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# HEALTH STATE OF THE POPULATION IN POLAND AND UKRAINE AND ITS CONDITIONING IN THE PERIOD OF TRANSFORMATION

**ABSTRACT.** The main aim of the article was the evaluation of the directions, scale and influence of socio-economic reforms implemented during 1990–2002 on the population's state of health in Ukraine and in Poland. The author of the article attempts to select and determine partial and synthetic indices and factors influencing public health. The article presents the typology of provinces in Ukraine and voivodeships in Poland which was developed with regard to the health status of the population and its influencing factors. Socio-economic reforms conducted in Ukraine have caused drastic deterioration of people's health while in Poland one can observe the improvement in a number of indices characterising the health of the population and socio-economic situation of the country.

**KEY WORDS:** public health, factors influencing public health, socio-economic transformations, Poland, Ukraine.

The political reforms, implemented for many years in Ukraine and in Poland, have been accompanied by a number of negative social phenomena. These comprise mainly the phenomenon of unemployment and rapidly increasing stratification of the society in terms of the standards of living. The number of poor people living on the verge of poverty has grown. At the same time there have been large differences between the effects of the conducted reforms, especially noticeable between large urban agglomerations and peripheral areas, which are becoming poorer and poorer.

In Poland, after the initially intensive reforms dating back to the beginning of the 1990s, the economy started to steadily revive and change its structure. Despite various fluctuations and hindrances, since 1993 it has been possible to

gradually increase the GDP and accelerate the development of technological infrastructure. In contrast, in Ukraine the economic reforms, which are of key importance to the achievement of the economic balance, have been progressing more slowly and are not as beneficial as expected.

In Ukraine, the transformation period has brought about numerous side-effects: a drastic decrease in standards of living, a rapid growth in unemployment, lack of social security, rising social tension as a result of vain hope for the improvement of the situation. All this had a destructive influence on the demographic situation and the population's state of health.

The selection of Poland and Ukraine as research subjects is conditioned by three important reasons:

- these two neighbouring countries were in a similar demographic and health situation;
- both countries saw a number of radical reforms in various spheres of social and economic life. Although the aim of the introduction of the reforms was similar, the ways in which they were implemented in each country as well as their effectiveness were respectively different. This significant difference is well reflected in the significant differentiation of the indices and factors influencing the population's state of health;
- Poland's entry into the European Union stimulates a strong urge to reach the same health standards as in the countries of Western Europe. Poland's experience in this respect can be helpful for pointing the way to new directions of further reforms which need to be introduced in Ukraine.

The analysis of the population's state of health within the research area was carried out at the general country-specific level and at the regional level (Ukrainian provinces and Polish voivodeships). The author conducted a comparative analysis of the health state and health conditions of the population during the period of intensive social and economic reforms (1990–2002). The basic research task consisted mainly in searching for an answer to the question: to what extent the changes in the socio-economic situation, resulting from the reforms, influenced the population's state of health in Poland and Ukraine.

The research is based on various resources collected during the research process in a number of institutions of both countries. Various research methods were used. Statistical methods were of the greatest importance to the research. These comprised mainly the Pearson linear correlation, multiple regression, Hellwig taxonomy and the procedure of typology by means of the method of k-averages.

The population's state of health depends on many factors, among which the following groups can be differentiated: socio-economic, ecological, medico-organizational, demographic, and genetic factors, which have a further division into sub-types (Fig. 1).

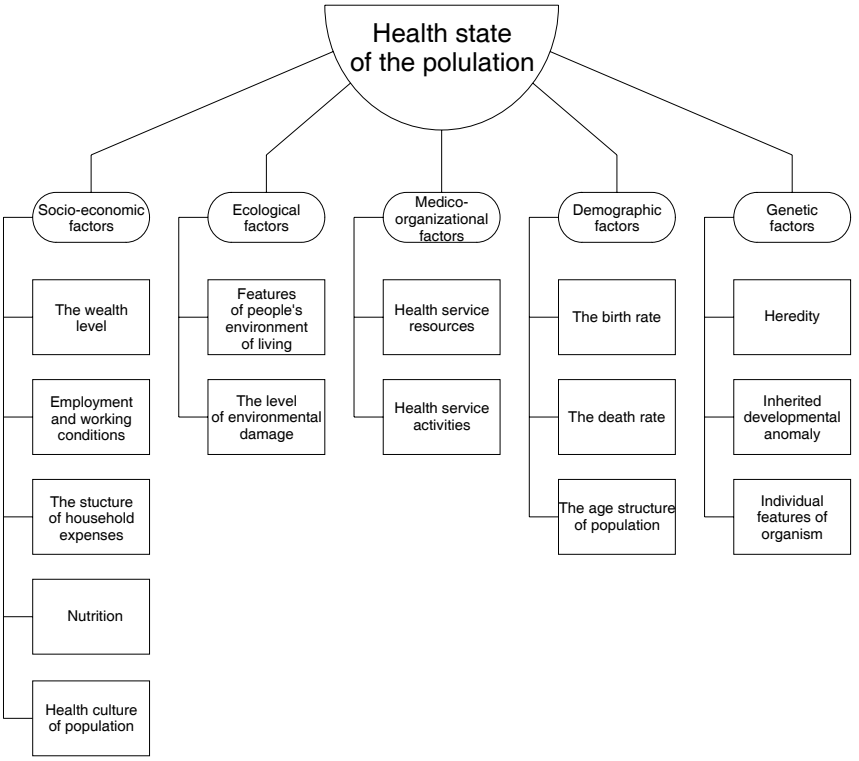


Fig. 1. The classification of factors influencing the health of the population

*Source:* own elaboration.

On the basis of the research it can be stated that the most important determinants of the health situation are the level of GDP per capita according to the purchasing power parity (PPP) as well as the derivative of this product – the level of income of households. In Ukraine the level of GDP per capita according to PPP was 4,350 USD in 2001 and was twice as low as in Poland, and by 15% lower than the poverty line as established by the UN. In both countries a serious problem is a large spatial differentiation of the values of the GDP by PPP. The capital regions of both countries are in the best situation. Significantly lower indices (even by 10 times) were recorded in the areas of the eastern borderline of Poland and the western part of Ukraine (Fig. 2).

The collected and analysed material allowed the author to state that there exists poverty on a large scale both in Poland and Ukraine. However, in Poland it has not developed to such an extent as in Ukraine. In both analysed countries we deal with the increasing share of structural poverty connected with

unemployment. As compared to Poland, the housing conditions of the Ukrainian population are much worse. The same refers to the amount and structure of expenses on basic food products, alcohol, tobacco, health care, entertainment, cultural activities and recreation. The share of food expenses in total household expenditure, which is a clear anti-stimulus of the population's state of health, is very high in Ukraine (twice as high as in Poland), while the share of expenses on health care, entertainment and recreation is significantly lower as compared to Poland: respectively 1.5 and 3.3 times.

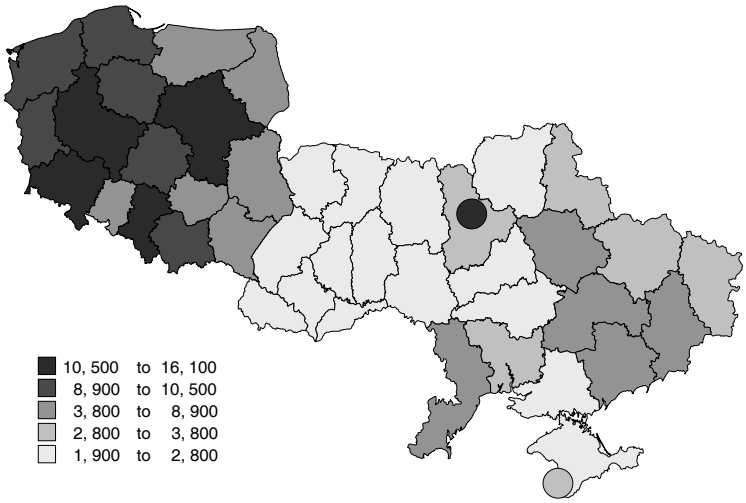


Fig. 2. The gross domestic product per capita in Ukraine and Poland in USD according to the parity of the purchasing power (2001)

*Source:* own elaboration based on: Rocznik statystyczny województw...2002, Statystyčnyj ščoričnyk Ukrajiny...2002.

Recently the situation in nutrition has been largely influenced by economic processes in the analysed countries. Another reason for this was common in Europe standards of the so-called rational consumption connected with the ecologisation of life. Especially in Ukraine after 1990 it was possible to notice a significant decrease in the consumption of some goods essential to the population's nutrition (mainly meat, fish and fruit). Also in Poland in 1990s there were unfavourable changes in the nutrition of the population. However, it did not affect the health state of the population as much as it did in Ukraine.

Following the fall of the communist system, both Poland and Ukraine introduced significant reforms in the sphere of employment, which resulted in

unemployment. It is an absolutely new social phenomenon, which the authorities as well as the population of the analysed countries cannot manage to deal with. According to the official data, the unemployment rate in Poland is higher than in Ukraine, yet in Ukraine we deal with hidden unemployment on a large scale (this concerns mainly people on administrative leaves and those working part-time, who are not included in the total number of the unemployed). Working conditions in Ukraine are of a much lower standard than those in Poland: a high share of workers are employed in hazardous or even life-threatening conditions.

One of the side-effects of the transformation period, especially in Ukraine, is an increase in social pathologies: the ever-increasing number of divorces, abortions, suicides and suicide attempts. On the basis of the analysed material it can be stated that both in Ukraine and in Poland there is a constant unfavourable trend influencing the lifestyle of the population: smoking on a large scale, consumption of alcohol and psychotropic drugs.

In both countries health systems are far from being perfect. The reforms undertaken in this field did not bring the expected results. In terms of health care resources and assets Ukraine has much more favourable conditions. However, their effectiveness is much higher in Poland. It is reflected in the number of patients treated in hospitals per 100 people, an average stay of a patient in hospital per day and the financial availability of medical services to the population. Low effectiveness of medical health care in Ukraine results largely from being directed at treatment and not at prevention. However, the most important problem of the Ukrainian health care is its critical level of financing.

Contemporary demographic problems of the analysed countries are undoubtedly connected with the health state of the population, especially with its health potential. Both Poland and Ukraine belong to the countries of a relatively low birth rate, but having significantly dissimilar death rate indices. In Poland they are quite low and similar to other countries of the European Union. In Ukraine they are almost twice as high and similar to those in the countries of the Commonwealth of Independent States (Fig. 3). In both countries the process of ageing of the society is in progress.

The changes in the population's health which took place during 1990–2002 within the analysed area were analysed on the basis of various coefficients (Table 1): average estimated life expectancy, natural increase rate, the synthetic index of self-estimated health state, death rates due to various reasons, infant mortality rate and morbidity rates caused by selected social diseases (tuberculosis, venereal diseases, AIDS) and civilization diseases (circulatory diseases, respiratory system diseases, psychic diseases and malignant tumors).

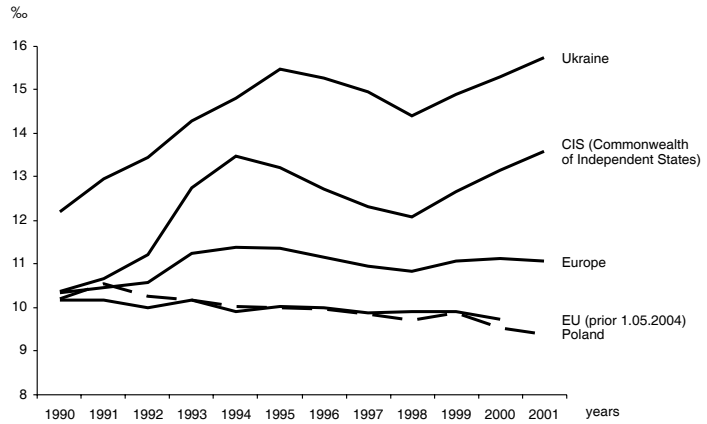


Fig. 3. The dynamics of death rate in selected territorial units in 1990–2002

*Source:* own elaboration based on: WHO/Europe HFA Database, June 2002, January 2004.

The conducted analysis proves that during 1990–2002 there existed a profound health crisis in Ukraine. It can be assumed that in terms of the population's state of health the situation in Poland was then just as unsatisfactory, especially in comparison to the European Union. However, in Poland it started to gradually improve and as early as in 1996 there were noticeable significant differences between the two countries to the disadvantage of Ukraine, where a further decline in the health state of the population was observed. This trend continued to develop in the same way in both countries, upwards in Poland and downwards in Ukraine. In Ukraine the decline in the population's state of health was visible especially in regard to such diseases as tuberculosis, AIDS or venereal diseases. In the case of civilization diseases the distance separating Ukraine from Poland became slightly shorter. On the basis of the analysed diseases it is proven that Poland went through the so-called epidemiological transformation (1) quite smoothly while in Ukraine the still-growing rate of social diseases interfered with the rate of civilization diseases (except for the respiratory system diseases).

Within the spatial organisation the population of Eastern and Southern parts of Ukraine shows the worst state of health. It is mainly due to a high rate of cancer, tuberculosis and AIDS as well as deaths being a result of external reasons. In Poland in this respect the population of Dolnośląskie voivodeship has a higher rate of psychic diseases and caused by alcohol abuse, the highest rate of malignant tumors, and a high death rate caused by these diseases. In contrast, the inhabitants of Opolskie voivodeship and the western provinces of Ukraine – Transcarpathian, Lvov and Ivano-Franktoivsk – are of the best state of health.

Table 1. Selected indices of health situation in Poland and Ukraine in 1990–2002

| Indices | Ukraine | | | Poland | | |
|---|---|---|---|---|---|---|
| | 1990 | 1996 | 2002 | 1990 | 1996 | 2002 |
| Average estimated life expectancy in years | | | | | | |
| men | 65.63 | 61.91 | 62.64 | 66.56 | 68.12 | 70.42 |
| women | 74.91 | 72.95 | 74.06 | 75.49 | 76.57 | 78.78 |
| Natural increase rate, ‰ | 0.6 | -6.1 | -7.6 | 4.1 | 1.1 | -0.1 |
| Death rate due to circulatory system diseases per 100,000 people | 641.5 | 879.0 | 965.4 | 534.2 | 503.2 | 443.0 |
| Death rate due to malignant neoplasm per 100,000 people | 195.4 | 192.4 | 197.2 | 193.4 | 203.7 | 234.9 |
| Death rate due to external causes per 100,000 people | 107.2 | 158.0 | 158.3 | 78.2 | 70.5 | 66.4 |
| Death rate due to respiratory system diseases per 100,000 people | 71.8 | 86.0 | 66.0 | 41.1 | 37.0 | 40.7 |
| Infant mortality rate per 1,000 live births | 12.8 | 14.3 | 10.3 | 19.3 | 12.2 | 7.5 |
| Tuberculosis incidence rate per 100,000 people | 31.9 | 45.8 | 75.6 | 42.3 | 39.8 | 27.4 |
| AIDS incidence rate per 100,000 people | 0.002 | 0.293 | 2.790 | 0.055 | 0.290 | 0.337 |
| Syphilis incidence rate per 100,000 people | 6.0 | 150.6 | 63.8 | 21.6 | 3.3 | 2.4 |
| Gonorrhoea incidence rate per 100,000 people | 73.2 | 74.2 | 46.5 | 5.4 | 3.9 | 1.6 |
| Incidence rate of malignant neoplasm per 100,000 people | 301.2 | 309.4 | 322.0 | 219.0 | 279.7 | 286.8[a] |

[a] – Poland by the state of 2000

*Source:* own elaboration based on: *Rocznik demograficzny*...1990, Naselennja Ukrajiny...1994, Rocznik demograficzny...1997, Rocznik statystyczny ochrony zdrowia...1998, Rocznik demograficzny...2003, Naselennja Ukrajiny...2003, Rocznik statystyczny województw... 2003,Statystyčnyj ščoričnyk Ukrajiny...2003, Biuletyn statystyczny Ministerstwa Zdrowia...2003, Pokaznyky zdorov'ja naselennja...2003, Stan zdorov'ja naselennja...2003.

The author determined the strength and character of the dependence between variables of health conditions (53 variables) and the variables determining the health state of the population (17 variables) by means of the Pearson linear correlation coefficient. A certain part of these variables shows a clear correlation with the majority of health conditions (natural increase rate, average

estimated life expectancy of men and women, infant mortality rate, death rate caused by circulatory system diseases, deaths caused by external factors, tuberculosis and venereal morbidity). Statistically, it was confirmed that there exist the above mentioned high correlations between enumerated variables and economic conditions as represented by the GDP per capita, household incomes and their expenses with special emphasis on food, recreation and health. A slightly weaker correlation was observed in the case of ecological, as well as medico-organizational factors. In the case of the remaining variables these correlations are weaker or even insignificant (the synthetic index of the self-estimated health state, death rate caused by the respiratory system diseases, malignant tumor morbidity and death rate, AIDS and psychic morbidity). It can be assumed that these variables can be determined by other variables (e.g. genetic ones), not included here due to the fact that it is impossible to capture a phenomenon or the lack of proper statistical data.

On the basis of the multiple regression, it can be stated that the population's state of health of the population in Ukraine and Poland, represented by an average life expectancy, in 84% can be represented by the following variables: the percentage of food and recreation expenses (in the general structure of expenses), the number of physicians per 10,000 inhabitants and budget expenses on health care (as expressed in USD by PPP per capita). As results from the above, these are the variables connected with the level of the economic development of these countries.

By means of the taxonomic method and the method of k-averages there was established a typology of Ukrainian provinces and Polish voivodeships with reference to health conditions and the health state of the population. In order to conduct the taxonomic analysis the variables as shown in Table 2 were selected. As calculated according to the equation by Hellwig (1968), the values of the taxonomic estimates of health state and its conditions were divided into 5 classes (Table 3). Each class was ascribed estimate qualifications (e.g. average conditions, very good state of health) representing the situation of a particular unit (i.e. provinces and voivodeships), both in terms of synthetic and particular indices.

On the basis of the method of k-averages in the area of the analysed countries 5 types of provinces and voivodeships were differentiated (three types in Ukraine and two in Poland). They were further divided into subtypes of a similar health state of the population and of a particular structure of health conditions (Table 4, Fig. 4). As it turned out in the course of taxonomic analysis, almost all the indices of health conditions and the population's state health, are much more favourable in Poland than in Ukraine.

Table 2. Variables accepted for taxonomic analysis of health conditioning and the health state of the population in Ukraine and Poland

| Conditioning and the health state of the population (synthetic indices) | Partial indices | Variables |
|---|---|---|
| Socio-economic conditioning | Wealth level | 1. GDP per capita in USD according to PPP (S);<br>2. The average monthly income of households in USD according to PPP (S);<br>3. The average usable area of flats in $m^2$ per capita (S). |
| | Employment and working conditions | 1. Number of the employed per 1,000 people (S);<br>2. The number of fatal accidents at work per 1,000 workers (D);<br>3. The employed in hazardous conditions, the percentage of the total number of employed (D);<br>4. The employed working in chemical substances hazards, the percentage in the total number of employed (D);<br>5. The employed working in fibrosing dust hazards, the percentage in the total number of employed (D);<br>6. The employed in health hazard conditions caused by arduousness of work, the percentage in the total number of employed (D). |
| | Household expenses | 1. The share of expenses on food among all expenses of households (D);<br>2. The share of expenses on alcohol and cigarettes among all expenses of households (D);<br>3. The share of expenses on health among all expenses of households (S);<br>4. The share of expenses on culture and sports among all expenses of households (S). |
| | Consumption of basic food products | 1. Yearly consumption of meat in kg per capita (S);<br>2. Yearly consumption of milk in l per capita (S);<br>3. Yearly consumption of fish in kg per capita (S);<br>4. Yearly consumption of vegetables in kg per capita (S);<br>5. Yearly consumption of fruit in kg per capita (S);<br>6. Yearly consumption of oil and other fats in kg per capita (S);<br>7. Yearly consumption of sugar in kg per capita (S). |
| Ecological conditioning | | 1. The area of forest in ha per 100 people (S);<br>2. The share of urban population in the total number of the population (N, suggested nominal value – 55% according to Andryszek, 1991: 81);<br>3. Population density, people per $km^2$ (N, suggested nominal value – 110 people per $km^2$ according to Andryszek, 1991: 81).<br>4. Industrial air pollution, tons per 1 $km^2$ (D). |
| Medico-organizational conditioning | Health service resources | 1. The number of physicians per 10,000 people (S);<br>2. The number of dentists per 10,000 people (S);<br>3. The number of pharmacists per 10,000 people (S);<br>4. The number of nurses per 10,000 people (S);<br>5. The number of beds in hospitals per 10,000 people (S);<br>6. Government spending on health care in USD according to PPP per capita (S). |
| | Health service activities | 1. Patients in hospitals per 100 people (D);<br>2. The average stay in hospital, days yearly (D);<br>3. The average usage of a bed in hospital, days yearly (N, suggested nominal value – 300 according to Andryszek, 1991: 81);<br>4. Ambulance interventions per 1,000 people (D). |

Cd. Table 2.

| | | |
|---|---|---|
| Demographic conditioning | | 1. The live birth rate per 1,000 people (S);<br>2. The death rate per 1,000 people (D);<br>3. The percentage of people over 60 in the total number of the population (D). |
| Health state of the population | The positive measures of health state | 1. The birth rate per 1,000 people (S);<br>2. The average expected life expectancy of men and women (S);<br>3. The synthetic index of self-estimated health state (S). |
| | The negative measures of health state | 1. The percentage of people estimating their health state below good in the total number of respondents (D);<br>2. The death rate of infants per 1,000 live births (D);<br>3. Deaths due to circulatory system diseases per 100,000 people (D);<br>4. Deaths due to malignant neoplasm per 100,000 people (D);<br>5. Deaths due to respiratory system diseases per 100,000 people (D);<br>6. Deaths due to external causes per 100,000 people (D);<br>7. The incidence of tuberculosis per 100,000 people (D);<br>8. The incidence of malignant neoplasm per 100,000 people (D);<br>9. The incidence of AIDS per 100,000 people (D);<br>10. The incidence of gonorrhoea per 100,000 people (D);<br>11. The incidence of syphilis per 100,000 people (D);<br>12. First-time patients with mental problems in psychiatric clinics per 100,000 people (D);<br>13. First-time patients in rehabilitation centres with mental problems caused by the use of alcohol per 100,000 people (D);<br>14. Disabled people in 0-15 age group per 100 people of the same age (D). |

S – stimulant; D – destimulant; N – nominant

*Source*: own elaboration.

Table 3. The classification of regions according to health conditioning and the health state of the population based on taxonomic analysis

| Classes | Values of taxonomic measures | Health conditioning | Health state of the population |
|---|---|---|---|
| I | below 0.200 | very unfavourable | very bad |
| II | <0.200–0.400 | unfavourable (below average) | bad (below average) |
| III | <0.400–0.600 | average | average |
| IV | <0.600–0.800 | favourable (above average) | good (above average) |
| V | <0.800–1.000 | very favourable | very good |

*Source*: own elaboration.

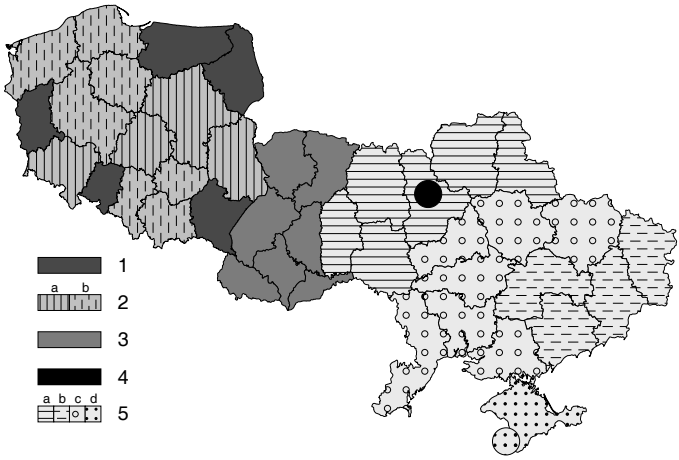


Fig. 4. The typology of provinces of Ukraine and voivodeships of Poland according to the health state of the population and its conditioning based on taxonomic analysis in 2002

*Source*: own elaboration.

Table 4. The types of provinces in Ukraine and voivodeships in Poland with respect to the health state of the population and its conditioning resulting from the taxonomic analysis

| Types | Averaging for a given type values of Hellwig's taxonomic measures | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ECON | WL | EWC | EH | CF | ECOL | DEM | MED | HS | HA | H | PM | NM |
| Poland | 0.346 | 0.425 | 0.468 | 0.505 | 0.217 | 0.564 | 0.679 | 0.129 | 0.141 | 0.743 | 0.455 | 0.780 | 0.377 |
| 1 | 0.340 | 0.391 | 0.442 | 0.524 | 0.239 | 0.695 | 0.703 | 0.064 | 0.070 | 0.770 | 0.554 | 0.815 | 0.491 |
| 2 | 0.349 | 0.441 | 0.480 | 0.496 | 0.207 | 0.504 | 0.668 | 0.158 | 0.173 | 0.731 | 0.411 | 0.764 | 0.325 |
| Ukraine | 0.166 | 0.199 | 0.416 | 0.215 | 0.130 | 0.493 | 0.355 | 0.223 | 0.386 | 0.303 | 0.236 | 0.325 | 0.235 |
| 3 | 0.138 | 0.122 | 0.507 | 0.166 | 0.074 | 0.696 | 0.634 | 0.228 | 0.379 | 0.326 | 0.422 | 0.505 | 0.417 |
| 4 | 0.283 | 0.341 | 0.532 | 0.291 | 0.194 | -0.601 | 0.530 | 0.145 | 0.217 | 0.475 | 0.386 | 0.382 | 0.420 |
| 5 | 0.170 | 0.220 | 0.376 | 0.229 | 0.148 | 0.476 | 0.243 | 0.225 | 0.398 | 0.286 | 0.159 | 0.256 | 0.159 |

ECON – synthetic index of socio-economic conditioning; partial indices of socio-economic conditioning: WL – the wealth level; EWC – employment and working conditions; EH – expenses of households; CF – consumption of basic food products; ECOL – synthetic index of ecological conditioning; DEM – synthetic index of demographic conditioning; MED – synthetic index of medico-organizational conditioning; partial indices of medico-organizational conditioning: HS – health service resources; HA – health service activities; H – synthetic index of health state of the population; partial indices of health state of the population: PM – the positive measures of health state; NM – the negative measures of health state.

*Source*: own elaboration.

***Type 1.*** It comprises 5 voivodeships: Opolskie, Lubuskie, Warmińsko-Mazurskie, Podlaskie and Podkarpackie, with the relatively best health state of the population, constituted by 6.8 mln people (17.8% of the total number of the population of Poland). In the light of Hellwig taxonomic measurement the health state in the voivodeships belonging to this type can be defined as average, with the exception of the Opolskie voivodeship, the population of which is of good health. This voivodeship is of the best state of population's health in the whole of the analysed area. The health situation of the type 1 regions was determined mainly by good ecological and demographic conditions, as well as the close to average level of the consumption of basic food products. The latter can result from the rural and agricultural character of the regions and a high percentage of self-supply with food by agricultural households. However, these regions are not wealthy as their GNP per person is clearly below the average for Poland.

***Type 2.*** This type comprises the remaining voivodeships of Poland (11 in total) of a varied socio-economic character and quite different affluence standards. It comprises regions of both the average and bad health state of the population. Due to this fact it is justified to divide these voivodeships into two sub-types:

***Sub-type 2a.*** It includes four voivodeships, among them better-industrialized ones (Dolnośląskie, Łódzkie, Mazowieckie) and one – Lubelskie voivodeship - of agricultural character. Their convergent feature is quite an equal level of the population's health and economic conditions. All this is connected with the affluence, working conditions and the structure of expenses of the population. An improvement in the health state of the population of the analysed area can be expected mainly as a result of the improvement in the quality of the environment and in the situation of health care resources.

***Sub-type 2b.*** It comprises 7 remaining voivodeships: Pomorskie, Zachodniopomorskie, Kujawsko-Pomorskie, Wielkopolskie, Śląskie, Małopolskie and Świętokrzyskie. They are of a diverse economic character. The one of Śląskie is highly industrialized and urbanized. The one of Świętokrzyskie is of a lower development of industry. It is also poorly urbanized. They have quite good demographic features and an average or good level of health care. In order to maintain the existing state of health of the population and to possibly improve it, it is essential to improve the ecological situation of the region as well as to raise the living standards of the population.

***Type 3.*** It includes provinces of an average (Lvov, Transcarpathian and Ivano-Frankivsk provinces) and poor state of health (Cherniovtsi, Ternopol, Rivne and Volyn), situated in the west of Ukraine. Despite such unfavourable health indices as compared to those of Poland, these areas are of the best health state of the population compared to the remaining part of Ukraine. The analysed provinces have relatively favourable demographic and ecological conditions and

quite efficient, as for the Ukrainian standards, health care. They have also good working conditions. However, in contrast to other administrative units they are of lower affluence of the population. It is a result of low GDP indices and negatively influences the consumption of basic food products. It also does not allow spending enough financial means on health care and recreation. To maintain the good health state of the population of the analysed area in the long run, it is necessary to direct the general policy of the country, the region and the local area towards raising the living standards of the population in this region.

***Type 4.*** It comprises the city of Kiev. It was differentiated due to its special status in relation to the remaining administrative units. Kiev is different from the rest of Ukraine in terms of quite a high level of affluence of the population and favourable structure of expenses as reflected by the relatively high consumption of food products. However, the poor state of health of the population is typical of this city, as determined by the Hellwig measure. It may largely result from difficult ecological conditions – air and water pollution as well as excessive noise. These problems should be subject to special concern on the part of local authorities.

***Type 5.*** It includes the greatest number of provinces situated in the central and eastern part of Ukraine. It is inhabited by 37.9 mln people (78.2% of Ukraine's total). The poor state of health (9.4 mln, i.e. 19.3% of the total) and very poor state of health of the population (28.5 mln people, i.e. 36.4% of the total). This type has significantly varied health conditions and due to that it was divided into 4 sub-types:

***Sub-type 5a.*** It comprises provinces of relatively favourable ecological and working conditions and a bad or very bad state of the population's health. It includes 6 administrative units of Ukraine situated generally in the central and northern part of the country (Kchmelnytskyy, Zhytomyr, Vinnytsia, Kiev, Chernihiv and Sumy provinces). To improve the population's health in these areas the level of affluence of the population should be raised. Also undertakings aimed at overcoming and lessening the effects of the Chornobyl breakdown should be implemented.

***Sub-type 5b.*** It includes provinces of unfavourable ecological and demographic conditions, low employment level, bad working conditions and a poor health state of the population. It comprises 4 eastern provinces of Ukraine: Luhansk, Donetsk, Dnipropetrovsk and Zaporizhia. To improve the population's health of this area it is essential to raise the quality of degraded environment and introduce stimulating activities at different administrative levels, especially those directed towards the improvement in the working conditions of the population in this region, decrease in the death rate and rise in the birth rate.

***Sub-type 5c.*** It has provinces situated generally in the southern part of Ukraine with an average development rate and poor or very poor population's health. This sub-type includes Kharkov province, which has a slightly better

health situation. Together these comprise Mykolayiv, Odessa, Poltava, Cherkasy, Kirovohrad, Kherson and Kharkov provinces. Some of the problems connected with the development of these administrative units are a low level and quality of health care (in the case of Mykolayiv, Kherson, Kirovohrad) and a low level of the population's affluence (in the case of Odessa and Mykolayiv provinces). The most important problem is the improvement in the situation of socio-economic and medico- organizational conditioning. Such improvement may lead to the improvement in the population's health in regions of this type.

***Subtype 5d.*** It includes administrative units of low affluence of the population, unfavourable structure of expenses and a poor or very poor state of health. These are AR Crimea and the city of Sevastopol. The improvement in the state of health of the population is connected here with the rise in the living standards of the population. Apart from that, a number of important problems are connected with the improvement in the quality of the natural environment.

The research has shown that the positive economic results that Poland achieved when introducing the reforms have contributed not only to stopping the regression but also to the improvement of many indices characterising the health of the people. On the other hand, in Ukraine the socio-economic changes (especially the actual way of their implementation) have caused drastic deterioration of people's health, which is an accumulated result of the falling living life standard, and of the flow of the latency period after Chornobyl catastrophe. The reforms in different domains of economic and social life have contributed to the strengthening of regional contrasts within the research area, both as far as health conditions and the population's health are concerned.

The analysis carried out constitutes a basis for establishing the conception of a necessary course of action aimed at restricting the destructive influence of the socio-economic, ecological, medico-organizational and demographic factors, both in the macro- and regional sections.

## NOTES

(1) Epidemiological transformation – shift of accent of main reasons for deaths and infectious diseases towards non-infectious chronic diseases (such as malignant tumors, circulatory diseases) (Murray, Lopez…2000).

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