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CONTENTS

POPULATION DEVELOPMENT IN THE CZECH REPUBLIC IN 2006[*]

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Abstract: The article describes the demographic situation in the Czech Republic in 2006 and evaluates it in the context of development since 1995. From the second half of the 1990s population development has occurred at a more fluid pace, the changes are not occurring as fast as they were in the first half of the 1990s. The article analyses changes in the fertility rate and its structure by the family status of women and by birth order, the decrease in the interest in marrying, and the postponement of the start of marriage and family life to a later age, the improvement of mortality and the contribution of the change in mortality by causes of death to this improvement. Divorce and abortion rates are also evaluated, along with the growing significance of international migration, ensuring population growth. The analysis is based on data processed by the Czech Statistical Office.

Keywords: population development, Czech Republic, age structure, nuptiality, divorce rate, fertility, abortion rate, mortality, migration

In 2006 the Czech Republic experienced positive population growth, and for the first time in thirteen years, since 1993, a natural population increase was recorded. Live births outnumbered deaths as a result of a higher fertility rate and a lower mortality rate. But the increase was very small, just 1.4 thousand, while the decreases recorded in the years between 1994 and 2005 ranged between 5.7 thousand (2005) and 22.3 thousand (1996).

After a period of population loss between 1993 and 2002, net migration produced a numerical increase in the population of the Czech Republic for four consecutive years, reaching a figure of 34.7 thousand people in 2006. The total population increase was thus 36.1 thousand and was the highest since 1980 (inclusive). The biggest source of the population increase in 2006 was the immigration of Ukrainian, Slovakian, and Vietnamese nationals.

The number of marriages and divorces grew slightly in 2006 compared to the previous year (by 1.0 thousand and 127, respectively) and led to a rise in the total marriage and divorce rates. The divorce rate in 2006 was actually the second highest ever recorded in history – just short of the record high in 2004. If the intensity of divorce by marriage duration recorded in those years were maintained, 49% of marriages would end in divorce.

The number of births and total fertility continued to rise in 2006, even though the increase in the number of live-born children was slightly smaller than in previous years: between 2003 and 2004 the inter-year increase was almost 4.0 thousand, between 2004 and 2005 it was 4.6 thousand, and between 2005 and 2006 it was "only" 3.6 thousand. Nevertheless, total fertility rose above the limit of 1.3 children per woman of reproductive age, thus pulling the Czech Republic out of the category of countries with "lowest-low" fertility. Unmarried women gave birth to one-third of all live-born children in 2006.

The total number of abortions stopped falling, but the number of induced abortions and the induced abortion rate both continued to decrease. The number of abortions stagnated at around 40 thousand, partly as a result of the increase in the number of miscarriages. This is connected with the overall higher number of pregnancies as a result of the increased fertility rate and the postponement of fertility to a later age, when the intensity of miscarriage is higher.

During 2006, 104.4 thousand people died, which was 3.5 thousand fewer people than in the previous year. Another positive trend emerged in life expectancy at birth, which increased by 0.6 years for both men and women. Infant mortality decreased by one-tenth of a per mille point to reach 3.3 in 2006.

Population size and structure by age and marital status

The year 2003 marked the first year of a population increase recorded after nine years of population decreases. The population size also grew in subsequent years, but, except in 2006,

Table 1 Population change, 1995–2006

Indicator	1995	2000	2001	2002	2003	2004	2005	2006
	Numbers							
Live births	96097	90910	90715	92786	93685	97664	102211	105831
Deaths	117913	109001	107755	108243	111288	107177	107938	104441
Infant deaths	740	373	360	385	365	366	347	352
Marriages	54956	55321	52374	52732	48943	51447	51829	52860
Divorces	31135	29704	31586	31758	32824	33060	31288	31415
Abortions, total	61590	47370	45057	43743	42304	41324	40023	39959
induced abortions	49531	34623	32528	31142	29298	27574	26453	25352
Immigrants	10540	7802	12918	44679	60015	53453	60294	68183
Emigrants	541	1263	21469	32389	34226	34818	24065	33463
Natural increase	−21816	−18091	−17040	−15457	−17603	−9513	−5727	1390
Net migration	9999	6539	−8551	12290	25789	18635	36229	34720
Total increase	−11817	−11552	−25591	−3167	8186	9122	30502	36110
Population (1 July)	10330759	10272503	10287482	10189423	10201651	10206923	10234092	10266646
	Per 1000 population							
Live births	9.3	8.8	8.8	9.1	9.2	9.6	10.0	10.3
Deaths	11.4	10.6	10.5	10.6	10.9	10.5	10.5	10.2
Marriages	5.3	5.4	5.1	5.2	4.8	5.0	5.1	5.1
Divorces	3.0	2.9	3.1	3.1	3.2	3.2	3.1	3.1
Abortions, total	6.0	4.6	4.4	4.3	4.1	4.0	3.9	3.9
induced abortions	4.8	3.4	3.2	3.1	2.9	2.7	2.6	2.5
Immigrants	1.0	0.8	1.3	4.4	5.9	5.2	5.9	6.6
Emigrants	0.1	0.1	2.1	3.2	3.4	3.4	2.4	3.3
Natural increase	−2.1	−1.8	−1.7	−1.5	−1.7	−0.9	−0.6	0.1
Net migration	1.0	0.6	−0.8	1.2	2.5	1.8	3.5	3.4
Total increase	−1.1	−1.1	−2.5	−0.3	0.8	0.9	3.0	3.5

the numerical increase stemmed exclusively from the immigration of foreign nationals. In 2006 the natural population increase also reached positive figures.

The total number of foreign nationals legally residing in the Czech Republic (on the basis of a permanent or long-term residence visa) at the end of 2006 was 321.5 thousand, according to information from the Foreign Police Headquarters of the Ministry of the Interior of the Czech Republic. These foreign nationals make up 3.1% of the population of the Czech Republic.

Figure 1 Foreigners by citizenship (ten most common), 31 Dec 2006
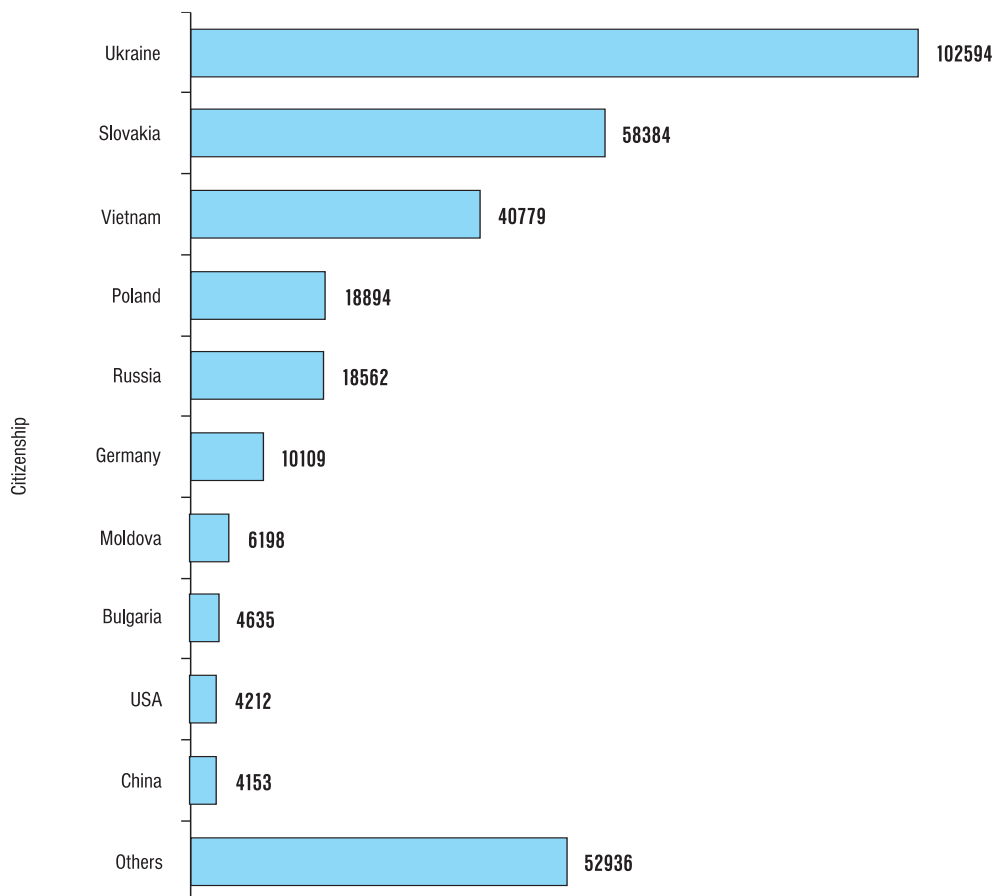
Although, since hitting a low in 1999, the number of live-born children each year has gradually increased, the number of children aged 15 and under and their percentage of the population has continued to fall. Children aged 0–14 currently make up 14.4% of the population, which is seven percentage points lower than in 1990 and four percentage points lower than in 1995. The share of the population over the age of 65 has thus gradually approached the share of the population aged 0–14 and last year even exceeded it (albeit only very slightly). People born in the first large birth cohorts of the war years (1940 and 1941) have recently begun to

reach the age of 65. So after years of slow growth and subsequent stagnation at the start of the millennium, this segment of the population has begun to grow. Once people born in other large birth cohorts from the 1940s begin to reach the age of 65, the over-65 age group will begin to expand even more dramatically. There has been an increase in the share of the population aged 15–64, though it was smaller than the increase in the over-65 age group. Combined with the decrease in the number of children, this meant just a very slight inter-year increase in the burden on the working-age population.

Table 2 Age distribution characteristics, 1995–2006 (31 Dec)

Indicator	1995	2000	2001	2002	2003	2004	2005	2006
	Population, thousands							
Total	10321	10267	10206	10203	10211	10221	10251	10287
0–14	1893	1664	1622	1590	1554	1527	1501	1480
15–64	7056	7179	7170	7196	7234	7259	7293	7325
65+	1372	1423	1415	1418	1423	1435	1456	1482
80+	277	250	260	277	293	308	322	336
	Structure (%)							
0–14	18.3	16.2	15.9	15.6	15.2	15.0	14.6	14.4
15–64	68.4	69.9	70.2	70.5	70.9	71.0	71.2	71.2
65+	13.3	13.9	13.9	13.9	13.9	14.0	14.2	14.4
80+	2.7	2.4	2.6	2.7	2.9	3.0	3.1	3.3
	Age structure characteristics							
Index of ageing[1]	72.5	85.5	87.2	89.2	91.6	94.0	97.0	100.2
Total dependency ratio[2]	46.3	43.0	42.3	41.8	41.2	40.8	40.6	40.4
Mean age	37.3	38.8	39.0	39.3	39.5	39.8	40.0	40.2
Median age	36.4	37.6	37.9	38.2	38.5	38.7	38.9	39.1

Note: [1] Number of persons aged 65+ per 100 children aged 0–14.
[2] Number of children aged 0–14 and number of persons aged 65+ per 100 persons aged 15–64.

The age structure of foreign nationals residing in the Czech Republic differs considerably from the age structure of the "domestic" population. There is a larger proportion of men, who make up 60% of all foreign nationals, while in the total population men make up 48.9%. Younger age groups (20–39) are also proportionally larger; this is linked to the economic motives of their immigration to the Czech Republic. Conversely, there are fewer children and generally fewer old people among foreign nationals in the Czech Republic. Exceptions with regard to the relative proportion of children among foreign nationals in the CR are found among Vietnamese nationals (21.0% of whom were children in 2005) and Russian nationals (13.0%). Foreign nationals with the largest proportion of people in post-productive age among them are Bulgarians (14.7%), Germans (11.4%), and citizens of the United States (10.9%).

The structure of the population by marital status has undergone significant changes as a result of the postponement of marriage to a later age or the rejection of marriage altogether and the spread of unmarried cohabitation (or living together apart) in its place, and as a result of the rise in the divorce rate, the decrease in the rate at which divorced people remarry, and the improvement in the mortality rate. The proportion of people (over the age of 15) who are married is still more than 50%, but among women only slightly more (50.4%), and among men the figure is 53.8% (in 2006). The decrease in the proportion of married people in the population has occurred with a corresponding rise in the proportion of single people, but even the proportion of divorced people has increased. In 2006 one-third of the male population was single and 23.5% of women had never been married. More than 10% of men and women

are divorced. There are slightly more divorced women than men: 10.1% of men and 12.0% of women in 2006. A slight decline in the proportion of widows has occurred as a result of the improved mortality rate of men. The biggest difference between men and women is in the proportion of widows compared to widowers: 2.8% of men are widowed vs. 14.0% of women (in 2004).

Nuptiality

In the second half of the 1990s around fifty-five thousand marriages were taking place annually. In the new millennium this figure decreased slightly by around two to three thousand. In 2003 a historical low was reached with fewer than fifty thousand marriages taking place. In the following years the annual number of marriages again rose above fifty thousand. The number of marriages registered in 2006 (52.9 thousand) was the highest in the past six years, but this is owing to the fact that men and women born in the large birth cohorts in the mid-1970s are currently at the age of highest nuptiality.

The postponement of marriage to a later age or the rejection of marriage altogether by part of the population has led to a sharp reduction in the proportion of people getting married. Ac-

Table 3 Population distribution by sex, marital status and age groups (%), 1995, 2005 and 2006 (31 Dec)

Age group	1995	2005	2006	1995	2005	2006	1995	2005	2006	1995	2005	2006
	Men											
	Single			Married			Divorced			Widowed		
20–24	77.6	96.3	96.8	21.3	3.5	3.0	1.2	0.2	0.2	0.0	0.0	0.0
25–29	34.6	71.3	73.9	59.4	26.0	23.7	6.0	2.7	2.4	0.0	0.0	0.0
30–34	17.6	36.8	39.7	73.2	54.2	51.8	9.1	8.9	8.4	0.1	0.1	0.1
35–39	12.4	18.9	20.2	76.4	65.4	64.2	11.0	15.5	15.3	0.3	0.2	0.2
40–44	9.6	13.1	13.5	77.4	68.6	67.5	12.5	17.9	18.6	0.5	0.4	0.4
45–49	7.2	10.5	10.8	79.2	70.4	69.4	12.6	18.4	19.0	1.0	0.8	0.7
50–54	5.7	8.2	8.5	81.5	73.2	72.2	11.2	17.2	17.9	1.6	1.4	1.4
55–59	4.8	6.0	6.3	83.6	76.9	76.0	8.8	14.5	15.2	2.8	2.6	2.5
60–64	4.2	4.5	4.6	84.1	80.1	79.4	6.8	11.2	11.8	4.9	4.2	4.2
65–69	3.8	3.7	3.7	82.0	81.5	81.2	5.6	7.8	8.3	8.6	7.0	6.8
70–74	3.8	3.1	3.1	77.7	79.7	79.8	4.5	5.8	6.0	14.0	11.4	11.1
75–79	3.5	2.8	2.7	71.4	74.1	74.7	3.8	4.5	4.5	21.4	18.6	18.1
80–84	3.0	3.0	2.8	61.4	65.0	65.6	2.7	3.5	3.6	32.9	28.6	28.1
85+	4.0	2.7	2.8	44.7	51.2	52.9	1.7	2.2	1.9	49.6	43.9	42.4
	Women											
	Single			Married			Divorced			Widowed		
20–24	54.0	88.5	89.7	43.2	10.8	9.6	2.7	0.7	0.6	0.1	0.0	0.0
25–29	15.7	51.2	54.4	75.0	43.6	40.8	8.8	5.1	4.7	0.4	0.2	0.1
30–34	7.1	20.3	22.9	80.7	66.1	64.3	11.4	13.0	12.3	0.8	0.5	0.5
35–39	4.7	8.8	9.8	80.5	70.7	69.5	13.2	19.4	19.6	1.6	1.1	1.1
40–44	3.7	5.5	5.8	78.8	71.6	70.4	14.7	20.8	21.8	2.7	2.1	2.0
45–49	3.3	4.1	4.3	77.5	72.1	71.3	14.3	20.0	20.8	4.9	3.8	3.6
50–54	3.0	3.4	3.5	75.4	71.5	71.0	12.7	18.6	19.2	8.8	6.5	6.3
55–59	2.7	3.0	3.0	71.2	69.7	69.4	10.1	15.8	16.5	15.9	11.5	11.1
60–64	2.5	2.7	2.7	62.5	64.5	64.7	8.9	13.1	13.7	26.0	19.7	18.8
65–69	2.9	2.4	2.4	49.7	55.8	56.1	8.0	10.0	10.4	39.4	31.9	31.0
70–74	3.5	2.2	2.2	34.9	42.8	43.6	7.0	8.5	8.6	54.7	46.5	45.6
75–79	3.6	2.5	2.4	21.7	28.0	29.0	5.5	7.5	7.6	69.1	62.0	61.0
80–84	4.1	3.0	2.8	11.8	15.3	15.9	4.2	6.6	6.7	79.9	75.2	74.5
85+	5.4	3.2	3.0	5.7	7.2	8.0	2.8	4.6	4.7	86.1	85.1	84.3

cording to nuptiality tables, in 2006, 37.1% of men and 30.3% of women under the age of 50 were single. This means that between the last two years there was a slight increase in marriage intensity (more pronounced among women), but compared to 1995, that is, after the sharp fall in the first half of the 1990s, there are ten percent fewer people entering into a first marriage. In 2006 the average age of partners at the time of first marriage increased further (by 0.2–0.3 of a year, compared to 2005), and the age has been rising steadily since 1990.

Although the inter-year increase in the number of marriages stemmed mainly from the increase in the number of marriages among single people, there were also slight increases in the number of higher-order marriages and in the marriage rate among divorced people. In 2006, 44.3% of divorced men and 43.1% of divorced women married again.

The proportion of marriages between two single people out of the total number of marriages has remained steady at around 64–65% (in 2006 there were 34.2 thousand such marriages, making up 64.7% of the total), and at the start of the 1990s the figure was roughly five percentage points higher. The second-largest proportion of marriages take place between partners that are both divorced (14.1% in 2006), followed by marriages between a divorced man and a single woman (10.0%), and vice versa (9.1%). Marriages of widowed people (with a partner of any marital status) are rare.

In 69.3% of marriages in 2006 the man was older than the woman and in 10.0% both partners were the same age. Over time, however, there has been a gradual increase in the proportion of marriages in which the woman is older than the man (20.7% in 2006, 16.9% in 1995). Most frequent are marriages in which the partners are the same age and marriages in which the groom is one to three years older than the bride. The average age difference between marrying partners has become stable at around three years.

A typical feature of marriage behaviour among the Czech population is that more than one-half of marriages (57.5% in 2006) are between people with the same level of education. Marriages in which there are very big differences between the education levels of the marrying partners are rare.

The proportion of marriages in which at least one of the marrying partners is a foreign national has increased since the mid-1990s, but there is no clearly increasing trend. At the start of the millennium such marriages made up one-tenth of all marriages within the given year. Marriages between a male of foreign nationality and a woman with Czech citizenship are 1.5

Table 4 Nuptiality table indicators, 1995–2006

Indicator	1995	2000	2001	2002	2003	2004	2005	2006
Proportion of pop. single at age	Men							
30	40.6	51.8	55.8	57.9	62.8	63.3	64.7	66.2
35	32.1	38.8	42.5	43.3	47.5	47.1	48.1	48.8
40	29.1	33.7	37.2	37.4	41.4	40.4	41.6	41.4
45	27.6	31.6	35.1	35.0	38.7	37.8	38.5	38.6
50	26.8	30.5	34.0	33.8	37.5	36.4	37.2	37.1
Total first marriage rate (%)	73.2	69.5	66.0	66.2	62.5	63.6	62.8	62.9
Mean age at first marriage	26.7	28.8	29.2	29.7	30.2	30.5	30.7	31.0
Proportion of pop. single at age	Women							
30	29.1	38.2	41.2	42.7	47.2	47.3	48.7	49.3
35	23.8	30.7	32.7	33.3	37.4	36.4	37.1	37.3
40	21.7	27.7	29.6	29.8	33.9	32.9	33.1	33.1
45	20.7	26.4	28.3	28.3	32.2	31.1	31.8	31.3
50	20.1	25.6	27.5	27.6	31.3	30.2	30.9	30.3
Total first marriage rate (%)	79.9	74.4	72.5	72.4	68.7	69.8	69.1	69.7
Mean age at first marriage	24.6	26.4	26.9	27.2	27.7	28.0	28.1	28.4

times more common than marriages between "Czech" men and women of foreign nationality. In the years under observation, several dozen marriages have taken place in which both partners were foreign nationals. In 2006 marriages between a man of foreign nationality and a female Czech citizen were most often between a Slovak man and a Czech woman (24.0%), followed by marriages between German men and Czech women (9.4%), British men and Czech women (6.0%), and Vietnamese men and Czech women (5.6%). In the case of marriages in which the foreign national was a woman, most often the woman was of Slovak (40.5%) or Ukrainian (23.3%) citizenship.

Divorce rate

Although there were only 127 more divorces in 2006 than in 2005, this increase combined with the decline in the number of marriages from previous years brought the divorce rate back up to the level of 49%. While this was still below the highest previous figure to date (from 2004), the decrease in 2005 to 47.3% of marriages ending in divorce did not lead to a reduction in the very high intensity of divorce. Instead, the figure has become stable at around fifty percent. The average duration of a marriage before ending in divorce only changed slightly – from 12.2 to 12.0 years. It appears that this indicator is also becoming stable.

The maximum intensity of divorce is gradually moving towards marriages of longer duration. In 2006 the highest divorce rate occurred after 4–6 years of marriage, while in 1995 it was after 2–4 years of marriage, but, on average, the intensity was more than twenty percent lower. Between 1995 and 2006 the divorce rate within the first year of marriage increased, most dramatically among marriages of more than ten years in duration.

Table 5 Selected divorce rate indicators, 1995–2006

Indicator	1995	2000	2001	2002	2003	2004	2005	2006
Total divorce rate	0.38	0.41	0.45	0.46	0.48	0.49	0.47	0.49
Mean duration of marriage (years)	10.50	11.00	11.30	11.50	11.80	11.90	12.20	12.00
Proportion of suits settlend by divorce (%)	80.3	85.00	86.10	86.6	86.90	87.20	87.60	88.00
Divorced marriages without dependent children	9027	10637	11037	11346	12119	12255	12078	12412
Divorced marriages with dependent children	22108	19067	20549	20412	20705	20805	19210	19003
Total number of dependent children at divorced marriages	32792	28215	30385	30260	30927	31008	28732	28117

Table 6 Divorce rate by duration of marriage, 1995–2006

Duration of marriage (years)	1995	2000	2001	2002	2003	2004	2005	2006
0	0.41	.	0.28	0.31	0.38	0.37	0.36	0.30
1	1.90	2.33	2.10	2.05	2.17	2.16	1.94	2.17
2	2.49	2.88	2.89	2.74	2.83	2.81	2.63	2.79
3	2.51	3.21	3.12	3.12	3.13	3.02	2.84	2.83
4	2.34	3.00	2.97	3.04	3.02	3.00	2.88	3.03
5	2.13	2.66	2.82	3.02	2.97	3.06	2.96	3.02
6	1.99	2.44	2.75	2.62	2.83	2.87	2.63	2.88
7	1.74	2.29	2.50	2.48	2.63	2.60	2.50	2.61
8	1.66	2.14	2.38	2.27	2.24	2.50	2.29	2.31
9	1.45	1.98	2.07	2.16	2.10	2.30	2.08	2.32
10–14	1.08	1.49	1.68	1.73	1.82	1.88	1.80	1.81
15–19	0.70	0.96	1.10	1.18	1.27	1.33	1.33	1.32
20–24	0.50	0.65	0.73	0.76	0.86	0.91	0.89	0.92
25+	0.24	0.29	0.32	0.34	0.38	0.38	0.41	0.41

In 2006, the proportion of divorce proceedings that ended in the granting of a divorce increased – 88.0% of all divorce petitions were granted. In 1995 the figure was 80.3%, and in 1990 it was three percentage points lower. However, what has changed little is the proportion of divorces filed for by women, who continue to be the petitioners in two-thirds of all divorces. The percentage of repeated divorces is also basically stable – around one-fifth of men and women divorce more than once.

On the other hand, the structure of divorces by marriage duration changed, with a smaller proportion of divorces occurring within a short period since marriage: while in 1995, 27.2% of marriages ended in divorce within five years of marriage (at the start of the 1990s the figure was even higher), by 2006 the figure had decreased to 18.2%. Conversely, there was a sharp increase in the proportion of divorces that occurred among marriages of longer duration. Over the same period there was a 1.6-fold increase in the proportion of divorces occurring after 25–29 years of marriage and a 2.5-fold increase in the proportion of divorces occurring after more than 30 years of marriage.

Figure 2 Divorces by duration of marriage (%), 1995, 2005 and 2006
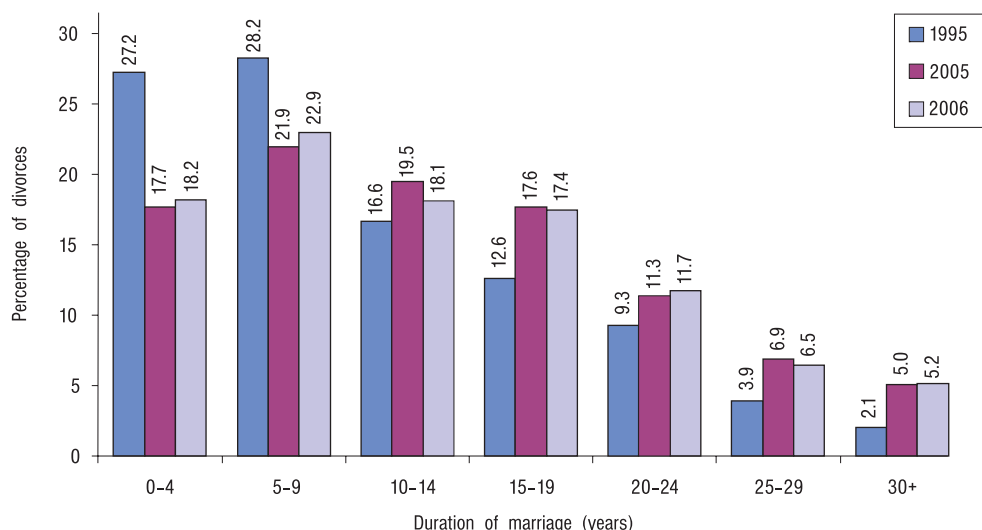
Since the second half of the 1990s the proportion of divorces among marriages with dependent children has been decreasing (60.5% in 2006, 71.0% in 1995), but this means that each year around twenty thousand marriages with children are legally dissolved (the exception was 1999, when the figure was fourteen thousand). In 2006, more than 28 000 dependent children were deprived of living in a two-parent family as a result of the divorce of their parents.

Statistics on divorce by the cited grounds for divorce are gradually losing their informative value – an increasing proportion of divorces are due to "other causes", which are today cited in one-quarter of all divorces, while in the late 1980s and early 1990s fewer than ten percent of divorces occurred on these grounds. There has also been an increase in the proportion of divorces (on the part of both men and women) that are due to "irreconcilable differences", which in 2006 was cited by 54.6% of men and 52.8% of women as the grounds for divorce. Conversely, there was a relative decrease in the proportion of divorces citing more specific reasons (ill-considered marriage, alcoholism, adultery, family neglect, cruel and inhuman

treatment, criminal conviction, health or sexual reasons), and in the proportion citing the final category of "no-fault divorce".

Natality

The natality trend in 2006 fits the context of trends in the past few years and the gradual rise in the number of births and total fertility. For two years in a row the annual number of children born has been higher than one hundred thousand, a figure last surpassed in 1994. In that year there were 106.6 thousand live births, which is 748 higher than in 2006, but 4.4 thousand higher than in 2005. Total fertility was also higher in 1994 – 1.44 children per woman of reproductive age were born, while in 2006 the figure was only 1.33 (1.28 in 2005). The average age of mothers at the time of first birth rose again in 2006 to 26.9 years, and the age of women at maximum first-order fertility intensity increased to 27–28 years. Even in the mid-1990s the highest fertility was still recorded among women aged 20–21.

Table 7 Fertility indicators, 1995–2006

Indicator	1995	2000	2001	2002	2003	2004	2005	2006
Total fertility rate	1.28	1.14	1.15	1.17	1.18	1.23	1.28	1.33
– first births	0.56	0.54	0.54	0.56	0.57	0.60	0.63	0.66
– second births	0.51	0.43	0.43	0.43	0.43	0.44	0.46	0.48
– third and upper births	0.21	0.18	0.18	0.18	0.18	0.19	0.19	0.19
Probability of having 1st child	0.56	0.54	0.54	0.56	0.57	0.60	0.63	0.66
Probability of having 2nd child	0.92	0.79	0.80	0.77	0.76	0.73	0.74	0.72
Probability of having 3nd child	0.28	0.29	0.29	0.30	0.29	0.29	0.28	0.28
Mean age of mothers	25.8	27.2	27.5	27.8	28.1	28.3	28.6	28.9
Mean age of mothers at 1st birth	23.3	24.9	25.3	25.6	25.9	26.3	26.6	26.9
Mean age of mothers at 2nd birth	26.4	28.1	28.4	28.7	29.0	29.3	29.6	29.9
Mean age of mothers at 3nd birth and higher-order birth	30.6	31.7	32.0	32.3	32.4	33.6	32.8	33.0
Premarital conception (%)	50.8	41.6	39.5	37.6	33.6	32.2	31.7	30.1
Net reproduction rate	0.61	0.55	0.55	0.56	0.57	0.59	0.62	0.64

Since 2002, when a more notable rise in fertility and natality began to be observed, there has been an increase in the fertility of all birth orders (or up to 4+), but most strikingly in the case of first-order fertility. The probability of first-order births increased most. Thus, in recent years the statistical significance of the assumption that when a woman has one child there is a relatively high chance that she will have a second has slightly decreased. In terms of increasing fertility towards a level of two children born per woman, the most significant factor is the start of reproduction among young people. The average interval between the birth of the first and second child (in the current marriage) increased slightly in the first half of the 1990s, and in the ensuing years it basically stagnated around 3.8-3.9 years. The question is whether there will be an overall shift in the age interval of reproduction among women, or whether, as a result of the effect of the postponement of the start of family life, women will already be relatively old once they reach the time to give birth to a second (or higher-order) birth and they will more often "settle" with just one child.

The trend since the late 1980s of a rising proportion of extramarital births continued in 2006. One-third of all live-born children were born to unmarried women. The number of extramarital second-order births has seen relatively the most dramatic increase since the late 1980s and early 1990s. Nevertheless, 60% of the 3.5-fold increase in the number of children born to unwed mothers in the past two decades comes from the increase in the number of first-order births. First-order births make up just under two-thirds of all extramarital births,

Table 8 Live births by legitimacy and birth order, 1995–2006

Birth order	1995	2000	2001	2002	2003	2004	2005	2006
	Live births inside marriage							
1.	35877	32209	30873	30919	29282	29615	29962	30287
2.	33606	29127	29026	28621	28262	28672	30079	30237
3.	8333	7067	7002	7125	6964	7069	7296	7573
4.+	3334	2715	2538	2662	2464	2469	2465	2475
Total	81150	71118	69439	69327	66972	67825	69802	70572
	Structure (%)							
1.	44.2	45.3	44.4	44.6	43.7	43.7	42.9	42.9
2.	41.4	41.0	41.8	41.3	42.2	42.3	43.1	42.9
3.	10.3	9.9	10.1	10.3	10.4	10.4	10.5	10.7
4.+	4.1	3.8	3.7	3.8	3.7	3.6	3.5	3.5
Total of all children	84.4	78.2	76.5	74.7	71.5	69.4	68.3	66.7
	Live births outside marriage							
1.	8645	11695	12464	13826	16081	18451	19968	21536
2.	3420	4746	5190	5826	6561	6997	7914	8801
3.	1701	2076	2242	2406	2597	2793	2975	3139
4.+	1181	1275	1380	1401	1474	1598	1552	1783
Total	14947	19792	21276	23459	26713	29839	32409	35259
	Structure (%)							
1.	57.8	59.1	58.6	58.9	60.2	61.8	61.6	61.1
2.	22.9	24.0	24.4	24.8	24.6	23.4	24.4	25.0
3.	11.4	10.5	10.5	10.3	9.7	9.4	9.2	8.9
4.+	7.9	6.4	6.5	6.0	5.5	5.4	4.8	5.1
Total of all children	15.6	21.8	23.5	25.3	28.5	30.6	31.7	33.3

Table 9 Fertility rate by age and marital status (per 1000 women) 1995, 2005 and 2006

Age	All women			Single women			Married women		
	1995	2005	2006	1995	2005	2006	1995	2005	2006
20	85.3	33.4	32.9	20.0	24.4	25.2	280.7	295.6	285.6
21	102.3	39.8	39.3	22.5	26.0	27.5	230.7	242.0	241.2
22	109.4	47.1	44.0	23.2	28.1	27.0	196.3	212.1	209.9
23	110.7	54.5	53.1	25.6	28.7	29.7	169.6	194.1	198.4
24	107.4	66.8	63.5	24.9	30.1	31.4	148.7	192.4	190.4
25	102.5	82.4	79.8	29.2	34.5	34.4	130.0	190.9	196.8
26	94.6	95.4	92.4	33.2	38.6	39.8	113.2	186.5	187.1
27	79.5	104.9	103.9	33.1	45.8	47.1	92.1	173.9	180.4
28	70.8	109.6	111.5	31.4	49.5	53.5	80.1	161.7	170.0
29	59.0	109.7	114.8	31.0	58.3	58.6	65.1	145.0	158.5
30	49.9	96.8	106.1	30.3	60.6	65.7	53.9	118.2	132.7
31	40.6	84.3	92.9	28.1	56.5	64.7	42.9	99.7	109.1
32	33.3	69.3	75.1	21.1	53.2	57.4	35.1	77.4	85.7
33	26.8	55.5	63.9	24.0	47.4	54.2	27.3	59.8	70.3
34	22.8	45.9	51.5	24.8	45.8	53.0	23.1	47.3	53.4
35	17.5	37.2	41.8	12.3	38.3	46.8	17.8	37.3	41.7
36	13.8	28.8	32.2	14.7	37.2	33.0	13.7	27.6	32.5
37	10.8	21.4	22.7	9.7	26.6	29.4	10.6	20.7	21.2
38	7.2	15.5	18.3	6.8	21.5	26.7	7.0	13.9	16.5
39	5.5	10.6	12.8	6.0	14.2	19.9	5.1	9.3	11.3

while in the case of married women the ratio of first-order to second-order children is much more balanced and in the past four years the difference was never more than five percent. Thus, among married women, the above-mentioned assumption that if a woman has one child she will also have another is true.

The fertility rate among married women reached a low in the mid-1990s, rising again in the following years, most significantly among 30–40 year-olds, while the fertility rate among the youngest age groups of married women decreased. The fertility rates of single and divorced women have been rising since the end of the 1990s, especially among women over the age of 30.

Even though the number of foreign nationals residing in the Czech Republic has gradually been rising, the number of children with foreign citizenship born in the country is not large, even though it has increased slightly. Overall relatively few foreign nationals in the Czech Republic start a family. In 2006 the number of children with foreign citizenship born in the country made up only 1.6% of all live births. Most of these children were Vietnamese (unlike most other groups of foreign nationals Vietnamese nationals tend to reside in the Czech Republic long term or permanently), followed by children of Ukrainian nationality and Slovak nationality.

Abortion rate

The uneven trend in the abortion rate by type of abortion has changed the structure of total abortion rate. While the number and intensity of induced abortions has been decreasing constantly since the end of the 1980s, the number of miscarriages and the rate of miscarriage stagnated from the mid-1990s and in the past three years has even been slightly rising. In 2006, a total of 40.0 thousand abortions were recorded, of which 25.4 thousand were induced abortions, 13.3 thousand were miscarriages, and 1.3 thousand were extrauterine pregnancies (there were three other abortions). Induced abortions thus made up 63.4% of all abortions, while in 1994 the figure was 80.4% (and in the late 1980s and early 1990s it was as high as 88.3%). In 2006 miscarriages accounted for a full one-third of the total number of abortions, and three percent were terminated extrauterine pregnancies.

In 2006, 17.4% of all pregnancies ended in abortion, while in 1995 the figure was almost twice that – 31.4%. The share of miscarriages out of all terminated pregnancies increased: in 1995, 6.7% of registered pregnancies ended in a miscarriage, while in 2006 the figure was 9.1%. Currently less than one-third of all pregnancies end in abortion, compared to almost forty percent in the mid-1990s.

The significant decrease in the rate of induced abortion, which tends to be related to the spread of modern birth control methods (according to data from UZIS, in 2005, 51% of wom-

Table 10 Pregnancies by type of termination (%), 1995–2006

Pregnancies by type of termination	1995	2000	2001	2002	2003	2004	2005	2006
Spontaneous abortion	6.7	8.2	8.2	8.2	8.6	8.9	8.6	9.1
Induced abortion	31.4	25.0	23.9	22.8	21.5	19.8	18.6	17.4
Other abortion	0.9	1.0	1.0	1.0	1.0	1.0	0.9	0.9
Live birth	60.8	65.6	66.7	67.8	68.7	70.1	71.7	72.4
Stillbirth	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Table 11 Abortion rate by type of abortion, 1995–2006

Indicator	1995	2000	2001	2002	2003	2004	2005	2006
Abortion rate	0.84	0.63	0.60	0.58	0.56	0.55	0.53	0.53
Total induced abortion rate	0.68	0.47	0.44	0.42	0.39	0.37	0.35	0.34
Total spontaneous abortion rate	0.14	0.15	0.14	0.15	0.15	0.16	0.16	0.17

en of reproductive age were using prescription birth control), signified a decrease in the average number of abortions per woman to 0.34 (in 2006). The average number of all types of abortion per woman is 0.53. The sharp fall in the intensity of induced abortion occurred across the age structure, but most of all among women between 20 and 30 years of age. The effect of the uneven decrease in the intensity of induced abortion in individual age groups combined with the postponement of the age of pregnancy to a later age shifted the highest induced abortion rate into the 29–35 age group. In the first half of the 1990s the average was five years younger.

The most induced abortions are still recorded among married women (43.6% in 2006), but they account for a smaller proportion of abortions (64.0% in 1995, down from 74.1% in 1990). This is not just owing to the effect of the decrease in the proportion of married women in the population, but is also the result of the sharp decrease in the induced abortion rate among married women (compared to women of other marital statuses). The induced abortion rates of married and single women have become almost even. In 2006 single women aged 28 and under had a lower abortion rate, while the biggest difference was among the youngest age group of women – up to the age of around 22. In other age units married and single women were essentially even or single women had a slightly higher abortion intensity than married women (in selected age units after the age of 30). However, the highest abortion rate was found among divorced women, though even among this group of women there was a significant decrease since the late 1980s and early 1990s (roughly equal to the decrease among women who had never been married). However, today divorced women account for only 13.1% of all induced abortions.

Table 12 Induced abortion rate by age and marital status (per 1000 women), 1995, 2005 and 2006

Age	All women			Single women			Married women		
	1995	2005	2006	1995	2005	2006	1995	2005	2006
15	3.0	3.4	3.1	3.0	3.4	3.1	.	.	.
16	6.9	5.2	4.9	6.8	5.1	4.9	x	x	x
17	12.0	7.6	7.2	11.7	7.4	7.1	x	x	x
18	16.9	10.2	9.7	16.3	9.9	9.4	x	x	x
19	21.9	11.6	11.3	20.2	11.2	11.1	33.1	33.1	26.8
20	25.6	12.8	13.1	23.1	12.4	12.6	32.3	24.6	25.6
21	28.0	14.3	13.9	24.5	13.4	13.0	32.4	23.8	28.3
22	28.7	14.8	13.3	24.1	13.8	12.0	31.3	21.4	22.8
23	30.8	14.3	14.0	25.4	13.3	12.9	32.4	18.7	17.6
24	32.3	14.9	14.0	26.7	13.2	12.9	33.5	18.9	16.3
25	33.7	14.4	13.1	27.1	12.9	11.6	33.8	15.8	14.5
26	34.8	14.2	13.8	28.4	12.9	11.9	34.0	14.6	15.1
27	32.9	14.7	13.3	23.9	13.4	12.5	32.7	14.4	12.9
28	33.3	14.5	13.9	27.8	12.9	12.9	32.7	14.1	13.4
29	32.9	14.6	14.2	25.9	13.3	13.7	32.0	13.7	13.3
30	32.8	16.0	14.1	24.0	15.7	12.6	32.0	14.8	13.3
31	31.5	15.6	14.7	23.5	14.3	14.5	30.5	14.7	13.6
32	30.6	16.6	15.2	19.8	16.2	15.0	29.9	15.2	13.8
33	29.1	14.4	14.9	21.7	14.5	15.1	27.8	13.3	13.3
34	26.8	16.2	14.2	21.0	14.8	13.5	25.7	15.0	13.2
35	24.8	15.8	14.6	19.7	14.7	13.0	24.2	14.3	14.1
36	23.0	13.7	14.0	16.9	11.8	12.4	22.7	13.0	12.4
37	21.2	12.5	13.0	14.1	11.4	15.1	21.3	11.2	11.8
38	19.1	11.5	11.0	13.1	8.1	11.5	18.9	10.6	10.1
39	16.1	10.2	10.1	11.3	10.2	9.7	15.6	9.3	9.1

In 2006, 41.5% of all induced abortions were repeat abortions. The relative proportion thus remained the same as in 2005. However, this was a decrease compared to previous years. First induced abortions are most common among women of every marital status: in 2006 more than 70% of abortions among single women were first abortions, and around one-half the abortions among married and widowed women were first abortions, while a little over one-third of abortions among divorced women were first abortions. From the perspective of how many children a woman has already given birth to before an abortion, the largest number of abortions is still recorded among women with two or more children (34.5% in 2006). However, the proportion of abortions among childless women has increased (27.4%). The proportion of abortions among women with one child has remained stable for several years at around 25%. Induced abortions among women with two or more children are most often among married women. While more single women (57.8%) deal with their first pregnancy by having an induced abortion, among married women very few first pregnancies end in an induced abortion (5.8% in 2006). The pattern of the most frequent induced abortions occurring among women with two or more children is also typical of divorced women. In their case, abortions are also more common among women with one child.

Out of all induced abortions in 2006, 6.9% were among foreign nationals, and although the number and percentage of induced abortions among foreign women grew during the 1990s and at the start of the new millennium, the figures have not grown since 2004. On the contrary, in the past three years there has even been a slight decrease.

Mortality

The trend in the mortality rate in 2006 has been favourable: life expectancy at birth of men and women increased by almost six-tenths of a year. A similarly large increase in the life expectancy of men and women last occurred between 1997 and 1998, and an increase of more than half a year was also recorded in 2004. The most recent increase among men stemmed mainly from the decreased mortality rate of men over the age of 55 and women over the age of 65. The difference between the life expectancy at birth of women and men in 2006 was 6.2 years, the same as the year before that, and seven-tenths of a year less than in 1995.

From the perspective of causes of death, the increase in life expectancy at birth in 2006 was again primarily the result of the decrease in the rate of death from cardiovascular diseases. But there was also an improvement in the death rates from the other most frequent causes of death. A more detailed breakdown of mortality by causes of death in 2006 showed a decrease in the death rate from myocardial infarction, especially among men, and among both men and

Table 13 Mortality indicators, 1995–2006

Indicator	1995	2000	2001	2002	2003	2004	2005	2006
Live expectancy at age of men – 0	69.7	71.6	72.1	72.1	72.0	72.5	72.9	73.4
– 45	27.6	28.9	29.3	29.3	29.2	29.6	29.9	30.4
– 65	12.7	13.7	13.9	13.9	13.8	14.2	14.4	14.8
– 80	5.7	6.1	6.2	6.0	5.9	6.1	6.1	6.4
Live expectancy at age of women – 0	76.6	78.3	78.4	78.5	78.5	79.0	79.1	79.7
– 45	33.3	34.6	34.6	34.8	34.7	35.2	35.2	35.7
– 65	16.0	17.1	17.1	17.2	17.1	17.5	17.6	18.0
– 80	6.6	7.1	7.0	6.9	6.9	7.1	7.1	7.4
Difference women – men (at birth)	6.9	6.7	6.3	6.5	6.5	6.5	6.2	6.2
Infant mortality rate	7.7	4.1	4.0	4.1	3.9	3.7	3.4	3.3
Neonatal mortality rate	4.9	2.5	2.3	2.7	2.4	2.3	2.0	2.3
Perinatal mortality rate	6.3	4.5	4.3	4.5	4.3	4.0	3.9	4.2

Note: Perinatal mortality rate = stillbirths and deaths at age 0–6 days inclusive per 1000 live births.

women there was decrease in the intensity of mortality from cerebrovascular diseases. Among men the positive trend in the rate of death from malignant neoplasm of trachea, bronchus and lung, while among women the opposite, rising trend continued (the intensity of death from these types of neoplasms has increased since the start of the 1990s by more than 45%). The rate of mortality from the most common types of neoplasms among women – malignant neoplasm of breast and genital organs – remained essentially at the same level as in 2005, after a long trend of a slight continuing decrease. With regard to the well above-average mortality rate from malignant colorectal neoplasms in the Czech Republic, the trend in recent years may suggest the possibility of a decrease. However, more time is needed to confirm this trend. But a decrease in the mortality rate from this cause cannot be ruled out entirely, as the public has been targeted with an information campaign about this disease and preventive screenings to check for the presence of blood in the stools are carried out every two years on citizens over the age of 50 in an effort to detect the early stages of neoplasm in time and thus increase the possibility of successfully treating the disease. In the case of external causes of death, in 2006 there was a significant decrease in the rate of death from transport accidents (by 11% among men and 13% among women), probably in connection with the introduction of a demerit point system for drivers. There was also an inter-year decrease in the mortality rate from suicide.

Table 14 Contributions of selected groups of causes of death to the difference between life expectancies at birth

Causes of death	2006 – 1995		2006 – 2005		Difference women–men		
	Men	Women	Men	Women	1995	2005	2006
Neoplasms	0.74	0.48	0.09	0.03	1.67	1.59	1.57
Diseases of the circulatory system	2.16	1.83	0.24	0.31	2.92	2.20	2.25
Myocardial infarction	1.04	0.48	0.08	–0.11	1.15	0.59	0.43
Other chronic ischemic heart disease	0.31	0.43	0.00	0.22	0.75	0.67	0.87
Cerebrovascular diseases	0.55	0.56	0.07	0.07	0.47	0.33	0.32
Other diseases of the circulatory system	0.25	0.35	0.09	0.13	0.55	0.62	0.64
Diseases of the respiratory system	0.06	0.05	0.06	0.05	0.32	0.38	0.37
Diseases of the digestive system	0.07	0.03	0.03	0.02	0.41	0.42	0.42
Injury and poisoning	0.56	0.32	0.12	0.08	1.38	1.21	1.18
Other causes	0.12	0.24	0.03	0.06	0.25	0.39	0.43
Total	3.71	2.95	0.56	0.55	6.96	6.19	6.22

In 2006, 352 children died within their first year of life, 246 of them within the first 28 days since birth. The number of infants that died was very slightly higher in 2006 than in 2005, but owing to the higher number of children born the infant mortality rate was lower – 3.3 compared to 3.4 in 2005. On the other hand, the intensity of neonatal mortality was higher (2.3 compared to 2.0). However, fluctuations are natural in the case of such low figures.

The number of deaths of foreign nationals with some type of residence permit in the Czech Republic is very low. However, foreign nationals in the Czech Republic have a different – younger – age structure. Less than one-half of a percentage point of all deaths are among foreigners.

International migration

In 2006 net international migration was 34.7 thousand, the second largest figure since the Czech Republic was established in 1993. The difference between the number of immigrants and emigrants was larger only in 2005 by 1.5 thousand. However, the volume of migration was larger in 2006. The increase in the population due to immigration was again primarily the result of the immigration of Ukrainians, Slovaks and Vietnamese. The number of people with

Ukrainian citizenship in the Czech Republic has increased the most – the number of Ukrainians increased each year since 2003 by more than ten thousand people. The Czech Republic has had long-term positive net migration with Slovakia, the exceptions being the years 2001–2002 and 2004, years when demographic statistics were already extended to include foreign nationals with one of the types of long-term residence status. Positive net migration is also observed among Vietnamese citizens (including 2001, when overall negative net migration was recorded), although the level is much lower than in the case of Ukrainians. For example, in 2006 the net migration of Vietnamese was 3.2-fold lower than the net migration of Ukrainians. The Czech Republic has positive net migration (since 2002) also, for example, with the Russian Federation, Germany, Poland, Moldova, Mongolia, and the United States.

Table 15 Net migration by citizenship (10 highes in given year), 1995, 2005 and 2006

1995		2005		2006	
Citizenship	Net migration	Citizenship	Net migration	Citizenship	Net migration
Czech Republic	4180	Ukraine	12483	Ukraine	12993
Slovakia	2513	Slovakia	8161	Slovakia	6152
Ukraine	650	Vietnam	3489	Vietnam	4083
Vietnam	359	Russia	1994	Russia	2214
Germany	281	Germany	1332	Moldova	1143
Russia	274	Poland	1119	Mongolia	1075
USA	196	Moldova	891	Poland	853
Romania	118	Mongolia	654	China	777
Jugoslavia	97	USA	628	Germany	734
Bulgaria	85	Belarus	426	USA	542
Others	1246	Others	5052	Others	4154
Total	9999	Total	36229	Total	34720

The difference between the number of immigrant and emigrant Czech citizens has shown an unstable trend in recent years: in 2000–2001 and 2003–2004 more Czech citizens immigrated than emigrated, in 2002 and 2005–2006 it was the other way around. However, the number of Czech emigrants is probably underestimated.

Internal migration

In 2006, 225.2 thousand changes of address were registered, which was 11.6 thousand more than the year before. A total of 44.5% of the mobility occurred between municipalities within the same district, 19.4% between districts within the same region, and 36.1% was between regions.

Typical for large cities are migration flows in and out of town occurring largely within the (greater) area of the cities. For example, out of 18.9 thousand people who moved out of the City of Prague in 2006, 7.1 thousand moved to neighbouring districts of Prague-West (3.8 thousand) and Prague-East (3.3 thousand). Conversely, 18.5 thousand people migrated into Prague (though more than one-third of them were foreign nationals), and most of these migrants were from the Central Bohemia Region (6.2 thousand). A total of 6.7 thousand moved out of Brno, mainly to the suburban district Brno-Rural (39.1% of all migrants) and 4.5 thousand people moved into the city, of which 1.2 thousand (26.9% of all migrants) from the district of Brno-Rural.

The total volume of internal migration includes the registered changes of address of foreign nationals. Over time their share of the total volume of internal migration has been growing, and somewhat more rapidly than the actual number of foreign nationals residing in the Czech Republic. The share of internal migration of foreign nationals out of the total volume of in-

ternal migration in 2006 has already surpassed ten percent (up from 8.4% in 2005); this entailed 23.0 thousand changes of address of foreign nationals. The majority of the total number of foreign nationals migrating within the Czech Republic are Ukrainian citizens (56.2% in 2006), followed by Vietnamese citizens (14.7%), Slovak citizens (6.0%), Moldovans (4.9%), and Russians (4.4%). However, when the number of migrating citizens by nationality (taking into account only the largest groups of foreign nationals residing in the country) is related to the total number of people of the given nationality residing in the Czech Republic, the highest mobility in 2006 was observed among Mongolian and Moldovan citizens (respectively 190 and 180 per thousand of each nationality moved in 2006), and only then Ukrainians (126 people per thousand).

The current demographic situation in the Czech Republic compared to other EU countries

Owing to the deep decline in fertility, the Czech Republic is today one of the countries in Europe with the lowest proportion of children in the population. In the Czech Republic, like in another thirteen EU countries, since 2006 the number of people over the age of 65 has been

Table 16 Basic demographic indicators of EU states, latest available data

Country	Proportion of children aged 0–14 years in population	Proportion of persons aged 65+ in population	Index of ageing	Mean age of women at first marriage	Proportion of marriages terminated in divorce (%)	Total fertility rate	Mean age of women at the birth of the first child	Proportion of births out of wedlock (%)	Life expectancy at birth – men	Life expectancy at birth – women	Infant mortality rate (‰)
	1. 1. 2006	1. 1. 2006	1. 1. 2006	2003	2003	2005	2003	2005	2005	2005	2005
Belgium	17.2	17.2	100	27.1	56.1	1.72	.	26.9	76.7	82.4	4.4
Bulgaria	13.6	17.2	127	24.9	25.8	1.31	24.2	49.0	69.0	76.3	10.4
Czech Republic	14.6	14.2	97	25.6	47.9	1.28	25.9	31.7	72.9	79.1	3.4
Denmark	18.7	15.2	81	30.1	47.3	1.80	.	45.7	75.6	80.2	4.4
Estonia	15.1	16.7	111	25.5	47.6	1.50	24.6	58.5	67.3	78.1	5.4
Finland	17.3	16.0	93	28.8	50.1	1.80	27.9	40.4	75.5	82.3	3.0
France	18.4	16.4	89	28.2	42.9	1.92	.	48.4	76.8	83.8	3.9
Ireland	20.5	11.1	54	.	.	1.88	28.3	32.0	77.1	81.8	4.0
Italy	14.1	19.5	138	.	13.0	1.34	.	17.3	77.6	83.2	4.7
Cyprus	18.4	12.0	65	27.3	22.4	1.42	26.9	4.4	77.0	81.7	4.6
Lithuania	16.5	15.3	93	24.4	42.2	1.27	24.5	28.4	65.4	77.4	6.8
Latvia	14.3	16.8	117	24.8	31.8	1.31	24.6	44.6	65.6	77.4	7.8
Luxembourg	18.6	14.4	77	27.9	47.7	1.70	28.7	27.2	76.2	82.3	2.6
Hungary	15.4	15.8	102	25.8	41.7	1.32	25.9	35.0	68.6	76.9	6.2
Malta	17.1	13.4	79	26.5	x	1.37	.	20.0	77.7	81.4	6.0
Germany	14.1	19.3	136	28.1	.	1.34	28.8	29.2	76.2	81.8	3.9
Netherlands	18.3	14.3	78	28.4	35.5	1.73	28.8	34.8	77.2	81.6	4.9
Poland	16.2	13.3	82	24.7	18.4	1.24	25.3	18.5	70.8	79.4	6.4
Portugal	15.6	17.1	110	26.1	32.1	1.40	27.1	30.7	74.9	81.4	3.5
Austria	15.9	16.5	104	27.7	44.6	1.41	26.9	36.5	76.7	82.2	4.2
Romania	15.5	14.8	95	24.1	21.1	1.32	24.2	28.6	68.2	75.4	15.0
Greece	14.3	18.5	129	27.3	.	1.28	27.9	5.10	76.6	81.5	3.8
Slovakia	16.6	11.7	71	25.0	32.3	1.25	25.0	26.0	70.1	77.9	7.2
Slovenia	14.1	15.6	110	27.5	25.0	1.26	27.2	46.7	74.1	81.3	4.1
United Kingdom	17.8	16.0	90	.	.	1.80	29.3	42.9	76.9	81.1	5.1
Spain	14.5	16.7	115	28.3	.	1.34	29.2	26.8	77.4	83.9	4.1
Sweden	17.3	17.3	100	30.5	54.0	1.77	28.5	55.5	78.4	82.8	2.4

Note: Wherever data were not available for the given year data from the previous year were used.
Source: Eurostat.

greater (albeit just slightly) than the number of children under the age of 15 (for greater comparability Table 16 presents data from 2005 for the Czech Republic). According to the index of ageing the Czech Republic currently ranks directly in the middle of EU countries.

Differences in nuptiality are relatively substantial, especially with regard to the average age at the time of first marriage. Given the ongoing changes in demographic behaviour among the Czech population, as a result of which people are postponing marriage to a later age, and even interest in formal unions is waning, the Czech Republic is currently one of the countries with the lowest intensity of marriage among men and women. However, the populations of the Czech Republic and other countries of Eastern and Central Europe still marry at a younger age than in the rest of Europe, by 2–4 years.

Differences in legislation on the conditions for granting divorce must be taken into account in an international comparison of divorce rates (for example, in Malta divorce is not even permitted). Public attitudes towards divorce as a solution to marital problems also certainly vary between individual countries. The gradual rise in the intensity of divorce, which has somewhat gained in strength since the 1990s, has ranked the Czech Republic among EU countries with the highest divorce intensity.

Despite the slight rise in the fertility rate of Czech women in recent years, the country still has one of the lowest rates in Europe. But almost all the countries of eastern and central Europe are experiencing low fertility. Countries of southern Europe also have very below-average fertility: Greece, Italy, Spain. Even though women living in the Czech Republic quickly began to postpone starting a family to a later age, they still begin their reproductive life around 2–3 years earlier than women in western, southern, and northern Europe. Significant differences are found between countries also in terms of the proportion of extramarital births. The rapid rise in this indicator since the 1990s in the Czech Republic has put the country in the middle of this imaginary scale of countries.

Even with the significant improvements in mortality that began back at the start of the 1980s, the Czech Republic is still lagging behind other advanced western European countries in terms of mortality rates. Mortality has of course also been improving constantly in these countries. The differences are thus still considerable. Czech women and men have a life expectancy at birth around 3–5 years lower than women and men living in countries with the lowest mortality, and the difference is most pronounced among men. On the other hand, the Czech Republic currently has one of the lowest infant mortality rates, though at the start of the 1990s it was among the countries with a higher rate.

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CHANGES IN THE NATURE OF NON-MARITAL FERTILITY IN THE CZECH LANDS SINCE THE 18TH CENTURY[*]

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Abstract: The increase in the percentage of children born to unwed parents is one of the more significant changes that have occurred in the reproductive behaviour of the population of the Czech Republic since 1989. However, the increase is primarily a consequence of the substantial decrease in the marital fertility rate, and not a rise in the fertility rate of unmarried women.

Keywords: fertility, extra-marital fertility, historical demography, Czech Republic

The issue of non-marital fertility can be approached from various perspectives. It can be viewed either as a particular social phenomenon, and thus mainly from the perspective of society's attitude towards non-marital intercourse and related attitudes towards single mothers and their children (cf. *Tinková*, 2004), or as a phenomenon connected with a particular aspect of demographic behaviour that influences the overall fertility rate (*Horská*, 1980; *Pavlík, Rychtaříková and Šubrtová*,1986)[1]. The latter approach is considerably easier because, owing to the traditionally negative attitude of the Catholic Church in particular towards extramarital children, it is possible to trace extramarital as well as marital fertility essentially from the time records of christenings began to be kept up to modern times. The negative view of the Church and the public towards unmarried mothers and their children in general is likely why in the past the majority of extramarital children born were unwanted children. Nonetheless, there always existed a number of extramarital children that unmarried mothers brought into the world deliberately. Such would have been the case of children born to couples who for various reasons never married but lived together in the same household, and children born to couples who intended to marry, had intercourse, and married after the birth of the child or children.

Since the emergence of *Pavla Horská's* summary study (1980) on the subject, extramarital fertility in the 19th and early 20th centuries is not a subject that has received much more attention in the Czech Republic, but certain factors had to be taken into account in the analysis of the overall fertility rate, both in the period of the old demographic regime (*Dokoupil et al.*, 1999) and during the demographic revolution (*Fialová*, 1990). Demographic research based on aggregate data cannot distinguish the real background to the birth of individual children, but it can trace some aspects. From the percentage of extramarital births it is possible to deduce whether the extramarital fertility rate is a marginal phenomenon, so the children are probably unwanted, or whether conversely the percentage of extramarital births indicates that

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[1] An interesting topic in itself would be the genesis of the change in how this phenomenon is referred to, from "non-marital" to "extramarital" fertility.

these were children born to parents in an informal relationship, who for various reasons never made the effort to legalise their union. An in-depth micro-survey undertaken by *Alice Velková* (2002) in the parish of Šťáhlavy and some recent sociological studies (*Chaloupková*, 2006), for example, indicate that a key factor in the intensity of extramarital fertility is the social and cultural environment.

The study of extramarital fertility is an example of how researchers begin to take a greater interest in a certain issue the moment its intensity changes, or specifically, when the change in intensity signifies a change in behaviour. This is particularly apparent in this case. Researchers began to take a deeper interest in the structure of births by marital status of the mother along with other related phenomena in the late 1970s and early 1980s. This was a time when in many countries in Western Europe the percentage of extramarital births began to rise. Historical demographers tried to find certain parallels to this in the past, as they were interested in observing differences or similarities connected with this phenomenon, which had ceased to be a marginal issue. When the first large international study on this issue came out (*Laslett, Oesterveen and Smith*, 1980), the percentage of extramarital births in the Czech Republic had slightly increased from the past, but it was still less than 6%. That characteristic feature of the Czech situation at the time was one of the reasons why *Pavla Horská's* paper (1980) long remained the only such work on the topic. And even though an analysis of extramarital fertility was a standard part of most studies of population development or fertility trends in the Czech lands in the past, it was not usually an accented part of research (*Fialová*, 1981; *Fialová, Pavlík and Vereš*, 1990; *Dějiny,* 1995). The approach taken by sociologists was the same.

It was only when reproductive behaviour began to change at the start of the 1990s that the fertility of unmarried women became a more common research theme, both among demographers and sociologists. Almost every analysis of fertility or family behaviour now touches on the topic. But unlike before more space is now devoted to the topic and an effort is made to understand the phenomenon and to situate it within a wider context (*Rychtaříková*, 2003; *Šalamounová and Nývlt*, 2006).

In this article I will try to point out the similarities and differences in the character of extramarital fertility in the long-term perspective, as there is now already a relatively rich collection of data on the topic providing general information on the rate of extramarital fertility over a relatively long period. In her work, *Pavla Horská* (1980: 346) identified three stages in the development of extramarital fertility: the early modern period (roughly from the start of parish records on natural population growth to the first third of the 19th century), when around 5% of children born were extramarital; from the start of the second third of the 19th century to the end of the first half of the 20th century, when the figure was around 12% to 15%; after 1950, when the figure decreased to around 5%. Obviously, *Pavla Horská* could not yet have dealt with the fourth stage, which only began after 1990 and continues to date. In this most recent period the percentage of extramarital births has grown continuously (surpassing 33% in 2006).

Sources and research methods

Demographers analysing family behaviour are interested in how widespread a given phenomenon is among the population, its intensity, timing, and differentiation, and any regional variations. This is no different in the case of extramarital fertility. They usually observe the percentage of children born to unmarried women and the age structure and other characteristics of the mothers of these children. Usually only simple indicators that are available for a longer time period and are comparable are necessary to analyse long-term trends. For this reason I limit myself just to observing the percentage of extramarital births and for more recent periods to the age structure of the mothers of these children, or the age-specific fertility rate of unmarried women.

Demographic statistics provide data on the rate of extramarital fertility on the territory of the Czech Republic today since the year 1787[2]. The fertility rate of unmarried women by age can be observed for the period between 1900 and 1970 mainly the census years and then also annually[3].

The quality and the informative value of indicators vary, but they do reveal the changes in attitudes towards extramarital fertility among a part of the population and indicate the internal differentiation of these differences.

The low rate of extramarital fertility (the period up to 1810)

The vast majority of extramarital children born in the early modern period can be deemed to have been unwanted children, who were usually born to single mothers, often housemaids. The data suggest that the birth of a child out of wedlock was not an exceptional event, but nor was it a particularly common one.

It can be deduced from a deeper analysis of data mainly from before the mid-18th century (Tab. 1) that illegitimate births were under-registered. In order to highlight the illegitimate status of these children they were not supposed to be recorded in the same register as children born in wedlock. Sometimes the parish registrar did not heed this recommendation, and all children were registered chronologically, regardless of their legitimacy. More often two registers were maintained, but it was not always that both of them survived. The fact that until 1770 registration was done at a fee may also have resulted in the under-registration of extramarital children, whose mothers often came from the poorer social strata. The low number of extramarital births registered in some parishes would suggest such a conclusion. For example, in the parish of Broumov in 1725–1742, out of 3498 christenings recorded in the register, only one related to an extramarital child; in Domažlice in 1760–1769, out of 1267 christenings there were none. Both *Eliška Čáňová* (1981) and *Petr Mužík* (1984), who studied the data on these localities, explain the low numbers by under-registration.

But even in cases where it is possible to work with more complete or even complete data the number of extramarital births is not usually high, especially in rural areas. For example, in the small parish of a church in Poruba (today in the district of Karviná) only rarely were there were more than four extramarital births a year (which was between 2% and 5% of the total number of children born), and the percentage was the same in the large district of Smečno (11 villages), where the number of extramarital births annually was rarely more than 10. It can generally be said that in the countryside the percentage of extramarital births was constant and low over the long term, usually less than 4%. However, the extramarital fertility rate grew in periods of unrest, especially during wars. This can be shown in data from the parish of Dobrovice (Mladá Boleslav district), where the percentage of extramarital births grew in the 1740s – during the War of the Austrian Succession, when the Czech lands were the site of military conflict – from just over 2% to 5%, and then in the following decade – during the Seven Years War – to 7% (*Dokoupil et al.*, 1999: 49).

A somewhat different picture is provided by data from urban parishes, where the percentage of children born to unmarried mothers was usually higher, though the difference was not too great, especially in smaller towns[4]. It can be judged from the available data that until the

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[2] Demographic statistical data can be used to determine the percentage of children born out of wedlock in the Czech lands in 1787 and 1792 and after that from the years 1806 onward (though up to 1822 either only for Bohemia or Moravia or Silesia). The data used in the study for the period before 1918 are drawn either from parish registers or from *V. Sekera's* books (1978, 1979).

[3] The calculation is dependent on the availability of data on the structure of women by age and marital status. Such data were contained only in manuscripts or in the internal documentation of the statistics bureau; starting in 1986 such data have been published in *Pohyb obyvatelstva* (*Population Change* – since 2005 *Demographic Yearbook*).

[4] Most towns in Bohemia and Moravia were not large enough to form a separate parish, and most of the parishes that had their base in a particular town also encompassed surrounding rural settlements. From the available data it is not possible to distinguish between children born to parents living in the town and those whose parents lived in rural villages within the town parish.

Table 1 Percentage of children registered at christening as born out of wedlock – selected parishes between the17th and 19th centuries

a) Rural district parishes						
Period	Králíky[1]	Smečno[1]	Poruba[1]	Kralice na Hané[1]	Vracov[2]	Lochenice[3]	Žitenice[4]
1601–1650	–	–	–	–	–	–	–
1651–1700	–	–	–	2.1	0.5	–	–
1701–1750	–	4.2	4.5	3.7	1.5	–	–
1751–1800	2.8	4.2	1.9	4.2	3.2	1.5	–
1801–1850	4.1	–	7.7	–	7.0	9.2	18.5
1851–1900	–	–	–	–	–	7.9	17.8
b) Urban district parishes						
Period	Broumov[1]	Domažlice[5]	Plzeň[1]	Budyně nad Ohří[1]	Litoměřice[6]	Ústí nad Labem[7]	Praha[8]
1601–1650	0.4	0.1	–	–	–	1.3	2.0
1651–1700	0.5	1.0	–	–	–	0.9	5.8
1701–1750	0.4	0.4	–	4.8	2.7	2.0	13.5
1751–1800	0.4	2.1	9.8	5.0	7.8	3.8	18.8
1801–1850	–	4.2	–	9.7	–	15.9	–
1851–1900	–	–	–	–	–	17.9	–

Note:
[1] Dlouhodobé populační trendy na území ČSR, předstatistické období (Long-term population trends in the Czechoslovak Republic, pre-statistical period). Praha: Acta demographica IV, 1981.
[2] Nesládková, 2003: 156.
[3] Kalousková, 2006: 98.
[4] Vaňková, 2006: 164.
[5] Mužík, 1986: 147 (1630–1830 period).
[6] Rukopisné tabulky (Manuscript tables), excerpted by L. Dušek (1700–1799 period).
[7] Dušková, 2000: 133 (1800–1850 period).
[8] Souhrn dat pro vybrané farní obvody (Summary data for selected parishes), (Fialová, 2006).

end of the 1750s even in towns the number of extramarital births was below 5%, and after that the number doubled relatively quickly (e.g. in Litoměřice and probably also in Pilsen).

An exception to this pattern was Prague, where the number of children born to unmarried mothers was much higher[5]. Even in the second half of the 17th century the number of extramarital births exceeded 5%. In the first half of the 18th century the number grew to 14% and in the second half of the century to 19%. To an increasing degree the rise in numbers was influenced by the existence of hospital for abandoned infants[6]. A certain number of mothers of these children would have been women who came to Prague from rural areas in order to conceal their predicament; this can also be judged from the fact that in the records of Prague birth registers, alongside the names of such mothers there is a note like "mother-newcomer". But in the city there were also larger strata of society for whom marrying was difficult (the urban poor, domestic servants).

The increasing percentage of extramarital children in the 18th century can be linked to a softening of the state's attitude towards such children – or to an "improvement" in the conditions faced by unmarried mothers and the option of being able to place an unwanted child in the special Provincial Maternity Hospital (with a foundling ward or *nalezinec*), cf. *Tinková*, 2003). National data from the very end of the 18th century and the start of the 19th century corresponds with these findings. In 1787 and 1792 the percentage of extramarital births in the Czech Lands was 4% and in 1806 it was 5%. In Bohemia the number of extramarital

[5] Information on the extramarital fertility rate in Prague is based on a sample that encompassed one-half of children recorded in birth registers in Prague in the second half of the 17th century and two-thirds to three-quarters in the 18th century (*Fialová*, 2006).
[6] However a foundlings hospital (*nalezinec*) is an altogether distinct category, as such children could be born in wedlock as well as out of wedlock.

births at this time was around 0.05–1.5 of a percentage point higher than in Moravia and Silesia.

The increase in extramarital fertility between 1810 and 1937 by nationality

The percentage of children born to unmarried mothers on average in the Czech Lands began to rise in the second decade of the 19th century and in 1817 it for the first time surpassed the level of 10% and remained above this level until 1937[7]. The totals for all the *země* or provinces in the Czech Lands – Bohemia, Moravia, and Silesia – show that the numbers of extramarital births increased especially in the years between 1810 and 1842, when the figure was greater than 15%. There ensued a period in which the rate did not increase, and on the contrary the figures tended to be lower. The maximum rate (16.3%) was recorded in 1865–1866. After 1870 the rate never usually exceeded 13%. Even in these years a difference between the provinces persisted – in Bohemia relatively more children were born to unwed mothers than in Moravia and Silesia: until 1870 approximately 1–2 percentage points more, after 1868 3–4 percentage points more. In the 20th century the difference decreased to previous levels.

Figure 1 Percentage of live-born extramarital children out of wedlock in the Czech Lands 1810–2005
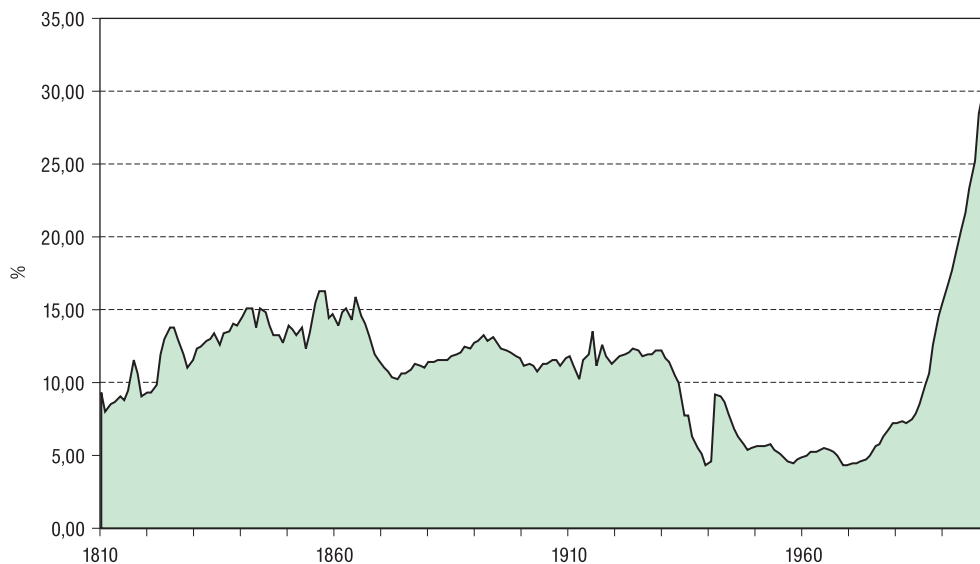
Note: In the years 1938–1944 data are only available for the Czech population in the Protectorate of Bohemia and Moravia.

The growing percentage of extramarital births in the first decades of the 19th century tends to be linked to the postponement of first-time marriage. In the first half of the 19th century the average age at the first marriage increased on average by 2 to 3 years, both among men and women, and the percentage of the population never married grew: in 1880 more than 10% of women and 6% of men in the 45–49 age group had never married.

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[7] Up to this year the demographic statistical data are comparable; in 1938-1945 data are only available on the Czech population of the Protectorate of Bohemia and Moravia.

Table 2 Live-born children by legitimacy in the Czech Lands 1823–2005 (averages for the indicated periods)

Period	Live births, total	Live births out of wedlock		Period	Live births, total	Live births out of wedlock	
		Number	%			Number	%
1823–1829	229 749	29 135	12.7	1920–1929	228 688	27 376	12.0
1830–1839	237 211	30 715	12.9	1930–1939	162 758	18 043	11.1
1840–1849	252 713	36 204	14.3	1940–1949	165 824	10 698	6.5
1850–1859	274 700	38 936	14.2	1950–1959	164 956	9 313	5.6
1860–1869	284 174	41 356	14.6	1960–1969	140 437	7 034	5.0
1870–1879	308 262	33 743	10.9	1970–1979	175 360	8 320	4.7
1880–1889	313 354	36 381	11.6	1980–1989	137 553	9 477	6.9
1890–1899	320 352	40 755	12.7	1990–1999	106 643	14 970	14.0
1900–1909	316 165	36 221	11.5	2000–2005	94 662	25 581	27.0
1910–1919	214 195	24 595	11.5				

Source: Sekera, 1978, 1979, Pohyb obyvatelstva ...
Note: 1937 (total population) – 11.0 %, in years 1938–1946 (Czech population): 1938 and 1939 – 8.3 %, 1940 – 6.8 %, 1941 – 5.8 %, 1942 – 5.4 % , 1943 – 4.6 %, 1944 – 4.9 %, 1945 – 6.9 %, 1946 – 7.8 %, 1947 – 9.6 % (total population).

Findings from micro-regions correspond with the data from national statistics, both in terms of the increase in the percentage and in terms of regional differentiation, which was somewhat more complex than in the preceding period. In addition to the urban-rural differentiation there were differences stemming from the varying responses of populations to deteriorating opportunities to marry in connection with nationality or a particular national culture. The increase in the number of extramarital births was stronger in areas inhabited by the German-speaking population; for example, in Jáchymov and Kraslice in 1881–1882 the figure was 27%; both districts were inhabited almost exclusively by German-speaking populations: in 1880, 99.9% of the population was recorded as German speakers. This percentage of extramarital births was roughly similar to the percentage in the Austrian Alps and some other Central European regions inhabited by German-speaking populations. Conversely, the rates in areas inhabited by a majority Czech population (i.e. an average of 5–10% of extramarital births) were comparable to the rates in France, Italy or Denmark (*Shorter, Knodel and van de Walle*, 1971).

Research by *Alice Velková* on the parish of Starý Plzenec indicates that the rate of extramarital fertility increased in the late 18th and early 19th centuries primarily among the lower social strata: in the cited parish in 1791–1800 one-quarter of women had an extramarital child and three-quarters of these women married later, though not always with the child's father (*Velková*, 2003: 220–221). An analysis of data obtained for Jablonec nad Nisou (a location with mainly a German-speaking population) for the years 1800-1869 points to very similar findings: the percentage of marriages in which the bride was a woman who had had a child when she was single increased from just under 5% in 1800–1809 to 12% in the following decade, and in 1820–1859 the figure was between 14% and 18%, and in 1860–1869 it reached 24%[8]. In Jablonec nad Nisou in 1800–1859 the period that passed between the birth of an extramarital child and the mother's marriage, if she married, was 2.1 years on average. Around 40% of the women who had a child while still single married within one year and 45% within four years; thus only around 15% of women remained unmarried. The fact that the woman's eventual husband was also the person listed as the father in the birth register indicates

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[8] The results are based on family forms reconstructed by *Walburga Wowková* for Jablonec nad Nisou (marriages that took place between 1800 and 1869, a total of 1512 family forms). I thank PhDr. Walburga Wowková for the opportunity to use these data.

that these children were born into a more or less permanent relationship. However, some children born to unmarried mothers were unwanted children[9].

It is only possible to verify obtained data against national statistics back to 1895. *Markéta Srbová* (2003: 65) worked out that in 1895–1913 for every 100 children born to an unwed mother 35–40% of them were made legitimate by the marriage of their parents and roughly every sixth wedding took place between partners who acknowledged living with a child they had conceived together. She also identified significant regional differences, as a higher rate of extramarital fertility and a higher percentage of extramarital children subsequently legitimised was recorded in areas with a German-speaking population (in 1900–1904 in some places more than 50% of extramarital children were later made legitimate by marriage). Based on data from demographic statistics the differences in the rate of extramarital fertility by nationality can be traced since 1925. That year 18% of children born to mothers of German nationality in the Czech lands were extramarital births, 9.5% of those born to Czech and Slovak mothers were; in 1937 the situation was similar, though the rate was lower (14.4% and 8.4%, respectively).

Table 3 Frequency by district of the percentage of extramarital children born in selected years in the Czech Lands

Percentage of extramarital children born	Percentage of districts in selected years					
	1880	1910	1930	1950	1961	2001
0–4	2.2	1.9	–	53.3	71.1	–
5–10	48.9	50.3	31.8	33.0	19.7	–
10–14	30.7	28.9	37.2	12.6	9.2	11.7
15–19	11.7	15.7	17.6	1.1	–	35.1
20–24	3.6	1.9	9.5	–	–	22.1
25–29	2.1	0.6	2.0	–	–	10.4
30–34	–	–	1.4	–	–	5.2
35–39	–	–	0.7	–	–	7.8
40–44	–	–	–	–	–	5.2
45–49	0.8	0.7	–	–	–	1.3
50–54	–	–	–	–	–	1.3
Total	100	100	100	100	100	100
Number of districts	127	147	148	182	76	77

Source: Bewegung der Bevölkerung... Pohyb obyvatelstva....

In the Czech Lands differentiation by nationality corresponded to regional divisions (the Czech population was concentrated more in the centre of Bohemia and Moravia, the German population lived in the border regions, although some settlements were located well within the country's interior), and consequently distinct cultural patterns were also reflected in the regional differentiation of extramarital fertility. In one-half of districts the number of extramarital births was less than 10%, and in every twentieth district the figure was more than 20% (in 1880; in 1910 it was in every fiftieth district). In Prague the Provincial Maternity Hospital (with a foundling ward) increased the percentage of extramarital births until 1925, when the system of processing data changed, and children were classified according to the mother's place of residence: in Prague the percentage of extramarital births decreased from 20% in 1924 to 13% in 1925.

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[9] *Alena Luxová* indirectly identifies this factor in an analysis of women convicted of killing their newborn child and imprisoned in Řepy: in 1865–1918 93% of these women were unmarried, in 1919–1948 87% of them were; they tended to come from the lower social strata (*Luxová*, 2005: 147, 195).

Figure 2 The age-specific fertility rates of unmarried women by age in the Czech Lands in selected years
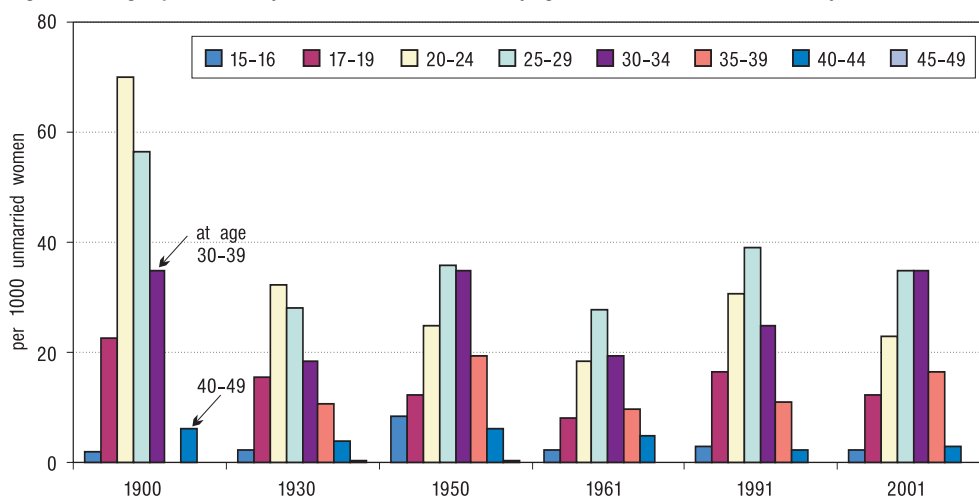
The extent of extramarital fertility is documented by the relatively high value of the Cole index *ih*, which in the late 19th century was at a level of more than 0,10 (at the same time the Cole index for marital fertility *ig* was 0,70), i.e. 10% (respectively 70%) of marital fertility of the Hutterites; a decrease of the *ig* index to a level below 0,60–0,65 usually indicates the limiting of marital fertility, so it is evident that at this time in the Czech Lands marital fertility was not yet significantly limited[10]. The proportion of unmarried women in the population in relation to their age can be told from the index of the fertility of married women (*im*), which at the end of the 19th century was only 0,50, i.e. up to one-half of all potential fertility could not be realised because the women remained unmarried.

Table 4 Percentage of extramarital live-born children out of the total live-born children by size of the place of residence of the mother (%) in the Czech Lands 1921–2004

Period	Total	In municipalities up to 10 thous. inhabitants	In municipalities above 10 thous. inhabitants
1920–1929	12.0	11.8	13.4
1930–1939*	11.1	10.8	11.9
1940–1949*	6.5	6.3	7.5
1950–1959	5.6	5.2	6.4
1960–1969	5.0	4.8	5.4
1970–1979	4.7	4.3	5.2
1980–1989	6.9	5.3	7.8
1990–1999	14.0	10.6	16.1
2000–2005	27.0	23.8	29.8

Source: Pohyb obyvatelstva …
Note: See the note to Table 2.

When in the 1870s the rate of realised fertility began to decrease as a result of the conscious limiting of the number of children in a family, this was reflected in a slight decline in the rate of extramarital fertility and a slight decrease in the percentage of children born out of wedlock. But given that the level of the indicator remained fixed even amidst a further decline in the rate of realised fertility, it would seem that the previous type of family behaviour continued. Of those children born out of wedlock a certain portion were later made legitimate by the parents' marriage. From 1895 it is possible to trace the age structure of the mothers of children born out

[10] On the method of constructing the index and its use in the analysis of fertility, see *A. J. Coale* and *S. C. Watkins* (1986) *The Decline of Fertility in Europe.* Princeton: Princeton University Press. On its application to development in the Czech Lands, see *Fialová* (1991).

Table 5 Percentage of extramarital live-born children out of the total live-born children by the age of the mother in the Czech Lands

Age	1900	1930	1950	1961	1991	2005
Percentage of extramarital children out of live-born children in the given age group (%)						
Total	11.9	12.0	6.3	4.6	9.8	31.7
15–19	58.0	45.6	15.7	11.4	20.0	86.6
20–24	25.6	18.0	5.9	3.2	6.8	50.6
25–29	8.1	7.6	4.7	3.0	7.1	25.2
30–34	3.9[1]	5.1	5.6	4.2	11.2	23.8
35–39		4.8	5.9	6.5	17.2	31.6
40+	3.3	5.5	6.6	12.1	24.2	36.5
Number of extramarital live-born children	39 925	24 926	11 884	6 007	12 684	21 259

Source: Sekera, 1979; Pohyb obyvatelstva…
Note: [1] 30–39.

of wedlock – the maximum rate was observed among women aged 20–24, and the highest rate of age-specific extramarital fertility was also found in this group (Tab. 6 and Fig. 2).

There was no significant change in the extramarital fertility rate even during the first three decades of the 20th century and the average was around one-tenth of children born. However, at the same time the rate of realised fertility decreased significantly: in 1900–1930 the fertility rate decreased by 55% among married women and by 53% among unmarried women.

From 1926 it is possible to trace the differences in the extramarital fertility rate by the size of the mother's place of residence. It was found that in larger communities the percentage of

Table 6 Women's fertility by age and marital status in the Czech Lands in selected years (live-born children per 1000 women in the given age group and marital status)

Age	1900	1930	1950	1961	1991	2001
Married women						
15–16	134.4	511.7	467.9	780.6	759.7	500.0
17–19	554.1	442.7	466.6	465.5	520.2	468.9
20–24	419.3	296.4	322.8	276.7	261.5	228.2
25–29	395.0	182.1	191.0	127.1	115.5	132.3
30–34	256.3[1]	108.6	113.3	55.2	38.1	52.5
35–39		62.4	57.0	20.5	11.1	14.8
40–44	59.7[2]	23.5	19.8	6.0	1.7	2.4
45–49		2.4	1.6	0.0	0.2	0.2
Total	240.4	109.0	111.6	79.4	74.0	58.0
Unmarried women						
15–16	1.9	2.2	8.5	2.4	2.8	2.1
17–19	23.3	15.6	12.2	8.1	16.6	12.4
20–24	72.7	32.2	24.7	18.3	30.7	23.0
25–29	59.1	28.1	35.8	27.8	39.1	34.8
30–34	38.9[1]	18.3	35.0	19.4	25.0	34.8
35–39		10.6	19.2	9.6	10.9	16.4
40–44	6.4[2]	4.0	6.2	4.7	2.2	2.9
45–49		0.4	0.4	0.1	0.0	0.1
Total	37.5	17.9	15.7	9.3	14.7	18.0

Source: Sekera, 1979; Pohyb obyvatelstva…; Census data.
Note: [1] 30–39, [2] 40+.

children born out of wedlock was always somewhat larger, though the difference was not too great.

The period of low extramarital fertility (1945–1990)

Immediately after the Munich Agreement was signed the legal status of the Republic of Czechoslovakia was altered, and so too was the way in which population change was documented. Although demographers tried later to reconstruct the data for this period, they were not entirely successful. For the years between 1938 and 1945 data on the extramarital fertility rate are only available for the Czech population in the Protectorate of Bohemia and Moravia[11]. The change in the rate is apparent, but it need not be connected just with the changes in the ethnic composition of the population: during the war the rate of extramarital fertility decreased significantly and remained low even after the end of the war. It was lower than the extramarital fertility rate of the Czech population in the interwar period. The number of children born out of wedlock returned to roughly the level observed in the last decades of the 18th century, and the difference between the urban and rural populations persisted. Extramarital fertility stabilised at a low rate (the numbers were around one-fifth of what they were at the start of the 20th century); women who gave birth out of wedlock were most often between the ages of 25 and 29; on average every fiftieth unwed woman in this age group had a child (Tab. 6). As in the case of other demographic characteristics, the situation in this regard became very homogenous, and the distribution of districts by percentage of extramarital births attests to this (Tab. 3).

A decrease in the number of extramarital births could to some extent have been a reflection of a high marriage rate, a rising divorce rate, and changes in social conditions. The spectrum of women who became unwed mothers basically changed very little and encompassed the typical examples of women seduced and abandoned, women who were careless, and women who voluntarily opted for single motherhood. From 1958 the low rate of extramarital fertility certainly stemmed in part from the fact that women had the possibility of requesting an abortion for social reasons, and one of the factors that made it easier to obtain permission for an abortion was marital status (the fact that the woman was unmarried). And although the use of modern contraceptives was still limited, the effect of their gradual spread should not be underestimated. However, the decisive factor influencing the low rate of extramarital fertility was marital conditions: the majority of unmarried women, even after an unplanned pregnancy, managed to marry before giving birth. According to *M. Kučera* (1994: 105), at the start of the 1950s 40% of first-order children were born within nine months of a marriage; from the start of the 1970s the figure was more than one-half, and later sometimes as much as 60%.

The lowest percentage of extramarital births occurred in 1974 (4.3%). It is no coincidence that 1974 was the year of the peak in the rising birth rate in the Czech Republic, a trend that had been significantly influenced by the advantages offered to married couples. From 1975 the percentage of extramarital births increased slightly but consistently to reach 8% in 1989. However, at that time some Western states were recording extramarital birth rates of around 20–40%. A slight increase in the percentage signalised an increase in the extramarital fertility rate among unmarried women also in the Czech Republic. The maximum rate continued to be in the 25–29 age group, and in the late 1980s and early 1990s the structure of fertility among unmarried women came to resemble closely the situation in the 1930s. However, at that time also social benefits began to advantage mothers raising children on their own (including mothers who never married). It can therefore be assumed that some children born to

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[11] The state statistics bureau collected and processed data only for the population on the territory of the Second Czechoslovak Republic, from 15 March 1939, for the population under the Protectorate of Bohemia and Moravia, not including Germans, because as citizens of the Third Reich the laws of the Protectorate did not apply to them.

unmarried mothers were wanted (and it is possible that they were born to relatively stable, co-habiting couples).

The rise in extramarital fertility after 1990

The percentage of children born to unwed mothers continued to rise in the 1990s: there was almost a regular year to year increase in the percentage and in 2006 it reached 33%. The unprecedented increase, however, was more the result of a decrease in the fertility rate among married women than an increase in fertility intensity among unmarried women. If we compare the fertility intensity of unmarried women in selected years in the 20th century, we find that in 2001 it was roughly at the same level as in the 1930s, which was when the first demographic revolution was coming to an end in the Czech Republic, and when reproduction of the population occurred in the circumstances of free-market capitalism and traditional marriage rates. However, the intensity was double the level observed in 1961, when it was at its lowest, and half what it was in 1900, which can be regarded as representative of the high fertility rate of the 19th century. And it has barely changed since 1991. The fact that every third child is born to an unwed mother is therefore the result of other changes, the effects of which are coincidentally co-acting: changes in the age structure of the female population, and changes in marital behaviour. Since the 1990s the large birth cohort born in the 1970s has been reaching reproductive age, but this generation typically exhibits different marital behaviour than previous generations: the postponement of marriage to a later age and lower marital intensity than before.

Table 7 Extramarital live-born children by birth order and average order in the Czech Lands 1950–2004 (five-year averages)

Period	Live births children out of wedlock	Extramarital births out of children born in the given birth order			Share of first-order births out of total live-born extramarital children	Average birth order of extramarital children
		1.	2.	3. +		
1950–1954	10 290	8.1	3.9	4.9	52.3	2.1
1955–1959	8 336	7.3	3.3	5.5	50.8	2.2
1960–1964	6 565	5.5	2.5	6.5	53.2	2.1
1965–1969	7 503	6.1	2.7	7.8	56.9	2.0
1970–1974	8 140	5.9	2.5	7.7	55.7	1.9
1975–1979	8 499	6.4	2.2	6.0	57.1	1.9
1980–1984	9 073	8.4	3.0	8.6	57.6	1.9
1985–1989	9 881	9.4	3.7	10.8	58.7	1.8
1990–1994	13 542	13.9	6.1	14.4	60.9	1.7
1995–1999	16 387	21.9	11.1	23.0	57.6	1.7
2000–2004	24 216	32.2	16.9	28.6	59.9	1.7

Currently few women are marrying at a young age. For example, out of the generation of women born in 1979 only 33% of them had married by age 25, while out of the generation born in 1964 the figure was 84%. This fact means that among women currently at the age of highest fertility a large number are unmarried and usually still single. So, although only 4% of unmarried women aged 25–34 gave birth in 2005, it was enough to increase their share of total births to 32%. However, that the relationship is not that simple is demonstrated by looking at this from a different perspective: although in 2005 relatively the most extramarital births were among young women (in the 15–19 age group nine out of ten live-born children were born to unmarried women, in the 20–24 age group it was every second child), the frequency of extramarital births significantly increased among older women, too. In 1900 only

4% of extramarital children were born to women aged 30–39 (amidst a still high rate of fertility in this age group) and this situation did not change significantly in the ensuing decades, but fundamental changes nonetheless did occur in the population's reproductive behaviour. Only from the 1990s did the number of extramarital births begin to increase even among older women and in 2005 accounted for a full one-quarter of children born. These mothers were mainly divorced women, with two-thirds of those over the age 35 being divorced.

As *Jitka Rychtaříková* recently pointed out (2006, 2007), one factor that can significantly influence the structure of live-born children is social policy and whether a distinction is made between applicants for social benefits on the basis of marital status (i.e. favouring mothers raising children on their own). When society does not stigmatise single mothers and the financial benefit it provides to help raise the child is better than the benefit for married mothers, this situation can influence the decision to become a single mother. Jitka Rychtařiková has in this regard also pointed out that a significant part of the increase in the percentage of children born out of wedlock in the Czech Republic was made up of children born to single mothers with basic education, i.e. women who have greater difficulty finding work in the labour market and for whom social benefits (including the parental allowance) can be an advantage when they lose their job.

Soukupová and Sunega (2006) inclined towards similar conclusions on the basis of an analysis of the financial advantages of various forms of living arrangements in the Czech Republic. The findings from an analysis of a large sociological study carried out in 2006 and focusing on examining extramarital fertility indicate the heterogeneity of circumstances leading up to single motherhood – a substantial proportion of unmarried mothers were not living with the father's child at the time of birth and usually they were younger and less educated women. Some of these women remained unmarried, some because their partner refused to marry them or the partner was already married. Some did not see marriage as a favourable prospect (*Chaloupková*, 2006). This also reveals that a certain proportion of children born out of wedlock will always be made up of mothers in difficult personal and social situations. The same can be deduced from an analysis of the following marriage rates of single women presented by *V. Polášek* (2005): among women who in 1991–2005 had their first child as a single mother increasing numbers are remaining unmarried: 16% of women who had their first child as a single mother in 1991 married within one year, but in 2003 the figure was only 6%; 40% of these women married within five years in 1991, but in 1999 the figure was just 28%.

Conclusion

We encounter the phenomenon of extramarital fertility in the history of the majority of European populations, as it is connected with a type of behaviour that is common to many European countries – it is more common in places where people tend to marry at a later age and where a portion of the adult population never marries, which in its modern age history was also common in the Czech Lands. However, the rate of extramarital fertility was usually low, only rarely exceeding 2%–5% (an exception being some parts of the German-speaking population in the 19th century). The relatively low rate continued even after the completion of the first demographic revolution (a typical feature of which was a decline in marital fertility).

With the exception of the period from the start of the 19th century to the middle of the 20th century, on the whole relatively few children were born out of wedlock in the Czech Lands (under 5%). It tended to be younger women who had them, a fact that corresponds with the higher average age at first marriage. The highest percentage of extramarital births occurred among women under the age of 20. The percentage of extramarital births only began to increase again at the end of the 1980s, at which time the composition of mothers also changed. The largest percentage of these children is still among mothers under the age of 20, but there has been a significant increase in the percentage born to older mothers.

When the rate of extramarital fertility began to rise in advanced countries during the 1960s this trend was placed in the context of the increase in unmarried cohabitation, and the increase in the percentage of women born to unwed mothers was to a considerable extent seen as signalising the reproductive behaviour of the emerging generation, which typically adopted new forms of family behaviour. Informal unions were one of the basic pillars in this new behaviour and were interpreted as a sign of the liberalisation of society, its democratisation, the equality of women, and, last but not least, of the economic progress of the country. This was accompanied by the assumption that modern contraceptives should provide a guarantee that the children born are wanted or planned children, even if the mothers are unmarried, and regardless of whether they have a partner or not. There is no doubt that there are women who want a child but do not want to get married (not even to the child's father). They want to have and raise the child alone, and sometimes they do not even want any financial or other support from the child's father.

Given the traditionally difficult social standing of single mothers and their children, in the majority of European countries these women and their children were gradually included in the welfare system for the socially disadvantaged during the second half of the 20th century, just as earlier on widows and orphans were incorporated into the system (usually they gained equality in legislation earlier). This fact makes it difficult to distinguish between children born to parents in more stable unions who are interested in this form of social benefit (without having to worry about the negative reaction of those around them) and children being raised by the mother alone.

Some researchers nonetheless incline towards the opinion that the phenomenon of extramarital fertility need not just signal the replacement of marriage by unmarried cohabitation and the emancipation of women. Not all children born out of wedlock are wanted children, and thus the single-mother syndrome may persist even in contemporary society (*McLanahan*, 2006; *Chaloupková*, 2006). The issue is all the more complex in that assistance provided to mothers raising children alone is one of the most common forms of social benefit provided in all economically advanced countries, and for some social strata it is a benefit that may be vital to maintaining the minimum living standard. However, what percentage of individual types of women annually become mothers of extramarital children cannot be determined.

In the Czech Republic the increase in the percentage of children born out of wedlock ranks among the most significant changes in the reproductive behaviour of the population since 1989. However, when we take a closer look we find that this has occurred amidst circumstances of low nuptiality and low marital fertility. The rate of extramarital fertility at the turn of the millennium is in reality lower than it was at the turn of the 20th century.

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TWENTY YEARS OF SINGLE MOTHERHOOD IN THE CZECH REPUBLIC (1986–2005)[*]

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Abstract: The increasing frequency of single motherhood, recently observed in the Czech Republic and mostly experienced by young, low-educated women, seems not to be a deliberate choice. The attributes of those mothers (mostly delivering only the first birth at younger age) have not changed over the last twenty years. On the other hand, traditional norms, expressed by legal marriage and subsequent parenthood, are the predominant patterns for university graduates. Social differentiation (based on educational attainment) regarding legal marriage or non-marital births has been deepening in the Czech society over time.

Keywords: single motherhood, maternal age, maternal education, child birth order, Czech Republic

Important demographic changes that have been recorded since the start of the 1990s include not just the long-term decline in the fertility rate, to well below the replacement level, and historically the lowest marriage numbers, but also the rapidly growing percentage of extramarital live births, which increased from 7.4% in 1986 to 31.7% in 2005. In many other advanced countries a similar increase in the percentage of extramarital births has been observed, especially extramarital births to single mothers. According to the most recent data from 2005, published by the Council of Europe (*Recent Demographic Developments in Europe*, 2005), high percentages of extramarital births have been recorded not only in Scandinavian countries (Norway 51%, Sweden 55%), but also in France (46%) and Great Britain (42%), and even Bulgaria (49%), Slovenia (45%), Latvia (45%) and Estonia (58%). A percentage similar to that in the Czech Republic is found, for example, in the Netherlands (32%). The growing numbers of extramarital births in the Czech Republic is sometimes interpreted in simplified terms as a manifestation of the "westernisation" of the demographic behaviour of the population. What is meant by this term is the liberalisation of behaviour, one manifestation of which is the pluralising of family forms, particularly in the sense of a shift towards cohabitation as a viable alternative to a legal marriage bond (*Inglehart*, 1997; *Inglehart and Welzel*, 2005). People with a post-modern value orientation and higher education are regarded as the vehicles of these changes (*Van de Kaa*, 1998). Such "reflections" are based on the fact that in many countries the number of marriages has decreased, while the percentage of extramarital births has increased. However, this "rough" correlation conceals a number of different facts (*Rychtaříková*, 1999, 2000a, 2000b). The decrease in the number of marriages can be accompanied by an increase in the number of children living in unmarried cohabitation or an increase in the number of children living with just one parent, usually the mother. A change in the number or percentage of extramarital births is not just about whether value

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orientations are changing or remain the same, as they can also be connected with a temporary (cross-sectional) differentiated change in demographic trends and structures. The rise in the percentage of extramarital births may be the result of differences in the trends of extramarital and marital fertility or a reflection of a change in the structure of the population by marital status. For example, the percentage of extramarital births can significantly increase as a result of a more rapid decrease in the intensity of marital fertility while the intensity of extramarital fertility remains unchanged or is slowly increasing. An increase in the number of unmarried men/women can also contribute to an increase in the number and percentage of extramarital births, although the actual intensity (extramarital children born to unmarried women) may remain the same. **The scope of factors that explain an increase in the percentage of extramarital births is therefore an open and complex matter. The factors involved can be demographic** (a change in intensities and structures and their interaction) or **behavioural** (a change in the value system in society), and both these groups of factors can be influenced by the **external population climate** (changes to the system of family support), etc. The weight of these factors can vary between countries, and **multiple factors can have an effect at the same time, or they can have the same or opposite effect, and they can operate in combination.**

Table 1 Number and percentage of live-born children in the Czech Republic in 1986–2005 by the mother's marital status

Year	By the mother's marital status						
	Numbers					%	
	Single	Married	Divorced	Widowed	Total	Married	Unmarried
1986	6 862	123 464	2 676	354	133 356	92.58	7.42
1987	6 575	121 455	2 548	343	130 921	92.77	7.23
1988	6 954	122 653	2 650	410	132 667	92.45	7.55
1989	7 061	118 215	2 748	332	128 356	92.10	7.90
1990	7 937	119 397	2 905	325	130 564	91.45	8.55
1991	9 226	116 651	3 120	357	129 354	90.18	9.82
1992	9 441	108 697	3 248	319	121 705	89.31	10.69
1993	11 269	105 702	3 730	324	121 025	87.34	12.66
1994	11 378	91 072	3 828	301	106 579	85.45	14.55
1995	10 910	81 150	3 715	322	96 097	84.45	15.55
1996	11 244	75 158	3 771	273	90 446	83.10	16.90
1997	11 946	74 532	3 852	327	90 657	82.21	17.79
1998	12 875	73 326	4 019	315	90 535	80.99	19.01
1999	13 966	71 045	4 180	280	89 471	79.41	20.59
2000	15 064	71 118	4 465	263	90 910	78.23	21.77
2001	16 359	69 439	4 653	264	90 715	76.55	23.45
2002	18 095	69 327	5 086	278	92 786	74.72	25.28
2003	20 753	66 972	5 668	292	93 685	71.49	28.51
2004	23 451	67 825	6 101	287	97 664	69.45	30.55
2005	25 753	69 802	6 354	302	102 211	68.29	31.71

The objective of this paper is to **compare the nature of single motherhood in the Czech Republic today with the situation in the 1980s.** This study focuses on **the character and context of procreative behaviour in a demographic perspective.** The study of extramarital fertility is limited just to children born to single mothers because they make up the majority of extramarital births, and the psychological and social situation of these children differs from the situation of children born to divorced and widowed mothers, that is, women who have already been married.

Figure 1 Structure of live-born children over time by the mother's marital status (%)
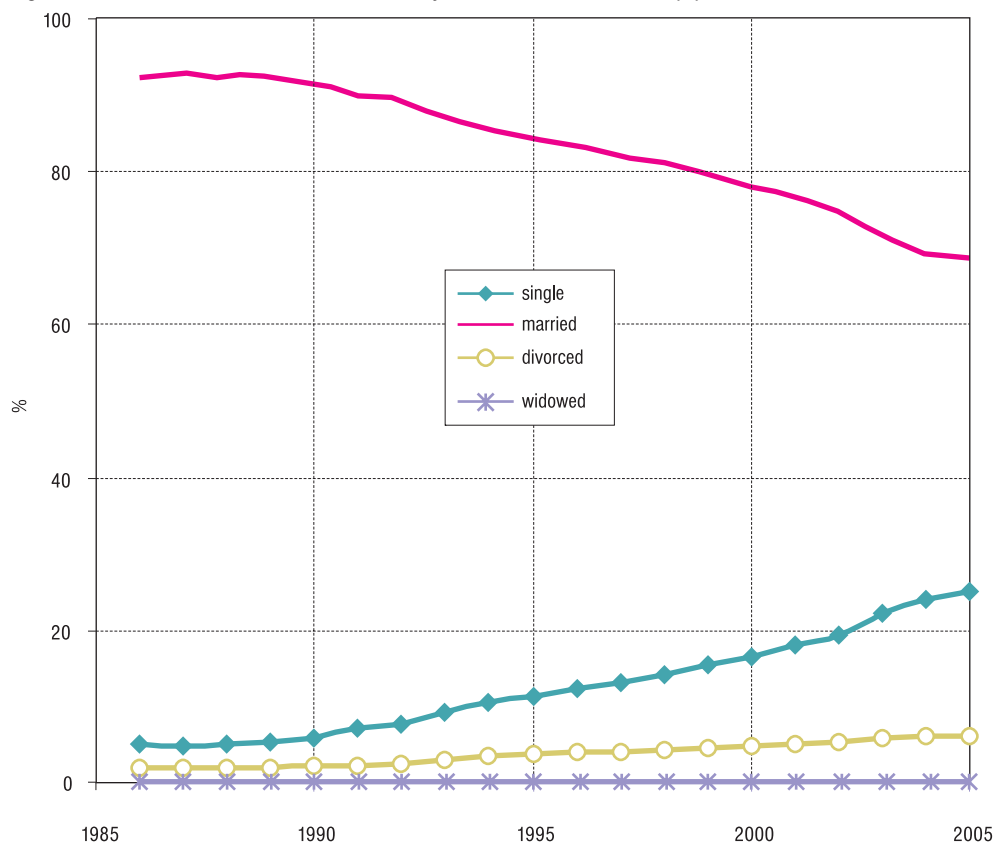

The absolute number of live births to single mothers in the Czech Republic grew from 6862 in 1986 to 25 753 in 2005 (Tab. 1). In relative terms, live births to single mothers constituted 5% of the total live births in 1986 and 25% in 2005 (Fig. 1). The percentage of children born to single mothers out of total extramarital live births also increased between 1986 and 2005, from 69% to 79%. In the Czech Republic single motherhood has the greatest weight in extramarital fertility and that weight is increasing over time. Deeper insight into the changing demographic structure of single motherhood over time can be obtained from an analysis by age, birth order (especially the first biological birth order), and the education of the mother, and by studying the change in the structure of the population by marital status. The calculated indicators presented here are based on birth data from vital statistics data collected between 1986 and 2005 and they provide a cross-sectional look at changes in single motherhood over time in individual calendar years marking the time of birth of the child. Thus, they do not reflect the subsequent situation in the life of the mother, who could eventually go on to marry. The factors that will be taken into account here are: **the mother's age, the biological birth order, the education of the mother, and the region.**

Changes in the age profile and structure of marital status

The trend in fertility intensity of single women exhibited almost no changes in relation to age up until the middle of the 1990s (Fig. 2). It is only after that point that there is an evi-

dent **increase in fertility intensity among single women aged 30–34 and 35–39 and from the start of the 21st century among in women aged 25–29.** However, it must be remembered that here we are on a scale that is an order below the level of marital fertility. It is also necessary to view the trend in rising fertility intensity among single women at a later age relative to other phenomena, such as the trend in the mean age at first (live) childbirth in the current marriage.

Figure 2 Fertility rates among single women over time, by age in the Czech Republic
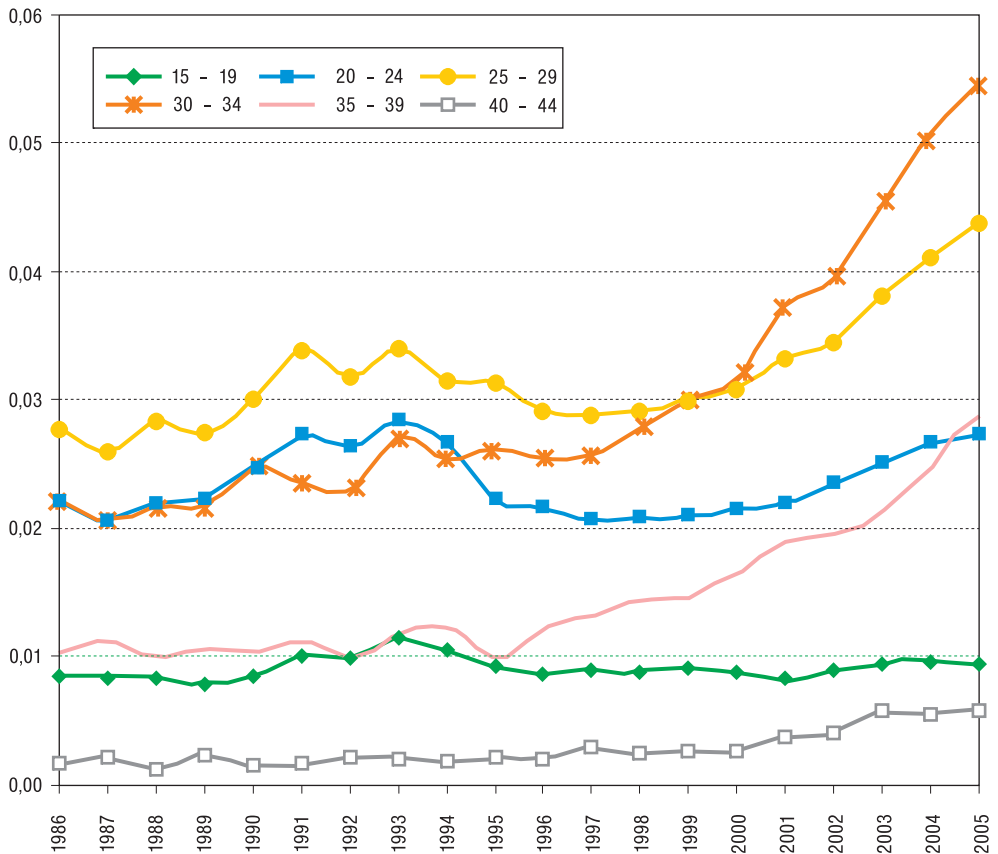
It is clear from Figure 3 that **the average age at the time of the first-order birth was always lower in the case of single mothers compared to married mothers** throughout the entire period between 1986 and 2005. Moreover, it appears that the increase in the average age of a woman at the time of her first-order birth was occurring slightly faster among married mothers than among single women (calculated from the distribution of live first-order births by age and marital status). In 2005 the average age of a single mother at the time of birth of her first child was 24.9 years and for married mothers it was 27.2, while in 1986 the respective figures were 21.2 and 22.0. In this regard it is necessary to realise that there has also been an age shift in many other life events alongside demographic ones like marriage or the birth of a child. For example, the length of time spent studying and preparing for employ-

ment has grown longer. In Europe this process is referred to as "postponement transition". It appears that in the Czech Republic these shifts are proportional, and thus the original relationship in relation to the marital status of the mother has been preserved, which is evident from the almost parallel rise in the average age of single and married mothers at the time of their first-order birth (Fig. 3).

Figure 3 Average age of single and married mothers over time
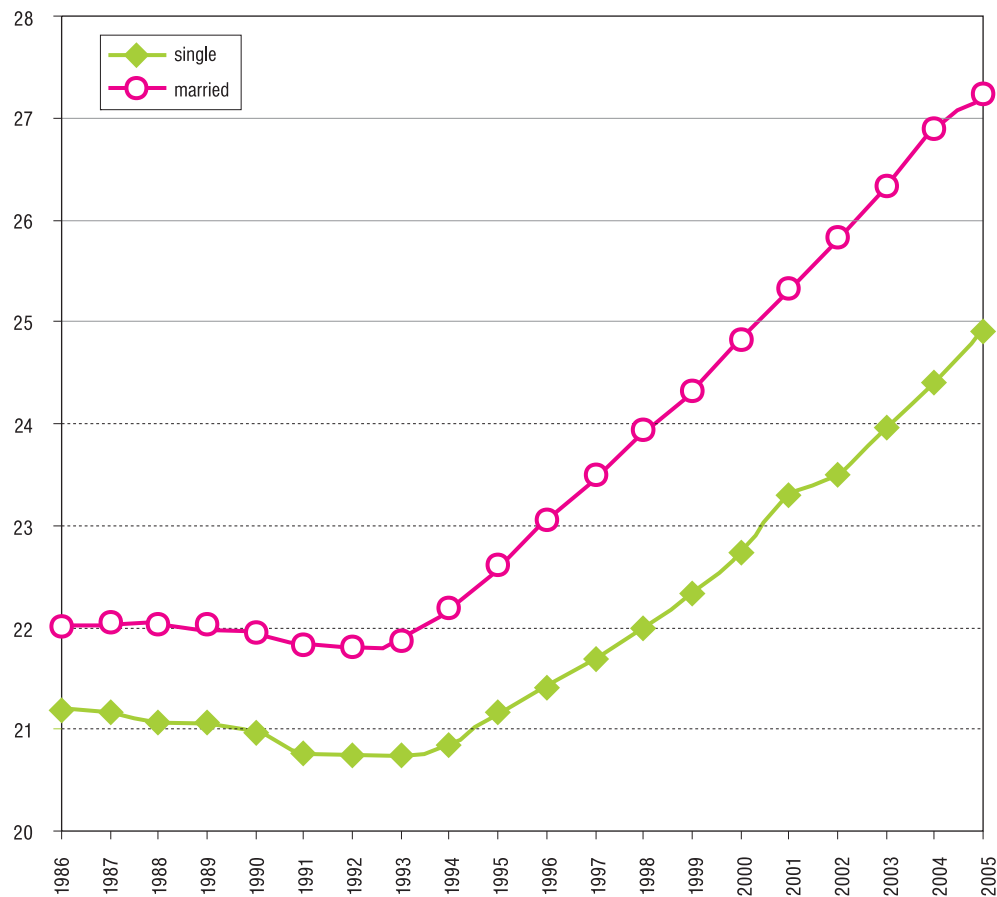
Note: Calculated for the distribution of live births.

   The exact effect that the change in the age structure or marital status structure of mothers had on the change in the percentage of extramarital births between the two periods and the extent to which the increase in the percentage of children born to single mothers was connected with the changes in the intensity of marital and extramarital fertility can be determined with the aid of decomposition methods (for details, see das *Gupta*, 1994, *Smith et al.*, 1996). Table 2 presents the results of this decomposition. Decomposition of the change in the percentage of children born to single mothers from a population of single and married mothers was calculated between the years 1986 and 2005 and encompassed changes in four factors: 1) the effect of the age structure, 2) the effect of the structure by marital status (here limited

to single and married), 3) the effect of the fertility intensity of single women, and 4) the effect of the fertility intensity of married women. Between 1986 and 2005 the number of live births to single mothers grew from 6862 to 25 753, which is an increase of 18 891 children. Conversely, the number of live births to married mothers decreased from 123 464 to 69 802, which is a decrease of 53 662 children. The percentage of children born to single mothers **out of the population of children born to single and married mothers** increased by 21.69 percentage points (from 5.26% in 1986 to 26.95 in 2005). The value of this increase, not expressed in percentages, is 0,2169, the decomposition of which is presented in Table 2.

Table 2 A decomposition of the changes in the intensity of fertility among single and married mothers and in their age structure

Indicator	1986	2005	Difference 2005–1986
Percentage of live births to single mothers out of live births to single and married mothers	5.26	26.95	21.69
Decomposition of the change between 1986 and 2005		Numbers	%
Change in the age structure		–0.0028	–1.28
Change in the structure by marital status		0.2248	103.66
Change in the fertility intensity of single women		0.0413	19.03
Change in the fertility intensity of married women		–0.0464	–21.42
Total		0.2169	100.00

A change in the age structure of women of reproductive age (Tab. 2), with a value of –0,0028, means that the change in the age structure counteracted the increase in extramarital fertility. In other words, the altered age structure of single and married women of reproductive age in 2005 decreased the percentage of children born to single mothers. Conversely, the change in marital status towards an increase in the percentage of single women in 2005 compared to 1986 (with a value of 0,2248, Tab. 2) played the most significant role in the increase in the percentage of children born to single mothers, and therefore, it was the most important component in the change in the percentage of live births to single mothers. The increase in the fertility intensity of single women then contributed a value of 0,0413 to the change, and the decrease in the fertility of married women "contributed" with a weight of –0,0464. The sum of these four components (–0,0028+0,2248+0,0413–0,0464) produced the increase in the frequency of children born to single mothers in the population of single and married women (0,2169).

The next column in the table expresses the relative weight of each of the four components. In this perspective the change in marital status between 1986 and 2005 had the most significant effect (103.7%) and the increase in the intensity of fertility among single women had the least weight (19.0%). The increase was also influenced by the decrease in marital fertility (–21.4%). These results are based on a cross-sectional comparison of two calendar years, 1986 and 2005, and this puts some limits on their real informative value. Nonetheless, the basic context of the transformation in single motherhood between these two points in time is accurate. The 1990s were a time of dramatic change in fertility, but to a certain extent it was influenced by the contemporary socio-economic situation, and it will only be possible to provide a definitive statement about the transformation of single motherhood and its determinants from a longitudinal analysis of the procreative behaviour of the relevant generations of women in the next twenty years. It will also be important to compare the resultant data with retrospective census data, because many single mothers may marry later on, and the data from vital statistics records based on the mother's marital status at the time of birth do not reflect that information.

Table 3 Structure of live-born children by biological order

| Year	Single mothers				Married mothers			
	1	2	3	4+	1	2	3	4+
1986	78.2	13.8	4.7	3.3	45.4	39.1	11.7	3.9
1987	77.5	14.4	4.5	3.5	45.8	39.2	11.2	3.8
1988	78.5	13.5	4.9	3.1	45.6	39.2	11.5	3.7
1989	79.1	13.2	4.5	3.2	46.4	39.0	11.1	3.6
1990	78.9	13.8	4.3	2.9	46.6	38.9	11.0	3.6
1991	79.9	13.7	4.0	2.5	48.7	37.3	10.4	3.6
1992	78.6	14.1	4.3	3.0	48.5	37.7	10.2	3.7
1993	77.4	14.8	4.8	3.0	46.7	39.1	10.2	4.0
1994	75.7	15.7	5.2	3.4	45.7	39.6	10.5	4.2
1995	73.1	17.6	5.1	4.1	44.2	41.4	10.3	4.1
1996	72.2	18.3	5.4	4.1	44.5	41.5	9.9	4.1
1997	73.0	17.6	5.4	4.0	44.9	41.3	10.0	3.8
1998	71.6	18.5	5.6	4.3	45.4	41.2	9.7	3.6
1999	72.1	18.4	5.4	4.1	45.5	41.1	9.7	3.7
2000	72.7	18.3	5.2	3.8	45.3	41.0	9.9	3.8
2001	71.5	19.1	5.2	4.1	44.5	41.8	10.1	3.7
2002	71.5	19.7	5.0	3.8	44.6	41.3	10.3	3.8
2003	72.6	19.2	4.7	3.5	43.7	42.2	10.4	3.7
2004	73.5	18.5	4.6	3.5	43.7	42.3	10.4	3.6
2005	72.6	19.9	4.5	3.1	42.9	43.1	10.5	3.5

Table 4 Percentage of children born to single mothers over time by completed level of education

Year	From live births of a given mother's educational category			
	Basic	Secondary without maturita exam.	Secondary with maturita exam.	University
1986	14,0	4,2	2,4	1,8
1987	15.1	4.1	2.1	2.1
1988	16.3	4.6	2.3	1.8
1989	17.7	4.8	2.5	1.8
1990	19.8	5.4	2.8	2.2
1991	23.2	6.5	3.2	2.6
1992	25.2	7.0	3.5	2.7
1993	29.2	8.6	4.3	2.9
1994	33.6	9.7	4.7	3.3
1995	36.3	10.1	4.8	3.7
1996	40.1	11.1	5.4	3.8
1997	41.9	12.3	5.9	4.2
1998	44.7	13.6	6.6	4.7
1999	47.1	15.4	8.2	5.4
2000	48.0	16.7	9.6	5.7
2001	51.2	18.2	10.7	6.7
2002	53.9	20.1	12.2	6.7
2003	56.4	24.0	14.6	8.3
2004	59.0	26.8	16.6	9.6
2005	59.8	27.9	18.5	11.1

Birth-order structure and changes to it can provide an idea of whether single motherhood is more an unplanned event, and therefore primarily first-order children are born, or whether it is an

alternative to legal marriage and the structure by order of children born will in time increasingly resemble the structure of marital children. Table 3 clearly confirms the basic difference between the two structures. Live births to single mothers are prevailingly first-order births (70–80%) (Tab. 3), and the relative structure by birth order did not change significantly over time; there was only a slight decrease in first-order births over time with a corresponding increase in second-order births. Among children born to married women the decrease in the intensity of fertility was accompanied by an increase in the weight of second-order to the detriment of first-order, which indicates that today marital children are born to strongly pro-family couples who do not stop at just one child. In fact, in 2005, the percentage of children born in this population that were second-order children was greater than the percentage of first-order children (Tab. 3). These results attest more to the first hypothesis, that single motherhood is not an alternative to marriage.

Figure 4 Percentage of first order children born to single mothers of a given educational category over time in the Czech Republic
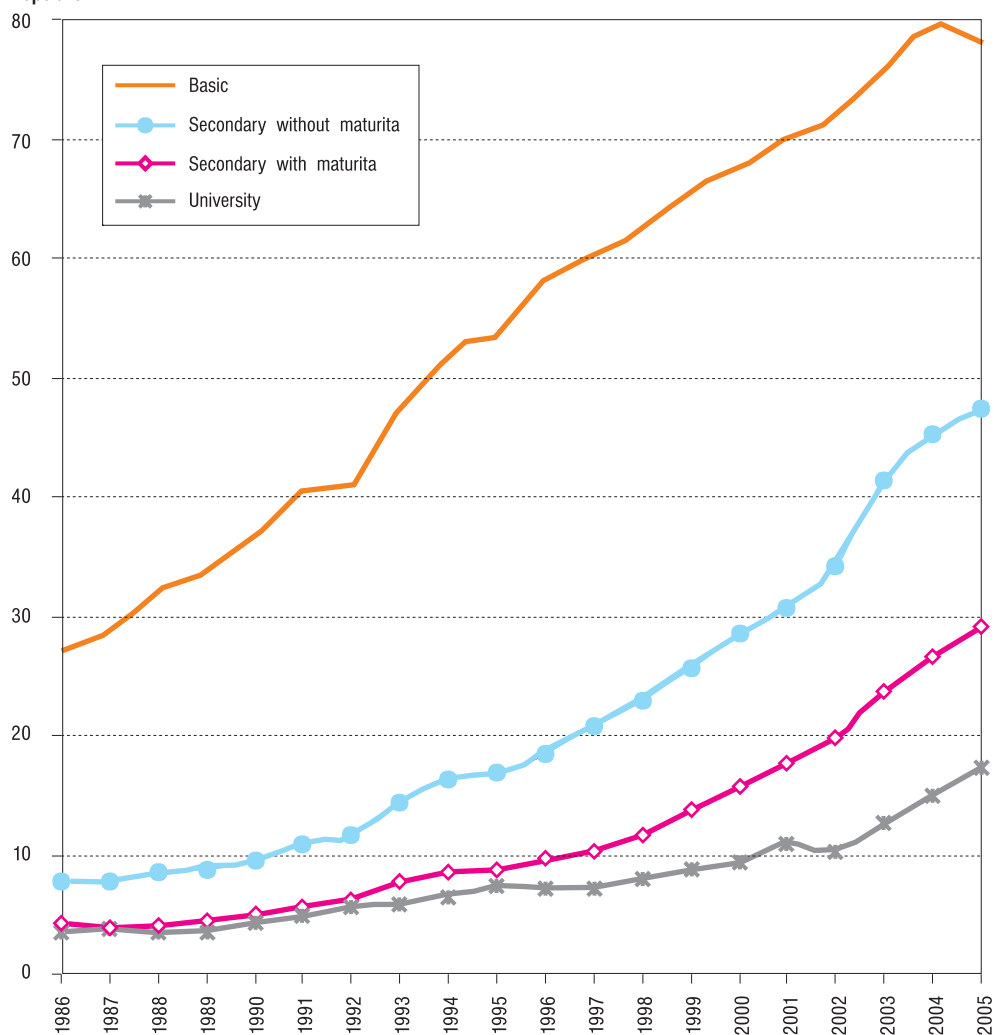
Gradient differentiation of single motherhood by education

As is the case with women on the whole (*Konietzka and Kreyenfeld*, 2002; *Kreyenfeld*, 2000; *Upchurch, Lillard and Panis*, 2002), among single women in the Czech Republic fertility intensity is negatively correlated with their level of education. Among women with basic education, in 1986, 14% gave birth to children as single mothers and in 2005 the figure was 60% (Tab. 4). Among women with higher education, the figures for the same years were 2% and 11%, respectively. If we look just at the first-order fertility of single mothers, then in 1986, 5% of all first-order births were born to single mothers (in 2005, 37%). However, among women with basic education these births accounted for 27% in 1986, and during the period under observation this figure rose sharply, reaching 78% in 2005 (Fig. 4). Conversely, women with secondary school education with the maturita exam had their first child as single mothers in fewer than 5% of the cases even in the late 1980s and early 1990s (Fig. 4). The higher the level of education of the single mother, the later the change towards an increase occurred, only taking place among women with the highest level of education at the end of the 1990s. Single mothers accounted for 17% all the first-order fertility among women with university education in 2005 (Fig. 4).

The average age at the time of first birth among single mothers was also differentiated by education: women with basic education were the youngest first-birth single mothers, and women with university education the oldest (Tab. 5). However, differentiation in time is sig-

Table 5 Average age of single mothers by education: live-born first-order

Year	Basic	Secondary without maturita	Secondary with maturita	University	Total
1986	19.25	21.23	23.92	29.56	21.18
1987	19.35	20.85	23.82	29.31	21.16
1988	19.13	20.83	24.00	29.58	21.06
1989	19.15	20.75	24.02	29.17	21.07
1990	18.82	20.77	23.90	28.67	20.96
1991	18.90	20.41	23.57	29.44	20.77
1992	18.69	20.52	23.48	29.10	20.74
1993	18.73	20.54	23.47	29.23	20.74
1994	18.72	20.82	23.72	29.18	20.84
1995	19.07	21.09	24.13	29.80	21.16
1996	19.24	21.49	24.19	29.93	21.41
1997	19.50	21.66	24.41	29.86	21.69
1998	19.67	21.89	24.34	30.01	22.00
1999	19.83	22.25	24.42	29.80	22.34
2000	19.92	22.75	24.62	29.68	22.74
2001	20.16	23.42	25.15	29.68	23.30
2002	20.21	23.62	25.38	29.81	23.50
2003	20.35	23.90	25.83	29.87	23.96
2004	20.60	24.24	26.17	29.91	24.41
2005	20.67	24.68	26.57	30.03	24.90

Note: Calculated from the distribution of live births.

nificant. Between 1986 and 2005 the average age of single mothers remained almost unchanged among women with basic education, among whom it continues to be around 20 years of age, and among women with university education, among whom it has remained at 30 years of age. The only increase in the average age of the mother at the time of first-order birth was among women with secondary education, with and without the maturita exam. These differentiated average trends also provide an answer to the question of why the corre-

lation between the percentage of children born to single mothers and their age is not very strong in Czech society. Given that the average age at which women with basic education become first-time single mothers has not changed, they form a specific and stable sub-population. Conversely, thirty-year-old single university graduates already have little room left in which a shift in age can occur.

Logistic regression can provide a more complex look at the effect of the socio-demographic factors that are of significance for the fact of whether a child is born in a marriage or to a single mother and insight into the change that occurred between 1986 and 2005. The dependent (explained) variable is birth to a single mother versus birth in a marriage. The independent (explanatory) variables (predictors) are the age of the mother (–19, 20–24, 25–29, 30+), birth order (1, 2, 3+), the mother's education (basic, secondary without the maturita exam., secondary with the maturita exam., university), and the region. Two regression models (main effects) were calculated, one for 1986 and the other for 2005 (Tab. 6).

Today children born to single mothers are more often born to younger mothers. While in

Table 6 Binary logistic regression: a model of the main effects without interactions (being born to a single mother versus being born to a married mother)

Independent variables	1986		2005	
	Sig.	Exp(B)	Sig.	Exp(B)
Age				
–19	0.000	1.373	0.000	5.711
20–24	0.000	0.778	0.000	2.313
25–29	0.000	0.772	0.000	1.093
30+	.	1.000	.	1.000
Births by order				
1	0.000	5.704	0.000	4.778
2	0.003	1.190	0.000	1.252
3+	.	1.000	.	1.000
Educational of mother				
Basic	0.000	9.771	0.000	12.024
Secondary without maturita	0.000	2.210	0.000	3.250
Secondary with maturita	0.025	1.195	0.000	1.654
University	.	1.000	.	1.000
Region				
Karlovarský kraj	0.000	3.683	0.000	2.962
Ústecký kraj	0.000	2.780	0.000	2.904
Hl. m. Praha	0.000	2.369	0.000	1.760
Liberecký kraj	0.000	2.040	0.000	2.122
Moravskoslezský kraj	0.000	1.931	0.000	2.008
Olomoucký kraj	0.000	1.548	0.000	1.657
Královéhradecký kraj	0.000	1.536	0.000	1.488
Plzeňský kraj	0.003	1.318	0.000	1.535
Jihočeský kraj	0.039	1.208	0.000	1.476
Jihomoravský kraj	0.021	1.205	0.000	1.263
Pardubický kraj	0.229	1.124	0.000	1.390
Středočeský kraj	0.290	1.091	0.000	1.334
Kraj Vysočina	0.075	0.832	0.914	0.994
Zlínský kraj	.	1.000	.	1.000

Note: Regions are listed according to the order of the value in 1986.

1986 children were born to single mothers under the age of 20, 1.4 times more than to women aged 30 and over, in 2005 it was 5.7 times more. This sharper gradient in 2005 is connected with the postponement of childbirth to a later age, which occurred more quickly among married women. Conversely, among single mothers with lower education the age at the time of first-order birth remained almost unchanged. A divergent trend can also be witnessed in an analysis of biological birth order: In 2005 there was a slight weakening in the predominance of first-order births among the order of births to single mothers compared to 1986 (in 1986 first-order births to single mothers occurred 5.7 times more often than to married women, while in 2005 it was only 4.8 times more). Nevertheless, first-order births continue to be the dominant birth order among single mothers (see Table 3). With regard to the mother's education, the differences between educational categories are growing larger and a strong polarisation is emerging between mothers with basic education and mothers with university education. In 1986, there were 9.8 times more single mothers among women with basic education who gave birth than among married women, and in 2005 the figure was more than 12 times more. Regional differentiation exhibited the smallest changes over time in comparison with the other variables under observation. The position of the Karlovy Vary region as the region with the biggest "risk" of single motherhood, as opposed to the reference region of Zlín, and compared to the other regions, actually weakened (a decrease from 3.7 to 3.0). There also occurred a shift in the order of the regions, which are ranked by values from 1986. The "risk" of single motherhood decreased in the capital of Prague and in the Southern Moravia region, while it grew in the Liberec and the Pilsen regions, based on an evaluation of the change in order.

Table 7 Marriage is an outdated institution: strongly agree + agree

Education	Men		Women	
	18–49	50–79	18–49	50–79
Basic	28.3	10.9	17.7	7.1
Secondary without maturita	20.1	7.7	15.5	7.4
Secondary with maturita	19.2	8.9	12.4	6.2
University	11.8	7.7	9.5	9.0

Source: Generations and Gender Survey 2005.
Note: The percentage is computed within the categories.

Conclusion

Single motherhood is a specific phenomenon in the study of fertility. In the Czech Republic the number of extramarital births never exceeded 10% at any time between the Second World War and the end of the 1980s (doing so for the first time in 1992). Only later did this percentage begin to grow. An analysis focusing on a comparison of the fertility of single and married women shows that the main determinant behind the rise in extramarital births to single mothers is the change in the structure of marital status, while the increase in fertility intensity among single women and the decrease in fertility among married women contribute less. With regard to single motherhood, women with university education are particularly conservative. The current prototype of the single mother in the Czech Republic, as in the past, is a woman with basic education, who gives birth to her first child around the age of 20. In a regional perspective these are women who live either in the Karlovy Vary region or the Ústí nad Labem region. The basic structural differences in the characteristics of single mothers compared to married mothers mean that single motherhood cannot be interpreted as an alternative to legal marriage with children, and this is partly also owing to the fact that the typical attributes of single motherhood have remained intact over time. On the other hand, it appears

that it is exclusively pro-family couples who have children after they are married, and there is a growing group of people who wait and are thus adding to the contingent of singles who then ultimately "produce" the larger number of births to single mothers amidst slightly increasing fertility intensity among singles. The gradual change in attitudes is documented in Table 7, where younger people often declare that marriage is an outdated institution, especially men with lower education. Nevertheless, the change in attitudes is not yet a threat to the institution of legal marriage with children, and instead implies more the formation of specific sub-groups of men with lower education, whose "free-thinking" opinions are more a reflection of their lower value in the marriage market (*McLanahan*, 2004).

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HAKIM'S PREFERENCE THEORY IN THE CZECH CONTEXT[*]

LADISLAV RABUŠIC – BEATRICE-ELENA CHROMKOVÁ MANEA[**]

Abstract: The article presents a test of Catherine Hakim's preference theory in the Czech environment. Using data from a representative survey of Czech women between the ages of 20 and 40 the authors first test to what extent Czech women conform to the typology of home-centred, work-centred and adaptive women. In the second part of the article the authors test whether this typology is a good predictor of Czech fertility and whether it influences the attitudes of Czech women on family policy measures.

Keywords: preference theory, fertility, family models, family policies, work

In 2002 the 'preference theory' proposed by the British sociologist *Catherine Hakim* first appeared in literature mapping the causes of low fertility in modern developed countries. She presented the theory in a series of articles and books (see, e.g., *Hakim*, 2000, 2003a, 2003b), and it sparked off considerable interest. In the preference theory, Hakim tries to explain women's lifestyle preferences based on their participation in the labour market, indicating whether their preferences steer them towards employment and building a career at work, or whether they are drawn more towards having a family and raising children. Hakim interprets lifestyle as a factor that can have a significant impact on women's fertility[1].

The preference theory puts forth a typology of women based on their relationship to family and paid work. Hakim distinguishes three types of women based on lifestyle preferences:

I. Home-centred women, who prefer to devote themselves to the family and household and tend to have larger families; they only seek work if it is necessary to maintain the family budget.

II. Work-centred women, who realise themselves more through work than through family; they form a kind of counterpart to the preceding type.

III. Adaptive women, who try to combine their work at the workplace and at home; they are a kind of mixture of types I and II.

Hakim's typology was empirically tested using the theory's indicators in representative studies of the populations of Great Britain and Spain. The empirical data from these studies produce a normal distribution curve and show that 20% of women are home-centred, 60% adaptive, and 20% work-centred (*Hakim*, 2000: 6). According to Hakim, an important feature of this typology should be that women in each lifestyle type are inclined to have a different number of children. In Hakim's view, this fact should make it possible to predict the reproductive behaviour of women in relation to the social and family policy of the state.

In this context Hakim draws attention to an error often committed by politicians when introducing measures designed to increase fertility in the country. Women with different lifestyle preferences respond differently to family and population policy measures, and that usu-

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ally prevents the measures from achieving their intended outcome[2]. For example, home-centred women should respond to changes in the state's fiscal policy. If the state fiscal policy reduces the tax burden on families with children women in this lifestyle type tend to have a large family and stay at home with the children. The situation is different in the case of adaptive women, who respond to policies or programmes aimed at helping them achieve a work-life balance. Work-centred women are not sensitive to any family or population policies. What is most important for them are policies directed at combating discrimination on the basis of gender, race, or marital status.

The objective of this article is to determine whether the preference theory also applies to the Czech Republic and specifically to the population of Czech women. Three basic research questions can be drawn from the preference theory, and they are the subject of our analyses here: 1) First we will ask whether the same distribution of individual types of women can be found in the Czech Republic as Hakim found in her data; 2) We will verify whether there are significant differences by lifestyle type between the approaches women take to fertility; 3) Finally, we will determine whether there are differences by lifestyle type between the way women view individual measures in Czech family policy.

Methodology

These three research questions are analysed using data from a sociological survey carried out in the Czech Republic at the end of 2005. The research agency SC & C collected the data by administering a standardised questionnaire to a random sample of the population made up of women between the ages of 20 and 40 and also their husband or partner if they shared the same household; the age of the men was not limited. If the woman lived alone and was in the defined age group she was included in the sample. If the interviewers came across a man between the ages of 20 and 40 and living alone, he was administered a male questionnaire and also included in the sample. Data was collected from a total of 2546 respondents. In this article, for obvious reasons, we will be focusing just on the sub-sample of women made up of 1284 respondents.

Formulating a relevant typology was of key importance in this analysis. This was done in cooperation with Hakim by using her set of questions (see the Appendix). Home-centred women are defined as women who selected the third response under question H5 and for whom work is not their focal interest. Work-centrality was determined on the basis of questions H4 and H6. Work-centred women are women who would continue to work even if the family income was high enough to allow them to remain at home (the first response to question H4) and who are the main source or contribute equally with their husband/partner to household income (the first or third response to question H6). Work-centred women are those who selected the first response under question H5 and for whom work is their focal interest (based on work-centrality). Adaptive women are those who do not fall into either one of the two types.

Findings

Hakim's typology in the Czech Republic

Table 1 shows the distribution of women according to individual lifestyle preferences. It also presents similar data for Great Britain and Spain drawn from Hakim's publication. The comparison of Czech data with foreign data is not ideal, as Hakim worked with data for a different age group of women, but the table does provide a kind of illustrative comparison.

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[2] It is a question whether her emphasis on the woman as the key element in determining the ultimate number of children is not perhaps somewhat erroneous. Hakim claims that 'romantics wanted to believe that couples decide together how many children they have, but in reality just one of the partners always has the decisive word' (2003a: 369). And in this she has the woman in mind.

Table 1 National distributions of lifestyle preference among women, Czech Republic, Great Britain and Spain, in %

Country	Home-centred women	Adaptive women	Work-centred women
Czech Republic			
Women aged 20–40 years	16	70	13
Working women	14	69	17
Married women aged 20–40 years	14	75	11
United Kingdom			
Women aged 16–64 years	14	71	15
Working women	11	72	17
Married women aged 20–59 years	13	77	10
Spain			
Women aged 18–64 years	14	71	15
Working women	5	67	28
Married women aged 20–59 years	15	73	12

Source: Authors' calculations for the Czech Republic from a data file from the MPR 2005; for Great Britain and Spain, Hakim (2003b: 85).

Like in the two other countries in the comparison, the Czech distribution of lifestyle preferences is relatively normal, but somewhat high. This means that the middle variant is larger than it should be for an ideal distribution. However, the share of **adaptive** women is also much higher than the other two types. There is a somewhat larger share of home-centred women (16%) in the Czech sample than work-centred women (13%), but the difference, though statistically significant at 0,05, is negligible. However, these shares are turned around in the sub-sample of employed women, where work-centred women make up the larger share. In the sub-sample of married women (which made up 49% of the sample) the share of adaptive women is very high, at 75%.

The Czech typological distribution is more or less similar to those seen in Great Britain and Spain. Given that these three countries have considerably different economic, social and cultural landscapes, this finding would suggest that there is a universal validity to Hakim's typology, as it has been empirically confirmed in three diverse cultures. However, the problem is that it is hard to accept this typological distribution because when the absolute majority of cases in every country fall into the middle category we have to wonder if this concept is being operationalised properly. We will return to this question in the final part of this article.

What characteristics are relevant to each type of lifestyle preference? Table 2 shows that among Czech women there is a link between typology and education: the best-educated women are more often work-centred women, while the least-educated women are more often home-centred women. Subjective class ranking works similarly: the higher the subjective class ranking the larger the share of work-centred women and the lower the share of home-centred women. We also found that women who were employed at the time of the research were more often work-centred than unemployed women, who, based on their responses, also more often belonged to the home-centred type of women. A woman's religious orientation did not play any role in the typology, though it could have been assumed that women with strong religious convictions would be more inclined to be the home-centred type[3]. The older women (aged 30-40) were typologically more work-centred than the younger women in the sample. Widowed and divorced women were also more work-centred than other marital status categories. In relation to the number of children a woman has, women with more than three children were most often the home-centred type[4].

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[3] Understandably there is a relatively strong correlation between the education of the respondent and her subjective self-classification (Goodman-Kruskal gamma for ordinal data is = +0,66; p < 0.001).
[4] More than one-half of the women in our sample worked full time, 11% were at home, 7% were unemployed, and 5% worked part time.

Table 2 Lifestyle preferences among women aged 20–40 in the Czech Republic by various socio-demographic characteristics, in %

Indicator		Work-centred women	Adaptive women	Home-centred women
Age group	20–29	11	73	16
	30–40	16	68	16
Education	Basic	10	59	31
	Secondary vocational/ Secondary without maturita	11	71	18
	Secondary with maturita	14	73	13
	University	26	59	15
Marital status	Married	11	75	14
	Widowed	25	47	27
	Divorced	22	63	15
	Separation of spouses	0	73	27
	Single	13	67	19
Operate position[4)]	Employed	17	69	14
	Unemployed	6	71	23
Current number of children	Childless	14	69	17
	1 child	14	71	16
	2 children	14	72	14
	3+ children	9	66	25
The role of religion in life*	Important	13	72	14
	Unimportant	14	70	17
Subjective class	Low/working class	13	65	22
	Lower-middle class	10	74	16
	Middle	15	71	15
	Upper-middle/upper class	24	66	10
Total		13	70	16

Source: Data file MPR 2005.
Note: *Four-item scale; here only the extreme fields are presented.

Given that the bivariance relations in Table 2 may conceal some apparent or even false associations, we also included these variables in a multinomial logistic regression. The findings from the regression are not presented here, as the regression model does not reproduce the data satisfactorily and adds no additional information that could not be drawn already from the tables of second-order categorisation – the variables used do not influence differences in preferences and the odds ratios come out statistically insignificant.

We tested the typology's validity by relating it to questions examining a similar phenomenon but formulated differently than the questions used to create the typology. If the typology is valid the answers should break down logically into consistent categories. Table 3 shows that this is the case. In all the statements (except statement 8) the views of home-centred women are genuinely much more pro-family than the views of work-centred women, while adaptive women (though not in such a clear-cut manner) always ranked in the centre[5)]. From this perspective, Hakim's typology differentiates in the Czech context as intended.

[5)] Czech feminists will probably be somewhat disappointed by attitudes to statement no. 1. A full 47% of women aged 20–40 agreed with this statement, and only 26% disagreed.

Table 3 Opinions on gender roles, work and family by lifestyle preferences in the Czech Republic, answers "agree", in %

Statement	Work-centred women	Adaptive	Home-centred women	Total "agree" abs.	%
1. It is the man's job to earn money, and a woman's job to look after the household and the family'	23	47	64	590	47
2. Working mothers can have just as close a relationship with their children and given them the same sense of security as mothers who don't work	91	78	72	978	79
3. A woman can derive the same satisfaction from being a homemaker as she can from working	16	26	39	333	27
4. Working is a good thing, but what most women really want is a home and a family	43	63	65	744	61
5. Women want to have both a family and children	92	84	65	1013	82
6. Working is so demanding on men today that they don't have time to devote to their family	22	38	40	455	36
7. Today families who want to have children have to share the task of caring for the children much more than before	74	64	60	817	65
8. Fathers are as well-equipped to care for their children as mothers are	52	46	47	594	47

Source: Data file MPR 2005.
Note: *Opinions on these statements were measured on a five-point Likert scale; the responses "wholly agree" and "agree" were merged for presentation in this table.

To sum up in response to our first question, in the Czech Republic Hakim's typology has a distribution similar to that in some other countries. The majority of women in the Czech Republic also fall into the adaptive category: in their responses to the questions these women hesitated over whether they clearly favoured work and their job or whether they were more strongly inclined towards the family. The typology of women by lifestyle preferences proved valid as a predictor of opinions on the roles of men and women in the family and the relationship between the family and employment. The individual types of women based on Hakim's guidelines held the views it was assumed they would.

Does this typological differentiation have an effect on women's fertility? According to Hakim's theory, it should have, and we have data that will allow us to answer this question.

Hakim's typology and fertility

The second question we are addressing in this article is whether the three types of women we defined also have significantly different fertility rates. The women included in the sample are at an age where many of them still have their reproductive life before them, while others have already completed their fertility. To address this, we used a variable that we called "hypothetical" (or expected) completed fertility. As its name suggests, it is similar to the demographic concept of completed fertility, but we calculated it as a sum of the number of children that the respondent has and the number of children that she would like to have in the future. The resulting datum summing up how many children a woman will probably have in her lifetime is thus a construct that is compiled out of already existing components (the actual number of children a woman has) and expected components (the planned number of children), which means it is not a certainty and is therefore referred to as "hypothetical".

As the data in Table 4 show, we must (unfortunately and with regret) confirm that Hakim's typology has little effect on the hypothetical completed fertility (HCF) of Czech women. In the 20–29 age group the HCF of home-centred women is the lowest of all three types (1,64), even though we ought to expect the reverse. While it is true that the difference between opposite types of women is small (though statistically significant, as the dispersion analysis demonstrated, so it can be expected to be found even in the basic sample), it is oriented in the "wrong" direction. The sequential correlation between the typology and the HCF, measured

as a gamma coefficient, is very small and statistically insignificant (0,16; p > 0,05)[6]. In the 30-40 age group the highest HCF is observed among adaptive women (1,92) followed by family-centred women (1,89), and work-centred women have the lowest HCF (1,76). The differences are of course very small, and moreover statistically insignificant, which means that the three types will not be different in the Czech Republic. The sequential correlation is almost zero and it is statistically insignificant (0,06; p > 0,05).

Table 4 Fertility indicators by age groups and Hakim's typology in the Czech Republic – mean number of children

Age group	Work-centred women			Adaptive			Home-centred women		
	CNCH[I]	NOCH[II]	HCF[III]	CNCH	NOCH	HCF	CNCH	NOCH	HCF
20–29 let	1.38	1.68	1.82	1.45	1.73	1.88	1.57	1.76	1.64
30–40 let	1.78	1.37	1.76	1.90	1.34	1.92	2.01	1.74	1.89

Source: Data file MPR 2005.
Note:[I] CNCH – current number of children (mean); [II] NOCH – number of other children (mean); [III] HCF – hypothetical completed fertility.

We find similar relations when, instead of the HCF, the variable in the analysis is the number of children the woman currently has (CNCH in Table 4) or the number of children the woman would like to have (NOCH in Table 4). For example, in the 30–40 age group, the average number of children for each individual type is 1.78 x 1.90 x 2.01. The differences between the averages are statistically insignificant and the sequential correlation between the typology and the number of children in this age group is close to zero and is also statistically insignificant (gamma = 0,11, p >).

Another indicator signalising that Hakim's typology is not a good predictor of fertility in the Czech Republic is the relationship between this typology and the value of children indicator. Based on Hakim's theory we would expect women's perceptions of the value of children to differ by lifestyle preferences. But this is not the case. Table 5 shows that work-centred and adaptive women more strongly emphasise the value of children (i.e. they agree with the statement that a person must have children in order to have fulfilment in life) than home-centred women. This finding also tells us that even Czech career women desire to have children, again confirming a conclusion reached by many other analysts, that being able to achieve a work-life balance is extremely significant for increasing fertility in the Czech Republic[7]. Conversely, it is more often home-centred than work-centred women who agree with the statement that children are not essential to a person's self-fulfilment, while based on Hakim's theory the opposite distribution would be expected.

The final piece of evidence that Hakim's typology is not a good indicator of (expected) fertility in the Czech Republic is the data on the average number of children that women in our sample over the age of 36 have. We know from age-specific fertility that fertility among Czech women after the age of 36 is very low, so with some licence we can assume that the number they have at age 36 is their completed fertility. Table 6 shows that there is no difference between work-centred and home-centred women with regard to the average number of children they have, and moreover, the highest intensity of completed fertility is observed among adaptive women.

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[6] With some statistical licence, this typology can be regarded as an ordinal type of variable.
[7] For example, *Rychtaříková* (2003) claims that the conflict between a woman's work commitments and her traditional role in the family has led to the sharp decline in fertility. Based on empirical data *Kocourková* (2001) found that women would consider having another child if they had the option of working part time or if they had the option of flexible working hours.

Table 5 Perception of the value of children by Hakim's typology in the Czech Republic, share of responses agreeing with the statement (N = 1232), in %

Statement	Work-centred women	Adaptive	Home-centred women
To have fulfilment in life, a person must have children	91	93 + + +	79 – – –
Today's world offers many opportunities for achieving fulfilment in life that a child is no longer actually necessary	9	7 – – –	21 + + +

Source: Data file MPR 2005.
Note: The symbols optically underscore the cells where the frequency is significantly different from the expected frequency on the assumption of the independence of the observed indicators. The symbol "+" indicates a higher measured frequency compared to expectations; the symbol "-" indicates the opposite. In each cell there can be one to three plus or minus symbols based on the statistical significance of deviation (95%, 99%, 99.9%).

Table 6 The average number of children of women aged 36+ by Hakim's typology

Age group	Work-centred women	Adaptive	Home-centred women	N
36+	1.54	1.82	1.59	1.73 (N = 289)

Source: Data file MPR 2005.

Hakim's typology and family policy

It follows from Hakim's theory that women's perceptions of family policy measures designed to facilitate childcare and parenthood and make it easier to combine work and family responsibilities should differ by lifestyle preference. In our research we formulated sixteen such measures and asked respondents to rank them by subjective importance[8]. Table 7 shows the total support respondents gave to the four measures they identified as the most important.

The preferences show that Hakim's typology does work in this case and women differ by lifestyle preference in their attitudes towards family policy measures. Home-centred women more often favoured extending paid maternity leave at 90% of the previous wage (compared to work-centred women the ratio is 57:42), significantly increasing the child allowance (50:42), and increasing the amount of the birth benefit (24:12). Conversely, work-centred women more often than home-centred women selected measures connected with work: support for flexible working hours or part-time work (38:20), increasing the number of nurseries and kindergartens (19:10), ensuring adequate availability of childcare facilities for school-age children (14:5). The differences were not that significant in the case of other measures.

Differences in preferences were similarly found with regard to which family policy measures work-centred women and home-centred women selected as the least important for making parenthood easier (Tab. 8).

Work-centred women more than home-centred women viewed increasing the birth benefit (17:6) and the existence of newlywed loans (12:4) as of absolutely no importance. Logically, home-centred women considered the least important measure that of allowing the father to be on maternity/parental leave instead of the mother (25:16) – these women naturally see childcare as their domain. They also ascribed little importance to measures aimed at increasing the number of nursery schools and kindergartens (13:4) – they have no need for them as they are at home with their children.

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[8] The wording of the question was: In state family policy there are measures that are designed to make parenthood and childcare easier and to make it possible to better combine working in the labour market and family responsibilities. Select four from the following selection that you see as the most important in this regard. Arrange them in order of importance.

Table 7 Hakim's typology and the family policy measures that female respondents in the Czech Republic consider the most important for helping them combine work and family responsibilities (in%; the measures are listed according to the preferences of work-oriented women)

Measures	Work-centred women	Adaptive	Home-centred women
Extending paid maternity leave at 90% of the previous wage	42	48	57
Significantly increasing the child allowance	42	41	50
Support for flexible working hours or part-time work	38	32	20
Reducing the taxes of people with minor children	28	28	28
Reducing the costs of child education	23	20	20
More affordable housing for families with children	23	22	28
Increasing the number of nurseries and kindergartens	19	15	10
Stronger measures against unemployment	16	22	20
Ensuring adequate availability of childcare facilities for school-age children	14	8	5
Increasing the birth benefit	12	18	24
Better job protection legislation for parents	11	10	5
The existence of newlywed loans	10	11	13
Requiring employers to allow mothers/fathers with children under the age of 10 to have 1–2 days off every month	9	7	8
Reducing the length of parental leave, increasing the parental allowance	6	10	9
Making kindergartens and nurseries more affordable	4	5	3
Allowing the father to be on parental leave instead of the mother	3	3	1

Source: Data file MPR 2005.

Table 8 Hakim's typology and the family policy measures that female respondents in the Czech Republic consider the least important for helping them combine work and family responsibilities (in%; the measures are listed according to the preferences of work-oriented women)

Measures	Work-centred women	Adaptive	Home-centred women	Total
Increasing the birth benefit	17	9	6	10
Allowing the father to be on parental leave instead of the mother	16	17	25	18
Requiring employers to allow mothers/fathers with children under the age of 10 to have 1-2 days off every month	14	11	6	11
The existence of newlywed loans	12	9	4	9
Making kindergartens and nurseries more affordable	8	13	9	12
Better job protection legislation for parents	6	4	5	4
Reducing the length of parental leave, increasing the parental allowance	5	4	7	5
Increasing the number of nurseries and kindergartens	4	10	13	10
Reducing the costs of child education	4	4	5	4
Ensuring adequate availability of childcare facilities for school-age children	4	6	7	6
Extending paid maternity leave at 90% of the previous wage	3	2	0	1
Reducing the taxes of people with minor children	2	2	3	2
Support for flexible working hours or part-time work	2	2	3	2
Stronger measures against unemployment	2	3	2	3
More affordable housing for families with children	2	3	2	3
Significantly increasing the child allowance	1	1	1	1

Source: Data file MPR 2005.

Conclusion

In this article we tested whether Catherine Hakim's much-discussed theory of a typology of women (home-centred women, work-centred women, and adaptive women) based on lifestyle preferences relating to labour-market participation and the perception of the roles of men and women in the family also applies in the Czech Republic. According to Hakim, the typology should be a good predictor of women's fertility behaviour and family policy preferences.

Based on a representative survey of Czech women aged 20–40 we found that Hakim's typology does not work well in the Czech Republic. The distribution of the three types corresponds to Hakim's findings in other European countries, but, contrary to Hakim's assumptions, it is not a good predictor of expected or completed fertility. It does, however, apply as expected in the case of women's family policy preferences. Work-centred women favour measures that help them combine work and family, while home-centred women favour measures that make it easier for them to remain at home and care for their children themselves.

Hakim vehemently promotes her typology and claims that it is a simple tool with which to predict women's fertility behaviour. Following our analyses, we are not altogether convinced this is true. The findings relating to its ability to predict fertility were particularly disappointing. Hakim's writings and conference papers had inspired the hope that by determining preferences and formulating lifestyle types we would be able to predict completed fertility. If her typology did work and we were able with some probability to expect that differences between women's lifestyle preferences would be reflected in differences between their completed fertility, we would then be able to design the appropriate family policy based on this information. However, in the Czech context these hopes fell through.

One likely reason why women do not always follow the preference patterns expected under Hakim's typology is that the preferences the indicators are intended to capture do not relate to the perceived value of children, which is a very important factor in explaining differences in fertility intensity, and, as first demonstrated by *Hoffman and Hoffman* (1973) and then by *Nauck* (2006), has played a significant role in international comparisons. Another likely reason is that the responses to the set of questions the typology is based on are contextually dependent. Consequently, they are not deeply embedded and unchanging aspects of a woman's personality that determine all the decisions women make between the ages of 20 and 40 about the number of children to have.

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Appendix

H1. To what extent do you agree or disagree with the following statements using a five-point scale where 1 means agree strongly, 2 agree somewhat, 3 have no strong feelings either way, 4 disagree somewhat and 5 disagree strongly:
a. Even when women work, the man should still be the main breadwinner in the family;
b. In times of high unemployment married women should stay at home.

H2. Who should have the ultimate responsibility for ensuring an adequate income for a family? The male partner? The female partner? Or both equally?

H3. Who should have the ultimate responsibility for ensuring that the housework is done properly in a household? The male partner? The female partner? Or both equally?

H4. If without having to work you had what you would regard as a reasonable living income, would you still prefer to have a paid job? Yes, No, I do not know.

H5. People talk about the changing roles of husband and wife in the family. Here are three kinds of family models. Which of them corresponds best with your ideas about the ideal family?
   1. A family where the two partners each have an equally demanding job and where housework and the care of the children are shared equally between them.
   2. A family where the wife has a less demanding job than her husband and where she does the larger share of housework and caring for the children.
   3. A family where only the husband has a job and the wife runs the home.
   4. None of these three cases.

H6. Who is the main income-earner in your household: respondent, partner, both of you jointly or someone else?

THE RISE IN EDUCATION LEVELS ACCORDING TO CENSUS DATA FROM 1961–2001 IN THE CZECH REPUBLIC[*)]

DAGMAR BARTOŇOVÁ[**)]

Abstract: This article examines the development of education based on the representation of the main education levels in different generations. The education levels of individual generations born between 1921 and 1985, divided into five groups, are analysed. Although the level of education among the youngest generations is continuously growing, the Czech Republic nonetheless lags behind advanced European states in terms of the overall level of education. A more rapid pace of increases in the percentage of people with secondary and university education can be observed mainly in the 1990s, but the proportion of people with university education is still low – according to the 2001 Census only 9% of the population over the age of 15 attained university education, and when post-secondary vocational education was taken into account the tertiary sector includes just over 10% of the population. Among both older and younger generations there is a persistent difference in the level of education of men and women, even though the level of education among women has risen more quickly. In the 1990s it is possible to observe a deceleration of the pace of relative increase in the percentage of people with university education, primarily owing to an increase in the length of the duration of study.

Keywords: education, education system, classification of education, generational analysis of level of education, census data

The article examines the development of education using census data since 1961, but it focuses mainly on the generational increase in education levels based on the representation of the main education levels in different generations (basic, lower secondary, upper secondary, and higher education). Post-war development of the education system was shaped by a number of legislative changes, and these were reflected in different ways of classifying education in individual censuses, so data from the four censuses is not fully compatible, but the classification of education levels used makes the differences and incompatibilities – with some reservations – negligible. Nevertheless, I consider it appropriate to briefly mention what the basic changes to the education system were.

That was not, however, the only problem that this analysis of the development of the education system had to deal with. Classifying the relevant birth cohorts into corresponding to five-year age groups of people with a certain type of education, for which the data are published, do not always match up in the time series. The censuses in 2001, 1991, and 1961 were taken at the start of March, and taking that calendar date into account, five-year generational groups were determined according to the date of birth of the cohort into corresponding the age of a person on 1 January of the given year or 31 December of the previous year. The fact

that the other censuses in 1970 and 1980 took place at the end of the year was left aside, so the difference between censuses does not correspond exactly to a ten-year interval, as was the fact that people complete lower levels of education in the middle of the calendar year. The article contains an analysis of the level of education by five-year cohorts between the ages of 15 and 79, which in 2001 represented persons born between the years 1921 and 1985 (in the censuses in 1970 and 1980 the classification of data by five-year groups ends at the age of 59 and 64, respectively, and in addition the 1970 census used a non-standard classification of the youngest age groups: 15–18 and 19–24).

Classification of the level of education as a reflection of the development of legislation affecting the education system

Czech censuses, and before that Czechoslovak censuses, have only been recording data on the highest completed level of education since 1950. Initially the data referred to persons over the age of 6, and since 1961 they have referred to persons over the age of 15. The classification of individual levels and types of education in individual censuses largely adhered to legislation on education, which in the 1950s underwent a number of changes. A more detailed classification of persons by completed education differed considerably in the 1950 census from later censuses, although the April 1948 Act on the basic form of the integrated education system made school attendance legally compulsory for nine years and the union of primary school with lower secondary schools established the so-called unique school and modified the structure of secondary schools[1]. It was only with the Education Act of 1960 that the school system began to resemble the school system that, with subsequent legislative changes, existed up to the start of the 1990s.

The Education Act of 1960 established the current school structure and its terminology. The duration of each individual level has varied over the years, as has the length of compulsory school attendance, and even the terms of compulsory attendance within individual levels has changed, which has had some impact on the percentage of people that have completed basic education.[2] However, a much bigger impact on the structure of school education was the incorporation of apprenticeship education into the secondary school system. In the 1960s it began to be possible to obtain secondary education and later complete secondary with *maturita* (the school-leaving exam) even at vocational schools, which since 1960, together with secondary technical schools and gymnasium-type education, have all been part of the secondary school system (the secondary level of education), wherein all three types of schools were gradually supposed to be made more alike and more equal (a reform from 1976 introduced into the Education Act of 1984). All three types of secondary school were able also to provide complete secondary education ending in maturita (that is, even some disciplines offered at secondary vocational schools), allowing the graduates of all these schools to apply for study

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[1] With the introduction of unique school, the 1948 Education Act combined the five-year primary (formerly the general) schools and the four-year lower level of secondary education, where it was possible to complete the compulsory nine years of education. This also altered the concept of secondary education, which was then regarded to be just secondary education providing the higher (secondary) level of secondary education. A legislative amendment in 1953 integrated primary and lower secondary school into an eight-year "secondary school", and compulsory school attendance was reduced to eight years. Also, the addition of gymnasium (the second level of secondary school) resulted in an eleven-year secondary school, the last three years of which followed from basic education at an eight-year secondary school and provided secondary general education terminating in maturita.

[2] Compulsory eight-year school attendance, legislated in 1953, was extended again to nine years in 1960, and then to ten years by the 1984 Act (No. 29/1984 Coll.; the actual change was however introduced in 1976), and then reduced to nine years again in the 1990 Act (No. 171/1991 Coll.). The 1960 Education Act also changed the structure of basic education: eight-year "secondary" school was replaced with nine-year basic school, which existed until 1979; in 1979–1989 it was shortened to eight years, in 1990–1995 it was again nine years in duration, as its first level was extended from four to five years. The 1995 Act again established compulsory school attendance at a nine-year basic school, after which it was possible to make the transition to a secondary school and complete school attendance there or school attendance could be completed at a multi-year gymnasium. Since 1996 the law is nine years of compulsory school attendance at a basic school or in combination with a multi-year gymnasium.

at a university. Since the 1961 census the more detailed classification of people by level and type of education is (with some differences) comparable (though in that year serve one's time apprenticeship was still a part of basic education), and in subsequent censuses the classification of education levels are adjusted to accommodate the changes in the education system.

The 1990 amendment to the Education Act re-introduced multi-year gymnasia, where students can complete compulsory school attendance and also higher secondary education. A 1995 amendment (No. 138/1995 Coll.) established in law a new level of education – higher technical vocational education, which is already a tertiary level of education, even though in the Czech Republic it is outside the higher education system.

In the 1950s higher education was centrally administered and planned on the basis of quotas and planned study-field structures, and some schools were even stripped of the status of university (e.g. theology faculties were listed separately in censuses in the 1970 and 1980 censuses). Only after 1989 did the universities regain their autonomy, self-administration, and academic freedom; their network expanded with the emergence of regional and private universities, and even their legal standing changed. Universities have gradually been transformed into a three-degree structure of study. Changes in the structure of higher education could only be reflected in the classification of higher education in the census in 2001, when the bachelor level of study was recorded for the first time within higher education and when the category of advanced research qualifications was also recorded.

The ISCED 97 classification (International Standard Classification of Education, 1997 revision) was used for the first time in the 2001 census. The ISCED 97 classified traditional forms of education into internationally comparable types. It comprises seven basic degrees of education at four levels:

Pre-primary education (ISCED 0) includes pre-school education (the start of formal education); in the census person over the age of 15 who had not completed the first stage of basic school or a special basic school) or the first or second stage of a remedial school, or with incomplete auxiliary school.

Primary education (ISCED 1) corresponds to the first level of basic school, graduation from the first level at a special basic school, the first and second levels at a remedial school, and graduation from a all levels of auxiliary school; in the census persons who had not complete basic education, then persons with finished only first basic or special basic school, first and second level of remedial school and with complete auxiliary school.

Secondary education (ISCED 2) comprises two categories: the first three levels of lower secondary education (ISCED 2A, 2B, 2C) includes people who have completed basic education (except those who completed the second level of a basic or special school, and persons who completed the third level of a remedial school, those with a working level of auxiliary school, graduates of one- and two-year vocational schools, council and civic schools, and courses for completing basic education).

The category of higher secondary education is divided into three programmes (ISCED 3A, 3B, 3C), where programme 3A is considered to be preparation for higher education (graduates have maturita or the school-leaving exam from one of various types of gymnasium, secondary general-education and eleven-year secondary schools, real gymnasia, higher schools for girls, secondary technical schools, including arts school and conservatory graduates with the school-leaving exam, or students who studied a vocational field terminating in maturita (the final school-leaving exam) at a secondary vocational school. The other two programmes (ISCED 3C and 3B) are regarded as degrees leading towards or preparing students for the labour market; they include training in various fields terminating in a final exam without maturita, graduates of practical three-year schools, people with an apprenticeship certificate, graduates of former technical one-year to three-year schools, including girls, family, and business academies, and the study of individual subjects terminating in a certificate.

ISCED 4 (which was introduced into the original classification only in a revision in 1997) encompasses programmes that are on the border between the higher secondary and post-secondary level; this includes follow-up courses and post-secondary study, courses leading to a certificate of apprenticeship for graduates of secondary school, re-qualification courses at secondary technical schools and secondary vocational school ending in a final exam or an apprenticeship certificate.

Tertiary education is divided into two programmes (ISCED 5 and 6). ISCED 5 encompasses category 5B (education terminating in a certificate from a higher technical school, with maturita and an absolutorium from an eight-year or six-year conservatory, former post-graduate study, experimental higher study at a secondary technical school) and category 5A (university, higher education), which includes graduates of higher education in bachelor programmes (Bc., BcA.), teacher training for primary, and graduates of most universities and current master's programmes and programmes following up on master's programmes (Mgr., MgA., MUDr., Ing., etc.). The second stage of tertiary education, ISCED 6, so-called advanced research qualifications, is aimed at awarding academic research qualifications; this includes the current doctoral study programme, post-graduate study, and until 2001 so-called research education (graduates of which bear the title of Ph.D., Th.D., formerly CSc., Dr.Sc.).

A table is appended to the end of the study showing the structure of the population by relevant education levels according to the ISCED classification and according to the classification used in the 2001 census; it also illustrates the substantial differences in the education of the population as a whole and in the 30-34 age group.

A brief overview of the development of overall education since 1950

The overall education level, measured by the percentages of people who completed levels of education higher than basic education, grew continuously in the period after the Second World War, but the Czech Republic and previously Czechoslovakia has nonetheless lagged behind advanced European countries in terms of the overall level of education. The rate of growth of the percentage of people with higher – secondary or university – education was the fastest in the 1950s and 1960s, but at that time it was growing out of a very small percentage. In the 1970s and 1980s there continued to be high inter-census increases in the number of people with university education – the number of people with university education always increased by approximately one-half, and by the 1990s the increase had begun to slow and the number of people with complete secondary and university education grew by just under one-third and their proportion by one-quarter. A role here was played by the prolongation of the total duration of study. Compared to 1950, twelve times as many people had university education in 2001 and their percentage in the population had increased tenfold. The rapid rate of increase in the percentage of people with university education in the 1950s is best illustrated by the fact that in the next census, in 1961, the increase was less than fivefold and the percentage had increased only fourfold. Nevertheless, the percentage of people with university education is still low – according to data from the 2001 census only just under 9% of the population over the age of 15 had university education and just over 10% had a tertiary level of education along with their higher secondary technical education. In EU countries the figures are between 10% and 30% of the population (the least are in Portugal and Italy, at around 10%, and the highest in Sweden, Finland, Denmark, Belgium, and Germany).

The number of people with complete secondary education (especially technical) increased more then sevenfold over a fifty-year period, and almost fourfold compared to 1961, while their percentage of the population tripled. A thirty-percent increase in the number of secondary school students in the past decade meant an increase in their percentage of the population by one-quarter, the same as the increase in the percentage of university students, the rate of increase in the percentage of secondary school students was, however, with more than a triple increase in numbers, slower throughout the period of forty years. In 2001 over 28% of the population had complete secondary education.

Table 1 Population over the age of 15 by highest completed level of education in 1950–2001

Highest completed education	Census year						Index (%)
	1950	1961	1970	1980	1991	2001	2001/61
Population, total (thousands)							
Basic[1]	5606.0	5743.7	4085.0	3511.7	2696.1	1975.1	83
Secondary technical incl. vocational[2]	660.9	546.9	2225.0	2556.3	2878.6	3255.4	
Secondary full[2]	344.6	642.8	1043.9	1348.5	1867.0	2431.2	378
incl. technical[3]	203.1	437.4	783.8	1070.2	1524.5	2000.2	457
general	141.5	205.4	260.1	278.3	342.5	431.0	210
Tertiary education	61.7	156.4	263.1	393.5	582.8	762.5	487
No school education	21.8	24.5	22.2	20.1	27.8	37.9	155
Not identified	62.8	28.7	60.0	49.8	85.5	113.1	394
Population aged 15+, total	6757.8	7143.0	7699.2	7879.9	8137.8	8575.2	120
men	3239.0	3398.9	3668.4	3753.6	3891.9	4133.1	122
women	3518.8	3744.0	4030.8	4126.3	4245.9	4442.1	119
%							
Basic[1]	83.0	80.4	53.0	44.6	33.1	23.0	69
Secondary technical incl. vocational[2]	9.8	7.7	28.9	32.4	35.4	38.0	
Secondary full[2]	5.1	9.0	13.6	17.1	22.9	28.4	315
incl. technical[3]	3.0	6.1	10.2	13.6	18.7	23.4	381
general	2.1	2.9	3.4	3.5	4.2	5.0	175
Tertiary education	0.9	2.2	3.4	5.0	7.2	8.9	406
No school education	0.3	0.3	0.3	0.3	0.3	0.4	129
Not identified	0.9	0.4	0.8	0.6	1.1	1.3	328
Population aged 15+, total	100.0	100.0	100.0	100.0	100.0	100.0	100

Note: [1] Basic, by the year 1961 incl. vocational school; [2] since 1970 incl. vocational school; [3] incl. follow-up courses, enterprise courses and higher technical education (2001).

In 2001 the largest percentage of the population had secondary school education without maturita, just like in 1991. Almost two-fifths of the population indicated they had this level of education. Since 1970s the percentage of this group grew by one-third at a relatively constant rate of increase, only slowing slightly in the last inter-census period. A comparison with the census in 1961 can only be carried out on basic and secondary education together, as in 1961 apprenticeship education was still included in the category of basic education. Mainly owing to the effect of the change in the category of apprenticeship education in 1961-1970 the percentage of people with secondary education increased from 8% to just below 30%, while the percentage of people with basic education in the population decreased from 80% to 53%.

The decrease in the percentage of people with basic education is also illustrated by the increases in the percentage of people with higher degrees of education. While in 1970 almost every second person in the population over the age of 15 had basic education, in 2001 it was every fourth person. While in 1950 and 1961 over 90% of the population had basic, apprenticeship, and to a lesser extent technical education, in 2001 it was over 60% of the population, two-thirds of which, however, were people with apprenticeship and secondary technical education. However, the overall trends in the development of educational levels concealed substantial differences in education by age group and between genders.

Differences in the structure of education by age and gender

Despite the generally faster rate of increase in education levels among women, manifested by the continuously greater approximation of percentages of higher education in both gen-

Table 2 Structure of the population over the age of 15 by gender and highest completed level of education in 1950–2001

Highest completed education	Census year						Index (%)	
	1950	1961	1970	1980	1991	2001	2001/61	2001/91
Men in %								
Basic[1]	79.8	78.0	39.2	33.8	24.7	16.5	72	67
Secondary technical incl. vocational[2]	10.4	7.3	40.0	41.1	43.1	45.3		105
Secondary complete[2]	7.2	10.4	14.8	17.4	21.4	25.5	246	119
incl. technical[3]	4.3	7.1	11.6	14.2	18.1	21.8	310	121
general	2.9	3.3	3.2	3.2	3.3	3.7	112	112
Tertiary education	1.6	3.6	5.1	6.9	9.4	10.8	296	115
No school education	0.3	0.3	0.2	0.2	0.3	0.4	143	129
Not identified	0.7	0.4	0.7	0.6	1.1	1.5	413	140
Population aged 15+, total	100.0	100.0	100.0	100.0	100.0	100.0	100	100
Women in %								
Basic[1]	85.9	82.6	65.7	54.3	40.9	29.1	67	71
Secondary technical incl. vocational[2]	9.2	7.9	18.8	24.6	28.2	31.1		110
Secondary complete[2]	3.2	7.8	12.5	16.9	24.4	31.0	400	127
incl. technical[3]	1.8	5.3	9.0	13.0	19.4	24.8	467	128
general	1.4	2.5	3.5	3.9	5.0	6.2	254	124
Tertiary education	0.3	0.9	1.9	3.2	5.1	7.1	816	139
No school education	0.4	0.4	0.3	0.3	0.4	0.5	120	130
Not identified	1.0	0.4	0.8	0.7	1.0	1.2	265	112
Population aged 15+, total	100.0	100.0	100.0	100.0	100.0	100.0	100	100

Note: [1] Basic, by the year 1961 incl. vocational school; [2] since 1970 incl. vocational school; [3] incl. follow-up courses, enterprise courses and higher technical education (2001).

ders, even in the most recent census in 2001 women overall still had a lower level of education. The percentage of women with university education did increase from less than 1% in 1961 to more than 7%, but even this increase, which in absolute numbers signified an increase from 33 000 to 317 000 women, still fell short of the figure of 11% for men. In 1961 there were four times as many male university students than female, and in the inter-census periods up to 1991 their percentage increases were between 35% and 40%, and only in the past decade was there a decrease was there to 15% (i.e. 80 000 men, more than one-fifth the number in 1991). The number and percentage of female university students more than doubled in the period between 1961 and 1970. In the next two decades the increases were around 60%–70%, and although in the 1990s the increase in their percentage slowed, as did the percentage of men, it still reached almost 40% (in absolute figures by almost 100 000 female university students more than in 1991).

Although in 1970 significantly more men than women had complete secondary education (even though in terms of general secondary school education women outnumbered men), by the time of the 1991 census there were more women and men with complete secondary education, and in 2001 almost one-third of women but just one-quarter of men had complete secondary education. The faster rate of growth in the percentage of women with complete secondary education than men between 1961 and 2001 signified a fourfold increase in the percentage of women, while the percentage of male secondary school graduates only increased by 2.5 times. The biggest increase in the percentage of women, by 7.5 percentage points, occurred in the 1981–1991 period.

The proportion of women with secondary technical and apprenticeship education without maturita in 2001 in the overall educational structure was the same as the proportion of women with complete secondary education (31%), having increased since 1970 by two-thirds.

Secondary or apprenticeship education was most widespread among men (45%). Their percentage grew from 1970, but only by 5 percentage points. In the 1961–1970 inter-census period there was a sixfold increase in the percentage of men and a fourfold increase in the percentage of women with this type of education, which was largely the result of a legislative change, wherein apprenticeship education became part of the secondary school system. The 1970 census was the first to reflect this change.

In 2001 the percentage of women with basic education was just 2% lower than the previous two types, but the number of women with this level of education was less than half what it had been in 1970. In 1991 basic education was still the most common type of education among women – more than four-fifths of women had this type of education; but in the 1990s the percentage with this type of education declined rapidly (by 30%). Nevertheless, in 2001 the percentage of women with basic education was 1.8 times higher than the percentage of men (this comparison, however, is considerably affected by the different age structure of men and women). In 2001 there were almost equal percentages of women with basic, women with secondary, and women with complete secondary education in the population. The educational structure of women still reflects the influence of traditional attitudes towards women's education and the legacy of past years, even though among the younger generations the percentages of men and women with higher education are now equal.

The structure of people with secondary technical education without maturita and skilled persons reveal a predominant proportion of men over women throughout the age profile. This distribution is clearly influenced by the structure of fields offered – it is most apparent with respect to economics schools, where throughout the period women predominated, though their percentage has nonetheless declined. Also, the increase in the percentage of men and women with technical education in 2001 is – especially among young people – clearly influenced by the different school structure, which cannot be determined in greater detail from the available census data. Although the overall percentage of technical education among young people in the last inter-census period either stagnated (men) or grew slightly (women), apprenticeship education lost its appeal (another reason may also be that many apprenticeship schools were closed or transformed into technical schools, which would also help explain the decrease or stagnation in the percentage of skilled people with maturita in the under 30 age group in 2001)[3].

A striking feature in the structure of people with secondary education is that there were almost twice as many women with general education as men in 2001 (and even more in the past), especially given that this type of education is usually seen as a path into university study. This would explain the increase in the percentage of this education again in the 1990s, but that could also be connected with structural changes in the school system (the re-introduction of multi-year gymnasia with the objective of providing better-quality education). The differences in the percentages of men and women with various types of technical secondary education were strongly influenced by the different opportunities – and gender stereotypes – for employment; women strongly outnumber men in secondary health and pedagogical education, and do so in all the age groups throughout the entire period and with rising percentages. Conversely, men prevail among graduates of secondary industrial fields, especially in the younger age groups. The increase in the percentage of men with technical education in particular but also general education in the 1990s may be the result of the prolongation of the

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[3] The higher proportion of apprenticeship education recorded in the censuses in 1991 and 2001 among middle-aged men (the small cohorts born in the second half of the 1950s and in the 1960s) is to a certain degree a hangover from earlier political interference in the structure of education in the 1960s and 1970s. As part of the professional allocation of young people it was necessary to meet the plans for the "reproduction of labour professions", which with the advent of smaller and smaller cohorts resulted in recruiting males for apprenticeship fields, which was reflected in a decrease in the number of boys accepted at secondary school.

Table 3 Population in the age of 25–29, 35–39 and 55–59 years by gender and selected types of secondary school education in the years 1970–2001

Level and type of education	Out of 1000 people in the given age group and gender in years							
	Men				Women			
	1970	1980	1991	2001	1970	1980	1991	2001
Population aged of 25–29								
Secondary technical school without maturita	476	528	490	493	207	338	348	383
incl.: vocational schools	440	514	478	196	135	283	327	130
technical schools	36	13	12	297	72	55	21	253
incl.: industrial[1], agricultural and forestry	32	11	9	267	21	7	5	128
economic	2	1	1	1	47	30	12	5
Secondary with maturita exam.	224	194	267	276	277	280	407	363
incl.: vocational schools	0	4	51	43	0	2	19	21
general schools	37	26	35	44	61	50	70	82
technical schools	186	163	181	188	216	228	318	260
incl.: industrial[1], agricultural and forestry	167	138	153	157	66	65	94	90
economic	6	17	17	1	63	84	117	51
medical[2]	1	1	1	10	51	54	60	81
pedagogical	2	1	1	0	29	17	35	10
Population aged of 35–39								
Secondary technical school without maturita	444	472	515	471	218	254	334	342
incl.: vocational schools	360	430	504	199	108	175	292	168
technical schools	84	42	12	272	110	78	42	174
incl.: industrial[1], agricultural and forestry	70	36	9	245	19	24	6	80
economic	9	2	1	0	57	47	22	10
Secondary with maturita exam.	195	228	204	266	149	276	305	367
incl.: vocational schools	0	0	8	30	0	0	5	11
general schools	24	29	19	31	26	53	44	63
technical schools	171	198	177	205	123	222	257	293
incl.: industrial[1], agricultural and forestry	125	179	150	174	14	65	66	92
economic	20	10	18	1	35	67	109	44
medical[2]	2	1	1	10	45	52	54	101
pedagogical	5	2	1	1	24	31	18	26
Population aged of 55–59								
Secondary technical school without maturita	426	355	409	503	164	227	248	302
incl.: vocational schools	344	242	323	334	80	94	124	184
technical schools	83	114	85	168	84	133	124	118
incl.: industrial[1], agricultural and forestry	44	74	69	145	3	8	27	43
economic	35	32	9	1	52	69	58	35
Secondary with maturita exam.	85	166	210	212	45	82	167	251
incl.: vocational schools	0	0	4	6	0	0	1	4
general schools	22	37	26	30	10	31	29	59
technical schools	63	129	180	176	36	51	138	189
incl.: industrial[1], agricultural and forestry	27	83	143	154	1	4	16	50
economic	21	34	21	1	8	19	41	37
medical[2]	1	1	3	7	4	9	52	62
pedagogical	10	5	4	1	20	16	23	20

Note: [1] In 2001 mentioned as industrial and technical sciences.
[2] Incl. secondary social and legal school.
Remainder to 100% of the given education group is comprised of other fields and data not determined.

duration of university study, as the census records the highest completed level of education. Conversely, the percentage of women under the age of 40 with economic education decreased by half during the 1990s; in the 25–29 age group it decreased from over 11% to just under 5%.

While since the 1970s (but evidently even in the 1950s and 1960s) training in a trade was commonplace among men and even secondary technical education was relatively common, it was much less common for women to obtain this type of education, and the change in attitudes in society that can be observed mainly since the 1970s was reflected in an almost equal rate of increase in the intensity of secondary education (even apprenticeship) and complete secondary education terminating in maturita up until 1991. Complete secondary education is more prominent among women of every age group, but especially up to the age of 50, than the percentage of men who have it. Throughout the period these trends are most evident among the youngest generation and are also connected with the growing range of available fields of study, especially secondary school fields with maturita, which have often suited women more than men. Women with secondary education specialising in economics, pedagogy, or health found work more easily than men – partly because women with secondary education working in administration, the education system, or in the health-care system usually settled for wages lower than men's wages.

Another reason for the smaller proportion of men with complete secondary education than women is evidently the fact that they more often than women continue on to university study, so their education is not completed until they complete the tertiary stage of study. A higher percentage of women than men was recorded in 1961 among people up to the age of 25, and in subsequent censuses the predominant percentage of women is always found in the emerging generation, so in 2001 women with complete education predominated up to the age of 65 (socialist quotas for the number of graduates of various types of schools was also clearly a factor in this).

Differences in the structure of tertiary education between genders are similar to those in secondary education, but the overall lower percentage of female university students than male is also accompanied by differences in the percentages in various preferred branches. Women focus more on university education, where they predominate mainly in pedagogical fields, the social sciences, medicine, and they even slightly predominate, for example, in economic branches; men predominate in technical fields. However, the differences between genders in study orientation are smaller, and among the youngest age group 25-29 the overall percentages of people with university education in 2001 were equal.

The development of education levels by gender and by birth cohort

The trend of rising educational levels is much more apparent if we analyse them in relation to generations. The development of education levels between generations can be observed well in the wider context of the social and economic development of society and political changes.

The oldest five-year generation whose educational development was traced was for people born in the years between 1921 and 1925, which in the 1961 census were between the ages of 35 and 39. Although the majority of them had completed basic and apprenticeship education before the Second World War, many may have obtained their secondary school education during the war and university education after the war. The events of the war for many may have required them to terminate their education prematurely, which was more often the case of women than men. In this generation there were extremely large differences between the proportion of men and women who had complete secondary or university education. In 1961 only 13 women out of 1000 indicated having university education, that is 6.5 times fewer than the proportion of women with complete secondary education, while in the very next genera-

Table 4 Population in the 25–29, 35–39 and 55–59 age groups by gender and selected types of university education in the years 1970–2001

Level and type of education	Out of 1000 people in the given age group and gender in years							
	Men				Women			
	1970	1980	1991	2001	1970	1980	1991	2001
Population aged of 25–29								
Tertiary education	80	100	137	107	71	72	113	109
incl.: university	20	26	27	34	52	48	60	64
incl.: pedagogical	0	6	9	8	0	19	32	28
technical	42	52	77	42	9	10	25	11
economic	3	6	10	20	4	7	16	24
Population aged of 35–39								
Tertiary education	96	101	130	150	34	76	85	127
incl.: university	28	27	34	36	25	56	55	71
incl.: pedagogical	0	9	7	12	0	32	23	40
technical	39	52	63	75	4	9	12	20
economic	8	5	10	17	2	4	9	24
Population aged of 55–59								
Tertiary education	42	82	113	117	7	16	39	83
incl.: university	22	32	34	35	7	13	29	60
incl.: pedagogical	0	5	10	11	0	4	13	36
technical	9	24	45	52	0	1	4	8
economic	3	10	10	12	0	1	2	7

Note: Remainder to 100% of the given education group is comprised of other fields and data not determined.

tion the figure in the 30–34 age group was already 21 out of 1000, which represented just under one-quarter of the percentage of women with secondary education, and roughly the same relation can be observed in 1961 among the generation born in 1931–35. Among men in the 1921–25 generation, in 1961, 60 men out of 1000 had university education, which was just under one-half of the percentage with secondary education, and that one-half also applied to the 1926–30 and the 1931–35 generations. In 1961, 80% of men and nine-tenths of women born in the 1920s had basic or secondary education, while the proportion of women with basic education continued to be more than one-half right up until 2001, though the effect of differential mortality caused this percentage to decrease in favour of mainly secondary education and also university education (more than 85% of women of these generations had basic education together with secondary education without maturita).

The 1921–25 generation of men had on the whole a constant proportion of basic and secondary education until 1980, while in 1980 and 1991 basic education slightly predominated. From 1991, with increasing age the higher mortality intensity among men with basic education began to have an effect and their percentage began to decline.

The increase in the percentage of men born in the 1920s who obtained complete secondary education in the period between 1961 and 1970 and university education up to 1980 can be explained by the fact that men gradually obtained a higher education while working. At a later age the effect of differential mortality was already strongly felt; the percentage of men with complete secondary and university education in the 1921–25 generation increased in 2001 to more than one-third, and two-fifths of men aged 75–79 had secondary education. The number of persons born in 1921–25 decreased over a forty-year period up to 2001 to reach 45% of its level in 1961, two-thirds of whom in 2001 were women.

Figure 1 Selected generations between 1921 and 1945 by completed education (censuses 1961–2001)
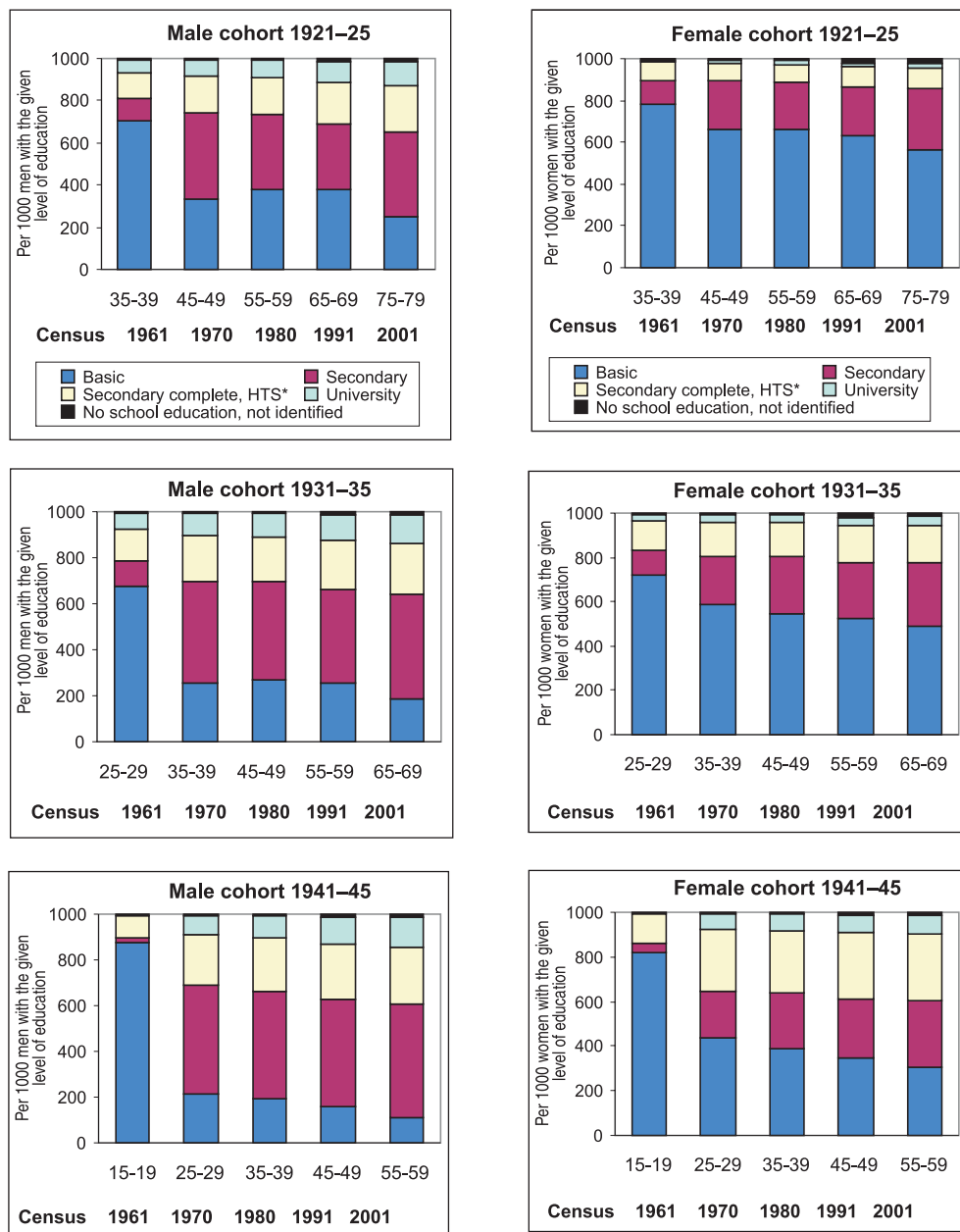
Note: In 1961 basic education includes people with vocational education; from 1970 vocational education is included under secondary education without maturita, and partly under complete secondary education (vocational with maturita).
*Higher technical school.

It is possible to observe very similar development among the male generation of the 1930s, with gradual increases in the percentage of men with secondary education and somewhat later of the percentage of men with complete secondary. There was just a slight increase in the percentage of men with university education, mainly in the 1931–35 generation, while the generation born in the second half of the 1930s did not attain university education to the same extent – possibly because of the political developments in the 1950s.

A characteristic feature of the pre-war generation of women is a relatively steady decline in the percentage with basic education, an increase in the percentage of women with secondary and complete secondary education, and a very gradual increase in the percentage of women with university education. The rate of increase in the percentage of people with secondary and university education was faster mainly among women born in the 1930s, and the percentage of women with complete secondary education grew fastest among women born in 1936–40 and then among women born during the war in 1941–45. Although the percentage of women with just basic education continued to decrease, the percentage was still much higher than among men. In 1970 more than 40% of women of this generation (aged 25–29) had just basic education, which was double the percentage of men, and although in subsequent censuses this percentage declined somewhat it was still double that of men. Middle-aged women less often than men continued to further their education, and the decrease in the percentage of women with just basic education in the highest age groups in 2001 was also less the result of differential mortality than among men.

In the generation of men born in 1941–45 the increase in the level of education was mainly influenced by the rapid increase in the percentage with secondary education to the detriment of basic education, and the same trend can be observed among men born after the war and in the 1950s.

Among the post-war generation it is possible to evaluate the completed level of education according to data from the 1970s census. Typical for the male generations is a share of more than 50% with secondary education without maturita in all the age groups between 20 and 55, and one-fifth to one-quarter of men obtained complete secondary education (the effect of the planned professional allocation of young people into different fields – see above). In the generations born in the 1960s there was a decrease in the percentage of men with secondary education to below 50%, contributing to an increase to more than one-quarter of men with complete secondary education; among men born in the second half of the 1960s the latter figure even grew to 35% (in 1991 these were men aged 20–24). Ten years later complete secondary education was indicated by just 30% of men in this generation (aged 30–34). The decrease is clearly structural in origin, and it can be partly explained by the shift of some of these people into the group of university men or also by the fact that the highest completed education was incorrectly recorded. The lower percentage of men with university education in 2001 than in 1991 is evidently the result of the extension of the duration of study; the generation born in 1966–70 only reached the age of 30–34 in 2001, and many in this generation had not yet completed their education.

The percentages of women in individual education levels in the post-war generations developed similarly to the percentages of men, but with the difference that the percentage of women with basic education deceased faster than among men (and from higher values) and the percentage of women with complete secondary education also grew faster. The percentage of women with secondary education with maturita in the generation born in the 1960s exceeded the percentage with secondary without maturita (unlike men), and the percentage of women with university education almost came to equal the percentage of men.

Figure 3 provides an overview of the overall development in the structure of education by age and gender. The faster increase in the level of education among women in the younger and youngest generations is particularly evident, as indicated not just by the growing percent-

Figure 2 Selected generations between 1946 and 1965 by completed education (censuses 1961–2001)
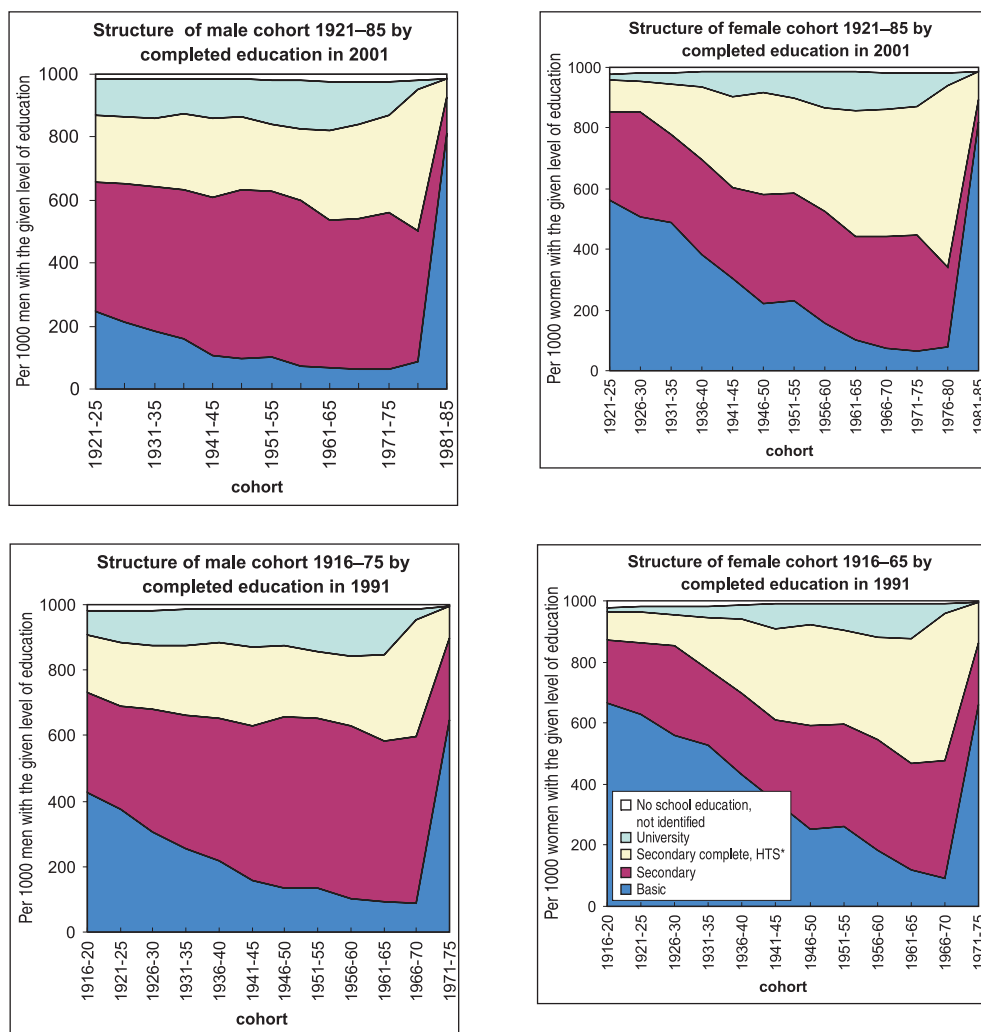

Note: *Higher technical school.
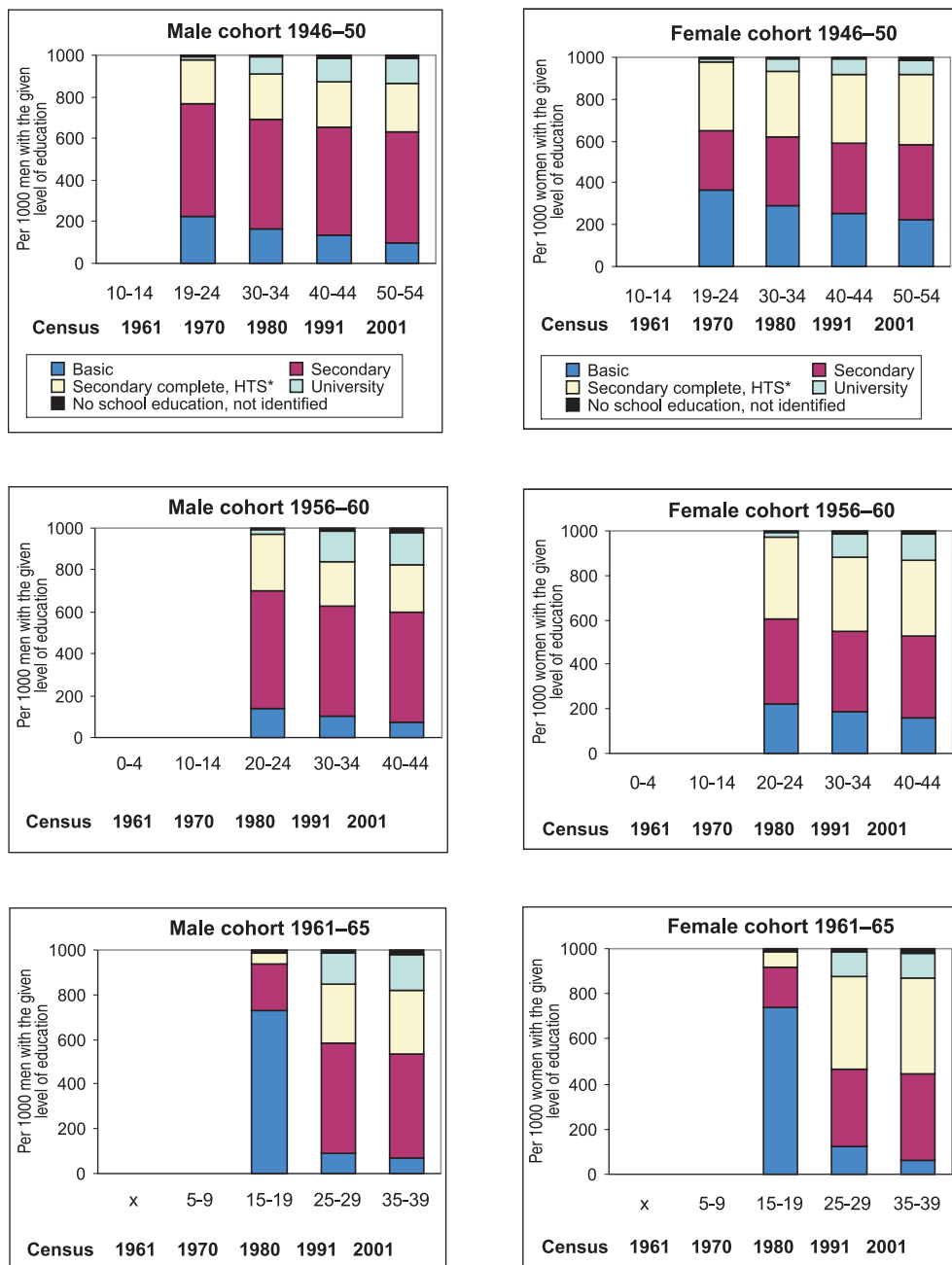
ages of women with complete secondary education but mainly by the increasing percentage of women with university education.

A comparison of the education structure in 2001 with changes in education levels in 1970–1991

Comparative (indirectly standardised) indices were used to assess the significance of the changes in the proportion of individual education levels between 1970 and 2001. The education structures by age and gender (which can be regarded as an expression of the intensity of

Figure 3 Structure of the population born between 1916 and 1985 by completed education according to the censuses in 1991 and 2001

Note: * Higher technical school .

Figure 4 Comparative indices of real and expected population numbers by sex, age, and education level 1970–2001 (standard from 2001=100)
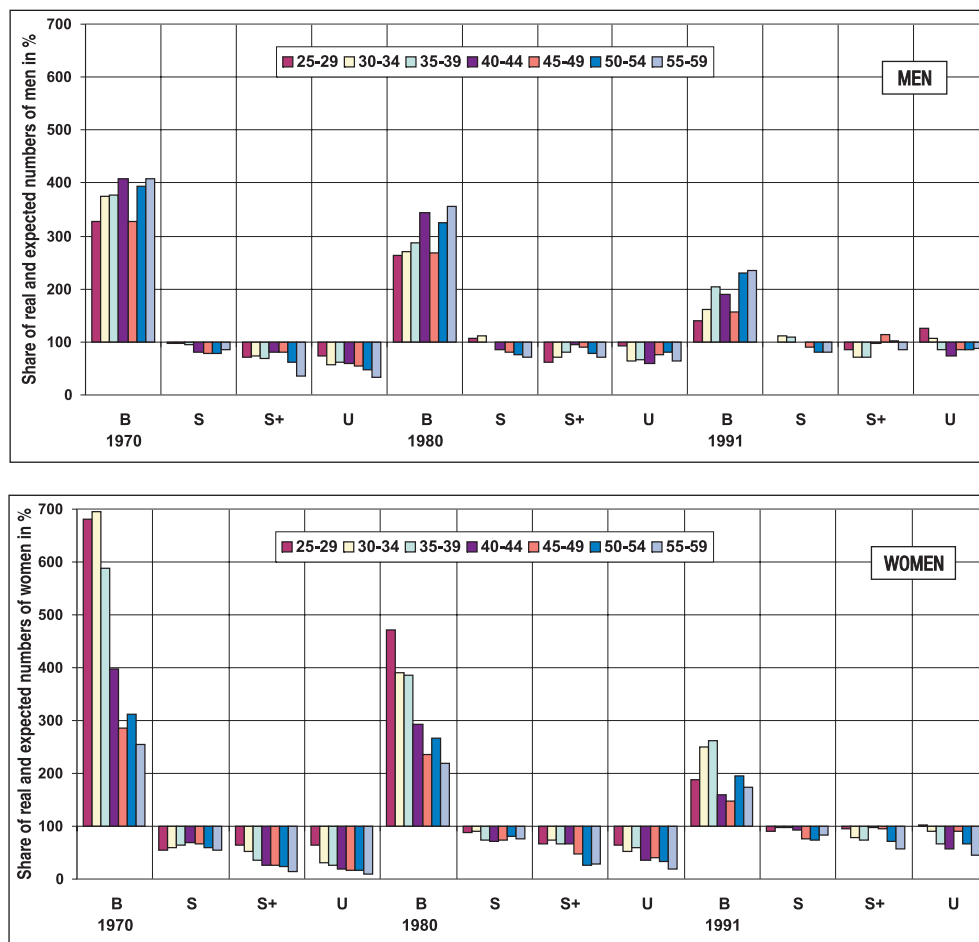
Note: Stage of education: B – basic, S– secondary without maturita, S+ secondary with maturita, follow-up courses and higher professional education, U – university incl. doctoral programmes.

a certain education in a given age group) from 2001 were applied to the numbers in the relevant categories of individuals in the 1970s and in 1980 and 1991 to create hypothetical numbers of people with the relevant type of education.

The comparative indices used, which show the ratio of real to hypothetical numbers of people with the given degree of education, make it possible to observe on a comparable level the change in the structure of persons by level of education, influenced only by the given age composition. Figure 4 contains the indices comparing the real to the hypothetical numbers of persons with a given type of education for five-year age groups of men and women between the ages of 25 and 59. For example, the values in the index for basic education, well above the level of 100 (which is the standard intensity), indicate that the intensity of basic education in 2001 would mean that the hypothetical numbers of women with basic education in 1970

would in relation to age be two to seven times higher than in reality, and thus the improvement in the level of education expressed by the reduction in the percentage of women with basic education was much higher than expected. In the indices evaluating the percentage of people with higher secondary and especially with university education the interpretation of the growth in the level of education is usually the opposite: the expected numbers of female university graduates were much higher than in reality, especially in the years 1970 and 1980, when the biggest differences related to the oldest age groups – thus the level of university education in 2001 was much higher than was expected; comparable figures for real and hypothetical numbers of university students in 1991 among younger women aged 25–29 are evidently a result of the extension of the duration of study witnessed at the end of the 1990s. The results for men, depicted in the second graph in Figure 4, can be interpreted similarly.

Table 5 Education level of the Czech population over the age of 15 and people in the 30–34 age group in 2001, by education classification used in the census (JKOV) and main ISCED 97 classifications*

Completed education		Code ISCED 97	ISCED 97	Persons (thousands)		%		In % by ISCED	
				Total	30–34 years	Total	30–34 years	Total	30–34 years
Basic[1]		2A, 2B, 2C	Lower secondary stage of education	1975.1	46.8	23.0	6.8	23.0	6.8
Secondary technical school without maturita	Total	3C	Upper secondary stage of education	3255.4	290.7	38.0	42.3	62.9	75.2
	With apprenticeship certificate			1760.7	96.3	20.6	14.0		
	Technical			1494.7	194.4	17.4	28.3		
Secondary with maturita exam[2]	Total	3A, 3B		2134.9	226.4	24.9	32.9		
	Vocational schools			125.3	18.8	1.5	2.7		
	Technical			1578.6	167	18.4	24.3		
	General			431.0	40.6	5.0	5.9		
Follow-up courses	Total	4	Post-secondary stage, lower than tertiary	188.1	16.7	2.2	2.4	2.2	2.4
Higher technical school, conservatoires with maturita and absolutorium		5B	Tertiary stage of education	108.1	4.7	1.3	0.7	10.2	13.5
Tertiary education	Total	5A		729.6	86.4	8.5	12.6		
	Bachelor			46.1	3.9	0.5	0.6		
University doctoral programmes		6		32.9	1.8	0.4	0.3		
No school education		0.1		37.9	2.9	0.4	0.4	0.4	0.4
Not identified				113.2	11.4	1.3	1.6	1.3	1.7
Total				8575.2	687.7	100.0	100.0	100.0	100.0

Note: *) International Standard Classification of Education, revision 1997.
[1] Including the first four years of eight-year conservatory, and including the first four years of a six-year and two-year gymnasium (2A) (secondary general schools).
[2] Including the next two years of an eight-year conservatory (3B), and including the first four years of a six-year conservatory.

Conclusion

The results of this generational analysis confirm knowledge about the rising level of education over the course of forty years of development. However, they clearly point to the fact that the rise in the level of education is determined by the young, emerging generation, that the intervals at which people complete their education have expanded in range and shifted, and that there is an increasing percentage of people for whom furthering their education even at a later age is a matter of course (in 2001 people who studied follow-up courses or at higher technical schools and the number of people indicating they had advanced research qualifications at universities: the second qualification for master's).

The analysis also revealed the much more rapid rate of increase in the level of education among women than among men, which was particularly evident in the 1980s and 1990s, and a change in the relationship to education among the post-war generation of men especially, who gave preference to secondary technical or apprenticeship education over just basic education, which was reflected in a reduction in the percentage of people with basic education and a rapid rise in the percentage of those with secondary education. It is apparent in the generational comparison that women in the post-war generations gave preference to complete secondary education over secondary education without maturita, but on the other hand they less often obtained a university education. Although from the 1960s the trends of social modernisation, the real emancipation of women, and efforts towards gender equality began to make themselves felt even in the politically unchanging Czech society, it was only when the country opened up to the advanced part of Europe in the 1990s that this development began to pick up in intensity, and the youngest generation of women are more and more striving towards the same education levels as men. It is only women born in the second half of the 1960s and younger that are producing equal percentages of university graduates as their male counterparts of the same generation, but the ratios in this regard are not yet final.

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THE SEGREGATIVE ASPECTS OF "PRO-ROMA" POLICIES[*]

DANIEL HŮLE[**]

Abstract: In the article the author examines the issues connected with the use of community schools as a modern form of education. There are certain risks tied to the use of this otherwise well thought-out concept, and they need to be considered before this form of education is adopted.

Keywords: Roma integration in the education system, remedial, community and basic schools, Czech Republic

In the current discourse, remedial schools and "community" schools[1] lie at the opposite ends of the notional scale of Roma integration in the education system. But is this really the case? Remedial schools have formally ceased to exist, and similarly in formal terms a "community school" is actually a label, and in reality both are formally basic schools. The question addressed in this text is whether these two types of schools really are polar opposites, or whether in categorical terms they actually overlap: in formal terms they are basic schools, but informally both are remedial schools.

The concept of the community school is today viewed by many experts and the public as the best possible strategy for the integration of Roma into society. However, are there not in fact exceedingly high risks attached to the indirect effects of this concept? Are we not poised on the threshold of segregated education?

The facts and myths of special education

Under the new Education Act[2], as of 1 January 2005, schools educating students with mental disabilities fall under the category of basic schools. Practical basic schools with a special-education programme of a remedial school, and an auxiliary school became the successors to the previous remedial school. In many cases there have been delays in applying this legislative change in practice. Where it has already been implemented, the question is whether it represents just a formal change, or whether it in fact signifies a complex shift in the approach to education, which will significantly improve the chances of students at these schools to successfully make the transition to a secondary school. The legislative change is certainly a positive one, though it will be many years before it is executed in full. But what was the branch of special education like before 1 January 2005?
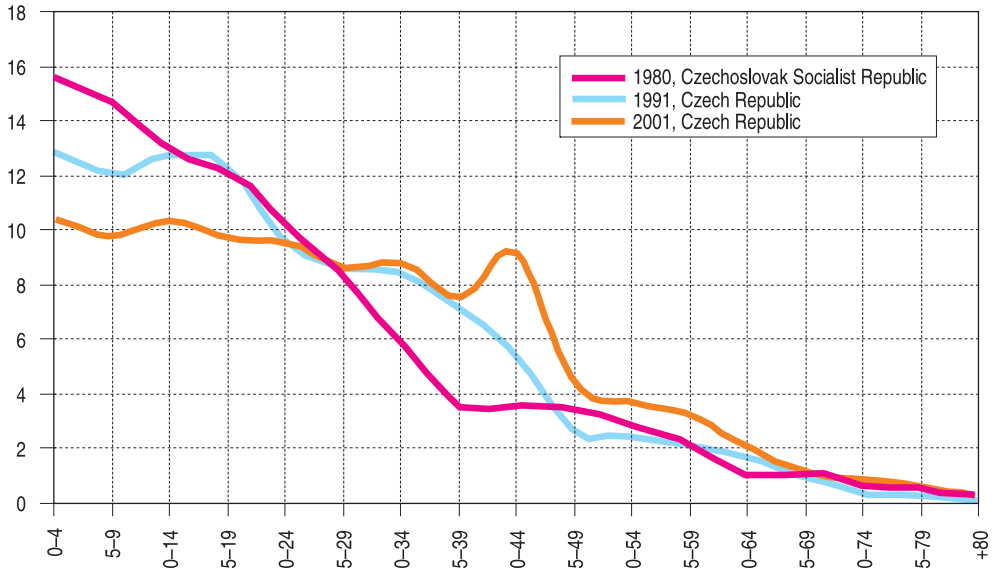
Figure 1 Age structure of the Roma population by Censuses over time


Source: Kalibová, 1991.

Many newspaper articles and the statements of activists in the past put forth estimates of how many Roma students attend special-education schools and what percentage of all Roma children of compulsory school age attend such schools. An interesting consensus emerged at one point around the estimate claiming that approximately 75% of all Roma children attend a remedial school. For instance: "The situation throughout the republic was even worse, three-quarters of Roma children were attending a special-education school" (*Bártová*, 2006); and "At present as much as 75% of Roma children have been reassigned or directly placed in a special-education school. The reason for this usually is not just their Roma nationality. It is also owing to their language handicap, the different dynamics of their development, and the different hierarchy of values – Veselý specified." (*Frydecká*, 2006) And there are numerous similar such examples. But what data are these estimates based on? The paradox is that most people who cite such figures simultaneously declare that there are currently around 300 000-350 000 Roma living in the Czech Republic.

Estimating the real number of Roma living in the Czech Republic is not an easy task. There is no one "correct" solution to this question, mainly thanks to the continuous migration flows of Roma from Slovakia. Instead we have to make do with wide estimate intervals. While it is difficult to make an estimate in absolute figures, data from the population censuses in 1970, 1980, 1991, and 2001 allow us to work with the population's age structure. Although in 1991 and 2001 only a negligible number of Roma declared themselves to be of Roma nationality (32 903 and 11 746, respectively), the distribution by region and age structure surprisingly coincides with data from the census in 1980 and especially with data from the lists of migrants/inhabitants maintained by the national committee (the last available one of which dates from 1989), or more precisely, the age structure approximately corresponds to possible development. This fact allows us to work with the age structure and estimate, for example, what percentage of the population is made up of children of compulsory school age. Naturally these are just rough estimates, but given that the total number is a rough estimate it is acceptable to use such an approach.

In order to estimate the percentage of Roma who attend or before 2005 attended a remedial school, we need to know how many Roma students actually attended a remedial school in a given school year and how many Roma are in a given age group (between the ages of about 6 and 15). Since there are no statistics available on students at remedial schools by ethnic group, we will assume that the absolute majority of students at these schools are Roma. For the sake of simplicity we will assume that **all** the students attending a remedial school who were assigned to this specific type of school for reasons of mental disability (the reason given in 90% of cases), and or learning disabilities, and behavioural problems are Roma. From a more detailed analysis of the age structure of the Roma sub-population we can obtain the percentage of people in this sub-population that are of compulsory school age (6–15 years), which is around 22%. Figure 2 presents the number of students attending a remedial school in each given year: in the 2003–2004 year, 24 164 children attended this type of school.

We will calculate the estimated percentage of Roma attending remedial schools based on an estimate of the total number of Roma living in the Czech Republic calculated by *Květa Kalibová*, who has long been working on this issue. According to her estimate, in 2005 approximately 250 000 Roma were living in the Czech Republic; 22% of this figure is equal to approximately 55 000 people. Therefore, in the 2003–2004 academic year around 55 000 Roma in the Czech Republic were attending a basic or a remedial school. Also in that year approximately 24 164 children were attending a remedial school, which is equal to around 44%. Were we to use the estimates of Roma activists that around 350 000 Roma live in the Czech Republic, the percentage of Roma children attending a remedial school out of the total number of Roma children of compulsory school age would "only" be 30%. And yet it is these activists, and some journalists, who cite the estimates that around 75% of Roma children attend remedial schools.

Figure 2 Total numbers of students in special education schools and percentage of these students out of total students (%)
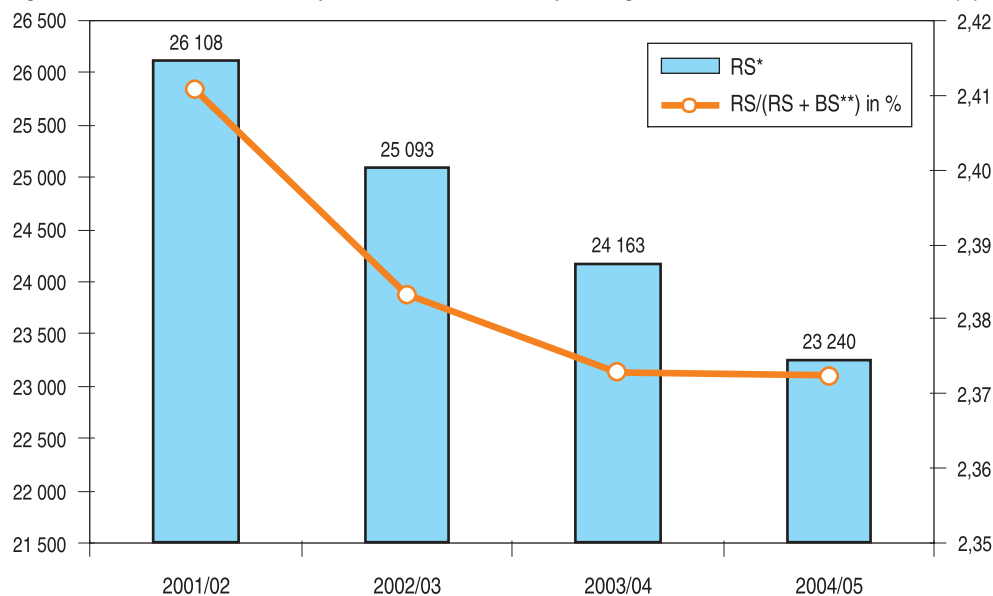
It is obvious that various myths have emerged around remedial schools, and one of them is the overestimated number of children directly affected by the problem of attending such schools. In this case the overestimate is probably twice as high. And yet, even if "only" 40% of Roma children are affected by this problem, it is still an issue that urgently needs to be addressed.

Enrolment trends among schools in a given locality

Remedial, basic, community, and selective schools: each of these is a formal or informal type of school attended by children of compulsory school age. Each school has a catchment area, the size of which varies depending on the size of the community that the school is located in. In towns the borders between schools serve only as guidelines, and often several types of school are located within a single catchment area. Parents thus have a choice of where to enrol their children. Conversely, in smaller towns or in villages, the choice is limited, and unless parents want to send their child to another school many kilometres away they will send their child to the school located in their catchment area.

Below I will describe certain segregative processes in student enrolment trends that occur in larger settlements, usually large towns. Figure 1 illustrates the enrolment trends among four schools in a locality, where one school (a selective basic school) lies on the border between several localities. This school provides high-quality education: the teachers put high demands on the students, and most of the students from this school go on to attend a multi-year gymnasium. Often parents send their children to this school from communities located some distance away, and there are no Roma children enrolled in this school.

Another school in the locality is a basic school, which for working purposes I refer to as a standard school. It is located directly at the centre of the locality. Its students usually go on to attend a multi-year gymnasium, a regular gymnasium, or a technical school, and some students go on to study at a vocational school. The school provides relatively good-quality education, and it has a good reputation among students' parents. Roughly 10% of the student body is Roma, which by my estimates is slightly lower than the percentage of Roma in the given locality. One problem the school has to deal with is the outflow of Roma students to another basic school, which I will refer to here as a "community basic school".

In recent years this community basic school has been developing dramatically. While in 2001 around 57% of all students were Roma, in 2003 the figure was just over 70%, and by 2005 it had already reached more than 80%. This development was significantly influenced by the active "pro-Roma" policy of the school, which made it popular among the local Roma community, and by its various "Roma-friendly" activities, such as regular fairs and various student performances centred on Roma folklore, etc., motivating parents to enrol their students in this school instead of other schools. For more than a decade the school has also offered a preparatory year for students from socially disadvantaged backgrounds.

The last type of school in the Figure is the remedial school. Although this type of school formally no longer exists, I retained the term for several reasons:

1. At the time when the research which I draw on in this analysis was conducted this school was in formal and practical terms a remedial school.
2. Although the school was renamed, that is, its status changed, the school continues informally to fulfil the function of a remedial school in the locality.

Like the community basic school, this school also offers a preparatory year, but for a shorter period.

Process A – transfers of Roma students between the remedial school and the community school

The positive function served by the community school is that the lower demands placed on students enable even some students attending a remedial school to succeed, especially in the earlier years of schooling, when differences between the knowledge levels of students are not

yet too substantial. In the vast majority of cases the transfers in both directions between these two types of school involve Roma students. Despite the relatively low demands placed on students in the community school, some students are still reassigned to the remedial school. This transfer usually occurs at the request of the parents and usually in upper school years, and girls tend to be transferred earlier as they mature more quickly.

Transfers out of the remedial school most often occur in the lower school years and in terms of volume involve a smaller number of students. Conversely, transfers out of the community school and into the remedial school occur in the upper school years and involve a larger number of students. As the demands placed on students in the community school are lowered, the number of students reassigned to the remedial school decreases.

Process B – reassignment from basic school to remedial school

This is the classic centrifugal tendency of basic schools to shed students who cannot keep up with the pace of learning in the class, while it is beyond the capacity of the teaching staff to focus on these students as much as they would need. Like Process A, the reassignment process tends to occur in the upper years. The already low percentage of Roma students at the school decreases. The advantage is that those Roma students who remain at the school have a relatively strong chance of succeeding at the next educational stage.

Process C – non-Roma students exchanged for Roma students: the first principle of segregation

This process is the first and the most significant principle of segregation in effect among catchment schools. Owing to the lower demands placed on students in the community school

Diagram. Relations between schools in a catchment area
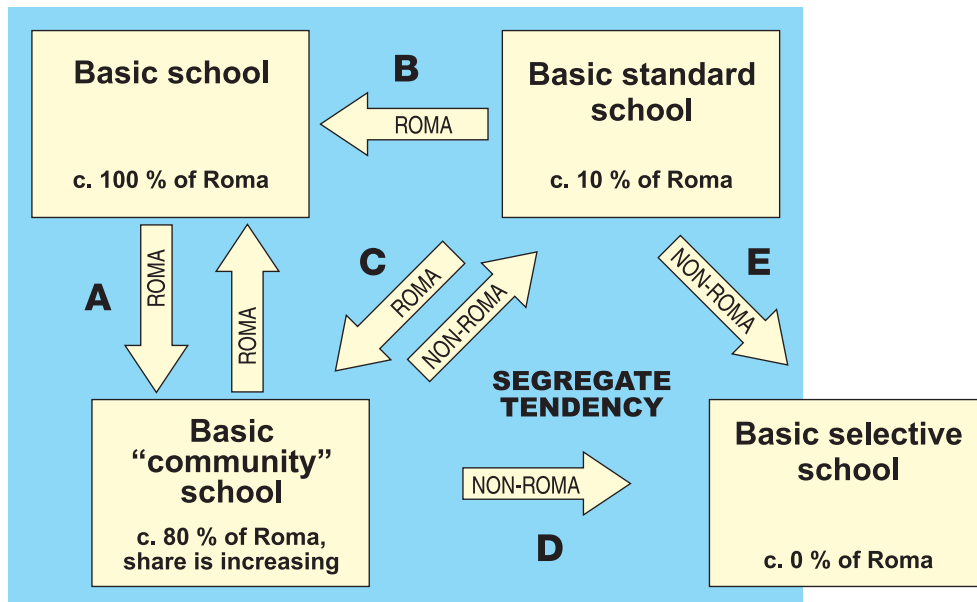
Note: Specific data on the percentage of Roma in individual schools are based on the real situation in one Prague locality, where research was conducted as part of an evaluation of the effectiveness of preparatory years for the Czech Ministry of Education (Hůle et al., 2004).

there tends to be an outflow of non-Roma students from the school, even if these students then have to commute to schools farther away. This process affects almost all non-Roma students, regardless of social differentiation or even differences in cognitive skills.

Another, smaller, but nonetheless very dangerous, trend is the outflow of Roma students from the basic school and into the community school. Most of these students would likely be capable of successfully completing the course of study in their original school, but the community school has a very strong appeal and draws in Roma students. This transfer usually occurs at the request of the parents themselves, even though sometimes teachers from the source (i.e. basic standard) school even attempt to dissuade them from taking this step. This process, marked as Process C in Figure 1, consequently results in an increase in the percentage of Roma students attending the community school.

Process D – the outflow of non-Roma elites: the second principle of segregation

The outflow of non-Roma students from the community school and into the selective school is a dangerous trend, because this means that smart students with good prospects for continuing education leave the school in the lower school years. As a result, there are no hard-working students left in the classroom, and there is a consequent drop in the knowledge level of students in the class. A certain number of students would probably transfer to a selective school soon or later anyway, but perhaps not until they were in an upper year. Parents of non-Roma students opt to transfer their children to another school owing to the increased percentage of Roma students in the student body.

Process E – the concentration of elites: the third principle of segregation

Students in the community school are only marginally affected by this process. It has a greater impact on students in the basic school, which in Figure 1 is marked as the "standard" school. This is a natural process, whereby parents try to place their child in the school that provides the best education and will best prepare children for their educational path. This process almost exclusively involves non-Roma students, and the way it affects Roma students is that when the more gifted students leave the community school the pace of learning in the class declines. Process E, like Process D, leads to a concentration of more gifted and brighter students in a selective basic school and later at a multi-year gymnasium; the antithesis of this is the process affecting the community school, which balances on the informal edge between a basic and a remedial school.

Segregation in community schools

Figure 1 depicts the enrolment processes that occur between individual types of schools in a locality. These processes occur in large towns, where parents have a choice of schools to which to send their children. Exact data on the percentage of Roma in these schools are drawn from repeat surveys conducted in one Prague locality, but the tendencies described here are similar to those in other localities in Prague, Brno, and elsewhere. The objective of describing the enrolment processes in a given locality is not actually to assess them, but sooner or later we will be forced to ask what sense the community school has in this constellation of processes.

Unquestionably a positive feature of this concept is the trend in which community schools attract a certain number of students from (today only informally) remedial schools. The trust placed in these schools by parents from the local Roma community is significant. The parents are more motivated to keep their children in a this kind of basic school and not request that they be transferred to a remedial school. In some cases they even request that their children be transferred out of a special-education school and into a basic school. There is however another side to the growing popularity of the school among Roma, and that is the lowered de-

mands placed on students and the decline in the popularity of the school among non-Roma students and their parents. This phenomenon is depicted in Figure 1 by Processes C, D and E.

Community schools typically involve the wider community in the life of the school. For example, they organise fairs for students' parents and the wider community, organise extracurricular activities for students and other young people, and include elements in the curricula that accommodate the particular community. In this case it means that students who are not accustomed to the quick pace of learning at the school have a chance to excel in skills that they know from their family background. In the majority society the Roma have a reputation as good musicians, dancers, and as being skilled at trades, and so as part of its curriculum the community school organises dance groups, adds more musical education, and so on. Consequently, Roma students "learn" skills that they are usually able to do well and at which they can excel at various performances. However, this is at the expense of other skills, which conversely they lack and cannot learn at home from anyone.

The increasing percentage of Roma students at community schools in the long term leads to segregated schools. The only students who remain at this kind of school are Roma and students from socially disadvantaged families who do not have the means to send their children to better schools farther away or are simply incapable of making such a decision. Can the fact that Roma parents take a liking to a community school and send their children there really make up for the segregation that the entire process is heading towards? Do we really want Roma children only to know *gádže* (non-Roma) from the street?

The community school conceived thus is an example of a policy with good intentions, but are the effects also good? At the start of this article I tried to debunk the myth that the majority of Roma attend special education schools. Certain segregative elements prevail or prevailed at remedial schools, but the majority of Roma attended basic school. If we choose to continue to support the concept of the community school, we will be putting the future of a large portion of Roma students at stake. We will be throwing them into mono-ethnic institutions that, alongside education, are intended largely also to fulfil a socialising function. However, in this case there is a risk of segregative socialisation, which ultimately encourages xenophobia.

Formal versus real basic school

The segregated school that the community school ultimately turns into then in reality becomes a remedial school: formally it remains a basic school, but, like the real remedial schools that formally used to exist, the level of education in the sense of the demands that teachers place on their students is such that informally the community school devolves into a remedial school. Given the unified school typology in which these schools are now just variously named basic schools, this kind of community school will not stand out in any way. It will be difficult to examine the results of its students, and assessing the success of this concept will be complicated. It is quite possible that we will reach a situation like that in the United States, where in basic school many African American students only have other African Americans as fellow students, or in France, where although many migrants from North Africa attain higher education it is usually at a school that is stigmatised as a school for socially excluded students and most employers are not interested in the school's graduates.

Conclusion

The organisation People in Need has attempted repeatedly to get particularly talented students transferred from a community school to a standard basic school. However, after up to a month of trying these efforts invariably failed and the most common argument on the part of parents and children was that the children have to study too much at the standard school. The

higher demands placed on children also put a bigger burden on the parents, and thus both parents and children are motivated to maintain the status quo. If I were to seek an analogy to this situation in the economic sphere, then it would to describe it as unfair competition, where one school competes with another on the basis of the lower demands put on students or the smaller proportion of standard subjects in the school's curriculum. The gravitational pull of community schools is so strong that the school it does not release students to attend other schools while it simultaneously draws students away from standard basic schools and appeals to them with secondary activities, which are not the kind of activities that make a school a school.

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THE CONCEPT OF REPLACEMENT MIGRATION AND ITS APPLICATION IN THE CZECH REPUBLIC*)

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Abstract: The article deals with the concept of replacement migration and its practical application to data for the Czech Republic. The first part contains a discussion of the concept of replacement migration and the reactions produced by its application in selected countries and regions presented in the UN in 2000. The second part presents the results of model calculations based on current expectation regarding natural change in the population of the Czech Republic.

Keywords: replacement migration, ageing, population, cohort component model, projection, Czech Republic

Numerous analyses and studies exist that deal with the current demographic situation in Europe. In one (*Grant et al.*, 2004) the situation is described as follows: "Nearly all European nations are experiencing long-term downtrends in fertility, and consequently, ageing of their populations. Fertility rates are now below replacement level (2.1 children per couple) in nearly all countries. As a result, natural population growth rates are entering periods of declining growth or outright decrease. At the same time, the proportion of elderly dependants continues to grow while the working-age population declines as a share of the overall population. Moreover, net immigration, which potentially could offset declines in working-age population, remains generally low in most European countries. Taken as a whole, these demographic trends could have potentially damaging consequences for European economies." (*Grant et al.*, 2004, p. xiii).

At the end of the 1990s and the start of the new century many advanced European states are beginning to become increasingly aware of the key links between demographic and, in the wide sense, economic and social development. In addition, they are beginning to discuss this issue more and also beginning to take political and then executive action. In this regard we can mention, for example, the reform of the pension system reform that has already been or is yet to be implemented, changes to tax model parameters, and changes to migration policy. International migration often becomes one of the most discussed but also sometimes even applied (e.g. recruitment programmes targeting selected foreign workforces) alternative solutions to the problem situation that has arisen. Part of the reason for this is that current pro-natal policies is thwarted by the current second demographic transition, which does not favour fertility (e.g. *van de Kaa*, 1997; *Lesthaeghe*, 2000), and thus the resulting expectations are not very optimistic. Naturally this provokes discussions of how desirable and how "necessary" a state's population growth actually is. The answers to the questions in this discussion are not

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simple and in practice they vary between states. Various opinions are put forth and defended at the level of national policy and in the science and research community (see *Burcin*, *Drbohlav and Kučera*, 2007).

The concept of "replacement migration", developed by the United Nations in 2000[1] (*Replacement,* 2000, 2001), works out an alternative solution to expected demographic losses, by determining the volume of migration necessary to offset losses caused by a decline in the size of the population and by a decrease in the percentage of the population of economically active age. What this involves is a structured search for a remedy to the entire process of demographic ageing in advanced countries through international migration. In such a light the UN study formulates several questions and certain related hypothetical scenarios of development to the year 2065.

The UN study[2] essentially attempts to answer the question of how many migrants (measured as the net number of migrants) would be required in individual countries in order to:
– prevent a decrease in total population;
– maintain a constant number of people of productive age in the population;
– keep the ratio of the number of people of productive age (15–64) to the number of people aged 65 and over (the Potential Support Ratio) from falling below 3.0) and
– maintain the conversely defined Old-Age (Elderly) Dependency Ratio (the number of people of post-productive age to the number of people of productive age) at a constant level.

The study reached a number of important conclusions, a selection of which is presented here:
– During the first half of the 21st century most advanced countries will experience a decrease in population size and an ageing of the population as a result of long-term low total fertility rates well below replacement level combined with rising life expectancy;
– In the absence of international migration population losses will be even grater and population ageing even faster;
– Fro France, the UK, the US, and the EU the number of migrants necessary to offset population decline will be smaller than or comparable to the number of international migrants to the given country in the recent past. For Italy, Japan, Korea and Europe the number necessary to replace the expected population losses must be much greater than the size of the migration streams to these countries in the past;
– The number of migrants required to halt the decline in the working age population is much higher than the number required prevent a decrease in the size of the population as a whole.
– The number of migrants required to prevent demographic ageing, in the sense of preserving the Potential Support Ratio, is extremely high and in each case would involve significantly larger migration flows than previously observed in the given countries;
– Preserving the current Old-age Dependency Ratio at current levels by means of immigration seems unrealistic given the extremely high number of immigrants that would be required to eliminate this manifestation of the ageing process;
– The new challenges ushered in by the reality of a declining and ageing population will require an objective, profound, and complex re-evaluation of many established economic, social and political programmes and policies.

Taken on the whole, despite some of the potential offered by migration, based on the exam-

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[1] It is, however, possible to trace the philosophy behind this approach to an earlier data – for example, in Cole (1972), Raomaniuc (1984), Ryder (1997) – according to Beaujot (2003) and Lesthaeghe (2000).
[2] The study worked with data for France, Germany, Italy, Japan, Korea, Russia, Great Britain, the USA, and also for Europe and the European Union.

ple of given countries it was clearly demonstrated the immigrations is not a very suitable or effective tool for solving the overall problem of demographic ageing (see also, e.g., *Grant et al.*, 2004; *Coleman*, 2003; *Lutz and Scherbov*, 2002, 2003; *Lesthaeghe*, 2000; *Beaujot*, 2003; *Tapinos*, 2000; *Martin*, 2004). Let us look, therefore, at some of the most important critical assessments made of/raised against the concept of replacement migration (for more see *Burcin, Drbohlav and Kučera*, 2007). The UN study criticised mainly on the following points:

1) Some claims in the original study are inaccurately or insufficiently formulated and thus are the cause of incorrect interpretations by journalists, the media, and even, for example, politicians (e.g. *Coleman*, 2000; *Tietelbaum*, 2004). Moreover, only some of the many findings are presented and are done so intentionally and out of context;

2) Some reviewers criticised the very concept of replacement migration for neglecting to take into account a number of aspects (e.g. the role of the majority's relationship to minorities, the qualitative characteristics of immigrants, the role of re-emigration, temporary/short-term migration or illegal migration flows),or that many statements were thus too general, that there was no substantiation for some of the axioms adopted, and no substantiation or justification given for some statements and proposed scenarios. None but demographic solutions are considered, and therefore the entire pleiade of such important provisions connected with the possible mobilisation of internal resources was overlooked.

3) Criticism also touched on the method used to calculate the models in the study. Attention was drawn to the frequent use of different input parameters, which oftentimes differ from the ones used in national statistics. Another target of criticism was the fact that, for example, the definitions of age categories corresponded more to developing rather than the most developed parts of the world. For example, there was no mention of the speculative nature of the projections, which are calculated for a period of more than fifty years.

Despite the criticism, however, the concept of replacement migration must be assessed as well-founded and as a very interesting analytic-synthetic construct, the results of which must, more than anything else, be understood as a kind of "warning message".

The studied at hand draws on the UN study and in a similar vein analyses the situation in the Czech Republic. Its novelty lies in the fact that 1) it is one of just a few studies that examine the issue in the region of Central and Eastern Europe (except for the large study by *Bijak et al.*, 2005 and *Vishnevsky*, 2000), and 2) it works with some modified categories and scenarios and tries to answer questions that are beginning to be raised even in the applied sphere.

Methodological aspects of the concept of replacement migration and its application in specific conditions

As suggested above, replacement migration means migration of such volume and structure that is capable of compensating for the change in selected parameters of the size or demographic structure resulting from population processes. In this regard, before operationalising replacement migration it is first necessary to formulate projected estimates of future fertility and mortality trends, and to do so in a structure that corresponds to the planning model that is used.

From a formal perspective, it does not matter whether we are working with realistic or purely modelled estimates, but in practice we are trying to approximate the most likely development of both components of natural population growth. In our case we chose this approach. For our projected estimates we used the classic cohort component projection model, incorporating migration into the model through age– and sex-specific distribution of so-called "net migrants" or in other words the overall net migration.

In comparison with the classic use of projected estimates for forecasting or modelling pro-

jected estimates in the case of replacement migration we encountered one additional problem with their use. We did not know the number of immigrants or the value of some other characteristic that would allow us to estimate that number. On the contrary, it was our task to determine these numbers, while the criterion that the value of the selected population parameter remains constant throughout the entire projection period. Therefore, we first had to determine the appropriate model and model of estimation. The actual estimation methods used in publications focusing on replacement migration are not usually revealed to the reader and anyone interested in the use of this concept is left in practice to rely on his/her own methodological skills or his/her ability to construct a methodology on the basis of a general outline of the substance of the problem and put it into action or operationalise it. "Consequently, when formulating our methodology and estimating the parameters of our model, we had to do so as though we were dealing with a question that had not been previously addressed. After some adjustments, we managed to formulate a general model for estimating the required size/amount of replacement migration under practically any regime/pattern of natural reproduction." The core of this model is the cohort component projection model, the basic application principles of which can be summed up in several individual steps.

In the first step, a calculation is made of all the projections based on an estimate of the detailed parameters of fertility and mortality. The results of these calculations are drawn on to calculate the observed (reference) characteristic and determine the difference between its starting and end values in the given projection step. In the third step, with the sex and age structure of the net migration fixed, it is necessary to estimate the aggregate effect of one average "net migrant" (including the effect of the forces of natural reproduction) on the development/trend of the given reference characteristic. When we have established the aggregate effect of the unit net migration, in the first approximation we can determine the necessary extent of replacement migration and test it with the use of the above-described modification of the cohort component model. If the testing shows a significant difference between the start and end values of the reference parameter we repeat, cyclically, the above-described steps three through five until the difference is zero or at least sufficiently small. In each cycle we work only with the residual difference and not with the total original difference. By means of these iterations we arrive at the necessary volume of net migration, while, in the final calculation, within the given projection step, the sum effect of replacement migration to its fully estimated extent is specified. At the same time it is necessary to determine the sex and age structure of the given population and with it the size that is the starting structure for the next projection step and which can be further specified with estimates of the number of individual events and other characteristics of reproduction behind the emergence of the new starting structure.

The iterative procedure described above forms the basis of the entire estimate and is applied in each of the projection steps continuously covering the entire defined period.

In the estimates that we made for the population of the Czech Republic as a whole the applied concept of replacement migration was based on specific internal and external model assumptions.

The internal assumptions of the model are:

1) All the events are equally distributed in each of the defined time fields under observation, where the mean population is always equal to the arithmetic average of utmost states of population and the numbers of events in the equally large parts of each field of observation are identical.

2) The parameters of the projection model can only change with the transition from one projection step to another, and never within a single step.

3) Migrants wholly adopt the demographic behaviour of the destination population.

4) The volume of replacement migration is estimated for both sexes together by means of the

total net migration and its sex and age structure, which means that full/complete replacements for men and women separately need not and usually are not achieved. The fulfilment of this requirement would lead to a different task that is not complementary to our original assignment. Specifically this means that ensuring/securing replacement at the level of each sex need not mean, with the exception of the total population, that the replacement of the population as a whole is secured, as the ratio of men to women in the population necessarily changes over time.

The external assumptions are:

1) The initial population size and the sex and age structure correspond to the parameters of the population of the Czech Republic on 1 January 2005 as presented by the Czech Statistical Office.

2) The value of fertility and mortality characteristics (Tab. 1) corresponds to the actual working revision of our last published forecast of population development in the Czech Republic (*Burcin – Kučera – Drbohlav*, 2003), which we prepared over the course of 2006 and which covers the entire period between 2005 and 2006.

3) The gender ratio at birth is constant at 485 girls and 515 boys out of every one thousand live-born children.

4) The relative age structure of net migration by gender (Fig. 1) is constant throughout the forecast period and is represented by the adjusted current age structure of the net migration of the Czech Republic, that is, foreign migration recorded in official statistics for the years 2002 to 2004.

We limited ourselves in the calculations to just the medium, mostly likely variant of the forecast of the natural change, but we also applied the concept of replacement migration to the utmost variants – low and high. In each of them we also examined the necessary extent of replacement migration from the perspective of each of the four following parameters: the total population size, the average age of the population, the percentage of people of productive age, and the values of the Dependency Ratio I (the number of people of post-productive age to the number of people of productive age), in other words, characteristics generally discussed in the context of the population of the Czech Republic in recent years. Also, we defined the basic age groups of the population in an innovative way, proposing a narrower productive age span (between the ages of 20 and 60 instead of the customary 15 and 65). By respecting the real rather than the nominal ages at which people enter and exit the labour market, this age span provides a better approximation of the economically active population.

Main findings

The size of the net migration necessary to compensate for changes caused by expected natural population change in the Czech Republic is generally determined by two factors: the ex-

Table 1 Fertility and mortality trends (low, medium and high forecast variants), 2005–2065

Year	Total fertility rate			Life expectancy at birth					
				Men			Women		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
2005*		1.29			72.9			79.1	
2010	1.36	1.42	1.45	73.4	74.1	74.9	79.7	80.3	81.0
2020	1.35	1.58	1.71	75.4	76.5	77.6	81.3	82.4	83.4
2030	1.41	1.66	1.79	77.0	78.7	80.0	82.6	84.0	85.2
2040	1.45	1.70	1.84	78.4	80.4	81.8	83.6	85.4	86.7
2050	1.47	1.73	1.87	79.7	82.0	83.4	84.6	86.7	88.0
2065	1.50	1.77	1.92	81.3	84.0	85.7	85.8	88.3	89.8

Note: *Empirical values.

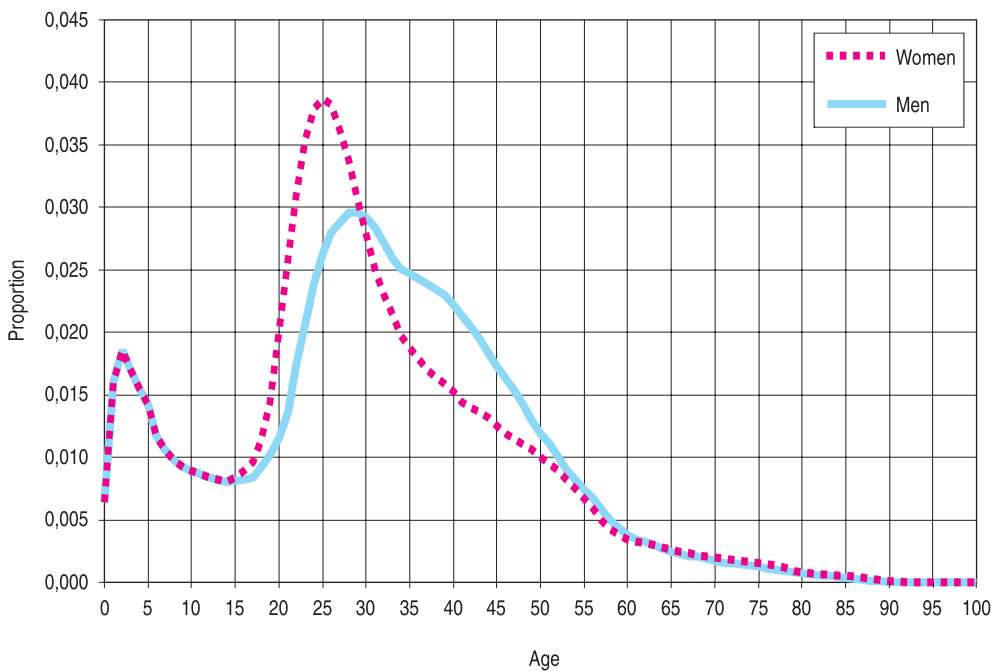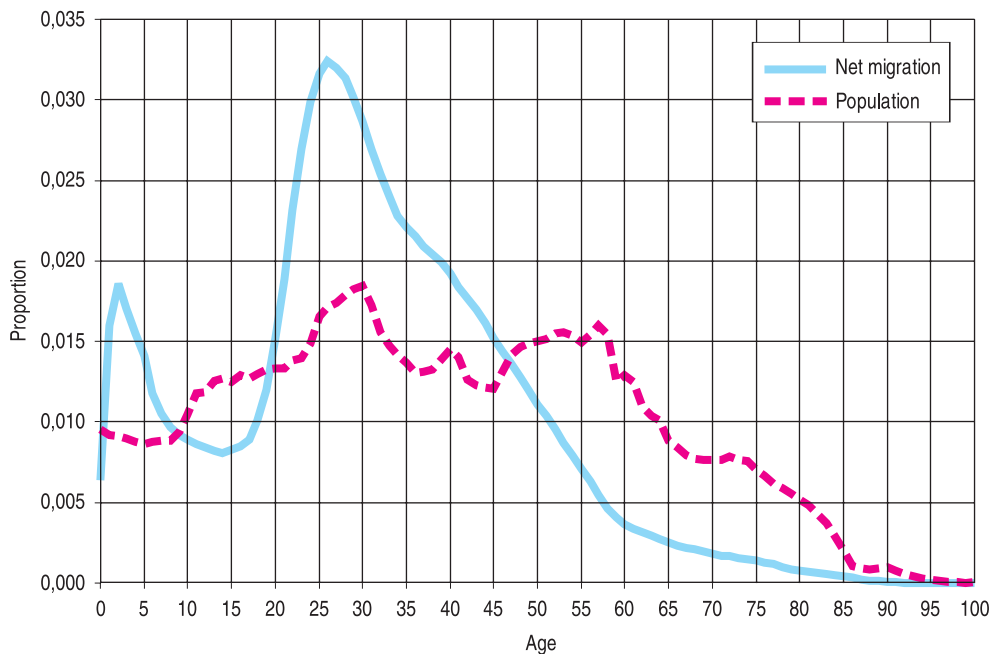**Figure 1 The expected distribution of net migration by sex and age**

Figure 2 The distribution of the population of the Czech Republic on 1 January 2005 and net migration by age

pected size of the change in the age structure of the population as a result of the effect of fertility and mortality, the difference between the relative age structures of the population and the net migration. The starting differences in the age structures are presented for illustration in

The only exception to the cited conditionality is replacement migration compensating the change in population size, as in this case the difference in the age structures of the population and the net migration logically does not play a role.

The inherent or internal reproductive potential of the population of the Czech Republic, which is determined by historically established irregularities in the age structure and by current and expected fertility and mortality rates, is not especially great. Future development based just on natural change would almost certainly in the long term lead to a clear and relatively sharp decline in the total number of inhabitants and very dynamic ageing of the population (Tab. 2).

Table 2 Population size and age structure of the population over time by natural change (low, medium and high forecast variants) 2005–2065

| Year	Population (thousand): 1 January			Mean age of the population: 1 January		
	Low	Medium	High	Low	Medium	High
2005*		10 221			39.77	
2010	10 171	10 205	10 230	40.91	40.93	41.00
2020	9 908	10 105	10 236	43.56	43.37	43.43
2030	9 426	9 819	10 066	46.37	45.92	45.92
2040	8 791	9 392	9 753	48.40	47.76	47.69
2050	8 081	8 922	9 403	49.92	48.83	48.52
2065	6 894	8 104	8 782	51.48	49.90	49.34

Note: *Empirical values.

Compensation for population losses

Methodologically the simplest estimate of replacement migration is connected with establishing the total size of the population. As already noted, the volume of replacement migration is equal to the momentary surplus or deficit in the natural change. In our model calculations we assumed that the natural change deficit increases gradually throughout the entire period the model applies to. The only possible exception could be the next several years, when, based on the medium and high variants of the forecast, we can expect the population size to stagnate or slightly increase by natural change. As a result then in the next ten to fifteen years the Czech Republic could make do with a foreign net migration at a level of just several hundred or thousand people in order for the population size to be preserved. It is very likely that at least until the year 2030 it will not be a serious problem to maintain the population size, as only after that year should the volume of necessary replacement migration begin to exceed the current foreign net migration.

In order to avoid depopulation, for the next roughly sixty years the Czech Republic would need to obtain from abroad in sum between 1.2 and 3.0 million new inhabitants, while based on the medium and the most likely variants around 1.8 million should suffice. In this case, and under the hypothetical assumption that throughout the entire period no one would ever move out of the country, the number of inhabitants born outside the state could represent roughly 15% of the population by the year 2065. Figure 3 shows their age distribution. The percentage of people born outside the Czech Republic could realistically reach as much as one-quarter of the population, while a somewhat smaller but negligible percentage could be made up of children of first-generation immigrants. However, as indicated by the data in Table 3, replacement migration compensating the population losses from natural change would have only a small effect on reducing population ageing expressed by the indicator of the average age of the population.

Figure 3 Model of the sex and age structure of the population of the Czech Republic on 1 January 2065, medium forecast variant, constant number of inhabitants
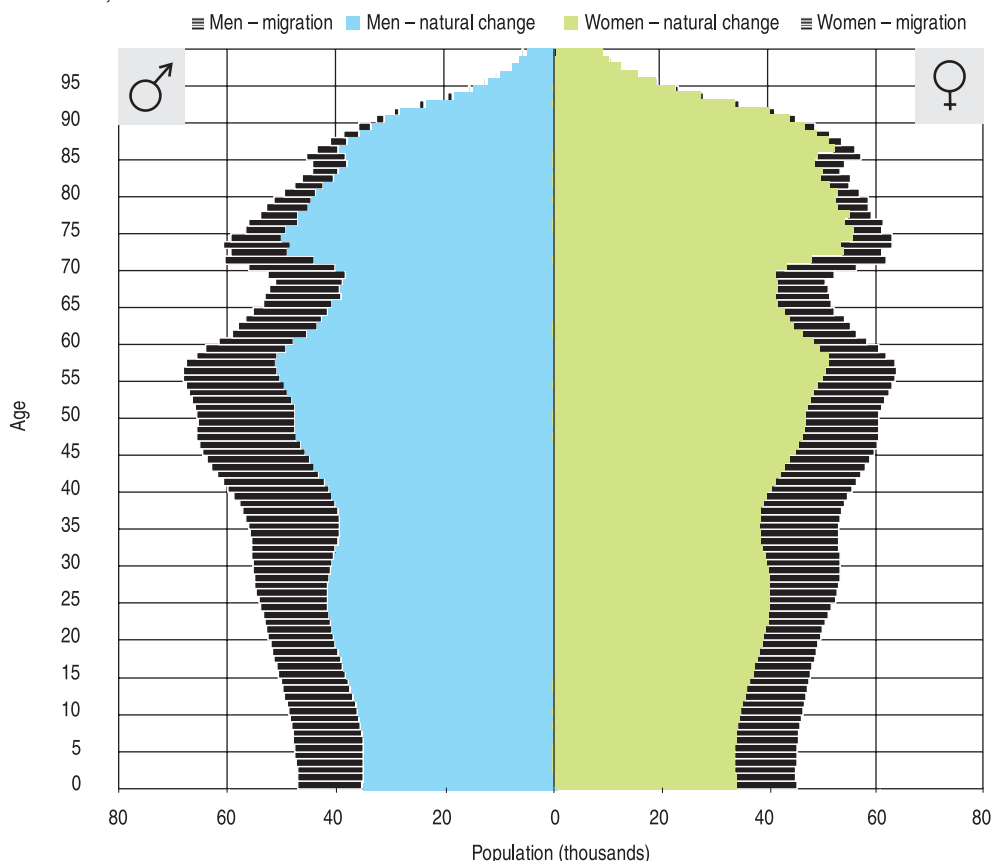
Compensating for the rise in the average age of the population

In the past fifteen years the relatively substantial and over time stable dynamics in the rise in the average age of the population of the Czech Republic has been caused by significant changes at both ends of the age pyramid as a result of the fall in fertility and the rapidly improving mortality conditions, especially among the very elderly, and also by the shift in the more significant irregularities in the age structure to a later age levels. Were reproduction to occur only by change, it can be realistically expected that in the next 25 and 30 years the current annual dynamics of the rise in average age, which is 0.20-0.25 years, would be maintained. Without a "youthening" effect of migration it is very likely that in the next sixty years the average age of the population would increase by 10 to 11 years and theoretically could exceed the limit of 50 years of age. To fully compensate for the increase in the average age it would be necessary that already today the foreign net migration would have to be approximately 300 000 people annually, which is probably around a ten times higher than the level indicated in recent years in official statistics. The necessary extent of replacement migration would also continue to dynamically increase into the future, and would so owing to the fact that the newcomers would with their age structure compensate not just for the ageing of the
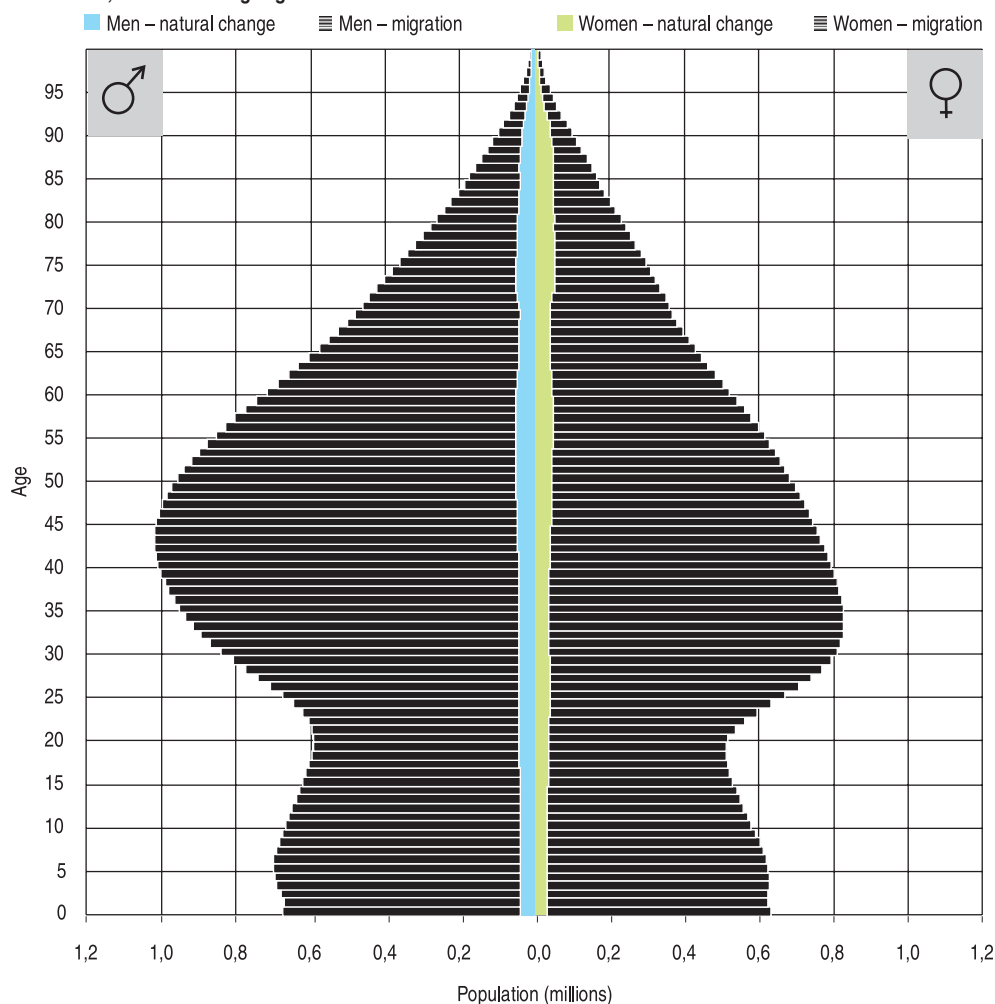
Figure 4 Model of the sex and age structure of the population of the Czech Republic on 1 January 2065, medium forecast variant, constant average age of inhabitants

original population but also for the ageing of the immigrants who came before them and their children. Our calculations indicate that in 2065 the annual price for sixty years of population average age stability would be, according to the median variant, 4.2 million foreign immigrants in their current age structure; this is of course assuming that during this period no one would move out of the Czech Republic. The total "price" would then be the very hard to imagine 90 million immigrants. Under these conditions by 2065 the country would have around 110 million inhabitants, of which around 80 million would be citizens who were born outside the country and 20 million would be their children. The resulting age distribution of the population is presented in Figure 4. These findings are well outside any real or realistic notions, and they can only be interpreted as a clear illustration of the extremely limited opportunities to regulate the ageing of the population by means of immigration from abroad.

Table 3 Expected volume of replacement migration and selected effects (by criteria and low, medium and high variant of the natural increase forecast), 2005–2065

Year	Population, total			Mean age			Proportion of persons of working age (P_{20-59}/P_{total})			Age dependence rate I (P_{60+}/P_{20-59})		
	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High
Net migration of replacement migration (thousands)												
2005	7	7	7	292	292	292	31	31	31	194	194	194
2010	13	3	–4	331	329	346	229	276	308	351	377	404
2020	34	16	5	634	548	531	296	479	603	318	364	406
2030	53	35	25	1 071	913	888	368	671	908	658	742	820
2040	58	37	27	1 699	1 357	1 277	1 032	1 530	1 948	1 330	1 477	1 611
2050	64	39	29	2 844	2 175	1 995	1 622	2 796	3 755	1 941	2 231	2 468
2065	72	44	30	5 854	4 208	3 790	2 494	5 340	8 043	3 775	4 439	5 002
Accrued net migration of replacement migration (thousands)												
2005	7	7	7	292	292	292	31	31	31	194	194	194
2010	61	18	–14	1 796	1 813	1 919	1 244	1 421	1 537	2 008	2 120	2 242
2020	328	124	–8	6 721	6 213	6 269	4 487	5 861	6 777	5 670	6 138	6 608
2030	781	399	171	15 401	13 696	13 568	7 653	11 562	14 325	10 662	11 796	12 877
2040	1 342	764	439	29 220	25 050	24 414	15 938	23 663	29 605	21 870	24 130	26 255
2050	1 961	1 146	721	52 054	42 785	40 828	29 594	45 584	58 340	38 375	42 835	46 851
2065	3 008	1 797	1 188	116 167	90 146	83 892	57 286	103 286	142 602	78 156	89 586	99 432
Population (thousands): 1 January												
2005*		10 221			10 221			10 221			10 221	
2010	10 221	10 221	10 221	11 684	11 741	11 857	11 216	11 384	11 496	11 880	12 006	12 129
2020	10 221	10 221	10 221	16 431	16 265	16 526	14 405	15 930	16 950	15 690	16 422	17 065
2030	10 221	10 221	10 221	25 082	24 112	24 423	22 077	25 297	25 297	20 428	22 258	23 793
2040	10 221	10 221	10 221	39 271	36 474	36 651	25 208	34 525	41 610	31 432	35 109	38 168
2050	10 221	10 221	10 221	62 991	56 051	55 431	39 192	58 158	73 215	48 695	55 864	61 662
2065	10 221	10 221	10 221	130 699	109 318	105 563	68 628	123 061	169 375	90 391	108 271	122 385
Mean age of the population: 1 January												
2005*		39.77			39.77			39.77			39.77	
2010	40.87	40.92	41.01	39.77	39.77	39.77	40.08	40.00	40.00	39.64	39.59	39.59
2020	43.25	43.25	43.44	39.77	39.77	39.77	40.58	39.78	39.45	40.20	39.80	39.64
2030	45.52	45.47	45.70	39.77	39.77	39.77	41.98	40.25	39.50	41.22	40.49	40.17
2040	46.89	46.81	47.05	39.77	39.77	39.77	41.32	39.74	39.01	40.50	39.80	39.49
2050	47.76	47.49	47.56	39.77	39.77	39.77	40.47	39.04	38.37	40.23	39.46	39.11
2065	48.43	48.05	48.00	39.77	39.77	39.77	40.99	39.08	38.29	40.53	39.70	39.32

Note: *Empirical values.

Compensating for the change in values of selected demo-economic characteristics

The extent of migration needs worked out in the scenario of compensation for the average age of the population logically is comparable to that worked out in estimating replacement migration in the case of scenarios where the values of two other observed indicators are fixed: the percentage of people of productive age and the Dependency Ratio I, as defined above. However, differences nonetheless exist between the scenarios of compensation for the rise in average age, the decline in the percentage of people of productive age, and the rise in the values of the Dependency Ratio I. In the first case the biggest migration need corresponds to the lowest variant of development, characterised by lower probability of surviving to an older age but also and especially by fewer children born. It is child births that have a strong "youthening effect". In our current circumstances the effect of the birth of one child in a year of obser-

vation on compensating for the rise in average age is around four times greater than that of an immigrant, who on average is aged 31 years. Therefore, higher fertility leads generally to lower necessary volumes of replacement migration. In the case of Dependency Ratio I, the situation is the reverse: the larger number of children and people of post-productive age under the higher variant of development by natural change logically means that a larger number of people of productive age and therefore migrants is required in order to keep the index value on an unchanging level.

Given the culmination of the percentage of people of productive age in the population at the start of this decade the total number of migrants in the sense of a cumulated volume of the net migration between the years 2005 and 2065 to compensate for the decrease in the percentage of the productive component of the population in the medium variant of development would be 103 million migrants with a final range of variants between 143 and 57 million immigrants. To stabilise the Dependency Ratio I "just" 90 million migrants would be necessary, in a somewhat narrower interval of 99 and 78 million immigrants according to the utmost variants of developments.

Conclusion

Our interest in the concept of replacement migration as presented in this article was not primarily theoretical or methodological but rather practical. For some time demographic ageing has been the subject of political discussion in the Czech Republic, and in it regulated migration from abroad has been presented as an important if not the main tool for solving the entire problem. Although a certain sense for reality prevents us from sharing that opinion or investing it with even the slightest hope, in this regard the numbers speak for themselves. In the Czech Republic, like in the majority of advanced countries, the figures are intelligible and clear: if our aim is just to maintain the current size of the population in the Czech Republic, under current or comparable conditions foreign migration could relatively easily help us and could do so in the long term. However, in the case of other parameters, the battle to maintain current levels of selected and many other similar indicators is lost before we start. Therefore, it will be enough compensation for the expended effort if our findings contribute to the abandonment of useless discussions and empty hopes and turn the attention of the relevant individuals towards a genuinely active and systematic preparation of society for population ageing, which is essentially an irreversible process.

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THE AGEING OF THE POPULATION – A THREAT TO THE PUBLIC HEALTH-CARE SYSTEM?[*])

TOMÁŠ FIALA – JITKA LANGHAMROVÁ[**])

Abstract: The Czech population, like other populations in the advanced world, is ageing and the trend will continue in the years to come. This article relates to the possible consequences the ageing of the Czech population holds for funding the public health-care system. A forecast of revenues to health insurance facilities is made along with a forecast of their expenditures on health care in relation to various development scenarios in the area of fertility, mortality, and migration in the next fifty years. The forecast assumes that during this period there are no changes to the system of health insurance, specific measures of employment by sex and age, the structure of average expenditures on health care per insurance subscriber by sex, average-income structure, age, and the rate of increase in health-care costs will grow equally with the rate of increase in wages.

Keywords: ageing of the population, population: projection, public health-care: system

A shared feature of the majority of European countries is decreasing population growth, that is, population decline by natural decrease, falling fertility and natality rates to sub-replacement levels, and increasing life expectancy as mortality conditions improve. The result of all this is the demographic ageing of the population. A specific feature of the Czech Republic on top of this is its irregular population structure, which means that irregular demands are placed on individual branches of the economy. Naturally this also applies to the health-care system and will continue to do so in the future. Moreover, after 1989 demographic behaviour in the Czech Republic underwent dramatic changes. The population is now ageing rapidly. The number of people of post-productive age is rising and will continue to rise substantially, especially among the "oldest old", that is, the most elderly population group, who tend also to require the most health care. People born in the 1940s and 1950s are part of a large birth cohort and they will soon be entering their post-productive years. Some of the characteristics of the expected ageing of the population of the Czech Republic are presented in Table 1.

As the percentage of economically active persons in the population decreases, and with it the percentage of people paying a portion of their income into the health-insurance system, the question is whether the reduced sum of payments to health insurance that will necessarily occur will be enough to support the costs of health care in the future, which, on the contrary, will continue to rise. Future demographic development will lead to an increase in public health-care costs. Not just expenditures but also the system's revenue will be affected. And all this lies ahead in the relatively near future. In this article we try to show how health-care expenditures and revenue relate to age and gender.

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Table 1 Percentages in selected population age groups in the Czech Republic and dependency indices, %

Age group	2005	2015	2025	2035	2045	2055
0–19	21.0	18.9	19.1	17.5	17.1	17.7
20–64	64.8	63.0	59.6	58.8	54.0	50.6
65+	14.2	18.1	21.4	23.7	28.9	31.7
85+	1.0	1.7	2.0	3.8	4.7	5.8
Dependence index	2005	2015	2025	2035	2045	2055
((0–19)+(65+))/(20–64)	0.5	0.6	0.7	0.7	0.9	1.0
(0–19)/(20–64)	0.3	0.3	0.3	0.3	0.3	0.3
(65+)/(20–64)	0.2	0.3	0.4	0.4	0.5	0.6

Source: Author's projection calculation – middle option (see next text).

The health-care system and health care form an important sector of society. Essentially every citizen comes into contact with the health-care system at some point. Given the sums redistributed in this sector, health care is even a very important sector of the economy.

In the Czech Republic there are three main sources of funding the health-care system: health insurance companies (public health insurance), public funding (the state budget and local budgets), and direct household expenditures. Alongside these three basic pillars of health-care funding, there are also other sources, but they are of negligible significance because they account for an estimated less than 1% of the total expenditures on health care (these include contractual health insurance for foreigners, travel insurance, and supplementary insurance, etc.).

The most important source of health-care funding is the health insurance companies, and their revenue comes from public health insurance payments. Every permanent resident in the Czech Republic (or persons without permanent residence but working with an employer registered to operate in the Czech Republic) must participate in the public health insurance system. The key principle of public health insurance is solidarity, equality and accessibility. Every insurance payer pays a sum determined by the size of their income and each payer is entitled to the same quality of care regardless of how much they pay into the system. Public health insurance funds all health care guaranteed under Act no. 48/1997 Coll. on public health insurance (in its effective amendment).

Public health insurance covers the majority of care services provided by the Czech health-care system, and only in some cases is the patient required to contribute to the costs. State budget resources serve as a supplementary source of funding for procedures or activities not covered by public health insurance, such as nursing care in social service facilities, the costs of research and development work connected with health care, the education of health-services workers, prevention programmes, and so on. Another supplementary source of funding comes in the form of direct household expenditures. Households pay for non-prescription drugs, health-care products, and extra (inessential) health services, for example, from a stomatologist. A less substantial resource is revenue from fees for spas, above-standard hospital rooms, and for various types of health certificates provided mainly by general practitioners.

To determine whether state health-care spending is adequate a country's total share of expenditures on health is measured as a percentage of GDP. In OECD countries the average share is around 8%. There is a direct connection between the share of expenditures and how economically advanced a country is, expressed as GDP per person. In the Czech Republic health care expenditures were 7.3% of GDP at current prices in 2000 and 7.8% in 2003.

Health-care expenditures per single insurance payer vary mainly in relation to age, but also in relation to gender. Table 2 and Figure 1 show that the highest expenditures occur at the start and towards the end of a person's life.

Table 2 Average expenditures on health care per insurance payer

Age group	2000		2001		2002		2003		2004		Average annual 2004/2000	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
0–4	10 368	9 169	11 254	9 812	12 200	10 570	12 515	10 951	13 086	11 242	1.06	1.05
5–9	5 376	5 050	6 281	5 601	6 574	5 870	7 226	6 494	7 440	6 679	1.08	1.07
10–14	5 565	5 415	5 876	5 737	6 300	5 967	6 835	6 727	6 994	6 988	1.06	1.07
15–19	5 227	6 279	5 463	6 502	5 895	6 911	6 118	7 538	6 297	7 975	1.05	1.06
20–24	4 711	6 953	4 762	7 084	5 247	7 625	5 285	7 727	5 456	8 026	1.04	1.04
25–29	5 096	8 271	4 951	8 519	5 519	9 353	5 732	9 891	5 998	10 458	1.04	1.06
30–34	5 258	7 898	5 575	8 357	5 927	9 307	6 343	10 033	6 655	10 551	1.06	1.08
35–39	5 712	7 985	6 286	8 475	6 885	9 334	7 315	9 893	7 815	10 525	1.08	1.07
40–44	7 008	9 041	7 679	9 529	8 310	10 496	8 763	10 874	9 123	11 566	1.07	1.06
45–49	9 179	11 280	10 036	11 890	10 960	13 029	11 518	13 735	12 026	14 348	1.07	1.06
50–54	12 242	14 001	13 629	14 526	15 089	15 943	15 884	16 779	16 645	17 738	1.08	1.06
55–59	15 911	15 193	18 041	16 154	20 230	18 036	21 295	19 039	22 242	20 069	1.09	1.07
60–64	17 651	17 030	20 952	18 326	23 562	20 349	25 274	21 986	26 769	23 502	1.11	1.08
65–69	20 602	20 161	25 932	22 170	29 074	24 575	31 477	26 280	33 298	27 984	1.13	1.09
70–74	24 648	22 700	30 318	25 788	34 205	28 700	36 926	31 054	39 741	33 157	1.13	1.10
75–79	26 984	25 229	32 543	27 944	37 339	31 648	40 945	33 965	43 718	36 697	1.13	1.10
80–84	28 678	28 253	32 511	30 298	38 396	34 413	40 499	36 283	43 684	38 842	1.11	1.08
85+	24 482	27 630	31 483	30 951	29 261	34 440	29 606	36 387	39 758	40 961	1.13	1.10
Average	9 710	11 816	11 071	12 744	12 339	14 133	13 215	15 127	14 060	16 149	1.10	1.08

Source: Analýza zdravotnických účtů ČR 2000–2004 (An analysis of health budgets of CR 2000–2004), CZSO.

Forecasting future development

Here we will present the results of a simple forecast of future trends, which show how big an impact population ageing in the Czech Republic will have in the next fifty years. The forecast was calculated on the assumption that the following characteristics will remain unchanged: the average costs of health care per insurance payer by gender in individual age groups; average wages by gender in individual age groups; the employment rate by gender in individual age groups; and the rules that apply to the payment of health insurance.

The future trends in the costs of health care and the cost of health insurance were forecast using the authors' own projections of population changes in the Czech Republic. The objective was not to provide as exact as possible an estimate of future population changes but instead to describe some alternative scenarios of development estimated using relatively large differences between the minimum and maximum rates of mortality, fertility and migration.

The initial age structure used was based on the most recent available data, i.e. the demographic structure of the population of the Czech Republic as of 1 January 2006, with a projection period until 1 January 2056. It was assumed that

Figure 1 Average expenditures on health care per insurance payer in 2004
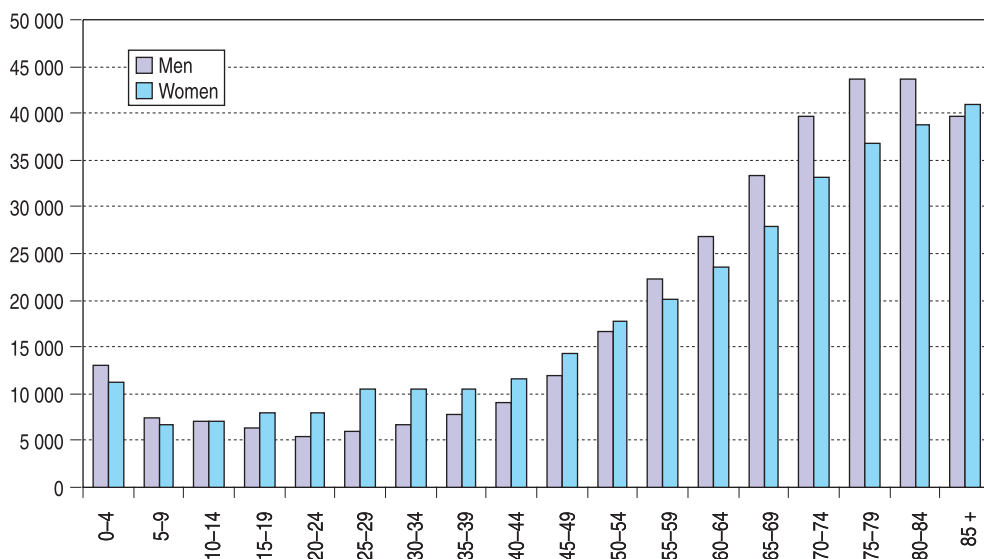
Source: Analýza zdravotnických účtů ČR 2000–2004 (An analysis of health budgets of CR 2000–2004), CZSO.

throughout the projection period there would be a linear increase in life expectancy (somewhat higher among men than among women). A linear increase in fertility was assumed until 2020, with a simultaneous change in the fertility structure, so that by 2020 the Czech fertility structure would resemble the fertility structure of women in the Netherlands. Between 2020 and 2055 the linear increase was assumed to be slower, without any other structural changes. The annual rate of growth in migration was assumed to be constant throughout the projection period, and the demographic behaviour of migrants was assumed to be the same as the Czech population. Three variants of life expectancy, total fertility, and migration were estimated.

However, as well as the above-mentioned projection variants, other alternatives assuming various combinations of extreme variants of assumed future trends in life expectancy, fertility and migration are also significant for modelling various scenarios of the costs of funding health care. (For example, a scenario in which there is assumed to be a significant increase in life expectancy and simultaneously low fertility and a low rate of migration increase). Therefore, alongside the basic three projection scenarios other alternatives were also estimated. Table 4 presents a summary of the estimated projection scenarios.

The projected population development was used to project expenditures on health care and health insurance payments. The projected health-care expenditures were based on the assumption that the costs per insurance payer by gender and five-year age group (Table 2, Figure 1) would remain at the level they were at in 2004 throughout the projection period. Estimating the rise in insurance premiums was more difficult, as no analogical data exist on collected insurance sums by gender and age. Therefore, the estimate was based on a simplified assumption that any employed person would pay insurance from an amount equal to 80% of the gross average wage by gender and by age in 2004, while for an unemployed person the state would pay the prescribed amount (again in the year 2004)[1]. Employed persons by defi-

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[1] The total amount of insurance collected from employed persons in 2004 was around 80% of the value calculated on the assumption that each employed person paid insurance out of the average wage for their gender and their age.

Table 3 Basic forecast scenarios

Option	Annual growth of live expectancy		Total fertility rate		Annual migration increase
	Men	Women	2020	2055	
Low	0.1	0.08	1.4	1.5	10 000
Middle	0.2	0.16	1.5	1.7	30 000
High	0.3	0.24	1.6	1.9	50 000

Table 4 Possible demographic developments

Alternative of development	Growth of live expectancy	Growth of fertility	Migration increase
LLL	low	low	low
LLH	low	low	high
LHL	low	high	low
LHH	low	high	high
MMM	middle	middle	middle
HLL	high	low	low
HLH	high	low	high
HHL	high	high	low
HHH	high	high	high

nition encompass not just people with an employer but also the self-employed. It can be assumed that persons whose only or main income is from self-employment pay on average (perhaps substantially) less on health insurance than people of the same age with an employer. Data from the Labour Force Survey (Czech Statistical Office) were used for the rate of employment in the Czech Republic (Figure 2).

The future burden of costs on the health-insurance system can be described using the rate

Figure 2 Rate of employment in the Czech Republic in 2004, %
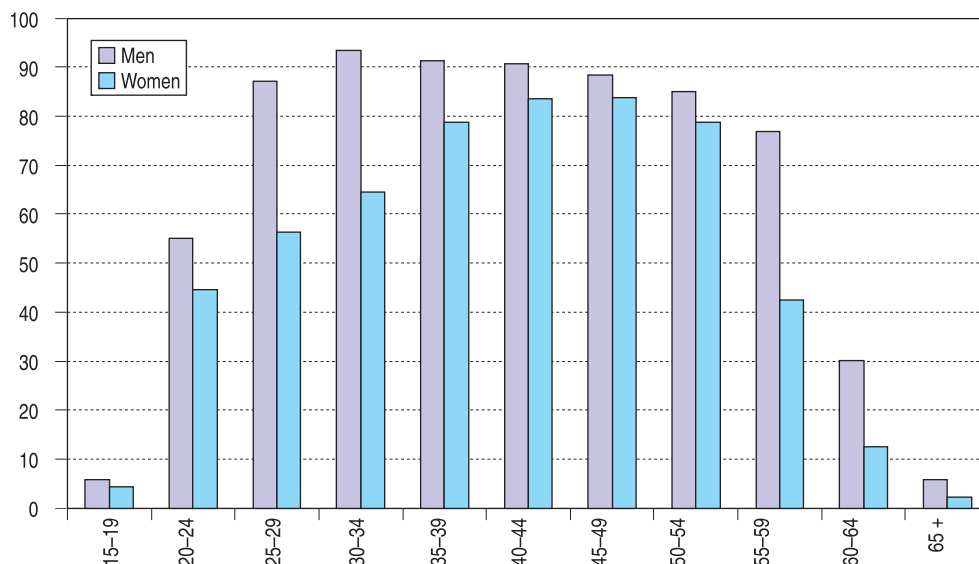
Source: Výběrová šetření pracovních sil 2004 (Sample labour force survey), CZSO.

Figure 3 Rates of insurance to health-care costs covered by insurance companies by individual development scenarios

Figure 4 Percentage of insurance paid by the state out of the total health-care insurance by individual development scenarios

Figure 5 Rates of insurance collected from employed people to health-care costs covered by insurance companies by individual development scenarios
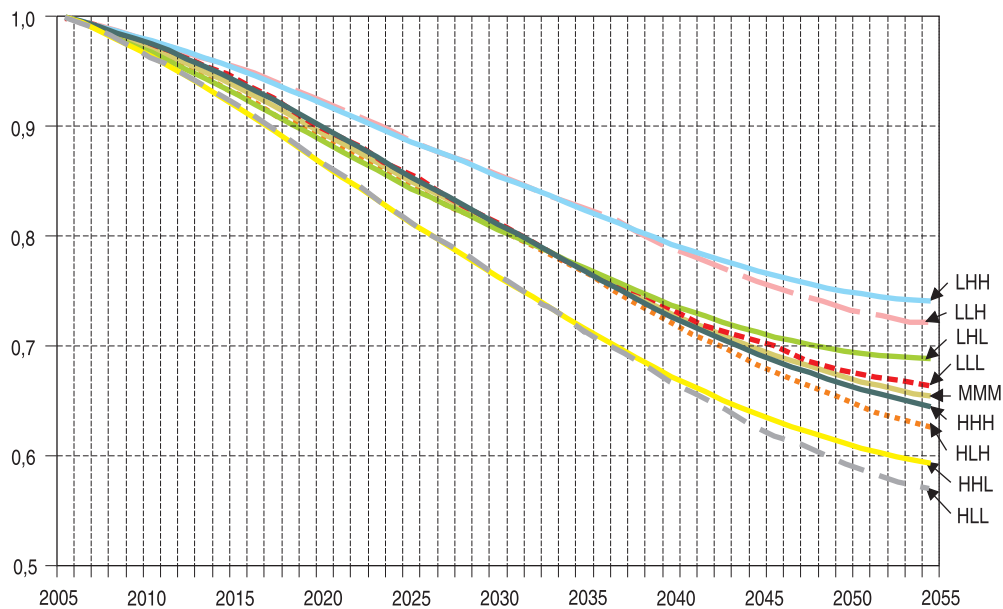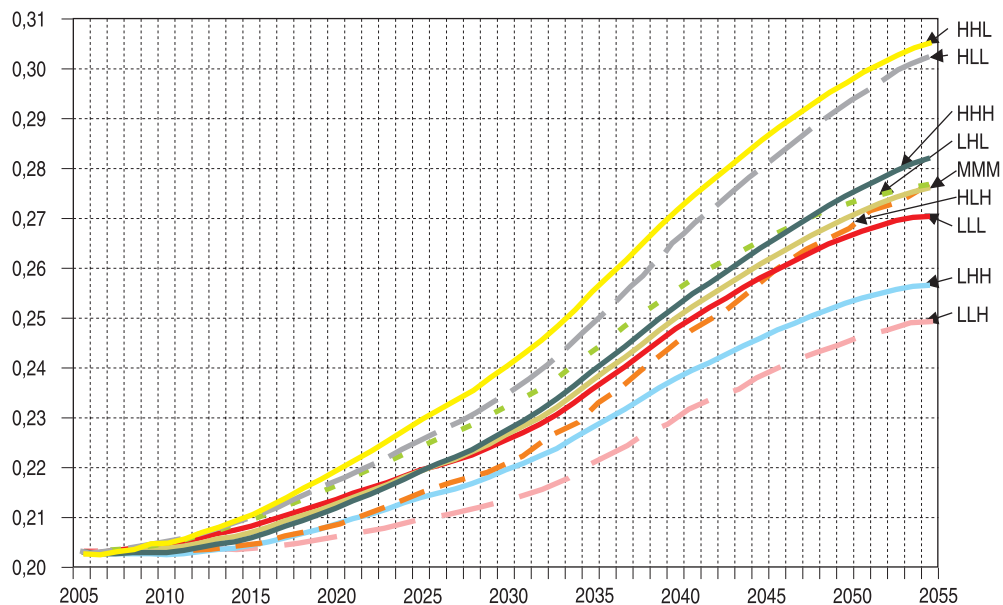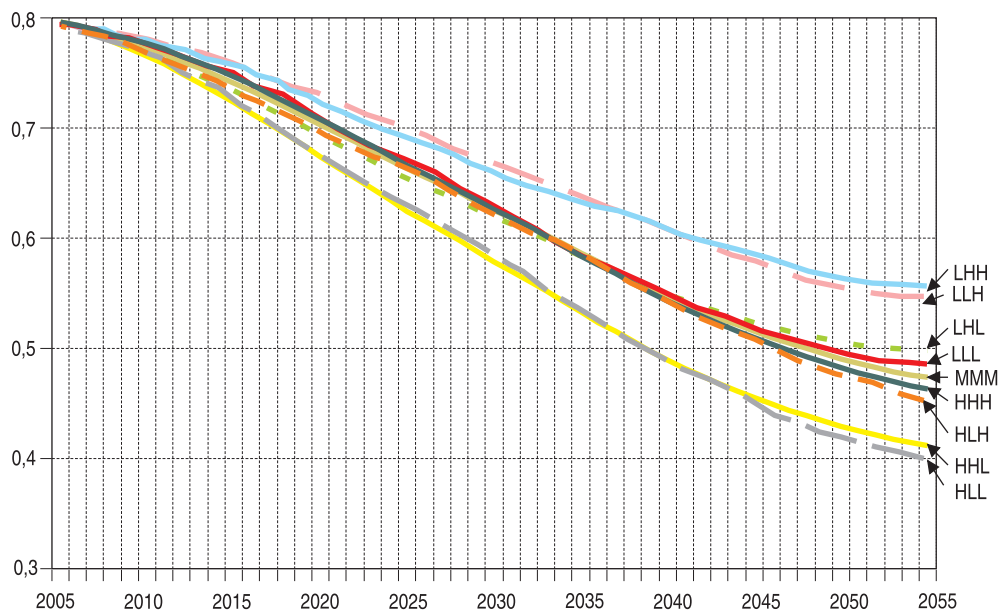

of total expected insurance collected to the total expected health-care costs covered by insurance. Figure 3 shows the rates for all of the alternative development scenarios.

We can see that in all the development scenarios the rate of insurance to costs would fall well below the unit value. This means that insurance premiums would not be enough to cover health-care costs. The smallest decrease would occur, as expected, in the case of a small increase in life expectancy combined with high immigration, and the biggest decrease would occur with a high increase in life expectancy combined with the currently low rate of immigration. The other development scenarios do not differ much mainly in the first years from the median projection. The pace of the increase in fertility would begin to have a stronger effect after several decades; a higher increase in fertility would signify a lower decrease in the rate of insurance to costs.

It is usually the state that pays health insurance for persons who are not working (children, students, non-working seniors, unemployed actively seeking work, etc.). Figure 4 shows how the percentage of insurance paid by the state would change in connection with changes in the demographic structure of the Czech population.

In all the development scenarios the percentage of insurance paid by the state would increase; the increase would be greatest in the case of a high increase in life expectancy, high fertility and low immigration, and the least increase in the opposite case. High fertility would mean again in the first years an increase in the cost burden, which would later decrease.

The total burden on the state connected with covering health-care costs can be described as the rate of total insurance collected just from employed persons to total health-care costs. Figure 5 shows the development of this characteristic over time.

In all the development scenarios there would be a substantial increase in the difference between the expected revenue and the expected expenditures of health insurance companies.

What are the possible solutions to this unfavourable trend? The first possibility is of course

an increase in health-insurance premiums. If, for example, we want the rate of insurance collected to the costs of health care covered by health-insurance companies to be equal to around one in future years, the rate of insurance to 2055 (assuming other characteristics remain unchanged) would have to increase gradually from the current 13.5% to 18–24% of the assessment base (Table 5).

Table 5 Insurance rates per insurance payer in 2005

Option	MMM	LLL	LLH	LHL	LHH	HLL	HLH	HHL	HHH
Insurance rate (%)	20.6	20.3	18.7	19.6	18.2	23.7	21.6	22.8	20.9

Another possible way of increasing total collected insurance and reducing the cost to the state would be to increase the employment rate, in particular by raising the age of retirement. For example, if by 2055 we increased the employment rate of 55–59 year-old men to 80% and 60-64 year-old men to 75%, and the employment rate of women in these age groups was just 5 percentage points below that that of men, then in 2055, in the case of the median scenario of demographic development, the rate of collected insurance to health-care costs would be equal to around 70% (while it would be only 65% if the current employment rate remained unchanged). Therefore, increasing employment would only slow the growing differences between revenue and expenditures but would not eliminate them entirely. It would also be important to improve the collection of insurance from persons whose main source of income is self-employment.

A financial tool for reducing the growing difference between the revenue and expenditures of health-insurance companies would be to increase the participation of insurance payers.

For the entire projection period we assumed that the specific health-care costs per insurance payer of a given gender and age would remain unchanged or the rate of increase would be around the same as the rate of increase in wages. In 2000–2004 the costs of health care rose slightly faster than the increase in wages, and the biggest increase in health-care costs was among people of retirement age.

It is very difficult to estimate future developments. However, it is likely that in the future it will be possible to achieve continuing improvements in the state of public health at relatively lower costs than at present. A particularly important advantage would be a public that is better and more informed about matters of health (in comprehensive terms, as defined by WHO). This could lead to changes in behaviour and lifestyle and to an improvement in the health of the population, reducing the demands on the health-care system. In the future older people will be more independent and more active than previously and they will make less use of the health-care system. We may surmise that as education levels in the population rise the amount of increase people take in their own health will also increase.

Another important factor is to increase the resources devoted to preventive health care, which in many cases could lead to a reduction of costs in the area of health treatment.

Some studies outside the Czech Republic claim that the use of some new technologies in health care could lead to the provision of better quality health care at a lower cost. It has also been shown that the total level of health-care costs is determined more by the share of chronically disabled in the population than by the relative proportion of seniors in the population. Some new procedures may, for example, render invasive surgery, intensive care units, or treatment centres for chronic illness (all relatively costly health-care services) less necessary than before. Modern treatment technology can also reduce the length of time patients spend in the hospital, which would also reduce costs. In some cases new technologies will make it possible to diagnose illness earlier and thus also initiate treatment at an earlier stage, which may also cut down on treatment costs and on top of that extend not just life expectancy but

also the quality of life. Genetics and bioinformation can provide information on the effectiveness of medicines and improve the effectiveness of subsequent clinical trials, and that could reduce the price of new medicines. However, the development of these new technologies will probably require increased investment into biomedical research.

Another possibility is to create conditions that enable out-patient and home care it is whenever feasible, because such care is usually much less expensive. This also applies to the care provided late in human life. According to some surveys, three-quarters of Czechs would prefer to die at home and with their family. However, current laws do not enable financial support for so-called domestic hospices, which provide qualified home care for people who are dying. Yet this would certainly be less expensive than hospitalising the elderly and in many cases would be much more humane for individuals and their relatives.

Health care and the health-care system are complex issues. **The proposed concept for health care for 2005–2009,** in conformity with the findings of the OECD Health Group (OECD, 2004), is based on creating an integrated health-care system, which favours solutions to emerging problems by means of effectively functioning health systems, the objective of which is sustainable cost management and sustainable financing, accessible health care, and health-care systems sensitive to the needs of patients. Emphasis is placed on improving the state of health of the population by promoting support for heath at the level of the regions, municipalities, and towns.

The system of financing and cost defrayal requires sustainable cost management. A disparity between future technological advances and demographic changes on the one hand and the eventual decline in the number of economically active members of the population on the other needs to be addressed through increased efficiency in the area of health services and an improvement in the state of health of the population. Data from an international comparison indicate that there is room for improving the efficiency of health systems.

Another possible solution lies in the direction of advances in molecular medicine and gene therapy, which should therefore be made a priority in the area of research and the development and the application of new technologies. The use of molecular medicine could significantly alter the approach to the mechanisms of financing health care and illness risk management (health insurance).

Conclusion

Population ageing is an acute issue and not just in the Czech Republic. A useful means of discerning the quantitative consequences of population ageing is to calculate population projections for not just the three basic scenarios described at the start of this article but for other development scenarios that combine, for example, a large increase in average life expectancy with simultaneously low fertility and migration rates.

An elderly population puts greater demands on health care. With population ageing, health-care costs will rise, and we can also expect inauspicious increases in the amount of resources that will be necessary to cover the costs of health care over time. In order to cover increased costs in the future, sufficient resources are required. However, as a population ages the number of economically active persons in the population decreases and thus so does insurance company revenue. Unless changes are made to the public health insurance system there may be a shortage of necessary resources. One possible solution would be to increase the payments for persons insured by the state, generally increase insurance premiums, and increase patient participation in costs. However, it is likely that, given the rising education levels and interest of the population in their own health, there will be some reduction in the demand or need for health care. Also, advances in medical technology and more efficient financial management in health care may make it possible to improve the quality of health care and to provide it at a lower cost.

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Comments[*]) on the article "The Ageing of the Population – A Threat to the Public Health-Care System?" by Tomáš Fiala and Jitka Langhamrová

Population ageing, especially in terms of the increase in the proportion of the elderly or very elderly in the population, is not a problem. It is the most positive result of improved living conditions and better health care.

It is specious to one-sidedly indicate, as the authors do, that "future demographic development will lead to an increase in public health-care costs". One cannot help but ask, how do they know this? Someone else could similarly claim that increased public health-care costs will lead to the further ageing of the population. Which is the dependent and which the independent variable? There is no doubt that in many countries the two phenomena are occurring simultaneously.

The vast majority of people want to live in good health and longer, and they are willing to do something or even to spend money to achieve this. Pharmaceutical companies and producers of health technology are well aware of this. Selling people things that they have been persuaded to believe are good for their health is good business. It manages to create a demand for

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[*] This comments on the article was published in *Demografie* 2007, 49, p. 22–23. The contents of the journal are published on the website of the Czech Statistical Office at: http://www.czso.cz/csu/redakce.nsf/i/demografie.

health services. However, it is justified to ask whether and to what extent the demand for health-care services and the services provided actually correspond to people's real needs.

Many advanced countries have already come to the realisation that treating health problems in hospitals is too expensive or even impossible to sustain. For example, the high consumption rates of alcohol and cigarettes in the Czech Republic cannot be offset by importing more medicine or expanding the liver transplant programme.

People who live long are certainly not responsible for the increased costs of public health care. On the contrary, these are usually people who have lived as healthily as possible and have taken care of their health. Such people are not a threat to the public health-care system or society, they are its wealth.

Population ageing and the consequences of this process for public health care have been the subject of an enormous amount of literature (*Thomson – Mossialos*, 2000). Questions that have been raised and carefully studied include: What determines the costs of public health care? Are expenditures effective? What are the costs connected with care for the elderly? What are the costs of health care in relation to the structure of the population by age and gender? Conversely, what are the costs of health care for an individual over the course of his/her lifetime? What other circumstances affect the trend in health-care costs? How should rising health-care costs be addressed? How can the strategy of health care be changed? What else needs to be taken into account? There are countless such questions. What is important is to identify the fundamentals.

In the modern day perhaps only journalists could make a one-sided case for a causal relationship between population ageing and health-care costs. Large-scale studies have been carried out in recent years that devoted more attention to this issue. What did they discover?

First, it has been shown that structural cross-sectional data on the trends in health-care costs are far from ideal for studying the given problem. It is necessary to start with longitudinal data describing the trend in costs over the course of a person's lifetime (*Zweifel et al.*, 2001).

The highest health-care costs are incurred during the several months before a person dies. What determines how high the costs are, is how long the person has left to live and not how old they are (*Seshamani – Gray*, 2004). It is mainly hospital care that is involved. The much higher costs of health care for the elderly do not stem from their need for ongoing care. They stem from the fact that the probability of death rises with age. It is obvious that when a young or middle-aged person dies the related health-care costs are quite high. Patients customarily receive intensive care in a hospital and are given very expensive treatments. Conversely, the death of older people is not usually perceived in such dramatic terms, and common experience has shown that the standard treatments applied to younger patients are not as effective on older patients. From a medical perspective, death in old age is "less expensive" than the costs of unsuccessful treatments applied to younger people.

From this perspective, population ageing could lead to a decrease in health-care costs as deaths occur more frequently in old age. However, such an assumption is not realistic, as health-care expenditures are continually rising, and are doing so in every country where the economy is growing relatively favourably. If health-care costs do decrease in a country, it is usually owing to serious internal economic or political problems. For example, in countries that were formerly a part of the Soviet Union, there was a sharp fall in health-care costs in the 1990s owing to a shortage of financial resources, and this was followed also by a sharp decline in the mean life expectancy.

There is no doubt that health-care costs are not determined one-sidedly just by the health problems of individuals, or by the health problems of social units, or even ultimately by population ageing. They are largely determined by the economic and political situation in a country and by the degree influence in decision-making acquired by companies that with effective marketing operate successfully in the pharmaceutical market and in the sale of medical technology bought with public funds. If health and health-care funds fall prey to interest groups prepared for financial conquests then the costs of public health care will grow.

It has to be acknowledged that numerous factors have had a hand in the rising costs of public health care in the Czech Republic in recent years. For example, it is common knowledge that competition between individual health-care facilities in the provision of health care is more expensive than an integrated and coordinated health-care system; it is more expensive when people can freely choose their doctors and have direct access to specialists than when the emphasis is placed on primary care and the general practitioner has a say in the decision to

provide access to specialists. It is more expensive to provide emergency clinic services at a teaching hospital than to provide regular emergency clinic care. And it is also very costly when adequate attention is not devoted to research on health systems, conceptual work on health policy, drawing on foreign experience, and responsible regulation and control over the use of public funds on health care.

If the management of a health-care system underestimates the need for professional ability, information and analytic work, and for the related social regulation, such as legislation, education, and the appropriate use of economic tools, then health care becomes more expensive, and it is impossible to expect the solution to this to lie in increasing user participation or health-insurance premiums.

It would be a mistake, however, to one-sidedly criticise this paper. It is certainly of significance and value. It is essentially a warning prognosis illustrating how things might turn out if not only the parameters mentioned by the authors remain constant but also if there is no progress in our way of thinking, and if we narrow-mindedly and dogmatically cling to some of the preconceptions that have dominated thus far. It would be a catastrophe if by 2055 (the year the authors' prognosis ends) we have not learned anything from the outcome of foreign and domestic research, if we are unable to react to the desirable extension of the population's life expectancy, if we do not value our health, and if we believe that health-care policy, the department of health, and health insurance companies do not need to progress over the next fifty years.

The entire professional community is in this regard faced with an enormous task. Demographic studies and prognoses will certainly constitute an important contribution. The better they can be integrated into summary studies of social, economic, and health issues, the more critically and successfully they can draw on knowledge to date, the more objectively they can present the wide scale of problems that warrant attention, and the more foresight they apply to proposed solutions, the more significant they will be.

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Book Reviews

THE HISTORICAL LEXICON OF MUNICIPALITIES IN THE CZECH REPUBLIC 1869–2005[*])

At the end of 2006 the *Czech Statistical Office* published the modestly titled **The Historical Lexicon of Municipalities in the Czech Republic 1869–2005**[1]), a unique source on the modern history of settlements in the country. Although works of exceptional value tend to gain appreciation over time, this is not quite true in this case, as this publication will undoubtedly be appreciated by contemporaries – not just in the statistical community but also among everyone who is interested in the history of settlement, among people who need to find data on the republic, regions and districts, and people who are interested in information on small settlements: it is a source that is thoroughly democratic, giving space to the capital city and to each of the 6248 municipalities and 11 475 municipal districts that the territory of the Czech Republic was divided into on 1 January 2005.

I suspect even experts may find it difficult to imagine how much hard and painstaking statistical, archival, and scientific-research work lies behind this publication. Work that moreover required immeasurable meticulousness, patience, and perseverance. For this reason alone the names of at least those who worked most on the preparation of the lexicon deserve mention: under the direction of *Jiřina Růžková* and *Josef Škrabal* they include *Vladimír Balcar, Radek Havel, Josef Křídlo, Marie Pavlíková*, and *Robert Šanda*, and others contributors include *Štěpánka Morávková, Miroslav Řípa, Magdaléna Poppová, Petra Berrová, Dana Pirníková, Tomáš Volný* (all of them from the Czech Statistical Office), and *Jan Müller* (from ÚRS Prague).

The Historical Lexicon is comprised of two very distinct but nonetheless closely linked parts: one section consists of data (part one of the publication) and an alphabetical list of municipalities and municipal districts (part two). The data section mainly contains information on the municipal populations since 1869. The tables adhere to the traditional breakdown of Czech statistical lexicons. The municipalities are ordered alphabetically by district and region, and municipalities that are divided into boroughs list them, too, usually alphabetically. Their order corresponds to the administrative divisions in effect since 1 January 2005. Each municipality or municipal district includes the year of the first written mention of the location, its area in ha (only municipalities), followed first by figures for the population size in census years (1869, 1880, 1890, 1900, 1910, 1921, 1930, 1950, 1961, 1970, 1980, 1991, and 2001) and then by the number of homes in those same years – except for the columns with the numerical order of the municipality this involves twenty-nine columns.

In addition to statistical data the first part also contains a very important introductory section that provides information about the historical context of the published statistical data, along with a relatively detailed description of the methods used to compile the historical lexicon and explanations of the tabular data. Here we find a section on the organisation of public administration in the Czech lands in 1850–2005, a list of sources used to compile the Historical Lexicon, a list of characteristics on municipalities published in statistical lexicons since 1869, and useful retrospective overviews: an overview of territorial divisions, trends in population growth and the number of households by regions and districts, historical cities of the Czech Republic as of 31 December 2005, the largest towns in 1869–2001 (on the area at the time of each census).

The publication's map supplement is worth noting. It shows the cartographic appearance of the administrative divisions of the Czech Republic in the period under observation, as since 1869 the administrative divisions at the level of the lands (or provinces), and at the level of the regions and districts has "only" changed substantially on five occasions (if we leave out the period from 28 September 1938 and 9 May 1945): in 1920, 1927, 1949, 1960, and 2000. Changes in the territorial divisions of municipali-

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ties within districts occurred more or less continuously. The map supplements capture the changes in territorial divisions at the level of the lands, the regions, and the districts. At the district level the maps also indicate population density in the years 1869 and 2001, population growth between 1869 and 2001 (the relative increase or decrease in a period of one or two decades, e.g. in 1930-1950, or 1991–2001), and the changing number of homes (the relative increase or decrease for the selected period).

The second volume of the Historical Lexicon contains an alphabetical list of municipalities and municipal boroughs between 1869 and 2005. This is a unique inventory of all the names of territorial units at the level of municipalities or boroughs that have existed in the statistical lexicons of municipalities since 1869, along with the larger administrative unit they belong to (district) in the individual census years, which from the years 1964 is expanded to include the exact dating of any territorial change (e.g. one municipality merging with another, the creation of a new administrative unit), the renaming of a municipality or municipal borough, or its transfer to another district. The lexicon therefore also allows readers to trace changes in administrative divisions during the period under observation. A major advantage of this list is that it graphically distinguishes the names, municipalities, and municipal boroughs that exist today from older names (no longer in use today) or from municipalities and municipal boroughs that no longer exist, and changing administrative affiliations of individual territorial units are described when possible under a single entry.

The volume opens with methodological notes and explanations and with a summary table of districts and historical statutory cities on the territory of the Czech Republic between 1869 and 2005.

The Historical Lexicon, prepared by the Czech Statistical Office, is very much a unique piece of work. Its graphic design is also outstanding. Hopefully it will help satisfy the growing interest among scholars and the general public in works of this type. The Czech Statistical Office and the collective of authors should be commended for this work.

Ludmila Fialová

THE FAMILY AND SOCIETY (NOT JUST) FROM A SOCIOLOGICAL PERSPECTIVE[*])

In 2006 SLON Press (officially the Sociology Press) published a new book by *Ivo Možný* titled **The Family and Society**, which is a revised and expanded version of his previous book titled **The Sociology of the Family** (Sociologie rodiny)[1]), published in 1999[2]). Like the majority of work by this author, this is a monograph that an educated layperson as well as an enthusiastic student or expert in the same or a similar field can read with interest and with a sense that they are co-discovering things often innately connected with their own lives. The book is conceived as a textbook (and is published in the Press's Study Texts series), and the structure of the book as a whole and its individual chapters are designed along these lines. However, the text satisfies much wider demands. In it, the author covers a broad scale of themes connected with the sociology of the family, ranging from themes more closely tied to general sociological theories, to explanations of changes in demographic behaviour (more or less accepted in sociological literature), to themes bordering on psychology and other related disciplines.

In the first chapter the author introduces readers to the topic of the sociology of the family by outlining his opinions on questions about the stability or decline of the family and by elucidating the book's general approach. He presents his conception of the developmental stages of the family, which are then analysed in more detail in other parts of the book. The next two chapters are "historical" and offer a rough overview of **the development of theoretical approaches** to the family and related phenomena and how the family is understood in contemporary sociological theories and concepts. Here the author follows not just the chronology of approaches and interpretative frameworks but also the relationships and connections between theoretical concepts. The reason for including this historical-sociological section is not just the publication's textbook character; it is also valuable because it offers readers, who may have varying degrees of knowledge about the history of sociology in general and the sociology of family in particular, with the opportunity to make an informed assessment of the current ideas and reality in each given area.

In the fourth chapter the author identifies the relationship between changes in the family and the changes in society as a whole and the basic feature of society – **social inequalities**. He also looks at the role of family ties and structures in society-wide relationships and structures. While questioning the role of the family in contemporary society, Možný has some interesting views on its effect as "the basic unit of inequality" (p. 110). In a sense he places the family at the centre of sociological inquiry. He is not trying to overestimate the significance of the family but just to draw attention to the mutual relationships between individual objects in the investigation of social inequalities and to the growing heterogeneity of the family and the widening of various family types.

The fifth chapter, **Family Formation: The Marriage Market, Love and Sex**, combines – even in its title – the approaches of various scientific fields, from demography to social psychology and beyond. One key feature of this chapter is that it confronts theories about the marriage market with demographic realities. The author draws attention to the wider context of interconnected factors that have a synergic effect on the choice of (life) partner and to the differentiation of individual approaches and aspirations. As part of an analysis of the social and cultural determinants of assortative mating he focuses on the effects of territorial proximity, the tendency towards age, ethnic and racial homogamy of partners, religious homogamy/heterogamy, and the tendency towards the educational and class homogamy of partners. From the perspective of partnership behaviour also obviously of interest are the analyses of the changing social functions of sex and erotica that Možný summarises in this chapter.

In the sixth chapter about **the socialisation of children in the family** (as elsewhere) Možný ties in with his previous work. He identifies changes in the social perception of "the most important transition in the family cycle" (p. 148) – the transition to parenthood, which he analyses in detail. He reflects on the limits and defects to the social autonomy of parents in society today. The wealth of themes mentioned in the introduction as the focus of this publication are illustrated here in a sub-chapter on Incest and Child Abuse, in which the author applies his historical-developmental approach. The section on socialisation looks at various theoretical approaches and at the current, most topical themes, such as the effect of peer groups in the period of the family transition or the differences in the socialisation of boys and girls.

The seventh chapter, titled **The Family, the Household and the Economy**, is devoted to the very current issue of work-life balance. The highly informative value of the way the author integrates the given theme into its historical context and reveals its distant roots becomes particularly apparent here. Of equal explanatory interest in this case is his comparison of the present and the socialist period and the effect of the socialist-era ideology of women's emancipation. Here Možný analyses three options (models) of tackling professional and parental aspirations, their positive and negative aspects, and how they stand up in practice. He questions ideas about the possibility of the "effective" compatibility of family and employment. Among other things, he draws attention to the subtle changes in the approach to the topic of equal opportunities, the effects of which in the family and in the sphere of employment are closely knit. In this context the author draws attention also to changes to masculinity and femininity. He situates recent changes in the general position of women in the context of, among other things, the greater openness in the public sphere of work and shifts in general opinion, which he expresses in the words: "Attitudes towards parenthood have also changed and the focal point in the perspective on the problem has shifted from pride in the participation of women in the labour market to the demand for men's participation in parenting" (p. 189). The impossibility of finding a satisfactory solution to the dilemma of motherhood (fatherhood) and professional self-realisation is today leading to the "differentiation of family models, the modification of the life cycle, and the increase in lifetime childlessness" (p. 191). In a part of the seventh chapter of especial interest to sociologists and demographers Možný focuses on the incidence, social character, and significance of **singles** as a social phenomenon.

The eighth chapter takes a comprehensive look at the issue of **divorce**. Again keeping to his well-proven method, he presents information about the contemporary realities of divorce in the context of a qualitative analysis and quantitative data on the divorce rate, which often has only seemingly evolved in a diametrically different manner than today. He does not fail to take into account the methodological difficulties of such statistical comparisons. His arguments are convincing thanks in part to the way they are linked to a detailed sociological (psychological) analysis of the aspects of marriage instability. The chapter includes a section on repeat marriages. Worth mentioning is the author's conclusion that divorces unquestionably remain one of the most frequent topics in sociology (and, shall we add, demography), but that it is quite possible that "…interest will shift from research into the orderliness of the family and from the study of divorce towards what happens next" (p. 227).

The ninth chapter bears the attractive title **The End of the Family?** and is devoted to the social context of changes in the post-modern family, including the connection with the development (and crisis) of the social state. He contrasts the opinions of various theorists of the family and individualisation and

also compares theory with empirical findings. He analyses the much-noted discrepancy between the 'traditional' family and the post-modern situation. He shows that the "progressive" function of the family that applied in past centuries has been diminishing for some time, the main influence here being the emancipation of women and the rise in the living standard, that is, two (for the time being) irreversible processes. He contrasts this with two facts: the foundation of the family is the mother-child relationship (p. 236), and the market society is indeed antagonistic to children, but this renders it a historical ephemeron (p. 237). Through an analysis of other effects of individualism, for example, on love and intimacy, and the again recalled differentiation of the family in the world today, Možný works towards the conclusion that even today the family is of significance, that "this civilisation will not dissolve an institution advantageous in every respect" (p. 249). Here he mainly has in mind intergenerational continuity, which is in the "selfish" interest of men and women.

Chapter ten, the final chapter (entirely new and not in previous edition of The Sociology of the Family) analyses and evaluates demographic and sociological data on **the development of the Czech family** and the Czech population in recent years from the perspective of the trends and theories described in the preceding chapters. The author points out the specific features of Czech development and analyses future outlooks, including some of the risks to population development that become apparent in current trends. In the book's conclusion he draws attention to the "expected imbalances" (p. 269) stemming from today's demographic behaviour and the sociological characteristics of the Czech population: 1. the relationship between the "productive" part of the population and the older generation in the process of population ageing (p. 271), 2. the relationship between the Czech population and immigrants, without which further population growth is inconceivable (p. 274), 3. the relationship between the intellectual elite and the rest of the population with regard to the high degree of homogamy and status continuity in Czech families (p. 275), 4. the relationship between childless people (singles) and families with children (p. 275), and 5. the relationship between the wealthy and the poor (p. 277).

Alongside its wealth of content, other features of I. Možný's monograph that will appeal to readers are the author's pleasant interpretative style and the nice combination of scholarly erudition, a simplicity of style, and an amount of humour appropriate to such a scholarly work.

Věra Kuchařová[**]

HOUSING FOR SENIORS[*]

Housing for Seniors[1] is the title of a book by *Dagmar Glosová* and a collective of authors that looks at the issue of housing for seniors from the perspective of sociology, architecture, and other fields. After the introduction, in which *Jiřina Šiklová* asks the question "How to Survive Old Age?", the book is divided into five chapters. *Boris Burcin* and *Tomáš Kučera* are the authors of the first chapter titled **How We Age**…, where they look at the problem of the demographic ageing of the population. In the first part of the chapter they discuss demographic trends since the mid-1980s, when a dramatic decline in fertility and mortality occurred in the majority of European countries, which was reflected in a sharp increase in the share of seniors in the population. In the second part they present the current results of their own demographic prognoses, which can be used to formulate a concrete idea of the expected population ageing, which is going to be especially dramatic in the Czech Republic.

The second chapter, **What Do Seniors Need**?, contains a study by *Kateřina Kubalčíková* on the "Natural Environment as a Significant Aspect in the Provision of Social Services to Seniors". In it the author notes mainly the need to try to enable elderly people dependent on the assistance of others to remain in their natural environment and try to keep them integrated in society. Two practical examples are cited: the model of supervised residential flats for seniors, which have been seen set up as part of the transformation of residential services in Vienna, and the model of integrating supervised residential flats into regular tenement buildings, as has been done in Amsterdam. The second chapter also contains two contributions from *Milan Lipner*. The first, Housing and the Quality of Life of Seniors, looks at the

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[1] Glosová, Dagmar et al. *Bydlení pro seniory*. Brno: Era, 2006.

needs and demands of seniors in relation to housing, and the second, **The Basic Principles of Housing for Seniors from the Social and Social Health Perspectives**, presents some of the findings from studies focusing on the wishes of seniors with regard to housing and the quality of life in old age. M. Lipner also formulates some of the basic requirements that should be taken into account when considering seniors' housing.

The third chapter, **How Well Seniors Live**, contains an article by *Ladislav Lábus*, which begins by addressing the wider context and conceptual background to the transformation of the idea of social care at the end of the last century, when in EU countries care services were gradually re-oriented towards smaller-scale, more individualsied and humane facilities. In the Czech Republic, which ranks among the countries with the highest proportion of institutionalised social care and the largest number of hospital beds per capita, social care remains in the shadows of institutions. In this context, L. Lábus repeatedly emphasises the advantages of housing and care in the home environment, which is more effective and less expensive than institutional care. The next contribution, by *Jiří Oplatek*, describes the system of care for seniors in Switzerland, where care for older citizens is based on three pillars: their own flats, flats for seniors, and seniors homes. The third pillar, the concept and the financing of it, receives the most attention, including an example of a specific seniors home in Münchestein. The third chapter closes with an article by *Naděžda Menšíková* on the theme of caring for the elderly and needy citizens in Germany, where a major role is played in care for seniors by associations, foundations, and charities.

The author of the fourth and longest chapter, **Flats, Homes, Institutions, and Centres**, is *Dagmar Glosová*. The readers learn about housing options for seniors that, in terms of services provided, their form, quality, and necessary intensity, take the following form: individual housing, supervised housing, housing in homes with care services, institutional housing in retirement homes and senior citizens homes, and housing in centres for seniors. Individual housing for seniors, i.e. housing in their own homes, is of considerable significance for the overall satisfaction of a senior, but it needs to be adapted to the senior's specific needs. Supervised housing, where a group of seniors can live together in one large modified flat that is part of regular housing and in which necessary services are provided, is not a very well-known form of housing. Non-institutional housing for seniors represents a transition point between individual housing and institutionalised living: the Czech Republic primarily builds homes with care services, which offer independent elderly people comfortable flats with easy access to assistance; but seniors who are no longer able to take care of themselves are required to move out. One form of housing for seniors in the Czech Republic is retirement homes, which offer accommodation and services for pensioners (e.g. house-cleaning, laundry, window washing) whose state of health is such that they do not require intensive care. Senior citizens homes' offer complex care services but are usually institutional facilities with a large capacity. The final form of housing is known as a seniors centre, which is a complex facility where all the above-named types of housing for seniors are brought together in one location. The author expanded this overview with examples of proposals to redesign individual housing, proposals relating to supervised housing, and specific examples of buildings intended as housing for senior citizens in the Czech Republic. In the second part of the chapter Dagmar Glosová presents readers with examples of housing for seniors in other countries, in particular noting the architectural arrangement of the buildings. The chapter is accompanied by numerous photographs.

In the final chapter, **How to Design a Home for Seniors**, *Dagmar Glosová* and *Hana Zbyszek-Štolcová* share practical advice on how best to design or modify housing for senior citizens so that it accommodates their specific needs and requirements. The authors start by focusing on public and semi-public spaces (sidewalks, parking spaces, ramps), then proceed to semi-private spaces, such as the entranceways to private property, to buildings, foyers, stairwells, and elevators, and end with a look at private spaces (flats and rooms). Most seniors live or long to live in their own flat, but standard flats are unsuitable for many of them. Adequate modifications and flat reconstruction combined with a functioning network of domestic assistance and professional care could limit the unpleasant effects of natural ageing and thus enable old people to remain in their own homes.

Although at first glance it may seem that this book is intended mainly for students of architecture, this is not the case. The book is accessible to any reader – the problem of ageing and life in old age affects us all.

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MATERNITY LEAVE: WHERE WE STAND COMPARED TO EUROPE[*]

Keywords: family, maternity leave, maternity pay, international comparison

State social policy has numerous instruments that are designed to support families with children[1]. There are essentially two basic types: financial instruments (tax deductions, credits, benefits, etc.) and formal, non-financial instruments (such as social recognition of the importance of motherhood and parenthood). One of the first policy provisions that families with children encounter is maternity leave (ML) and the financial assistance that accompanies it. This policy provision combines both aspects: formally expressed recognition of pregnancy and motherhood as important social functions that warrant a special approach, and financial compensation for the temporary loss of employment.

According to numerous demographic studies, young people in the Czech Republic are having fewer children than they may originally have planned. It is mainly the socio-economic problems and the generally low support for parenthood in Czech society that tend to interfere with their original fertility plans. The **Family and Fertility Survey** conducted in 1997 indicates that a full 60% of women would, in their own opinion, have had the number of children they wanted if there had been supportive pro-family policy provisions in place (*Národní koncepce*, 2005: 6). Formal, non-financial forms of support for families are especially neglected. Consequently, a functioning family with children is not a symbol of social success in the eyes of the majority of society. Nevertheless, studies show that most Czechs still give preference to measures of financial nature over other forms of family support (*Kocourková*, 2004). Perhaps that is one of the reasons why Czech policy focuses mainly on financial forms of support, while in the majority of EU states the focus is on supporting work-life balance. Even the National Concept for Family Policy in the Czech Republic, formulated by the Ministry of Labour and Social Affairs, states that "caring for children and the household must be placed on the same level as the contribution of work", which "must also be reflected in the financial evaluation of such care" (*Národní koncepce*, 2005: 12).

Family benefits are an important source of income for families, especially for those with young children. Benefits are not just a form of immediate assistance for socially vulnerable households and a source of security in the case of permanent or temporary loss of job income; they are also an expression of the state's interest in the family. They embody the state's effort to bridge the gap between the standards of living of childless people and parents, who devote their time and resources to raising the next generation. That is why a number of family benefits are tied to the birth of a child and the first years of a child's life when families are often required to live off just one income or may even be entirely dependent on state assistance. The existence of benefits is all the more important today when the functions which used to be traditionally fulfilled by the family have been largely taken over by formal organisations or the state.

Let's take a look at the financial assistance that is provided during the early stage of motherhood. The following pages present a comparison of the conditions of financial assistance in EU-25 countries, along with Norway, Iceland, and Switzerland. The data used relate to 1 May 2005.

Qualifying conditions for the entitlement to maternity pay in the CR

In the Czech Republic, the Financial Assistance in Maternity (FAM), i.e. the maternity allowance, is provided during the period of maternity leave. Like in other EU states, one must contribute to the health insurance system to be entitled to maternity pay. Only under certain circumstances is a person exempt

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from this duty. These situations are called periods compensating for health insurance[2]. In the Czech Republic the FAM is paid exclusively to women[3] for a period of 28 weeks, starting from the sixth to eighth week before a woman is expected to give birth. A woman is only entitled to this benefit if she had health insurance for at least 270 days in the previous two years. The benefit amounts to 69% of the daily assessment basis for both employees and the self-employed. The assessment basis is calculated from the woman's previous average wage using a special formula. In order to qualify for maternity pay, the following additional requirements must be met:

a) the recipient must continue contributing to the health insurance system (or the protection period from the previous health insurance must continue) until the first day from which the benefit is paid out (i.e. the first day of maternity leave)
b) the pregnancy must end in childbirth
c) the recipient has no income from economic activity (*Přibyl et al.*, 2003: 70)
d) Should the beneficiary be the self-employed, she must also:
e) have participated in the health insurance system for at least 180 days within the period of one year previous to the childbirth
f) pay the health insurance premium for the period from which the entitlement to financial assistance in maternity is claimed no later than three months after the first day from which the benefit is paid out (Ibid.: 94).

If a mother gives birth to two or more children at once and is caring for at least two of them, or if she is unmarried, widowed, divorced, or for some other serious reason is alone and not living with a cohabiting partner, FAM is provided for a period of 37 weeks (calculated from the start of payment). The same conditions apply to a woman who, though she did not give birth to the child herself, is replacing the mother's care (with the agreement of the relevant official body), or (b) has taken into her care a child whose mother has died. However, in these cases the period of payment of financial assistance is limited by the age of the fostered child (the youngest one) and ends when the child reaches the age of eight months. A man who takes a child into his care with the agreement of the relevant official body or who cares for a child whose mother has died is also qualified for a longer "maternity" pay, providing he has participated in the health insurance system and is single, widowed, or divorced, or for some other serious reason lives alone. The period during which the financial assistance is provided to him is again limited by the child's age (up to eight months of age).

A woman who does not meet the requirement of having participated in the health insurance system for the minimum required period is not entitled to the maternity allowance but is entitled to the parental benefit.

The Czech Republic compared to other EU states

All of the countries studied in this article provide new mothers with some form of financial and legal protection. In the majority of them, the institution of maternity leave exists, and a financial benefit is attached to it. In Sweden and Norway it is more accurate to speak of parental leave, because maternity leave per se essentially does not exist there. These two countries provide relatively generous and long support during maternity (parental) leave. However, it is not just mothers who are entitled to this leave; both parents have a right to take it. In Norway mothers alone are entitled to a leave of just three weeks before childbirth and six weeks after childbirth, i.e. nine weeks of maternity leave in total. In Sweden, the only provision intended solely for the mother is a Compensation Benefit in Maternity which is, granted to pregnant women who are unable to continue to perform their job owing to its physical demands. This benefit is paid for a maximum period of fifty days during the sixty days before childbirth, i.e. for around seven weeks.

There are therefore two conceptions of financial assistance in maternity that are evident in current European models: a) maternity allowance as a health insurance benefit, where only the future mother is entitled to it (like in the Czech Republic, for example); b) maternity allowance as a parental-health insurance benefit, where the benefit can also be paid to the father instead of the mother, or can be paid to

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[2] Person is exempt from the health insurance duty if in military or civil service, collecting a pension, listed in the register of job-seekers, collecting a sickness benefit or collecting financial assistance during maternity at the end of the sickness benefit entitlement.
[3] Under the current law, a father can only take maternity leave if the mother of the child has died or is seriously ill and unable to take care of the child herself. A proposed amendment to the act on health insurance would allow fathers to either take maternity leave instead of mothers (starting from six weeks after the birth of the child) or alternate on maternity leave with the mother (however, the period of maternity leave of the parents combined could not under normal circumstances exceed 28 weeks).

both of them at the same time (*Matějková and Paloncyová*, 2004: 30). Health insurance can take the form of public health insurance, company (employee) insurance, or a combination of the two. At least one of the parents must be working for an employer in order to qualify for the company health insurance (The Netherlands). Company insurance plans can differ considerably, not just with respect to entitlement conditions but also in terms of the amount of the benefit as a percentage of the calculation base.

An interesting solution is provided under the Swedish model: support for a young working family is provided on the basis of parental insurance. This insurance covers both employees and the self-employed, who have paid benefits equal to 2.2% of their income. The insurance covers the following three types of benefit: maternity allowance, parental allowance, and temporary parental allowance. The Slovenian model also occupies a specific place among European countries. It is built upon a highly developed principle of solidarity of working childless people with working parents. Maternity, paternity, and parental allowances are all covered out of parental insurance, and every actor (employee, employer, self-employed) contributes 0.1% of gross wages to the system.

Not all countries with statutory maternity leave provide financial assistance unconditionally to any mother who is in some way participating in the labour market (whether she be employed, self-employed, or even unemployed looking for work). In most countries, including the Czech Republic, only those women who are employed and/or meet the condition of contributing to the relevant insurance system are entitled to the maternity allowance.

Figure 1 The length of maternity leave and the amount of compensation for previous wages
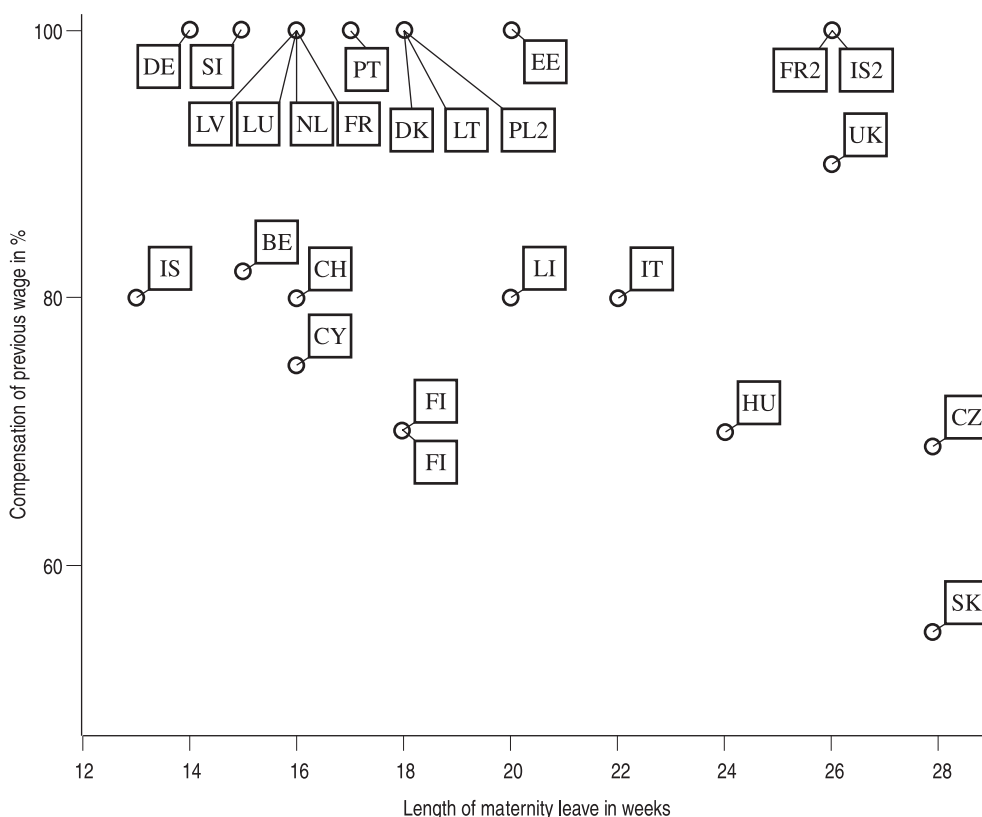
Source: MISSOC (2004).
PL1 = Poland: FAM at the time of the first-order birth. PL2 = Poland: FAM at the time of the second-order or additional birth. FR1 = France: FAM at the time of the first-order and second-order birth. FR2 = France: FAM at the time of third-order or additional birth. IS 2 = 6 months of maternity leave. For other descriptions, see Table 1.

Table 1 Maternity leave and financial assistance during maternity leave in selected countries

Lable	Country	Insurance type	Length of entitlement (weeks)	Wage replacement rate (%)	Tax	Personal income tax (from average wage in 2004)	Social insurance contributions	Social insurance payable from FAM in 2004 (%)
AT	Austria	Health insurance	16	100	N	–	–	–
BE	Belgium	Health insurance	15	82 (75)	Y	26.60	N	–
CY	Cyprus	Social insurance	16	75	N	–	–	–
CZ	Czech Republic	Health insurance	28	69	N	–	–	–
DK	Denmark	Paid from taxes	18 (50)	100	Y	30.60	Y, only pension contributions	0.30
EE	Estonia	Health insurance	20	100	Y	18.73	N	–
FI	Finland	Health insurance	18 (44)	70	Y	24.20	Y, only health contributions	1.50
FR	France	Health insurance	16 or 26	100	Y	13.10	Y	6.70
DE	Germany	Health insurance	14	100	N	–	–	–
HU	Hungary	Social insurance	24	70	Y	12.40	Y, only pension contributions	8.50
IS	Iceland	Health insurance	13 (26)	80	Y	25.50	Y, only pension contributions	4.00
IE	Ireland	Social insurance	18	70	N	–	–	–
IT	Italy	Social insurance	22	80	Y	18.60	N	–
LV	Latvia	Health insurance	16	100	N	–	–	–
LI	Lichtenstein	Health insurance	20	80	Y	n.a.	N	–
LT	Lithuania	Health insurance	18 (59)	100	Y	23.13	N	–
LU	Luxembourg	Health insurance	16	100	Y	8.90	Y	10.65
MT	Malta	Social insurance	13	611 EUR*	N	–	–	–
NL	Netherlands	Health insurance	16	100	Y	8.50	Y	38.20
N0	Norway	Health insurance	38 or 48	100 or 80	Y	20.90	Y	7.80
PL	Poland	Health insurance	16 or 18	100	Y	6.1	Y	26.96
PT	Portugal	Social insurance	17	100	N	–	–	–
SK	Slovakia	Health insurance	28	55	N	–	–	–
SI	Slovinia	Parental insurance	15 (52)	100	Y	11.31	Y	22.93
ES	Spain	Social insurance	16	100	Y	12.70	Y	6.35
SE	Sweden	Parental insurance	76	80	Y	24.00	N	–
CH	Switzerland	Health insurance	16	80	Y	10.00	Y	11.00
UK	United Kingdom	National insurance	26	90	Y	15.90	Y	9.40

Source: MISSOC (2004); EUROSTAT (2005).

All data relate to cases of a single child being born. Multiple pregnancies (twins, triplets, etc.) are not taken in account.

* flat rate

BE – 82% of previous wage compensated for the first 30 days of maternity leave. A rate of 75% applies from the 31st day of ML. In some cases tax relief may apply.

DK – 18 weeks (4 before and 14 after childbirth) are reserved solely for the mother. Both parents are then entitled to another 32 weeks of fully compensated leave.

FI – 105 consecutive days (not counting Sundays) are reserved solely for mothers. Either of the parents is then entitled to another 158 days of leave (again, excluding Sundays) compensated at the same rate as the first 105 days.

FR – 16 weeks of maternity leave applies to the first and second childbirth. Should a women have a third child maternity leave is 18 weeks.

IS – First three months of maternity leave are reserved for mothers only. Next three months (compensated at the same rate) can be taken by either of the parents.

LT – After maternity leave, either of the parents is entitled to a benefit at the same level as the maternity allowance until the child turns one.

NO – Parents have two options: either a 52-week maternity allowance at 80% wage replacement rate or 42 weeks of fully compensated maternity allowance. Four weeks are reserved solely for the father (therefore not used in the analysis).

PL – At the birth of the first child 16-week maternity leave is provided. With each subsequent child maternity leave is extended to 18 weeks.

SE – The first 390 days of maternity/parental leave are compensated at a rate of 80%. A flat-rate benefit of 20 EUR per day applies to the rest of the the leave (approx. 3 months).

SL– The first 105 days of maternity leave are reserved solely for the mother. Either of the parents is then entitled to another 260 days of parental leave compensated at the same rate.

UK – The first 6 weeks of maternity leave are compensated at a 90% rate. A flat-rate benefit of 152 EUR (or 90% of previous wage if it amounts to less than 152 EUR) applies to the rest of the maternity leave.

Figure 2 The length of maternity leave and the real amount of compensation for lost wages

The Czech Republic provides one of the longest periods of entitlement to maternity leave and maternity allowance in Europe and in the world (Tab. 1). As mentioned in the previous section, the period of entitlement to maternity allowance is 28 weeks, which is longer than recommended by the International Labour Organisation (ILO)[4]. In the amount of wage compensation, however, the Czech Republic complies with the ILO recommendation advising that the amount of the allowance be set at two-thirds of a woman's previous wage. The daily assessment base for calculating the allowance is set at 69% of the previous wage in the Czech Republic, even though the standard practice in European countries is to compensate 90-100% of the previous wage (Tab. 1).

Figure 1 depicts the situation of support for maternity of women employees in selected European countries around the time of childbirth[5]. Around one-half of the countries choose to fully replace a woman's previous wage over a relatively short period of maternity leave (up to 18 weeks). Only in Iceland and France is maternity leave

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[4] According to the ILO, the recommended minimum period of paid leave owing to pregnancy or the birth of a child is twelve weeks. Nonetheless, the minimum of fourteen weeks is generally advised.
[5] Explanations for the abbreviations used for the names of states are found in Table 1. PL 1 (I) = Poland: FAM at the time of first-order birth. PL 2 = Poland: FAM at the time of the second-order or additional birth. FR1 (I) = France: FAM at the birth of the third child or more. IS = Iceland: maternity leave reserved exclusively for the mother. IS 2 = Iceland: maternity leave plus three additional months that either of the parents can take.

Figure 3 Financial assistance during maternity leave in selected European countries
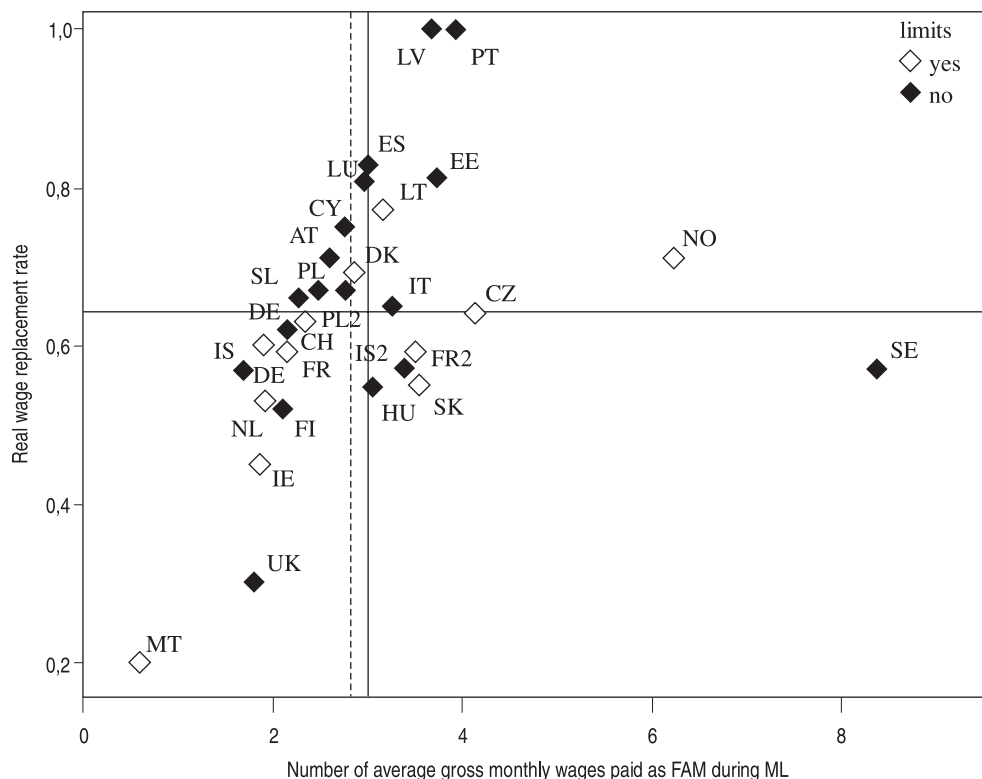
Source: MISSOC (2004); EUROSTAT (2005); author's calculation.
Note: PL1 = Poland: FAM at the time of first-order birth. PL2 = Poland: FAM at the time of second-order or additional birth.
FR1 = France: FAM at the time of first-order or second-order birth. FR2 = France: FAM at the time of third-order or additional birth.
IS 2 = 6 months of maternity leave. For other descriptions, see Table 1.
The solid lines across Figure 2 represent the average length of ML in the sample (the broken line = the average without Norway and Sweden) and the average compensation of lost wages.

fully paid – under certain conditions – for 26 weeks[6]. As noted above, the Czech Republic lies at the opposite end of the pole. It provides longer leave but offers one of the lowest wage replacement rates[7]. Only Slovakia replaces a lower percentage of a woman's previous wage (55% of the previous wage) than the Czech Republic, and only since 1 January 2004. In other countries that, like the Czech Republic, do not tax FAM, the percentage of wage replacement ranges between 70% (Ireland)[8] and 100% (Germany, Portugal, Lithuania, Austria).

Figure 1 contains no data on Sweden or Norway. As mentioned earlier, this is because maternity leave

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[6] Here it is necessary to mention the specific case of Slovenia. Maternity leave per se lasts for 15 weeks in Slovenia, but immediately after ML follows parental leave for a period of 37 weeks, which is also compensated at a level of 100% of the previous wage. The mother (parent) is thus paid her entire wage in full for a period of 52 weeks, which is a unique phenomenon in this part of Europe, and conceptually resembles the practices in Scandinavian countries, which also provide a generous allowance throughout the period of not just maternity leave but also parental leave. The situation is similar in Latvia, where from the end of maternity leave up to the child's first birthday a parental allowance of 70% of the previous wage is paid.
[7] Until the year 2004, when Slovakia changed its rules governing the calculation of financial assistance in maternity and lowered the percentage of wage replacement from 90% to 55%, the compensation level in the Czech Republic was the lowest in Europe.
[8] Ireland increased the percentage of wage replacement in 2005 to 75% and it is now 80%.

Figure 4 Financial assistance during maternity leave in selected European countries (not including Sweden and Norway)

as such does not exist in these countries [9]. The duration of parental leave offered would thus have distorted the figure. (Explanations for the abbreviations of country names are in Table 1.)

In many countries, including the Czech Republic, there is a maximum daily limit on either the amount of income that the calculation of FAM can be based on or on the amount of allowance that can be paid. This limit disadvantages higher-income groups. Consequently, in some countries the difference between the income ceiling and full replacement is paid by the employer complying with the recommendations of the state authorities (e.g. Norway, Germany). Elsewhere, the compensation for the difference is the subject of a collective agreement between the employer and employee as part of pro-family policy (Denmark, France, and Italy). Some Czech experts believe that it would be a good idea for the Czech social system to take inspiration from these examples. Their proposal states that should the employers be unable to pay the difference they could apply to the health insurance funds for a contribution (cf. *Matějková and Paloncyová*, 2004). The question is whether this provision would not lead employers to reject young female job applicants out of a fear of potentially high labour costs.

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[9] In Sweden only a Compensation Allowance is paid during maternity. This allowance is reserved uniquely to women who cannot work owing to the physical demands of their job. It replaces 80% of their previous wage and is provided for a maximum period of 50 days within the 60-day period before the expected date of childbirth. In other cases the concept of parental/maternity leave applies.

Figure 5 Amount of money (as the number of average gross monthly wages) paid during ML

Country	Value
Sweden	8.37
Norway	6.22
Czech Republic	4.11
Portugal	3.93
Estonia	3.73
Latvia	3.67
Slovakia	3.63
France 2	3.51
Iceland 2	3.38
Italy	3.26
Lithuania	3.18
Hungary	3.05
Spain	2.97
Luxembourg	2.95
Denmark	2.85
Poland 2	2.77
Cyprus	2.75
Austria	2.61
Poland 1	2.46
Switzerland	2.32
Slovenia	2.26
France 1	2.16
Belgium	2.15
Finland	2.10
The Netherlands	1.94
Germany	1.91
Ireland	1.84
United Kingdom	1.80
Iceland 1	1.69
Malta	0.58

In addition to the above-mentioned restriction, there is the issue of taxation. Whether or not FAM is taxed and social insurance contributions are required has a potential impact on the amount of benefit received. The only countries where maternity pay is not taxed and social insurance payments are not required are the Czech Republic, Germany, Lithuania, Portugal, Austria, Slovakia, Ireland, and Cyprus. The information presented in Table 1 and Figure 1 must therefore be taken as just a rough outline. Moreover, the replacement wage level stated in the table does not always apply to the entire length of maternity leave. For example, Sweden replaces 80% of the previous wage only for the first 390 out of a total 480 days. In the remaining days a maximum of 20 EUR a day is paid (which is equal to approx. 27% of the average monthly income). In Norway, the amount of replacement wage depends on the length of leave: parents can take 42 weeks with a full replacement wage, or 52 weeks and receive a replacement wage of 80%[10]. In Belgium, the income during the first 30 days is equal to 82% of the previous wage and during the remaining 75 days the recipient collects only 75% of income, with an income ceiling. In Great Britain, despite the undeniable improvements to the social system in recent years, the situation is not as favourable as it seems in Figure 1. A replacement rate of 90% (without an income ceiling) applies only to a segment of the 26-week maternity leave[11], specifically the first six weeks. The remaining period of ML is supported through a payment of 102.80 GBP a week, which is not even equal to one-quarter of the average monthly wage.

Figure 2 shows the positions of the countries if all the restrictions on paying FAM, taxation and social insurance payments are taken into account. For the purpose of comparison, the average gross monthly wage in individual countries was taken as the calculation base. Calculated from the base of the average monthly wage and reduced by possible tax and insurance payments, the monthly FAM was then related to the average gross wage to obtain the real replacement rate of the previous (gross) wage.

We can see that the situation changes considerably in those countries with high social insurance contributions (The Netherlands, Poland, Slovenia) and taxes (Denmark, Finland, Sweden, and Belgium[12]), and in Ireland and Great Britain, where there is a very low ceiling on maternity pay . The wage replacement rate also fell in Germany, Austria, and France, where FAM is calculated from net, not gross, wages. Owing to the ceiling on the amount of income FAM can be based on, the Czech Republic also shifted, but it still more or less occupies a relatively good position among the other countries because of the very long period of maternity leave. As is apparent from Figure 2, most countries favour a shorter period of leave with a relatively high replacement wage. Only Estonia has above-average values in both categories. Conversely, Malta lags behind in both categories. Rarely is the length of ML and the percentage of replacement wage combined in such a way that both have high values. Usually a longer period of maternity leave means a lower replacement of lost wages.

It is somewhat difficult to find an all-encompassing, general indicator of a country's "generosity" in the domain of maternity leave and maternity pay provisions. Essentially, there are two basic perspectives from which to approach the matter. The first is the proportion of lost wages that FAM replaces each month (wage replacement rate). The second is the total amount of money that a mother receives throughout the full duration of ML. The wage replacement rate is especially important for mothers who do not want to or cannot remain at home with their children for a long time and therefore cannot afford a substantial cut in income. The total sum of money paid is important from the perspective of the state budget and is probably of more significance to mothers who choose to remain on ML longer. Figures 3 and 4 show the distribution of countries in relation to these two criteria. Figures 5 and 6 present a clear overview of country ranking according to these two criteria.

It is apparent that the total sum of money paid for the full duration of ML is closely connected with the percentage of wage replaced (Figure 4; r = 708**[13]). Only those countries where FAM comprises flat-rate allowances (Great Britain) or where various restrictions apply to calculating FAM (CR, SK) de-

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[10] Three weeks before childbirth and six weeks after childbirth are restricted to the mother and the four weeks that follow the post-natal six-week period are reserved only for the father. The state allowance has an upper limit of six times the annual social insurance base (i.e. 42 953 EUR for the year 2004, which is higher than the average annual income), but the employer can make up the difference between the allowance and the amount equal to 80% or 100% of previous income, should the employer wish to do so.

[11] Employees who have worked for the same employer for at least 26 weeks up to the start of the fourteenth week before the expected data of birth are even entitled to 52 weeks of maternity leave. Their job is held for them throughout this period, but the last 26 weeks are not paid unless the employer deems otherwise.

[12] In Belgium the amount of the social insurance contributions can under certain circumstances be reduced.

[13] The probability of a correlation between these two variables is expressed by the number of asterisks according to the value r (Pearson's correlation coefficient). Two asterisks (**) correspond to p = 0,01, i.e. a high probability of correlation.

Figure 6 Wage replacement rate (percentage of average gross monthly wage compensated by FAM)

Country	Value
Portugal	1.00
Latvia	1.00
Estonia	0.81
Spain	0.81
Luxembourg	0.80
Lithuania	0.77
Cyprus	0.75
Norway	0.71
Austria	0.71
Denmark	0.69
Poland 1	0.67
Poland 2	0.67
Slovenia	0.66
Italy	0.65
Czech Republic	0.64
Switzerland	0.63
Belgium	0.62
Germany	0.60
France 1	0.59
France 2	0.59
Sweden	0.57
Iceland 1	0.57
Iceland 2	0.57
Hungary	0.55
Slovakia	0.55
The Netherlands	0.53
Finland	0.52
Ireland	0.45
United Kingdom	0.30
Malta	0.20

viate strongly from the main trend. A similar tendency is shown by states which provide a longer than average period of leave, such as Norway and Sweden (Figure 3). It must be pointed out again, however, that it is in fact the parental leave we are talking about in these two countries, and so they are not entirely comparable with the rest. To properly understand the content of Figures 3 to 5 it is worth noting that the total sum of money represented on axis x is simply **the number of average gross monthly wages paid in the form of FAM for the duration of ML in a given country.**

In Figures 3 and 4 the states that put a ceiling on the amount of FAM paid are visibly distinguished from those states where there is no limit on the amount of FAM. In the latter, marked in the Figure with a solid black rhombus, FAM can acquire any value depending on the previous wage. Future mothers with high average earnings are therefore not disadvantaged in any way in these countries. Conversely, those states where there exists a ceiling on the amount of FAM that can be paid, i.e. the Czech Republic, Slovakia, Ireland, the Netherlands, France, Switzerland, Malta, Latvia, Germany, and Denmark[14], the revenue is redistributed in favour of low-income groups. In each country, however, the ceiling height may be different. In Switzerland (Canton of Geneva) and the Netherlands, for example, the maximum wage the FAM can be calculated from is equal to approximately twice the average monthly income. In the Czech Republic and Slovakia, however, it only amounts to 1.3 and 1.0 times[15] the average wage, respectively. If we consider the maximum possible amount of FAM paid in one month of maternity leave (allowing for possible taxation and social insurance payments) and relate it to the average monthly wage in the country, we find the highest maximum limit in Latvia (2.69 times the average gross monthly wage), followed by Switzerland (1.04) and France (0.84), and the lowest in Ireland (0.45) and Malta (0.20).

Leaving aside Sweden and Norway, where the leave provided is not maternity leave in the real sense of the term, the Czech Republic (Figure 5) pays out by far the most money on FAM (in relation to the average gross monthly wage in the country). Although only a mediocre 64% of the previous wage is replaced, the above-average length of maternity leave puts the Czech Republic in front of the other countries in terms of the amount of money paid out as FAM. In general, the top half of the ladder mainly comprises countries that offer relatively long ML. Only Portugal and Lithuania occupy positions so far up the ladder thanks to the very high wage replacement rates.

Figure 6 shows the proportion of average gross wage that is compensated monthly by FAM in a given country. Values in the figure essentially express the extent to which financial rewards for employment and early maternity are comparable. Consequently, the conditions of FAM payment in countries at the top of the ladder would most probably best suit those women who cannot afford a substantial reduction in income during ML.

Due to all the factors mentioned in the previous paragraphs it is difficult to say which state pays the most generous maternity benefits. The length of entitlement to maternity allowance alone is not the determinant. This fact is obvious from the example of Great Britain, which offers a relatively long period of maternity leave (26 weeks) but only replaces the lost wage in full for 6 weeks, applying a maximum daily limit in the remaining weeks. Moreover, maternity allowance in Great Britain is taxed and not universal, that is, not every woman is entitled to this assistance. Even if we take into account only those states where lost wages are replaced in full for the full duration of maternity leave, such as Portugal, we find other disadvantages; namely, in this specific case, the period of maternity leave does not count as a period compensating for health insurance.

Figure 7 is the result of an attempt to construct an indicator that would compare the countries as objectively as possible. For each country a kind of average generosity score was calculated, equalling the sum of normalised values for each preceding characteristic (total sum of money paid and percentage of lost wages replaced) divided by two. Both of these perspectives are thus equal in weight. The values in the Figure indicate how far and in what direction from the average each individual country lies. We can see that, alongside Sweden and Norway, whose excellent position is the result of the extremely long period of maternity/parental leave, the two characteristics are best combined in Portugal, Lithuania, and Estonia. Also above average are Spain, Luxembourg, the last of the Baltic States, Latvia, the Czech Republic, and Cyprus. There then follows a large group of countries around the average, and finally countries that are below average in both characteristics, namely, Malta, Great Britain, and Ireland.

To sum up, the most financially generous system of maternity leave and benefits during maternity is

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[14] In Germany and Denmark officially there is an upper limit to the FAM, but in reality the difference between the upper limit and the full wage is compensated by the employer on the basis of collective agreement.
[15] It is 1.5 times the average wage as of 1 May 2005. It is always related to the average wage in the previous calendar year.

Figure 7 Average score

Country	Score
Sweden	1.66
Portugal	1.41
Norway	1.34
Latvia	1.32
Estonia	0.77
Spain	0.50
Luxembourg	0.47
Lithuania	0.46
Czech Republic	**0.39**
Cyprus	0.25
Italy	0.12
Denmark	0.10
Austria	0.08
France 2	0.03
Poland 2	0.01
Iceland 2	−0.08
Slovakia	−0.09
Poland 1	−0.10
Slovenia	−0.20
Hungary	−0.25
Switzerland	−0.27
Belgium	−0.36
France 1	−0.44
Germany	−0.50
Finland	−0.67
Iceland 1	−0.67
The Netherlands	−0.70
Ireland	−0.98
United Kingdom	−1.44
Malta	−2.17

found in the Baltic States, Portugal, France (if a woman is expecting her third child), and, despite the low level of wage replacement, also in the Czech Republic. The not too favourable position of the Netherlands, Germany, and Belgium is somewhat surprising as these countries are usually regarded as states with highly developed pro-family policy. Similarly unexpected is the relatively low level of FAM in Poland, a traditionally pro-family country. One explanation for this may be the strong role and autonomy of the family in Poland, the emphasis on traditional structures, and consequently the relative independence (at least as proclaimed) of the family from social support provided by the state.

It is difficult to compare the Scandinavian countries with other countries. Particularly in Sweden, Norway, and Iceland, family policy has moved in the direction of not distinguishing between maternity and parental leave. Except for the period directly after childbirth, the father has a similar entitlement to leave as the mother, and therefore, if we were to compare FAM in the period reserved for the mother alone these states would be visibly lagging behind the others. Denmark and Finland, with, respectively, 18 and 15 weeks of maternity leave reserved exclusively for the mother have a more similar scheme to that in the rest of Europe. In the overall comparison Denmark figures around the average. Owing to the low percentage of wage replacement and the existence of a limit on the initial wage it can be based on (like in the Czech Republic), Finland is located in the bottom half of the ladder.

Conclusion

Judged by the criteria used in this analysis, the Czech Republic ranks among the most generous countries with regard to financial support paid during maternity leave. In terms of the wage replacement rate and the length of maternity leave, the country is similar to Slovakia, Hungary, and France (the latter in the case of the birth of a third and subsequent child). Thanks to the total sum of money paid during maternity leave, the Czech Republic, more than any other country, comes close to the family-generous Scandinavian countries, such as Sweden and Norway, that is, the social democratic type of state (*Esping-Anderson*, 1990). This finding is certainly positive, but it represents just one way of looking at things.

The percentage of lost wages compensated through financial assistance in maternity is just 69% in the Czech Republic, and there is a ceiling of 419 CZK on the daily amount that can be paid. Although the intention behind providing maternity pay in the form of a health insurance benefit is to mitigate the impact of the decline in a woman's wage during maternity leave (women with different wage levels thus receive different benefit amounts during ML), setting a maximum daily limit to the amount of financial assistance essentially undermines this objective. A benefit constructed in this way affects likewise young women with small starting salaries and women with high incomes, who suffer a marked decrease in income during maternity leave. Lone mothers or mothers with multiple births are entitled to a longer period of FAM payment[16], but its daily amount remains the same. Thus, it is usually lone-parent families headed by single mothers with small children that often end up dependent on the state social security system due to the absence of a second income in the family.

When viewed from the perspective of facilitating the harmonisation of parental aspirations with professional ambitions (or just being able to secure basic family needs), the existing Czech model seems somewhat antiquated compared to other European countries, not responding adequately to the needs of people living in contemporary society. As *Matějková* and *Paloncyová* (2004) noted, the entire system is too uniform and static, and the current model of Czech family policy does not adequately reflect the differentiation of life styles and strategies that has occurred in recent years. For its generosity and length maternity leave in the Czech Republic is indeed unique, but it would benefit from becoming more flexible, more along the lines of the Scandinavian model. In most European countries it is easier to combine caring for pre-school-age children with employment, parents are offered different options for organising work and family life. Particularly inspiring is the possibility of choosing between a shorter period of maternity (maternity/parental) leave with a higher amount of monthly assistance or a longer leave with a lower monthly allowance. It would also be a practical idea to introduce the possibility of postponing some leave to a time when the child is older and dividing leave between the parents.

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[16] This rule has only applied up until 31 December 2006. Extended maternity leave was withdrawn at the start of 2007.
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PROF. ING. VLADIMÍR ROUBÍČEK, CSC. (1930–2005)[*)]

Vladimír Roubíček was born on 11 May 1930. After completing gymnasium, from 1949 to 1953 he studied economic-statistical engineering at the College of Special Studies and at the Economical Engineering Faculty at the Czech Technical University in Prague. In August 1953 he began working as an assistant in the Department of Statistics at the University of Economics in Prague (VŠE; formerly the Faculty of Economics at the University of Political and Economic Science). As a very successful young teacher, within two years he was appointed a lecturer in the department. In 1956 he began lecturing on demographic statistics and prepared its first course book, titled **Demographic Statistics** (1958). It became the primary teaching resource in demography at the time and represented an important step towards obtaining recognition for demography as an autonomous scientific field. Demography was first taught in the Department of Statistics as a part of economic statistics, and Roubíček initially worked on economic statistics in the Department of Statistics headed by *Bohumil Korda*. **Demographic Statistics** became the basic resource for teaching demographic statistics and Roubíček submitted the text as his PhD. thesis, which he defended in 1962 at the Faculty of Economics and Public Policy at VŠE (in the field of economic statistics). He was awarded the title of PhD. in economics that same year. His career in research and teaching progressed successfully and in 1967 he was awarded the position of senior lecturer in the Department of Statistics at VŠE. He wrote his habilitation thesis on the subject of potential demography, and a large part of the dissertation was published in Statistics and Demography VII (1967) under the title **Population Prognoses and Potential Demography**.

At the initiative of Doc. Roubíček, in 1967 the *Demography Lab* was founded at the *Faculty of Economics and Public Administration VŠE*. The status and affiliation of the Demography Lab changed frequently in the ensuing years (it was always a part of the Department of Statistics, and for a limited period it was part of the Institute of Prognostics at the University of Economics). The Demography Lab enjoyed a strong reputation in professional circles, directly owing to the work of Doc. Roubíček.

Vladimír Roubíček's career was not, however, always successful and simple. In 1968 he became actively involved in various political initiatives and activities. This had negative consequences for him during the normalisation period and later on. He could no longer be promoted, he was not allowed to supervise graduate students, and he was not allowed to travel to conferences in the West. After 1989, the situation changed, and Doc. Roubíček, who prior to 1989 had been prevented for political reasons from any promotion at work, was appointed a professor in the Department of Statistics VŠE. The university underwent reorganisation in 1990 and the former Department of Statistics was turned into three new separate departments: the Department of Statistics and Probability, the Department of Economic Statistics, and the Department of Demography. Professor Roubíček was named head of the Department of Demography, which became an important department in the newly established Faculty of Informatics and Statistics VŠE, and he remained head until 1995. He continued to work actively after that, even though he was suffering from a number of health problems. He was an active member of the department almost to the end of his life and was devoted to working with his students.

Prof. Ing. Roubíček, CSc., was undoubtedly one of the most important Czech post-war demographers. He also published prolifically. His professional scope was broad from the time he joined the Department of Statistics. He initially focused on computer technology, then on the problem of economic statistics, and he remained interested in graphic methods. He only then went on to specialise in demographic statistics. This is reflected in his publications. In 1955 he and a collective of authors from the Department of Statistics published **An Anthology of Papers from Statistical Theory** (SPN, 317 pp.), and in 1956, with the same group of authors, he published **Statistical Methods** (SPN, 382 pp.). Alone he published **An Anthology of Examples from Economic Statistics** (SPN, 1963, 157 pp.) and **Graphic Representation in Statistics** (SEVT, 1963, 218 pp.). Between 1959 and 1972 he published another

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[*)] This article was published in *Demografie* 2007, 49, p. 286–289. The contents of the journal are published on the website of the Czech Statistical Office at: http://www.czso.cz/csu/redakce.nsf/i/demografie.

six textbooks on economic statistics in which he was one in a collective of authors. He was also one of the co-authors of **An Abridged Statistical Lexicon for Economics Professionals** (Svoboda, 1967, 341 pp.).

Of much greater significance for the field of demography was his publication work in the field of demographic statistics and demography, particularly, as noted above, the publication in 1958 of **Demographic Statistics**. Neither Antonín Boháč nor later František Fajfr published any course book in demography. Korčák's **The Elements of Population Science** was no longer available. Roubíček's **Demographic Statistics** consequently became the main teaching resource for students of demography.

Roubíček dealt with several areas in his works. These included life tables and mortality tables (*Demografie*, 1959, p. 105-109), fertility tables (**A Collection of Papers in Demography**, 1959, p. 101-118), and labour activity tables (*Statistická revue*, 1970, p. 49-76). Of major significance was his use of cohort analysis in the study **Studying the Fertility of Marriage Cohorts** (Statistics and Demography, 1961, p. 347-370) and in the study **Cohort Analysis and the Problems Involved in Using It to Estimate Specific Fertility Trends** (*Statistika a demografie*, 1965, p. 43-75). Roubíček was also interested in population prognoses. He published a number of papers on this topic and applied them in various commissioned work in practice. He also dealt with the methodology of potential demography, particularly in the study **Population Prognoses and Potential Demography** (*Statistika a demografie*, 1967, p. 117-147).

He focused also on theoretical problems in demography (**On Symbolism – Or On Being Clear and Meaningful**, Demography, 2000, p. 299-302; **On Terminology – Or On Gross and General Measures of Natality, Fertility, and Mortality, and On the Philosophical Dichotomy of the General to the Specific**, *Demografie*, 1999, p. 138-140). He took part in debates on Marxist demography organised by *Vladimír Srb* in 1963 and 1964 with a paper titled **On the Nature of Demography and Demographic Phenomena** (*Demografie*, 1964, p. 258–263). In conformity with Korčák, he defined the subject of demography by proceeding from its focal area of interest, that is, population reproduction, but expanded this reproduction to include migration. He regarded demographic phenomena as biosocial phenomena. He dealt also with the application of demography as a means of achieving certain social objectives or population policy objectives. The scope of Professor Roubíček's interest was broad and encompassed everything that related to demography. He contributed to the advancement of demography with a number of studies. The most recent included **Fertility in the Czech Republic in the Nineties** (1st ed., Prague VŠE, 2001) and **Mortality in the Czech Republic in the Nineties** (1st ed., Prague VŠE, 1998). He was also a member of the collective of authors behind **The Multilingual Demographic Dictionary** (NČS AV 1965), and he published a number of teaching aids on demography, including, in 1966, **Selected Chapters from Demography I** (1965) and **The Elements of General and Economic Demography** (VŠE, 1970, 200 pp.). His book **An Introduction to Demography** (1997) is essentially the culmination of his teaching work (reviewed in *Demografie*, 1998, p. 196-198).

The last-mentioned university textbook on demography is a systematic outline of basic terms and methods that are essential for understanding population, social, and economic development and for economic thought and decision-making at every level of the economy. In it Roubíček provides students with an orderly outline of all the material that he had amassed during his teaching history and that he regarded to be important. As he noted himself in the publication, "One of the basic conceptual problems of a textbook is arranging the individual topics in such a way that those topics necessary to understand other related topics, if possible, precede those related topics". This book was his sixth textbook on theoretical and methodological questions in demography. Based on previous experience, he decided to abandon the standard order of similar teaching texts. In the introductory section he included sub-chapters on standardisation, mortality tables, and demographic models. Although this layout may have been unusual, I personally find it to be very effective. This arrangement proved especially beneficial for exercises during practical instruction. The book was awarded the Dean's Award for Publication of the Year at the Faculty of Informatics and Statistics of the University of Economics in Prague.

Vladimír Roubíček was a founding member of the *Czechoslovak Demographic Society* at the Czechoslovak Academy of Sciences (now called the Czech Demographic Society), as well as being its deputy chair, and for a long time also its scientific secretary. From the founding of the journal *Demografie* in 1959 he was a member of its Editorial Board. He also sat on the Editorial Board of the journal **Acta Demographica**. From 1965 he was a member of the International Union for the Scientific Study of Population and from 1985 a member of the European Association for Population Studies.

Professor Roubíček was above all an experienced university lecturer. He taught in the Department of Demography at the Faculty of Informatics and Statistics (FIS), but also at other higher education institutions, such as the Social Economics Faculty of J. E. Purkyně University in Ústí nad Labem, giving

lectures both for students and the general public. He was the guarantor of the majority of demographic subjects in the Department of Demography at FIS. He laid the foundations for teaching demography at the University of Economics when the Department of Demography was founded and during the accreditation of new courses. He directed his efforts into teaching the other students at the school as well as students in the field of statistics about demography and demographic statistics. He always made an effort to connect theory with practice in his teaching. He refrained from burdening students with unnecessary details and tried to equip them with the ability to employ and make the best use of the indicators and methods he taught them in their respective fields.

When Roubíček was still a student his scholarly interests were broad and not limited just to demography, statistics, and computer technology. Not everyone knows that he was an enthusiastic amateur theatre player (a good teacher must also be somewhat of an actor if he or she hopes to capture the attention of the students and not bore them). In an amateur student drama club he performed one of the main roles in Goldoni's **The Liar**. He had a strong talent for acting, and it is the good fortune of demography that he opted instead for a career in science and teaching. He was able to make use of this unquestionable talent in scholarly debate, often coming in with very original ideas. It is worth recalling the live debates between Pavlík and Roubíček that participants at the annual Demographic Society conference used to look forward to each year. Professor Roubíček possessed great skills of persuasive argumentation. He always came up with something that no one else had expected or even thought of.

Roubíček was also responsible for increasing the visibility of demography as a field of real practical significance.

Vladimír Roubíček passed away unexpectedly on 18 January 2005. Until almost the very end of his full life he spent time among his students, and he enjoyed being with them. Few teachers can boast as much interest in their dissertation topics and the level of interest students showed in the topics offered and supervised by Professor Roubíček. The number of dissertations that were written on demographic topics ranks with the number on purely statistical topics. If I can speak for the students, Professor Roubíček was viewed as one of the most cooperative and obliging professors. While he required his students to be knowledgeable and active, and he sometimes raised his voice, we all admired his deeply human approach. During my years as a student I never met another figure like Professor Roubíček. He was interested in everything. Discussions with him were a wonderful experience for every participant. Members of the Demographic Society shared this same feeling. Few teachers either could boast of such continued interest from former students, who, even many years after completing their studies, would turn to him for practical advice in demography.

But the figure of Professor Roubíček is still among us – whenever I search for materials in the archives I come across his hand-written notes on the topics I'm looking for. He had everything meticulously sorted out and arranged with opinions on individual topics. Czech demography has lost its primary representative. He is missed by everyone who came to know him.

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Population and vital statistics of the Czech Republic: 2006, regions and districts

Area	Marriages	Divorces	Live births	Abortions	Deaths Total	Deaths Within 1 year	Deaths Within 28 days	Increase (decrease) Natural	Increase (decrease) Net migration	Increase (decrease) Total	Marriages	Divorces	Live births	Deaths	Total increase	Infant mortality	Neonatal mortality
											Per 1000 inhabitants					Per 1000 inhabitants	
Czech Republic	**52860**	**31415**	**105831**	**39959**	**104441**	**352**	**246**	**1390**	**34720**	**36110**	**5.1**	**3.1**	**10.3**	**10.2**	**3.5**	**3.3**	**2.3**
Capital	**6841**	**3737**	**12530**	**4293**	**12274**	**32**	**19**	**256**	**6260**	**6516**	**5.8**	**3.2**	**10.6**	**10.4**	**5.5**	**2.6**	**1.5**
Středočeský kraj	**6140**	**3743**	**12741**	**4654**	**12067**	**30**	**14**	**674**	**16472**	**17146**	**5.3**	**3.2**	**10.9**	**10.3**	**14.7**	**2.4**	**1.1**
Benešov	431	238	988	363	1008	-	-	-20	614	594	4.6	2.5	10.5	10.8	6.3	4.4	-
Beroun	438	259	914	346	808	4	1	106	1022	1128	5.6	3.3	11.6	10.2	14.3	4.4	1.1
Kladno	849	562	1607	741	1653	5	4	-46	1113	1067	5.6	3.7	10.6	10.9	7.0	3.1	2.5
Kolín	547	290	1049	373	1050	1	-	-1	685	684	5.6	3.0	10.8	10.8	7.0	1.0	-
Kutná Hora	296	192	685	241	808	3	-	-123	910	787	4.0	2.6	9.3	10.9	10.6	4.4	-
Mělník	486	303	1051	432	966	3	1	85	92	177	5.1	3.2	11.0	10.1	1.8	2.9	1.0
Mladá Boleslav	684	403	1215	439	1160	2	2	55	2477	2532	5.8	3.4	10.3	9.8	21.5	1.6	1.6
Nymburk	470	311	960	334	926	4	3	34	1136	1170	5.4	3.5	11.0	10.6	13.4	4.2	3.1
Praha – východ	643	418	1396	444	1036	3	2	360	3486	3846	5.9	3.8	12.8	9.5	35.3	2.1	1.4
Praha – západ	547	315	1281	346	882	-	-	399	4346	4745	5.5	3.2	13.0	8.9	48.0	-	-
Příbram	481	300	1022	388	1148	2	-	-126	295	169	4.5	2.8	9.5	10.7	1.6	2.0	-
Rakovník	268	152	573	207	622	3	1	-49	296	247	4.9	2.8	10.5	11.4	4.5	5.2	1.7
Jihočeský kraj	**3110**	**1729**	**6370**	**2292**	**6168**	**14**	**7**	**202**	**2038**	**2240**	**4.9**	**2.7**	**10.1**	**9.8**	**3.6**	**2.2**	**1.1**
České Budějovice	931	519	1886	755	1746	7	4	140	1192	1332	5.1	2.9	10.4	9.6	7.3	3.7	2.1
Český Krumlov	328	188	685	280	510	-	-	175	118	293	5.4	3.1	11.2	8.4	4.8	-	-
Jindřichův Hradec	416	256	902	305	892	2	1	10	-125	-115	4.5	2.8	9.7	9.6	-1.2	2.2	1.1
Písek	305	184	644	204	749	2	1	-105	246	141	4.3	2.6	9.1	10.6	2.0	3.1	1.6
Prachatice	253	144	530	193	487	-	-	43	-104	-61	4.9	2.8	10.3	9.5	-1.2	-	-
Strakonice	363	168	714	214	733	-	-	-19	512	493	5.2	2.4	10.2	10.5	7.1	-	-
Tábor	514	270	1009	341	1051	3	1	-42	199	157	5.0	2.6	9.9	10.3	1.5	3.0	1.0
Plzeňský kraj	**2897**	**1643**	**5803**	**2425**	**5918**	**18**	**14**	**-115**	**3124**	**3009**	**5.2**	**3.0**	**10.5**	**10.7**	**5.4**	**3.1**	**2.4**
Domažlice	285	172	615	234	601	5	5	14	354	368	4.8	2.9	10.4	10.2	6.2	8.1	8.1
Klatovy	395	230	884	331	957	1	1	-73	472	399	4.5	2.6	10.1	10.9	4.5	1.1	1.1
Plzeň – město	1001	539	1711	814	1798	3	2	-87	720	633	6.1	3.3	10.5	11.0	3.9	1.8	1.2
Plzeň – jih	316	201	766	289	739	1	1	27	371	398	4.5	2.9	11.0	10.6	5.7	1.3	1.3
Plzeň – sever	399	216	789	316	784	1	-	5	844	849	5.3	2.9	10.5	10.4	11.2	1.3	1.3
Rokycany	240	126	431	189	556	4	3	-125	419	294	5.2	2.7	9.4	12.1	6.4	9.3	7.0
Tachov	261	159	607	252	483	3	2	124	-56	68	5.0	3.1	11.7	9.3	1.3	4.9	3.3

(Continue)

A r e a	Marriages	Divorces	Live births	Abortions	Deaths			Increase (decrease)			Per 1000 inhabitants					Deaths	
					Total	Within 1 year	Within 28 days	Natural	Net migration	Total	Mar-riages	Divorces	Live births	Deaths	Total increase	Infant mortality	Neonatal mortality
Karlovarský kraj	**1573**	**1108**	**3201**	**1597**	**2976**	**7**	**5**	**225**	**103**	**328**	**5.2**	**3.6**	**10.5**	**9.8**	**1.1**	**2.2**	**1.6**
Cheb	485	311	963	560	847	3	2	116	459	575	5.4	3.4	10.6	9.4	6.4	3.1	2.1
Karlovy Vary	593	482	1233	553	1242	-	-	-9	28	19	4.9	4.0	10.2	10.3	0.2	-	-
Sokolov	495	315	1005	484	887	4	3	118	-384	-266	5.3	3.4	10.8	9.5	-2.9	4.0	3.0
Ústecký kraj	**4387**	**2930**	**8935**	**4504**	**8719**	**49**	**43**	**216**	**-124**	**92**	**5.3**	**3.6**	**10.9**	**10.6**	**0.1**	**5.5**	**4.8**
Děčín	716	517	1439	764	1469	11	10	-30	516	486	5.3	3.9	10.7	10.9	3.6	7.6	6.9
Chomutov	684	480	1300	651	1182	7	6	118	-309	-191	5.5	3.8	10.4	9.4	-1.5	5.4	4.6
Litoměřice	596	330	1185	488	1233	5	5	-48	-1357	-1405	5.2	2.9	10.4	10.8	-12.3	4.2	4.2
Louny	418	252	921	365	906	3	3	15	183	198	4.9	2.9	10.7	10.5	2.3	3.3	3.3
Most	612	453	1284	660	1303	9	8	-19	15	-4	5.2	3.9	11.0	11.2	0.0	7.0	6.2
Teplice	669	509	1434	851	1471	6	5	-37	418	381	5.2	4.0	11.2	11.5	3.0	4.2	3.5
Ústí nad Labem	692	389	1372	725	1155	8	6	217	410	627	5.8	3.3	11.5	9.7	5.3	5.8	4.4
Liberecký kraj	**2339**	**1548**	**4466**	**2022**	**4143**	**15**	**8**	**323**	**1420**	**1743**	**5.4**	**3.6**	**10.4**	**9.6**	**4.1**	**3.4**	**1.8**
Česká Lípa	638	484	1100	568	959	4	3	141	-281	-140	6.0	4.6	10.3	9.0	-1.3	3.6	2.7
Jablonec nad Nisou	441	295	890	464	874	4	1	16	380	396	5.0	3.3	10.1	9.9	4.5	4.5	1.1
Liberec	929	590	1736	739	1554	7	4	182	1327	1509	5.8	3.7	10.8	9.7	9.4	4.0	2.3
Semily	331	179	740	251	756	-	-	-16	-6	-22	4.4	2.4	9.9	10.1	-0.3	-	-
Královéhradecký kraj	**2738**	**1692**	**5491**	**2213**	**5691**	**17**	**14**	**-200**	**1475**	**1275**	**5.0**	**3.1**	**10.0**	**10.4**	**2.3**	**3.1**	**2.5**
Hradec Králové	825	526	1606	756	1619	4	4	-13	267	254	5.2	3.3	10.1	10.1	1.6	2.5	2.5
Jičín	374	253	741	301	878	4	3	-137	929	792	4.8	3.3	9.5	11.3	10.2	5.4	4.0
Náchod	531	328	1157	392	1120	2	2	37	-28	9	4.7	2.9	10.3	10.0	0.1	1.7	1.7
Rychnov nad Kněžnou	412	204	828	244	807	3	2	21	143	164	5.2	2.6	10.4	10.2	2.1	3.6	2.4
Trutnov	596	381	1159	520	1267	4	3	-108	164	56	5.0	3.2	9.6	10.5	0.5	3.5	2.6
Pardubický kraj	**2603**	**1330**	**5248**	**1568**	**5164**	**15**	**12**	**84**	**1643**	**1727**	**5.1**	**2.6**	**10.4**	**10.2**	**3.4**	**2.9**	**2.3**
Chrudim	465	241	1038	331	1082	3	2	-44	253	209	4.4	2.3	9.9	10.3	2.0	2.9	1.9
Pardubice	923	499	1638	423	1695	4	4	-57	1301	1244	5.7	3.1	10.1	10.5	7.7	2.4	2.4
Svitavy	492	236	1039	354	1044	2	2	-5	17	12	4.8	2.3	10.2	10.3	0.1	1.9	1.9
Ústí nad Orlicí	723	354	1533	460	1343	6	4	190	72	262	5.2	2.6	11.0	9.7	1.9	3.9	2.6
Vysočina	**2393**	**1224**	**5113**	**1762**	**4773**	**14**	**12**	**340**	**538**	**878**	**4.7**	**2.4**	**10.0**	**9.3**	**1.7**	**2.7**	**2.3**
Havlíčkův Brod	449	226	922	354	926	1	1	-4	10	6	4.7	2.4	9.7	9.7	0.1	1.1	1.1
Jihlava	523	297	1184	417	1002	4	4	182	251	433	4.8	2.7	10.9	9.2	4.0	3.4	3.4
Pelhřimov	327	174	691	243	742	1	-	-51	194	143	4.5	2.4	9.5	10.2	2.0	1.4	-

(End of table)

Area	Marriages	Divorces	Live births	Abortions	Deaths Total	Deaths Within 1 year	Deaths Within 28 days	Increase Natural	Increase Net migration	Increase Total	Per 1000 Marriages	Per 1000 Divorces	Per 1000 Live births	Per 1000 Deaths	Per 1000 Total increase	Infant mortality	Neonatal mortality
Třebíč	546	267	1106	377	1080	2	1	26	63	89	4,7	2,3	9,5	9,3	0,8	1,8	0,9
Žďár nad Sázavou	548	260	1210	371	1023	6	6	187	20	207	4,6	2,2	10,2	8,6	1,7	5,0	5,0
Jihomoravský kraj	**5859**	**3096**	**11512**	**3923**	**11667**	**43**	**35**	**-155**	**2360**	**2205**	**5,2**	**2,7**	**10,2**	**10,3**	**1,9**	**3,7**	**3,0**
Blansko	516	309	1047	355	1123	4	3	-76	686	610	4,8	2,8	9,7	10,4	5,6	3,8	2,9
Brno – město	2149	1027	4056	1401	3833	13	12	223	-300	-77	5,9	2,8	11,1	10,5	-0,2	3,2	3,0
Brno – venkov	896	475	1920	500	1674	8	6	246	1326	1572	5,1	2,7	11,0	9,6	9,0	4,2	3,1
Břeclav	568	303	1166	391	1274	5	3	-108	159	51	4,6	2,5	9,5	10,3	0,4	4,3	2,6
Hodonín	710	400	1443	535	1715	6	6	-272	-131	-403	4,5	2,5	9,2	10,9	-2,6	4,2	4,2
Vyškov	446	263	813	267	892	5	4	-79	402	323	5,1	3,0	9,3	10,2	3,7	6,2	4,9
Znojmo	574	319	1067	474	1156	2	1	-89	218	129	5,0	2,8	9,3	10,1	1,1	1,9	0,9
Olomoucký kraj	**3206**	**2003**	**6428**	**2202**	**6298**	**33**	**21**	**130**	**603**	**733**	**5,0**	**3,1**	**10,1**	**9,8**	**1,1**	**5,1**	**3,3**
Jeseník	189	130	374	186	409	3	1	-35	-29	-64	4,5	3,1	8,9	9,8	-1,5	8,0	2,7
Olomouc	1242	785	2400	706	2184	12	6	216	130	346	5,4	3,4	10,5	9,6	1,5	5,0	2,5
Prostějov	499	313	1076	377	1172	4	3	-96	300	204	4,6	2,9	9,8	10,7	1,9	3,7	2,8
Přerov	656	418	1350	513	1306	5	3	44	359	403	4,9	3,1	10,0	9,7	3,0	3,7	2,2
Šumperk	620	357	1228	420	1227	9	8	1	-157	-156	5,0	2,9	9,8	9,8	-1,2	7,3	6,5
Zlínský kraj	**2706**	**1618**	**5612**	**1852**	**5926**	**14**	**8**	**-314**	**11**	**-303**	**4,6**	**2,7**	**9,5**	**10,0**	**-0,5**	**2,5**	**1,4**
Kroměříž	451	333	992	324	1088	5	5	-96	196	100	4,2	3,1	9,2	10,1	0,9	5,0	5,0
Uherské Hradiště	628	361	1338	465	1462	2	1	-124	110	-14	4,4	2,5	9,3	10,2	-0,1	1,5	0,7
Vsetín	684	386	1399	429	1426	3	1	-27	-126	-153	4,7	2,6	9,6	9,8	-1,0	2,1	0,7
Zlín	943	538	1883	634	1950	4	1	-67	-169	-236	4,9	2,8	9,8	10,1	-1,2	2,1	0,5
Moravskoslezský kraj	**6068**	**4014**	**12381**	**4652**	**12657**	**51**	**34**	**-276**	**-1203**	**-1479**	**4,9**	**3,2**	**9,9**	**10,1**	**-1,2**	**4,1**	**2,7**
Bruntál	431	311	955	415	1009	3	2	-54	-314	-368	4,4	3,1	9,7	10,2	-3,7	3,1	2,1
Frýdek – Místek	1081	632	2199	778	2297	11	10	-98	680	582	4,7	2,8	9,7	10,1	2,6	5,0	4,5
Karviná	1365	929	2534	1104	2813	13	6	-279	-693	-972	5,0	3,4	9,2	10,3	-3,5	5,1	2,4
Nový Jičín	728	429	1598	492	1453	8	6	145	69	214	4,6	2,7	10,0	9,1	1,3	5,0	3,8
Opava	811	520	1854	666	1852	6	3	2	43	45	4,5	2,9	10,3	10,3	0,2	3,2	1,6
Ostrava – město	1652	1193	3241	1197	3233	10	7	8	-988	-980	5,3	3,9	10,5	10,4	-3,2	3,1	2,2

131

Population and vital statistics of the Czech Republic in towns with a population above 20 thous.: 2006

Town	Mid-period/ year population	Marriages	Divorces	Live births	Abortions	Deaths Total	Deaths Under 1 year	Increase (decrease) Natural	Increase (decrease) Net migration	Increase (decrease) Total	Per 1000 inhabitants Marriages	Per 1000 inhabitants Divorces	Per 1000 inhabitants Live births	Per 1000 inhabitants Deaths	Per 1000 inhabitants Total increase	Infant mortality
Praha	1 183 576	6 841	3 737	12 530	4 293	12 274	32	256	6 260	6 516	5,8	3,2	10,6	10,4	5,5	2,6
Brno	366 384	2 149	1 027	4 056	1 401	3 833	13	223	-300	-77	5,9	2,8	11,1	10,5	-0,2	3,2
Ostrava	309 495	1 652	1 193	3 241	1 197	3 233	10	8	-988	-980	5,3	3,9	10,5	10,4	-3,2	3,1
Plzeň	163 019	1 001	539	1 711	814	1 798	3	-87	720	633	6,1	3,3	10,5	11,0	3,9	1,8
Olomouc	100 112	587	383	1 108	334	942	5	166	-379	-213	5,9	3,8	11,1	9,4	-2,1	4,5
Liberec	98 396	591	430	1 046	457	944	2	102	729	831	6,0	4,4	10,6	9,6	8,4	1,9
České Budějovice	94 653	509	322	989	470	895	5	94	-	94	5,4	3,4	10,4	9,5	1,0	5,1
Ústí nad Labem	94 638	561	329	1 095	633	914	7	181	86	267	5,9	3,5	11,6	9,7	2,8	6,4
Hradec Králové	94 395	520	355	938	510	898	1	40	-216	-176	5,5	3,8	9,9	9,5	-1,9	1,1
Pardubice	88 365	527	307	831	256	903	2	-72	128	56	6,0	3,5	9,4	10,2	0,6	2,4
Havířov	84 360	488	313	784	339	761	2	23	-231	-208	5,8	3,7	9,3	9,0	-2,5	2,6
Zlín	78 106	440	236	796	307	822	1	-26	-137	-163	5,6	3,0	10,2	10,5	-2,1	1,3
Kladno	69 290	410	284	758	366	748	2	10	-63	-53	5,9	4,1	10,9	10,8	-0,8	2,6
Most	67 727	357	279	748	350	736	4	12	-126	-114	5,3	4,1	11,0	10,9	-1,7	5,3
Karviná	63 253	266	229	594	270	687	8	-93	-247	-340	4,2	3,6	9,4	10,9	-5,4	13,5
Frýdek-Místek	59 503	311	210	626	259	538	5	88	-354	-266	5,2	3,5	10,5	9,0	-4,5	8,0
Opava	59 358	279	208	626	292	606	2	20	-290	-270	4,7	3,5	10,5	10,2	-4,5	3,2
Děčín	51 984	280	230	569	324	577	6	-8	298	290	5,4	4,4	10,9	11,1	5,6	10,5
Teplice	50 982	289	228	551	366	533	4	18	18	36	5,7	4,5	10,8	10,5	0,7	7,3
Karlovy Vary	50 808	258	249	457	184	535	-	-78	-124	-202	5,1	4,9	9,0	10,5	-4,0	-
Jihlava	50 227	263	165	583	210	457	3	126	-69	57	5,2	3,3	11,6	9,1	1,1	5,1
Chomutov	49 978	259	203	500	308	478	3	22	-232	-210	5,2	4,1	10,0	9,6	-4,2	6,0
Prostějov	47 108	235	165	470	160	502	1	-32	83	51	5,0	3,5	10,0	10,7	1,1	2,1
Přerov	46 854	240	198	439	207	407	2	32	22	54	5,1	4,2	9,4	8,7	1,2	4,6
Jablonec nad Nisou	44 781	230	153	435	259	447	1	-12	86	74	5,1	3,4	9,7	10,0	1,7	2,3
Mladá Boleslav	43 592	284	188	445	193	394	1	51	710	761	6,5	4,3	10,2	9,0	17,5	2,2
Třebíč	38 633	192	128	389	153	314	-	75	-133	-58	5,0	3,3	10,1	8,1	-1,5	-
Česká Lípa	38 298	248	216	387	220	270	3	117	-425	-308	6,5	5,6	10,1	7,0	-8,0	7,8
Třinec	37 832	194	115	370	154	406	2	-36	-59	-95	5,1	3,0	9,8	10,7	-2,5	5,4
Tábor	35 849	162	99	349	171	317	1	32	-71	-39	4,5	2,8	9,7	8,8	-1,1	2,9
Znojmo	34 930	211	118	320	195	335	-	-15	-115	-130	6,0	3,4	9,2	9,6	-3,7	-
Příbram	34 804	169	133	317	147	330	-	-13	-211	-224	4,9	3,8	9,1	9,5	-6,4	-
Cheb	33 915	183	117	374	249	299	2	75	280	355	5,4	3,4	11,0	8,8	10,5	5,3

(End of table)

Town	Mid-period/ year population	Marriages	Divorces	Live births	Abortions	Deaths Total	Deaths Under 1 year	Natural	Net migration	Total	Marriages	Divorces	Live births	Deaths	Total increase	Infant mortality
								Increase (decrease)			Per 1000 inhabitants					
Orlová	33 439	145	118	267	152	281	1	-14	-542	-556	4,3	3,5	8,0	8,4	-16,6	3,7
Trutnov	31 136	182	118	351	172	301	2	50	-136	-86	5,8	3,8	11,3	9,7	-2,8	5,7
Kolín	30 207	176	161	318	155	311	-	7	-24	-17	5,8	5,3	10,5	10,3	-0,6	-
Písek	29 924	141	107	284	114	296	-	-12	44	32	4,7	3,6	9,5	9,9	1,1	-
Kroměříž	29 026	135	91	273	94	310	2	-37	51	14	4,7	3,1	9,4	10,7	0,5	7,3
Vsetín	28 205	143	86	259	103	268	-	-9	-177	-186	5,1	3,0	9,2	9,5	-6,6	-
Šumperk	28 116	148	80	279	113	305	1	-26	-101	-127	5,3	2,8	9,9	10,8	-4,5	3,6
Valašské Meziříčí	27 351	119	90	286	88	254	1	32	-62	-30	4,4	3,3	10,5	9,3	-1,1	3,5
Litvínov	27 066	142	96	284	177	318	3	-34	57	23	5,2	3,5	10,5	11,7	0,8	10,6
Nový Jičín	26 222	119	72	279	108	250	1	29	-120	-91	4,5	2,7	10,6	9,5	-3,5	3,6
Hodonín	26 173	133	103	257	115	288	-	-31	-85	-116	5,1	3,9	9,8	11,0	-4,4	-
Uherské Hradiště	26 066	118	94	239	104	225	-	14	-138	-124	4,5	3,6	9,2	8,6	-4,8	-
Český Těšín	25 861	123	92	251	106	269	-	-18	-115	-133	4,8	3,6	9,7	10,4	-5,1	-
Břeclav	25 615	134	92	270	90	262	2	8	-57	-49	5,2	3,6	10,5	10,2	-1,9	7,4
Krnov	25 209	113	91	233	94	249	1	-16	-125	-141	4,5	3,6	9,2	9,9	-5,6	4,3
Sokolov	24 518	138	106	280	134	230	-	50	-173	-123	5,6	4,3	11,4	9,4	-5,0	-
Havlíčkův Brod	24 329	103	75	257	124	233	-	24	-55	-31	4,2	3,1	10,6	9,6	-1,3	-
Žďár nad Sázavou	23 743	126	80	212	103	161	-	51	-204	-153	5,3	3,4	8,9	6,8	-6,4	-
Litoměřice	23 462	120	79	265	120	207	1	58	-876	-818	5,1	3,4	11,3	8,8	-34,9	3,8
Chrudim	23 337	108	56	241	103	207	1	34	-57	-23	4,6	2,4	10,3	8,9	-1,0	4,1
Strakonice	23 315	151	68	262	89	226	-	36	33	69	6,5	2,9	11,2	9,7	3,0	-
Kopřivnice	23 250	113	93	235	56	144	1	91	-119	-28	4,9	4,0	10,1	6,2	-1,2	4,3
Bohumín	23 031	154	63	285	102	273	-	12	-66	-54	6,7	2,7	12,4	11,9	-2,3	-
Klatovy	22 897	119	67	235	88	244	-	-9	1	-8	5,2	2,9	10,3	10,7	-0,3	-
Jindřichův Hradec	22 537	102	72	217	94	216	2	1	-180	-179	4,5	3,2	9,6	9,6	-7,9	9,2
Vyškov	22 015	128	74	201	78	184	2	17	-73	-56	5,8	3,4	9,1	8,4	-2,5	10,0
Kutná Hora	21 229	94	68	212	94	193	1	19	212	231	4,4	3,2	10,0	9,1	10,9	4,7
Jirkov	21 085	122	99	234	148	172	2	62	-149	-87	5,8	4,7	11,1	8,2	-4,1	8,5
Náchod	21 020	96	69	238	97	222	-	16	-134	-118	4,6	3,3	11,3	10,6	-5,6	-
Blansko	20 716	95	70	198	98	168	-	30	237	267	4,6	3,4	9,6	8,1	12,9	-

Miroslav Šimek