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Unmet medical needs and health care accessibility in seven countries of Eastern Europe

P. Marcin Sowa[1*], James R.G. Butler[1], Luke B. Connelly[2]

ABSTRACT

The study investigated the magnitude and structure of health care access barriers and utilisation inequalities in seven countries of Eastern Europe. Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, and Slovakia were examined over the period 2005-2009. The dataset containing 574,390 observations was derived from the European Union Statistics on Income and Living Conditions (EU-SILC). Logit and multinomial logit models were estimated for each country-year combination to inspect the relationship between respondents' socio-economic characteristics, the probability of reporting unmet needs for examination or treatment, and the reason for the need not being met.

We found that health care was most easily accessible in the Czech Republic and Slovakia. Affordability issues and prohibitive waiting times were prevalent in Poland and the Baltic States. Mobility and information represented minor access barriers. The poorest households, the unemployed, working age cohorts and women were more exposed to problems in accessing health care than the population at large. Access conditions improved over the analysed period.

Substantial differences exist among countries that constitute an arguably homogenous group of post-communist, new EU member states. The nature of access barriers is indicative of coverage gaps and inadequacy of public sector resources relative to need, which call for systemic solutions.

Keywords: health care access, utilisation, inequalities, waiting times, Eastern Europe

JEL classification: C25, I14, I18, P3

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Introduction

Access is the first and critical prerequisite for providing an adequate response to a health care need at any given level of care. In the case of primary care, it creates an opportunity for a medical professional to assess the urgency and severity of the need, allowing for prioritisation of further actions towards best health outcomes and containment of costs. Access to secondary care enables a specialist examination and medical/surgical management, thus maximising the effects of treatment. Timely tertiary care is often life-saving. It naturally follows that ensuring access to health care is a matter of priority in any patient-oriented health care system. The OECD (2004) identifies access as a key attribute of high-performing health care systems, on a par with efficiency, quality, responsiveness, affordability and financial sustainability.

Seven new EU member countries of Eastern Europe (EE7) studied in this paper enjoy comparable levels of macroeconomic and socio-demographic parameters, and share a history of achievements in institutional development. They also form a cluster of post-communist welfare states that, among other things, provide nearly universal coverage by the means of statutory social health insurance (cf. Fenger, 2007). Their present health care systems originated from the Soviet Semashko model that operated before 1989, in which equitable and virtually unrestricted access to care was a cornerstone assumption. The period of transition brought a number of fundamental changes to health care in the region, including a shift from the integrated, state-run system towards more decentralised, pluralistic and contract-based systems. Despite favourable trends in overall health outcomes (Stillman, 2006), issues in accessing care intensified and persisted, remaining a major source of dissatisfaction. The problem is politically pressing, as these populations have a historically built expectation of universal availability of health care procured by a paternalistic state (Kornai and Eggleston, 2001).

Despite the shared historical background of EE7, the choice of strategies for health care transition resulted in various levels of system performance being achieved. This study aims to provide comparative evidence on the magnitude of difficulties in accessing health care and their socio-economic determinants. The comparative perspective is emphasised because, for historical and macroeconomic reasons, the countries constitute a peer group that is relevant for benchmarking of economic performance. Within-region studies have the capacity to identify best performers and illustrate the (wasted) potential of laggards. In so doing, these studies are more meaningful than more abstract comparisons between the transition and industrialised countries. The evidence should provoke a discussion on the institutional design of the health care systems, leading to policy-relevant conclusions regarding gaps in coverage and the adequacy of health care funding mixes presently applied in the region. This has further implications for broader social policy, as inequalities of health and health care access form part of a bigger picture of growing economic differences in Eastern European countries, along such dimensions as gender, age, region and labour force status (Heyns, 2005).

Implications of unmet medical needs

Barriers to accessing health care take various financial and non-financial forms. Financing constraints apply to both public and private spheres, leading to excessive waiting times in the former and affordability issues in the latter. Relevant to securing an adequate level of access to health care are comprehensiveness of insurance coverage, the degree of cost-sharing, non-financial factors such as information, education and geographical distribution of providers, an adequate structure of the supply side (including informal care) and availability of new technologies (OECD, 2004). Social factors such as education and occupation have also been shown to affect health status in various direct and indirect ways, including exposure to environmental risk factors, risky behaviours, and effects on the capacity to access and benefit from health care (Adler and Newman, 2002). To the extent that access is a prerequisite for utilisation, inequitable access to health care may escalate the inequality of utilisation, and in consequence – of health.

This study relies in part on an analysis of unmet needs reported by individuals. The central theoretical question is therefore how information about unmet medical needs can be translated into broader conclusions regarding health care accessibility. A subjective unmet need for medical examination or treatment may indicate either (1) a solicited health care demand that was not met by an adequate supply (of either services or insurance coverage), or (2) unsolicited demand, resulting from either individual preferences leading to forgoing care or an actual/anticipated limitation of financial capacity, mobility or information. Drawing valid conclusions requires a careful delineation of these eventualities. While unmet solicited demand and demand unsolicited in result of a health care deficiency can be credited to the health care system, forgoing care for other reasons ought to be identified and excluded as irrelevant.

Existing studies

A great part of the rich evidence of health (care) inequalities focuses on health status and health outcomes, while studies that centre on access and utilisation remain relatively scarce (Bambra et al., 2010). This is particularly the case in the former Eastern bloc, where the scarcity of suitable data has kept the number of published empirical studies low.

Kunst (2009) reviews the existing evidence on health care access and utilisation inequalities in Eastern Europe. In scope for his literature review are studies of socio-economic status implications for avoidable deaths, utilisation of health care, and cervical cancer screening. He concludes that inequalities in health and mortality are likely to partially result from inequalities in accessibility, utilisation and quality of services.

Balabanova et al. (2004) report socio-economic determinants of health care access and utilisation patterns in eight former Soviet Republics. Because of its objectives and methods, their paper can be viewed as complementary to this study in focusing on another set of the former Eastern bloc countries.

The authors find that medical care displays a great variation in the region, ranging from readily accessible in Belarus and Russia to poor and unaffordable in Armenia and Georgia; additionally, they report considerable inequalities within each country. A follow-up study by Balabanova et al. (2012) shows some improvements in accessibility and financial protection, as well as lower within-country inequalities. However, they also report that the problem of unaffordability persists, particularly among the most disadvantaged social groups, and paying for care, formally or informally, has become commonplace despite the strengthening of public systems. In another study, Balabanova and McKee (2002) expose the intricacies of accessing health care in a system with prevalent informal payments, a setting that applies in many if not all countries of Eastern Europe. In 1997 Bulgaria, they find informal payments to scale accordingly to the ability to pay, and report that poorer and female patients are less likely to receive higher and more expensive forms of specialist care.

Some light is also shed onto the problem by the Euro Health Consumer Index (Björnberg, 2012) that in its most recent edition included 10 EU member countries from Eastern Europe. Although the relevant 'accessibility score' is limited to wait times in five treatment categories, the results are indicative of the countries' comparative performance. In the report, Slovakia and the Czech Republic receive the highest marks in the group, indicating relatively high accessibility, while Latvia and Poland are the low scorers.

Methods

Study aims

The study involves seven EU countries of Eastern Europe: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia, over five years (2005-09). By adopting a robust statistical approach, it addresses the questions of (a) the probability of experiencing an unmet health care need, i.e. the magnitude of access barriers; (b) primary reasons behind the reported unmet needs, i.e. the nature of access barriers, and (c) socio-economic determinants of access to care, i.e. the structure of inequality. Evidence in these areas may reveal systematic differences in performance between countries that made varied choices regarding the evolution of their systems after 1989. The longitudinal dimension gives an opportunity to inspect if ongoing changes in health care organisation and growing health expenditure go hand in hand with more equitable access and lower probability of reporting unsatisfied health care needs. It also provides an insight on whether internationally there is a convergence or divergence in this aspect of health system performance.

Data and variables

The primary concern of the analysis is individual-level, self-reported unmet needs for medical examination or treatment within 12 months prior to survey. The services covered by this questionnaire include GP, specialist, and other medical consultations that qualify as 'mainstream medicine'. This information is supplemented by a follow-up question about the main reason behind the unmet need. Explanatory variables comprise both individual- and household-level socio-economic characteristics.

The variables used in this study include indicators of health status, demographic information, educational attainment, employment status, and residential location: descriptive statistics are presented in Table 1. All variables used in this study accord with the original survey definitions (Eurostat, 2009).

Table 1: Descriptive statistics of the study sample

Variable	Category	2005		2006		2007		2008		2009	
		N	%	N	%	N	%	N	%	N	%
Health status	very bad	4,044	*4.0*	4,077	*3.7*	4,206	*3.7*	4,173	*3.7*	3,691	*3.3*
	bad	15,172	*15.1*	16,289	*14.8*	16,587	*14.6*	15,915	*14.1*	15,343	*13.9*
	fair^	31,659	*31.5*	34,949	*31.8*	35,105	*30.9*	33,273	*29.4*	32,992	*29.9*
	good	35,979	*35.8*	40,184	*36.6*	41,989	*37.0*	43,857	*38.8*	43,050	*39.0*
	very good	13,658	*13.6*	14,430	*13.1*	15,578	*13.7*	15,929	*14.1*	15,443	*14.0*
Sex	female^	54,608	*53.8*	60,853	*53.9*	63,254	*53.8*	65,382	*53.8*	65,263	*54.0*
	male	46,846	*46.2*	52,035	*46.1*	54,235	*46.2*	56,215	*46.2*	55,699	*46.0*
Age	below 30	24,531	*24.2*	26,469	*23.4*	26,582	*22.6*	26,895	*22.1*	26,271	*21.7*
	30-39	15,080	*14.9*	16,653	*14.8*	17,574	*15.0*	17,956	*14.8*	17,786	*14.7*
	40-49^	18,017	*17.8*	19,271	*17.1*	19,437	*16.5*	19,770	*16.3*	19,541	*16.2*
	50-59	18,117	*17.9*	20,104	*17.8*	21,273	*18.1*	21,897	*18.0*	21,842	*18.1*
	60-69	12,559	*12.4*	14,416	*12.8*	15,595	*13.3*	16,679	*13.7*	17,263	*14.3*
	70 and more	13,150	*13.0*	15,975	*14.2*	17,028	*14.5*	18,400	*15.1*	18,259	*15.1*
Education	primary	13,652	*13.5*	11,750	*10.6*	10,734	*9.3*	10,161	*8.6*	9,746	*8.3*
	secondary^	73,679	*72.9*	83,039	*75.0*	87,205	*75.9*	90,678	*76.3*	89,335	*75.7*
	tertiary	14,123	*13.9*	18,099	*16.0*	19,550	*16.6*	20,758	*17.1*	21,881	*18.1*
Household income	poorest	20,282	*20*	22,571	*20*	23,493	*20*	24,309	*20*	24,182	*20*
	2nd quintile	20,285	*20*	22,579	*20*	23,494	*20*	24,321	*20*	24,192	*20*
	middle^	20,293	*20*	22,573	*20*	23,495	*20*	24,319	*20*	24,191	*20*
	4th quintile	20,292	*20*	22,578	*20*	23,497	*20*	24,317	*20*	24,193	*20*
	richest	20,302	*20*	22,587	*20*	23,510	*20*	24,331	*20*	24,204	*20*
Basic economic activity	employed^	48,306	*47.6*	54,990	*51.7*	58,317	*49.6*	61,211	*50.3*	57,898	*47.9*
	unemployed	8,365	*8.2*	7,441	*5.3*	5,996	*5.1*	4,764	*3.9*	7,240	*6.0*
	retired	25,886	*25.5*	28,725	*27.2*	30,681	*26.1*	32,412	*26.7*	32,728	*27.1*
	otherwise inactive	18,897	*18.6*	21,728	*19.9*	22,495	*19.1*	23,210	*19.1*	23,093	*19.1*
Area of residence	urban	35,699	*35.2*	38,205	*33.8*	39,311	*33.5*	40,235	*33.1*	40,198	*33.2*
	intermediate^	14,705	*14.5*	16,723	*14.8*	17,878	*15.2*	19,522	*16.1*	18,536	*15.3*
	rural	51,050	*50.3*	57,960	*51.3*	60,300	*51.3*	61,553	*50.6*	62,228	*51.4*

Health status is self-assessed. Household income levels are quintiles of total disposable household income in 12 months prior to survey. Area of residence follows the DEGURBA classification (Eurostat 2009). Figures reported in the '%' column may not add up to 100% because of rounding.

The analysis is based on survey data from the European Union Statistics on Income and Living Conditions (EU-SILC). All private households and all persons aged 16 and over within the households are eligible for the survey procedure. Study sample sizes are presented in Table 2. EU-SILC data provides nationally representative samples of both households and individuals. The selection of countries for this study ensures that basic concepts and definitions are fully comparable in terms of the reference population, private household definition and household membership (Wolff et al., 2010). The

dataset has been previously relied on in a number of studies of socio-economic determinants of health and health care access in Western Europe (e.g. Allin and Masseria, 2009; Hernández-Quevedo at al., 2010).

Table 2: Sample size and share of country total population

Country	2005		2006		2007		2008		2009	
	N	%	N	%	N	%	N	%	N	%
Czech Republic	8,628	*0.08*	14,856	*0.14*	19,384	*0.19*	22,754	*0.22*	19,765	*0.19*
Estonia	9,643	*0.72*	13,007	*0.97*	11,971	*0.89*	10,851	*0.81*	11,308	*0.84*
Hungary	14,791	*0.15*	16,516	*0.16*	18,490	*0.18*	18,710	*0.19*	20,973	*0.21*
Latvia	7,913	*0.34*	9,071	*0.40*	9,270	*0.41*	10,910	*0.48*	12,207	*0.54*
Lithuania	9,929	*0.29*	10,219	*0.30*	10,913	*0.32*	10,473	*0.31*	11,214	*0.34*
Poland	37,671	*0.10*	36,589	*0.10*	34,888	*0.09*	33,801	*0.09*	31,674	*0.08*
Slovakia	12,879	*0.24*	12,630	*0.23*	12,573	*0.23*	14,098	*0.26*	13,821	*0.26*

Data quality is managed centrally by Eurostat, with the aims of minimising the bias of non-random missing data, ensuring consistency between results of different analyses, and providing a workable dataset to researchers (Eurostat, 2009). A number of possible error categories are identified in the survey methodology: conceptual, data collection, processing, item non-response, coverage, unit non-response, and sampling. Data accuracy and comparability are achieved through detailed guidelines for local surveying units, and post-collection techniques. Handling of missing data takes into account the nature of non-response and may apply weighing, imputation or micro-simulation. Sampling errors are inspected using Jack-knife Repeated Replication. The dataset is made available after confirming it has the attributes of relevance, accuracy, reliability, coherence and comparability. The above aspects of data quality are handled internally by Eurostat, and the published microdata do not contain information that would allow for reassessing non-response rates and re-estimating sampling errors (Verma and Betti, 2010).

Statistical methods

The sample sizes allow for a multivariate regression of each country-year independently, enabling an estimation and comparison of country-specific socio-economic patterns of access. This approach is preferred to an analysis of cross-sectionally pooled data, which would impose the same coefficients across countries, effectively leading to a loss of information on regional variation.

The binary answer to the question of unmet medical needs is used as the response variable in a logit model. The conventional logit approach is employed (McFadden, 1974; Wooldridge, 2002), with the latent variable specification of:

$$y_i^* = x_i\beta + e_i = \beta_1 + health\beta_2 + sex\beta_3 + age\beta_4 + edu\beta_5 + inc\beta_6 + act\beta_7 + area\beta_8 + e_i \quad (1)$$

In the above equation, x_i is a vector of individual characteristics, β is a vector of unknown parameters, and e_i is an unobserved random component that is assumed to be independently and identically distributed (IID). In the model, individual characteristics are represented with a set of binary variables that correspond to variable categories presented in Table 1.

The latent function represents the capacity of a health care system to accommodate health care needs of a person whose socio-economic characteristics are x_i. Satisfying all the needs over the 12 month period produces the outcome y_i=0, while not providing access to health care at least once in the timeframe results in y_i=1. Hypothesised is H_0: $\beta_2 = \ldots = \beta_n = 0$, which reflects the situation of equitable access where no individual characteristic leads to a statistically significant difference in the probability of reporting unmet needs for examination or treatment.

Health care needs are more likely to occur in individuals of poor health, who can thus be expected to seek medical care more often. This increased occurrence of need in any given period of time makes them more likely to experience trouble in accessing care. For this reason, health status assumes the role of a control variable in this framework.

The income variable, defined as monthly disposable household income, was tabbed into quintiles for each country-year combination. This implies that the thresholds for the five income bands are different in each case, but permits the estimation of effects of a relative position in the social income stratification, making the interpretations consistent in the light of the longitudinal and cross-sectional variations in income levels. Moreover, modelling income as bands permits each strata to have its own income effect, whereas a continuous variable approach fits an overarching sample coefficient estimate. Nonetheless, an alternative specification using continuous (linear and quadratic) age and income variables was considered in sensitivity testing. The resulting covariate patterns were similar in terms of statistical significance and the magnitude of coefficients, suggesting that the treatment of age and income as categorical variables in the base model did not introduce arbitrariness into the results. Full results of the alternative specification are available as an electronic appendix.

A multinomial logit of the same latent specification (eq. 1) is used to explore specific barriers that may exist for access to health care. The probability of reporting a specific problem is assumed to be a non-stochastic function of observable individual characteristics and an unobservable error term. Formally, modelled is $P(y_i=j|x_i)$, where the levels of y_i j=0,…,4 are derived from answers to the follow-up question about the main reason behind the unmet need. Accordingly, the values of j represent: (1) the problem of affordability (including a lack of insurance or inadequate coverage); (2) the issue of excessive waiting times (including a lack of referral); (3) the problem of mobility in getting to the place of service provision, indicating an inadequacy of the geographical distribution of providers to the level of population mobility; (4) the barrier of informational or educational nature, such as not being able to

identify or locate the right specialist and also a fear of treatment. These four groups of issues are commonly referred to as the *health care system deficiencies*. Finally, j=0 is the base category that comprises reasons not attributable to the health care system, such as individual preferences (e.g. for alternative medicine), priorities (e.g. work duties) and other personal choices (e.g. self-treatment) that lead to forgoing health care despite the need.

The probability predictions correspond to the base set of characteristics denoted with '^' in Table 1. All estimations were carried out in Stata v.12.

Specification tests

In all of the logit models, the Likelihood Ratio Chi-Square test led to a strong rejection of the hypothesis that all variables equal zero. The models were further scrutinised with a specification test ('linktest') and the Hosmer-Lemeshow (2000) goodness-of-fit test with 10 quantiles. The conditions were considered satisfactorily met at the 5% significance level, with both tests passed by 32 (out of 35) models. The models of Lithuania 2006 and 2007 failed the specification test, while Lithuania 2006 and Hungary 2009 failed the goodness-of-fit test. Caution was taken in drawing conclusions from these results; more specifically, individual interpretations were avoided and the cross-sections were only considered in the context of an overall country trend.

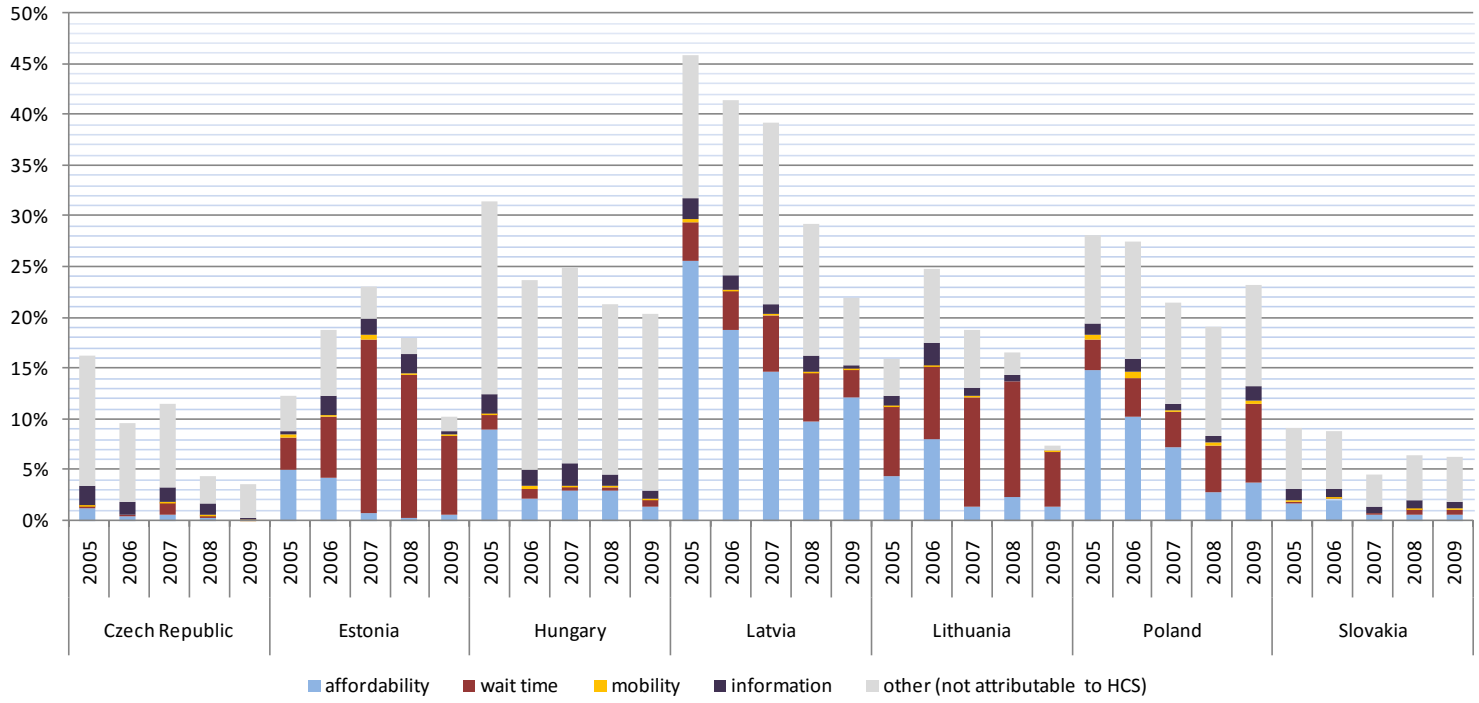
In the multinomial logit models, the Hausman test was used to verify whether the condition of independence of irrelevant alternatives (IIA) was satisfied. Following Freese and Long (2001), the tests were performed using the mlogtest command (version 1.7.6 jsl 2009-10-18). In every case the omitted alternative was found independent of other alternatives with 95% confidence, thus leading to the conclusion that the assumption was met.

Results

Probability of experiencing an unmet health care need

Figure 1 provides a graphical and tabular presentation of predicted probabilities of experiencing an unmet need in each country for each year, at the base set of characteristics and after controlling for the effect of other covariates. These post-logit predictions show that considerable differences exist within the group of EE7 countries. Populations of the Czech Republic and Slovakia enjoy health care that is relatively accessible, with the existing barriers low, stable and primarily extrinsic to the health care systems. As of 2009, in the Czech Republic the probability of not being able to access health care in need was 3.57%, however, only 0.28% in consequence of a health care system deficiency, and mainly because of waiting times and information issues. The corresponding numbers in Slovakia were 6.38% and 1.92%, with affordability and waiting times being the most prevalent barriers.

Figure 1: Predicted probability of reporting an unmet need for medical treatment or examination within a 12-month period, controlling for covariates, and primary reasons



Reason	*Czech Republic*					*Estonia*					*Hungary*					*Latvia*					*Lithuania*					*Poland*					*Slovakia*				
	2005	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**
Affordability	1.33	0.55	0.62	0.29	0	5.12	4.33	0.82	0.37	0.6	9	2.29	3.04	3.03	1.4	25.6	18.9	14.7	9.74	12.2	4.41	8.09	1.48	2.3	1.42	14.9	10.3	7.21	2.83	3.74	1.76	2.14	0.65	0.69	0.65
Wait time	0.29	0.07	1.29	0.36	0.16	3.15	5.92	17.1	14	7.85	1.65	0.87	0.37	0.31	0.83	3.94	3.9	5.52	4.91	2.75	6.94	7.23	10.8	11.4	5.6	3.09	3.87	3.53	4.68	7.79	0.21	0.16	0.17	0.58	0.51
Mobility	0.03	0	0.05	0.03	0.02	0.21	0.21	0.4	0.18	0.14	0.03	0.39	0.04	0.21	0.05	0.23	0.03	0.21	0.03	0.03	0.02	0.03	0.08	0	0	0.38	0.59	0.22	0.3	0.34	0.03	0.01	0	0.02	0.18
Information	1.88	1.21	1.4	1.06	0.1	0.35	1.9	1.57	1.94	0.29	1.76	1.58	2.31	1.01	0.71	2.03	1.42	0.92	1.63	0.37	1.06	2.23	0.81	0.63	0	1.08	1.17	0.64	0.6	1.34	1.19	0.78	0.68	0.73	0.58
Other	12.8	7.85	8.19	2.73	3.29	3.57	6.47	3.22	1.6	1.42	19.1	18.7	19.3	16.8	17.4	14.1	17.1	17.8	13	6.7	3.63	7.32	5.67	2.3	0.42	8.8	11.6	9.92	10.7	10	6.06	5.73	3.05	4.52	4.46
Total	16.4	9.67	11.5	4.46	3.57	12.4	18.8	23.1	18.1	10.3	31.5	23.8	25	21.3	20.4	45.8	41.4	39.2	29.3	22.1	16.1	24.9	18.8	16.7	7.44	28.2	27.5	21.5	19.1	23.2	9.25	8.82	4.55	6.55	6.38
Total HCS	3.53	1.82	3.36	1.73	0.28	8.83	12.4	19.9	16.5	8.89	12.4	5.12	5.77	4.56	2.98	31.8	24.2	21.3	16.3	15.4	12.4	17.6	13.1	14.4	7.02	19.4	15.9	11.6	8.4	13.2	3.19	3.09	1.5	2.03	1.92

Post-logit probability predictions at base characteristics (denoted '^' in Table 1). The probabilities provided concern population at large, not those seeking care. In the figure, the height of each column indicates the estimated probability of an individual reporting at least one unmet need for examination or treatment in 12 months prior to survey ('Total' in the table). The column height excluding the grey 'other' category illustrates the probability of reporting an unmet need because of the health care system deficiencies ('Total HCS' in the table). The table represents values corresponding to those presented in the figure, expressed in percentage terms.

In Estonia and Lithuania, the frequency of unmet needs peaked in 2006-07, however, by 2009 it scaled down to below the level of 2005. Contrary to Czech Republic and Slovakia, in the two above countries waiting times were the primary factor preventing people from accessing care. In 2009, the probability of reporting an unmet health care need for a reason attributable to the health care system was 8.9 and 7 per cent, in Estonia and Lithuania respectively.

Hungary shows a distinct problem structure. The rates of unmet medical needs were considerably higher than in the previous countries (20.4%), however, this was mainly due to reasons not amenable to the health care system. Looking exclusively at the situations that emerged from health care deficiencies, over the period 2005-09, the magnitude of access barriers was reduced from 12.4% to 3%, with affordability standing out as the major issue.

Latvia and Poland are the regional laggards, reporting in 2009 comparable extents of access problems, both with respect to all reasons (with the probability over 22%) and those attributable to the health care system (over 13%). While in Latvia affordability was a common issue, in Poland it was coupled with problematic waiting times.

The longitudinal dimension of results shows that access conditions generally improved. Comparing 2005 and 2009, the probability of reporting unmet health care needs decreased in all the countries by 17-78% (the average reduction of 41%).

Access barriers

Over the analysed period, affordability became a less important constraint on access to health care; in all the countries the probability of reporting unmet needs for an affordability reason decreased by 52 to 88 per cent, except for Czech Republic, where in 2009 the problem was nearly non-existent. In Latvia, on the other hand, 12.2% of the population would not access care for affordability reasons. While Latvia is an outlier in this aspect (the remaining countries average 1.3%), the statistical evidence shows substantial regional differences in the prevalence of the problem.

With respect to waiting times, two groups emerge from the analysis. Estonia, Poland and Slovakia experienced a nearly 50% expansion in the frequency with which waiting was reported to be an access problem. In the remaining four countries the frequency of occurrence of this item was reduced by 19-50%. These outcomes have to be put in the context of the absolute materiality of the problem, however. The Czech Republic, Hungary and Slovakia were countries where less than 1% of the population reported that waiting times restricted them from getting access to health care. At the other end of the spectrum were Estonia and Poland, with nearly 8% of individuals indicating this was a problem.

Mobility was a less frequently reported concern. In Slovakia, Estonia and particularly Poland, the prevalence was relatively high with more than 0.1% individuals in 2009 experiencing difficulties in physically accessing a point of provision. In the other countries the respective figures were below 0.05%.

It appears that, between 2005 and 2009, significant improvements took place in the area of patient information. In countries other than Poland, the probability of reporting informational access barriers was substantially reduced to below 1%.

Socio-economic determinants of access

In the analysed countries, education did not seem to constitute a major determinant of access to health care, with two exceptions. In Latvia, individuals with primary education were more likely to report unmet health care needs. In Poland, the same was true of the higher education stratum, which stands against the theoretical expectation (Aday and Andersen, 1974).

In four out of seven countries, individuals from the lowest household income quintile were consistently more likely to experience unmet medical needs. In the remaining three countries the evidence can also be found in selected cross-sections. Moreover, in 10 out of 35 country-year combinations, evidence supports the hypothesis that the better-off households enjoy facilitated access to health care. Latvia was the country with the most pronounced income-related inequalities of access, with strong evidence for both the disadvantageous situation of the lowest income quintile as well as the advantageous position of the highest. No evidence on income inequalities of access is found in the Czech Republic for years 2005-07, Slovakia 2007-08, and Lithuania 2008. However, in the most recent years in the Czech Republic and Slovakia individuals from more affluent households were more likely to report access barriers than their poorer counterparts.

As for basic activity status, in Estonia, Latvia and Slovakia, the unemployed faced consistently higher odds of failing to access health care than working individuals. Retirees and otherwise economically inactive individuals, on the other hand, were generally less likely to report access problems, except in Estonia and Lithuania, where the access reported by these groups did not differ statistically from that of employed respondents.

With respect to gender, statistically significant differences occur in half of the country-year cases. Generally, men were less likely to report access problems, except for Hungary, where the opposite was true. In the Czech Republic, Latvia and Slovakia, no evidence of systematic differences is found in four out of five cross-sections, making these countries the most equitable. Particularly in Estonia, Lithuania and Poland, the situation of women may need to be given a policy consideration.

There are marked patterns of age dependency of health care access. Generally speaking, respondents aged 30 years and less tended to enjoy facilitated access. The problem peaked in the productive age

Table 3: Predicted probability of reporting unmet needs for medical treatment or examination (odds ratios) for covariates included in the base model

Variable	Category	*Czech Republic*					*Estonia*					*Hungary*					*Latvia*					*Lithuania*					*Poland*					*Slovakia*				
		2005	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**
Health status	very bad	1.69	2.33	1.89	2.96		1.69	2.65	1.58	3.03		1.5	1.87	2.39	1.99	1.84	2.73	1.69	2.04	3.13	1.76	3.4	2.65	3.95	2.91	2.85	1.81	1.68	2.03	1.97	2.05	3.79	3.9	4.22	3.06	4.47
	bad	1.65	1.6	1.57	1.37	1.45	1.86	1.68	1.53	1.92	1.85	1.4	1.62	1.83	1.4	1.51	2.18	1.62	1.49	1.62	1.62	1.93	1.99	2.28	1.83	1.8	1.41	1.37	1.48	1.46	1.59	2.63	2.22	2.21	2.11	2.32
	fair^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	good	0.38	0.57	0.43	0.44	0.57	0.39	0.4	0.39	0.34	0.43	0.49	0.53	0.41	0.43	0.35	0.34	0.38	0.43	0.29	0.25	0.34	0.33	0.35	0.42	0.46	0.43	0.44	0.39	0.43	0.36	0.54	0.6	0.62	0.44	0.49
	very good	0.21	0.24	0.22	0.25	0.2	0.18	0.17	0.16	0.28	0.5	0.37	0.3	0.21	0.18	0.19	0.15	0.19	0.3	0.15	0.19	0.25	0.17	0.23			0.19	0.23	0.22	0.23	0.18	0.26	0.26	0.43	0.29	0.25
Sex	female^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	male				1.24			0.86	0.86	0.79			1.13	1.11	1.12	1.19	0.78					0.81			0.8	0.72	0.83	0.85	0.86		0.83		0.86			
Age	below 30							0.42	0.44	0.53	0.52	0.71	0.64	0.7	0.63	0.56	0.74	0.72	0.51		0.75				0.22	0.52	0.76	0.83	0.74	0.81	0.84			0.71	0.71	
	30-39				1.38														0.8		1.22				0.68											
	40-49^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	50-59	0.63	0.75	0.71								0.82	0.78	0.76	0.84					0.82							0.79	0.9	0.85						0.64	
	60-69	0.59	0.51	0.65	0.52	0.44	0.69	0.55	0.73		0.62	0.7	0.69	0.61	0.75	0.75	0.61			0.8					0.68		0.67	0.81	0.83		0.84		0.62	0.51	
	70 and more		0.49	0.58	0.54	0.41	0.5	0.35	0.6	0.57	0.46	0.41	0.48	0.46	0.51	0.47	0.48	0.67	0.62	0.5	0.66		0.66	0.67	0.45		0.46	0.59	0.55	0.64	0.58	0.59	0.5	0.6		
Education	primary																1.17	1.35	1.59	1.47										1.19						
	secondary^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	tertiary	1.43																0.82					0.79				1.15	1.19	1.19		1.21					0.55
Household income	poorest				1.74	2.19	1.59	1.49	1.28	1.25	1.36	1.32	1.35	1.16	1.46	1.43	1.26	1.69	1.6	1.76	1.79	1.25	1.39			1.48	1.45	1.42	1.32	1.43	1.41	1.47	1.6			
	2nd quintile					1.54							1.35		1.25	1.25		1.27			1.31					1.51	1.25	1.12		1.12						
	middle^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4th quintile				1.35	1.41								0.8			0.84		0.82				0.78	0.79					0.84							1.36
	richest											0.77					0.78	0.68	0.57	0.77	0.71		0.79													1.47
Basic economic activity	employed^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	unemployed			0.64			3.34	2.51	2.42	2.11	2.18						1.35	1.54	1.52	1.44	1.47	1.31										1.36	1.37	2.53		1.93
	retired	0.61		0.59								0.54	0.48	0.59	0.52	0.51		0.68		0.74	0.75						0.71	0.6	0.64	0.7	0.71	0.53	0.7			0.59
	otherwise inactive	0.52	0.63	0.72	0.68					0.77		0.69	0.56				0.62	0.65		0.72			0.79	0.78			0.63	0.65	0.66	0.71	0.76		0.63		0.48	
Area of residence	urban					1.5						0.83		0.66	0.87	0.5											1.25	1.28	1.31		1.22	1.39	1.52	1.44	1.35	
	intermediate^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	rural			0.71				0.82	0.5	0.74	0.65	0.74	0.83	0.71			0.59	0.71	0.62	0.8		0.61	0.49	0.48	0.46	0.42	0.85				0.9					

Reported are odds ratios relative to the base ('^') category statistically significant at 5%. No value indicates the coefficient was found statistically insignificant. Presented point estimates are subject to uncertainty. Standard errors are omitted for the clarity of presentation. Full results including standard errors are available as an online appendix.

cohorts, particularly in the group of 30-49 year olds, and subsequently lessened as the retirement age was approached.

In Estonia, Hungary, Latvia and Lithuania rural populations were less than the comparator group likely to report access difficulties. In line with this is evidence from Poland and Slovakia, where urban populations were more exposed to the problem. Little evidence on the influence of the area of residence is found in the Czech Republic.

Finally, the estimated coefficients and their statistical significance provide strong evidence for the theoretical expectation that poorer-than-average health makes it more likely to experience health care access issues. Below-average health status leaves individuals increasingly exposed to the problem, and the odds are highest in the lowest health status category. Conversely, the higher is self-reported health status, the lower are the odds of experiencing unmet health care needs. This pattern is largely consistent across the countries and cross-sections.

Also noteworthy is an overall positive trend in self-reported health status. The share of the region's population reporting bad or very bad health diminished from 19.1% in 2005 to 17.2% in 2009. At the same time, the proportion of individuals who assessed their condition as good and very good increased from 49.4% to 53%.

Discussion

Implications for health care systems

The challenge of health care access is one of a dual nature. On one hand, in Eastern European systems that face financial and institutional constraints, the magnitude of access barriers is generally high. On the other hand, there are considerable within-country inequalities related to socio-economic status.

The results are presented in Figure 1, which correspond to the WHO definition of access as "a measure of the proportion of population that reaches appropriate health services" (Roberts, 1998), show that significant disparities exist within the EE7 group. The consistency of individual country trends substantiates these differences as systematic.

While the dataset does not provide the opportunity to inquire about the nature of specific access limitations, it is clear that the best performers enjoy systemic advantages. The Czech Republic and Slovakia both employ the competing insurer model and are the biggest spenders on health with ca. 1,770 purchasing power parity dollars per capita in 2009, compared to the EE7 average of 1,300 (World Bank, 2012). The levels of spending are crucial, given the fact that fairly low levels of health care funding per capita typify this region, by comparison with its wealthier counterparts. In spite of these common characteristics, the two countries have strongly dissimilar levels of public spending. While the Czech system sets the benchmark for its peers in providing equitable and accessible care by featuring the

highest in EE7 levels of public spending (84% of total expenditure on health in 2009), Slovakia achieves comparable performance at the second-lowest 66%. Health care in Slovakia remains accessible despite the fact that high levels of private expenditures are not mitigated by voluntary health insurance, and largely take the form of out-of-pocket payments.

Still, even in the group of single payer systems, patients experience varying levels of accessibility. Hungary provides an interesting example of a country that has had a rather bumpy transition in terms of health reform consistency and continuity, but nevertheless displays above-average performance. Hungary and Poland both have single-payer systems and matching levels of health expenditure. Moreover, both countries are notorious for the prevalence of corruption in health care (Ensor, 2004). Yet in Poland, an individual is more than four times as likely to forgo medical care for reasons attributable to the health care system.

The issues of affordability and waiting times are the dominant access barriers and constitute, in fact, two sides of the same coin, viz. an inability to pay. Excessively long waiting lists in countries like Latvia and Poland often result from volumes of services that are contracted at levels that are inadequate to meet population needs. This is a consequence of health insurance funds' budget limitations, and is attributable to insufficient public funding for health care rather than inadequate provider capacity (Kuszewski and Gericke, 2005; Tragakes et al., 2008). Affordability, on the other hand, is an issue of individual inability to pay for services in the market or in the public system, the latter both in formal and informal terms, and may also stem from gaps in health insurance coverage. Furthermore, the two problems are connected in that prohibitively long waiting times in the public system often lead to out-of-pocket market purchases of services or side-payments for those services. Despite being guaranteed under a statutory insurance scheme, certain services are not effectively available, possibly leading to inequalities related to the ability to pay.

Goddard and Smith (2001) emphasise the awareness of availability and efficacy of treatment as a precondition for equitable access. This aspect of the problem poses a challenge to public health, as adequately presented information is argued to be a crucial resource in supporting individuals' conscious choices (Hibbard and Peters, 2003). In the Czech Republic and Slovakia, tackling other access limitations exposed information deficiencies, which in 2009 stood behind a third of all medical needs unmet for reasons attributable to the health care system. Over the five-year period, however, countries other than Hungary and Poland experienced a decrease in the relevance of informational issues, relative to the remaining health care system deficiencies. This may partly reflect a growing reliance on the internet as a source of medical information and a space for opinion-sharing (Kummervold et al., 2008).

As for socio-economic inequalities, reaching appropriate health care services remains a challenge for the poorest households in the region. However, there are countries that seem to be doing better in this

respect. In Slovakia, since 2007, the odds for the 1st and 2nd quintiles were not statistically different from the base middle-income category. In the Czech system, the inequalities only appeared in 2008-09, and have to be considered in the context of an overall reduction in the occurrence of unmet medical needs. It also has to be noted that the appearance of income-related inequalities coincided with the introduction of co-payments in the Czech Republic; the token co-payments for doctor visits, hospital days, selected ambulatory services and prescription pharmaceuticals were aimed at curbing consumer moral hazard (Bryndová et al., 2009).

In all of the analysed countries, it is the working cohorts (particularly those aged 30-49) that are the most exposed to access difficulties. By the same token, individuals in their teens and 20s as well as older individuals tend to perceive health care as more accessible. These results are likely to be a consequence of lower time costs for the old and the young, given that the analyses control for health status.

Finally, the financial crisis of 2008-09, which affected the Baltic countries with sharp declines of economic output and soaring levels of unemployment (Masso and Krillo, 2011), does not seem to be reflected in the accessibility of health care. Indeed, quite the opposite is true: from 2007 onwards, in these three countries there was a monotonic decrease in the frequency of unmet medical needs.

Policy considerations

The above considerations arrive at the difficult time of public sector austerity, when the paradigm of continuous growth in expenditures is increasingly substituted by the principles of integrated care, cost-effectiveness and frugality. Given current government deficits and an outlook of further fiscal pressures, resulting from population ageing among other things, an urgent question is how to make health care systems perform better without spending more. As this paper shows, in the area of health care accessibility, there are peer lessons to be learned.

In Eastern Europe, the idea of competition in the health sector has been stigmatised as exclusive and inequitable. While the health care financing model is by no means the sole factor determining the accessibility of health care services, this study provides an argument against the single payer model being allegedly more accessible and equitable, a justification often repeated in the political rhetoric of health reform. As the statistical evidence presented here shows, the regional benchmark is set by the countries that employ the competitive insurer model. A well-designed competing insurer system tends to benefit from market forces as well as from a more transparent structure and higher standards of information and governance (Bevan and Van de Ven, 2010). In the light of these observations, and given relatively poor performance, it can be argued that the sickness fund reform introduced in Poland in 1999 and revoked in 2003 was a wasted opportunity.

The issue of waiting times points at contracting low volumes of services relative to needs, a problem that could be alleviated by increased levels of contributions. However, bringing more funds is unlikely

to prove an effective strategy in the systems that already perform poorly. In countries like Latvia and Poland, where gaps in coverage are substantial, this leads to the question of the role for private financing, in particular the capacity of private health insurance to promote efficiency and equity. Moreover, prepayment options must be considered as means to improve financial protection, given that in the region out-of-pocket payments may constitute over a quarter of total expenditures on health. According to the OECD (2012) System of Health Accounts, 2009 shares of household out-of-pocket expenses in total health expenditure were: in the Czech Republic 14.9%, Estonia 21.2%, Poland 24.4%, Hungary 25.9%, Slovakia 26.9%. Special attention must be paid to the pharmaceuticals reimbursement policy, because expenses on medical goods make between 54% (Hungary) and 73% (Estonia) of household out-of-pocket health expenditure. The financial protection of prepayment schemes is especially important in the case of poorest households that face the highest risk of catastrophic expenses and are the most exposed to access difficulties. Given the diversity of possible private health insurance implementations, and considering the fact that the existence of coverage gaps is not a sufficient condition for the emergence of a voluntary market (Thomson and Mossialos, 2009), this funding option has to be carefully studied by policy-makers.

Limitations and caveats

Authors of the original survey recognise implications of study sample exclusions that are a consequence of the household-based design (Atkinson and Marlier, 2010). Explicitly excluded from the target population are individuals who are institutionalised (OECD, 2007). Some institutionalised groups, such as the homeless, the elderly, prisoners and refugees, are likely to experience higher-than-average population difficulties in accessing health care. Moreover, the access barriers they face may vary between countries depending on the extent of health insurance coverage and other aspects of social security. Thus, excluding those groups may limit the system-wide representativeness of findings. Furthermore, transfers between the household and institutionalised domains could affect the longitudinal comparability of study groups. While the magnitude of exclusions is not addressed in quantitative terms in the EU-SILC methodology, other studies suggest that shifts between the household and institutional population are minor and unlikely to significantly bias the outcomes of this analysis. For example, the 1995 census data indicates that 1.68% of EU15 population was institutionalised, and the figure was projected to increase to 1.85% by 2010 and then to decline to 1.71% in 2025 (Eurostat, 2003).

Kunst (2009) argues that the reliance on unlinked cross-sectional data is a major limitation of existing comparative studies of health (care) inequalities in Central and Eastern Europe. In the light of his observation, the longitudinal and cross-sectional consistency and comparability of data is an upside of our study. However, this comes at the expense of a deepened analysis. In particular, the survey provides no distinction of the generalist, specialist, inpatient, and other health needs as well as forgone services. Moreover, only the primary reason behind forgoing care is reported, which may conceal the underlying

complexity of the problem. For example, a reported inability to pay for services in the private market may be a consequence of excessive waiting times in the public system. Similarly, low materiality of informational access barriers in Estonia and Lithuania may be a result of these barriers being obscured by the more immediate problem of waiting times, rather than a signal of actual high system performance in this aspect. Further still, the survey does not inquire how many times each person experienced the problem in the 12-month period. Each positive answer indicates that a person's medical needs were unmet at least once, effectively censoring information on the event reoccurrence.

As defined in the questionnaire, the issue of affordability includes cases of inadequate insurance coverage. However, this situation cannot be clearly distinguished by the use of any available variables. In particular, the problem of inadequate coverage does not correspond perfectly to the unemployed or economically inactive status, because such persons may or may not benefit from welfare protection or family arrangements such as inclusion of children under statutory insurance. The lack of clear identification disallows reaching situation-specific conclusions. This extends in particular to vulnerable groups such as ethnic minorities, e.g. the Roma people, who are also likely to be underrepresented in the study sample (Fésüs et al., 2012).

The need, as defined in this study, is a self-assessed, 'core' and 'real' requirement of a consultation with a conventional medicine specialist (Eurostat, 2009). By contrast, Oliver and Mossialos (2004) identify two key components of a health care need: the individual's pre-treatment state of health and his or her capacity to benefit from health care. It is apparent that the EU-SILC definition of need focuses on the subjective health status. Moreover, it disregards the 'capacity to benefit' component, to the extent the respondent takes no account of it. This fact renders the interpretation of equitable health care according to the principle of 'equal access for equal need' not applicable.

Admittedly, countries may and do differ in patterns of risk factors such as lifestyles and environmental conditions, which may result in varying levels of burden on health systems. Nevertheless, the findings illustrate the adequacy of each country's health system to its idiosyncratic conditions. In a sense, the underlying differences are internalised in the level of need reported by the populations, and the survey responses are individual-level assessments of the health care system's capacity to answer those needs.

More problematically, nations may differ in characteristics such as perceptions of health needs, expectations of health care and health care seeking behaviours. These factors, relevant to the research problem and possible sources of bias, were not included in the analysis because of the survey limitations. Another concern is the potential bias in self-reported measures of health and in other variables analysed in the context of this study. A comprehensive discussion of these methodological issues and an assessment of the EU-SILC validity in this regard are provided by Hernández-Quevedo et al. (2010).

Conclusions

Despite the nearly universal statutory health insurance coverage in Eastern Europe, ensuring actual, timely and equitable access to health care remains a challenge. Barriers are pervasive and form a firm element in the health care landscapes of poorly performing systems. This study illustrates differences in health care accessibility within a group of seven Eastern European countries, taking into consideration both the magnitude of the problem and within-country inequalities. The identified discrepancies are significant and systemic, although in the region at large the situation improved considerably between 2005 and 2009.

Countries that employ the competitive insurance model and are the biggest spenders on health consistently outperform their peers. Substantial differences are also found between the single payer systems. In the laggard states, inefficiencies and underfunding of public systems lead to rationing through waiting times and informal payments, exposing individuals to financial and health risks. The evidence provided in this paper is indicative of gaps in coverage and groups at risk that, depending on country, may include the poorest households, the unemployed, working age cohorts and women. These findings call for a consideration of policy remedies that would either improve the allocation within the public system or provide an efficient alternative outside of it. One such option might be more extensive competition in insurance markets which is not incompatible even with substantial public subvention.

Finally, evidence presented in this article should be of particular interest to policy-makers in numerous other countries of Eastern Europe and Former Soviet Republics. After 1989, the entire region was faced with reassessing and reforming the state-owned Semashko system inherited from the past era. The seven countries, in the course of their institutional development, have moved to the forefront of this process. Evidence of the strengths and weaknesses of their resulting health care systems may offer valuable insights for reform choices in the remaining countries.

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Supplement

Table S1: Predicted probability of reporting unmet needs for medical treatment or examination (odds ratios) for covariates included in the alternative model (age and income modelled as continuous variables)

Variable	Category	*Czech Republic*					*Estonia*					*Hungary*					*Latvia*					*Lithuania*					*Poland*					*Slovakia*				
		2005	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**
Health status	very bad	1.79	2.48	1.98	3.24		1.79	2.81	1.68	2.85		1.52	1.94	2.42	2.02	1.87	2.8	1.7	2.09	3.2	1.8	3.48	2.75	4.07	3.14	2.79	1.88	1.71	2.1	2.02	2.08	3.81	3.98	4.41	3.13	4.55
	bad	1.69	1.65	1.6	1.46	1.51	1.9	1.69	1.55	1.77	1.79	1.39	1.62	1.82	1.4	1.52	2.2	1.62	1.5	1.61	1.63	1.94	2.01	2.29	1.9	1.7	1.43	1.38	1.5	1.48	1.61	2.64	2.23	2.23	2.11	2.34
	fair^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	good	0.4	0.58	0.45	0.46	0.59	0.39	0.41	0.41	0.27	0.3	0.49	0.54	0.43	0.45	0.36	0.34	0.39	0.45	0.3	0.26	0.35	0.32	0.37	0.38	0.38	0.44	0.44	0.4	0.43	0.36	0.56	0.61	0.65	0.47	0.52
	very good	0.21	0.24	0.22	0.26	0.22	0.19	0.18	0.18	0.21	0.31	0.38	0.31	0.22	0.2	0.2	0.15	0.2	0.31	0.15	0.21	0.24	0.18	0.24			0.19	0.23	0.23	0.24	0.18	0.26	0.27	0.44	0.31	0.27
Sex	female^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	male							0.84	0.85	0.82			1.13	1.1	1.11	1.19	0.77					0.82			0.8	0.72	0.82	0.85	0.86	0.93	0.83		0.85			
Age							1.06	1.12	1.09	1.05	1.04	1.08	1.07	1.06	1.07	1.09	1.04	1.06	1.07	1.06	1.06		1.05		1.11	1.06	1.05	1.04	1.05	1.04	1.04	1.04	1.05			
Age squared			<1				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			
Education	primary											1.24		1.23	1.29	1.23		1.39	1.61	1.55	1.3						1.09			1.23	1.1					
	secondary^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	tertiary	1.49																0.81					0.8				1.16	1.21	1.2		1.22					0.54
Income		0.96				0.96	0.92	0.93				0.94	0.97	0.96	0.95	0.95	0.93	0.92	0.92	0.96	0.95	0.89	0.89	0.95			0.96	0.94	0.97	0.97	0.99	0.95	0.93			
Income squared							>1	>1				>1	>1	>1	>1	>1	>1	>1	>1	>1	>1	>1	>1	>1			>1	>1	>1	>1	>1	>1	>1			
Basic economic activity	employed^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	unemployed	0.65		0.64			3.45	2.52	2.5	2.01	2.24						1.37	1.64	1.56	1.51	1.5											1.37	1.38	2.47		1.96
	retired	0.57	0.69	0.53	0.62	0.7						0.58	0.5	0.58	0.53	0.53		0.75	0.8								0.73	0.62	0.67	0.71	0.74	0.54	0.65	0.55		0.52
	otherwise inactive	0.46	0.61	0.66	0.61					0.74		0.73	0.6				0.6	0.73		0.77		0.75	0.79	0.78			0.62	0.67	0.68	0.73	0.8		0.62		0.45	
Area of residence	urban					1.51						0.83		0.67	0.87	0.51											1.25	1.28	1.32		1.22	1.37	1.53	1.43	1.33	
	intermediate^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	rural			0.71				0.82	0.5	0.76	0.59	0.73	0.84	0.71			0.59	0.72	0.62	0.81		0.6	0.49	0.48	0.45	0.4	0.85									

Variable units are one year for ‘age’ and 100 euro for ‘income’. Reported are odds ratios statistically significant at 5%. No value indicates the coefficient was found statistically insignificant. The continuous variables’ odds ratios are often close to 1. Where a rounded estimate figure would appear as 1, instead indicated is the position relative to 1.

Table S2: Predicted probability of reporting unmet needs for medical treatment or examination (odds ratios with standard errors) for covariates included in the model

Variable	Category	*Czech Republic*					*Estonia*					*Hungary*					*Latvia*					*Lithuania*					*Poland*					*Slovakia*				
		2005	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**
Health status	very bad	1.69*	2.33*	1.89*	2.96*	1.4	1.69*	2.65*	1.58*	3.03*	1.43	1.5*	1.87*	2.39*	1.99*	1.84*	2.73*	1.69*	2.04*	3.13*	1.76*	3.4*	2.65*	3.95*	2.91*	2.85*	1.81*	1.68*	2.03*	1.97*	2.05*	3.79*	3.9*	4.22*	3.06*	4.47*
		(0.4)	*(0.44)*	*(0.36)*	*(0.52)*	*(0.35)*	*(0.32)*	*(0.4)*	*(0.27)*	*(0.51)*	*(0.47)*	*(0.16)*	*(0.2)*	*(0.23)*	*(0.19)*	*(0.19)*	*(0.3)*	*(0.18)*	*(0.22)*	*(0.35)*	*(0.22)*	*(0.56)*	*(0.38)*	*(0.54)*	*(0.48)*	*(0.6)*	*(0.13)*	*(0.13)*	*(0.17)*	*(0.16)*	*(0.17)*	*(0.51)*	*(0.54)*	*(0.75)*	*(0.51)*	*(0.71)*
	bad	1.65*	1.6*	1.57*	1.37*	1.45*	1.86*	1.68*	1.53*	1.92*	1.85*	1.4*	1.62*	1.83*	1.4*	1.51*	2.18*	1.62*	1.49*	1.62*	1.62*	1.93*	1.99*	2.28*	1.83*	1.8*	1.41*	1.37*	1.48*	1.46*	1.59*	2.63*	2.22*	2.21*	2.11*	2.32*
		(0.22)	*(0.19)*	*(0.17)*	*(0.17)*	*(0.2)*	*(0.2)*	*(0.15)*	*(0.14)*	*(0.18)*	*(0.23)*	*(0.09)*	*(0.11)*	*(0.12)*	*(0.1)*	*(0.11)*	*(0.16)*	*(0.11)*	*(0.11)*	*(0.11)*	*(0.11)*	*(0.19)*	*(0.17)*	*(0.2)*	*(0.19)*	*(0.24)*	*(0.06)*	*(0.06)*	*(0.07)*	*(0.07)*	*(0.08)*	*(0.26)*	*(0.23)*	*(0.31)*	*(0.27)*	*(0.29)*
	fair^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	good	0.38*	0.57*	0.43*	0.44*	0.57*	0.39*	0.4*	0.39*	0.34*	0.43*	0.49*	0.53*	0.41*	0.43*	0.35*	0.34*	0.38*	0.43*	0.29*	0.25*	0.34*	0.33*	0.35*	0.42*	0.46*	0.43*	0.44*	0.39*	0.43*	0.36*	0.54*	0.6*	0.62*	0.44*	0.49*
		(0.05)	*(0.06)*	*(0.04)*	*(0.05)*	*(0.07)*	*(0.04)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.05)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.02)*	*(0.04)*	*(0.03)*	*(0.04)*	*(0.06)*	*(0.08)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.05)*	*(0.06)*	*(0.08)*	*(0.05)*	*(0.06)*
	very good	0.21*	0.24*	0.22*	0.25*	0.2*	0.18*	0.17*	0.16*	0.28*	0.5*	0.37*	0.3*	0.21*	0.18*	0.19*	0.15*	0.19*	0.3*	0.15*	0.19*	0.25*	0.17*	0.23*	0.75	0.66	0.19*	0.23*	0.22*	0.23*	0.18*	0.26*	0.26*	0.43*	0.29*	0.25*
		(0.04)	*(0.04)*	*(0.03)*	*(0.04)*	*(0.04)*	*(0.05)*	*(0.04)*	*(0.04)*	*(0.07)*	*(0.14)*	*(0.04)*	*(0.03)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.05)*	*(0.05)*	*(0.07)*	*(0.04)*	*(0.05)*	*(0.06)*	*(0.05)*	*(0.06)*	*(0.23)*	*(0.25)*	*(0.01)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.04)*	*(0.04)*	*(0.07)*	*(0.06)*	*(0.05)*
Sex	female^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	male	0.89	1.09	1.05	1.24*	1.06	0.93	0.86*	0.86*	0.79*	0.92	1.08	1.13*	1.11*	1.12*	1.19*	0.78*	0.92	1	1.05	0.97	0.81*	0.9	0.9	0.8*	0.72*	0.83*	0.85*	0.86*	0.93	0.83*	0.91	0.86*	1.12	1.13	0.94
		(0.08)	*(0.09)*	*(0.08)*	*(0.1)*	*(0.1)*	*(0.07)*	*(0.06)*	*(0.06)*	*(0.06)*	*(0.09)*	*(0.05)*	*(0.05)*	*(0.05)*	*(0.05)*	*(0.06)*	*(0.04)*	*(0.05)*	*(0.05)*	*(0.06)*	*(0.05)*	*(0.06)*	*(0.06)*	*(0.06)*	*(0.07)*	*(0.08)*	*(0.02)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.06)*	*(0.06)*	*(0.1)*	*(0.1)*	*(0.08)*
Age	below 30	1.14	0.78	0.89	1.13	0.93	0.87	0.42*	0.44*	0.53*	0.52*	0.71*	0.64*	0.7*	0.63*	0.56*	0.74*	0.72*	0.51*	0.82	0.75*	1	0.78	0.97	0.22*	0.52*	0.76*	0.83*	0.74*	0.81*	0.84*	0.82	0.77	0.71*	0.71*	0.75
		(0.2)	*(0.13)*	*(0.13)*	*(0.19)*	*(0.18)*	*(0.12)*	*(0.05)*	*(0.06)*	*(0.07)*	*(0.09)*	*(0.06)*	*(0.06)*	*(0.07)*	*(0.06)*	*(0.06)*	*(0.08)*	*(0.07)*	*(0.05)*	*(0.08)*	*(0.09)*	*(0.15)*	*(0.11)*	*(0.14)*	*(0.05)*	*(0.13)*	*(0.04)*	*(0.04)*	*(0.05)*	*(0.06)*	*(0.06)*	*(0.11)*	*(0.11)*	*(0.12)*	*(0.12)*	*(0.12)*
	30-39	1.27	1.03	1.06	1.38*	1.01	1.2	0.87	0.93	1	0.76	1	1.06	1.06	1.08	1.03	1.1	0.91	0.8*	1.08	1.22*	1.2	0.92	1.21	0.68*	0.73	1.08	0.95	0.98	1.12	1.01	1.19	1.11	0.98	0.89	1.15
		(0.19)	*(0.14)*	*(0.13)*	*(0.2)*	*(0.16)*	*(0.16)*	*(0.1)*	*(0.11)*	*(0.13)*	*(0.13)*	*(0.08)*	*(0.08)*	*(0.09)*	*(0.09)*	*(0.08)*	*(0.1)*	*(0.08)*	*(0.08)*	*(0.1)*	*(0.12)*	*(0.15)*	*(0.12)*	*(0.16)*	*(0.12)*	*(0.18)*	*(0.05)*	*(0.05)*	*(0.06)*	*(0.07)*	*(0.07)*	*(0.14)*	*(0.14)*	*(0.15)*	*(0.14)*	*(0.17)*
	40-49^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	50-59	0.63*	0.75*	0.71*	0.8	0.77	0.98	0.88	0.85	1.11	1	0.82*	0.78*	0.76*	0.84*	0.9	0.91	0.93	0.93	0.82*	0.91	0.82	0.83	0.9	0.79	0.99	0.79*	0.9*	0.85*	0.96	0.91	0.98	0.88	0.78	0.64*	0.88
		(0.09)	*(0.09)*	*(0.08)*	*(0.11)*	*(0.12)*	*(0.12)*	*(0.08)*	*(0.08)*	*(0.12)*	*(0.14)*	*(0.06)*	*(0.06)*	*(0.06)*	*(0.06)*	*(0.07)*	*(0.08)*	*(0.08)*	*(0.08)*	*(0.07)*	*(0.08)*	*(0.09)*	*(0.08)*	*(0.1)*	*(0.1)*	*(0.18)*	*(0.04)*	*(0.04)*	*(0.05)*	*(0.06)*	*(0.05)*	*(0.1)*	*(0.1)*	*(0.11)*	*(0.09)*	*(0.12)*
	60-69	0.59*	0.51*	0.65*	0.52*	0.44*	0.69*	0.55*	0.73*	0.77	0.62*	0.7*	0.69*	0.61*	0.75*	0.75*	0.61*	0.9	0.82	0.8*	0.9	0.85	0.95	0.78	0.68*	0.84	0.67*	0.81*	0.83*	0.88	0.84*	0.92	0.62*	0.51*	0.7	0.85
		(0.14)	*(0.1)*	*(0.11)*	*(0.11)*	*(0.1)*	*(0.12)*	*(0.08)*	*(0.1)*	*(0.12)*	*(0.13)*	*(0.07)*	*(0.07)*	*(0.06)*	*(0.08)*	*(0.08)*	*(0.07)*	*(0.1)*	*(0.09)*	*(0.09)*	*(0.1)*	*(0.15)*	*(0.13)*	*(0.12)*	*(0.13)*	*(0.21)*	*(0.04)*	*(0.05)*	*(0.06)*	*(0.07)*	*(0.06)*	*(0.15)*	*(0.1)*	*(0.11)*	*(0.14)*	*(0.18)*
	70 and more	0.62	0.49*	0.58*	0.54*	0.41*	0.5*	0.35*	0.6*	0.57*	0.46*	0.41*	0.48*	0.46*	0.51*	0.47*	0.48*	0.67*	0.62*	0.5*	0.66*	0.77	0.66*	0.67*	0.45*	0.62	0.46*	0.59*	0.55*	0.64*	0.58*	0.59*	0.5*	0.6*	0.69	0.88
		(0.16)	*(0.11)*	*(0.12)*	*(0.13)*	*(0.11)*	*(0.1)*	*(0.06)*	*(0.09)*	*(0.1)*	*(0.12)*	*(0.05)*	*(0.05)*	*(0.05)*	*(0.06)*	*(0.05)*	*(0.07)*	*(0.08)*	*(0.08)*	*(0.06)*	*(0.09)*	*(0.17)*	*(0.12)*	*(0.13)*	*(0.1)*	*(0.18)*	*(0.03)*	*(0.04)*	*(0.05)*	*(0.05)*	*(0.05)*	*(0.1)*	*(0.09)*	*(0.14)*	*(0.15)*	*(0.21)*
Education	primary	0.49	0.65	n/a	n/a	1.15	0.94	1.05	0.98	1.14	1.35	1.13	1.06	1.1	1.16	1.1	1.17*	1.35*	1.59*	1.47*	1.17	0.95	0.95	1.09	1.23	0.93	1.05	0.97	1.05	1.19*	1.05	1.96	1.47	0.9	0.64	1.32
		(0.51)	*(0.67)*			*(0.84)*	*(0.15)*	*(0.14)*	*(0.14)*	*(0.17)*	*(0.26)*	*(0.11)*	*(0.1)*	*(0.11)*	*(0.11)*	*(0.11)*	*(0.08)*	*(0.16)*	*(0.18)*	*(0.17)*	*(0.14)*	*(0.13)*	*(0.11)*	*(0.13)*	*(0.17)*	*(0.16)*	*(0.04)*	*(0.04)*	*(0.05)*	*(0.06)*	*(0.05)*	*(0.83)*	*(0.37)*	*(0.37)*	*(0.28)*	*(0.4)*
	secondary^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	tertiary	1.43*	1.26	1.07	0.87	0.71	1.06	0.94	1.08	1.03	1.07	1.06	0.96	1.09	0.89	0.94	0.99	0.82*	0.98	0.93	0.93	0.95	0.79*	0.98	0.94	0.75	1.15*	1.19*	1.19*	1.08	1.21*	1.1	1.1	1.1	0.86	0.55*
		(0.21)	*(0.16)*	*(0.13)*	*(0.13)*	*(0.13)*	*(0.11)*	*(0.08)*	*(0.09)*	*(0.09)*	*(0.12)*	*(0.08)*	*(0.07)*	*(0.08)*	*(0.07)*	*(0.07)*	*(0.08)*	*(0.06)*	*(0.07)*	*(0.07)*	*(0.07)*	*(0.1)*	*(0.07)*	*(0.09)*	*(0.1)*	*(0.12)*	*(0.06)*	*(0.06)*	*(0.07)*	*(0.06)*	*(0.07)*	*(0.11)*	*(0.12)*	*(0.15)*	*(0.12)*	*(0.08)*
Household income	poorest	1.23	1.27	1.19	1.74*	2.19*	1.59*	1.49*	1.28*	1.25*	1.36*	1.32*	1.35*	1.16*	1.46*	1.43*	1.26*	1.69*	1.6*	1.76*	1.79*	1.25*	1.39*	1.2	1.14	1.48*	1.45*	1.42*	1.32*	1.43*	1.41*	1.47*	1.6*	1.34	1.08	1.25
		(0.17)	*(0.16)*	*(0.14)*	*(0.23)*	*(0.34)*	*(0.18)*	*(0.14)*	*(0.13)*	*(0.14)*	*(0.19)*	*(0.09)*	*(0.1)*	*(0.09)*	*(0.11)*	*(0.11)*	*(0.11)*	*(0.13)*	*(0.13)*	*(0.14)*	*(0.15)*	*(0.14)*	*(0.13)*	*(0.13)*	*(0.14)*	*(0.25)*	*(0.07)*	*(0.07)*	*(0.07)*	*(0.08)*	*(0.08)*	*(0.16)*	*(0.19)*	*(0.2)*	*(0.16)*	*(0.18)*
	2nd quintile	0.81	1.04	0.85	0.94	1.54*	0.98	0.92	1.02	1.02	1.11	1.14	1.35*	0.92	1.25*	1.25*	1.14	1.27*	1.06	1.13	1.31*	1.04	1.07	0.89	0.97	1.51*	1.25*	1.12*	1.1	1.12*	1.05	1.06	1.1	1.01	1.04	1.16
		(0.12)	*(0.14)*	*(0.11)*	*(0.14)*	*(0.25)*	*(0.12)*	*(0.09)*	*(0.11)*	*(0.12)*	*(0.16)*	*(0.08)*	*(0.1)*	*(0.07)*	*(0.09)*	*(0.1)*	*(0.09)*	*(0.1)*	*(0.08)*	*(0.09)*	*(0.11)*	*(0.12)*	*(0.11)*	*(0.1)*	*(0.13)*	*(0.25)*	*(0.06)*	*(0.05)*	*(0.06)*	*(0.06)*	*(0.06)*	*(0.12)*	*(0.13)*	*(0.15)*	*(0.15)*	*(0.16)*
	middle^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4th quintile	0.94	0.92	1.12	1.35*	1.41*	0.9	1	1.04	1.05	1.01	0.91	1.02	0.8*	1.01	1.1	0.84*	0.98	0.82*	0.96	0.88	0.82	0.78*	0.79*	0.83	1.23	0.98	0.92	0.84*	0.91	0.96	1.23	0.97	1.12	0.99	1.36*
		(0.13)	*(0.12)*	*(0.13)*	*(0.18)*	*(0.23)*	*(0.12)*	*(0.1)*	*(0.11)*	*(0.12)*	*(0.15)*	*(0.07)*	*(0.08)*	*(0.06)*	*(0.08)*	*(0.09)*	*(0.07)*	*(0.08)*	*(0.07)*	*(0.08)*	*(0.08)*	*(0.1)*	*(0.08)*	*(0.09)*	*(0.11)*	*(0.22)*	*(0.05)*	*(0.05)*	*(0.05)*	*(0.05)*	*(0.06)*	*(0.14)*	*(0.12)*	*(0.17)*	*(0.15)*	*(0.19)*
	richest	0.77	1	0.93	1.17	1.25	0.84	0.87	1.12	1	0.95	0.77*	0.99	0.86	0.89	1.13	0.78*	0.68*	0.57*	0.77*	0.71*	0.83	0.79*	0.8	0.87	0.91	0.97	0.96	0.95	1.01	1.02	0.91	0.8	0.96	1.19	1.47*
		(0.12)	*(0.13)*	*(0.11)*	*(0.17)*	*(0.22)*	*(0.12)*	*(0.1)*	*(0.12)*	*(0.12)*	*(0.15)*	*(0.06)*	*(0.08)*	*(0.07)*	*(0.07)*	*(0.1)*	*(0.07)*	*(0.06)*	*(0.05)*	*(0.07)*	*(0.07)*	*(0.1)*	*(0.09)*	*(0.09)*	*(0.12)*	*(0.18)*	*(0.05)*	*(0.05)*	*(0.06)*	*(0.06)*	*(0.06)*	*(0.11)*	*(0.1)*	*(0.15)*	*(0.17)*	*(0.21)*
Basic economic activity	employed^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	unemployed	0.66	0.79	0.64*	0.92	1.16	3.34*	2.51*	2.42*	2.11*	2.18*	0.88	0.96	0.92	1.15	1.21	1.35*	1.54*	1.52*	1.44*	1.47*	1.31*	1.24	0.9	1.31	1.31	0.94	1	1.01	0.98	1.04	1.36*	1.37*	2.53*	1.22	1.93*
		(0.14)	*(0.15)*	*(0.13)*	*(0.21)*	*(0.24)*	*(0.43)*	*(0.34)*	*(0.39)*	*(0.36)*	*(0.33)*	*(0.08)*	*(0.1)*	*(0.1)*	*(0.12)*	*(0.12)*	*(0.13)*	*(0.15)*	*(0.17)*	*(0.15)*	*(0.12)*	*(0.17)*	*(0.17)*	*(0.17)*	*(0.27)*	*(0.28)*	*(0.05)*	*(0.05)*	*(0.07)*	*(0.09)*	*(0.09)*	*(0.16)*	*(0.18)*	*(0.4)*	*(0.25)*	*(0.29)*
	retired	0.61*	0.76	0.59*	0.76	0.85	1	1.19	1.03	1.28	1.36	0.54*	0.48*	0.59*	0.52*	0.51*	0.97	0.68*	0.84	0.74*	0.75*	0.83	0.76	0.92	1.42	1.36	0.71*	0.6*	0.64*	0.7*	0.71*	0.53*	0.7*	0.69	0.77	0.59*
		(0.13)	*(0.14)*	*(0.1)*	*(0.15)*	*(0.18)*	*(0.17)*	*(0.16)*	*(0.14)*	*(0.2)*	*(0.31)*	*(0.05)*	*(0.04)*	*(0.05)*	*(0.04)*	*(0.04)*	*(0.11)*	*(0.07)*	*(0.09)*	*(0.08)*	*(0.08)*	*(0.15)*	*(0.11)*	*(0.14)*	*(0.27)*	*(0.33)*	*(0.04)*	*(0.04)*	*(0.04)*	*(0.05)*	*(0.05)*	*(0.07)*	*(0.1)*	*(0.13)*	*(0.14)*	*(0.12)*
	otherwise inactive	0.52*	0.63*	0.72*	0.68*	0.82	0.91	0.87	1.03	0.77*	0.94	0.69*	0.56*	0.91	0.88	0.89	0.62*	0.65*	0.93	0.72*	0.86	0.8	0.79*	0.78*	1.19	1.06	0.63*	0.65*	0.66*	0.71*	0.76*	0.78	0.63*	0.8	0.48*	0.83
		(0.09)	*(0.09)*	*(0.09)*	*(0.1)*	*(0.13)*	*(0.11)*	*(0.09)*	*(0.1)*	*(0.09)*	*(0.14)*	*(0.06)*	*(0.05)*	*(0.08)*	*(0.07)*	*(0.08)*	*(0.07)*	*(0.06)*	*(0.09)*	*(0.07)*	*(0.09)*	*(0.1)*	*(0.09)*	*(0.09)*	*(0.17)*	*(0.2)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.04)*	*(0.04)*	*(0.12)*	*(0.11)*	*(0.16)*	*(0.11)*	*(0.13)*
Area of residence	urban	0.96	0.93	0.85	1.01	1.5*	n/a	n/a	n/a	n/a	n/a	0.83*	0.9	0.66*	0.87*	0.5*	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.25*	1.28*	1.31*	1.05	1.22*	1.39*	1.52*	1.44*	1.35*	1.14
		(0.11)	*(0.1)*	*(0.08)*	*(0.11)*	*(0.19)*						*(0.05)*	*(0.06)*	*(0.04)*	*(0.06)*	*(0.04)*											*(0.06)*	*(0.06)*	*(0.07)*	*(0.06)*	*(0.07)*	*(0.12)*	*(0.15)*	*(0.17)*	*(0.15)*	*(0.12)*
	intermediate^	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	rural	1.01	0.89	0.71*	1.13	1.04	0.85	0.82*	0.5*	0.74*	0.65*	0.74*	0.83*	0.71*	0.95	0.97	0.59*	0.71*	0.62*	0.8*	0.92	0.61*	0.49*	0.48*	0.46*	0.42*	0.85*	0.92	1.02	0.92	0.9*	0.98	0.95	0.97	0.96	0.86
		(0.11)	*(0.09)*	*(0.06)*	*(0.11)*	*(0.12)*	*(0.07)*	*(0.06)*	*(0.03)*	*(0.05)*	*(0.06)*	*(0.04)*	*(0.05)*	*(0.04)*	*(0.06)*	*(0.06)*	*(0.03)*	*(0.04)*	*(0.03)*	*(0.04)*	*(0.05)*	*(0.05)*	*(0.03)*	*(0.03)*	*(0.04)*	*(0.05)*	*(0.04)*	*(0.04)*	*(0.05)*	*(0.05)*	*(0.05)*	*(0.08)*	*(0.08)*	*(0.11)*	*(0.1)*	*(0.09)*

Reported are odds ratios relative to the base ('^') category together with standard errors. Statistical significance at 5% is denoted with '*'.