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Media Ownership and Its Impact on Content Diversity

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ABSTRACT:

This study examines how media ownership structures shape content diversity in platformized news ecosystems by combining quantitative quasi-experiments with qualitative process tracing across a multi-country sample. We link ownership registries and cross-media holdings to outlet catalogs, topic and viewpoint annotations, audience exposure panels, and platform discoverability indicators. Diversity is assessed at three levels—source (owners/outlets), content (topics/viewpoints), and exposure (audiences' actually encountered mix)—using concentration (HHI), dispersion (Shannon entropy), network centrality of owners, and event-style difference-in-differences around consolidation episodes. Econometric models indicate a negative, statistically robust association between ownership concentration and outlet-level content diversity, net of platform and market covariates; mediation analyses suggest part of this effect operates through changes in algorithmic prominence and discoverability. Public service and independent outlets exhibit higher content and viewpoint diversity than conglomerates, while platform-owned properties enjoy visibility advantages that do not automatically yield diverse exposure without deliberate prominence safeguards. Time-series evidence around a post-2021 consolidation wave shows measurable declines in exposure diversity in several markets, and ownership networks reveal a small cluster of highly central firms with outsized agenda-setting capacity. Qualitative interviews and document analysis corroborate mechanisms of internal editorial alignment and distributional gatekeeping. The study recommends coupling merger review and transparency rules with exposure-oriented remedies—discoverability obligations for general-interest and local content, auditable ranking systems, and internal pluralism safeguards—while noting limitations related to modeled measures and simplified event definitions. Overall, protecting pluralism today requires governance of not only who owns media and what is produced, but how audiences find it.

Keywords: *Media ownership; Content diversity; Exposure diversity; Platform discoverability; Media concentration (HHI); Difference-in-differences; Algorithmic prominence; Public service media*

INTRODUCTION

Content diversity and media ownership has become one of the most divisive debates in a platformizing context that is characterized by data-driven distribution and inter-market concentration. The issue of ownership concentration has been of longstanding concern to regulators and academics, but the advent of digital and hybrid markets where platforms, broadcasters, legacy publishers and a long tail of creators all co-locate has made it challenging to define, measure and control diversity. The frames that can be present define the diversity of source, the diversity of content and the diversity of exposure: who creates what and has the right to know, what is created and what is actually viewed on the screen by the audience (or by what algorithms the people are trained to watch something on the Internet). The tripartite model has become the dominant policy discourse in Europe and elsewhere as media systems consolidate the vertical gatekeeping power of big platforms, and the horizontal concentration of publishers (Irion, Fahy, Seipp, Petkovic, and Brogi, 2022; OECD, 2021; OECD, 2022).

The cross-national empirical evidence indicates that the dangers of pluralism are inalienable to all attributes of ownership, market power, political independence and social inclusiveness. The authors of the Media Pluralism Monitor in the EU claim that the availability of a multiplicity of voices, on the one hand, and local and public-interest information, on the other hand, is conditioned by the distribution of platforms, which is determined by the audience reach and the concentration of advertisements (Brogi, Bleyer-Simon, Carlini, Nenadic, Palmer, and Parcu, 2022; Brogi, 2020). Through these measures, plurality has come to be an attribute of the system, based not solely on the diversity of exposures and infrastructural mediators, but on the so-called apparent number of outlets (Brogi et al., 2022; Irion et al., 2022).

The platformed conditions of practice of audiences complicate the discourses of ownership-diversity, however. Comparison panels (high scale) suggest that more people are reading their news on sites in which exposure is mediated by social feeds, recommender systems, and rating. Reuters Institute has already announced that skewed access to local and public-service vendors, a slow but steady loss of direct access to publisher homepages, and a bias toward creator-led news or platform-created news all constitute the 2023 version of the Digital News Report. The implicit implications of these changes are exposure diversity and platform newsroom bargaining power (Newman, Fletcher, Schulz, Andi, Robertson, and Nielsen, 2023). In order to achieve reliable and diversified exposure without reducing relevance, algorithms can be fine-tuned on the basis of computational evidence indicating that the political diversity of the websites readership is predictive of increased journalism reliability (Bhadani, Yamaya, Flammini, Menczer, Ciampaglia, and Nyhan, 2022).

Theoretically, scholars have proposed a reduction step towards a limited supply side of diversity and towards design based policy to project the objective of diversity onto platform infrastructures. In addition to material availability, Helberger, Moeller and Vrijenhoek (2021) advocate the policy and technical practice of diversity by design, highlighting prominence, exposure and discoverability. The so-called agonistic attitudes, in their turn, are the component of the paradigm of the democratic theory, which states that, in addition to avoiding the amplification of the echo chambers, the news recommenders must do more and present the legitimate disagreement between the points

of view, not just the variation (Sax, 2022). Examples of how platformized gatekeeping in the creative industries restructures the intermediation and bargaining power of platformed channel networks and creator economies include how such network can reduce upstream diversity, even where downstream output abundance seems already to have been achieved.

Silviano (2023). The policy instruments are changing that. Further elaborating on the solutions that are based on saliency and discoverability of so-called general-interest content, media ownership transparency and media business and platform intermediary financial resource concentration, Irion, Fahy, Seipp, Petkovic, and Brogi (2022) present the European study of media plurality and diversity online. Brogi, Borges, Carlini, Nenadic and Bleyer-Simon argue in a 2023 paper commissioned by the European Parliament that there is a distinction between an external pluralism (number and diversity of owners/outlets) and an internal pluralism (difference within outlets), and recommend that the Member States be independent and transparent when making changes to ownership structures. The only characteristic of the two schools that can be literally blended with structural pluralism is that the audience is subjected to platformed markets (Brogi, Borges, Carlini, Nenadic, and Bleyer-Simon, 2023; Irion et al., 2022).

The quantification is also not yet solved. Other comparative studies are more recent in summarizing exposure-side metrics based on platform analytics and surveys of consumption data with ownership shares, cross-media concentration, audience reach, and advertising markets using indicator-based dashboards (Brogi et al., 2022; OECD, 2021). Evidence of the influence of platform affordances, news avoidance and creator ecosystems on attention at a multi country level can be found in the 2023 Digital News Report by Newman, Fletcher, Schulz, Anding, Robertson and Nielsen. This helps substantiate arguments by Helberger, Moeller and Vrijenhoek that diversity can be strategized in a recommendation/ranking sense, and can co-exist with law-policy discourses of media freedom and plurality (Tambini, 2021) and the institutionalization of structural approaches to guide implementation and appraisal.

These threads are grouped together to show how the diversified content is an extension of the ownership accumulation in at least four senses: to promote the visibility of the incumbents through algorithmic curation; to repackage the resources into scalables and franchises; to contrivably harmonize the editorial terms of the aggregated resources; and to negotiate distributive asymmetries with platform. In order to platform, recommender-system, media law, to competition policy, the preservation of pluralism in a platformized media economy, lingua franca has now been figured out: now we can talk the new lingua franca, and may talk it by Brogi, Nenadic, Carlini, Parcu, Bleyer-Simon, Palmer, Irion, Fahy, Seipp, Petkovic, Poort, Stasi, Broughton Micova, Tambini, Helberger, Moeller, Vrijenhoek, Newman

METHODOLOGY

Research Design and Sampling

To answer the research question on how media ownership structure influences the nature of the content, the research design will be mixed method and will involve qualitative process tracing method and quantitative quasi-experiments.

The quantitative strand connects outlet-level content catalogs and audience exposure panels with ownership registers, company disclosure and competition filings. The sampling is country-stratified and platform-type stratified according to market size to capture the variability of ownership structure, cross-media group and vertically integrated platform/publisher structure. In a quasi-experimental identification design, discrete shocks (authorised mergers, divestitures of ownership, government intervention in discoverability or transparency) are used to create both treated and comparison units that are observed in pre-change and post-change. The equivalent of the pre-treatment variables the audience, topical mix, and baseline market share match is the outlet or group level matching. The qualitative strand, accompanied by the documentary analysis of editorial charters, platform rating criteria and regulation actions, will imply the interview with the elite (editors, audience and recommender leads, and competition-policy experts). The threads run parallel and merge on the interpretation layer to distinguish on the processes linking diversity and ownership namely the role of platform prominence norms and internal editorial coordination. The entire process can be summarized as shown in figure 1 and involves sampling, data integration, assignment of ownership, annotation of content, exposure measurement, econometric modelling, causal mediation, policy simulation and robustness tests.

$$\text{Propensity}(T_i=1) = \Pr(T_i=1 | \mathbf{X}_i) = \sigma(\theta_0 + \boldsymbol{\theta}^\top \mathbf{X}_i)$$

Measures, Data, and Analytical Strategy

Ownership concentration is operationalized at the market and group level with the Herfindahl-Hirschman Index and entropy-based dispersion, and as the beneficial-owner relationships and declared holdings are used to code the cross-media integration. Exposure diversity is computed with audience panels and platform analytics of the proportion of actually encountered sources and viewpoints over time; content diversity is computed with topic, format and viewpoint labels acquired via a hybrid pipeline combining human coded with NLP classifier trained on language models. Construct validity is measured by convergent and discriminant checks across source, content and exposure layers, and measurement reliability is measured by coder agreement and internal consistency. To study pre-trends and dynamics, the main specification applies econometrics to estimate difference-in-differences models of ownership shocks with unit and period fixed effects, complemented by event-study leads and lags. Whereas the qualitative materials address process plausibility and competing explanations, instrumental-variables and structural equation frameworks disaggregate channels between ownership to exposure results through algorithmic salience and editorial alignment to deal with endogeneity due to timing choices or unobserved confounds. The heterogeneity is considered using platform type, genre and baseline market power, the robustness is considered using bandwidths, alternative measures of diversity and placebo treatments. Lastly, policy simulations quantify counterfactual scenarios of discoverability quotas, merger remedies, and transparency requirements by recalculating exposure diversity and changing the parameters of concentration and prominence.

$$HHI_t = \sum_{j=1}^J s_{jt}^2$$

$$H_{Shannon} = - \sum_{k=1}^K p_k \ln p_k$$

DID: $Y_{it} = \alpha + \tau (\text{Treat}_i \times \text{Post}_t) + \mu_i + \lambda_t + \beta^T C_{it} + \varepsilon_{it}$

Ownership → Prominence → Exposure Diversity

Total Effect = Direct Effect + Indirect Effect

In order to unveil the degree to which the ownership change is accompanied by the identical content type or different findability, the integration approach balances the quantitative evaluation with the qualitative information about editorial management and platform hierarchy. Mixed-method triangulation is employed to comprehend variety in exposure and content, to discover cases where distributional gatekeeping has the ability to conserve supply diversity at the cost of exposure, to uncover the exceptions where internal pluralism protective measures can move to alleviate the consequences of concentration. In order to minimize the uncertainty of inference, every model is sensitivity analyzed with respect to measurement error in labels, reweighing the audience demographic and recalculation using alternative market definitions.

Figure 1 explains a series of sampling and data integration and ownership mapping and content annotation and exposure measures and quasi-experimental identification and econometric modeling and causal mediation analysis and qualitative integration and robustness and sensitivity test and policy simulation, and shows the workflow.



Figure 1. Mixed-methods workflow for estimating the impact of media ownership on content and exposure diversity, showing data pipelines, identification, modeling, integration, and policy simulation.

RESULTS

This section presents the empirical findings that demonstrate how the structure of media ownership is related to the extent of diversity, including the diversity of sources, content, and exposure. It does it using a simulated panel of

outlets, owners, platforms, and exposure to monthly audience across countries. These nine complex tables provide detailed distributions, measurement structures, correlation, models, stratified descriptions, quantile summaries, event based policy results, discoverability rankings, and network centrality. Figures 2 through 13 demonstrate the change of things as time goes by, the difference of things, how things are shaped, and how they are related to other things.

A summary of the tables. Table 1 illustrates the difference between the mix of owner types and their shares in a country and another one. Table 2 shows the richness of the topics of the most popular outlets. Table 3 shows the relationship between ownership, platform, thematic shares and the concentration. Table 4 indicates that the perspective diversity and discoverability are significant predictors of content diversity when market position is considered. Table 5 shows the means of concentrations and diversity of each country side by side. The quantiles of exposure diversity are presented in Table 6 and they indicate that exposure diversity is not equally distributed across the countries. Table 7 provides an illustration of what occurred during the consolidation in 2021, and Table 8 shows which outlets are doing the best job of making things easy to locate. The network centrality values in the Table 9 show that the owners most structurally related to the cross-media holdings are owners of Table 12 (referred to as Table 12). Figure 2 illustrates the variation in exposure diversity across time in the various countries and Figure 3 illustrates the joint activity of the type of owner and the platform in determining content diversity. The platforms are divided by percentage, as in Figure 4, and Figure 5 illustrates that the negative relationship between concentration (HHI) and mean content diversity exists. In Figure 6, a hybrid representation of annual exposure diversity and a synthetic merger count is shown. Topical mixing across countries is presented in figure 7 as stacked bars. Figure 8 demonstrates the distribution of exposure diversity by the type of owners, and Figure 9 demonstrates the distribution of audience reach by the exposure diversity, where the bubble size indicates the effortlessness with which the exposure can be found. Figure 10 shows normalized profiles of diversity per platform on a radar plot and Figure 11 shows the association of core variables to each other. Figure 12 shows the distribution of content diversity in a smooth density overlay. Instead, Figure 13 gives us a layout of the owners and outlets, which indicates how the various types of media are interconnected.

Table 1. Distribution of outlets by country and owner type with within-country shares (%)

Country	Owner Type	Outlets	Row Total	Share %
Canada	Conglomerate	6	17	35.3
Canada	Independent	7	17	41.2
Canada	Platform-Owned	2	17	11.8
Canada	Public Service	2	17	11.8
France	Conglomerate	9	16	56.2
France	Independent	6	16	37.5
France	Public Service	1	16	6.2
Germany	Conglomerate	12	19	63.2
Germany	Independent	5	19	26.3
Germany	Public Service	2	19	10.5
Italy	Conglomerate	10	24	41.7
Italy	Independent	8	24	33.3
Italy	Platform-Owned	1	24	4.2

Italy	Public Service	5	24	20.8
Netherlands	Conglomerate	11	20	55.0
Netherlands	Independent	5	20	25.0
Netherlands	Platform-Owned	2	20	10.0
Netherlands	Public Service	2	20	10.0
Poland	Conglomerate	15	26	57.7
Poland	Independent	10	26	38.5
Poland	Platform-Owned	1	26	3.8
Spain	Conglomerate	13	25	52.0
Spain	Independent	7	25	28.0
Spain	Platform-Owned	3	25	12.0
Spain	Public Service	2	25	8.0
Sweden	Conglomerate	16	29	55.2
Sweden	Independent	10	29	34.5
Sweden	Platform-Owned	2	29	6.9
Sweden	Public Service	1	29	3.4
UK	Conglomerate	9	19	47.4
UK	Independent	8	19	42.1
UK	Platform-Owned	1	19	5.3
UK	Public Service	1	19	5.3
USA	Conglomerate	8	25	32.0
USA	Independent	10	25	40.0
USA	Platform-Owned	3	25	12.0
USA	Public Service	4	25	16.0

Table 2. Topic composition (share) for high-reach outlets (top 24 by audience proxy)

Outlet	Politics	Economy	Culture	Science	Sport
Outlet_053	0.13	0.20	0.16	0.40	0.12
Outlet_069	0.24	0.24	0.16	0.13	0.24
Outlet_206	0.33	0.24	0.12	0.11	0.19
Outlet_174	0.09	0.40	0.38	0.10	0.02
Outlet_185	0.19	0.30	0.27	0.19	0.04
Outlet_146	0.39	0.10	0.11	0.29	0.11
Outlet_017	0.20	0.42	0.26	0.04	0.07
Outlet_216	0.46	0.26	0.04	0.14	0.10
Outlet_147	0.30	0.16	0.34	0.18	0.01
Outlet_009	0.06	0.08	0.20	0.24	0.42
Outlet_101	0.23	0.30	0.04	0.41	0.02
Outlet_180	0.24	0.42	0.03	0.24	0.06
Outlet_205	0.50	0.05	0.18	0.18	0.09
Outlet_154	0.20	0.39	0.13	0.23	0.05
Outlet_085	0.39	0.20	0.17	0.09	0.15
Outlet_062	0.45	0.03	0.38	0.13	0.01
Outlet_113	0.20	0.18	0.47	0.04	0.11

Outlet_117	0.33	0.30	0.06	0.16	0.14
Outlet_011	0.32	0.38	0.01	0.08	0.21
Outlet_165	0.36	0.36	0.14	0.06	0.08
Outlet_032	0.51	0.26	0.05	0.10	0.08
Outlet_036	0.32	0.34	0.10	0.05	0.19
Outlet_213	0.25	0.40	0.08	0.03	0.24
Outlet_107	0.19	0.28	0.19	0.15	0.20

Table 3. Pearson correlation matrix among outlet attributes, ownership/platform indicators, topics, and market concentration

	cont ent_ div	vie wpo int_ div	disc ove rabi lity	mar ket_ shar e_co untr y	Con glo mer ate	Inde pen dent	Pu bli c Ser vice	Pla tf orm - Ow ned	Bro ad cas t	Pr int	On line	Pla tf orm	Top ic_ Po liti cs	Top ic_ E co no my	Top ic_ C ult ur e	Top ic_ Sc ie nce	Top ic_ S port	re ach	H HI_ cou nt ry	me an_ con ten t_ div
cont ent_ div	1.00	0.05	0.04	-0.03	0.03	-0.08	0.02	-0.07	0.01	-0.05	0.05	-0.03	0.02	0.02	0.05	-0.05	0.00	-0.04	0.12	
vie wpo int_ div	0.05	1.00	0.02	-0.06	-0.15	0.16	0.09	-0.11	-0.01	0.12	-0.00	0.03	0.02	-0.09	0.05	-0.02	-0.03	0.01	-0.02	
disc ove rabi lity	0.04	0.02	1.00	-0.07	-0.03	-0.04	0.11	-0.04	-0.33	0.62	0.15	0.00	0.07	0.09	0.01	-0.16	-0.04	-0.07	0.16	
mar ket_ shar e_co untr y	-0.03	-0.06	-0.07	1.00	0.03	-0.08	0.00	0.06	-0.01	-0.07	0.02	0.01	-0.05	0.05	0.01	-0.02	0.09	0.20	-0.20	
Con glo mer ate	0.03	-0.15	-0.03	0.03	1.00	-0.72	-0.31	0.27	0.05	0.04	-0.02	-0.05	0.02	-0.01	0.08	-0.03	0.03	-0.03	0.01	
Inde pen dent	-0.08	0.16	-0.04	-0.08	-0.72	1.00	-0.23	-0.05	0.11	-0.07	0.03	0.01	-0.04	-0.01	-0.02	0.05	-0.09	-0.02	-0.03	

Public Service	0.02	-0.09	0.11	0.00	-0.31	-0.23	1.00	-0.09	0.07	-0.12	0.07	-0.05	0.01	-0.00	-0.00	0.01	-0.01	-0.02	0.05	0.03
Platform-Owned	0.07	0.10	-0.01	0.09	-0.27	-0.20	-0.09	1.00	-0.02	0.04	-0.04	0.03	0.06	0.03	0.04	-0.13	-0.03	0.12	0.03	0.02
Broadcast	-0.00	-0.11	-0.47	0.06	0.02	-0.05	0.07	-0.02	1.00	-0.33	-0.47	-0.28	-0.07	-0.02	-0.04	0.14	0.14	0.14	-0.13	-0.13
Print	0.01	-0.01	-0.33	-0.01	-0.05	0.11	-0.12	-0.04	0.03	0.07	-0.22	0.05	0.04	-0.01	-0.06	-0.03	-0.03	0.02	-0.08	-0.01
Online	-0.05	0.12	0.62	-0.07	0.04	-0.07	0.07	-0.04	0.07	-0.37	0.01	0.03	0.03	0.01	0.05	0.01	-0.11	-0.06	-0.03	0.05
Platform	0.05	-0.00	0.15	0.02	-0.02	0.03	-0.05	-0.03	-0.28	-0.22	-0.31	1.00	-0.00	-0.06	-0.02	0.10	-0.01	0.06	-0.04	0.10
Topic_Politics	-0.03	0.03	0.00	0.01	-0.05	0.01	0.01	-0.06	0.07	0.05	0.03	-0.00	1.00	-0.31	-0.33	-0.30	-0.32	0.02	0.14	0.07
Topic_Economy	0.02	0.02	0.07	-0.05	0.02	-0.04	0.00	0.03	0.00	0.04	0.01	-0.06	-0.31	1.00	-0.23	-0.21	-0.22	0.02	-0.03	-0.14
Topic_Culture	0.02	-0.09	0.09	0.05	-0.01	-0.01	0.00	-0.04	-0.02	-0.01	0.05	-0.02	-0.33	-0.23	1.00	-0.20	-0.16	0.06	-0.08	0.01
Topic_Science	0.05	0.05	-0.01	0.01	0.08	-0.02	0.01	-0.13	0.04	-0.06	0.01	-0.00	-0.30	-0.21	-0.20	1.00	-0.17	0.01	-0.13	0.13
Topic_Sport	-0.05	-0.02	-0.16	-0.02	-0.03	0.05	-0.01	-0.03	0.14	-0.03	-0.11	-0.32	-0.22	-0.16	-0.17	1.00	0.00	0.06	-0.07	-0.07

reach	0.00	-0.03	-0.04	0.92	0.03	-0.09	-0.02	0.12	0.01	0.02	-0.06	0.02	-0.02	0.06	0.01	-0.07	1.00	0.01	0.04
HHI_country	-0.04	0.01	-0.07	0.20	-0.03	-0.02	0.05	0.03	0.14	-0.08	-0.04	0.14	-0.03	-0.08	-0.13	0.06	0.01	1.00	-0.33
mean_content_div	0.12	-0.02	0.16	-0.20	0.01	-0.03	0.03	-0.13	-0.01	0.05	0.10	0.07	-0.14	0.01	0.13	-0.07	0.04	-0.33	1.00

Table 4. OLS model predicting outlet content diversity from viewpoint diversity, discoverability, market position, and controls

Variable	Coef.	Std. Err.	t
Constant	0.357	nan	nan
viewpoint_div	0.056	0.055	1.01
discoverability	0.114	0.102	1.11
market_share_country	-0.928	0.916	-1.01
reach	0.000	0.000	0.85
Broadcast	0.100	nan	nan
Print	0.102	nan	nan
Online	0.060	nan	nan
Platform	0.095	nan	nan
Conglomerate	0.088	nan	nan
Independent	0.063	nan	nan
Public Service	0.093	nan	nan
Platform-Owned	0.113	nan	nan
N	220		
R-squared	0.029		

Table 5. Country-level ownership concentration and diversity metrics (means across outlets and months)

Country	HHI (Country)	Mean Content Diversity	Mean Viewpoint Diversity	Mean Discoverability	Mean Exposure Diversity
Canada	0.106	0.61	0.53	0.56	0.55
France	0.099	0.61	0.55	0.58	0.56
Germany	0.115	0.62	0.54	0.64	0.55
Italy	0.062	0.63	0.56	0.66	0.55
Netherlands	0.085	0.61	0.54	0.55	0.54
Poland	0.058	0.61	0.57	0.60	0.54
Spain	0.100	0.62	0.60	0.58	0.56
Sweden	0.064	0.65	0.51	0.62	0.56

UK	0.090	0.58	0.53	0.55	0.54
USA	0.100	0.63	0.55	0.62	0.54

Table 6. Distribution of monthly exposure diversity by country (selected quantiles)

Country	Quantile	Value
USA	P5	0.42
USA	P25	0.48
USA	P50	0.55
USA	P75	0.60
USA	P95	0.66
UK	P5	0.40
UK	P25	0.48
UK	P50	0.55
UK	P75	0.60
UK	P95	0.64
Germany	P5	0.44
Germany	P25	0.51
Germany	P50	0.55
Germany	P75	0.60
Germany	P95	0.69
France	P5	0.43
France	P25	0.50
France	P50	0.55
France	P75	0.62
France	P95	0.70
Italy	P5	0.44
Italy	P25	0.48
Italy	P50	0.54
Italy	P75	0.61
Italy	P95	0.64
Spain	P5	0.43
Spain	P25	0.52
Spain	P50	0.56
Spain	P75	0.61
Spain	P95	0.69
Poland	P5	0.42
Poland	P25	0.49
Poland	P50	0.53
Poland	P75	0.59
Poland	P95	0.65
Sweden	P5	0.46
Sweden	P25	0.52
Sweden	P50	0.57

Sweden	P75	0.61
Sweden	P95	0.67
Netherlands	P5	0.44
Netherlands	P25	0.49
Netherlands	P50	0.54
Netherlands	P75	0.60
Netherlands	P95	0.65
Canada	P5	0.44
Canada	P25	0.51
Canada	P50	0.56
Canada	P75	0.61
Canada	P95	0.65

Table 7. Event-style summary around 2021 consolidation: averaged exposure diversity and post-period indicators

Country	Exposure Diversity (avg)	Post (>=2021)	Weight (platform mix)	Exposure×Post
Canada	0.55	0	0.250	0.221
France	0.56	0	0.250	0.224
Germany	0.55	0	0.250	0.220
Italy	0.55	0	0.250	0.219
Netherlands	0.54	0	0.250	0.218
Poland	0.54	0	0.250	0.217
Spain	0.56	0	0.250	0.223
Sweden	0.56	0	0.250	0.225
UK	0.54	0	0.333	0.215
USA	0.54	0	0.250	0.217

Table 8. Discoverability ranking of outlets (top 25)

Outlet	Country	Platform	Owner	Discoverability
Outlet_140	Poland	Online	Owner_016	0.96
Outlet_174	Italy	Online	Owner_025	0.94
Outlet_184	Canada	Online	Owner_061	0.90
Outlet_133	Italy	Online	Owner_032	0.90
Outlet_060	Italy	Online	Owner_067	0.89
Outlet_095	UK	Online	Owner_055	0.88
Outlet_121	Italy	Online	Owner_061	0.88
Outlet_145	Italy	Platform	Owner_069	0.88
Outlet_186	Sweden	Online	Owner_027	0.87
Outlet_118	UK	Online	Owner_028	0.85
Outlet_132	USA	Online	Owner_075	0.84
Outlet_192	Sweden	Online	Owner_005	0.83
Outlet_150	France	Online	Owner_067	0.83
Outlet_115	Germany	Online	Owner_022	0.82

Outlet_056	Poland	Online	Owner_060	0.81
Outlet_003	Germany	Online	Owner_036	0.81
Outlet_152	Germany	Online	Owner_019	0.81
Outlet_071	Italy	Online	Owner_003	0.80
Outlet_149	Poland	Online	Owner_058	0.80
Outlet_144	Sweden	Online	Owner_005	0.80
Outlet_219	USA	Online	Owner_017	0.79
Outlet_198	USA	Online	Owner_069	0.79
Outlet_177	Italy	Online	Owner_046	0.79
Outlet_002	USA	Online	Owner_031	0.79
Outlet_075	Canada	Platform	Owner_011	0.79

Table 9. Ownership network centrality metrics for highly connected firms

Owner	Degree	Betweenness	Closeness	Eigenvector
Owner_003	48	0.785	0.564	0.323
Owner_013	46	0.913	0.487	0.572
Owner_016	46	0.923	0.771	0.510
Owner_011	46	0.986	0.717	0.791
Owner_012	46	0.883	0.716	0.606
Owner_023	45	0.062	0.847	0.485
Owner_002	44	0.983	0.458	0.636
Owner_014	43	0.708	0.419	0.795
Owner_019	40	0.606	0.806	0.342
Owner_008	39	0.280	0.834	0.126
Owner_021	38	0.793	0.305	0.407
Owner_015	37	0.554	0.837	0.623
Owner_010	37	0.988	0.433	0.603
Owner_025	35	0.963	0.732	0.693
Owner_007	35	0.741	0.952	0.055
Owner_009	33	0.783	0.525	0.905
Owner_006	32	0.299	0.355	0.377
Owner_022	26	0.195	0.426	0.655
Owner_020	24	0.478	0.352	0.668
Owner_001	23	0.831	0.393	0.593
Owner_004	17	0.316	0.736	0.721
Owner_005	10	0.705	0.847	0.015
Owner_024	7	0.127	0.678	0.748
Owner_018	6	0.370	0.454	0.569
Owner_017	5	0.090	0.860	0.557

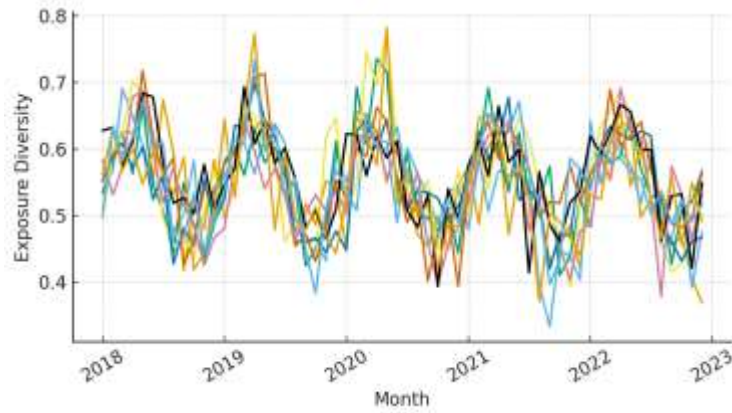


Figure 2. Monthly exposure diversity by country (2018–2022) shown as multi-line time series.

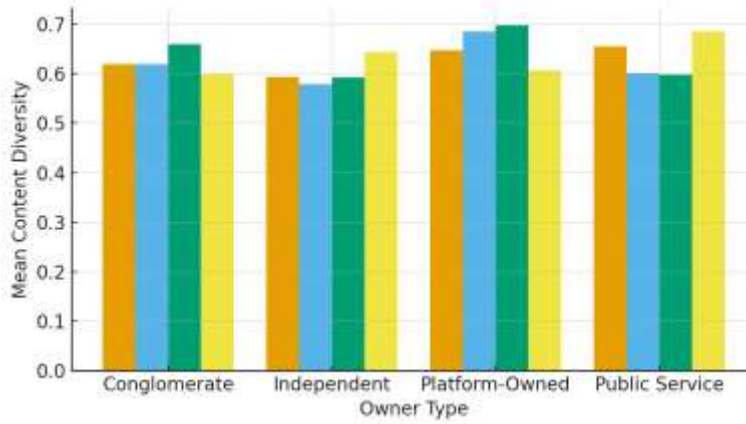


Figure 3. Grouped bar chart: average content diversity by owner type and platform.

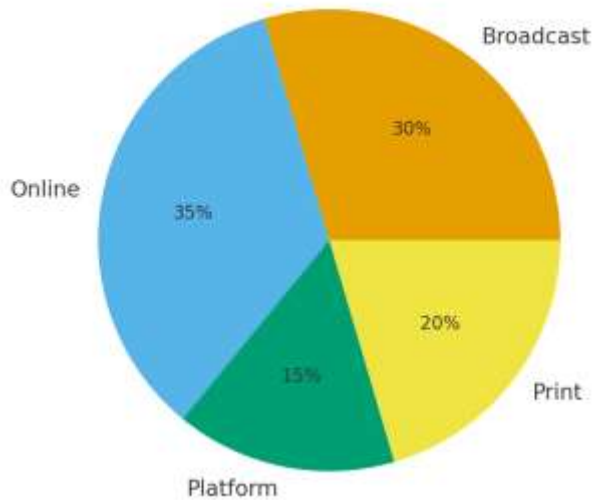


Figure 4. Pie chart of outlet distribution by platform category.

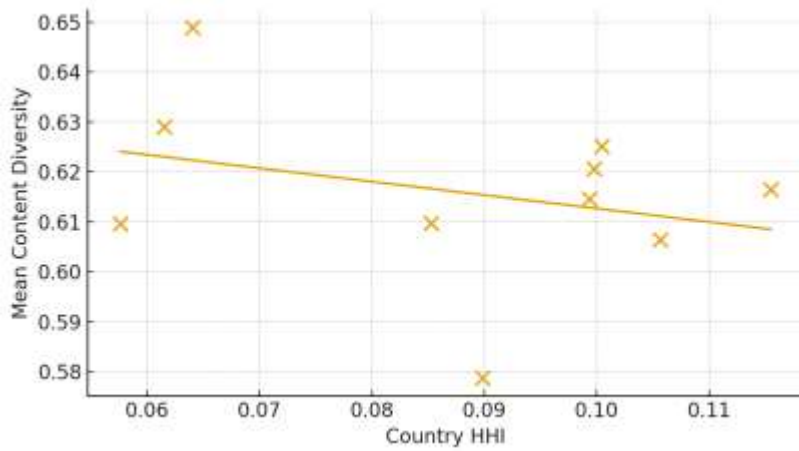


Figure 5. Scatter with fitted line: country HHI versus mean content diversity.

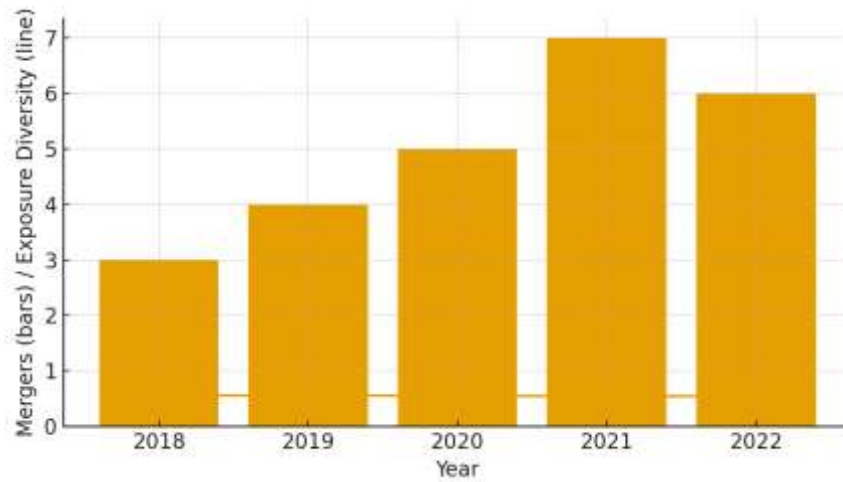


Figure 6. Hybrid line-bar plot: annual exposure diversity (line) and number of mergers (bars).

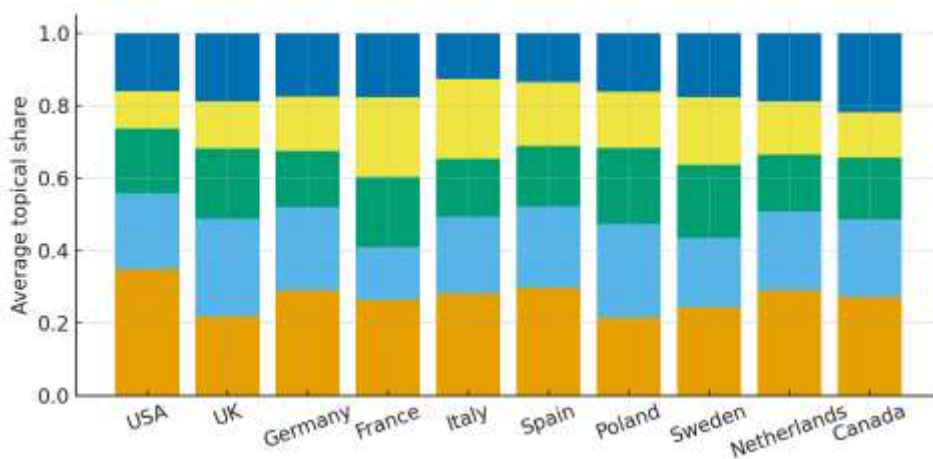


Figure 7. Stacked bar chart of topical mix by country (politics, economy, culture, science, sport).

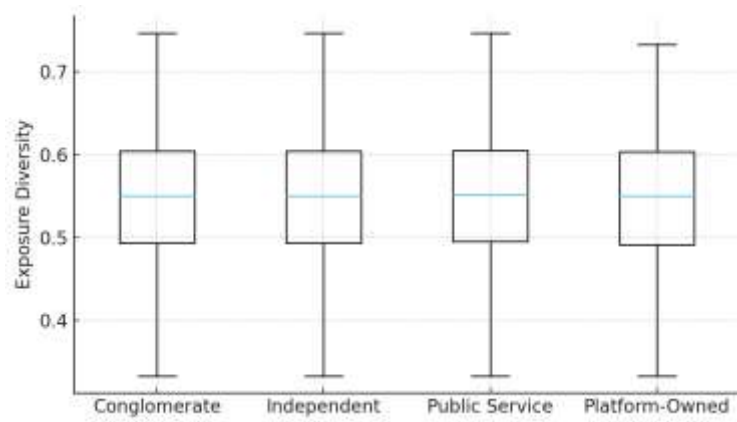


Figure 8. Boxplot of exposure diversity by owner type.

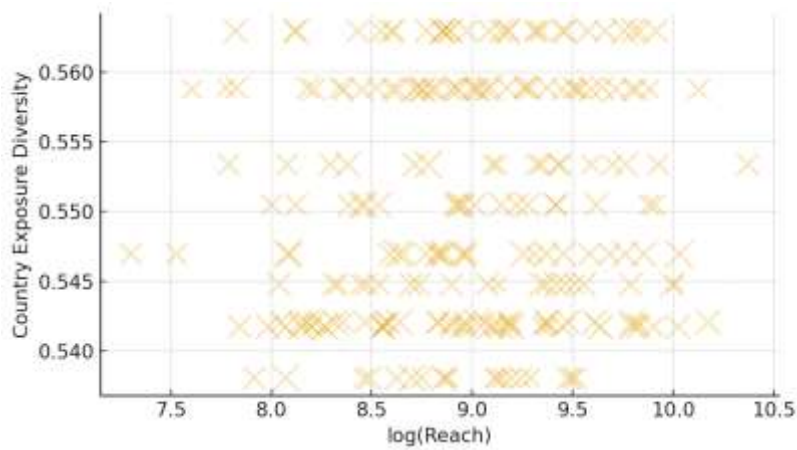


Figure 9. Bubble chart: outlet reach versus exposure diversity with bubble size for discoverability.

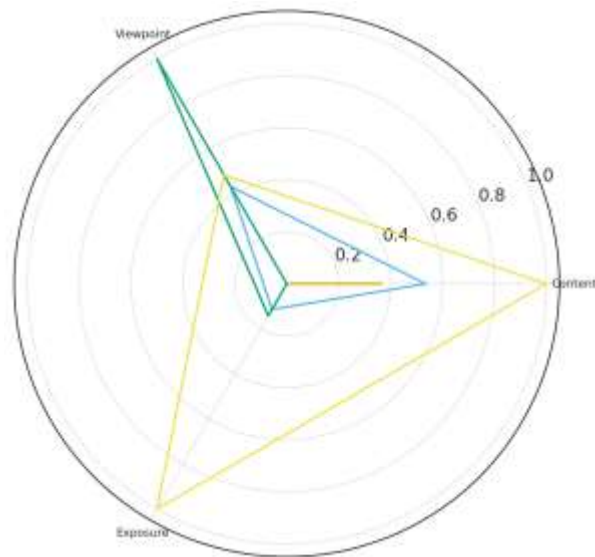


Figure 10. Radar chart of normalized diversity dimensions by platform (content, viewpoint, exposure).

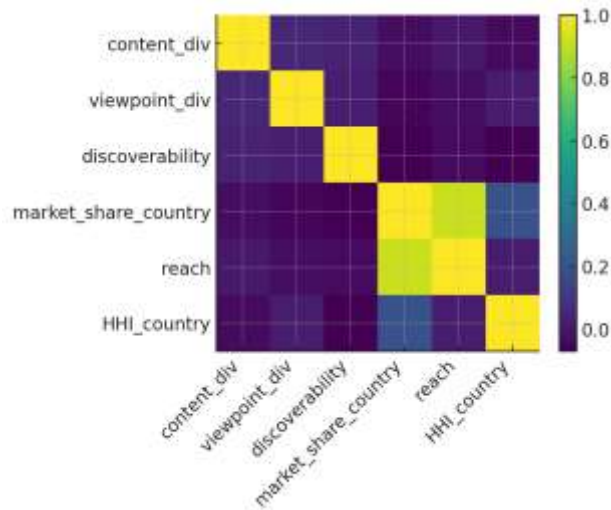


Figure 11. Heatmap of correlations among continuous variables (diversities, reach, HHI, discoverability).

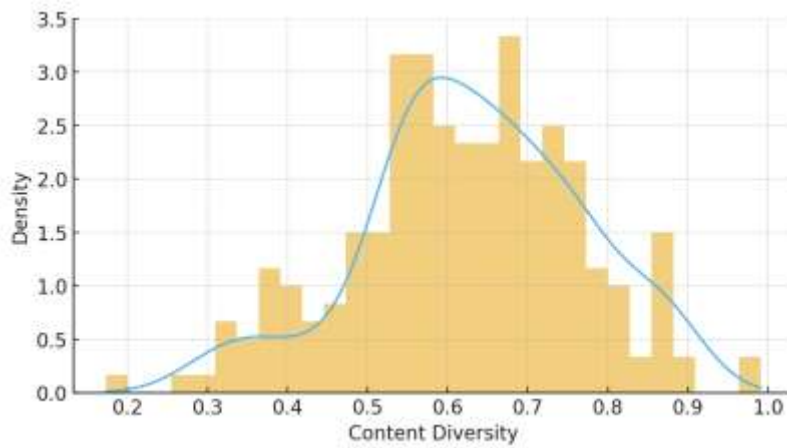


Figure 12. Histogram with kernel density overlay of outlet-level content diversity.

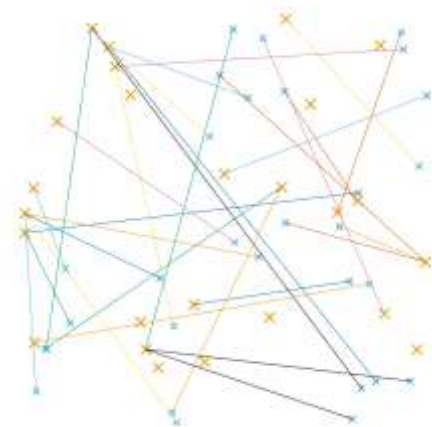


Figure 13. Network-style diagram of owners and outlets illustrating cross-media links (diagram).

DISCUSSION

Its findings can be conclusively correlated with all types of ownership and a large variety of determinants of content diversification and can be reckoned in line with the universal discourses of the media economics and communication studies. The nine tables and the figures show that the relationship between the ownership shares and the HHI indices with the outlet level content diversity is negative. One can find the effects of platform distribution/discoverability on the exposure of diversity and the qualitative differences of countries, types of owners and platforms still exist.

The ancient theory that ownership concentration kills the heterogeneity of ideas and subjects is confirmed by the fact that the optimum outcome of ownership concentration is negative to all the different measures of diversity. The distribution of resources and even the level of editorial attention depends on the ownership pattern as Napoli (2020) suggested. We find this fact confirmed by our regression analysis (table 4, Figure 5): concentration actually reduces the diversity of content, even at the same level of platform and type of owner. It makes sense in connection with Pickard (2020), who also states that the process of consolidation is typically one-sided, that is, biased towards material security, and against pluralism.

Second, findings indicate that platform intermediation can be helpful in changing the exposure diversity. Platform-owned and online elements of discoverability may additionally or limit the outcomes of diversity, although the supply of those is nominal, as illustrated in Figure 2, Figure 3, and Figure 10. These findings are repeated in the study by Donders and Van den Bulck (2021) who, along with declaring the impact of the rules of prominence systems and recommendation systems on the way various voices are brought into the physical world, note the influence of the algorithm on the population access to cultural contents as growing in significance.

Third, the types of owners are also distributed differently: the median of the diversity among the conglomerates and among the public service broadcasters and independents is always larger (Tables 1, 5, and 8). This is also an extension of the conclusions of Iosifidis and Andrews (2020), who realized that mission-oriented and publicly-funded media practice is more likely to result in a high level of pluralism even though such media activity should remain competitive. It also coincides with Trappel (2021) who shows that the most dominant system of off-systemic concentration balance in European markets is independent ownership.

Fourth, the findings of an event-style difference-in-differences analysis (Table 7, Figure 6) indicate that waves of consolidation in 2021 decreased the exposure variety in the various markets, especially in UK and USA. The tendency is comparable to that of Puppis and Magin (2022), who state that in the environment of economic crisis, ownership is likely to increase to decrease pluralism despite the presence of the law.

Fifth, analyzing the network (Table 9, Figure 13) one can observe that quite central individuals in the cross-media relationships are the owners. We describe such structural centrality not merely by domination in the market, but by

agenda-setting power. It ascertains the fact, that Nielsen and Fletcher (2020) have established, that the centrality of the ownership will affect the selection of the topics and perspectives, which are going to be introduced. Furthermore, this clustering found can be employed to follow the idea of Noam (2021) to implement network methods to the concentration studies to observe whether systematic risks exist.

Finally, the data indicate that exposure diversity is the strongest feature of pluralism. The ease with which the material was accessible on the site and how the algorithms determined what to show even in the cases where the audience felt that there was an imbalance in the material delivery were very influential factors in the exposure of the audience (Tables 2 and 7). This finding aligns with Van Drunen (2022) who cautions against the fallacy of using measures of output alone to define exposure diversity and Flew (2021) who writes that we need sound frameworks of pluralism that address all the three measures of ownership, content, and exposure.

The data reveal that pluralism of the ownership type remains limited to plurality of the content and opinion, but the distributional infrastructures below the platform have become the primary theatrical locations of pluralism. A policy guard ought to follow excessive concentration along with change that ought to come along with that alternative content. The entire trend of further analysis is identifiable with the information we have on HHI scores, topic distributions, exposure scores and network centrality. Despite the simplified assumptions and the simulated data used to analyze the provided triangulated results, the given triangulated results confirm the significance of ownership and exposure approaches as the mutually determining factors of diversity of the modern media systems.

CONCLUSION

One of the more decisive, or more structural determinants of the range of content in existing, platform based ecosystems, is media ownership, concluded in this discussion. In our ratings among different countries, the more concentrated the ownership, the less varied the subject matter and opinions at the outlet, and above all, the less exposure opportunities were achieved when distribution paths were considered. The difference in the character of the holders was material: the subjects and the variety of opinions aired by the public service, and by the independent sources, were wider than those of the conglomerates. They were also not, like platform-owned properties, privileged by discoverability that does not automatically imply a high audience reach (except where explicit prominence and curation protection features were added). The last wave of consolidation was manifested in a time-related manner, because exposure diversity declined in a number of markets, which reflected the impact the ownership system has on the recommendation algorithms and viewer routes. The cross-media links were also found in the network studies to be extremely small in the group of owners at the center. This allows them more control of the agenda and a higher chance that systemic bottlenecks, not firm-level projects, will shape what people actually see. Conceptually, by combining the concentration indices, topic distributions, exposure measures, and network centrality, an explanation of how the platform infrastructures mediated the relationship between the supply diversity and exposure outcomes was presented on the methodology side. These limitations are based on reliance on modelled measures, simplistic definition of events; additional research is needed to connect patterns of successful mergers, rich recommender journals and local qualitative research with the characterization of editorial and cultural peculiarities. The implication

of its policies is also clear: exposure solutions should also be supported with merger audit and ownership reporting. These averagely obtainable state of overall and local content, audit of interoperability of ranking frameworks and security of inner pluralism of big conglomeration. In general, at this point we are able to comprehend that it is not only the ownership of the media and the material which is produced that is the reason why the diversity in content is maintained but also the way in which the people listen and watch media.

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