

Measuring Online News Audience Fragmentation and Ideological Segregation Across Countries, Time and Media Systems Using Online Tracking Data

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Digisurvor @ The University of Manchester

13 January 2026

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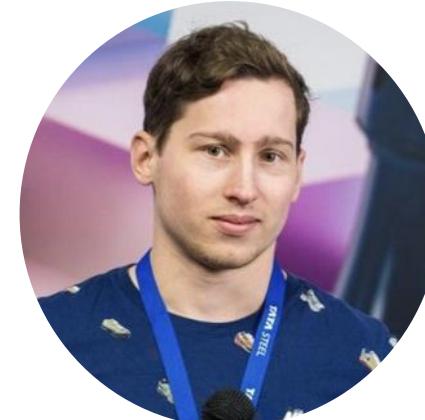
Subhayan Mukerjee
National University of Singapore



Tian Yang
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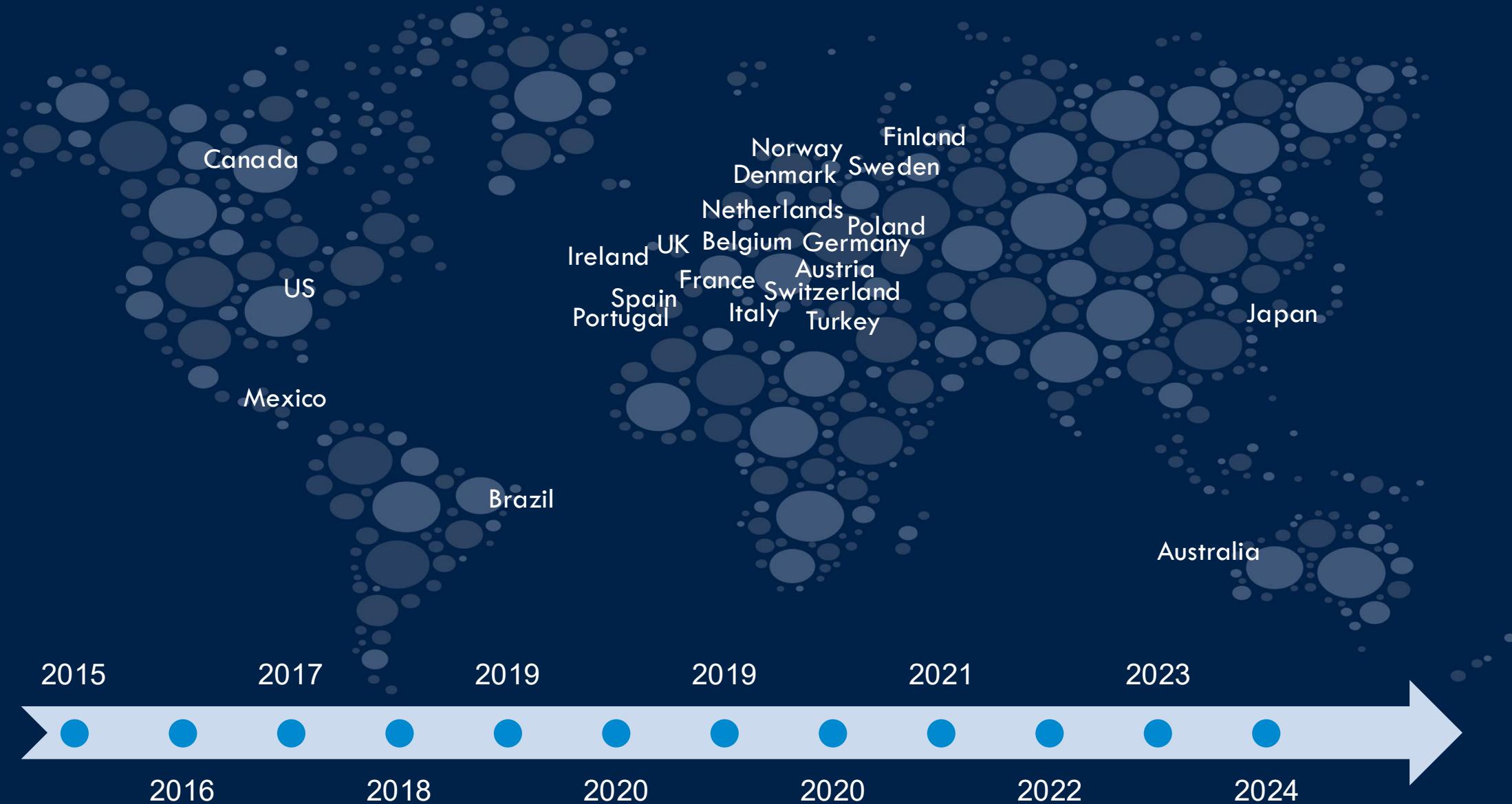
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Vrije Universiteit Amsterdam

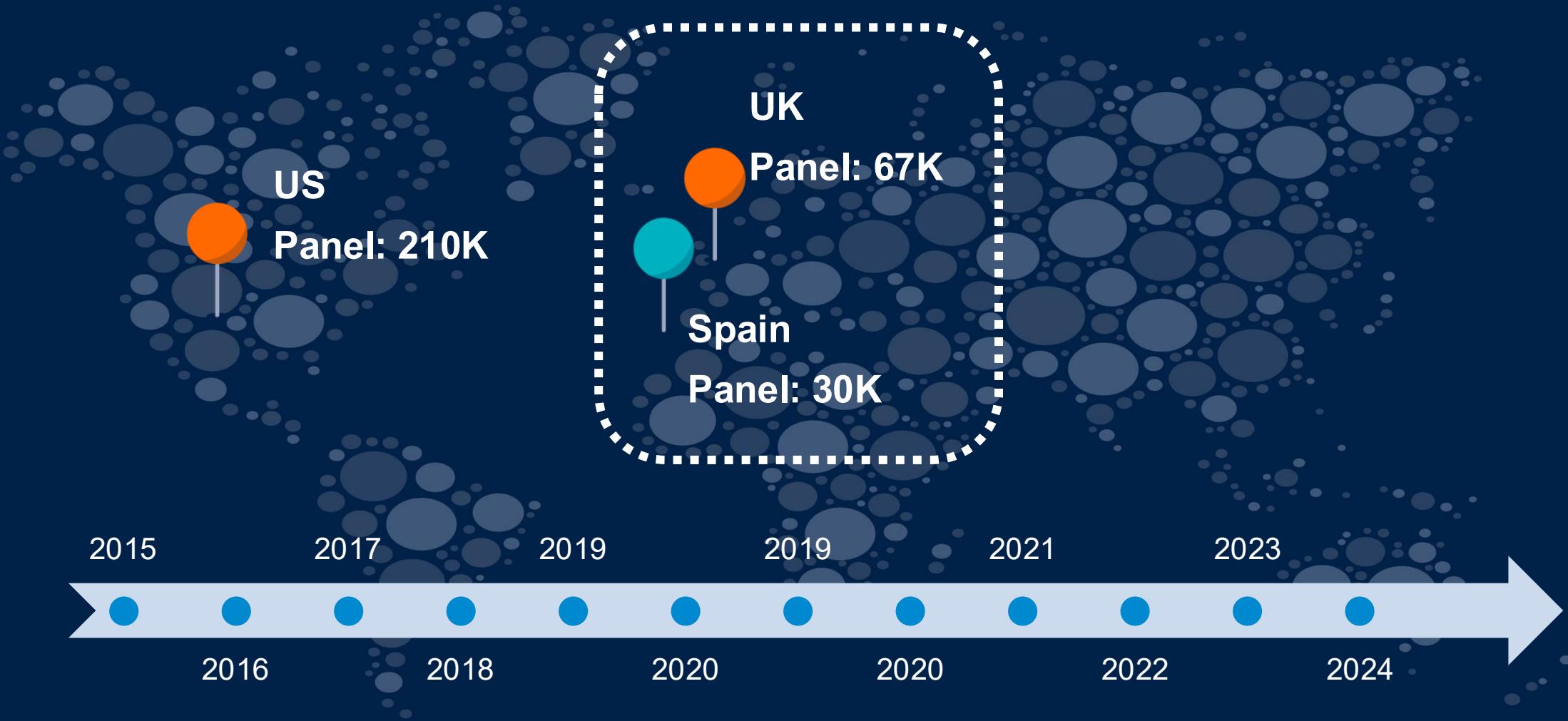


Is there evidence of self-selection in
how audiences navigate the **news
media environment?**

Do audiences of specific media outlets
also consume **other news sources?**

Comparison across 23 countries





1. Why news audience fragmentation matters?
2. How do we measure news audience fragmentation across countries with digital browsing data?
3. Are news audiences **increasingly fragmented / polarized?**

Audience Fragmentation: At the centre of the academic agenda for more than three decades.

ANNALS, AAPSS, 546, July 1996

And Deliver Us from Segmentation

By ELIHU KATZ

ABSTRACT. With the rapid multiplication of channels, television has all but ceased to function as a shared public space. Except for occasional media events, the nation no longer gathers together. Unlike the replacement of radio by television as radio underwent a similar process of segmentation, there is no new medium in the wings to replace television that is likely to promote national political integration. No less than in the United States, the governments of Europe—once proud of their public broadcasting systems—are bowing to the combined constraints of the new media technology, the new liberal mood, the economic and political burden of public broadcasting, and the seductions of multinational corporations. Thus is mass democracy deprived of its last common meeting ground, and, if theories of technological determinism are applicable, the cohesion of the nation-state itself is in jeopardy. The case of Israeli broadcasting—now in the throes of this paradigm change—is presented in illustration.



Audience Fragmentation: At the centre of the academic agenda for more than three decades.

- Fragmentation of the **media agenda** (Lee, 2007; McCombs, 2005; Sunstein, 2001)
- Fragmentation of the **public agenda** (McCombs & Zhu J-H 1995; Möller, Trilling, Helberger et al. 2016; Cardenal, Galais & Majó-Vázquez)
- Fragmentation along lines of **political difference** (Barberá et al. 2015; Stroud, 2010)
- Fragmentation of **online news audience behaviour** (Fletcher & Nielsen, 2017; Majó-Vázquez, Nielsen & González-Bailón, 2018; Webster & Ksiazek, 2012)



News audience polarization is the extent to which audiences divide along party lines to form **a fragmented media ecosystem**, where each side primarily consumes information that reinforces its own views and has limited access to diverse news diets



News audience fragmentation is the extent to which audiences divide along party lines to form **a fragmented media ecosystem**, where each side primarily consumes information that reinforces its own views and has limited access to diverse news diets

Why audience **polarization** matters?

Theoretical Framework

We build on the **normative assumption that in democracy, citizens must have access to balanced media diets**

News media diets must represent the breadth of **ideological positions and issues existent** in the society

Diversity in news exposure has been deemed necessary for a healthy democratic citizenship (McQuail, 1992; Helberger, 2019)

10 September 2025

STATE OF THE UNION



Home About us ▾ Our priorities ▾ News and media ▾ Topics ▾ Resources ▾ Europe

Home > ... > Priorities 2019-2024 > A new push for European democracy > Protecting democri

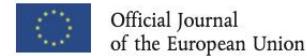
European Media Freedom Act

Free media are a key pillar of every democracy and they are essential for a healthy market economy on a global scale, the European Union remains a stronghold for free media, setting a standard as a democratic continent. Yet, there are increasingly worrying trends. Building on past efforts, the Commission has taken a number of measures to protect media freedom and pluralism in the EU, in addition to enhancing freedom of movement of services. This has culminated in the [European Media Freedom Act](#), which entered into force on 7 May 2024. The new rules will fully apply as of 8 August 2025.

New rules to protect media pluralism and independence

The European Media Freedom Act puts in place a new set of rules to protect media pluralism and independence in the EU. They will ensure that media – public and private – can operate more easily across borders in the EU internal market, without undue pressure and taking into account the digital transformation of the media space.

Among others, the European Media Freedom Act will



EN
L series

2024/1083

17.4.2024

REGULATION (EU) 2024/1083 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 11 April 2024

establishing a common framework for media services in the internal market and amending Directive 2010/13/EU (European Media Freedom Act)

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 114 thereof,

Having regard to the proposal from the European Commission,

After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee (¹),

Having regard to the opinion of the Committee of the Regions (²),

Acting in accordance with the ordinary legislative procedure (³),

- Audience Polarization has negative effects on **citizens involvement on public debate** and the extend citizens **share public concerns** (Cardenal, Galais, Majó-Vázquez, 2019)
- Audience Polarization is related to **limited exposure to diverse perspectives** and this has negative effects on **forming valid opinions** and **appreciating the perspective of others** (Mutz & Martin, 2001)
- It can ultimately affect **social polarization** (Chaffee & Metzger, 2001)

International Journal of Public Opinion Research Vol. 0 No. 0 2018
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 doi:10.1093/ijpor/edy025

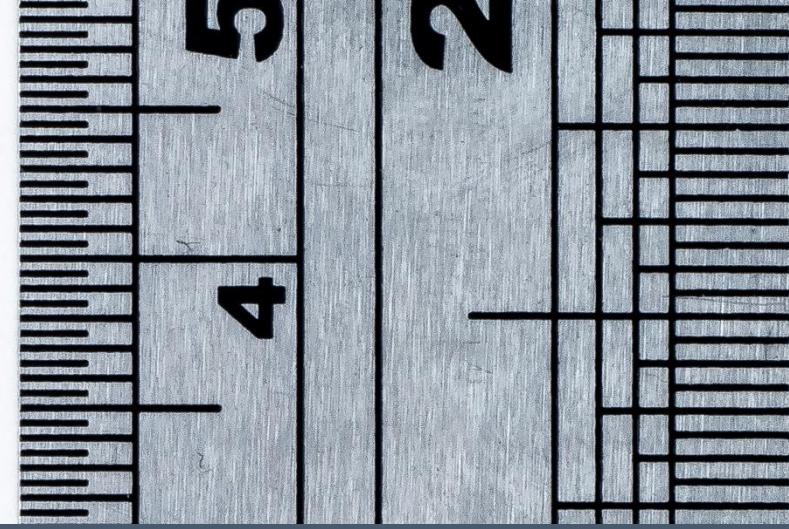
Is Facebook Eroding the Public Agenda? Evidence From Survey and Web-Tracking Data

Ana S. Cardenal¹, Carol Galais², and Silvia Majó-Vázquez³

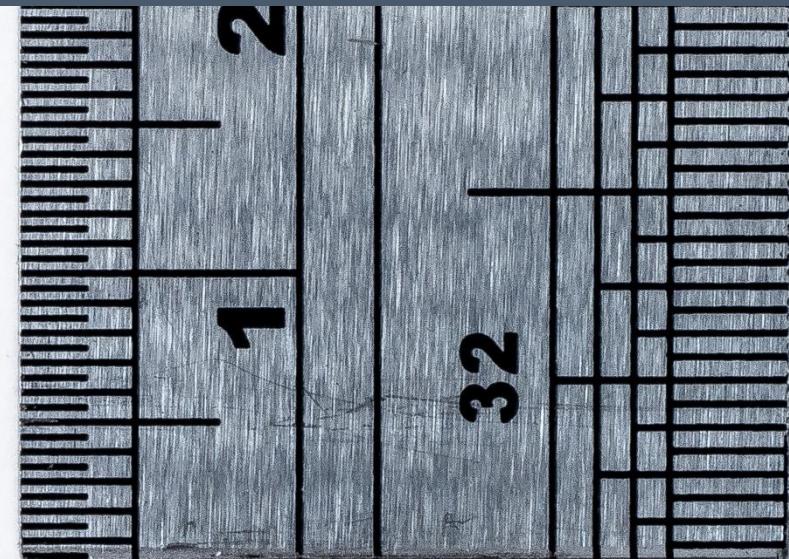
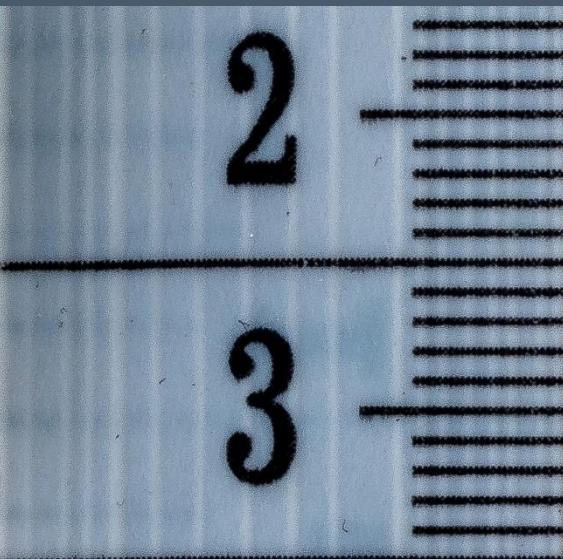
¹School of Law and Political Science, Universitat Oberta de Catalunya, Spain;
²Political Science and Public Law Department, Universitat Autònoma de Barcelona, Spain;
³Reuters Institute for the Study of Journalism, University of Oxford, UK

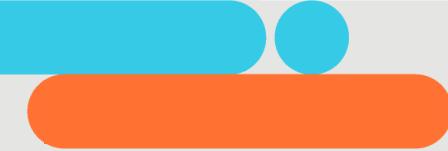
Abstract

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.



Measuring News Audience Fragmentation





How to trace news media diets



Third-party online tracking panels

Direct collection tracking data (Menchen-Trevino, 2016)

Data donations (Piotrowski & Araujo, 2025)

Screenshot data collection (The human screenome project, Reeves et al. 2025)

How to trace news media diets

Third-party online tracking panels:

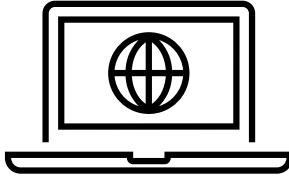
1. Aggregated behavioural data
2. Individual behavioural data



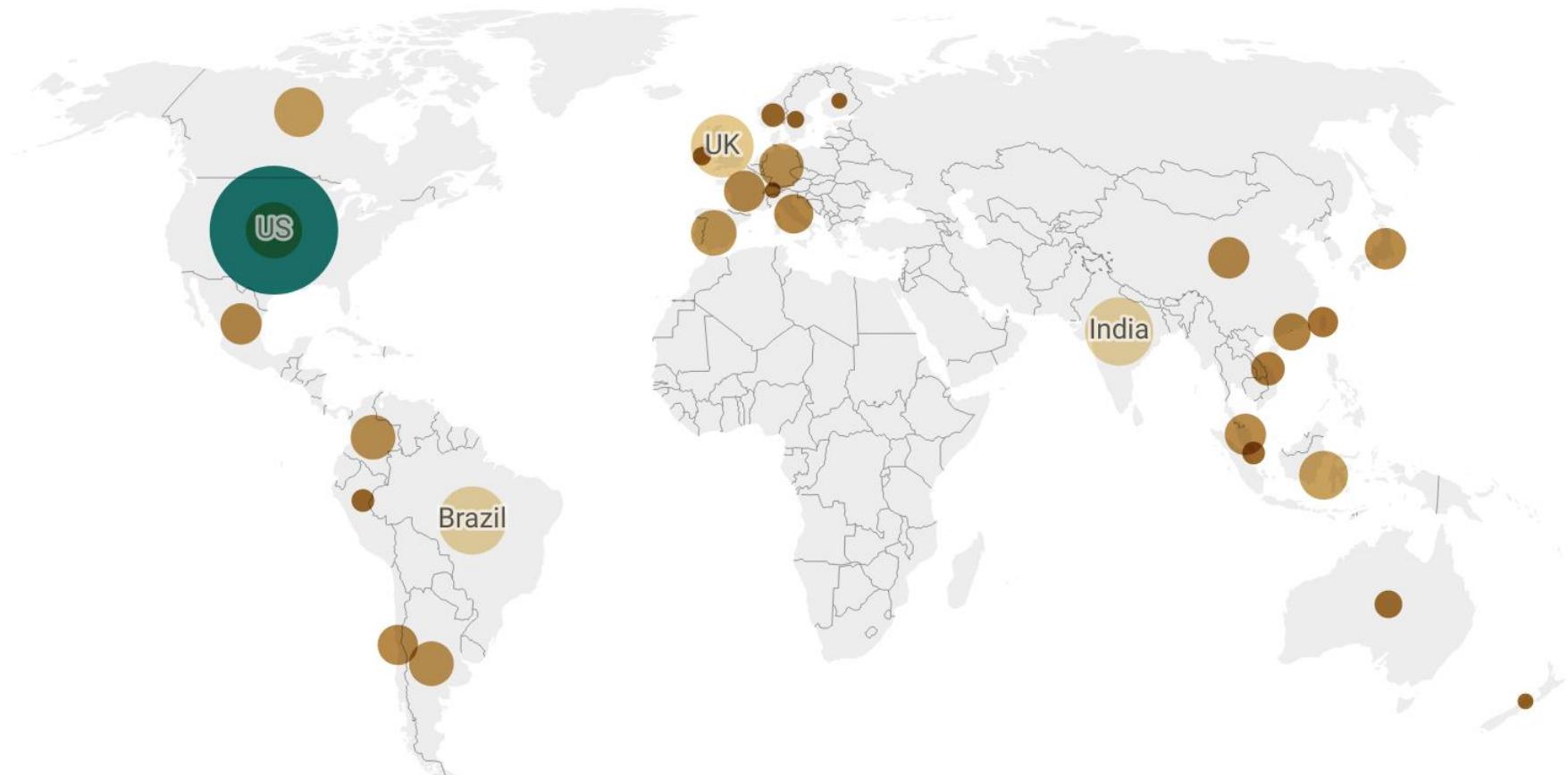
Survey Data

Research Goal: Understanding News Media Diets

AGGREGATED BROWSING DATA - DESKTOP PANELS COMSCORE



Sample Size



Sample Size



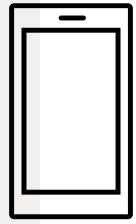
Aggregated Data - Iphone Panels



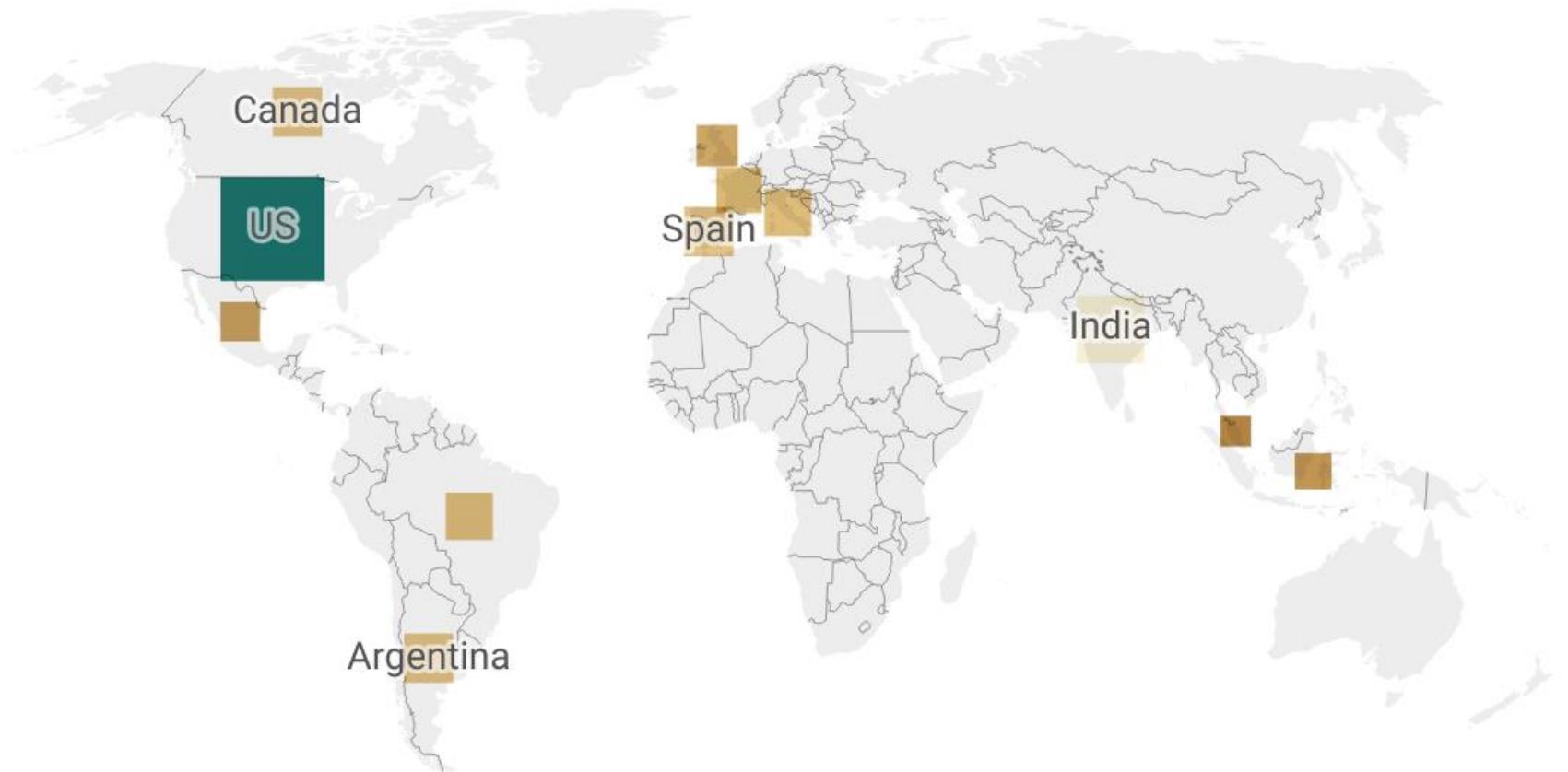
Iphone Panel Size



Android Panels



Android Panel Size



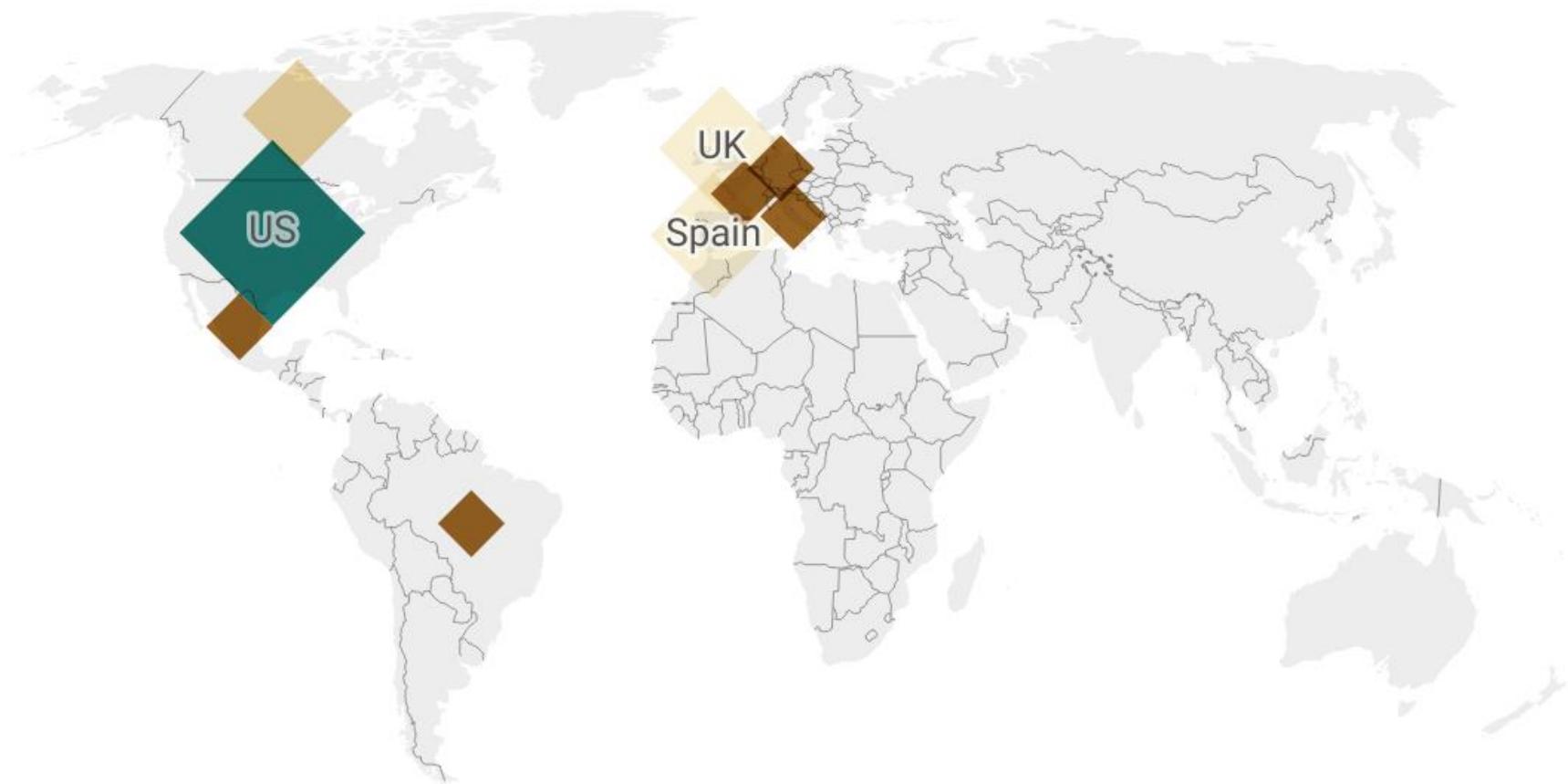
Ipad Panels



Ipad Panel Size

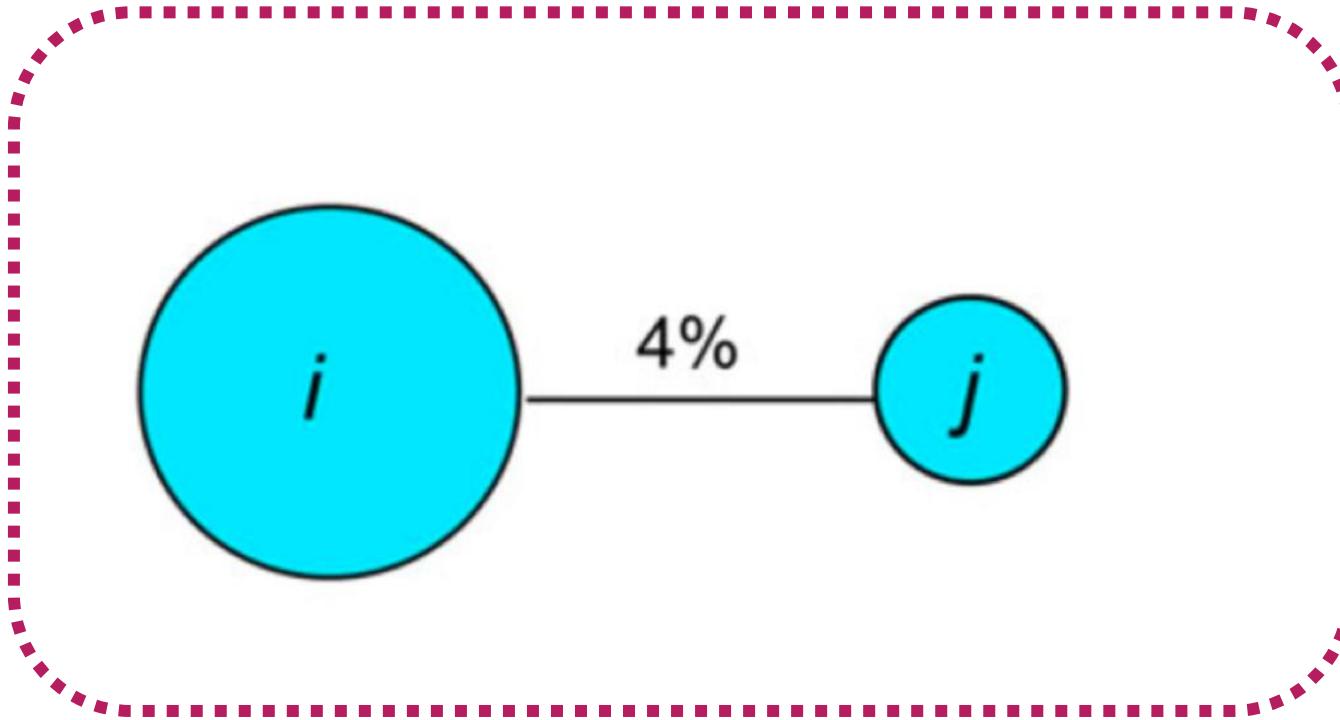
500

4,500



Measures of Audience Overlap

Undirected Measure



Mukerjee, S., Majó-Vázquez, S., & González-Bailón, S. (2018). Networks of Audience Overlap in the Consumption of Digital News. *Journal of Communication*, 68(1), 26-50.

MyMetrix ▾

MMX Video Metrix Mobile GSMA Plan Metric Segment Metric Reach Frequency Ad Metric Xmedia qSearch Office Link

Entity Search 622 u12_smajo

MEDIA DASHBOARD

1. Select country

United States

2. Choose dashboard type

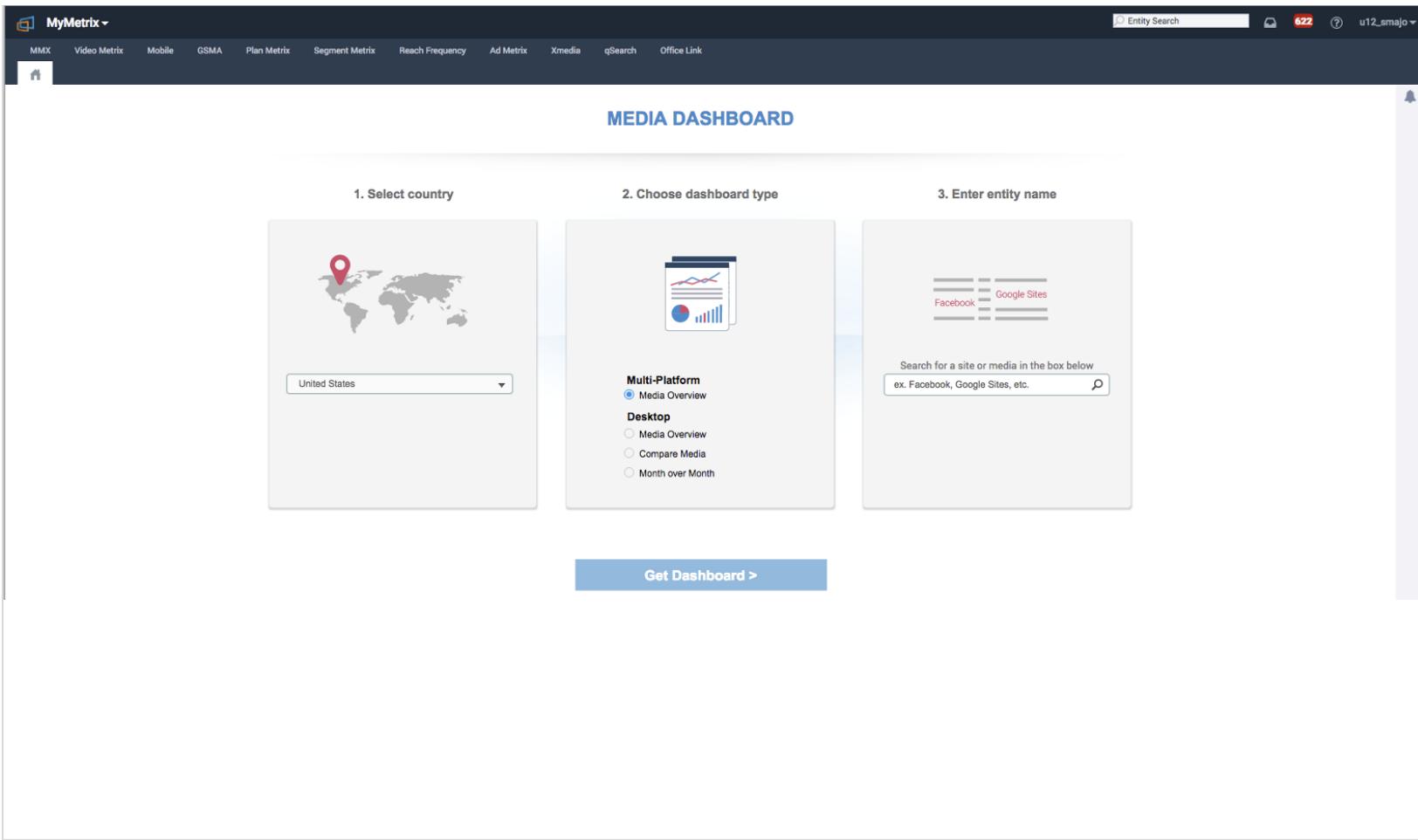
Multi-Platform
 Media Overview
Desktop
 Media Overview
 Compare Media
 Month over Month

3. Enter entity name

Facebook Google Sites

Search for a site or media in the box below
ex. Facebook, Google Sites, etc.

Get Dashboard >



MyMetrix ▾

MMX NEW! Video Metrix Mobile GSMA Plan Metrix Segment Metric Reach Frequency Ad Metrix Xmedia qSearch Office Link Data Updates

Entity Search 4202 orr_smajovazquez

Key Measures Cross Visiting

* Missing/incorrect data; please correct to run the report

Data Source Geography Time Period Target Audience [edit](#)

Multi-Platform Spain Months Total Audience

Desktop only July 2016

* Media In Columns [edit](#) * Media In Rows [edit](#) Measures [edit](#)

Media Quick Search No media selected.

TOTAL DIGITAL POPULATION
Shared Audience (000)
% Vertical
% Horizontal
Index

Include category column

Learn Save Run to Export Run in New Tab Run Report

Home Key Measures Cross Visiting Entity Search 4202 orr_smajovazquez

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Key Measures Cross Visiting

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Data Source Geography Time Period Target Audience [edit](#)

Multi-Platform Spain Months Total Audience

Desktop only July 2016

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Media Quick Search No media selected.

TOTAL DIGITAL POPULATION
Shared Audience (000)
% Vertical
% Horizontal
Index

Include category column

Learn Save Run to Export Run in New Tab Run Report

Media in Columns

[Pick List](#)[Search](#)

Media Set Types

- Ranked Categories
- Expanded Categories
- Custom Entities
- Display Ad Ecosystem
- Distributed Content Entities
- [Saved Media Lists]

Spain_A

(Max. 10 Entities)

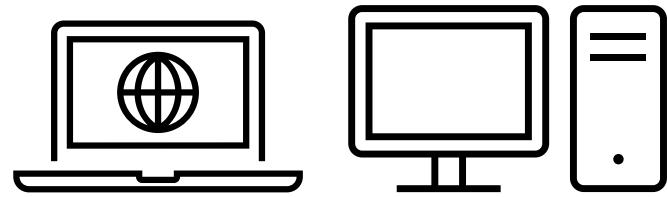
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|----------------------------|
| [C] 20MINUTOS Sites |
| [M] ABC.ES Sites |
| [P] ELCONFIDENCIAL.COM |
| [M] ELECONOMISTA.ES |
| [M] Elmundo.es Sites |
| [C] ELPAIS.COM |
| [C] LAVANGUARDIA.COM Sites |
| [M] LIBERTADDIGITAL.COM |
| [M] RTVE.ES |
| [C] Telecinco Sites |



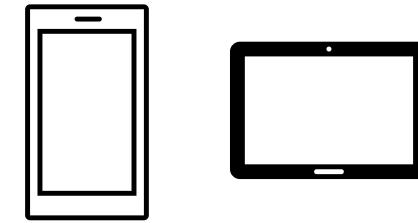
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[Save Set](#)[OK](#)[Cancel](#)

Desktop devices

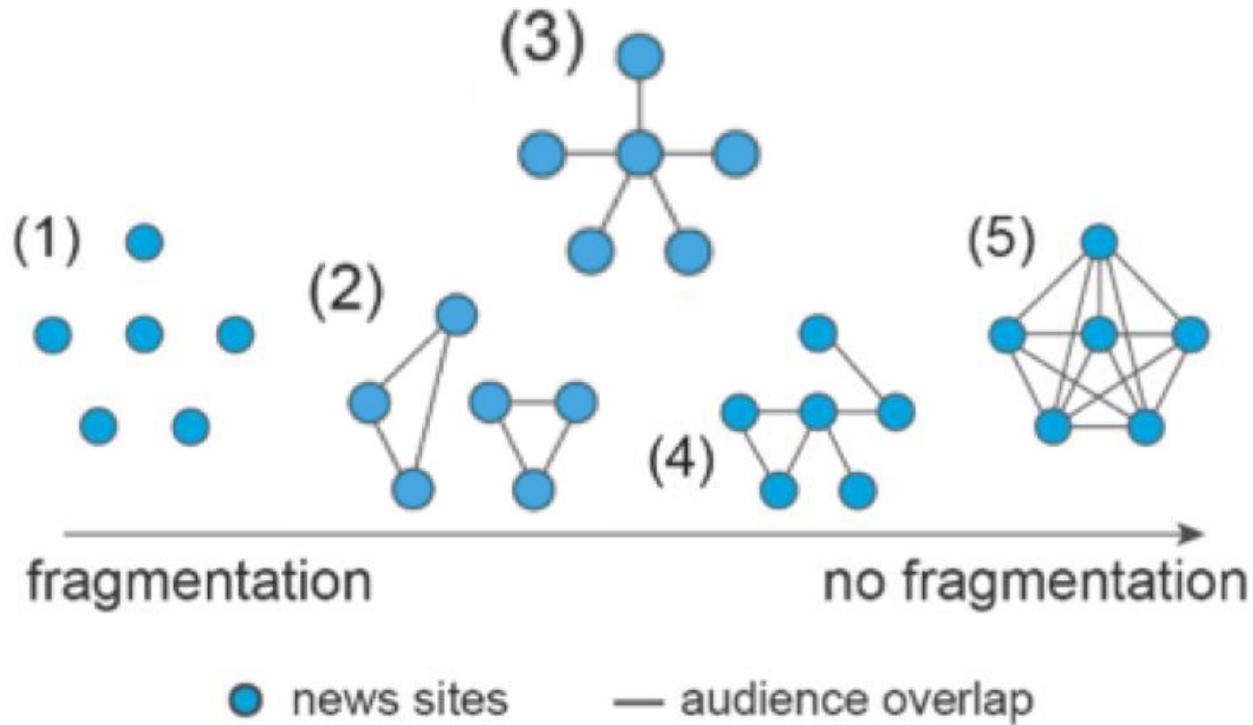


Mobile devices



Networks of Audience Overlap

This figure summarizes the possibility space within which observed audience networks can emerge



Mukerjee, S., Majó-Vázquez, S., & González-Bailón, S. (2018). Networks of Audience Overlap in the Consumption of Digital News. *Journal of Communication*, 68(1), 26-50.

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The Backbone Structure of Audience Networks: A New Approach to Comparing Online News Consumption Across Countries

Sílvia Majó-Vázquez, Rasmus K. Nielsen & Sandra González-Bailón
Published online: 13 Dec 2018

Download citation | <https://doi.org/10.1080/10584609.2018.1546244> | Check for updates

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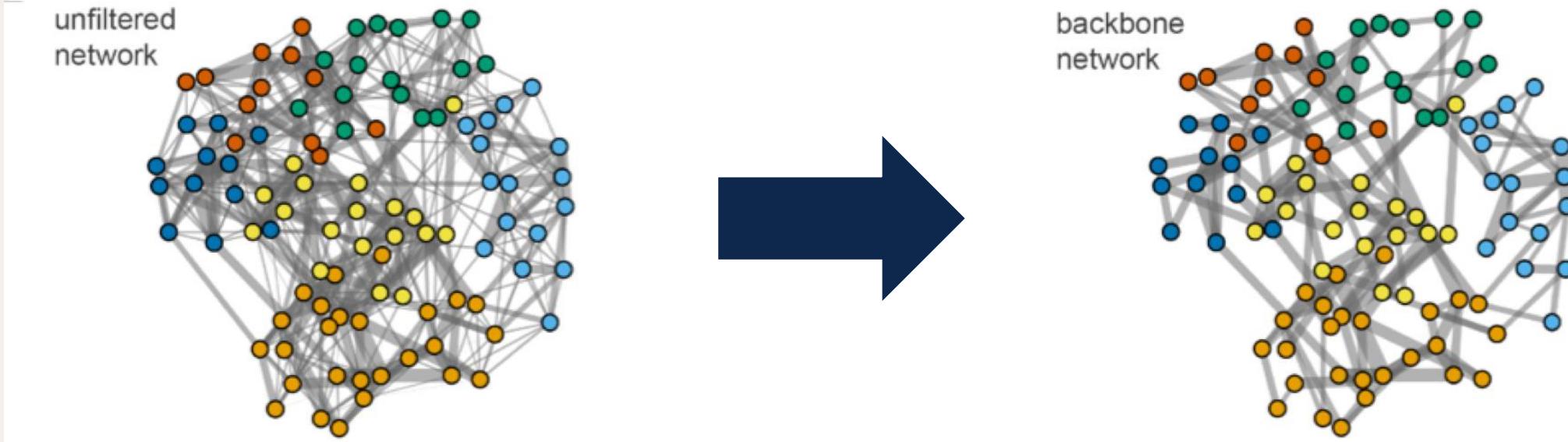
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Translator disclaimer

Abstract

Measures of audience overlap between news sources give us information on the diversity of people's media diets and the similarity of news outlets in terms of the audiences they share. This provides a way of addressing key questions like whether audiences are increasingly fragmented. In this article, we use audience overlap estimates to build networks that we then analyze to extract the backbone—that is, the overlapping ties that are statistically significant. We argue that the analysis of this backbone structure offers metrics that can be used to compare news consumption patterns across countries, between groups, and over time. Our analytical approach offers a new way of understanding audience structures that can enable more comparative research and, thus, more empirically grounded theoretical understandings of audience behavior in an increasingly digital media environment.

Keywords: online news, audience networks, fragmentation, comparative research, legacy media, digital-born media

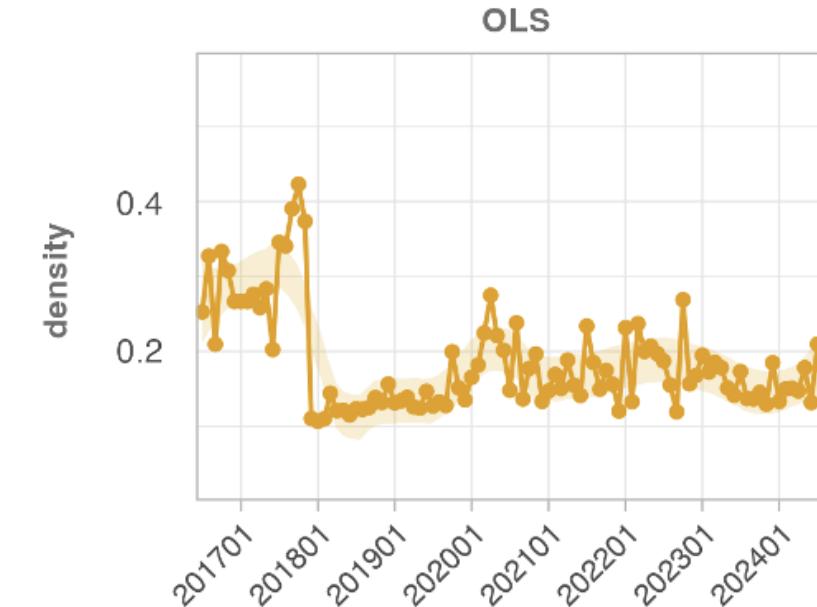
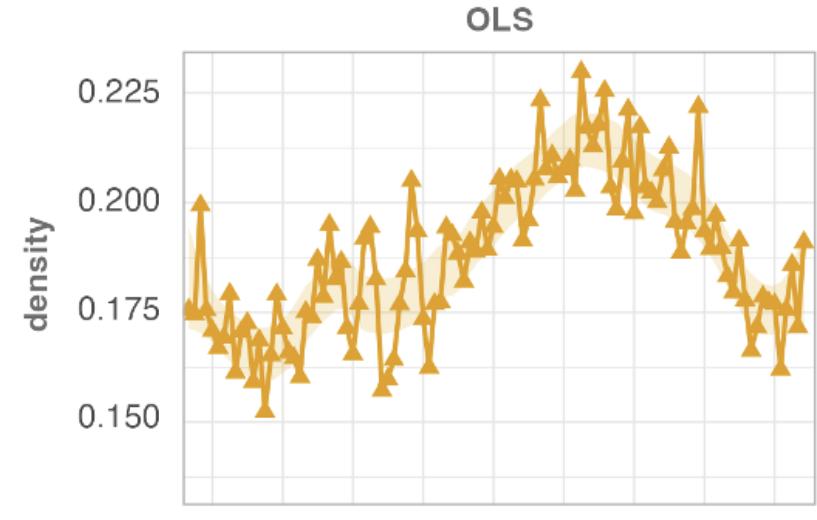




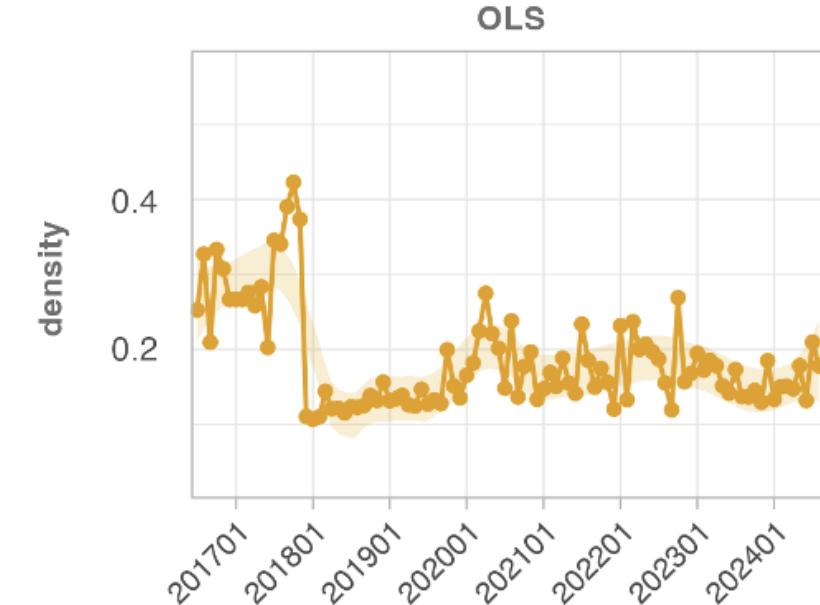
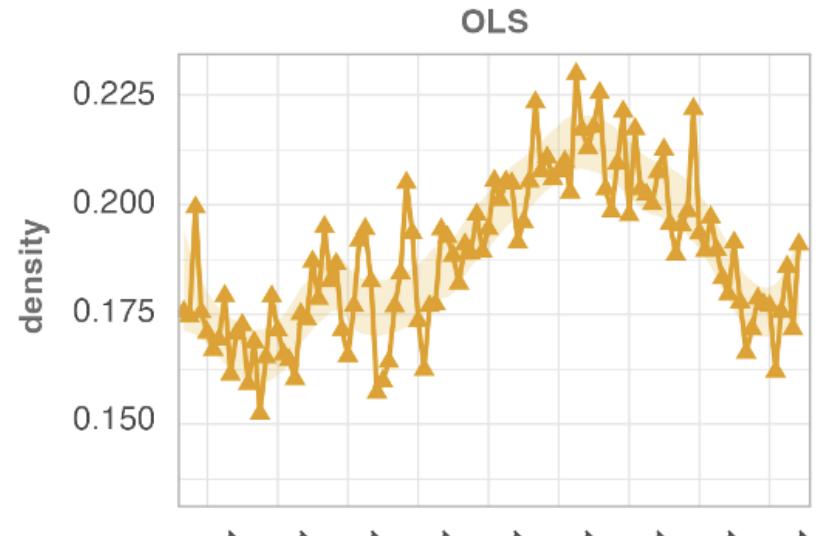
Serrano, M. Á., Boguná, M., & Vespignani, A. (2009). Extracting the multiscale backbone of complex weighted networks. *Proceedings of the national academy of sciences*, 106(16), 6483-6488.

Results

- **Network density:** Network density measures the number of existing ties out of all possible ties that could exist in the network
- In an empty network with **no audience overlap the density is 0**; in a complete network (where all outlets share some audience) **the density is 1**



- The longitudinal analyses of the audience overlap networks show that **network density measures are dynamic**.
- Periods of **major political events** result in the reconfiguration of the networks and networks grow denser (Independence Referendum, Covid-19 pandemic).
- This trend suggests that **exposure to news is becoming more diversified and less fragmented during those periods of time**.



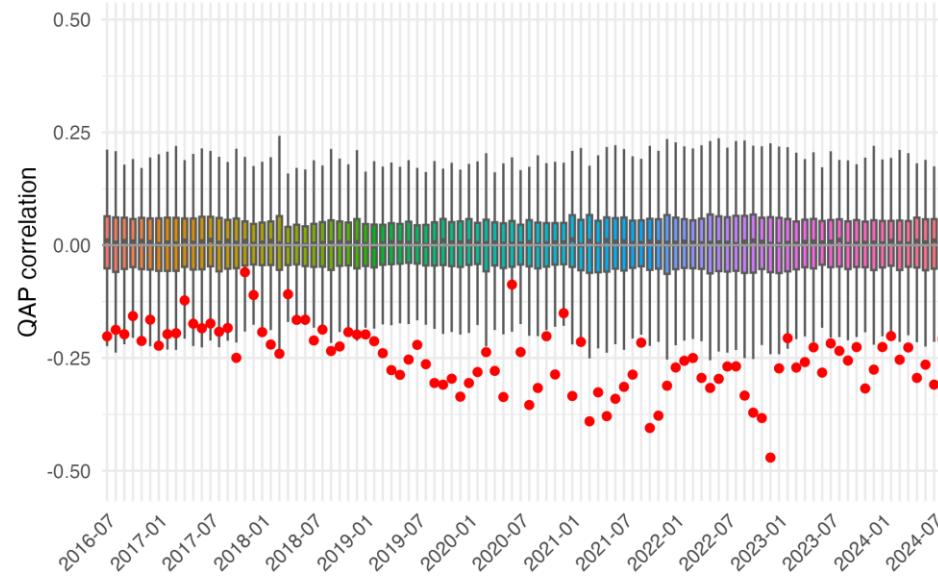
QAP Correlation of Network Overlap and Ideological Scores

- The QAP - Quadratic Assignment Procedure (QAP) results show the correlation between the observed network and the **networks representing the pairwise ideological distance between two sites**. The closer two outlets are ideologically, the smaller their "distance."
- A negative correlation means that as the ideological distance between two news outlets increases, their audience overlap tends to decrease.
- In simpler terms, **news outlets that are ideologically closer to each other are more likely to share an audience.**

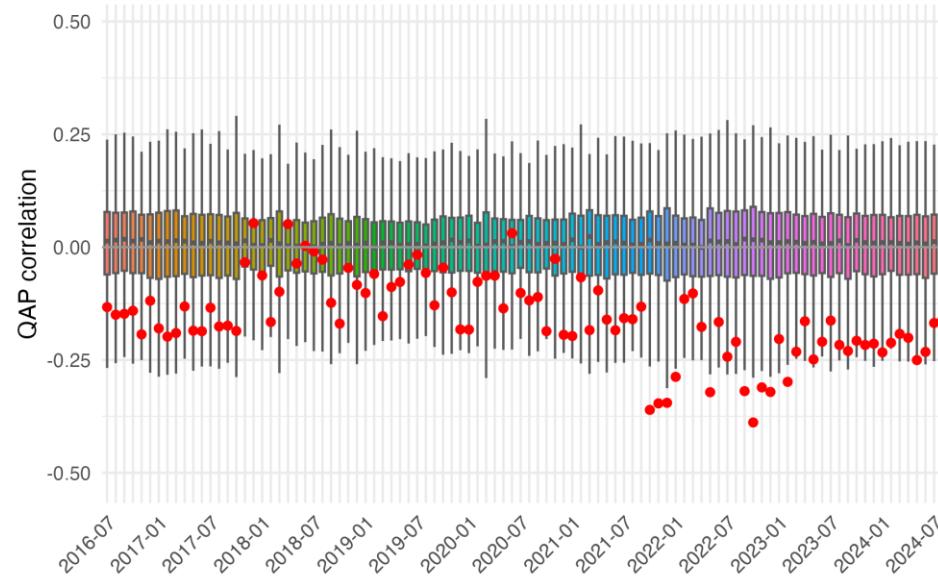




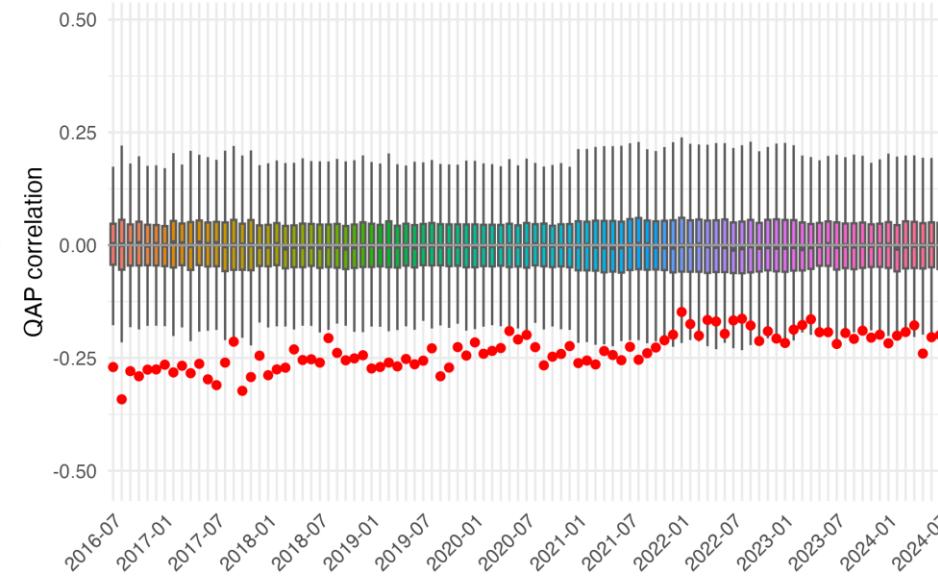
A1. Conservative Share (PMI)



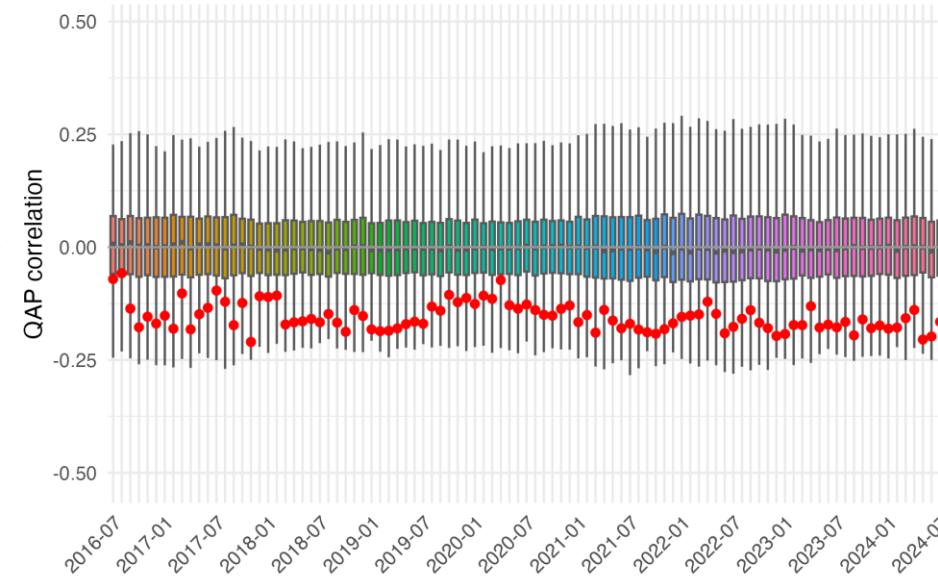
A2. Perceived_slant Reported (PMI)



B1. Conservative Share (Backbone)



B2. Perceived_slant Reported (Backbone)



QAP Correlation of Network Overlap and Ideological Scores

- **UK:** The negative correlation is mostly insignificant, meaning that despite the appearance of some ideological sorting, it is not a statistically robust and reliable feature of the UK media system across the entire time window of analysis.
- **Spain** shows a more volatile picture, with clear periods of statistically significant and negative correlation scores, **representing the importance of ideological segregation in the audience behaviour**, while other periods this indicator loose significance.

CONCLUSIONS

We must move away from the assumption of strong, consistent polarization across time to more nuanced analysis about the complexity of audience behaviour across time and media systems.

Major political and social events impact news audience navigation and increase networks' density signalling more diverse news consumption.

We know that the use of different devices to navigate the media ecosystem impacts audience fragmentation. Comparative research across devices is needed.



Thank you!

COMPUTATIONAL METHODS LABS SHOWCASE

ICA - Computational Methods Division

February 16, 2026

**4:00-5:30pm CET (10:00-
11:30am EST)**



Annie Waldherr, Computational Communication Science Lab
University of Vienna



Sofía Gil-Clavel, Societal Analytics Lab, Vrije Universiteit Amsterdam

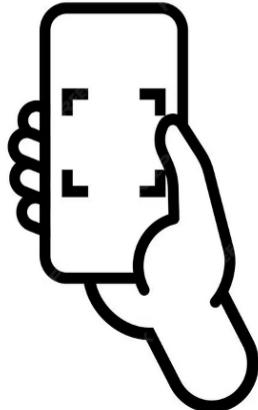


Nathan Carpenter, Atlas Social Media Listening Lab
University of Florida



Jieun Shin, Atlas Social Media Listening Lab
University of Florida

SCAN ME



Registration Open!



<https://forms.office.com/e/zHBkwUWNFw>

The screenshot shows a Microsoft Forms survey page. At the top right is a three-dot menu icon. The main title is "Join Us: Computational Methods Lab Showcase". To the left of the title is a small square thumbnail image showing a network graph. Below the title, the event details are listed: "Day: February 16, 2026 Time: 4pm to 5:30pm CET - 10am-11:30am EST". Under "Speakers", four names are listed with their respective affiliations: "Nathan Carpenter, Atlas Social Media Listening Lab University of Florida", "Jieun Shin, Atlas Social Media Listening Lab University of Florida", "Sofia Gil-Clavel, Societal Analytics Lab, Vrije Universiteit Amsterdam", and "Annie Waldherr, Computational Communication Science Lab University of Vienna". A note below states: "When you submit this form, it will not automatically collect your details like name and email address unless you provide it yourself." The form contains two text input fields: "1. First Name" and "2. Surname", each with a placeholder "Enter your answer".