

# Trends in Epidemiology and Mortality of Patients with Breast Cancer in Germany: A Retrospective Study Using German Claims Data

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## Background

Despite progress in the early detection and treatment of early and late breast cancer (BC), it remains one of the most frequent cancer diagnoses in women, associated with substantial mortality in the late stages. This research aims to estimate the incidence and prevalence of BC in Germany and to describe trends in mortality in the last ten years.

## Methods

Based on anonymized claims data from the AOK PLUS (a German statutory health insurance fund with 3.5 million individuals), patients with at least two outpatient or one inpatient BC diagnosis (ICD-10-GM: C50) were identified as BC cases.

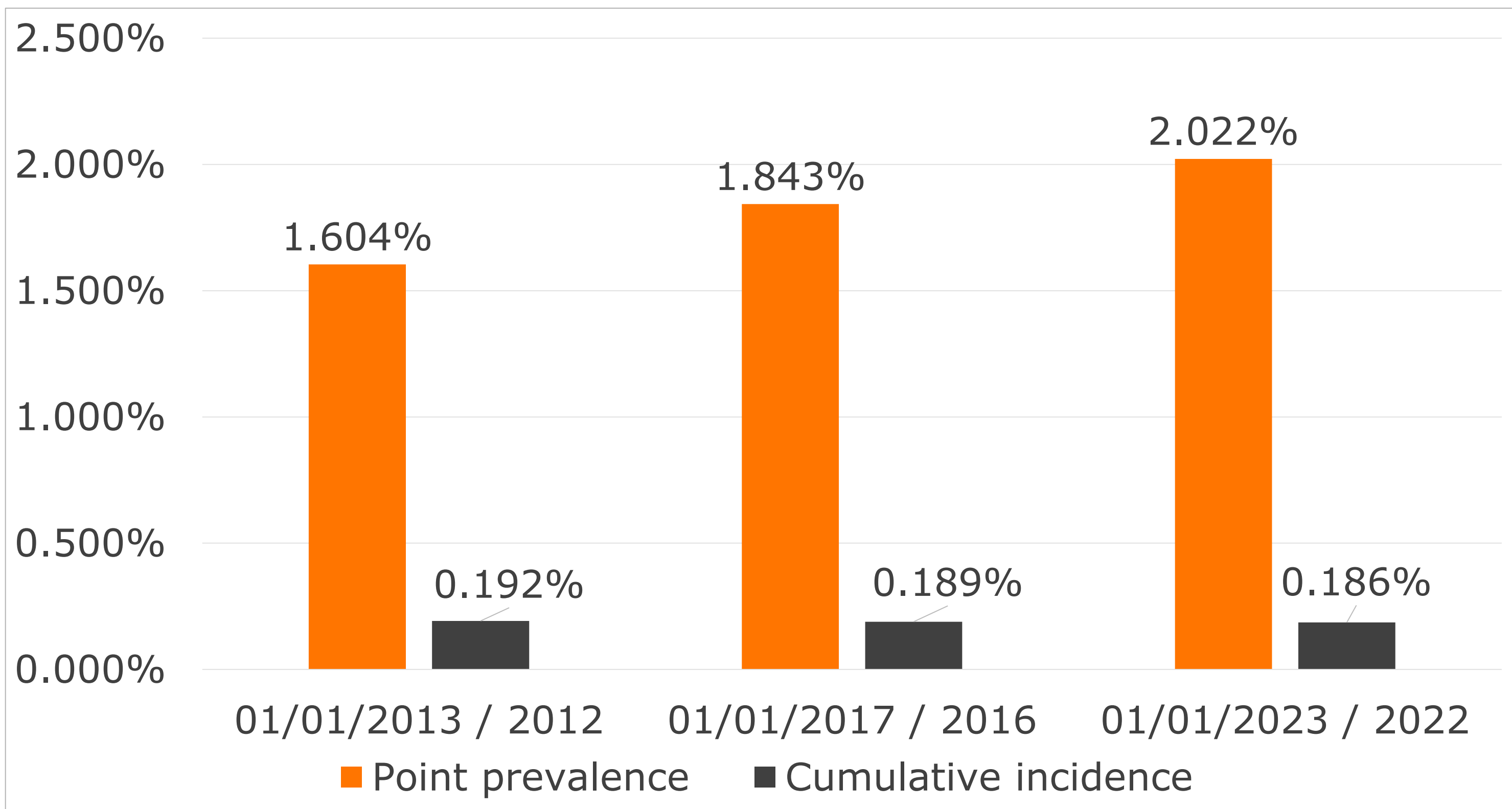
BC incidence was defined as newly diagnosed after a 24-month baseline period of continuous insurance and without any BC diagnosis. Cumulative BC incidences were assessed for the years 2012, 2016, and 2022. Point prevalences were calculated for January 1st, 2013, January 1st, 2017, and January 1st, 2023. Incidence and prevalence were extrapolated (age-standardized) to the overall German female population of the respective year as well as to the entire German population. Standardized mortality rates for the years 2012, 2016, and 2022 were evaluated in cross-sectional BC samples (BC prevalent and alive on January 1st of the respective year). The incidence in 2022 was compared with nationwide registry data from 2020 (Centre for Cancer Registry Data (ZfKD) located at Robert Koch-Institute (RKI)).

## Results

**Incidence:** The cumulative incidence in the observed female population was 0.235% in 2012 (0.192% standardized to the German female population; 0.099% to the entire population), 0.222% in 2016 (0.189%/0.097% standardized), and 0.199% in 2022 (0.186%/0.096% standardized; **Figure 1**). Based on a German population of 83.3 million persons, this translates into 80,000 incident BC cases in the year 2022. The mean age at incident diagnosis decreased from 68.9 years in 2012 and 2016 to 66.5 years in 2022(**Table 1**).

Data from RKI for 2020 indicated fewer incident cases, with 1.8 cases per thousand males and 167.5 per thousand females [1].

**Figure 1: Point prevalence and cumulative incidence of breast cancer in the German female population**



**Prevalence:** The point prevalence in females was 2.043% on January 1st, 2013 (1.604% standardized to the German female population; 0.825% to the entire German population), 2.216% on January 1st, 2017 (1.843%/0.941% standardized), and 2.189% on January 1st, 2023 (2.022%/1.034% standardized; **Figure 1**). Extrapolated to the German population, this corresponds to 861,000 BC-prevalent patients on January 1st, 2023.

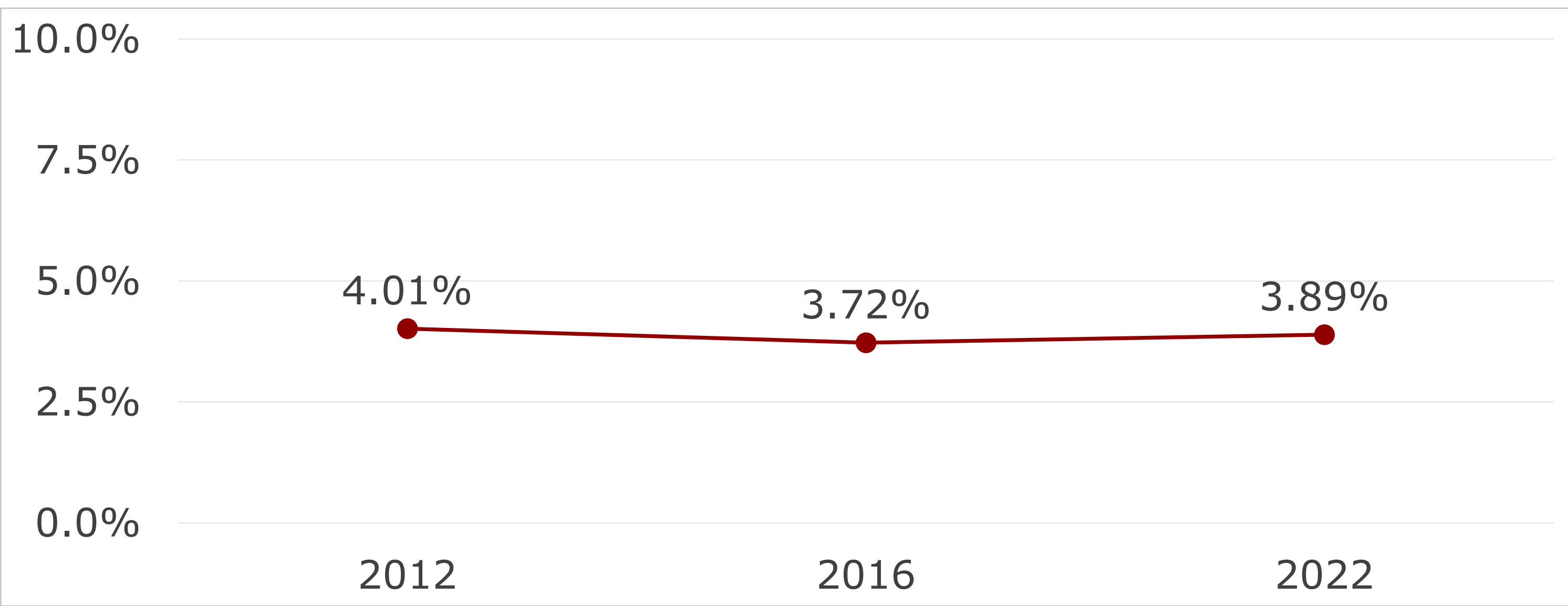
The mean age of the prevalent populations slightly decreased by 1.2 years from 70.4 years on January 1st, 2013 (and 2017), to 69.2 years on January 1st, 2023 (**Table 1**).

**Table 1: Characteristics of the identified breast cancer populations**

	Incident BC populations			Prevalent BC populations		
	2012	2016	2022	January 1st, 2013	January 1st, 2017	January 1st, 2023
Mean age (SD)	68.9 (14.1)	68.9 (15.2)	66.5 (15.5)	70.4 (12.8)	70.4 (13.1)	69.2 (13.3)
% female	98.4%	98.3%	98.9%	99.4%	99.3%	99.3%

**Mortality:** The yearly mortality in the population of BC prevalent patients was 5.08% in 2012 (4.01% extrapolated to the German population), 5.30% in 2016 (3.72% extrapolated), and 5.03% in 2022 (3.89% extrapolated; **Figure 2**). The mortality rates standardized to the German population were 0.033%, 0.035%, and 0.040%, respectively.

**Figure 2: Mortality rates of patients with breast cancer, extrapolated to the German population**



## Conclusion

BC incidence and prevalence estimates based on claims data are higher than in the official German RKI statistics, probably due to a certain degree of overreporting in claims data, but mainly due to missed cases in the cancer registries resulting from underreporting in outpatient and inpatient practices. Reports from inpatient and outpatient oncology sites form the basis of the RKI statistics [2,3]. Mortality in BC-prevalent patients remained practically on the same level. Combined with an increasing prevalence of BC, this indicates an increased health system burden associated with BC.

## Disclosure statement

No disclosures other than those related to the listed affiliations need to be reported.

## References

- [1] Website of Robert Koch-Institut ([https://www.krebsdaten.de/Krebs/DE/Content/Krebsarten/Brustkrebs/brustkrebs\\_node.html](https://www.krebsdaten.de/Krebs/DE/Content/Krebsarten/Brustkrebs/brustkrebs_node.html)).
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