

PERFORMANCE OF PEOPLE WITH DIABETES IN THE LABOUR MARKET: AN EMPIRICAL APPROACH CONTROLLING FOR COMPLICATIONS

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OVERVIEW

1. Background
2. Objective
3. Data and Methods
4. Results
5. Conclusions





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BACKGROUND

- ▶ In terms of employment, diabetes might:
 - ▶ Impair the ability to work completely (Norlund *et al.*, 2001; Herquelot *et al.*, 2011; Rumball-Smith *et al.*, 2014)
 - ▶ Increase absenteeism (Tunceli *et al.*, 2005; ADA, 2013; Hex *et al.*, 2012)
 - ▶ Reduce productivity at work (ADA, 2013; Hex *et al.*, 2012)
 - ▶ Discriminated at work due to employers' concerns about low productivity (Songer *et al.*, 1989)
- ▶ The particular case of **Spain**
 - ▶ Highest rates of early-labour force exit in Ireland and Spain (Rumball-Smith *et al.*, 2014)
 - ▶ Total cost of productivity loss due to diabetes: 2.8 billion € in 2009 (López-Bastida *et al.*, 2013).
 - ▶ Number days of work lost due to diabetes: 154,214 days due to temporary disability generated by diabetes and its complications (Vicente-Herrero *et al.*, 2013)





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OBJECTIVE

- ▶ Focus on the **Spanish case**
- ▶ Assess the impact that **diabetes** has on **employment status and wages**
- ▶ Improve the existing and recent literature by controlling for **diabetes-related complications**
- ▶ Last wave (**year 2012**) of the Spanish National Health Survey (SNHS)





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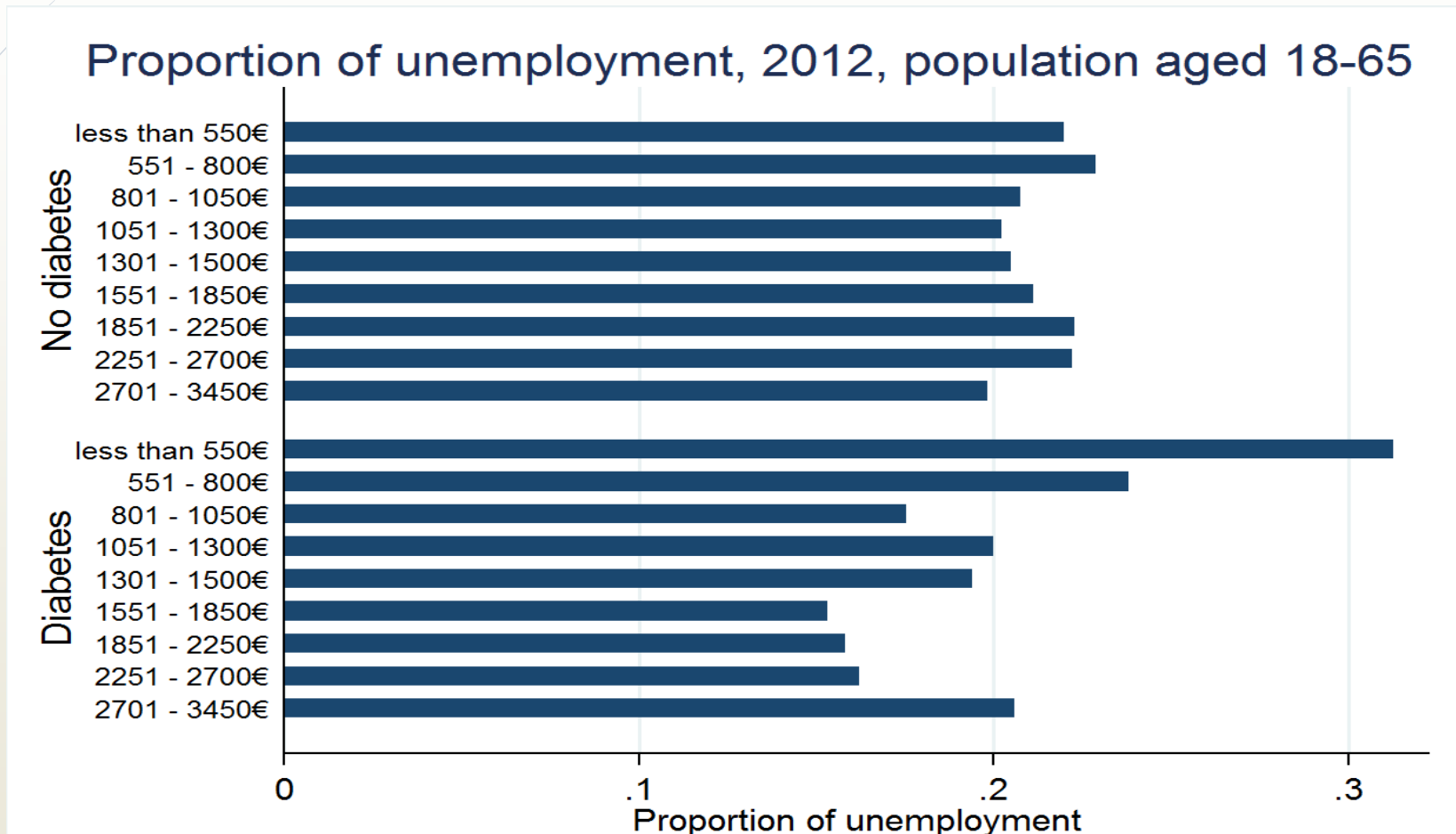


DATA AND METHODS

- ▶ **DATA:** the Spanish National Health Survey (SNHS)
 - ▶ 21,508 households are part of the survey.
 - ▶ Being **unemployed** would be defined as those individuals aged 18 to 65 years old who are in labor force, but do not have a job and are looking for work.
 - ▶ Unemployment duration
 - ▶ Household income refers to the net income that the household receives per month. It is measured in intervals: i) less than 550€; ii) 551–800€; iii) 801–1050€; iv) 1051–1300€; v) 1301–1550€; vi) 1551–1850€; vii) 1851–2250€; viii) 2251–2700€; ix) 2701–3450€
 - ▶ Diabetes
 - ▶ **Chronic diseases;** hypertension, heart attack, arthritis, back pain, asthma, chronic lung disease, gastric ulcer, cholesterol, stroke and cancer.
 - ▶ Dichotomous variable for **having limitations in performing the ADLs**
 - ▶ Age, gender, educational level, marital status, overweight and obesity, and smoking habits



DATA AND METHODS



DATA AND METHODS

► STATYSTICAL ANALYSES

- Univariate probit regressions
- Multivariate probit regression for being unemployed

$$\Pr[unemployed_i = 1 | x_i] = \Phi(\beta_0 + \beta_1 diabetes_i + \beta_2 X_i + \varepsilon_i)$$

- Multivariate ordered probit regression for income

$$prob_i(income_1) = \Phi(\alpha_1 - \beta_1 diabetes_i - \beta_j X_i)$$

$$prob_i(income_j) = \Phi(\alpha_j - \beta_j diabetes_i - \beta_j X_i) - \Phi(\alpha_{j-1} - \beta_{j-1} diabetes_i - \beta_j X_i),$$

$$j = 2, \dots, j - 1$$

$$prob_i(income_j) = 1 - \sum_{j=1}^{J-1} prob_i(income_j)$$



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RESULTS

► SUMMARY STATISTICS: LABOUR STATUS AND DIABETES

Variables	People with diabetes (N = 1,710)	People without diabetes (N = 34,377)	T-test of mean difference
	Mean ± (SD)	Mean ± (SD)	p-value
<i>Unemployed</i>	0.20	0.21	0.132
<i>Unem_6</i>	0.02	0.05	0.000***
<i>Unem_6_12</i>	0.01	0.03	0.000***
<i>Unem_12_24</i>	0.03	0.03	0.918
<i>Unem_24</i>	0.06	0.06	0.174



RESULTS

► SUMMARY STATISTICS: INCOME AND DIABETES

Variables	People with diabetes (N = 1,710)	People without diabetes (N = 34,377)	T-test of mean difference
	Mean ± (SD)	Mean ± (SD)	p-value
Household income			
<i>Hbinc_550</i>	0.04	0.04	0.106
<i>Hbinc_551_800</i>	0.10	0.09	0.074*
<i>Hbinc_801_1050</i>	0.11	0.10	0.022**
<i>Hbinc_1051_1300</i>	0.09	0.11	0.019**
<i>Hbinc_1301_1550</i>	0.08	0.07	0.495
<i>Hbinc_1551_1850</i>	0.07	0.07	0.802



RESULTS

SUMMARY STATISTICS: HEALTH STATUS AND DIABETES

Variables		People with diabetes (N = 1,710)	People without diabetes (N = 34,377)	T-test of mean difference
		Mean ± (SD)	Mean ± (SD)	p-value
Health	<i>Hypertension</i>	0.48	0.14	0.000***
	<i>Heart attack</i>	0.06	0.01	0.000***
	<i>Arthritis</i>	0.32	0.12	0.000***
	<i>Back pain</i>	0.40	0.27	0.000***
	<i>Asthma</i>	0.06	0.05	0.947
	<i>Chronic lung disease</i>	0.10	0.03	0.000***
	<i>Ulcer</i>	0.07	0.04	0.000***
	<i>Cholesterol</i>	0.46	0.15	0.000***
	<i>Stroke</i>	0.02	0.01	0.000***
	<i>Cancer</i>	0.04	0.02	0.000***
	<i>Limitations in Activities of Daily Living (ADL)</i>	0.40 ± (0.60)	0.16 ± (0.42)	0.000***



RESULTS

REGRESSION RESULTS: LABOUR STATUS AND DIABETES

VARIABLES	Average Marginal Effects Model A	Average Marginal Effects Model B	Average Marginal Effects Model C	Average Marginal Effects Model D
Diabetes	-0.004 (0.010)	-0.006 (0.010)	-0.008 (0.011)	-0.009 (0.011)
Observations	36,087	36,087	36,087	36,087

VARIABLES	AME Model D: less than 6 months	AME Model D: 6 months - 1 years	AME Model D: 1 - 2 years	AME Model D: more than 2 years
Diabetes	-0.062*** (0.020)	-0.007*** (0.002)	0.009*** (0.003)	0.084*** (0.027)
Observations	7,592	7,592	7,592	7,592

RESULTS

REGRESSION RESULTS: INCOME AND DIABETES

VARIABLES	AME income: less than 550€	AME income: 551-800€	AME income: 801-1050€	AME income: 1051-1300€
Diabetes	0.008* (0.004)	0.005* (0.003)	0.004* (0.002)	0.003* (0.001)
Observations	36,807	36,807	36,807	36,807

VARIABLES	AME income: 1301-1550€	AME income: 1551-1850€	AME income: 1851-2250€	AME income: 2251-2700€	AME income: 2701-3450€
Diabetes	0.001* (0.000)	0.000 (0.000)	-0.001* (0.000)	-0.005* (0.002)	-0.015* (0.008)
Observations	36,807	36,807	36,807	36,807	36,807



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CONCLUSIONS

- ▶ Having **diabetes is not significantly associated with** the probability of being **unemployed**
- ▶ **Always significant and negatively associated with long-term unemployment and income**, regardless of the variables included in the regression analyses
 - ▶ being allocated into lower-skills demanding types of job (Songer et al., 1989), which are usually associated with lower wages, leading to reduced income, but still being employed
 - ▶ once unemployed, if employers are concerned about the lower productivity of people with diabetes (Hex et al., 2012), they will be more likely to hire new healthy employees, increasing the length of unemployment



ANY QUESTIONS?



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