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ARTICLE (REFEREED)

Ethnic Fractionalization and Polarization: A Bibliometric Study of Trends, Clusters, and Opportunities

I Ketut Gunawan[1,*], Paisal Akbar[1], Hasse Jubba[2], Mohammad Eisa Ruhullah[3], Muhammad Nurul Huda[4], Inka Nusamuda Pratama[5]

[1] Universitas Mulawarman, Samarinda, East Kalimantan, Indonesia
[2] Universitas Muhammadiyah Yogyakarta, Special Region of Yogyakarta, Indonesia
[3] University of Malaya, Kuala Lumpur, Malaysia
[4] Universitas Muhammadiyah Karanganyar, Karangyar, Java, Indonesia
[5] Universitas Muhammadiyah Mataram, Mataram, West Nusa Tenggara, Indonesia

Corresponding author: I Ketut Gunawan, Universitas Mulawarman, Jl. Kuaro, Gn. Kelua, Kec. Samarinda Ulu, Kota Samarinda, East Kalimantan 75117, Indonesia, i.ketut.gunawan@fisip.unmul.ac.id

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Abstract

This study presents a bibliometric analysis of 541 documents on ethnic fractionalization and polarization from the Scopus database (1983-2025). Using VOSviewer, we examined publication trends, geographic distribution, thematic clusters, and temporal shifts. Publications increased significantly since 2000, peaking in 2022 and 2025, with the United States, the United Kingdom, and Australia leading, though contributions from developing countries are growing. Seven thematic clusters emerged. Classical themes linking ethnic diversity to economic growth, conflict, and political instability remain central. Two emerging clusters, public health and environmental vulnerability, signal a major expansion. Temporal analysis reveals a shift from political identity and governance (2013-2018) toward health and environmental issues (2019-2022). Density visualization identifies under-researched areas: mental health, climate vulnerability, trust, fiscal decentralization, and country-specific case studies. This study provides a foundation for policy responses at the intersection of ethnicity, health, and the environment.

Keywords

Ethnic Polarization; Ethnic Fractionalization; Ethnic Fragmentation; Bibliometric Analysis; Research Trends

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Introduction

Ethnicity is a global phenomenon that has existed since the beginning of human civilization. It encompasses blood ties, kinship, beliefs, ancestry, and cultural practices (Smith 1979, 1989). As a primordial element, ethnicity is often seen as ancient, obsolete, and even primitive (Keyes 1981). As a result, both Marxists and Liberals argue that these primordial ties and ethnic affiliations will fade or disappear as society progresses through industrialization and modernization. From a Marxist perspective, ethnic loyalty is considered archaic and temporary; it will disappear once individuals from different ethnic backgrounds realize the interests of the common class. The Liberals also argue that ethnic loyalty is anachronistic and will inevitably be eroded by the forces of rationalization and homogenization that accompany industrialization and modernization (Eller & Coughlan 1993). However, the persistence of ethnicity from ancient times to the modern era, even in the digital era, demonstrates its continued significance. The phenomenon of ethnicity in contemporary society is unlikely to subside, given the economic and political needs that drive it and the rise of ethnic myths about ancestry and heritage (Smith 1989). Resilience, awakening, and ethnic attachment can be attributed to individuals' primordial tendencies in response to certain situational demands (Eller & Coughlan 1993).

In this context, ethnicity remains relevant, especially in multiethnic countries. As mobility increases and transportation and accommodation systems advance, most countries are now multiethnic. This sparked interest in research on ethnicity, especially ethnic diversity. Attention comes not only from developing countries, but also from developed democracies. Because ethnicity is a global issue, researchers worldwide are working to explore, understand, and analyse its complexity. Anthropologists and sociologists examine ethnic migration and relationships between ethnic groups, including indigenous peoples, as well as aspects of tribal membership, traditions, languages, and cultures (Smith 1989; Strobele-Gregor 1994; Birnir & Van Cott 2007; Banton 2008; Dadze-Arthur 2017). They aim to document and preserve cultural heritage, as well as explore the potential use of ethnic culture and local knowledge for development. Political scientists focus on ethnic conflicts, nation-building, and state-building from et hnic perspectives; ethnonationalism; democracy in multiethnic countries; indigenous peoples' rights; governance; and terrorism (Ikenberry 2000; Snyder 2000; Horowitz 2001; Gurr 2015; Python, Brandsch & Tskhay 2017; Shoup 2018). Economists associate ethnicity with economic development, growth, inequality, economic freedom, public spending, corruption, the provision of public goods, and trust (Montalvo & Reynal-Querol 2005; Dincer 2011; Cerqueti, Coppier & Piga 2012; Ananta et al. 2023). Scholars from other disciplines also research ethnicity to connect it to their various areas of concern (Awaworyi Churchill & Smyth 2017; Churchill, Ivanovski & Bhattacharya 2019; Awaworyi Churchill, Nuhu & Lopez 2019).

All of these research results are documented in various formats, including books, reports, videos, newspapers, magazines, journals, and proceedings. Recent research on ethnicity focuses on two aspects of ethnic diversity: *ethnic fractionalization* and *ethnic polarization*. These two elements are associated with a variety of issues, depending on the researcher's disciplinary focus. However, systematic measurement of these concepts has mainly developed since the 1980s (Alesina et al. 2003; Montalvo & Reynal-Querol 2005). The underlying idea has deeper intellectual roots. Terms such as ethnic fragmentation and ethnic polarization have appeared in the social science literature since the mid-20th century, for example, in the study of conflict in Nigeria (Waldman 1966), electoral polarization in the UK (Deakin & Bourne 1970), population census in Nigeria (Prothero 1956), political instability in Africa (Barrows 1976), as well as national integration in West Africa (Wallerstein 1993). Thus, the discourse on ethnic fragmentation had taken root long before quantitative indices were developed.

This study aims to map research trends on *ethnic fractionalization* and *ethnic polarization* with a bibliometric approach. Specifically, we ask: What are the dominant research themes, how have they evolved,

and what opportunities exist for future inquiry? By analyzing publications indexed in Scopus, we sought to identify thematic developments, geographic distributions, shifts in focus over time, and future research opportunities. This mapping is important not only for academics to understand the evolution of fields of study, but also for policymakers grappling with the challenges of pluralistic societies. By understanding which themes are dominant and which are less dominant, we can direct further research more strategically.

Literature Review

The term 'ethnicity' entered academic use in the 19th century, and Max Weber provided the first comprehensive definition based on subjective belief in common descent. Edward Shils (1957) and Clifford Geertz (1976) later developed the concept of primordialism, viewing ethnic identity as rooted in fixed markers such as kinship, language, and religion. This perspective suggests that ethnic attachments are deeply ingrained and relatively stable, often passed down through generations. However, critics argue that ethnicity is fluid and socially constructed, shaped by historical circumstances and social interactions (constructivism). Others contend that ethnicity is strategically deployed by elites competing for power and resources (instrumentalism). Rather than treating these perspectives as mutually exclusive, many scholars combine them to explain different aspects of ethnic phenomena. The increasing frequency of ethnic conflicts, underdevelopment, inequality, and weak governance in multi-ethnic countries has driven scholarly interest toward two specific dimensions: ethnic fractionalization and ethnic polarization (Easterly & Levine 1997; Montalvo & Reynal-Querol 2002; Esteban & Ray 2008; Klašnja & Novta 2014).

Ethnic fractionalization refers to the degree of fragmentation of ethnic groups within a geographic area (Esteban & Ray 2008). The term ethnic fragmentation appeared much earlier in the literature: Prothero (1956) noted considerable ethnic fragmentation in Northern Nigeria, Barrows (1976) developed an ethnic fractionalization index to examine political instability in Black Africa, and Waldman (1966) discussed ethnic polarization in the context of the Fulani Jihad. Deakin and Bourne (1970) warned of ethnic polarization in UK elections. Thus, the discourse has deep roots in the social sciences, predating the quantitative revolution of the 1990s. Since then, scholars have created various indices to measure fractionalization. The most widely used is the *Ethnic and Language Fractionalization* (ELF) index (Alesina et al. 2003), which captures the probability that two randomly selected individuals belong to different ethnic, linguistic, or religious groups. Building on this, Posner (2004) developed the *Politically Relevant Ethnic Groups* (PREG) index, which focuses only on groups that actually matter in political competition. Montalvo and Reynal-Querol (2005) proposed a polarization index that emphasizes group sizes rather than the sheer number of groups. Bossert, D'Ambrosio and La Ferrara (2011) introduced the *Common Ethno-Linguistic Fractionalization Index*, offering greater flexibility for non-state contexts.

Empirical studies using these indices show mixed results. Some find a negative correlation between ethnic fractionalization and economic growth, attributing this to reduced investment, higher corruption, and poor provision of public goods (Campos & Kuzeyev 2007; Awaworyi Churchill & Smyth 2017). Others find no significant effect (Majumder 2009), and some even report positive effects in democratic contexts with strong institutions (Heckelman & Wilson 2018). The mechanisms behind these divergent findings are complex. In weak institutional environments, ethnic fragmentation may exacerbate coordination problems and rent-seeking. However, in stable democracies, diversity can foster creativity and cross-cutting ties that enhance economic performance. Conflict studies are similarly inconclusive, with some research linking fragmentation to a higher risk of ethnic armed conflict (Wegenast & Basedau 2014) while others find no association (Montalvo & Reynal-Querol, 2005). This ambiguity has led researchers to shift their focus toward ethnic polarization, which is argued to better capture the dynamics of intergroup antagonism.

Ethnic polarization measures the level of antagonism and tension between ethnic groups, reflecting ethnic distance and the potential for conflict (Esteban & Ray, 2008). Unlike fractionalization, which counts the number of groups, polarization emphasizes the distribution of group sizes: a society polarized between two or three large groups is considered more prone to conflict than one with many tiny groups. The indices developed by Esteban and Ray (2008) and Montalvo and Reynal-Querol (2005) have been widely applied. Their empirical work consistently shows that polarization has a greater and more direct impact on civil war and political violence than fractionalization. For example, Montalvo and Reynal-Querol (2005) found that ethnic polarization significantly increases the likelihood of civil war, whereas fractionalization does not.

In the economic domain, polarization reduces investment, increases government consumption, and raises the risk of civil conflict (Montalvo & Reynal-Querol, 2005). Dincer (2011) identified a positive correlation between ethnic and religious polarization and income inequality, suggesting that polarized societies struggle to agree on redistributive policies. Moreover, polarization erodes social capital: Gebrihet and Mwale (2024) showed that ethnic polarization reduces trust in government, and Lee (2022) found that perceived polarization undermines interpersonal trust in the United States. These findings have important policy implications. Addressing polarization requires more than simply managing diversity; it demands strengthening democratic institutions, promoting cross-ethnic dialogue, and implementing inclusive policies that foster trust and reduce perceived grievances. Without such measures, polarized societies risk falling into cycles of violence and institutional decay.

Methodology

This study employs a bibliometric approach to map research trends on ethnic fractionalization and ethnic polarization. This approach is particularly suited to uncovering patterns and trends in large bodies of scholarly literature, offering a systematic and replicable way to map the evolution of a research field. Data were retrieved from the Scopus database, chosen for its broad coverage of peer-reviewed literature across disciplines and its reputation as a leading abstract and citation database for academic research. The search was conducted in December 2025 using the following query: *TITLE-ABS-KEY ('ethnic polarization') OR TITLE-ABS-KEY ('ethnic polarisation') OR TITLE-ABS-KEY ('ethnic fractionalization') OR TITLE-ABS-KEY ('ethnic fractionalisation') OR TITLE-ABS-KEY ('ethnic fragmentation')) AND PUBYEAR < 2026*. This search strategy was deliberately designed to be as inclusive as possible, accommodating spelling differences between American and British English and including the equivalent term 'ethnic fragmentation', which has been used interchangeably with ethnic fractionalization in earlier literature (Prothero 1956; Waldman 1966; Barrows 1976). The search was applied to titles, abstracts, and keywords (TITLE-ABS-KEY) to capture core conceptual discussions rather than peripheral mentions.

The initial search yielded 541 documents. The earliest document in our dataset dates back to 1983. All publications up to 2024 were included, and documents from 2025 (early access) were retained to capture the most recent developments. The search was limited to English-language publications, as Scopus indexing for non-English documents is less comprehensive and could introduce bias. No documents were excluded based on document type; we retained articles, book chapters, reviews, books, conference papers, and other formats to provide a complete picture of the scholarly discourse. This inclusive approach follows best practices in bibliometric research (Zupic & Čater 2015). The exported data included complete metadata: authors, titles, abstracts, author keywords, indexed keywords, affiliations, publication years, document types, subject areas, and citation counts. VOSviewer (van Eck & Waltman 2010) was used to construct and visualize bibliometric networks, including keyword co-occurrence networks, author collaboration patterns, and temporal trends. A full-counting method was applied, with a minimum keyword occurrence threshold of 2 to ensure that visualizations focused on significant terms while retaining meaningful variation.

The analysis proceeded in three stages. The first stage was descriptive analysis, examining annual publication trends, geographic distribution, the most productive authors and their affiliations, dominant document types, and subject-area categorization. The second stage was cluster analysis, in which we grouped keywords into thematic clusters to identify the main research streams in the literature. The third stage was temporal analysis, tracing how research focuses have shifted over time by examining the average publication year of keywords in the VOSviewer visualizations.

Results and Discussion

YEARLY RESEARCH TRENDS

Reading the growth graph of publications on ethnic fractionalization and polarization from 1983 to 2025 (Figure 1) is like reading an electrocardiogram of global academic attention. A total of 541 documents collected from Scopus, after expanding the search to include British spelling and the term ethnic fragmentation, allow us to read this intellectual history more fully.

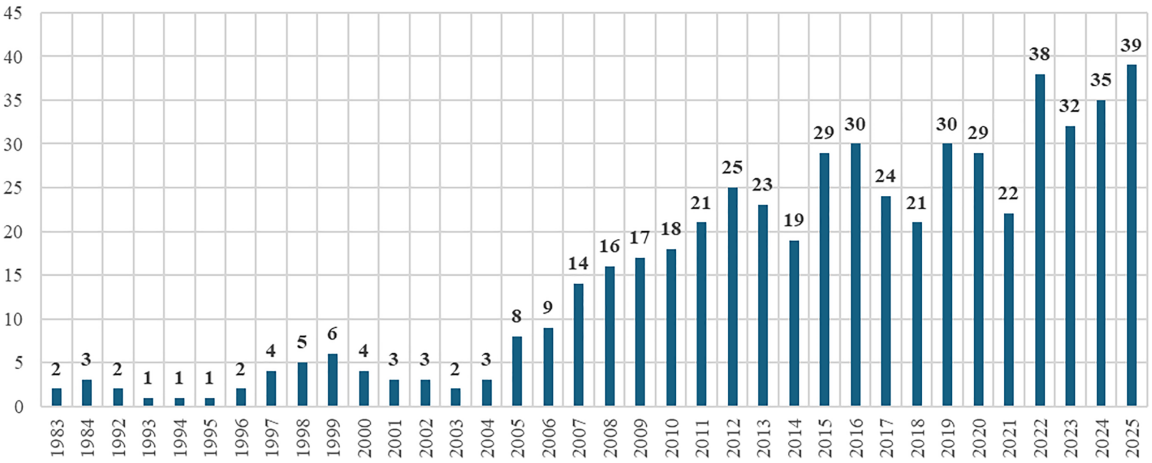


Figure 1. Article Growth Every Year
Source: Processed by Authors from Scopus Database

In the early phase (1983-2000), publications were sparse. Yet the existence of documents in 1983-1984, including Heaven (1983), which asked 'Ethnic polarization in South Africa: Myth or reality?', and Hecht, Sharpe, and Wong (1983), on ethnicity in Canada, confirms that discussions about ethnic fragmentation took root long before quantitative indices were developed.

After 2000, the pulse grew stronger. Key publications include Alesina, Baqir, and Easterly (2000) on public policy; Wilkinson (2000) on democratization; Posner (2004) on the PREG index; Montalvo and Reynal-Querol (2005) on polarization and civil war; and Houweling et al. (2005) on child mortality. From 2010 onward, publications increased consistently, with important contributions from Montalvo and Reynal-Querol (2010) on the duration of civil wars, Fearon (2003) on ethnic diversity, and Björkman and Svensson (2010) on community-based health monitoring. The biggest jump occurred in the last five years: 2022 (38 publications), 2023 (32), 2024 (35), and 2025 (39). These numbers (Figure 1) reflect academic responses to rising populism, identity politics, ethnic conflicts, and debates on structural racism. We now shift from when the research was done to who did it.

AUTHORS, AFFILIATIONS, AND GEOGRAPHIC DISTRIBUTION OF RESEARCH

Across the 541 documents we analyzed, 160 authors have contributed to the study of ethnic fractionalization and polarization. However, as is common in many scientific fields, only a handful of names appear consistently over the years, turning ethnicity into a long-term research program rather than an occasional interest. Figure 2 presents the most prolific authors. Easterly occupies the top position with five publications, building a framework that links ethnic fragmentation to low provision of public goods and slow economic growth, particularly in developing countries. Together with Levine (1997), he showed that high ethnic fragmentation in Sub-Saharan Africa explains many of the region's poor policy characteristics. Later, Easterly (2001) nuanced this finding by showing that ethnic fragmentation negatively affects growth only when institutions are weak; in countries with good institutions, ethnic diversity does not reduce growth. Together with Ritzen and Woolcock (2006), he further demonstrated that social cohesion endogenously determines institutional quality.

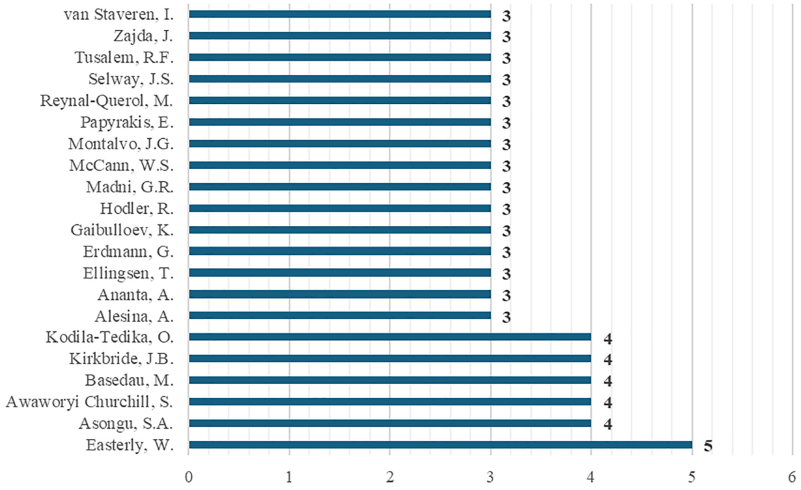


Figure 2. Authors with the Most Article Contributions

Source: Processed by Authors from Scopus Database

Alongside Easterly, names such as Asongu and Kodila-Tedika appear in the top ranks, both based in Africa (Cameroon and the Democratic Republic of Congo, respectively). Their contributions bring perspectives that differ from the American-European mainstream, focusing on governance, corruption, and inequality in African contexts. This signals a gradual decentralization of knowledge production about ethnicity. Authors making significant contributions, such as Montalvo and Reynal-Querol, who formulated the ethnic polarization index, remain productive, confirming that foundational concepts continue to shape the field. If we look at the affiliations of these authors (Figure 3), an interesting institutional map emerges. The World Bank ranks first with 12 publications, reflecting its practical interest in understanding why some ethnically diverse countries fail to achieve inclusive growth while others succeed. World Bank-affiliated studies have shown that ethnic fragmentation is a dominant predictor of property rights protection worldwide (Ayyagari, Demirgüç-Kunt & Maksimovic 2013), which strongly correlates with child mortality (Filmer & Pritchett 1999), and that its impact on labor productivity is moderated by firm size (Khalid & Amin 2023). In second place, the Norwegian University of Science and Technology (NTNU) has nine publications, reflecting Scandinavia's long tradition of peace and conflict studies. Elite universities such as Harvard, Stanford, Oxford, and the Australian National University each contributed eight publications,

confirming that the study of ethnic fragmentation and polarization has become integral to the research agenda of the world's intellectual centers.

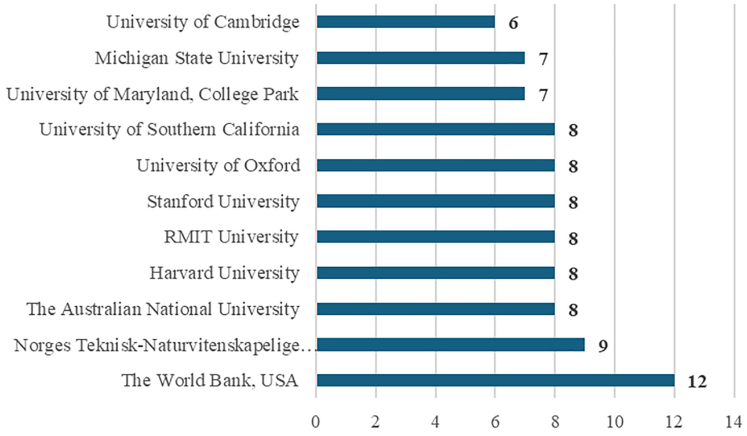


Figure 3. Affiliations with the most articles contributed

Source: Processed by Authors from Scopus Database

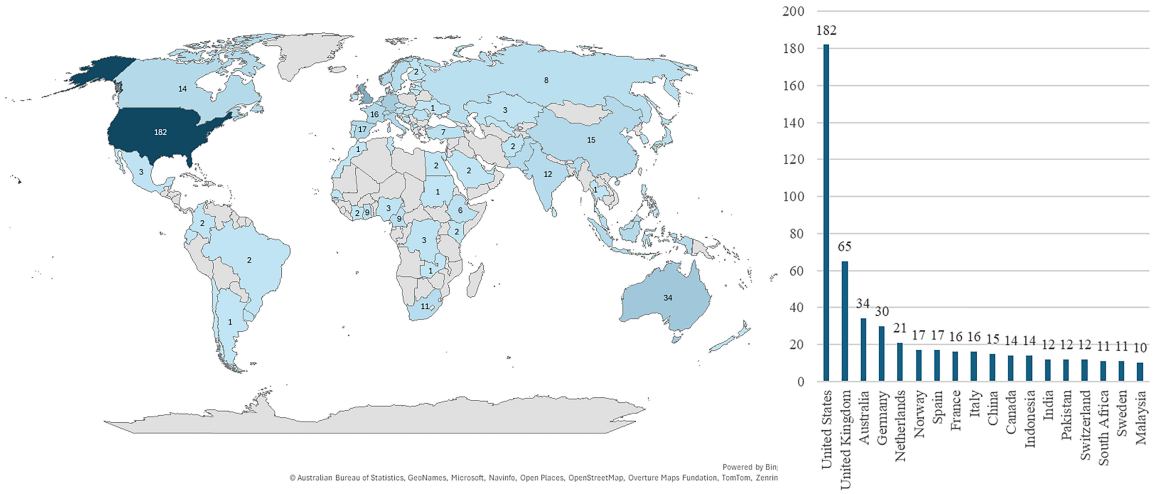


Figure 4. Countries with the highest document contributions

Source: Processed by Authors from Scopus Database

The geographic distribution of publications (Figure 4) remains uneven. The United States leads with 182 documents, followed by the United Kingdom (65), Australia (34), Germany (30), the Netherlands (21), and Norway (17). The US publication pattern shows peaks in 2019, 2023, and 2024, which coincide with domestic political events such as the Trump-era immigration debate and the post-George Floyd reckoning on structural racism. The UK's publications peaked around 2017 and 2019, during the Brexit debate. Germany's output increased notably after the 2015 refugee crisis. Meanwhile, contributions from developing countries are increasingly visible. Indonesia, for instance, has 14 publications, a number that places it on a par with Canada and above India and Pakistan. Indonesian studies not only calculate fractionalization and polarization indices (Ananta, Utami & Handayani 2016; Ananta et al. 2023) but also explore ethically-sensitive governance in the new capital city (Gunawan et al. 2025), post-conflict social integration through

local wisdom (Rahman, Arsal & Shintasiwi 2022), and the historical deconstruction of ethnic polarization in South Sulawesi (Malewa 2024). Such contextual work enriches the global discourse and challenges universalist models derived solely from Western experiences.

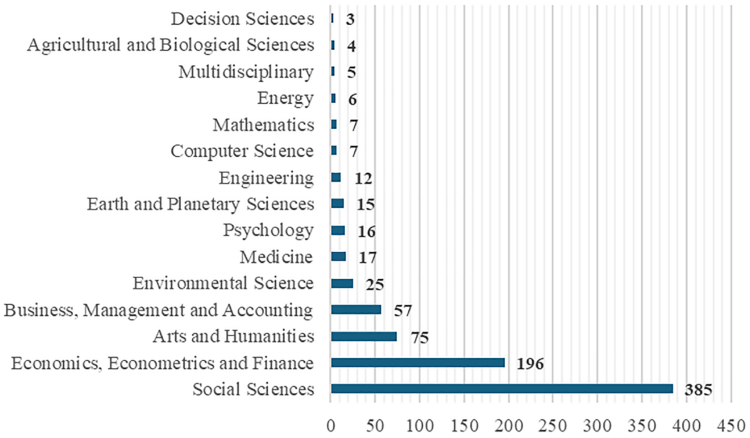


Figure 5. Most Dominant Subject Areas
Source: Processed by Authors from Scopus Database

Finally, the subject areas of these publications (Figure 5) reveal a remarkable cross-disciplinary expansion. The Social Sciences still dominate with 385 publications, followed by Economics, Econometrics, and Finance with 196 publications. However, the Arts and Humanities have recorded 75 publications, with a notable surge in 2024 and 2025, suggesting a 'humanistic turn' in ethnicity studies. Business, Management and Accounting (57 publications) reflect corporate concerns about diversity. More strikingly, the hard and life sciences have also entered the field: Environmental Science (25), Medicine (17), Psychology (16), Earth and Planetary Sciences (15), and even Engineering (12). Studies in Medicine, for example, have shown that ethnic fragmentation affects child mortality (Houweling et al. 2005). Neighborhood ethnic segregation is associated with the incidence of psychosis (Kirkbride et al. 2007). This broad thematic spread indicates that ethnicity is no longer the exclusive domain of sociologists and political scientists; it has become a truly interdisciplinary concern. The fluctuations in publication growth by subject area confirm that while traditional social-science outputs have remained steady, newer disciplines have begun to contribute significantly over the last five years.

DOMINANT ISSUES IN ETHNIC FRACTIONALIZATION AND POLARIZATION RESEARCH

Cluster analysis using VOSviewer reveals a much richer and more complex intellectual map of the field than is typically captured in narrative reviews. From the 541 documents analyzed, seven major clusters covering 226 keywords emerged. Figure 6 presents a visual network of these seven clusters, while Table 1 details the items in each cluster. Each cluster has distinct thematic characteristics, reflecting how the study of ethnic fractionalization and polarization has expanded into previously unimaginable territories.

Cluster 1, with 73 items, is the largest and most surprising cluster. It focuses on public health and social determinants. This cluster indicates the presence of themes previously absent from mainstream ethnic literature: health, child mortality, health care access, health disparities, health policy, psychosis, schizophrenia, socioeconomic factors, and social determinants of health. This cluster is also associated with keywords such as poverty, income, social capital, and neighborhood, emphasizing that ethnic health cannot be separated from socio-economic conditions. The presence of geography, urban areas, urbanization, and

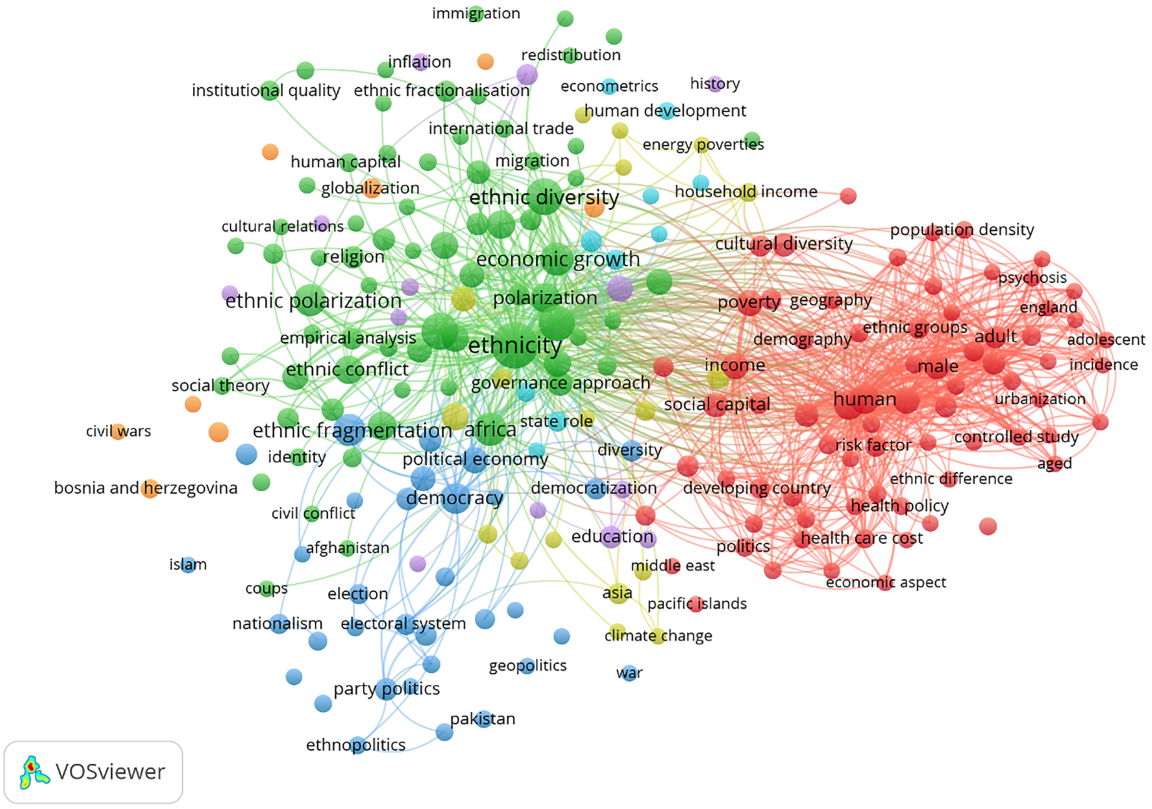


Figure 6. Dominant network of issues discussed in Ethnic Fractionalization and Polarization
Source: Processed by Authors using VOSviewer

residential characteristics suggests that researchers are beginning to recognize how settlement segregation contributes to health inequalities.

The second cluster (71 items) is the heart of ethnicity studies. Here we find classic keywords: ethnic fractionalization, ethnic polarization, ethnic diversity, ethnic conflict, civil war, inequality, economic development, economic growth, and public goods. The foundation of this cluster rests on the work of Montalvo and Reynal-Querol (2005). The presence of environmental quality, governance approach, and institutional quality indicates that the debate has shifted from 'is ethnic diversity bad for growth?' to 'under what conditions is ethnic diversity a problem, and how can institutions mitigate it?' Easterly (2001) noted that ethnicity only negatively impacts when institutions are weak. The emergence of specific geographic regions, Afghanistan, Africa, Ethiopia, Ghana, India, Indonesia, and Sub-Saharan Africa, shows that ethnicity research is increasingly contextual.

The third cluster (33 items) covers political themes: democracy, democratization, election, political instability, terrorism, nationalism, ethnopolitics, and voting behavior. Colonial legacy and colonialism shaped ethnic configurations through territorial divisions, 'divide et impera' policies, and racial hierarchies. As noted by Wilkinson (2000), policies that aim to share power among ethnic groups can intensify ethnic polarization if not carefully managed. The regions in this cluster, Latin America, Pakistan, Russia, Spain, and Turkey, face a common challenge: building a stable democracy in an ethnically divided society. Evans and Need (2002) showed that cultural differences explain variations in polarization better than economic factors.

The fourth cluster (18 items) reflects contemporary issues: climate change, deforestation, natural disasters, energy poverty, and vulnerability. Their presence marks a new chapter: climate change and natural disasters are never ethnically neutral. Ethnic groups in vulnerable areas, such as coasts, mountain slopes, forests, and

Table 1. Clustering Issues

Yes	Cluster	Items	Number	Colour
1	Cluster 1	Teenager; adult; aged; children; child health; child mortality; childhood mortality; comparative study; controlled study; cultural diversity; demography; developing country; economic aspect; England; environmental factors; epidemiology; ethnic difference; ethnic groups; Europe; female; geography; government; health; health care; health care access; health care costs; health care policy; health disparity; health expenditures; health policy; human; humans; immigrant; impact; income; infant mortality; clinical study major; male; middle aged; Middle East; mortality; neighborhood; Pacific Islands; political system; politics; population density; poverty; psychosis; psychotic disorders; questionnaire; race; racial segregation; regression analysis; residence characteristics; resident; risk; risk factor; schizophrenia; social aspect; social capital; social class; social cohesion; social determinants of health; social environment; social status; socioeconomic factors; socioeconomics; statistical analysis; United Kingdom; United States; urban area; urbanization; young adult	73	Red
2	Cluster 2	Afghanistan; Africa; civil conflict; Civil War; complexity; conflict; blows; cultural relations; data sets; development; economic development; economic growth; economic theory; empirical analysis; environmental quality; Ethiopia; ethnic conflict; ethnic diversity; ethnic divisions; ethnic fractionalization; ethnic fractionalization; ethnic group; ethnic minorities; ethnic polarization; ethnic polarization; ethnicity; financial development; fractionalization; genocide; Ghana; governance approach; growth; growth rate; human capital; identity; immigration; income distribution; income; India; Indonesia; inequality; institutional quality; international trade; language; migration; modelling; multiculturalism; natural resources; norms; peacekeeping; polarization; policy making; property rights; public goods; public sector; redistribution; religion; religious diversity; rent seeking; resource curse; segregation; social conflict; social theory; socioeconomic indicator; state building; sub-Saharan Africa; theoretical study; time series analysis; violence	71	Green

Table 1. continued

Yes	Cluster	Items	Number	Colour
3	Cluster 3	Altruism; colonial legacy; colonialism; decentralization; democracy; democratic; consolidation; democratic transition; democratization; diversity; election; electoral system; ethnic fragmentation; ethnic heterogeneity; ethnopolitics; geopolitics; heterogeneity; Islam; Latin America; nationalism; Pakistan; party politics; political conflict; political economy; political geography; political instability; political parties; power relations; Russian Federation; Spain; terrorism; Turkey; voting behavior; war	33	Blue
4	Cluster 4	Asia; climate change; corruption; deforestation; developing countries; economics; endogeneity; energy poverty; estimation method; gross domestic product; household income; institutional framework; least squares method; literature review; low income population; natural disaster; data panels; Vulnerability	18	Yellow
5	Cluster 5	developing world; education; Electoral Geography; fiscal decentralization; fiscal policy; fragmentation; history; inflation; Malaysia; OECD; public spending; service provision; Social Structure	13	Purple
6	Cluster 6	econometrics; ethnic politics; governance; human development; institutions; poverty alleviation; quantile regression; state capacity; state role; sustainable development;	10	Light Blue
7	Cluster 7	Bosnia and Herzegovina; Civil Wars; elections; ethnic inequality; globalization; Kenya; political regimes; Trust	8	Orange
		Total	226	

drylands, are the worst affected yet contribute the least. Schleussner et al. (2016) found that about 23% of conflicts in highly fractionalized countries coincide with climate disasters. Nyiayaana and Okoh (2023) further illustrate this link in the Nigerian context, showing how climate change exacerbates identity-based conflicts and undermines cosmopolitan ideals. This cluster also includes methodological keywords such as panel data and estimation methods, indicating that the research is empirical and quantitative.

The fifth and sixth clusters, with 13 and 10 items respectively, exhibit distinct thematic focuses. Cluster 5 focuses on fiscal policy, decentralization, and public services, with strong geographic associations with Malaysia and OECD countries. Cluster 6, in contrast, centers on governance, institutional capacity, and development outcomes. This separation reflects the different analytical contexts in which these themes are studied: Cluster 5 focuses on fiscal mechanisms and service delivery, while Cluster 6 emphasizes broader governance and development challenges. Hasnain (2008) on Pakistan showed that fragmented party systems encourage patronage rather than the improvement of public services. The seventh cluster (8 items) holds great potential with trust. Trust determines whether diverse societies can live in peace. Habyarimana et al. (2009) experimentally explored co-ethnic trust. In Bosnia and Kenya, fragile trust after violence shows

its importance (Kimenyi & Shughart, 2010). Such case studies provide depth that cross-country analysis cannot.

Reading these seven clusters together, several conclusions emerge. First, research on ethnic fractionalization and polarization has expanded into public health, environment, and public policy. Second, new thematic layers continue to enrich the established classical themes. Third, research is increasingly contextual, with a focus on developing countries. Fourth, interdisciplinary opportunities lie at the intersections of climate, health, and trust. Yet this map answers 'what'; 'when' requires temporal analysis.

ISSUES DEVELOPMENT FROM YEAR TO YEAR

The seven clusters we have just mapped give us an idea of what has been studied in research on ethnic fractionalization and polarization. However, an equally interesting question is when these themes became concerns. Has there been a shift in focus over time that reflects changing global circumstances? VOSviewer's overlay visualization addresses this by coloring keywords according to their average year of appearance, with darker shades indicating older average publication years and brighter shades indicating more recent years (Figure 7). Reading this temporal map is like witnessing an intellectual journey.

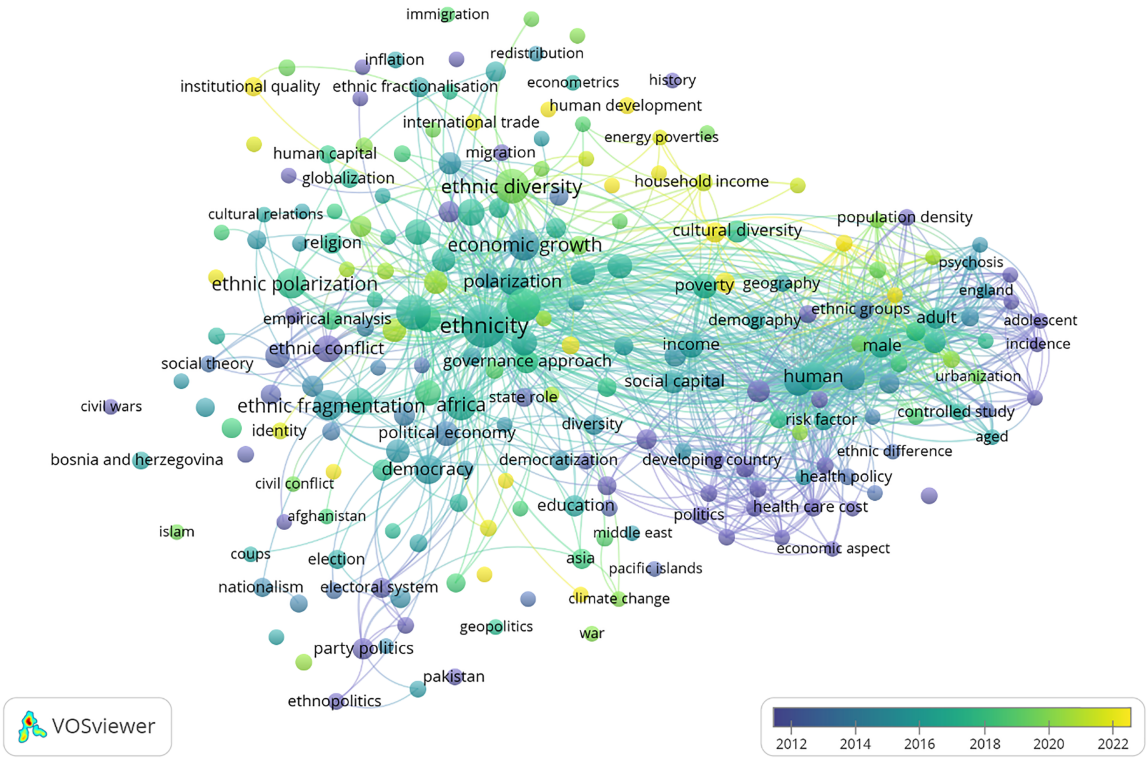


Figure 7. Development Network of Issues Discussed in Ethnic Fractionation and Polarization from Year to Year

Source: Processed by Authors using VOSviewer

In the early 2010s, academic attention was dominated by classical political themes. Keywords such as ethnopolitics, nationalism, geopolitics, war, and election appear predominantly in the earlier part of the timeline, marking the period around 2013-2015. This was the era when the Arab Spring still reverberated, the Syrian conflict triggered the largest refugee crisis since World War II, and identity politics began showing its fangs in many democracies. Researchers asked how ethnicity is mobilized in political

contestation and why ethnic nationalism rises in a supposedly cosmopolitan age. Studies such as Somer (2001) on the cascade of ethnic polarization in Yugoslavia became newly relevant.

Entering the mid-decade, around 2016-2018, the focus shifts. Keywords such as civil conflict, ethnic conflict, governance approach, institutional quality, and political economy emerge in the middle range of the timeline. This was the period when researchers moved from merely describing ethnic conflicts to dissecting their structural roots. They asked why some highly diverse countries maintain stability while others collapse. Answers pointed to institutional quality, governance, and policy design. These years coincided with the heated Brexit debate and Trump's shock election, events that forced social scientists to re-examine the links between identity, institutions, and democracy. Easterly's (2001) finding that good institutions can mitigate the negative impact of ethnic diversity has become increasingly relevant.

The most dramatic leap occurs in the most recent period (2019-2022). Here we find keywords that were almost invisible in earlier literature: climate change, health policy, health care cost, energy poverty, psychosis, schizophrenia, and socioeconomic factors. The COVID-19 pandemic fundamentally changed the research agenda (Kravchenko & Yusupova 2020; Egorov et al. 2021; Núñez-Sánchez et al. 2022; Waradas 2022). Scholars realized that ethnicity is not just a variable in economic growth or conflict models but also a key determinant of health vulnerability. Why do ethnic minorities have higher COVID-19 death rates? Why is vaccine access so uneven? These questions spawned a wave of research linking ethnicity to epidemiology and health policy. Simultaneously, the climate crisis left its mark. The keywords climate change and energy poverty remind us that the impacts of climate change are never ethnically neutral; groups living in vulnerable coastal, forest, or dryland areas are the first to suffer yet contribute the least to the causes. This temporal evolution teaches us that the study of ethnic fractionalization and polarization is not static. It constantly responds to global shocks, from wars and revolutions to pandemics and climate change, while adding new layers to the old foundations of identity politics, civil conflict, and institutional quality.

NEW RESEARCH OPPORTUNITIES IN ETHNIC FRACTIONALIZATION AND POLARIZATION

If the overlay visualization shows when themes emerged, the density visualization serves as a topographic map of research intensity, a purple gradient where the deepest purple indicates heavily explored areas and the fading, opaque purple indicates rarely touched territories (Figure 8). Unsurprisingly, the deepest purple surrounds classic themes: ethnic fractionalization, ethnic polarization, economic growth, democracy, and civil conflict. These are the solid foundations, cultivated by thousands of articles. Yet as we move to the periphery, the purple fades, revealing low-density areas that offer promising opportunities for future research. Most of these opaque areas come from the new clusters that appeared in our dataset.

First, the health area. Keywords such as psychosis (3 occurrences), schizophrenia (3 occurrences), and child mortality (4 occurrences) have low co-occurrence frequencies in our dataset (see Table 1). This indicates that research in this field remains very limited, even though early studies have highlighted its urgency. For example, studies on ethnic disparities in mental health care access and maternal mortality among minority groups have shown significant gaps in both research and policy (Anderson et al., 2014; Gee & Ford, 2011). Yet fundamental questions remain: Do ethnic minority groups have a higher risk of mental disorders? Are the causes biological, social, or both? How can health policies be designed to reach marginalized ethnic communities? In the post-pandemic era, as health disparities widen, research in this area is increasingly urgent.

Second, the environment and disaster area. Keywords such as climate change (3 occurrences) and energy poverty (3 occurrences) appear infrequently in our dataset. Despite evidence that about 23% of conflicts in highly fractionalized countries coincide with climate disasters (Schleussner et al. 2016), few studies systematically link ethnicity to climate vulnerability. Marginalized ethnic groups, indigenous tribes in the Amazon, small-island communities, and poor farmers in Sub-Saharan Africa are the most vulnerable,

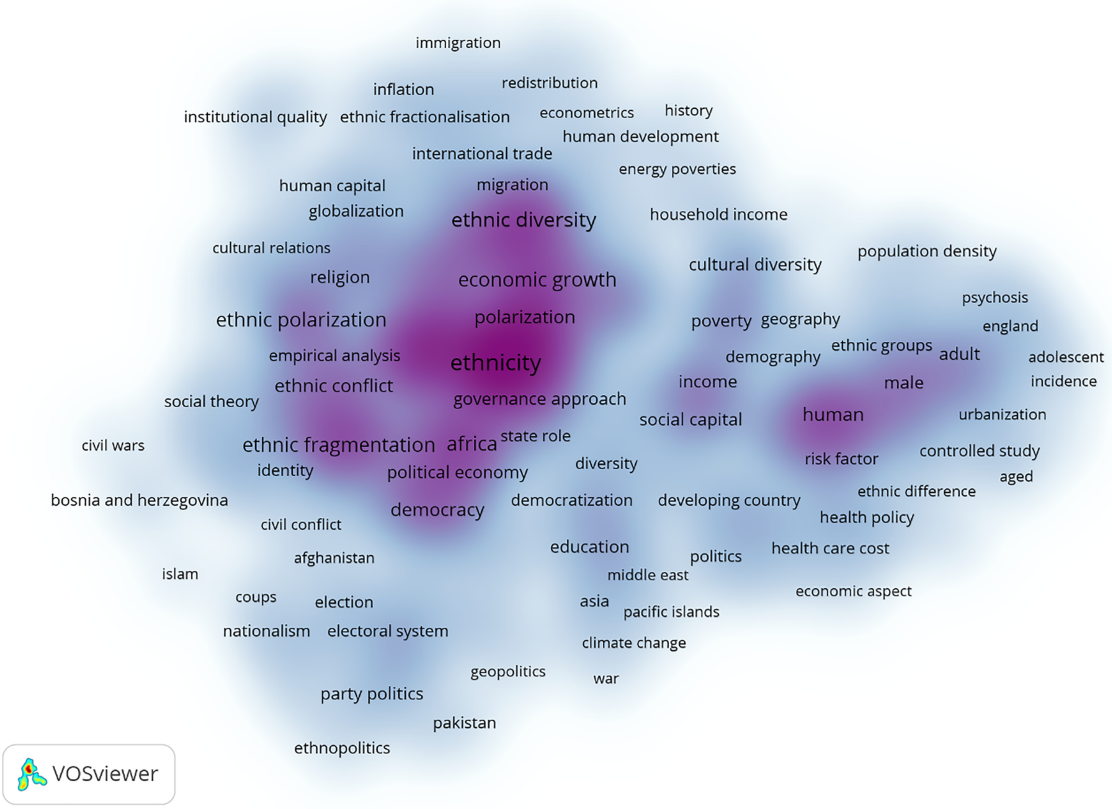


Figure 8. Issue Density in Ethnic Fractionation and Polarization

Source: Processed by Authors using VOSviewer

yet they are rarely the focus of research. How does ethnic fragmentation affect people's ability to adapt to climate change? Do ethnic conflicts intensify after natural disasters due to resource scarcity? How can climate mitigation policies avoid exacerbating ethnic inequalities? This fertile land awaits cultivation.

Third, the area of trust and social cohesion. The keyword trust (6 occurrences) appears infrequently in our dataset, even though interpersonal and institutional trust are crucial social glue. Experimental work from Uganda (Habyarimana et al. 2009) has begun to explore why people tend to trust co-ethnics more. Yet we still know little about how ethnic fragmentation affects trust levels, how trust mediates the relationship between diversity and political stability, and what factors can maintain cross-ethnic trust. This low research density is both a challenge and an opportunity.

Fourth, the area of fiscal policy and public services. Keywords such as fiscal decentralization (3 occurrences) and public spending (4 occurrences) appear infrequently. While fiscal decentralization is often proposed as a solution for managing ethnic diversity, evidence from Pakistan suggests that fragmented and polarized party systems may instead encourage patronage (Hasnain 2008). In Indonesia, post-1998 decentralization has been in place for over two decades, yet studies of ethnically sensitive governance are only beginning to emerge (Gunawan et al. 2025). Does decentralization reduce or reinforce ethnonationalist sentiment? How does the ethnic composition of a region affect public spending allocation? Empirical answers are still scarce, especially in developing countries.

Fifth, country-specific case studies. Keywords such as Bosnia and Herzegovina (5 occurrences), Afghanistan (3 occurrences), and Pakistan (4 occurrences) appear with low frequencies. In-depth case studies of countries with complex ethnic dynamics can enrich contextual understandings that cross-country

analyses miss. For example, Malewa (2024) on the historical roots of ethnic discourse in South Sulawesi, and Arifin et al. (2025) on ethnic fragmentation as a cultural demand in the Uluan community, demonstrate the value of local qualitative work. These research opportunities are not isolated; they can be approached in a multidisciplinary manner, combining environment and health, or trust and fiscal policy, or case studies with health. The seven clusters formed from 541 documents are not the end of the journey but the beginning. The purple gradation, from deepest to most opaque, is a map that invites researchers to delve further into still-vague areas. For those eager to contribute, there is no better time to start filling the opaque areas with a more intense shade of purple.

Discussion

This research begins by mapping the development of research on ethnic fractionalization and ethnic polarization over the past four decades. By broadening the search scope to include variations in British spelling and the equivalent term 'ethnic fragmentation', we not only found 541 documents but also uncovered previously hidden thematic layers. These findings not only confirm what is already known but also offer a new perspective on how research on ethnicity has evolved, responded to changing times, and penetrated previously unimaginable territories.

First, the growth of research on ethnicity reflects the collective anxiety of the global community. The significant surge in publications after 2015, with peaks in 2022 (38 documents), 2024 (35), and 2025 (39), suggests that these issues of ethnic fractionalization and ethnic polarization are increasingly urgent to understand. As stated by Qodir, Jubba and Hidayati (2022), ethnic polarization is no longer an exclusive phenomenon of developing countries but also of those considered democratically established. The rise of populism in America and Europe, the strengthening of identity politics in various young democracies, ethnic conflicts in Myanmar and Ethiopia, and the fierce debate about structural racism after George Floyd died in the US all contributed to increased academic attention (Alekseev et al. 2021). Historical data also show that the seeds of these thoughts have long existed, with publications in 1983 and 1984 discussing ethnic polarization in South Africa and Canada (Heaven 1983; Hecht, Sharpe & Wong 1983), confirming that discussions of ethnic fragmentation took root long before quantitative measures were developed.

Second, the geography of knowledge production remains uneven, but it is beginning to shift. The dominance of the United States (182 documents) and the United Kingdom (65 documents) is not surprising. Both countries have strong research infrastructures and a long history of grappling with issues of race, ethnicity, and immigration. As Alesina and La Ferrara (2005) state, ethnic fragmentation in developed countries affects public policy, political stability, and economic performance. However, the emergence of significant contributions from developing countries such as Indonesia (14), India (12), Pakistan (12), and Malaysia (10) signals that Western researchers no longer monopolize the discourse of ethnicity. Academics in these countries bring perspectives born of firsthand experience living in a pluralistic society, enriching our understanding through more diverse contexts. Studies from Indonesia, for example, not only calculate fractionalization and polarization indices (Ananta, Utami & Handayani, 2016; Ananta et al. 2023) but also explore how ethnicity interacts with governance in the new capital city (Gunawan, Taufik & Somlai 2024; Gunawan et al. 2025), how local wisdom builds post-conflict social integration in Aceh (Rahman, Arsal & Shintasiwi 2022), and even how historical narratives shape ethnic polarity in South Sulawesi (Malewa 2024). This diversity of approaches enriches the global discourse and challenges the universalism of models born of Western experience.

Third, the thematic expansion into health and the environment was the most significant finding. The VOSviewer cluster analysis revealed seven clusters, with two of them, public health (Cluster 1) and environment (Cluster 4), marking a new chapter in the study of ethnic fractionalization and polarization. The presence of keywords such as psychosis, schizophrenia, child mortality, health care access, climate

change, deforestation, and energy poverty shows that ethnicity is no longer seen only as a variable in economic-political models, but also as a social determinant affecting vulnerability to disease and disaster. As Nyiayaana and Okoh (2023) demonstrate, climate change can intensify identity-based conflicts, reinforcing the need to integrate ethnic perspectives into environmental policy. Similarly, Loyi (2024) shows that while cosmopolitan social movements can challenge ethnonationalism, the underlying ethnic polarization remains a serious concern in plural societies. These findings expand Horowitz's (2001) argument that ethnic polarization is rooted in political injustice by showing that this injustice also manifests in unequal access to health care and unequal ecological vulnerability. Temporal analysis of the overlay visualization reinforces this reading. Identity-politics themes dominated the 2013-2015 period; 2016-2018 shifted to governance and institutional quality; while 2019-2022 saw a dramatic leap toward health and environmental themes, triggered by the COVID-19 pandemic and the climate crisis. This is a paradigmatic shift that warrants further attention, especially in the design of policies responsive to the needs of vulnerable groups.

Fourth, density visualization opens up vast opportunities for future research. The purple gradation, from deepest to most opaque, shows heavily explored areas (well-established themes) and still-deserted areas (mental health, climate vulnerability, trust, fiscal decentralization, country-specific case studies). These opportunities align with our previous identification. Research on mental health and ethnicity, climate vulnerability and indigenous communities, the role of trust in maintaining social cohesion amid polarization, and the effectiveness of fiscal decentralization in pluralistic countries remains wide open. As emphasized by Qodir, Jubba and Hidayati (2022), strengthening social cohesion in developing countries requires a social justice-based approach and an equitable distribution of resources. New research can empirically test how this approach is implemented in different contexts, for example, by combining environmental and health issues: how does climate change affect the mental health of ethnic groups displaced by disasters? Or integrating trust and fiscal policy: do people who trust the government support ethnically fair decentralization policies?

Finally, this study confirms that ethnic fractionalization and ethnic polarization are multidimensional phenomena requiring a cross-disciplinary approach. The seven mapped clusters, recorded temporal shifts, and opaque areas waiting to be filled with research studies are all invitations for researchers to continue exploring and giving meaning to the world's increasingly complex diversity. As Putnam (2007) reminds us, ethnic diversity creates social tensions that require careful scientific understanding. However, it also opens up opportunities for social innovation and cultural enrichment. Our job, as an academic community, is to ensure that this understanding is not only meticulous but also aligned with fairness and inclusion.

Conclusion

This study maps the development of research on ethnic fractionalization and polarization by analyzing 541 documents from the Scopus database. Publications increased sharply since 2015, peaking in 2022 and 2025, reflecting academic responses to rising identity politics and global ethnic conflicts. Geographically, the United States and the United Kingdom dominate, but contributions from developing countries such as Indonesia, India, Pakistan, and Malaysia signal a gradual decentralization of knowledge production.

Cluster analysis reveals seven main themes. Three clusters reflect well-established research: diversity conflict development (Cluster 2), politics democracy nationalism (Cluster 3), and fiscal public service policy (Clusters 5 and 6). However, the most significant findings are the emergence of two new clusters, public health and social determinants (Cluster 1) and environment and vulnerability (Cluster 4). Keywords such as psychosis, schizophrenia, child mortality, climate change, and energy poverty mark a paradigmatic shift: ethnicity is no longer understood only as a source of conflict but also as a marker of vulnerability to disease and disaster. Temporal analysis confirms this shift: identity politics dominated 2013-2015, governance and

institutional quality from 2016-2018, and health/environmental issues surged in 2019-2022, triggered by the COVID-19 pandemic and the climate crisis.

Density visualization identifies low-research areas offering future opportunities: mental health and ethnicity, climate vulnerability, trust as a driver of social cohesion, fiscal decentralization, and in-depth country case studies (for example, Bosnia, Afghanistan, Pakistan, Indonesia). This study has limitations, including reliance on a single database and a quantitative bibliometric approach. Nonetheless, the intellectual map of these 541 documents shows that research on ethnicity has expanded far beyond its origins. The opaque purple areas in the density map invite researchers to explore intersections among health, the environment, trust, and public policy, enriching our understanding of how diversity is managed, contested, or reconciled.

Disclosure of AI Use

During the preparation of this manuscript, the authors used artificial intelligence (AI) tools solely for language checking, writing style improvement, and sentence restructuring to enhance readability. AI was not used for data analysis, result interpretation, or conclusion drawing. All scientific content, analysis, and interpretation are the original work of the authors. The authors take full responsibility for the accuracy and integrity of this manuscript.

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