RAND LABOR AND POPULATION

Economic Preparation for Retirement and the Risk of Out-of-pocket Long-term Care Expenses

Michael D Hurd

With Susann Rohwedder and Peter Hudomiet

We gratefully acknowledge research support from the Social Security Administration via the Michigan Retirement Research Center, and additional support from the National Institute on Aging and the Department of Labor. All opinions are our own.

Adequacy of resources in retirement: No absolute standard

- **Lifetime resources vary across households**
- **Households poor during working life will be poor during retirement**

How to assess adequacy?

Assessing adequacy: Three methods

1. Income replacement rate:

Ratio of income after retirement to income before retirement

But common implementations ignore

- Financing consumption out of saving
- Time horizon or survival curve of the *household*
  - Lower survival chances of the poor
- Reduction in spending following widowing
- Consumption path is not flat, declines with age
- Taxes

Assessing adequacy: Three methods (cont.)

2. Compare actual wealth at retirement with "optimal wealth" **(e.g.,** Scholz, Seshadri, Khitatrakun, 2006)

Theoretically sound

But simplifying assumptions needed to be tractable.

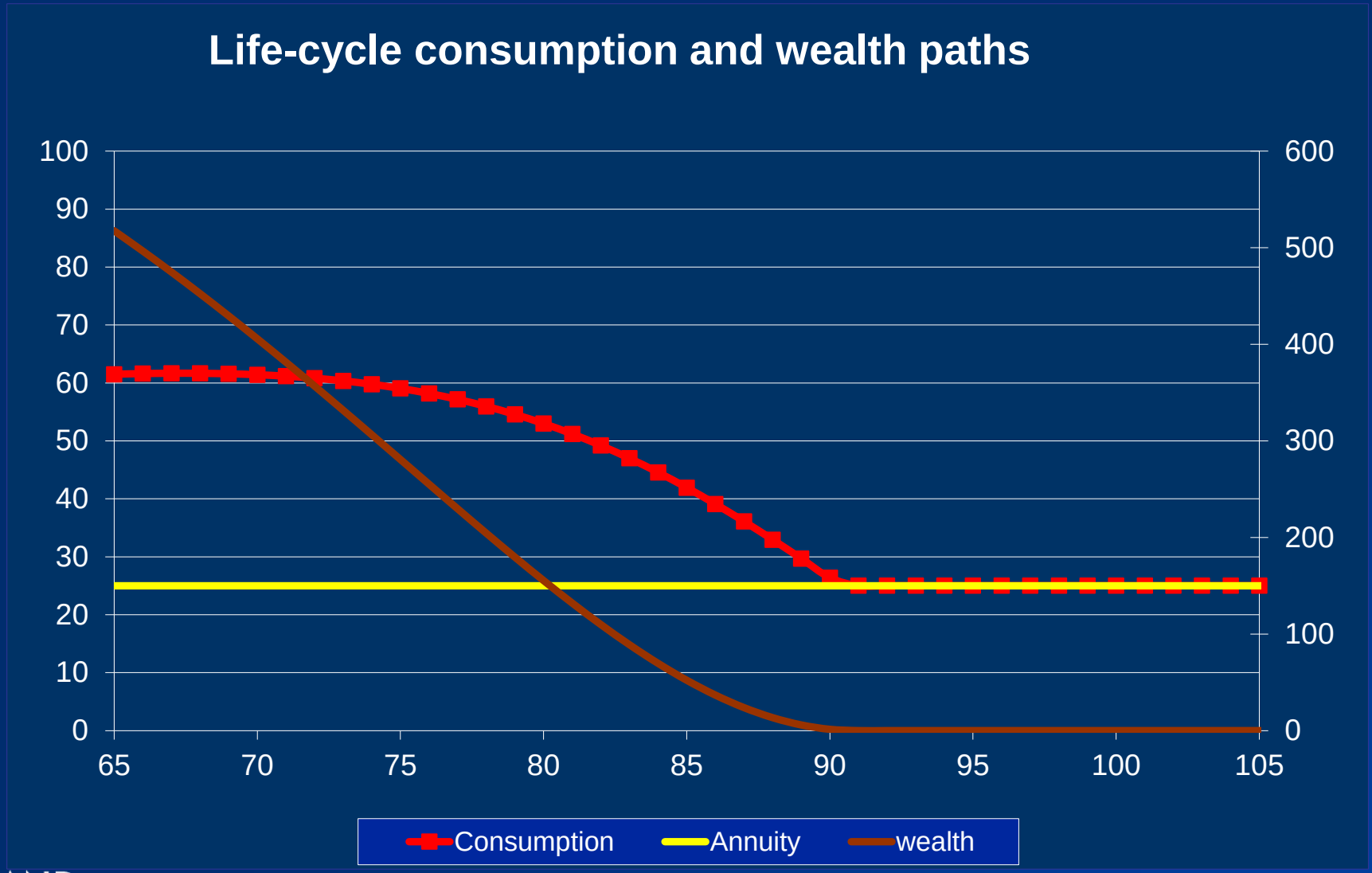
Assessing adequacy: Three methods (cont.)

3. Can household finance predicted consumption path during retirement, given its resources?
(Hurd and Rohwedder, 2012)

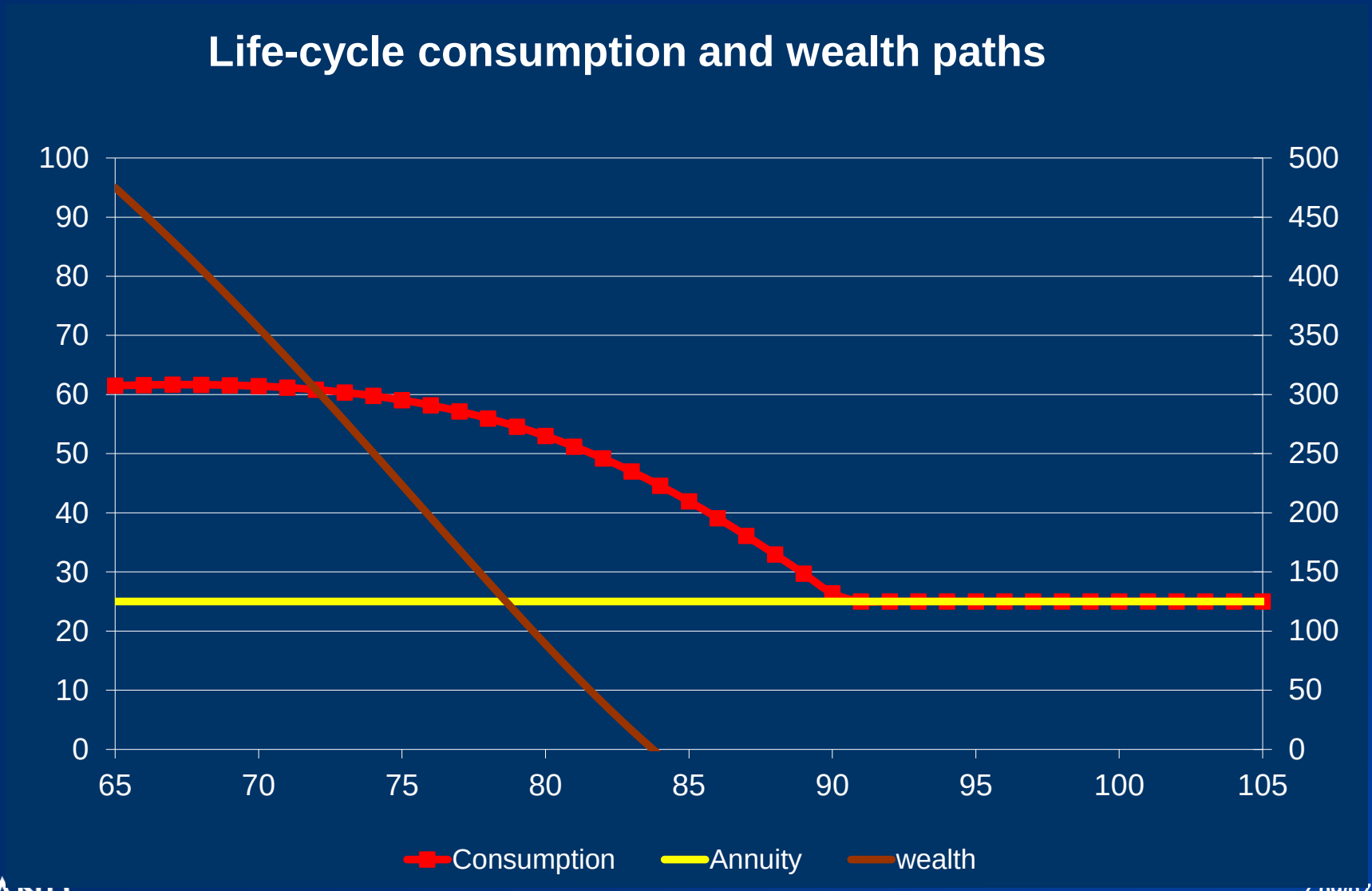
- ***Predict consumption path from beginning of retirement to end of life***
- ***Calculate economic resources necessary to finance that consumption path***
- ***Compare with actual resources at household level***
- ***Account for uncertainty through simulation.***

Exactly affordable consumption path

Initial wealth = 500; annuities = 25



Initial wealth = 475. Under-saved (over-consumed at 65): discontinuity in cons.



Data from the Health & Retirement Study

- Representative sample of U.S. population age 51 or older
- Follows households over time: core survey every two years
- Initial wave 1992
- Refreshes with new group age 51 to 56 every six years
- Complete inventory of household economic resources
- Household spending in subsample

Household spending

- Consumption and Activities Mail Survey
  - Sub-sample of HRS respondents
- Mail-out in October
- Odd years 2001, 2003 covering preceding 12 months
- About 5,000 households enrolled in panel
- Complete inventory of spending: 39 categories
- Construct two-year spending change
  - Link together
  - Path empirically determined

Estimate Consumption Growth from Data

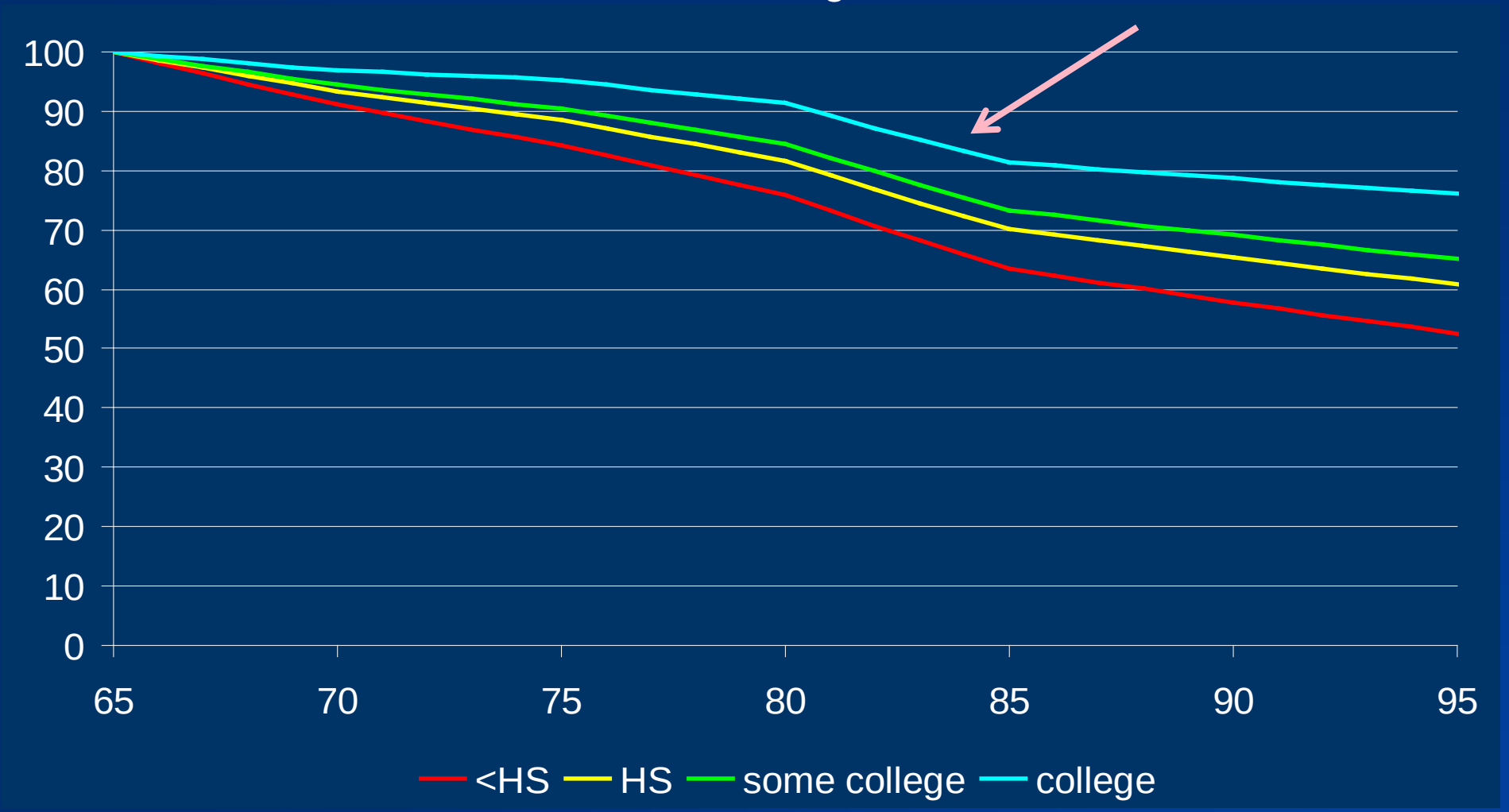
Within an age band such as 70-74, we assume

$$\frac{d \ln c_t}{dt}$$

is constant, and estimate by age band, education level, sex and marital status.

Simulated Consumption Paths: Single Females by Education

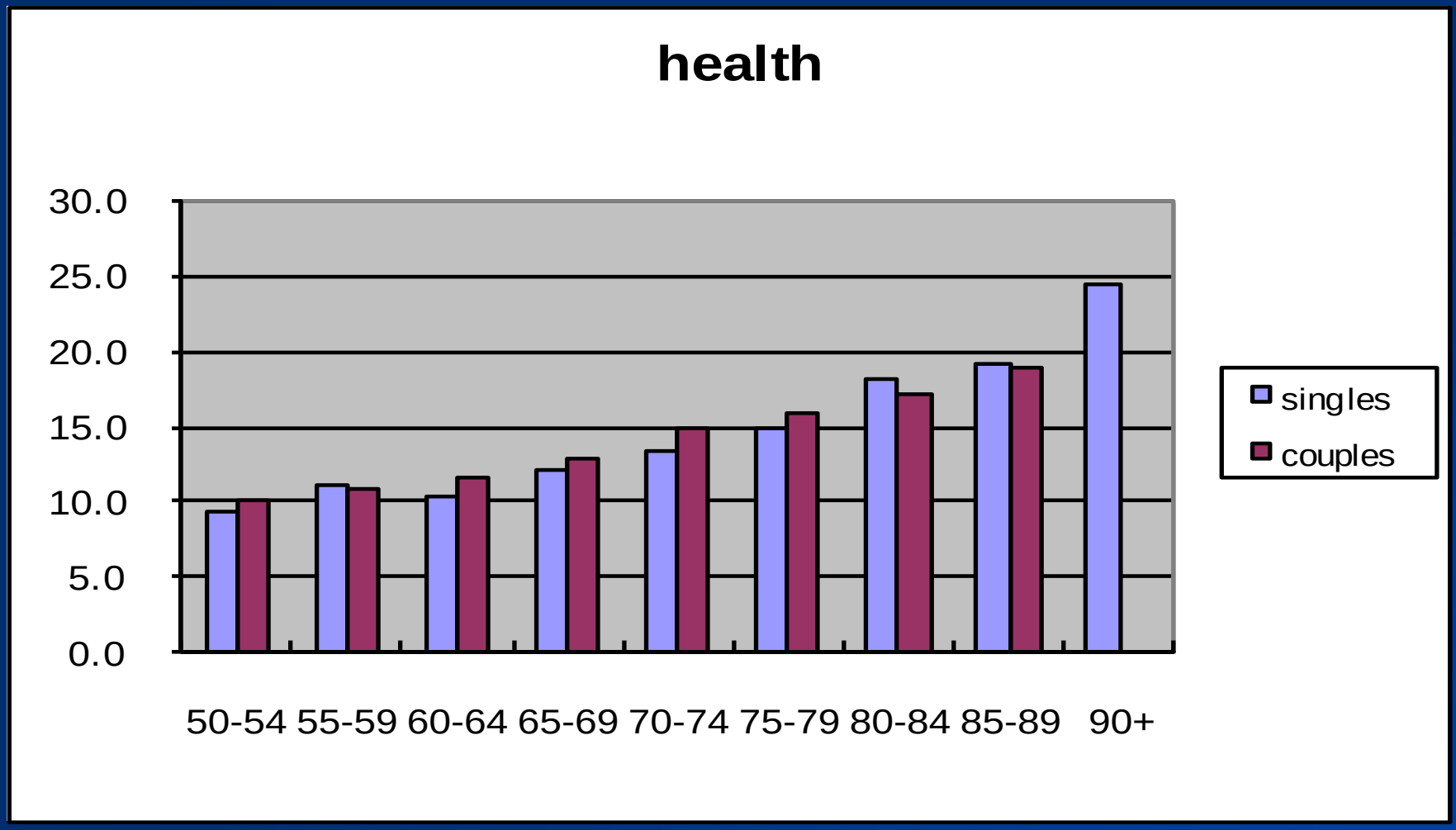
High education: flatter path expected
…have greater survival chances



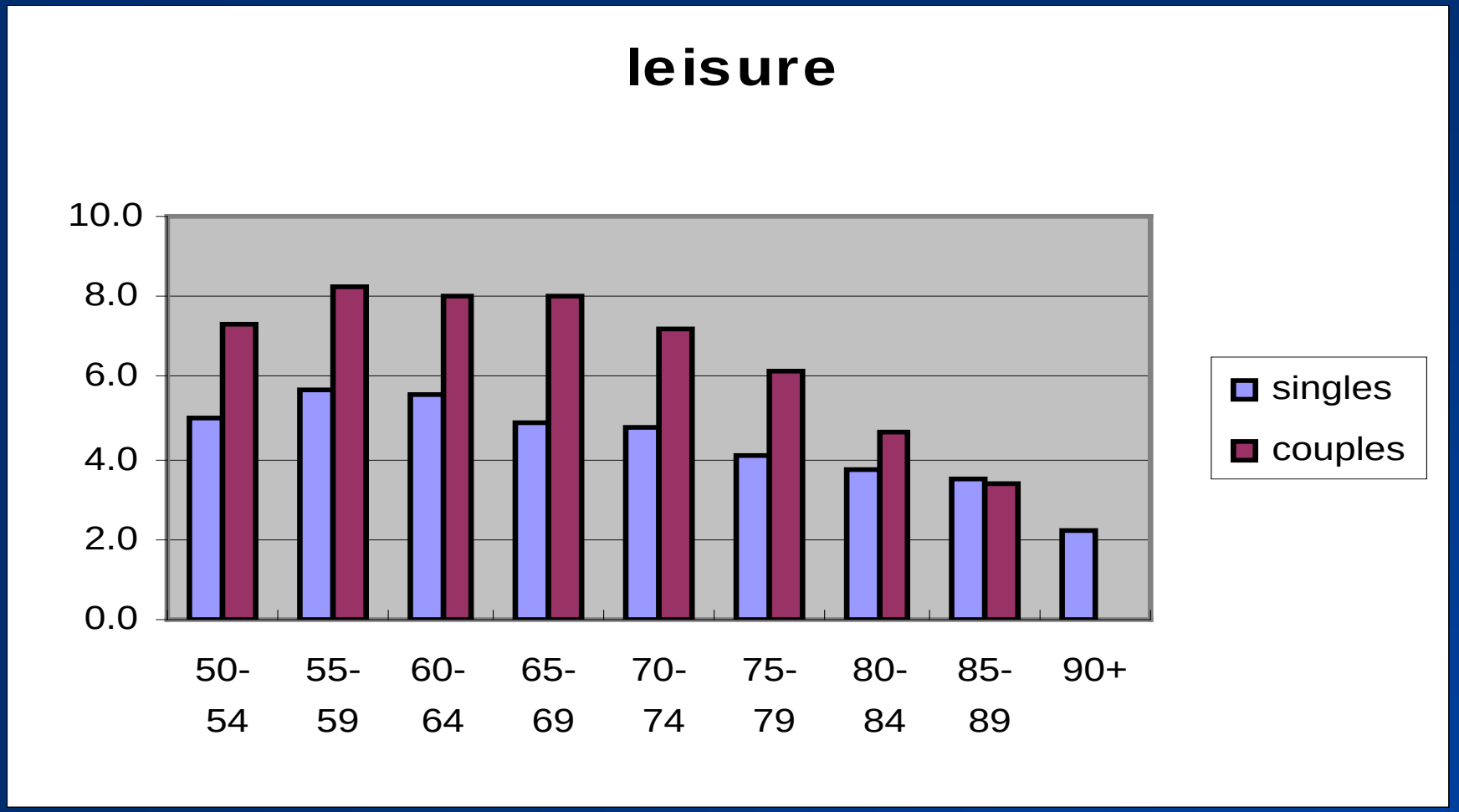
What explains declining consumption paths?

- Traditional Yaari explanation: mortality risk
  - Spend early do avoid wasting wealth at death
  - If “unfortunate” survival, reduce spending
- Health-spending interaction
  - Worse health prevents spending on a number of spending categories
    - Private transportation
    - Trips and vacations
  - Reductions may overcome increased spending due to demand for health care spending

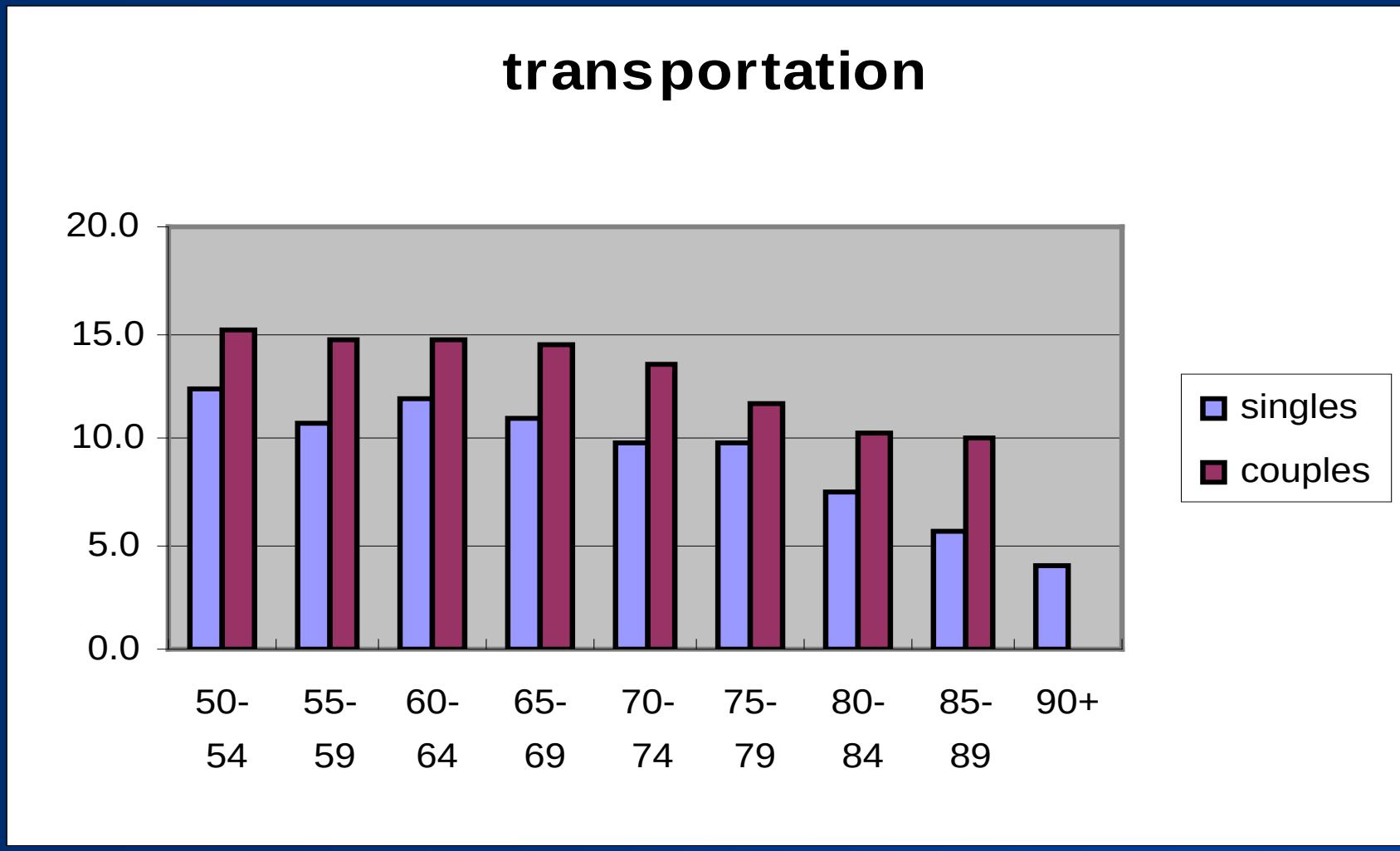
Budget share (percent of total spending)



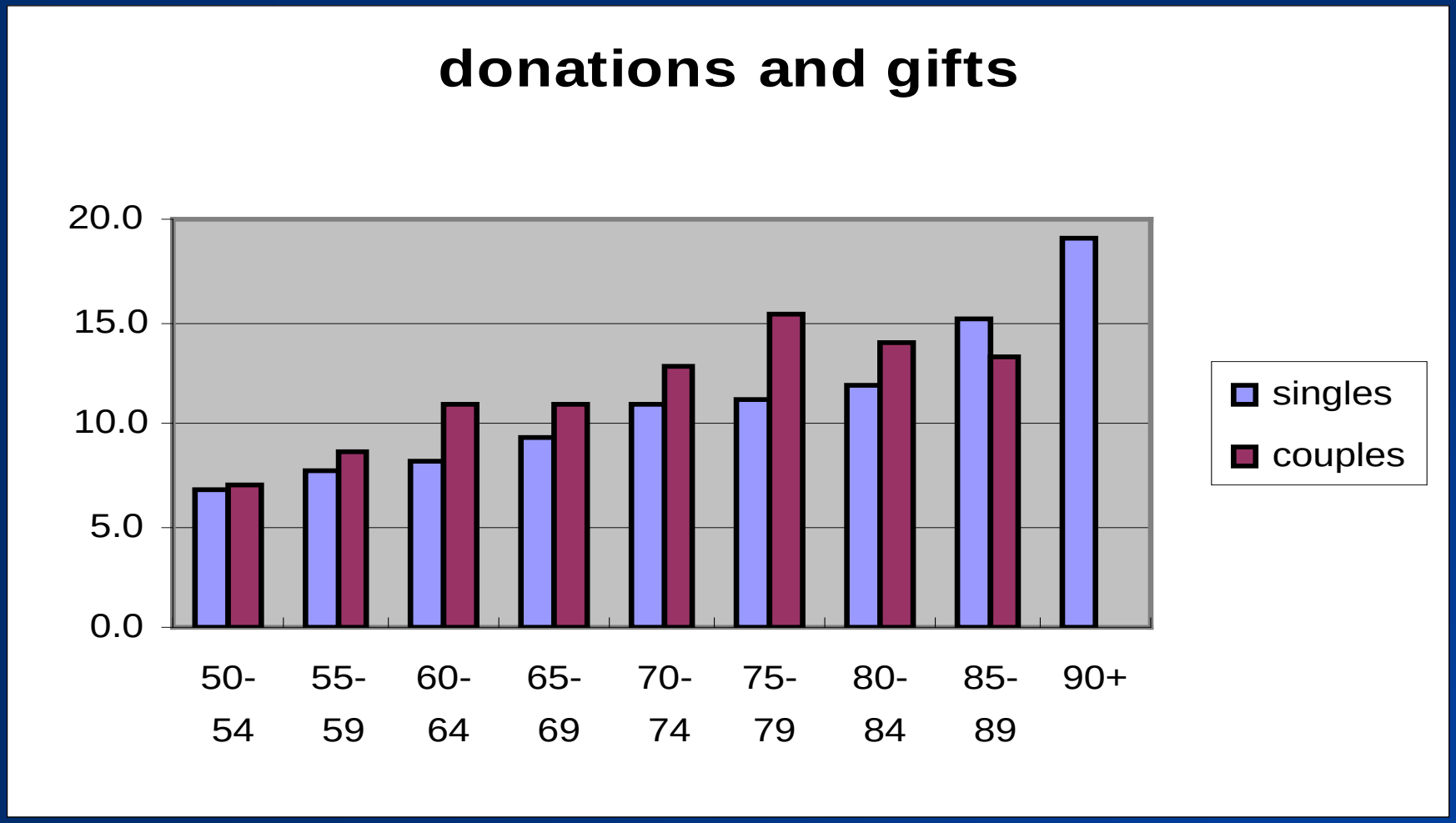
Budget share



Budget share



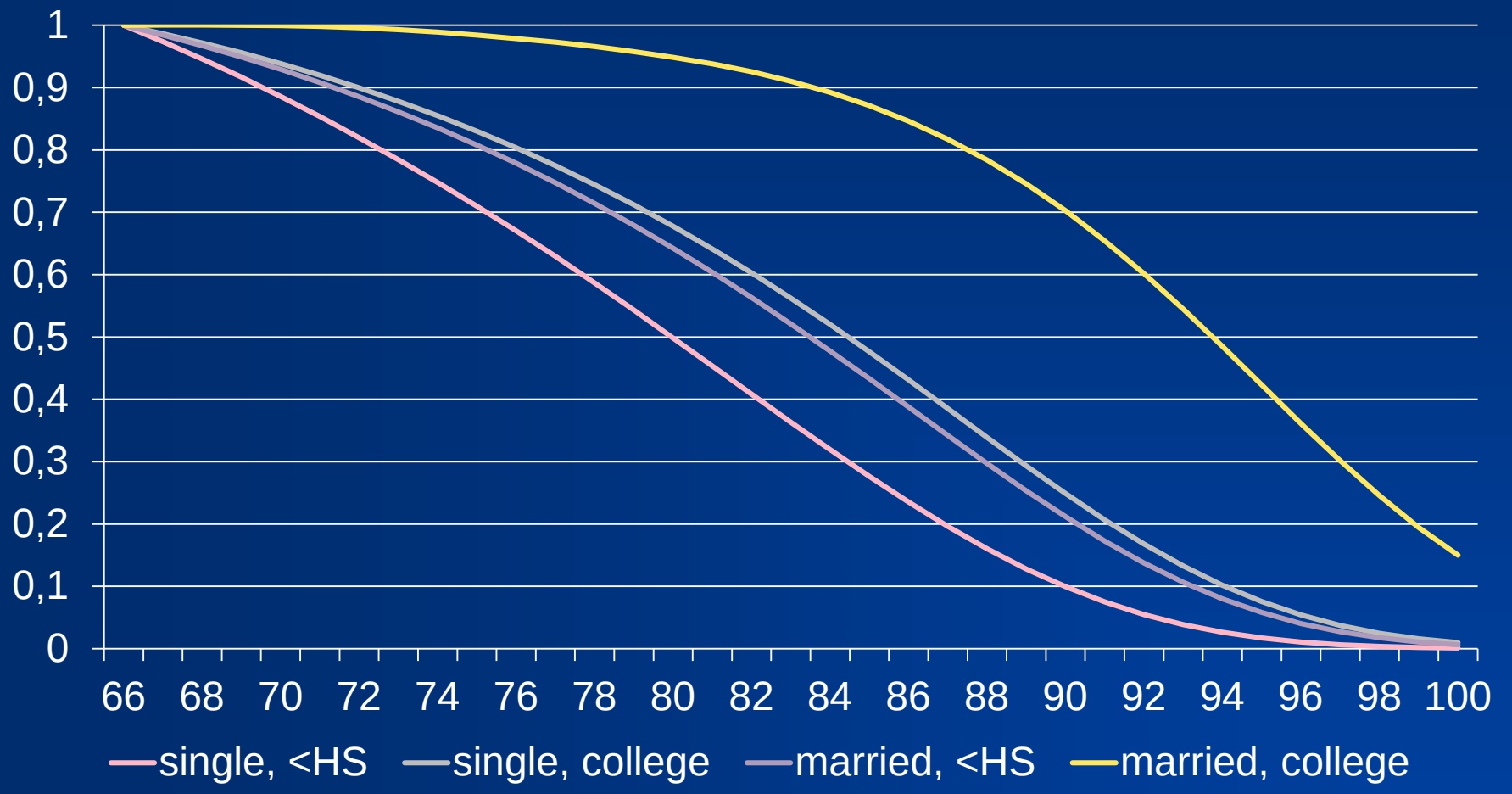
But not budget constraint on average



Method accounts for differential mortality

Important

Survival Curves, males



Given our estimated paths we ask:

Can observed economic resources sustain the projected consumption path?

Choice of sample

- Study people shortly after retirement
- Use HRS 2000-2008 for initial conditions
  - Not much affected by adjusting for Great Recession
- **Singles 66-69, N = 633**
- **Couples 66-69, and spouse 62 or older , N = 1,092**
- Ages chosen so that pension income (mostly) observed

Simulations from initial conditions

Singles

Begin with observed consumption

Follow shape of consumption path of singles

Real annuities (Social Security) and nominal annuities (pension income)…no further annuity purchase

Random mortality from life-table adjusted for differential mortality by sex, marital status and education

Couples

Begin with observed consumption and resources by a couple.

Follow consumption path of couples as long as both alive

Random mortality from life tables:
independent draws for each spouse

At widowing

- **Reduce consumption according to returns to scale**
- **Reduce annuities to 0.67 times couple's annuities**

Then follow singles' path

Simulations account for

- Returns to scale in spending, and widowing
- Spending paths decline with age, consistent with theory and empirical observation
- Future earnings
- Housing wealth: last spent
- Taxes: income, withdrawal of 401ks, housing last
- Mortality risk and differential mortality
- Risk of out-of-pocket medical expenditures
  - Embeds serial correlation in spending
- Heterogeneity by marital status, sex and education taken into account throughout

Individual-level Metric with Respect to Wealth

Ask:

How often does individual (married or single) die with positive wealth?

Find through simulations from ages 66-69 until death

Prepared if wealth positive in 95% of simulations or more

Allow for some margin of error so that small short-falls ok.

Percent Adequately Prepared: 71%

Married persons better prepared, single females most vulnerable.

	Singles			Couples		
	All	Male	Female	All	Male	Female
Less than high-school	36.0	63.6	29.0	70.1	70.2	69.9
High-school	62.1	66.7	60.5	79.5	77.2	80.8
Some college	53.8	62.5	51.0	80.7	77.2	82.6
College and above	68.5	65.0	69.6	88.5	86.5	90.2
All	54.5	64.9	51.3	79.9	77.9	81.1

Source: Hurd and Rohwedder (2012)

Important Threat to Economic Preparation

Risk of large out-of-pocket (OOP) medical expenditures

- Even though Medicare (including Part D) insures a large fraction of medical expenditure risk of those age 65+.

Some Statistics on
Out-of-pocket Medical Expenses

High SES individuals healthier, but spend more on health care.

HRS 2014, individuals' out-of-pocket medical expenditures

2 years, weighted, thousands of 2014 dollars

Wealth quartile	70-79 year olds		80-89 year olds	
	Mean	95th %ile	Mean	95th %ile
Lowest	2.7	9.9	2.4	9.2
2nd	3.0	9.6	3.3	11.6
3rd	3.6	10.6	3.4	11.7
Highest	3.9	12.5	4.4	16.1
Total	3.3	10.9	3.5	12.2

Source: Hudomiet, Hurd and Rohwedder (in progress)

Relevant metric for financial planning: Remaining LIFETIME risk of OOP expenditures

- HRS data
- cumulated out of pocket starting from age 70 until death
- adjusted for right-censoring by “splicing”
  - nonparametric
- weighted by baseline weight
- thousands of 2014 year dollars
- Stratified by quartiles of bequeathable wealth (not including Social Security or other income)

Average financial lifetime exposure moderate, but non-trivial risk of very large OOP

HRS data, cumulated OOP starting from age 70 until death, adjusted for right-censoring, weighted by baseline weight, thousands of 2014 year dollars

Wealth quartile at age 70	Mean wealth in quartile	Lifetime OOP	
		Mean	95th %ile
Lowest	21.7	40.8	147.2
2nd	147.8	54.0	182.4
3rd	391.6	61.7	208.0
Highest	1,724.5	66.6	214.0
Total	596.9	56.1	191.1

Source: Hudomiet, Hurd and Rohwedder (in progress)

Largest uninsured risk among elderly: Nursing home

- **Medicare only pays for nursing home stays following hospital admission and only up to 100 days, large co-pays after 21 days.**

- **Annual cost of nursing home stay: about $84k**

- **Medicaid pays if household depletes financial resources → well-to-do will pay substantially more**

OOP spending on Nursing Home; 32% of total

Medicaid important payer

Wealth quartile at age 70	Lifetime OOP mean	Lifetime NH nights mean	Lifetime OOP, NH mean	Lifetime OOP, NH 95th %ile
Lowest	40.8	312.7	17.5	102.5
2nd	54.0	272.7	21.3	117.5
3rd	61.7	293.2	22.3	131.1
Highest	66.6	261.7	22.3	112.1
Total	56.1	284.6	20.9	117.5

Source: Hudomiet, Hurd and Rohwedder (in progress)

Nursing home: Large uninsured risk importantly due to dementia

Prevalence

Costs

Lifetime risk

Dementia

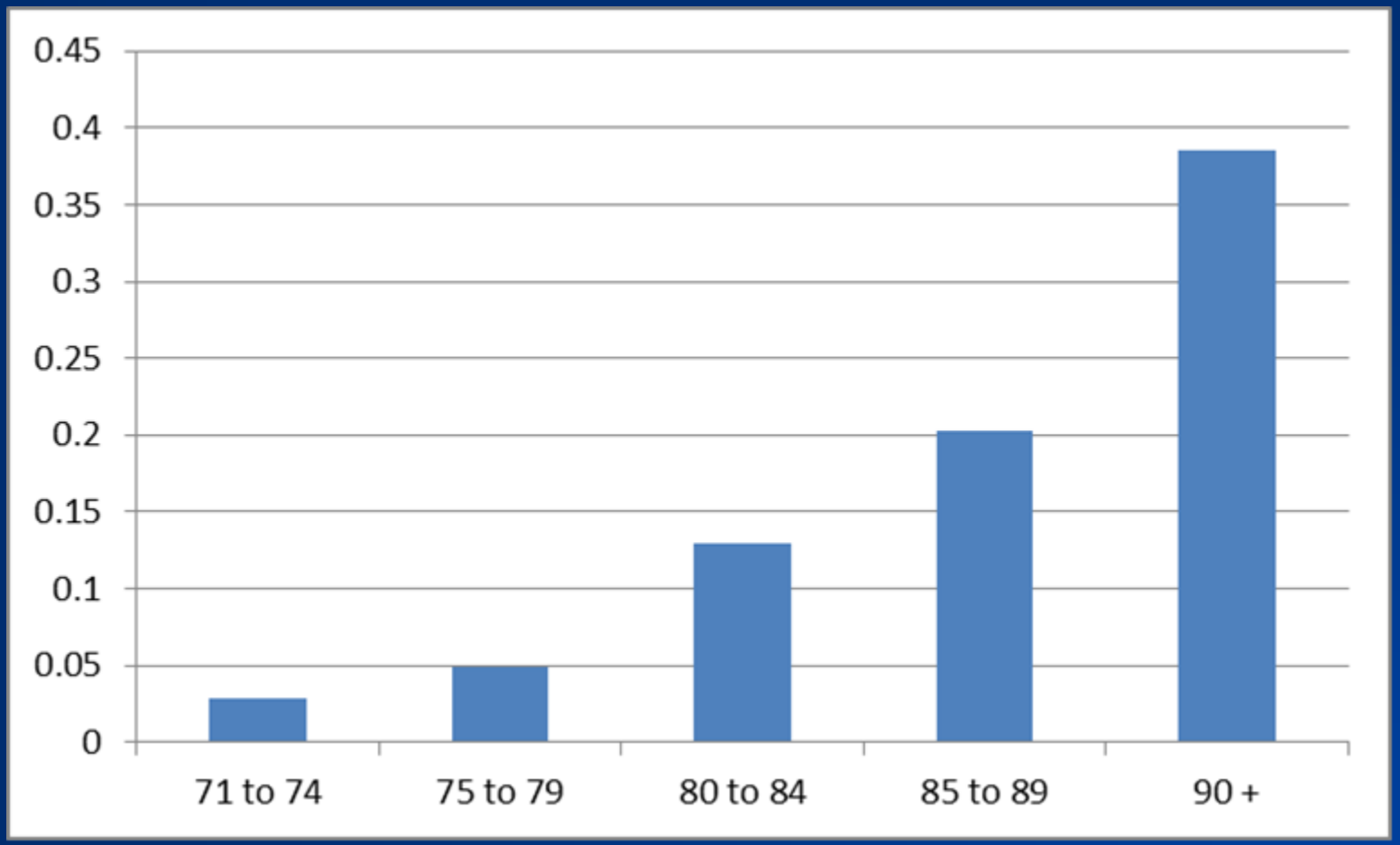
…serious loss of cognitive ability in a previously unimpaired person, beyond what might be expected from normal aging, leading to disability

Non-specific illness syndrome

Affected areas of cognition may be memory, attention, language, and problem solving.

Number of types: Alzheimer's (60-80%), vascular (often with Alzheimer's), Lewy bodies, Parkinsonian, frontotemporal, and several more

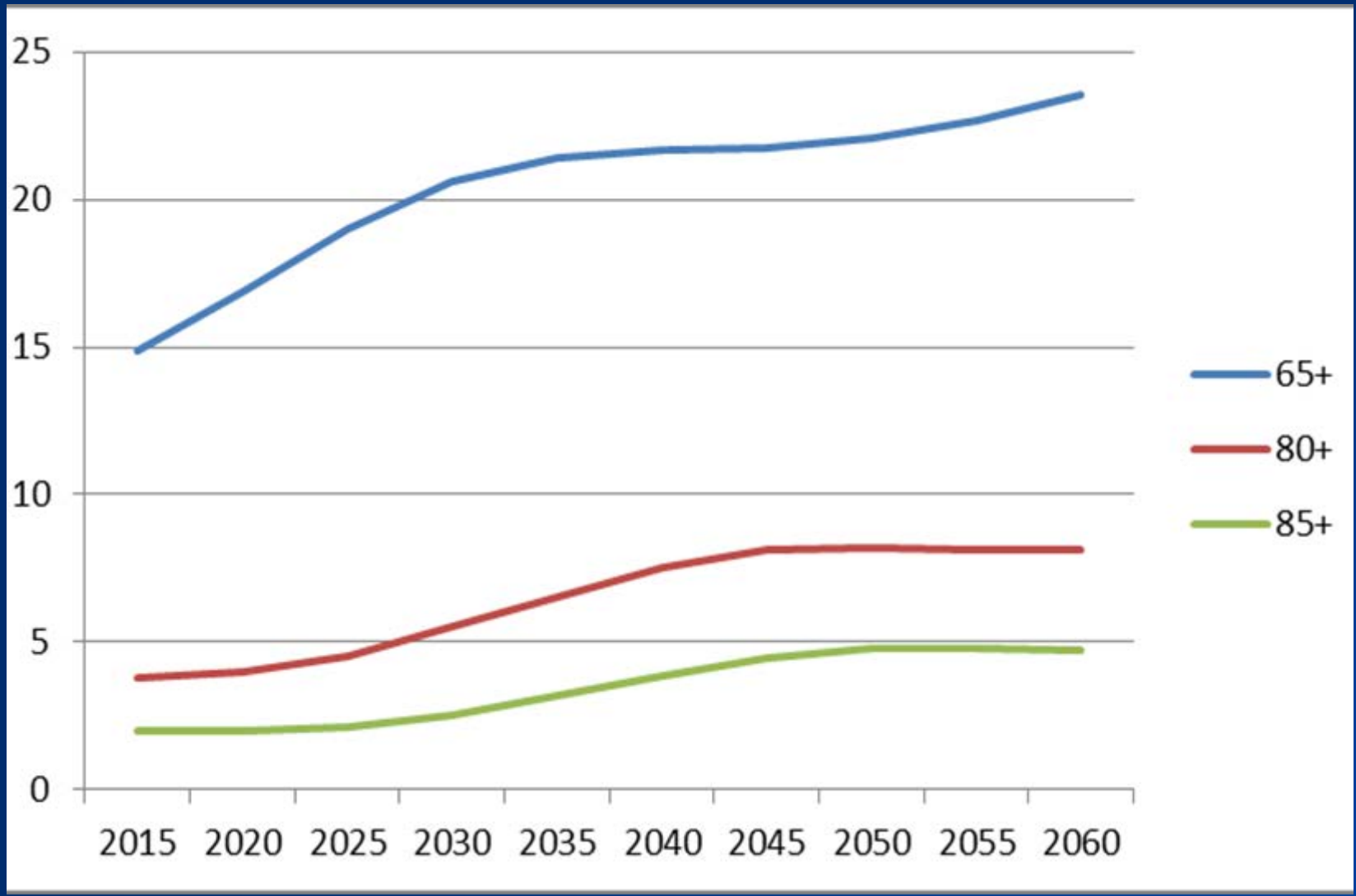
Prevalence of dementia: doubles every five years



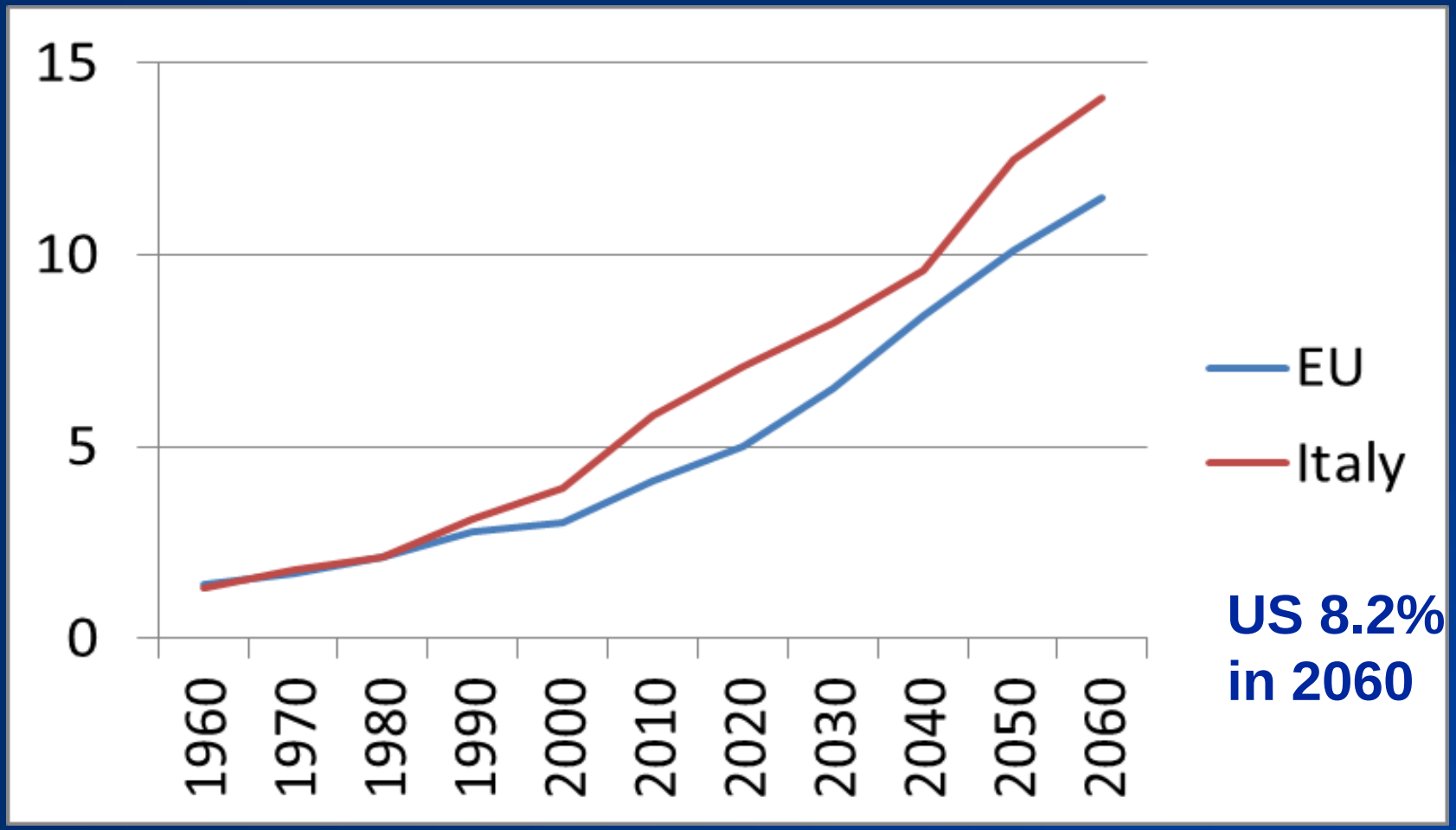
Trends in prevalence

If age-specific prevalence rates remain unchanged, increasing fraction of population will have dementia because of population aging.

Percent of US population



Problem for all developed countries
% of population 80 or older



Important cost to society and to individuals

Society

The Monetary Cost of Dementia in the United States

Hurd, Delavande, Martorell, Mullen, and Langa

***New England Journal of Medicine*, April 4, 2013**

The Aging, Demographics, and Memory Study ADAMS

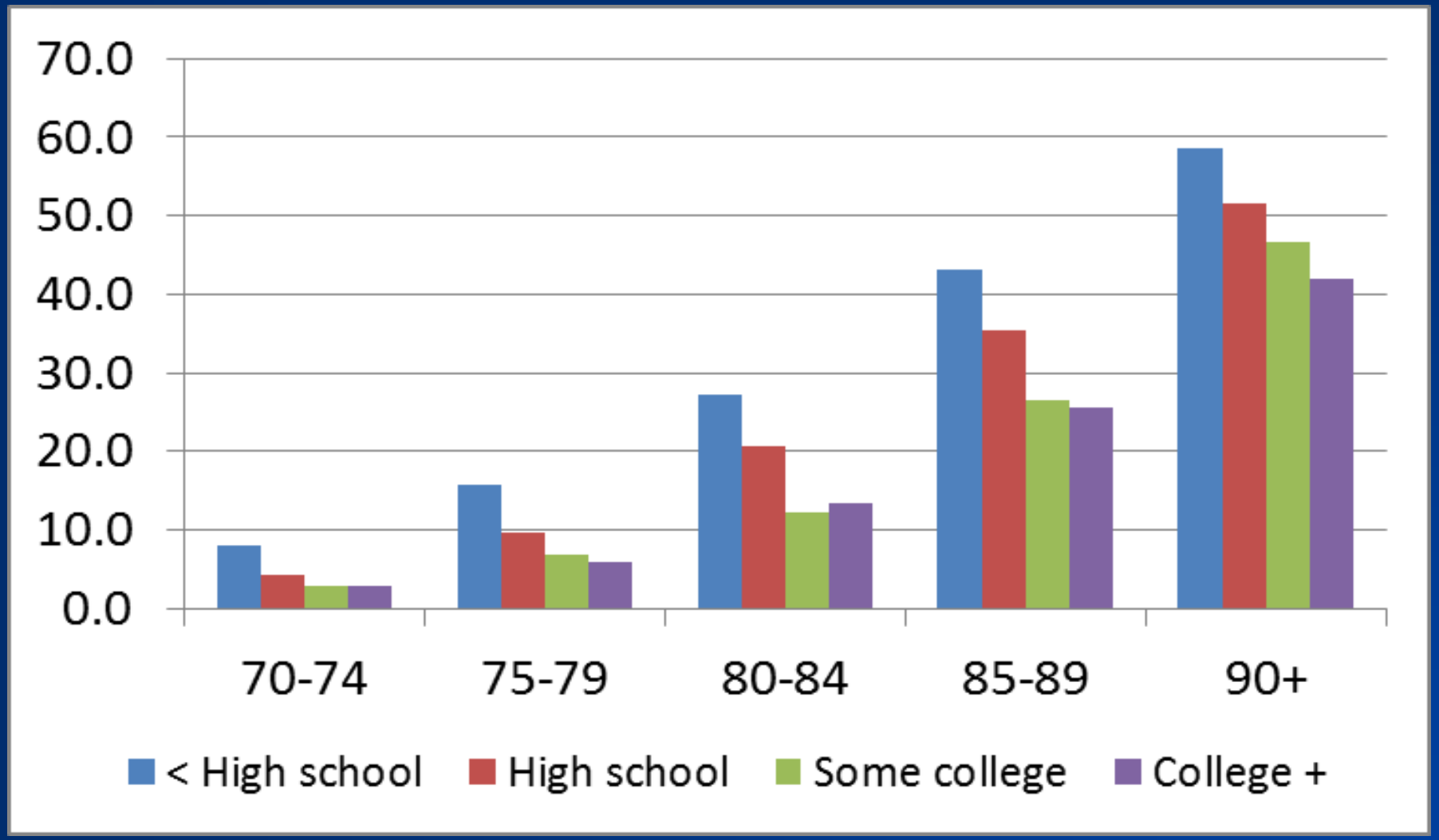
Sub-sample of HRS

865 respondents ages 70 or older assessed for dementia status

Model of dementia status

Imputed probability of dementia to larger HRS

Prevalence by education



Annual attributable costs per person

- **About $42 thousand (2010$)**
- **Mostly care costs**
- **About $13 thousand imputed value of informal caregiver time**

Total costs

- 2010: $159 billion
  - Monetary: $109B
    - Heart: $102B
    - Cancer: $77B
- 2040 $379B (real)

Lifetime nursing home costs, individual OOP and dementia

- **Use long panel of HRS**
- **Correct for right censoring**
- **Nonparametric**
- **Lifetime from age 70**

Nursing Home stays and dementia

- High SES similar LIFETIME likelihood of dementia
- survive longer and dementia risk doubles every 5 years after age 70

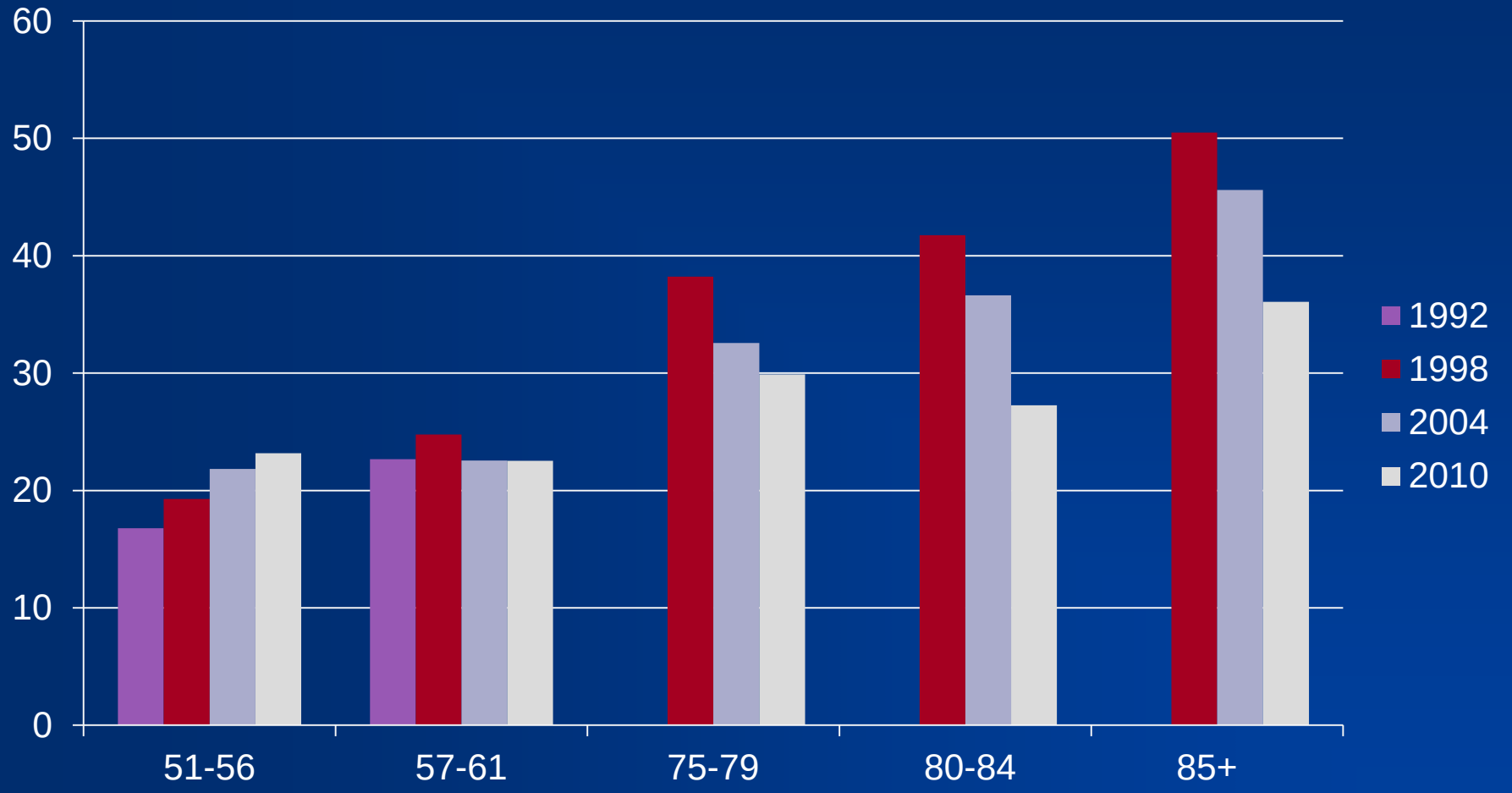
Wealth quartile, age 70	Years alive after age 70	Prob ever dement	Lifetime NH nights	
			Never dement	Ever dement
Lowest	11.7	0.40	116	564
2nd	13.6	0.40	81	524
3rd	14.2	0.41	90	545
Highest	15.1	0.38	89	514
Total	13.7	0.40	94	537

Source: Hudomiet, Hurd and Rohwedder (in progress)

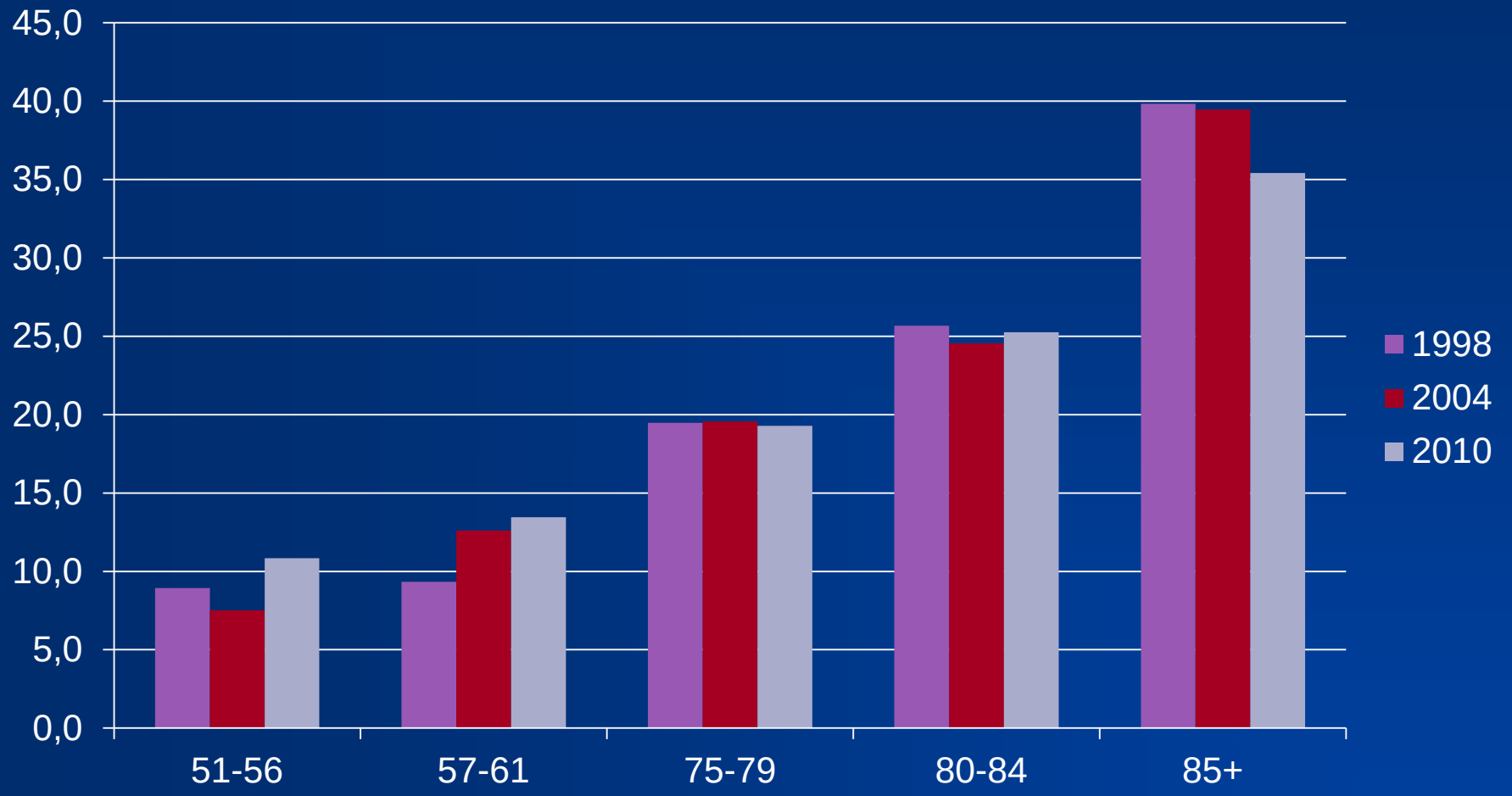
Future Trends in OOP Medical Expenditures: depend critically on trends in survival and dementia

- **Trends in mortality and trends in dementia interact** (competing risk)
  - Dementia risk sharply increases with age
  - Out of pocket spending sharply increases with dementia
- **Will longevity increases continue?**
  - Most recent cohorts in HRS have worse health; implications for mortality?

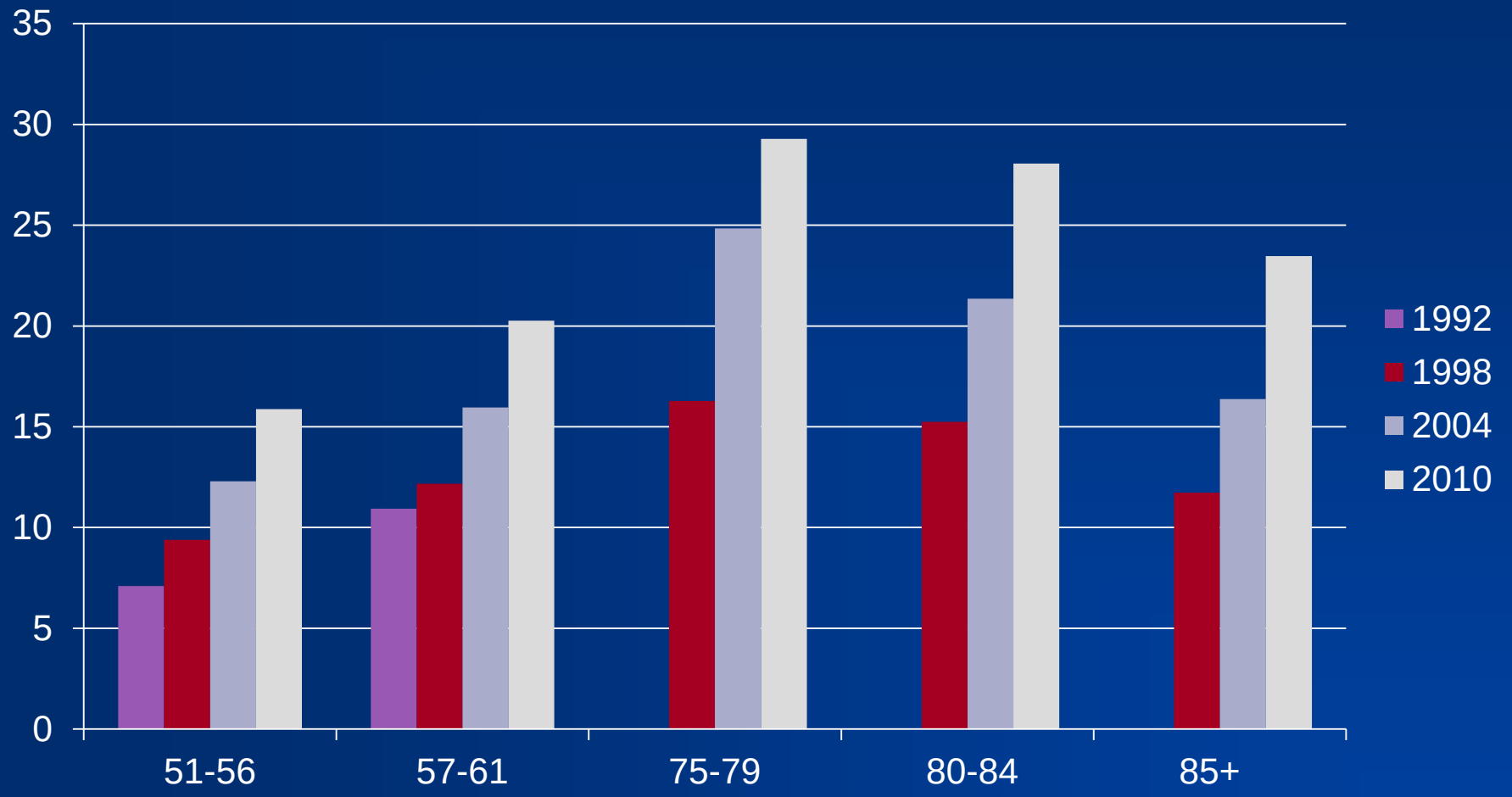
Percent in fair or poor health



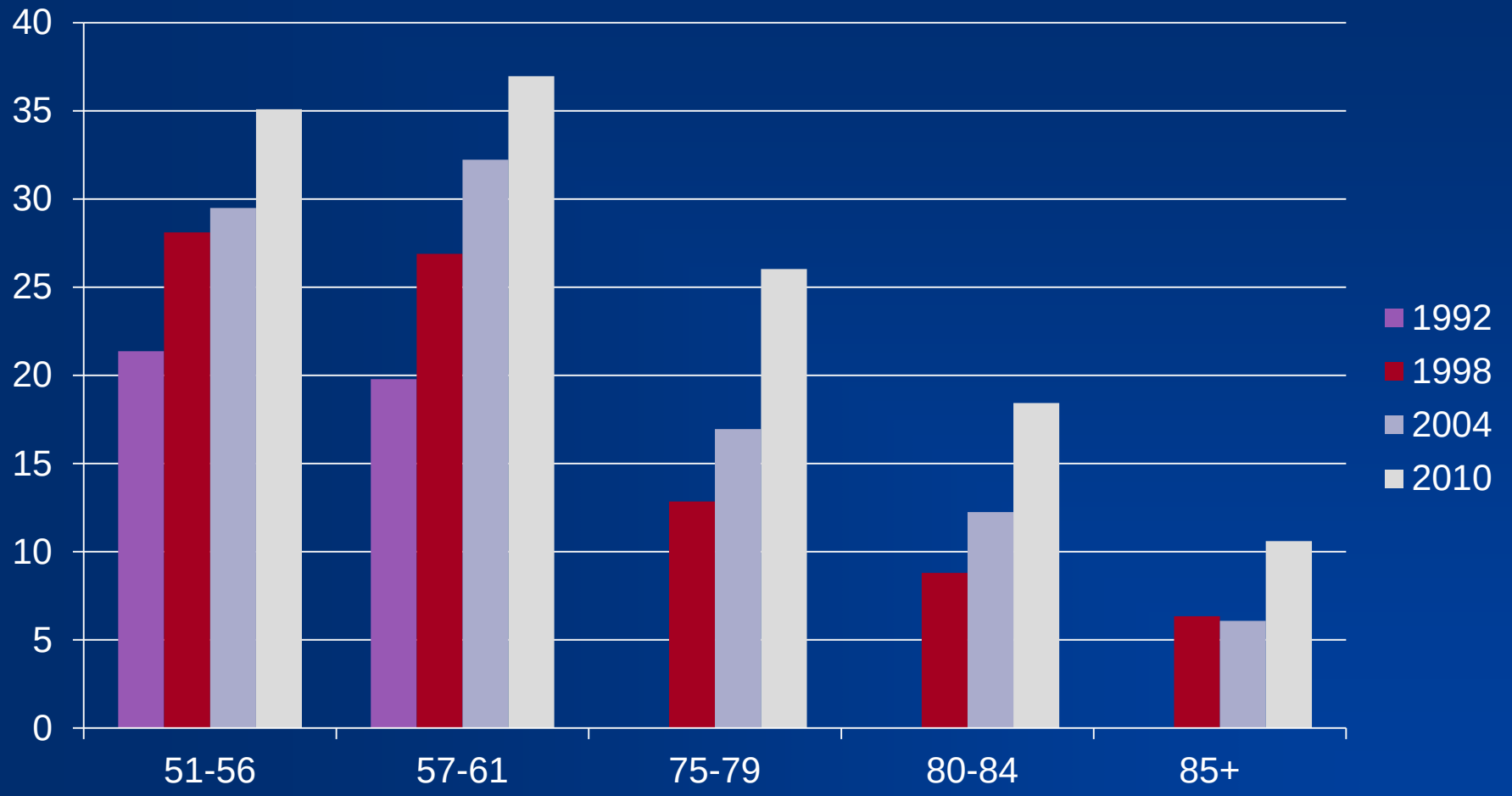
Percent with one or more ADL limitation



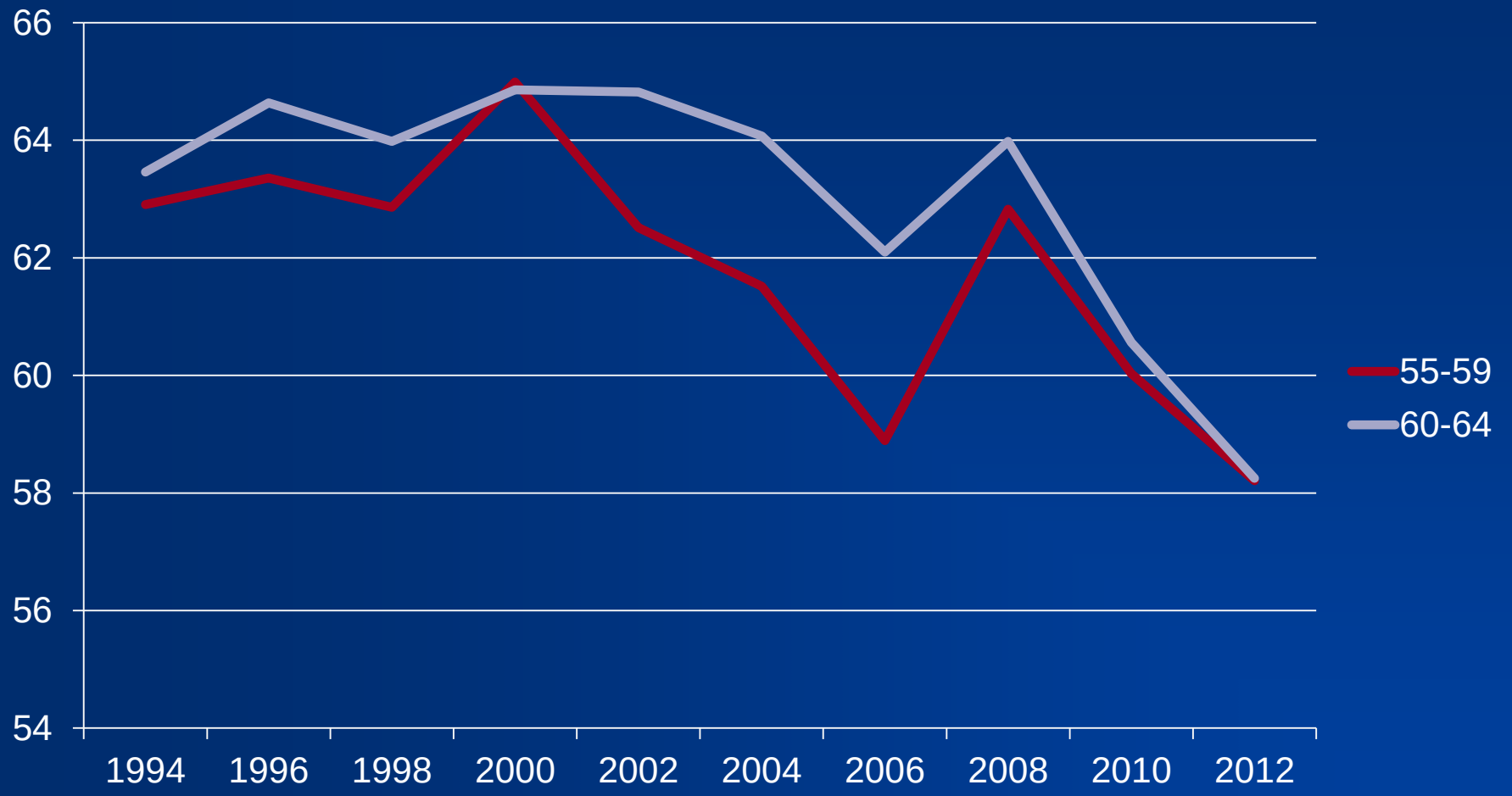
Percent with diabetes



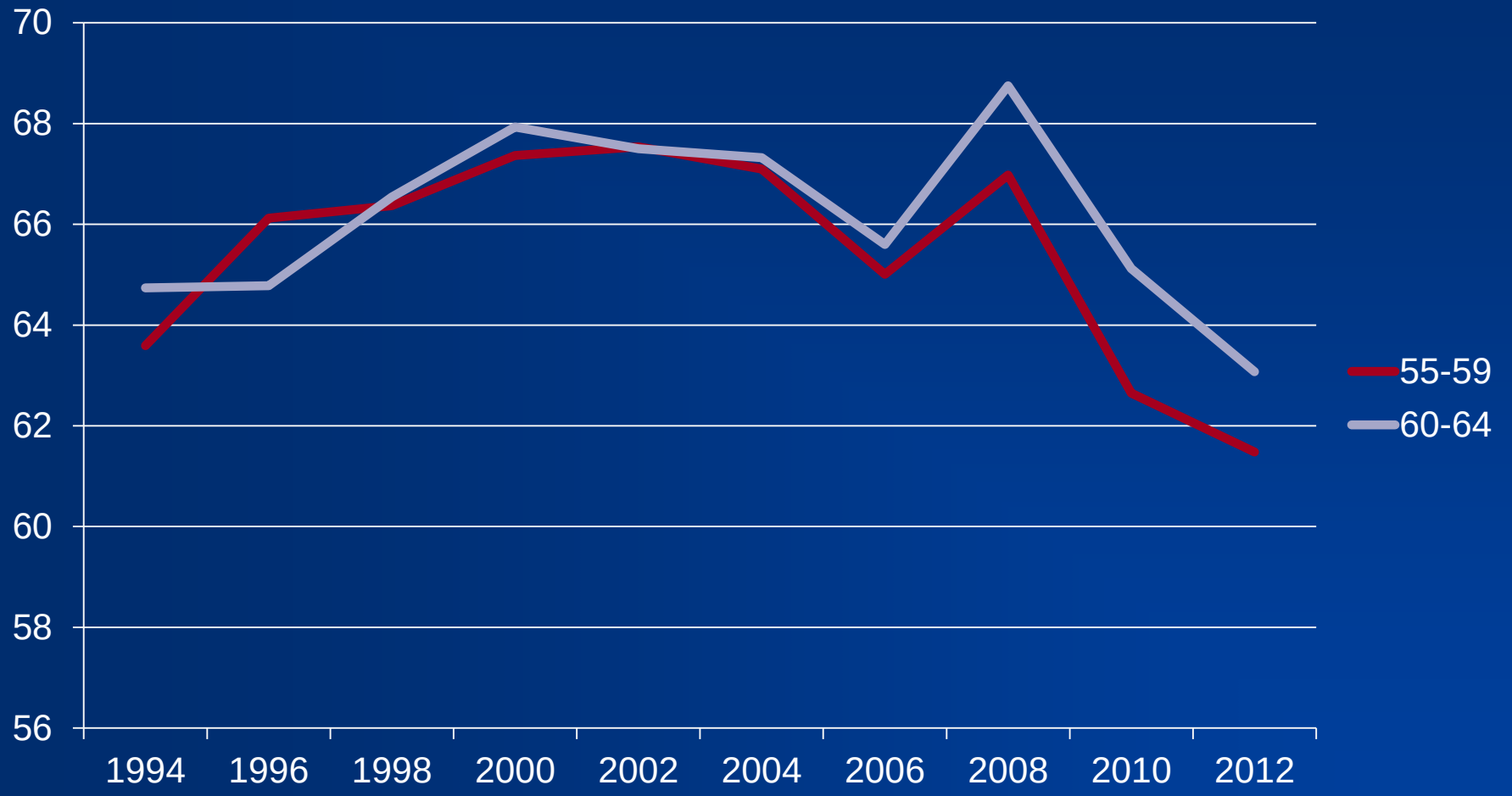
Percent with BMI 30 or greater



Subjective survival to age 75, males



Subjective survival to age 75, females



Future out-of-pocket spending for health care (cont.)

- Will there be Improvements in age-specific rates dementia?
  - Greater education
  - Cardio-vascular risk better controlled
- Some recent studies have found declines in age-adjusted rates of dementia (Europe and U.S. Framingham)
- Any trend—up or down—will have large impact on long-term care costs for individual and for society

More uncertainty than even macro projections!

Thanks for your attention