



A bibliometric analysis of the main databases of the Way of St. James (1997–2023)

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Abstract The *Camino de Santiago* is one of the most important pilgrimage routes and representative of the world of Christianity, and the first European Cultural Route that leads to the Cathedral of Santiago de Compostela (Cazaux in *Tour Int Interdiscip J* 3(1):353–367, 2011; Mróz et al. in *Int J Relig Tour Pilgr* 7(5):56–71, 2019; Roszak in *J Relig Health*, 62:2734–2745, 2023; Zhang et al. in *J Relig Health*, 63(1):89–108, 2024; Roszak and Mróz in *J Relig Health* 63(6):4861–4875, 2024). This study conducts a comprehensive bibliometric analysis of publications related to the *Camino de Santiago* from 1934 to 2023, using the Scopus, Web of Science, and PubMed databases. The data collected in the Scopus database was

analyzed using the VOSviewer tool. This tool enabled the generation of thematic network maps, which were derived from the analysis of keyword occurrences, documents, and countries with the highest number of publications. Additionally, it was used to identify journals with the highest number of publications and the most productive authors. 685 studies were identified, of which 317 met the inclusion criteria, after filtering for duplicates, accessibility, and relevance. The main findings reveal that 27.1% of the research has been conducted in arts and humanities, 24.4% in social sciences, 15.2% in tourism, and 13.8% in business, management and accounting. A limited number of comprehensive research projects into the *Camino* were found. Several studies were inaccessible or didn't have detailed abstracts. To date, only two bibliometric analyses of the *Camino de Santiago* have been identified. This research is distinguished by its extended time frame, diverse methodological approaches and use of multiple databases, providing a more nuanced understanding of the scholarly landscape surrounding the *Camino de Santiago*. The findings underscore the need for more accessible and detailed research to fully capture the multifaceted nature of this historic pilgrimage route.

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Introduction

The pilgrimage to Santiago de Compostela—a set of world heritage routes that converge on the capital of Galicia, in northwestern Spain (Zhang et al., 2024)—is a spiritual practice that is distinct from traditional religious practices (López et al. 2017; Amaro et al., 2018; Lois-González & Lopez, 2021). It is marked by natural, historical, religious, and cultural aspects that are appreciated by both pilgrims and tourists (Murray, 2014; Murray & Graham, 1997) and has an important dimension as a sacred place (Santos, 2002).

The increasing popularity of pilgrimage along the *Camino de Santiago* is one of the most interesting developments from recent years, in terms of religion and spirituality in the Western world (Brumec et al., 2023). The *Camino* presents a wide variety of dimensions and interpretations that reinforce its polysemic nature (Lois-González, 2013). This idea was made stronger by the connection between different aspects of spirituality, religion, tourism, and appreciating nature and cultural landscapes.

The *Camino de Santiago* became an example of the increased frequency of going on pilgrimages in contemporary society, reviving a Medieval Way, and transforming the *Camino* into a cultural and tourist attraction (Raj & Morpeth, 2007). The highest number of pilgrims was recorded in the Holy Year of 2010 (272,385), in 2023 (446,077) and before the COVID-19, in 2018 (327,377), and in 2019 (347,566) (Oficina del Peregrino, 2024). Pilgrimages have powerful political, economic, social, and cultural implications and can even affect global trade and health (Barber, 1993, cited by Collins-Kreiner, 2010; Amaro et al., 2018; Roszak 2019, Roszak & Huzarek, 2022; Santos, 2022; Brumec et al., 2023). It is important to remember that although Santiago de Compostela is historically linked to the Christian religion, profound spiritual experiences are not restricted to believers, they can also be shared by atheists (Malis et al., 2023).

The Way of St. James is the subject of the main revised studies on pilgrimage tourism, due to its popularity, history and geographical attractiveness (Lois-González et al., 2015, 2017; Roszak & Huzarek, 2022). The substantial increase in the number of pilgrims traversing the *Camino de Santiago* can be sociologically understood as a phenomenon rooted in broader social transformations, notably an increased

emphasis on experiential knowledge and a heightened significance of emotions (Brumec & Roszak, 2024). The importance of this phenomenon has made it a focus of interest for research in various disciplines, such as Geography, Anthropology or Sociology (Lois-González, 2013). There is an extensive bibliography written on this topic in Spanish or Galician (e.g., Santos, 2002; Rodríguez, 2004; Barreiro, 2009; Collins-Kreiner, 2010; López et al. 2017; Amaro et al., 2018; Lois-González & Somoza-Medina, 2022).

Motivation is a core focus for considering the *Camino de Santiago*, whatever the origin, religion, customs or traditions. The *Camino* attracts an increasing number of pilgrims driven by religious and non-religious motivations (Cova et al., 2019). In the contemporary era, motivations may include religious, spiritual, and humanistic benefits, as well as appreciation of culture and geography (Nelson-Becker et al., 2023).

In this sense, it has been considered relevant to conduct a systematic analysis of studies on the Way of St. James, using bibliometric analysis, to ascertain which types of studies exist. The first bibliometric analysis was presented by Alan Pritchard in 1969, and it subsequently became a popular method. Bibliometrics aims to analyse scientific or technical activity through the quantitative study of publications (Silva, 2004a, 2004b).

For this study, it was considered to be important to evaluate the studies indexed in the Scopus, Web of Science, and PubMed databases, for the period 1934–2023. These databases were chosen due to their relevance and comprehensiveness in the scientific field, facilitating access to a vast amount of data in order to conduct a detailed bibliometric analysis, which plays a fundamental role in this study, since it makes it possible to identify the main themes addressed in studies related to the *Camino de Santiago*, the most representative fields of study, the authors that have made the greatest contribution and had the greatest impact in terms of citations, as well as the countries and institutions that have played significant roles in studies on this topic.

This study also enables us to make detailed examination of which topics have been developed over the last twenty-six years, offering a chronological and thematic overview of scientific contributions. This analysis also allows us to understand the collaboration

networks established between authors, institutions and countries in the context of research related to the *Camino*. Despite efforts to encompass a substantial time span, select studies available until the close of the twentieth century permitted only perusal of the title and, in certain instances, the abstract. For this reason, most of the analyses carried out were made for the post-1997 period.

This study has been organised into four sections, in addition to the introduction, which aims to offer a structured presentation of the information. The introduction contextualises the relevance of the topic and presents the study's main objectives. The first section provides a brief review of the most relevant literature, accompanied by development of the study's theoretical framework. The second section describes the detailed methodology and principal data sources, together with the procedures of data collection and processing and the analytic techniques used in the bibliometric analysis. This section aims to ensure the study's transparency and productivity by providing complete information on all the procedures adopted. The third section presents the main results, accompanied by detailed analysis of the most relevant bibliometric indicators. Finally, the fourth section is dedicated to the conclusions and final considerations, in which the main conclusions are summarised, highlighting their relevance and implications for future work. Reflections on the limitations of study and suggestions for further research are also presented.

Overall, this study aims to offer a comprehensive and structured analysis, contributing not only to the current state of studies related to the *Camino de Santiago*, but also identify the key trends, gaps and potential collaboration that can guide future studies.

Pilgrimage to santiago de compostela

The word "pilgrimage" refers to a religious (or simply spiritual) journey made by an individual or a group to a sacred place. The original Latin term, "peregrinus", from which the word is derived, also encompasses another type of person—such as a foreigner, vagabond, or exile (Lois-González & Santos, 2015). Pilgrimage is one of the universal religious top and its meaning has changed over time in different cultures (Schnell & Pali, 2013). It develops from a desire for a more profound connection, exploration, and even

devotion to religious ideas (Amaro et al., 2018; Hall et al., 2018).

The first pilgrimages date back to the ninth and tenth centuries, but it was only in the eleventh century that the pilgrimage to Santiago gained its international dimension (Mendel, 2010). The *Camino de Santiago* or the Way of St. James was an important ancient Christian pilgrimage route in the Middle Ages. It is believed to reflect the legend of Saint James (Basil, 2020). In the past, the pilgrimage was closely linked to Christian traditions. It was a journey to the Christian God (Ohler, 2003). Nowadays, the production and consumption of pilgrimage activities are increasingly detached from traditional religion and increasingly approach and adapt to the characteristics of contemporary societies (Lois-González & Santos, 2014; Lois-González & Somoza-Medina, 2022). In the period of Antiquity, veneration, the possibility of healing, and the expression of redemption from sin were key motives for going on a pilgrimage (Chemin, 2011).

Over the centuries, embarking on a pilgrimage has continued to be meaningful, based on personal, social and spiritual aspects (Turner & Turner, 2011). In today's world, even atheist segments of society can gain a holistic experience of a pilgrimage, not as a journey to the Christian God, but rather as a journey to something personal, that transcends them (Farias et al., 2018). At the end of the twentieth century, pilgrimages acquired a new dimension, with the attraction of a growing number of pilgrims, for various reasons, including social, political, religious, spiritual and touristic motivations. In this way, pilgrimages have become an international tourist-cultural itinerary (Faria et al., 2022).

Pilgrimage is about leaving the old behind, in particular familiar social relations and about discovering the new role of a traveller (Malis et al., 2023). The time spent on a pilgrimage also plays an important role in intense experiences of self-knowledge (Ohler, 2003). During the pilgrimage, people are more open to thoughts that they do not have time to consider during their professional lives (Malis et al., 2023). Pilgrimage is also related to moving slowly and, more specifically, doing so while enjoying gastronomy in the places and regions visited (Lois-González & Santos, 2014). It is increasingly linked to natural sites, encouraging ecological habits and a connection with the natural environment. This fact has a direct

implication in the management of pilgrimage tourism, since pilgrims become agents of landscape conservation (Eppig, 2018).

Pilgrimage to Santiago de Compostela has become an example of the growing number of people going on pilgrimages in contemporary society, reviving a medieval way, transforming the *Camino de Santiago* into a cultural and tourist attraction (Raj & Morpeth, 2007), which involves walking, eating and sleeping activities (Remoaldo et al., 2024). In the Middle Ages, the *Camino de Santiago* (the Way of St. James) was one of Christianity's most important pilgrimage routes (Braun, 2021).

The pilgrim is a person who has undertaken a journey on foot, on horseback or by bicycle to a sacred place, regardless of their motivations, and he/she goes to places that carry emotional or spiritual values, in the hope of achieving some kind of personal transformation (Amaro et al., 2018).

The main bibliometric studies on the *Camino de Santiago*

Despite the socio-cultural and religious interest of the Way of St. James, there are few studies that have implemented a bibliometric analysis. Some examples are Martinho and Nunes (2020), and Marinho (2021). More recently, as we were concluding our analysis, Díaz-de la Fuente et al. (2024) published a new approach.

Martinho and Nunes (2020) conducted a bibliographic research that collected 52 Web of Science studies, using bibliometric analysis, which allowed the articles to be grouped into clusters based on the VOSviewer tool, to demonstrate the occurrences of the keywords. They did not define a period for analysis, and the study focused on the region of Viseu. The Portuguese Inland Way of Santiago commences in Viseu, Portugal, and crosses regions such as Castro Daire, Vila Real, Vila Pouca de Aguiar and Chaves.

Marinho (2021), from the University of Trás-os-Montes and Alto Douro (Portugal), carried out an academic study on the bibliometric analysis of the *Camino de Santiago* and residents living along the way. The analysis involved two stages. In the first stage, the literature review focused on the search for articles that contained, in their title or abstract, the terms "religious tourism or pilgrims" and "residents",

in general, with articles selected between the years 2001 and 2020, in areas of knowledge such as Social Sciences, Arts and Humanities, Economics and Business. In the second stage the search terms were, "way of Saint James" or "way of St. James" or "*Camino de Santiago*" or "*Caminho de Santiago*". The year of publication is between 2010 and 2020, and the other arguments of the research remained the same as in Stage 1. The results obtained showed that in Stage 1 the results reflect a greater maturity of the research area, when compared to Stage 2. It became clear that there was a lack of studies on the theme of the *Camino de Santiago* which place residents as the centre of research.

Díaz-de la Fuente et al. (2024), conducted a bibliometric analysis of the *Camino de Santiago* in the academic literature from the period 1980–2024, in order to present a holistic view and integrated perspective of its influence. Two data sources were used comparatively: manuscripts indexed in Scopus and doctoral theses. In addition to the query applied in Table 1, the authors included specific types of documents in their analysis, such as: article, book, book chapter, conference paper, editorial, letter, note, review and short survey. The analysis also reflected key sources, authors, countries, and institutions, as well as their patterns of scientific collaboration. The results revealed a growth of the academic relevance of this topic over the last decade, especially in indexed publications. The conceptual framework of the academic field, which differs between doctoral theses and indexed articles, also confirms the *Camino* as a crossroads not only of people, but also of academic disciplines and scientific perspectives.

Between these studies, the research conducted by Marinho (2021) is similar to our own, in terms of the co-occurrence of *Keywords*, even if it they used different terms. We analysed a longer time period (1934–2023), and conducted a more detailed study (e.g., research techniques, topic of studies, most cited authors, countries with the highest number of publications, and most cited documents). The recent study by Díaz-de la Fuente et al. (2024) used research techniques identical to our own study, especially with regard to the analysis of the type of document, the institutions with the highest number of documents cited, and thematic areas with the highest number of publications. The authors also used network analysis to visualise the results, a technique that was also used

Table 1 Certain characteristics of the main bibliometric studies about the *Camino de Santiago*

Year	Author(s)	Period analysed	Thematic	Database indexing	Query string	Type of document analysed
2021	Marinho, R. C	1st stage —2001–2020 2nd stage—2010–2020	1st stage —religious tourism, pilgrims and residents 2. Stage— <i>Camino de Santiago</i>	Scopus	1st stage—“religious tourism” OR “pilgrim” resident” 2nd stage—“way of Saint James” OR “way of St. James” OR “camino de Santiago” OR “caminhode Santiago”	Journal article
2020	Martinho and Nunes	2019	<i>Camino de Santiago</i>	Web of Science	Unavailable	Journal article

Table 1 (continued)

Year	Author(s)	Period analysed	Thematic	Database indexing	Query string	Type of document analysed
2024	Díaz-de la Fuente et al	1980–2024	<i>Camino de Santiago</i> , bibliometric analysis, academic influence, scientific mapping, network analysis, pilgrimage	Scopus	TITLE-ABS-KEY ("Camino de Santiago" OR "Caminos de Santiago" OR "Camino de Santiago" OR "Jacobeo" OR "Xacobeo" OR "Saint James Path" OR "Way to Santiago" OR "Way of Saint James" OR "Saint-Jacques-de-Compostelle" OR "Way of St. James" OR "Camino to Santiago" OR "route to Santiago" OR "pilgrimage to Santiago" OR "pilgrimage Santiago" OR "Camino Lebaniego" OR "way of santiago" OR "Santiago de Compostela pilgrimage") OR TITLE-ABS-KEY (pilgrim AND Camino) OR KEY (pilgrimage AND santiago AND de AND compostela) OR KEY (camino AND pilgrimage) OR TITLE-ABS-KEY (santiago AND due AND composted AND sacred AND places) OR TITLE (pilgrimage AND way) OR TITLE (pilgrimage AND Camino) OR KEY (Camino de Santiago de Compostela) OR KEY (Camino de Santiago) OR ABS (Santiago de Compostela Camino) OR TITLE-ABS-KEY ("Santiago Ways")	Article, book, book chapter, conference paper, editorial, letter, note, review and short survey

Source Author's own elaboration, based on eight studies

in our study. In our study, we assigned a theme, technique used, and method applied to each study.

Also this bibliometric analysis is distinct from other St. James Way bibliometric studies in its incorporation of three databases (i.e., PubMed, Web of Science, and Scopus) with extended periods (1934–2023) and the utilization of multiple analysis techniques (e.g., research technique, analysis technique used, and publications by theme and main authors).

Table 1 was created to present the data extracted from the two bibliometric analyses of the aforementioned authors.

Methodology

Data extraction

This research aimed to analyse the scientific studies related to the Way of St. James indexed in the Scopus, Web of Science and PubMed databases. The studies were searched through two combinations (OR and AND), for different keywords related to the Way of St. James. The keywords were written in Portuguese, French, English and Spanish ("Caminho de Santiago" OR "Camino de Santiago" OR "St. James Way" OR "Way of St. James" OR "Way of Saint James") OR ("Way of Santiago" AND "Route of St. James").

These combinations were applied in the three databases. From these databases, 685 studies were extracted (371 from Scopus, 227 from Web of Science and 87 from PubMed), and analysed separately. 317 studies remained related to the *Camino de*

Santiago. The research covered the period from 1934 to 2023. Content analysis was used in this study, as well as bibliometric analysis.

Content analysis, in its qualitative aspect, is based on a series of assumptions, which, in the analysis of a text, serve as a support to capture its symbolic meaning (Ispizúa & Olabuenaga, 1989). Bardin (1997) emphasises the importance of rigour in the use of content analysis and the need to overcome uncertainties and find out what is questioned.

Bibliometric analysis is a methodological approach that facilitates the assessment of a nation's standing in the global context, the relative position of an institution within that nation, and the placement of individual scientists within the broader scientific community. This analysis is predicated on the enumeration of scientific articles, patents, and citations (Soares et al., 2016).

For the extraction of the data, the following variables were considered: author's name, affiliation, country of the document, language, year of publication, keywords, number of citations, abstract, link, and accesses (Table 2).

The utilization of four languages (Portuguese, French, English, and Spanish) in keyword searches led to an augmentation in the scope and pertinence of results, thereby facilitating the acquisition of information from diverse sources and enhancing search productivity. It is paramount to recognize the significance of the study's emphasis on these languages. These are intricately linked to the historical route of the Way of Saint James, a path that has garnered significant scholarly attention, particularly in Portugal, Spain, and France.

Table 2 Criteria used in data search

Databases	Scopus, Web of Science and PubMed
Keywords/Query string	" <i>Caminho de Santiago</i> " OR " <i>Camino de Santiago</i> " OR "St. James Way" OR "Way of St. James" OR "Way of Saint James") OR ("Way of Santiago" AND "Route of St. James")
Category	Title, Abstract and Keywords
Subject area	All
Document type	Books, articles, book chapter, editorial, conference paper, conference review, note and review
Period	1934–2023
Language	Portuguese, French, English and Spanish
Access	Open
Duplicate publications	Deleted

Source authors' own elaboration, based on research conducted on 01/09/2024

Filtering

The data were collected on 24 September, 2024 and resulted in 685 studies. After being analysed separately, excluding duplicate studies, travel diaries, testimonials, abstracts, and publications not available, a total of 316 studies were considered in the analysis. The "travel diaries" and "testimonies" were identified manually by reading the available full-texts.

The process used to create an analysis of studies on the *Camino de Santiago* consisted of 4 steps: from the selection of keywords to identify and choose papers for review (step 1) to the transformation of the data into descriptive statistics and analysis thereof (step 7) as identified in Fig. 1.

After the data was processed, it was exported to a Microsoft Office Excel file. This tool was used to classify the data according to the author's name, year of publication, citation, affiliation, type of document, topic of study, method (qualitative and quantitative), research technique, and techniques analysis. After analysing the data in the three databases, a merger was carried out, eliminating duplicate studies.

For a more detailed analysis a network analysis was conducted, using the techniques of bibliographic coupling and co-citation through VOSviewer software for building and visualising bibliometric networks. Bibliographic coupling analysis is a tool developed by Kessler (1963), which measures the relationship between two articles, based on the number of common references cited in the two articles. The two articles were thus called coupled articles and the relationship between them is called bibliographic coupling. In turn, co-citation analysis measured the relationship between two articles, based on the number of publications in which they appear most frequently cited (Small, 1973). In this sense, Small (1973) mentioned that bibliographic coupling and co-citation analysis, as indicators of thematic similarity, provide significantly different patterns in relation to the structure of a scientific domain (Grácio, 2016). With this tool, it was possible to carry out a rigorous analysis of the data, which is included in the third section of this article.

Results

Evolution of studies and type of publication

The evolution of published articles in the three databases analysed in this paper between 1997 and 2023 are present in Fig. 2, where each row represents a type of database, the total is represented in red.

Three main stages can be detached.

1st stage—Prior to 2003

It reflects the beginning of the interest in the topic. Effectively, studies on the *Camino de Santiago* remount to 1934 with the Fbose study. Fobse (1934), Foster (1964), Engels (1974), Benitezrojo (1983) and Gerrard (1985) are other examples from this period. Between 1998 and 2002, there were no articles related to the *Camino de Santiago* in any of the databases.

In the three databases, the first study related to the *Camino de Santiago* available and in open access, was published in 1997 by the authors Michael Murray & Brian Graham, "Exploring the dialectics of route-based tourism: The *Camino de Santiago*". Other databases were consulted as mentioned before, but so far it has not been possible to identify studies related to the *Camino de Santiago* available prior to 1997.

Between 1997 and 2006, the studies indexed in the three databases were of a theoretical and practical nature. These studies are from the areas of social sciences, such as the case of Murray and Graham (1997). In this study the authors explore the complexities of route-based tourism, focusing in particular on the *Camino de Santiago*. It discusses how the *Camino* has evolved into a cultural tourist product, highlighting the interaction between pilgrimage and tourism. The authors state that the *Camino* brings economic benefits that primarily derive from road-oriented tourists and off-road pilgrims. In short, the authors underline the importance of balancing the development of tourism with the preservation of cultural heritage located along the *Camino*.

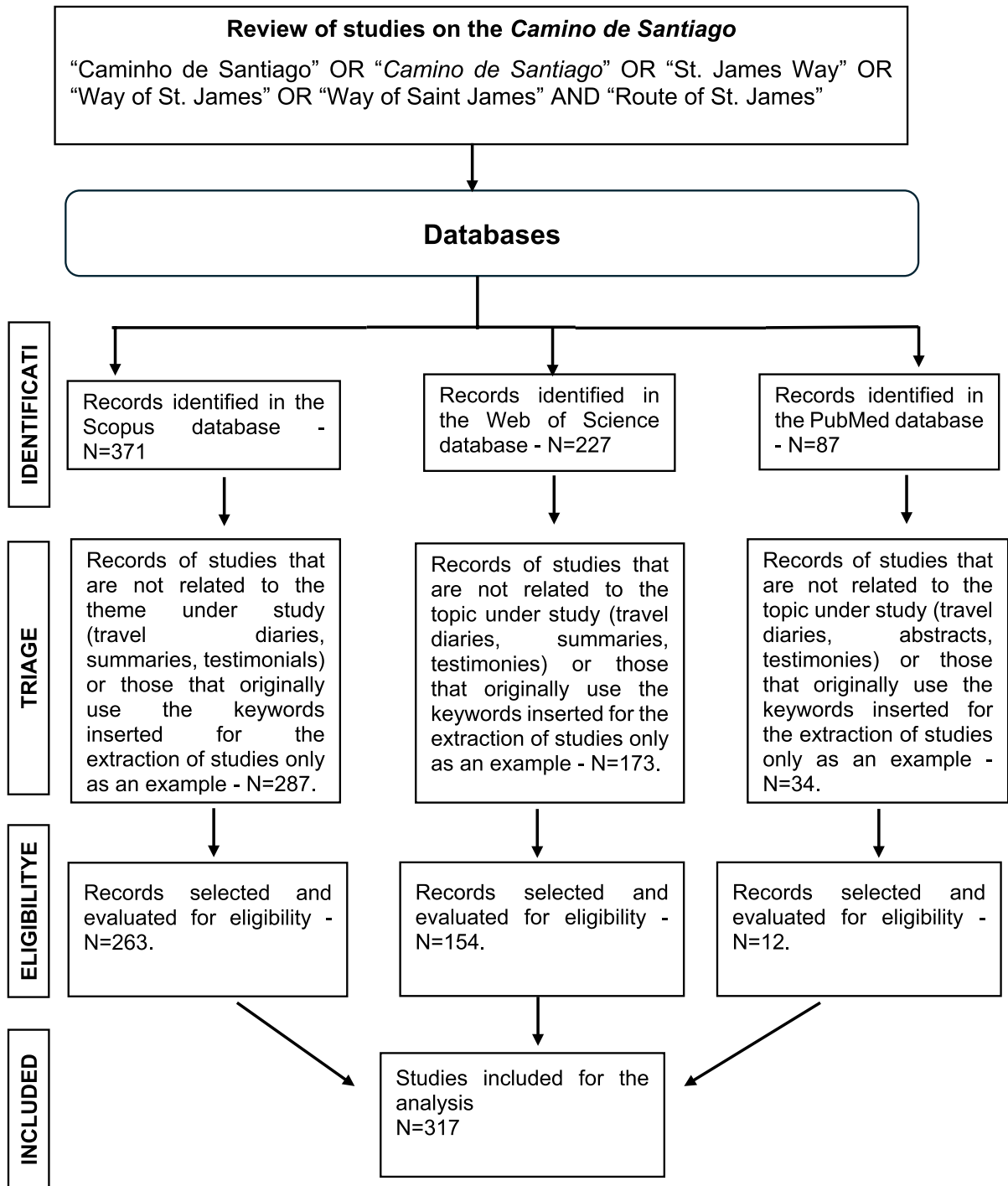


Fig. 1 Stages of the analysis performed. *Source* Author’s own elaboration, based on research conducted on 01/09/2024

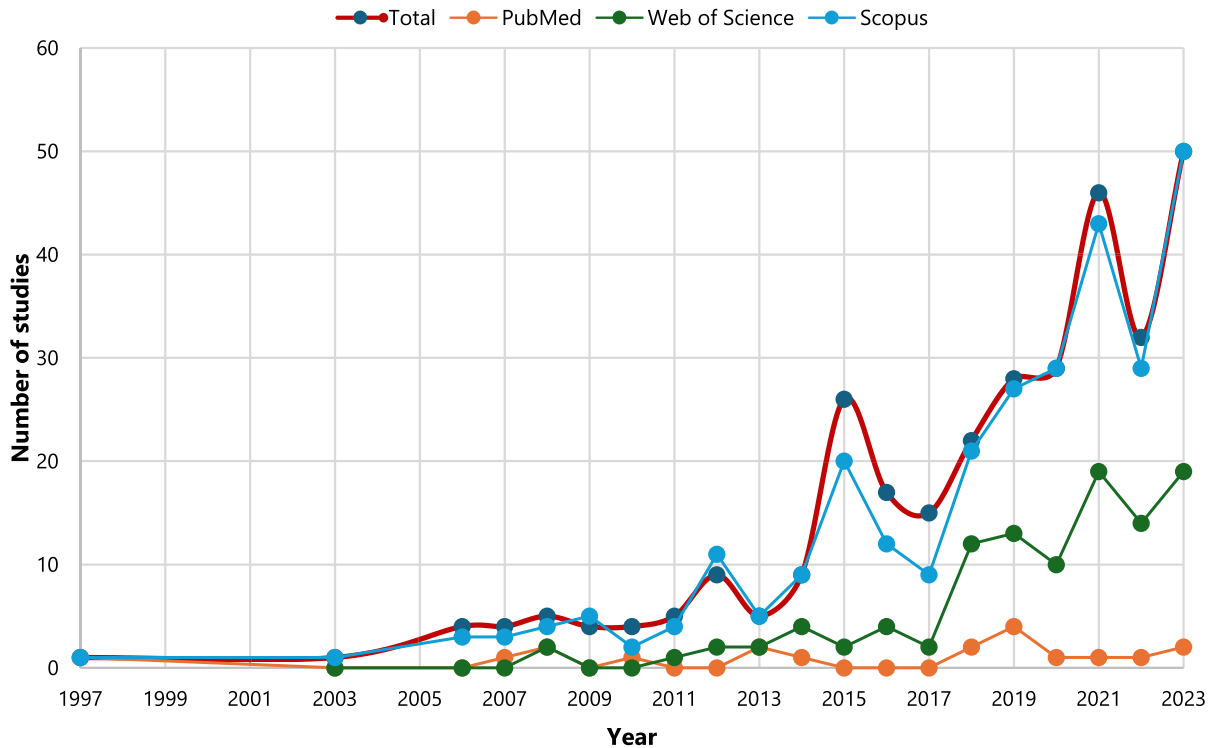


Fig. 2 Number of studies published per year in Scopus, Web of Science, and PubMed between 1997 and 2023

2nd stage—2003 to 2012

In this period there was a slight increase in the number of articles indexed in both databases (Scopus or Web of Science— $n=24$).

Between 2003 and 2006, the indexed studies were theoretical, i.e., they do not constitute any practical body in their development (e.g., de La Cuesta, 2003). These authors have mainly studied the stories and traditions linked to the pilgrimage to the *Camino de Santiago* since the Middle Ages.

3rd stage—2013 to 2024

In 2015, there was a sharp increase ($n=26$), and in the following years there was a small decrease (2016, $n=17$) and 2017 ($n=15$). Between 2018 and 2023, there was a significant increase in the number of published studies ($n=207$), coinciding with the surge in the number of people travelling along the *Camino*, according to data obtained from the Oficina del Peregrino (2024).

The Scopus database has the highest number of publications ($n=263$), especially from 2015 onwards, when the number of publications increased sharply. Over the last 8 years, there are some important peaks (e.g., in 2019 and 2021), and 2023 was the year with the highest number of publications, exceeding 50.

On the other hand, the Web of Science shows a gradual growth in the number of publications ($n=154$), in particular from 2015 onwards, when it began to rise more sharply. Despite this, the number of publications in this database is lower than in Scopus, but it exceeds PubMed throughout much of the period analysed.

Finally, the PubMed database ($n=12$) remained low throughout the period, with small increases over recent years, perhaps due to the fact that this database is linked to the areas of health, so its published studies use the following keywords: health, diseases, benefits of walking, and psychological effects after walking. In the case of Scopus and Web of Science, they cover all areas, such as social sciences, physics, health, and economics.

Table 3 Main characteristics of the studies about the Way of St. James

Period	Main authors	Topics covered	Document Type	Document No	Field of study
1st stage	Murray & Graham (1997)	"route-based tourism"; "cultural tourism"; and "pilgrimage to Santiago de Compostela"	Article	1	Social sciences; business management and accounting
	de la Cuesta (2003)	"Camino de Santiago by the Ebro River"; "popular saints of the Way"; "Pilgrimage"	Article	1	Arts and humanities
2nd stage	Schrire (2006), Ledo et al. (2007), Lourens (2007), Miaux (2008), Rubio and Sosa (2008), Genoni (2011), Doi (2011)	"European heritage"; "modern traditions"; "Jacobin beliefs"; "promotion of the Camino de Santiago"; "cultural tourism"; "tourist routes"; "pilgrim's experiences"; "motivations of pilgrims"; "strengthening identity"; "international tourist destinations"	Articles and books	8	Social sciences; medicine; earth and planetary sciences; psychology; arts and humanities

Table 3 (continued)

Period	Main authors	Topics covered	Document Type	Document No	Field of study
3rd stage	Lois-González and López (2012), Gonzalo et al. (2012), Harris and Wolf (2013), Nickerson et al. (2014), Watkins et al. (2014), Lois-González et al. (2015), Lois-González and Santos (2015), Fernández et al. (2016), Franklin (2016), Kim et al. (2016), Lois-González et al. (2016), Santos and Trillo-Santamaria, (2017), Lopez et al. (2017), Amaro et al. (2018)	"acute gastroenteritis in pilgrims"; "narratives"; "anthropology of pilgrimage"; "tourism websites"; "medieval pilgrimage"; "modern period"; "Christian pilgrimage"; "Middle Ages"; "sacred space"; "cardiovascular diseases"; "rebirth of the Way"; "experience on the Camino"; "innovation with beliefs"; "geographical analysis of the Way"; sustainable tourism; "Jacobian Pilgrimage"	Books, articles, book chapter, editorial, conference paper, conference review, note and review	15	Arts and humanities; social sciences; business, management and accounting; environmental science; computer science; medicine; earth and planetary sciences and other
	Lopez et al. (2019), Roszak (2019), Girish and Lee (2020), Moscarelli et al. (2020), Brumec & Aracki Rosenfeld (2021), Romanelli et al. (2021), Pérez-Ramallo et al. (2022), Hortelano Mínguez, & Mansvelt Beck (2023), Bailey (2023), Somoza Medina et al. (2023), Rodríguez-Vázquez et al. (2023), Blasco Vallés (2023)	"Impacts of Covid"; "Cultural Tourism"; "heritage tourism"; "rural tourism"; "motivations"; "experiences"; "sustainable tourism"; "narratives"; "Covid 2019"; "effects of the pandemic"; "mass tourism"; "beliefs"; "tourist routes"; "religious tourism"; "women and pilgrimage"; "Middle Ages"; "popular festivals"; "holy year"; "Galicia"; "fusion of identity"; "GIS technology"; "Western Europe"; "walkers"; "well-being"; apostle S. Tiago"; "Side effects of the pandemic"	Books, articles, book chapter, editorial, conference paper, conference review, note and review	13	Arts and humanities; social sciences; business, management and accounting; environmental science; economics, econometrics, finance; medicine and other

Source Authors' own elaboration, based on research conducted on 01/09/2024

Table 3 presents the main studies, together with the core topics addressed. It is observed that in an initial stage the studies deal with themes related to pilgrimage, tourism based on routes and stories of pilgrimage to Santiago de Compostela (e.g., Murray & Graham, 1997; de la Cuesta, 2003).

Lois-González and López (2021) presented a study that involves the historical evolution of the *Camino* as one of the main pilgrimage routes, highlighting its contemporary renaissance and the transformation of pilgrims into tourists. They conducted a geographical and cultural analysis, which combines historical and contemporary approaches.

With the Holy Year, studies related to the Jubilee event emerged. Fernández et al. (2014) analysed the online presence of the Spanish autonomous communities in relation to the promotion of the *Camino de Santiago* and the Jubilee year of 2010. The authors highlighted the importance of effective website management to achieve tourism promotion objectives. They also discussed the evolution of information technologies and the need for public institutions to adapt to these changes.

Targeting the social sciences, also the study by Fernández et al. (2014), explores traditional creative practices in northwestern Spain, with a focus on the game of bowling (Bolos) and its conceptual connection to the pilgrimage of the *Camino*. These local cultural activities are preserved in Galician municipalities and maintain their historical links amongst pilgrims. They highlight the importance of preserving cultural heritage through these traditional games.

Watkins et al. (2014), in the field of medicine, studied the rare medical conditions experienced by a 73-year-old pilgrim, describing the symptoms, and the increased risk of contracting Leishmaniasis in northern Spain, due to climate change and other factors.

Lois-González and Santos (2015), in a study on the motivation of pilgrims to travel to Santiago, provided a theoretical and analytical exploration of modern pilgrimage. The authors mentioned pilgrimage as a driver of cultural and experiential tourism, mixing religious motivations such as touristic desire for relaxation, landscapes, and mental escape.

Santos (2016), in "The Way of Saint James as an event: politics and nation", analysed the relationship between the *Camino* and historical events, highlighting its evolution since the discovery of the relics of

Saint James in the twentieth century, especially during the Holy years, which has a strong national political significance. It also explores pilgrims' motivations, which go beyond spirituality, and discusses how the commercialisation of the *Camino* contributes to the pilgrims' experiences.

In relation to motivations, still within the areas of social sciences and arts, the study by Amaro et al. (2018), analyses the motivations of pilgrims who travel along the *Camino*. The study involved 1,140 pilgrims from 45 different nationalities, and highlights that spiritual motivations and the search for new experiences are the main factors that attract pilgrims. Brumec (2023), provides another study on the same topic, using the qualitative and quantitative method to study the motivations of pilgrims travelling to Santiago. The qualitative methodology was based on the content analysis of 32 travel reports and the quantitative research was based on an online analysis.

In other areas related to tourism, certain studies stand out (e.g., Moscarrelli, 2023), which address tourism development of the *Camino*, and the bodies created to monitor its development (e.g., Mingesz & Beck, 2023), rural tourism through the reuse and promotion of heritage (e.g., Malis et al., 2023).

Table 4 represents the evolution of the studies according to the type of publication. From 1997 to 2023, there was a mixture of studies. Over the years authors have studied various topics, such as cultural tourism, religious tourism, and stories linked to the pilgrimage to Santiago de Compostela. It is important to note that this increase is probably due to the improvement of information about pilgrims and the *Camino*.

Of the publications analysed (Table 4), 73.8% are related to scientific studies, wherein the first

Table 4 Evolution by publication type

Publication type	N	%
Article	234	73.8
Book chapter	45	14.2
Conference paper	19	6.0
Review	17	5.4
Note	2	0.6
Total	317	100.0

Source Authors' own elaboration, based on research conducted on 01/09/2024

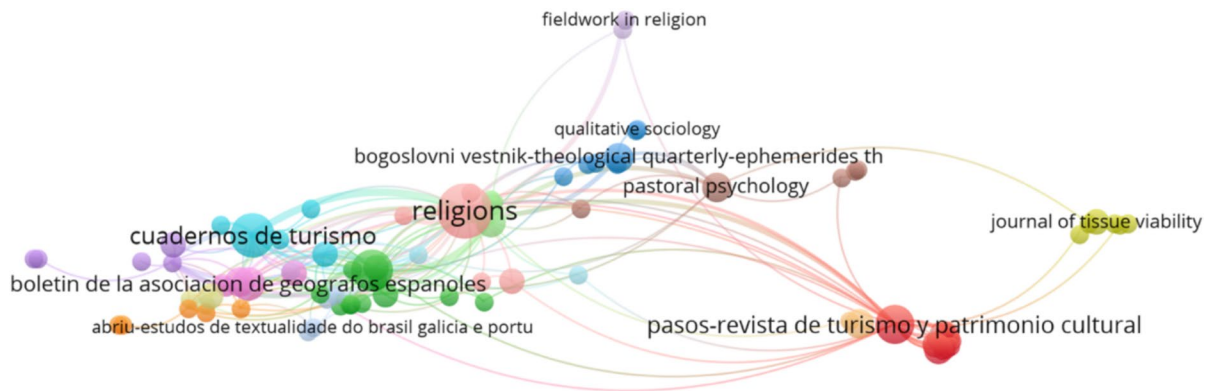


Fig. 3 Sources with the highest number of publications. *Source* Authors' own elaboration, based on research conducted on 01/09/2024

article was published in 1997, as previously mentioned. Book chapters occupy the second position ($n = 14.2\%$).

Main sources and most cited authors and documents

Figure 3 represents the visualisation map of the network of citations of sources with the highest number of publications. Each cluster represents a specific (journalled) source, while the colours and proximity indicate thematic groupings or frequency of interconnection between clusters. The lines connect journals that share a relationship, such as mutual citations or thematic similarity. There are two major central clusters – one around "Religion" and the other around "PASOS—Revista de Turismo y Patrimonio Cultural" (Journal of Tourism and Cultura Heritage). PASOS is a journal on tourism and cultural heritage, based in Tenerife (Spain) and published in Portuguese, Spanish and English. In this context, it is not surprising that publications appear on the *Camino de Santiago* and other religious/spiritual routes, due to their respective cultural/heritage and tourist dimensions. Obviously, given the importance of the *Camino de Santiago* for pilgrims travelling from Spain and Portugal to Santiago de Compostela, it is not surprising that the subject has attracted the attention of researchers from these countries, along with Latin American countries, where the journal has a considerable level of circulation.

The "Religion" Clusters, involve studies related to the religious dimension of the *Camino*, that is, the *Camino de Santiago* is a Christian pilgrimage route

that dates to the ninth century, and is also rich in religious elements, that in turn arouse the interest of studies in various fields.

The other sources of cluster groups, such as the "Cuadernos de Turismo", contain publications related to tourism, linked to the other two aforementioned sources (journals).

The manner in which journals are interconnected serves to demonstrate that research on the *Camino de Santiago* is not confined to a single discipline; rather, it exhibits a multifaceted interconnectedness with domains such as theology, history, tourism, and cultural heritage. For instance, the correlation between the "Religion" and "PASOS" clusters indicates that studies from one domain frequently cite and influence those from another, thereby establishing connections between religious themes and tourism/cultural heritage. The emergence of these clusters may signify an escalating interest in these methodologies, potentially reflecting shifts in the manner in which the *Camino de Santiago* is being studied.

Figure 4 also represents the visualisation of the network that maps the connection between different authors with relationships and academic publications or research collaborations. Each cluster represents the most cited authors, and the links between them suggest collaborations, co-authorships, or similar research topics. The distribution and colour of the clusters indicate clusters of authors with more frequent connections to each other.

The central clusters group around the authors, Lopez Lucrezia and Lois-González, and form a cluster highlighted on the left, with several studies related

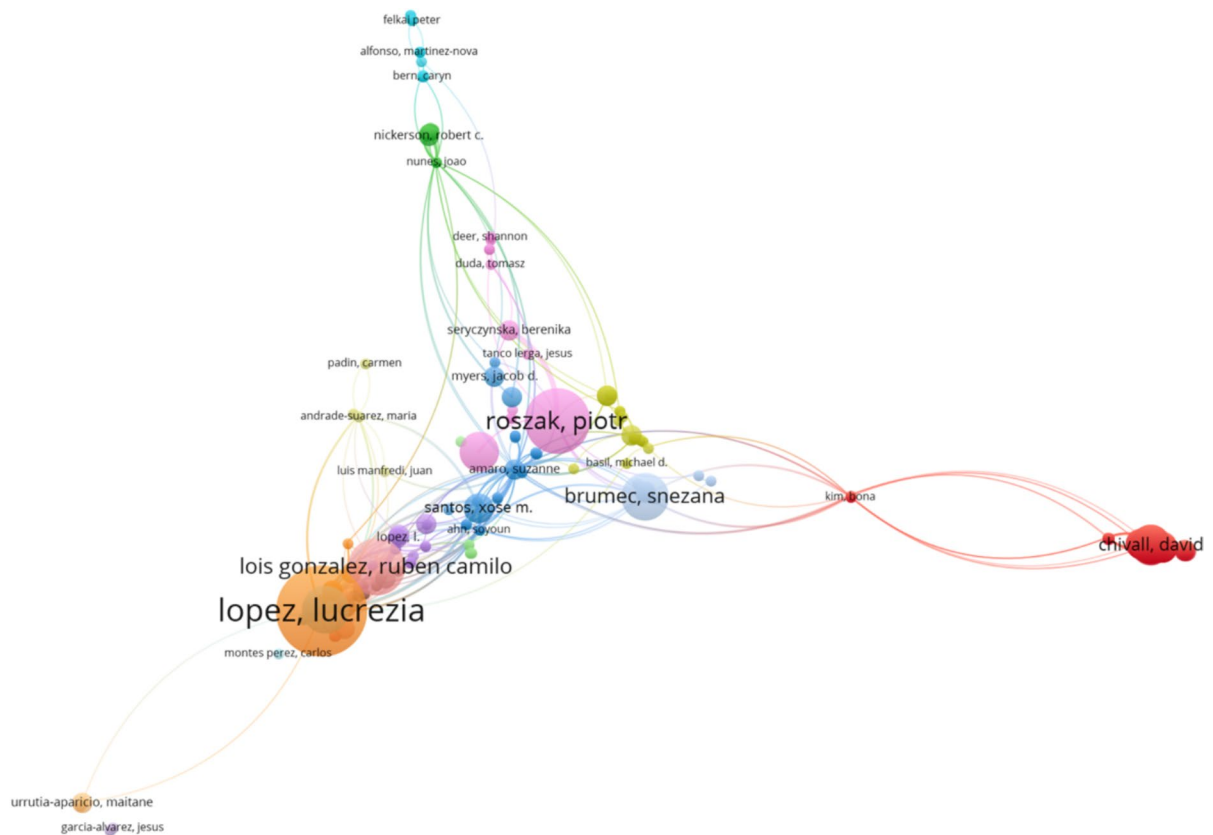


Fig. 4 Most cited authors. *Source* Authors' own elaboration, based on research conducted on 01/09/2024

to the *Camino de Santiago* in tourism, religion, social sciences and arts and humanities. Roszak and Brumec, are in a central cluster with diverse connections, as well as Santos and Amaro, revealing a dense network of co-authorships or collaborations on topics related to religion or social sciences.

The way in which the clusters are organized suggests the existence of different approaches to the study of the *Camino de Santiago*. Some authors focus more on tourism (e.g., Lopez et al., 2017; Santos, 2022; Santos & Lois, 2011); others on religion and spirituality (e.g., Brumec, 2022; Brumec et al., 2023; Roszak & Mróz, 2024) and some bridge these domains (e.g., Lois-González & Santos, 2014; Lois-González et al., 2015). Dense clusters suggest areas where there is strong convergence of research and, consequently, greater production and citation of studies (Religion and Tourism). This is important for understanding academic trends and identifying potential gaps or opportunities for new research. The

co-authorship network highlights authors who collaborate frequently and have the ability to bring together different perspectives and approaches, enriching the quality and scope of the studies carried out.

In Fig. 5, the network map presents the most cited documents. The proximity between the clusters and the different core highlights groups of publications that bring together themes or that are frequently referenced. The most cited document (497 citations in 3/12/2024) corresponds to the author Murray and Graham (1997), which appears in many groups. This can be explained because it was the first published study and is the first open access study available linked to tourism and religion on the *Camino de Santiago*. The second document was by Husemann & Eckhardt (2019). Katharina C. Husemann is a Reader in Marketing at King's Business School (King's College London). Her research programme is embedded in the field of consumer culture theory and aims at exploring

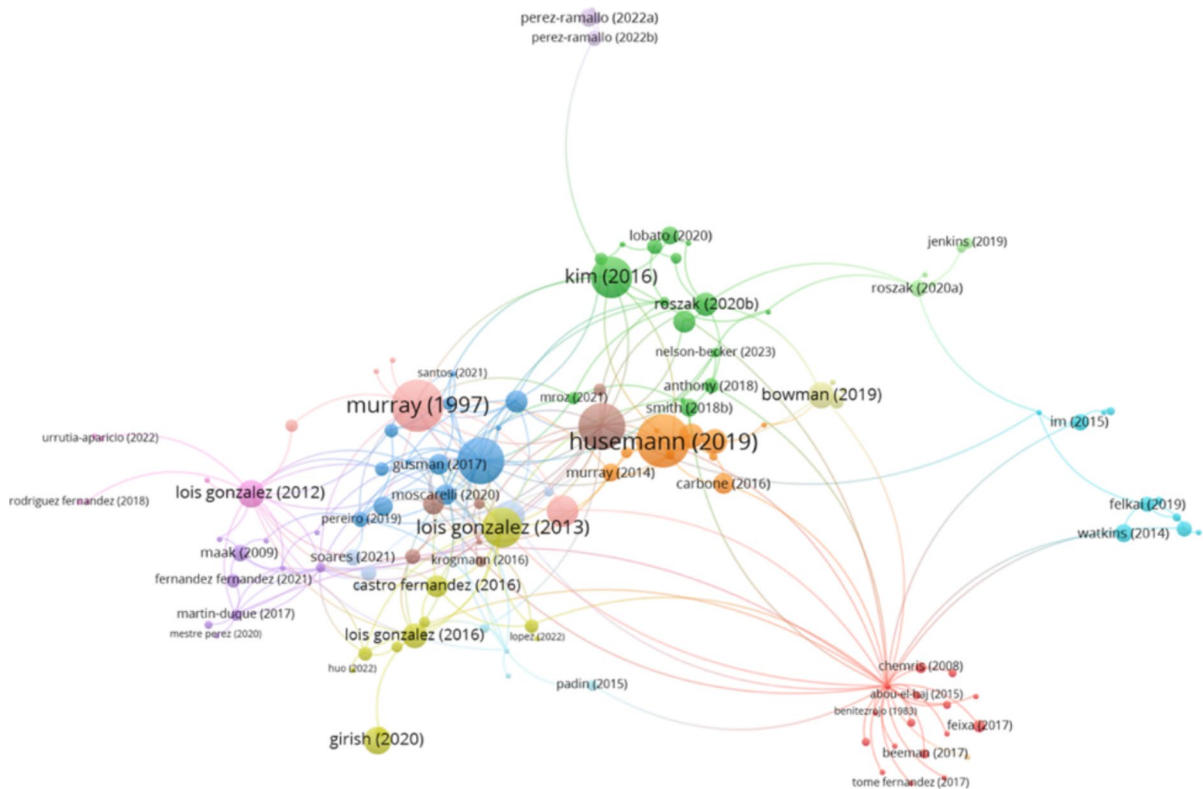


Fig. 5 Most cited documents. *Source* Authors' own elaboration, based on research conducted on 01/09/2024

consumer experiences of, or consumer responses to, a globalised, accelerated, and digitalised consumer culture that now characterises contemporary Western societies. Husemann provided an ethnographic study of the pilgrimage of the *Camino de Santiago* in Spain and introduced the concept of consumer slowdown. This study had 184 citations in 3/12/2024, and is a central cluster connecting to many other authors and publications.

Other central authors include Lois-González & López (2012), Lois-González (2013) and Lois-González et al. (2016) who appears several times, indicating a productive academic production. Kim (2016) highlights the importance of the *Camino* in themes that are interrelated with the other most cited authors, for example, Lois-González (2013), Husemann & Eckhardt (2019), Murray and Graham (1997), and Santos (2002)

Publications by theme, main authors and techniques used

For each study analysed a specific theme was assigned (Table 5). The most discussed theme concerns "The History of the *Camino de Santiago* over the Centuries" (27.4%). It indicates a strong interest in the historical and cultural evolution of the *Camino*. It is followed by "*Camino de Santiago*: a journey of cultural, religious, historical and landscape tourism" (26.5%), revealing recognition of the *Camino* as a relevant destination for cultural, religious and heritage tourism. Together these two themes represent 54% of the published papers.

The theme "Exploring the motivations, profiles, experiences and satisfaction of pilgrims on the *Camino de Santiago*" (25.9%) focuses on the

Table 5 Publications by theme and main authors

Theme	N	%	Main authors
The History of the Camino de Santiago through the Centuries	87	27.4	De la Cuesta (2003), Las Heras (2006), Schrire (2006), García (2008), Kessler et al. (2009), Egan (2010), Lois-González and López (2012), Lois-González (2013), Lois-González et al. (2015), Sánchez-Carretero (2015), Santos (2016), Roszak (2019), Senra (2021), Santoro (2023)
Camino de Santiago: a day of cultural, religious, historical and landscape tourism	84	26.5	Murray and Graham (1997), Gonzalo (2006), Solla (2006), Maak (2009), Gonzalo et al. (2012), Murray (2014), Lois-González and Santos (2015), Lopez et al. (2015), Pérez (2015), Franklin (2016), Gusman et al. (2019), Guilarte and González (2018), López et al. (2019), Moscarelli (2021), Mróz (2023)
Exploring the motivations, profiles, experiences and satisfaction of pilgrims on the Camino de Santiago	82	25.9	Ledo et al. (2007), Lourens (2007), Gallegos et al. (2008), Miaux (2008), Kim et al. (2016), Santos & Trillo-Santamaría (2017), Amaro et al. (2018), Fernández (2018), Pereiro (2019), Basil (2020), Roszak (2020), Lopez (2020), Heiser (2021), Navarrete et al. (2023)
Experiences and perceptions of students and teachers about the Camino	28	8.8	Havard (2017), Sienkewicz (2018), Braun (2021), Ferreiro et al. (2022), Pérez-Guilarte (2022)
Use of technologies in the dissemination and management of the Camino de Santiago	14	4.4	Nickerson et al. (2014), Rodríguez et al. (2015), López del Ramo & García Marco (2018), Manfredi (2019), Lois-González and Somoza-Medina (2022), Moscarelli (2023), Ortega (2023)
Women and pilgrimage in the Middle Ages	9	2.8	Tato Fontañá (2016), Hetherington (2018), Lois-González & Somoza-Medina (2022), Signori (2022), Smith (2022)
The impacts of COVID-19 on the Camino de Santiago	8	2.5	Gehrke (2021), Lopez and Lois González (2021), Roszak and Huzarek (2022), Otón et al. (2023), Rodríguez-Vázquez et al. (2023)
Climate Change and the Camino de Santiago	2	0.6	Doi (2011), Chias and Abad (2014)
Health, preparations and physical activities: the Case of the Camino de Santiago	1	0.3	Gallegos et al. (2007), Rubio and Sosa (2008), Harris and Wolf (2013), Siegel et al. (2015), Smith (2018), Harris (2019), Esther et al. (2022), Meuffels et al. (2023)
Interaction between residents and pilgrims	1	0.3	Fernández et al. (2014)
Tattoos after pilgrimage	1	0.3	Kurrat and Heiser (2020)
Total	317	100.0	-

Source Authors' own elaboration, based on research conducted on 01/09/2024

experiences of pilgrims showing a concern with subjectivity and personal experience.

Additionally, "Experiences and perceptions of students and teachers about the Camino" (8.8%) reflects an interest in educational perceptions about the *Camino*. The "Use of technologies in the dissemination and management of the *Camino de Santiago*" (4.4%), highlights the interest in innovations and in the modernisation of the promotion and management of the *Camino*. Other topics such as "Climate Change and the *Camino de Santiago*" (0.6%) and "Interaction between residents and pilgrims" (0.3%) indicate less comprehensive research areas, possibly because they

are emerging topics, wherein analysis began in the last decade.

Table 6 presents a detailed analysis of the techniques used, indicating the number of occurrences for each technique and the respective percentages in relation to the total number of studies analysed ($n=317$). These data highlight the wide methodological variety used by the authors, providing a comprehensive view of the preferences and techniques adopted in different studies.

Among the most commonly used techniques, "secondary data", stands out as the predominant technique, with 156 occurrences (49.2%). It reveals a

Table 6 Main publications by research technique used

Research Technique	N	%
Secondary Data	156	49.2
Questionnaire survey	38	12.0
Interview	32	10.1
Not Applicable	23	7.3
Secondary data and participant observation	21	6.6
Interview and participant observation survey	13	4.1
Direct observation	8	2.5
Focus group	5	1.6
Participant observation	5	1.6
Content analysis	3	0.9
Secondary data and direct observation	3	0.9
Direct observation and unstructured interviews	3	0.9
Other techniques	3	0.9
Interview and questionnaire survey	2	0.6
Conversations	2	0.6
Total	317	100.0

Source Authors' own elaboration, based on research conducted on 01/09/2024

strong dependence on existing information and highlights the relevance of secondary sources in these studies, i.e., many of these studies chose to explore information already available, rather than generate primary data.

The "questionnaire survey" represents 12.0% of the techniques used, in which researchers obtain direct information from participants, using questionnaires as an essential tool to obtain opinions, perceptions and quantitative data. This technique is a primary source, as well as the "Interview" technique, which corresponds to 10.1%.

The "not applicable" technique represented 7.3%, applied to studies where the researchers did not mention which technique was used.

We have other combined techniques, such as "secondary data and participant observation" (6.6%) and the "survey by interview and participant observation" (4.1%), declaring the interest of researchers in enriching their analyses, ensuring greater rigour in the study.

Other less frequent techniques, such as "direct observation" (2.5%), "focus group" and "participant observation" (1.6%) demonstrated their importance in the context of these studies, especially those that require qualitative and quantitative analyses.

Table 7 Publications by techniques used in the analysis

Analysis technique used	N	%
Content analysis	196	61.8
Descriptive analysis	43	13.6
Descriptive statistical analysis	42	13.2
Not applicable	15	4.8
Unavailable	5	1.6
Others	5	1.6
T-tests	4	1.3
Isotope analysis	3	0.9
Questionnaire Mindfulness Attention Awareness Scale (MAAS)	2	0.6
Factor analysis	2	0.6
Total	317	100.0

Source Authors' own elaboration, based on research conducted on 01/09/2024

Table 7 presents data on the analytic techniques used in a set of surveys, with the number of occurrences and the respective percentages in relation to the total of 317 cases.

Content analysis (n=196—61.8%) is the most common technique, suggesting a predominance of the use of content analysis to interpret qualitative or textual data. In these cases, the studies typically employed to systematically categorize and identify patterns in qualitative data sources, such as interview transcripts, documents, or media.

"Descriptive analysis" (13.6%) and "descriptive statistical analysis" (13.2%), both of which are widely used, indicate that authors also focus on describing and summarising qualitative and quantitative data for their research. "Descriptive analysis" refers to non-numerical, narrative-based summaries of qualitative findings, often used to organize and present data in an accessible manner. In contrast, "descriptive statistical analysis" involves the application of numerical summaries, such as means, frequencies, and standard deviations, to quantify trends and distributions in datasets. This difference is similar to other research, such as Nunkoo et al. (2013), Lopes et al. (2021), and Faria et al. (2024).

"Not applicable" (4.8%) indicates that, in some cases, the analytic techniques were not applied, which may be relevant to demonstrate certain limitations in some studies. Non-evaluated (1.6%) correspond to studies that do not present the techniques used.

Statistical techniques such as “questionnaire mindfulness attention awareness scale (MAAS)” (0.6%) and “factor analysis” (0.6%) are less frequent, indicating a lesser focus on advanced statistical analysis compared to content analysis.

Other techniques such as “SWOT analysis”, “bibliometric analysis”, “structural equation modelling”, “regression analysis” and “T-tests and Regression Analysis”, constitute the remaining 1.6%, with 1% for each technique. The scarcity of primary data may be attributed to the fact that qualitative methods, such as content analysis and interviews, necessitate a protracted process of data collection, transcription, coding, and interpretation. These methods may also require the utilization of specialized tools for the interpretation of the data. Conversely, there is a prevailing tendency to prioritize studies that center on the historical, religious, and spiritual dimensions of the route, along with a critical examination of tourist demand for Santiago de Compostela.

Discussion and main conclusions

The *Camino de Santiago*, as one of the world’s oldest and most representative pilgrimage routes, continues to be the object of study in various fields of knowledge. This research presented bibliometric indicators that make it possible to evaluate the productivity of authors, publications and sources. The bibliometric analysis permitted study of three databases (Scopus, Web of Science and PubMed), and to facilitate better interpretation, the VOSviewer tool was used to create network maps. By carrying out this bibliometric analysis, important studies have been revealed and the existence of a few studies related to the *Camino de Santiago* have been highlighted, since the first remote open access study took place in 1997. After 2013 scientific interest in this topic grew at a faster rate, in particular to describe the history and characteristics of the *Camino* (54% of the published papers).

The data obtained reveals a significant concentration of studies in the areas of arts and humanities (27.1%), followed by social sciences (24.4%), and tourism (15.2%). These results reflect the interdisciplinary richness of the topic, with a predominant focus on the cultural, historical and social aspects of the *Camino*. However, it is evident that there is a lack of studies that address pilgrims’ experiences,

interaction between pilgrims and residents, pilgrim mobility and analysis of the digital narratives generated on social networks. There are also gaps in studies focused on emerging issues, such as climate change. Further research is required about the digital experiences of pilgrims and the role of the *Camino* in promoting their mental health and well-being.

Another critical point identified was the limited number of studies accessible or with detailed abstracts, which are linked to the history of the *Camino de Santiago* and were published between 1934 and 1997. Regarding the bibliometric studies related to the *Camino de Santiago*, three studies were considered, indicating a lack of systematic understanding of the literature.

In conclusion, this study provides a comprehensive overview of studies related to the *Camino de Santiago*, highlighting its importance as a topic of interdisciplinary research. In addition, the use of multiple databases and a detailed methodological approach to the current state of the literature, has allowed us to observe the following points: on the first point, the journals “PASOS”, “Religion” and “Cuaderno de Turismo”, were those that presented the largest number of publications with studies on this topic. On the second point, the authors Lopez Lucrezia, Lois-González, Roszak, Brumec, Santos and Amaro, had a greater contribution in studies related to the *Camino de Santiago*. On the third point, the most cited studies correspond to the authors Husemann & Eckhardt (2019), Lois-González, Kim et al. (2016), Murray and Graham (1997), and Santos (2002, 2016, 2022).

In addition to the creation of network maps, this study includes a set of analytic techniques that have made it possible to obtain a more detailed and in-depth analysis. In terms of research techniques, the intensive use of content analysis stands out, emphasising the relevance of qualitative interpretation of data. On the other hand, statistical analysis also plays a key role in these studies, contributing with tools and methods that facilitate quantification of data. In most cases, the authors have used secondary data in their application. The central themes are related to the history of the *Camino*, from the Middle Ages to the present, to tourism and to contemporary, personal and social experience.

This reveals the importance of implementing studies based on primary data in order to enable a better understanding of pilgrims’ profile and motivations.

Also, in the digitalisation era, particularly, in Europe, there is a shortage of studies which explore the role of technology in enhancing knowledge about the territory, inclusion and pilgrims' access and experience improvements. In the same line, the issue of Climate Change has been ignored in most studies, despite the importance of achieving a fuller understanding of its impacts or attaining carbon neutrality. Since pilgrims use sustainable mobility—namely walking or cycling—to carry out their journey, it would be interesting to have some case studies to measure this dimension of the *Camino*.

Research priorities and gaps

A bibliometric analysis of research on the Camino de Santiago has identified several gaps in knowledge that necessitate further investigation. Two key themes that have received scant attention are the interaction between residents and pilgrims (0.3% of studies) and the impact of climate change on the Camino (0.6% of studies). These findings indicate a potential discrepancy between the research priorities established and the evolving dynamics of the pilgrimage.

Subsequent studies should concentrate on the interactions between pilgrims and residents, taking into account elements such as the socio-economic ramifications of tourism on local communities, the evolution of residents' perceptions regarding the increasing number of pilgrims, and the potential conflicts or advantages stemming from these interactions. A comprehensive understanding of these dynamics could facilitate more sustainable tourism planning and enhanced community engagement.

Moreover, the field of Camino research has thus far overlooked the significant implications of climate change. As extreme weather events become more prevalent, it is imperative that studies assess their impact on pilgrimage experiences, infrastructure resilience, and the necessary adaptations. This encompasses the evaluation of alterations in seasonal travel patterns, the risks associated with heat stress, and the potential for sustainability measures to mitigate adverse environmental effects.

Further research could also benefit from an expanded focus on mental health and well-being among pilgrims, particularly in relation to their motivations, spiritual experiences, and the long-term

effects of undertaking the journey. A more comprehensive approach that incorporates digital narratives, such as social media discussions and online pilgrim communities, could yield valuable insights into how the Camino experience is perceived and shared in the digital age.

Main limitations

It is imperative to acknowledge the limitations of this study. A notable challenge was the limited accessibility of certain studies, particularly those published prior to 1997. A substantial proportion of older works were found to be deficient in terms of providing detailed abstracts or making the full text available. This deficiency imposed limitations on the extent of the bibliometric analysis that could be conducted.

A further limitation pertains to the database selection. Although Scopus, Web of Science, and PubMed were utilized, these sources primarily index high-impact journals, potentially overlooking valuable studies published in regional, institutional, or alternative databases. Future research could enhance bibliometric coverage by incorporating databases such as Dialnet, Redalyc, SciELO, or national repositories that archive research in Spanish, Portuguese, and French—languages strongly associated with the Camino.

In order to address the aforementioned challenges, it is essential for researchers to collaborate with regional institutions, including Xunta de Galicia, CCDR-N, Oficina del Peregrino Santiago, and Turismo do Porto e Norte de Portugal. The establishment of partnerships with these organizations could facilitate access to local studies, gray literature, and institutional reports, thereby enriching the current understanding of underexplored topics.

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