

Financial Well-Being of Older Adults: A Bibliometric Analysis of Knowledge Structure, Thematic Evolution, and Emerging Trends

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Abstract

Because of the accelerating global population ageing and increasing strain on elder support systems, the financial well-being of older adults has emerged as an important topic in interdisciplinary research. However, the intellectual structure, developmental pathways, and emerging frontiers of research in this field remain unexplored. As such, this study employed bibliometric techniques to analyze 1,576 publications indexed in the Web of Science Core Collection from 1982 to 2025. A comprehensive knowledge map was constructed by combining keyword co-occurrence, burst detection, and document co-citation analysis. Findings showed publications in this field rapidly increased to 214 in 2025, with USA and China as key knowledge centers. There are ten research foci in this field. Financial hardship and mental health, together with pensions and social security formed the main research axes, while digital finance and long-term care insurance were the fastest-rising frontiers in recent years. There has been also a shift in research designs, transitioning from descriptive analysis to causal inference, and from isolated risk perspectives to comprehensive protective frameworks. The translational chain from risk identification to intervention validation was underdeveloped with limited cross-national integration. This study shows a replicable approach to mapping the knowledge on older adults' financial well-being. The findings establish an evidence-based knowledge foundation and offer strategic guidance for future research in this field.

Keyword

Older adults; financial well-being; bibliometrics; knowledge map

1. Introduction

Global population is growing in a rapid manner. By 2020, individuals aged 60 years and above worldwide had surpassed one billion, and this figure is projected to double within the next three decades (World Health Organization [WHO], 2025). This trend constitutes significant challenges to the sustainability of old-age security systems across nations (Organisation for Economic Co-operation and Development [OECD], 2025a) and financial security in later life has become a challenge in elderly quality of life. The OECD (2025b) reported that approximately 72% of respondents across member countries generally expressed concerns about their financial security in old age. The findings also showed that respondents in Nordic countries reported considerably lower levels of concern than those in Southern European and Latin American countries, suggesting that national institutional arrangements play an important role in elderly quality of life (OECD, 2025b).

As an autonomous and systematic scholarly concept and policy objective, financial well-being has attracted high global attention over the past decade. At the conceptual level, the working definition proposed under the G20 framework in 2024 defined financial well-being as “*a state in which individuals are able to smoothly manage their financial needs and obligations, can cope with negative shocks, can pursue*

aspirations, goals and capture opportunities, and feel satisfied and confident about their financial lives, keeping in mind country specific circumstances” (OECD, 2024, p. 23). The Consumer Financial Protection Bureau (CFPB) emphasized financial well-being as *“a state of being wherein you have control over day-to-day and month to month finances; have the capacity to absorb a financial shock; are on track to meet your financial goals, and; have the financial freedom to make choices that allow you to enjoy life”* (CFPB, 2015, p. 5). Together, these two definitions outline the multidimensional structure of financial well-being, including current financial security, future financial resilience, and subjective financial satisfaction. Financial well-being has been regarded as the aim of financial literacy policy (OECD, 2024), outcome of high-quality financial inclusion (Global Partnership for Financial Inclusion [GPFI], 2023), and priority action areas related to ageing and financial inclusion (GPFI & OECD, 2019).

Although financial well-being can be measured objectively (e.g., welfare provision), subjective perception also plays an important role (Bidgoli et al., 2026). International organizations and scholars have used different terms, including “financial well-being” and “financial health,” although their core meanings largely overlap (OECD, 2024; United Nations Secretary-General’s Special Advocate for Inclusive Finance for Development [UNSGSA], 2021; United Nations Capital Development Fund [UNCDF], 2022). At the level of individual decision making, financial capacity is defined as *“the ability to satisfactorily manage one’s financial affairs in a manner consistent with personal self-interest and values”* (Gardiner et al., 2015, p. 82), encompassing three key components: declarative knowledge, procedural knowledge, and judgment (Marson & Hebert, 2008; Pinsker et al., 2010). For older adults, one extreme manifestation of financial vulnerability is financial exploitation, defined as *“illegal taking, misuse, or concealment of funds, property, or assets of a vulnerable elder”* (Mosafer et al., 2025, p. 662). Considering these dimensions together, this study uses the term “financial well-being” consistently and adopts a broad definition that covers the adequacy of economic resources, a subjective sense of financial security, and financial decision-making capacity.

In high-income countries with relatively well-developed public pension systems, financial well-being may increase with age, although this association varied with country specific pension arrangements (Comerton-Forde et al., 2018; Kempson et al., 2017; Muir et al., 2017). Where social security coverage was insufficient, older adults may face more severe financial strain as they age (Kuitto et al., 2023; OECD, 2025a). A comparative study of China, India, Japan, South Korea, and USA also showed substantial differences in older adults’ retirement financial preparedness across countries (Ehrlich & Liu, 2025). These differences were tied to pension arrangement, traditions of intergenerational family support, and levels of financial literacy (Ehrlich & Liu, 2025). In countries with comprehensive public pension systems, pensions served as a core form of social protection, reducing the burden on individuals to save for retirement and lowering financial anxiety about later life (OECD, 2025a). This role gave pensions a basic supporting function in older adults’ financial well-being (OECD, 2025a). These context-dependent findings suggest that the relationship between financial well-being and age may vary across institutional settings in different places.

Despite these institutional protections, older adults may still face significant structural risks and inequalities. The intersection of age and gender can exacerbate inequality. Older women often possess fewer

financial resources than men which contributes to lower financial well-being and greater vulnerability (Muir et al., 2017; Women's World Banking [WWB], 2024). In non-OECD countries, women, older adults with lower educational attainment, and those with lower income were particularly susceptible to financial insecurity (Lyons et al., 2018). Racial and ethnic differences formed another important dimension of the effects of the influence of financial strain. An analysis using 13 waves of longitudinal data from UK demonstrated that financial strain exerted significant adverse effects on mental health and life satisfaction across all ethnic groups (Chai et al., 2025). Besides, older adults constituted one of the poorest and most vulnerable groups, and this vulnerability is structurally rooted and overlapped with disadvantages, including health issues, which may further increase financial risks in later life (Schröder-Butterfill & Marianti, 2006).

In an increasingly digital financial environment, some older adults may face higher risks of fraud, misleading information, or inappropriate sales practices when using digital financial services undermining their financial well-being (OECD, 2020). In regions with low pension coverage, such as Southeast Asian countries where only a share of older adults receive pensions, financial well-being in later life depends heavily on family intergenerational transfers and community mutual-aid networks (OECD & Economic Research Institute for ASEAN and East Asia [ERIA], 2025). In rural China, the introduction of public pensions was shown to improve the subjective well-being of older adults, without displacing non-monetary intergenerational support mechanisms (Ko & Möhring, 2021). The moderating role of public pensions was not limited to direct health-related outcomes, but was also embedded in patterns of intergenerational support. Financially reciprocal intergenerational relationships had a significant protective effect against frailty when pension coverage was available (Y. Zhang & Y. -C. Chen, 2025). The financial security of older adults depends heavily on public pensions, social security, and public health care services (Kuitto et al., 2023; Long et al., 2025; Lyons et al., 2018; OECD, 2025a). Any policy changes, reductions in benefits, or systemic weaknesses may pose major systemic risks to older adults (Muir et al., 2017; OECD & ERIA, 2025).

The patterns summarized above are based on existing studies mainly come from research evidence in high-income countries. Globally, alternative protective mechanisms, including informal security arrangements, intergenerational family transfers, and community mutual-aid networks, are widely present in developing countries (R. Huang et al., 2020; Schröder-Butterfill & Marianti, 2006; Zhan et al., 2025). These mechanisms may lead to marked heterogeneity in older adults' pathways to financial well-being in different contexts (Goodman-Palmer et al., 2023). Moreover, social and cultural contexts shape the financial decision-making processes of older adults (Caboral-Stevens & Medetsky, 2014). Furthermore, as specific cognitive domains were strongly associated with financial capacity (Pinsker et al., 2010), cognitive impairment in older adults may also lead to financial vulnerability in later life.

Over the past twenty years, research on the financial well-being of older adults has gradually expanded from its early roots in economics to include disciplines such as public health, gerontology, psychology, social policy, and behavioral finance. Financial exploitation is among the most widely studied dimensions within this field (Yon et al., 2017), with studies conducted to examine the prevalence, risk factors, heterogeneity among victim groups, and evaluation of prevention strategies (Burnes et al., 2017; Button et

al., 2024; Mosafer et al., 2025). In the dimension of financial literacy and decision-making capacity, reviews have identified financial knowledge, cognitive function, and financial self-efficacy as three core predictors affecting older adults' financial decision-making (Boyle et al., 2013; James et al., 2012; Tang, 2021). Interdisciplinary studies have also promoted the development of this area. The emerging concept of financial health literacy theoretically integrates financial management and health management, broadening the research agenda for this dimension (Davis & Jones, 2024; Leung et al., 2022).

Unfortunately, most existing reviews are narrative in nature, concentrating on specific topics or particular countries and regions, and there is a lack of systematic quantitative analysis of its overall knowledge structure, research hotspots, and developmental trends from a broader perspective. At the international level, it has been noted that most available evidence derives from country- or region-specific studies, while systematic synthesis at the global level remains limited (OECD, 2024). Researchers have identified substantial differences in definitions and measurement tools within the literature on financial exploitation (T. Zhang et al., 2023), insufficient inclusion of older adults living with dementia in current studies (Wei & Balser, 2025), the lack of rigorous evaluation of protective strategies (Button et al., 2024; Wei & Balser, 2025), and relatively limited empirical validation of preventive measures (Choudrie et al., 2018; Greene, 2022). Furthermore, review-based research on the financial well-being of older adults remains limited in regions such as Southeast Asia, Africa, and Latin America (OECD, 2024; R. Huang et al., 2020).

In contrast to traditional narrative reviews, bibliometric methods draw on citation databases and quantitative algorithms to systematically identify the knowledge structure, research hotspots, and research frontiers within a specific field on a large scale (Cobo et al., 2011; Donthu et al., 2021; Zupic & Čater, 2015). By systematically analyzing three core dimensions, namely, keyword co-occurrence analysis, keyword burst detection, and document co-citation clustering, this study aims to construct a comprehensive knowledge map of research on the financial well-being of older adults. Centered on the scholarly literature on older adults' financial well-being, this study employed bibliometric tools to perform a systematic analysis of this interdisciplinary field and addresses three core questions:

1. What are the defining characteristics of the field's overall developmental trajectory, including annual publication output, core countries and institutions, journal distribution, and collaboration networks?
2. What knowledge clusters have formed the core research themes and their evolution over time?
3. What are the most active research frontiers and emerging trends, alongside the directions they provide for future research?

Based on a dataset of 1,576 publications related to older adults' financial well-being indexed in the Web of Science Core Collection between 1982 and 2025, we conducted a systematic analysis across three dimensions: the pattern of knowledge production and collaboration networks, research themes and hotspots, and research trends and future directions.

2. Materials and Methods

2.1 Data Sources and Search Strategy

This study used bibliometric and science mapping methods to systematically map the knowledge structure of research on the financial well-being of older adults. Data were retrieved from the Web of Science Core Collection (WoS CC), a database that covers core journals across multiple disciplines and offers complete citation records. It therefore meets the needs of bibliometric analyses that require sufficient data volume and traceable citation relationships (Qi et al., 2021; Qi et al., 2022).

The search strategy was constructed along two dimensions. The population dimension combined the World Health Organization's age-based criteria for older adults with search terms widely recommended in gerontological research. Keywords such as "older adult*," "older person*," "older people*," "senior*," "elder*," "aging population," "aged 65," and "aged 60" were used to capture diverse expressions referring to older populations. The financial dimension was based on a broader set of terms than financial well-being itself, balancing core concepts with specific financial contexts. For the core conceptual terms, the truncation form "financ*" was used to capture variants such as "financial," "financially," and "finance," as well as related subfield terms including "financial literacy," "financial exploitation," "financial well-being," "financial inclusion," and "financial capability." For specific financial contexts, terms such as "bank*," "credit union*," "insur*," "pension*," "investment*," "stock*," "securit*," "loan*," "mortgage*," "credit card*," "debt*," "saving*," and "asset*" were included to identify literature related to financial institutions, products, and financial states. The two sets of terms were connected using the Boolean operator "OR," creating a compound search network that covered both theoretical constructs and practical financial contexts. The search terms for the population dimension and the financial dimension were combined using the Boolean operator "AND," requiring that representative terms from both dimensions appear simultaneously in the title, abstract, or keywords of each record. The document types were restricted to research articles ("Article") and reviews ("Review"), and the language was limited to English. The publication period covered by the search ranged from January 1, 1982, to December 31, 2025. Accordingly, the records analyzed in this study were limited to this period. The search was conducted on January 22, 2026, and initially yielded 37,550 records. The full search string was as follows: TS=((("older adult*" OR "older person*" OR "older people*" OR "senior*" OR "elder*" OR "aging population" OR "aged 65" OR "aged 60") AND ("financ*" OR "bank*" OR "credit union*" OR "insur*" OR "pension*" OR "investment*" OR "stock*" OR "securit*" OR "loan*" OR "mortgage*" OR "credit card*" OR "debt*" OR "saving*" OR "asset*"))).

2.2 Data Processing and Screening Procedure

The search results were exported from the Web of Science Core Collection (WoS CC) in plain text format. All retrieval and export procedures were completed on the same day to minimize potential data discrepancies caused by dynamic database updates. Literature screening followed the PRISMA 2020 guidelines (Page et al., 2021), and corresponding inclusion and exclusion criteria were established. The inclusion criteria comprised two conditions. First, the study topic had to address the intersection between older populations aged 60 years or above and issues related to financial well-being, such as financial literacy, financial exploitation, retirement financial planning, and financial services for older adults. Second, the document had

to be an empirical study, review, or theoretical article. For initial screening, a record was preliminarily considered eligible if its abstract contained at least one finance-related keyword and one ageing-related keyword. The exclusion criteria were as follows: studies in which the participants were younger than 60 years or in which older adults were not analyzed separately; studies that mentioned ageing or financial issues only briefly in the background or discussion sections without treating them as core research variables; and records for which the full text could not be obtained.

The screening procedure can be seen in Figure 1. The initial search yielded 37,550 records. After the records were imported into EndNote, 151 duplicate records were removed. 412 publications with missing key fields, including abstracts, keywords, or references, were also excluded, leaving 36,987 unique records. Two researchers independently screened titles and abstracts according to the inclusion and exclusion criteria, excluding 34,689 records. The remaining 2,298 records proceeded to full-text assessment. A further 722 records were excluded after full-text screening, resulting in a final sample of 1,576 publications for bibliometric analysis.

Figure 1. Flowchart of Data Processing and Literature Screening

Using these 1,576 source publications, this study further constructed a citation dataset for document co-citation analysis, comprising 54,075 records. This dataset consisted of two components: citing articles (i.e., source records) and cited references. The citing articles were the main body of the WoS records and included information on authors, affiliations, countries, titles, keywords, subject categories, and lists of cited references. The cited references were treated as the knowledge base of the field. The bibliographic records also contained metadata fields such as authors, titles, journals, and publication years, which helped reflect the core intellectual foundations of this research area.

2.3 Bibliometric Analysis Tools and Methods

To address the research questions systematically, this study used CiteSpace (version 6.2.6) and VOSviewer (version 1.6.20) for visual bibliometric analysis. VOSviewer was employed to construct and visualize bibliometric networks (van Eck & Waltman, 2010), whereas CiteSpace was used to identify research frontiers and pathways of knowledge evolution (C. Chen, 2006). The two tools have complementary functions, and their combined use has been widely adopted in bibliometric research in the social sciences. Table 1 summarizes the analytical dimensions, tool settings, and output formats.

Table 1. Bibliometric Analytical Dimensions and Tool Configurations

2.4 Bibliometric Terms and Parameter Settings

To help readers interpret the results, this section explains the core bibliometric terms, rules for reading visualization maps, and key parameter thresholds used in this study (Table 2). When these terms first appear in the Results section, brief annotations are provided, to avoid repeated detailed explanations.

Table 2. Definitions of Bibliometric Terms

3 Results

3.1 Publication Trends and the Journal Landscape

The earliest publication in this field dates back to 1982. During the 1980s and 1990s, annual output remained low: it stayed around 20 per year from 2006 to 2010. Since 2012, growth had notably accelerated: output increased from 39 publications in 2012 to 51 in 2016, 69 in 2019, and exceeded 100 in 2020. Output then rose to 179 in 2022 and 214 in 2025. The exponential model ($R^2 = 0.964$) showed a rapidly accelerating expansion pattern (Figure 2).

Figure 2. Temporal Trends in Publication Output

Table 3. Top Ten Journals by Publication Output

Publication output (Table 3) reflects the distribution of publication venues, while citation frequency shows the structure of the field's knowledge sources (Table 4). The most frequently cited journals were *Social Science & Medicine* with 965 citations, *The Gerontologist* with 726 citations, and *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences* with 591 citations, along with other journals such as *Aging & Mental Health* (575), *Social Indicators Research* (527), and *Psychology and Aging* (480), highlighting key areas of social policy, gerontology, psychology, mental health, and social well-being. Journals such as *Journal of Public Economics* (521) and *Health Affairs* (476) underscore the importance of institutional issues like pensions and health care coverage in the field.

Table 4. Top Ten Cited Journals

A comparison of publication venues and knowledge sources shows a notable pattern. The *Gerontologist* and *Aging & Mental Health* are present in both lists of Table 3 and Table 4, suggesting that journals focusing on gerontology and mental health serve a dual role in this field. Journals in economics and public policy are key for research and citations but less so for publication volume. Institutional analysis offers vital knowledge, spread across many outlets. The citation pattern favors cross-disciplinary exchange over single-journal dialogue. The high publication-output rankings of *PLOS ONE* and *Frontiers in Public Health* may be partly attributable to the publication capacity associated with the open-access model.

3.2 Country, Institutional, and Author Collaboration Networks

At the country level (Table 5), USA led with 417 publications, followed by China with 282, UK with 85, Canada with 67, and South Korea with 65. UK ranked first in betweenness centrality at 0.37, with China and

USA at 0.25 and 0.24. This shows UK's key bridging role in international collaboration, while North American and European countries remain dominant. The geographical distribution is shown in Figure 3.

Figure 3. Geographical Visualization of the Country Collaboration Network

At the institutional level (Table 5), the University of Southern California led in publications with 32, followed by the University of London with 30 and Rush University with 28. The University of California System showed strong connectivity in the institutional collaboration network with a betweenness centrality of 0.16. Johns Hopkins University and the State University System of Florida also showed some connectivity. Among the authors (Table 5), Boyle and Lichtenberg each authored 24 articles, followed by Yu with 22 and Bennett with 20. Betweenness centrality was mostly zero among the leading authors, reflecting a fragmented collaboration network without a stable core. The rankings of top institutions, countries, and authors are delineated in Table 5, while the network structure is in Figure 4.

Table 5. Top Ten Countries, Institutions, and Authors

Figure 4. Institutional and Author Collaboration Networks.

3.3 Disciplinary Development and Interdisciplinary Characteristics

The disciplinary distribution in this field has evolved through three stages. Initially, research was mainly concentrated in economics and econometrics, with economics at the center and fields such as public health, health policy, and social work emerging with limited cross-disciplinary links. After 2000, gerontology and geriatrics gained prominence, followed by sociology, development studies, psychiatry, and finance gradually entering the field. The focus expanded from economics to include health, social behavior, and policy. Since 2012, there has been increased participation from public health, social work, psychiatry, psychology, and multidisciplinary sciences, along with emerging fields such as demography, family studies, and environmental sciences. The research landscape centers on public health and social sciences, supported by various disciplines, with development of collaboration networks shown in Figure 5.

Figure 5. Evolution of Disciplinary Collaboration Networks Across Three Periods

3.4 Dual-Map Overlay of Journals and Knowledge Flows

The dual-map overlay of journals illustrates the knowledge-flow pathways between citing journals and cited journals (C. Chen, 2017; C. Chen & Leydesdorff, 2014; Leydesdorff & Rafols, 2009). The citing journals on the left concentrated primarily in psychology, education, and health, whereas the cited journals on the right are concentrated in health, nursing, and medicine (Figure 6). This pattern indicates that the field draws heavily on the research base of medicine and health sciences as its primary knowledge source, while also developing

a degree of internal knowledge circulation in psychology and education. Citation paths associated with economics, and with economics and political science, remain relatively distinct, forming a comparatively stable theoretical system around pension institutions, retirement savings, and public policy. Together, health sciences, psychology, and economics constitute the three primary streams of knowledge flow in this field.

Figure 6. Dual-Map Overlay of Journals

3.5 Keyword Co-occurrence and Burst Analysis

The co-occurrence network of high-frequency keywords shows the relational structure among core terms in this field. Central keywords include *older adults*, *health*, *income*, *risk*, *retirement*, *depression*, *dementia*, *social support*, *financial literacy*, and *policy*, forming the core set of high-frequency co-occurring terms (Figure 7). Keyword burst analysis captures temporal shifts in the importance of these terms (Figure 8). Early burst terms focused on population characteristics and institutions, such as *women* (strength = 3.68), *older people* (4.05), *mortality* (7.48), *coverage* (3.88), and *united states* (4.13). Later, bursts appeared in cognition-related terms such as *competence* (6.83), *ability* (7.35), *Alzheimer's disease* (4.50), and *mild cognitive impairment* (7.53). During this period, *socioeconomic status* (3.63) and *social security* (4.34) also emerged, highlighting the growing role of socioeconomic position and institutional protection in older adults' financial well-being. Recently, terms such as *food insecurity* (3.73), *portfolio choice* (3.98), *literacy* (3.88), *mental health* (6.10), and *loneliness* (4.48) have emerged, indicating that the research focus has expanded beyond demographics and health to include financial literacy, psychological well-being, and social relationships.

Figure 7. Keyword Co-occurrence Map

Figure 8. Top 25 Keywords with the Strongest Bursts

Building on the keyword co-occurrence network, keyword clustering analysis identified 13 major clusters which were grouped into four themes (Figure 9). The first theme covers social security and insurance, focusing on health insurance, pensions, and commercial insurance to reduce old-age poverty and improve economic security. The second concerns financial literacy and capacity, exploring how financial knowledge, cognitive function, and self-efficacy influence older adults' financial decision-making, with emphasis on cognitive health conditions such as mild cognitive impairment and Alzheimer's disease. The third concerns social support and well-being, highlighting social networks, social capital, and the impact of retirement planning on life satisfaction and financial well-being. The fourth addresses risks in later life, highlighting financial exploitation, mental health, financial inclusion, and digital financial services, indicating a shift from traditional risks to issues related to digitalization and social inclusion.

Figure 9. Time-Zone View of Keywords (1982-2025)

3.6 Document Co-citation Clustering and Frontier Evolution

Keyword clustering and co-citation clustering describe the structure of a field from two distinct perspectives, namely terms and citations. The former captures the conceptual labels used by researchers in their publications, while the latter shows the knowledge communities formed through citation practices (Aria & Cuccurullo, 2017; Cobo et al., 2011; Donthu et al., 2021; Zupic & Čater, 2015). Together, these two methods provide a fuller view of the field's knowledge structure. Document co-citation analysis identified core knowledge communities through citation relationships, revealing 11 research clusters grouped into five levels (Figure 10). At the individual level, financial capacity is the largest cluster, covering financial capacity assessment, the effects of cognitive decline, and neurocognitive predictors. The financial literacy cluster addresses financial knowledge, inclusion, and retirement planning. Regarding risk and harm, the clusters of financial exploitation and well-being focus on economic victimization of older adults, legal protections, and the link between mental health and financial decisions. At the intergenerational and family level, economic transfers, bequest motives, and precautionary savings shape within-family resource flows and asset choices. Institutionally, three clusters cover insurance, health care, and old-age security, spanning public to private forms of protection. Additional clusters on late-life hardship and housing highlight vulnerabilities linked to economic and housing pressures.

Figure 10. Document Co-citation Network and Cluster

Co-citation clusters reflect the field's accumulated intellectual foundation, while citation burst detection highlights frontier references with rapidly rising citations within a specific period, signaling ongoing scholarly discussion. This study emphasized cited references with citation bursts beginning in or after 2022 (Table 6), as major survey datasets, including Survey of Health, Ageing and Retirement in Europe (SHARE), China Health and Retirement Longitudinal Study (CHARLS), Health and Retirement Study (HRS), and English Longitudinal Study of Ageing (ELSA), released relevant data around 2020. A series of longitudinal studies around 2022 examined the pandemic's impact on older adults' financial security, mental health, and social connectedness from 2020 to 2022. The COVID-19 pandemic brought shocks that moved issues such as financial strain, loneliness, and well-being in research, accelerating publications and citations. References with citation bursts after 2022 indicate the research community's focused response to these shocks, marking new knowledge development driven by better data and urgent real-world needs.

Between 2022 and 2025, 19 cited references with citation bursts were identified, mainly in three areas (Table 6). The strongest bursts related to policy evaluations of long-term care insurance. Five references assessed China's long-term care insurance effects on healthcare use, family welfare, consumption, and institutional design. Most of the burst references focused on risks and impacts of financial exploitation, including a framework for financial insecurity, links to health, older adults' experiences, and the identification of stressors and protective factors. The cited references also discuss early warning signs of Alzheimer's disease in financial decision-making, and examine how objective financial literacy and subjective confidence influence help-seeking among abuse victims. The set also includes four studies on pension reform and older

adults' well-being from China and South Korea, focusing on the effects of social pensions on health, healthcare use, and well-being. Research on long-term care insurance mainly covers China, pension reform spans China and South Korea, and financial abuse and decision-making research is mainly based in the USA. These groups go beyond describing older adults' financial hardship to focus on interventions and institutional improvement through policy evaluation, mechanism testing, and risk prediction, and help shape the research frontier.

Table 6. Cited References with Citation Bursts

Discussion

4.1 Knowledge Production Landscape and Collaboration Networks

From the perspective of the temporal distribution of publication output, the growth trajectory in this field approximately aligns with the pace of the global ageing population trend. During the 1980s and 1990s, relevant publications were mostly exploratory and sporadic, arising mainly from early work by a limited number of European and North American scholars on income security in later life and retirement policy. After 2000, publication output began to increase steadily, broadly coinciding with the timing of pension reforms in multiple countries and the establishment of China's New Cooperative Medical Scheme. After 2012, the field entered a phase of rapid growth. Annual publication output increased from fewer than 40 publications to 214 in 2025, showing a clear exponential growth pattern. This acceleration was supported by improvements in research infrastructure, especially the public release of multinational longitudinal survey data such as SHARE, CHARLS, HRS, and ELSA, which substantially lowered the barriers to longitudinal research. It was also directly related to the policy window created by China's long-term care insurance (LTCI) pilots. Following 2020, the COVID-19 pandemic has stimulated concentrated research output on financial shocks and the mental health of older adults, contributing to a further surge in publications during this period. It also helped transform the field from a moderately sized specialized area into an active research field spanning multiple disciplines over more than a decade.

Regarding the distribution of research by country, USA ranked first, followed by China, UK, Canada, and South Korea. USA and China served as the two primary hubs of knowledge production in this field, despite differences in their modes of knowledge production. Research conducted in the USA is more evenly distributed across various topics, including financial capacity assessment, identification of financial exploitation, pension actuarial analysis, and retirement behavior. China's research growth is more concentrated. A large share of studies published after 2015 focuses on evaluating the policy effects of pension systems and LTCI, often using quasi-experimental designs such as difference-in-differences and regression discontinuity. This concentration is closely associated with the intensive advancement of social security reforms in China, while also indicating considerable room for expanding the breadth of China-based research topics. UK ranked third with 85 publications. However, its betweenness centrality was significantly higher than that of USA and China, indicating a bridging function within the international collaboration network. UK researchers have maintained close collaborations with European SHARE data teams and have established

relatively stable collaborative links with scholars in North America and parts of Asia, thereby establishing UK as possessing the most geographically extensive collaboration network among the leading producing countries. The betweenness centrality of USA appears disproportionate to its publication volume.

Institutional and author collaboration networks provide a further view of the structure of the academic community in this field. The University of Southern California, the University of London, and Rush University ranked as the top three institutions by publication output. Research at Rush University is concentrated at the intersection of financial capacity and cognitive decline, with core authors such as Boyle and Bennett affiliated with this team. It therefore constitutes a major contributor to knowledge production on financial capacity. The University of California system had the highest betweenness centrality in the institutional collaboration network, playing a bridging role similar to that of UK at the country level. Renmin University of China entered the top ten with 14 publications, indicating the increasing participation of Chinese institutions in international publications. Within the author collaboration network, Boyle and Lichtenberg each contributed 24 articles. However, betweenness centrality was generally zero among authors with high productivity, indicating that a stable core collaborative group has not yet formed. This loosely interconnected structure may result from two primary factors. Research in this domain frequently depends on country-specific longitudinal survey data and the institutional contexts of social security, with data barriers and institutional disparities elevating the organizational costs associated with cross-national collaboration. Additionally, researchers are dispersed across various fields, including gerontology, economics, psychology, public health, and social policy. Variations in publication venues and research paradigms among these disciplines may also increase the difficulty of interdisciplinary collaboration.

From the perspective of knowledge flows, the dual-map overlay of journals offers a profile of the citation structure within the field. The cited journals are predominantly concentrated in psychology, education, and health, whereas the citing journals are primarily focused on health, nursing, and medicine. This pattern suggests that the field depends heavily on medicine and health sciences as sources of knowledge, while an internal circulation of knowledge has already been established within psychology and education. The citation paths of economics journals remain relatively independent, forming a relatively self-contained theoretical system around pension systems, retirement savings, and public policy. Cross-citation between economics, health sciences, and psychology remains insufficient. It should be noted that this paper's literature search scope is limited to the Web of Science Core Collection, non-English literature coverage has structural bias, and Chinese-language publications were not included. Accordingly, the extent to which economics and behavioral science intersect within the Chinese-language publication ecosystem requires further examination.

The findings show a multipolar knowledge landscape with USA and Europe as traditional centers and China as an emerging growth pole. USA excels in thematic breadth, China shows strong growth in policy evaluation, and UK plays a connecting role in cross-national collaboration networks. Publications are spread across gerontology, public health, social policy, and psychology. Knowledge flows mainly around health sciences and gerontology, while psychology and economics maintain independent citation pathways. Disciplinary boundaries have not yet been fully bridged. Domestic networks dominate institutional collaboration, and the author network remains relatively loose. Obviously, cross-national and cross-

institutional collaboration could therefore be further strengthened.

4.2 Research Themes and Hotspot Analysis

This section combines three bibliometric perspectives, namely keyword co-occurrence, keyword burst detection, and document co-citation clustering, to identify ten major research topics in this field. The theme of financial hardship and mental health is the longest-standing research cluster in this field. Its core development can be understood through three analytical levels: objective economic indicators, subjective financial perceptions, and social institutional embeddedness. Early studies linked financial strain to psychological distress (Krause, 1987), while later longitudinal research showed that financial strain independently predicted depression (Chi & Chou, 1999). Subsequent work shifted the focus from objective debt levels to more specific measures of financial strain, including perceived discrepancies between financial resources and needs (W. Kim et al., 2017), debt type, and debt fluctuations (Hiilamo, 2020). Recent studies incorporated institutional contexts such as debt stigma and bankruptcy protection (Hiilamo, 2024), as well as social structural factors such as ethnicity (Chai et al., 2025). Using SHARE data, Bialowolski et al. (2025) found that health decline predicted subsequent financial decline more strongly than the reverse pathway. This line of work has moved the theme beyond a simple stress-response model toward a more complex, multi-level psychosocial framework.

Research on financial hardship shows the negative individual psychological effects of deficits in financial well-being, while pensions and social security shift the focus to institutions, examining whether public transfers can reduce these effects. Methodologically, this theme is centered on quasi-experimental designs. A body of cross-national evidence has shown that non-contributory pensions and social pensions can have positive effects on mental health, decision-making power, and healthcare utilization, with magnitude and dimensions of these effects varying across institutional parameters (S. Chen et al., 2020; Galiani et al., 2016; Mostert et al., 2022; Pak, 2020; Salinas-Rodríguez et al., 2014). Recent studies have also extended the range of outcomes examined to extreme outcomes such as suicidal behavior (C. Kim, 2025) and frailty (Y. Zhang & Y. -C. Chen, 2025). Quasi-experimental studies using China's long-term care insurance (LTCI) pilots have consistently shown that LTCI coverage can reduce unmet care needs and improve mental health through pathways such as reduced medical spending and increased social interaction (Lei et al., 2022; Wang, 2024).

Recent advances in this area have extended the measurement of catastrophic expenditure from health care costs alone to a broader metric that includes long-term care costs, showing that the protective effect of LTCI depends strongly on benefit thresholds (Long et al., 2025). Related work has also reported the independent effect of LTCI on older adults' living-arrangement preferences (Zhu & Bai, 2025). In cancer care, the concept of *financial toxicity* connects financial burden with clinical psychological outcomes (Arastu et al., 2020). Recent research also found that loneliness plays a significant mediating role in this relationship (Zhao et al., 2025), which extends the health financing discussion from institutional protection to patients' subjective psychological experiences.

The theme of financial literacy and decision-making moves the focus from external resources to

individuals' cognitive capacity and knowledge. It addresses the structural imbalance between wealth holding and decision-making capacity in later life. Building on the work of Lusardi and Mitchell (2011, 2014), gerontological applications have shown stable associations between financial literacy and health-related financial decision-making capacity, cognitive function, and mental health (Bennett et al., 2012; James et al., 2012). Subsequent research also found that financial literacy has a stronger protective effect in preventing assets from falling below a safety threshold than a growth-promoting effect in moving assets above that threshold (Bialowolski et al., 2022). At the same time, conceptual clarification of financial health literacy (Davis & Jones, 2024) and cross-cultural validation of the Multidimensional Subjective Financial Well-Being Scale (MSFWBS) (Sorgente et al., 2026) have helped develop the field's measurement infrastructure. However, these advances point to a core challenge: financial knowledge education alone may be insufficient to resolve the tension between cognitive decline and financial decision-making. In the risk dimension, the theme of financial exploitation stands in contrast with financial literacy. Meta-analytic evidence has estimated an annual prevalence of approximately 5% to 6% (Burnes et al., 2017), while cognitive impairment, low numeracy, and depressive symptoms have been identified as key predictors that are consistent across studies (Mosafer et al., 2025; Wood et al., 2016). Social capital appears to have a dual role: social participation increases exposure to fraud, whereas social support and social security coverage function as protective factors (Yao et al., 2025). At the intervention level, empowerment-oriented financial coaching has shown preliminary effectiveness in alleviating psychological distress by enhancing victims' financial knowledge and decision-making confidence, suggesting its potential to restore a sense of economic autonomy (Hall & Lichtenberg, 2025).

The theme of digital finance and financial technology has become one of the fastest-growing emerging clusters in recent years, such as technology anxiety and gaps in digital literacy (Anupama & Sengupta, 2025), particularly salient among the oldest segments of the older population (Han & Ko, 2025). Even so, digital financial inclusion has been found to improve life satisfaction and self-rated health, with stronger effects among disadvantaged groups (Yin & Wang, 2025). These findings suggest that digital finance and FinTech constitute a frontier area in which opportunities and risks coexist, and in which effects are highly heterogeneous.

The theme of informal care and intergenerational financial transfers has increasingly focused on care providers. Evidence on national trends in Sweden suggests that downward intergenerational financial transfers have become more prevalent over time. Women's financial contributions have increased in both frequency and amount, while class-based disparities in financial support have widened (von Saenger et al., 2025). The effects of intergenerational support are also strongly conditioned by cultural context. In the Chinese sample, financial support was more salient under low expectations of filial piety, whereas emotional support played a stronger role under high expectations of filial piety (Zhan et al., 2025). This finding supports the argument that cultural norms shape financial decision-making behavior. It also indicates that research designs should treat cultural context as an analytical variable rather than a fixed background condition. In non-Confucian cultural contexts, the relative weight of financial and emotional support may follow very different patterns.

Housing and assets shift the focus from income flows to asset stocks. Research has shown that homeownership can enhance financial well-being through wealth and other mediating pathways, while the effect of financial literacy on financial well-being is fully mediated by housing tenure, wealth, and income (Gignac et al., 2024). However, the income-poor but asset-rich group and the limited role of assets in paying for long-term care (Johnson & Wang, 2019; Marcinkiewicz & Chybalski, 2024) both point to the same problem: a single asset indicator is not enough to assess economic security in later life. The independent contribution of multidimensional retirement resources to subjective well-being (Pang et al., 2024) further shows the need to move beyond a single focus on housing tenure or financial assets and toward a more comprehensive assessment of economic security in later life.

Between 2022 and 2023, the COVID-19 pandemic catalyzed a temporary research cluster on financial shocks and older adults' mental health, driven by this external event. Several studies showed that pandemic-related income loss and financial difficulties independently predicted poorer mental health and greater loneliness, while probable COVID-19 infection was also significantly associated with persistent financial difficulties (Iob et al., 2022; Samuel et al., 2022). The scholarly value of this cluster lies in its use of the pandemic as a natural experiment to show how systemic social shocks can amplify health inequalities in later life through financial pathways. Its continued relevance, however, depends on whether the literature can move beyond the historical event itself. Heo et al. (2025), using comparative data across pre- and post-COVID periods, suggested that post-pandemic research is moving toward more refined mechanism-based analysis.

Taken together, the analysis of these ten themes shows that research on older adults' financial well-being globally has become diverse and multi-layered. Financial hardship and mental health, together with pensions and social security, constitute the two core research axes. Financial literacy and financial exploitation form a contrast between the capacity and risk dimensions. Long-term care insurance and digital finance are the fastest-growing frontier growth areas over the past five years. Informal care and intergenerational transfer, housing and assets extend the analysis through the contextual dimensions of family networks and asset structures. The COVID-19 shocks, as an external event, have highlighted the key role of financial pathways in shock transmission. However, the development of these themes remains uneven. Some have entered a stage of mechanism refinement and subgroup heterogeneity analysis, whereas others remain at an early stage of theoretical construction and preliminary evidence accumulation. These distributional patterns reflect more than two decades of scholarly accumulation in the field and provide a bibliometric evidence base for allocating resources in future research.

4.3 Research Trends and Future Directions

Based on the knowledge structure and hotspot analysis, we observed four interconnected trends. The first trend involves conceptual operationalization, with the measurement of financial well-being expanding from objective indicators like income and assets to include subjective aspects such as perceived financial security, satisfaction, and self-efficacy. Financial insecurity remains a prominent focus. Obviously, using both objective and subjective measures can help future research reduce assessment bias.

The second trend concerns conceptual and analytical frameworks. Research is moving from single risk-factor models toward an integrated vulnerability-and-protective-factor perspective. The clusters on financial exploitation and financial capacity both identify cognitive impairment, depressive symptoms, and low social support as core predictors. Research on digital finance, in parallel, examines two opposing mechanisms: technological empowerment and technological exclusion. More importantly, related studies have begun to move beyond descriptive associations and to ask questions about dynamic causal mechanisms. As discussed earlier, Bialowolski et al. (2025) used a random-intercept cross-lagged panel model (RI-CLPM) to examine the bidirectional longitudinal relationship between health and finance. In the field of psychological well-being, researchers are also moving beyond depression as a single outcome and using latent growth mixture modeling to distinguish different developmental trajectories under financial strain, such as resilient and deteriorating trajectories (McGiffin et al., 2019).

The third is research design, shifting from cross-sectional studies to quasi-experimental methods (like difference-in-differences and regression discontinuity) which can generate stronger evidence on causal inference. These designs rely on exogenous institutional changes as identification conditions and require key assumptions such as parallel trends, allowing researchers to assess with higher internal validity whether and to what extent institutional interventions improve older adults' financial well-being. However, their cross-national transferability still needs further testing.

The fourth trend involves frontier domains. Digital financial inclusion has shown sustained bursts since 2021. Although it has not yet consolidated into an independent cluster in co-citation networks, digital finance produces both empowering effects and digital exclusion. Future research should quantify the net distribution of these two effects across age, education, and cognitive-function subgroups, mixed-method designs that combine large-scale survey data, in-depth interviews, and user log analysis to understand the cognitive and behavioral barriers faced by older adults in using digital financial services. These trends expand the boundaries of the field, but they also reveal structural shortcomings. One of the weaknesses is that the translational chain from risk identification to effective intervention remains weak. For older adults with cognitive impairment, existing protective strategies have not yet received enough rigorous experimental testing (Button et al., 2024; Wei & Balser, 2025). The evidence remains fragmented across countries and institutions. A unified framework for cross-national comparison and shared data infrastructure is lacking.

Based on this study's findings and trend analysis, we recommend three key research directions. The first direction is to deepen the research across different disciplines and domains on financial well-being, covering overlooked groups and asset structure. Although such cross-topics in the bibliometric map have not yet formed independent clusters, the frequent occurrence of nodes such as gender, ethnicity, and socioeconomic status in the co-occurrence network, along with their burst strength, suggests potential space for cross-analysis. Future analysis needs to go beyond single demographic variables, go deep into the heterogeneity of wealth structure, focus on older adults who are income-poor but asset-rich (Marcinkiewicz & Chybalski, 2024), and on the ways in which multiple assets, including housing and pension accounts, are exposed to risk during macroeconomic fluctuations (Gustman et al., 2012). Research should systematically examine how institutional environments and social identities interact to construct financial vulnerability.

Large-scale longitudinal surveys should also consider oversampling underrepresented groups, including sexual minorities and immigrants, in future waves. Currently, research is limited on the financial security of LGBTQ+ older adults, financial exclusion of immigrants and ethnic minorities, financial well-being of informal caregivers, and older adults' financial well-being in regions such as Southeast Asia, Africa, and Latin America (Leung et al., 2022; Shastri & Erney, 2024). These should be research priorities. High-impact journals lack special issues on these topics. Future issues could foster intersectional research and highlight underexplored areas in bibliometric structures.

The second direction is to advance experimental validation and cost-effectiveness evaluation of interventions to bridge the gap between risk identification and protective practice. Overall, the translational chain from identifying risks to validating interventions remains weak in this field. A small number of quasi-experimental evaluations, such as empowerment-oriented financial coaching (Hall & Lichtenberg, 2025), require further testing across different contexts. In relation to the protection of financial capacity, interventions such as property management arrangements and powers of attorney still lack rigorous evidence from randomized controlled trials (Button et al., 2024; Wei & Balser, 2025). Future research could examine ways to combine cognitive training with financial decision-making support, while evaluating effects on both exploitation prevention and the preservation of financial autonomy. In terms of digital security, artificial intelligence-based real-time fraud warnings and spending reminders also require rigorous effectiveness testing. Intervention studies could first focus on areas with stronger practical feasibility, such as community-based financial education, anti-fraud counseling, and cognitively accessible product design. Randomized controlled trials fit interventions that allow random assignment, including community education and product design, while quasi-experimental designs are better suited to natural experimental settings such as pilot policy rollouts. Studies should also extend follow-up periods to assess long-term effects and incorporate cost-effectiveness analysis to provide an economic reference for policy adoption. Cost-effectiveness analysis depends on the monetary valuation of well-being improvements, so caution is needed when comparing diverse interventions on the same scale. Future research could also evaluate whether institutional designs, like regulatory sandboxes and compliance incentives, help financial institutions develop suitable products for older adults with cognitive impairment. Because establishing randomized conditions for large-scale institutional reforms is challenging, identifying policy effects will mainly rely on high-quality quasi-experimental methods.

The third direction is to build a unified analytical framework for cross-national comparison, while integrating systemic risks and global data infrastructure. Existing evidence still relies heavily on single-country longitudinal data. The effects of pensions and long-term care insurance often point in a similar direction, but their magnitude varies, which requires explanation through the coding of institutional parameters and systematic comparison. Differences in pension replacement rates, coverage, financial literacy, and intergenerational support cultures should be incorporated into unified meta-analyses or multi-country parallel designs. Hiilamo's (2024) cross-national study of how debt culture moderates the association between financial strain and mental health has provided a useful example of this approach. Future research should further extend this perspective by incorporating systemic risks like climate change and economic

recessions in a unified framework. Quasi-experimental methods could evaluate how policies such as disaster relief and pension changes mitigate shocks across countries. This expands COVID-19 shock analysis and may strengthen policy responses. The data infrastructure for surveys such as SHARE, HRS, ELSA, CHARLS, and the Korean Longitudinal Study of Aging (KLoSA) is improving, but measurement equivalence and differences in sampling frames remain challenges. A feasible short-term step would be to conduct cross-cultural measurement equivalence tests for two or three core measures, such as perceived financial security and core financial literacy modules (Sorgente et al., 2026). This step could be led by relevant international academic organizations or cross-national survey consortia. On that basis, broader indicator harmonization could be advanced gradually.

4.4 Contributions and Limitations

4.4.1 Research Contributions

This study deepens our understanding of research on older adults' financial well-being at both methodological and substantive levels. At the methodological level, it is an early effort to systematically apply three bibliometric tools, namely keyword co-occurrence analysis, keyword burst detection, and document co-citation clustering, to this interdisciplinary field. This approach offers a transparent strategy for mapping the knowledge structure that is both replicable and updatable. It documents the consolidation of long-standing research axes, such as financial hardship and pensions, while also identifying the rapid emergence of frontier areas such as digital finance and long-term care insurance. More importantly, this study identifies a critical gap in the translational chain: although the risk factors for financial vulnerability have been extensively documented, the movement from risk identification to intervention validation remains markedly underdeveloped. By defining ten research themes and their functional roles grouped under four categories (core research axes, capacity and risk dimensions, frontier growth areas, and contextual extensions), this study provides an organizational framework for future theoretical development and the allocation of research resources.

4.4.2 Research Limitations and Future Directions

Despite its pioneering nature, this study has several limitations. First, the data were limited to the Web of Science Core Collection and English-language publications, which may have caused the structural omission of non-English studies and publications in regional journals. This limitation is especially relevant to Southeast Asia, Africa, and Latin America, which were identified in this study as underrepresented regions. Second, bibliometric methods focus mainly on macro-level structures and high-impact clusters, and are less able than narrative reviews to capture the theoretical depth and contextual detail of individual studies. Although cluster labels were manually checked and refined, theme naming and boundary delineation still involved a degree of subjective judgment. Third, this study did not conduct statistical synthesis such as meta-analysis, so its assessments of effect direction and magnitude remain descriptive.

The above limitations also suggest several directions for future research. First, expanding database coverage to Scopus, PubMed, and regional databases would improve sample representativeness and support stronger cross-national comparisons. Second, combining bibliometric mapping with narrative reviews of core

clusters could add theoretical depth to the structural overview provided here. Third, when enough evidence has accumulated, cross-national meta-analyses could examine specific relationships, such as financial stress and depression or the health effects of pension reforms, and produce more precise and generalizable effect estimates. These steps would help build a more integrated, globally representative, and policy-relevant evidence base for the field, which can eventually promote the well-being of older adults across the globe.

5 Conclusion

Based on 1,576 publications indexed in the Web of Science Core Collection between 1982 and 2025, this study conducted a bibliometric analysis of knowledge production, thematic structure, and evolutionary trends in research on older adults' financial well-being. The findings show that publication output in this field has shifted from sporadic accumulation to exponential growth. USA and China have emerged as the main knowledge hubs, while the UK serves a bridging role in the collaboration network. Despite rapid growth in output, inter-institutional collaboration remains largely domestic, which points to a structural gap in global research integration.

By combining keyword co-occurrence analysis, keyword burst detection, and document co-citation clustering, this study identified ten major themes. Financial hardship and mental health, together with pensions and social security, constitute two long-standing core research axes, with one centered on micro-level perceptions and the other on macro-level institutional arrangements. Financial literacy and financial exploitation provide complementary perspectives from the dimensions of individual capacity and risk. Long-term care insurance and digital finance have been the fastest-growing frontier areas in the past five years. Informal care, intergenerational transfers, housing, and assets expand the analytical scope toward family networks and wealth structures. COVID-19-related research shows how systemic social shocks can amplify health inequalities through financial pathways.

At a broader level, the field is moving in three directions: causal inference supported by quasi-experimental designs, broader measurement that combines objective and subjective indicators, and integrated vulnerability frameworks that move beyond isolated risk factors. The rapid rise of digital financial inclusion also marks a transformative frontier. Three priorities should receive more attention. First, future studies should deepen intersectional analysis by including gender, ethnicity, socioeconomic status, and wealth, especially to address the underrepresentation of marginalized groups. Second, the link from risk identification to intervention validation remains weak. Rigorous experimental evaluation and cost-effectiveness assessment are needed for interventions such as cognitive training, financial coaching, and digital security technologies. Third, a unified framework for cross-national comparison should be built through cross-cultural measurement equivalence testing of core instruments and the gradual integration of cross-national longitudinal survey data. This framework would make it possible to examine, in a more cumulative analytical system, how institutional parameters shape financial well-being outcomes.

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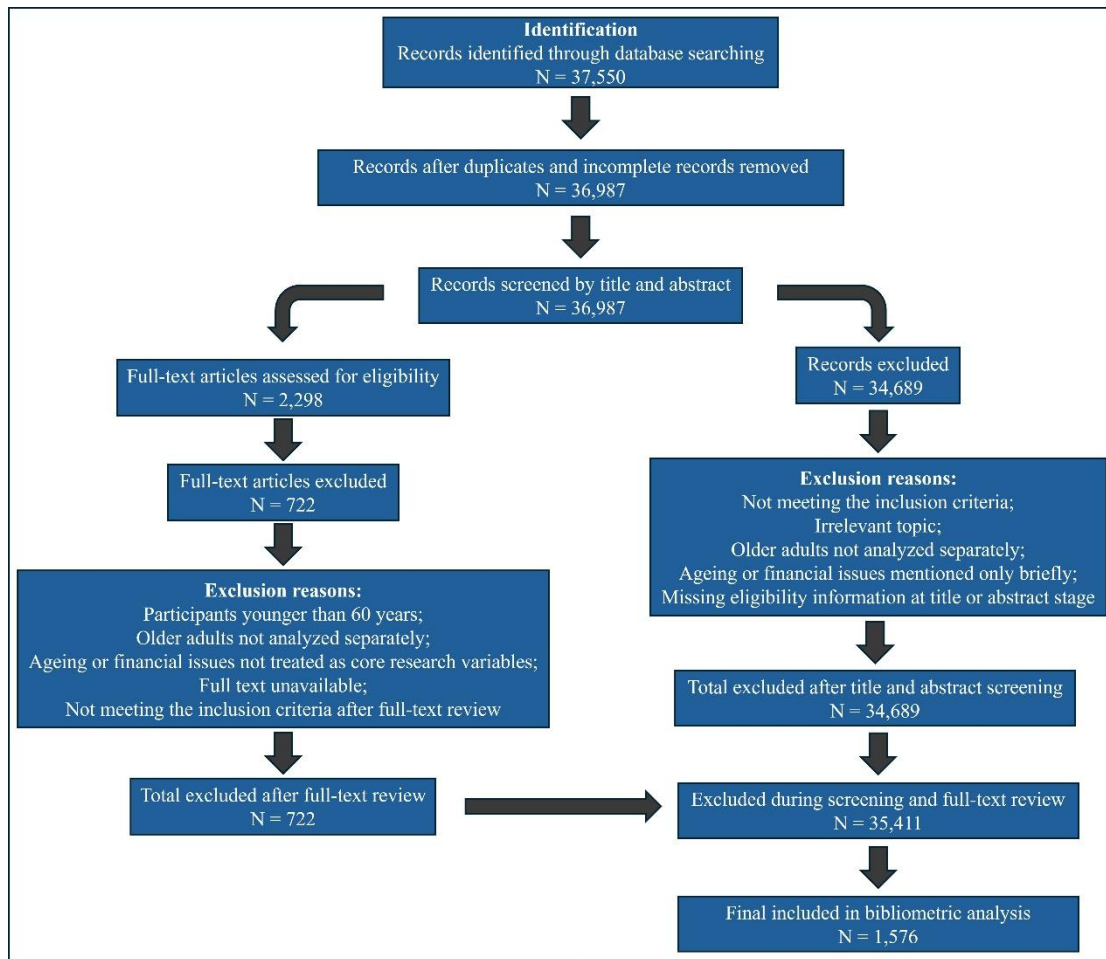
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Figure 1. Flowchart of Data Processing and Literature Screening

Note. The screening procedure followed the PRISMA 2020 guidelines. WoS CC = Web of Science Core Collection. Records with missing abstracts, keywords, or references were removed before title and abstract screening.

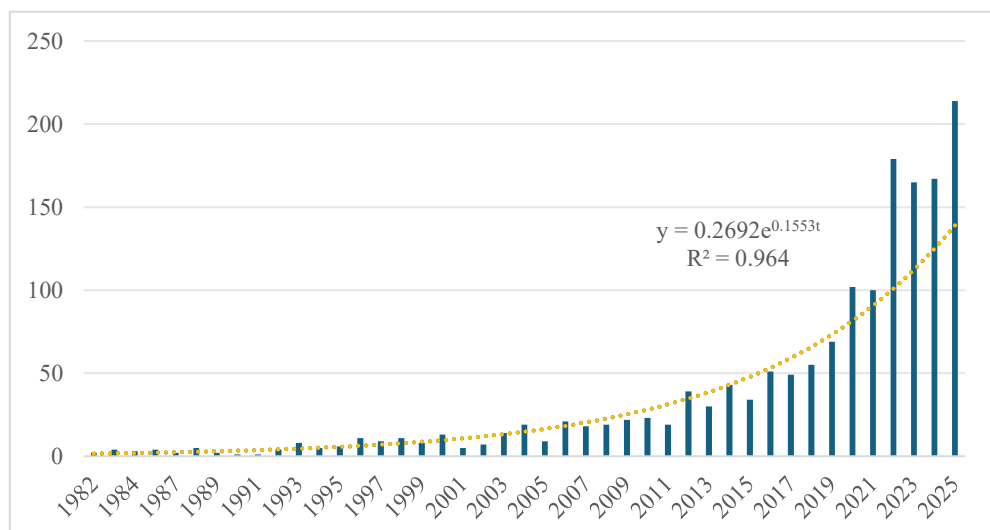
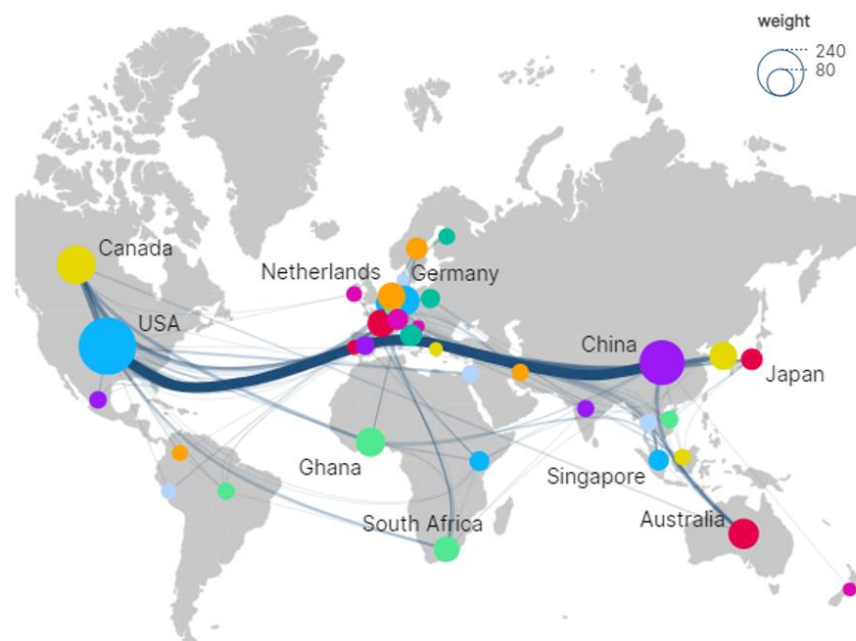
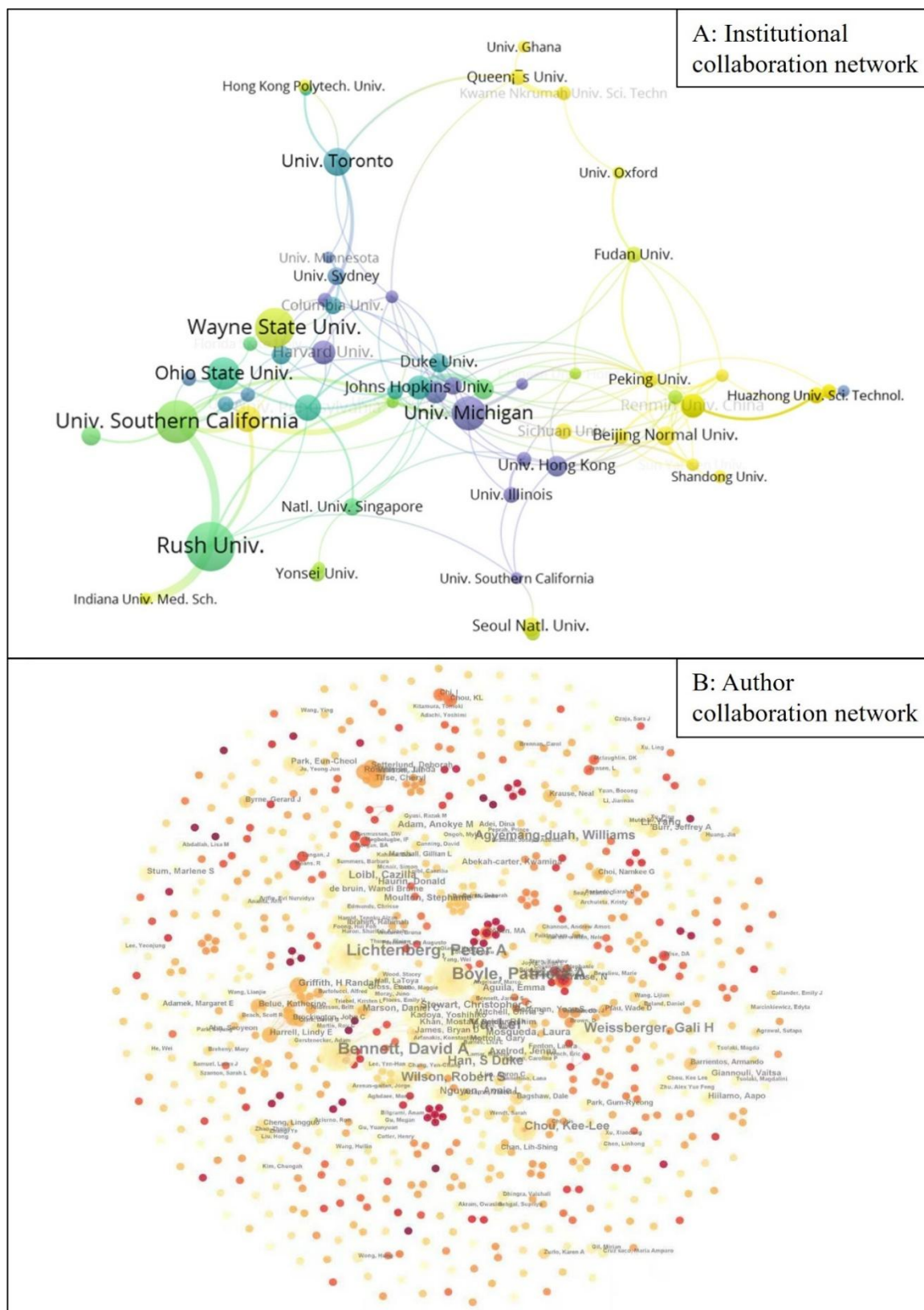
Figure 2. Temporal Trends in Publication Output

Figure 3. Geographical Visualization of the Country Collaboration Network



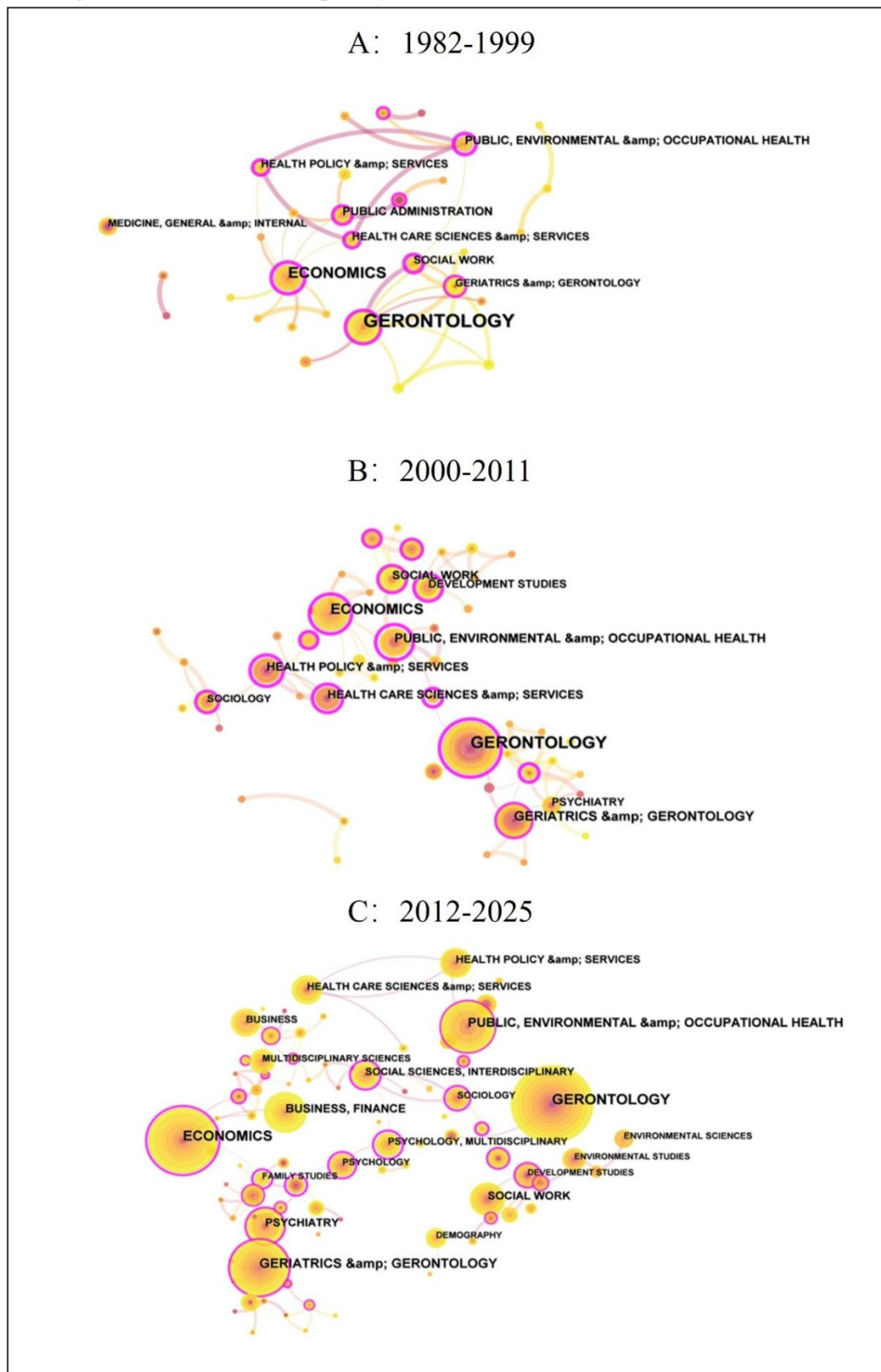
Note. Each node represents a publishing country. Node size indicates the number of publications, and links between nodes represent collaboration relationships between countries.

Figure 4. Institutional and Author Collaboration Networks



Note. This figure consists of two panels. Panel A presents the institutional collaboration network, and Panel B presents the author collaboration network.

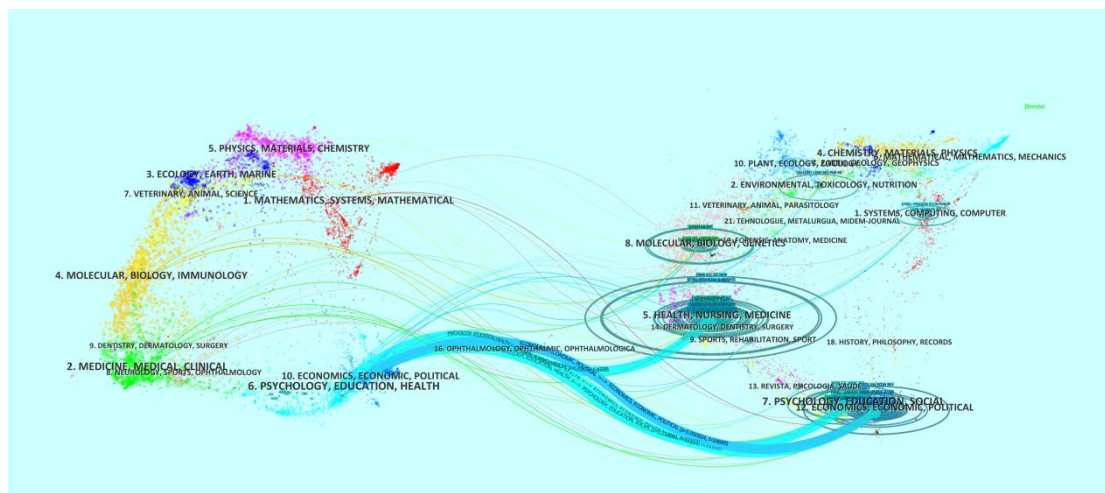
Figure 5. Evolution of Disciplinary Collaboration Networks Across Three Periods



Note. From top to bottom, the three disciplinary collaboration networks represent the periods 1982 to 1999,

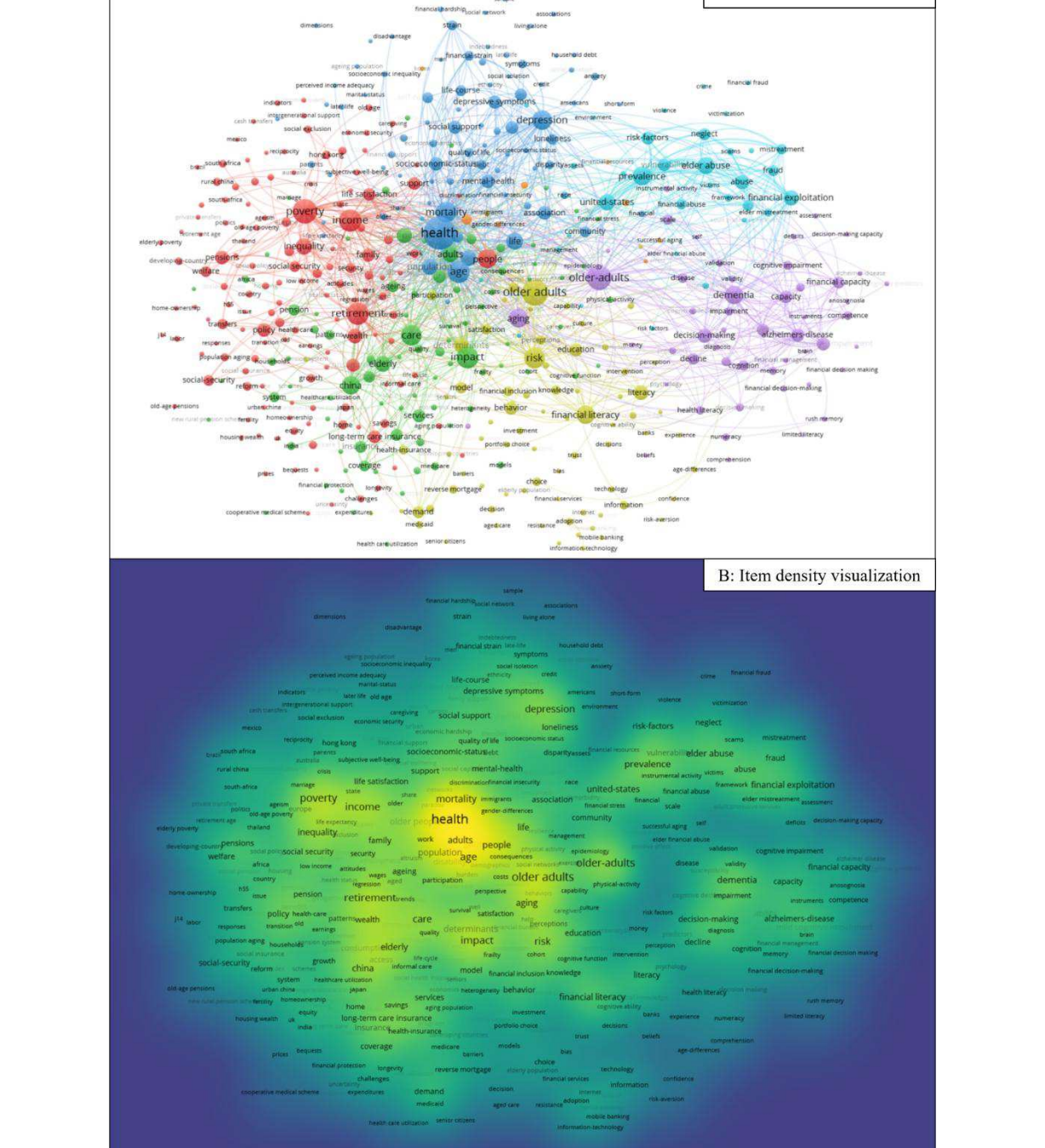
2000 to 2011, and 2012 to 2025.

Figure 6. Dual-Map Overlay of Journals



Note. The width of the horizontal axis of each ellipse represents the number of authors in the journals, and the length of the vertical axis represents the number of articles published in the journals.

CAT0219	A: Network visualization
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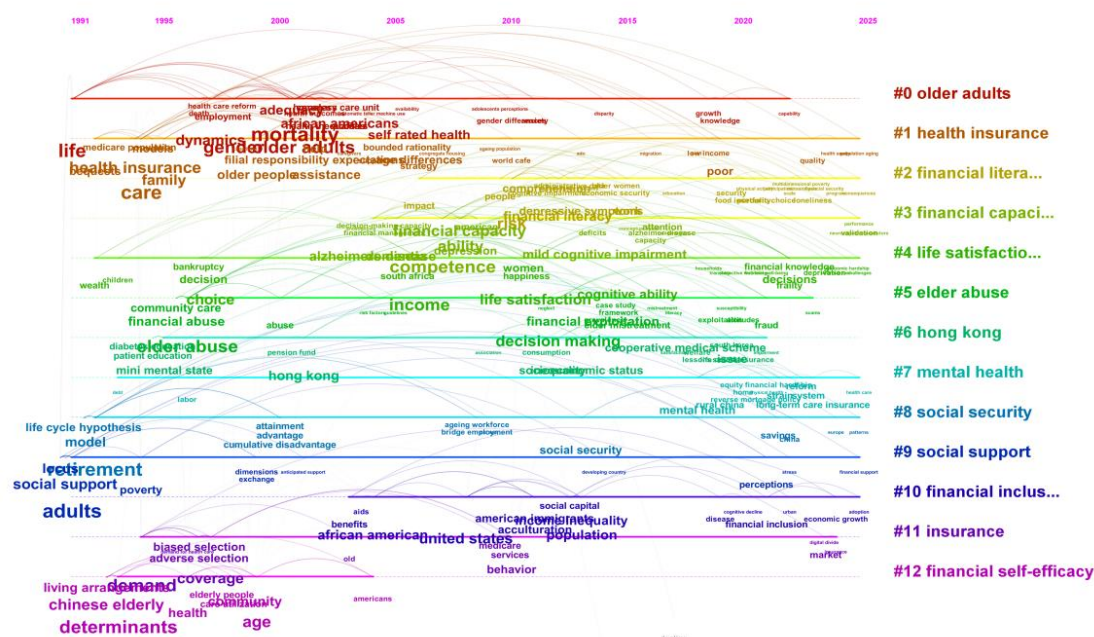


Note. This figure consists of two panels. Panel A shows the network visualization of the keyword co-occurrence map. Panel B shows the item density visualization. In Panel A, each node represents a keyword, node size indicates keyword occurrence frequency, colors indicate different keyword clusters, and links represent co-occurrence relationships; thicker links indicate stronger co-occurrence strength. In Panel B, the color of each point indicates the local density of keywords. Brighter and warmer colors indicate areas with a larger number of keywords and/or keywords with higher weights, whereas cooler colors indicate lower keyword density. In this study, keyword occurrence was used as the item weight.

Figure 8. Top 25 Keywords with the Strongest Bursts



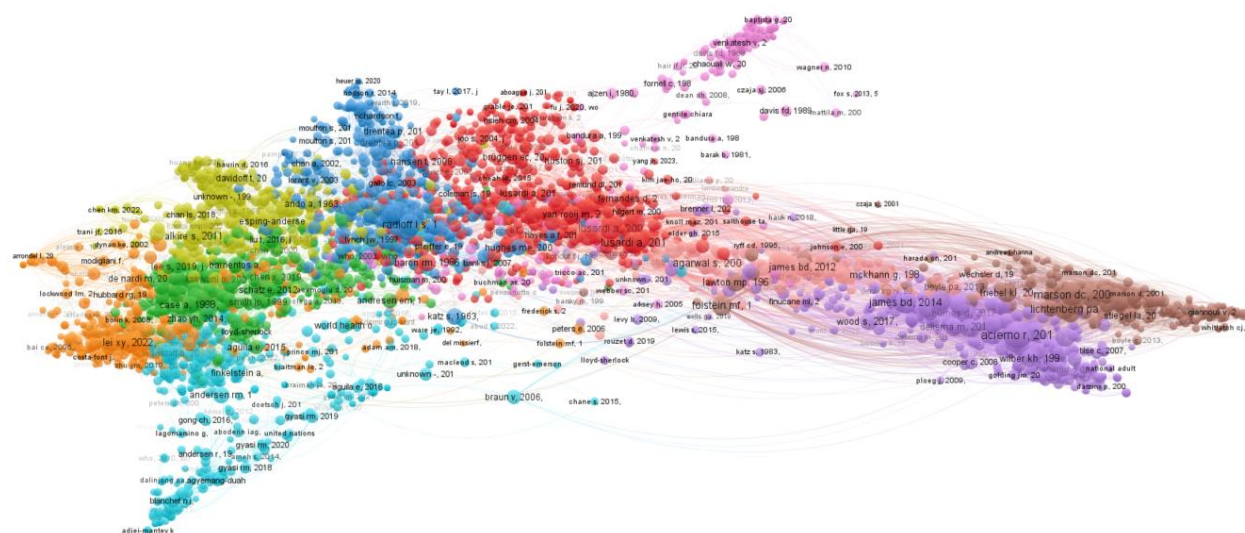
Figure 9. Time-Zone View of Keywords (1982-2025)



Note. The timeline view displays 13 keyword clusters from top to bottom. The labels on the right indicate

the names of the clusters. The timeline on the left shows the temporal distribution of keywords within each cluster and the active period of each cluster.

Figure 10. Document Co-citation Network and Cluster



Note. Each node represents a document. Links between nodes indicate co-citation relationships. Nodes belonging to the same cluster are shown in the same color.

Table 1. Bibliometric Analytical Dimensions and Tool Configurations

Analytical dimension	Analytical tools	Output
Knowledge production landscape	Descriptive statistics (VOSviewer, Excel); Exponential growth model fitting (Excel or statistical software)	Trend chart of annual publication output; Contribution tables for core authors, countries, and institutions; List of high-impact journals; Country and regional publication-output maps; Journal distribution map; Fitted exponential growth curve; R ² value for the fitted exponential growth model
Collaboration network	Co-authorship network analysis (CiteSpace); Institutional collaboration network analysis (VOSviewer); Country collaboration network analysis (VOSviewer); Betweenness centrality analysis (CiteSpace); Dual-map overlay (CiteSpace)	Author collaboration network; Institutional collaboration network; Country collaboration network; Bridge nodes with high betweenness centrality; Dual-map overlay of journals showing disciplinary knowledge flows
Structural evolution	Document co-citation analysis (VOSviewer, CiteSpace); Co-citation cluster analysis of highly cited references (CiteSpace); Keyword co-occurrence analysis (VOSviewer); Keyword co-occurrence clustering (VOSviewer)	Document co-citation network; Co-citation cluster map; Keyword co-occurrence network; Thematic labels of keyword clusters
Research frontiers and trends	Keyword burst detection (CiteSpace); Cited-reference burst detection (CiteSpace); Timeline view of co-citation clusters (CiteSpace)	Burst keywords; Cited references with citation bursts; Timeline view of co-citation clusters

Table 2. Definitions of Bibliometric Terms

Analytical dimension	Term	Definition
Publication trend	Exponential growth model	A model that uses an exponential function to fit annual publication output and reveals the growth pattern of scientific literature over time. It is a classic approach in bibliometrics for describing the growth of scientific literature (de Solla Price, 1963). An R^2 value of 0.80 or above was treated as indicating a good model fit in this study.
Collaboration network	Betweenness centrality (BC)	An indicator measuring the extent to which a node functions as a “bridge” in a network. Its value ranges from 0 to 1. A higher value indicates that the node is more indispensable to network connectivity, while a value of 0 indicates that the node collaborates only with local members (Freeman, 1978).
Collaboration network	Network density	The proportion of actual links in a network relative to the maximum possible number of links. A higher value indicates broader and denser collaboration, while a lower value indicates sparse collaboration (Wasserman & Faust, 1994).
Collaboration network	Modularity (Q value)	An indicator measuring the extent to which a network can be divided into subgroups with dense internal connections and sparse external connections, namely a community structure (Newman, 2006).
Knowledge flow	Dual-map overlay of journals	A visualization that overlays the disciplinary distribution of citing journals on the left and cited journals on the right, based on WoS journal subject categories. The curves indicate knowledge-flow directions, their thickness reflects citation volume, and the size of each ellipse represents the number of journals in the corresponding discipline (C. Chen & Leydesdorff, 2014).
Research hotspots	Keyword co-occurrence network	A network in which keywords are treated as nodes, with node size indicating frequency of occurrence, and co-occurrence relationships are represented as links, with link thickness indicating co-occurrence strength. The network is constructed using the association strength normalization method (van Eck & Waltman, 2010).
Research hotspots	Keyword clustering	A procedure that uses the VOSviewer clustering algorithm to group keywords that frequently co-occur and share similar research foci into thematic clusters. Cluster labels are assigned using the most representative terms within each group, and cluster size reflects the number of keywords included in the theme and the breadth of the issue area.
Research hotspots	Document co-citation analysis	An analysis of the relationship in which two documents are cited together by a third document. A higher co-citation strength indicates greater proximity between the two documents in terms of research topic or knowledge base.
Research hotspots	Co-citation clustering	A procedure that automatically groups documents with strong co-citation relationships into knowledge clusters. Each cluster represents a core research direction or intellectual foundation within the field.
Frontiers and evolution	Burst term detection	A CiteSpace procedure based on the burst detection algorithm (Kleinberg, 2003) that identifies keywords whose frequency of use increases sharply during a specific period. Burst strength reflects the magnitude of the surge in attention, while the beginning and ending years indicate the life cycle of the hotspot.
Frontiers and evolution	Timeline view	A visualization in which each cluster is displayed on a separate horizontal line, showing the temporal distribution of nodes within the cluster and reflecting the persistence and evolution of the theme (C. Chen,

		2006).
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Table 3. Top Ten Journals by Publication Output

Ranking	Journal	Frequency
1	Ageing & Society	45
2	Journal of Elder Abuse & Neglect	44
3	Frontiers in Public Health	42
4	The Gerontologist	41
5	Aging & Mental Health	41
6	PLOS ONE	40
7	Journal of Applied Gerontology	40
8	Social Indicators Research	35
9	Journal of Aging & Social Policy	34
10	Clinical Gerontologist	33

Table 4. Top Ten Cited Journals

Ranking	Source	Citations
1	Social Science & Medicine	965
2	The Gerontologist	726
3	The Journals of Gerontology Series B: Psychological Sciences and Social Sciences	591
4	Aging & Mental Health	575
5	Social Indicators Research	527
6	Journal of Public Economics	521
7	Ageing & Society	498
8	Psychology and Aging	480
9	Health Affairs	476
10	Journal of Elder Abuse & Neglect	471

Table 5. Top Ten Countries, Institutions, and Authors

Ranking	Country	Count	BC	Institution	Count	BC	Author	Count
1	USA	417	0.24	University of Southern California	32	0.07	Boyle, Patricia A	24
2	China	282	0.25	University of London	30	0.09	Lichtenberg, Peter A	24
3	UK	85	0.37	Rush University	28	0.01	Yu, Lei	22
4	Canada	67	0.08	University System of Ohio	26	0.04	Bennett, David A	20
5	South Korea	65	0.00	University of California System	26	0.16	Weissberger, Gali H	13
6	Australia	53	0.09	Wayne State University	23	0.01	Agyemang-duah, Williams	11
7	Japan	40	0.07	Bar Ilan University	18	0.01	Han, S Duke	11
8	Germany	33	0.06	State University System of Florida	17	0.08	Wilson, Robert S	11
9	Ghana	29	0.08	Johns Hopkins University	17	0.14	Chou, Kee-Lee	7
10	India	28	0.05	Renmin University of China	14	0.08	Loibl, Cazilia	7

Table 6. Cited References with Citation Bursts

Ranking	Author (Year)	Burst strength	Burst period	Research topic
1	Lei et al. (2022)	12.99	2023-2025	Long-term care insurance, unmet activities of daily living (ADL) care needs, informal care burden, care-related expenditures, and well-being among older adults and families in China
2	J. Feng et al. (2020)	11.35	2023-2025	Substitution effects of long-term care insurance on hospitalization and medical expenditure in China
3	Z. Feng et al. (2020)	6.44	2023-2025	Policy landscape, challenges, and future prospects of China's long-term care system
4	Liu et al. (2023)	6.19	2024-2025	Effects of public long-term care insurance on elderly household consumption in China
5	Lichtenberg et al. (2020)	5.84	2022-2025	Financial, psychological, and relationship insecurity associated with financial exploitation among older adults
6	Nguyen et al. (2021)	5.23	2023-2025	Qualitative narratives on perceived types, causes, and consequences of financial exploitation
7	Weissberger et al. (2020)	5.22	2022-2025	Physical and mental health correlates of perceived financial exploitation among older adults
8	W. Huang and C. Zhang (2021)	4.69	2022-2025	Effects of China's New Rural Pension Scheme on older adults' welfare
9	Bucher-Koenen et al. (2017)	4.20	2022-2022	Gender differences in financial literacy
10	Acierno et al. (2019)	4.06	2022-2025	Mental health correlates of financial mistreatment among older adults
11	Sohn et al. (2020)	4.02	2023-2025	Long-term care insurance, mortality disparities, service type, and income level among older Koreans
12	Fong et al. (2021)	4.02	2023-2025	Financial literacy and financial decision-making at older ages
13	Hall et al. (2022)	3.80	2024-2025	Financial stressors and resources associated with financial exploitation
14	Pak (2021)	3.80	2024-2025	Effects of South Korea's Basic Pension expansion on older adults' health
15	Lee et al. (2019)	3.60	2022-2025	Effects of old-age public transfer on the well-being of older adults in South Korea
16	H. Chen and Ning (2022)	3.33	2024-2025	Impacts of long-term care insurance on health care utilization and expenditure in China
17	Nicholas et al. (2021)	3.33	2024-2025	Early financial presentation and warning signs of Alzheimer's disease and related dementias
18	Fan and Henager (2022)	3.33	2024-2025	Structural determinants framework for financial well-being
19	Hwang and Lee (2022)	3.33	2024-2025	Pension benefit duration and health improvements among older adults in South Korea