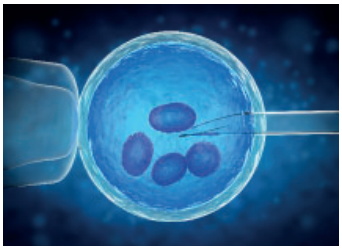
research

Sponsorship bias in economic analysis p 437

Mortality gap between Republican and Democratic counties p 438



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ORIGINAL RESEARCH Registry based analysis

Industry sponsorship bias in cost effectiveness analysis

Xie F, Zhou T

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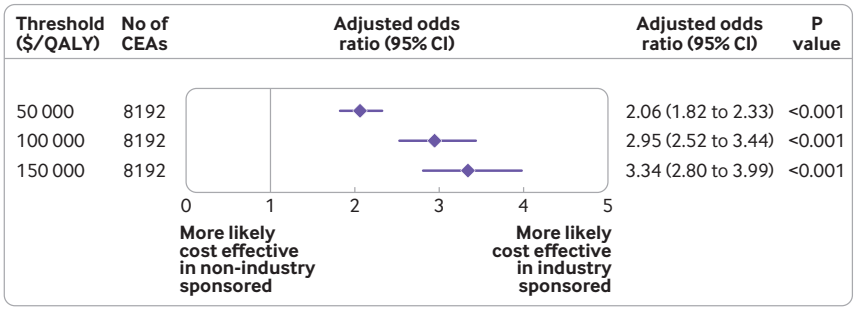
Study question What is the association between industry sponsorship and cost effectiveness analysis (CEA) results?

Methods The Tufts Cost-Effectiveness Analysis Registry was used to identify all CEAs, published in Medline between 1976 and 2021, that reported an incremental cost effectiveness ratio (ICER) using quality adjusted life years. Descriptive analyses were used to describe and compare the characteristics of CEAs with (fully or partly funded) and without industry sponsorship. Logistic regression was used to identify the association between industry sponsorship and the cost effective conclusion using selected threshold values ($50 000 (£40 511; €47 405), $100 000, and $150 000). Robust linear regression was used to assess the association between industry sponsorship and the magnitude of ICERs. All regression analyses were adjusted for disease and study design characteristics.

Study answer and limitations 8192 CEAs were eligible and included in the analysis, with 2437 (29.7%) sponsored by industry. Industry sponsored CEAs were more likely to publish ICERs below $50 000 (adjusted odds ratio 2.06, 95% confidence interval 1.82 to 2.33), $100 000 (2.95, 2.52 to 3.44), and $150 000 (3.34, 2.80 to 3.99) than non-industry sponsored studies. Among 5877 CEAs that reported positive incremental costs and quality adjusted life years, ICERs from industry sponsored studies were 33% lower (95% confidence interval −40 to −26) than those from non-industry sponsored studies. Analyses were limited to the available information recorded in the registry.

What this study adds In CEAs, sponsorship bias is significant, systemic, and present across a range of diseases and study designs.

Funding, competing interests, and data sharing No funding received. No competing interests declared. No additional data available.



Adjusted odds ratios of cost effectiveness in non-industry versus industry sponsored studies by threshold level. CEAs=cost effectiveness analyses; QALY=quality adjusted life year

Politics and mortality in the United States

ORIGINAL RESEARCH: SPECIAL PAPER Population based cross sectional analysis

Political environment and mortality rates in the United States, 2001-19

Warraich HJ, Kumar P, Nasir K, Joynt Maddox KE, Wadhera RK

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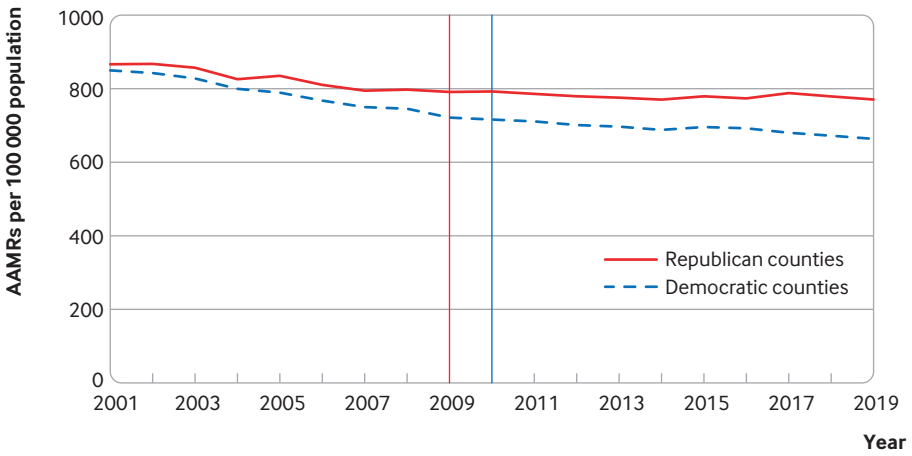
Study question What is the association between trends in county level political environment and age adjusted mortality rates (AAMRs) in the United States?

Methods The US Centers for Disease Control and Prevention Wide-ranging OnLine Data for Epidemiologic Research database was linked to county level data on US presidential elections. County political environment was classified as either Democratic or Republican for the four years that followed a November presidential election. Additional sensitivity analyses analysed trends in AAMRs for counties that voted only for one party throughout the study, and county level gubernatorial election results and state level AAMR trends.

Study answer and limitations Between 2001 and 2019, the AAMR per 100 000 population decreased by 22% in Democratic counties (from 850.3 to 664.0) but by only 11% in Republican counties (from 867.0 to 771.1). Male and female residents of Democratic counties experienced lower mortality rates and twice the relative decrease in mortality rates than did those in Republican counties. Black Americans experienced similar improvement in AAMR in both Democratic and Republican counties. However, the mortality gap between white residents in Democratic versus Republican counties increased fourfold. Rural Republican counties experienced the highest mortality rates and the least improvement. All



Trends in age adjusted mortality rates (AAMRs) per 100 000 residents of counties voting for Democratic or Republican presidential candidates. Widening gap in AAMR is noted between Democratic and Republican counties. Statistically significant inflection points in annual percentage change (APC) of AAMR occurred for Democratic counties between periods 2001-09 (APC −2.1) and 2009-19 (APC −0.8) and Republican counties between periods 2001-08 (APC −1.4) and 2008-19 (APC −0.2)

COMMENTARY Mounting evidence suggests a link between republican politics and higher death rates

For decades, people in the US have experienced lower life expectancy and poorer health outcomes than populations in other high income countries, and the problem has worsened over time.[1] This pervasive disadvantage has been attributed to unhealthy behaviors, a dysfunctional healthcare system, and adverse socioeconomic and environmental conditions, but these downstream conditions arise from upstream policies and social values, many of them quintessentially American.[1-4] These include the US Constitution's protections of states' rights and gun ownership, resistance to social welfare programs or to restrictions on personal freedoms, and systemic racism.[5]

Such attitudes are not uniform across the country. Stark geographic inequalities in both policy and health outcomes have widened over time.[6] Life expectancy began to diverge dramatically across US states in the 1990s, increasing in states such as New York where the Democratic party and progressive policies dominated, and stagnating or decreasing in states with more conservative governments and Republican majorities.[1] Southern and Appalachian states, generally led by Republican governments, have the nation's lowest life expectancy and highest poverty rates.

Observers of health trends in the US should keep their eye on state governments

Polarisation

Political polarisation in state governments intensified over the past decade.[7] Republican governors and legislatures adopted more conservative policies that affected population health, such as opposing Medicaid expansion, minimum wage legislation, and tobacco and gun controls.[8 9] Studies of the 2016 and 2020 presidential elections reported that counties voting for the Republican candidate Donald Trump had higher—and larger increases in—mortality rates than counties favoring his Democratic opponent.[10-13]

Such studies hint at an association between elections and mortality but cannot establish the existence or direction of a causal link.

The study by Warraich and colleagues advances the evidence by examining the temporal association between US presidential voting and county mortality rates.[15] Between 2001 and 2019, counties that favored Republican candidates experienced half the reduction in mortality rate (11%) observed in Democratic leaning counties (22%). Republican leaning counties also experienced smaller decreases in mortality in white populations and rural areas, and no decreases after 2009.

Between 2001 and 2019, the absolute difference in mortality rates between

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PICTURE ARCHITECT/ALAMY

trends were similar when comparing counties that did not switch political environment throughout the period and when governor election results were used. The greatest contributors to the rising AAMR gap between Republican and Democratic counties were heart disease (difference in AAMRs 27.6), cancer (17.3), and chronic lower respiratory tract diseases (8.3) followed by unintentional injuries (3.3) and suicide (3.0).

What this study adds The mortality gap in Republican voting counties compared with Democratic voting counties has grown over time, especially for white populations, and that gap began to widen after 2008.

Funding, competing interests, and data sharing
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Republican leaning and Democratic leaning counties jumped by 541%, from 16.7 to 107.1 deaths per 100 000 population. Votes for governor followed the same pattern. Study weaknesses included the binary classification of counties as Republican or Democratic on the basis of the favored presidential candidate in the preceding election, rather than a continuous measure such as vote share or margin. Votes for local officials, governors, and legislators in statehouses and Congress—which may bear more on county mortality rates—were not examined.

These limitations aside, corroborating evidence about the potential health consequences of conservative policies is building. For example, Montez and colleagues reported that states adopting more conservative policies between 1970 and 2014 experienced smaller improvements in life expectancy. The authors estimated that the increase in US life expectancy that occurred during 2010-14 would have been 25% steeper in women and 13% steeper in men had this transition to conservative policies not occurred.[16]

Political influence on US mortality rates became overt during the covid-19 pandemic, when public health policies, controlled by states, were heavily influenced by party affiliation. Republican politicians, often seeking to appeal to President Trump and his supporters, challenged scientific evidence and opposed enforcement of vaccinations and safety measures such as masking.[17] A macabre natural experiment occurred in 2021, a year marked by the convergence of vaccine availability and contagious variants that threatened unvaccinated populations: states led by governors who promoted vaccination and mandated pandemic control measures experienced much lower death rates than the "control" group, consisting of conservative states with lax policies and large unvaccinated populations.[18] This behavior could explain why US mortality rates associated with covid-19 were so catastrophic, vastly exceeding losses in other high income countries.[19]

Observers of health trends in the US should keep their eye on state governments, where tectonic shifts in policy are occurring. While gridlock in Washington, DC incapacitates the federal government,[7] Republican leaders in dozens of state capitols are passing laws to undermine health and safety regulations, ban abortion, limit LGBT+ rights, and implement more conservative policies on voting, school curriculums, and climate policy.[20] To understand the implications for population health, researchers must break with custom; although scientific literature has traditionally avoided discussing politics, the growing influence of partisan affiliation on policies affecting health makes this covariate an increasingly important subject of study.

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Infertility, recurrent pregnancy loss, and risk of stroke

Liang C, Chung H-F, Dobson AJ, et al

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Study question Are women with a history of infertility, miscarriage, or stillbirth at higher risk of stroke than women without these reproductive histories?

Methods Eight prospective cohort studies across seven countries (Australia, China, Japan, Netherlands, Sweden, the United Kingdom, and the United States, participating in the International Collaboration for a Life Course Approach to Reproductive Health and Chronic Disease Events consortium) that collected data on infertility, miscarriage, or stillbirth, at least one outcome event (non-fatal or fatal stroke), and information on covariates were analysed. Non-fatal strokes were identified through self-reported questionnaires, linked hospital data, or national patient registers. Fatal strokes were identified through death registry data. Cox regression was used to estimate associations of infertility, miscarriage, and stillbirth with non-fatal and fatal strokes.

Study answer and limitations 618 851 women aged 32.0-73.0 years at baseline were included. The median follow-up for non-fatal stroke and fatal stroke was 13.0 years (interquartile range 12.0-14.0) and 9.4 years (7.6-13.0), respectively. A first non-fatal stroke was experienced by 9265 (2.8%) women and 4003 (0.7%) had a fatal stroke. Hazard ratios for non-fatal or fatal stroke were stratified by hypertension and adjusted for race or ethnicity, body mass index, smoking status, education level, and study. Infertility was associated with an increased risk of non-fatal stroke (hazard ratio 1.14, 95% confidence interval 1.08 to 1.20). Recurrent miscarriage (at least three) was associated with higher risk of non-fatal and fatal stroke (1.35, 1.27 to 1.44; and 1.82, 1.58 to 2.10, respectively). Women with stillbirth were at 31% higher risk of non-fatal stroke (1.31, 1.10 to 1.57) and women with recurrent stillbirth were at 26% higher risk of fatal stroke (1.26, 1.15 to 1.39). The increased risk of stroke (non-fatal or fatal) associated with infertility or recurrent stillbirths was mainly driven by a single stroke subtype (non-fatal ischaemic stroke and fatal haemorrhagic stroke, respectively), whereas the increased risk of stroke (non-fatal or fatal) associated with recurrent miscarriages was driven by both subtypes. The effects of different causes or treatments related to infertility, miscarriage, or stillbirth were not explored owing to limited data.

What this study adds A history of recurrent miscarriages and stillbirths should be considered a female specific risk factor for stroke, with differences in risk according to stroke subtypes.

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Association of infertility, miscarriage, and stillbirth with non-fatal and fatal stroke

Reproductive history	Non-fatal stroke	Fatal stroke
Infertility		
Ever *v* never	1.14 (1.08 to 1.20)	—
Miscarriage		
Ever *v* never	1.11 (1.07 to 1.15)	1.17 (1.07 to 1.29)
1 *v* 0	1.07 (1.04 to 1.10)	1.08 (0.96 to 1.21)
2 *v* 0	1.12 (1.07 to 1.17)	1.26 (1.07 to 1.49)
≥3 *v* 0	1.35 (1.27 to 1.44)	1.82 (1.58 to 2.10)
Stillbirth		
Ever *v* never	1.31 (1.10 to 1.57)	1.07 (1.00 to 1.13)
1 *v* 0	1.32 (1.15 to 1.51)	0.97 (0.91 to 1.03)
≥2 *v* 0	1.29 (0.84 to 1.98)	1.26 (1.15 to 1.39)

Data are hazard ratios (95% confidence intervals).