

## Mortality reduction potential in Russian Federation: estimation and factors of influence

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**Annotation:** In this article, mortality reduction reserves of population of Russian Federation are estimated in terms of worldwide life expectancy growth rate guidelines. Basic factors that influence public health situation in post-Soviet Russia are defined. The fact that “the lost health fund” of 1990s and years that went before the demise of Soviet Union remains the basic reserve of mortality reduction in Russia Federation is grounded.

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**Key words:** mortality rate; potential (reserves) of mortality reduction; life expectancy; mortality from root causes; infant mortality, public health.

### 1. Introduction

Any possible reduction of death rate of reproductive population, consisting of such criteria as life expectancy (LE) and other calculable indexes among all, is considered as potential mortality reduction on specified territory. Structural changes in population that lead to general mortality rate changes but don't effect mortality intensity among reproductive people may be considered in this aspect only as a general, neutral, favorable or unfavorable background, where possible mortality intensity reduction will take place. Therefore, structural constituent of general mortality rate must be accepted as reality, and its trends must be only monitored and nothing more.

Judging about conclusive improving of general situation with mortality and with healthy population due to the mortality intensity reduction is a wrong way. As practice shows, infant mortality reduction, as far as heavy disease (mostly of hereditary nature) mortality reduction reduces general level of people's health, particularly, healthy life expectancy (HLE). HLE represents life expectancy, which is calculated according to those years of life, when person is in condition of full health. Not only mortality but also incapacity to work because of diseases and succeeding disability are included in it.

Russian Federation official statistics haven't provided the values of HLE yet. It is impossible to calculate HLE on basis of the only regional data on the Rosstat website – general amount of physically

challenged people. According to previous experience in calculation of HDI (formerly – Index of potential human development), Russian Federation with its high level of people's disability should be ready for UNDP will soon add HDI (IPHD) to calculation, instead of LE. And Russian Federation will be sent down again in the HDI rankings, as it has already been done after 2010. Then, among all, geometric middling has succeeded arithmetical one in calculating of overall HDI. This caused the reduction of HDI overall values in countries with certain deviations in constituents of overall index. Russian Federation has such deviation exactly in life expectance statistics. However, UNDP specialists don't care about the fact that the high level of disability means not only “the tribute” to modern standard of living but also the reflection of preceding history, to begin with, World War II and different experiments of post stagnation period of socialism breakdown and primitive accumulation of capital.

Lot of works about revelation of population mortality reduction reserves were written (Andrushina and others, 2011; Predotvratimaya..., 2006). There were works concerning problems of different aspects of mortality reduction in Russian Federation and factors of this process among all (Rimashevskaya and others, 2011; Nemtsov, 2009). There is no sense in reciting and retelling of works written by authoring teams, consisting of leading specialists and Doctors of Science in this problematics. Thereby, we will try only to estimate modern country and regional reserves of mortality reduction in Russian Federation. However, it

is essential to take into consideration preceding trends in HL, because amortized ascent often may follow sharp decline of its level, and vice versa – sharp ascent may be followed by growth retardation.

**2. Material and Methods** We will display LE dynamics in different countries separately for men and women according to UN five year estimates (UN...).

At the same time, it is important to understand that according to Rosstat current data, but not estimates, situation with mortality rate continued improving until 2014 and exceeded the mark of 70 years in 2014.

The dynamics of male HL in relatively close to Russian Federation countries (geographically and historically) is displayed below (Table 1).

Table 1. Life expectancy at birth in different countries (male), years

Countries\Years	1950-55	1965-70	1970-75	1985-90	2000-05	2005-10
Russian Fed.	53.9	63.2	62.8	63.9	58.6	61.0
Belarus	57.6	66.7	66.4	66.5	62.3	63.6
Ukraine	58.7	66.7	65.9	66.0	61.9	62.3
Poland	58.6	66.5	67.0	66.8	70.3	71.2
Romania	59.4	65.1	66.8	66.5	67.9	69.5
Germany	65.3	67.6	67.9	71.6	75.6	77.1
North Korea	32.6	53.9	58.2	65.0	64.2	64.8
South Korea	46.0	55.8	59.5	66.2	73.8	76.5
Vietnam	50.8	57.9	52.7	65.3	69.6	70.2

Data Source – UN Database (Website), Reference: <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>

The dynamics of male LE among three east-European countries – Russian Federation, Belarus

and Ukraine – is rather common in shape (Image 1).

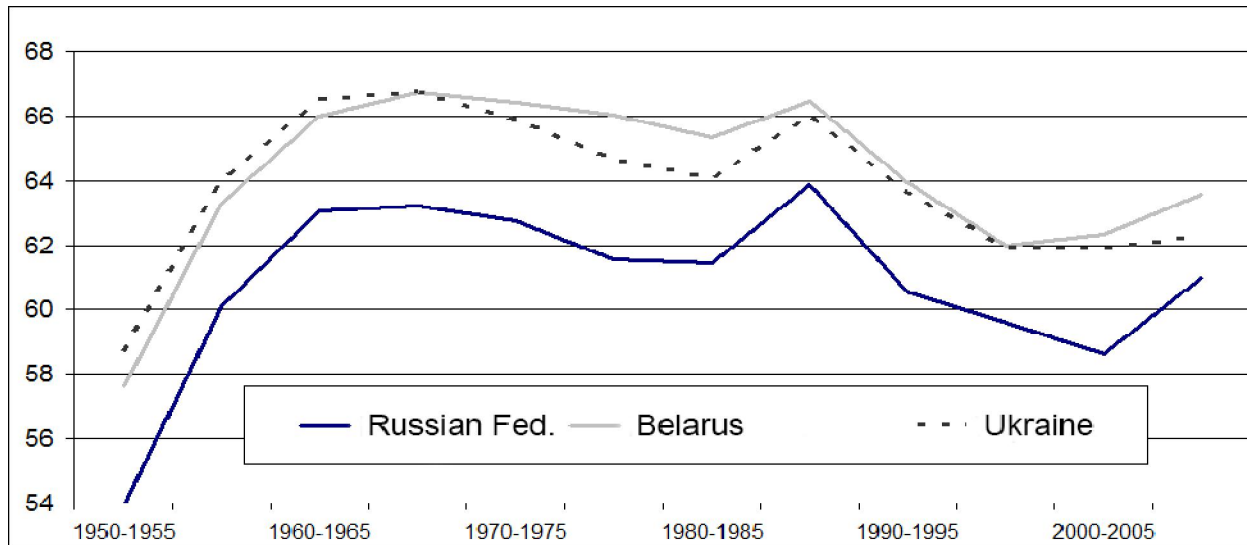
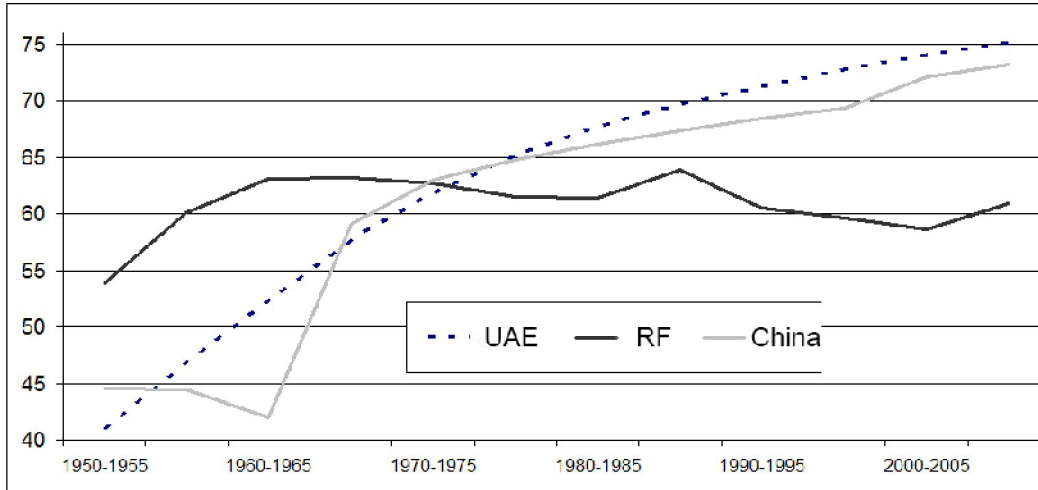


Image 1. Life expectancy at birth (men) in different countries, years.

Data Source – UN Database (Website), Reference: <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>

During the whole analyzed period until the second half of 2000s, male LE in Russian Federation was at 3-4 years lower than male LE in Belarus and Ukraine. In other former socialist camp countries to the west of Russian Federation, male LE was at 4-5 years higher in 1950s and up to 2005-2010s, the gap has increased to 9-10 years. Only in Kazakhstan and Turkmenistan among countries of CIS, male LE

remain slower than in Russian Federation. Within the last 50 years (from 1950-1955 to 2005-2010), male LE has increased by 7 years – from 54 to 61, besides it has decreased by more than 2 years within the last 40 years (from 1965-1970 to 2005-2010). At that period, countries with “crouch start” has over taken Russian Federation significantly in question of male LE (Image 2).



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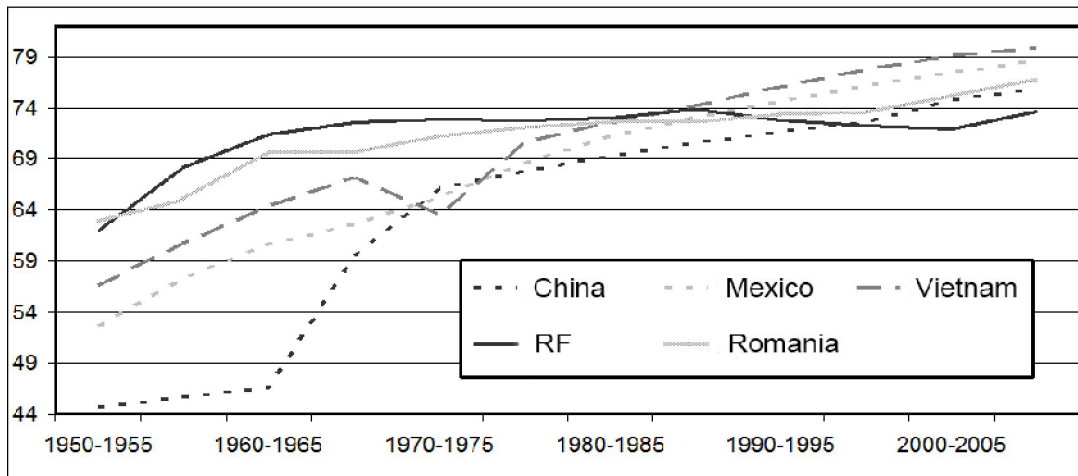


Image3. The dynamics of female LE in different countries, years.

Data Source–UN Data base (Website), Reference: <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>

After mid-1960s, the process called “running in place” in LE situation took place either among men or among women. During this period, many developing countries have managed not only to reach but also to overtake Russian Federation in female LE. The top female LE rate are shown as follows (Table 3).

In aggregate male and female LE level in Russian Federation also was at the bottom of developed and developing countries list, as far as all European countries list (Table 4).

Table 3. Life expectancy at birth in different countries (female), years

Countries\Years	1950-1955	2005-2010
Japan	63.9	86.0
South Korea	49.9	83.2
Poland	64.2	79.8
Russian Fed.	62.0	73.7

Data Source – UN Data base (Website), Reference: <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>

Table 4. Life expectancy at birth in different countries (male and female), years

	1950-1955	1965-1970	1970-1975	1975-1980	1985-1990	2000-2005	2005-2010
China	44.6	59.4	64.6	66.3	68.9	73.4	74.4
South Korea	47.9	58.8	63.2	65.0	70.4	77.4	80.0
Mexico	50.7	60.3	62.6	65.3	69.8	75.0	76.3
Vietnam	53.5	62.4	57.8	66.1	69.8	74.4	75.1
Albania	55.3	66.3	67.7	69.7	72.0	75.4	76.3
Russian Fed.	58.5	68.5	68.3	67.6	69.2	65.0	67.2

Data Source – UN Data base (Website), Reference: <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>

Consequently, mortality reduction potential of Russian Federation in comparison with worldwide LE growth rate guidelines is gigantic. The distance of 8 years separate Russian Federation from civil-war-suffered Vietnam, the distance of 13 years – from civil-war-suffered South Korea etc. Moreover, the standard of living in Vietnam is a sequence lower than in Russian Federation. So where is the root of

the problem?

Let's go down to the analysis of mortality in Russian Federation in terms of root causes of death. Rosstat gives six root causes of death and keeps its own international statistics, which lags behind for 10 years. Mortality from root causes in different countries is displayed below (Table 5).

Table 5. Mortality from root causes in different countries, per 100,000 population, for year 2002\*.

Countries \Root Causes	Cardiovascular diseases	External causes	Malignant neoplasms (Cancers)	Digestive diseases	Respiratory infections	Infectious and parasitic diseases
Россия 2002	907	235	201	52	70	26
RussianFed. 2014	660	129	<b>202</b>	<b>67</b>	54	23
Kazakhstan	713	160	167	52	57	43
Belarus	592	154	143	25	41	34
Ukraine	637	135	139	35	37	40
China	291	79	148	32	146	43
South Korea	186	67	169	39	46	19
Finland	201	61	115	23	15	5
Mexico	163	58	88	65	39	25
Poland	324	53	180	31	16	6
Chile	165	50	137	41	33	21
France	118	48	142	24	19	7
USA	188	47	134	21	39	16
Japan	106	39	119	15	16	8
Germany	211	29	141	28	18	8
Italy	175	29	134	20	21	5

\*-there is no more actual data without standardization regarding countries in Rosstat

Data Source for calculation–Rosstat (Rosstat).

It's obvious, that by the year 2014, the situation in Russian Federation has improved, but it has improved in other countries either. However, in the year 2002, which wasn't the worst year in terms of LE rate, we had values of deaths from root causes exceeding the same in developed and developing countries:

- external causes – 3.5-8 times;
- infectious and parasitic diseases – 2-5 times;
- malignant neoplasms (cancers)– 1.5-2 times;
- cardiovascular diseases– 4.5-8 times;
- respiratory infections– 2-6 times (except China);
- digestive diseases - 1.3-2.5 times (except Mexico).

LE growth potential in Russian Federation lies in reduction of mortality from all root causes of death.

World Health Organization (WHO) gives less detailed but more balanced statistics regarding values of mortality coefficients standardized by age.

In the year 2000, Russian Federation was 114<sup>th</sup> of 172 countries in terms of mortality rate from all causes of death (in order of value ascending) with the value of 1,186 deaths per 100,000 population (o/oooo), it neighbored with North Korea (112th, 1174 o/oooo) and India (115th, 1,262 o/oooo).

In the year 2012, the situation in world rankings has slightly changed – Russian Federation has advanced four positions up and become 110th with the value of death coefficient from all causes 967 o/oooo. This shift became possible due to the quick mortality reduction in Russian Federation in comparison with countries of Pakistan, Philippines etc. suffering from

child and maternal mortality. It was these countries, Russian Federation had overtaken in the WHO rankings.

WHO, in contrast to Rosstat, gives three death classes for the general preparatory analysis instead of six. They are: 1) infectious and parasitic diseases (class I), 2) other (non-infectious and non-parasitic) diseases, 3) injuries and external causes (class XIX – «injuries, poisoning and other aftereffects» and class XX – «external causes»).

In 2000, Russian Federation was 68th (80 o/oooo) in the ranking of mortality from class I causes and in 2012 – 77th, giving a road to Azerbaijan, Saudi Arabia, Tunisia, Kyrgyzstan, Mexico, Iran, Kazakhstan, China, Turkey and Maldives.

In 2000, Russian Federation was 165<sup>th</sup> (913 o/oooo) in the ranking of mortality from other causes, neighboring with Afghanistan (906 o/oooo) and Moldova (944 o/oooo). In 2012, having overtaken Armenia, Afghanistan, Uzbekistan and others, Russian Federation has become 160th (790 o/oooo),

In 2000, Russian Federation was 166<sup>th</sup> (7th from the end) –193 o/oooo in the ranking of mortality from injuries (classes XIX-XX) with only six African countries behind. By 2012, Russian Federation has made significant step forward in this direction – on the 136<sup>th</sup> place with the value of 103 o/oooo. Having overtaken many African countries, Russian Federation has neighbored with Kazakhstan, Myanmar and Venezuela.

In addition, Russian Federation has potential in child mortality reduction, despite all the success in this sphere during last years (Table 6).

Table 6. Infant mortality in different countries, per 1,000 live births.

Countries\Years	1970	1980	1990	1994	2002	2013
USA	19.9	12.6	9.4	8.2	6.9	5.9
Japan	13.4	7.4	4.6	4.3	3.0	2.1
Thailand	71.6	46.9	30.3	24.9	17.5	11.3
South Korea	41.2	12.4	6.1	4.9	5.6	3.2
Finland	13.2	7.2	5.5	4.5	3.4	2.1
Germany	22.1	12.6	7.0	5.5	4.2	3.2
Israel	...	15.3	9.7	7.6	5.2	3.2
Belarus	...	19.4	13.5	14.1	9.3	3.7
<b>Poland</b>	<b>32.2</b>	<b>21.0</b>	<b>15.1</b>	<b>13.5</b>	<b>7.3</b>	<b>4.5</b>
Chile	67.3	28.2	16.0	11.7	8.3	7.1
<b>Russian Fed.</b>	<b>35.8</b>	<b>27.3</b>	<b>21.9</b>	<b>22.3</b>	<b>17.7</b>	<b>8.6</b>
Ukraine	...	23.1	16.7	17.3	14.3	8.6
Romania	57.1	34.9	31.0	27.9	21.6	10.5
China	80.3	48.0	42.2	39.1	26.2	10.9
Argentina	59.5	37.3	24.4	21.4	17.1	11.9
Brazil	101.7	76.2	51.4	42.7	25.1	12.3
Mexico	77.3	56.0	37.0	30.3	19.3	12.5
Kazakhstan	...	57.5	44.7	45.0	33.9	14.6
Turkey	126.5	89.2	55.7	45.9	30.3	16.5

Data Source: UN, (Website), Reference: <http://www.childmortality.org/>

Unfavorable situation with mortality in post-Soviet Russia may be explained by complex set of circumstance, including:

- firstly, continuation of negative trends of Soviet era. LE rate of all population, especially men, stopped increasing since mid-1960s. Compensatory consequences (demographic amortization) after anti-alcohol campaign of 1985-1987 years.

However, this isn't only reason of sharp decline of LE rate by 1994. In the most nondrinking nation of 1980s, LE trends among urban women (from population in terms of men-women, city-village) weren't as negative as among men. As light roll back was only in later 1970s. The crash in urban women LE level has happened after 1991.

- secondly, frustrating political, social, and economic perturbations of 1990s, especially for family men.

- thirdly, "alcoholization of population" has started on the back of social stresses and "the loss of light and cloudless past" (Nemtsov, 2001). Prices for alcoholic drink have been falling all the post-Soviet period. It is an open secret that alcohol consumption produces and increases the risk of death from almost all root reasons, provoking liver cirrhosis, pancreatitis, cardiovascular diseases, leading to accidents etc. However, the trouble of alcohol consumption in Russia lies not only in quantity and in frequency of consumption by men and women of reproductive age. It is our deep belief that trouble of quality of alcohol is at least equal to it. After the demise of Soviet Union and the elimination of monopoly on liquor production the great part of population consumed (starting with alcohol "Royal") and continues consuming (of those who are still alive) poor quality, surrogate, poor purified from fusel oil, produced of cheap raw wood faked alcoholic beverages. Such production has wide range starting with pseudocognac and pseudowhiskey in distribution networks at prices lower than «Duty Free» and ending with "screwdrivers" and other cocktails (made in bars and restaurants). We aren't mentioning such harmful boozes as "quick production" beer, artificially aerated "a la champaign", vines made of powder etc.

Unfortunately, this side of question is neglected, probably, because of liquor lobby, and mistaken confidence that root of the problem lies in over consumption but not quality is widely spread. Russian people always drank a lot but not much more than in other European countries, where love for alcohol didn't harm long and happy life. For example, in 2010, alcohol consumption value in liters of pure ethanol per head (aged 15+) in Russian Federation was 15.1. At the same time, in other "non-vine" and "non-beer" countries with higher LE rate this value

was: Lithuania – 15.4, Belarus – 17.5, Czech Republic, Slovakia – 13.0, Finland, Latvia, Poland, Croatia– 12,2-12,5 (WHO, 2014).

The root of problem is the quality of alcohol, and in developing Russia, where "strict ...laws are softened by unnecessary of subjection to them" (M. Saltykov-Shchedrin), only the authority can provide proper quality of it. During Soviet Era, state monopoly on vodka supposed its permanent high quality. Further more, it was sufficient budget item. J. Stalin stated this fact without embarrassing: «By the way, a few words about backup source – vodka. There are people who think the socialism may be built up wearing white gloves. It is howling mistake, comrades. If we lack loans, if we are poor in capitals, and if we must not get into cabala of capitalists among all, must not agree the enslaving conditions, they are offering and we are rejecting, – one thing remains – to search source in other spheres. It is better than enslaving. Here we should choose between cabala and vodka, and people who think the socialism may be built up wearing white gloves make a gross mistake» (Stalin, 1952).

After the Andropov's era, since February 1, 2015, vodka has become cheaper for the first time. (Vodka is getting cheaper...). The budget is struggling with sanctions. The more to buy, the more to drink. Quality of cheap vodka leaves much to be desired. Therefore, it will affect poorly the health of Russian people.

Yet, conventional traditions in alcohol consumption are preserved. In the context of Russian extremeness, people look for areas on to drink in every event, either wedding or funeral, either delivery of child or divorce, either promotion or demission, either car purchase or its loss. Whether it is "washing" of something new or "farewell" to something leaving, meeting someone from the past or any step forward, everything must be celebrated three times according to Old Russian traditions. All this appears to be the illustration of low cultural level of great part of population, resulting in own health neglecting, low self-esteem grounded by preceding Soviet and pre-Soviet history.

Smoking extension is worth adding to this list. Nowadays in Russian Federation, two of three men and one of three women are smokers. Since public places smoking ban was issued, all the people, including children, become passive smokers because of smoke clouds at facility entrances, on the landings of the dwelling houses etc. Poor and, in some regions, even terrible ecological situation may be added to all this. There is total filthiness in surroundings of any place, starting from villages, especially on country out skirts, and ending with public places in surroundings of leading cities.

In addition, we can mention horrible quality and often unfreshness of fish or meat products, foreign fruit and vegetables, juices etc.; total substitution of natural milk products with surrogate made with milk powder and palm oil; absolute usage of preserving agents, taste modifiers. It is impossible to buy even salt without harmful aids that prevents formation of lamps! The situation is getting worse because of unsatisfactory dietary of Russian people, absence of cheap but good eating houses, cafeterias, snack bars etc. on the pattern of USSR (rent in dollars is unaffordable!), substitution of healthy eating with unhealthy mostly genetically modified “fast food”, cooked with preserving agents, which is washed down by cold soda produced by a known overseas manufacturer.

And finally, the liquidation of regular medical examination of all people, de facto substitution of free health care with commercial one (in terms of services and favored medicine), professionalization and “cost growth” of sports and its transformation from mass leisure activity into mass commercial entertainment followed by mass fan drunk parties, unveiled “fast food” advertising, and veiled vodka and beer advertising is another factor of mortality increasing of Russian people.

This is not the end of the list, describing harmful aspects of life in Russia. All-inclusive outbound resort holidays with striking doses of ultraviolet emission and local surrogate boozes, prolonged New Year holidays of “over eating and hard drinking”, giving the only positive moment of baby boom in October (something that has been never before), sedentary (at TV, PC or behind the steering wheel) lifestyle are destructive for the health of nation. Moreover, network propaganda of health-detrimental behavior is strengthening bad effect.

### 3. Results

Consequently, the main mortality reduction reserve in Russian Federation is “the lost health fund” of years that went before the demise of Soviet Union or supplementing of living losses of population in 1990s (to be exact, in the period of 1985-2005). This supplementing is the most important aim, and according to the official statistics of Russian Federation, the Government has managed with quantitative losses at most. One more reserve of mortality reduction is elimination of after effects of 1990s, i.e. observable rejuvenation of LE (in pubertal and young working ages), and elimination of negative trends in female mortality in working ages. The next reserve is elimination of aftereffects of negative mortality structure changes of 1990s, decreasing of number of “socially induced causes”. There are cyclical ones with crises increment in later periods of

stagnation among them.

In the period of “roll back”, during the stage of “reverse epidemiological transition”, “the pathologies of population circle has expanded by means of diseases of digestive system (mostly alcohol cirrhosis), respiratory system (pneumonia), infections (tuberculosis)” (Semenova V.G., 2006). HLE growth reserves of population of Russian Federation are hidden here too. In our strong belief, the only action of prohibition of counterfeit alcoholic beverages may lead not only to reduction of fatal casualties caused by alcoholic intoxication, liver cirrhosis etc., but also to decreasing of exposure to cardiovascular diseases in the country.

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