Access to care in the Baltic States: did crisis have an impact?

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ABSTRACT

Background : In 2009, brief but deep economic crisis profoundly affected the three Baltic States: Estonia, Latvia and Lithuania. In response, all three countries adopted severe austerity measures with the shared goal of containing rising deficits, but employing different methods. Aims : In this article, we analyse the impact of the economic crisis and post-crisis austerity measures on health systems and access to medical services in the three countries. Methods : We use the EU-SILC data to analyse trends in unmet medical need in 2005–2012, and apply log-binomial regression to calculate the risk of unmet medical need in the pre- and post- crisis period. Results : Between 2009 and 2012 unmet need has increased significantly in Latvia (OR: 1.24, 95% confidence interval (CI): 1.15–1.34) and Estonia (OR: 1.98, 95% CI: 1.72–2.27), but not Lithuania (OR: 0.84. 95% CI: 0.69–1.04). The main drivers of increased unmet need were inability to afford care in Latvia and long waiting lists in Estonia. Conclusion : The impact of the crisis on access to care in the three countries varied, as did the austerity measures affecting their health systems. Estonia and Latvia experienced worsening access to care, largely exacerbating already existing barriers. The example of Lithuania suggests that deterioration in access is not inevitable, once health policies prioritise maintenance and availability of existing services, or if there is room for reducing existing inefficiencies. Moreover, better financial preparedness of health systems in Estonia and Lithuania achieved some protection of the population from increasing unmet need due to the rising cost of medical care.

KEY POINTS

- Economic crisis had a negative impact on population health in Europe, particularly in the hardest-hit countries. The Baltic States (Estonia, Latvia and Lithuania) had one of the deepest recessions among the EU countries, forcing their governments to respond with large cuts to public spending on healthcare.
- This study presents valuable lessons on the impact of the crisis and policy response on access to care. It uses population survey data to quantify changes to the unmet medical need in Estonia, Latvia and Lithuania before and after the economic crisis, and analyses the reasons behind the increase in unmet need in Estonia and Latvia in 2010–2012.
- The study provides context on health policy responses which could have had an impact on access to care in the Baltic States

INTRODUCTION

The three Baltic States, Estonia, Latvia and Lithuania have been profoundly affected by the financial crisis, experiencing sharp reductions in Gross Domestic Product (GDP) (of 14, 18 and 15%, respectively) and rise in unemployment in 2009 (Appendix Table S1). Economic shocks on such a scale and intensity inevitably had a profound effect on public budgets in these countries, including state financing of their health systems. In response, all three countries adopted severe austerity measures with the declared goal of containing rising deficits. The path chosen provoked an international debate, most notably between Estonia's President Toomas Ilves and the Nobel-Prize winning economist Paul Krugman, with the former proclaiming victory over economic adversity as early as 2012[1] and the latter questioning the degree of success that had been achieved[2, 3]. The shocks, although brief, were fairly profound, especially for Latvia which, due to its larger exposure to financial turbulence and weaker preparedness, faced bankruptcy and had to be bailed out with the total of 7.5 billion euro loans from the European Union, the International Monetary Fund and the World Bank over 2008–2011[4]. Estonia and Lithuania were able to mobilise their own resources and coped through adopting major financial retrenchment in the public sector[5, 6]. Economic growth has returned in subsequent years, achieving pre-crisis level by 2013 in Estonia and 2014 in Latvia and Lithuania.

Several years after the onset of the crisis, it is not clear how the years of financial retrenchment across many sectors have impacted on different aspects of health service provision. Some authors point to improvements in overall indicators of population health, such as life expectancy and all-cause mortality during and immediately after the crisis[7], sometimes linking them directly to the effect of recession[8]. But before attributing any changes to the crisis in the Baltic countries, it is important to note that Estonia, Latvia and Lithuania have also undergone a major transition: from former Soviet Republics to independent capitalist economies. These changes have profoundly affected population health, initially negatively, with life expectancy at birth falling by more than 3 years between 1990 and 1994, and subsequently recovering by the late 1990s[9]. The rapid improvement in life expectancy in recent years (after 2007) in all three countries coincided with the crisis. Its onset, which preceded the fall in GDP due to the recession, suggests that the continuing health transition may have played a role, with large reductions in premature mortality, particularly from cardio-vascular diseases and external causes[10], partly due to improved preventive efforts, such as tackling smoking[11] and alcohol consumption[12, 13].

Improvement in these rather broad population health measures does not pick up the impact of the crisis on more 'crisis-sensitive' measures of ill-health, particularly in the longer term. Research available to date shows the crisis has not left population health

in the Baltic countries unscathed—there been a notable increase in suicides[14] and a long-term improvement in self-perceived health has come to halt[15].

If it is to address the threats to population health associated with the financial crisis, a health system must be able to maintain and, where necessary, increase availability of services, particularly for the most vulnerable groups. Failure of the state to do so in the face of austerity measures can lead to devastating consequences even in high income countries, as has already been seen in Greece[16]. In Estonia, Latvia and Lithuania, the health sectors also faced austerity measures, yet the scale and nature varied among these countries (see Appendix Table S1). In Estonia, measures to control health spending mainly involved cutting budgets of public health programmes and looking for efficiency gains. In Latvia, drastic measures were taken in order to counterbalance the cuts, including introduction of new out-of-pocket payments (OOP) and increases in existing ones, as well as major restructuring of secondary care. Lithuania resorted to reducing provider payments and cutting administrative functions.

The aim of this article is to analyse the impact of the economic crisis and post-crisis austerity measures on access to medical service in the three countries, and to determine whether this impact was dependent on the different financing and health policy responses.

METHODS

Data

European Union Statistics on Income and Living Conditions (EU-SILC)[17] is an EU-wide annual representative population survey in which Estonia, Latvia and Lithuania have participated since 2005, with the latest available data for 2012. While mainly focussed on socioeconomic conditions, the survey also contains several health variables: self-reported health, presence of chronic disease; existence of limiting health problems; unmet need for medical examination or treatment and unmet need for dental examination or treatment. In this analysis, we used the 'unmet need for medical examination or treatment during the last 12 months' as well as the main reason why such unmet need was reported, as a proxy measure of access to health care services.

The year 2009 has been chosen a baseline for measuring unmet medical need since the crisis, as the EU-SILC definition relates to the past 12 months and this was the last year predating the impact of the crisis. Subsequent years coincide with the main impact of the economic crisis (2010) and policy responses (2011 and 2012) in the Baltic countries.

We constructed dummy variables for unmet need and the reason for unmet need, as well as for the latest year of survey in relation to 2009 (baseline), and for explanatory sociodemographic variables: sex (male = 1), family status (married = 1), education

(postsecondary = 1). The samples from 2009 to 2012 and their basic sociodemographic characteristics are described in the Appendix Table S2.

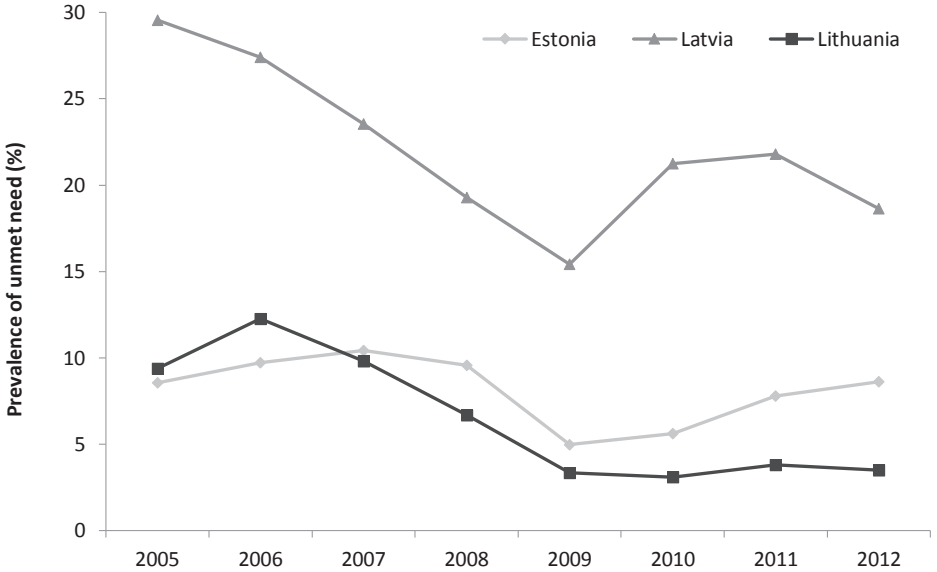
Analysis

First, we used age-adjusted prevalence of unmet medical need to establish trends in the three countries between 2005 and 2012, age-adjusted using the 2013 European Standard Population. We then applied log-binomial regressions to calculate the risk of unmet medical need for the years 2010–2012 relative to the baseline (2009). Log-binomial regressions were also used to analyse the change in risk of reporting unmet need in 2010–2012 due to each specific reason (financial constraint; long waiting list; lack of time due to work/family responsibilities; travel distance; delay to see if problem resolves; and combined 'other' category, which included fear of doctor, not knowing appropriate specialist and other reasons). We used EU-SILC standard sampling population weights to account for survey design.

RESULTS

Figure 1 shows age-adjusted prevalence of unmet medical need in Estonia, Latvia and Lithuania. Latvia exhibited the highest rates among the three countries throughout the entire period (2005–2012). Before the crisis it had almost halved, from 29.6% in

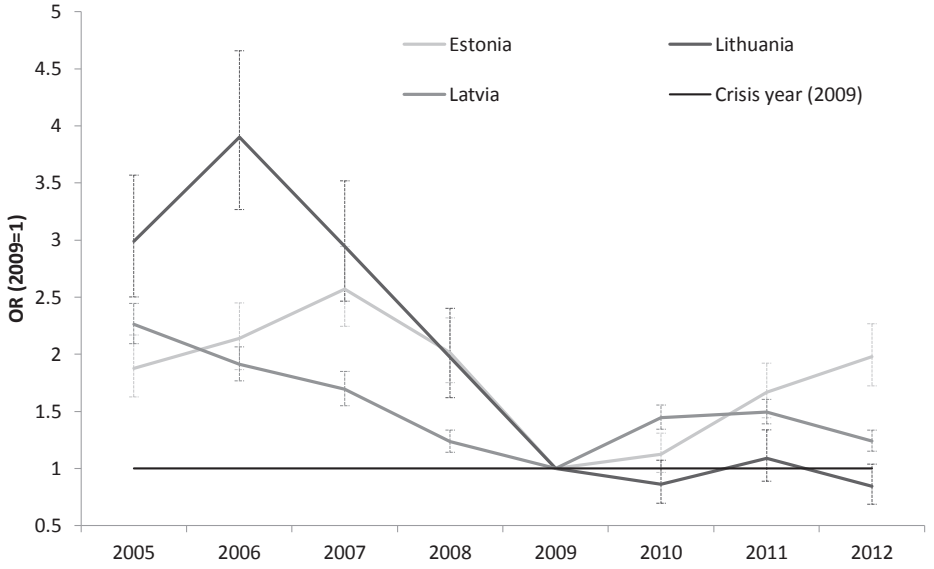
Figure 1. Age-standardised prevalence of unmet medical need in Estonia, Latvia and Lithuania, 2005–2012



2005 to 15.4% in 2009. After the crisis this trend reversed, with unmet medical need peaking at above 21% in 2010–2011 and reducing again to 18.6% in 2012. In Estonia and Lithuania the prevalence of unmet need followed a similar path, starting at 8.5 and 9.4% respectively and, after a small increase 2006–2007 reducing to 5.0% (Estonia) and 3.3% (Lithuania) in 2009. After the crisis, unmet need steadily increased year on year in Estonia, to 8.6% in 2012, but remained fairly stable in Lithuania (at 3.5% in 2012).

Figure 2 and Appendix Table S3 shows the change in access to services in comparison to the baseline year (2009). The weighted odds ratio (OR) for reporting unmet medical need after the crisis is larger than 1.00, indicating an increase as compared to before the crisis, in Latvia (OR: 1.45, 95% confidence interval (CI): 1.34–1.55 in 2010, OR: 1.49, 95% CI: 1.39–1.60 in 2011 and OR: 1.24, 95% CI: 1.15–1.34 in 2012) and Estonia (OR: 1.12, 95% CI: 0.96–1.31 in 2010, OR: 1.67, 95% CI: 1.44–1.92 in 2011 and OR: 1.98, 95% CI: 1.72–2.27 in 2012). In Lithuania, the ORs have fluctuated below and above the baseline at non-significant levels (OR: 0.86, 95% CI: 0.69–1.07 in 2010, OR: 1.09, 95% CI: 0.89–1.34 in 2011 and OR: 0.84, 95% CI: 0.69–1.04 in 2012). Unlike in Estonia and Lithuania, in Latvia unmet medical need is consistently lower for respondents with post-secondary level of education.

Figure 2. Change in unmet medical need (OR) in Estonia, Latvia and Lithuania 2005–2012, indexed to 2009



Note: ORs and their 95% Confidence Intervals adjusted for age, sex, marital status and education, weighted for survey sampling

Table 1 shows the change in reasons for unmet medical need in the three countries in 2010–2012 compared to 2009. In Estonia, there has been a significant and progressive

increase in unmet need attributed to waiting times in 2011 and 2012, an increase in unmet need attributed to distance in 2012 and in other reasons (2010–2012). In Latvia, there has been an increase in unmet need attributed to inability to afford care in 2010–2012, and increase in those delaying care to wait and see if the health problem gets better (2012) and other reasons (2011). In Lithuania, there has been an increase in those who could not take time off work or family responsibilities in 2011 and in those delaying care in 2011 and 2012. However, these changes in unmet need have to be considered in terms of their proportion of the total sample. Figure 3 shows trends in age-standardised prevalence of unmet medical need for the three main reasons and the

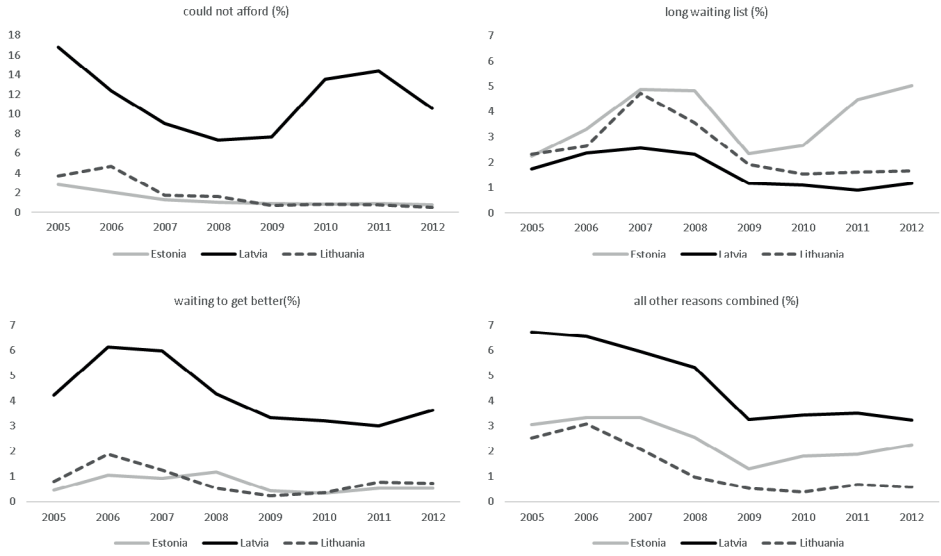
Table 1. Change in reason for unmet medical need (OR) in Estonia, Latvia and Lithuania in 2010 - 2012 compared to 2009 (ORs and 95% confidence intervals)

	could not afford	waiting list	could not take time	too far to travel	wanted to wait	other reasons
Estonia						
2009	1	1	1	1	1	1
2010	0.93	1.11	1.05	1.31	0.49*	2.08**
	[0.64,1.36]	[0.89,1.38]	[0.54,2.05]	[0.93,1.84]	[0.27,0.89]	[1.30,3.32]
2011	1.24	1.93***	1.31	1.34	0.83	1.66*
	[0.87,1.76]	[1.59,2.35]	[0.68,2.55]	[0.95,1.90]	[0.50,1.37]	[1.01,2.73]
2012	1.16	2.23***	1.64	1.64**	1.1	2.77***
	[0.81,1.65]	[1.84,2.69]	[0.89,3.04]	[1.19,2.28]	[0.68,1.77]	[1.75,4.40]
Latvia						
2009	1	1	1	1	1	1
2010	1.80***	0.89	0.99	0.86	1.02	1.29
	[1.63,1.98]	[0.68,1.15]	[0.79,1.23]	[0.60,1.22]	[0.87,1.19]	[1.00,1.67]
2011	1.96***	0.69**	0.85	1.28	0.94	1.30*
	[1.79,2.15]	[0.53,0.91]	[0.69,1.06]	[0.93,1.76]	[0.81,1.09]	[1.01,1.67]
2012	1.36***	0.92	0.79*	1.11	1.21*	1.29
	[1.23,1.50]	[0.71,1.18]	[0.63,1.00]	[0.80,1.55]	[1.04,1.40]	[0.99,1.66]
Lithuania						
2009	1	1	1	1	1	1
2010	1.18	0.67**	1.06	0.96	1.82	0.75
	[0.77,1.79]	[0.49,0.90]	[0.42,2.72]	[0.42,2.19]	[0.89,3.73]	[0.33,1.69]
2011	1.26	0.76	3.67**	1.1	2.91***	0.95
	[0.80,1.96]	[0.56,1.01]	[1.58,8.52]	[0.53,2.27]	[1.59,5.32]	[0.47,1.91]
2012	0.73	0.64**	1.94	1.61	2.31**	0.8
	[0.47,1.15]	[0.48,0.86]	[0.67,5.57]	[0.84,3.09]	[1.26,4.23]	[0.39,1.61]

Note: Odds ratios adjusted for age, sex, marital status and education; weighted for survey sampling. Other reasons include: fear of doctor/hospitals/examination/treatment; did not know any good doctor or specialist; other. * $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$.

combined 'other' category in 2005–2012. The scale of unmet need attributed to inability to afford care in Latvia has been and remains disproportionately high, compared to neighbouring countries and other causes. It has increased during the crisis and remains the single largest barrier to accessing services there, followed by delaying care while waiting to get better. At the same time, Estonia exhibits a sharp increase in unmet need attributed to long waiting lists in 2011 and 2012. Lithuania has shown fairly stable trends in reasons for unmet need post-2009, with long waiting lists remaining as the leading cause but affecting only 2% of respondents.

Figure 3 Changes in reason for unmet medical need (age-standardised), in Estonia, Latvia and Lithuania, 2005–2012



DISCUSSION

Our analysis shows that between 2009 and 2012 unmet need has increased significantly in Latvia (OR: 1.24, 95% CI: 1.15–1.34) and Estonia (OR: 1.98, 95% CI: 1.72–2.27), but not Lithuania (ORs: 0.84. 95% CI: 0.69–1.04). The main drivers of increased unmet need were inability to afford care in Latvia and long waiting lists in Estonia. In Lithuania, waiting lists were also seen as the main barrier, however the increase has been in seen in respondents waiting to get better on their own.

This study has a number of limitations. First, due to the nature of EU-SILC, the data are self-reported, and how unmet need for medical examination or treatment is perceived may vary, both within and among countries and over time, although the extent to which this really is a problem is unclear[18, 19]. Second, the number of respondents reporting

having unmet need in the population is generally low, inevitably reducing the power to detect significant change. Third, there is no reliable and comparable data on utilization of services, which we could include to test if any self-reported increase in unmet need corresponds to factual changes in the levels of health service use in different settings. Finally, in this study we cannot test for a direct causal relationship between the crisis and unmet need although, as we show below, the findings are consistent with what is known about the main policy changes in response to the crisis in each country.

All three the Baltic governments have engaged in substantial budgetary tightening across the public sector, including health. The first shock of the crisis did not seem to have an immediate impact on population health, with the exception of suicides, which increased by more than 10% in 2009–2010[9] and a decrease in road traffic accidents[20]. Immediate large rises in unemployment (by 11.2, 11.8 and 12 percentage points in Estonia, Latvia and Lithuania, respectively[21]), which are frequently associated with certain adverse health outcomes, such as suicide[22], reduced in 2011 and 2012, partially due to improvements in the economic situation, and partially due to migration of the labour force to other EU countries. The similarities between the three countries end at the onset of the crisis, with differences then emerging in their health system preparedness and response.

According to EU-SILC data, Latvia has continuously had one of the highest levels of unmet need among EU countries. Public expenditure on health fell from US$1380 to 1015 million between 2008 and 2012, whereas the share of private household payments rose from 33.7 to 35.1% over the same period[23]. Deep cuts were implemented across the sector in 2010, including 40% cuts to treatment services, 68% cuts to administration of health care financing, and the virtually complete elimination of existing funding for public health programmes[24]. There has been an emphasis on shifting health expenditure to individuals, with increases of varying scales in a number of pre-existing official co-payments: for outpatient appointments, per diem hospital stay, inpatient surgery, diagnostic services, etc. At the same time, the threshold for exempting those on low incomes had been €170 and below per household member per month but in 2012 this was further reduced to €130. Moreover, in 2009 a cap on the total user charges per person per year was increased from €213 to €570[4]. Given these changes, the finding that the increased need during the crisis and its aftermath was attributed to financial reasons, reversing the previous positive trend, seems intuitive. This change corresponds with these large increases in co-payments. The exemption threshold was already low and even then did not cover the full spectrum of services[4]. In summary, the level of unmet need in Latvia was highest in 2010 and 2011, which corresponds to both the delayed impact of the crisis in terms of reduced household budgets, as well as introduction of austerity measures in form of budget cuts and increases in OOP.

Habicht and Evetovits[5] note that Estonian health system was able to manage even a deep but short-term crisis because it had accumulated reserves in its main financing body, the Estonian Health Insurance Fund (EHIF), as well as benefiting from earlier reforms that eliminated inherited inefficiencies. Cost-saving measures have focussed on reducing hospital costs (by 5–6% in 2010 and 2011) and some restrictions to the benefits package for dental services and temporary sick leave. At the same time, outpatient care has been subject to implicit rationing since 2009 through increases in maximum official waiting times, from 4 to 6 weeks. The financial burden on households did not increase as user charges were maintained at the same level between 2002 and 2012, while the amount of out-of-pocket payments for health by private households as a proportion of total health expenditure decreased from 19.6% in 2008 to 18.2% in 2012[9]. The preparedness of the Estonian health system did not seem to have enabled it to maintain the pre-crisis level of access to care, as unmet need has been rising through 2010–2012, albeit the overall level still remains fairly low. The gradual rise, as well as the predominant reason given by respondents, long waiting lists, indicates the gradual increase in non-price rationing of health services. The above mentioned increase in minimum waiting times, coupled with reduction in fees paid by the EHIF to health providers (table 1), could potentially have led to provider-induced reduction in service supply, resulting in longer waiting lists. While longer waiting times may reduce demand for services without undermining health outcomes[25], reducing timely access may have an impact on clinical quality as well as reducing patient satisfaction[24].

In Lithuania, the existence of a counter-cyclical mechanism and the law requiring gradual year-on-year increase in state contribution for the unemployed and economically inactive population has helped to cushion the impact of the crisis on the budget of the health insurance fund (about 90% of the public health expenditure)[26]. Nevertheless, it was not enough to protect the health system, and, since 2009, there have been large cuts to provider payments, amounting to an average of 19% for secondary care services in 2010, gradually reducing to 11% for 2011 and 2012. For the majority of primary care services, the cuts were between 11 and 3% over the same period[6]. In addition, the crisis took place during the last stage of a prolonged process of reform that sought to improve efficiency in the health sector by shifting care to what was seen as a cheaper primary care setting and reducing reliance on hospital services[27]. However, neither the crisis nor the subsequent measures seemed to have an impact on access, as assessed by EU-SILC data. The level of unmet need remained fairly stable after the crisis, and there even is an indication of a potential improvement. As the cuts fell mainly on providers, it is possible that access to services remained intact for patients if the cuts prompted healthcare providers to reduce inefficiencies (e.g. high reliance on inpatient treatment). At the same time, the results of our analysis by reason for unmet need show an increase in respondents who are delaying care, which could indicate a gradual shift

in a culture of reliance on specialist care bypassing primary level towards more rational service use, or that other barriers are at play from the patients' perspective which delay them from seeking care promptly.

The trends in reasons for unmet need show that the progress achieved before the crisis has been reversed in two of the three countries examined. The main barriers to accessing care before the crisis in Latvia and Estonia (financial cost and waiting times respectively) showed an increase once the countries were hit by financial difficulties. This demonstrates the fragility of progress achieved in health care reform, as governments respond to major economic shocks.

To conclude, this study presents valuable lessons on the impact of the financial crisis and policy response on access to care. Two of the Baltic countries—Estonia and Latvia—experienced worsening access to care, albeit to a different extent and from a different baseline, largely exacerbating already existing barriers. It is concerning that the improvement in access, which was seen in years prior to crisis has reversed, as the Baltic States still tend to lag behind the rest of the EU Member States on many health indicators. The example of Lithuania suggests that that deterioration in access is not inevitable, once health policies prioritise maintenance and availability of existing services at least on pre-crisis levels, or if there is room for reducing existing inefficiencies. In addition, better financial preparedness of health systems in Estonia and Lithuania managed to protect the population from increasing unmet need due to the cost of care, which is an important achievement considering the depth of the crisis.

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CHAPTER 8.1 SUPPLEMENTARY DATA

Appendix Table S1. Economic crisis and health systems response in Estonia, Latvia and Lithuania

	Estonia	Latvia	Lithuania
Health system financing source (% total revenue)	EHIF with 69%, CG with 11%, private with 20% (2011)	CG with 60%; private with 40% (2009)	LHIF with 61%, CG with 10%; private with 29% (2011)
% GDP change	-4.2% (2008), -14.1% (2009), 2.6% (2010), 9.6% (2011), 3.9% (2012)	-2.8% (2008), -17.7% (2009), -1.3% (2010), 5.3% (2011), 5.2% (2012)	2.9% (2008), -14.8% (2009), 1.6% (2010), 6.0% (2011), 3.7% (2012)
Unemployment (%)	5.5% (2008), 13.5% (2009), 16.7% (2010), 12.3% (2011), 10.0% (2012)	7.7% (2008), 17.5% (2009), 19.5% (2010), 16.2% (2011), 15.0% (2012)	5.8% (2008), 13.8% (2009), 17.8% (2010), 15.4% (2011), 13.4% (2012)
Public expenditure on health (PPP$ per capita) [9]	1042 (2008), 1035 (2009), 1010 (2010), 1041 (2011), 1107 (2012)	741 (2008), 648 (2009), 657 (2010), 651 (2011), 674 (2012)	939 (2008), 935 (2009), 935 (2010), 965 (2011), 1010 (2012)
Areas of response measures	Reduction in CG spending; using reserves to compensate for loss of revenues to health insurance fund, cuts to provider payments, reduction in sick leave entitlements, reduction in dental coverage, increase in maximum outpatient waiting times, reduction of pharmaceutical costs.[5]	Cuts to PHE; increase in OOPs for specialist outpatient and inpatient care; introduction of global budgets for hospitals, prioritising some services and excluding others; service restructuring; pharmaceutical policy reforms. [4]	Reduction in CG spending; NHIF spending maintained due to existing compensatory mechanisms[1]; cuts to provider payments for specialist outpatient and inpatient care; reduction in sick leave entitlements, reduction of pharmaceutical costs.[6]

PHE – public expenditure on health; EHIF – Estonian Health Insurance Fund; CG – Central Government; LHIF – Lithuanian Health Insurance Fund; Source: Eurostat [21], unless stated otherwise

1 LHIF spending maintained due to measures implemented before the crisis: (1) counter-cyclical mechanism where social health insurance payments for employed population are calculated based on average salary lagged by 2 years; (2) legislation requiring year-on-year increase in state payments for the unemployed and economically inactive groups.

Appendix Table S2. Survey samples 2009-2012

	2009			2010			2011			2012		
	Obs	Mean	SD	Obs	Mean	SD	Obs	Mean	SD	Obs	Mean	SD
Estonia												
age	11308	45.73	19.21	11219	46.01	19.15	11171	46.76	19.10	11902	47.25	19.12
sex	11308	0.46	0.50	11219	0.46	0.50	11171	0.46	0.50	11902	0.46	0.50
married	11308	0.43	0.49	11219	0.43	0.49	11169	0.43	0.50	11901	0.42	0.49
education	11220	0.24	0.43	11108	0.26	0.44	11072	0.27	0.44	11768	0.28	0.45
unmet need	11220	0.05	0.22	11110	0.05	0.23	11072	0.08	0.27	11770	0.09	0.28
Latvia												
age	12207	48.93	19.26	12999	49.23	19.16	13503	49.67	19.08	12964	50.67	19.02
sex	12207	0.43	0.50	12999	0.43	0.50	13503	0.43	0.49	12964	0.42	0.49
married	12206	0.43	0.50	12999	0.42	0.49	13496	0.41	0.49	12964	0.42	0.49
education	12026	0.25	0.43	12857	0.26	0.44	13354	0.28	0.45	12817	0.30	0.46
unmet need	12065	0.16	0.36	12888	0.21	0.41	13388	0.22	0.42	12843	0.19	0.40
Lithuania												
age	11214	50.47	18.75	11606	49.94	18.65	11028	50.85	18.48	11224	51.73	18.41
sex	11214	0.46	0.50	11606	0.46	0.50	11028	0.46	0.50	11224	0.46	0.50
married	11214	0.60	0.49	11606	0.60	0.49	11028	0.60	0.49	11224	0.59	0.49
education	11138	0.44	0.50	11498	0.45	0.50	10934	0.45	0.50	11161	0.46	0.50
unmet need	10723	0.04	0.19	11425	0.03	0.18	10842	0.04	0.20	11036	0.04	0.20

Appendix Table S3. Change (ORs) in unmet medical need in Estonia, Latvia and Lithuania in 2010-2012 compared to 2009

	2010					
	Odds Ratio	EIM Std. Err.	z	P>z	[95% Conf. Interval]	
Estonia						
survey year	1.1234	0.0874	1.50	0.1340	0.9646	1.3084
age (16-81)	1.0096	0.0021	4.70	0.0000	1.0056	1.0137
sex (male=1, female=0)	0.8729	0.0703	-1.69	0.0910	0.7455	1.0221
family status (married=1)	1.2407	0.0995	2.69	0.0070	1.0604	1.4518
education (post-secondary=1)	0.8476	0.0732	-1.92	0.0550	0.7157	1.0039
_cons	0.0355	0.0047	-24.96	0.0000	0.0273	0.0462
Latvia						
survey year	1.4452	0.0540	9.86	0.0000	1.3432	1.5550
age (16-81)	1.0169	0.0009	18.21	0.0000	1.0151	1.0187
sex (male=1)	0.9511	0.0369	-1.29	0.1970	0.8814	1.0263
family status (married=1)	0.9035	0.0354	-2.59	0.0100	0.8367	0.9756
education (post-secondary=1)	0.7040	0.0318	-7.77	0.0000	0.6443	0.7692
_cons	0.0973	0.0058	-38.97	0.0000	0.0865	0.1094
Lithuania						
survey year	0.8629	0.0954	-1.33	0.1820	0.6949	1.0717
age (16-81)	1.0250	0.0029	8.78	0.0000	1.0193	1.0306
sex (male=1)	0.7271	0.0865	-2.68	0.0070	0.5759	0.9180
family status (married=1)	0.8028	0.0926	-1.91	0.0570	0.6404	1.0063
education (post-secondary=1)	0.9020	0.1004	-0.93	0.3540	0.7252	1.1218
_cons	0.0145	0.0031	-19.99	0.0000	0.0096	0.0220

Appendix Table S3 (continued)

	2011					
	Odds Ratio	EIM Std. Err.	z	P>z	[95% Conf. Interval]	
Estonia						
survey year	1.6656	0.1214	7.00	0.0000	1.4438	1.9214
age (16-81)	1.0121	0.0019	6.38	0.0000	1.0084	1.0158
sex (male=1, female=0)	0.8082	0.0587	-2.93	0.0030	0.7010	0.9319
family status (married=1)	1.0322	0.0752	0.43	0.6640	0.8948	1.1906
education (post-secondary=1)	0.8532	0.0697	-1.94	0.0520	0.7270	1.0013
_cons	0.0351	0.0045	-26.21	0.0000	0.0273	0.0451
Latvia						
survey year	1.4935	0.0545	10.99	0.0000	1.3904	1.6043
age (16-81)	1.0188	0.0009	20.86	0.0000	1.0170	1.0206
sex (male=1)	0.9376	0.0354	-1.71	0.0880	0.8707	1.0096
family status (married=1)	0.9507	0.0360	-1.34	0.1810	0.8828	1.0239
education (post-secondary=1)	0.7205	0.0308	-7.68	0.0000	0.6626	0.7834
_cons	0.0868	0.0052	-40.93	0.0000	0.0772	0.0975
Lithuania						
survey year	1.0898	0.1140	0.82	0.4110	0.8879	1.3377
age (16-81)	1.0213	0.0028	7.70	0.0000	1.0158	1.0268
sex (male=1)	0.6837	0.0741	-3.51	0.0000	0.5528	0.8455
family status (married=1)	0.8127	0.0876	-1.92	0.0540	0.6580	1.0038
education (post-secondary=1)	0.9467	0.1015	-0.51	0.6090	0.7673	1.1680
_cons	0.0175	0.0035	-19.98	0.0000	0.0118	0.0260

Appendix Table S3 (continued)

	2012					
	Odds Ratio	EIM Std. Err.	z	P>z	[95% Conf. Interval]	
Estonia						
survey year	1.9763	0.1384	9.73	0.0000	1.7229	2.2670
age (16-81)	1.0099	0.0018	5.50	0.0000	1.0063	1.0134
sex (male=1, female=0)	0.8889	0.0621	-1.68	0.0920	0.7751	1.0195
family status (married=1)	0.9840	0.0684	-0.23	0.8160	0.8587	1.1276
education (post-secondary=1)	1.0118	0.0757	0.16	0.8750	0.8738	1.1716
_cons	0.0366	0.0044	-27.36	0.0000	0.0288	0.0463
Latvia						
survey year	1.2394	0.0470	5.66	0.0000	1.1506	1.3351
age (16-81)	1.0182	0.0010	19.18	0.0000	1.0163	1.0200
sex (male=1)	1.0170	0.0403	0.43	0.6700	0.9410	1.0991
family status (married=1)	0.9306	0.0370	-1.81	0.0710	0.8608	1.0061
education (post-secondary=1)	0.6796	0.0309	-8.49	0.0000	0.6216	0.7430
_cons	0.0884	0.0055	-39.15	0.0000	0.0783	0.0998
Lithuania						
survey year	0.8437	0.0890	-1.61	0.1070	0.6861	1.0375
age (16-81)	1.0250	0.0030	8.40	0.0000	1.0191	1.0309
sex (male=1)	0.7456	0.0830	-2.64	0.0080	0.5993	0.9274
family status (married=1)	0.8549	0.0946	-1.42	0.1560	0.6883	1.0619
education (post-secondary=1)	0.9461	0.1033	-0.51	0.6120	0.7638	1.1718
_cons	0.0136	0.0030	-19.59	0.0000	0.0089	0.0209

Note: Weighted for survey sampling