

Determinants of unmet needs for long-term care of older people in the European Countries

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Structure of the presentation

- Main research problem
- Short literature review and overview of main concepts
- Data and hypotheses
- Results
- Discussion and conclusion

Short literature review and overview of main concepts

- Long term care: an emerging key issue in discussing the social inclusion or exclusion of the older population in modern European society (e.g. Theobald, 2005; Motel-Klingebiel, Tesch-Roemer and von Kondratowitz, 2005)
- Cross-national econometric studies of the relationship between formal and informal care for older adults in western European countries have become a booming field (Suanet et al., 2012)
- Conceptualizing and defining needs (and unmet needs) is far from simple (Godfrey and Callaghan 2000)
- Bradshaw (1972) conceptualizes different needs on the basis of who defines them: normative needs (experts); felt need (subjective); comparative need (comparative to others); technical need (e.g. improvement in efficiency)

Short literature review and overview of main concepts

- Considerable variation not only in conceptual definitions (Billings and Cowley 1995; McGregor, Camfield and Woodcock 2009) but also in survey measures of unmet needs when needs are evaluated by individuals or proxy respondents
- As a consequence, there are substantial differences in estimations of shares of people with unmet needs across studies (Vlachantoni et al. 2011; Williams, Lyons and Rowland 1997; Gannon and Davin 2010; Herr et al. 2013; LaPlante et al. 2004; Davey and Patsios 1999; Davey et al. 2005)
- The Andersen behavioural model states that usage of services depends on the characteristics of individuals, families, communities, and societies (Aday and Andersen 1974; Andersen et al. 1983; Andersen 1995; Andersen and Newman 2005)

Short literature review and overview of main concepts

- On the individual level, use of services is mediated by predisposing demographic characteristics (age, gender, marital status, and past illnesses), social structure (education, race, occupation, family size, ethnicity, religion, and geographical mobility) and beliefs (attitudes and beliefs about health, illness and health system)
- Enabling resources are family (income, type of health insurance, regular source of care and its availability) and community (availability of health personnel and facilities, financial and geographical accessibility of services, waiting times and degree of urbanization) context, and they may either hinder or encourage the use of services
- Needs are assessed with subjective evaluations (perceptions of health, reports of difficulties in managing everyday tasks) and diagnoses.

Main hypotheses and methodology

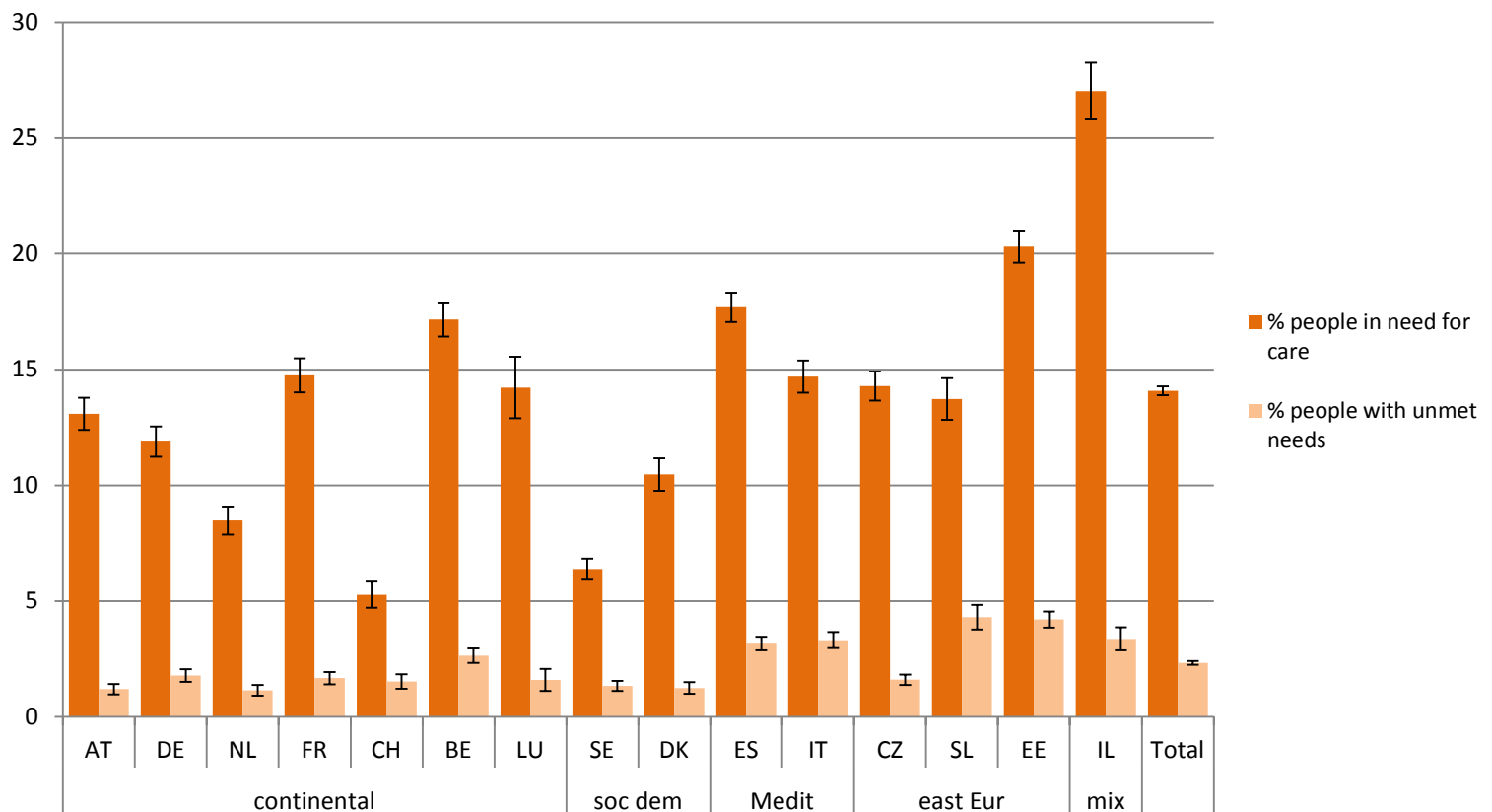
- H1: „People who suffer from social exclusion are more likely to have “unmet need” for long term care“
- H2: „Need (health) variables positively contribute to the unmet need for long term care“ (not so obvious)
- H3: „Eastern European countries are at most risk regarding unmet need for long term care“
- H4: „Multinomial logit model does/can bring different/more logical results than the Heckman model“
- Methodology, dependent variable: unmet needs – people who need care (have ADL/IADL problems) yet do not receive either formal or informal care
- We therefore have sample selection in our model, but instead of the usually used Heckman’s model (see e.g. Gannon and Davin 2010; Laferrère and Van den Bosch 2015; Srakar et al. 2015) we use multinomial logit model with 5 categories:

Main hypotheses and methodology

- **Category 0 (reference category – no needs)** – respondents with no needs for long term care;
- **Category 1 (formal care)** – respondents with needs for long term care and receiving formal care (regardless of whether they also receive any form of informal care);
- **Category 2 (informal care outside household)** – respondents with need for long term care, not receiving formal care but receiving informal care outside household (regardless of whether they also receive informal care within household);
- **Category 3 (informal care within household)** – respondents with need for long term care, receiving neither formal care nor informal care outside household, but receiving informal care within household;
- **Category 4 (the unmet needs category)** – respondents with need for long term care, but receiving neither type of formal or informal care.

Data

- Data: SHARE Wave 5, data for 15 countries (Austria, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Switzerland, Belgium, Israel, Czech Republic, Luxembourg, Slovenia, Estonia), final analytic sample: 34,584 people (only those aged 65 and older)



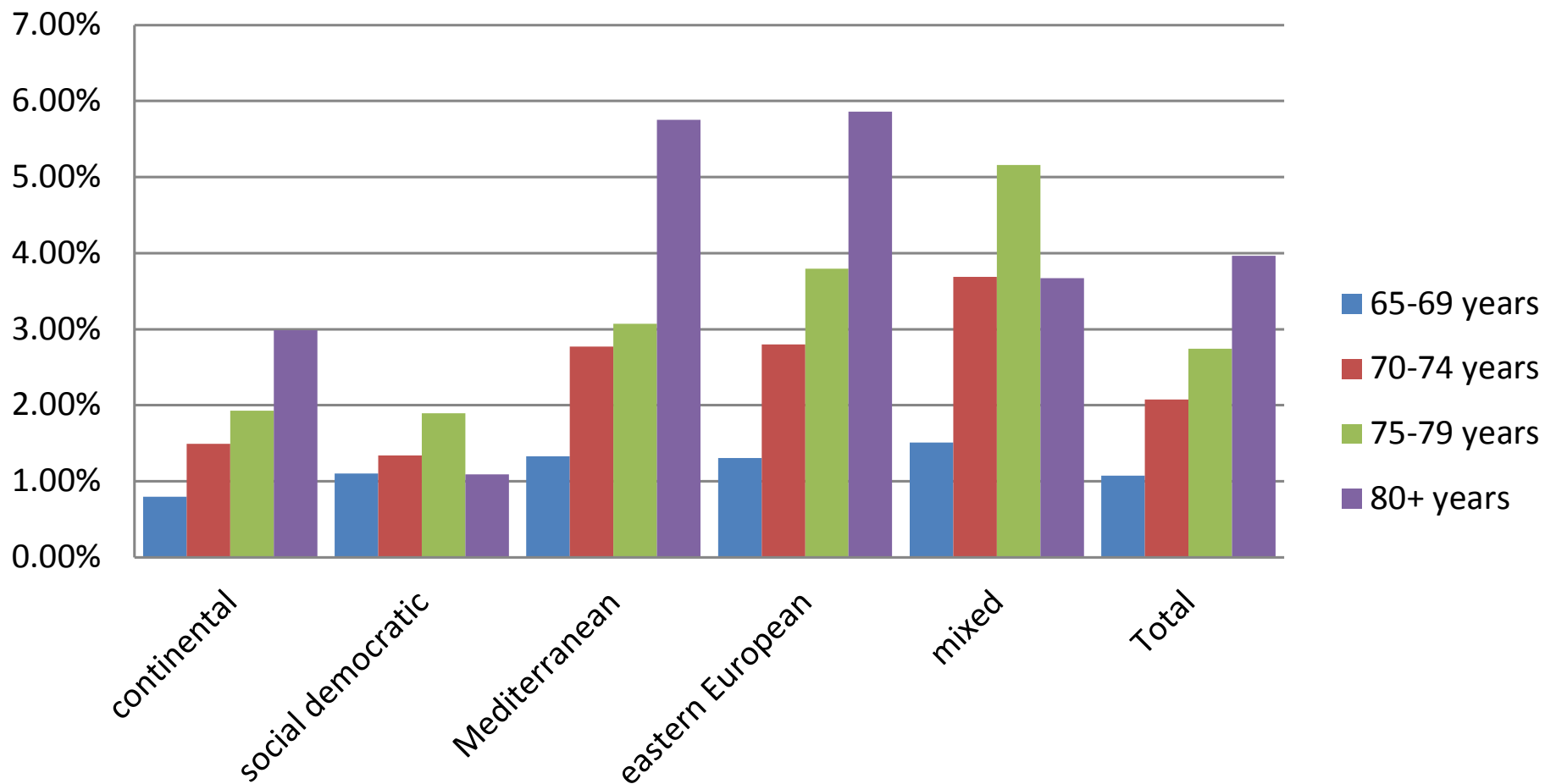
Data

- Estimation of total people with unmet needs, Deville-Särndal's procedure

Country	Estimated people with unmet needs
Austria	21,786
Germany	323,535
Netherlands	33,544
France	217,028
Switzerland	19,410
Belgium	47,207
Luxembourg	1,402
Sweden	24,522
Denmark	11,962
Spain	288,857
Italy	541,307
Czechia	27,422
Slovenia	15,568
Estonia	9,869
Israel	29,877
Total	1,613,295

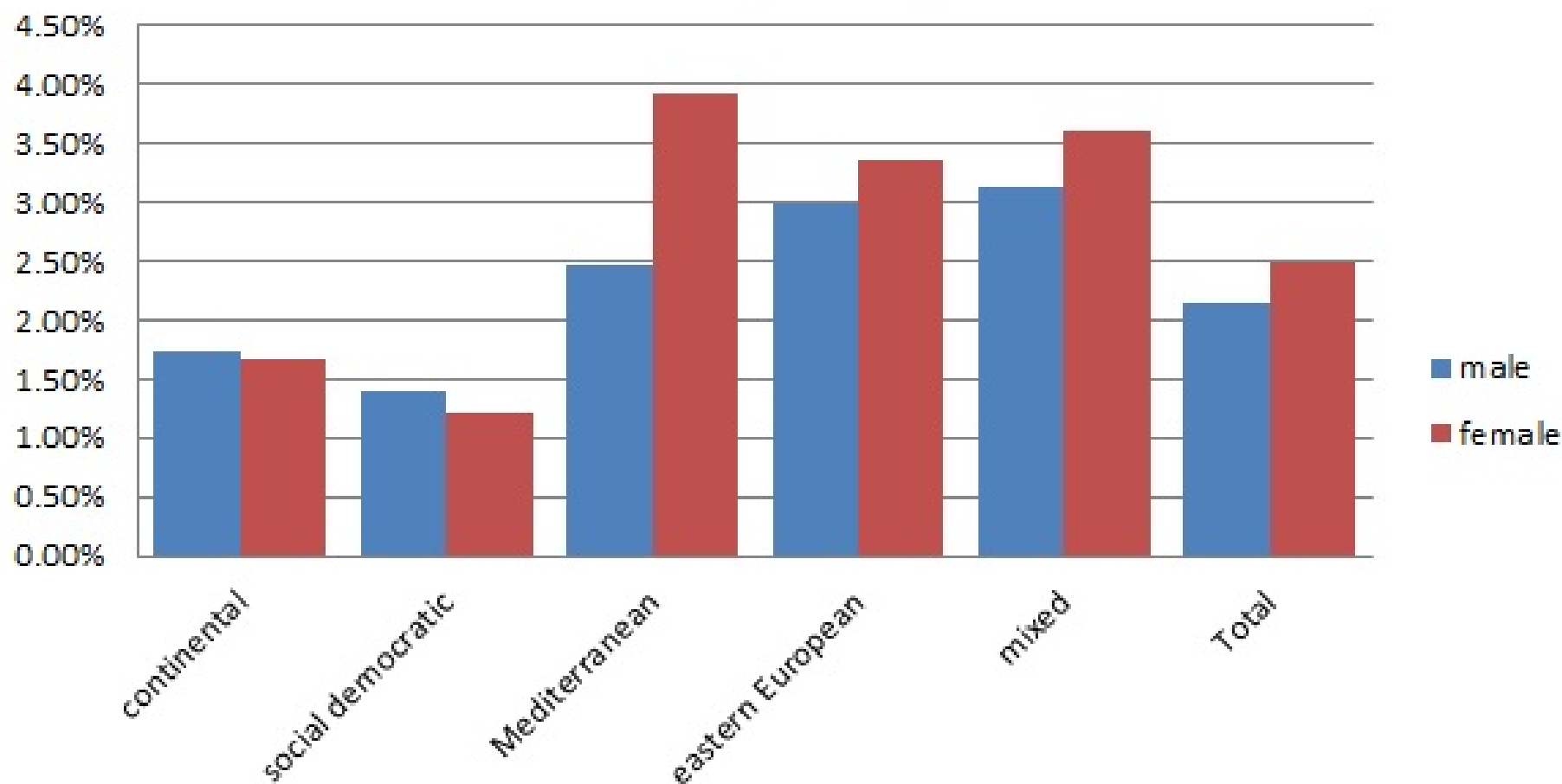
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Unmet needs for elderly care - age and welfare regime' profiles



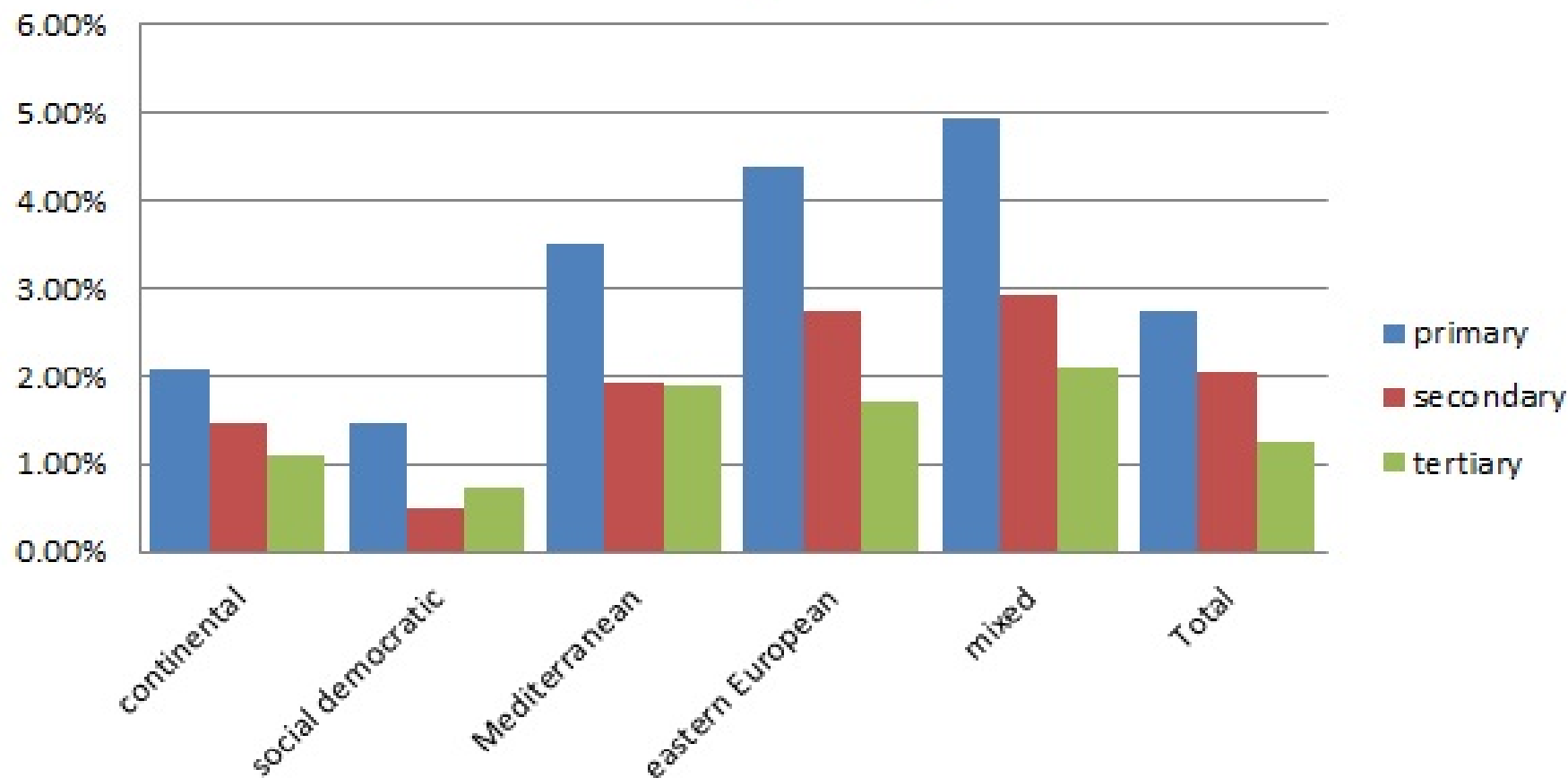
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Unmet needs for elderly care - gender and welfare regime' profiles



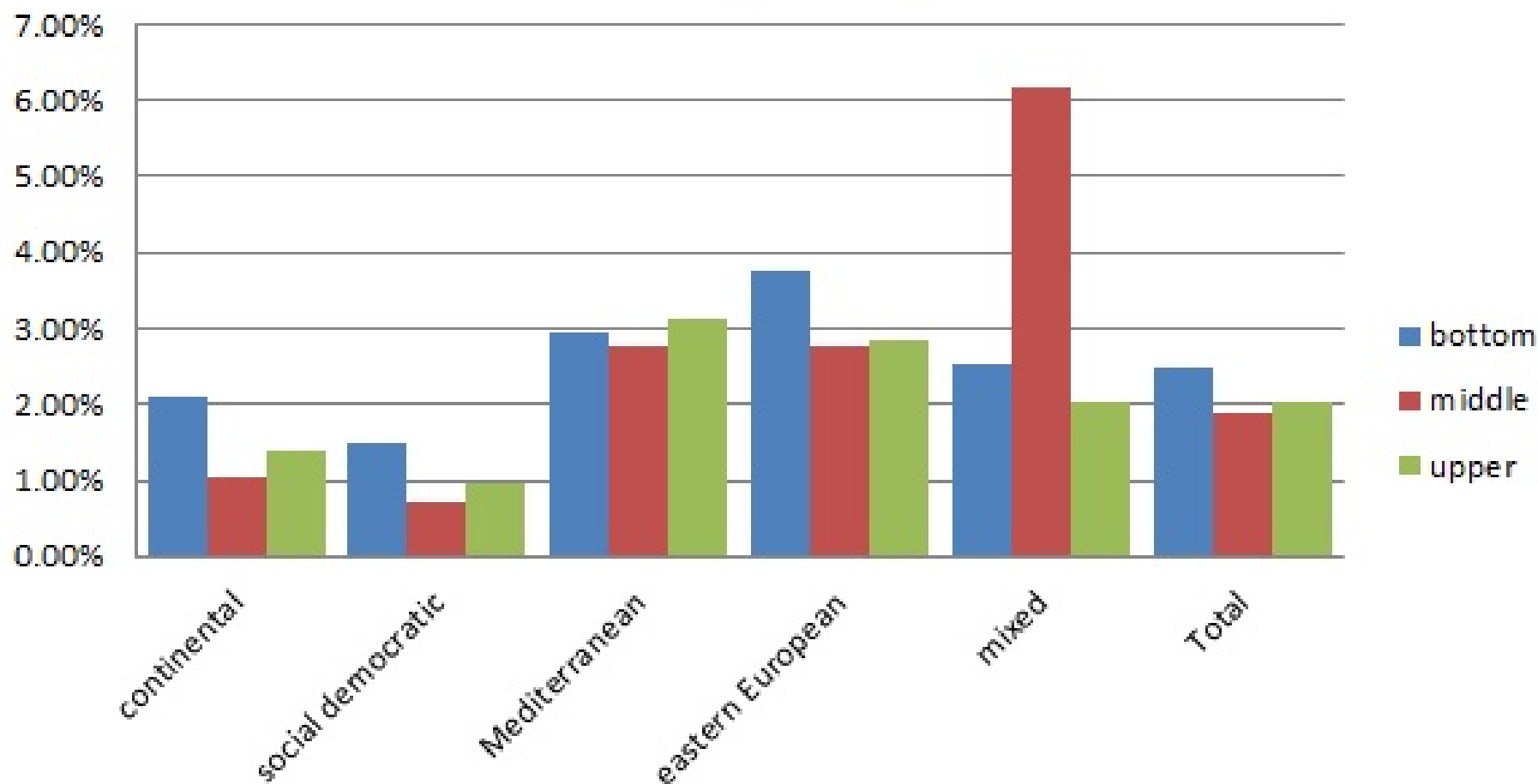
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Unmet needs for elderly care - education and welfare regime' profiles



Data

Unmet needs for elderly care - income and welfare regime' profiles



Variables used

Variables:

- SHARE index of social deprivation, separated into two components: „**material**“ and „**social**“ deprivation; for the material deprivation 13 different items/variables are used and for the social deprivation 15
- Need variables: **depression** (dummy: 1 if a respondent has a score of 4 or more on the Euro-D Depression scale; and 0 otherwise); **functional limitations** (dummy: 1 if a respondent has two or more functional limitations; and 0 otherwise); **chronic diseases** (dummy: 1 for 4 diseases or more; and 0 otherwise)
- Availability of informal carers: **Living alone** (dummy); **Child distance** (1 for having a child in the range of 25km, following Suanet et al. 2012)
- Controls: **gender** (1 for women; 0 for men); **age** (nominal); **income** (logarithm, winsorised); **education years**; **settlement** (1 for urban; 0 for rural)
- **Welfare regimes**, 5 types: 1 – social democratic (Sweden, Denmark); 2 – continental (Austria, Germany, Netherlands, France, Switzerland, Belgium, Luxembourg); 3 – Mediterranean (Spain, Italy); 4 – eastern European (Czech Republic, Slovenia, Estonia); 5 – mixed (Israel)

Main results – summary, Heckman

	Need for care			Unmet need		
	Coef.	z	Sig.	Coef.	z	Sig.
Gender (1=women)	-0.1232	-4.06	***	-0.0048	-0.06	
Age	0.0409	19.60	***	-0.0237	-4.15	***
Education_years	-0.0064	-1.48		-0.0110	-1.03	
Income (logarithm, winsorised)	-0.0046	-0.26		-0.1486	-3.34	***
Settlement (1=urban)	0.0771	2.42	**	-0.0215	-0.27	
Living alone				-1.3108	-9.94	***
Child distance (25km)				-0.0824	-0.93	
Func_limit	0.3605	61.85	***			
Chronic disease (1=2 or more)				-0.2186	-2.38	**
Depression (1=4 or more)				-0.2266	-2.89	***
Social deprivation	0.1410	11.42	***	-0.0395	-1.35	
Material deprivation	0.0497	6.41	***	0.0203	1.10	
Social democratic	0.1110	1.84	*	0.2082	1.23	
Continental	0.3120	7.80	***	-0.0969	-0.95	
Mediterranean	-0.0013	-0.03		0.2986	2.88	***
Mixed	0.5259	6.62	***	-0.0044	-0.02	
Observations	29360					
Wald chi2	151.67***					
Log Likelihood	-5565.36					

Main results – summary, multinomial logit

	Type of need							
	Formal care		Informal care outside household		Informal care within household		Unmet needs	
	Odds ratio	Std.Err	Odds ratio	Std.Err	Odds ratio	Std.Err	Odds ratio	Std.Err
Gender (1=women)	0.856**	(0.065)	0.655***	(0.049)	0.670**	(0.124)	0.755**	(0.099)
Age	1.107***	(0.006)	1.056***	(0.005)	1.077***	(0.014)	1.037***	(0.010)
Education_years	1.000	(0.010)	0.968***	(0.010)	0.971	(0.026)	0.971	(0.019)
Income (logarithm, winsorised)	1.126***	(0.045)	1.078*	(0.044)	0.802*	(0.092)	0.744***	(0.063)
Settlement (1=urban)	1.182**	(0.089)	1.041	(0.080)	1.193	(0.243)	1.009	(0.141)
Living alone	1.132*	(0.085)	1.184**	(0.092)	0.000	(0.000)	0.059***	(0.020)
Child distance (25km)	0.892	(0.068)	1.166*	(0.096)	0.905	(0.208)	0.891	(0.139)
Func_limit	1.964***	(0.029)	1.783***	(0.026)	1.888***	(0.071)	1.779***	(0.045)
Chronic disease (1=2 or more)	1.498***	(0.130)	1.254***	(0.108)	1.516*	(0.383)	1.030	(0.158)
Depression (1=4 or more)	2.073***	(0.147)	2.260***	(0.166)	2.159***	(0.438)	1.602***	(0.217)
Social deprivation	1.356***	(0.036)	1.117***	(0.033)	1.427***	(0.090)	1.099*	(0.061)
Material deprivation	1.057***	(0.020)	1.062***	(0.019)	1.083*	(0.048)	1.106***	(0.035)
Social democratic	1.981***	(0.298)	0.681**	(0.110)	2.390*	(1.093)	1.880**	(0.514)
Continental	2.296***	(0.223)	0.651***	(0.061)	1.554	(0.439)	1.141	(0.207)
Mediterranean	0.612***	(0.072)	0.693***	(0.068)	2.051***	(0.531)	1.084	(0.193)
Mixed	3.676***	(0.659)	1.829***	(0.317)	2.352*	(1.207)	2.079**	(0.673)
Constant	0.000***	(0.000)	0.000***	(0.000)	0.000***	(0.000)	0.002***	(0.002)
Log Likelihood	-8153.507							
Wald Chi2	10016.04							
N	25410							

* p<0.10, ** p<0.05, *** p<0.01

Main results – summary, multinomial logit

Total marginal effects	dy/dx	z	Sig.
Gender (1=women)	-0.0017	-1.26	
Age	0.0001	0.55	
Education_years	-0.0002	-1.20	
Income (logarithm, winsorised)	-0.0034	-3.80	***
Settlement (1=urban)	-0.0004	-0.26	
Living alone	-0.0236	-0.12	
Child distance (25km)	-0.0012	-0.76	
Func_limit	0.0034	12.88	***
Chronic disease (1=2 or more)	-0.0011	-0.67	
Depression (1=4 or more)	0.0028	2.43	**
Social deprivation	0.0000	0.08	
Material deprivation	0.0008	2.46	**
Social democratic	0.0039	1.11	
Continental	0.0003	0.19	
Mediterranean	0.0022	1.22	
Mixed	0.0037	1.10	

Heckman model, Gannon and Davin (2010)

Table 5 Probability of having unmet need for care among people aged 65 and over living at home in Ireland or France

Variable	Bivariate probit with sample selection	
	Need for care	Unmet need among those needing care
Age		
65–69		
70–74	0.227 (0.094)***	0.213 (0.132)
75–79	0.528 (0.106)***	–0.048 (0.141)
80+	0.922 (0.116)***	–0.121 (0.148)
Gender		
Male	–0.457 (0.080)***	0.200 (0.108)*
Female		
Household		
Lives alone		
Lives with spouse only	0.214 (0.097)**	0.025 (0.119)
Lives with spouse and others	0.140 (0.170)	0.181 (0.245)
Lives with others only	0.007 (0.191)	–0.192 (0.209)
Years of education	–0.020 (0.010)**	0.005 (0.013)
Difficulties making ends meet ^a		
Yes	0.287 (0.093)***	0.254 (0.111)**
No		
Missing	0.029 (0.099)	0.027 (0.129)
Number of symptoms (0–12)	0.370 (0.030)***	
Number of chronic conditions (0–15)	0.202 (0.032)***	
Number of functional limitations (0–10)		–0.068 (0.028)***
Number of ADL restrictions (0–6)		–0.126 (0.079)
Number of IADL restrictions (0–7)		–0.684 (0.070)***
Cognitive functions [0–10 (memory score delayed)]	–0.079 (0.020)***	
Country dummy		
Ireland	0.358 (0.087)***	0.446 (0.110)***
France		
Constant	–0.665 (0.170)***	0.291 (0.236)

Log pseudo-likelihood = –1255.8

$\rho(1.2) = 0.349 (0.142)$

Discussion of findings

- **Deprivation:**
- Coefficients on the **deprivation indexes** in the multinomial models are significant and positive after controlling for the confounders
- Confirms our first hypothesis: the more someone is socially excluded, the higher is the probability of not receiving the needed care
- Particularly, **material deprivation** appears as the more significant predictor of unmet need for long term care
- **Welfare regime differences:** no clear differences visible, particularly in relationship to the Eastern European regime

Discussion of findings

- **Need variables:** controversial evidence; some results (Gannon & Davin; our Heckman model) suggest the negative influence – respondents with more need tend to have less unmet needs; our multinomial model evidence shows a positive effect, particularly for functional limitations;
- **General covariates:** women and older people tend to have more unmet needs (multinomial model); younger elderly people tend to have more unmet needs (Heckman)

Some important paths for future work

- Apparent disparity between results of multinomial model and Heckman – the latter sometimes brings results in contrary to the general expectations
- Possible explanation: people who have higher need tend to receive help more frequently – we tested this assumption with **finite mixture models**, regressing provision of care on need variables (and other covariates); so far no evidence on the existence of substantial heterogeneity in the regression slopes
- Need of better explanation – two clear options:
 - 1) The Heckman model provides misplaced results
 - 2) Determinants of unmet needs have to be studied more carefully
- We would like to provide policy conclusions (some are obvious: measures to reduce material (and social) deprivation would reduce unmet needs for long-term care; measures of improving health and reducing functional limitations would reduce unmet needs; etc.)
- BUT: this riddle has to be solved in the first place.

THANK YOU FOR LISTENING!

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