The University of Texas at Austin
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Trends in Cardiovascular and Cancer Mortality among Texas Residents with Cancer, 2010–2019

EPH152

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BACKGROUND

- Advances in cancer care have led to increased life expectancy among cancer survivors.
- Despite longer survival rates, cancer survivors face a higher risk of cardiovascular disease (CVD).
- CVD-related mortality and morbidity rates are higher in cancer survivors compared to the general population in the United States.
- Evidence suggests that CVD risk and mortality among cancer survivors may differ by cancer stage and site.

OBJECTIVE

- To evaluate the trends and characteristics of cancer-related and CVD-related deaths among Texas residents with cancer, and to examine how these patterns vary by stage at diagnosis and primary cancer site.

METHODS

Study Design

- Observational, retrospective cohort study

Data Source

- The Texas Cancer Registry 1995-2020

Study Population

- Texas residents ≥ 20y with newly diagnosed cancer
- Cohorts:
  (1) Cohort for incidence-based mortality (IBM) rate calculations (patients with deaths data 2010-2019)
  (2) Cohort for 1-year and 5-year survival (patients diagnosed with cancer during 2010-2015)

Key Variables

- Primary cancer sites was classified using SEER ICD-O-3/WHO 2008 Definition
- Stage at diagnosis (in situ, localized, regional, distant)
- Years of cancer diagnosis and last contact/death
- Cause of death (cancer or CVD) was classified using SEER ICD-10 Cause of Death Recode

Outcomes

- Age-adjusted IBM rate for cancer and CVD: Calculated as cause-specific deaths divided by person-years at risk, weighted by the 2010 US Standard Population (per 100,000 population)
- CVD/Cancer mortality ratio: Divided the respective IBM rates
- Survival rates: Assessed at 1-year and 5-year follow-ups, based on the time from diagnosis date to last contact/death

Statistical Analysis

- Joinpoint regression analysis
- Pearson's correlation
- Heatmap plotting
- Analyses conducted in Joinpoint Regression Program v5.3.0.0, SAS 9.4 and RStudio

RESULTS

Figure 1. Overall Trends in Cancer and CVD IBM

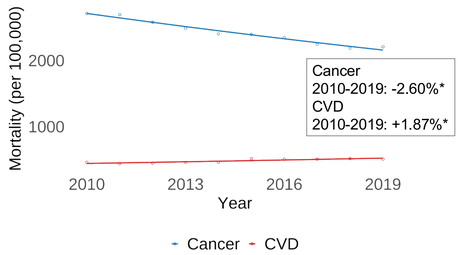


Figure 2. Cancer IBM, CVD/Cancer IBM Ratios, and CVD IBM by County, 2010-2019

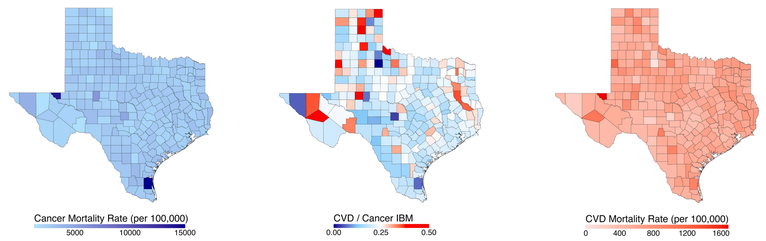


Table 1. Cancer and CVD IBM and Ratios by Stage and Top Primary Cancer Sites

	Cancer Deaths Count	CVD Deaths Count	Cancer IBM (per 100,000)	CVD IBM (per 100,000)	CVD/Cancer IBM Ratio
Stage at Diagnosis					
In situ	8889	8460	458.89	398.58	0.87
Localized	97309	48079	1074.35	456.40	0.42
Regional	90525	16113	2916.85	464.93	0.16
Distant	169079	15116	8005.03	607.77	0.08
Primary Cancer Site					
Endocrine	3844	1971	643.29	364.24	0.57
Prostate	30953	20337	1010.12	480.8	0.48
Bladder	13882	5865	1732.66	575.58	0.33
Uterus	8034	2395	1503.73	432.2	0.29
Breast	40526	16245	1338.55	375.36	0.28
Kidney, renal, pelvis	15115	4716	2054.65	571.82	0.28
Lymphomas	40613	11247	2519.23	614.75	0.24
Brain, other nervous	12610	3485	2123.35	494.82	0.23
Oral cavity, pharynx	12946	2655	3090.46	587.3	0.19
Colorectal	44851	12135	3159.14	549.92	0.17

Figure 3. Survival vs CVD/Cancer Ratios by Cancer Sites

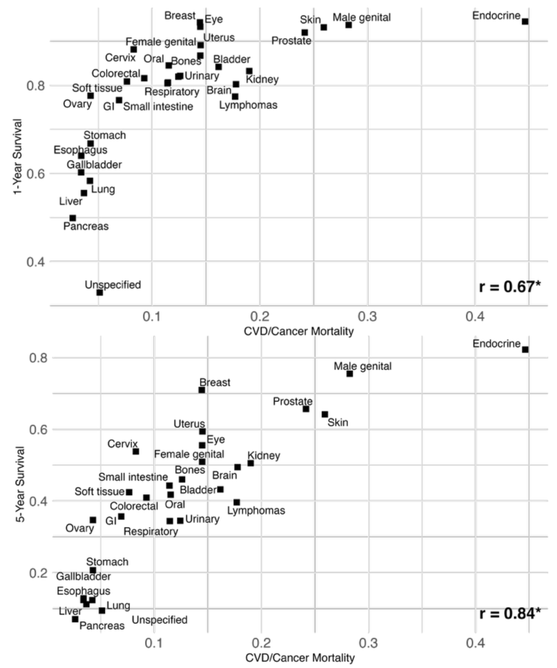


Figure 4. Trends in Cancer and CVD IBM by Stage and Cancer Site

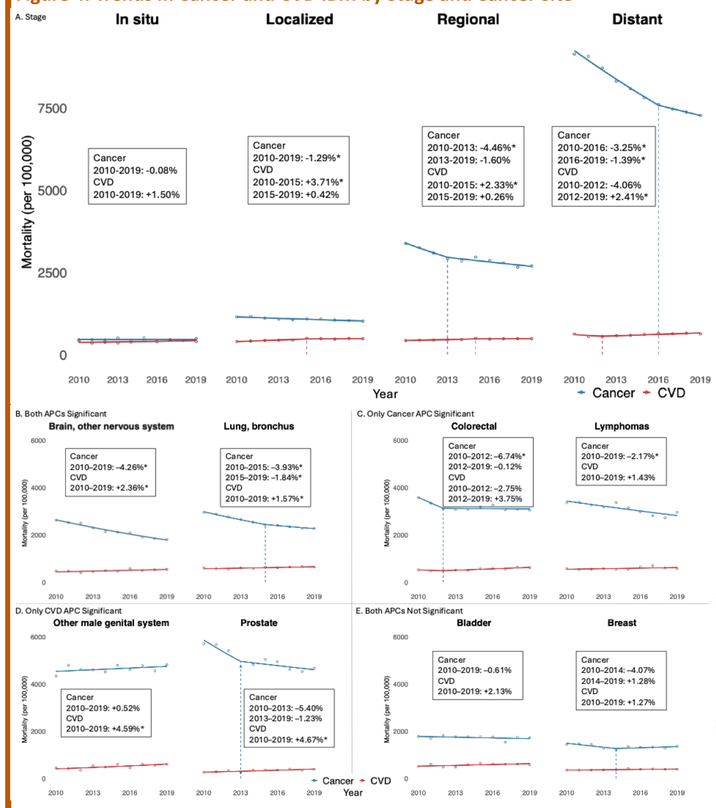
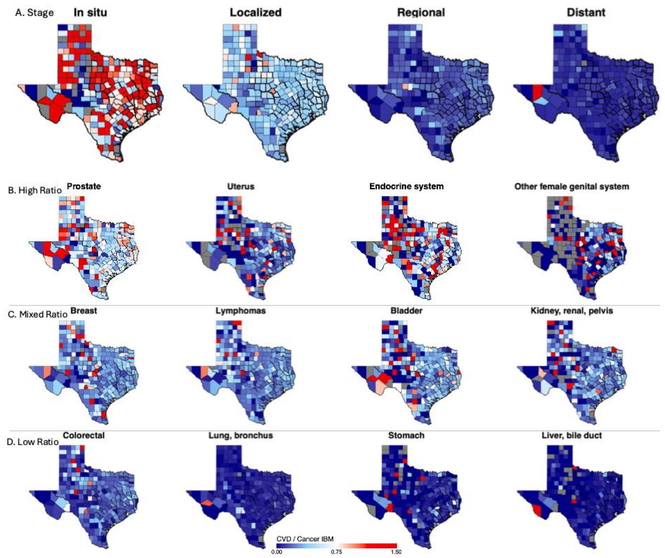


Figure 5. CVD/Cancer IBM Ratios by Stage and Cancer Site, 2010-2019



CONCLUSIONS

Strengths and Limitations

- The study used longitudinal data and analyzed the trends over a long period.
- Texas Cancer Registry provided a substantial sample size, which enhanced the statistical power of the analysis.
- The study evaluated multiple aspects of cancer and CVD mortality and demonstrated rigorous statistical analysis.
- The study findings relied on the accuracy and completeness of the Texas Cancer Registry data.
- IBM ratio estimates in smaller counties or rare cancers may be unstable due to small counts.

Implications

- Cancer mortality decreased (–2.60%/year) while CVD mortality increased (+1.87%/year) among Texas cancer survivors (Figure 1), highlighting the growing importance of cardiovascular care in survivorship.
- High CVD/cancer mortality ratios were observed outside the Texas Triangle (Figure 2), suggesting geographic disparities in post-cancer CVD risk.
- Early-stage cancers (in situ) had the highest CVD/cancer ratio (0.87), which declined sharply with advanced stage (0.08 in distant stage) (Table 1, Figure 5).→ Emphasizes the need for CVD prevention in early-stage survivors.
- Cancer sites with high CVD burden included prostate, endocrine, and uterine cancers, indicating a need for site-specific cardio-oncology strategies (Table 1, Figure 5).
- 5-year survival was strongly correlated with CVD/cancer mortality ratio (r = 0.84), suggesting that CVD prevention could support improved long-term outcomes (Figure 3).

Conclusion

- The study revealed distinct patterns in cancer and CVD mortality among Texas residents with cancer.
- Elevated CVD burden in early-stage cancers and sites such as prostate, endocrine, and uterine suggests the need for tailored cardio-oncology care to improve long-term survival.

REFERENCES

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DISCLOSURE

- All authors declare that they have no relevant or material financial interests that relate to the research described in this poster.