

Systematic Review: Address Theories and Methods in Studies on Retirement Benefits in the Context of Social Security

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Abstract

Social security has gained global prominence in political and economic debates, particularly amid demographic challenges tied to aging populations, increased life expectancy, and shifts in family and work dynamics. Despite this, academic production on the subject remains scarce and nascent. This study addresses this gap by examining the current scientific production on social security, focusing on retirement benefits, and identifying underlying theories and methods. Using the IRAMUTEQ software to analyze discourse in abstracts from the Scopus database, the research employed Systematic Review and the Reinert Method for text classification. Out of over 2,000 articles, 59 met the research criteria following the PRISMA Protocol. Results unveiled five discourse classes in selected articles: studies on workers' decisions to continue or cease working after retirement, issues related to beneficiaries' conditions and family income maintenance, economic considerations and resource capitalization, analyses on the granting of pensions to teachers, and investigations of socioeconomic and behavioral variables in pension systems. Regarding methods, the research identified a prevalence of regression processes and demographic models in the analyzed articles. Theoretical frameworks emphasized the fundamental roles of Social Vulnerability and Social Risk theories, highlighting the state's responsibility in ensuring a minimum for vulnerable groups and applying resource capitalization to guarantee pension sustainability and future benefit payments, such as retirements and pensions.

Key words: Systematic review; Social security; Iramuteq

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1. INTRODUCTION

Social security is an institution born in the most remote times, with man's concern to store resources conducive to its maintenance, treated in a merely individual perspective or associated with the family nucleus, but without conceptions of a social nature: primitive idea of social security, which extends to the present day, as DNA from which our race inherits, concatenated to our survival instinct. (Nogueira N. G., *O Equilíbrio Financeiro e Atuarial dos RPPS: de princípio constitucional a política pública de Estado*, 2012)

In Greece, the "*Eranoi*", mutual aid society, were funded by regular contributions, and carried out transactions for the granting of loans (without interest) to their participants, who needed and resorted to them; In Rome, the *Collegia* or *Sodalitia*, through regular contributions, they covered the funeral expenses of their members; and *Pater Families* They provided services to the servants and clients of the association, funded with resources from the contribution of the members. (Horvarth Junior, 2005)

In the modern world, around the fifteenth and sixteenth centuries, legal norms aimed at the collection and distribution of resources to people in need emerged in Europe as a public policy in the face of the threat that hunger and the misery of large excluded groups represented to society. (Rocha, 2004)

In Brazil, the social security institute was officially born from the promulgation of the Legislative Decree No. 4,682/1923 (Brasil, 1923) – Eloy Chaves Law, creating the Retirement and Pension Funds (CAP's), considered a response of the elite to the problems of the “social question”, reflecting a paternalistic attitude of the rulers towards the workers. (Nogueira, 2012; Alvarado, 2002) (Nogueira, 2012; Alvarado, 2002)

Initially aimed at supporting those who most needed resources for their survival, the social security processes were expanded with the processes of urbanization and the achievements of workers, keeping a focus on other areas of scientific knowledge: demography, health, actuarial, financial, accounting, among many others, which would increase the interest of researchers and should increase the number of publications focused on the theme.

A bibliometric study described and analyzed the typical characteristics and methodology of the publications indexed by the health team of the Mexican Institute of Social Security in 1997. The results showed that a total of 300 original articles were published, of which 212 (71%) were available for study: full-time investigators (FTI) generated 109 articles and investigators with clinical activities (CAI) wrote 103 articles. Biomedical research predominated in the first group (41%) and clinical research in the second (66%). There was also a predominance of descriptive studies and publications in journals, with no factor of significant impact. (Valdez-Martinez, Garduño-Espinosa, & Gómez-Delgado, 2000)

From 1992 to 2002, social security studies focused on public administration were rare, incipient, and diffuse. In the Journal of Public Administration (RAP), for example, the most frequent themes in scientific production were related to organizational studies, modernization and administrative reform of the State, hospital management and health services, and public management. (Fleury, Bloch, Bravo, & Balassiano, 2003)

Subsequently, investigating the transformations of the works published in the (RAP), in the period from 2003 to 2016, through bibliometric research, it was observed the emergence of the Social Security theme (social security policy): 2003 (0.7%), 2005 (1.2%), 2006 (2%). 1% of the scientific production analyzed. (Smolski, Dalcin, Visentini, Bamberg, & Kern, 2017)

In a bibliographic study carried out on the theme of Social Security, the Secretariat of Information and Documentation of the Federal Senate brought the figures on the national production related to social security law, social security, social security, pension funds, retirement of public and private servants: 1,296 references of books and journal articles (in Portuguese, English, French and Spanish published in 12 Brazilian newspapers, since 1998), from fifteen libraries that participated in the Virtual Network of Libraries of the National Congress (RVBI), managed by the Federal Senator's Library (Senado Federal, 2003).

The meta-analysis of the technical-scientific production on Brazilian Social Security in the events of the National Association of Graduate Studies and Research in Administration (ANPAD) in the period from 1997 to 2011, resulted in 33 articles that addressed contents categorized according to the following criteria: annual distribution of articles and events, authors, federative units of the authors and the event, methodological approach, types of schemes, most cited researchers, publication in journals, and Social Security deficit. The results showed that the scientific production in the field in Brazil was still small. (Silva, Costa, & Nobre, 2014)

Still, on the theme of social security, but with the construct's “retirement” and “*retirement*”, Saints, Cross *et al.* performed bibliometric research in the database *ISI Web Science*, in the period from 2006 to 2016, and located 2,116 academic productions, including articles and journals and in annals of events, with greater representativeness in the last two periods of the research (2015-2016), predominantly in English, corresponding to about 29.1% of the scientific production on the subject, mostly with a quantitative approach, carried out through research *Survey*. (Santos, Cruz, Bezerra, & Leone, 2019)

The search for articles using the keyword “social security” was carried out by Reis and Casagrande (2023, in the scientific databases Scopus, Journals of the Coordination for the Improvement of Higher Education Personnel (CAPES) and Scientific Electronic Library Online (SciELO), and found 1,212 articles in the CAPES database (which includes the Scopus collection) and 277 articles in the SciELO database, Considering the productions from the period 1988 to 2021. (Reis & Casagrande, 2023)

In order to analyze the theoretical perspectives adopted in scientific studies on the trajectory of Social Security policies in Brazil from 1998 to 2017, presented by Silva, Tavares and Lopes (2020), through a systematic integrative literature review and qualitative methodology, they used the lexical analysis of the IRAMUTEQ software (*Interface de R pour leer Analysis Multidimensionnelles de Textes et de Questionnaires*), and found four theoretical perspectives related to the theme: well-being (related to the criticism of the social security model), economic (related to the understanding of the financial situation), legal and reformist (economic support of successive social security reforms), which indicated insufficient studies that understand social security in its social aspect, possible theoretical hiatus on longitudinal and integrative studies of the trajectory of this public policy. It also illuminated new research opportunities in this field, such as the segment of social security benefits: retirements and pensions. (Silva, Tavares, & Lopes, 2020)

In this *research gap*, and within the context of the theme presented, the following question was asked: what is the current environment of the scientific production of social security, in the segment of social security benefits,

and what are the theories and methods that support it? Thus, the main objective is to answer this question, having the following specific objectives: 1. To study, briefly, the theory of social risk as an instrument to support the granting of social security benefits; 2. Discuss the characteristics of social security at the national level; 3. To evaluate the discourse presented by the titles and abstracts contained in the scientific productions published and related to the theme of social security in *the Scopus* database, which justifies the choice for the ease of operational processing, mining, arrangement and visualization of the graphic formation from the data collected; and 4. Use the Iramuteq software for data processing. As a methodological tool, a Systematic Review (SR) will be used to determine the results.

In general, the article intends to contribute to a mapping of social security studies for researchers who wish to initiate or conduct research in this area, as well as to offer *insights* for public policies and institutions that fund research projects. It also offers a guide to publication opportunities for the general public with a general interest in social security.

The present work will be divided into 5 sections: 1) Context, problem and objective, contained in the Introduction; 2) Development, containing the characteristics of the Brazilian social security system; 3) Methodology adopted to answer the study question; 4) the results and findings of the study; and 5) The authors' general considerations.

2. DEVELOPMENT

The social security system can be defined as a set of welfare, health, and social assistance programs. as an organizing concept of Brazilian social protection was one of the most relevant innovations of the 1988 constitutional text, which expanded the coverage of the social security system and made access to benefits more flexible for rural workers, recognized Social Assistance as a non-contributory public policy that operates both services and monetary benefits, and consolidated the universalization of health care through the creation of the Unified Health System (SUS). In this way, Social Security, articulating the policies of social insurance, social assistance, health and unemployment insurance, is founded on a set of policies with a universal vocation.(Delgado, Jaccoud, & Nogueira, 2017)

Social Security is a system of broad social protection that aims to support the essential needs of society as a whole, ensuring a minimum essential for the preservation of life. A set of sustaining the general right of personality and also informing the special rights of personality (Szaniawski, 2005, p. 120).

In the United States of America, it is the largest public budget (surpassed only by Defense) with an average annual

disbursement of about US\$ 1 trillion (15% of GDP) per year. In Germany, social security expenditures are around \$760 billion (9.2% of GDP) per year. (Miranda, 1997)

Among the countries that spend the most resources on social security/GDP (in %) are Italy (20.4), Greece (20.3), France (19.2), Austria (18.4), Denmark (13.6), Germany (13.6) and Japan (12.2). In Brazil, the budget proposal considers expenditures of R\$ 704.416 billion with social security benefits in 2021, compared to R\$ 677.181 billion in 2020, 13% of GDP, the only country with high social security spending and a still young population. (Isto é Dinheiro, Gasto com Previdência deve ser 9,2% do PIB em 2021., 2021) (Laporta, Gasto brasileiro com Previdência é o mais alto entre países de população jovem, 2017)

In fact, in Brazil, in particular, the demographic dynamics have been characterized by a rapid drop in fertility, combined with increasing values of life expectancy at the date of retirement, namely: total fertility rate (number of live children born per woman during the reproductive cycle) decreased by about six children/woman in the 50s, to about 3 children/woman, in the 80s, causing an accelerated aging of the age structure of the population.(Oliveira, Beltrão, & Ferreira, 1997)

2.1 Theory of social risk as a support for the granting of social security benefits

In the contemporary world, society, due to the great technological advances, has come to live more directly with risk, which is periodically transformed: sometimes due to changes in the profile of society, sometimes due to the creation of solutions that, when solving one type of risk, end up creating others and, although they reach part of the population more incisively than others, everyone is or will be subjected to these risks, sooner or later: to the loss of family capacity to generate income, and the State must assume the payment of retirements, pensions or aid when individuals, at least in theory, reduce their potential for income generation, constituting a social risk: a future, uncertain event to which an insured person (beneficiary) is subject due to work circumstances, or life itself. (Silva & Silva, 2023)

Pastor (1991) brings with him the conceptual idea of social risk:

Risk, according to the traditional doctrine of social insurance, is nothing more than the possibility of a future, uncertain and involuntary event that produces economic damage to the insured. However, now leaving aside the notes of event and damage, the characteristics of risk in the strict sense are the future and uncertainty, which configure it as risk-possibility. a) Futurity implies that the risk as the object of the social security legal relationship is valid when the foreseen event is not past or past but is about to occur (ex-ante position of the relationship). b) Uncertainty implies the lack of knowledge whether the event will occur, either in an absolute sense, *incertincertus an et quando* (accident, illness, etc.), or in a relative sense, *incertus* in old age, or *incertus* when death (Pastor, 19991).

Social risk, a future and uncertain event, is premised on the protection of workers/servants who, eventually, are prevented from performing their work and, for this reason, are in a state of need. According to Schuster, it is a binomial event of probability/magnitude classified into two strands: concrete and abstract. On the concrete side, binomial quantification is enhanced; while in the abstract aspect, the occurrence of uncertainties *stricto sensu* either as to the magnitude (ambiguity) or as to the two (ignorance), the latter reaching the granting of social security benefits. (Schuster, 2021)

Social Security is called a *sui generis* insurance, given that its affiliation is compulsory for the basic, collective, contributory, and state organization regimes, which protects its beneficiaries against social risks. It is, in practice, a more advanced protective technique than the old social insurance and with greater coverage. (Ibrahim, *Curso de Direito Previdenciário*, 2014)

Social risk theory in social security refers to an approach that recognizes the uncertainties and risks associated with social security and seeks ways to manage these risks more efficiently and equitably. This theory highlights the importance of considering variations in individual conditions when designing and implementing pension systems.

Social security typically involves the redistribution of resources to provide financial security to individuals in events such as retirement, disability, death, and other risky situations. Social risk theory identifies some of these risks and highlights the need for policies that address these uncertainties in a fair and sustainable manner.

Here are some of the main social risks considered in social risk theory in social security:

a) Longevity: The risk of living longer than expected can result in a greater need for resources during retirement.

b) Disability: The possibility of disability due to illness or injury, which can result in loss of ability to work.

c) Unemployment: The risk of becoming unemployed and facing financial hardship as a result.

d) Death: The loss of the primary provider can create financial hardship for dependents.

e) Inflation The continuous increase in prices over time can erode the true value of social security benefits.

f) Economic fluctuations: Changes in economic conditions can affect the financial health of pension systems.

Social risk theory suggests that pension systems should be flexible and able to adapt to different individual situations. This may involve implementing adjustment mechanisms, such as indexing benefits to inflation, creating reserve funds to weather economic crises, and promoting policies that encourage individuals' active participation in managing their own risks.

In addition, social risk theory highlights the importance of social solidarity, where the most economically capable

members contribute to the well-being of the less able, helping to build a more equitable and resilient system.

Among the possibilities of social risks, or as social contingencies are called, are unemployment, death, old age, imprisonment, maternity, total and permanent disability, or total and temporary disability, which, when consummated, cause economic damage, due to the reduction of the worker's income, due to the reduction or elimination of work capacity, as provided for in the Federal Constitution, items I to V of article 201. (Brasil, *Constituição da República Federativa do Brasil*, de 5 de outubro de 1988, 1988)

Therefore, the Theory of Social Risk is closely related to state protection, since, once the occurrence of a social risk is verified, the State must carry out actions that will protect the citizen, whether through the granting of a social security benefit (social security), a medicine (health) or a LOAS (social assistance), guaranteeing him, thus, the existential minimum for them to enjoy life with dignity, concatenated with the Theory of State Protection. (La Bradbury, 2020)

2.2 Characteristics of Brazilian Social Security

Social security is based on a. Principle of Solidarity; b. Principle of objective and subjective universality, with breadth to all, without distinction; c. Principle of uniformity; d. Principle of selectivity; and. Principle of irreducibility of benefits; f. Principle of equity of participation in costing; g. Principle in the diversity of the source of funding; and h. Principle of decentralized and democratic management (Rodrigues, 2015):

a) The Principle of Solidarity allows the subject to recognize his neighbor in the same way as he sees himself, that is, as being worthy of consideration, thus achieving social esteem. Mirror of the values of its individual members or groups (Tavares and Sousa, 2016);

b) The Principle of Universality is linked to the granting of social security benefits to all who depend on and are entitled to it, without any defect in its granting (Pereira, 2013).

c) The Principle of Uniformity is affirmed in article 194, sole paragraph, II of the Federal Constitution (BRASIL, 1988): it aims at equal treatment between urban and rural populations, and there must be equality in the offer of benefits and services, when the same events occur.

d) The Principle of Selectivity serves as a counterweight to the Principle of Universality: Social security needs to cover all existing social risks, imposing on the public administration the selection of benefits and services to be provided, based on the relevance of social risks (Kertzman, 2024).

e) The Principle of Irreducibility emerges as a mechanism to ensure the effective functioning of a social security system, imposing the periodic review of these benefits by applying adjustments that should reflect

inflationary variation, so that access to the means of survival of beneficiaries is not suspended (ROCHA, 2004).

f) The Principle of Equity of Participation in Costing stipulates that participation in the financing of the social security system is in accordance with the subject's income, a corollary of the isonomy and the taxpayers' ability to pay (RIBEIRO, 2011).

g) The Principle of Diversity of the Source of Funding aims to ensure greater stability of social security, as it prevents the burden of funding from being attributed to specific segments of society. The larger the financing base, the greater the solvency capacity of the social security system (TORRES, 2012).

The National Social Security System is formed by three regimes: The General Social Security System (RGPS), led by the National Institute of Social Security (INSS), covering all workers governed by the Consolidation of Labor Laws; the Proper Social Security System (RPPS), which covers federal, state and municipal public servants (effective); and the Supplementary Pension System (RPC), for beneficiaries who intend, in the future, to enjoy better conditions in the event of retirement: an integrated set of actions by public and private initiatives, aimed at ensuring the rights related to health, social security and social assistance, as provided for in the National Magna Carta, in the form of the Social Security System, with the following

characteristics: (BRASIL, Constituição da República Federativa do Brasil, 1988)

Table 1
Characteristics of Brazilian social security systems

Questions	RGPS	RPPS	RPC
Who manages it?	INSS	Federal, State and Municipal Governments.	Private initiative, with state supervision.
Who is affiliated?	Workers under the Consolidation of Labor Laws (CLT), public or private.	Military and statutory public administration employees.	On personal initiative.
Is membership mandatory?	Yes.	Yes.	No.
Is it necessary to be a contributor to the system?	Yes.	Yes.	Yes.
Can those who do not work be affiliated?	Yes.	No	Yes.

Source: Adapted by the authors (2021) from (Brasil, Lei n. ° 8.213, de 24 de Julho de 1991. Dispõe sobre os Planos de Benefícios da Previdência Social e dá outras providências., 1991)

The benefits to be paid in the event of social security claims are divided into three segments: retirement, dependent benefits, and disability, as shown in Table 2.

Table 2
Characteristics of social security benefits in the Brazilian social security system

	Benefits	Beneficiaries	Features
Retirements	Retirement by age	All Insured Persons	Payment to the insured in the implementation of the retirement conditions (minimum age)
	Retirement by contribution period	All insured persons, except those who contributed under the Simplified Plan at a reduced rate	Payment to the insured at the implementation of the contribution period, regardless of age.
	Special Retirement	Worker (except domestic worker) who proves effective exposure to chemical, physical, biological agents, or association of agents harmful to health.	Payment of retirement to workers subjected to special conditions, harmful to health and physical safety, fulfilled within the required contribution time.
	Disability Retirement	All insured persons.	Payment of the retirement benefit to the insured person who has become incapacitated and unable to rehabilitate himself or herself for any kind of work.
Family Benefits	Maternity Pay	All insured persons (in specific case)	Payment of benefits to the insured as a result of non-criminal childbirth or abortion and, in the case of adoption, for men and women.
	Family Allowance	Employees (including domestic workers) and independent workers.	Paid to the low-income insured with minor children up to the age of 14 (no limit for disabled children).
	Imprisonment Assistance	Dependents of the insured.	Payment of benefits to low-income insured persons taken to prison.
	Death Pension	Dependents of the insured.	Payment of benefit in the event of the death of the insured.
Disability Benefits	Sickness benefit	All insured persons.	Payment of benefit to the insured, due to the impossibility of exercising work activity due to temporary incapacity
	Accident Assistance	Employees (including domestic workers), independent workers and special insured persons.	Payment of benefits to the insured resulting from accidents of any nature or cause, with an impact on their ability to work.

Source: Adapted by the authors (2023) from (Brasil, Lei n. ° 8.213, de 24 de Julho de 1991. Dispõe sobre os Planos de Benefícios da Previdência Social e dá outras providências., 1991)

The conditions and regulations for the granting of the benefits shown in Table 2 are not part of the scope

of this study. However, it should be noted that the different variables that make the social security system

complex: birth of beneficiaries, death or longevity of insured persons, health, demographics, incarceration events, pregnancy, unborn child, all of this is part of social security studies that materialize in the most diverse knowledge bases.

3. METHODOLOGY

The debate on social security has found increased openness in the academic world. Previously restricted to technocrats, this social protection system finally has a place in the legal field, a natural consequence of its express provision as a social right capitulated in article 6 of the 1988 Constitution, combined with the recognition of its fundamentality in the scope of human rights, which aims to improve the material conditions of the existence of the urban worker and an instrument for maintaining the dignity of human life after the end of his working life and it is necessary to seek analyses about the discourses contained in scientific publications that deal with the adopted theme, through a documentary analysis. (Ibrahim, 2016) (Bobbio, 1992)

3.1 Characterization of the research method

But what is a document analysis? Bardin (1977, p. 47) asks. According to the (seminal) author, it is a set of operations that aim to represent the content of a document in a different form from the original, in order to facilitate its consultation and referencing, allowing the transformation of a primary document (raw) into a secondary document (representation of the former, such as abstracts or abstracts (summaries of the document); or indexing that allows its indexing in keywords, descriptors or indexes, classifying the information elements of the documents in a restricted manner (Bardin, 1977).

Bardin (1977, p. 54) also evaluates that for each word and for each subject, one, two, three or four words are inserted in a small file: nouns, adjectives, expressions and proper nouns that, when put together, need to be ordered in such a way that we can arrive at condensed representations (descriptive analysis of the content) and explanatory representations (analysis of the content, conveying supplementary information appropriate to the objective to which we propose, such as a bibliometric study, or a systematic review. (Bardin, 1977)

Systematic review (SR) is the methodology used to make sense of a large corpus of information and a means of contributing to answers to questions about what works and what does not, and many other types of questions as well. It is a method for mapping areas of uncertainty and identifying where little or no relevant research has been done, but where novel studies need to make sense of discourses in substantial amounts of information. (Bardin, 1977)

Systematic review, a rigorous and comprehensive research methodology, plays a key role in consolidating

and critically analyzing existing literature on a specific topic. This method is essential for scientific research, providing an organized and unbiased view of the available evidence. Its main objective is the exhaustive and careful search for relevant studies, the objective selection of articles that meet predefined criteria, and the systematic synthesis of data to offer an in-depth understanding of the current state of knowledge.

The process of conducting a systematic review begins with the clear definition of the research question and the development of protocols to ensure a consistent methodological approach. The literature search is conducted in academic databases, ensuring the inclusion of relevant studies. The screening of articles is performed independently by at least two reviewers, reducing the risk of bias in the selection. Data extraction and evaluation of the methodological quality of the included studies are crucial steps to ensure the validity and reliability of the results.

The relevance of the systematic review transcends the mere compilation of studies. It enables the identification of gaps in knowledge, suggests directions for future research, and provides subsidies for informed decision-making in clinical practice or public policy. With the increasing emphasis on transparency and reproducibility in research, systematic review stands out as a valuable tool for the synthesis and critical evaluation of existing knowledge, contributing to the continuous advancement of various scientific areas.

Also, a method of collecting studies in a comprehensive and exhaustive way, adding value to this search through the adoption of criteria and evaluation of the quality and validity of what is recovered in these searches. It is a method that can be combined with others, such as bibliometrics. It aims to comprehensively locate and synthesize research related to a specific issue, using organized, transparent, and replicable procedures at each step of the process;(Chalmers & Altman, 1995)(Littel, Corcoran, & Pillai, 2008)

The study presented here follows the protocol and steps of a systematic review carried out according to the recommendations of the Transparent Reporting of Systematic Reviews and Meta-Analyses - PRISMA; , characterized by documentary, bibliographic, qualitative, descriptive and explanatory research for seeking to understand the trajectory of Social Security, according to the academic production on the subject. The details of the information related to the selection of studies for the present SR are described below.(Mother, Liberati, Tezlaff, & Altman, 2009) (Hemple, 2023)

3.2 Data collection

The research was conducted using the scientific papers contained in the Scopus Base (Elsevier), accessed through the Federated Academic Community (CAFÉ) Platform. This option allows remote access to the subscribed content

of the Portal of Journals of the Coordination for the Improvement of Higher Education Personnel (CAPES), of which the Federal University of Ceará (UFC) is a signatory, accessed in November/2023. (CAPES, 2023)

To carry out searches in the Scopus database, the keyword string “social security” was used, having as the first filter the limitation in the sub-area business and management without time restriction, including all types of documents: articles, newspapers, conferences, magazines and books, which resulted in 2,517 works, without differentiation of languages, although most are in English.

Of the studies found (2,517), a new filter was used with the keyword retirement, but with the typology articles (article), which resulted in 454 studies found. As the objective of the present study was to investigate the scientific production on the theme of social security, in search of the methodologies and theories that would support it, the “methodology” filter was applied, since the authors did not initially see the “theory” filter in the abstracts presented at Scopus, which resulted in 89 papers to be read and mined.

Table 3
Formulation of the research conducted

Name	Query
<i>Social security Business Adm Sociais</i>	TITLE-ABS-KEY (“social security”) AND (LIMIT-TO (SUBJAREA , “BUSI”))
<i>Social security retirement</i>	TITLE-ABS-KEY (“social security”) AND (LIMIT-TO (SUBJAREA , “BUSI”)) AND (LIMIT-TO (DOCTYPE , “ar”)) AND (LIMIT-TO (EXACTKEYWORD , “Social Security”) OR LIMIT-TO (EXACTKEYWORD , “Retirement”))
<i>Social security retirement</i>	TITLE-ABS-KEY (“social security”) AND (LIMIT-TO (SUBJAREA , “BUSI”)) AND (LIMIT-TO (DOCTYPE , “ar”)) AND (LIMIT-TO (EXACTKEYWORD , “Retirement”) OR LIMIT-TO (EXACTKEYWORD , “Methodology”))

Source: Prepared by the authors (2023) based on consultation with the Scopus Base (2023).

After conducting a translation process, using the DEEPL translator, in the free mode, due to its translation quality, the titles and abstracts were read to identify which publications were adherent to the theme. Of the 89 studies filtered by Scopus, only 63 were aligned with the object of investigation 5 studies related to medical and social assistance services in social security (studies n. 63, 80, 82, 87 and 89); 21 private (paid) papers, on average at the price of US\$ 30 to which the authors did not have full access, or the abstracts did not show the object of this article, or were not available for download (those of nos. 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 40, 44, 61, 74, 75, 76, 79, 81, 83, 84 and 85).(DEEPL, 2023)

3.3 The use of the IRAMUTEQ software

IRAMUTEQ is a free software developed under the logic of open source, licensed under the GNU GPL (v2). It is

anchored in the statistical environment of the R software and in the python language (www.python.org). This software enables diverse types of textual data analysis, from amazingly simple ones, such as basic lexicography (calculation of word frequency), to multivariate analyses (descending hierarchical classification, similarity analyses). It organizes the distribution of vocabulary in an easily understandable and visually obvious way, through similarity and word cloud analysis, for example, as recorded in the software tutorial.(Camargo & Justo, 2013)

According to the tutorial provided, in classical lexical analyses, the program identifies and reformats the units of text, transforming Initial Context Units (ICU) into Elementary Context Units (ECU); identifies the number of words, average frequency, and number of hapax (words with a frequency of one); researches vocabulary and reduces words based on their roots (stemming); Creates dictionary of reduced forms, identifies active and supplementary forms.

In the analysis of specificities, it is possible to directly associate the texts of the database with descriptive variables of their producers, and it is possible to analyze the textual production as a function of the characterization variables. It is a contrast analysis, in which the corpus is divided according to a variable chosen by the researcher. For example, it is possible to compare the textual production of people in relation to a given theme.

The Descending Hierarchical Classification (DHC) method, proposed by Reinert (1990), used by the ALCESTE software, classifies the text segments (TS) according to their respective vocabularies, and the set of them is divided based on the frequency of the reduced forms (words already stemmed).

Top-down hierarchical sorting is a method of statistical analysis that groups data into a hierarchical tree structure. In the context of data mining and machine learning, this technique is often used to organize observations into nested clusters, where data is grouped hierarchically. The process begins with considering each observation as an individual cluster and then performs successive mergers based on similarity criteria, thus forming a top-down hierarchical structure. This method offers a detailed view of the relationships between data, allowing for the analysis of patterns at various levels of granularity.

The main advantage of top-down hierarchical classification is its ability to provide a structured and interpretable representation of relationships in data. However, the choice of similarity criterion and cluster-linking approach can significantly influence the results, requiring careful consideration during the analysis process. This technique is applied in various fields, including biology, computer science, and marketing, where a hierarchical understanding of the relationships between data is crucial for making informed decisions.

This analysis aims to obtain ECU classes that present, concomitantly, similar vocabularies, as well as the

different vocabulary of the ECUs of the other classes. IRAMUTEQ also provides another way of presenting the results: by means of a correspondence factor analysis based on CHD (Post-Factorial Analysis), representing, in a Cartesian plane, the different words and variables associated with each of the CHD classes.

The interface makes it possible to retrieve the text segments associated with each class in the original corpus, at which point the context of the statistically significant words is obtained, enabling a qualitative analysis of the data.

The analysis of similarity is based on graph theory, allowing the identification of co-occurrences between words. Its result indicates connections between words, which help in the identification of the structure of a textual corpus, distinguishing the common parts, as well as the specificities as a function of the illustrative (descriptive) variables identified in the analysis. The word cloud groups them together and organizes them graphically according to their frequency. It is a simple lexical analysis, but graphically it becomes graphically interesting as it enables quick identification of the keywords of a corpus. (Marchand & Ratinaud, 2013)

These analyses can be conducted either from a group of texts on a given theme (corpus) gathered in a single text file; such as from tables with individuals in a row and words in columns, organized in spreadsheets, as is the case of databases built from free evocation tests.

The IRAMUTEQ Tutorial recommends that texts, or tables, should be generated using open-source software, such as OpenOffice.org or LibreOffice, avoiding coding bugs.

In this study, the World tool was used to format titles and abstracts, which should be thematic variables. However, the recording of the corpus must follow the UTF-8 format, as a special encoding, obeying some rules outlined below: (Salviati, 2017)

- a. Forbidden signs: quotation marks; apostrophe; Dollar; percentage; asterisk; ellipsis; indent; bold, italics, and other similar signs; paragraph indentation, margins, or tabs of text; justification of the text;
- b. Score allowed: point; colon; comma; interrogation and exclamation;
- c. Full-text formatting, with no line change;
- d. Capitalization only for proper nouns.
- e. Compound words must be joined by *an underline*, even those joined orthographically by a hyphen. E.g.: newlywed; anti_inflamatório; Distrito_Federal; and
- f. Standardization of acronyms and proper names to always obey the same spelling, among others.

After the recommended adjustments, the notepad was used to construct the corpus, except with the UTF-8 coding, and it was possible, from the titles, abstracts, and full reading of the 60 works considered adherent to the research object, to present the results found. Figure 1 shows the synthesis of the research process based on the recommendations contained in the Prisma Protocol.

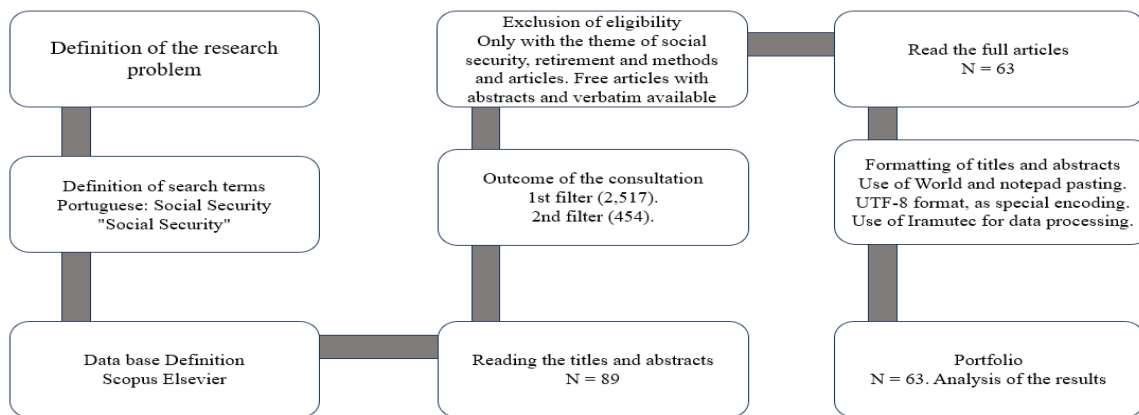


Figure 1
Summary of the steps for the research

Source: Prepared by the authors (2023) from the Prisma Protocol.(Mother, Liberati, Tezlaff, & Altman, 2009)

4. RESULTS AND DISCUSSION

Social security is a topic that has occupied a significant space in international political and economic discussions. In Brazil, over the last few decades, the Brazilian pension system has faced substantial challenges due to the aging of the population, increased life expectancy, and changes in family and work dynamics, with the projection that the elderly population in Brazil will continue to grow in

the future, intensifying the pressure on social security resources.

The financial sustainability of the pension system is a constant concern, leading to heated debates about reforms and adjustments. Demographic changes and the evolution of the labor market demand a careful review of social security policies.

The pension reform approved in 2019 was an attempt to address these challenges by establishing

new rules for retirement and seeking to balance public accounts. However, there is an ongoing debate about the effectiveness of these measures and their social implications. In addition to demographic issues, social inequalities also play a significant role in the social security discussion in Brazil and the research presented here brought some of these contexts, in the most different countries, which are shown below.

4.1 The context of social security brought by the articles studied

From the portfolio of initial articles (89) imported from the Scopus Database, it was found that most of the studies with the theme of social security, with the retirement filter, are concatenated to perceptions related to different contexts. The unread ones, in their entirety (30) worked on contexts related to low pensions, health plans and their implications on the values of social security benefits, incentives to stay in work and postponement of the request for pensions and improvements. It is worth highlighting the article related to the granting of pensions to workers from the so-called baby-boom, a demographic phenomenon related to the explosion of births in the periods after World War II, who would also retire all in the same period.

Most of the articles read (59) refer to issues of sustainability of social security systems, job offers, demographic aging, the granting of retirement benefits to different genders (binary), social security education, and issues related to race, ethnicity, and workers' health. This work, in particular, studies the impact of the labor force of men and women (black and Hispanic elderly) on the U.S. social security system and concludes that these ethnicities have more pressing financial needs than white ethnicities, disproportionate to the minority age of older adults: they reach retirement age, retire, and need to continue in the labor market to ensure their financial survival.

The portfolio of works included in the Scopus Base comes from the most diverse nations, with emphasis on the scientific production of the United States (39), Germany (7), Spain (6), Canada (5) and Italy (4) shown in Graph 1. Brazil collaborates in this production with 1 work published in the Journal *Contabilidade e Finanças* (2023), called "financial preparation for retirement: multidimensional analysis of the perception of Brazilians" which has as its main objective to identify how socioeconomic, demographic and behavioral variables influence financial preparation for retirement. This is a survey, with 2,920 respondents from all Brazilian regions who, Through descriptive statistics, association testing and multiple regression analysis, it was concluded that the majority of Brazilians have low or very low financial preparation for retirement. Women, young people, divorced/separated, Black people, individuals with up to complete elementary school, borrowed housing, unemployed, with a gross monthly family income of up to R\$ 1,100.00 and with 4 or more dependents constitute

the profile of citizens less able to deal with financial preparation for retirement.

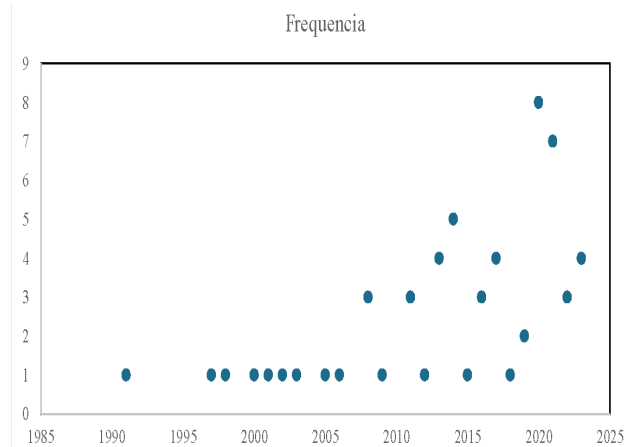


Figure 2
Scientific Production related to the Social Security Theme

Source: Prepared by the authors (2023) from the Scopus database.

4.2 Impact Factor of the articles studied

The JCR database is a research source used by researchers, which indicates the main and most relevant publications from more than 80 countries and more than 11 thousand scientific journals, and their impact strength (IF) and also provides statistical information that helps researchers, editors and other professionals to select the most expressive journals in certain areas of knowledge.

It is a category-normalized metric calculated for all journals in the Web of Science Core Collection, including the Science Citation Index Expanded, Social Science Citation Index, Arts & Humanities Citation Index, and Emerging Sources Citation Index. (Clarivate, 2021)

The Journal Citation Reports (JCR) is a database recognized for evaluating journals in the WoS database. The WoS database indexed 12,062 journal titles in 2017 (1,094 open access titles), of which 3,233 titles are in the area of Social Sciences, corresponding to approximately 30% of the total number of indexed titles. (Trajtel, Trankova, & Kruzlik, 2017)

The SCImago Journal & Country Rank is a publicly available portal that includes the scientific indicators of journals and developed countries based on the information contained in the Scopus® database (Elsevier B.V.). These indicators can be used to assess and analyze scientific domains. The journals can be compared or analyzed separately. Country rankings can also be compared or analyzed separately. Journals can be grouped by subject area (27 main subject areas), subject category (309 specific subject categories), or by country. Citation data is drawn from more than 34,100 titles from more than 5,000 international publishers and per-country performance metrics from 239 countries worldwide. SJCR also allows you to embed meaningful journal metrics on your website as a clickable image widget.

Table 4
Breakdown of Scientific Production Read by Journal

Newspaper	Freq.	ISSN	EISSN	Category	JCR	SJR		
					IF	IF		
Academy Of Accounting And Financial Studies Journal	1	1096-3685	1528-2635	Business, Management and Accounting (Q3)	N/A	Q3	0,2	
Feminist Economics	1	1354-5701	1466-4372	Womens Studies - Ssci(Q1); Economics - Ssci(Q2)	1,09	Q1	1,53	
Fiscal Studies	1	0143-5671	1475-2566	Business, Finance - Ssci(Q1); Economics - Ssci(Q1)	1,71	Q1	2,1	
Geneva Papers On Risk And Insurance: Issues And Practice	1	1018-5895	1468-0440	Business, Finance - Ssci(Q4)	0,54	Q2	0,4	
Ilr Review	1	0019-7939	2162-271X	Industrial Relations & Labor - Ssci(Q2)	1,68	Q1	3,37	
Industrial Relations	3	0022-1856	1472-9296	Industrial Relations & Labor - Ssci(Q2)	1,23	Q1	1,17	
International Journal Of Health Care Quality Assurance	1	0952-6862	1758-6542	Health Policy & Services (Q4)	1,40	Q2	0,53	
International Journal of Manpower	2	0143-7720	1758-0374	Industrial Relations & Labor - Ssci (Q2); Management - Ssci (Q3)	0,95	Q2	0,82	
International Labour Review	1	0020-7780	1564-913X	Economics - Ssci(Q3); Industrial Relations & Labor - Ssci(Q4)	0,61	Q2	0,6	
International Tax and Public Finance	1	0927-5940	1573-6970	Economics - Ssci(Q4)	0,48	Q2	0,69	
Journal of Economic Behavior and Organization	1	0167-2681	1879-1751	Economics - Ssci(Q3)	0,67	Q1	1,18	
Journal of Economic Policy Reform	2	1748-7870	1748-7889	Development Studies - Ssci(Q3); Economics - Ssci(Q3)	0,80	Q1	0,76	
Journal of Financial Regulation and Compliance	1	1358-1988	1740-0279	Business, Finance - Esci	0,90	Q3	0,25	
Journal of Human Resources	4	0022-166X	1548-8004	Economics - Ssci(Q1); Industrial Relations & Labor - Ssci (Q1)	1,87	Q1	3,34	
Journal of Labor Research	1	0195-3613	1936-4768	Industrial Relations & Labor - Ssci(Q4)	0,43	Q3	0,37	
Journal Of Marketing Research	1	0022-2437	1547-7193	Business - Ssci (Q1)	1,22	Q1	7,42	
Journal Of Pension Economics And Finance	14	1474-7472	1475-3022	Economics - Ssci(Q2); Business, Finance - Ssci(Q3)	0,58	Q3	0,33	
Journal Of Policy Analysis And Management	1	0276-8739	1520-6688	Economics - Ssci(Q1); Public Administration - Ssci(Q1)	N/A	Q1	2,11	
Journal of Retirement	1	2326-6899	2326-6902	Business - Ssci; Management () And Accounting	N/A	Q3	0,23	
Journal of Risk and Insurance	2	0022-4367	1539-6975	Economics - Ssci(Q3); Business, Finance - Ssci(Q4)	0,64	Q2	0,79	
Labour Economics	9	0927-5371	1879-1034	Economics - Ssci (Q3)	0,65	Q1	1,48	
Management Revue	1	0935-9915	1861-9908	Business, Management and Accounting (Q3)	N/A	Q3	0,19	
Research in Labor Economics	1	0147-9121	-	Business, Management and Accounting (Q3)	N/A	Q2	0,44	
Retraite et Société	1	1167-4687	1961-8719	Demography; Planning and Development; Social Sciences	N/A	Q4	0,12	
Accounting and Finance Magazine	1	1519-7077	1808-057X	Business - Ssci; Management () and Accounting	N/A	Q4	0,19	
Venezolana Management Magazine	1	1315-9984	2477-9423	Agricultural and Biological Sciences	N/A	Q4	0,12	
Society and Economy	1	1588-9726	1588-970X	Business - Ssci; Management () and Accounting	N/A	Q3	0,22	
Statistical Journal of the United Nations Economic Commission	1	0167-8000	1875-9238	-	N/A	-	-	
Technological Forecasting and Social Change	1	0040-1625	1873-5509	Business - Ssci(Q1); Regional & Urban Planning -	2,41	Q1	2,64	
World Bank Economic Review	1	0258-6770	1564-698X	Business, Finance - Ssci(Q3); Biochemical Research Methods - Scie(Q3); Microbiology (Q4)	0,90	Q1	1,405	

Source: Prepared by the authors (2023) from the Scopus database.

The Portfolio of papers read (59) indicated that the impact factors of the SCImago Journal presented 26 papers with Q1 impact, 9 with Q2, 20 with Q3 and 3 with Q4 classification. On average, the papers read have an impact factor of Q2, a result compatible with the Q2 classification, when the source observed is the JCR Base, as detailed in Table 4, with emphasis on the scientific production of the Journal of Pension Economics and Finance, with 14 articles read.

4.3 Descriptive statistics generated by Iramuteq

The use of software brings as an advantage the coding,

```

Resumo
Number of texts : 59
Number of occurrences : 10833
Number of forms : 2421
Número de hapax : 1417 (13.08% of occurrences - 58.53% of forms)
Média de ocorrências por texto : 183.61
    
```

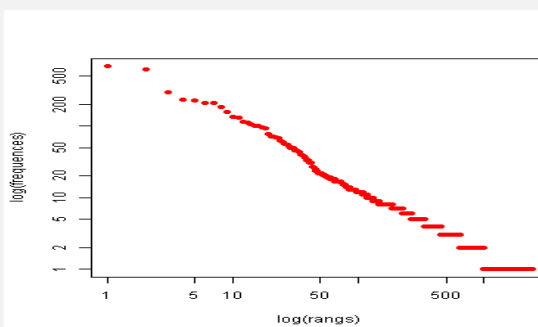


Figure 3
Statistics described – Zipf's theory

Source: Prepared by the authors (2023) based on the use of Iramuteq.

The corpus processing was performed on 12/1/2023 and took 1s. A total of 10833 words were classified, technically defined as Elementary Context Units (ECU) and 2,421 distinct words (number of forms) and 1417 hapax (words that are repeated only 1 time), with an average occurrence per text of 183.61, which can be visualized in Graph 2, which indicates that writing follows the human writing pattern, according to the conception of the Zipf Graph. which consists of a metric of the frequency of the appearance of words in various texts, generating an ordered list of terms from a particular discipline or subject. (Guedes & Borschiver, 2005)

4.4 Descending Hierarchical Classification generated by Iramuteq (Dendrogram)

To create a dictionary of words, Iramuteq uses the chi-square test (χ^2), revealing the associative strength between words and their respective class. This associative strength is analyzed when the test is greater than 3.84, representing $p < 0.0001$. The lowest chi-square value represents a lower relationship between the variables. (Souza, Wall, Thuler, Lowen, & Peres)

The classes are formed according to the relationship of the various ICUs processed and that have homogeneous words. For the classification and the relation of the classes, the ICUs are grouped according to the occurrences of the words by means of their roots, giving rise to the ECU, which results in the creation of a dictionary with

organization, and individualization of the imported data, allowing the quick location of information extracted from the text segments (TS) used in the discourse analysis, in the qualitative methodology. In this case, in three steps to achieve the Descending Hierarchical Classification (CHD) and the interpretation of the classes extracted from the ST, namely: retrieval of the abstracts in the chosen database, preparation of the textual corpus and its processing, here using Iramuteq. Of the 59 abstracts extracted from the scopus database, and adhering to the objective of the research, with the strings detailed in the Methodology (Figure 3).

reduced forms, using the chi-square test (χ^2).

From the corpus, the text segments (TS) presented in each class, statistically significant words ($p < 0.0001$) were obtained, which allowed the qualitative analysis of the data, with a utilization of 77.96%, considered good (above 75%) for the creation of the dictionary of words, as shown in Figure 4, for a better understanding of those that were cited the most or that had the highest number of repetitions in the corpus generated.

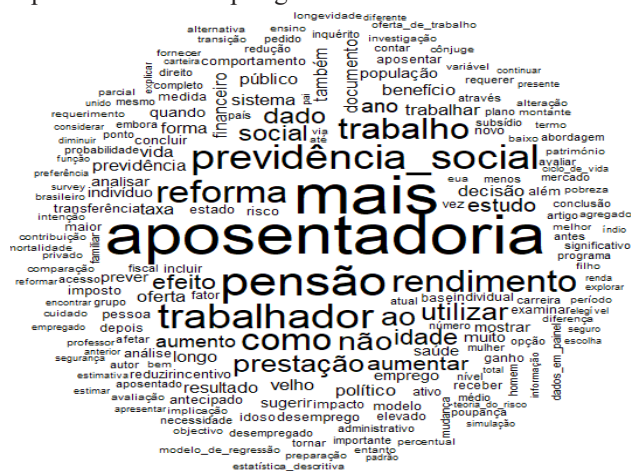


Figure 4
Word cloud generated by Iramuteq

Source: Prepared by the authors (2023) based on the use of Iramuteq.

After processing and grouping according to the occurrences of the words, CHD creates the dendrogram of the classes. This figure aims to present the classes and demonstrate the relationship between them, since they are associated with each other. Each class has a distinct color and the ECUs of each one have the same color as the class, as shown in figures 4 and 5.

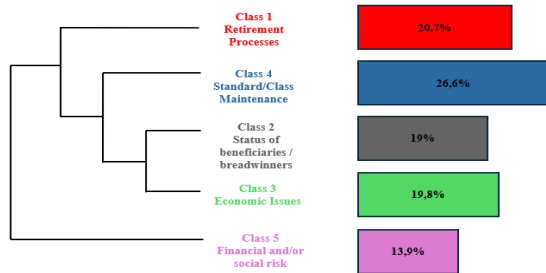


Figure 5
Dendrogram (CHD) of the classes provided

Source: Prepared by the authors (2023) based on the use of Iramuteq.

Souza, Wall et al indicate that the reading of the relationship between the classes elaborated by Iramuteq, at this stage, is conducted from left to right. In the dendrogram, the corpus was divided into five subcorpuses. In the first, class 5 was obtained with 33/237 of the ECUs, corresponding to 13.92% of the total. The second subgroup included Class 1 (20.7% 49/237 ECUs), Class 2 (19 - 45/237), Class 3 (19.8% - 47/237) and Class 4 (26.6% - 63/237). For each class of words, a list of words generated from the chi-square test was computed.

Class 1 reveals the studies related to the retirement processes and the workers' decision-making regarding whether to continue working, or to apply for social security benefits, mainly in the United States, Italy, the United Kingdom and Korea, where the Social Security System offers tax and financial subsidies to beneficiaries considering the issues of aging and the attachment to work of those who do not wish to retire.

In Class 2, there are issues related to the condition of the beneficiaries, usually breadwinners of families that support them with the resources of their retirement, or that are on the poverty line, or that achieve improvements after retirement by finding new ways to increase family income, due to the decrease in mortality rates, and the increase in life expectancy: Workers implement retirement conditions with increased quality of life (healthier) and increased life expectancy.

Class 3 deals with economic issues arising from the granting of social security benefits. It is in this that the formulation of models that can influence the adjustment of the forecasts of the social security deficit, arising from the absence of capitalization of the resources of the social security system (savings and market risk), and the importance of integrating these: social security

wealth whose levels and variation reflect future income expectations, and underestimation of the contributions of beneficiaries.

In Class 4, studies related to the maintenance of the financial standard and the granting of retirement to a specific class, that of teachers. It works on the theory of the work life cycle, a strand of the maintenance of the worker in working life, even with the implementation of retirement conditions and who prefers to remain at work, as he will no longer have annual salary replacements, for example. Other professions, such as teachers, tend to lose income patterns over the course of the retirement process.

Class 5 shows how the variables of financial risk and social risk are affected by the increase in the participation of health plans in the social security system, as well as how socioeconomic and behavioral variables influence the financial preparation for the expectation of retirement. In this class is the study related to the financial perception of Brazilians for retirement (art. 4): women, young people, divorced, separated, blacks, individuals with elementary education up to complete, borrowed housing, unemployed, with a gross monthly family income of up to 1,100.00 constitute the profile of citizens less capable of dealing with financial preparation for retirement.

Another version of the dendrogram generated by Iramuteq maintains the chosen forms of analysis and makes them available to the researcher so that he/she can, at any moment, return to them and, from their reading, understand the results obtained, giving them a title, so that it represents the central theme interpreted that composes them, as represented in Figure 6.

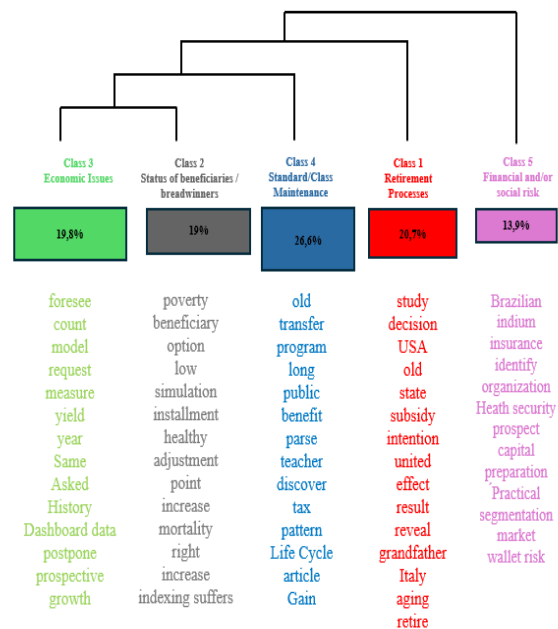


Figure 6
Dendrogram with percentage of classes provided by Iramuteq

Source: Prepared by the authors (2023) based on the use of Iramuteq.

The classes also brought the models, methods and theories that supported the works read (59), which are presented below.

4.5 Models and methods that supported the papers read.

The scientific method is a systematic and logical approach to investigating natural phenomena, seeking answers to questions, and developing knowledge, which is fundamental to the progress of science and is composed of several interconnected steps (ChatGPT, 2023). The steps may vary slightly depending on the source, but include:

a) Note: Observing a phenomenon in nature and identifying a problem or a question that needs to be answered.

b) Formulation of a question Turn the observation into a clear and specific question.

c) Literature review: Research previous work and relevant information to understand what is already known about the subject.

d) Formulation of a hypothesis: Propose a testable explanation for the identified question or problem. A

hypothesis is an educated guess that can be assessed empirically.

e) Experimentation or data collection Conducting experiments or collecting data to assess the hypothesis. This often involves the careful design of experimentation procedures and the accurate collection of observational data.

f) Data analysis: Evaluating the results of experiments or observations and determining whether they support or refute the hypothesis.

g) Conclusion Reach a conclusion based on the results of data analysis. If the hypothesis is supported by the data, it can be accepted or refined. If it is refuted, a new hypothesis can be formulated.

h) Communication of results: Presenting results, often through scientific publications, conferences, or other means, so that other researchers can review, replicate, and validate the findings.

The articles studied and read presented several models and methodologies to measure investigative aspects related to retirement (social security), some of which are outlined in Table 5.

Table 5
Methods and models that support the articles studied

Method	Description	Application
Of computable generations	In the context of actuarial retirement, computable generation models can be used to predict and analyze the impact of demographic changes, pension policies, birth rates, life expectancy, among other factors, on retirement systems. They make it possible to simulate different scenarios and assess the sustainability and effectiveness of pension systems over time.	In the context of actuarial retirement, computable generation models can be used to predict and analyze the impact of demographic changes, pension policies, birth rates, life expectancy, among other factors, on retirement systems. They make it possible to simulate different scenarios and assess the sustainability and effectiveness of pension systems over time.
Cross-section	Cross-sectional refers to a single observation or measurement of a phenomenon at a single point in time, representing a "slice" of data collected at a specific point in time. Key features include data collection at a single time point, the diversity of participants observed, each being recorded only once. A practical example would be a study on employee satisfaction in a company, where researchers collect data from all employees simultaneously, providing instant insight into workplace satisfaction.	Widely used to perform descriptive analyses of a population at a specific point in time. It provides a snapshot of the characteristics, behaviors, or conditions of that population.
General Equilibrium - Computable General Equilibrium	understand the complex interactions between various sectors of an economy. It represents the simultaneous equilibrium in all markets, encompassing goods, factors of production, and the decisions of consumption and production. Its primary features include simultaneous equilibrium, consideration of all markets, microeconomic basis, and mathematical modeling. One variant, Computable General Equilibrium Analysis (GCS), incorporates computational techniques to simulate the impact of changes in economic variables on the overall equilibrium of the economy	Powerful tool for understanding the complex interactions within an economy. However, like any model, it is a simplification of reality and requires some assumptions and abstractions to apply.
Micro simulation	The General Equilibrium Model (GEM) is an economic approach that seeks to understand the complex interactions between various sectors of an economy. It represents the simultaneous equilibrium in all markets, encompassing goods, factors of production, and the decisions of consumption and production. Its primary features include simultaneous equilibrium, consideration of all markets, microeconomic basis, and mathematical modeling. One variant, Computable General Equilibrium Analysis (GCS), incorporates computational techniques to simulate the impact of changes in economic variables on the overall equilibrium of the economy.	They are used in various areas, such as the economy, health, demography, social security, and fiscal policy. They can be applied to assess the impact of specific policies at the individual and collective level.
Regression	A regression model is a statistical tool that seeks to establish the relationship between a dependent variable and one or more independent variables. This approach aims to predict or explain the variations in the dependent variable based on the independent variables. Widely used in statistics, econometrics, and social sciences, the regression model involves a mathematical equation that expresses the relationship between variables, including the dependent variable (or response), the independent variables (or predictors), an intercept, and coefficients for the independent variables.	Regression models are powerful statistical tools that allow you to understand and quantify the relationships between variables. They are fundamental for predictive analytics and for testing hypotheses in a variety of areas of research and practice.

Source: Prepared by the authors (2023) from ChatGPT 3.5 (2023); (Gujarati & Porter, 2011)

The articles studied and read had, in essence, with greater statistical frequency, the use of regression methods and generational demographic models, often associated with the determination of social security results and the modeling of the working population of the social security systems, as a way of estimating the future perspective of the cohorts studied (the labor mass, closed).

4.6 Theories that supported the papers read.

When working with the method, the first activity of the scientist is the observation of facts. At first, this observation may be casual and spontaneous, but the

facts do not explain themselves. In fact, brute facts say nothing, it is not enough to see, it is necessary to look, and for that it is already necessary to be problematized and the presence of the problem is of a rational, logical order. On the other hand, it may also happen that several laws concerning various sectors of phenomena have the possibility of being unified in a more comprehensive law, which is the theory, a larger set of apparently different facts. (Severino , 2016)

In some of the articles studied and read, they presented several theories to support them, based on the theme of retirement (social security), as outlined in Table 6.

Table 6
Theories that supported the articles studied

Theory	Description
Public Choice Theory	Public Choice Theory allows for a better understanding of how retirees decide to apply for social security benefits eventually, and offers practical information to policy makers, financial planners, and consumer finance organizations.
Social Vulnerability Theory	Social vulnerability theory seeks to understand the social conditions that make certain groups or individuals more prone to adversity. It highlights social, economic, and political factors as key determinants, considering the historical and structural context. It adopts an interdisciplinary approach, encompassing resilience and empowerment as strategies to reduce vulnerability. It is applied in fields such as social care and public health to guide interventions and policies aimed at promoting equity.
Markovitch's theory (Portfolio Theory)	The Markowitz Theory, developed by Harry Markowitz in 1952, introduces key concepts in investment management. It highlights the importance of diversification in an investment portfolio, proposing the "Efficient Frontier" as the ideal combination of assets to maximize the desired return considering the level of risk tolerated. The theory emphasizes the need to balance risk and return in order to optimize the construction of an investment portfolio.
Career Life Cycle Theory	The "Career Life Cycle Theory" describes the stages that an individual goes through in their professional career. It includes the Initial Establishment, with a focus on opportunities and skills development; the Mid-Career Development, marked by advancements and specialization; o Reach the Peak of the Career, with leadership responsibilities; and the Decline or Disengagement, preparing for retirement or new opportunities. These internships can vary depending on the profession and external factors and are useful to guide professional development and career management strategies.
Theory of Behavior	"Behavior theory" refers to different perspectives in various disciplines, including psychology, economics, management, biology, and sociology. In psychology, one explores how environmental and cognitive factors influence human behavior. In behavioral economics, the interaction between psychological factors and economic decisions is examined. In organizations, it addresses how behavior impacts performance. In biology, animal behavior is studied, while in sociology, it is analyzed how social interactions shape human behavior. In summary, "behavior theory" varies by discipline, but it seeks to understand and explain behavioral patterns.
Theory of Risk	The "theory of risk" covers different areas, being notable in finance, where it highlights the importance of diversification to balance risks in investment portfolios. Also, in decision-making, it addresses how people perceive and respond to risk. These theories aim to understand and often manage risk, offering tools to deal with uncertainty in a variety of contexts.
Social Risk Theory	Social risk theory addresses distinct aspects related to retirement: Social Security Theory: Explores how social security systems are designed to ensure financial protection in retirement, including considerations of social risks such as longevity. Active Aging Theory: Highlights the importance of creating conditions for older people to participate fully in society, which can impact retirement and its risks. Retirement Transition Theory: Focuses on psychosocial and economic changes during the transition from working life to retirement, considering factors such as identity, psychological and social adjustments, and financial challenges.
Contract Theory	"Contract theory" is a field that studies the contractual relationships between parties in transactions. It analyzes the formation, execution, and resolution of contracts, considering elements such as offer, acceptance, and consideration. It incorporates principles of rational choice theory and explores economic aspects, including transaction costs. This theory is essential for understanding the legal and commercial dynamics involved in contractual agreements, ranging from explicit written contracts to implicit understandings between the parties.
Theory of Differentiated Wages	"Differential wage theory" in economics explores the reasons behind wage disparities among workers. Different theories offer perspectives, including Human Capital Theory, which highlights investments in skills, and Pay Discrimination Theory, which explores the role of factors such as gender or race. Other theories include collective bargaining, incentive strategies, labor market segmentation, and efficiency wages. Each theory addresses specific aspects that contribute to the complexity of the observed wage differences.

Source: Prepared by the authors (2023) from ChatGPT 3.5 (2023).

The theories presented in the works read bring in their context two main concerns: The Theory of Social Vulnerability to the understanding of the social factors that certain groups are more prone to social vulnerability, applicable to issues related to social security, as a basic premise of the State in guaranteeing the minimum

possible for their survival; the Theory of Social Risk, as a bias of the former; and the Theory of Risk, here applied to issues related to the financial contributions necessary for the capitalization of social security resources, and their possibility of payment of future benefits: retirements and pensions, in their essence.

5. FINAL THOUGHTS

Social security sustainability in Brazil and around the world is influenced by a number of complex factors. Demographics play a crucial role, with an ageing population and declining fertility rates putting pressure on pension systems. Longer life expectancy also adds to the challenge, requiring benefit payments over longer periods. In addition, economic factors such as labour market growth and stability, government policies, social inclusion, and health and migration issues all play significant roles in the long-term sustainability of pension systems.

Social security reforms, sometimes necessary, must be adapted to deal with these factors and ensure the viability of the systems in the future, balancing the equation between revenues and expenses and all this context was brought to the studies read and studied in this Work that inquired about the environment of the scientific production of social security, in search of the methods and would have to support them.

However, initially, with the help of the Iramuteq software, it was sought to analyze the discourse brought by the articles read. These indicated in layers that: There is an indecision of workers to apply for retirement benefits, even if they implement the necessary conditions, preferring to remain in the labor market, or, retired, they seek other forms of income supplementation, this factor being a worldwide phenomenon the United States, Italy, the United Kingdom and Korea, for example, ratify this position.

On the other hand, other issues related to the sustainability of social security systems of an economic and risk nature have an impact on the balance of public accounts, especially when we refer to the social security context in the Brazilian State, although represented in the database studied by only one article, but which covers issues related to gender, race, ethnicity and health of workers and their lack of perception of the need to contribute (or prepare) to the process of retirement, as a point of relationship adhering to all workers. In short, the discourse studied is concerned with the sustainability of social security systems, and the aging of the mass of workers and their improvement of quality of life and increase in life expectancy.

But we had one main objective: to evaluate which theories and models would support the scientific articles produced, published in the Scopus Base. From the perspective of retirement models and the capitalization model of social security resources, it was observed that the former is highlighted in the full participation of older people in society and its impact on the social security system, concatenated to the improvement of the quality of life of the workforce, which is believed to have been answered, which ratified Silva's work. Tavares and Lopes (2020), with the addition of the social aspect, with the segment of social security benefits: retirements and pensions.

From the methodological point of view, it was observed that the regressive models and the generation simulation models, within the mass of workers, was the most adopted model in the studies read, because the determination of the factors that influence the social security result are, eminently, representative models of a determinant variable (the result), and of other dependent variables, endogenous and exogenous variables. Causes of social security sustainability: demographic, labor market (we read a lot of labor force in the articles read), conjunctural, structural, and design of the pension plan, including retirements of teachers and rural workers.

There were some difficulties regarding the installation and processing of Iramuteq: The R 3.0.1 language was installed, as the most current one does not work. Iramuteq presented some *bugs* that were gradually resolved, sometimes requiring to uninstall and reinstall it. On the other hand, the work that is being completed can be considered positive, as it should illuminate other projects, from new perspectives with the theme of social security, contributing, even more, to its improvement and improvement.

All stages of the research required attention, seriousness, and knowledge, which made the authors study the software using the resources available on YouTube, notably with the participation of the authors in the courses promoted by the Kaizen Research Group of the Federal University of Rio Grande do Norte (Kayzen, 2021), because the authors were committed to this qualitative research, that required time and material resources for its construction.

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