A. Nemirovskaya, V. Kozlov

Central and frontier regions: quality of life and social well-being

This research is devoted to the study of quality of life and social well-being of central and peripheral regions, within the research project "Social structure and social institutions of the central and frontier zones of the Russian Federation: quality of life and potential for modernization", supported by the grant of Russian Humanities Research Foundation in 2013 - 2014, # 13-33-01319. Actually, the framework of this research is pre-defined by this initial project.

Consistent with F.Turner's "frontier thesis", in our previous research we have found that frontier societies in different countries all carry a common syndrome of socio-cultural attributes, ranging from higher levels of membership in voluntary associations and civic activism, to greater individualism, libertarianism, skepticism of government and others.

Not only in Russia, but also in other "frontier countries", contemporary frontier is settled by relatively recently formed local communities with specific socio-cultural features. These areas are also often characterized by quite harsh economic and climatic conditions, lower provision of public goods, higher violence, compared to the center of the country.

Historically, Russian frontier, or peripheral territory is often synonymous with a number of factors, complicating already pretty hard life of its population.

Compared to central parts of the country, frontier territories in Russia are characterized by lower provision of social infrastructure, lower overall social and economic development, shorter life expectancy, harsh climatic conditions, substantial income level differences, high volume of crime, high rate of out-migration flows and others.

Strategically, these regions play an important role in Russian economic development, geographical and political integrity of the country.

However, in the last decades we observe significant out-migration from this territories, especially among well-educated population with high social expectations.

So, **the aim of this research** is to define factors, affecting SWB on regional level in Russia.

On the basis of Russian case we investigate the level of social well-being in central and peripheral (frontier)areas and contributing factors, using regression analysis of state statistics and regional survey data.

SWB might be affected by different factors of regional level:

Material conditions: income, wealth, consumption, etc.

(Dolan,P., T. Peasgood and M. White (2008),"Do we really know what makes us happy?A review of the economic literature on the factors associated with subjective well-being", Journal of Economic Psychology, Vol. 29, pp. 94-122.)

Health status, unemployment, social contact and safety

(Boarini, R., M. Comola, C. Smith, R. Manchin and F. De Keulenaer (2012), What Makes for a Better Life? The determinants of subjective well-being in OECD countries: Evidence from the Gallup World Poll, STD/DOC (2012) 3, OECD.)
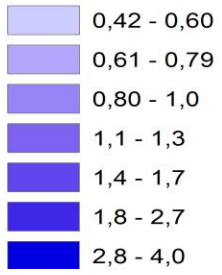
Environmental quality, noise and air pollution

(Silva, J.,F. De Keulenaer and N. Johnstone (2012), "Individual and Contextual Determinants of Satisfaction with Air Quality and Subjective Well-Being: Evidence based on Micro-Data", OECD Environment Directorate Working Paper, OECD Publishing, Paris.; Weinhold,D. (2008), "How big a problem is noise pollution? A brief happiness analysis by a perturbable economist", MPRA Working Paper, No. 10660.)

Personal security, living in unsafe or deprived area, perceived crime rates (Balestra, C.and J. Sultan (2013), "Home Sweet Home: The Determinants of Residential Satisfaction and Its Relation with Well-Being", OECD Statistics Directorate Working Papers, OECD, Paris; Helliwell, J.F. and S. Wang (2011), "Trust and Well-being", International Journal of Wellbeing, available online at: www.internationaljournalofwellbeing.org/index.php/ijow/issue/current.)
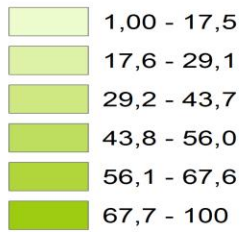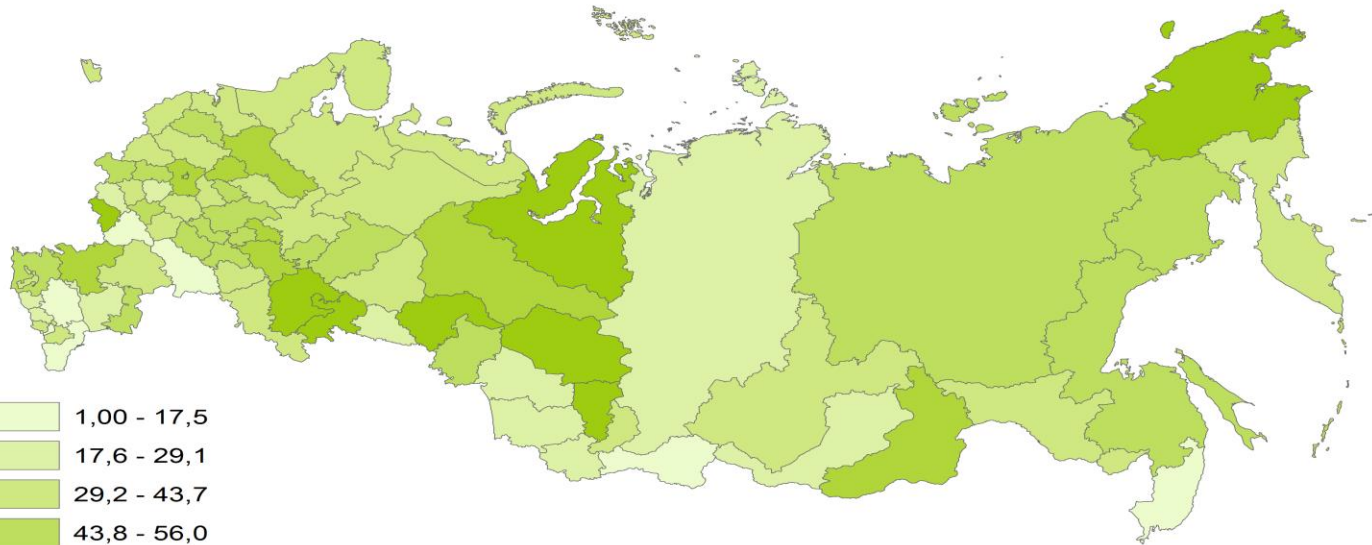
The index of natural resource potential, 1998

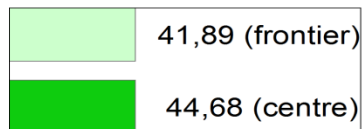0,42 - 0,60
0,61 - 0,79
0,80 - 1,0
1,1 - 1,3
1,4 - 1,7
1,8 - 2,7
2,8 - 4,0

Central and frontier regions of Russia

Centre

Frontier

1,00 - 17,5
17,6 - 29,1
29,2 - 43,7
43,8 - 56,0
56,1 - 67,6
67,7 - 100

Social well-being index (Zirkon, 2008)

41,89 (frontier)
44,68 (centre)

Dwelling houses construction, 2011

	29 - 129
	130 - 251
	252 - 333
	334 - 393
	394 - 518
	519 - 680
	681 - 1153

	279,67 (frontier)
	414,08 (centre)

Life expectancy (male), 2011

	56,25 - 59,00
	59,01 - 60,80
	60,81 - 62,70
	62,71 - 64,50
	64,51 - 66,30
	66,31 - 68,50
	68,51 - 72,37

	60,43 (frontier)
	64,13 (centre)
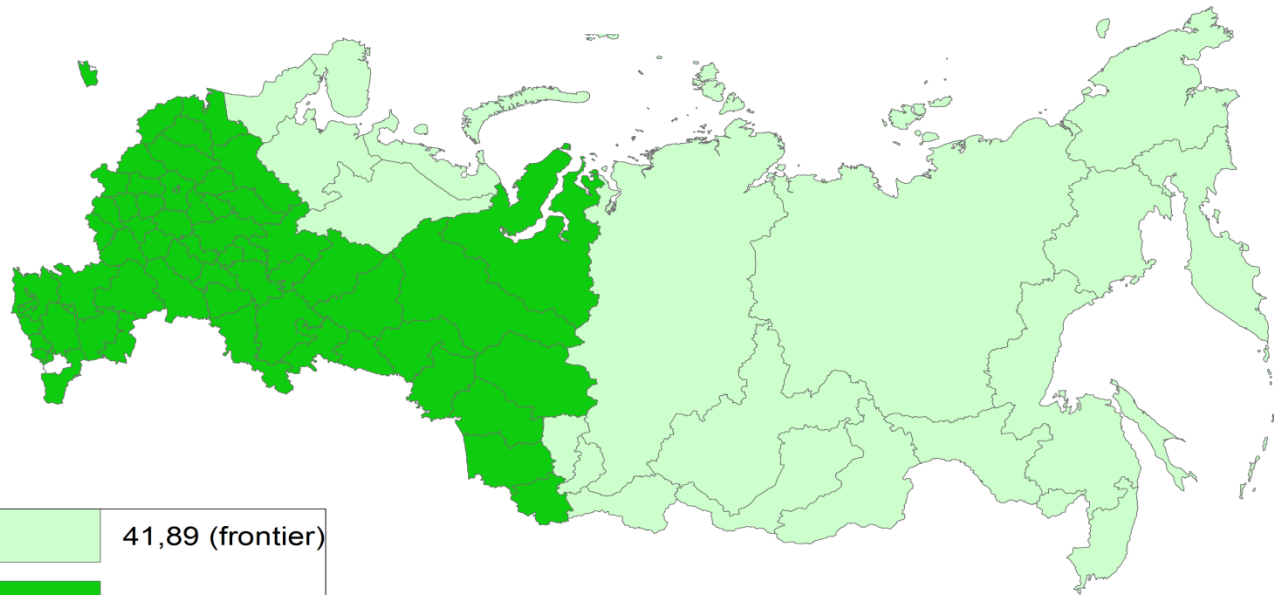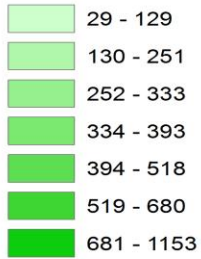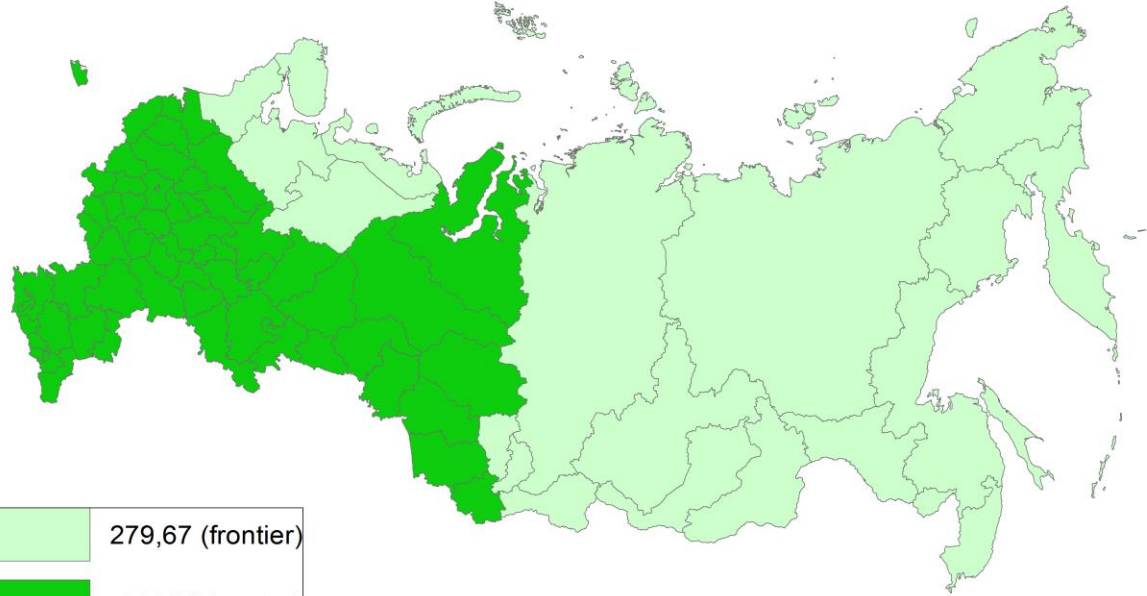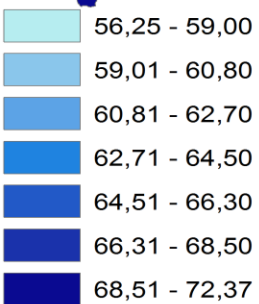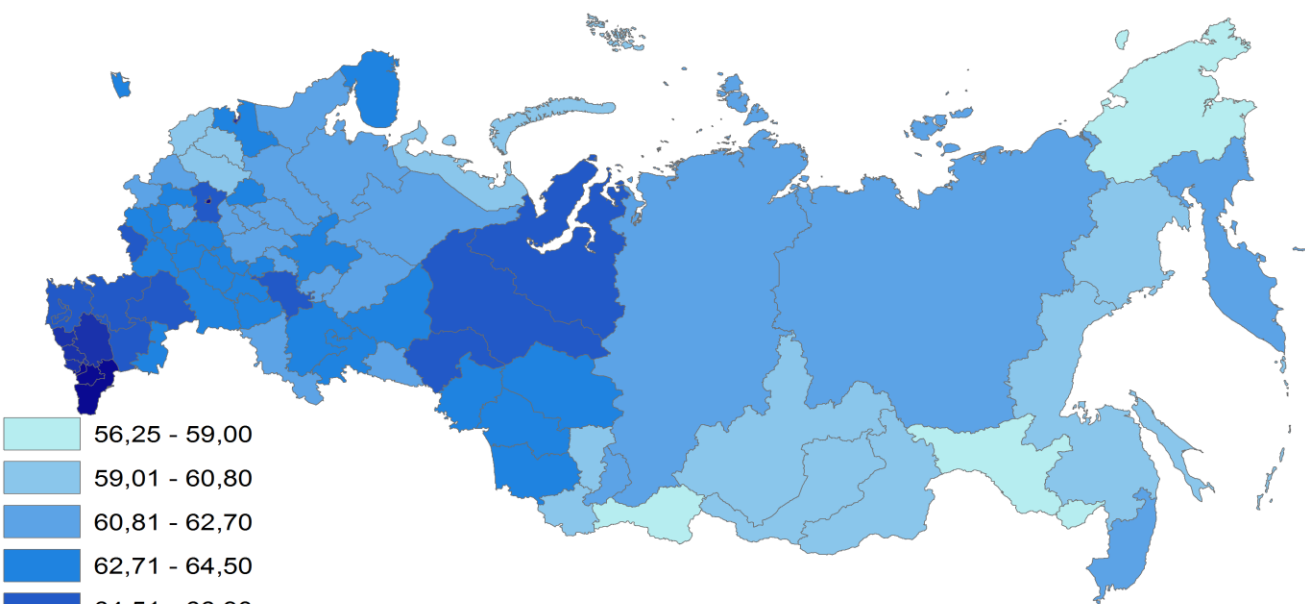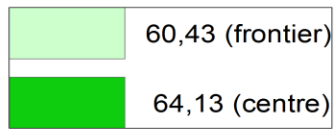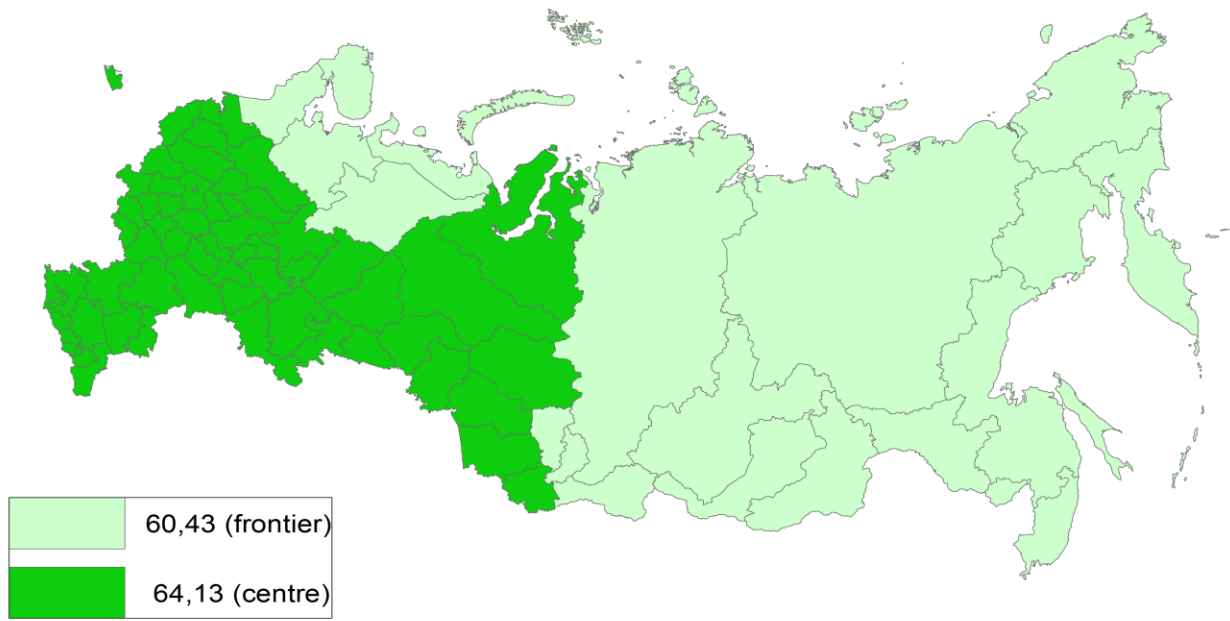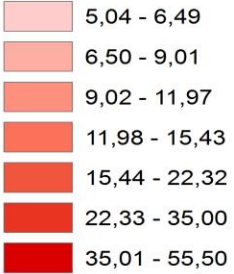
Number of homicides (per 100 000), 2011

5,04 - 6,49
6,50 - 9,01
9,02 - 11,97
11,98 - 15,43
15,44 - 22,32
22,33 - 35,00
35,01 - 55,50

10,28 (centre)
19,60 (frontier)
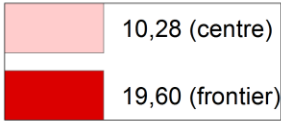
Number of abortions
(per 100 births), 2011

11,0 - 29,0	
29,1 - 50,0	
50,1 - 66,0	
66,1 - 79,0	
79,1 - 93,0	
93,1 - 116,0	

65,66 (centre)	
82,95 (frontier)	
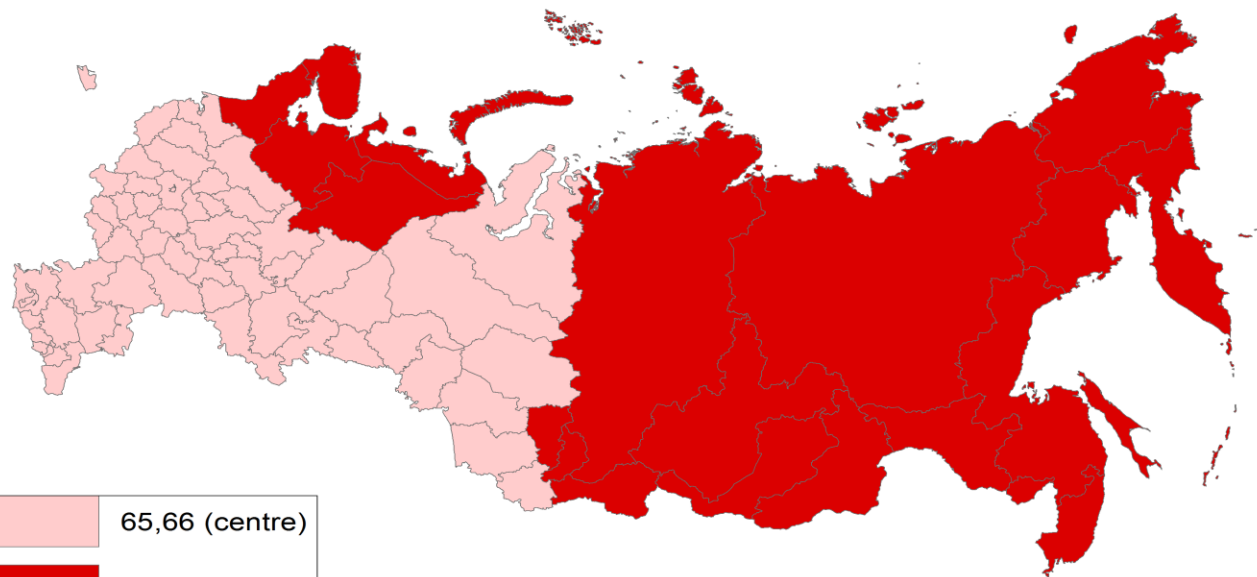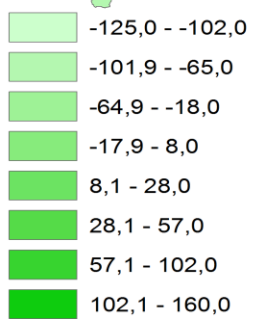
Migration rate (per 10 000), 2011

-125,0 - -102,0
-101,9 - -65,0
-64,9 - -18,0
-17,9 - 8,0
8,1 - 28,0
28,1 - 57,0
57,1 - 102,0
102,1 - 160,0

-40,81 (frontier)

14,58 (centre)

15,6 - 32,1
32,2 - 40,9
41,0 - 45,1
45,2 - 48,6
48,7 - 56,1
56,2 - 74,8
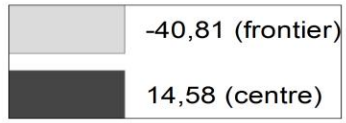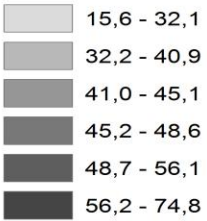
Provision of social Infrastructure (RiaRating, 2012)

44,94 (centre)

45,98 (frontier)
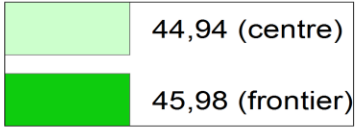
Model

- **Dependent variable** - Social well-being index (SWB)

- OLS regressions with robust standard errors

- Exclude Chechnya, the Moscow city and the so-called autonomous regions (generally Chukotka, Khanty-Mansi, Nenets, Yamalo-Nenets territories)

- Zabaykalskiy kray excluded, but used for robustness check

Means of variables (76 regions)

	Centre	Frontier
SWB	43,62	38,88
urban population (*urban*), %	67,86	75,38
population (*pop*), '000	1961,51	1088,83
population dencity (*pop_den*), 1 per sq. km	177,67	4,79
human development index (*hdi_10*)	0,82	0,82
average income (*av_income*), rub	16 591,26	20 915,07
natural resources potential (*res_98*)	1,13	2,16
Social infrastructure security (*soc_inf_sec*)	44,91	46,08
Discharge of polluted wastewater (*water_disc*), mln cub. m	190,98	188,11
Life expectancy – male (*le_m*)	63,98	60,61
Number of registered crimes (crimes), *'0000*	1519,83	2090,56
Dwelling houses construction (*dw*), '000	407,86	270,00

Without frontier

	(1) SWB	(2) SWB	(3) SWB	(4) SWB	(5) SWB	(6) SWB
Urban	0.263*	0.0909	-0.0412	0.185	0.0507	0.256
	(0.149)	(0.199)	(0.187)	(0.211)	(0.197)	(0.185)
Pop	0.00110	0.000654	-0.00231	0.00124	0.000873	-0.00224
	(0.00140)	(0.00145)	(0.00289)	(0.00170)	(0.00144)	(0.00189)
pop_den	-0.00435**	-0.00682**	-0.0108***	-0.00472	-0.00560*	-0.00459*
	(0.00190)	(0.00261)	(0.00318)	(0.00350)	(0.00290)	(0.00259)
hdi_10	376.2***	341.5***	371.1***		361.9***	209.8**
	(110.5)	(110.0)	(116.0)		(119.1)	(99.80)
res_98	-2.972	-3.054	-3.956	0.0537	-3.937	0.128
	(2.470)	(2.750)	(2.665)	(3.214)	(2.948)	(2.942)
soc_inf_sec		0.621	0.748*	0.936*	0.521	0.556
		(0.430)	(0.405)	(0.494)	(0.457)	(0.370)
Water_disc			0.0209			
			(0.0153)			
av_income				0.000186		
				(0.000482)		
le_m				0.133		
				(0.814)		
crimes					0.00383	
					(0.00474)	
dw						0.0390***
						(0.0106)
Constant	-281.4***	-267.8***	-286.1***	-25.84	-282.9***	-183.3**
	(82.90)	(81.93)	(85.67)	(62.50)	(88.43)	(74.19)
Observations	76	76	76	76	76	76
R-squared	0.316	0.336	0.357	0.245	0.343	0.404
N	76	76	76	76	76	76
F	56.16	53.45	51.55	32.89	42.42	67.20

With frontier

	(1)	(2)	(3)	(4)	(5)	(6)
	SWB	SWB	SWB	SWB	SWB	SWB
Urban	0.401**	0.229	0.0883	0.252	0.191	0.398**
	(0.154)	(0.195)	(0.178)	(0.225)	(0.191)	(0.186)
Pop	-0.000267	-0.000708	-0.00497	-0.000745	-0.000612	-0.00365*
	(0.00183)	(0.00191)	(0.00322)	(0.00201)	(0.00187)	(0.00209)
pop_den	-0.00413**	-0.00659**	-0.0118***	-0.00272	-0.00459	-0.00434
	(0.00192)	(0.00261)	(0.00332)	(0.00319)	(0.00297)	(0.00261)
hdi_10	314.4***	280.0***	304.0***		301.2***	146.3
	(98.33)	(97.92)	(104.2)		(105.4)	(88.91)
res_98	0.710	0.619	0.332	4.358	-0.108	3.888
	(3.170)	(3.272)	(3.233)	(3.709)	(3.279)	(3.361)
soc_inf_sec		0.619	0.786*	0.688	0.457	0.553
		(0.429)	(0.402)	(0.468)	(0.451)	(0.368)
Water_disc			0.0277*			
			(0.0156)			
fr_1	-10.59*	-10.56**	-13.17**	-19.94***	-12.56**	-10.74**
	(5.491)	(5.211)	(5.694)	(6.956)	(5.645)	(4.747)
av_income				0.000672		
				(0.000491)		
le_m				-1.076		
				(0.735)		
crimes					0.00618	
					(0.00512)	
dw						0.0393***
						(0.0105)
Constant	-240.5***	-227.1***	-241.3***	50.70	-243.6***	-141.2**
	(73.57)	(72.49)	(76.41)	(55.73)	(77.87)	(65.49)
Observations	76	76	76	76	76	76
R-squared	0.345	0.365	0.400	0.332	0.381	0.434
N	76	76	76	76	76	76
F	47.63	47.00	43.91	42.29	37.65	61.61

Counter-intuitive results

- <u>discharge of polluted water</u> is positively correlated with SWB as well as a registered crimes rate. **Explanation:** higher industrialization or greater number of larger cities in the regions with high SWB;

- the positive correlation between <u>crimes rate</u> and SWB. **Explanation:** the higher level of registration in the regions with higher urbanization, the higher level of trust to police in regions with higher SWB

- <u>The life expectancy</u> changes the sign. **Explanation**: with frontier variable effect of northern-east gradient is specified

Interactions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	SWB	SWB	SWB	SWB	SWB	SWB	SWB	SWB
Urban	0.0507	0.255	0.200	0.372***	0.168	0.293	0.234	0.150
	(0.176)	(0.224)	(0.191)	(0.179)	(0.183)	(0.230)	(0.194)	(0.192)
Pop	-0.00390	-0.000845	-0.000469	-0.00365**	0.000607	-0.00123	-0.000543	2.05e-05
	(0.00311)	(0.00203)	(0.00180)	(0.00217)	(0.00149)	(0.00198)	(0.00185)	(0.00182)
pop_den	-0.0124***	-0.00296	-0.00430	-0.00403	-0.00664***	-0.00509***	-0.00654***	-0.00666***
	(0.00344)	(0.00318)	(0.00299)	(0.00261)	(0.00261)	(0.00252)	(0.00261)	(0.00260)
hdi_10	339.4***		297.8***	144.0**	318.7***		278.2***	311.4***
	(112.6)		(105.7)	(85.09)	(104.3)		(98.22)	(97.15)
res_98	-1.253	4.460	-0.0922	4.061	-1.514	4.261	0.532	-0.862
	(2.534)	(3.716)	(3.157)	(3.374)	(2.410)	(3.629)	(3.132)	(3.055)
soc_inf_sec	0.643	0.708	0.414	0.533	0.539	0.849**	0.598	0.612
	(0.414)	(0.467)	(0.455)	(0.372)	(0.423)	(0.434)	(0.433)	(0.439)
Water_disc	0.0314**							
	(0.0159)							
wst_ft	-0.0321				-0.0156			
	(0.0275)				(0.0240)			
av_income		0.000685				0.000581		
		(0.000492)				(0.000496)		
le_m		-1.014						
		(0.722)						
le_ft		-0.333***				-0.286***		
		(0.115)				(0.108)		
crimes			0.00682					
			(0.00526)					
cr_ft			-0.00612***				-0.00484**	
			(0.00275)				(0.00247)	
dw_11				0.0443***				
				(0.0111)				
dw_ft				-0.0331**				-0.0207
				(0.0177)				(0.0186)
Constant	-263.3***	45.56	-240.9***	-139.2***	-252.2***	-25.18**	-225.3***	-247.5***
	(82.99)	(54.88)	(78.10)	(62.85)	(77.68)	(11.27)	(72.69)	(72.29)
Observations	76	76	76	76	76	76	76	76
R-squared	0.382	0.336	0.383	0.431	0.344	0.324	0.364	0.347
N	76	76	76	76	76	76	76	76
F	48.99	42.79	37.76	60.70	46.19	49.67	46.97	45.60

Life expectancy

- Possible **explanation** the higher SWB in industrial cities with higher levels of pollution and dangerous working and infrastructure conditions, that lead to the higher level of external causes of diseases and diseases like respiratory ones and infections (f.e. tuberculosis).

- Additional model with the shares of employed in potentially dangerous mining (min_q) and manufacturing(man_ind) branches is used for approval

Life expectancy (additional check)

	(1)	(2)
	SWB	SWB
man_ind	1.635***	1.583***
	(0.545)	(0.540)
min_q	3.344***	3.307***
	(0.909)	(0.887)
le_fr	-0.118	-0.161
	(0.122)	(0.122)
soc_inf_sec	0.928***	0.819**
	(0.316)	(0.347)
Urban	-0.272	-0.283
	(0.239)	(0.238)
Pop	-0.000348	-5.47e-05
	(0.00185)	(0.00192)
pop_den	0.00120	0.00265
	(0.00305)	(0.00343)
av_income	0.000640	0.000702
	(0.000461)	(0.000464)
res_98	0.237	0.432
	(3.595)	(3.636)
le_m		-0.770
		(0.637)
Constant	-19.74*	34.00
	(10.60)	(48.34)
Observations	76	76
R-squared	0.439	0.446
N	76	76
F	43.31	45.30

Robustness check

- **+ Zabaykalskiy kray**

- there are no changes in significance of explanatory variables for interaction effects. For ordinary models the significance of frontier dummy is going down: only in models with life expectancy and criminal rate the frontier is significant.

- **Explanatory variables belong to 2008 period**

- the signs remain the same as well as the general significance level for both samples with and without Zabaykalskiy krai.