COVID-19 and changes in the cancer incidence rates in Baden-Württemberg (south-west Germany) in 2020-2023

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Background

- Many countries reported a decrease in cancer incidence at the start of the COVID-19 pandemic in 2020
- Less is known about the impact of the pandemic in subsequent years

The aim of this study was to investigate short-term trends in cancer incidence between 2015 and 2023 in relation to the COVID-19 pandemic in Baden-Württemberg, Germany

Methods

Data

- Data were obtained from the Baden-Württemberg Cancer Registry (approx. 11 million people in south-west Germany)
- Cancer sites: overall cancers (ICD-10: C00-C97 without C44), colorectal (C18-C20), lung (C33-C34), prostate (C61), female breast (C50) cancer

Statistical methods

- Annual age-standardized incidence per 100,000 person-years (standard population: persons in Baden-Württemberg in 2020)
- Annual age-specific incidence, standardized within age groups
- Comparison of the incidence in the years 2020 onwards with
  - Incidence in 2017-2019 with standardized incidence ratios (SIRs)
  - Modelled projections based on the incidence in 2015-2019 (Poisson regression models by sex and age, weighted sum of age-specific estimates)

Fig. 1: Annual age-standardized incidence (per 100,000) for total cancer by sex

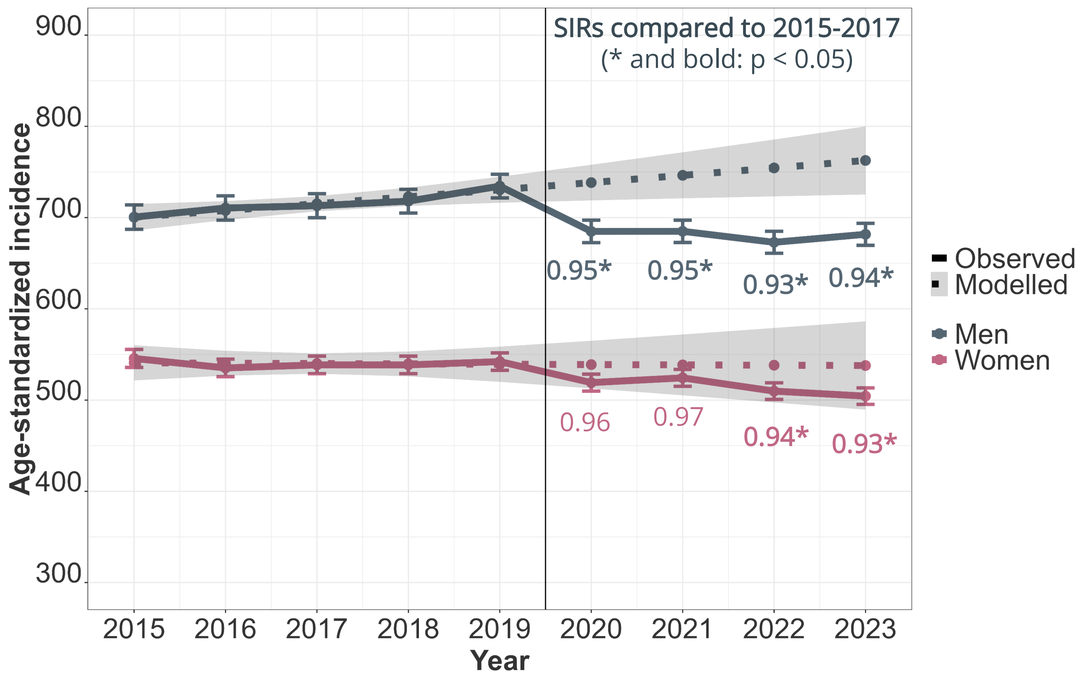


Fig. 2: Annual age-standardized incidence (per 100,000) by cancer site

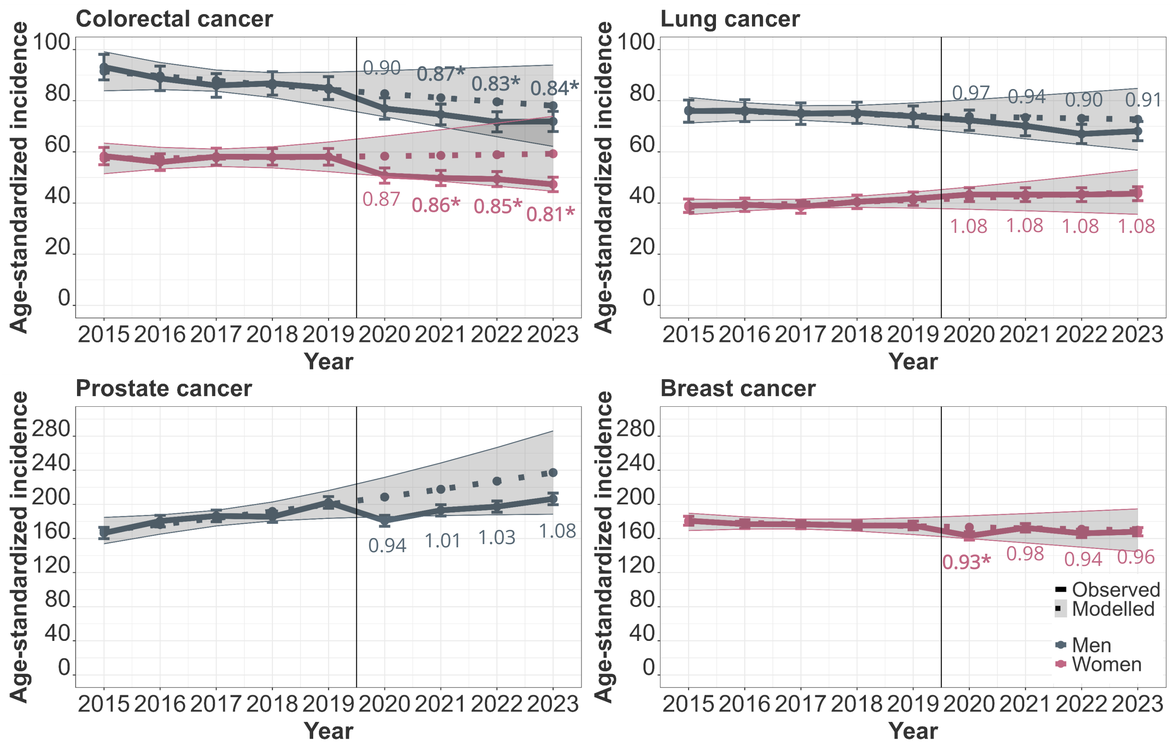
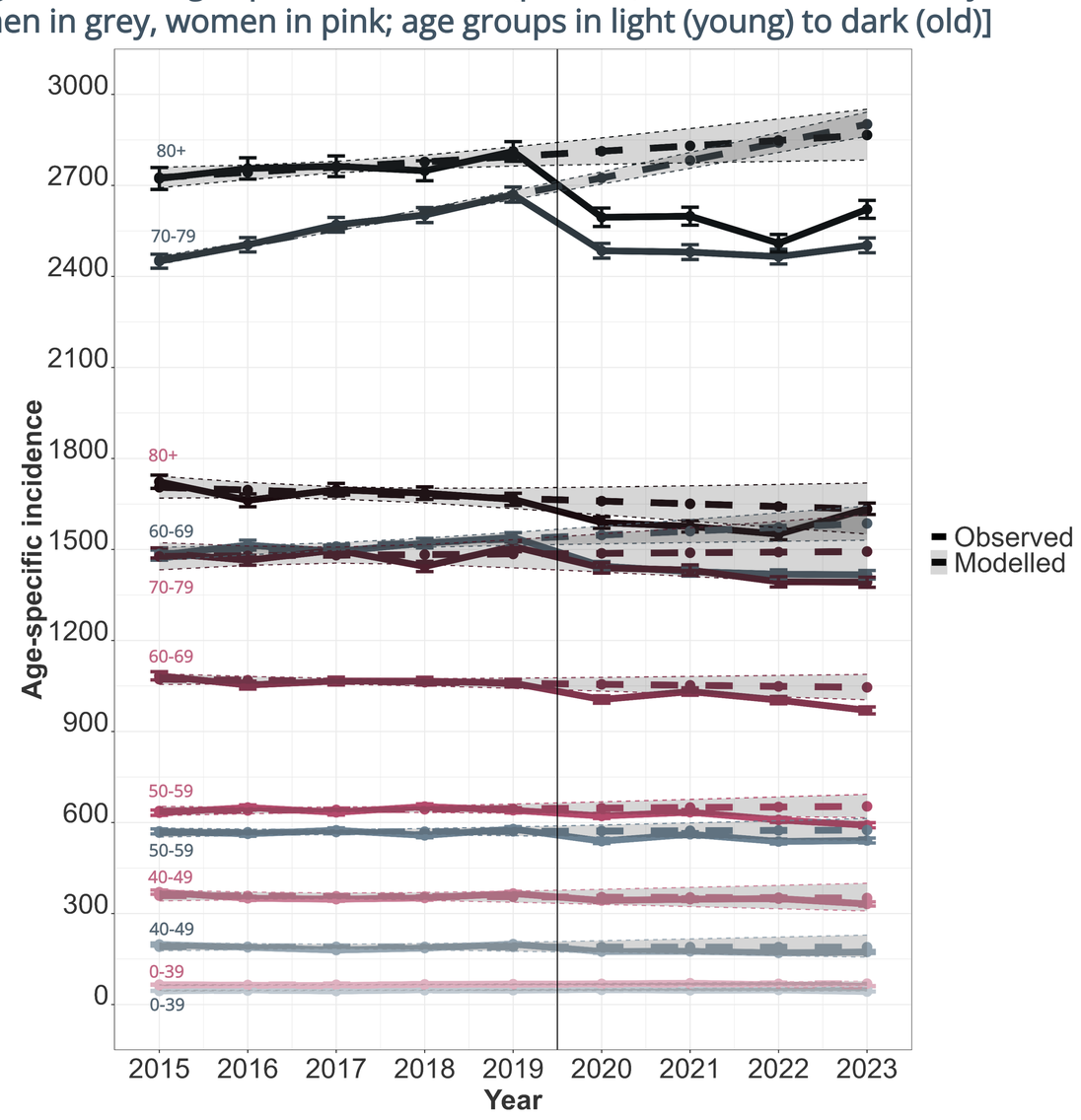


Fig. 3: Annual age-specific incidence (per 100,000) for total cancer by sex [men in grey, women in pink; age groups in light (young) to dark (old)]



Main Results

Age-standardized overall cancer incidence, by gender (Fig. 1)

- Between 2015 and 2019, the incidence increased in men (from 701 to 734 per 100,000) and remained stable in women (from 546 to 542).
- Following this period, a decrease was observed in both genders, reaching 682 in men and 504 in women in 2023.
- Compared with the reference period, the incidence was significantly lower in men in 2020 to 2023 (SIRs: 0.93-0.95) and in women in 2022 (0.94) and 2023 (0.93).

Cancer incidence by site (Fig. 2)

- Colorectal: Lower incidence starting in 2021 in men and women – partly explainable by pre-pandemic trends in men.
- Lung: Tendency to lower incidence in men. In women, the trend towards higher incidence compared with the reference period can be explained by the pre-pandemic trend.
- Prostate: No significant differences compared with the reference period. Continuation of pre-pandemic trend: significantly lower incidence in 2020
- Breast: Significantly lower incidence in 2020 (but only in comparison to the reference period).

Age-specific overall cancer incidence (Fig. 3)

- Compared to the reference period, an attenuation of incidence rates in 2020 to 2023 was present in men aged 40 or older and women aged 50 or older. Absolute but not relative attenuation was larger in elderly.
- In men younger than 40 years, incidence rates were higher in 2020 (1.06) but lower in 2023 (0.91). In women aged 40-49 years, the decrease was less pronounced and non-significant in 2020 to 2022. In women up to age 39 years, incidence tended to be higher in 2020 (1.04) and 2021 (1.07) but was also attenuated in 2023 (0.93)

Discussion

Lower than expected cancer incidence was observed from 2020 to 2023. While lockdown-related reductions are plausible, the lack of a subsequent increase is unexpected. Future monitoring of cancer incidence and stage distributions is needed. Further studies disentangling potential causes such as post-pandemic effects, migration, and competing risks (e.g. selective reduction of at risk population due to high COVID mortality among elderly) are warranted.

Baden-Württemberg Cancer Registry
www.krebsregister-bw.de

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