

# UNDERSANDING DISABILITY IN EUROPE AND THE UNITED STATES: A Health Perspective

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**Rolando A. Pabon**

Paris-Jourdan Sciences Economiques, France and OECD

**Mauricio Avendano**

Erasmus Medical Center, The Netherlands



**R A N D      C o r p o r a t i o n**

Santa Monica ■ July 10-11 2006

**1 Background and Facts**

2 Prevalence of Disability in Europe and the US

3 Contribution of Diseases and Health Behavior

4 Conclusions

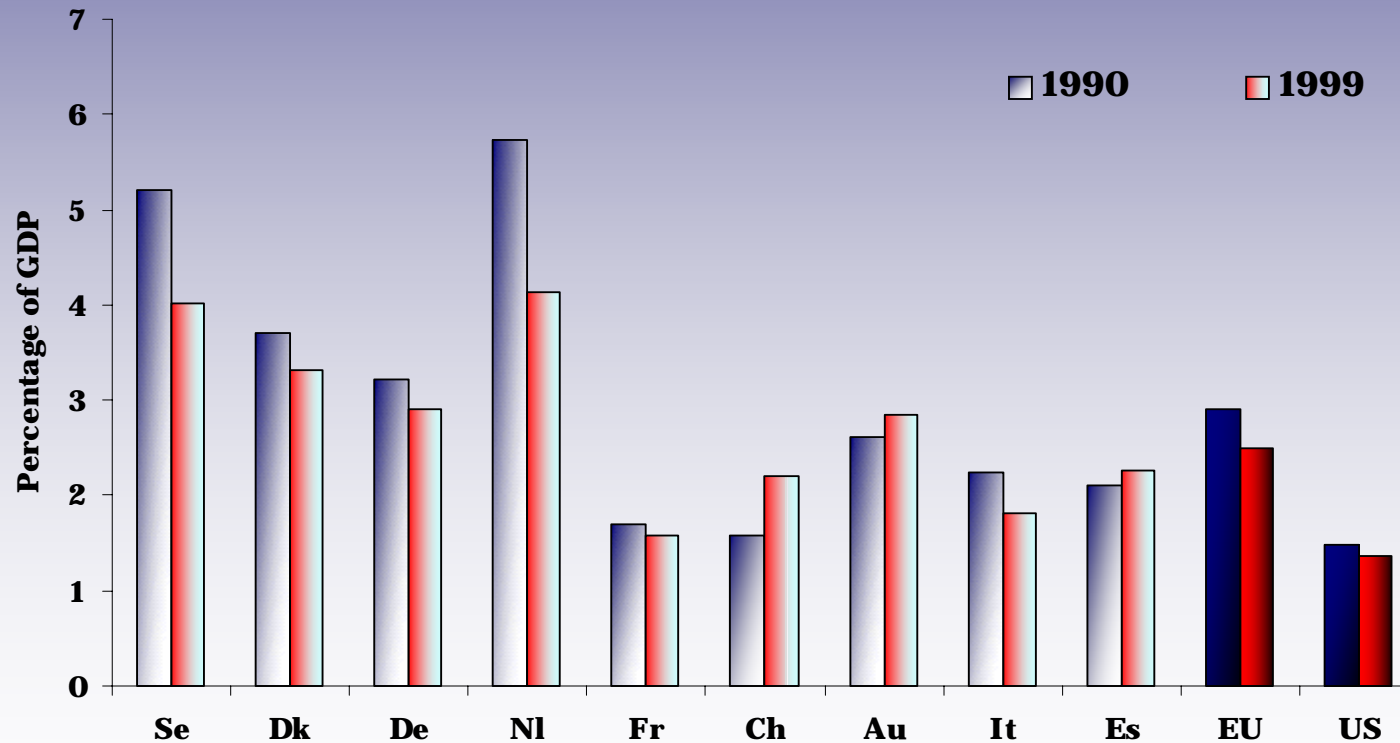
# BACKGROUND

- About 25% of those aged 50 to 64 in the OECD have chronic disabilities.
- No single country can be considered as having a particularly successful policy for disabled people (OECD 2003).
- The cost of medical care for a disabled older person averages 3 times that for a non-disabled senior.

**Source:** Vicki A. Freedman, Linda G. Martin, Robert F. Schoeni. “Recent Trends in Disability and Functioning Among Older Adults in the United States A Systematic Review.” JAMA. 2002;288:3137-3146.

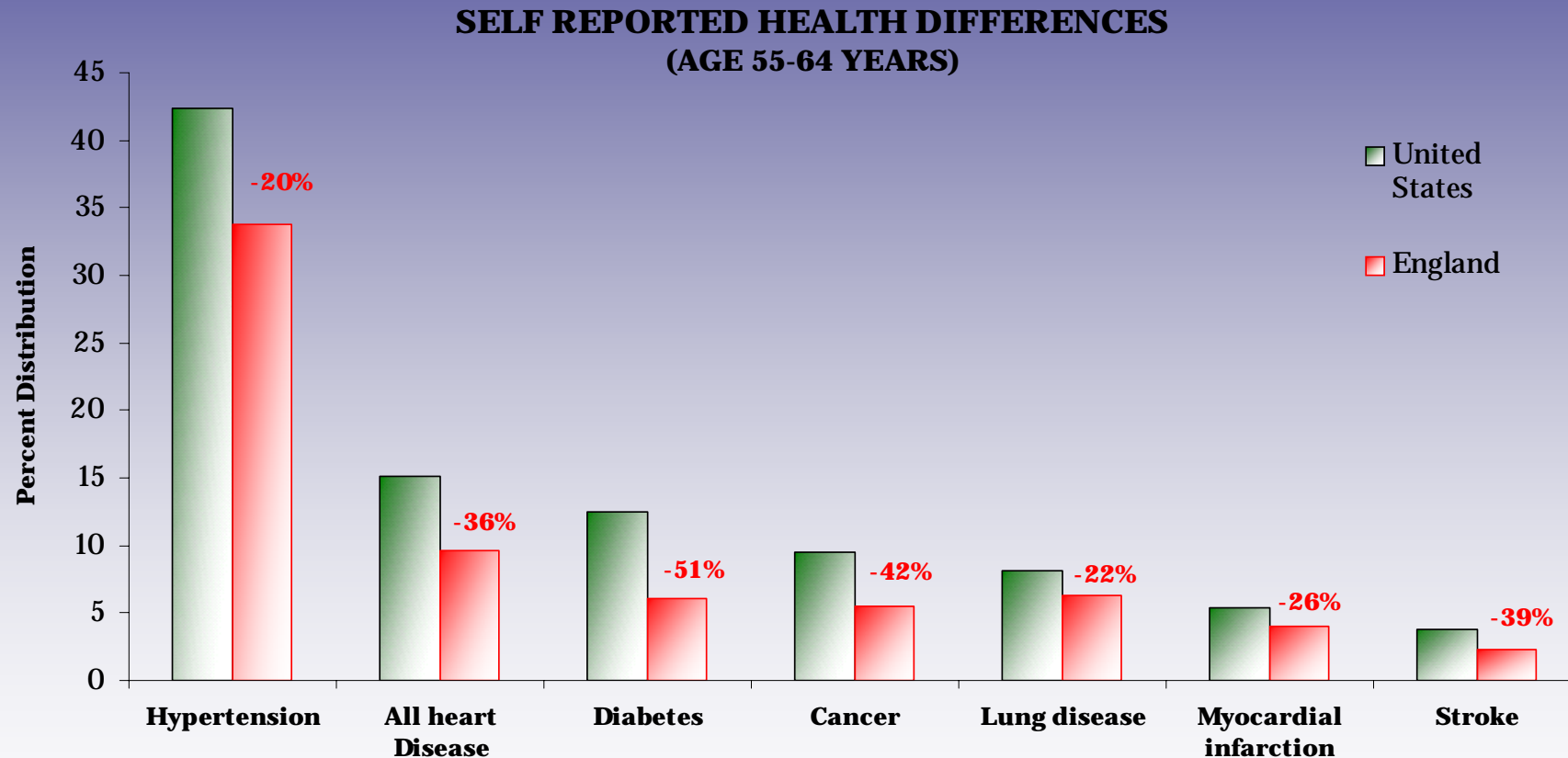
# Disability expenditure varies considerably between countries

## VARIATIONS IN PUBLIC EXPENDITURE ON DISABILITY PROGRAMS



Source: "Transforming disability into ability: Policies for Promoting Work and Income Security for Disabled People". OECD, Paris. 2003.

# In general, a higher prevalence of disease is observed among Americans



Source: Banks, J. Marmot, M. Oldfield, Z. & J. Smith. "Disease and Disadvantage in the United States and in England". Journal of the American Medical Association. May 2006.

# OBJECTIVES

1. Are there differences between European countries and the United States in the level of functioning and disability?
  - Self-reported
  - Objective indicators (i.e., walking speed)
2. What is the contribution of specific chronic diseases, health-related behavior to cross-country variations in disability?
3. What is the impact of physical disability on disability benefit enrolment and how this varies across countries?

# DATA AND METHODS

- *50 years or older*
- *Health and retirement survey:*
  - 7th Wave 2004
  - Non-Hispanic whites
  - n=14,303
- *Share study:*
  - 2004 wave for 10 countries
  - n=21,596

# OUTCOME VARIABLES

- **ADL** : activities related to personal care, i.e., bathing or showering, dressing, getting in or out of bed or a chair, using the toilet, and eating.
- **IADL** : Activities related to independent living, i.e., preparing meals, managing money, shopping for groceries or personal items, performing light or heavy housework, and using a telephone
- **Mobility** (including arm and fine motor function): Walk 100 mts, sitting 2 hours, getting up from chair, climbing stairs, stooping, reaching arms, pulling, lifting, picking up coin
- **Walking Speed:**
  - Meters per second
  - Walking disability: Prob. of walking 0.4 m/s or less

# THE MODEL

## Basic Model:

$$\text{Logit}(\text{Disability}_i) = \text{Log} \left( \frac{\text{Disability}_i}{1 - \text{Disability}_i} \right) = \beta_0 + \beta_1 \text{Age}_i + \beta_2 \text{Sex}_i + \beta_3 \text{Country}_i + \varepsilon_i$$

## Chronic Model:

$$\text{Logit}(\text{Disability}_i) = \alpha_0 + \alpha_1 \text{Age}_i + \alpha_2 \text{Sex}_i + \alpha_3 \text{Country}_i + \alpha_4 \text{Chronic Dummy}_i + \varepsilon_i$$

Ch. Dummy = {CVD, Cancer, Lung, Arthritis}

## Behavior Model:

$$\text{Logit}(\text{Disability}_i) = \theta_0 + \theta_1 \text{Age}_i + \theta_2 \text{Sex}_i + \theta_3 \text{Country}_i + \theta_4 \text{Behaviour Dummy}_i + \varepsilon_i$$

B. Dummy = {BMI, Smoking, Alcohol, PA, Depression}

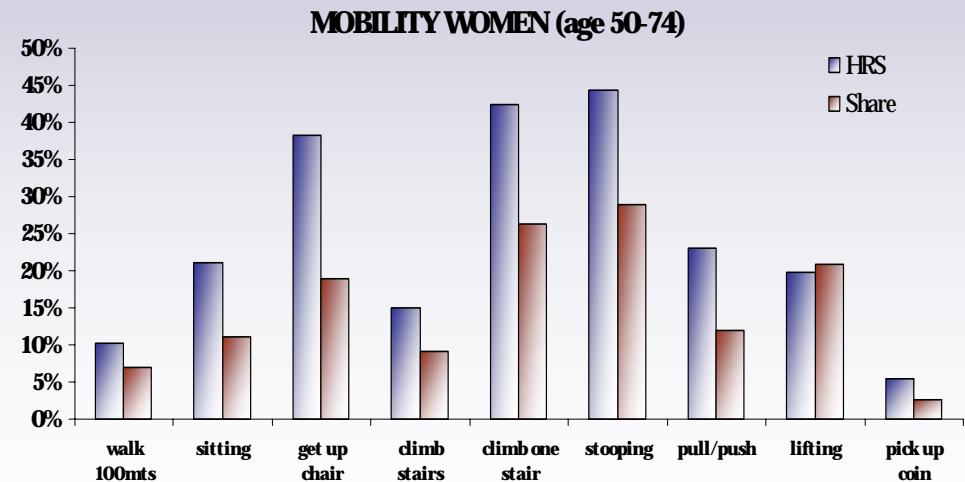
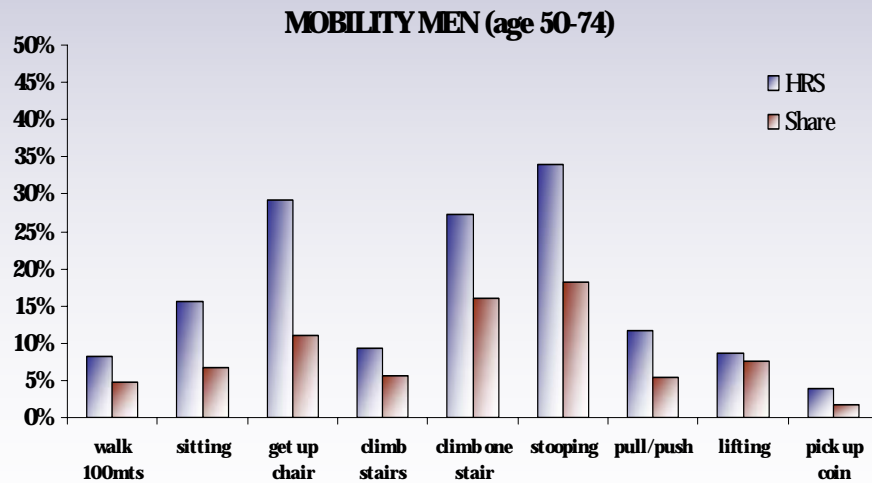
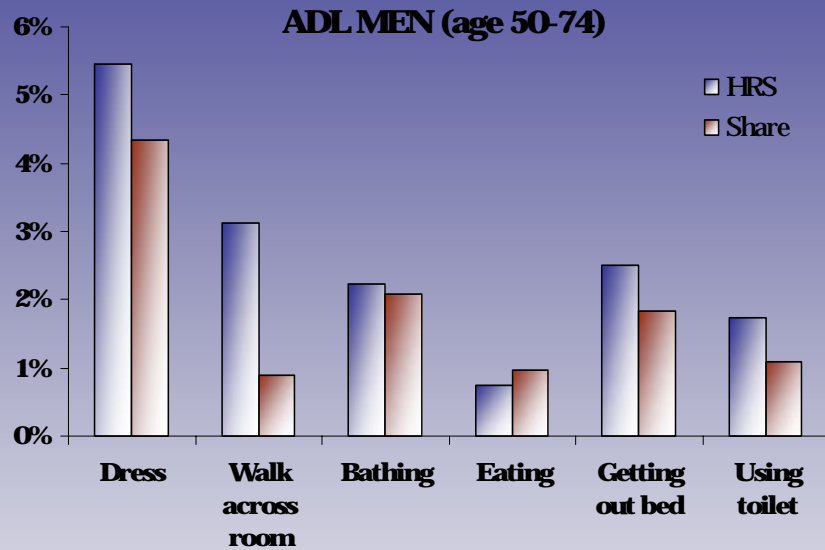
1 Background and Facts

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# US population appears to have more limitations than Europeans



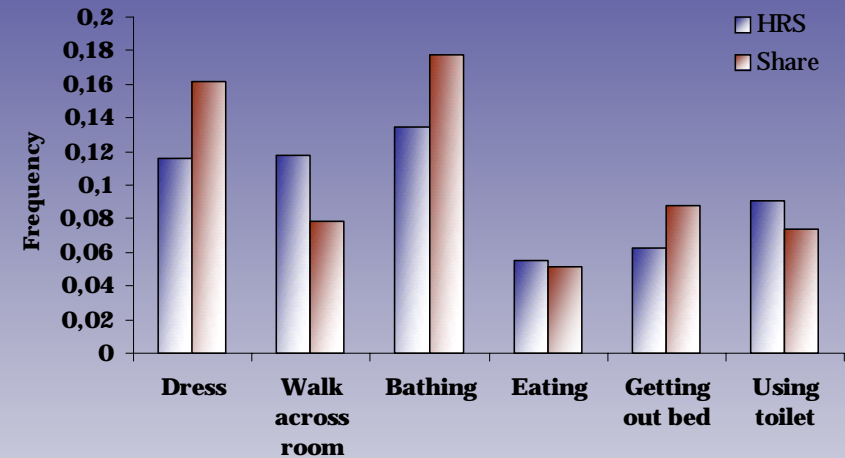
Note: Data adjusted for age

# ...But regional variations decline at very old ages

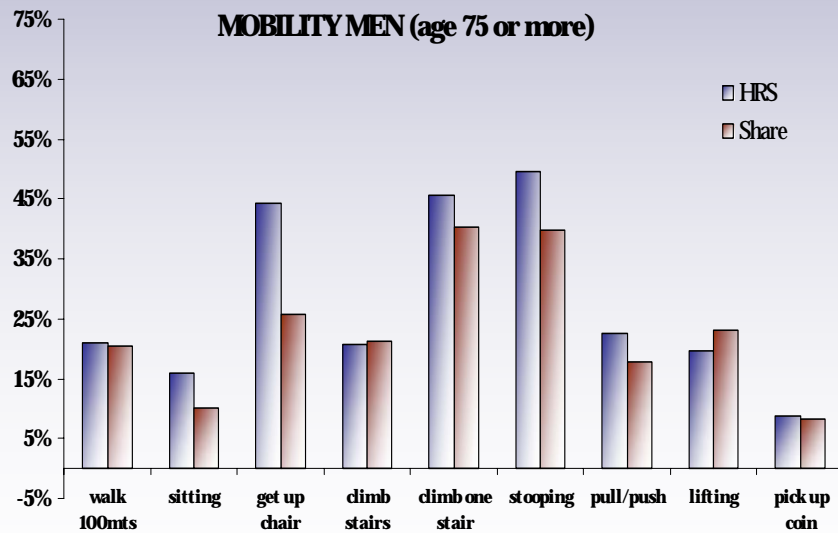
**ADL MEN (age 75 or more)**



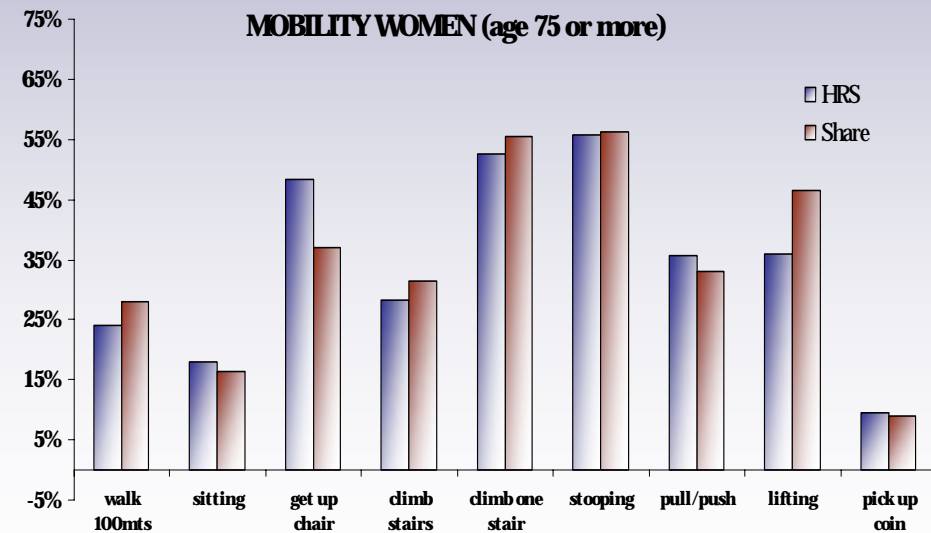
**WOMEN (age 75 or more)**



**MOBILITY MEN (age 75 or more)**



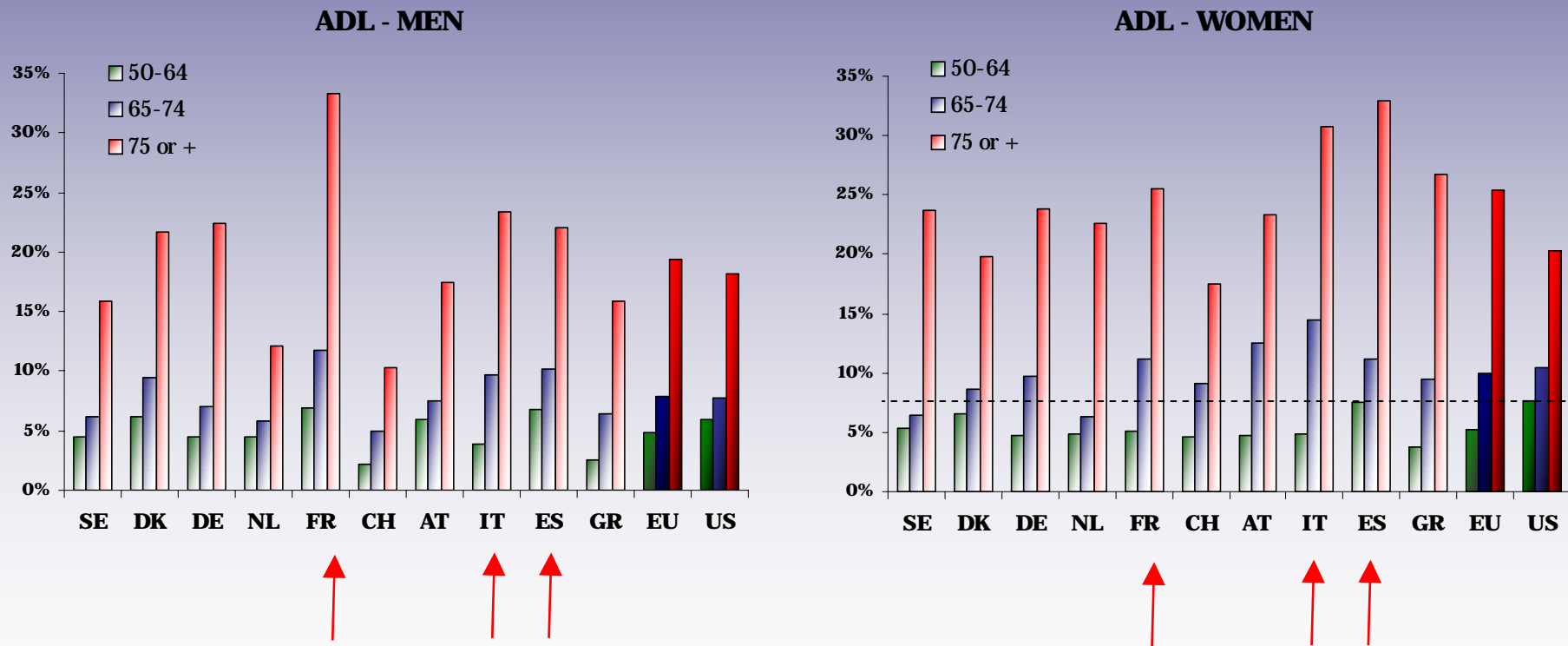
**MOBILITY WOMEN (age 75 or more)**



Note: Data adjusted for age

# There are also intra-regional differences in disability across Europe

## Prevalence of 1 or more ADL limitations

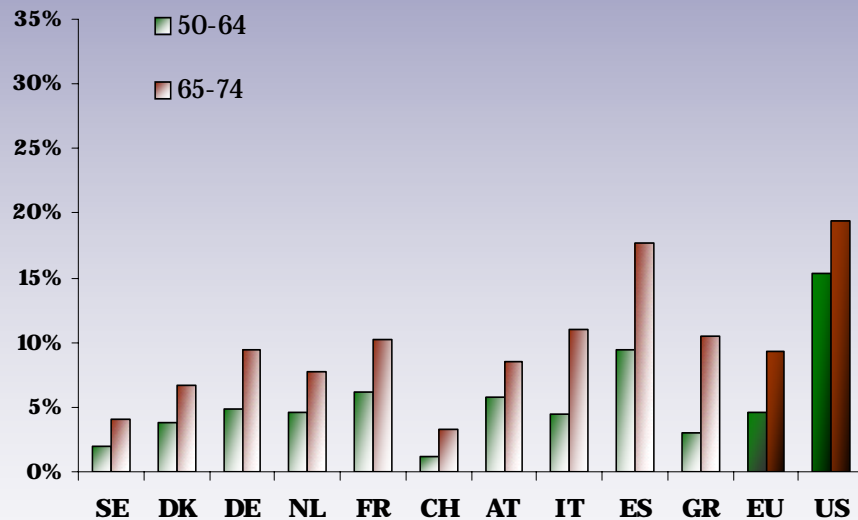


Note: Data adjusted for age

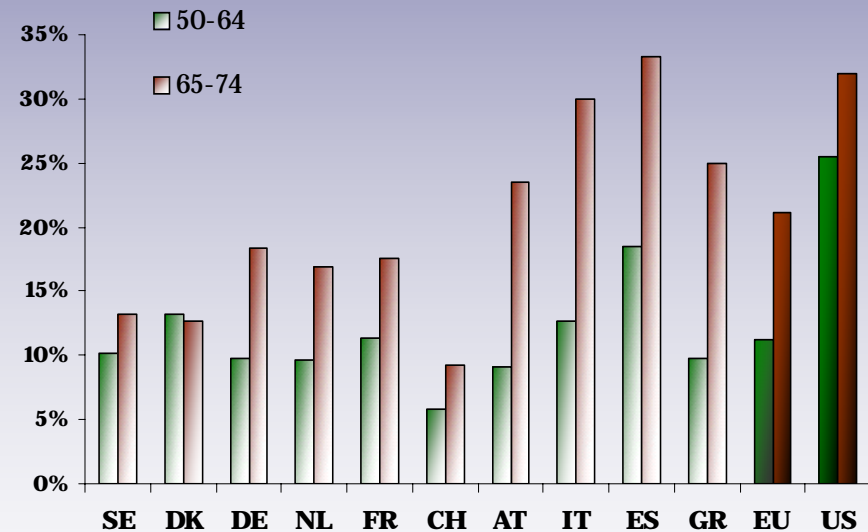
# Significant variations in mobility are present in the first two age-groups

## Prevalence of 4 or more mobility limitations

**MOBILITY (4 Act.) - MEN**



**MOBILITY (4 Act.) - WOMEN**

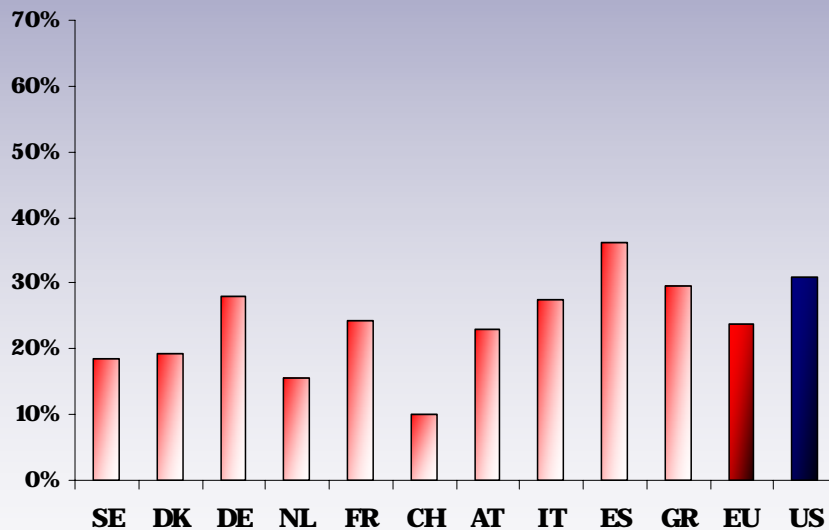


Note: Data adjusted for age

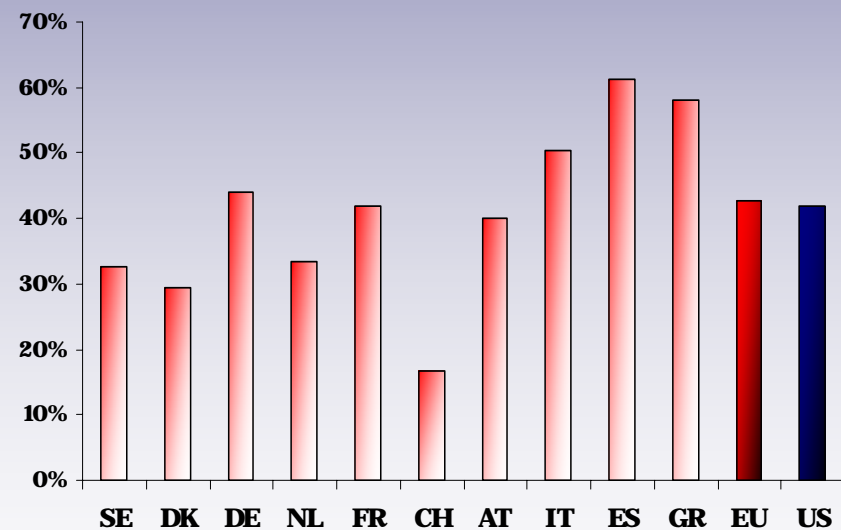
# ... intra-European differences in disability remain, but US-Europe disparities decline

## LIMITATIONS WITH MOBILITY (age 75 years or more)

MOBILITY (4 Act.) - MEN



MOBILITY (4 Act.) - WOMEN



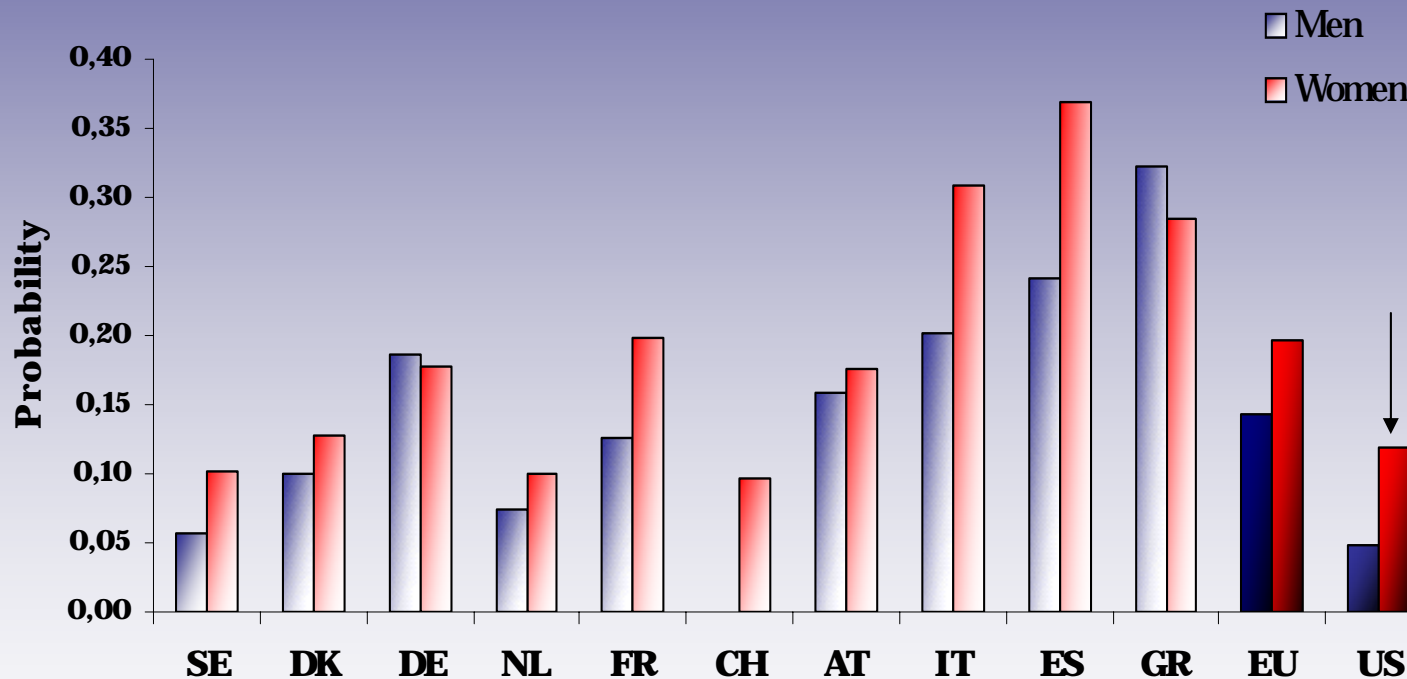
Note: Data adjusted for age

# Objective indicators confirm intra-European variation, but US shows lower disability levels!

## 76+ years

### PROBABILITY WALKING SPEED < 0.4 M/S

#### MEN vs. WOMEN



## What is going on?

Note: Data adjusted for age

# Background and Facts

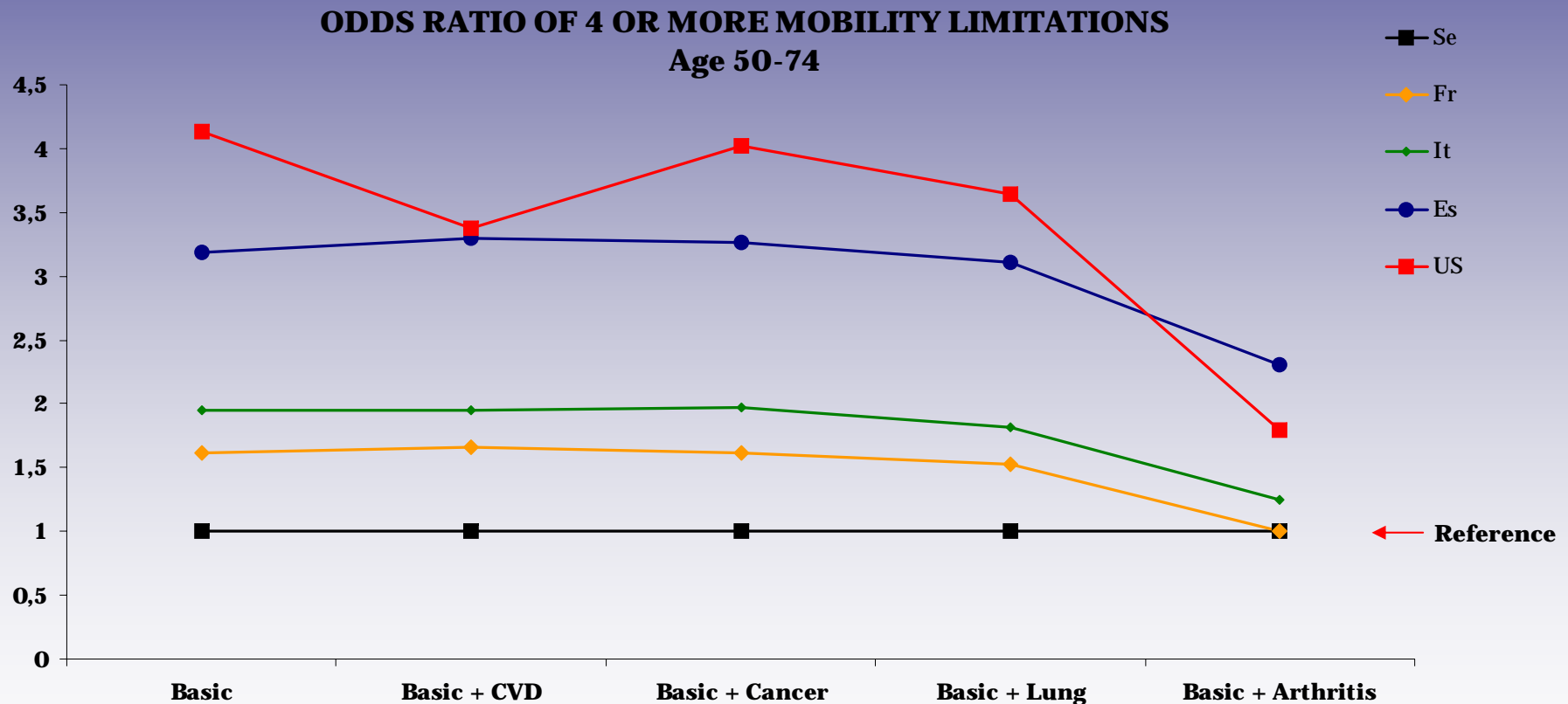
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# Adjustment for arthritis attenuates cross-country differences in mobility limitations

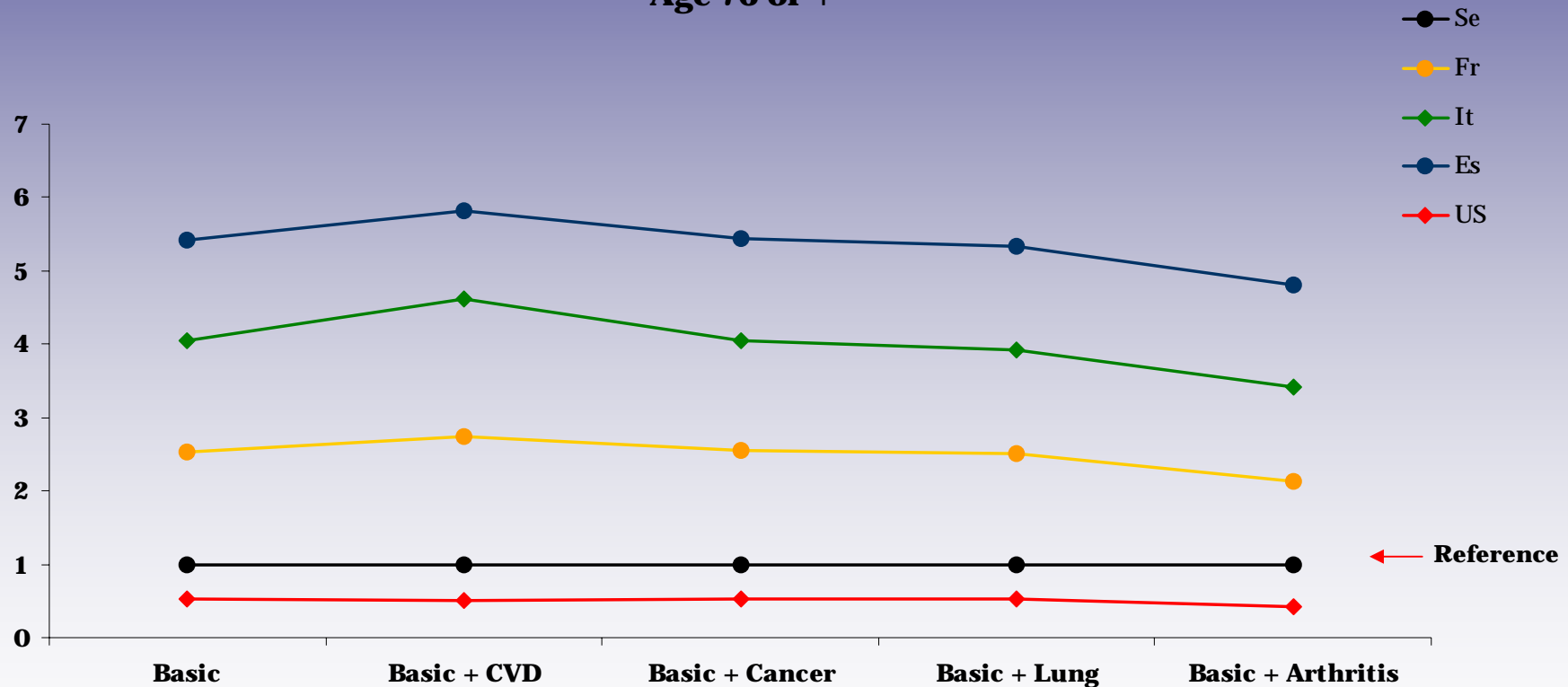


Reference Country: Sweden

Note: Basic includes age, sex, education, marital status

# ...being almost negligible when looking at walking speed

**ODD RATIOS FOR WALKING DISABILITY**  
Age 76 or +

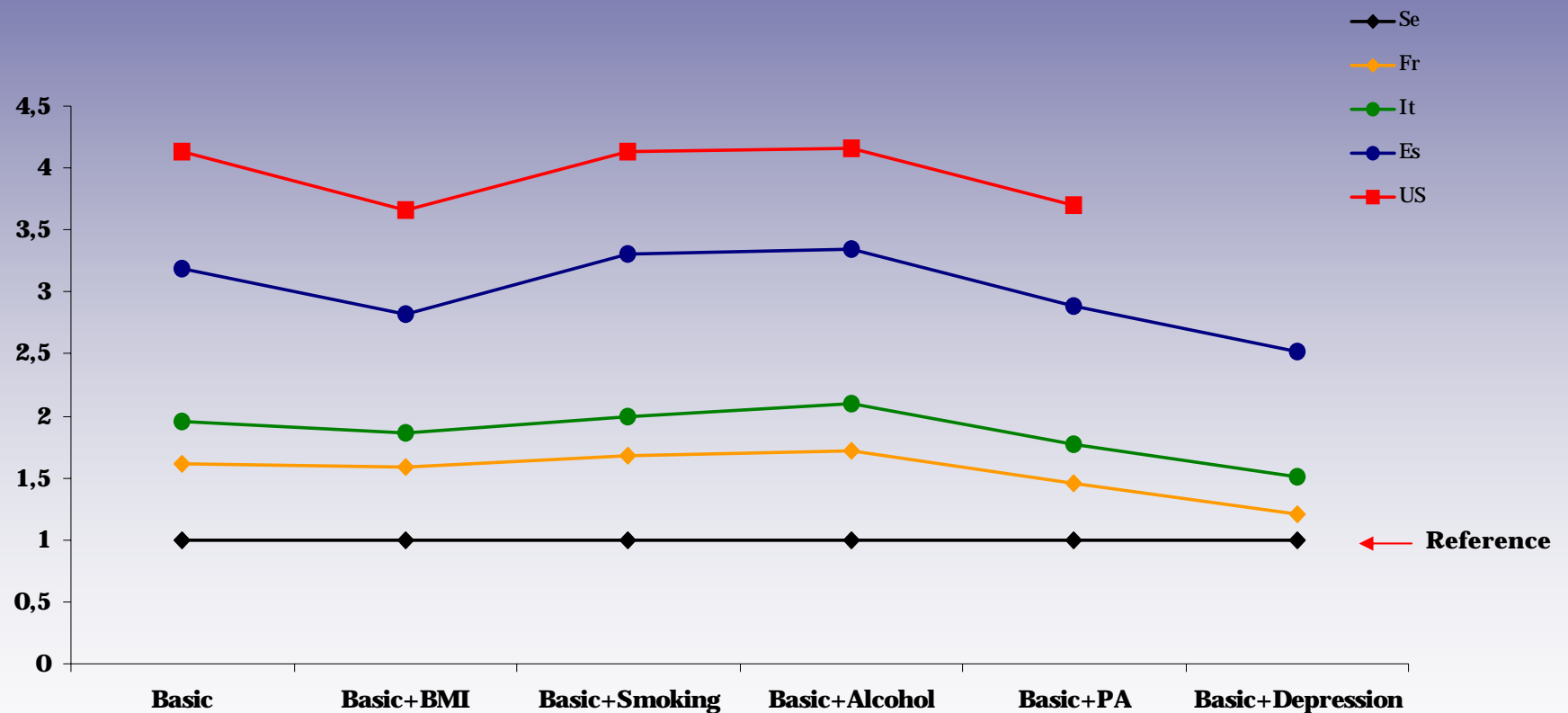


Reference Country: Sweden

Note: Basic includes age, sex, education, marital status

# Adjusting for health behavior does not attenuate cross-country differences in mobility...

**ODD-RATIO OF 4 OR MORE DIFFICULTIES WITH MOBILITY  
Age 50-74**

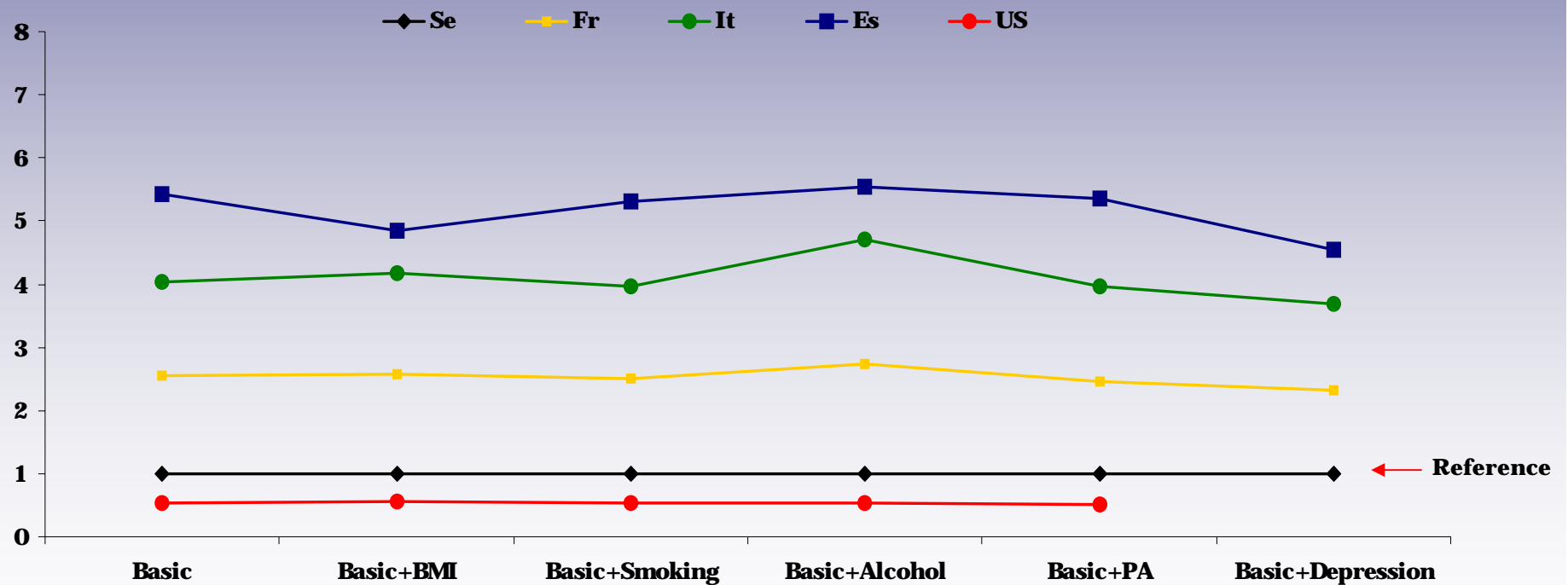


Reference Country: Sweden

Note: Basic includes age, sex, education, marital status

# Walking disability differences remain unchanged after risk factor adjustment....

**ODD RATIOS FOR WALKING DISABILITY**  
Age 76 or +

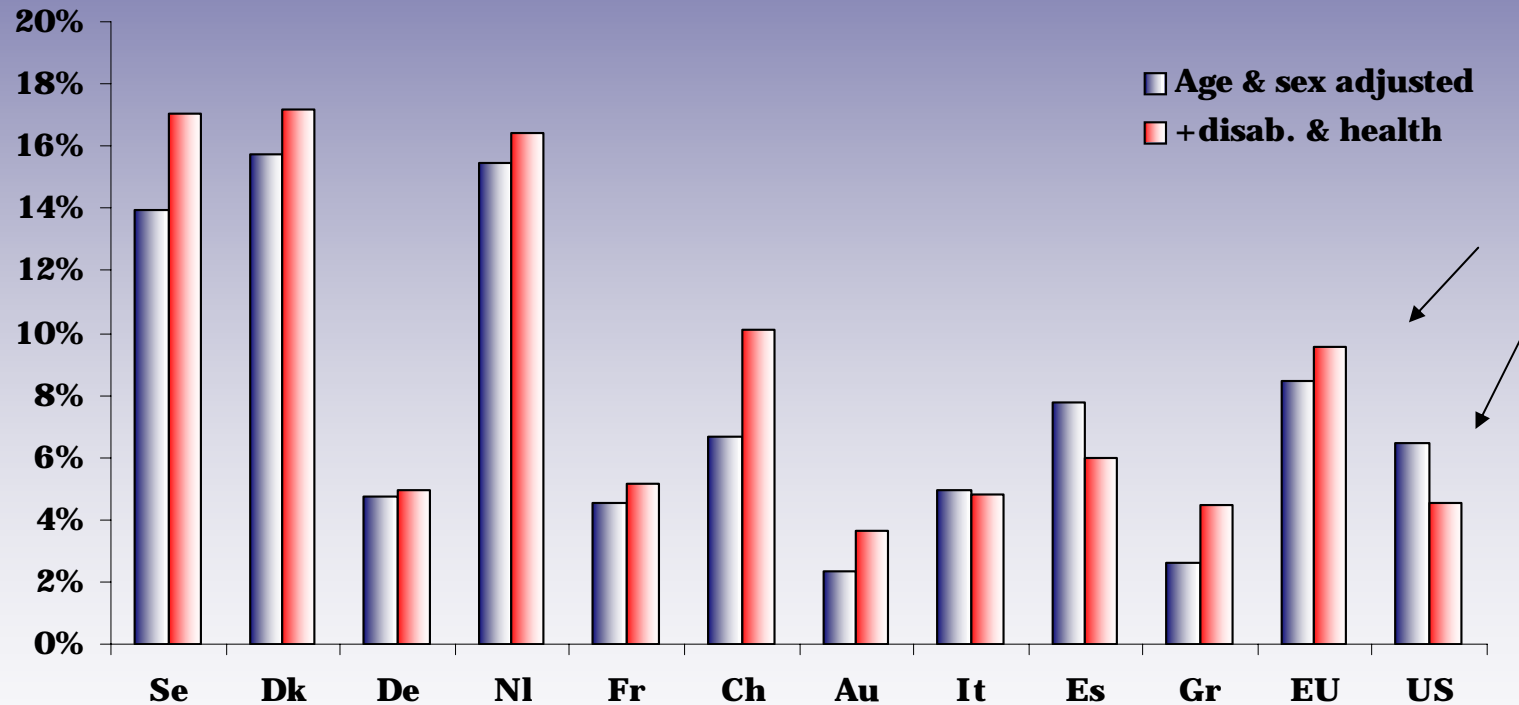


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# DISABILITY BENEFITS

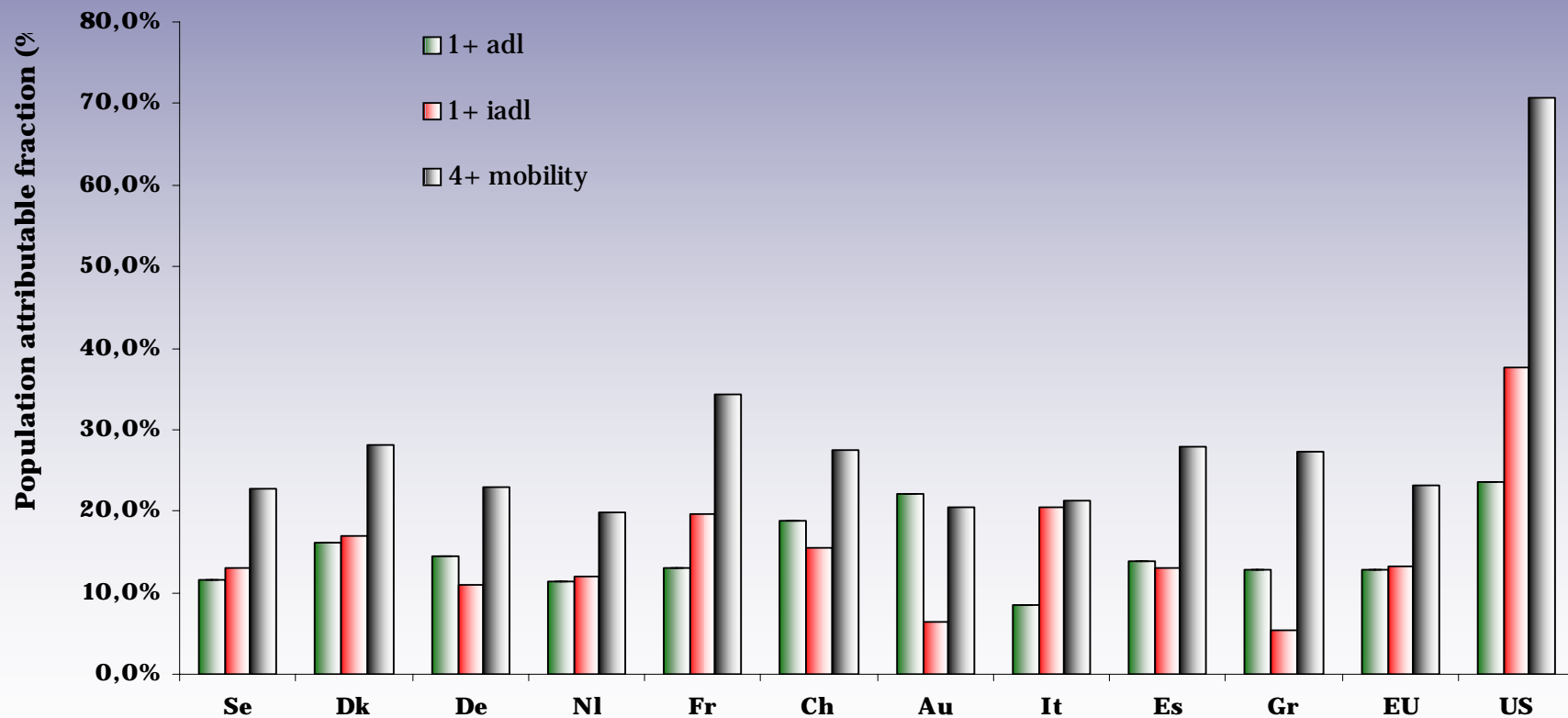
There are huge variations in disability benefit enrolment across Europe, even after adjusting for health and functioning...

### DISABILITY INSURANCE UPTAKE



# The proportion of benefit enrolment attributable to functioning limitations is very large in the US and very small in Europe...

**PROPORTION OF DISABILITY BENEFIT UPTAKE ATTRIBUTABLE TO ADL, IADL & MOBILITY LIMITATIONS**



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# Conclusions

- There are large variations between countries in the prevalence of disability:
  - Higher disability in France, Italy and Spain, lower in north Europe
  - Higher disability limitations for the US at 50-74, but lower disability in the US in oldest old
- Higher arthritis accounts for a large extent for variations at ages 50-74, but not among oldest old
- Health behaviour and depression do not largely contribute to variations in disability

## Conclusions (II)

- The proportion of benefit enrolment attributable to functioning limitations is very large in the US and very small in Europe – other (non-physical) causes for disability benefit in Europe?
- Are variations real?
  - Self-report bias (vignettes)
  - Differences in cohorts, response rates....

# ANNEX

# Calculation Proportion of Disability Benefit

$$\text{Population attributable risk} = \frac{\text{Prevalence} \times (RR - 1) \times 100}{\text{Prevalence} \times (RR - 1) \times 1}$$