

Are gaps in disability free life expectancies reducing in Italy?

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Aim

To analyse differences in Life expectancy and Disability Free Life Expectancy (DFLE) by gender (Italy)

- ☾ Mortality and Disability contributions
- ☾ Contribution by age

☾ To analyse recent evolution

☾ Decomposition method: Ref. Nusselder and Looman 2004

Acknowledgements to Wilma Nusselder for her contribution to the application of the model to the Italian data

Data

Mortality Life Tables (Istat)

Year 2000

Year 2005

Disability prevalence for people living in households from the Italian HIS (Istat)

Year 1999/2000

Year 2004/2005

Children less than 6 years old and people with disabilities that live in institutions are not surveyed

Definitions

For surveying disability, Istat used a set of 20 questions, developed by an OECD working group and based on the International Classification of Impairment, Disability and Handicap (ICIDH), that enables to examine specific dimensions of disability:

dimension of communication that relates to the sight, the hearing and the speech functions;

physical dimension, which refers to the mobility and locomotion functions, indicating a confinement in situations of serious limitations;

the autonomy in activities of daily living as regards personal care activities;

A person is defined as disabled when, excluding conditions of temporary limitation, he or she declares to have the highest level of difficulty in at least one of the dimensions surveyed, despite the sanitary equipments he or she may have (prosthesis, canes, glasses, etc.).

Disability is grouped into 5 different clusters

- 1) People who have difficulties only in the dimension of communication;
- 2) People who have difficulties only in the physical dimension;
- 3) People who have difficulties only in performing activities of daily living;
- 4) People who have difficulties in two of the dimensions;
- 5) People who have difficulties in all the dimensions.

Methods

Disability Free Life Expectancy is calculated by means of the **Sullivan Method** which combines mortality life tables with the prevalence of disabilities



The number of person-years lived with a disability at age x $\pi_x \cdot L_x$ where
 π_x is proportion of disabled persons at age x
 L_x is the number of person-years lived at age x

The method used is the one proposed by Nusselder and Looman. It allows to decompose the difference between two disability-free life expectancies into mortality and disability contributions



$$\Delta \pi_x \cdot L_x = [(\pi_x + \Delta \pi_x) \cdot (L_x + \Delta L_x)] - \pi_x \cdot L_x$$

Δ is the variation in the number of person-years lived with a disability between females (F) and males (M) or between two calendar years

The previous expression can be formulated as follow

$$\Delta {}_i\pi_x \cdot {}_iL_x = \underbrace{[({}_i\pi_x(M) + {}_i\pi_x(F)) / 2] \cdot \Delta {}_iL_x}_{\text{MORTALITY}_i} + \underbrace{[({}_iL_x(M) + {}_iL_x(F)) / 2] \cdot \Delta {}_i\pi_x}_{\text{DISABILITY}_i}$$

MOR_i expresses the change in the number of person-years lived with a disability due to the gender/year differences of the mortality rates (F-M or 2005-2000).

DIS_i indicates the change in the number of person-years lived with a disability due to the gender/year differences of the disability prevalence rates.

It is possible to express the differences for the person-years lived without disability through the "non-disabled persons" proportion $1 - {}_i\pi_x$.

The results refer to the differences of disability-free life expectancy at age x .

Life expectancy (LE_{30}) and $DFLE_{30}$ at age 30

Gender differences - Females vs Males

Year 2000

	M	F	F-M
LE_{30}	47.79	53.29	5.50
$DFLE_{30}$	44.90	47.63	2.73

Year 2005

	M	F	F-M
LE_{30}	49.11	54.26	5.15
$DFLE_{30}$	46.38	48.78	2.41

LE_{30} and $DFLE_{30}$ are higher for females

Gender differences are slightly decreasing in recent years

DECOMPOSITION OF $DFLE$ (F-M)

$$2.73 = 4.01 + (-1.28)$$



MORTALITY DISABILITY

$$2.41 = 3.63 + (-1.22)$$



MORTALITY DISABILITY

Life expectancy (LE_{30}) and $DFLE_{30}$ at age 30

Time evolution 2005 vs 2000

Males

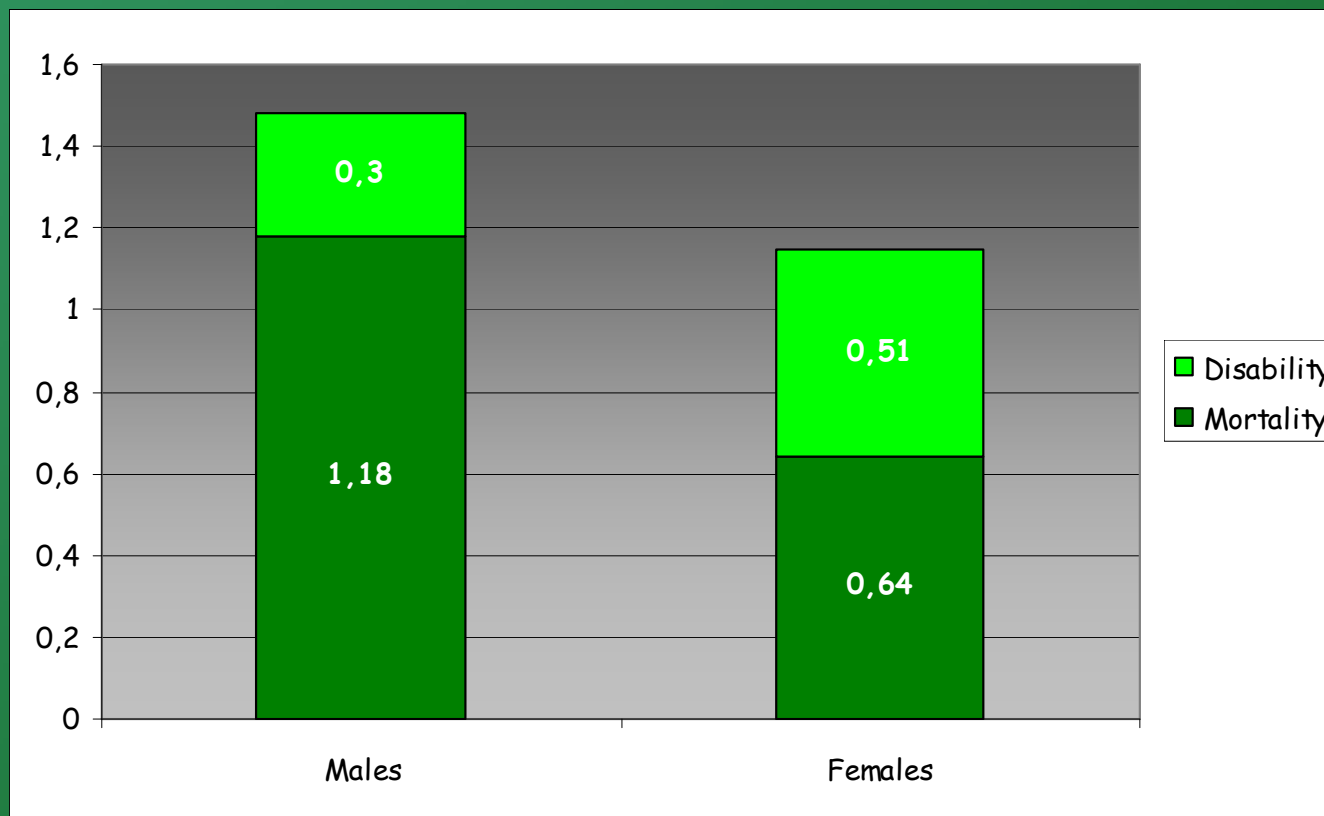
Females

	2000	2005	05-00
LE_{30}	47.79	49.11	1.32
$DFLE_{30}$	44.90	46.38	1.48

	2000	2005	05-00
LE_{30}	53.29	54.26	0.97
$DFLE_{30}$	47.64	48.78	1.15

Contribution of disability and mortality to $DFLE$ variation (2005-2000)

Life-years



Mortality and disability effects by age on DFLE

Gender differences - Females vs Males

Year 2000

Year 2005

	DFLE (F-M)	Mortality	Disability
30-54	0.44	0.44	0.00
55-69	0.73	0.91	-0.18
70-84	1.26	2.01	-0.76
85+	0.31	0.66	-0.34
Total	2.73	4.01	-1.28

	DFLE (F-M)	Mortality	Disability
30-54	0,24	0.21	0.03
55-69	0,62	0.78	-0.16
70-84	1.19	1.95	-0.76
85+	0.35	0.68	-0.33
Total	2.41	3.63	-1.22

The 70 to 84-age class provided the highest contribution to gender differences, accounting for about half of all differences both as regards the general indicator and as regards the individual components (mortality and disability)

Mortality and disability effects by age on DFLE

Gender differences - Females vs Males

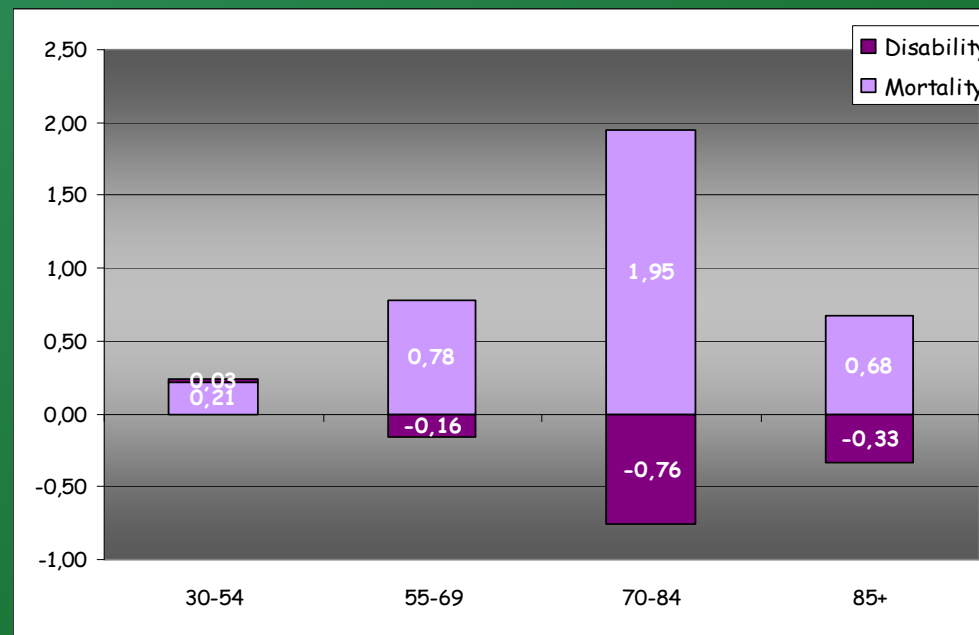
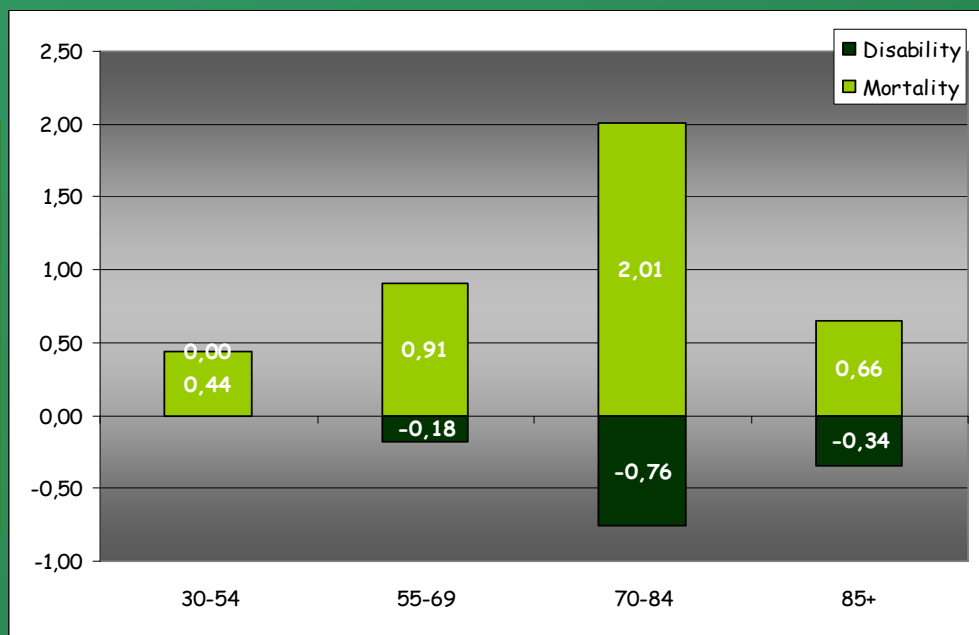
Year 2000

DFLE₃₀ (F-M) = 2.73

Year 2005

DFLE₃₀ (F-M) = 2.41

Life-years



Mortality and disability effects on DFLE

Time evolution 2005 vs 2000 - By gender and age groups

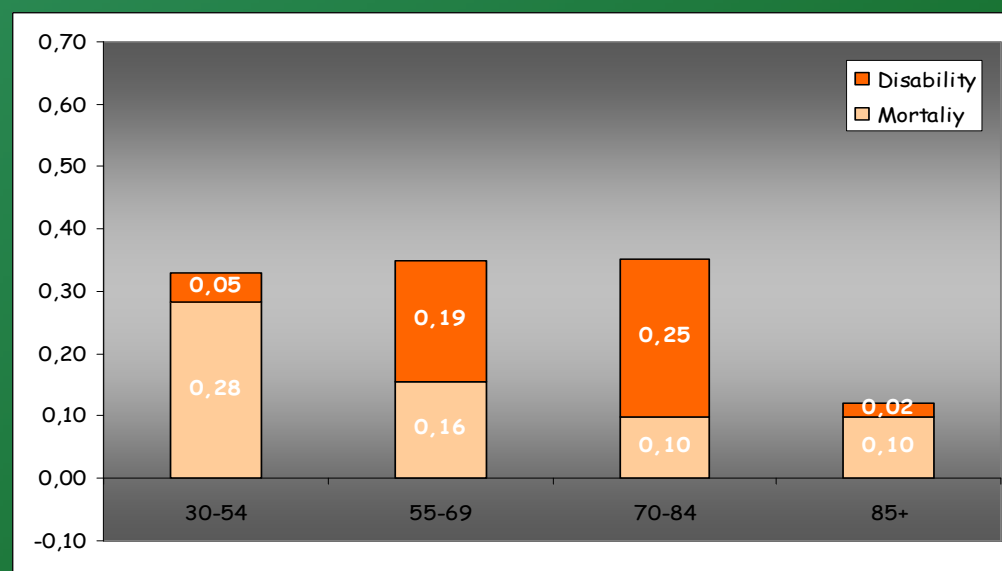
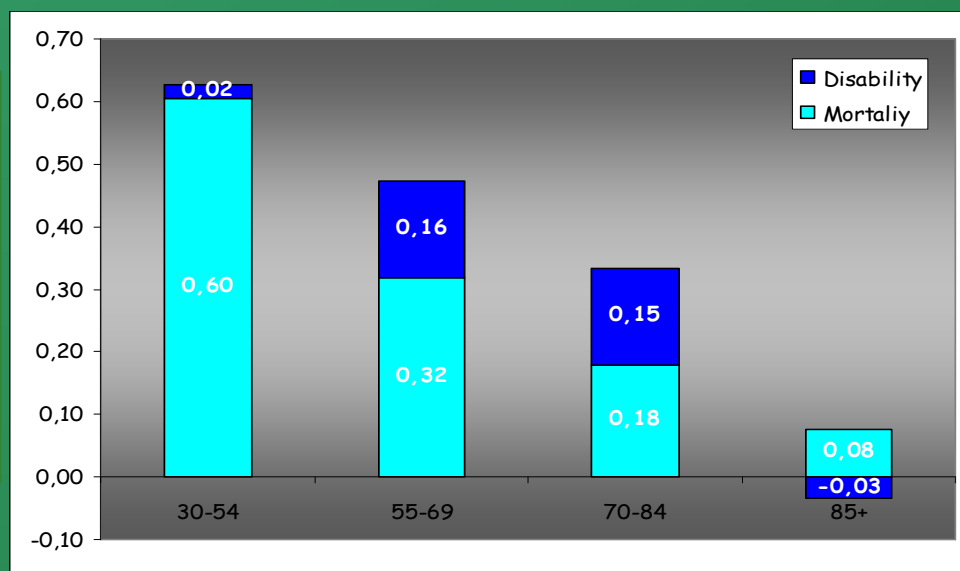
Males

$DFLE_{30}(2005-2000) = 1.48$

Females

$DFLE_{30}(2005-2000) = 1.15$

Life-years



Decomposition of DFLE differences into mortality and type of disabilities

$$\Delta {}_i\pi_x {}_iL_x = \underbrace{[({}_i\pi_x(M) + {}_i\pi_x(F)) / 2]}_{\text{MORTALITY}_i} \cdot \Delta {}_iL_x + \underbrace{[({}_iL_x(M) + {}_iL_x(F)) / 2]}_{\text{DISABILITY}_i} \cdot \Delta {}_i\pi_x$$

$$\underbrace{[({}_iL_x(M) + {}_iL_x(F)) / 2]}_{\text{Type 1 of disability}} \Delta {}_i\pi_{x,\text{dis1}} + \dots + \underbrace{[({}_iL_x(M) + {}_iL_x(F)) / 2]}_{\text{Type J of disability}} \Delta {}_i\pi_{x,\text{disJ}}$$

$$\text{DFLE (F-M)} = \text{mortality} + \underbrace{\text{dis 1}} + \underbrace{\text{dis 2}} + \underbrace{\text{dis 3}} + \underbrace{\text{dis 4}} + \underbrace{\text{dis 5}}$$

Disability effects by type of disability on DFLE gender differences

"Women disadvantage by type of disability"

Disability	Year 2000	Year 2005
Only in the communication dimension	0,14	0,06
Only in the physical dimension	-0,55	-0,43
Only in performing activities of daily living	-0,16	-0,08
Two dimensions	-0,58	-0,63
All the dimensions	-0,13	-0,13
Total effect of disability	-1.28	-1.22

CONCLUSION

DFLE is higher for females

Are gender gaps in DFLE reducing in Italy? Yes, but...

Males are reducing their gap thanks to mortality that is decreasing more than in females. This emerges mainly in younger generations

Concerning disabilities females are disadvantaged

This disadvantage is stable in recent years (both for total disability and for different groups of disability)

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Would these results be confirmed if institutionalised people were included?

The number of males in institutions is higher

What would be the results if mental disabilities were included?

Females have higher mental disability rates



Thanks!

Disability effects by type of disability on DFLE gender differences

"Women disadvantage"

Life-years

