# Avoidable Hospitalisations of Patients in the Oldest Age Groups (80+) in Austria

L. Rainer, A.E. Schmidt, M. Zuba, S. Mathis-Edenhofer
– *Austrian Public Health Institute, Stubenring 6, 1010 Vienna*

Background

- **Health risks due to unnecessary hospitalisations may occur particularly for older patients.** Prevalence of ambulatory care sensitive conditions (ACSC) treated in hospitals is a common proxy for avoidable hospitalisations.
- **Avoidable hospitalisations in older age groups are influenced by availability and quality of long-term care (LTC) services.** Studies in Europe show association between expansion of LTC and reduced hospital discharge rates both for older people living at home (Spiers et al., 2019; Jansen et al., 2019; Costa-Font et al., 2018) and in nursing homes (Fernandez & Forder, 2008; Gaughan et al., 2013; Holmas et al., 2013; Herrin et al., 2015; Forder, 2009).
- **Avoidable hospitalisations are tackled in current health reforms** in many countries including Austria – a country with very high hospital discharge rates (Fig. 1) and lack of integrated care.

Fig. 1: Hospital discharges per 1000 population in the EU, 2015

Source: OECD and European Observatory on Health Systems and Policies, 2017
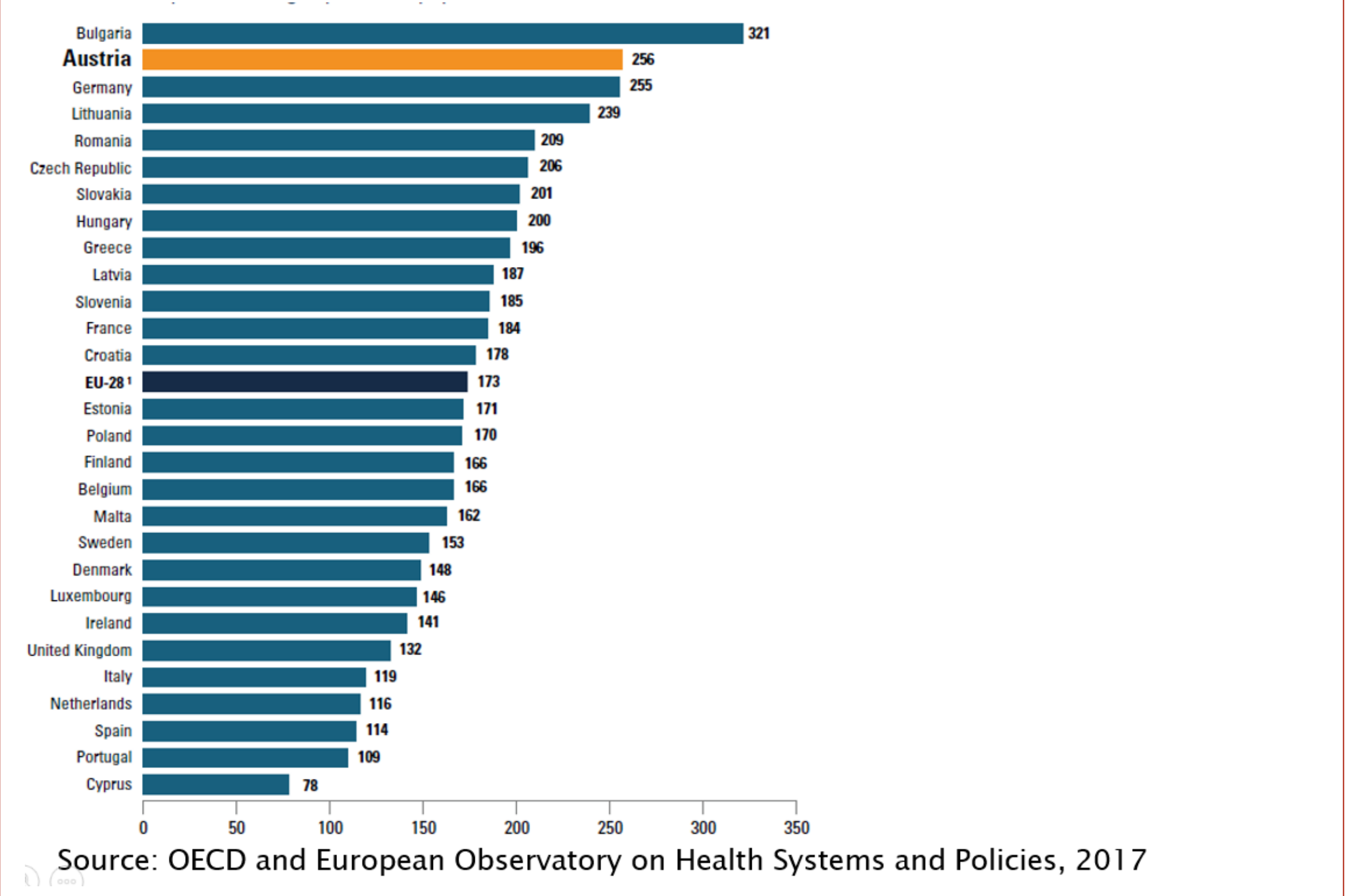
Research question and empirical approach

Fig. 2
ACSC hospitalizations 80+ and density of nursing homes at district level
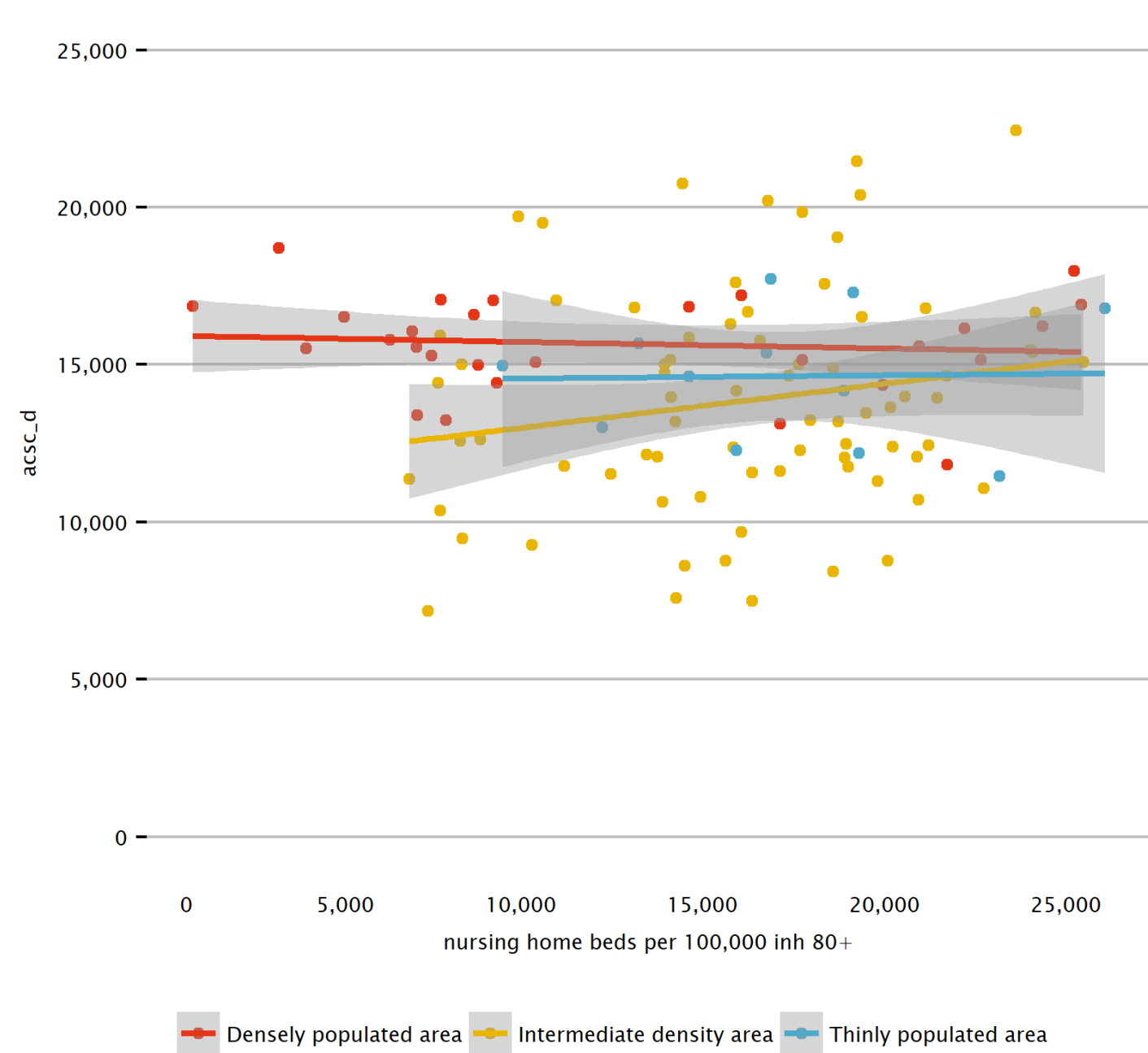
- RQ: **What drives variation in avoidable hospitalisations and hospital bed days among older people (80+) across Austrian districts?**
- Design: Observational study using Austrian **DRG-data at district level** 2012–2017 with linear mixed-effects models (excl. Vienna).
- Explanatory variables: *availability of health care* (density of GPs 'gp_contr', home visits of GPs 'visits', density of hospital beds 'beddens'); *and of LTC* (density of nursing home places 'rescaredens'); *and socio-economic status* (income, life exp., % females, % single hh, degree of urbanisation)
- Descriptive analysis: Nursing home places show no bivariate association with ACSC (Fig. 2), income is inversely associated with ACSC in areas with intermediate degree of urbanization in bivariate analysis.
- Limitations: No mobile care data, no individual level data, no causal inference

Results and discussion

Main results from multivariate analysis (excl. Vienna):
(1) Low-income districts display higher ACSC rates
(2) Residential care density associated neither with bed days nor ACSC rates
(3) Share of single housholds (proxy for informal care) associated neither with bed days not ACSC rates
(4) Within health care, inverse association bw GP density and hospital bed days – substitution effect
(5) ACSC rates significantly higher in urban areas (w/o VIE)

Discussion:
- Avoidable hospital admissions affect the oldest in economically disadvantaged regions more than elsewhere in Austria
- Mechanisms regarding care at home and hospital use need to be investigated further

Dep. Var.	*Linear mixed effects* BED DAYS	ACSC	Dep. Var.	BED DAYS	ACSC
year fixed-effects	YES	YES	pop_fem	−708,383.800	−12,783.860
				(691,919.400)	(10,495.830)
state fixed-effects	YES	YES	single	78,259.290	−5,813.218
district effects	random	random		(362,549.900)	(8,007.783)
beddens	67.381***	0.525	urban_area	245,841.100***	3,580.553**
	(19.808)	(0.415)		(75,464.480)	(1,640.462)
gp_contr	−174,463.900*	958.387	rural_area	86,139.110*	275.121
	(94,806.040)	(1,462.366)		(44,000.820)	(978.287)
visits	−8.583	−0.125	Constant	491,428.900	46,903.730***
	(13.880)	(0.307)		(860,800.000)	(11,586.880)
rescaredens	0.128	0.039	Obs.	552	552
	(3.542)	(0.078)	Log Lh	−7,261.783	−4,870.467
lifeexp	8,299.508	−147.125	AIC	14,575.570	9,792.934
	(8,444.485)	(97.068)	BIC	14,687.720	9,905.086
income	−2.112	−0.383**	Note:	*p<0.1; **p<0.05; ***p<0.01	
	(6.877)	(0.152)			

Std. Beta-Coeff.
0.4 – 0.6
0.2 – 0.4
0.0 – 0.2

Gesundheit Österreich
GmbH