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## A STUDY OF STATE-SOCIETY-CITIZEN RELATIONS: A VOSVIEWER BIBLIOMETRIC ANALYSIS (2000–2023)

**Objectives:** The purpose of this study is to facilitate the understanding of the theoretical and analytical foundations of state-society-citizen relations by addressing the concepts of “social security,” “social behavior,” and “civic engagement” within recent integrative approaches. **Methods:** The article uses a two-step research method: (a) a conceptual analysis, and (b) a VOSviewer bibliometric analysis using the PubMed database to test applicative-analytical individualizations regarding the three terms and related keywords over the last two decades, as well as the impact of the COVID-19 pandemic within the applied social research. **Results:** The study provides a pluralistic epistemology of conceptual and relational representations, together with the radical transformation of the researched concepts during the COVID-19 pandemic. **Conclusions:** The study contributes to the multidimensional analysis of the state-society-citizen nexus. It integrates recent implications of social security, social behavior, and civic engagement to facilitate good governance and social integration.

**Keywords:** social behavior, social security, civic engagement, social integration, good governance.

### 1. INTRODUCTION

In the last two decades, the approach to state-society-citizen relations through analyzing social security, social behavior and civic engagement included a new generation of pluralistic and innovative evaluations (Liu, Lapinski, 2022; Gustison, Phelps, 2022; Dang, Seemann, Lindenmeier, Saliterer, 2022; Stoecker, Witkovsky, 2022; Vega-Tinoco, Gil-Lacruz, A.I., Gil-Lacruz, M. 2022). Thus, the research emphasis is placed in a *first* approach (i) on norms, values, expectations and in a second approach (ii) on social behavior motivation, voluntary activity and social transformation. Consequently, the current study will engage a research framework focusing on: (i) the analysis of the topics; (ii) the theory of normative social behavior (Rimal, Real, 2005; Liu, Lapinski, 2022; Lapinski, Rimal, 2005); (iii) the social and behavioural constructs and theories and recent integrative

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approaches on state-society-citizen relations; (iv) other integrative approaches enhancing social security and civic engagement; (v) the civic participatory norms and good governance (Saurugger, 2010, Kotzian, 2014); (vi) civic engagement and citizen participation; (vii) the individual participation and civic engagement in the context of social functioning; (viii) the role of individual human action exploring social behaviour motivation and social behaviour intention.

Therefore, the main goal of the paper is to analyze how the scientific literature evolved in the period 2000–2023 and how the international research focused and accessed the conceptual and analytical trends of the state-society-citizen relations. To achieve this goal, we will operationalize the answer to the following research questions: (1) What are the key features of normative social behavior? (2) What are the key approaches to social security, social behavior and civic engagement during the COVID-19 pandemic? (3) What is the role of the recent integrative approaches linking good governance, social normativity and social functioning? The answer to these research questions will also frame and explain the contextual influences related to social norms, citizen participation, human action and social functioning to analyze and monitor the worldwide research trends in the period 2000–2023 as the selected period highlights complex phenomena and processes with obvious intensity, social and political changes of particular significance for social security, human behavior as well as civic commitment, associating various sources and resources specific to the social, cognitive and participatory space. Consequently, the research profiles the subject categories of “social behavior” and “social security” displayed by the PubMed database associated with the bibliometric review. The research data and topics were obtained from PubMed using the VOSviewer software tool extracted from the worldwide scientific literature in the mentioned period. The topics displayed by the analysis are important due to two complementary reasons: (1) the topics address main social, participatory and community problems for the linkage state-society-citizen linkages in the last two decades; (2) the topics assign important impact on the scientific knowledge in the area of social sciences, humanities and related field. Moreover, selected topics are mainly focus on the normative and behavioural consequence of the state-society-citizen relations.

In this sense, we formulate a hypothesis for our research: “The more social phenomena and processes know periods of intense evolution, the more the production of scientific literature in the field intensifies”. Further, in this paper, we set a five steps framework to construct the research area of the state-society-citizen relations in the period 2000–2023: (1) the methodology of the research offering based features of the VOSviewer for data downloaded from PubMed database; (2) the empirical research and conceptual screening of the recent relevant scientific addressing the following trending three nexus: (a) state-society-citizen; (b) social behaviour motivation and social behaviour intention; (c) sources of social security and civic engagement; (3) results and discussion of the VOSviewer bibliometric analysis; (4) conclusions and future research directions.

## 2. METHODOLOGY

The concept analysis identifies recent theoretical developments and key systemic features aimed to identify how social behavior types civic engagement and how social security and social behaviour are assessed within the state-society-citizen nexus. The research is conducted using the VOSviewer bibliometric analysis for PubMed database approaching two keywords: “social behavior” and “social security”. Bibliographic data was downloaded for all selected journals listed and indexed by PubMed between between

January 1, 2000 and January 23, 2023 using the PubMed format to save citation to file filtering the selection for “all results”. The results of the VOSviewer analysis use relational techniques of the links attribute and total link strength attribute. The results highlight the scientific production research and trends, most used topics and top contributing areas of study. The documents retrieved from the PubMed database included various document types: articles, reviews and book reviews etc. The selection of the PubMed database is because the research period includes also the pandemic of COVID-19 and during this period it was relevant for the research to monitor and analyze also relevant sources of the period, emerging keywords and trending topics aimed to stimulate the interdisciplinary research and monitoring of the state-society-citizen relations in the last two decades.

### **3. STATE-SOCIETY-CITIZEN: BASED MODERATORS**

In recent literature, there is an evolving contribution to the resourcing and researching of social security, social behavior and civic engagement theories related to state-society-citizen relations. Many studies often develop an integrative linkage between the three concepts (Lapinski, Rimal, 2005; Hsu, Chang, 2007; Olimid, D.A., Olimid, A. P., 2019; Pavlova, Silbereisen, 2015; Supportive Dang, Seemann, Lindenmeier, Saliterer, 2022; Gustison, Phelps, 2022; Liu, Lapinski, 2022). As a result, Lapinski and Rimal (2005) usefully involve the valid knowledge of the theory of social normativity by focusing the social experiment at the level of mass communication. Through their concern to identify the role of collective norms and the most important “moderators” (namely citizen and involvement), other studies develop a research framework to examine the key drivers of the state-society nexus, here including social influence, participatory governance and political behavior (Kotzian, 2014; Waheduzzaman, As-Saber, 2015; Pavlova, Silbereisen, 2015). However, using the theory of normative social behavior as a framework, Rimal and Real (2005) formulate an integrative approach to the results of three mechanisms: injunctive norms, outcome expectations and group identity. The injunctive norms are determined using the complex social standards regarding the social behavior of people given a certain social condition or situation.

These factors are based on social norms considering the difference between the perceived and community norms and between descriptive and injunctive factors and norms within state-society-citizen nexus. With an analysis towards fostering the role of social behavioral features, Lapinski and Rimal (2005) apply a logical nexus of the state-society-community relationship collecting novel information and approaches related to normative influences (Lapinski, Rimal, 2005). However, Lapinski and Rimal (2005) describe the added value of the theory of normative social behavior by involving the assessment of (a) the social and normative constructs defined by norms and social behavior; (b) the role of social moderators and “social network” requiring the input of communication and social norms; (c) the contribution of collective norms and expectations and (d) the engagement of evaluation in the process of the valid knowledge involving normative influences, behavioral features and cognitive influences.

### **4. SOCIAL BEHAVIOR MOTIVATION AND SOCIAL BEHAVIOR INTENTION**

Although Lapinski and Rimel's theory is prominent for the theory of normative social behavior of the 2000s, since 2010, other contextual effects included a type of rational-analytical evaluation and research aimed to adapt the theory of “human social behaviour”

to new social phenomena (Gantt, Lindstrom, Williams, 2017) and state-to-citizen engagement assets (Ofoeda, Boateng, Asmah, 2018).

Therefore, research carried out by Lapinsky and Rimal (2005) on personal and mass communication drivers should be advanced to facilitate social integration and voluntary activity (Marcus, Echeverria, Holland, Abraido-Lanza, Passannante, 2015; Jung, Thompson, Byun, 2022). Furthermore, proper identification of the communication drivers and an assessment of social integration lead to sources of social behavior conceived as balance between voluntary actions and social transformation. However, research studies in the last two decades provide a phasing-in focus on “social phenomena” enabling social behavior motivation and social behavior intention (Hsu, Chang, 2007) and advancing new resources (e.g. “potential transgenerational inheritance” and new opportunities (e.g. attitudes, values and goals nexus) (Brenman-Suttner, Yost, Frame, Robinson, Moehring, Simon, 2020).

Although “social attachment” stands out as an inner factor of social behavior, other studies encompass the social attachment biases and individual assets to target social behavior integrative bonds (Gustison, Phelps, 2022) and social motivation and community capacity to address social phenomena. As a consequence, the concepts of social behavior and social phenomena trace a theoretical and analytical variety ranging from “high-order” social constructs (e. g. values and ideologies) to human behaviour and aging (Brenman-Suttner, Yost, Frame, Robinson, Moehring, Simon, 2020), social factors, social world, motivation, attitudes and social security (Moczuk, Delekta, Stecko, Polakiewicz, 2021).

## 5. SOURCES OF SOCIAL SECURITY AND CIVIC ENGAGEMENT

Common to the analysis of social behavior and social security is the influencing role of civic engagement and civic participatory norms having wide consequences on civil activities and civic responsibility (Dang, Seemann, Lindenmeier, Saliterer, 2022; Donoghue, Tranter, 2010; Olimid, 2014). Another consideration is the linkage between norms and decision-making processes (case study European Union) (Saurugger, 2010). By compounding the “strategic-constructivist” theory, participatory norms engage political and administrative actors by creating “continued activism” Saurugger (2010). For example, Saurugger (2010) explores the increase evidence that civil society engagement in European Union decision-making mechanisms provide a useful model of approaching citizen participation. In addition, there is a linkage between good governance and norms of citizenship (Kotzian, 2014).

In that context, the case for increasing social security, the quality of governance and citizens’ attachment to civic participatory norms and social prosperity (Woźniak, M., Woźniak, L., Chrzanowski, Ostasz, 2015) can be argued by assessing three contributions. (1) First, related to the linkage between social context and civic participation, recent studies point political participation depending on socio-demographic factors and social networks (Pavlova, Silbereisen, 2015). (2) Second, the influencing role of social security and civic engagement within the “participatory governance” (Waheduzzaman, As-Saber, 2015) and the participation of citizens in local-level programmes and initiatives. (3) Third, from a wider perspective, Stoecker and Witkovsky (2022) focus on rural areas relating civic engagement to the local-community-based support experience and development strategies by posing a double challenge for the sources of social behavior and social security: (a) the local civic potential in addition to organizational long-term perspective and (b) the COVID-19 social and health biases focusing an engagement-based relation to the social

and community benefits. In this context, the research of Topazian et al. evidences the relationship between civic association participation and the social factors during COVID-19 (Topazian, Levine, McGinty, Barry, Han, 2022).

Clearly, this research of Topazian et al. is crucial for assessing interpersonal interactions, social integration and civic engagement by underlying the multidimensional views of involvement during the pandemic period. Therefore, civic engagement extends beyond the interpersonal interactions and contributions directly to the state-society-citizen nexus (Lyeonov, Bilan, Yarovenko, Ostasz, Kolotilina, 2021). Although Topazian *et al.* view civic engagement as a subset of the social integration, Vega-Tinoco, Gil-Lacruz and Gil-Lacruz (2022) rate the linkage between well-being and civic participation depending on health, social happiness and life conditions. Vega-Tinoco et al. conclude the need to expand the research of civic participation and social security by underpinning the debate on state-community-citizen synergies (Vega-Tinoco, Gil-Lacruz, Gil-Lacruz, 2022).

## 6. VOSVIEWER BIBLIOMETRIC ANALYSIS: RESULTS AND DISCUSSION

This research uses the VOSviewer bibliometric analysis (Van Eck, Waltman, 2009; Van Eck, Watman, 2010; Augustyn, 2022; Samadbeik, Bastani, Fatehi, 2022; Akturk, 2022) of the concepts of “social security” and “social behavior”. The VOSviewer software program facilitates the construction of a co-occurrence matrix aimed to visualize a based map functionally displayed in various dimensions due to the visualization tools (e.g. zooming and searching). Additionally, the VOSviewer software tool provides data and results using tables (Table 1 and Table 2) graphs (Graph 1 and Graph 2) and figures (Figure 1, Figure 2, Figure 3 and Figure 4). Figure 1 to Figure 4 display a label view provided by the VOSviewer tool visualizing the items following their label and also by indicating a circle. For a better understanding and visualisation of the results, the font size of the selected topics and also, the size of the items are directly dependent on the weight of the item and the total strength of all links established for the selected item. Overall, the selection of the items of Figure 1 to Figure 4 focuses on the major concept displayed by the data extracted using the VOSviewer tool, namely: “humans” (Figure 1), “COVID-19” (Figure 2), “social behavior” (Figure 3) and “social behavior-social cognition-cooperation” nexus (Figure 4). The network visualization (Figure 1 and Figure 3) and the overlay visualization (Figure 3 and Figure 4) are two types of visualization provided by VOSviewer computer program due to its dual functionality, namely the zooming functionality and the scrolling functionality. Consequently, the limitations of the research refer to the amount of information and data retrieved for the selected period and permitted for data export by PubMed using the VOSviewer tool. Moreover, for better visualisation of the results, the research will display the same results in Table 1 and Graph 1, and also Table 2 and Graph to individualize the increasing trends of topics in some year. Therefore, the research provides a systematic review of the specialized literature developing a five-step process as follows: (1) the research concepts are focused in the area of “social security” (10160 results) and “social behavior” (123.361 results); (2) the research filters the results provided by PubMed for the period between January 1, 2000 and January 23, 2023 by exploring all types of scientific literature as provided by PubMed database produced by National Library of Medicine (United States of America) for the last two decades; (3) data were collected directly from PubMed database (accessed on January 23, 2023); (4) the corpus of articles was extracted from the PubMed database as follows: the results were saved for each targeted concept by applying the filters of “Free full text” and “Full Text”; (5) the last step

of the systematic review processes the data collected providing: (1) information and results on the relationship among key terms (key terms occurrence for “social security” search (Figure 1) and relationship among key terms for “social security” search relating all author’s selected keywords (Figure 2); (2) information and results on the relationship among key terms occurrence for “social behavior” (Figure 3) and relationship among key terms for “social behavior” search relating all author’s selected keywords (Figure 4); (3) Table 1 and Graph 1 illustrate the distribution of results in the field of “social security” and the associated number of citations and publications within the period January 1, 2000-January 23, 2023, while Table 2 and Graph 2 illustrates the distribution of results in the researched field of “social behavior” for the same period; (4) results on the relationship among key terms for “social security” search relating all author’s selected keywords (Figure 3 and Figure 4).

The research applied uniformly for all years (January 1, 2000-January, 23, 2023) reveals convergent approaches for the search of the concept of “social security” for the period 2000–2005 (between 56 and 84 results annually) (Table 1). In the case of the period 2006–2019, the number of results for the “social security” search (Table 1) proves a more complex evaluation, quantified between 109 and 833 results. The importance of research in the “social security” field is gradually amplified in the period 2006-2019 and the trend of increasing interest in the field can be translated into the study of the experience of the state-society-citizen relationship, as well as for the modeling of a new approach aimed at improving the classical theoretical approach. The new research tendency developed after 2010 centred on the social security-civic engagement relationship and emphasizes the interdependencies of the thematic positions between good governance, social security reform and citizen participation (Goldman, Orsza, 2014; Jaccoud, Mesquita, Paiva, 2017).

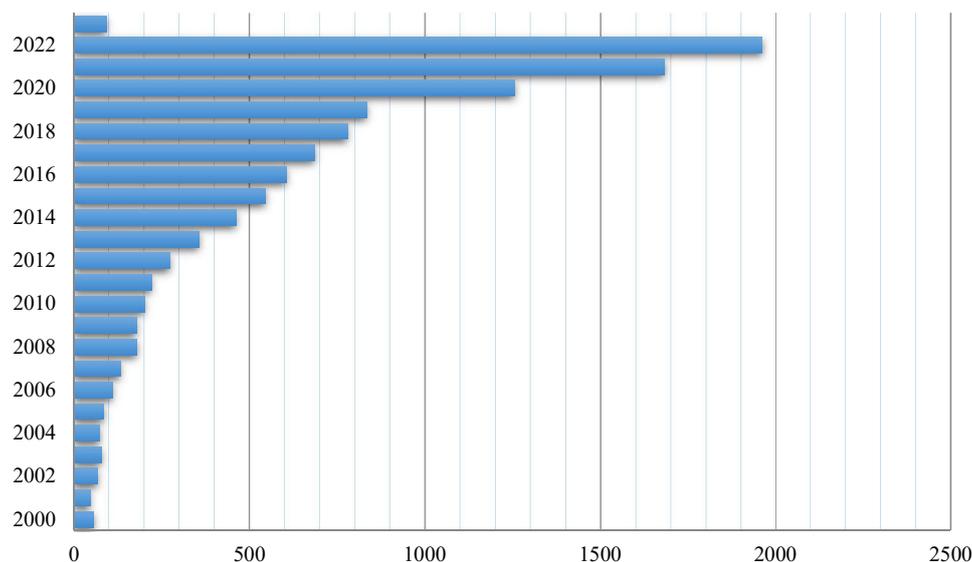
Table 1. Number of results (citations and publications) on “social security”

Year (2012–2023)	Count	Year (2000–2011)	Count
2023	92	2011	220
2022	1961	2010	200
2021	1683	2009	178
2020	1256	2008	179
2019	833	2007	131
2018	779	2006	109
2017	686	2005	84
2016	605	2004	73
2015	545	2003	78
2014	462	2002	67
2013	357	2001	45
2012	273	2000	56

Source: Authors’ own compilation based on Pubmed search results on “social security” (01.01.2000-23.01.2023).

A retrospective overview of the last three years (from January 1, 2020 to January 23, 2023) on the search results for the key term “social security” marks a clear distinctiveness

of the COVID-19 pandemic period at the level of the years 2020, 2021 and 2022 (Graph 1). Results for these years gravitate between 1256 and 1961 recorded annually and ranging from 833 results (2019) before the pandemic period to more than 1961 results (2022), an increase of at least two times in last three years (Graph 1). Approximately one-half of the results for the whole period were registered during the COVID-19 pandemic (4992 results). Over the last two years, the results for the “social security” research almost double ranging from 1256 results (2020) to 1961 (2022). As an overall focus, Graph 1 and Graph 2 are merely intended to visualize and explore the advances registered in the last years (ranging from 2018 to 2022) compared to the first years of the selected period (ranging from 2000 to 2010).



Graph 1. Number of results (citations and publications) on “social security”

Source: Authors’ own compilation based on Pubmed search results on “social security” (01.01.2000-23.01.2023).

The consequences of the increasing trend focusing on the pandemic period are also the result of the debate that focuses the social security system and good governance (Li, Huang, Xiang, Dou, 2021; Ullah, Harrigan, 2022; Zhi,Tan, Chen, Chen, Wu, Xue, Song, 2022). Human behavior and social security experienced during COVID-19 have the strongest links emphasizing the social and health impact of the pandemic period (Figure 1).

Similarly, two other significant sources of social security (“health status” and “health care costs”) are also correlated with the COVID-19 pandemic (Figure 1). Other three concepts (“policy”, “social behavior” and “social capital”) can be identified as sources for the “social security” increased occurrence during the researched period.

Therefore, the focus on “social security” poses a double challenge (“quality of life” and “health care costs”) by enhancing the role of the relationship state-society-citizen. The presence of concepts of “social adjustment”, “policy”, “family relations” and “adaptation” follows the trajectory of the relationship between state-society-citizen and the linkage good governance-social normativity-social functioning raised by the first research question of

the paper. This approach is rooted in “time factors” and “quality of life” (Figure 1). The results of the research encompass other key terms including “food supply” and “social capital” as vital elements of social development in the last two decades (Figure 1). In particular, researching “family characteristics” and preserving “adaptation” is essential for the “social security” search exposing external and internal benchmarks for policy formulation.

While the VOSviewer framework largely releases the use of the concept of “social security” related to “humans” and “COVID-19”, it also noted that the analytical scrutiny of “social adjustment” and “quality of life” to be concerned with other policy references related to “health education”, “prevention” and “prognosis” (Figure 1).

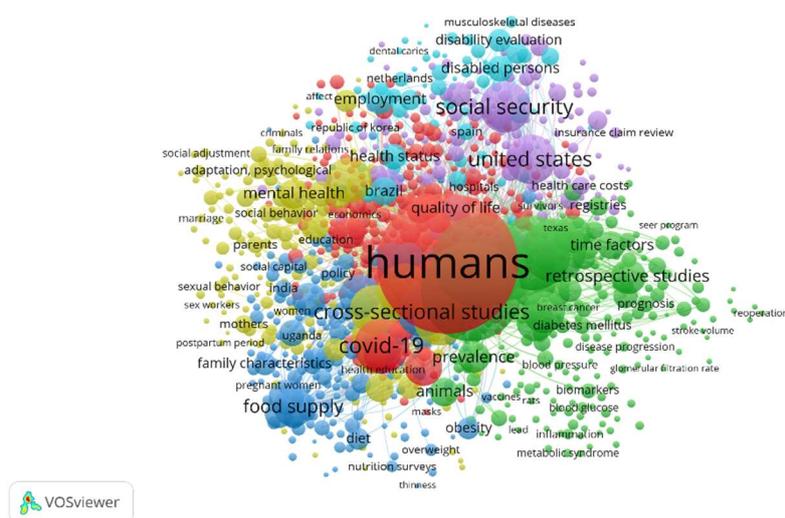


Figure 1. Network visualization of the relationship among key terms occurrence for “social security” search (01.01.2000–23.01.2023)

Source: Authors’ own processing based on VOSviewer software.

The concept of COVID-19 can be found in most of the studies analyzed during this period considering the polarization of research on the social security and civic engagement relationship during the pandemic period. In addition, most research launched in the period 2020–2022 had to find a balance between state responsibility and individual participation.

Furthermore, social integration, public health and social attachment are pivotal factors of the studies released in the period 2020–2022 (Lyeonov, Bilan, Yarovenko, Ostasz, Kolotilina, 2021; Gustison, Phelps, 2022; Jung, Thompson, Byun, 2022) (Figure 2). Thus, Figure 2 considers the overlay visualization of the keywords of the selected articles releasing the concept of “COVID-19” as particularly focused due to the high level of dependency on other concepts (e.g. “social medicine”, “public health”, “corporate social responsibility”, “health inequalities” and “food policy”) (Figure 2).

According to the overlay visualization provided by Figure 2, “social security” has become a benchmark for state-society-citizen relationship guiding the attributes of social development and community-scale “public health” and targeting four levels of social-related dependencies: “primary care”, “health inequalities”, “aging” and “privacy”. Figu-

re 2 also highlights the importance of health policies during the COVID-19 period toward social security regarding the IoT (Internet of Things) development and sustainability providing the key features of the social security-social behavior-civic engagement nexus during the COVID-19 pandemic as launched by the research question (2) in the Introduction section of the paper.

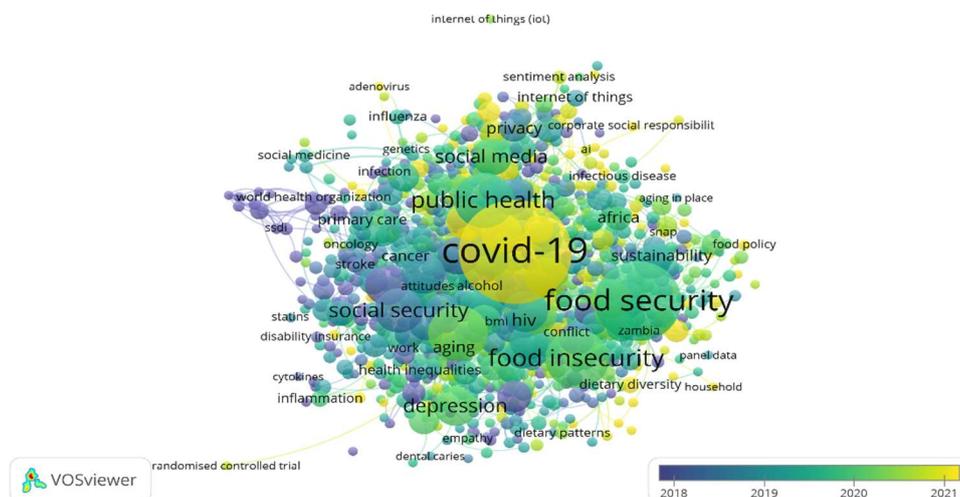


Figure 2. Overlay visualization of keywords of journals articles (authors selected keywords) among key terms for “social security” search (01.01.2000–23.01.2023)

Source: Authors’ own processing based on VOSviewer software.

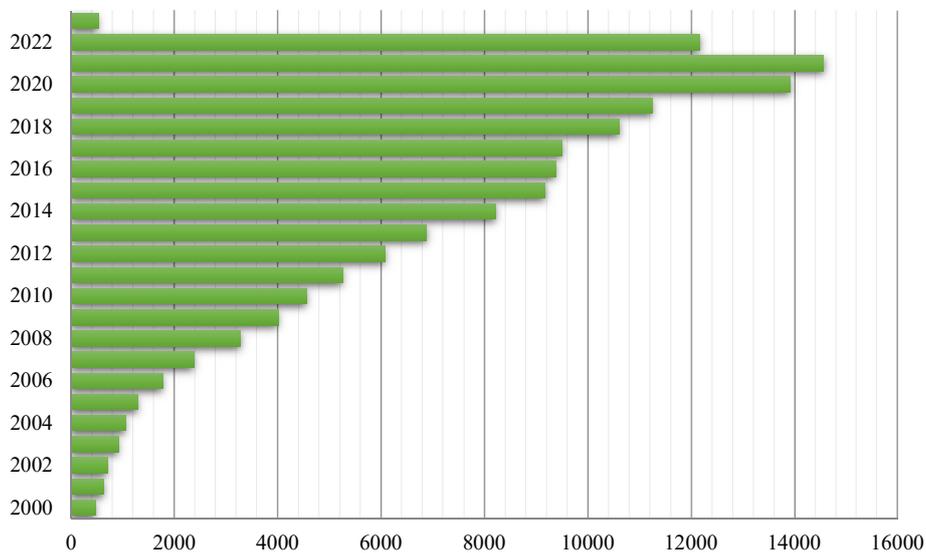
Table 2 highlights the number of results for the search on “social behavior” focusing on the increase of results for the period (pre)pandemic ranging from 470 results (2000), 634 (2001), 695 (2002), 4564 (2010), 6078 (2012), 9176 (2015), 9505 (2017), 10 610 (2018), 14573 (2021) to 12 173 results (2022). The recorded data shows a thirtyfold increase in the number of recorded results considering a comparison of the records extracted for the years 2000 (470 results) and 2021 (14 573 results). The table focuses on three periods of research-based approach to “social behavior” within PubMed database: (i) the first period (2000–2010) ranging from 470 results (2000) to 4564 results (2010); (ii) the second period (2011–2017) ranging from 5262 (2011) to 9505 (2017); (iii) the third period (2018–2022) ranging from 10610 (2018) to 12173 (2022).

Nevertheless, the results estimated for the pandemic period (a total of 40 668 results for the period 2020–2022) lie at the core of “social behavior” search centring related concepts to “social support”, “population dynamics” and “social dominance”. The last three terms represent central themes of research for the studies listed by PubMed database during the period 2000–2023. To do so, Graph 2 undertakes an integrated approach of the period of research placing “social behavior” as the central theme of research for social policies by relying on the “cooperative behavior” and “choice behavior” approaches (Figure 3).

Table 2. Number of results (citations and publications) on “social behavior”

Year (2012–2023)	Count	Year (2000–2011)	Count
2023	521	2011	5262
2022	12173	2010	4564
2021	14573	2009	4009
2020	13922	2008	3285
2019	11251	2007	2378
2018	10610	2006	1773
2017	9505	2005	1289
2016	9384	2004	1050
2015	9176	2003	913
2014	8220	2002	695
2013	6886	2001	634
2012	6078	2000	470

Source: Authors’ own compilation based on Pubmed search results on “social behavior” (01.01.2000-23.01.2023)



Graph 2. Number of results (citations and publications) on “social behavior” (01.01.2000–23.01.2023)

Source: Authors’ own compilation based on Pubmed search results on “social behavior”.

Therefore, the data presented in Table 1 and Table 2 highlight the number of citations and publications for “social security” and “social behavior” expressing the increased attention of the scientific literature for the two topics and the growth trends especially during the COVID-19 pandemic.





citizen relationship and other key terms covered by the PubMed database during the period January 01, 2000 – January 23, 2023. As proposed by the research goals framework research exposed in the first part of the paper, the analysis used for analysis the following concepts: “civic engagement”, “social cognition”, “cooperation”, “social evolution”, “social functioning”, “social behavior”, “social capital”, “social security”, “quality of life” and “health care costs”, “social adjustment”, “family relations” etc. (Figure 1 – Figure 4).

First, the research results focus on the strong social underpinnings and conceptual biases during the research period. Second, addressing a specific period of research (2000-2023), the results explore the direct dependencies between key terms using network and overlay visualization of terms. Third, the study also addresses the social biases during COVID-19. This context is related to an institutional and individual spectrum focusing on “social integration” and “cooperation”. Thus, the research identifies a strong link between social security, social behavior and civic engagement rooted in the concepts of “social support” (Figure 3) and “sociality” (Figure 4).

As possible directions for further study, future research is needed in order to analyze and monitor how the state-society-citizen evolved in the post-pandemic period, to scrutinize the constructive role of the relationship between social motivation and social intention and the new sources of social security and civic engagement.

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