Health and its impact on work and dependency among the elderly in graying Japan

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Population Research institute

Total fertility rate (TFR) and ideal family size, Japan, 1947-2004
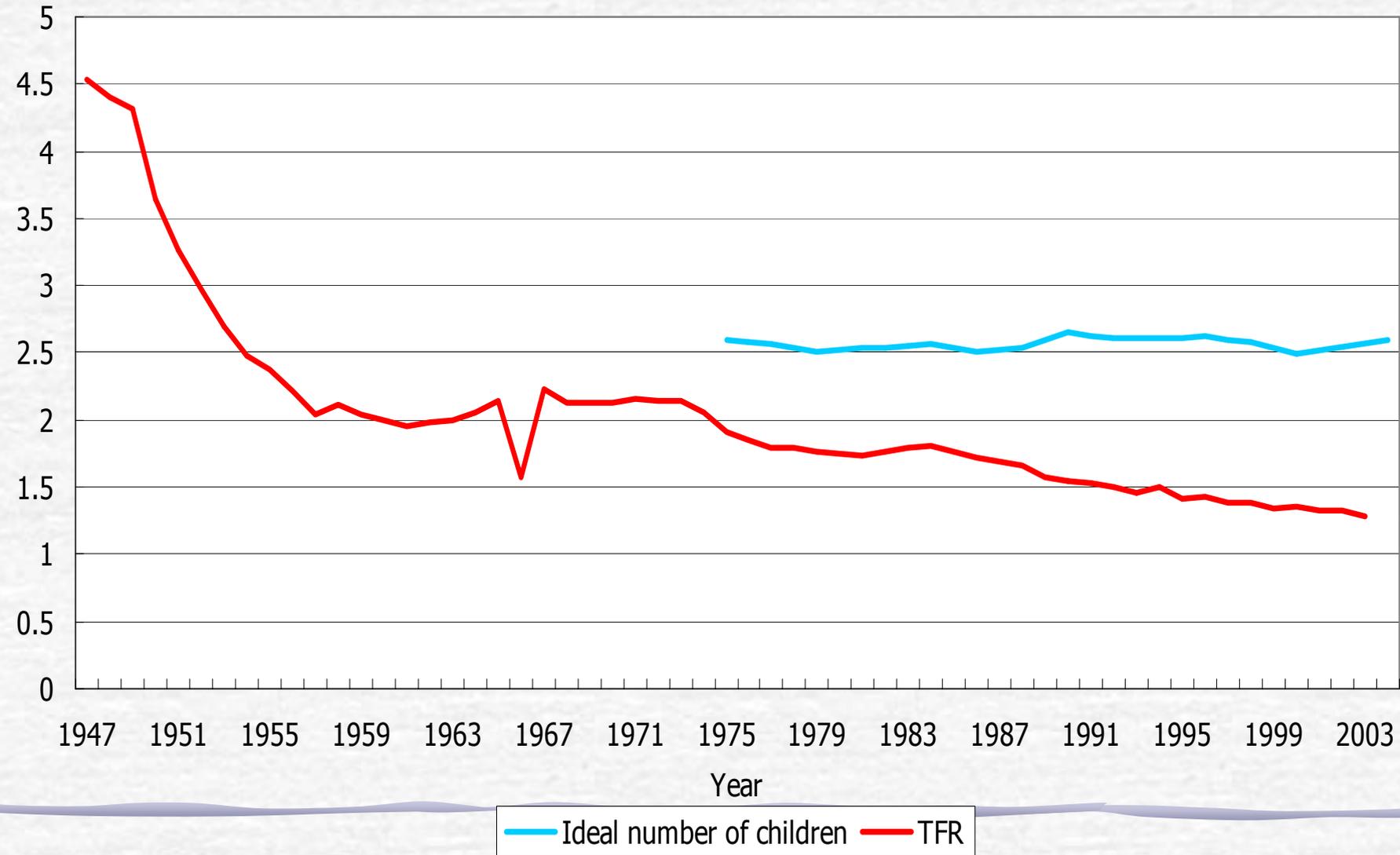
Trends in Period Parity Progression Ratios in Japan, 1950-2000
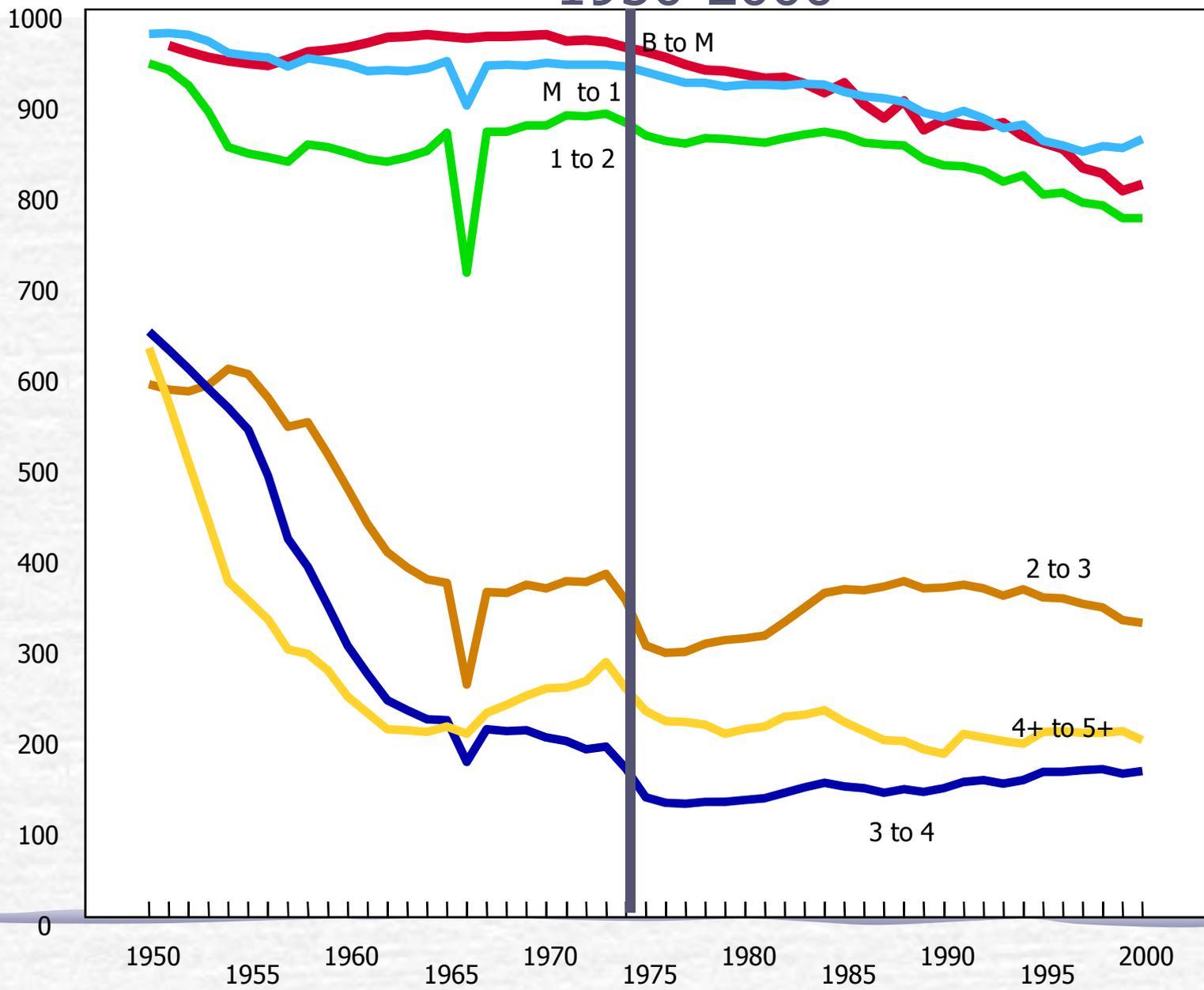
Change in Survival Curve Over Time
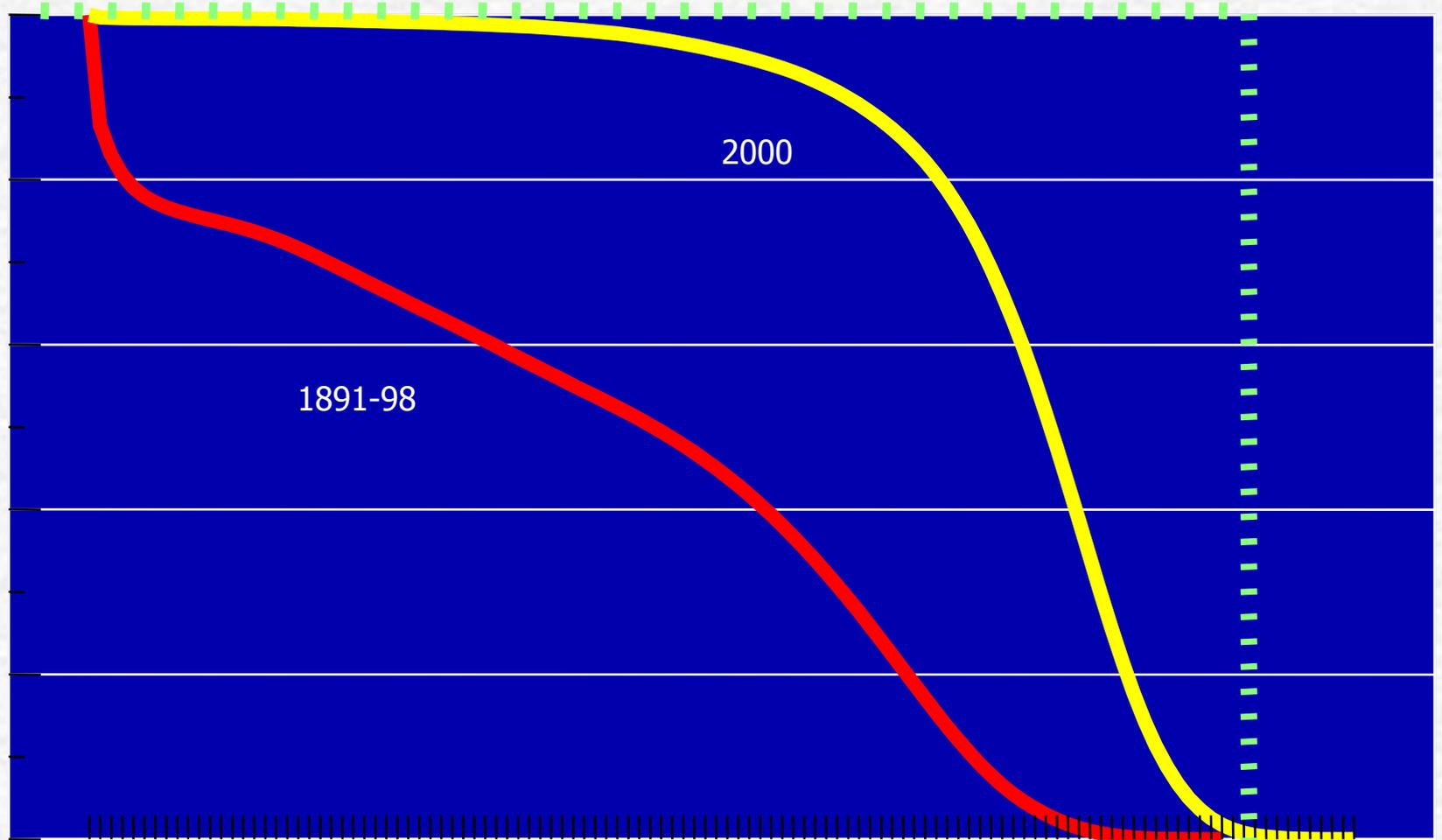
Change in average age of death among 50 oldest persons in Japan, by sex 1950-2002

Age

Year
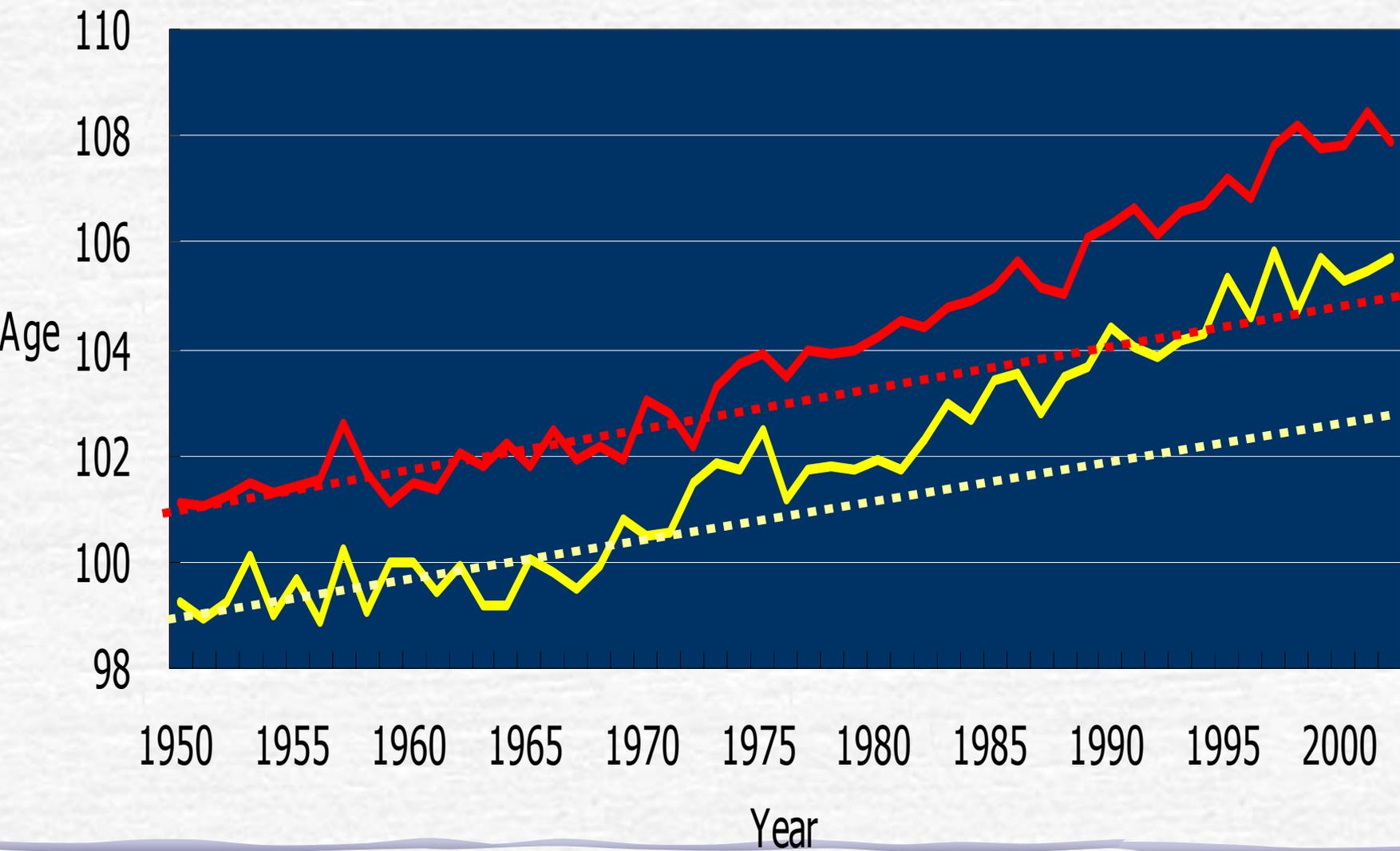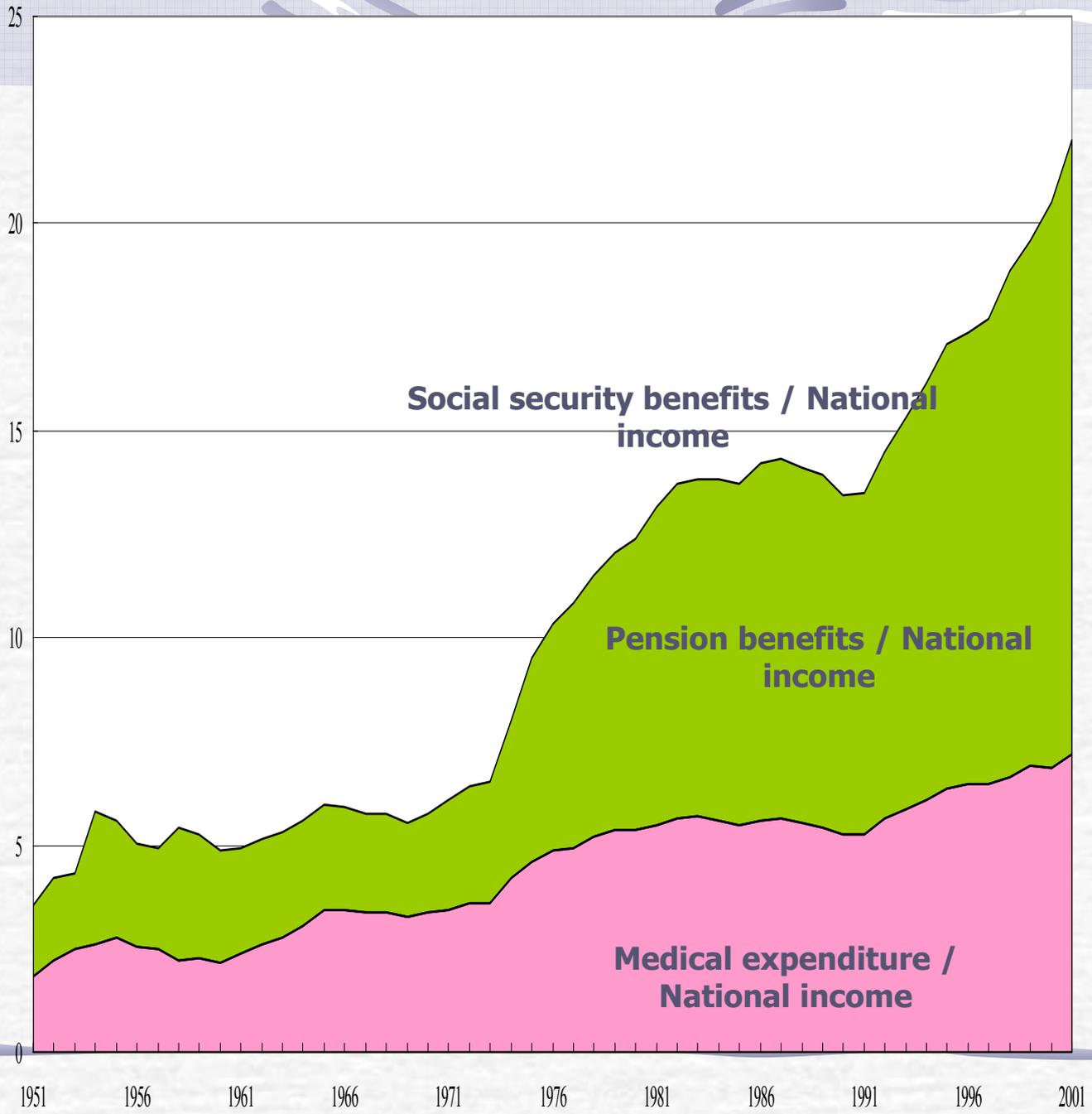
Social security benefits / National income

Pension benefits / National income

Medical expenditure / National income

Trends in expectation for old-age security from children and the number of legal cases of parents suing their children for support: Japan, 1950-2004
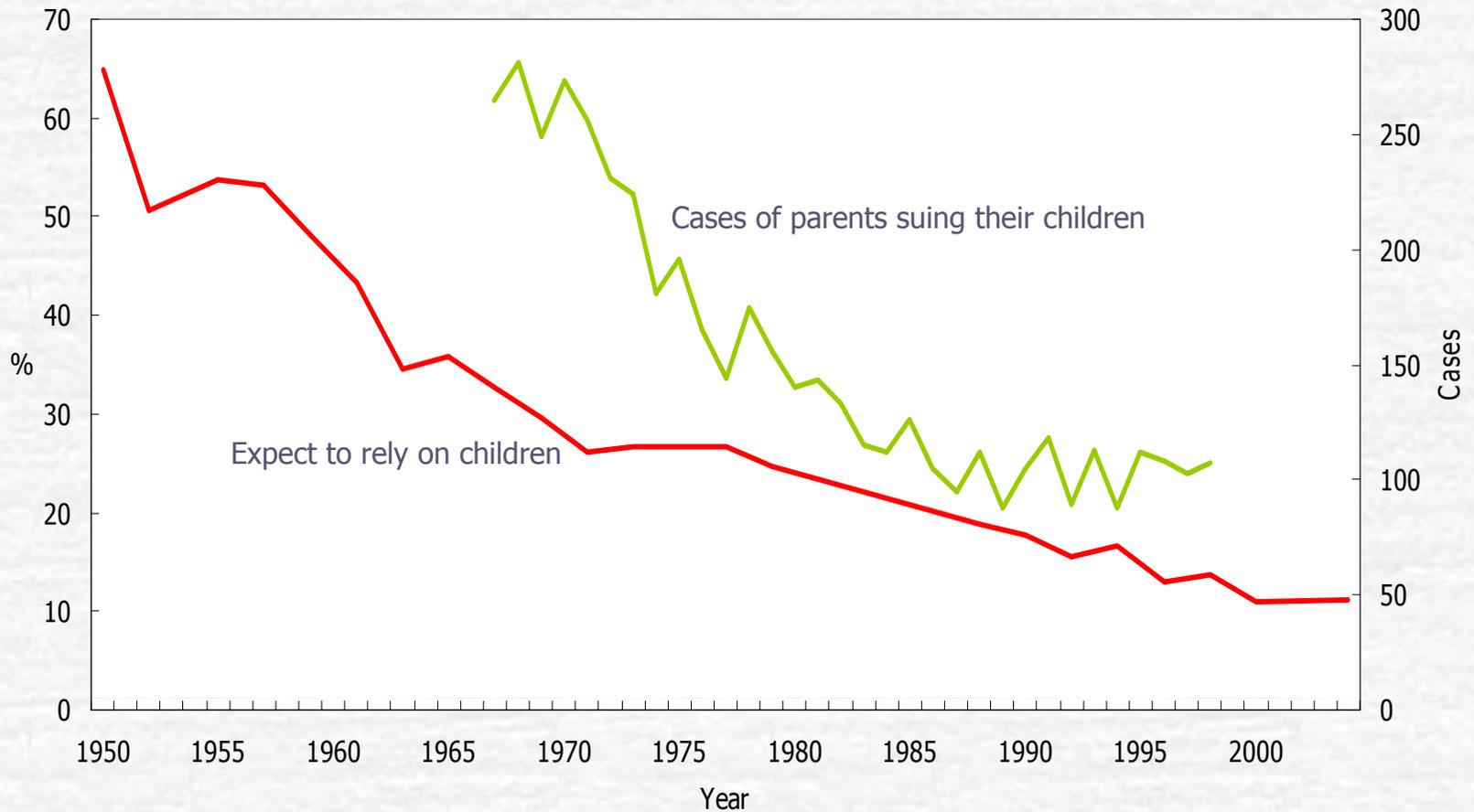
Trends in Norms and Expectations about Care for the Elderly: Japan, 1950-2004
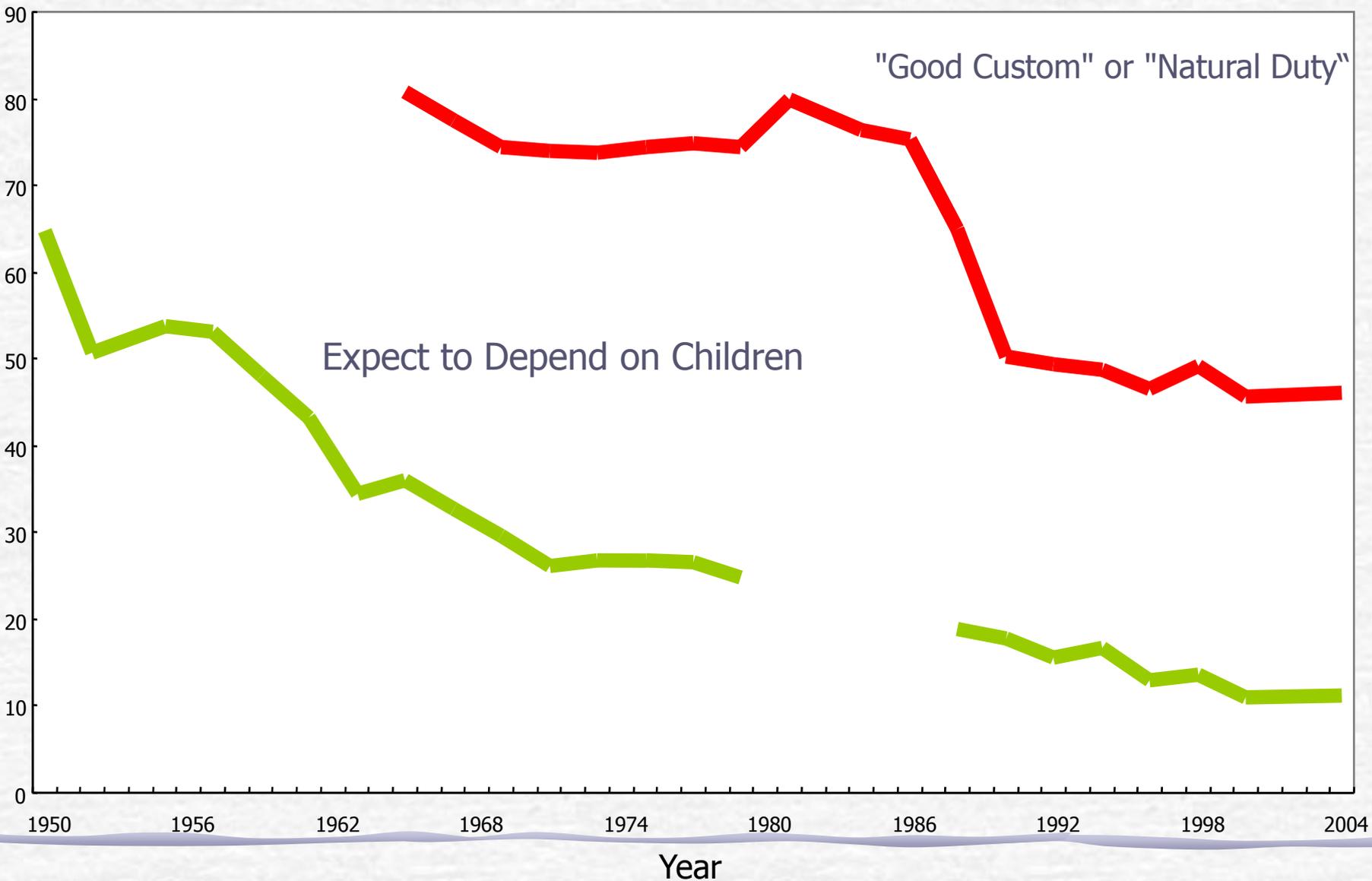
Proportion of those who would take care of parents under any circumstances, when their parents get older and need some help in their daily lives due to poor health, Japan, United States and China, 2005

(%)

	Japan	U.S.	China
	43	68	84
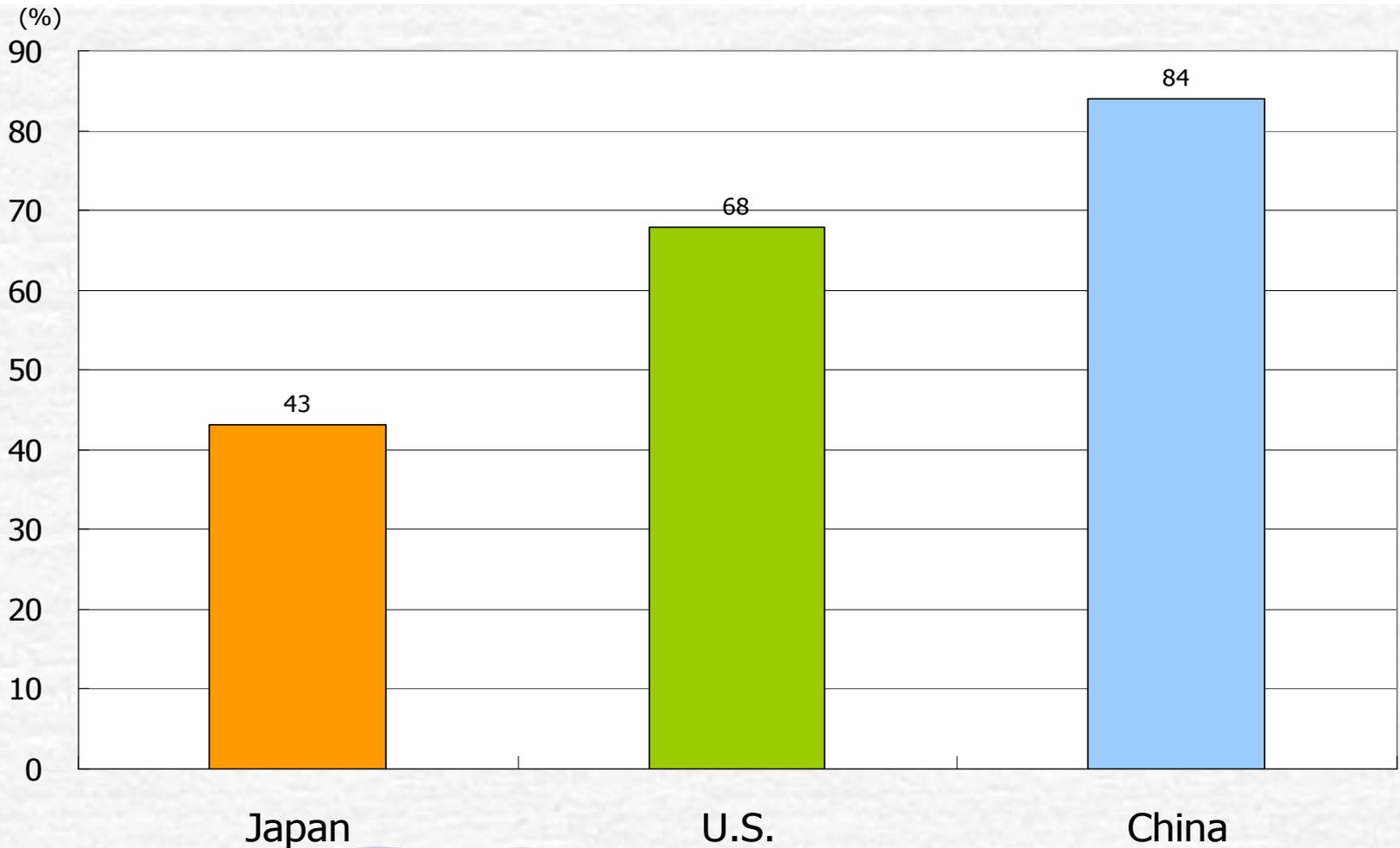
Source: Japan Youth Research Institute, High School Students' Lifestyle Survey, 2005.

Projected life expectancy at birth

Age

95

90

85

80

75
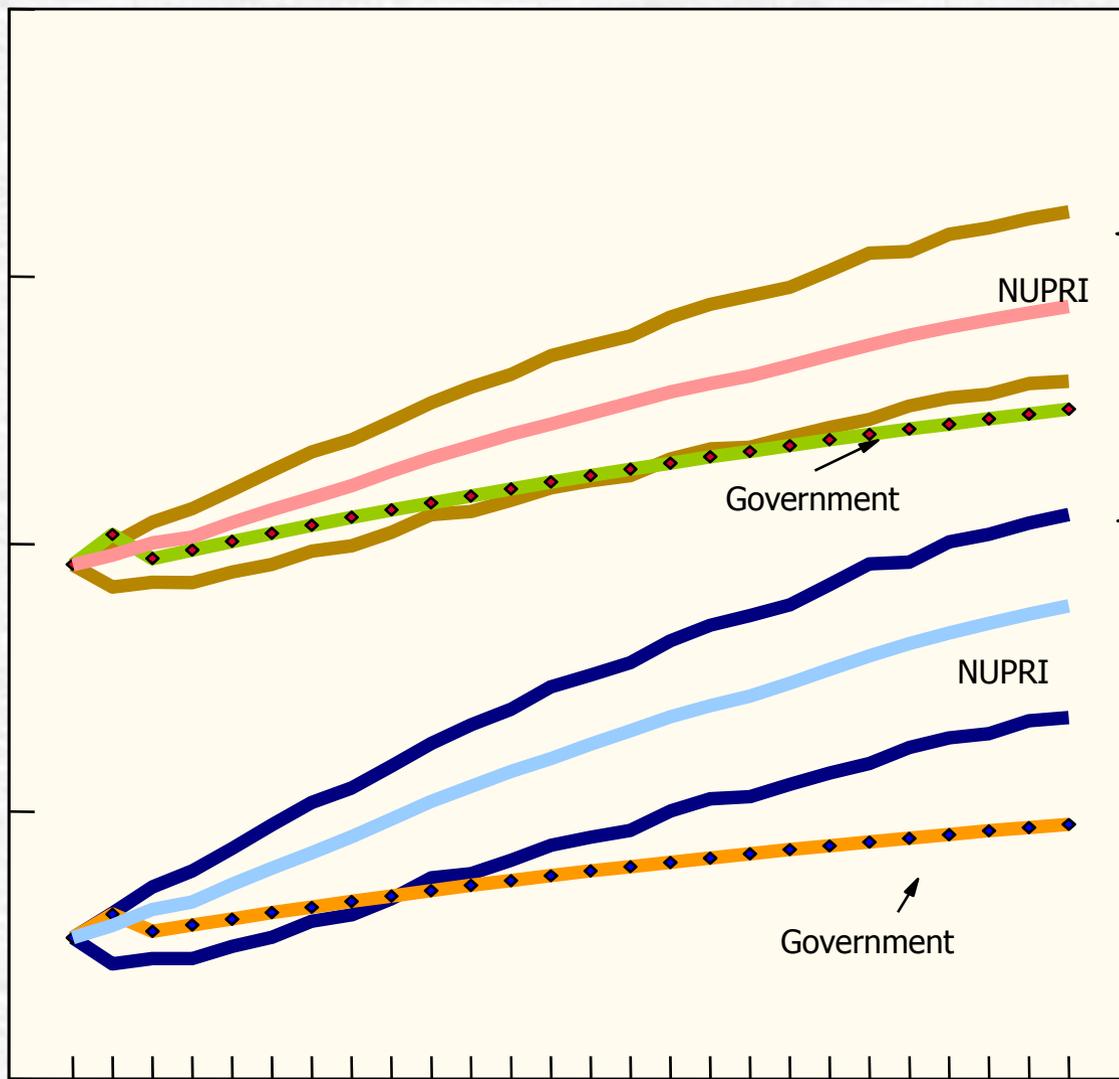
NUPRI

Government

90% confidence level

90% confidence level

NUPRI

Government

2000   2005   2010   2015   2020   2025

Year

Projected total fertility rate, 2000-2025
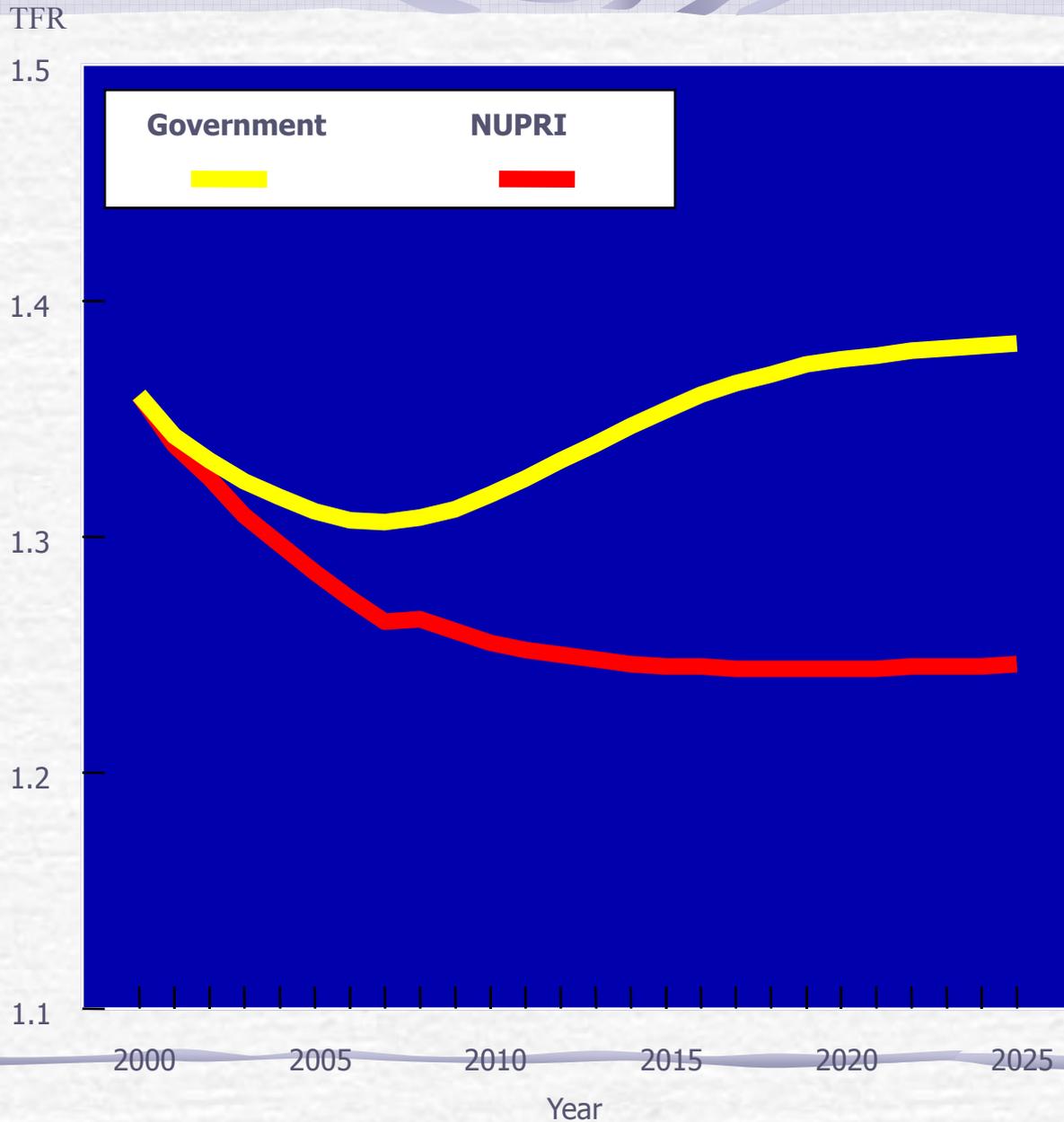
Projected total population, 2000-2025
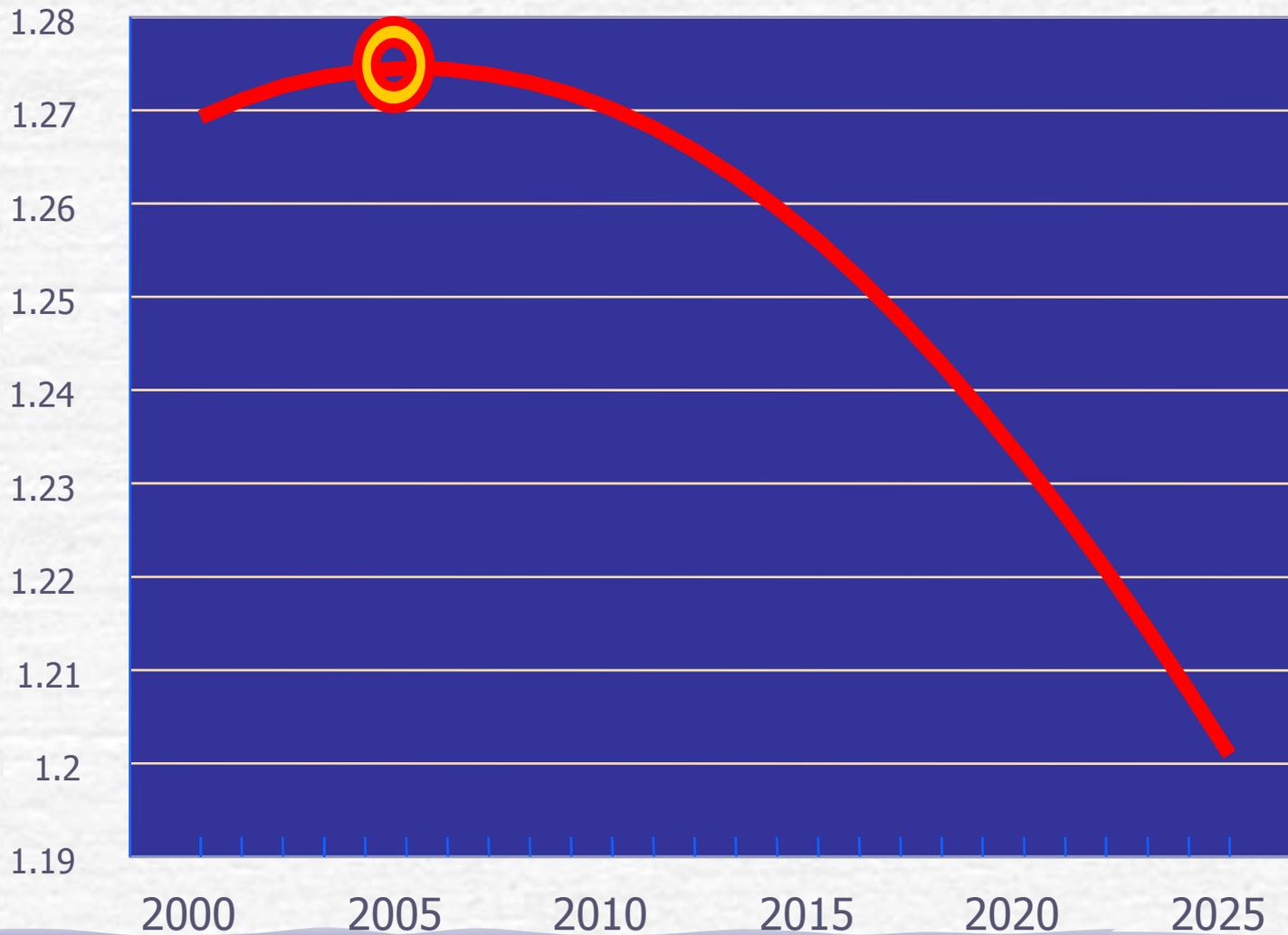
2000年と2025年の人口ピラミッド（推計値）

男　女
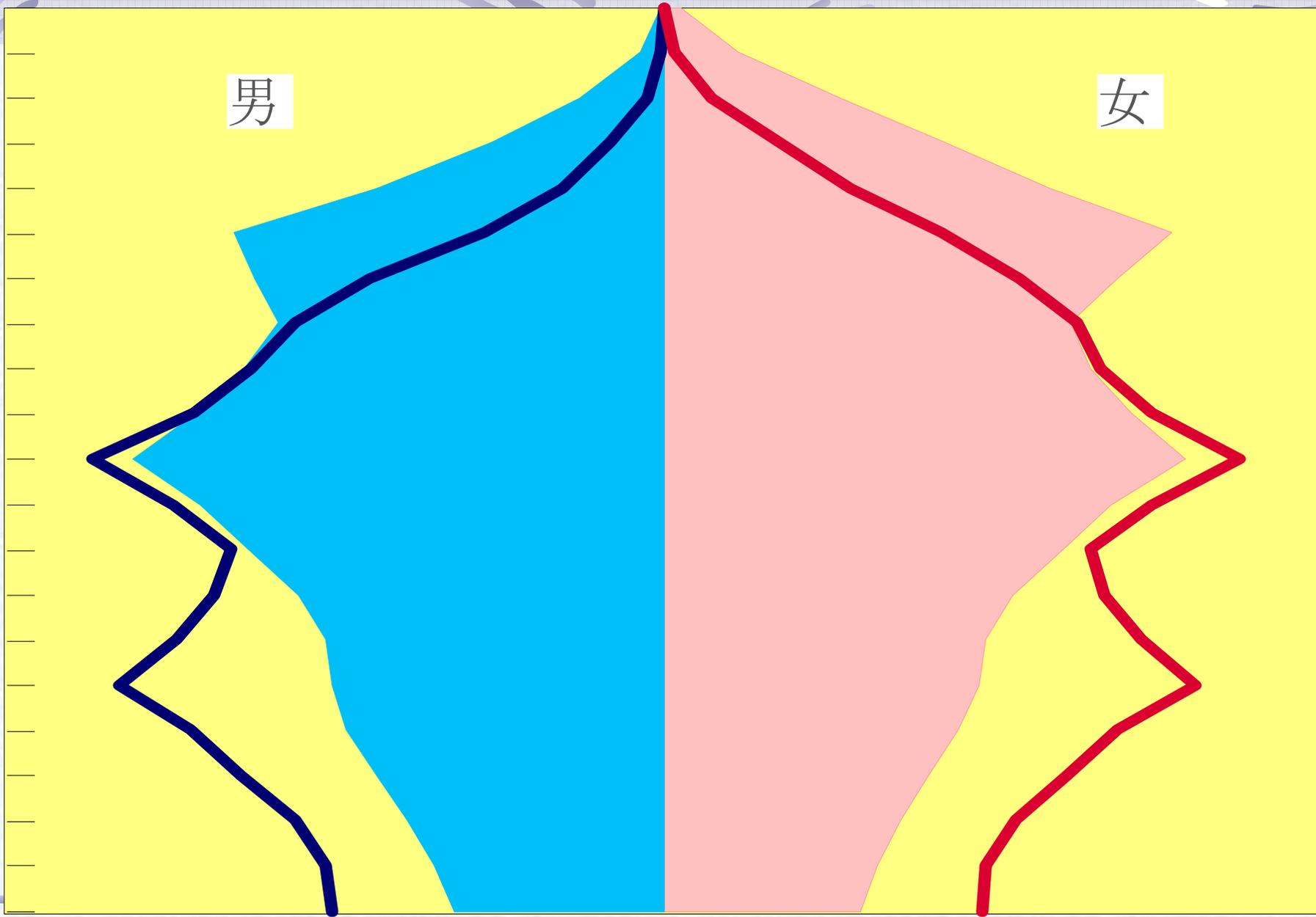
The Bottom Line

- Rapid aging appears to be virtually certain
    - Life expectancy continues to rise
    - Low fertility is resistant to policy
    - Immigration is of limited help
- How best do we accommodate the aging of our populations?

Three Strategies for Responding to an Aging Society

- Strategy 1: Retire Later
- Strategy 2: Expand Transfer Programs
- Strategy 3: Accumulate Pension Funds

Labor force participation rates for men and women aged 65 and over in selected countries, 2000
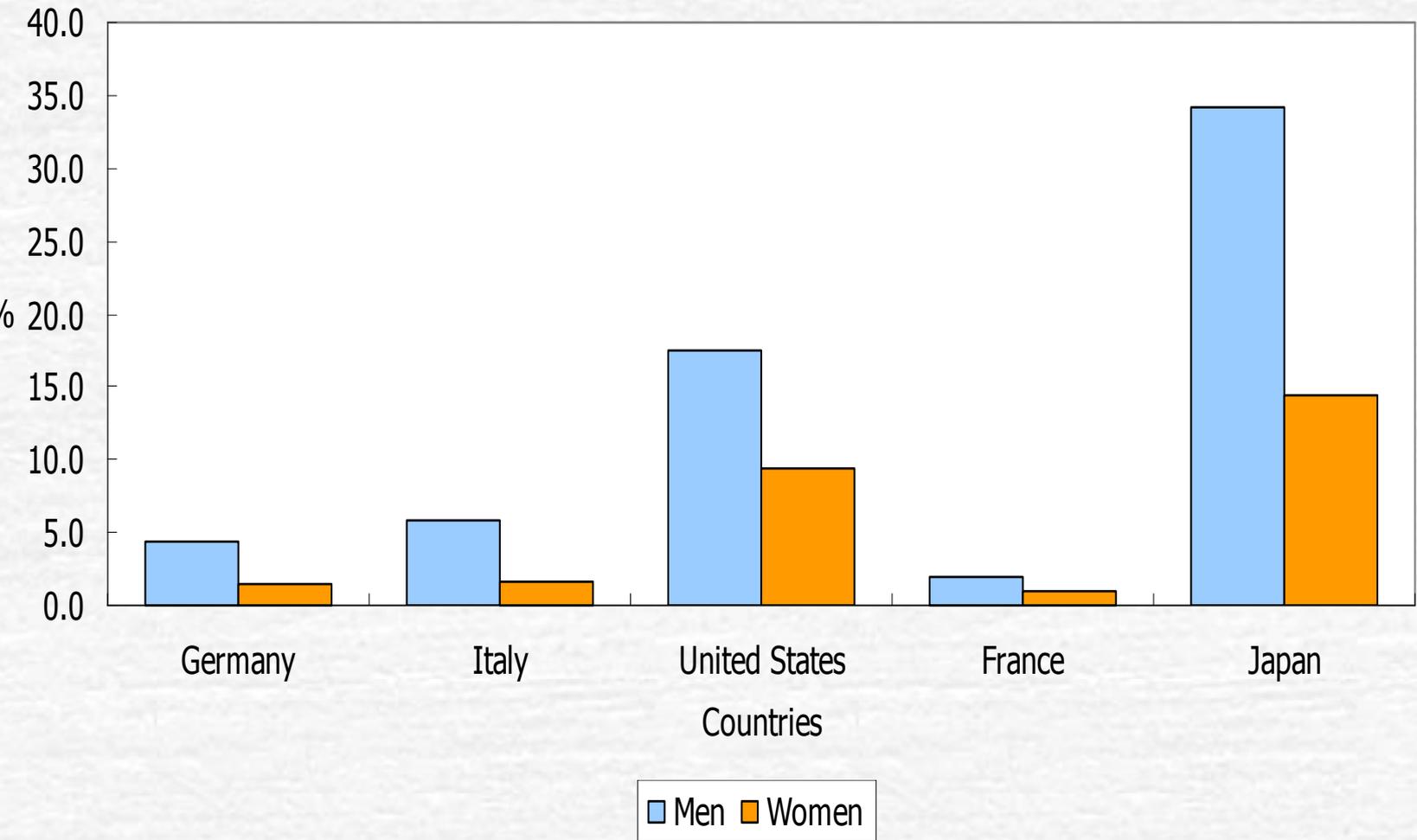
Strong Trend toward Early Retirement in West
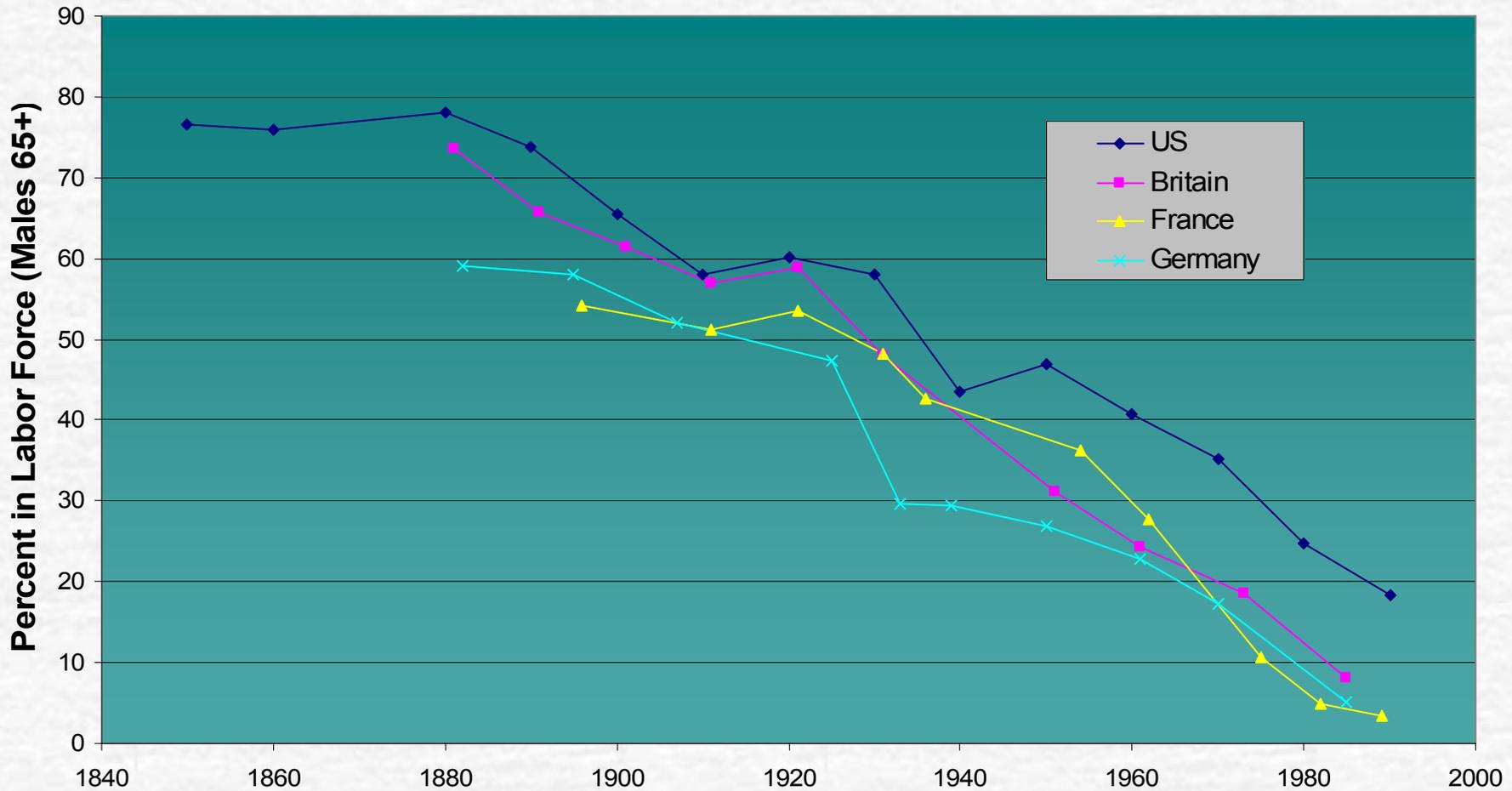
Source: Costa 1998, Table 2A.2.

Labor force participation rates aged 65 and over, 1960-2003
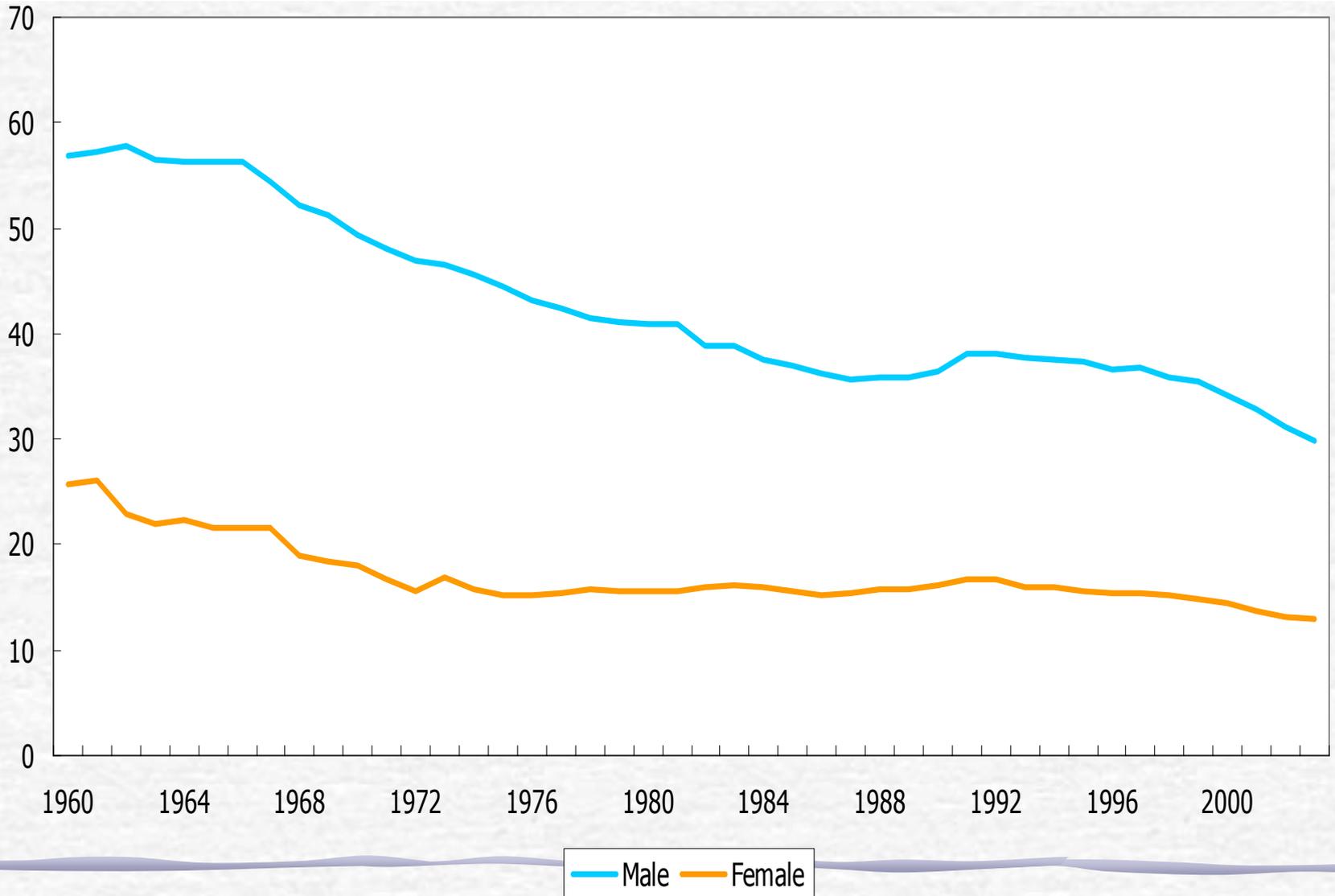
Asia is Joining the Trend toward Early Retirement
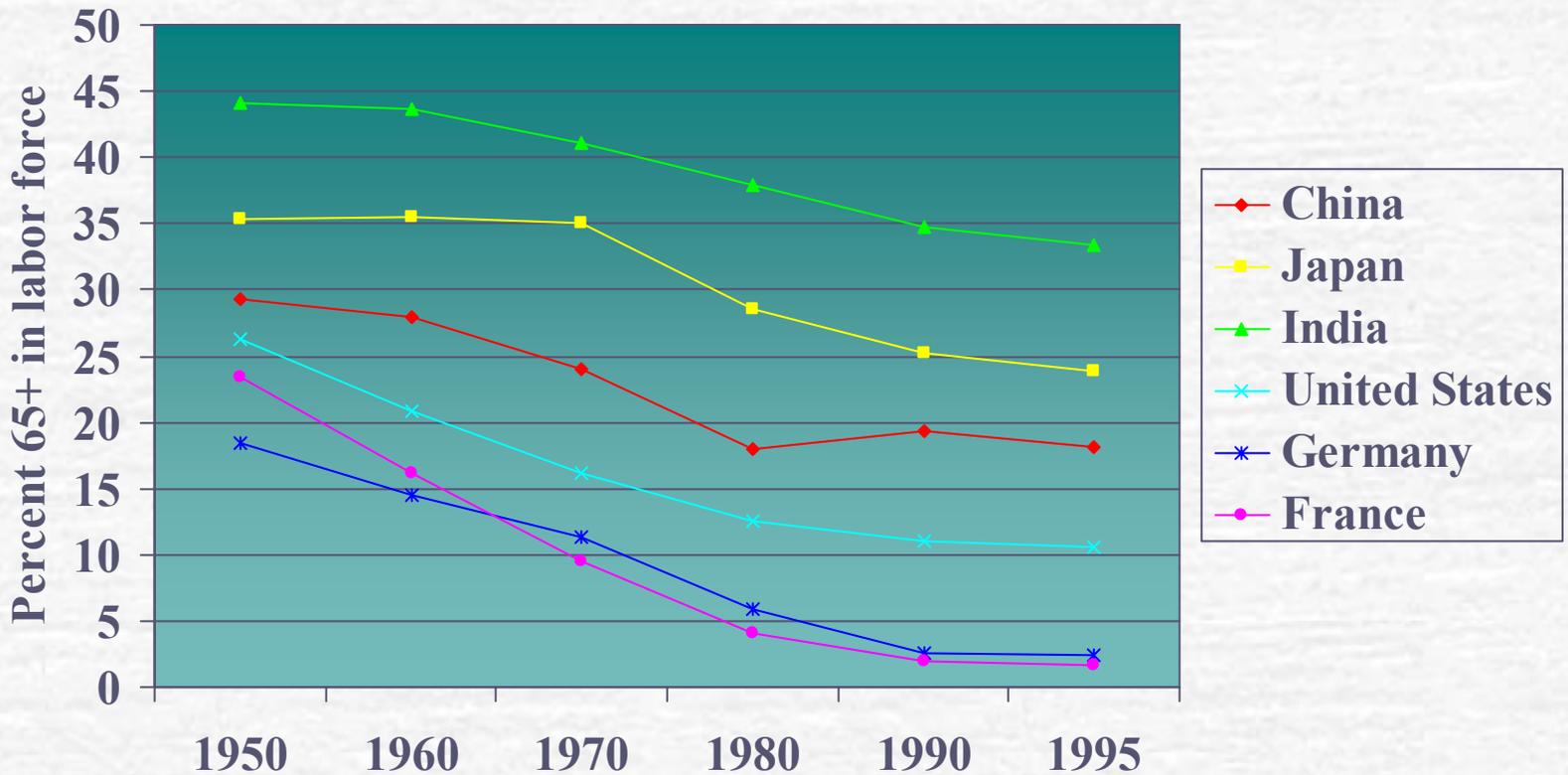
Note: Male and female combined.

Mandatory retirement age in Japan, by firm size, 2003

Firm size

Legend: ■ 55 ■ 56-59 ■ 60 ■ 61-64 ■ 65 ■ 66 and over □ Others
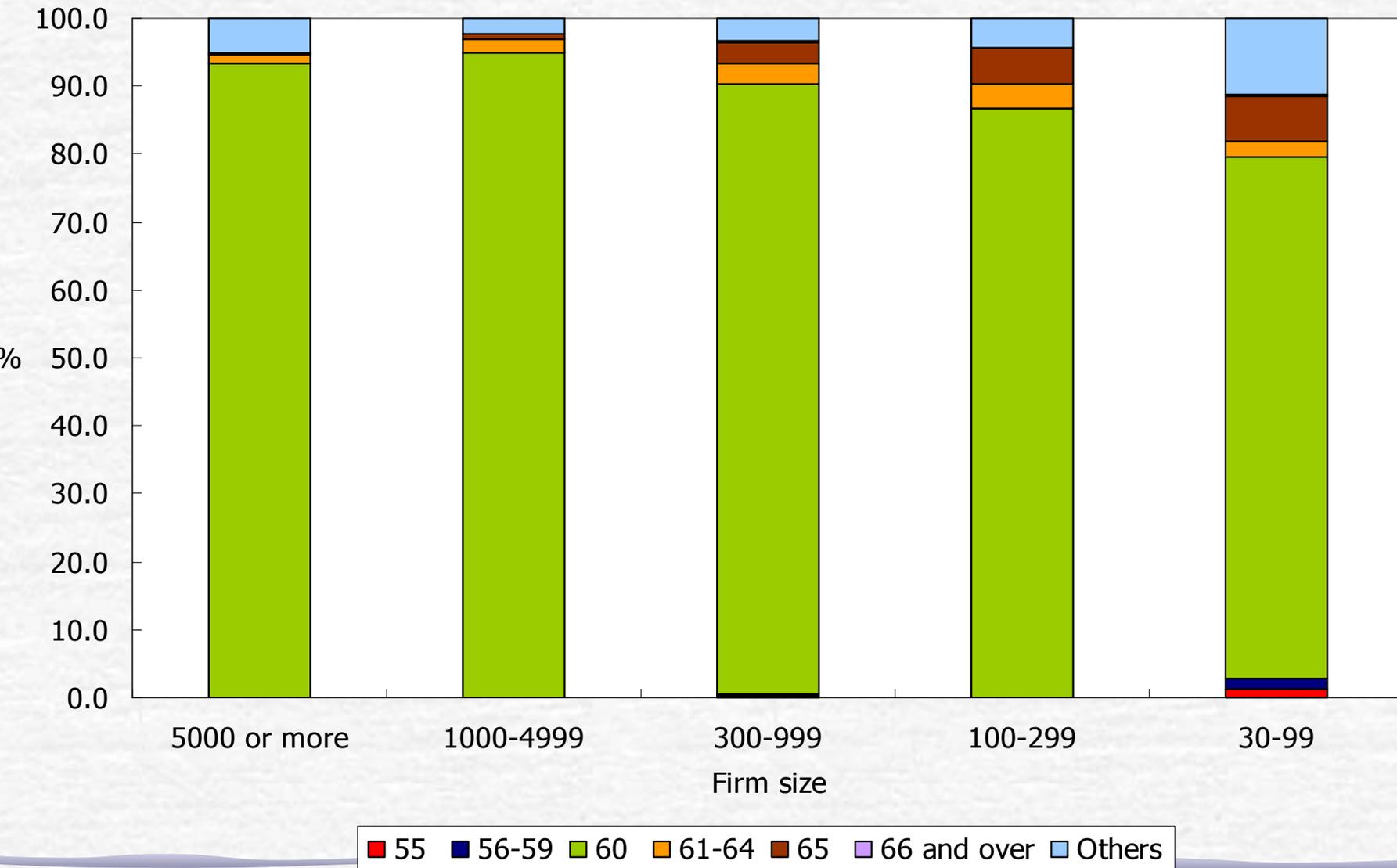
Average age of mandatory retirement in large firms
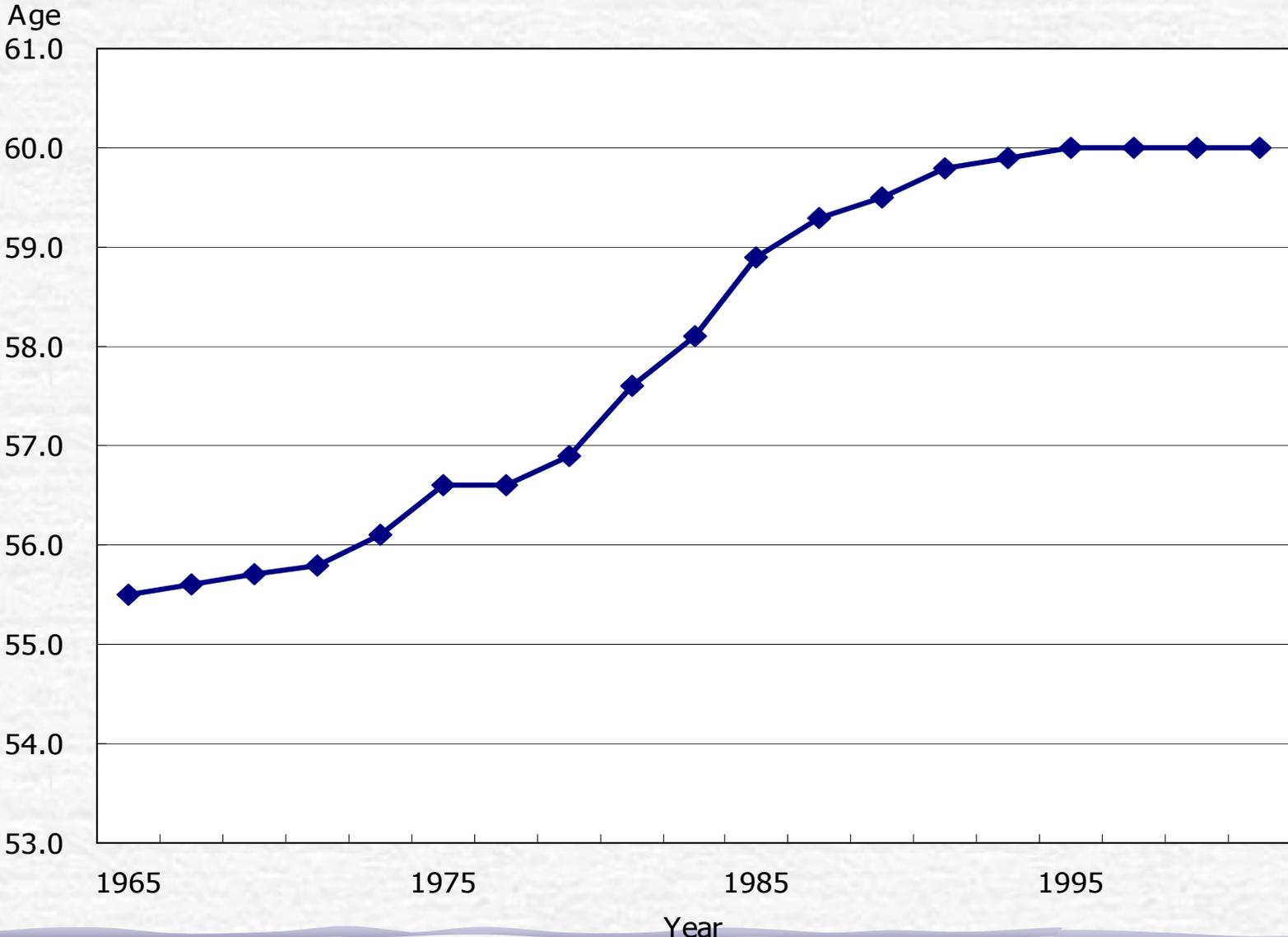
Trends in reasons for quitting job for persons aged 65 and over: Japan, 1950-2004
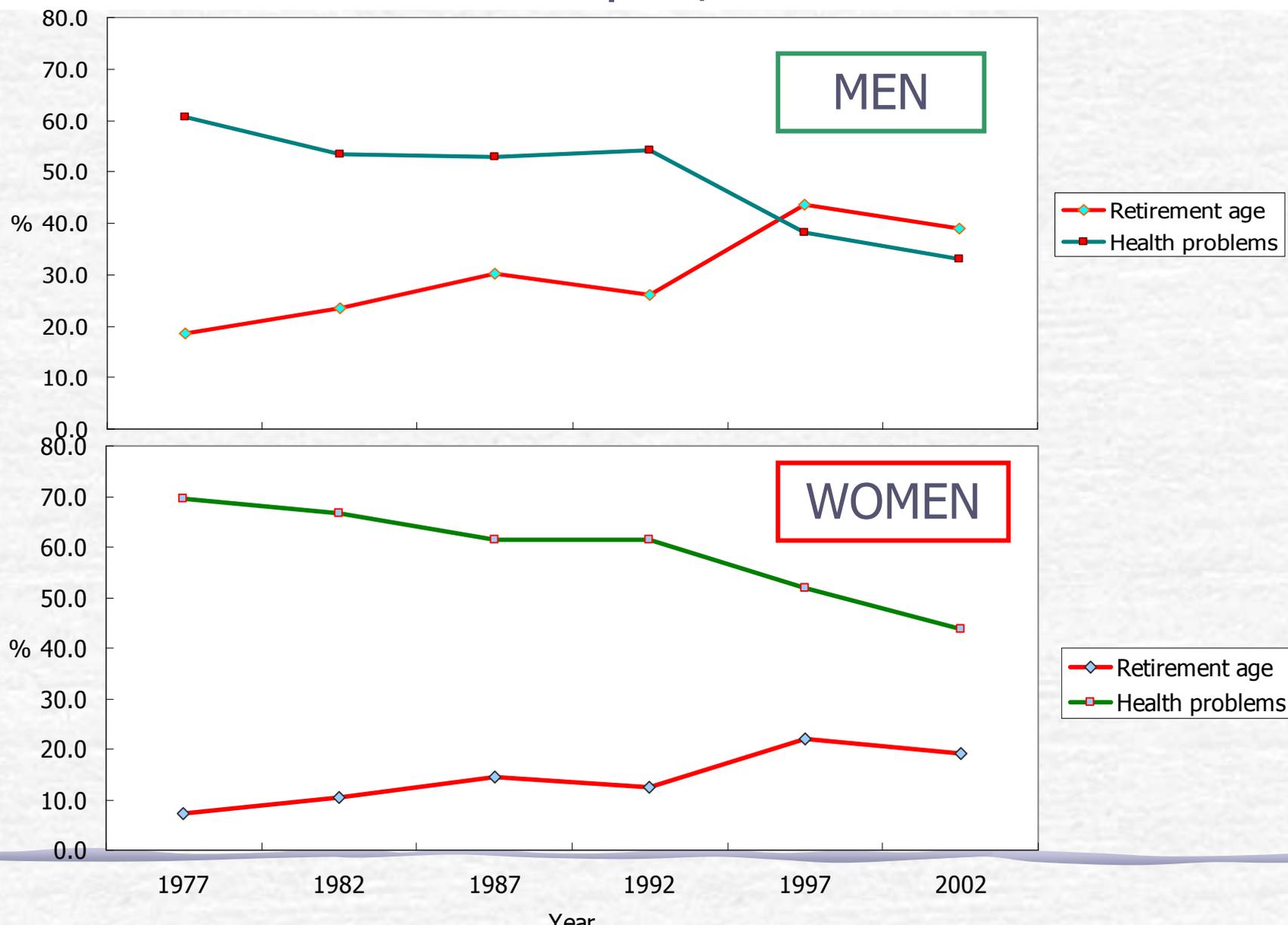
Change in retirement age at large-scale businesses and life expectancies at age 20 for men and women: Japan, 1965-2002
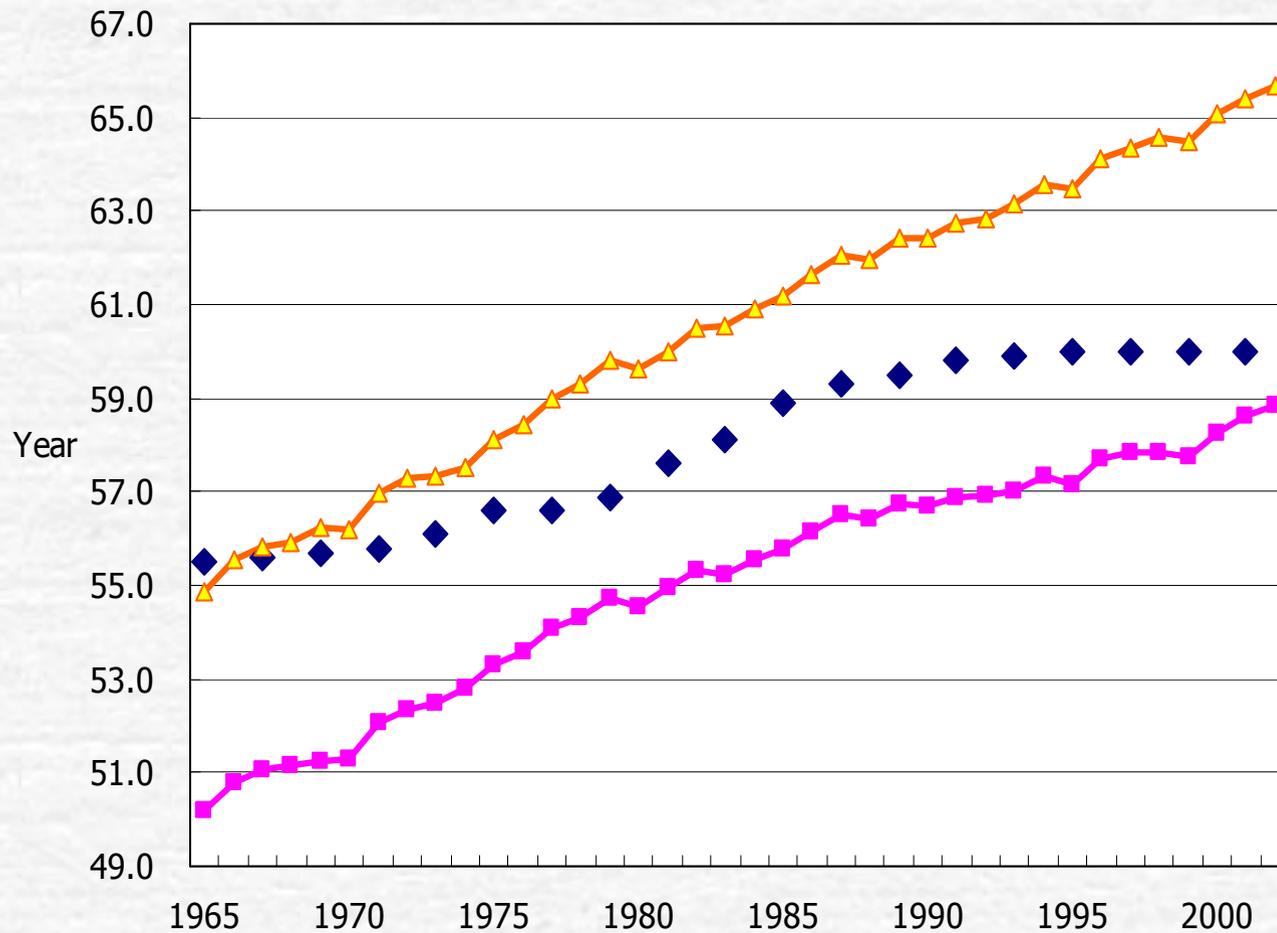
Male	Reason for quitting job				Female	Reason for quitting job		
	Mandatory retirement	Health	Personal curtailment, liquidation or bankruptcy of the company			Mandatory retirement	Health	Personal curtailment, liquidat or bankruptcy of the compa
55-59					55-59			
1982	29.3	13.4	13.4		1982	11.0	24.1	1
1992	14.7	14.3	14.4		1992	8.1	19.8	1
2002	5.7	9.0	28.2		2002	3.2	12.4	2
60-64					60-64			
1982	50.0	18.5	7.9		1982	18.6	37.4	
1992	54.1	15.8	6.2		1992	25.4	24.7	
2002	46.1	10.3	16.7		2002	23.4	16.3	1
65-69					65-69			
1982	43.8	32.5	6.6		1982	14.6	57.5	
1992	57.6	22.0	4.4		1992	26.8	36.4	
2002	52.4	17.9	10.7		2002	27.6	24.8	1
% of working among those who left job by mandatory retirement								
55-59					55-59			
1982	67.4				1982	22.1		
1992	77.5				1992	29.6		
2002	74.4				2002	37.7		
60-64					60-64			
1982	51.4				1982	17.2		
1992	52.3				1992	22.9		
2002	41.3				2002	20.7		
65-69					65-69			
1982	41.5				1982	15.8		
1992	40.7				1992	16.3		
2002	32.4				2002	13.6		

NUJLSOA

Nihon **U**niversity **J**apan **L**ongitudinal **S**tudy **o**f **A**ging

Survey in 1999 , 2001 and 2003

Grouping for analysis

Y = 1 if the individual was not working in 1999

Y = 2 if the individual was working in 1999 but not in 2001

Y = 3 if the individual was working in 1999 and 2001, but not in 2003

Y = 4 if the individual was working in 1999, 2001, and 2003

Labor force transition by respondents aged 65-84

Men

1999		2001		2003

Working （37%）　—63%→　Working　—70%→　Working

38%　　　　　　30%

Not working （63%）　—8%→　Not working　—6%→　Not working

92%　　　　　　94%

Women

1999		2001		2003

Working （18%）　—51%→　Working　—66%→　Working

49%　　　　　　34%

Not working （82%）　—4%→　Not working　—4%→　Not working

96%　　　　　　96%
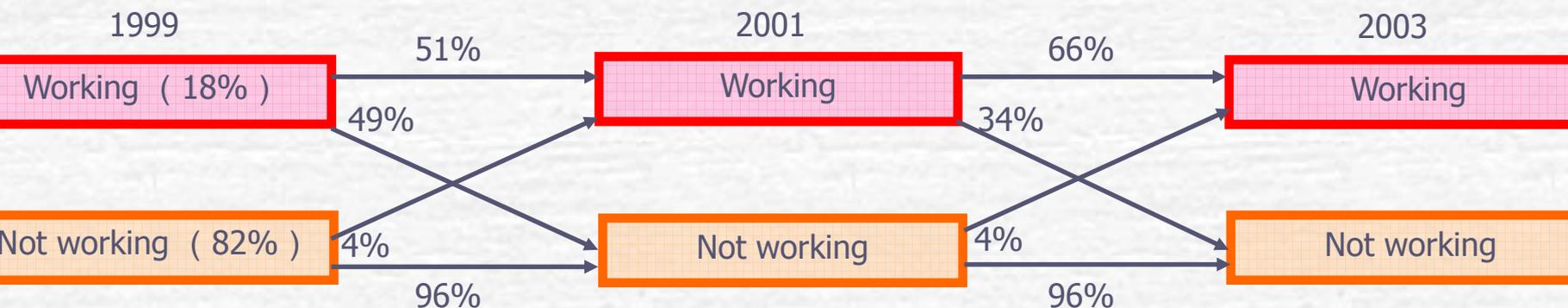
Percent of respondents with difficulty in performing NAGI index activities in 1999, 2001, and 2003
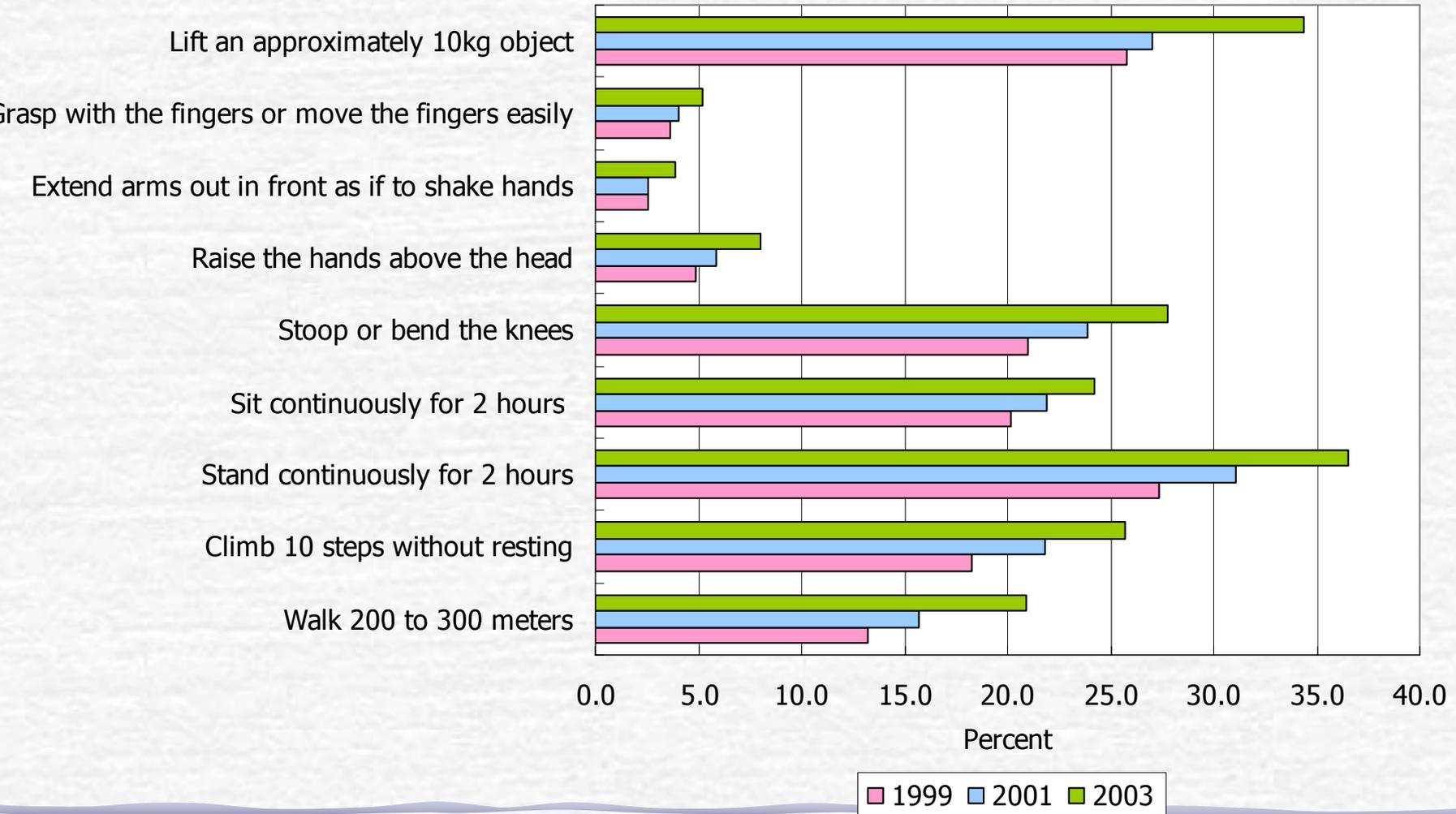
Composition of respondents change by NAGI score between 1999 and 2003

Change in NAGI score	Men (percent)	Women (percent)
Between 1999 and 2001		
Improvement	16.6	24.1
No change	62.7	44.8
Deterioration	21.7	31.1
Between 2001 and 2003		
Improvement	11.5	21.2
No change	65.3	50.4
Deterioration	23.2	28.4

Percent of respondents expecting to rely on children by age in 1999, 2001, and 2003

Men			
	Year of survey		
Age	1999	2001	2003
65-69	27.3	27.8	22.7
70-74	32.3	36.8	36.0
75-79	39.3	43.3	40.8
80-84	48.6	48.5	47.2

Women			
	Year of survey		
Age	1999	2001	2003
65-69	35.7	38.4	37.0
70-74	45.9	47.6	42.3
75-79	57.8	58.7	56.3
80-84	68.0	69.6	63.9

Estimated effect on probabilities of working in 1999

	Men		Women	
Predicted mean	32.8		16.3	
NAGI score				
Some difficulty	20.7	**	11.9	**
No difficulty+	39.0		21.1	
Age				
65-69	42.3	**	26.4	**
70-74	37.1	**	20.1	**
75-79	29.0	*	13.1	
80-84+	24.8		11.6	
Education				
Junior high or lower+	28.8		15.3	
Senior high	36.6	**	17.8	
Univ or Junior college	43.7	**	22.2	**
Marital status & spouse's health				
Married and spouse is healthy	34.2		18.8	*
Married and spouse is not he	25.2	**	13.5	
Not married+	35.8		15.5	
Longest job				
Self-employed or agriculture	55.0	**	31.6	**
Others+	21.7		7.6	
Living with child				
Yes	33.7		16.0	
No+	32.1		16.8	
Living with pre-schooler				
Yes	32.6		17.6	
No+	32.8		16.2	
Current residence				
Urban	29.8	**	14.7	**
Rural+	37.0		17.9	
Home ownership				
Yes	32.9		16.3	
No+	32.3		15.8	
Log likelihood	-888.6		-809.9	
Sample size	1691		2280	

	From 1999 to 2001		From 2001 to 2003	
	Men	Women	Men	Women
Predicted mean	64.5	56.0	74.2	69.4
NAGI score in 1999				
Some difficulty	58.3 *	54.2	58.9 *	66.7
No difficulty+	65.5	56.8	76.1	70.4
Change in NAGI from previous survey				
-3 (improvement)	75.6 *	69.3 **	95.0 **	90.3 **
0 (no change)	65.1 *	57.4 **	77.8 **	72.6 **
+3 (deterioration)	52.9 *	44.4 **	40.6 **	46.4 **
Age				
65-69	77.7 **	69.5 **	76.4	77.9
70-74	63.2	61.1 **	75.8	70.8
75-79	55.2	49.1 *	73.8	67.7
80-84+	54.5	30.7	69.4	63.2
Education				
Junior high or lower+	61.0	57.7	68.8	61.8
Senior high	65.8	51.8	82.9 **	87.3 **
Univ or Junior college	75.4 **	69.9	74.9	44.5
Marital status & spouse's health				
Married and spouse is healthy	64.8	58.8	73.5	67.0
Married and spouse is not hea	69.6	51.0	79.9	78.8
Not married+	57.0	55.6	72.8	67.9
Longest job				
Self-employed or agriculture	70.4 **	57.9	78.3	75.3 **
Others+	57.0	51.8	69.3	54.5
Living with child				
Yes	69.5 **	53.3	74.8	73.7
No+	59.4	59.7	73.6	64.4
Living with pre-schooler				
Yes	54.9	28.4	80.7	46.0
No+	65.0	56.8	74.0	70.4
Current residence				
Urban	60.7 *	59.4	73.0	78.5 **
Rural+	68.9	52.2	75.5	61.4
Home ownership				
Yes	63.2 *	56.8	74.4	69.7
No+	77.8	48.0	71.9	66.5
Log likelihood	-242.4	-153.6	-110.2	-54.0

Estimated effect on probabilities of men working sequentially, conditional on working in the previous survey period, by region

	From 1999 to 2001		From 2001 to 2003	
	Urban	Rural	Urban	Rural
Predicted mean	61.0	65.8	75.0	72.1
NAGI score in 1999				
Some difficulty	59.2	51.6 *	35.1 **	77.4
No difficulty+	61.3	68.6	79.1	71.3
Change in NAGI from previous survey				
-3 (improvement)	59.6	89.1 **	95.2 **	95.4 **
0 (no change)	60.9	67.5 **	76.9 **	77.7 **
+3 (deterioration)	62.1	35.5 **	38.2 **	41.7 **
Age				
65-69	70.9 **	73.9	67.2	83.0 **
70-74	74.8 **	48.5 **	85.1	79.3
75-79	48.3	54.0 **	85.5	63.2
80-84+	42.3	78.6	87.9	54.3
Education				
Junior high or lower+	55.6	65.2	73.7	66.0
Senior high	63.0	65.0	77.9	88.1 **
Univ or Junior college	69.1	78.0	72.2	83.2
Marital status & spouse's health				
Married and spouse is healthy	62.8	68.3 **	75.5	69.7
Married and spouse is not health	52.8	71.6 **	66.1	83.5
Not married+	59.0	43.6	76.2	64.9
Longest job				
Self-employed or agriculture	68.3 **	68.8	83.2	73.8
Others+	54.8	59.4	70.0	68.3
Living with child				
Yes	64.8	70.1	77.4	74.6
No+	57.6	60.4	73.2	68.4
Living with pre-schooler				
Yes	49.9	60.0	48.7	...
No+	61.4	66.2	75.5	...
Home ownership				
Yes	58.9	65.0	75.7	...
No+	73.5	93.9	69.8	...
Log likelihood	-139.3	-99.3	-48.1	-44.7

Estimated effect on probabilities of expecting to depend on children for old-age security, 2001 and 2003

	2001		2003	
	Men	Women	Men	Women
Predicted mean	38.7	57.1	37.3	53.9
NAGI score in previous survey				
Some difficulty	42.8	61.4 **	39.1	56.1
No difficulty+	37.4	53.1	36.6	51.8
Change in NAGI from previous survey				
-3 (improvement)	33.3	50.2 **	38.8	51.5
0 (no change)	38.6	56.9 **	37.4	53.7
+3 (deterioration)	44.2	63.4 **	36.1	55.9
Age				
65-69	29.8 **	49.2 **	22.5 **	51.1
70-74	39.9	53.4 **	37.2	46.5 **
75-79	39.8	58.7 *	40.6	56.4
80-84+	44.5	64.6	37.3	57.9
Education				
Junior high or lower+	43.5	59.3	41.6	58.3
Senior high	36.6 *	54.9	34.9 *	47.7 **
Univ or Junior college	20.2 **	40.5 **	22.2 **	32.4 **
Marital status & spouse's health				
Married and spouse is healthy	36.7 **	52.5 **	33.3 **	47.5 **
Married and spouse is not hea	40.1	53.9 *	39.3 **	54.4
Not married+	48.3	60.9	51.7	56.6
Longest job				
Self-employed or agriculture	41.1	65.3 **	41.1	58.7 **
Others+	37.4	52.3	35.2	50.9
Living with child				
Yes	50.7 **	67.9 **	46.6 **	61.9 **
No+	26.0	41.6	28.1	42.6
Living with pre-schooler				
Yes	35.2	66.9	40.8	67.0
No+	38.9	56.8	37.1	53.6
Current residence				
Urban	32.7 **	53.5 **	33.7 **	49.8 **
Rural+	48.3	63.4	43.0	60.4
Home ownership				
Yes	39.7 **	58.1 *	38.9 **	54.8 *
No+	28.2	49.6	17.4	45.2
Log likelihood	-532.2	-664.7	-494.0	-629.3

Simulations

Use NUPRI Model:

Assume Mandatory Retirement Age raised from 60 to 65

In response, employment rates for persons 60 to 64 rise to those of persons 55 to 59

Based on these assumptions, use NUPRI model to recalculate GDP and GDP per capita

Interrelationship among three submodels モデルの構成

Population submodel

sex differential in enrollment for university education

fertility

mortality

Population by age and sex

labor force participation rate

labor supply

Economic submodel

income share

price, wage

consumption, investment

employment

Social security submodel

Medical insurance schemes

total medical expenditure

contribution to medical schemes

medical benefits

social security benefits

pension benefits

pension schemes

contribution to social insurance schemes

contribution to pension schemes

Economic Projections from NUPRI Model

Item	Base Case	Base Case	More Older Workers
	2005	2025	2025
Real GDP(Trillion Yen)	564.7	624.8	693.8
Real GDP Per Capita (million yen)	4.43	5.2	5.74

The Second Dividend

- Life expectancy is increasing
- Stimulates the accumulation of wealth
- More wealth leads to a permanent increase in income

Wealth Profiles
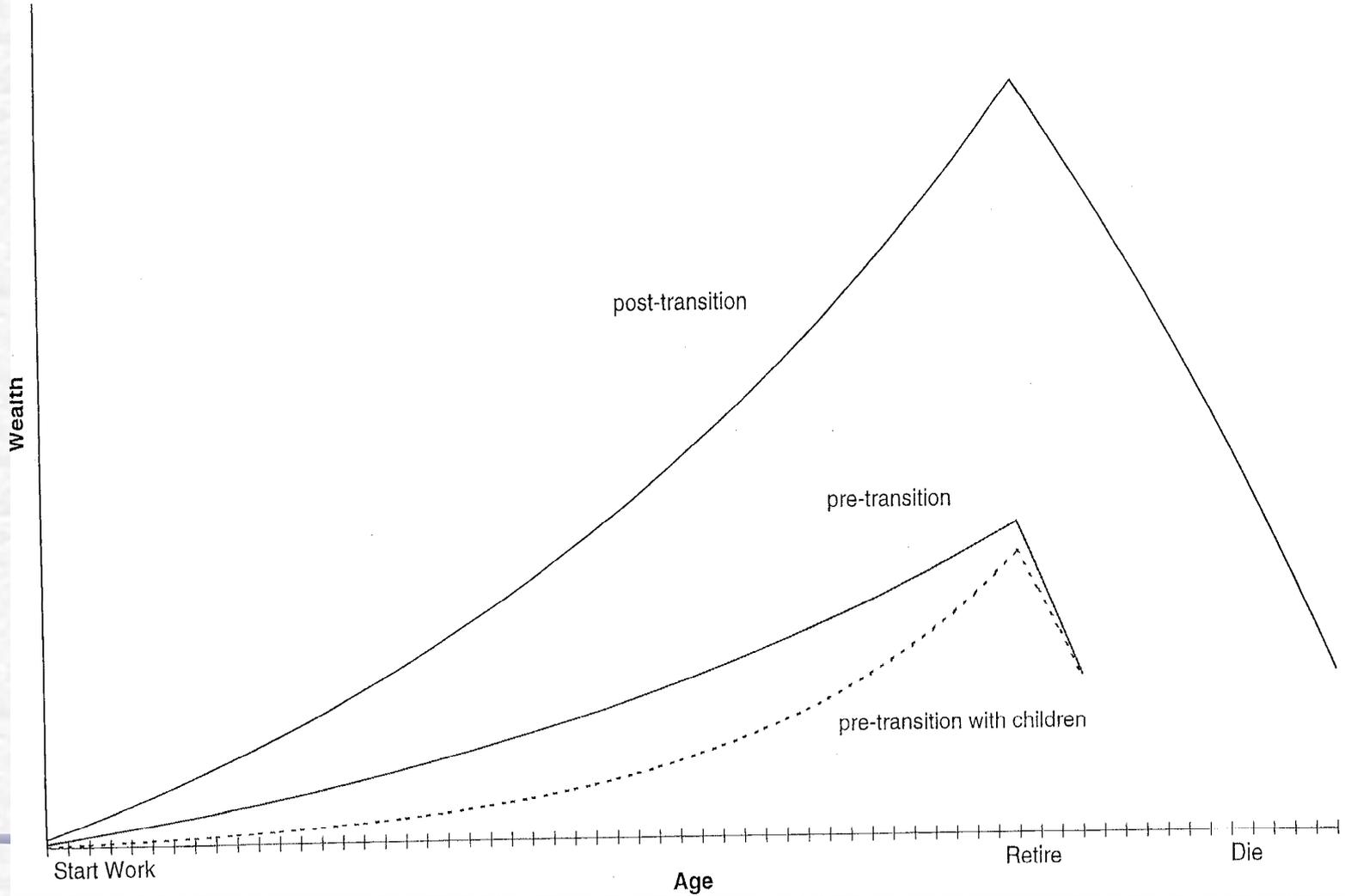
Household Financial Assets
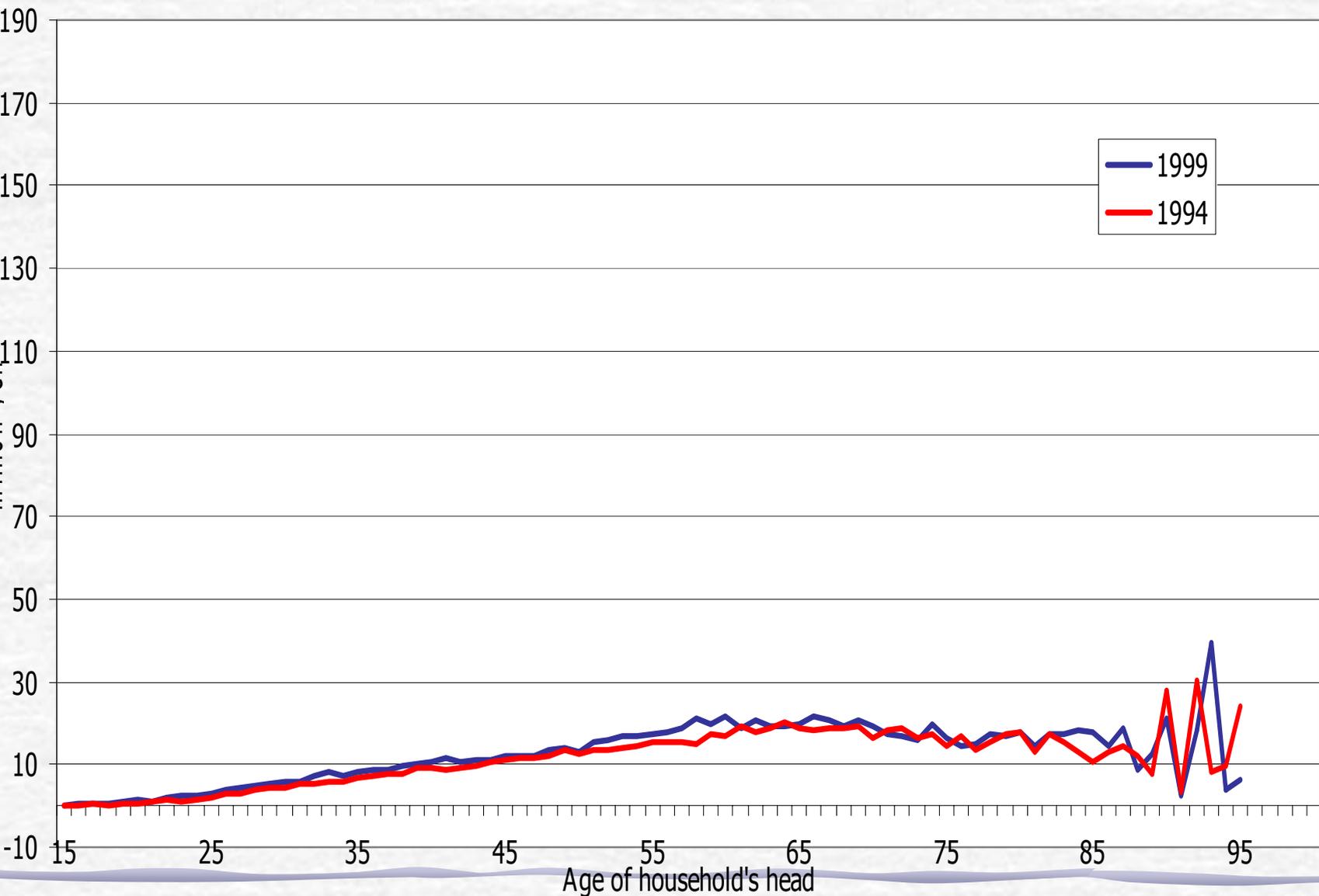
Real Assets
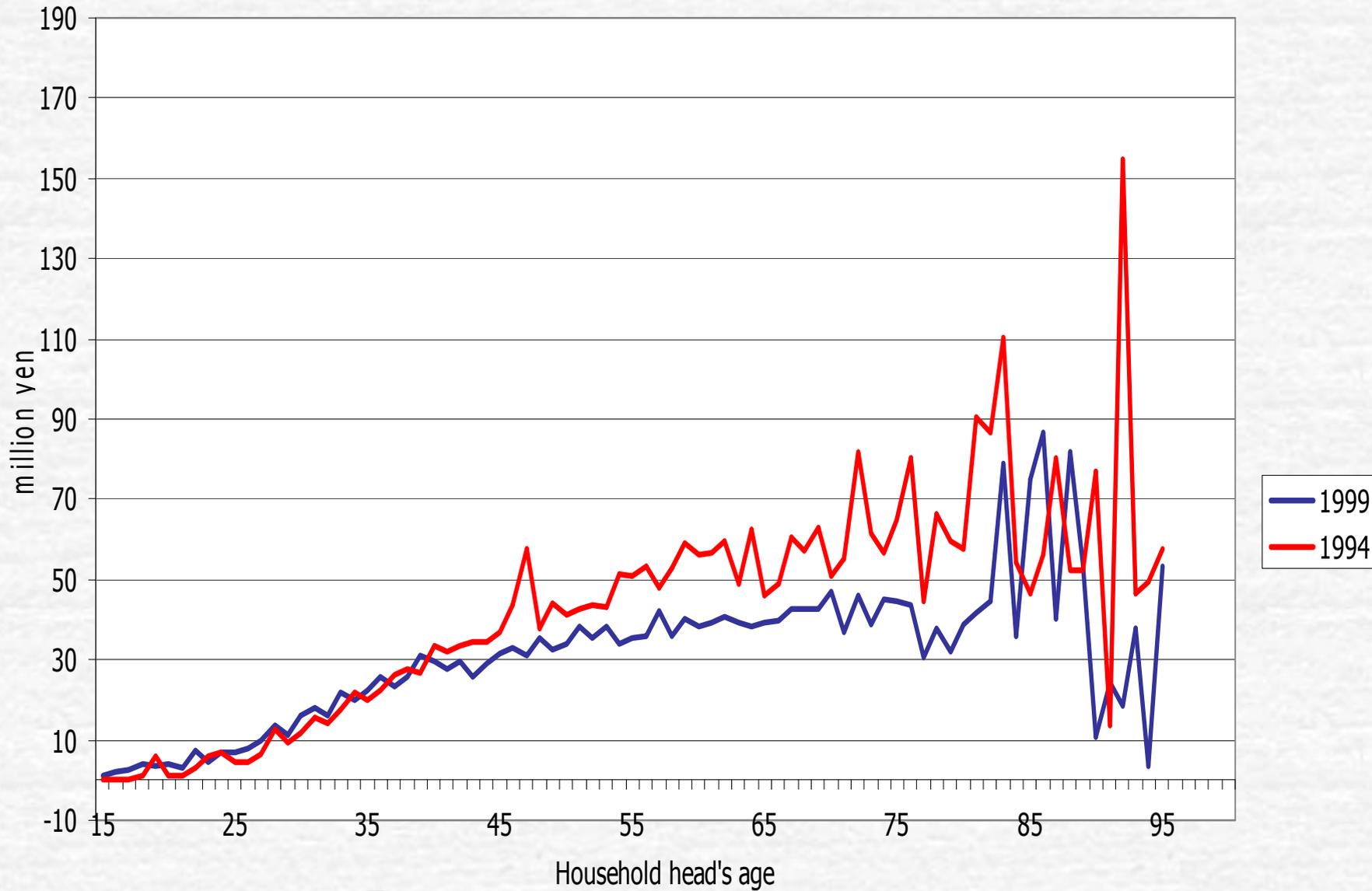
Lifecycle Deficit by Age, Japan, 1999 Actual and 2025 Age Distribution
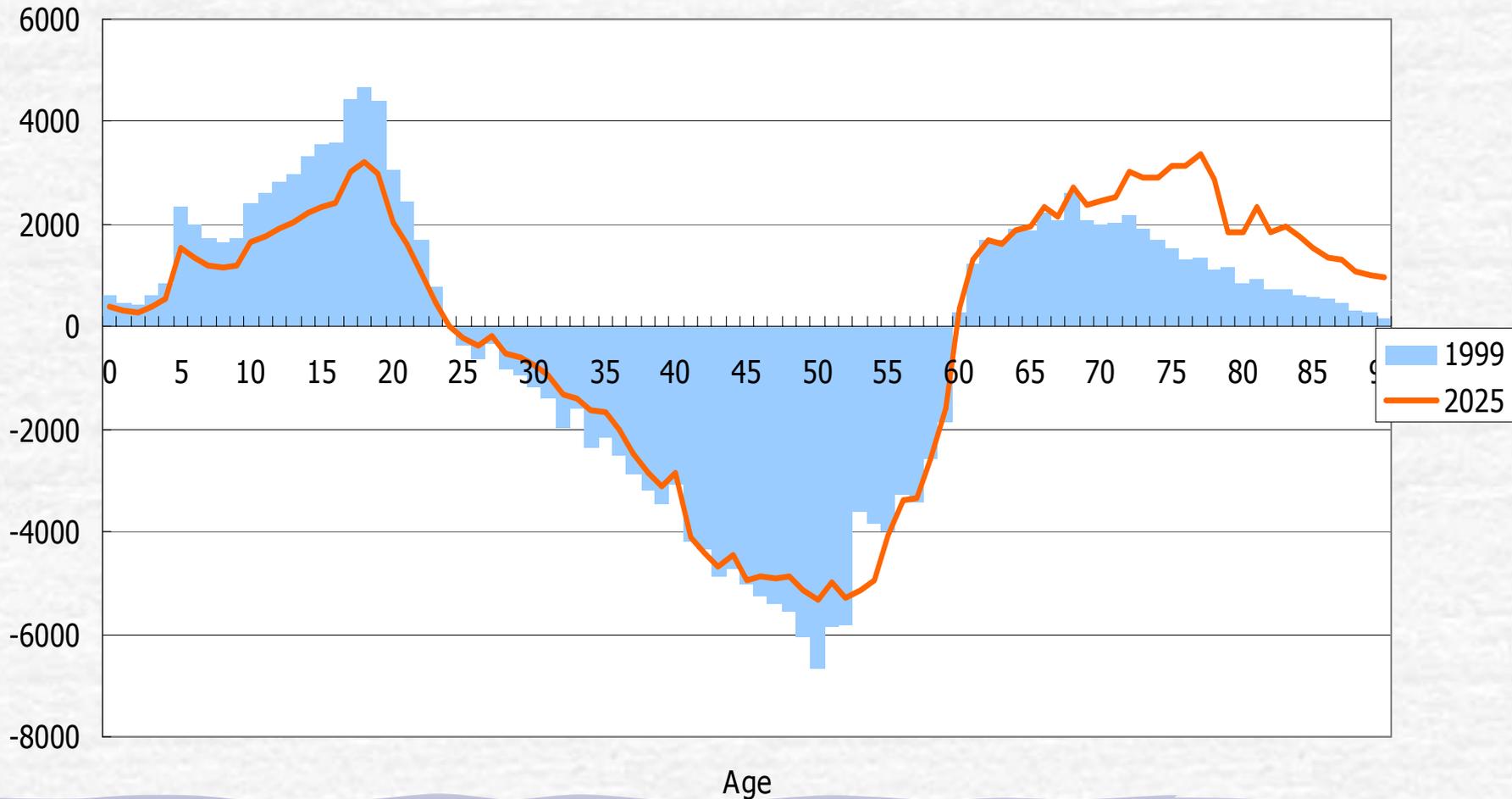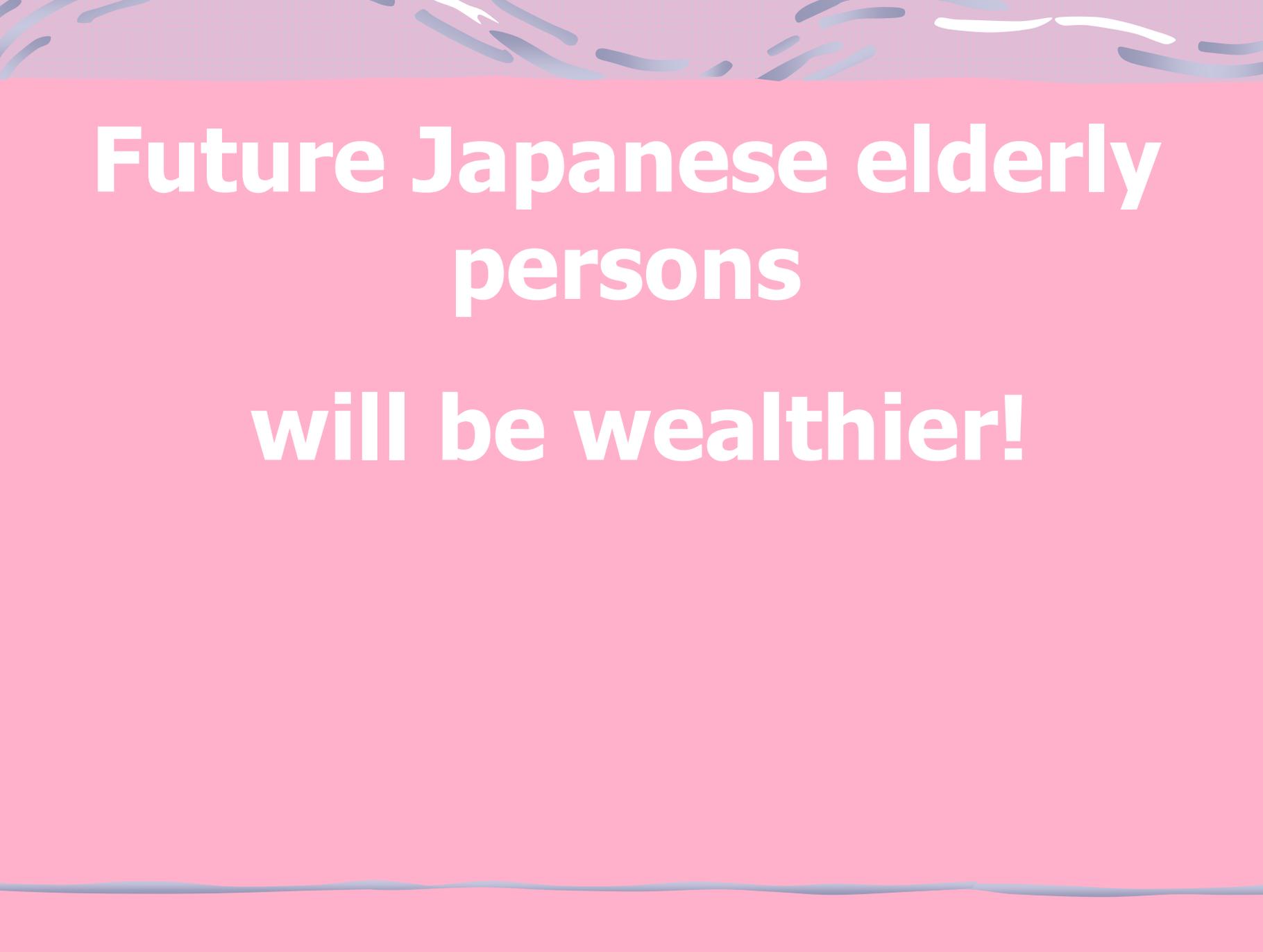
Future Japanese elderly persons

will be wealthier!

Elderly population by heath status, Japan 2000-25
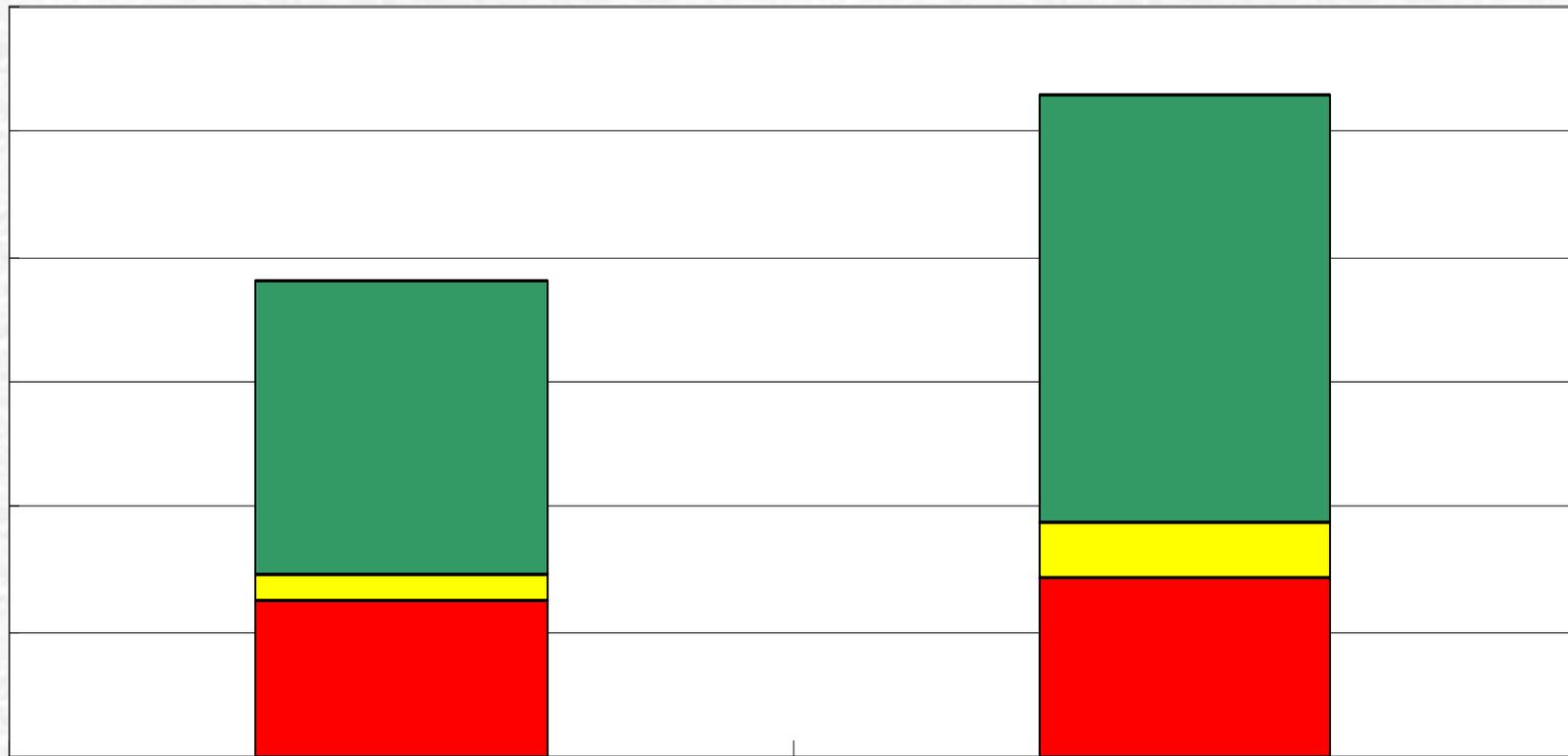
Future Japanese elderly persons

will be

not only wealthier but also healthier!

Future Japanese elderly persons

will be

wealthier, healthier

and

cleverer!

Length of demographic bonus period

Country	Period
Japan	~1965–2005
Singapore	~1978–2025
Republic of Korea	~1987–2028
Democratic People's Republic of Korea	~1988–2035
China	~1990–2030
Thailand	~1993–2033
Sri Lanka	~1997–2029
Mongolia	~2007–2048
Iran (Islamic Republic of)	~2007–2047
Viet Nam	~2008–2043
Indonesia	~2009–2044
Myanmar	~2011–2048
Malaysia	~2013–2045

1950   1970   1990   2010   2030   2050   2070
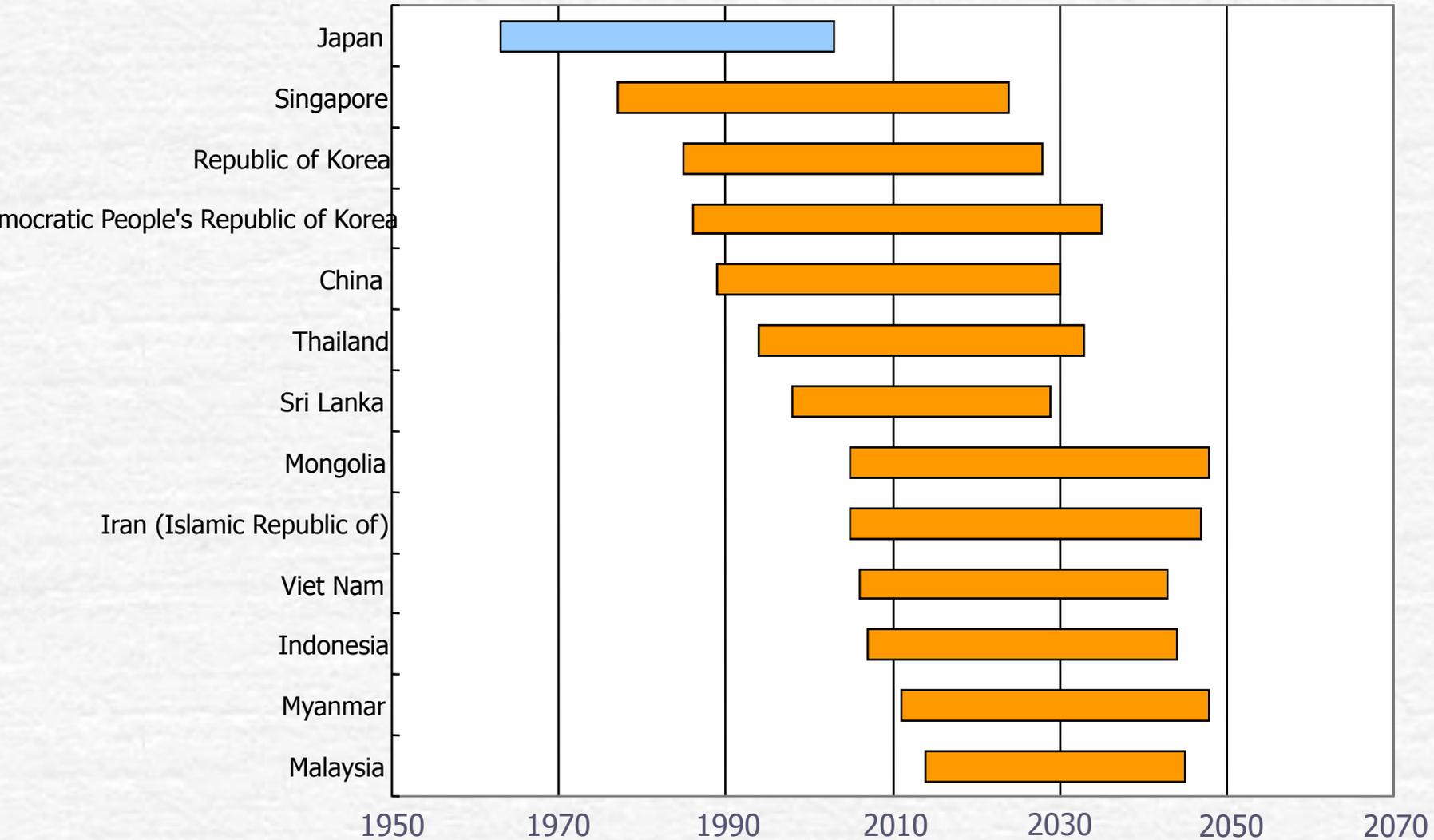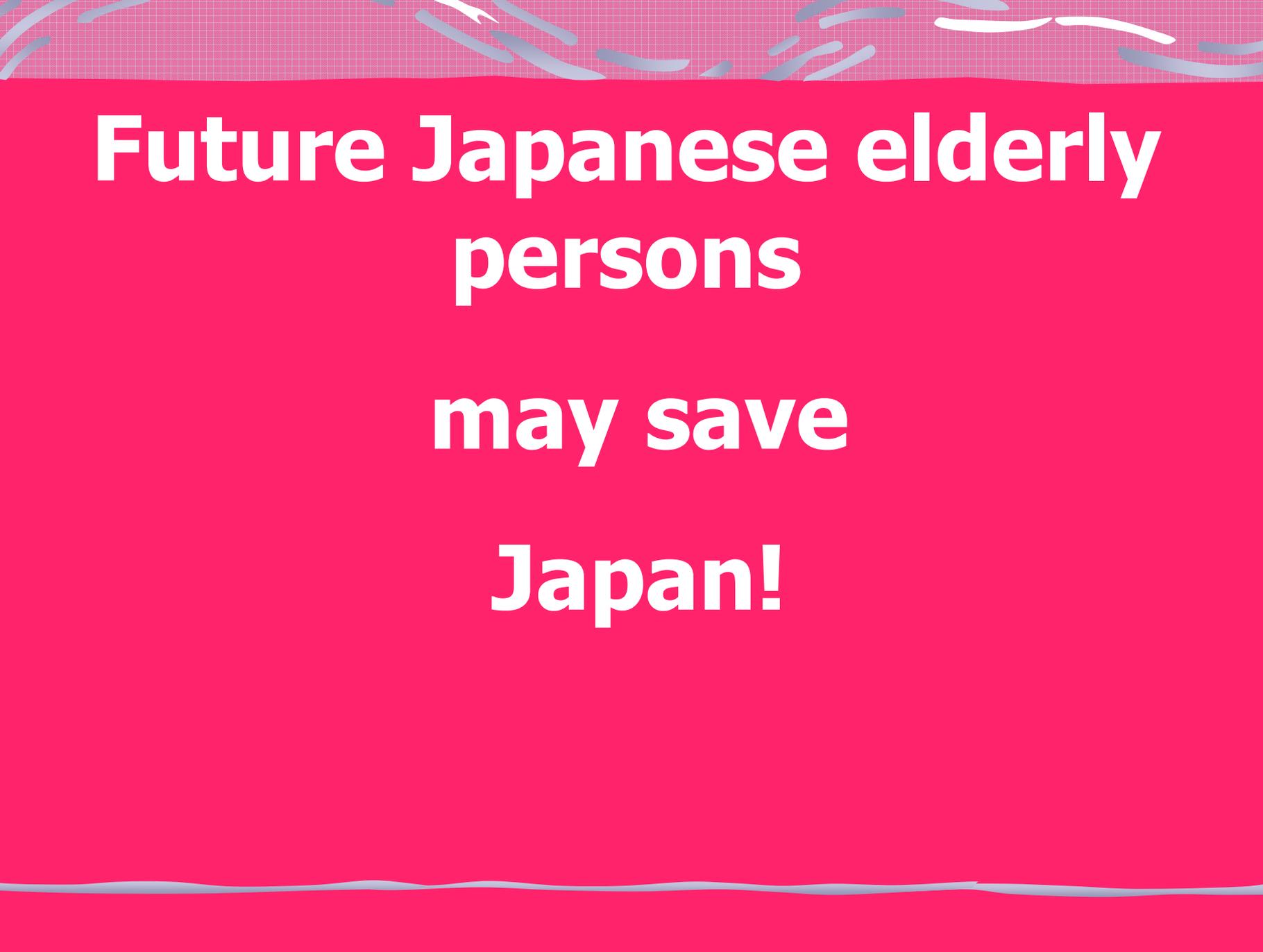
Future Japanese elderly persons

may save

Japan!

謝々！