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# Gender differences in life expectancy in Brazil

**Flávia Cristina Drumond Andrade, Pilar Egüez Guevara**  
University of Illinois at Urbana-Champaign, USA

**Maria Lúcia Lebrão, Lício Ferreira Santos**  
Universidade de São Paulo, Brazil



# Outline

- Background
- Research questions
- Data
- Methods
- Results
- Discussion



# Background

Aging process affecting developing countries is accelerated in comparison with developed countries in North America and Europe.

(Palloni, Pinto-Aguirre, & Peláez, 2002; Palloni, Mc Eniry, Wong & Peláez, 2006; United Nations, 2009)



# Background

Proportion of older adults (60+) in Brazil:

1950: 5%

2000: 9%

2050: 20%

(CELADE, 2000)

- In 2010, most (56%) of the population aged 60 and over is constituted by women.



# Background

Research on gender differentials in health shows that women live longer lives, but a large proportion of these years with disability.

(Camargos et al., 2007; Crimmins & Saito, 2001; Laditka & Laditka, 2002; Reyes-Beaman, Jagger, Garcia-Peña, Muñoz, Beaman & Stafford, 2005; Reyes-Ortiz, Ostir, Peláez, & Ottenbacher, 2006; Robine, Romieu, & Cambois, 1997)



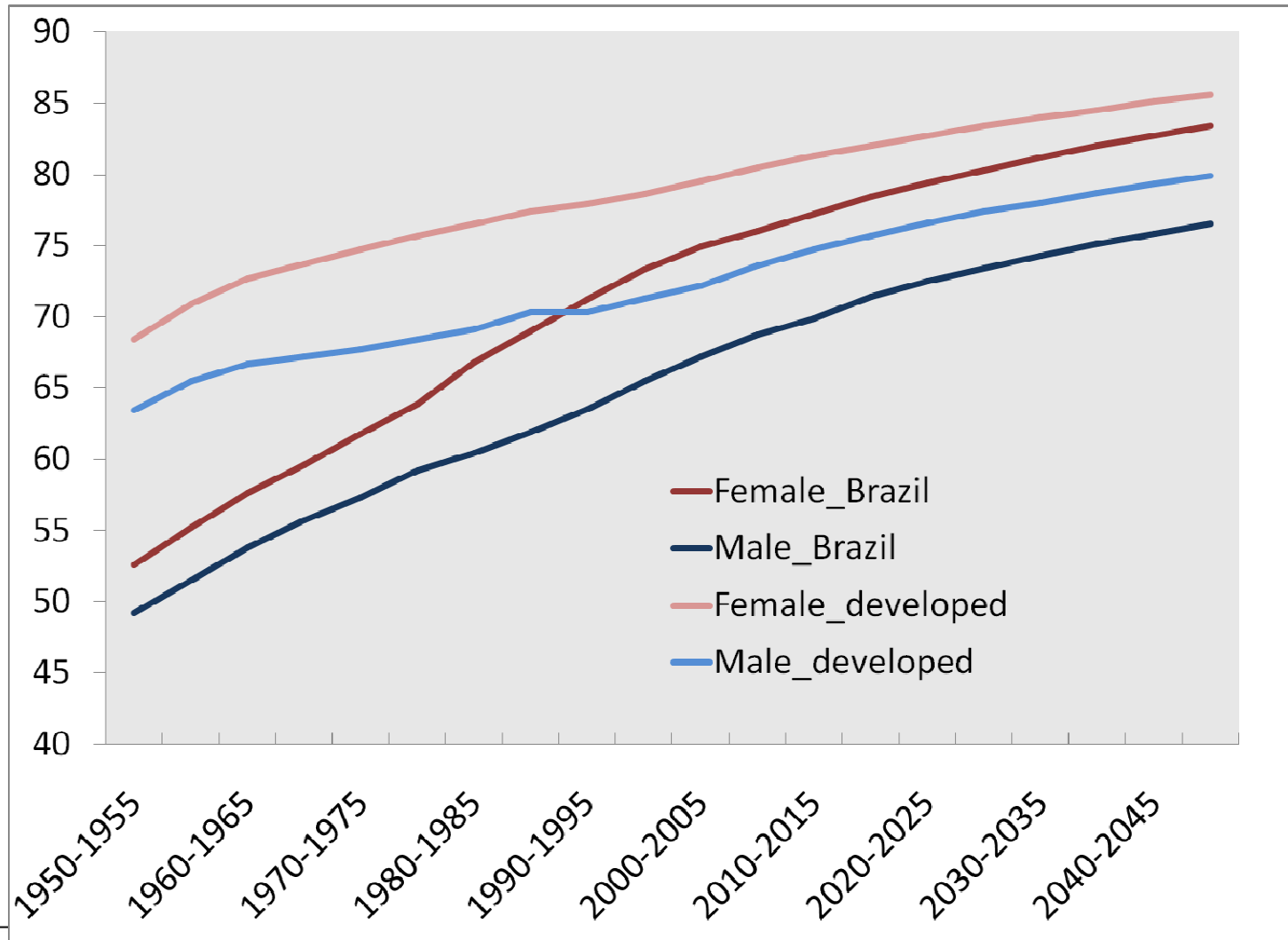
# Background

Women are more likely to report worse self-rated health and to have a higher prevalence and incidence of disability, lower mobility and decreased strength at older ages.

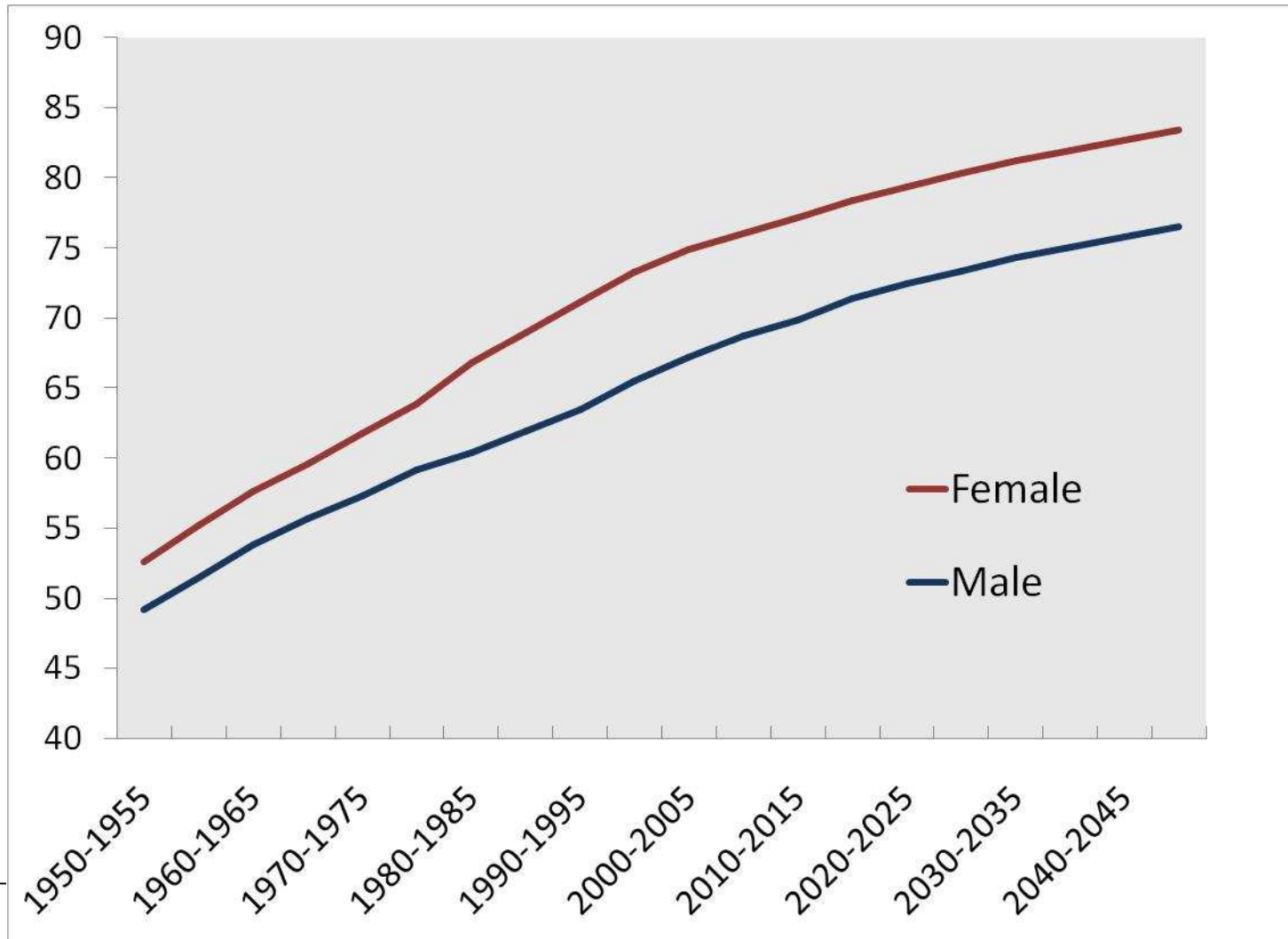
(Al Snih et al., 2005; Alvarado, Guerra, & Zunzunegui, 2007; Arber & Cooper, 1999; Case & Paxson, 2005; Merrill, Seeman, Kasl, & Berkman, 1997; Oman, Reed, & Ferrara, 1999; Reyes-Ortiz, Ostir, Pelaez, & Ottenbacher, 2006; Wray & Blaum, 2001)



# Trends in life expectancy: Brazil and more developed countries



# Trends in life expectancy at birth in Brazil





# Background

Between 1950 and 2000, life expectancy at age 65 increased 5.6 years among women, while the gains reached 3.6 years among men.

(CELADE, 2007)



## Health differentials by gender in Brazil

- Women report experiencing worse health conditions and more frequent functional limitations.

(Camargos et al., 2007; Camargos et al., 2008; Del Duca, Silva, & Hallal, 2009; Palloni, et al., 2006; Zunzunegui et al., 2009)

- Women report higher prevalence of disability.

(Barbosa et al., 2005; Duarte, Lebrão, & Lima, 2005; Guerra et al., 2008)



# Health differentials by gender in Brazil

Based on cross-sectional data, previous studies in Brazil have shown that women have higher life expectancies, but are more likely to be functionally disabled and severely disabled than men.

(Camargos, et al., 2005; Camargos et al., 2007; Camargos, et al., 2008)





What are the differences  
in total life expectancy,  
disability-free and  
diabetes-free life  
expectancy by gender in  
Brazil?



What are the differences in total life expectancy (TLE), disability-free life expectancy (DFLE), and disabled life expectancy (DLE) between older adult males and females in São Paulo, Brazil?

What are the differences in the number of years that individuals with and without disability will require assistance to perform ADL activities?

What are the public policy implications of these findings?



# Salud, Bienestar, y Envejecimiento (SABE)

- The baseline interview in São Paulo, Brazil was conducted in 2000 and the second wave in 2006.
- São Paulo is the largest city in Brazil with over 11 million residents.



# Salud, Bienestar, y Envejecimiento (SABE)

- First wave: 2,143 complete interviews (response rate 84.6%).
- Second wave: 1,894 subjects (88.4% of the first stage respondents).
- The main reasons for non-participation in the second stage were refusal to participate (7.5%), address change (2.0%) and (2.1% for all other reasons).
- Mortality data of deceased subjects between 2000 and 2006 was obtained by linking the data to the vital statistics.
- 544 subjects died between waves (25.4%).



## Disability and assistance measures

- **Activities of daily living (ADL):**  
dressing, bathing, eating, getting in and out of a bed (transferring), toileting, and getting across a room.
- **Assistance on ADL:**  
whether or not a spouse or other person assisted respondent in performing any ADL.





## Disability and assistance measures

**Binary** form: those scoring '0' indicate that they do not have any limitations or did not receive assistance, while score '1' was assigned for those who reported having difficulty performing at least one activity or received assistance.



## Methods

- Multistate life table method (MSLT) to estimate disability-free and disabled life expectancy by gender- IMaCh 0.98g version.
- Multivariate logistic regression models are used to to assess age and gender differences in health outcomes on disability and personal care assistance – STATA 10.1 SE.



## Prevalence rates (in percentage) of functional limitations by sex and age groups, Brazil, SABE, 2000 (weighted estimates)

Sex and age groups	Sample size	ADL	Severe ADL	Assistance on ADL
Males (60+)	878	14.9**†	4.8†	7.5†
60-69	310	10.9*	2.2	5.2
70-79	338	18.3	6.9	9.1
80 +	230	32.0**	16.5	18.9*
Females (60+)	1265	22.3†	6.2†	7.6†
60-69	495	17.2	3.5	3.2
70-79	470	23.4	5.7	8.1
80 +	300	42.8	19.5	26.0
Total (60+)	2143	19.2†	5.6†	7.6†
60-69	805	14.5	3.0	4.1
70-79	808	21.4	6.2	8.5
80 +	530	39.2	18.5	23.6

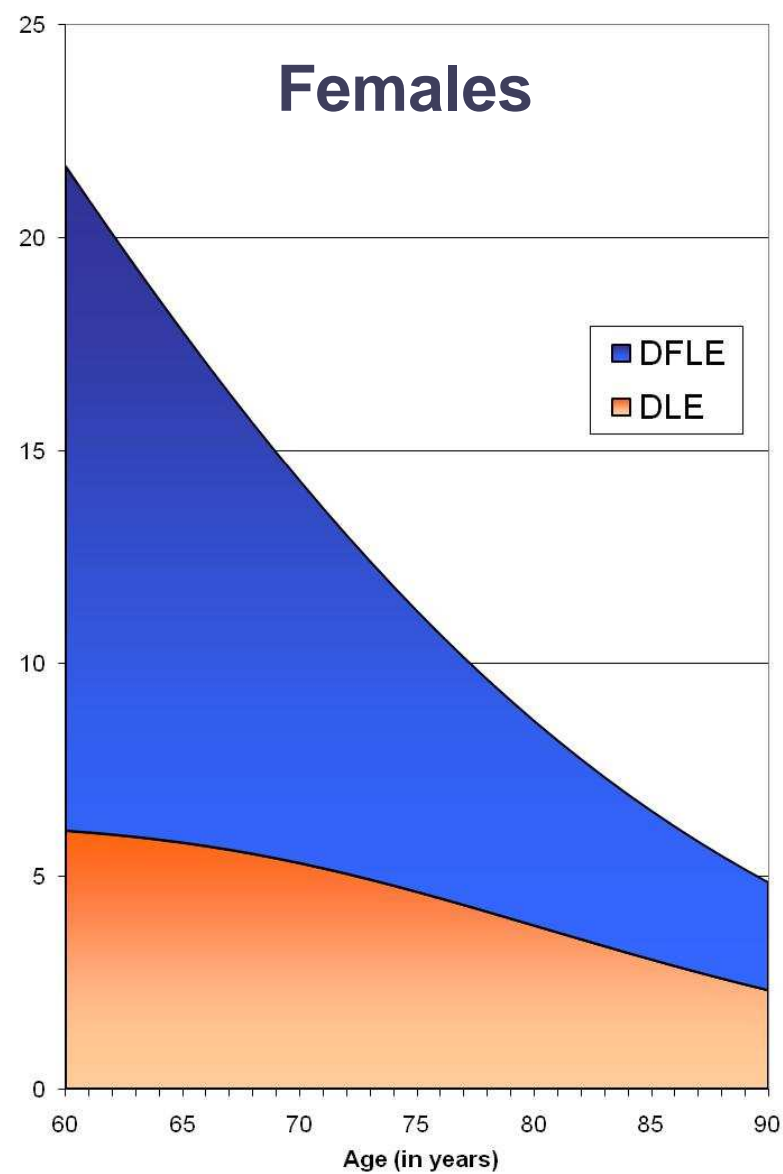
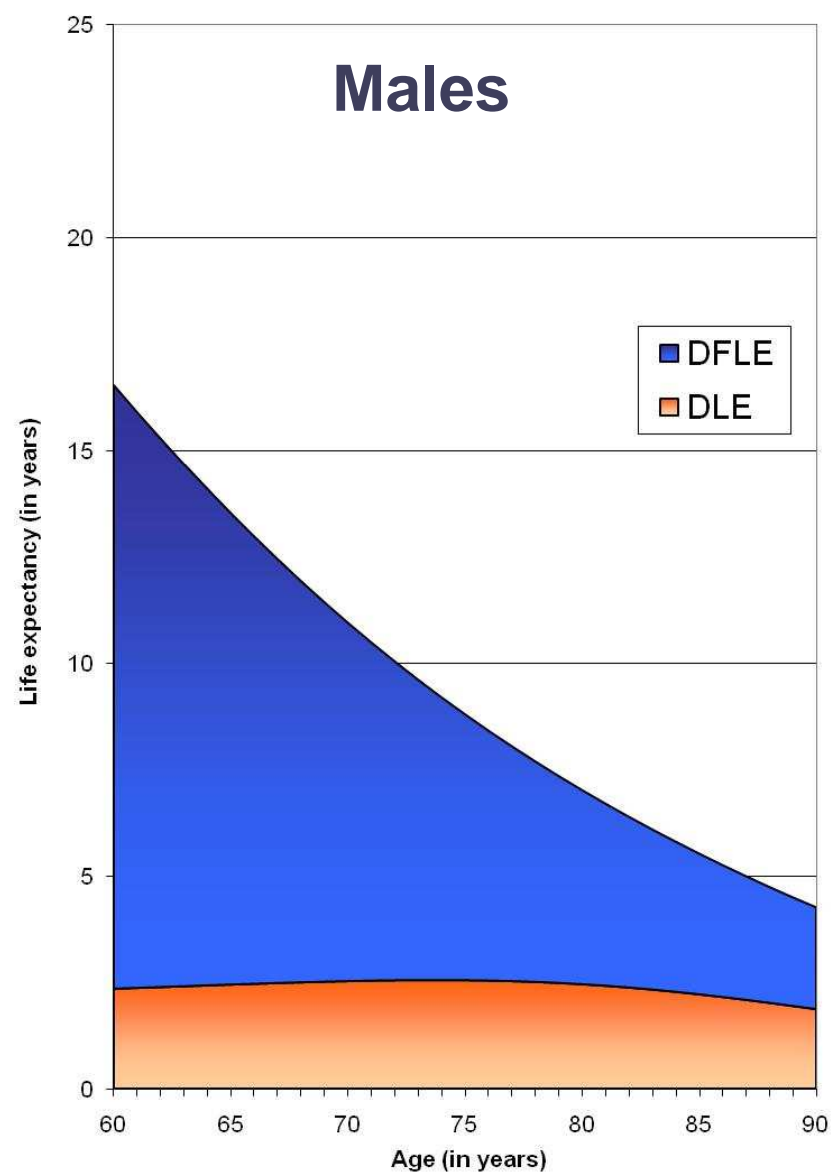


Note: Gender comparison: \*\* p<0.01; \* p<0.05. Time trend: † p<0.0001.

Total life expectancy (TLE), disability-free life expectancy (DFLE) and disabled life expectancy (DLE) by gender in São Paulo, Brazil.



# Total life expectancy, disability-free life expectancy, and disabled life expectancy by sex and age, Brazil, SABE, 2000-2006



Total life expectancy, disability-free life expectancy, and disabled life expectancy by sex and age, Brazil, SABE, 2000-2006

ADL	Age 60		Age 70		Age 80	
	Males	Females	Males	Females	Males	Females
TLE	16.5	21.7	10.9	14.3	7.0	8.6
DFLE	14.2	15.6	8.4	9.0	4.6	4.8
DLE	2.4	6.1	2.5	5.3	2.5	3.8
DLE/TLE (%)	14.2%	28.0%	23.1%	37.1%	35.0%	44.4%



# Males

## Sullivan versus MSLT

Males	Age 60		Age 70		Age 80	
	Sullivan	MSLT	Sullivan	MSLT	Sullivan	MSLT
TLE	17.6	16.5	11.7	10.9	7.2	7.0
DFLE	14.6	14.2	9.0	8.4	4.9	4.6
DLE	3.0	2.4	2.7	2.5	2.3	2.5



# Females

## Sullivan versus MSLT

Females	Age 60		Age 70		Age 80	
	Sullivan	MSLT	Sullivan	MSLT	Sullivan	MSLT
TLE	22.2	21.7	14.9	14.3	8.9	8.6
DFLE	16.4	15.6	10.0	9.0	4.8	4.8
DLE	5.8	6.1	4.9	5.3	4.0	3.8





Total life expectancy, disability-free life expectancy, and disabled life expectancy by sex and age, Brazil, SABE, 2000-2006

Severe ADL	Age 60		Age 70		Age 80	
	Males	Females	Males	Females	Males	Females
TLE	16.6	21.3	11.3	14.2	7.2	8.6
DFLE	15.3	18.5	9.9	11.5	5.6	5.8
DLE	0.8	2.7	1.4	2.7	1.6	2.7
DLE/TLE (%)	4.9%	12.7%	12.2%	19.0%	22.5%	31.9%



## Total life expectancy, disability-free life expectancy, and disabled life expectancy by sex and age, Brazil, SABE, 2000-2006

Assistance on ADL	Age 60		Age 70		Age 80	
	Males	Females	Males	Females	Males	Females
TLE	16.5	21.5	10.9	14.5	7.0	8.7
Without assistance	15.7	19.9	9.8	12.6	5.5	6.7
With assistance	0.8	1.6	1.0	1.8	1.4	2.1
% with assistance/DLE	34.7%	27.0%	41.1%	34.7%	58.7%	53.5%



## Multinomial logistic regression results: health outcomes, Brazil, SABE 2000-2006

	Age		Female	
	RRR	95% CI	RRR	95% CI
No ADL in 2000 <i>Reference category: no ADL in both waves</i>				
Incidence of disability	1.10	[1.07,1.12]	2.20	[1.57,3.08]
Mortality	1.12	[1.09,1.14]	0.54	[0.37,0.78]
ADL in 2000 <i>Reference category: ADL in both waves</i>				
Recovery from disability	0.93	[0.89,0.96]	0.74	[0.35,1.58]
Mortality	1.08	[1.05,1.11]	0.34	[0.17,0.69]



## Public policy implications

- Brazil's universal pension system targets elderly and people with disabilities and has benefited elderly women and individuals in rural areas.

(Camarano & Pasinato 2007; Medeiros, Diniz, & Squinca, 2006; Lloyd-Sherlock, 2006; Lloyd-Sherlock, 2008)

- While pensions might not guarantee support for elderly in general and elderly disabled individuals in particular, there is evidence that pension reform has increased the probability of companionship for elderly individuals.

(Camarano & Pasinato, 2007; United Nations, 2009; Lloyd-Sherlock & Locke, 2008; Lloyd-Sherlock, 2006)



## Public policy implications

- Economic burden for the health care system due to disability.
- Unpaid assistance provided by families.
- Women as caregivers face vulnerability in later life.

(Donelan, Falik, & DesRoches, 2001; Filmer, 2008; Medeiros, Diniz, & Squinca, 2006; Camarano et al., 1999)



## Limitations

- Data are not representative of Brazil.
- Data on ADL are self-reported.
- First wave of SABE focuses on the civilian population not residing in institutions.
- Other limitations of the paper are due to the empirical application of multistate methods (for a detailed discussion of the drawbacks of this method, see Laditka & Hayward, 2003).



Ministério da Saúde

Caderneta de

Saúde

da

Pessoa  
Idosa



## Final remarks

- Using longitudinal data, this study confirms previous studies that illustrated women face a higher disability burden than men.
- Given their higher prevalence of disability and longer periods of DLE compared to older men, older women will face more social and economic marginalization tied to the stigma associated with disability.



(Filmer, 2008; Robb, Small, & Haley, 2008)



## Final remarks

- Results from studies on healthy life expectancies are useful to estimate human and financial demands for a growing aging female population.
- Recommendations: Need for programs that assist family caregivers, most of whom are women, although there are ongoing proposals to extend their protection.

(Medeiros et al., 2006)



## What is next?

- Distribution of chronic diseases
- Socioeconomic factors, health care use and access
- Analyze the role of informal care in Brazil
- Use panel data (1998-2008) to evaluate trends on disability



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AT URBANA-CHAMPAIGN

**Thank you**

**For additional information please  
contact:**

**Flavia Andrade  
fandrade@illinois.edu**



illinois.edu