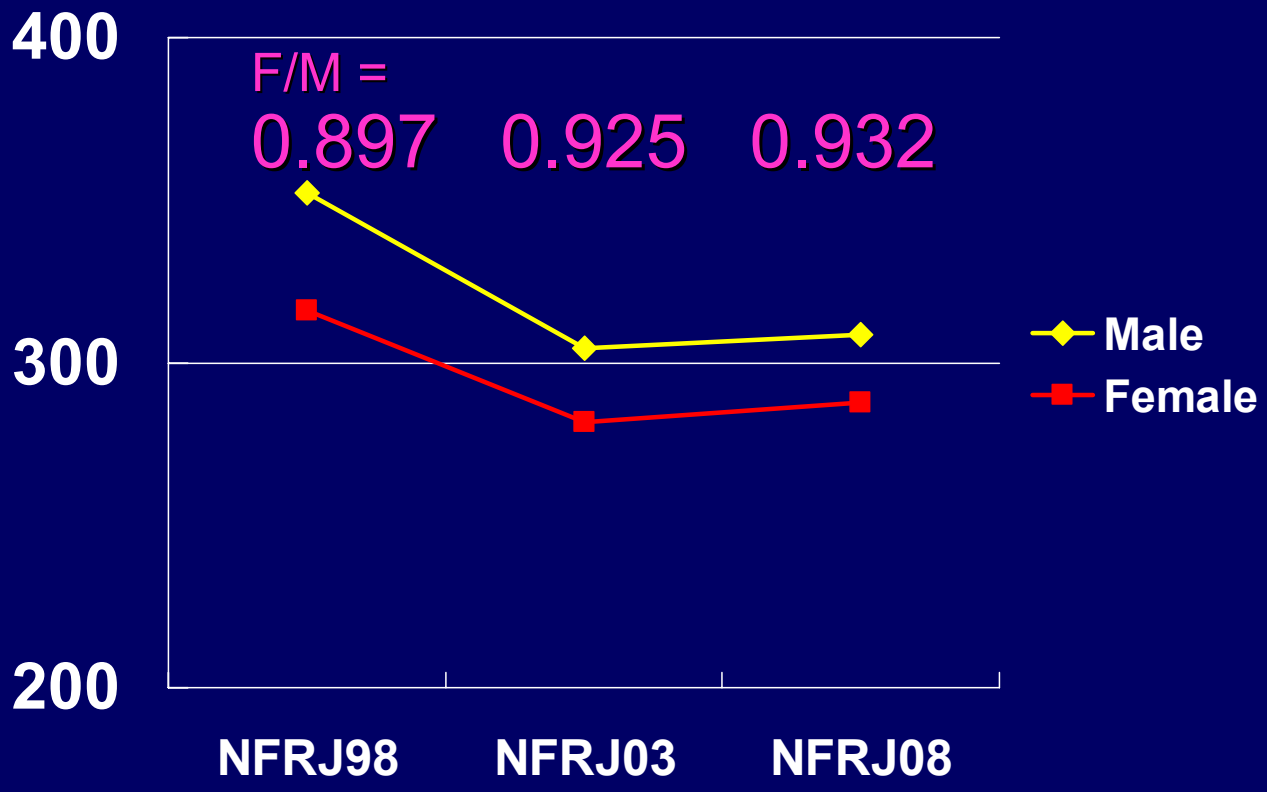
Geometric mean

$$G = \sqrt[n]{X_1 \times X_2 \times \cdots \times X_n}$$

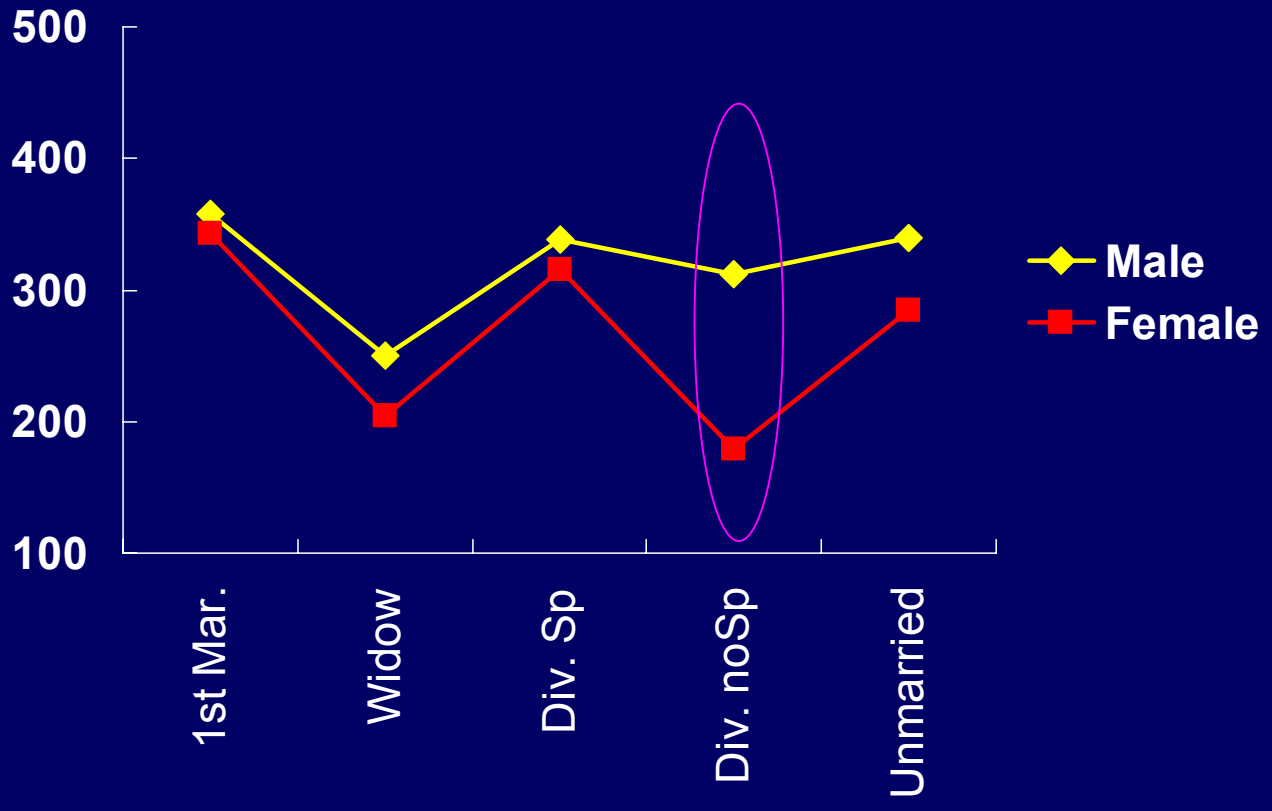
$$\Updownarrow$$

$$\log G = \frac{\log X_1 + \log X_2 + \cdots + \log X_n}{n}$$

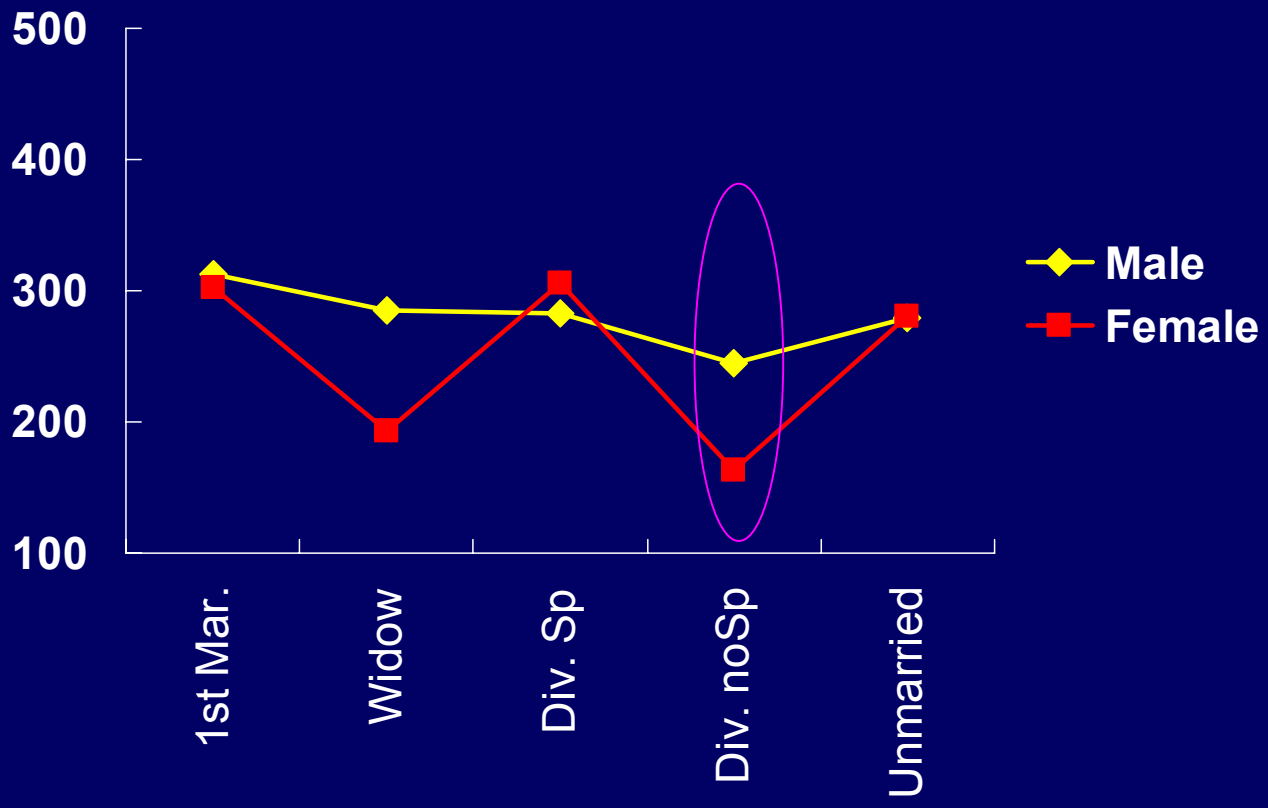
Gender gap in EHI



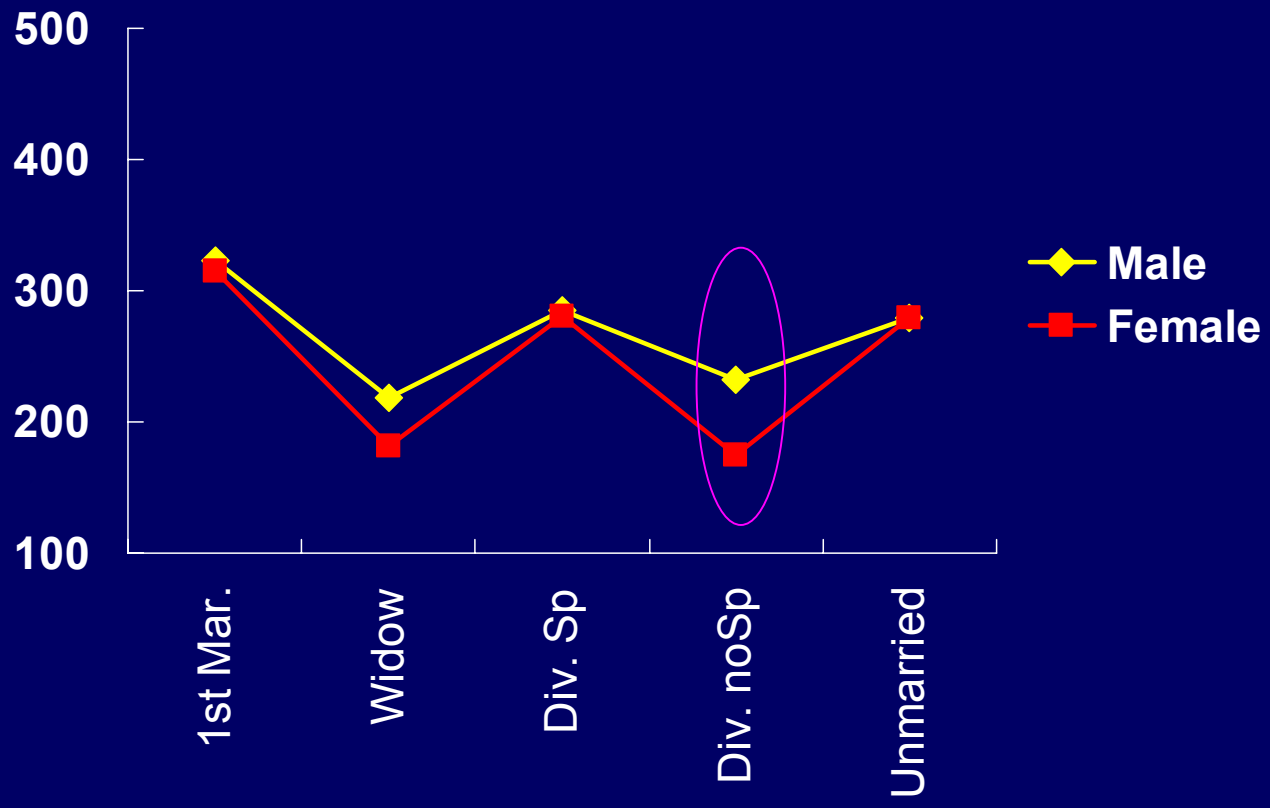
Marital history and EHI: NFRJ98



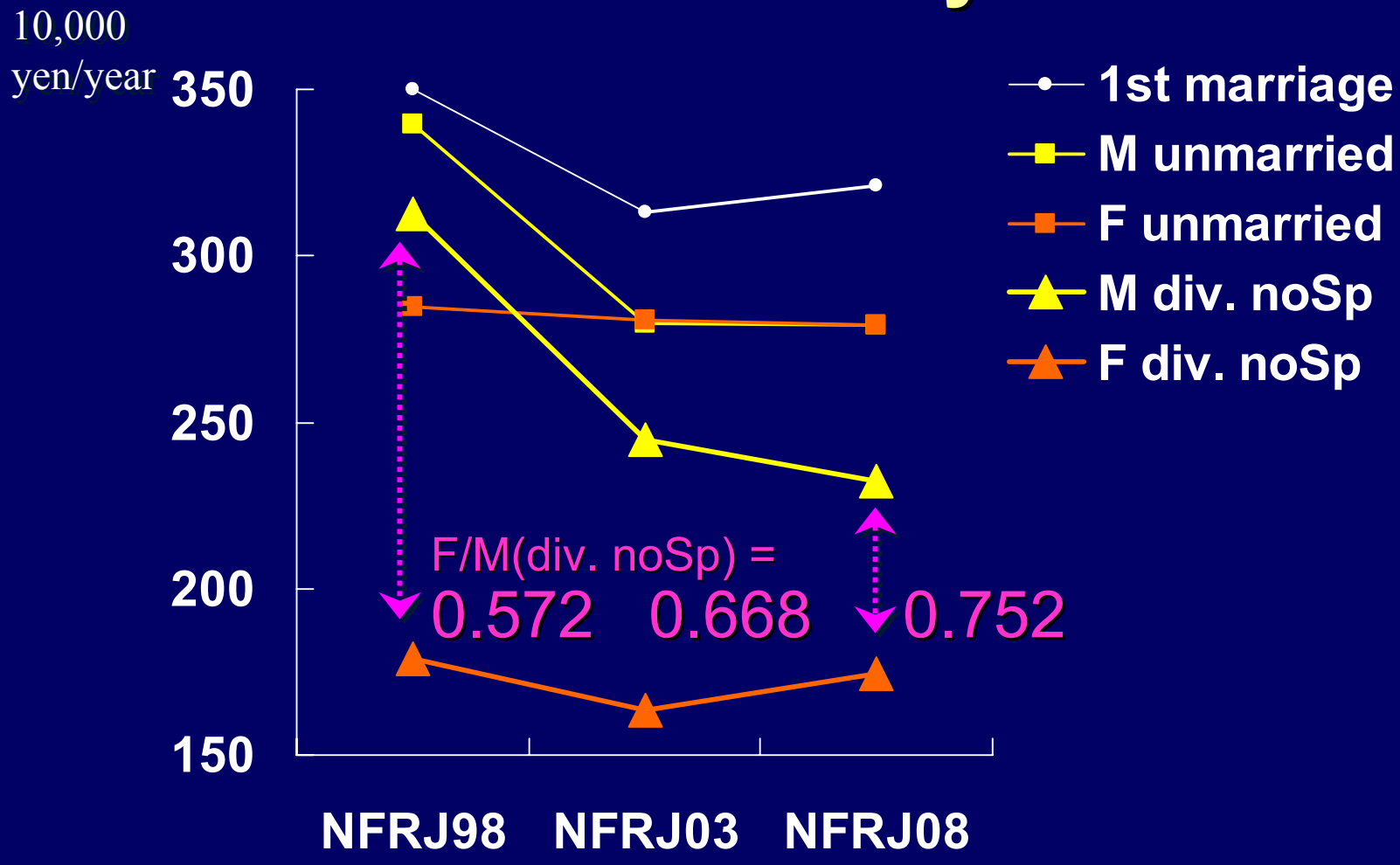
Marital history and EHI: NFRJ03



Marital history and EHI: NFRJ08



Summary


10,000
yen/year
350
300
250
200
150
NFRJ98
NFRJ03
NFRJ08
1st marriage
M unmarried
F unmarried
M div. noSp
F div. noSp
F/M(div. noSp) =
0.572
0.668
0.752

Regression Analysis

$$\hat{Y} = A \times B_1^{X_1} \times B_2^{X_2} \times \cdots \times B_n^{X_n}$$

$$\Updownarrow$$

$$\log \hat{Y} = \log A + X_1 \log B_1 + X_2 \log B_2 + \cdots + X_n \log B_n$$

Decomposition of gender effect:

- Indirect (mediated) effect
- Interaction effect
- Direct (unidentified) effect

Indirect (mediated) effect: example

EHI for regular employment: 267
EHI for others: 167

Male regular employment: 42.6%
Female regular employment: 17.6%

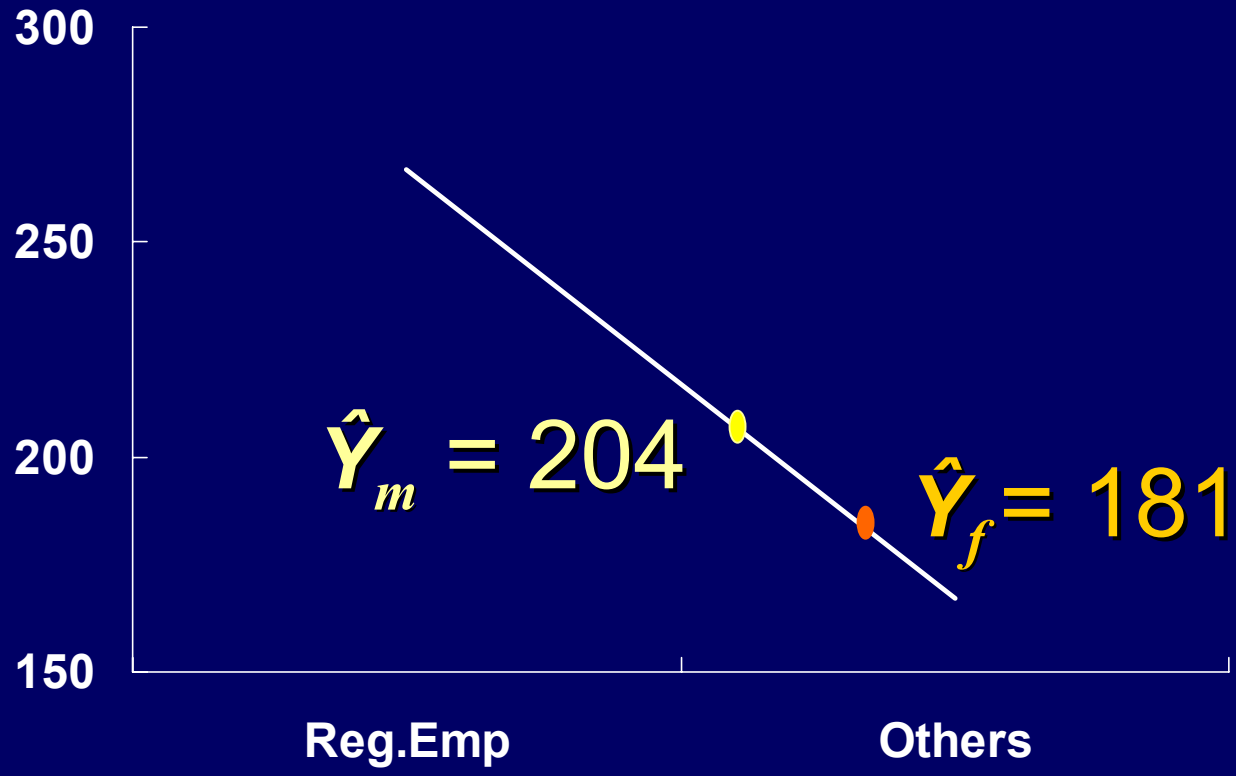
Indirect (mediated) effect: example

$$\hat{Y}_m = 267^{0.426} \times 167^{0.574} = 204$$
$$\hat{Y}_f = 267^{0.176} \times 167^{0.824} = 181$$

$$\hat{Y}_f / \hat{Y}_m = 181/204 = (167/267)^{0.426-0.176}$$
$$= 0.889$$

→ Female EFI is **11.1%** reduced due to difference in employment status

Indirect (mediated) effect: example

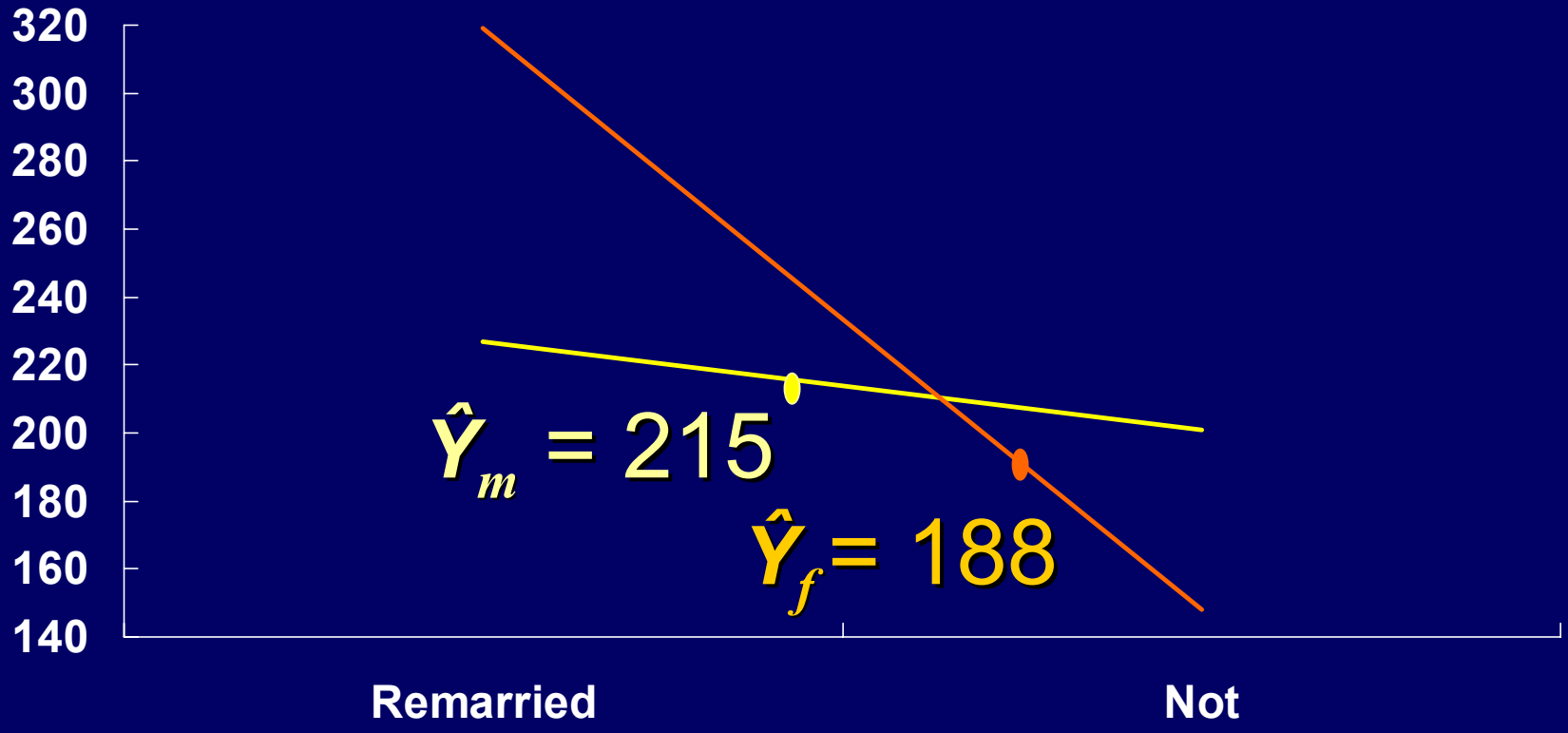


Interaction effect: example

EHI for remarried men: 227
EHI for non-remarried men: 201
EHI for remarried women: 319
EHI for non-remarried women: 148

Male remarried: 55.9%
Female remarried: 31.4%

Interaction effect: example



Interaction effect: example

$$\hat{Y}_m = 227^{0.559} \times 201^{0.441} = 215$$
$$\hat{Y}_f = 319^{0.314} \times 148^{0.686} = 188$$

$$\hat{Y}_f / \hat{Y}_m = 188/215 = 0.876$$

→ Female EFI is **13.4%** reduced
due to difference related to remarriage

Direct (unidentified) effect

Female / male gap remained after all indirect/interaction effects are controlled

= if all variables were kept constant

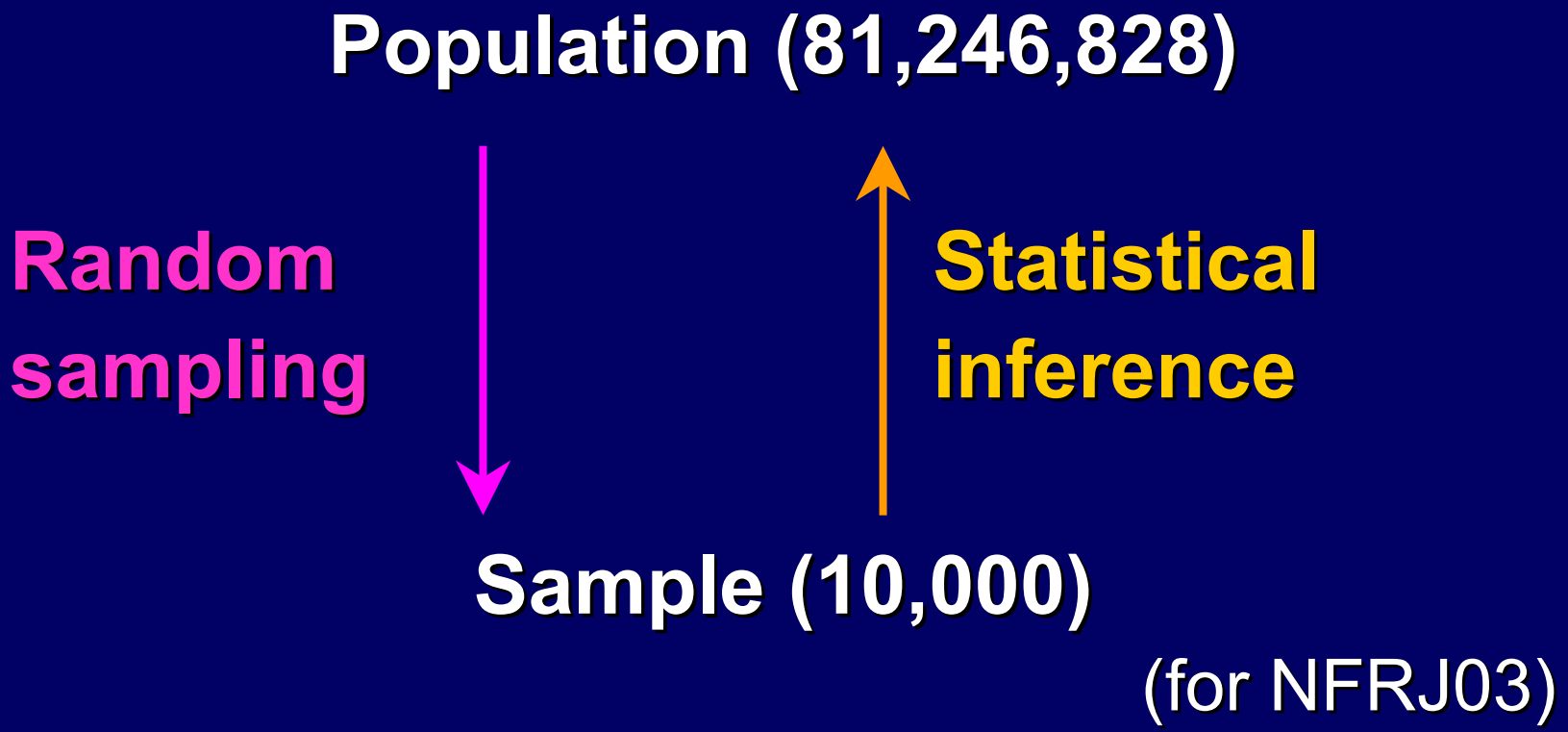
OLS

All variables' effects should be decomposed.

Ordinary Least Square method to determine all parameters simultaneously

Mean is OLS solution for one-variable regression

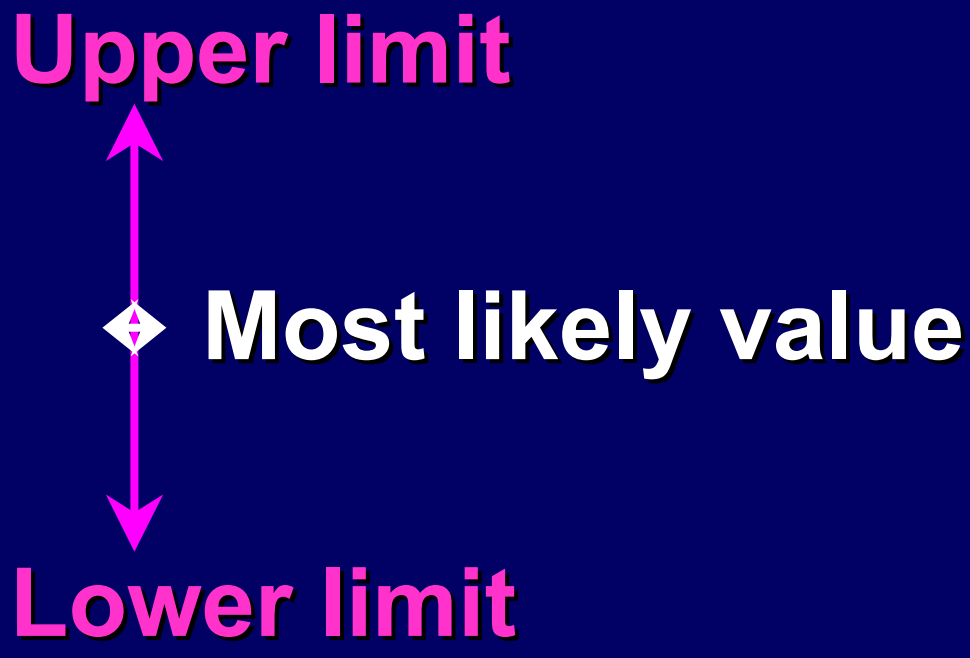
Evaluation of sampling error



(for NFRJ03)

Confidence interval

95% probability range
of population value



Statistical test terminology

“Significant”

if 

< 1 (=negative effect)

or 1 <  (= positive effect)

“Not significant”

if 

(=unclear effect)

In Table 5 (A)

Model 1

Direct negative effect of “female” after controlling age composition is …

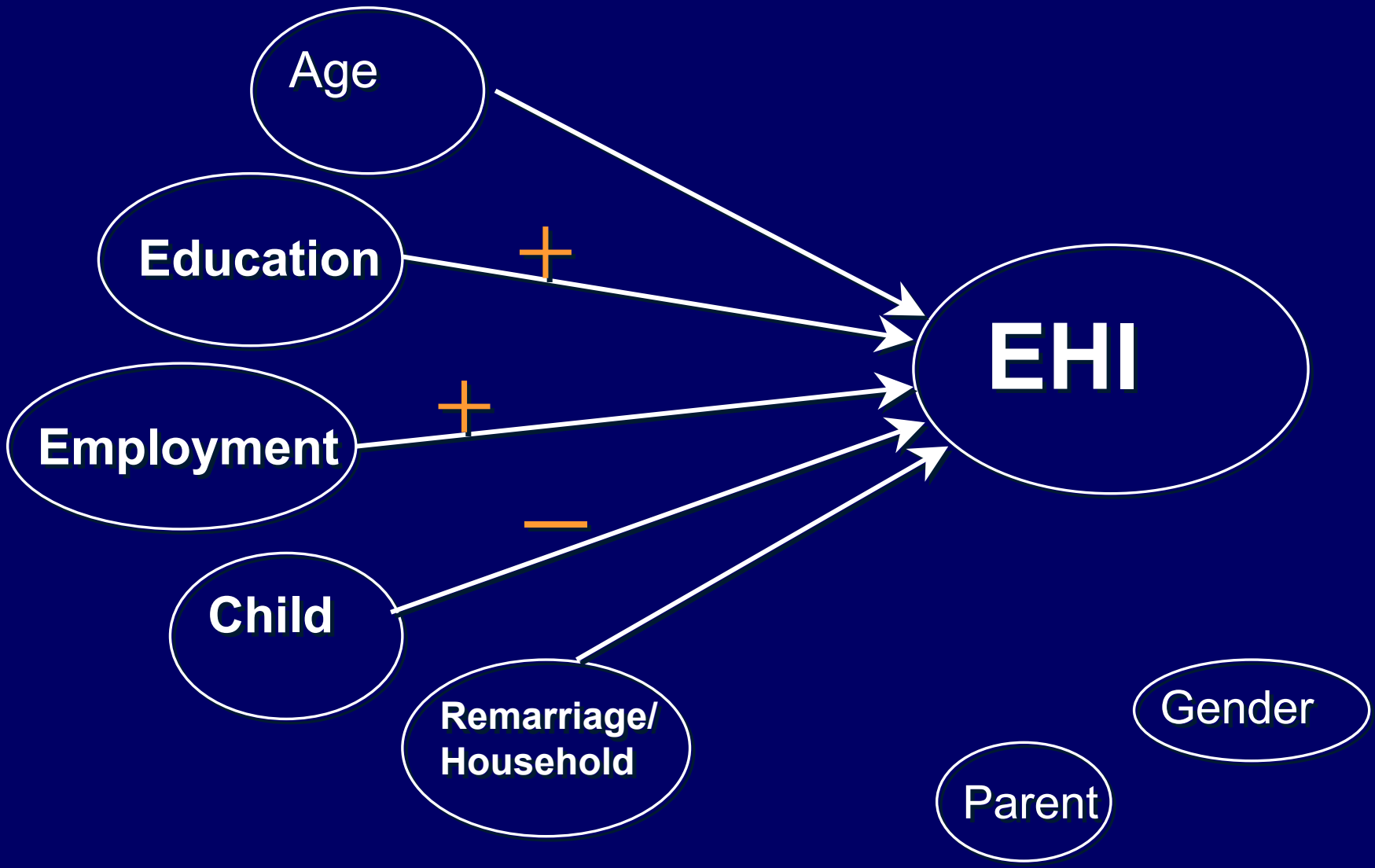
0.683 (0.583 ～ 0.799)

Model 2

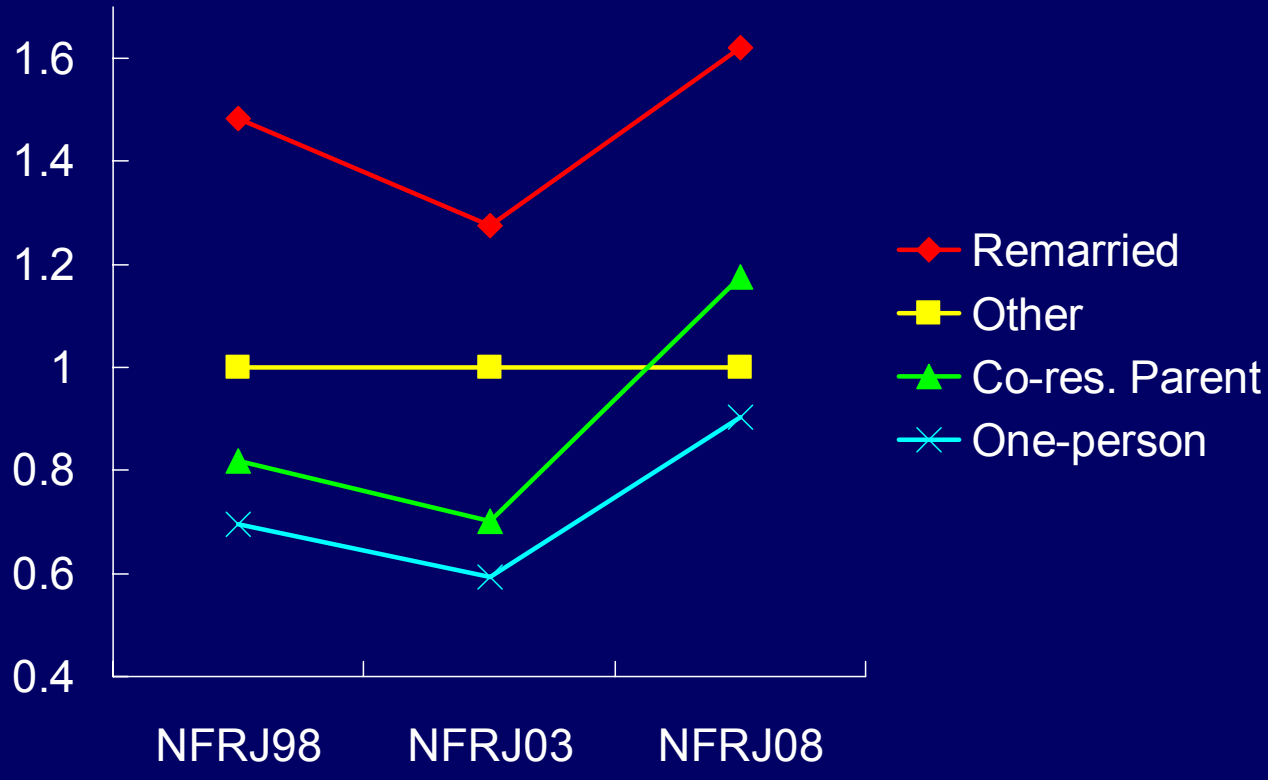
The effect is not significant

0.890 (0.756 ～ 1.047)

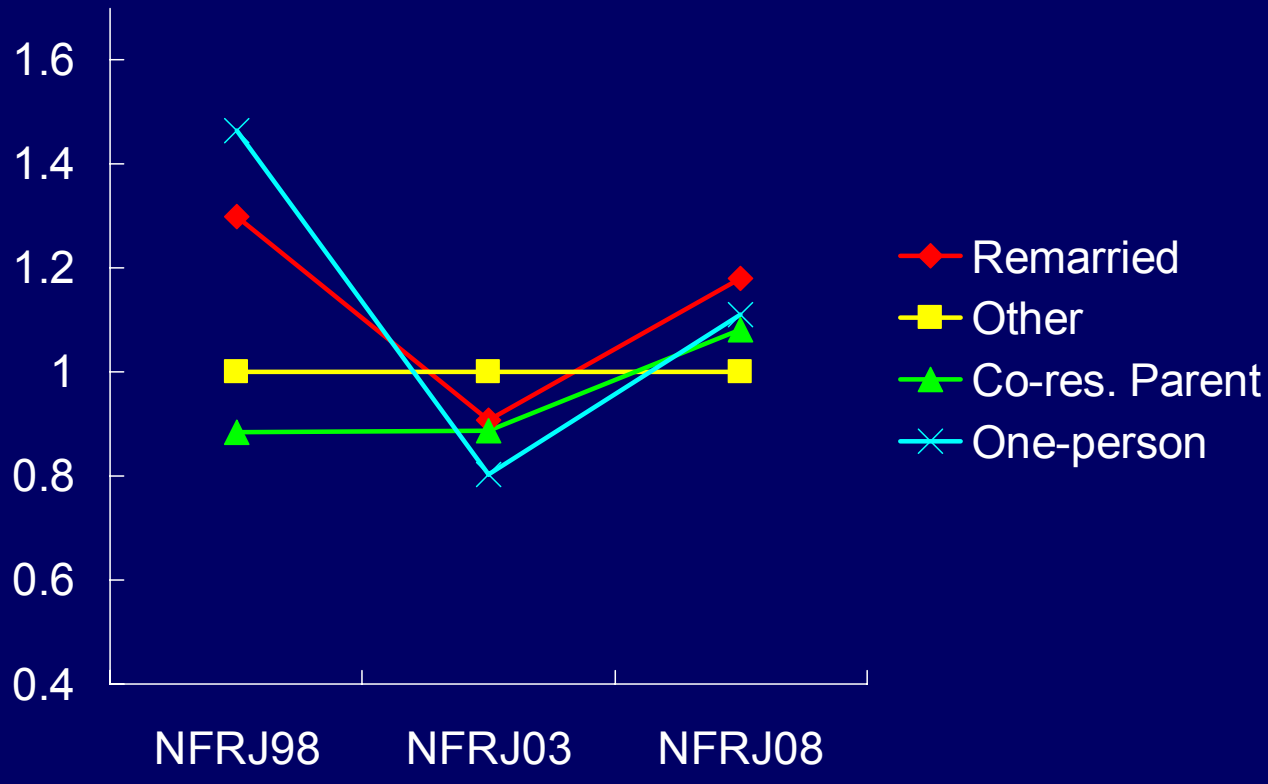
Result (Model 3)



Effect of remarriage/household (female)



Effect of remarriage/household (male)



Findings

- ✓ Female EHI is 10% lower than male
- ✓ Mainly caused by widowed/divorced
- ✓ Divorced men's EHI is decreasing
- ✓ 4 factors of gender gap after divorce

Four factors (female/male)

	NFRJ98	NFRJ03	NFRJ08
Pre-marriage:			
Education	2.2%	6.4%	3.8%
Marital life:			
Employment	10.6%	6.7%	9.8%
Children	4.5%	6.5%	5.3%
Post-divorce:			
Remarriage	10.8%	12.5%	6.1%

Policy Implication

Distance from stratification study to policy

- ✓ Social consensus about justice
  → **Gender-equal policy since 1980s**
- ✓ Implement of norm for subsystem
  → **?**

Education

Gender

↓ School / Family

Education

↓ Labor market / etc.

Living standards

Employment status

Gender

↓ Labor market / Family

Continuous career

↓ Labor market / Family

Living standards

Childrearing

Gender

↓ Family

Childcare/Custody

↓ Labor market / Family

Living standards

Remarriage

Gender

↓ Family

Remarriage

↓ Family

Living standards

Importance of Statistics

Monitoring system of inequality

- Real-time picture of stratification
- Strategic policy
  to stop stratification process
- Focus on minority

Acknowledgement

The data for this secondary analysis, National Family Research of Japan 1998 (NFRJ98) and National Family Research of Japan 2003 (NFRJ03) by the NFRJ Committee, Japan Society of Family Sociology, was provided by the Social Science Japan Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, The University of Tokyo.

The author gratefully acknowledge the permission for the use of the National Family Research of Japan 2008 (NFRJ08) data by the NFRJ Committee, Japan Society of Family Sociology.