The effects of public and private health care expenditure on health status:

comparative analysis

U.S., Canada, England, Australia, Russia

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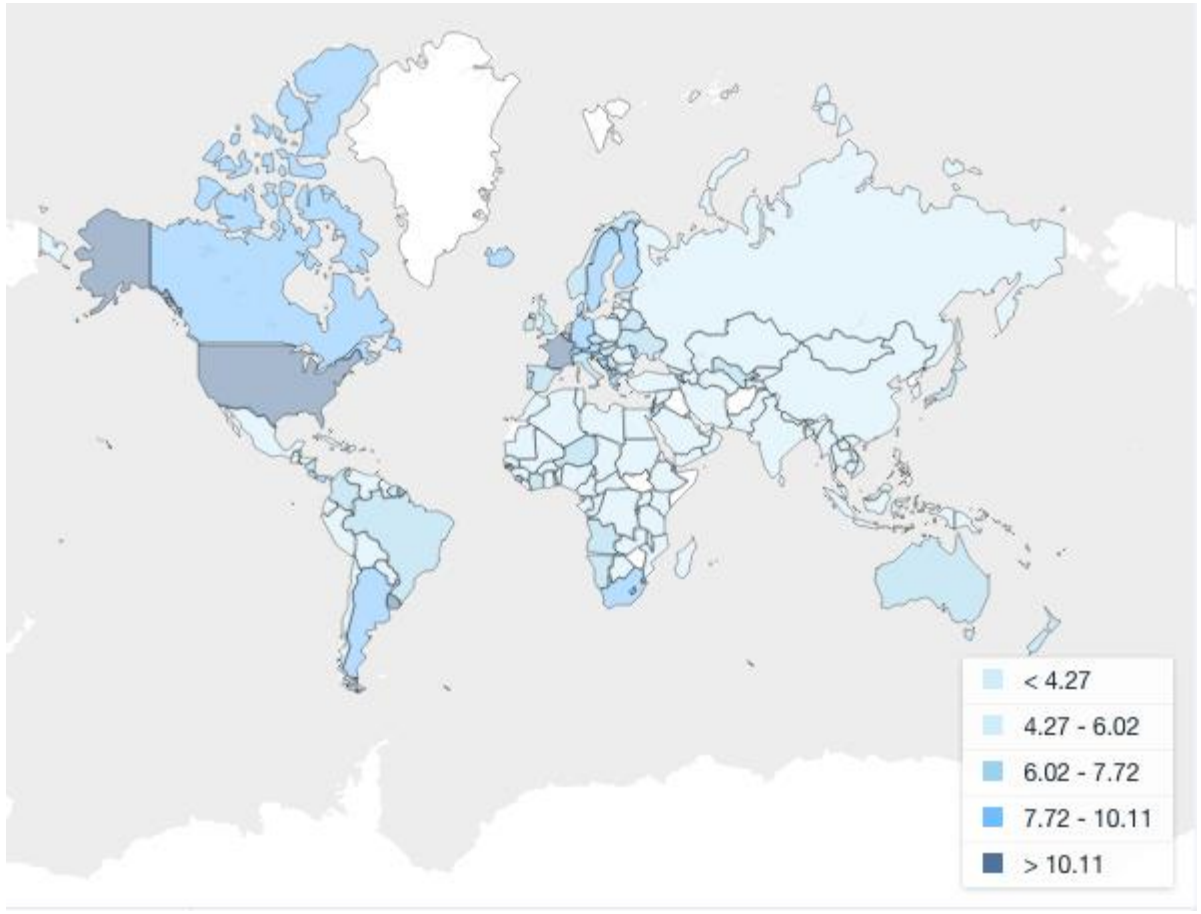
Motivation

From 1995 to 2015:

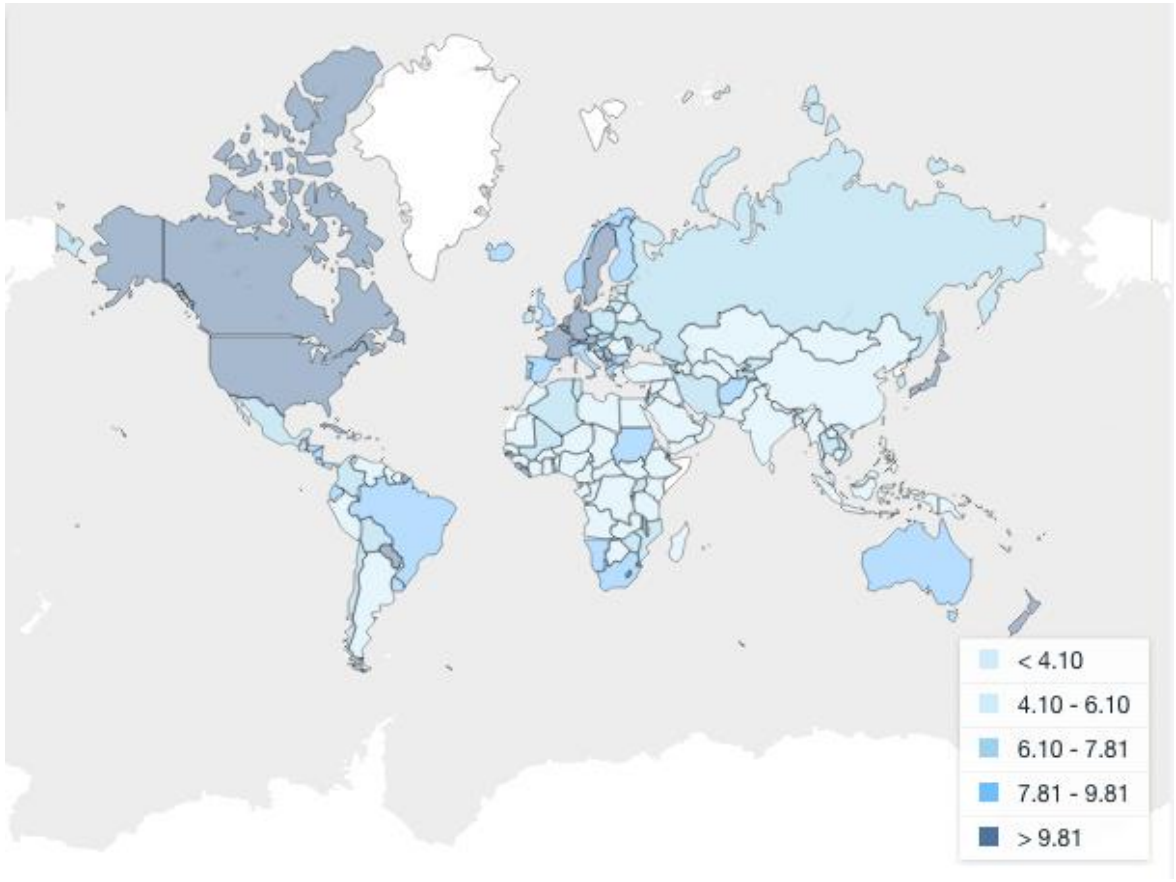
- ✓ high level of preventable death
- ✓ "optimization" of the medical system
- ✓ coverage of pensioners by primary healthcare *(women over 55 and men over 60)* estimated double the level for working-age adults
- ✓ rising expenditure not deliver higher quality or wider access to the population
- ✓ development of the private services sector

Health expenditure, total (% of GDP)

1995:

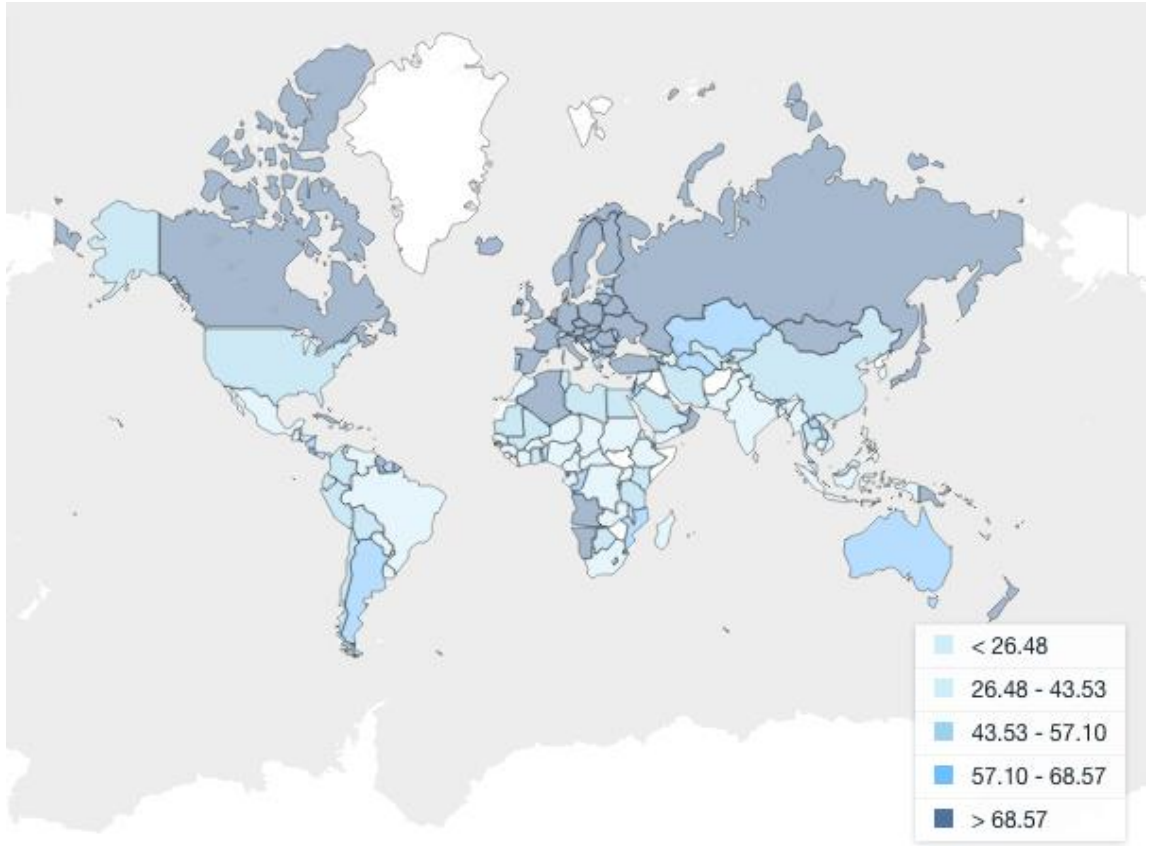


2015:

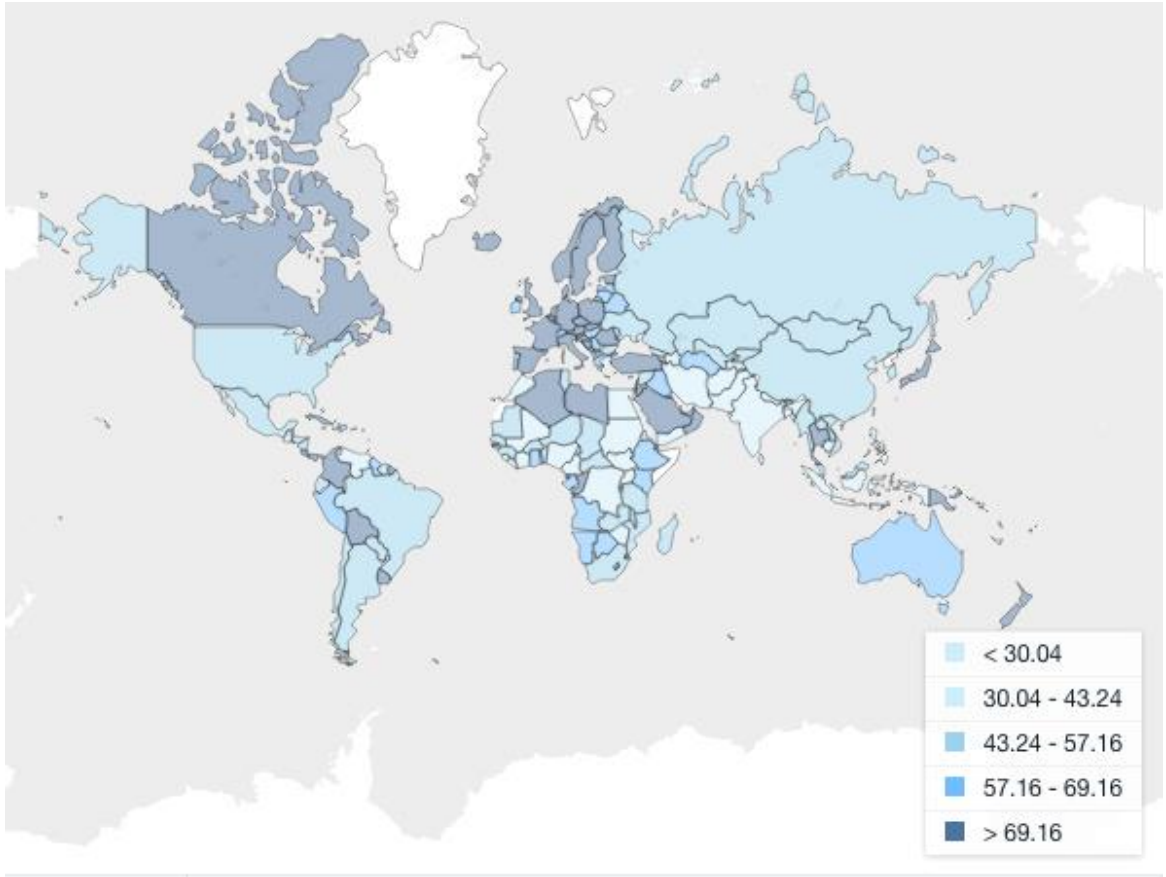


Health expenditure, public (% of total health expenditure)

1995:

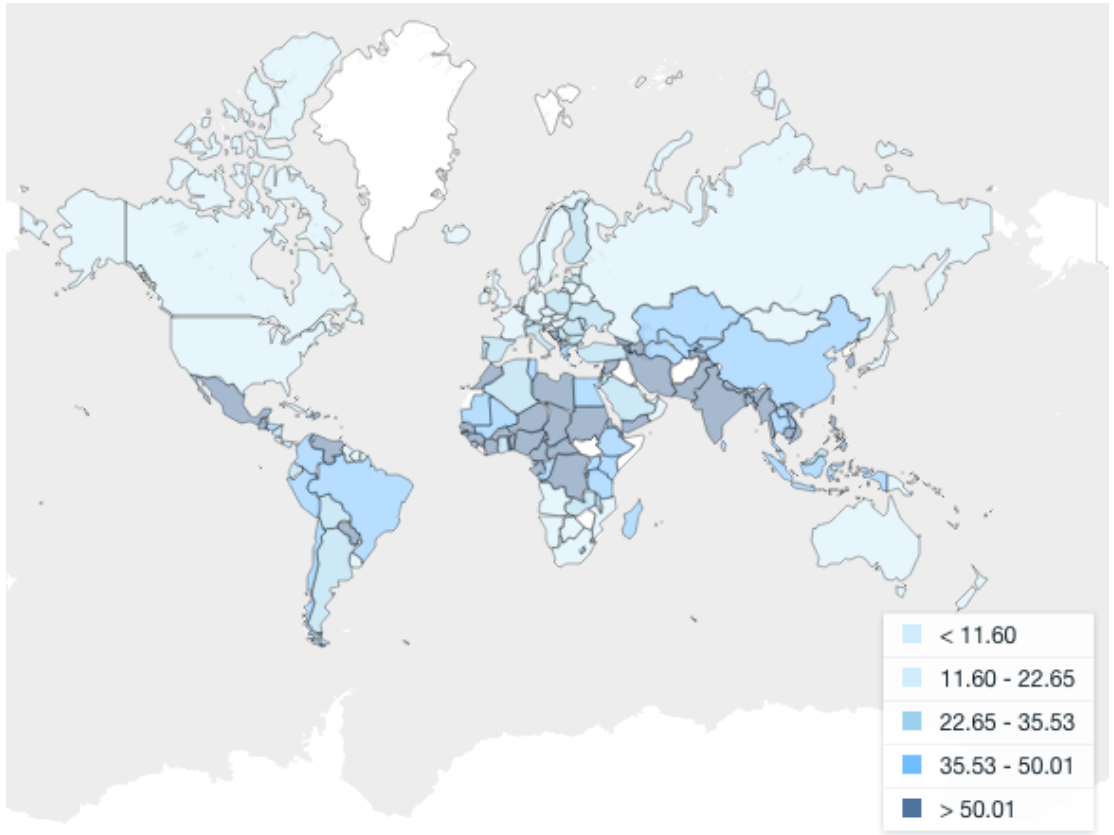


2015:

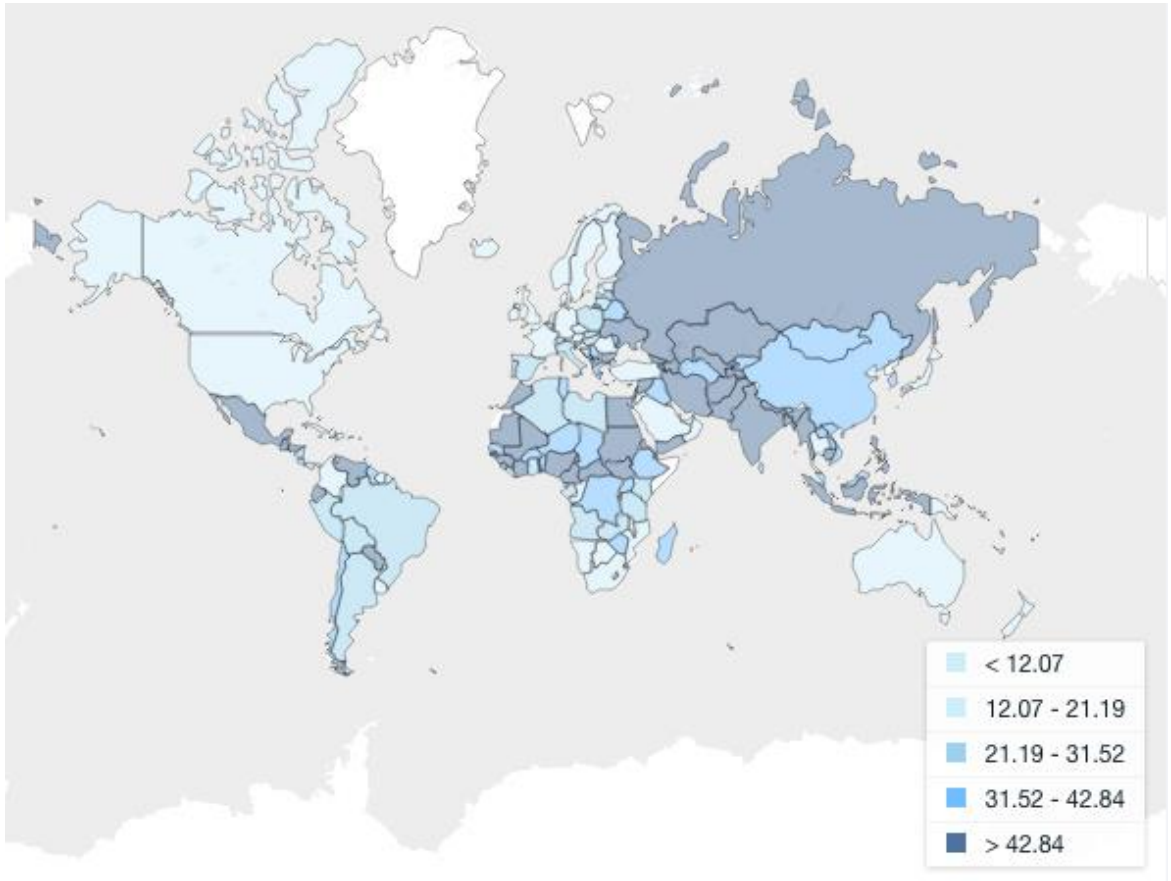


Out-of-pocket health expenditure (% of total expenditure on health)

1995:



2015:



Theoretical framework

- Human capital model is: quality health significantly influences human capital development through the additional working time and utility derived from good health.

Grossman M. The demand for health: A theoretical and empirical investigation. New York: Columbia University Press; 1972.

- When one holds constant those changes in life style that have an impact upon health (e.g. smoking, drinking, traffic accidents, dangers on the job) and adjusts for inflation and population size, health care expenditures do bear a positive relationship to health status.

Wolfe BL. Health status and medical expenditures: is there a link? Soc Sci Med 1986; 22

- The share of income that countries spend on health is greater for high income countries, with health spending as a share of gross domestic product (GDP) ranging from about 1.5% to 13%.
- Total health expenditure is considered as a summation of both public and private spending on all health related goods and services.

Poullier J-P, Hernandez P, Kawabata K, Savedoff DW. Patterns of global health expenditures: results for 191 countries. WHO Discussion Paper No 51. 2002.

Data

- The study pooled cross-section and annual time series data from 1995 to 2015.
- The data used in the empirical analysis were sourced from the World Bank, World Development Indicators (WDI).

The variables are:

- public health expenditures;
- private health expenditures;
- gross domestic product per capita;
- proportion of the population under 18 years old;
- proportion of the population between 18 to 55 years old, over 56 years old;
- life expectancy at birth (years);
- death rate;
- income;
- quality measure;
- age of household head.

Hypotheses

H1: a negative correlation between the prevalence of private insurance and demand for publicly-insured services.

H2: a positive correlation between an increase in private health care expenditure significantly allow to increase life expectancy at birth and a negative correlation between death rate.

Assumption (H1)

Can universal healthcare coverage be realistically achieved through private expenditure?

1. In countries where healthcare is principally financed through public funds, out-of-pocket spending is typically low (e.g. UK).

2. Out-of-pocket spending is also low in countries where healthcare is largely financed through private funds in the form of private voluntary insurance (e.g. US).

Coverage in England ~100%

Health insurance coverage in U.S.:
Private – 66%;
Governmental – 27%

Model (H1)

$$P_{it} = a_1 Age_{it} + b_2 Income_{it} + c_3 Quality_t + e_{it}$$

where

P_{it} – probability of out-of-pocket expenditures;

Age_{it} – age of head of household;

$Income_{it}$ – income of age group (rich, middle, poor);

$Quality_t$ - waiting lists of medical care;

e_{it} - error term.

Estimation (H1)

	Private insurance		Attitude to public spending			
			Bivariate ML		Probit	
	Coefficient	T-value	Coefficient	T-value	Coefficient	T-value
Age of head	0,982	8,538	0,727	4,328	0,571	3,49
Income	0,364	24,380	0,093	2,607	0,008	0,32
Quality	0,017	1,858	- 0,024	0,224	-0,046	0,44

Findings (H1)

- ✓ An interaction between the public and private healthcare expenditures, it comes as much from an increase in the availability of care in the private sector as from a perceived fall in the quality of the public sector.

- ✓ Health care is a "superior" or "luxury" good, which takes a steadily larger share of income as income rises.

Findings (H1):

The private financing in healthcare could also be justified as a means of promoting overall health care sector efficiency through competition.

The failings of private financing in healthcare to promote cost efficiency are related to a series of factors, which present in the Russian case:

1) the fact that insurers do not engage in selective contracting since this conflicts with their main dimension of differentiation, i.e. choice of provider;
2) the type of provision in healthcare makes it difficult to introduce cost-effectiveness criteria in the delivery of care;
3) individual consumers “vote with their feet”;
4) practice of payment in public sector allows a substantial degree of leverage for doctors to shift costly procedures twice: from private services to the public network.

Model (H2)

$$Lexp. = \alpha_1 + \beta_1 PubE + \beta_2 \mathrm{PrE} + \beta_3 Y + \beta_4 N_{17} + \beta_5 N_{18-55} + \beta_6 N_{56} + \varepsilon_{it}$$

where

Lexp. - life expectancy at birth in country *i* in period *t*;

PubE - public health expenditure;

PrE - private health expenditure;

Y - per capita real income;

$N_{17,\ 18\text{-}55,\ 56}$ - population age groups of below 17, 18–55 and above 56 years respectively expressed as a percentage of total population;

α_i - time invariant and captures country-specific effect that was not included in the model;

ε_{it} - error term.

Estimation (H2)

an increase in private health care expenditure significantly allow to increase life expectancy at birth

	GLS-fixed effects model		GLS-random effects model	
Variables	**(1)**	**(2)**	**(1)**	**(2)**
Constant	41.577	42.261	41.357	43.000
Real GDP Per Capita	0.002 ***	0.002***	0.002***	0.002***
Health Expenditure (Total)	0.697***		0.615 ***	
Health Expenditure (Public)		1.039***		0.983***
Health Expenditure (Private)		0.528***		0.443***
Population >17 yrs	0.041	0.024	0.051	0.024
Population 18-55 yrs	0.103	0.104	0.111	0.102
Population >56 yrs	−0.421	−0.491	−0.433	−0.509
HIV Prevalence rate	−0.204***	−0.162**	−0.175***	−0.148 **
R-squared	0.735	0.734	0.138	0.139
Durbin-Watson	0.173	0.161	0.142	0.136
F-Stat.	21.705***	20.952***	11.180***	9.502***
Cross section included	4	4	4	4

Findings (H2)

- ✓ Disintegrating the effect of total health expenditure shows that an increase in both public and private health care expenditure significantly (at 1% level) increased life expectancy at birth by about 1 and 0.5 years, respectively, in the fixed effects model and about 1 and 0.4 years.

Model (H2)

$$\mathrm{D}rates = \alpha_1 + \beta_1 PubE + \beta_2 \mathrm{PrE} + \beta_3 Y + \beta_4 N_{17} + \beta_5 N_{18-55} + \beta_6 N_{56} + \varepsilon_{it}$$

where

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PubE - public health expenditure;

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$N_{17,\ 18\text{-}55,\ 56}$ - population age groups of below 17, 18–55 and above 56 years respectively expressed as a percentage of total population;

α_i - time invariant and captures country-specific effect that was not included in the model;

ε_{it} - error term.

Estimation (H2)

an increase in private health care expenditure significantly allow to reduce death rate

	GLS-fixed effects model		GLS-random effects model	
Variables	**(1)**	**(2)**	**(1)**	**(2)**
Constant	17.587	17.645	17.778	17.070
Real GDP Per Capita	−0.001 ***	−0.001 ***	−0.001 ***	−0.001 ***
Health Expenditure (Total)	−0.567 ***		−0.505 **	
Health Expenditure (Public)		−0.839 ***		−0.797 ***
Health Expenditure (Private)		−0.445 ***		−0.381***
Population <17 yrs	0.018	0.025	0.010	0.026
Population 18-55 yrs	−0.036	−0.042	−0.042	−0.040
Population >56 yrs	0.377	0.422	0.386	0.436
HIV Prevalence rate	0.125**	0.099**	0.10**	0.085 **
R-squared	0.703	0.702	0.148	0.151
Durbin-Watson	0.211	0.204	0.176	0.174
F-Stat.	18.508***	17.904***	12.148***	10.53
Cross section included	4	4	4	4

Findings (H2)

- ✓ An increase in total health expenditure reduces death rate (per 1000 people) by approximately 0.6 in the fixed effects model and 0.5 in the random effects model with a significance level of 1%. While public health care expenditure reduced death rate by about 0.8 in both fixed and random effects models, private health care expenditure reduced death rate by approximately 0.4 per 1000 people in the fixed and random effects models, respectively, at 1% significance level

Results

1. Both public and private health care spending showed strong positive association with health status even though public health care spending had relatively higher impact.

2. Total health care expenditure significantly influences health status through improving life expectancy at birth and death rate.

Policy makers in Russia need to organized effective public model of health care expenditures in social insurance.

Thank you for your attention!