Determinants of cardiovascular diseases and mortality in individuals with eastern and western European background

Christian Wegner-Siegmundt[1], George B. Ploubidis[2] and Marc Luy[1]

[1] Wittgenstein Centre for Demography and Global Human Capital (IIASA, VID/OEAW, WU), Vienna Institute of Demography of the Austrian Academy of Sciences

[2] London School of Hygiene and Tropical Medicine

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Abstract

Background: Cardiovascular diseases (CVD) are the leading causes of death for both sexes in all European countries. The aim of our study is to identify important determinants of long-term changes in the prevalence of CVD and all-cause mortality among elderly individuals who were socialized in western and eastern European regimes, respectively.

Methods: We use the two-wave panel of the German Life Expectancy Survey to analyse the impact of specific life conditions at 1984/86 in western and 1991/92 in eastern Germany and life course experiences on changes in the self-reported prevalence of CVD at baseline and at follow-up in 1998 as well as on all-cause mortality between the survey waves among individuals aged 50 and older. We used binary logistic regression models stratified by sex and country of residence.

Results: CVD at baseline is primarily related to age in eastern as well as western Germany. Whereas among western German women and men the occurrence of CVD at baseline is also significantly related to lower social class, such an effect was not observed in the eastern German subsample. In all four subpopulations mortality is significant related to age, sportive inactivity and smoking.

Conclusions: We found significant similarities as well as differences in the drivers of CVD and mortality among individuals whose life courses were determined by eastern or western European background. Thus, our study indicates that past influences of the different political systems have at least partly different effects on the wellbeing and the longevity of individuals.

Keywords: Cardiovascular diseases, East Germany, West Germany, Mortality, Differentials, Life conditions

1. Introduction

Mortality in Europe is characterised by regional variations between Western and Eastern Europe (Luy et al. 2011; Vallin and Meslé 2001). The highest life expectancies and most favourable health conditions are experienced by Western European populations whereas the populations of Eastern Europe exhibit the least favourable health conditions with stagnating or even decreasing life expectancy during the last decades (Ploubidis et al. 2012). The regional mortality differences in Europe are mainly driven by cardiovascular diseases (CVD) as the leading causes of mortality (Lopez et al. 2006; Vallin and Meslé 2001). During the Communist regime, risk factors like lower quality of medical care, lower intake of vitamins due to restricted supply of fresh fruits and vegetables, psychosocial constraints by oppressive regimes and alcohol abuse were the main explanations of higher CVD prevalence and consequential mortality in Eastern Europe (Bobak and Marmot 2005; Cockerham 1999). The fall of the iron curtain and the accompanied societal transition was characterised by political, economic and social changes which affected the whole population of Eastern Europe. Increasing inequalities in socioeconomic conditions as well as rise in alcoholism were the main characteristics and causes of the subsequent Eastern European health crisis (Cockerham 1999). These observations imply that the overall progress in CVD depends strongly on economic and social conditions, public health regimes, and broader cultural changes which shape specific health environments as well as individual health-related behaviours and lifestyles (Caselli and Vallin 2006; Luy et al. 2011; Vallin and Meslé 2001).

According to the life course perspective (Kuh and Ben-Shlomo 2004; Kuh et al. 2003) the prevalence of CVD and the consequential mortality are consequences of the accumulation of health-related events and environmental conditions. Therefore we can expect that levels and trends of CVD differ between eastern and western European population even after the changes in Eastern Europe towards the western system. In contrast to the West, the life of Eastern Europeans is characterised by experiencing life conditions under different and changing political systems and the need to adjust to new social and economic situations. Hence, the health of elderly people from the East can be expected to be influenced by an accumulation of unfavourable health conditions during their life time including the experience of a specifically critical period caused by fundamental social changes during the transition, but also the positive changes caused by better methods of medical treatments. Thus, it might be that public health measures aimed at reducing the prevalence of CVD and related mortality in Europe have to take into account these differences in past and current social, political and economic differences conditions in the both parts of Europe.

The German population provides the unique opportunity to test the hypothesis that life experiences under different social systems and the following adoption of the western social systems have different impacts on CVD prevalence and development as well as mortality because it contains two sub-populations which experienced Eastern and Western European socialisation and life conditions. The two pre-reunification German regions experienced almost identical demographic compositions and conditions until 1945. The subsequent 45 years were characterised by life under different political and socio-economic structures, resulting in social and demographic developments that were determined by the Eastern and Western European systems (Gjonça et al. 2000; Luy 2004; Vaupel et al. 2003). The trend in CVD mortality in the German Democratic Republic (GDR) was consistent with the typical Eastern European pattern while the Federal Republic of Germany (FRG) followed the Western European trend. After unification the decline in CVD mortality was remarkable stronger in the eastern than in the western part of Germany and tended to the level of western Germany (Nolte et al. 2000).

The aim of this paper is to analyse the long-term impact of social, behavioural and demographic determinants of CVD and all-cause mortality in eastern and western Germany among individuals aged 50 and older with different socialisation background but increasingly equalized life and environmental conditions during the most recent years after unification. Our main research focus is to identify whether differences in CVD risk factors prior to unification might also have significant implications for the prevalence of CVD and mortality thereafter. We are specifically interested in the impact of past social systems and the accompanied social stratification of the populations on CVD status after unification. Moreover, we investigate whether specific individual health-related behaviours like smoking, alcohol consumption or sportive activity have the same impact on health and mortality of individuals who had spent a substantive part of their life under different political and cultural systems.

2. Data and methods

For our analysis we used longitudinal data from the German Life Expectancy Survey (LES). The LES consists of two waves and was carried out to study the relationship between lifestyle, health and mortality in western and eastern Germany, restricted to persons with German citizenship (Gärtner 2001). The first wave was part of the German National Health Survey (GNHS) and contains a representative sample of the population of western Germany of the years 1984 to 1986. Shortly after unification the GNHS was also carried out in eastern Germany with the first wave being conducted in the years 1991 and 1992. In 1998, the German Federal Institute for Population Research initiated second interviews for both subsamples (for more details see (Gärtner 2001; Luy 2004)).

The LES is a unique survey for Germany because it includes extensive information about demographics, economic and social status, social networks, health behaviours, life attitudes and a variety of health indicators for the cohorts born between 1912 and 1952. The information comprises, among others, the subjective health status, the OECD disability and the hospital occupancy scales as well as the self-reported prevalence of more than 30 diseases. We restricted our analysis to respondents aged 50 or older at the time of the initial survey in western Germany (i.e., individuals being born before 1935). The respondents from the eastern German sample were selected to match the birth cohorts of the western German sample. This selection was chosen because we wanted to study only persons who lived more than half of their life time in one of the two former political systems. Moreover the risk of CVD as main causes of death increases with age and is less relevant in younger age groups.

The West sub-sample includes 1,925 women and 1,967 men. Of those, 805 women (42 %) and 793 men (40 %) participated in the second wave while 252 women (13 %) and 517 men (26 %) died between the two survey waves and 868 women (45 %) and 657 men (33 %) got lost due to attrition (see left part of Table 1). The East sample contains 366 women and 277 men (see right part of Table 1), of whom 178 women (49 %) and 135 men (50 %) participated in the second wave, 42 women (12 %) and 51 men (19 %) died and 146 women (40 %) and 86 men (32 %) dropped out between the surveys.

We included several characteristics about respondents' demographic, economic and social background (sex, age, socioeconomic status, experiences with unemployment, marital status & social contacts), health lifestyle (smoking pack years (Prignot 1987), daily alcohol consumption (Marmot et al. 1981), weekly sports activity as

well as a summary of healthy dietary habits), and number of children. The socioeconomic status is defined by Winkler's social class index (Winkler and Stolzenberg 1999) which summarizes an individual's education, occupational status and household income, taking into account the high degree of collinearity among those variables in the LES. Life-time experience with unemployment, smoking and fertility histories summarize life course experiences, whereas the other variables are defined by respondents' characteristics at the time of the first survey. Note, however, that also social class can be seen as a consequence of the life course because the included cohorts are mostly characterized by stable occupational carriers and income (Geisler 1996; Huinink and Mayer 1995).

For eastern Germany it was further necessary to aggregate categories of social class and daily alcohol consumption because of the smaller sample size. Note that due to this different categorisation the results for eastern and western Germany are not directly comparable. However, this does not affect our analysis because our aim is to investigate the effects of specific risk factors for CVD and all-mortality within the eastern and western German samples separately in order to identify corresponding differences and similarities.

We employed binary logistic models estimated in Mplus 6.12 (Muthén and Muthén 1998-2007) with the robust maximum likelihood estimator (MLR) using Monte Carlo integration. In the CVD model we excluded participants who have died between the two survey waves, whereas participants lost due to attrition were included but treated as missing. The mortality model includes all participants regardless their survival status at the end of observation. Missing data at baseline and caused by attrition were handled with the Full Information Maximum Likelihood (FIML) method. In this full likelihood context model parameters and standard errors were estimated directly from the available data and the selection mechanism is ignorable under the Missing at Random (MAR) assumption (Little and Rubin 1989, 2002). The basic goal of FIML missing data handling is to identify the population parameter values that are most likely to have produced a particular sample of data and the discrepancy between the data and the estimated parameters is quantified by the likelihood. In this context the MAR assumption implies that all systematic selection effects depend on variables which are included in the model. In our analyses this means that all systematic selection effects depend on the predictors in our models, as well as auxiliary variables such as self-rated health, life satisfaction and presence of multi-morbidity. The advantage of this approach is the use of the maximum available information of any individual instead of a simple complete case analysis which implies very strong assumptions for the missing data generating mechanism. Reference categories were chosen on basis of the lowest expected risk on CVD outcome. Some descriptive information about the used data can be found in Table 1.

3. Results

Table 2 presents the odds ratios of presence of CVD at baseline (1984), at follow up (1998) and mortality among men and women in western Germany. The odds of CVD presence at baseline increased for male participants of middle and low social class compared to their high social class counterparts but we did not observe any additional statistically significant association between the other predictors and presence of CVD at baseline in males (see column 2). In women, the presence of CVD at baseline was associated with higher age and low social class (column 5). The odds of CVD presence at follow up increased with the presence of CVD at baseline for both sexes (columns 3 and 6). While we did not observe any other statistically significant predictors for CVD at

follow up in western German men, we found additional significant effects among women for sportive inactivity (increasing the risk of onset of CVD) and childlessness (reducing the risk). With respect to mortality, age, presence of CVD at baseline, lack of sporting activity, smoking and social class were associated with higher risk of dying equivalently for both women and men (columns 4 and 7).

~ Table 2 about here ~

The odds ratios of presence of CVD at baseline (1991), at follow up and mortality among men and women of the eastern German sample are presented in Table 3. The presence of CVD at baseline was related to age in both sexes (columns 2 and 5). Among men, age was the only statistically significant predictor of CVD at baseline, whereas among women we found an additional significant effect of alcohol consumption with the unexpected result that heavy drinking decreased the prevalence of CVD. The odds of CVD presence at follow up increased for men with the presence of CVD at baseline and lack of social contacts (column 3). Also among women the presence of CVD at baseline was a predictor of CVD prevalence at follow up (column 6). Another significant effect was found for social class. However, in contrast to the typical socioeconomic gradient in health and mortality, eastern German women from the low social class had decreased odds of CVD in 1998. With regard to mortality, age, presence of CVD at baseline, lack of sporting activity and low social class were associated with higher risk of dying for men from eastern Germany (column 4). Among eastern German women, mortality was significantly related only to age and inactivity in sports (column 7).

~ Table 3 about here ~

4. Discussion

This study aimed at investigating similarities and differences in the driving forces behind CVD prevalence, CVD development and all-cause mortality of individuals with eastern and western European background. The major strength of this study is that the specific characteristics of the LES offer extensive data on health conditions and health determinants in a longitudinal setting for two sub-populations which lived the most part of their lives in Eastern or Western European societies. This feature makes the survey a unique tool for investigating the influences of specific factors related to eastern and western European culture, policy and economy on health and mortality. However, there are two important limitations that should be taken into account when interpreting the results. First, the information about the presence or absence of CVD stem from self-reports of the respondents and not from medical examination. Moreover, information about the timing of CVD onset was not available; a limitation that did not allow us to estimate time-event dependencies of CVD that would be more appropriate in this instance. Second, a direct formal comparison of the model results for eastern and western Germany is not possible because of the different observation times as described in the data & methods section. As a consequence, eastern German respondents were older at baseline. This and the higher mortality in eastern Germany until the late 1990s (Luy 2004; Luy 2008) could cause that eastern German respondents at baseline were more health selected than their western German counterparts. In addition, the small size of the eastern German sample required collapsing the number of categories in the variables social class, daily alcohol consumption and smoking. All these factors are probably responsible for the fact that we found fewer significantly effects in the eastern German sample. It should also be noted that since we have employed

observational data and despite of the richness of the LES, our results could be biased due to unknown unmeasured confounders.

Our empirical analysis indicates that CVD at baseline is primarily caused by age in eastern as well as western Germany. Among western German men the effect is not statistically significant, but the coefficient is similar to the other subpopulations. Whereas among western German women and men the occurrence of CVD at baseline is also significantly related to lower social class, such an effect cannot be observed in the eastern German subsample. Instead we find the effect of a decreased risk for CVD at baseline for heavy alcohol consumption among eastern Germany women. No statistically effects were found in any subpopulation for marital status, social contacts, sport activity, experiences with unemployment, smoking, diet, alcohol consumption and the number of children.

Suffering from CVD at the time of the second survey appears to be mainly related to suffering from CVD at baseline. This effect is highly statistically significant with the highest coefficients in all four subpopulations. Age has an additional significant effect only among western German women. Note, however, that the occurrence of CVD at baseline as the main driver of the onset of CVD until follow-up was found to be mainly related to age. Other significant effects on the emergence of CVD between the two survey waves could only be identified for a few variables that differed between the subpopulations. An increased risk for the onset of CVD was found for sportive inactivity and being childless among western German women and for having no close social contacts among eastern German men. Among eastern German women the risk of reporting CVD at follow-up was reduced for those of lower social class.

Several statistically significant effects were found for mortality which we included as concurring event to the onset of CVD. In all four subpopulations mortality was significantly related to age and sportive inactivity. Suffering CVD at baseline and belonging to lower social classes had additional significantly impacts among men from eastern and western Germany and western German women. Only among eastern German women these factors did not show statistically significant effects. Among western Germans of both sexes, smoking—measured in terms of time of exposure—increased the risk of dying significantly as well as having four or more children among eastern German men. Marital status, social contacts, experiences with unemployment, diet and alcohol consumption did not have any significant impact on mortality in any on the four subpopulations.

We can conclude that despite the mentioned limitations of the data our study provided some interesting results for our basic research question. Obviously, the classical risk factors age and suffering CVD at baseline seem to increase the risk of suffering CVD at follow-up for all individuals, regardless whether they are male or female and whether they are from eastern or western European societies (noting, however, that among eastern German women the effect of suffering CVD at baseline was not statistically significant for reporting CVD at follow-up). A very interesting finding is the general positive effect of sportive activity on longevity in every subpopulation. Among western German women, being active in sports had even a significant impact on the absence of CVD at follow-up. Thus, these results indicate that physical activity is one of the most important drivers of health and longevity, independently of sex (Samitz et al. 2011; Oguma et al. 2002) and as a result of our analysis also independently of the political system in which one grew up. Nevertheless, it is also interesting to note that marital status, lifetime experiences with unemployment and diet did not have any significant impact on each outcome for any of the four subpopulations in our sample.

Besides these similarities we found some notable differences between eastern and western Germans. The most interesting difference is that social class was found to be a very important determinant for suffering CVD at baseline and for mortality between the two survey waves only among western German women and men. This result is in agreement with previous studies which found a negative influence of low socio-economic status on survival in western Germany as well (Klein 1996; Lampert and Kroll 2006). Among eastern Germans, however, the social background appears to be rather insignificant. This might be a consequence of the lower income discrepancies and the lower unemployment rate in the former communist system of East Germany (Lüschen et al. 1997). In fact, previous studies showed that in the former GDR health was stronger related to occupational stress and dissatisfaction than to unemployment (Kunzendorff 1994). Thus, our results indicate that the more homogeneous social structures of Eastern European societies lead to smaller social inequalities in CVD. Above all women from eastern Germany seem to have profited from the missing or weaker socioeconomic impact on health, given that they are the only subpopulation in which social class did not show any statistically significant effect on mortality between the two survey waves. Note that also the—at least at the first glance—unexpected effect of decreased risk for CVD at baseline for heavy alcohol consumption among eastern German women might be a result of this effect, implying that among individuals with eastern European background alcohol consumption is not as clearly linked to social class as it is the case in western European societies (Cockerham 1997).

The fact that smoking had a significant impact on mortality among western Germans but not among eastern Germans should be not over-interpreted. Although it is true that smoking patterns of eastern and western Germans are different with regard to years before as well as after unification (Heinemann et al. 1996; Luy 2004), the missing effect of smoking on mortality among eastern Germans is most likely due to the considerably shorter observation time for the eastern German LES sample. Also the other single effects of different factors in different subpopulations should be approached with caution. They should probably be seen as consequences of the low case numbers and different observation times for the eastern and western German subsamples as described at the beginning of this section.

To sum up, despite the data limitations we found similarities as well as differences in the drivers of health and mortality among individuals whose life courses were determined by eastern respective western European political, societal, economic and cultural influences. Thus, our study indicates that the past influences of the different systems have at least partly different effects on the wellbeing and the longevity of individuals even after convergence of life conditions. It is likely that what we found for eastern Germans applies similarly to other populations from Eastern Europe who also left the former communist system. According to our results it seems that specifically shaped public health policies are required in western and central as well as eastern European societies in order to maximize to improve population health. Therefore it would be interesting to study whether differences between eastern and western Germans in the relationship between social class and CVD are also valid for other diseases and health dimensions.

Conflicts of interest statement

None declared.

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Table 1 Distribution of CVD and selected demographic, socioeconomic and behavioural characteristics for western and eastern Germans aged 50 and older

		Western Germany				Eastern Germany				
	Status 1998	**Men**		**Women**		**Status 1998**	**Men**		**Women**	
		n/mean	**% /sd**	**n/mean**	**% /sd**		**n/mean**	**% /sd**	**n/mean**	**% /sd**
	absence CVD	485	(24.7)	580	(30.1)	absence CVD	78	(28.7)	114	(31.1)
	presence CVD	290	(14.7)	216	(11.2)	presence CVD	55	(20.2)	64	(17.5)
	missing	*18*	*(0.9)*	*9*	*(0.5)*	*missing*	*2*	*(0.7)*	*0*	*(0.0)*
	died	517	(26.3)	252	(13.1)	died	51	(18.8)	42	(11.5)
	loss	657	(33.4)	868	(45.1)	loss	86	(31.6)	146	(39.9)
	Baseline 1984/86					**Baseline 1991/92**				
CVD	absence	1374	(69.9)	1380	(71.7)	absence	167	(61.4)	211	(57.7)
	presence	593	(30.1)	545	(28.3)	presence	105	(38.6)	155	(42.3)
Age		58.4	(5.5)	58.8	(5.5)		64.5	(5.7)	66.0	(6.2)
Social Class	high	406	(20.6)	112	(5.8)	high/middle	173	(63.6)	141	(38.5)
	middle	1133	(57.6)	922	(47.9)					
	low	423	(21.5)	863	(44.8)	low	99	(36.4)	225	(61.5)
	missing	*5*	*(0.3)*	*28*	*(1.5)*	*missing*	*0*	*(0.0)*	*0*	*(0.0)*
Unemployed	never	1372	(69.8)	1437	(74.6)	never	253	(93.0)	363	(99.2)
	at least one	550	(28.0)	404	(21.0)	at least one	18	(6.6)	3	(0.8)
	missing	*45*	*(2.3)*	*84*	*(4.4)*	*missing*	*1*	*(0.4)*	*0*	*(0.0)*
Marital Status	married	1771	(90.0)	1349	(70.1)	married	233	(85.7)	202	(55.2)
	unmarried	188	(9.6)	565	(29.4)	unmarried	38	(14.0)	164	(44.8)
	missing	*8*	*(0.4)*	*11*	*(0.6)*	*missing*	*1*	*(0.4)*	*0*	*(0.0)*
Number of Children	none	308	(15.7)	345	(17.9)	none	25	(9.2)	56	(15.3)
	1	407	(20.7)	459	(23.8)	1	66	(24.3)	89	(24.3)
	2-3	978	(49.7)	906	(47.1)	2-3	147	(54.0)	168	(45.9)
	4+	274	(13.9)	215	(11.2)	4+	34	(12.5)	53	(14.5)
Contact to Friends	yes	1767	(89.8)	1760	(91.4)	yes	252	(92.6)	324	(88.5)
	no	177	(9.0)	136	(7.1)	no	20	(7.4)	42	(11.5)
	missing	*23*	*(1.2)*	*29*	*(1.5)*	*missing*	*0*	*(0.0)*	*0*	*(0.0)*
Doing Sport	active	564	(28.7)	486	(25.2)	active	91	(33.5)	80	(21.9)
	non-active	1380	(70.2)	1415	(73.5)	non-active	180	(66.2)	285	(77.9)
	missing	*23*	*(1.2)*	*24*	*(1.2)*	*missing*	*1*	*(0.4)*	*1*	*(0.3)*
Healthy Diet		1.95	(0.5)	1.77	(0.5)		1.87	(0.6)	1.71	(0.6)
	missing	*218*	*(11.1)*	*173*	*(9.0)*	*missing*	*1*	*(0.4)*	*2*	*(0.5)*
Smoking Pack Years		27.8	(27.9)	5.0	(12.1)		21.7	(20.6)	2.4	(6.6)
	missing	*67*	*(3.4)*	*29*	*(1.5)*	*missing*	*2*	*(0.7)*	*0*	*(0.0)*
Alcohol Consumption	moderate	719	(36.6)	408	(21.2)	moderate & low	99	(36.4)	293	(80.1)
	low	683	(34.7)	1281	(66.5)					
	heavy	481	(24.5)	88	(4.6)	heavy	172	(63.2)	73	(19.9)
	missing	*84*	*(4.3)*	*148*	*(7.7)*	*missing*	*1*	*(0.4)*	*0*	*(0.0)*

Data: German Life Expectancy Survey

Table 2 Odds ratios from binary logistic regression models for the presence of CVD and occurrence of all-cause mortality, western Germany (1984/86-1998)

West Sample	***Men (n = 1,967)***			***Women (n = 1,925)***		
	(2) **CVD 1984/86**	(3) **CVD 1998**	(4) **Mortality**	(5) **CVD 1984/86**	(6) **CVD 1998**	(7) **Mortality**
CVD at 1984/86, ***absence (ref)***						
presence		5.34 **	2.04 **		4.52 **	1.99 **
Age	1.08	1.03	1.09 **	1.07 *	1.08 **	1.16 **
Social Class, ***high (ref)***						
middle	1.73 **	0.79	1.95 **	1.08	1.43	1.92
low	1.76 **	0.71	3.40 **	1.75 *	1.18	2.97 *
Unemployed, ***never (ref)***						
at least one	1.10	1.34	0.79	1.53	1.20	1.24
Married, ***yes (ref)***						
no	0.79	1.47	1.37	1.25	0.75	1.10
Number of Children, ***2-3 (ref)***						
0	1.28	0.93	1.38	0.92	0.62 *	1.33
1	0.86	0.92	1.23	0.93	0.81	0.97
4+	1.28	1.14	1.15	1.60 *	1.37	1.32
Contact to friends, ***yes (ref)***						
no	1.08	1.20	0.73	1.11	0.92	1.16
Sporting Active, ***yes (ref)***						
no	1.08	1.32	1.48 *	1.15	1.67 *	1.70 *
Healthy diet						
Smoking Pack Years	1.00	1.00	1.01 **	0.99	1.01	1.02 *
Alcohol use, ***moderate (ref)***						
low	1.17	0.93	1.29	0.90	1.40	1.13
heavy	1.16	0.87	1.21	0.92	0.89	1.96

† p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001

Data: German Life Expectancy Survey

Table 3 Odds ratios from binary logistic regression models for the presence of CVD and occurrence of all-cause mortality, eastern Germany (1991/92-1998)

East Sample	***Men (n = 272)***			***Women (n = 366)***		
	(2) **CVD 1991/92**	(3) **CVD 1998**	(4) **Mortality**	(5) **CVD 1991/1992**	(6) **CVD 1998**	(7) **Mortality**
CVD at 1991/92, ***absence (ref)***						
presence		5.15 **	3.16 **		6.86 **	1.30
Age	1.08 **	1.03	1.07 **	1.10 **	1.04	1.09 **
Social Class, ***high & middle (ref)***						
Low	1.22	1.22	3.22 **	0.77	0.42 *	1.51
Unemployed, ***never (ref)***						
at least one	0.74	1.49	0.48	0.77	1.36	1.42
Married, ***yes (ref)***						
no	1.01	1.33	0.92	1.19	0.98	2.05
Number of Children, ***2-3 (ref)***						
0	0.69	1.73	1.16	1.13	2.67	1.87
1	0.71	1.22	1.60	0.90	1.39	1.31
4+	0.91	1.79	2.43 *	0.87	2.33	1.80
Contact to friends, ***yes (ref)***						
no	0.88	3.50 *	2.06	0.62	1.02	0.77
Sporting Active, ***yes (ref)***						
no	0.91	1.34	4.13 **	1.22	1.34	4.17 **
Healthy diet						
Smoking Pack Years	0.99	1.02	0.98	1.00	1.01	1.01
Alcohol use, ***moderate & low (ref)***						
heavy	0.77	0.84	0.69	0.55 *	0.86	0.91

† $p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Data: German Life Expectancy Survey