

Reporting Summary

Nature Portfolio wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Portfolio policies, see our [Editorial Policies](#) and the [Editorial Policy Checklist](#).

Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

- | | |
|-------------------------------------|--|
| n/a | Confirmed |
| ☐ | ☒ The exact sample size (<i>n</i>) for each experimental group/condition, given as a discrete number and unit of measurement |
| ☐ | ☒ A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly |
| ☐ | ☒ The statistical test(s) used AND whether they are one- or two-sided
<i>Only common tests should be described solely by name; describe more complex techniques in the Methods section.</i> |
| ☐ | ☒ A description of all covariates tested |
| ☐ | ☒ A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons |
| ☐ | ☒ A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals) |
| ☐ | ☒ For null hypothesis testing, the test statistic (e.g. <i>F</i> , <i>t</i> , <i>r</i>) with confidence intervals, effect sizes, degrees of freedom and <i>P</i> value noted
<i>Give P values as exact values whenever suitable.</i> |
| ☒ | ☐ For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings |
| ☐ | ☒ For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes |
| ☐ | ☒ Estimates of effect sizes (e.g. Cohen's <i>d</i> , Pearson's <i>r</i>), indicating how they were calculated |

Our web collection on [statistics for biologists](#) contains articles on many of the points above.

Software and code

Policy information about [availability of computer code](#)

Data collection	Researchers analyzed a social science dataset available to academic researchers, labeled "Facebook URLs dataset", created and granted access by Social Science One in collaboration with Facebook (Meta). Researchers were not involved in the data collection process, and were only allowed to access the dataset and performed analysis with a portion of the dataset relevant to their research questions of interest. Thus, no software was used for data collection, but we used Python (version 3.10.11) for data retrieval.
Data analysis	As grantees with an accepted proposal, we were allowed special access to a JupyterHub system that provides an interface to query the data. Information to obtain authentication and access to JupyterHub, as well as resources for data analysis, were communicated through an invite-only GitHub organization (https://github.com/fb-researchtool-ss1). All data were retrieved, prepared, and analyzed using Python (version 3.10.11) with the following packages: NLTK (version 3.8.1) and scikit-learn (version 1.2.2). Example of major Python codes used for data retrieval, preparation, and analysis are included in supplementary materials as readme files.

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Portfolio [guidelines for submitting code & software](#) for further information.

Data

Policy information about [availability of data](#)

All manuscripts must include a [data availability statement](#). This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A description of any restrictions on data availability
- For clinical datasets or third party data, please ensure that the statement adheres to our [policy](#)

Access to Facebook data was granted via Social Science One, with all researchers in need of access to Facebook data signing a Research Data Agreement between Facebook, Inc. and the Grantee institution (Pennsylvania State University). Details about these data, including the codebook, can be found at the Social Science One Dataverse repository: <https://socialscience.one/facebook-dataverse>. Detailed information about the codes we used for data retrieval are included the Code Availability statement in our manuscript.

Research involving human participants, their data, or biological material

Policy information about studies with [human participants or human data](#). See also policy information about [sex, gender \(identity/presentation\), and sexual orientation](#) and [race, ethnicity and racism](#).

Reporting on sex and gender	The study does not include any findings or analysis related to sex and gender.
Reporting on race, ethnicity, or other socially relevant groupings	The only socially relevant categorization variable used in this study is the political affinity of users. However, the unit of data was based on the social media content (e.g., URLs or domains) and available in aggregate form, not at the level of individual users. In other words, the size of political affinity group was categorized for each content. For instance, the number of shares for each URL was classifiable based on 5 different political user groups (ranging from liberal = -2 to conservative = +2), which was calculated and readily available by the dataset offered by Social Science One in collaboration with Facebook.
Population characteristics	See above
Recruitment	There is no recruitment of human participants involved in this study.
Ethics oversight	This research was approved by Pennsylvania State University's Institutional Review Board (IRB).

Note that full information on the approval of the study protocol must also be provided in the manuscript.

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☐ Life sciences ☒ Behavioural & social sciences ☐ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see nature.com/documents/nr-reporting-summary-flat.pdf

Behavioural & social sciences study design

All studies must disclose on these points even when the disclosure is negative.

Study description	The study conducted quantitative analysis of "shares without clicks" for all URLs publicly shared on Facebook between 2017 and 2020.
Research sample	Our unit of analysis is URL, not individuals. The study analyzed 4,523 top-shared domains aggregated from the URL-level data across the 4-year period. URL data from a politically relevant timeframe in 2018 from May to November (i.e., the 2018 midterm election season) as well as in 2020 from May to November (i.e., the 2020 presidential election season) were also analyzed. To offer comparison points, data from May to November for 2017 and 2019 were added. As a result, the study extracted users' behavioral data pertaining to about 35 million URLs over four years (4,195,082 URLs from 2017, 7,068,001 URLs from 2018, 10,503,165 URLs from 2019, and 13,480,583 URLs from 2020). Since this dataset is not structured at the individual user-level (vs. URL or domain content-level), we cannot offer demographic information or distributions at the user level. As indicated in the manuscript, the dataset "includes demographics of individuals who viewed, shared, and otherwise interacted with web pages (URLs) shared on Facebook starting January 1, 2017, and up to and including October 31, 2022, which covers about 68 million URLs shared as an original post or reshared with "public" privacy settings more than 100 times." We selected certain time frames as explained above to extract URL-level data, appropriate to answer our research questions for different years.
Sampling strategy	The sampling strategy of the dataset we accessed for our study is to include all URLs shared on Facebook starting January 1, 2017, and up to and including October 31, 2022, which covers about 68 million URLs shared as an original post or reshared with "public" privacy settings more than 100 times. We were not involved in the data collection process, We selected and filtered out URLs, data points and variables relevant to their research questions, from the readily available data frames offered by Social Science One in collaboration with Facebook. Because of no association with data collection, we cannot confirm the data sampling procedure. In

	addition, no sample size calculation was performed, and sample sizes (of URLs or domains) were chosen based on political relevance (e.g., the 2018 midterm election season) or data size requirements to reduce noise (e.g., 4,523 top-shared domains).
Data collection	Researchers were not involved in the data collection process. Instead, they analyzed a portion of dataset, offered by Social Science One in collaboration with Facebook, associated with their research questions of interest. This study was not an experiment, thus blinding procedures are not applicable.
Timing	The dataset used by the researchers, namely Facebook URLs dataset, was released in February 2020, pertaining to approximately 38 million URLs publicly shared over 100 times globally between January 2017 and July 2019, and has been extended to incorporate more recent user behaviors over the years. This study's analysis covers data collected over 4 years, from 2017 to 2020. We started data extraction and analysis during September 2020 and as noted in our manuscript: "All analyses reported in this article were confirmed and finalized in September 2024, after seeking and obtaining assurance from Meta that there have been no changes or updates made after October 2022 to the URL Shares dataset, which is currently in maintenance mode."
Data exclusions	Domains or URLs that did not meet the size requirement of acceptable shares to have statistical confidence over the calculated content affinity scores were excluded. For major analyses, domains or URLs having weighted affinity below -2 and above 2 were also excluded. Other exceptional exclusions such as outliers (e.g., domain missing all political affinity group information, domain with extremely high shares without clicking) are also explained within the main manuscript.
Non-participation	This study does not involve participant recruitment. Data are based on social media content (e.g., URLs or domains), not individual users.
Randomization	This study does not follow an experimental design, thus does not require randomization of participant allocation to different conditions. Controls or covariates are not applicable to our analyses either because we are dealing with content data, not people data, in an effort to detect (count) the nature of content that is shared most often without clicking.

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems		Methods	
n/a	Involved in the study	n/a	Involved in the study
☒	☐ Antibodies	☒	☐ ChIP-seq
☒	☐ Eukaryotic cell lines	☒	☐ Flow cytometry
☒	☐ Palaeontology and archaeology	☒	☐ MRI-based neuroimaging
☒	☐ Animals and other organisms		
☒	☐ Clinical data		
☒	☐ Dual use research of concern		
☒	☐ Plants		

Plants

Seed stocks	n/a
Novel plant genotypes	n/a
Authentication	n/a