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.

Disability expenditure varies considerably between countries

VARIATIONS IN PUBLIC EXPENDITURE ON DISABILITY PROGRAMS

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

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:

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

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\}
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)

Note: Data adjusted for age

MOBILITY MEN (age 75 or more)

MOBILITY WOMEN (age 75 or more)

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**

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
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Background and Facts</td>
</tr>
<tr>
<td>2</td>
<td>Prevalence of Disability in Europe and the US</td>
</tr>
<tr>
<td>3</td>
<td>Contribution of Diseases and Health Behavior</td>
</tr>
<tr>
<td>4</td>
<td>Conclusions</td>
</tr>
</tbody>
</table>
Adjustment for arthritis attenuates cross-country differences in mobility limitations

ODDS RATIO OF 4 OR MORE MOBILITY LIMITATIONS
Age 50-74

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 +

Note: Basic includes age, sex, education, marital status
DISABILITY BENEFITS
There are huge variations in disability benefit enrolment across Europe, even after adjusting for health and functioning...

DISABILITY INSURANCE UPTAKE

- Age & sex adjusted
- +disab. & health
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

Population attributable fraction (%)
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
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
Population attributable risk = \frac{Pr\text{ev}alence \times (RR - 1) \times 100}{Pr\text{ev}alence \times (RR - 1) \times 1}