

Socioeconomic Institute of the University of Zurich

Hottingerstrasse 10, CH-8032 Zurich · Tel +41 1 634 22 70 · Fax +41 1 634 49 87 ·

<http://www.soi.unizh.ch/>

Morbidity Compression, Morbidity Expansion, Red Herring What Could It Mean for Health Policy?

by

Peter Zweifel, pzweifel@soi.uzh.ch

Presentation prepared for the

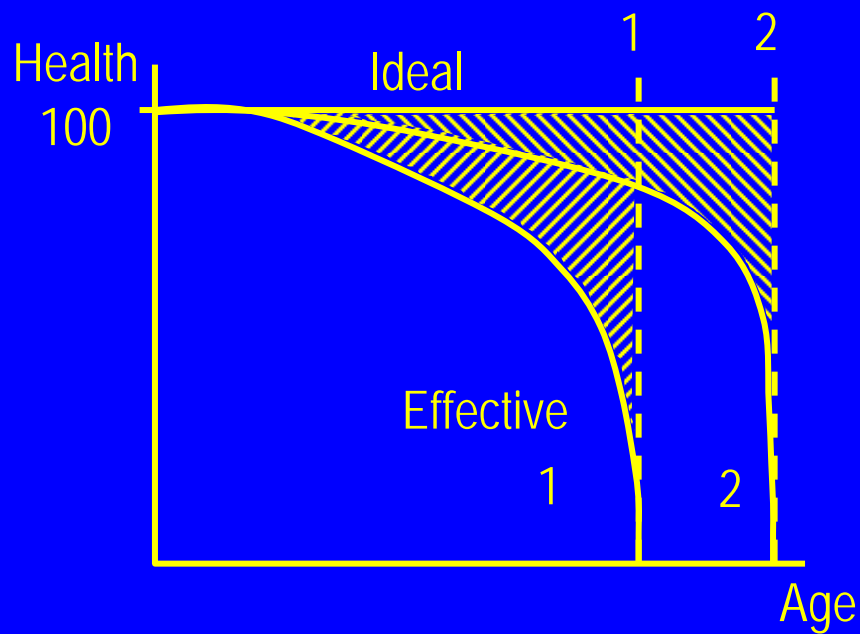
**AEI Seminar,
Washington DC, 27 June 2008**

Plan of presentation

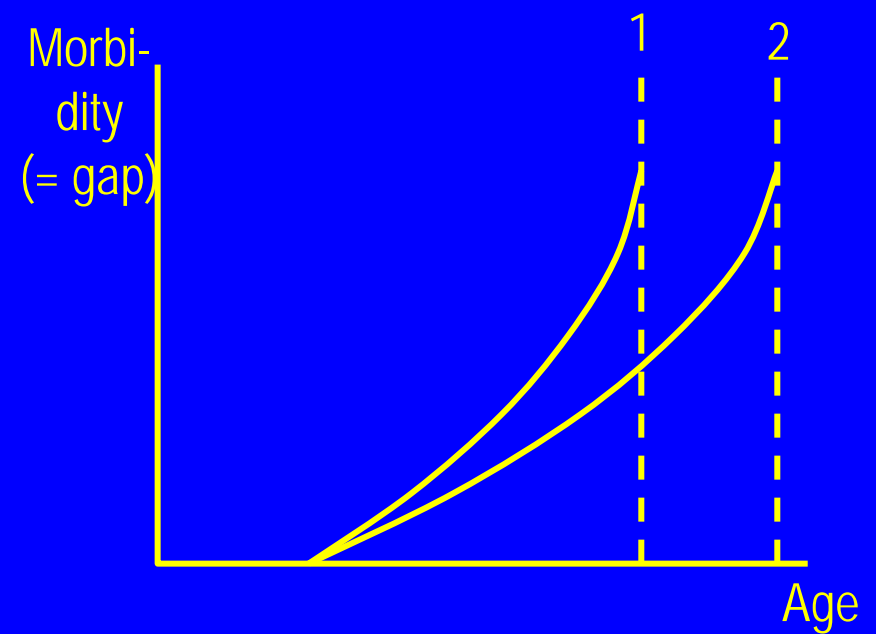
1. A (Western) ideal and its consequences
2. News from the red herring
3. Reform of health insurance – can the aged be won over?
4. Concluding remarks

1. A (Western) ideal and its consequences I

(a) Health Status development



(b) Implied morbidity profile



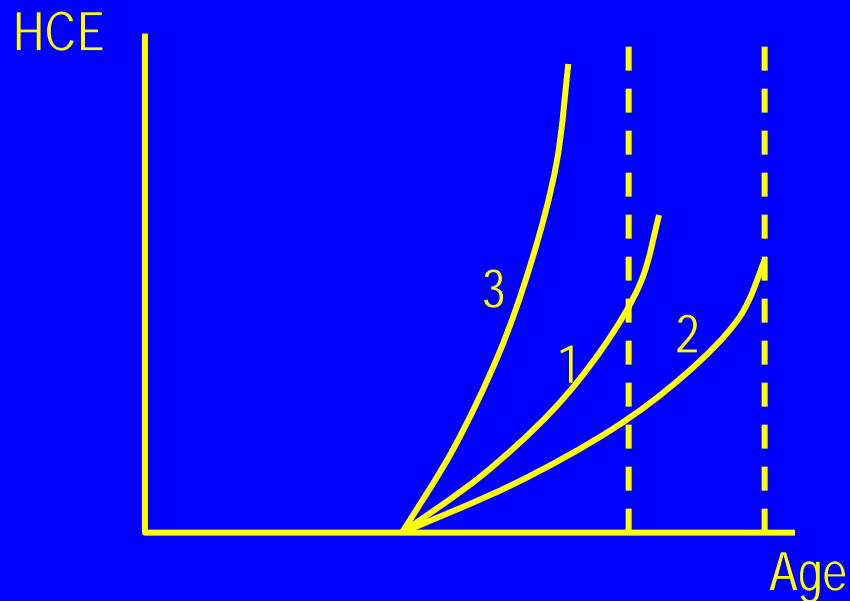
Case depicted: Compression of morbidity

1. A (Western) ideal and its consequences II

- Thus, if (Western) man is successful in approaching his/her ideal, **compression** of morbidity is predicted
- However, the consequence for health care expenditure (HCE) is not clear

1. A (Western) ideal and its consequences III

(c) Implied HCE development



Case depicted:

- 1, 2: Constant marginal effectiveness of health care services.
- 3: decreasing marginal effectiveness

2. News from the red herring I

Red herring hypothesis: Proximity to death not age is the (demographic) driver of HCE

Difficulty with testing: At a given point in time, aging by one year brings one closer to death

Testing possibility: Distinguish 3 time concepts

- (1) Historical time (reflects state of medical technology)
- (2) Age (reflects decreasing effectiveness of one's own efforts in favor of health)
- (3) Time to death (reflects efforts to "bridge the gap")

2. News from the red herring II

Test: Zweifel, Felder, and Meier (1999, HE) were (among the?) first to be able to estimate the relative importance of time concepts (1) to (3) as determinants of HCE

Data base: Panel data set of deceased Swiss, 1982-93

(1) Historical time ✓, shifts HCE up (almost) every year

(2) Age - , insignificant, sometimes wrong sign

(3) Time to death ✓, effect progressively increasing

2. News from the red herring III

Newest version: "School of red herring", Werblow, Felder, and Zweifel (2008, HE)

Idea: Test hypothesis for **components** of HCE, following Spillman and Lubitz (2000, NEJM)

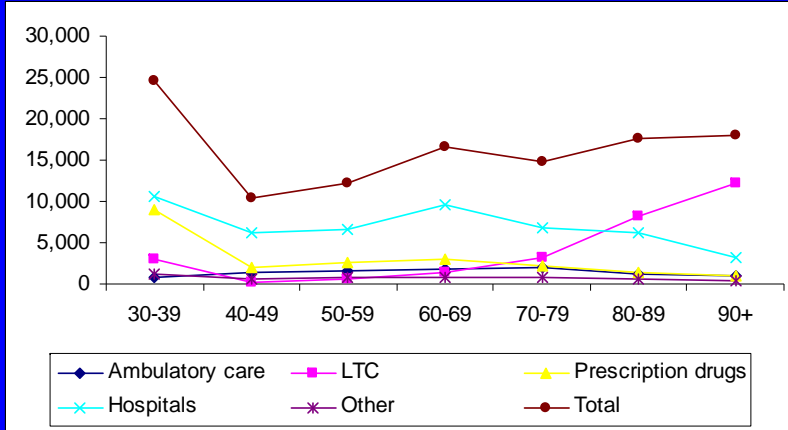
Data base: 1999 HCE of insured who were alive (57,000) or dead (5,075) by 2004

Long-term care: New distinction between LTC and non-LTC individuals

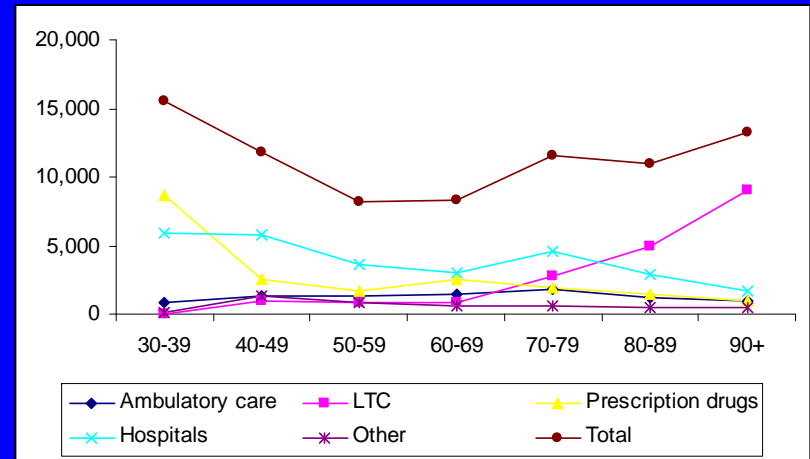
2. News from the red herring IV

Figure 1: Observed age profiles of HCE components

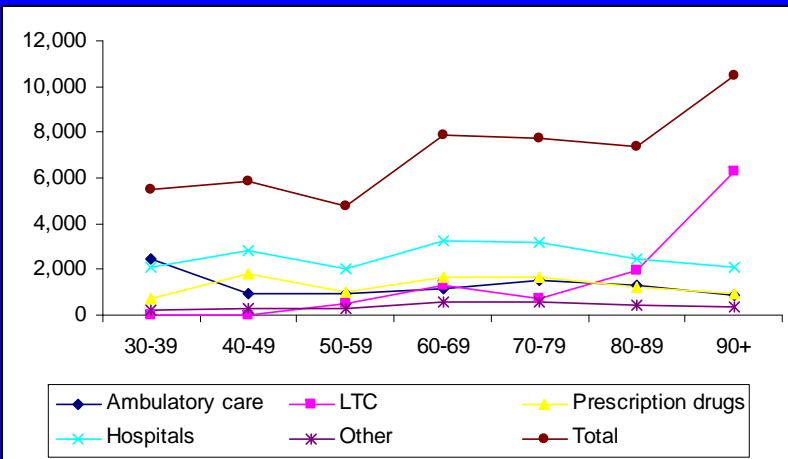
Time to death 1 - 12 mos.



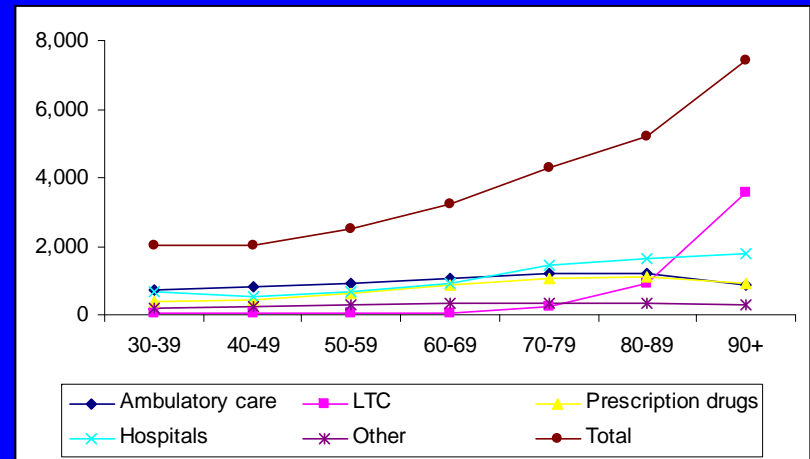
Time to death 25 - 36 mos.



Time to death 49 - 59 mos.



Time to death ≥ 60 mos.



2. News from the red herring V

Note from Figure 1 (raw data)

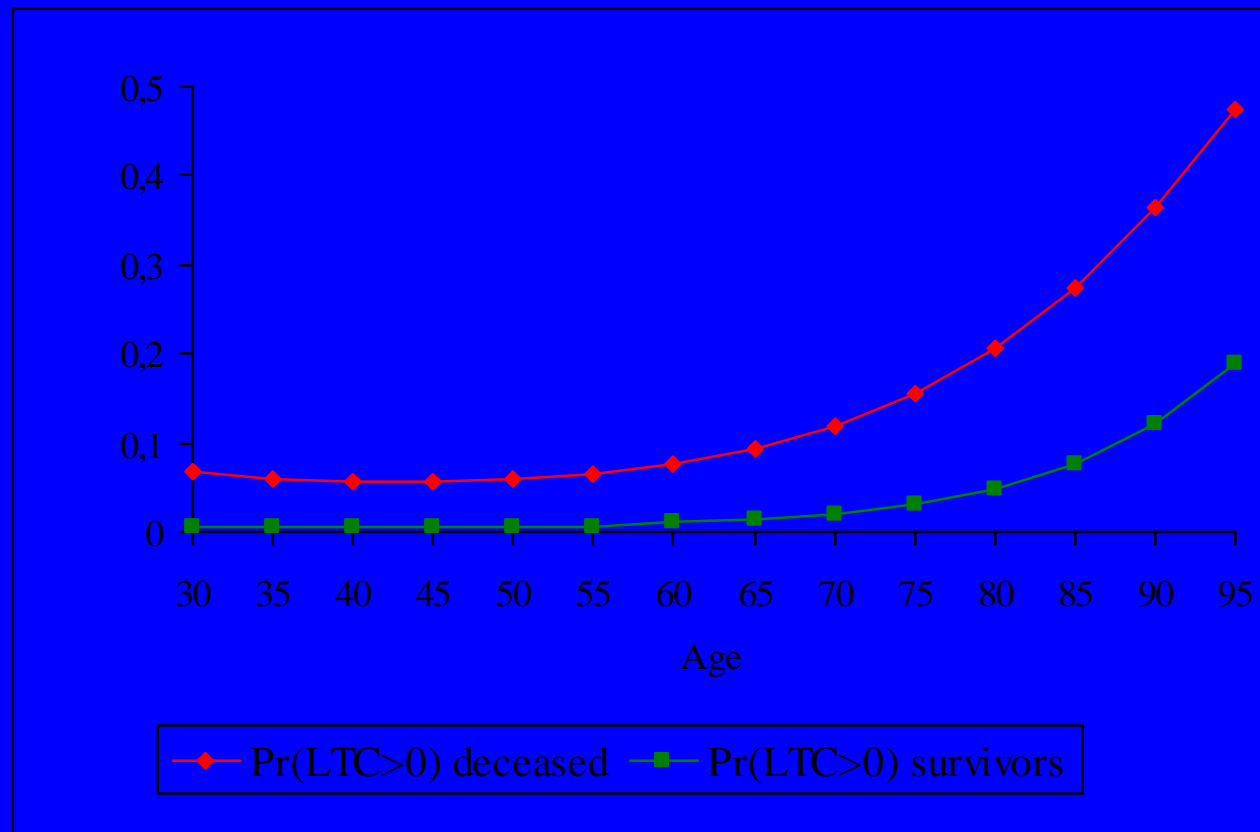
- Total HCE does not consistently increase with age of the deceased but **increases** among **survivors**
- Hospital HCE **decreases** with age of deceased (beyond app. 75), increases somewhat among survivors
- HCE on LTC does **increase** with age regardless of survivor status
- Ambulatory HCE **decreases** with age (beyond app. 75) regardless of survivor status
- Prescription drug HCE **decreases** with age (beyond app. 75) regardless of survivor status

2. News from the red herring VI

- Question:** Do these patterns also hold when **other determinants** such as sex, deductible, supplementary hospital insurance, other supplementary schemes, accident insurance, and community level of HCE are held constant?
- Answer:** Holding constant, other determinants (among them notably **time to death**) flatten the age profile of HCE considerably
- Estimation:** Seemingly Unrelated Regression (SURE) to take into account that unobserved shocks impinging on one component of HCE typically also affect other components

2. News from the red herring VII

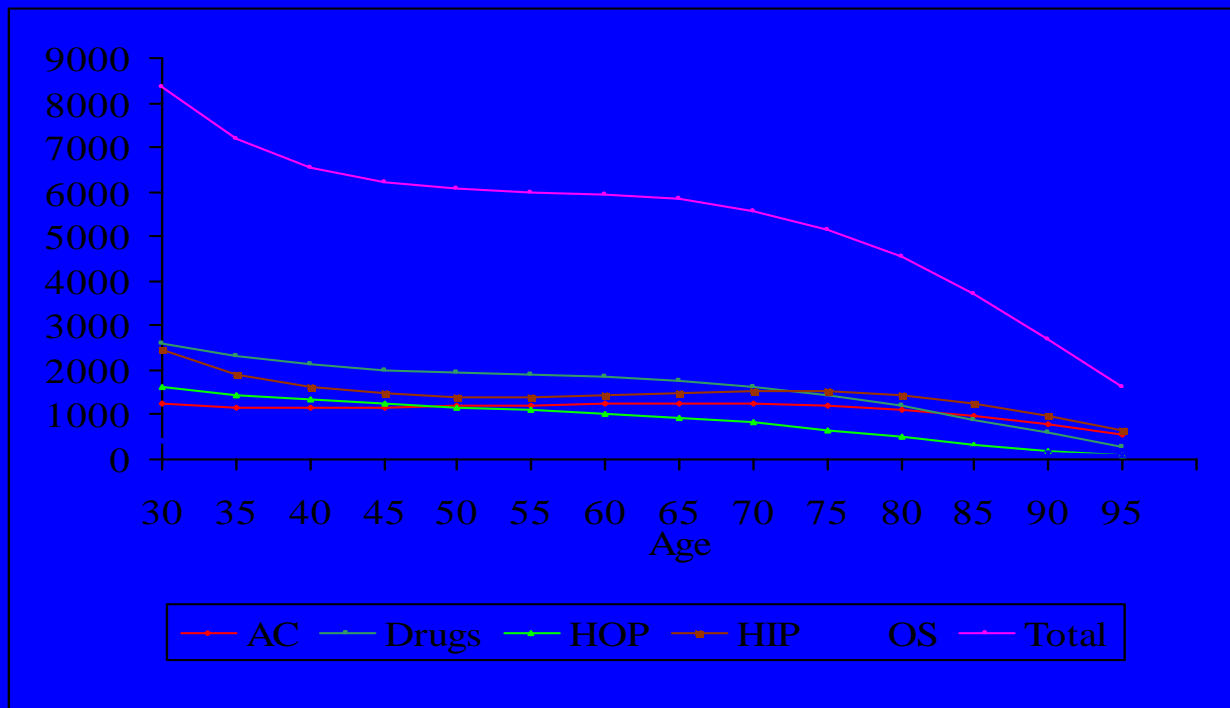
Figure 2: Probability of LTC >0 of surviving and deceased men as a function of age



Note: Probability of being a LTC case also has a flatter age profile when other determinants are held constant

2. News from the red herring VIII

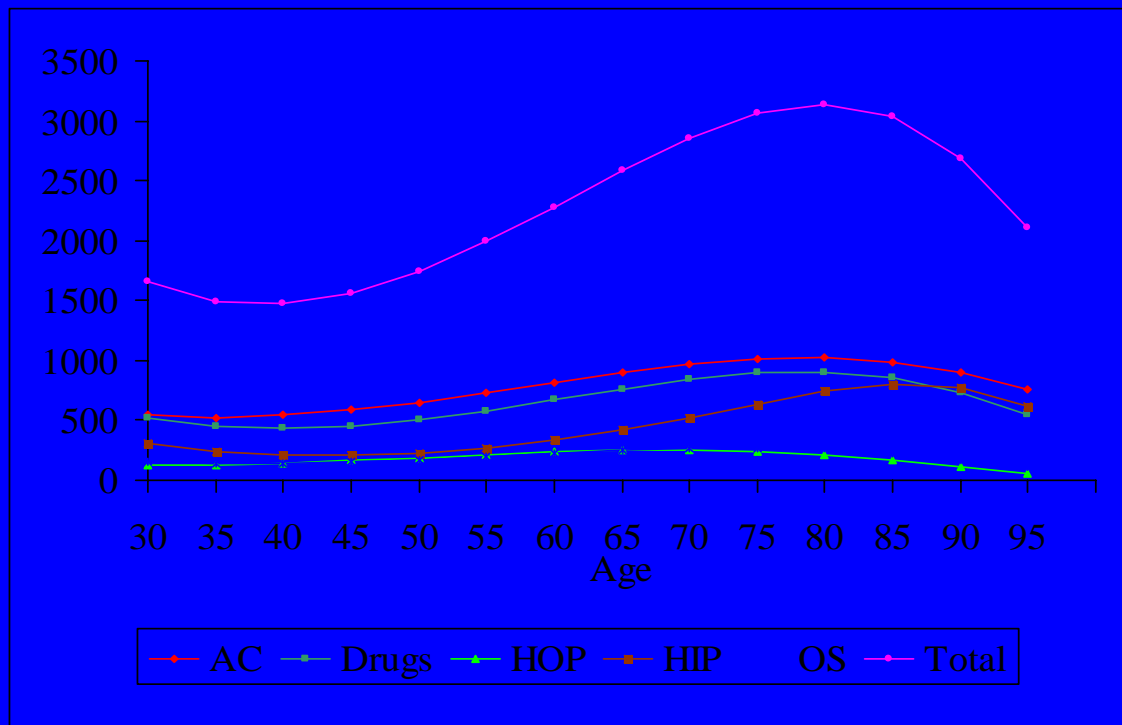
Figure 3: Expected values of for acute HCE components for deceased and surviving male non-LTC users as a function of age, in CHF (1999)



Panel A: Deceased persons

2. News from the red herring IX

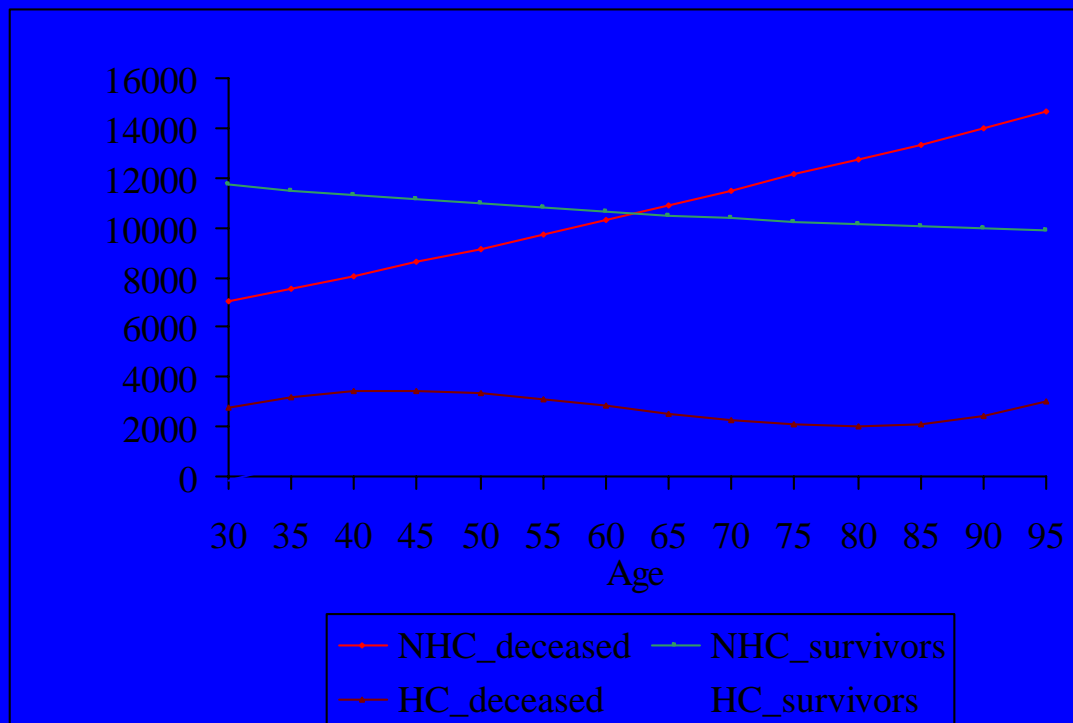
Figure 3: Expected values of for acute HCE components for deceased and surviving male non-LTC users as a function of age, in CHF (cont'd)



Panel B: Survivors

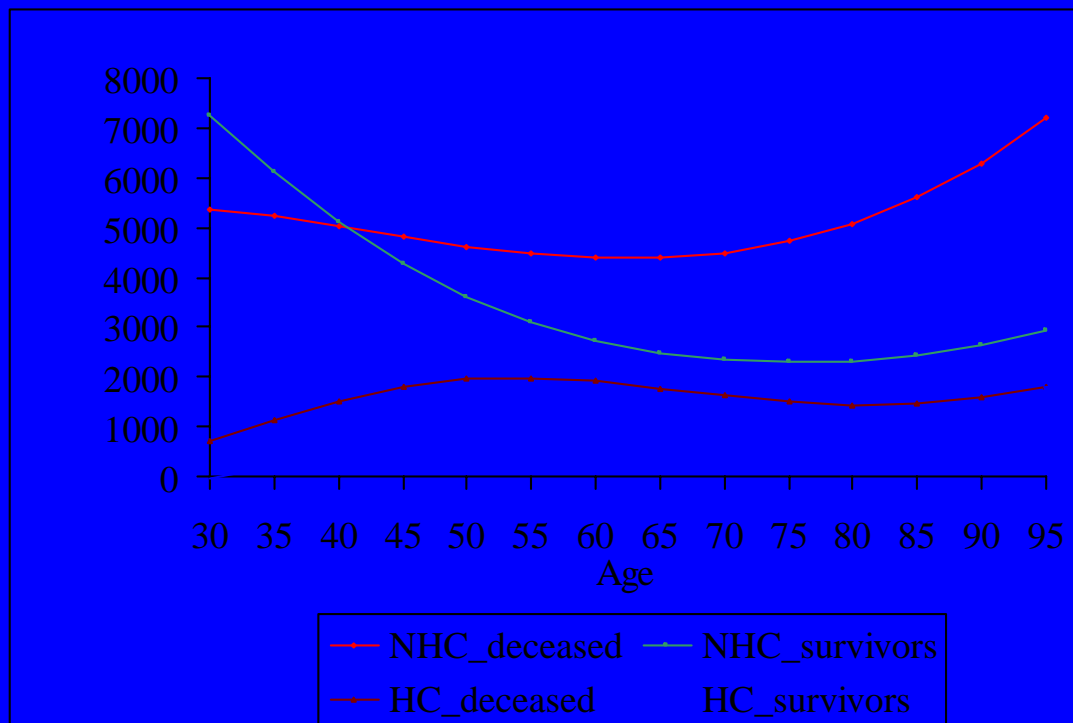
2. News from the red herring X

Figure 4: Conditional and expected values of nursing home care (NHC) and home care (HC) expenditure, in CHF (1999)



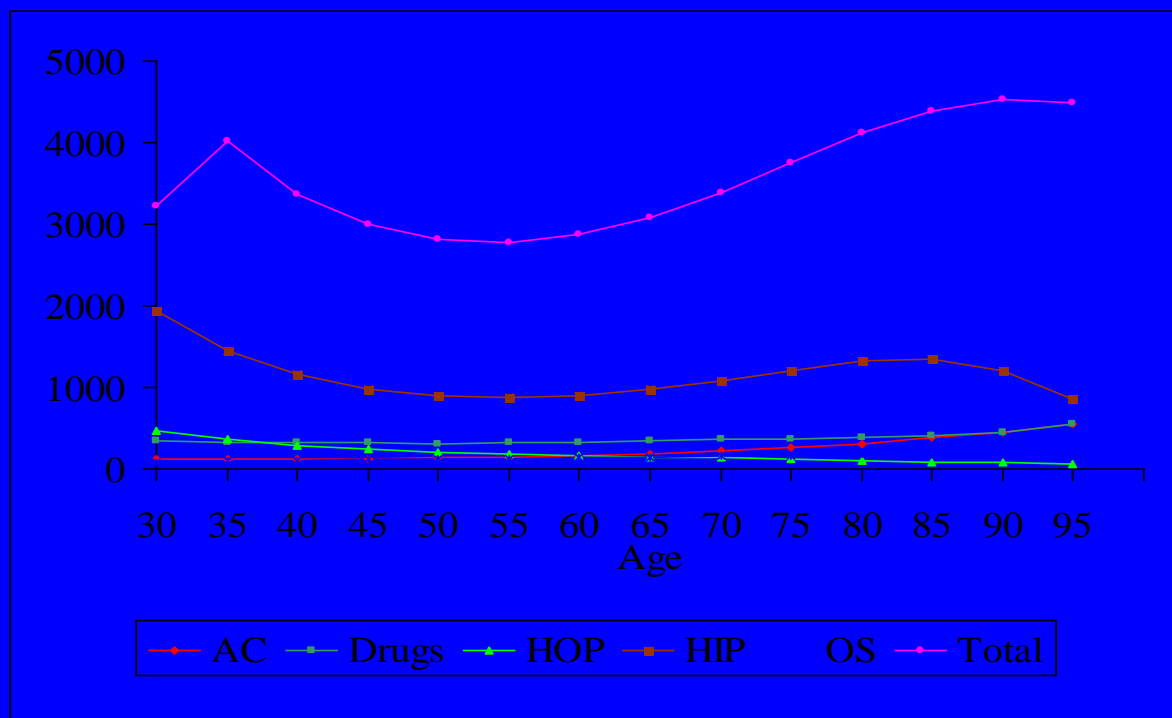
2. News from the red herring XI

Figure 4: Conditional and expected values of nursing home care (NHC) and home care (HC) expenditure (cont'd)



2. News from the red herring XII

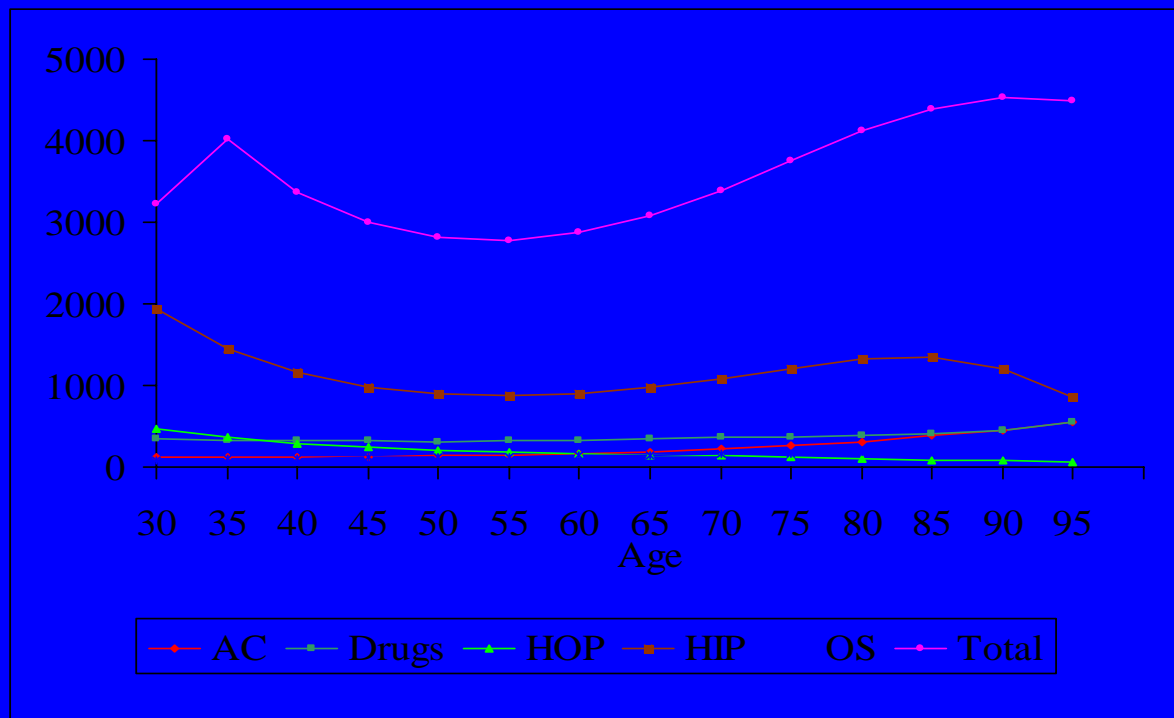
Figure 5: Expected values of acute HCE components for deceased and surviving male LTC users as a function of age, in CHF



Panel A: Deceased persons

2. News from the red herring XIII

Figure 5: Expected values of acute HCE components for deceased and surviving male LTC users as a function of age, in CHF



Panel B: Survivors

2. News from the red herring XIV

Conclusions regarding the „red herring“

- Total HCE of deceased again increases with **time to death** but not age
- Among **LTC patients**, age becomes a statistically significant determinant but its effects are **small**, even for HCE components related to LTC status
- Among **non-LTC patients**, age gradients are zero or even negative (at least beyond age 80) – regardless of survivor status
- **Exception to the „red herring“ pattern**: Acute care provided to LTC patients, regardless of survivor status

3. Reform of health insurance – can the aged be won over? I

- **Challenge to health insurance:** How to avoid the explosion of HCE right before death?
- **Problem with contract design:** At any given point in time, age is the principal indicator of „closeness to death“
- The aged **must be won over** to a policy e.g. with higher copayment!

3. Reform of health insurance – can the aged be won over? II

- Becker and Zweifel [2007, *The Patient* 1 (1)] report on a market experiment
- 1,000 respondents had to choose 10 times between the status quo and a hypothetical alternative
- Discrete Choice Experiments (DCE) are hoped to be less subject to biases than the conventional Contingent Valuation alternative

3. Reform of health insurance – can the aged be won over? III

Table 1: Product attributes and levels in the main survey

Attribute	Label	Levels
Deductible	deduct	- Status quo: CHF 230, 400, 600, 1,200, 1,500 annual - CHF 0, 2,400, 4,800 per year
Copayment	copay	- Status quo: 10% (=0) with a maximum of CHF 600 - 20% (=1) with a maximum of CHF 1,200
Alternative medicine	altmed	- Status quo: some treatment methods are covered (=0) - More alternative treatment methods are covered (=1)
Coding of dummy variables in parantheses		

3. Reform of health insurance – can the aged be won over? IV

Table 1: Product attributes and levels in the main survey (cont'd)

Attribute	Label	Levels
Medication	generics	<ul style="list-style-type: none"> - Status quo: all drugs on the list are reimbursed (=0) - The cheapest product on the market is reimbursed (=1)
Access to innovation	innovation	<ul style="list-style-type: none"> - Status quo: all treatment methods are covered as soon as they get approved (=0) - Innovative treatment methods are covered only three years after introduction (=1)
Premium	premium	<ul style="list-style-type: none"> - Increase of the monthly premium by CHF 50, 25 or 10 - Decrease of the monthly premium by CHF 50, 25 or 10

Coding of dummy variables in parantheses

3. Reform of health insurance – can the aged be won over? V

Example of a choice card:

	Your current policy	Alternate policy
Deductible	CHF 400	CHF 1,500
Coinsurance	10 percent, max. CHF 600 annually	20 percent, max. CHF 1,200 annually
Alternative medicine	Most procedures reimbursed	Reduced benefit
Drugs	All drugs on the official list are reimbursed	Only the lowest-price drug is reimbursed
Innovation	Immediate access and reimbursement	Access delayed by 2 years
Monthly premium	CHF 190	CHF 25 less
Which policy do you prefer?	<input type="radio"/>	<input type="radio"/>

3. Reform of health insurance – can the aged be won over? VI

How much compensation is needed for voluntary acceptance of changes?

Table 7: Compensation required for an alternative contract with a deductible of CHF 1,500 (CHF/month) a b

Age (y)	Compensation for considering change of contract	Compensation for higher deductible	Total compensation needed
25 – 39	62	38	100
40 – 62	57	50	107
63+	65	60	125

a Status quo: CHF 230 (the minimum deductible in 2003)

b 1 CHF = 0.8 US\$ at 2007 exchange rates

• 4. Concluding remarks

- (Western) man's attempt to attain 'rectangularization' of health status is predicted to result in a compression of **morbidity**
- Still, the age profile of **HCE** may steepen in the future (decreasing marginal effectiveness of health care services)
- The 'red herring' hypothesis, stating that time to death rather than age drives HCE, is largely indicated by an analysis of **components of HCE** ('school of red herrings')
- Any attempt to **avoid** the costly time before death by reforming health insurance must win over the **aged**
- Experimental evidence from Switzerland suggests that the aged 63+ require some **CHF 125/mo.** in terms of **compensation** to accept a CHF 1,500/yr (rather than 400/yr) deductible, compared to **CHF 100/mo. for the 25-39 old**. This includes status quo bias