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**COMPREHENSIVE DEMOGRAPHIC PROJECTION IN UKRAINE UP TO
2050**

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Comprehensive demographic projection in Ukraine up to 2050
(composite authors) / Edited by E.M.Libanova, Associate Member of the National Academy of Sciences of Ukraine. – Kyiv: Ukrainian Centre for Social Reforms, 2006. – 129 pp.

This monograph presents a detailed multivariate demographic projection of the total population number and sex-age structure for the period to 2050. The authors developed probable trajectories of the basic components, determining the population number and structure in the future. Some analytical scenarios of projections are also presented. Historical development of approaches to demographic projections is described, as well as the modern methods. The hypotheses and main results of the historical demographic projections, developed for Ukraine, are analyzed. The standards of publication of demographic projections are proposed with purpose of their comparative analysis.

The edition is intended for experts in demography, statistics, public administration, lecturers and students, other persons, interested in the population prospects.

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INTRODUCTION

A population, its social feeling and development is a determinant of a society and a basis of the state powers. Therefore, demography is calling for particular attention of politicians and the public. The present demographic situation in Ukraine gives large concerns. The population decline, decrease of life expectancy and birth rates and negative net migrations have become the prominent features of the newest demographic trends.

The reasons of this situation have historical roots; they have been accumulated during a long time. In accordance with expert estimations, the First and Second World Wars, three famines (1921, 1932-1933, 1947), forced industrialization, mandatory collectivization, mass reprisals of the 1950's, the Chernobyl disaster and the prolonged system crisis of the 1990's have extremely negatively affected the normal process of demographic transformation, leading to significant deformations of the population sex-age structure and premature death of about 16 million persons. These catastrophic events were negatively designated on the population dynamics; they also deformed the population sex-age structure and reproduction regime. In combination with a long-term preservation of birth rates, which did not provide even a simple reproduction of generations (this trend has been continuously observed during 4 decades), it resulted in exhaustion of demographic potential, inevitably leading to depopulation.

Unlike in economically developed states, there were wavy fluctuations in life expectancy in Ukraine (and in the former USSR as a whole); starting from the 1960's, the periods of death rates decline were replaced with death rates growth.

The qualitative structure of the population has been also negatively affected by migratory processes. Though net migrations with other republics of the USSR have not exceeded 100,000 persons a year during the 1980's, the population ageing has been intensifying, as mostly young people were leaving for work in Siberia, Far East and Far North, while pensioners were coming back to Ukraine. Regular concentration of the most qualified experts in the central part of the USSR negatively influenced the human potential of Ukraine as well.

The impact of migratory processes increased with the Independence of Ukraine. The new migrations were caused as by disintegration of the uniform state, as by opportunities of free population movements within the country and abroad. Also, negative indicators of the natural population movement, resulting from economic and socio-psychological factors, were in force: a sharp decline in birth rates to the lowest world level (in 2002) and increase of mortality among the working-age population, combined with stagnation of mortality among the population of above working age and decrease of mortality among younger population groups.

The population decline, which has begun in the end of the last century in Ukraine, resulted both from direct and indirect population losses. In general, excess of deaths over births, related to low birth rates and ageing of the population, is common for the majority of the European countries. However, high living standards cause a stable migratory inflow to these countries, which compensates depopulation and leads to some increase of the population. In addition, migratory inflow of the youth (it is well-known that young people migrate more often) positively influences the population age structure.

The opposite situation has been formed in Ukraine, as a large temporary outflow of the population has been observed there on a background of small negative net stationary migrations (positive net migrations in 2005). This trend has been directly reflected in birth rates. The Ukrainian labour migrants get the status of permanent residents very often, in particular in the European countries. Therefore, perspective estimations of the population number and shifts in sex-age structure are rather unfavourable.

The recent revisions of the United Nations global projections and probabilistic projections for the world's regions, developed by the IIASA demographers, testify an opportunity of prevalence of depopulation processes in the majority of the global countries.

The role of demographic projections for development of the long- and middle-term strategies of social and economic development of a country is very important. The data on the number and sex-age structure of the population make a basis for estimation of the perspective state revenues and expenditures, in particular regarding such important components, as funding of pensions, social benefits, educational and medical institutions etc. It is impossible to estimate the budget revenues without consideration of demographic indicators, as the revenues depend on the labour force number, the population economic activity rates and educational attainments. A population is the main productive force; it is also a consumer of material benefits. The rates and proportions of economic development of a country or some regions, in particular the scales of manufacture and consumption, largely depend on the population number, age, educational, professional and social structures, as well as on the labour resources.

The population number and structure are characterized by uncertainty, while fertility and mortality have stochastic character. They are influenced by many latent factors, which are difficult to be revealed and quantitatively measured. Thus, it is impossible to develop absolutely correct discrete (dot) projections. But, the incorporated hypotheses and final results are usually realized with a certain probability, while the errors depend on a probability of projections realization. That's why, the smaller appropriate confidential interval, the smaller probability of projections realization. Therefore, development of interval projections is more correct, suggesting

development of assumptions with a certain level of probability that the expected changes in the country's demographic development will not exceed some limits.

Therefore, the modern methodology of demographic projections is presented in the monograph, as well as base hypotheses on the country's future birth and death rates and population shifts in different sex-age groups. The results of interval projection of the Ukrainian population number and structure up to 2050 are also presented in the book.

Preparation and publication of the monograph has been supported by the United Nations Population Fund in the framework of demographic studies cycle. The monograph is a logical continuation of the *Comprehensive demographic research in Ukraine*¹.

¹ Comprehensive demographic research in Ukraine / Edited by E.M.Libanova, Associated Member of the National Academy of Sciences of Ukraine. – Kyiv: Ukrainian Centre for Social Reforms, 2005. – 190 pp.

1. MODERN METHODS OF DEMOGRAPHIC PROJECTIONS

Demographic projection is a scientifically based prediction of the main parameters of the population movement and future demographic situation: the population number, sex-age and marital structure, fertility, mortality, migrations. Demographic projection provide a base for projections of general socioeconomic processes (prospects of production and consumption of goods and services, housing construction, development of social infrastructure, public health and education, pension system etc.). So, projections of the population number and structure, families' number and structure, as well as other demographic processes, present a very important component of activity of the international, state and non-governmental organizations, educational and scientific institutions.

Traditional approaches, accumulated in the international practice of population projections, are based on three main conceptual schemes. The first scheme suggests a general trend of a population development, the second one – analysis of statistical data, the third one is based on a probable or stochastic interpretation of demographic processes.

The modern view of demographic projection problems combines some elements of simulation and a projection itself. This methodology is called potential analysis, divided into two main approaches: social-integrated and regional-typological. The first of them suggests a close correlation between the population analysis and projection, between labour potential and socioeconomic processes, which should be considered not only as precondition of demographic processes, but as their results. The regional-typological approach considers a need in overcoming of a strict associating of demographic processes to the territorial differentiation, which traditionally investigated the main projection indicators only in the framework of administrative-territorial structure. Thus, the aim of the potential analysis is to define the most probable scenarios of some processes based on the complex estimation of their objective possibilities of development.

Regarding technical approach, demographic projection presents perspective population estimations, i.e. estimations of the population number and sex-age structure, developed based on the change of demographic characteristics (population number, sex-age structure, fertility, mortality, migration) as in the past, as in the future.

These estimations are usually developed in three variants: pessimistic, medium and optimistic ones. Medium variant responds to the most probable situation, while pessimistic and optimistic variants provide a bottom and upper lines of demographic indicators.

Reliability is an important characteristic of demographic projections, meaning the correspondence of the predicted populations to the actual ones. Reliability of demographic projections is estimated by correctness of information, relevance of hypotheses, and duration of the investigated period.

The aims of demographic projections are related to the needs of economic planning (estimation of the labour force number and structure); to the needs in estimation of the future demand on different types of goods and services; to the needs of social development (education, public health, pension reform, etc.). That's why the aim of a projection is among the most important determinants of classification of projections.

In accordance with the main principles of demographic projection, projections are classified by:

- regional coverage (global – the whole world, regional – continents and groups of countries, national – some countries, territorial – administrative units, large cities);
- time period (time horizon) of estimations (short-term, middle-term, long-term projections);
- level of detailization (the total perspective population number and sex-age structure, territorial, social distribution etc.);
- purpose or aim of a projection (practical, warning projection, analytical, normative etc.);
- methods of estimation (extrapolation, correlation-regression models etc.);
- objects or components of projection (number of the population age or social groups, fertility, mortality, migrations).

Short-term projections cover periods to 5 years inclusive. They are needed for realization of the nearest aims of the economy and culture in the countries, are characterized by high correctness and details.

Middle-term projections are developed for period of 20-30 years. These estimations are less correct, as compared with short-term ones, but they estimate the perspective number of the population with rather high reliability.

Long-term projections cover period of time, which could exceed a century. They have smaller reliability, as compared with short- and middle-term ones, and usually are classified as scientific predictions.

Demographic projections could be detailed and non-detailed. Non-detailed projections do not suggest a division of the future population number by age and other groups. Detailed projections describe not only the total population number, but its structure by sex, age and territorial distribution.

Regarding their purpose, all demographic projections are divided into realistic, analytic, normative, warning and functional projections.

Realistic projections are used in estimations of the labour force balances, fertility, mortality, transition from infants to adults, from employed to pensioners etc.

Realistic projections have to provide a correct reflection of the expected changes in the population development. Reliability of a projection depends on correctness of the hypotheses on changes in fertility, intensity

of mortality and directions of migratory flows. Realistic projections provide definition of all parameters for every time moment not as of separate rates, but as of confidence intervals, i.e. maximal and minimum rates of parameters. But, these rates probably will not be reached at all.

Analytical projections are developed with scientific purposes; they present investigation of the future trends of the population movements and reproduction. They could illustrate an isolated impact of some factor (or groups of factors) on demographic reproduction, or development of the population given some rare, but interesting events. Analytical projections usually present an estimation of parameters of the future demographic situation, based on assumptions on the future reproduction regime. Analytical projections are usually long-term. Though they are rare, these projections describe probable limits of the future changes in the population number and structure. It could assist in prevention of the negative trends, development of the state demographic policy.

Normative projections are related to development of the new concepts, which describe probability of some demographic parameters in a case if some socioeconomic actions are realized. This approach is based on a thesis that demographic projections (such as fertility and migrations) could be influenced by economic measures (increase of employment and improvement of the population well-being), as well as by social-psychological measures (educational attainment, propaganda of a desirable number of children in a family, development of the state demographic policy).

Normative (or conceptual) projections present a special form of interpolation estimations; the needed value of a projection object is selected, then a form of correlation between demographic processes is defined; parameters of independent variables, needed to reach the desired result, are calculated.

Warning projections aim on illustration of possible negative situations in the future population number and structure, fertility, mortality and migration. So, they can be considered as instruments of prevention and timely regulation of non-desirable results of demographic development of the population.

Functional projections are developed with purpose to receive some information on the population, needed to make decisions in economic, social, political and other activities of the state and social institutions.

The estimations are realized by means of mathematic functions (linear, exponential and logistic functions are used most often), or by a method of age groups shift (method of components). These methods are mostly used for projections of the population number at small territories, in particular at those without reliable demographic statistics.

Projections, based on linear and exponential functions, sometimes are called as methods of extrapolation, while projections, based on use of logistic and other functions – as analytical methods.

Extrapolation method is based on the direct use of linear and exponential functions, i.e. on the data about the yearly absolute changes of the population or about the yearly growth rates. If these parameters are known, the population number can be estimated for any period ahead; the parameters are considered as constant for the whole investigated period.

During extrapolation, a process under projection is presented as a function of time, accumulating action of other factors, defining its direction and intensity. Any projection is based on extrapolation of a trend in certain form. In particular, methods of expert judgments include detailed investigation of a process by experts of different scientific branches and extrapolation of a trend (with probable changes, which are based on the trends).

Extrapolation methods are organically related to a hypothesis that the revealed trends of the past will be kept in the future. These methods are most wide-spread due to their simplicity. They give a clear idea about dynamics of some demographic phenomenon in case if its development will take place according to the usual trajectory. For instance, if we know that a continuous decline in fertility will lead to the progressive population ageing, we could estimate a rate of the ageing in the future. Respectively, the total decrease of the population mobility can be estimated, as youth is characterized by the largest migratory mobility. But, extrapolation models have a disadvantage, as they proceed from a vision of the “medium” development and do not consider peculiarities of development of some population groups (in particular, of age groups or generations). So, the methods are not used for development of such projections. Extrapolation projections could also be called as methods of the trends estimations.

Analytical method is based on a function, describing the past demographic dynamics most closely; but any function has empirical character. Analytical method has the same restrictions as extrapolation methods. It can be used only for short periods of time.

Special computer programs have been developed in the XXth century with purpose of population projections based on different analytical functions. For example, standard software in the form of electronic tables is used in the national and European practice of demographic projections (in particular, in the statistics bureau of Sweden).

Method of Markov chains is based on probabilities of replacement of some people from one sampling to another one, as well as on their going out of observation (death, moving to another workplace etc.). It is suggested that the received coefficients will stay invariable for some time. So, a structure, depending only on a transition matrix, not on the starting conditions, is formed. Sometimes, method of Markov chains is called as a law of ergodicity (ergodicity is a virtue of “forgetting” of the previous structure by the system). But, we should remember that the main aim of the projection is not in a probabilistic interpretation of events, but in their socioeconomic conditioning, in analysis of demographic phenomena in a

context and organic correlation with development of productive forces of the regions.

Regression models are used when estimation has to be done in accordance with predicted or known changes of some economic or social factors, contributing to a predicted process. In respect to the formal view, this type of projections is based on construction of multivariate regression models, proceeding from the results of analysis of multiple correlation and regression. A numerous material characteristic stands for an independent variable here, being a determinant factor. Thus, the method is more convenient for regional projections.

The modern computer tools of information processing provide with a possibility to digitalize a large number of factors. But, correlation-regression models are not supposed to reflect the reality (in accordance to its definition). It is an instrument of knowledge, which reflects only general trends, structural connections and relations. We have to mention that revealing of the qualitative nature of demographic phenomena and correlation between their determinants is required when developing correlation-regression models, but not creation of mathematical apparatus.

Methods of objects-periods and construction of recurrent (recursive) models present an improved variations of correlation-regression models. According to the first method, several time series are included to one sampling population (for instance, data for 10 years are aggregated for 27 regions in Ukraine); it provides with a possibility to expand a sampling population size and use the law of large numbers for its processing. But, we have to note that such sampling population is not similar to a sampling, which includes 270 observations for one time period.

Recurrent model is based on the structure of correlations; it considers not only direct impacts on a dependent variable, but also indirect impacts, evaluated through correlations between independent variables.

When using structural-analogue method, it is suggested that the investigated process will develop at some territory in accordance with similar trends of the referent territory (obviously, with some peculiarities).

Well-known method of age groups shift (or component method) is most wide-spread. Projection of some components of demographic development consists of three main processes, determining the population dynamics: fertility, mortality and migrations. They are related through the demographic balance equation:

$$P^{t+1} = P^t + N^t - M^t + E^t$$

where:

P – population number,

t – time (usually 1 year),

N – number of births in a year t ,

M – number of deaths in a year t ,

E – net migrations in a year t .

For separate age groups the general formula of a shift could be written in the form:

$$P_{x+1}^{t+1} = P_x^t - M_x^t + E_x^t = P_x^t - P_x^t \times q_x^t + E_x^t$$

where:

x – number of complete years, starting from 0,

q – probability to die in the age x , not reaching the age of complete $x+1$ years, taken from the life tables.

Particular attention should be paid to a shift of the marginal age groups – in the age under 1 and in the age of 100+. Following the formula of R. Böeckh,

$$q_0 = 1 - \frac{N^t - {}^tM_0^t}{N^t} \times \frac{N^{t-1} - {}^{t-1}M_0^{t-1} - {}^tM_0^{t-1}}{N^{t-1} - {}^{t-1}M_0^{t-1}}$$

it is purposeful to make a shift of different groups of infants by different parts of the formula. Thus, infants under 1, who are alive at the beginning of the investigated period (i.e. they were born in a year $t-1$), are shifted to a group of the complete 1st year of life (from 1 to 2 years) at the beginning of the next year according to the formula:

$$P_1^{t+1} = P_0^t \times p_0^t,$$

p (probability to reach the next age group) is calculated according to the formula:

$$p_0^t = \frac{N^{t-1} - {}^{t-1}M_0^{t-1} - {}^tM_0^{t-1}}{N^{t-1} - {}^{t-1}M_0^{t-1}}$$

where:

${}^tM_0^{t-1}$ – number of deaths in the age of 0 in a year t of all born infants in a year $t-1$,

N^{t-1} – number of births in a year $t-1$.

Respectively, persons, born in a previous year, will not reach the age of 1 at the beginning of the next year. So, they will form the age group of 0 (under age 1) at the beginning of the next year. A shift of infants, born at the beginning of the next year, is done through the formula:

$$P_0^{t+1} = N_0^t \times p_0^t,$$

p is calculated through another multiplier of the R.Beck formula:

$$p_0^t = \frac{N^t - {}^tM_0^t}{N^t}$$

Information on age structure of the population in the age 100 and over is limited. But, it would be incorrect to suppose that all persons of this age would die every next year of projection, while only persons, who reached the age of 99 in a previous year, enter this age group. Moreover, quite a

large group of persons in the „open” age group², as well as progressive ageing of the population in Ukraine and corresponding increase of persons in the age 100 and over, require a particular attention to perspective estimations of the eldest populations.

Hence, it is reasonable to continue age groups shift after the age of 100. A probability to die can be suggested as a constant for the age groups from 101 to 110 (similar to the age of 100), or received by extrapolation. It is known from the life tables estimations that methods, used by the Central Statistics Agency of Poland³, provide good results when extrapolating beyond the age of 100.

Theoretically, the population distribution in the age of 100-110 can be obtained by individual years of age based on retrospective methods, given the required statistics for 10 years before a base year and life tables for this period. The scheme of age groups shift is presented at Fig. 1.1.

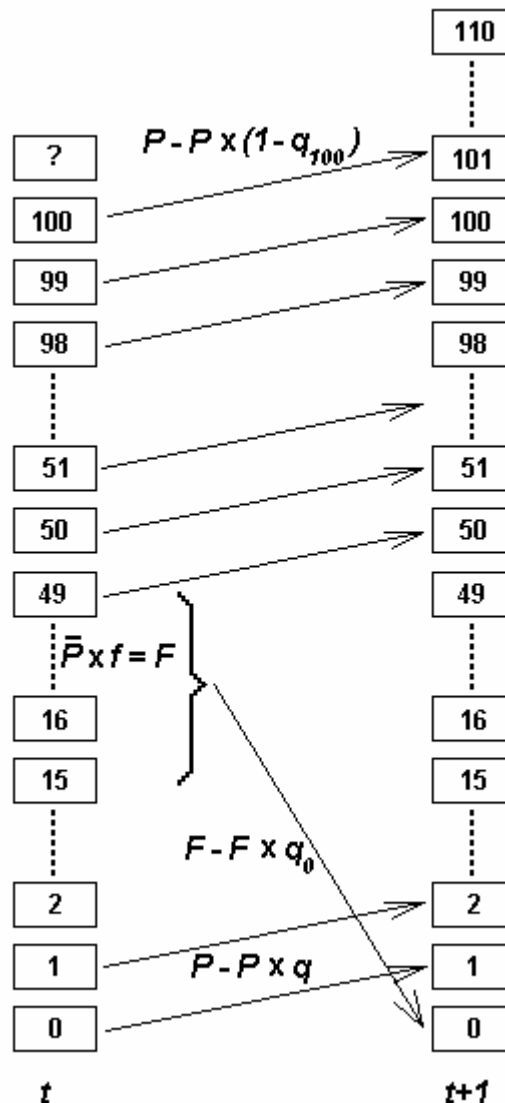


Fig. 1.1. General scheme of age groups shift.

² There were 1,777 persons in the age of 100 and over at the beginning of 2006.

³ Trwanie życia w 2000 r. – Warszawa: Główny urząd statystyczny, 2001. – 48 s.

If we know the population number, the number of births and deaths, as well as net migrations at the beginning of a year, we can have the population number at the beginning of the next year. But, values of these indicators are indefinite in the future. Errors of projections are increasing with time; it will be proved on example of demographic projections in Ukraine.

The main reasons of probable errors are different at different stages of the investigated period. The largest errors could be observed as early as in the first years of projections of migrations. It results from a high sensibility of migrations to such conjuncture factors as political situation, legal norms and level of economic development of territories.

Obviously, juridical obstacles could become rather powerful determinants of migrations' control or stimulation. Political stresses or stabilization could lead to rapid changes in a country's migratory appeal. That's why projections of migrations could be based on different hypotheses, describing as excess of emigrants, as excess of immigrants.

As the experience proves, the state demographic policy makes not so large impact on fertility. So, a variation of the total fertility rate, exceeding 6-8% a year, is very rare. Given unbroken transformations of fertility, this indicator varies within 3-4% a year. But, such stability can be delusive. Long-term unidirectional dynamics of fertility could result in radical changes of a fertility rate. Thus, the total fertility rate could change almost twice during 10-15 years. So, a dependency of demographic projections' correctness on correctness of long-term fertility estimations is increasing with time. Reliability of long-term projections is decreasing, as generations, who have not been born at the moment of a projection development, will enter fertile age on 25-30 years later. That's why no one could predict reproductive aims of the future generations of women.

Historically, dynamics of mortality is most stable. The yearly change of the average life expectancy on more than 0.5 years is very rare. So, prediction of a number and sex-age structure of persons, who are alive at the moment of a projection, is relatively correct. A probability of the long-term unidirectional dynamics (in particular, negative one) is problematic. Thus, a long-term reduction of mortality in the youngest population groups with simultaneous increase of mortality in the middle ages results in significant „skews” in mortality structure (as by age, as by death causes). So, it is very difficult to find a referent territory for realization of structural-analogue demographic projections.

Thus, even separate components of demographic projection could be undetermined. Combination of these components could lead to increase of such ambiguity. A probabilistic approach lets us to define this ambiguity in the visual form, contrary to other methods of demographic projections.

When developing multivariable projections, three projections are usually developed: low, medium and high projections (in accordance with the UN terminology). They also could be called as minimum, maximum and

most probable projections or as pessimistic, optimistic and realistic projections.

A moment with estimated initial age structure of the population is called as a time threshold. Time interval of age groups shifting (as a usual, one- or five-year period) is used as a “pitch” of calculation. Also, such term as “projection horizon” is used to indicate the last year of a predicted period.

Potential demography is a particular demographic method; it estimates a value of demographic phenomenon based on a growth (positive or negative) of the population living potential. The living potential means a number of the future years of life of a person (a population sampling) in some age. It is estimated based on the order of deaths (life tables).

Projections of migrations and their results (re-distribution of the population within some territory) are the least developed component of demographic projections. The conceptual issues are insufficiently developed. For instance, there is no common opinion on parameters of migrations, which could be predicted, as well as on parameters, which depend on other processes.

Migration as an object of projections differs from other demographic processes. While a change of the natural movement parameters requires a rather long period and is reflected on the labour force with an additional lag in 20 years, parameters of the population migration could be changed in a few years. Peculiarities of migration projections also depend on predicted indicators: number of emigrants by age groups, gross migrations (a sum of emigrants and immigrants), net migrations, and intensity of migrations (gross migrations, divided by the population number). Intensity of migrations is also called “the population mobility”.

The next directions of migrations; projections can be specified: estimations, which are based on extrapolation of the basic trends, simulation of migrations and use of a method of demographic tables.

To construct regression models of migrations, a system of indicators is formed and hypotheses of correlations between migrations and its determinants, which could be numerously estimated, are selected. Territorial variations of conditions of life of the population stand as factors of migration.

Gravitation models have become rather wide-spread in their times. They were based on an assumption that migratory appeal of settlements is similar to the gravitation of physical bodies. The population number is a measure of mass in this case. In other words, “gravitation” of some settlement towards another one is directly proportional to its population number and inversely proportional to a distance between these settlements.

Processes of such „gravitation” occur in undeveloped economies of centralized type. The population of these countries moves to the centres, where financial flows and productive activities are concentrated. The rest of

territories become depopulated. The examples are presented by growth of the Mexico City, by concentration of a large part of the Hungarian population in Budapest. Probably, Kyiv region will experience the same fate in Ukraine. Development of transports and communications in the economically developed regions contributes to suburbanization, meaning a „spreading” of the population around the centres.

Methods of probabilistic projections

The origins of probabilistic approach to the population projections could be found in many publications (see Stoto⁴, Alho and Spencer⁵, Keyfitz⁶, Pflaumer⁷). Three basic alternative approaches to probabilistic projections are developed in these works: analysis of errors ex-post, analysis of time series and expert judgments.

During the last decade, the attention to development of methods and practical use of probabilistic projections has been increasing. Probabilistic projections were developed for many countries: Austria⁸, Finland⁹, Norway¹⁰, the USA¹¹, Germany^{12, 13}, Australia¹⁴, the Netherlands¹⁵. Stochastic projection of the population of Sweden is under development now¹⁶. Also, the experts of the Vienna Institute for Demography have developed a probabilistic demographic projection for the world's regions. Indeterminacy of demographic projections is a subject of the detailed discussions in many scientific editions.

The principal feature of probabilistic predictions is a deviation from defining several “most probable” scenarios. Based on direct assessment, as well as on methods of time series analysis and historical error analysis,

⁴ Stoto, M. 1983. The accuracy of population projections // Journal of the American Statistical Association 78(381):13-20.

⁵ Alho, J.M. and B.D. Spencer. 1985. Uncertain population forecasting // Journal of the American Statistical Association 80(390):306-314.

⁶ Keyfitz, N. 1985. A probability representation of future population // Zeitschrift für Bevölkerungswissenschaft 11:179-191.

⁷ Pflaumer, P. 1988. Confidence intervals for population projections based on Monte Carlo methods // International Journal of Forecasting 4:135-142.

⁸ Lutz, W., Scherbov, S. An expert-based framework for probabilistic national population projections: The example of Austria. European Journal of Population 14(1):1 – 17.

⁹ Alho, J.M. A stochastic forecast of the population of Finland. Reviews 1998/4. Statistics Finland, Helsinki.

¹⁰ Keilman N., Pham D.Q., Hetland A. Why population forecasts should be probabilistic – illustrated by the case of Norway // Demographic Research, vol. 6, art. 15. – 2002. – P. 410-454.

¹¹ Lee, R., Tuljapurkar, S. Stochastic Population Projections for the Unites States: Beyond High, Medium and Low. Journal for the American Statistical Association 89, 1175-1189 (1994).

¹² Lutz, W., Scherbov, S. “Probabilistische Bevölkerungsprognose für Deutschland“, in: Zeitschrift für Bevölkerungswissenschaft, Jg. 23 2/1998, 83-109.

¹³ Betz F., Lipps O. Stochastic Population Projection for Germany – Mannheim, 2004. – 20 s.

¹⁴ Wilson T., Bell M. Australia's uncertain demographic future // Demographic Research, vol. 11, art. 8. – 2004. – P. 196-234.

¹⁵ De Beer, J., Alders M. Probabilistic population and household forecasts for the Netherlands. – Working Paper nr. 45, Joint ECE-Eurostat Work Session on Demographic Projections, Perugia, Italy, 3-7 May 1999.

¹⁶ SCB:s modell för befolkningsprognoser. En dokumentation. – Stockholm, Statistiska centralbyrån, 2005. – 30 s.

the experts define certain limits for demographic processes with probabilities of 60%, 80%, 95% etc. The total number of the most probable projections is obtained by “superposition” of different trajectories within the specified “corridors”. There can be one, two or more thousand such stochastic imitations. Obviously, given normal (or asymmetric, if specified) distribution, different variants are concentrated around a trajectory close to the medium. Usually, a condition of normal distribution of numbers with the dispersion equal to 1 and expectation 0 is specified.

Probabilistic approach, through calculation of a large number of projection scenarios with mutual independence of variables, eliminates expert’s bias to a great extent, expert judgement being obvious though. Such methods have great advantages over usual variant projections because of broad use of the expert’s experience and intuition (which are often most valuable in forecasting social processes in contrast to pure mathematical models); on the other hand, they provide efficient elimination of the influence of the expert’s opinion on the projection.

Deterministic projections do not provide appropriate characteristics of future indeterminacies. That is why, it is reasonable to develop probabilistic demographic projections, that is projections that include not just methods of forecasting one or several “most probable”, in the researcher’s opinion, variants (or scenarios) of a projection, but extrapolation of a “cluster” of interrelated projections based on a large number of simulations of possible combinations of expected rates of natural and mechanical population movements. Such approach allows expert judgements and historical error analysis.

Errors in demographic projections are associated with two types of mistakes - unreliable input information and inadequate assumptions on the prospects of demographic processes. As to the first type, it should be noted that reliability of demographic information is being steadily improved. That is why for European countries with rather developed current accounting of natural movement of the population, including Ukraine, the error in current population accounting can be neglected.

Special regard should be given to the second type of projection’s mistakes. As the international experience of demographic projections shows, they form the main source of incorrect projections. Of course, one can note that a scientific projection is not a “guess” on the future dynamics and it does not have to coincide with real dynamics of a process *ex post*. The essence of a scientifically valid projection lies, first of all, in the adequacy of projection model to the most probable assumptions of expected demographic processes. Numerical characteristics of such processes for the future are defined by means of individual forecasting methods (analysis and extrapolation of time series, expert judgement, and historical error analysis) or their combination.

Complex systems, such as a population, are characterised by a great degree of indeterminacy. That’s why projection of development of this

system should be done with consideration of its peculiarities as of indeterminate system. Multiple relations with social and economic systems can result in the multiplication effect. That is why insignificant errors of the input hypotheses can lead to considerable distortions of output results. So, methods of probabilistic projection have become wide-spread during last decades. Given this approach, indeterminacy of a projection, resulting from synergy effect, is considered through definition of the confidence interval.

A probabilistic prediction, contrary to a deterministic one, specifies upper and bottom limits of possible values of predicted characteristics (fertility, mortality, and migrations). The range of predicted values is between these marginal figures. A projection is estimated as a set of probabilistic imitations of possible variables. An established condition of normal distribution of probabilities of each component of the projection and their superposition provide concentration of imitations, their greatest density being at the medium value of the distribution.

Expert opinion adds a certain degree of subjectivity to a projection. In order to avoid it and obtain more reliable results, the largest possible number of stochastic imitations is calculated for a projection (about 2,000). Given normal distribution of probabilities and mutually independent scenarios of different components of the projection, we obtain a "cluster" of trajectories whose realisation is known with an estimated probability rate. The most probable variants will be concentrated at the point of the greatest density of these "clusters". This point, given acceptable conditions, will be situated near the medium value. All the variants of the projection put together cover the value area that, with the probability of 0.95, limits prospective parameters of demographic reproduction and the size and structure of the population of Ukraine.

A projection does not provide for any catastrophes during the projection period. This assumption results in the condition of smoothness of variable dynamics. It is obvious that the value, attained by a parameter, influences the most probable value of the next year. It means that parameters of neighbouring years should not differ too much. This requirement contributes to narrowing of probable trajectories of projection parameters. However, trajectories can hardly be unidirectional. It seems logical to connect the growing probability of the approach of a "turning point" with the periods of demographic generations change.

The length of generation is usually about 25-27 years. In demographic context (on the age pyramid of the population of Ukraine), there is a generation very different in number - people born in late 1990's. Their reproductive and "vital" aims are not known yet. That is why the uncertainty of projections will grow when they enter reproductive age (about 2020). Thus, it is reasonable to specify the points of the probable turn of trends as 2020-25, 2050-55 etc.

Time series extrapolation

The method is based on an assumption of preservation of dynamics of some projection's variables in the future. Models with different parameters are widely used, in particular such as ARIMA (Autoregressive Integrated Moving Average) – an autoregression by moving averages.

As a theoretic base for use of elements of extrapolation of time series, a dependency of each next indicator of a value of the last year is used. Indeed, the analysis of the average life expectancy in Ukraine proves that it does not change rapidly from year to year. The average life expectancy at birth did not change more than on 1.65 years annually even at times of the strictest measures of the state regulation of some aspects of demographic development. The average yearly growth of the average life expectancy at birth was 0.43 for males and 0.25 for females in absolute values. The most part of this period was characterized by small fluctuations of life expectancy of a conditional generation. The European experience shows even smaller changes in the yearly changes of life expectancy – about 0.2-0.3 years for males and 0.1-0.2 – for females.

But, this method has a problem, as correctness of extrapolation of time series is inversely proportional to a projection horizon. Demographic processes and systems are characterized by certain rate of ergodicity, as they could “forget” the past intensity and structure. It could be suggested with high rates of reliability that the average life expectancy at birth of men will not overstep the limits of 61-62-years interval in 2006; but it will less depend on the initial value of 2005 in 2010, so it could vary within interval of 59- 64 years.

Thus, it is obvious that indeterminacy is an important characteristic of social processes. The reasons are found in extreme complexity of socioeconomic systems, their interrelations and interconnectivity. Cooperation of several factors (unidirectional as well as multidirectional) could lead to unexpected reaction of the population reproduction processes.

The main problems of extrapolation by time series are found in selection of a curve (type of function) and length of statistical series of data for approximation. Analytical possibilities of functions are limited, as interrelations of social-demographic processes are not functional, but stochastic, probabilistic. So, approximation of a curve of indicators of some demographic process to a mathematic function, observed in the recent years, does not automatically prove that this dependency will be preserved in the future.

Logistic and exponential functions are broadly used in demographic projections. It is known that logistic functions describe the total population dynamics and fertility rates very well. But, long-term extrapolation is often unjustified. Thus, logistic function has a specified limit of expansion of the predicted indicator. It provides with a possibility to avoid appreciable errors in estimations in some cases. But, it makes an obstacle in other cases, as

human society could rapidly change its regime of reproduction due to changes in technologies (in particular, in public health) or in social factors (changes in public opinion on the desirable number of children in a family).

Exponential function could be “dangerous” when extrapolating, as it is close to linear function at some short segments; but, it could sharply increase given certain conditions.

Other mathematic functions (linear function, polynomials of different types) also have some failures. Linear function, as well as exponential one, could provide unreal values when extrapolating for a long period. It is also difficult to predict behaviour of n -grade polynomial without detailed mathematical analysis.

Selection of a length of approximated series remains open. Its length is too small (less than 10 points), so it largely depends on casual fluctuations of a predicted indicator during this period. Expansion of series provides the old trends with larger statistical importance, though they cannot respond to the new realities.

Thus, though mathematical functions could approximate historical observations very well, they do not indicate a rate of possible fluctuations in the future. Most of the used functions are monotonous (they are either increasing or decreasing) for the whole period.

Extrapolation of time series for a period of more than 5 years often turns out to be unjustified; as a result, it leads to unrealistic results. That's why this method should be used only for short-term projections (to 5 years). Regarding middle- or long-term projections, correction or narrowing of unacceptable intervals of projections should be applied.

Analysis of historical projection errors

Analysis of historical projection errors is among approaches, used in probabilistic demographic projections. This approach requires investigation of historical projection errors. According to its definition, „a stable distribution of errors provides us with a possibility to transform the results of historical analysis into confidence intervals”¹⁷ for hypotheses of a new projection. Analysis of historical projections in terms of errors is aimed to estimate a value and mathematical characters of deviations. But, this approach to extrapolation is very similar to extrapolation of the past errors for the future.

There is another problem of this approach, as recent demographic projections have not moved away from their base years yet, and their time series are short. As a result, they have smaller errors (regarding their size, not number). Older projections could be unavailable or include rather rough information on the present demographic processes, so it is impossible to estimate their reliability a posteriori.

¹⁷ PyrozHKov S.I. Labour potential in demographic dimension. – Kyiv, 1992, p.131. (Пирожков С.И. Трудовой потенциал в демографическом измерении – К.: Наукова думка, 1992. – С. 131).

So, it is purposeful to change interpretation of the approach to use of historical forecast errors. In particular, a researcher has to investigate if there were statistical alarm signals of the problems, which caused further dynamics of the predicted processes, at time of projections' development. Revealing of a nature of those phenomena, resulting in shifts of demographic processes, provides us with a possibility to understand the principles, which are important for more correct and reliable development of projections.

Conditional probabilistic projection

Conditional probabilistic projections are among practical applications of probabilistic projections use. They present a possibility to combine advantages of probabilistic projections, in particular numerous estimation of indeterminacy with advantages of alternative scenarios, which suggest a clear explanation of base assumption. This type of projections is useful not only for scientific aims, but for practical use when developing demographic policy. It provides with estimations of similarity of deterministic variants of projections with probabilistic distribution of the appropriate characteristics.

A special attention of this approach is concentrated on probable changes of the predicted characteristics. Thus, hypotheses of a long-term projection, developed in 2000, will notably differ from those, used in a projection, developed in 2010. The unknown changes will take place during these 10 years, including fertility rate, structure of mortality, caused by new cases of epidemics or, contrary, by new achievement in public health.

Conditional probabilistic projections investigate the so-called "jump-off dates". They also are combined with deterministic projections, developed in accordance with principle „if that's the case". It means that some critical lines are established in the future; if the predicted processes reach these lines, there could be a need in reformation of models of pension or social security, taxation, measures of demographic policy, etc.

For instance, the period of 2002-26 could become one of such lines for Ukraine, as a time of the smallest number of women in the fertile age. If high fertility rate will not reached till that time, it would be purposeful to use special bonuses for „fast" childbirths by analogy with those in Sweden. Such measures could contribute to a rapid increase of fertility, at least regarding a conditional generation. These measures are aimed on a smoothing of the future age structure of the population.

Pension reform model has to include detailed data on probable growth of demographic dependency rates (number of pensioners per 1,000 of the working-age population). At reaching some critical line (when natural and mechanic movements of the population will not be optimal), some preventive measures should be used or at least considered.

For instance, given the present retirement age, demographic dependency rate will grow to more than 600‰ by 2037-38 (in comparison with 394‰ at the beginning of 2006). In another 10 years, there will be 0.8

pensioners per 1 employed person. Moreover, these results are obtained without consideration of pensioners with earlier retirement and unemployed persons of the working age. It will take some time to introduce the new retirement age. So, it is obvious that the government has to start a preparation before.

Regarding mortality, Ukraine has already overcome such critical line (in 1960's). Presently, large-scale reforms are needed. Finland can be used as a model in this case, as a country with one of the best public health system, with strict control of quality of food products and drinking water, with developed system of labour protection.

Thus, this type of projections is an addition to analysis of historical errors. It can be regarded as analysis of probable future deviations from the predicted trend. In time, when statistical data will be available for estimation of the population trajectories, the needed measures of demographic policy could be formulated more precisely.

Expert- and argument-based projections

There are many publications on use of methods of projections, which are based on expert judgments (for instance, publication of Arab-Oghly). Many international organizations (UNO, United States Censuses Bureau, International Institute of Applied System Analysis) and majority of the national scientific and statistical organizations use expert-based methods in their projections. In particular, the World Bank uses expert judgements together with mathematic functions.

Expert-based projections are most well-developed among all probabilistic demographic projections. Actually, probabilistic demographic projections are based on expert judgements. Approaches, mentioned above, could be integrated and involved into expert judgements.

Expert judgments are implicit in other approaches to demographic projections. Thus, when developing time series projections, an expert selects a length of retrospective series, provides data of different remoteness with different statistical "weight", and selects a type of the approximating function and, finally, the predicted changes. When developing statistical simulations of demographic processes, using multiple regression, autocorrelation etc., an expert selects the required parameters and proposes different logs of delay.

But, regarding probabilistic projections, expert-based projections are radically different from well-known Delphi method, which is also based on expert judgments. According to classical Delphi method, an expert judgment is taken for granted. So, there is a failure, as expert judgments on the predicted indicators are "hidden", not supported with open explanations. Another problem of this method is found in averaging-out of the received results. According to some modifications, it is proposed to reject those judgments, which largely differ from the base massive. But, it is known that some new knowledge rarely is an achievement of an old theory. Thus,

according to T.S. Khun¹⁸, anomalies, which do not accommodate to the dominating theory, are important findings of the new theoretical thinking. But, experts do not change their judgments often. So, it is purposeful to reject a voting in favour of well-based arguments.

Though there is no notable difference between approaches to expert judgments by Delphi method and by probabilistic projections, this difference is important¹⁹. Expert judgments are not argued, so it is difficult to verify their reliability. They are not obvious for other persons, so no one could criticize them. Experts still are human beings. Their judgments are influenced by political, cultural and personal factors. But, scientific society cannot critically analyze the arguments, if they are hidden in projections.

The main point of the problem is in a need to overcome the experts' subjectivity. To eliminate it, experts' opinion and knowledge should be clearly determined. An opinion is not very important in this case, as it does not suggest appropriate argumentation. Contrary, the knowledge is particularly valuable, as it does not depend on human existence, it can be argued, verified and criticized.

According to this approach, any assumptions on the future trends or structural changes of demographic processes require rather a clear and understandable argumentation, not unspecified expert opinion. In case of heterogeneous groups of experts (specialists in different areas), written arguments are required.

Arguments of expert judgments have to be open for any discussions, as an objective estimation could be made only when an expert explains his assumptions. If there are no appropriate arguments, none of discussions can be organized.

Argument-based approach suggests obvious character of all factors, which make some impact on argumentation. Only such approach could provide a possibility of critical attitude. Publicity of expert judgments provides with reduction of subjectivity, common for all people.

Historical origins of demographic projections

An exact sentence of A. Boyarskiy on "a cemetery of demographic projections" has been still realized regarding correctness of perspective estimations during the last decade. Population projections, developed by different institutions, are constantly been adjusted. The global population dynamics, including its regional peculiarities, is developing as if mocking at demographers. The results of the first attempts of scientific population projections obviously underestimated the real population changes. Thus, J. Graunt and V. Petty estimated a period of the English population

¹⁸ T.Khun. Structure of scientific revolutions. Translation from English. – Moscow, 1975, 287 pp. (Кун Т. Структура научных революций. Пер. с англ. – М. Изд.-во „Прогресс”, 1975. – 287 с.)

¹⁹ Lutz W., Saari Luoma P., Sanderson W.C., Scherbov S. New Developments in the Methodology of Expert- and Argument-Based Probabilistic Population Forecasting. Interim Report. – Laxenburg, 2000. – P. 6.

doubling correspondingly in 280 and 360 years. In 1696, G. King estimated the total population of England in 11 millions as in 2300, based on geometric progression. Obviously, we do not know the future population number of the state in two centuries, but its present population was extremely underestimated as by this economist, as by previous two scientists.

New models of perspective population number appeared in a century, when the second stage of demographic transition started in the majority of the European countries and the population growth turned out to be more intensive than it was suggested. These models extrapolated a period of the population doubling in every 25 years, which was common for that period. This hypothesis was put into projections of T. Malthus. Presently, we know that he has overestimated the rates of the population growth.

Mathematic functions with smaller growth start to be used in the XIXth century, including parabola of the third degree and formula of compounding. Initiation of regular population censuses in Europe and the USA provided good statistical information, resulting in possibility to make methods of demographic projections more complicated.

The first half of the XXth century was marked with development of multivariate population projections based on age groups shift. Projections became more perfect and more correct.

We should pay particular attention to a projection, developed by W. Tomson in 1938 for the USA. It had an important peculiarity, as it included seven variants, depending on different rates of high, medium and low mortality, as well as fertility, with consideration of migrations and without it. Starting from that time, we could declare a beginning of the new era of multivariate demographic projections.

The first systematic population projections were developed after the World War II (F. Notestein). Starting from 1950's, the UNO is an acknowledged global leader in development of demographic projections. Later, demographic projections were also developed by the United States Census Bureau (USCB), World Bank (WB) and Interstate Statistics Committee of the CIS. As to Europe, the largest efforts in demographic projections are realized by the International Institute of Applied System Analysis (IIASA). Global long-term projections are also realized by some researchers. These developments are mostly done at the national or sub-national levels. IIASA provided a large contribution to improvement of methods of demographic projections at these levels.

Time horizons of global projections vary from 50 to 150 years. Input assumptions, put into projections – such as predicted rates of fertility, mortality and migrations – determine a number of output projection scenarios.

Thus, several important stages of the humanity development can be defined, which determined the evolution of demographic projection methods.

Pre-industrial stage (before the XVIIth century) is characterized by small interest to scientific predictions of the population number. The reasons are found in high mortality, which balanced high fertility. Small changes in the population number have been observed during a long time, so there was no particular need in projections. Sporadic, rather fast population growth in different parts of the world resulted in devastating wars or was balanced by epidemic and famine splashes.

Industrial stage (XVIIth century – Ist half of the XXth century). The basic reasons of increase of interest to the population dynamics were found in fiscal and military factors. Deterministic approach dominated, being imported from the classical mechanics, which have been rapidly developing at that time. Researchers made attempts to present the population dynamics in the form of different mathematic functions. In practice, projections were limited by selection of a curve, which would be more adequate in description of the population retrospective movement with its further extrapolation for the future.

Multivariate projections (Ist half of the XXth century – middle of the XXth century). Problems, faced by the researchers of that time, consisted in rapid and sudden changes of fertility-mortality ratios.

Probabilistic projections (end of the XXth century – beginning of the XXIth century). Interpretation of a population as a complex system, which has ability to self-organization, was developed. Undetermined trajectories of the predicted processes development and complication of simulations of socioeconomic processes resulted in a need to develop the new class of projection.

Regarding organizations, involved into development of the global and regional demographic projections, the United Nations Organization (UNO) should be mentioned. The specialists of the UNO have developed 17 population estimations and projections during the period from 1951 to 2000; their projections covered all countries and regions. Until 1978, new revisions were published approximately every 5 years. Since then, projections were reviewed every 2 years. Also, the UNO projections are published in the World Population Prospects series. Usually, the assumptions of projections are not original and diverse. Four scenarios, which usually are presented, differ by assumptions on a high, medium and low fertility rates; a variant with constant fertility, fixed at the present rate, is also provided as an illustrative scenario.

Long-term projections are reviewed by the UNO experts every 10 years. They are based on expansion of the previous short-term projection results. The last long-term projection is usually developed only in two years after a previous one. This unusually short interval is caused by a need in notable changes, made in a projection of 1998, which was based on the new data and assumption on a projection of 1996. Projection of fertility was adjusted to the largest degree. In particular, it was decided to reject an

assumption on fertility increase to a rate of a simple reproduction in 2050 in countries, where fertility does not provide a replacement of generations.

Long-term projections of the UNO were developed for 8 main regions of the world; they consist of 7 scenarios, which differed only in assumptions on the predicted fertility rates: high, medium-high, medium, medium-low and low scenarios, as well as illustrative scenarios under present fertility rate (constant fertility) and projection under condition of reaching simple replacement. The first five scenarios correspond to two mortality scenarios: an increase of life expectancy with its stabilization in 2025 (one variant) or in 2050 (another variant).

The World Bank started to develop projections of the population number in 1978 due to publication of the annual Global Development Report. Projections are developed for separate countries. The WB has developed only six long-term projections from 1984 to 1994-95. Until 1992-93, projections consisted only of one variant. Then, projection scenarios included „a base scenario” and two alternative scenarios, describing slow or fast fertility declines. Starting from 1994-95, the WB has not published none demographic projections, though the specialists still develop these issues for internal use (in particular, for pension programs).

The United States Censuses Bureau (USCB) started to develop the global demographic projections in 1985. The projections are estimated for all countries and regions of the world in accordance to a single scenario. Projection horizons are presented by periods in 15-25 years. The USCB realized the global population projection to 2050 in 1998. It also realizes projections of the United States population. The last projection of such type was developed to 2100.

International Institute of Applied System Analysis (IIASA) realized a set of the global long-term population projections in 1994. They were renewed in 1996. The projections were developed for 13 regions of the world to 2100 by three scenarios, including fertility, mortality and migrations. 27 probable combinations were received; later they were combined in a smaller number, as they could be selected and united for each region based on projection of migrations.

There is a unique peculiarity of the IIASA projections, as they provide a probabilistic interpretation of the results. So, they describe a probability that a population will reach some number and age structure during the investigated period.

Population References Bureau (PRB) publishes information on the population number, fertility, infant mortality, urbanization rate and short- and middle term population projections for all countries of the world. Starting from 2000, long-term projections have been developed – up to 2050. Projections are provided in the form of only one scenario of the total population number for all countries and selected regions.

The specialists of the Population References Bureau use a combination of projections, provided by the countries, developed by the

UNO or by the United States Censuses Bureau, as well as their own projections for few countries. Usually, they develop their own projections if they have access to more reliable of latest data on the population at the projection threshold or on fertility and mortality. The PRB's projections are also based on cohort-component methodology.

2. EXPERIENCE OF THE POPULATION PROJECTIONS IN UKRAINE

The first projections of number and sex-age structure of the population of Ukraine were developed in the end of 1920's – at the beginning of 1930's by **M.V. Ptukha, Yu.O. Korchak-Chepurkivsky and A.P. Khomenko**. They were based on the urban population census of 1923 and on the first population census of 1926. The projections were developed based on comparison of numerous parameters of demographic processes in rural area, small and middle towns and large cities of the Ukrainian SSR. The directions of probable decrease of mortality in some age groups were determined, with involvement of data on evolution of mortality in other countries. Unfortunately, it is impossible to analyze deviations of these projections from the actual data due to horrible human losses and catastrophic distortion of natural and mechanic population movements in Ukraine in 1930-40's.

Under regime of a planned economy in Ukraine, demographic projection occupied the basic place within system of projections for the needs of the national economy planning. After the World War II, **I.Z. Kovalenko** worked in the field of demographic projections. As there were no population censuses for a long time, information base of projections used the lists of voters during elections of 1946-1954, the audit of children and infants in urban settlements in 1948 and 1954, as well as the current statistics of natural and migratory movements of the population²⁰. The variation between predicted and actual data of the population number was within 1.5-2.0%.

The first post-war population census of 1959 was a good precondition for a projection, realized by **Yu.O. Korchak-Chepurkivsky in 1961**. The main hypotheses of the projection were based on assumptions on invariable mortality regime (at the level of 1958-59) and on a gradual decrease of fertility. Indeed, rapid rates of the life expectancy growth were slowed down in 1950's, while an increase of mortality began in the second half of 1960's. Thus, the average rates of mortality regime in 1961-81 were close to those in 1959. The trends of fertility were also correctly estimated by the famous demographer. Migratory movements of that time were strictly limited by a system of residence registration, so it had no important impact on the population dynamics. Thus, the estimations developed by Yu.O. Korchak-Chepurkivsky, had small deviations from the actual data, observed later²¹.

²⁰ Demographic prospects of the Ukrainian SSR till 2000. – Kyiv, 1974, P.6. (Демографические перспективы Украинской ССР до 2000 г. – К., 1974. – С. 6.)

²¹ Korchak-Chepurkivsky Yu.A. Selected demographic studies. – Moscow, 1970. pp.289-320 (Корчак-Чепурковский Ю.А. Избранные демографические исследования. – М.: Статистика, 1970. – С. 289-320).

The works on demographic projections, developed rather long ago, are extremely interesting regarding their results, which provided estimations for the recent years.

The ***First scientific report of the Institute of economy of the Academy of Sciences of the USSR of 1968*** mentioned „the unfavourable demographic situation”²². A „pessimistic” variant of the projection to 1985 suggested a decline in fertility by 1971 and its stabilization in the end of the investigated period. An „optimistic” variant was based on assumption about invariable fertility at the level of 1965-66 by the time horizon. All variants suggested a decline in mortality by 1985.²³ But, presently, we can see that this pessimistic variant turned out to be very “optimistic”. Though fertility grew in 1985, reaching the level of 1971, the general trend tended to decrease during this period, while the increase resulted from a well-known activation of the state demographic policy. Obviously, it was impossible to predict such policy at the moment of the projection development.

Also, there was an increase in mortality at that time; it could not be expected as well, regarding substantial achievements of the post-war medicine, rapid overcoming of dreadful infectious diseases, etc. The Ukrainian life expectancy was very long in the middle of 1960’s, even in comparison with developed countries, while medical services were among the best and widely available in the world. The most impressive results were achieved in the infant mortality, as Ukraine took one of the first positions in the world regarding rates of the infant mortality decline.

Regarding developed countries of that time, even more optimistic projections were developed on this background, while an achievement of the life expectancy in 100 years was considered to be not so distant. Under these conditions, it was impossible to predict a deterioration of the achieved parameters. Thus, the total number of the Ukrainian population, predicted by this projection, turned out to be overestimated.

The second edition of the scientific report of the Institute of economy of the Academy of Sciences of USSR of 1974 presented more detailed hypotheses. The Population Census of 1970 was used as a base of the projection; its quality was much better than that of the previous census of 1959. There was a correct assumption on more intensive decline in fertility in elder age groups of mothers. But, improvement of the output data accuracy did not provide possibilities of development of an exact deterministic projection. That’s why the hypotheses on exhausted fertility of women in urban and rural settlements in Ukraine turned out to be more pessimistic at the first stage and overestimated during 1990’s. Thus, fertility

²² Demographic prospects of the Ukrainian SSR. – Kyiv, 1968, p.2. (Демографические перспективы Украинской ССР. – К., 1968. – С. 2. (56 с.))

²³ Demographic prospects of the Ukrainian SSR. – Kyiv, 1968, pp.14-15. (Демографические перспективы Украинской ССР. – К., 1968. – С. 14-15).

rates at the beginning of the investigated period (1970's) are close to the actual observed rates. Increase of fertility during 1980's provided more notable deviation of the projected parameters. But, the largest error is common for the end of the investigated period (Table. 2. 1). Indeed, an increase of fertility of 1980's could not be predicted at the beginning of 1970's, as well as a rapid fertility decline in 1990's. This example illustrates a correlation between demographic projections and measures of the state demographic policy. Indeed, extrapolation of the linear trend of fertility during 1970's (without consideration of the present data of 1980's) shows parameters, close to the projected parameters. Thus, this projection could be correct or very close to the real data if there were no stimulating measures of demographic policy and socioeconomic problems later.

Table. 2 1. Comparison of fertility hypotheses, put into base of the 1974 projection, and current statistics data

	urban settlements	rural area	urban settlements	rural area
1969-1970 (actual data)	1.84	2.40	1.84	2.40
	predicted estimations *		<i>calculated by actual data of the State Statistics Committee</i>	
1970-1974	1.81	2.36	1.86	2.53
1975-1979	1.76	2.30	1.81	2.38
1980-1984	1.71	2.25	1.82	2.50
1985-1989	1.67	2.21	1.87	2.49
1990-1994	1.63	2.19	1.33	2.05
1995-2000	1.61	2.18	1.03	1.67

* *Calculated by data: Demographic prospects of Ukrainian SSR to 2000 – Kyiv, 1974. – p. 12, table. 2*

A slowing-down of mortality decline is mentioned in the projection; it is related to an exhaustion of the reserves of reduction²⁴. The corresponding mortality decline is put into two variants of estimations („optimistic” and „medium”), while invariable level of mortality of 1969-70 is put into a „pessimistic” variant.

Regarding persons in the age over 70, a stabilization of mortality rates was suggested by the project. The basic growth of life expectancy was expected due to reduction of infant mortality and mortality in the working-age population groups. Thus, the largest growth of life expectancy (more than on 1.9% as compared with 1969-70) was expected to take place among men in the age groups of 45-59. As to women, the largest growth of life expectancy was expected in the age of 0-4 (more than 0.3%), 20-29

²⁴ Demographic prospects of the Ukrainian SSR to 2000. – Kyiv, 1974. – P. 17. (Демографические перспективы Украинской ССР до 2000 г. – К., 1974. – С. 17)

and 45-49 (more than on 0.2%) for urban women and in the age of 15-39 – for rural women²⁵.

The prospects of net mechanic movements were expected to be positive at the level of 40-60 thousand persons a year in the „optimistic” and „medium” variants, and $\pm 40 \dots \pm 58$ thousand persons a year in the “pessimistic” variant²⁶.

As a result, the total number of the population of Ukraine was overestimated, just as in the first edition of the report. The deviation is increasing by the end of the investigated period and makes 7.7-12.9% by different variants. The pessimistic variant of the projection is the most correct. According to it, the population number in Ukraine at the beginning of 2000 was overestimated only on 3.775 mln. persons. The optimistic variant exceeded the actual data on 6.317 mln. persons (Fig. 2. 1).

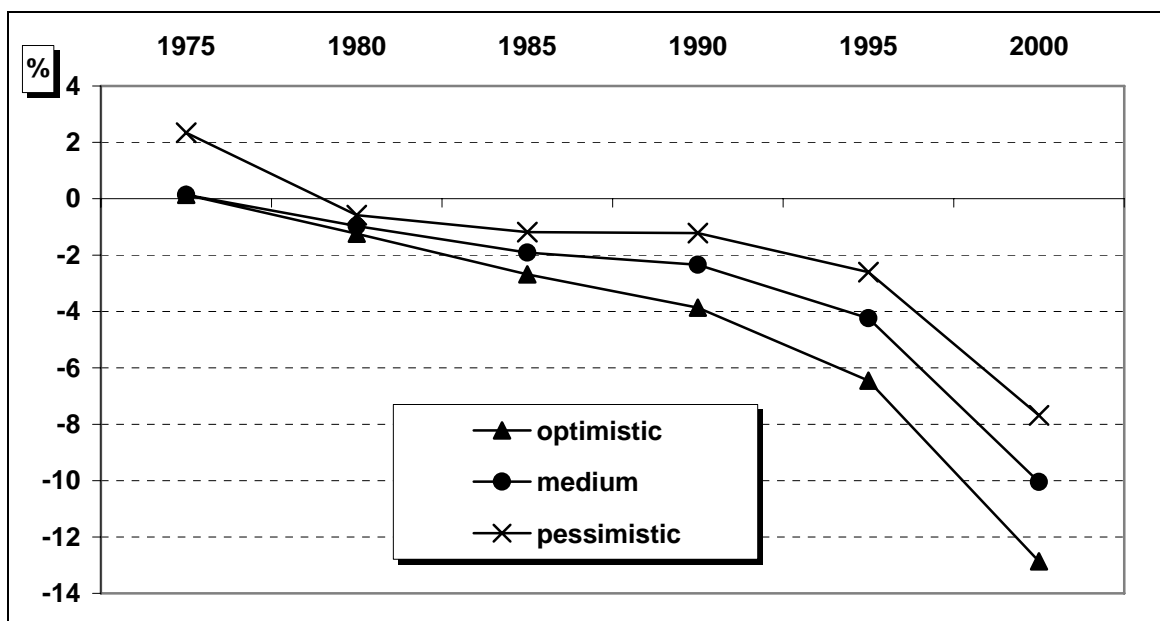


Fig. 2.1. Deviation of the population number in Ukraine predicted by projection of 1974 in comparison with the actual observations.

Demographic projections have been systematically developed since 1963 by the State Planning Committee of the USSR for the planned economy needs. Starting from 1992, they have been developed by the Ministry of Economy and since 1995 – by the **State Scientific-Research Institute of Information and Simulations of Economy (SSRIIE)** of the National Agency on Information of the President of Ukraine. Time horizons of multi-version projections were mostly short-term, in accordance with corresponding economic plans of economic and social development for periods of 1966-71, 1967-71, 1971-1975, 1971-81, 1971-2000, 1981-1991,

²⁵ Demographic prospects of the Ukrainian SSR to 2000. – Kyiv, 1974. – P. 19. (Демографические перспективы Украинской ССР до 2000 г. – К., 1974. – С. 19)

²⁶ Demographic prospects of the Ukrainian SSR to 2000. – Kyiv, 1974. – P. 24. (Демографические перспективы Украинской ССР до 2000 г. – К., 1974. – С. 24)

1991-2011, 1996-2025. It should be mentioned that all projections, developed by the Institute, had small deviations from the actual data until 1991 (within 0.8-1.5%)²⁷. The specialists of the Institute were unable to predict a decline in fertility to the level of 1.1 children per woman in the end of 1990's, as well as other demographers. In accordance to the 1997 projection,²⁸ the total fertility rate was established at the level of 1.6 in 2000 and 2005, which is much higher than the actual rate. But, the total number of the population of Ukraine, estimated for 2005, turned out to be the most correct.

Unfortunately, it is impossible to determine more detailed characteristics of natural and migratory movement, put into these projects.

Projection of experts of the Council for Productive Forces Study of the National Academy of Sciences of Ukraine (CPFS NANU) to 2010²⁹ was developed in 1997 in two variants. The project of fertility is based on the idea of realization of births, postponed at the beginning of 1990's. According to the optimistic variant, the growth of the total fertility rate had to take place since 1997 and reach 1.75 by 2003. After compensational growth, fertility had to decline to 1.5³⁰ in 2009. The second variant of projection suggested a two-year lag of fertility growth (since 1999). The expected decline was more important – up to 1.21 in 2003. This rate is very close to the real one – 1.17. This variant had to reach the previous one in 2010, reaching 1.55.

The hypotheses of mortality projection turned out to be more pessimistic than the actual rates. An increase of mortality in all age groups, except children, was correctly predicted³¹. Also, faster probable changes of “male” mortality were correctly predicted. But, mortality rates were estimated imperfectly. Thus, even optimistic variant for 2005 suggested the average life expectancy in 59.2 years for men and 68.4 years for women. The actual rates were correspondingly 61.5 and 73.4. It was suggested to

²⁷ Demographic prospects of Ukraine to 2026 / Eds. V.Steshenko. – Kyiv, 1999, p.7. (Демографічні перспективи України до 2026 року / Відп. ред. д.е.н. В. Стешенко. – К., 1999. – С. 7).

²⁸ Demographic prospects of Ukraine to 2026 / Eds. V.Steshenko. – Kyiv, 1999, p.8. Демографічні перспективи України до 2026 року / Відп. ред. д.е.н. В. Стешенко. – К., 1999. – С. 8.

²⁹ Makarova O., Poznyak O., Shyshkin V. Projection of demographic development of Ukraine to 2010. In: Ukraine: aspects of labour, #5, 1997, pp.25-27. (Прогноз демографічного розвитку України до 2010 р. // Україна: аспекти праці. – №5. – 1997. – С. 25-27).

³⁰ Makarova O., Poznyak O., Shyshkin V. Projection of demographic development of Ukraine to 2010. In: Ukraine: aspects of labour, #5, 1997, p.26. Макарова О., Позняк О., Шишкін В. Прогноз демографічного розвитку України до 2010 р. // Україна: аспекти праці. – №5. – 1997. – С. 26.

³¹ Makarova O., Poznyak O., Shyshkin V. Projection of demographic development of Ukraine to 2010. In: Ukraine: aspects of labour, #5, 1997, pp.26. (Макарова О., Позняк О., Шишкін В. Прогноз демографічного розвитку України до 2010 р. // Україна: аспекти праці. – №5. – 1997. – С. 26).

reach the average life expectancy of 1994 (correspondingly 62.4 and 73.0) and 1995 (61.2 and 72.5) in the end of the investigated period (according to different variants of projection).

In accordance with the optimistic variant of this projection, the population number should be equal to 47.6 mln. persons at the beginning of 2010, while according to the pessimistic variant – 46.1 mln. persons. Regarding the current data of the beginning of 2006 (46.7 mln. persons), even the pessimistic variant will probably become too “optimistic”.

Projection of **S.I. Pyrozhev of 1992** was developed in three scenarios³². Invariable rates of natural and mechanic population movements at the level of 1989 are put into *Scenario A*. *Scenarios C and D* were based on a general hypothesis of coming to uniformity and preservation of the present variety of input data of fertility, mortality and migrations for each stage of the projection. Hypotheses of fertility and mortality are similar in both projection variants, while these projections differ in terms of migratory component³³.

Successes of the state regulation of fertility rates in the mid 1980's and restriction of alcohol use in the end of the same decade resulted in very optimistic assumptions, which were put into the project. Thus, the total fertility rate has to be 1.92 in 1999 and 1.97 in 2004 in accordance with the mentioned scenarios; but, the actual data were correspondingly 1.13 and 1.22.

Reduction of mortality of the working-age population, observed in 1985-86, and corresponding rapid growth of life expectancy at birth (on 1.6 for men and on 1.0 year for women in 1986, as compared with 1985) provided a basis for optimistic projections of life expectancy. Rapid growth of this rate provided reasons to expect radical changes for the better in mortality dynamics. Thus, the hypothesis on correspondence of life expectancy in Ukraine to the Austrian life expectancy of that time (71 for men and 78 for women³⁴) was developed. Unfortunately, a year of these results achievement was not mentioned. Ukraine was behind Austria on 4.9 years regarding life expectancy of men and on 2.8 years regarding life expectancy of women in 1989 (a year of base data, used in the projection). So, it was unreasonable to predict an achievement of this life expectancy rate just after a base year of the projection.

³² Pyrozhev S.I. Labour potential in demographic dimension – Kyiv, 1992. – pp. 139-141. (Пирожков С.И. Трудовой потенциал в демографическом измерении. – К.: Наукова думка, 1992. – С. 139-141).

³³ Pyrozhev S.I. Labour potential in demographic dimension – Kyiv, 1992. – p. 140. (Пирожков С.И. Трудовой потенциал в демографическом измерении. – К.: Наукова думка, 1992. – С. 140).

³⁴ Pyrozhev S.I. Labour potential in demographic dimension. – Kyiv, 1992, P.140. (Пирожков С.И. Трудовой потенциал в демографическом измерении. – К.: Наукова думка, 1992. – С. 140).

As a result, the total predicted number of the population exceeded the actual one. The error was 6.3-7.5% (in accordance with different scenarios) for 10 years (at the beginning of 1999).

Projected estimations of ***E.M. Libanova of 1991*** are concentrated on probable changes in the population mortality regime in the regions of Ukraine³⁵. This work is also based on structural-analogue approach to projections of life expectancy. The referent territories were selected based on similarity of dynamics of the age and structural (by death causes) mortality rates. An attempt of determination of terms of achievement of life expectancy in the referent countries is done with a time lag and consideration of mortality trends in 1980's.

Positive dynamics of life expectancy in 1958-86 provided bases for general optimistic visions of the future. Thus, the Central region of Ukraine has to reach the life expectancy of Belgium of the first half of 1960's (men) and second half of 1970's (women) by the end of 2010's. As to the Western regions' residents, their mortality regime is very close to that of the citizens of France of 1960's (the first half of 1960's – for men and the second half of 1960's for women). The eastern residents of Ukraine responded to the population of Finland in 1970's in terms of their mortality regimes. As to the South of Ukraine, the population mortality in Spain was chosen: the second half of 1950's for men and the second half of 1960's for women.

In accordance with this approach, the average life expectancy of the population of different regions of Ukraine had to reach 71-73 for men and 79-80 for women by 2010. Considering the actual data of 2005, it is obvious that realization of this projection for women requires large efforts from the whole society (to provide increase on 5.6 years during 5 years), while it is rather impossible for men at all (increase on 9.5 years during 5 years).

Medium variant of projection of the ***National Institute of Strategic Researches of 1995***³⁶ (NISR) suggested the total fertility rate at the level of 1.8 during 2000-05. All four variants of fertility projection did not suggest the total fertility rate below 1.7. So, the basic error on the predicted population number took place among children's age groups. The total population number was very far from the actual one (Fig. 2.2).

³⁵ Libanova E.M. Life expectancy of the population. – Kyiv, 1991, pp.75-77. (Либанова Э.М. Продолжительность жизни населения. – К.: Наукова думка, 1991. – С. 75-77).

³⁶ Pyrozhkov S.I., Lakiza-Sachuk N.M., Zapatrina I.V. Ukraine in demographic dimension: past, present, future. – Kyiv, 1995, pp. 36-39. (Пирожков С.І., Лакіза-Сачук Н.М., Запатріна І.В. Україна в демографічному вимірі: минуле, сучасне, майбутнє. – К.: НІСД, 1995. – С. 36-39)

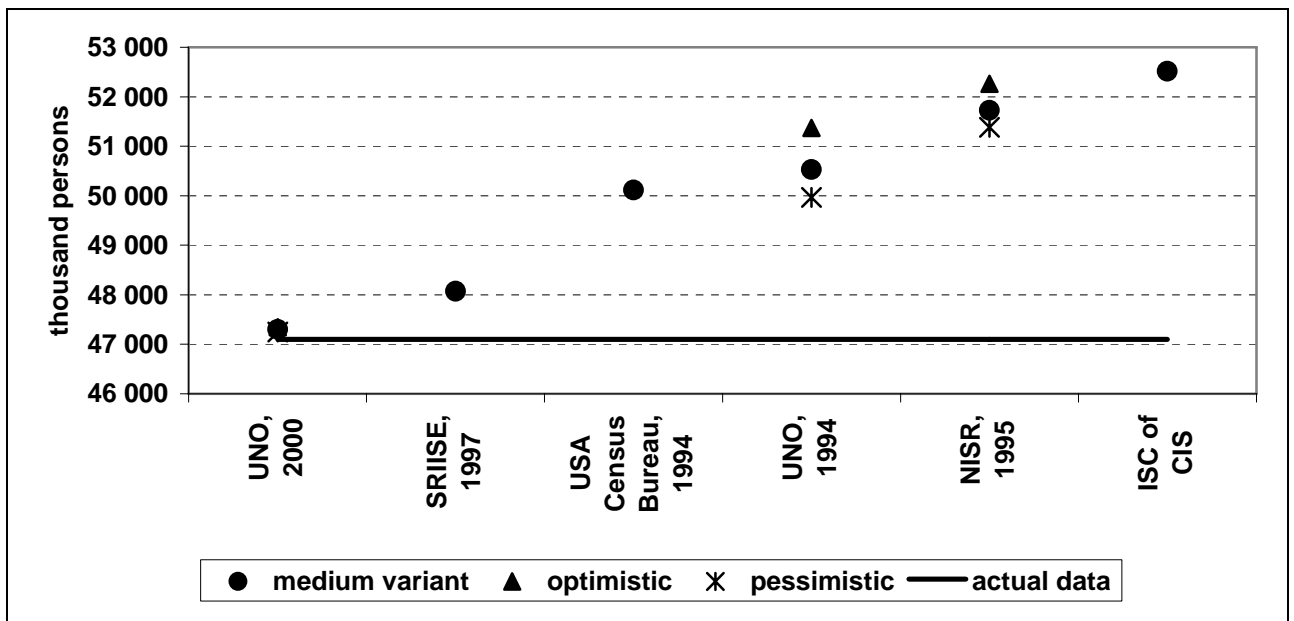


Fig. 2.2. The population number in Ukraine at the beginning of 2005 by different projections³⁷.

Note: SRIIME – Scientific-research institute of informatization and simulations in economy, NISR – National Institute of Strategic Researches, ISC of CIS – Interstate Statistics Committee of the Commonwealth of Independent States.

UNO experts regularly review the reliability of their hypotheses and recalculate their projections for different countries of the world. As it is known, they avoid projections of migratory movements due to political reasons and concentrate on indicators of natural population movement. Projections of the UNO are divided into „low”, „medium”, „high” and „constant-fertility” projections; the last one suggests constant fertility rates.

It is logical to suggest that there is an inverse negative relationship between a time horizon of a projection and its correctness. Indeed, as Fig.2. 2 shows, a reviewed projection of the UN of 2000 provided more correct prediction of the total population number in Ukraine, as compared with review of 1994. The rest of projections are characterised by the same peculiarities.

Multi-variant projection³⁸ of the collective of authors (**E.M.Libanova, O.V.Makarova, O.V.Poznyak and others**) of 1999 consisted of 4 fertility scenarios, 2 mortality scenarios and 3 scenarios of migratory processes development.

³⁷ Based on data of: Demographic prospects of Ukraine to 2026 / Eds. V.Steshenko. – Kyiv, 1999. p.9. (Демографічні перспективи України до 2026 року / Відп. ред. д.е.н. В. Стешенко. – К., 1999. – С 9); World Population Prospects. The 2000 Revision. Vol. II: Sex and Age. – N.-Y., UN, 2001. – P. 861-863.

³⁸ Libanova E.M., Makarova O.V., Poznyak O.V., Shevchuk P.E., Shyshkin V.C. Demographic prospects of Ukraine: 2000-2075. In: Employment and labour market, Kyiv, NAS of Ukraine, 1999, #11, pp.126-141. (Лібанова Е.М., Макарова О.В., Позняк О.В., Шевчук П.Є., Шишкін В.С. Демографічні перспективи України: 2000-2075 роки // Зайнятість та ринок праці. – К.: РВПС України НАН України, 1999. – № 11. – С. 126-141).

Even in accordance to the most pessimistic fertility scenario (the fourth one), the total fertility rate was suggested for 2000 at the level of 1.16 children per woman; afterwards, it turned out to be larger than the actual data. The first scenario suggested rather optimistic vision of compensational fertility growth to 1.64 in 2005.

Unfortunately, the majority of the published projections present incomplete information about their base hypotheses. Thus, there is no possibility to estimate their correctness. Probably, it results from the need to economize space in publications, as well as from prevailing orientation on the last year of the investigated period. The data of intermediate years usually stay fragmented.

Projection “**Demographic prospects of Ukraine to 2026**”, developed by the Institute of Economy of the National Academy of Sciences of Ukraine in 1999, is the most detailed among all published projections³⁹.

Unfortunately, the base year of the project was selected as 1999 (as there were the actual data); this year was very distant from the previous Census. That’s why there was an error in the input data; it made 0.6% at the beginning of 1999 due to verification of the data for the period between two censuses. Realization of the First All-Ukrainian Population Census in 2001 revealed a smaller number of the population of Ukraine than according to the current audit. Such difference had to make an impact on the projection results. Indeed, the population number at the beginning of 2001 turned out to be overestimated by all variants (Table 2.2). Extension of projection trajectories in the next years of the investigated period resulted in more equal distribution of the error at the beginning of 2006. Thus, we can consider the error as harmless with adjustment for incorrect input data (0.6%); the error varied from -0.9 to 2.4% at the beginning of 2006.

Table. 2.2. Comparison of the 1999 projection results and current statistics data⁴⁰

	1999	2001	2006	1999	2001	2006
	<i>thousand persons</i>			<i>deviation from the actual data, %</i>		
by data of 1996		48857	46630		0.4	-0.3
pessimistic		48692	46313		0.1	-0.9
medium	49851	49034	47216	0.6	0.8	1.0
optimistic		49374	48150		1.5	3.0
actual data*	49545	48664	46749			

* with consideration of the 2001 population census data

³⁹ Developed by data: Demographic prospects of Ukraine to 2026 / Eds. V.Steshenko. – Kyiv, 1999, p.56. (Демографічні перспективи України до 2026 року / Відп. ред. д.е.н. В. Стешенко. – К., 1999. – 56 с.)

⁴⁰ Developed by data: Demographic prospects of Ukraine to 2026 / Eds. V.Steshenko. – Kyiv, 1999, p.36. (Демографічні перспективи України до 2026 року / Відп. ред. д.е.н. В. Стешенко. – К., 1999. – С. 36).

The medium variant of fertility projection for urban settlements practically does not differ from the actual data of 2001 (Table. 2.3). The present dynamics proves that the total fertility rate in 2006 will stay within limits of the pessimistic (1.0 children per woman) and optimistic variants (1.3 children per woman), described in this projection⁴¹. But, even the pessimistic variant for rural residents (1.6 as on 2001) was largely overestimated, as compared with the actual data (1.43 as on 2001). It leads to a small „skew” of errors of these projection variants towards overestimation of the population number.

Table. 2.3. Comparison of the 1999 fertility projection and current statistics data

	2001	2006	2001	2006
	<i>urban settlements</i>		<i>rural area</i>	
pessimistic	0.9	1.0	1.6	1.6
medium	1.0	1.1	1.7	1.8
optimistic	1.2	1.3	1.9	2.0
actual data	0.96		1.43	

Calculated by data: Demographic prospects of Ukraine to 2026 / Eds. V. Steshenko. – Kyiv, 1999. – P. 17.

Unfortunately, the publication „*Demographic prospects of Ukraine to 2026*” presents numerous characteristics of life expectancy only for the medium variant of projection⁴². As the actual data show, this variant turned out to be overestimated. The hypotheses of pessimistic variant described a probable stagnation of life expectancy at the level of mid 1990’s and decrease of social-labour potential, i.e. increase of mortality in the working-age groups⁴³. Indeed, such dynamics has been observed during recent years: life expectancy at birth is close to the rates of mid 1990’s for women, while life expectancy of men in 2005 has already reached the corresponding rate of 1996.

Conclusions

Projections of the population of Ukraine, described above, prove that demographic projection as a science correctly responded to the realities before 1990’s. But, none of researchers or scientific collectives was able to predict a rapid decline in fertility, prolonged preservation of negative net migrations and continuation of trends of life expectancy reduction. Demographers, who developed projections in the end of the XXth century,

⁴¹ Developed by data: Demographic prospects of Ukraine to 2026 / Eds. V. Steshenko. – Kyiv, 1999, p.17. (Демографічні перспективи України до 2026 року / Відп. ред. д.е.н. В. Стешенко. – К., 1999. – С. 17).

⁴² Developed by data: Demographic prospects of Ukraine to 2026 / Eds. V. Steshenko. – Kyiv, 1999, p.27. (Демографічні перспективи України до 2026 року / Відп. ред. д.е.н. В. Стешенко. – К., 1999. – С. 27).

⁴³ Developed by data: Demographic prospects of Ukraine to 2026 / Eds. V. Steshenko. – Kyiv, 1999, p.27. (Демографічні перспективи України до 2026 року / Відп. ред. д.е.н. В. Стешенко. – К., 1999. – С. 27).

tried to catch the new shifts in demographic development of Ukraine. But, fast changes in the intensity of demographic processes disproved all projections.

As early as at the beginning of 1990's, when demographic projections demonstrated small deviations from the actual data, demographic literature noted a possibility of unpredictable, radical shifts in the population reproduction in Ukraine due to impetuous social, political, economic and ecological changes⁴⁴.

The reasons are found in nondeterministic course of social and, in particular, of demographic processes. On one hand, they cannot be expressed in a form of a law or a function. Use of correlation-regression models does not guarantee that established statistical peculiarities will be constant or changing in the future. On another hand, demographic development, as well as development of any system, is not chaotic; it has „sufficient sequence and order”⁴⁵.

Large deviations of the total fertility rate, estimated by demographic projections of the beginning of 1990's, from the actual data prove impossibility of projections based on a stereotype: „it cannot happen, as it have not happen before”. The most pessimistic estimations of fertility in the end of 1990's exceeded the actual data on 30% and more. The reasons of errors, common for all demographers, were in expectations of a quick improvement of economic situation and the population well-being. Material factor was regarded as extremely important for fertility, though many publications showed an increase of self-conscious control over fertility and development of behavioural aspects of the population. Statistical data of the European countries with high living standards of the population, but low fertility rates, were ignored when developing these projections.

The example of the total fertility rate dynamics in the end of the XXth – at the beginning of the XXIth centuries proved the real possibility of large fluctuations during a rather short period of time, less than a generation.

As it has been noted, fragmented data, in particular for intermediate years of projections, limit possibilities of the detailed analysis of demographic projections' errors. So, it is purposeful ***to recommend providing information not only on the last years of the period, but for some intermediate years (points of the trends return or for years, to divisible by five).***

⁴⁴ Pyrozhev S.I. Labour potential in demographic dimension – Kyiv, 1992. – p. 131. (Пирожков С.И. Трудовой потенциал в демографическом измерении – К.: Наукова думка, 1992. – С. 131).

⁴⁵ Pyrozhev S.I. Labour potential in demographic dimension – Kyiv, 1992. – p. 131. (Пирожков С.И. Трудовой потенциал в демографическом измерении – К.: Наукова думка, 1992. – С. 131).

3. HYPOTHESES OF SCENARIOS OF DEMOGRAPHIC PROJECTIONS

3.1. Hypotheses of the expected fertility rate in Ukraine

Projection as a perspective analysis

According to the demographic transition theory, fertility rate, as well as mortality rate, is very low at the last stage of the transition. But, it is still unknown how low could be fertility and for how long could this situation last.

To answer these questions, the experience of those countries, which have already overcome the last transition stage or follow the path of transformation of fertility models, changing its rates and birth calendars, has to be investigated.

Situation with fertility is rather various in the countries of Europe. The total fertility rate varies from 1.1 to almost 2.0. A sharp decline in fertility was observed in many European countries in the second half of the XXth century. In particular, the total fertility rate in Norway has decreased from almost 3.0 in 1964 to 1.66 in 1983-84. The Swedish women have reduced their fertility from 2.5 in 1965 to 1.6 in 1978. As to Denmark, total fertility rate has decreased from 1.82 in 1974 to 1.38 in 1983. The number of children per woman of a conditional generation exceeded 3.0 in the Netherlands at the beginning of 1960's. But, 20 years later, this rate reached 1.5⁴⁶.

However, the mentioned countries returned to rather high fertility rate, in spite of such significant fertility decline. Thus, the total fertility rate was 1.73 in the Netherlands and 1.83 in Norway in 2004, while Sweden and Denmark achieved the corresponding rates of 1.76 and 1.80 in 2005.

Thus, these countries provided good examples of the effect of postponed births for demographers. This phenomenon contributed to a sharp decline in fertility in conditional generations. Thus, fertility in some calendar year is determined by age-specific birth rates in the real generations of women, who are at fertile age at the moment. This phenomenon is called as *tempo-effect* in the European demographic literature⁴⁷, in contrast to *quantum-effect*, which means a general decline in fertility. So, the total fertility rate, estimated for a conditional generation (*period fertility rate* in contrast to *cohort fertility rate* – the total fertility rate for the real generation), depends on the intensity of childbirths in different cohorts of women. If young cohorts start to postpone births, in particular the first ones, while elder women follow an old birth calendar, a decline in

⁴⁶ Calculated by the data of statistic agencies of the referent countries.

⁴⁷ **Kohler H.-P., Ortega J.A.** Tempo-Adjusted Period Parity Progression Measures, Fertility Postponement and Completed Cohort Fertility // Demographic Research, Vol.6, Article 6. – 2002. – P. 92-144; **Sobotka T.** Tempo-Quantum and Period-Cohort Interplay in Fertility Changes in Europe. Evidence from the Czech Republic, Italy, the Netherlands and Sweden // Demographic Research, Vol.8, Article 6. – 2003. – P. 152-214; **Hoem J.M.** Why does Sweden have such high fertility? // Demographic Research, Vol.13, Article 22. – 2005. – P. 559-572.

fertility in a conditional generation is obviously taking place, though there could be no such decline in the real population (or it could occur not so fast).

Approximate length of transformation of birth calendars could be estimated by analogy with some referent countries (for example, those, mentioned above). The available time series show that the whole process of decreasing lasts for 20-30 years (as well as subsequent increasing). Denmark presents a striking example in this sense. A process of transformation of birth calendar there was accompanied not only by a decline in fertility in a conditional generation, but also by replacement of the medium age of mother towards elder ages (Fig. 3.1.1).

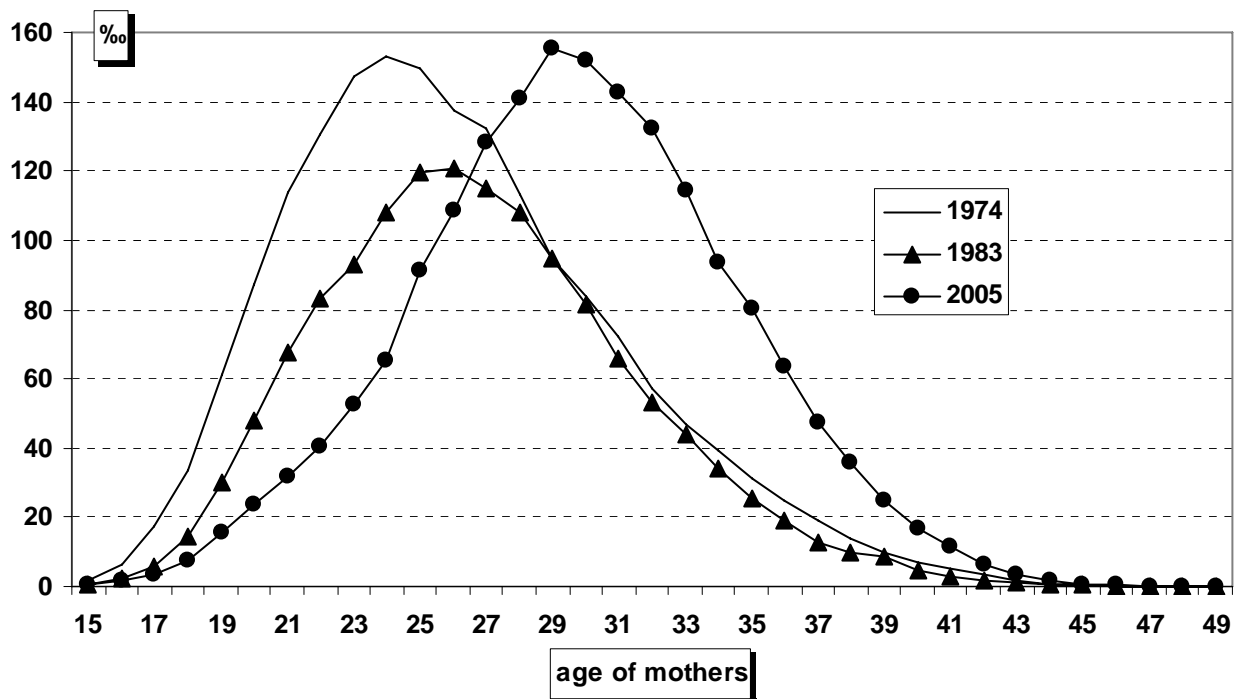


Fig. 3.1.1. Fertility rates by age of mothers in Denmark.

Contrary to the North Europe and France, other European countries are characterized by low and very low fertility (less than 1.3 children per woman). More prolonged decline in fertility is observed in Italy and Spain. The corresponding total fertility rates in these countries have dropped to 1.19 and 1.15 in 1998.⁴⁸ But, a small increase of the rates to 1.29 has been also observed recently.

The post-socialist countries demonstrate dynamics of fertility rates, which is close to the Ukrainian one. A sharp decline in the total fertility rate started to be observed there only in the end of 1980's- at the beginning of 1990's (just as in Ukraine). But, in spite of the minimum rate, similar to the Ukrainian one (1.1-1.2), a trend to increase of fertility is registered in these countries.

⁴⁸ Statistik Austria. Statistisches Jahrbuch 2006. – S. 535.

Obviously, the experience of other countries cannot be simply extended to Ukraine. We have to investigate all determinants of changes in fertility in details. The population living standards are important, but not determining. It could be proved not only by high fertility rates in the developing countries. A comparison of the European countries, which are close in terms of living standards, history and culture, provides a lot to understand development of the modern fertility type, which responds to the new demands of the times.

While there were 1.38 children per woman in Austria and 1.41 in Switzerland in 2003, the figure was 1.98 in Ireland⁴⁹. Thus, even such country as France, with its well-known active pro-natal policy and large share of Muslim population, is unable to reach this rate (the total fertility rate was 1.923 there in 2005, according to the preliminary data). High fertility in Ireland can be explained, as its population has moved to a new type of fertility in the first half of the XXth century; late marriages and elder medium age of mothers and elder age of the first childbirth are prevalent there.

To understand demographic reasons of a sharp decline in fertility in Ukraine during the last decade of the XXth century, we have to investigate reproductive peculiarities of generations of women, which were in the most active fertile age at that time.

Generations of women, born at the beginning of 1970's (mostly first births) and in the end of 1970's (mostly second births) were in the most active fertile age in 1992-94 (period of the largest decline in fertility).

Fertility rate in Ukraine, as well as in many post-socialist countries, has been rather high until the beginning of 1990's (more than 1.8). Fertility rates in the economically developed countries were at the rate of 1.2-1.3; in some cases they returned to a replacement-fertility level – 1.8 (Fig. 3.1.2).

⁴⁹ Statistik Austria. Statistisches Jahrbuch 2006. – S. 535.

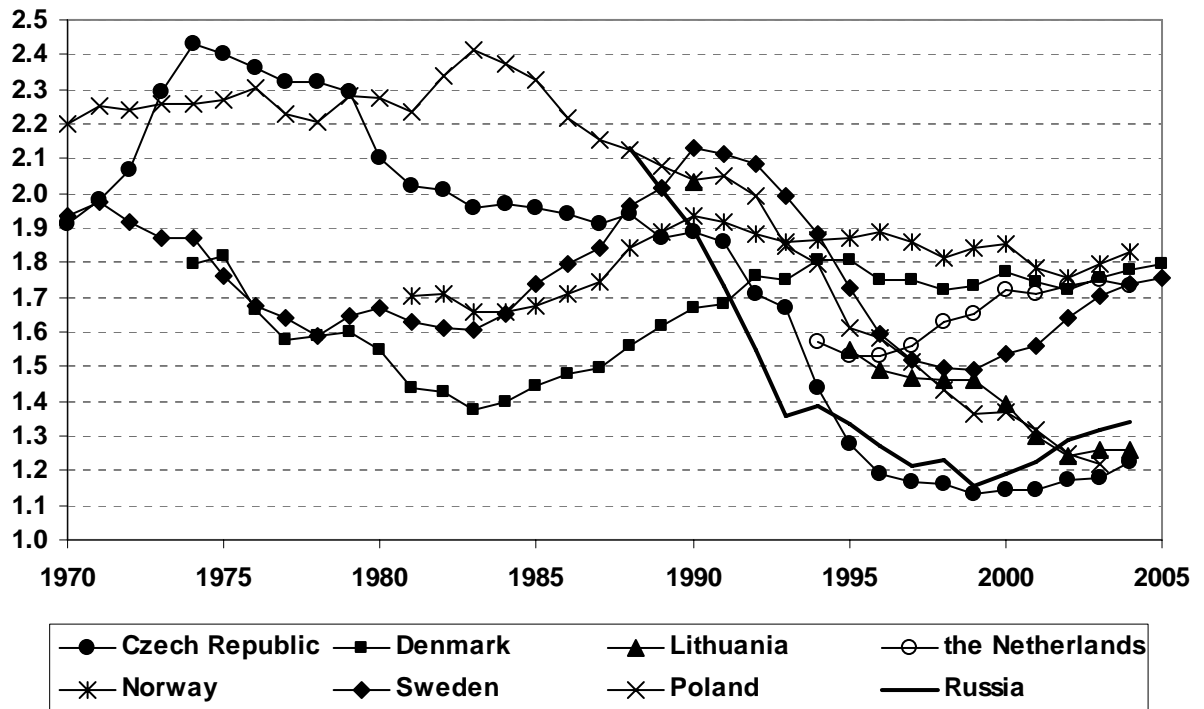


Fig. 3.1.2. Dynamics of the total fertility rate in some countries of Europe.

A gradual slow increase in the total fertility rate in Ukraine (and in the whole Soviet Union) in 1980's resulted from a decree on prolonging maternal leaves in 1982. This measure resulted in a well-known increase of fertility in the middle of 1980's as among elder women, as among young women (born in 1960's). As to women born in 1960's, they had mostly their first children at that time. So, they could have their second children (as on average) in 1990's. But, socioeconomic crisis combined with other social-psychological and economic determinants forced them not to have any subsequent children. It can be proved by a comparison of age-specific fertility rates of a generation, born in 1965-66, and of a generation, born in 1955-56 (Fig. 3.1.3). In other words, a decline in a share of the next children results in a sharp decline in fertility in young age, which is common for the present Ukraine. As a result, a sharp decline in fertility rates can be observed just after a maximum in the age of 22-23.

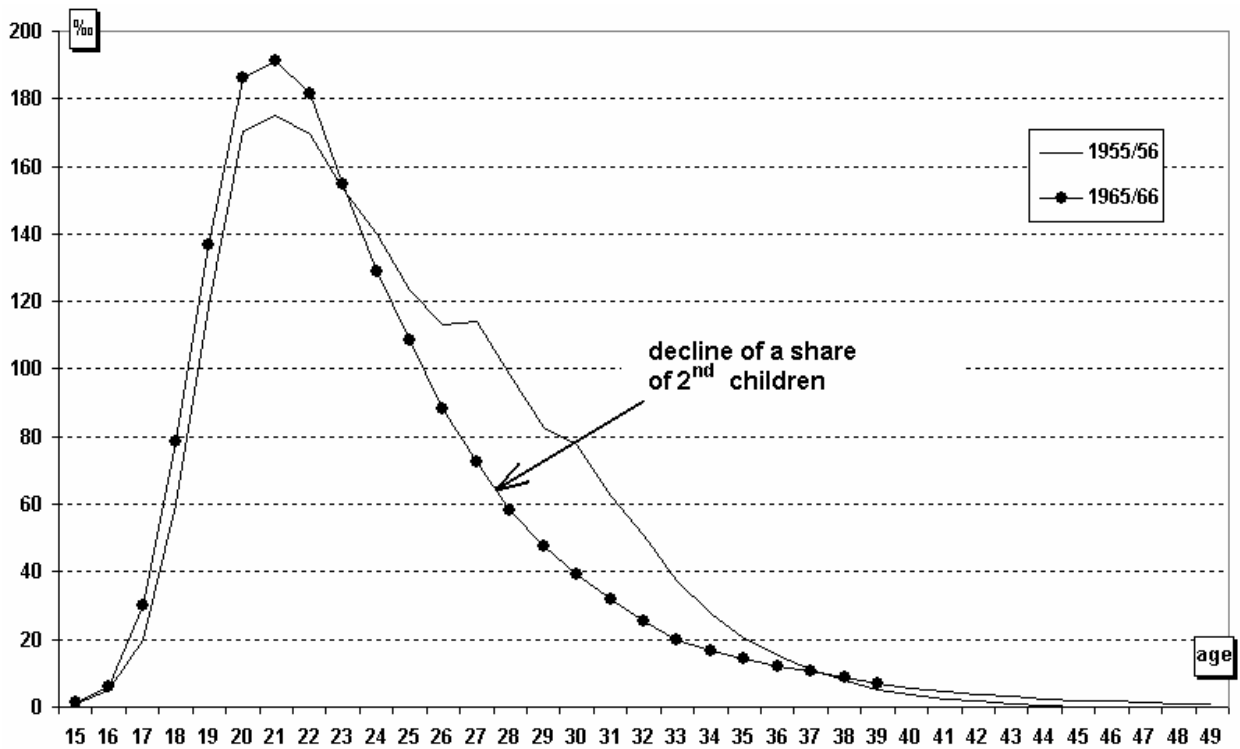


Fig. 3.1.3. Age-specific fertility rates of different generations of women (rates for age of 40 and over are extrapolated for a cohort, born in 1965-66, based on exponential function).

The total fertility rate has been increasing during 2002-04 not due to the second births, but due to realization of the postponed births by a generation of 1970's (as birth series show). Generations, born in the middle of 1960's have probably lost their possibility to have second children. The total fertility rates of these generations will make less than 1.7 children based on extrapolated indicators (Fig. 3.1.3). Accumulated shares show that they will not reach a rate of fertility, common for generations of 1950's (no less than 1.8 children per woman). So, there is a large share of women with only one child among those, born in 1960's. That's why their children will have lower fertility, when entering fertile age (as they could follow the models of their families). This hypothesis could be realized as a projection of fertility.

Long-term projections, covering more than a generation, could become unpredictable, as persons with unknown reproductive aims are entering the fertile age. A level of economic development, peculiarities of social relations and population behaviour are outlined rather obscure. So, starting from 2025, any projection is not analytical any more; it rather outlines the most probable "corridor" of the rates.

Low fertility projection

A very recent increase of the total fertility rate in Ukraine proves development of trends, similar to the European transformations of birth calendar. A small decrease of this rate in 2005 is probably caused by

expectations of implementation of the Law on “Lump-sum benefit on childbirth” (constituted on the 1st of April, 2005). A comparison of age-specific fertility rates of 2004 and 2005 shows that such postponing took place mostly among the youngest women (Fig. 3.1.4). Based on comparison of age-specific fertility rates in these years, we can estimate a curve, which could be observed given none state intervention. The trends show the total fertility rate in 1.28 could be the most probable for 2005; this trend is presented through bifurcation of the curve at Fig 3.3.5.

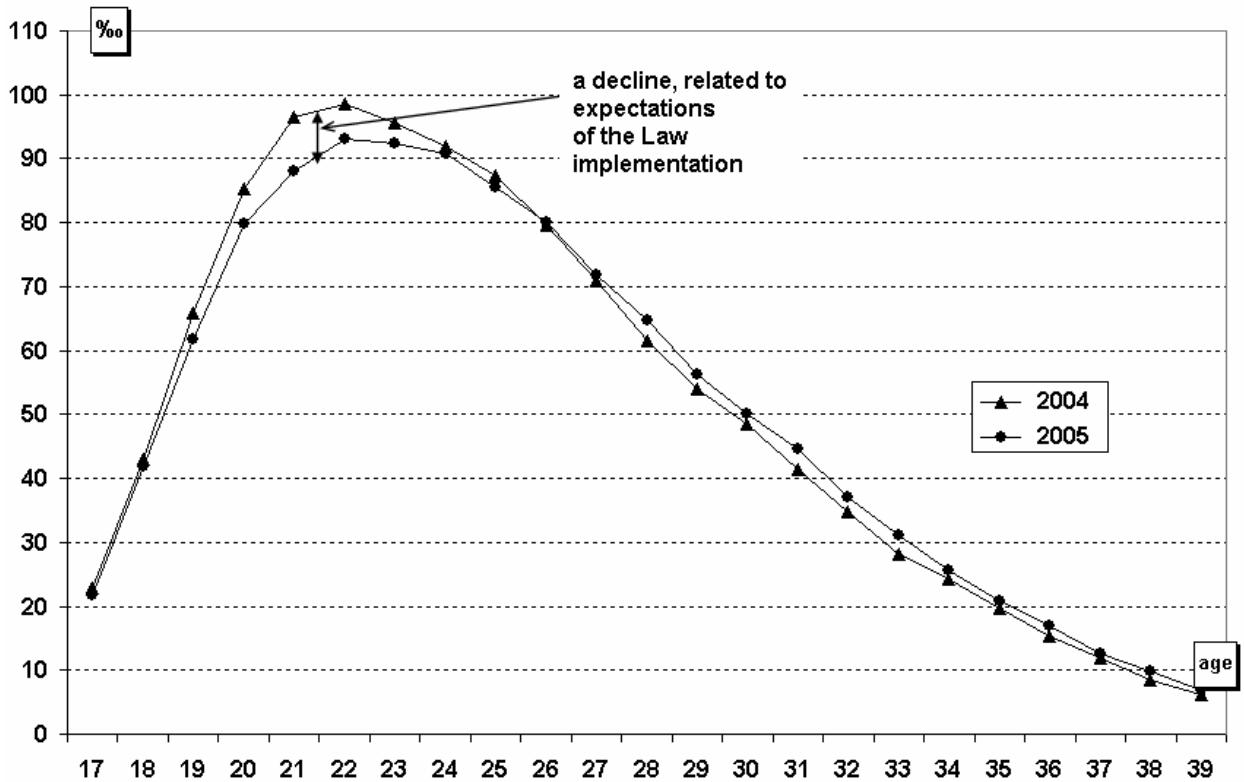


Fig. 3.1.4. Effect of the postponed births among young women, caused by expectations of implementation of the Law on „Lump-sum benefits on a childbirth”.

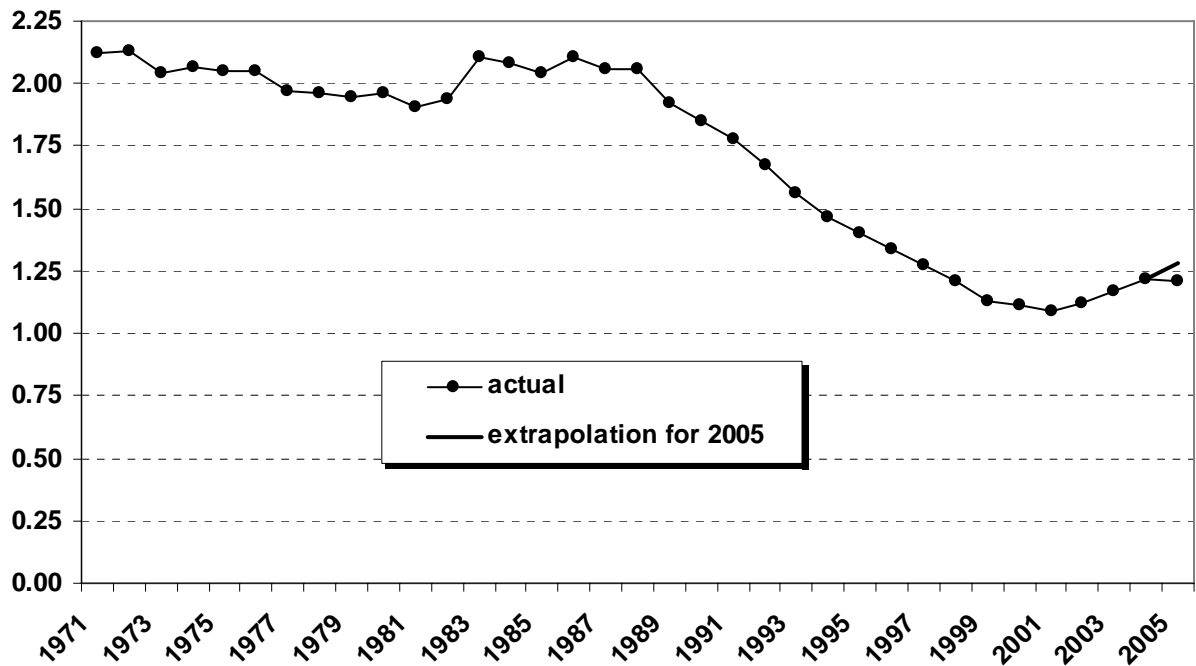


Fig. 3.1.5. Total fertility rate for conditional generations in Ukraine.

The further dynamics will be related to stimulation of fertility in the nearest years. The middle of 1980's, when maternal leaves were prolonged, could be used as the analogy. A related increase of fertility lasted for about 3 years (1983-85). It cannot be estimated more correct, as the antialcoholic company could also contribute to relatively high fertility.

That's why we have to expect the total fertility rate at the rate of no less than 1.25 even in accordance with a „low” variant of projection. The growth rates could slow down in the result of a probable economic recession and pre-scheduled realization of the first births among generations, born in 1982-85. The next generations will preserve a trend of postponing not only second, but also first births. So, we have to expect a new decline in fertility due to a new forced tempo-effect. Given these situation, the total fertility rate will not exceed 1.3 in 2007-08, later it will gradually decrease, reaching 1.1 in 2013.

A gradual „entering” of the fertile age by small cohorts of those, born in the end of 1990's – at the beginning of the XXIth century, could change the Ukrainian model of fertility for a long time.

The world practice shows that small generations are more active in terms of reproduction. It can be explained, as they enter tertiary educational institutions more easily, have smaller competition at the labour market, as well as at the markets of housing and credits; also, they have more family resources in the childhood. In Ukraine, small cohorts of mothers, born in 1932-33 and during the World War II, are characterized by declined depleted fertility, in comparison with those, born in the adjoining years. That's why prevalence of families with one child could result in a transition to a model of families with one child among their children.

As V.S. Steshenko notes⁵⁰, Ukraine has not received any demographic “benefits” from a decline in births during the war and famines.

Thus, if there are no corresponding reproductive aims in these generations, a need in children could be realized in a prevailing model of a family with one child. In practice, the total fertility rate could reach 0.9 by 2020. A probability of such low fertility rate can be supported by intensive process of demographic degradation in rural area. It results in an increase of a share of urban residents in the population structure and thus in an accelerated expansion of their reproductive aims.

This rate could stay at the same level in the next years of the investigated period. A will to have and raise children will not be able to compete with receiving of education and self-realization in the society, professional growth, needs in entertainment, etc. Hardship of children’s bringing up (diseases, a need to pay some attention and time, etc.) will prevent realization of other needs. But, other needs could be more valuable for the next generations.

Moreover, public opinion and common standards of behaviour, including reproductive aims, are important for human beings. So, prevalence of families with many children, relatively early marriages and early motherhood are among factors of preservation of relatively high fertility in the western regions of Ukraine, as well as in rural area. In case of prevalence of families with one child, a transition of these standards to the next generations could take place. Prevalence of public stereotypes of families with one child could lead to a very low fertility rate in the long-term run (Fig. 3.1.7). Under new standards of families with mostly one child, the next generations will not know any other standards at all.

⁵⁰ Steshenko V. Cohort birth rates and fertility of women in Ukraine // Demographic studies, Issue 25, 2003, p.23. (Стешенко В.С. Когортна народжуваність і плідність жінок України // Демографічні дослідження – Вип. 25, 2003. – С. 23.)

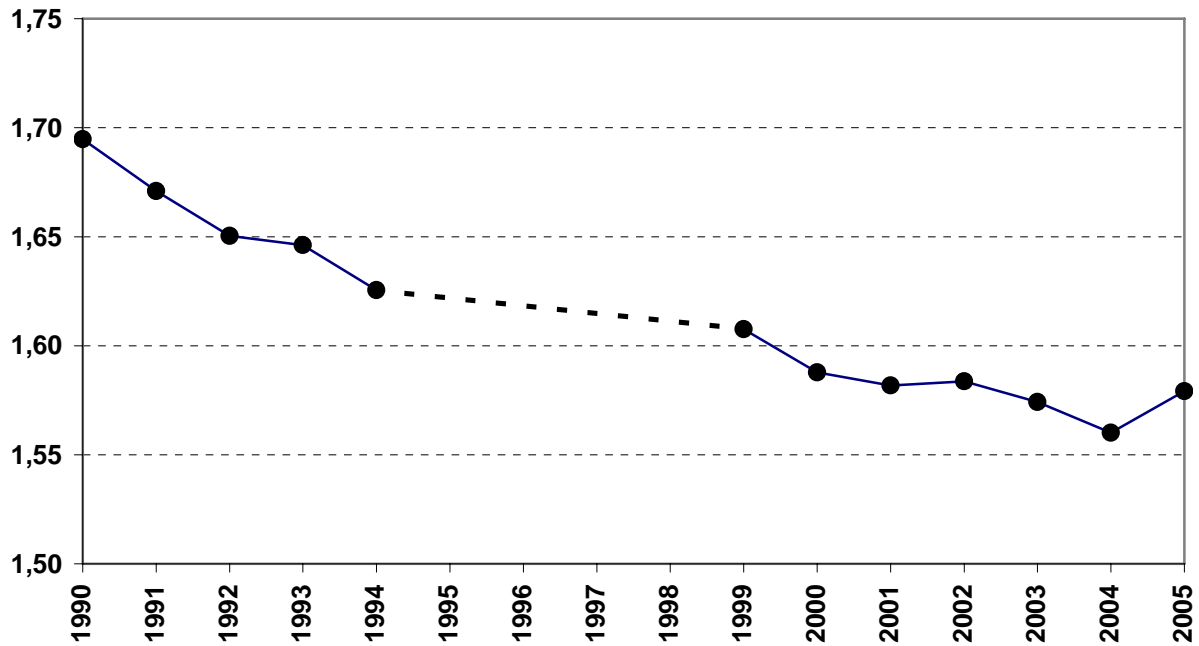


Fig. 3.1.6. Birth order in Ukraine.

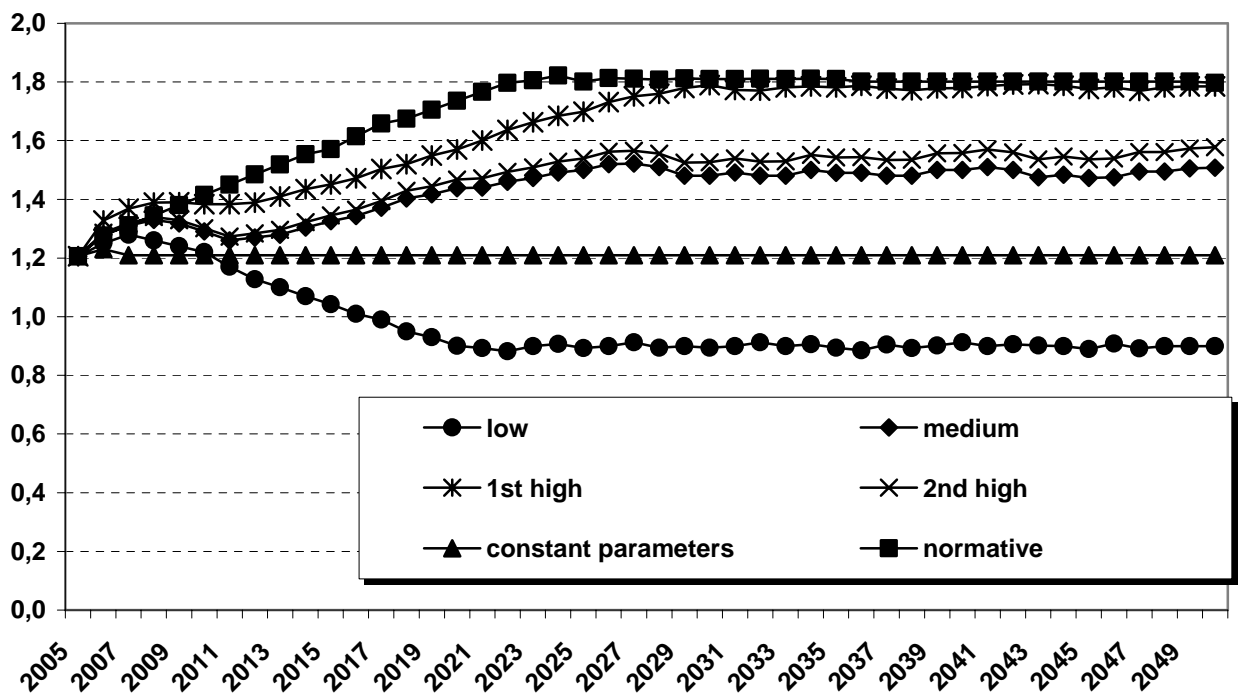


Fig. 3.1.7. Multivariate projection of the total fertility rate.

Medium projection

The average birth order is considered as relatively correct characteristics of fertility. In this context, an increase of the birth order is regarded as a true fertility growth. It is estimated as an average arithmetic weighted on the total fertility for each birth order.

Decline in fertility of younger fertile groups has been developing faster than in elder groups of women. It proves structural (age-specific) shifts in a calendar of births towards elder groups of women. So, when the present

profile of age-specific fertility rates will move a maximum to the age group of 25-29, an approximation of the rates of exhausted fertility of the real cohorts of women to the total fertility rates of conditional generations will take place, i.e. it will increase to the average birth order (about 1.5).

But, namely this rate does not support the hypotheses on the fertility intensity increase. As Fig. 3.1.6 shows, it has been steadily decreasing (there are no actual data for 1995-98, only simulation estimations⁵¹). A comparison of Figures 3.1.4 and 3.1.6 reveals a true reason of the birth order increase – a decline (postponing) of births among the youngest generations of women (aged 19-23). As women have mostly their first children at this age, a share of the next children is increasing, resulting in a relative growth of the average birth order in 2005.

There could be another factor of a relative decline in fertility in 2005, as the previous year (2004) was a leap-year. It is well-known that leap-years are characterized by decline in the intensity of marriages in the result of folk traditions (Fig. 3.1.8). This situation has also contributed to reduction of a share of children; obviously, regarding the first children.

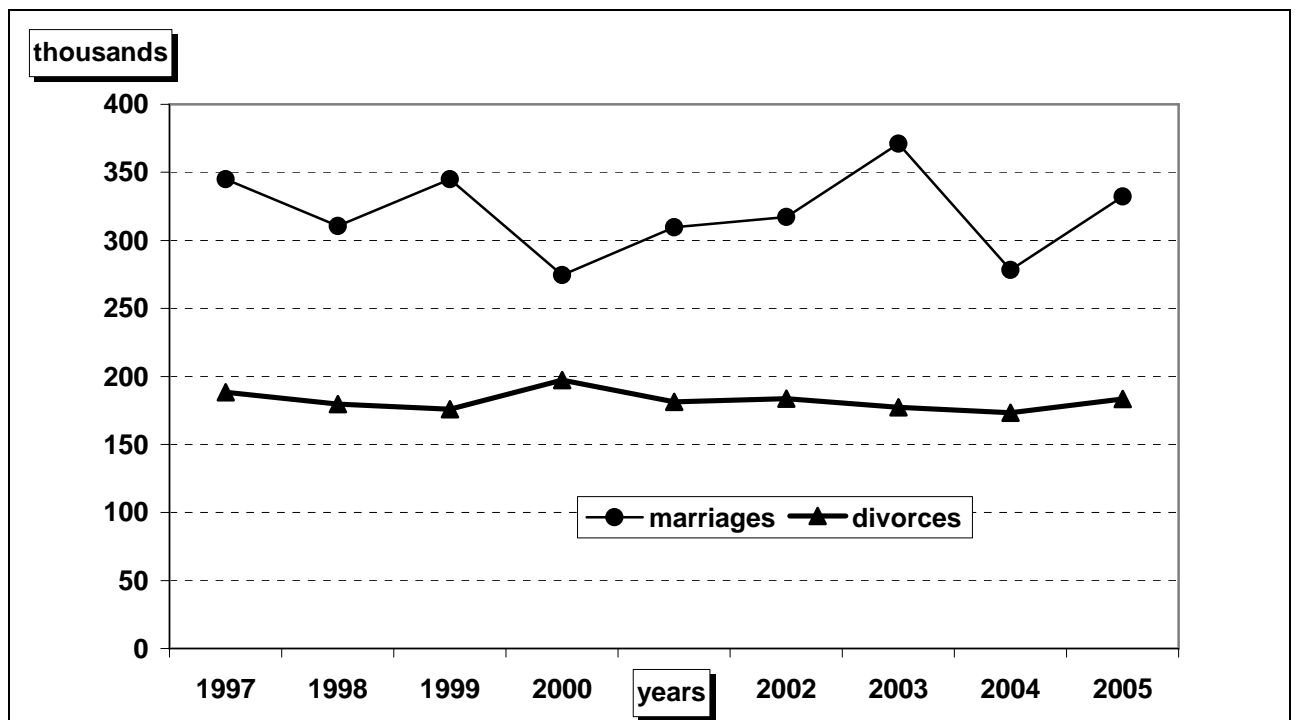


Fig. 3.1.8. Registered marriages and divorces in Ukraine.

Hence, the bases of short-term fertility dynamics are defined. Realization of the postponed first births is expected to take place in 2006 (as by young, as by elder women), as well as realization of the second births by elder generations of the fertile age. Considering the experience of

⁵¹ Yavorskiy V. Methods of definition of structure of the newborns by birth order and age of mothers // Demographic studies, issue 21, 1999, pp.206-221 (Яворский В. Методы определения структур новорожденных по очередности рождений и возрасту матери // Демографічні дослідження, вип. 21, 1999. – С. 206-221).

the 1980's, we can expect an increase of the total fertility rate on 6-7% in 2006 in comparison with 2005 (up to 1.28). As to 2007-08, the rates of fertility growth will slow down in the result of exhaustion of a potential of the planned births realization. It should be mentioned that we expect realization of the births, planned for the next years, not of the postponed births. That's why a decline in fertility will start in 2009; it will last till 2011. The total fertility rate will reach 1.26 (Fig. 3.1.7). Later, the mothers' generations will enter a "calm" period of fertility, undistorted by demographic policy measures.

According to the medium variant, the total fertility rate will reach 1.4 children per woman by 2018. Later, a slow increase will still take place due to the end of transformation of birth calendar (increase of the medium age of mother and age of mother at the first childbirth). Regarding models of families, there will be as families with one child, as families with two children. As a result, the total fertility rate will reach about 1.5 children per woman.

As Fig. 3.1.6 shows, the average birth order in Ukraine was about 1.5-1.6 children per woman in the end of the XXth century. It is logically to suggest that the average number children in families of that period is also close to these rates. As standards of behaviour, including reproductive aims, are perceived in the childhood, women, born in this period, will have the same vision of their future families. Hence, when women, born at the beginning of the XXth century will reach the most active reproductive age (25-30 years) in 2025, the average birth order will vary at about 1.5 children per woman, responding to the total fertility rate in conditional generations as well. This rate will be kept till the end of the investigated period (Fig. 3.1.7).

1st high projection

This variant is based on the experience of the developed European countries with social-oriented economy. Definition and mitigating of the basic determinants of fertility reduction will result in a systematic increase of fertility in Ukraine in a few decades.

Living standards. Many examples could be named, describing higher fertility in the countries with lower living standards, as compared with economically developed countries. Countries with similar living standards and culture could notably differ by their fertility rates. It is well-known that high-income populations usually have smaller number of children as compared to the whole country (as well as in Ukraine). But even those regions of Ukraine, which have higher living standards, are characterized by notably lower fertility rates. Regarding time aspect, it can be also said that the Ukrainian population has been living much better at the beginning of the XXIth century, as compared with the last century, but it has much lower fertility rate.

High rate of female orientation towards out-of-family sphere (employment, „high life” style, education, sports, etc) will inevitably reduce their reproductive aims. A woman stops to see her destination as a housekeeper. Thus, to change the situation, some conditions for establishing of the actual equality in a family are required, as well as for actual possibilities of combining family and out-of-family interests.

So, an importance of this factor should not be overestimated. But, a gradual increase of the population living standards and broad possibilities of employment (as a determinant of such increase) could become a general background, providing the Ukrainian residents' confidence in their own future and in the future of their children.

Family-friendly and female-friendly policy at the labour market. A purposeful state policy could provide possibilities of organic combination of employment and reproductive activity very fast. Qualitatively new recovering of the preschool children's institutions, improvement of paediatrics quality and reformation of social security will assist in overcoming obstacles to a birth of the second children. The society has to recognize the realities of high rates of female employment and to develop measures of family policy with consideration of this factor.

Gender roles in a family. There is a general need in changing roles of women and men in families, which was ignored in the previous paragraphs. As the European experience proves, this process is rather prolonged (more than 20 years), but necessary. A husband has to take consciously as much responsibilities for a child bringing up and unpaid homework, as possible. Such policy will consolidate a family, release women from excessive home duties; also, it will indirectly contribute to reduction of male mortality.

Reduction of children's "costs". It is purposeful to reduce the costs of children maintenance, including meals, medical treatment and education. The policy of direct money benefits on childbirth is low-efficient. It mostly results only in increase of bribery and misuses, including medical examinations of pregnant women and in maternity hospitals, as well as further "blackmailing" in medical and educational institutions. The costs of children's goods (clothing, meals, toys etc.) are simultaneously increasing.

If medical treatment and education of children were actually free of charge, while their meals and leisure activities relatively cheap, it would contribute to some increase of fertility. Thus, it is purposeful to extend preschool children's institutions, which would be funded on 50-75% from the government or local authorities (as in the Scandinavian countries). Such policy of assisting fertility and socialization of childcare would provide more results for Ukraine than any populist attempts of money benefits.

According to this variant, Ukraine could reach a rate of fertility in 1.7 children per woman by 2025. Later, starting from 2030, this rate could increase by 1.8 in those cohorts of women, who have not been born at the moment of the projection development. Such value of the total fertility rate means an expansion of a standard of two children with adjustment for a

bareness and unrealized reproductive aims of some part of the population. According to this variant of projection, the total fertility rate will make 1.8 by the end of the investigated period (Fig. 3.1.7, Table 3.1.1).

Table 3.1.1. Projection of the total fertility rate in Ukraine

	2005 ¹	2006	2007	2008	2009	2010	2015	2020	2025	2030	2040	2050
Low	1,21	1,25	1,28	1,26	1,24	1,22	1,04	0,90	0,89	0,89	0,91	0,90
Medium	1,21	1,28	1,31	1,33	1,32	1,29	1,33	1,44	1,50	1,48	1,50	1,51
1 st high	1,21	1,33	1,37	1,39	1,39	1,38	1,45	1,57	1,70	1,79	1,78	1,78
2 nd high	1,21	1,29	1,32	1,34	1,33	1,30	1,34	1,47	1,54	1,53	1,56	1,58
Constant coefficients	1,21	1,23	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21
Normative	1,21	1,28	1,31	1,35	1,38	1,41	1,57	1,74	1,80	1,81	1,80	1,80

¹ actual data

2nd high projection

Probably mass flows of immigrants from politically and economically instable, overpopulated countries of Asia will lead to changes of fertility rate in Ukraine. This variant is closely related to the flows of immigrants. Estimation of perspective fertility rates is realized based on adjustment of the corresponding rates of the medium variant. The total fertility rate will change in accordance with a share of immigrants, who arrived during the adjoining 3-4 years to a one-year number of the local resident. It can be explained, as immigrants preserve reproductive aims of their countries of origin for several years. Age-specific fertility rates are calculated by adjustment of a medium projection rates to age-specific models of the immigrants' countries of origin.

Adjustment of a medium variant of fertility projection to a high rate of immigrants' arrivals will lead to increase of the total fertility rate. An increase of net migrations more than on +50 thousands a year by 2010 will contribute to more intensive changes of ethnic structure of the population of Ukraine. A certain accumulation of immigrants from the countries with higher reproductive activity will contribute to the corresponding increase of the total fertility rate in Ukraine. Such exceeding (as compared with a medium scenario) will make 1% by 2011. It will reach 3% by 2028. As to the end of the investigated period, fertility could increase by 4-5% in comparison with a transformation of fertility, described in a medium variant, due to accumulation of immigrants from Asia and Africa in Ukraine.

Obviously, immigrants accept reproductive aims of the indigenous population with time, but they preserve their standards of reproductive behaviour during the first years of stay. So, we have to estimate the possibilities of these contingents fertility on the average Ukrainian rates very carefully. That's why, when estimating a probable exceeding of fertility in some year as a correction mark, the total number of arrivals for only 3-4 previous years was used, not a cumulative number for the whole period.

Thus, it is suggested that fertility rates of immigrants will become similar to the rates of the local resident later.

Normative projection

The analogies with economically developed countries are aimed on estimation of not a probable variant of the events development, but their best vision. Taking a hypothesis on undistorted fertility regime of 1982 (in terms of the state interventions, as well as economic problems) and considering the minimum fertility, observed in 2001, we can suggest symmetry of fertility dynamics regarding the beginning of the XXIth century. Thus, a half-cycle of a probable transition of the Ukrainian population to a new model of fertility takes about 20 years. Hence, we could reach the present rate and age-specific profile of Denmark by 2021-22 (1.8 children per woman). Later, the same fertility rate will be kept till the end of the investigated period.

A hypothesis on such fast achievement of the former fertility rate is based on the similar successes of the developed countries of North Europe (Denmark, Norway, and Sweden). These countries were able to return to rather high fertility rates in 15-20 years. A change of birth calendars is among possible explanations of the phenomenon (Fig. 3.1.1).

Constant coefficients

Scenario with fixed fertility rates, observed in the base year of the projection, (1.21 children per woman), is a very attractive hypothesis in terms of comparing the results of such development of the situation. Such variant of „*constant-fertility*” is stably used by the UNO experts when developing demographic projections for the world countries. Thus, a population with a structure, close to a stable population, is obtained. Contrary to the UNO projections, our variant is used in combination with age-specific net migrations, registered in 2005. Of course, it does not have self-dependent value, so it can be used only for analytical aims, as well as a normative variant.

3.2. Projection of mortality and life expectancy

APPROACHES TO PROJECTIONS OF MORTALITY AND LIFE EXPECTANCY

Significant synchronism of age-specific death rates in the adjoining age groups makes it purposeful to combine them into broader age intervals. As such aggregated characteristics are more inert, mortality dynamics can be explained not only for the nearest years, but also in the middle-term run. When developing a long-term demographic projection, we have to reject from the trends extrapolation. Instead, it is purposeful to investigate correlations between death rates and evolution of a population decline depending on specific socioeconomic conditions.

Projection of mortality consists of two general stages:

- 1) scientific development of a projection and creation of hypotheses – content projection;
- 2) estimation of the corresponding numerous parameters for a perspective – series of age-specific death rates.

The first stage. Content projection is a basic element of the process, as general hypotheses on the expected changes of mortality determinants (internal and external) are formed at the stage. Based on statistical – mathematic methods, parameters of correlations between different processes are determined (including social, economic, medical, psychological and demographic processes).

But, approaches to estimation of the numerous parameters, responding to the formulated hypotheses, still are unspecified. For instance, the average Ukrainian life expectancy at birth was much lower in 2005 in comparison with 1970. As to males, this indicator was 61.5 in 2005 against 66.5 in 1970. The average life expectancy of females was at the level of 73.4 in 2005 against 74.4 in 1970. Thus, a decline in life expectancy is obvious. But, the changes took place with different rates and even with different vectors among different age groups of the population. In particular, infant mortality has decreased largely since then. An important decline was also observed among elder children. At the same time, death rates have growth in all age groups of the working-age population. Thus, a decline in the most integral characteristics of mortality – life expectancy at birth – does not mean an increase of mortality in all age groups of the population; it also does not mean a similar proportion of such increase.

Thus, **the second stage** is necessary in projections' development, including detailization of indicators. On one hand, the indicators do not have to be as numerous as age-specific death rates (100 rates for each sex), on other hand – they must describe their age-specific distribution rather well. Importantly, these predicted rates have to be interpreted. Thus, a coordination of the predicted rates with more general hypotheses of the first stage takes place. While a short-term projection can be based on the

new trends, importance of cumulative indices of mortality is increasing in the long-term run, as they less depend on temporarily impacts.

Such cumulative indices, which could be interpreted and rather correctly reflect a curve of age-specific death rates, are presented by probabilities to die by the aggregated age (sex-age) groups. These probabilities mean probabilities not to live the whole period between the starting points of two adjoining age groups. A probability to die is estimated for some age groups within „broad” aggregated age groups based on interpolation.

Age groups are aggregated based on defining the most important death caused in some age groups. The results of analysis of mortality by death causes and age prove that only few classes of death causes explain more than 70% of variation of death rates in different age groups. Thus, two or three determinants are observed in the aggregated age groups (classes of death causes).

This approach has an advantage, as it integrates content hypotheses and numerous indices of age-specific death rates, which respond to the previously developed hypotheses.

Limits of „broad” age groups are estimated by basic classes of death causes of the base projection year (2005). Based on ranking of death rates by death causes, the next broad age groups could be aggregated: 1-19, 20-39, 40-59, 60 and over. Age group under 1 and age group 100 and over are estimated separately, without any aggregation.

Population in the age under 1. Infant mortality differs from other age groups a lot. That’s why projections of infant mortality are developed separately, regarding sex structure. Such particular position of this age group can be explained not only by its importance for estimation of mortality regime in a conditional generation. It also results from peculiarities of estimations of probabilities to die in this age (it is difficult to define a generating sampling). While a definition of generating samplings is realized rather simply for most age groups, it is done in a special way for infants, as it is impossible to provide good approximate estimations of their existence during a calendar year. The differences are also caused by a curve of death rates during the first year of life. As it is known, a hypothesis of linear distribution is more reliable for most age groups. As to infants, who die during their first years of lives more intensively, this hypothesis is unqualified. Besides peculiarities in death rates, there is also an important difference in the structure of death causes, which are specific for this age (acting only in the youngest age or decreasing with age). Such death causes include congenital anomalies and states of the perinatal period, which cause 70.3% of all deaths in this age. Naturally, these death causes make a very small impact on other age groups – only 0.5%. A probability to die of such death causes in the age under 1 was 7.0‰ in 2005. A large proportion of deaths are also caused by infectious and parasitic diseases (4.7% of all deaths in this age). A large proportion of infant mortality is

causes by traumas and poisonings (8.1%); this fact is particularly horrifying, as such deaths could be easily avoided provided appropriate care.

Also, infant mortality is a bright indicator of the population health conditions (at least, of the fertile part of females population) and of development of medical services and their quality. That's why infant mortality could be efficiently regulated by the state and by the population itself. Also, infant mortality is very vulnerable to any negative trends in the society, including deterioration of the living standards and quality of nutrition, etc.

We should mention that introduction of the international methods of live births registration is expected to take place in 2007 in Ukraine. Contrary to the present approach, which has been inherited from the Soviet Union, the new methods suggest important changes in definition of live- and dead births. Thus, according to the Soviet methodology, live births are defined as infants, born with a weight of more than 1,000 grams, height no less than 35 centimetres, who have done at least one self-dependent breath after a separation from a mother⁵². Infants with smaller weight were registered as live births only if they have lived for 7 days or were born at multiple births.

Contrary to the Soviet methods, the international methodology does not fix duration of pregnancy and recognized a live birth in case when a child breathes or presents some other signs of living – heart-beating, pulsing of an umbilical cord or moves of the musculature⁵³. A bodyweight could be only 500 grams.

Obviously, introduction of not so strict standards of live births will make an impact on their number by increasing a share of those infants, who usually die during the first week of their lives. Respectively, infant mortality rates will increase. The experts provide different estimations of this increase. According to some estimation, infant mortality rate (in the age under 1) could reach from 18.8 to 23.2%⁵⁴. But, the experts of the State Statistics Committee estimate a probable increase of infant mortality at the rate of about 15%. This projection is based on different estimations within 10-20% of the increase, depending on a variant of projection hypothesis.

Considering probable positive shifts in medical services for the youngest population groups, a „high” variant of projections is based on an

⁵² Libanova E.M. Life expectancy of the population (Experience of a complex regional study). National Academy of Sciences of Ukraine, 1991, p.116 (Либанова Э.М. – Продолжительность жизни населения (Опыт комплексного регионального исследования) АН Украины. СОПС Украины АН Украины; Отв. ред. В.В. Оникиенко. К.: Наукова думка, 1991. – С. 116).

⁵³ Decree of the Ministry of Public Health of Ukraine #31 of 19.02.96 “On approval of instruction on defining criteria of live births, dead births and perinatal period” (Наказ Міністерства охорони здоров'я України № 31 від 19.02.1996 р. „Про затвердження інструкції щодо визначення критеріїв живонародженості, мертвонародженості та перинатального періоду”).

⁵⁴ Levchuk N. Infant mortality in Ukraine: illusions and reality // Demographic studies. Issue 24, 2002, p.63 (Левчук Н. Смертність немовлят в Україні: ілюзії та реальність // Демографічні дослідження. Вип. 24. – 2002. – С. 63).

increase of a probability to die in the age under 1 up to 11.5‰ (on 15% as compared with 2005).

As to death causes in the age group of **1 – 19**, the leading positions are occupied by three classes: traumas and poisonings, tumours and diseases of nervous system and organs of senses. In aggregate, they explain 73.9% of deaths, while a probability to die of these causes is 7.7‰.

The largest variation of death causes is observed in the age group of **20-39**. While 73.4% of male deaths are described by three classes of death causes (traumas and poisonings, infectious and parasitic diseases, blood circulation diseases (the last ones only gain their force in this age group)), these death causes are not so important among females. Female death rates are more influenced by tumours. But, without taking blood circulation diseases into consideration, other death causes do not cover even 60% of females' death rates. So, to estimate death causes of both sexes in this age group, all four classes should be considered. In aggregate, they explain 79.1% of deaths' variation. A probability to die of these diseases in the age from 20 to 40 is 52.6‰.

Although death rates, caused by infectious and parasitic diseases, respiratory and digestive diseases, are rather important in the age of **40-59**, 72.8% of deaths are caused by blood circulation diseases, traumas and poisonings and tumours. The last ones are increasing in the end of this age interval, reaching 20.8% in the age of 55-59, as compared with 10.5% in the age of 40-44. A probability to die of these three classes of diseases makes 163.5‰.

The prevailing death causes in the age group of **60-99** are found in blood circulation diseases and tumours. Deaths, caused by these two types of diseases, take 85.9%. A probability to die in the age under 100 is 857.5‰.

Dynamics of mortality in the age **100 and over** is very unstable. Almost a third part of death causes (30.6%) is covered by symptoms and other unclear states. As to an impact of mortality in this age group on the projection's results (regarding as the total population number, as correctness of the life tables), it is very insignificant. So, parameters of a normative projection could be put into all variants of demographic projections for this age group. Moreover, the Ukrainian probability to die in the age of 100, not reaching 101, exceeded the corresponding Swedish analogue on 2.1% for males and on 19.8% for females in 2005.

Death causes (classes of diseases) investigated above determine a general direction of the mortality dynamics in these age groups. Other classes act as additional factors. But, as main, as additional classes, characterize an integral process and peculiarities of mortality of this age group. Given a notable decline in mortality, caused by the main factors, the additional causes could become determinant. It should be considered in the age groups of 20-39 and 40-59, where mortality, caused by diseases of digestive and respiratory systems is important. A bright example is

presented by infectious and parasitic diseases and tumours, which vary by importance and range in these age groups (Table. 3.2.1).

Thus, extrapolation of death rates based on retrospective time series is possible for the **nearest future** (up to 5 years). It can be based, as mortality is the most inert demographic indicator. So, given there are no catastrophic events, it changes very slowly from year to year. The trends of death rates by one-year age groups could have no clear dynamics. At the same time, such rates by five-year groups are characterized by more clear orientation. They often indicate rather clear trends of mortality changes in time, resulting mostly from socioeconomic conditions, as they have the largest conjuncture in short time periods

In this context, there could be some assumptions:

1. Preservation of the present trends of death rates by sex and age in the nearest future.
2. Stagnation of age-specific death rates.
3. Consideration of a probability that a base projection year is a return point in the changes of mortality. As a result, a change of age-specific death rates is probable. If 2005 is taken as the base year, a trend to decrease is possible.

Predicted death rates by one-year age groups could be received based on interpolation from five-year groups. Based on these assumptions, three basic variants of projections could be formulated: low, medium and high projections.

As to **the middle-term** projections (25-30 years), more general hypotheses of mortality dynamics are developed. Time series of age-specific death rates for this period (contrary to short-term projections) look too narrow. So, it is purposeful to develop mortality projections for "broad" age groups. Age intervals could be aggregated, as mortality of the population in some broad age groups could be on 70-80% caused by several (two or three) classes of death causes.

The main parameters of projections include probabilities to live from the beginning of one broad age interval to the next one. Also, probabilities to reach some age can be estimated for one-year groups within such "broad" intervals based on interpolation. But, correctness of the life tables is decreasing in this case. But, this error is miserable in comparison with a probable error in formulated hypotheses. The last, open interval of the age group of 100 and over is not very important for projections.

The long-term projections (more than 30 years) require projections of only most general indicators, describing mortality trends. These characteristics include: life expectancy at birth and medium death age, caused by different classes of diseases.

Table 3.2.1. Percentage of deaths by the basic classes of death causes in different age groups (2005)

Age	0	1-20	20-40	40-60	60-100
<i>Probability to live the whole period (males, ‰)</i>	988.8	986.9	899.3	666.8	0.5
Percentage of deaths causes in the corresponding age, %					
Some infectious and parasitic diseases	4.6	3.3	14.6	6.1	0.5
Tumours	1.1	9.2	4.3	13.5	13.9
Blood circulation diseases	1.7	3.6	13.6	35.5	69.7
Respiratory diseases	4.8	3.1	3.9	5.0	5.3
Digestive system diseases	0.5	1.3	9.5	9.5	2.4
Some conditions of perinatal period	43.3	0.0	0.0	0.0	0.0
Congenital anomalies of development, deformations and chromosome anomalies	27.0	6.5	0.3	0.1	0.0
External death causes	7.8	61.1	45.0	22.8	4.2
Other	12.6	19.5	17.3	18.6	16.4
<i>Probability to live the whole period (females, ‰)</i>	991.3	992.7	969.3	878.6	1.8
Percentage of deaths causes in the corresponding age, %					
Some infectious and parasitic diseases	4.8	5.4	15.9	2.8	0.2
Tumours	1.1	13.2	16.2	26.2	8.3
Blood circulation diseases	1.5	3.6	12.1	35.8	79.3
Respiratory diseases	4.4	4.6	4.1	2.6	1.8
Digestive system diseases	1.0	1.4	11.8	11.5	1.5
Some conditions of perinatal period	40.4	0.0	0.0	0.0	0.0
Congenital anomalies of development, deformations and chromosome anomalies	29.9	10.9	0.5	0.3	0.0
External death causes	8.5	45.4	27.5	13.4	1.6
Other	12.1	16.8	16.5	13.1	12.4

It is difficult to specify those classes of death causes, which will be determining in 50 years. But, as previous projections (too optimistic, as it turned out) show, we should not hope too much on successes in medicine and biology in overcoming of some diseases

Even most successful innovations are usually not used for the masses (they are expensive, rare, etc.). Respectively, very probable scientific achievements and technologies will not be applied for the masses at once; they will face a resistance of socioeconomic conditions.

The Ukrainian lag in life expectancy is too large, while the trends of economic development and public health are rather negative (in particular in rural area), that it is unreasonable to suggest a larger increase of life expectancy than the rates, observed in the Western and North Europe presently.

It is well-known that changes in mortality are very slow, given there are no catastrophic events of natural (earthquakes, meteorites, etc) or social character (wars). Even in times of the antialcohol company of 1985-86, the average life expectancy of the Ukrainian males at birth has grown only on 0.65 (in 1985) and 1.64 (in 1986) years. As to females, the corresponding increase was observed only in 1986 (on 0.98 years). Later, death rates have returned to their previous positions in a few years. In times of the worst economic crisis of 1994-95, the average male life expectancy has decreased on 1 year. Thus, the population mortality by death causes and age has been largely caused by socioeconomic factors during the last decade.

The lowest projection

The lowest variant of projection is a warning projection. It is based on an attempt to consider possible results the HIV-AIDS epidemic in Ukraine. As it accepted, the start of the epidemic took place in 1994⁵⁵

According to the estimations of epidemiologists, about 43.4 thousand deaths, caused by AIDS, are expected in Ukraine in 2010⁵⁶. According to new estimations, a peak of the annual number of deaths, caused by AIDS, will be achieved in 2014, making 59.0 thousand persons in accordance with a medium scenario⁵⁷. Obviously, such estimations are too pessimistic. They are based on an attempt to consider a latent mortality. But, when making expert estimations of a proportion of deaths, caused by AIDS, it has not been considered that the total number of deaths remains stable, despite of causes, noted in death certificates.

In particular, the authors believe that a proportion of the AIDS-caused deaths in the age of 15-49, was 13.2% in 2004⁵⁸. At the same time, in accordance with the State Statistics Committee data, the corresponding proportion of deaths made only 2.3%.

Recently, the rates of mortality, caused by AIDS, are gradually decreasing in Ukraine (Fig. 3.2.1). It partially results from high death rates, which have been already observed. Extrapolation of the growth trend by linear and exponential functions shows that death rates will start to decrease in 5-7 years. Thus, the maximum death rates, caused by AIDS, will be reached in 2010-12, exceeding the rates of 2005 in 2.3-2.5 times.

In 2005, a contribution of AIDS to the average life expectancy at birth was -0.2 and -0.1 years for males and females respectively. According to

⁵⁵ Socioeconomic Impact of HIV/AIDS in Ukraine. – Washington, The World Bank, 2006. – xi+112 p.; Socioeconomic Impact of HIV/AIDS in Ukraine: new projections. – Kyiv, UNAIDS, 2003, 146 p. (Соціально-економічні наслідки епідемії ВІЛ/СНІДу в Україні: нові прогнози. – К.: Укр. ін-т соціальних досліджень, Британська Рада, ЮНЕЙДС, 2003. – 146 с.)

⁵⁶ Socioeconomic Impact of HIV/AIDS in Ukraine: new projections. – Kyiv, UNAIDS, 2003, 146 p. (**Соціально-економічні наслідки епідемії ВІЛ/СНІДу в Україні: нові прогнози.** – К.: Укр. ін-т соціальних досліджень, Британська Рада, ЮНЕЙДС, 2003. – С. 53).

⁵⁷ **Socioeconomic Impact of HIV/AIDS in Ukraine.** – Washington, The World Bank, 2006. – P. 12.

⁵⁸ **Socioeconomic Impact of HIV/AIDS in Ukraine.** – Washington, The World Bank, 2006. – P. 11

our simulations, the population losses, caused only by AIDS, could make 0.35-0.2 years for different sexes in 2010-12. The yearly number of such deaths will make 8.0-10.0 thousand persons. Later, we could expect a decline in the AIDS-caused mortality by 1.0-2.0 thousand persons in the end of 2020's. It will take place as in the result of the general epidemics decline, as due to decreasing of the population group in the age of 25-39, as it is most vulnerable to the HIV-AIDS.

Tuberculosis has a larger impact on the population life expectancy in Ukraine. In 2005, its contribution to the average life expectancy at birth made -0.6 for males and -0.2 for females.

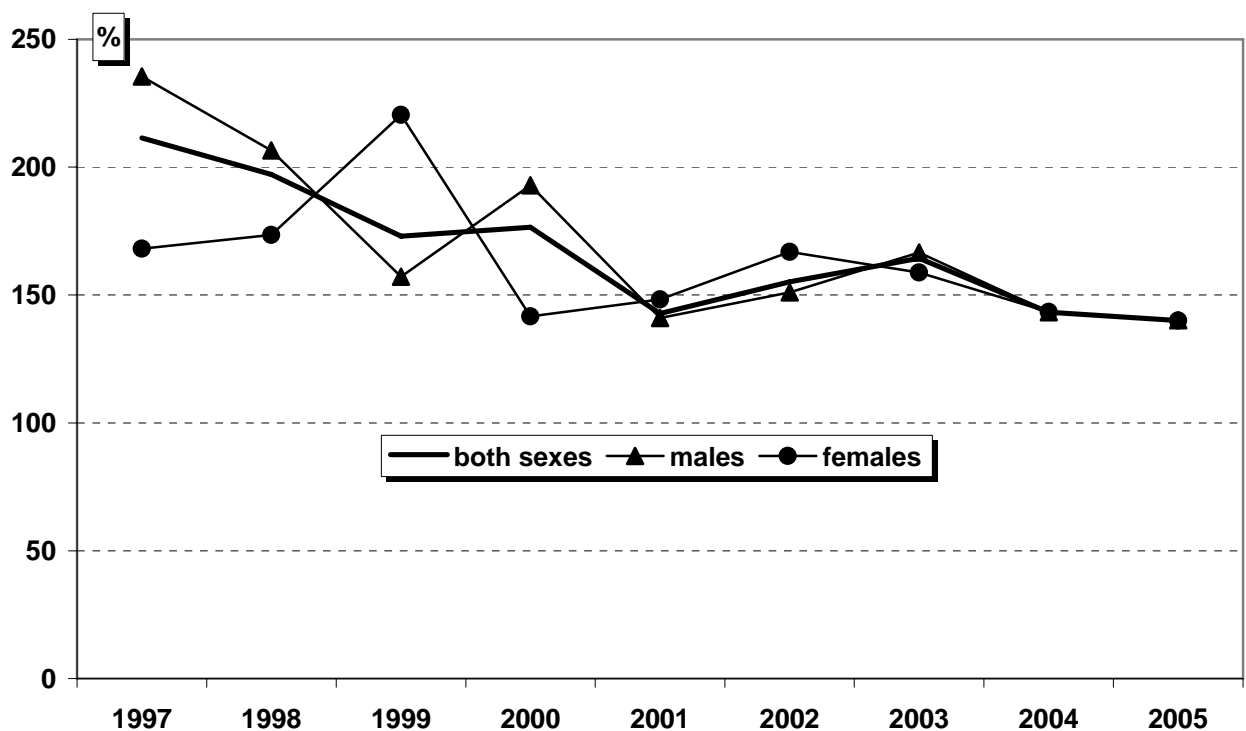


Fig. 3.2.1. Dynamics of death rates, caused by AIDS, by sexes.

Analysis of age-specific tuberculosis and AIDS death rates shows that they are not competitive. For instance, a sharp increase of the AIDS mortality in the age of 25-39, observed in the last years (Fig. 3.2.2.), has not lead to a corresponding decline in tuberculosis mortality, as it has to be given competition between these death causes. The average age of death, caused by these diseases, also varies. The variation in demographic indicators proves that these diseases affect different population groups. Hence, AIDS is still observed within the risk groups in Ukraine. Such assumptions provide additional proves of possible decline in the AIDS mortality.

But, these arguments are not calming. Recently, mortality of blood circulation diseases is increasing in Ukraine. Though the dynamics is not very bright in this case, the statistical weight of these causes is quite large. Thus, even small changes in the corresponding age-specific death rates

could lead to sharp changes in life expectancy. This situation was observed in 2005, when a conditional generation of males lost 0.5 years of their life expectancy in comparison with the previous year.

The main losses in life expectancy are suggested in the age groups, which are most vulnerable to socially-determined diseases: 25-39 (HIV-AIDS) and 35-59 (tuberculosis). The last age group could experience large population losses in the result of deaths, caused by cardiovascular diseases and tumours.

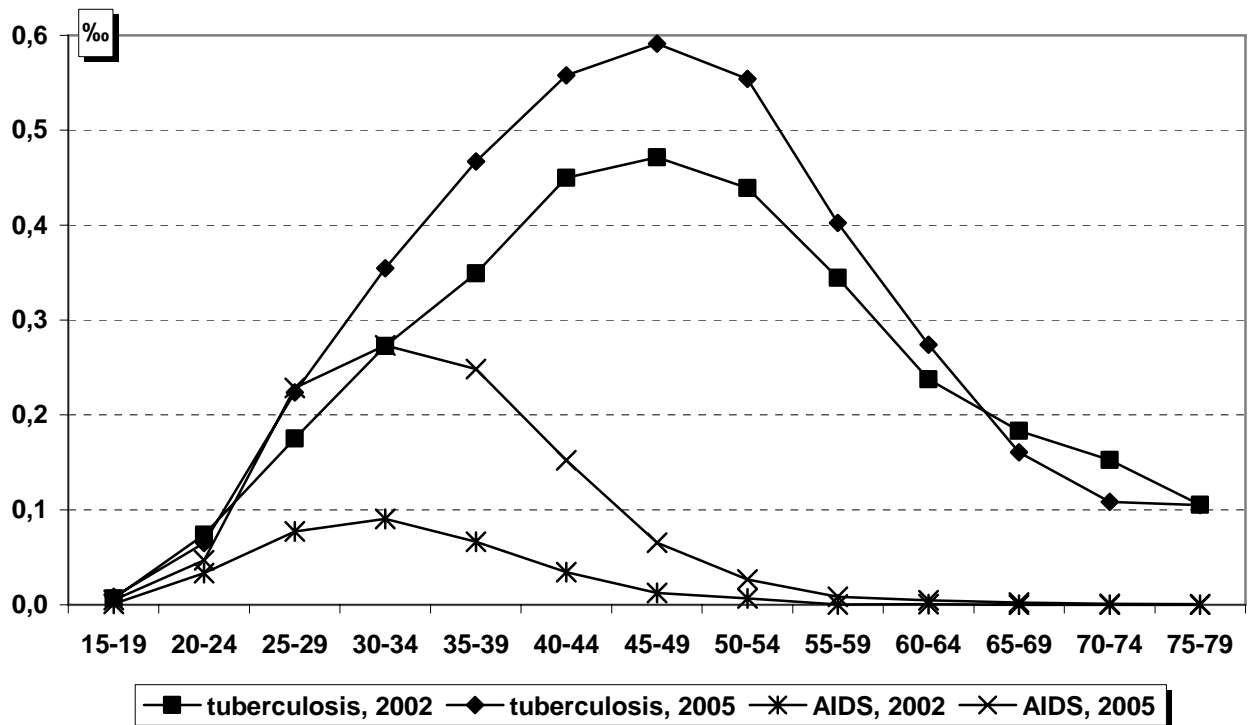


Fig. 3.2.2. Mortality, caused by AIDS and all forms of tuberculosis in 2002 and 2005.

According to the lowest projection variant, an increase of death rates in the age of 60 and over is expected due to deterioration of the population living standards and medical services. Life expectancy at reaching 100 will drop from 13.8 for males and 19.1 for females in 2005 to 12.0 and 17.0 in 2010, while the corresponding rates will reach 14.0 and 20.0 by the end of the investigated period.

Thus, given conservation of the most negative mortality trends, life expectancy at birth could reach 58 for males and 70 for females by 2011. According to this variant, we have to expect an increase of life expectancy later; it will be caused as by expansion of self-protecting behaviour among the population, as by the effect of natural selection of the most adapted persons. Life expectancy at birth will make 63.0 for males and 75.0 for females in the end of the investigated period.

Low projection

The rates of infant mortality decline have been slowing down during the recent years. It proves that recourse of the population well-being improvement is gradually being exhausted, so there is a need in positive shifts in medical services and population attitude to the health. But, under conditions of deterioration of economic situation, an increase of mortality is possible; just as it was observed during the worst times of the economic crisis of 1990's (Fig. 3.2.3).

According to this variant, an increase of infant mortality is suggested. This hypothesis is based on a probable deterioration of economic and social environments in the Ukrainian society. Death causes, determining infant mortality, depend not only on medical services, but also on the living standards, nutrition and general health of pregnant women.

According to this variant, a probability to die under age of 1 will make 11.6‰ for boys and 9.1‰ for girls in 2006; regarding new standards of live births definition, these figures will grow to 13.5 and 10.4‰ in 2007.

Infant mortality rates will gradually decrease in the next years, reaching 7.5 ‰ for boys and 6.0‰ for girls by 2050.

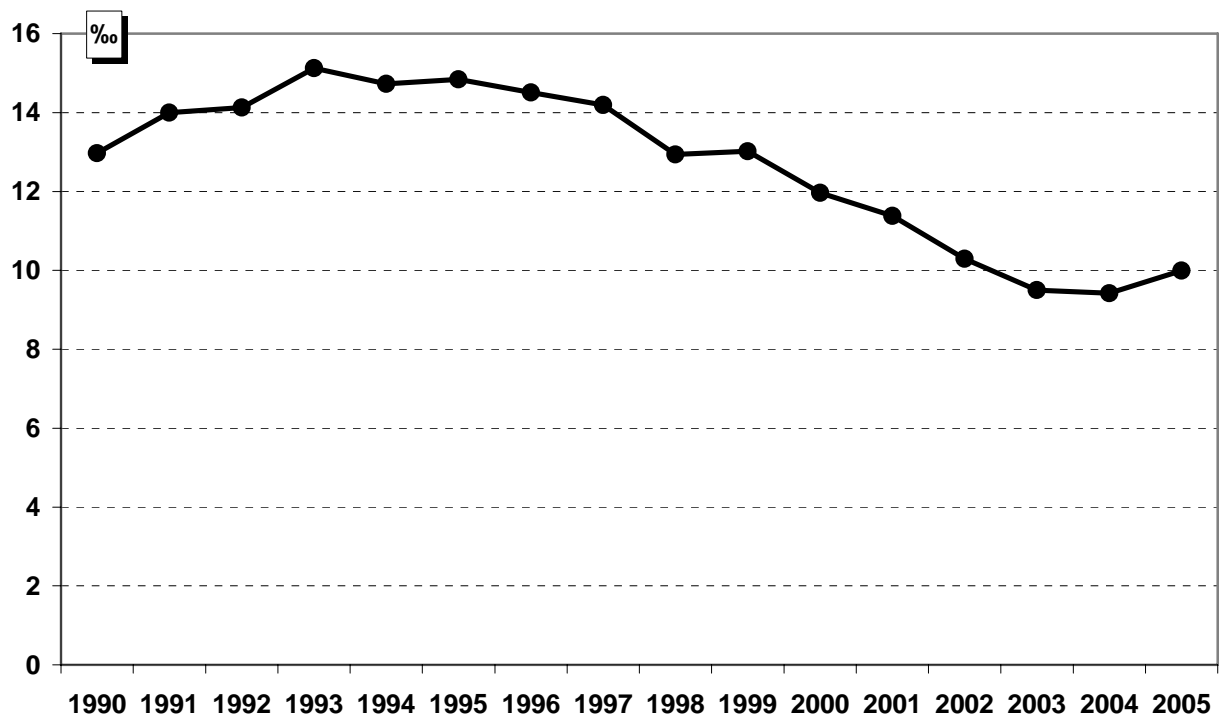


Fig. 3.3.3. Ratio of deaths in the age under 1 to the live births.

A probability to live from **age 1 to age 20** has been increasing recently (Fig. 3.2.4). But, a small increase of death rates among males of this age group was observed in 2005. Regarding stable trends of mortality decline in these age groups, such dynamics should not be long-term. So, we have to expect stabilization of death rates in this age for the period of 2008-2010

(according to a “low” projection); later it will gradually decrease till the end of the investigated period.

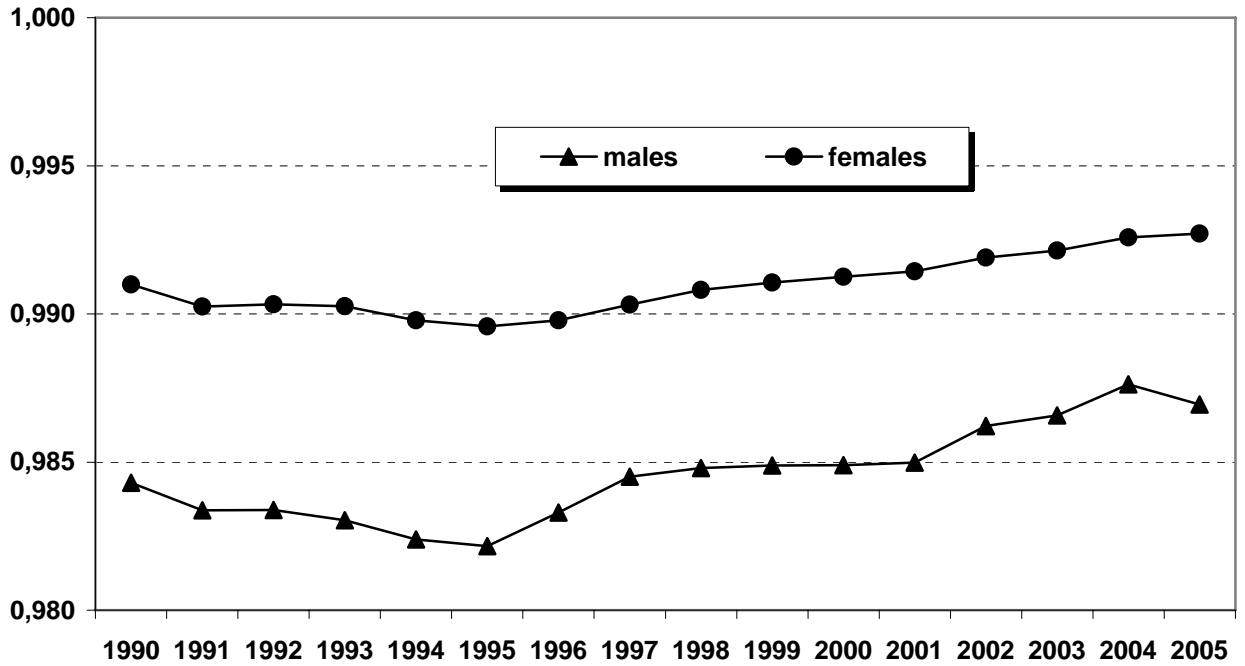


Fig. 3.3.4. Probabilities to reach 20 after age of 1.

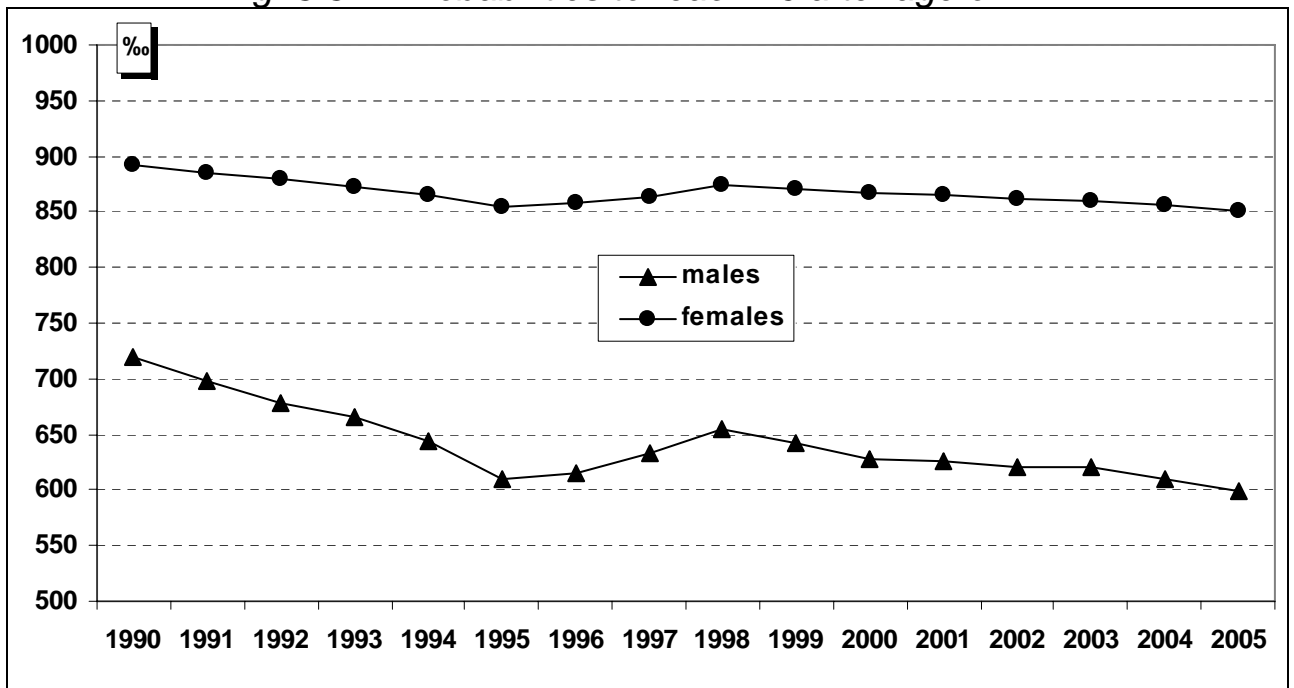


Fig. 3.2.5. Probabilities to reach 60 after age of 20.

A probability to die in this age interval will make 9‰ for males and 5‰ for females in the end of the investigated period.

An increase of mortality in the age group of **20-60**, observed in 2005, was largely determined by catastrophic increase of the rural population mortality (Fig. 3.2.6). High mortality of the working-age population resulted in a decline in life expectancy of the rural population on 0.8 years for both

sexes (in 2005, as compared with 2004). As to urban dwellers, their life expectancy has decreased on 0.2 years during the same period. As it has been mentioned in the present demographic studies, such situation is a display of demographic reaction on social and economic inequality of the population in different types of human settlements⁵⁹.

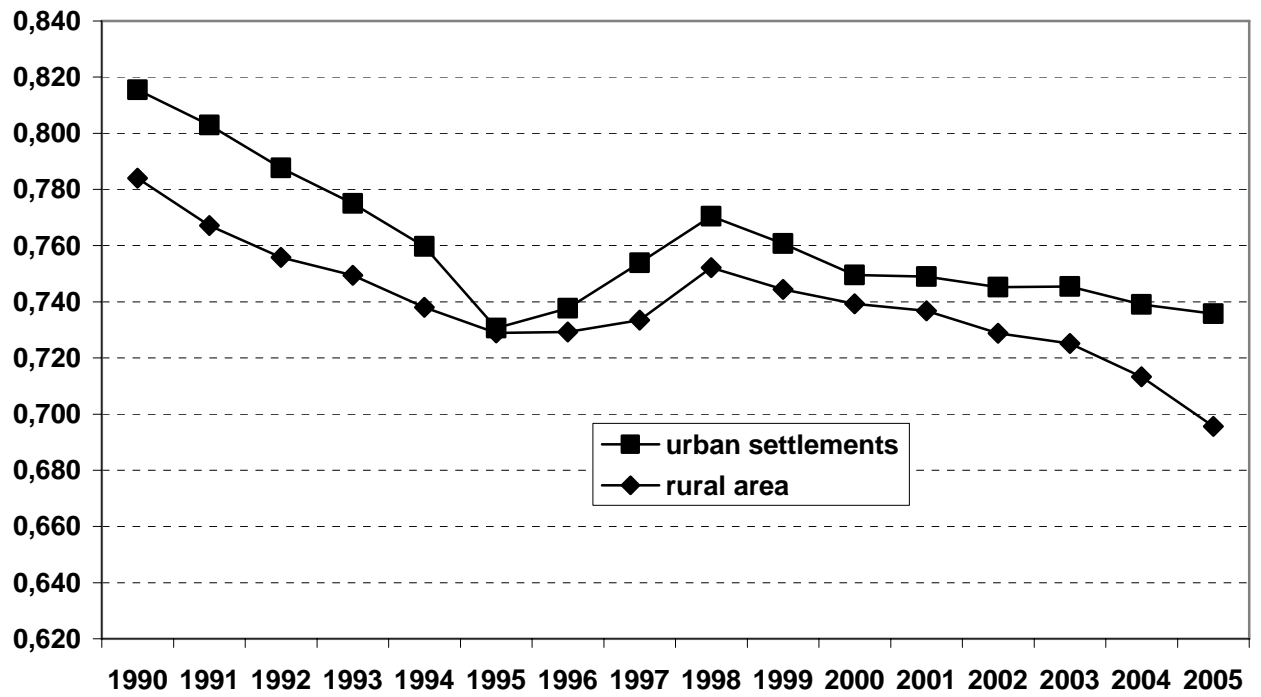


Fig. 3.2.6. Dynamics of probabilities to reach 60 after age of 20 in Ukraine by a type of settlements.

Deteriorated living standards of the population in combination with poor culture of some population groups lead to prevalence of violent deaths. Mortality, caused by external factors, is particularly increasing due to prevalence of hard drinking, in particular at workplaces. Safety measures are also often violated. As a result, a “self-ruining” behaviour is formed among the population, which is also dangerous for other people.

Medical services are still very poor in rural area. It is almost unreal to receive timely medical assistance there (not to mention its quality). Though there are new medical-obstetrician stations open in some rural settlements, their total number is decreasing. The basic reason is in lack of funding and uncovered need in medical workers. The situation is formed, when elder doctors are retired, while young specialists quit after the necessary three-year term of work, as they face unsatisfactory conditions of work.

Hence, we could extrapolate a trend of mortality increase in this broad age group (20-59) for the nearest three years. After 2008, a stabilization of death rates is expected, while they will start to decrease in 2012.

⁵⁹ Population of Ukraine – 2003. Annual analytical report. – Kyiv, 2004, p.95 (Населення України – 2003. Щорічна аналітична доповідь. – К.: ІДСД НАН України, 2004. – С. 95.)

As to the end of the investigated period, a probability to die in the age of 20-40 will make 57‰ for males and 18‰ for females, while in the age of 40-60 – correspondingly 251 and 85‰.

The age group of **60 and over** is characterized by historical stability of death rates. Dynamics of life expectancy at reaching 60 is similar to variation of life expectancy at birth, but it has smaller amplitude (Fig. 3.2.7). So, according to a low variant of projection, we could expect some stabilization of death rates in the nearest 3-5 years, later they will gradually decrease. Life expectancy at reaching 60 will make 15.6 for males and 21.0 for females by the end of the investigated period.

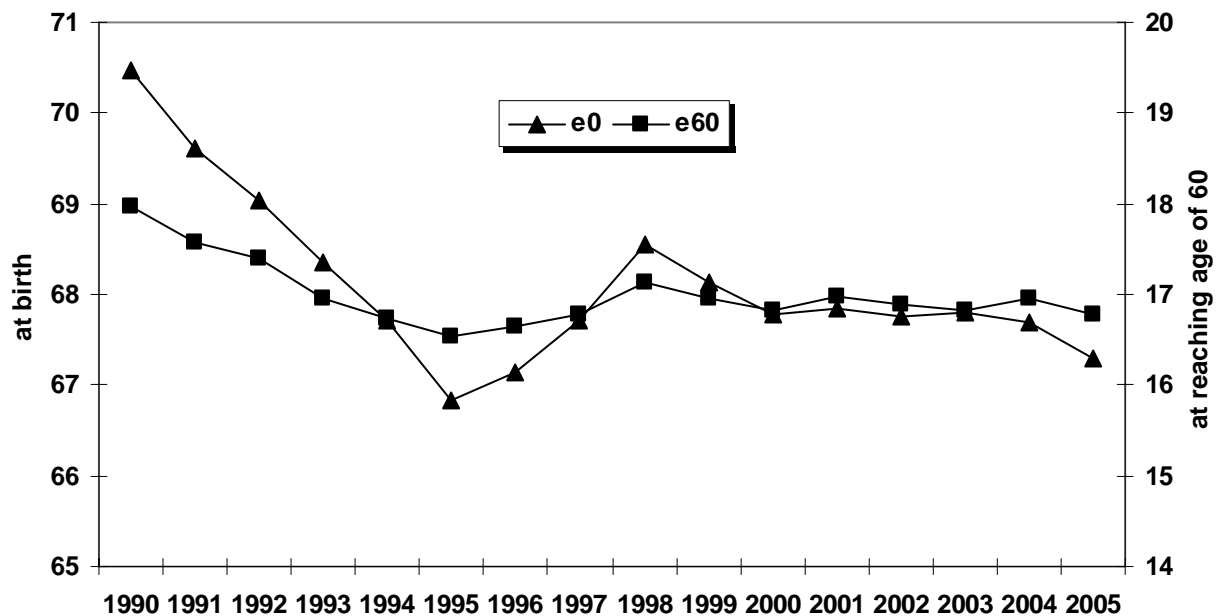


Fig. 3.2.7. Dynamics of the average life expectancy at birth and at reaching 60 for the population of Ukraine.

The calculations, based on the mentioned assumption, show that life expectancy at birth will reach 60.5 for males and 72.8 for females by 2008. Later, it will slowly increase up to 62.0 and 74.0 by 2030. At to the end of the investigated period, we could expect life expectancy at 66.5 for males and at 77.0 for females.

Medium projection

According to this variant, infant mortality will decrease in 2006, in accordance with its long-term trends (Fig. 3.2.3). An increase of this rate in 2007 will be caused by changes of methods of live births registration, as it has been stated. Thus, a probability to die in the age under 1 will make 10.7‰ for boys and 8.3‰ for girls in 2006; the corresponding rates will grow to 12.9 and 10.0‰ in 2007.

Later, a long-term trend of infant mortality decline is predicted, related as to improvement of the population well-being, as to improvement of

medical services. A probability to die in the age under 1 will reach 6.5‰ for boys and 5.5‰ for girls by the end of the investigated period.

The age group of **1-19** has been characterized by a stable trend to mortality decline during 10 years. A small increase of mortality, observed in 2005, could be related to fluctuations, caused by a background component of mortality. According to a medium variant of projection, we can expect a stabilization of mortality in this age group by 2008 and a subsequent decline in mortality among children and adolescents by the end of the investigated period. A probability to live from age 1 to age 20 will make 993 and 996‰ by 2050 (Tables 3.2.2 and 3.2.3).

Some age groups within a broad age interval of **20-39** are extremely various in terms of death cause structure. While 70% of deaths are caused by three or two classes of diseases in other age groups, mortality in this age group is mostly caused by four classes (external factors, infectious and parasitic diseases, blood circulation diseases and digestive system diseases). At the same time, tumours and respiratory diseases also take a large proportion of deaths. Probably, it can explain such multiple-valued age-specific death rates in these age groups.

The dynamics of mortality has some peculiarities (Fig. 3.2.8). Regarding dynamics and values of death rates, we could notice a probability of stabilization of death rates in the age of 20-24 and gradual increase of death rates in the age of 25-39 by 2010. Later, a gradual decline in death rates in the age of 20-24 should be expected, as well as a faster decline in the age of 25-39.

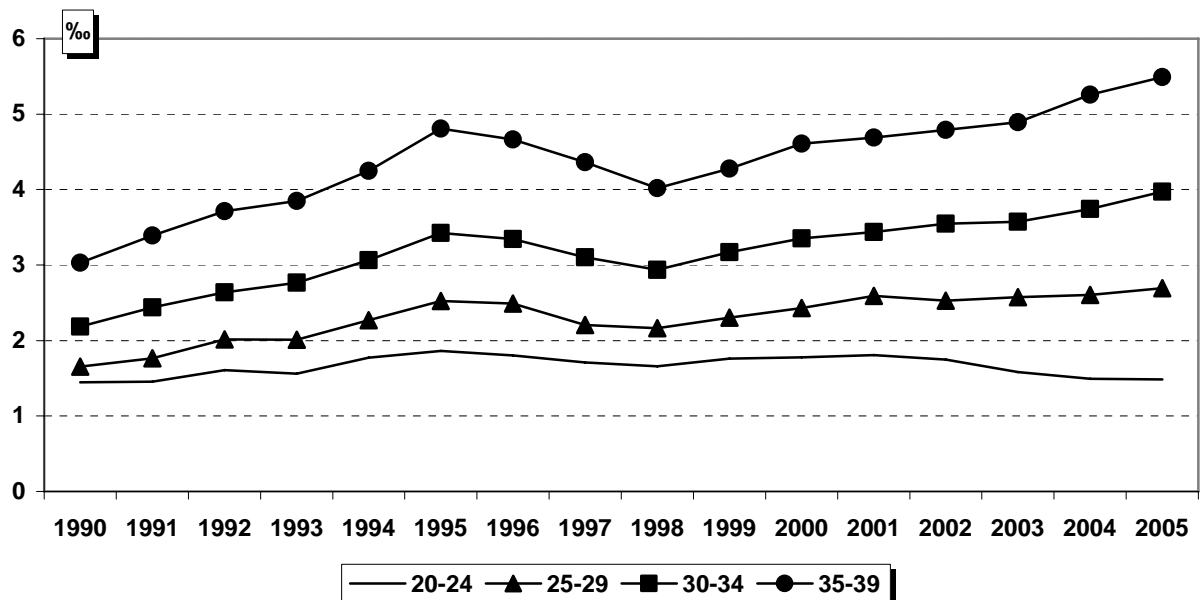


Fig. 3.2.8. Death rates of the population of Ukraine at age 20-39.

In 2012-14, death rates of these age groups will reach the local minimum of 1998 (Fig. 3.2.9). Later, the rates of mortality decline will slow down, but the general direction of mortality decline will be preserved. A

probability to live from 20 to 40 will make 967‰ for males and 989‰ for females by the end of the investigated period (Table 3.2.2).

The age group of **40-59** is characterized by more homogenous structure of death causes and corresponding unidirectional dynamics of changes (Fig. 3.2.9). The external death causes are inferior to blood circulation diseases and tumours in this age group.

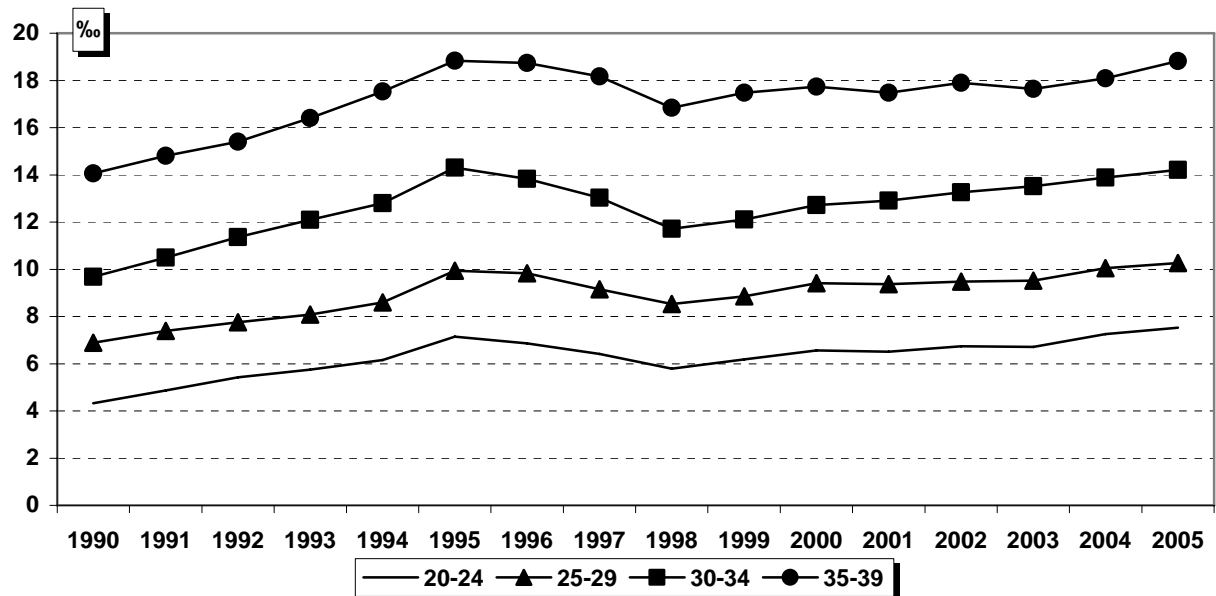


Fig. 3.2.9. Death rates of the population of Ukraine at age 40-59.

A medium projection suggests a slower growth of mortality in these age groups and a decline in mortality, starting from 2010-12. In 2011, mortality will reach the rate of 1998, while in 2015 – the rate of 1990. A further decline in mortality is related to a replacement of blood circulation diseases and tumours to elder population groups and decrease of mortality, caused by external factors.

A probability to live from age 40 to age 60 will make 838‰ for males and 938‰ for females by the end of the investigated period.

Life expectancy at reaching **60** will make 17.8 years for males and 22.6 years for females by 2050 (Table 3.2.3).

An exhaustion of a potential of mortality increase in the age of 25-50 will result in stabilization of death rates in these age groups. As a result, there will be a stagnation of life expectancy at the achieved levels of 61.3 for males and 73.3-73.5 for females in 2006-2010. In accordance with probable decline in mortality in these broad age groups, life expectancy at birth will increase to 71.5 for males and 79.5 for females by 2050 (Table 3.2.3).

High projection

Reduction of death rates (on 5.5%), which took place in the 1st quarter of 2006 in comparison with the same period of 2005, could prove some

positive shifts in mortality decline in Ukraine. As age structure of the population is not changing too fast for several years, a decline in the total number of deaths could indicate some reduction of mortality.

It is known that infant mortality is best regulated by improvement of the living standards and expansion of access to medical services. So, according to this projection variant, we suggest more intensive decline in infant mortality in 2008, as compared with „low” and „medium” variants. A probability to die in the age under 1, expected in 2007 in the result of introduction of new approaches to estimation of live births, will make 12.4‰ for boys and 9.5‰ for girls. These rates will decrease in accordance with a linear trend by the end of the investigated period, reaching 5.5 ‰ for boys and 4.5‰ for girls.

The age groups of **1-19** are characterized by rather stable and prolonged trend of mortality reduction. So, it looks reasonable to extend this trend for the future. The rates of mortality reduction will respond to those, observed during 2000-05 until 2010. They will slow down later. Gender inequality in probabilities to live from age 1 to age 20 will notably decrease - from 987‰ for males and 993‰ for females in 2005 to 993 and 997‰ in 2030. In 2050, these rates will make 995 and 997‰ for males and females correspondingly (Table 3.2.2).

The situation is not so unambiguous in other age groups. Thus, death rates of the population aged from **20 to 39** are influenced not only by traumas, poisonings and external factors, infectious and parasitic diseases, but also by blood circulation and digestive diseases (Table 3.3.1). Death rates are very high in this age, so the largest increase of life expectancy has to take place there. While a probability to live from age 20 to age 40 was 899‰ for males and 969‰ for females in 2005, the corresponding rates in Sweden made 986 and 993‰, in Norway – 980 and 991‰, in Poland – 967 and 991‰.

So, we've put a probable decrease of mortality into this projection starting from 2006 with rates, which were observed in 1996-1998. A probability to live from age 20 to age 40 will increase to 909‰ for males and 973‰ for females in 2008. In 2050, these rates will reach 980 and 992‰.

Death rates in a broad age group **40 - 59** are characterized not only by a trend to increase. There is a very negative phenomenon in these age groups - a reduction of the medium age of deaths, caused by those diseases, which determine a general trend of death rates (blood circulation diseases and tumours). The role of these determinants is increasing in the ages 40-59; they occupy the first places in the structure of mortality (Table 3.2.1). So, positive trends should be related not only to decrease of death rates, but to their replacement to elder age groups.

Sedentary life-style is among the determinants of high death rates, caused by blood circulation diseases, in Ukraine. A sharp increase of the private cars number and large mechanisation of industries and homework

results in hyperkinesias, which in turn leads to hypodynamia. That's why propaganda of a healthy way of life and increase of mobility will contribute to reduction of death rates, caused by these factors.

According to this variant, a probability to die from age 40 to age 60 will gradually increase from 667 and 879‰ in 2005 to 847 and 938‰ in 2030 and to 912 and 945‰ in 2050.

Death rates of the population in the age of **60 and over** will stabilize at the rate of 2005 and slowly increase by 2030. The rates of life expectancy increase will grow in the result of probable improvement of medical services and living standards of pensioners. The average life expectancy at reaching 60 will make 20.7 for males and 23.7 for females by 2050.

The main increase of life expectancy will be observed in the age groups of 25-59. Life expectancy at birth could reach 76.5 for males and 81.0 for females by 2050 (Table 3.2.3).

Normative projection

As it is known, structural-analogue projections are based on assumptions on similarity of dynamics and structures of some phenomenon in the developed and developing countries. Such projections were used in the national demographical studies for perspective analysis of the future dynamics of life expectancy and death rates⁶⁰.

Analysis of the present life tables in different countries of Europe indicates probable vectors of changes in mortality regime in the countries with high death rates (such as Ukraine) towards regimes, common for the countries with low death rates (North and Western Europe). As it is shown at Fig. 3.10, there is some dependency in evolution of age-specific regime of mortality. It is also proved by comparisons of the life tables of a single country, developed at different times.

Thus, probabilities to die, estimated by the national life tables of 2000-2005, are presented at Fig. 3.10. This Figure shows a basic inequality in the mortality regime of different populations. Thus, the highest mortality is observed in Russia and Ukraine. There is a clear trend of over high male mortality among children and working-age population of these countries, as compared with residents of other countries. Particular losses are observed in the young population groups and among persons of the working-age. Correspondingly, the basic reserves of a probable life expectancy increase in Ukraine are common for these age groups, so the largest growth of this indicator should be expected namely there.

⁶⁰ Libanova E.M. Life expectancy of the population (Experience of a regional study) national Academt of Sciences of Ukraine, Kyiv, 1991, pp.75-77. (Либанова Э.М. – Продолжительность жизни населения (Опыт комплексного регионального исследования) АН Украины. СОПС Украины АН Украины; Отв. ред. В.В. Оникиенко. К.: Наукова думка, 1991. – С. 75-77); Pyrozhev S.I. Labour potential in demographic dimension – Kyiv, 1992, p.140 (Пирожков С.И. Трудовой потенциал в демографическом измерении. – К.: Наукова думка, 1992. – С. 140).

Such possibilities are related to peculiarities of the prevailing death causes in some sex-age groups of the population. Absolute domination of external death causes is observed in the age groups under 20; these causes are also prevailing in the age of 20-39, while infectious and parasitic diseases are also important (Table 3.2.1). These diseases, which could be easily eliminated under conditions of the appropriate state policy, could provide a basic increase of life expectancy.

As to elder population of the working-age (40-59), infectious diseases give way to blood circulation diseases and tumours, which gain importance with age. External causes still are important. There are some reserves of mortality reduction in this broad age group.

Vital activity of a human organism is notably declining in the age 60 and over, resulting in an increase of mortality intensivity. Retrospective time series of death rates, as well as comparisons with developed countries, show that possibilities of mortality reduction are very small in these age groups. Thus, a comparison of age-specific probabilities to die of males in Ukraine and Norway shows that death rates of the Ukrainian males in the age of 30-40 exceed the analogues of Norway in 6-8 times, while this gap makes "only" 1.5-2 times in elder ages (70-80).

So, this projection variant suggests a faster decline in mortality among children (5-11) and partially among the "young" (25-30) and "middle-aged" (30-45) working-age populations.

Peculiarities of decline in mortality, caused by external factors, will contribute to a larger increase of life expectancy by 2020 (correspondingly on 0.52 and 0.31 years for males and females). Thus, life expectancy at birth will reach 69.4 for males and 78.1 for females by 2020.

A rate of the yearly growth of life expectancy is rather high for such inert parameter. But, there are some reasons of such situation:

- according to the expert estimations, such rates respond to the age, when endogenic death causes start to play an increasing role. So, a decline in the external death causes importance could be rather fast.

- life expectancy of the population of Ukraine has already reached similar figures 20 years ago: almost 67 for males and more than 75 for females.

- life expectancy of males in Poland, which could be a referent sampling population, has been steadily increasing averagely on 0.35 years annually during 13 years; moreover, it had a „higher start” – from the age of 66.1 in 1991. The Ukrainian life expectancy of 2005 is too short; it could consist of even larger „growth potential”.

- finally, a normative projection is only a strategic checkpoint in a struggle for life expectancy increase⁶¹.

⁶¹ Voytenko V.P. Mortality and life expectancy: analysis and projection. – Kyiv, 1990, p.167 (Войтенко В.П. Смертність і тривалість життя: аналіз та прогноз. – К.: Здоров'я, 1990. – 167 с.)

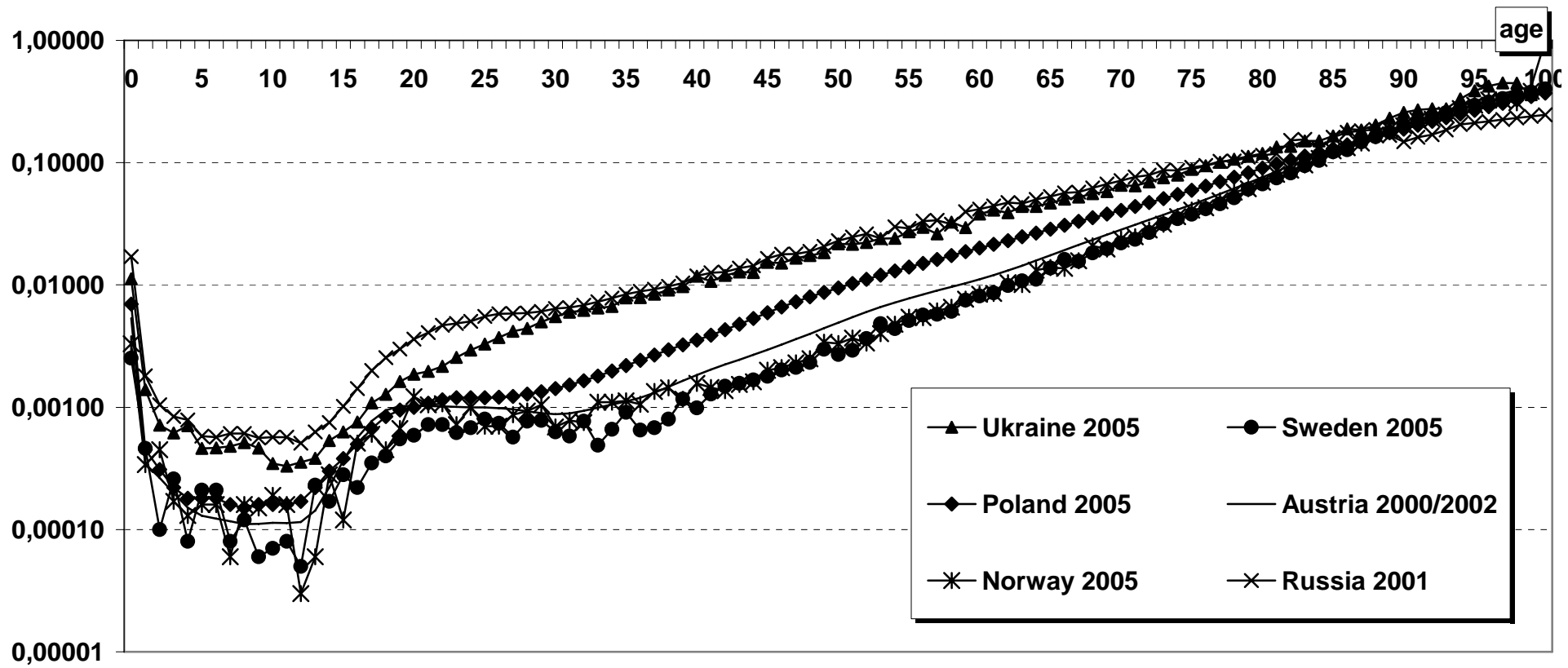


Fig. 3.2.10. Probabilities to die for males based on the life tables in some countries of Europe (logarithmic scale)

The growth rates will slow down after 2020 due to exhaustion of the growth potential (Fig. 3.2.11 and 3.2.12). As to the end of the investigated period, an increase of life expectancy will take place with slower rates (0.16 for males and 0.07 for females).

Thus, according to a normative variant of projection, life expectancy at birth will reach 78.42 for males and 82.78 for females by 2050, while probabilities to die in the age under 1 – 2.52‰ for boys and 2.33‰ for girls (such rates were observed in Sweden in 2005).

Constant coefficients

A hypothesis of preservation of age-specific death rates during the whole investigated period is reasonable, as its results could be compared with other variants of projections. Such projection is sometimes called a warning projection. It indicates demographic dynamics, which could be observed given there are no changes in natural and mechanic movements of the population. This projection variant is widely used by the UNO experts; it also has been used by the national demographers.

Thus, regime of mortality, used in this variant, responds to life expectancy of 2005 – 61.5 for males and 73.4 for females. A probability to die among infants is estimated based on the formula of R.Beck; the corresponding rates are 11.23‰ for boys and 8.67‰ for girls.

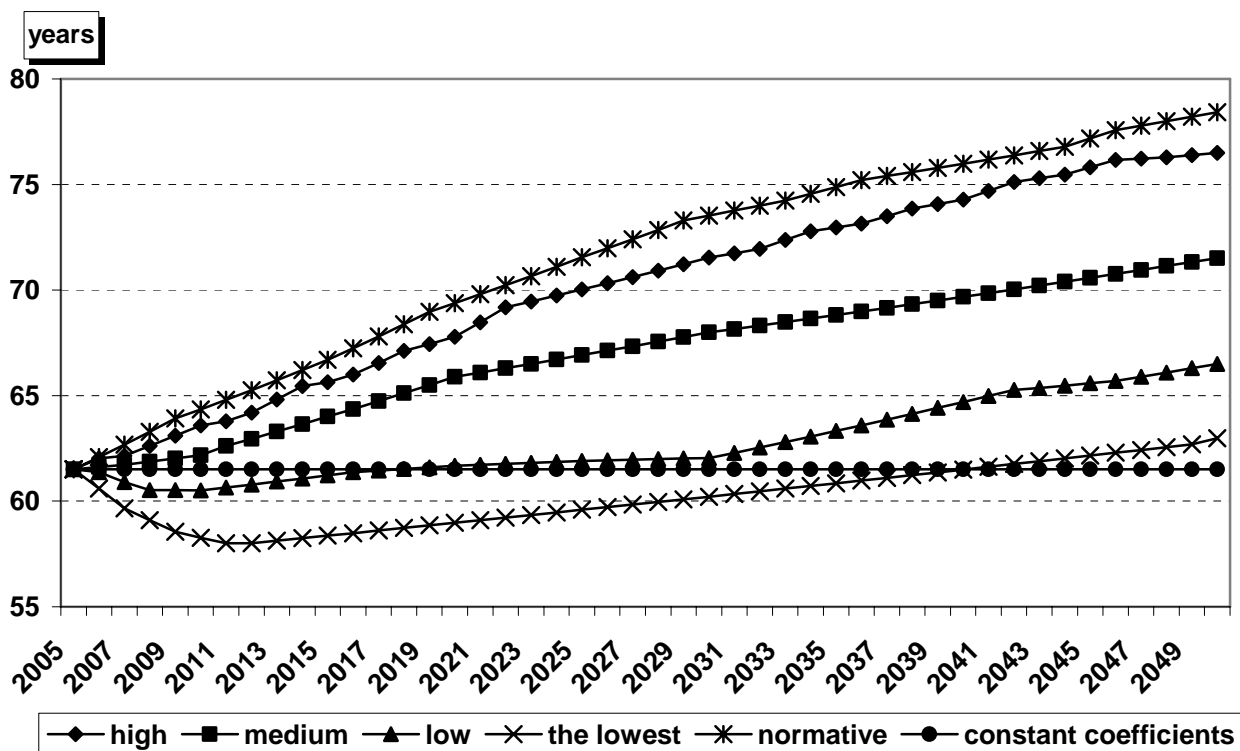


Fig. 3.2.11. Average life expectancy at birth in accordance with different variants (males).

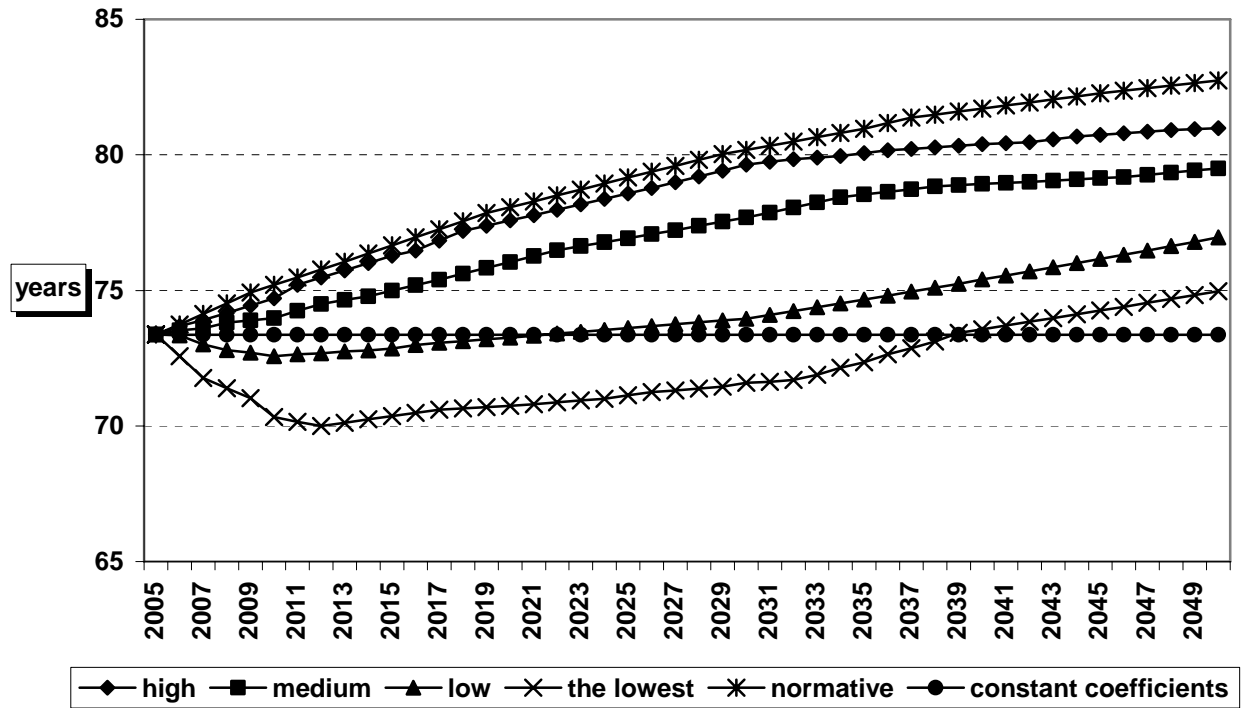


Fig. 3.2.12. Average life expectancy at birth in accordance with different variants (females).

Table 3.2.2. Probability of reaching some age in different age intervals in accordance with different variants of mortality projection

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
males										
1-20										
High	987	990	991	992	993	993	994	994	995	995
Medium	987	989	990	991	992	992	993	993	993	993
Low	987	987	988	988	988	988	989	990	990	991
The lowest	987	985	985	986	986	987	987	988	988	989
Normative	987	989	991	992	993	994	995	995	996	996
20-40										
High	899	916	929	942	953	960	966	971	977	980
Medium	899	903	919	934	941	949	953	958	962	967
Low	899	889	897	901	903	905	916	928	935	943
The lowest	899	845	845	854	863	872	881	890	899	910
Normative	899	919	933	948	958	967	972	977	981	986
40-60										
High	667	715	753	789	825	847	867	884	904	912
Medium	667	669	705	741	760	779	793	808	823	838
Low	667	641	655	665	669	672	695	719	734	749
The lowest	667	620	621	630	639	648	657	667	676	688
Normative	667	722	764	809	842	871	890	904	920	935
females										
1-20										
High	993	995	995	996	996	997	997	997	997	997
Medium	993	994	995	995	996	996	996	996	996	996
Low	993	992	992	993	993	993	994	994	995	995
The lowest	993	991	991	991	991	992	992	993	993	994
Normative	993	994	995	996	996	997	997	997	997	998
20-40										
High	969	976	981	984	987	989	990	991	991	992
Medium	969	972	976	979	983	986	988	988	989	989
Low	969	964	965	967	968	970	973	976	979	982
The lowest	969	940	939	942	945	949	954	964	969	974
Normative	969	975	979	983	985	988	989	991	992	993
40-60										
High	879	901	915	924	931	938	940	942	944	945
Medium	879	889	899	909	917	924	931	934	935	938
Low	879	868	871	876	879	883	891	899	907	915
The lowest	879	852	853	856	860	864	871	882	888	894
Normative	879	897	911	923	932	939	945	950	954	956

Table 3.2.3. Life expectancy at reaching different age in accordance with different projection variants

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
High										
Males										
e0	61.5	63.6	65.6	67.8	70.0	71.5	73.0	74.3	75.8	76.5
e15	47.6	49.6	51.6	53.7	55.9	57.3	58.7	60.0	61.4	62.1
e45	22.8	24.0	25.5	27.1	28.8	29.9	31.0	32.0	33.1	33.6
e60	13.8	14.2	15.3	16.3	17.5	18.2	18.9	19.6	20.4	20.7
Females										
e0	73.4	74.7	76.3	77.6	78.6	79.6	80.1	80.4	80.7	81.0
e15	59.4	60.6	62.1	63.4	64.3	65.3	65.7	66.0	66.3	66.5
e45	31.4	32.2	33.5	34.5	35.3	36.2	36.5	36.8	37.0	37.2
e60	19.1	19.4	20.5	21.4	22.1	22.8	23.1	23.3	23.5	23.7
Medium										
Males										
e0	61.5	62.2	64.0	65.9	66.9	68.0	68.8	69.7	70.6	71.5
e15	47.6	48.2	50.0	51.9	52.8	53.9	54.6	55.5	56.3	57.2
e45	22.8	23.2	24.4	25.6	26.2	26.9	27.5	28.1	28.7	29.3
e60	13.8	14.4	15.0	15.7	16.0	16.4	16.7	17.1	17.4	17.8
Females										
e0	73.4	74.0	75.0	76.0	76.9	77.7	78.5	78.9	79.1	79.5
e15	59.4	60.0	60.9	61.9	62.7	63.4	64.2	64.6	64.8	65.1
e45	31.4	31.8	32.5	33.4	34.0	34.5	35.2	35.5	35.7	36.0
e60	19.1	19.2	19.8	20.5	21.0	21.3	21.9	22.2	22.3	22.6
Low										
males										
e0	61.5	60.5	61.2	61.7	61.9	62.0	63.3	64.7	65.6	66.5
e15	47.6	46.7	47.3	47.8	47.9	48.0	49.3	50.6	51.4	52.3
e45	22.8	22.2	22.5	22.8	22.9	22.9	23.7	24.5	25.0	25.6
e60	13.8	13.6	13.8	13.9	13.9	13.9	14.4	14.9	15.2	15.6
Females										
e0	73.4	72.6	72.9	73.3	73.6	74.0	74.7	75.4	76.2	77.0
e15	59.4	58.7	58.9	59.3	59.6	59.9	60.5	61.2	61.9	62.6
e45	31.4	31.0	31.2	31.4	31.6	31.9	32.4	32.9	33.4	34.0
e60	19.1	18.8	19.0	19.2	19.3	19.5	19.8	20.2	20.6	21.0
The lowest										
Males										
e0	61.5	58.3	58.4	59.0	59.6	60.2	60.8	61.5	62.2	63.0
e15	47.6	44.5	44.6	45.1	45.7	46.3	46.8	47.4	48.1	48.8
e45	22.8	21.6	21.7	21.9	22.2	22.4	22.7	22.9	23.2	23.5
e60	13.8	13.4	13.4	13.5	13.7	13.8	13.9	14.0	14.1	14.3
Females										
e0	73.4	70.3	70.4	70.7	71.1	71.6	72.4	73.6	74.3	75.0
e15	59.4	56.5	56.5	56.8	57.1	57.6	58.3	59.5	60.1	60.8
e45	31.4	30.0	30.0	30.2	30.4	30.7	31.1	31.8	32.2	32.6
e60	19.1	18.1	18.1	18.2	18.4	18.6	18.9	19.4	19.7	20.0
Normative										
Males										
e0	61.5	64.4	66.7	69.4	71.5	73.5	74.9	76.0	77.2	78.4
e15	47.6	50.4	52.7	55.3	57.3	59.2	60.5	61.5	62.6	63.8
e45	22.8	24.8	26.5	28.5	30.0	31.4	32.4	33.1	34.0	34.8
e60	13.8	15.1	16.2	17.5	18.4	19.3	19.9	20.4	20.9	21.4
Females										
e0	73.4	75.2	76.7	78.1	79.2	80.2	81.0	81.7	82.3	82.7
e15	59.4	61.1	62.5	63.8	64.8	65.8	66.5	67.1	67.6	68.1
e45	31.4	32.8	33.9	35.0	35.9	36.7	37.3	37.9	38.3	38.6
e60	19.1	20.2	21.1	22.0	22.6	23.3	23.8	24.2	24.6	24.9

3.3. Projection of the external migrations of the population of Ukraine

Migration of a population is a complex process investigated by researchers in different fields: demography, economics, geography, history, ethnography, sociology, jurisprudence, statistics etc. There are two basic forms of migration - stationary migration, related to a change of the place of residence and registered by state statistics, and labour migration – short-term trips to work outside a locality without changing the place of residence. At present, labour migration, external in particular, is highly spread in Ukraine and causes numerous social problems; but, regarding demographic analysis and forecasting, it is more important to estimate the trends of stationary migration.

A projection of migration and estimation of its future rates are important components of demographic projections. The future population size and its structure in Ukraine will primarily depend on migration processes. The point is that the latter provide not just direct impact through inflow of migrants, but first of all - indirect impact of migration on the long-term demographic development through structural and qualitative shifts. Many years of surplus of immigrants over emigrants result in younger age structure of the population, vast majority of migrants being young people. Hence, given positive net migration, the share of young people in the population will grow, which will lead to the increase of fertility and decrease of mortality. And vice versa - years of surplus of emigrants over immigrants will result in the opposite situation. Moreover, if numerous immigrants from countries with traditionally high fertility settle down in Ukraine, it will also contribute to the increase of fertility.

A large experience of projecting of demographic development is accumulated in Ukraine; the scientific methodical approaches to estimation of perspective parameters of fertility and mortality are developed. But, the national researchers usually estimate only general net migrations for the investigated period (by methods of expert estimations or extrapolation) with its future division into age groups. Below, the projection, based on fundamentally different methods of projection of migrations is presented, developed by estimation of the perspective parameters of inflows and outflows, as well as of sex-age structure of migrants by a type and geographic direction of movement.

Producing reliable migration projections is a much more complicated task than forecasting the parameters of natural movement of a population. While natural reproduction means the self-development of a single population, migration results from an interaction of two geographically separated groups of people. That is why the amount and direction of future external migration in Ukraine depend not only on internal determinants, but also on external factors. The decisive impact of territorial differentiation of social conditions and living standards on migration processes is beyond

any doubt, but numerous attempts of researchers from different countries to establish a direct mathematical dependency between corresponding quantitative data have not produced desired results. The only reliable method for predicting amounts of migration is based on expert judgements.

Naturally, a projection of migration cannot be as correct as projections of fertility or mortality. It is the result of: 1) relatively low inertness of migration processes (a change in socio-economic trends affects migration rather quickly, while natural movement lags behind the changes in external conditions); 2) insufficient reliability of input data (there are problems with migration accounting even in the richest countries with highly developed statistics). We should admit that correctness in migration projections is always lower than in natural movement projections. The task of a researcher is not to remove the objective difference in the level of reliability between the components of a demographic projection, but to minimise this difference. This problem is solved by a comprehensive analysis of current migration trends and use of correct methods of migration forecasting.

Trends of migratory processes

The main trends in migration of the population of Ukraine between the last population census in the former USSR (1989) and the first Ukrainian census (2001) were:

- ◆ decrease in the total rate of the population mobility;
- ◆ reduction of the intensity of migration relations with former USSR republics;
- ◆ expansion of contacts with the “old” foreign countries: formation of a stable emigration flow to Europe, America and Israel (first, representatives of some ethnic groups – Jews, Germans, Greeks, Hungarians, Czechs etc, later - Ukrainians and Russians), rotation of educational migrants from developing countries (people graduating from Ukrainian colleges return to their native countries and are replaced by other people);
- ◆ “family” character of migration – reduction of the share of young people and growth of the share of middle-aged people, primarily among external migrants;
- ◆ considerable migration growth in late 1980’s and early 1990’s, which gave place to a long period (starting from 1994) of surplus of emigrants over immigrants (by over 100 thousand people a year);
- ◆ appearance and development of the new forms of migratory movements for the post-soviet period: labour migration, refugees, transit of illegal migrants, return and settlement of the deported nations.

According to the data of the First All-Ukrainian Population Census of 2001, 37.2% of the permanent residents of Ukraine have changed their

place of residence at least once in their lives. As compared with 1989 (according to the results of the last Soviet Population Census), this parameter has decreased more than on 7 percentage points. Many ethnic Ukrainians and representatives of the deported nations have returned to Ukraine after declaration of the independence; instead, numerous groups of Russians and representatives of other ethnic groups of the former USSR have returned to the countries of origin. As compared with 1989, the Population Census of 2001 registered an increase of a share of persons, who have been born in Ukraine, while a share of persons, born in the countries of CIS and Baltic States, has notably dropped (Table. 3.3.1). A small increase of a share of persons, born in Uzbekistan, was observed due to return of Crimean Tatars, as some of them were born after the deportation.

Table. 3.3.1. Structure of the Ukrainian citizens by place of birth, % (according to the Population Censuses of 1989 and 2001)

<i>Country of origin</i>	<i>1989</i>	<i>2001</i>
Ukraine	86.2	88.9
other countries of the former USSR	13.6	10.1
including		
Russia	10.1	7.5
Belarus	0.8	0.6
Kazakhstan	0.7	0.5
Moldova	0.4	0.3
Uzbekistan	0.3	0.5
outside former USSR	0.7	0.6
Unknown	0.2	0.4

The annual number of migrants has rapidly decreased (regarding stationary migration, related to a change of official place of residence, which is registered by the state statistics): from 3-3.5 mln. persons in the end of 1980's – in the beginning of 1990's to 1.5 mln. in the mid 2010's. A high rate of migratory activity during the Soviet times resulted from unification of a way of life in the whole territory of the state (at least, in the cities), as well as from presence of workplaces; so, the citizens of the former Soviet Union have been assured in finding a job and of incomes after moving.

Decrease in the population mobility was observed in 1990's due to economic crisis and decline in the population living standards, resulting in absence of money, needed for organization of a moving. The decline in mobility resulted also from wide-spread unemployment practically in all regions; thus, the citizens valued their workplaces more, than during the Soviet times. Another reason of decrease in mobility is found in disintegration of the Soviet Union: the differences in social and language environment have increased among the former republics; there are some specific legislations and currencies in each of them. The gross migration

among the states has dropped more notable, as compared with the gross inter-regional migration, – from about 1.5 million to 74.6 thousand persons in 2005. Moreover, a decline in gross migrations results exclusively from the external migrations in the second half of 1990's and at the beginning of the XXI century. Recently, the trend to a small increase of the inter-regional migration has been observed, while the external gross migration is decreasing.

The intensity of migratory connections with countries of the former USSR has notably decreased. Rather active population exchange still exists with most close countries of the CIS (in terms of ethnicity and geography) – Russian Federation, Belarus and Moldova. At the same time, migratory connections with the Baltic States have practically come to naught, while contacts with Transcaucasia and Central Asian states have become unilateral – the intensity of the population inflow from these regions is kept at a rather high rate, while the opposite flow is gradually decreasing.

With breaking-down of the “iron curtain” in the second half of 1980's, emigration outside the USSR was activated. While the “old foreign” countries covered 10-12% of emigrants from Ukraine during the last years of the USSR, they covered about 20% of them in the first half of 1990's and almost 40% presently. Israel, Germany and the USA have been and still are the main destination countries of emigration (outside the former USSR). Starting from 2001, Germany occupies the first place, leaving Israel behind; in 2002, Israel moved to the third place, being inferior to the USA. But, Israel still occupies the first place by relative intensity of departures from Ukraine; the next positions are taken by Moldova, Russia, Belarus, Germany and majority of the CIS countries. The main migratory partners in terms of arrivals to Ukraine (by relative parameters) are Moldova, Russian Federation, Armenia, Israel and Belarus.

Net migrations have been close to zero until 1990's in Ukraine. A sharp migratory growth was observed during 1991-1992 (reaching the largest after-war rate in +288.1 thousand persons (+5.5‰)); an extremely large decrease took place during the next two years (up to -140 thousand persons or -2.8‰ in 1994) (Fig. 3.3.1). A new splash of migratory losses took place in 1996 after a decline in the negative net migrations in 1995 – up to -131.1 thousand persons. But, a module of the negative net migrations dropped again next year – more than in 1.5 times. Subsequent decline in this parameter was observed in 1999-2000 – more than twice in comparison with 1998. It resulted from a decline in emigration to Russian Federation due to the war in Chechnya (Fig. 3.3.1). Generally, Ukraine lost almost 1.2 mln. persons during the period between the Population Censuses.

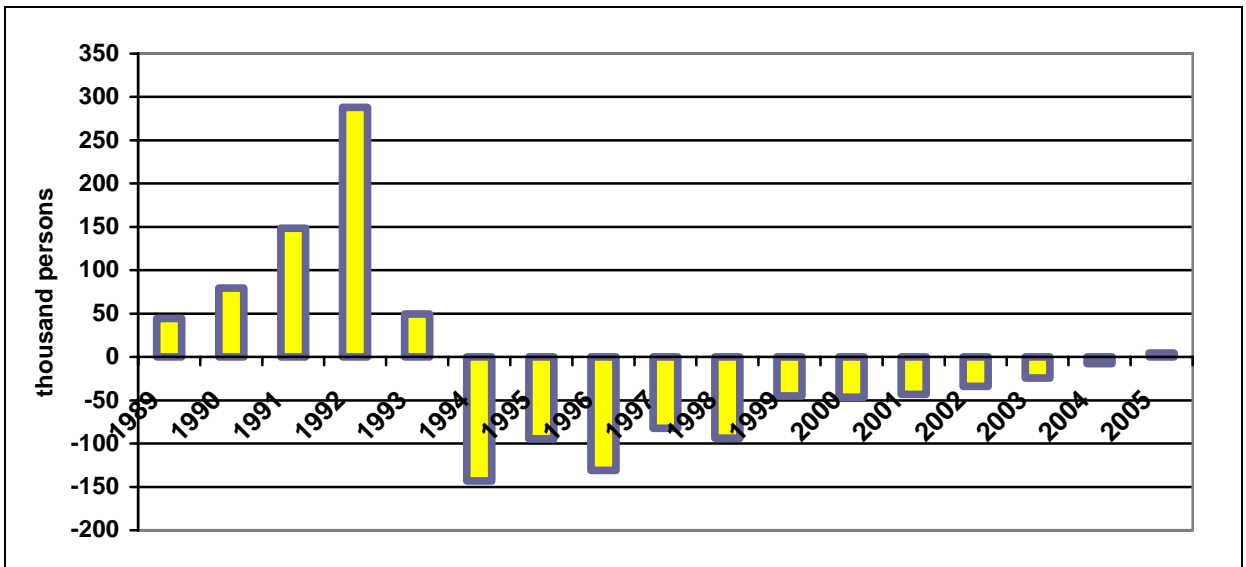


Fig. 3.3.1. Dynamics of net migrations of the population of Ukraine in 1989-2005 (according to the current statistics)

Recently, the scales of the migratory population losses have decreased in Ukraine; an exceeding of emigration over immigration was 33.8 thousand persons in 2002, 24.2 thousand persons in 2003, 7.6 thousand persons in 2004, while a transition to the positive net migrations was observed in 2005 (+4.6 thousand persons).

Sex-age structure of migrants has changed during 1990's. Thus, an advantage of young migrants has become not as large as 10-12 years ago: stationary migration has mostly family character in Ukraine. The positive shifts of 2004-2005 occurred mostly due to individual migrants, while net family migrations were negative in 2004 (Fig. 3.3.2): while net migrations of the total population were -0.16‰, net migrations of the population aged 17-18 was +0.14‰, of children aged 0-14 -0.23‰, of their parents (aged 23-34) – -0.40‰. Net family migrations were negative in 2005, reaching zero rates, while net total migrations were positive (Fig. 3.3.3).

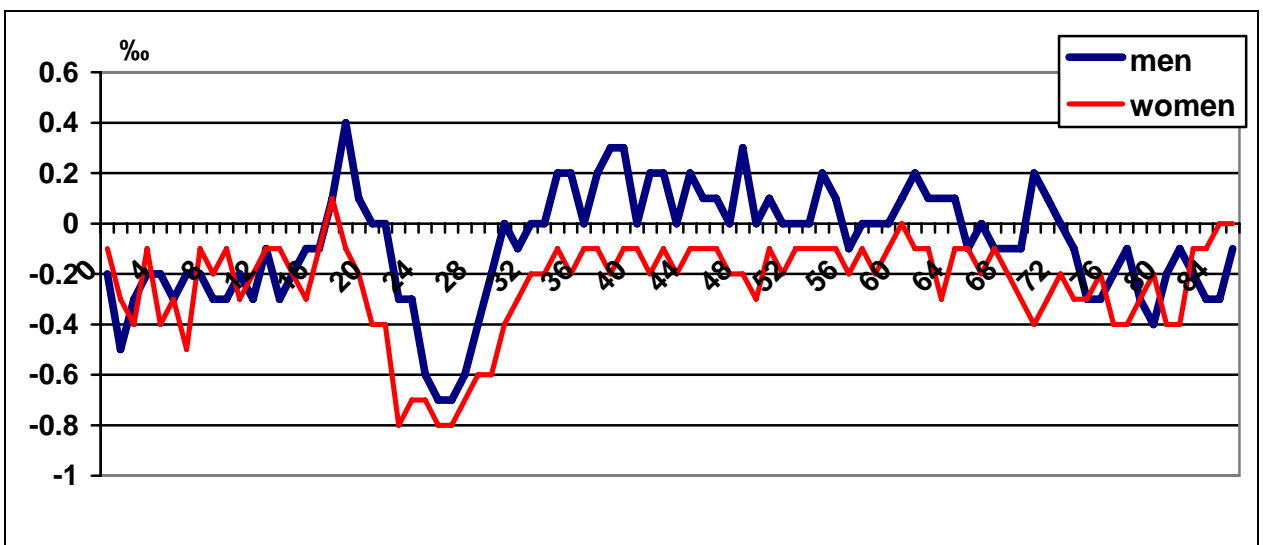


Fig. 3.3.2. Net migrations in Ukraine by age groups, 2004.

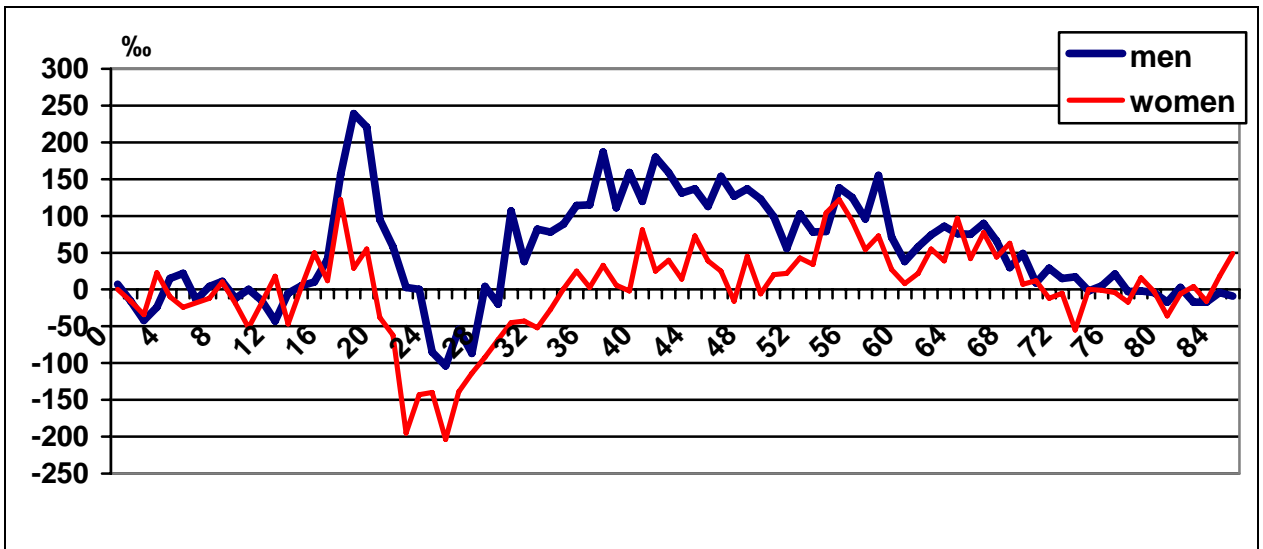


Fig. 3.3.3. Net migrations in Ukraine by age groups, 2005.

Even given positive net migrations, Ukraine still loses its educational potential: while the average number of years of study of immigrants was 12.3 years in 2005 (this figure was almost equal among immigrants from the “new” and the “old” foreign countries), the average length of study of emigrants to the post-soviet countries was 12.4 years, of emigrants to the “old” foreign countries – 12.9 years.

As a result of the limited possibilities of employment at the official labour market in Ukraine, external labour migrations of the Ukrainian citizens have become the objective reality and mass phenomenon. Contrary to stationary migrations, labour migrations do not result in a change of the population number in a country or a region (except, in rare instances of transition of labour migrations into stationary ones) and correspondingly in a direct impact on the living potential, sex-age structure and educational attainment of the population. At the same time, labour migrations are determining in realization of labour potential; also, their indirect impact on transformation of demographic processes could be rather strong.

Labour migrations make a multiple-valued impact on demographic situation. On one hand, labour migrations lead to increase of instability of marriages (due to weakening of family ties in the result of leaving of a family member abroad for a long time); it could make a negative impact on fertility. Also, frequent trips and harassing labour worsen the migrants' health, leading to a untimely death. But, on another hand, the costs, earned by labour migrants and “shuttle-traders”, could improve the possibilities of households in childcare, expand access to high-quality medical services and leisure.

By different estimations, the scales of labour migrations make from 1 to 5 million persons; the most real estimations provide figures in 2-2.7 million persons. There are some basic destination centres for the Ukrainian labour migrants: Russia (40-50% of total migrants), Poland (15-20%),

Czech Republic (10-12%), Italy (about 10%), and Portugal (5-8%). Also, there is important variation in directions of the external labour migrations of men and women. Thus, a sharp prevailing of women is observed among labour migrants, moving to Italy; labour migration to Turkey, Greece and Japan also is mostly "female". Russia and Portugal attract mostly male migrants from Ukraine; women make about a third part of migrants to Poland and about a quarter of migrants to Czech Republic.

Labour migrants are almost exclusively persons in the age of 20-49, i.e. the representatives of the most economically productive age groups. The maximal rate of participation in labour migrations is observed in the age of 25-29. Rural residents are involved into labour migrations more often, as well as married men and women. It can be explained by more important needs in the "migration money" for family budgets, as compared with the budgets of single persons. But, the highest intensity of labour migrations is common among divorced persons, who have experience of family life and earning of incomes for a family, but are not tied by family duties and do not experience the risk of losing of a family in the result of the prolonged separation. Moreover, divorced persons often face a problem of raising of a child without support of another parent (it particularly concerns female migrants), so labour migration becomes the only way to solve this problem.

Persons with vocational and complete secondary education become labour migrants more often. Low-educated persons have initially limited possibilities of employment abroad because of insufficient qualification, while well-educated groups are less interested in this type of employment, as they have better opportunities of employment in Ukraine. Almost $\frac{3}{4}$ of persons, who have experience of labour migrations, would like to repeat their trips.

The absolute majority of the Ukrainian labour migrants (at least $\frac{3}{4}$ of them) work illegally, resulting in the numerous violations of their rights. Conditions of work of the Ukrainian workers abroad absolutely do not correspond to the normatives, established as in Ukraine, as in a recipient country. Irregular working hours are usual, as well as poor safety conditions and involvement into hazardous works; there are also cases of delay with payment of wages. Many of them experience a danger to find themselves in inappropriate conditions or to become victims of trafficking. These persons stay outside the legal environment of Ukraine, so they could face psychology of social and legal nihilism. Young women, who have become the victims of trafficking, receive psychological traumas and could be „excluded” from reproduction. Deterioration of health could result from heavy and intensive labour and illegal labour migrations, as well as high death rates. As a usual, health care is provided illegally (through personal contacts of an employer with medicians), i.e. there is no appropriate treatment. Re-adaptation to the Ukrainian society, which has changed during their absence, is another important problem of long-term migrants (a

trip to Ukraine actually means the loss of a job for illegal migrants, while legal long-term migrants have a possibility to visit relatives and keep permanent social contacts).

The Ukrainian male labour migrants are mostly employed in construction. Also, a large share of migrants, employed in transport and communications, is observed in Russia. There are many migrants, employed in agriculture, in Poland. The contingent of the Ukrainian sailors, employed at foreign shuttles, is also numerous. The sectoral structure of female employment is different in various countries, depending on the needs of the national economies. Among women, working in Russia, the largest contingents are employed in trade and construction, while in Czech Republic – in public catering and industries (mostly light industry and food processing), in Poland – in agriculture and in home cleaning services. Domestic services provide the main area of employment for the Ukrainian female migrants in Italy. Generally, our citizens are mostly employed in areas, which do not contribute to improvement of skills and training to the new skills. Usually, worse conditions of work abroad are common for the Ukrainian constructors, while better conditions – for sailors and domestic workers.

The average workday duration of the Ukrainian labour migrants exceeds 8 hours (usually it makes 10-12 hours). A workday in 8 hours is a norm for those migrants, who are employed at plants with shift regime of work (correspondingly, duration of a workday reflects duration of a shift).

A monthly wage of the main part of Ukrainians workers abroad is from USD 200 to 1,000. Regarding persons, employed in construction in the neighbouring countries (Russia, Poland, Czech Republic, Hungary), non-skilled workers usually earn USD 200-400, while skilled workers - USD 500-700; these incomes are much higher in Germany, Italy and other countries with developed market economies. The incomes of sailors make about USD 600-1,300 for privates and from USD 1,800 to 4,000-5,000 for commanders. Domestic workers, waiters, caregivers receive about USD 200-300 monthly (in some cases – USD 600 and even USD 1,000), while medicians earn USD 1,000-2,000, IT-specialists – up to USD 5,000. The summary costs, earned by the Ukrainian workers abroad, are estimated in USD 4.7-7.6 billion yearly, making 7-11% of the Ukrainian GDP.

Generally, our citizens are satisfied with conditions of work; they agree to work in intensive operating mode, trying to earn as much money as they can. Their time needs in support of social connections are decreasing (in particular, there is no need to spend some time with families), as they stay in another society. To minimize their expenses in a receiving country, our citizens live in uncomfortable conditions; some of them bring food products with them.

Methodical and methodological approaches to migration projections.

The final result of migration forecasting is obtaining figures of migration growth (decrease) for each sex-age group of the population of Ukraine in each year of the projection period. However, when formulating hypotheses of the prospects of migration development, we should keep in mind that the total net migration of the population (a sex-age group) is only the mathematical difference between two significant values – the number of immigrants and the number of emigrants, and it has no notional capacity by itself. Therefore, correct estimation of predicted net migration requires separate estimations of immigrants and emigrants as intermediate stages of forecasting. This is how this approach to forecasting migration processes differs from the majority attempts to forecast migration made in Ukraine before.

Migration forecasting includes three stages. The first stage is estimation of the future amounts of immigrants and emigrants, as well as of distribution of migrants by geographical directions. Obviously, it is not rational to develop a projection for migration relations of Ukraine with every country of the world - it results in a higher probability of errors whose combination can lead to improper predicted values of net migration. Therefore, forecasting the amounts of international migration flows should be limited to a few groups of countries defined by such socio-economic and geopolitical features as geographical situation, mentality of the population, history and peculiarities of development of migration contacts with Ukraine. The regioning should be based on the fundamental principle: disparities between respective country characteristics within a group should be less significant than between the groups of countries.

Obviously, the first step of such regioning should be a differentiation between so-called “new” and “old” foreign countries, because the long period of being part of a united state will influence, more than any other geopolitical factors, the migration processes for decades. Within the former USSR, Russia can be considered the main migration partner of Ukraine in terms of absolute amounts of immigrants and emigrants. The rest of the former Soviet republics should be divided into western (Belarus, Moldova and Baltic States) and southern ones (Transcaucasia and Central Asia). This differentiation takes into consideration not only geographical situation, but also the features of the way of life of the population in these countries, closeness of their mentality to that of the Ukrainian population. This approach reflects the global division of the world into the East and West.

Similarly, all regions of the world outside the former USSR could be divided into the so-called territories populated by Europeans (TPE) and Eastern countries group. The TPE include Western and Central Europe, North and South America, Australia, New Zealand, and Israel, while Eastern group includes the countries of Asia (except the former USSR and Israel), Africa, and Oceania.

The expert judgement method is used to estimate the key projection elements - the character of developing migration contacts with different groups of countries (trends towards increase or decrease in migration, its acceleration or slowdown), maximal/minimal annual amount of migration flow, the year of reaching this level, etc. Calculation of numerical values of migration parameters during the projection period is done by extrapolation, interpolation and the analogue method. Interpolation is used to estimate a migration flow in each year of the period, if the amount of the flow at the end of the period and the development trend during the period are defined by the expert judgement method.

The second projection stage is estimation of the prospective structure of migrants.

Projection of parameters of inflows to Ukraine and outflows abroad is possible for each sex-age group in two ways:

- ◆ calculation of projected rates of arrivals and departures coefficients by sex-age groups;
- ◆ projection of the total number of immigrants and emigrants with their future division by sex and age.

Investigation of the migratory situation in Ukraine proves that territorial differentiation of sex-age structure of migrants and regional variation of the total population structure are not highly correlated. As a result, there is practically no impact of the population age structure on forming of the structure of emigrants. As to immigrants, their sex-age structure depends on the structure of residents of the countries (regions) of origin of migrants, but not on the sex-age structure of the destination region. The population of Ukraine is not an aggregate, which produces the contingent of immigrants. Thus, the second way of projection of the sex-age structure of immigrants and emigrants is more preferable.

Unfortunately, the state statistics does not provide information on sex-age structure of migrants depending on the country of origin (destination); age structure is available only for people arriving from/departing for the “new” and “old” foreign countries. The analysis of the external migration of Ukraine shows that immigration flows from the former Soviet republics, emigration to the CIS and Baltic states, and emigration to countries outside the former Soviet Union are characterised by almost identical distribution of migrants by sex and age. Only a small number of immigrants arriving from countries outside the former USSR have a specific sex-age structure. It can be accounted for by the specific character this migration flow: more than half of all people arriving from “old” foreign countries are educational migrants, diplomatic representatives, businessmen, etc. These are people who are simply “lost” among relatively large number of external (within the former USSR) migrants and emigrants to countries outside the former USSR.

Considering these differences in the age structures of migrants of different flows, while moving from projecting the amounts of external

migration to estimating the prospective structure of migrants, all emigrants can be estimated together, while immigrants, for the purpose of forecasting their sex-age structure, should be divided into two categories - people arriving from the "new" foreign countries and from the "old" foreign countries.

Besides, there is a possibility that, under certain conditions, new migration flows, which are almost absent now, will develop in the future. They can include: 1) the second wave of people of the deported nationalities returning to Ukraine; 2) people from Afro-Asian countries moving to Ukraine.

The hypothesis on arrival of immigrants from Afro-Asian countries to Ukraine is among basic hypotheses of the project. Such hypothesis is based on inevitable decrease of the population number and corresponding labour force suggestion in the nearest future. The only source of increase (or at least stabilization) of the population of Ukraine, provision of the economy with labour force and support of the necessary level of economic development of territories is provided by migratory processes (in particular, the population number growth is provided only by migrations in many Western European states). Ukraine has to make a choice between combined residence of European and Asian ethnic groups with prospects of forming of a new large Ukrainian nation, similar to the so-called resettlement countries and preserving of the present mental environment given the stable decrease of the population number. The second variant automatically means preservation of the problem, which will be "transferred" to the future generations, being even more problematic. So, there is the next choice: involvement of immigrants to Ukraine on a base of the reasonable migratory policy or their non-controlled inflow after reaching of the critically small number of the population.

The representatives of the Asian and African ethnic groups already demonstrate a will to immigrate to Ukraine (the living standards in the majority of Asian and African countries are much lower than in Ukraine). In case when possibilities of settlement and citizenship (granting with citizenship, social status, etc.) for immigrants from the Third World countries will be better in Ukraine, as compared with the western countries, the number of potential immigrants will grow, so it will be possible to consider selection of the desirable contingents.

Of course, there are problems of changing of mentality of the population of Ukraine and assimilation of immigrants. But, Ukrainians are not genetically homogenous at present as well. Besides Slavonic tribes, representatives of other ethnic groups participated in forming of the Ukrainian ethnos – in particular Turkic people of the Black Sea Shore steppes. The hordes of conquerors crossed the territory of Ukraine many times, making an impact of the genetic fund. Other ethnic groups have been living beside the Ukrainian nation during the whole period of its existence. About fifteen modern nations have or had their compact ethnic

territories within Ukraine.

Thus, under the conditions of a demographic crisis, an inflow of immigrants from Asia and Africa is the only means of depopulation slowdown and of maintaining an acceptable ratio between the number of the most economically productive age groups and older people. This flow will inevitably form the return flow of those migrants who will not be able to adjust themselves to living in Ukraine.

Thus, forecasting the amounts of external migration is undertaken for five geographical directions, but estimating the sex-age structure of migrants in the system of population exchange between Ukraine and other countries of the world requires defining six qualitatively specific components:

- ◆ inflow of people from the “new” foreign countries (except repatriation of people of the deported nationalities);
- ◆ inflow of people from the TPE and educational migrants from Afro-Asian countries;
- ◆ outflow of the population from Ukraine;
- ◆ repatriation of people of the deported nationalities;
- ◆ immigration to Ukraine from Afro-Asian countries ;
- ◆ return migration of migrants.

The first three components exist at present, while the other three will be formed under certain conditions. The prospective distribution of external migrants by sex and age depends on a ratio of these components in the gross migration. The sex-age structure of migrants is calculated separately for these components. The sex-age structure of immigrants from developing countries is defined by analogy with the structure of similar migration flows in other regions of the globe. The age structures of immigrants and emigrants of the projection period are interdependent due to the development of return migration flows.

The total net migration for each sex-age group is calculated as the difference between the sum of immigrants of the respective sex and age of all migration types and the sum of emigrants of the specified sex-age group.

The third projection stage is estimating net migration by the year of birth. This kind of estimation is necessary because the use of the method of age-group shift suggests considering the size of age groups (including migrants) by full years of age as of the beginning of a year. Migrating people, at the moment of migration, can be at the same age as / 1 year older than at the beginning of a year, depending on the date of their migration (before or after their birthday in the specified year).

The analysis of the distribution of migrants by age and the year of birth shows that about 45% of migrants move before their birthdays in the specified year (i. e. at the same age as at the beginning of the year), and 55% move after their birthdays (i. e. at the same age as at the end of the

year). In different years, there can be variations of this ratio, but it is generally stable (differences do not exceed the acceptable error).

Variants of migration projections. Migration projections are usually produced in several variants, in correspondence with probable scenarios of social and economic development of Ukraine and possible changes in the state socio-demographic policy. In fact, the estimation of influence of macroeconomic and geopolitical factors on changes in the population size and structure is among the tasks of demographic forecasting. The data of a variant of migration projection to 2050 are set out below; this projection consists of six variants:

- ◆ high;
- ◆ medium;
- ◆ low;
- ◆ the lowest;
- ◆ normative;
- ◆ constant coefficients.

The first four variants present scientific forecasting of the future migratory development under certain macroeconomic and geopolitical conditions. Unrealistic hypotheses are put in the basis of the last two projections. **The normative variant** of projection suggests complete absence of the external migrations in 2006-2050, **constant coefficients** – preservation of the present rate of net migrations (2005) in each age group for the whole investigated period. Projections of the population number and structure, based on the normative projection and of the projection, fixed on the constant coefficients, present some kind of theoretic models; the aim of these projections is not in reflection of the future demographic situation, but in demonstration of the population development potential, as well as in revealing of impact of different components into the general dynamics of the population number and of reserves of the present situation improvement.

Medium variant

The medium variant of migration projection is probable, given stabilisation of the recent positive socio-economic trends and implementation of the Draft Strategy of Demographic Development of Ukraine in 2006-2015.

The calculation of the medium projection of migrations is based on the following main hypotheses:

- ◆ decrease in the intensity of contacts with the countries of the former USSR will stop (as the intensity is very low now and its further decrease is improbable);
- ◆ positive net migration in the population exchange with these countries in line with the trends of recent years;
- ◆ the second wave of repatriation of people of the deported

nationalities (its amount will undoubtedly be much lower than the flow of 1980's-1990's);

- ◆ decrease in the intensity of permanent emigration to the territories populated by Europeans due to: 1) exhaustion of ethnic component of this emigration; 2) diminution of factors stimulating immigration; 3) expansion of the possibilities of return labour migration to these countries without changing the place of residence;

- ◆ a slight increase of inflows from Europe and America to Ukraine owing to the growing number of foreign companies' offices, joint ventures etc.;

- ◆ formation and development of immigration flows of limited numbers of people from developing countries;

- ◆ increase in the "individual" component of migration (family-type migration is common for periods of economic crises).

If the above hypotheses are realised, the immigration from Russian Federation will gradually increase (up to 50 thousand people a year, i.e. to the rate of 1998-1999) and from other European countries of the former USSR (up to 10-11 thousand people a year or to the rate of 1997); return flows will stabilise during 2006-2025 and gradually grow in the second half of the projection period. In 2006-2015, migration growth in the exchange with the countries of Transcaucasia and Central Asia will sharply rise due to the second wave of people of the deported nationalities returning to Ukraine. Positive net migration in the exchange with this region will remain after the repatriation is over, though the value of net migration will notably drop.

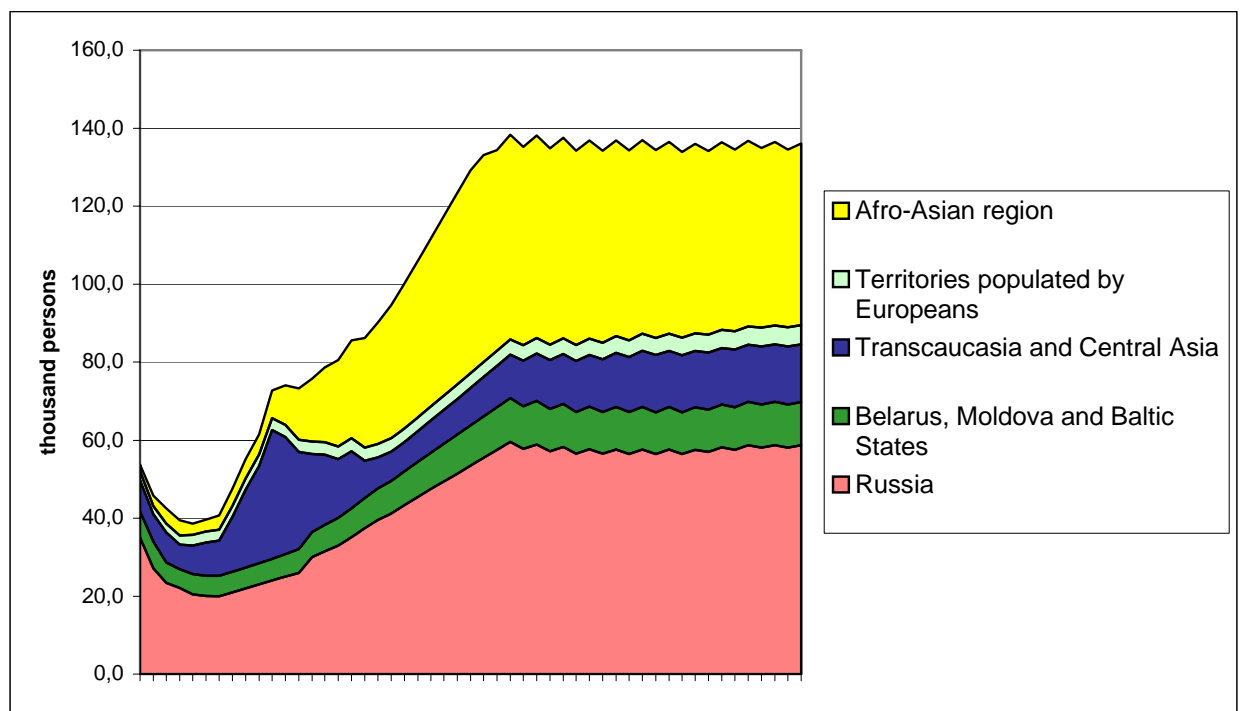


Fig. 3.3.4 Dynamics of arrivals to Ukraine in 2000-2050 (medium variant of projection)

The number of emigrants to the territories populated by Europeans will decrease almost twice by the end of the projection period as compared to 2004, while the return flow will grow 1.8 times (Fig. 3.3.4). As a result, the ratio of emigrants to the territories populated by Europeans and immigrants from this region will be 3:2 (at present – 4:1). The number of immigrants from the Afro-Asian region will gradually grow; it will stabilise at 47-53 thousand people a year in the second half of the projection period. The return flow will be 4.5-5 times smaller; about 40% of people departing for these countries will be educational migrants graduating from Ukrainian colleges, the rest being people unable to adjust themselves to living in a new place.

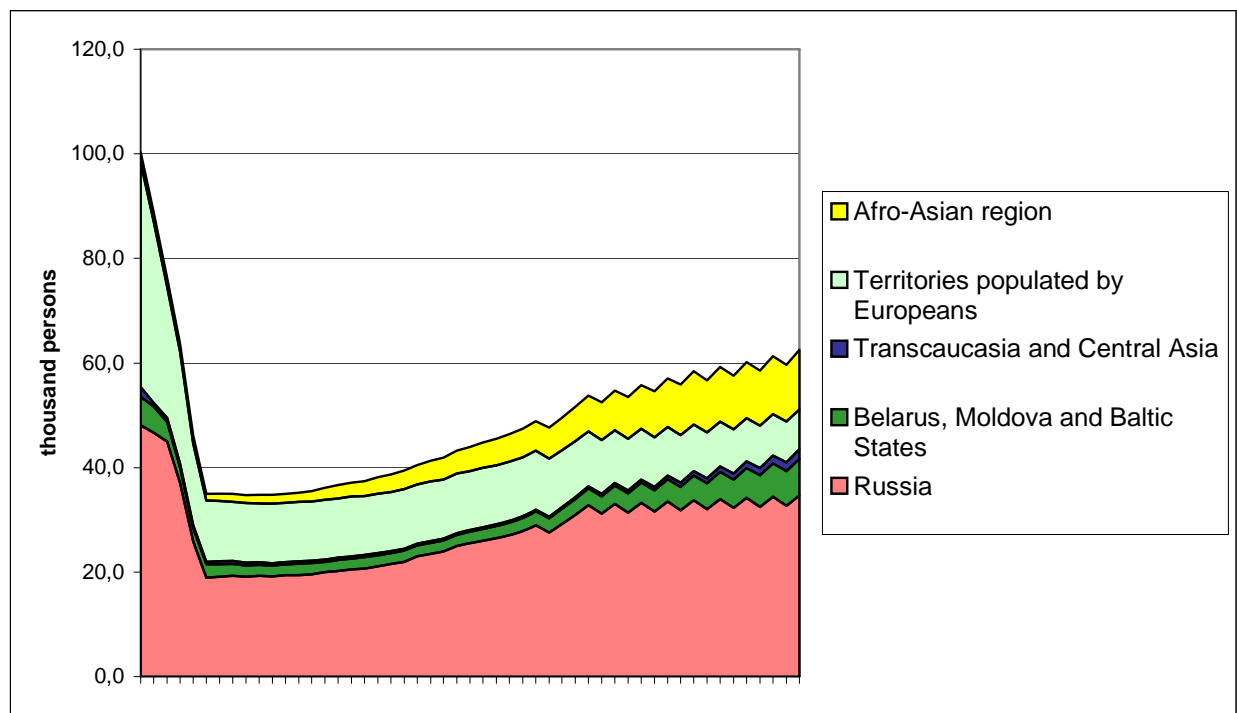


Fig. 3.3.5. Dynamics of departures from Ukraine in 2000-2050 (medium variant of projection)

Net migration of the population of Ukraine will gradually grow, reaching the maximum of +90 thousand people a year in late 2020's. At the end of the projection period net migration will be +73-77 thousand people a year (Fig. 3.3.5). Its value in the second half of the projection period will be provided mostly (almost 2/3) by Afro-Asian countries (Table 3.3.2). A share of young people will notably grow in the structure of migrants, while shares of children and older people will correspondingly decrease (Fig. 3.3.6).

Table 3.3.2. Net migrations of the population of Ukraine with different world regions in 2004-2050 (thousand persons, 2004-2005 – actual data, 2007-2050 – projection)

	2004	2005	2007	2010	2025	2040	2050
Medium variant							
Total	-7,6	4,6	12,6	38,0	85,3	79,4	73,5
Russia	-5,4	1,1	1,7	4,8	28,0	24,1	24,0
Belarus, Moldova and Baltic States	2,8	2,6	3,0	3,6	8,1	6,6	4,1
Transcaucasia and Central Asia	6,7	8,1	13,4	32,5	9,2	13,6	12,9
Territories population by Europeans	-12,9	-8,9	-8,5	-8,3	-7,5	-4,9	-2,7
Afro-Asian region	1,3	1,7	3,0	5,4	47,5	40,0	35,2
High variant							
Total	-7,6	4,6	17,8	53,8	107,9	117,2	121,6
Russia	-5,4	1,1	6,0	17,8	42,8	38,8	39,0
Belarus, Moldova and Baltic States	2,8	2,6	3,2	4,7	10,2	9,6	9,0
Transcaucasia and Central Asia	6,7	8,1	13,6	32,6	9,8	14,1	14,0
Territories population by Europeans	-12,9	-8,9	-8,6	-7,8	-4,8	-1,8	-2,6
Afro-Asian region	1,3	1,7	3,6	6,5	50,0	56,5	62,1
Low variant							
Total	-7,6	4,6	-5,3	-29,3	7,4	-3,2	-5,5
Russia	-5,4	1,1	-2,5	-3,7	-10,4	-38,4	-44,2
Belarus, Moldova and Baltic States	2,8	2,6	2,4	1,9	0,8	0,1	-0,3
Transcaucasia and Central Asia	6,7	8,1	6,9	7,0	5,3	3,4	1,0
Territories population by Europeans	-12,9	-8,9	-14,2	-36,9	-10,2	-7,1	-5,1
Afro-Asian region	1,3	1,7	2,1	2,4	21,9	38,8	43,1
The lowest variant							
Total	-7,6	4,6	-5,3	-29,3	-14,7	-41,7	-48,2
Russia	-5,4	1,1	-2,5	-3,7	-10,4	-38,4	-44,2
Belarus, Moldova and Baltic States	2,8	2,6	2,4	1,9	0,8	0,1	-0,3
Transcaucasia and Central Asia	6,7	8,1	6,9	7,0	5,3	3,4	1,0
Territories population by Europeans	-12,9	-8,9	-14,2	-36,9	-10,2	-7,1	-5,1
Afro-Asian region	1,3	1,7	2,1	2,4	-0,2	0,4	0,3

Note. The sum of parameters of net migrations by five geographic directions could not be equal to the summary parameter because of approximation of the output data.

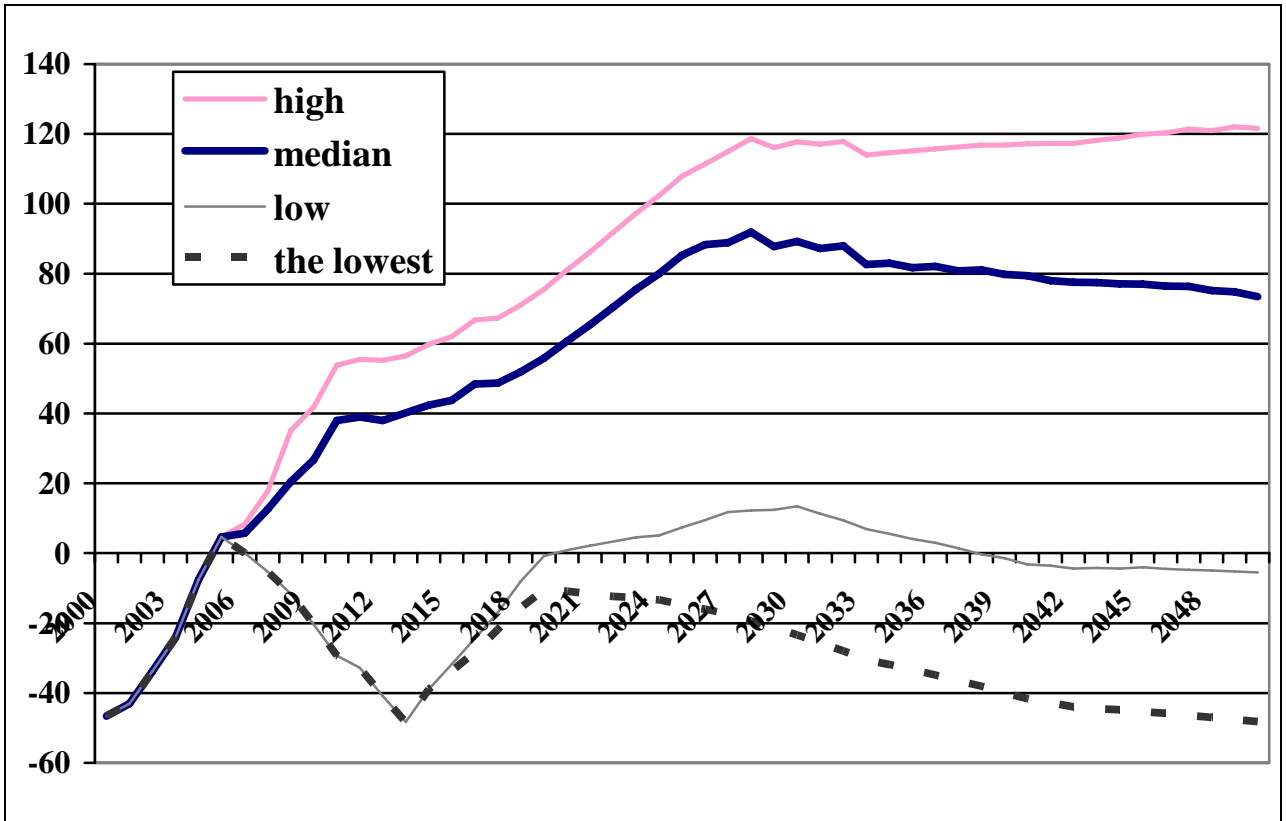


Fig. 3.3.6. Dynamics of net migrations of the population of Ukraine in 2000-2050.

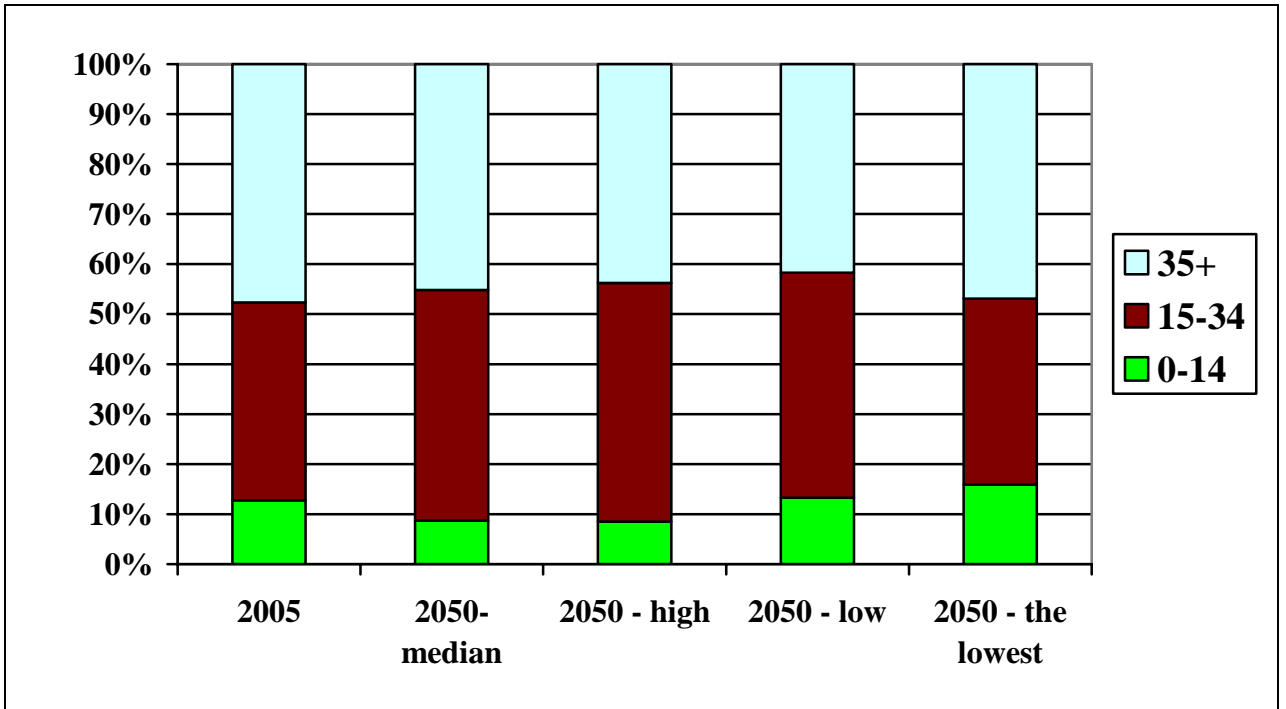


Fig. 3.3.7. Age structure of the external migrants in 2005 (actual data) and in 2050 (projection).

High variant

This variant of projection is probable under conditions of accelerated improvement of the population living standards in Ukraine and advanced development of the Ukrainian economy in comparison with economies of

the CIS and Eastern European countries. Under these conditions, an increase of immigrants from Russia, Belarus, Moldova and the Baltic states will be more fast than under the previous variant; the number of immigrants from Russia will be 70-73 thousand persons a year in the end of the investigated period, from other “new foreign” European countries – more than 13 thousand persons a year (Fig. 3.3.8). The number of immigrants from the Afro-Asian countries will steadily increase (up to more than 70,000 persons a year by the end of 2040’s), while a rate of their staying in Ukraine will be much higher than under medium variant of projection (Fig. 3.3.9). Net migrations will grow during the whole period, reaching 120-122 thousand persons a year (Fig. 3.3.6); the expected increase of a share of persons aged 15-34 will be more notable (Fig. 3.3.7).

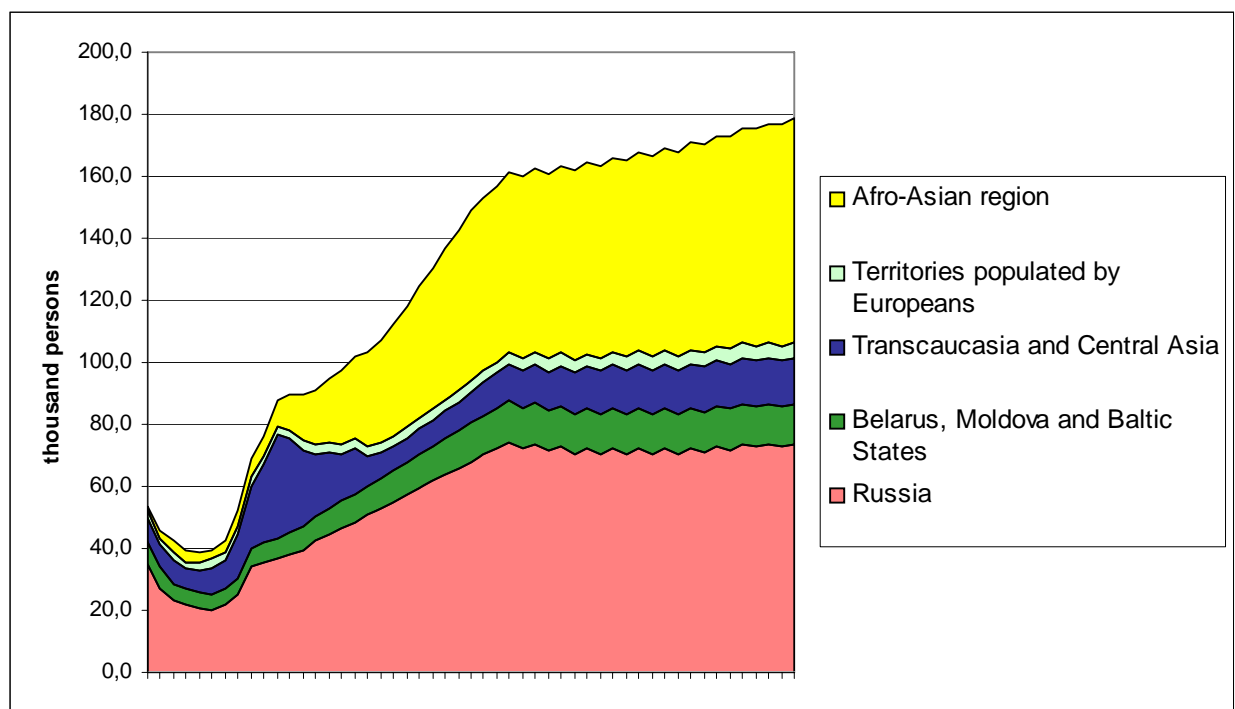


Fig. 3.3.8. Dynamics of immigration to Ukraine in 2000-2050 (high variant of projection)

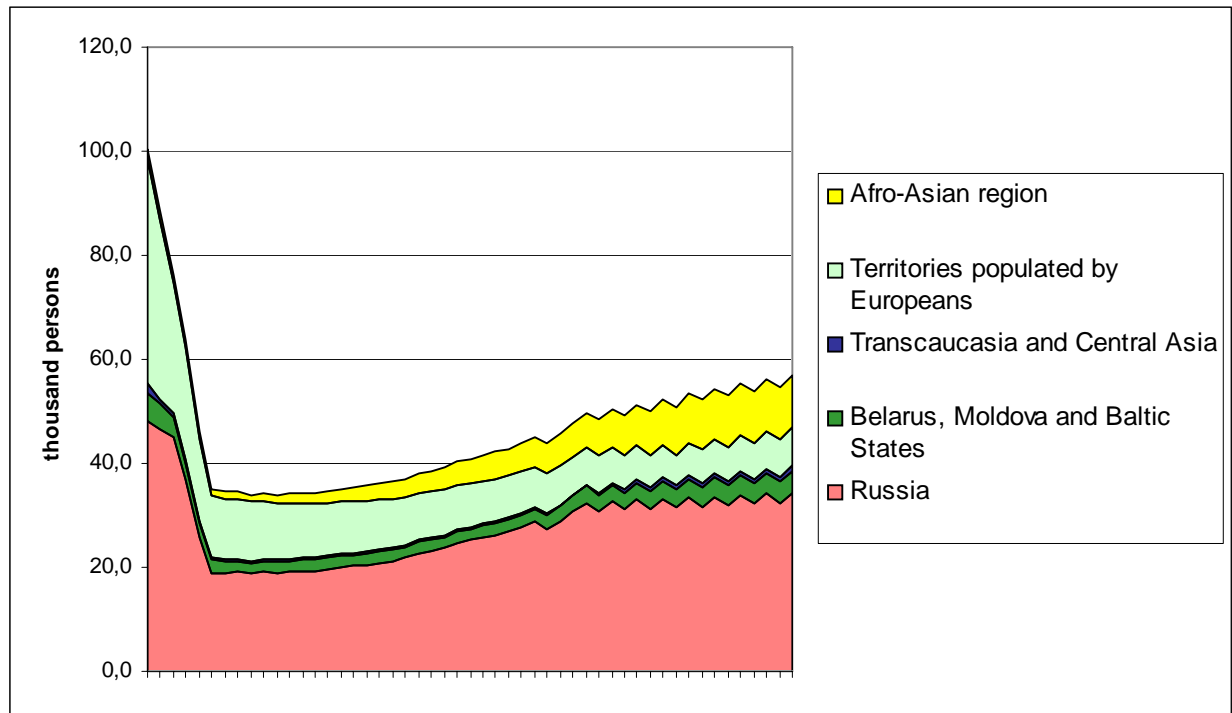


Fig. 3.3.9. Dynamics of emigration from Ukraine in 2000-2050 (high variant of projection)

Low variant

Low variant reflects the results of a probable slowing-down of the economic growth and decline in the living standards. In this case, we should expect an increase in emigration to the countries population by Europeans during the first half of the investigated period in the result of emigration of the well-skilled specialists and partial transition of temporarily labour migration into irreversible form (Fig. 3.3.10). During the second half of the investigated period, large migratory losses in the population exchange with Russia will take place, as a large part of the Ukrainian citizens with Russian roots or those, who have worked in Russia for a long time, will try to move to this country (Table 3.3.2, Fig. 3.3.11). We should not expect realization of the second wave of repatriation, migratory contacts with countries of Central Asia and Transcaucasia will gradually come to naught. There still will be some immigration from the Afro-Asian countries (even the lowest scenario suggests higher living standards in Ukraine as compared to the poorest world countries, while a need in migrants will be larger than under favourable trends of socioeconomic development). But, forming of this inflow will take place after 2015, while a rate of immigrants staying in Ukraine will be relatively small – about a quarter of immigrants will return to the countries of their origin or move to the western European countries. Net migrations will be negative during the most part of the investigated period, positive net migrations will be observed only in 2020-2035, when a splash of emigration to the West will stop and an inflow from the East will be formed (Fig. 3.3.6). A small exceeding of departures over arrivals during the last 15 years of the

projected period will be provided by intensification of emigration to Russia. The “family” character of emigration will increase, a share of migrants aged over 34 will grow in the structure of migrants, and a share of children will remain the same, while their share in the total population will be obviously smaller (Fig. 3.3.7).

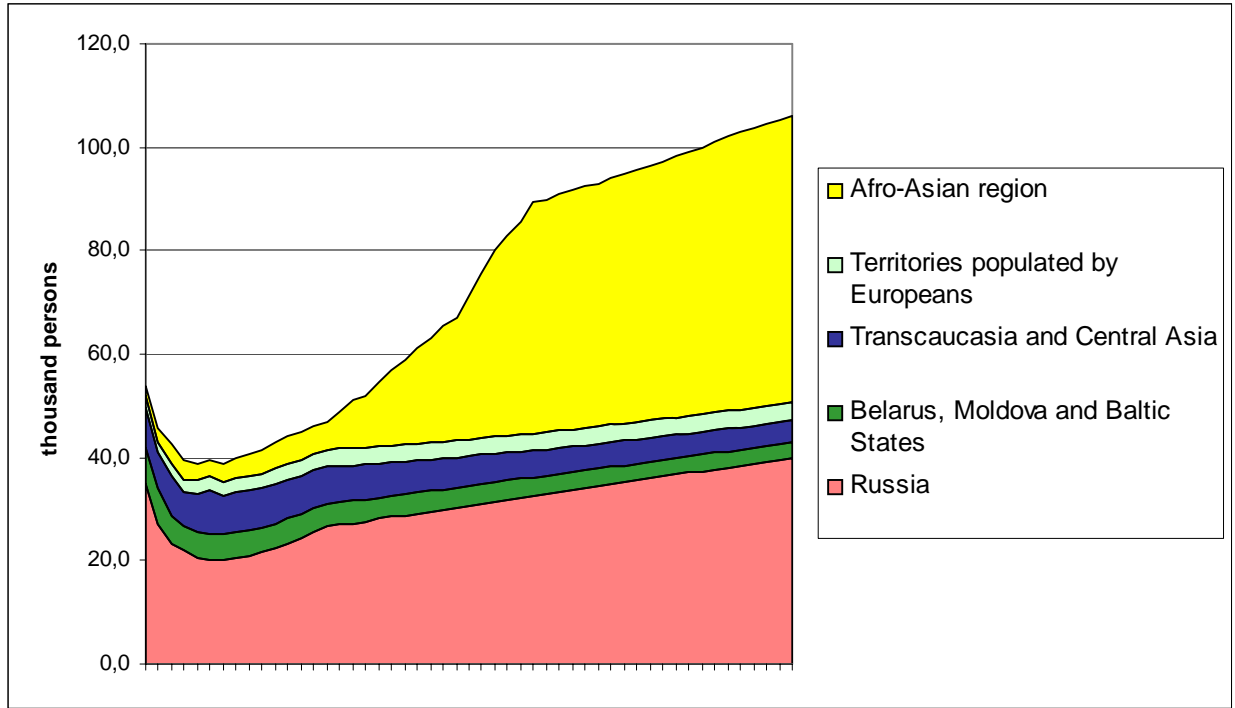


Fig. 3.3.10. Dynamics of immigration to Ukraine in 2000-2050 (low variant of projection)

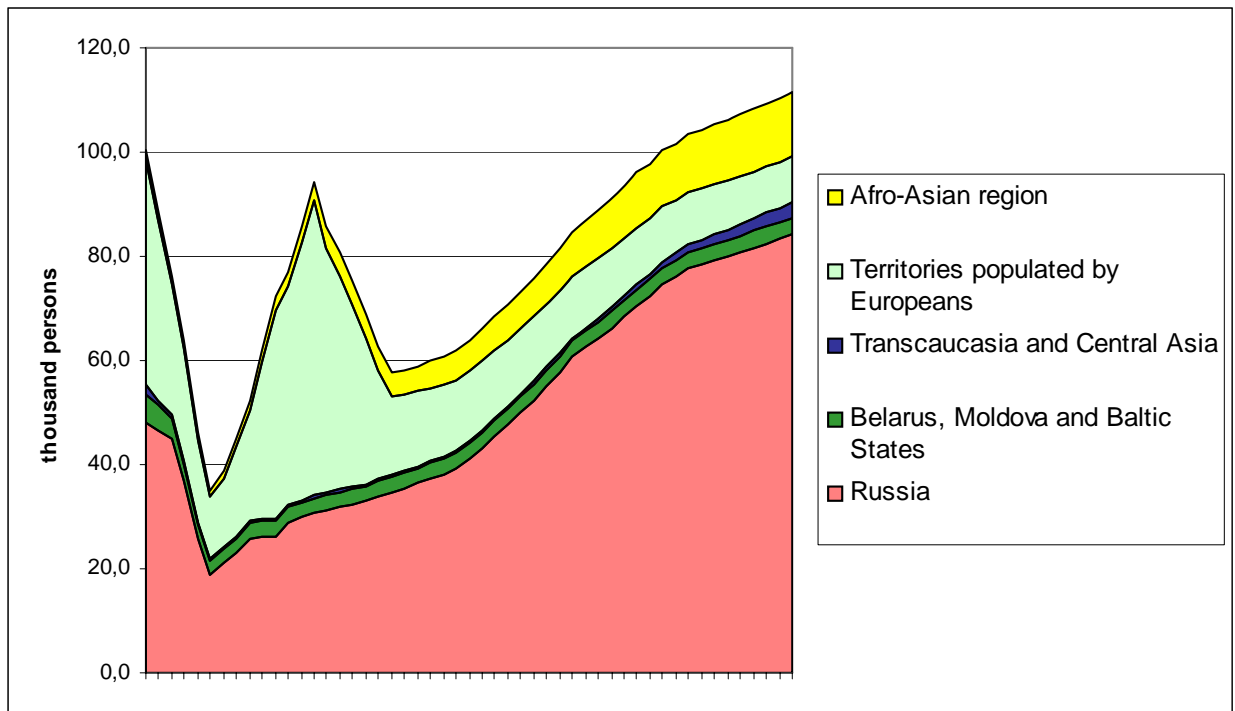


Fig. 3.3.11. Dynamics of emigration from Ukraine in 2000-2050 (low variant of projection)

The lowest variant

The lowest variant presents a prediction-warning: it shows the results, expected under low scenario of socioeconomic development and absence of the state migratory policy on involvement of migrants. Development of migratory contacts with countries of the former USSR and countries populated by Europeans will be the same as according to low variant (Table 3.3.2); the number of arrivals from the Afro-Asian region will reach 5 thousand persons a year by the end of 2010's and will decrease to 4,000 by the end of the investigated period (Fig. 3.3.12). Immigrants from the developing countries will usually return home after receiving high education; only 10% of them will stay in Ukraine (Fig. 3.3.13). Net migrations will be negative during the whole period; it will reach about - 50,000 in the end of the period. A return to such scales of migratory losses, which have been observed in Ukraine in the second half of 1990's, is hardly probable even under the lowest scenario: emigrational potential of the present population is practically limited by a part of the external labour migrants and well-skilled specialists, the new generations will be less numerous and unable to produce a large contingent of emigrants. As inflow of immigrants from the countries of Asia and Africa, which has used in low variant of projection will consist mostly of individual migrants and representatives of the young families (which is non-typical for Europe), a share of children and middle-aged and elder persons will be much smaller among migrants, while a share of youth – correspondingly larger as compared with low scenario (Fig. 3.3.7).

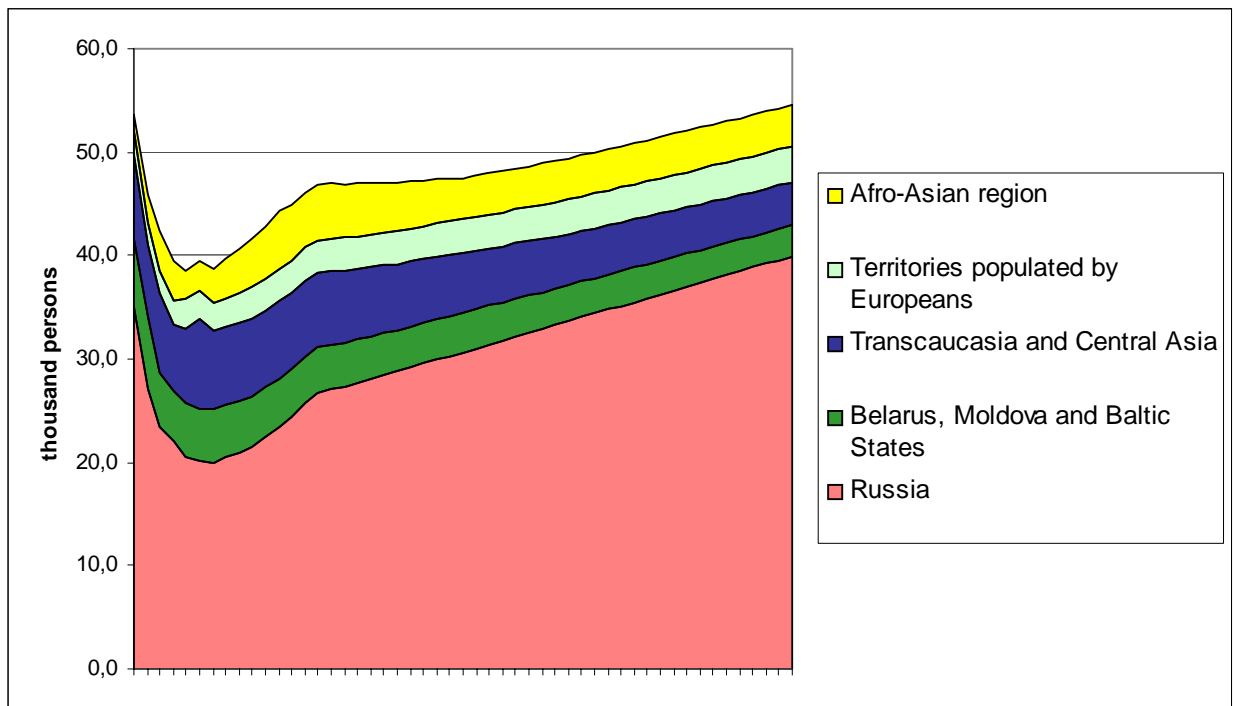


Fig. 3.3.12. Dynamics of immigration to Ukraine in 2000-2050 (the lowest variant of projection)

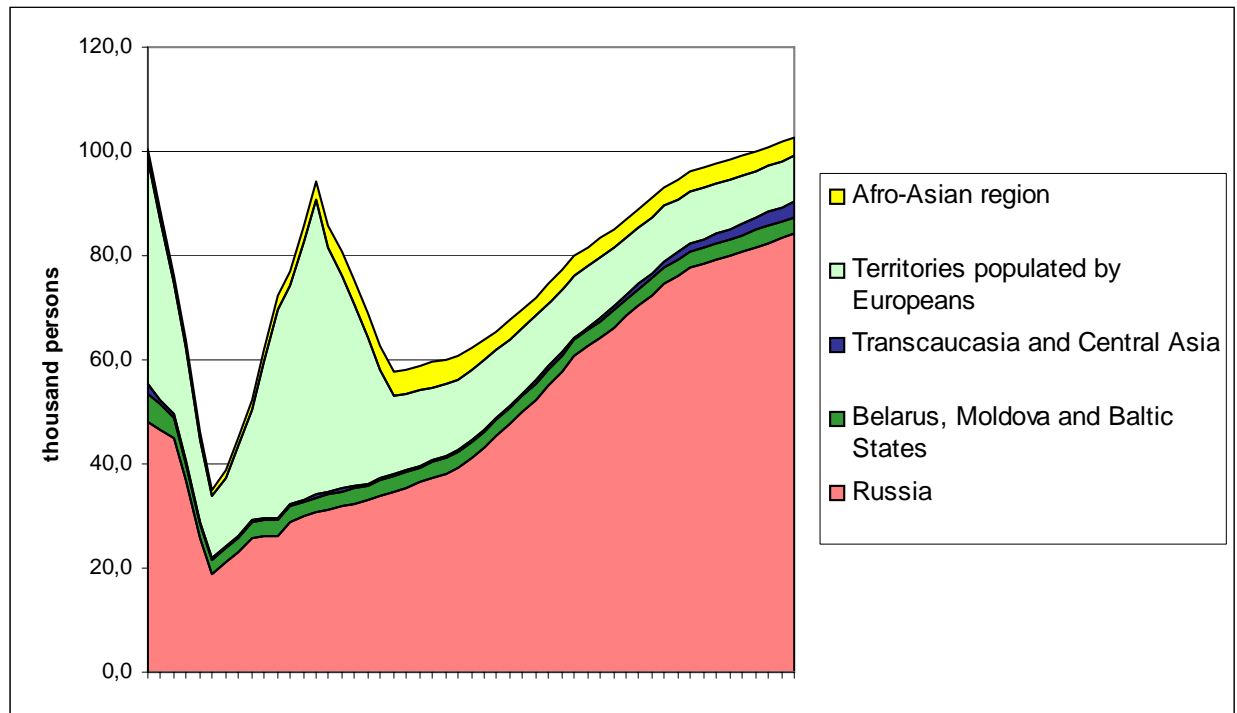


Fig. 3.3.13. Dynamics of emigration from Ukraine in 2000-2050 (the lowest variant of projection)

As a result of the lowest variant of projection, the population of Ukraine will rapidly decrease; this decline will not be homogenous through the territory of the country. Obviously, the number of citizens of Kyiv city and Kyiv agglomeration, Odessa city and Southern Coast of the Crimea won't drop under any conditions (of course, if not consider the total economic collapse). The risk of the population losses is not much higher in other resort regions of Ukraine (Near-Black Sea Region, the Carpathians, Poltava region) and in some multifunctional cities (Kharkiv, Dnipropetrovsk, Lviv, etc.). So, if the total population of Ukraine will drop twice, a multiple increase of the population will take place in some regions. It should be kept in mind that level of economic development of territories depends not only on the number of the total population, but rather on the number of economically productive population groups – persons of young and middle age; under conditions of low fertility rates and emigration of the youth, the rates of ageing will be notably accelerated.

It is well-known that provision of the necessary level of economic development of territories (which is impossible without support of at least minimal population density in all regions) is among conditions of the national safety. The world countries with territories of unfavourable climatic conditions try to hold people in these territories. The United States of America stimulate residents of Alaska, and even under “wage-levelling” in the former USSR, employees of enterprises at the Far North received large extra charges, which motivated citizens in temporarily residence in these regions. Unfortunately, there is a region with hazardous conditions of living in Ukraine after the Chernobyl disaster. But, The Chernobyl zone stay

under control of the state: the special authority – Administration of the Zone of alienation and of the Zone of absolute (obligatory) resettlement has been created with purpose of management and coordination of the actions at territories, which suffered most of all; the Administration is a subdivision of the Ministry of emergency situations of Ukraine.

Presence of depopulated territories in the country with conditions, which are favourable for living, should be regarded as a catastrophe. Under condition of insufficient number of the population, the state will not be able to realize efficient control over the situation in these regions, so they probably will become a living space for settlement of undesirable immigrants and a field of unlawful actions. Thus, even under condition of absence of involvement of migrants, there still will be a inflow of immigrants from the developing countries to Ukraine; but, firstly, it will take place in the second half of the XXIth century, secondly, development of immigration will be unpredictable, thirdly, in opinion of immigrants they will come not into the receiving country, but populate " no man's land", which belongs to the country only formally.

4. THE POPULATION NUMBER AND SEX-AGE STRUCTURE TO 2050.

The population number and age structure are formed under impact of three main components: fertility, mortality and migrations. That's why a component demographic projection suggests a combination of different variants of these components. The variants were described in the previous sections of this research. These variants are visually presented in Table 4.1. The proposed abbreviations are also presented there.

Table 4.1. Variants (abbreviations) of demographic projection

<i>components of projections</i>			
	fertility	life expectancy	migration
variants	low (<i>l</i>)	very low (<i>sl</i>)	very low (<i>sl</i>)
	medium (<i>m</i>)	low (<i>l</i>)	low (<i>l</i>)
	1 st high (<i>1h</i>)	medium (<i>m</i>)	medium (<i>m</i>)
	2 nd high (<i>2h</i>)	high (<i>h</i>)	high (<i>h</i>)
	normative (<i>norm</i>)	normative (<i>norm</i>)	normative (<i>no migrations</i>)
	constant coefficients 2005 (<i>const</i>)	constant coefficients 2005 (<i>const</i>)	constant net migrations 2005 (<i>const</i>)

The basic variants of this work are recognized as „low”, „medium” and „high” projections (for fertility – „1st high” projection). The rest of variants have analytical character and are developed for scientific aims.

Based on the logics of each variant of a component projection, not all variants are united in the combination. In particular, such variants as normative and constant coefficients are combined only with similar variants of other components. A very low variant of life expectancy and migrations is combined with a medium variant of fertility with purpose of estimation of an impact of the worst situation regarding mortality and migrations in comparison with realistic dynamics of fertility. The variants can be estimated as most probable if they combine no less than two „medium” variants for all components.

All variants of the perspective population distribution by sex and age are presented in the Annexes. The name of each variant consists of some partial projection components. Thus, the first word responds to fertility, the second word – to mortality, the third word – to migrations. For instance, such variant of projection as „1st high-medium-low” describes a combination of the 1st high projection of fertility, a medium variant of life expectancy and a low variant of projection of migrations.

Particular attention should be paid to the most probable variant of projection, which is a „**medium-medium-medium**” projection. This variant looks like most close to the actually achievable rates of fertility, mortality and migration flows, estimated for the projected years. As the practice of demographic projections shows, correct point projections are impossible due to many direct and indirect factors, making an impact on the

investigated processes; a mechanism and character of their recurrent connections is still not understood. Some new factors could appear, driving radical changes of the whole system of socioeconomic interrelations and resulting in unpredictable demographic results. But, this variant of projection passes within the most probable „bunch” of demographic reality.

According to this variant, the population number will make about 36,158.4 thousand persons by 2050 (Fig. 4.1). Given the working-age in 16-59 (for women - 16-54), there will be 727 pensioners per 1,000 of the working-age population.

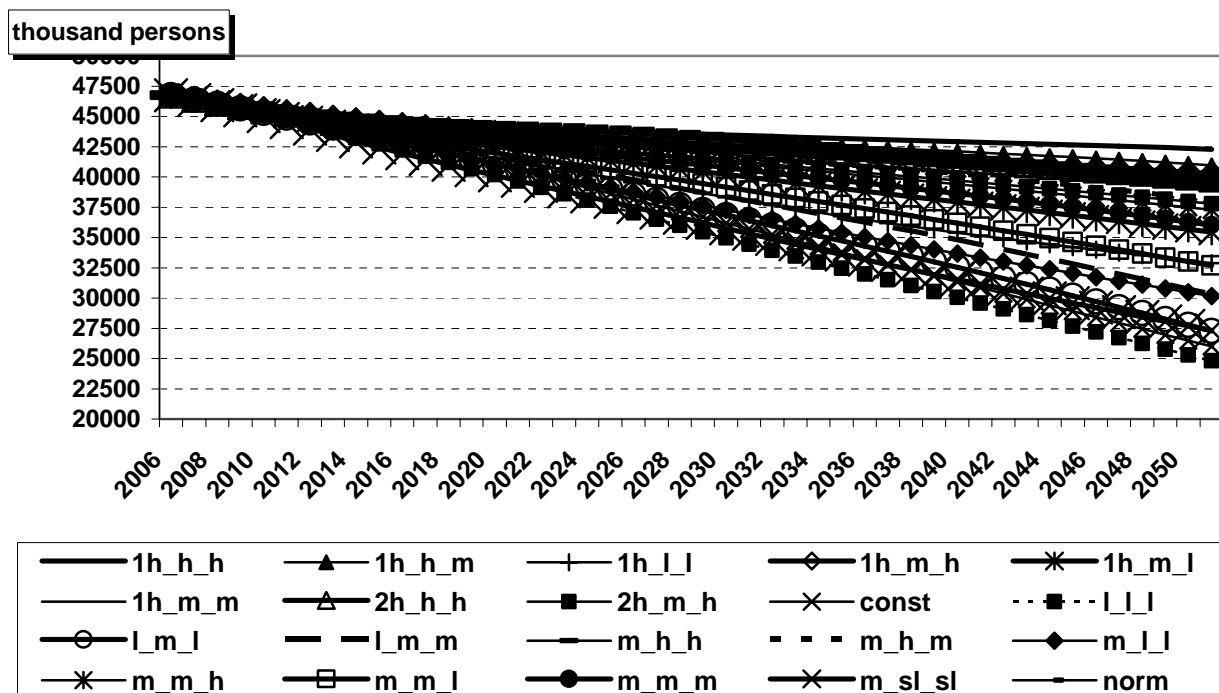


Fig. 4.1. Projection of the population number in Ukraine to 2050 according to different scenarios.

A share of persons in the age over 60 will make 32.2% by the end of the investigated period (Fig. 4.2). The population ageing rate will even drop by 2008. It results from peculiarities of the present age structure. There will be more children born in the nearest 2-3 years, than persons, entering the age of 60 and over. Later, when the numerous generations of persons, born at the beginning of 1950's will enter the appropriate age, while also numerous cohorts of those, born in the middle of 1980's will go out of the most fertile age, an increase of the population ageing will begin. The “bend” of the curves, responding to the middle 2020's (Fig. 4.2), as well as further increase of the ageing rates, are caused by those peculiarities of the population age structure, which are already common for the population of Ukraine.

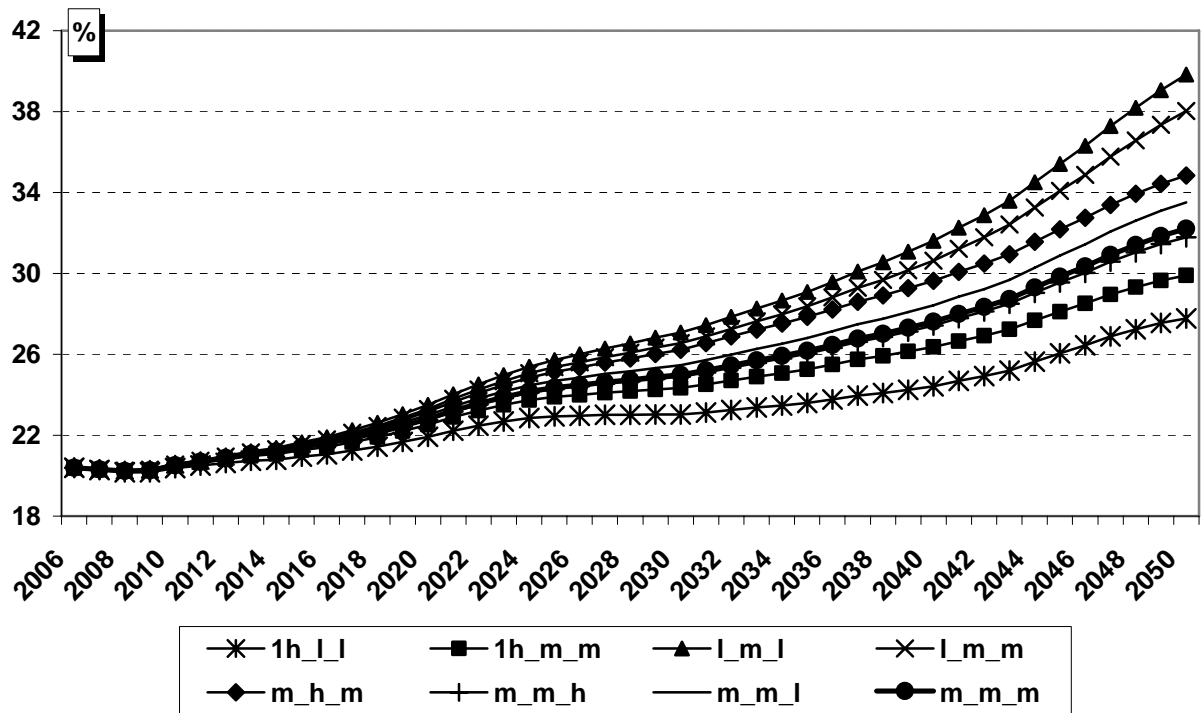


Fig. 4.2. Expected rate of the population ageing in Ukraine according to some scenarios of demographic projection.

Sex-age pyramids, estimated according to three variants, of the population of Ukraine are presented at Fig. 4.3. The most probable distributions are situated between these pyramids and are approaching a medium-medium-medium variant.

„1st high – high - high” variant is the most optimistic variant of projections. A combination of the most advantageous variants of projections of life expectancy and migrations with “a high” fertility variant provides the population number in 42,313.4 thousand persons by 2050. The population ageing will reach 32.1%.

„1st high – high - medium” variant takes the second position by its optimism. The population number will make 41,013.9 thousand persons in the end of the investigated period; a share of persons aged over 60 will reach 32.4%.

„1st high – medium - high” combination provides an important failure in comparison with previous variants, while the population number will make 40,286.1 thousand persons. A share of elder persons will make 29.5%.

„1st high – medium - low” variant is hardly probable. But, a low variant of projection of migrations significantly changes a view of demographic situation in comparison with other variants of the „1st high” fertility. The population number will make 35,568.6 thousand persons by 2050, while the population ageing will make 31.0%.

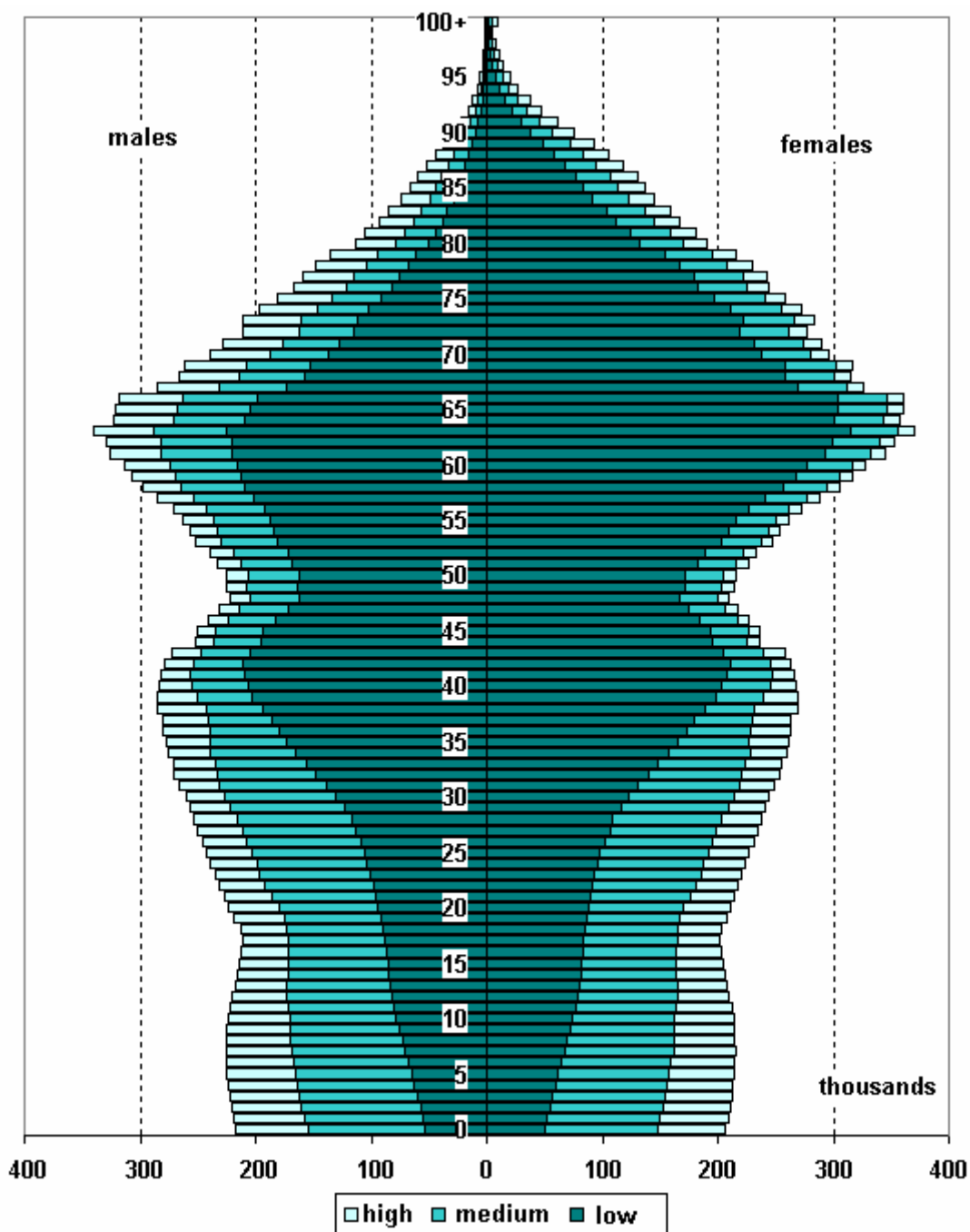


Fig. 4.3. Sex-age pyramid of the permanent population of Ukraine at the beginning of 2050 according to the variants „1st-high-high-high”, „medium-medium-medium”, and „low-low-low”.

„1st high – medium - medium” variant is situated between the previous variants results and provides a figure in 39,019.0 thousand persons. A share of elder persons will make correspondingly 29.9%.

„1st high – low – low” variant describes a combination of a short life expectancy, migratory intractability of the country and high fertility, which is also very improbable. According to this variant, the future population number will reach 32,988.1 thousand persons by 2050. Obviously, the population ageing will reach a smaller rate – 27.8%.

„**Medium – high - high**” variant will result in the population number in 39,394.0 thousand persons and in the population ageing at the rate of 34.4%.

„**Medium – medium - high**” variant is more realistic in terms of mortality projection. According to this variant, the population number will reach 37,380.9 thousand persons, while a share of elder persons – 31.8%.

„**High – high - medium**” variant presents more optimistic variant of life expectancy in the future (45 years), being a more powerful factor than migrations. The population number will be almost on 1 million larger, reaching 38,139.4 thousand persons by 2050. But, a share of persons over 60 will be also larger (34.8%).

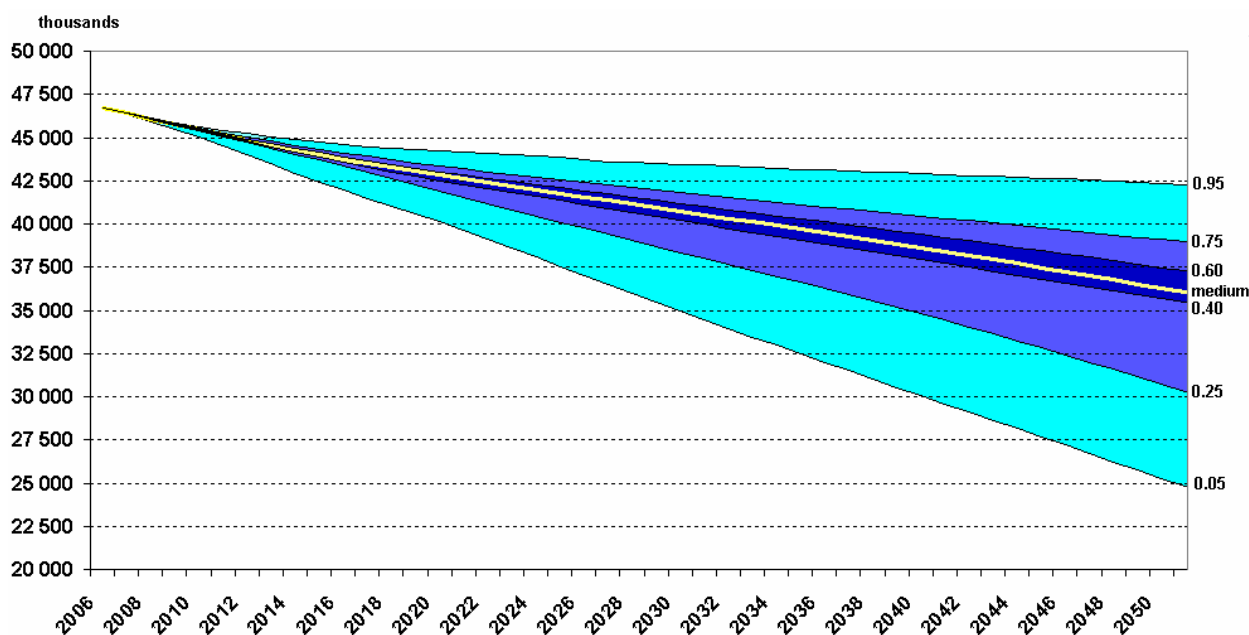


Fig. 4.4. Probabilistic interpretation of multivariate demographic projection.

„**Low-low-low**” variant combines all low variants of projections (not necessary the lowest variants), describing a possibility to reach a very small population number – 25,047.7 thousand persons. A short life expectancy, which has to slow down the population ageing, is completely compensated by low fertility. It proves that the population ageing results not from life expectancy growth, but mostly from decline in fertility. According to this variant, the population ageing will be among the highest possible rates, reaching 36.3%.

„**Low – medium - low**” variant provides the population number in 27,527.7 thousand persons by 2050. A share of elder population will make 39.8%.

„**Low – medium - medium**” variant has some peculiarities. Low fertility, combined with medium projections of mortality and migrations, will provide a rather large number of the population – 30,517.8 thousand persons. But, a share of elderly will be also very large – 38.0%.

„Medium – low - low” variant will provide the population number in 30,314.6 thousand persons and the population ageing in 30.2%.

„Medium – medium - low” variant is rather close to the previous variant, but lower mortality will preserve more than 2 million lives till the end of the period. As a result, the population number has to make about 32,858.4 thousand persons, while the population ageing rate will be much higher – 33.5%.

According to hypotheses, formulated the “2nd high” fertility projection, this variant is intersected not will all possible variants of projections of mortality and migrations. It is directly related to a high immigration from the countries of Asia and Africa, with their high fertility. High immigration, in turn, is related to a probable improvement of the population living standards in Ukraine. That’s why a „low” variant of life expectancy projection is also rejected. Thus, there are two variants remaining.

„2nd high – high - high” variant provides the population number in 39,893.2 by 2050 under conditions, described in the corresponding sections of the study. The population ageing will make 34.0%.

„2nd high – medium - high” variant will provide the population number in 37,877.9 thousand persons only due to changes of mortality hypotheses. A share of persons aged over 60 will make 31.4%.

The next analytical variants of projections are hardly probable, but interesting in terms of comparisons.

„Medium – the lowest – the lowest” variant suggests the population number in 27,507.3 thousand persons. The main losses will be observed in the middle groups of the working-age. According to this combination of projections’ variants, a share of persons over 60 will make 29.4%.

„Constant coefficient” projection, fixed at the level of 2005, is hardly probable. But, this variant of projection could rather adequately respond to a possible dynamics in the short-term run due to some autoregression and inertness, common for demographic processes. Regarding the specificity of this projection’s components, these variants are not combined with other scenarios.

According to this variant, given invariable demographic processes in Ukraine, the population number will make 26,251.5 thousand persons by 2050. This is one of the two worst results. Thus, this variant shows that the present demographic situation consists of extremely negative features, which could lead to a sharp population decline during the nearest 45 years (in 1.8 times). The population ageing will make 32.4%.

The **„normative”** variant of projections is based on the corresponding hypotheses on the natural population movement. There are no migrations. This variant indicates possible reserves of improvement of demographic situation by means of the „internal” factors and under conditions of development of demographic processes, similar to those in the Western and North Europe. These hypotheses also do not intersect the rest of

variants due to their small probability (as the historical errors analysis proves).

This variant of projection predicts a possibility to reach the population number in 40,032 thousand persons by 2050. A share of persons aged over 60 will make about a third part of the total residents (33.5%).

CONCLUSIONS

As demographic projections, simulations and expert estimations show, there is a very small probability to reach replacement-level fertility in Ukraine in the short- or middle-term run. Probably, net migrations will not also be able to compensate a natural decline of the population in our country. Contrary to the European countries, where the living standards and natural increase of the population give promises of a slow increase of the total population number (in particular Sweden, Germany, France), Ukraine (as well as Poland and Russia) still will be characterized by decline in the residents' number.

According to the most probable scenarios of demographic projection, the population number in Ukraine will decrease with rather fast rates during the nearest 50 years. It can be explained by large losses of demographic potential, caused by wide-spread standards of few children in families, short life expectancy and unfavourable interstate migratory exchange. The basic parameters of the present and expected regimes of demographic reproduction include:

- one of the lowest **fertility** regimes in the world, kept for a long time, will result in a small reproductive basis (small number of persons in the fertile age) in the nearest years. The global trends prove a sharp decline in fertility in the majority of countries. So, the recent global population projections have to be revised towards decreasing. As to Ukraine, the national and foreign experts agree that an increase of fertility over a replacement-level is hardly probable;

- the Ukrainian **life expectancy** looks rather advantaged only in comparison with Russia and Africa. Though this indicator is gradually increasing in the most global countries, the trend has a wave-like character in Ukraine, being generally decreasing. But, even if life expectancy will grow very intensively, it will not provide a desirable population increase or, at least slow down the rates of the population decreasing.

- under conditions of exhausted potential of demographic growth in Ukraine, **active immigration policy** is nearly one possibility of the population number increase. But, the “demographic deficit” is very large in Ukraine; so, there could be a danger of breaking the unity and internal balance of the society, of hardships in mutual adaptation of the indigenous people and immigrants, caused by migrations, needed to compensation of the deficit. It is more purposeful to attract limited groups of migrants; of course, it will not provide overcoming of the depopulation, but will contribute to its slowing down and reaching more or less appropriate ratio between taxpayers and dependent persons, who are supported by the state.

A decline in the population number is observed in Ukraine presently, as well as in many countries of Europe. It mostly results from depopulation (the surplus of deaths over births in a population). But, the global

population decline could take place in this century, according to some estimations⁶². Thus, Ukraine, as well as majority of the European countries, is in the vanguard of the global depopulation. But, this is a poor consolation. The population of Ukraine has very archaic elements of natural movement, in particular regarding cause- and age-specific death rates.

We have to remember that demographic projections are not end in itself; they do not pretend on correctness of predictions. First of all, projections are methods of perspective analysis. They also contribute to the future development by themselves. Demographic projections indicate those ways of the population development, which could be realized based certain hypotheses. In this context, a projection is an instrument, indicating possible and necessary steps in regulation of the population reproduction.

Recognition the urgent need in a purposeful state demographic policy at different levels is among the study's conclusions. With this purpose, the recommendations of the Concept and Strategy of demographic development of Ukraine have to be included into the state practice.

Ukraine enters a special phase of demographic development. A small number of children, born during the last decade, will determine the labour resources deficit soon. At the same time, a share of elder population will increase. Thus, demographic ageing of the population is inevitable. Under conditions of the solidarity pension system and low labour productivity, economically active population will be unable to support an increase number of pensioners. So, there is no need in large increase of tax revenues to the state budget, even under improvement of economic situation. To implement insurance, the next conditions should be available:

- stable incomes during the whole active life of the born generations,
- a long period of economic stability, securing purchasing power of the population savings during whole their lives.

A warning has to be done, as the population ageing will make an impact on the Ukrainian economy not only through excessive pressure on the state budget, it also could lead to changes of economic behaviour of the labour force. Obviously, raising the retirement age will result in increase of a share of elder population groups in the total working-age population. In turn, it could make an impact on ability of the labour force to perceive innovations in the world of high technologies.

⁶² Schebov S. How much of us could there be? / Statistics issue, £3, 2002, pp.17-23 (Щербов С. Сколько же нас может быть? // Вопросы статистики. – № 3. – 2002. – С. 17-23).

ANNEXES

CONSTANT COEFFICIENTS*(THOUSAND PERSONS)*

	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45206.0	43191.5	40996.0	38625.2	36195.2	33774.8	31349.7	28910.1	26490.1
0-4	2005.1	2109.9	1999.9	1731.1	1426.7	1257.9	1191.4	1125.9	1013.8	881.8
5-9	2067.9	1960.1	2104.4	1994.6	1726.6	1422.9	1254.5	1188.1	1122.8	1011.0
10-14	2691.7	2163.6	1956.3	2100.3	1990.8	1723.1	1420.0	1251.8	1185.6	1120.3
15-19	3572.7	2849.8	2159.1	1952.6	2096.2	1986.9	1719.9	1417.6	1249.9	1183.9
20-24	3793.9	3680.1	2834.9	2148.4	1943.4	2086.1	1977.4	1712.0	1411.4	1244.8
25-29	3446.0	3711.2	3635.0	2798.8	2120.0	1917.6	2058.7	1951.1	1688.5	1391.3
30-34	3326.0	3354.7	3645.6	3570.1	2748.3	2081.6	1883.0	2021.6	1915.8	1657.7
35-39	3123.0	3237.8	3276.7	3560.4	3486.0	2683.9	2033.4	1840.1	1975.2	1871.9
40-44	3447.8	3010.9	3134.9	3172.2	3446.4	3373.5	2597.8	1969.3	1782.9	1913.5
45-49	3663.3	3466.3	2881.3	2999.8	3035.1	3296.8	3226.0	2484.5	1884.5	1707.1
50-54	3257.9	3371.9	3256.7	2708.2	2819.4	2852.1	3097.5	3029.4	2333.0	1770.4
55-59	2825.1	3023.3	3102.8	2995.5	2492.4	2594.5	2624.1	2849.2	2784.7	2144.6
60-64	1961.6	2274.9	2697.4	2770.7	2673.0	2225.4	2316.4	2342.3	2542.8	2482.9
65-69	2947.6	1944.4	1957.7	2315.2	2380.6	2294.5	1911.7	1989.8	2011.4	2183.2
70-74	1663.4	2344.8	1555.7	1582.1	1863.3	1918.6	1846.0	1539.5	1602.6	1619.4
75-79	1690.7	1236.4	1694.2	1112.6	1152.3	1346.7	1389.4	1332.3	1113.0	1159.1
80-84	876.1	1002.7	730.0	1019.6	657.7	700.8	809.1	836.8	797.9	668.4
85-89	267.6	371.8	450.3	321.1	460.9	288.8	321.4	364.0	377.7	357.0
90-94	104.9	74.8	107.3	126.9	88.2	131.0	78.9	93.2	102.9	107.2
95-99	15.1	15.5	10.1	14.6	16.6	11.1	17.3	9.8	12.8	13.6
100+	1.8	1.2	1.3	0.9	1.2	1.4	1.0	1.4	0.9	1.0
MALES	21574.7	20801.2	19802.1	18718.0	17545.1	16344.8	15164.4	14007.1	12864.0	11737.7
0-4	1031.7	1080.1	1022.4	885.0	729.4	643.1	609.1	575.6	518.3	450.8
5-9	1059.9	1008.1	1076.9	1019.3	882.4	727.2	641.1	607.2	573.8	516.7
10-14	1379.6	1107.9	1005.8	1074.5	1017.1	880.4	725.5	639.6	605.8	572.5
15-19	1828.4	1459.7	1104.8	1003.2	1071.7	1014.4	878.1	723.8	638.3	604.6
20-24	1934.9	1877.7	1449.2	1097.6	997.1	1064.9	1008.1	873.0	720.1	635.4
25-29	1734.4	1881.9	1845.3	1423.8	1078.1	979.6	1046.1	990.2	857.3	707.0
30-34	1647.9	1670.1	1832.6	1796.5	1386.1	1049.7	954.2	1018.8	964.3	834.9
35-39	1526.6	1584.7	1610.8	1767.5	1732.2	1336.8	1013.1	921.6	983.7	931.1
40-44	1646.5	1441.9	1505.6	1530.4	1679.2	1645.1	1270.2	963.5	877.3	935.9
45-49	1711.5	1613.0	1343.5	1402.8	1425.9	1564.7	1532.0	1183.3	898.5	819.0
50-54	1474.4	1516.5	1458.1	1215.4	1269.2	1290.0	1415.9	1385.3	1070.1	813.2
55-59	1234.1	1307.9	1329.4	1277.2	1065.5	1112.7	1130.9	1241.5	1213.7	937.8
60-64	796.1	931.2	1091.7	1110.3	1065.0	889.6	929.1	944.4	1037.4	1012.6
65-69	1139.7	727.8	735.4	858.5	873.7	836.8	699.9	731.0	743.1	816.7
70-74	609.3	828.3	523.7	535.6	621.5	633.2	605.0	506.8	529.5	538.3
75-79	532.8	397.6	527.7	329.1	343.8	395.0	403.1	383.5	322.1	336.7
80-84	208.6	271.7	206.8	278.3	170.4	183.0	207.6	212.3	200.9	169.2
85-89	57.0	78.2	110.2	82.2	112.8	67.3	75.2	83.8	86.0	80.7
90-94	18.9	14.2	20.4	28.4	20.5	29.0	16.6	19.8	21.4	22.1
95-99	2.5	2.5	1.7	2.5	3.4	2.3	3.4	1.8	2.4	2.5
100+	0.3	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1
FEMALES	25174.5	24404.8	23389.4	22278.0	21080.1	19850.4	18610.4	17342.6	16046.1	14752.4
0-4	973.4	1029.8	977.5	846.1	697.4	614.8	582.3	550.3	495.6	431.0
5-9	1008.0	952.0	1027.5	975.3	844.2	695.7	613.3	580.9	549.0	494.3
10-14	1312.1	1055.7	950.5	1025.8	973.7	842.8	694.5	612.2	579.8	547.9
15-19	1744.4	1390.1	1054.3	949.3	1024.5	972.5	841.8	693.8	611.6	579.3
20-24	1859.1	1802.3	1385.7	1050.9	946.2	1021.2	969.3	839.0	691.3	609.4
25-29	1711.6	1829.2	1789.7	1375.1	1042.0	937.9	1012.5	960.9	831.1	684.3
30-34	1678.1	1684.6	1813.0	1773.6	1362.3	1031.9	928.8	1002.7	951.5	822.8
35-39	1596.4	1653.1	1665.9	1792.9	1753.8	1347.0	1020.3	918.5	991.6	940.8
40-44	1801.3	1569.1	1629.3	1641.9	1767.2	1728.5	1327.6	1005.8	905.6	977.6
45-49	1951.8	1853.3	1537.9	1596.9	1609.3	1732.1	1693.9	1301.2	986.0	888.1
50-54	1783.5	1855.4	1798.6	1492.8	1550.2	1562.2	1681.6	1644.1	1262.8	957.1
55-59	1591.0	1715.3	1773.4	1718.4	1426.9	1481.8	1493.2	1607.6	1571.0	1206.8
60-64	1165.5	1343.7	1605.8	1660.4	1608.0	1335.8	1387.3	1397.9	1505.4	1470.3
65-69	1808.0	1216.6	1222.3	1456.8	1506.9	1457.7	1211.8	1258.8	1268.3	1366.5
70-74	1054.1	1516.5	1032.0	1046.5	1241.8	1285.4	1241.1	1032.7	1073.1	1081.1
75-79	1157.9	838.9	1166.4	783.5	808.5	951.7	986.3	948.8	791.0	822.4
80-84	667.4	730.9	523.2	741.3	487.3	517.8	601.5	624.5	597.1	499.2
85-89	210.7	293.6	340.0	238.9	348.1	221.5	246.2	280.2	291.8	276.3
90-94	86.1	60.6	86.9	98.5	67.6	102.0	62.2	73.5	81.4	85.1
95-99	12.6	13.1	8.4	12.1	13.3	8.8	13.9	8.0	10.4	11.0
100+	1.5	1.1	1.2	0.8	1.1	1.2	0.8	1.2	0.8	0.9

NORMATIVE

(THOUSAND PERSONS)

	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH SEXES	46749.2	45581.5	44683.6	44217.8	43832.7	43155.5	42297.5	41477.1	40742.2	40097.5
0-4	2005.1	2268.8	2533.1	2672.4	2537.1	2105.4	1883.8	1952.3	2128.4	2224.5
5-9	2067.9	1960.7	2264.3	2529.0	2668.7	2534.2	2103.2	1882.1	1950.7	2126.8
10-14	2691.7	2164.3	1958.2	2261.9	2526.7	2666.7	2532.6	2102.0	1881.1	1949.9
15-19	3572.7	2848.8	2159.7	1954.6	2258.4	2523.2	2663.4	2529.6	2099.8	1879.3
20-24	3793.9	3680.3	2835.1	2150.8	1947.8	2251.5	2516.3	2656.6	2523.6	2095.2
25-29	3446.0	3718.8	3649.8	2815.7	2138.6	1938.8	2242.6	2507.7	2648.5	2517.1
30-34	3326.0	3360.7	3671.2	3612.1	2792.4	2124.7	1928.5	2232.8	2498.4	2640.9
35-39	3123.0	3243.0	3301.7	3620.0	3572.0	2768.2	2109.9	1917.8	2222.6	2489.8
40-44	3447.8	3016.7	3163.8	3237.0	3563.5	3527.7	2740.0	2092.4	1904.6	2210.9
45-49	3663.3	3477.2	2916.6	3078.6	3166.5	3501.1	3475.9	2706.2	2070.2	1888.6
50-54	3257.9	3387.5	3314.6	2804.7	2981.4	3084.0	3423.6	3409.2	2660.1	2040.8
55-59	2825.1	3040.3	3174.1	3138.3	2679.5	2869.0	2982.5	3324.8	3319.4	2599.0
60-64	1961.6	2292.7	2778.9	2943.4	2941.2	2535.0	2731.7	2854.6	3194.3	3202.3
65-69	2947.6	1963.6	2031.3	2498.8	2684.5	2710.4	2355.0	2554.1	2680.6	3016.6
70-74	1663.4	2379.1	1638.1	1747.1	2180.3	2378.1	2422.1	2123.3	2316.0	2446.7
75-79	1690.7	1263.3	1821.8	1283.3	1420.6	1796.8	1988.3	2042.9	1805.9	1986.6
80-84	876.1	1032.7	811.6	1243.1	892.3	1036.7	1322.4	1488.3	1537.8	1375.8
85-89	267.6	386.1	516.7	421.4	690.7	500.1	617.2	789.3	901.8	935.1
90-94	104.9	78.4	127.9	179.5	150.6	266.4	191.6	256.1	324.7	377.3
95-99	15.1	17.0	13.3	24.6	36.4	31.9	61.6	44.4	64.8	82.0
100+	1.8	1.3	1.9	1.8	3.4	5.6	5.6	10.5	8.9	12.3
MALES	21574.7	20996.5	20596.6	20456.2	20388.7	20193.4	19907.7	19641.5	19429.2	19279.5
0-4	1031.7	1161.5	1295.3	1366.8	1297.8	1077.1	963.9	999.1	1089.3	1138.7
5-9	1059.9	1008.3	1158.8	1292.8	1364.5	1296.0	1075.8	962.8	998.1	1088.3
10-14	1379.6	1108.2	1006.7	1157.2	1291.4	1363.3	1295.0	1075.1	962.2	997.6
15-19	1828.4	1459.1	1105.0	1004.3	1154.8	1289.0	1361.0	1293.0	1073.5	961.0
20-24	1934.9	1876.9	1448.6	1098.3	999.1	1149.7	1283.9	1356.1	1288.6	1070.3
25-29	1734.4	1885.8	1853.2	1433.5	1088.9	992.2	1142.9	1277.3	1349.9	1283.7
30-34	1647.9	1673.7	1849.1	1824.3	1415.9	1078.5	984.6	1135.8	1270.6	1344.6
35-39	1526.6	1588.3	1628.5	1810.0	1794.2	1398.0	1067.7	976.9	1128.5	1264.9
40-44	1646.5	1446.3	1527.6	1579.3	1767.5	1761.5	1377.5	1055.2	967.6	1120.8
45-49	1711.5	1621.4	1370.7	1463.9	1527.3	1722.2	1724.4	1353.7	1039.8	957.1
50-54	1474.4	1528.6	1502.8	1290.2	1395.3	1470.5	1669.6	1680.1	1323.7	1021.8
55-59	1234.1	1320.8	1382.4	1383.9	1207.1	1322.0	1405.0	1606.1	1623.1	1286.4
60-64	796.1	943.8	1149.6	1233.6	1258.9	1116.9	1236.7	1325.7	1525.0	1552.6
65-69	1139.7	740.0	783.9	980.6	1079.4	1122.6	1009.9	1130.3	1220.7	1418.4
70-74	609.3	846.4	567.7	630.3	808.8	913.0	963.3	878.6	992.2	1084.2
75-79	532.8	408.8	583.8	404.7	474.2	622.0	716.9	765.9	707.2	810.5
80-84	208.6	280.4	233.2	355.4	252.7	314.5	416.8	490.0	527.0	496.0
85-89	57.0	80.6	124.4	106.4	172.6	123.3	163.7	216.3	258.1	279.3
90-94	18.9	14.6	23.0	37.0	32.0	55.3	38.8	55.8	72.5	88.2
95-99	2.5	2.6	2.1	3.6	6.0	5.3	9.8	6.7	10.6	13.7
100+	0.3	0.2	0.2	0.2	0.3	0.6	0.6	1.1	0.8	1.3
FEMALES	25174.5	24584.9	24087.0	23761.6	23444.0	22962.2	22389.8	21835.5	21313.1	20817.9
0-4	973.4	1107.3	1237.8	1305.6	1239.3	1028.2	919.9	953.2	1039.0	1085.8
5-9	1008.0	952.4	1105.6	1236.2	1304.2	1238.2	1027.4	919.3	952.6	1038.5
10-14	1312.1	1056.1	951.5	1104.7	1235.3	1303.4	1237.6	1027.0	918.9	952.3
15-19	1744.4	1389.7	1054.7	950.4	1103.6	1234.2	1302.4	1236.6	1026.3	918.3
20-24	1859.1	1803.4	1386.5	1052.5	948.7	1101.7	1232.3	1300.5	1235.0	1024.9
25-29	1711.6	1833.0	1796.6	1382.1	1049.7	946.6	1099.7	1230.3	1298.7	1233.4
30-34	1678.1	1687.0	1822.1	1787.8	1376.5	1046.2	943.9	1097.0	1227.8	1296.3
35-39	1596.4	1654.7	1673.1	1810.0	1777.9	1370.2	1042.2	940.9	1094.1	1224.9
40-44	1801.3	1570.4	1636.2	1657.7	1796.0	1766.3	1362.5	1037.2	937.0	1090.1
45-49	1951.8	1855.8	1545.8	1614.7	1639.2	1778.9	1751.5	1352.5	1030.3	931.5
50-54	1783.5	1859.0	1811.8	1514.5	1586.1	1613.5	1754.1	1729.1	1336.4	1018.9
55-59	1591.0	1719.5	1791.7	1754.4	1472.4	1547.0	1577.5	1718.7	1696.3	1312.5
60-64	1165.5	1348.9	1629.3	1709.7	1682.3	1418.2	1495.0	1528.8	1669.3	1649.7
65-69	1808.0	1223.7	1247.4	1518.2	1605.1	1587.8	1345.1	1423.8	1460.0	1598.2
70-74	1054.1	1532.6	1070.4	1116.7	1371.4	1465.2	1458.8	1244.7	1323.8	1362.5
75-79	1157.9	854.5	1238.0	878.6	946.4	1174.8	1271.4	1277.0	1098.7	1176.1
80-84	667.4	752.3	578.4	887.8	639.6	722.2	905.6	998.4	1010.8	879.8
85-89	210.7	305.5	392.4	315.0	518.1	376.8	453.4	573.0	643.7	655.8
90-94	86.1	63.8	104.8	142.5	118.5	211.1	152.9	200.3	252.2	289.1
95-99	12.6	14.4	11.2	21.0	30.5	26.6	51.8	37.7	54.2	68.3
100+	1.5	1.2	1.7	1.6	3.1	5.0	5.0	9.4	8.1	11.0

1 ST HIGH-HIGH-HIGH		(THOUSAND PERSONS)								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45626.8	44710.6	44099.6	43722.0	43454.3	43174.6	42912.5	42652.9	42351.0
0-4	2005.1	2329.3	2414.6	2317.5	2180.4	2071.0	2030.8	2121.0	2185.8	2153.2
5-9	2067.9	1964.6	2336.3	2419.8	2325.3	2191.3	2082.4	2042.4	2132.8	2198.1
10-14	2691.7	2170.2	1977.2	2345.4	2431.5	2340.7	2207.1	2098.3	2058.5	2149.3
15-19	3572.7	2857.8	2189.2	1996.3	2370.1	2462.0	2372.0	2238.8	2130.8	2092.3
20-24	3793.9	3692.1	2881.8	2240.7	2074.6	2467.2	2562.9	2475.3	2345.3	2242.2
25-29	3446.0	3724.0	3686.1	2904.4	2288.7	2140.4	2534.8	2631.9	2547.2	2421.0
30-34	3326.0	3369.6	3701.4	3683.3	2929.2	2333.8	2190.3	2584.5	2684.2	2603.2
35-39	3123.0	3252.0	3334.0	3680.8	3685.9	2957.7	2373.1	2233.7	2629.4	2732.7
40-44	3447.8	3026.6	3196.5	3293.7	3657.1	3680.6	2969.3	2395.5	2262.0	2659.0
45-49	3663.3	3482.6	2945.9	3129.0	3245.7	3619.7	3652.1	2958.8	2398.9	2271.8
50-54	3257.9	3392.0	3335.4	2846.2	3046.9	3178.6	3554.2	3594.8	2925.3	2382.6
55-59	2825.1	3040.4	3186.0	3165.0	2730.6	2942.8	3082.8	3456.8	3507.4	2866.6
60-64	1961.6	2287.9	2770.8	2946.8	2964.8	2584.8	2802.2	2949.3	3321.6	3382.3
65-69	2947.6	1953.2	2013.3	2471.7	2674.7	2721.4	2396.0	2613.3	2766.7	3131.0
70-74	1663.4	2357.4	1604.9	1710.5	2136.0	2348.0	2411.3	2141.8	2351.9	2504.4
75-79	1690.7	1242.5	1754.3	1226.5	1365.8	1728.1	1929.0	1994.2	1789.7	1980.0
80-84	876.1	1009.9	763.5	1149.6	823.6	964.5	1231.1	1391.9	1446.3	1313.0
85-89	267.6	377.9	482.4	381.2	616.1	447.4	555.9	707.9	810.3	844.2
90-94	104.9	77.0	120.6	164.2	135.5	237.7	173.5	230.3	290.6	338.0
95-99	15.1	18.2	14.1	24.7	35.6	30.6	58.1	41.8	59.5	74.5
100+	1.8	1.4	2.3	2.2	3.8	6.0	5.8	10.5	8.6	11.5
MALES	21574.7	21018.8	20594.1	20362.0	20294.0	20291.7	20295.2	20346.2	20437.5	20512.0
0-4	1031.7	1192.4	1234.5	1185.1	1115.2	1059.4	1038.9	1085.2	1118.5	1102.0
5-9	1059.9	1010.4	1195.6	1236.9	1189.0	1120.8	1065.3	1045.0	1091.4	1125.0
10-14	1379.6	1111.3	1016.6	1200.1	1242.8	1196.9	1128.9	1073.4	1053.3	1099.9
15-19	1828.4	1464.1	1120.7	1026.4	1213.0	1258.8	1213.4	1145.7	1090.7	1071.3
20-24	1934.9	1883.8	1474.5	1149.0	1070.5	1267.5	1315.6	1271.9	1206.3	1154.4
25-29	1734.4	1887.6	1871.6	1483.4	1174.6	1107.0	1305.0	1354.3	1312.8	1250.0
30-34	1647.9	1677.9	1862.4	1861.1	1492.1	1196.4	1132.3	1330.4	1381.9	1343.1
35-39	1526.6	1592.8	1643.6	1838.3	1852.9	1501.2	1213.8	1153.1	1352.8	1407.0
40-44	1646.5	1452.3	1544.4	1606.5	1812.5	1839.3	1500.5	1221.9	1166.1	1367.3
45-49	1711.5	1624.9	1387.3	1489.3	1565.8	1778.7	1812.6	1487.9	1220.1	1169.2
50-54	1474.4	1530.6	1513.0	1310.8	1426.2	1513.2	1727.8	1769.5	1462.7	1207.2
55-59	1234.1	1317.4	1382.3	1390.3	1227.4	1350.4	1443.7	1659.0	1710.0	1423.0
60-64	796.1	937.8	1133.5	1219.6	1255.3	1127.2	1253.7	1353.7	1570.4	1629.9
65-69	1139.7	731.5	762.9	945.2	1049.5	1100.6	1004.9	1132.6	1238.8	1451.3
70-74	609.3	832.7	542.4	593.9	759.3	864.0	920.9	856.2	980.2	1085.0
75-79	532.8	400.2	548.4	370.8	433.2	565.5	658.9	714.8	679.5	789.6
80-84	208.6	273.9	216.8	318.4	224.1	277.6	367.5	439.3	485.1	470.8
85-89	57.0	79.4	117.5	96.6	152.5	108.5	143.1	190.6	233.8	260.7
90-94	18.9	14.7	22.9	35.7	30.6	51.4	36.6	52.3	69.8	87.7
95-99	2.5	3.0	2.6	4.3	7.0	6.1	10.8	7.7	11.9	15.8
100+	0.3	0.2	0.4	0.4	0.6	1.1	1.0	1.7	1.4	2.0
FEMALES	25174.5	24608.0	24116.4	23737.6	23427.9	23162.6	22879.4	22566.3	22215.4	21839.1
0-4	973.4	1136.9	1180.1	1132.4	1065.2	1011.6	991.8	1035.8	1067.3	1051.2
5-9	1008.0	954.2	1140.7	1182.9	1136.3	1070.5	1017.1	997.4	1041.4	1073.1
10-14	1312.1	1058.9	960.6	1145.3	1188.7	1143.9	1078.2	1024.9	1005.3	1049.4
15-19	1744.4	1393.7	1068.6	969.9	1157.1	1203.2	1158.7	1093.1	1040.1	1021.0
20-24	1859.1	1808.3	1407.3	1091.8	1004.1	1199.7	1247.3	1203.4	1139.0	1087.8
25-29	1711.6	1836.4	1814.5	1421.0	1114.1	1033.4	1229.8	1277.5	1234.4	1171.1
30-34	1678.1	1691.7	1839.0	1822.2	1437.2	1137.4	1058.0	1254.1	1302.3	1260.1
35-39	1596.4	1659.2	1690.4	1842.5	1833.0	1456.5	1159.4	1080.6	1276.7	1325.7
40-44	1801.3	1574.3	1652.0	1687.3	1844.6	1841.2	1468.8	1173.6	1095.9	1291.8
45-49	1951.8	1857.7	1558.6	1639.8	1679.9	1841.0	1839.5	1470.9	1178.9	1102.6
50-54	1783.5	1861.4	1822.3	1535.4	1620.6	1665.4	1826.3	1825.3	1462.6	1175.5
55-59	1591.0	1722.9	1803.7	1774.8	1503.2	1592.4	1639.1	1797.8	1797.5	1443.6
60-64	1165.5	1350.2	1637.2	1727.2	1709.5	1457.6	1548.5	1595.6	1751.2	1752.5
65-69	1808.0	1221.8	1250.4	1526.5	1625.2	1620.7	1391.1	1480.7	1527.9	1679.7
70-74	1054.1	1524.7	1062.5	1116.6	1376.7	1484.0	1490.4	1285.5	1371.7	1419.5
75-79	1157.9	842.2	1205.9	855.7	932.6	1162.6	1270.1	1279.4	1110.2	1190.4
80-84	667.4	736.0	546.7	831.2	599.5	686.8	863.6	952.6	961.2	842.2
85-89	210.7	298.5	364.9	284.6	463.6	338.9	412.8	517.2	576.5	583.5
90-94	86.1	62.3	97.6	128.5	105.0	186.2	136.9	178.0	220.8	250.3
95-99	12.6	15.3	11.5	20.4	28.6	24.5	47.2	34.1	47.6	58.6
100+	1.5	1.2	1.9	1.8	3.2	4.9	4.8	8.7	7.3	9.5

1 ST HIGH-HIGH-MEDIUM		(THOUSAND PERSONS)								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45589.4	44589.8	43883.9	43396.0	42994.9	42554.5	42104.5	41628.0	41078.2
0-4	2005.1	2327.8	2408.6	2306.4	2162.6	2045.4	1996.9	2077.1	2129.3	2082.0
5-9	2067.9	1963.1	2331.9	2411.3	2311.6	2170.4	2053.2	2004.4	2084.3	2136.4
10-14	2691.7	2168.2	1971.7	2337.3	2419.1	2322.4	2181.1	2063.5	2014.4	2094.1
15-19	3572.7	2855.2	2181.8	1985.2	2355.9	2441.8	2344.6	2202.1	2083.9	2034.3
20-24	3793.9	3688.9	2871.9	2223.8	2052.5	2437.9	2520.7	2419.4	2273.7	2153.3
25-29	3446.0	3720.5	3675.1	2884.8	2260.5	2104.5	2487.5	2567.8	2465.5	2319.4
30-34	3326.0	3365.8	3689.5	3662.3	2898.2	2292.0	2138.2	2518.5	2598.9	2497.5
35-39	3123.0	3248.7	3322.5	3659.5	3654.2	2914.1	2316.4	2164.4	2543.9	2625.4
40-44	3447.8	3023.4	3185.9	3273.9	3626.4	3638.1	2913.3	2324.8	2177.0	2556.2
45-49	3663.3	3480.1	2936.7	3111.3	3217.9	3580.0	3599.9	2892.2	2316.8	2174.5
50-54	3257.9	3389.8	3328.1	2831.1	3022.6	3143.5	3506.8	3534.4	2850.1	2291.4
55-59	2825.1	3038.9	3180.0	3153.0	2710.4	2913.0	3041.7	3403.2	3440.5	2784.4
60-64	1961.6	2286.3	2766.4	2937.3	2948.9	2560.5	2768.3	2904.1	3263.8	3311.0
65-69	2947.6	1951.3	2007.6	2464.5	2662.6	2702.7	2368.9	2576.5	2718.7	3070.4
70-74	1663.4	2356.2	1600.8	1703.2	2127.2	2334.3	2391.3	2113.9	2314.8	2456.5
75-79	1690.7	1241.4	1751.1	1221.5	1358.0	1718.6	1915.1	1974.7	1763.2	1945.2
80-84	876.1	1009.4	761.7	1146.6	819.2	957.9	1223.0	1380.4	1430.5	1291.7
85-89	267.6	377.8	481.8	380.0	614.1	444.6	551.8	702.8	803.0	834.3
90-94	104.9	76.9	120.4	163.9	135.0	236.8	172.2	228.4	288.4	334.8
95-99	15.1	18.2	14.1	24.6	35.5	30.5	57.8	41.4	59.0	73.8
100+	1.8	1.4	2.3	2.1	3.8	6.0	5.8	10.4	8.6	11.4
MALES	21574.7	21001.1	20536.4	20255.5	20130.4	20058.7	19977.9	19929.5	19905.2	19846.9
0-4	1031.7	1191.7	1231.4	1179.4	1106.1	1046.3	1021.6	1062.7	1089.5	1065.5
5-9	1059.9	1009.6	1193.3	1232.5	1181.9	1110.0	1050.2	1025.4	1066.4	1093.3
10-14	1379.6	1110.3	1013.7	1195.9	1236.3	1187.3	1115.4	1055.4	1030.5	1071.5
15-19	1828.4	1462.7	1116.7	1020.6	1205.4	1248.1	1198.9	1126.4	1066.2	1041.1
20-24	1934.9	1882.2	1469.4	1139.7	1058.4	1251.4	1292.5	1241.2	1167.2	1106.0
25-29	1734.4	1886.0	1866.4	1472.9	1159.1	1087.1	1278.6	1318.6	1267.3	1193.5
30-34	1647.9	1676.1	1856.9	1850.5	1475.3	1173.4	1103.4	1293.7	1334.4	1284.2
35-39	1526.6	1591.1	1637.9	1827.8	1836.5	1477.6	1182.7	1115.0	1305.5	1347.6
40-44	1646.5	1450.6	1538.9	1596.3	1796.9	1817.1	1470.3	1183.3	1119.5	1310.6
45-49	1711.5	1623.5	1382.4	1479.9	1551.5	1758.3	1785.3	1452.1	1175.4	1116.1
50-54	1474.4	1529.5	1509.3	1303.0	1413.6	1495.3	1703.7	1738.1	1422.6	1157.9
55-59	1234.1	1316.8	1379.5	1384.3	1217.3	1335.4	1423.2	1632.1	1675.7	1379.8
60-64	796.1	937.1	1131.7	1215.4	1247.9	1115.6	1237.3	1331.8	1542.1	1594.0
65-69	1139.7	730.7	760.7	942.4	1044.5	1092.5	992.7	1115.6	1216.3	1422.4
70-74	609.3	832.3	540.9	591.4	756.2	858.9	912.9	844.4	964.0	1063.5
75-79	532.8	400.0	547.5	369.3	430.7	562.4	654.1	707.5	669.0	775.2
80-84	208.6	273.8	216.5	317.6	222.8	275.8	365.1	435.6	479.6	462.8
85-89	57.0	79.4	117.5	96.4	152.0	107.8	142.0	189.3	231.6	257.5
90-94	18.9	14.6	22.9	35.7	30.5	51.2	36.3	51.8	69.3	86.8
95-99	2.5	3.0	2.6	4.3	7.0	6.1	10.8	7.6	11.8	15.7
100+	0.3	0.2	0.4	0.4	0.6	1.1	1.0	1.7	1.4	2.0
FEMALES	25174.5	24588.3	24053.4	23628.4	23265.6	22936.3	22576.7	22175.1	21722.8	21231.3
0-4	973.4	1136.2	1177.2	1127.0	1056.6	999.1	975.3	1014.4	1039.7	1016.5
5-9	1008.0	953.5	1138.6	1178.8	1129.7	1060.4	1003.0	979.0	1017.9	1043.1
10-14	1312.1	1057.9	957.9	1141.4	1182.8	1135.1	1065.7	1008.0	983.9	1022.7
15-19	1744.4	1392.5	1065.0	964.6	1150.4	1193.7	1145.7	1075.7	1017.7	993.3
20-24	1859.1	1806.6	1402.5	1084.1	994.1	1186.5	1228.3	1178.2	1106.5	1047.3
25-29	1711.6	1834.5	1808.7	1411.9	1101.4	1017.4	1208.8	1249.2	1198.2	1126.0
30-34	1678.1	1689.7	1832.6	1811.8	1422.9	1118.6	1034.7	1224.8	1264.5	1213.3
35-39	1596.4	1657.6	1684.5	1831.8	1817.7	1436.5	1133.7	1049.4	1238.4	1277.8
40-44	1801.3	1572.8	1647.1	1677.6	1829.5	1821.0	1443.0	1141.5	1057.5	1245.6
45-49	1951.8	1856.6	1554.3	1631.4	1666.4	1821.7	1814.6	1440.1	1141.4	1058.4
50-54	1783.5	1860.3	1818.8	1528.2	1609.0	1648.2	1803.1	1796.3	1427.5	1133.5
55-59	1591.0	1722.1	1800.5	1768.6	1493.1	1577.6	1618.5	1771.1	1764.8	1404.6
60-64	1165.5	1349.2	1634.8	1722.0	1701.0	1444.9	1531.0	1572.3	1721.7	1717.0
65-69	1808.0	1220.6	1246.9	1522.2	1618.1	1610.2	1376.2	1460.9	1502.4	1647.9
70-74	1054.1	1524.0	1059.9	1111.8	1371.0	1475.5	1478.5	1269.4	1350.8	1393.0
75-79	1157.9	841.4	1203.6	852.2	927.3	1156.2	1261.0	1267.2	1094.2	1170.0
80-84	667.4	735.6	545.3	829.0	596.3	682.1	857.9	944.8	950.9	828.9
85-89	210.7	298.4	364.4	283.6	462.1	336.8	409.8	513.5	571.4	576.8
90-94	86.1	62.3	97.5	128.2	104.5	185.6	136.0	176.6	219.1	248.0
95-99	12.6	15.2	11.5	20.4	28.5	24.4	47.0	33.8	47.2	58.2
100+	1.5	1.2	1.9	1.7	3.2	4.9	4.8	8.7	7.2	9.4

1 ST HIGH-LOW-LOW		(THOUSAND PERSONS)								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45288.3	43346.3	41591.0	39942.4	38317.0	36759.0	35404.3	34217.4	33097.6
0-4	2005.1	2318.8	2372.4	2240.4	2063.2	1909.6	1836.2	1899.4	1932.6	1862.1
5-9	2067.9	1955.7	2298.5	2357.4	2229.4	2052.5	1897.4	1822.2	1883.8	1916.6
10-14	2691.7	2159.4	1936.2	2284.5	2347.5	2219.3	2040.3	1882.9	1805.8	1866.8
15-19	3572.7	2846.2	2140.6	1925.6	2279.3	2344.7	2215.6	2034.8	1876.3	1799.2
20-24	3793.9	3677.4	2819.1	2133.0	1935.8	2303.0	2376.1	2246.1	2066.6	1911.1
25-29	3446.0	3706.1	3610.5	2776.1	2111.2	1923.7	2290.4	2360.8	2231.5	2054.8
30-34	3326.0	3348.4	3618.5	3538.9	2731.0	2082.4	1899.9	2261.7	2332.8	2207.3
35-39	3123.0	3229.7	3246.3	3524.7	3458.9	2676.2	2046.8	1871.4	2230.8	2304.7
40-44	3447.8	3000.6	3100.7	3131.6	3412.1	3352.8	2599.9	1995.0	1829.5	2185.8
45-49	3663.3	3454.2	2844.2	2953.4	2992.5	3264.0	3211.6	2497.7	1921.6	1766.4
50-54	3257.9	3359.9	3221.5	2663.8	2774.5	2813.9	3074.8	3035.7	2367.7	1824.7
55-59	2825.1	3005.1	3060.2	2946.8	2445.4	2550.9	2593.6	2848.6	2824.2	2207.9
60-64	1961.6	2263.3	2654.9	2720.5	2627.0	2185.1	2287.6	2341.5	2588.5	2576.1
65-69	2947.6	1938.1	1929.6	2272.4	2339.8	2261.4	1888.9	1992.4	2053.3	2282.0
70-74	1663.4	2338.3	1540.6	1558.8	1836.3	1898.2	1840.6	1552.6	1652.2	1713.1
75-79	1690.7	1233.9	1682.4	1102.8	1142.0	1340.6	1398.8	1369.6	1170.7	1258.1
80-84	876.1	996.0	720.2	1012.1	656.1	703.8	825.6	880.0	872.2	758.1
85-89	267.6	366.6	436.5	312.6	457.6	290.5	332.0	393.0	431.7	434.1
90-94	104.9	73.2	102.0	120.1	84.8	130.7	81.9	104.2	125.5	143.5
95-99	15.1	15.9	10.0	14.3	16.8	11.8	19.7	12.7	18.5	22.9
100+	1.8	1.3	1.5	1.0	1.4	1.7	1.3	2.2	1.7	2.4
MALES	21574.7	20833.4	19878.7	19030.9	18236.2	17452.2	16725.9	16147.7	15685.4	15248.1
0-4	1031.7	1186.7	1212.7	1145.4	1055.0	976.5	939.0	971.5	988.5	952.5
5-9	1059.9	1005.7	1175.9	1204.6	1139.4	1049.1	970.0	931.6	963.2	980.0
10-14	1379.6	1105.7	995.6	1168.5	1199.2	1134.0	1042.6	962.3	923.0	954.3
15-19	1828.4	1458.2	1095.9	990.0	1165.6	1197.6	1132.1	1040.0	959.3	920.2
20-24	1934.9	1876.7	1443.2	1092.1	995.9	1178.9	1215.6	1150.3	1059.6	981.0
25-29	1734.4	1878.6	1833.2	1414.5	1076.4	986.4	1169.1	1205.2	1141.2	1052.7
30-34	1647.9	1665.4	1817.5	1781.7	1380.4	1053.8	968.2	1148.6	1186.1	1125.0
35-39	1526.6	1579.6	1593.2	1749.5	1721.7	1338.2	1026.4	947.2	1126.7	1166.2
40-44	1646.5	1435.7	1487.4	1510.3	1665.8	1641.9	1281.3	989.4	918.6	1095.6
45-49	1711.5	1605.6	1323.0	1380.3	1407.6	1555.4	1537.2	1207.6	938.5	875.1
50-54	1474.4	1508.8	1439.3	1193.9	1250.6	1277.2	1416.5	1409.3	1114.3	869.2
55-59	1234.1	1294.6	1303.4	1251.4	1043.3	1095.0	1123.3	1257.8	1260.9	1001.1
60-64	796.1	923.2	1065.9	1082.3	1042.2	871.5	920.0	955.0	1081.9	1089.8
65-69	1139.7	725.5	722.1	836.2	852.6	820.7	691.1	739.7	777.9	888.2
70-74	609.3	824.5	517.4	524.9	606.1	619.4	599.0	513.6	558.5	592.4
75-79	532.8	396.4	522.2	323.9	336.1	384.5	397.5	391.8	343.8	378.4
80-84	208.6	269.2	203.4	274.0	167.2	178.5	204.2	217.8	219.3	195.7
85-89	57.0	76.9	106.0	79.0	109.3	64.8	73.8	86.2	95.6	97.4
90-94	18.9	13.9	19.2	25.8	18.5	26.3	15.4	20.3	24.7	28.6
95-99	2.5	2.6	1.8	2.4	3.1	2.2	3.3	2.2	3.4	4.3
100+	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.4	0.3	0.5
FEMALES	25174.5	24454.9	23467.6	22560.2	21706.3	20864.7	20033.1	19256.6	18532.0	17849.5
0-4	973.4	1132.1	1159.7	1095.0	1008.3	933.1	897.2	928.0	944.1	909.5
5-9	1008.0	950.0	1122.7	1152.8	1090.0	1003.4	927.4	890.6	920.6	936.6
10-14	1312.1	1053.7	940.6	1116.0	1148.2	1085.3	997.7	920.6	882.8	912.5
15-19	1744.4	1388.0	1044.6	935.5	1113.8	1147.1	1083.6	994.8	916.9	879.1
20-24	1859.1	1800.8	1375.9	1040.9	939.8	1124.1	1160.4	1095.8	1007.0	930.2
25-29	1711.6	1827.6	1777.3	1361.6	1034.9	937.3	1121.3	1155.6	1090.3	1002.1
30-34	1678.1	1683.0	1801.0	1757.2	1350.6	1028.5	931.7	1113.2	1146.7	1082.3
35-39	1596.4	1650.1	1653.1	1775.2	1737.3	1338.0	1020.4	924.1	1104.1	1138.5
40-44	1801.3	1565.0	1613.3	1621.4	1746.3	1710.9	1318.6	1005.6	911.0	1090.2
45-49	1951.8	1848.6	1521.2	1573.1	1584.9	1708.7	1674.4	1290.1	983.1	891.3
50-54	1783.5	1851.1	1782.2	1469.9	1523.9	1536.7	1658.3	1626.4	1253.4	955.4
55-59	1591.0	1710.6	1756.9	1695.5	1402.1	1455.9	1470.3	1590.7	1563.3	1206.9
60-64	1165.5	1340.2	1589.0	1638.2	1584.8	1313.6	1367.7	1386.4	1506.6	1486.2
65-69	1808.0	1212.6	1207.5	1436.1	1487.2	1440.7	1197.8	1252.6	1275.4	1393.9
70-74	1054.1	1513.8	1023.2	1033.9	1230.3	1278.9	1241.6	1039.0	1093.6	1120.7
75-79	1157.9	837.5	1160.1	778.9	805.9	956.1	1001.3	977.8	826.9	879.7
80-84	667.4	726.8	516.7	738.2	488.9	525.3	621.4	662.2	652.9	562.4
85-89	210.7	289.8	330.5	233.6	348.3	225.7	258.2	306.8	336.0	336.7
90-94	86.1	59.4	82.7	94.3	66.3	104.5	66.5	83.9	100.8	115.0
95-99	12.6	13.3	8.2	11.9	13.6	9.6	16.3	10.5	15.1	18.6
100+	1.5	1.1	1.2	0.9	1.2	1.4	1.1	1.8	1.4	2.0

1ST HIGH-MEDIUM-HIGH		(THOUSAND PERSONS)								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
BOTH	46749.2	45569.3	44448.6	43562.3	42883.2	42292.1	41727.7	41243.6	40787.6	40332.0
SEXES										
0-4	2005.1	2328.4	2411.9	2313.3	2175.1	2065.8	2025.8	2115.3	2178.7	2144.9
5-9	2067.9	1964.6	2335.2	2416.8	2320.7	2185.6	2076.8	2037.0	2126.6	2190.4
10-14	2691.7	2170.3	1977.0	2344.0	2428.2	2335.8	2201.1	2092.3	2052.8	2142.7
15-19	3572.7	2857.8	2189.0	1995.8	2368.3	2458.3	2366.6	2232.4	2124.4	2086.1
20-24	3793.9	3691.9	2880.8	2239.8	2073.3	2464.4	2558.0	2468.8	2337.6	2234.7
25-29	3446.0	3722.3	3682.3	2900.7	2285.3	2136.9	2529.4	2624.1	2537.5	2410.4
30-34	3326.0	3365.3	3690.1	3670.9	2918.9	2325.5	2182.5	2573.9	2670.5	2587.9
35-39	3123.0	3246.9	3318.9	3658.8	3662.5	2938.7	2358.2	2219.3	2610.4	2710.2
40-44	3447.8	3018.9	3175.9	3264.6	3619.6	3642.0	2938.6	2370.5	2237.4	2628.1
45-49	3663.3	3470.5	2916.9	3088.4	3195.9	3559.7	3591.5	2909.1	2357.6	2232.0
50-54	3257.9	3378.0	3292.8	2792.1	2977.1	3096.3	3458.3	3495.9	2842.8	2314.9
55-59	2825.1	3023.6	3133.6	3082.4	2637.7	2826.6	2950.6	3304.3	3348.4	2734.9
60-64	1961.6	2284.8	2731.7	2863.1	2842.0	2449.7	2637.1	2764.0	3103.7	3154.3
65-69	2947.6	1955.5	2004.8	2414.2	2559.9	2556.9	2221.1	2403.1	2527.2	2847.1
70-74	1663.4	2359.0	1597.6	1678.9	2043.2	2188.5	2202.7	1931.3	2098.5	2216.1
75-79	1690.7	1245.0	1741.0	1193.2	1299.2	1588.2	1724.5	1749.7	1546.6	1690.0
80-84	876.1	1013.5	760.2	1108.8	767.7	869.0	1067.3	1177.9	1198.4	1069.6
85-89	267.6	378.0	478.4	363.8	561.0	386.1	463.2	570.1	636.6	648.2
90-94	104.9	76.3	116.1	151.0	117.5	192.6	132.2	172.2	209.8	238.0
95-99	15.1	17.3	12.3	20.2	27.6	21.8	38.7	26.8	37.7	45.5
100+	1.8	1.4	2.0	1.6	2.6	3.7	3.3	5.7	4.5	6.0
MALES	21574.7	20986.5	20449.7	20070.7	19804.5	19589.4	19387.8	19239.1	19140.8	19060.4
0-4	1031.7	1191.9	1233.1	1182.9	1112.5	1056.7	1036.3	1082.2	1114.8	1097.7
5-9	1059.9	1010.5	1195.0	1235.4	1186.7	1117.8	1062.3	1042.1	1088.1	1120.8
10-14	1379.6	1111.5	1016.6	1199.3	1241.2	1194.3	1125.6	1070.1	1050.1	1096.2
15-19	1828.4	1464.2	1120.6	1026.2	1212.0	1256.9	1210.4	1142.1	1087.1	1067.7
20-24	1934.9	1883.9	1474.0	1148.4	1069.7	1265.8	1312.8	1268.0	1201.7	1149.8
25-29	1734.4	1886.6	1869.3	1481.3	1172.5	1104.6	1301.2	1349.1	1306.3	1242.9
30-34	1647.9	1674.2	1854.1	1852.9	1485.0	1190.4	1126.3	1322.1	1371.6	1331.8
35-39	1526.6	1588.4	1631.9	1822.6	1836.5	1487.3	1202.2	1141.3	1337.1	1389.2
40-44	1646.5	1445.5	1528.3	1584.9	1785.3	1810.8	1476.7	1201.4	1145.4	1341.4
45-49	1711.5	1613.7	1363.2	1457.5	1527.5	1732.3	1764.5	1446.9	1184.8	1134.9
50-54	1474.4	1518.2	1477.1	1266.8	1370.4	1447.7	1650.0	1686.7	1391.7	1147.8
55-59	1234.1	1303.6	1341.3	1324.5	1152.2	1256.7	1335.9	1530.4	1572.6	1307.1
60-64	796.1	937.8	1109.2	1160.9	1161.4	1021.2	1121.6	1200.1	1383.8	1430.7
65-69	1139.7	735.6	763.8	913.9	971.7	980.9	871.6	964.6	1040.2	1209.0
70-74	609.3	839.1	547.9	587.5	711.4	766.0	779.6	700.8	782.8	852.1
75-79	532.8	404.0	555.9	369.2	412.0	501.7	548.0	562.6	513.3	580.4
80-84	208.6	278.2	221.5	318.7	214.1	248.8	303.6	336.8	348.8	323.8
85-89	57.0	80.9	120.4	97.2	146.3	97.6	119.4	145.3	163.9	171.0
90-94	18.9	15.3	23.7	36.2	29.3	46.1	30.3	39.7	47.9	55.2
95-99	2.5	3.3	2.6	4.1	6.5	5.2	8.6	5.6	7.9	9.6
100+	0.3	0.3	0.4	0.3	0.5	0.8	0.8	1.2	0.9	1.2
FEMALES	25174.5	24582.8	23998.9	23491.5	23078.6	22702.7	22340.0	22004.5	21646.8	21271.6
0-4	973.4	1136.5	1178.8	1130.4	1062.7	1009.1	989.5	1033.0	1063.9	1047.2
5-9	1008.0	954.1	1140.2	1181.3	1134.1	1067.8	1014.5	994.9	1038.6	1069.6
10-14	1312.1	1058.8	960.4	1144.6	1187.0	1141.5	1075.4	1022.2	1002.7	1046.5
15-19	1744.4	1393.6	1068.4	969.6	1156.3	1201.4	1156.2	1090.3	1037.3	1018.3
20-24	1859.1	1808.0	1406.8	1091.3	1003.6	1198.7	1245.2	1200.8	1135.9	1084.8
25-29	1711.6	1835.8	1812.9	1419.5	1112.8	1032.3	1228.2	1275.0	1231.2	1167.5
30-34	1678.1	1691.0	1836.0	1818.1	1433.9	1135.1	1056.3	1251.8	1298.9	1256.1
35-39	1596.4	1658.5	1687.0	1836.1	1826.0	1451.4	1156.1	1078.0	1273.3	1321.0
40-44	1801.3	1573.3	1647.6	1679.7	1834.3	1831.2	1461.9	1169.1	1092.0	1286.8
45-49	1951.8	1856.8	1553.8	1630.9	1668.3	1827.4	1827.0	1462.2	1172.8	1097.1
50-54	1783.5	1859.8	1815.7	1525.3	1606.7	1648.6	1808.3	1809.2	1451.1	1167.1
55-59	1591.0	1720.0	1792.3	1757.9	1485.5	1569.9	1614.7	1773.8	1775.9	1427.8
60-64	1165.5	1346.9	1622.6	1702.2	1680.6	1428.5	1515.5	1563.9	1719.9	1723.6
65-69	1808.0	1220.0	1241.0	1500.4	1588.1	1576.0	1349.5	1438.5	1487.1	1638.1
70-74	1054.1	1519.9	1049.7	1091.4	1331.8	1422.5	1423.1	1230.5	1315.7	1364.0
75-79	1157.9	841.0	1185.2	824.0	887.2	1086.5	1176.5	1187.1	1033.3	1109.7
80-84	667.4	735.3	538.7	790.1	553.6	620.2	763.7	841.1	849.5	745.7
85-89	210.7	297.1	358.0	266.6	414.8	288.5	343.7	424.8	472.6	477.2
90-94	86.1	61.0	92.4	114.8	88.2	146.5	101.9	132.5	161.9	182.8
95-99	12.6	14.1	9.8	16.1	21.1	16.6	30.1	21.1	29.7	36.0
100+	1.5	1.2	1.6	1.2	2.1	2.9	2.6	4.6	3.6	4.8

1 ST HIGH-MEDIUM-LOW	(THOUSAND PERSONS)									
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45428.8	43835.3	42512.6	41360.3	40202.2	39043.6	37929.6	36815.0	35683.1
0-4	2005.1	2321.3	2378.2	2249.3	2074.8	1922.9	1850.8	1916.3	1951.7	1882.2
5-9	2067.9	1956.6	2302.5	2364.8	2240.2	2066.0	1912.6	1838.4	1902.0	1936.8
10-14	2691.7	2160.0	1937.8	2289.5	2356.2	2231.4	2055.1	1899.1	1822.9	1885.7
15-19	3572.7	2847.2	2142.3	1928.4	2286.0	2355.4	2229.6	2051.0	1893.5	1817.2
20-24	3793.9	3679.6	2823.2	2137.8	1941.8	2314.0	2391.1	2263.5	2085.4	1930.6
25-29	3446.0	3708.8	3619.8	2788.4	2124.1	1938.2	2311.5	2384.5	2255.5	2079.0
30-34	3326.0	3352.9	3633.6	3565.2	2760.4	2110.6	1928.6	2296.7	2368.1	2241.1
35-39	3123.0	3235.7	3270.3	3566.9	3518.7	2735.7	2098.3	1917.5	2282.5	2355.6
40-44	3447.8	3007.5	3130.1	3187.0	3497.3	3461.9	2698.5	2071.5	1894.3	2257.8
45-49	3663.3	3461.2	2875.6	3017.9	3093.4	3407.4	3380.4	2636.8	2025.0	1854.6
50-54	3257.9	3370.6	3259.6	2731.1	2887.0	2970.1	3281.7	3260.4	2545.8	1957.9
55-59	2825.1	3018.9	3108.6	3032.7	2560.9	2717.8	2805.7	3109.5	3095.6	2422.0
60-64	1961.6	2279.5	2714.4	2827.9	2782.2	2361.2	2517.5	2609.2	2900.8	2895.8
65-69	2947.6	1948.9	1978.5	2384.8	2515.5	2487.4	2123.7	2275.2	2365.2	2639.8
70-74	1663.4	2354.5	1578.3	1646.5	2008.2	2138.4	2129.6	1832.4	1971.5	2058.0
75-79	1690.7	1241.2	1725.5	1170.5	1266.9	1551.9	1674.8	1680.3	1455.2	1575.2
80-84	876.1	1011.9	751.7	1094.1	748.6	842.5	1037.1	1137.5	1143.6	998.9
85-89	267.6	377.5	475.7	358.3	552.5	374.8	447.7	552.2	612.7	616.3
90-94	104.9	76.1	115.4	149.8	115.4	189.4	127.9	166.2	202.8	228.6
95-99	15.1	17.3	12.2	20.1	27.4	21.4	38.1	25.9	36.4	44.0
100+	1.8	1.4	1.9	1.6	2.6	3.8	3.3	5.7	4.4	5.9
MALES	21574.7	20921.2	20166.4	19573.4	19068.2	18568.7	18073.9	17617.0	17197.1	16785.1
0-4	1031.7	1188.2	1215.8	1150.0	1060.9	983.4	946.6	980.2	998.4	963.0
5-9	1059.9	1006.3	1178.2	1208.7	1145.1	1056.2	977.9	940.0	972.7	990.7
10-14	1379.6	1106.2	996.6	1171.5	1204.1	1140.5	1050.5	970.9	932.0	964.3
15-19	1828.4	1458.9	1097.0	991.9	1169.7	1203.9	1139.8	1048.8	968.6	929.8
20-24	1934.9	1878.0	1445.5	1095.1	1000.0	1186.0	1225.0	1160.5	1070.4	991.9
25-29	1734.4	1880.0	1838.7	1422.5	1085.3	996.7	1183.6	1220.8	1156.3	1067.6
30-34	1647.9	1668.5	1827.7	1799.5	1401.2	1074.2	989.0	1173.2	1210.1	1147.6
35-39	1526.6	1583.1	1609.6	1778.9	1763.9	1380.9	1063.6	980.5	1163.3	1202.0
40-44	1646.5	1439.9	1506.5	1548.9	1726.9	1720.7	1352.9	1044.8	965.4	1147.7
45-49	1711.5	1609.2	1343.9	1425.0	1480.5	1660.6	1661.2	1309.8	1014.5	941.0
50-54	1474.4	1514.8	1462.1	1239.4	1329.8	1390.8	1568.7	1574.5	1246.1	969.4
55-59	1234.1	1301.6	1330.8	1303.2	1119.0	1209.4	1272.9	1444.1	1456.5	1158.9
60-64	796.1	935.8	1102.6	1147.1	1137.1	985.0	1072.3	1136.1	1298.1	1317.2
65-69	1139.7	733.0	753.8	903.3	955.4	954.6	834.5	915.4	977.4	1126.5
70-74	609.3	837.5	540.9	576.3	699.7	749.0	754.3	666.2	737.8	795.4
75-79	532.8	402.9	550.9	361.6	401.7	490.4	532.5	540.7	484.1	543.0
80-84	208.6	277.9	219.3	314.3	208.1	240.8	294.9	325.2	333.0	303.1
85-89	57.0	80.8	119.8	95.8	143.8	94.3	115.2	140.6	157.7	162.5
90-94	18.9	15.3	23.6	35.9	28.8	45.3	29.2	38.2	46.3	53.0
95-99	2.5	3.2	2.6	4.1	6.4	5.2	8.5	5.4	7.7	9.2
100+	0.3	0.2	0.4	0.3	0.5	0.9	0.8	1.2	0.9	1.2
FEMALES	25174.5	24507.6	23668.9	22939.3	22292.1	21633.5	20969.7	20312.6	19617.9	18898.0
0-4	973.4	1133.1	1162.4	1099.3	1013.8	939.5	904.2	936.0	953.3	919.2
5-9	1008.0	950.2	1124.3	1156.2	1095.1	1009.8	934.7	898.3	929.3	946.2
10-14	1312.1	1053.8	941.1	1118.0	1152.1	1090.9	1004.6	928.2	890.8	921.4
15-19	1744.4	1388.3	1045.3	936.5	1116.3	1151.6	1089.7	1002.1	924.9	887.4
20-24	1859.1	1801.7	1377.7	1042.7	941.8	1128.0	1166.1	1103.0	1015.1	938.7
25-29	1711.6	1828.7	1781.1	1365.9	1038.8	941.5	1127.8	1163.7	1099.2	1011.4
30-34	1678.1	1684.4	1805.9	1765.6	1359.3	1036.4	939.6	1123.6	1158.0	1093.5
35-39	1596.4	1652.7	1660.7	1788.0	1754.8	1354.8	1034.7	937.0	1119.3	1153.6
40-44	1801.3	1567.6	1623.6	1638.1	1770.4	1741.2	1345.6	1026.7	928.9	1110.0
45-49	1951.8	1852.0	1531.6	1592.8	1612.9	1746.8	1719.2	1327.0	1010.5	913.6
50-54	1783.5	1855.8	1797.5	1491.7	1557.1	1579.3	1712.9	1685.9	1299.7	988.5
55-59	1591.0	1717.3	1777.8	1729.5	1441.9	1508.4	1532.8	1665.5	1639.1	1263.1
60-64	1165.5	1343.8	1611.8	1680.8	1645.1	1376.3	1445.2	1473.1	1602.7	1578.6
65-69	1808.0	1215.9	1224.7	1481.5	1560.1	1532.8	1289.3	1359.8	1387.8	1513.3
70-74	1054.1	1517.1	1037.4	1070.3	1308.5	1389.4	1375.3	1166.2	1233.7	1262.6
75-79	1157.9	838.4	1174.5	808.8	865.3	1061.4	1142.3	1139.6	971.2	1032.1
80-84	667.4	734.0	532.3	779.9	540.5	601.7	742.2	812.3	810.6	695.9
85-89	210.7	296.7	355.9	262.5	408.7	280.5	332.5	411.6	455.0	453.7
90-94	86.1	60.9	91.9	113.9	86.6	144.1	98.7	128.0	156.5	175.6
95-99	12.6	14.0	9.7	16.0	20.9	16.3	29.6	20.4	28.7	34.8
100+	1.5	1.2	1.6	1.3	2.1	2.9	2.5	4.5	3.5	4.7

1 ST HIGH-MEDIUM-MEDIUM		(THOUSAND PERSONS)								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45531.9	44328.2	43347.9	42560.5	41838.9	41118.0	40451.3	39785.5	39090.7
0-4	2005.1	2327.0	2406.0	2302.3	2157.4	2040.3	1992.0	2071.5	2122.2	2073.8
5-9	2067.9	1963.1	2330.8	2408.3	2307.0	2164.7	2047.7	1999.1	2078.2	2128.8
10-14	2691.7	2168.3	1971.5	2335.9	2415.7	2317.5	2175.1	2057.6	2008.7	2087.6
15-19	3572.7	2855.2	2181.5	1984.7	2354.1	2438.1	2339.2	2195.8	2077.6	2028.2
20-24	3793.9	3688.7	2871.0	2222.8	2051.1	2435.1	2515.9	2412.8	2266.1	2145.9
25-29	3446.0	3718.8	3671.3	2881.1	2257.1	2101.0	2482.2	2560.1	2455.9	2309.0
30-34	3326.0	3361.5	3678.2	3650.0	2887.9	2283.8	2130.6	2508.1	2585.5	2482.6
35-39	3123.0	3243.5	3307.4	3637.6	3630.9	2895.3	2301.7	2150.3	2525.2	2603.5
40-44	3447.8	3015.6	3165.4	3244.9	3589.1	3599.8	2883.0	2300.4	2153.1	2526.2
45-49	3663.3	3468.0	2907.7	3070.8	3168.3	3520.5	3539.8	2843.3	2276.5	2136.1
50-54	3257.9	3375.8	3285.6	2777.2	2953.2	3061.9	3411.8	3436.8	2769.2	2225.7
55-59	2825.1	3022.1	3127.6	3070.5	2617.9	2797.5	2910.9	3252.5	3283.8	2655.8
60-64	1961.6	2283.1	2727.5	2853.8	2826.6	2426.3	2604.6	2721.0	3048.8	3086.8
65-69	2947.6	1953.6	1999.1	2407.1	2548.0	2539.0	2195.4	2368.5	2482.4	2790.8
70-74	1663.4	2357.8	1593.5	1671.7	2034.5	2175.3	2183.9	1905.3	2064.4	2172.5
75-79	1690.7	1243.9	1737.9	1188.3	1291.8	1579.2	1711.6	1731.9	1522.8	1659.2
80-84	876.1	1013.1	758.4	1105.9	763.5	863.0	1060.0	1167.6	1184.6	1051.3
85-89	267.6	377.9	477.8	362.7	559.3	383.6	459.6	565.7	630.5	640.2
90-94	104.9	76.2	115.9	150.7	117.0	191.9	131.2	170.8	208.0	235.6
95-99	15.1	17.3	12.3	20.2	27.5	21.7	38.6	26.5	37.3	45.1
100+	1.8	1.4	1.9	1.6	2.6	3.7	3.3	5.7	4.5	5.9
MALES	21574.7	20968.8	20392.2	19965.0	19643.0	19360.5	19077.7	18834.0	18626.0	18420.0
0-4	1031.7	1191.1	1230.1	1177.2	1103.4	1043.6	1019.0	1059.8	1085.8	1061.2
5-9	1059.9	1009.7	1192.7	1231.1	1179.5	1107.0	1047.3	1022.5	1063.1	1089.2
10-14	1379.6	1110.4	1013.7	1195.1	1234.7	1184.7	1112.2	1052.2	1027.3	1067.9
15-19	1828.4	1462.8	1116.7	1020.4	1204.4	1246.2	1196.0	1122.9	1062.6	1037.6
20-24	1934.9	1882.3	1468.9	1139.2	1057.6	1249.6	1289.6	1237.3	1162.6	1101.5
25-29	1734.4	1885.0	1864.1	1470.8	1156.9	1084.7	1274.9	1313.4	1260.8	1186.6
30-34	1647.9	1672.5	1848.6	1842.3	1468.3	1167.4	1097.6	1285.5	1324.3	1273.3
35-39	1526.6	1586.7	1626.3	1812.1	1820.2	1463.9	1171.3	1103.5	1290.2	1330.3
40-44	1646.5	1443.8	1522.7	1574.8	1769.8	1788.8	1446.8	1163.3	1099.4	1285.5
45-49	1711.5	1612.3	1358.3	1448.2	1513.4	1712.3	1737.7	1411.8	1141.1	1083.0
50-54	1474.4	1517.1	1473.4	1259.1	1358.1	1430.3	1626.6	1656.4	1353.1	1100.4
55-59	1234.1	1302.9	1338.5	1318.7	1142.4	1242.3	1316.5	1505.1	1540.4	1266.7
60-64	796.1	937.1	1107.3	1156.8	1154.4	1010.3	1106.4	1180.0	1358.1	1398.3
65-69	1139.7	734.8	761.5	911.1	967.0	973.3	860.5	949.4	1020.4	1183.9
70-74	609.3	838.7	546.4	585.0	708.3	761.2	772.4	690.5	768.9	834.2
75-79	532.8	403.7	555.0	367.6	409.7	498.9	543.7	556.4	504.7	568.9
80-84	208.6	278.2	221.1	317.9	212.9	247.0	301.5	333.7	344.4	317.7
85-89	57.0	80.9	120.3	97.0	145.9	97.0	118.5	144.1	162.3	168.6
90-94	18.9	15.3	23.7	36.1	29.2	46.0	30.1	39.4	47.5	54.6
95-99	2.5	3.2	2.6	4.1	6.4	5.2	8.6	5.5	7.9	9.4
100+	0.3	0.2	0.4	0.3	0.5	0.8	0.7	1.2	0.9	1.2
FEMALES	25174.5	24563.1	23936.0	23382.9	22917.5	22478.4	22040.4	21617.3	21159.5	20670.7
0-4	973.4	1135.8	1175.9	1125.0	1054.0	996.7	973.0	1011.7	1036.4	1012.6
5-9	1008.0	953.4	1138.1	1177.3	1127.5	1057.7	1000.4	976.5	1015.0	1039.6
10-14	1312.1	1057.9	957.8	1140.8	1181.1	1132.8	1063.0	1005.4	981.4	1019.8
15-19	1744.4	1392.4	1064.9	964.3	1149.6	1191.9	1143.3	1072.9	1015.0	990.7
20-24	1859.1	1806.4	1402.1	1083.6	993.5	1185.5	1226.3	1175.6	1103.5	1044.4
25-29	1711.6	1833.8	1807.1	1410.3	1100.2	1016.3	1207.3	1246.7	1195.1	1122.4
30-34	1678.1	1689.0	1829.6	1807.7	1419.6	1116.4	1033.0	1222.6	1261.2	1209.4
35-39	1596.4	1656.9	1681.1	1825.4	1810.7	1431.4	1130.5	1046.8	1235.0	1273.2
40-44	1801.3	1571.8	1642.7	1670.1	1819.3	1811.0	1436.2	1137.1	1053.7	1240.7
45-49	1951.8	1855.7	1549.5	1622.6	1654.9	1808.2	1802.2	1431.5	1135.4	1053.1
50-54	1783.5	1858.7	1812.2	1518.1	1595.1	1631.5	1785.2	1780.3	1416.1	1125.3
55-59	1591.0	1719.2	1789.1	1751.8	1475.5	1555.2	1594.4	1747.4	1743.4	1389.1
60-64	1165.5	1346.0	1620.1	1697.0	1672.2	1416.0	1498.2	1541.0	1690.8	1688.5
65-69	1808.0	1218.8	1237.6	1496.0	1581.1	1565.6	1334.9	1419.1	1462.0	1606.8
70-74	1054.1	1519.1	1047.1	1086.7	1326.2	1414.2	1411.5	1214.8	1295.4	1338.3
75-79	1157.9	840.2	1182.9	820.6	882.1	1080.3	1167.9	1175.5	1018.1	1090.4
80-84	667.4	734.9	537.3	788.0	550.7	615.9	758.5	834.0	840.1	733.6
85-89	210.7	297.0	357.5	265.7	413.4	286.6	341.1	421.6	468.3	471.5
90-94	86.1	60.9	92.2	114.6	87.8	145.9	101.1	131.4	160.5	181.0
95-99	12.6	14.0	9.7	16.0	21.0	16.5	30.0	21.0	29.5	35.6
100+	1.5	1.2	1.6	1.2	2.1	2.9	2.6	4.5	3.6	4.8

2ND HIGH-HIGH-HIGH		<i>(THOUSAND PERSONS)</i>								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45561.1	44425.0	43632.6	43041.4	42527.4	41962.4	41361.4	40699.3	39973.3
0-4	2005.1	2263.6	2194.6	2135.6	1966.3	1823.6	1743.8	1779.6	1779.9	1724.8
5-9	2067.9	1964.6	2270.7	2200.1	2143.7	1977.4	1835.3	1755.7	1791.7	1792.5
10-14	2691.7	2170.2	1977.2	2279.8	2212.1	2159.2	1993.4	1851.3	1772.0	1808.4
15-19	3572.7	2857.8	2189.2	1996.3	2304.6	2242.9	2190.8	2025.4	1884.2	1806.1
20-24	3793.9	3692.1	2881.8	2240.7	2074.6	2402.0	2344.5	2294.7	2132.5	1996.4
25-29	3446.0	3724.0	3686.1	2904.4	2288.7	2140.4	2469.8	2414.4	2367.2	2209.0
30-34	3326.0	3369.6	3701.4	3683.3	2929.2	2333.8	2190.3	2519.9	2467.6	2423.8
35-39	3123.0	3252.0	3334.0	3680.8	3685.9	2957.7	2373.1	2233.7	2565.1	2517.1
40-44	3447.8	3026.6	3196.5	3293.7	3657.1	3680.6	2969.3	2395.5	2262.0	2595.2
45-49	3663.3	3482.6	2945.9	3129.0	3245.7	3619.7	3652.1	2958.8	2398.9	2271.8
50-54	3257.9	3392.0	3335.4	2846.2	3046.9	3178.6	3554.2	3594.8	2925.3	2382.6
55-59	2825.1	3040.4	3186.0	3165.0	2730.6	2942.8	3082.8	3456.8	3507.4	2866.6
60-64	1961.6	2287.9	2770.8	2946.8	2964.8	2584.8	2802.2	2949.3	3321.6	3382.3
65-69	2947.6	1953.2	2013.3	2471.7	2674.7	2721.4	2396.0	2613.3	2766.7	3131.0
70-74	1663.4	2357.4	1604.9	1710.5	2136.0	2348.0	2411.3	2141.8	2351.9	2504.4
75-79	1690.7	1242.5	1754.3	1226.5	1365.8	1728.1	1929.0	1994.2	1789.7	1980.0
80-84	876.1	1009.9	763.5	1149.6	823.6	964.5	1231.1	1391.9	1446.3	1313.0
85-89	267.6	377.9	482.4	381.2	616.1	447.4	555.9	707.9	810.3	844.2
90-94	104.9	77.0	120.6	164.2	135.5	237.7	173.5	230.3	290.6	338.0
95-99	15.1	18.2	14.1	24.7	35.6	30.6	58.1	41.8	59.5	74.5
100+	1.8	1.4	2.3	2.2	3.8	6.0	5.8	10.5	8.6	11.5
MALES	21574.7	20985.2	20448.2	20123.2	19946.1	19818.0	19675.9	19554.2	19440.2	19298.5
0-4	1031.7	1158.8	1122.0	1092.1	1005.7	932.9	892.2	910.6	910.9	882.8
5-9	1059.9	1010.4	1162.1	1124.6	1096.2	1011.5	938.9	898.3	917.0	917.5
10-14	1379.6	1111.3	1016.6	1166.6	1130.7	1104.1	1019.6	947.1	906.7	925.5
15-19	1828.4	1464.1	1120.7	1026.4	1179.5	1146.9	1120.8	1036.6	964.7	925.0
20-24	1934.9	1883.8	1474.5	1149.0	1070.5	1234.3	1204.3	1179.8	1097.8	1029.0
25-29	1734.4	1887.6	1871.6	1483.4	1174.6	1107.0	1272.0	1243.7	1221.2	1142.0
30-34	1647.9	1677.9	1862.4	1861.1	1492.1	1196.4	1132.3	1297.7	1272.0	1251.9
35-39	1526.6	1592.8	1643.6	1838.3	1852.9	1501.2	1213.8	1153.1	1320.2	1297.7
40-44	1646.5	1452.3	1544.4	1606.5	1812.5	1839.3	1500.5	1221.9	1166.1	1335.0
45-49	1711.5	1624.9	1387.3	1489.3	1565.8	1778.7	1812.6	1487.9	1220.1	1169.2
50-54	1474.4	1530.6	1513.0	1310.8	1426.2	1513.2	1727.8	1769.5	1462.7	1207.2
55-59	1234.1	1317.4	1382.3	1390.3	1227.4	1350.4	1443.7	1659.0	1710.0	1423.0
60-64	796.1	937.8	1133.5	1219.6	1255.3	1127.2	1253.7	1353.7	1570.4	1629.9
65-69	1139.7	731.5	762.9	945.2	1049.5	1100.6	1004.9	1132.6	1238.8	1451.3
70-74	609.3	832.7	542.4	593.9	759.3	864.0	920.9	856.2	980.2	1085.0
75-79	532.8	400.2	548.4	370.8	433.2	565.5	658.9	714.8	679.5	789.6
80-84	208.6	273.9	216.8	318.4	224.1	277.6	367.5	439.3	485.1	470.8
85-89	57.0	79.4	117.5	96.6	152.5	108.5	143.1	190.6	233.8	260.7
90-94	18.9	14.7	22.9	35.7	30.6	51.4	36.6	52.3	69.8	87.7
95-99	2.5	3.0	2.6	4.3	7.0	6.1	10.8	7.7	11.9	15.8
100+	0.3	0.2	0.4	0.4	0.6	1.1	1.0	1.7	1.4	2.0
FEMALES	25174.5	24575.8	23976.9	23509.3	23095.2	22709.4	22286.5	21807.3	21259.1	20674.8
0-4	973.4	1104.8	1072.6	1043.5	960.6	890.8	851.6	869.0	869.1	842.0
5-9	1008.0	954.2	1108.6	1075.5	1047.5	966.0	896.4	857.3	874.8	875.0
10-14	1312.1	1058.9	960.6	1113.2	1081.4	1055.1	973.8	904.2	865.2	882.9
15-19	1744.4	1393.7	1068.6	969.9	1125.1	1096.0	1070.0	988.8	919.5	881.1
20-24	1859.1	1808.3	1407.3	1091.8	1004.1	1167.7	1140.2	1114.9	1034.8	967.4
25-29	1711.6	1836.4	1814.5	1421.0	1114.1	1033.4	1197.9	1170.7	1146.0	1067.0
30-34	1678.1	1691.7	1839.0	1822.2	1437.2	1137.4	1058.0	1222.2	1195.6	1171.9
35-39	1596.4	1659.2	1690.4	1842.5	1833.0	1456.5	1159.4	1080.6	1244.9	1219.3
40-44	1801.3	1574.3	1652.0	1687.3	1844.6	1841.2	1468.8	1173.6	1095.9	1260.2
45-49	1951.8	1857.7	1558.6	1639.8	1679.9	1841.0	1839.5	1470.9	1178.9	1102.6
50-54	1783.5	1861.4	1822.3	1535.4	1620.6	1665.4	1826.3	1825.3	1462.6	1175.5
55-59	1591.0	1722.9	1803.7	1774.8	1503.2	1592.4	1639.1	1797.8	1797.5	1443.6
60-64	1165.5	1350.2	1637.2	1727.2	1709.5	1457.6	1548.5	1595.6	1751.2	1752.5
65-69	1808.0	1221.8	1250.4	1526.5	1625.2	1620.7	1391.1	1480.7	1527.9	1679.7
70-74	1054.1	1524.7	1062.5	1116.6	1376.7	1484.0	1490.4	1285.5	1371.7	1419.5
75-79	1157.9	842.2	1205.9	855.7	932.6	1162.6	1270.1	1279.4	1110.2	1190.4
80-84	667.4	736.0	546.7	831.2	599.5	686.8	863.6	952.6	961.2	842.2
85-89	210.7	298.5	364.9	284.6	463.6	338.9	412.8	517.2	576.5	583.5
90-94	86.1	62.3	97.6	128.5	105.0	186.2	136.9	178.0	220.8	250.3
95-99	12.6	15.3	11.5	20.4	28.6	24.5	47.2	34.1	47.6	58.6
100+	1.5	1.2	1.9	1.8	3.2	4.9	4.8	8.7	7.3	9.5

2ND HIGH-MEDIUM-HIGH		<i>(THOUSAND PERSONS)</i>								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH SEXES	46749.2	45503.6	44163.4	43096.1	42204.3	41367.7	40519.2	39697.7	38841.7	37965.7
0-4	2005.1	2262.7	2192.3	2131.9	1961.8	1819.2	1739.7	1774.8	1774.2	1718.3
5-9	2067.9	1964.6	2269.7	2197.5	2139.6	1972.6	1830.6	1751.2	1786.5	1786.3
10-14	2691.7	2170.3	1977.0	2278.5	2209.1	2154.8	1988.2	1846.3	1767.1	1802.9
15-19	3572.7	2857.8	2189.0	1995.8	2302.9	2239.6	2186.0	2019.9	1878.8	1800.9
20-24	3793.9	3691.9	2880.8	2239.8	2073.3	2399.3	2340.2	2288.8	2125.9	1989.9
25-29	3446.0	3722.3	3682.3	2900.7	2285.3	2136.9	2464.6	2407.3	2358.4	2199.5
30-34	3326.0	3365.3	3690.1	3670.9	2918.9	2325.5	2182.5	2509.5	2455.1	2409.8
35-39	3123.0	3246.9	3318.9	3658.8	3662.5	2938.7	2358.2	2219.3	2546.5	2496.5
40-44	3447.8	3018.9	3175.9	3264.6	3619.6	3642.0	2938.6	2370.5	2237.4	2565.0
45-49	3663.3	3470.5	2916.9	3088.4	3195.9	3559.7	3591.5	2909.1	2357.6	2232.0
50-54	3257.9	3378.0	3292.8	2792.1	2977.1	3096.3	3458.3	3495.9	2842.8	2314.9
55-59	2825.1	3023.6	3133.6	3082.4	2637.7	2826.6	2950.6	3304.3	3348.4	2734.9
60-64	1961.6	2284.8	2731.7	2863.1	2842.0	2449.7	2637.1	2764.0	3103.7	3154.3
65-69	2947.6	1955.5	2004.8	2414.2	2559.9	2556.9	2221.1	2403.1	2527.2	2847.1
70-74	1663.4	2359.0	1597.6	1678.9	2043.2	2188.5	2202.7	1931.3	2098.5	2216.1
75-79	1690.7	1245.0	1741.0	1193.2	1299.2	1588.2	1724.5	1749.7	1546.6	1690.0
80-84	876.1	1013.5	760.2	1108.8	767.7	869.0	1067.3	1177.9	1198.4	1069.6
85-89	267.6	378.0	478.4	363.8	561.0	386.1	463.2	570.1	636.6	648.2
90-94	104.9	76.3	116.1	151.0	117.5	192.6	132.2	172.2	209.8	238.0
95-99	15.1	17.3	12.3	20.2	27.6	21.8	38.7	26.8	37.7	45.5
100+	1.8	1.4	2.0	1.6	2.6	3.7	3.3	5.7	4.5	6.0
MALES	21574.7	20952.9	20303.9	19832.4	19457.5	19117.0	18770.5	18450.0	18148.2	17854.1
0-4	1031.7	1158.3	1120.8	1090.2	1003.4	930.6	890.0	908.1	907.9	879.4
5-9	1059.9	1010.5	1161.5	1123.4	1094.1	1008.9	936.4	895.9	914.1	914.2
10-14	1379.6	1111.5	1016.6	1165.9	1129.2	1101.8	1016.8	944.4	904.0	922.5
15-19	1828.4	1464.2	1120.6	1026.2	1178.6	1145.2	1118.2	1033.6	961.6	922.0
20-24	1934.9	1883.9	1474.0	1148.4	1069.7	1232.5	1201.7	1176.2	1093.7	1025.0
25-29	1734.4	1886.6	1869.3	1481.3	1172.5	1104.6	1268.3	1238.9	1215.2	1135.7
30-34	1647.9	1674.2	1854.1	1852.9	1485.0	1190.4	1126.3	1289.5	1262.5	1241.6
35-39	1526.6	1588.4	1631.9	1822.6	1836.5	1487.3	1202.2	1141.3	1304.9	1281.4
40-44	1646.5	1445.5	1528.3	1584.9	1785.3	1810.8	1476.7	1201.4	1145.4	1309.7
45-49	1711.5	1613.7	1363.2	1457.5	1527.5	1732.3	1764.5	1446.9	1184.8	1134.9
50-54	1474.4	1518.2	1477.1	1266.8	1370.4	1447.7	1650.0	1686.7	1391.7	1147.8
55-59	1234.1	1303.6	1341.3	1324.5	1152.2	1256.7	1335.9	1530.4	1572.6	1307.1
60-64	796.1	937.8	1109.2	1160.9	1161.4	1021.2	1121.6	1200.1	1383.8	1430.7
65-69	1139.7	735.6	763.8	913.9	971.7	980.9	871.6	964.6	1040.2	1209.0
70-74	609.3	839.1	547.9	587.5	711.4	766.0	779.6	700.8	782.8	852.1
75-79	532.8	404.0	555.9	369.2	412.0	501.7	548.0	562.6	513.3	580.4
80-84	208.6	278.2	221.5	318.7	214.1	248.8	303.6	336.8	348.8	323.8
85-89	57.0	80.9	120.4	97.2	146.3	97.6	119.4	145.3	163.9	171.0
90-94	18.9	15.3	23.7	36.2	29.3	46.1	30.3	39.7	47.9	55.2
95-99	2.5	3.3	2.6	4.1	6.5	5.2	8.6	5.6	7.9	9.6
100+	0.3	0.3	0.4	0.3	0.5	0.8	0.8	1.2	0.9	1.2
FEMALES	25174.5	24550.7	23859.5	23263.7	22746.8	22250.7	21748.7	21247.7	20693.5	20111.6
0-4	973.4	1104.4	1071.4	1041.8	958.4	888.7	849.7	866.8	866.3	838.9
5-9	1008.0	954.1	1108.1	1074.1	1045.5	963.7	894.2	855.3	872.4	872.2
10-14	1312.1	1058.8	960.4	1112.6	1079.9	1053.0	971.4	901.9	863.1	880.4
15-19	1744.4	1393.6	1068.4	969.6	1124.3	1094.4	1067.8	986.3	917.2	878.9
20-24	1859.1	1808.0	1406.8	1091.3	1003.6	1166.7	1138.4	1112.6	1032.1	964.9
25-29	1711.6	1835.8	1812.9	1419.5	1112.8	1032.3	1196.3	1168.4	1143.1	1063.9
30-34	1678.1	1691.0	1836.0	1818.1	1433.9	1135.1	1056.3	1220.0	1192.6	1168.2
35-39	1596.4	1658.5	1687.0	1836.1	1826.0	1451.4	1156.1	1078.0	1241.6	1215.1
40-44	1801.3	1573.3	1647.6	1679.7	1834.3	1831.2	1461.9	1169.1	1092.0	1255.3
45-49	1951.8	1856.8	1553.8	1630.9	1668.3	1827.4	1827.0	1462.2	1172.8	1097.1
50-54	1783.5	1859.8	1815.7	1525.3	1606.7	1648.6	1808.3	1809.2	1451.1	1167.1
55-59	1591.0	1720.0	1792.3	1757.9	1485.5	1569.9	1614.7	1773.8	1775.9	1427.8
60-64	1165.5	1346.9	1622.6	1702.2	1680.6	1428.5	1515.5	1563.9	1719.9	1723.6
65-69	1808.0	1220.0	1241.0	1500.4	1588.1	1576.0	1349.5	1438.5	1487.1	1638.1
70-74	1054.1	1519.9	1049.7	1091.4	1331.8	1422.5	1423.1	1230.5	1315.7	1364.0
75-79	1157.9	841.0	1185.2	824.0	887.2	1086.5	1176.5	1187.1	1033.3	1109.7
80-84	667.4	735.3	538.7	790.1	553.6	620.2	763.7	841.1	849.5	745.7
85-89	210.7	297.1	358.0	266.6	414.8	288.5	343.7	424.8	472.6	477.2
90-94	86.1	61.0	92.4	114.8	88.2	146.5	101.9	132.5	161.9	182.8
95-99	12.6	14.1	9.8	16.1	21.1	16.6	30.1	21.1	29.7	36.0
100+	1.5	1.2	1.6	1.2	2.1	2.9	2.6	4.6	3.6	4.8

LOW-LOW-LOW		<i>(THOUSAND PERSONS)</i>								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH SEXES	46749.2	45143.1	42718.7	40172.2	37554.2	34964.2	32471.8	30062.7	27669.6	25283.1
0-4	2005.1	2173.6	1889.6	1447.8	1090.9	939.8	892.4	829.7	703.0	562.0
5-9	2067.9	1955.7	2153.8	1875.7	1438.6	1082.3	929.7	880.2	816.0	689.0
10-14	2691.7	2159.4	1936.2	2140.0	1866.6	1429.7	1071.6	916.5	865.0	800.1
15-19	3572.7	2846.2	2140.6	1925.6	2135.1	1865.0	1428.0	1068.4	912.1	860.5
20-24	3793.9	3677.4	2819.1	2133.0	1935.8	2159.6	1899.0	1462.5	1104.8	951.3
25-29	3446.0	3706.1	3610.5	2776.1	2111.2	1923.7	2148.3	1887.8	1453.9	1099.8
30-34	3326.0	3348.4	3618.5	3538.9	2731.0	2082.4	1899.9	2121.3	1865.0	1437.5
35-39	3123.0	3229.7	3246.3	3524.7	3458.9	2676.2	2046.8	1871.4	2092.6	1843.5
40-44	3447.8	3000.6	3100.7	3131.6	3412.1	3352.8	2599.9	1995.0	1829.5	2050.2
45-49	3663.3	3454.2	2844.2	2953.4	2992.5	3264.0	3211.6	2497.7	1921.6	1766.4
50-54	3257.9	3359.9	3221.5	2663.8	2774.5	2813.9	3074.8	3035.7	2367.7	1824.7
55-59	2825.1	3005.1	3060.2	2946.8	2445.4	2550.9	2593.6	2848.6	2824.2	2207.9
60-64	1961.6	2263.3	2654.9	2720.5	2627.0	2185.1	2287.6	2341.5	2588.5	2576.1
65-69	2947.6	1938.1	1929.6	2272.4	2339.8	2261.4	1888.9	1992.4	2053.3	2282.0
70-74	1663.4	2338.3	1540.6	1558.8	1836.3	1898.2	1840.6	1552.6	1652.2	1713.1
75-79	1690.7	1233.9	1682.4	1102.8	1142.0	1340.6	1398.8	1369.6	1170.7	1258.1
80-84	876.1	996.0	720.2	1012.1	656.1	703.8	825.6	880.0	872.2	758.1
85-89	267.6	366.6	436.5	312.6	457.6	290.5	332.0	393.0	431.7	434.1
90-94	104.9	73.2	102.0	120.1	84.8	130.7	81.9	104.2	125.5	143.5
95-99	15.1	15.9	10.0	14.3	16.8	11.8	19.7	12.7	18.5	22.9
100+	1.8	1.3	1.5	1.0	1.4	1.7	1.3	2.2	1.7	2.4
MALES	21574.7	20759.2	19557.9	18305.6	17015.5	15739.0	14536.5	13422.2	12348.2	11270.9
0-4	1031.7	1112.5	965.9	740.2	557.8	480.6	456.4	424.3	359.6	287.5
5-9	1059.9	1005.7	1101.9	958.4	735.2	553.2	475.3	450.0	417.2	352.3
10-14	1379.6	1105.7	995.6	1094.7	953.5	730.5	547.6	468.4	442.2	409.0
15-19	1828.4	1458.2	1095.9	990.0	1092.0	952.8	730.0	546.6	467.0	440.7
20-24	1934.9	1876.7	1443.2	1092.1	995.9	1105.8	972.7	751.2	569.7	492.0
25-29	1734.4	1878.6	1833.2	1414.5	1076.4	986.4	1097.1	965.4	746.8	568.1
30-34	1647.9	1665.4	1817.5	1781.7	1380.4	1053.8	968.2	1077.9	950.4	736.7
35-39	1526.6	1579.6	1593.2	1749.5	1721.7	1338.2	1026.4	947.2	1057.6	935.4
40-44	1646.5	1435.7	1487.4	1510.3	1665.8	1641.9	1281.3	989.4	918.6	1028.5
45-49	1711.5	1605.6	1323.0	1380.3	1407.6	1555.4	1537.2	1207.6	938.5	875.1
50-54	1474.4	1508.8	1439.3	1193.9	1250.6	1277.2	1416.5	1409.3	1114.3	869.2
55-59	1234.1	1294.6	1303.4	1251.4	1043.3	1095.0	1123.3	1257.8	1260.9	1001.1
60-64	796.1	923.2	1065.9	1082.3	1042.2	871.5	920.0	955.0	1081.9	1089.8
65-69	1139.7	725.5	722.1	836.2	852.6	820.7	691.1	739.7	777.9	888.2
70-74	609.3	824.5	517.4	524.9	606.1	619.4	599.0	513.6	558.5	592.4
75-79	532.8	396.4	522.2	323.9	336.1	384.5	397.5	391.8	343.8	378.4
80-84	208.6	269.2	203.4	274.0	167.2	178.5	204.2	217.8	219.3	195.7
85-89	57.0	76.9	106.0	79.0	109.3	64.8	73.8	86.2	95.6	97.4
90-94	18.9	13.9	19.2	25.8	18.5	26.3	15.4	20.3	24.7	28.6
95-99	2.5	2.6	1.8	2.4	3.1	2.2	3.3	2.2	3.4	4.3
100+	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.4	0.3	0.5
FEMALES	25174.5	24384.0	23160.9	21866.6	20538.7	19225.2	17935.4	16640.5	15321.4	14012.3
0-4	973.4	1061.2	923.8	707.6	533.1	459.2	436.1	405.4	343.5	274.5
5-9	1008.0	950.0	1051.9	917.3	703.3	529.1	454.4	430.2	398.8	336.7
10-14	1312.1	1053.7	940.6	1045.3	913.0	699.2	524.0	448.1	422.9	391.1
15-19	1744.4	1388.0	1044.6	935.5	1043.2	912.3	698.0	521.8	445.1	419.7
20-24	1859.1	1800.8	1375.9	1040.9	939.8	1053.7	926.2	711.2	535.1	459.3
25-29	1711.6	1827.6	1777.3	1361.6	1034.9	937.3	1051.2	922.3	707.0	531.7
30-34	1678.1	1683.0	1801.0	1757.2	1350.6	1028.5	931.7	1043.5	914.6	700.8
35-39	1596.4	1650.1	1653.1	1775.2	1737.3	1338.0	1020.4	924.1	1034.9	908.1
40-44	1801.3	1565.0	1613.3	1621.4	1746.3	1710.9	1318.6	1005.6	911.0	1021.7
45-49	1951.8	1848.6	1521.2	1573.1	1584.9	1708.7	1674.4	1290.1	983.1	891.3
50-54	1783.5	1851.1	1782.2	1469.9	1523.9	1536.7	1658.3	1626.4	1253.4	955.4
55-59	1591.0	1710.6	1756.9	1695.5	1402.1	1455.9	1470.3	1590.7	1563.3	1206.9
60-64	1165.5	1340.2	1589.0	1638.2	1584.8	1313.6	1367.7	1386.4	1506.6	1486.2
65-69	1808.0	1212.6	1207.5	1436.1	1487.2	1440.7	1197.8	1252.6	1275.4	1393.9
70-74	1054.1	1513.8	1023.2	1033.9	1230.3	1278.9	1241.6	1039.0	1093.6	1120.7
75-79	1157.9	837.5	1160.1	778.9	805.9	956.1	1001.3	977.8	826.9	879.7
80-84	667.4	726.8	516.7	738.2	488.9	525.3	621.4	662.2	652.9	562.4
85-89	210.7	289.8	330.5	233.6	348.3	225.7	258.2	306.8	336.0	336.7
90-94	86.1	59.4	82.7	94.3	66.3	104.5	66.5	83.9	100.8	115.0
95-99	12.6	13.3	8.2	11.9	13.6	9.6	16.3	10.5	15.1	18.6
100+	1.5	1.1	1.2	0.9	1.2	1.4	1.1	1.8	1.4	2.0

LOW-MEDIUM-LOW		(THOUSAND PERSONS)								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH SEXES	46749.2	45283.5	43206.1	41088.3	38959.5	36827.3	34722.5	32538.5	30196.7	27771.1
0-4	2005.1	2175.9	1894.1	1453.2	1096.4	945.5	898.8	836.6	709.7	567.8
5-9	2067.9	1956.6	2157.4	1881.5	1445.2	1088.9	936.3	887.4	823.4	696.1
10-14	2691.7	2160.0	1937.8	2144.6	1873.4	1437.2	1078.8	923.6	872.6	807.9
15-19	3572.7	2847.2	2142.3	1928.4	2141.4	1873.4	1436.6	1076.3	919.7	868.4
20-24	3793.9	3679.6	2823.2	2137.8	1941.8	2169.8	1910.9	1473.5	1114.2	960.1
25-29	3446.0	3708.8	3619.8	2788.4	2124.1	1938.2	2168.1	1906.7	1469.2	1112.1
30-34	3326.0	3352.9	3633.6	3565.2	2760.4	2110.6	1928.6	2154.3	1893.3	1459.3
35-39	3123.0	3235.7	3270.3	3566.9	3518.7	2735.7	2098.3	1917.5	2141.3	1884.3
40-44	3447.8	3007.5	3130.1	3187.0	3497.3	3461.9	2698.5	2071.5	1894.3	2118.0
45-49	3663.3	3461.2	2875.6	3017.9	3093.4	3407.4	3380.4	2636.8	2025.0	1854.6
50-54	3257.9	3370.6	3259.6	2731.1	2887.0	2970.1	3281.7	3260.4	2545.8	1957.9
55-59	2825.1	3018.9	3108.6	3032.7	2560.9	2717.8	2805.7	3109.5	3095.6	2422.0
60-64	1961.6	2279.5	2714.4	2827.9	2782.2	2361.2	2517.5	2609.2	2900.8	2895.8
65-69	2947.6	1948.9	1978.5	2384.8	2515.5	2487.4	2123.7	2275.2	2365.2	2639.8
70-74	1663.4	2354.5	1578.3	1646.5	2008.2	2138.4	2129.6	1832.4	1971.5	2058.0
75-79	1690.7	1241.2	1725.5	1170.5	1266.9	1551.9	1674.8	1680.3	1455.2	1575.2
80-84	876.1	1011.9	751.7	1094.1	748.6	842.5	1037.1	1137.5	1143.6	998.9
85-89	267.6	377.5	475.7	358.3	552.5	374.8	447.7	552.2	612.7	616.3
90-94	104.9	76.1	115.4	149.8	115.4	189.4	127.9	166.2	202.8	228.6
95-99	15.1	17.3	12.2	20.1	27.4	21.4	38.1	25.9	36.4	44.0
100+	1.8	1.4	1.9	1.6	2.6	3.8	3.3	5.7	4.4	5.9
MALES	21574.7	20846.9	19844.7	18845.2	17840.9	16843.7	15866.1	14864.2	13820.1	12751.1
0-4	1031.7	1113.9	968.3	743.0	560.6	483.5	459.7	427.9	363.1	290.5
5-9	1059.9	1006.3	1104.1	961.6	738.7	556.7	478.7	453.8	421.1	356.0
10-14	1379.6	1106.2	996.6	1097.4	957.4	734.5	551.5	472.2	446.2	413.2
15-19	1828.4	1458.9	1097.0	991.9	1095.8	957.7	734.8	550.9	471.1	445.0
20-24	1934.9	1878.0	1445.5	1095.1	1000.0	1112.5	980.2	757.8	575.1	497.0
25-29	1734.4	1880.0	1838.7	1422.5	1085.3	996.7	1110.8	977.9	756.5	575.8
30-34	1647.9	1668.5	1827.7	1799.5	1401.2	1074.2	989.0	1101.1	969.7	751.3
35-39	1526.6	1583.1	1609.6	1778.9	1763.9	1380.9	1063.6	980.5	1092.1	964.2
40-44	1646.5	1439.9	1506.5	1548.9	1726.9	1720.7	1352.9	1044.8	965.4	1077.6
45-49	1711.5	1609.2	1343.9	1425.0	1480.5	1660.6	1661.2	1309.8	1014.5	941.0
50-54	1474.4	1514.8	1462.1	1239.4	1329.8	1390.8	1568.7	1574.5	1246.1	969.4
55-59	1234.1	1301.6	1330.8	1303.2	1119.0	1209.4	1272.9	1444.1	1456.5	1158.9
60-64	796.1	935.8	1102.6	1147.1	1137.1	985.0	1072.3	1136.1	1298.1	1317.2
65-69	1139.7	733.0	753.8	903.3	955.4	954.6	834.5	915.4	977.4	1126.5
70-74	609.3	837.5	540.9	576.3	699.7	749.0	754.3	666.2	737.8	795.4
75-79	532.8	402.9	550.9	361.6	401.7	490.4	532.5	540.7	484.1	543.0
80-84	208.6	277.9	219.3	314.3	208.1	240.8	294.9	325.2	333.0	303.1
85-89	57.0	80.8	119.8	95.8	143.8	94.3	115.2	140.6	157.7	162.5
90-94	18.9	15.3	23.6	35.9	28.8	45.3	29.2	38.2	46.3	53.0
95-99	2.5	3.2	2.6	4.1	6.4	5.2	8.5	5.4	7.7	9.2
100+	0.3	0.2	0.4	0.3	0.5	0.9	0.8	1.2	0.9	1.2
FEMALES	25174.5	24436.5	23361.4	22243.1	21118.6	19983.7	18856.4	17674.3	16376.6	15020.0
0-4	973.4	1062.0	925.8	710.2	535.8	462.0	439.1	408.7	346.7	277.3
5-9	1008.0	950.2	1053.4	919.9	706.5	532.2	457.6	433.6	402.3	340.0
10-14	1312.1	1053.8	941.1	1047.2	916.0	702.6	527.3	451.4	426.4	394.7
15-19	1744.4	1388.3	1045.3	936.5	1045.6	915.7	701.8	525.4	448.6	423.4
20-24	1859.1	1801.7	1377.7	1042.7	941.8	1057.3	930.7	715.7	539.1	463.1
25-29	1711.6	1828.7	1781.1	1365.9	1038.8	941.5	1057.3	928.8	712.7	536.3
30-34	1678.1	1684.4	1805.9	1765.6	1359.3	1036.4	939.6	1053.2	923.6	708.0
35-39	1596.4	1652.7	1660.7	1788.0	1754.8	1354.8	1034.7	937.0	1049.2	920.1
40-44	1801.3	1567.6	1623.6	1638.1	1770.4	1741.2	1345.6	1026.7	928.9	1040.4
45-49	1951.8	1852.0	1531.6	1592.8	1612.9	1746.8	1719.2	1327.0	1010.5	913.6
50-54	1783.5	1855.8	1797.5	1491.7	1557.1	1579.3	1712.9	1685.9	1299.7	988.5
55-59	1591.0	1717.3	1777.8	1729.5	1441.9	1508.4	1532.8	1665.5	1639.1	1263.1
60-64	1165.5	1343.8	1611.8	1620.8	1645.1	1376.3	1445.2	1473.1	1602.7	1578.6
65-69	1808.0	1215.9	1224.7	1481.5	1560.1	1532.8	1289.3	1359.8	1387.8	1513.3
70-74	1054.1	1517.1	1037.4	1070.3	1308.5	1389.4	1375.3	1166.2	1233.7	1262.6
75-79	1157.9	838.4	1174.5	808.8	865.3	1061.4	1142.3	1139.6	971.2	1032.1
80-84	667.4	734.0	532.3	779.9	540.5	601.7	742.2	812.3	810.6	695.9
85-89	210.7	296.7	355.9	262.5	408.7	280.5	332.5	411.6	455.0	453.7
90-94	86.1	60.9	91.9	113.9	86.6	144.1	98.7	128.0	156.5	175.6
95-99	12.6	14.0	9.7	16.0	20.9	16.3	29.6	20.4	28.7	34.8
100+	1.5	1.2	1.6	1.3	2.1	2.9	2.5	4.5	3.5	4.7

LOW-DEMIAN-MEDIUM		(THOUSAND PERSONS)								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45386.4	43695.1	41903.6	40105.5	38354.7	36617.6	34802.4	32821.3	30729.9
0-4	2005.1	2181.4	1918.0	1490.2	1144.9	1007.6	969.9	913.1	791.8	655.8
5-9	2067.9	1963.1	2185.6	1921.2	1496.0	1153.5	1016.2	978.1	921.0	799.6
10-14	2691.7	2168.3	1971.5	2190.8	1929.1	1507.2	1164.7	1026.9	988.5	931.3
15-19	3572.7	2855.2	2181.5	1984.7	2209.2	1952.3	1530.4	1187.1	1048.6	1009.7
20-24	3793.9	3688.7	2871.0	2222.8	2051.1	2290.8	2031.9	1606.9	1261.0	1120.4
25-29	3446.0	3718.8	3671.3	2881.1	2257.1	2101.0	2338.6	2078.5	1653.8	1308.3
30-34	3326.0	3361.5	3678.2	3650.0	2887.9	2283.8	2130.6	2365.5	2106.9	1685.0
35-39	3123.0	3243.5	3307.4	3637.6	3630.9	2895.3	2301.7	2150.3	2383.8	2128.5
40-44	3447.8	3015.6	3165.4	3244.9	3589.1	3599.8	2883.0	2300.4	2153.1	2386.2
45-49	3663.3	3468.0	2907.7	3070.8	3168.3	3520.5	3539.8	2843.3	2276.5	2136.1
50-54	3257.9	3375.8	3285.6	2777.2	2953.2	3061.9	3411.8	3436.8	2769.2	2225.7
55-59	2825.1	3022.1	3127.6	3070.5	2617.9	2797.5	2910.9	3252.5	3283.8	2655.8
60-64	1961.6	2283.1	2727.5	2853.8	2826.6	2426.3	2604.6	2721.0	3048.8	3086.8
65-69	2947.6	1953.6	1999.1	2407.1	2548.0	2539.0	2195.4	2368.5	2482.4	2790.8
70-74	1663.4	2357.8	1593.5	1671.7	2034.5	2175.3	2183.9	1905.3	2064.4	2172.5
75-79	1690.7	1243.9	1737.9	1188.3	1291.8	1579.2	1711.6	1731.9	1522.8	1659.2
80-84	876.1	1013.1	758.4	1105.9	763.5	863.0	1060.0	1167.6	1184.6	1051.3
85-89	267.6	377.9	477.8	362.7	559.3	383.6	459.6	565.7	630.5	640.2
90-94	104.9	76.2	115.9	150.7	117.0	191.9	131.2	170.8	208.0	235.6
95-99	15.1	17.3	12.3	20.2	27.5	21.7	38.6	26.5	37.3	45.1
100+	1.8	1.4	1.9	1.6	2.6	3.7	3.3	5.7	4.5	5.9
MALES	21574.7	20894.4	20068.5	19226.6	18388.0	17579.6	16778.2	15949.3	15072.3	14156.7
0-4	1031.7	1116.7	980.6	762.0	585.6	515.4	496.2	467.2	405.2	335.7
5-9	1059.9	1009.7	1118.5	982.1	765.0	590.0	519.9	500.4	471.3	409.3
10-14	1379.6	1110.4	1013.7	1121.0	985.9	770.6	595.7	525.3	505.7	476.6
15-19	1828.4	1462.8	1116.7	1020.4	1130.4	998.0	782.8	607.6	537.0	517.1
20-24	1934.9	1882.3	1468.9	1139.2	1057.6	1176.0	1042.9	826.4	650.1	578.5
25-29	1734.4	1885.0	1864.1	1470.8	1156.9	1084.7	1201.9	1068.6	853.0	677.6
30-34	1647.9	1672.5	1848.6	1842.3	1468.3	1167.4	1097.6	1213.3	1081.9	869.0
35-39	1526.6	1586.7	1626.3	1812.1	1820.2	1463.9	1171.3	1103.5	1218.9	1090.6
40-44	1646.5	1443.8	1522.7	1574.8	1769.8	1788.8	1446.8	1163.3	1099.4	1215.3
45-49	1711.5	1612.3	1358.3	1448.2	1513.4	1712.3	1737.7	1411.8	1141.1	1083.0
50-54	1474.4	1517.1	1473.4	1259.1	1358.1	1430.3	1626.6	1656.4	1353.1	1100.4
55-59	1234.1	1302.9	1338.5	1318.7	1142.4	1242.3	1316.5	1505.1	1540.4	1266.7
60-64	796.1	937.1	1107.3	1156.8	1154.4	1010.3	1106.4	1180.0	1358.1	1398.3
65-69	1139.7	734.8	761.5	911.1	967.0	973.3	860.5	949.4	1020.4	1183.9
70-74	609.3	838.7	546.4	585.0	708.3	761.2	772.4	690.5	768.9	834.2
75-79	532.8	403.7	555.0	367.6	409.7	498.9	543.7	556.4	504.7	568.9
80-84	208.6	278.2	221.1	317.9	212.9	247.0	301.5	333.7	344.4	317.7
85-89	57.0	80.9	120.3	97.0	145.9	97.0	118.5	144.1	162.3	168.6
90-94	18.9	15.3	23.7	36.1	29.2	46.0	30.1	39.4	47.5	54.6
95-99	2.5	3.2	2.6	4.1	6.4	5.2	8.6	5.5	7.9	9.4
100+	0.3	0.2	0.4	0.3	0.5	0.8	0.7	1.2	0.9	1.2
FEMALES	25174.5	24492.0	23626.5	22677.0	21717.6	20775.1	19839.4	18853.0	17749.1	16573.1
0-4	973.4	1064.7	937.4	728.2	559.3	492.1	473.7	445.9	386.6	320.1
5-9	1008.0	953.4	1067.1	939.1	731.1	563.5	496.3	477.6	449.7	390.3
10-14	1312.1	1057.9	957.8	1069.8	943.1	736.7	569.0	501.6	482.7	454.7
15-19	1744.4	1392.4	1064.9	964.3	1078.8	954.2	747.6	579.5	511.7	492.6
20-24	1859.1	1806.4	1402.1	1083.6	993.5	1114.7	989.0	780.5	610.8	541.9
25-29	1711.6	1833.8	1807.1	1410.3	1100.2	1016.3	1136.7	1009.9	800.8	630.7
30-34	1678.1	1689.0	1829.6	1807.7	1419.6	1116.4	1033.0	1152.2	1025.0	816.0
35-39	1596.4	1656.9	1681.1	1825.4	1810.7	1431.4	1130.5	1046.8	1164.9	1037.9
40-44	1801.3	1571.8	1642.7	1670.1	1819.3	1811.0	1436.2	1137.1	1053.7	1170.9
45-49	1951.8	1855.7	1549.5	1622.6	1654.9	1808.2	1802.2	1431.5	1135.4	1053.1
50-54	1783.5	1858.7	1812.2	1518.1	1595.1	1631.5	1785.2	1780.3	1416.1	1125.3
55-59	1591.0	1719.2	1789.1	1751.8	1475.5	1555.2	1594.4	1747.4	1743.4	1389.1
60-64	1165.5	1346.0	1620.1	1697.0	1672.2	1416.0	1498.2	1541.0	1690.8	1688.5
65-69	1808.0	1218.8	1237.6	1496.0	1581.1	1565.6	1334.9	1419.1	1462.0	1606.8
70-74	1054.1	1519.1	1047.1	1086.7	1326.2	1414.2	1411.5	1214.8	1295.4	1338.3
75-79	1157.9	840.2	1182.9	820.6	882.1	1080.3	1167.9	1175.5	1018.1	1090.4
80-84	667.4	734.9	537.3	788.0	550.7	615.9	758.5	834.0	840.1	733.6
85-89	210.7	297.0	357.5	265.7	413.4	286.6	341.1	421.6	468.3	471.5
90-94	86.1	60.9	92.2	114.6	87.8	145.9	101.1	131.4	160.5	181.0
95-99	12.6	14.0	9.7	16.0	21.0	16.5	30.0	21.0	29.5	35.6
100+	1.5	1.2	1.6	1.2	2.1	2.9	2.6	4.5	3.6	4.8

MEDIUM-HIGH-HIGH		<i>(THOUSAND PERSONS)</i>								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45549.2	44388.9	43560.8	42925.7	42360.1	41734.8	41059.5	40309.4	39484.5
0-4	2005.1	2251.7	2170.4	2099.9	1922.4	1771.8	1683.2	1705.0	1691.3	1625.2
5-9	2067.9	1964.6	2258.8	2175.9	2108.0	1933.5	1783.6	1695.1	1717.1	1703.9
10-14	2691.7	2170.2	1977.2	2268.0	2187.9	2123.6	1949.5	1799.6	1711.5	1733.9
15-19	3572.7	2857.8	2189.2	1996.3	2292.8	2218.8	2155.2	1981.6	1832.6	1745.7
20-24	3793.9	3692.1	2881.8	2240.7	2074.6	2390.2	2320.5	2259.2	2088.9	1944.9
25-29	3446.0	3724.0	3686.1	2904.4	2288.7	2140.4	2458.1	2390.5	2331.9	2165.4
30-34	3326.0	3369.6	3701.4	3683.3	2929.2	2333.8	2190.3	2508.2	2443.7	2388.6
35-39	3123.0	3252.0	3334.0	3680.8	3685.9	2957.7	2373.1	2233.7	2553.5	2493.3
40-44	3447.8	3026.6	3196.5	3293.7	3657.1	3680.6	2969.3	2395.5	2262.0	2583.6
45-49	3663.3	3482.6	2945.9	3129.0	3245.7	3619.7	3652.1	2958.8	2398.9	2271.8
50-54	3257.9	3392.0	3335.4	2846.2	3046.9	3178.6	3554.2	3594.8	2925.3	2382.6
55-59	2825.1	3040.4	3186.0	3165.0	2730.6	2942.8	3082.8	3456.8	3507.4	2866.6
60-64	1961.6	2287.9	2770.8	2946.8	2964.8	2584.8	2802.2	2949.3	3321.6	3382.3
65-69	2947.6	1953.2	2013.3	2471.7	2674.7	2721.4	2396.0	2613.3	2766.7	3131.0
70-74	1663.4	2357.4	1604.9	1710.5	2136.0	2348.0	2411.3	2141.8	2351.9	2504.4
75-79	1690.7	1242.5	1754.3	1226.5	1365.8	1728.1	1929.0	1994.2	1789.7	1980.0
80-84	876.1	1009.9	763.5	1149.6	823.6	964.5	1231.1	1391.9	1446.3	1313.0
85-89	267.6	377.9	482.4	381.2	616.1	447.4	555.9	707.9	810.3	844.2
90-94	104.9	77.0	120.6	164.2	135.5	237.7	173.5	230.3	290.6	338.0
95-99	15.1	18.2	14.1	24.7	35.6	30.6	58.1	41.8	59.5	74.5
100+	1.8	1.4	2.3	2.2	3.8	6.0	5.8	10.5	8.6	11.5
MALES	21574.7	20979.2	20429.7	20086.6	19887.0	19732.5	19559.6	19400.0	19241.1	19048.9
0-4	1031.7	1152.7	1109.6	1073.9	983.2	906.4	861.2	872.4	865.5	831.8
5-9	1059.9	1010.4	1156.0	1112.2	1077.9	989.0	912.5	867.4	878.8	872.2
10-14	1379.6	1111.3	1016.6	1160.5	1118.3	1085.9	997.2	920.7	875.8	887.4
15-19	1828.4	1464.1	1120.7	1026.4	1173.5	1134.6	1102.6	1014.3	938.3	894.1
20-24	1934.9	1883.8	1474.5	1149.0	1070.5	1228.2	1192.0	1161.7	1075.5	1002.7
25-29	1734.4	1887.6	1871.6	1483.4	1174.6	1107.0	1266.0	1231.5	1203.2	1119.8
30-34	1647.9	1677.9	1862.4	1861.1	1492.1	1196.4	1132.3	1291.7	1259.8	1234.0
35-39	1526.6	1592.8	1643.6	1838.3	1852.9	1501.2	1213.8	1153.1	1314.4	1285.7
40-44	1646.5	1452.3	1544.4	1606.5	1812.5	1839.3	1500.5	1221.9	1166.1	1329.2
45-49	1711.5	1624.9	1387.3	1489.3	1565.8	1778.7	1812.6	1487.9	1220.1	1169.2
50-54	1474.4	1530.6	1513.0	1310.8	1426.2	1513.2	1727.8	1769.5	1462.7	1207.2
55-59	1234.1	1317.4	1382.3	1390.3	1227.4	1350.4	1443.7	1659.0	1710.0	1423.0
60-64	796.1	937.8	1133.5	1219.6	1255.3	1127.2	1253.7	1353.7	1570.4	1629.9
65-69	1139.7	731.5	762.9	945.2	1049.5	1100.6	1004.9	1132.6	1238.8	1451.3
70-74	609.3	832.7	542.4	593.9	759.3	864.0	920.9	856.2	980.2	1085.0
75-79	532.8	400.2	548.4	370.8	433.2	565.5	658.9	714.8	679.5	789.6
80-84	208.6	273.9	216.8	318.4	224.1	277.6	367.5	439.3	485.1	470.8
85-89	57.0	79.4	117.5	96.6	152.5	108.5	143.1	190.6	233.8	260.7
90-94	18.9	14.7	22.9	35.7	30.6	51.4	36.6	52.3	69.8	87.7
95-99	2.5	3.0	2.6	4.3	7.0	6.1	10.8	7.7	11.9	15.8
100+	0.3	0.2	0.4	0.4	0.6	1.1	1.0	1.7	1.4	2.0
FEMALES	25174.5	24570.0	23959.2	23474.2	23038.7	22627.6	22175.2	21659.6	21068.3	20435.6
0-4	973.4	1098.9	1060.8	1026.1	939.1	865.5	822.0	832.6	825.8	793.4
5-9	1008.0	954.2	1102.8	1063.7	1030.1	944.5	871.1	827.7	838.3	831.8
10-14	1312.1	1058.9	960.6	1107.4	1069.6	1037.7	952.3	878.9	835.7	846.5
15-19	1744.4	1393.7	1068.6	969.9	1119.3	1084.2	1052.6	967.4	894.3	851.6
20-24	1859.1	1808.3	1407.3	1091.8	1004.1	1161.9	1128.4	1097.5	1013.4	942.2
25-29	1711.6	1836.4	1814.5	1421.0	1114.1	1033.4	1192.1	1158.9	1128.6	1045.7
30-34	1678.1	1691.7	1839.0	1822.2	1437.2	1137.4	1058.0	1216.5	1183.9	1154.6
35-39	1596.4	1659.2	1690.4	1842.5	1833.0	1456.5	1159.4	1080.6	1239.1	1207.6
40-44	1801.3	1574.3	1652.0	1687.3	1844.6	1841.2	1468.8	1173.6	1095.9	1254.4
45-49	1951.8	1857.7	1558.6	1639.8	1679.9	1841.0	1839.5	1470.9	1178.9	1102.6
50-54	1783.5	1861.4	1822.3	1535.4	1620.6	1665.4	1826.3	1825.3	1462.6	1175.5
55-59	1591.0	1722.9	1803.7	1774.8	1503.2	1592.4	1639.1	1797.8	1797.5	1443.6
60-64	1165.5	1350.2	1637.2	1727.2	1709.5	1457.6	1548.5	1595.6	1751.2	1752.5
65-69	1808.0	1221.8	1250.4	1526.5	1625.2	1620.7	1391.1	1480.7	1527.9	1679.7
70-74	1054.1	1524.7	1062.5	1116.6	1376.7	1484.0	1490.4	1285.5	1371.7	1419.5
75-79	1157.9	842.2	1205.9	855.7	932.6	1162.6	1270.1	1279.4	1110.2	1190.4
80-84	667.4	736.0	546.7	831.2	599.5	686.8	863.6	952.6	961.2	842.2
85-89	210.7	298.5	364.9	284.6	463.6	338.9	412.8	517.2	576.5	583.5
90-94	86.1	62.3	97.6	128.5	105.0	186.2	136.9	178.0	220.8	250.3
95-99	12.6	15.3	11.5	20.4	28.6	24.5	47.2	34.1	47.6	58.6
100+	1.5	1.2	1.9	1.8	3.2	4.9	4.8	8.7	7.3	9.5

MEDIUM-HIGH-MEDIUM		(THOUSAND PERSONS)								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45511.8	44268.7	43346.5	42603.2	41907.9	41127.9	40272.2	39314.9	38255.0
0-4	2005.1	2250.2	2165.0	2089.8	1906.6	1750.2	1655.3	1668.5	1644.6	1566.8
5-9	2067.9	1963.1	2254.4	2168.0	2095.2	1914.6	1758.2	1663.1	1676.1	1652.1
10-14	2691.7	2168.2	1971.7	2259.9	2176.0	2106.2	1925.5	1768.7	1673.3	1686.1
15-19	3572.7	2855.2	2181.8	1985.2	2278.6	2199.1	2128.7	1946.9	1789.5	1693.7
20-24	3793.9	3688.9	2871.9	2223.8	2052.5	2360.8	2278.8	2204.2	2019.2	1859.8
25-29	3446.0	3720.5	3675.1	2884.8	2260.5	2104.5	2410.8	2326.9	2251.0	2065.8
30-34	3326.0	3365.8	3689.5	3662.3	2898.2	2292.0	2138.2	2442.2	2359.0	2283.8
35-39	3123.0	3248.7	3322.5	3659.5	3654.2	2914.1	2316.4	2164.4	2467.9	2386.5
40-44	3447.8	3023.4	3185.9	3273.9	3626.4	3638.1	2913.3	2324.8	2177.0	2480.8
45-49	3663.3	3480.1	2936.7	3111.3	3217.9	3580.0	3599.9	2892.2	2316.8	2174.5
50-54	3257.9	3389.8	3328.1	2831.1	3022.6	3143.5	3506.8	3534.4	2850.1	2291.4
55-59	2825.1	3038.9	3180.0	3153.0	2710.4	2913.0	3041.7	3403.2	3440.5	2784.4
60-64	1961.6	2286.3	2766.4	2937.3	2948.9	2560.5	2768.3	2904.1	3263.8	3311.0
65-69	2947.6	1951.3	2007.6	2464.5	2662.6	2702.7	2368.9	2576.5	2718.7	3070.4
70-74	1663.4	2356.2	1600.8	1703.2	2127.2	2334.3	2391.3	2113.9	2314.8	2456.5
75-79	1690.7	1241.4	1751.1	1221.5	1358.0	1718.6	1915.1	1974.7	1763.2	1945.2
80-84	876.1	1009.4	761.7	1146.6	819.2	957.9	1223.0	1380.4	1430.5	1291.7
85-89	267.6	377.8	481.8	380.0	614.1	444.6	551.8	702.8	803.0	834.3
90-94	104.9	76.9	120.4	163.9	135.0	236.8	172.2	228.4	288.4	334.8
95-99	15.1	18.2	14.1	24.6	35.5	30.5	57.8	41.4	59.0	73.8
100+	1.8	1.4	2.3	2.1	3.8	6.0	5.8	10.4	8.6	11.4
MALES	21574.7	20961.4	20372.3	19980.8	19725.1	19503.1	19249.0	18993.8	18724.4	18406.0
0-4	1031.7	1152.0	1106.8	1068.6	975.1	895.3	846.9	853.7	841.6	801.9
5-9	1059.9	1009.6	1153.7	1108.1	1071.3	979.2	899.4	850.9	857.6	845.5
10-14	1379.6	1110.3	1013.7	1156.3	1112.1	1076.8	984.7	904.7	856.1	862.8
15-19	1828.4	1462.7	1116.7	1020.6	1166.0	1124.1	1088.6	996.0	915.8	867.0
20-24	1934.9	1882.2	1469.4	1139.7	1058.4	1212.1	1169.1	1131.4	1037.3	956.2
25-29	1734.4	1886.0	1866.4	1472.9	1159.1	1087.1	1239.6	1196.0	1158.1	1064.3
30-34	1647.9	1676.1	1856.9	1850.5	1475.3	1173.4	1103.4	1255.0	1212.6	1175.6
35-39	1526.6	1591.1	1637.9	1827.8	1836.5	1477.6	1182.7	1115.0	1267.1	1226.5
40-44	1646.5	1450.6	1538.9	1596.3	1796.9	1817.1	1470.3	1183.3	1119.5	1272.5
45-49	1711.5	1623.5	1382.4	1479.9	1551.5	1758.3	1785.3	1452.1	1175.4	1116.1
50-54	1474.4	1529.5	1509.3	1303.0	1413.6	1495.3	1703.7	1738.1	1422.6	1157.9
55-59	1234.1	1316.8	1379.5	1384.3	1217.3	1335.4	1423.2	1632.1	1675.7	1379.8
60-64	796.1	937.1	1131.7	1215.4	1247.9	1115.6	1237.3	1331.8	1542.1	1594.0
65-69	1139.7	730.7	760.7	942.4	1044.5	1092.5	992.7	1115.6	1216.3	1422.4
70-74	609.3	832.3	540.9	591.4	756.2	858.9	912.9	844.4	964.0	1063.5
75-79	532.8	400.0	547.5	369.3	430.7	562.4	654.1	707.5	669.0	775.2
80-84	208.6	273.8	216.5	317.6	222.8	275.8	365.1	435.6	479.6	462.8
85-89	57.0	79.4	117.5	96.4	152.0	107.8	142.0	189.3	231.6	257.5
90-94	18.9	14.6	22.9	35.7	30.5	51.2	36.3	51.8	69.3	86.8
95-99	2.5	3.0	2.6	4.3	7.0	6.1	10.8	7.6	11.8	15.7
100+	0.3	0.2	0.4	0.4	0.6	1.1	1.0	1.7	1.4	2.0
FEMALES	25174.5	24550.4	23896.5	23365.7	22878.1	22404.8	21878.9	21278.4	20590.5	19849.0
0-4	973.4	1098.3	1058.1	1021.1	931.4	854.9	808.5	814.8	803.0	765.0
5-9	1008.0	953.5	1100.7	1059.9	1023.9	935.4	858.8	812.2	818.4	806.6
10-14	1312.1	1057.9	957.9	1103.6	1063.9	1029.4	940.8	864.0	817.2	823.3
15-19	1744.4	1392.5	1065.0	964.6	1112.6	1075.0	1040.1	950.9	873.8	826.8
20-24	1859.1	1806.6	1402.5	1084.1	994.1	1148.7	1109.7	1072.7	981.8	903.6
25-29	1711.6	1834.5	1808.7	1411.9	1101.4	1017.4	1171.2	1130.9	1092.9	1001.5
30-34	1678.1	1689.7	1832.6	1811.8	1422.9	1118.6	1034.7	1187.2	1146.4	1108.2
35-39	1596.4	1657.6	1684.5	1831.8	1817.7	1436.5	1133.7	1049.4	1200.9	1160.0
40-44	1801.3	1572.8	1647.1	1677.6	1829.5	1821.0	1443.0	1141.5	1057.5	1208.3
45-49	1951.8	1856.6	1554.3	1631.4	1666.4	1821.7	1814.6	1440.1	1141.4	1058.4
50-54	1783.5	1860.3	1818.8	1528.2	1609.0	1648.2	1803.1	1796.3	1427.5	1133.5
55-59	1591.0	1722.1	1800.5	1768.6	1493.1	1577.6	1618.5	1771.1	1764.8	1404.6
60-64	1165.5	1349.2	1634.8	1722.0	1701.0	1444.9	1531.0	1572.3	1721.7	1717.0
65-69	1808.0	1220.6	1246.9	1522.2	1618.1	1610.2	1376.2	1460.9	1502.4	1647.9
70-74	1054.1	1524.0	1059.9	1111.8	1371.0	1475.5	1478.5	1269.4	1350.8	1393.0
75-79	1157.9	841.4	1203.6	852.2	927.3	1156.2	1261.0	1267.2	1094.2	1170.0
80-84	667.4	735.6	545.3	829.0	596.3	682.1	857.9	944.8	950.9	828.9
85-89	210.7	298.4	364.4	283.6	462.1	336.8	409.8	513.5	571.4	576.8
90-94	86.1	62.3	97.5	128.2	104.5	185.6	136.0	176.6	219.1	248.0
95-99	12.6	15.2	11.5	20.4	28.5	24.4	47.0	33.8	47.2	58.2
100+	1.5	1.2	1.9	1.7	3.2	4.9	4.8	8.7	7.2	9.4

MEDIUM-LOW-LOW		<i>(THOUSAND PERSONS)</i>								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45210.9	43028.2	41062.2	39169.2	37270.4	35403.6	33678.3	32051.2	30469.9
0-4	2005.1	2241.4	2131.5	2029.0	1817.8	1634.4	1523.9	1523.0	1484.1	1389.0
5-9	2067.9	1955.7	2221.4	2117.0	2018.5	1807.6	1622.8	1510.5	1508.1	1468.8
10-14	2691.7	2159.4	1936.2	2207.5	2107.5	2008.7	1795.8	1608.7	1494.5	1491.5
15-19	3572.7	2846.2	2140.6	1925.6	2202.5	2105.3	2005.5	1790.8	1602.6	1488.6
20-24	3793.9	3677.4	2819.1	2133.0	1935.8	2226.6	2138.0	2037.1	1823.8	1638.7
25-29	3446.0	3706.1	3610.5	2776.1	2111.2	1923.7	2214.7	2124.8	2024.2	1813.7
30-34	3326.0	3348.4	3618.5	3538.9	2731.0	2082.4	1899.9	2186.9	2099.5	2002.1
35-39	3123.0	3229.7	3246.3	3524.7	3458.9	2676.2	2046.8	1871.4	2157.2	2074.7
40-44	3447.8	3000.6	3100.7	3131.6	3412.1	3352.8	2599.9	1995.0	1829.5	2113.6
45-49	3663.3	3454.2	2844.2	2953.4	2992.5	3264.0	3211.6	2497.7	1921.6	1766.4
50-54	3257.9	3359.9	3221.5	2663.8	2774.5	2813.9	3074.8	3035.7	2367.7	1824.7
55-59	2825.1	3005.1	3060.2	2946.8	2445.4	2550.9	2593.6	2848.6	2824.2	2207.9
60-64	1961.6	2263.3	2654.9	2720.5	2627.0	2185.1	2287.6	2341.5	2588.5	2576.1
65-69	2947.6	1938.1	1929.6	2272.4	2339.8	2261.4	1888.9	1992.4	2053.3	2282.0
70-74	1663.4	2338.3	1540.6	1558.8	1836.3	1898.2	1840.6	1552.6	1652.2	1713.1
75-79	1690.7	1233.9	1682.4	1102.8	1142.0	1340.6	1398.8	1369.6	1170.7	1258.1
80-84	876.1	996.0	720.2	1012.1	656.1	703.8	825.6	880.0	872.2	758.1
85-89	267.6	366.6	436.5	312.6	457.6	290.5	332.0	393.0	431.7	434.1
90-94	104.9	73.2	102.0	120.1	84.8	130.7	81.9	104.2	125.5	143.5
95-99	15.1	15.9	10.0	14.3	16.8	11.8	19.7	12.7	18.5	22.9
100+	1.8	1.3	1.5	1.0	1.4	1.7	1.3	2.2	1.7	2.4
MALES	21574.7	20793.8	19716.1	18760.6	17841.0	16917.6	16034.0	15267.5	14581.9	13911.3
0-4	1031.7	1147.1	1089.5	1037.4	929.4	835.8	779.3	779.0	759.1	710.5
5-9	1059.9	1005.7	1136.4	1081.7	1031.6	923.9	829.6	772.2	771.1	751.0
10-14	1379.6	1105.7	995.6	1129.1	1076.6	1026.3	917.7	822.2	763.9	762.4
15-19	1828.4	1458.2	1095.9	990.0	1126.3	1075.5	1024.8	915.4	819.6	761.5
20-24	1934.9	1876.7	1443.2	1092.1	995.9	1140.0	1094.5	1043.9	935.9	842.2
25-29	1734.4	1878.6	1833.2	1414.5	1076.4	986.4	1130.7	1085.6	1036.1	930.4
30-34	1647.9	1665.4	1817.5	1781.7	1380.4	1053.8	968.2	1110.9	1068.6	1021.5
35-39	1526.6	1579.6	1593.2	1749.5	1721.7	1338.2	1026.4	947.2	1089.9	1051.2
40-44	1646.5	1435.7	1487.4	1510.3	1665.8	1641.9	1281.3	989.4	918.6	1059.9
45-49	1711.5	1605.6	1323.0	1380.3	1407.6	1555.4	1537.2	1207.6	938.5	875.1
50-54	1474.4	1508.8	1439.3	1193.9	1250.6	1277.2	1416.5	1409.3	1114.3	869.2
55-59	1234.1	1294.6	1303.4	1251.4	1043.3	1095.0	1123.3	1257.8	1260.9	1001.1
60-64	796.1	923.2	1065.9	1082.3	1042.2	871.5	920.0	955.0	1081.9	1089.8
65-69	1139.7	725.5	722.1	836.2	852.6	820.7	691.1	739.7	777.9	888.2
70-74	609.3	824.5	517.4	524.9	606.1	619.4	599.0	513.6	558.5	592.4
75-79	532.8	396.4	522.2	323.9	336.1	384.5	397.5	391.8	343.8	378.4
80-84	208.6	269.2	203.4	274.0	167.2	178.5	204.2	217.8	219.3	195.7
85-89	57.0	76.9	106.0	79.0	109.3	64.8	73.8	86.2	95.6	97.4
90-94	18.9	13.9	19.2	25.8	18.5	26.3	15.4	20.3	24.7	28.6
95-99	2.5	2.6	1.8	2.4	3.1	2.2	3.3	2.2	3.4	4.3
100+	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.4	0.3	0.5
FEMALES	25174.5	24417.1	23312.1	22301.6	21328.2	20352.8	19369.6	18410.8	17469.3	16558.6
0-4	973.4	1094.3	1042.0	991.7	888.3	798.6	744.6	744.1	725.0	678.5
5-9	1008.0	950.0	1084.9	1035.3	986.8	883.6	793.2	738.3	737.0	717.8
10-14	1312.1	1053.7	940.6	1078.3	1030.8	982.3	878.1	786.5	730.6	729.0
15-19	1744.4	1388.0	1044.6	935.5	1076.1	1029.9	980.7	875.4	783.0	727.1
20-24	1859.1	1800.8	1375.9	1040.9	939.8	1086.6	1043.6	993.3	887.9	796.5
25-29	1711.6	1827.6	1777.3	1361.6	1034.9	937.3	1084.0	1039.2	988.1	883.4
30-34	1678.1	1683.0	1801.0	1757.2	1350.6	1028.5	931.7	1076.0	1030.9	980.5
35-39	1596.4	1650.1	1653.1	1775.2	1737.3	1338.0	1020.4	924.1	1067.2	1023.5
40-44	1801.3	1565.0	1613.3	1621.4	1746.3	1710.9	1318.6	1005.6	911.0	1053.7
45-49	1951.8	1848.6	1521.2	1573.1	1584.9	1708.7	1674.4	1290.1	983.1	891.3
50-54	1783.5	1851.1	1782.2	1469.9	1523.9	1536.7	1658.3	1626.4	1253.4	955.4
55-59	1591.0	1710.6	1756.9	1695.5	1402.1	1455.9	1470.3	1590.7	1563.3	1206.9
60-64	1165.5	1340.2	1589.0	1638.2	1584.8	1313.6	1367.7	1386.4	1506.6	1486.2
65-69	1808.0	1212.6	1207.5	1436.1	1487.2	1440.7	1197.8	1252.6	1275.4	1393.9
70-74	1054.1	1513.8	1023.2	1033.9	1230.3	1278.9	1241.6	1039.0	1093.6	1120.7
75-79	1157.9	837.5	1160.1	778.9	805.9	956.1	1001.3	977.8	826.9	879.7
80-84	667.4	726.8	516.7	738.2	488.9	525.3	621.4	662.2	652.9	562.4
85-89	210.7	289.8	330.5	233.6	348.3	225.7	258.2	306.8	336.0	336.7
90-94	86.1	59.4	82.7	94.3	66.3	104.5	66.5	83.9	100.8	115.0
95-99	12.6	13.3	8.2	11.9	13.6	9.6	16.3	10.5	15.1	18.6
100+	1.5	1.1	1.2	0.9	1.2	1.4	1.1	1.8	1.4	2.0

MEDIUM-MEDIUM-HIGH		<i>(THOUSAND PERSONS)</i>								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH SEXES	46749.2	45491.7	44127.3	43024.4	42088.8	41200.8	40292.1	39396.6	38453.1	37479.0
0-4	2005.1	2250.8	2168.1	2096.3	1918.0	1767.6	1679.2	1700.4	1685.9	1619.1
5-9	2067.9	1964.6	2257.8	2173.3	2104.0	1928.8	1779.0	1690.8	1712.2	1698.1
10-14	2691.7	2170.3	1977.0	2266.6	2185.0	2119.2	1944.5	1794.7	1706.8	1728.6
15-19	3572.7	2857.8	2189.0	1995.8	2291.0	2215.5	2150.5	1976.2	1827.3	1740.7
20-24	3793.9	3691.9	2880.8	2239.8	2073.3	2387.5	2316.1	2253.4	2082.3	1938.6
25-29	3446.0	3722.3	3682.3	2900.7	2285.3	2136.9	2452.9	2383.4	2323.2	2156.2
30-34	3326.0	3365.3	3690.1	3670.9	2918.9	2325.5	2182.5	2497.9	2431.4	2374.8
35-39	3123.0	3246.9	3318.9	3658.8	3662.5	2938.7	2358.2	2219.3	2535.0	2472.9
40-44	3447.8	3018.9	3175.9	3264.6	3619.6	3642.0	2938.6	2370.5	2237.4	2553.6
45-49	3663.3	3470.5	2916.9	3088.4	3195.9	3559.7	3591.5	2909.1	2357.6	2232.0
50-54	3257.9	3378.0	3292.8	2792.1	2977.1	3096.3	3458.3	3495.9	2842.8	2314.9
55-59	2825.1	3023.6	3133.6	3082.4	2637.7	2826.6	2950.6	3304.3	3348.4	2734.9
60-64	1961.6	2284.8	2731.7	2863.1	2842.0	2449.7	2637.1	2764.0	3103.7	3154.3
65-69	2947.6	1955.5	2004.8	2414.2	2559.9	2556.9	2221.1	2403.1	2527.2	2847.1
70-74	1663.4	2359.0	1597.6	1678.9	2043.2	2188.5	2202.7	1931.3	2098.5	2216.1
75-79	1690.7	1245.0	1741.0	1193.2	1299.2	1588.2	1724.5	1749.7	1546.6	1690.0
80-84	876.1	1013.5	760.2	1108.8	767.7	869.0	1067.3	1177.9	1198.4	1069.6
85-89	267.6	378.0	478.4	363.8	561.0	386.1	463.2	570.1	636.6	648.2
90-94	104.9	76.3	116.1	151.0	117.5	192.6	132.2	172.2	209.8	238.0
95-99	15.1	17.3	12.3	20.2	27.6	21.8	38.7	26.8	37.7	45.5
100+	1.8	1.4	2.0	1.6	2.6	3.7	3.3	5.7	4.5	6.0
MALES	21574.7	20946.8	20285.5	19795.8	19398.5	19031.7	18654.4	18296.3	17949.8	17605.8
0-4	1031.7	1152.2	1108.5	1071.9	981.0	904.2	859.0	870.0	862.7	828.6
5-9	1059.9	1010.5	1155.4	1111.0	1075.9	986.5	910.0	865.0	876.1	869.0
10-14	1379.6	1111.5	1016.6	1159.8	1116.9	1083.6	994.5	918.0	873.2	884.5
15-19	1828.4	1464.2	1120.6	1026.2	1172.5	1132.9	1100.0	1011.2	935.3	891.2
20-24	1934.9	1883.9	1474.0	1148.4	1069.7	1226.5	1189.5	1158.2	1071.5	998.8
25-29	1734.4	1886.6	1869.3	1481.3	1172.5	1104.6	1262.3	1226.8	1197.3	1113.6
30-34	1647.9	1674.2	1854.1	1852.9	1485.0	1190.4	1126.3	1283.6	1250.5	1223.8
35-39	1526.6	1588.4	1631.9	1822.6	1836.5	1487.3	1202.2	1141.3	1299.1	1269.5
40-44	1646.5	1445.5	1528.3	1584.9	1785.3	1810.8	1476.7	1201.4	1145.4	1304.0
45-49	1711.5	1613.7	1363.2	1457.5	1527.5	1732.3	1764.5	1446.9	1184.8	1134.9
50-54	1474.4	1518.2	1477.1	1266.8	1370.4	1447.7	1650.0	1686.7	1391.7	1147.8
55-59	1234.1	1303.6	1341.3	1324.5	1152.2	1256.7	1335.9	1530.4	1572.6	1307.1
60-64	796.1	937.8	1109.2	1160.9	1161.4	1021.2	1121.6	1200.1	1383.8	1430.7
65-69	1139.7	735.6	763.8	913.9	971.7	980.9	871.6	964.6	1040.2	1209.0
70-74	609.3	839.1	547.9	587.5	711.4	766.0	779.6	700.8	782.8	852.1
75-79	532.8	404.0	555.9	369.2	412.0	501.7	548.0	562.6	513.3	580.4
80-84	208.6	278.2	221.5	318.7	214.1	248.8	303.6	336.8	348.8	323.8
85-89	57.0	80.9	120.4	97.2	146.3	97.6	119.4	145.3	163.9	171.0
90-94	18.9	15.3	23.7	36.2	29.3	46.1	30.3	39.7	47.9	55.2
95-99	2.5	3.3	2.6	4.1	6.5	5.2	8.6	5.6	7.9	9.6
100+	0.3	0.3	0.4	0.3	0.5	0.8	0.8	1.2	0.9	1.2
FEMALES	25174.5	24544.9	23841.8	23228.6	22690.3	22169.1	21637.6	21100.4	20503.3	19873.2
0-4	973.4	1098.6	1059.6	1024.3	937.0	863.4	820.2	830.4	823.2	790.4
5-9	1008.0	954.1	1102.3	1062.3	1028.1	942.3	868.9	825.7	836.1	829.1
10-14	1312.1	1058.8	960.4	1106.8	1068.1	1035.7	950.0	876.7	833.6	844.1
15-19	1744.4	1393.6	1068.4	969.6	1118.5	1082.6	1050.5	964.9	892.0	849.4
20-24	1859.1	1808.0	1406.8	1091.3	1003.6	1160.9	1126.6	1095.2	1010.8	939.7
25-29	1711.6	1835.8	1812.9	1419.5	1112.8	1032.3	1190.6	1156.6	1125.8	1042.6
30-34	1678.1	1691.0	1836.0	1818.1	1433.9	1135.1	1056.3	1214.3	1180.9	1151.0
35-39	1596.4	1658.5	1687.0	1836.1	1826.0	1451.4	1156.1	1078.0	1235.9	1203.4
40-44	1801.3	1573.3	1647.6	1679.7	1834.3	1831.2	1461.9	1169.1	1092.0	1249.6
45-49	1951.8	1856.8	1553.8	1630.9	1668.3	1827.4	1827.0	1462.2	1172.8	1097.1
50-54	1783.5	1859.8	1815.7	1525.3	1606.7	1648.6	1808.3	1809.2	1451.1	1167.1
55-59	1591.0	1720.0	1792.3	1757.9	1485.5	1569.9	1614.7	1773.8	1775.9	1427.8
60-64	1165.5	1346.9	1622.6	1702.2	1680.6	1428.5	1515.5	1563.9	1719.9	1723.6
65-69	1808.0	1220.0	1241.0	1500.4	1588.1	1576.0	1349.5	1438.5	1487.1	1638.1
70-74	1054.1	1519.9	1049.7	1091.4	1331.8	1422.5	1423.1	1230.5	1315.7	1364.0
75-79	1157.9	841.0	1185.2	824.0	887.2	1086.5	1176.5	1187.1	1033.3	1109.7
80-84	667.4	735.3	538.7	790.1	553.6	620.2	763.7	841.1	849.5	745.7
85-89	210.7	297.1	358.0	266.6	414.8	288.5	343.7	424.8	472.6	477.2
90-94	86.1	61.0	92.4	114.8	88.2	146.5	101.9	132.5	161.9	182.8
95-99	12.6	14.1	9.8	16.1	21.1	16.6	30.1	21.1	29.7	36.0
100+	1.5	1.2	1.6	1.2	2.1	2.9	2.6	4.6	3.6	4.8

MEDIUM-MEDIUM-LOW		<i>(THOUSAND PERSONS)</i>								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45351.3	43516.4	41981.7	40582.7	39148.2	37676.5	36186.0	34623.2	33019.8
0-4	2005.1	2243.8	2136.6	2036.8	1827.5	1645.3	1535.5	1536.2	1498.5	1403.6
5-9	2067.9	1956.6	2225.2	2123.6	2028.0	1819.0	1635.3	1523.4	1522.3	1484.1
10-14	2691.7	2160.0	1937.8	2212.2	2115.2	2019.4	1808.3	1622.1	1508.1	1506.3
15-19	3572.7	2847.2	2142.3	1928.4	2208.9	2114.9	2017.9	1804.6	1616.9	1502.9
20-24	3793.9	3679.6	2823.2	2137.8	1941.8	2237.2	2151.5	2052.7	1839.9	1654.9
25-29	3446.0	3708.8	3619.8	2788.4	2124.1	1938.2	2235.0	2146.1	2045.7	1834.6
30-34	3326.0	3352.9	3633.6	3565.2	2760.4	2110.6	1928.6	2220.8	2131.2	2032.5
35-39	3123.0	3235.7	3270.3	3566.9	3518.7	2735.7	2098.3	1917.5	2207.3	2120.5
40-44	3447.8	3007.5	3130.1	3187.0	3497.3	3461.9	2698.5	2071.5	1894.3	2183.3
45-49	3663.3	3461.2	2875.6	3017.9	3093.4	3407.4	3380.4	2636.8	2025.0	1854.6
50-54	3257.9	3370.6	3259.6	2731.1	2887.0	2970.1	3281.7	3260.4	2545.8	1957.9
55-59	2825.1	3018.9	3108.6	3032.7	2560.9	2717.8	2805.7	3109.5	3095.6	2422.0
60-64	1961.6	2279.5	2714.4	2827.9	2782.2	2361.2	2517.5	2609.2	2900.8	2895.8
65-69	2947.6	1948.9	1978.5	2384.8	2515.5	2487.4	2123.7	2275.2	2365.2	2639.8
70-74	1663.4	2354.5	1578.3	1646.5	2008.2	2138.4	2129.6	1832.4	1971.5	2058.0
75-79	1690.7	1241.2	1725.5	1170.5	1266.9	1551.9	1674.8	1680.3	1455.2	1575.2
80-84	876.1	1011.9	751.7	1094.1	748.6	842.5	1037.1	1137.5	1143.6	998.9
85-89	267.6	377.5	475.7	358.3	552.5	374.8	447.7	552.2	612.7	616.3
90-94	104.9	76.1	115.4	149.8	115.4	189.4	127.9	166.2	202.8	228.6
95-99	15.1	17.3	12.2	20.1	27.4	21.4	38.1	25.9	36.4	44.0
100+	1.8	1.4	1.9	1.6	2.6	3.8	3.3	5.7	4.4	5.9
MALES	21574.7	20881.6	20003.3	19302.0	18670.7	18030.1	17375.7	16727.0	16079.1	15427.5
0-4	1031.7	1148.6	1092.3	1041.4	934.5	841.4	785.3	785.8	766.6	718.2
5-9	1059.9	1006.3	1138.7	1085.4	1036.6	929.9	836.1	779.0	778.5	759.1
10-14	1379.6	1106.2	996.6	1132.0	1081.0	1032.1	924.4	829.3	771.1	770.3
15-19	1828.4	1458.9	1097.0	991.9	1130.3	1081.0	1031.7	923.0	827.3	769.2
20-24	1934.9	1878.0	1445.5	1095.1	1000.0	1146.9	1102.9	1053.1	945.2	851.3
25-29	1734.4	1880.0	1838.7	1422.5	1085.3	996.7	1144.8	1099.6	1049.6	943.3
30-34	1647.9	1668.5	1827.7	1799.5	1401.2	1074.2	989.0	1134.7	1090.2	1041.9
35-39	1526.6	1583.1	1609.6	1778.9	1763.9	1380.9	1063.6	980.5	1125.3	1083.4
40-44	1646.5	1439.9	1506.5	1548.9	1726.9	1720.7	1352.9	1044.8	965.4	1110.4
45-49	1711.5	1609.2	1343.9	1425.0	1480.5	1660.6	1661.2	1309.8	1014.5	941.0
50-54	1474.4	1514.8	1462.1	1239.4	1329.8	1390.8	1568.7	1574.5	1246.1	969.4
55-59	1234.1	1301.6	1330.8	1303.2	1119.0	1209.4	1272.9	1444.1	1456.5	1158.9
60-64	796.1	935.8	1102.6	1147.1	1137.1	985.0	1072.3	1136.1	1298.1	1317.2
65-69	1139.7	733.0	753.8	903.3	955.4	954.6	834.5	915.4	977.4	1126.5
70-74	609.3	837.5	540.9	576.3	699.7	749.0	754.3	666.2	737.8	795.4
75-79	532.8	402.9	550.9	361.6	401.7	490.4	532.5	540.7	484.1	543.0
80-84	208.6	277.9	219.3	314.3	208.1	240.8	294.9	325.2	333.0	303.1
85-89	57.0	80.8	119.8	95.8	143.8	94.3	115.2	140.6	157.7	162.5
90-94	18.9	15.3	23.6	35.9	28.8	45.3	29.2	38.2	46.3	53.0
95-99	2.5	3.2	2.6	4.1	6.4	5.2	8.5	5.4	7.7	9.2
100+	0.3	0.2	0.4	0.3	0.5	0.9	0.8	1.2	0.9	1.2
FEMALES	25174.5	24469.7	23513.1	22679.8	21912.0	21118.2	20300.9	19459.0	18544.2	17592.3
0-4	973.4	1095.2	1044.3	995.4	893.0	803.9	750.2	750.4	731.9	685.5
5-9	1008.0	950.2	1086.5	1038.3	991.3	889.0	799.2	744.4	743.8	725.0
10-14	1312.1	1053.8	941.1	1080.3	1034.3	987.3	884.0	792.8	737.0	736.0
15-19	1744.4	1388.3	1045.3	936.5	1078.6	1033.9	986.2	881.6	789.6	733.7
20-24	1859.1	1801.7	1377.7	1042.7	941.8	1090.3	1048.6	999.6	894.7	803.6
25-29	1711.6	1828.7	1781.1	1365.9	1038.8	941.5	1090.2	1046.5	996.1	891.3
30-34	1678.1	1684.4	1805.9	1765.6	1359.3	1036.4	939.6	1086.1	1041.0	990.6
35-39	1596.4	1652.7	1660.7	1788.0	1754.8	1354.8	1034.7	937.0	1081.9	1037.1
40-44	1801.3	1567.6	1623.6	1638.1	1770.4	1741.2	1345.6	1026.7	928.9	1072.9
45-49	1951.8	1852.0	1531.6	1592.8	1612.9	1746.8	1719.2	1327.0	1010.5	913.6
50-54	1783.5	1855.8	1797.5	1491.7	1557.1	1579.3	1712.9	1685.9	1299.7	988.5
55-59	1591.0	1717.3	1777.8	1729.5	1441.9	1508.4	1532.8	1665.5	1639.1	1263.1
60-64	1165.5	1343.8	1611.8	1620.8	1645.1	1376.3	1445.2	1473.1	1602.7	1578.6
65-69	1808.0	1215.9	1224.7	1481.5	1560.1	1532.8	1289.3	1359.8	1387.8	1513.3
70-74	1054.1	1517.1	1037.4	1070.3	1308.5	1389.4	1375.3	1166.2	1233.7	1262.6
75-79	1157.9	838.4	1174.5	808.8	865.3	1061.4	1142.3	1139.6	971.2	1032.1
80-84	667.4	734.0	532.3	779.9	540.5	601.7	742.2	812.3	810.6	695.9
85-89	210.7	296.7	355.9	262.5	408.7	280.5	332.5	411.6	455.0	453.7
90-94	86.1	60.9	91.9	113.9	86.6	144.1	98.7	128.0	156.5	175.6
95-99	12.6	14.0	9.7	16.0	20.9	16.3	29.6	20.4	28.7	34.8
100+	1.5	1.2	1.6	1.3	2.1	2.9	2.5	4.5	3.5	4.7

MEDIUM-MEDIUM-MEDIUM		<i>(THOUSAND PERSONS)</i>								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45454.4	44007.5	42811.5	41769.5	40754.9	39695.6	38624.9	37481.4	36280.8
0-4	2005.1	2249.4	2162.6	2086.1	1902.2	1745.9	1651.4	1664.0	1639.2	1560.8
5-9	2067.9	1963.1	2253.4	2165.4	2091.2	1909.8	1753.7	1658.8	1671.2	1646.3
10-14	2691.7	2168.3	1971.5	2258.6	2173.0	2101.8	1920.5	1763.8	1668.7	1680.9
15-19	3572.7	2855.2	2181.5	1984.7	2276.9	2195.8	2124.0	1941.5	1784.3	1688.8
20-24	3793.9	3688.7	2871.0	2222.8	2051.1	2358.2	2274.5	2198.4	2012.7	1853.6
25-29	3446.0	3718.8	3671.3	2881.1	2257.1	2101.0	2405.7	2319.9	2242.5	2056.7
30-34	3326.0	3361.5	3678.2	3650.0	2887.9	2283.8	2130.6	2432.1	2346.9	2270.4
35-39	3123.0	3243.5	3307.4	3637.6	3630.9	2895.3	2301.7	2150.3	2449.8	2366.7
40-44	3447.8	3015.6	3165.4	3244.9	3589.1	3599.8	2883.0	2300.4	2153.1	2451.7
45-49	3663.3	3468.0	2907.7	3070.8	3168.3	3520.5	3539.8	2843.3	2276.5	2136.1
50-54	3257.9	3375.8	3285.6	2777.2	2953.2	3061.9	3411.8	3436.8	2769.2	2225.7
55-59	2825.1	3022.1	3127.6	3070.5	2617.9	2797.5	2910.9	3252.5	3283.8	2655.8
60-64	1961.6	2283.1	2727.5	2853.8	2826.6	2426.3	2604.6	2721.0	3048.8	3086.8
65-69	2947.6	1953.6	1999.1	2407.1	2548.0	2539.0	2195.4	2368.5	2482.4	2790.8
70-74	1663.4	2357.8	1593.5	1671.7	2034.5	2175.3	2183.9	1905.3	2064.4	2172.5
75-79	1690.7	1243.9	1737.9	1188.3	1291.8	1579.2	1711.6	1731.9	1522.8	1659.2
80-84	876.1	1013.1	758.4	1105.9	763.5	863.0	1060.0	1167.6	1184.6	1051.3
85-89	267.6	377.9	477.8	362.7	559.3	383.6	459.6	565.7	630.5	640.2
90-94	104.9	76.2	115.9	150.7	117.0	191.9	131.2	170.8	208.0	235.6
95-99	15.1	17.3	12.3	20.2	27.5	21.7	38.6	26.5	37.3	45.1
100+	1.8	1.4	1.9	1.6	2.6	3.7	3.3	5.7	4.5	5.9
MALES	21574.7	20929.1	20228.2	19690.8	19238.7	18806.5	18351.1	17901.7	17450.6	16987.5
0-4	1031.7	1151.5	1105.7	1066.7	972.9	893.0	844.8	851.3	838.7	798.8
5-9	1059.9	1009.7	1153.2	1106.9	1069.2	976.7	897.0	848.5	855.0	842.4
10-14	1379.6	1110.4	1013.7	1155.6	1110.6	1074.5	982.0	902.0	853.5	859.9
15-19	1828.4	1462.8	1116.7	1020.4	1165.0	1122.4	1086.0	993.0	912.8	864.1
20-24	1934.9	1882.3	1468.9	1139.2	1057.6	1210.4	1166.6	1128.0	1033.4	952.4
25-29	1734.4	1885.0	1864.1	1470.8	1156.9	1084.7	1236.0	1191.4	1152.3	1058.3
30-34	1647.9	1672.5	1848.6	1842.3	1468.3	1167.4	1097.6	1247.1	1203.5	1165.7
35-39	1526.6	1586.7	1626.3	1812.1	1820.2	1463.9	1171.3	1103.5	1252.2	1210.8
40-44	1646.5	1443.8	1522.7	1574.8	1769.8	1788.8	1446.8	1163.3	1099.4	1248.1
45-49	1711.5	1612.3	1358.3	1448.2	1513.4	1712.3	1737.7	1411.8	1141.1	1083.0
50-54	1474.4	1517.1	1473.4	1259.1	1358.1	1430.3	1626.6	1656.4	1353.1	1100.4
55-59	1234.1	1302.9	1338.5	1318.7	1142.4	1242.3	1316.5	1505.1	1540.4	1266.7
60-64	796.1	937.1	1107.3	1156.8	1154.4	1010.3	1106.4	1180.0	1358.1	1398.3
65-69	1139.7	734.8	761.5	911.1	967.0	973.3	860.5	949.4	1020.4	1183.9
70-74	609.3	838.7	546.4	585.0	708.3	761.2	772.4	690.5	768.9	834.2
75-79	532.8	403.7	555.0	367.6	409.7	498.9	543.7	556.4	504.7	568.9
80-84	208.6	278.2	221.1	317.9	212.9	247.0	301.5	333.7	344.4	317.7
85-89	57.0	80.9	120.3	97.0	145.9	97.0	118.5	144.1	162.3	168.6
90-94	18.9	15.3	23.7	36.1	29.2	46.0	30.1	39.4	47.5	54.6
95-99	2.5	3.2	2.6	4.1	6.4	5.2	8.6	5.5	7.9	9.4
100+	0.3	0.2	0.4	0.3	0.5	0.8	0.7	1.2	0.9	1.2
FEMALES	25174.5	24525.2	23779.2	23120.7	22530.9	21948.4	21344.5	20723.3	20030.8	19293.3
0-4	973.4	1097.9	1057.0	1019.4	929.3	852.9	806.6	812.7	800.5	762.1
5-9	1008.0	953.4	1100.2	1058.5	1022.0	933.1	856.7	810.3	816.2	803.9
10-14	1312.1	1057.9	957.8	1103.0	1062.4	1027.3	938.5	861.8	815.2	821.0
15-19	1744.4	1392.4	1064.9	964.3	1111.9	1073.4	1038.0	948.5	871.5	824.7
20-24	1859.1	1806.4	1402.1	1083.6	993.5	1147.7	1107.9	1070.4	979.3	901.2
25-29	1711.6	1833.8	1807.1	1410.3	1100.2	1016.3	1169.7	1128.6	1090.1	998.5
30-34	1678.1	1689.0	1829.6	1807.7	1419.6	1116.4	1033.0	1185.0	1143.4	1104.7
35-39	1596.4	1656.9	1681.1	1825.4	1810.7	1431.4	1130.5	1046.8	1197.7	1155.9
40-44	1801.3	1571.8	1642.7	1670.1	1819.3	1811.0	1436.2	1137.1	1053.7	1203.5
45-49	1951.8	1855.7	1549.5	1622.6	1654.9	1808.2	1802.2	1431.5	1135.4	1053.1
50-54	1783.5	1858.7	1812.2	1518.1	1595.1	1631.5	1785.2	1780.3	1416.1	1125.3
55-59	1591.0	1719.2	1789.1	1751.8	1475.5	1555.2	1594.4	1747.4	1743.4	1389.1
60-64	1165.5	1346.0	1620.1	1697.0	1672.2	1416.0	1498.2	1541.0	1690.8	1688.5
65-69	1808.0	1218.8	1237.6	1496.0	1581.1	1565.6	1334.9	1419.1	1462.0	1606.8
70-74	1054.1	1519.1	1047.1	1086.7	1326.2	1414.2	1411.5	1214.8	1295.4	1338.3
75-79	1157.9	840.2	1182.9	820.6	882.1	1080.3	1167.9	1175.5	1018.1	1090.4
80-84	667.4	734.9	537.3	788.0	550.7	615.9	758.5	834.0	840.1	733.6
85-89	210.7	297.0	357.5	265.7	413.4	286.6	341.1	421.6	468.3	471.5
90-94	86.1	60.9	92.2	114.6	87.8	145.9	101.1	131.4	160.5	181.0
95-99	12.6	14.0	9.7	16.0	21.0	16.5	30.0	21.0	29.5	35.6
100+	1.5	1.2	1.6	1.2	2.1	2.9	2.6	4.5	3.6	4.8

MEDIUM-THE LOWEST-THE LOWEST		<i>(THOUSAND PERSONS)</i>								
	2006	2010	2015	2020	2025	2030	2035	2040	2045	2050
BOTH										
SEXES	46749.2	45025.7	42436.0	40128.4	37940.0	35762.6	33586.9	31540.9	29585.2	27692.8
0-4	2005.1	2239.1	2119.3	2008.2	1789.2	1595.8	1471.8	1454.1	1402.6	1297.7
5-9	2067.9	1955.5	2217.8	2103.1	1995.0	1775.3	1579.8	1453.9	1434.5	1382.5
10-14	2691.7	2159.2	1935.3	2202.5	2091.3	1981.7	1759.2	1561.3	1433.3	1413.1
15-19	3572.7	2845.6	2139.2	1921.4	2191.4	2078.8	1966.4	1741.8	1542.3	1413.9
20-24	3793.9	3670.6	2808.7	2117.1	1905.3	2171.3	2056.2	1942.6	1717.9	1519.2
25-29	3446.0	3686.6	3564.2	2733.4	2064.5	1856.9	2115.5	2001.2	1888.7	1667.7
30-34	3326.0	3329.6	3550.2	3444.4	2649.0	2000.7	1797.8	2051.7	1941.4	1833.9
35-39	3123.0	3214.8	3191.4	3415.4	3323.3	2558.3	1931.7	1737.0	1986.6	1882.4
40-44	3447.8	2990.3	3058.7	3047.2	3271.0	3186.4	2453.2	1852.9	1667.5	1912.3
45-49	3663.3	3441.9	2810.6	2885.3	2883.4	3100.2	3021.9	2328.0	1758.2	1584.3
50-54	3257.9	3350.7	3184.4	2608.3	2686.1	2688.5	2894.6	2825.9	2177.9	1645.1
55-59	2825.1	2998.4	3030.0	2887.6	2372.8	2448.5	2454.5	2650.6	2592.2	1998.9
60-64	1961.6	2258.6	2630.1	2670.3	2551.0	2101.7	2173.6	2187.0	2370.4	2322.8
65-69	2947.6	1927.0	1902.3	2222.1	2267.4	2169.6	1791.6	1862.1	1881.2	2047.1
70-74	1663.4	2322.9	1504.8	1510.2	1764.4	1809.9	1734.6	1443.1	1509.4	1532.0
75-79	1690.7	1216.1	1618.0	1042.3	1073.6	1251.4	1294.3	1251.7	1053.3	1111.5
80-84	876.1	976.6	674.6	927.1	589.8	632.5	735.0	778.2	761.2	650.4
85-89	267.6	357.4	400.7	274.3	393.2	245.4	280.0	328.8	358.4	354.1
90-94	104.9	68.9	86.9	97.4	65.9	100.9	61.6	79.7	95.0	107.6
95-99	15.1	14.6	7.7	10.2	11.5	7.9	13.0	8.2	12.2	14.8
100+	1.8	1.1	1.0	0.6	0.8	0.9	0.7	1.2	0.9	1.3
MALES	21574.7	20708.7	19434.7	18292.4	17216.5	16157.9	15120.2	14152.4	13244.9	12381.4
0-4	1031.7	1146.0	1083.1	1026.5	914.7	816.0	752.6	743.7	717.4	663.8
5-9	1059.9	1005.6	1134.5	1074.2	1019.3	907.2	807.5	743.2	733.3	706.8
10-14	1379.6	1105.7	995.0	1126.4	1067.9	1012.3	898.9	797.9	732.6	722.3
15-19	1828.4	1457.9	1095.3	987.8	1120.4	1061.4	1004.4	890.0	788.4	722.9
20-24	1934.9	1872.4	1437.3	1083.1	978.9	1109.3	1049.5	992.1	878.1	777.2
25-29	1734.4	1864.4	1801.7	1386.9	1048.0	947.5	1073.9	1015.0	958.8	847.9
30-34	1647.9	1652.2	1769.6	1717.0	1327.0	1004.0	908.2	1031.4	975.6	923.3
35-39	1526.6	1569.4	1556.4	1674.4	1631.1	1263.5	957.2	867.3	987.3	936.0
40-44	1646.5	1429.1	1460.3	1454.5	1571.4	1534.0	1190.2	902.8	819.6	935.9
45-49	1711.5	1597.6	1302.4	1336.7	1337.3	1449.2	1417.2	1101.4	836.8	762.1
50-54	1474.4	1502.7	1414.6	1158.3	1194.4	1198.5	1302.9	1276.6	994.0	756.8
55-59	1234.1	1291.5	1283.8	1212.4	998.0	1032.8	1039.7	1134.7	1114.5	869.9
60-64	796.1	922.9	1055.3	1054.0	998.4	825.5	857.3	866.0	949.2	934.8
65-69	1139.7	721.9	715.1	818.9	822.2	780.0	646.9	673.7	682.5	751.5
70-74	609.3	821.1	509.0	513.7	587.5	592.7	562.5	468.4	489.7	498.1
75-79	532.8	392.3	509.0	312.5	324.5	369.2	374.8	355.8	298.1	313.6
80-84	208.6	265.0	193.9	258.1	156.7	169.1	191.4	196.5	186.9	158.4
85-89	57.0	75.1	99.1	71.8	99.3	59.3	67.8	76.3	79.7	76.2
90-94	18.9	13.4	17.5	23.2	16.6	24.2	14.1	17.6	19.6	21.0
95-99	2.5	2.5	1.5	2.0	2.8	2.0	3.1	1.8	2.5	2.8
100+	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.3
FEMALES	25174.5	24316.9	23001.2	21836.1	20723.5	19604.7	18466.7	17388.5	16340.2	15311.4
0-4	973.4	1093.1	1036.2	981.7	874.5	779.8	719.1	710.4	685.2	633.9
5-9	1008.0	949.9	1083.4	1028.9	975.8	868.1	772.4	710.7	701.2	675.7
10-14	1312.1	1053.5	940.2	1076.2	1023.3	969.4	860.3	763.4	700.7	690.8
15-19	1744.4	1387.7	1044.0	933.6	1071.0	1017.4	962.0	851.8	753.9	691.0
20-24	1859.1	1798.2	1371.4	1034.0	926.3	1061.9	1006.7	950.6	839.8	742.0
25-29	1711.6	1822.3	1762.5	1346.6	1016.6	909.4	1041.5	986.2	929.9	819.8
30-34	1678.1	1677.5	1780.7	1727.4	1322.0	996.7	889.6	1020.3	965.8	910.6
35-39	1596.4	1645.4	1635.0	1741.0	1692.2	1294.8	974.5	869.7	999.4	946.3
40-44	1801.3	1561.2	1598.4	1592.8	1699.6	1652.4	1263.0	950.1	847.8	976.4
45-49	1951.8	1844.2	1508.1	1548.5	1546.1	1650.9	1604.8	1226.6	921.5	822.3
50-54	1783.5	1848.1	1769.8	1450.0	1491.7	1490.0	1591.7	1549.2	1183.9	888.3
55-59	1591.0	1707.0	1746.2	1675.3	1374.9	1415.7	1414.8	1515.9	1477.7	1129.0
60-64	1165.5	1335.7	1574.8	1616.3	1552.6	1276.2	1316.3	1321.0	1421.1	1388.0
65-69	1808.0	1205.1	1187.2	1403.1	1445.2	1389.6	1144.8	1188.4	1198.6	1295.6
70-74	1054.1	1501.8	995.8	996.6	1176.9	1217.2	1172.1	974.7	1019.7	1034.0
75-79	1157.9	823.8	1108.9	729.8	749.1	882.2	919.5	895.9	755.1	798.0
80-84	667.4	711.6	480.8	669.0	433.1	463.3	543.6	581.7	574.3	492.0
85-89	210.7	282.3	301.5	202.5	294.0	186.1	212.2	252.5	278.7	277.9
90-94	86.1	55.6	69.4	74.2	49.3	76.7	47.5	62.1	75.4	86.6
95-99	12.6	12.2	6.2	8.2	8.7	5.9	9.9	6.4	9.7	12.1
100+	1.5	1.0	0.8	0.5	0.6	0.7	0.5	0.9	0.7	1.1

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UP TO 2050**

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