

# Disability, health and access to training

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# Structure of the presentation

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# Motivation

- In spite of a rich legislation protecting people in poor health, according to the Fair Treatment at Work Survey, disability is one of the first causes of unfair treatment at the workplace
- Enabling “disabled adults to renew and refresh their skills to gain employment and progress in their careers” is one of the aims explicitly stated by the Disability Rights Commission
- The Disability Discrimination Act is a model for European Countries for the implementation of the Employment Equality Directive (Directive 2000/78)
- In 2002 the WHO introduced the so called *biopsychological model* of disability

# Theoretical background and previous evidence

- When affirmative policies make it difficult for the firms to discriminate in terms of pecuniary wages, discrimination takes the form of differential access to training (Lazear, AER 1979) .
- The quality of the worker is not fully observable. Hence, firms rely on signals (actions) and indices (observed characteristics) (Spence, QJE 1973)
- Employers' beliefs on workers' productivity influence the amount of firm sponsored training (Altonji e Pierret, QJE 2001)
- Employers are more likely to invest in those workers who are more likely to stay with the firm after the investment in human capital (Kuhn, LE 1993; Royalty, ILRR 1996). This can lead to delayed training (Loewenstein and Spletzer, ILRR 1997).
- Disabled workers seem to be more likely than workers in good health to experience involuntary job changes. However, when other forms of job mobility are analysed, the two groups do not differ significantly (Baldwin and Shumacher, IR 2002)

# Intuitions

- Disability as a form of heterogeneity among workers
- Two types of disabled differing in their probability of staying with the firm after the investment in human capital.
- Firms use Bayesian learning to distinguish between the two groups of workers in bad health. When they collect enough information, they invest on those people who are thought to be “safe”, while they don't offer opportunities of training to those workers who are perceived to have a higher probability of dropping out of the labour force.
- In order to guess the type of workers they should train, firms rely on:
  - observed characteristics (indices)
  - partially observed characteristics: health status (which cannot be completely assessed) and ability (proxied by education)
  - firm specific characteristics: ex expected average tenure

# Data and selected sample

WERS 2004: The cross section survey of Employees and The Cross-Section Survey of Managers

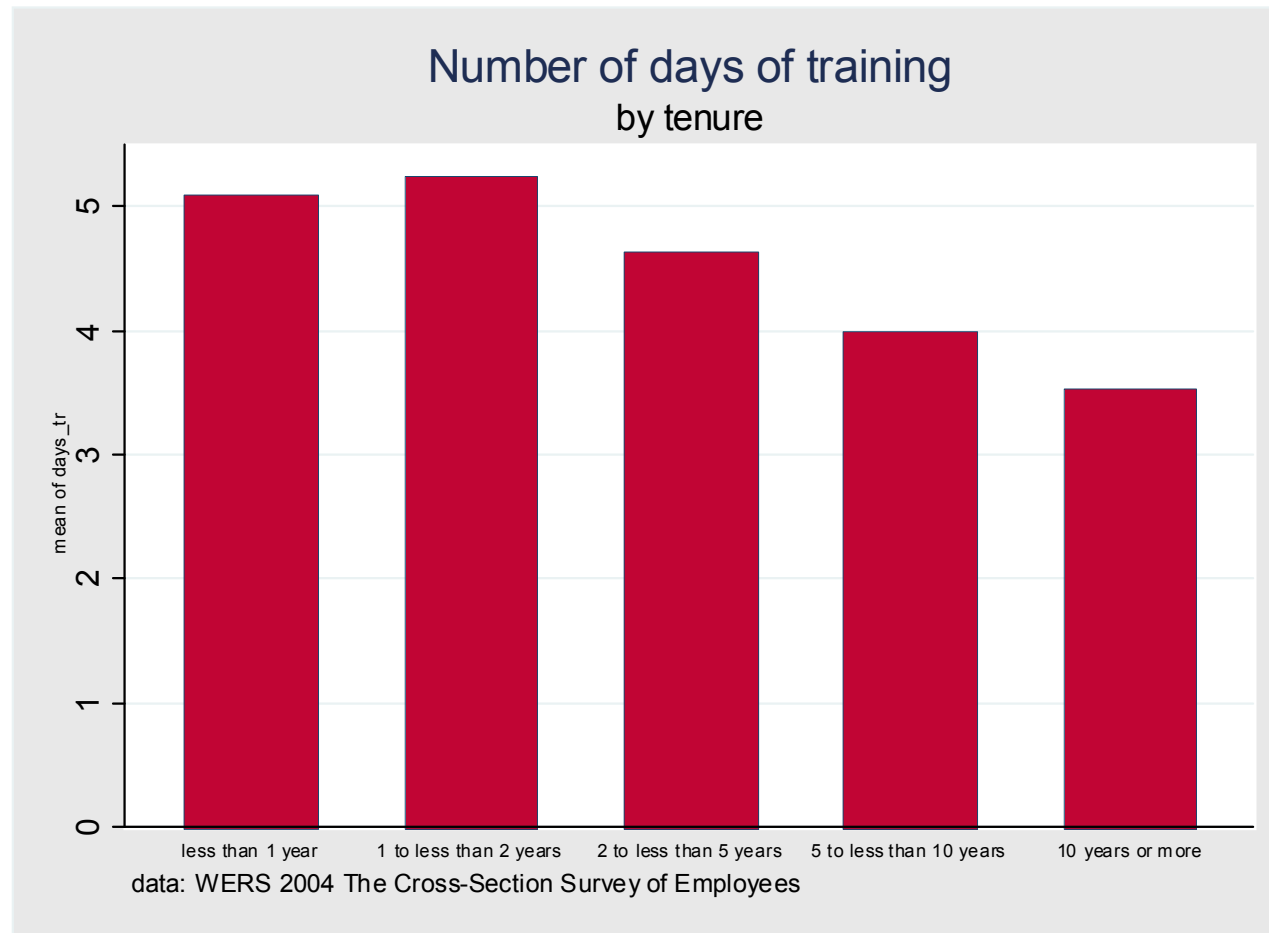
I excluded private firms and those observations for which I did not have complete information on the variables of interest

Mean tests show that the excluded observations are not significantly different from those retained in the sample.

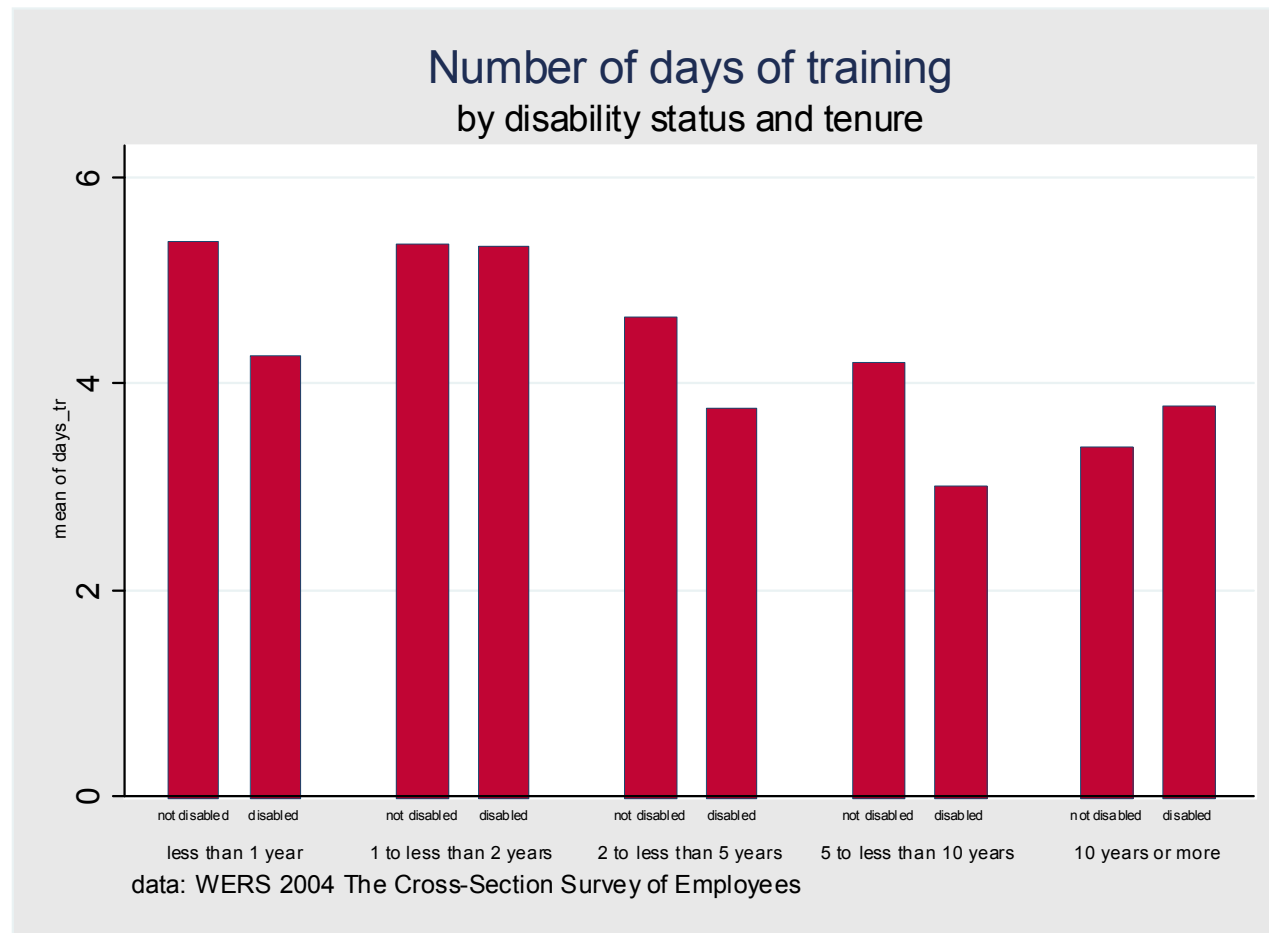
Final sample: 12.436 workers clustered in 1177 firm.

Almost **12%** of the workers in the sample suffers from a Long Standing Illness or Disability (i.e. an impairment which is expected to last for at least 12 months)

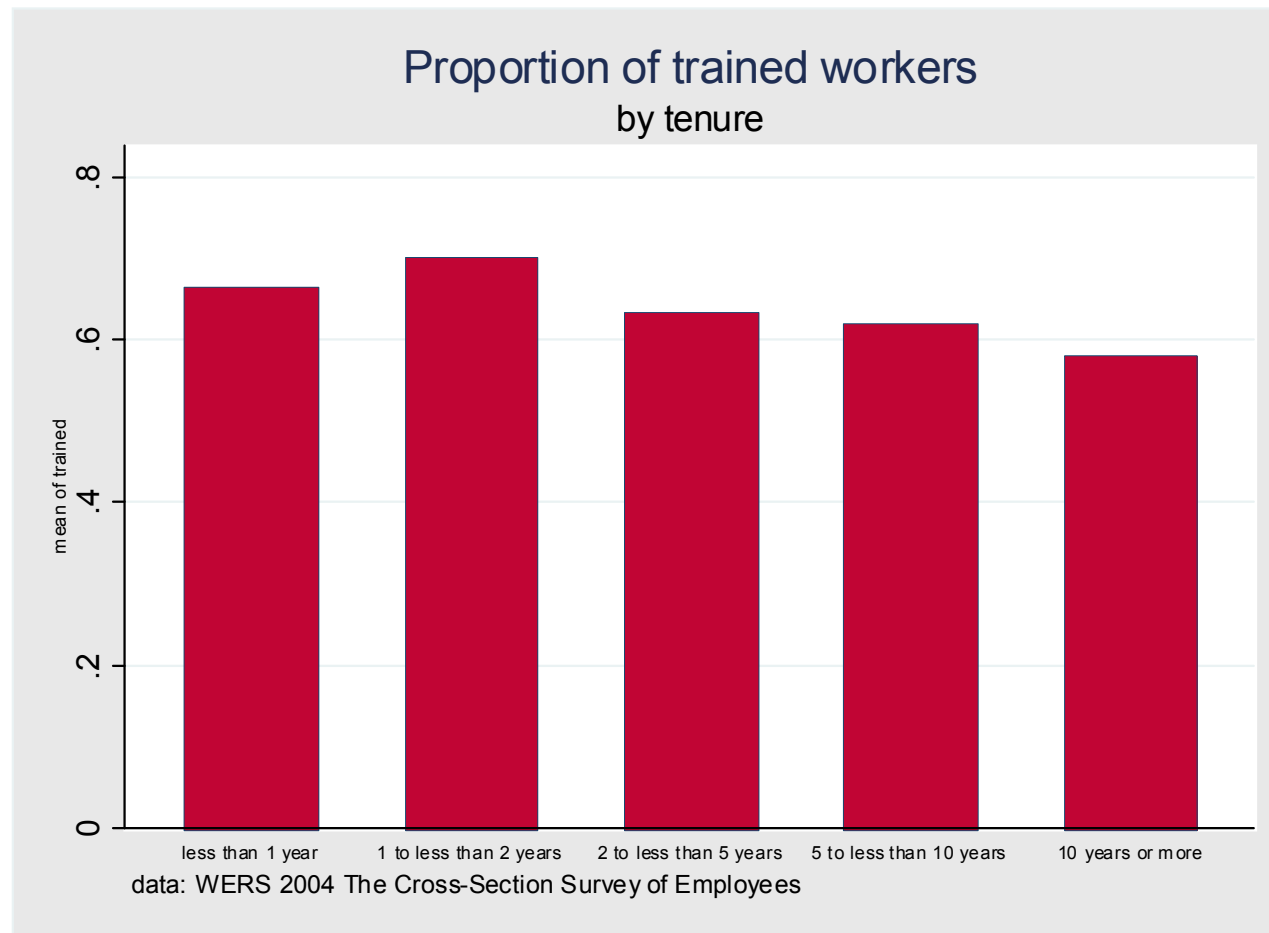
# Health status, tenure and training in WERS 2004



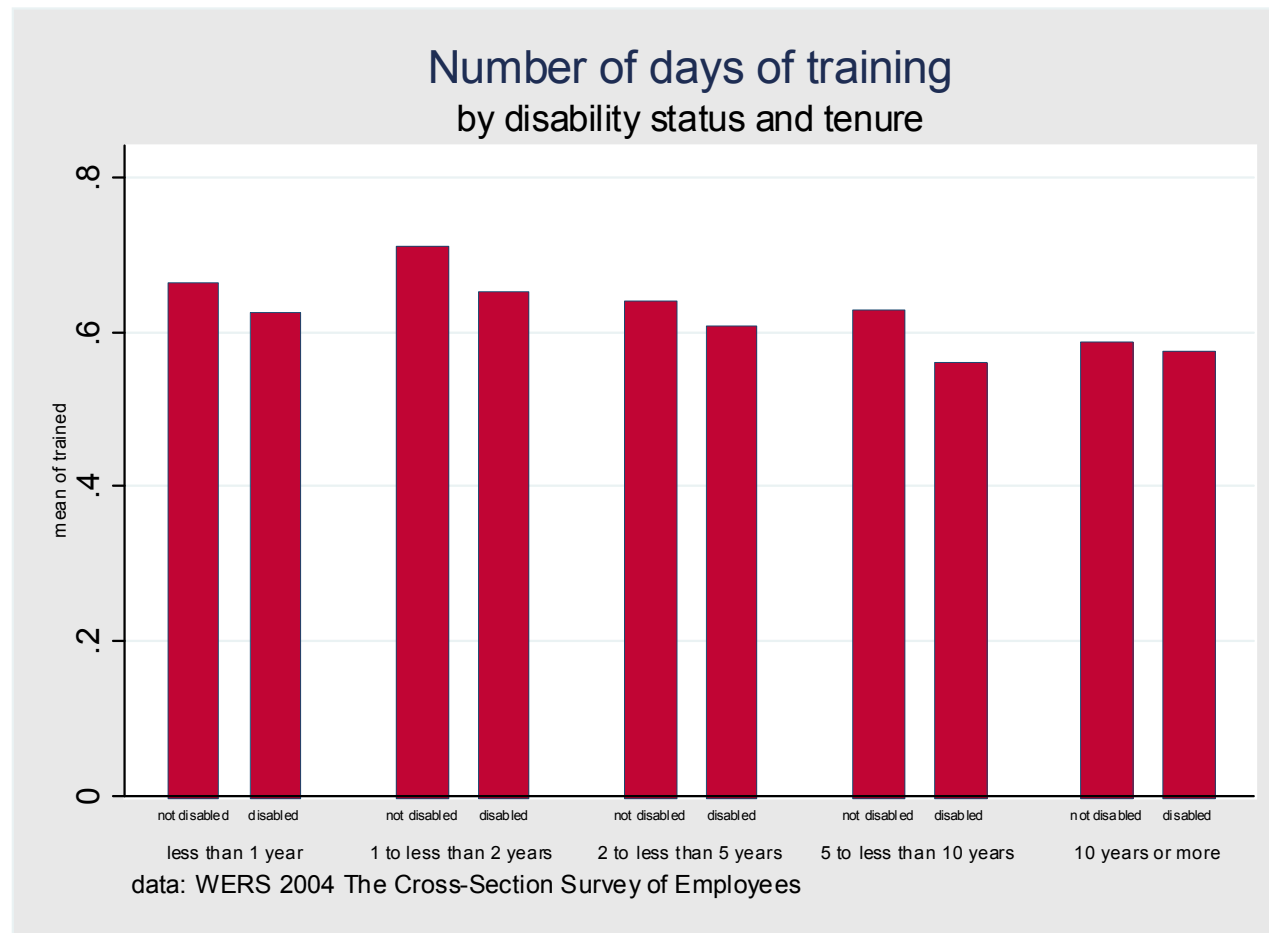
# Health status, tenure and training in WERS 2004



# Health status, tenure and training in WERS 2004



# Health status, tenure and training in WERS 2004



# The econometric model

**Pairs of logit-ordered logit models** allowing for firm specific random intercept and/or firm specific random coefficient and including both individual and firm specific variables.

**Intuition:** the probability of getting a particular amount  $x = \bar{x}$  of training can be decomposed as

$$P(x = \bar{x}) = P(x > 0) * P(x = \bar{x}/x > 0)$$

**Estimation strategy:** the adopted strategy permits to study the differences between the trained and the no-trained group and to identify potentially endogenous variables by analysing the difference in their behaviour.

# The econometric model

Let  $y_{ij}^*$  be the latent variable indicating the propensity of receiving training, training incidence ( $y_{ij}$ ) and training intensity ( $\tilde{y}_{ij}$ ) are defined as follows:

$$y_{ij} = \begin{cases} 1 & \text{if } y_{ij}^* > 0 \\ 0 & \text{otherwise} \end{cases}$$

$$\tilde{y}_{ij} = \begin{cases} 1 & \text{if } y_{ij}^* \leq \kappa_1 \\ 2 & \text{if } \kappa_1 \leq y_{ij}^* \leq \kappa_2 \\ 3 & \text{if } \kappa_2 \leq y_{ij}^* \leq \kappa_3 \\ 4 & \text{if } \kappa_4 \leq y_{ij}^* \leq \kappa_5 \\ 5 & \text{if } \kappa_5 \leq y_{ij}^* \end{cases}$$

# The econometric model

With

$$y_{ij}^* = (\beta_1 + \zeta_{1j}) + (\beta_2 + \zeta_{2j})d_{ij} + \bar{\beta}_3\bar{x}_{ij} + \bar{\beta}_4\bar{x}_j + \varepsilon_{ij}$$

and

$$Var(\zeta_{1j}) = \psi_{11}$$

$$Cov(\zeta_{1j}, \zeta_{2j}) = \psi_{21}$$

$$Var(\zeta_{2j}) = \psi_{22}$$

$$\beta_1 = 0$$

Where  $d_{ij}$  is a dummy variable indicating LSI disabled people,  $\bar{x}_{ij}$  are individual specific characteristics and  $\bar{x}_j$  are firm specific characteristics

# The variables

## Dependent variables:

- **Training incidence** indicating whether the worker got any training paid or organised by the employer in the 12 months before the interview. It is a dichotomous variable.
- **Training intensity** indicating how many days of training the worker got (just positive records)

## Independent variables:

- **Individual level variables:** Long Standing Illness (LSI), job tenure, interactions disability\*tenure (three bands), extra hours worked (to control for absence), education, occupation, usual demographic controls
- **Firm specific variables:** average expected tenure, variables describing the available information about training, average difficulty of the job, presence of policies preventing discrimination against disabled (factor analysis), firm size

## Results-training incidence, random intercept model

	type	min var	individual	firm	
	sample size (lev2)	13379	13071	12548	
	sample size (lev1)	1238	1235	1177	
age		0.001 (0.012)	0.005 (0.013)	-0.001 (0.013)	
age squared		0.000 (0.000)	** 0.000 (0.000)	0.000 (0.000)	
male		0.220 (0.046)	*** 0.146 (0.050)	*** 0.143 (0.052)	***
ethnic minority		-0.041 (0.096)	-0.098 (0.098)	-0.073 (0.099)	
disabled		-0.135 (0.062)	** -0.334 (0.190)	* -0.372 (0.194)	*
tenure shorter than 1 year	no		-0.189 (0.084)	** -0.165 (0.086)	**
tenure longer than 2 years	no		-0.372 (0.071)	*** -0.393 (0.073)	***
disabled* < 1y tenure	no		0.225 (0.252)	0.208 (0.258)	
disabled* > 2y tenure	no		0.254 (0.203)	0.281 (0.208)	
individual controls	no		yes	yes	
long expected tenure	no		no	0.076 (0.121)	
neither long nor short e. tenure	no		no	0.090 (0.155)	
any meeting, no training	no		no	-0.338 (0.091)	***
no meetings, no training	no		no	-0.930 (0.161)	***
training negotiated wt representatives	no		no	0.207 (0.265)	
no discrimination	no		no	0.203 (0.053)	
firm specific controls	no		no	yes	

## Results-training intensity, random intercept model

type	min var		individual		firm	
sample size (lev2)	8129		7960		7626	
sample size (lev1)	1162		1151		1098	
age	0.01 (0.013)		0.006 (0.014)		0.005 (0.014)	
age squared	0.00 (0.000)	**	0.000 (0.000)		0.000 (0.000)	
male	0.33 (0.044)	***	0.239 (0.049)	***	0.236 (0.045)	***
ethnic minority	-0.14 (0.092)		-0.196 (0.094)	**	-0.159 (0.095)	*
disabled	0.00 (0.065)		0.244 (0.193)		0.204 (0.198)	
tenure shorter than 1 year	no		0.231 (0.079)	***	0.216 (0.080)	***
tenure longer than 2 years	no		-0.037 (0.066)		-0.058 (0.067)	
disabled* < 1y tenure	no		-0.579 (0.254)	**	-0.552 (0.261)	**
disabled* > 2y tenure	no		-0.207 (0.207)		-0.176 (0.213)	
individual controls	no		yes		yes	
long expected tenure	no		no		0.201 (0.098)	**
neither long nor short e. tenure	no		no		0.179 (0.124)	
any meeting, no training	no		no		-0.176 (0.076)	**
no meetings, no training	no		no		-0.364 (0.162)	**
training negotiated wt representatives	no		no		-0.123 (0.205)	
no discrimination	no		no		0.044 (0.040)	
firm specific controls	no		no		yes	

# Conclusions

- Being a ill-disabled worker decreases the probability of being trained, but it appears not to be significant once we consider positive amounts of training (selected sample)
- most of the investment in human capital seems to take place between the first and the second year of tenure. We suspect this is a necessary training, thus inelastic to workers' characteristics including disability.
- Poor health conditions work as a scar for newly hired disabled people. The gap between disabled and non disabled people among newly hired workers can be explained claiming that when the employers do not have enough information about workers' productivity and workers' labour attachment they rely on the available information. The importance of indices decreases with tenure.
- The expected time horizon of the investment in human capital does matter in determining the amount of training also when the actual tenure of the workers is taken into account.

# Further developments

- IV approach for the variable “disability”
- double hurdle models with interval regression
  - **Intuition:** the sub sample of trained people is different from the whole sample of workers: there are two distinct processes which can be jointly estimated
  - **Estimation strategy:** cross section data do not permit to distinguish between “real” zeros and zeros due to censoring. Double Hurdle models can explain the “excess of zeros”, while interval regression exploit the variation on the distribution of training. eterogeneity among workers.