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Bipartisan-cited science is rare, unevenly distributed, and disproportionately influential

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This study offers a systematic analysis of scientific papers cited in both Republican and Democratic policy documents. Using data from Overton and Dimensions, we examine congressional reports, hearings, and think tank publications. We find that bipartisan citations, while rare, highlight papers of exceptional scientific influence. Policy documents citing these papers also receive more citations, amplifying their policy impact. Yet, bipartisan-cited science is unevenly distributed—concentrated in monetary policy and healthcare, but notably absent in climate, inequality, and race and gender. These results show that bipartisan engagement, though limited, marks a uniquely influential core of science in both research and policy.

bipartisan citations | science and policymaking | political polarization | science of science

Although science is commonly viewed as essential for effective policymaking (1), Democratic and Republican policymakers often rely on different scientific sources even when addressing the same issues (2). Amid rising political polarization (3, 4), this disparity raises a critical question for both science and society: What forms of scientific knowledge are jointly engaged by policymakers across the partisan divide, in which contexts, and with what impact?

Prior work shows Democrats and Republicans rarely cite the same science (2). Here, we take a complementary perspective, studying the small but important set of papers cited by both parties. Tracking citations across congressional committee documents and think tanks, we find a strikingly influential core of bipartisan-cited science—papers that are highly impactful in academia and are associated with greater policy influence for policy documents that cite them.

Understanding this core of bipartisan-cited science may reveal how science upholds trust, fosters cooperation, and shapes policy across ideological lines (5). Amid growing political scrutiny, such understanding is urgently needed. Our analysis is descriptive: We document the structure, characteristics, and policy correlates of bipartisan citation without making claims about the causal mechanisms that generate such overlap.

Results

We find that bipartisan-cited science represents a small core that is markedly influential across scientific and policy spheres. Only 6.70% of papers show bipartisan use, less than the 14.08% expected under a permutation-based null model in which partisanship plays no role in citation patterns—and similarly below expectation among both congressional (14.88% vs. 20.82%) and think tank citations (7.43% vs. 15.60%).* While the use of science in policy has grown substantially over this time period, the degree of bipartisan engagement with the scientific literature in policy has remained low (2). Yet as we show next, this small core of bipartisan-cited science is especially impactful across three key dimensions.

First, we examine the scientific impact of bipartisan-cited papers (Fig. 1). For each outcome, we report differences in both the full sample (solid markers) and a matched sample (hollow markers). The matched sample pairs bipartisan- and partisan-cited papers using SPECTER embeddings (6) (*Materials and Methods*), a method that represents papers as high-dimensional vectors based on their abstracts and citation patterns, and locates topically similar papers near one another, allowing for comparison of papers with nearly identical content. Bipartisan-cited papers are substantially more likely to be hit papers (top 5% of citations in their field and year) than partisan-cited counterparts (Fig. 1*A*), a pattern confirmed by field citation ratios (FCR; Fig. 1*B*). Bipartisan-cited papers average an FCR of 63 versus ~35 for single-party papers, consistent with recent work showing the resilience of high-quality science in policy (6). They also receive more media attention (Fig. 1*C*) (7), are less likely to be preprints (Fig. 1*D*), and tend to be older (Fig. 1*E*), consistent with bipartisan uptake occurring after evidence has accumulated. If bipartisan citation simply reflected shared concern about particular issues, these differences should largely vanish once papers are matched on semantic content; instead,

*The combined bipartisan share is lower because papers cited by both sources are disproportionately bipartisan; once de-duplicated, partisan-only papers dominate.

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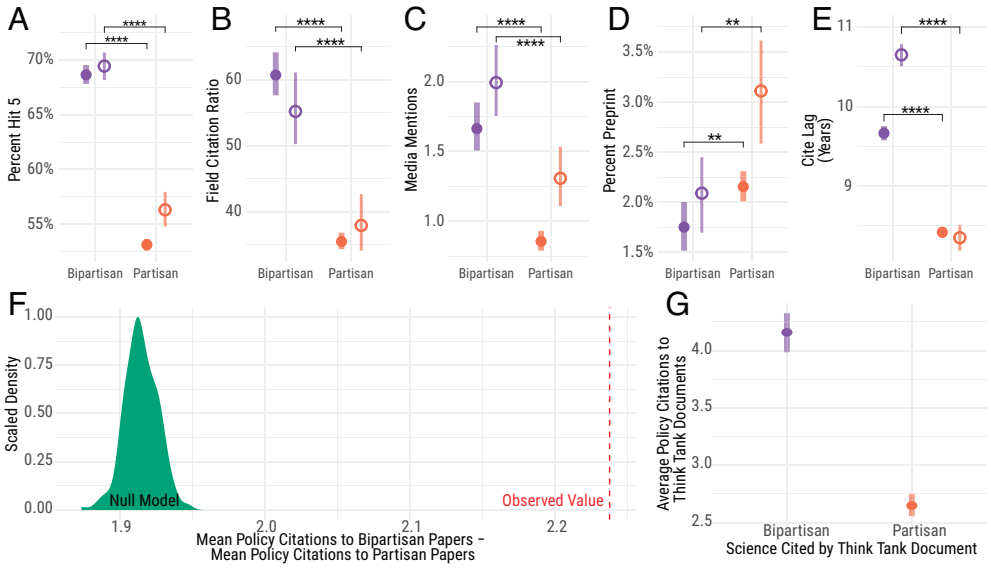

Fig. 1. (*A*–*E*) Differences in hit-paper probability, field citation ratio, media mentions, share of preprints, and time to policy citation (years) for papers with ≥2 policy citations, by bipartisan vs. single-party citation, with 95% bootstrapped CIs. Stars mark significance (two-tailed *t* tests). Solid markers indicate comparisons within the full sample, hollow markers indicate comparisons within a matched sample of semantically similar papers. (*F*) Average policy citation premium of bipartisan vs. partisan papers relative to a permuted null. (*G*) Average citations of think tank documents citing bipartisan vs. partisan science.

they remain substantial, indicating that topical differences alone do not account for the patterns we document.

Second, pooling congressional and think tank citations, bipartisan-cited papers receive more policy citations than expected under a permutation-based null model that preserves citation volume but removes partisan structure (Fig. 1*F*).

Finally, think tank documents citing bipartisan science receive substantially more downstream policy citations than those citing only partisan science (Fig. 1*G*, 4.16 vs. 2.64, t = 14.71, $P < 0.0001$). This holds in poisson QMLE regressions controlling for citation volume, with think tank, publication year, document type, and policy topic fixed effects. We observe bipartisan-citing documents receiving 36.9% more policy citations (β = 0.314, SE = 0.027). The effect is stronger among right-of-center think tanks (65.0% more; β = 0.501, SE = 0.053) than left-of-center ones (25.6%; β = 0.228, SE = 0.031).

These results raise a natural next question: Is bipartisan-cited science spread evenly across the scientific landscape? To examine this, we project all policy-cited papers into a high-dimensional space using SPECTER embeddings (8) and visualize them in two dimensions using t-SNE (9). We uncover a strikingly uneven distribution—concentrated in some areas while conspicuously absent in others (Fig. 2*A*). For example, bipartisan citation is dense in areas such as Economics, Markets, and Regulation; Taxation, Fiscal Policy, and Public Finance; U.S. Healthcare Costs, Insurance, and Policy; and Drug Pricing and Pharmaceutical Policy, but sparse in areas like Global Development and Environmental Governance or Gender, Family, Race, and Social Inequality (Fig. 2*A*).

Comparing observed to expected rates under a null model (Fig. 2 *B* and *C*), bipartisan citation is consistently below expectation across both scientific fields and policy topics. Fields like energy, pharmacology, and economics show roughly half the expected rate, while computer science and the humanities exhibit only 20–25% (Fig. 2*B*). Policy documents show similar variation (Fig. 2*C*): Economy, labor, and education topics cite more bipartisan science than sports, arts, and religion. Overall, bipartisan citation varies substantially across scientific and policy domains.

Discussion

Our findings reveal both promising connections and stark divides in how evidence crosses partisan lines. Bipartisan-cited papers form a small but influential core of high-impact research repeatedly invoked by policymakers. While bipartisan-cited papers are the most scientifically prominent, papers cited by only one party are also more highly cited than average, suggesting that scientific prominence may be necessary but not sufficient for bipartisan recognition. Bipartisan-cited science may thus represent more than what scientists value—it may mark a shared evidentiary foundation in an otherwise divided policy landscape.

Think tank documents citing bipartisan science receive substantially more policy citations, even after accounting for document characteristics and citation patterns. This suggests a virtuous cycle: Engaging with research that resonates across partisan lines is associated with greater credibility and reach, potentially providing incentives for policymakers to draw on such work.

The uneven topical distribution of bipartisan-cited science reveals clear limits, however. Engagement concentrates in areas related to markets, public finance, and healthcare, but is notably sparse in areas related to environmental governance, social inequality, and race and gender. Yet these asymmetries also mark domains where bipartisan engagement with science remains possible and could be strategically cultivated.

Our results are correlational and do not establish causality regarding either the production of bipartisan-cited science or its effects on policy outcomes. Moreover, while we focus on citation patterns, the same papers may be interpreted differently across partisan contexts or mobilized for distinct rhetorical or strategic purposes depending on partisan positioning. Future work should examine how bipartisan-cited science is framed and mobilized in debate, and whether rhetorical differences shape or limit its effectiveness as a shared evidentiary base.

Whereas much research highlights partisan divergence in the use of science (2, 6), our findings illuminate the contours of bipartisan engagement through citation. Though bridging divides remains challenging, bipartisan-cited papers stand out as extraordinarily influential in both science and policy. This work illustrates the kinds of scientific outputs that, empirically, receive attention across partisan contexts. Understanding what makes these papers resonate—whether evidentiary strength, maturity, or policy relevance—could inform future research on how scientific work attains cross-partisan visibility. Bipartisan-cited science thus highlights both the limits of science in bridging polarization and its potential to provide a shared evidentiary foundation for addressing pressing challenges.

Materials and Methods

We draw on the Overton database of policy documents, selecting congressional committee reports and hearings from the 104th through 116th Congresses and publications from 121 US-based ideological think tanks, totaling 424,199

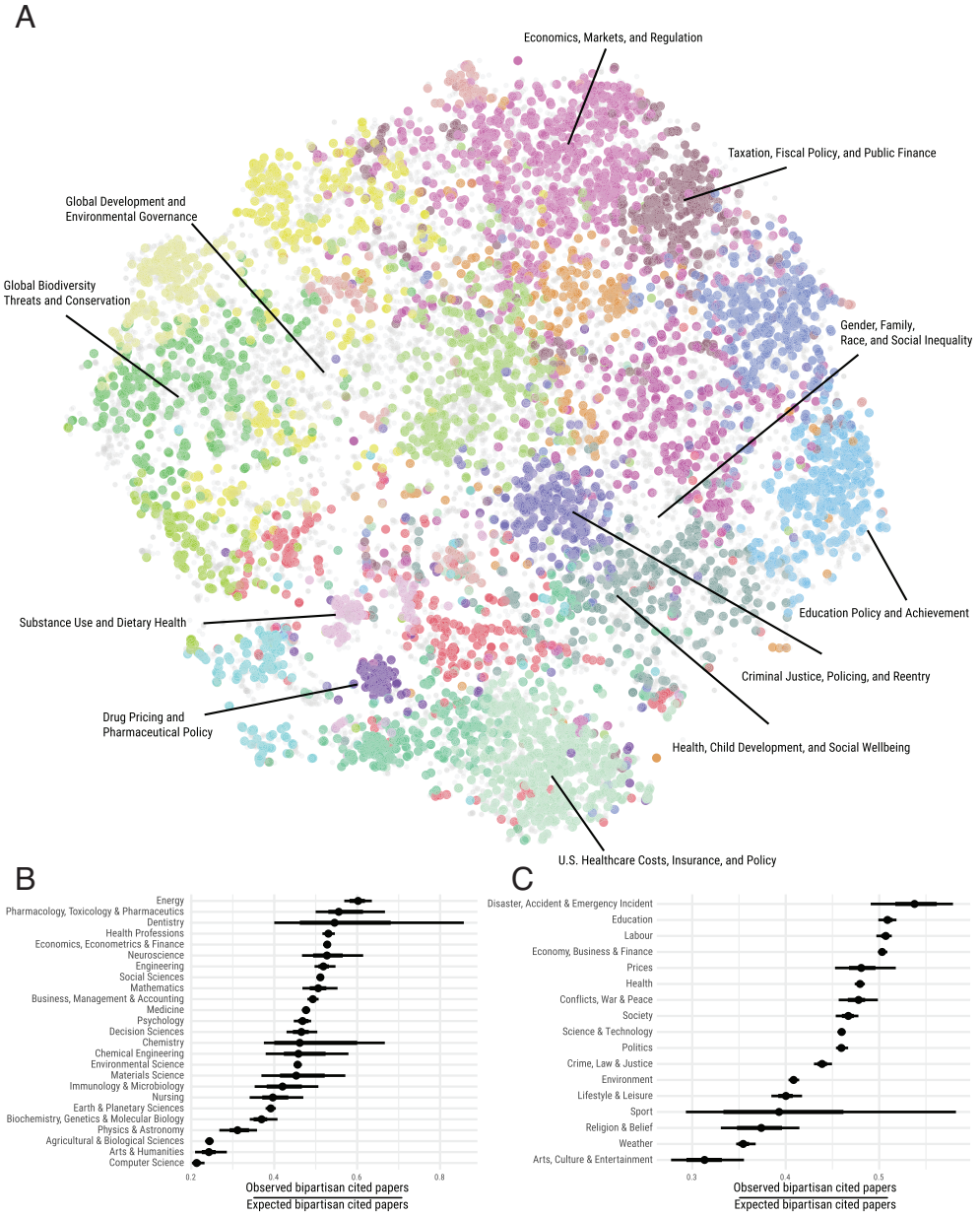

Fig. 2. (*A*) t-SNE of SPECTER embeddings for all science cited in congressional or think tank documents. Gray = single-party citations; colored = bipartisan. Colors show clusters, with each bipartisan-cited paper assigned to one. (*B*) Ratio of observed to expected bipartisan citations from a permuted null (preserving paper and party distributions) by field of research. Thick lines = IQR; thin = 95% CI. Ratios <1 indicate fewer, >1 indicate more than expected. (*C*) Ratio of observed to expected bipartisan citations from a permuted null (preserving paper and party distributions) by policy document topic. Thick lines = IQR; thin = 95% CI. Ratios <1 indicate fewer, >1 indicate more than expected.

references to 191,244 unique papers. Scientific references are linked to the Dimensions database using DOI information, achieving match rates of 94.6% for congressional and 90.5% for think tank citations. Think tank ideology is coded following Furnas et al. (2), and congressional committee partisanship is assigned according to chamber majority; papers are classified as bipartisan if cited by both left- and right-of-center sources, among papers receiving at least two policy citations. To assess whether observed differences between bipartisan- and partisan-cited papers reflect topical differences rather than citation patterns, we construct a matched sample using SPECTER embeddings (8), pairing each bipartisan-cited paper to its nearest semantic neighbor among partisan-cited papers. We use permutation tests, in which we randomize partisan labels while preserving citation volume, to estimate how much bipartisan citation departs from chance expectations, both overall and within scientific fields and policy topic strata. See the *SI Appendix* for more details and the replication data and code (10).

Data, Materials, and Software Availability. Data and code have been deposited in Harvard Dataverse repository (10).

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