



STUDYING

NEWS MEDIA DIETS

Using Linking Data

Dr Sílvia Majó-Vázquez

Assistant Professor in Political Communication



METERED DATA, BROWSING TRACKING DATA, OBSERVATIONAL DATA, BEHAVIOURAL DATA

Third-party online tracking panels

Browsing Tracking Data Collection

Data Donations

Screenshot data collection



Survey Data



METERED DATA, BROWSING TRACKING DATA, OBSERVATIONAL DATA, BEHAVIOURAL DATA

- Third-party online tracking panels:

- Individual behavioural data



Survey Data

- Aggregated behavioural data

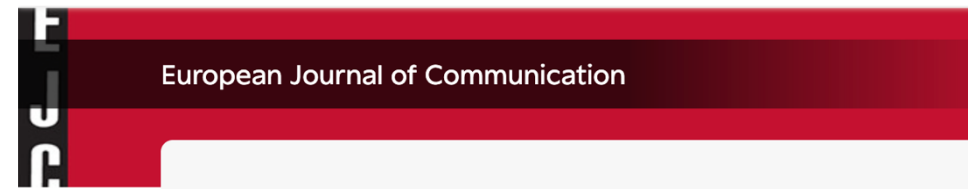
Research Goal: Understanding News Media Diets

EFFECTS OF THE NATURE OF MAJOR EVENTS ON EXPOSURE DIVERSITY

Main Findings

Under normal conditions, **people tended to engage in extensive cross-partisan media consumption**, although they still spent more time in congenial partisan media.

However, **as news consumption increased**, amid both political and non—political events **users tended to become more polarized**.




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<https://doi.org/10.1177/0267323119844409>



Full Length Article

Echo-chambers in online news consumption: Evidence from survey and navigation data in Spain

Ana S Cardenal ¹, Carlos Aguilar-Paredes, Camilo Cristancho², and Sílvia Majó-Vázquez³

Abstract

Whether people live in echo-chambers when they consume political information online has been the subject of much academic and public debate. This article contributes to this debate combining survey and web-tracking online data from Spain, a country known for its high political parallelism. We find that users spend more time in outlets of their political leanings but, generally, they engage in considerable cross-partisan media exposure, especially those in the left. In addition, we use a quasi experiment to test how major news events affect regular patterns of news consumption, and particularly, selective exposure. We find that the nature of news explains changes in users' overall consumption behaviour, but this has less to do with the type of event than with the interest it arouses. More importantly, we find that users become more polarized along party lines as the level of news consumption and interest for news increases.

EFFECTS OF THE NATURE OF MAJOR EVENTS ON EXPOSURE DIVERSITY

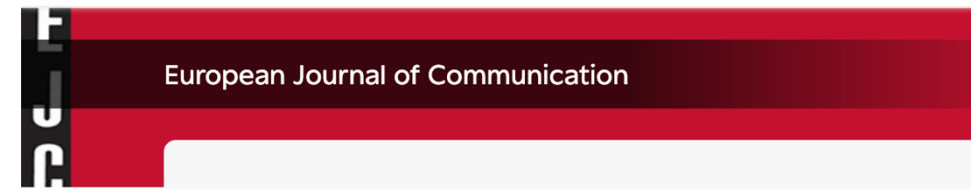
Main Challenges and Limitations

- Only 4% of sites visited pointed to news sites, equivalent to 3,7% of total time tracked.
- Analysis at the domain level
- Only desktops tracked. Data from 2015, when desktop was still by slim margin most used for news (DNR, 2015).
- Sample characteristics

General population vs Our Sample

Variables	mean	sd	min	max
CIS				
Age	46.3	17.2	18	92
Education	2.7	0.9	1	4
Political interest	2.3	0.9	1	4
Ideology*	4.4	2.1	0	10
Sample				
Age	36.1	13.7	18	74
Education	3.5	0.6	1	4
Political interest	2.8	0.8	1	4
Ideology	4.0	2.1	0	10

*Original values in this variable have been rescaled to make them comparable with our sample




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EFFECTS OF 'DOORS TO NEWS' ON DEMOCRATIC CITIZENSHIP

Main Findings

When Facebook was a **relevant news referral**, people were **less likely to mention the top MIPs** mentioned by the Spanish general population.

Facebook news consumers' MIPs **were more diverse**.

Facebook news consumers were **more likely to mention niche problems of public relevance** such as increasing spending in R&D

International Journal of Public Opinion Research

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JOURNAL ARTICLE

Is Facebook Eroding the Public Agenda? Evidence From Survey and Web-Tracking Data [Get access >](#)

Ana S Cardenal, Carol Galais ✉, Silvia Majó-Vázquez

International Journal of Public Opinion Research, Volume 31, Issue 4, Winter 2019, Pages 589–608, <https://doi.org/10.1093/ijpor/edy025>

Published: 15 December 2018

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Abstract

Preserving a common public agenda positively affects social integration, minimizing social cleavages and polarization. Although social media are known for fragmenting the media environment, research has not devoted much attention to their effect on the public agenda. This article addresses whether consuming news through Facebook shapes individual agendas that diverge from the set of most important problems (MIPs) as perceived by the general public. Our research design combines survey and Web-tracking data to analyze how Facebook-referred news consumption influences individual consumers' agendas. We find that when Facebook is a relevant news referral, people are less likely to mention the top MIPs for a representative sample of the Spanish population. We discuss the implications of our findings for the public agenda.

Issue Section: [Articles](#)

EFFECTS OF 'DOORS TO NEWS' ON DEMOCRATIC CITIZENSHIP

Main Challenges and Limitations

- **Door to news is proxied** via the preceding visit.
- **Offline news consumption** is reported and **not observed**
- **Content** accessed on social media platforms is not accessed
- Only 4% of sites visited are to news sites, equivalent to 3,7% of total time tracked.
- Analysis at the domain level
- Only desktops tracked. Data from 2015, when desktop was still by slim margin most used for news (DNR, 2015).
- Sample characteristics

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Abstract

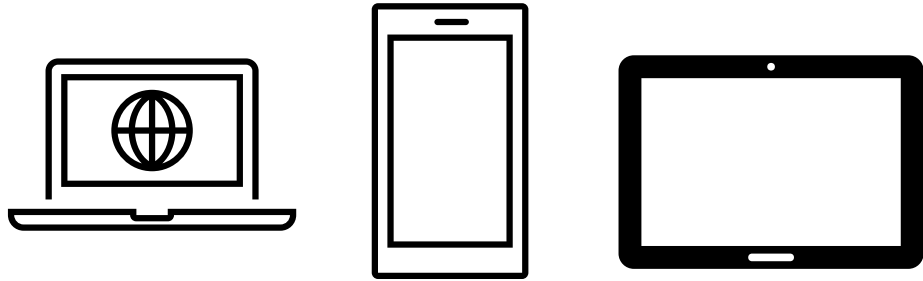
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Issue Section: [Articles](#)



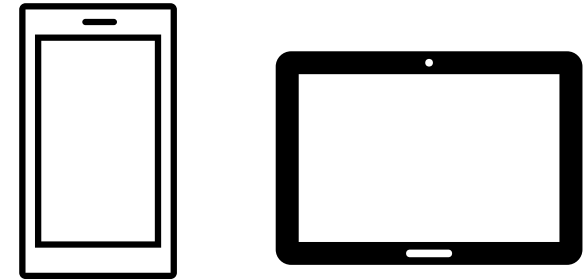
Credit: "Dies que són història", Xavier Bertal. Edicions 62

NEW STUDY 2020 – SPAIN AND THE UK



701

individuals

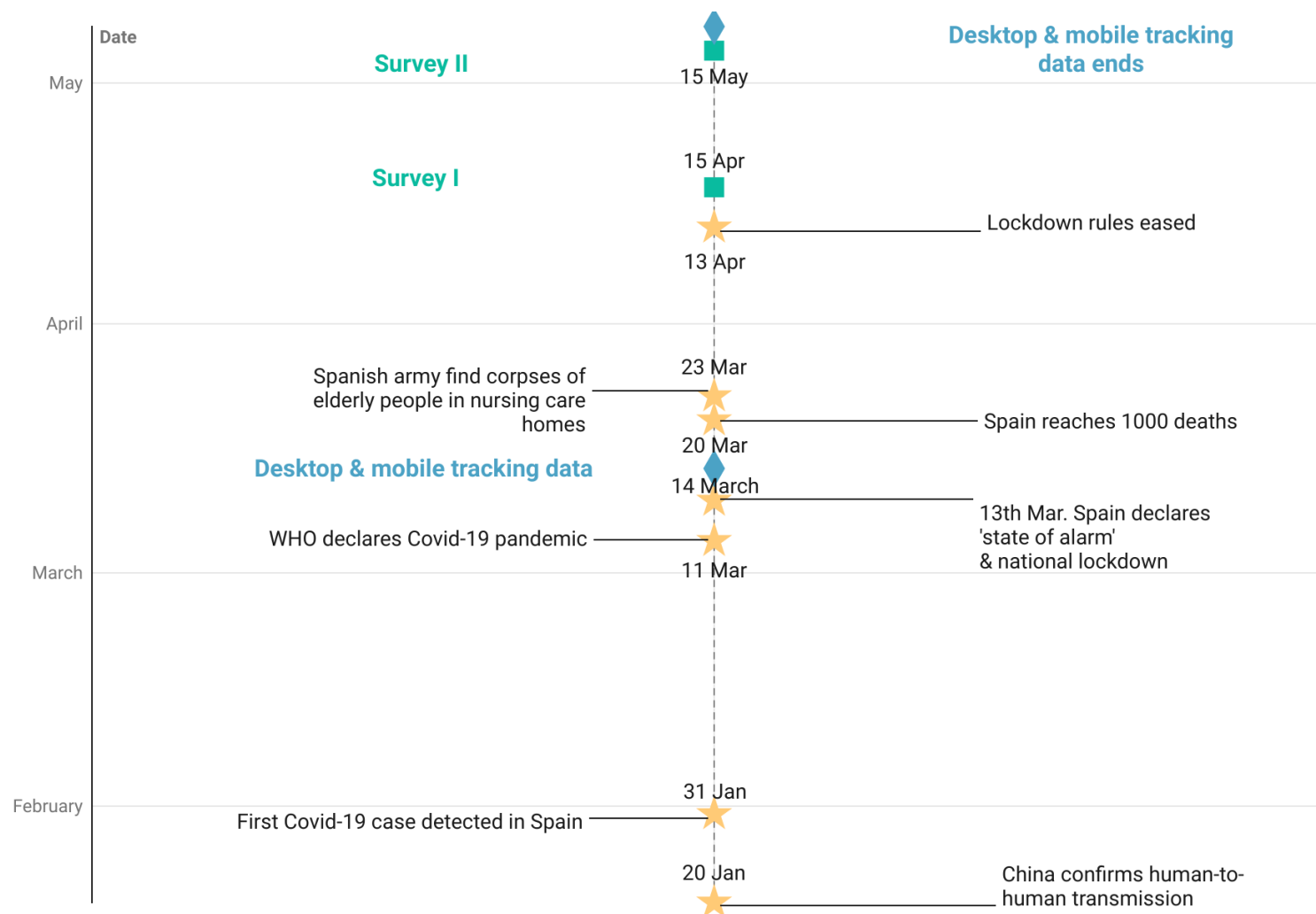


544

individuals



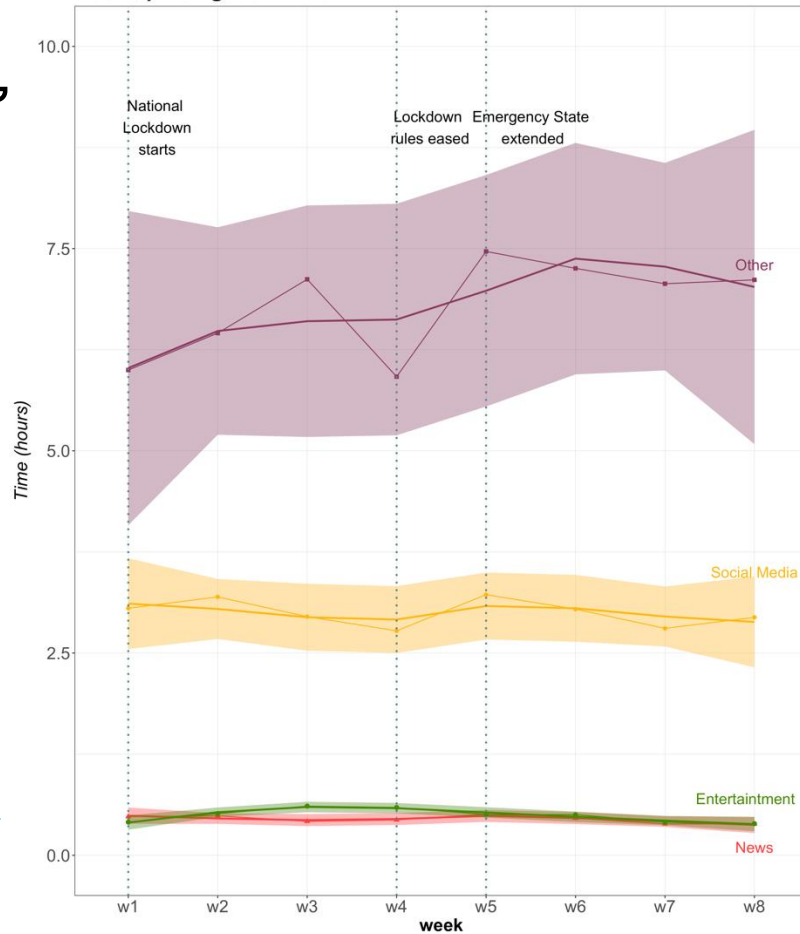
NEW STUDY 2020 – SPAIN AND THE UK



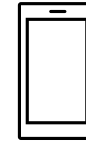
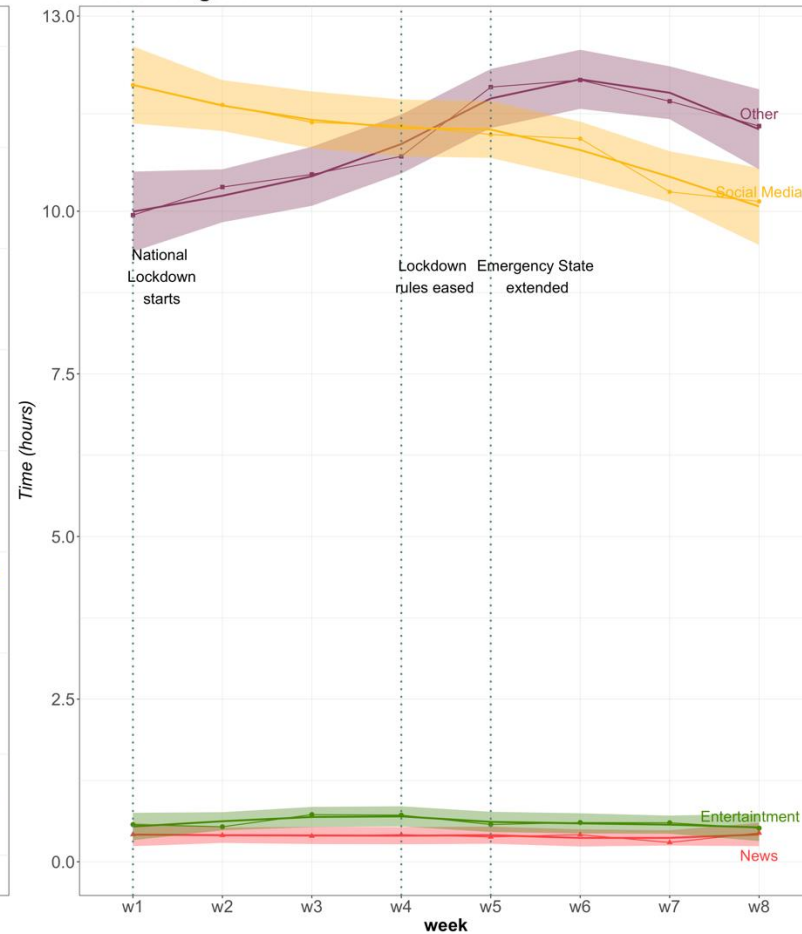
NEW STUDY 2020 – SPAIN AND THE UK



Desktop Navigation Time

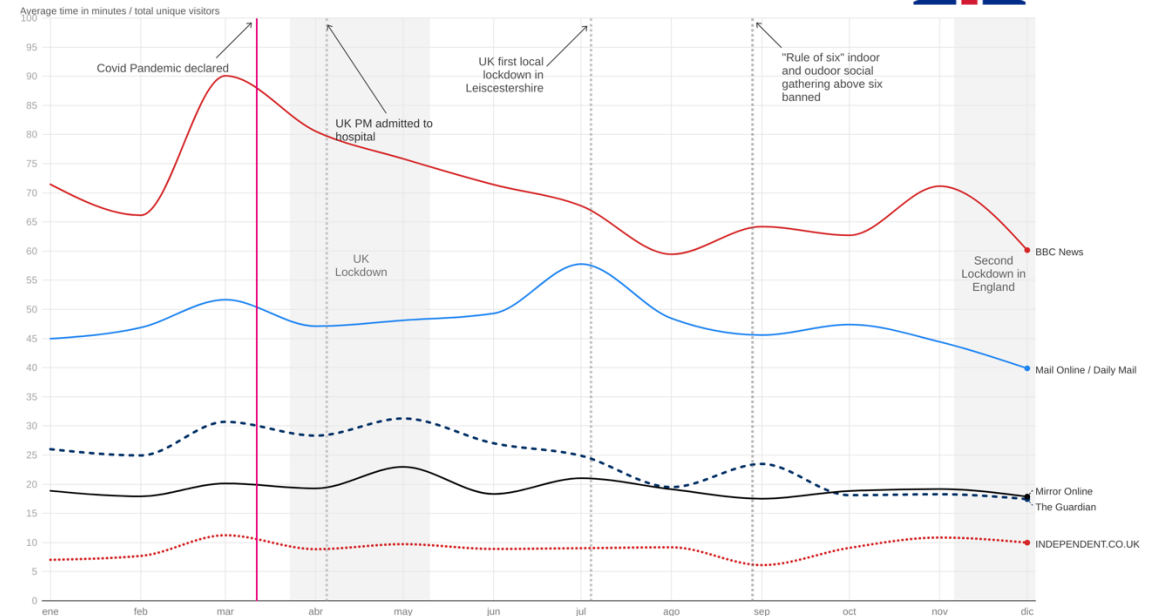
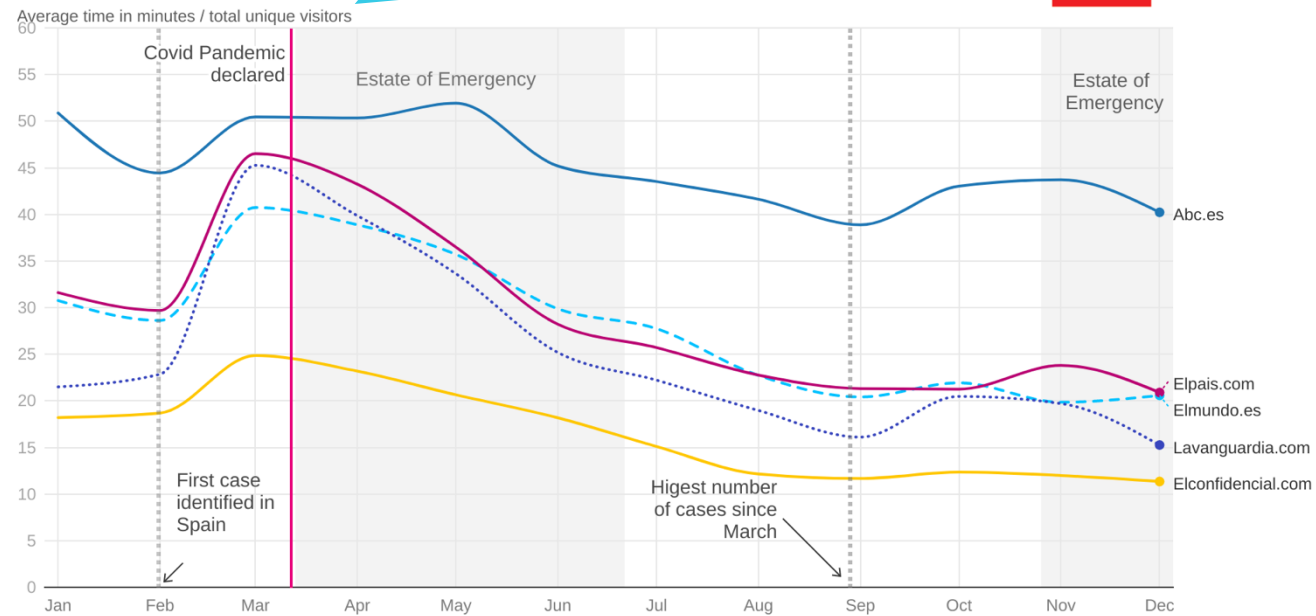


Mobile Navigation Time

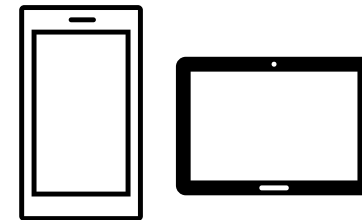
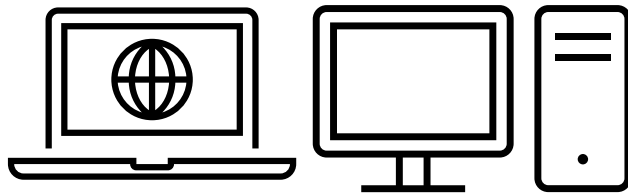


NEW STUDY 2020 – SPAIN AND THE UK

The surge identified during the days previous to the lockdown, promptly lead to an **information fatigue phase**



NEW STUDY 2020 – SPAIN AND THE UK



URLs

% news over
total

URLs

% news over
total

Apps

% news apps
over total

Total
Navigation

1,763,368

341,428

6,816,018

News
Navigation

165,907

9.41%

64,157

18.79%

17,727

0.26%

VALIDATION OF REPORTED MEASURES OF NEWS DIETS





Main Findings

Goal: Assessing the validity of three types of survey questions commonly used in studies for measuring news exposure: **open-ended**, **check-all**, and **forced-choice**.

- **Check-all question is the one performing better, less biased estimates** in terms of accuracy, although differences across conditions are negligible in the UK.
- **Media systems matter for accuracy**, where media fragmentation is high (Spain), accuracy is low, across all questions and the reverse is true.



Assessing the Validity of Survey Measures for News Exposure through Digital Footprints: Evidence from Spain and the UK

Ana S. Cardenal , María Victoria-Mas , Silvia Majó-Vázquez , and Iván Lacasa-Mas 

^aSchool of Law and Political Science, Universitat Oberta de Catalunya, Barcelona, Spain; ^bSchool of Communication, Universitat Internacional de Catalunya, Barcelona, Spain; ^cReuters Institute for the Study of Journalism, University of Oxford, Oxford, UK

ABSTRACT

This paper assesses the performance of three commonly used types of questions – open-ended, check-all and forced choice – for capturing retrospective online news exposure, combining both survey and web-tracking data. It examines the performance of these different survey questions considering both systematic and random error in two unexplored non-US contexts: Spain and the UK. Results show that the check-all question produces on average the most accurate – i.e. less biased – estimates of observed exposure. Some motivational and cognitive factors underlying bias in self-reports are explored. Findings reveal that the characteristics of outlets are associated with systematic error. Finally, we find that media systems matter for accuracy – where media fragmentation is high (Spain), accuracy is low across all questions; where it is low (UK), accuracy is high across all questions. In the final section, we highlight the methodological and theoretical contributions of our study and provide some recommendations.

VALIDATION OF REPORTED MEASURES OF NEWS DIETS

Main Challenges and Limitations

- **Door to news is proxied** via the preceding visit, but here we used url-level data instead of domain-level data.
- The assumption that survey and digital trace data **measure the same underlying construct may not be true.**
- Browsing tracking data cannot be assumed, for all topics, as a **gold standard for evaluating survey measures** (Bosch & Revilla, 2022).
- We didn't have access to **desktop data in the UK**
- **We did not have offline observed news consumption either**
- **Differential sampling bias by device.** Individuals making use of their mobiles for news visits differ from those not using this device on college levels and ideology.



Assessing the Validity of Survey Measures for News Exposure through Digital Footprints: Evidence from Spain and the UK

Ana S. Cardenal ^a, María Victoria-Mas ^b, Silvia Majó-Vázquez ^c, and Iván Lacasa-Mas ^b

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DIMENSIONS OF EXPOSURE DIVERSITY AND DEMOCRATIC CITIZENSHIP OUTCOMES

Main Findings

Goal: How much **exposure diversity** is necessary to serve the ideal of democratic citizenship?

Generally, **accessing more news sources does not increase level of Surveillance Political Knowledge** neither in the UK nor Spain

The use of technological platforms to access news does **increase individual exposure to a wider range of news outlets and articles in each outlet in both countries** and it does increase the exposure to **pro-attitudinal news**.

Yet, in the UK it also increases the exposure to counter-attitudinal information.

Are deliberate forms of exposure diversity realised? Limited effects of source and ideological diversity on surveillance political knowledge

Silvia Majó-Vázquez^{1 †}, Marta Cantijoch², Ana S. Cardenal³,
María Victoria-Mas⁴, Iván Lacasa⁵, Laia Castro⁶

Vrije Universiteit Amsterdam (NL)

University of Manchester (UK)

Universitat Oberta de Catalunya (Spain)

Universitat Abat Oliba (Spain)

Universitat Internacional de Catalunya (Spain)

Universitat de Barcelona (Spain)

August 2024

Abstract

How much exposure diversity is necessary serve the ideal of democratic citizenship? To address this question, we analyse the extent to which *deliberate forms of exposure diversity* are realised in two very different media systems, UK and Spain, and how they affect democratic citizenship. Towards, this end, we firstly measure the effects of modes of exposure, direct, indirect, individual and social, on the diversity of media diets and assess the role of different news distributors and providers. While we acknowledge the multidimensionality of the concept exposure diversity, we focus here on two specific dimensions, namely source and ideological diversity. Then, to test its effects on democratic citizenship, we measure the relationship between various levels exposure diversity and surveillance political knowledge. Surveillance political knowledge is used as a measure to test the extend that diverse modes of exposure diversity prevalent across platforms and countries are serving the ideal of exposing citizens to the minimum knowledge to operate in democracy and hold politicians accountable. We find that the effects of digital platforms on exposure diversity are not consistent either across countries or platforms. The use of technological platforms to access news does increase individual exposure to a wider range of news outlets and articles in each outlet in both countries and it does increase the exposure to pro-attitudinal news. Yet, in the UK it also increases the exposure to counter-attitudinal information. While in Spain the use of messaging app increases

ARE DELIBERATE FORMS OF EXPOSURE DIVERSITY REALISED?

Main Findings

Goal: Do people learn about the political world through online media?

Leveraging URL content to distinguishes between **visits to general news domains and visits to politically or content-specific articles**, identified using machine learning techniques.

Our findings underscore the importance of granularity: time spent on Ukraine-related articles emerges as the strongest predictor of surveillance knowledge

Weights were applied to account for sample differences in age, education, and gender.

They were computed separately for each demographic characteristic and then combined into a single weighting factor

Does online news exposure increase political knowledge? A validity test of exogenous measures of exposure differing in granularity

Ana S. Cardenal¹, Ludovic Terren⁴, David Hopmann², Silvia Majó-Vázquez³, Peter Van Aelst⁴, Alon Zoizner⁵

¹ Universitat Oberta de Catalunya

² University of Southern Denmark

³ Vrije University Amsterdam

⁴ University of Antwerp

⁵ University of Haifa

Abstract

Do people learn about the political world through online media? We address this question by developing various exogenous measures of media exposure, drawing on three months of web-tracking data from five democracies. Our analysis distinguishes between visits to general news domains and visits to politically or content-specific articles, identified using machine learning techniques. We evaluate these measures through multiple approaches, including their ability to predict political knowledge. To deepen our understanding, we analyze knowledge gains during a major, unexpected news event—the Russian invasion of Ukraine in 2022—and using diverse media exposure measures varying in granularity. Our findings underscore the importance of granularity: time spent on Ukraine-related articles emerges as the strongest predictor of surveillance knowledge, while broader measures, such as domain-level visits, show no significant impact when controlling for self-reported exposure and other key predictors. We conclude by discussing the substantive and methodological implications of these results.

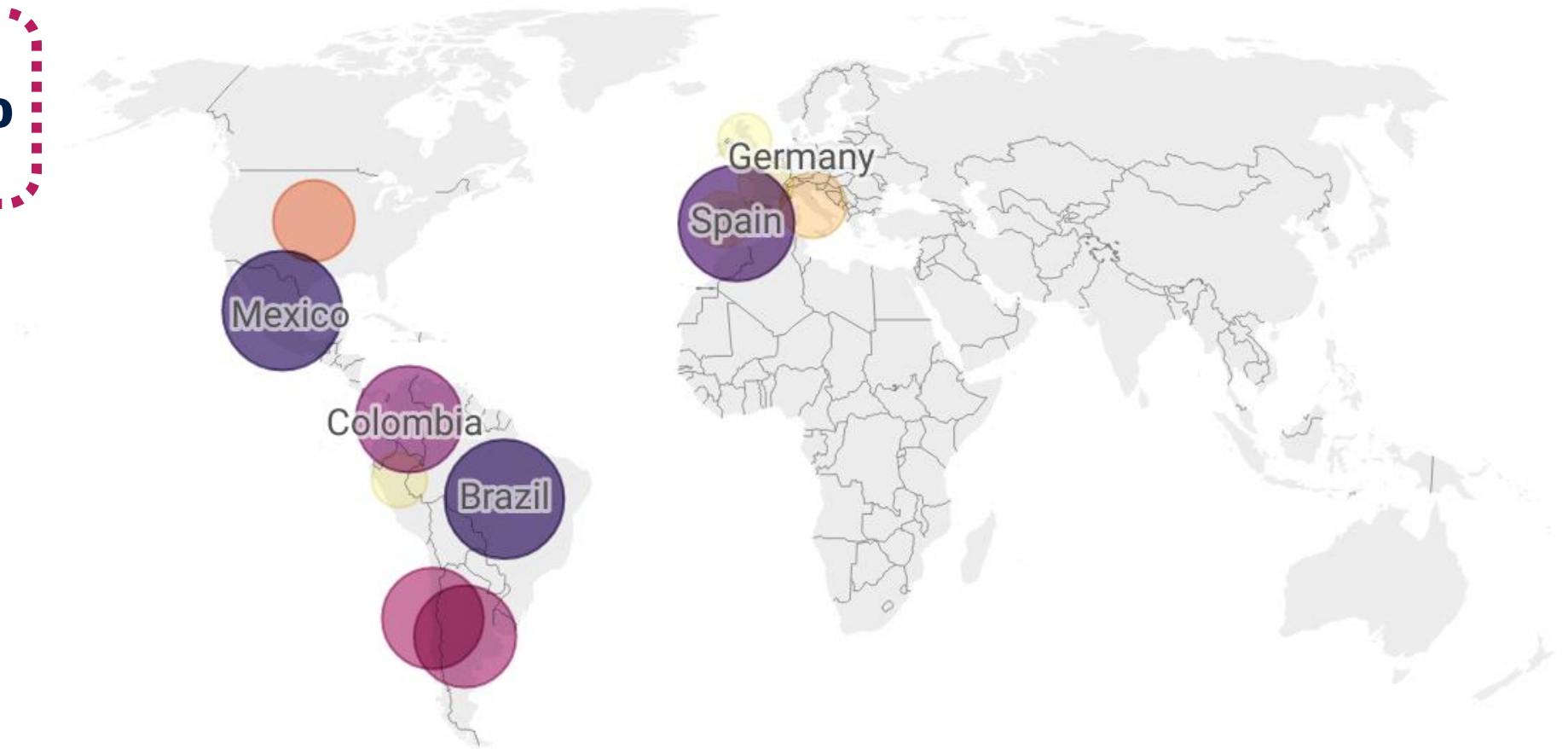
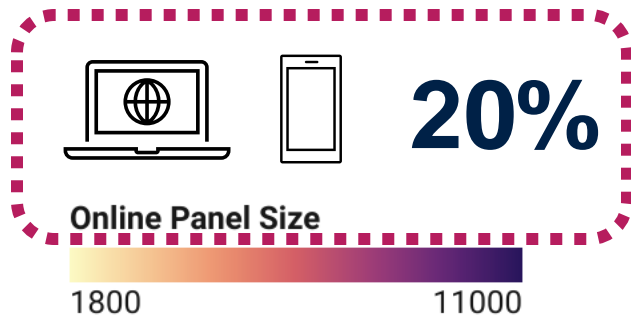
Keywords: news exposure, web-tracking data, exogenous measures, computational methods, event knowledge, Ukraine war.

The research presented in this paper is a part of the project “THREATPIE: The Threats and Potentials of a Changing Political Information Environment” which is financially supported by the NORFACE Joint Research Programme on Democratic Governance in a Turbulent Age and co-funded by FWO, DFF, ANR, DFG, NCN Poland, NWO, AEI, ESRC and the European Commission through Horizon 2020 under grant agreement No 822166



A Comparison of Patterns in **2 countries**

INDIVIDUAL BROWSING DATA PANELS



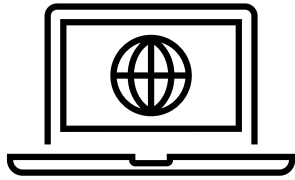


METERED DATA, BROWSING TRACKING DATA, OBSERVATIONAL DATA, BEHAVIOURAL DATA

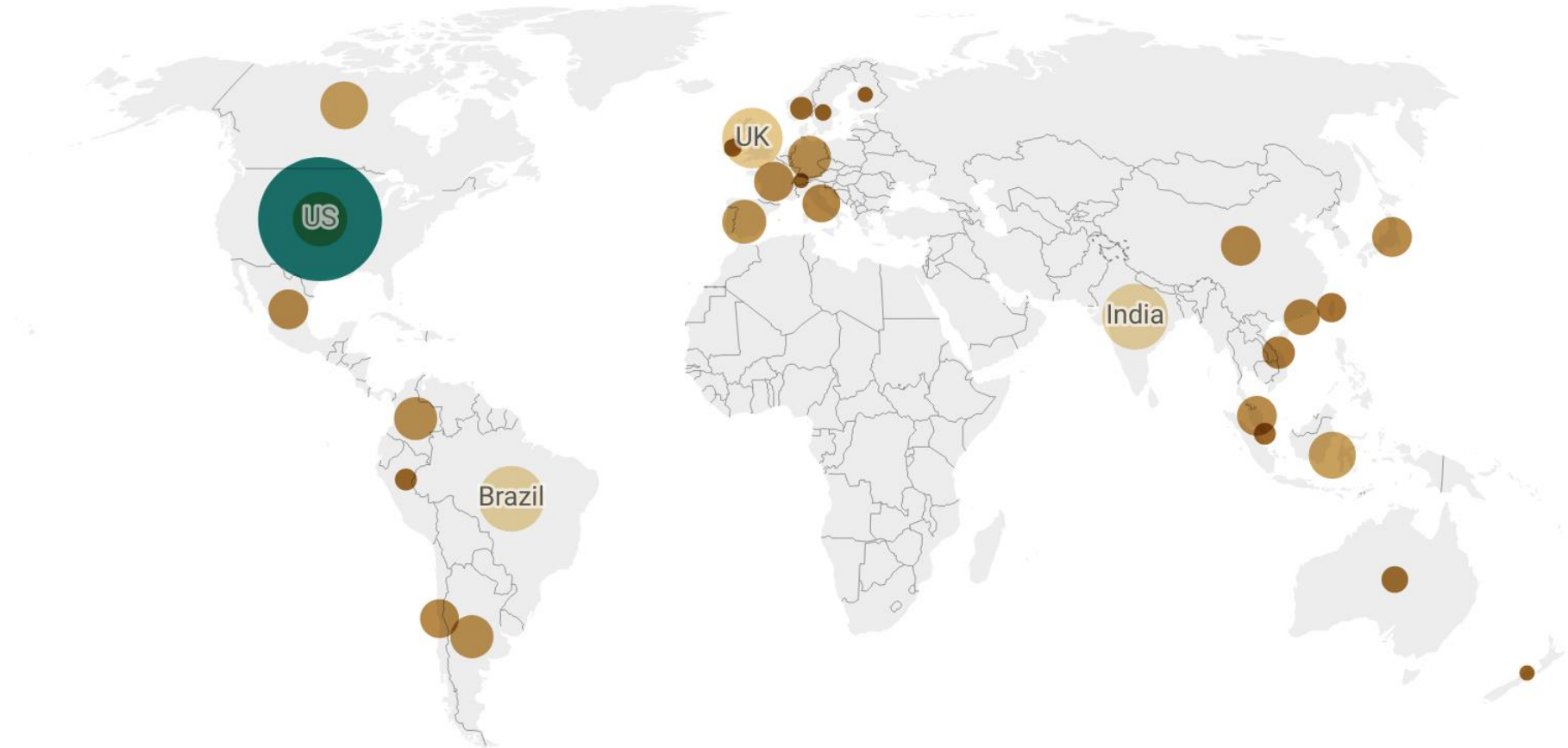
- Third-party online tracking panels:
 - Individual behavioural data
 - Aggregated behavioural data

Research Goal: Understanding News Media Diets across countries and media systems

AGGREGATED BROWSING DATA DESKTOP PANELS



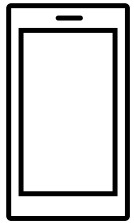
Sample Size



Sample Size



AGGREGATED BROWSING DATA MOBILE PANELS



Iphone Panel Size





● AGGREGATED BEHAVIOURAL DATA

- Larger Cross-country and cross-devices comparison
- Longitudinal studies with longer time windows
- Across sociodemographic groups and country regions
- Within apps measurement
- Detection of non-human traffic



The consumption of Political News across Media Environments

A Comparison of Patterns in **23 countries**

AGGREGATED BEHAVIOURAL DATA



NEW RESEARCH IN

Physical Sciences

Social Sciences

RESEARCH ARTICLE

Exposure to news grows less fragmented with an increase in mobile access

Tian Yang, Silvia Majó-Vázquez, Rasmus K. Nielsen, and Sandra González-Bailón

PNAS November 17, 2020 117 (46) 28678-28683; first published October 30, 2020; <https://doi.org/10.1073/pnas.2006089117>

Edited by Matthew O. Jackson, Stanford University, Stanford, CA, and approved September 25, 2020 (received for review April 1, 2020)

Article

Figures & SI

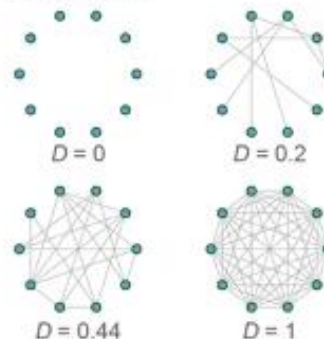
Info & Metrics

PDF

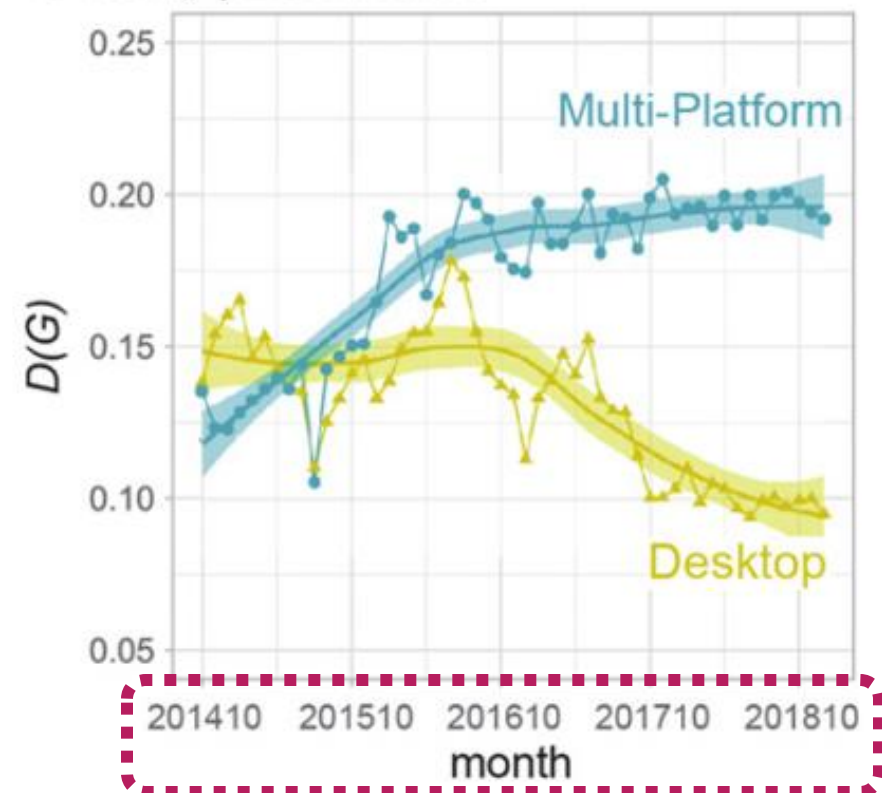
Significance

Access to diverse news strengthens democratic citizenship. Whether digital technologies have narrowed or widened news diets fosters contentious debates. Previous research shows the abundance of digital news sources might be leading to more fragmented audiences, ideological segregation, and echo chambers. Our study resorts to an unprecedented combination of data to show that the increase in mobile access to news

Network Density



Density | Backbones





● AGGREGATED BEHAVIOURAL DATA

- Proprietary measurement building system (census data + tag data)
- News Media installing tags vs Projections
- Tied to large budgets
- No Content extraction (video and text)
- Country panels discontinued
- Socio-demographic groups unstable
- Proprietary News sites classification (Properties, Media, Entities)



INDIVIDUAL BEHAVIOURAL DATA

- Cross-country comparisons limited
- Shared devices
- No tracking on private browsers
- Differential sampling bias by device (Jürgens et al. 2020).
- No tracking within Apps
- Non-tracked routes



INDIVIDUAL BEHAVIOURAL DATA

- Maintenance and managing costs
- Limited Past individual behavioural data
- Data Granularity
- Content extraction (video and text)
- Attitudes and Opinions Studies (+ Surveys)



Thank you!

Credit: Andrew Ridley / Unsplash