United Nations Population Fund

Georgian Academy of Sciences Institute of Demographic and Sociological Research
Partnership for Social Initiatives – Georgian Centre
Centre for Social Studies

DEMOGRAPHIC OVERVIEW OF GEORGIA

(1960-2000)

Giorgi Tsuladze, Nika Maglaperidze, Alexander Vadachkoria

Tbilisi
Georgia
2002

Publication was prepared by initiative and support of United Nations Population Fund (UNFPA) office in Georgia

This work tries to acquaint readers with such demographic processes as fertility, mortality, marriage, divorce etc., which have been taking place in Georgia in the period 1960-2000. With them, a new approach is taken in discussing the number of population as well as and ongoing demographic trends, processes are discussed in a new way.

This work was reviewed and approved by the scientific council of the Demography and Sociological Research Institute of the Georgian Academy of Sciences.

EDITORS

Leo Chikava
Martin Naughton

The text from Georgian into English was translated by Z. Abkhazava, L. Dolakidze, T.Zubiashvili

The text was prepared on the personal computer by T. Pruidze

ISBN 99928-0-514-5

Contents

PREFACE 5
INTRODUCTION 6

I POPULATION 7
1.1. Reliability of Data 7
1.2. Possibility of Estimation of Population Size 9
1.3. Change of Population Size 10
1.4. Population Age-sex Composition 12
1.5. Demographic Aging 13

II MARRIAGE 15
2.1. Married Population 15
2.2. “Marriage Market” 17
2.3. First Marriage and Remarriage 19
2.4. Age of Marriage 21
2.5. Frequency of Marriage 22
2.6. Unregistered Marriages 24

III DIVORCE 26
3.1. Number of Divorces and The General Picture 26
3.2. Level of Divorce 28
3.3. Age of Divorce 30
3.4. Divorce by Length of Marriage 31

IV FERTILITY AND FAMILY PLANNING 32
4.1. Reliability of the Data 32
4.2. Number of Births and General Level of Fertility 34
4.3. Realization of Fertility Potential 38
4.4. Change of Fertility Level 42
4.5. Multiple Fetus Delivery 47
4.6. Sex Secondary Ratio 49
4.7. Births Outside of Marriage 53
4.8. Family Planning 58
4.9. Reproductive Behavior 65

V MORTALITY AND LIFE EXPECTANCY 70
5.1. Possible Level of Mortality 70
5.2. Reliability of the Data 72
5.3. Method of Estimation 77
5.4. Epidemiological Transition 81
5.5. Number of Deaths and General Level of Mortality 85
5.6. Change of Age-specific Mortality 88
5.7. Infant Mortality 93
5.8. Mortality by the Cause of Death 96
5.9. Life Expectancy 101

VI NATURAL INCREASE AND POPULATION REPRODUCTION 108
6.1. Reliability of Data 108
6.2. Natural Increase 109
6.3. Population Reproduction 110

VII EXTERNAL MIGRATION 112
7.1. Reliability of the Data 112
7.2. General Tendencies 114
7.3. Migrants Gender and Age 118
7.4. Direction of External Migration 121

VIII POPULATION PROSPECTS 124
8.1. Fertility 125
8.2. Mortality and Life Expectancy 125
8.3. Natural Increase and Population Reproduction 127
8.4. External Migration 128
8.5. Population Size and Changes 129

EPILOGUE 131
APPENDIX 132

PREFACE

Relevant demographic data have been available since the 1960s and many scientific works were dedicated to the population reproduction issues of Georgia.

In spite of this, while working on this scientific work it became quite clear that a number of data required revision and relevant adjustments.

Such corrected data are reflected in "Demographic Yearbook of Georgia 2001," which was published along with the Georgian version of the book "Demographic Development of Georgia." Population size and overall demographic trends are presented in a new manner. Readers are given a new perspective on the demographic picture of Georgia from 1960 to 2000 inclusive.

The authors are deeply grateful to everyone, who rendered assistance to them while working on this scientific work.

Besides the authors (G. Tsuladze, N. Maglaperidze, A. Vadachkoria) the co-authors of the separate parts of this work are:

N. Kopaleishvili – 5. Mortality and Life Expectancy;
T. Kutateladze – 5.4. Epidemiological Transition;
E. Maruashvili – 1.4. Population Age-Sex Composition;
4.6. Sex Secondary Ratio.

Denotations

SDSG - State Department for Statistics of Georgia
CMSI - Center for Medical Statistics and Information (Ministry of Health and Social Affairs)
Estimate - Evaluations and calculations by G.Tsuladze, N.Maglaperidze, A.Vadachkoria

Explanation of symbols

Data not available . . . . . **...**
Magnitude zero . . . . . _
Magnitude not zero, but less than of unit employed . . . . . 0 and/or 0.0

INTRODUCTION

Georgia is situated on the Eurasian continent in the southwest part of the Caucasus. It mainly occupies the territory east of the Black Sea and south of the Caucasus mountain range.

The territory of Georgia is 69,700 square kilometers. The total length of the borders of Georgia is 1970 km. Its land border comprises 1655 km. (84%), while its coastal border is 315 km (16%).

Georgia's location is most important as it is a connective part between European and Asian countries. For centuries, Georgia has been an important trade and transport hub. It borders Russia to the North, Turkey and Armenia to the southwest, Azerbaijan to the south-east and the Black Sea to the West.

Georgia has a long and rich history. It was one of the first countries to embrace Christianity. In the 430s Christianity was declared the state religion. The Georgian language and alphabet are unique and one of the oldest ones.

In 1991 Georgia regained its independence. (Officially acknowledged by the UN in 1992).
From a demographic point of view, Georgia has gone through various stages of development.

According to Georgian scientists, the first demographic stage began in the first half of the nineteenth century (V. Gujabidze, M. Khmaladze, N. Maglaperidze, G. Meladze, A. Sulaberidze, G. Tsuladze, A. Vadachkoria, et al). It lasted until the 1920-30s.

The second stage lasted until the 1950s and the third stage began in the 1960s.

According to the new data which are considered in this work the second stage should have continued until the end of the 1960s and the beginning of the third stage should have been from the mid 1970s until the 1990s. In the 1990s Georgia went into the fourth stage of the demographic transition.

Thus, the given work discusses the last period of the second stage and the initial period of the fourth stage of demographic transition in Georgia.

I

POPULATION

Results of demographic processes are reflected in population size and its age and sex composition. In turn, population size and age-sex composition determine the level and intensity of demographic processes.

Population and its various elements (Population, fertility, mortality, external migration and others) being closely linked to each other, are presented in a coherent whole. Changes occurring in one are reflected in others and all are influenced by each other.

Because all are so interconnected, it's sometimes difficult to know where to begin and in what order. But in accordance to demographic, tradition we will start with population size and age-sex composition.

1.1. Reliability of Data

Reliable data on population size and age-sex composition of a population are drawn from population censuses.

In between censuses, a country's population and its age-sex structure are estimated, taking fertility, mortality and external migration into consideration.

The accuracy of such estimates largely depends on the perfect registration of births, deaths and external migration.

The last population census in Georgia was conducted in January 2002. The previous one was in January 1989.

The well-known political, socio-economic and public events, which took place in Georgia in the 1990s were accompanied by a worsening of demographic and migration registration; as a result the determination of population size and age-sex composition worsened.

In parallel with official statistics unofficial statistics computed by scientific estimation have been frequently considerably different from the data and indicators given by the State Department for Statistics of Georgia (SDSG).

All such estimates and computations are based on the population census conducted in 1989.

But were the data of the 1989 population census accurate in relation to the size of the population?

Before giving an answer, we have to review and analyze the data existing prior to 1989.

In this case we have used the population size and its age-sex structure of the 1989 population census as a benchmark.

This is done for a number of reasons. Firstly, the 1939 census was the last one for twenty years. Secondly, even if it had been reliable, World War II and the undetermined number of dead associated with it, made it redundant.

Thus, the data of the 1959 census about population number and its age-sex composition in our case were regarded as the basis for further computing.

Population size measured by the population censuses, natural increase, external migration (according to the SDSG) and their resultants are shown in table 1.1. The figures are expressed in round numbers.

Table 1.1. Number of population, natural increase, external migration and total increase in Georgia in 1959-1999 (according to the SDSG) and their resultants (in thousands)

Period	Number of Population			Natural Increase[1]	Net of External Migration	Total Increase	Year	The size of population as an outcome of the total increase		Balance[4]	
	Beginning of the period	End of the period	Balance								
1959-1970	4044	4686	642	724	-90	634	1970	4678	4678	8	8
1970-1979	4686	4993	307	477	-140	337	1979	5015 [2]	5023 [3]	-22	-30
1979-1989	4993	5400	407	487	-175	312	1989	5327 [2]	5305 [3]	73	95
1959-1989	4044	5400	1356	1688	-405	1283	1989	5327		73	

1. 1959-1969, 1970-1978, 1979-1988.
2. Taking into account the population number of the previous period.
3. Balance between the population number released from the census and the total increase.
4. Balance between population number drawn from the census and coming out from the total growth.

It follows from the data about officially recorded external migration and natural increase, shown in the table, that the population of Georgia was between 73000 and 95000 less than it was according to the census.

Similarly, the 1970, 1979 and 1989 censuses don't correspond to the natural increase and population size coming out from the existing data on external migration.

If we accept that the number of deaths in Georgia in 1960-1989 was recorded incompletely (see part 5 of this book- Mortality and Life Expectancy) then the size of the population of Georgia in 1989 should have been less than it was according to the 1989 census.

As well as this in population censuses there are big discrepancies in the numbers and demographic data of separate age groups. For instance, according to the 1970 population census, for which the critical moment was January 15, the population under the age of one amounted to 71,900 . In 1969 there were 87,100 live births . In the same year, according to the SDSG, deaths under the age of one made up 2500. It is not difficult to calculate that the population under the age of one in January 1970 was supposed to be approximately 84,000. If we accept that the number of deaths among children under one was around 15000 then the infant mortality rate was more than 170 per 1000 births. This is an extremely high rate and practically impossible for that time.

On the other hand, even assuming that in 1969 the negative balance of external migration of the population under the age of one was 15000, this is still suspicious. In 1969, according to the SDSG the negative balance of external migration for Georgia made up only 8600. Proceeding from this, it is possible to assume that the 1970 population census was not conducted properly.

The same can be said for the 1979 population census[1].

[1] According to the census the population under the age of one was 73,400 .
In 1978 88,800 live births and 2,500 stillbirths were recorded. From the given data it follows that during the census the population under the age of one was around 86000 i.e. the odds are more than 12000.

The current official data relating to population size between the censuses are also unreliable in some instances. For example, in 1987 the population of Georgia was measured as 5,266,000 and in 1988 as 5,397,000 . In 1987 natural increase accounted for 48,300 and the net of external migration was negative and made up 19,900 . In such a case at the beginning of 1988, the population of Georgia was supposed to be no more than 5,295,000 and not 5,397,000 as is shown in the official data (5,266,000 + 48,300 - 19,900 = 5,294,400). i.e. the population of Georgia in 1988 according to the official data was 102,000 (5,397,000 – 5,295,000 = 102,000 more than it really was.

In the second instance, proceeding from official data, the population of Georgia increased by 3000 (5,400,000 – 5,397,000) by January 12, 1989 as compared to January 1, 1988. In 1988 the natural increase was 44,400 and external migration was 13,300 . In such a situation the population of Georgia was supposed to be 5,428,100 on January 1, 1989.

If the 1987 figures were correct, then the 1989 figures could not have been have correct. In twelve days the population could not have grown by 75,000.

Other examples of similar inaccuracies can be cited.

Demographic records for the 1990s were even worse than they had been in the 1980s. Imperfect registration of births and deaths had reached such a level that it is impossible not to notice it.

Even with increased external migration, due to the worsened registration of external migration, the negative balance of external migration according to the official data was less than it had been in the 1980s. Statistics of external migration have been entirely useless since 1997. At the same time, the official statistics of external migration for the years 1990-1995 don't reflect actual current trends.

It is understandable that under such conditions SDSG data about the population size of Georgia are far from factual.

Therefore, we can conclude that in the period 1960-2000, the official data about the population size of Georgia and particularly information obtained from censuses were less than reliable. Despite evidence to the contrary, according to the official figures, the population has risen (except in 1979). In our opinion, such a distortion has taken place because it suits the authorities to overestimate the population size.

The data about the population size of Georgia is even less reliable given the incomplete registration of deaths in 1960-2000.

1.2. Possibility of Estimation of Population Size

Estimating the population is based on such demographic components (elements) as the number of deaths and the relevant crude death rate.

If these two indicators are known, then it is very easy to compute the total number of the population because the number of deaths is in the numerator and a population number is in the denominator and the crude death rate is the result of their ratio.

It's possible to compute the variable of the crude death rate in an indirect way without the number of deaths and population number (see section 5.1. of the given work- Possible Level of Mortality). For example, proceeding from a variety of variants, in Georgia in 1999, the crude death rate could have been 11,2 – 12,1 per 1000 population.

In the same year the total number of deaths in Georgia according to the SDSG was 40,400. Following from this, in 1999 the mid-year number of people in Georgia would have been 3,339,000 – 3,607,000.

This figure cannot be accurate if in that period we take into account the level of the incomplete recording of births in Georgia.

According to the results of a sample survey conducted in that period the incomplete registration of deaths reached 18%[2]. Therefore, the number of deaths would be around 48,000 instead of 40,400 .

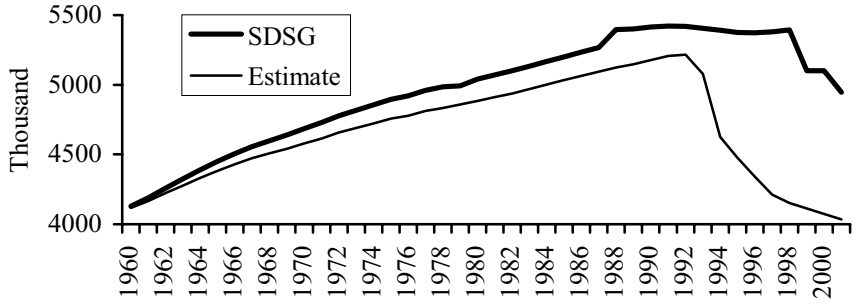
In view of this , the number of people in Georgia in 1999 would have been 3,967,000 – 4,286,000.

There are other exact methods to determine both the number of deaths (see part 5 of the given work) and the crude death rate.

1.3. Change of Population Size

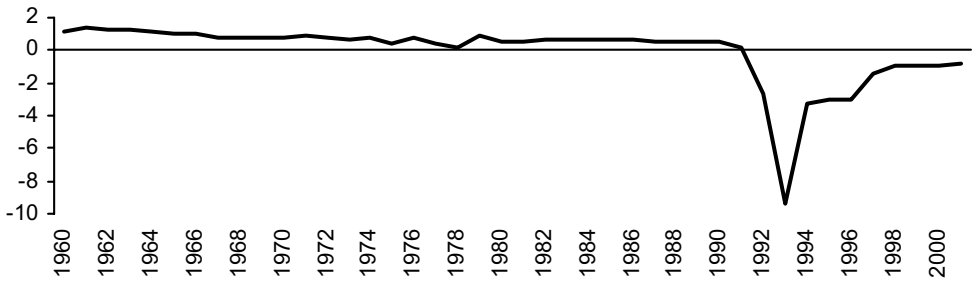
Our estimates of the number of deaths in 1960-2000 is significantly different from the figures released by the SDSG which took incomplete statistics for deaths and external migration into account (see part 5 of the given work). This is clearly illustrated in figure 1.1.

Figure 1.1. Population size of Georgia in 1960-2000 (in thousands) according to SDSG data and our estimates



As can be seen, the discrepancy between our data and the SDSG's has continued to increase since 1960. In 1970 the discrepancy was 107,000, in 1980, 157,000, in 1990, 236,000 and in 2000, 1,028,00. Our estimates for the period 1960-2000 were always less than the official figures. Moreover, according to our figures, the population has in fact been declining since the year 1992.

Figure 1.2. Average Annual Rates (%) of Population Growth in Georgia in 1960-2000 (our estimates)



[2] Computed by us in the statistical directory - Health Care. Georgia, 1999. Tbilisi, 2000, p.139 (in Georgian) – on the basis of the presented data.

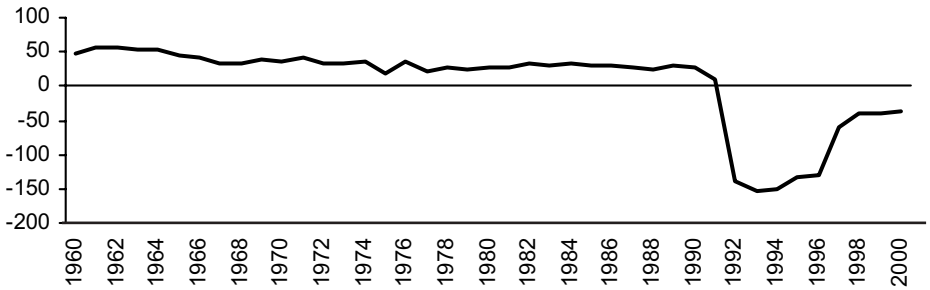
In the period under consideration, in spite of certain changes, population growth was decreasing and in 1992 the population actually declined (see figure 1.2.).

The most significant decline in population occurred in 1993. This was due to high external migration rates and the exclusion of Abkhazia and the Tskhinvali region from the registration process.

Population decline was rather high in the years 1994-1996. In the following years it was less so, though it can be regarded as high.

The total population increase and decrease in absolute numbers is shown in figure 1.3.

Figure 1.3. Total population increase-decrease in Georgia (in thousands) in 1960-2000 (our estimates)

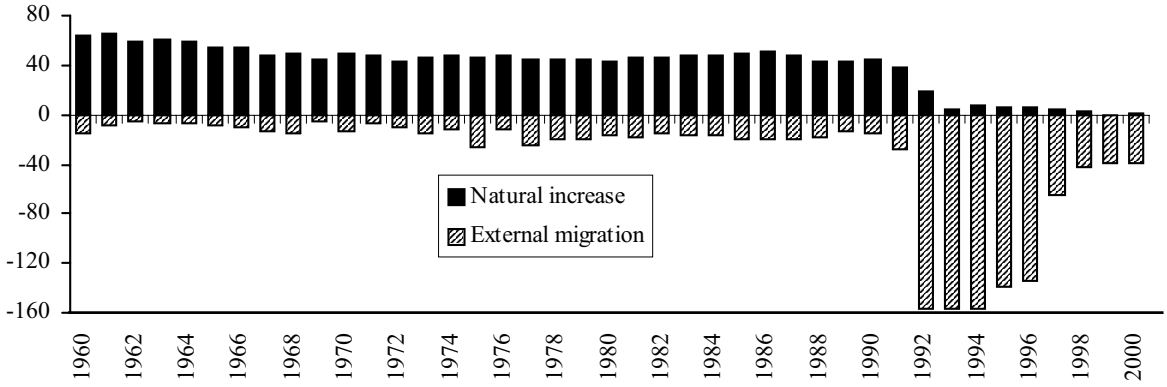


As we see, in Georgia in 1960-1991, the population grew at varying rates and in 1992 it actually went into decline.

The population of Georgia in nine years (1992-2000) declined by about as much as it had increased during the previous 28 years (1964-1991).

The natural and mechanical movements (migration) in the total growth of the population are presented with different proportion (see figure 1.4.).

Figure 1.4. Components of total increase-decrease of population in Georgia In 1960-2000 (in thousands, by our estimated data)



During the whole period under consideration, despite the fact that natural increase was declining and had actually fallen to zero growth, it still had a positive mark. At the same time the net of external migration was negative.

Until 1992 as natural increase was higher than external migration, Georgia's population increased. Since 1992, however, there has been a steep decline in the natural increase and at the same time a significant growth in external migration, which has resulted in population decline.

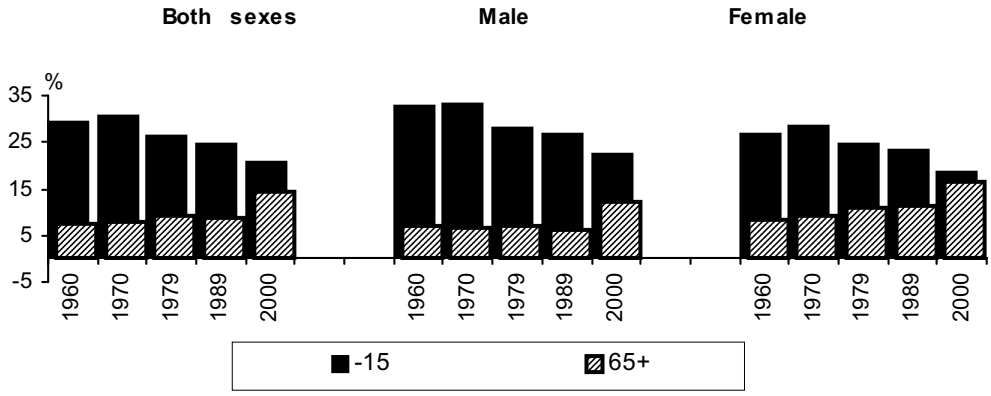
Although the decline has been less since 1996 (in 2000 it was 3,4 times less compared to 1996), the level continues to remain high.

1.4. Population Age-sex Composition

From the standpoint of demography, population age composition is a result of the previous population reproduction rates and changing migration patterns. At the same time it points to future demographic development. The population age structure is formed by the numerical ratio of both sexes, and the difference between male and female mortality rates. It influences population reproduction to a certain extent[3].

As is apparent from the given figure (1.5), from 1960 to 2000 the population of both males and females aged under 15 declined and the proportion of 65 year-olds and older increased. In the same period the proportion of males and females ages 15-65 underwent certain changes. As a result of this, in 2000 compared with 1960, the proportion of males of the mentioned age increased and females effectively remained the same.

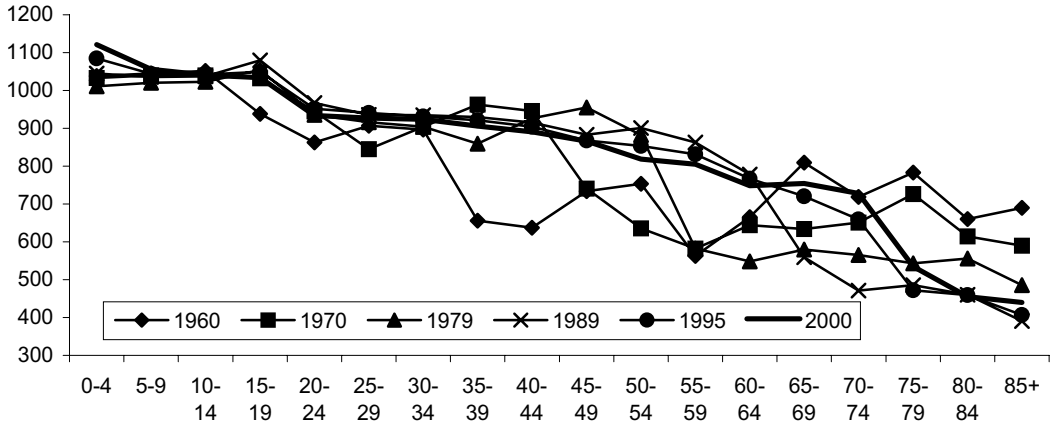
Figure 1.5. Population age-sex composition (%) in Georgia in 1960-2000 (our estimates)



The changes from 1960 to 2000 were mainly caused by fertility decline and external migration processes. Because of the structure, there is a stationary population, which eventually leads to a regressive one. The ratio of males and females in separate age groups should be noted.

[3] Concise Demographic Encyclopedic Dictionary. Compiled by G.Tsuladze. Tbilisi, 2000, p. 202, 205 (in Georgian).

Figure 1.6. Number of males per 1000 women in Georgia 1960-2000 (by our estimated data)



Looking at the graph, it can be seen that males outnumber females in the under 20 bracket. This is due to a higher live birth rate for males. Because of a high male death rate in the age groups above 20, females exceed males. The sharp distortions in the sex ratio mainly at the age of 30-37 in 1960-1970 (especially in 1960 even under the age of 80) can be explained by the military loss of males in World War II. Then, over time, it leveled off. The significant distortions (in favor of females) in numerical ratio of males and females at an old age are the results of a higher male mortality rate. In 1990, especially in the 20-60 age group external migration and a high male mortality rate caused the decline of the male proportion in the sex ratio.

Toward the end of the 1980s the impact of the War on the total sex numerical ratio decreased appreciably. Though, external migratory processes in the 1990s had a negative impact on it.

1.5. Demographic Aging

As is known, population aging refers to the increase in the proportion of elderly in the total population. The cause of demographic aging is prolonged changes in a population reproductive nature[4]. Demographic aging can be also accelerated as a result of intensive external migratory processes when the net migration is negative and the working age population in particular leaves.

Georgia is a demographically aged country. Its economy is extremely retarded and its population is aged. The aged population has become a huge socio-economic group. This has posed significant socio-economic, moral-psychological and other problems for the country[5].

Generally, two scales are used for evaluating demographic aging. One of them is Rosset's scale by which demographic aging is defined by a proportion (%) of a population 60 years of age or older in an entire population.

According to Rosset's scale if the number of people who are 60 or older accounts for 12 percent or more in an entire population, then demographic aging exists (The aged population is divided into different levels of aging)[6].

The UN criteria are somewhat different, in that the specified age is 65 or older and seven percent of the population is the benchmark[7].

[4] ibid, p.61.
[5] M. Shelia. Population Aging in Georgia. Tbilisi, 1999, p.3 (in Georgian).
[6] Concise Demographic Encyclopedic Dictionary. Compiled by G.Tsuladze. Tbilisi, 2000, p.62 (in Georgian).
[7] ibid.

Below we have used both scales.

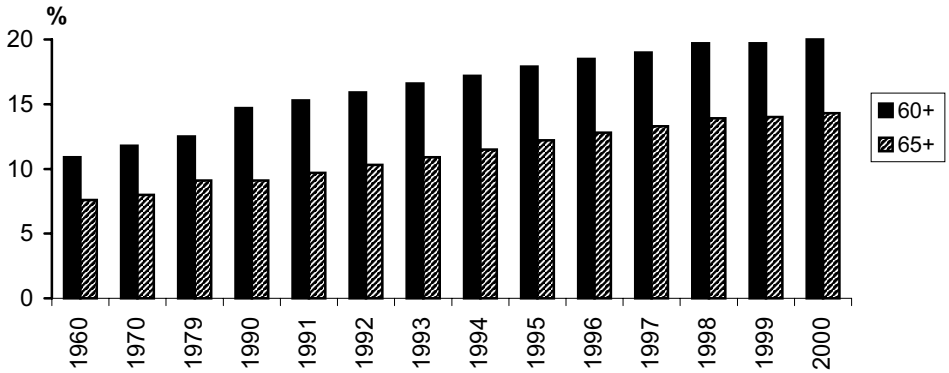
As we can see (see Figure 1.7), the population of Georgia in 1970 was at a low point on Rosset's scale. But according to the UN scale, demographic aging had already begun. By 1979, even by Rosset's criteria, demographic aging in Georgia had begun. It was though only slight.

The process of demographic aging was especially intensive in 1992-1997. This was because of two reasons. One was the sharp and marked decline in fertility, which occurred in 1992-1993 and fell below the replacement level. In spite of certain changes it remained at the same level for the next few years. Emigration amongst the under 60s was also high.

Although the process of demographic aging has somewhat slowed since 1998, a very high level of demographic aging had been formed since 1996.

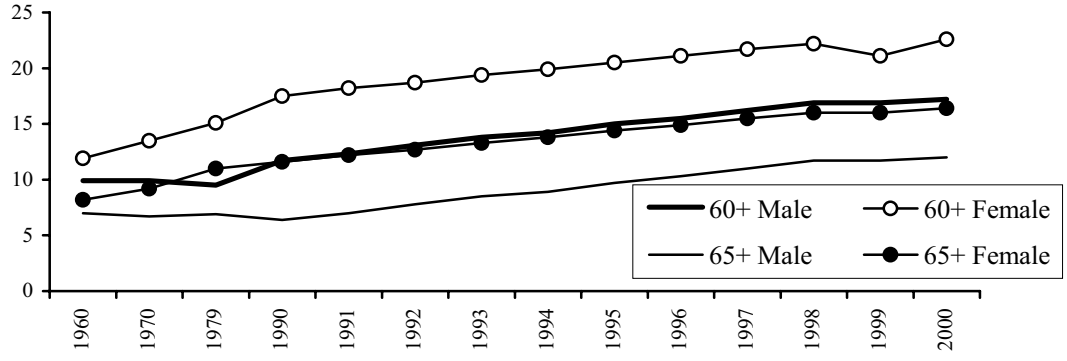
Female demographic aging was and is higher because of high female life expectancy rates.

Figure 1.7. Process of demographic aging in Georgia – proportion of 60, 65 year olds or over in the total population (our estimates)



The disparity between the rates of male and female demographic aging was less but it widened gradually because of the increase in male mortality rates. Since 1990 this disparity has not grown and in recent years it has even begun to decline (see Figure 1.8).

Figure 1.8. Demographic aging of females and males in Georgia (our estimates)



II

MARRIAGE

Marriage is defined as the joining of a man and a woman with the sanction of law or custom. It regulates their relations, attitude toward their children and determines their position in public life[1].

As a demographic term "marriage" is the creation of married couples. It also shows the involvement of a generation or a population in marriage[2].

The demographic significance of marriage is related to population reproduction[3].

Marriage depends on many factors. The number or ratio of married and unmarried people of different ages and sexes is an important factor. In turn, the frequency of marriage is one of the determinants of the composition of marital status[4].

In looking at the given section of this work we generally use the existing data about marriages. However, the frequency of actual marriages alters the situation to a certain degree.

2.1. Married Population

On average around 70% of males above 15 years of age and around 60% of females of the same age were married throughout the period under consideration (1959-1999).

The proportion of married males and females under 20 years of age grew in spite of certain changes, notably in recent years.

The proportion of married males and females aged 20-24 grew at first, then it declined in the 1990s, especially the proportion of females.

The proportion of married males aged 25-49 declined steadily during the whole period under review, and the proportion of males 50 years of age and older decreased in 1999 in spite of certain changes.

The proportion of married females aged 25-44 underwent certain changes, though for 1999 it was less than previous years.

The proportion of females 45 years of age or older grew on the whole in spite of changes.

All the aforesaid is clearly expressed by the given data in table 2.1 and a bar chart in figure (2.1.).
As we see, in Georgia over the course of time the proportion of never married persons increased as a result of decline in the number of married males and female. Appreciable growth occurred in the 1990s in particular.

A similar process occurred in Russia. However the proportion of never married persons always was less in Russia than in Georgia.

---

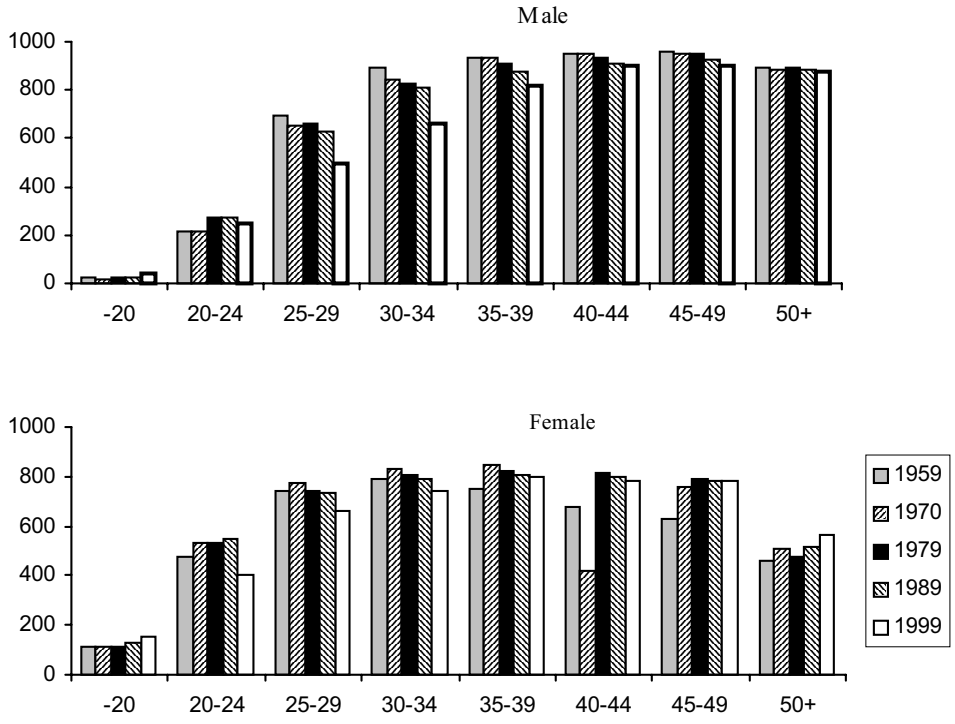
[1] M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. Family Crisis in Georgia and Principles of Family Policy. Tbilisi, 1998, p.49 (in Georgian).
[2] ibid.
[3] Concise Demographic Encyclopedic Dictionary. Compiled by G.Tsuladze. Tbilisi, 2000, p. 262-263 (in Georgian).
[4] M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. Mentioned work, p.50.

Table 2.1. Married Population of Georgia (per 1000 population of pertinent age and sex)

Age	1959		1970		1979		1989		1999	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total	663	550	692	610	692	589	683	598	676	592
Among them										
Under 20	22	110	20	112	21	109	28	133	40	150
20-24	216	479	213	536	271	535	271	552	250	400
25-29	692	739	654	773	659	738	625	733	500	660
30-34	892	794	847	827	830	805	811	794	660	740
35-39	936	746	931	846	906	826	880	805	820	800
40-44	951	674	951	416	936	818	909	795	900	780
45-49	957	632	954	756	951	794	923	780	900	780
50 and older	889	462	887	507	895	474	883	519	872	564

1959-1989 – SDSG's data.
1999 – Computed by us on the basis of the SDSG household survey results[5].
1959-1989 Extracted from the work by M. Bekaia, G. Tsuladze, Z. Gokadze, G.Meladze- Family Crisis in Georgia and Principles of Family Policy. Tbilisi, 1998, p.51 (in Georgian).

Figure 2.1. Dynamics of Married Population in Georgia (per 1000 population of pertinent age and sex)



[5] The same results were derived for females under 50 years of age (see G. Meladze – Differentiated Analysis of the Changes of Age-specific Rates of Fertility. Demography. 2001, 2(4), p.95 (in Georgian).

According to the indicators of never married persons at a certain age the following situation was in Georgia (see Table 2.2.). For comparison Russia's relevant indicators are expressed in the table.

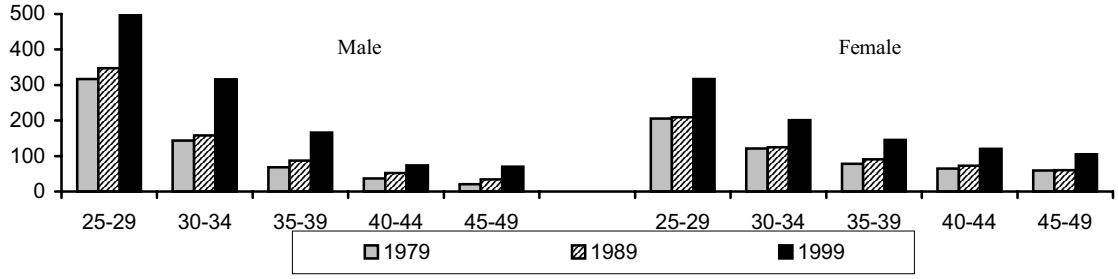
Table 2.2. Never Married Persons per 1000 population of particular age and sex in Georgia and Russia

Age	Male			Female		
	1979	1989	1999*	1979	1989	1999*
Georgia						
25-29	317	347	496	206	209	317
30-34	144	158	316	121	125	201
35-39	68	87	166	78	91	145
40-44	37	52	74	65	73	120
45-49	21	34	70	59	60	105
Russia						
25-29	179	208	250	120	120	142
30-34	84	105	142	66	69	79
35-39	50	68	97	39	53	56
40-44	32	47	71	34	45	49
45-49	19	37	55	40	35	46

Georgia: 1979, 1989 – SDSG's data.
1999 – Computed by us on the basis of the SDSG household surveys' results.
Russia: Population of Russia 1999. M., 2000, p.47.
*Russia - 1994

The current process in Georgia is graphically displayed in Figure 2.2.

Figure 2.2. Never Married Persons in Georgia in 1979-1999 (per 1000 population of particular age and sex)



2.2. "Marriage Market"

The "marriage market" is one factor that influences the rate of marriage.

The "Marriage Market" is a term that is used in demography to determine a numerical ratio of different groups of marriageable people . The situation on the "marriage market" largely depends on the number of potential marriageable partners in a population, and the population age-sex composition. It involves the number of unmarried females per unmarried male on average. Since males' age is more than females' by 4 years during marriage, a numerical ratio of males and females is used for computing "marriage market", and for a given time males and females are not married and with that age group is more by five year age interval than females[6].

[6] M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. Mentioned work, p. 52 (in Georgian); Concise Demographic Encyclopedic Dictionary. Compiled by G.Tsuladze.Tbilisi, 2000, p. 242-263 (in Georgian); G. Meladze, G. Tsuladze. Population of Georgia and Demographic Processes. Tbilisi, 1997, p. 50(in Georgian); Population. Encyclopedic Dictionary. M., 1994, p.36 (in Russian).

In 1959 in all age groups, there were more females than males in the "marriage market". As people grew older, that became even more pronounced, especially so for women over thirty. For every unmarried male aged 25-34, there were two unmarried women. This reflects the consequences of World War II. Hence, the previous period (the 1940s) had an impact on the formation of the "marriage market"[7].

By 1970 the situation on the Georgian "marriage market" had changed substantially. (see Table 2.3.). The war had little effect by then, except for males of the 45-49 age group.

Table 2.3. Situation on the Georgian "marriage market"

Age		Number of never married females per never Married males on average				
Male	Female	1959	1970	1979	1989	1999
20-24	15-19	1.1	1.5	1.4	1.2	1.2
25-29	20-24	2.1	1.6	1.7	1.1	1.3
30-34	25-29	2.7	1.2	2.3	1.7	1.1
35-39	30-34	7.0	3.1	2.1	2.1	1.4
40-44	35-39	9.4	3.1	2.5	3.2	2.4
45-49	40-44	9.6	7.8	4.7	2.6	2.8

1959-1989 – G. Meladze, Z. Gokadze. Population of Georgia and Demographic Processes. Tbilisi, 1997, p.54. (in Georgian)
1999 – Computing by us on the basis of the SDSG household surveys' results.

The number of females aged 20-24 increased compared with the previous period. In contrast, the number of females compared to the number of males of the various age groups decreased. However, in all other age groups from age 20 there was a large deficit of marriageable male partners. For instance, despite the fact that in 1959-1970 the difference for males aged 35-44 significantly declined in 1970, there were three unmarried females for every unmarried male of the given age[8].

In 1979, as opposed to 1970, the numerical ratio of males 30 years of age or older and females 25 years of age or older changed and accordingly the situation changed for them on the "marriage market".

The "marriage market" underwent less change for females under 20 and males under 25 compared with the previous period[9].

In 1989 compared with 1979, the "marriage market" underwent further changes and the number of unmarried females declined to the same level as unmarried males for the age of 35 (also for males aged 45-49). The same number remained for males aged 35-39 and it rose for males aged 40-44[10].

It can be assumed that intensive external migratory processes influenced the formation of the Georgian "marriage market" of the 1990s[11].

Recently conducted research[12] has confirmed the view that of those who emigrate, married males exceed unmarried males and unmarried females exceed married ones[13]. At the same time, the highest

[7] M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. Mentioned work, p. 54.
[8] ibid.
[9] ibid.
[10] ibid.
[11] ibid, p.56, see also G.Meladze, G. Tsuladze. Population of Georgia and Demographic Processes. Tbilisi, 1997, p.52.
[12] Statistics of Migration (sample survey). SDSG. Tbilisi, 2001.
[13] M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. Mentioned work, p. 56; G. Meladze, G. Tsuladze. Mentioned work, p. 52.

proportion of unmarried persons who emigrate are under 39 and the highest proportion of married persons who emigrate are over 40[14].

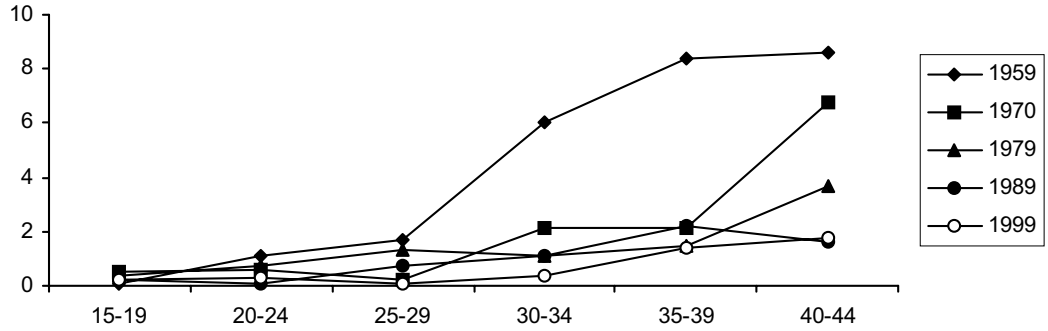
In 1999, compared with 1989, the "marriage market" didn't change for males under 25 years of age. At the same time, the number of unmarried females equaled unmarried males in the 25-29 and 45-49 age categories. Less unmarried females were available for males aged 30-44.

On the whole, there was a deficit of male partners on the Georgian "marriage market" at the end of the twentieth century and this deficit was wider than it had been in 1989.

According to our figures, 103,000 females didn't have an appropriate marriageable partner in 1999. It's significant that nearly half of them were aged under 25.

This deficit is expressed in figure 2.3.

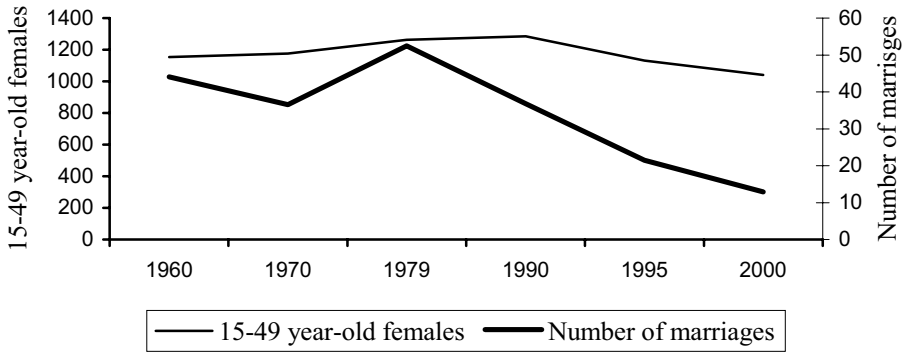
Figure 2.3. Male deficit per female of particular ages in Georgia



2.3. First Marriage and Remarriage

Despite the fact that the number of marriageable females increased in Georgia from 1960 to 1990 inclusive, the number of marriages varied and the decrease in the number of marriages was followed by an increase and subsequently the increase was followed by a decrease.
In the 1990s the number of marriageable females declined to some extent (in 2000 by 19% compared with 1990), but at the same time the number of marriages significantly decreased (by nearly 3 times). This is illustrated in Figure 2.4.

Figure 2.4. Number of Registered Marriages and the number of 15-49 year-old females in Georgia (thousand)



[14] Statistics of Migration (sample survey). SDSG. Tbilisi, 2001. p.16.

Over 20 years, since 1980 the total number of marriages declined four fold. The number of first marriages and particularly remarriages declined markedly (see Table 2.4).

Table 2.4. Number of Registered Marriages in Georgia

Year	All marriages	First marriage		Remarriage		Proportion (%) of remarriages among all marriages	
		Groom	Bride	Groom	Bride	Groom	Bride
1980	50547	48530	49573	2017	974	4.0	1.9
1985	44168	40231	41965	3937	2203	8.9	5.0
1990	36812	32680	34111	4132	2701	11.2	7.3
1991	38070	34663	35835	3407	2235	8.9	5.9
1992	26878	24763	25465	2115	1413	7.9	5.3
1993	24105	22489	23025	1616	1080	6.7	4.5
1994	21907	20752	21135	1155	772	5.3	3.5
1995	21481	20374	20670	1107	811	5.2	3.8
1996	19253	18454	18758	799	495	4.2	2.6
1997	17099	16588	16796	511	303	3.0	1.8
1998	15343	14961	15077	382	266	2.5	1.7
1999	13845	13457	13545	388	300	2.8	2.2
2000	12870	12561	12654	309	216	2.4	1.7

According to the SDSG's data. 1993 – by our estimates.

The decline in the number of remarriages as a proportion of all marriages is illustrated in Figure 2.5. More men than women remarried.

Figure 2.5. Changes in the number of remarriages in Georgia

From 1980 to 1990 inclusive the proportion of remarriages increased in Georgia and from 1990 it declined. In 2000 it reached its lowest point. For example, in Russia in 1999 the proportion of remarriages was 10 times higher (27, 5%) for males and 12 times higher (26, 3%) for females than in Georgia at the same time[15].

More divorcees than widows remarried.

[15] Population of Russia 2000. Editor A.G. Vishnevsky. M., 2001, p.29 (in Russian).

2.4. Age of Marriage

At what age people get married is demographically very important. It is determined by culture, tradition and socio-economic factors.

Great importance is attached to when people, particularly women, first get married.

Table 2.5. Mean Marriage Age

Year	All marriages		First marriage		Remarriage		Mean age of females first age			
	Groom	Bride	Groom	Bride	Groom	Bride	Sweden	Denmark	Belgium	Austria
1980	30.2	26.7	29.8	26.5	42.0	39.3	26.0	24.6	22.2	23.2
1990	28.8	25.3	27.1	24.1	42.5	40.1	27.5	27.6	24.2	24.9
1991	27.9	24.4	26.5	23.4	42.6	39.7	27.6	27.8	24.4	25.2
1992	27.6	24.1	26.3	23.2	42.7	39.8	28.0	28.0	24.7	25.3
1993	27.7	24.0	26.6	23.3	42.8	39.5	28.1	28.5	24.9	25.6
1994	27.8	24.0	26.9	23.5	43.2	39.0	28.5	28.9	25.2	25.8
1995	28.0	24.1	27.1	23.6	43.5	37.8	28.7	29.0	25.4	26.1
1996	27.9	24.1	27.2	23.7	44.2	39.4	28.9	29.2	26.0	26.3
1997	28.1	24.4	27.8	24.2	39.0	37.2	29.2	29.4	26.0	26.5
1998	28.5	24.5	28.2	24.4	41.8	37.9	29.4	29.5	25.8	26.7
1999	28.8	25.1	28.5	24.8	43.6	38.2	29.8	29.7	26.1	27.0
2000	28.9	24.9	28.5	24.8	44.3	39.7				

Georgia: 1980-2000 – Our computing on the basis of the SDSG's data. 1993 – Our estimates .
Foreign countries: Recent demographic developments in Europe 1999. Strasbourg, 1999;
Recent demographic developments in Europe 2000.

The data expressed in table (2.5.) show the mean age of marriage in Georgia (all marriages, first marriage and remarriage for males and females) and in some other countries of Europe (first marriage for females) for comparison.

In Georgia in 1980 and in 1960-1970 the mean marriage age was rather high for that time.

By 1990 it had fallen. In the 1990s it varied and at the end of the 1990s it was higher than it had been at the beginning of the decade. However it was lower than it had been in the period 1960-1980.

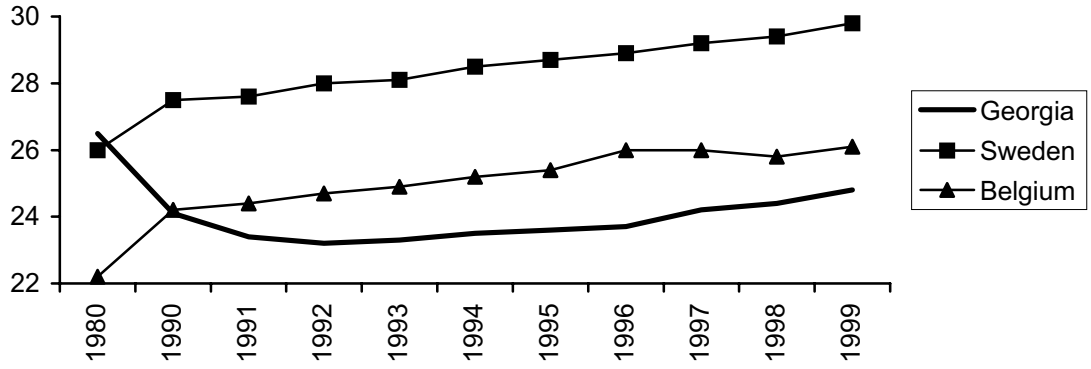
In western countries the first signs of growth in the marriage age appeared in the second half of the 1970s. By the 1980s this process was apparent throughout the developed world[16].

In 1980 in the foreign countries given in the table the mean age of females' first marriage was lower and in some countries (Belgium, Austria) it was much lower than in Georgia at the same time. At the end of the 1990s, the mean marriage age in those countries was much higher than in Georgia. In all these countries the mean marriage age increased from the 1980s, whereas in Georgia, as it was already said, it fell and fluctuated around a certain age.

Variation of the mean age of females' first marriage is graphically illustrated in Figure (2.6.).

[16] Population of Russia. Editor A.G. Vishnevsky M., 2001, p.33 (in Russian).

Figure 2.6. The Mean Marriage Age in Georgia and Some European Countries



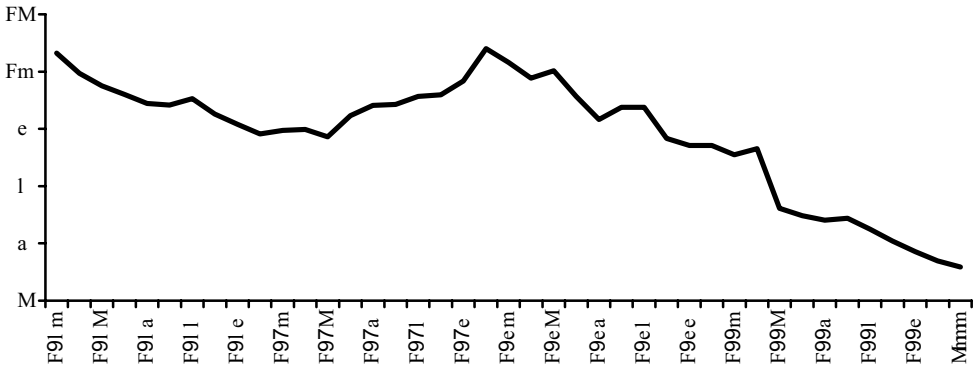
At the end of the 1990s in Georgia, men married for the first time on average 3,7 years later than women. This gap is widening.

The mean remarriage age for both males and females is higher than that for first marriages. Moreover the average male remarriage age is higher than the female one.

2.5. Frequency of Marriage

The crude marriage rate which refers to the number of marriages per 1000 population indicates a reduction in the frequency of registered marriages in Georgia since the second half of the 1980s and especially since 1992 (see Figure 2.7.).

Figure 2.7. Registered Marriages in Georgia per 1000 population
(Our estimated population number)

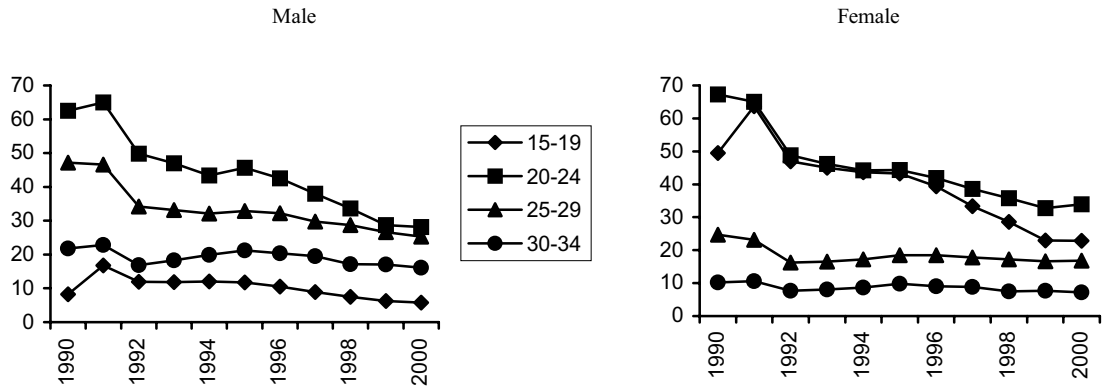


In order to look deeper into the situation, let's see what changes there were in the age-specific marriage rates in the 1990s. Since the proportion of remarriages is the least important among all marriages we devoted our attention to the age-specific rates of the first marriages. Besides we have discussed the age-specific marriage rates of those under 35 because nearly 90% of the first married females and more than 80% of the first married males are under the age of 35.

The most important reduction was with males and females aged less than 25. Since 1992 the marriage frequency of females aged under 20 and 20-24 year olds steadily decreased. The decline of marriage for 20 year-old males mainly began since 1996. However the decline of the marriage frequency for 20-24

year-old males as well as for females began since 1992. After the decline occurred during the following period the marriage frequency for 25-34 year-old males and females varied. Although in 2000 the marriage frequency turned out less than it was in 1990-1991 (see Figure 2.8.).

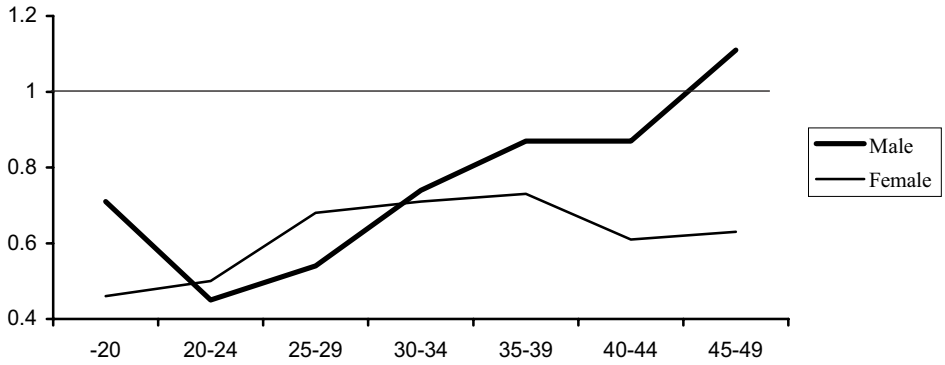
Figure 2.8. Changes of Age-specific Rates for the First Marriage in Georgia in 1999-2000
(Our estimates)



Thus, the total decline of marriages in Georgia in 1990 mainly was conditioned by the decline of the marriage frequency for males and females aged under 25.

The noted reduction in 2000 compared with 1990 is shown in Figure 2.9.

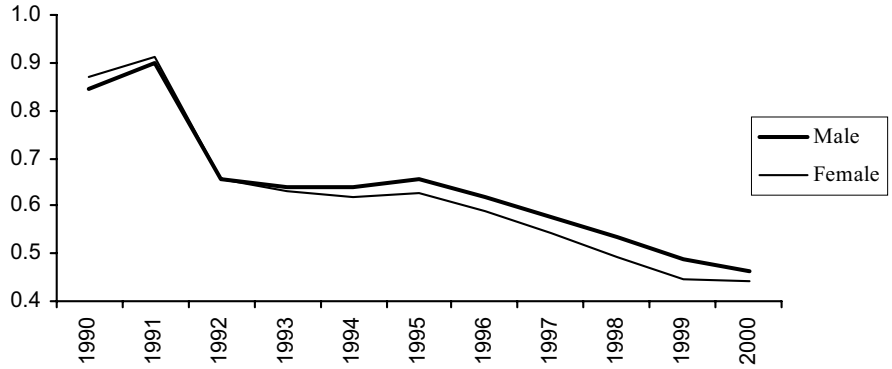
Figure 2.9. Relative Changes of Age-specific Rates for the First Marriage in Georgia in 2000 compared to 1990 (Straight line – 1990 year level)
(By our estimated data)



As we can see the age-specific marriage rate for males under 20 declined by 30% and for females by 54 %. For the 20and 24 year-olds it declined by 55% and 50% respectively. Age-specific marriage rates are rather low for the 45-49 age group and in the following age groups it is much lower. For example, in 2000 in Georgia 45-49 year-old males' marriage rate was 14 times lower than 20-24 year-old males' corresponding rate. The comparative rate for females was 34 times lower.

All noted changes of age-specific marriage rates ultimately were reflected in the total marriage rates (see Figure 2.10.).

Figure 2.10. Change of Total Marriage Rate in Georgia in 1990-2000 (Our estimates)



In 2000 the total marriage rate was half what it had been in 1990.

According to official figures, more than half of males and females in Georgia never get married.

2.6. Unregistered Marriages

Although some estimates are used, in discussing marriage rates only registered marriages are taken into consideration.

Besides registered marriages there are unregistered marriages.

Registered marriages along with unregistered marriages determine the actual number of marriages.

Current statistical registration takes account of unregistered marriages. Thus, it is quite difficult to identify the frequency of unregistered marriages.

The frequency of unregistered marriage is indirectly related to the number of births outside marriage (see section 4 of the given work, Births Outside Marriage). This survey gives a clear view of the phenomenon.

The findings from sociological research conducted in 1997 in Tbilisi, presented in Table 2.6, illustrate the spread of unregistered marriages and other related issues (see Table 26.).

Table 2.6. Distribution of Married Population of Tbilisi (%) According to the forms of marriage (1997)

Form of marriage	Distribution (%)		
	Both sexes	Male	Female
Total Population on average			
Legally registered and Religious marriage	30.8	29.5	32.0
Only legally registered	61.0	64.1	58.1
Only religious marriage	3.5	2.9	4.1
Consensual marriage and co-residence	4.7	3.5	5.8
Total	100.0	100.0	100.0
Among the population under 25			
Legally registered and religious marriage	39.6	38.5	40.0
Only legally registered	29.2	30.8	28.6
Only religious marriage	20.8	23.1	20.0
Consensual marriage and co-residence	10.4	7.6	11.4
Total	100.0	100.0	100.0

Source: M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. Family Crisis in Georgia and Principles of Family Policy. Tbilisi, 1998, p.192 (in Georgian).

As we can see, registered marriages among the entire population are predominant. 30, 8% of the population also applied for a religious marriage.

Such a situation was conditioned by various reasons. For example, religious marriage has no legal significance and official registration is therefore considered necessary. Some people with no religious inclination applied for a religious marriage because they considered it a beautiful ceremony or as a guarantee of family firmness[17].

Nevertheless, only a small portion of the entire population applied only for a religious marriage.

At present a religious marriage can be considered as consensual. Despite this, a consensual marriage was distinguished from a church marriage in the mentioned research. Such a differentiation was made if a marriage was not religious or legally registered but was acknowledged by a group (relatives, friends, and neighbors). It was then considered to be consensual.

The proportion of those involved in consensual marriage or co-residence was less than in the entire population.

On average, in contrast to the entire population, a different situation was observed among those under 25. The proportion of under-25s who were only in a registered marriage turned out to be half the figure for the population as a whole. Under-25s who only had a religious marriage were six times greater, as a proportion, than the population as a whole. The proportion of under-25s who were in a consensual marriage or co-residence was twice as high as the total population.

Thus, a further decline in registered marriages is to be expected.

This process has been going since the1980s. It had a particular intensity in the 1990s and it continues today.

To counter this process legal recognition should be given to religious marriages, as is done in Europe.

[17] M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. The mentioned work, p. 196, 198.

III

DIVORCE

Divorce refers to the dissolution of marriage[1].

Divorce is a complex social process. The level of divorce is determined by many circumstances, such as socio-cultural norms, marriage norms, women's status in society, family life order and the particular stage of a country's social development. A country's divorce legislation is also of great importance[2].

Divorce is an important factor in determining the size of the married population and in defining family structure[3].

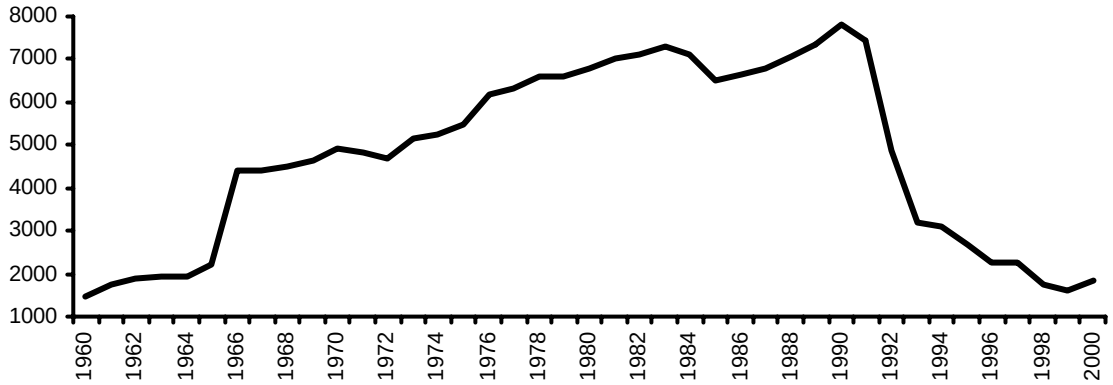
This section of the work is based on legally registered marriages or information obtained from the SDSG. Although we have used our estimated population numbers and its structure for calculating divorce rates.

It is thought that the number of separated persons far exceeds the number of divorcees. For various reasons only a portion is officially registered as divorced[4].

3.1. Number of Divorces and The General Picture

During the period under review, from 1960 to 1990 inclusive, the number of divorces in Georgia, in spite of certain changes, increased and after the year 1990 it decreased (see Figure 3.1.).

Figure 3.1. Dynamics of Divorce in Georgia in 1960-2000

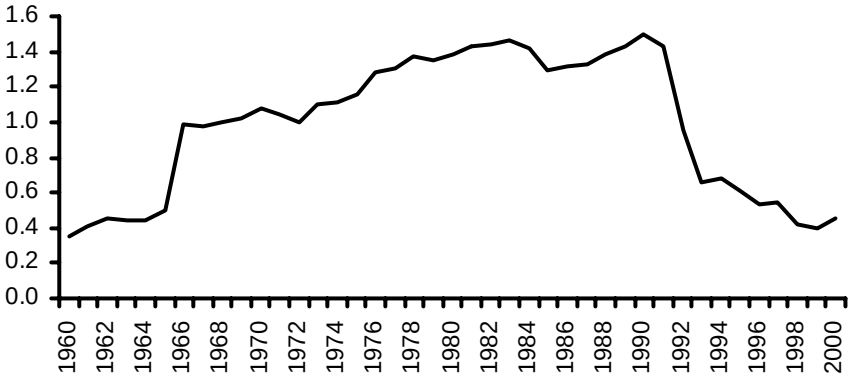


The general divorce rate or the crude divorce rate indicates the growth in frequency of divorce (per 1000 population), which in 1990 was 3, 5- 3, 8 times more compared with 1960 (see Figure 3.2.).

---

[1] M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. Family Crisis in Georgia and Principles of Family Policy. Tbilisi, 1998, p.64. The Concise Encyclopedic Dictionary of Demography. Tbilisi, 2000, p.37-38 (in Georgian).
[2] Concise Demographic Encyclopedic Dictionary. Compiled by G.Tsuladze. Tbilisi, 2000, p. 38 (in Georgian).
[3] M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. The mentioned work, p.64.
[4] ibid, p.72.

Figure 3.2. Change of the General Divorce Rate in Georgia in 1960-2000 (‰)[5]



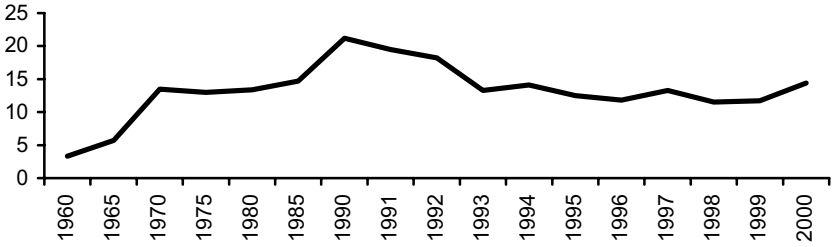
In the second half of the 1960s divorce was already 2,5 times more than in the first half of the 1960s. Then for 7 years up to 1972, there was little change in the rate. Afterwards, slow and gradual growth occurred. In 1992 it declined steeply. In 1993 compared with 1992 it continued to decrease at a slow rate and consequently the divorce rate continued to fall. It grew insignificantly only in 2000. However its level was the same as it had been 35 years before in 1965. Similarly, its level was very low in the period under review and in the 1990s particularly.

For example, in Russia in 1970 the number of divorces per 1000 population was 3 times more than in Georgia at the same time and in 1990 it was 2, 5 times more. In 1997 in Russia the crude divorce rate (3, 8) was already nearly 8 times more than in Georgia at the same time[6].

In Georgia the number of divorces per 100 marriages increased in the 1970s and it practically remained at the same level until 1980. It grew insignificantly in 1985 and after that it reached its maximum value in 1990. In the 1990s it underwent changes and with a declining tendency and it increased only in 2000.

The number of divorces per 100 marriages is not big. For example, in Russia in 1999 it stood at 58, 4 and was 5 times higher than at the same time in Georgia[7].

Figure 3.3. Number of Divorces per 100 Marriages in Georgia



[5] Source: G. Tsuladze, N. Maglaperidze, A. Vadachkoria. Demographic Yearbook of Georgia. 2001. Tbilisi, 2002. p.35-36.

[6] Russia's data on the General divorce rate adapted from the work: Population of Russia 1998. Editor A.G. Vishnevsky. M., 1999, p.33 (in Russian).

[7] Computing by us from the work – Population of Russia 2000. Editor A.G. Vishnevsky. M., 2001 , p.29, 39 (in Russian) – on the basis of the presented data.

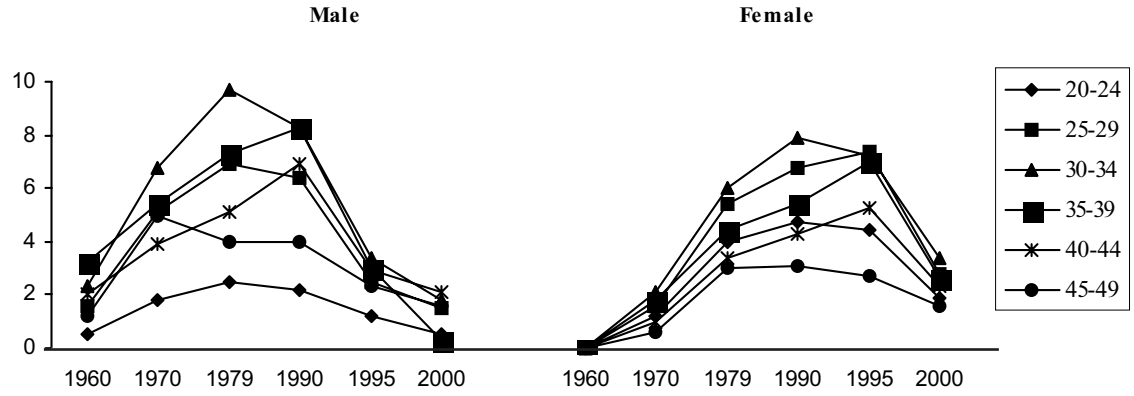
Though the actual number of divorces gives a certain view of divorce, it's inadequate, as it doesn't include all those marriages that could have ceased to exist. Moreover, the crude divorce rate is influenced by population age structure and other indicators[8].

To overcome this problem, other indicators of divorce such as age-specific divorce rates, total divorce rate and others that represent the precise indicators of divorce intensity and level are used. They are reviewed below.

3.2. Level of Divorce

The highest level of divorce for males during the whole period under review (1960-2000) is with 30-39 year-olds. The same situation was observed for females in 1960 and 2000. In 1970-1995 a high level was characteristic of 25-30 year-old females (see Figure 3.4.).

Figure 3.4. Age-specific Divorce Rates in Georgia in 1960-2000 (‰)



As is evident from looking at the given figure, the level of divorce for males among all age groups grew between 1960 and 1980.

For the year 1990, compared with the previous year, the divorce rate for 35-49 year-old males, 25-29 and 35-44 year-old females increased and it mainly decreased for other age groups.
The decline of registered divorces is remarkable in the 1990s. This is naturally reflected in the age-specific divorce rates.

The decline in the age-specific divorce rates in the 1990s is shown in Figure 3.5.

As we can see, in 1995 compared with 1990, the decline in divorce rates was already evident in all male and female age groups. Further and fairly significant decline was observed for the year 2000. Only the 50-54 year-old males' divorce rate increased insignificantly compared to 1995. The divorce rate for females of the same age was of the same value. However, they were far less than the corresponding indicators for 1990. The divorce rate for 50-54 year-old males and females in 2000 was 42% and 28% respectively of the total 1990 level.

From 1960 to 1990 inclusive, the total divorce rate is characterized by growth (specifically in the 1970s) and after 1990 it is characterized by decline. It increased insignificantly only in 2000 compared to 1999.

[8] Concise Demographic Encyclopedic Dictionary. Compiled by G.Tsuladze. Tbilisi, 2000, p.38 (in Georgian).

Figure 3.5. Relative Change of Age-specific Divorce Rates in Georgia in 1995 and 2000 compared with 1990 (Straight line – 1990 level)

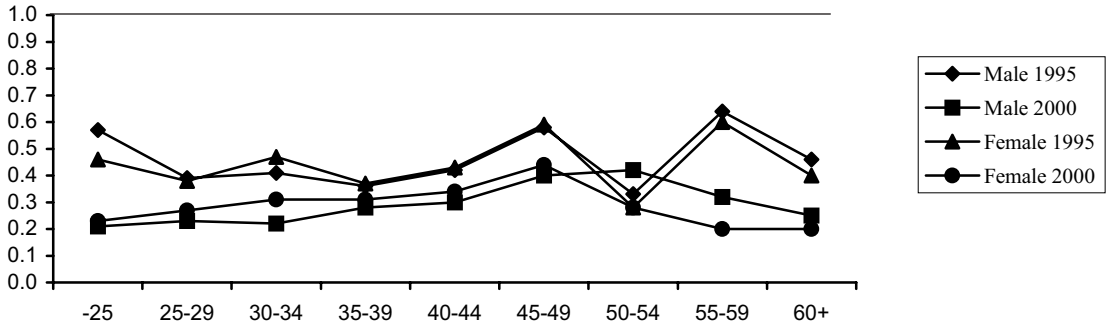
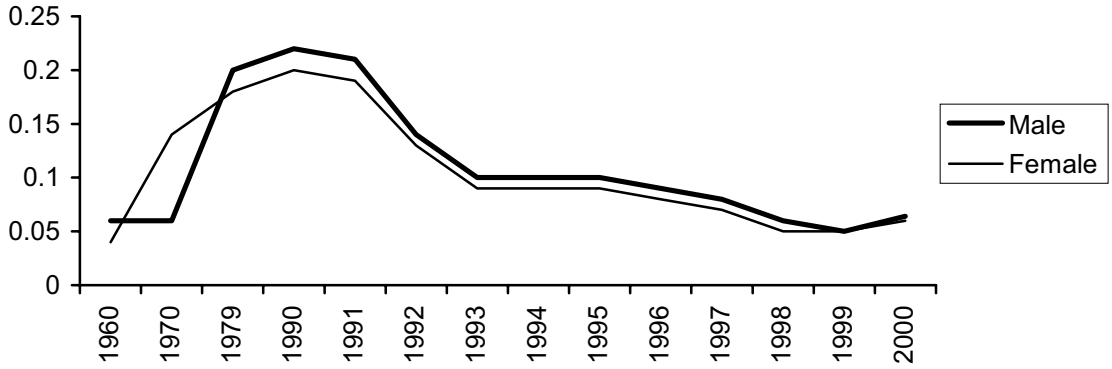
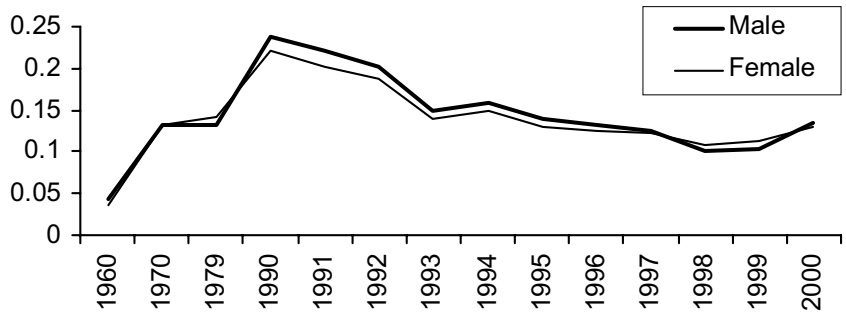


Figure 3.6. Total Divorce Rate in Georgia



A more precise and adequate characteristic of the divorce level is the marriage index, which is drawn from the ratio of the total divorce rate to the total marriage rate. Its variation is shown in Figure 3.7.

Figure 3.7. Variation in Divorce Index in Georgia in 1960-2000[9]



As we can see, the male and female divorce level in Georgia reached its maximum value in 1990. In 1991-1993 the divorce rate continued to plummet and it declined notably in 1993. In 1994 compared

[9] 1960-1979 M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. The mentioned work p.67. 1990-2000 Computing by us.

with 1993 the divorce level for both males and females rose to some extent. However in 1995-1998 it declined. In 1998, the divorce level rose very insignificantly and in 2000 it experienced further growth.

It's premature so far to draw a conclusion about the growth tendency for the divorce level in Georgia. For such a conclusion we need some more years' data. The divorce level in 2000 still was low and lagged behind the 1990-1992 level to a great extent.

At the same time, the level of divorce in Georgia was much lower than in other countries. For example in Russia the analogous indicator at the end of the 1990s was 4, 6 times higher and reached 0, 6 (60 divorces per 100 marriages)[10].

However, legally registered divorces in Georgia only partially reflect the actual situation, particularly since 1992[11].

It is quite possible the increasing number of unofficial divorcees may register their divorces after a certain time. This will lead to an increase in divorce statistics[12].

65-75% of divorcees in Georgia are childless. We can therefore assume that one of the main reasons for divorce is childlessness. Divorced couples had 0, 4-0, 5 children on average in the 1990s.

3.3. Age of Divorce

The largest share of divorced males and females is among 25-32 year-olds. However, the mean age for males and females at the time of divorce in 2000 was a bit more than 39 and 36 respectively.

In 1970 compared with 1960 the mean age at divorce for both males and females increased and after some decline in 1980 (it was more for males and insignificant for females) it increased again in 1990 (see Figure 3.8.).

Figure 3.8. The Mean Age at Divorce in Georgia[13]

[10] Population of Russia 2000. Editor A.G. Vishnevsky. M., 2001 , p.38 (in Russian).
[11] M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. The mentioned work. p. 72.
[12] ibid.
[13] 1960-1980 - M. Bekaia, G. Tsuladze, Z. Gokadze, G. Meladze. The mentioned work. p. 65.
1990-2000 - G. Tsuladze, N. Maglaperidze, A. Vadachkoria. Demographic Yearbook of Georgia. 2001. Tbilisi, 2001. p.49.

In the 1990s the mean age at divorce for males and females varied. In 2000 it reached its highest level ever.

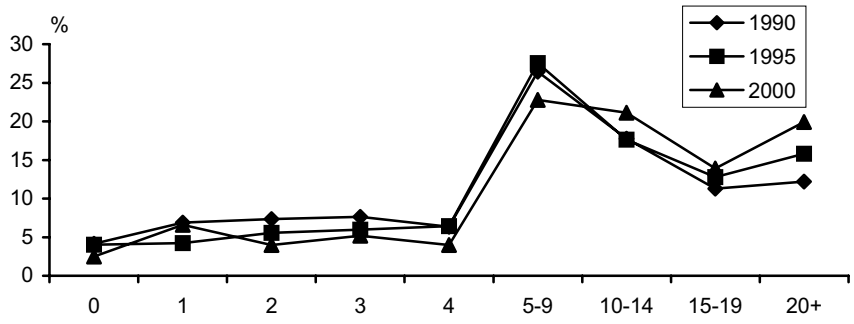
3.4. Divorce by Length of Marriage

A small share of married couples got divorced after one year of marriage. The share of this category despite changes in the 1990s decreased in 2000.

The biggest share of divorcees is with those who got divorced after 5-9 years of marriage. However a big share of divorcees also got divorced after 10, 15, 20 and more years of marriage (see Figure 3.9.).

It should be noted that in the 1990s in Georgia the length of marriage at divorce registration increased. This is confirmed by the mean number of years of marriage at divorce (in 1990 it was 9, 8; in 2000, 11, 3).

Figure 3.9. Length of Marriage at Divorce Registration in Georgia in 1990-2000 (SDSG data)[14]



It should be noted that the length of actual marriage at divorce is less than officially acknowledged. Legal registration doesn't happen immediately after divorce, sometimes not for a few years.

[14] G. Tsuladze, N. Maglaperidze, A. Vadachkoria. Demographic Yearbook of Georgia. 2001. Tbilisi, 2000. p.50.

IV

FERTILITY AND FAMILY PLANNING

Fertility is a process of childbirth resulting from the union of human beings, which creates a generation or a population[1].

The human ability to reproduce is the biological base of fertility. The potential for childbirth is based on fecundity[2], the realization of which is based on female reproductive behavior. [3].

The level of fertility estimates the maximal possible level of fertility. There are no direct methods of measuring fertility. It is estimated indirectly on the basis of the fecundate ability or by the level of natural fertility, which is always higher than the level of actual fertility. Natural fertility is fertility that is not limited by using preventive means or performing artificially induced abortions. The minimum number of live births a woman can have is 7,95 (according to V. Borisov) The hypothetical maximum is 12,55 (according to A.Coale). The rate is even higher when estimated by G. Bongaarts and reaches 15,3. It must be understood that fertility is not fully realized in natural fertility[4].

Many different indices are used for measuring, characterizing and analyzing fertility.

The changing nature of fertility in Georgia between 1960 and –2000 will be considered below.

4.1. Reliability of the Data

Analyses of any index of fertility are based on the number of births. That is why the more complete the registration of births the more reliable the finally calculated indicators , subsequent analyses and drawn conclusions.

There are different sources of information concerning the number of births: 1) population census, 2) current registration, and 3) special sample survey.

Population censuses are carried out only periodically and even when reliable the number of births in between the censuses distorts the true picture.

That is why ongoing registration by statistical bodies is important.

In Georgia current registration of births is carried out by both RCA (Registration of Civil Acts) offices, from where data are finally accumulated at the SDSG and Maternity houses, and by Health Statistics as well, which also covers home deliveries.

---

[1] Concise Demographic Encyclopedic Dictionary. Compiled by G.Tsuladze. Tbilisi, 2000,p.272.(in Georgian).

[2] Fecundity – biological ability of a woman, man or a married couple of fecundation and giving live birth to children. Average species fertility of a human being makes 10-12 live births during the life or 12-15 pregnancies including deaths and abortions (Concise Demographic Encyclopedic Dictionary. 2000, p. 211).

[3] Concise Demographic Encyclopedic Dictionary. Compiled by G.Tsuladze. Tbilisi, 2000,p.272. (in Georgian).

[4] ibid, p.p.272, 274.

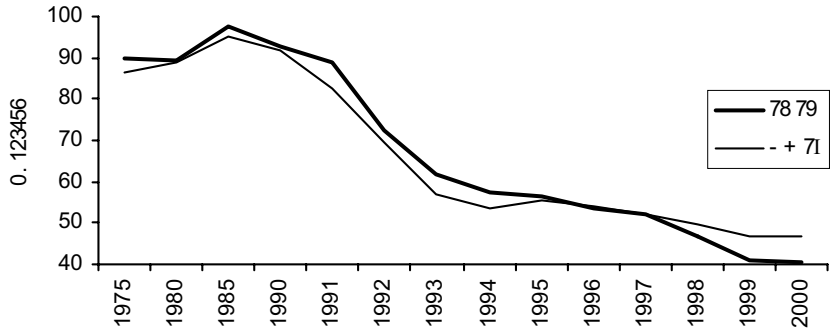
Sample surveys contain certain representative inaccuracies. Besides, to generalize their results it is often necessary to present particular information, which is problematic. Even so, sample surveys are useful for estimates.

Thus reliable information on the number of births ultimately depends on the completion of current registration.

What is the situation in Georgia regarding this matter?

If we compare data from the SDSG and Health Statistics concerning the number of live births in Georgia, we will see that there is a certain difference between them (see figure 4.1.).

Figure 4.1. Number of live births in Georgia according to the SDSG and Health Statistics - CMSI (thousand)



As we see before 1996 according to SDSG data the number of live births is higher than in the data given by the Health Statistics. From 1996 the number of live births according to the Health Statistics exceeds corresponding data by SDSG.

The differences in the data has varied. For instance, in 1975 there was a 3,5% difference; by 1980 it had decreased to 0,8% but increased in 1985 to 2,5%. By 1990 it had again decreased to 1,3%. In 1991-1995 the differences fluctuated between 1,8-7,5%. In 1996-1997 according to the data given by Health Statistics, live births were more by 0,6-0,7% in number than corresponding to the data of the SDSG. The difference between them increased to 6% in 1998 and was 14,7% in 1999. In 2000 it was 15,8%.

SDSG data were not complete in 1996. In some cases, Health Statistics data were more accurate and reliable, though generally before 1996 SDSG data could be considered more complete than the data from Health Statistics.

For instance, according to the data by the SDSG, in Georgia in 1980-1999 there were 4312 deliveries with multiple fetuses, but according to Health Statistics in the same period there were 7048.

It is difficult to imagine but it is a fact that the SDSG for unknown reasons didn't register 2736 twins, even though special attention is paid to twins in Georgia.

Anyway, before 1996, SDGS data concerning the number of live births should be considered as more valuable than those from Health Statistics. But from 1996 the opposite was the case.

In 1998 the Center of Health Statistics and Information of the Ministry of Labor, Health and Social Affairs of Georgia (henceforth known as CHSI) and Management of Demographic Statistics of the State Department for Statistics of Georgia carried out a sample survey. Along with other issues they studied completeness of registration among the RCA and CHSI offices. They found that RCA failed to register 21,7%of births[5].

Similarly, data given by Health Statistics concerning the number of live births are not complete either, as it covers the number of births at home only partially. For instance, according to the data given by Health Statistics, in 1999, 1868 women delivered at home (total deliveries 47669)[6]. According to the results of wide scale research, which was carried out simultaneously, 8% of deliveries were at home[7].

This would suggest that Health Statistics, which recorded that home deliveries made up only 3,9% of all deliveries, did not register the total number of home deliveries. 8% home deliveries make up 3,800. In this case total deliveries make up about 50000 . Taking into consideration deaths (according to Health Statistics data for 1999) in 1999 live births made up 49000.

We must also bear in mind that some Georgian women for different reasons deliver in Tskhinvali, Armenia and Azerbaidjan and after a while return back to Georgia.

Thus in 1999 the number of live births should have been approximately 49,500.
When registering deaths, we can use special model life tables, which cannot be used to measure the number of deaths.

Below, SDGS data concerning the number of live births before 1996 and from 1996 estimates we have used above are presented. Calculating different indices of fertility we used our population estimates and estimated population structure.

4.2. Number of Births and General Level of Fertility

The number of births is divided into two parts: 1) live birth and 2) stillborns. The number of live births defines fertility. The number of stillborns gives us the stillbirth rate.

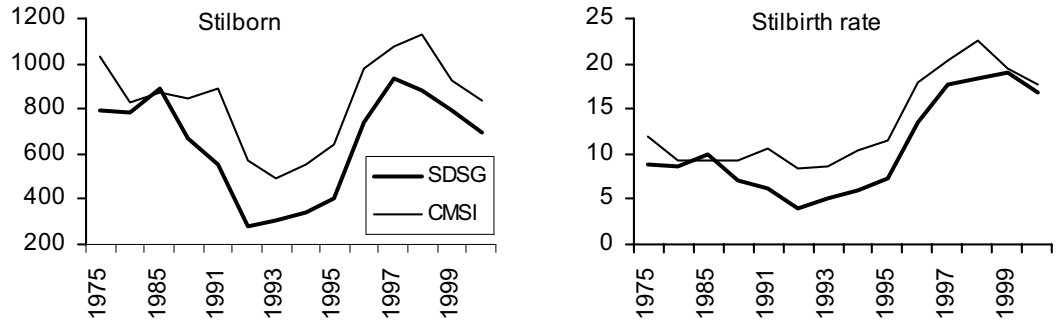
We are interested in live birth, though very briefly we will touch on stillbirth.

There is a difference between the data given by the SDSG and Health Statistics regarding the number of live birth and stillborns. For instance, in 1990-2000 according to the SDSG there were 6607 stillborns. Health Statistics, though gave a different number - 8947[8]. There was a difference of 2340.

Differences between the data regarding the number of stillbirths took place in 1970-1980 too. If we do not take in consideration individual years, Health Statistics' figures were higher those of the SDSG.

[5] Health Care. Georgia, 1999, Statistical Bulletin. Tbilisi, 2000,p.139 (in Georgian).
[6] ibid, p.23.
[7] Reproductive Health Survey. Georgia, 1999-2000. Final Report. Tbilisi, 2001, p.95 (in Georgian).
[8] Tsuladze G., Maglaperidze N., A. Vadachkoria A.. Demographic Yearbook of Georgia. 2000. Tbilisi, 2001,p.33.

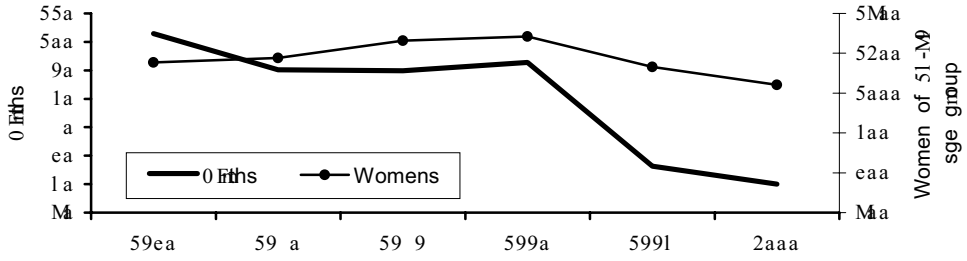
Figure 4.2. Stillborn and stillbirth rate (‰) in Georgia according to the SDSG and CMSI



As we can see, despite an initial decrease, the number of stillbirths in Georgia was higher in 1996-2000 than it was in 1975-1995.

Regarding the number of live birth, as shown in figure 4.3., you can see the number of live births and the dynamics of women of the 15 to 49 age group in Georgia, in 1960-2000.

Figure 4.3. Dynamics of births and women in the 15 to 49 age group in Georgia 1960-2000 (thousand)



As we can see, from 1960 to 1979, despite an increase in the number of women of fertile age, births in Georgia decreased. The number of women of fertile age compared to the previous period, decreased in the 1990s, though at the same time the number of births decreased significantly. For instance, the number of women of 15-49 age group decreased by 10% over the 1960-2000 period, but the number of births decreased by two times.

It is obvious that the decrease was only partially due to the decrease in the number of women of fertile age. The main reason should be looked for in changes in reproductive behavior.

Table 4.1. Changes in actual* and hypothetical number of live births in Georgia in 1990-2000 (thousand)

Year	Births		Decline in births compared to 1989		% of hypothetical change compared to actual
	actual	Hypothetical	actual	Hypothetical	
1990	92.8	93.9	1.7	2.8	164.7
1991	89.1	90.4	-2.0	-0.7	35.0
1992	72.6	75.1	-18.5	-16.0	86.5
1993	61.6	67.8	-29.5	-23.3	79.0
1994	57.3	67.5	-33.8	-23.6	69.8
1995	56.3	69.5	-34.8	-22.1	63.5
1996	55.0	70.2	-36.1	-20.9	57.9
1997	54.0	70.9	-37.1	-20.2	54.4
1998	52.0	69.4	-39.1	-21.7	55.5
1999	49.5	65.4	-41.6	-25.7	61.8
2000	50.0	68.2	-41.1	-22.9	55.7
1990-2000	690.2	807.8	-311.9	-194.3	62.3

* 1989-1995-data by the SDSG; 1996-2000-our estimates

Table 4.1. makes it possible to estimate the contribution of behavioral and structural factors to the changes in the total number of live births. The actual number of births is compared to the hypothetical number of births. The latter means the number that was possible if the age structure of the population of Georgia had not changed after 1989. In such a case, the only factor of change in birth rates would be changes in age specific fertility[9].

From the data contained in the table it is clear that in 1990-2000 807,800 would have been born in Georgia but for the intensive decrease in fertility. Because if this. 117,600 less were born.

In 1990, compared to 1989, the number of live births increased. The increase was because of improvements in both reproductive behavior and age structure.

After 1989 the number of live birth declined.

In 1991 this decline was insignificant and was mainly caused (65%) by a worsening of the age structure.

In 1992-1993, and especially in 1992, decline in the number of births was mostly conditioned by changes in reproductive behavior, which for both sexes decreased by 13-21%.

In the following years a greater part in the declining number of births was caused by changes in reproductive behavior and less (30-45%) was due to age structure.

[9] Concerning the issue see, Population of Russia 1996. Editor A.G. Vishnevski, M., 1997, p.75-77 (in Russian).

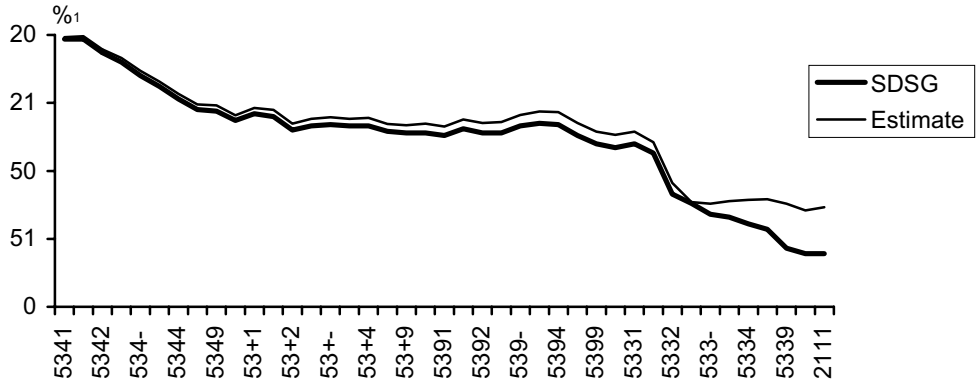
From 1999to 2000 in Georgia, 62% of birth rate decline was caused by changes in reproductive behavior and 37% was because of a worsening of age structure.

Despite the low rate of divorce in Georgia, it still played a certain role in the decline in the number of births. According to calculations made by Giorgi Meladze because of divorce 800 less children were born in Georgia. It was even higher in 1970-1980[10].

Ignoring other indicators and using only the crude birth rate which measures births per 1000 persons, it is clear that from 1960 to 2000 births significantly declined in Georgia (see figure 4.4.)

The general birth rate is expressed both according to the data of the SDSG and our estimated data. The difference between them is caused by the difference in the size of the population before 1996, and from 1996, both in the size of population and the number of births.

Figure 4.4. Dynamics of general birth rate in Georgia in 1960-2000



As we can see at the beginning of the 1960s the difference between them was rather insignificant, but it grew gradually and reached a high level (3,4‰) by 2000.

Despite this, both sources describe similar tendencies. In particular from 1960 to the beginning of the 1970s, a 19‰ decline in births , then a certain stabilization at 18-19‰ from 1970 to the end of the 1980s, significant decline in 1992 and finally a certain leveling off in 1999-2000.

There is difference as well, especially after 1993. According to the data presented by the SDSG, fertility per 1000 of population continued to decline up to 1999. Estimates, though, by and large indicate stabilization within 12-13‰ between 1993 and 2000.

We would like to repeat that the general rate of fertility intensity is a very crude index and is used here only to draw a general picture.

For fertility intensity and rate determination it is proper to use other indices, which we will discuss below.

[10] Meladze, G., Evolution of divorce in Georgia and the loss caused as a result. Report at the scientific council of the Institute of Demography and Sociological Research of the Academy of Sciences of Georgia.

4.3. Realization of Fertility Potential

Above we have mentioned fertility and natural fertility.

With interfamily childbirth regulation, the actual fertility level is lower than the natural fertility level. The fertility potential therefore is not fully realized.

Fertility potential can be very high, but the existing level of fertility depends exactly on the degree of its realization.

To measure the degree of fertility potential realization two indices are used: Coale Index[11] and Borisov index (natural fertility realization degree)[12].

Coale indices come up with hypothetical maximal fertility intensiveness and emphasize differences in the existing level of fertility from the possible maximum[13].

The value of a Coale index is always lower than one. The lower the Coale index value, the more the regulation of interfamily childbirth. Despite their complexity, the Coale indices are a good way of explaining changes in fertility.

Below, listed data are based on Coale indices.

Coale introduced four indices:

1. Common birth index **(I_f) -** indicates to what degree in a certain population the number of children delivered by women comes near to the number of births , which they would have had if there had been a maximal fertility rate.

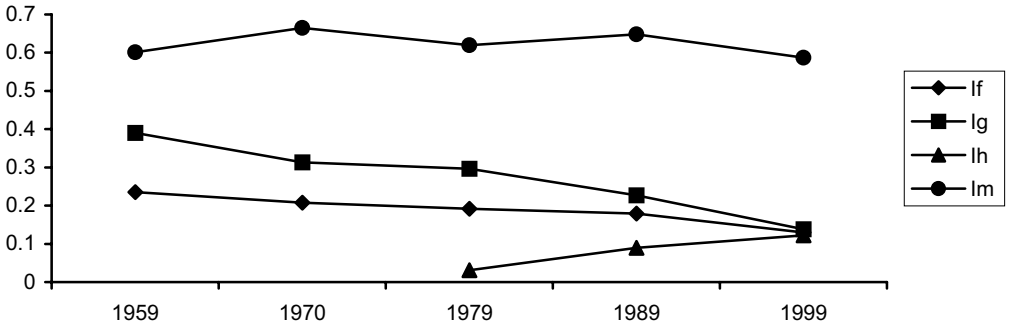
2. Marital birth index **(I_g)** – indicates to what degree the number of births by age specific fertile married women comes close or differs from the maximum possible number of marital births.

   Extra-marital birth index **(I_h)** – indicates the degree of similarity-difference between the number of live births by unmarried women of age specific fertility from the maximum possible number of extra-marital births.

3. Index of the contribution of age specific fertile married women **(I_m)** – indicates to what extent women's marital status influenced fertility[14].

[11] Coale A. Factors associated with the development of low fertility: a historic summary. UN., World Population Conference. Belgrade, 1965; Coale, A. The decline of fertility in Europe from the French Revolution to World War II. In: Fertility and family planning. A world view. The University of Michigan press, 1969.
[12] Borisov V. Perspectives of fertility. M., 1976 (in Russian).
[13] Concise Encyclopedic Dictionary of Demography. Compiled by G.Tsuladze. Tbilisi, 2000, pp.96, 99-101.
[14] Ibid; also- Bekaia M., Tsuladze G., Gokadze Z., Meladze G. p.80.

Figure 4.5. Change of Coale indices in Georgia in 1959-1999[15]



From 1960 to1970 the common birth index declined significantly compared to the 1970s. The marital birth index declined even more so in the 1960s than in the 1970s , even though the marital status had improved in the sixties and declined in the seventies[16].

The decline in live births in 1960-1970 was caused by the increase in interfamily regulation of birth, and the 1970s birth rate decline was more determined by a worsening of marital structure[17].

In 1979-1989 the common birth index continued to decline , but somewhat slower than in the 1970s. At the same time in 1979-1989 there was a significant decline in the marital birth index, especially compared to the 1970s. Its decline would have been more significant if in the 1980s the situation with the marital status of the population has not improved (there was an increase in the number of married women of age specific fertility)[18].

The 1990s were unprecedented from the point of view of Coale index changes. From 1989 to 1999 , the common birth Coale index declined almost as much as it had during the previous 30 years, from 1959 to 1989. The decline of the marital birth index was more important than the decline of the common birth index, as it is a sign of current changes in reproductive behavior. A significant decline in the indicator of the proportion of the of age specific fertility married women is a sign of worsening structural changes.

In the 1990s the Coale index of extramarital birth increased. In 1999 it came rather close to the value of the marital birth indicator .

Thus from the Coale indices it emerges that in the 1990s in Georgia, the decline of the birth rate was caused mainly by the changes in reproductive behavior and less by the worsening of the marital structure of the population[19].

---

[15] 1959-1999s –Meladze G., Tsuladze G.. Population of Georgia and demographic processes. Tbilisi, 1997, p.10 (in Georgian).
1999 - Tsuladze G. Demographic Development of Georgia: Past and Present //international workshop- Population Development and emerging Requirements for data Comparability: Baltic and Caucasian Region. Tallinn, 2000,p.8.

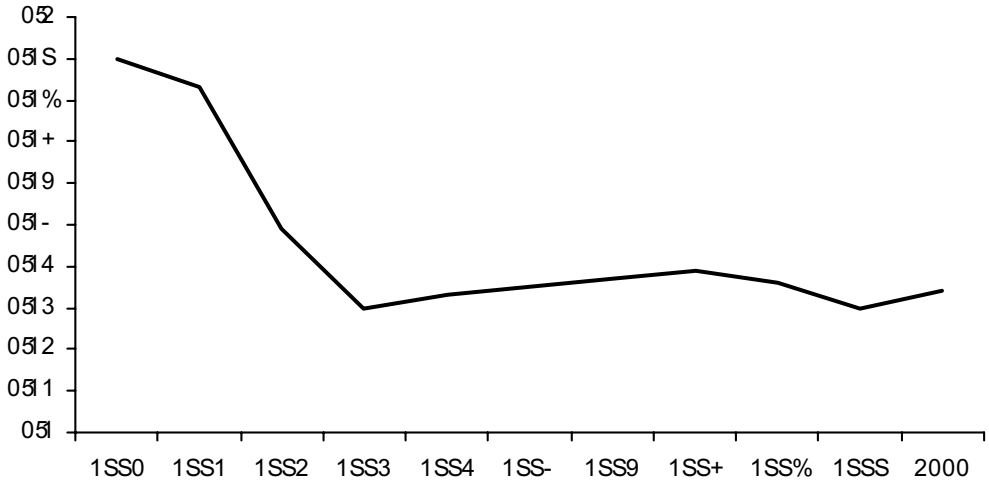
[16] Bekaia M., Tsuladze G., Gokadze Z., Meladze G. ibid. p.81.

[17] ibid.

[18] ibid.

[19] Tsuladze G., Khmaladze M. Modern Tendencies of fertility in Georgia// Problems of demography and sociology. 1. Tbilisi, 2001, p. 42 (in Georgian).

Figure 4.6. Changes of Coale birth index in Georgia in 1990-2000



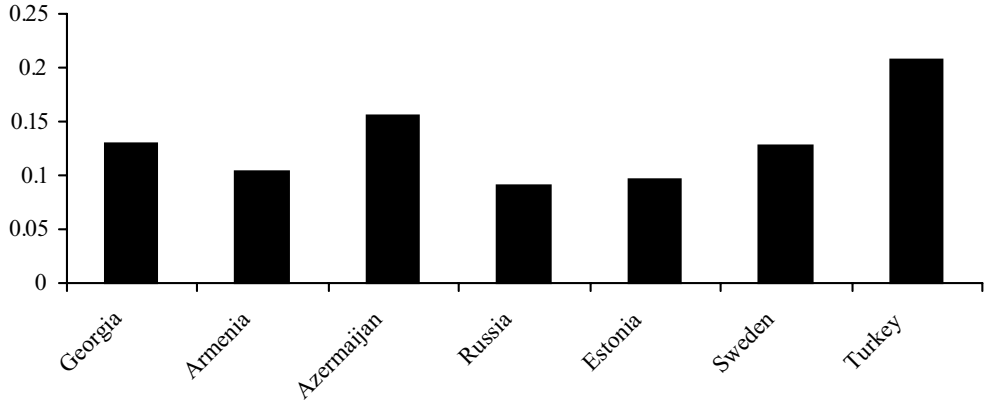
The graph demonstrates the change in the Coale birth index in Georgia in 1990-2000.

As we can see significant decline in the Coale birth index took place in 1992 and 1993. In 1994-1997 the Coale index was characterized by increase compared to 1993, and in 1998-1999, there was decline and some level of increase by 2000.

In order to compare the Coale indices of birth for Georgia and some other countries are given below.

Compared to Georgia, interfamily childbirth regulation was more spread in Russia, Estonia, Armenia and Sweden, and less so in Turkey and Azerbaijan.

Figure 4.7. Coale indices of births for Georgia and some other countries at the end of the twentieth century[20].



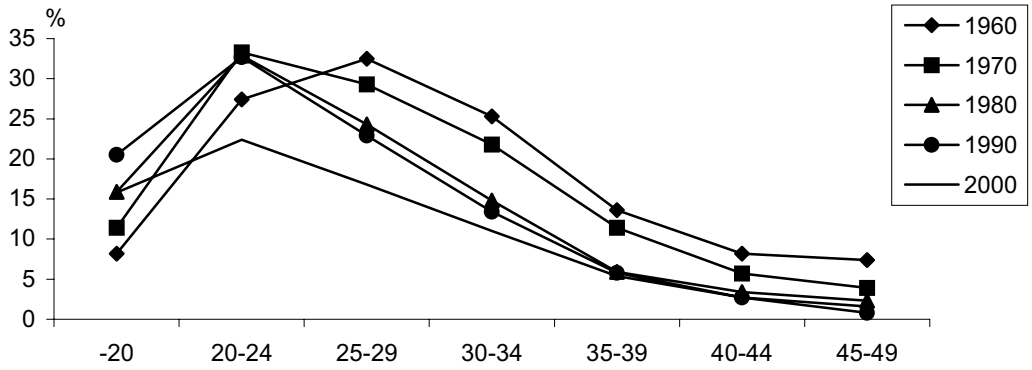
[20] On the basis of our calculations. Source: Recent demographic developments in Europe 1999. Strasbourg, 1999 Georgia, Russia – 1999, Estonia, Armenia, Azerbaijan, Turkey – 1998, Sweden – 1997.

It should be noted that in Armenia in 1989, the Coale index of births (0.225) was far higher than in Georgia at the same time[21]. The Coale index declined more than two times in Armenia in the 1990s.

In the 1990s compared to 1989, the Coale index of common births significantly declined in Azerbaijan (1,6 times) and in Russia (1,8 times).

Confirmation of the actual birth rate by age and of the Coale index of common births by age, gives us the possibility of knowing in which age group women have more childbirth potential. At the same time, comparisons of indicators from different periods shows us changes in the degree of childbirth potential (see figure 4.8.).

Figure 4.8. Degree of using child birth potential by women of different age groups (%) in Georgia from Coale age index

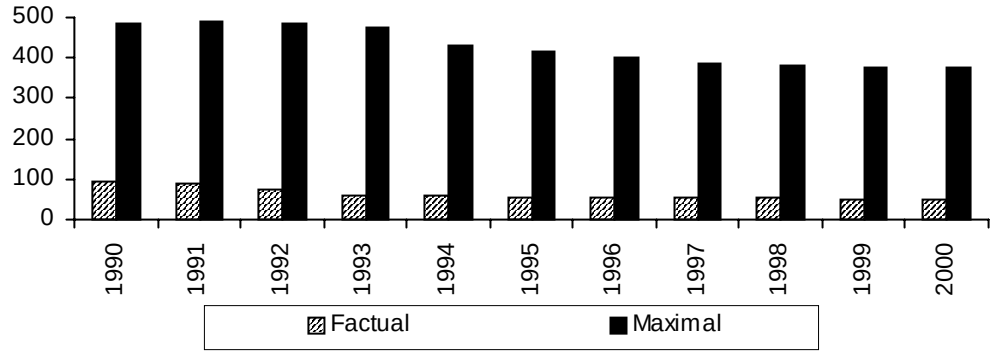


A high degree of childbirth potential was evidenced among women from the age of 20–to 29. By 2000, compared to 1990, the degree of realization of childbirth had declined in every age group, except in the age group of 40 and older (except for 45 year – old women). The degree though is extremely low for women at the age of 35 and older. In 2000 women at the age of 20-24 had the highest degree of realization of childbirth though they used only about 23% of this potential.

In 1990 there were 92,800 children born in Georgia. The number of maximal possible births was five times higher at 487,200. For 2000 it declined to 374,100, with only 50,000 actual births (according to estimates).

[21] Tsuladze G., Meladze G. Indicator of Demographic transition and demographic development of nationalities living in Georgia. – Georgia. 1999, 1-2, p. 176 (in Georgian).

Figure 4.9. Changes of factual and maximal possible number of births in Georgia 1990-2000s (thousand)



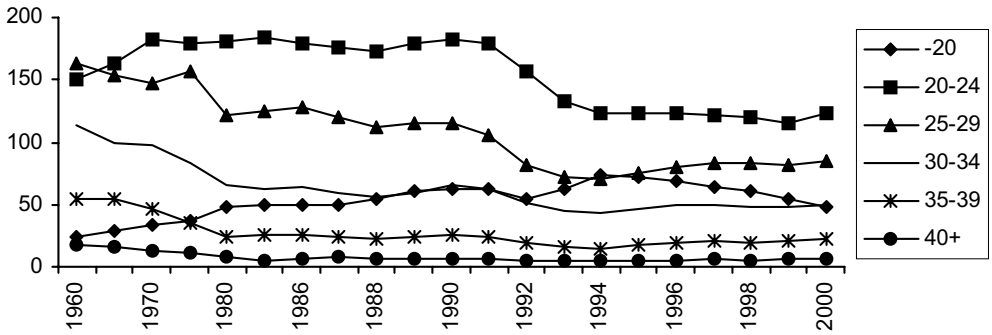
Thus in the 1990s- in Georgia both fertility and the potential number of childbirths declined, but at the same time intrafamily regulation of childbirth increased.

4.4. Change of Fertility Level

We have already demonstrated that birth potential is not fully realized. Below we will discuss the actual intensity of birth and the fluctuation of the birth rate.

Firstly, we will draw attention to age specific fertility rates (see figure 4.10.).

Figure 4.10. Dynamics of age-specific fertility rates (‰) in Georgia, in 1960-2000[22]



[22] 1960-1988 - data by SDSG.
1989-2000 - our estimated data.

As we can see, in 1960-1991 despite certain changes, there was increased fertility intensity in women younger than 25 and simultaneously declined fertility intensity in women in the age group of 25 and older.

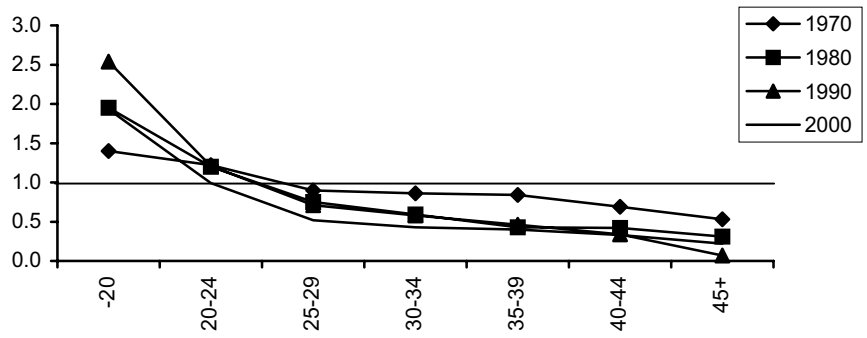
To some degree important changes took place in 1992-1993. In 1992 compared to previous years, the age-specific fertility rate declined in practically every age group, especially in the 25-29 age group. In 1993 further decline in the fertility of women of 20 and older took place. From 1994 the age-specific fertility rate underwent alternating changes (increase-decrease).

Finally, the above mentioned changes appeared to be quite significant from the point of view of fertility decline.

From differential analyses of age-specific fertility rate emerges the fact that despite certain differences in individual age groups, in general during the whole period of research (1959-1999) decline in fertility was caused by the decline in marital births[23].

Figure 4.11. gives the comparative changes in the age-specific fertility rate in 1979-2000 compared to 1960.

Figure 4.11. Comparative changes in age-specific fertility rate in Georgia, in 1970-2000 (the straight line indicates the rate in 1960)[24]



As a result of changes in 1960-2000, by 2000 compared to 1960 fertility intensity increased two fold in women younger than 20. In 1970-1999, after the increase, fertility intensity b of women at the age of 20-24 was at the same level, but for the age group of 25 and older, fertility declined significantly. Besides in the age group of 25-44 decline in fertility was consistent during of the whole period of time.

Changes in the age-specific fertility rate were reflected in the changes in the total rate and its decline (see figure 4.12.).

[23] Meladze G. Differential analyses of changes of age-specific fertility rate. -Demography. 2001,2(4) p.97 (in Georgian).
[24] 1960-1980s- data by SDSG; 1990-2000 our estimated data.

Figure 4.12. Changes in total fertility rate in Georgia[25]

Despite certain changes, in 1960-1990 the total fertility rate declined continually. In 1991 it had declined to the level of simply maintaining the population, and from 1992 it went even lower than this.

Thus since 1992 the birth rate has not been able to sustain the population.

Even though there was some stabilization of the birth rate between 1993 and 2000, with a total fertility rate of 1,7, it has not been enough to maintain the population. (2,1).

Each age group has contributed to the formation of the total fertility rate. Let's see what it looked like and what kind of changes it underwent (see table 4.2.).

Table 4.2. Role of age groups in forming the total fertility rate
In Georgia, 1960-2000 (%)[26]

Year	Age of mother					Total
	-20	20-24	25-29	30-34	35+	
1960	4.5	26.2	32.0	21.5	15.8	100.0
1970	6.5	35.0	29.0	18.0	11.5	100.0
1980	10.6	40.1	27.0	14.7	7.6	100.0
1990	13.6	39.9	25.2	14.4	6.9	100.0
1991	14.1	40.7	23.9	14.2	7.1	100.0
1992	15.0	42.7	22.2	13.9	6.2	100.0
1993	18.7	39.9	21.8	13.5	6.1	100.0
1994	22.4	37.1	21.4	13.1	6.0	100.0
1995	21.3	36.4	22.1	13.6	6.6	100.0
1996	19.8	35.8	23.1	14.3	7.0	100.0
1997	18.2	34.7	24.1	14.4	8.6	100.0
1998	17.7	35.1	24.7	14.1	8.4	100.0
1999	16.7	35.2	24.8	14.9	8.4	100.0
2000	14.2	37.0	25.4	14.7	8.7	100.0

[25] 1960-1980s – data by SDSG; 1989-2000 our estimated data.
[26] 1960-1980s-data by SDSG.
1990-2000 our estimated data.

In 1960 the biggest role in forming the total fertility rate was played by women in the 25-29 age group. Age groups of 20-24 and 30 also played a significant role, but the smallest contribution was made by women younger than 20.

By 1970 the situation had somewhat changed. Younger women began to contribute to the formation of the total fertility rate, though the contribution of women of 30 and older was still high.

By 1980 the situation had changed even more. Half (50,7%) of the total fertility rate was as a result of the reproductive behavior of women younger than 25. Compared to 1960, the "contribution" of women 35 and older had decreased two- fold.

By 1990 the contribution of young women had increased even more.

Thus during the whole period of 1960-1999 a process took place in which the role of relatively old women in the formation of the total fertility rate declined steadily whilst younger women's role increased. At the same time the total fertility rate continued to decline, which was a result of the low reproductive behavior of younger women.

In 1991-1994 the contribution of young women in the formation of the total fertility rate increased even more. At the same time there was a significant decline in their age-specific fertility rate. As a result of this the total fertility rate significantly declined, to the point where basic population replacement requirements weren't being met.

From 1995 to a certain extent , a reverse process took place. In 1995-2000 the contribution of women under 20 in the formation of the total fertility rate declined, the contribution of women of the 20-24 age group underwent changes and the contribution of women of 25 and older increased.

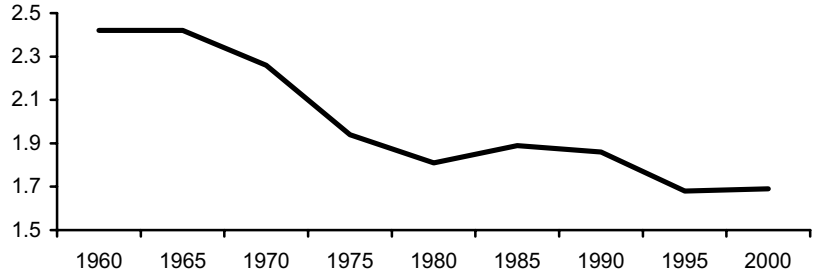
Such changes were not enough though to significantly change the fertility rate.

There was an increase in the number of first-borns and a decline in the number others in the overall live birth rate.

In 1960 live births of first-borns made up 34,7% of the total births, while live births of third and following orders made up 36,5%. In 2000 the proportion of live births by first-borns increased to 51,9% and live births by third and following orders declined to 14,8%.

In this period changes where reflected in an average indicator of live births by order which is called the childbirth structural rate (see figure 4.13.)

Figure 4.13. Childbirth structural rates in Georgia 1960-2000



As we can see, already in 1975 the average live birth by order in Georgia was much lower than 2 and in 1995 and 2000 declined to 1,7. In 1995-2000 the childbirth structural rate and the total fertility rate were similar. Such circumstances indicate that from 1995 gradual change of the birth regime from generation to generation took place.

Thus from the above-mentioned it can be seen that the 1990s in Georgia is a period of decline in population reproduction below the necessary level.

Birth rate decline that took place in the 1990s is the reaction to the worsening of social economic conditions of the population, or did begin even earlier?[27]

It may be paradoxical but from the results of social-demographic research made in the 1990s it comes out that the level of realization of reproductive plans and the necessity of having children compared to 1980 practically did not decline (changes were insignificant), and it was (mainly) reproductive orientations themselves that declined[28].

The research done in 1996 shows that reproductive orientations of the women's cohort born in 1967 (ideal, desired and expected number of children) strongly differed from reproductive orientations of the women's cohort born before 1967 and was very low. If we take into consideration that the age of the first marriage in Georgia for women is 24 on average, then they must have been mostly married and already have children in 1991-1992. Thus decline in the birth rate in 1990 becomes clear[29].

It was possible to make prognoses of decline of the birth rate in Georgia in the 1990s and the 1980s and such prognoses have been made.

Such decline is considered undesirable for the various nationalities living in Georgia[30].

Later on, on the basis of studies of school age population reproductive orientation[31], which turned out to be stable [32] the following conclusions were drawn:

1) The future birth rate will be less than it is at present [33];
2) This decline will be so severe that the population sustainability level will not be met [34].
3) Coming out of the abovementioned by 2000 without a demographic policy, the total fertility rate will decline lower than is necessary for population sustainability and the share of live births by third and following order will make less than 15% in the total number of births[35].

---

[27] Tsuladze G., Khmaladze M. quoted work, p.42

[28] ibid.

[29] ibid, p.42-43.

[30] Tsuladze G., Issues of fertility sociology. Tbilisi. 1984, p.114 (in Georgian).

[31] Tsuladze G.,.Chankvetadze T. Formation of ideas about the number of children in a family in schoolchildren// childbirth in a family: yesterday, today, and tomorrow. M.,1986, p.104-116; (in Russian). Tskhovrebadze Z. Characteristics of reproductive orientation formation (on Tbilisi examples). Tbilisi, 1993, etc.

[32] Tsuladze G., Gokadze Z. On the attitudes of school goers towards the optimum number of children in a family // Modern problems of ecology, demography and health of the population. Sverdlovsk, 1988 (in Russian).

[33] Tsuladze G., Chankvetadze T..same work.p.116 (in Russian).

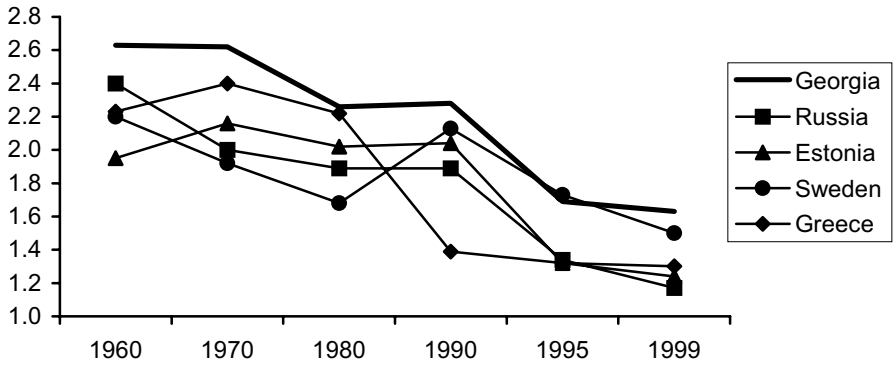
[34] Tsuladze G. Family planning and national traditions//family planning and national traditions. Issu1.M.1986.p.11 (in Russian).

[35] Sulaberidze A. Characteristics of demographic development of Georgia//Actual problems of developing of demographic processes in Georgia. Tbilisi. 1990,p.35 (in Georgian).

As we see all of this has come to pass.

In many countries the birth rate level is lower than in Georgia. To compare, Figure 4.14 gives the total fertility rate for Georgia and some other countries (see figure 4.14.).

Figure 4.14. Total fertility rate for Georgia and some other countries[36]



We shouldn't assume that there are no countries where the total fertility rate is higher than it is in Georgia. In 2000 the total world fertility rate was 2,8, but in Nigeria, Mali, Somali, Congo and Yemen it was over seven. In one hundred countries in 2001 the total fertility rate was over three. [37].

4.5. Multiple Fetus Delivery

Above we have briefly demonstrated some of the data concerning multiple fetus deliveries. Below we will deal with the issue more comprehensively.

As is known multiple fetus delivery is a delivery involving two or more children during one multiple fetus pregnancy. The possibility of such a pregnancy greatly depends on heredity. Its probability is higher if the women or her husband is a twin. [38].

Multiple fetus deliveries are conditioned by genetic factors. Ethnic and racial background is also a factor [39]. Among the peoples of East Asia it is comparatively low. For instance in Japan the number of twins per 1000 deliveries is about five. In Europe it is ten. . In northern countries it is characterized by a certain level of growth, but in eastern countries by decline. Frequency of multiple fetus deliveries is rather high in South India and Sri-Lanka (35 per 1000 delivery) and especially high in West Africa. Among some peoples of Nigeria (Yoruba) multiple fetus deliveries make up 50 per 1000 delivery[40].

---

[36] Source: Recent demographic developments in Europe 1999; Recent demographic developments in Europe 2000; Population of the World: Demographic reference book. M.1989; Population of Russia 2000. M., 2001(in Russian).

[37] Pison G. All the countries of the World (2001). – Population and Society. 2000,N56 (in Russian).

[38] Population. Encyclopedic Dictionary. M., p.240 (in Russian).

[39] Kozlov V.I..Ethnic demography. M., 1977.p.87 (in Russian).

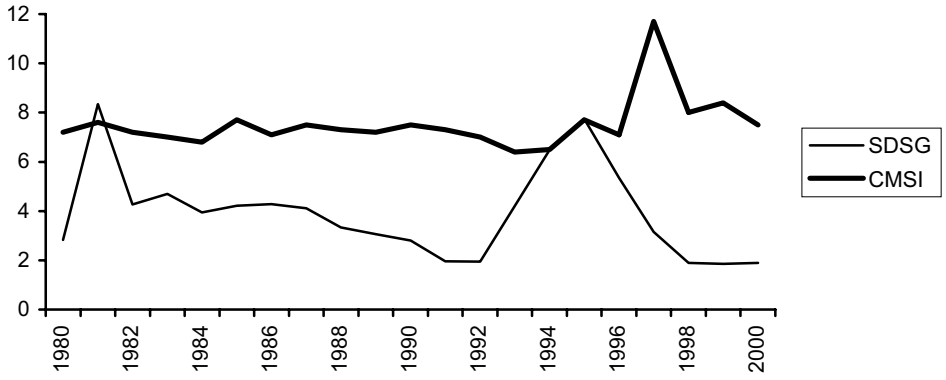
[40] ibid. Nylander P. The incidence of triplets and higher multiple birth in some rural and urban populations in Western Nigeria. – Annual Human Genetic. 1971. N4.

There is a certain regularity at work. The ratio of single fetus deliveries to double fetus deliveries is the same as the ratio of double fetus deliveries to triple fetus deliveries, and so on[41].

Thus we can say that multiple fetus delivery is genetically defined, as it obeys a certain regulation and is more or less stabile. There are of course exceptions.

Figure 4.15. gives multiple fetus deliveries per 1000 deliveries in Georgia according to the SDSG and Health Statistics.

Figure 4.15. Multiple fetus deliveries per 1000 delivery in Georgia according to the SDSG and CMSI.



As we can see, SDSG and Health Statistics data concerning multiple fetus deliveries per 1000 deliveries are significantly different from each other.

According to the SDSG, multiple fetus deliveries per 1000 delivery have undergone significant changes.

According to the SDSG, in the researched period (1980-2000) multiple fetus deliveries per 1000 delivery averaged 3,92.

Different data are given by Health Statistics concerning multiple fetus deliveries per 1000 deliveries. In the given case if we ignore the peak of 1997, multiple fetus deliveries per 1000 deliveries had a more normal character; its size had a stable character. In 1980-2000 multiple fetus deliveries per 1000 deliveries made 7,51 on average, which is almost twice the SDSG figure.

SDSG data are obviously incomplete, but on the other hand the corresponding data from Health Statistics cause certain dissatisfaction and are unreliable.

SDGS data is obviously incorrect, as they don't conform to the natural law - one multiple fetus deliveries per 80. The 1997 figures were the exception (one in 84).

[41] Concise Demographic Encyclopedic Dictionary. Compiled by G.Tsuladze. Tbilisi, 2000,p.209 (in Georgian).

The problem needs further research, but first of all it is necessary to improve the registration of current deliveries.

At present all we can say is that according to the data by Health Statistics, Georgia is similar to European countries in the number of multiple fetus deliveries.

4.6. Sex Secondary Ratio

Secondary quantitative correlation of sexes is the correlation of the number of boys and girls in live births.

This issue has been in focus for many years already. There were different opinions regarding this issue in Ancient Greece and Rome, though it wasn't until the seventh century that it became a scientific issue.

Secondary correlation of sexes was described in 1662 by J. Graunt, who noted that the number of boys born is always higher than the number of girls. The correlation between boys and girls born in London was 14:13 or 107,7 boys per 100 girls[43].

Further research of the secondary correlation of sexes showed that it has a constant character for all other regions and times. P. Laplas came to the conclusion that in the secondary correlation of sexes, a surplus of boys was a general rule. Moreover, he proved that a surplus of boys is conditioned by constant reasons and actual changes are caused by incidental reasons[44].

According to research by V. Lexis, the secondary correlation of sexes has a constant character and deviation in every country from the average was bigger when the total birth rate was smaller. At the same time the mean number of deviations was in accordance with the theory of probability[45].

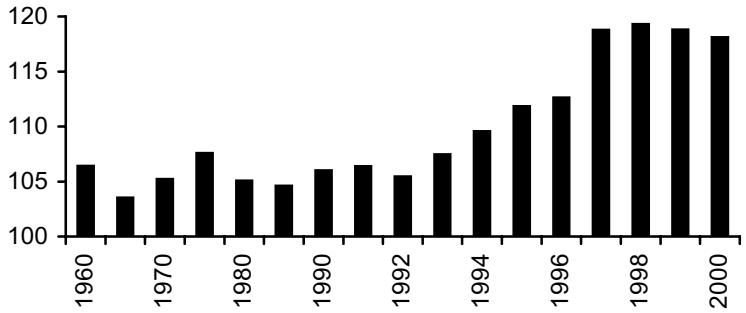
Over time vast empirical material has been gathered. It shows the chances for differentiation in the secondary correlation of sexes for different groups. Today the secondary correlation of sexes is 105-106 boys per 100 girls. This correlation is different by country ; but it rarely exceeds 107 boys and is seldom less than 104. Generally in registered marriage more boys are born than in extra marital cases. The higher the live birth by order, the less boys are born on average. Young mothers, especially those under twenty, have more boys than older mothers do[46].

Let's see what is the situation is in Georgia in this direction (see figure 4.16.).

---

[43] Ptukha M. Articles of history of statistics of XVII-XVIII c.c. M., 1945, p.33 (in Russian).
[44] ibid. p.271-272.
[45] Lexis V. General theory of movement of Population//Population and studies about Population. M., 1897, p.214. (in Russian).
[46] Population. Encyclopedic dictionary. M., 1994, p. 461-462 (in Russian).

Figure 4.16. Secondary correlation of sexes in Georgia in 1960-2000 (Number of boys per 100 girls in live births.)[47]



As we can see in the researched period the secondary correlation of sexes in Georgia before 1994 was not less than 103 and did not exceed 108. In 1960-1992 the average was 105,5, which was normal.

From 1994 the situation changed and the relatively small deviation from the norm was followed by a significant distortion of the correlation. From 1997 there were 118 boys for every 100 live girls born[48].

Such a big distortion of the correlation and the corresponding deviation from the norm today (in the second half of the 1990s) is noted only in a few other countries of the world.

Besides, on the basis of the data obtained in 1994-1997, it can be seen that in Georgia some of the above mentioned general regulations were destroyed. In particular, the higher the live birth by order, the more boys were born on average and young mothers, especially under the age of twenty, gave birth to less boys than older mothers did [49].

Let's see what was the situation was like in Georgia after 1997. In order to discuss the dynamics of the process corresponding data by the SDSG will be given (see Table 4.3).

In 1998-2000 in Georgia the same destruction of regulation which was revealed in 1994-1997 took place, when the higher the live birth by order, the higher the number of boys born. The data for the whole period of 1994-2000 on average are more reliable than for any particular year, because of the number of cases studied, which makes it possible to give reasons for incidental changes. The following regulations are revealed: according to the indicators of the secondary correlation of sexes, births by I-II and IV-V order were similar: live birth by III order in secondary correlation of sexes was different. (See Table 4.3.)

Between the age of a mother and the secondary correlation of sexes in 1998-2000 was revealed mainly the type of destruction that in 1994-1997 took place. In particular young mothers (under 25) on average have less boys than older mothers do (see table 4.3.).

Concerning the secondary correlation of sexes by marital status in the given case the following situation was manifested (see Table 4.3.). As we can see, the general principle that in registered marriages more

[47] SDSG data, 1993 – Estimate.
[48] 1994-1997 see quoted work by: Meladze G., Tsuladze G. Quoted work p.68-77; G.Tsuladze, Meladze G. quoted work.p.45-49.
[49] ibid.

boys are born than in extra-marital cases is true for Georgia. Besides despite certain changes it was found that on average in 1994-2000 more boys were born to those who registered childbirth according to declaration of both parents, than to single mothers.

The situation for populous nationalities living in Georgia is different.

This difference was already evident in 1989. The secondary correlation of sexes amongst Georgians was within accepted limits (106,1), with Russians at 107,8, with Azerbaijanis rather high at 109,9, and Armenians lower at 101,7.

At the same time in 1988-1989 in Armenia itself, Azerbaijan and Russia, the secondary correlation of sexes was within the accepted norm (106,6; 106,7 and 105,6 respectively).[50]

From 1994 for each cited nationality, the number of boys began to increase among live births. In 1994-2000, the number of boys per 100 girls for Georgians, Armenian and Russians was within 114-115, and for Azerbaijanis, 129,5.

Data for the secondary correlation of sexes by live birth, by order, age of a mother and marital status for the 1980s and for 1990-1993, are absent. Such a situation makes it impossible to discuss the secondary correlation of sexes before 1994 and to compare it with the corresponding data of 1994-2000.

How can this be explained?

Two hypotheses exist :

1. Among live births the registration of girls, compared to boys, is poor and
2. The influence of early diagnostics of sexes[51].

Where there is incomplete registration, registration of girls compared to boys is even lower.

The other factor is the influenced of early diagnostics of sexes. As boys are sometimes given more preference than girls, female fetuses are sometimes aborted.

There is no all-encompassing explanation for the destruction of the secondary correlation of sexes.

Some of scholars think that one of the causes of the distortion of the secondary correlation of sexes is the incomplete registration. But the artificial abortion of an undesirable sex still seems more likely [52].

According to this it is possible to explain the fact of significant increase of secondary correlation of sexes in live births by II, III and following order, but distortion of the correlation also takes place in live births by I order. Besides, early diagnostics of sexes isn't possible in the first 2,5 months of pregnancy, which makes late and criminal abortions unlikely. Late and criminal abortions amongst women older than 40, who are pregnant for the first time, is also questionable[53].

---

[50] Calculated by us. Source: Demographic yearbook USSR. 1990.M., 1990, p.107, 110,113. (in Russian).
[51] Meladze G., Tsuladze G. Quoted work, p.75.
[52] Totadze A. New demographic threat. – Demography. 2001,2(4), p.75 (in Georgian).
[53] Meladze G., Tsuladze G. Quoted work, p.75-76.

Table 4.3. Secondary correlation of sexes according to live birth by order, by mother's age, marital status and populous nationalities living in Georgia[54]

	1994	1995	1996	1997	1998	1999	2000	1994-2000
Average	109.6	111.7	112.5	118.8	119.3	118.8	118.1	115.5
Birth order								
I	107.9	107.6	109.6	114.3	112.9	113.2	112.3	111.1
II	107.7	107.8	110.9	113.4	116.6	113.6	115.1	112.2
III	122.9	125.3	124.9	146.8	146.2	156.1	142.8	137.9
IV	114.8	131.2	137.0	155.6	161.6	162.1	168.9	147.3
V +	125.6	130.8	134.1	148.8	168.4	136.1	172.2	145.1
Age of the mother								
-20	105.7	110.9	108.3	108.9	111.4	116.8	115.6	111.1
20-24	109.3	110.6	110.0	117.4	118.2	114.3	117.7	113.9
25-29	111.6	111.9	115.2	119.8	121.7	119.3	115.3	116.4
30-34	111.1	117.9	117.8	129.7	124.1	125.1	121.1	121.0
35-39	114.2	106.7	120.2	130.3	128.7	135.1	130.5	123.7
40+	122.1	112.0	113.2	119.4	131.7	117.5	122.4	119.8
Marital status								
Registered marriage	111.0	111.9	113.1	121.0	121.9	121.7	120.2	117.3
Extra marital	106.1	111.3	111.2	114.5	115.3	114.2	115.5	112.6
Among them								
By declaration of both parents	106.2	113.0	113.0	113.7	116.9	114.0	116.4	113.3
By declaration of mother	104.6	102.9	103.8	119.1	105.0	115.7	108.2	108.5
Nationality								
Georgian	109.3	110.6	111.7	117.4	118.7	118.2	116.5	114.6
Armenian	105.1	108.8	112.4	116.1	120.9	123.3	115.5	114.6
Russian	110.7	104.1	109.4	141.1	114.3	107.8	113.1	114.4
Azeri	115.6	132.6	125.5	130.0	130.3	130.4	141.8	129.5

It is difficult it imagine that a pregnant woman of 40 who is going to be a mother for the first time would have an abortion just because she is going to have a girl. Still, the number of such women cannot be small, as there were 118,4 boys per 100 girls among live births for women of 40 and above in 2000. In 1994-2000 the secondary correlation of sexes on average was equal to 114,1.

In 1894-1898 in Tbilisi province, long before the early diagnostics of sexes, there were 114,6 boys per 100 live girls born[55].

The reason could have been incorrect registration of live births.

It is accepted, when quantitative correlation analyses is being done, any inaccuracy, changes in the rules of registration of births or incomplete registration, which may distort the value of the secondary correlation of sexes, should be taken into account[56].

Registration of live births in Georgia is as bad now as it had been in the nineteenth century.

That is why registration of births is of the first priority.

[54] 1994-1997 data are taken from before mentioned work by G. Tsuladze, G.Meladze.

[55] Calculated by us. Source: Collection of statistical information for Transcaucasus. Part 1. Tiflis, 1902.p.27-30. (in Russian).

[56] Population. Encyclopedic dictionary. M., 1994,p.461. (in Russian).

We tend more to the view that the main reason for the destruction of the secondary correlation of sexes in Georgia is the incomplete registration of births.

4.7. Births Outside of Marriage

Birth without registration (furthermore known as extra marital births) represents that part of total births that was formed by extra marital births. Extra marital birth is where a child is born whose mother is not in a juridical (registered) marriage. Children from consensual marriages and from life partnerships are currently categorized as extra marital births[57].

In the former Soviet Union before 1944 the concept of extra marital birth practically did not exist. Unregistered marriages were seen as registered marriages. The practice existed of declaring paternity or the courts stating it. In 1944-1969 information about the father of an extra marital child was not fixed. And in the relevant column they used to draw a line. Modern current statistics differentiate three categories of births with corresponding documents:

1. Registered marriage births; 2. Births registered by the declaration of both parents (also those cases when paternity was stated by the courts) or by a certificate of paternity declaration with his signature; 3. Births which are registered by the mother's declaration only and her signature. In the second case responsibilities and duties between the father and the child are the same as in a judicially registered marriage. By the mother's declaration during the birth registration, information about the father is accepted from the mother, and the child gets its mother's family name and between the child and the father there are no juridical relations formed. Where parents subsequently marry, information in the declaration is not changed [58].

The level of extra marital birth depends on marriage and family traditions of the country and its laws and is determined by marital and reproductive behavior[59].

Several indicators can measure extra marital births:

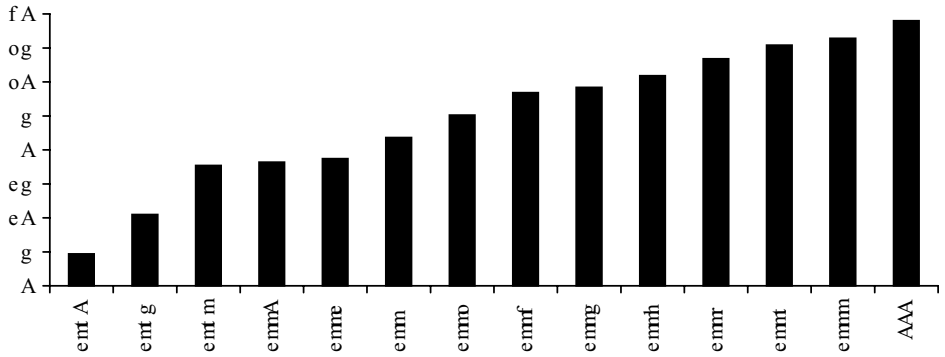
1. Percentage (%) of extra marital births in total births;
2. Extra marital birth rate which shows the number of births by women of 15-49 age group per every 1000 unmarried women;
3. Total extra marital birth rate;
4. The Coale index for extra marital births.

The Coale index for extra marital births was discussed above (see part 4.3. of this work). That is why we will not deal with it here, except to say that from 1979 to 1999 the Coale index for extra marital births in Georgia increased almost four fold.

The proportion of extra marital births to total births (furthermore known as the proportion of extra marital births) in Georgia in 1980 was still small and made up only 4,7%, though within five years it had doubled to 10,5% (see Figure 4.17).

[57] Bekaia M., Tsuladze G., Gokadze Z., Meladze G. Quoted work, p.101.
[58] ibid. p.101-102; Population. Encyclopedic dictionary. M., 1994.p.45-46.(in Russian).
[59] Ibid. p.102.

Figure 4.17. Proportion (%) of extra marital births in total births in Georgia, 1980-2000 (by the SDSG)



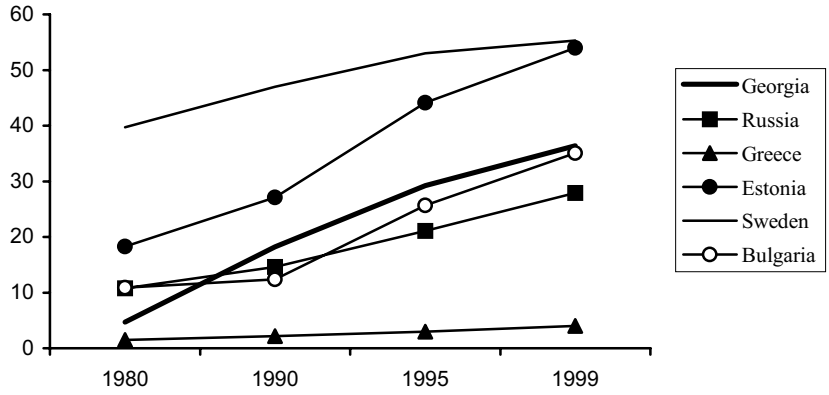
In the following years extra marital births continued to increase and in 1990 it had already reached 18,2%.

The1990s in Georgia saw a rapid rise, with a two fold increase which by 2000 brought the figure to 39%.

This is rather high, but in some countries we can see higher indicators than this. There are countries where the proportion of extra marital births is much smaller than in Georgia (see Figure 4.18.).

If we judge by the rate of growth of extra marital births, during the last 20 years in Georgia in this direction compared to other countries there significant increase.

Figure 4.18. Proportion (%) of extra marital births in total births in Georgia and other European countries[60]



We estimate that there were about 10000 unregistered births in Georgia in 2000. If we assume the fact that half of unregistered births were extra marital births, then the proportion of extra marital births

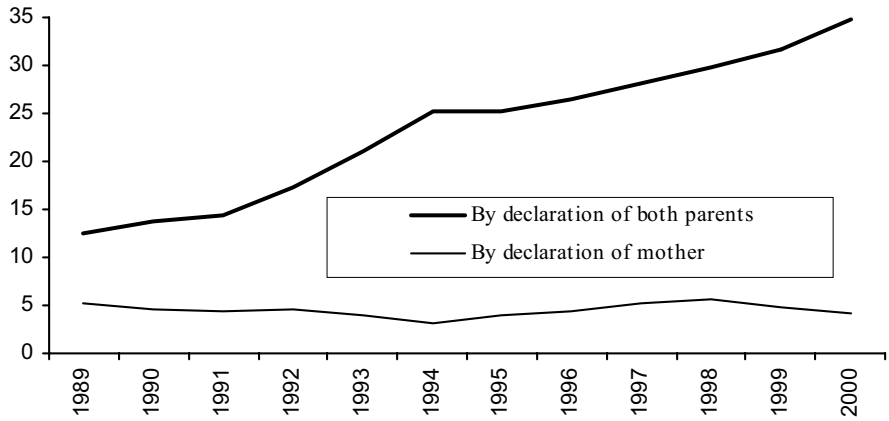
[60] Source: Recent demographic developments in Europe. 2000.Strasgourg, 2000.

would be even more in Georgia and it would exceed 41%. Even if this is not so, 41% proportion of extra marital births in Georgia by our estimates could be reached in 2001 or even exceed it[61].

As it was mentioned above, extra marital birth consists of two components: 1. Births registered by declaration of both parents (with a certificate stating paternity) and 2. Births registered by the mother's declaration only.

Let's see what is the situation in Georgia in this case (see Figure 4.19.).

Figure 4.19. Proportion of extra marital births (%) by declaration by both parents and according to the declaration by mother: Georgia, 1989-2000 (Data by SDSG)



As we can see, in Georgia despite a 3-6% fluctuation, extra marital births according to the declaration by the mother stayed practically at the same level. Extra marital births according to the declaration by both parents increased significantly.

Thus the increase in extra marital births in Georgia in the 1990s was conditioned by births, which were registered according to the declaration by both parents (with the certificate stating paternity).

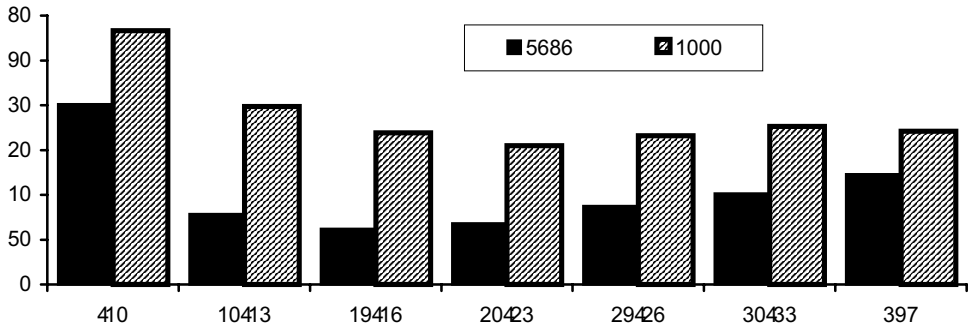
In many countries the situation is different from this. For example in Russia more than half of the proportion of extra marital births both in the 1980s and in the 1990s was made up by births registered according to the declaration by the mother only[62].

This makes us think that in Georgia parents of children registered according to the declaration by both parents practically have a church marriage.

Attention should be drawn to the contribution of extra marital births by mother's age (see Figure 4.20).

[61] Latest SDSG data suggests the proportion of extra marital births in 2001 was 41,8%.
[62] Population of Russia 2000. Resp. Editor A.G.Vishnevski. M. p. 46. (in Russian).

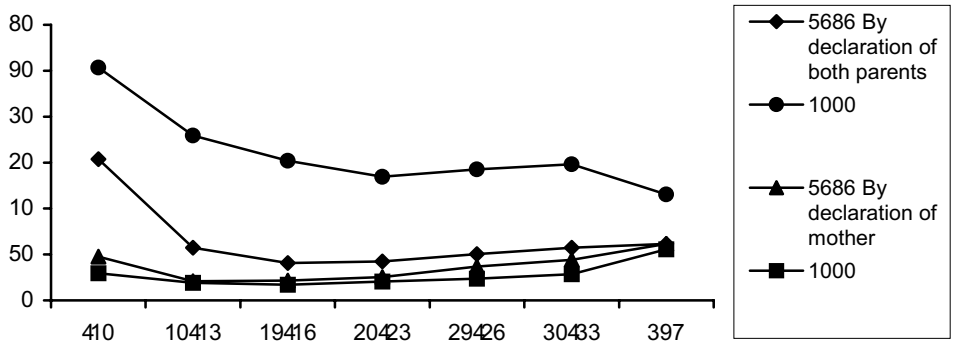
Figure 4.20. Proportion of extra marital births by mother's age (%) in Georgia (by SDSG)



The biggest contribution is made by women under the age of 20. In 1989 women 45 years or older still made a significant contribution.

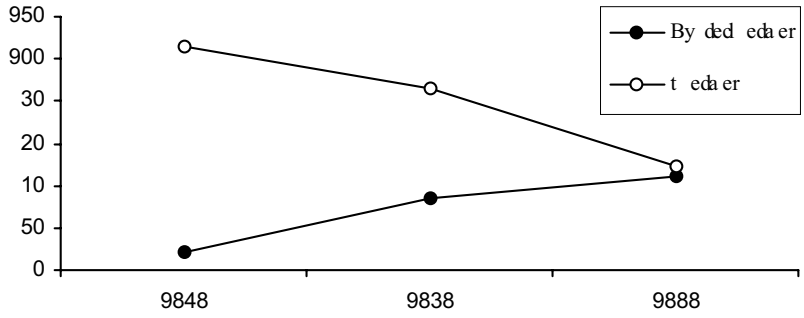
By 2000 the proportion of mothers having extra marital children of all ages had increased. Though for different age groups this increase was not the same. The proportion of mothers under 20 having extra marital children was still the highest. More than half of the children born to mothers under 20 were outside of marriage. The number of extra marital children born to mothers at the age of 20-24 significantly increased. For mothers of 25 and older it reached and fluctuated between 31 and 35%.

Figure 4.21. Proportion of extra marital births by mother's age (%) and registration form in Georgia, in 1989 and 2000. (By the SDSG)



As we can see, in 2000, compared to 1989, there was a significant increase in the proportion of extra marital births by mothers of every age according to declarations of both parents and a decline in the proportion of extra marital births according to declarations of the mother only. Moreover, the biggest proportion of extra marital births according to declaration of the mother only came from mothers of 45 and older.

Figure 4.22. Rates of extra marital births and registered marriage births (‰) in Georgia[63]



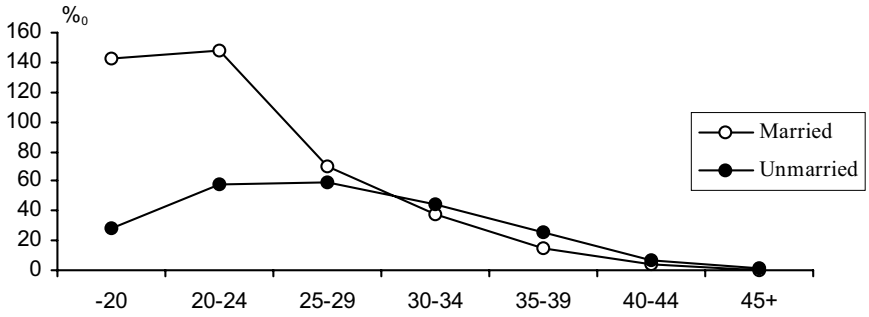
Still in 1979 rate of extra marital births was very low and significantly lower than the rate of registered marriage births. Even by 1989, the level of extra marital births had significantly increased, and registered marriage births – had declined, though it was still 2,5 times more compared to the level of extra marital births. In the 1999s, the number of extra marital births continued to rise, but the number of registered marriage births declined . As a result of this, levels of extra marital births and registered marriage births were quite close, although registered marriage births were still somewhat higher in 1999. (see Figure 4.22).

If the rate of extra marital births had not increased and had stayed at the same level as it had been in 1989, there would have been 4,200 less births in Georgia in 1999.

These data do not allow us to speak about birth intensity by marital status. This can only be done by looking at age rates.

Let's see what is the situation in this direction in 1999 (see Figure 4.23.).

Figure 4.23. Birth rate by age of mother in Georgia, in 1999 according to marital status[64]



[63] 1979-1989 is taken from M. Bekaia, G.Tsuladze, Z.Gokadze, and G.Meladze. Quoted work, p.104. 1999 is calculated by us on the basis of data by the SDSG and research of households.

[64] Calculated by us on the basis of data by the SDSG and research of households.

As we can see, despite the fact that there are more extra marital births in the age group of mothers under 20 than in registered marriages, birth intensity is much higher (5,2 times) in married couples as a whole than in unmarried couples.

Generally, the intensity of fertility of married women under 30 is higher than in unmarried women of the same age. In the age group of 30 and over birth intensity of unmarried women is higher than of married women.

From the1999 data, according to our estimates, a married woman will have during her lifetime 2,1 children on average, while an unmarried woman will have 1,1, or less.

4.8. Family Planning

Family planning is basically about deciding on what size one's family should be. In particular, it involves deciding about the particular number of children to have, and how to realize this [65].

Family planning is a relatively new phenomenon in Georgia, but is becoming more popular. [66].

Family planning aims to have the desired number of children, to avoid undesirable pregnancy, to chose and follow protogenetic and intergenetic intervals. As a result of family planning there are decreases in mortality, improvements in health conditions of babies and mothers, and declines in secondary sterility, etc[67].

Information about the different aspeacts of family planning, legal abortions and the spread of contraceptives is supplied by Health Statistics. It does not give the complete picture of actual situation, though. The information is rather incomplete and only gives a superficial view of the real situation concerning contraception and abortion.

To obtain more reliable information one needs to carry out wide ranging research in this area, which is rare, though research of this kind was carried out in the1990s [68] and we can use its results.

Before we start to consider the results of this research, we think it proper to show the official data from Health Statistics about legal abortions.

---

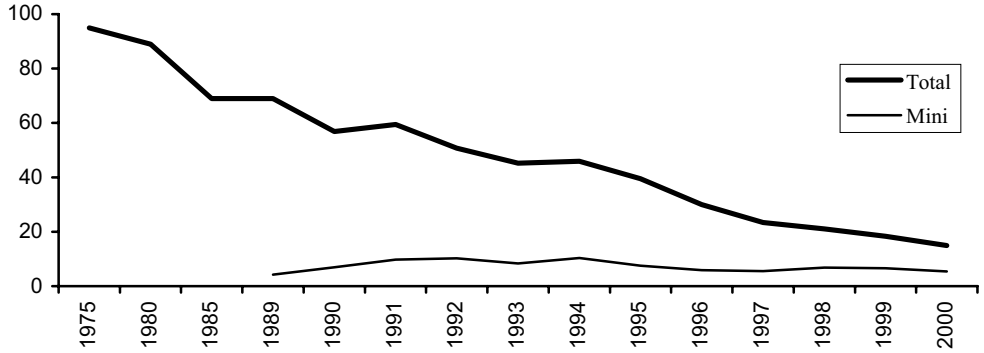
[65] Concise Demography Encyclopedic Dictionary Tbilisi, 2000, p.219 (in Georgian).

[66] ibid.

[67] ibid.

[68] Family planning and reproductive health situation in Georgia. Evaluation of the situation. Final report. D.Khubua. International foundation "Curatio". 1996.(in Georgia).
Women's reproductive health survey Georgia, 1999-2000. Final report. F.Serbanescu, L.Morris, N.Nutsubidze, P.Imnadze, M.Shahnazarova (CDC, UNFPA, UNICEF, UNHCR, USAID, AIHA). Tbilisi, 200, (in Georgian).

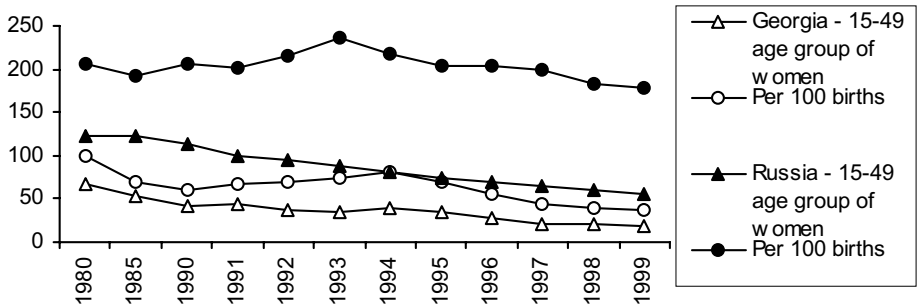
Figure 4.24. Number of legal abortions (total and mini) in Georgia by CMSI (Thousand)



As we can see, the absolute number of abortions in Georgia, if we do not take minor changes into consideration, was constantly declining (see Figure 4.24.). Most significant, was the decline in abortions in the1990s. In 2000,compared to 1990, the number of legally induced abortions decreased by four times in Georgia. The decrease was not caused by an increase in the number of mini abortions. The number of mini abortions, which reached its maximum in 1991-1994, in 1995-2000, fluctuated between 5,500 and 7,500. At the same time from 1995 to 2000, the total number of abortions declined from 39,500 to 15,000.

The absolute number of abortions does not indicate the level of its diffusion. Different indicators are used in order to determine the level of the abortion diffusion and its intensity. This is estimated by such indicators as the number of abortions per 1000 women between the ages of 15and 49, and the number of abortions per 100 births. For the purpose of comparison, we will bring corresponding data from Russia (see Figure 4.25.).

Figure 4.25. Legal abortions (total) per 1000 women at ages of 15 and 49, and 100 births in Georgia and Russia[69]



In Georgia, the number of legally induced abortions per 1000 women at age 15 to 49 in 2000 compared to the previous period significantly decreased. The same tendency is seen with abortions per 100 births.

[69] Data for Georgia are calculated by us. Number of 15-49 age group women is taken by our estimated data. Live births including 1995 – by SDSG, 1996-1999 –by estimated data.
Data for Russia – Population of Russia 1997. Editor A.G.Vishnevski. M. 1998, p.60 (in Russian).
Population of Russia 2000. Editor A.G.Vishnevski. M. 2001, p.51 (in Russian).

In Russia, the comparative figures were and are much higher.

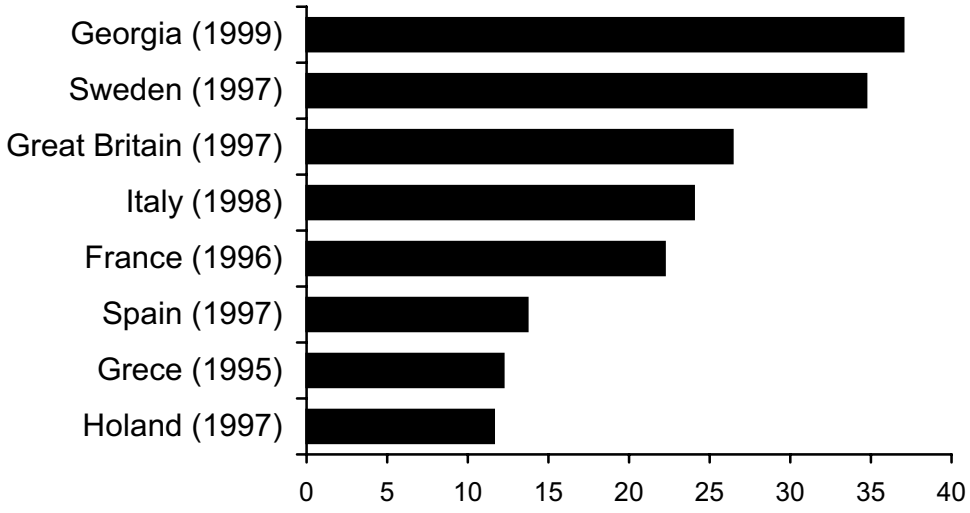
Compared to Georgia, in many countries of the world, the number of abortions per 100 births was lower (see Figure 4.26).

In 2000, compared to 1999, the number of abortions both per 1000 women at age 15 to 49 and the number of abortions per 100 live births (to 29,9) declined in Georgia.

At the same time, the age rate of legally induced abortions, which is the best indicator of abortion frequency, declined.

The rate of legal abortions and the total abortion rate in Georgia were rather low. For example, the total legally induced abortion rate in Georgia in 1999 was equal to 0,606, while in Russia it was 1,950[70], or three times more. By 2000, the total abortion rate in Georgia declined even more and made up 0,503.

Figure 4.26. Number of legally induced abortions per 100 live births in Georgia and other countries[71]



If we judge according to the official data and calculations based on them the situation in Georgia regarding the diffusion of abortions is not very bad. Unfortunately, the situation changes essentially if we take into view the results of certain research.

In 1999-2000, wide ranging , representative research was carried out in Georgia. The results enabled us to determine abortion diffusion and other issues[72].

If we compare the results of the mentioned research to the official data concerning abortions we will see significant differences (see Figure 4.27.).

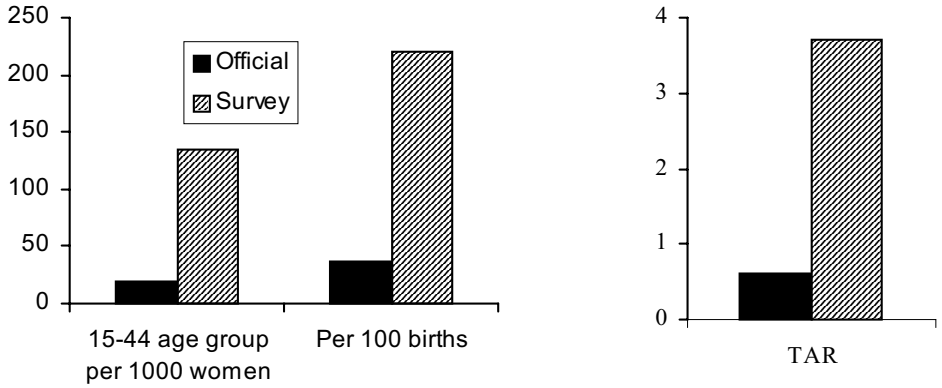
For the researched data, women of between 15 and 44 were questioned. Abortion indicators were calculated per 1000 women of this age, whilst official data were based replies from women aged between

[70] Population of Russia, 2000. Resp. Editor A.G. Vishnevski. M., 2001.p.53. (in Russian).
[71] Calculated by us. Source: Recent demographic development in Europe. 1999. Strasbourg, 1999.
[72] Women's reproductive health survey, Georgia, 1999-2000. Final report. F.Serbanescu, L.Morris, N.Nutsubidze, P.Imnadze, M.Shahnazarova (CDC, UNFPA, UNICEF, UNHCR, USAID, AIHA). Tbilisi, 2001, (in Georgian).

15 and 44. At this time, the official indicator of abortions per 1000 women at age 15 to 44 was somewhat higher than for women aged from 15 to 49 and was 20,0 instead of 17,4.

Thus, it can be seen from the results of the research that of 1000 women aged from 15 to 49, seven times more had induced abortions than according to official data. Also, there were six times more induced abortions per 100 live births and total abortion rate was six times more compared to official data.

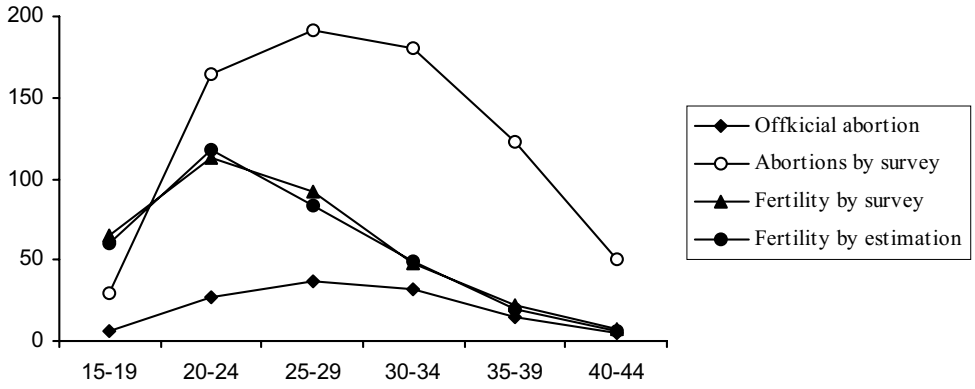
Figure 4.27. Number of abortions per 1000 women at age 15 to 49, per 100 live births and total abortion rates according to official data and to the results of research[73], Georgia, 1999



The results of the research indicate that Georgia has the highest abortion indicators, and according to the frequency of abortions is ahead of such countries as Russia, Byelorussia, Romania, Cuba and Vietnam, which are considered to be the world "leaders".

The difference in the age specific abortion rate between official data and research results is very high, which is shown in Figure 4.28. Here we can also see the age specific birth rate according to the results and our estimates.

Figure 4.28. Age-specific abortion rate according to the results[74] and our estimates and age-specific fertility rate according to the results[75] and our estimates (‰).



[73] ibid, p.57.
[74] ibid, p. 59.
[75] ibid, p. 32 (three year period 1997-1999).

Our estimates, for the purpose of comparison, take age specific birth rates for a three-year period (1997-1999).As we can see, age specific birth rates, which were obtained by research results and by our estimated data, are quite close to each other.

For every age group, the age specific abortion rate obtained by research results is much higher than according to official data. Particularly so, for the women at the age of 35 and more. Age specific abortion rates for women younger than 35 are, according to the results obtained by the research, 5-6 times higher than the official figures, and 8-10 times for the age group of 35 and older.

According the results obtained by the research, abortion intensity is higher than birth intensity

The results obtained from the research indicate that only 16% of abortions are legally induced, and 84% are illegal.

At the same time according to the same results obtained by the research 3,6% of abortions w outside the System of Healthcare. This means that 96,4% of abortions was made within the Healthcare system[76].

From comparison of the last data and a very low of legally induced abortion share it comes out that great majority of abortions (96%) is made within the system of Healthcare, but only a small part of them is fixed. Survey results show that 96% of abortions are carried out at hospitals

Women who had at least one abortion during their life times and at the same time had one child had 2,6 abortions on average, those who had two children, 4,0 abortions, and those who had 3 and more children had 4,7 abortions[77].

65,8% of women gave the reason for having an abortion as not wanting to have more children, 20,1, social-economic conditions and 8,6% said that they did not want to have children yet. The share of the rest of the reasons was insignificant (5,5%).[78]

It should be noted that almost half of pregnant women (48,9%) considered their last pregnancy to be undesirable and the great majority of abortions (83,1%) were performed for this reason. [79].

As can be seen, artificially induced abortion is the main method of family planning in Georgia at the end of the Twentieth Century. Whatever the reasons for having an abortion, it is clear that practically no measures were used to prevent an undesired pregnancy.

Let's see what is the picture concerning this matter (Table 4.4.).

The great majority of women (95%) are aware about this or that method of contraception. At the same time, the majority of women are aware more about modern methods of contraception than of traditional ones.

Most women have heard about IVM and condoms, but few know about emergency and inject able contraception.

[76] ibid, p. 71.
[77] ibid, p.64 (calculated by our data).
[78] ibid, p. 81.
[79] ibid, p.50.

Among married women, compared to women of other marital statuses, those who have heard about contraception know how to use it and use one form or another.

Generally, the majority of women, both married and unmarried know how to use contraceptives. Modern methods of contraception are more known than traditional ways.

In Georgia in 1999-2000, only 40,5% of married women use any form of contraceptive method. The same number of women uses modern and traditional methods. The biggest number practices withdrawal.

Table 4.4. Awareness of contraception among the women of the 15-44 age group and use of contraceptives. (Georgia 1999-2000)[80].

Contraception	Is aware		Knows rules		uses at the moment	
M	Total	Married	Total	Married	Total	Married
Any method	a1 eF	amc8	mmca	88c8	24cm	40d
Modern methods	a4ca	amc4	m3d	82c3	F2eF	Fac8
Among them						M
Condom	88d	a0c8	62e2	68e2	3ca	6c3
IVM	a2c6	a6d	6Fc8	mFc3	1 ca	acm
Pills	6md	m3c0	30eF	3mcF	0c6	Fc0
Tubal ligation	43d	1 Fc3	30eF	36c3	Fc0	Fc6
Vasectomy	F2e4	F4c3	8ca	F0eF	0eF	0eF
Spermicidal	FFc3	F3d	mc0	8c3		
Injectable (depo-provera)	4c3	4c6	2c6	3d		
Emergency contraception	4eF	4d	2cm	2ca	0c6	Fc0
Traditional methods	6ae4	81c0	1 2eF	6ac3	F2e6	20cm
Among them						M
Calendar	64ca	mac6	43c0	1 6cm	6e2	F0e2
Withdrawal	1 0c3	66c3	3mca	1 2c0	6e4	F0d

In the cities, especially in Tbilisi modern methods are used, while in rural areas, traditional. The percentage of married women using contraception even in Tbilisi is only 45%[81].

The higher the educational level of a woman and her income, the higher the usage of contraception[82].

The majority (85,2%) of married women is satisfied with the modern method they use, and only a small part (14,8%) express dissatisfaction for various reasons[83].

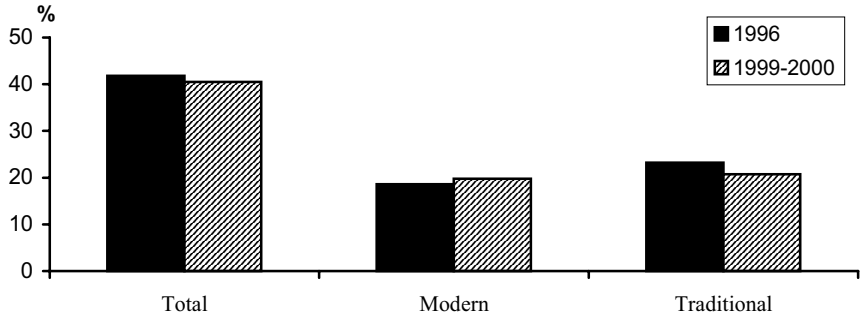
Only 22,4% of married women are going to use any form of contraceptive method in the next year, and 15,9% declared that they would use contraception later. The majority 61,7% does not want to or has not decided yet to use contraception[84].

Concerning the usage of contraception, we have the possibility to compare results of two abovementioned researches in Georgia. One was carried out by the international foundation, "Curatio," in 1996, within

[80] Ibid, p. 126,130,139.
[81] Ibid, p.141.
[82] Ibid,
[83] Ibid, p. 146.
[84] Ibid, p. 159.

the confines of UN Development Program, and the other in 1999-2000, some results of which were discussed above[85].

Figure 4.29. Proportion of married women of fertile age, using contraceptive methods: Georgia, 1996 and 1999-2000[86]

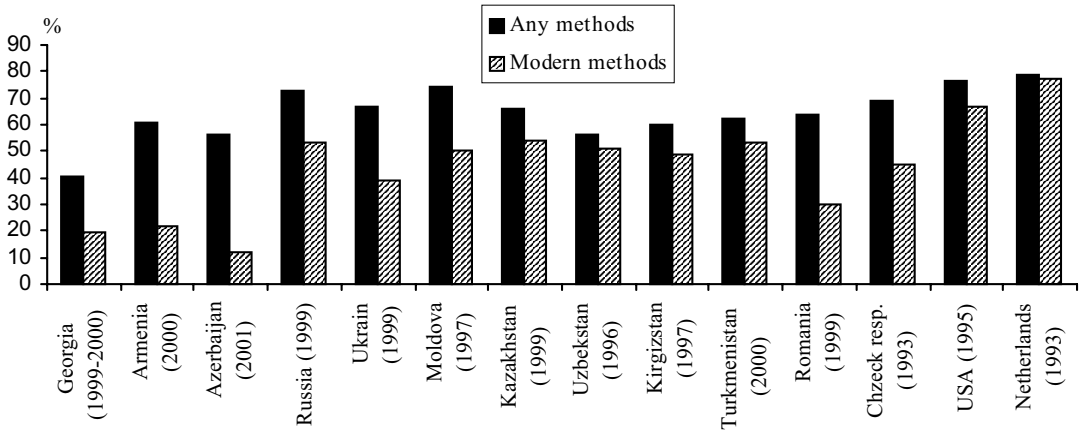


As we can see from Figure 4.29, during the past 3-4 years there were no essential changes regarding usage of contraception in Georgia. Those minor differences, which were noticed during the research, could have been due to errors in the sample surveys.

It is clear from the results of both researches that only 41-42% of married women of fertile age use contraception. And of them, more give preference to traditional means than to the modern methods.

At the same time for example in Kazakhstan from 1995 by 1999, the proportion of women at the age of 15-44 increased from 59% to 66% and the contribution of women using modern methods of contraception increased from 46% to 54%[87].

Figure 4.30. Proportion of women of fertile age (%) using contraception, modern methods of contraception among them in Georgia and other countries[88]



[85] Family planning and reproductive health situation in Georgia. evaluation of the situation. Final report. D.Khubua. International foundation "Curatio". 1996.
Women's reproductive health survey Georgia, 1999-2000. Final report. F.Serbanescu, L.Morris, N.Nutsubidze, P.Imnadze, M.Shahnazarova (CDC, UNFPA, UNICEF, UNHCR, USAID, AIHA). Tbilisi, 2001, (in Georgian).

[86] Source: 1996-M.Bekaia, G.Tsuladze, Z.Gokadze, G.Meladze. Quoted work, p.138 (this part of the work is executed by E.Gachechiladze).

[87] Women's reproductive health survey, Georgia, 1999-2000. Tbilisi, 2001, p.139.

[88] ibid, p.139, also Population of Russia 2000. Resp.Editor A.G.Vishnevski.M. 2001,p.58 (in Russian).

It should be noted that compared to other countries, in Georgia the proportion of married women using contraception, especially using modern methods, is very low (see Figure 4.30).

Low usage of contraception in Georgia means that abortion remains as the main means of family planning, which has a strong damaging impact on a woman's reproductive health.

4.9. Reproductive Behavior[89]

Many works have been dedicated to reproductive behavior, its theoretical and methodological aspects, not only in foreign countries, but in Georgia too[90].

Therefore we will not discuss them below. We have noted that reproductive behavior involves a person's activity, directed to satisfying the need of having children[91]. As a result of reproductive behavior we have a certain number of children.

In Georgia more than 30 studies on reproductive behavior have been carried out. They covered practically all aspects of reproductive behavior but had a local focus.

That is why we will pay attention to the results of the country-wide sociological-demographic research[92].

Researches of this range, which have been widely described in special literature, are very rare. Besides, such studies only focus on one issue. In 1972, it was the expected number of children.

In 1980, compared to 1969, the average ideal number of children significantly declined and by 1996 it declined even more. At the same time from 1969 to 1980 the ideal number of children declined to a greater extent on average than in 1980-1996 (see Table 4.5).

Table 4.5. Changes in the number of children of married women in Georgia[93]

Number of children	Year			
	1969	1972	1980	1996
Ideal	3.95		3.30	3.02
Desirable			2.81	2.68
Expected	2.88	2.91	2.45	2.25

[89] This part with minor corrections is fully taken from the work by M.Bekaia, G.Tsuladze, Z.Gokadze, G.Meladze:Family crisis in Georgia and principles of family policy. Tbilisi, 1998, p.112-121. Author G. Tsuladze (in Georgian).

[90] Tsuladeze G. Sociological-psychological studies of fertility. Tbilisi, 1982 (in Russian); Tsuladeze G. Sociological Issues of fertility. Tbilisi, 1984 (in Georgian); Z.Gokadze.Mononational and mixed marriages. Tbilisi, 1992 (in Georgian); Z. Tskhovrebadze. Specialties of formation of reproductive orientations. Dissertation for the title of candidate of economic sciences. Tbilisi, 1993(manuscript) (in Georgian); G.Meladze. Characteristics of reproductive behavior of Tbilisi Population. Dissertation for candidate of economical sciences. Tbilisi, 1994 (manuscript) etc.(in Georgian).

[91] Tsuladze G. Issues of sociology of Fertility. Tbilisi. 1984, p. 7 (in Georgian).

[92] We mean researches of 1969,1972,1980,1996,1998, and 1999-2000. Results of 1998 and 1999-2000 we will not discuss, as the data regarding the issue are inaccurate compared to the results of previous studies.

[93] Here and after: 1969 data are taken from: V.Belova. Number of children in a family. M., 1975 (in Russian).
1972 – How many children will there be in a Soviet family. M., 1977 (in Russian).
1980 – G. Tsuladze. Sociological aspects of fertility. Tbilisi.1984 (in Georgian).
1996 - Family planning and reproductive health in Georgia. Tbilisi. 1996 (in Georgian).

Apart from the average size decline in the given case, changes in the norms of reproductive behavior connected to fertility in a family should also be noted. 20,9% of women who were married in 1969 thought it ideal to have a family with multiple children (5 and more children) and only 8,8% wanted a family with few children (1-2). The rest wanted the average number of children (3-4).

In 1980 69,7% of women considered a family with the average number of children as ideal. That means that compared to 1969 there was practically no change in this direction. Instead, in 1980 compared to 1969, there was a 2,5 decline in the number of those women who considered a family with multiple children an ideal one. And there was a 2,5 increase in the proportion of women who thought a family of few children an ideal one.

The given data show that as married women re-evaluated their attitudes in the 1970s towards the ideal number of children in a family, there was significant changes in their reproductive norms in the direction of decline.

By 1996 this process had been even further re-enforced, with the proportion of those who considered the ideal family one with few children increasing to 25,6%, and the proportion of those whose ideal was a family with multiple children, declining. The proportion of those who considered a family with an average number of children as an ideal one, did not change. A high proportion of these women (69,9%) viewed a family with the average number of children as normal. However, if such families are divided into components by the number of children, and are considered separately, we will see significant changes.

The thing is that in 1969, 22,1% considered a family with three children an ideal one, and 48,2% thought that four children was the ideal. In 1980, the proportion of families with three children increased to 37,7% and those with four children declined to 32,0%. In 1996 the proportion of those who considered a three-child family ideal increased even more and made up 49,8%, and the proportion favoring four children declined to 20,1%.

Thus significant inter structural changes took place over thirty years in Georgia – an increase in the proportion of those who found a family with three children best and a decline in the proportion of those who found a family with four children an ideal one.

Supposedly, the process will continue in future. First there will be a further increase in the proportion of three children families and a decline in the proportion of four children families. , This shift towards fewer children will lead to the establishment in Georgia of reproductive norms of having few children in a family.

The desirable number of children also underwent changes. In 1980 the desired number of children for married women in Georgia was on average enough to increase the population, but in 1996 it could guarantee only the replacement level fertility of the population.

The expected number of children in Georgia in 1969-1972 on average was similar to it and could ensure expanded reproduction of the population. It seems that, its decline below the necessary limit of replacement level fertility of population began after 1972 and by 1980 its amount was not enough for reproduction.

We should note that the expected number of children is a prognostic indicator, which indicates the possible situation in future and not the situation in the given year.

In 1980, the fertility rate in Georgia could ensure expanded population reproduction, which is shown by the Total Fertility Rate and Reproduction Net Rate. In 1980 the average expected number of children pointed an expected decline of fertility level, to the point, which could not ensure even replacement level fertility of population.

By 1996, compared to 1980, the average expected number of children declined even more. Table 4.5 shows the expected number of children for the nearest five years. It must be noted that on average the expected number of children in the nearest five years will not be reached and will turn out to be less than planned by women. The thing is that while giving the numbers, women were hopeful and did not (or could not) take into view primary sterility, which makes up about 5%. Maybe because of this, every woman thought that in the coming five years she would have a child, though because of sterility of them remained childless. Taking into this account, the expected number of children in five years will turn out to be less and will not be more than 2,15 on average[94]. Besides, it is possible that other unfavorable problems, which will decrease the average number of mentioned children even more, will appear.

The difference between the desired and expected number of children shows the degree of realization of the desire of having children.

By 1980 the difference between the desired and expected number of children was equal to 0,36. In 1996, 0,43 (for the nearest five years) and if we consider sterile women, then the figure is 0,53.

In 1980 in Georgia married women cited health conditions as the main reason for not having the desired number of children. Material reasons were less important[95].

By 1996 the situation had changed and the dire social-economic conditions of the 1990s named as unfavorable reasons for having a child.

In one case, the difference between the desired and expected number of children, though insignificantly, increased.. In another case, as a result of this by 1996 material reasons were always present as unfavorable for having children[96].

As it was mentioned above, the expected number of children mentioned before will not be realized on average. From the corresponding analyses in Georgia in 1980, the average expected number of children given by women at the age of 30 was 2,5, but by 1996, which is actually 16 yeas later at the end of fertility period, was actually only 2,2. Initial expected number of children eventually turned out to be less by 0,3.

The difference between the desired and expected number of children, in Georgia varies between 0,4-0,5. The final decline in the expected number of children was 0,3, and so the desired number of children will be actually realized less by 0,7-0,8.

Table 4.6.shows the changes in the expected number of children in Georgia, over 60 years, by marriage years.

---

[94] Family planning and reproductive health in Georgia. 1996. p.12-13. Given part of the work is written by G, Tsuladze and E.Gachechiladze (in Georgian).

[95] Tsuladze G. Issues of sociology of fertility. Tbilisi, 1984. p.85 (in Georgian).

[96] Family planning and reproductive health in Georgia. 1996.p.12. (in Georgian).

The expected number of children of married women in the first half of the 1930s and the 1940s on average was quite high, despite the fact that there were certain changes, but in total it somewhat declined. Decline in the expected number of children continued in the following period as well. In 1950-1964 it underwent less changes for married women . It declined a little in 1965-1969 among married women.

It should be noted that the expected number of children despite definite changes among married women in 1930-1934 and in 1965-1969 underwent decline. On average during the 35-year period it declined by 0,52 children, but despite this its size was still enough for expanded population reproduction.

Table 4.6. Average expected number of children for married women by the year of marriage in Georgia[97]

Marriage years	Expected number	Marriage years	Expected number
1930-1934	3.28	1965-1969	2.76
1935-1939	3.00	1970-1974	2.50
1940-1944	3.08	1975-1979	2.35
1945-1949	2.93	1980-1984	2.30
1950-1954	2.86	1985-1989	2.25
1955-1959	2.84	1990-1994	2.10
1960-1964	2.82	1995-1996	1.90

The situation in 1970-1974 among the cohort of married women changed. Their average expected number of children could not ensure even replacement level fertility of population , and the future pointed to the possibility of establishing a regime not enough even for reproduction.

In the following years the expected number of children for the cohort of married women continued to decline. At first slowly, but from the 1990s compared to the previous period quickly.

In 1995-1996 the expected number of children for the cohort of married women made up less than 2 children, which is an extremely small size. Moreover, as we have mentioned above, even this is unlikely to be fully realized.

The decline in the ideal, desired and expected number of children by birth cohorts was important. Figure 4.31 gives a clear idea of this (the straight line is the limit of replacement level fertility).

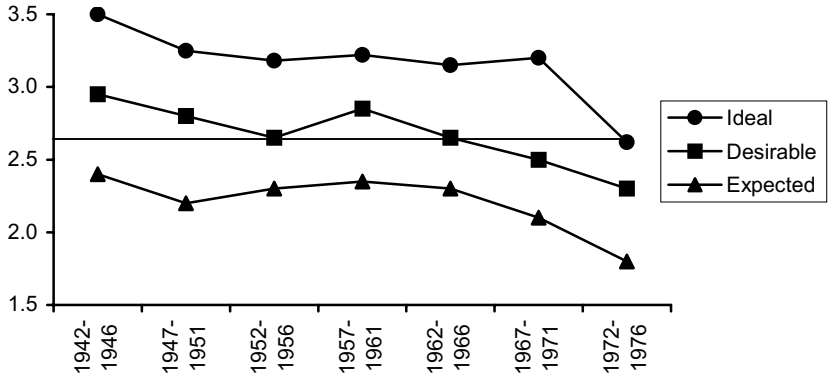
The ideal number of children for women born in 1947-1951 and now in marriage was less on average compared to the indicators of 1942-1946.

Reproductive norms and certain changes in the need to have children of the women born in 1947-51 were characterized by fluctuation. The ideal and desired number of children by women born in 1952-1956 was on average less than for those women born in 1947-1951, though corresponding indicators for those born in 1957-1961 were characterized by increase and reached the level of indicators for the women of 1947-1951.

[97] 1030-1969 taken from work – How many children will there be in the Soviet family. M., 1977, p.102 (in Russian). 1970-1990 – calculated by us on the basis of the following works: G.Tsuladze. Issues of sociology of fertility. Tbilisi, 1984, p.59-60; Family planning and reproductive health in Georgia. 1996, by him (in Georgian).

Characteristic, quantitative and qualitative changes began with the cohort of women born in 1962-1966. Their desire to have children declined to the limit needed for the replacement level fertility and the desire to have children of the next cohort is below this limit, which points to a situation where the reproduction of the population is not achieved. Moreover, with the cohort of women born in 1962-1966 there is constant decline in the wish to have children[98].

Figure 4.31. Number of children by birth cohorts in Georgia



Similar tendencies were observed in the case of the expected number of children, in the cohort of women born in 1957-1961.

The expected number of children in every cohort from 1942 was on average not enough even for replacement level fertility of population.

Thus, it can be seen , that in Georgia in the 1990s the basis for the decline in fertility to the limit lower than replacement level fertility of population was laid by reproductive behavior of the cohort of women born in 1940, who were married in the 1970s. It should be noted that the desire to have children among women born at the beginning of the1960s on average is not enough even for replacement level fertility of population and has a tendency for further decline.

[98] Family planning and reproductive health in Georgia. 1996, p.14 (in Georgian).

V

MORTALITY AND LIFE EXPECTANCY

Mortality is one of the basic components, which together with the rate of birth determines population size.

A number of matters related to mortality are considered below.

Special emphasis is placed on an approximate determination of the mortality level.

This is because in the 1990s deaths registration-related problems were first introduced and an incomplete registration of deaths was on a rather large scale.

5.1. Possible Level of Mortality

A determination of a possible level of mortality means an approximate determination of the general value of the Crude Death Rate.

An approximate determination of the crude death rate is based upon rather simple calculations. For instance, we are interested in determining the crude death rate for 1999.

Until the 1990s, 1989 was the last year when trusty mortality data were received. In 1989 the census of the population took place and the data concerning the age and sex composition of the population were received. At that time the registration of deaths was carried out much more precisely than it was in the 1990s.

If we assume that in 1999 the value of the mortality factor in basic (large) age-sex groups was the same as it had been in 1989, then it is possible to calculate an approximate crude death rate, by taking into consideration only the structural changes of the population during the given period.

Special emphasis is placed on large age groups due to the fact that in certain groups with less age intervals there are greater possibilities of variation (increase or decrease) in the intensity of mortality. While in the large age groups, increases or decreases are more or less balanced by each other.

In calculating the crude death rate it's necessary to multiply the age share (%) of the population by the relevant age-specific mortality rates (the constant values). The total gives the crude death rate, indicated along "Total 100,0 (%)" in the Table, below.

Table 5.1.provides the data on an average age-and-sex distribution (%) of the population of Georgia (excluding Abkhazia and the Tskhinvali region). The information comes from estimates made by the Demographic Statistics Division of the State Department for Statistics of Georgia (SDSG), households research, the authors of this work, and SDSG data on age-and-sex distribution (%) in 1989 and relevant age-specific mortality rates.

In the same Table, in the column "Actual – SDSG", the 1999 age distribution, the relevant age-specific mortality rates, the crude death rate as evaluated by the SDSG and corresponding data for Sweden, are provided.

According to the data given in the Table, the value of the crude death rate in 1999 (for both sexes), assuming that the 1989 age-specific mortality rates for age groups remained unchanged, is 11,2 – 12,1 (by various versions).

The lowest value of the crude death rate is based upon the data provided by the SDSG Demographic Statistics Unit regarding the population's structure. It is less outdated than the other comparable structures. The highest value is based upon the studies of the households' structure conducted by the SDSG, which is considered as the most outdated according to the above studies. The estimated crude death rate takes a middle position between the two values.

Table 5.1. Value of crude death rate in accordance with age-specific distribution of the population, assuming unchanged age-specific mortality rates in 1989, and actual mortality rates

Age group	Both sexes		Male		Female	
	Composition (%)	Mortality rate (‰)	Composition (%)	Mortality rate (‰)	Composition (%)	Mortality rate (‰)
1989 (according to Census)						
-15	24.8	1.9	26.6	2.2	23.1	1.7
15-64	66.3	4.5	67.2	6.4	65.6	2.9
65+	8.9	59.0	6.2	70.4	11.3	53.3
Total	100.0	8.7	100.0	9.3	100.0	8.3
1999 (according to SDSG data)						
-15	20.4	1.9	22.1	2.2	18.9	1.7
15-64	66.3	4.5	67.2	6.4	65.4	2.9
65+	13.3	59.0	10.7	70.4	15.7	53.3
Total	100.0	11.2	100.0	12.3	100.0	10.6
1999 (SDSG – household survey)						
-15	17.8	1.9	19.2	2.2	16.5	1.7
15-64	67.4	4.5	68.1	6.4	66.8	2.9
65+	14.8	59.0	12.7	70.4	16.7	53.3
Total	100.0	12.1	100.0	13.7	100.0	11.1
1999 (estimation)						
-15	20.8	1.9	22.8	2.2	19.0	1.7
15-64	65.1	4.5	65.4	6.4	64.8	2.9
65+	14.1	59.0	11.8	70.4	16.2	53.3
Total	100.0	11.6	100.0	13.0	100.0	10.8
1999 (Actual - estimation)						
-15	20.8	1.6	22.8	2.0	19.0	1.3
15-64	65.1	4.7	65.4	6.6	64.8	3.0
65+	14.1	61.7	11.8	68.2	16.2	57.6
Total	100.0	12.1	100.0	12.8	100.0	11.5
1999 (Actual - SDSG)						
-15	20.4	1.0	22.1	1.1	18.9	0.8
15-64	66.3	3.5	67.2	4.8	65.4	2.2
65+	13.3	45.3	10.7	50.9	15.7	41.8
Total	100.0	8.6	100.0	8.9	100.0	8.2
1997 (Actual – Sweden)[1]						
-15	18.6	0.3	19.4	0.4	18.0	0.3
15-64	63.9	2.2	65.7	2.8	62.1	1.7
65+	17.5	51.9	14.9	58.8	19.9	46.9
Total	100.0	10.5	100.0	10.7	100.0	10.4

[1] Demographic Yearbook , 1999. UN, N.Y., 2000, p. 210, 435, 474.

The actual estimated data in the Table show that in 1999, age-specific mortality rates for both sexes under 15, decreased insignificantly in comparison with the relevant data in 1989, while the age-specific mortality rates for the 15-64 age group (both sexes) increased. The mortality rate for females over 65 increased, while for males of that age it decreased somewhat. In total, the these rates, in line with the structural changes, resulted in a considerable increase in the crude death rate.

A significant decrease in the age-specific mortality rates is conditioned by the data provided by the SDSG, stating that despite considerable structural changes (a demographic outdating), the 1999 crude death rate has not changed in comparison with the 1989 crude death rate. The similar data for Sweden, given in the Table as an example only, show that the population of that country is more outdated than it is in Georgia. However, the Mortality Factors in Sweden are lower.

The age-specific mortality rates of the under-65 Swedish population are also lower in comparison with the similar data fixed by the SDSG. However, the SDSG data state that the mortality rates of 65 and above age groups in Georgia are lower than in Sweden.

The above mentioned causes certain doubts.

The fact is that Sweden is a developed nation where the health and social systems are well developed . Therefore, the low mortality rate characterizing this country is considered as an exemplary one throughout the world.

Thus, it's doubtful that the age-specific mortality rates for 65 and older age groups in Georgia are lower than in Sweden, as stated in the data of the SDSG.

Such a situation may be caused by an incomplete registration of deaths on the one hand and by overestimation in recording the actual size of the population, on the other hand.

Both are true of Georgia.

If we were to use the estimated structure of the population of Georgia and the age-related mortality factors in Sweden, then the crude death rate in Georgia would have been 8,8‰ in 1999. One the other hand, if we were to use the estimated structure of the population of Sweden and the age-specific mortality rates in Georgia, the crude death rate in Georgia would have reached 14,1‰.
When considering mortality-related problems, special attention should be paid to the reliability of the data relating to the number of deaths.

5.2. Reliability of the Data

Any discussion of mortality must be based on information regarding deaths. The reliability of death registrations is therefore fundamental.

It is well known that throughout the 1990s in Georgia there was a high rate of under-registration of deaths.

We should mention that this is not new for Georgia. Even the period from 1960-1980 is characterized by an under-registration of deaths.

Foreign experts have noted this fact. Under-registration of deaths was common in almost all republics of the former USSR from the period 1960-1980 and earlier. Georgia is no exception.

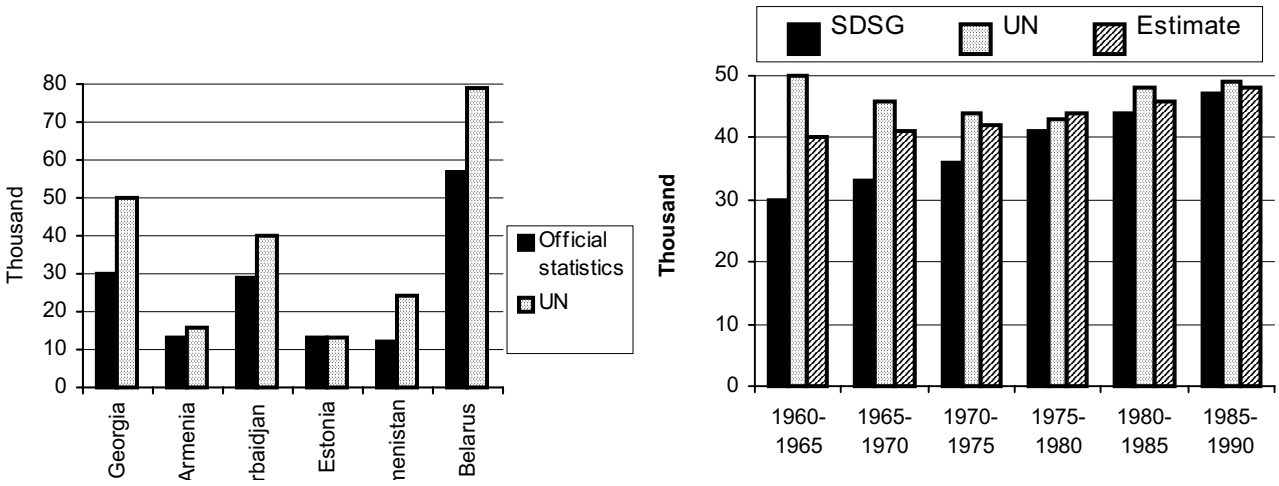
In the 1990s this problem was common in a number of large states. For instance, in Brazil (in 1992) under-registration amounted to 26%, while in Hong-Kong (in 1995) it was 14%[2].

Unfortunately, the under-registration of deaths in the period from 1960 to 1980 was not realized or acknowledged by Georgian scientists until now.

In scientific works for this period and later, the registration of deaths was assumed to be complete and many characteristics of mortality were calculated on the basis of this information.

Figure 5.1. shows the number of deaths for some republics of the former USSR in the period from 1960 to 1965 provided by local statistical offices and by UN experts. The proportion of under-registration deaths is also shown here.

Figure 5.1. Number of deaths for some republics of the former USSR in the period from 1960 to 1965 provided by local statistical offices and by experts from the UN, also shown as the proportion of under-registered deaths[3].



As per Figure 5.1., about 20,000 deaths were not registered in Georgia per year in the period of 1960-1965, according to the UN experts, while the share of under-registration amounted to 40%. The latter is rather high, but is less than it is in the Central Asian countries.

According to estimates by UN experts, the situation in Armenia and Azerbaijan in the realm of deaths registration was much better than in Georgia.

The best situation, however, was in Estonia and the other Baltic Republics.

Let us consider the number of deaths in Georgia for the longer periods, according to different data. Let us consider the number of deaths for the period 1960 - 1980.

Figure 5.2. shows the number of deaths in Georgia during 1960 - 1980, provided by the SDSG, the UN and according to our estimates . The proportion of under-registered deaths is shown here, also[4].

---

[2] World Health Statistics Annual (WHO). Geneva, 1998.

[3] Figure 5.1. is based on the following sources: Population of the USSR 1987. Statistics annual. Moscow, 1988. pp.112-126 (in Russian); World Population Prospects. The 1998 Revision. Volume 1: Comprehensive Tables. UN, NY., 1999, pp. 82, 88, 98, 182, 200, 406.

[4] Figure 5.2. is based on the following sources: 1) Estimates by the authors of the present work; 2 (G. Tsuladze, N. Maglaperidze, A. Vadachkoria. Demographic Yearbook of Georgia, 2000. Tbilisi, 2001, pp. 24-25. 3) World Population Prospects. The 1998 Revision. Volume 1: Comprehensive Tables. UN. N.Y., 1999, p.200.

As estimated by the UN experts and the authors of the present work, the whole period in question (1960-1980)was characterized by an under-registration of deaths.

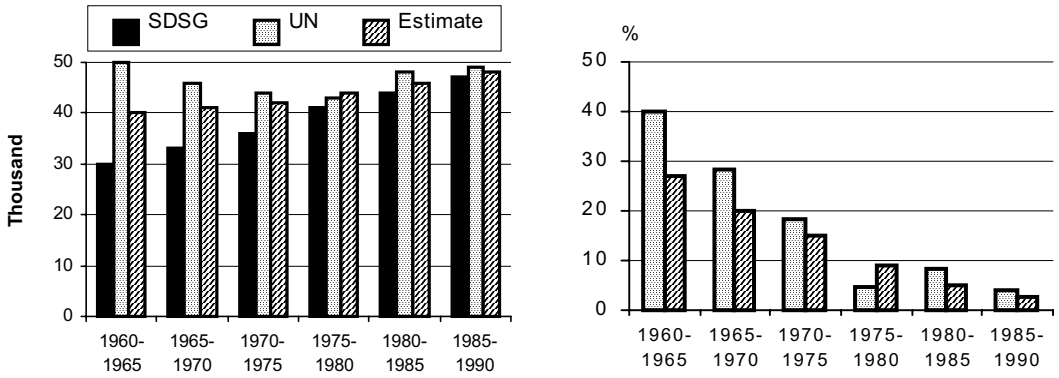
According to these estimates, death registration was improving after 1960, although UN estimates it somewhat worsened in the period from 1980 to 1985 before improving again at the end of the 1980s. UN estimates are higher than ours.

The reasons for this are considered below.

In the period from 1960 to 1980, the number of deaths was 1,185,000 according to the SDSG estimates, 1,350,000 by our estimates and 1,400,000 by UN estimates.

In the period from 1960 to 1990 in Georgia, 215,000 deaths (15.4%) were unregistered according to the UN, and 165,000 (12.2%) according to our estimates.

Figure 5.2. Number of deaths, provided by the SDSG, the UN and the authors' estimates, also shown as the proportion of under-registered deaths.



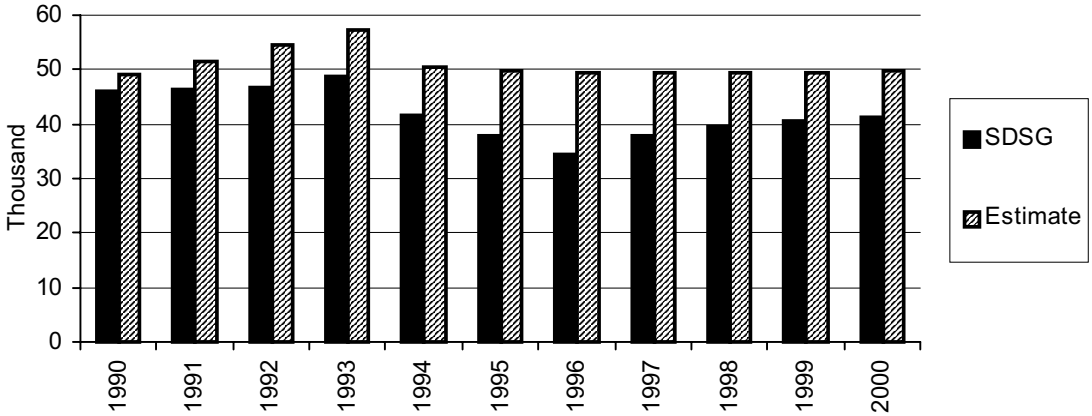
As mentioned above, the deaths registration is Georgia was improving beginning from 1960 and by the end of 1980s it was 99% complete.

However, in the 1990s, due to massive political, social and economic changes, the statistical office's ability to accurately register deaths as well as other demographic events became worse.

Compared with the 1980s and even with the1970s, the 1990s were characterized by an increased level of under-registration of deaths.

Figure 5.3. shows the number of deaths in the period from 1990 to 2000, provided by the SDSG and by our estimates, respectively.

Figure 5.3. Number of deaths in Georgia in the period from 1990 to 2000 provided by SDSG data and the authors' estimates.

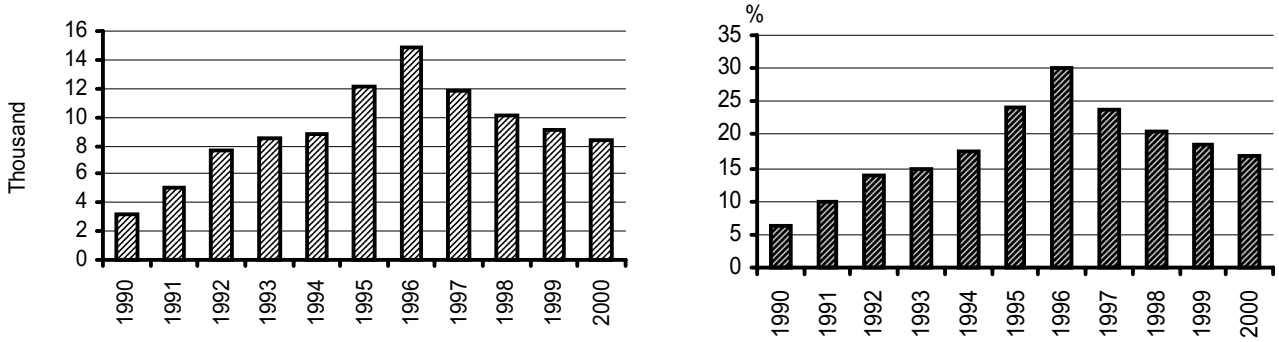


As we can see from Figure 5.3., a difference in the number of deaths between the SDSG and our estimates exists for the whole period from 1990 to 2000.

Figure 5.4. shows the under-registration of deaths (number and proportion), due to the above mentioned differences.

As follows from Figure 5.4., the under-registration of deaths increased after 1990, reaching a maximum in 1996, and decreased thereafter, although it remained at a high level.

Figure 5.4. Under-registration of deaths in Georgia during the period 1990-2000 (authors' estimates).



The Center for Medical Statistics and Information and the Department for Mothers and Children Health Care at the Ministry of Health of Georgia, in line with the Demographic Statistics Division of the SDSG have conducted special optional research.[5].

[5] Health Care. Georgia, 1999. Statistical Bulletin. Tbilisi, 2000, pp.136-143 (in Georgian).

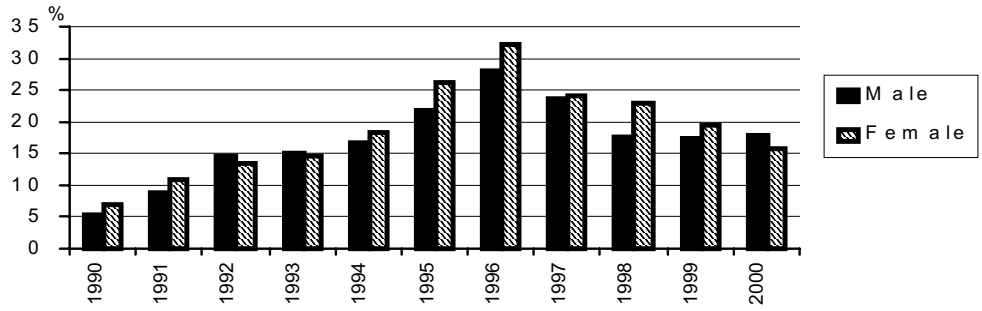
The results of this research show that about 17,6%[6] of the total number of deaths in 1998 was not registered by Citizens Registration Bureaus, and consequently, they did not appear in the respective statistical data.

According to our estimates, the under-registration of deaths in 1998 reached 20,4%

According to our estimates regarding the under-registration of deaths, the period from 1990 to 2000 can be divided into four stages: 1. The period from 1990to 1991 is characterized by increasingly relatively low under-registration; 2. The period from 1992 to1994 witnessed an increasing number of under-registered deaths; 3. The period from 1995to 1997 is noted by a high level of under-registration with a maximum peak in 1996; 4. The period beginning from 1998 is characterized by a decreasing tendency of under-registered deaths.

According to our estimates , a difference exists between the level of under-registration among males and females.

Figure 5.5. Proportion of under-registered deaths by sex in Georgia during the period from 1990 to 2000 (authors' estimates).



We can see from Figure 5.5 that the proportion of under-registration of deaths was higher for females than for males, except for the years 1992-1993 and 2000.

Under-registered deaths in Georgia first came to light in 1997[7]. It was revealed that in 1995 at least 3000 cases of deaths (7,5%) were not registered, while in 1996 at least 5,800 (14,5%) cases went unregistered[8] .

Other revelations have made it possible to calculate the number of deaths more precisely and thus, to determine the extent of under-registration with greater reliability.

[6] Calculated by the authors of this work based upon the data provided by Health Care. Georgia, 1999. Statistical Bulletin. Tbilisi, 2000. p.139 (in Georgian).
[7] G. Meladze, G. Tsuladze. Population of Georgia and Demographic Processes,. Tbilisi, 1997. p.37 (in Georgian).
[8] Ibid. (in Georgian).

Some other estimates of the number of deaths and the under-registration of deaths exist also[9].

Therefore, we may conclude that the registration of deaths in Georgia in 1990-2000 was incomplete.

5.3. Method of Estimation

In previous sections we considered the reliability of data about the number of deaths and mentioned the existence of under-registration of deaths.
To define the level of under-registration of deaths, we needed to estimate the number of deaths as close to the reality as possible. The main purpose here was to calculate the possible number of deaths.

It is clear that estimates by the authors should be based upon a certain method

One such method we used was the Coale and Demeny model life tables[10]. However, some other methods, for instance the UN model life tables, may also be used[11].

The authors of this work do not use it directly. In our case, the Coale and Demeny model life tables seem to be the starting-point upon which corrections in the number of deaths are based. These tables are also used for exercising some control for corrections and re-correction of the relevant data.

Now, let us talk briefly about the Coale and Demeny model life tables.

These tables are based on statistical studies of 326 mortality rate-related tables, in which probabilities and their logarithms of the age-specific mortality rates are represented as the functions of one parameter measuring the mortality level. An average life expectancy at the age of 5 was taken as the parameter. Based on the analysis of deviations of average values of the tables, the typical (model) tables of mortality rates for four regional systems were drawn up: “West” (the most widely used in demographic studies), “North”, “South” and “East”. The Coale and Demeny life tables were published in 1966 (the second edition - in 1983). In 1989 additional model tables were published, in which the modern tendencies of mortality rates are foreseen.[12]

When data is incomplete, one can use a special computer program to estimate age-specific mortality rates[13].

---

[9] I. Badurashvili. Use of Coale and Demeny model life tables for estimating the mortality rates in Georgia in the 1990s. Demography. 2001. 1(3). (in Georgian); Badurashvili Irina, McKee Martin, Tsuladze Giorgi, Mesle France, Vallin Jacques and Schkolnikov Vladimir. – Where there are no data: what happened to life expectancy in Georgia since 1990? Public Health (2001) 115; Yeganyan Ruben, Badurashvili Irina, Andreev Evgueni, Mesle France, Shkolnikov Vladimir and Vallin Jacques. – Life expectancy in two Caucasian countries. How much due to overestimated population? Paper presented in Helsinki, June, 7-9. European Population Conference-2001; Yeganyan Ruben, Badurashvili Irina, Andreev Evgueni, Mesle France, Shkolnikov Vladimir and Vallin Jacques. – Life expectancy in two Caucasian countries. Demographic Research. Volume 5, Article 7, 2001, pp.217-243.

[10] Coale A., Demeny P. Regional model life tables and stable populations. Princeton. 1966; 2nd ed., N.Y. – L., 1983; Coale A., Guo G. Revised region model life tables at very low levels of mortality –“Population Index”, 1989, v.55, N.4.

[11] Age and sex patterns of mortality: Model Life Tables for Under Developed Countries. – “Population Studies”. UN, N.Y., 1955, N.22 .

[12] Concise Demographic Encyclopedic Dictionary. Compiled by G.Tsuladze. Tbilisi, 2000, p.292-293,(in Georgian)

[13] MortPak – The United Nations software package for mortality measurement. N.Y., 1988.

The first attempt to correct the number of deaths in Georgia in the 1990s was made in 1997-1998[14].

Based upon this experience, in 1999, a further correction of the number of deaths was jointly done by France Mesle and Jacques Vallin, leading experts from the National Institute of France for Demographic Studies, Vladimir Shkolnikov, a leading specialist from Russia's Center of Demography and Human Ecology, and Irina Badurashvili, Nika Maglaperidze and Giorgi Tsuladze, who are from Georgia.

The results of these joint activities were duly published[15].

The number of deaths in 1998 and the respective mortality rates were corrected.

Furthermore, the already corrected data of 1998 were somewhat revised , while the 1998 Mortality Rates were applied in calculating mortality rates for the 1990-1997 period[16].

Later, the mortality rates and the number of deaths were specified according to the principles described below.

Based on mortality data for 1989 in Georgia, that is considered as reliable for the estimation of age-specific death rates for the period from 1990 to 2000, it is most reasonable to consider the west model, level 23.

We should mention that for females, level 23 is more acceptable than for males.

The fact is that because of the high mortality of males, even in cases of an under-registration of deaths, age-specific death rates provided by the SDSG are higher in many age groups than the corresponding age-specific death rates in Coale and Demeny life tables.

In the given case, while correcting the mortality rates, the high rate of death for males in 1990-2000 was based on the situation existing in 1989.

Using Coale and Demeny life tables, we corrected age-specific death rates in age groups where they were less than the corresponding age-specific death rates in Coale and Demeny life tables.

To correct , we used the recalculated population structure by age and sex.

The age-specific death rates and consequently the number of deaths were calculated separately for each year.

We made corrections below age 20 and in old ages, where age-specific death rates provided by the SDSG were below the corresponding rates in the Coale and Demeny life tables.

---

[14] Meladze G., Tsuladze G. Population of Georgia and demographic processes. Tbilisi, 1997, pp.35-41(in Georgian); Tsuladze G., Meladze G. Demographic Situation in Georgia. Tbilisi, 1998. pp.19-27 (in Georgian); Pirtskhalava L. Increase of average life expectancy in Georgia in 1990s, as a result of under-registration of deaths and an attempt for its revealing and calculation. 1999 Census in Georgia and the demographic problems; Papers of Scientific and practical Conference. Tbilisi 1998. pp.24-26 (in Georgian).

[15] Tsuladze G., Badurashvili I. Demographic Yearbook of Georgia. 1998. Tbilisi, 1999. pp. 11, 48, 49, 79-80.

[16] Tsuladze G., Maglaperidze N. Demographic Yearbook of Georgia. 1999. Tbilisi, 2000. pp. 58-59, 62-63.

The estimates of infant deaths from 1989 are based on data from the Ministry of Health Care institutions which were more reliable than SDSG data. To avoid under-registration of deaths, data from health care were corrected by increasing the number of deaths by the appropriate value after consultation with experts from the Department of Statistics from the Ministry of Health.

However, we faced certain difficulties when attempting to correct the number of deaths in infants for the 1993-1995 period.

Our method of corrections was based on the hypothesis that the situation existing in Georgia in 1993-1995 (the war in Abkhazia, difficult social-economic conditions, etc.) was most unfavorable for ensuring health care and other living conditions for infants.

Because if this, the infant mortality rates in 1993-1995 would have to be even higher (and not less) than in 1996. We have corrected the number of deaths of infants in 1993-1995 with this in mind.

A peculiar situation exists in relation to 1993. 4000 "additional victims" of the war in Abkhazia were uncovered, which meant that about 4000 cases of deaths were added to the 1993 corrected deaths data. As for the estimation and correction of deaths by cause of death, it should be noted that the structures of deaths by Causes of diseases,whether right or wrong, differ from each other only marginally. However, within individual categories, the difference is quite large. Various cases of incorrect causes of death in death certificates were revealed, and data in death certificates and in the medical cards of dead patients differ from each other[17].

Until this situation has been improved, we suggest correcting the death structures using a new system (which is now in the introductory phase) envisaging the correction of the basic categories of diseases, only. In this regard, we consider it inappropriate to conduct a review or analysis of the situation existing in certain classes of diseases, or to make estimations and correction thereof.

Estimation of the mortality structure by classes of diseases have been carried out by us as follows:
Based upon SDSG data, the number of deaths by sex and age in a year were divided by the respective corrected number of deaths in the same year. Thus, the correct coefficients were obtained for each age and sex group separately.

The correct coefficients by age and sex were then multiplied by the respective data provided by the SDSG which had already been differentiated according to the main cause of deaths.
An exception here is the XV class (pregnancy, childbirth and puerperium.)

In the given case, the statistical data by the SDSG and the Ministry of Health differed considerably from each other. E.g. the 1999 data provided by the SDSG were 2,7 times lower than the relevant data by the Ministry of Health, while in 2000 it was 4,6 times lower.

Hence, for the XV class the data provided by the Ministry of Health in the already differentiated form were taken directly by us.

The final correction was done taking the latter factor into account.

[17] Health Care. Georgia, 1999. Statistical Bulletin. Tbilisi, 2000, pp.139-143 (in Georgian).

Figure 5.6. The SDSG and estimated age-specific mortality rates from 1999 in Georgia relative to Coale and Demeny life tables, model west, level 23

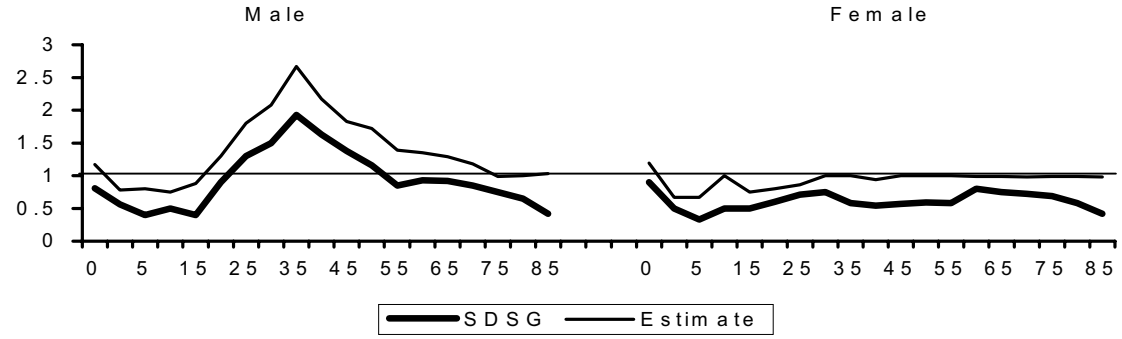


Figure 5.6. shows the relative difference between SDSG and the estimated age-specific mortality rates from 1999 and those of the Coale and Demeny model life tables.

According to Figure 5.6, the mortality rates of male in 1999, according to SDSG data are less than the corresponding data of the Coale and Demeny life model tables for under-25s and over-55s. Due to an increased number of male deaths in the 25-54 age groups, the mortality rates according to the SDSG are higher than the corresponding data in the Coale and Demeny life model tables.

By our estimation , the male mortality rates in all age groups are higher than stated by the SDSG.

As for females, SDSG data show that the mortality rates are lower (significantly, in certain cases) in comparison to the respective data of the Coale and Demeny life model tables.

According to our estimates, the mortality rate for females under one is higher than the respective data of the Coale and Demeny life model tables, and is higher in all age groups in comparison with the respective SDSG data.

Even in 1960 the data of mortality rates provided by the SDSG for over-75s of both sexes was suspect.

According to these data the mortality rates were much lower than the respective data of the Coale and Demeny life model tables, west model, even when compared to the level 25.

This situation shows evidently that the registration of deaths in the mentioned period was incomplete.

Regarding the correction of age-specific death rates for the census years 1960, 1970 and 1979, we also used Coale and Demeny life tables, west model.

The respective levels of these periods are as follows (according to our estimates):

	1960	1970	1979	1989
Male	≈20	21	21	23
Female	>21	<21	≈22	23

5.4. Epidemiological Transition

According to existing data, Georgia may be considered as a country belonging to the classical country models in view of the epidemiological transition.

The first signs for this are that a demographic transition in Georgia started at the very beginning of the nineteenth century[18]. While in the first phase of the demographic transition, a type of mortality was transforming, that, in its turn, was related to the epidemiological transition.

No data concerning the natural size-changes of Georgia's population until the nineteenth century are known.

The first such data for certain regions of Georgia appeared in the 1830s, and for the whole country in the 1850s[19].

According to the data, in the 1830s in Tbilisi, births amounted to 34,4‰, mortality to 24,0‰ and the natural increase to 10,4‰[20]. In 1857-1863, births in eastern Georgia amounted to 37,3‰, mortality to 25,4‰, and the natural increase to 11,9‰[21].

Appropriate research and analysis of the relevant statistical data and materials show that until the second half of the 1880s the statistical data provided by different sources regarding the natural increase of the population of Georgia were incorrect due to under-registration. Thus, only the statistical data of the later periods may be considered more or less exact.[22].

In 1886-1890, the birth in Georgia amounted to 32,3‰, mortality to 17,5‰ and the natural increase to 14,8‰[23]. In 1897, the birth in Georgia amounted to 30,5‰, mortality to 18,6‰ and the natural increase to 11,9‰[24].

Infant mortality in 1897, in Georgia, reached 174,7‰[25], while the estimated life expectancy at the moment of a birth in 1880, in Tbilisi Province was 35 years for males and 38 years for female[26].
Figure 5.7. shows the crude death rate (per 1000 persons) in Georgia (in 1886-1890) and in some other countries (in 1881-1890)[27].

---

[18] Gudjabidze V. Demographic Transition and composition of the population in Georgia. // Actual problems of development of demographic processes in Georgia. Tbilisi, 1990, p.5 (in Russian) Khmaladze M. Appropriateness and economic outcomes of reproduction of the population in Georgia. Scientific Bulletin. Work for defending the doctor's degree in Economics. Tbilisi,1995. p.14; Meladze G., Tsuladze G. Population of Georgia and Demographic Processes. Tbilisi, 1997. p.8 (in Georgian).

[19] Meladze G., Tsuladze G. Population of Georgia and Demographic Processes. Tbilisi, 1997. p.6 (in Georgian).

[20] Evetsky O. Statistical description of Caucasian region. Sp. 1835, pp.142-143; (in Russian); On the basis of the same source, calculations by Meladze G. 34.0; 23.7 and 10.3 (in Georgian).

[21] Caucasian calendar for 1835. Tiflis, 1864 (in Russian).

[22] Pirtskhalava G. On modern peculiarities of development of reproduction of Soviet Georgia. – Matsne (informational bulletin) Series: Philosophy. 1975. N.4., pp.98-99 (in Georgian).

[23] Ibid.

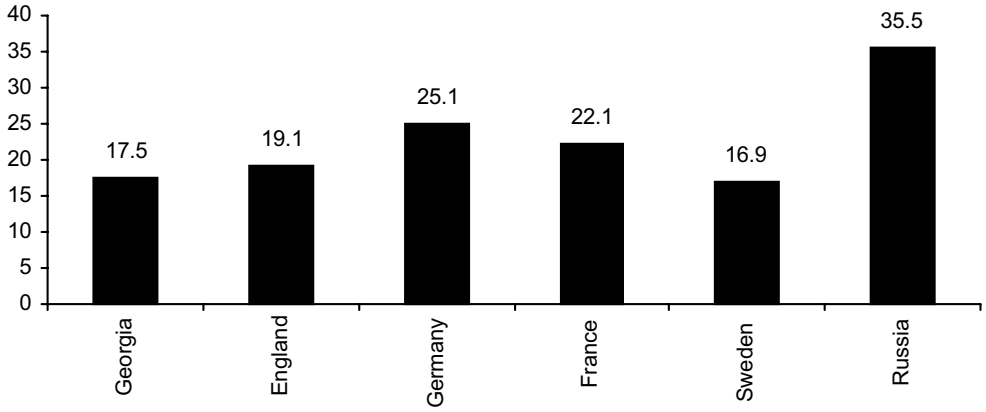
[24] Meladze G., Tsuladze G., Ibid, p.7 (in Georgian).

[25] Khmaladze M. Ibid. p.22 (in Georgian)

[26] Kotrikadze B., Sinelnikov A. Birth rate in Georgian SSR. Tendencies and Directions for Regulation. Tbilisi, 1990/ pp. 8-9 (in Russian).

[27] Data about foreign states are from the work: Reproduction of the population in the USSR. Moscow, 1993, p.57. (in Russian); Georgia – Pirtskhalava G. On development of reproduction and modern peculiarities in Soviet Georgia - Matsne. Series: Philosophy. 1975, N.4 pp.98-99 (in Georgian).

Figure 5.7. Mortality in Georgia and in some other countries in 1880-1890 (‰)



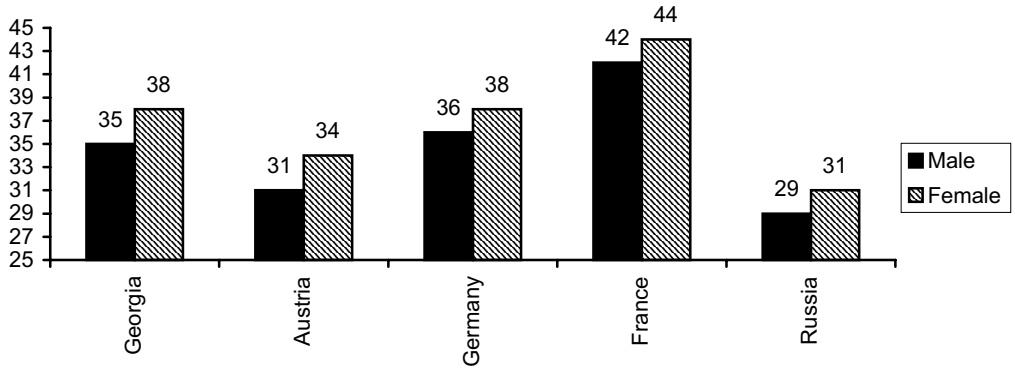
As can be seen, mortality in Georgia, at the end of the nineteenth century was even less than in some western European countries and half that in the European regions of Russia.

Compared to now, the estimated life expectancy in Georgia, in the second half of the nineteenth century, was not significantly lower than in other countries.

Figure 5.8. shows the estimated life expectancy at birth in Georgia (Tbilisi Province, 1880) and in some other countries (1875)[28].

We should take into consideration that the data on estimated life expectancy covers Tbilisi Province, only. As is known, mortality in western Georgia (Kutaisi Province) was 5 points less than in Tbilisi Province, (16,3 and 21,0 respectively)[29]. Hence, we may suppose that the estimated life expectancy at birth, in western Georgia could be higher. We may conclude that the estimated life expectancy throughout Georgia was higher in comparison with the estimated life expectancy in Tbilisi Province, only.

Figure 5.8. Estimated life expectancy at birth in Georgia (1880) and in some other countries (1875; European regions of Russia – 1884-1893)



[28] Data about foreign states are from the works: Austria, Germany, the Netherlands, France – Vishnevski A.G. Reproduction of the population and Society. Moscow, 1982. p.113; European Russia – Reproduction of population in the USSR. Moscow, 1983, p.63 (in Russian).

[29] Tsuladze G. Problems of birth on the modern stage of development of the soviet society. Own synopsis for defending the doctor's degree of historical sciences. Tbilisi, 1986. p.19 (in Russian).

Infant mortality in Georgia at the end of the nineteenth century, was considerably lower than in the European regions of Russia where it amounted to 300‰[30]

The relatively low level of mortality in Georgia at the end of the nineteenth century was conditioned first of all by the changes having taken place in the mortality-specific structure. Namely, deaths caused by infectious diseases comprised less than 3% of the total number of deaths. In general, the number of deaths caused by infectious diseases was extremely low in Georgia in 1894-1898.

Table 5.2, where the number of deaths caused by infectious diseases in various countries are provided, gives clear evidence of this.

Table 5.2. Mortality caused by infectious diseases in Georgia (1894-1898) and in some other countries (1905-1909) [31]
(Number of deaths per 100000 persons)

	Georgia	Russia	Hungary	Italy	Germany	England	Sweden	Norway
Smallpox	22.8	50.8	1.0	1.4	0.1	0.1	0.0	0.2
Measles	7.7	106.2	43.5	28.1	18.2	30.9	6.0	6.0
Scarlet fever	11.8	134.8	52.4	8.0	16.8	9.5	6.9	3.9
Diphtheria	0.9	64	39.8	15.3	24.7	16.1	20.3	21.6
Whooping cough	1.8	80.9	35.9	17.1	26.9	25.5	15.2	14.9
Typhus	6.5	91	28	28.4	5.4	7.7	7.8	4.0
All diseases named	51.5	527.7	200.6	98.3	92.1	89.8	56.2	50.6

The number of deaths caused by smallpox in Georgia at that times, was higher compared with the European countries, while the number of deaths caused by diphtheria and whooping-cough was lower.

It should be noted that the statistics provide the 1894-1898 data for Georgia and the 1905-1909 data for Russia and Western European countries. Within the 10-year period, positive changes would have taken place in Georgia , as some data proves. By our calculations based on the existing data, in 1913 the mortality rate in Georgia caused by smallpox, was 1,2 only, which was considerably lower than in previous periods.

Hence, proceeding from all existing data (the demographic transition process, the structure of mortality, etc.) at the end of the nineteenth century , Georgia had already passed the phase of illness- and hungry-specific epidemic transition, as well as the late phase of the pandemics decrease stage. Simultaneously, a stage of degeneration and professional diseases was emerging.

In our opinion, certain eco-biological and socio-economic and medical determinants played a leading role in Georgia.

Demographic changes in Georgia at the end of the nineteenth century, were expressed in a low birth level and in a high degree of regulation of births within the households.

[30] Kurkin P. Birth and Mortality in Capitalistic States of Europe. Moscow, 1938. p.84 (in Russian).
[31] Data on Georgia are calculated by us. Source: Statistical Data about Caucasian region. 1902, pp.102-110. (in Russian); Foreign states – Novoselski S.A. Mortality rate and life expectancy in Russia. Petersburg, 1916, p.159 (in Russian).

At the end of the nineteenth century a degree of realization of a hypothetical minimum of natural births was 68,2%[32], while the Total Births Coale Index for that period was about 0,34[33].

According to existing ethnographic information, large families (with more than 3-4 children) were prohibited by tradition, in some regions of Georgia. At the same time, births with small intervals were also prohibited, which means that the inter-genetic interval was somehow prolonged. In most cases women entered into marriage at 30-35 years old [34]. In some regions of the country women were prohibited to give birth within the first year of marriage[35].

Simultaneously, the stage of degeneration and professional diseases was developing, step-by-step. Due to a lack of information in some cases it seems difficult to discuss everything surely, but certain data enable us to express our opinion.

We may suppose that in the 1920s the estimated life expectancy in Georgia had increased in comparison with the end of the nineteenth century.

According to existing data, in 1926-1927 the estimated life expectancy in Tbilisi was 53,4 years for males and 57,2 years for females (55,3 years for both sexes). For that time it was rather high . For instance, the relevant data for European regions of the USSR were 41,9 for males and 46,8 for females (44,3 years for both sexes). The difference was quite large in infant mortality. For instance, in the European part of the USSR about 20,1% of boys and 17,2% of girls died within a year of being born , while in Tbilisi these indicators were 9,6% and 8,1%, respectively. Even in Moscow and Leningrad the mortality rates were much higher than in Tbilisi[36].

The next period in Georgia was characterized by a further development of the epidemiological transition.

At present Georgia is in a high stage of epidemiological transition. According to A. Omran's classification, this is a late phase involving degenerative and professional diseases, while the modern classification says it is a stage of delayed degenerative diseases.

The factors given below some of the features involved.

Increase in the population. Mortality and births have already decreased below 20‰, long ago. At the same time, birth is a determinant in increasing the population.

Composition of the population. A demographic aging of the population has been underway for a long time. At the end of the 1990s the share of persons of 60 and above in the total population was above 18%, which is a very high level of aging. As for the share of those above 65, it was twice (within 14%) the relevant UN rate (7%).

Social environment and the civil society. Rationalism and utilitarianism has become common with an increase in bureaucracy and depersonalization.

---

[32] Tsuladze G. Problems of birth on the modern stage of development of Soviet society. Own synopsis for defense of doctor's degree of historical sciences. Tbilisi, 1986. p.19 (in Russian).

[33] Adeishvili N. Evolution of Births in Georgia // Actual problems of development of demographic processes in Georgia. Tbilisi, 1990, pp. 57-58 (in Russian).

[34] Makalatia S. Khevsureti. Tbilisi, 1984, pp. 167-168, 180 (in Georgian).

[35] Makalatia S. Mtiuleti. Tbilisi, 1930, p. 119 (in Georgian).

[36] Kotrikadze B., Sinelnikov A. Birth rate in Georgian SSR. Tendencies and Directions for Regulation. Tbilisi, 1990, p. 19 (in Russian). Estimated life expectancy in six European states (Denmark, England, Wales, France, the Netherlands, Norway, Sweden) and the USA for both sexes in 1920 was 58,3 and in 1930, 61,7 (Source: Population of the States Throughout the World. Reference Book. Moscow, 1978, p.163). High rates of life expectancy in Georgia for, that times, may have resulted from under-registration of deaths. Even if the life expectancy at birth is less for several years, this index can in a way be considered as high (in Georgian).

Family and women's role therein. Small families (with not more than 1-2 children) have become the norm. Women are increasingly playing nontraditional roles. They get a good education and have entered the professions.

Mortality. In 2000 the estimated life expectancy at the moment of birth of both sexes in Georgia was 71,8 years (68,1 for males and 75,3 for females). The share of infants in the total number of deaths was less than 3%, while the share of deaths of persons of 50 or over was more than 87%.

Structure of diseases. The main causes of deaths are not infectious, but the diseases of circulatory system and some neoplasm's. At present, occurrences of such diseases like paralyzing poliomyelitis and smallpox are very rare, in Georgia.

Problems existing in the sphere of health. The number of psychical and nervous abnormalities, drug abuse, accidents, and environmental-related negative factors are increasing in line with the increase in cases of degenerative diseases. Consequently the need to provide an appropriate medical service to the population gains great importance. A number of effective anti-disease methods have been introduced.

The health system is becoming more and more concerned with researching and applying effective preventive measures. At the same time, serious problems, which have arisen in the health system, may necessitate an increase in funds.

In addition to all the above , when characterizing the epidemiological transition, we should single out and discuss such indicators as economic factors, living standards, food provision, etc.

The process of epidemiological transition, mortality, structure of mortality and diseases are greatly dependent on these factors.

Unfortunately, in this regard, the situation in Georgia is far from good and has had major effects on the process of epidemiological transition.

The level of deaths among mothers giving birth and infants, and other specific rates are high. Moreover, the estimated life expectancy since 1989, has at a minimum been stagnant and possibly gone into decline.

Therefore, we should remember that worsening ecological and social-economic conditions could halt and even reverse the process of epidemiological transition[37].

At the same time, it should be considered that at the current stage of epidemiological transition the estimated mortality rates, because of diseases of the circulatory system and neoplasm, may increase, especially amongst older people.

5.5. Number of Deaths and General Level of Mortality

As we have already mentioned above (see Part 5.2.) deaths in Georgia were under-registered.

We can presume that the under-registration of deaths had taken place even before the 1960s.
We have also mentioned that the 1959 census data relating to the size and composition of the population were considered by us as the basis for further calculations.

We mentioned the size and the structure of the population becausethe correction of death rates causes changes in both the size and age-sex specific composition of the population, which in turn, changes the mortality rate.

[37] Population. Encyclopedic Dictionary. Moscow, 1994, p.569 (in Russian).

A correction of the mortality rates and the number of deaths in 1960, 1970, 1979 and 1989 was performed on the basis of the Coale and Demeny life model tables.

The number of deaths in 1989 did not change significantly in comparison with previous years. More significant was the change in the number of deaths and consequently in the mortality rates in 1960, which were caused by a high level of under-registration that existed in that period.

We more or less estimated the number of deaths, mortality rates and under-registration of deaths for the census years 1960, 1970, 1979 and 1989.

By an interpolation of the proportion of under-registered deaths in these census years we arrived at an estimation of the number of unregistered deaths between the census years.

Due to this specific procedure, before 1990 an estimation of the number of deaths for 5 or 10-year intervals is reasonable.

Thus, the data given in Table 5.3 are of a conditional nature and provided for information purposes only. However, they can give some grounds for reflection, as well.

As regards the period from 1990 to 2000, we recalculated the number of deaths and age-specific mortality rates for every year. Hence, these years may be considered separately.

In a similar manner, we estimated the level of under-registration of infant deaths between the census years (see the relevant data in Part 5.7. “Infant Mortality” of the presents work).

As is clear from the table, the highest level of under-registration of deaths was observed in 1960-1964.

Then, it improved and in 1985-1989 was satisfactory, while from the beginning of the 1990s it started to worsen again. In the second half of 1990 the level of registration of deaths was lower than in the first half of the same year. As noted, beginning from 1997 under-registration was decreasing step by step, but quite a large number of under-registered deaths still exists today.

By our estimation, in the period from 1960 to 2000, about 262,100 deaths were not registered in Georgia.

According to SDSG data, the lowest crude death rate was set in 1960-1964. Afterwards, mortality increased, reaching a maximum in 1993 during the Georgian-Abkhazian war. Then, it decreased and, in 1995-1998 the crude death rate was lower than it had been since 1975.

Such a trend in the crude death rate could not reflect realistically the situation due to two factors: 1) the high level of under-registration of deaths; and 2) the overestimated population.

Theses two factors were less pronounced in 1999-2000.

By our estimations, the crude death rate was lowest in the years 1965-1974. Afterwards, it increased due to a decrease in the number of births and changes in the age-specific composition of the population, and achieved its maximum level in 1995-1999.

As becomes clear from Figure 5.9, a significant difference between the crude death rates provided by SDSG data and the evaluated ones were observed in 1960-1964 . Afterwards this difference lowered and fell to a minimum in 1985-1989, while then it started to increase again in 1995-1999. An average difference between the two data mentioned above, was 3,9‰ (maximum 4,4‰ in 1996).

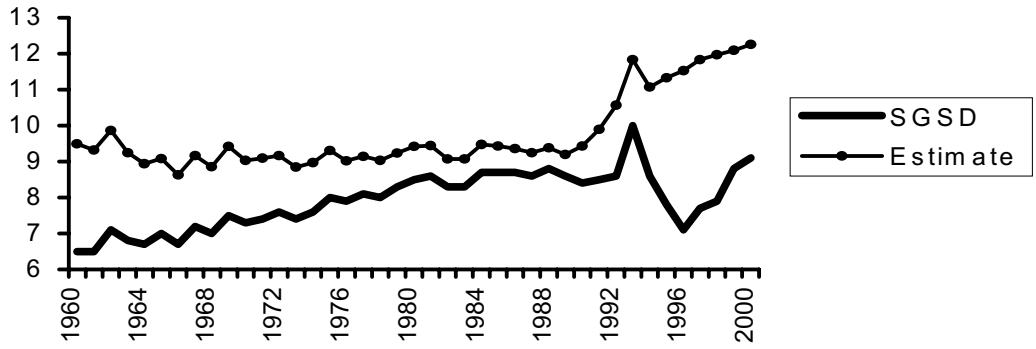
Figure 5.9 describes the change in the crude death rate in Georgia during the period from 1960 to 2000 according to SDSG data and the authors’ estimates (%).

Generally, evaluating the mortality level from 1960, enables us to understand in a new way both the evolution of life expectancy and the demographic transition within the last 40 years (1960-2000), as a whole.

Table 5.3. Deaths and mortality rates in Georgia

Year	Deaths		Under-registration		Mortality rates (‰)		Difference
	SDSG	Estimate	Number	%	SDSG	Estimate	
1960	27015	39324	-12309	31.3	6.5	9.5	-3.0
1961	27621	39111	-11490	29.4	6.5	9.3	-2.8
1962	30394	41944	-11550	27.5	7.1	9.9	-2.8
1963	29620	39809	-10189	25.6	6.8	9.2	-2.4
1964	29708	38947	-9239	23.7	6.7	8.9	-2.2
1965	31291	40021	-8730	21.8	7.0	9.1	-2.1
1966	30389	38427	-8038	20.9	6.7	8.6	-1.9
1967	32904	41130	-8226	20.0	7.2	9.2	-2.0
1968	32416	40066	-7650	19.1	7.0	8.9	-1.9
1969	35169	42977	-7808	18.2	7.5	9.4	-1.9
1970	34283	41506	-7223	17.4	7.3	9.0	-1.7
1971	35325	42143	-6818	16.2	7.4	9.1	-1.7
1972	36409	42853	-6444	15.0	7.6	9.2	-1.6
1973	35911	41657	-5746	13.8	7.4	8.9	-1.5
1974	37145	42494	-5349	12.6	7.6	9.0	-1.4
1975	39292	44361	-5069	11.4	8.0	9.3	-1.3
1976	38875	43268	-4393	10.2	7.9	9.0	-1.1
1977	40139	44113	-3974	9.0	8.1	9.1	-1.0
1978	40239	43659	-3420	7.8	8.0	9.0	-1.0
1979	41907	44893	-2986	6.7	8.3	9.2	-0.9
1980	43346	46163	-2817	6.1	8.5	9.4	-0.9
1981	43961	46511	-2550	5.5	8.6	9.4	-0.8
1982	42734	44956	-2222	4.9	8.3	9.1	-0.8
1983	43301	45250	-1949	4.3	8.3	9.1	-0.8
1984	45787	47527	-1740	3.7	8.7	9.5	-0.8
1985	46153	47630	-1477	3.1	8.7	9.4	-0.7
1986	46354	47559	-1205	2.5	8.7	9.4	-0.7
1987	46332	47235	-903	1.9	8.6	9.2	-0.6
1988	47544	48176	-632	1.3	8.8	9.4	-0.6
1989	47077	47468	-391	0.8	8.6	9.2	-0.6
1990	45945	48983	-3038	6.2	8.4	9.4	-1.0
1991	46473	51561	-5088	9.9	8.5	9.9	-1.4
1992	46762	54370	-7608	14.0	8.6	10.6	-2.0
1993	48938	57393	-8455	14.7	10.0	11.8	-1.8
1994	41596	50365	-8769	17.4	8.6	11.1	-2.5
1995	37874	49930	-12056	24.1	7.8	11.3	-3.5
1996	34414	49291	-14877	30.2	7.1	11.5	-4.4
1997	37679	49511	-11832	23.9	7.7	11.8	-4.1
1998	39404	49475	-10071	20.4	7.9	12.0	-4.1
1999	40378	49510	-9132	18.4	8.8	12.1	-3.3
2000	41320	49695	-8375	16.9	9.1	12.3	-3.2
			Average of five-year interval				
1960-1964	28872	39827	-10955	27.5	6.7	9.4	-2.7
1965-1969	32434	40524	-8090	20.0	7.1	9.0	-1.9
1970-1974	35815	42131	-6316	15.0	7.5	9.0	-1.5
1975-1979	40090	44120	-4030	9.1	8.1	9.1	-1.0
1980-1984	43826	46081	-2255	4.9	8.5	9.3	-0.8
1985-1989	46692	47614	-922	1.9	8.7	9.3	-0.6
1990-1994	45943	52534	-6591	12.5	8.8	10.6	-1.8
1995-1999	37950	49543	-11593	23.4	7.9	11.8	-3.9

Figure 5.9. Change in the crude death rate in Georgia during the period from 1960 to 2000 according to SDSG data and the authors' estimations (‰)

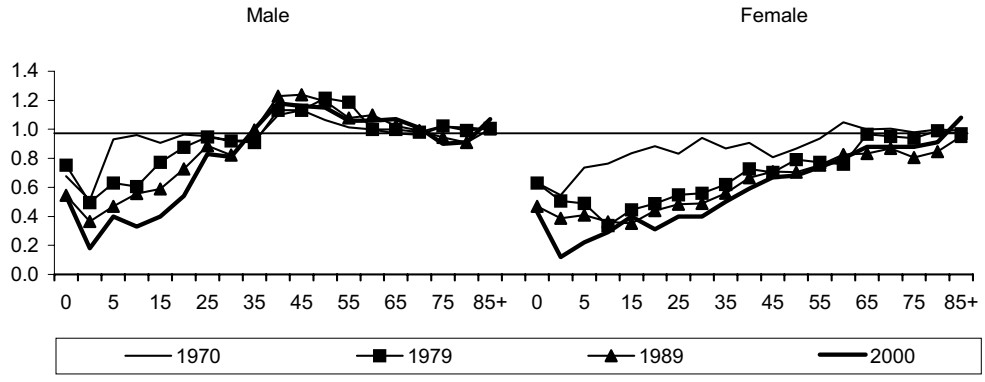


5.6. Change of Age-specific Mortality

The analysis of changes in the age-specific mortality, as given below, is based on our estimates of age-specific mortality rates, only.

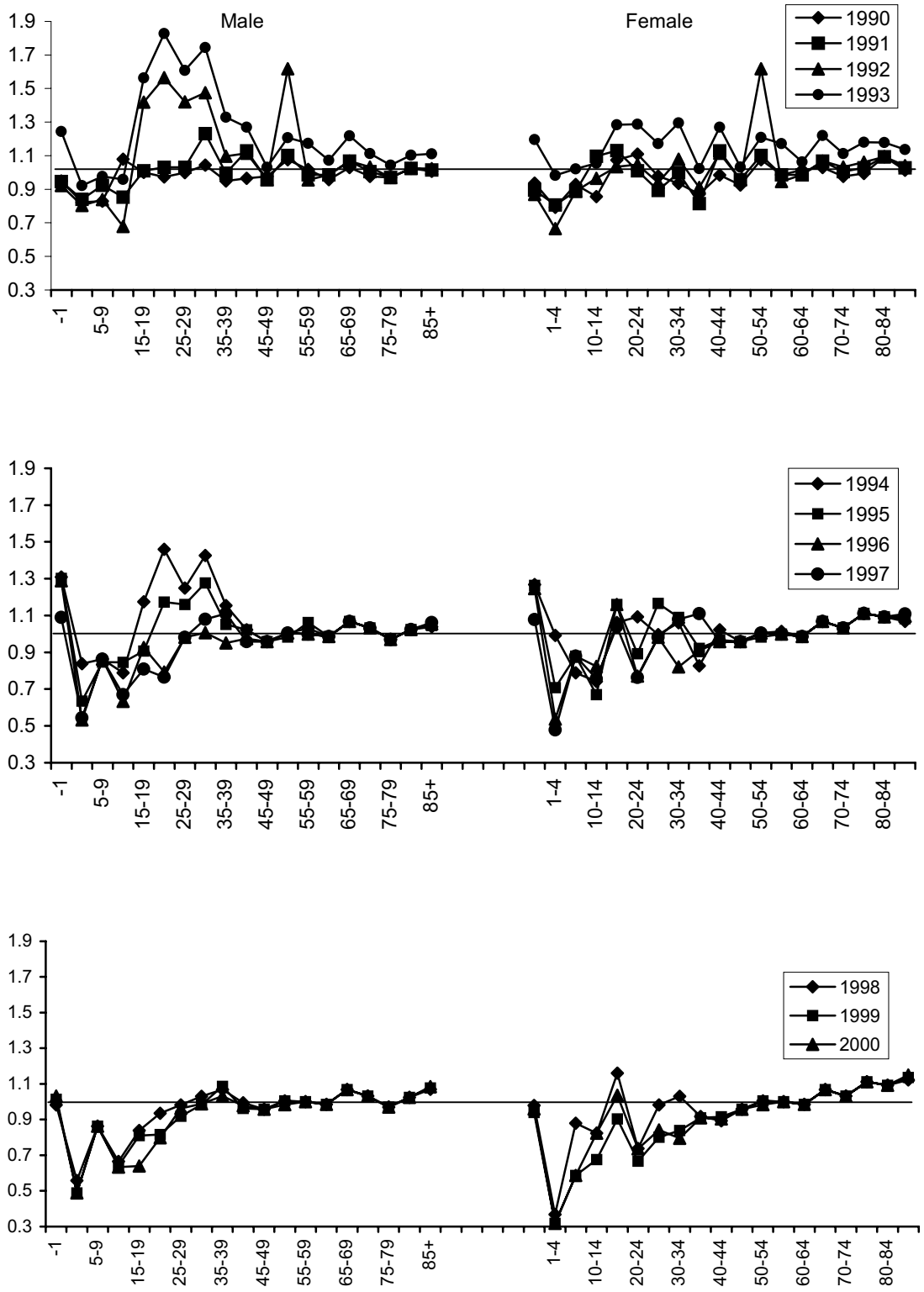
First of all, let us consider the changes having taken place in this long period from 1970 to 2000.

Figure 5.10. The relative difference in Georgia between the age-specific mortality rates of the years: 1970, 1979, 1989, 2000 compared to 1960



As we can see from Figure 5.10., age-specific mortality rates compared with the year 1960 significantly decreased for males below the age of 25, whereas the decrease was less significant in the age 25-34 age group and did not change at all in the 35-39 age group. At the same time, we can note an increase in the 40-69 age group and almost the same level in the 70-84 age group. While age specific mortality rates for those over 85 have the same level for the period 1970-1979, compared with 1960, in 2000 we can notice an increase.

Figure 5.11. Relative changes in age-specific mortality rates in Georgia (straight line – level in 1989)



For females, age-specific mortality rates decreased for almost all age groups, except in 2000, when age specific mortality rate increased after the age of 85.

It should be noted that the decrease in female mortality rates was not consistent. In the 1-14 age-group it decreased considerably, and a certain decrease of the mortality rate was observed for the 15-19 female

age group. The decrease of the mortality rate for the 40-59 female age group was comparatively low , while the decrease was almost insignificant for the 60-84 female age group.

As for the relative changes of age-specific mortality rates within the 1990-2000 period, comparable to 1989, the appropriate data are given in Figure 5.11.

Morality rates for the 0-1 age groups for both sexes increased in 1993-1996 compared to 1989, while from 1997 it decreased .

As for the mortality rate of the 1-14 age groups of both sexes, in 1990-2000 it was lower than in 1989, despite some variations.

Mortality for the 15-44 age groups of both sexes increased mainly in 1991-1995, except for the 35-39 female age group. From 1996, despite some deviations, a decrease in the mortality for the 15-44 age groups of both sexes declined below the 1989 level.

The morality rate of males and females of the 45-49 age groups was quite stable during the whole period of 1990-2000 and was similar to the 1989 rate.

As for the mortality rate for the 50-54 age groups of both sexes, it increased in 1990-1993 in comparison with 1989, and from 1996 it fell back to 1989 level.

Within the given period, the mortality rates for males and females of the 55-64 age groups remained at the 1989 level.

The mortality rate for those above 65 of both sexes was higher than in 1989. The exception was for males of the 75-79 age group, whose morality rate was similar to the one fixed in 1989.

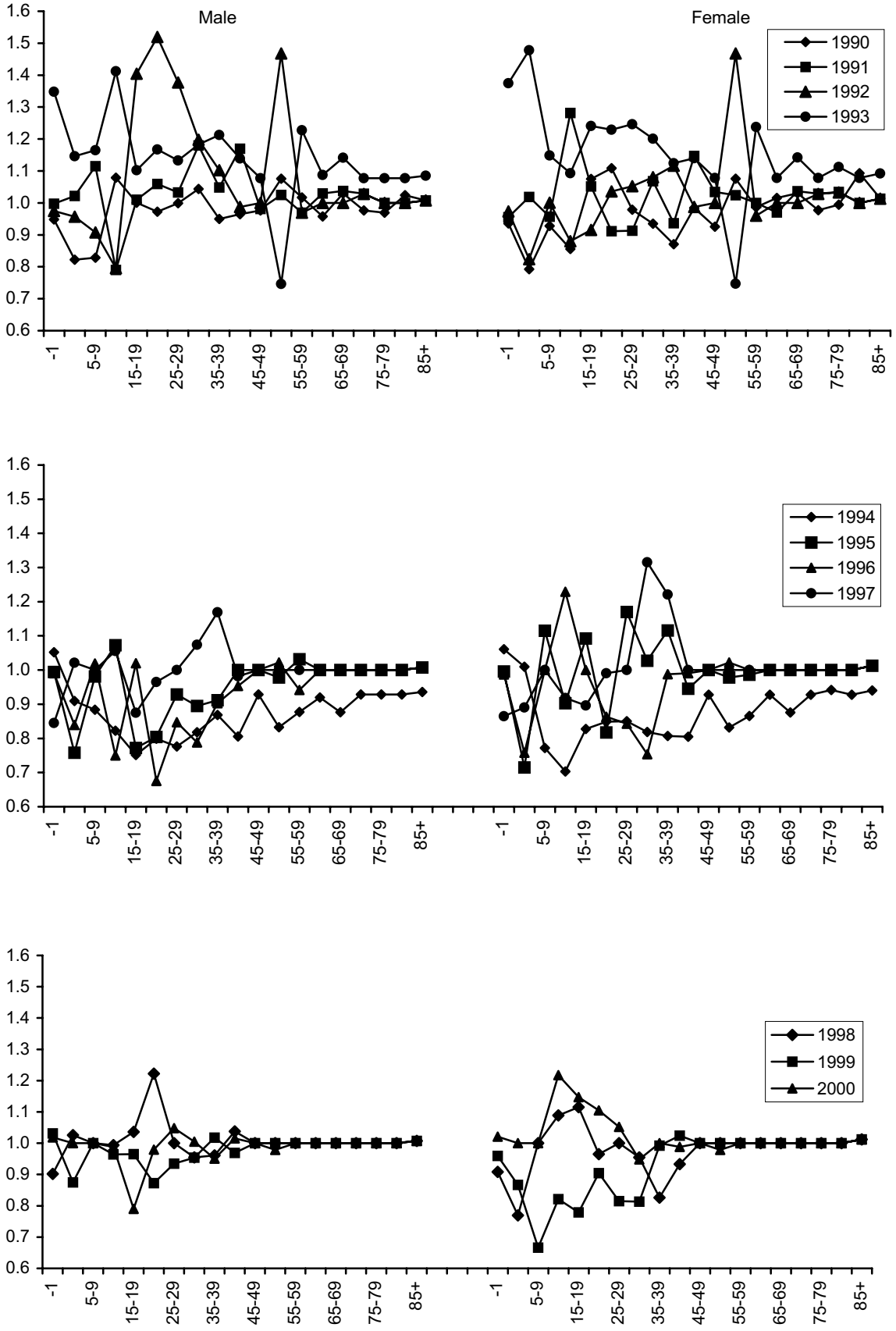
In most cases, 1993 is a notable year as regards the increase in mortality. The war in Abkhazia was the main reason for such an increase.

As for the relative difference in age-specific mortality rates between 2000 and 1989, a clear picture is given in Figure 5.12.

Figure 5.12. The relative difference between age-specific mortality rates of 2000 and the base year1989 (straight line – level in 1989)

The next figure (5.13) shows the relative changes in the age-specific mortality rates for each year in comparison with the previous year.

Figure 5.13. Relative changes in age-specific mortality rates in Georgia in 1990-2000 compared to each preceding year



There was a considerable increase in the male mortality rate for the 15-34 age group in 1992, and an even greater increase in 1993. However, in 1994-1996 there was a decrease. In 1997 the mortality rate for males of the 30-34 age group certainly increased, but then decreased insignificantly. Similarly, an increase in the mortality rate for males of the 20-24 age group in 1998 was then followed by a decrease in the subsequent years.

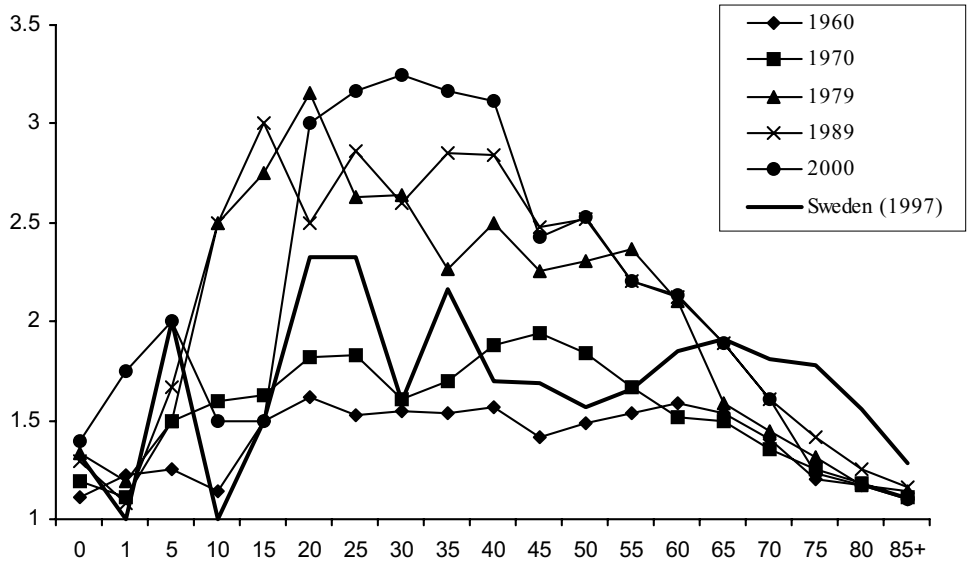
In 1991-1993 the mortality rate for males of the 35-39 age group increased, then, in 1994-1996, decreased, in 1997 increased again and, from 1997 onwards , a decreasing trend was observed.

In 1990-1994, the mortality for those over 45 of both sexes was characterized by considerable deviations, while after 1995 it remained practically unchanged.

The mortality rate for females under 45 was changing during the whole period.

Let us see, what differences were and are characteristic for the mortality rates for various male and female groups (see Figure 5.14.).

Figure 5.14. Ratio of mortality rates for male and female in Georgia (estimated data) and in Sweden



We can see that the mortality rate of males is higher that for female, in all age groups, despite the fact that some important changes were occurring in a number of age groups in 1960-2000.

By 2000, the difference in mortality rates between males and females under 75 had increased, in comparison with the relevant data of 1960.

This difference was uniform for almost all age groups.

A considerable increase in the mortality rate for male was observed in the 20-64 age groups.

In 2000, the increment of the mortality rate for males of the 25-44 age group increased two- fold, in comparison with 1960, and 1,5 times for males of the 45-49 age group.

As a result, in 2000 the mortality for male of the 20-44 age group was 3 over times the mortality rate for female of the same age group and twice the female morality rate of the 45-64 age group.

As for the increment of the mortality rate for males in 1960, it was much lower than the relevant rates in 1970-1980 and today.

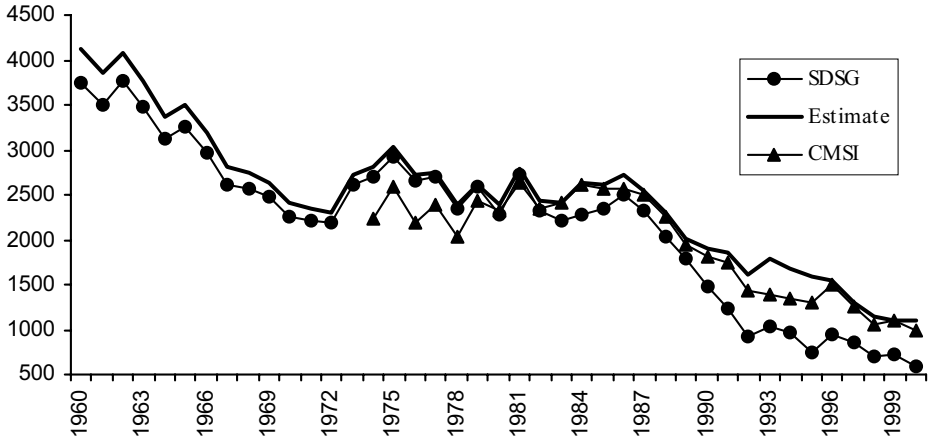
5.7. Infant Mortality

Because of its importance , we would like to consider separately infant mortality (deaths of infants under 1).

We should note here that in contrast to improvements in the registration of deaths in total, the registration of deaths of infants by the SDSG has worsened since the 1980s. This is show not only by our estimates but by other data developed by the heath authorities, too.

Within the 1980-2001 period, 1981 was the only year when the number of deaths of infants according to SDSG data was higher compared to the data provided by the Ministry of Health. In all other years of this period the deaths of infants registered by the Ministry of Health was higher than the number given in the data by the SDSG (see Figure 5.15.).

Figure 5.15. Number of infant deaths in Georgia in the period from 1960 to 2000 provided by the SDSG, Health Care (CMSI) and the authors' estimates



In 1974-1979 the number of infant deaths registered by the SDSG was much higher than the relevant data provided by the Ministry of Health. Until 1974 the Ministry of Health had no appropriate data concerning the number of infant deaths.

Within the 1975-1979 period, 322 more infant deaths were registered by the SDSG per year than by the Ministry of Health. In 1980-1984, the Ministry of Health registered 105 more cases per year than the SDSG did. Thereafter, this difference further increased, adding even greater importance to this issue.

SDSG data till 1980 seems to be more reliable, while the data of the Ministry of Health reflecting the situation in infant deaths registration from 1980 onwards (except for 1981) is more precise than the relevant SDSG data for this period.

As for the infant mortality rates, the data by SDSG related to births number till 1996, seems more reliable to compare to the data by the Ministry of Health.

Until 1989, the estimated data concerning infant mortality by year are of a conditional nature. Thus, it seems better to evaluate them through 5-year intervals.

In general, according to SDSG data, infant mortality decreased compared to 1960. According to both

the SDSG and the estimated data, a certain increase in the number of infant deaths was observed in 1975-1979.

As for SDSG data, the low rate of infant mortality after 1989 is mainly caused by under-registration.

Table 5.4. Infant deaths and infant mortality rates in Georgia

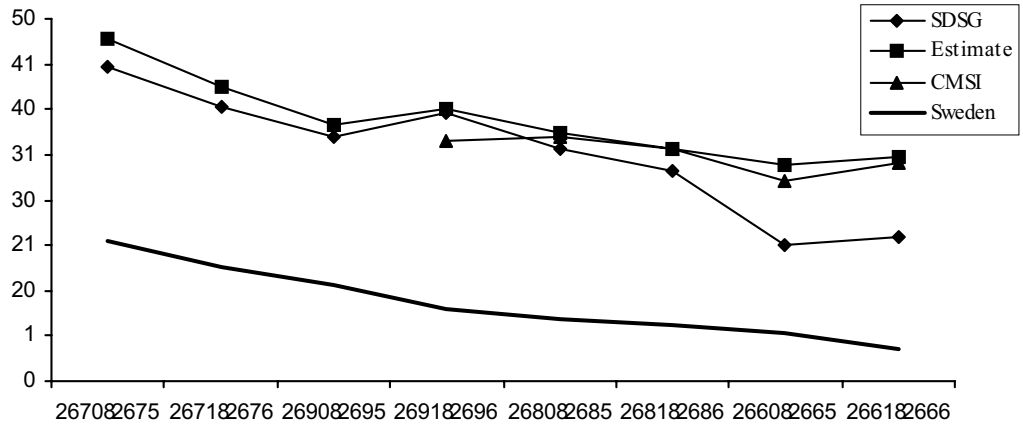
Year	Number			Rate (per 1000 births)		
	SDSG	Estimate	Health Care	SDSG	Estimate	Health Care
1960	3739	4113	...	36.8	40.0	...
1961	3492	3856	...	33.7	37.1	...
1962	3764	4087	...	36.7	39.8	...
1963	3479	3768	...	34.5	37.4	...
1964	3112	3363	...	31.6	34.2	...
1965	3248	3501	...	33.9	36.5	...
1966	2969	3193	...	31.9	34.3	...
1967	2613	2803	...	28.9	31.1	...
1968	2573	2753	...	28.7	30.7	...
1969	2476	2643	...	28.1	30.1	...
1970	2252	2409	...	25.3	27.0	...
1971	2215	2344	...	24.6	25.9	...
1972	2192	2305	...	25.0	26.3	...
1973	2607	2724	...	29.7	31.0	...
1974	2705	2809	2230	30.3	31.4	27.0
1975	2932	3025	2593	32.7	33.7	29.9
1976	2664	2731	2191	29.5	30.2	25.0
1977	2702	2752	2378	30.2	30.7	27.1
1978	2354	2382	2033	26.5	26.8	23.2
1979	2592	2605	2439	29.0	29.1	27.2
1980	2275	2400	2322	25.4	26.8	26.2
1981	2719	2795	2633	29.7	30.6	28.9
1982	2332	2424	2335	25.4	26.3	25.5
1983	2205	2417	2402	23.9	26.1	26.2
1984	2272	2644	2609	23.9	27.6	27.9
1985	2339	2621	2560	24.0	27.0	26.9
1986	2500	2714	2566	25.5	27.7	26.9
1987	2318	2543	2502	24.3	26.6	27.4
1988	2026	2296	2259	21.9	25.0	25.2
1989	1787	2005	1935	19.6	22.0	22.0
1990	1469	1910	1804	15.8	20.7	19.7
1991	1226	1850	1744	13.7	20.6	21.1
1992	918	1601	1424	12.4	20.9	20.5
1993	1039	1800	1397	16.9	28.0	24.5
1994	959	1680	1345	16.7	28.8	25.2
1995	738	1600	1311	13.1	28.3	23.7
1996	934	1550	1494	17.4	28.0	27.8
1997	849	1300	1254	16.3	24.0	24.1
1998	710	1150	1054	15.2	21.9	21.0
1999	714	1104	1094	17.5	22.0	23.4
2000	600	1100	989	14.9	22.1	21.1
			Average of five-year interval			
1960-1964	3517	3837	...	34.7	37.7	...
1965-1969	2776	2979	...	30.3	32.5	...
1970-1974	2394	2518	...	27.0	28.3	...
1975-1979	2649	2699	2327	29.6	30.1	26.5
1980-1984	2361	2536	2466	25.7	27.5	26.9
1985-1989	2194	2435	2364	23.1	25.7	25.7
1990-1994	1122	1768	1543	15.1	23.8	22.2
1995-1999	789	1341	1242	15.9	24.8	24.0

According to our and health care institutions' estimates, infant death rates increased in the period from 1990 to 2000. In the 1990s the highest infant death rates were in the period from 1993 to 1996 and then we can notice a decrease.

Most cases of infant death come to the first six months of birth. We should note that in 2000, the number of infant deaths within the first 6 days of birth as well as the number neonatal deaths (i.e. death within the first 27 days) in general, increased in comparison with the relevant data of 1995[38].

Figure 5.16 provides the infant mortality rates in Georgia and Sweden for 1996-2000. We would like to mention here that the infant mortality rate in Sweden is the lowest throughout the world[39].

Figure 5.16. Infant mortality rates in 1960-2000, in Georgia and in Sweden (‰)



As seen from the graph , the infant mortality rate in Sweden was always lower than in Georgia during 1960-2000. In 1995-1999 this rate in Sweden was 7 times lower than in Georgia. (compared to the estimated data and those provided by the SDSG)

In 1995-2000, Georgia took 81st position in the world by the infant mortality level. (according to our estimates).

In this regards, we should note that in many countries the infant mortality level has decreased considerably during the last 30 years, while in Georgia the decrease was insignificant and in 2000 it was at the 1989 level 1989.

For instance, in 1970, in Portugal, the infant mortality rate was 55,5 per 1000 live births[40], i.e. about two times higher than in Georgia. In 1998 the infant mortality rate decreased 9 fold in comparison with the relevant rate of 1970 and was 6,0[41]. Compared to 1989 data, the infant mortality rate in Portugal had halved by 1998.

---

[38] Tsuladze G., Kopaleishvili N. Demographic situation in Georgia. (1990-2000)- Epoch. 2001, N.1, p.111 (in Georgian).
[39] The data about Sweden are taken from the work: Recent demographic developments in Europe 1999. Strasbourg. 1999, p.517; World population prospects: The 2000 revision. Highlights. UN. N.Y., 2001, p.42.
[40] Recent demographic developments in Europe 1999. Strasbourg, 1999, p.432.
[41] Ibid.

5.8. Mortality by the Cause of Death

As mortality rates provided by the SDSG are very low and could not reflect realistically the existing situation in Georgia, the following section is based on estimated mortality data.

Table 5.5. represents the share (%) of deaths in Georgia in 1989 and 2000, caused by some main classes of diseases according to ICD 10th revision.

As we can see from Table 5.5., in 2000 compared with 1989 male and female age-specific mortality rates for infectious diseases increased. The same happened with the circulatory system causes, while mortality rates for neoplasm decreased.

Table 5.5. Share of deaths (%) in Georgia in 1989 and 2000 by some main classes of diseases (our estimates)

	Both sexs	Mtaols	FmA
	0515	**2000**	
Diseases of the circulatory system	grup	Ciun	
Neoplasms	iiu(	i%un	
Diseases of the respiratory system	gui	)un	
Diseases of the digestive system	ruC	ru)	
Injury, poisoning and certain other consequences of external causes	guC	)un	
Certain infectious and parasitic diseases	iug	%up	
Endocrine, nutritional and metabolic diseases	iuy	)u%	
Diseases of the genitourinary system	iu)	%uy	
Certain conditions originating in the perinatal period	iuy	iu(	
Other	)u(	run	
Total	i%u%	i%u%	

The number of deaths caused by reasons not mentioned in the above classification increased 3 fold by 2000, compared to 1998. Such an increase is mainly conditioned by ineffective diagnosis of the causes of death[42].

Proper diagnoses, though, cannot provide us with clear reasons for either the intensity of deaths or the level of mortality rates.

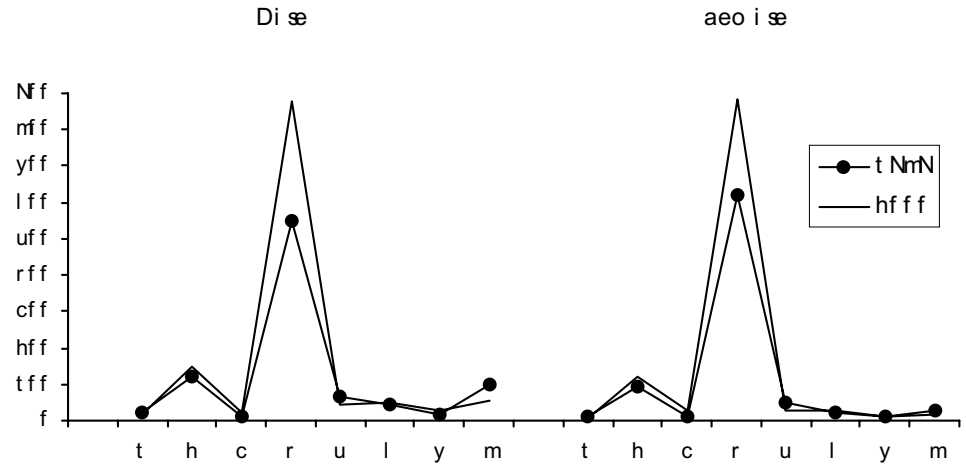
These changes may be calculated through comparison of mortality rates for various causes of death.

Figure 5.17 represents the mortality rates for males and females by some causes of death in Georgia, in 1989 and 2000, according to age-specific groups (per 100,000 persons of each sex).

We can see the increase in the number of deaths caused by diseases of the circulatory system and neoplasm. In 2000, the number of deaths caused by diseases of the endocrine and digestive systems and metabolic disorders increased considerably compared with 1989, while the number of deaths caused by infectious

[42] This idea supported by us has been first introduced by American (USA) expert Mr. Robert Israel.

Figure 5.17. Male and female mortality rates in Georgia in 1989 and 2000, caused by some diseases, by sex and age respectively, for per 100,000 persons (our estimates)

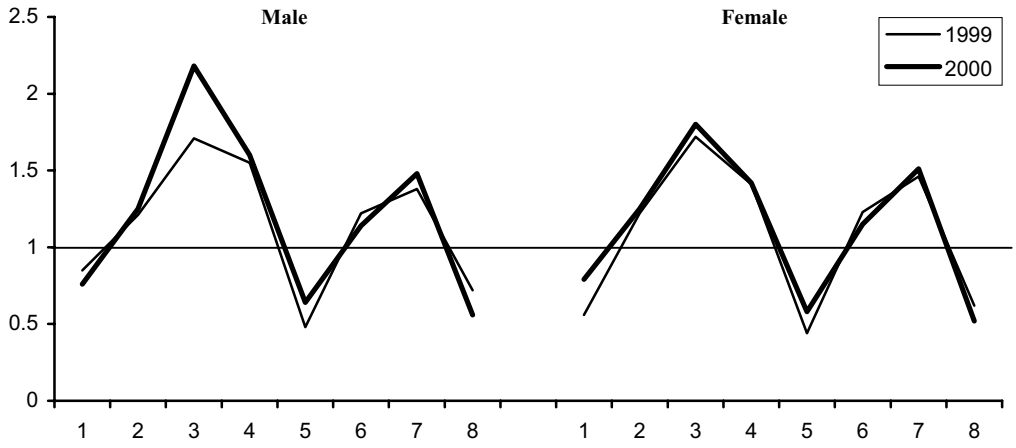


1 - Certain infectious and parasitic diseases
2 - Neoplasms
3 - Endocrine, nutritional and metabolic diseases
4 - Diseases of the circulatory system
5 - Diseases of the respiratory system
6 - Diseases of the digestive system
7- Certain conditions originated in the perinatal period
8 - Injury, poisoning and certain other consequences of external causes

and parasitic diseases, diseases of the respiratory system, congenital malformations, deformations and chromosomal abnormalities decreased. A really undesired tendency is the increase in the number of deaths caused by certain conditions originating in the perinatal period

A relative change in the mortality rates by cause in 1999 and 2000, compared to 1989, is provided in Figure 5.18. (by our estimates).

Figure 5.18. Relative changes in mortality rates in Georgia by certain causes of death (Straight line – 1989 level)



As Figure 5.18 shows, in 2000 the number of deaths caused by endocrine, nutritional and metabolic diseases, increased considerably in males. As we have already mentioned above, in 2000 the share of deaths caused by these diseases made just 2% of all deaths in the year.

Mortality caused by diseases of the circulatory system increased significantly.

In 2000, compared to 1989, the deaths of males caused by certain infectious and parasitic diseases decreased, while for females, it increased.

In 2000, even compared to the previous year, the deaths caused by diseases of the respiratory system, neoplasm, endocrine, nutritional and metabolic system as well as by certain conditions originated in the prenatal period, increased.

In 1999, compared to 1989, deaths caused by diseases of the respiratory system decreased considerably, while they increased in 2000, but remained lower than they had been in 1989.

In 2000, compared to 1999, a certain decrease in mortality caused by digestive organs diseases, injury, poisoning, and certain other consequences of external cause, as well as by diseases of the nervous and genitourinary systems, decreased.

The above mentioned changes in mortality caused by specific diseases, differed from each other by sex and age-specific features.

There was a high level of deaths among infants under 1 and people over 85, caused by some infectious and parasitic diseases, in 2000. In 1989, the number of deaths among boys under one was 33 times less and among girls under –one, 23 times less than among those over 85. in the respective sexes.

At the same time, in 2000 compared to 1989, the mortality rate for boys under one, and for girls under one, caused by infectious and parasitic diseases, decreased two fold and 3,4 fold , respectively; while for those over 85 , it increased 8,6 fold for males and 3,9 fold for females.

The above changes in mortality caused by various diseases in 1989 and 2000 are shown in Figure 5.19.

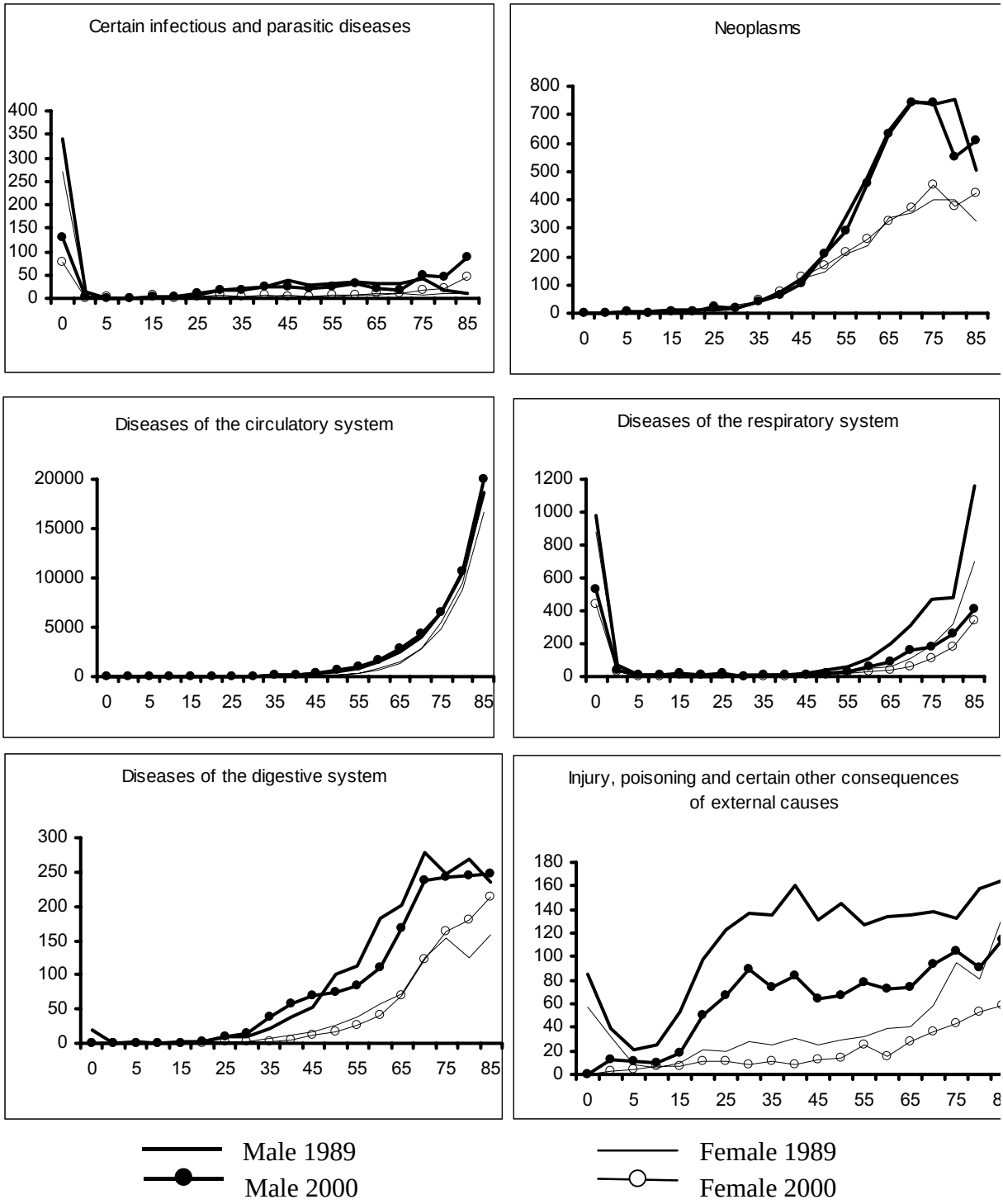
Mortality, caused by neoplasm, rapidly increases from the age of 35. After the age of 75, it varies, but it remains on a high level.

Mortality among males over50, caused by neoplasm, is much higher than it is among females of the same age group. In 2000, compared to 1989, mortality caused by neoplasm was considerably higher for both sexes of the over-85 age group.

Mortality, caused by endocrine and nutritional and metabolic diseases increases in line with aging and reaches a rather high level for those over 60 of both sexes. In 2000, compared to 1989, mortality for both sexes of the over-50 age groups, caused by endocrine, nutritional and metabolic systems, increased significantly.

Mortality caused by diseases of the circulatory system is increasing continuously, in line with aging. In every age group above 19, mortality caused by diseases of the circulatory system increased and, for female of the 40-44 age group and above, it almost doubled . In 2000 compared to 1989, mortality of males of the age of 25 and above, caused by the mentioned diseases, increased significantly for almost all age groups. With females, a considerable increase in mortality caused by these diseases was observed in the 30-29 age group and among those over 65. Mortality caused by diseases of the circulatory system in males is in all cases much higher than in females (over 3 times higher in males of the 25-29 age group).

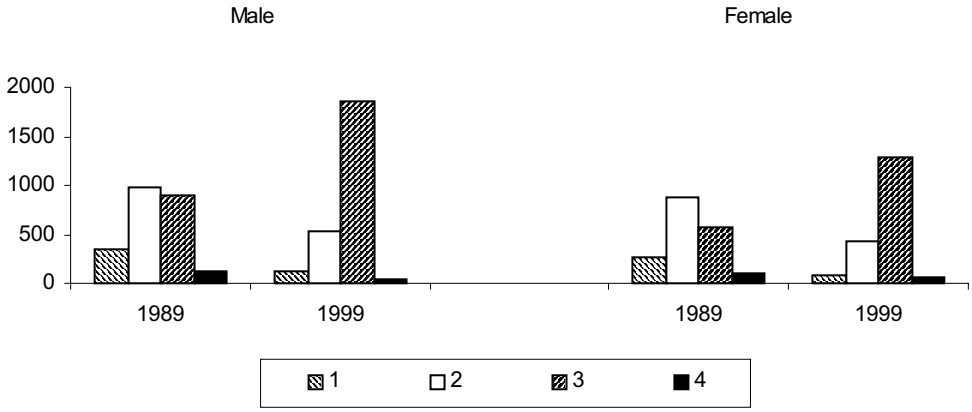
Figure 5.19. Age-specific mortality rates by major causes of death for males and females in 1989 and 2000 (in 100,000)



As for infants, the level of mortality caused by diseases of the respiratory system is significantly high. Thereafter, its intensity decreases and then increases again in males over 50 and in females over 58, (data of 2000), It reaches quite a high point at the age of 85, but still, it remains lower than in infants under one. In 2000, compared to 1989, mortality among babies under five, especially among those under one, of both sexes, caused by diseases of the respiratory system, decreased considerably. As for adults of both sexes, the relevant indicator decreased among those over 30 (except for females in the 55-59 age group whose mortality caused by the said diseases remained unchanged, at the level of 1989). At the same time, increases in mortality caused by the said disease in males of the 5-29 age group and females of 15-24 age groups, was reported.

In 2000, mortality caused by diseases of the digestive system in both sexes increased: for males over 30 and for females over 75 it increased to the 1989 level.

Figure 5.20. Infant mortality rates for 1989 and 1999 according to the authors' estimates.



1- Certain infectious and parasitic diseases
2 - Diseases of the respiratory system
3 - Certain conditions originating in the perinatal period
4 - Congenital malformations, deformations and chromosomal abnormalities

In 2000, as in 1989, mortality caused by injury, poisoning and certain other consequences of external causes was much higher in males than in females. At the same time, in 2000 compared to 1989, the level decreased considerably for both sexes.

As far as infant mortality is concerned, it also changed significantly (see Figure 5.20)

In 2000 compared to 1989, mortality caused by certain infectious and parasitic diseases (2,6 times in boys and 3,4 times in girls), diseases of the respiratory system (1,8 times in boys and 2 times in girls), congenital malformations, deformations and chromosomal abnormalities (3 times in boys and 2,3 times in girls), decreased considerably. However, in 2000 compared to 1989, an undesired event took place, reflected in an increase of mortality caused by diseases of the respiratory system in boys (almost insignificant) and especially in girls, as well as an increase of mortality level caused by certain infectious and parasitic diseases in girls. One more negative event was an increase of mortality of girls caused by certain conditions originating in the perinatal period.

In light of the decrease in these three factors, had mortality caused by certain conditions originating in the perinatal period remained at the level of 1989, then the infant mortality rate for 2000 would be 14 instead of 22.

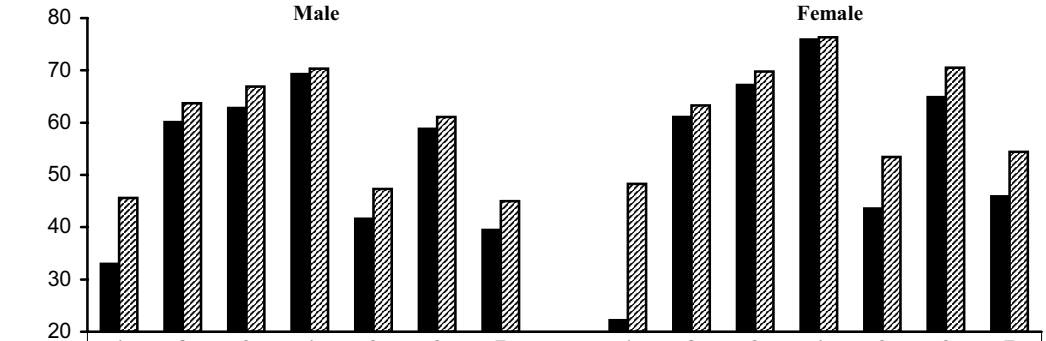
It is well known that the average age of death is one of the main structural components of mortality. In this regard, positive changes have occurred[43].

We can see positive, progressive changes in the increasing average age of death in 2000 compared to 1989. The average age of death for males increased from 59.8 in 1989 to 65.1 in 1999 and for females from 69 in 1989 to 72.7 in 1999.

[43] Vishnevski A., Shkolnikov V. Mortality rate in Russia is lowering. - Population and Society. 1997, N.23, p.3 (in Russian).

Changes in the average age of death in 2000 compared to 1989, are reflected in Figure 5.21, by the main cause of death.

Figure 5.21. Changes in the average age of death for 1989 and 2000 by cause of death in Georgia



	Male							Female						
	1	2	3	4	3	6	7	1	2	3	4	3	6	7
1989	33.0	60.1	62.8	69.3	41.6	58.8	39.5	22.2	61.1	67.2	75.9	43.6	64.9	45.9
2000	45.6	63.7	66.9	70.3	47.3	61.1	45.0	48.3	63.3	69.8	76.3	53.4	70.5	54.4

1 - Certain infectious and parasitic diseases
2 - Neoplasms
3 - Endocrine, nutritional and metabolic diseases
4 - Diseases of the circulatory system
5 - Diseases of the respiratory system
6 - Diseases of the digestive system
7 - Injury, poisoning and certain other consequences of external causes

In 2000 compared to 1989, the average age of death in Georgia, by main classes of causes, increased for both sexes. . However this increase has not been equal for all classes of diseases.

The most significant increase of the average age of death was reported in cases of infectious and parasitic diseases, injury, poisoning, and certain other consequences of external causes, as well as in case of diseases of the respiratory system.

Considerably low progress was achieved in increasing the average age of death in cases of neoplasms and disease of the circulatory system.

It should be noted also that in 2000, as in 1989, the average age of death caused by diseases of the circulatory system was higher than the average age of death caused by other diseases.

In total, the changes related to increases of the average age of death by the various classes of diseases may be viewed as positive.

5.9. Life Expectancy

The differences existing in the age-specific mortality rates between estimated and official (SDSG) data were generally reflected in the estimated life expectancy (see Figure 5.22.).

From the data calculated on the basis of the mortality rates provided by the SDSG, one can see that life expectancy at birth for both sexes, especially males, decreased in the period from 1960 to 1979 and then increased between 1979 and 1989.

We can explain the declining life expectancy at birth in the period 1960-1979 according to the SDSG by improvements in the registration of deaths in that period, which had been more incomplete in the 1960s than in the 1970s and especially in the 1980s.

We should note that life expectancy at birth in Georgia for the period of 1979-1980, as indicated in the literature, somewhat increased[44].

Figure 5.22. Life expectancy at birth in Georgia according to the SDSG, the UN and the authors' estimated data

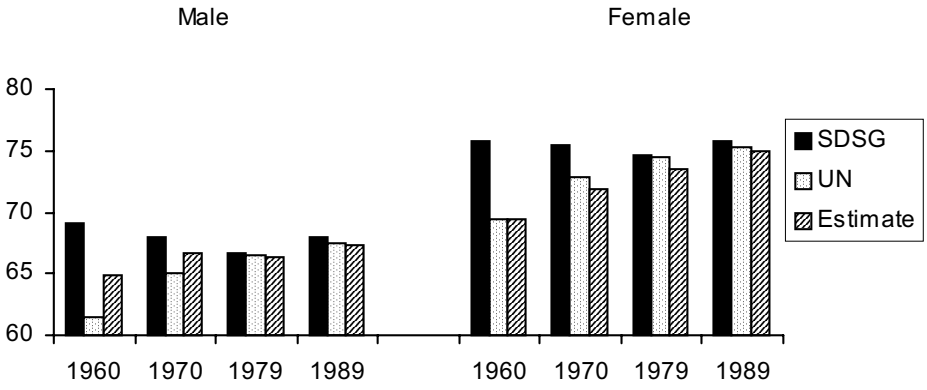


Figure 5.22. shows the level of life expectancy at birth in Georgia according to the SDSG[45], the UN[46] and our estimated data.

According to UN and our estimates, life expectancy at birth in Georgia increased in the period from 1960 to 1989.

These estimates presented a completely different picture from that given by the official data. Namely, instead of decreasing or stagnating, life expectancy was increasing during this period.

Figure 5.22. also shows that in the period 1960-1989 and especially in 1960-1970, life expectancy at birth was far less than it was according to official data.

The difference in male life expectancy figures between UN estimates and ours is conditioned by the fact that a difference between male and female life expectancy was discovered in the 1970s and later due to a higher relative male mortality.

In the 1990s, the political and economic situation was reflected in the life expectancy of Georgia.

Figure 5.23. reflects the dynamic of the estimated life expectancy at birth in Georgia, in 1990-2000, according to our estimates[47].

---

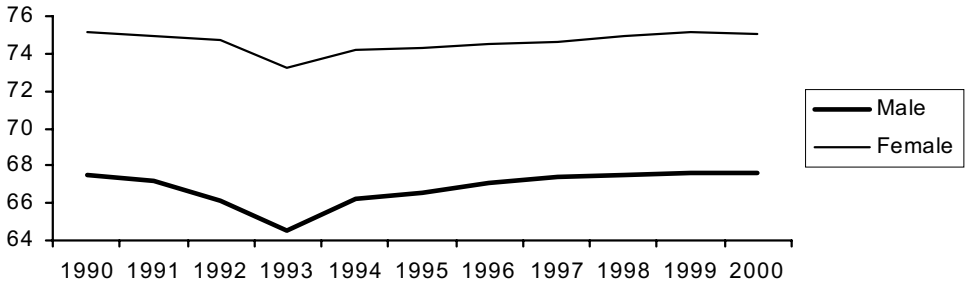
[44] World Population. Demographic Directory. Moscow, 1989, p.211 (in Russian).

[45] Calculated by N. Maglaperidze.

[46] 1960-1965, 1970-1975, 1975-1980, 1985-1990. The UN data are taken from the work: World Population Prospects. The 1998 Revision. Volume 1: Comprehensive Tables. UN. N.Y., 1999, p.200.

[47] Taking into account the fact that according to SDSG data the estimated life expectancy in Georgia for the period of 1990-2000 are unrealistically high due to under-registration of deaths and overestimation of the size of population, we will not consider them any more.

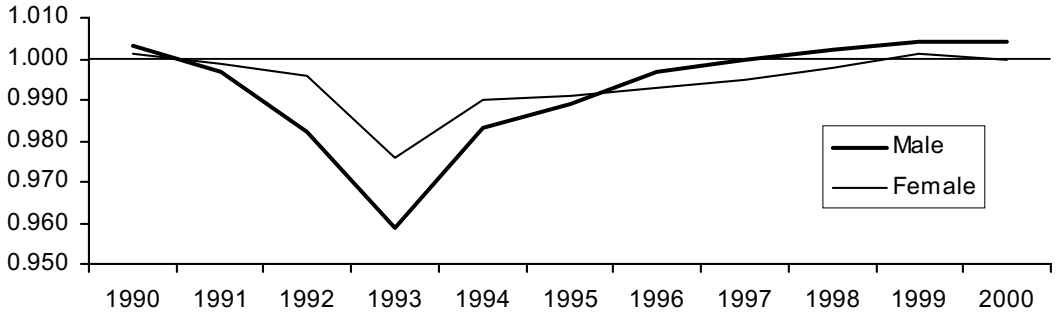
Figure 5.23. Change of life expectancy at birth in the period 1990-2000 (authors' estimates).



As can be seen from Figure 5.23., in 1991-1996 male life expectancy at birth was lower than in 1990. In 1993 life expectancy fell due to the Georgian-Abkhazian war. After 1997, life expectancy did not change

After declining during the 1991-1994 period, female life expectancy at birth increased after 1995. Figure 5.24. reflects the difference between estimated life expectancy in 1990-2000, compared to 1989.

Figure 5.24. Relative changes in estimated life expectancy at birth in Georgia in 1990-2000 compared to 1989 (straight line – the level in 1989)



According to Figure 5.24., the estimated life expectancy at birth in Georgia, in 1990-2000 changed in significantly compared to 1989.

The above change are reflected on Figure 5.25, in absolute values.

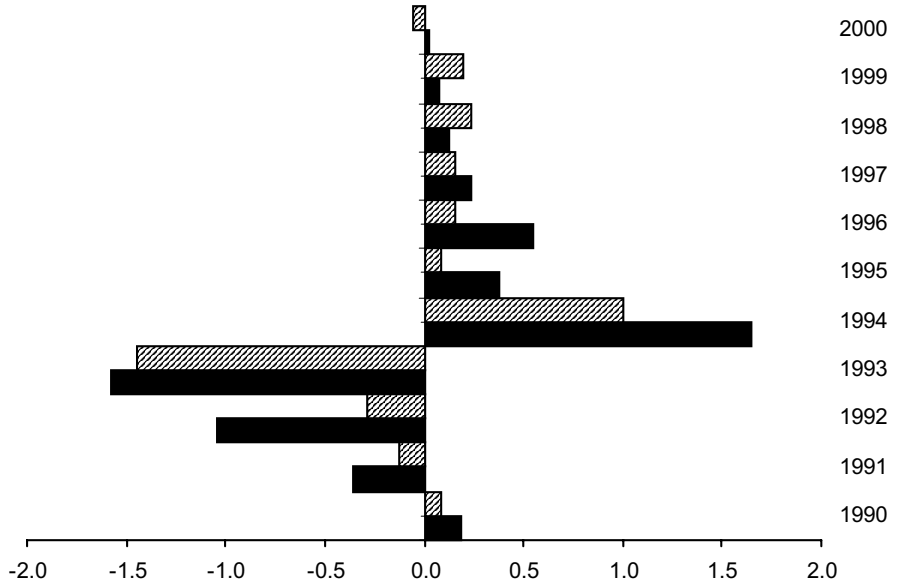
A decrease in estimated life expectancy for both sexes was reported in 1991-1993 (and in 2000 for female), while in other years the estimated life expectancy increased.

As a result of all these changes, the estimated life expectancy in Georgia in 2000 remained on the same level as in 1989.

This may be explained by the fact that the life expectancy of Georgians in 1989 in comparison with all other nationalities living in the country was higher (by about 2 years). In the 1990s, other nationalities of Georgia emigrated more than Georgians, which resulted in an increased share of Georgians in the total population. Thus, the similar rates of the estimated life expectancies reported in 2000 and in 1989, are mainly caused by structural changes in the composition of Georgia's population, resulting in a reduced share of those nationalities which had a lower estimated life expectancy than Georgians[48].

[48] Tsuladze G., Maglaperidze N. Life expectancy in Georgia. – Social Economics. 2000, N.3, pp.36-40 (in Georgian). The first idea in this regard was introduced by Shkolnikov V., and confirmed by us as a result of the analysis of the statistical data.

Figure 5.25. Changes in estimated life expectancy at birth in 1990-2000 compared to each preceding year

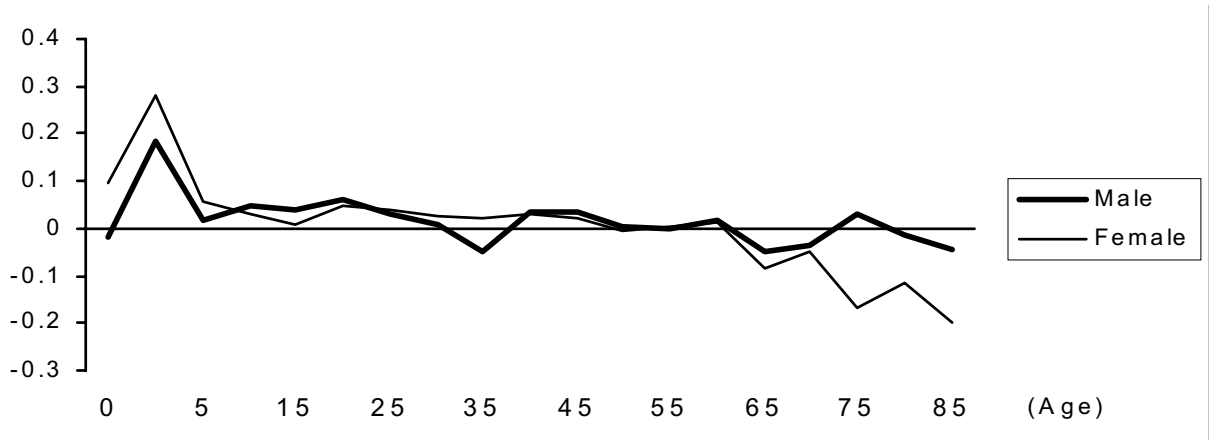


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Female	0.09	-0.13	-0.29	-1.45	1.00	0.09	0.16	0.16	0.24	0.20	-0.06
Male	0.19	-0.36	-1.04	-1.58	1.65	0.38	0.55	0.24	0.13	0.08	0.03

Decomposing the change of life expectancy at birth by age[49] Figure 5.26 shows the age components of change in male and female life expectancy from 1989 to 1999.

As we can see from Figure 5.26, the age group below age 30 had a positive impact on the change in life expectancy between 1989 and 1999 for both males and females. For males, we can see a negative impact after age 80, while for females the negative impact exists after age 65.

Figure 5.26. Age components of the change in male and female life expectancy from 1989 to 1999

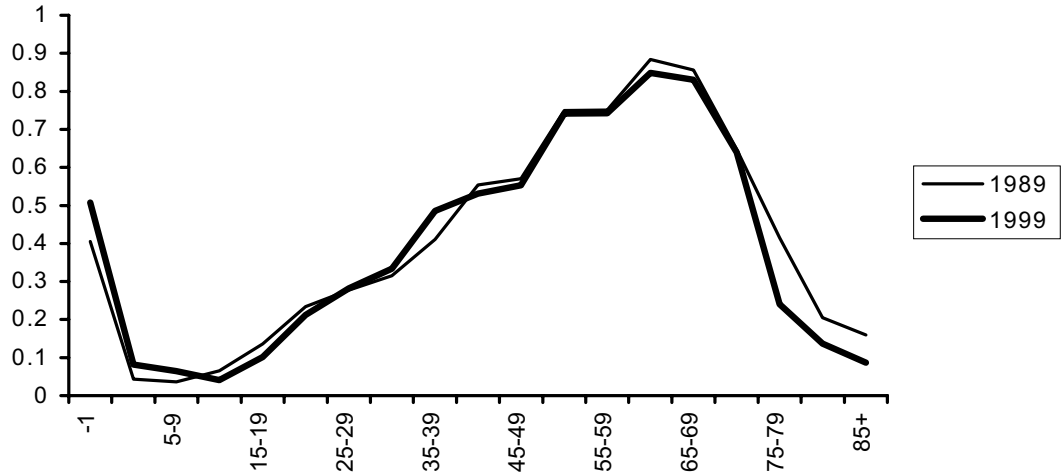


[49] Preston S.H., Heuveline P., Guillot M. Demography: Measuring and Modeling Population Processes. Blackwell Publishers. L., 2001.

As regards the difference between female and male life expectancy, by our estimates, in 1989 the difference was 7.7 years, which decreased in 1999 to 7.5 years.

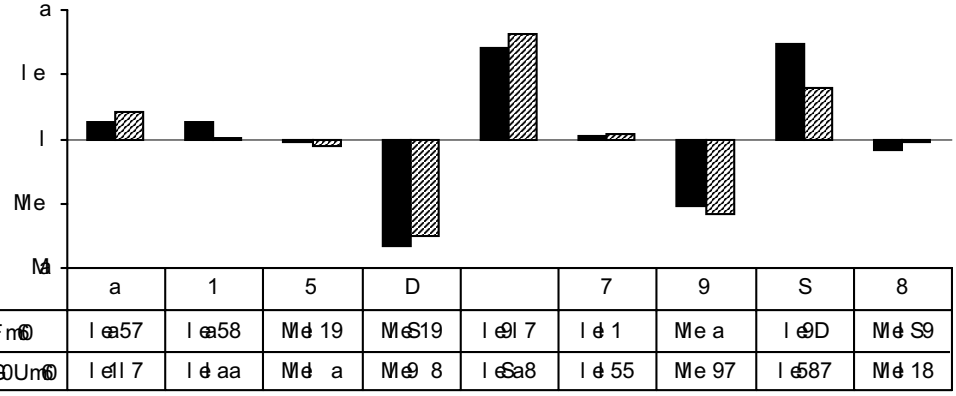
In 1989 as well as in 1999, the main impact on the change of life expectancy between females and males was in the age group below 1 and the 35-74 age group (Figure 5.27).

Figure 5.27. Age components of the differences in life expectancy between males and females from 1989 to 1999



Decomposing the change of life expectancy by cause of death[50] between 1989 and 1999 we can see that most of the loss for male as well as for female life expectancy was due to an increase of mortality by diseases of the circulatory system and by certain conditions originating in the perinatal period. These losses were compensated by declining mortality caused by diseases of the respiratory system (especially for females), by injury, poisoning and certain other consequences of external causes (especially for males). Compensation was less significant by declining mortality caused by certain infectious and parasitic diseases and neoplasms (Figure 5.28).

Figure 5.28. Causal components of changes in life expectancy between 1989 and 1999



1. Certain infectious and parasitic diseases
2. Neoplasms
3. Endocrine, Nutritional and metabolic diseases
4. Diseases of the circulatory system
5. Diseases of the respiratory system
6. Diseases of the digestive system
7. Certain conditions originating in the perinatal period
8. Injury, poisoning and certain other consequences of external causes
9. Other diseases

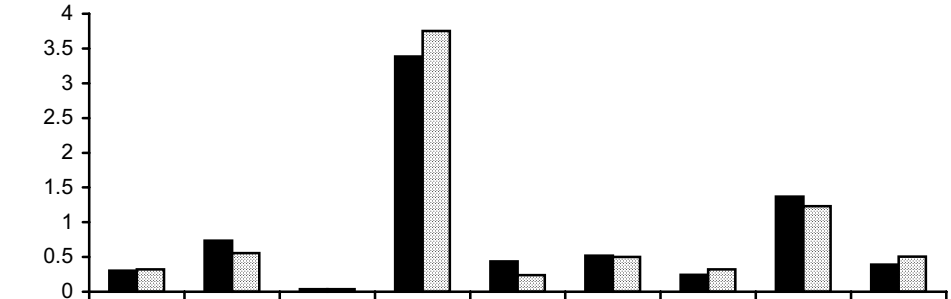
[50] ibid.

In the absence of a decrease in mortality caused by diseases of the circulatory system and by certain conditions originating in the perinatal period, male life expectancy as well as female life expectancy would have increased by 1.3 years from 1989 to 1999 (Figure 5.28).

In both 1989 and 1999, the main positive impact on the differences between female and male life expectancies were caused by diseases of the circulatory system and by injury, poisoning and certain other consequences of external causes (Figure 5.29).

In 1999, compared with 1989, the increase in the difference between female and male life expectancy was due to the comparable increase in mortality caused by diseases of the circulatory system and the comparable decreases caused by injury, poisoning and certain other consequences of external causes (Figure 5.29).

Figure 5.29. Causal components of differences in life expectancy between males and females from 1989 to 1999



	1	2	3	4	5	6	7	8	9
1989	0.305	0.733	0.036	3.383	0.435	0.519	0.244	1.368	0.39
1999	0.323	0.554	0.038	3.754	0.237	0.501	0.32	1.229	0.505

1. Certain infectious and parasitic diseases
2. Neoplasms
3. Endocrine, Nutritional and metabolic diseases
4. Diseases of the circulatory system
5. Diseases of the respiratory system
6. Diseases of the digestive system
7. Certain conditions originating in the perinatal period
8. Injury, poisoning and certain other consequences of external causes
9. Other diseases

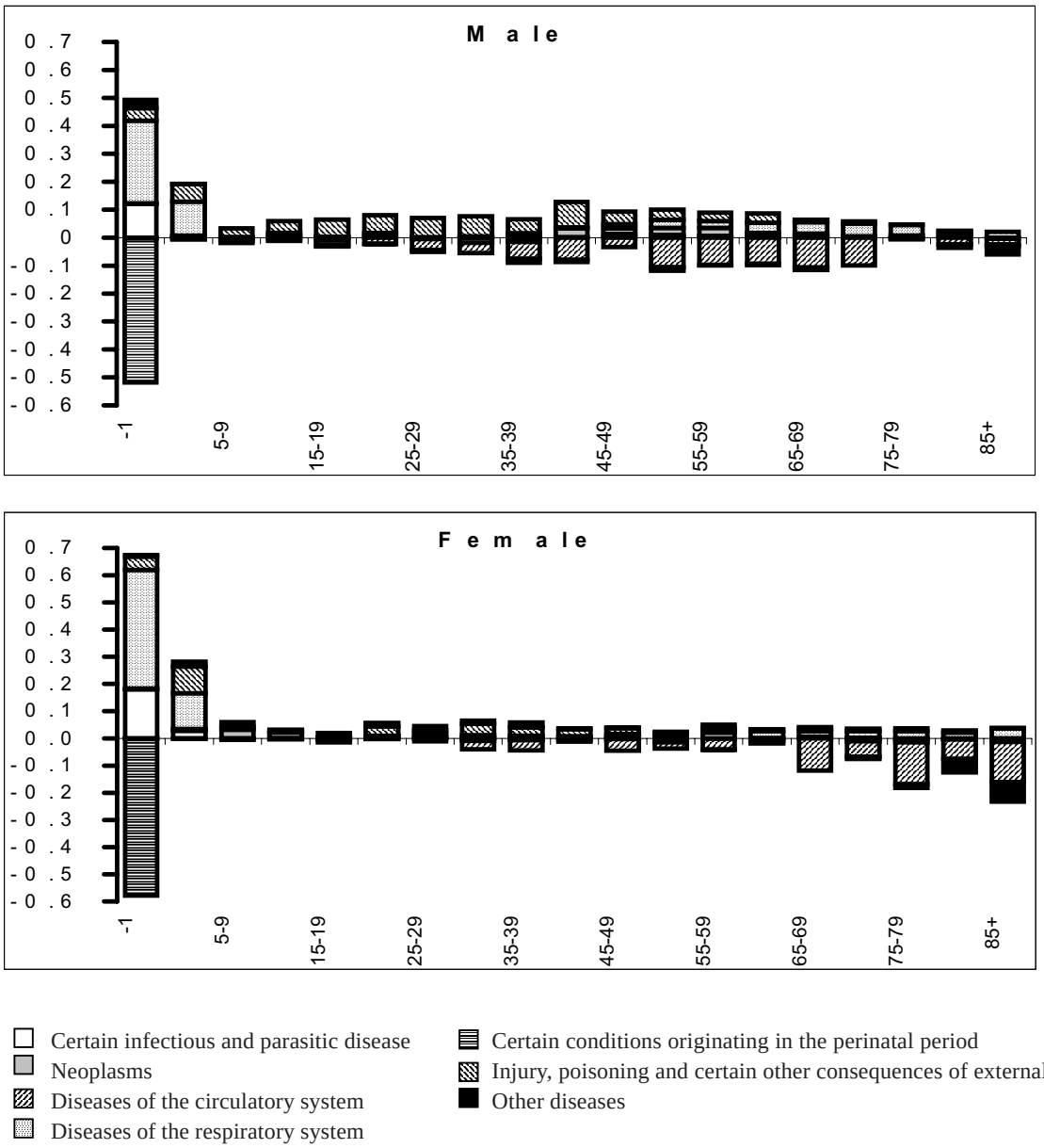
Figure 5.30. represents the causal components of change in male and female life expectancy between 1989 and 1999 by age.

For both males and females, infant mortality contributed positively to life expectancy. During the first year of life, certain infectious and parasitic diseases, diseases of the respiratory system and injury, poisoning and certain other diseases have a positive impact which are offset by certain conditions originating in the perinatal period.

Cardiovascular diseases have a negative impact on the change of life expectancy for both males and females in almost all age groups, especially after age 50. In contrast, diseases of the respiratory system have a positive impact on the change of life expectancy.

For both males and females, mortality levels at the oldest ages have a negative impact.

Figure 5.30. Causal components of change in male and female life expectancy between 1989 and 1999 by age



Thus, according to our calculations, the life expectancy in Georgia was increasing during 1960-1989. However, notwithstanding the changes having taken place in the country within the period of 1990-2000, the live expectancy in 2000 remained at the level fixed in 1989.

In 1995-1999, an estimated live expectancy at birth in Georgia was by 9 years less for male and by 7 years less for female, compared to Sweden, for the same period[51]. At the same time the estimated live expectancy for males reached 65 age and for females of the same age, was less by 3 and 4 years, respectively, compared to the relevant data of Sweden[52].

Proceeding from updated (estimated) data regarding mortality, we need to re-view the peculiarities of the process of demographic transition in Georgia, both for the end of the second phase and start of the third one and, generally, for the above mentioned period.

[51] Data about Sweden are taken from: Recent Demographic Developments in Europe. 1999. Strasbourg, 1999, p.528.
[52] Ibid.

VI

NATURAL INCREASE AND POPULATION REPRODUCTION

Natural population natural increase refers to the balance between births and deaths in a certain period of time. It can be expressed by an absolute value, a coefficient rate, the balance of the general birth and death rates or the ratio of the existing natural increase to the average size of the population in a certain period, expressed in per milles[1].

Population reproduction is a continuous process of generational growth formed from the interaction between fertility and mortality[2].

When measuring the population reproduction value, we can use various indicators. The population reproduction net rate is the most accepted and widespread one at present.

The population reproduction net coefficient is a general characteristic of the population reproduction regime, which takes account of fertility and mortality. It can be calculated for both sexes separately though as a rule, it is calculated for females only. In this instance, the population reproduction net rate represents a quantitative indicator of change between one generation and their mothers' generation. It indicates the average number of girls born per woman during her lifetime, and of them, how many will survive to the same age as when their mother gave birth[3].

Population reproduction is divided into three types of regimes – extended, replacement level fertility and reduced reproduction. Extended reproduction of population is when a generation is more than the preceding generation, which in turn conditions the subsequent growth of population. In this case, the value of the population reproduction net coefficient is above one. Population replacement fertility indicates the size of the preceding generation is almost the same as the present one. Here, the value of the net coefficient equals one. The reduced reproduction regime is when the size of the following generation is less than the the preceding one. This time the net coefficient of population reproduction is below one. Such a value doesn't mean the population's abrupt decline, but it is seen as a potential sign of depopulation[4].

6.1. Reliability of the Data

Population reproduction or natural increase are an outcome of particular interactions between fertility and mortality.

Thus, the reliability of the indicators of population reproduction and natural increase, and how well they really reflect the existing situation, depends on perfect registration of births and deaths.

---

[1] Concise Demographic Encyclopedic Dictionary. compiled by G.Tsuladze. Tbilisi, 2000. p. 121, 191.
[2] ibid, p. 177.
[3] ibid, p. 120.
[4] ibid, p. 179.

Current registration in Georgia isn't reliable.

Hence, judging from the registered births and deaths, as well as population numbers that are distorted due to incomplete recording of external migration, we can see that birth and death indicators are not accurate.

Such inaccuracies lead to the incorrect indicators of the population reproduction and natural increase that ultimately cause incorrect evaluation of the actual demographic situation and its prospects.

Therefore, in discussing natural increase and population reproduction, we have used corrected data.

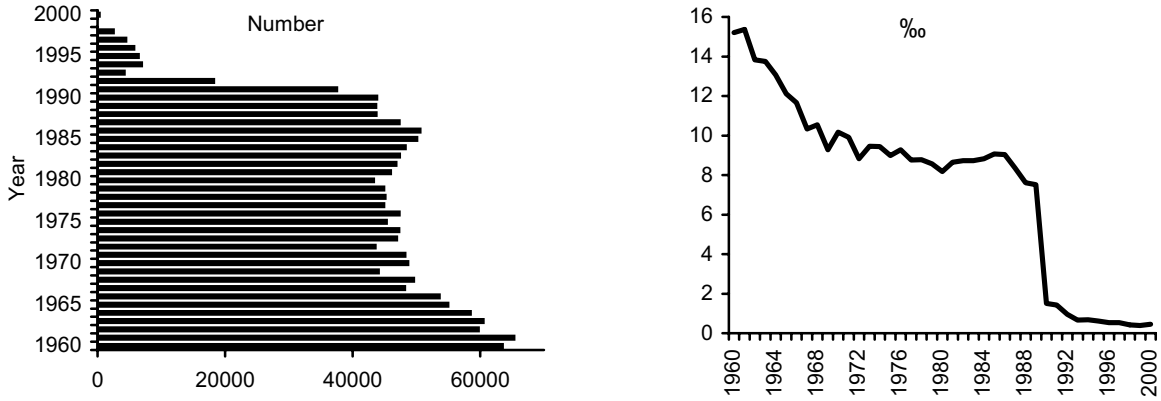
6.2. Natural Increase

In Georgia in the period under review (1960-2000) the years 1960-1965 had relatively high natural increases. In the following years, despite the certain changes, natural increase continued to decrease. In 1989 the natural increase in Georgia per 1000 population was 2 times less than in 1960.

The decline was conditioned by the two processes – fertility decline and mortality increase.

The sharp decline of fertility in the years of 1992-1993 brought about significant decline in the natural increase.

Figure 6.1. Natural Increase (number and rate) in Georgia in 1960-2000 (by our estimated data)



At the same time, population aging was followed by an increase in mortality that reduced natural increase to a point where in 1999-2000 it practically dropped to zero. The number of births and deaths became equal in Georgia.

The prospects of fertility growth are less likely to happen at present. Thus, the further growth of mortality will result in decline in the population size of Georgia in a natural way.

6.3. Population Reproduction

It's natural that decline in the total fertility rate entails decline in the population reproduction net coefficient. The latter experienced the same changes as the total fertility rate.

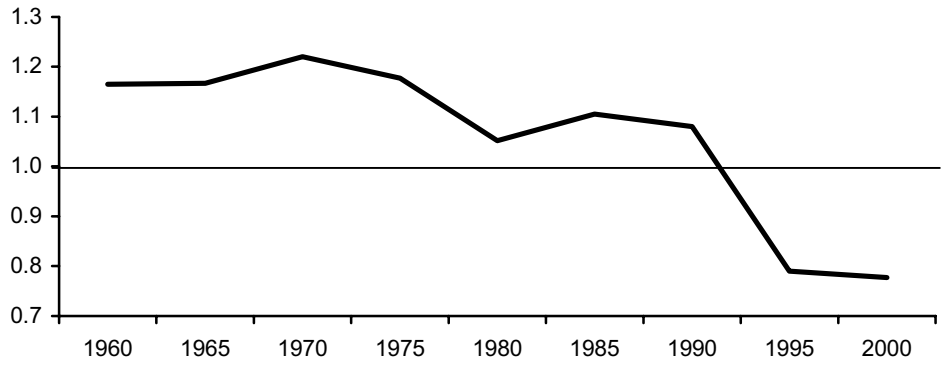
At the beginning of the 1970s, after a certain growth, the population reproduction net coefficient proceeded to decline and at the beginning of the 1990s its value practically came down to the lower level of the population replacement fertility rate. By 1992 the value of the net coefficient was below the replacement fertility level and it remains the same to date (see Figure 6.2).

Thus, in Georgia the extended regime of population reproduction of the 1960-80 period had by 1992 changed into the reduced regime and has remained so since then.

From the value of the 2000-population reproduction net coefficient, only 78 % of the female generation will be renewed. It has been the same since 1993.

This means that after 2000, Georgia's population will be 80% of what it was in the mid-1990s period (even without external migration).

Figure 6.2. Change of the Population Reproduction Net Coefficient in Georgia in 1960-2000



Straight line - Population Replacement Level Fertility

As it is known, the economy of the population reproduction regime indicates the number of girls born per woman in order to replace the maternal generation and maintain replacement fertility levels. The economy of the population reproduction regime is higher if its value is closer to one[5].

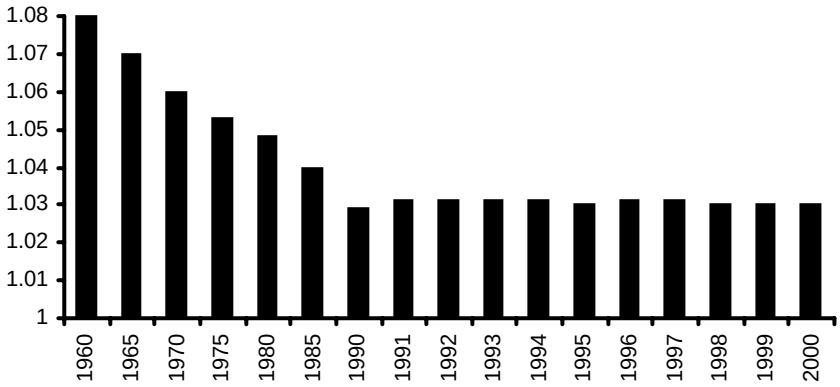
Since 1960 the difference between the gross population reproduction regime and the net reproductive regime declined. This process is called the economy of the population reproduction regime.

In 1960 in Georgia 100 mothers would have had 108 girls if the maternal generation had been renewed with the girls' generation. In 1975 for this process 105 girls were sufficient and in the 1930s, 103 girls.

[5] ibid, p.183.

Figure 6.3. Economy of the Population Reproduction Regime
Georgia in 1960-2000 (by our estimates)

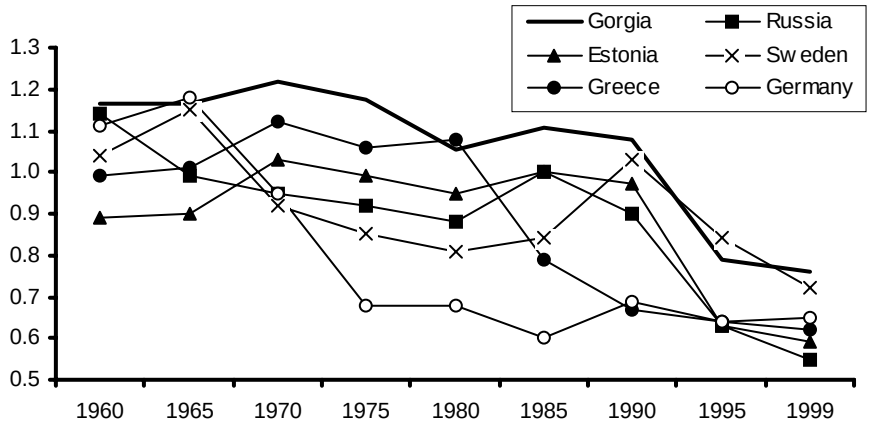
.



In this regard the situation in Georgia was improving . The renewal process of the maternal generation worsened because 100 mothers had less than 100 girls.

It is worth noting that the situation in this regard in many countries compared to Georgia is not better (see Figure 6.4.).

Figure 6.4. Population Reproduction Net Coefficient in Georgia
and in some other countries[6]



External migration is an important component of the demographic system. Peculiarities and natural development of the functioning of the demographic system largely depend on it.

[6] Georgia – by our estimated data; foreign countries – Recent demographic Developments in Europe. Strasbourg, 1997; Recent Demographic Developments in Europe. Strasbourg, 2000.

VII

EXTERNAL MIGRATION

The intensity of external migration can determine the population age-sex, social, ethnic and other features in large part. It can also affect an overall growth of population, demographic aging, demographic processes and population reproduction in general.

In Georgia, external migration plays a significant role in population formation.

The fact is that Georgia has had a negative balance of external migration since 1960. In 1973-1996 in Georgia, the negative balance of external migration was more than 10,000 (except 1990) annually, according even to the official data, which are not complete.

Population numbers proceeded to grow despite the negative balance of external migration.

The situation was exacerbated in the 1990s when fertility decreased significantly and mortality increased and at the same time external migration increased.

The low natural increase couldn't offset the high negative balance of external migration, which led to the reduction of the total number of Georgia's population.

At the same time external migration accelerated demographic aging and deformation of the population age-sex structure that in turn had some impact on the other processes.

7.1. Reliability of the Data

It was mentioned above that the registration of births, deaths and artificially induced abortions in Georgia is incomplete and it was noted that for various reasons the current recording of actual marriages and divorces is also incomplete.

According to specialists, the same situation applies to external migration. It means that not all emigrants are counted .

In the Soviet period when the State had strict control over external migration through *"propiska"* (registration) and other means, migration data was complete and reflected arrivals and departures for new permanent residence in a better and fuller way.

We cannot say the same about the post-Soviet period, especially after the transformation of *"propiska"* and its replacement with a new form.

The imperfect external migration data can be seen in the following example:

According to SDSG data, the external net migration for Georgia in 1995-1999 was 33, 500[1].

But according to the official Russian data , the balance of external migration between Russia and Georgia in the same period was 138,100[2]. The difference was 104,600.

The Russian experts think it is even higher, as not all migrants are enumerated[3].

[1] Tsuladze G., Maglaperidze N., Vadachkoria A. Demographic Yearbook of Georgia. 2000. Tbilisi, 2000. p.98.
[2] Population of Russia 2000. Editor A.G. Vishnevsky. M., 2001, p.108 (in Russian).
[3] Population of Russia 1996. Editor A.G. Vishnevsky. M., 1997, p.136 (in Russian).

It should be noted that in the Soviet period the statistics on external migration to a certain degree were "closed."

State statistics were not always available to everybody.

There are cases when the data of the Soviet period on external migration from Georgia presented in some publications considerably differ from the official statistical data. At the same time, it seems, the author's figures are based on the official statistical data and are significantly less compared with the SDSG's data, which has become available recently.

The balance of the external migration for Georgia in 1960-1988 is presented in Figure 7.1. according to SDSG data (thousands).

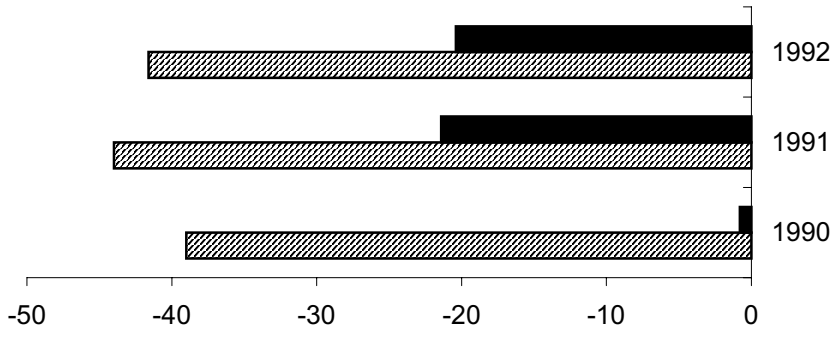
Table 7.1. Balance of External Migration for Georgia in 1960-1988

Year	Net	Year	Net	Year	Net
1960	-16.8	**1970**	-11.6	**1980**	-17.0
1961	-10.0	**1971**	-6.4	**1981**	-19.3
1962	-5.0	**1972**	-10.0	**1982**	-15.0
1963	-7.5	**1973**	-14.6	**1983**	-15.9
1964	-7.6	**1974**	-13.9	**1984**	-16.9
1965	-10.0	**1975**	-25.5	**1985**	-18.8
1966	-10.6	**1976**	-12.0	**1986**	-19.8
1967	-14.8	**1977**	-23.7	**1987**	-19.9
1968	-15.6	**1978**	-22.0	**1988**	-13.3
1969	-8.6	**1979**	-19.0	**Total**	-421.1

The negative balance of external migration in the years 1960-1988 is twice what it is in other publications.

Due to unclear reasons (we can only assume what these reasons might be) the SDGS data on external migration in 1990-1992 significantly differ from each other (see Figure 7.1.).

Figure 7.1. Negative Net Balance of External Migration for Georgia in 1990-1992**,** known to date and according to the updated SDSG data (thousand)



	1990	1991	1992
Updated	-0.8	-21.4	-20.4
Known to date	-39.0	-44.0	-41.6

Sadly, many inferences were drawn from the SDSG's "updated" data and from the data that are known to date.

Below we have used the SDSG's updated data on discussing external migration .

It should be noted that our estimated data on external migration, which were released prior to the given work, were corrected to a certain degree, especially for the years 1990-1995.

Such corrections were conditioned by the population change in 1989 when it was used as a basis. The changes made were necessary for relevant correct population size and external migration as well.

As to our estimation of external migration, it is based on external migration's place in the demographic system and data analysis of a sample survey conducted in 1990-2000 in Georgia on the issues of external migration.

Despite the fact that SDSG data on external migration is not complete we thought it expedient to discuss it first, because information on separate issues is available in SDSG data.

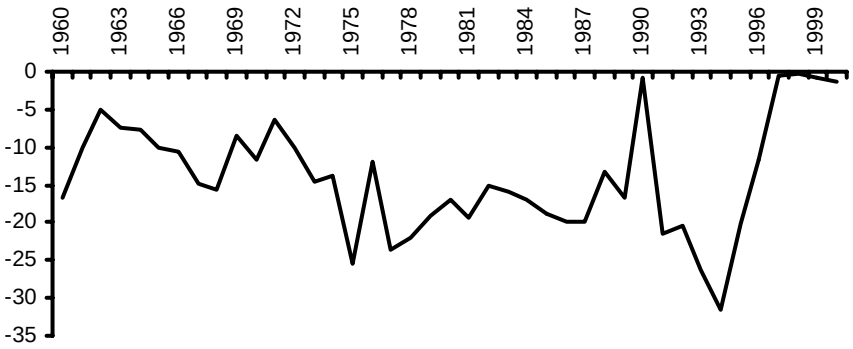
7.2. General Tendencies

First of all we have discussed external migration in 1960-2000 according to the SDSG's data.

At the moment it is difficult to know how reliable are the data on external migration for the period of 1960-1989. At least they represent the latest figures and they differ from public data which were known until recently.

Above we have reviewed them partially. Below we will discuss them in more detail (see Figure7.2.).

Figure 7.2. External Net Migration in Georgia in 1960-2000
According to the SDSG's latest updated data (thousand)



Despite some annual variations, negative net external migration steadily proceeded to grow in absolute numbers from 1960 to 1990 (according to the SDSG's data).

In 1990-2000 according to the SDSG's data the negative net external migration was even less in than it had been in 1980-1989 and 1970-1979.

It is worth noting that the negative net external migration has had a very low value since 1997 that is due to the transformation of *propiska* (registration) in Georgia.

It should be noted also that negative net external migration was lower in the 1990s in comparison with the previous period.

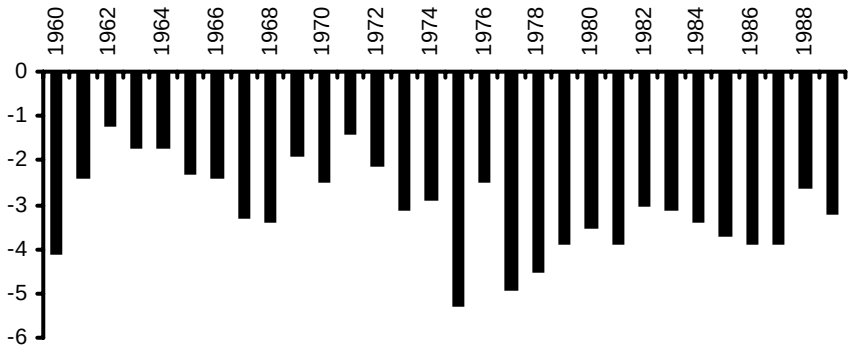
But everybody in Georgia knows that external migration in the 1990s in Georgia was larger than in the previous years.

The 1990s will be discussed in more detail below. In the given instance, it should be noted that absolute value doesn't enable us to characterize the intensity of migration. To characterize migration intensity we used a net coefficient of migration intensity (net migration which is the ratio of balance to the relevant mid-year number of Georgia's population multiplied by a thousand).

The net intensity coefficients of external migrations in 1960-1989 are provided in Figure (7.3.). Net migration balance is obtained from the SDSG's data and the population number, from our estimated data.

As we see in separate years the intensity of migration varied widely especially in 1960-1979, though the intensity of external migration was not below 1,2‰ or above 5,3‰. It varied a little in the 1980s when it fluctuated between 2,6 – 3,9‰. Since 1960 on average the intensity of external migration in Georgia has grown for several decades.

Figure 7.3. Net Coefficient of External Migration in Georgia in 1960-1989 (‰)



Thus, there has been negative net external migration and an intensive growth of external migration on average.

In the 1990s the well-known political, socio-economic and societal changes, which took place in Georgia were reflected in external migration.

Unfortunately, those events were accompanied by worsened statistical recording of migration and demographic events.

Further, different estimates of external migration as well as other demographic events appeared along with the SDSG's data.

G. Tsuladze and M. Khmaladze[4], G. Meladze and G. Tsuladze[5], R. Gachechiladze[6] and T. Gugushvili[7] provided estimates.

G. Tsuladze and M. Khmaladze estimated the negative net external migration in 1992-1994 to be nearly 600,000[8].

G. Tsuladze and G. Meladze gave a figure of 1,006,000 for 1990-96[9].

In the same period (1990-1996) R. Gachechiladze's estimates was 620,000[10].

T. Gugushvili's estimate was 820,000[11].

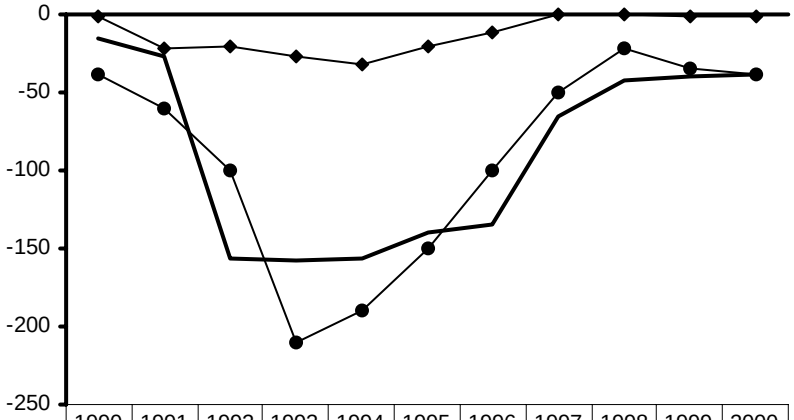
The UN have said that 80,000 left per year on average between 1995 and 2000[12] and for the whole period it reached 480,000 .

The estimates differ, but they all show higher figures than the official data.

Over time, in the light of new data and information, the estimates have been updated.

Figure 7.4 shows negative net external migration for Georgia in 1990-2000 according to the SDSG's latest updated data and our and T. Gugushvili's estimates[13].

Figure 7.4. Net External Migration in Georgia in 1990-2000 according to the SDSG, our and T. Gugushvili's data (thousands)



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
SDSG	-0.8	-21.4	-20.4	-26.3	-31.5	-20.2	-11.7	-0.5	-0.2	-0.9	-1.3
Estimate	-15.8	-27.4	-156	-157	-157	-139	-135	-65.2	-42.3	-39.5	-38.6
T.Gugushvili's estimation	-39	-60	-100	-210	-190	-150	-100	-50	-22.4	-34.8	-39

[4] Tsuladze G, Khmaladze M. How many were we? How many are we? "Georgia", N° 10 (1448), 1996 (in Georgian).
[5] Meladze G., Tsuladze G. Population of Georgia and Demographic Processes. Tbilisi, 1997 (in Georgian).
[6] Gachechiladze R. Population Migration in Georgia and Its Socio-Economic Consequences. Tbilisi, 1997 (in Georgian).
[7] Gugushvili T. External Migration and Demographic Problems of Georgia. Tbilisi, 1998(in Georgian).
[8] Tsuladze G., Khmaladze M. How many were we? How many are we? "Georgia", N° 10 (1448), 1996 (in Georgian).
[9] Meladze G., Tsuladze G. Population of Georgia and Demographic Processes. Tbilisi, 1998, p.19 (in Georgian).
[10] Gachechiladze R. Population Migration in Georgia and Its Socio-Economic Consequences. Tbilisi, 1997, p.36 (in Georgian).
[11] Gugushvili T.. External Migration and Demographic Problems of Georgia. Tbilisi, 1998, p.52 (in Georgian).
[12] World Population Prospects. The 1998 Revision. Volume I: Comprehensive Tables. UN, N.Y., 1999, p. 200.
[13] T. Gugushvili's new estimation is not released. It is presented in our work by his permission.

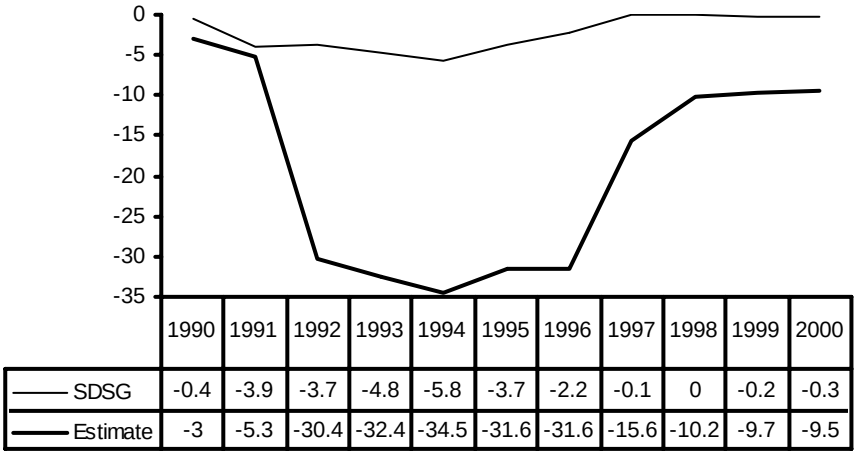
As we see, the SDSG's data and estimates of net external migration are rather different. According to the estimates, negative net external migration for Georgia in 1990-2000 was much more (7 times) than according to the SDSG's data. The reason in our opinion is incomplete registration of external migrants, especially since 1997.

Both sets of estimated data on net external migration for the whole period (1990-2000) are not too different from each other. In our estimates the negative net external migration in 1990-2000 was 88,500 per year on average (for the whole period, 973, 600) , and in T. Gugushvili's estimates, it was 90,500 (for the whole period, 995, 200).

In the final analysis the both sets are not largely different from each other. This can't be said about individual years in the 1990s when the differences were quite significant. 2000 was the exception, when the figures were similar.

In both estimates there was high negative net external migration in 1992-1996. It reached its maximum in 1993.

Figure 7.5. Net Intensity Coefficient of External Migration in Georgia by the SDSG's and our estimated data in 1990-2000 (‰)



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
SDSG	-0.4	-3.9	-3.7	-4.8	-5.8	-3.7	-2.2	-0.1	0	-0.2	-0.3
Estimate	-3	-5.3	-30.4	-32.4	-34.5	-31.6	-31.6	-15.6	-10.2	-9.7	-9.5

It is clear that SDSG and our data are different (see Figure 7.5.).

Our estimated data shows that external migration grew precipitously and markedly in 1992; after that despite a certain change it remained the same and very high until 1996 inclusive. In 1997 compared with 1996, external migration was halved and in 1998 it fell again. From then on there has been insignificant decline. In 2000 the net external migration in Georgia was 3, 6 times less than in 1994 and 3, 3 times less as compared even with 1996.

Still, it was l rather high and in 2000 it was 1, 8 times more than at any time for the period of 1960-1989.

Thus, in 1960-1989 a negative net external migration was characteristic of Georgia. In addition, according to the SDSG's updated data for 1989 and our estimated data for 1990-2000, the absolute value of the negative net external migration as well as its intensity underwent growth.

By our estimates, in 1960-2000, Georgia's population decreased by over 1,411,000 people (by official data, it declined by 572, 900) due to external migration.

The 1990s were especially important when, by various estimated data, Georgia's population experienced much more decline due to external migration than in the previous 30 years.

By estimated data, in the years 1990-2000 due to external migration, Georgia experienced population decline by up to 19% of the 1989 population, i.e. very fifth person.

Certainly it is a big figure, though in some post-Soviet countries the situation is worse in this regard. At the seminar, "Central and East Europe in the System of Migration," held in Moscow in November 2001, some interesting figures were given. It was noted that 1 million people had emigrated from Armenia, i.e. 26% of the country's population. From Azerbaijan to the Russian Federation alone, 2 million people emigrated[14], i.e. nearly 25% of the total population of Azerbaijan, and approximately 500,000 people left Moldova, i.e. nearly 30% of Moldova's population[15].

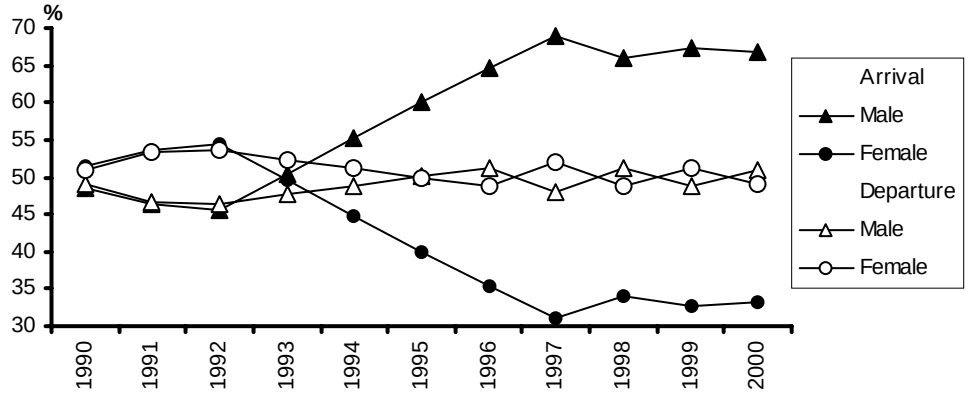
Specialists deem that external migration is caused by grave socio-economic conditions and generally low living standards in the countries of origin[16].

7.3. Migrants Gender and Age

Discussion presented below is based on the SDSG's data. In addition, because the SDSG's data don't reflect completely the scale of external migration, percentage indicators are used to reflect the discrepancy.

It is apparent from figure 7.6. that, among arrivals prior to 1993, the proportion of females was more compared to males, and since 1993 the proportion of males has exceeded the female proportion. Since

Figure 7.6. External Migrants Share (%) by sex in Georgia in 1990-2000 (by the SDSG's data)[17]



[14] By the Russian official data in 1990-1999 about 340 thousand emigrants were registered from Azerbaijan (Population of Russia 1997. Editor A.G. Vishnevsky. M., 1998, p.111; Population of Russia 2000. Editor A.G. Vishnevsky. M., 2001, p.108 (in Russian).

[15] Khmaladze M. Population Labor Migration of Tbilisi. - Audit, Accounting, Finances. 2002, N° 2 (in Georgian).

[16] ibid.

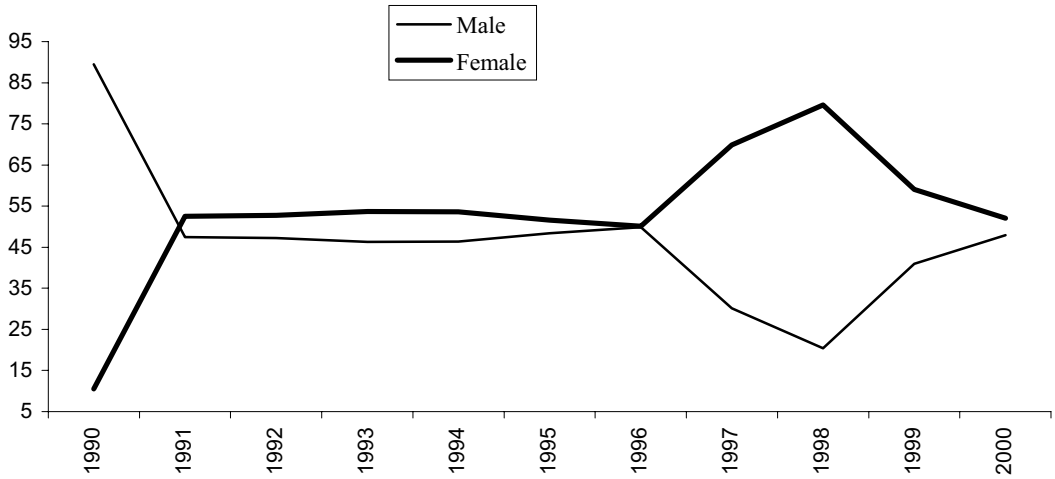
[17] Here and further the SDSG's differentiated data on external migration of Georgia for the year 1993 are estimated and obtained from the computing done jointly by G. Tsuladze and the staff of the Department of Demographic Statistics.

1994 and especially since 1996 they exceeded females significantly. In spite of this, for the whole period of 1990-2000 the share of females (51,4%) among arrivals was somewhat more compared to the males share (48, 6%).

Prior to 1995 more females departed than males. In 1995-1996 the male share surpassed the female share. Since 1997 sometimes the females share has been more and sometimes less. In the period of 1990-2000, the share of females (51, 9%) among departed persons was more than the share of males (48, 1%).

It's interesting to find out which sex's share was more in the negative balance (see Figure 7.7.).

Figure 7.7. Male and Female Share (%) in the Negative Net External Migration in Georgia in 1999-2000 (by the SDSG's data)



As we see, except for 1990, in negative net external migration, the female share exceeded the male share. In 1990-2000 the female share in the negative net external migration accounted for 52, 5% and the male share was 47,5%.

As to the migrants arriving in and departing from Georgia, they are presented by sex and age in Figure 7.8.

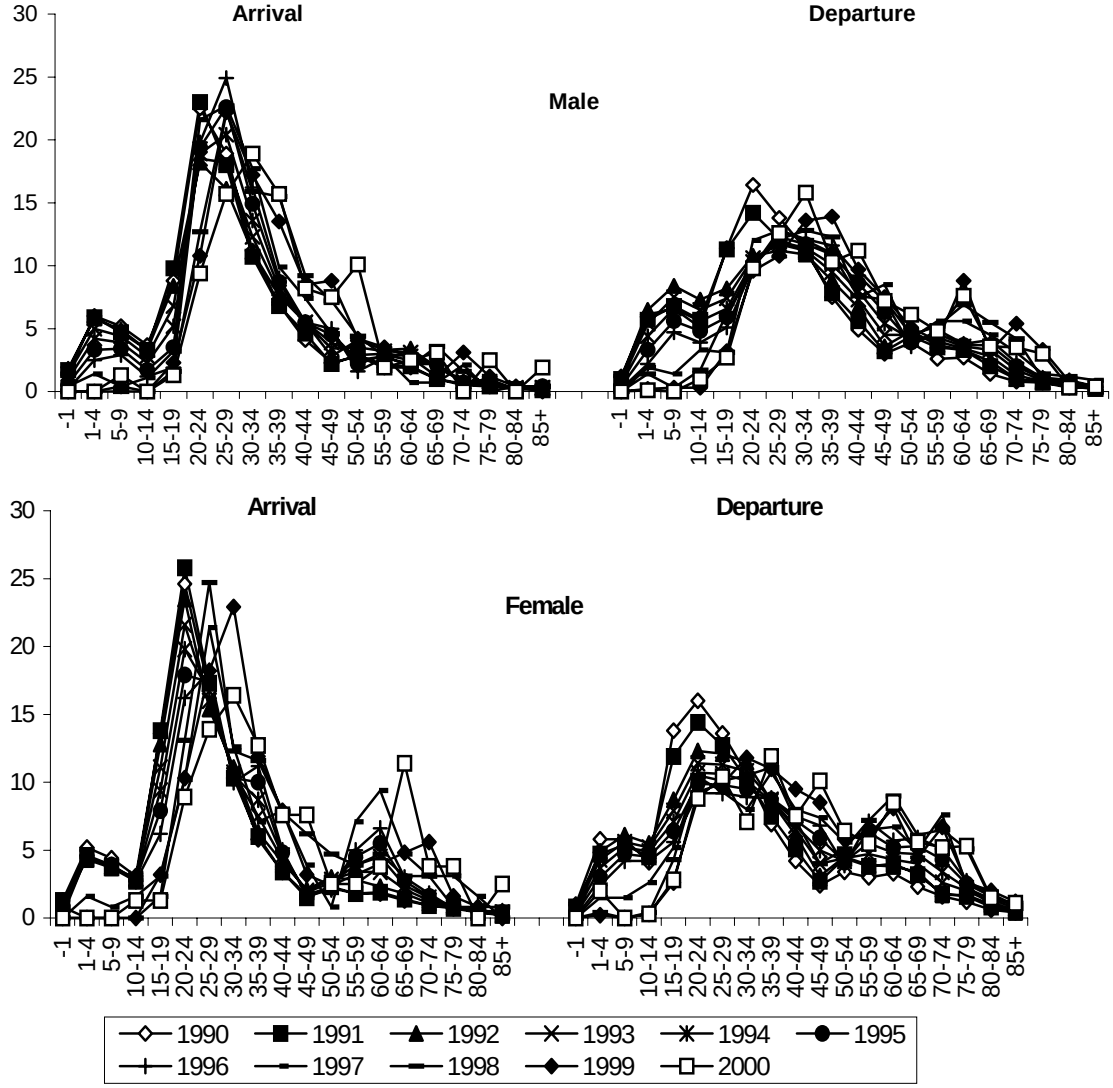
As we see, a large share of both males and females who arrived and departed in 1990-2000 were aged 15-39. At the same time, since 1990 the share of 15-19 year-old migrants declined and the share of migrants aged 35-39 and older increased.

It should be noted, that as a whole and at the same time by age and sex, in the case of the negative net external migration for the period of 1990-2000, there is one exception. Namely, 20-24 year-old females have a positive net balance, i.e. female arrivals of the given age exceeded the number who departed. At the same time, while in 1990-1992 the net balance for 20-24 year-old females was positive, since 1993 the opposite is true. But the positive balance of 1990-1992 exceeded the negative balance of 1993-2000 and so the balance for the whole period of 1990-2000 was still positive (by the SDSG's data).

It should also be noted that according to the SDSG's data, 20-24 year-old males in 1990-1991 and 1997-1998 had a positive balance, though for 1990-2000 the balance was negative on the whole. In 1990-2000 the negative balance of 20-24 year-old males was somewhat less than the negative balance of the

prior (15-19) and the next (25-29) age groups. It exceeded only the negative balance of under-ones and those over 74.

Figure 7.8. Distribution of arrived and departed migrants (%) in Georgia in 1990-2000 by age and sex (by the SDSG's data)



On the whole, the negative balance for the migrants of both sexes aged 20-24 was very low. It was 3 times less than the balance for migrants aged 85 and older.

20-24 year-old migrants participated in migration processes rather intensively according to the SDGS data The intensity coefficients of their arrival and departure are one of the highest, but the balance between arrival and departure is very low.]

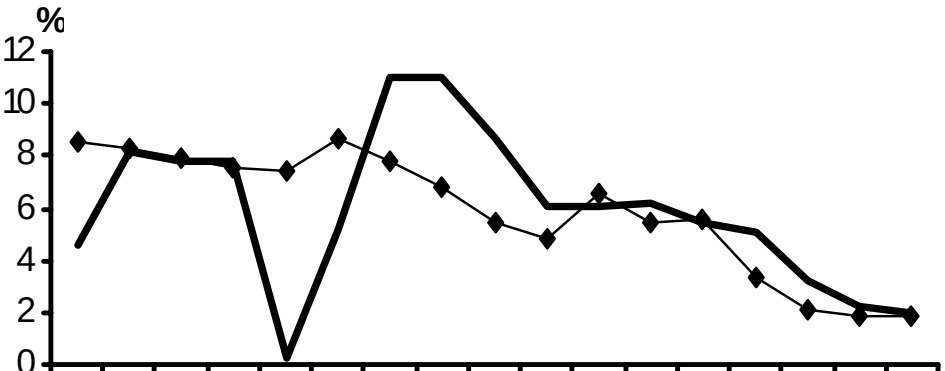
The age composition of Georgia's population in 1990 and the age composition of migrants of both sexes in 1990-2000 are shown in Figure 7.9.

As we see, for under-fives (and especially under-ones) the share balance is largely less than the share of the population of the same age. The share balance for 10-19 year-olds of the general population and external migrants is similar, and the share of 20-29 year-olds of the population (especially 20-24 year-olds) is significantly more than the share balance for the external migrants of the corresponding age. At the age of 30-49 the share balance for migrants is much higher compared to the population share of the same age. The share of migrants is less compared to the population share at 50-54, and from the the age

55 onwards (except for 60-64) the share of migrants exceeds the population share of the corresponding age.

If the share of migrants of older ages was not more compared to the population share in the period of 1990-2000, then the level of demographic aging in Georgia would have been higher.

Figure 7.9. Age Composition of Georgia's population in 1990 and Age Composition of the Net Migration in 1990-2000 (by the SDSG's data)



	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+
Population in 1990	8.5	8.3	7.9	7.6	7.4	8.6	7.8	6.8	5.4	4.8	6.6	5.4	5.6	3.3	2.1	1.9	1.8
Net in 1990-2000	4.6	8.2	7.8	7.8	0.2	5.2	11	11	8.7	6.1	6.1	6.2	5.5	5.1	3.2	2.2	2

It should be noted that the excess of migrants' share of older age compared to the population structure is not typical or characteristic of migration. It confirms that besides labor migration there is another type of external migration. Namely, there is emigration of whole families and elderly people to their relatives, settled and residing abroad.

7.4. Direction of External Migration[18]

The discussion below is also based on the SDSG's data. Because the SDSG's data on external migration is not complete, although they have been adjusted since 1995 by comparison, net external migration is presented since 1995 in percentages. In addition, for the purpose of leveling off the deviation in separate years, the net external migration is presented for the period of 1995-2000.

---

[18] About presented and other aspects of external migration see:
R. Gachechiladze. Population Migration in Georgia and Its Socio-Economic Consequences. Tbilisi, 1997 (in Georgian);
T. Gugushvili. External Migration and Demographic Problems of Georgia. Tbilisi, 1998 (in Georgian);
G. Meladze, G. Tsuladze. Population of Georgia and Demographic Processes. Tbilisi, 1997 (in Georgian).
G. Pirtskhalava. Population of Georgia: National Composition, family, Migration. Tbilisi, 1997 (in Georgian);
A. Totadze. Population of Georgia on the Boundary of the Second and Third Milleniums (in Georgian);
G. Tsuladze, G. Meladze. Demographic Situation in Georgia. Tbilisi, 1998;
M. Tukhashvili. Population Migration in Georgia. Tbilisi, 1996(in Georgian);
M. Tukhasvili. Labor Potential of Georgia. Tbilisi, 1998 (in Georgian);
T. Zubiashvili. Contemporary International Migration. Tbilisi, 1999 (in Georgian) and others.

Table 7.2. Net External Migration (%) for Georgia and Other Countries in 1995-2000 (by the SDSG's data)

Country	Net (%)	Country	Net (%)	Country	Net (%)
Russia	-69.1	Armenia	-3.5	Germany	-0.8
Ukraine	-4.8	Azerbaijan	-2.4	Greece	-6.6
Byelorussia	-0.7	USA	-1.9	Denmark	-0.3
Uzbekistan	0.2	Canada	0.6	Israel	-7.5
Kazakhstan	-0.2	Australia	-0.1	Other	-2.9

As we see in the period of 1995-2000, 69,1% of the negative net migration between Georgia and other countries was with Russia. According to the SDSG's data in 1995-1996 the figure for Russia made up 72% of the total external migration. In the following years it significantly declined and for 1997-2000 it accounted for only 36,7% on average (according to the SDSG's data)

Israel, Greece, Ukraine, Armenia and Azerbaijan are the other main destinations.

Georgia had a slightly positive balance with Canada, Uzbekistan and with some other countries, which are not included in the "other" countries group (Estonia, Tajikistan, Turkmenistan, New Zealand, France). Because a considerable number and share of the net external migration is with Russia, further attention is paid to this. We used the SDSG's and official Russian data.

Table 7.3. External Migration Between Georgia and Russia (thousand)[19]

	1995	1996	1997	1998	1999	1995-1999
By SDSG data	14.7	8.3	0.2	0.0	0.3	23.5
By Russian data total	47.3	34.5	21.2	18.1	17.0	138.1
Among them:						
Russians	14.2	9.1	5.5	4.5	3.3	36.6
Georgians[20]	9.9	7.1	5.3	3.6	3.1	29.0

As we see, net external migration between Georgia and Russia is significantly different according to the SDSG and Russian statistical data,, especially since 1997 due to above-noted reasons (see Table 7.3.). In the period of 1995-1999, which is under our consideration, the net external migration between Georgia and Russia was considerably less compared to the years 1990-1994. In 1995-1999, while the net migration between Georgia and Russia (by Russia's data) was 138,100, in 1990-1994 it reached 216,600 and amounted to 354,700[21] for 1990-1999.

In 1995-1999 Russians who emigrated to Russia did so with less frequency than before. In this period 36,600 of them left, while in 1990-1994 115,100 did so, according to Russian statistics. Thus, in 1990-1999 the net external migration of Russians between Georgia and Russia was 151,700[22].

[19] Russia's data source: Population of Russia 1997. Editor A.G. Vishnevsky. M., 1998, p.110, 114, 116; Population of Russia 2000. Editor A.G. Vishnevsky. M., 2001, p.108-110 (in Russian).

[20] General Migration Balance of Georgians between Georgia and the CIS and Baltic Countries.

[21] Computing by us on the basis of the data presented in the following sources: Population of Russia 1997. Editor A.G. Vishnevsky. M., 1998, p.110, 114, 116; Population of Russia 2000. Editor A.G. Vishnevsky. M., 2001, p.108-110(in Russian)

[22] ibid.

In fact, the number should have been somewhat more in the 1990s.

According to the 1989 census data, 341,200 Russians resided in Georgia and 264,200[23] excluding Abkhazia and the Tskhinvali region.

As of January 2000, in our estimation, the number of Russians residing in Georgia was not more than 90,000 [24].

In the 1990s the death rate of Russians residing in Georgia exceeded their birth rate and therefore their number was reduced. In 1990-1999 according to the SDSG's data (1993 - our estimates) their number decreased by nearly 16,000 . As was said above, in 1990-1999 the balance of Russians between Georgia and Russia was negative and it made up 151,700 . In total, because of natural decrease and migration, the number of Russians decreased by 167,700 . If we subtract 167,700 from 264,200 (the number of Russians living in Georgia in 1989, excluding those living in Abkhazia and the Tskhinvali region) we get 96,500.

This figure is 6,500 more than our estimate , but it should be taken into account that a small number of Russians might have gone to other countries besides Russia.

In the second case, Russians emigration to Russia occurred from Abkhazia and the Tskhinvali region where they were about 77,000 of them according to the 1989 census data. 74,900 (97,3%) of them resided in Abkhazia and 2,100 (2,7%), in the former South Ossetian Autonomous District.

According to T. Gugushvili, as of January 1, 1998, only 18,000 ethnic Russians remained in Abkhazia. In addition to the 74,900 Russians residing in Abkhazia in 1989, 47,000[25] permanently left Georgia. Thus, by our estimates, official Russian statistics for 1990-1999should have included another 40,000.

42,000 more Georgians from throughout the CIS went to Russia than left Russia[26].
This value (42,000) is actually comparatively very low and it indicates that the Russian statistics managed to register only a small part of migrants having Georgian nationality.

In T. Gugushvili's estimation in 1998 , of the 580,000 Georgians outside Georgia, 400,000 of them had left Georgia in the 1990s [27].

Negative net external migration will be characteristic of Georgia in 2000-2010[28] and perhaps for the next period when the population of Georgia will shrink again[29].

---

[23] Tsuladze G., Maglaperidze N., Demographic Yearbook of Georgia. 1999. Tbilisi, 2000. p.80.
[24] ibid.
[25] Gugushvili T.External Migration and Demographic Problems of Georgia.Tbilisi,1998, p.102 (in Georgian).
[26] Computing by us on the basis of the data presented is the following sources: Population of Russia 1997.M., 1998, p.116; Population of Russia 2000. M., 2001, p.110 (in Russian).
[27] Gugushvili. T. External Migration and Demographic Problems of Georgia. Tbilisi, 1998, p. 102 (in Georgian).
[28] World Population Prospects. The 1998 Revision. Volume I: Comprehensive Tables. UN, N.Y., 1999, p. 200.
[29] G. Tsuladze, N. Maglaperidze. Demographic Prospects of Georgia. Tbilisi, 2001, p. 17-19; see also the section of the given work: "Demographic Prospects".

VIII

POPULATION PROSPECTS

The material presented below is based on the projections of population demographic indicators of Georgia including 2020, using international standards and obtained by the cohort-component method.

Calculations for the prospects of demographic indicators of Georgia were first made in 2001[1] according to the abovementioned method and practically accepted international standards. Besides it must be mentioned that such calculations were made in the past[2] and are systematically revised[3] by UN experts for Georgia and other countries.

In total prospects made on a high professional level unfortunately in Georgia do not correspond to the real situation today and it is natural that projections based on them will be unreliable. This situation was and is caused by the fact that the projections from 2000 are based on the average demographic indicators of the past (1995-2000) period which are not in accordance with indicators really existing in this period[4].

In accordance with international practice, on the basis of new data and situations we have revised our previous calculations for 2002[5].

Thus the prospects below are based on corresponding new information and their usage for today compared to the previous version is more expedient.

Taking into account accepted principles; projections are carried out in three (low, medium, high) variants.

We completely share the view that high-variant projections are always overstated and such low and medium-variants are more realistic. Besides, international practice has shown that low variants are more real[6].

Despite this, according to accepted rules, population perspective calculations for Georgia are made in three variants.

We took corresponding average indicators of 1995-1999 as the basis of calculations.

Calculations do not include Abkhazia or the Tskhinvali region, as demographic indicators are not available from there.

---

[1] Tsuladze G., Maglaperidze N. Population prospects of Georgia. Tbilisi, 2001.

[2] See World Population Prospects. The 1998 Revision. Volume I: Comprehensive Tables. UN, N.Y., 1999. World Population Prospects. The 1998 Revision. Volume II: Sex and age. UN, N.Y., 1999, etc.

[3] See World Population Prospects. The 2000 Revision. Highlights. UN, N.Y., 2001.

[4] Tsuladze G., Maglaperidze N. Population prospects of Georgia. Tbilisi, 2001, p. 5, 10.

[5] ibid.

[6] Antonov A.I., Sorokin S.A. Fate of a family in Russian in XXI century. M., 2000,p.49-50 (in Russian).

8.1. Fertility

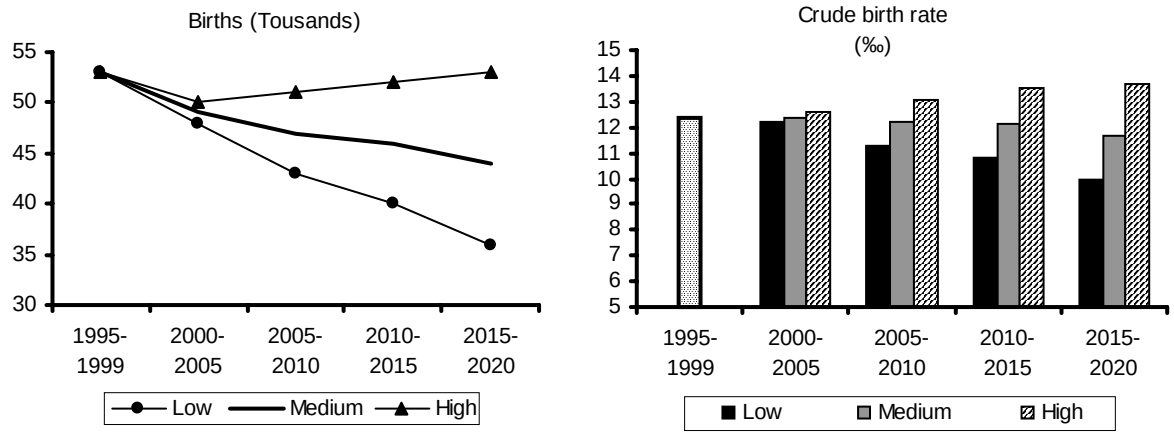
Using low-variant projection of the birth rate, the total fertility rate undergoes constant decline for the whole period. With medium-variant projections, the rate is constant. High-variant projections give increase.

As a result, with the low variants both the number of births and the birth rate per 1000 of population declines during the whole period of time.

Live births in the medium version decline less than in the low version. And so to does the birth rate per 1000 of population in relation to the constant total birth rate. Decline in births and the general birth rate is caused by decline in the size of population, and changes in age-specific and sex structure during the projecting period.

In the high variant of birth rate, the number of live births and the crude birth rate increase. Despite this, the general birth rate stays rather low even at the end of the projected period, and the total birth rate reaches only the limit of replacement level fertility.

Figure 8.1. Births (thousands) and crude birth rate (‰) in Georgia in 1995-2000



Differences between different variants of projections are quite important.

Between 2015 and 2020 by using the low –variant, in Georgia there will be 36000 births on average, and the birth rate will be 10,0‰, while by the low-variant projection there will be 53000 births and the birth rate will reach 13,7‰.

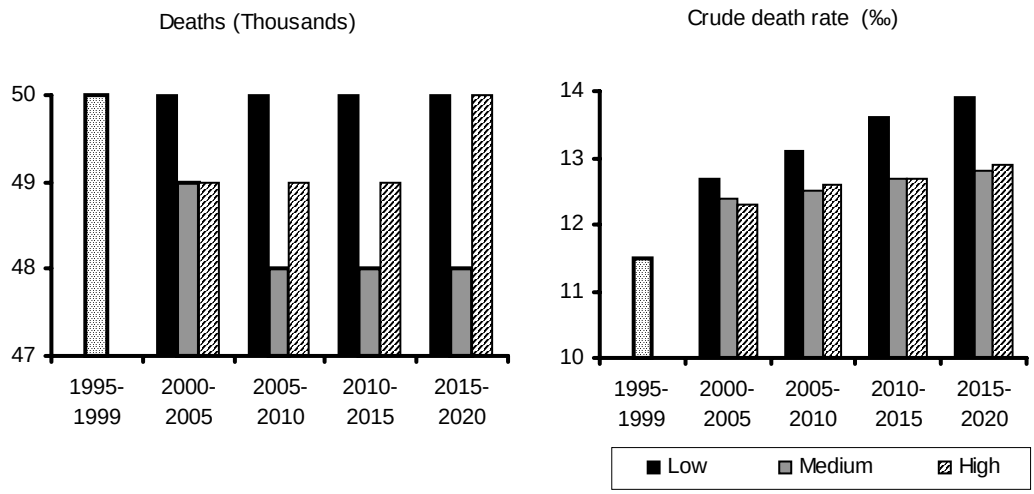
8.2. Mortality and Life Expectancy

By low-variant projection, deaths are within 50,000 during the whole period of projection. At the same time the death rate per 1000 of population continuous to grow, which is determined by the decline in the size of population.

Using the medium –variant, after a certain decline during 2005-2020, deaths are less than 48,000 , but at the same time the death rate grows slowly and reaches 12,8‰ in 2015-2020.

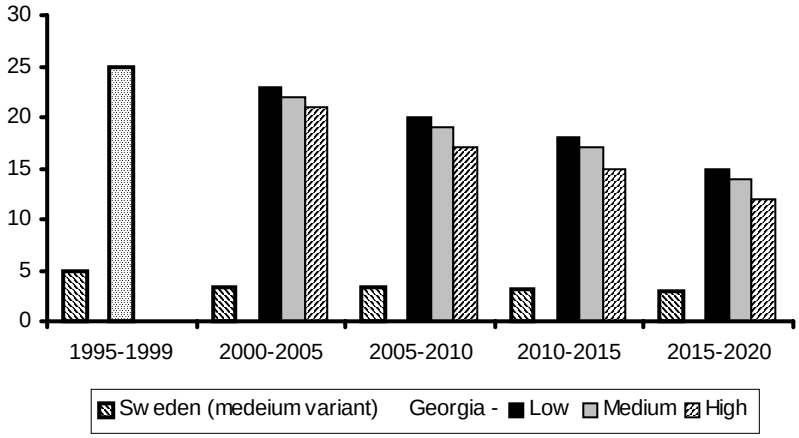
Using the high –variant, the number of deaths is more than that by medium-variant and by the end of projected period reaches 50,000 – the same as by low-variant. At the same time, the death rate is similar to medium-variant.

Figure 8.2. Deaths (thousands) and crude death rate (‰) in Georgia in 1995-2020



The infant mortality rate in Georgia declines by every variant, but its decline varies and the level reached by the end of the projected period are different for different variants.

Figure 8.3. Infant mortality (per 1000 births) in Georgia and Sweden[7] (medium variant) in 1995-2020



By low-variant projection, infant mortality by 2015-2020 will be 15 per 1000 births, and by high-variant, 12.

Despite the significant decline in infant mortality, it will remain high in Georgia in 2015-2020 compared to developed countries.

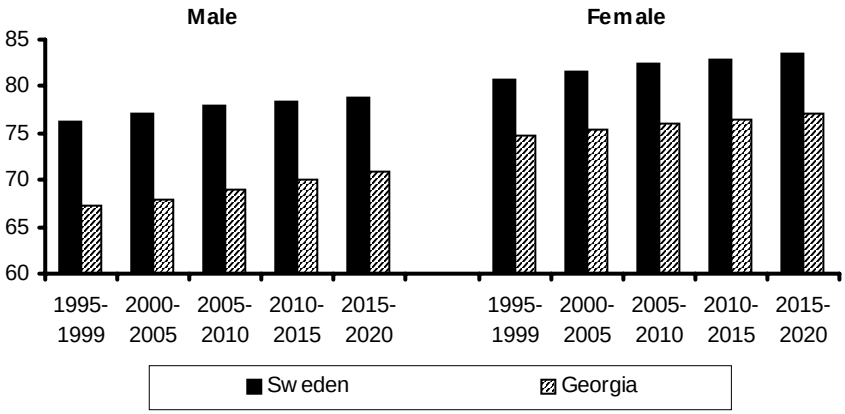
By medium-variant, according to UN experts, infant mortality in Georgia in 2015-2020 will be within 15[8] and only in 2020-2025 will it decline to 13.[9] In Sweden it will decline to 3[10].

Life expectancy at birth in Georgia is increasing and by 2015-2020 it will for men be 71,0 years and for women 77,1.

---

[7] World Population Prospects. The 2000 revision. Highlights. UN, N.Y., 2001, p.41.
[8] World Population Prospects. The 1998 Revision. Volume I: Comprehensive Tables. UN, N.Y., 1999, p.200.
[9] World Population Prospects. The 2000 revision. Highlights. UN, N.Y., 2001, p.40.
[10] ibid. p.41.

Figure 8.4. Life expectancy at birth in Georgia and Sweden[11] in 1995-2020 (average-variant)



Projections by UN experts for life expectancy at birth compared to our projections are more optimistic, with 72,1 for men and 79,1 for women by 2015-20[12].

Figure (8.4.) shown life expectancy at birth in Georgia according to our projection and in Sweden according to UN experts, for the sake of comparison.

As we can see there already exists an important difference between life expectancies in Georgia and Sweden, which will continue to exist in 2015-2020.

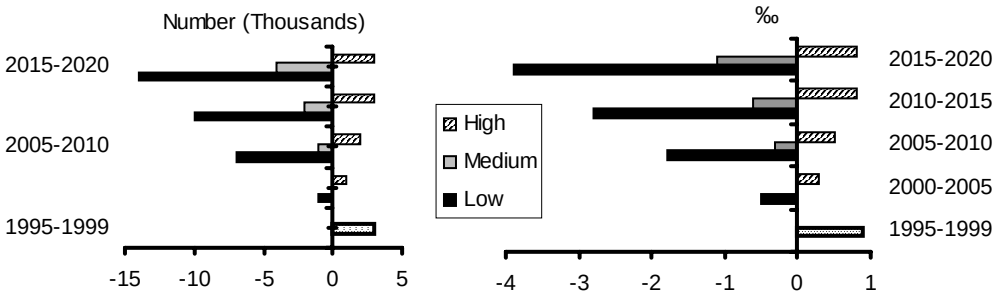
8.3. Natural Increase and Population Reproduction

According to the low variant of projection, low natural increase in 1995-1999 will changeto insignificant decline of population in 2000-2005 and will increase in the following period.

By medium-variant, in 2000-2005 there will be "zero" natural increase and mortality will exceed fertility in 2005-2010. The difference between them will continue to grow.

By high-variant of projection, low natural increase is maintained, which in 2010-2020 will be similar to the natural increase of 1995-1999.

Figure 8.5. Natural increase in Georgia in 1995-2020

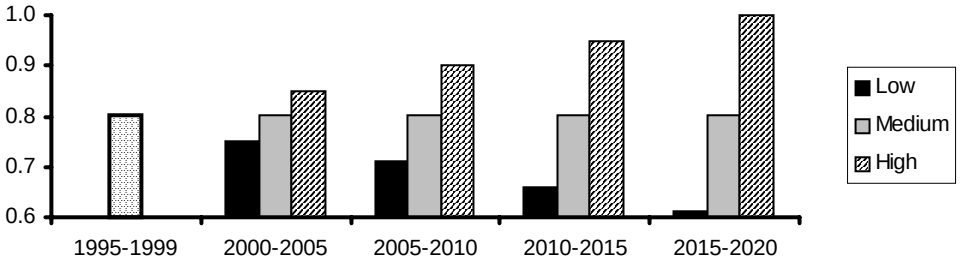


[11] World Population Prospects. The 1998 Revision. Volume I: Comprehensive Tables. UN, N.Y., 1999, p.386.
[12] ibid. p.200.

The net reproduction rate, by low-variant projection, declines and by the end of the projected period will be 0,61. The net rate is smaller by one using the medium-variant of projection, though its size is constant for the whole period and is 0,80.

Thus using low and medium-variants in 2000-2020 in Georgia there will not be enough of an increase for population reproduction.

Figure 8.6. Net reproduction rate in Georgia, 1995-2020



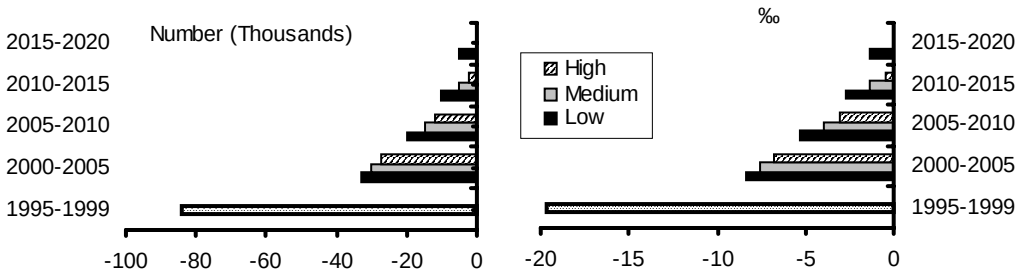
Similar results are reached from using the high variant of projection, though the size of the net rate during the projected period grows and by the end of the period reaches the limit of replacement level fertility.

8.4. External Migration

The level of external migration (negative net migration) in 2000-2005 for Georgia by every variant of projection will be much smaller than for the previous period of 1995-1999.

Net migration for Georgia, despite significant decline by low-variant of projection, will be characteristic by the end of the projected period, and by medium and high variants, external migration will play a significant role in the projected period in determining of the size of the population in Georgia.

Figure 8.7. Net migration per year in Georgia: 1995-2020

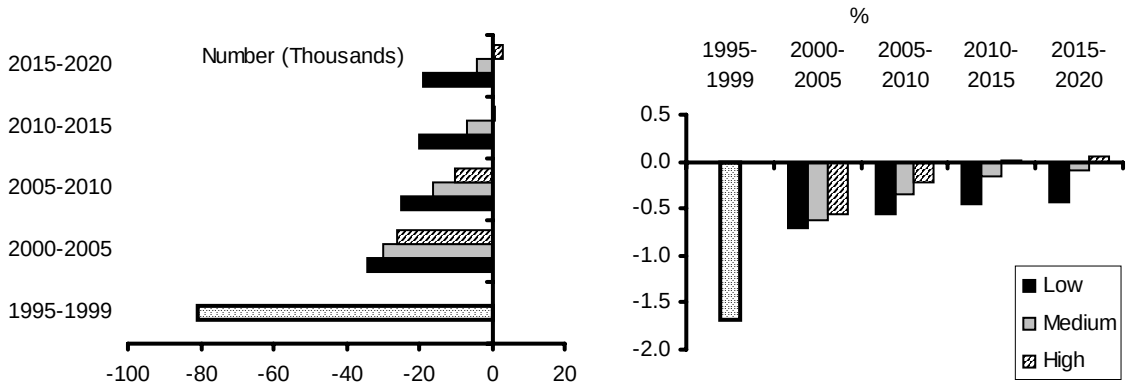


By the low variant of projection, net migration per year for Georgia in 2000-2020 will be equal to 340,000. By the medium – variant, it will be 250,000 and by the high variant, 205,000.

8.5. Population Size and Changes

In the projected period , by low and medium-variants of projection there will be annual population decline. Only by high variant will there be population growth and even then only after 2010. Before then, population decline is envisaged. Corresponding changes are given in the population growth rate (see Figure 8.8).

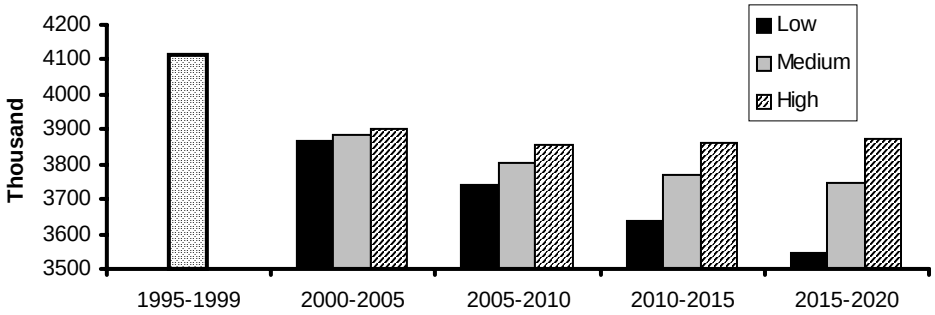
Figure 8.8. Population change (thousand) and growth rate (%) in Georgia: 1995-2020 (per year)



As we can see, the population by low variant of projection will decline to 3,545,000 or by 489,000 , by medium –variant, to 3,749,000 or by 285,000 and by high variant of projection to 3,874,000 or by 160,000.

With the high variant of projection, the population of Georgia will begin to increase as a slow rate from 2010. Such a situation is conditioned by positive natural increase, which exceeds the natural increase of 2000-2010 on the basis of fertility growth and a decline in net migration per year. We think this to be impossible.

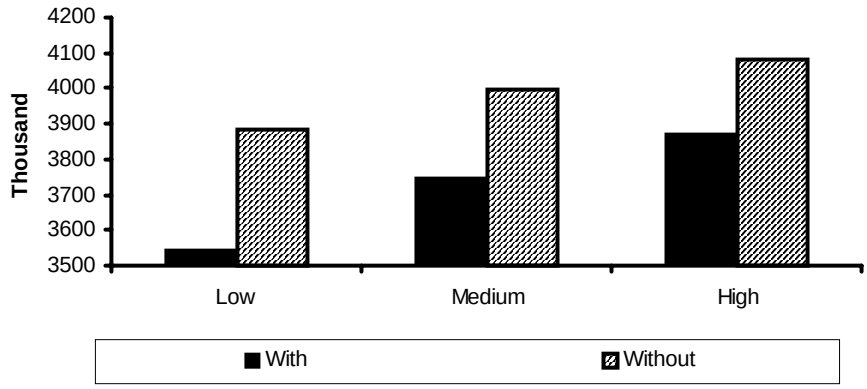
Figure 8.9. Population dynamics of Georgia 1995-2020 (end of the period)



During the whole projected period, especially in 2000-2015, by low and medium variants of projection and by the high variant before 2010, external migration will play an important role in the population formation of Georgia.

By the end of the period, 2020, the difference in the size of the population of Georgia with external migration and without it, is very significant (see figure 8.10.)

Figure 8.10. Population of Georgia by 2020, with and without external migration



As we can see, in defining the population of Georgia external migration will have a decisive role in the next 20 years.

* * *

Finally, we would like to note that in 2000-2020 in Georgia, we expect to witness the following:

- Population decline;
- Decisive (negative) role of external migration in population change;
- Decline in fertility;
- Increase in mortality;
- Decline in population through natural means (mortality exceeding fertility);
- Reduced regime of population reproduction;
- Despite infant mortality declining, it will be higher than in developed countries;
- Despite a growth in life expectancy, it will be low compared to developed countries.

EPILOGUE

Readers may have noticed that, in discussing fertility, mortality or any other official data, except for SGSD data, the authors' estimates are used. These estimates are based on particular methods of correction and we consider the results to be more reliable.

Incomplete registering of demographic data forced this upon us.

This work does not give information about "regional differences" and fails to deal with some other issues.

Thus whatever possibilities the corrective-reconstructural methods may have, they cannot replace the importance of complete registration of current demographic data.

In Georgia, to improve this undesirable situation, there is an on-going work , the results of which are hopeful.

In particular we mean work within the remit of Georgia-United Kingdom joint project. This has been planned and implemented by international experts and the Georgian State Department for Statistics, the Department of Demographic Statistics, the Department of Mother and Child Health of the Ministry of Labor, Social Affairs and Health of Georgia and the Center of Medical Statistics and Information.

First of all, it was decided to improve the registration of births and deaths in Georgia.

A new system of registration was implemented.

The main feature of the new system of registration entails obtaining information directly from health facilities. To do this, a proper juridical basis was formed.

It is possible to compare GCA data and data obtained from the new system of registration.

Perfect implementation of the new system of registration will take time, but first results exceeded our expectations.

For example, here are current results from GCA and the new system of registration of births and deaths for Tbilisi.

System of registration	Births	Deaths
New system	5289	3879
Current GCA	3908	3611
Difference	1381	268
% (incomplete registration)	26.1	6.9

The scale of incomplete registration could be even bigger than revealed during the first four months of the pilot project. Implementation of the new system in future will give us more perfect results (implementation began from July, 2002). It is supposed to process information obtained by the new system in every direction and to generalize it, and also to improve the system further. Here the role of the Institute of Demography and Sociological Studies of the Georgian Academy of Sciences is important.

It is doubtless that for today there is revealed a wide scale incomplete registration of births and deaths in Tbilisi, which is likely to be higher in the regions.

Thus the work carried out by the Department for Demographic Statistics of the State Department for Statistics of Georgia gives us the opportunity to conclude that current registration of births and deaths will be improved in Georgia.

Appendix*

Table 1. Population: 1897-1989

Year	Total (in thousands)		Among them			
			Urban	Rural	Urban	Rural
			In thousands		%	
	SDSG	Estimate	SDSG		SDSG	
1897**	2109	...	322	1787	15.3	84.7
1926	2666	...	594	2072	22.3	77.7
1939	3540	...	1066	2474	30.1	69.9
1959	4044	...	1713	2331	42.4	57.6
1960	4129	4117	1744	2385	42.2	57.8
1961	4190	4166	1803	2387	43.0	57.0
1962	4258	4223	1884	2374	44.2	55.8
1963	4325	4278	1927	2398	44.6	55.4
1964	4389	4332	1969	2420	44.9	55.1
1965	4450	4384	2026	2424	45.5	54.5
1966	4505	4430	2073	2432	46.0	54.0
1967	4556	4473	2122	2434	46.6	53.4
1968	4598	4507	2157	2441	46.9	53.1
1969	4640	4541	2202	2438	47.5	52.5
1970	4686	4579	2240	2446	47.8	52.2
1971	4729	4615	2276	2453	48.1	51.9
1972	4778	4657	2317	2461	48.5	51.5
1973	4818	4691	2349	2469	48.8	51.2
1974	4856	4723	2388	2468	49.2	50.8
1975	4896	4758	2434	2462	49.7	50.3
1976	4920	4777	2491	2429	50.6	49.4
1977	4960	4813	2523	2437	50.9	49.1
1978	4986	4833	2552	2434	51.2	48.8
1979	4993	4859	2549	2444	51.1	48.9
1980	5041	4884	2629	2412	52.2	47.8
1981	5071	4911	2659	2412	52.4	47.6
1982	5100	4938	2694	2406	52.8	47.2
1983	5134	4970	2729	2405	53.2	46.8
1984	5167	5001	2762	2405	53.5	46.5
1985	5201	5033	2798	2403	53.8	46.2
1986	5234	5064	2833	2401	54.1	45.9
1987	5266	5095	2873	2393	54.6	45.4
1988	5397	5123	2975	2422	55.1	44.9
1989	5400	5148	2991	2409	55.4	44.6
1990	5413.5	5178.0	3013.8	2399.7	55.7	44.3
1991	5421.6	5206.0	3028.6	2393.0	55.9	44.1
1992	5420.2	5216.0	3023.7	2396.5	55.8	44.2
1993	5404.5	5078.0	3004.4	2400.1	55.6	44.4
1994	5390.9	4625.0	2985.8	2405.1	55.4	44.6
1995	5375.1	4475.0	2970.6	2404.5	55.3	44.7
1996	5373.4	4342.0	2967.8	2405.6	55.2	44.8
1997	5381.0	4212.7	2970.3	2410.7	55.2	44.8
1998	5394.9	4152.0	2980.5	2414.4	55.2	44.8
1999	5101.0	4112.2	2942.1	2158.9	57.7	42.3
2000	5100.5	4072.7	2945.5	2155.0	57.7	42.3
2001	4945.6	4034.4	2860.8	2084.8	57.8	42.2
2002	4546.6	4001.0	2664.2	1882.4	58.6	41.4

* G.Tsuladze, N.Maglaperidze, A.Vadachkoria. Demographic Yearbook of Georgia 2001. Tbilisi, 2002.

** Within the state border of that time. Within the present state border - 1919

Table 2. Population by age and sex (in thousands) SDSG

Age (in years)	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	1897 28.01.*			**1926 17.12.***			**1939 17. 01.***		
-1	50.0	26.2	23.8	83.3	42.9	40.4	94.5	48.1	46.4
1-4	257.9	130.6	127.3	312.0	158.0	154.0	351.3	178.7	172.6
5-9	297.7	153.4	144.3	325.5	167.6	157.9	416.6	211.8	204.8
10-14	248.2	129.3	118.9	311.3	160.9	150.4	445.7	228.4	217.3
15-19	192.5	101.1	91.4	259.7	127.0	132.7	321.6	158.7	162.9
20-24	191.2	114.5	76.7	231.3	117.2	114.1	302.9	148.4	154.5
25-29	163.1	88.9	74.2	206.7	99.1	107.6	312.2	155.3	156.9
30-34	147.8	77.2	70.6	175.9	85.2	90.7	247.4	127.2	120.2
35-39	118.6	67.2	51.4	154.8	79.6	75.2	212.5	105.7	106.8
40-44	106.1	54.5	51.6	126.8	64.7	62.1	148.8	71.8	77.0
45-49	63.6	36.5	27.1	86.7	48.9	37.8	136.4	71.4	65.0
50-54	74.4	38.5	35.9	91.0	44.8	46.2	116.1	57.5	58.6
55-59	47.9	28.7	19.2	68.5	35.9	32.6	122.2	52.9	69.3
60-64	65.5	33.0	32.5	89.3	41.4	47.9	107.6	49.8	57.8
65-69	21.6	13.0	8.6	35.8	19.7	16.1	65.1	33.9	31.2
70-74	26.5	13.6	12.9	41.7	20.5	21.2	50.4	23.3	27.1
75-79	10.3	6.2	4.1	20.2	11.9	8.3	36.8	18.0	18.8
80-84	16.1	7.3	8.8	25.9	11.9	14.0	24.0	10.2	13.8
85+	9.5	4.9	4.6	18.5	9.6	8.9	27.0	13.4	13.6
Unknown	1.1	0.5	0.6	1.5	0.9	0.6	1.0	0.6	0.4
All ages	2109.6	1125.1	984.5	2666.4	1347.7	1318.7	3540.1	1765.1	1775.0
-15	853.8	439.5	414.3	1032.1	529.4	502.7	1308.1	667.0	641.1
15-64	1170.7	640.1	530.6	1490.7	743.8	746.9	2027.7	998.7	1029.0
65+	85.1	45.5	39.6	143.6	74.5	69.1	204.3	99.4	104.9
	1959 15. 01.*			**1970 15. 01.***			**1979 17. 01.***		
-1	89.3	45.4	43.9	71.9	36.2	35.7	73.4	37.1	36.3
1-4	370.7	188.9	181.8	360.7	183.7	177.0	342.8	172.2	170.6
5-9	408.8	208.9	199.9	513.1	261.6	251.5	428.0	216.2	211.8
10-14	315.9	162.0	153.9	485.1	247.4	237.7	453.4	229.4	224.0
15-19	335.8	162.5	173.3	400.8	203.5	197.3	486.2	249.6	236.6
20-24	399.6	185.0	214.6	299.2	145.4	153.8	416.3	201.3	215.0
25-29	366.3	174.3	192.0	277.4	127.0	150.4	359.8	172.1	187.7
30-34	363.6	171.9	191.7	402.4	191.0	211.4	267.3	127.0	140.3
35-39	221.2	87.6	133.6	341.9	167.7	174.2	306.5	141.7	164.8
40-44	188.1	73.2	114.9	364.5	177.3	187.2	374.9	180.3	194.6
45-49	197.6	83.7	113.9	225.4	95.9	129.5	324.0	158.3	165.7
50-54	171.6	73.7	97.9	165.6	64.4	101.2	327.5	153.6	173.9
55-59	171.7	61.8	109.9	212.5	78.2	134.3	201.1	74.0	127.1
60-64	134.1	53.6	80.5	177.4	69.5	107.9	170.0	60.2	109.8
65-69	101.7	45.5	56.2	140.9	54.7	86.2	164.4	60.3	104.1
70-74	85.5	35.8	49.7	91.4	36.0	55.4	125.4	45.3	80.1
75-79	60.6	26.6	34.0	65.2	27.4	37.8	87.5	30.8	56.7
80-84	33.6	13.4	20.2	43.6	16.6	27.0	39.9	14.3	25.6
85+	28.4	11.6	16.8	35.3	13.1	22.2	38.8	12.7	26.1
Unknown	0.2	0.1	0.1	11.8	5.7	6.1	6.0	2.5	3.5
All ages	4044.3	1865.5	2178.8	4686.1	2202.3	2483.8	4993.2	2338.9	2654.3
-15	1184.7	605.2	579.5	1430.8	728.9	701.9	1297.6	654.9	642.7
15-64	2549.6	1127.3	1422.3	2867.1	1319.9	1547.2	3233.6	1518.1	1715.5
65+	310.0	133.0	177.0	376.4	147.8	228.6	456.0	163.4	292.6

(continued)

Age (in years)	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
		1989 12. 01.*			**1990 01.01.**			**1991 01.01.**	
-1	89.2	45.9	43.3	89.5	46.1	43.4	91.6	47.1	44.5
1-4	376.5	192.1	184.4	368.1	188.5	179.6	358.0	184.2	173.8
5-9	440.6	224.2	216.4	447.9	228.0	219.9	453.6	230.9	222.7
10-14	432.1	220.0	212.1	429.4	218.7	210.7	427.0	217.4	209.6
15-19	419.2	217.7	201.5	413.6	213.9	199.7	405.6	209.5	196.1
20-24	413.8	203.4	210.4	403.3	201.9	201.4	399.6	203.3	196.3
25-29	467.6	226.1	241.5	465.9	225.1	240.8	449.8	216.0	233.8
30-34	416.8	201.3	215.5	423.1	203.8	219.3	436.3	211.2	225.1
35-39	362.4	174.6	187.8	370.6	178.5	192.1	377.6	182.2	195.4
40-44	261.1	124.7	136.4	290.1	138.8	151.3	315.0	150.3	164.7
45-49	296.5	139.0	157.5	260.1	120.5	139.6	226.2	106.6	119.6
50-54	345.7	163.9	181.8	358.8	170.4	188.4	366.3	170.4	195.9
55-59	303.9	140.8	163.1	294.2	136.1	158.1	291.8	137.0	154.8
60-64	297.4	130.2	167.2	304.3	136.0	168.3	306.8	137.9	168.9
65-69	160.5	57.5	103.0	177.9	65.7	112.2	196.1	75.4	120.7
70-74	123.4	39.5	83.9	116.3	36.7	79.6	117.9	37.1	80.8
75-79	100.8	33.0	67.8	104.7	33.6	71.1	103.3	32.5	70.8
80-84	55.9	17.6	38.3	58.7	18.4	40.3	58.9	18.5	40.4
85+	37.4	10.5	26.9	37.0	10.4	26.6	40.2	11.1	29.1
All ages	5400.8	2562.0	2838.8	5413.5	2571.1	2842.4	5421.6	2578.6	2843.0
-15	1338.4	682.2	656.2	1334.9	681.3	653.6	1330.2	679.6	650.6
15-64	3584.4	1721.7	1862.7	3584.0	1725.0	1859.0	3575.0	1724.4	1850.6
65+	478.0	158.1	319.9	494.6	164.8	329.8	516.4	174.6	341.8
		1992 01.01.			**1993 01.01.**			**1994 01.01.**	
-1	87.8	45.2	42.6	71.6	36.7	34.9	60.5	31.2	29.3
1-4	354.8	182.8	172.0	352.4	181.5	170.9	336.5	172.8	163.7
5-9	456.0	232.3	223.7	451.9	230.5	221.4	450.6	230.5	220.1
10-14	423.2	215.6	207.6	424.8	216.6	208.2	427.5	217.8	209.7
15-19	408.1	210.2	197.9	409.9	209.5	200.4	416.2	212.2	204.0
20-24	398.5	204.0	194.5	397.1	206.1	191.0	389.2	202.4	186.8
25-29	434.3	207.9	226.4	414.8	199.2	215.6	404.8	196.8	208.0
30-34	443.4	213.7	229.7	448.9	216.1	232.8	451.0	216.0	235.0
35-39	384.3	184.9	199.4	387.6	185.8	201.8	396.5	190.5	206.0
40-44	331.9	158.4	173.5	340.3	162.7	177.6	345.1	164.5	180.6
45-49	210.6	98.2	112.4	217.2	102.9	114.3	245.4	115.8	129.6
50-54	357.1	166.3	190.8	328.8	151.4	177.4	282.2	129.5	152.7
55-59	299.1	140.1	159.0	304.6	143.3	161.3	319.8	149.7	170.1
60-64	295.0	135.3	159.7	291.2	132.2	159.0	275.4	125.8	149.6
65-69	214.6	85.3	129.3	234.4	97.9	136.5	256.0	108.5	147.5
70-74	120.5	39.1	81.4	128.2	42.5	85.7	133.2	45.7	87.5
75-79	98.5	30.7	67.8	92.7	28.6	64.1	91.1	27.3	63.8
80-84	61.7	19.3	42.4	66.3	20.4	45.9	65.9	20.1	45.8
85+	40.8	11.4	29.4	41.8	11.9	29.9	44.0	12.6	31.4
All ages	5420.2	2580.7	2839.5	5404.5	2575.8	2828.7	5390.9	2569.7	2821.2
-15	1321.8	675.9	645.9	1300.7	665.3	635.4	1275.1	652.3	622.8
15-64	3562.3	1719.0	1843.3	3540.4	1709.2	1831.2	3525.6	1703.2	1822.4
65+	536.1	185.8	350.3	563.4	201.3	362.1	590.2	214.2	376.0

(continued)

Age (in years)	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	1995 01.01.			**1996 01.01.**			**1997.01.01.**		
-1	56.3	29.3	27.0	55.6	29.3	26.3	52.7	27.8	24.9
1-4	309.3	158.8	150.5	274.8	141.5	133.3	243.2	126.0	117.2
5-9	444.3	227.8	216.5	439.8	226.0	213.8	435.8	224.2	211.6
10-14	435.0	221.4	213.6	442.9	225.2	217.7	448.2	228.0	220.2
15-19	416.7	212.3	204.4	416.7	212.0	204.7	415.8	211.7	204.1
20-24	391.7	203.5	188.2	391.8	202.0	189.8	397.8	204.8	193.0
25-29	391.8	193.1	198.7	388.9	195.9	193.0	387.4	197.4	190.0
30-34	448.3	214.8	233.5	434.6	206.7	227.9	420.0	199.6	220.4
35-39	402.3	191.6	210.7	415.7	198.8	216.9	424.9	203.1	221.8
40-44	350.6	167.1	183.5	357.6	170.6	187.0	366.7	174.7	192.0
45-49	273.3	128.9	144.4	297.5	139.6	157.9	315.4	148.1	167.3
50-54	244.4	110.9	133.5	212.4	98.2	114.2	198.6	90.9	107.7
55-59	332.8	155.7	177.1	340.9	155.9	185.0	335.1	153.4	181.7
60-64	262.2	119.0	143.2	261.7	120.6	141.1	273.7	125.3	148.4
65-69	263.9	115.4	148.5	266.8	117.3	149.5	261.2	116.5	144.7
70-74	146.6	52.5	94.1	164.4	61.2	103.2	183.1	70.6	112.5
75-79	87.1	25.6	61.5	88.6	26.3	62.3	94.4	29.0	65.4
80-84	69.4	21.0	48.4	69.3	20.3	49.0	67.8	19.7	48.1
85+	49.1	14.1	35.0	53.4	15.5	37.9	59.2	17.2	42.0
All ages	5375.1	2562.8	2812.3	5373.4	2562.9	2810.5	5381.0	2568.0	2813.0
-15	1244.9	637.3	607.6	1213.1	622.0	591.1	1179.9	606.0	573.9
15-64	3514.1	1696.9	1817.2	3517.8	1700.3	1817.5	3535.4	1709.0	1826.4
65+	616.1	228.6	387.5	642.5	240.6	401.9	665.7	253.0	412.7
	1998 01.01.			**1999 01.01.**			**2000 01.01.**		
-1	51.1	27.7	23.4	46.1	25.0	21.1	43.5	23.6	19.9
1-4	224.4	117.3	107.1	215.3	113.9	101.4	203.2	107.5	95.7
5-9	421.1	216.4	204.7	394.9	202.8	192.1	372.8	191.5	181.3
10-14	447.6	228.0	219.6	447.5	228.7	218.8	422.6	216.0	206.6
15-19	421.1	214.7	206.4	424.7	216.4	208.3	401.0	204.3	196.7
20-24	402.9	206.0	196.9	411.2	209.7	201.5	388.3	198.0	190.3
25-29	388.7	201.2	187.5	382.4	198.5	183.9	361.0	187.4	173.6
30-34	405.2	192.9	212.3	397.2	191.9	205.3	375.0	181.2	193.8
35-39	435.3	207.8	227.5	440.3	209.2	231.1	415.8	197.6	218.2
40-44	374.3	177.5	196.8	385.9	183.7	202.2	364.4	173.5	190.9
45-49	326.6	153.7	172.9	334.0	157.2	176.8	315.4	148.4	167.0
50-54	206.3	96.0	110.3	236.0	109.7	126.3	222.9	103.6	119.3
55-59	311.4	140.9	170.5	268.9	121.3	147.6	253.8	114.5	139.3
60-64	281.0	129.5	151.5	298.5	137.0	161.5	281.9	129.4	152.5
65-69	261.2	115.0	146.2	249.0	110.3	138.7	235.1	104.1	131.0
70-74	202.1	82.0	120.1	223.3	91.7	131.6	210.7	86.5	124.2
75-79	102.4	32.5	69.9	108.4	35.9	72.5	102.4	33.9	68.5
80-84	65.3	18.8	46.5	66.7	18.7	48.0	63.0	17.6	45.4
85+	66.9	19.5	47.4	71.8	21.0	50.8	67.7	19.8	47.9
All ages	5394.9	2577.4	2817.5	5402.1	2582.6	2819.5	5100.5	2438.4	2662.1
-15	1144.2	589.4	554.8	1103.8	570.4	533.4	1042.1	538.6	503.5
15-64	3552.8	1720.2	1832.6	3579.1	1734.6	1844.5	3379.5	1637.9	1741.6
65+	697.9	267.8	430.1	719.2	277.6	441.6	678.9	261.9	417.0

(continued)

Age (in years)	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
	2001 01.01.			**2002 01.01.**			**2001 ****		
-1	39.8	21.5	18.3	39.9	21.6	18.3	39.85	21.55	18.30
1-4	199.5	105.7	93.8	176.9	95.8	81.1	188.20	100.75	87.45
5-9	361.7	185.8	175.9	332.4	170.7	161.7	347.05	178.25	168.80
10-14	409.7	209.4	200.3	376.4	192.4	184.0	393.05	200.90	192.15
15-19	388.8	198.1	190.7	354.0	180.2	173.8	371.40	189.15	182.25
20-24	376.4	191.9	184.5	341.9	175.3	166.6	359.15	183.60	175.55
25-29	350.2	181.8	168.4	319.8	166.0	153.8	335.00	173.90	161.10
30-34	363.6	175.7	187.9	330.9	159.7	171.2	347.25	167.70	179.55
35-39	403.2	191.6	211.6	366.6	173.7	192.9	384.90	182.65	202.25
40-44	353.3	168.2	185.1	320.5	151.8	168.7	336.90	160.00	176.90
45-49	305.8	143.9	161.9	281.2	131.6	149.6	293.50	137.75	155.75
50-54	216.1	100.4	115.7	199.3	92.3	107.0	207.70	96.35	111.35
55-59	225.2	99.4	125.8	207.3	91.2	116.1	216.25	95.30	120.95
60-64	280.4	126.4	154.0	256.2	115.0	141.2	268.30	120.70	147.60
65-69	242.1	102.9	139.2	227.5	96.7	130.8	234.80	99.80	135.00
70-74	218.5	85.8	132.7	204.6	81.5	123.1	211.55	83.65	127.90
75-79	113.4	34.8	78.6	108.7	35.0	73.7	111.05	34.90	76.15
80-84	59.0	24.6	34.4	58.8	24.5	34.3	58.90	24.55	34.35
85+	38.8	16.3	22.5	43.7	18.0	25.7	41.25	17.15	24.10
All ages	4945.5	2364.2	2581.3	4546.6	2173.0	2373.6	4746.05	2268.60	2477.45
-15	1010.6	522.3	488.3	925.6	480.5	445.1	968.15	501.45	466.70
15-64	3263.0	1577.4	1685.6	2977.8	1436.9	1540.9	3120.35	1507.10	1613.25
65+	671.9	264.5	407.4	643.2	255.6	387.6	657.55	260.05	397.50

* In accordance to the population census. De jure Population

** Mid-year

Table 3. Population by age and sex (in thousands) Estimate

Age (in years)	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
		1960 01.01.			**1970 01.01.**			**1979 01.01.**	
-1	93.3	47.4	45.9	83.5	42.0	41.5	85.1	43.0	42.1
1-4	377.1	192.2	184.9	352.3	179.4	172.9	333.1	167.3	165.8
5-9	416.0	212.6	203.4	501.2	255.5	245.7	415.8	210.0	205.8
10-14	321.4	164.8	156.6	473.8	241.6	232.2	440.4	222.8	217.6
15-19	341.7	165.4	176.3	391.5	198.8	192.7	472.4	242.4	230.0
20-24	406.6	188.3	218.3	292.2	142.0	150.2	404.3	195.5	208.8
25-29	372.5	177.2	195.3	270.8	124.0	146.8	349.6	167.2	182.4
30-34	370.0	175.0	195.0	393.1	186.6	206.5	259.7	123.4	136.3
35-39	225.0	89.1	135.9	334.0	163.8	170.2	297.8	137.7	160.1
40-44	191.4	74.5	116.9	356.0	173.1	182.9	364.2	175.1	189.1
45-49	201.0	85.1	115.9	220.2	93.7	126.5	314.9	153.9	161.0
50-54	174.6	75.0	99.6	161.8	62.9	98.9	318.2	149.2	169.0
55-59	174.7	62.9	111.8	207.6	76.4	131.2	195.4	71.9	123.5
60-64	136.4	54.5	81.9	173.3	67.9	105.4	165.2	58.5	106.7
65-69	103.5	46.3	57.2	137.6	53.4	84.2	159.6	58.6	101.0
70-74	87.0	36.4	50.6	89.3	35.2	54.1	121.8	44.0	77.8
75-79	61.7	27.1	34.6	63.7	26.8	36.9	85.0	29.9	55.1
80-84	34.2	13.6	20.6	42.6	16.2	26.4	38.8	13.9	24.9
85+	28.9	11.8	17.1	34.5	12.8	21.7	37.7	12.3	25.4
All ages	4117.0	1899.2	2217.8	4579.0	2152.1	2426.9	4859.0	2276.6	2582.4
-15	1207.7	617.0	590.7	1410.9	718.6	692.3	1274.4	643.1	631.3
15-64	2594.0	1147.0	1447.0	2800.4	1289.1	1511.3	3141.7	1474.8	1666.9
65+	315.3	135.2	180.1	367.7	144.4	223.3	442.9	158.7	284.2
		1989 01. 01.			**1990 01.01.**			**1991 01.01.**	
-1	89.1	45.8	43.3	89.2	45.9	43.3	90.9	46.6	44.3
1-4	358.6	183.0	175.6	352.0	180.2	171.8	340.9	174.8	166.1
5-9	419.6	213.5	206.1	428.0	217.9	210.1	421.1	214.4	206.7
10-14	411.5	209.5	202.0	410.4	209.0	201.4	412.6	210.1	202.5
15-19	399.2	207.3	191.9	395.3	204.4	190.9	397.0	204.8	192.2
20-24	394.1	193.7	200.4	385.3	192.8	192.5	386.4	192.4	194.0
25-29	445.3	215.3	230.0	445.3	215.1	230.2	436.5	210.8	225.7
30-34	397.0	191.8	205.2	404.4	194.8	209.6	399.6	192.4	207.2
35-39	345.2	166.3	178.9	354.3	170.7	183.6	360.9	173.6	187.3
40-44	248.7	118.8	129.9	277.2	132.6	144.6	287.9	137.4	150.5
45-49	282.4	132.4	150.0	248.6	115.2	133.4	258.5	119.8	138.7
50-54	329.3	156.1	173.2	343.0	162.9	180.1	329.2	155.4	173.8
55-59	289.4	134.1	155.3	281.2	130.1	151.1	285.0	131.2	153.8
60-64	283.3	124.0	159.3	290.9	130.0	160.9	293.1	130.1	163.0
65-69	152.9	54.8	98.1	170.1	62.8	107.3	184.5	70.4	114.1
70-74	117.5	37.6	79.9	111.2	35.1	76.1	124.4	42.1	82.3
75-79	96.0	31.4	64.6	100.1	32.1	68.0	102.2	32.7	69.5
80-84	53.3	16.8	36.5	56.1	17.5	38.6	57.9	18.1	39.8
85+	35.6	10.0	25.6	35.4	9.9	25.5	37.4	10.5	26.9
All ages	5148.0	2442.2	2705.8	5178.0	2459.0	2719.0	5206.0	2467.6	2738.4
-15	1278.8	651.8	627.0	1279.5	652.9	626.6	1265.5	645.8	619.7
15-64	3413.9	1639.8	1774.1	3425.7	1648.7	1777.0	3434.2	1648.0	1786.2
65+	455.3	150.6	304.7	472.8	157.4	315.4	506.3	173.8	332.5

(continued)

Age (in years)	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
		1992 01.01.			**1993 01.01.**			**1994 01.01.**	
-1	87.2	44.7	42.5	71.0	36.4	34.6	59.7	31.2	28.5
1-4	328.9	169.2	159.7	308.6	159.1	149.5	269.9	139.7	130.2
5-9	413.1	210.7	202.4	394.5	201.2	193.3	351.6	179.7	171.9
10-14	413.8	211.0	202.8	404.1	206.0	198.1	368.5	188.0	180.5
15-19	397.6	205.0	192.6	387.8	199.3	188.5	353.3	181.4	171.9
20-24	386.3	191.6	194.7	376.1	185.4	190.7	342.0	167.8	174.2
25-29	426.9	206.5	220.4	405.8	196.4	209.4	360.3	174.6	185.7
30-34	394.0	189.9	204.1	378.0	182.2	195.8	338.6	163.4	175.2
35-39	366.7	176.4	190.3	362.9	174.3	188.6	335.1	161.0	174.1
40-44	298.2	142.3	155.9	300.1	142.8	157.3	282.1	134.2	147.9
45-49	267.7	124.3	143.4	269.8	125.3	144.5	253.6	117.9	135.7
50-54	314.5	147.9	166.6	291.8	136.3	155.5	252.2	117.1	135.1
55-59	288.1	132.3	155.8	283.6	129.6	154.0	260.8	118.9	141.9
60-64	294.5	130.1	164.4	288.3	126.6	161.7	263.4	115.1	148.3
65-69	198.5	78.1	120.4	207.0	83.3	123.7	200.7	82.6	118.1
70-74	137.3	49.2	88.1	146.3	54.6	91.7	144.6	55.9	88.7
75-79	104.0	33.4	70.6	102.9	33.0	69.9	95.2	30.6	64.6
80-84	59.4	18.6	40.8	59.5	18.7	40.8	55.4	17.5	37.9
85+	39.3	11.2	28.1	39.9	11.4	28.5	38.0	11.0	27.0
All ages	5216.0	2472.4	2743.6	5078.0	2401.9	2676.1	4625.0	2187.6	2437.4
-15	1242.9	635.6	607.3	1178.2	602.7	575.5	1049.7	538.6	511.1
15-64	3434.7	1646.4	1788.3	3344.2	1598.2	1746.0	3041.4	1451.5	1589.9
65+	538.4	190.4	348.0	555.6	201.0	354.6	533.9	197.5	336.4
		1995 01.01.			**1996 01.01.**			**1997.01.01.**	
-1	55.6	29.3	26.3	54.7	28.8	25.9	53.2	28.1	25.1
1-4	250.2	129.8	120.4	232.1	120.9	111.2	214.7	112.2	102.5
5-9	332.6	169.9	162.7	315.1	161.3	153.8	298.3	152.7	145.6
10-14	356.7	182.0	174.7	346.4	177.0	169.4	336.2	171.7	164.5
15-19	341.6	174.9	166.7	331.0	169.3	161.7	320.9	163.7	157.2
20-24	330.2	161.0	169.2	319.4	155.1	164.3	309.1	149.2	159.9
25-29	339.2	164.4	174.8	319.8	155.2	164.6	301.5	146.4	155.1
30-34	321.9	155.2	166.7	306.7	148.1	158.6	292.0	140.9	151.1
35-39	328.7	157.6	171.1	322.9	154.9	168.0	317.1	151.8	165.3
40-44	281.1	133.5	147.6	280.5	133.1	147.4	279.6	132.3	147.3
45-49	252.7	117.4	135.3	252.3	117.5	134.8	251.7	117.2	134.5
50-54	230.7	106.2	124.5	210.8	96.4	114.4	192.1	87.0	105.1
55-59	254.5	115.5	139.0	248.8	112.6	136.2	243.4	109.6	133.8
60-64	255.7	111.0	144.7	248.6	107.5	141.1	241.8	103.8	138.0
65-69	205.9	86.2	119.7	211.0	89.8	121.2	215.6	92.9	122.7
70-74	150.8	59.9	90.9	156.8	63.9	92.9	162.2	67.3	94.9
75-79	93.5	30.0	63.5	91.9	29.5	62.4	90.4	29.0	61.4
80-84	55.0	17.3	37.7	54.5	17.2	37.3	54.0	17.0	37.0
85+	38.4	11.1	27.3	38.7	11.3	27.4	38.9	11.4	27.5
All ages	4475.0	2112.2	2362.8	4342.0	2049.4	2292.6	4212.7	1984.2	2228.5
-15	995.1	510.9	484.2	948.3	488.0	460.3	902.4	464.7	437.7
15-64	2936.2	1396.7	1539.5	2840.8	1349.7	1491.1	2749.2	1301.9	1447.3
65+	543.7	204.6	339.1	552.9	211.7	341.2	561.1	217.6	343.5

(continued)

Age (in years)	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
		1998 01.01.			**1999 01.01.**			**2000 01.01.**	
-1	52.7	28.5	24.2	50.8	27.1	23.7	48.3	26.1	22.2
1-4	201.4	105.7	95.7	199.5	104.5	95.0	196.6	103.4	93.2
5-9	286.7	146.9	139.8	284.1	145.3	138.8	275.9	141.7	134.2
10-14	331.4	169.3	162.1	328.3	167.4	160.9	317.8	162.1	155.7
15-19	315.9	160.8	155.1	313.0	159.0	154.0	313.6	159.4	154.2
20-24	303.7	145.7	158.0	300.9	144.1	156.8	297.5	143.7	153.8
25-29	288.4	140.2	148.2	285.7	138.6	147.1	284.0	136.6	147.4
30-34	282.4	136.3	146.1	279.8	134.8	145.0	275.7	132.4	143.3
35-39	316.4	151.3	165.1	313.5	149.6	163.9	299.0	142.1	156.9
40-44	283.1	133.7	149.4	280.4	132.2	148.2	282.3	133.0	149.3
45-49	254.9	118.6	136.3	252.5	117.3	135.2	253.8	117.8	136.0
50-54	176.9	79.3	97.6	175.2	78.4	96.8	188.3	84.8	103.5
55-59	241.8	108.5	133.3	239.5	107.3	132.2	222.7	99.3	123.4
60-64	238.9	102.0	136.9	236.7	100.9	135.8	233.0	99.7	133.3
65-69	223.2	97.3	125.9	221.2	96.3	124.9	218.5	93.9	124.6
70-74	169.8	71.7	98.1	168.3	71.0	97.3	171.9	72.4	99.5
75-79	90.3	29.0	61.3	89.5	28.7	60.8	99.5	34.7	64.8
80-84	54.3	17.1	37.2	53.9	17.0	36.9	54.4	17.0	37.4
85+	39.8	11.7	28.1	39.4	11.6	27.8	39.9	12.2	27.7
All ages	4152.0	1953.6	2198.4	4112.2	1931.1	2181.1	4072.7	1912.3	2160.4
-15	872.2	450.4	421.8	862.7	444.3	418.4	838.6	433.3	405.3
15-64	2702.4	1276.4	1426.0	2677.2	1262.2	1415.0	2649.9	1248.8	1401.1
65+	577.4	226.8	350.6	572.3	224.6	347.7	584.2	230.2	354.0
		2001 01.01.			**2002 01.01.**			**2001 ***	
-1	48.9	25.3	23.6	48.9	25.3	23.6	48.9	25.3	23.6
1-4	192.6	101.9	90.7	192.0	100.9	91.1	192.3	101.4	90.9
5-9	269.2	138.8	130.4	262.8	136.1	126.7	266.0	137.5	128.6
10-14	308.4	157.5	150.9	299.5	153.2	146.3	304.0	155.4	148.6
15-19	312.6	158.9	153.7	310.1	157.7	152.4	311.4	158.3	153.1
20-24	295.3	143.7	151.6	293.9	143.9	150.0	294.6	143.8	150.8
25-29	282.6	135.3	147.3	281.3	134.4	146.9	282.0	134.9	147.1
30-34	272.7	130.4	142.3	270.3	128.7	141.6	271.5	129.6	142.0
35-39	287.2	135.9	151.3	277.8	130.9	146.9	282.5	133.4	149.1
40-44	281.5	132.4	149.1	278.7	130.8	147.9	280.1	131.6	148.5
45-49	255.7	118.5	137.2	257.3	119.1	138.2	256.5	118.8	137.7
50-54	199.3	90.1	109.2	208.5	94.4	114.1	203.9	92.3	111.7
55-59	212.5	94.5	118.0	206.7	91.8	114.9	209.6	93.2	116.5
60-64	227.1	97.4	129.7	220.4	94.6	125.8	223.8	96.0	127.8
65-69	216.0	92.0	124.0	212.9	90.0	122.9	214.5	91.0	123.5
70-74	174.1	72.9	101.2	175.0	72.8	102.2	174.6	72.9	101.7
75-79	107.7	39.4	68.3	113.9	42.9	71.0	110.8	41.2	69.7
80-84	56.7	18.1	38.6	59.9	19.8	40.1	58.3	19.0	39.4
85+	34.3	10.5	23.8	31.1	9.6	21.5	32.7	10.1	22.7
All ages	4034.4	1893.5	2140.9	4001.0	1876.9	2124.1	4017.7	1885.2	2132.5
-15	819.1	423.5	395.6	803.2	415.5	387.7	811.2	419.5	391.7
15-64	2626.5	1237.1	1389.4	2605.0	1226.3	1378.7	2615.8	1231.7	1384.1
65+	588.8	232.9	355.9	592.8	235.1	357.7	590.8	234.0	356.8

* Mid-year

Table 4. Summary vital statistics: 1960-1989

Year	Live births			Deaths				Natural increase				Marriages			Divorces		
	Number	Rate ‰		Number		Rate ‰		Number		Rate ‰		Number	Rate ‰		Number	Rate ‰	
	SDSG	SDSG	Estimate	SDSG	Estimate	SDSG	Estimate	SDSG	Estimate	SDSG	Estimate	SDSG	SDSG	Estimate	SDSG	SDSG	Estimate
1960	102866	24.7	24.8	27015	39324	6.5	9.5	75851	63542	18.2	15.2	44075	10.6	10.6	1470	0.4	0.4
1961	104429	24.7	24.9	27621	39111	6.5	9.3	76808	65318	18.2	15.4	41705	9.9	9.9	1735	0.4	0.4
1962	101717	23.7	23.9	30394	41944	7.1	9.9	71323	59773	16.6	13.8	40384	9.4	9.5	1910	0.4	0.4
1963	100326	23.0	23.3	29620	39809	6.8	9.2	70706	60517	16.2	13.8	39622	9.1	9.2	1915	0.4	0.4
1964	97433	22.0	22.4	29708	38947	6.7	8.9	67725	58486	15.3	13.1	38749	8.8	8.9	1932	0.4	0.4
1965	94987	21.2	21.6	31291	40021	7.0	9.1	63696	54966	14.2	12.1	38930	8.7	8.8	2221	0.5	0.5
1966	92026	20.3	20.7	30389	38427	6.7	8.6	61637	53599	13.6	11.7	40303	8.9	9.1	4396	1.0	1.0
1967	89302	19.5	19.9	32904	41130	7.2	9.2	56398	48172	12.3	10.3	38227	8.4	8.5	4405	1.0	1.0
1968	89660	19.4	19.8	32416	40066	7.0	8.9	57244	49594	12.4	10.5	36929	8.0	8.2	4510	1.0	1.0
1969	87069	18.7	19.1	35169	42977	7.5	9.4	51900	44092	11.2	9.3	35666	7.6	7.8	4661	1.0	1.0
1970	90207	19.2	19.6	34283	41506	7.3	9.0	66924	48701	11.9	10.2	36518	7.8	7.9	4943	1.0	1.1
1971	90396	19.0	19.5	35325	42143	7.4	9.1	55071	48253	11.6	9.9	37011	7.8	8.0	4833	1.0	1.0
1972	86402	18.0	18.5	36409	42853	7.6	9.2	49993	43549	10.4	8.8	36111	7.5	7.7	4692	1.0	1.0
1973	88577	18.3	18.8	35911	41657	7.4	8.9	52666	46920	10.9	9.4	39826	8.2	8.5	5169	1.1	1.1
1974	89761	18.4	18.9	37145	42494	7.6	9.0	52616	47267	10.8	9.4	41814	8.6	8.8	5258	1.1	1.1
1975	89712	18.3	18.8	39292	44361	8.0	9.3	50420	45351	10.3	9.0	42183	8.6	8.8	5501	1.1	1.2
1976	90605	18.3	18.9	38875	43268	7.9	9.0	51730	47337	10.5	9.3	43813	8.9	9.1	6172	1.2	1.3
1977	89028	17.9	18.5	40139	44113	8.1	9.1	48889	44915	9.8	8.8	44301	8.9	9.2	6305	1.3	1.3
1978	88766	17.8	18.4	40239	43659	8.0	9.0	48527	45107	9.7	8.8	46773	9.4	9.7	6621	1.3	1.4
1979	89803	17.8	18.5	41907	44893	8.3	9.2	47896	44910	9.5	8.6	52524	10.4	10.8	6592	1.3	1.4
1980	89458	17.6	18.3	43346	46163	8.5	9.4	46112	43295	9.1	8.2	50547	10.0	10.3	6788	1.3	1.4
1981	92501	18.1	18.8	43961	46511	8.6	9.4	48540	45990	9.5	8.7	48100	9.4	9.8	7023	1.4	1.4
1982	91784	17.8	18.5	42734	44956	8.3	9.1	49050	46828	9.5	8.7	49688	9.6	10.0	7114	1.4	1.4
1983	92660	17.8	18.6	43301	45250	8.3	9.1	49359	47410	9.5	8.7	45559	8.8	9.1	7315	1.4	1.5
1984	95841	18.3	19.1	45787	47527	8.7	9.5	50054	48314	9.5	8.8	41775	8.0	8.3	7117	1.4	1.4
1985	97739	18.5	19.4	46153	47630	8.7	9.4	51586	50109	9.8	9.1	44168	8.4	8.7	6514	1.2	1.3
1986	98155	18.4	19.3	46354	47559	8.7	9.4	51801	50596	9.7	9.0	44485	8.3	8.8	6667	1.3	1.3
1987	94595	17.6	18.5	46332	47235	8.6	9.2	48263	47360	9.0	8.4	39157	7.3	7.7	6766	1.3	1.3
1988	91905	17.0	17.9	47544	48176	8.8	9.4	44361	43729	8.2	7.6	38100	7.0	7.4	7082	1.3	1.4
1989	91138	16.7	17.7	47077	47468	8.6	9.2	44061	43670	8.1	7.5	38288	7.0	7.4	7358	1.4	1.4

Table 5. Summary vital statistics: 1990-2001

Year	Live births					Deaths				Natural increase				Marriages			Divorces		
	Number			Rate (‰)		Number		Rate (‰)		Number		Rate (‰)		Number	Rate (‰)		Number	Rate (‰)	
	SDSG	Estimate	CMSI	SDSG	Estimate	SDSG	Estimate	SDSG	Estimate	SDSG	Estimate	SDSG	Estimate	SDSG	SDSG	Estimate	SDSG	SDSG	Estimate
1990	92815	A	91648	17.0	17.9	45945	48983	8.4	9.4	46870	43832	8.6	8.5	36812	6.7	7.1	7796	1.4	1.5
1991	89091	A	82737	16.3	17.1	46473	51561	8.5	9.9	42618	37530	7.8	7.2	38070	7.0	7.3	7440	1.4	1.4
1992	72631	A	69445	13.3	14.1	46762	54370	8.6	10.6	25869	18261	4.7	3.5	26878	4.9	5.2	4890	0.9	1.0
1993	61594	A	56985	12.6	12.7	48938	57393	10.0	11.8	12656	4201	2.6	0.9	24105	4.9	5.0	3211	0.7	0.7
1994	57311	A	53453	11.8	12.6	41596	50365	8.6	11.1	15715	6946	3.2	1.5	21908	4.5	4.8	3089	0.6	0.7
1995	56341	A	55284	11.6	12.8	37874	49930	7.8	11.3	18467	6411	3.8	1.5	21481	4.4	4.9	2685	0.6	0.6
1996	53669	55000	54146	11.1	12.9	34414	49291	7.1	11.5	19255	5709	4.0	1.4	19253	4.0	4.5	2269	0.5	0.5
1997	52020	54000	52287	10.7	12.9	37679	49511	7.7	11.8	14341	4489	3.0	1.1	17099	3.5	4.1	2267	0.5	0.5
1998	46841	52000	49589	9.3	12.6	39404	49475	7.9	12.0	7437	2525	1.4	0.6	15343	3.1	3.7	1758	0.4	0.4
1999	40778	49500	46827	8.9	12.1	40378	49510	8.8	12.1	400	-10	0.1	0.0	13845	3.0	3.4	1622	0.4	0.4
2000	40392	50000	46765	8.9	12.3	41320	49695	9.1	12.3	-928	305	-0.2	0.0	12870	2.8	3.2	1854	0.4	0.5
2001	40416	50000	46006	9.1	12.4	39339	48213	8.9	12.0	1077	1787	0.2	0.4	13336	3.0	3.3	1987	0.4	0.5

Table 6. Marriages by age of groom and age of bride: total (SDSG)

	Total	Age (in years)										Unknown
		16-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+	
							1990					
Groom	36812	1771	12760	10993	5122	2309	1139	550	730	493	945	_
Bride	36812	9953	13795	6284	2694	1364	744	405	551	427	595	_
							1991					
Groom	38070	3577	13103	10537	5142	2232	1115	490	630	442	802	_
Bride	38070	12800	13334	5739	2645	1244	713	303	462	352	478	1
							1992					
Groom	26878	2488	9727	7331	3590	1511	722	320	387	307	495	_
Bride	26878	9208	9757	3790	1849	820	434	229	275	256	260	_
							1993 *					
Groom	24105	2309	8502	6416	3470	1430	655	323	301	271	428	_
Bride	24105	8268	8631	3455	1719	786	402	222	205	212	205	_
							1994					
Groom	21907	2179	7470	5648	3453	1384	603	334	223	242	371	1
Bride	21908	7526	7711	3202	1630	771	380	221	139	174	154	_
							1995					
Groom	21481	2037	7285	5370	3383	1574	683	386	184	234	345	_
Bride	21481	7180	7499	3241	1720	778	402	230	118	150	163	_
							1996					
Groom	19253	1761	6505	4925	3041	1420	608	357	159	180	297	_
Bride	19253	6301	6838	3010	1461	758	353	203	80	106	143	_
							1997					
Groom	17099	1461	5662	4303	2772	1400	618	338	118	160	214	53
Bride	17099	5237	6179	2724	1349	733	343	186	81	56	198	13
							1998					
Groom	15343	1215	4922	4049	2370	1334	568	287	132	122	320	24
Bride	15343	4439	5671	2570	1127	651	274	192	91	68	247	13
							1999					
Groom	13845	1005	4166	3702	2316	1233	559	278	151	109	311	15
Bride	13845	3560	5130	2483	1144	592	350	178	86	55	205	62
							2000					
Groom	12870	750	4055	3459	2152	1141	551	272	173	71	241	5
Bride	12870	2815	5200	2505	1059	580	291	165	99	41	108	7
							2001					
Groom	13336	740	3969	3587	2305	1258	673	287	172	77	262	6
Bride	13336	2443	5772	2521	1207	600	348	184	99	46	99	17

* Estimate

Table 6. Marriages by age of groom and age of bride: first marriage (SDSG)

	Total	Age (in years)										Unknown
		01-05	87-84	89-85	37-34	39-35	47-44	49-45	97-94	99-95	17+	
						1990						
Groom	38127	0695	08177	07909	4489	0138	147	880	852	874	321	_
Bride	34000	5509	03103	9223	8883	545	438	880	865	864	388	_
						1991						
Groom	34113	3967	08526	07089	4998	0129	673	831	823	053	385	_
Bride	39239	08610	03016	9311	8864	585	494	016	897	054	868	0
						1992						
Groom	84613	8461	5146	6722	3830	0024	411	018	014	042	056	_
Bride	89419	5029	5194	3924	0966	187	860	084	011	015	009	_
						1993*						
Groom	88425	8850	2485	1835	3804	0023	411	059	042	031	022	_
Bride	83789	2885	2998	3307	0988	133	863	043	088	040	077	_
						1994						
Groom	87698	8017	6475	9947	3864	0800	466	838	031	082	024	0
Bride	80039	6415	6199	3009	0973	110	820	011	28	001	26	_
						1995						
Groom	87364	8705	6834	9818	3881	0401	942	817	001	038	010	_
Bride	87167	6033	6471	3040	0170	192	850	018	66	57	000	_
						1996						
Groom	02494	0642	1413	4296	8536	0375	906	817	009	53	099	_
Bride	02692	1863	1625	8593	0352	127	857	017	92	15	22	_
						1997						
Groom	01922	0441	9173	4893	8679	0331	919	865	26	002	021	07
Bride	01651	9874	1032	8154	0375	151	373	018	15	43	019	03
						1998						
Groom	04510	0873	4261	4779	8386	0852	988	893	000	52	846	80
Bride	09766	4404	9134	8944	0751	176	896	012	63	99	806	08
						1999						
Groom	03496	552	4081	3111	8862	0054	984	847	088	25	887	09
Bride	03949	3935	9723	8497	0075	992	306	097	19	40	060	18
						2000						
Groom	12561	742	4034	3434	2121	1102	519	233	146	53	172	5
Bride	12654	2806	5172	2482	1035	555	259	143	80	31	84	7
						2001						
Groom	03744	634	3541	3917	8812	0887	146	893	091	14	057	1
Bride	03089	8434	9646	8977	0028	967	388	017	21	34	63	06

* Estimate

Table 6. Marriages by age of groom and age of bride: set ond and ne(Smarriages DG) G3 8

	Tosal	wge Dn years8									- n+nown
		29k2_	05k01	0Ak0_	75k71	7Ak7_	15k11	1Ak1_	A5kA1	AAkA_	95+	
						1990						
Groom	1270	20	295	146	9_4	944	1__	70_	170	06_	AA_	U
Bride	0452	76	260	152	142	12A	720	261	040	2A7	047	U
						1991						
Groom	7154	4	229	120	A_5	A14	120	0A1	714	01_	147	U
Bride	007A	76	294	747	742	72A	0A_	279	020	2A6	059	U
						1992						
Groom	022A	20	65	017	7A_	704	0A9	2A6	007	2A_	0_6	U
Bride	2127	07	257	059	040	055	297	25A	25_	64	21A	U
						1993						
Groom	2929	26	47	244	0A9	014	26_	206	2A7	27A	015	U
Bride	2565	7_	4_	21A	2_4	2A7	20_	4_	67	42	25A	U
						199*						
Groom	22A9	2_	92	256	24_	247	209	250	64	221	264	U
Bride	447	A4	A9	64	204	225	__	AA	A4	A6	94	U
						1994						
Groom	2254	26	A2	256	2A4	2A6	27A	209	96	250	261	U
Bride	622	14	_7	255	22_	205	222	96	12	95	A0	U
						1996						
Groom	4__	27	10	96	251	222	_2	_4	11	64	210	U
Bride	1_A	06	1_	A4	97	46	97	17	00	74	AA	U
						1995						
Groom	A22	2A	A_	A5	94	91	A7	A_	72	10	06	17
Bride	757	77	12	75	15	74	15	01	20	27	77	U
						1997						
Groom	760	20	19	11	17	79	19	71	02	01	47	7
Bride	099	0A	74	09	72	11	24	01	26	27	75	2
						1999						
Groom	79_	4	76	7A	76	7_	71	76	0_	05	_2	k
Bride	0_1	2_	1A	77	7A	71	70	04	02	21	71	k
						2000						
Groom	128	7	05	04	15	18	10	18	03	57	98	6
Bride	059	8	07	01	0*	04	10	00	58	52	0*	6
						2001						
Groom	066	9	02	04	74	76	01	71	29	27	40	k
Bride	052	4	07	2_	0A	06	01	01	27	20	24	k

Es t ima e ie

Table 9.Age-specific marriage rates: total (Estimate)

	Age (in years)										Total marriage rate
	16-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+	
						1995					
Groom	8.7	66.3	51.6	26.5	13.4	8.4	4.7	4.6	3.8	7.3	0.976
Bride	52.0	71.4	27.6	12.9	7.4	5.0	3.0	3.1	2.8	3.7	0.944
						1991					
Groom	17.5	68.3	50.5	26.9	12.8	8.0	4.0	4.2	3.4	6.2	1.008
Bride	66.5	68.6	25.7	12.9	6.6	4.7	2.1	2.7	2.3	2.9	0.975
						1993					
Groom	12.3	51.6	36.4	19.3	8.6	5.1	2.6	2.7	2.3	3.9	0.724
Bride	48.3	50.6	17.6	9.2	4.3	2.8	1.6	1.7	1.7	1.6	0.697
						199					
Groom	12.1	48.1	34.6	20.1	8.5	4.7	2.7	2.4	2.2	3.5	0.695
Bride	45.9	47.3	17.5	9.3	4.3	2.6	1.6	1.4	1.4	1.3	0.663
						199*					
Groom	12.2	45.4	33.3	21.7	8.7	4.5	2.8	2.0	2.1	3.3	0.680
Bride	44.5	44.9	17.8	9.5	4.5	2.6	1.6	1.1	1.2	1.1	0.644
						1990					
Groom	11.8	46.1	33.6	22.3	10.1	5.1	3.3	1.8	2.1	3.2	0.697
Bride	43.7	45.0	19.1	10.6	4.6	2.7	1.7	1.0	1.1	1.1	0.653
						1992					
Groom	10.6	42.8	32.7	21.0	9.3	4.6	3.0	1.7	1.6	2.8	0.650
Bride	39.5	42.2	18.8	9.4	4.5	2.4	1.5	0.7	0.8	1.0	0.605
						1994					
Groom	9.0	38.4	30.0	20.0	9.2	4.7	2.9	1.4	1.5	2.1	0.596
Bride	33.5	38.9	18.0	9.1	4.4	2.3	1.4	0.8	0.4	1.4	0.551
						1996					
Groom	7.6	34.0	29.0	17.5	8.9	4.3	2.4	1.7	1.1	3.2	0.548
Bride	28.7	36.0	17.4	7.7	4.0	1.8	1.4	0.7	0.5	1.8	0.501
						1999					
Groom	6.3	29.0	26.9	17.3	8.5	4.2	2.4	1.9	1.1	3.1	0.503
Bride	23.1	33.0	16.9	7.9	3.7	2.4	1.3	0.9	0.4	1.5	0.456
						Taaa					
Groom	**201**	2802	2204	1604	802	402	203	200	007	204	00471
Bride	2203	3400	1700	704	303	200	102	001	003	003	00421
						Taab					
Groom	4.7	27.6	26.6	17.8	9.4	5.1	2.4	1.9	0.8	2.7	0.495
Bride	16.0	38.3	17.1	8.5	4.0	2.3	1.3	0.9	0.4	0.8	0.448

Table 6. Mi egsyeofrfo n adbfai e da:est rfds: n adbfai e (Ss:fn a:eD

	r i e (f4 _eadsD										
	6Gg6)	3. g38	31g3)	2. g28	21g2)	8. g38	81g3)	1. g18	11g1)	G. 7	T5:al n adbfai e da:e
						1993					
Groom	0MG	G1M8	8) M8	33MI	) M1	8M9	6MI	6MI	6MG	2M	. M088
Bride	16M0	9. M8	31M0	6. M9	1M8	3MI	6MG	6MG	6M0	3M	. M0G)
						1991					
Groom	69M8	G9M9	80M1	32M0	) MG	1M	6MI	6MI	6M1	3M1	. M0))
Bride	GGM2	G9M9	38M8	66M8	8MI	2M	6M3	6M1	6M2	6M9	. MI62
						199					
Groom	63M3	16M3	21M3	69M8	GM0	2M2	6M2	6M3	6M8	6M1	. MG1G
Bride	80M3	1. M8	6GM9	9MI	2M2	6M9	. MI	6M	6M8	. M9	. MG10
						199*					
Groom	63M	89M9	22MG	60MG	9M8	2M8	6MG	6M3	6M8	6MG	. MG2)
Bride	81M9	8GMI	6GM0	0M3	2M1	6M0	6M	. M0	6M	. MG	. MG26
						1994					
Groom	63M8	81M8	23M9	3. MG	9MG	2MG	3M	6M3	6M8	6MG	. MG29
Bride	88M8	88MG	69M2	0M0	2M0	6MI	6M3	. MG	. M0	. MG	. MG6)
						1995					
Groom	66M9	81M0	23MI	36M2	) M8	8M8	3M3	6M8	6M3	6M1	. MG18
Bride	82M8	88M8	60M1	) M0	2MI	3M	6M3	. MG	. M9	. M0	. MG39
						1996					
Groom	6. M1	83M1	23M3	3. M2	0M1	2MI	3M3	6M2	. M0	6M1	. M06)
Bride	2) M2	86MI	60M1	) M	8M8	3M	6M3	. M1	. M1	. MG	. M100
						1990					
Groom	0MI	20M	3) M9	6) M1	0M0	8M2	3M8	6M	6M8	6M0	. M199
Bride	22M2	20MG	69M0	0M0	8M3	3M	6M3	. M9	. M2	6M3	. M186
						1992					
Groom	9M1	22M9	30M9	69M3	0MG	2MI	3M8	6M8	. MI	3M8	. M122
Bride	30MG	21M0	69M3	9M1	2M9	6M9	6M3	. M0	. M8	6MG	. M0) 2
						1999					
Groom	GM2	30M9	3GMG	69M8	0M3	8M	3M	6M1	. MI	3M3	. M109
Bride	32M	23M9	6GMG	9M9	2M1	3M8	6M8	. MG	. M2	6M2	. M181
						2000					
Groom	5.8	28.1	25.3	16.1	7.9	3.9	2.0	1.7	0.5	1.7	0.465
Bride	22.8	33.9	16.8	7.2	3.6	1.7	1.0	0.8	0.3	0.6	0.444
						2001					
Groom	8MG	39M8	3GM8	69M1	) M8	8MI	3M8	6M9	. M9	3M	. M102
Bride	61MI	20M8	69M	0M2	2M0	3M3	6M3	. M0	. M2	. MG	. M186

Table 66.Mr eigseydoy mamar e nadeg: geyt (S a(S (eDdmamar eg G; gdmade3

	Mr e G& Uearg i e(a((keg3										Tt dal mamar e nade
	68i61	27i20	29i21	57i50	59i51	07i00	09i01	97i90	99i91	874	
						1990					
Groom	7.6	7._	2.2	5.8	5.1	5.A	2._	2.A	2.2	0.5	7.652
Bride	7.2	7.1	6._	2.5	2.2	2.6	6.0	6.9	6.7	6.A	7.7A9
						1991					
Groom	7.7	7.8	2.7	5.6	5.6	2.1	2.6	2.5	6.1	5.8	7.67_
Bride	7.2	7.1	6.A	6._	6.A	6.A	6.7	6.2	6.7	6.5	7.782
						1992					
Groom	7.6	7.0	6.2	6.1	6.1	6._	6.5	6.8	6.2	2.5	7.78_
Bride	7.6	7.9	6.7	6.0	6.6	6.7	7.A	7.A	7.8	7.1	7.707
						1993					
Groom	7.6	7.0	6.7	6.9	6.9	6.0	6.6	6.2	6.6	2.7	7.798
Bride	7.2	7.0	7.A	6.6	7._	7._	7.8	7.8	7.9	7.A	7.752
						1994					
Groom	7.6	7.0	7.8	6.6	6.6	7.1	7.1	7._	6.7	6.A	7.705
Bride	7.5	7.5	7.9	7.A	7.8	7.A	7.0	7.0	7.0	7.9	7.729
						1995					
Groom	7.6	7.5	7.A	6.7	6.7	6.7	6.6	7.A	7.1	6.A	7.702
Bride	7.5	7.8	7.8	7.A	7.A	7._	7.9	7.5	7.0	7.0	7.728
						1996					
Groom	7.6	7.5	7.9	7.A	7.A	7.A	7._	7.9	7._	6.5	7.752
Bride	7.2	7.5	7.0	7.0	7.9	7.0	7.5	7.2	7.5	7.0	7.76A
						1997					
Groom	7.6	7.0	7.5	7.9	7.0	7.0	7.9	7.0	7.0	7.5	7.761
Bride	7.2	7.5	7.2	7.5	7.2	7.5	7.2	7.6	7.6	7.2	7.767
						1998					
Groom	7.6	7.5	7.5	7.5	7.2	7.5	7.5	7.5	7.2	7.A	7.769
Bride	7.2	7.2	7.2	7.2	7.5	7.6	7.2	7.2	7.6	7.2	7.77_
						1999					
Groom	7.7	7.5	7.5	7.5	7.5	7.5	7.5	7.0	7.2	7.1	7.768
Bride	7.6	7.5	7.2	7.2	7.2	7.2	7.2	7.2	7.6	7.5	7.766
						2000					
Groom	7.6	7.6	7.6	7.5	125	125	7.5	7.5	7.2	7.A	7.760
Bride	7.7	7.6	7.2	7.2	7.2	7.5	7.2	7.6	7.7	7.2	7.77A
						2001					
Groom	7.7	7.6	7.2	7.5	7.5	7.2	7.5	7.2	7.6	7._	7.762
Bride	7.7	7.2	7.6	7.2	7.2	7.2	7.2	7.6	7.6	7.6	7.77A

Table 6. Mr igsyoef bmane ad: f et (Sr SDG

	TsAal	k ne (id meayf G										wd- ds+ d
		w 5	. 5w 2	. 1w 3	75w72	71w73	25w22	21w23	15w12	11w13	85+	
						dee3						
Gr om	)) 38	61	278	62. 8	6807	6200	3) .	238	130	. 33	707	9
Bmi r om	)) 38	88	00.	6) 87	61) 7	6713	0. 1	70.	282	. 72	. 20	9
						deed						
Gr om	) 225	. 7	217	6722	6881	67) 2	38)	22)	1. 0	. 05	713	9
Bmi r om	) 225	03	365	6888	6856	6. 56	) 03	776	257	. . 7	. .)	9
						dee						
Gr om	2035	22	2) 6	3) 5	65) 6	) 03	1) 2	. 13	. 33	633	. 62	9
Bmi r om	2035	623	077	336	6577	) 5)	2) 0	. . 8	. 68	670	663	9
						dee196						
Gr om	7. 66	63	.) 7	18.	8) 6	127	256	. . 1	607	6) 5	682	9
Bmi r om	7. 66	0)	288	865	886	166	725	605	616	660	0)	9
						dee0						
Gr om	7503	65	. . 0	283	862	126	265	. 8)	68)	. 56	60.	9
Bmi r om	7503	) 5	7) 5	116	865	171	715	. 52	61)	621	3)	9
						dee2						
Gr om	. 801	6.	630	250	1. 6	2) 2	703	. 88	660	613	673	6
Bmi r om	. 801	17	763	2) 3	117	221	772	. 6.	07	660	03	9
						dee*						
Gr om	. . 83	0	67.	762	276	212	7. .	. 68	6. 7	6. .	622	7
Bmi r om	. . 83	.)	. 16	737	2) .	73.	.) 3	. . 8	05	0)	13	7
						dee4						
Gr om	. . 8)	6.	625	. 13	7) 5	723	. 03	. . 5	3.	32	667	7. 3
Bmi r om	. . 8)	12	. 8.	71.	256	785	. 2.	683	82	8)	87	. 77
						dee5						
Gr om	6) 10	2	00	. 6)	. 21	. 81	. 6.	686	06	88	) 3	725
Bmi r om	6) 10	. 0	601	. 01	757	.) 1	. 51	67.	10	2.	) 6	6) 2
						deee						
Gr om	68. .	3	00	. 57	. . 1	. 87	630	620	))	15	8)	. 32
Bmi r om	68. .	. 8	6) 2	. 3.	.) 0	. 25	6) 5	658	88	. 3	08	611
						2000						
Gr om	1287	0	51	434	474	041	427	122	145	95	95	424
Bmi r om	1287	41	102	465	015	078	496	194	56	08	73	181
						2001						
Gr om	630)	1	87	63.	.) .	7. 8	. 37	. 52	685	11	657	762
Bmi r om	630)	0	61.	.))	702	7.)	.) 7	63.	33	72	20	637

4_ f AUaAe

Table 9. Ag- espcei frffi r ft : ci e ca(ep E) 876 p(f3 a(e

	g- e Efy yeacp7										T: (al r ft : ci e ca(e
	s58	58s50	5ns5+	. 8s. 0	. ns. +	08s00	0ns0+	n8sn0	nnsn+	18+	
dee6											
Gr om	8A9	5A	1A2	4A2	4A1	2A5	0A5	. A4	5A	5A+	8A5. 0
Bmi r om	8A	0A1	2A2	2An	2A	nA1	5A4	5A1	9An	9An	8A584
deed											
Gr om	8A9	5A0	1A0	4A2	2A+	1A+	. A2	. An	5A9	5A4	8A555
Bmi r om	8An	0A2	2An	2A4	1A0	nA5	5A	5A0	9A0	9A0	8A9+2
dee0											
Gr om	8A5	5An	0A4	nA4	0An	0A8	5A9	5A9	9An	9A2	8A901
Bmi r om	8A4	0A	0A1	nA5	. A2	. A9	9A1	9A	8A+	8A2	8A9. 9
dee2											
Gr om	8A9	9An	. A8	. A+	. A5	5A+	9A+	9A0	9A0	9A0	8A980
Bmi r om	8An	5A1	. A9	. A1	5A4	5A5	9A	9A8	8A4	8A1	8A8+5
dee1											
Gr om	8A9	9A0	5A4	. A+	. A0	. A9	5A	9An	9A2	9A1	8A984
Bmi r om	8A0	5A5	. A9	. A1	. A9	5A0	9An	9A5	9A8	8A2	8A8+n
dee9											
Gr om	8A9	9A	5A1	. A0	. A8	5A+	5A	9A5	9A0	9A	8A8+2
Bmi r om	8A	9A+	5A4	. A0	5A1	5A	9A1	8A2	8A+	8A1	8A84n
dee3											
Gr om	8A8	8A+	5A9	. A8	. A8	5A0	9A4	9A	9A9	9A0	8A84n
Bmi r om	8A5	9An	5An	. A8	5A0	9A+	9A2	8A2	8A1	8A0	8A82n
dee											
Gr om	8A9	8A+	9A4	5A2	5A	5A5	9A+	9A9	8A+	9A9	8A82n
Bmi r om	8A	9A1	5A	5A2	5A5	9A1	9A5	8A1	8An	8An	8A814
dee*											
Gr om	8A8	8A1	9A1	9A4	9A4	9A1	9A0	9A8	8A1	8A4	8A8n1
Bmi r om	8A5	9A5	9A+	5A9	9A2	9A0	9A8	8A1	8A	8An	8A8n0
deee											
Gr om	8A9	8A1	9An	9A2	9A4	9An	9A	8A+	8An	8A2	8A8n5
Bmi r om	8A5	9A9	5A8	9A+	9An	9A9	8A4	8A2	8A5	8A1	8A8n9
Taaa											
Gr om	**202**	**201**	201	203	401	402	206	**201**	**203**	**203**	**202**60
Bmi r om	**204**	**207**	402	404	404	203	204	**203**	**201**	**201**	**202**17
Taab											
Gr om	8A8	8A0	9A0	5A9	5A0	5A5	9A2	9A2	8A1	9A9	8A81+
Bmi r om	8A9	9A8	9A+	5A2	5A5	9A4	9A0	8A+	8A	8A0	8A81.

Table 6. Mr ige bisyof bmane d: t dyoes

9eas	Tdyal	Une d: t dyoesk4 measf w								54_4dA4
		(SD	SD(S.	SG(S)	3D(3.	3G(3)	. D(. .	. G(.)	GD8	
					e1e9					
6) 1D	6DS211	3113	36G7G	36G.)	S37DS	2G1G	SG2G	1SS	1DG	
6) 1G	) .) 27	. 1G1	S6213	33)) S	6) 1D2	6671D	S. 1S	. G7	62)	
6) 7D	) DSD7	7DS7	3D. SD	S61SS	SDGDD	721)	S. D7	3D.	G2	
6) 7G	2) 76S	2336	316S1	S32G7	6D7. 1	2331	6)) 1	36D	6D	
6) 2D	2) . G2	6D1S3	. D. 1)	S321)	)) G7	S23D	6. GS	637	6S6	
6) 26	) SGD6	) 6) .	. S67G	SG123	6D) G2	S) 6D	632G	6G)	37	
6) 2S	) 672.	6DD82	. SS3)	S. 171	6D1) 1	S233	661S	6. D	(	
6) 23	) S11D	6DD. S	. SSDG	S.) D1	66SS.	3S1)	222	6S1	(	
6) 2.	) G2. 6	) 23D	. S)) S	S16G3	6S6G2	32D.	7GS	6GS	(	
6) 2G	) 723)	6DDD)	. S1S)	S773D	6S3GS	. S7S	13G	S6S	(	
6) 21	) 26GG	67332	33. DS	S) DGS	6S)) G	. GG	1) S	6SS	(	
6) 27	) . G) G	67D2)	361. D	S2D. D	6S376	. . 3)	227	66D	6)	
6) 22	) 6) DG	6D) 11	317) 6	S7DSD	6SDS3	. S67	7G2	27	. 3	
6) 2)	) 6632	6671D	3GS) 7	S1GD.	6S. D.	. S) G	26S	1.	S	
6)) D	) S26G	66) D1	3GS76	S1SS2	6376S	. 73.	) SD	3.	6D	
6)) 6	2) D) 6	6SDSS	3.) G3	S3GG2	6S) 36	. 1GG	) .)	6)	.	
6)) S	7S136	6D. 27	3DSDD	67GD3	6D6) 2	3GDD	767	SD	1	
6)) 30	16G) .	66S61	S. 67.	6. 3DG	23S.	S222	13)	37	66	
6)) .	G7366	6SG) 7	S66GG	6S26D	7. . .	S16S	1S.	G.	6G	
6)) G	G13. 6	662) 3	SDG72	6S1) 6	7. 7.	S) S2	171	26	SD	
6)) 1	G311)	6DG))	6) . . 3	6S. D7	7. D7	3D77	133	2S	S6	
6)) 7	GSDSD	) GG1	62G62	6SS71	76) 6	3SSD	2S1	6D.	3S)	
6)) 2	. 12. 6	237.	61) 67	6667D	13D2	S) 1D	1) 2	73	3. 6	
6)))	. D772	1) S3	6. 167	) 721	G76.	S73S	176	7)	36	SSG
SDDD	. D3) S	G22S	6G62G	))) D	G17D	S7S)	767	) 3	S.	6DS
SDD6	. D. 61	.) DD	6G733	) 1. D	G)) S	3DG2	2D)	6. 1	32	6DD
					GroBi od					
6)) 1	55. . .	8. 213	86635	83785	7568	9859	106	20	38	
6)) 7	50. . .	663.	86339	83709	7015	9909	257	8. 2	908	
6)) 2	53. . .	6361	8272.	830. .	7. . 9	9321	775	28	976	
6)))	065. .	2085	8729.	8869.	7. 36	9987	203	66	92	
SDDD	GDDDD	73DD	622SD	6S. GD	7DDD	3. DD	) DD	6DD	3D	
SDD6	GDDDD	1D1S	6) . 2)	66) 7.	7. 6G	32D2	6DDS	SDD	GD	

Table 15. Age-specific fertility rates

Year	All ages	Age of mother (in years)							Total fertility rate (TFR)	Reproduction rate	
		-20	20-24	25-29	30-34	35-39	40-44	45+		Gross	Net
SDSG											
1958-1959	85.0	22.2	124.3	172.0	112.2	58.7	21.5	6.4	2.59	1.237	1.146
1961-1962	89.9	24.5	150.5	163.0	113.0	55.2	18.3	4.5	2.65	1.287	1.194
1963-1964	84.6	23.2	158.5	161.4	106.1	53.0	17.5	3.9	2.62	1.267	1.176
1965-1966	78.2	28.2	163.7	154.1	99.8	54.1	15.6	3.7	2.60	1.249	1.183
1967-1968	72.9	31.1	167.9	145.7	98.5	46.0	14.4	3.2	2.53	1.228	1.170
1969-1970	73.3	34.3	182.9	147.2	97.5	46.3	12.6	2.4	2.62	1.292	1.233
1971-1972	70.8	33.7	183.5	155.7	90.7	44.4	12.0	2.2	2.61	1.277	1.215
1973-1974	69.4	33.4	192.0	157.6	78.4	41.5	10.8	1.7	2.58	1.269	1.206
1975-1976	68.9	36.3	179.4	156.3	82.5	35.9	11.0	1.8	2.52	1.239	1.179
1977-1978	68.0	37.4	178.1	140.7	71.3	27.3	9.5	1.2	2.33	1.144	1.091
1979-1980	68.5	47.8	181.1	121.9	66.3	24.0	7.6	1.4	2.26	1.102	1.052
1981	69.9	39.7	189.2	126.6	63.1	24.0	6.6	1.0	2.25	1.100	1.052
1982	69.0	44.6	186.0	118.8	58.9	23.7	5.9	0.8	2.19		
1983	69.4	46.1	182.6	117.6	60.1	25.2	5.0	0.7	2.19	1.109	1.071
1984	71.5	46.7	184.2	120.9	63.9	26.1	4.9	0.8	2.24		
1985	72.6	49.1	183.7	124.9	63.0	26.0	4.8	1.1	2.26	1.149	1.109
1986	72.7	49.1	180.0	127.4	64.6	26.4	5.8	0.6	2.27		
1987	70.0	49.2	176.4	119.6	60.0	24.6	7.6	0.6	2.19	1.117	1.078
1988	68.0	54.5	172.4	112.5	56.8	22.7	5.9	0.5	2.13	1.094	1.058
1989	67.6	58.6	171.4	109.7	57.2	22.6	5.7	0.4	2.13	1.034	1.003
1990	69.4	60.2	177.4	110.5	61.7	24.4	5.8	0.3	2.20	1.072	1.044
1991	66.9	61.0	178.9	102.4	56.9	23.6	5.6	0.2	2.14	…	…
1992	54.5	52.7	156.7	79.2	44.1	17.5	4.1	0.2	1.77	…	…
1994	42.2	61.7	112.8	63.0	31.8	12.5	3.4	0.4	1.43	…	…
1995	41.1	58.2	108.9	64.8	32.4	13.7	3.6	0.5	1.41	…	…
1996	38.8	51.9	101.6	64.8	33.0	14.0	3.3	0.5	1.35	…	…
1997	37.3	46.9	95.0	65.0	33.2	14.3	4.2	0.6	1.29	…	…
1998	33.1	40.4	84.9	60.2	30.2	12.9	3.5	0.4	1.16	…	…
1999	30.6	35.2	76.8	56.4	29.5	12.5	3.5	0.7	1.07	…	…
2000	31.3	30.8	82.3	59.3	30.2	12.9	3.9	0.7	1.10	…	…
2001	32.8	26.9	89.6	59.8	33.4	15.1	4.6	1.2	1.15	0.528	0.519
Estimate											
1989	70.9	61.4	179.7	115.2	59.8	23.7	5.9	0.5	2.231	1.083	1.052
1990	71.9	62.2	182.5	115.1	65.8	25.5	6.2	0.3	2.288	1.111	1.080
1991	68.6	62.5	179.8	105.6	62.9	24.7	6.2	0.2	2.210	1.071	1.039
1992	56.4	55.0	156.7	81.4	51.0	18.5	4.6	0.2	1.837	0.894	0.867
1993	50.5	62.2	132.5	72.4	44.9	15.9	4.2	0.3	1.662	0.801	0.777
1994	49.9	74.4	123.2	71.0	43.5	15.1	4.2	0.5	1.660	0.797	0.773
1995	50.5	72.4	123.4	74.8	46.0	17.3	4.6	0.7	1.696	0.814	0.790
1996	50.7	68.1	122.9	79.5	49.0	18.9	4.4	0.8	1.718	0.825	0.800
1997	50.7	63.5	120.9	84.0	50.2	20.2	5.8	3.3	1.740	0.835	0.810
1998	49.3	60.1	119.3	84.0	48.1	20.0	5.2	3.4	1.701	0.816	0.792
1999	47.3	54.6	114.8	81.0	48.7	20.7	5.7	1.0	1.632	0.783	0.760
2000	48.2	47.4	123.2	84.5	49.0	22.1	6.0	1.0	1.666	0.800	0.777
2001	48.6	39.6	129.2	81.4	52.2	25.5	6.7	1.0	1.678	0.805	0.784

Table 6. Mrige bisyof bmnsdes :t (t SD

	Uisyo nsdes					Tnyal
	G	GG	GGG	G	) 3	
			Gr o mBi			
68. 1	27. 09	98. 29	60. 82	8290	6172.	6195. 1
6. . 7	98895	956. .	65976	8659	8478	8485.
6801	221. 1	95198	67150	0911	. 521	8191.
6807	28525	95097	62468	4. 00	2172	58069
6851	42449	98725	61599	2446	9967	58475
6857	465. 5	24. 97	6766.	2807	9677	80028
6881	46275	26780	64428	2. 46	6051	89567
6887	21169	65279	7. 49	6. 96	064	7. 246
9111	91852	62492	4200	6611	718	41289
9116	96. 67	69567	4496	6154	456	4146.
			dBie1B96			
68. 1	24M0	95M5	60M9	8M6	61M9	611M1
6. . 7	26M7	98M0	68M9	8M0	61M1	611M1
6801	2. M	26M6	6. M0	5M1	0M	611M1
6807	44M4	29M1	67M1	7M9	2M4	611M1
6851	45M	22M1	69M6	2M5	9M7	611M1
6857	49M5	27M4	67M7	4M6	9M9	611M1
6881	44M	24M1	67M	2M8	6M8	611M1
6887	72M2	29M	61M1	9M8	6M2	611M1
9111	76M8	22M2	61M5	9M0	6M2	611M1
1228	72M7	26M0	61M8	9M0	6M9	611M1

Table 60Mrige bisyof bmfe_ :t (t SD

Aeas	Unyo fe_ef	k ale	we- ale	k +ww611
68. 1	6195. .	72121	4852.	61. M4
68. 7	84850	45268	4. . . 5	612M7
6801	81910	4. 971	42870	617M9
6807	58069	4. 482	42968	610M
6851	58475	47522	42. 97	617M6
6857	80028	48809	400. 0	614M
6881	89567	40075	47170	61. M1
6886	58186	47894	426. 0	61. M4
6889	097. 7	20942	27299	617M4
6882w	. 6784	26814	98. 81	610M7
6884	70266	988. 4	90240	618M
6887	7. 246	98047	9. 78.	666M6
688.	72. . 8	95498	97941	669M
6880	79191	95949	92005	665M6
6885	4. 546	97452	96275	668M2
6888	41005	99646	65. 20	665M6
9111	41289	96501	65799	665M6
9116	4146.	9681.	65761	665M2

Table 6. Mr eligesiey bo f mn besd: :etmyey

- eas	Gr Go			mB Gi			7 mti+le :etmyey +es 6555 Seligesiey	
	(ll Seligesiey DTdtalG	(n df wt+en wit+ :etmy		(ll Seligesiey DTdtalG	(n df wt+en wit+ :etmy			
		6	)3		6	)3	8r 81	2780
69. 5	. 99. 4	. 9_A6	) UU	. . 9kk	. . A5)	4k)	) M	_M
69. 6	9) k6A	964k)	__6	9) 6k4	96kk4	_55	. MA	_M
69.)	9) 6A5	96_A_	A9A	96_4U	9665.	4U_	kMA	_M
69. A	9) 9U_	9) U) 5	kA_	96U5A	95. 45	4kA	kM	_M
69. k	94644	9U_. 4	A. 5	9AUk6	9) 95_	4Ak	kM	4M
69. U	9.) 66	9__9_	k6k	9Uk6A	9k4_9	_Ak	kM	_M
69. 4	9. 46)	9. 695	k))	9U455	9k9) k	4_4	kMA	_M
69. _	9U5_k	9k4. A	A96	96Uk9	95. 4U	4. k	kM	_M
69. .	9) A45	9) 5U)	A5.	. 995U	. 9) kU	445	AMA	_MA
69. 9	96kk9	96649	) . 5	. _. Ak	. _) 5A	4A6	AM	_M
6995	9A) 6A	9) 9U)	) 46	96. 65	96k) A	A. _	) M	_M
6996	. 9kU6	. 9) _4	6_U	.) .) k	.))) 6	45A	) M	_MA
699)	_) __5	_) 4) 9	6k6	49_4_	49) .)	k. U	6M	_M
699A	w	w	w	U_665	U4_k)	A4.	w	4M
699k	U_4UU	U_) . 6	A_k	UA4Uk	UAA5_	Ak_	4M	4M
699U	U4_k.	U4A59	kA9	UUU55	UU5_k	k) 4	_M	_M
6994	Ukk66	Uk6) 5	) 96	Uk44.	Uk) _.	A95	UM	_M
699_	U) 9UA	U) _. 4	64_	U) 9) 6	U) A5)	469	AM	66M
699.	k__) 6	k_4A6	95	U5A6)	k995.	k5k	6M	. M
6999	k6U_)	k6k9U	__	k_AU)	k49UU	A9_	6M	. M
5. . .	k65. U	k6554	_9	k_696	k4. A9	AU)	6M	_M
5. . 8	k65U)	k59k.	65k	k4A_5	k456)	AU.	) M	_M

Table 6. Mr i gsayo asfgal bfsgmn d t : (S

- eas	Tkgal	DeGfngese) o assfaGen	r i gsayo asfgal bfsgmn	+o kAGgmeo		_AUAkwA
				+wwks) fAGgk gme) ewlasagfkA k+ bkgmwaseAgn	+wwks) fAGgk gme) ewlasagfkA k+o kgmes	
			Gr o mBi			
6. 3.	. 6683	12. 11	65656	668. 6	2117	
6. . 7	. 0369	19. 60	65. 78	60175	26. 1	
6. . 6	3. 7. 6	10260	6551.	60362	8359	
6. . 0	10586	9536.	69360	60211	8889	
6. . 8	569. 2	4	MMM	MMM	MMM	
6. . 2	91866	2678.	65010	62288	638.	
6. . 9	95526	27611	65252	62011	0631	
6. . 5	9855.	81755	65578	62007	0838	
6. . 1	90707	82552	61895	62525	0167	
6. . 3	25326	87025	659. 9	683. 9	0797	
6. . .	27113	09. 80	62325	60. 81	6. 7.	
0777	278. 0	08113	69128	62797	65. 8	125
0776	27265	00216	61. 29	69611	6101	5675
			dBie1B902345567Bem603			
6. 3.	677M	30M	61M	60M	9M	
6. . 7	677M	36M	63M	68M	2M	
6. . 6	677M	36M	63M	62M	2M	
6. . 0	677M	13M	06M	61M	2M	
6. . 8	677M	4	MMM	MMM	MMM	
6. . 2	677M	16M	03M	09M	8M	
6. . 9	677M	17M	0. M	09M	8M	
6. . 5	677M	5. M	87M	05M	2M	
6. . 1	677M	55M	88M	03M	9M	
6. . 3	677M	52M	89M	0. M	9M	
6. . .	677M	58M	85M	86M	2M	
4666	5666	310	8. M	870	70	405
4665	677M	99M	22M	81M	2M	0M

Table 6. Mr i gsayo asfgal bfsgmn bd a: e t (o t gmes SDGD) 3

8: e t (o t gmes	Tt gal	1 e: fngese2 o assfa: en	r i gsayo asfgal bfsgmn	8 o t - : gmeo		1 28270 2
				8 wwt s2f- : g gme 2ewlasagt - t (bt gm+ase- gn	8 wwt s2f- : g gme 2ewlasagt - t (o t gmes	
				Gr o mBi		
				1282		
y6.	7709.	0. 56	406U	597.	777U	
6. y64	5_6A0	6A006	__6_	4. 45	74U6	
6_y6A	69_. 4	65667	56U5	67_5	775.	
5. y54	764. 4	7. 075	79A7	7. _6	95A	
5_y5A	46A_	5_46	0_5	456	567	
4. y44	U76	940	79_	A5	06	
4_k	99	_.	79	U	U	
				2000		
y6.	_UU6	64. 0	5560	6AU5	544	543
6. y64	7_7U_	UU6A	9. 6_	_4_0	_9U	995
6_y6A	AAA.	9457	55U.	5. 4.	54.	56*
5. y54	_90.	50A.	709.	7_64	659	5 E
5_y5A	606A	700.	A. 9	00U	76U	s9
4. y44	070	4_5	6_5	676	47	55
4_k	770	04	4.	60	75	9
				2001		
y6.	4A. .	7U40	5. _5	6_A7	55A	765
6. y64	7_055	U47A	0574	95. 7	_90	449
6_y6A	A94.	_UA5	5040	570A	599	6. 6
5. y54	_AA6	50_A	6655	7U9A	65U	769
5_y5A	5. _U	7A4.	777U	A. 9	759	09
4. y44	U. A	4U.	56A	6_.	_5	69
4_k	7U4	77_	9A	_A	0	5
				dBie1B96028 e*4Bemfi65		
				1282		
y6.	7. . M	_AMJ	4. M	5. M	AM	
6. y64	7. . M	U4M	7_M	77M	4M	
6_y6A	7. . M	U0M	76M	UM7	4M	
5. y54	7. . M	U9M	75M	UM	_M7	
5_y5A	7. . M	U6M	70M	7. M7	0M	
4. y44	7. . M	0AM	6. M	77M	UMJ	
4_k	7. . M	0_M	64M	76M	76M	
				2000		
y6.	7. . M	4Et*	_AM7	_. M	_MA	ts
6. y64	7. . M	s3t5	47MA	5_MA	5MJ	t
6_y6A	7. . M	i 4t4	5_M	5. M	5M	5t3
5. y54	7. . M	i i t3	55M	69MA	4M7	t
5_y5A	7. . M	i 4t*	5_M7	6UM	4M	5t*
4. y44	7. . M	i 9t	59MJ	6AM	_M	5ts
4_k	7. . M	i 9t	59MJ	65M7	77M7	ti
				2001		
y6.	7. . M	50M	96M	_6MA	9MA	6M
6. y64	7. . M	_5M	49M	4. M	5M	6MA
6_y6A	7. . M	97M7	5UMA	55M	5MJ	6M7
5. y54	7. . M	96M	50M	57M	4M	6M7
5_y5A	7. . M	95M	59M	6AM	4M	6M
4. y44	7. . M	_AM	4. M	5. MA	9M	5M
4_k	7. . M	96M	50M	56M7	5MJ	7M

Table 9. Age- alls pci f mei abr t:pr co

Yeat	Nf E bet		Nf E bet r 0abr t:pr co pet . 222 + r E ec a: a- e 0r E . 1 :r 58	
	Gr om		Bi de1 9d6	
	Tr :al	(E r c- :) eE E pcp	Tr :al	(E r c- :) eE E pcp
. 878	67773	5956	1. A	3A
. 882	16769	AAA	59A1	…
. 88.	18375	8449	53A7	4A9
. 889	12457	. 2916	34A6	4A6
. 883	51. 3.	738.	35A7	6A1
. 885	51717	. 2981	37A7	7A4
. 881	38137	4199	35A7	6A6
. 886	32223	1764	94A8	1A8
. 884	93523	115.	9. A8	1A9
. 887	9. 2. 7	6726	. 8A8	6A5
. 888	. 7326	6158	. 4A5	6A9
9222	. 581.	15. 5	. 5A5	1A9
922.	. 1227	1332	. 5A6	1A9

Table 99Age- alls pci f mei abr t:pr co bs a- e r 0+ r E ac

(- e r 0+ r E ac	Yeat					
	Nf E bet			(- eyopemp0pmta:eo		
	. 888 n	9222 n	922. n	. 888 m	9222 m	922. m
y. 1	3	.	.	2A2	2A2	2A2
. 1y. 8	766	474	714	1A6	1A.	1A6
92y95	5983	3646	3669	94A5	95A.	95A8
91y98	1354	3845	5276	36A8	94A2	94A7
32y35	563.	3178	31. 8	3. A8	91A.	95A7
31y38	9357	9. 49	9244	. 5A8	. 5A.	. 3A8
52y55	4. 3	687	414	5A7	5A4	1A.
51y58	87	57	5.	2A4	2A5	2A8
12y	4	6	7	2A.	2A.	2A.
Tr :al abr t:pr c + a:e (T(+)				2A626	2A123	2A128

nCMSI
mEo:pE a:e

Table 6. Mr eaigs by aoe af msen d r : t (

Soe	DGg senes	) ale	3e8 ale	DGg senes	) ale	3e8 ale	DGg senes	) ale	3e8 ale
		2012			**20**82			**208**0	
12	5. 58	21113	6. 583	2272	62523	61213	2782	6989	6180
217	6206	. 223	7783	498	5713	2883	787	529	2. 6
019	549	216	645	2. .	647	662	608	660	. 6
25127	221	652	00	255	694	0.	696	82	98
20129	220	695	07	287	215	82	56.	26.	611
65167	7. 0	589	609	582	202	661	952	56.	667
60169	416	589	21.	54.	271	66.	715	574	69.
. 51. 7	812	791	542	. 86	75.	279	719	577	698
. 01. 9	46.	520	208	061	777	277	489	946	255
75177	7. 1	514	249	6687	091	577	6241	0. 9	504
70179	0. .	9. 7	912	6615	479	998	67. 6	61. 5	980
05107	61. 4	491	954	6216	498	772	2460	6. 77	045
00109	6529	. 57	708	60. 7	6617	. . 1	2226	6204	857
45147	6. 8.	6119	. 85	2408	6747	6629	2745	65. 6	6682
40149	6874	61. 7	006	52. 9	6055	6996	9674	2660	2150
_51_7	277.	6569	6295	5450	606.	6026	9810	25. 9	2759
_01_9	2445	6288	6549	5997	6. 48	64. 4	7486	279.	5699
A51A7	2471	6249	6504	589.	6055	2669	9564	605.	29. 8
A0U	5167	65. .	6450	7071	2952	5960	4454	29. 6	9647
TGal	2. 167	69595	624. 2	59205	6026.	64144	9681.	26991	2194.
		2040			**200**2			**2002**	
12	6. 0.	6152	. 77	6948	099	427	6224	. 17	726
217	9. 0	241	260	5. .	218	640	5. 2	21.	647
019	6. 6	611	. 6	698	05	44	675	86	42
25127	690	88	98	698	61.	92	658	07	79
20129	299	6. 0	44	290	6. .	. 6	279	6. 8	. 7
65167	910	280	661	917	207	621	967	517	661
60169	787	956	649	707	924	678	7. 5	956	692
. 51. 7	488	711	688	. 17	760	60.	014	418	68.
. 01. 9	041	426	258	069	416	265	097	492	215
75177	895	407	270	805	. 61	2. 5	6665	. 00	527
70179	6585	898	999	6265	0. 8	559	6188	. . 1	528
05107	2442	6079	010	2. 11	6028	0. 6	2. . .	6868	070
00109	52. 0	2677	6625	5269	26. 9	6191	5655	2625	6161
45147	7227	52. 4	6898	7225	5221	2115	7216	52. 5	6820
40149	9214	260.	2168	941.	2547	2292	7176	2066	2291
_51_7	9076	210.	2. 49	997.	6080	2778	97. 0	6842	2464
_01_9	47. 0	2497	5855	4567	29. 7	5091	4681	2581	5011
A51A7	7049	2696	5. 25	7. 64	2616	5467	7822	2622	5011
A0U	440.	2149	9425	4464	21. 4	9791	4424	2152	9789
TGal	9. 1. .	25742	25767	97897	228. .	22840	949. 5	25999	25128

k wG8 - +iwo by t NTs+lam+e af mwM) aola- erwm+eM

(continued)

Soe	DGg senes	) ale	3e8 ale	DGg senes	) ale	3e8 ale	DGg senes	) ale	3e8 ale
		2001			**200**6			**200**3	
12	860	761	910	6158	466	920	878	787	549
217	560	608	628	595	605	641	281	659	674
019	691	01	41	658	01	78	89	98	97
25127	669	4.	9.	620	05	97	616	48	52
20129	564	290	40	565	258	. 9	295	606	42
65167	740	977	665	709	942	622	9. 7	5. 1	617
60169	. 6.	7. 5	699	. 10	777	675	772	929	620
. 51. 7	86.	. 61	21.	850	. 29	269	. 42	700	6. 9
. 01. 9	824	. 18	26.	881	. 45	22.	044	4. 0	600
75177	66. 9	094	520	626.	0. 8	550	616.	. 55	209
70179	899	474	200	6667	. 04	528	6190	. 94	512
05107	27. 2	6. . 5	. 88	2575	6410	. 97	64. 4	6657	796
00109	5629	2158	6107	5588	2218	6681	5126	684.	6179
45147	71. 6	5640	6815	9894	5664	6051	5082	2900	6919
40149	7795	51. 2	29. 6	4699	5979	2481	77. 0	56. 2	2914
_51_7	9460	6847	2475	7607	22. 1	2867	9. 50	2650	2411
_01_9	7066	227.	5779	7098	2226	5420	9051	6099	2804
A51A7	412.	2614	5826	4957	2295	9682	7704	6876	5457
A0U	4899	2628	9067	. 665	2649	9898	7040	6. 72	9664
TGal	94. 42	25772	25261	90850	29471	29200	96784	26169	21702
		2000			**2001**			**200**8	
12	. 50	976	20.	859	706	575	098	762	55.
217	26.	669	615	646	08	. 2	65.	07	72
019	615	47	50	. 9	91	59	01	76	28
25127	05	77	20	47	92	25	09	79	51
20129	605	657	90	657	85	92	699	00	74
65167	571	204	49	274	604	. 1	292	6. 9	40
60169	762	5. 6	696	547	2. 2	85	571	247	07
. 51. 7	4. 6	716	6. 1	980	5. 4	622	755	5. 8	679
. 01. 9	062	414	214	. 6.	75.	601	06.	7. 7	292
75177	6166	. 95	240	827	. 17	221	852	489	250
70179	6657	026	569	6174	. . 4	201	6109	. . 6	565
05107	6579	874	580	6650	010	551	6116	442	558
00109	2861	68. 4	859	2407	6. 06	819	2976	6461	096
45147	5586	2608	6212	5651	2192	6100	5455	2212	6956
40149	724.	51. 5	2689	9. 20	2. 00	6891	7180	2845	2657
_51_7	9744	2675	2965	9711	2682	2510	7402	20. 4	2014
_01_9	9516	6496	2441	5022	6540	2979	9949	64. 9	2. 81
A51A7	984.	6. 42	5217	9970	6984	2842	9456	6772	51. 8
A0U	7515	6776	5. 72	9. 4.	6911	554.	794.	6759	5855
TGal	5. 0. 9	68998	60927	59969	6. 7. 2	64092	5. 4. 8	60. 26	60870

(continued)

Soe	DGg senes	) ale	3e8 ale	DGg senes	) ale	3e8 ale	DGg senes	) ale	3e8 ale
		2004			**2000**			1222	
12	. 61	95.	2. 5	. 69	951	209	411	549	254
217	661	44	99	02	76	56	. 1	91	51
019	48	91	28	78	96	60	94	20	60
25127	. 5	75	21	. 4	71	24	7.	54	26
20129	642	664	94	695	87	90	695	00	77
65167	2. 9	218	47	258	606	70	291	6. .	45
60169	591	275	0.	55.	275	09	554	242	. 9
. 51. 7	900	599	699	974	591	664	997	554	618
. 01. 9	. 86	782	688	. 72	709	640	. 69	728	607
75177	8. 1	. 21	271	872	484	274	824	. 1.	268
70179	6698	050	566	6656	099	20.	6690	042	204
05107	6696	015	550	6605	094	55.	6262	079	570
00109	2652	6507	. 9.	6. 82	66. 8	465	6724	6169	762
45147	5. 25	2280	6927	5047	2591	6727	5. 75	2249	6908
40149	7522	56. .	2697	7640	5122	2694	7256	5660	2665
_51_7	4. 81	5425	564.	. 2. 8	5068	5941	. 408	9119	5407
_01_9	9006	6855	2890	7914	2695	5245	4656	2580	5. 55
A51A7	9779	670.	284.	9988	6715	2884	9412	696.	5607
A0U	7. 27	6. 22	9115	4297	6007	9541	4976	6058	9462
TGtal	58919	21684	68210	915. 0	21512	211. 4	96521	2155.	21805
		122**2**							
12	9. 0	. 52	2__						
217	70	64	. 6						
019	95	69	27						
25127	. 9	0.	62						
20129	605	227	49						
65167	210	2. _	_2						
60169	5. 1	6_2	99						
. 51. 7	945	. 05	22.						
. 01. 9	440	054	246						
75177	875	_22	676						
70179	6674	A0_	699						
05107	6289	967	. _5						
00109	6566	A__	7. 7						
45147	5991	29A5	2745						
40149	7194	69. 4	6225						
_51_7	. 177	. _A_	. 64A						
_01_9	4546	6_2.	. 47A						
A51A7	9298	2. 42	6AAA						
A0U	0A77	20A6	7646						
Uf kf Gwf	A0	07	. 2						
TGtal	. 9. . 9	29049	29__5						

Table 6. Mr eaigs by aoe af msen d sit(aieS

Doe	G) ig senes	3 ale	8e(ale	G) ig senes	3 ale	8e(ale	G) ig senes	3 ale	8e(ale
		2012			**20**82			**20**80	
12	1225	6677	2425	6174	2520	2742	6379	2977	2279
21.	2593	893	377	330	532	578	949	561	682
710	507	627	287	503	659	292	621	257	01
2912.	619	217	279	523	248	224	235	221	14
27120	123	615	285	165	639	290	581	681	277
6916.	380	177	680	137	642	234	142	536	264
67160	300	177	600	118	638	207	975	593	218
5915.	455	997	505	462	917	502	971	599	214
57150	397	557	567	470	937	510	341	132	655
. 91. .	337	557	557	2527	016	130	2637	081	503
. 71. 0	2754	968	926	2278	393	192	2982	2785	140
7917.	2583	857	313	2673	392	999	6320	2899	035
77170	6792	496	2744	6502	2285	2670	6662	2603	459
4914.	6141	2603	2670	5668	2940	2364	6935	2582	2246
47140	5756	2301	2510	5034	2008	2406	1170	6220	6647
_91_.	1244	6226	6708	1679	2436	6615	9951	6142	5715
_71_0	1411	6541	6997	9789	6122	6331	3145	6349	5840
A91A.	1577	2083	6161	9535	6690	5279	1807	2000	6046
A7U	9887	6141	5683	3069	6877	1269	8570	6327	1340
T) ial	54561	24321	24827	12973	67286	62551	11044	66758	66036
		2040			**200**2			**2002**	
12	6779	2290	018	2427	2270	076	2097	2742	894
21.	180	637	620	588	674	230	586	678	239
710	282	277	82	214	05	33	295	42	36
2912.	210	44	14	214	278	16	254	09	91
27120	611	280	33	614	288	86	699	284	83
6916.	170	640	227	122	604	266	128	579	226
67160	949	152	231	945	163	238	980	152	218
5915.	344	977	244	825	965	247	025	374	671
57150	037	362	654	067	375	628	092	316	674
. 91. .	415	309	690	405	827	685	2200	037	560
. 71. 0	2545	414	111	2689	084	543	2567	043	161
7917.	6336	2091	070	6032	2447	082	6072	2415	090
77170	5604	6299	2251	5606	6234	2225	5695	6265	2257
4914.	9650	5604	2414	9660	5669	6775	9609	5562	2431
47140	1673	6208	6724	1845	6992	6616	9121	6492	6135
_91_.	1008	6745	6841	1417	6234	6882	9873	6354	5738
_71_0	3908	6391	5455	3384	6369	1791	3418	6383	1682
A91A.	9005	6212	5816	3918	6688	1687	3817	6510	1546
A7U	3886	6222	1332	8761	6205	1012	8105	6559	9210
T) ial	18130	65835	65879	10405	61575	61307	92931	69856	69056

* Estismae)

Doe	G)ig senes	3 ale	8e(ale	G)ig senes	3 ale	8e(ale	G)ig senes	3 ale	8e(ale
		2001			**200**6			**200**3	
12	2372	419	393	2077	2736	850	2307	2777	307
21.	520	204	264	534	248	286	520	236	293
710	217	07	37	297	03	31	229	87	19
2912.	221	38	18	250	04	14	272	34	56
27120	528	610	34	558	698	07	615	202	36
6916.	982	199	223	357	140	256	183	587	273
67160	865	985	297	835	940	239	993	161	256
5915.	469	827	629	2722	807	652	838	900	284
57150	411	874	659	2738	066	619	087	380	246
.91.	2248	033	552	2566	490	531	2756	813	603
.71.0	2514	423	155	2121	432	195	2682	031	178
7917.	5035	6382	2246	6902	2880	075	2476	2579	948
77170	5260	6715	2709	5336	6584	2605	5766	2430	2791
4914.	9651	5688	2498	9532	5593	6779	1311	6003	2890
47140	9887	5678	6935	3336	5836	6477	9092	5591	6148
_91_.	3127	5705	5568	8259	5958	5940	3831	5116	5566
_71_0	8221	6304	1169	8100	6889	1825	3305	6199	1660
A91A.	3056	6503	1113	8229	6142	1361	3519	6669	1267
A7U	8067	6114	9582	0500	6357	9890	8869	6152	9641
T)ial	91587	68935	63078	98545	64723	60588	97539	69620	69218
		2000			**2001**			**200**8	
12	2377	499	319	2997	460	366	2577	884	962
21.	628	221	275	232	04	86	211	09	94
710	226	39	18	270	35	19	275	37	15
2912.	277	86	60	09	96	55	01	91	57
27120	672	259	33	240	255	39	282	221	98
6916.	587	603	01	698	203	82	611	281	87
67160	923	582	219	126	648	229	545	606	222
5915.	381	972	285	976	583	263	918	508	237
57150	029	373	674	812	958	671	030	362	618
.91.	2726	815	634	486	879	638	431	341	687
.71.0	2630	036	173	2638	036	179	2685	033	178
7917.	2343	2290	950	2988	2786	979	2150	486	133
77170	6441	2483	2720	6022	2026	444	6838	2884	400
4914.	1971	6804	2829	1586	6348	2389	1683	6368	2314
47140	3760	5140	6957	3242	5357	6932	3547	5884	6327
_91_.	8780	5380	5177	8585	5044	5181	8876	1252	5982
_71_0	3933	6122	1299	3191	6534	1709	3540	6514	1714
A91A.	3649	6670	1708	3650	6204	1714	3663	6206	1711
A7U	8003	6100	9540	0766	6953	9103	0661	6944	9369
T)ial	14457	61423	69721	14642	61156	61094	14922	61951	61488

* Estismae)

Doe	G) ig senes	3 ale	8e(ale	G) ig senes	3 ale	8e(ale	G) ig senes	3 ale	8e(ale
		2004			**2000**			1222	
12	2297	347	137	2271	302	165	2277	387	157
21.	260	01	11	222	85	50	274	86	58
710	277	90	16	01	98	68	06	93	63
2912.	09	95	56	83	97	63	84	10	52
27120	280	223	36	237	222	14	211	00	93
6916.	683	674	38	616	202	32	611	288	38
67160	502	681	278	558	695	01	592	636	04
5915.	922	536	214	135	517	265	197	553	221
57150	849	946	675	880	901	241	820	964	204
. 91. .	486	867	696	496	343	693	439	878	690
. 71. 0	2681	033	170	2682	035	170	2688	038	127
7917.	2534	466	118	2129	491	132	2184	2777	184
77170	6816	2837	406	6352	2309	413	6181	2902	045
4914.	1663	6947	2353	1283	6932	2329	1741	6923	2980
47140	3107	5018	6355	3544	5884	6367	3571	5341	6327
_91_.	8093	1612	5329	8475	1636	5312	0752	1520	5825
_71_0	3533	6558	1764	3825	6930	1219	8545	5772	1546
A91A.	3667	6206	1750	3669	6283	1714	3500	6613	1216
A7U	0533	6312	9869	0187	6828	9895	0725	6327	9175
T) ial	14189	61911	61452	14927	61942	61424	14349	61880	61428
		1222							
12	2277	387	157						
21.	227	87	17						
710	02	99	63						
2912.	46	36	57						
27120	675	263	88						
6916.	667	211	83						
67160	508	601	275						
5915.	147	536	260						
57150	340	967	280						
. 91. .	488	861	695						
. 71. 0	2695	038	503						
7917.	2979	2769	107						
77170	6748	2690	054						
4914.	5319	6226	2955						
47140	9880	5209	6945						
_91_.	8486	1664	5815						
_71_0	8038	5558	1957						
A91A.	3330	6125	1699						
A7U	8787	6575	1838						
T) ial	10625	65813	61138						

Table 6. M i gsalyso gasef bo ame and f e: t(S(DG

) me	3i s8 f e: ef	r ale	1e2 ale	3i s8 f e: ef	r ale	1e2 ale	3i s8 f e: ef	r ale	1e2 ale
		1960			**1970**			**1979**	
70	90M	99M	45M	40M	49MA	6UM	4. M	9AM	4AM
079	4M	4NU	4M	0NU	0M	0NM	0NM	0M	0M
. 75	AM	0MA	ANU	AM	AM	AM	AM	AM	AM
0A709	ANM	ANU	AM	AM	AM	AM	AM	AM	AM
0. 705	ANM	AM	AM	ANM	0MA	AM	ANM	AM	AM
6A769	0M	6M	AM	0M	0M	ANM	0MA	0M	AM
6. 765	0M	6M	0M	0M	6MA	ANU	0M	6M	ANU
4A749	6M	4M	0M	6MA	6NU	0M	0M	6NU	0M
4. 745	6NU	4NM	6M	6M	4M	0M	6M	4M	0M
9A799	4MA	9M	6M	4M	9NM	0M	4M	9NU	6MA
9. 795	9M	. NM	4M	9M	_NU	4M	9NU	_NU	4MA
. A7. 9	_M	UNM	9M	kM	0AM	. M	UMA	00M	. MA
. . 7. 5	kNM	00M	. M	UNU	09M	. NM	00MA	0kM	kM
_A7_9	04M	0UNM	5M	0. M	66M	0AM	0. M	66NU	0AM
_. 7_5	05M	64M	0. NM	64M	44M	0_NM	6. M	4. M	05M
kA7k9	4AM	4_NM	6. MA	45NU	. AM	46M	45M	. 6M	40M
k. 7k5	94M	9UNU	9AM	. 6NU	_9M	99M	_. MA	U6NM	. . M
UA7U9	kUM	59M	_UM	5ANM	00AM	kUM	0AUM	06UM	5_NU
U. w	0A_M	00UNM	5kM	0_. NM	0U. M	0. 9MA	0k0MA	059M	0. 5M
Ti sal	_M	kM	. NM	kM	UM	_M	UM	5M	kM
		2020			**2001**			**2002**	
70	6AMA	66M	0kM	1256	1751	1456	1053	1950	1658
079	0M	0M	0M	158	151	158	158	151	158
. 75	AM	AM	AM	850	854	850	850	854	850
0A709	AM	AM	AM	850	859	856	850	854	850
0. 705	AM	ANU	AM	852	857	854	852	85*	854
6A769	0MA	0M	AM	158	154	852	158	159	852
6. 765	0M	0M	ANM	150	15*	853	150	658	852
4A749	0NM	6M	AM	152	659	857	157	65*	85*
4. 745	6M	4M	0M	656	050	151	656	059	158
9A799	4M	. M	0NU	056	45*	153	054	951	15*
9. 795	9NM	kM	4MA	958	353	652	958	359	657
. A7. 9	kNM	00M	9M	354	1853	459	353	1154	454
. . 7. 5	0ANU	0. M	kMA	1158	195*	252	1852	1950	254
_A7_9	0kM	69NU	00NM	1351	6059	115*	1350	6458	1153
_. 7_5	6_M	4. M	0UNM	6452	0059	1*56	6459	0958	135*
kA7k9	45M	. . M	49M	0756	9159	0651	0752	9159	0654
k. 7k5	_. M	k5NM	. _M	2853	345*	9451	2154	3953	9457
UA7U9	0A9M	005M	5. NM	*356	1105*	7*52	*756	1165	*157
U. w	0kUNU	6AAM	0k9MA	13154	1*057	12657	12052	17158	1925*
Ti sal	UM	5M	UM	759	75*	751	752	*51	751

Estimae))

) me	3i s8 fe: ef	r ale	1e2 ale	3i s8 fe: ef	r ale	1e2 ale	3i s8 fe: ef	r ale	1e2 ale
		1992			**1993**			**1994**	
70	00M	06M	0AM	0. M	0UMA	04M	0_M	05M	06M
079	AM	0MA	AMU	0MA	0MA	0MA	AM	AMU	0MA
. 75	AM	AM	AM	AM	AM	AM	AM	AM	AM
0A709	AM	AM	AM	AM	AM	AM	AM	AM	AM
0. 705	AMU	0M	AM	AMU	0M	AM	AM	AM	AM
6A769	0M	6M	AM	0M	6M	AM	0M	0MU	AM
6. 765	0M	6MU	AM	0M	6MU	AM	0M	6M	AM
4A749	6M	4M	AM	6M	4M	AM	0M	6M	AM
4. 745	6M	4MU	0M	6M	9M	0M	6M	4M	AM
9A799	4M	. M	0M	4M	. M	0M	6M	9M	0M
9. 795	9M	_M	6M	9MU	kM	6M	9MA	_M	6M
. A7. 9	kM	00M	9M	kM	00M	9M	_M	5M	4MU
. . 7. 5	0AM	09M	_MU	0AM	0. M	kM	5M	06M	_M
_A7_9	0kM	64M	00M	0kM	69M	00M	09M	6AM	5M
_. 7_5	69M	44M	0UM	6. M	44M	0UM	60M	6UM	0_M
kA7k9	4kM	9UM	40M	45M	. 0M	44M	44M	94M	6UM
k. 7k5	_AMU	k_M	. 4M	_4M	k5M	. _M	. 9M	_5M	9kM
UA7U9	59M	0A_M	UUMU	5kM	00AMU	50M	U6M	5. MA	kkM
U. w	0_UM	0U4MA	0_6M	0_. M	0k_M	0_0M	06_MA	040M	069MA
Ti sal	UM	5M	UM	5M	5M	UM	kM	UM	kM
		2004			**2008**			**2001**	
70	04M	0. M	0AMU	1356	6850	1057	0_M	0UM	04M
079	AM	AMU	AM	852	853	852	AM	AM	AM
. 75	AM	AM	AM	856	856	856	AM	AM	AM
0A709	AM	AM	AM	851	856	851	AM	AM	AM
0. 705	AM	AM	AM	850	854	856	AM	AM	AM
6A769	AM	0M	AM	852	85*	854	AM	AMU	AM
6. 765	0M	0M	AM	85*	154	859	AM	0M	AM
4A749	0M	6M	AM	156	15*	859	0M	0M	AM
4. 745	6MA	4M	0MA	153	653	857	0M	6MU	0M
9A799	6M	9M	0M	652	451	156	6M	4M	0M
9. 795	9MA	_M	6M	054	954	153	4M	. M	0MU
. A7. 9	. M	5M	4M	959	759	053	9M	kM	4M
. . 7. 5	UM	06M	. M	35*	1159	45*	kM	0AM	9MU
_A7_9	06M	0UM	UM	1153	1252	359	04M	0kM	5M
_. 7_5	05M	6_M	09M	135*	605*	1056	05M	6. M	09M
kA7k9	65M	4kM	69M	695*	0050	6154	65M	4kM	69M
k. 7k5	95MA	_4M	94MA	4157	4*59	0754	9. M	. 9M	90M
UA7U9	k0M	U. M	_. MU	2953	3453	2153	_5M	UAM	_. M
U. w	0A4M	0A9M	0A6M	7452	7952	7450	U_M	U4M	UUMA
Ti sal	kMA	kM	_M	254	257	258	kMA	kM	_M

Est imnae))

) me	3i s8 f e: ef	r ale	1e2 ale	3i s8 f e: ef	r ale	1e2 ale	3i s8 f e: ef	r ale	1e2 ale
		1998			**1999**			**2000**	
70	09M	0_M	06M	0. M	0kM	04M	0. M	0_M	06M
079	AM	AM	AM	AM	AM	AM	AM	AM	AM
. 75	AM	AM	AM	AM	AM	AM	AM	AM	AM
0A709	AM	AM	AM	AM	AM	AM	AM	AM	AM
0. 705	AM	AM	AM	AM	AM	AM	AM	AM	AM
6A769	AM	0MA	AM	AM	AM	AM	AM	AM	AM
6. 765	AM	0M	AM	AM	0M	AM	0MA	0M	AM
4A749	0M	0NU	AM	0M	0NU	AM	0M	0M	AM
4. 745	0NU	6NU	AM	0NU	6M	AM	0NU	6NU	AM
9A799	6M	9MA	0M	6M	4M	0M	6M	9M	0M
9. 795	4M	. M	0NU	4M	. M	0M	4NU	_MA	0NU
. A7. 9	. M	kNU	6M	. M	kM	6M	. M	UM	4M
. . 7. 5	kM	0AM	9M	_M	0AMA	9M	_NU	0AM	9M
_A7_9	06NU	0kM	5M	04M	0kM	5M	04M	0kM	5M
_. 7_5	6AM	6UM	0. M	60M	6UM	0. M	60M	4AM	0. M
kA7k9	40M	90M	6. M	44M	96M	6kM	4. M	9_M	6kNU
k. 7k5	9_M	. _M	90M	. 0M	_0M	9_M	. 9M	_UM	9kM
UA7U9	_5MA	U9M	_6NU	_5M	U4MA	_9M	kUMA	. kM	56M
U. w	U6M	U. M	U0M	U5M	56M	UUM	0__M	006NU	6A. MA
Ti sal	kM	kNU	_NU	kM	UM	kM	UM	UM	UM
		6112							
70	06MA	09MA	5M						
079	AM	AM	AM						
. 75	AM	AM	AM						
0A709	AM	AM	AM						
0. 705	AM	AM	AM						
6A769	AM	AM	AM						
6. 765	0M	0M	AM						
4A749	0M	6M	AM						
4. 745	0M	6NU	ANU						
9A799	6NU	9M	0M						
9. 795	4M	_M	0M						
. A7. 9	_M	5M	4M						
. . 7. 5	_M	5M	4M						
_A7_9	06NU	0_M	5M						
_. 7_5	60M	65M	0. M						
kA7k9	44M	9. M	6. M						
k. 7k5	. kM	kkM	9kM						
UA7U9	k6M	. . M	U9M						
U. w	090M	56M	0k_NU						
Ti sal	UM	UM	UMA						

20184163**0** 7rt**02**ty4**0**t8s4ly4**0**g84**0**nd4s8x4444(Estim**0**t8)

Ag84	4B7th4s8x8s	0 **02**8	F8m**02**8	4B7th4s8x8s	0 **02**8	F8m**02**8	4B7th4s8x8s	0 **02**8	F8m**02**8
		1960			**1970**			**1979**	
-1	4431	4634	4137	1839	3134	1633	3036	3439	1631
1-4	336	339	331	139	130	138	138	139	136
5-9	039	130	038	038	039	036	035	036	034
10-14	038	038	037	037	038	035	034	035	031
15-19	131	135	130	131	133	038	038	131	034
10-14	137	131	133	136	130	131	131	139	036
15-19	138	133	135	137	131	131	134	131	038
30-34	135	331	130	133	139	138	139	139	131
35-39	139	337	134	137	334	130	133	334	135
40-44	334	434	138	337	439	136	335	530	130
45-49	531	631	434	530	730	336	530	730	331
50-54	739	937	635	735	1033	536	833	1138	531
55-59	1137	1531	938	1135	1534	931	1134	1830	736
60-64	1833	1336	1438	1836	1335	1535	1536	1335	1131
65-69	1933	3634	1336	1831	3533	1335	1737	3633	1138
70-74	4833	5830	4133	4731	5538	4134	4536	5639	3933
75-79	8031	8835	7337	7937	9031	7131	7637	9035	6931
80-84	11538	13736	11830	11539	13938	11737	11338	13635	11637
85+	19937	11113	19137	19739	11130	19031	19434	11135	18630
27t**0**2	936	1038	839	931	934	838	933	937	839
		1252			1226			1221	
-1	1135	1538	1936	1131	1430	1833	1038	1339	1735
1-4	138	134	138	131	131	130	131	131	130
5-9	034	035	033	034	034	033	034	034	033
10-14	034	035	031	034	035	031	033	034	033
15-19	036	039	033	036	039	034	036	039	034
10-14	130	135	036	131	135	036	131	136	036
15-19	133	130	037	133	130	037	133	131	036
30-34	137	136	130	138	137	039	130	331	130
35-39	135	337	133	133	335	131	133	337	131
40-44	336	534	139	335	533	139	430	631	131
45-49	531	737	331	530	735	139	530	733	330
50-54	739	1136	436	835	1135	439	837	1138	530
55-59	1135	1633	734	1136	1636	733	1133	1631	733
60-64	1831	1539	1131	1739	1438	1134	1830	1535	1130
65-69	1630	3731	1937	1730	3833	1033	1833	3937	1130
70-74	4137	5735	3538	4139	5631	3530	4336	5738	3630
75-79	6731	8336	5934	6631	8130	5930	6734	8130	6130
80-84	10736	11530	9937	11439	11830	10930	11530	11830	10930
85+	19037	11139	18134	19139	11335	18439	19531	11531	18734
27t**0**2	931	937	837	934	939	930	939	1034	934

(continued)

Ag84	4B7th4s8x8s	0 02 8	F8m02 8	4B7th4s8x8s	0 02 8	F8m02 8	4B7th4s8x8s	0 02 8	F8m02 8
		1992			**1993**			**1994**	
-1	1031	1333	1730	27.5	31.4	23.4	1931	3331	1438
1-4	130	131	038	1.3	1.3	1.2	131	131	131
5-9	033	034	033	0.4	0.5	0.3	033	034	033
10-14	033	033	031	0.4	0.5	0.3	033	034	031
15-19	038	131	034	0.9	1.4	0.4	037	130	034
10-14	135	134	036	1.8	2.8	0.7	134	133	036
15-19	137	138	037	2.0	3.2	0.8	136	135	037
30-34	134	338	130	2.8	4.5	1.2	133	337	130
35-39	136	430	131	3.1	4.9	1.3	136	433	131
40-44	430	631	131	4.5	6.9	2.4	337	536	139
45-49	530	733	330	5.4	7.9	3.2	530	733	330
50-54	1137	1838	734	9.5	14.0	5.5	739	1137	436
55-59	1039	1536	730	13.5	19.1	8.7	1137	1638	735
60-64	1830	1535	1130	19.4	27.8	12.9	1739	1535	1130
65-69	1835	3937	1130	32.7	45.4	24.0	1838	3937	1130
70-74	4531	5934	3730	49.1	64.0	39.9	4538	5934	3730
75-79	6838	8130	6330	75.6	87.2	70.1	7038	8130	6630
80-84	11530	11830	10930	123.9	137.9	117.5	11530	11830	10930
85+	19734	11638	18939	215.4	235.3	207.3	10131	11031	19439
27t02	1036	1133	939	11.8	12.6	11.1	1131	1137	1035
		1227			1224			1220	
-1	1930	3139	1437	1837	3136	1434	1435	1735	1131
1-4	039	039	039	037	038	037	037	038	036
5-9	033	034	033	034	034	033	034	034	033
10-14	033	034	031	031	033	031	033	033	031
15-19	036	038	034	036	038	034	035	037	034
10-14	131	138	035	038	131	034	038	131	034
15-19	136	133	038	133	130	037	133	130	037
30-34	131	333	130	137	136	038	139	138	130
35-39	135	339	131	133	335	131	137	431	135
40-44	336	536	138	335	533	138	334	531	138
45-49	530	733	330	530	733	330	530	733	330
50-54	737	1134	435	738	1137	436	738	1137	436
55-59	1139	1733	734	1134	1633	734	1134	1633	734
60-64	1739	1535	1130	1738	1535	1130	1738	1535	1130
65-69	1839	3937	1130	1930	3937	1130	1931	3937	1130
70-74	4630	5934	3730	4631	5934	3730	4634	5934	3730
75-79	7038	8130	6630	7038	8130	6630	7038	8130	6630
80-84	11530	11830	10930	11530	11830	10930	11530	11830	10930
85+	10435	11138	19734	10637	11334	19938	10930	11531	10138
27t02	1133	1130	1037	1135	1131	1130	1138	1135	1133

(continued)

Ag84	4B7th4s8x8s	0 02	F8m02	4B7th4s8x8s	0 02	F8m02	4B7th4s8x8s	0 02	F8m02
		1998			1999			3666	
-1	1131	1438	1931	1133	1536	1834	1136	1631	1838
1-4	036	038	035	036	037	034	036	037	034
5-9	034	034	033	033	034	031	033	034	031
10-14	033	033	031	031	033	031	033	033	031
15-19	036	037	034	035	037	033	035	036	034
10-14	039	134	034	038	133	034	038	131	034
15-19	133	130	037	131	138	036	131	139	036
30-34	138	137	130	136	135	038	136	136	038
35-39	135	339	131	135	430	131	134	338	131
40-44	334	534	137	334	531	137	334	533	137
45-49	530	733	330	530	733	330	530	733	330
50-54	738	1137	436	738	1137	436	736	1134	435
55-59	1134	1638	734	1134	1638	734	1134	1638	734
60-64	1738	1535	1130	1738	1535	1130	1738	1535	1130
65-69	1931	3937	1130	1931	3937	1130	1930	3937	1130
70-74	4635	5934	3730	4635	5934	3730	4634	5934	3730
75-79	7038	8130	6630	7130	8130	6630	7134	8130	6630
80-84	11530	11830	10930	11530	11830	10930	11530	11830	10930
85+	11113	11637	10438	11336	11833	10733	11630	13030	10938
27t02	1130	1136	1134	1131	1138	1135	1133	1330	1136
		3661							
-1	1135	1635	1831						
1-4	036	037	034						
5-9	033	034	031						
10-14	033	034	031						
15-19	037	038	035						
10-14	037	130	035						
15-19	134	131	037						
30-34	138	138	039						
35-39	135	339	131						
40-44	335	535	137						
45-49	439	733	138						
50-54	734	1131	433						
55-59	1030	1335	731						
60-64	1638	1130	1130						
65-69	1639	3530	1130						
70-74	4537	5831	3638						
75-79	7130	8131	6530						
80-84	11434	11733	10831						
85+	11631	11931	11035						
27t02	1130	1136	1135						

Table 27. Deaths and mortality rates by cause of death: 1989,1999, 2000

Year	Total	Cause of death																	
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX
											Number									
1989 *	47077	737	5462	66	647	88	191	33	_	30188	2801	1754	14	13	578	50	587	115	579	3174
1989 **	47468	767	5476	66	648	88	194	33	_	30331	2899	1760	14	13	579	50	659	126	582	3183
1999 *	40378	397	4422	30	733	28	165	6	7	28727	828	1440	3	11	340	9	475	33	1153	1571
1999 **	49510	459	5273	36	881	32	196	7	8	35458	1059	1698	3	13	404	24	734	50	1433	1742
2000 *	41249	386	4516	20	851	32	113	_	_	29678	1087	1356	4	11	151	4	419	16	1372	1233
2000 **	49695	460	5368	22	1001	34	123	_	_	35678	1391	1570	6	12	181	23	768	29	1651	1378
											Rate									
1989 *	871.6	13.6	101.1	1.2	12.0	1.6	3.5	0.6	_	559.0	51.9	32.5	0.3	0.2	10.7	0.9	10.9	2.1	10.7	58.8
1989 **	919.6	14.9	106.1	1.3	12.6	1.7	3.8	0.6	_	587.5	56.1	34.1	0.3	0.3	11.2	1.0	12.8	2.4	11.3	61.6
1999 *	791.5	7.8	86.7	0.6	14.4	0.5	3.2	0.1	0.1	563.2	16.2	28.2	0.1	0.2	6.7	0.2	9.3	0.6	22.6	30.8
1999 **	1209.8	11.2	128.9	0.9	21.5	0.8	4.8	0.2	0.2	866.4	25.9	41.5	0.1	0.3	9.9	0.6	17.9	1.2	35.0	42.6
2000 *	820.7	7.7	89.9	0.4	16.9	0.6	2.2	_	_	590.8	21.6	27.0	0.1	0.2	3.0	0.1	8.3	0.1	27.3	24.5
2000 **	1225.7	11.3	132.4	0.5	24.7	0.8	3.0	_	_	880.2	34.3	38.7	0.1	0.3	4.5	0.6	18.9	0.7	40.7	34.0

* SDSG ** Estimate

5. 82136790 1. 4(c3Bo3n. t c13 u8e1. 4(3 de3c1)

Y1. r	5i 4 2	1 25674039728*																	
		1	11	111	19	9	91	911	9111	16	6	61	611	6111	619	69	691	6911	69111	616
											t 2s7									
9793*	63566	56	69 6	34	676	74	9	7	_	34 3	565	9	5	3	359	_	369	66	350	6403
9793**	63763	537	69 7	34	676	74	6	7	_	3476	579	66	5	3	360	_	4 4	67	356	6409
9993*	60306	3 3	6353	66	3	6	00	6	3	3460	459	9 9	6	4	663	_	674	60	6 6	639
9993**	6459	357	6773	66	376	7	7	6	3	64 7	590	070	6	5	663	_	450	3	737	357
60003*	6067	676	6400	9	393	67	60	_	_	3575	604	76		5	06	_	657	7	735	966
60003**	64777	3 9	6764	9	469	67	60	_	_	6767	775	990	6	5	6	_	475	3	793	057
											7E 2s7									
9793*	635 5	6 6	6550	36	37	4	76	5	_	6775	676	635	9	0	6 9	50	6 7	53	669	77
9793**	63705	669	6557	36	376	4	73	5	_	6759	360	637	9	0	6 9	50	645	57	630	774
9993*	60076	74	6069	7	466	6	65	4	4	5307	369	56		7	7	9	9	3	54	336
9993**	649 9	0	6500	0	509	5	79	5	5	9040	469	667		7	4	64	674	9	696	375
60003*	60967	4	6 6		457	5	53	_	_	6093	473	495	3	6	49	4	6	9	637	67
60003**	649 7	4	6544	3	536	6	63	_	_	7950	606	570	4	7	60	63	693	6	757	36

*3S0 SG

**3Ec4m. 4l

Table 29. Mortality rates by cause of death and sex

Year	Total	Cause of death																	
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX
Male																				
1989 *	919.6	20.3	113.7	1.3	10.8	2.9	4.6	0.7	_	523.5	59.5	43.7	0.2	0.1	14.0	_	14.4	2.4	13.7	93.8
1989 **	969.7	22.0	119.1	1.4	11.3	3.0	4.9	0.7	_	549.7	64.4	45.8	0.2	0.1	14.7	_	16.9	2.8	14.4	98.3
1999 *	832.5	12.8	96.5	0.9	12.8	0.7	4.1	0.1	0.1	550.3	18.8	37.7	0.1	0.2	9.1	_	11.6	0.8	25.1	50.8
1999 **	1279.7	18.7	144.3	1.3	19.3	0.9	6.1	0.1	0.2	854.3	30.7	55.7	0.1	0.3	13.7	_	23.4	1.6	38.4	70.6
2000 *	844.5	11.3	99.9	0.4	16.4	1.1	2.5	_	_	565.7	25.2	35.9	_	0.2	4.2	_	10.7	0.3	30.6	40.1
2000 **	1302.2	16.8	148.4	0.5	24.6	1.5	3.2	_	_	879.1	41.3	52.0	_	0.3	6.4	_	25.0	0.7	46.9	55.5
Female																				
1989 *	828.4	7.6	89.8	1.1	13.1	0.5	2.5	0.5	_	590.9	44.9	22.4	0.3	0.4	7.7	1.8	7.7	1.9	8.1	27.2
1989 **	873.9	8.4	94.3	1.2	13.7	0.5	2.7	0.6	_	621.6	48.7	23.5	0.3	0.4	8.1	1.8	9.0	2.1	8.5	28.5
1999 *	754.4	3.2	77.7	0.3	15.9	0.5	2.4	0.2	0.2	575.0	13.8	19.6	0.1	0.3	4.4	0.3	7.2	0.5	20.3	12.5
1999 **	1148.2	4.7	115.2	0.5	23.5	0.7	3.6	0.2	0.2	877.1	21.6	28.9	0.1	0.4	6.5	1.1	13.1	0.9	32.1	17.7
2000 *	799.6	4.3	80.7	0.4	17.5	0.2	2.0	_	_	613.8	18.4	18.9	0.1	0.2	1.9	0.2	6.1	0.3	24.3	10.3
2000 **	1158.5	6.6	118.3	0.6	24.7	0.3	2.9	_	_	881.1	28.2	27.0	0.2	0.3	2.8	1.1	13.6	0.7	35.2	14.9

* SDSG

** Estimate

International Classification of Diseases (10 th revision)

I	Certain infectious and parasitic diseases
II	Neoplasms
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
IV	Endocrine, nutritional and metabolic diseases
V	Mental and behavioural disorders
VI	Diseases of the nervous system
VII	Diseases of the eye and adnexa
VIII	Diseases of the ear and mastoid process
IX	Diseases of the circulatory system
X	Diseases of the respiratory system
XI	Diseases of the digestive system
XII	Diseases of the skin and subcutaneous tissue
XIII	Diseases of the musculoskeletal system and connective tissue
XIV	Diseases of the genitourinary system
XV	Pregnancy, childbirth and the puerperium
XVI	Certain conditions originating in the perinatal period
XVII	Congenital malformations, deformations and chromosomal abnormalities
XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
XIX	Injury, poisoning and certain other consequences of external causes

***

Table

2222229 . l 2Mr 2 l i yes

C u222f l r bji d2hl i bn22ji b 2 b2 . l 2u2

X u22222 1ya8i 8odbi 2a*2ht or . 28l b6l l r 2 ui 0b2 . l e22u2 r h2u3r 7/2r 4_2ay2r 45

d222222 1ya8i 8odbi 22a*2eSyDDor . 2ba2 ui 0b2 . l 22u2Myac 2_GGGGGs

h u22222T Sc 8l y2a*2ht or . 228l b6l l r 2 ui 0b2 . l e2u2 r h2u3r 2M4_2ay2r E45s2

m u22222T Sc 8l y2a*2Y year E l i ye2dDb h28l b6l l r 2 ui 0b2 . l e2u2 r h2u3r 2M2r 4_2ay2r 425s

T u2222T Sc 8l y2a*2Y year E l i ye2dD h2 b2 . l e2aD y2u

l u2222E uY 0bi bar 2a*2dM 2 b22 ui 0b2 . l 2u

*f ac YSbor . 2Yya0 l hSy 26 i e20ac Yd b h28t 2T . 2Mi . d Y ydnzl

Table 30. Lufe expectancy at certain ages

MI Fm	Age														
	0			1			15			45			65		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
							S6SG								
Caus	e œ	uadC	ef ad	et œ	eCo	eead	u dh	f dad	uf dh	hf dC	h dh	hed	Cacs	Ced	sdf
Caes	eCca	ueca	ef d	eho	uao	eudf	uscs	f udC	uhdh	h dh	ao	ht ad	Cud	Ct df	Ceca
Caea	eCcs	uuœ	et au	e df	uddf	ef ca	f ao	f f o	u df	hCd	do	hhca	Cf au	Chœ	Cuca
Cada	e cs	udcs	ef œ	e df	udau	eucs	f adC	f f o	u df	hCo	ddC	hhœ	Cf df	Chau	Cuau
Caas	e ad	udca	eud	ehcs	uadC	eudf	f adf	f f œ	uhcs	hCau	ddf	ht dC	Cucs	Ct dC	CedC
CaaC	73.0	68.9	76.7	72.9	69.0	76.6	59.5	55.5	63.0	hCau	ddf	ht o	Cucs	Ct dC	Ceo
Caa	ehcs	uacs	eud	e ca	udad	euau	f adh	f f dh	uhcs	hCad	dca	ht o	CudC	Ct d	Ceo
Caah	e dh	udo	euo	e df	udd	euo	f dca	f t ca	u œ	hCdf	dau	hhca	Cf ca	Ct o	Cuca
Caat	et ad	esœ	edf	ef cs	eCdC	edf	uCd	f ed	ut ca	hhau	hsœ	hucs	Ceau	Cf ad	Cdœ
Caaf	eud	e au	dsau	eud	e œ	dsd	uho	f adC	uud	hf o	h cs	hed	CadC	Ceo	sdh
Caau	78.8	74.8	82.4	79.2	75.3	82.6	65.5	61.7	68.8	37.2	34.1	39.7	21.0	19.3	22.2
Caae	78.1	74.6	81.3	78.4	75.0	81.4	64.7	61.4	67.7	36.4	33.8	38.7	20.2	18.6	21.3
Caad	78.3	74.2	82.0	78.4	74.4	82.0	64.7	60.7	68.2	36.4	33.1	39.1	20.1	17.9	21.7
Caaa	eeau	ehœ	dCdC	eeca	et dC	dCdh	ut dC	usdh	ued	hf œ	h œ	hddh	Cadh	Ced	sœ
sss	ef df	ehdC	edd	ef œ	ehdh	eddC	uCca	f adf	ut dh	hhdf	hCa	hf dC	Cuca	Cuau	Cedh
ssC	eudC	ehœ	edœ	eucs	ehœ	edd	u o	f aca	ut au	ht cs	h d	hf au	Ced	Ceo	Cead
							Estimate								
Caus	uedh	ut ad	uad	uad	uecs	eCd	f ecs	f t au	f dca	acd	dcs	hCo	Ct dC	Chcs	Cf cs
Caes	uad	uuœ	eCad	esad	uddC	ehcs	f eœ	f f o	f aca	hsd	ddh	hCa	Ct df	Chd	Cf d
Caea	eso	uud	ehdf	eCœ	uddC	et ad	f ddf	f t ca	uCdf	hsœ	dcs	h ad	Ct ad	Chd	Cf œ
Cada	eCdh	uedh	ef cs	eCa	udcs	ef df	f dau	f t œ	u cs	hsœ	eœ	hhdh	Cf o	Chdh	Cudh
Caas	71.5	67.5	75.1	72.0	68.1	75.5	58.5	54.7	61.9	30.6	27.6	33.1	15.1	13.3	16.2
CaaC	71.2	67.2	74.9	71.7	67.8	75.3	58.2	54.3	61.8	30.5	27.5	33.0	14.9	13.2	16.0
Caa	70.5	66.1	74.7	70.9	66.7	74.9	57.4	53.2	61.3	29.9	26.9	32.6	14.8	13.1	15.9
Caah	68.9	64.5	73.2	69.8	65.6	73.9	56.4	52.2	60.5	29.3	26.4	31.9	14.0	12.4	15.1
Caat	70.3	66.2	74.2	71.3	67.4	75.1	57.9	53.9	61.6	30.3	27.5	32.8	14.6	13.1	15.7
Caaf	70.5	66.6	74.3	71.6	67.8	75.1	58.0	54.3	61.6	30.3	27.5	32.8	14.6	13.1	15.7
Caau	70.9	67.1	74.5	71.9	68.3	75.3	58.3	54.7	61.6	30.3	27.5	32.8	14.6	13.1	15.7
Caae	71.1	67.4	74.6	71.8	68.2	75.2	58.2	54.6	61.5	30.3	27.5	32.8	14.6	13.1	15.7
Caad	71.2	67.5	74.9	71.8	68.2	75.3	58.2	54.6	61.6	30.3	27.5	32.8	14.5	13.1	15.7
Caaa	eCd	ueau	ef dC	e cs	uddh	ef d	f ddh	f t œ	uCœ	hsdh	ed	h œ	Ct df	ChdC	Cf œ
sss	eCd	ueau	ef cs	e cs	udd	ef d	f ddh	f t ad	uCœ	hsdh	ed	h œ	Ct df	ChdC	Cf au
ssC	eCau	uddC	ef	e o	udca	ef d	f dau	f f dh	uCau	hsœ	ddh	h ad	Ct œ	Chd	Cf œ

Table 30. Lufe xable p0ct ny r i r g s

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
C	CaCuse	CaCusCu	sCCCCC	usCo	ef eu	f dt ueot	f dat o
s	CaCCho	CaCsheCe	eo eo	shhu	h Cesh	f st f CC	f uaf u
o	CaCCCe	CaCCuues	euot s	udo	uf sf ut	t f t Ceo	f saf t
sC	CaCCCf	CaCChueu	eushf	hde	ut e t d	t hsuhue	t f aC
so	CaCCCf	CaCChueu	eh C	hd	ut ddC	o uuu f	t dahC
dC	CaCCso	CaCCf uf u	ehu C	t ee	ut ot ou	ohf t dt	of aos
do	CaCCst	CaCCf ef s	edf s	f uC	ut dCo	uesCt su	odæh
hC	CaCCdo	CaCsdud	edCud	ssuu	uof hoC	uuu oot	u ahh
ho	CaCCd	CaCshesC	eC e	sdt u	uoshde	heesdCt	uhæs
uC	CaCChC	CaCsu ef	et hu	shho	uuu hC	hohe f	heaue
uo	CaCCuu	CaCdsf f e	de	sedh	uht t u	hCeoCu	hoaCo
oC	CaCCt h	CaChsCuf	t hf o	dt d	udosf d	dt o ht u	hCaf
oo	CaCCf f	CaChf do	ht eu	hst t	usCoou	ddhhsed	dt at
t C	CaCshu	CaCt uef s	Cod	odhd	h eooe	s ddt h	ddat h
t o	CaCsed	CaCes t e	f odet	t esf	hoes t	suhhCf e	seaCh
f C	CaChCt	Casudt f s	t hf e	ef ot	hsf oCh	sCf h eh	soaf s
f o	CaCuhe	Case t de	o t dh	sst uu	dt uCCu	f ot heC	sdæC
C	CaCf e	CahhCdho	ut ef e	soosu	set sC	uedh t	sCau
oM	CasCt d	s	hsut o	hsut o	det df f	det df f	eaud
				S 6GE			
C	CaCuus	CaCuhsot	sCCCCC	uhst	ef ud	t esCf u	t eass
s	CaCCh	CaCsoCed	eot u	suuu	hf e ue	t sdeCt	f sadC
o	CaCCsC	CaCCue e	euduC	uf C	uf CCdt	t uhhCof	t adt
sC	CaCCC	CaCCheeh	ehf f C	hf u	ut f eso	oet hChs	t hape
so	CaCCCe	CaCCuues	ehhet	use	ut oehC	oueosst	o a u
dC	CaCCds	CaCsCuue	edef t	ef d	ut duoh	oCdes t	ouaCe
do	CaCCdh	CaCssuhe	edCCo	sCod	uof heh	uot t f hh	ueat u
hC	CaCChs	CaCsoheC	eCeod	suCC	uosdt d	usCehuC	uoas
ho	CaCChf	CaCs huh	eooh	st uh	uuht ot	ht o Cf	uCa o
uC	CaCCud	CaCdCf e	f esC	s d	uhuef e	hdsuudd	ht aot
uo	CaCCof	CaCd sde	t C d	duds	uduhou	df f euuh	hdade
oC	CaCC f	CaCudt he	ht t C	hot f	uCeh h	dhooC e	d aso
oo	CaCsse	CaCof ef	CCeh	ut hf	h f d	seuof Cf	duade
t C	CaCs f	CaC eof	f ouot	t f oe	ht Ch s	soot ho	dCat h
t o	CaCdht	Cassf et	t t ef	f t C	hdud h	sset uou	sf aud
f C	CaCht f	Cast f t	t sCsf	sCde	df ehhe	f dsf s	suade
f o	CaCu	Cads h h	oCf se	ssCf t	ddoeCu	oed hd	ssat e
C	CaCeuh	Cah soed	het uh	sosdf	st Cheo	ht t ed	eadt
oM	Cass f	s	duoso	duoso	dCt ohd	dCt ohd	aud
				sEt 6GE			
C	CaChet	CaCh h	sCCCCC	h u	e Co	f of oed	f oaf e
s	CaCChs	CaCsdhd	et sst	ss o	h dCeo	f u Cohu	f f a h
o	CaCCC	CaCCheeh	euehs	hf e	uf hf Ce	f Ce uhe	f uaf f
sC	CaCCCt	CaCCdeet	euood	d h	uf dCoh	t t duf hC	f CaCt
so	CaCCCo	CaCCduef	eudt e	dho	uf Cf ot	t sodt f f	t oadf
dC	CaCCCe	CaCCuues	euChu	udd	ut essd	ot seds	t Caud
do	CaCCss	CaCCou t	eht ss	osu	ut t f f d	odsd Ce	ooat e
hC	CaCCse	CaCCeuoe	ehCe	s	ut hd f	uf ut Cht	oCæ
ho	CaCCdd	CaCsCeuu	eddsf	sCCe	uo ot h	ud df ue	ut auu
uC	CaCCdh	CaCssuhe	esdC	sCuh	uohuhs	h dus f	usæh
uo	CaCCho	CaCsf ht C	eCst o	sot o	uut esC	hhf Cf ot	hf ah
oC	CaCCuo	CaCdddt	oee	sef h	uh Ct u	dedh ut	hhaCC
oo	CaCCou	CaCdt t t f	t t dt	dhsC	udf hof	du of d	d af C
t C	CaCCee	CaCu h f	uhst	uC C	ussh d	dCo udo	duaus
t o	CaCsof	CaCf of du	Cdht	t Cf t	h oeeh	st uf Cuu	dCaoh
f C	CaCdo	Cass Cod	f ust s	f oo	hu est	sdt sCos	sf aCC
f o	CaCuCs	Cas deeu	t ouCt	sset e	def sCf	esdsho	shæo
C	CaCt t	Cadehf hh	ohuhf	sot et	ddf euu	t soCd	ssaos
oM	CaCef o	s	hf f us	hf f us	h f C u	h f C u	sCadt

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
T	TaTbl b	TaTbTe b	l TTTTT	bTe	2e9. 2	Ml e2To2	Ml æ2
l	TaTTl e	TaTTMl Mb	2o2l e	o2.	beo eT	MT2Tol T	Mbal o
.	TaTTT.	TaTT 92M	2o	9T	9eT. l l	oMT9bbT	o2æe
l T	TaTTT.	TaTT 92M	2. 2e	9T	9M2bl l	o be T	o9æ9
l .	TaTTTM	TaTTb929	2. M9	bb.	9MMeM	. M99. T2	oTaTT
T	TaTTl b	TaTTo9el	2. 9Te	ol e	9M 92b	. ooob9	. . a T
.	TaTTl b	TaTTo9el	29Me2	ol 9	9M 9l	9M2l l 9l	. Ta .
bT	TaTT	TaTT22. 9	29l M	2bM	9oe. b	9bl eM 2	9. æo
b.	TaTT 9	TaTl l 2b9	2b be	l l l b	9ob9TM	be. Tl 2M	9l a 2
9T	TaTTbb	TaTl obM	2 l .	l . T2	9. oe. 9	bbeoM2T	boaMb
9.	TaTT92	TaT 9 o	2Tol o	l 2.	99M 29	2 22bo	b abb
. T	TaTTMb	TaTb. e2b	ee9 l	bl M9	9b9l M	9e b9	eaTM
. .	TaTTee	TaT9bl T	e. 9e	boMb	9l MT9e	T9el MT	9aTb
oT	TaTl .	TaTMbb2o	el . M	. 2eM	b2 e2l	l obl l	TaTT
o.	TaT b	Tal l TTT	M . e.	ebl 9	b. M bM	l be bl	l oabe
MT	TaTb2e	Tal el M9e	oM MT	l o	bT. Meo	eel T29	l bal T
M	TaT. e	Ta b9l Mb	. . T99	l e2T	9 22.	. M bTe	l Ta9.
eT	TaT2T.	Tabo2 oM	9 l . 9	l . . oo	l Ml e. .	bb bl b	Mæe
e. r	Tal o. M	l	o. ee	o. ee	l oT9. e	l oT9. e	oaT9
				sex			
T	TaTb9T	TaTbb9bM	l TTTTT	bb99	2eb e	oM2TM M	oM82l
l	TaTTl 2	TaTTM Mb	2oo. o	Mb	be. l ol	oo2 b22	o2a 9
.	TaTTTo	TaTT 22o	2. 2 9	eM	9Me2Tb	obTM be	o. aM
l T	TaTTTo	TaTT 22o	2. obM	eM	9MM9oe	. e ebb.	oTa29
l .	TaTTl T	TaTT92e2	2. b. T	9Mb	9M . ob	. b. Teoo	. oal
T	TaTTl 2	TaTT29. 2	29eM	e2M	9M l bT	9eM bT9	. l ab2
.	TaTT T	TaTT22. 9	2b2MM	2b.	9oM 9e	99Tbl Mb	9oæ.
bT	TaTT e	TaTl b2l T	2bT9	l 29	9ol 2M9	b2b. o .	9 abT
b.	TaTTbb	TaTl obM	2l M9e	l . T	9. 92e	b9Mbo. l	bMæeo
9T	TaTT9M	TaT b 9M	2T 9.	T2e	99. 2e	bTl eoo2	bba9.
9.	TaTToe	TaTbb9Mb	eel 9M	2. l	9bbboT	. M oeM	2al 2
. T	TaTl Tl	TaT92b9	e. l 2M	9 T9	9l . 9M9	l b2b M	. al l
. .	TaTl 9l	TaToe . o	eT22b	. . e	b2l l 99	l M be. b	l a e
oT	TaT .	Tal Toe. b	M 9o.	eTo9	b. Ml o.	l bb MTe	l Mboo
o.	TaTbb.	Tal . . l MT	oM9Tl	l T9. 2	bl Te. 2	2M . 99	l 9a9M
MT	TaT. T.	Ta . l bl	. o29	l e T	. oob	oo9oe.	l l aoM
M	TaTo9o	Ta M2TM	99l b	l bl b	l e2ebl	9l T l	2ab9
eT	Tal l T9	Ta9bl 9T9	bl eT2	l bM b	l 9M9T	l 2T	oa22
e. r	Tal e. o	l	l eTeM	l eTeM	2M9. T	2M9. T	. ab2
				Cau sea			
T	TaT eo	TaT e Tl	l TTTTT	e T	2e. 2T	M b. . oe	Ml abo
l	TaTTl M	TaTToMMe	2M eT	o. 2	beM9T	M9bo2Me	Mba b
.	TaTTT9	TaTTl 22e	2o. l	l 2b	9e l 9	MT92. Mb	MbaT9
l T	TaTTT9	TaTTl 22e	2ob e	l 2	9el l oT	o. oM9.	oeal e
l .	TaTTT.	TaTT 92M	2ol bo	9T	9eTTM2	oTeo 2	obabl
T	TaTTTM	TaTTb929	2. e2o	bb.	9Meo9l	. oTo l b	. ea9o
.	TaTTTe	TaTTb22b	2. . ol	be	9Mbe92	. l M M	. baoo
bT	TaTTl	TaTT. 2eb	2. l M2	. o2	9M99M	9o. TM b	9eæo
b.	TaTTl .	TaTTM9M9	29ol T	MTM	9Ml eT	9l Mb . l	99al 9
9T	TaTTl 2	TaTT29. 2	2b2T	eee	9oM 2	bMT92Ml	b2a9o
9.	TaTTb.	TaTl MboT	2bTl 9	l ol .	9ol Tb.	b bMbM2	b9æl
. T	TaTT. .	TaT Ml . 9	2l 9TT	9e	9. TM2b	MMbo99	bTabe
. .	TaTT. M	TaT el 2	ee2l e	. Tl	9bebbo	b . e. T	oal o
oT	TaTl T9	TaT. TMMb	eo9l M	9bee	9 l l l 9	l eeMl .	l æ9
o.	TaTl oM	TaTeTbo9	e T 2	o. 2	b2boo9	l 9oo9Tl	l Mæee
MT	TaTb 2	Tal . . 2e	M 9bM	l l . l	b9e9T.	l TM MbM	l 9a
M	TaT99b	Ta TT . e	ob2 .	l eT	eMb	M 9bb	l l abb
eT	TaTMeb	Tab el . M	. l l 9	l oMMM	l boMM	9boMl T	ea 9
e. r	Tal . 9	l	b9b9M	b9b9M	bTbb	bTbb	oa92

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
T	TaTbl b	TaTbe 2e	9TTTTT	be 2	2. M l	oT2oMeb	oTa2o
9	TaTT9o	TaTT oo.	2 l b9	l e	b. e. 9e	22. 2o.	oMal 9
l	TaTTTe	TaTT922.	2l . o	92M	eo. 2Tb	9e9 e	. a22
9T	TaTTTb	TaTT9e22	2l . l	9eb	eo. T l	9bl M M	ea9M
9l	TaTTTo	TaTTbe2e	2l l e9	bbe	eo . oM	l l o92o	l 2aM9
MT	TaTT9T	TaTTe2. 2	2l MTo	eol	eoe. l T	l 9. TbM	l eæ9
M	TaTT9e	TaTT 2oo	2eobb	9	eoMT9T	eoTl eol	e2a o
bT	TaTT92	TaTT2el 2	2eToM	. 2T	e . 9bb	eMobbe l	el aTT
bl	TaTTMb	TaT99eb2	2b9. M	9T	e bMee	bo l bbM	eTæ9
eT	TaTTbe	TaT9 . .	2M99	9l l e	el 2l	bbTMT. .	bl a l
el	TaTTe.	TaTMbobo	2Tl M	M9l T	eeoeb	M el b2e	b9æM
l T	TaTT. T	TaTb2MbM	. . e9M	beoM	ebbb. M	Mb2o2l .	Mba9M
l l	TaT99T	TaTl b M	. e2eT	el l l	e9bb9b	92 el o	Mba9b
T	TaT9l 9	TaToM2bT	. Tb. l	l . M	b. oM 2	9l l 9M M	92abT
l	TaTMl b	Ta992b. o	oel Mb	. . 2o	bl TboT	99 b22b	9l a M
oT	TaTb29	Ta9o. . bb	l M	99ob	M2. o. .	. 9b Mb	9MæT
ol	TaT l T	TaM Tl l T	l b. . 2	9l 992	Mb9 l 9	l 9e. bl	2al l
. T	Ta9T. 9	TaæMel M9	b. oo9	9 el 2	9l MbT	M b9. l	oabT
. l r	Ta9o9T	9	MMb9M	MMb9M	9bTeo.	9bTeo.	l a l
				Caus			
T	TaTeTM	TaTb2e9l	9TTTTT	b2e9	2. TM2	oM2. b	aob
9	TaTT92	TaTTol ob	2 Tl 2	oMb	b. Mbo2	l oe2l e	. æl
l	TaTTTl	TaTTMe2o	2l bb9	Mb.	eo T T	92M9ol	ea2l
9T	TaTTTe	TaTT922.	2l T2b	92T	eoe22T	l o9 99l	Ta99
9l	TaTTT2	TaTTee29	2e2Tb	eM	eobee2	l Me99M	l l aMb
MT	TaTT9	TaTTo2o9	2eeoo	ol b	eoTl T9	eo o ol	l Tæ
M	TaTTM9	TaT9Tee2	2boMe	2o2	e 9oT	eM2o9oe	el a l
bT	TaTTM	TaT9b29T	2Mbee	9M2T	e Te2o	b. b9TTe	e9ab9
bl	TaTTbb	TaT9 bol	29el e	9e2.	el bl M	bboTl To	b a l
eT	TaTTe.	TaTMbobo	. 22l o	M9bl	eeeee	M29 2o2	bMæb
el	TaTT .	TaTbbeob	. o. M9	M2eT	eb9ol .	MeoMl be	M a9l
l T	TaT99e	TaTl l l M	. e. . M	eo9b	e9M M	MTeTool	MeaTe
l l	TaT9oe	TaT. bl 22	. T9 2	oTM	b. eT. .	9 M 9e2	MTab9
T	TaTMM	Ta9T. MTb	obe o	o2e2	beoe T	9MeeT 9	9 a2b
l	TaTbl 9	Ta9 922l	l l 9o	9T 9b	bT9Tl b	. 2 TM	9ba .
oT	TaTl Me	TaMbM 9T	l e2Te	9Mbo9	MeM 29	l 2l l e2	9Ta l
ol	TaT. Mb	TabebM l 2	eM9bb	9ee M	9oel To	bl M2l .	. ab.
. T	Ta9M l	Tae. bTTb	Mb oT	9bb l	9Te2b2	9o. el 9	æl
. l r	Ta92e	9	9ebTl	9ebTl	obl 9M	obl 9M	l a9e
				es aus			
T	TaTbTM	TaTM2ol	9TTTTT	M2o	2. l 9M	oe M l e	oea b
9	TaTT9	TaTT b. 9	2oTMe	92	b. . T	ob eTeM	ol a2T
l	TaTTTb	TaTT9e22	2 eTl	9el	e. 9 l	2oo9. M	oMabo
9T	TaTTTM	TaTT9TTT	2 M 9	2	e. 9T e	e2l l 9o	oæ.
9l	TaTTTe	TaTT922.	2 9 l	92M	e. Tbeb	T9eel b	Mal e
MT	TaTTTl	TaTTMe2o	2l 2oM	MeT	eo2M b	l l be99T	l oa
M	TaTTT.	TaTTb22b	2l obb	b. M	eoooT2	l Tl e. eo	l Ma T
bT	TaTT99	TaTTl e.	2l bl 9	l Mb	eol eel	el oo9b2	e. aTT
bl	TaTT9e	TaTT 2oo	2e. Mb	M	eoMe. b	e9T9 2b	ebaM
eT	TaTTMT	TaTT22l e	2e9	2bo	e . e.	b M2M9T	b. al e
el	TaTTbT	TaT9e. 2o	2bMM	9b. 2	e M oT	b9 ToMe	bba2T
l T	TaTTl T	TaTMeo9e	29. eT	MMbT	el bl Me	M 2. Tl e	M2ab.
l l	TaTToe	TaTb bo	. 2l oT	bM .	eb2oTe	MMeel bT	M aT
T	TaT9T2	TaTl b9l b	. b9M	el . .	eMTT. 2	9. Te. M	MTa29
l	TaT92	TaT2b 2o	. 9oMe	o l o	b. 2eoo	9b. eob	9 a2e
oT	TaTb9	Ta9eoTT9	oeT o	9T. . .	beb99e	22l M T	9baæe
ol	TaTl l e	TaMeeM b	b9o2	9l ebe	Mbob9T	l M9e	9TabM
. T	TaT2 .	Tab. 2l . T	eooel	9. T9	92MMM	boe. b	oa l
. l r	Ta9l 2	9	M29el	M29el	9. M 99	9. M 99	aMb

Table 29. Mxe table iyscsu f d f h n

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
0	0.0200	0.019804	100000	1980	99010	7202059	72.02
1	0.0013	0.005187	98020	508	391061	7103049	72.47
5	0.0004	0.001998	97511	195	487068	6711988	68.83
10	0.0003	0.001499	97316	146	486217	6224920	63.97
15	0.0006	0.002996	97170	291	485124	5738703	59.06
20	0.0010	0.004989	96879	483	483188	5253579	54.23
25	0.0013	0.006481	96396	625	480418	4770391	49.49
30	0.0017	0.008467	95771	811	476829	4289973	44.79
35	0.0024	0.011934	94960	1133	471969	3813144	40.16
40	0.0036	0.017852	93827	1675	464948	3341175	35.61
45	0.0047	0.023247	92152	2142	455405	2876226	31.21
50	0.0077	0.037825	90010	3405	441538	2420821	26.90
55	0.0108	0.052678	86605	4562	421621	1979283	22.85
60	0.0176	0.084521	82043	6934	392880	1557662	18.99
65	0.0262	0.123382	75109	9267	352376	1164782	15.51
70	0.0393	0.179667	65842	11830	299635	812406	12.34
75	0.0653	0.281657	54012	15213	232028	512771	9.49
80	0.1049	0.414817	38799	16095	153760	280743	7.24
85+	0.1788	1	22705	22705	126983	126983	5.59
				Male			
0	0.0225	0.022253	100000	2225	98887	6801461	68.01
1	0.0014	0.005585	97775	546	390007	6702573	68.55
5	0.0004	0.001998	97229	194	485657	6312567	64.92
10	0.0005	0.002497	97034	242	484566	5826909	60.05
15	0.0008	0.003993	96792	386	482994	5342343	55.19
20	0.0015	0.007474	96406	721	480227	4859349	50.41
25	0.0019	0.009459	95685	905	476163	4379122	45.77
30	0.0025	0.012428	94780	1178	470955	3902960	41.18
35	0.0036	0.017852	93602	1671	463833	3432005	36.67
40	0.0055	0.027154	91931	2496	453415	2968172	32.29
45	0.0068	0.033473	89435	2994	439690	2514757	28.12
50	0.0113	0.055053	86441	4759	420308	2075068	24.01
55	0.0153	0.073862	81682	6033	393328	1654759	20.26
60	0.0252	0.118942	75649	8998	355750	1261431	16.67
65	0.0380	0.174234	66651	11613	304223	905681	13.59
70	0.0528	0.234176	55038	12889	242970	601457	10.93
75	0.0802	0.334717	42150	14108	175478	358488	8.51
80	0.1216	0.463861	28041	13007	107689	183010	6.53
85+	0.1996	1	15034	15034	75321	75321	5.01
				Female			
0	0.0174	0.017252	100000	1725	99137	7566790	75.67
1	0.0012	0.004789	98275	471	392158	7467653	75.99
5	0.0003	0.001499	97804	147	488654	7075495	72.34
10	0.0002	0.001000	97658	98	488044	6586841	67.45
15	0.0003	0.001499	97560	146	487434	6098797	62.51
20	0.0005	0.002497	97414	243	486460	5611363	57.60
25	0.0007	0.003494	97170	340	485003	5124902	52.74
30	0.0009	0.004491	96831	435	483067	4639899	47.92
35	0.0013	0.006481	96396	625	480419	4156832	43.12
40	0.0019	0.009459	95771	906	476592	3676413	38.39
45	0.0028	0.013910	94865	1320	471029	3199821	33.73
50	0.0044	0.021779	93546	2037	462636	2728793	29.17
55	0.0069	0.033957	91509	3107	449775	2266156	24.76
60	0.0117	0.056950	88401	5034	429420	1816382	20.55
65	0.0196	0.093697	83367	7811	397306	1386962	16.64
70	0.0329	0.152598	75556	11530	348954	989656	13.10
75	0.0580	0.254268	64026	16280	279430	640702	10.01
80	0.0972	0.390849	47746	18662	192077	361272	7.57
85+	0.1719	1	29085	29085	169195	169195	5.82

Table 29. Mre table iysssc uf udh

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
0	0.0212	0.02984479	200000	2988	88512	3117353	31.19
2	0.0009	0.0021844	84102	213	787680	3919936	31.64
1	0.0002	0.00098844	84799	98	982184	3060346	32.40
20	0.0002	0.00098844	84581	98	982717	6168244	66.47
21	0.0009	0.00288426	84596	286	980390	6033471	62.46
50	0.0006	0.00588146	84010	589	948121	1143081	16.84
51	0.0020	0.00984412	83316	944	943160	1083140	15.21
70	0.0025	0.00184791	83564	145	949441	9620050	93.90
71	0.0024	0.0048654	86646	463	942567	9251271	95.63
90	0.0056	0.02585593	81428	2574	936000	7697435	74.07
91	0.0074	0.02447963	89142	2342	964917	7263435	77.98
10	0.0016	0.05369249	85400	5161	913144	5688928	58.08
11	0.0064	0.07793538	80571	7050	997651	5592472	59.49
60	0.0279	0.06983296	43521	1666	952820	2384506	50.65
61	0.0526	0.20534482	42198	4745	746380	2736586	26.44
30	0.0715	0.26592876	37263	22449	776251	848106	27.15
31	0.0192	0.57859984	62547	29665	568360	617742	20.66
40	0.0340	0.75322607	96652	21510	289840	747652	4.57
41+	0.2667	2	72732	72732	244692	244692	6.02
				Male			
0	0.0268	0.02636055	200000	2636	88265	3701666	37.06
2	0.0009	0.0021844	84759	213	785845	3506109	37.58
1	0.0005	0.00088819	84263	84	980180	6427155	68.92
20	0.0005	0.00088819	84068	84	980200	6755875	69.93
21	0.0009	0.00288426	83832	286	948761	1475475	18.19
50	0.0008	0.00998068	83331	978	943334	1797963	19.61
51	0.0029	0.00683394	83776	638	949847	9411648	98.48
70	0.0028	0.00891416	86613	829	942000	9730306	91.55
71	0.0054	0.02782022	81397	2775	931741	7448306	90.67
90	0.0095	0.05038429	89922	2869	963291	7929752	76.26
91	0.0060	0.05814804	85993	5371	911784	5893236	72.44
10	0.0041	0.09263424	48325	7378	978527	5982334	53.34
11	0.0205	0.09842874	41837	9547	928214	5015161	57.43
60	0.0238	0.04180547	42680	3023	780804	2677903	50.00
61	0.0707	0.2927643	39637	20116	796831	2595988	26.69
30	0.0963	0.50883595	69223	27967	546854	481159	27.83
31	0.0648	0.58945215	10619	29879	521871	604186	25.02
40	0.0136	0.51537833	71350	8054	216070	785662	20.88
41+	0.2254	2	56685	56685	576672	576672	4.43
				Female			
0	0.0258	0.02542491	200000	2545	88718	3408554	34.08
2	0.0007	0.00228877	84324	224	789676	3308468	34.20
1	0.0002	0.00098844	84600	98	985434	3721577	39.28
20	0.0002	0.00098844	84112	98	985677	6455711	68.57
21	0.0007	0.00298486	84105	294	985290	6758355	69.56
50	0.0007	0.00298486	84719	293	982907	1473145	18.71
51	0.0009	0.00288426	84503	286	980191	1796238	19.99
70	0.0006	0.00588146	84022	589	948750	9411679	98.19
71	0.0008	0.00998068	83323	978	943944	9766729	99.64
90	0.0025	0.00184791	83534	145	949871	7434456	78.43
91	0.0024	0.0048654	86686	463	942727	7787482	71.20
10	0.0072	0.02174846	81458	2931	931914	5825134	70.78
11	0.0092	0.05070362	89719	2826	966840	5973250	51.47
60	0.0083	0.09397211	85974	9749	912570	2830290	52.72
61	0.0215	0.03778692	44019	6967	959227	2124820	23.51
30	0.0534	0.27099286	42182	20697	742794	2089383	27.95
31	0.0931	0.52724655	30894	21251	726854	327998	20.06
40	0.0856	0.73620163	11457	50881	556654	786152	3.20
41+	0.5010	2	79454	79454	268487	268487	9.44

Table 29. Mre table iysscu f d f h n

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
0	s.scys	s.sccxy18	csssss	ccxy	xx1s1	*9csssc	*9.cs
.	s.sss2	s.sscy2ys	x66s*.888	cyy	2x1x6*	*8cs8x*	*9.sc
2	s.sssc	s.sss9cx2	x6968.6yy	9c	1x2y*9	*cc89cs	*y.cs
. 0	s.sssy	s.sssx1sx	x69y1.*s2	x2	1xy6xy	99yy221	9*.c8
. 2	s.sss8	s.ssy19sx	x682c.xsy	y1y	1xys82	9cyx11y	9y.yc
10	s.sss9	s.ssy6xcx	x6y6x.1yx	y61	1xs*2*	892*26x	8*.28
12	s.sscc	s.ss88s61	x6ss8.c6x	81s	1669*9	8c1998y	8y.8c
90	s.ssc2	s.ss9919y	x*198.21s	916	168*s*	198*x*9	1*.*x
92	s.ssc*	s.ss6912s	x96c*.89y	62*	16cxx9	1c*yy9x	12.sx
80	s.ssy6	s.sc1s8cx	x8x6s.*96	c21x	1*982y	29xsy*2	26.18
82	s.ss2x	s.scx8c86	x192y.s81	c61*	196812	2yc2*1c	22.x9
20	s.ss9y	s.s2s*s*6	xy*68.y29	y61x	1896s2	y*18cx6	yx.8x
22	s.ss9c	s.syx6xy*	6xx29.ss9	y966	11yx8x	yy662x8	y8.11
40	s.scy6	s.s9yy16*	6*y1*.86s	812c	1yy99s	c618129	yc.c8
42	s.syc8	s.csyyx2x	6c6c9.822	629x	266c8x	c1yy**8	c*.2x
70	s.s222	s.c818y1y	*211*.cxx	cc21x	226692	cs219c9	c1.sx
72	s.s8*2	s.y8c8c*c	9ysx*.6y6	c89cx	y*c11y	9x8*82	cc.ys
50	s.s*yc	s.2s91*99	191*x.c9y	c1y18	cx9*61	1y12cc	x.c2
523	s.c1c*	c	2yy21.269	2yy21	yy*8y*	yy*8y*	*.s9
				Male			
0	s.sc1s	s.sc26*cx	csssss	c26*	xx2s9	*29899c	*2.99
.	s.sss2	s.sscs2c6	x69c2	csy	2x1y16	*y99281	*2.9x
2	s.sssy	s.sss6c2y	x68cc	6s	1xy288	96*ycs*	9x.*9
. 0	s.sss2	s.ssc2c62	x612c	c2s	1xc62s	92*x*8y	91.6c
. 2	s.sss9	s.ss2ssx2	x62sc	yx9	1xs*99	866*xyc	8x.xs
10	s.sss*	s.ss2*y18	x6ss8	298	16xcc1	82x*c88	88.s*
12	s.ssc9	s.ss**92x	x*91s	*86	1692s*	1xs6s1s	8s.y*
90	s.ssyc	s.scs2682	x966y	css9	16c6x9	11yc*21	18.91
92	s.ssy6	s.sc2*929	x86*9	c2ys	1*9s6y	2x2x626	1c.sx
80	s.ss11	s.sycxxyx	x188*	ys6s	19*861	2192*89	29.92
82	s.ss9y	s.s2s9981	xy1**	y629	188yx8	yxx9c*y	2y.1s
20	s.ssx9	s.s19xs8*	6x91c	1ys8	12*9x1	y81s6**	y6.21
22	s.ssxy	s.s18s8s2	68129	261x	1c*89s	ycs2c62	y1.9y
40	s.sc91	s.s*6xx1c	6c866	9118	2xc6y8	c9689y2	ys.99
42	s.syx1	s.c2*82cx	*8c12	cs228	21x6**	cyx2*x6	c*.yy
70	s.s182	s.ys1ys89	916s6	c2y21	yxsx88	x12xyy	c1.89
72	s.s***	s.2y9cxxx	8c8*1	c96y2	yc86cc	98yx9*	cy.99
50	s.s881	s.y111yx9	21*8s	61x1	c8y8c*	12*c89	cy.86
523	s.sxyy	c	y9y89	y9y89	y61926	y61926	cs.61
				Female			
0	s.ssx*	s.ssx9y9y	csssss	x92	xx8cx	*6989sy	*6.99
.	s.sss1	s.ssc19y*	xxs2*	c18	2x869s	**99s62	*6.1y
2	s.sssc	s.sss1c19	x66x2	1c	1x129s	*2*syy1	*1.82
. 0	s.sssc	s.sss8192	x668y	81	1x1cy2	96*8692	9x.89
. 2	s.sss1	s.ssc6xc1	x6*x6	c6*	1x28ys	926c*1c	91.8x
10	s.sss1	s.ssysys2	x69cc	cxx	1xy888	8666yyc	8x.*c
12	s.sss9	s.ss2s962	x61cc	2sy	1xc2sy	82x8998	81.62
90	s.sss9	s.ss2c1yy	x6csx	2s6	16x***	1xs1292	1x.xx
92	s.sss6	s.ss2xx*9	x*6sc	2xc	166syx	11c1869	18.c1
80	s.ssc1	s.ss96c68	x*1cs	991	1682xc	2xy9886	1s.2c
82	s.sscx	s.ssx8891	x9*19	xy8	16c1cx	211cc9*	28.8*
20	s.ss22	s.sc916*6	x86yc	c86s	1*8c86	yx8x*1x	2s.6x
22	s.ss29	s.sc**x26	x1y1y	c9**	19*sc9	y1618xc	y9.29
40	s.ssxx	s.s1621*y	xy898	11*8	18c928	ysc*8*8	yc.6s
42	s.sc89	s.s*82x9x	66s6x	991y	1y2612	c898x1s	c*.*6
70	s.sy89	s.cys8s1s	6c116	x6c8	26y*sy	cc1ysx*	c1.sy
72	s.s1*x	s.yc16cs1	*c922	c8266	2cx9x9	*8x2x8	cs.9s
50	s.s61c	s.21*xc9s	89y18	cx89x	y2y2s9	12x9xx	*.6y
523	s.c*96	c	299**	299**	ys*2x2	ys*2x2	8.98

Table 29. Mde table iyscuf dhtom ate

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
0	0.0219	0.028040	900000	2804	74424	1451159	14.54
9	0.0034	0.092176	78273	9202	347918	1156642	17.25
8	0.0007	0.002279	72067	253	217379	1527407	11.25
90	0.0006	0.003773	73114	342	214200	8460396	19.49
98	0.0095	0.008763	73573	886	218017	8395796	81.78
50	0.0094	0.006214	75438	468	219499	2624627	85.56
58	0.0097	0.007287	79780	640	284842	2361936	24.40
30	0.0051	0.095755	79060	9944	285284	3756812	23.93
38	0.0030	0.092674	67703	9337	221911	3241904	36.14
20	0.0038	0.094310	66812	9834	236748	3057720	32.59
28	0.0083	0.051947	64051	5546	257238	5870711	57.44
80	0.0060	0.037545	62426	3356	298297	5919830	58.89
88	0.0997	0.084674	69250	2492	378392	9421999	59.28
10	0.0961	0.067950	41401	1631	311237	9380474	94.19
18	0.0576	0.937972	17640	7458	358031	762386	92.07
40	0.0279	0.597846	10922	93501	514401	187355	90.71
48	0.0691	0.337893	21736	98731	972680	379191	6.32
60	0.9560	0.269136	39005	92735	994169	971411	1.38
68+	0.5035	9	91040	91040	47061	47061	2.75
				F ale			
0	0.0268	0.024310	900000	2431	74135	1247910	12.47
9	0.0020	0.098669	78512	9893	346030	1369856	11.77
8	0.0090	0.002767	73489	216	214861	1003276	12.02
90	0.0007	0.002279	73563	297	218340	8838799	87.38
98	0.0098	0.004242	75618	172	215864	8040829	82.10
50	0.0055	0.090722	75940	9007	286330	2104782	27.77
58	0.0053	0.099237	79915	9023	283509	2927152	28.85
30	0.0035	0.098663	70997	9239	224091	3171255	29.05
38	0.0036	0.096638	66166	9140	237515	3527201	31.12
20	0.0028	0.055516	64094	9736	230529	5690928	35.57
28	0.0013	0.039024	68047	5129	296473	5347703	54.74
80	0.0077	0.026364	65236	3767	205594	9719990	53.47
88	0.0982	0.042356	46227	8639	344114	9886673	97.64
10	0.0520	0.993866	45196	6527	325217	9969558	91.54
18	0.0340	0.940035	12317	90728	572268	636484	93.03
40	0.0870	0.586041	83258	93466	535182	822545	90.97
48	0.0700	0.314156	37134	92845	919481	399196	4.61
60	0.9200	0.893851	58018	95645	73924	927615	8.76
68+	0.5980	9	95972	95972	81498	81498	2.18
				Mmale			
0	0.0231	0.025146	900000	2516	74611	1731442	17.34
9	0.0033	0.093997	78435	9581	360294	1636706	49.22
8	0.0007	0.002279	72241	252	249359	1286279	16.31
90	0.0004	0.003272	72085	357	217237	8764940	13.11
98	0.0090	0.002767	73453	216	214226	8894439	86.64
50	0.0093	0.001269	73581	102	212417	8080563	82.91
58	0.0098	0.004242	75185	175	219854	2868892	27.27
30	0.0050	0.007782	79787	798	284804	2953766	22.68
38	0.0052	0.099732	79022	9064	285805	3111269	20.54
20	0.0057	0.092202	67784	9571	221824	3593747	38.43
28	0.0028	0.055516	66119	9742	236349	5414235	39.59
80	0.0011	0.035803	61164	5696	251375	5357010	51.64
88	0.0900	0.026618	63640	2076	207905	9705117	55.17
10	0.0980	0.045212	47449	8469	362208	9273814	96.45
18	0.0520	0.993866	43779	6202	326725	9907915	92.77
40	0.0250	0.970621	18861	95894	571137	410550	99.87
48	0.0480	0.391153	83017	91603	553337	213860	6.42
60	0.9500	0.287330	31511	91186	937161	520529	1.15
68+	0.9780	9	97106	97106	900888	900888	8.93

Table 29. Mbre table iyscuf dhtom ate

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
0	0.0221	0.029814	700000	2981	85219	3840038	38.40
7	0.0078	0.006162	83601	629	251214	3547676	60.61
1	0.0005	0.002882	81869	252	465802	3413232	36.96
70	0.0006	0.002484	81158	224	466770	1866430	39.12
71	0.0077	0.001453	81911	192	464838	1100248	16.64
90	0.0071	0.006464	84622	605	467589	1091250	12.01
91	0.0073	0.006867	84094	648	435948	4112455	45.42
20	0.0092	0.077428	82961	7036	432605	4051928	42.50
21	0.0096	0.072473	89905	7926	416846	2397127	28.95
40	0.0023	0.076519	80867	7394	410681	2732154	24.65
41	0.0048	0.094993	58246	9734	447294	9679658	20.23
10	0.0062	0.021582	56759	2798	495058	9967433	93.01
11	0.0779	0.014168	54012	4155	405686	7542266	97.82
30	0.0757	0.053592	68433	3588	250050	7424168	75.01
31	0.0961	0.798799	69133	8260	228406	7014488	74.12
60	0.0430	0.906710	32783	72087	952914	671089	77.29
61	0.0665	0.293497	10701	73211	908325	427525	5.39
50	0.7920	0.436683	22610	71655	798968	999907	3.15
51+	0.7822	7	76839	76839	89899	89899	1.76
				Male			
0	0.0234	0.021613	700000	2163	85979	3331599	33.33
7	0.0090	0.006860	83494	638	254737	3136370	35.77
1	0.0008	0.004487	81313	420	466903	3752448	34.34
70	0.0005	0.002882	81993	250	461757	1603942	18.89
71	0.0072	0.003457	84543	371	469384	1927039	11.71
90	0.0090	0.008814	84929	825	435572	4615235	10.10
91	0.0097	0.070448	82984	861	434020	4958111	41.85
20	0.0095	0.072870	89278	7954	415252	2591191	47.44
21	0.0022	0.073261	87024	7487	417443	2236749	23.88
40	0.0046	0.092946	58144	9059	449171	9871383	29.13
41	0.0035	0.022462	56439	9895	498889	9462759	95.95
10	0.0707	0.048249	54121	4767	479941	9042780	94.76
11	0.0710	0.069434	50232	1592	256915	7320841	90.98
30	0.0920	0.708702	64140	5722	219235	7942356	73.35
31	0.0241	0.718447	33406	70155	201136	587275	72.49
60	0.0141	0.940688	11578	72447	941484	151617	70.48
61	0.0550	0.237023	49265	71200	762347	240915	5.02
50	0.7230	0.102707	96065	72392	707222	733376	3.71
51+	0.9037	7	72411	72411	31954	31954	4.51
				Female			
0	0.0203	0.020744	700000	2074	85482	6757798	67.57
7	0.0076	0.003665	83853	316	253395	6059323	62.02
1	0.0003	0.009883	83295	958	450890	3383008	38.17
70	0.0001	0.009486	83040	940	468188	3971058	34.67
71	0.0005	0.002882	81500	259	465042	1621480	18.56
90	0.0077	0.001453	81476	192	461665	1916445	11.70
91	0.0079	0.001852	84584	135	462010	4657360	10.28
20	0.0075	0.005832	84293	541	438176	4205390	41.35
21	0.0090	0.008814	82457	827	431066	2528702	47.06
40	0.0091	0.079495	89110	7710	418561	2264093	23.43
41	0.0021	0.076230	87400	7156	412022	9874717	27.55
10	0.0011	0.096714	58572	9428	449838	9437778	96.40
11	0.0080	0.044068	56264	2517	496942	9075710	92.70
30	0.0717	0.069820	52192	3087	409253	7180806	78.01
31	0.0920	0.708702	66429	5445	233025	7755190	71.21
60	0.0401	0.754312	35854	79625	272062	599459	77.89
61	0.0601	0.200307	13943	73806	925818	108408	8.03
50	0.7710	0.444843	28225	76102	719829	960410	3.55
51+	0.7515	7	97521	97521	776175	776175	1.25

Table 29. Mo e table iy9s9c uf to l ate

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
0	0.0211	0.029884	700000	2985	58316	4030582	40.37
7	0.0074	0.006448	56177	619	289424	6533438	47.42
1	0.0001	0.003954	51814	325	948684	6124557	68.37
70	0.0009	0.007558	51678	757	944677	6015209	62.24
71	0.0008	0.002552	51934	287	946787	1187652	18.95
30	0.0073	0.001582	51096	165	942804	1701173	12.43
31	0.0079	0.006544	59944	615	940424	9627401	95.03
20	0.0075	0.005915	52878	884	966840	9760568	99.21
21	0.0032	0.077925	53520	7062	967559	2659058	25.41
90	0.0029	0.076868	57864	7110	911962	2323702	21.78
91	0.0098	0.032424	50278	3799	996335	3446690	20.49
10	0.0080	0.025343	88749	2962	923372	3220977	36.92
11	0.0770	0.012638	89477	9192	973755	7858758	33.97
60	0.0717	0.043520	80768	1894	286331	7986000	78.19
61	0.0368	0.736026	49233	5264	298750	7055441	79.80
40	0.0997	0.755999	69519	73511	353281	417181	77.14
41	0.0493	0.272455	13000	76274	375301	915300	8.82
80	0.7758	0.918467	21683	76240	724984	325551	6.42
81+	0.7889	7	75272	75272	703108	703108	1.27
				Male			
0	0.0909	0.025604	700000	2567	58030	6628831	66.25
7	0.0075	0.004142	56025	434	283402	6190806	68.77
1	0.0006	0.003556	51273	386	941896	6718702	69.67
70	0.0001	0.003954	51036	324	949125	1683314	15.80
71	0.0077	0.001986	59485	130	943696	1304478	19.59
30	0.0078	0.008562	59365	891	965322	9421042	10.32
31	0.0037	0.070995	52939	546	969680	9361825	91.66
20	0.0038	0.072570	53998	7386	915031	2807715	97.73
21	0.0022	0.076241	57763	7952	913048	2293729	26.66
90	0.0098	0.032424	85665	3738	992031	3850016	23.32
91	0.0068	0.022942	84197	3520	920248	3994027	34.51
10	0.0779	0.011138	89677	9658	977204	3076612	32.82
11	0.0749	0.082155	45573	6687	283860	7601291	30.05
60	0.0338	0.708302	42323	4539	296295	7333981	76.65
61	0.0217	0.767551	61208	70180	200050	846726	72.93
40	0.0110	0.393426	19438	72381	390920	146096	70.12
41	0.0841	0.215248	97999	79859	765589	221676	8.70
80	0.7230	0.953942	36110	72041	700067	761623	6.39
81+	0.3011	7	72941	72941	61147	61147	9.84
				Female			
0	0.0209	0.035510	700000	3551	58102	4213224	42.13
7	0.0076	0.006287	54001	675	286483	4312829	49.48
1	0.0009	0.007558	56286	752	987995	6864013	47.31
70	0.0003	0.007000	56752	56	980434	6281602	66.28
71	0.0009	0.007558	56054	753	980004	1509846	67.91
30	0.0006	0.003556	51501	384	948808	1939840	16.16
31	0.0008	0.002552	51678	283	944721	9596063	17.42
20	0.0077	0.001986	51326	133	949841	9968536	96.53
21	0.0079	0.006544	59479	667	947574	2559017	93.74
90	0.0030	0.005519	59012	526	964539	2133721	24.91
91	0.0020	0.079854	52774	7284	963771	2019377	23.80
10	0.0010	0.039479	57420	3364	913580	3153056	38.36
11	0.0049	0.026246	85963	2319	925744	3725771	32.57
60	0.0705	0.012712	86308	9183	975181	7655525	75.43
61	0.0330	0.709154	87636	8128	286481	7380212	71.65
40	0.0280	0.749329	42088	73429	222609	852168	73.32
41	0.0640	0.384503	60219	74246	318235	115569	5.38
80	0.7720	0.925051	93548	78847	764470	207621	4.03
81+	0.7800	7	39706	39706	722531	722531	1.16

Table 29. Mbre table iyscsu f dtdn ate

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
0	0.0221	0.022298	400000	2229	75555	3482376	34.88
4	0.0048	0.001865	73336	121	870018	3088705	34.79
1	0.0009	0.002046	73214	476	951369	6698511	65.82
40	0.0009	0.004377	73011	431	959583	6415074	68.91
41	0.0006	0.008063	76550	273	958615	1638219	15.16
20	0.0040	0.001222	76158	109	954611	1457176	18.38
21	0.0048	0.006660	76037	690	935379	9303794	97.00
80	0.0043	0.005655	71987	527	931424	9227493	99.84
81	0.0021	0.042221	79640	4413	930413	8319026	87.65
90	0.0086	0.043358	78918	4662	968444	8258567	81.49
91	0.0012	0.021747	74374	2837	918005	2520315	80.38
10	0.0037	0.085559	57942	8933	985865	2863310	26.95
11	0.0441	0.016486	51781	9529	943646	4727852	22.91
60	0.0452	0.053978	54444	3073	853549	4144361	45.69
61	0.0260	0.422344	39041	7052	893863	4428714	41.47
30	0.0923	0.478568	69782	42155	278474	336159	44.76
31	0.0632	0.255607	12899	41403	228719	958878	7.28
50	0.4036	0.928460	83283	41313	496378	217990	6.73
51+	0.4703	4	24950	24950	442693	442693	1.29
				Male			
0	0.0218	0.029791	400000	2979	75318	6384378	63.82
4	0.0049	0.001348	73106	113	855705	6688090	65.08
1	0.0001	0.002846	76795	229	959454	6299482	69.94
40	0.0001	0.002868	76329	227	958097	1317714	17.11
41	0.0007	0.009849	76971	946	954986	1236708	19.67
20	0.0041	0.003652	76037	385	935110	9371966	97.74
21	0.0020	0.007763	71894	710	939827	9846746	91.25
80	0.0026	0.042517	79874	4249	965747	8592153	90.34
81	0.0083	0.045232	78433	4308	964625	8838665	86.24
90	0.0019	0.026703	74939	2964	914247	2742087	84.58
91	0.0033	0.083669	57048	8818	986659	2960524	23.61
10	0.0446	0.016170	51660	9595	946459	2029483	28.68
11	0.0468	0.035158	50548	6810	855457	4603718	47.70
60	0.0217	0.422018	39962	7055	897174	4247369	46.85
61	0.0832	0.430740	61839	44438	275785	530438	48.84
30	0.0131	0.212193	19204	48655	286359	134281	40.19
31	0.0586	0.896498	90148	49028	463101	889914	5.26
50	0.4210	0.938801	26957	42185	404408	466796	6.80
51+	0.2447	4	48712	48712	61592	61592	9.32
				Female			
0	0.0476	0.047839	400000	4783	77084	3975407	39.75
4	0.0048	0.001005	75068	974	874265	3877033	31.91
1	0.0008	0.004301	73134	466	953992	3003507	34.52
40	0.0002	0.004249	73901	445	956380	6120865	66.79
41	0.0008	0.004328	73253	465	956046	6088683	62.02
20	0.0006	0.002376	73447	232	959745	1193622	13.42
21	0.0003	0.008115	76595	891	958835	1062309	12.23
80	0.0040	0.009356	76108	962	954864	9137826	93.91
81	0.0048	0.006138	76094	684	935625	9073761	92.63
90	0.0047	0.007815	71940	578	939545	8647883	83.78
91	0.0084	0.041112	79143	4930	965744	8499147	88.23
10	0.0096	0.022689	78093	2406	917734	2631605	25.36
11	0.0039	0.086858	70794	8807	996989	2241686	29.86
60	0.0422	0.017479	53688	1453	921479	4367202	20.47
61	0.0473	0.078733	52991	3395	872516	4899005	46.80
30	0.0815	0.461032	39673	42880	892660	714414	42.38
31	0.0179	0.217942	62863	46437	234853	605974	7.36
50	0.0773	0.875598	96455	45922	459556	883408	3.80
51+	0.4529	4	23366	23366	412243	412243	1.95

Table 29. Mbe table iysssc uf tcol ate

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
0	0.0221	0.022989	400000	2298	78884	5495917	54.95
4	0.0001	0.002294	75512	248	970140	5098388	52.00
6	0.0009	0.004609	75633	435	385964	1135858	18.46
40	0.0009	0.004263	75975	422	381157	1410625	19.26
46	0.0006	0.002284	75256	222	386847	6159835	68.99
20	0.0008	0.003034	75069	972	383283	6488028	69.31
26	0.0042	0.001415	71114	671	384849	3509536	38.11
90	0.0041	0.008083	71016	555	358984	3224794	39.76
96	0.0023	0.042442	76288	4463	359663	9539660	97.27
30	0.0093	0.041701	73493	4674	311174	9217771	93.53
36	0.0060	0.023580	72632	2279	361757	2809906	90.27
60	0.0051	0.095389	70237	9989	332587	2931921	21.00
66	0.0443	0.066980	81811	3844	322901	4709695	24.74
10	0.0458	0.086323	82061	5040	972566	4384294	48.06
16	0.0270	0.496586	56031	40470	937561	4088351	43.60
50	0.0313	0.208869	13861	49636	270345	598520	44.97
56	0.0543	0.909506	64944	46689	245676	338909	8.53
80	0.4460	0.333763	96525	46875	498876	290505	1.31
86+	0.2410	4	47890	47890	74849	74849	3.19
				Male			
0	0.0214	0.026598	400000	2653	78549	1567470	15.67
4	0.0005	0.002571	75321	252	987410	1110351	18.91
6	0.0003	0.004778	75463	473	386289	1254945	13.66
40	0.0009	0.004377	71710	436	383396	6581099	67.15
46	0.0001	0.002514	71843	215	389309	6904677	63.51
20	0.0042	0.001434	71635	679	384262	3848471	37.74
26	0.0047	0.007679	76763	724	355317	3991739	36.20
90	0.0021	0.042540	76093	4208	352438	9867356	30.14
96	0.0098	0.048819	79821	4550	313509	9985925	91.40
30	0.0069	0.021946	72061	2322	363229	2722129	94.56
36	0.0059	0.091079	87199	9296	330057	2318304	25.63
60	0.0443	0.066172	81978	3842	347712	2028922	29.38
66	0.0419	0.058618	84685	1340	974708	4108910	47.54
10	0.0266	0.420307	56451	7062	969269	4241362	41.48
16	0.0975	0.484608	11426	42002	900148	819477	49.06
50	0.0673	0.267594	63422	43065	296317	612682	40.97
56	0.0840	0.995314	30016	49620	411626	925449	8.41
80	0.4280	0.384198	21636	42586	400514	410688	1.06
86+	0.2900	4	49510	49510	67825	67825	3.96
				Female			
0	0.0488	0.048106	400000	4810	77050	5377249	53.77
4	0.0003	0.004677	78430	465	972233	5300439	56.30
6	0.0002	0.004000	75789	78	387118	5005877	54.62
40	0.0002	0.004000	75886	78	387457	1648290	11.67
46	0.0003	0.004586	75585	456	388378	1027062	14.11
20	0.0003	0.002014	75142	204	385667	6630663	61.51
26	0.0001	0.002771	75344	272	381921	6062776	64.85
90	0.0008	0.009840	75447	950	383154	3611117	35.02
96	0.0042	0.006781	71537	657	382277	3084778	32.47
30	0.0045	0.008315	71450	843	358846	9677177	95.39
36	0.0090	0.043875	76961	4324	359228	9420883	92.59
60	0.0036	0.022218	79796	2072	313335	2135161	28.47
66	0.0053	0.091951	74833	9934	360811	2489208	29.55
10	0.0420	0.068950	88609	6411	327677	4592939	47.65
16	0.0240	0.400050	89995	8930	976896	4902533	46.19
50	0.0950	0.450092	53775	42562	939401	701707	42.07
56	0.0110	0.283296	12236	45172	211771	619802	7.01
80	0.4070	0.325229	33669	47093	456480	271805	1.11
86+	0.2078	4	26647	26647	424125	424125	3.55

Table 29. Mbe table i9yysc uftol ate

x	mx	qx	lx	dx	Lx	Tx	ex
				Both sexes			
0	y.y99h	y.y9992nx1	syyyyy	999h	81111	nsx9x*2	ns.x*
.	y.yyyx	y.yy991hx2	8nnnh	99*	*8yxh2	nyx*n2x	n9.92
2	y.yyy*	y.yysh9s28	8nhh9	s21	21n*11	xxn*y89	x1.2s
.0	y.yyy*	y.yyshs9*h	8n2y*	s2n	21xx21	xs1hny2	x*.hs
.2	y.yyyn	y.yy*9hhss	8n9hx	*sn	21h218	hx88yhx	h1.xy
10	y.yyyn	y.yy*n9n2x	8x8*8	*xs	21*n82	h9s*hxn	h*.n1
12	y.yys2	y.yyx12s91	8xhn1	xxs	21s9*8	2n98nn*	21.8n
90	y.yys1	y.yy181xh2	8h8sn	1x9	2nn2*9	2921h*h	22.98
92	y.yy9h	y.ys991*8x	8hyhh	ssx1	2n9*h1	*nnssy*	*8.xn
80	y.yy*h	y.ysn*yy12	8*111	sx92	2xh*n1	*981n2h	*h.s*
82	y.yy28	y.y92sh9s2	899x*	9991	2hhn2x	91***xn	*y.ns
20	y.yyn2	y.y*x912x1	8yy*h	*9xn	229yy1	9*nnx9s	9x.2s
22	y.ysyy	y.y2111nx8	1xnx1	2929	29*9*x	s8*hxs9	99.*s
40	y.ysx*	y.yn12xx2n	19h9x	x2nx	*8x22*	shs9*nx	s1.**
42	y.y9x8	y.s9xxx12*	nxyhs	8x**	*hxsns	sssh8*2	s2.xn
70	y.y2hn	y.9yh19*1x	xx2s1	s*xny	98n8s9	nh8nx*	ss.22
72	y.ynsy	y.*y92y2*n	h9n2n	sh8hs	99*1h8	2xs1hs	1.nx
50	y.ss22	y.22*s9y2h	*xn8x	sx*yh	s2*9s1	9*n88*	x.2n
523	y.9sx9	s	9y28s	9y28s	82nnh	82nnh	2.x*
				Male			
0	y.y9xh	y.y9xs2yy	syyyyy	9xs2	81x8*	x1y2h2s	x1.yh
.	y.yyyn	y.yy9nhn1	8n*1x	9x8	*18yyn	xnyh121	x1.1x
2	y.yyy2	y.yys8818	8nssn	s82	21hsy9	x*sx12s	xh.y2
.0	y.yyy2	y.yys88*n	8x89*	s8*	212s**	h1*sn*8	xy.sn
.2	y.yyy1	y.yy*8n9h	8xn*y	*12	219x8y	h*2nxyx	hh.91
10	y.yysy	y.yy288h2	8x*2x	21s	21yh9x	21x28sx	hy.28
12	y.yy9s	y.ysy2n8*	8h1xh	syyh	2nx1ss	2*12*8y	2h.n2
90	y.yy91	y.ys*11s8	821xy	s*sn	2nsyy1	*8ynhn8	2s.s8
92	y.yy*8	y.ys8*sx*	8*h2*	s1yn	2x*s81	*2*xhns	*x.n2
80	y.yyhh	y.y9nsxs8	8sn*x	9289	2h92h9	98n**n*	*9.2s
82	y.yyn*	y.y*h11*s	18922	*9y9	2*19sx	9h9y899	91.9h
20	y.ysss	y.yh2shx2	1xy29	2xxy	2s1hxs	9y19nyh	92.9s
22	y.ys*h	y.yxh2xh*	1s*19	h*91	*8*h8*	sxx2s22	9y.2h
40	y.y99y	y.sy2h8ns	nxyhh	n8hh	*xy*1h	s9nyhh9	sx.ns
42	y.y*hy	y.sxshx8h	x1syy	ssyy*	*s988s	8sysxx	s*.*n
70	y.yh1s	y.9h22xs1	hny8n	s2h98	928sxs	h8nsnh	sy.2x
72	y.y1ss	y.**nn1sx	29hx1	s2*n8	snx189	*21ys2	1.s1
50	y.s9n*	y.2n81sxs	91s18	s*h9x	syns*9	snss99	x.yn
523	y.9989	s	s2xx2	s2xx2	x*88y	x*88y	2.*x
				Female			
0	y.ys19	y.ys1yhn8	syyyyy	s1yx	88y8n	nhyy2x9	nh.yy
.	y.yyy2	y.yysnh1n	81s82	sn*	*892*s	n2ys*xh	nh.*n
2	y.yyy9	y.yysysy1	81y99	88	2181xy	nyy18**	ns.hy
.0	y.yyy9	y.yysyy8y	8n899	88	218*xh	xhs8yn*	xx.hn
.2	y.yyyh	y.yy9hs9x	8n192	92x	211hy2	xy98ny1	xs.x2
10	y.yyyh	y.yy9hsny	8nhn1	92x	21n9nh	hh2s9yh	hx.n8
12	y.yyyn	y.yy*28h2	8n**9	*2y	21h1ss	hyh*898	hs.89
90	y.yyy8	y.yy2288*	8x889	2*x	21*1x8	2hx1ss8	2n.sy
92	y.yys9	y.yyh8h91	8xhhx	hnh	21s*2s	2y129hy	29.*y
80	y.yysn	y.yy121h9	8h81s	1s2	2nn1x1	*xy98y1	*n.h2
82	y.yy91	y.ys*89h8	8hsxx	s*9h	2n9hs8	*s9hy2y	*9.12
20	y.yy2*	y.y9s912*	8*12s	s88n	2x29s9	9xh9h9s	91.9n
22	y.yyn9	y.y*h2*9h	8s122	*9h2	2hsy1*	9s11*y8	9*.1*
40	y.ys9y	y.yh1*nyy	11h8y	hsns	2*yy9y	sn*n99h	s8.xs
42	y.y9sy	y.syyy8yh	1*2s8	1*28	*8x9s8	s*yn9yh	sh.xn
70	y.y*x1	y.sx89ynn	nhyx8	s9ny9	*2*h8y	8sy81h	s9.s2
72	y.yxhy	y.91yx8xs	x9*xn	snhyx	9x1yx8	hxn*8h	8.sy
50	y.sy1s	y.292xsnx	221xs	s8y28	snxx19	988*9x	x.xn
523	y.9syh	s	9h1s9	9h1s9	s99x22	s99x22	2.nh

Table 29. Mbr ti aysacuf yoehusocnx1e8 o*yaf 6sh sc1s0auoyn 37nus8 aue4

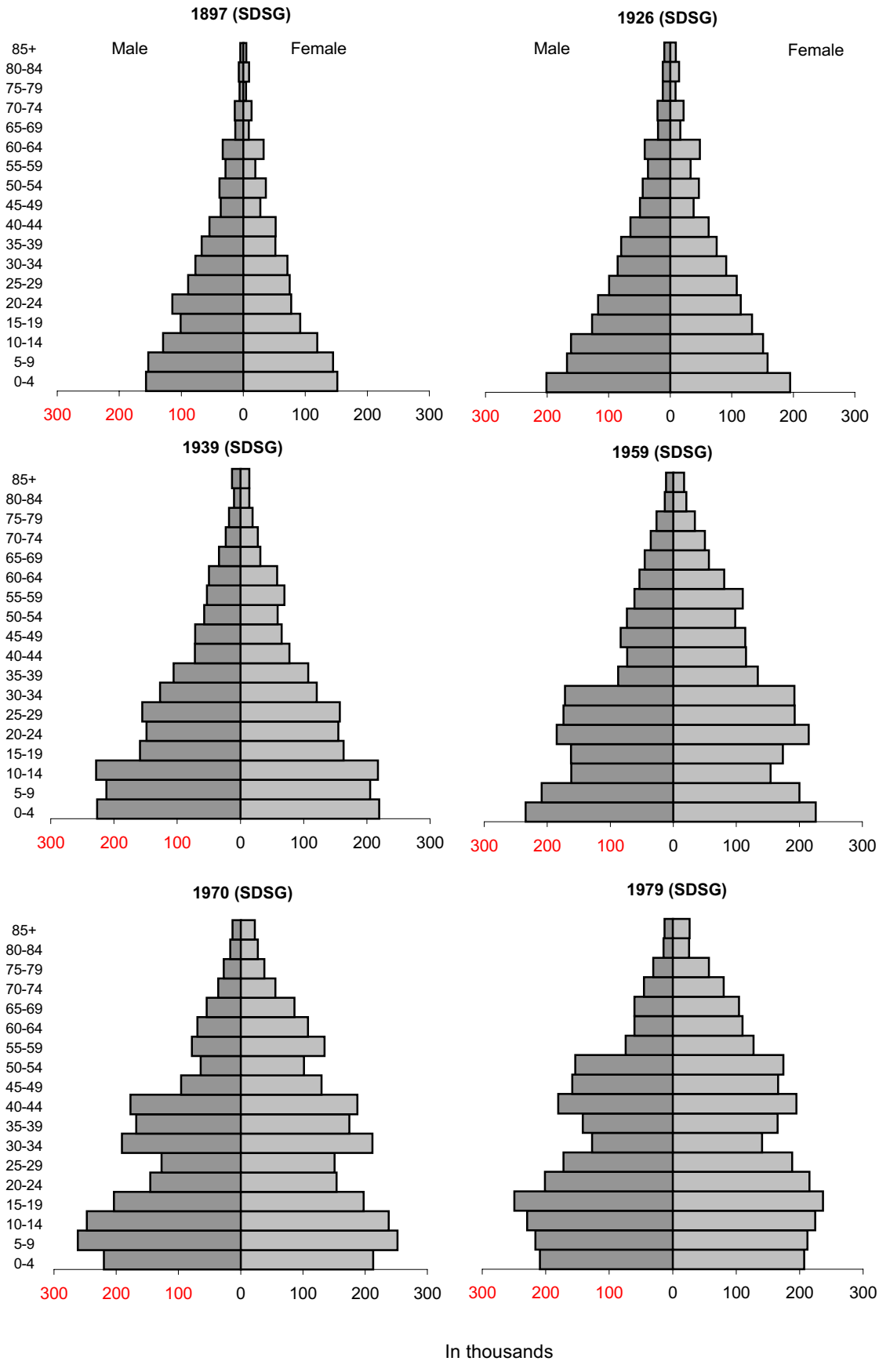
	xmmqlxmmm	dLLLldLLq	dLLqldLxL	dLxLldLxq	dLxqldLdL
_of 5lausoc h6ac*e f eySeay3i6o5nac1n4	tDG	t92	tEm	tEY	tGT
_of 5lausoc *yor u6 yaue 3f eyhecua*e 4	tGET	tY.*G	tY.mm	tY.2m	tY.22
. syu6n f ey Seay 3i6o5nac1n 4	m9	2D	29	2Y	9E
Meau6n f ey Seay3i6o5nac1n 4	mY	mY	mY	mY	mY
z au5yal schyeane f ey Seay3i6o5nac1n 4	9	tG	t*	tGY	tG2
7y51e bsyu6 yaue 3f eyGYYY f of 5lausoc 4	GE.2	GE.E	GG9	GY.D	GY.Y
7y51e 1eau6 yaue 3f eyGYYY f of 5lausoc 4	GGm	GE.*	G9.G	G9.E	G9.T
z au5yal schyeane yaue 3f eyGYYY f of 5lausoc4	Y.T	tY.m	tGD	tE.D	t9.T
Toual 4eyuksuS yaue 3f ey r o8 ac 4	G*Y	GE	Gm	G2	G9
Gyonn yef yo15husoc yaue 3f ey r o8 ac 4	Y.DE	Y.**	Y.*9	Y.ED	Y.E9
z eu yef yo15husoc yaue 3f ey r o8 ac 4	Y.DY	Y.*m	Y.*G	Y.EE	Y.EG
z eu 8 s*yausoc f ey Seay3i6o5nac1n 4	tD2	t99	tEY	tGY	tm
z eu 8 s*yausoc yaue 3f eyGYYY f of 5lausoc 4	tGT.*	tD.2	tm9	tE.*	tG2
Ic4acu 8 oyualsuS yaue 3f ey GYYY bsyu6n 4	Em	E9	EY	GD	Gm
_of 5lausocTt . e*sccsc* o4u6e f eyso1 3i6o5nac1n4	22*m	2Y92	9DEm	9*2Y	9E2Y
_of 5lausoc t 7c1 o4u6e f eyso1 3i6o5nac1n4	2GGE	9DEm	9*2Y	9E2Y	9m2m
_of 5lausoc t Me1s58 o4u6e f eyso1 3i6o5nac1n4	2ET2	9TmY	9DY9	9ETY	9mT9

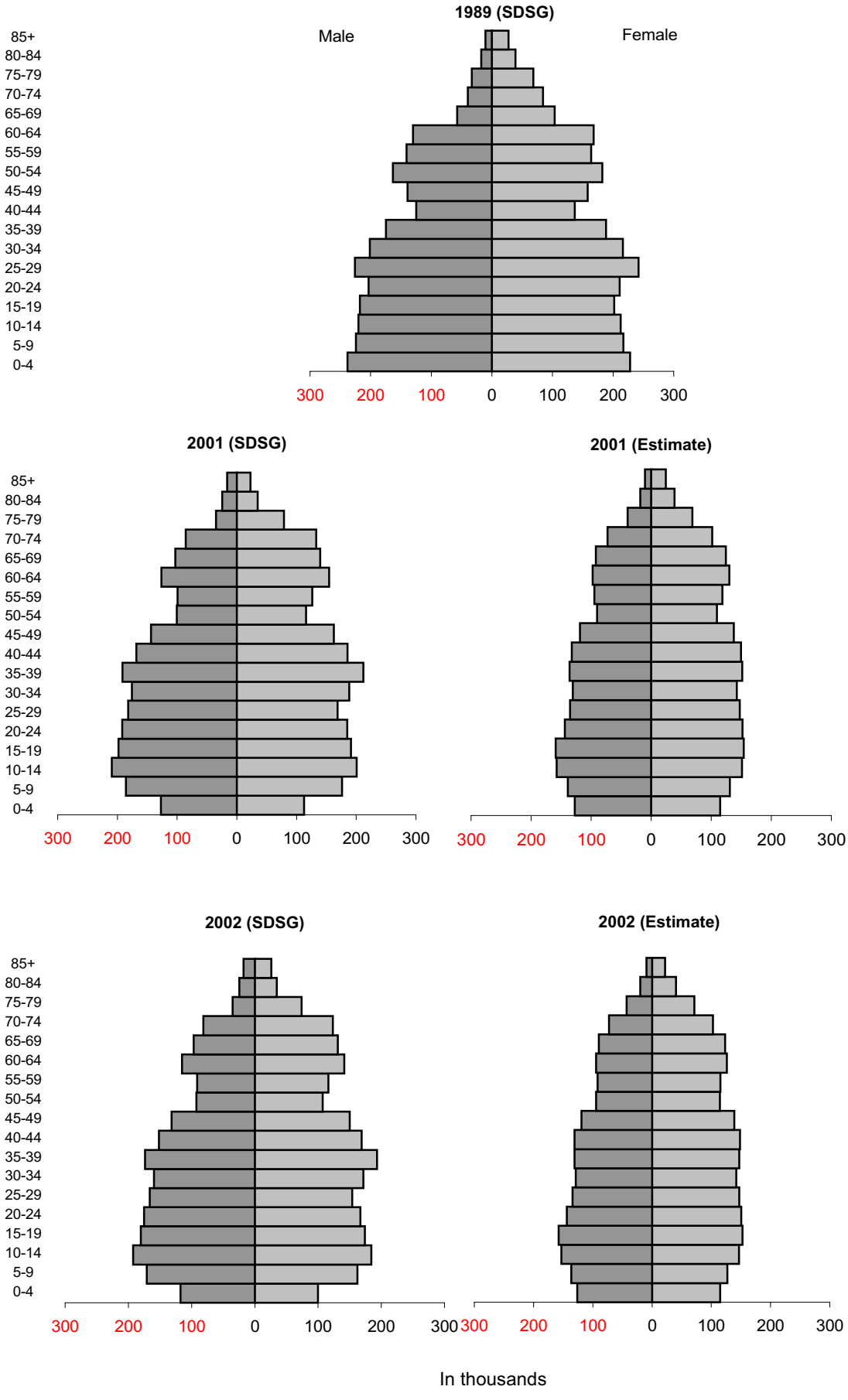
Table 44. Medium-variant projections: demographic indikators (Estimate)

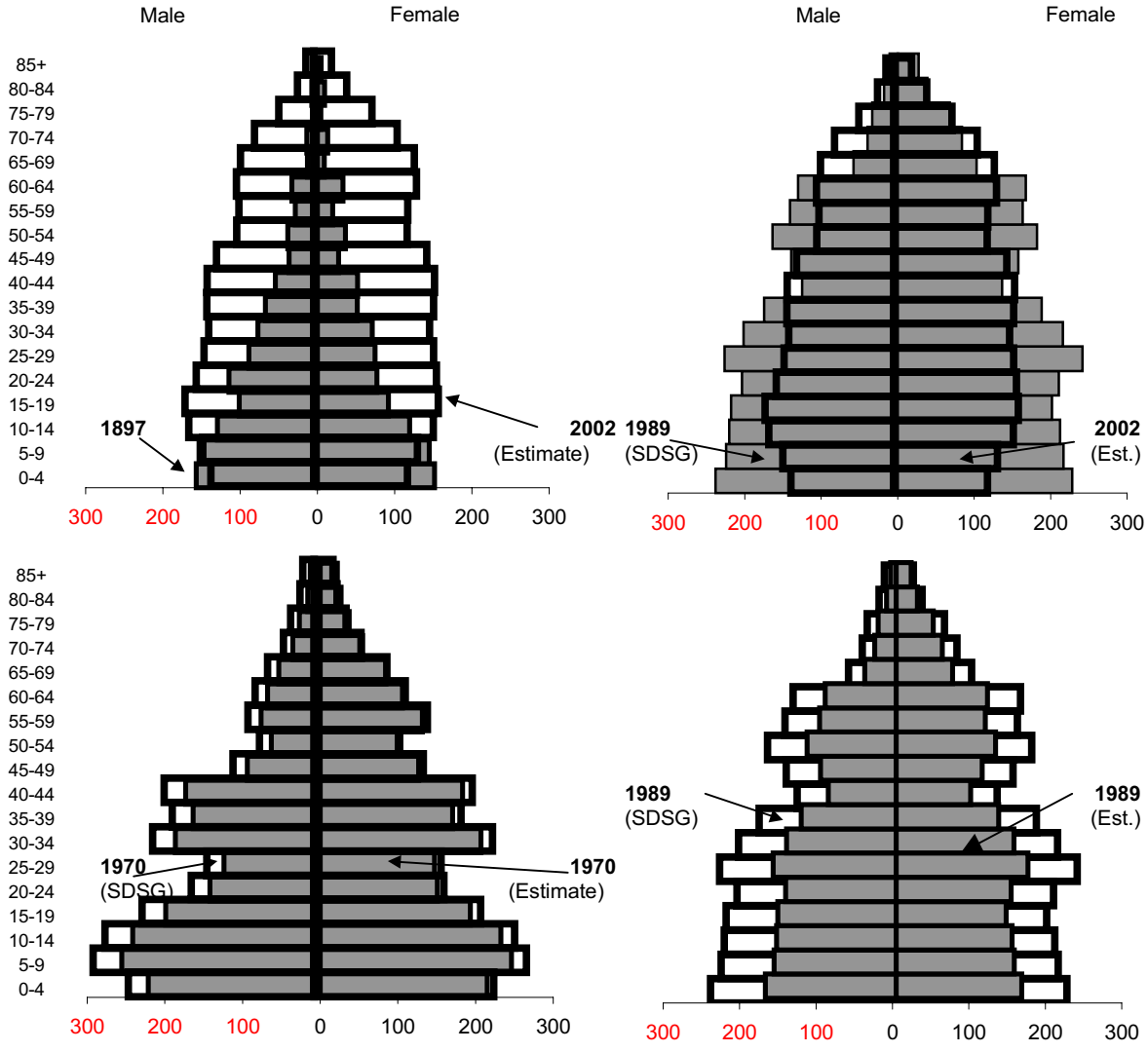
	1995-1999	2000-2005	2005-2010	2010-2015	2015-2020
Population change per year (thousands)	-81	-30	-16	-7	-4
Population growth rate (percentage)	-1.69	-0.63	-0.35	-0.15	-0.09
Births per year (thousands)	53	49	47	46	44
Deaths per year (thousands)	50	49	48	48	48
Natural increase per year (thousands)	3	0	-1	-2	-4
Crude birth rate (per 1000 population)	12.4	12.4	12.2	12.1	11.7
Crude death rate (per 1000 population)	11.5	12.4	12.5	12.7	12.8
Natural increase rate (per 1000 population)	0.9	0.0	-0.3	-0.6	-1.1
Total fertility rate (per woman)	1.70	1.7	1.7	1.7	1.7
Gross reproduction rate (per woman)	0.82	0.82	0.82	0.82	0.82
Net reproduction rate (per woman)	0.80	0.80	0.80	0.80	0.80
Net migration per year (thousands)	-84	-30	-15	-5	0
Net migration rate (per 1000 population)	-19.7	-7.6	-3.9	-1.3	0
Infant mortality rate (per 1000 births)	25	22	19	17	14
Life expectancy at birth (years):					
Males	67.2	68.0	69.0	70.0	71.0
Females	74.7	75.3	76.0	76.5	77.1
Both sexes combined	71.0	71.7	72.5	73.3	74.1
Population - Beginning of the period (thousands)	4475	4034	3884	3804	3769
Population - End of the period (thousands)	4112	3884	3804	3769	3749
Population - Medium of the period (thousands)	4294	3959	3844	3787	3759

Table 29. Mor t iyasacufsdhenuodcx18e* dr saf t on oc8o6audsx 03xuo aue7

	1995-1999	2000-2005	2005-2010	2010-2015	2015-2020
4df _lauodc nt acr e f es5eas0ut d_xac8x7	iSD	iGE	iDm	D	Y
4df _lauodc r sdTut saue Ofesnecuar e 7	iD.EE	im99	imGD	mmG	mmE
* osut x f es 5eas 0ut d_xac8x 7	9Y	9m	9D	9G	9Y
. eaut x f es 5eas0ut d_xac8x 7	9m	2E	2E	2E	9m
Mau_sal ocnseaxe f es 5eas0ut d_xac8x 7	Y	D	G	Y	Y
z s_8e bosut saue Of esDmmm f df _lauodc 7	DG.2	DG.E	DY.D	DY.9	DY.7
z s_8e 8eaut saue Of esDmmm f df _lauodc 7	DD.9	DG.Y	DG.E	DG.7	DG.E
Mau_sal ocnseaxe saue Of esDmmm f df _lauodc7	mE	mY	m9	mS	mS
Tdual 4esuodo5 saue 0f es Td* ac 7 შობადობის ჯამობრივი კოეფიციენტი	D.7m	D.S	D.E	Gm	G.D
Gsdxx sef sd8_nuodc saue 0f es Td* ac 7	mSG	mS7	mEG	mE7	D.mG
Meu sef sd8_nuodc saue 0f es Td* ac 7	mSm	mS9	mEm	mE9	D.mm
Meu * or sauodc f es 5eas0ut d_xac8x 7	iS2	iG7	iDG	iG	m
Meu * or sauodc saue Of esDmmm f df _lauodc 7	iDE.7	iE.S	iY.D	im9	m
Ic4acu * dsualo5 saue 0f es Dmmm bosut x 7	G9	GD	D7	D9	DG
4df _lauodc i * er occocr d4ut e f esod8 0ut d_xac8x7	2279	2mY2	YEm2	YS92	YS9E
4df _lauodc i 3c8 d4ut e f esod8 0ut d_xac8x7	2DDG	YEm2	YS92	YS9E	YS72
4df _lauodc i Me8o_* d4ut e f esod8 0ut d_xac8x7	2GE2	YEEE	YS7E	YS97	YSE7


1897 (SDSG)
1926 (SDSG)
1939 (SDSG)
1959 (SDSG)
1970 (SDSG)
1979 (SDSG)
Male
Female
85+
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
300
200
100
0
100
200
300
In thousands


1989 (SDSG)
Male
Female
85+
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
300 200 100 0 100 200 300
2001 (SDSG)
2001 (Estimate)
2002 (SDSG)
2002 (Estimate)
In thousands



In thousands

Giorgi Tsuladze
Doctor of Sciences, Professor

GEORGIAN ACADEMY OF SCIENCES
INSTITUTE OF DEMOGRAPHIC AND SOCIOLOGICAL RESEARCH
Leading Researcher
PARTNERSHIP FOR SOCIAL INITIATIVES - GEORGIAN CENTRE
Member of board

CENTRE FOR SOCIAL STUDIES
Leading Expert

Gr oBde119i602i0663 *
457Bde119i6022018 31;ii669**8
E-m5idBpolionlge@wanex.net; src@kheta.ge

Nika Maglaperidze
Ph. D.

GEORGIAN ACADEMY OF SCIENCES
INSTITUTE OF DEMOGRAPHIC AND SOCIOLOGICAL RESEARCH
Senior research Assistant

Gr oBde119i602i96 **3**
E-m5idB*nika@ti.net.ge*

Alexander Vadachkoria
Demography Statistics Division, Head

STATE DEPARTMENT FOR STATISTICS OF GEORGIA

Gr oBde119i602i669**8;i96**6**06**
457mBde119i602i669**8
E-m5idB*demostat7@hotmail.com*