



Key message

- ▶ Low socioeconomic status is associated with an increased mortality risk and reduced life expectancy in Germany.
- ▶ There are also indications of socioeconomic differences in life expectancy in later life, that are to the detriment of women and men of low socioeconomic status as well.
- ▶ Women and men in the higher status groups live longer and more years in a state of good health.
- ▶ Regional differences in life expectancy are closely associated with the living conditions in the various German regions.
- ▶ Social differences in mortality and life expectancy can be observed in almost all European countries.
- ▶ In individual countries it is reported that the social differences in mortality and life expectancy have increased in recent decades.

Social Differences in Mortality and Life Expectancy

Over the last 20 to 30 years, numerous studies have shown a close connection between social status and state of health both in Germany and in most of the other welfare states. Many diseases, complaints and risk factors can be found more frequently among persons of low socioeconomic status - generally measured on the basis of data on income, education and occupation. This also applies to severe, chronic health problems, which are often accompanied by functional impairments in everyday life and impacts on the quality of life (Mielck 2000, RKI 2005, Richter, Hurrelmann 2009).

In Germany, this inequity in disease, complaints and risk factors is no longer discussed solely from the point of view of the resulting requirements in terms of prevention, health promotion and the provision of medical care (Gerlinger 2008, Rosenbrock, Kümpers 2009). Moreover, it also plays a key role in the debate on solidarity within society, equality of opportunity and the corresponding organisation of social security systems. Particular importance is attached to research findings that indicate increased premature mortality and lower life expectancy among the socially disadvantaged sections of the population, as these parameters are viewed as extreme characteristics of social inequality (Huster 2012).

The first research findings on social differences in mortality and life expectancy for Germany were published in the 1980s (Neumann, Liedermann 1981, Schepers, Wagner 1989). The number of relevant studies in this field is still relatively small, however, also due to the limited data basis (Kroll, Lampert 2009, Wolf et al. 2012). In contrast to the practice in other countries, for example, official death certificates in Germany do not contain any information on the socioeconomic status of the deceased. Additionally, there is still no nationwide register of deaths providing information that could be merged with other official, health-related or social science data sources. Nowadays, evidence regarding inequalities in mortality is generally based on data from mortality follow-ups on scientific studies as well as on the routine data of the social insurance funds.

The following pages summarise the empirical findings on social differences in mortality and life expectancy that are available for Germany. This summary not only includes studies based on comparisons between socioeconomic status groups but also takes into account regional analyses which outline the relationship between socioeconomic indicators and life expectancy on the level of the federal states, the so-called »spatial planning regions« (BBSR 2012), the administrative districts and the independent municipalities. In addition to that, we also examine time trends that can be observed with regard to the social differences in mortality and life expectancy. Finally, the available findings for Germany are compared with results for other comparable countries and discussed, paying due consideration to the deficits in the data basis.

Definition: Life expectancy

Mean life expectancy is a measure commonly used in health and social reporting to describe the health situation of a population (RKI, Destatis 2006, Destatis 2012).

Mean life expectancy is calculated on the basis of mortality tables which show the ratio between registered deaths and the population level differentiated by age and gender. A difference has to be made between mean life expectancy at birth and mean life expectancy in later life from a certain age.

Mean life expectancy at birth describes the number of years that a new-born baby will live on average under the current mortality conditions. Accordingly, mean life expectancy at later ages (later life expectancy) describes the number of years that a person of a certain age can be expected to live on average under the current mortality conditions.

The values of mean life expectancy should not be interpreted as predictions, however. Because they pay due consideration to current mortality conditions, they constitute more of a snapshot which does not involve any assumptions or scenarios regarding the future development of mortality. This should also be taken into account in the evaluation and classification of the results of social differences in life expectancy shown below.

Income, education and occupation all influence life expectancy

The German Socio-Economic Panel (SOEP) provides a solid data basis for the analysis of social differences in mortality and life expectancy. The SOEP is a household survey on living conditions and social change in Germany which has been conducted annually by the German Institute for Economic Research (DIW) since 1984. Where study participants are not reachable, a systematic follow-up survey is set in motion which also collects information on vital status. This ensures the relatively reliable recording of deaths (Infraestat 2002, Schnell, Trappmann 2006).

The information on deaths collected by the SOEP has been used already to investigate income differentials in mortality and life expectancy (Lampert et al. 2007). To this end, the SOEP data for the period from 1995 to 2005 were merged with the official life tables. Five distribution-based income groups were formed for the purpose of analysis using the mean net equivalised income, where the lowest and highest income groups (below 60 % and 150 % and more of the mean net equivalised income) each represents a relative poverty risk and relative material prosperity. Three middle income groups were constructed using the following thresholds: 60 % to less than 80 %, 80 % to less than 100 % and 100 % to less than 150 % of the mean net equivalised income (Lampert et al. 2007, Kroll, Lampert 2009). The so-called net equivalised income or need-adjusted net household income is calculated from the net household income, in other words the sum of the net incomes of all members of the household, taking into account the number of members of the household and their age (BMAS 2013).

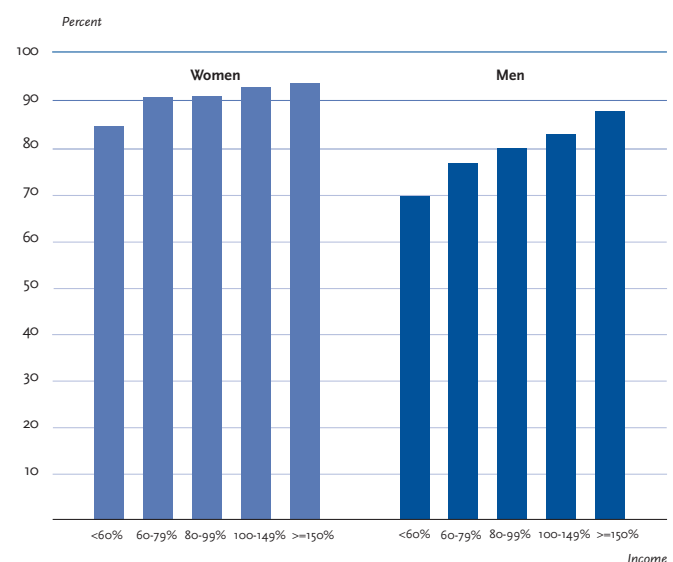
The results show that women and men whose income is below the poverty risk threshold have a mortality risk that is 2.4 and 2.7 times higher than that of their counterparts in the highest income group, respectively. Therefore, a far lower percentage of women and men in the low income group reach the age of 65 years (Figure 1). This applies to 84 % of the women affected by a relative poverty risk, while the figure for relatively well-off women is 93 %. The corresponding figures for men are 69 % in the low and 87 % in the high income group. If the middle income groups are also included in the calculations, it can be asserted that the chance of reaching the age of 65 or above increases successively with increasing income.

These findings are even more revealing when viewed in relation to mean life expectancy at birth, which can be determined as 81.3 years for women and 75.3 years for men based on the life tables for the period from 1995 to 2005 (Table 1). Using the mortality differences calculated on the basis of the SOEP data, the difference between the lowest and highest income group is 8.4 years among women and 10.8 years among men. If only healthy life expectancy is considered, i. e. the years spent in a very good or good general state of health, the difference between the lowest and the highest income group is even more pronounced at 13.3 years for women and 14.3 years for men (Lampert et al. 2007, see also Reil-Held 2000, Klein, Unger 2002).

The differences between the income groups can also be clearly seen with regard to life expectancy in later life. In a study by Kroh and colleagues (2012) which also used SOEP data, the difference between the low and high income group at the age of 65 is 3.5 years for women and 5.3 years for men. According to the study, these differences can be partly explained by increased psychological and physical

Figure 1
Percentage of women and men who will reach the age of 65 at least by net equivalised income (n = 32,500)

Data source: SOEP, Periodensterbetafeln 1995-2005, Lampert et al. 2007



burdens over the course of life, in particular during working life, and by lower material, cultural and social resources in the bottom income group. Men who have learned a profession that is associated with a high level of physical exertion, for example, have a life expectancy in later life at 65 that is two years lower than that of men whose jobs have exposed them to lower levels of strain. Similar findings on social and psychosocial factors influencing life expectancy were also reported in earlier studies (Becker 1998, Doblhammer et al. 2008).

A further analysis based on the SOEP data takes account of the fact that income poverty is frequently a temporary experience and that a drop in standard of living often only becomes apparent when income poverty is of longer duration (Voges, Groh-Samberg 2012). The study investigated socioeconomic positions over a period of five years and used additional indicators, such as financial reserves and employment status, alongside the standard parameter of income. This made it possible to differentiate various characteristic forms of poverty or prosperity careers. The findings of the study support the view that not only established poverty (defined as being in poverty for the entire duration of the study) but also temporary poverty (periods of secure income alternating with phases of poverty) are associated with an increased mortality risk. If relevant control variables were taken into account, it was shown that people in established poverty situations had a mortality risk that was 1.4 times higher than that of people who lived in secured prosperity. The mortality risk of people with temporary experience of poverty was higher by a factor of 1.2 to 1.4. Alongside poverty, the other predictors for increased mortality risk were a low education level, low occupational status and living alone.

Mortality follow-ups on health surveys or epidemiological studies are a further means of analysing social differences in mortality and life expectancy. One example is the Life Expectancy Survey of the Federal Institute for Population Research (BIB) conducted in 1998 as a follow-up survey of the participants in the 1984-86 German Cardiovascular Prevention Study (GCP) and the 1991-92 East

German Health Survey (Gärtner 2002). For the participants in the 1984-86 GCP study, the information on vital status supplied by the population registration offices in 1998 was used to show, among other things, that 20.8% of the 60 to 69 year-old women with lower secondary school qualifications died during the observational period compared to 12.1% of women with a university entrance qualification. The corresponding figures for men were 38.7% and 26.6% (Gärtner 2002). Based on the findings of a more extensive analysis, the life expectancy in later life at age 45 is 1.9 and 5.3 years lower respectively in women and men with a lower-level secondary school qualification than in women and men with a university entrance qualification. Moreover, differences were also found based on occupational status and income, and these differences were more marked in men than in women (Luy 2006).

The MONICA/KORA studies conducted in the Augsburg region also permit mortality analysis for the period from 1984 to 2002. These data showed among other things that education has a major influence on mortality, and that this effect is more pronounced in men than in women (Klein et al. 2001, Schneider 2007). It was not just overall mortality but also cancer-related mortality that showed clear differences to the detriment of the groups with lower-level educational qualifications. According to the study, many of the observed differences are due to the cumulative effects of behaviour-correlated risk factors, such as smoking, lack of exercise and overweight among the less well-educated.

Another study using the same data comes to the conclusion that women and men with low socioeconomic status (determined on the basis of educational background and net household income) have a mean life expectancy at birth which is 4.1 and 3.8 years lower than that of women and men with a high socioeconomic status. Chronic disease reduces mean life expectancy in all groups, and the resulting loss of life span in the socially disadvantaged groups is often greater than in the socially advantaged groups (the study did not take the severity or duration of disease into consideration). A heart attack, for example, reduces the

Table 1
Mean life expectancy (in years) by net equivalised income (n=32,500)
 Data source: SOEP, Periodensterbefafeln 1995-2005, Lampert et al. 2007

	Women		Men	
	Life expectancy at birth	Healthy life expectancy at birth	Life expectancy at birth	Healthy life expectancy at birth
Income				
under 60%	76.9	60.8	70.1	56.8
60% to under 80%	81.9	66.2	73.4	61.2
80% to under 100%	82.0	67.1	75.2	64.5
100% to under 150%	84.4	69.1	77.2	66.8
150% and more	85.3	71.0	80.9	71.1
Total	81.3	66.6	75.3	64.8

Table 2
Mean life expectancy at birth (in years) by net household income and heart attack (lifetime prevalence) (n=13,427)

Data basis: MONICA/KORA Study 1984-2002, Perna et al. 2010

	Income	Heart attack	Life expectancy
Women	low	no	86.8
	low	yes	75.8
	high	no	87.3
	high	yes	83.5
Men	low	no	80.3
	low	yes	75.2
	high	no	81.0
	high	yes	77.3

life expectancy of women with low income by 11.0 years, whereas the corresponding figure for women in the high income group is just 3.8 years. The comparative values for men are 5.1 years in the low and 2.7 years in the high income group (Table 2). Diabetes mellitus reduces the life expectancy of men by 7.9 years in the low income group and by 4.9 years in the high income group. In the case of women, however, there are no differences in the corresponding survival times by income: diabetes reduces life expectancy by an average of 5.7 years in both the low and high income groups (Perna et al. 2010).

The studies conducted as part of the health monitoring activities of the Robert Koch Institute also permit the analysis of mortality rates (Kurth 2012, Wolf et al. 2012). The participants in the German Health Interview and Examination Survey 1998 (GNHIES98) are the starting point for this analysis. For the panel component of the German Health Interview and Examination Survey for Adults (DEGS1), an attempt was made to re-contact all the participants in the GNHIES98 (Scheidt-Nave et al. 2012). The time and cause of death were determined for all study participants who had died between the two surveys. The first preliminary findings based on year of death and month of death confirm that women and men of higher socioeconomic status, measured in terms of educational background, occupational status and net equivalised income (Lampert et al. 2013a), live significantly longer than their counterparts with low socioeconomic status (Figure 2). In every year of life, the mortality risk of women and men in the lower status group was roughly twice that of the people in the higher status group. In terms of life expectancy in later life at age 18, this corresponds to a difference of 6.5 years in women and men. Some of these differences can be attributed to the more risky health behaviour of the low status group: after checking statistically for smoking habits, obesity and lack of physical exercise, the differences in mortality risk observed between the status groups fell by 28 % in women and 24 % in men.

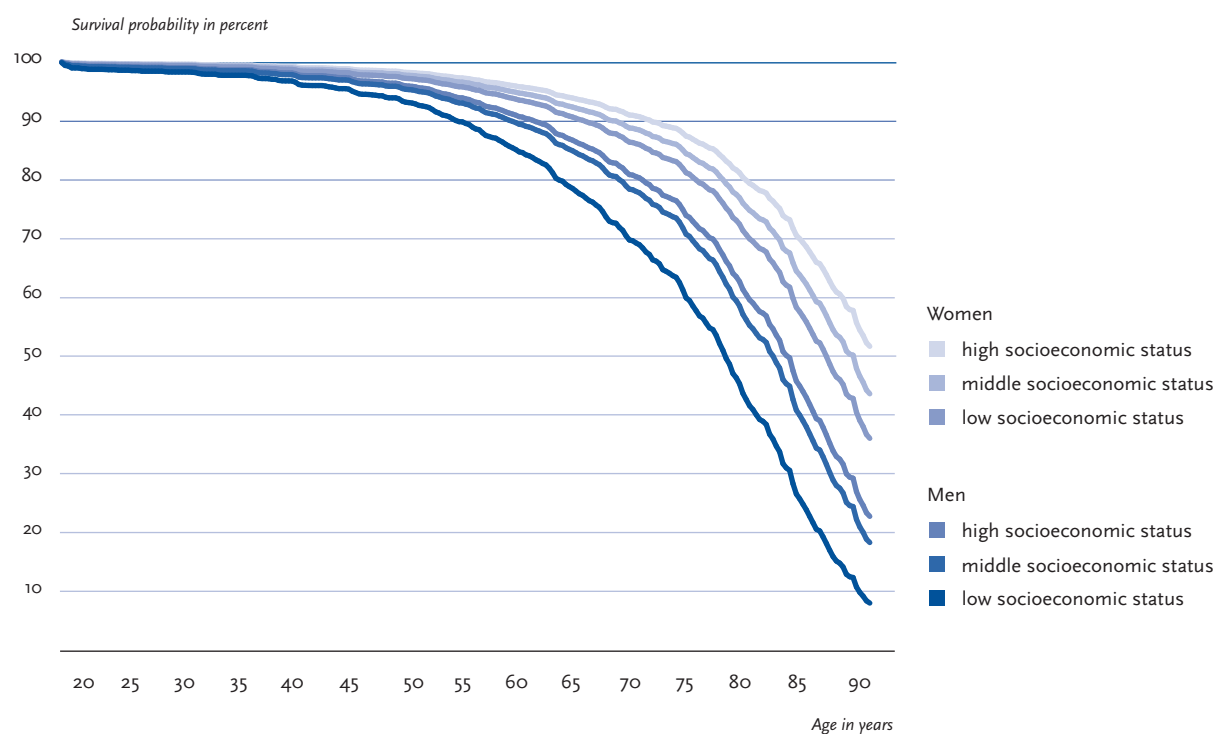
A further source of information for the analysis of social differences in mortality and life expectancy are the process-produced routine data of the social insurance providers. Data from the AOK Mettmann compulsory health insurance fund for the period from 1987 to 1996, for example, were used to analyse the influence of occupational status on mortality risk in the age range from 30 to 70. It was found that, in both women and men, the mortality risk increases gradually with decreasing occupational status: unskilled and semi-skilled blue-collar employees of both genders and blue-collar workers who had completed an apprenticeship had a four to fivefold mortality risk in the period under observation compared to management executives (Geyer, Peter 1999). The influence of occupational status on mortality was also shown by data from the Gmünder Ersatzkasse health insurance fund for the period from 1990 to 2003. Moreover, the insurance status (voluntary insurance versus compulsory insurance) was also shown to be significant with regard to insured people between the ages of 40 and 69. Differences due to educational background and between unemployed and employed insured people were only found in men (Voges et al. 2004).

Alongside the data from health insurance funds, the data from the statutory pension insurance system also permit statements on social differences in mortality and life expectancy. One early example of this is a survey based on a 20 % sample of the course-of-rehabilitation file of the Federal Insurance Fund for Salaried Employees (BfA), although the survey only included male salaried employees between the ages of 30 and 59 who were employed in a compulsorily insured job in 1985. In 1986, 412 deaths were recorded per 100,000 insured persons for salaried employees in the lowest income category. The corresponding figure for salaried employees in the highest income category was less than half this at 190 per 100,000 insured. Mortality rates fell steadily from the lowest to the highest income group, although the differences between the higher income groups were only relatively small (Klosterhuis, Müller-Fahrnow 1994).

The »Differential Mortality« project based on data from the research data centre of the German statutory pension insurance scheme for the period from 1993 to 2003 analysed social differences in expectancy in later life at age 65 and included the sum of personal »earnings points« as an indicator for the lifetime working income from insured employment. According to the findings, the mean life expectancy in later life of the insured employees is 15.7 years. The highest later life expectancy is found in the group of pensioners with the highest number of personal earnings points (65 and more points). The difference compared to pensioners with the lowest number of personal earnings points (20 to 39 points) is roughly three years (Himmelreicher et al. 2006).

A further analysis using the data from the German statutory pension insurance scheme included not only pen-

Figure 2
Estimated survival probability in the period from 1998 to 2011 by socio-economic status (Cox regression model) (n=7124)
 Data source: BGS98 and DEGS1



sioners but also retired civil servants. The findings show that the difference in later life expectancy between the groups with the lowest and highest number of earnings points is 2.9 years for pensioners and 3.8 years for retired civil servants. A further finding was that the later life expectancy at age 65 of retired civil servants is roughly two years higher than that of pensioners (Himmelreicher et al. 2008).

Lower life expectancy in regions with a high poverty risk rate

Social differences in mortality and life expectancy can also be observed on a spatial level. An early socio-spatial analysis of mortality in Germany was presented for the federal state of Hessen (Wittwer-Backofen 1999). The focus of interest here was life expectancy at birth, further life expectancy at the age of 65 and 75 years, and the cause of death-specific mortality rates in the period from 1987 to 1993. A comparison was made of 26 urban and rural districts within the federal state. It included numerous indicators such as educational participation, labour force structure, economic growth health care and cultural infrastructure. The results suggest that more favourable socioeconomic conditions in the district – above all those that are to be found in the City of Frankfurt and Rhine-Main district – go hand in hand with higher life expectancy. This connection was more prominent in the life expectancy of the 65 and 75-year olds than in life expectancy at birth. With men, the socioeconomic differences occurred

above all with causes of death which can be associated with health-damaging behaviour, e. g. cardiovascular diseases and respiratory disorders. Results for inequities within individual municipalities and communities are also available in Germany. For a long time, the Senate Administration for Health and Social Affairs in Berlin showed socially structured differences in life expectancy between the various urban districts of Berlin (Meinlschmidt, Brenner 1999). A connection was established here between mean life expectancy in the urban districts and a socioeconomic index developed for Berlin based on local unemployment levels, receipt of social welfare or low income. The evaluations for the years 1996 to 1998 show that mean life expectancy at birth in the districts with the most unfavourable social structure (e. g. Kreuzberg, Wedding, Tiergarten and Friedrichshain) was roughly three to five years lower than in the districts with the most favourable social structure (e. g. Zehlendorf, Wilmersdorf and Köpenick). Although this distribution pattern was established for both genders, the gap between the socially worst and socially best districts expressed in mean life expectancy was more distinct among men than women. Similar connections have also been documented for other towns and regions, e. g. Bremen and North Rhine-Westphalia (Freie Hansestadt Bremen 2006, MGEPA 2011).

On the level of the federal states, it was shown for 2007 that the mean life expectancy at birth varies by roughly 1.5 years with women and roughly 2 years with men. For women and men, life expectancy was highest in the federal states with the lowest poverty risk rate, i. e. Bavaria, Baden-

Württemberg and Hessen, and lowest in the federal states with the highest poverty risk rate, which include Mecklenburg-Western Pomerania, Saxony-Anhalt and Thuringia (Lampert, Kroll 2010). Using the INKAR 2009 database (Indicators and Maps Showing Regional and Urban Development in Germany and Europe) devised by the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR), observations were also made on the level of the 88 spatial planning regions designated for Germany and/or regional adaptive layers (BBSR 2009). It was confirmed here that mean life expectancy at birth is higher the lower the poverty risk rate is. With women, the difference in life expectancy between the regions with the highest and lowest poverty risk rates is roughly two years and roughly four years with men (RKI 2009). The INKAR database also allows observations on the level of the 412 administrative districts in Germany. Based on the data for the years 1995 to 2009, a close connection can be established between mean net household income and mean life expectancy. On the district level, the difference in the mean life expectancy at birth between the districts with the lowest and highest mean income is roughly seven years with women and almost ten years with men (Figure 3).

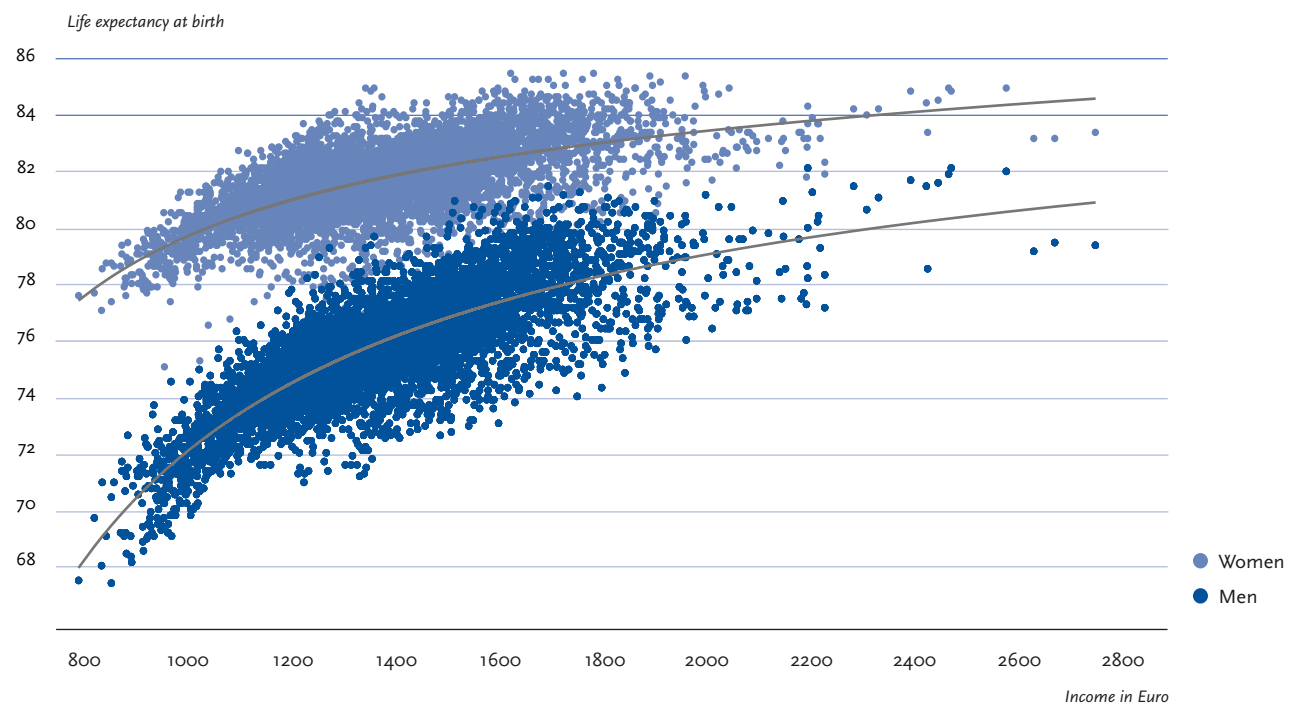
First analyses of chronological development indicate a consolidation of the differences

For a long time, the limited data situation did not permit any statements on how the social differences in mortality

and life expectancy have developed in the course of time (Kroll 2010). Analyses on the chronological developments and trends are possible in the meantime on the basis of the data provided by the SOEP and Federation of German Pension Insurance Funds (DRV), for instance. Reference should be made among other things to a study conducted by Unger and Schulze (2013), which is based on SOEP data and deals with changes in income and education differences in healthy life expectancy between the years 1989, 1999 and 2009. They determined healthy life expectancy here on the basis of people's subjective satisfaction with their own health. According to the results of the study, the social differences in healthy life expectancy expanded during the observation period, particularly among men. This expansion could be traced back to increasing differences between the income and education groups regarding health satisfaction. The social differences in mortality did not expand; on the other hand, they remained fairly constant over the entire period.

The DRV data formed the basis for an analysis of chronological developments with regard to social differences in life expectancy at age 65 (Kibele et al. 2013). The differences were examined by income (personal earnings points) and occupational status and the observation period extended from 1995/96 to 2007/08. The results make it clear that the social differences in life expectancy have increased. Although life expectancy has risen in all of the groups observed, the increases were lower in the lower income and occupational status groups. Consequently, the

Figure 3
Connection between mean life expectancy at birth and mean net household income on the level of administrative districts and independent municipalities from 1995 to 2009 (n = 6180)
 Data source: INKAR 2012, BBSR 2012



differences between the income groups (30–39 as opposed to 65+ personal earnings points) increased by 1.7 years over the observation period (Figure 4), and the differences between the occupational status groups by 0.9 years.

Social differences in life expectancy are to be found in all welfare states

Social differences in mortality and life expectancy are found in all welfare states for which reliable data are available (Mackenbach 2006, Marmot 2010). The results of a European research project on the extent of health inequalities in 22 countries are revealing in this regard (Mackenbach et al. 2008). Only countries were taken into consideration here in which national health surveys with mortality follow-ups were already conducted in the 1990s and 2000s. On a European average, the results suggest a mortality risk in the low education groups that is roughly twice as high as the high education groups. An observation differentiated by cause of death shows that these differences exist both with deaths as a result of cardiovascular disease and cancer, as well as accidents and injuries. In a country comparison, social differences in mortality were to be found more in the eastern than in the southern, central and northern European countries.

Statements on long-term chronological developments of social differences in mortality and life expectancy are also possible for several countries. In Europe, this applies

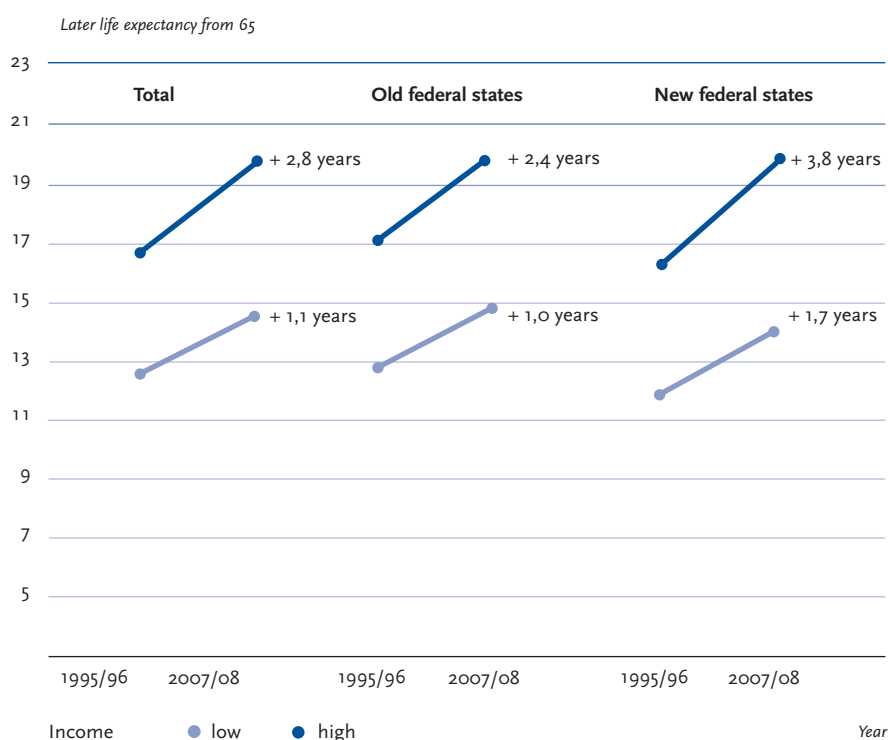
in particular to the UK and the Scandinavian countries. In the UK, use can be made of the routine mortality follow-up to the official census for analyses of this kind. According to data for England and Wales, there was a difference of 3.8 years in the mean life expectancy at birth for women and 4.9 years for men in the years 1982–86 in a comparison of the lowest with the highest occupational status groups. Although life expectancy increased in all status groups in the 20 years that followed, the gap between the groups increased too. In the years 2002–06, it had risen to 4.2 years for women and 5.8 years for men (Figure 5).

It was also seen for Norway that the social differences in life expectancy have increased over the last few decades. This is made clear by a study which used the data of the Norwegian population register as well as population-related studies and databases from the years 1961 to 2009 (Steingrimsdóttir et al. 2012). At the beginning of the 1960s, women and men with a low education level had on average a life expectancy of 44.1 and 40.3 years respectively at the age of 35. The equivalent values for women and men with a high education level were 45.6 and 42.2 years. Up to 2009, life expectancy increased by 2.9 and 2.1 years for women and men in the low education group, as opposed to the much higher increase of 6.1 and 6.4 years for women and men in the high education group.

Meaningful data are also available for the USA. Reference should be made, for instance, to a study which examined the connections between education and mortality

Figure 4
Development of mean life expectancy of males with pension insurance aged 65 and over between 1995 and 2008

Data source: DRV Bund, Kibele et al. 2013



in the 26 to 64-year old population on the basis of the official mortality register (Ma et al. 2012). The study uses data from 26 federal states in which deaths and the causes thereof were recorded in the same manner in the observation period from 1993 to 2007. The mortality rate reduced by an average of 0.9 and 0.4 % respectively for women and men with a low education level during the observation period, whereas the reduction in women and men with a high education level was much more distinct, with 2.2 % and 3.0 % respectively. The risk of premature death was higher between women and men with a low as opposed to a high level of education by a factor of 1.9 and 2.5 % respectively in 1993, and by a factor of 3.0 and 3.6 % in 2007. An observation differentiated by main cause of death made it clear that the expansion of inequality in deaths as a result of cardiovascular disease and cancer is attributable to a stronger decline in the population groups with a high level of education. Where deaths as a result of diabetes mellitus and accidents are concerned, on the other hand, the expansion of inequality is due to the fact that premature deaths have increased in the low education level group and declined or at least remained stable in the groups with higher education levels.

Discussion

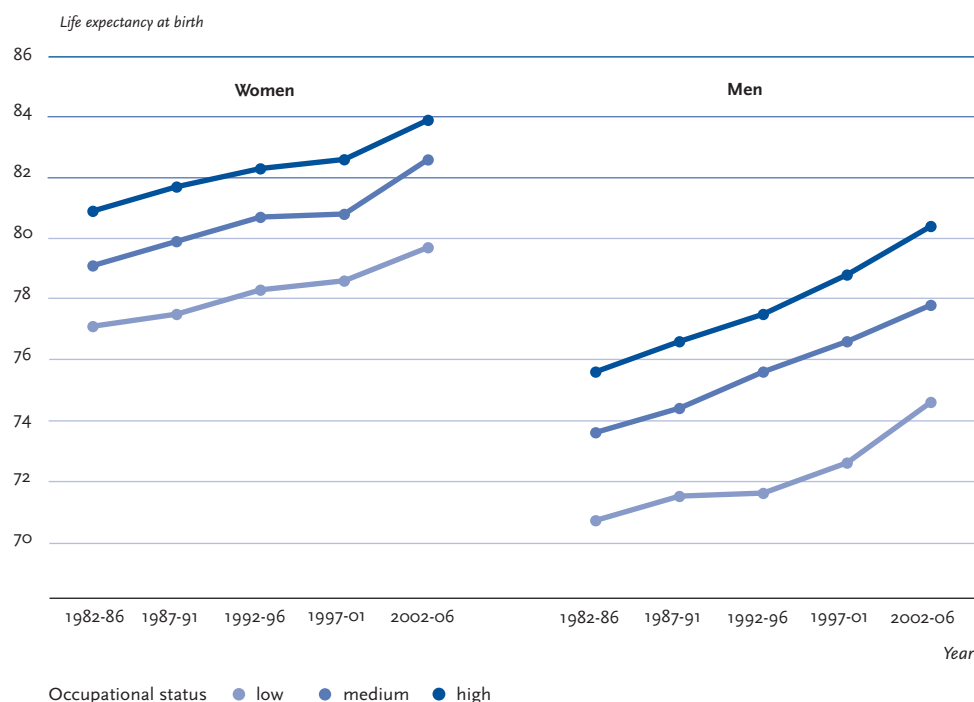
Overall available research results indicate the existence of considerable social differences in mortality and life expectancy for Germany. These differences can be found

at birth as well as later life from the age of 65 onwards. If only the period of life spent in good health is observed, the social differences are even more pronounced. Several studies indicate that the chances of survival also vary after the occurrence of severe illnesses, such as heart attacks and diabetes mellitus to the disadvantage of the socially underprivileged population groups. In addition to low income, a low education level and low occupational status are also associated with a higher mortality risk and lower life expectancy.

The social differences in mortality and life expectancy can also be observed on a socio-spatial level. Mean life expectancy is lower in federal states, spatial planning regions, administrative districts and independent municipalities with high poverty levels and an unfavourable social structure than in comparatively better-off regions. It is conspicuous here that the differences are more pronounced the smaller the observed spatial units are, i.e. they are more distinct between administrative districts than between spatial planning regions and federal states. Whether the regional differences merely reflect the socio-spatial distribution of persons with a low socioeconomic status and higher mortality risk or additional effects of the different living conditions in the regions cannot be judged with certainty on the basis of the available research results.

Statements on chronological developments and trends with relation to social differences in mortality and life expectancy have only been possible for Germany to a limited extent up to now. The few available studies suggest

Figure 5
Development of mean life expectancy at birth by occupational status in England and Wales between 1982 and 2006
Data source: Marmot 2011, Johnson 2011



that the observed differences between the income, education level and occupational status groups could have expanded in the course of time. This is also supported by these studies, which substantiate an expansion of social differences in the distribution of the relevant risk factors responsible for a considerable proportion of the morbidity and mortality, including smoking and physical inactivity (Kroll 2010, Lampert et al. 2013b). Where the general state of health is concerned, there are also reports of an increase in social differences over the course of time (Kroll, Lampert 2009). In order to make reliable statements on chronological developments and trends of health inequality, a theoretical classification of the results and further empirical analysis are still needed.

Other countries have recourse to a much better data basis for the analysis of chronological developments and trends. International comparative studies as well as surveys dealing with the situation in individual countries reinforce the impression that the social differences in mortality and life expectancy have consolidated or even expanded over time. This applies to countries such as Norway, the UK and the US, which differ considerably from one another with regard to underlying social conditions and national social security systems. Where the current research status is concerned, it can at least be ascertained that in no country for which reliable and comparable data exist can indications of a reduction in the social differences in mortality and life expectancy be found (Mackenbach 2006, Marmot 2005).

The social differences in mortality and life expectancy pose a great challenge to public health and health policy (Wilkinson, Pickett 2008, Marmot 2010). For continuous monitoring, an improvement of the data situation should be aimed at as one of the essential prerequisites for the planning, implementation and evaluation of measures to reduce the social differences in mortality and life expectancy. Up to now, mortality follow-ups conducted within the scope of social scientific or health-related studies can be drawn upon along with the routine data of the social insurance funds. Although both of these empirical access sources are promising, they also involve methodical limitations. Mortality follow-ups require considerable effort in terms of organisation and effort and the results often involve uncertainty due to small case numbers and limited representativity (Wolf et al. 2012). The data of the social insurance providers, on the other hand, often give only sketchy information on the social situation of the insured. In addition to this, they do not usually allow any conclusions on the household level and are also only representative to a limited extent due to the selective structure of the insured persons (Voges et al. 2004, Himmelreicher et al. 2006).

The decisive advantage in other countries is to be seen in the existence of national mortality registers which can also be combined with other data sources, such as social science and health-related studies. Even though a compa-

orative link of different data sources is only partially possible if at all in Germany, due to data protection regulations, the establishment of a national mortality register would produce opportunities to acquire additional knowledge (RatSWD 2011). If this mortality register could also provide information on the social situation of the deceased, or be linked with data sources which contain this information, a significantly improved data basis could also be created for making statements on social differences in mortality and life expectancy, as well as their development in the course of time.

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