Divorce and Diagnosis:

How Marital Dissolution Shapes Cardiovascular Health

Michaela Kreyenfeld (Hertie School, ECPD, BBAW), Pavel Grigoriev (BiB, ECPD), Martin Brünger (Charité Universitätsmedizin, ECPD), Jennifer Marie Burchardi Brünger (Charité Universitätsmedizin, ECPD), Paul Gellert (Charité Universitätsmedizin, ECPD)

1 Background and research question

Cardiovascular diseases are the leading cause of death worldwide. In Germany, their impact is particularly evident, as the recent stagnation in life expectancy has been associated with excess mortality from these conditions (Jasilionis et al. 2023). Although all-cause mortality has declined in recent decades, mortality risks associated with cardiovascular diseases remain elevated, particularly in the years preceding retirement age (ibid.). This pattern may suggest that social and psychological determinants—such as stress, social isolation, and life events like union dissolution—may play a growing role in shaping cardiovascular health outcomes.

Union dissolution at advanced ages—often referred to as *gray divorce* or *silver split*—may represent an emerging risk factor relevant to health outcomes in midlife and beyond (Vignoli et al. 2025; Bach et al. 2020). *Gray divorce*, typically defined as divorce occurring at ages 50 and above, has increased markedly in recent years in Germany (Molina et al. 2025). For instance, in 1999, only about 18% of all divorces involved at least one partner aged 50 or older, whereas by 2022, this share had risen to 45% (DESTATIS 2023). To date, there is little evidence of the repercussions of late-life union dissolution on health and mortality. This project examines the impact of divorce on the risk of developing cardiovascular disease. We also examine survival

following a cardiovascular disease diagnosis and how it is affected by divorce and marital history. The large sample size of our study furthermore allows us to explore patterns stratified by gender, region (East and West Germany), and prior earnings.

2 Data, variables and analytical strategy

2.1 Data and analytical sample

We use data from the Combined Demographic Histories (CDH) — a large-scale 20% sample of linked registers of the German Pension Fund. The data, which form the basis of this investigation, are currently available for on-site use at the Research Data Center of the German Pension Fund (a Scientific Use File of the CDH is expected to be released in 2026). The dataset links detailed information on employment, earnings, divorce, and health (including dates of death). Several important limitations should be emphasized. First, the data do not cover the entire resident population but only individuals with a pension account, representing approximately 90% of Germany's resident population. Second, information on divorce (and separation) is limited to cases in which a *Versorgungsausgleich* (pension rights adjustment) was conducted. Although this procedure is legally required, a substantial fraction of divorces is not covered in practice (Keck et al. 2020). Finally, health information is derived from rehabilitation records. These records capture cases of severe illness eligible for rehabilitation measures but exclude acute illnesses leading directly to death without rehabilitation.

The analysis was restricted to the years 2011–2023, as it is only from 2011 onwards that it is possible to link individuals in the register using unique identifiers. Our analytical sample was

further limited to individuals aged 30–59. While we focus on divorce and rehabilitation diagnoses within this age range, mortality follow-up continues until 2023, regardless of the individual's age. The data includes information on about 4 million individuals per year.

2.2 Variables

The main independent variable of interest in this study is divorce. The data include both the date of legal enactment of divorce and the date of separation (i.e., when the divorce was filed or when the opposing party received the divorce request). We use the separation date as the primary point of interest. In addition, the analysis incorporates other characteristics, such as the duration since the first (and last) divorce.

Information on the division of work during marriage is also included. This is captured through the so-called *malus* and *bonus* measures, which are calculated in the event of divorce and provide insights into the gendered division of care responsibilities within the marriage.

Key sociodemographic covariates, in addition to age and gender, include region (East vs. West Germany) and income. Income is recorded in terms of earning points in the registers, where one earning point corresponds to the average income in a given year.

2.3 Analytical strategy

The analysis is divided into two parts. The first part examines whether and how cardiovascular disease is associated with divorce. We begin with simple descriptive analyses showing the annual incidence of cardiovascular diagnoses by time since separation. These descriptive results are

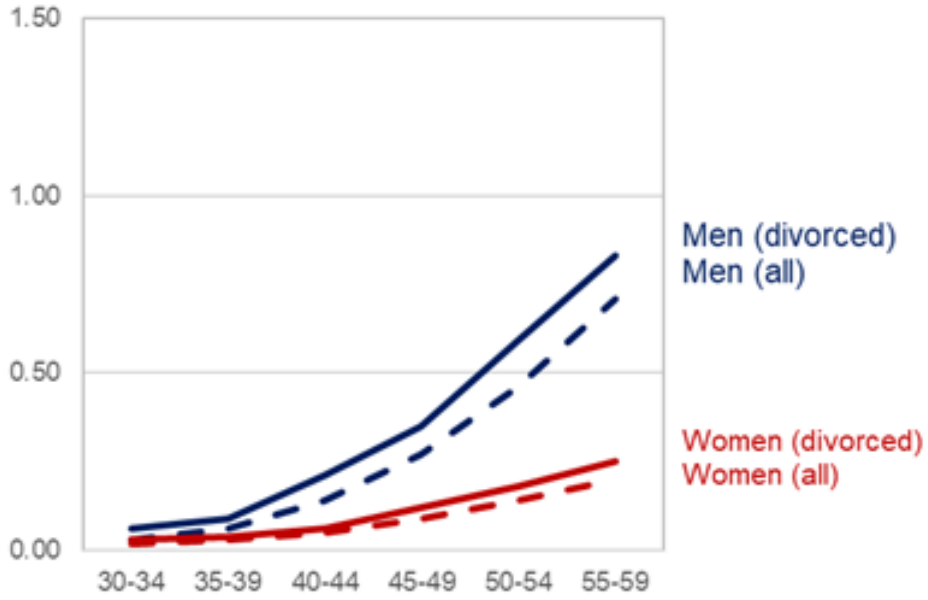
further stratified by key sociodemographic characteristics, including region, age at divorce, and income prior to divorce (measured two years before the divorce). To construct a control group, we use exact matching. The large sample size provides a substantial pool of cases, enabling the creation of a well-matched and robust control group.

In the second part of the analysis, we analyze long-term survival following a cardiovascular disease (CVD) diagnosis and examine how this outcome is related to past and present divorce experience. We follow here prior research that has demonstrated a strong correlation between marital status and survival following cardiovascular disease (Dupre and Nelson 2016; Idler et al. 2012). We extend prior research by examining how these patterns are moderated by age, gender, income, region, and past marital history.

3 First results

Figure 1 shows first descriptive results. Our results indicate that divorce significantly increases the risk of cardiovascular disease. Moreover, we identify pronounced gender differences, with men being more strongly affected by the adverse health impacts of divorce than women. For the initial analyses, we group hypertension, stroke, and other circulatory disorders (ICD-10 codes I00–I99) into a single category. In future investigations, we plan to focus more specifically on acute myocardial infarction (I21) and subsequent myocardial infarction (I22).

Figure 1: Cardiovascular Diagnosis by age and sex and marital status



Source: CDH-data, own estimates

4 References

Dupre, Matthew E.; Nelson, Alicia (2016): Marital history and survival after a heart attack. In *Social Science & Medicine* 170, pp. 114–123. DOI: 10.1016/j.socscimed.2016.10.013.

Idler, Ellen L.; Boulifard, David A.; Contrada, Richard J. (2012): Mending broken hearts: marriage and survival following cardiac surgery. In *Journal of Health and Social Behavior* 53 (1), pp. 33–49. DOI: 10.1177/0022146511432342.

Jasilionis, Domantas; van Raalte, Alyson A.; Klüsener, Sebastian; Grigoriev, Pavel (2023): The underwhelming German life expectancy. In *European Journal of Epidemiology* 38 (8), pp. 839–850. DOI: 10.1007/s10654-023-00995-5.

Keck, Wolfgang; Radenacker, Anke; Brüggmann, Daniel; Kreyenfeld, Michaela; Mika, Tatjana (2020): Statutory Pension Insurance Accounts and Divorce: A New Scientific Use File. In *Jahrbücher für Nationalökonomie und Statistik* 240 (6), pp. 825–835. DOI: 10.1515/jbnst-2019-0064.

Molina, Stefania; Alonso-Perez, Enrique; Kreyenfeld, Michaela (2025): Divorce and mental health: Is late divorce particularly harmful for women with low earnings? In *Social Indicator Research*. DOI: 10.1007/s11205-025-03721-8.

Vignoli, Daniele; Alderotti, Giammarco; Tomassini, Cecilia (2025): Partners' health and silver splits in Europe: A gendered pattern? In *Marriage and Family* 87 (4), pp. 1639–1663. DOI: 10.1111/jomf.13077.