

Decomposition of gender differences in HLY

Wilma Nusselder, Caspar Looman

Erasmus MC, Rotterdam, The Netherlands

Herman van Oyen, Jean-Marie Robine, Carol Jagger

REVES, Copenhagen, Denmark, May 27-29, 2009

Background

- Healthy Life Years (HLY) is the EU structural indicator on health
 - Health monitoring
 - Comparisons between Member States and population(groups)

Background

- Healthy Life Years (HLY) is the EU structural indicator on health
 - Health monitoring
 - Comparisons between Member States and population(groups)
- Previous studies show differences in HLY between EU-10 and EU-15:
 - fewer HLY in EU-10
 - larger gender gaps in HLY in EU-10

EU-10:

- Cyprus
- Czech Republic
- Estonia
- Hungary
- Latvia
- Lithuania
- Malta
- Poland
- Slovakia
- Slovenia

EU-15:

- Austria
- Belgium
- Denmark
- Finland
- France
- Germany
- Greece
- Ireland
- Italy
- Luxembourg
- Netherlands
- Portugal
- Spain
- Sweden
- United Kingdom

Background

- Healthy Life Years (HLY) is the EU structural indicator on health
 - Health monitoring
 - Comparisons between Member States and population(groups)
- Previous studies show differences in HLY between EU-10 and EU-15:
 - fewer HLY in EU-10
 - larger gender gaps in HLY in EU-10
- More insight is needed to understand these gaps
- Decomposition tools can increase understanding of differences in HE measures, like HLY

Decomposition tools

- Decomposition (or partitioning) is widely used to decompose differences in life expectancy (LE)
 - by age: additive contribution of age groups
 - by cause: additive contribution of causes of death
- Decomposition tools have recently been developed (Nusselder & Looman, 2004; Andreev et al, 2003) to decompose differences in health expectancy (HE)
 - by type: additive contribution of mortality and disability
 - by age: additive contribution of age groups
 - by cause: additive contribution of causes of death and causes of disability

Aim

- The aim of the current study is to examine **gender differences** in **HLY** and unhealthy life years (**ULY**) in the EU-10, and to assess whether the overall pattern in gender differences is similar to that in the EU-15

Data

Data from EHEMU-database (<http://www.ehemu.eu/database/index.php>)

- Deaths by age and sex (2006)
- Population by age and sex (1-1-2006,1-1-2007)
- Prevalence of **activity limitation** by age and sex (SILC, 2006)

Activity limitation: based on the Global Activity Limitation Index (**GALI**):

- Aims to capture long-term limitation (>6 months) in usual activities, which are caused by ill-health, with three severity levels: none, limited but not severely, and severely limited health
- We defined disability to be any limitation

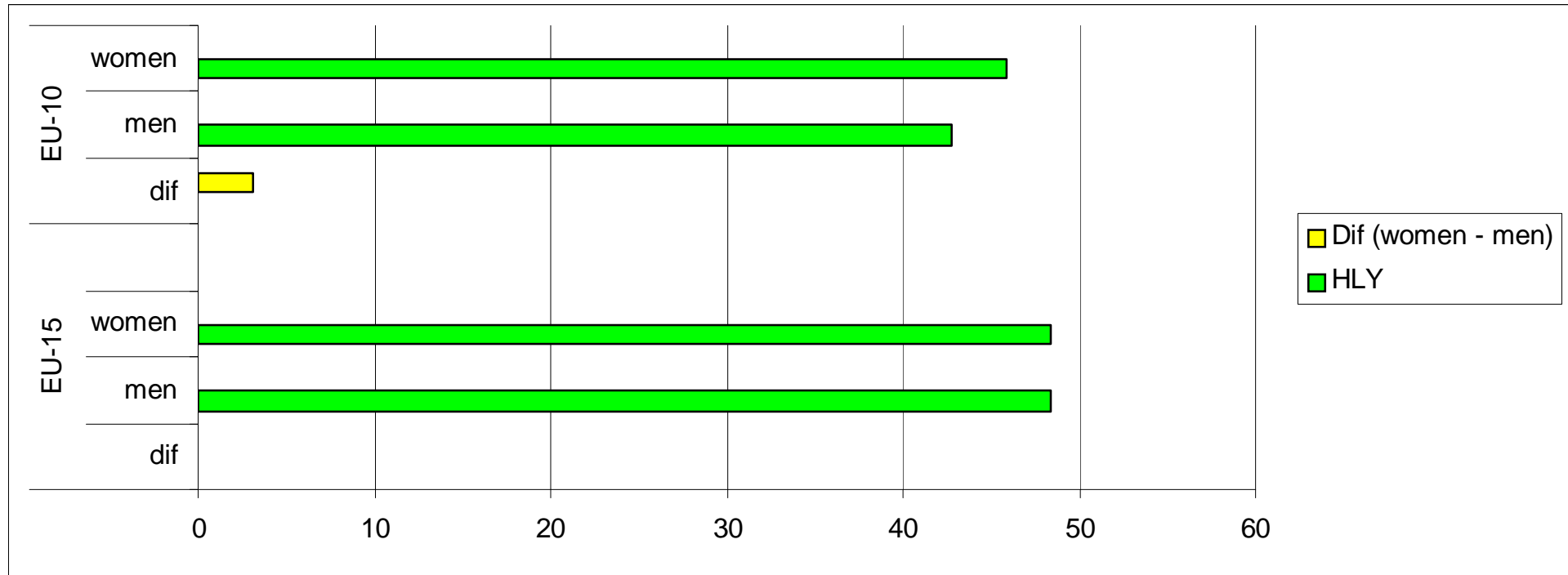
Methods

- Decomposition tool to decompose differences in health expectancy into the contribution of mortality and disability effects (Nusselder, 2004)
 - Here: gender differences
- Tool is based Sullivan method is an extension of the Arriaga method to decompose differences in life expectancy
- Software of the tool will become publicly available next year (now available on request)

HLY at age 15

		HLY	LE	% HLY in LE
EU-15	men	48.4	62.9	76.9
	women	48.4	68.5	70.7
EU-10	men	42.7	56.3	75.8
	women	45.8	64.7	70.8

HLY age 15: EU-10 vs. EU-15



- EU-10: 15-year old girl can expect to live 3.1 more HLYs than boy
- EU-15: no gender differences

Decomposition gender gaps in HLY within EU-10

EU-10	HLY
- Men	42.7
- Women	45.8
Diffence	
-Women-Men	3.1
Decomposition	
- Mortality effect	3.9
- Disability effect	-0.8

EU-10: 3 more HLYs in women

- effect of lower mortality in women (+3.9 HLYs) is only slightly nullified by higher disability (-0.8 HLYs)

Decomposition gender gaps in HLY within EU-15

EU-15	HLY
- Men	48.4
- Women	48.4
Diffence	
-Women-Men	0.02
Decomposition	
- Mortality effect	2.6
- Disability effect	-2.6

EU-15: similar HLYs in men and women:

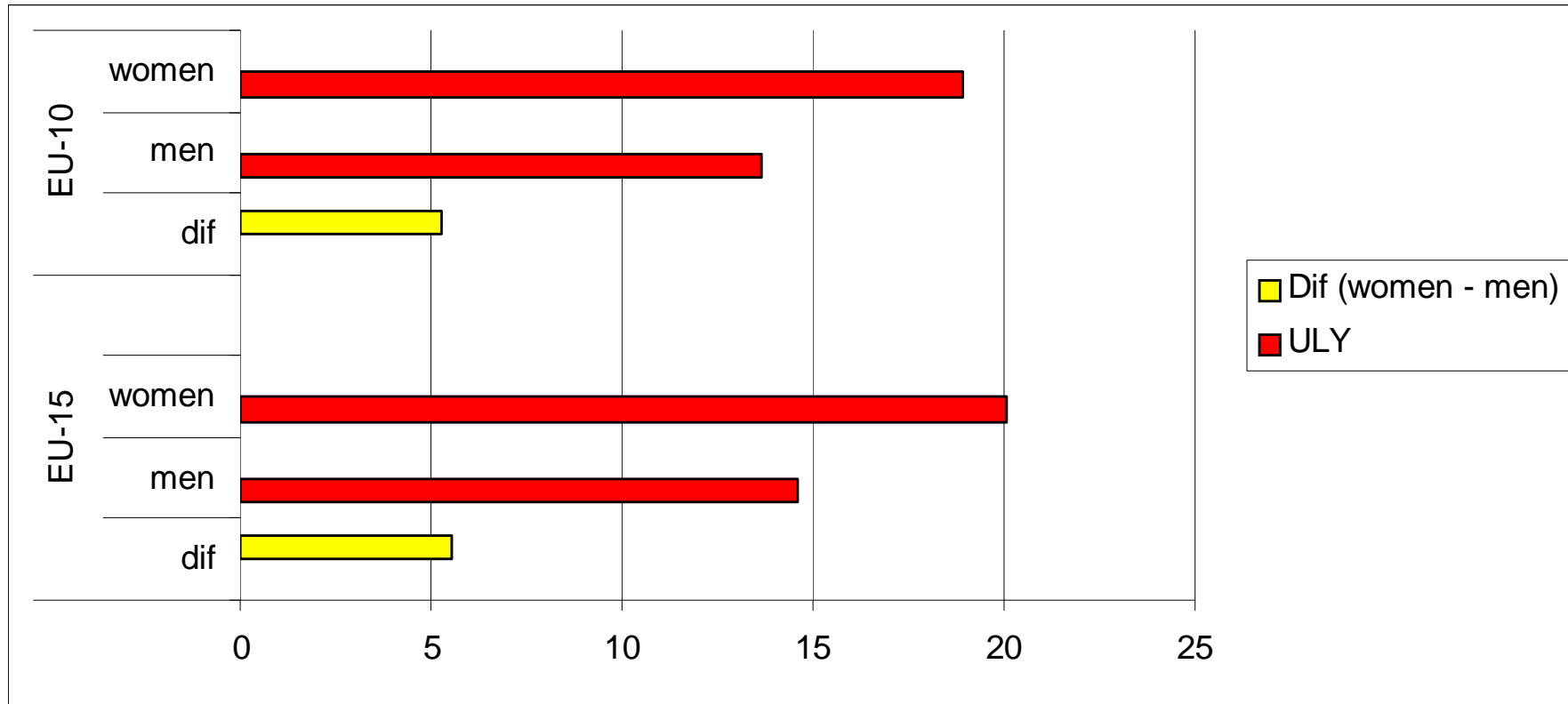
- effect of lower mortality in women (+2.6 HLYs) is nullified by higher disability (-2.6 HLYs).

Comparison HLY gaps between EU-10 and EU-15

EU-15	HLY	EU-10	HLY
- Men	48.4	- Men	42.7
- Women	48.4	- Women	45.8
Diffence		Diffence	
-Women-Men	0.02	-Women-Men	3.1
Decomposition		Decomposition	
- Mortality effect	2.6	- Mortality effect	3.9
- Disability effect	-2.6	- Disability effect	-0.8

- EU-15: absence of gender gap in HLYs masks important gender differences in mortality and disability
- Both EU-10 and EU-15 men are worse of in terms of mortality than their female peers, but the male disadvantage is larger in the EU-10
- The generally found disability advantage in men is much smaller in EU-10 males than EU-15 males

ULY age 15: EU-10 vs. EU-15



- ULY = years with activity limitations
- Both in the EU10- and EU-15 population: girls can expect to live about 5.5 more ULYs than boys.

Decomposition gender gaps in ULY within EU-10

EU-10	HLY	ULY	LE
- Men	42.7	13.6	56.3
- Women	45.8	18.9	64.7
Diffence			
-Women-Men	3.1	5.3	8.4
Decomposition			
- Mortality effect	3.9	4.5	8.4
- Disability effect	-0.8	0.8	0.0

EU 10-men spend about 5.3 fewer ULYs than EU-10 women:

- mainly effect of higher mortality (4.5 ULYs), in addition: lower disability (0.8 ULYs).

Decomposition gender gaps in ULY within EU-15

EU-15	HLY	ULY	LE
- Men	48.4	14.6	62.9
- Women	48.4	20.1	68.5
Diffence			
-Women-Men	0.02	5.5	5.5
Decomposition			
- Mortality effect	2.6	2.9	5.5
- Disability effect	-2.6	2.6	0.0

EU 15-men spend about 5.5 fewer **ULYs** than EU-15 women, due to:

- combination of higher mortality (-2.9 **ULYs**) and lower disability (-2.6 **ULYs**).

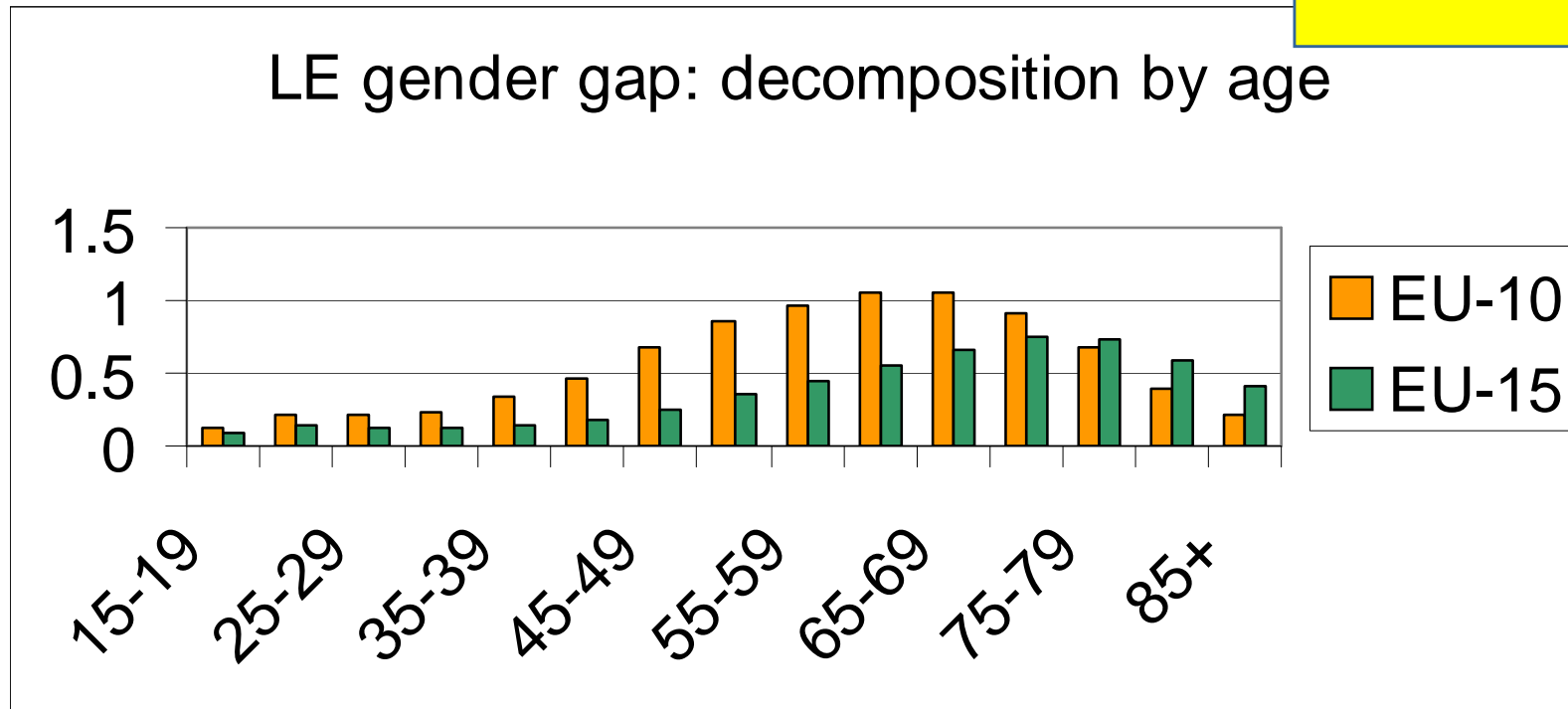
Comparison ULY gaps between EU-10 and EU-15

EU-10	HLY	ULY	EU-15	HLY	ULY
- Men	42.7	13.6	- Men	48.4	14.6
- Women	45.8	18.9	- Women	48.4	20.1
Diffence			Diffence		
-Women-Men	3.1	5.3	-Women-Men	0.02	5.5
Decomposition			Decomposition		
- Mortality effect	3.9	4.5	- Mortality effect	2.6	2.9
- Disability effect	-0.8	0.8	- Disability effect	-2.6	2.6

- The similar size of the gender gap in **ULY** in the EU-10 and EU-15 masks the more unfavorable position of EU-10 men
- Both EU-10 and EU-15 men are worse of in terms of mortality than their female peers, but in EU-10:
 - the male mortality disadvantage is larger
 - the generally found disability advantage in men is much smaller

Mortality disadvantage by age:

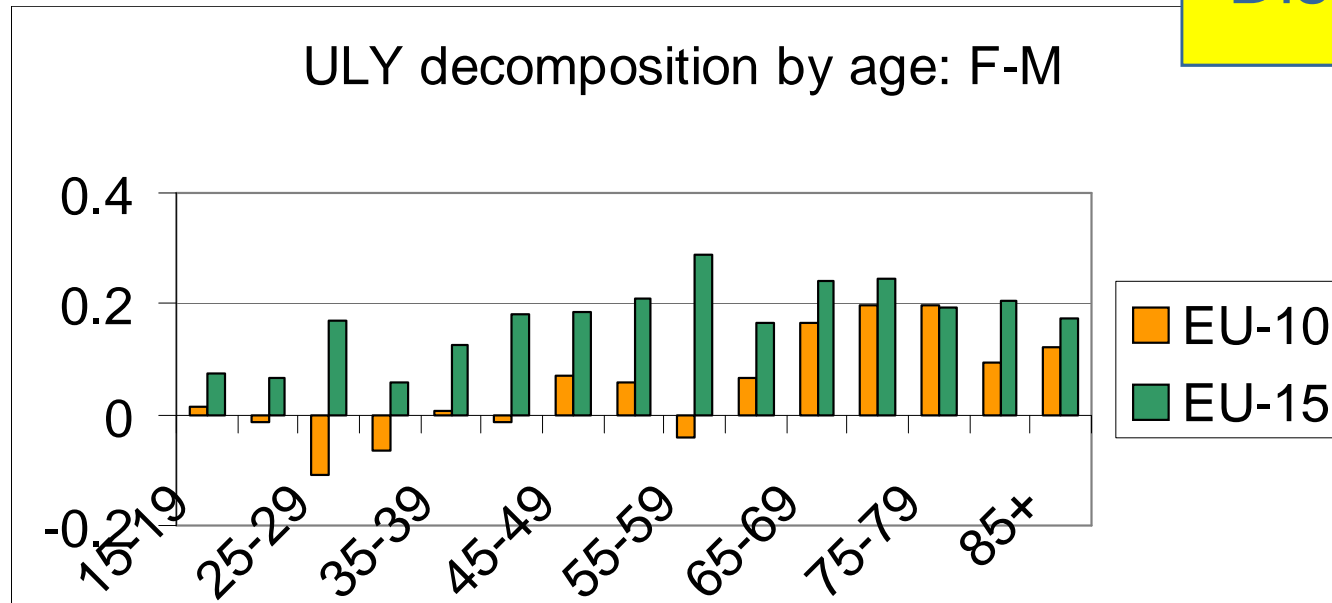
Mortality effect



- EU-10: mortality disadvantage at young age

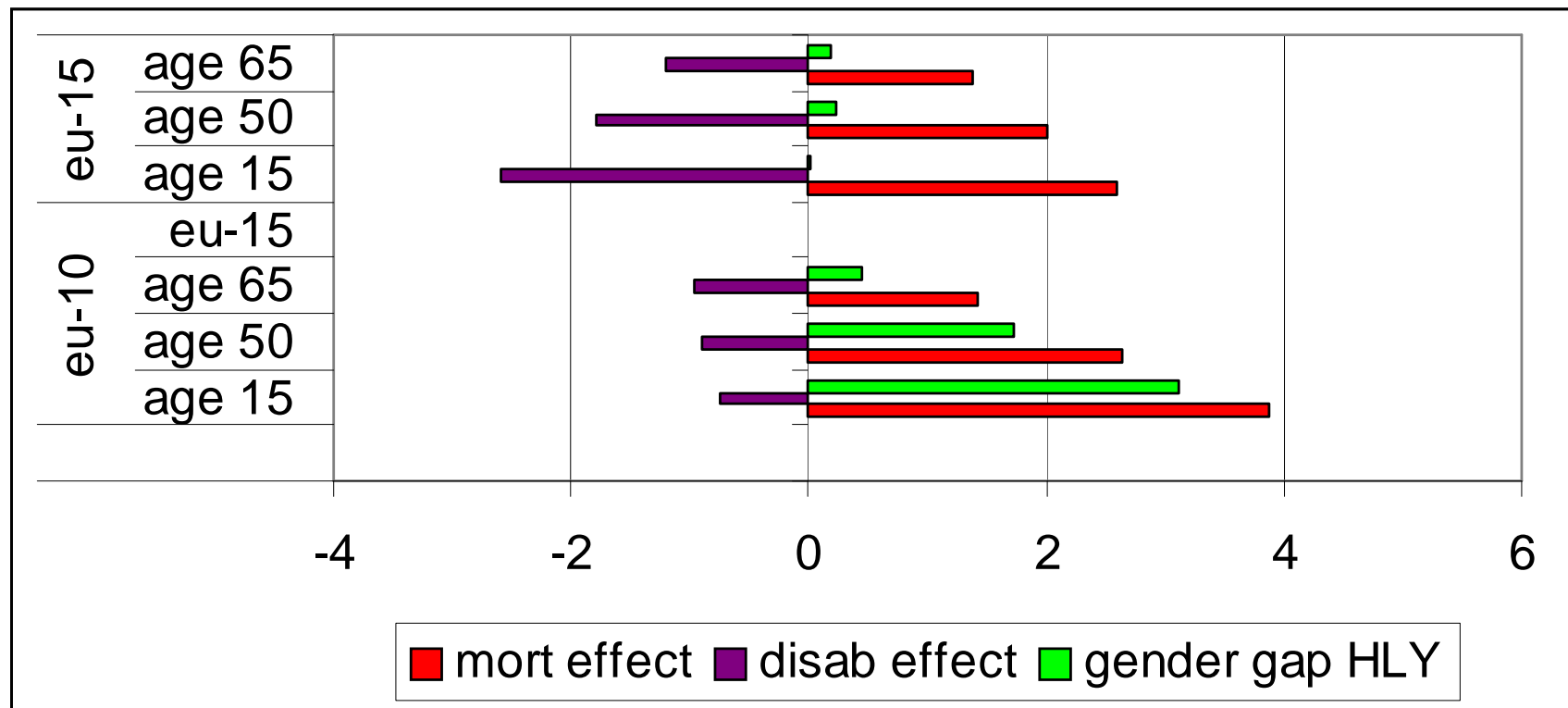
Disability advantage by age

Disability effect



- EU-15: men less disability at all ages than women
- EU-10: men less disability at older ages than women, not at younger ages

HLY gender gaps at different ages



- EU-15: gender gap constant across age (virtually absent)
- EU-10: male disadvantage decreases with increasing age
 - Decreasing mortality disadvantage
 - Slightly increasing disability advantage
- At age 65: gender gap is similar in EU-10 and EU-15

Conclusions

EU-10 males double disadvantage:

- Higher mortality than females (and than EU-15 males)
- Less disability advantage than females (and EU-15 males)

Higher burden of mortality and morbidity in EU-10 males at
“young” age

Discussion (2)

Data:

- Disability data not fully comparable (Denmark, Germany?)
- Self reported disability from one question

Method:

- Decomposition is based on Sullivan method
- Until now only EU-10 and EU-15 as group, this will mask differences between countries
- No information on causes of disability and death included (no causes of disability in SILC; causes of death could be done)

Discussion (2)

Possible explanations for EU-male disadvantage:

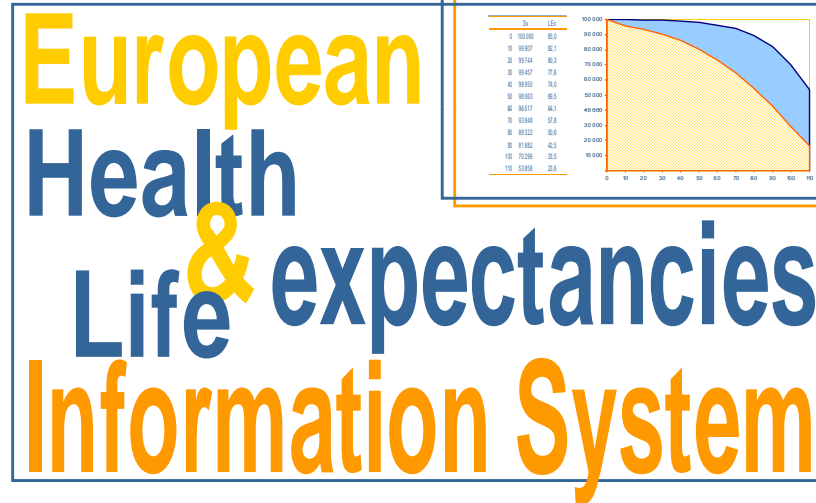
- Life style
- Accidents / injuries (work-related / route)
- Differential gender difference in reporting of ill health

Additional analyses needed which include causes of death and disability

Family of decompositions

	Causes of death	
Disability	No	Yes
No information	LE difference by age	LE difference by cause of death
Prevalence only	HE difference by mortality vs. disability effect (type of effect) + disability effect by age	HE difference: mortality effect by cause of death
By cause (attributions)	HE difference: disability effect by cause of disability/ LE with disability by cause (of disability)	HE difference by cause (death and disability)

Tool: available on request (w.nusselder@erasmusmc.nl)



THANK YOU FOR YOUR ATTENTION

NOW: EU-10 vs. EU-15

Men	HLY	ULY	Women	HLY	ULY
- EU-10	42.7	13.6	- EU-10	45.8	18.9
- EU-15	48.4	14.6	- EU-15	48.4	20.1
Diffence			Diffence		
-EU-15-EU-10	5.7	0.9	-EU-15-EU-10	2.6	1.2
Decomposition			Decomposition		
- Mortality effect	3.4	3.2	- Mortality effect	1.4	2.3
- Disability effect	2.3	-2.3	- Disability effect	1.2	-1.2

- EU-10 EU-15-gap:
 - EU-10 male vs. EU-15 male; EU-10 female vs. U-15 female
 - Fewer **HLYs** in particular for men
 - EU-15 more **ULY** (+1 year) due to mortality advantage: longer survival