

Affective polarization across states and time: A Bayesian analysis of ANES surveys, 1964 - 2024

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Affective polarization refers to the tendency to evaluate one's own political party positively and the opposing party negatively. This project examines how affective polarization varies across states, demographic groups, and election cycles using American National Election Studies data from 1964 through 2024. I measure affective polarization as the difference between respondents' feeling-thermometer ratings of their own and opposing parties. I address missing data through multiple imputation and estimate a Bayesian multilevel model with demographic, state, and year effects. The results indicate that affective polarization has generally increased in recent election cycles. Demographic relationships also changed substantially across decades. Older respondents consistently exhibited greater polarization than younger respondents, with the difference increasing sharply during the 2020s. The racial pattern changed most dramatically. White respondents were substantially less polarized than non-White respondents in earlier decades, but this gap narrowed over time and reversed during the 2020s, when White respondents became more polarized. Differences by party, education, gender, and income also varied over time. These findings demonstrate that national increases in affective polarization have not occurred uniformly across demographic groups.

Speaking to the audience: Mode of address as a partisan signal in U.S. political podcasts

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Political podcasts are a major but rarely studied news source. We investigate how hosts differ in the way they speak to listeners across the political spectrum. From transcripts of 204 U.S. political podcasts (2018–2026), we measure two registers using published dictionaries and syntactic parsing: hostility and listener-directed address (the second-person instruction aimed at the audience). Partisanship is validated against hosts' campaign contributions and listeners' reported party. Linking the corpus to two national surveys ($n \approx 18,800$, $n \approx 9,000$), we find that conservatives and liberals differ not in hostility but in listener-directed address ($d = 0.78$), a stable trait of each show. Podcast listeners are 0.22 SD more cynical about institutions than other news consumers, in both parties and at every education level. Within political podcasts, listener-directed address predicts a less educated audience (-0.27 SD per SD, income held constant) and, exploratorily, listeners who distrust elections and institutions ($+0.27$ and $+0.22$ SD per SD). Thus, podcasting sorts listeners by how hosts speak, not only what they argue. Because address style is measurable at scale and stable within shows, we show that political register offers a tractable place to study how media environments and institutional distrust are linked.

Depressive symptoms and momentary mood relate to decision-making under uncertainty

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Everyday decisions shape important outcomes in people's lives, making it important to understand why people choose as they do. Depression affects how people evaluate potential risks and rewards, but it remains unclear whether decision-making is shaped primarily by stable symptoms or by changes in momentary mood. To examine these relationships, we replicated and extended previous analyses using a longitudinal dataset from 481 depressed patients across 4,554 eligible task sessions. In each session, participants repeatedly chose between a certain option and a gamble. Some gambles involved only possible rewards, whereas others included possible gains and losses. Participants generally preferred certainty and weighted potential losses more heavily than equivalent gains, leading them to gamble less when they stood to lose something. A broad depression component was associated with less risk-taking in trials that included possible gains and losses and with greater loss aversion, meaning that participants behaved as though potential losses were larger than equivalent gains.

A second component, characterized by greater anxiety and lower anhedonia, was associated with greater risk aversion. The influence of symptoms on behavior appeared to be trait-level, as session-to-session changes in mental health and emotion did not reliably predict changes in gambling within the same person. However, higher-than-usual happiness immediately before a choice was associated with more gambling when only gains were possible. Overall, these findings suggest that stable symptom differences and immediate emotional states may relate to distinct aspects of decision-making under uncertainty.

Vertices of the convex polytope consisting of all monotonic stochastic choice functions

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In economics, empirical data on individual or aggregate choice behavior frequently takes the form of stochastic choice data. Market share data, for instance, records the fraction of a population selecting each alternative from a given menu. Define a *stochastic choice function*, from the power set 2^X of the set of alternatives X to $\mathbb{R}$, to be one that, for each menu $S \subseteq X$, assigns a non-negative probability to each element in S with total probability 1 for that subset. The convex polytope consisting of all linear combinations of *linear orders*, precisely defines the random utility models (RUM) -- the functions which satisfy the property that their Block-Marschak polynomials are nonnegative. If we consider *monotonicity*, the property that adding an alternative into the menu does not increase the probabilities of the other alternatives, then all monotonic choice functions form another convex polytope. We compute this convex polytope for small values of $|X|$, and suggest models to characterize some or all of its vertices. Eventually, we completely characterize the subset of vertices that have Stochastic Sequential Criteria (SSC) representations, and compute the number of such vertices for each number of total alternatives. Efficiently characterizing the monotonic choice functions will simplify future work in behavioral economics by limiting the space of studied choice functions to only the relevant ones.

Why do buyers discount flood-resistant homes? A housing choice experiment

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Mentor: Hannah Druckenmiller

Home elevation is among the most effective physical adaptations for reducing flood damage, yet elevated homes sell at a discount. This project uses a survey choice experiment to investigate how prospective home buyers evaluate residential properties with flood-resistant construction. We recruit U.S. adults aged 25 or older who purchased or seriously considered purchasing a home in the past five years. Participants complete six choice tasks, each presenting a pair of hypothetical home listings in which visible elevation is varied through listing photographs, alongside information on monthly flood insurance premiums and other standard housing attributes. Primary outcomes are the home selected from each pair and a 0–100 desirability rating for each home. We test whether visible elevation reduces the probability that a home is selected and lowers its rating, and whether these effects vary with household mobility limitations, prior flood damage experience, and risk aversion. The findings will clarify the role of nonfinancial concerns, including appearance and accessibility, in explaining why buyers discount elevated homes despite their flood-protection benefits.

Evaluation and analysis of the classroom experience of the Digital Kenyan Grade 10 CBC digital textbook

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INNODEMS, a Kenyan educational technology organization, has piloted an open-access digital mathematics textbook to support Kenya's newly introduced Competency-Based Curriculum. This project investigates how the textbook is used, which topics are most difficult for students, and how correctly they are actually answering questions, drawing on six months of server access logs together with structured interviews with teachers and students. Because the logs alone could not show whether an answer was correct, a difficulty proxy built from retry counts was checked directly against real scores recovered from the grading system, and found to be weak and, once contamination in the data was accounted for, actively misleading. The structured interviews proved far more trustworthy:

every topic teachers and students independently named as difficult was confirmed, or at minimum never contradicted, by this real correctness data, with reflections on geometric figures emerging as the single hardest topic in the curriculum across every method applied. This project's central conclusion is that qualitative accounts from teachers and students are a more reliable foundation for identifying difficulty than automatically logged usage data alone, and the analysis pipeline and recommendations this work produced - shared with the STACK development team and with INNODEMS - are intended to give INNODEMS an evidence-based basis for revising this textbook's content and to be reused across INNODEMS' other digital textbooks and future STACK-based deployments more broadly.