

# Social aspects of frailty: why do social circumstances matter?

Melissa Andrew, MD, PhD, MSc(PH), FRCPC  
Associate Professor of Geriatric Medicine  
Dalhousie University  
Halifax, Nova Scotia, Canada  
mandrew@dal.ca

**72**

**frail**

**lives alone**

**isolated**

**no family**

**few friends**

**no-one to help**

**rarely gets out**

**low mastery**

**few resources**



**connected**

**family**

**many friends**

**social supports**

**engages in community**

**volunteers**

**high mastery**

**many resources**

# How do we define frailty?

- Descriptive definitions e.g. Frailty Scale
- Rules-based definitions e.g. Frailty Phenotype
- Deficit accumulation: Frailty index
- The multidimensional view: “balance beam”

# A multidimensional view of frailty: The Balance Principle (reserve!)



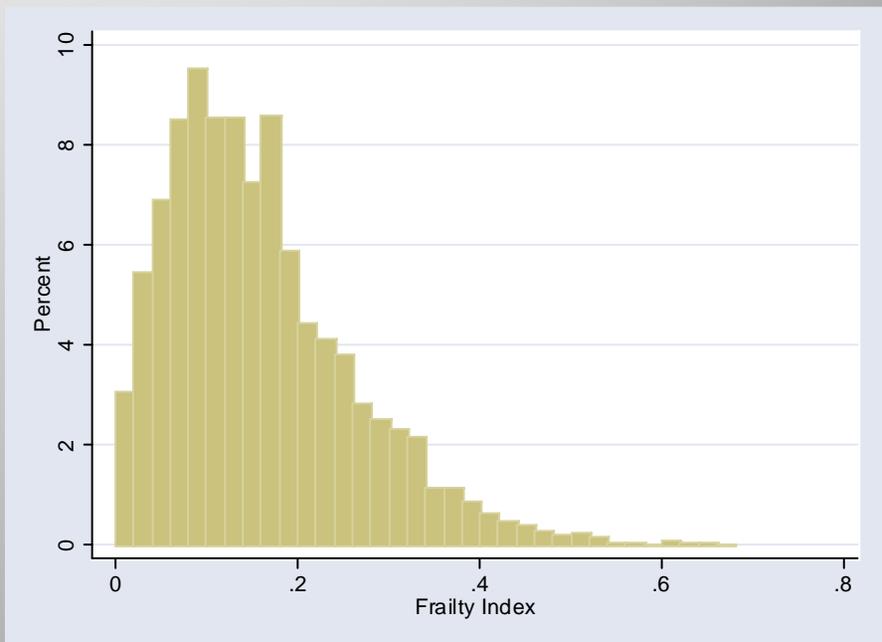
*Rockwood et al. Can Med Association 1994; 150:499-507*  
*Rockwood et al. J Am Geriatric Society 1996; 44:578-82*

Sample list of deficits used in the frailty index.

	Deficits
1	Eyesight
2	Hearing
3	Help to eat
4	Help to dress
5	Ability to take care of appearance
6	Help to walk
7	Help to get in and out of bed
8	Help to go to the bathroom
9	Help to take a bath or shower
10	Help to use the telephone
11	Help to travel beyond walking distance
12	Help with shopping
13	Help to prepare own meals
14	Help to do housework
15	Ability to take medications
16	Ability to handle own money
17	Self-rated health
18	Troubles prevent normal activities
19	Lives alone
20	Having a cough
21	Feeling tired
22	Nose stuffed up or sneezing
23	High blood pressure
24	Heart and circulation problems
25	Stroke or effects of stroke
26	Arthritis or rheumatism
27	Parkinson's disease
28	Eye trouble
29	Ear trouble
30	Dental problems
31	Chest problems
32	Trouble with stomach
33	Kidney trouble
34	Losing control of bladder
35	Losing control of bowels
36	Diabetes
37	Trouble with feet or ankles
38	Skin problems
39	Fractures

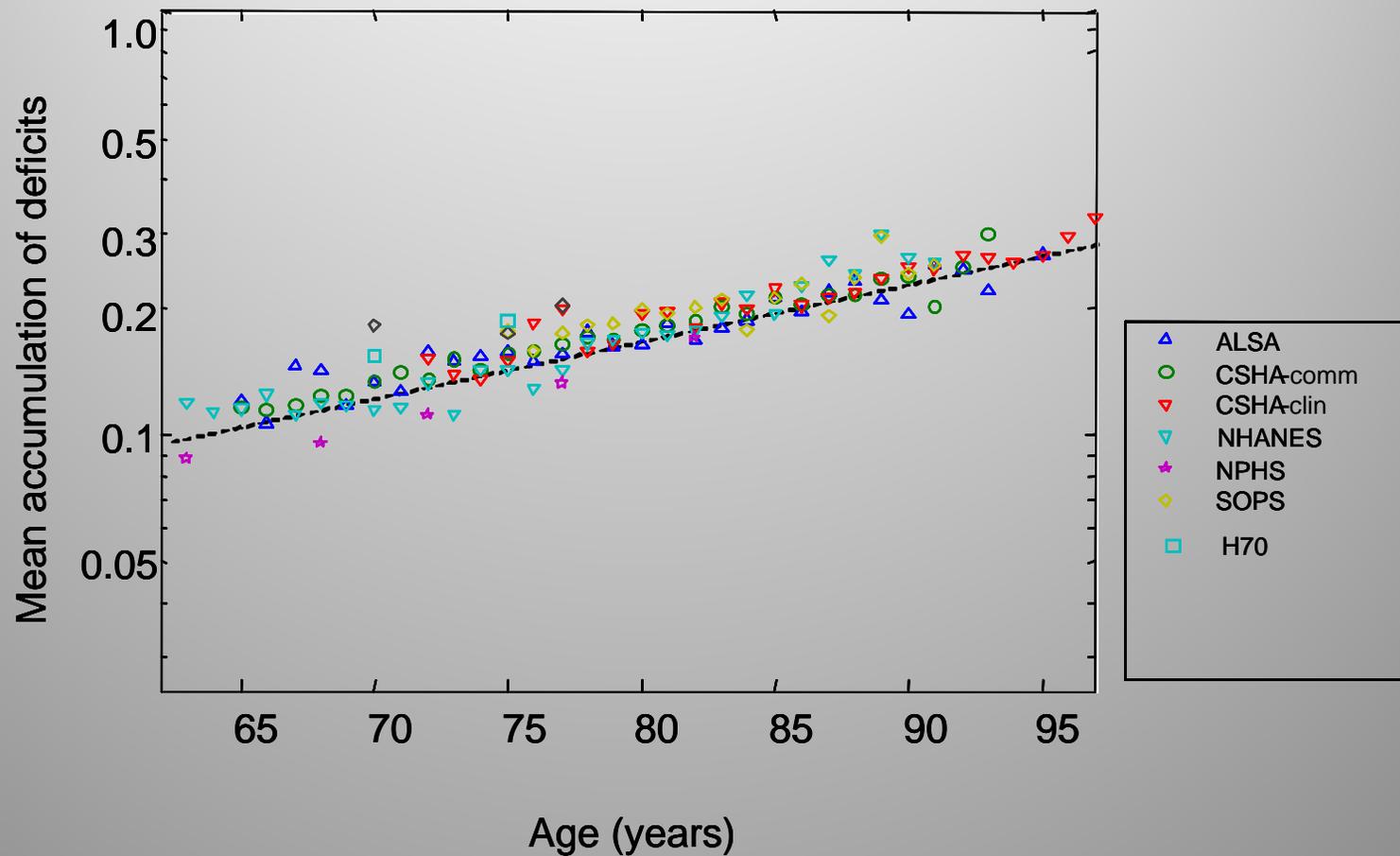
# Measuring frailty as an “index of deficits”

## Frailty index distribution

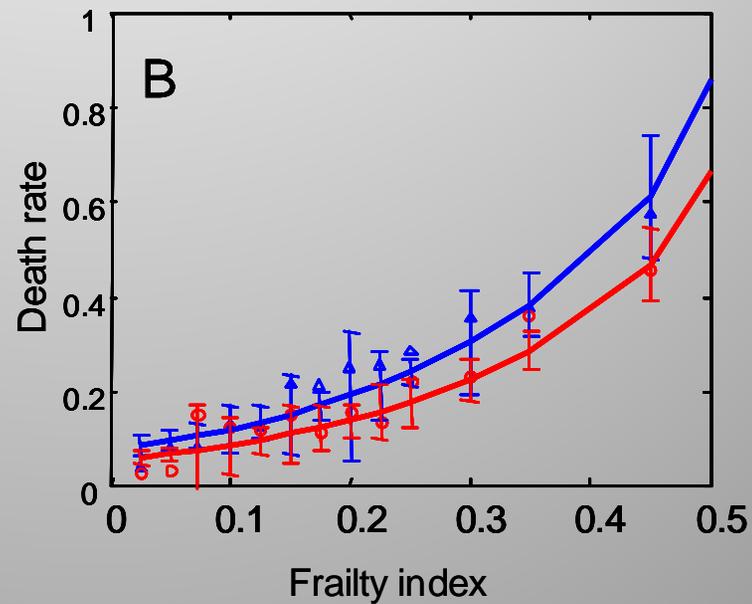
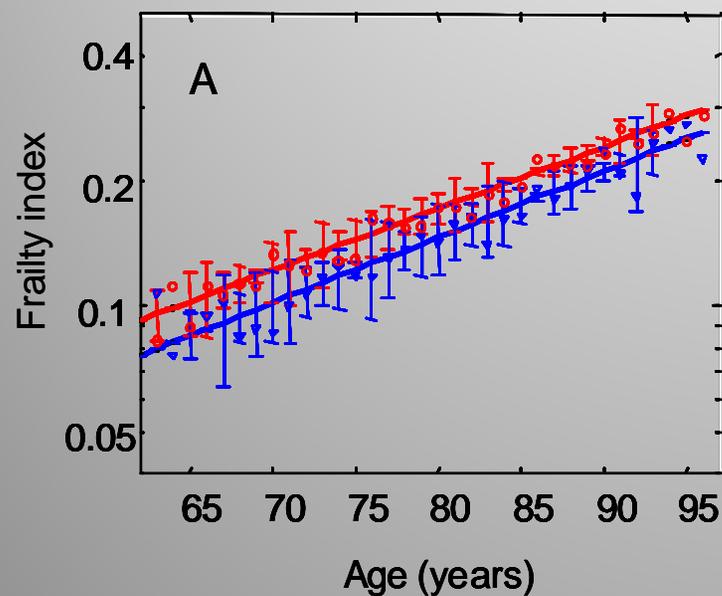


- Range = 0 to 0.66, mean 0.16

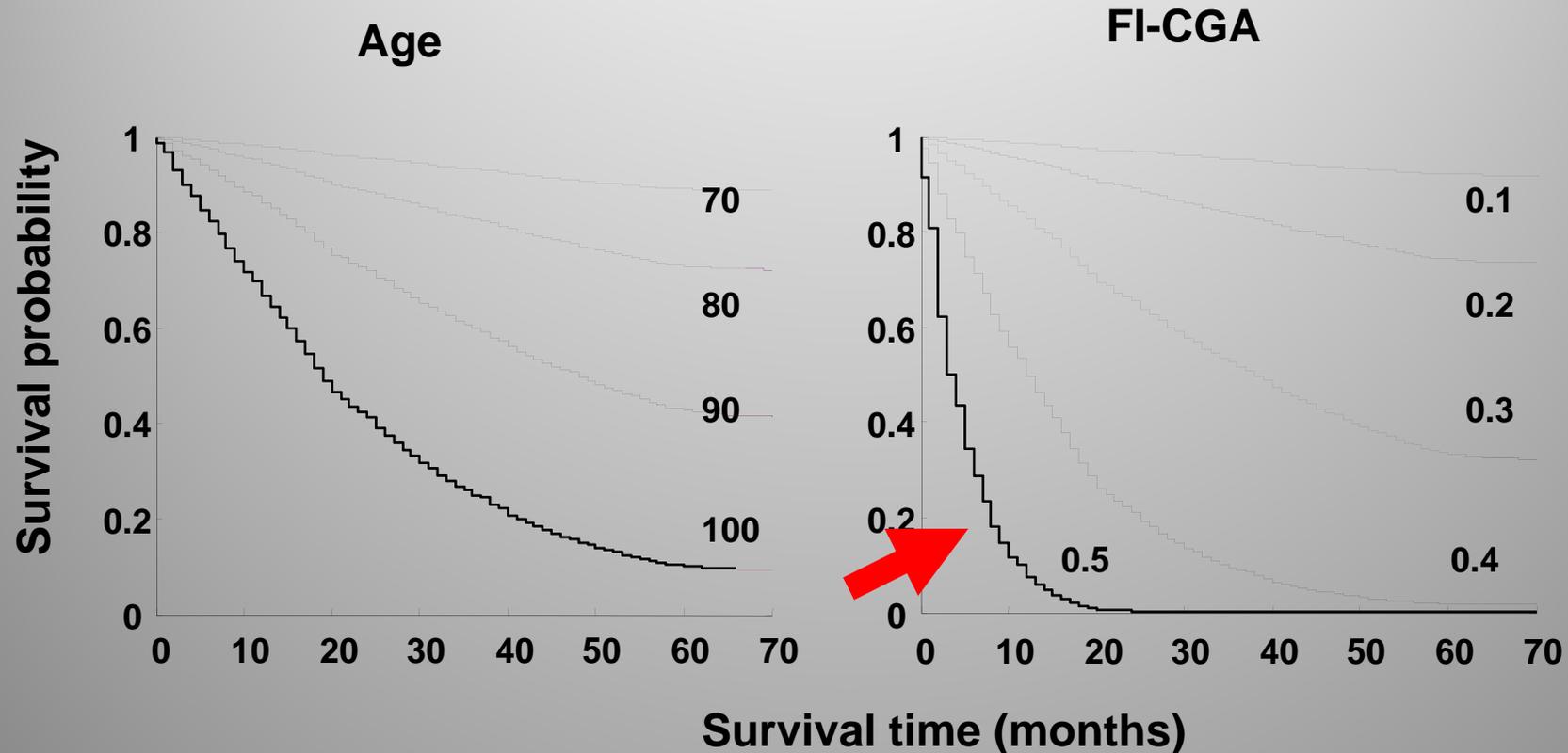
Deficits accumulate, on average, at about 3% per year, regardless of the data source



At any age, women accumulate more deficits than do men. For men & women, deficit accumulation is highly correlated ( $r > 0.95$ ) with mortality



# A frailty index based on a Comprehensive Geriatric Assessment (FI-CGA) better stratifies 70-month survival than does age



# Health



**Intrinsic** factors: frailty, comorbidity, genetics

**Extrinsic** factors:  
social and physical environment



# Why are social circumstances important?

**Risk factor**



**Management,  
Care planning,  
Discharge  
planning**

# Social factors and health

- Social factors individually associated with health
  - Socioeconomic status
  - Social inequalities
    - income, social status, control over life situation
  - Social support
  - Social networks
  - Social engagement
  - Social capital (individual vs. group)
  - Social cohesion
- Can these be conceptually unified?



# Social factors and older adults' health: the evidence

**Survival:** rich social networks, social supports, group engagement, occupational status (gradient), social capital, trust

## **Cognitive decline and dementia:**

social supports, social connectedness, loneliness, social engagement, social vulnerability, SES (individual and neighbourhood-level)

**Self-assessed health:** social capital, trust, social supports, volunteerism, group participation, SES (individual and neighbourhood)



## **Mental health:**

neighbourhood social capital, social ties, social networks, social supports, SES

**Mobility and falls:** SES, living alone, social engagement, neighbourhood deprivation/SES

## **Functional decline/dependence:**

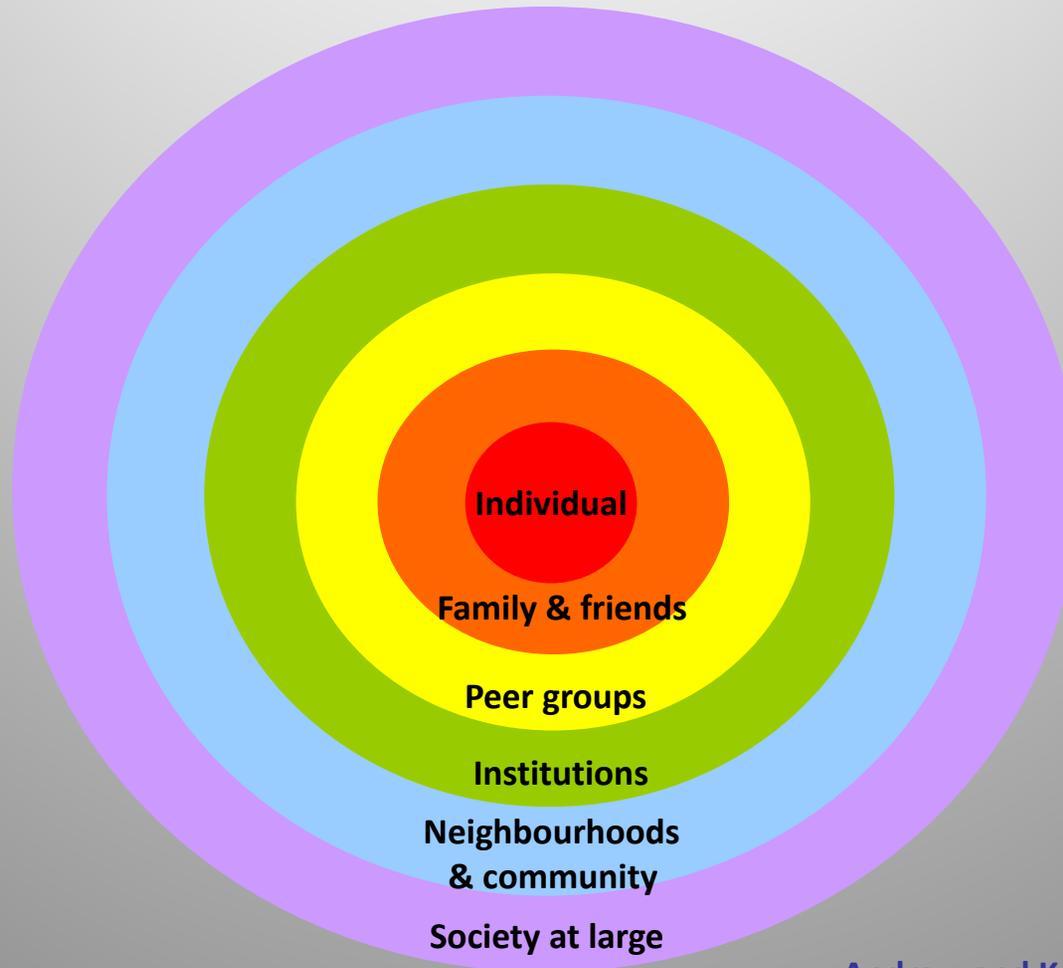
low social engagement, social networks, social engagement, social support, trust

**Institutionalization:** lack of social supports, social capital

**Frailty:** social vulnerability, isolation, lower SES, social position, community participation, social supports (including perceived social supports)

# What is Social Vulnerability?

- **Social vulnerability** is the degree to which a person's overall social situation leaves them susceptible to further insults (either health-related, or social).
- Consider the inverse: **social reserve**, the degree of resilience gained from a well-connected and supportive social situation
- The more social problems one has, the more the vulnerability to adverse outcomes.



# Social vulnerability index

## **Communication to engage in wider community**

- 1 Read English or French
- 2 Write English or French

## **Living situation**

- 3 Marital status
- 4 Lives alone

## **Social support**

- 5 Someone to count on for help or support
- 6 Feel need more help or support
- 7 Someone to count on for transportation
- 8 Feel need more help with transportation
- 9 Someone to count on for help around the house
- 10 Feel need more help around the house
- 11 Someone to count on to listen
- 12 Feel need more people to talk with
- 13 Number of people spend time with regularly
- 14 Feel need to spend more time with friends/family
- 15 Someone to turn to for advice
- 16 Feel need more advice about important matters

## **Socially oriented Activities of Daily Living**

- 17 Telephone use
- 18 Get to places out of walking distance

## **Leisure activities**

- 19 How often visit friend or relatives
- 20 How often work in garden
- 21 How often golf or play other sports
- 22 How often go for a walk
- 23 How often go to clubs, church, community centre
- 24 How often play cards or other games

## **Ryff scales**

- 25 Feel empowered, in control of life situation
- 26 Maintaining close relationships is difficult and frustrating
- 27 Experience of warm and trusting relationships
- 28 People would describe me as a giving person

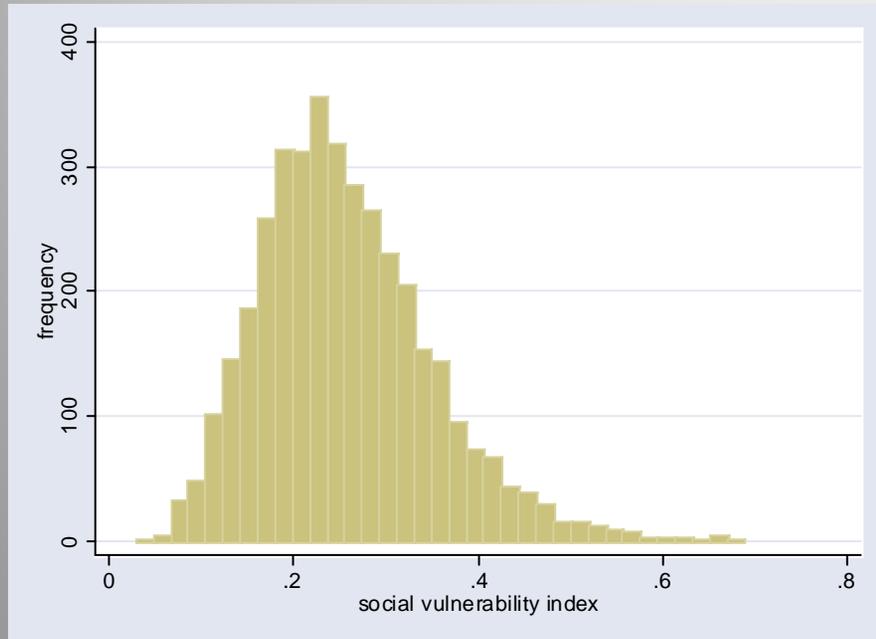
## **How do you feel about your life in terms of ...**

- 29 Family relationships
- 30 Friendships
- 31 Housing
- 32 Finances
- 33 Neighbourhood
- 34 Activities
- 35 Religion
- 36 Transportation
- 37 Life generally

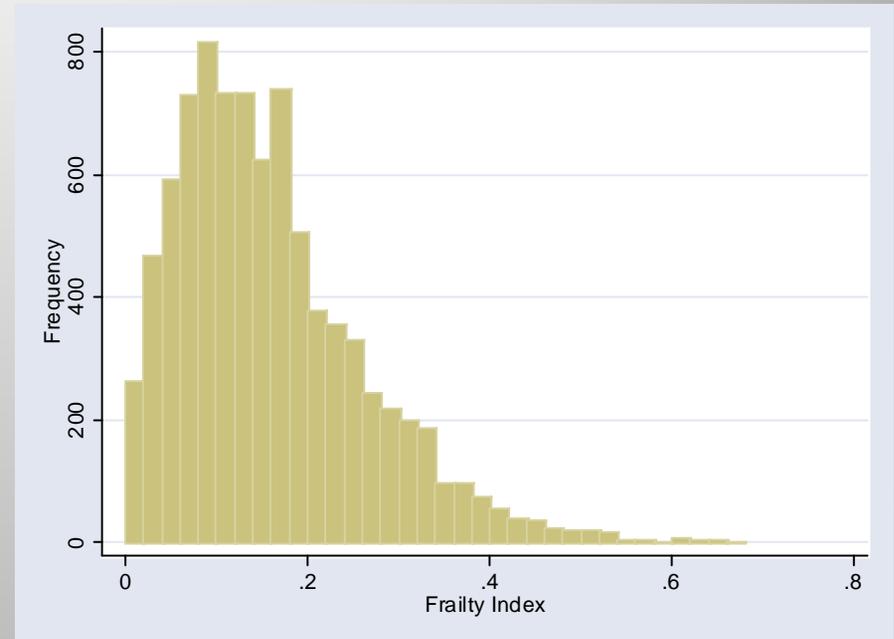
## **Socio-economic status**

- 38 Does income currently satisfy needs
- 39 Home ownership
- 40 Education

# Similarities between frailty and social vulnerability?



Social vulnerability index



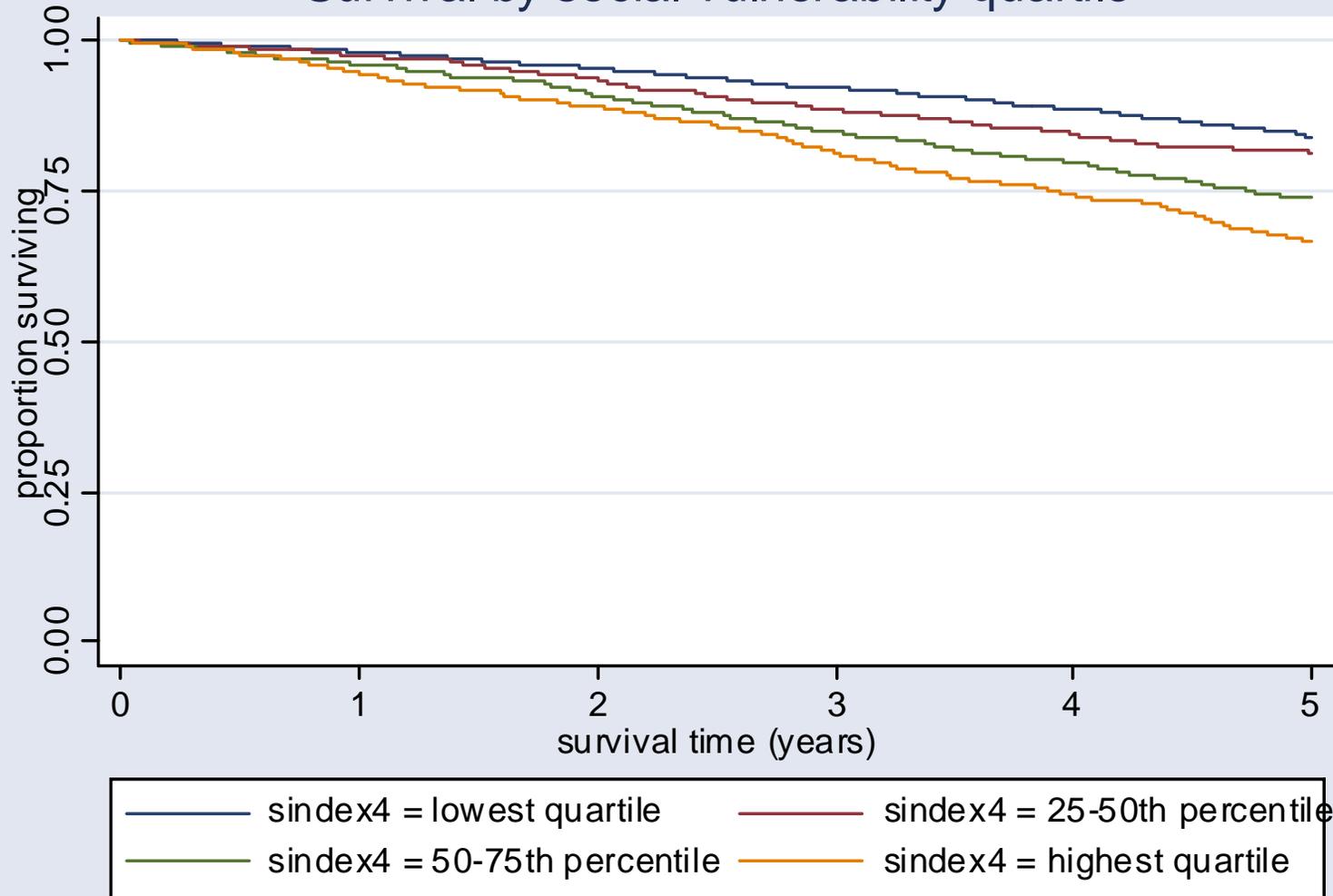
Frailty index

- Social vulnerability is correlated with the frailty index ( $r=0.44$ )
- This correlation differs for men and women (0.31 vs. 0.46)

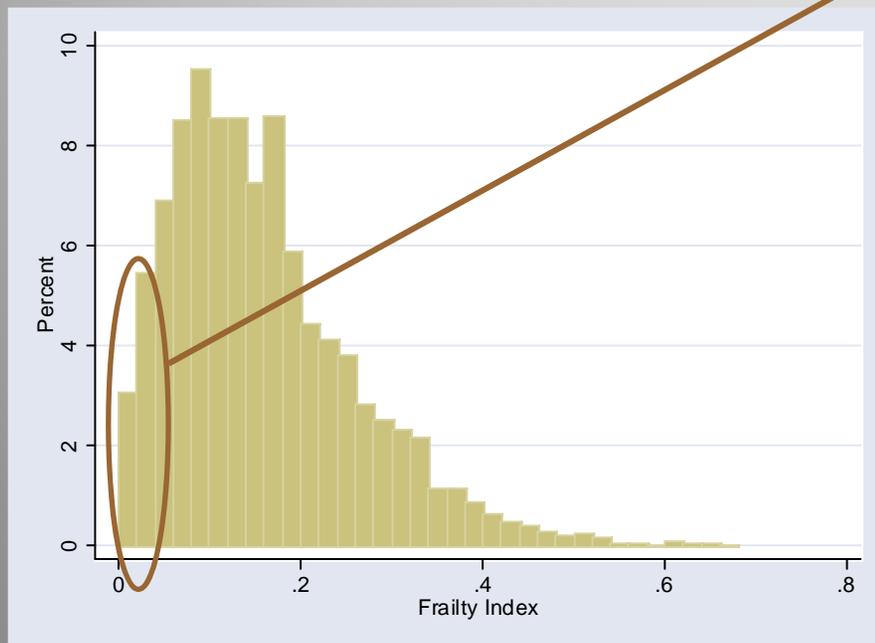
## Associations of the social vulnerability dimensions with covariates

	Engagement	Contextual SES	Support	Living situation	Esteem	Mastery	Relations
Gender	Women more engaged $p=0.03$		Women more supported $p=0.003$	Women more alone $p<0.001$		Women better mastery $p=0.02$	
Age				Older age, more alone $p<0.001$		Older age, better mastery $p<0.001$	
Frailty	More frail, less engagement $p<0.001$	More frail, lower SES $p=0.07$			More frail, lower esteem $p<0.001$	More frail, lower mastery $p<0.001$	
Education	Lower educ, less engagement $p<0.001$	Lower educ, lower SES $p<0.001$			Lower educ, lower esteem $p=0.01$	Lower educ, lower mastery $p<0.001$	

## Survival by social vulnerability quartile



# Survival in “zero state” frailty stratifies by level of social vulnerability: the “zero state” of frailty as a candidate marker for the health of populations



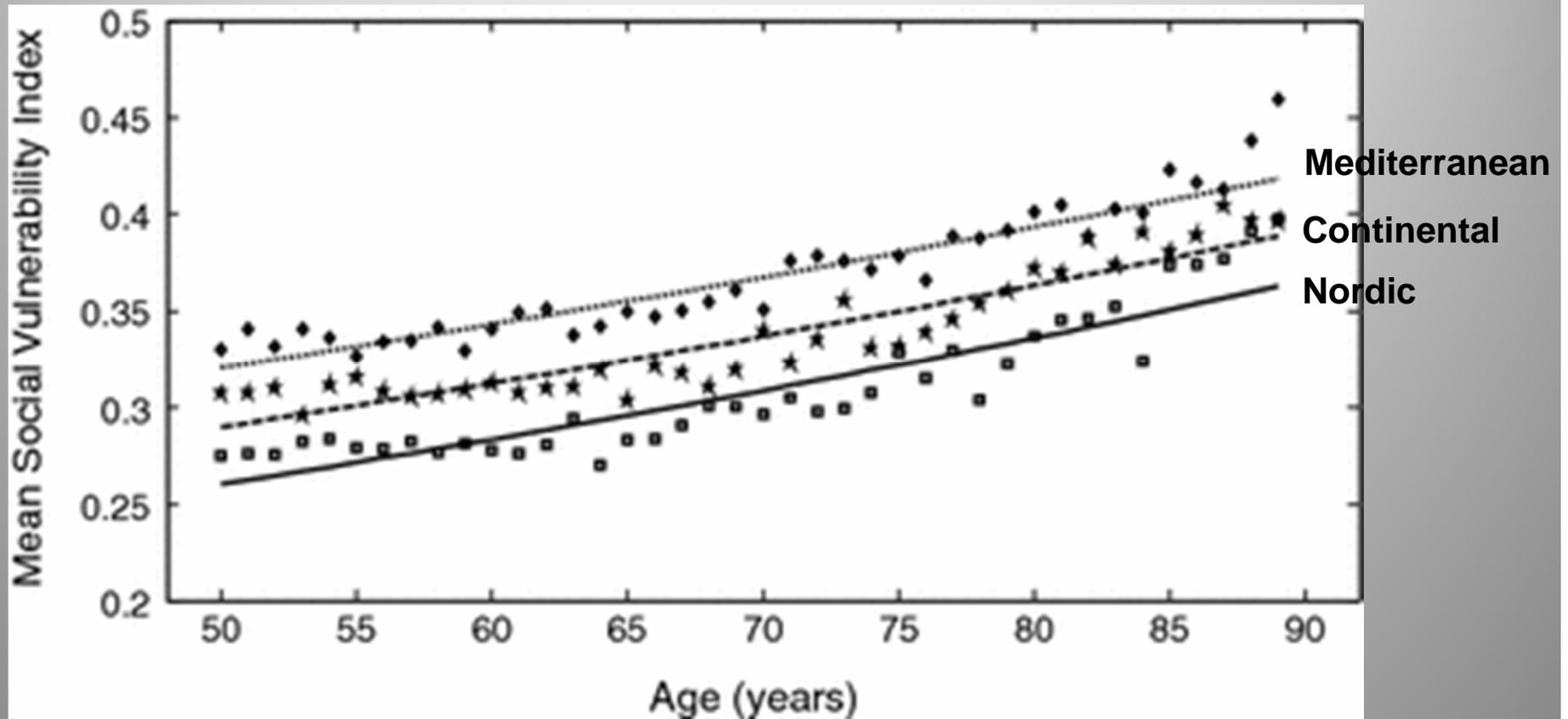
	HR	95% CI	p value
Low SV	1		
Med SV	1.22	0.68-2.16	0.5
High SV	2.28	1.23-4.20	0.009

Cox regression model adjusted for age and sex

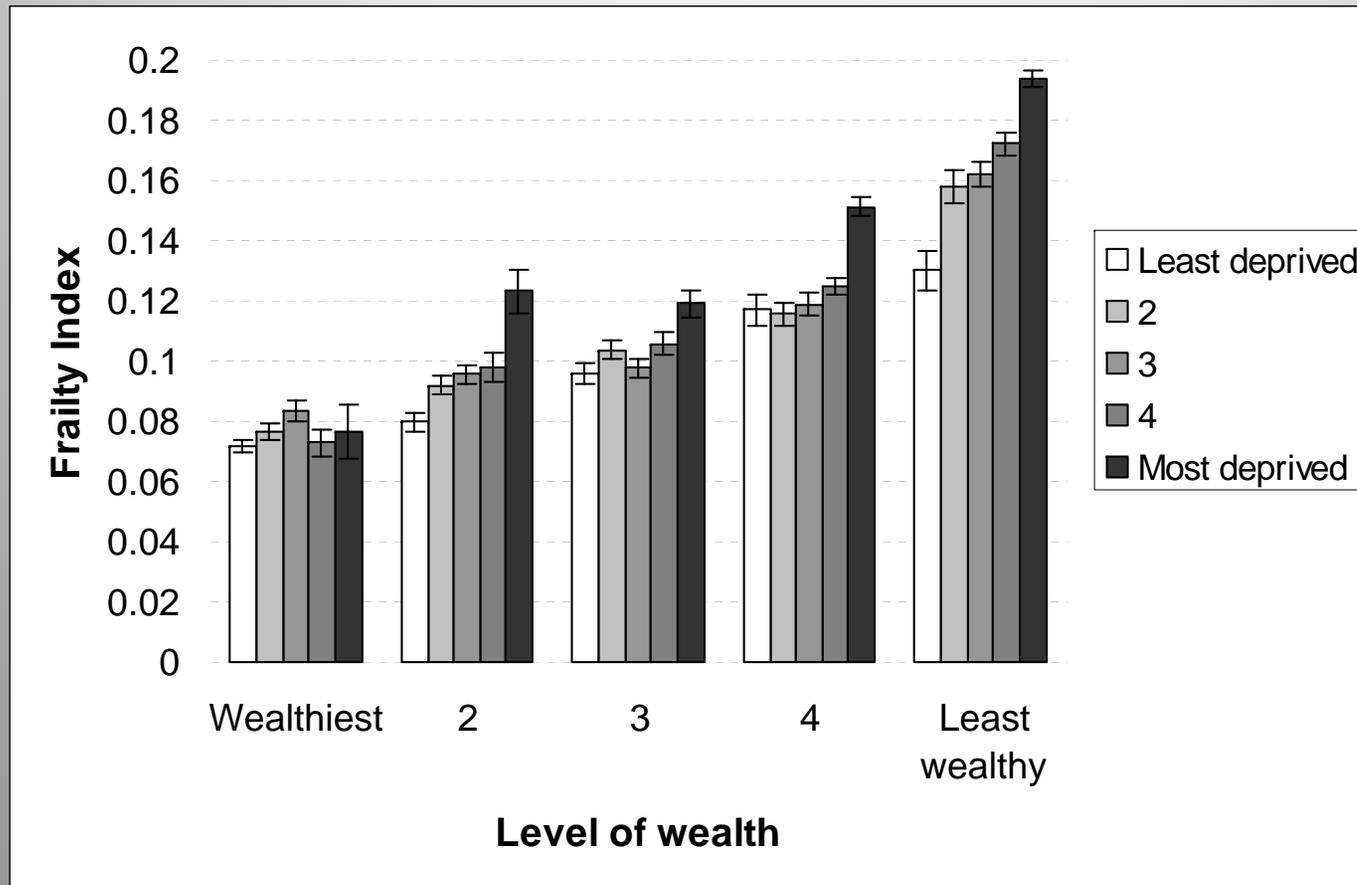
20% absolute increase in risk of mortality

	Survived	Died	Total	Absolute mortality
Low SV	220	29	250	11.6%
Med SV	106	23	129	17.8%
High SV	39	18	57	31.6%
Total	365	70	436	

# Social vulnerability varies by social welfare model: SHARE



# Neighbourhoods matter...

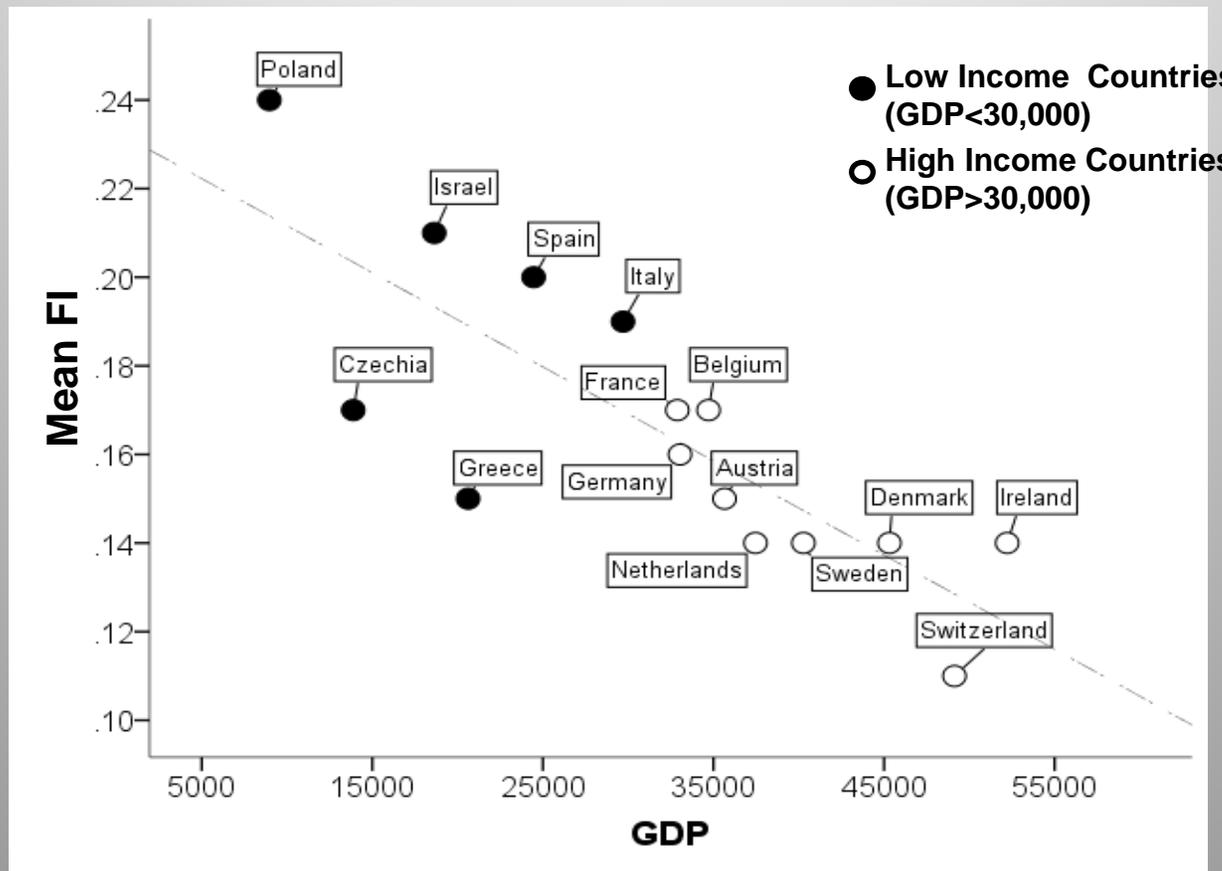


Predicted frailty index by wealth and neighborhood deprivation, both split by quintiles, in fully adjusted models

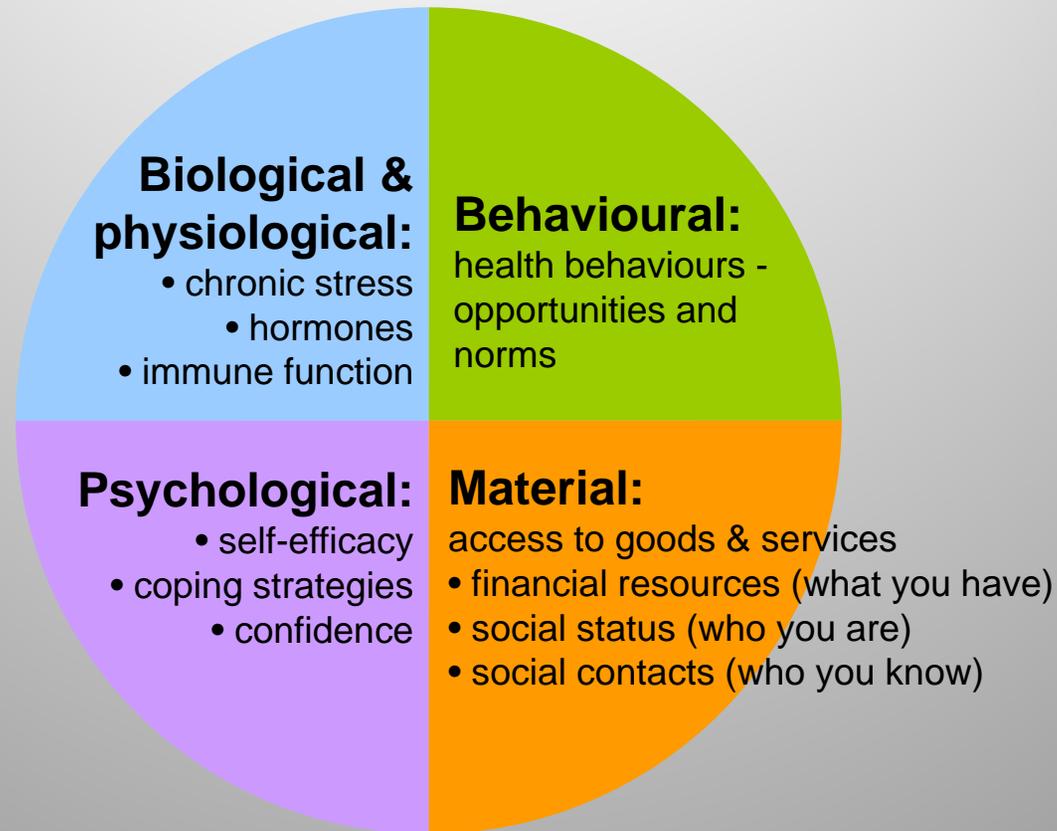
Lang et al. Socioeconomic status, neighborhood deprivation, and frailty in older adults. JAGS 2009

# Frailty and National Income

*Frailty decreases with Gross Domestic Product (GDP)*



# Social factors and older adults' health: Mechanisms?



# Acknowledgements

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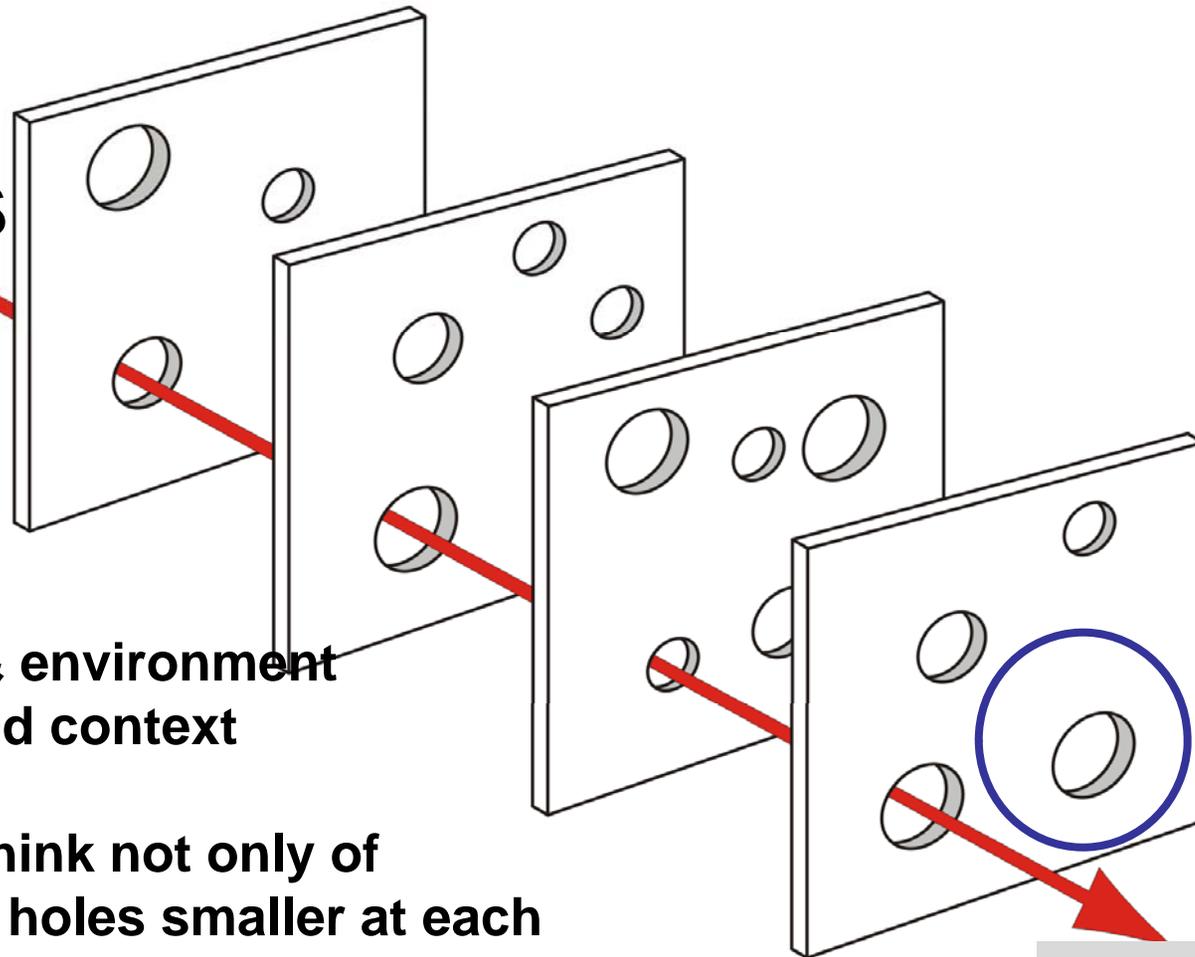
Frail older adults have low reserve. They will be particularly vulnerable to problems in their environments and in our systems of care

**Insults**

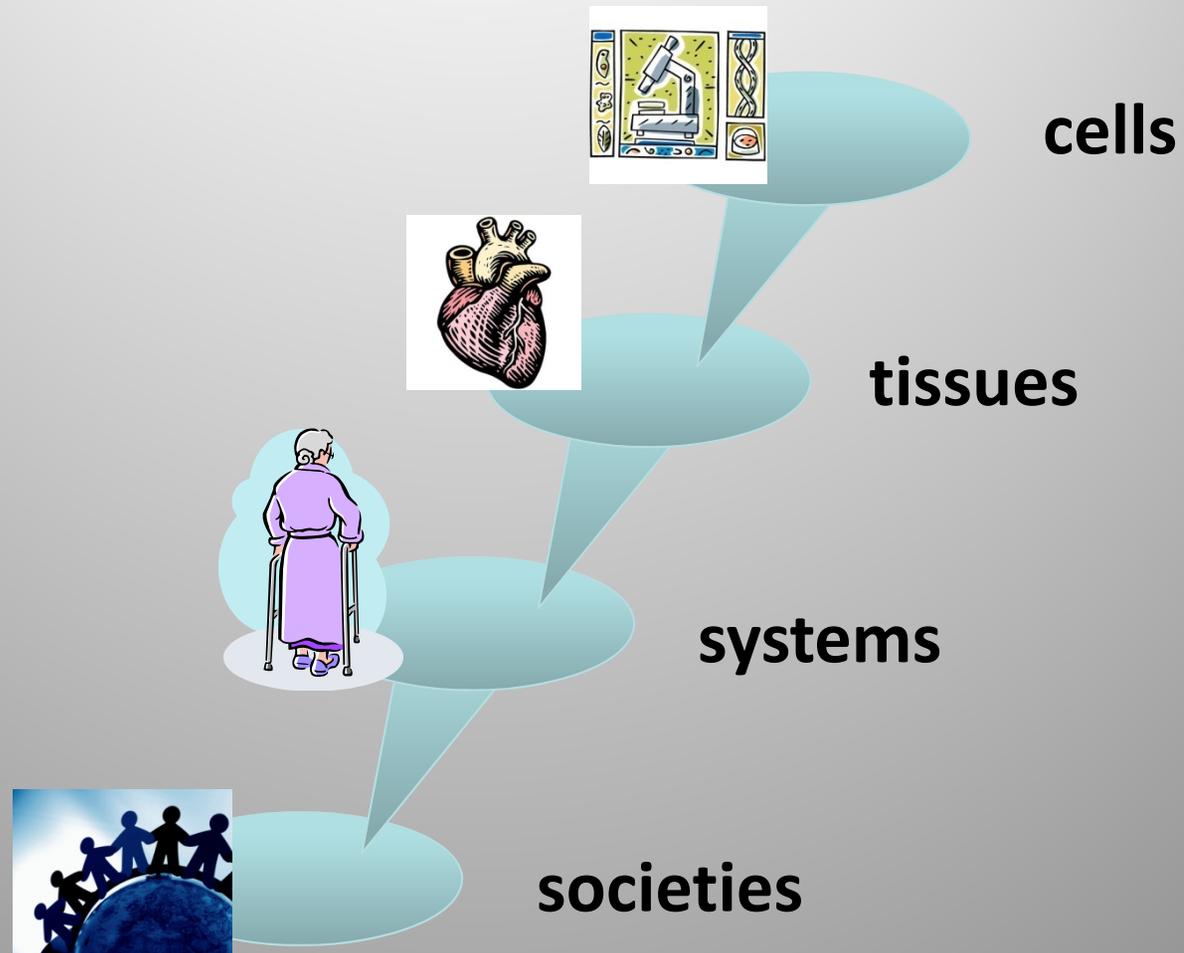
- Patient
- Provider
- Protocols & environment
- Systems and context

We have to think not only of plugging the holes smaller at each level, but also of making sure that they do not line up.

**Injuries**



# Desirability of scaling



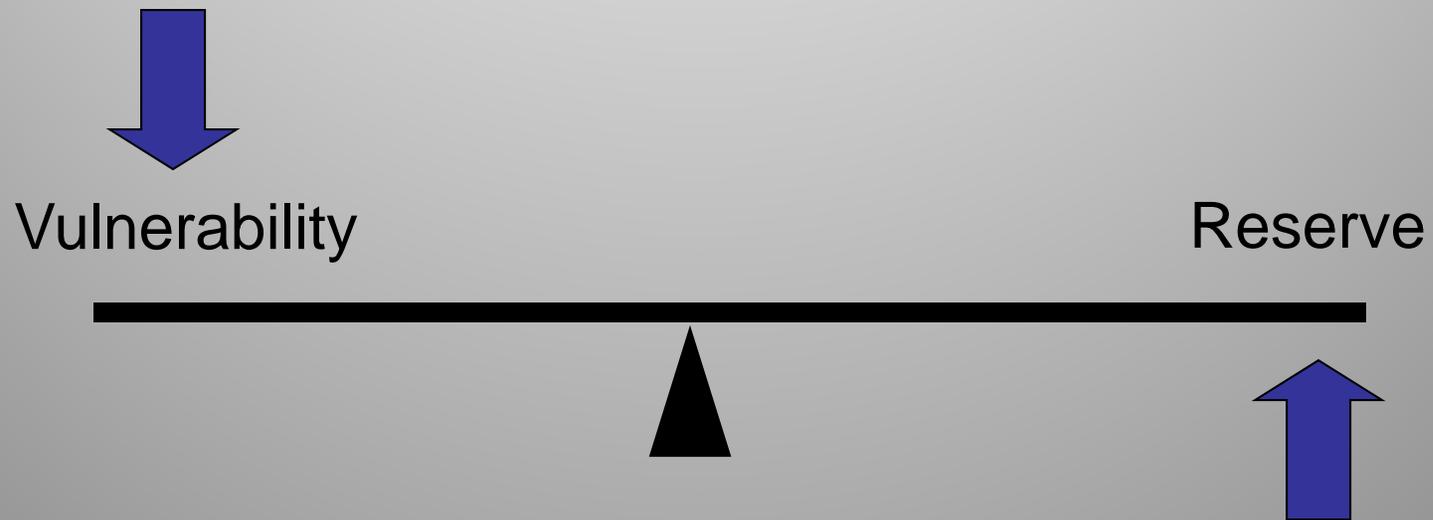
Vulnerability in each of the seven dimensions in relation to vulnerability in the others, adjusted for age, sex, frailty, and education.

	Esteem	Mastery	Living situation	Support	Engagement	Relations	Context
Esteem		+++	NS	NS	NS	+	NS
Mastery	+++		+++	+++	NS	+++	NS
Living situation	NS	+++		+++	+	NS	++
Support	NS	+++	+++		++	+++	NS
Engagement	NS	NS	+	++		+++	NS
Relations	+	+++	NS	+++	+++		NS
Context	NS	NS	++	NS	NS	NS	

+ p<0.05, ++ p <0.01, +++ p<0.001

Frailty: it comes down to

# Vulnerability



## Frailty phenotype

- A phenotypic definition of frailty:  
Fried *et al.*, 2001; 5 items
  - weakness
  - weight loss
  - slowness
  - inactivity
  - exhaustion