

Social and Demographic Challenges in the Modern Russian Frontier: Mortality Threat

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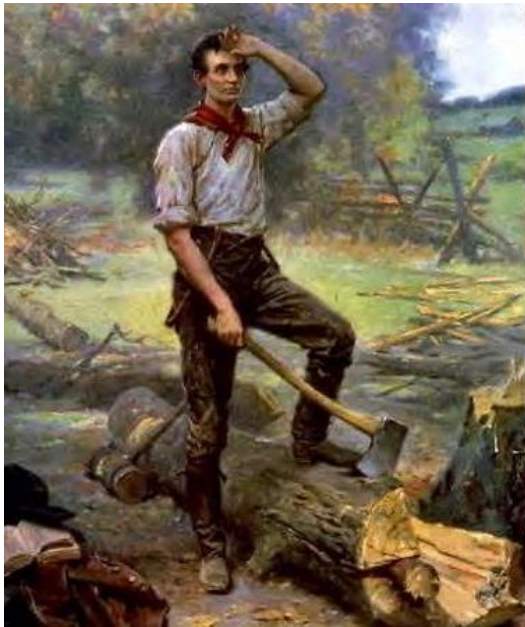
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The revival of interest to the frontier theory

F.J. Turner (1893) explained the specific features of the development of the USA by *the interaction of the settlers with the frontier* (the boundary of American settlements) and tried to prove the originality of social institutions of the United States and the diversity within the American nation due to such interaction.

The distinctive egalitarian, democratic, aggressive, and innovative features of the American character stems from the American *frontier experience*, the moving frontier line, which had impact on pioneers going through the process.

Nowadays, a number of countries are characterized by the presence of obvious center and frontier areas due to historical features of population settlement and distribution in their territory: **the USA, the Russian Federation, Canada, Argentina, Brazil, Australia, China.**



Socio-cultural properties of frontier societies:

- *Ethnic and cultural heterogeneity*
- *Higher level of social capital*
- *Individualism*
- *Economic libertarianism, egalitarianism*
- *Greater reliance on social cooperation, less reliance on government*
- *Conservatism, traditionalism*
- *Civic participation, self-organization*

Specifying the frontier as a tool for regional division

Frontier is a newly settled area populated by historically recent migration.

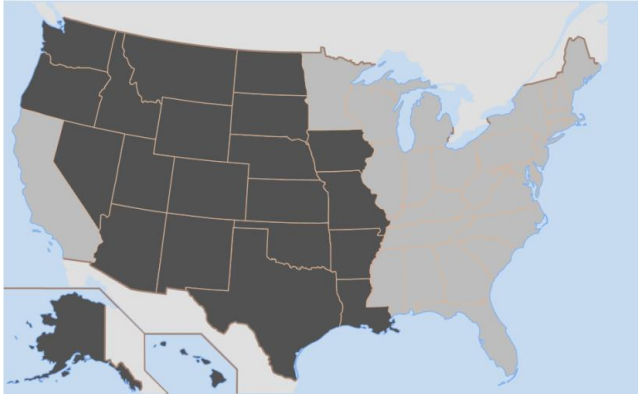
Empirically, **frontier zones are defined by:**

- **administrative remoteness** (distance from the capital, that leaves the central government only imperfectly able to maintain, police, and control its frontier territories)
- **relatively recent arrival of transitory population** (the settlers arrive in advance of the government, and therefore set up their own social institutions ahead of formal political integration)
- **population sparsity**



Frontier territory in Russia includes regions of Eastern Siberia, Far East, arctic regions of Russian North and Urals, which all were settled in masse predominantly in the XXth century, now characterized by low population density and a high proportion of urban population.

USA



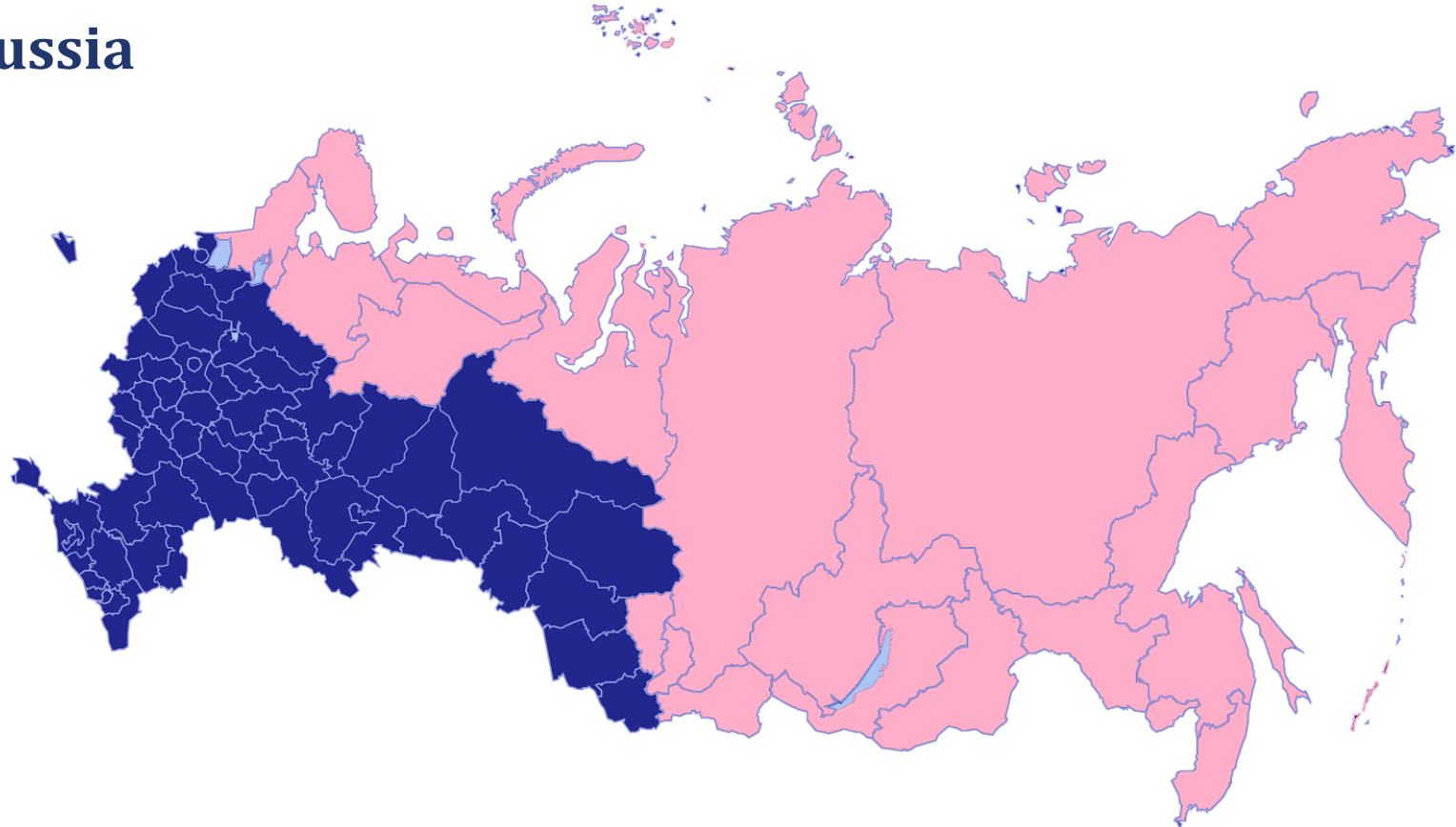
Canada



Brazil



Russia



Russian frontier: a real survival zone?

Frontier as a territory in disadvantageous socio-economic and unfavorable climatic conditions:

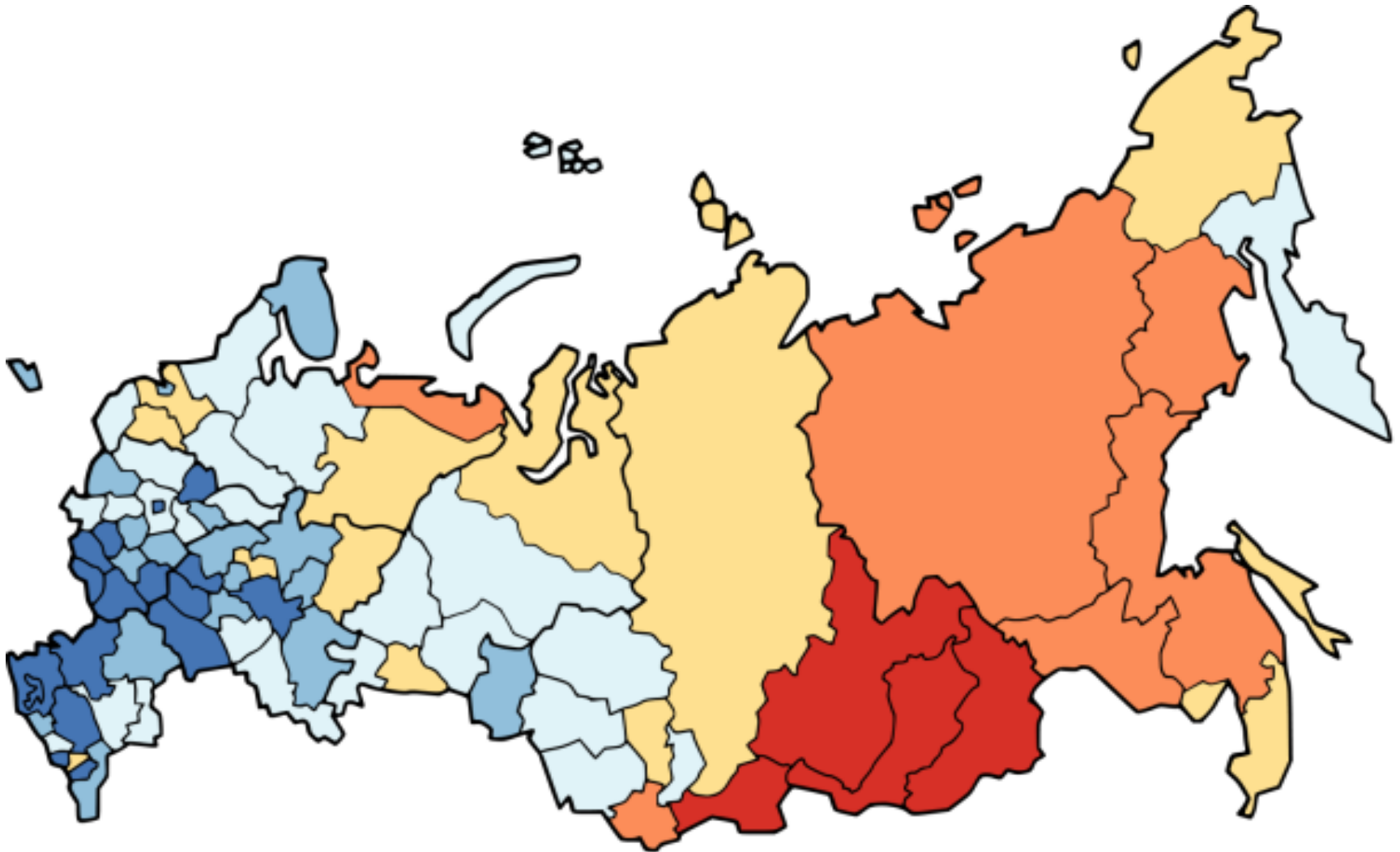
- contrasts with the center by the socio-cultural traits of their population, harsher economic and climatic living conditions, poorer environmental conditions, lower provision of public goods and a lack of social infrastructure.
- falls behind average country level in life quality and life expectancy, income, security, access to health care and others.

Demographic challenges in the frontier:

- low life expectancy,
- Increasing out-migration and an influx of immigrants from CIS countries affecting the region's endowment with human capital,
- high rates of mortality, homicide, suicide, abortions, crime and violence.



Homicide Rates across Frontier/non-Frontier Regions



Public goods provision across regions of Russia

Slum Housing as a Percentage of Total



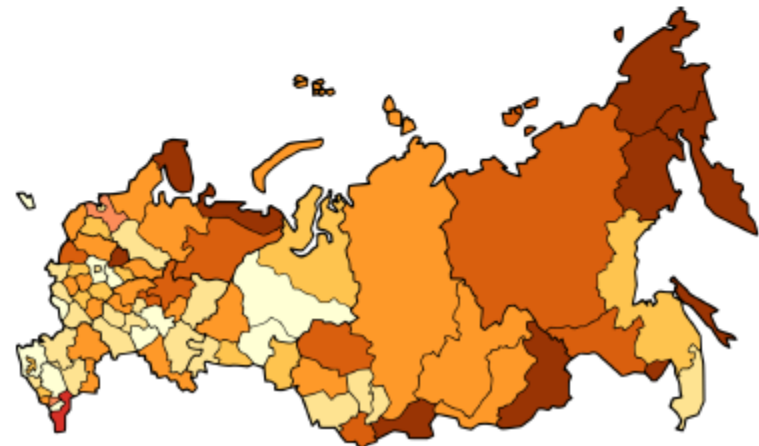
Inhabitants per Doctor



(a) Children per Educational Place (Ratio)

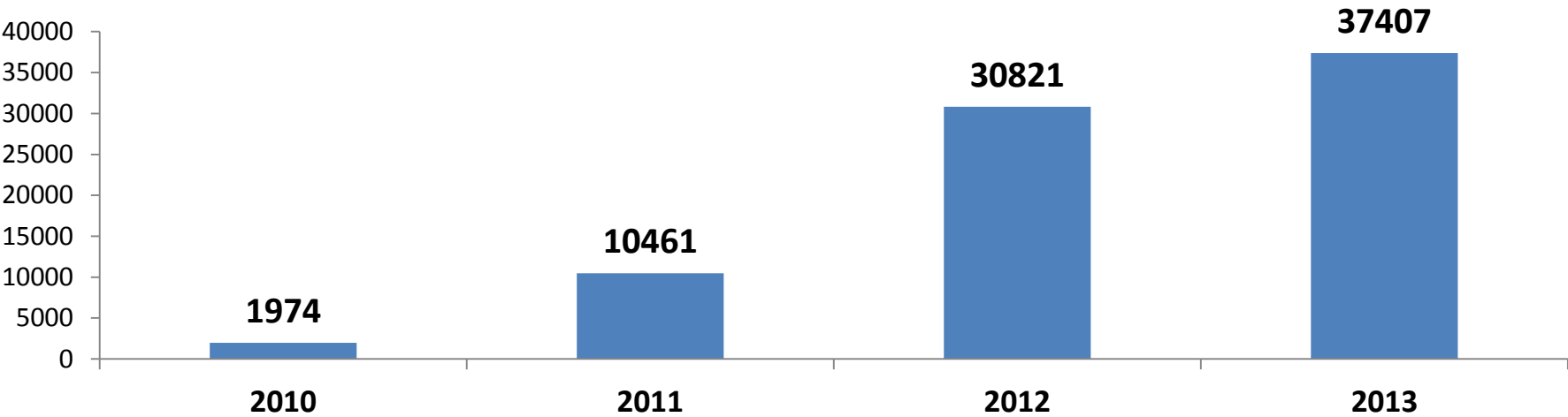


(b) Hospital Beds per Capita

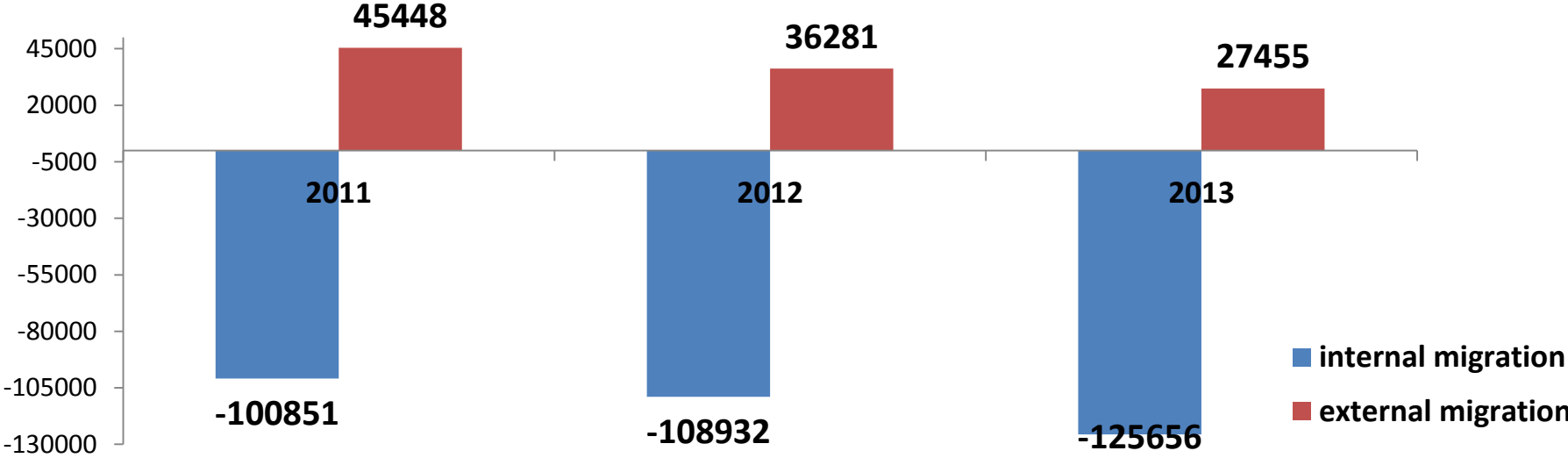


Current demographic situation in the frontier zone

Natural population increase in the frontier zone, number of people

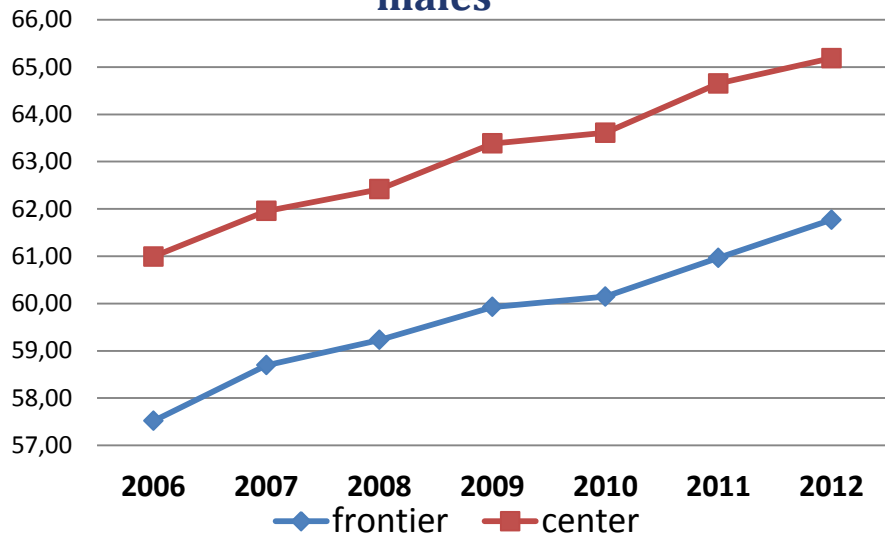


Migration gain in the frontier zone, number of people

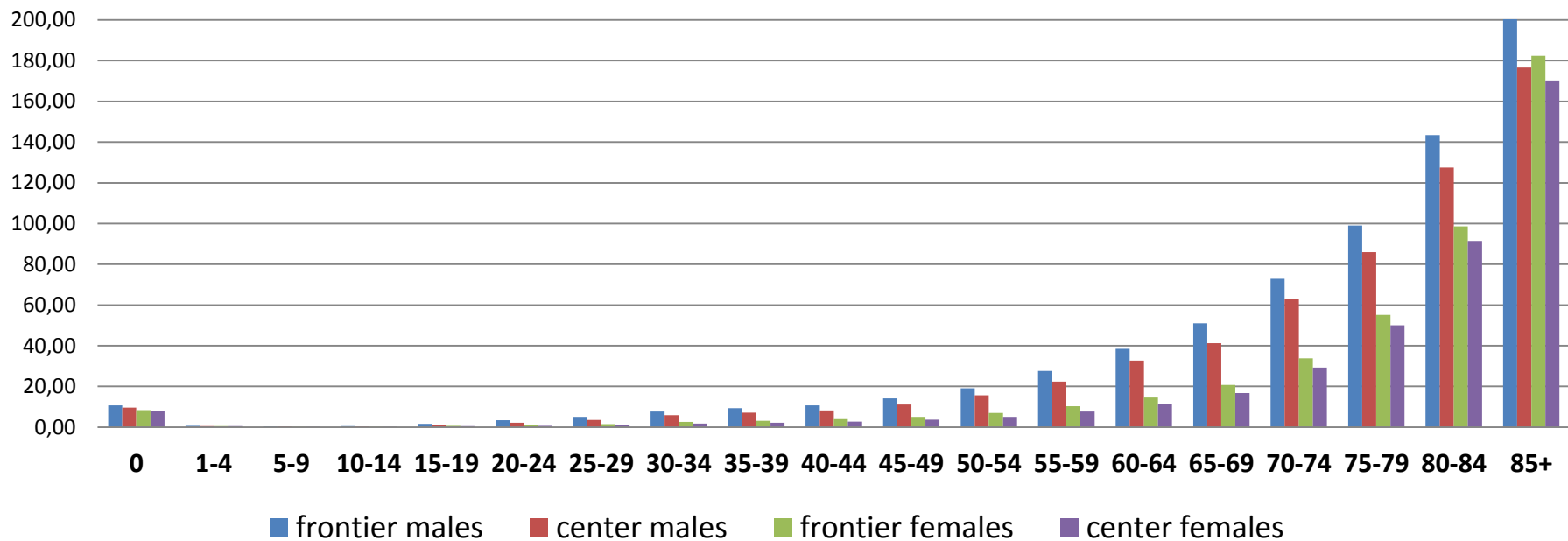
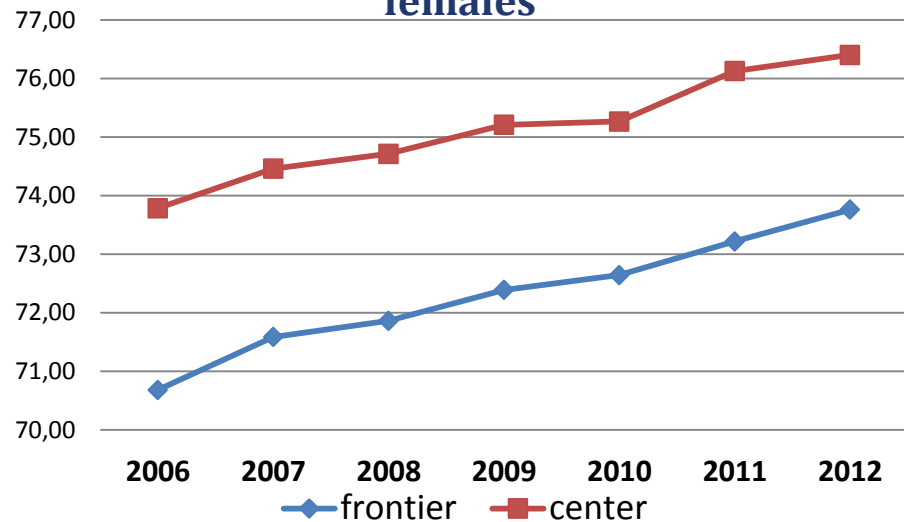


Life expectancy at birth

males



females



What fuels high mortality rates in far flung regions of Russia?

- excessive consumption of alcohol (strong spirits), “northern alcoholism”
- disadvantageous socio-economic environment
- unemployment and economic deprivation
- tensions between core (indigenous) and migrant (settling) populations, latent ethnic and religious conflicts
- low level of public order (high crime and violence rates)
- unfavorable environmental conditions, long harsh winter, extremely low temperature (Earle J., Gelbach S.)
- a so called «north-eastern gradient of mortality» (Vishnevskiy A., Shkolnikov V.)
- new unusual circumstances, disadaptation due to rapid change of life conditions (Davydovskiy I.V.)
- economic reforms and mass privatisation (Gerry C., Mickiewicz T., Nikoloski Z.)
- arduous work conditions, hazardous employment
- “polar tension syndrome” conception, “sprinter” and “stayer” migrants (Kaznacheev A.P.)
- other possible factors?

Empirical basis:

1. Statistical data provided by the Federal State Statistic Service

- The Bulletins of the State Federal Statistical Bureau (Vital Statistics of the Russian Federation; Population size and migration in the Russian Federation)
- Demographic Annual Report of the Russian Federation
- Russian Population Census Data
- Russian Statistical Yearbook

2. Statistical data from the Center for Demographic Research, Russian Economic School

The standardized coefficients of mortality rates due to 6 main types of mortality causes (infectious and parasitic diseases, tumorigenic, diseases of the circulatory system, diseases of the respiratory systems, diseases of the digestive system, external causes) and the data on life expectancy in the regions of Russia are taken from the Federal State Statistical Service databases.

The data for mortality rates due to particular causes are obtained from the Russian Database of Birthrate and Mortality (РосБРиС) of the Center for Demographic Research, Russian Economic School (ЦДИ РЭШ).

Time span: 2006, 2008, 2010 and 2012. All data are in an open access.

Research question:

What are the factors for supermortality in the contemporary Russian frontier and their contribution to different mortality causes in gender comparison?

Methods:

regression and path analysis

Dependent variables:

Mortality rate (standardized mortality coefficients per 1 000 000 population) from 3 causes according to ICD-10:

- **accidental alcoholic poisoning**
- **suicide**
- **homicide**

All 3 mortality causes are studied **separately for male and female population**.

The standard is the distribution of population in age groups according to the Russian Census in 2010.

Explanatory variables:

- Frontier (a region belonging to a frontier zone)
- Climate (an average temperature in January)
- Sales of vodka (liters per person)
- Ethnic composition of the population (the share of Russian population in a region)
- Long-term residence (the share of long-standing inhabitants, or the residents of the region who have been born within its boundaries)
- Crime rate (number of registered criminal offences per 100 000 population)
- Poverty (the ratio of the average income in the region to the value of the regional subsistence level for models on accidental alcoholic poisoning and the share of population below the poverty line for models on suicide and homicide)

Control variables:

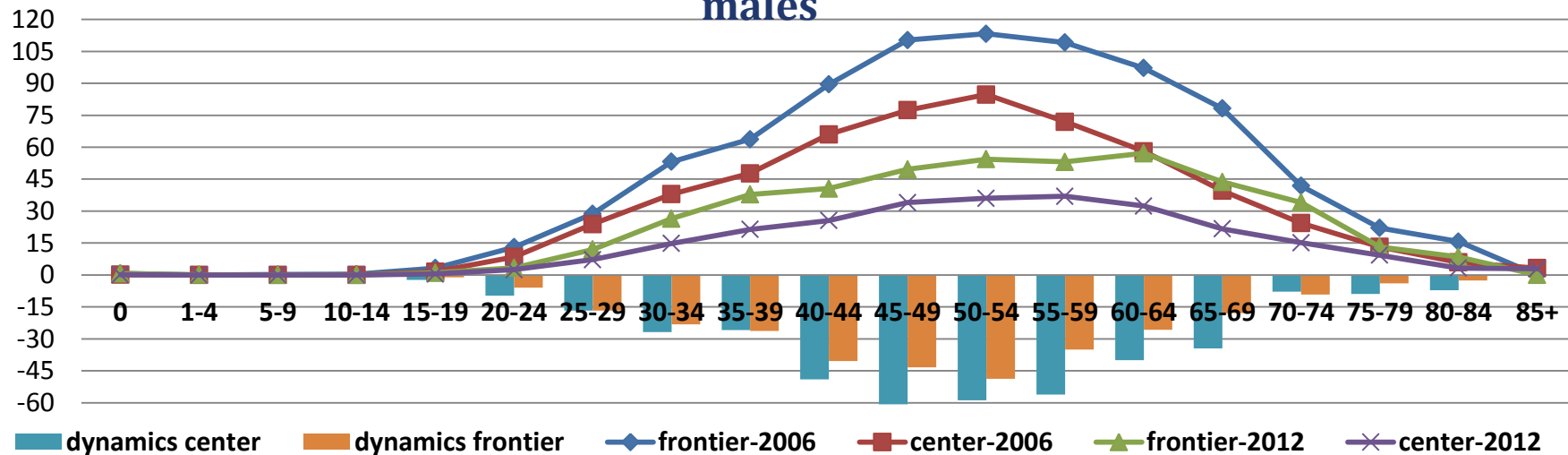
- Higher education (population with higher education per 1000 people)
- Unemployment (the percentage of unemployed in the region)
- Rural population (the percentage of rural population in a region);
- North Caucasus (Chechnya, Ingushetia or Dagestan as the regions with poor accounting for mortality causes)

Variables	Scale	Obs	Mean	Std. Dev	Min	Max
alcoholic poisoning (m)	per 100 000 population	82	279.1	192.8	10.7	756.9
suicide (m)	per 100 000 population	82	508.6	305.3	4.6	1394.5
homicide (m)	per 100 000 population	83	258.6	205.1	18.2	1569.7
alcoholic poisoning (f)	per 100 000 population	80	88.1	90.4	0	552.9
suicide (f)	per 100 000 population	81	95.9	65.2	7.4	304.5
homicide (f)	per 100 000 population	82	72.2	47.6	12.9	333.4
January temperature	Celsius degrees	83	-16.8	7.7	-34.6	1.5
crime rate	per 100 000 population	83	1792.5	548.9	364.0	2787.0
long-term residence	%	83	74.5	12.8	31.5	99.0
the share of population below the poverty line	%	82	15.1	4.7	7.3	35.7
the ratio of the average income in the region to the value of the regional subsistence level	%	82	324.9	71.1	184.8	596.6
ethnic composition of population	%	83	73.4	24.6	0.8	94.7
higher education	per 1 000 population	83	204.7	40.8	115.0	410.0
unemployment	%	83	9.1	6.5	1.7	49.7
sales of vodka	liters per person	82	11.2	4.0	0	21.7
share of rural population	%	83	40.4	23.4	1.0	80.0

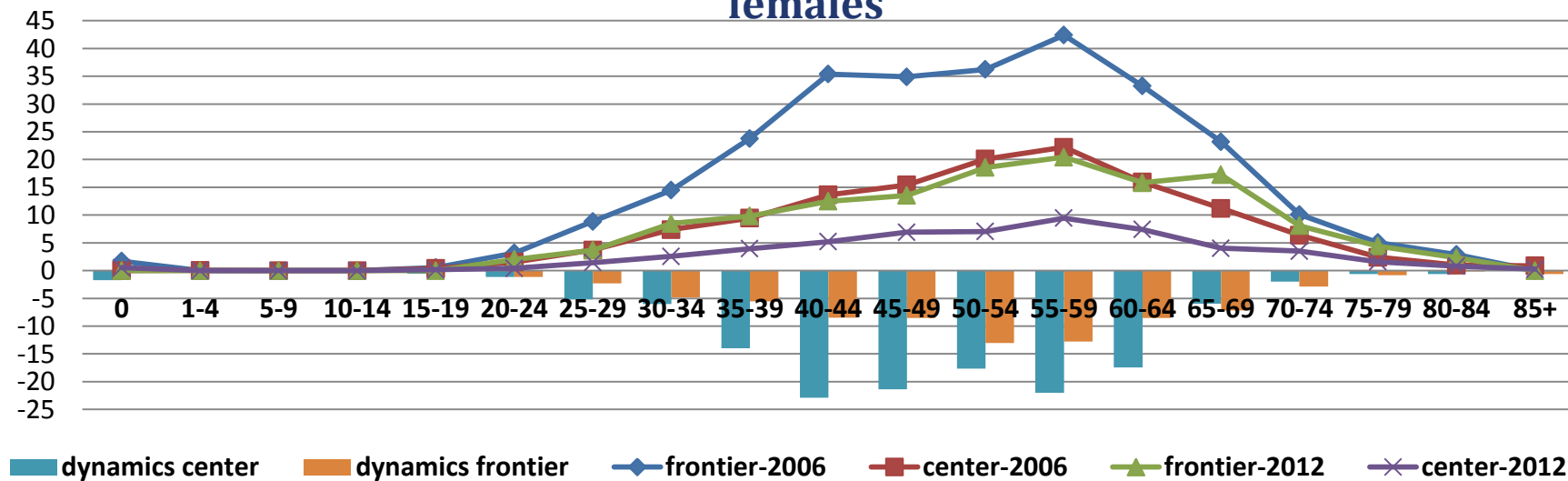
	Center of Russia			Frontier of Russia		
	Obs	Mean	Std. Dev	Obs	Mean	Std. Dev
alcoholic poisoning (m)	60	260,3412	178,7242	22	330,3024	223,3204
suicide (m)	60	425,4707	231,6914	22	735,2286	367,7221
homicide (m)	61	187,9841	90,82599	22	454,5019	293,2735
alcoholic poisoning (f)	58	66,68894	61,3543	22	144,4895	126,3252
suicide (f)	59	73,38452	44,84891	22	156,132	73,58935
homicide (f)	60	57,81674	27,67225	22	111,4227	66,34746
January temperature	61	-14,7885	7,171497	22	-22,2409	6,472996
crime rate	61	1663,918	565,7733	22	2148,864	284,3248
long-term residence	61	76,34383	11,14177	22	69,30574	15,55736
the share of population below the poverty line	60	14,69167	4,532156	22	16,11364	5,163913
the ratio of the average income in the region to the value of the regional subsistence level	60	325,5867	74,7213	22	323,0864	61,89981
ethnic composition of population	61	73,00656	26,24802	22	74,63182	20,01191
higher education	61	206,9836	43,60906	22	198,1818	31,55439
unemployment	61	9,152459	7,352134	22	9,063636	3,385058
sales of vodka	60	9,91	3,537389	22	14,73636	3,023172
share of rural population	61	42,18033	23,30201	22	35,5	23,35594

Age specific mortality rate due to accidental alcohol poisoning, per 100 000

males

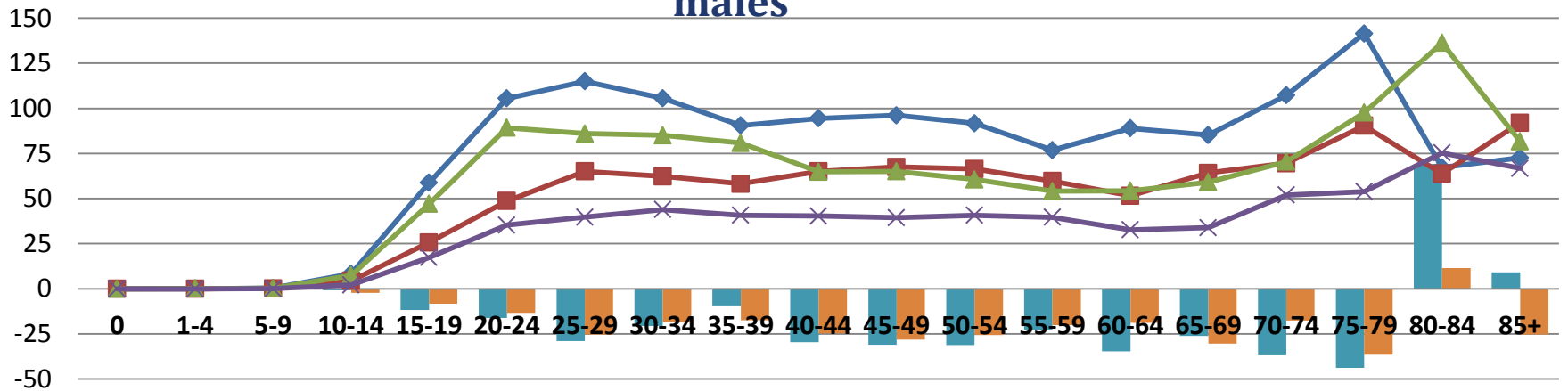


females



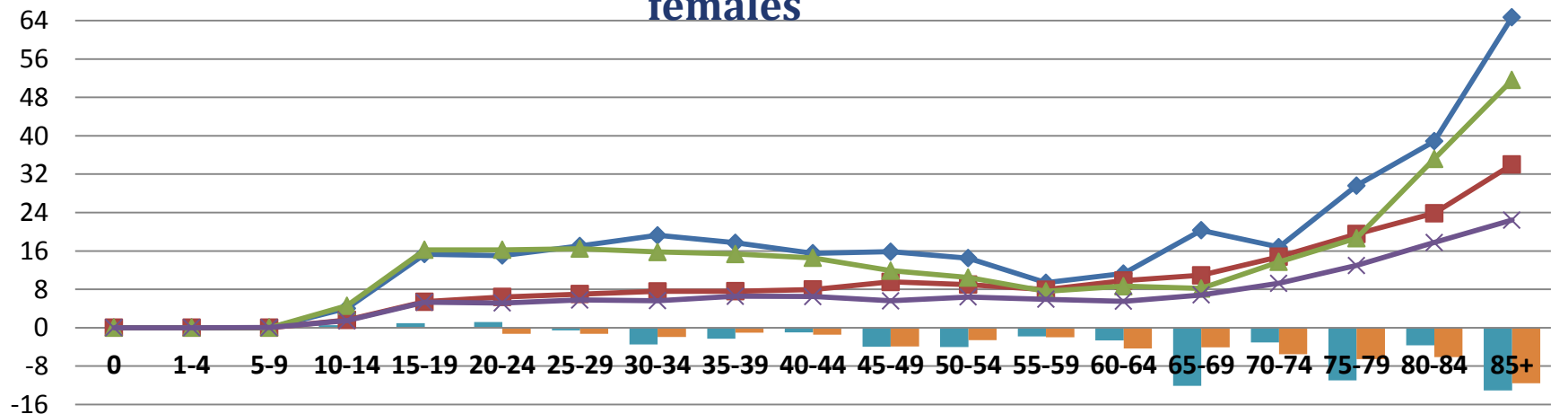
Age specific mortality rate due to suicide, per 100 000

males



■ dynamics center
 ■ dynamics frontier
 ◆ frontier-2006
 ■ center-2006
 ▲ frontier-2012
 × center-2012

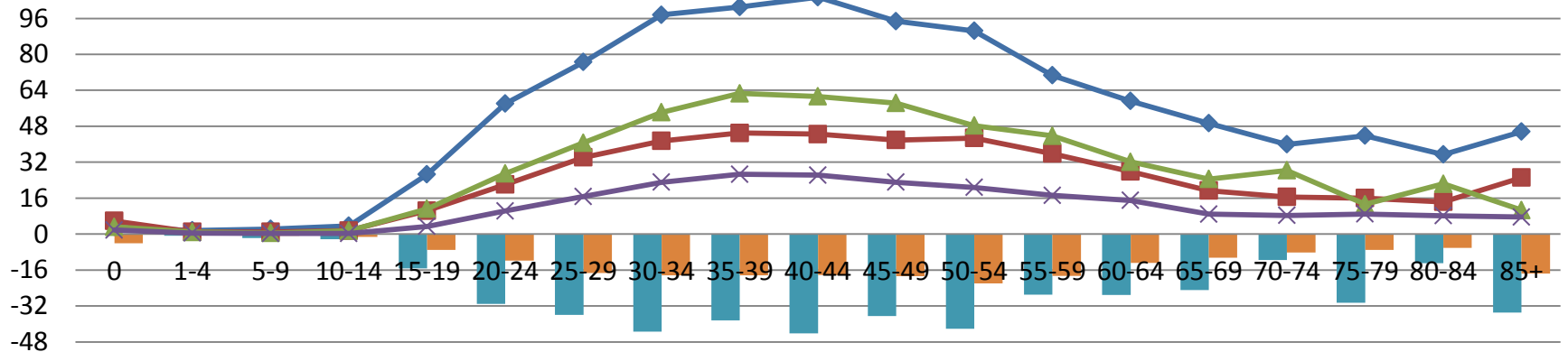
females



■ dynamics center
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 ▲ frontier-2012
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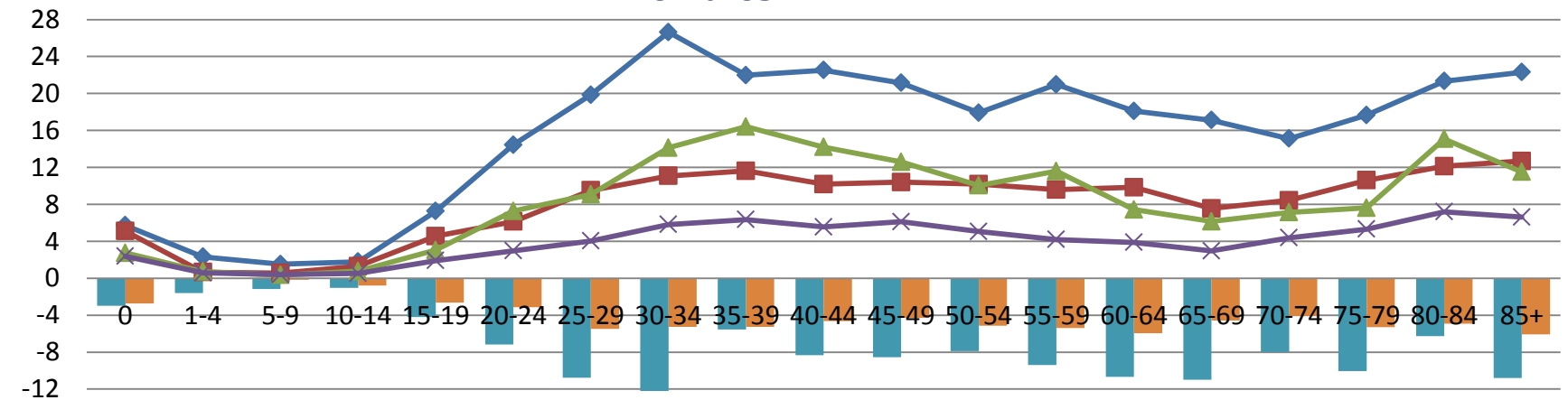
Age specific mortality rate due to homicide, per 100 000

males

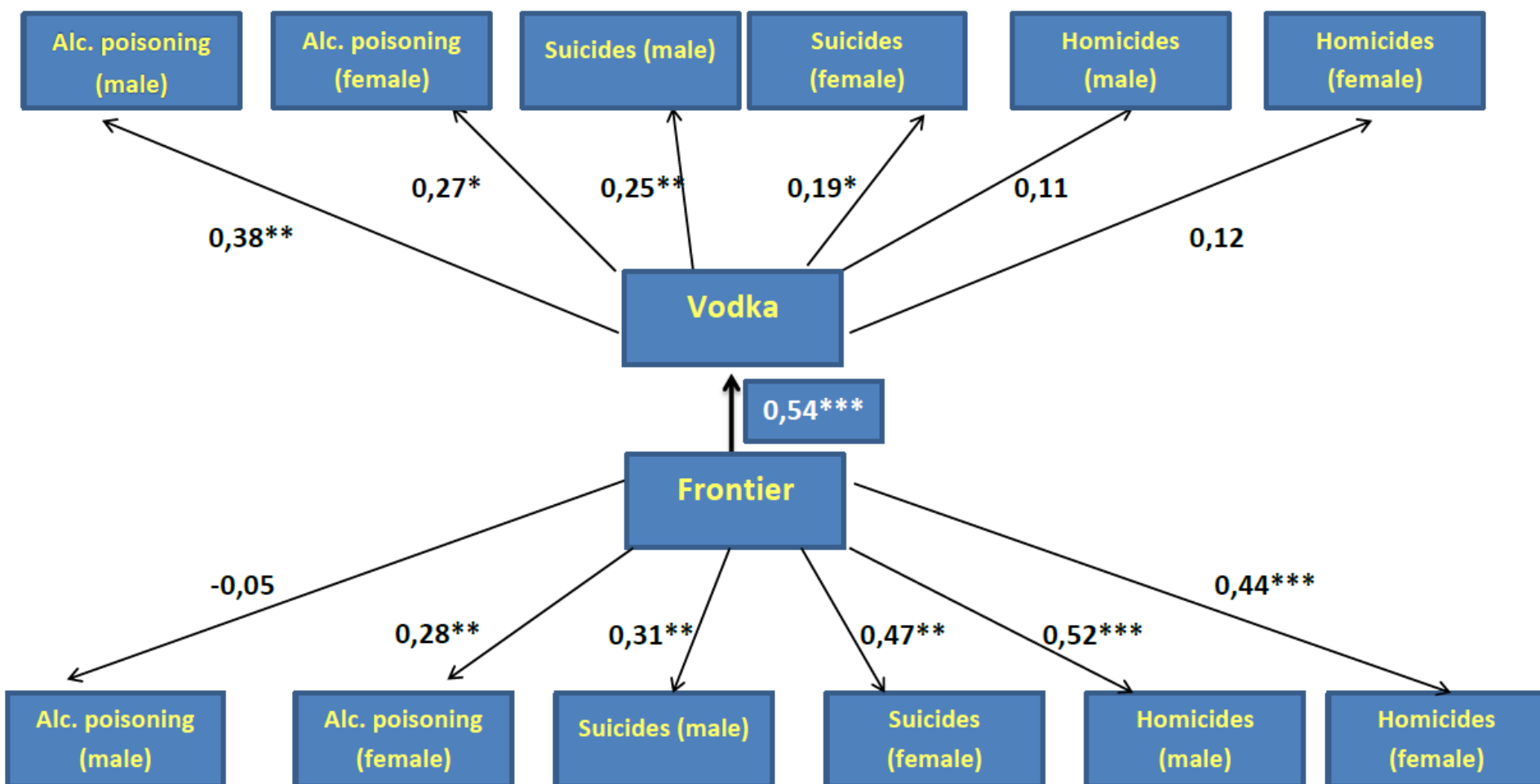


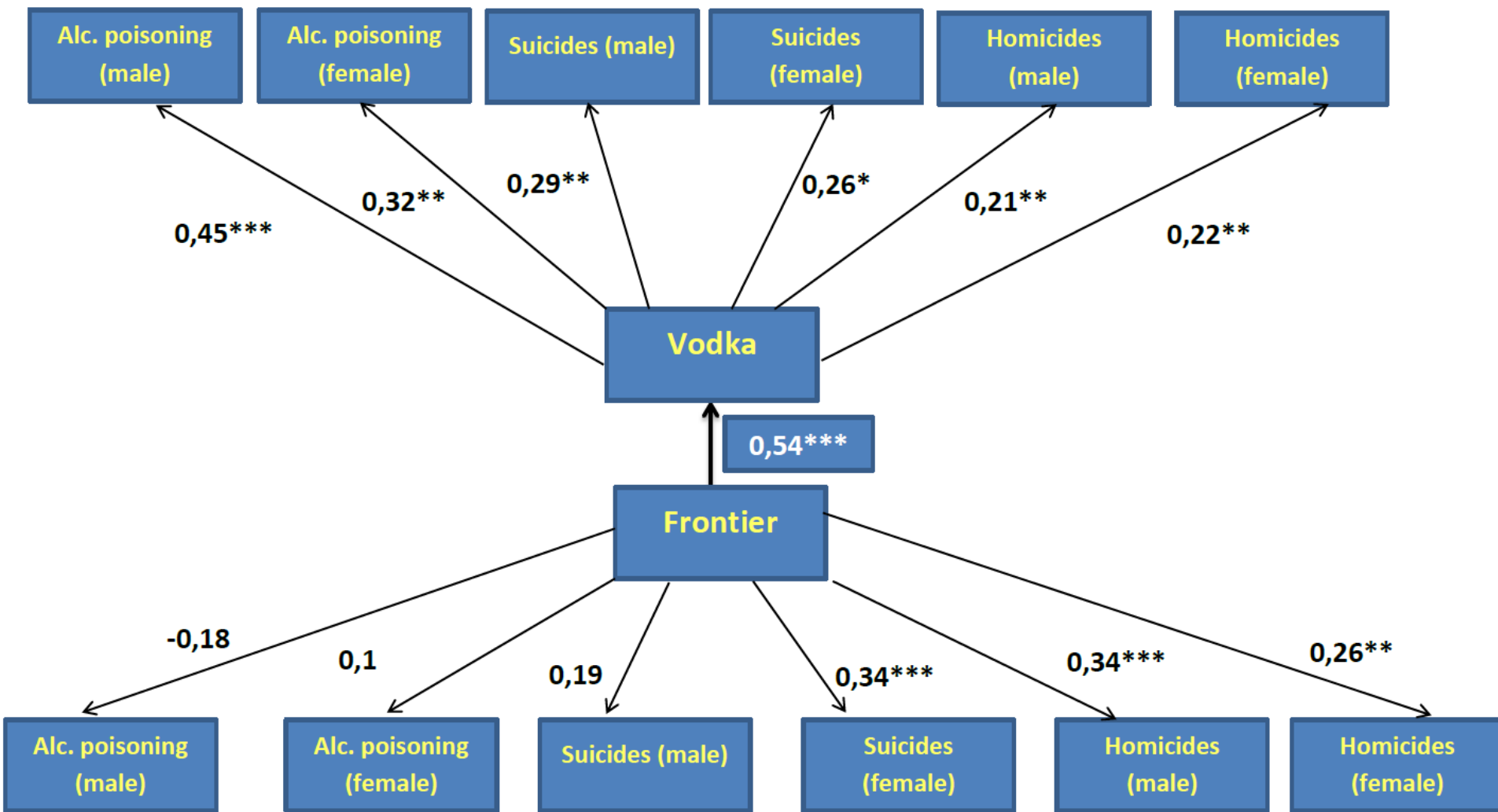
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females

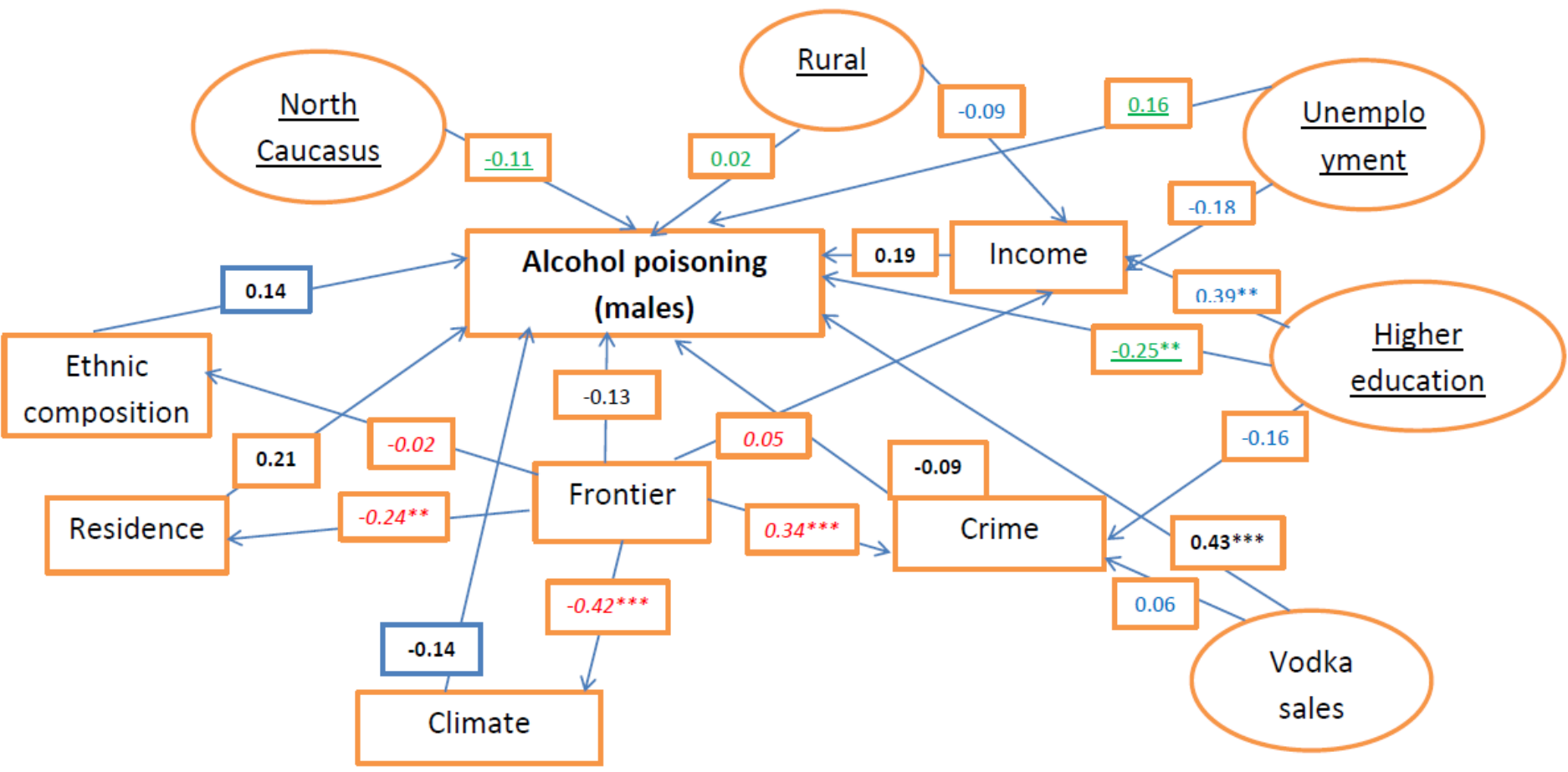


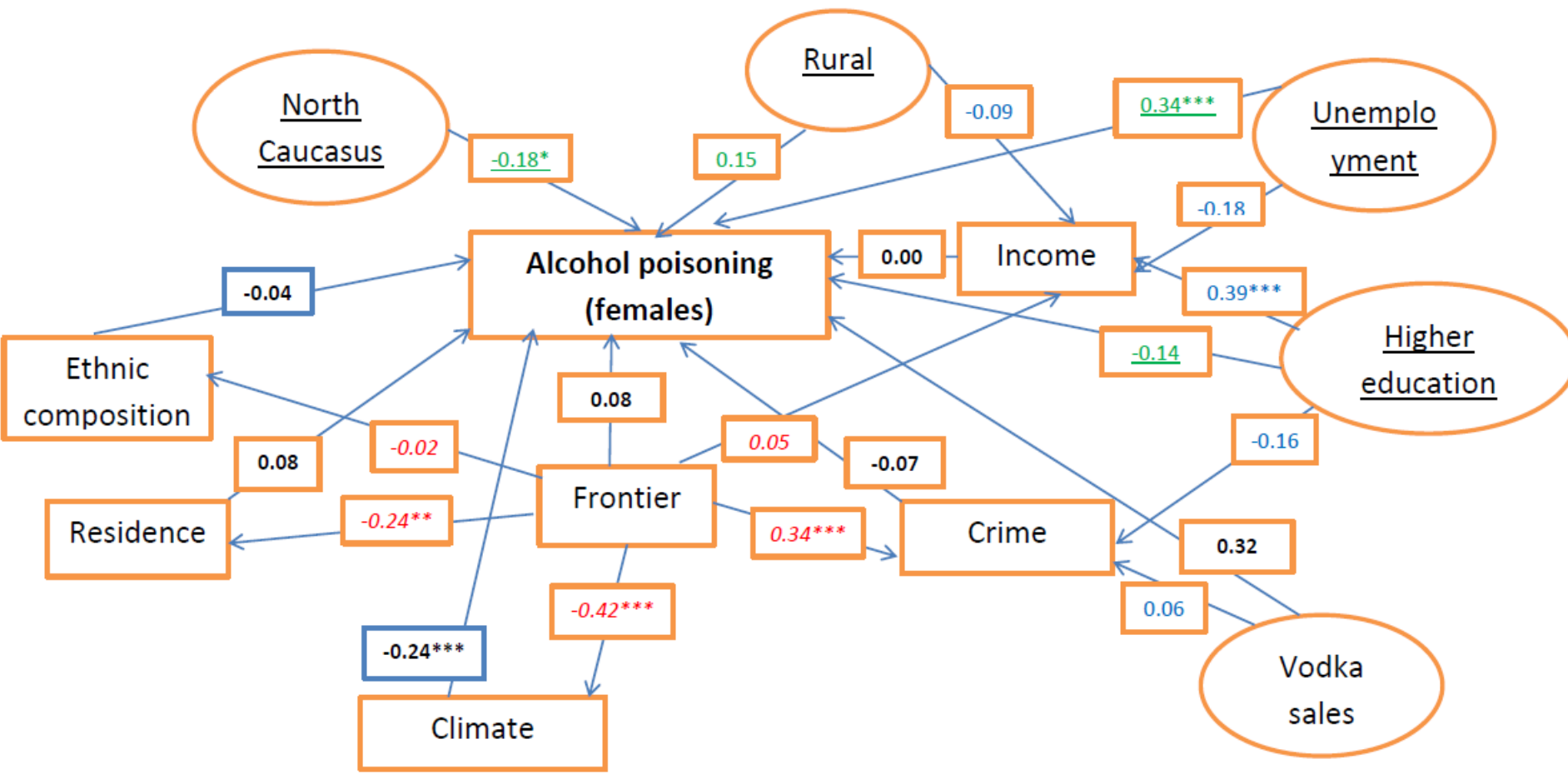
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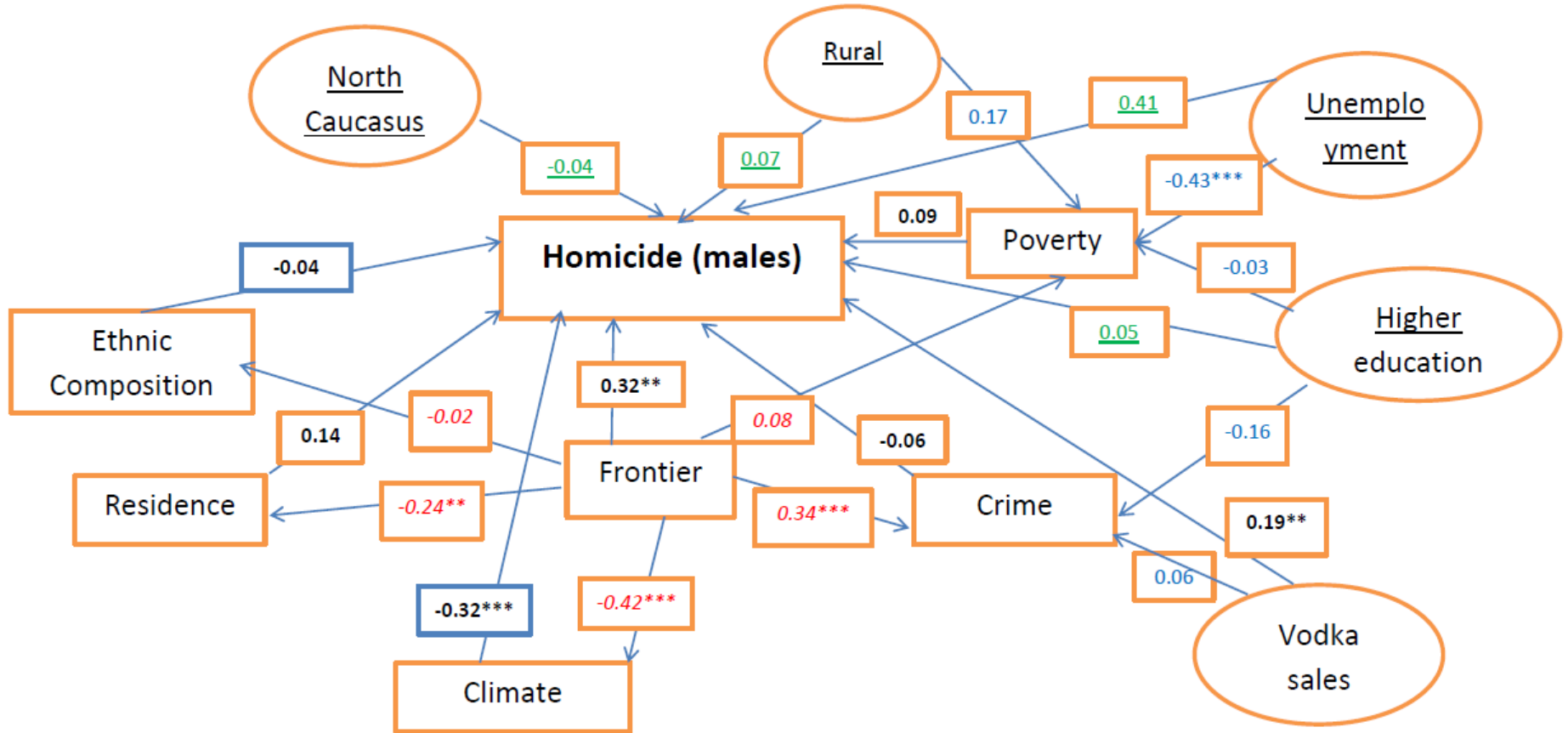


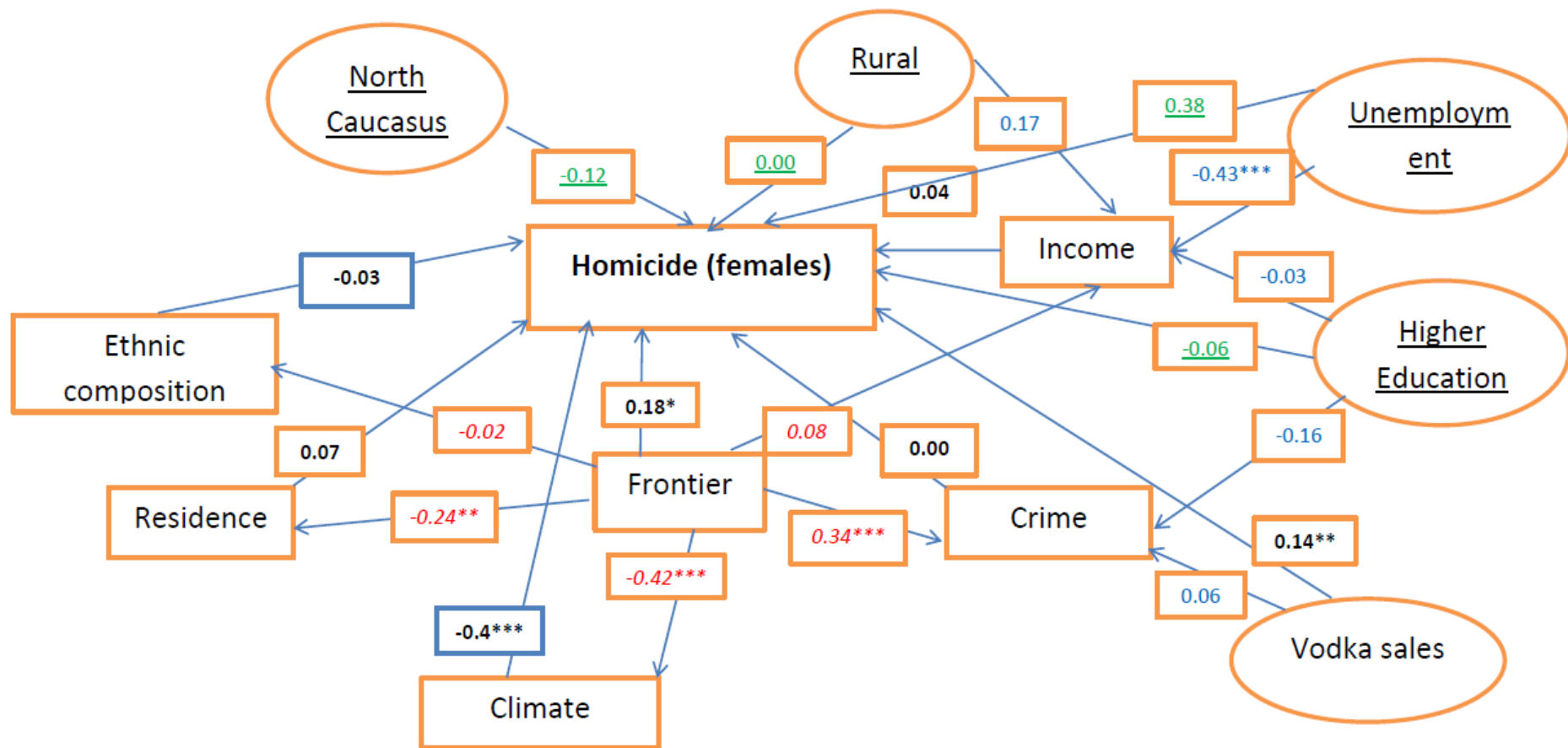


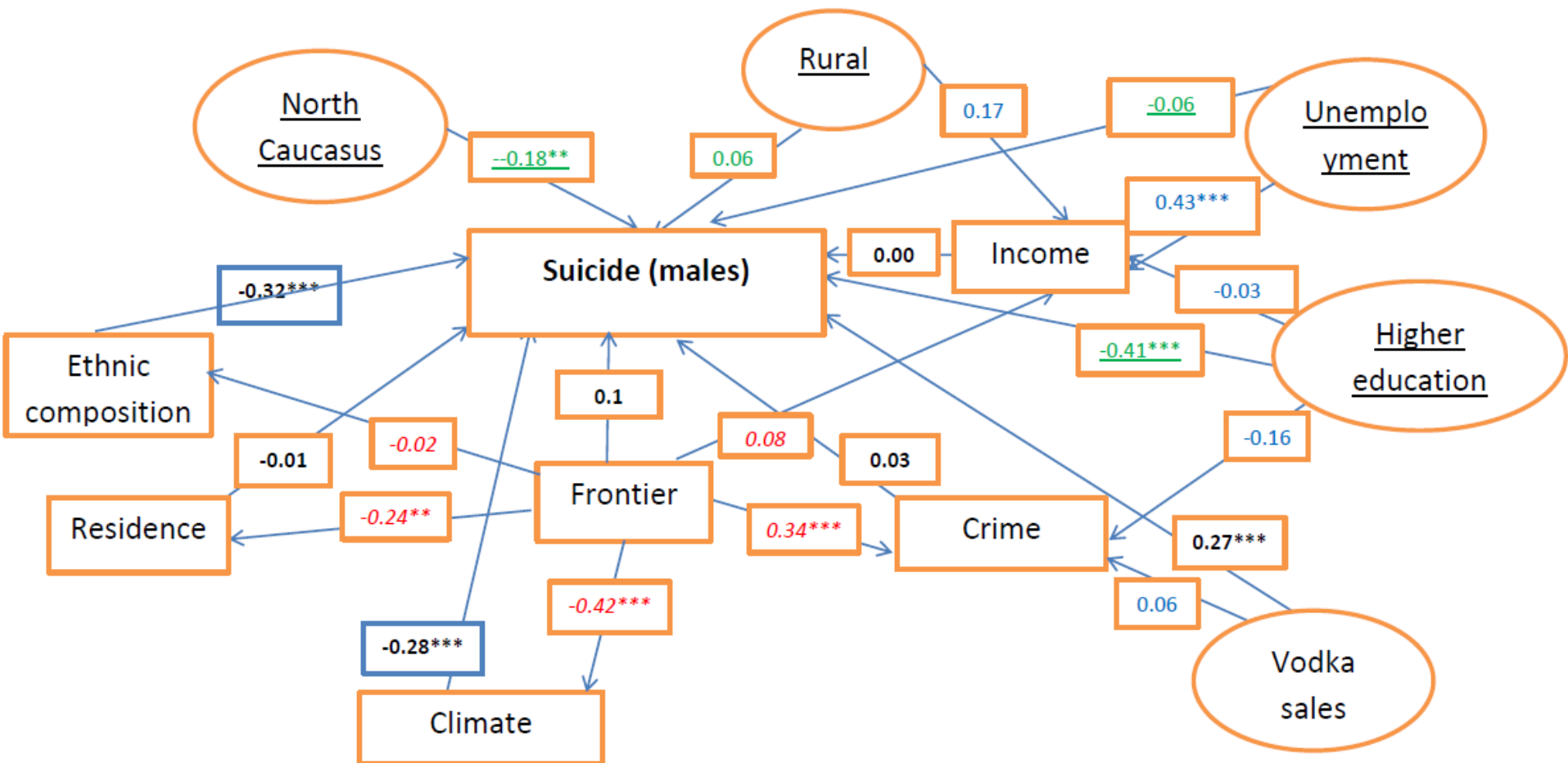
Equations include controls for poverty, ethnic composition, North Caucasus, higher education and unemployment

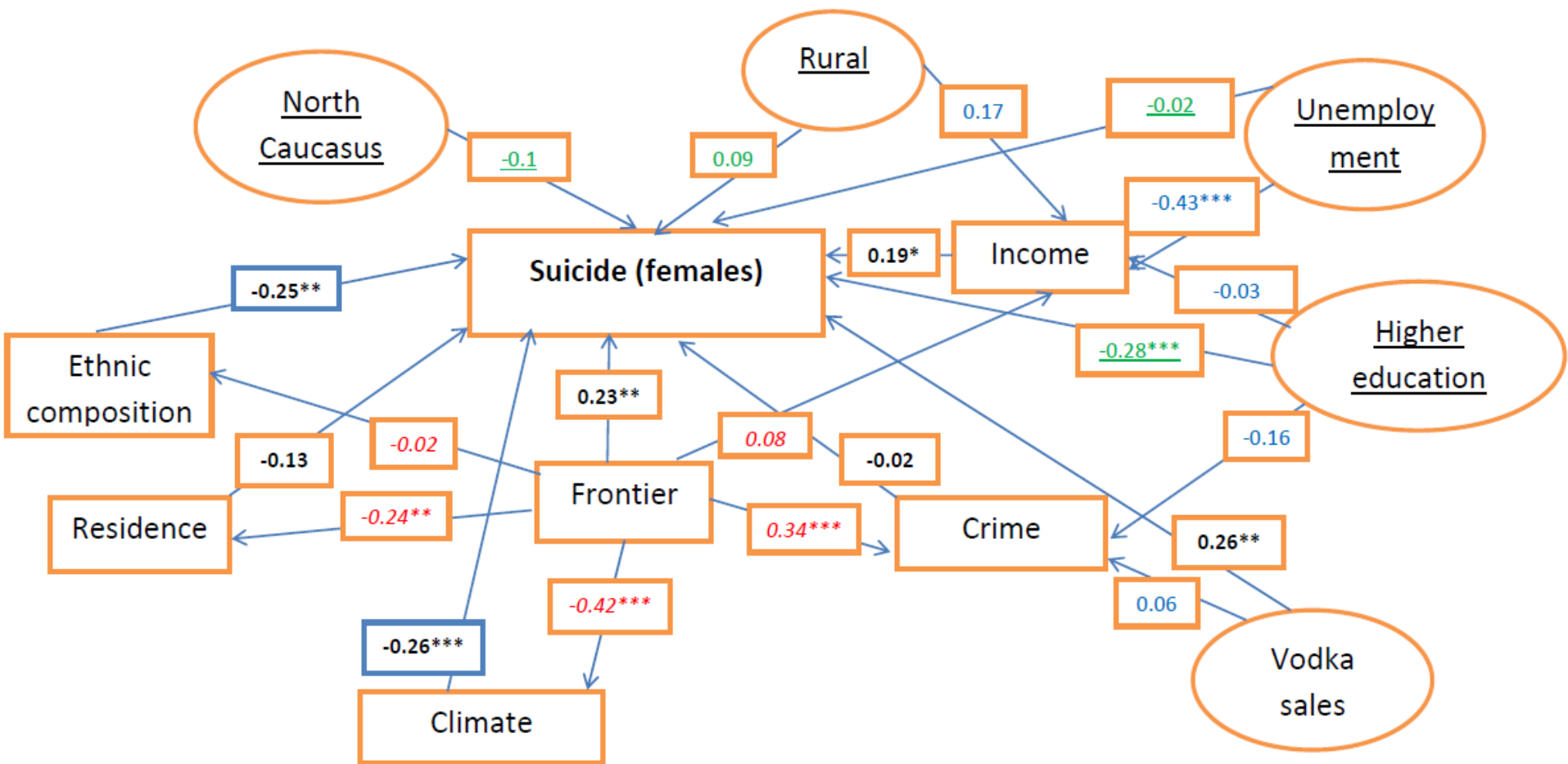












Direct and indirect effects (standardized beta-coefficients)

	alc_m	alc_f	sui_m	sui_f	hom_m	hom_f	alc_m	alc_f	sui_m	sui_f	hom_m	hom_f
Direct												
front (vodka)	-0.05	0.28**	0.32***	0.47***	0.53***	0.44***	-0.18	0.10	0.19*	0.35***	0.34***	0.26***
front (residence)	0.24**	0.45***	0.51***	0.59***	0.65***	0.57***	0.15	0.29***	0.36***	0.46***	0.57***	0.46***
front (crime)	0.12	0.37***	0.40***	0.55***	0.58***	0.47***	0,09	0.29***	0.34***	0.50***	0.50***	0.40***
front (climate)	0.02	0.26**	0.28***	0.43***	0.45***	0.32***	0.00	0.17*	0.23***	0.38***	0.37***	0.25***

Indirect												
front->vodka	0.21	0.11	0.32	0.10	0.06	0.07	0.25	0.17	0.16	0.14	0.12	0.12
front-> residence	-0.08	-0.06	-0.06	-0.02	-0.07	-0.06	-0.05	-0.01	-0.01	0.03	-0.05	-0.03
front->crime	0.05	0.02	0.06	0.02	0.00	0.03	-0.01	-0.01	0.02	-0.01	0.01	0.02
front->climate	0.14	0.13	0.17	0.14	0.13	0.18	0.10	0.12	0.14	0.13	0.15	0.19
Controls*	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes
Year	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010

*Control variables: poverty, ethnic composition, North Caucasus, higher education and unemployment

Direct effect of frontier to:	
vodka	0,54
residence	0,24
crime	0,39
climate	-0,43

Some conclusions

- Contemporary Russian frontier is still strongly associated with bigger proportion of migrant population, harsh climate, high crime rate and consumption of strong spirits.
- The same set of factors is relevant to explanation for mortality rates of all 6 external causes, however the relative effect of these factors vary in gender groups and different causes, but remains significant over time if tested on pooled sample of data from 2006 to 2012.
- Frontier existence has significant impact on mortality rate due to homicide in both gender groups (less significant for female sample) and on mortality rate caused by suicide in female group, after controlling for poverty, ethnic composition, North Caucasus, higher education and unemployment.
- Consumption of vodka has a significant effect on deaths from accidental alcoholic poisoning in male group, less significant in female group and in case of male suicides.
- January temperature contributes to the death rate in cases of homicides and suicides, but it does not cancel out the effect of frontier, despite the suicides in female group.
- Even though frontier territories are renowned for their high crime rate, crime itself does not appear to be a factor for higher mortality rates from the external causes.



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