

# CARDIOVASCULAR MORTALITY ATTRIBUTABLE TO DIETARY RISK FACTORS IN 54 COUNTRIES IN GERMANY AND THE WHO EUROPEAN REGION FROM 1990 TO 2019: AN UPDATED SYSTEMATIC ANALYSIS OF THE GLOBAL BURDEN OF DISEASE STUDY

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## BACKGROUND AND AIM

Non-communicable diseases continue to increase as part of the health transition. Cardiovascular diseases (CVDs) are one of the most common diseases in this group. The most important behavioural risk factors include high systolic blood pressure, tobacco use and dietary risks.

In Germany and the WHO European Region (WHO ER) CVDs are one of the main causes of deaths. This study aimed to estimate the association between single dietary risk factors and CVDs in Germany and the WHO ER by age and sex.

## METHODS

To estimate the association between dietary risk factors and CVDs, 13 dietary risks and 13 forms of CVDs were included in the study. The comparative risk assessment framework of the Global Burden of Disease Study was used to estimate the deaths attributable to them. The data were analysed by age and sex and calculated for 54 countries and their related regions Western Europe (WE), Central Europe (CE), Eastern Europe (EE) and Central Asia (CA).

Table 1: DRCDs in Germany (WHO ER) between 1990 and 2019.

Year	Number of deaths	Deaths per 100.000 *	% of CVD deaths	% of total deaths
1990	170.405 (1.686.540)	132 (212)	37.7 % (41.5 %)	18.9 % (19.8 %)
1995	152.080 (1.897.793)	110 (236)	37.2 % (41.8 %)	17.5 % (20.1 %)
2000	129.067 (1.802.287)	86 (221)	36.1 % (40.7 %)	15.5 % (19.5 %)
2005	111.243 (1.763.761)	68 (213)	34.0 % (39.3 %)	13.4 % (18.7 %)
2010	102.568 (1.582.521)	56 (180)	32.1 % (37.9 %)	12.1 % (17.4 %)
2015	107.056 (1.529.240)	53 (161)	30.9 % (37.1 %)	11.7 % (16.5 %)
2019	112.601 (1.550.233)	51 (150)	30.9 % (36.7 %)	11.7 % (16.4 %)

\* Age-standardised

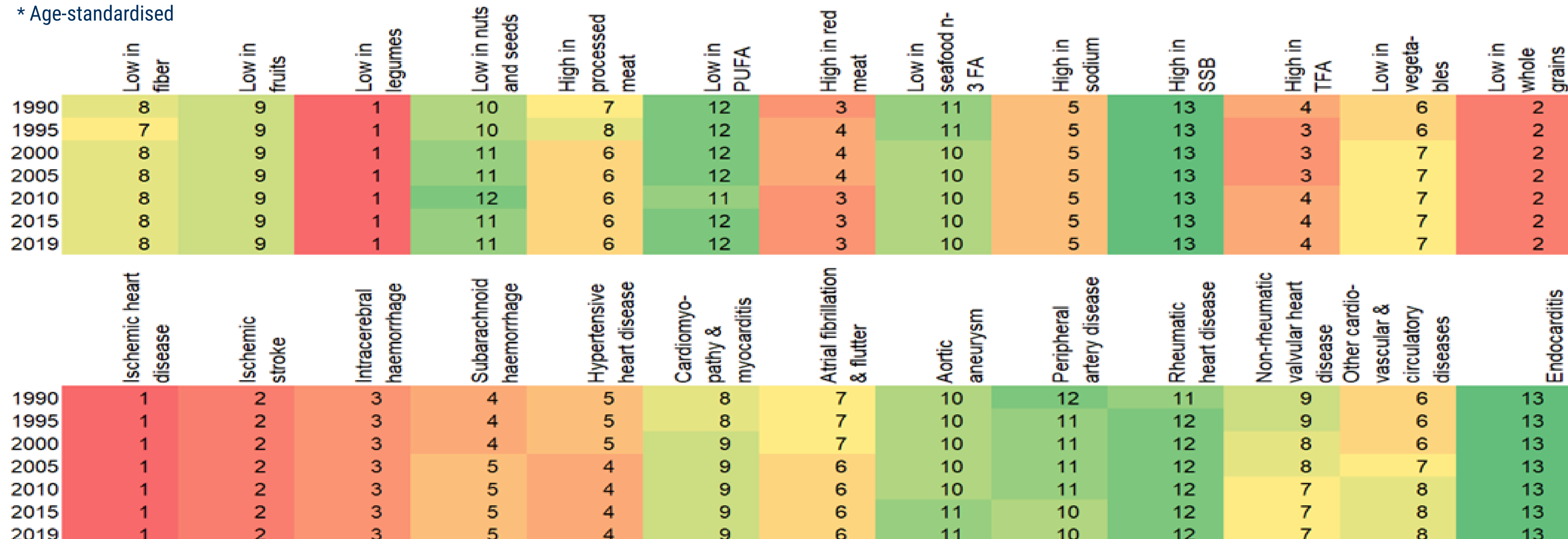


Figure 3: Heat map of numbers of death by dietary risks (above) and CVDs (below) from 1990 to 2019 in Germany.

## RESULTS

In 2019, 112.601 people in Germany (WHO ER 1.55 Mio.) died from CVDs attributable to suboptimal diet. Diet-related CVD deaths (DRCDs) accounted for 11.7% of total deaths and 30.9% of CVD deaths in 2019 (WHO ER: 16.4% and 36.7%). Between 1990 and 2019, there was a DRCDs reduction of 8.1% in the WHO ER, 33.9% in Germany. At the same time, the percentage of DRCDs decreased as well in Germany as in the WHO ER during this period. The age-standardised death rates also decreased between 1990 and 2019 (Table 1). 2019, the numbers of DRCDs in Germany were slightly higher in men (58,085 deaths) than in women (54,516 deaths) (WHO ER 777,714 deaths in women; 772,519 deaths in men). The largest percentage across the age groups is found in the group 85+ years (Germany 44.2%, thereof 63.8% women; WHO ER 32.1%, thereof 67.4% women), the age group under 70 years accounted for 16.0% of the DRCDs in Germany (thereof 3.7% women; WHO ER 28.3%, thereof 7.9% women) (Figure 1).

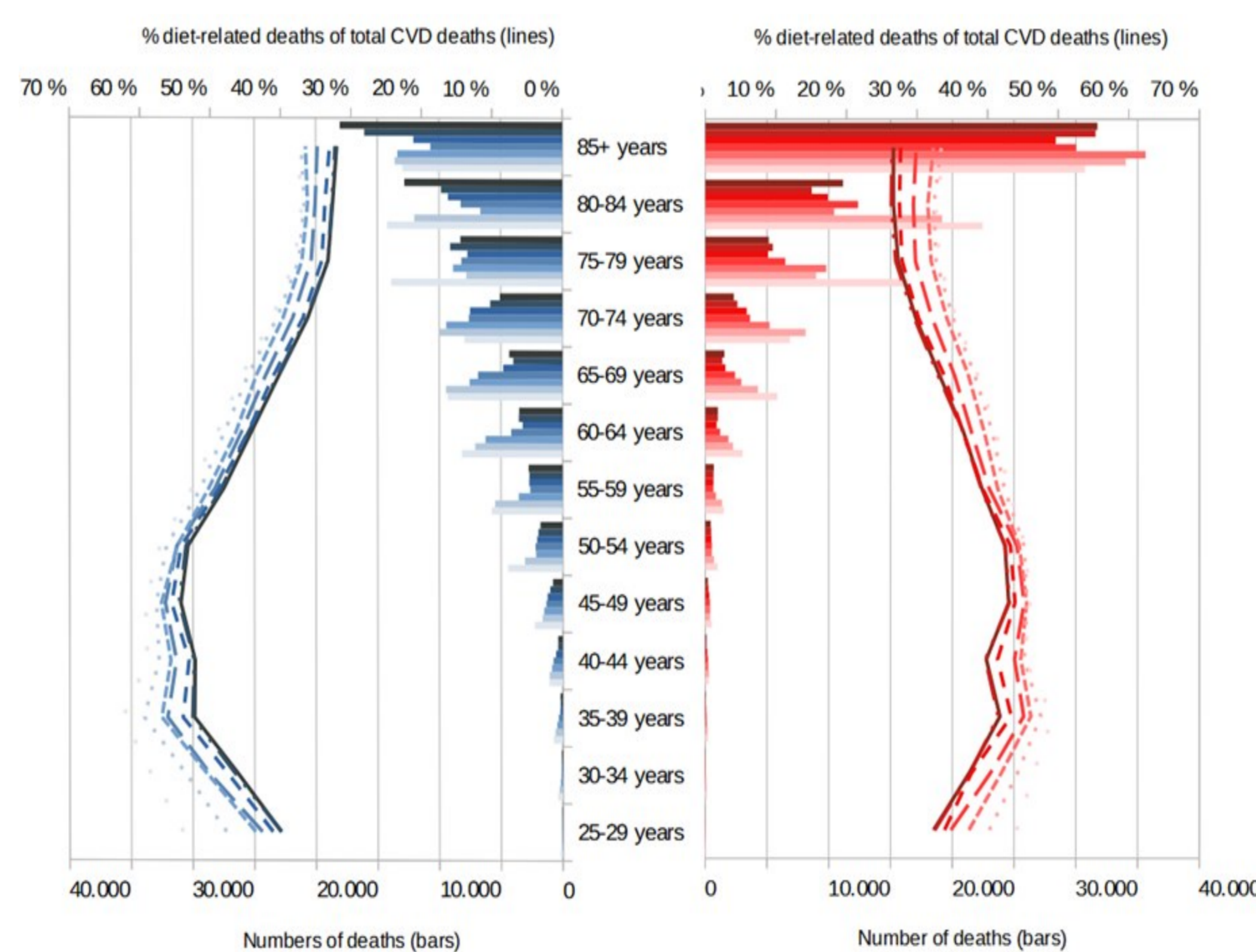


Figure 1: Age- and sex-specific mortality of DRCDs (bars) and share of diet-related on total CVD deaths (lines) for men (left) and women (right) from 1990-2019 in Germany.

Most DRCDs in Germany were caused by a diet low in legumes (20,152 deaths, 17.9%; WHO ER second place with 15.0%), followed by a diet low in whole grains (19,593 deaths; 17.4%; WHO ER first place with 21.1%) and a diet high in red meat (11,357 deaths; 10.1%; Figure 2 and 3). In the WHO ER a diet high in sodium took third place (12.3%). Overall, 83.6% (WHO ER 80.3%) of the deaths could be attributed to ischemic heart disease, which was also the main cause of death in all countries. It is followed by ischemic stroke and intercerebral haemorrhage with 8.8% and 3.3% respectively (WHO ER 11.3% and 4.7%) (Figure 3).



Figure 2: DRCDs from 1990 to 2019 in Germany.

## CONCLUSION

With one in six deaths in the WHO ER, CVD due to suboptimal diet is a prominent cardiovascular risk factor. In terms of total CVD deaths, nearly every third death is attributable to diet. The influence in Germany is a little lower in both cases. This makes diet, along with other behavioural risks, one of the most important factors in preventing premature death. Improving dietary habits is one of the most effective means of prevention and health promotion.



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