

Disability in Bulgaria – Does it Increase or Decrease during the Period 1992-2004?

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Introduction

For the last two decades there could be observed several serious demographic problems in Bulgaria. One of them is the depopulation. Another is aging. As a result of these problems Bulgarian population becomes smaller and older. *However, does it also become more disable?*

This paper is aimed at that question. Its goal is to determine whether disability in Bulgaria increases or decreases during the period 1992-2004.

The lower bound of the period is limited by the first National Census, conducted through 1992, with collected data about disable persons. The upper bound is limited by the last available demographic information.

Method

The applied method is suggested by Robine and Mathers, who “identified four possibilities for the evolution of disability-free life expectancy in the population:

1. absolute compression of morbidity: the increase in disability-free life expectancy exceeds the increase in total life expectancy, reducing the years lived with disability.
2. relative compression of morbidity: disability-free life expectancy and years lived with disability both increase, but disability-free life expectancy as a proportion of total life expectancy increases.
3. relative expansion of morbidity: disability-free life expectancy and years lived with disability both increase, but disability-free life expectancy as a proportion of total life expectancy decreases.
4. absolute expansion of morbidity: disability-free life expectancy decreases and years lived with disability increase.” (Mathers 1999: 37)

Data and results

In Bulgaria there does not exist routine practice of calculation of disability-free life expectancy. For that reason Bulgarian researchers have to calculate themselves disability-free life expectancy. Thus, the paper is using results of other researchers. Moreover, some calculations are made by the author himself.

There are three different data sources of calculation of disability-free life expectancy in Bulgaria. The first ones are the surveys, using the method of the interview, of health state of the population, conducted during 1996 and 2001. The second one is the National Census. Data about the number of disable persons is collected only in the last two Censuses in Bulgaria, conducted during 1992 and 2001. The third data source is the information supplied by the National Social Security Institute of Bulgaria about the number of persons who receive disability pension. Such information is available since 1997.

There exists calculated disability-free life expectancy in the publication concerning surveys of health state of the population (<http://www.nsi.bg/Census/Census.htm>). The only activity remained is to calculate years lived with disability. The obtained results are presented in Tables 1 and 2 and Figures 1, 2, 3 and 4.

Other calculated disability-free life expectancies do not exist so far. For that reason the author himself has calculated disability-free life expectancy based on information from the National Censuses using Sullivan method (Hauet 1997) as well as the years lived with disability. The obtained results are presented in Tables 3 and 4 and Figures 5, 6, 7 and 8.

Moreover, disability-free life expectancy and years lived with disability based on information from the National Social Security Institute of Bulgaria are also calculated by the author himself. The obtained results are presented in Tables 6, 7, 9 and 10 and Figures 9, 10, 11 and 12.

Differences between results obtained using various data sources are due to different definitions of disability. During the surveys of health state of the population, the persons are counted as disable on the base of their self-evaluation. During the National Censuses, the persons are counted as disable on the base of decision of Territorial Expert Medical Commission. The National Social Security Institute of Bulgaria supplies information only about the persons who receive disability pension as a first pension. If the person receives a

retirement pension as a first pension and a disability pensions as a second pension, he/she is not included in the data¹.

However, all data sources lead to the similar results. Moreover, they practically lead to the same conclusions. Generally, what is a typical trend for Bulgaria, is that disability-free life expectancy decreases during the observed period (with some isolated exceptions). At the same time years lived with disability increase (also with some isolated exceptions). It comes under conditions of fourth possibility of method of Robine and Mathers.

Disability-free live expectancy as a proportion of total live expectancy is calculated for all exceptional cases. For all them, disability-free life expectancy as a proportion of total life expectancy decreases. It comes under condition of third possibility of abovementioned method.

Conclusions

1. Disability in Bulgaria increases during the period 1992-2004. Almost for all of the cases it increases absolutely and in some exceptional cases it increases only relatively.
2. Increasing of disability concerns all age groups of the population.
3. Disability in the female population is larger and it increases faster than disability in the male population.

References:

Hauet, E. 1997. Practical Guide on Health Expectancy: "Sullivan Method", <http://sauvy.ined.fr/euroreves/methods/cookdef/cookdef.html>

Mathers, C. 1999. International Trends in Health Expectancies: Do They Provide Evidence for Expansion or Compression of Morbidity?, in Compression of Morbidity: Workshop Papers, <http://www.health.gov.au/pubs/hfsocc/hacocc4a.htm>

Основни резултати от изследването на здравното състояние на населението в България през месец март 2001 година и някои сравнения с данни от предходни изследвания, (Main results of survey of health state of the population of Bulgaria through March 2001 and some comparisons with data from previous surveys), <http://www.nsi.bg/Census/Census.htm>

¹ For that reason, the relative frequency of disable persons is estimated by model $\pi_x = ab^x$ where π_x is the relative frequency of disability persons and x is the lower bound of age group.

Table 1. Life expectancy and disability-free life expectancy (male)

(years)

Age groups	Life expectancy		Disability-free life expectancy		Years lived with disability	
	1994-1996	1999-2001	1994-1996	1999-2001	1994-1996	1999-2001
15-19	53,84	54,30	46,12	45,38	7,72	8,92
20-24	49,07	49,51	41,50	40,71	7,57	8,80
25-29	44,37	44,80	36,93	36,18	7,44	8,62
30-34	39,68	40,08	32,40	31,65	7,28	8,43
35-39	35,05	35,43	27,98	27,13	7,07	8,30
40-44	30,58	30,91	23,66	22,84	6,92	8,07
45-49	26,35	26,61	19,64	18,78	6,71	7,83
50-54	22,40	22,65	15,87	14,93	6,53	7,72
55-59	18,74	19,01	12,42	11,86	6,32	7,15
60-64	15,38	15,63	9,27	8,83	6,11	6,80
65-69	12,32	12,61	6,56	6,05	5,76	6,56
70-74	9,48	9,80	4,28	4,03	5,20	5,77
75-79	7,05	7,40	2,57	2,37	4,48	5,03
80+	5,16	5,49	1,15	1,35	4,01	4,14

Note: Life expectancy and disability-free life expectancy are calculated by H. Maleshkov and M. Mutafova (<http://www.nsi.bg/Census/Census.htm>)

Table 2. Life expectancy and disability-free life expectancy (female)

(years)

Age groups	Life expectancy		Disability-free life expectancy		Years lived with disability	
	1994-1996	1999-2001	1994-1996	1999-2001	1994-1996	1999-2001
15-19	60,88	61,11	48,21	47,24	12,67	13,87
20-24	56,02	56,23	43,51	42,50	12,51	13,73
25-29	51,16	51,36	38,87	37,83	12,29	13,53
30-34	46,33	46,52	34,19	33,35	12,14	13,17
35-39	41,51	41,71	29,62	28,75	11,89	12,96
40-44	36,76	36,96	25,13	24,46	11,63	12,50
45-49	32,11	32,31	20,91	20,24	11,20	12,07
50-54	27,58	27,77	16,86	16,26	10,72	11,51
55-59	23,16	23,37	12,96	12,54	10,20	10,83
60-64	18,98	19,17	9,59	9,06	9,39	10,11
65-69	15,05	15,20	6,57	6,20	8,48	9,00
70-74	11,46	11,58	3,90	3,72	7,56	7,86
75-79	8,45	8,44	2,29	1,95	6,16	6,49
80+	5,95	5,89	1,02	0,97	4,93	4,92

Note: Life expectancy and disability-free life expectancy are calculated by H. Maleshkov and M. Mutafova (<http://www.nsi.bg/Census/Census.htm>)

Table 3. Life expectancy and disability-free life expectancy (male)

(years)

Age groups	Life expectancy		Disability-free life expectancy		Years lived with disability	
	1990-1992	1999-2001	1990-1992	1999-2001	1990-1992	1999-2001
15-19	53,80	54,95	50,68	51,58	3,12	3,37
20-24	50,03	50,16	46,92	46,81	3,11	3,35
25-29	45,35	45,43	42,28	42,12	3,08	3,31
30-34	40,68	40,70	37,65	37,44	3,04	3,27
35-39	36,06	36,06	33,09	32,85	2,98	3,20
40-44	31,56	31,51	28,66	28,38	2,91	3,13
45-49	27,28	27,19	24,46	24,15	2,82	3,04
50-54	23,21	23,16	20,49	20,22	2,72	2,94
55-59	19,41	19,44	16,80	16,61	2,60	2,83
60-64	15,88	16,02	13,42	13,32	2,46	2,70
65-69	12,69	12,94	10,40	10,39	2,29	2,55
70-74	9,85	10,14	7,76	7,79	2,09	2,35
75-79	7,42	7,74	5,57	5,63	1,86	2,11
80+	5,39	5,74	3,84	3,94	1,56	1,80

Notes: 1. Information for life expectancy is supplied by the National Statistical Institute of Bulgaria.

2. Disability-free life expectancy is calculated by the author.

3. Disability-free life expectancy is based on information from the National Censuses toward 04.12.1992 and 01.03.2001 about the number of disable persons.

Table 4. Life expectancy and disability-free life expectancy (female)

(years)

Age groups	Life expectancy		Disability-free life expectancy		Years lived with disability	
	1990-1992	1999-2001	1990-1992	1999-2001	1990-1992	1999-2001
15-19	60,00	61,51	55,39	55,97	4,62	5,54
20-24	56,11	56,64	51,51	51,11	4,61	5,52
25-29	51,25	51,78	46,67	46,28	4,59	5,50
30-34	46,42	46,91	41,86	41,44	4,55	5,47
35-39	41,59	42,10	37,09	36,68	4,50	5,42
40-44	36,84	37,34	32,40	31,99	4,44	5,35
45-49	32,17	32,69	27,82	27,44	4,35	5,26
50-54	27,61	28,17	23,38	23,03	4,22	5,13
55-59	23,19	23,76	19,13	18,80	4,06	4,96
60-64	18,97	19,52	15,13	14,80	3,84	4,72
65-69	15,02	15,55	11,46	11,15	3,57	4,41
70-74	11,44	11,91	8,22	7,91	3,22	4,00
75-79	8,41	8,80	5,59	5,28	2,82	3,52
80+	5,93	6,28	3,60	3,34	2,33	2,94

Notes: 1. Information for life expectancy is supplied by the National Statistical Institute of Bulgaria.

2. Disability-free life expectancy is calculated by the author.

3. Disability-free life expectancy is based on information from the National Censuses toward 04.12.1992 and 01.03.2001 about the number of disable persons.

Table 5. Life expectancy (male)

Age groups	Periods ²							(years)
	1995-1997	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004	
15-19	53,84	54,30	54,70	54,95	55,01	55,07	55,44	
20-24	49,07	49,51	49,92	50,16	50,21	50,25	50,62	
25-29	44,37	44,80	45,20	45,43	45,49	45,52	45,88	
30-34	39,68	40,08	40,47	40,70	40,75	40,79	41,16	
35-39	35,05	35,43	35,80	36,06	36,09	36,09	36,46	
40-44	30,58	30,91	31,26	31,51	31,54	31,52	31,89	
45-49	26,35	26,61	26,95	27,19	27,20	27,19	27,52	
50-54	22,40	22,65	22,95	23,16	23,16	23,13	23,43	
55-59	18,74	19,01	19,21	19,44	19,47	19,43	19,75	
60-64	15,38	15,63	15,79	16,02	16,03	15,99	16,35	
65-69	12,32	12,61	12,79	12,94	12,99	12,90	13,28	
70-74	9,48	9,80	9,95	10,14	10,22	10,11	10,59	
75-79	7,05	7,40	7,49	7,74	7,79	7,61	8,21	
80+	5,16	5,49	5,35	5,74	5,79	5,55	6,44	

Source: National Statistical Institute of Bulgaria.

Table 6. Disability-free life expectancy (male)

Age groups	Periods							(years)
	1995-1997	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004	
15-19	49,61	49,78	49,53	48,81	48,37	47,75	46,83	
20-24	44,84	44,98	44,74	44,01	43,55	42,91	41,99	
25-29	40,14	40,27	40,01	39,26	38,82	38,17	37,23	
30-34	35,45	35,54	35,27	34,53	34,08	33,42	32,48	
35-39	30,83	30,90	30,61	29,88	29,41	28,73	27,78	
40-44	26,37	26,39	26,07	25,32	24,86	24,15	23,18	
45-49	22,16	22,10	21,75	20,98	20,51	19,80	18,78	
50-54	18,22	18,12	17,73	16,91	16,44	15,69	14,63	
55-59	14,57	14,46	13,96	13,13	12,68	11,92	10,82	
60-64	11,23	11,08	10,51	9,65	9,19	8,43	7,31	
65-69	8,22	8,06	7,46	6,51	6,10	5,32	4,20	
70-74	5,54	5,35	4,71	3,75	3,40	2,68	1,65	
75-79	3,35	3,15	2,46	1,50	1,25	0,71	0,00	
80+	1,83	1,59	0,88	0,00	0,00	0,00	0,00	

Notes: 1. Disability-free life expectancy is calculated by the author.

2. Disability-free life expectancy is based on information from the National Social Security Institute of Bulgaria about the number of disability pensions.

² Life table for the period 1996-1998 does not exist.

Table 7. Years lived with disability (male)

(years)

Age groups	Periods						
	1995-1997	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004
15-19	4,23	4,52	5,17	6,14	6,64	7,33	8,61
20-24	4,23	4,53	5,18	6,15	6,65	7,34	8,63
25-29	4,24	4,54	5,19	6,17	6,67	7,36	8,65
30-34	4,23	4,53	5,19	6,18	6,68	7,37	8,67
35-39	4,22	4,53	5,19	6,18	6,68	7,37	8,69
40-44	4,20	4,52	5,19	6,19	6,68	7,37	8,70
45-49	4,19	4,51	5,20	6,20	6,69	7,39	8,74
50-54	4,18	4,52	5,22	6,24	6,73	7,43	8,80
55-59	4,17	4,55	5,25	6,31	6,79	7,51	8,93
60-64	4,15	4,56	5,28	6,37	6,84	7,56	9,03
65-69	4,09	4,55	5,33	6,43	6,89	7,58	9,08
70-74	3,94	4,45	5,24	6,39	6,82	7,43	8,94
75-79	3,69	4,26	5,03	6,24	6,54	6,90	8,21
80+	3,33	3,90	4,48	5,74	5,79	5,55	6,44

Table 8. Life expectancy (female)

(years)

Age groups	Periods						
	1995-1997	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004
15-19	60,88	61,11	61,44	61,51	61,73	61,80	62,30
20-24	56,02	56,23	56,56	56,64	56,84	56,88	57,39
25-29	51,16	51,36	51,69	51,78	51,98	52,00	52,51
30-34	46,33	46,52	46,84	46,91	47,11	47,13	47,64
35-39	41,51	41,71	42,04	42,10	42,29	42,30	42,82
40-44	36,76	36,96	37,31	37,34	37,55	37,54	38,06
45-49	32,11	32,31	32,65	32,69	32,89	32,86	33,40
50-54	27,58	27,77	28,12	28,17	28,36	28,32	28,86
55-59	23,16	23,37	23,70	23,76	23,96	23,93	24,47
60-64	18,98	19,17	19,50	19,52	19,70	19,67	20,22
65-69	15,05	15,20	15,56	15,55	15,71	15,66	16,21
70-74	11,46	11,58	11,92	11,91	12,07	12,01	12,59
75-79	8,45	8,44	8,80	8,80	8,92	8,81	9,42
80+	5,95	5,89	6,21	6,28	6,41	6,26	6,96

Source: National Statistical Institute of Bulgaria.

Table 9. Disability-free life expectancy (female)

(years)

Age groups	Periods						
	1995-1997	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004
15-19	51,92	51,32	51,37	49,87	49,32	47,30	46,03
20-24	47,05	46,43	46,48	44,98	44,41	42,38	41,11
25-29	42,18	41,55	41,60	40,10	39,54	37,48	36,21
30-34	37,34	36,70	36,74	35,22	34,66	32,60	31,33
35-39	32,53	31,88	31,92	30,40	29,84	27,77	26,49
40-44	27,78	27,13	27,18	25,64	25,10	23,01	21,73
45-49	23,15	22,49	22,52	21,00	20,45	18,36	17,09
50-54	18,66	17,98	18,01	16,49	15,97	13,88	12,62
55-59	14,34	13,65	13,66	12,17	11,68	9,65	8,42
60-64	10,30	9,60	9,59	8,14	7,69	5,77	4,65
65-69	6,65	5,93	5,91	4,57	4,20	2,52	1,64
70-74	3,52	2,86	2,80	1,70	1,47	0,31	0,00
75-79	1,18	0,67	0,61	0,00	0,00	0,00	0,00
80+	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Notes: 1. Disability-free life expectancy is calculated by the author.

2. Disability-free life expectancy is based on information from the National Social Security Institute of Bulgaria about the number of disability pensions.

Table 10. Years lived with disability (female)

(years)

Age groups	Periods						
	1995-1997	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004
15-19	8,96	9,79	10,07	11,64	12,41	14,49	16,27
20-24	8,97	9,80	10,08	11,66	12,43	14,50	16,28
25-29	8,98	9,81	10,09	11,68	12,44	14,52	16,30
30-34	8,99	9,82	10,10	11,68	12,45	14,53	16,31
35-39	8,99	9,83	10,11	11,69	12,45	14,53	16,32
40-44	8,98	9,83	10,12	11,70	12,45	14,53	16,33
45-49	8,96	9,82	10,12	11,70	12,44	14,50	16,31
50-54	8,92	9,79	10,11	11,67	12,39	14,44	16,24
55-59	8,83	9,72	10,04	11,58	12,28	14,28	16,05
60-64	8,67	9,57	9,91	11,38	12,01	13,90	15,58
65-69	8,41	9,27	9,65	10,99	11,52	13,14	14,58
70-74	7,95	8,73	9,12	10,21	10,60	11,70	12,59
75-79	7,27	7,77	8,19	8,80	8,92	8,81	9,42
80+	5,95	5,89	6,21	6,28	6,41	6,26	6,96

Figure 1. Disability-free life expectancy based on information from surveys of health state of the population about the number of disable persons (male)

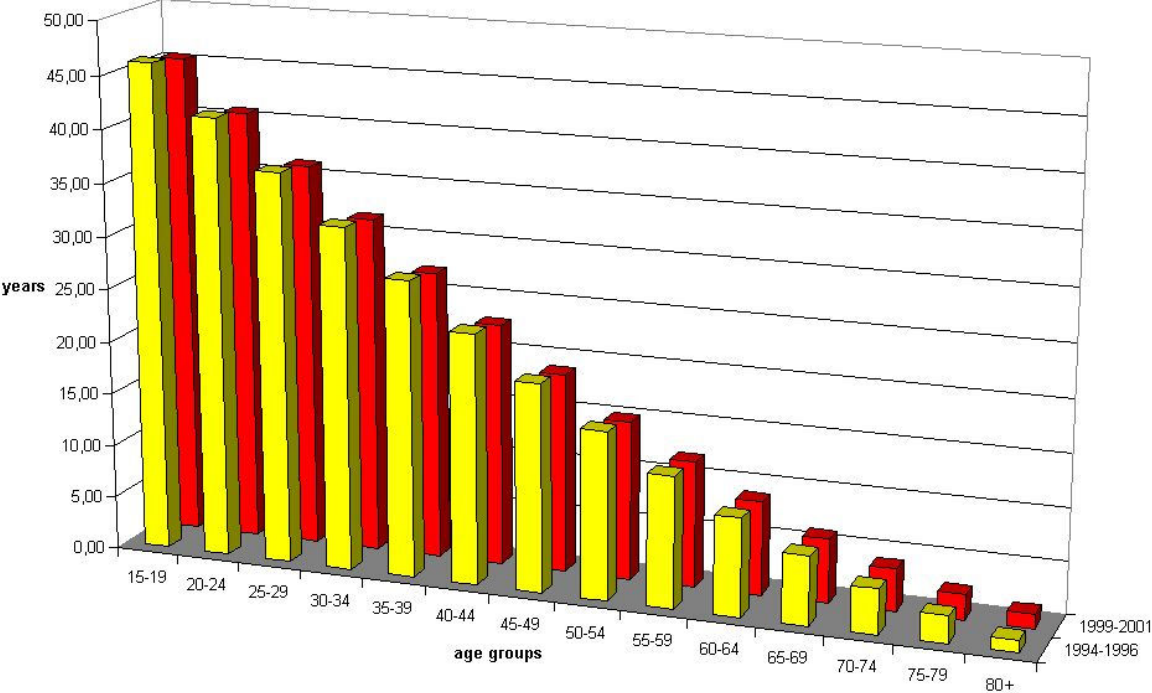


Figure 2. Years lived with disability based on information from surveys of health state of the population about the number of disable persons (male)

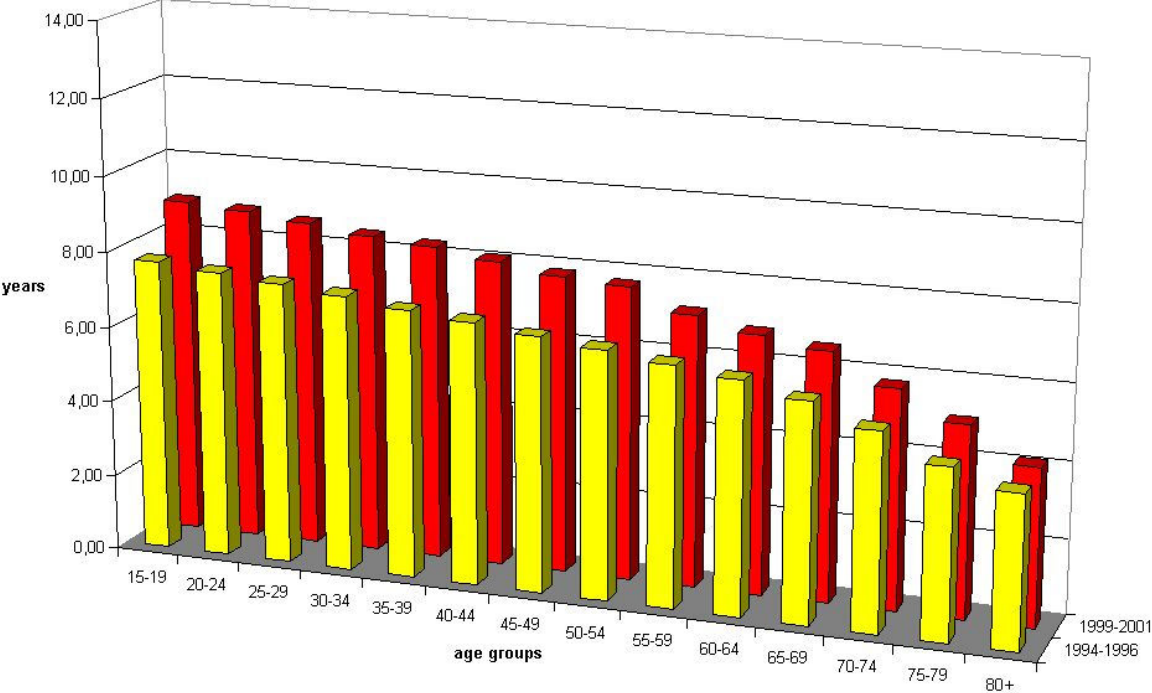


Figure 3. Disability-free life expectancy based on information from surveys of health state of the population about the number of disable persons (female)

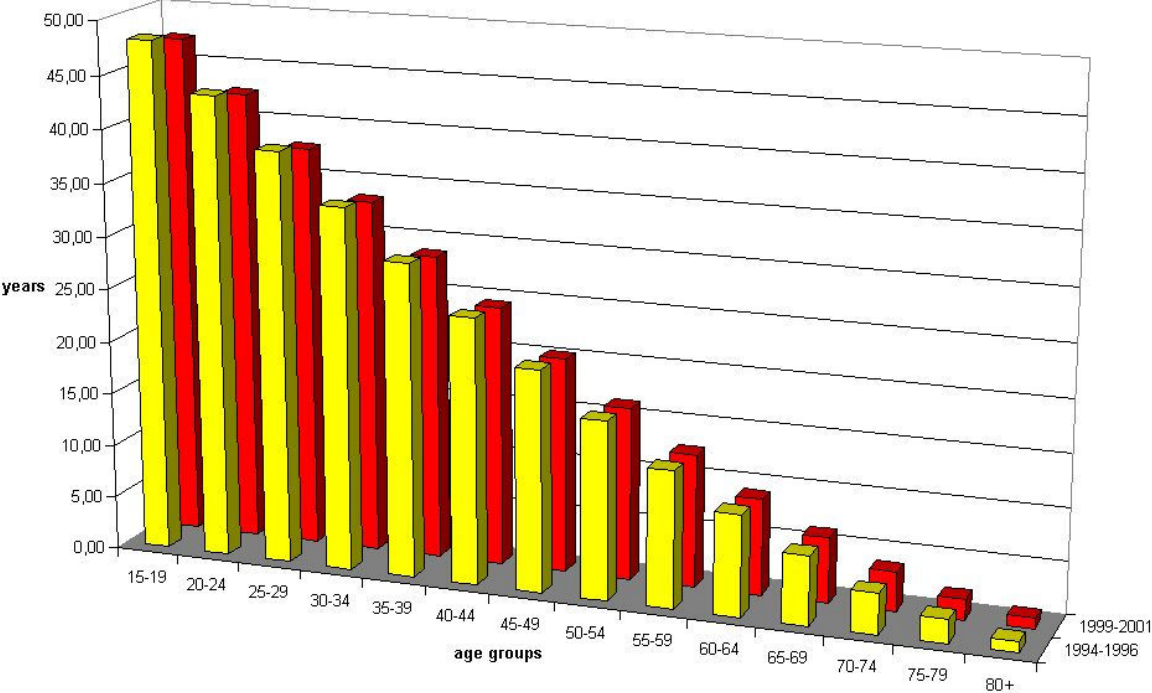


Figure 4. Years lived with disability based on information from surveys of health state of the population about the number of disable persons (female)

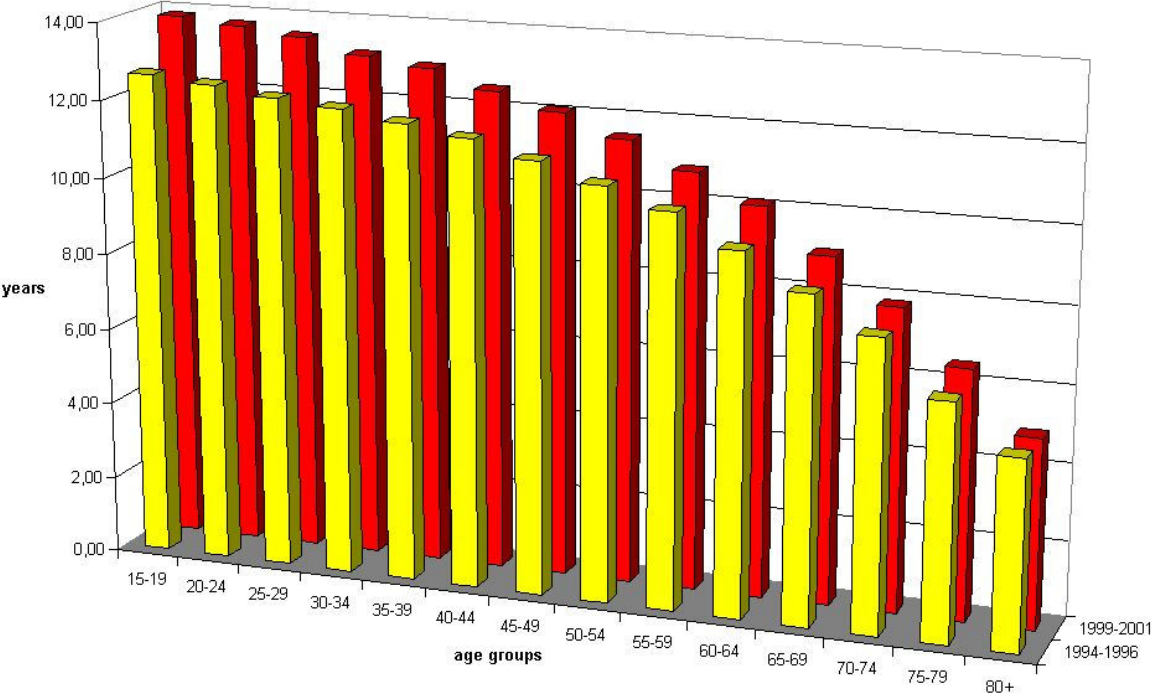


Figure 5. Disability-free life expectancy based on information from the National Censuses about the number of disable persons (male)

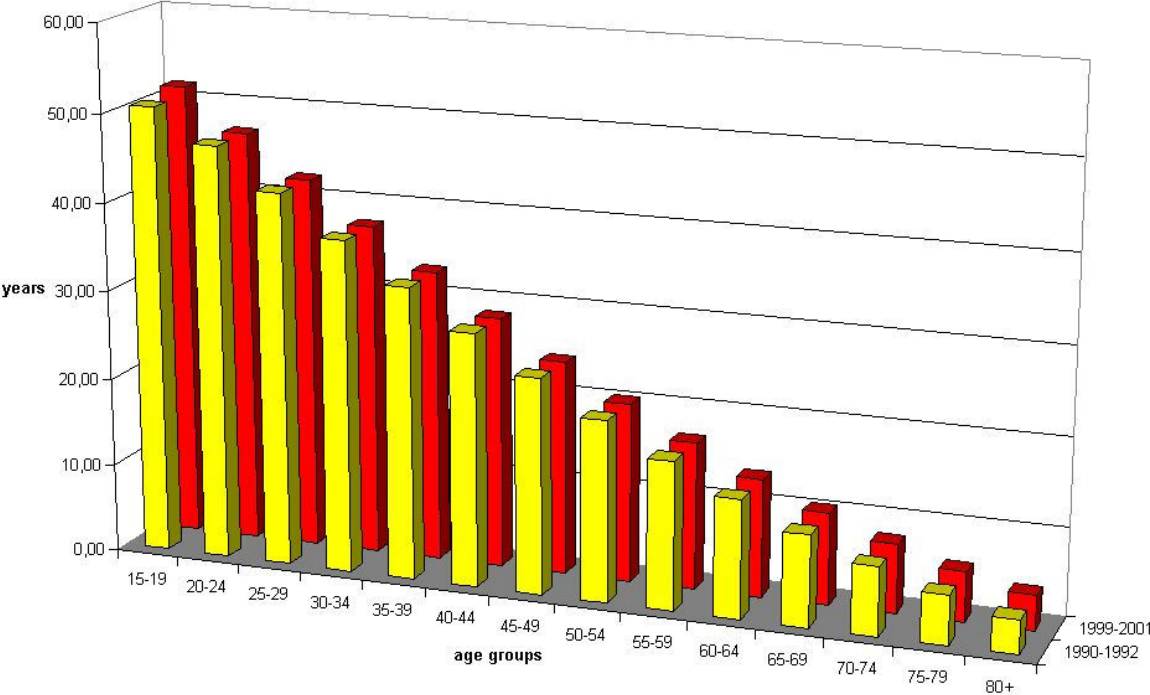


Figure 6. Years lived with disability based on information from the National Censuses about the number of disable persons (male)

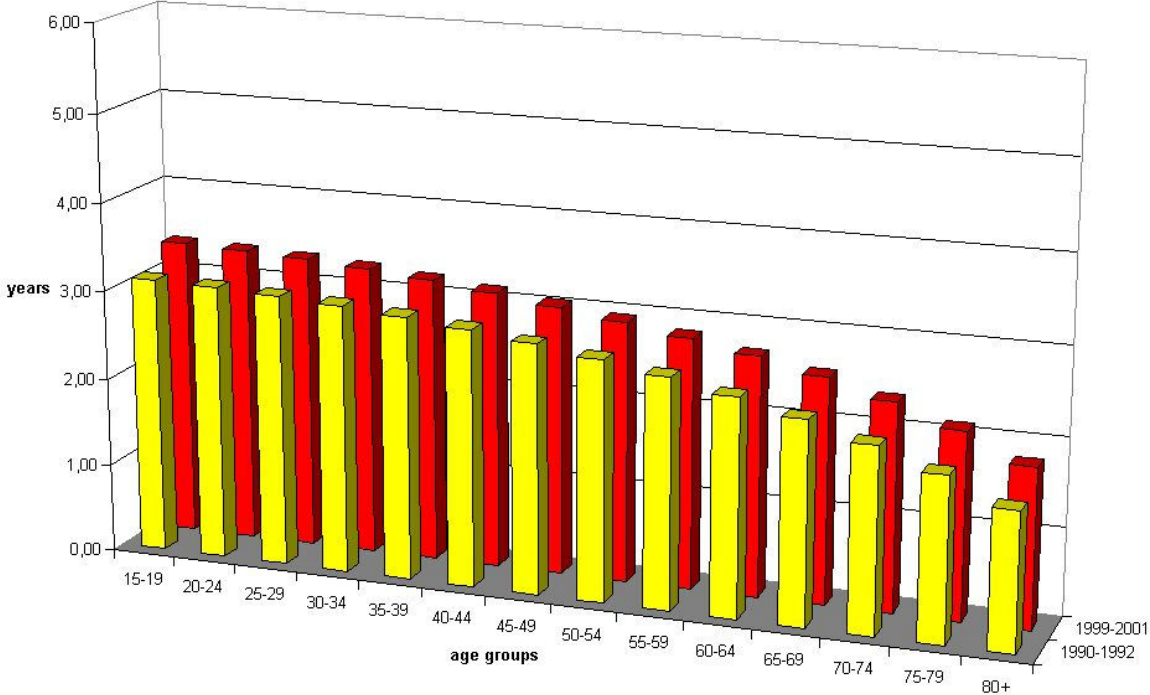


Figure 7. Disability-free life expectancy based on information from the National Censuses about the number of disable persons (female)

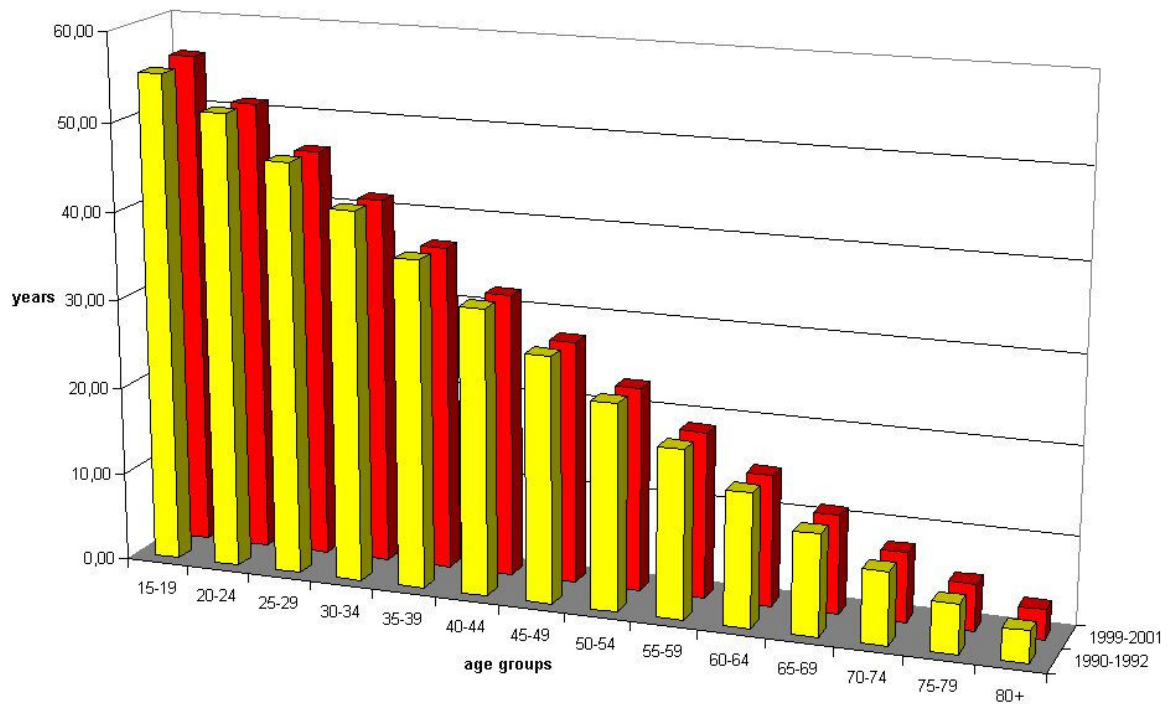


Figure 8. Years lived with disability based on information from the National Censuses about the number of disable persons (female)

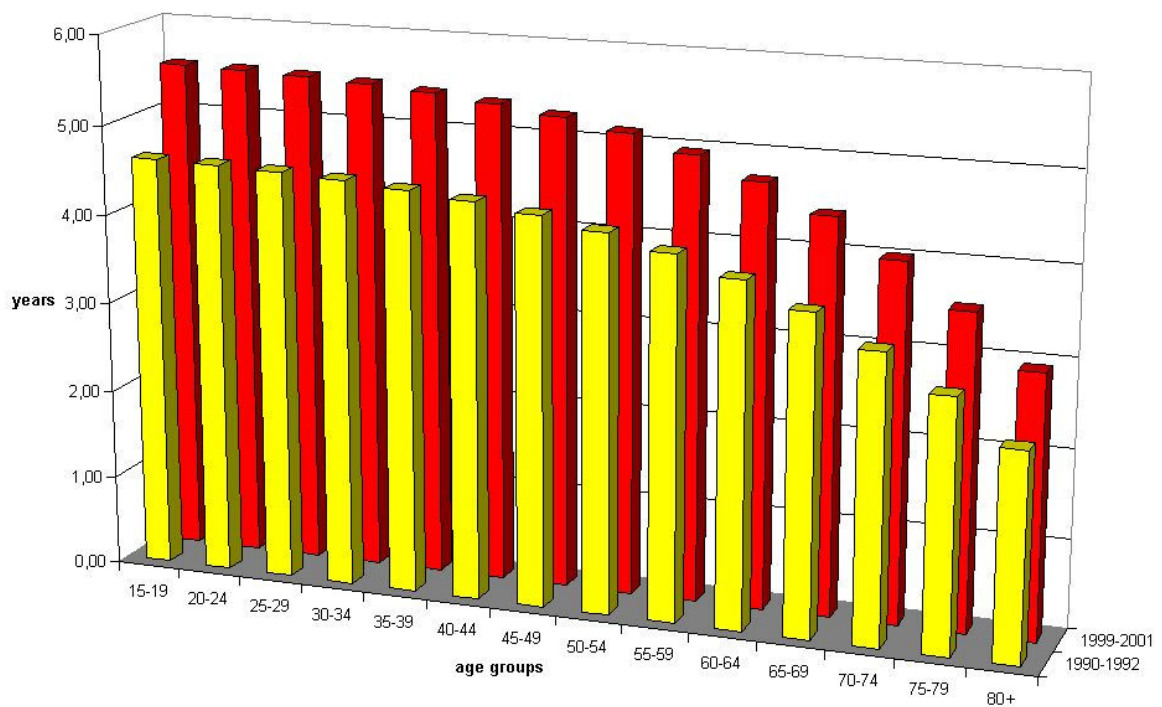


Figure 9. Disability-free life expectancy based on information from the National Social Security Institute of Bulgaria about the number of disability pensions (male)

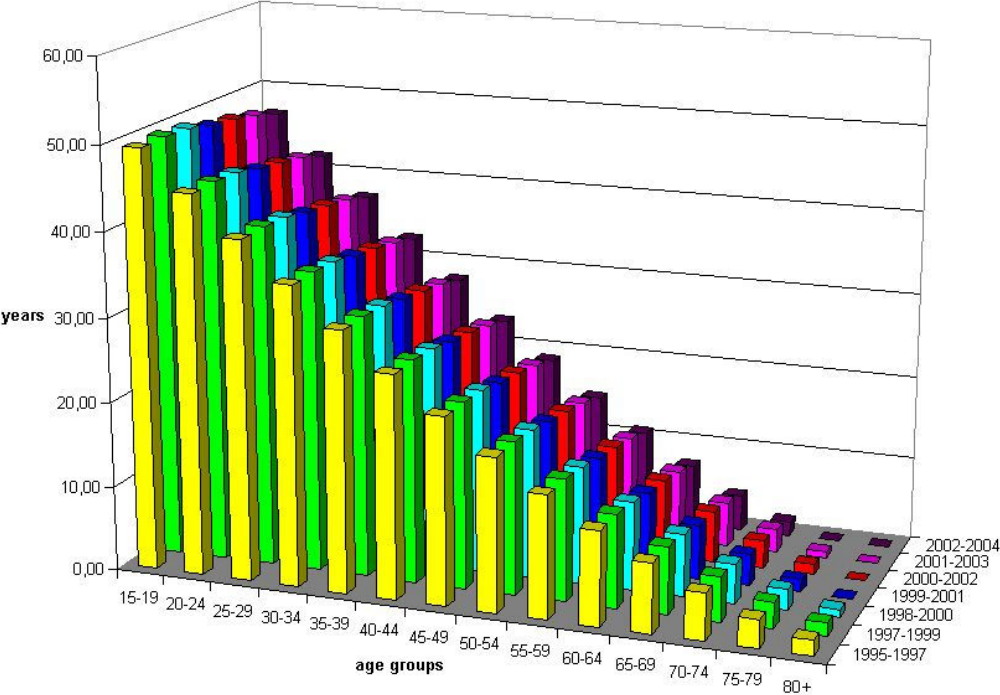


Figure 10. Years lived with disability based on information from the National Social Security Institute of Bulgaria about the number of disability pensions (male)

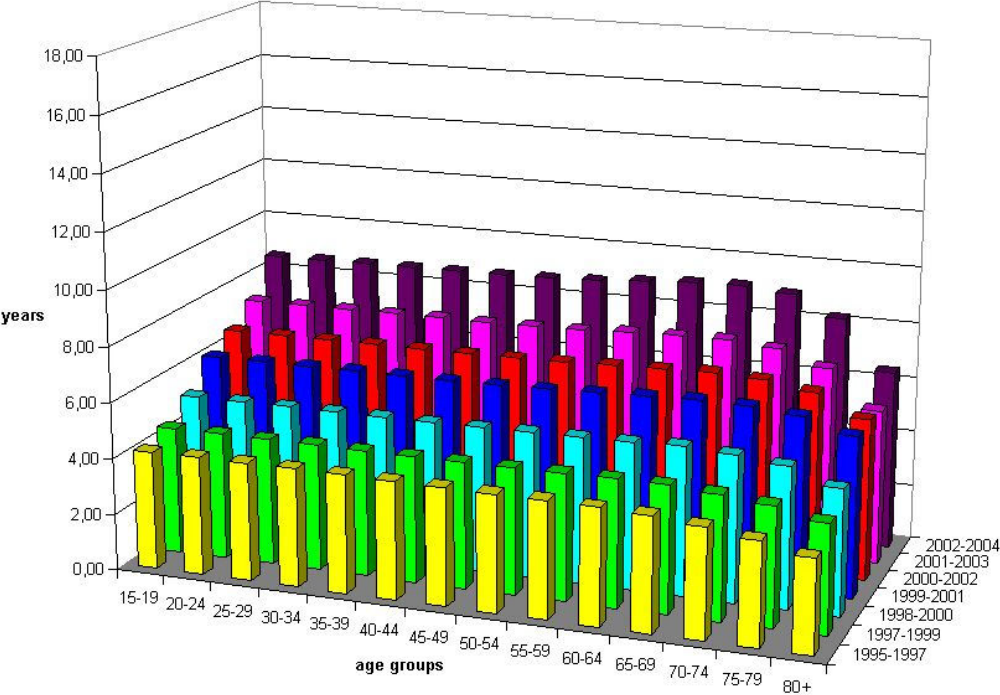


Figure 11. Disability-free life expectancy based on information from the National Social Security Institute of Bulgaria about the number of disability pensions (female)

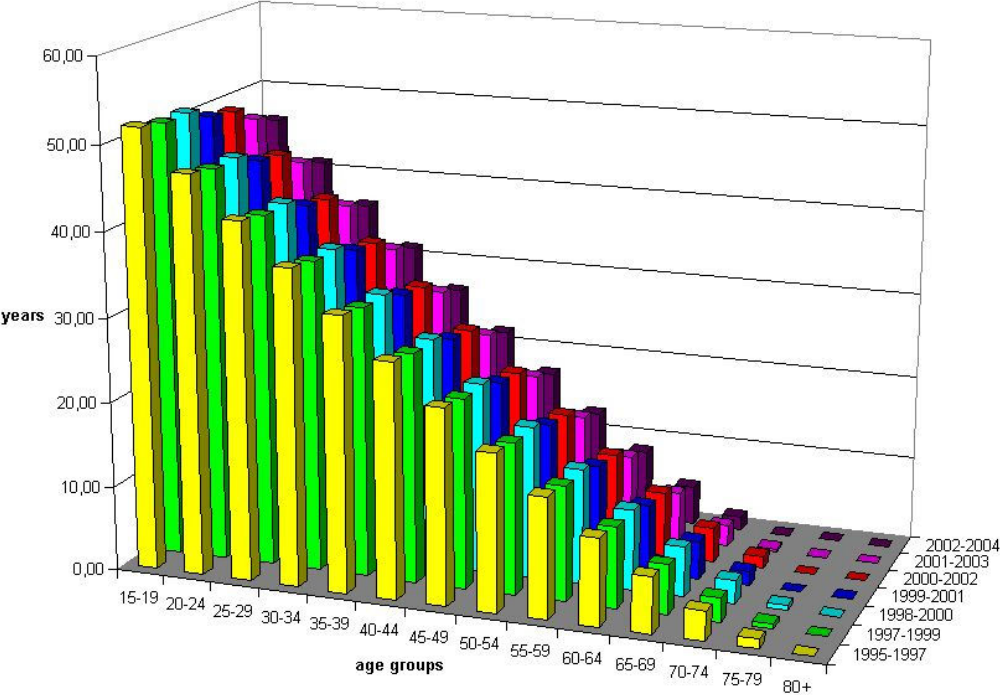


Figure 12. Years lived with disability based on information from the National Social Security Institute of Bulgaria about the number of disability pensions (female)

