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Forgone healthcare and cancer mortality in the United States: A state-level analysis

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Abstract

Forgone healthcare is a hot topic in the United States. One reason is that many Americans cannot afford healthcare or health insurance. This article examines whether there are statistically significant differences in cancer mortality between US states with low, medium, and high levels of forgone healthcare. The analysis revealed statistically significant differences in cancer mortality rates between US states. Evidence shows that the percentage of adults unable to access healthcare when needed due to cost, and the percentage of adults reporting fair or poor health, are associated with differences in cancer mortality rates. These findings have important policy implications, highlighting the need for state-specific measures to improve the health and wellbeing of the population.

Keywords: cancer mortality, forgone healthcare, United States

1. Introduction

Forgone healthcare is a hot topic in the United States. It can be defined as healthcare that a person needs but does not receive (Douillet et al., 2022). The reasons for this can be cultural, economic, financial, social, and psychological (Anderson et al., 2021; Douillet et al., 2022; Reddy et al., 2025; Weaver et al., 2010). The purpose of this article is to examine whether there are statistically significant differences in cancer mortality between US states with low, medium, and high levels of forgone healthcare.

Although the United States is one of the wealthiest countries in the world, many Americans cannot afford healthcare or health insurance (Reddy et al., 2025). In some cases, this could be a reason for the late detection and treatment of cancer. Early detection and treatment of cancer are the most effective strategies to reduce the number of cancer deaths (Douillet et al., 2022).

Literature also reports that health perceptions of patients can be indicative of cancer mortality (Killie et al., 2024; Yoon et al., 2024). This article also studies whether this holds by estimating cancer mortality differences between US states based on self-reported health status.

The remainder of this article is organised as follows: Section 2 provides a literature review, Section 3 the methods, Section 4 the results, Section 5 the discussion, and Section 6 the conclusion.

2. Literature review

Douillet et al. (2022) describe forgone healthcare as unutilised healthcare that is objectively or subjectively considered necessary by the patient and can be used as a proxy for unmet healthcare needs. It can be attributed to financial and non-financial barriers, such as distance to the place of healthcare location, language barriers, healthcare system organisation and response to healthcare demand, age, fear of infectious diseases, etc. (Anderson et al., 2021; Douillet et al., 2022; Reddy et al., 2025; Weaver et al., 2010). It is usually measured by surveys of patients (population). Weaver et al. (2010) used the National Health Interview Survey and found that in the US, forgone healthcare is greater between cancer survivors, especially those aged 65 and older, is greater than in the population with no history of cancer and is influenced by ethnicity. Their research also shows that the prevalence of forgone healthcare between cancer survivors is highest for

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dental care and lowest for mental healthcare. Anderson et al. (2021) examined forgone healthcare in the US during the initial phase of the Covid–19 pandemic using data from the Johns Hopkins Covid–19 Civic Life and Public Health Survey and found that unemployment, self-perceived health status, in some cases ethnicity and fear of contracting the virus were important factors in forgone healthcare during this time. Kakietek et al. (2022) analysed forgone healthcare during Covid–19 pandemic in 39 countries and found that the main causes were financial reasons and pandemics, especially in less developed countries. Based on the Medical Expenditure Panel Survey in the USA, Reddy et al. (2025) found that 5 per cent of breast cancer patients had to face healthcare forgone or delay medical care, with more than half of them citing non-financial reasons. They also found that forgone or delaying healthcare was positively associated with healthcare utilisation and spending. McDougall et al. (2020) used a sample from the New Mexico Tumor Registry and found that financial hardship, particularly food insecurity, was positively associated with forgone healthcare. Apparently, forgone healthcare has a detrimental effect on the health of cancer patients (Douillet et al., 2022) and can lead to an increase in healthcare spending (Douillet et al., 2022; Reddy et al., 2025).

Studies have come to different conclusions about the relationship between self-reported health status, a subjective measure of health, and cancer incidence and mortality. Killie et al. (2024) found that lower self-rated health status was significantly associated with cancer mortality in women in Norway. Torres–Collado et al. (2022) found that self-rated health status was statistically significantly associated with all-cause mortality in the elderly population in Spain, but not with cancer mortality. Roelsgaard et al. (2016) report that self-rated health status is not associated with cancer incidence in Danish women. Yoon et al. (2024) find that self-rated health status is associated with mortality in colorectal cancer patients in the USA. Adeyemi et al. (2021) show that in the USA, self-reported health status and mental health are related to breast cancer mortality (survival times).

3. Methods

Data on cancer mortality and forgone healthcare in US states for 2023 comes from SHADAC, a multidisciplinary health policy research centre focused on state health policy. The dataset contains information from $n = 49$ US states on the following variables related to forgone healthcare:

- Percentage of adults who were unable to access healthcare when they needed it due to cost (mean = 10.74%, SD = 2.44);
- Percentage of adults reporting fair or poor health (mean = 13.71%, SD = 2.74);
- Age-adjusted cancer mortality rate (mean = 144; SD = 13.35).

States were categorised into three groups based on terciles, firstly by “Percentage of adults who were unable to access healthcare when they needed it due to cost” (which represents forgone health), and secondly by 'percentage of adults reporting fair or poor health'. In each case, we examined whether there were statistically significant differences in age-adjusted cancer mortality rates between these tercile-based groups of US states.

Because the age-adjusted cancer mortality rates within each tercile group were normally distributed, a parametric one-way ANOVA was used to test for significant differences between the three groups. Statistical analyses were performed using IBM SPSS Statistics 29.

4. Results

To determine whether age-adjusted cancer mortality differs significantly between states with different levels of forgone healthcare, a one-way ANOVA was performed. Two separate analyses were performed using age-adjusted cancer mortality as the dependent variable. States were categorised into terciles based on (i) the percentage of adults who were unable to access healthcare when they needed it due to cost and (ii) the percentage of adults reporting fair or poor health.

Table 1. Results of ANOVA

ANOVA						
Variable: Percentage of adults who were unable to access healthcare when they needed it due to cost						
Source	SS	df	MS	F	p	η^2
Between Groups	1.342.33	2	671.16	4.284	.020	.157
Within Groups	7.206.77	46	156.67			
Total	8.549.00	48				
Variable: Percentage of adults reporting fair or poor health						
Source	SS	df	MS	F	p	η^2
Between Groups	1.532.06	2	766.03	5.022	.011	.179
Within Groups	7.017.04	46	152.54			
Total	8.549.10	48				

Note: SS = Sum of Squares, df = degrees of freedom, MS = Mean Square, η^2 = eta squared

Source: Authors calculations

Table 2. Post hoc analyses

Post hoc				
Variable: Percentage of adults who were unable to access healthcare when they needed it due to cost				
Comparison	Mean Diff.	SE	95 % CI	p
Group 1 – Group 2	2.77	4.12	[-7.23, 12.77]	.781
Group 1 – Group 3	-10.35	4.72	[-21.78, 1.08]	.083
Group 2 – Group 3	-13.12	4.57	[-24.19, -2.05]	.017
Variable: Percentage of adults reporting fair or poor health				
Comparison	Mean Diff.	SE	95 % CI	p
Group 1 – Group 2	-1.52	4.37	[-12.09, 9.06]	.936
Group 1 – Group 3	-12.44	4.30	[-22.85, -2.02]	.016
Group 2 – Group 3	-10.92	4.30	[-21.34, -.50]	.038

Note: SE = Standard Error, CI = Confidence interval
 Source: Authors calculations

Post-hoc comparisons using the Tukey HSD test revealed that the mean age-adjusted cancer mortality rate for Group 2 (M = 139.83, SD = 12.63) was significantly lower than that of Group 3 (M = 152.95, SD = 15.62), $p = .017$, when states were grouped according to the percentage of adults who were unable to access healthcare when they needed it due to cost.

When states were grouped by the percentage of adults who reported fair or poor health, the Tukey HSD test showed that the mean cancer mortality rate for Group 1 (M = 139.19, SD = 8.90) was significantly lower than that of Group 3 (M = 151.63, SD = 12.40), $p = .016$. In addition, Group 2 (M = 140.71, SD = 14.98) also had a significantly lower mean mortality rate than Group 3, $p = .038$.

Table 3. Descriptive statistics

Descriptive statistics		
Variable: Percentage of adults who were unable to access healthcare when they needed it due to cost	M	SD
Group 1	142.60	9.65
Group 2	139.83	12.63
Group 3	152.95	15.62
Variable: Percentage of adults reporting fair or poor health	M	SD
Group 1	139.19	8.90
Group 2	140.71	14.98
Group 3	151.63	12.40

Note: M = Mean, SD = Standard Deviation
 Source: Authors calculations

The basic descriptive statistics for the groups of US states (based on both variables) are shown in Table 3.

5. Discussion

The two main findings of the study – that lack of health care due to cost and subjective perceptions of poor health are important factors in the differences in cancer mortality between US states – are consistent with the literature. Essentially, the results show that states where more adults lack access to healthcare due to cost have higher age-adjusted cancer mortality. This is consistent with the findings of Douillet et al. (2022), who reported that forgone healthcare negatively impacts cancer patient outcomes. The financial barrier as a cause of unmet health needs (Anderson et al., 2021; McDougall et al., 2020) supports the finding that cost-related barriers increase the risk of mortality. In addition, states with a higher proportion of adults reporting mediocre or poor health have higher cancer mortality rates. This is consistent with studies showing that self-rated health status is a predictor of cancer. Killie et al. (2024) found that lower self-rated health was significantly associated with cancer mortality in women, while Yoon et al. (2024) observed similar trends in colorectal cancer patients in the US.

Since it is well known that there is no universal health insurance, a stronger role of the state in providing health insurance could somewhat reduce the reported forgone healthcare, which could be positively related to cancer mortality. As previously mentioned, the failure to provide health care is a hot topic in the United States. Although the United States is one of the wealthiest countries and can be described as an economic “powerhouse”, its healthcare system has some shortcomings, which means that poorer populations in particular can be affected by forgone healthcare and a different perception of health. Analysing the forgone healthcare on a state-by-state basis is therefore an important topic, for further development.

Our findings have important implications for public health policy and social inequalities in the United States, where states with higher rates of forgone healthcare and poorer self-reported health show higher age-adjusted cancer mortality. This suggests that financial and access barriers disproportionately affect vulnerable populations. These disparities may worsen existing social inequalities, particularly among low-income, uninsured, and minority groups. Policy measures such as expanding medical aid, increasing the affordability of preventive services, and targeting interventions to populations with

high rates of forgone care could help reduce these inequalities and improve cancer outcomes across states. Furthermore, state-level differences highlight the need for tailored policy interventions that consider regional variations in healthcare access and social determinants of health.

This study has several limitations. First, some variables, such as self-reported health status, are subjective and may introduce reporting bias. Individuals' perceptions of their health may not fully reflect objective health conditions, potentially affecting the observed differences in cancer mortality. Additionally, our analysis is cross-sectional, which limits causal inference.

The results also suggest potential regional differences in healthcare access and outcomes. This highlights the importance of considering geographic and socio-economic heterogeneity in healthcare planning. Regional analysis can inform policymakers were targeted interventions, such as local outreach programmes, mobile clinics, or subsidies for preventive care, may be most effective in reducing cancer mortality.

6. Conclusion

This article aimed to investigate whether statistically significant differences in cancer mortality exist between groups of US states with different levels of forgone healthcare. The analysis revealed that the percentage of adults unable to access healthcare when needed due to cost is associated with differences in cancer mortality rates, as statistically significant differences exist between some US state groups. Additionally, the results showed that statistically significant differences exist when percentage of adults reporting fair or poor health and cancer mortality are analysed.

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