

THE DEPOPULATION IN UKRAINE: TRAPPED IN MORTALITY CRISIS

Hanna Shvindina

e-mail: shvindina@management.sumdu.edu.ua

Sumy State University, Ukraine
University of Montpellier, France

Abstract. This paper is devoted to the generalization of the tendencies in demographic transition in Ukraine and the analysis of the consequences of economic and social development and its impact on the depopulation phenomenon. Different profiles of the mortality were revealed. Economic and political events of 2014 that took place in Ukraine dropped the minimum monthly wage to its historically minimum level, causing the migration and immigration of the labor force and depopulation aggravation.

Key words: depopulation, demographic transition, mortality, mortality crisis, SDR, labor market, development.

Introduction

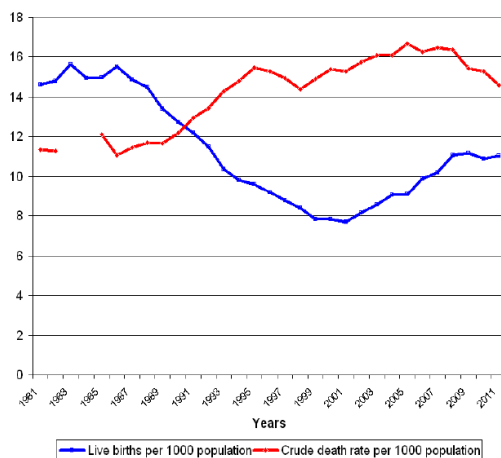
The analysis of labor force reproduction in Ukraine has revealed the unfavorable tendencies, such as: high mortality rates, low birth rates, aging, low life expectancy – all of that allows to assert that the problem of depopulation became more acute.

Modern demographers use the term “demographic cross”, which as phenomenon appeared in 1991 in post-soviet countries, and means that the curves of death rates and birth rates create the cross graphically. In other words, there is a big gap between mortality and infant natality in Ukraine and this gap starts to reduce in 2012 (Figure 1).

In 2012 Ukraine had slight decrease in population natural loss, actually five oblasts had the positive population growth for the first time from the disintegration of Soviet Union. According to Dvoret'skaya (2013) these were the following oblasts as: Zakarpattia, Rivne, Volyn, Ivano-Frankivsk and Chernivtsi, though the depopulation stayed at one of the highest levels in Europe.

The tendencies in economic and population growth that were observed in 2012 brought the hope for the future recovery but had been cut off by the events of 2014 – the Military Conflict between the Russian Federation and Ukraine.

Figure 1. The indexes of crude death rate and birth rate in Ukraine, 1981-2012. Constructed by author using the data of (European Health for all database (HFA-DB), WHO/Europe, 2013)



Vishnevsky (2005: 177-182) had described the Russian demographic cross as far back as in 1998. In his article Russian demographer had analyzed the causes of the mortality increase and natality decrease. He had indicated that natality reduction in the USSR had a background in 60-ties and the index of birth rate per one woman was 1,85 of child, and that was corresponded to general European tendencies, as this index was even higher in such countries as Great Britain (1,68) and Germany (1,57) at that same time (Vishnevsky 2005: 187). Though, Vishnievsky noted “singularity” of the natality reduction in the end of 80-ties, even against its long-term decrease in previous decades.

In case of Ukraine, as graphic shows (Figure 1), the last prolonged peak of natality was recorded in 1987, and in 1988 the rates went back to the level of former year, and since 1987 the decline has begun, which stopped only in 2002.

The period from 1987 till 1991 is marked as “perestroika” and brought the long-term political, economic, social and institutional transformations that are far away from their currently completions. One ought not to say, after other demographers, that separation of Ukraine into independent state is the cause of catastrophic changes in economics of the country. But it is necessary to understand, that decentralization of power and independency became a natural consequence of whole series of rapid unavoidable changes due to social and economic failures of the soviet system, which actually happened long time earlier (e.g. Chernobyl in 1986, war in Afghanistan in 1989 etc.).

The population of the former USSR, and now – independent Ukrainians, were not ready for these changes, the same as the population of Russia, Belarus, Moldova and other republics. In his work Vishnevsky A. correlated the mortal-

ity increase with a stress, induced by emergency of adaptation to new life conditions: "... despite our expectations, not the weakest and socially unprotected groups had suffered. The most decisive input into life expectancy decrease was made by mortality increase of males in age from 30 till 60 (and from 30 till 75 – to a lesser degree) – the most strong, viable group that had less contacts with medical care specialists... at that accidents are the most frequent among the males, and the blood circulation diseases are the most frequent among the females" (Vishnevsky 2005: 176). The population of working age was under the bulk of impact of the mortality increase, and it was the same group that was responsible for decisions on their family wealth, suffered from a prolonged stress.

In the opinions of such scientists as Andreev, Boytzova, Nemtsov, Shkolnikov, McKee (e.g. Andreev et al. 2003), and others, the mortality increase was alcohol-related, as many confirmed empiric researches were based on the difference between the alcohol consumption during anti-alcohol campaign in 90-ties and after its shutdown. Without entering into a debate with cited scientists, we want to analyze the current indexes of mortality of working-age population in Ukraine and to reveal the regular tendencies.

The goal of article is to analyze the mortality dynamic among the population of working age in Ukraine, and generalization of experts' opinions in the field of possible explanation of the existing demographic crisis. It's rightfully to say about natality decline in the period from 1998 till 2001 included, and about the mortality increase starting from 1988 to 2011.

After the first observations of mortality in different age group and different regions in Ukraine the crucial new evidences of the high mortality rates were revealed for the population of 30-44 years. So far as precisely the population of senior (30-44 years) working age is the source of future changes in birth and death rates, the research is focused just on this target group as main driver of country future development.

Before the 2014 events the most critical depopulation was observed in Donetsk, Dnipropetrovsk, Luhansk, Kharkiv and Poltava oblasts. Due to war of 2014-2015 approximately the same oblasts suffered more (Donetsk, Luhansk, Odessa) than others. To distinguish patterns in depopulation the article is divided into two subchapters: the mortality data analysis and death causes analysis.

1. Analysis of the problem. Generalisation of the theories

Every year the population of Ukraine decreases by 500 thousand people. According to statistical data provided by State Statistic Service of Ukraine, in 2013 during the period from May 1st to November 1st the population of Ukraine had decreased by 48 thousand people. Since 1993 the population growth had been recorded only once – in September of 2012 when there was a growth by 1 thousand of people, or by 0,0002% bigger comparatively to previous month (State Statistic Service of Ukraine).

The natality decrease started in 1988 and lasted till 2001 inclusive, and after 2002 the natality decrease became slower, and in certain regions a little positive effect occurred, when the natality overcame the mortality at last. Slow increase of Ukrainian population was recorded in five regions: Zakarpattia, Rivne, Volyn, Ivano-Frankivsk and Chernivtsi Oblasts. Levchuk N. in her interview provided by Dvoretzkaya (Dvoretzkaya 2013) stated that the natality on the West of Ukraine is higher because of rural population. Besides, the mentality plays significant role in these phenomena, for example, as Levchuk N. considered in her interview, “high level of religious activity forms healthier life style, oriented on family values” (Dvoretzkaya 2013).

At the same time the depopulation was observed in industry-oriented regions, and the most critical depopulation was revealed in Donetsk, Dnipropetrovsk, Luhansk, Kharkiv and Poltava oblasts. The mortality level was twice higher than natality level. According to data of State Statistic Service of Ukraine, in 2012 the population of Donetsk oblast decreased by over than 27 thousand people, Dnipropetrovsk and Luhansk – by more than 14 thousand people, Kharkiv – by nearly 13 thousand, and Chernihiv and Poltava oblasts – by nearly 10 thousand people. According to experts’ opinion, the depopulation in the eastern regions can be explained by migration of the working-age population from economically depressive territories to the capital city. But moreover the unfavourable ecological living conditions, heavy-load conditions and high level of infections influence the life expectancy significantly. As Levchuk N. mentioned (Levchuk 2007; Levchuk 2009) in eastern regions the mortality was higher than in other regions due to murders, traumas and poisoning (data in 2007, confirmed by author using data in 2012).

In my opinion, the confidence in the future plays the significant role in the population life quality. In economic sense it means that there must be an opportunity for the population to accumulate the savings and to invest them in a sphere with low risk of losses. One of such spheres is healthy life-style. It is difficult to imagine that woman with two kids in Kharkiv oblast will take care about calories and healthy food, as the only thing she cares is how to feed her children as the salary is very close to the line of poverty.

Many researchers devoted their articles to prove the correlation between the wealth and health levels, such as Ettner (1996), Feinstein (1993), Meer, Miller and Rosen (2003), Currie (2008) and many other.

As they are very confident about this correlation, we should analyze the wages in Ukraine by oblasts, trying to find out the patterns in mortality increase. But apparently, as it is demonstrated in table (see table 1), the same oblasts that suffered more from mortality crisis and depopulation, have the highest average wages in the country.

Table 1. Ranking of the oblasts by the average wage, comparatively to the average wage in Ukraine (2012)

Rank	Oblasts and certain towns	Average wage, UAH	Deviation from the average wage in Ukraine	
			UAH	%
1	Kyiv (city)	4306	+1507	+53.8%
2	Donetsk oblast	3254	+455	+16.3%
3	Dnipropetrovsk oblast	2965	+166	+5.9%
4	Kyiv oblast	2941	+142	+5.1%
5	Luhansk oblast	2826	+27	+1.0%
	Average wage in Ukraine	2799	X	X
6	Zaporizhzhia oblast	2786	-13	-0.5%
7	Mykolaiv oblast	2767	-32	-1.1%
8	Sevastopol (city)	2649	-150	-5.4%
9	Poltava oblast	2603	-196	-7.0%
10	Rivne oblast	2554	-245	-8.8%
11	Kharkiv oblast	2535	-264	-9.4%
12	Odessa oblast	2466	-333	-11.9%
13	Lviv oblast	2351	-448	-16.0%
14	Ivano-Frankivsk oblast	2335	-464	-16.6%
15	The Republic of Crimea	2304	-495	-17.7%
16	Cherkasy oblast	2278	-521	-18.6%
17	Khmelnyskyi oblast	2276	-523	-18.7%
18	Sumy oblast	2270	-529	-18.9%
19	Kirovohrad oblast	2194	-605	-21.6%
20	Vinnysia oblast	2177	-622	-22.2%
21	Zakarpattia oblast	2132	-667	-23.8%
22	Zhytomyr oblast	2117	-682	-24.4%
23	Chernivtsi oblast	2080	-719	-25.7%
24	Volyn oblast	2075	-724	-25.9%
25	Kherson oblast	2055	-744	-26.6%
26	Chernihiv oblast	2052	-747	-26.7%
27	Ternopil oblast	1996	-803	-28.7%

Source: State Statistic Service of Ukraine.

Nevertheless, the economic levels of the regions differ in opposite way as it was suggested. Now it is possible to say that in the Eastern part it was revealed a concentration of the higher wages (comparatively to the average in Ukraine) and higher mortality at the same time. In other words, the mortality crises in the Eastern part can be slightly explained by the level of the economic development of the region. But it can be explained in the following way: the more wealth (savings) is concentrated in the certain region, the more speed of reallocation of the resources grows and the gap between the richest and poorest people becomes larger, that leads to the higher death rates among the population (suicides, injuries, murders etc).

The same thought was expressed by Levchuk, as she mentioned that not the level of poverty itself but “the difference between the incomes is the determinant of forming the inequality in risks of death, especially externally caused. This inequality of life chances and opportunities, the shortage of necessary resources and depressive understanding of impossibility to change one’s life for better – [all these factors] unavoidably influence the behaviour of the stratum of poor population, included health behaviour (Levchuk 2007: 17). These patterns in health behaviour, mortality and morbidity, and the increasing inequity of wealth in the regions made them extremely unstable, as later political events and military invasion proved it.

Many experts explained the high rates of mortality in Ukraine in the period since 1991 using different approaches:

- Cornia and Panizza – environmental pollution, diet, alcohol consumption, smoking and psychological stress (Cornia and Panizza 1996);
- Rekha and Bianca was sure that the main cause is the deterioration of the health care system and the absence of the primary care system (Rekha 2010);
- The group of scientists considered the intensive alcohol consumption as the main cause of high mortality. The same case of mortality in Russia there was researched by Anderson and Hibbs (1992); Shkolnikov, Cornia, Leon and Meslé (1998); Bobak (2003); for Ukraine – by Levchuk (2009);
- Another explanation can be given due to the weakness and low efficiency of health care system, low living standards and psychological stress, as was assumed by Meslé (2004); Andreev (2003), Cockerham (2006) and many others;
- The stress of adaptation to changeable economic and social life conditions is the main factor of mortality according to Vyshnevsky (1998).
- The level of poverty or rather the difference between the incomes is the determinant of forming the inequality in mortality as consequence of “inequality of life chances and opportunities” (Levchuk 2007: 17).

In my judgment, it is possible to assume that the mortality peaks happened due to stress (or distress) which I consider as *sudden unexpected and unpredictable changes of many life-supporting factors that lead to uncertainty increase in the person’s life - and affect one’s health behaviour*. In the case of Ukraine many life-supporting factors dramatically impact the demographic situation: degradation of housing conditions, income decrease, deterioration of health care and education system, and of course, future security. But the biggest influence all these factors have in combination when acting simultaneously and unpredictably.

2. Methods, data and results of the research

The logic of research was to analyze the mortality data by regions, age and gender to reveal any evidences and to confirm the experts' explanations, cited above. At first stage of the research the mortality statistics in Ukraine were analyzed to reveal any evidences or new patterns. The preliminary calculations showed the opposite logic of link between economic regional development and mortality as it was mentioned above. The source of data was State Statistic Service of Ukraine.

More narrow investigation of mortality for the different age groups with difference in 5 years was provided and it was discovered that the males of 30-44 age has the bigger peaks in mortality growth than males of other age groups in 2007-2008, and what is more strange, the females of the same age group showed the unexpectedly higher rates of mortality growth in 2007-2008 than males. These facts of higher mortality of the most active working age population made these segments to be the target group of the research. The data sources were as follows: Main Statistical Office in L'viv Region in Ukraine and the WHO European Health for all databases, the experts' interviews.

The second stage of the research is the investigation of the death causes for this particular group, – both males and females, and separately for females, to understand the gender profile of mortality. The WHO European Health for all database and, in particular, the offline version of WHO European detailed mortality database were the data sources.

2.1. Results of mortality data analysis

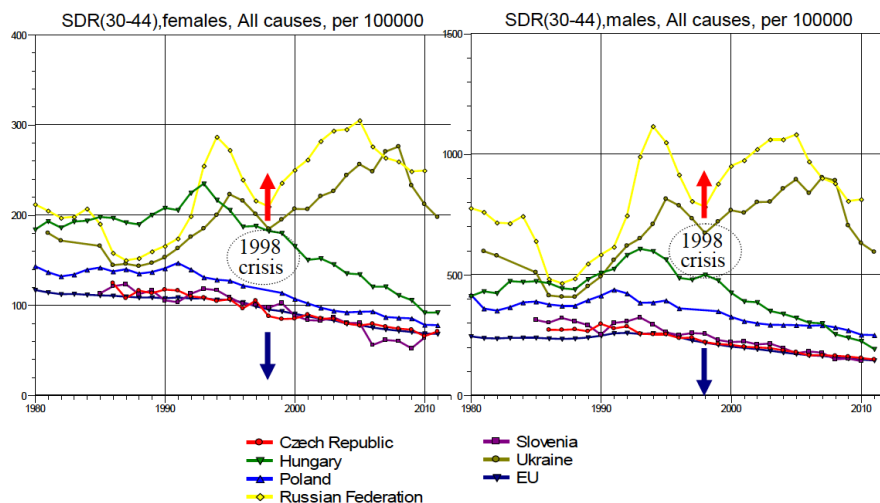
As I consider the stress to be the main factor of mortality increase due to economic crisis, in favor of this suggestion the comparative analysis of standardized death rate (hereinafter – SDR) indexes was done for the countries of the former Soviet countries and countries that were under Soviet domination. As we see from the graphics, Poland, Hungary, the Czech Republic and Bulgaria recovered faster than Ukraine (Figure 2). The patterns in mortality split up in 1998, when economic crisis of 1998 damaged economic systems of Ukraine, Russian Federation, Kazakhstan, Belarus, Moldova, Georgia, Lithuania, Latvia and Estonia. These simultaneous patterns in mortalities are the symptoms of synchronous economic and social systems development, or rather transition, of post-soviet countries.

As we begin to compare the same group of indexes inside of a group for the countries of the former Soviet Union, the mortality profiles acquire the unique features and we may discover another peaks of mortality increase in 2005 – for the Russian Federation, in 2007 – for Kazakhstan and in 2008 – for Ukraine and it became a leader in mortality rates in Europe for the males and females of this age group in 2008. I may consider it as a "mor-

tality echo" of 2007-2008 crisis, as it's obviously visible in figure 3 and, on the other hand, it can be a consequence of the internal the Russian Federation – Ukraine gas dispute in 2005-2006, which in turn appeared as a prolongation of economic crises of 1998. The population of Ukraine, hit by shock of the commodity prices increase, reacted by the mortality rates increase.

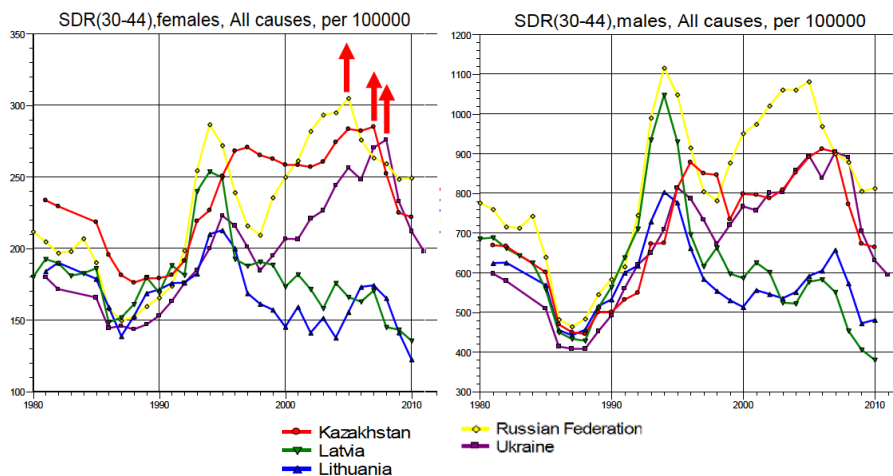
Thereby the approach of Vyshnevsky, who observed the demographic situation in the Russian Federation in late 90-ties and explained the high mortality by stress of adaptation, can be confirmed, as far as the same alarming situation appeared in Ukraine in 2008. The dramatic peaks in SDR have the bigger extremums for the group of working age – for age 30-44 than for other ages, as it was revealed during preliminary calculations. And further investigation showed (as presented in Figure 3) that the more threatening tendency for the same group – the mortality growth had higher rates for the women. In other words, the men keep on dying in bigger numbers than women, but during the crises women react more intensively with higher rates of mortality growth (the growth is 10% and it is bigger than for males). Together with the low fertility and birth rates in Ukraine, this mortality phenomenon becomes one of the most significant impact-factor on the depopulation in Ukraine.

Figure 2. Comparative analysis of the mortality in age group of 30-44 years for the countries that were under Soviet dominance



Source: Constructed by author using the data of European Health for all database (HFA-DB), WHO/Europe, 2013.

Figure 3. Comparative analysis of the mortality in age group of 30-44 years for the countries of the former Soviet Union.



Source: Constructed by author using the data of European Health for all database (HFA-DB), WHO/Europe, 2013. “Mortality Echo” appears for the group of females.

2.2. Results of death causes analysis

In their research Rekha and Biance (2010: 19) listed the causes of death in Ukraine that became the main contributors into Ukrainian mortality crisis. There were ischemic heart disease, and cerebrovascular disease by a large margin, and then the cirrhosis of liver, poisonings, injuries and other causes that are presented (Table 2).

Table 2. Top-twelve causes of death, all population, 2005

Cause of death	%
Ischemic heart disease	39,60
Cerebrovascular disease	12,60
Cirrhosis of liver	3,00
Poisonings	2,90
Other unintentional injuries	2,60
Self-inflicted injuries	2,10
Trachea, bronchus, lung cancers	2,10
HIV/AIDS	2,00
Chronic obstructive pulmonary disease (COPD)	1,90
Tuberculosis	1,90
Road traffic accidents	1,60
Stomach cancer	1,50

Source: Rekha and Biance 2010: 19.

Using the WHO European detailed mortality database (DMDB) I checked TOP-12 causes for the target group and it was revealed that the main contributors into the peaks of mortality in 2008 for an age group of 30-44, both for males and females, were as follows:

- AIDS/HIV;
- Pulmonary heart disease and other heart diseases;
- Ischaemic heart disease;
- Cerebrovascular disease;
- Tuberculosis.

In a contrast to data in 2005 HIV became the main contributor into mortality growth. The HIV epidemic in Ukraine could be named as another dreadful symptom of demographic changes.

The data processing of 55 causes of death in a period from 1981 to 2010 for the female age group of 30-44 was made. Only the women age group of 30-44 was analyzed as the phenomenon of faster reaction of women group to the crisis is important for further discovering.

By using simple ranking method it was revealed that the main contributors into mortality and into mortality growth differ. The table 3 is to show the difference in the list of main killers (column 1 of the Table 3) comparatively to main contributors into mortality growth in 2008 (column 4 of the Table 3).

Table 3. SDR in causes of death for women in age of 30-44, 2008 (per 100 000)

Rank by contribution into mortality	Causes of death	SDR	Rank by contribution into mortality growth	Rate of growth, compare to 2006 and 2001 %	
				2008/2006	2008/2001
1	2	3	4	5	6
1	External causes of injury and poisoning, which include:	52,7	x	↓	
	• Accidental poisoning	11,28	6	12,24	1,71
2	Diseases of the digestive system	49,69	1	45,12	209,7
3	Malignant neoplasms	48,56	x	↓	
4	Diseases of the circulatory system	48,01	4	15,08	31,86
5	Infectious and parasitic diseases, which include:	37,11	2	20,1	236,45
	• AIDS/HIV (as recorded by routine mortality statistics system)	19,28		37,52	883,67
	• Tuberculosis	15,27		5,38	75,32
6	Diseases of the respiratory system	11,56	3	17	43,07
7	Diseases of nervous system and sense organs	9,33	5	13,09	36,2

Source: Calculations based on the European detailed mortality database (DMDB), WHO, December 2015; where bold type means the growth of the mortality for the given age group, and down arrow means that this index decreased, *italic type* means biggest contributors since 2001.

The calculation showed the strange tendency in the growth of mortality for women of working age. The mortality increase was due to, firstly, diseases of the digestive system, secondly, due to infectious and parasitic diseases (where AIDS/HIV remained the main cause) and thirdly due to diseases of the respiratory system, if we will take into account only the 2008 peak. But general tendency showed that leading causes are: AIDS/HIV and diseases of the digestive system (see italic type in Table 3). The strangeness is that diseases of the digestive system were not presented in Top-12 of death causes and remained invisible for the mortality analysis.

External causes of injury and poisoning and neoplasm have gone down, and there is no sign of the alcohol-related mortality growth this year, except the group “accidental poisoning”. As we know so far, poor people may switch in their alcohol consumption from the brands to homemade substitutes. But it can’t be explained by that kind of suggestions, and more investigation of that phenomenon is required. For example, Levchuk in her research about the alcohol-related mortality emphasizes on the decline of that type mortality in these years (after 2007 crisis).

Summing up the evidences of mortality data, I can state, that working age population mortality is influenced by economic and social stressors which became even more intense due to the crises of 2008.

If the crises of 2007-2008 stroke men and women, with a higher mortality rates for women, then the events of 2014-2015 stoke basically men of the working age. According to the chief researcher of the Institute of Demography and Social Studies, National Academy of Sciences of Ukraine, Natalia Rynhach, an important factor was deaths caused by the war. "In 2014, the mortality of working age men from external factors was 160,300 compared to 134,100 in 2013. Those are both direct losses and indirect ones. Kyiv reports that 3,394 men died as a result of military actions in 2014", as she said in her interview to Bondareva (Bondareva, 2015). According to the Office of the United Nations High Commissioner for Human Rights, these numbers are underestimated, and accurate number of all war deaths is still unknown.

Two of these story lines – female and male – affect marriage patterns and number of children born in future and will aggravate the depopulation crisis.

Depopulation in developed countries usually leads to deficit of labor force on the labor market and as consequence to average wage growth. But under conditions of the war (political crisis) and hryvna devaluation (economic crisis) in 2,5 times, the monthly minimum wage dropped to 58 € (1378 UAH) and brought Ukraine to the pre-last position in Europe by the minimum wage (Wikipedia, 2015). For instance, monthly minimum wage in Poland is equal to 412 €, in France – 1458 €.

Meanwhile the hybrid war between the Russian Federation and Ukraine doesn't end, the people try to adapt to the rapid growth of commodity prices in highly import-dependent Ukraine and new challenge of destruction of the industrial centers of Donetsk and Luhansk appears. The waves of migrants to more rich regions lead to disproportion on the labor market between unemployed and employed people and to the reduction of the average monthly wage in the regions, starting the vicious circle of the interdependent economic transformations.

This negative tendency may lead, in my opinion, to bigger stratification of population by levels of income, and consequently by levels of mortality. The inequality in life conditions will grow in society as soon as a disproportion between minimum wage and its purchasing power.

3. Discussion

There are still many questions remained unanswered. There is an assumption that this difference in mortality by gender per se is the social differentiation of mortality and it depends on income and inequality in access to health care resources.

The approach of the comparison of the constant and crisis-related death causes can be criticized. I revealed a tendency but not the system of causes and consequences. There can be other factors that led to the mortality growth due to diseases of the digestive system for the females of working age. While HIV attracts a lot of concerns of demographers, sociologists, and health care specialists, digestive diseases problem is ignored. In the discussion I had while interviewing the expert in demographic field, the expert emphasizes that digestive diseases can not be so significant for mortality analysis, because they are not lethal. So if they are preventable or treatable, it's even bigger problem if people still die of them.

Some of the existing approaches to mortality research had been relatively confirmed, but others were not completely rejected. In the death causes analysis there is still a problem for demographer to investigate every particular case of death, if you are not in a health care system. There can be a problem of corrupted data about death causes presented from the health statistics. For example, the cause of death can be named by the last symptom, but not a cancer to hide the cancer deaths, and so on.

But still further research must be conducted to explain the difference in the age, gender, income mortality profiles in Ukraine. As hybrid war still goes on, the disproportion in society grows and the problem of inequality of income and life opportunities becomes as more significant as ever. There is a necessity of further research of mentioned groups in a dimension of the income gap as main factor of inequality in health and mortality, and therefore as the main factor of depopulation of Ukraine. And what is more important the future cooperative

research must be done with sociologists, economists and demographers to find the ways for Ukraine to recover.

Conclusions

The research of the depopulation tendencies in Ukraine had revealed that the entrance into a dimension of “demographic cross” in 1991 made Ukraine to face with a line of economic and political challenges, crisis of 1998 and 2007-2008 inclusive. These crises had influenced the mortality and put Ukraine into position with the fastest rate of depopulation in Europe. Nevertheless, the tendency in 2012 become more positive and it was expected that population loss will be stopped. But the events of 2014-2015 brought the country the new wave of mortality crisis, but now due to hybrid war.

It is safe to say, that different profiles of mortality are formed in Ukraine, i.e. for different group of population, distinguished by age, gender and income. This research is devoted to reveal tendency and specifics of mortality for the working-age group of people. It is proved that female and male mortality in the 30-44 age group has different features that are required to investigate in what follows. The “mortality echo” was revealed as a reaction to economic crisis of 2007-2008 for the working-age group of population.

Author made a suggestion that the population suffers from economic and social stressors, and the mortality increase is a consequence of it. This research considers stress as sudden unexpected and unpredictable changes of many life-supporting factors that lead to uncertainty increase in the person’s life and affect one’s health behaviour.

Though the observation of demographic transition in Ukraine gives an impression of its unfavorable balance, there are some positive suggestions. One of them is that the natural oscillations in population had the positive pattern before the 2014 events, so there is a hope to renew the positive tendency after the end of the war.

And another suggestion is that Ukraine is a country-survivor that went through many dreadful events (e.g. Genocide of 1933) and it has accumulated the best strong features to overcome crises, and is able to reconstruct the social, political and economic systems into viable and successful ones.

References

- Anderson, S.C. and Hibbs, V.K. (1992), Alcoholism in the Soviet Union, *International Social Work* 35 (4): 441-453.
- Andreev, E.M. Nolte, E., Shkolnikov, V.M., Varavikova, E. and McKee, M. (2003), The evolving pattern of avoidable mortality in Russia, *International Journal of Epidemiology* 32 (3): 437-446.
- Bobak, M., Murphy, M., Rose, R. and Marmot, M. (2003), Determinants of adult mortality in Russia: estimates from sibling data, *Epidemiology* 14(5): 603-611.

- Bondareva, A. (2015), Sharply increased mortality rates in Ukraine, available at: <http://newcoldwar.org/sharply-increased-mortality-rates-in-ukraine/> (accessed 10 September 2015).
- Cockerham, W.C., Hinote, B.P. and Abbott, P. (2006), Psychological distress, gender, and health lifestyles in Belarus, Kazakhstan, Russia, and Ukraine, *Social Science & Medicine* 63(9): 2381-2394.
- Cornia, G.A. and Paniccià, R. (1996), The transition's population crisis: An econometric investigation of nuptiality, fertility and mortality in severely distressed economies, *MOST: Economic Policy in Transitional Economies* 6(1): 95-129.
- Currie, J. (2008), Healthy, wealthy, and wise: Socioeconomic status, poor health in childhood, and human capital development. Working paper 13987. National Bureau of Economic Research, available at: <http://www.nber.org/papers/w13987> (accessed 10 September 2015).
- Ettner, S.L. (1996), New evidence on the relationship between income and health, *Journal of Health Economics* 15(1): 67-85.
- European detailed mortality database (DMDB). Copenhagen, WHO Regional Office for Europe, (2015), available at: <http://www.euro.who.int/en/data-and-evidence/databases/european-detailed-mortality-database-dmdb2> (accessed 18 November 2015).
- European Health for all Database (HFA-DB). Copenhagen, WHO Regional Office for Europe, (2015), available at: <http://www.euro.who.int/en/data-and-evidence/databases/european-health-for-all-database-hfa-db> (accessed 18 November 2015).
- Feinstein, J.S. (1993), The relationship between socioeconomic status and health: a review of the literature, *The Milbank Quarterly* 71(2): 279-322.
- Levchuk, N. (2007), Social'na dyferenciacija stanu zdorov'ja i smertnosti v Ukrajinі, *Demohrafiya ta social'na ekonomika* 1: 12-27.
- Levchuk, N. (2009), Alcohol and mortality in Ukraine. Max Planck Institute for Demographic Research. Working paper WP2009-017, available at: http://www.researchgate.net/profile/Nataliia_Levchuk/publication/251443560_Alcohol_and_mortality_in_Ukraine/links/0a85e53a95269c22f5000000.pdf (accessed 10 September 2015).
- Meer, J., Miller, D.L. and Rosen, H.S. (2003), Exploring the health-wealth nexus, *Journal of Health Economics* 22(5): 713-730.
- Meslé, F. (2004), Mortality in Central and Eastern Europe: long-term trends and recent upturns, *Demographic Research, Special Collection* 2: 45-70.
- Rekha, M. and Biance, F. (2010), What underlies Ukraine's mortality crisis? Health and demography. The Worldbank, Washington DC, available at: <http://documents.worldbank.org/curated/en/2010/01/16522815/underlies-ukraines-mortality-crisis> (accessed 10 September 2015).
- Shkolnikov, V.M., Cornia, G.A., Leon, D.A. and Meslé, F. (1998), Causes of the Russian mortality crisis: evidence and interpretations, *World Development* 26(11): 1995-2011.

- State Statistic Service of Ukraine, available at: <http://www.ukrstat.gov.ua/> (accessed 21 December 2014).
- State Statistic Service of Ukraine. Main statistical office in L'viv Region. Data-bank of Demographic Statistics, available at: http://database.ukrcensus.gov.ua/statbank_lviv/Database/19DEMOGR/databasetree_uk.asp (accessed 10 September 2015).
- Vishnevsky, A.G. (2005), *Èkonomičeskaja demografija. Analiz demografičeskikh processov, Izbrannye demografičeskie trudy*, V. 2.
- WHO European Health for all database (HFA-DB), Copenhagen, WHO Regional Office for Europe, (2013), available at: <http://www.euro.who.int/en/data-and-evidence/databases/european-health-for-all-database-hfa-db> (offline version accessed 19 April 2014).
- Wikipedia (2015), List of sovereign states in Europe by minimum wage, available at: https://en.wikipedia.org/wiki/List_of_sovereign_states_in_Europe_by_minimum_wage (accessed 10 September 2015).

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