

Leading trends in mass housing research in Türkiye and worldwide

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Abstract

The concept of mass housing is a housing production model that emerged due to the rapid increase in urbanization. Mass housing has gained importance in the literature on architecture and urban planning because of the vast areas it covers in cities and the large population it serves. This study conducted a bibliometric analysis of publications on mass housing. The Web of Science (WoS) and Scopus databases were searched to obtain numerical data on the subject. Bibliographic maps of the publications from the WoS database were generated using the VOSviewer software. The mapping included country, journal activity, keyword, and author analyses. The finding that Türkiye has the highest number of publications and citations in the country analysis indicates the importance and relevance of the subject for Türkiye. Publication analysis by year revealed an increasing trend in publications in this field in recent years. This study is expected to serve as a valuable reference for researchers in mass housing research and future studies.

Keywords: Mass housing, Housing, Bibliometric analysis, Housing policy, Türkiye

Extended Abstract

Introduction: The migration that emerged with the Industrial Revolution caught cities unprepared, making housing a fundamental problem. Industrialization, economic and social changes in urban areas lead to the differentiation of urban structures and the diversification of housing production models to meet housing needs. This evolution of housing production models has led to various housing typologies. Mass housing, a subject that is particularly associated with social housing, has become the most important of these production methods. The concept of mass housing has become a focal point in architecture and urban planning literature owing to its significant coverage in cities and the population it accommodates. In this study, we conducted a bibliometric analysis of publications on public housing. The review of the literature on public housing, both globally and in Turkey, reveals a wide variety of studies. Especially in recent years, the increasing weight in literature makes the subject more important.

Purpose and scope: Research conducted in the context of public housing has focused on several topics. An important area of focus lies in understanding the ongoing mass housing issue and exploring the specific aspects that international and domestic studies have concentrated on. This study aims to ascertain the primary themes within the public housing discourse, evaluate the prominence of authors and journals in this field, and provide a comprehensive analysis of the current literature. In particular, the areas in which the existing literature is concentrated, current discourses and predictions for the future are important. The article, which analyzes studies that evaluate public housing from many different perspectives, aims to be an important reference source for researchers.

Method: Bibliometric analysis allows the screening and review of scientific literature, providing information about the current status and future potential of the relevant subject. Bibliometrics, a term coined by Alan Pritchard in the late 1960s, is defined as “the application of mathematical and statistical methods to books and other means of communication.” Bibliometrics is based on the analysis of printed material, and today, it has become a branch of science used in almost every field (Roemer & Borhardt, 2015: 28). Marsilio ao., (2011: 765) defined bibliometrics as attempts to measure the structure of a research topic, starting from mathematical and statistical analysis of the patterns that emerge in the use and dissemination of publications. Bibliometric analyses use scientific mapping methods to visualize similarities or differences between data collected from one or more sources. It also provides information on many topics, such as citations, co-authorship, bibliographic links, journal activities, and source data (Sajovic ao., 2018: 267). Bibliometric analyses are used in every field, and their importance is increasing because they can provide data and visualization in

many different fields. Within the scope of the study, the Web of Science (WoS) and Scopus databases were searched, and numerical data on the subject were obtained. Then, bibliographic maps of the publications belonging to the WoS database were created with the software tool named VOSviewer.

Findings and conclusion: The study included mapping, country analysis, journal activity analysis, keyword analysis, and author analysis. Initially, we examined the types of publications in the WoS and Scopus databases, along with their distribution by year. It was noted that the publications predominantly focused on articles, with a recent uptick in their number. Regarding country activity, Türkiye and the United States are at the forefront compared to other countries in terms of both the quantity and number of citations. Keyword analysis highlighted *mass housing*, *housing*, *architecture*, *urban planning*, *housing policy*, and *sustainability* as the most frequently used keywords. In the journal activity analysis, *Building and Environment*, *Automation in Construction*, *Environment and Planning B: Planning and Design*, *Landscape*, and *Urban Planning* emerged as the most active journals in terms of both article numbers and citations. Additionally, the analysis of publications over the years has revealed a growing trend in this field. A comprehensive review of the mass housing literature is expected to provide important insights for researchers, planners, and practitioners alike. This study is anticipated to serve as a crucial reference for researchers aiding in understanding the current situation and future predictions. This study is significant for planners and practitioners in addressing various issues, such as domestic and international study statuses, key focus areas, and essential parameters for the design process. Incorporating theoretical and practical knowledge regarding the planning, design, implementation, and utilization of mass housing areas is vital for creating livable environments, especially on an urban scale with substantial populations. The comprehensive perspective provided by this study is expected to significantly contribute to the overall process.

Keywords: Mass housing, Housing, Bibliometric analysis, Housing policy, Türkiye

INTRODUCTION

Shelter, the most basic human need, brings us to the concept of *housing* as an architectural product. Researchers have defined the concept of housing using various approaches. It is possible to say that such a narrow definition of the concept, defined as “the house, apartment, etc., in which people live” in the dictionary definition, is quite shallow (TDK, n.d.). In particular, Ersoy’s (2002: 30) definition of housing as “defining one’s own life and way of being in the world; encompassing all of the physical, social and psychological relationships that humans maintain with space throughout their lives” highlights an important point. Arcan and Evci added the need for security to the characteristics of housing by defining it as a type of structure that enables people to live in security and meet the need for shelter (Arcan & Evci, 1999). Rapoport (1977), on the other hand, stated that the housing establishes an important relationship with its surroundings and this relationship transforms the housing into a living organism. This living structure is affected not only by its inhabitants but also by the environment. Lawrence (1987) sees housing and its environment as fundamental concepts in the context of the livable spaces it creates in terms of meeting the needs of individuals, achieving personal satisfaction, and improving the general health of individuals and societies. When housing is evaluated from another perspective, the importance of the connection it establishes with the city on a higher scale becomes apparent. Housing, which occupies the largest and most important area among the building typologies that make up the city worldwide, is affected by all the changes that occur in the city. Housing is affected by issues such as the speed of urbanization, migration, population growth, and physical response to urbanization. Socioeconomic structure approaches of decision makers and economic situation changes in social structure affect housing. In particular, rapid urbanization has led to the emergence of new housing typologies. At this point, the concept of *mass housing*, which constitutes the main focus of this study, has rapidly taken place in cities and played an active role in changing their appearance and structure. However, there are important details regarding this point. In the literature, mass and social housing are often used interchangeably. However, the difference between these two concepts is that “social housing defines housing for the lower-middle class, produced without profit as an alternative to market production, while mass housing corresponds to a commercial concept” (Gülsün, 2021: 32). Since the concept of mass housing constitutes the main fiction of this study, it is important to know the starting point and current status of the concept.

The mass production of housing, first seen in England and then in Belgium, Germany, and France, emerged because of major changes in the economic structure. As a result of the rapid migration from rural to urban areas that occurred with the Industrial Revolution, different mass housing typologies such as row houses, back-to-back houses, single or twin apartment buildings, and blocks with inner courtyards were used to meet housing

needs (Özsoy, 2011). Housing produced, especially for the working class, whose living conditions were rapidly becoming inadequate, led to a change in the face of cities. The first examples of mass housing in Türkiye were Beşiktaş Akaretler, built for palace servants, and the Harikzedegan (Tayyare) Apartments built afterwards are among the early examples of mass housing. Especially after the 1950s, the emergence of a serious housing problem for lower-middle-income groups led to the acceleration of housing cooperatives, build-and-sell production, and mass housing production. In this context, both state and private loans were used for production. However, the establishment of the Housing Development Administration (TOKİ) in 1984 was particularly important for mass housing. Until 2002, the administration had produced approximately ninety thousand housing units. In 2002, its power rapidly expanded, and approximately one million houses have been produced to date.

Mass housing has a special place in the city because of the area it occupies and the effect of this area in the third dimension. In addition, the volume effect resulting from the combination of these two factors makes mass housing more visible. The areas located in the city lead to changes in the urban form, which is one of the most important reasons for the importance of the issue (Ünlü, 2015). Studies in the context of mass housing have focused on many topics. When the studies conducted are examined, it is seen that evaluations have been made on many different issues, such as post-use evaluation, user satisfaction, quality, density, privacy, cost, sustainability, and energy-efficient building design. Additionally, owing to the increasing needs and desires in housing design, the topics of flexibility and adaptability also form the subjects of mass housing research. Another important concept is density. In particular, decisions regarding land use and research on different spatial analyses have emerged as important research topics.

Housing is a concept that places a human at its center and is influenced by all changes experienced by humans. This means that mass housing is affected by societal, economic, social, and psychological factors. Many disciplines have examined housing and mass housing from different perspectives. The subject's wide scope leads to the formation of research questions in many fields, such as spatial, sociological, and design. Current studies have also conducted research in many fields, such as applied science, health sciences, and social sciences. This study examines this issue in the context of the architecture discipline. The issue of mass housing remains topical, and it is an important subject of study in which aspects of this issue have been examined, especially in areas where foreign and domestic studies have been conducted. Within the scope of this study, a bibliometric analysis method is used to evaluate the concept of mass housing. The analyses were evaluated, and assessments were made on the number and types of publications on the concept of mass housing, fields of study on the subject, countries in which publications are concentrated, and author analysis.

LITERATURE REVIEW

Bibliometrics, a term coined by Alan Pritchard in the late 1960s, is “the application of mathematical and statistical methods to books and other means of communication.” Bibliometrics is based on the analysis of printed material, and today, it has become a branch of science used in almost every field (Roemer & Borchardt, 2015: 28). Marsilio ao. (2011: 765) defined bibliometrics as attempts to measure the structure of a research topic, starting from mathematical and statistical analysis of the patterns that emerge in the use and dissemination of publications. Bibliometric analyses use scientific mapping methods to visualize similarities or differences between the data collected from one or more sources. It also provides information on many topics such as citations, co-authorship, bibliographic links, journal activities, and source data (Sajovic ao., 2018: 267). Bibliometric analyses are used in every field and their importance is increasing as they can provide data and visualization in many different fields. In recent years, the field of architecture has become a growing field of study. In this context, it is important to examine studies in which bibliometric analyses are used in the field of architecture to establish the structure of the study and ensure that the mapping can serve the right purpose.

In their study, Cao ao. (2023: 1) examined the use of the model called “public-private-partnership (PPP),” which is widely used in public services and infrastructure projects, in the WoS database. Along with bibliographic analysis, keyword mapping, and cluster analysis, seven studies also included future predictions with PPP. Öztürk Akbıyık and Arslan Selçuk’s (2023: 347) study on Building Information Modeling (BIM)

literature was conducted to examine how existing research has developed and diversified in the discipline of architecture. The research is important in terms of being a study that deals with the BIM literature at the architectural scale. In this study, analysis was conducted on many parameters, such as keywords, authors, journals, institutions, and citation rates, and bibliographic maps were created. This study, which aims to turn the analysis of existing data into a knowledge base for researchers and practitioners, is considered important as a resource for future studies. Guo ao. (2019: 1) article on bibliometric analysis of smart cities is an important data pool. In research conducted using the WoS database, keywords, co-authorship, country affiliations of authors, and mapping of journals were made about smart cities, which has become increasingly more extensive in recent years. This study aimed to analyze the available data and make it a reference source for researchers.

Doğruer's (2022: 1) study on the bibliometric analysis of Anatolian Local Architecture covers publications in the WoS database. In his analysis and mapping of 95 publications, he underlined that this is the first time a bibliometric study has been conducted on this subject. This study, which states that Türkiye is the most active country on the subject, aims to encourage other countries to research this issue. The number of studies that have shown an increasing trend in recent years is considered a development indicator that the issue has gained importance. Özeren and Dinç Kalaycı (2022: 114) used publications in the WoS and Scopus databases in their research, which focused on architectural design studios. In this study, the mapping and performance analyses were performed using VOSviewer and SankeyMATIC software. Mapping the publications in both databases, including document citation, number of institution publications, journal activity, and periodical distribution, was carried out. This study suggested that information technologies, which have increased rapidly, especially in recent years, could also be used in studio education, and it was stated that there may be updates on this issue over time. Köseoğlu and Burkut (2023: 155) used the WoS database for their bibliometric analysis of the relationship between urban morphology and health. Within the scope of the research, 147 publications were identified, and keyword mapping and word cloud visualization of urban morphology were performed. The same researchers have also published articles on bibliometric analysis and mapping of publications on children in the field of architecture. Within the scope of this article, 747 publications on children were published in the WoS database and visualized through country, journal activity, and keyword analyses (Burkut & Köseoğlu, 2022: 511). Alkılıç and Palabıyık (2023: 2016) used the WoS database in their bibliometric analysis of decision support system methods for site selection. The words "decision support system" and "site selection" were identified, and 203 publications were analyzed and mapped. The study, in which many analyses, such as publication and citation analysis by years and the number of publications of countries, are made, is an important data source in terms of determining the publications to be utilized to determine decision support systems.

Kahraman (2022: 510), in his research on bibliometric analysis of studies on urbanization and cities in Türkiye, used the WoS database and examined 2370 studies. Bibliometric analyses by years, countries, journals, and authors are analyzed with many maps such as co-authors, keywords, and co-citations. In particular, this study is a detailed reference source on urbanization practices in Türkiye, as it has a large volume of publications; in particular, the study is a detailed reference source on urbanization practices in Türkiye, as it has a large volume of publications and provides important data such as journals, universities, and keyword detection. Aydın ao. (2022: 1) focused on the bibliometric analysis of theses in the fields of construction and building physics within the Department of Architecture in Türkiye between 2000-2018. Using the data retrieved from the High Education Board - National Thesis Center, 850 theses were examined, and a detailed examination was conducted on the language, year, city, university, title, method, and keywords of the theses. In particular, this study is important in the field of architectural education and reveals the actuality of the subject by showing an increase in studies in the field of construction and building physics.

METHODOLOGY

This study presents a bibliometric analysis and bibliographic mapping of publications on mass housing and uses data accessed from the WoS database between 1975-2022. Tools such as Biblioshiny, Bibliometrics, and VOSviewer are frequently used for bibliometric analyses. The VOSviewer software selected for this study has been frequently used in recent years. According to its description, VOSviewer is a software tool for creating and visualizing bibliometric networks. It also has a text-mining function that creates and visualizes networks

of occurrences of important terms in the scientific literature (VOSviewer, n.d). WoS is a database of international articles, conference papers, books, theses, preprints, and patents that can be accessed worldwide (Web of Science, n.d.). The Scopus database is another widely used data source that contains more than 90 million documents (Scopus, n.d.).

The data collection process was carried out on 20.09.2023. In the field of architecture, 522 publications on mass housing were found in the WoS database, and 703 publications were found in the Scopus database. The findings obtained from the research were interpreted in charts. Bibliometric analysis was evaluated for both the WoS and Scopus databases separately, while mapping was performed only for the WoS database. The structural diagram created within the scope of this study is shown in Figure 1.

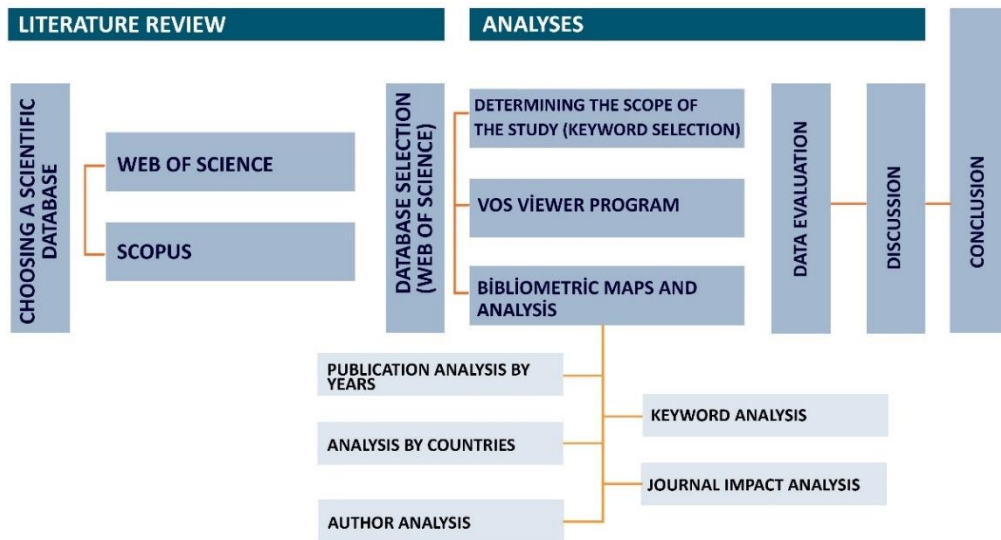


Figure 1. Article structure scheme

FINDINGS AND RESULTS

Within the scope of the research, WoS and Scopus databases were searched in English using titles, abstracts, and keyword criteria. The WoS database yielded 522 publications between 1975-2023, while the Scopus database yielded 703 publications between 1980-2023. Figure 2 shows that the number of studies has increased notably, especially since 2010.

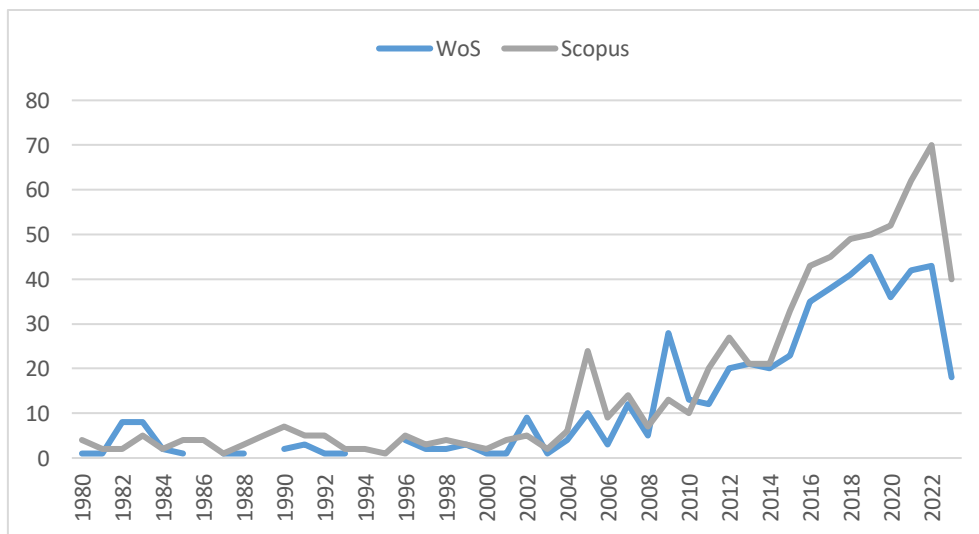


Figure 2. Distribution of publications in WoS-Scopus Databases by years

First, the document types of the studies were analyzed. As shown in Figure 3, both databases focus primarily on articles, followed by conference papers, and book chapters. Analyses were conducted in the areas in which the publications were focused. At this point, differences were noted in the research areas of the WoS and Scopus databases. As demonstrated in Table 3, while the WoS database emphasizes architecture, Scopus contains more publications in engineering and social sciences.

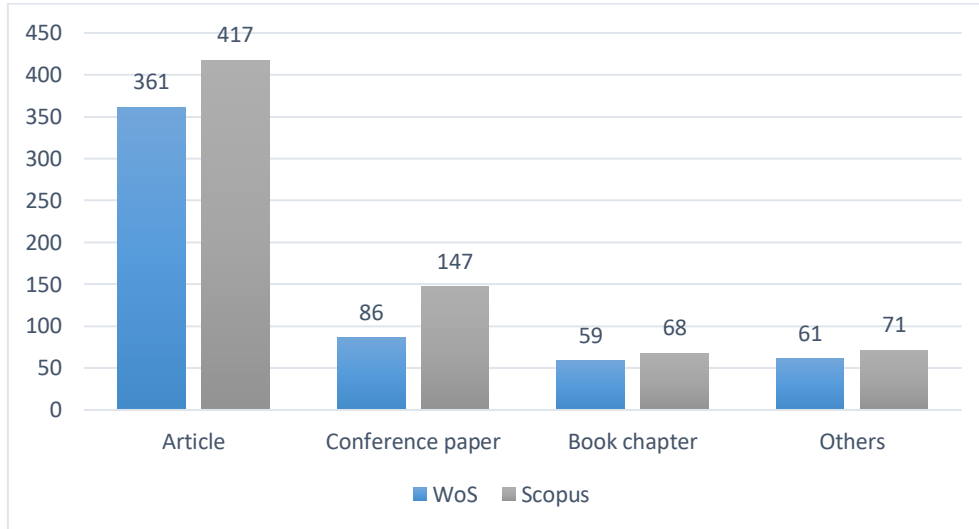


Figure 3. Document types according to WoS and Scopus databases

When analyses were conducted on the areas in which publications were concentrated, differences were found in the research areas listed in the WoS and Scopus databases. As shown in Figure 4, while the WoS database focuses more on architecture, Scopus has more publications in the fields of engineering and social sciences.

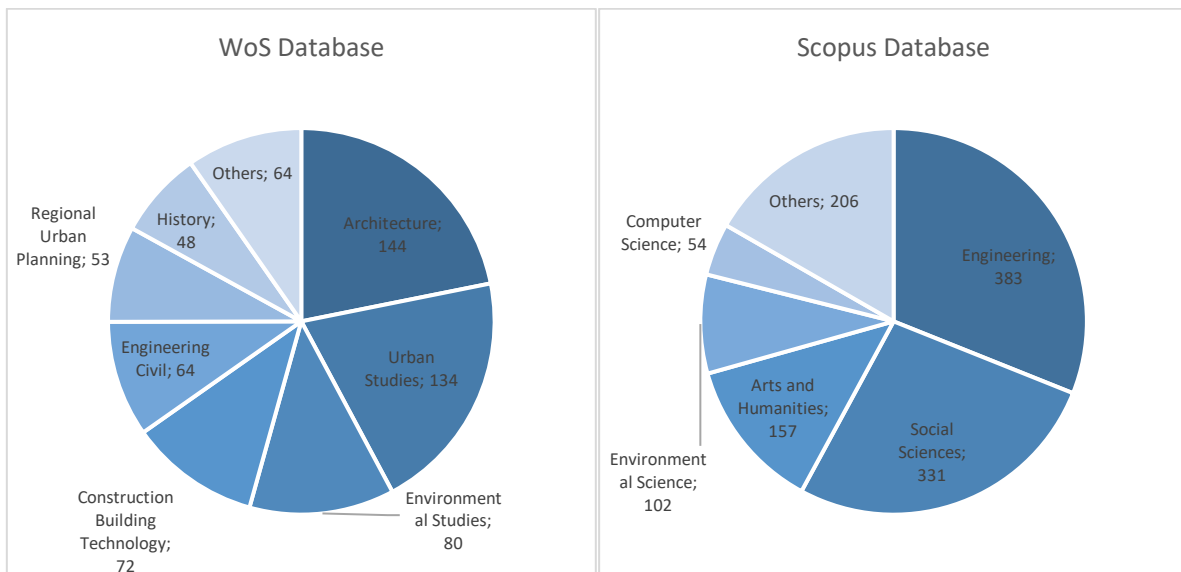


Figure 4. Disciplinary distribution of publications in WoS and Scopus databases

Country Activity Analysis and Bibliographic Map

The distribution of publications by country is an important issue that should be explored. As shown in Table 1, Türkiye, the United States, and the United Kingdom produced the most number of publications in the WoS database. Given that the first examples of mass housing were in England, the ongoing relevance and study of this topic highlights its importance.

Table 1. Numerical distribution of publications by country and number of citations

Country	Number of articles	Number of citations	Total connection power	Country	Number of articles	Number of citations	Total connection power
Türkiye	77	586	23	Sweden	6	21	4
USA	51	546	31	New Zealand	6	9	4
United Kingdom	46	308	17	Finland	5	63	2
The Netherlands	23	94	13	Slovenia	5	34	2
China	22	174	10	Chile	5	28	0
İran	21	168	16	Romania	5	20	1
Germany	21	43	8	Algeria	4	35	2
India	20	65	3	Ghana	4	31	4
Russia	19	65	0	Brasil	4	22	4
Spain	14	55	1	Esthonia	4	22	7
Malaysia	12	62	5	Japan	4	8	0
Slovakia	11	26	0	Switzerland	4	8	0
South Korea	11	26	1	Hungary	4	5	3
Nigeria	10	51	1	Austria	3	17	2
Italy	10	19	5	The Czech Republic	3	11	1
Scotland	9	64	5	Denmark	3	5	1
South Africa	8	100	4	Ethiopia	2	81	0
Serbia	8	27	7	Ireland	2	31	1
Australia	8	18	1	Indonesia	2	24	0
Belgium	8	7	1	Latvia	2	21	0
United Arab Emirates	7	63	4	North Macedonia	2	4	2
France	7	43	2	Saudi Arabia	2	4	0
Portugal	6	107	3	Thailand	2	4	3
Polond	6	49	0	Croatia	2	2	0
Lithuania	6	42	5	Greece	2	2	0
Israel	6	34	6				

In this analysis, Türkiye ranked first, with 77 articles and 586 citations. The United States has 51 articles and 546 citations. England, where the first examples of mass housing were built, ranks 3rd with 46 articles and 308 citations. Overall, the relationship between the number of articles and citations is directly proportional. However, although there are very few studies in countries such as Portugal, South Africa, and Ethiopia, the number of citations is quite high. After analyzing the number of articles and citations, the co-authorship relationships of the countries were examined. In this context, author links were found between the 50 countries. In the mapping conducted to determine the cooperation between authors, nine clusters were formed, as shown in Figure 5. The red, green, and blue clusters have the highest number of units with six countries. The red cluster consists of Australia, Chile, Ghana, Iran, South Africa, and the United Arab Emirates. Iran, the most active country in the cluster, established 16 co-author links with 21 other countries. The green cluster comprises Austria, Belgium, Greece, Israel, Italy, and Switzerland. Italy is the most active member of the group, with 10 articles and 5 author links with other countries. The blue cluster consists of Hungary, the Netherlands, Russia, Slovenia, and the United States. In this group, the USA had 51 articles and 31 author links with other countries. The yellow cluster includes Estonia, Latvia, and Poland, with Lithuania being the most active country with six articles and five links with other countries. The purple cluster includes Ethiopia, Germany, northern Macedonia, and Serbia. Germany was the most active country, with 21 articles and 15 connections. The turquoise cluster consisted of Portugal, Spain, Sweden, and Türkiye.

Türkiye, which has the highest number of articles and citations among all the countries, has established 23 co-authorship links with other countries. When a general evaluation is conducted, it is observed that geographically close countries tend to establish common authorship. However, this evaluation does not apply uniformly to all the groups. Authorship connections between countries with different structures can offer diverse perspectives. Additionally, diversity arising from geographical differences is important for the quality of academic publications. It is important to examine and discuss various factors related to mass housing such as different practices and planning decisions.

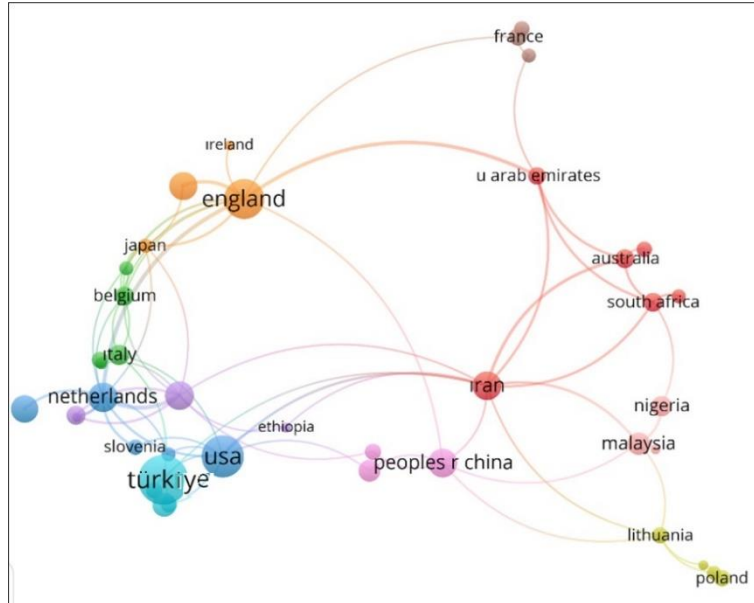


Figure 5. Bibliometric map of country and co-authorship relationship

An evaluation of the issue specific to Türkiye is important because it is in the first place in terms of both the number of articles and citations. An analysis was conducted by selecting “Türkiye” as the country preference for WoS. Table 2 shows the top 10 most-cited publications from Türkiye and the institutions in which they were published.

Table 2. Most cited publications in Türkiye

Publication Name	Authors	Journal	Institution	Year of publication	Number of Citations
Evaluation of ornamental plant resources to urban biodiversity and cultural changing: A case study of residential landscapes in Trabzon city (Türkiye)	Acar, C., Acar, H., Eroglu, E.	Building and environment	Karadeniz Technical University	2007	76
Urban Regeneration and Hegemonic Power Relationships	Türkün, A.	International Planning Studies	Yıldız Technical University	2011	69
Does housing create voting? Explaining the electoral success of the AKP in Türkiye	Marschall, M., Aydoğan, A., Bulut, A.	Electoral Studies	Rice University- Karadeniz Technical University	2016	55
The Role of the Public Sector in the Provision of Housing Supply in Türkiye, 1950-2009	Özdemir, D.	International Journal of Urban and Regional Research	Yeditepe University	2011	43
Cost-based analysis of quality in developing countries: a case study of building projects	Kazaz, A., Birgonul, M. T., Ulubeyli, S.	Building and environment	Mediterranean University	2005	27
Environmental Quality and User Satisfaction in Mass Housing Areas: The Case of Istanbul	Berkoz, L., Turk, Ş. Ş., Kellekci, Ö. L.	European Planning Studies	Istanbul Technical University	2009	24
Embodied carbon assessment of residential housing at urban scale	Kayaçetin, N. C., Tanyer, A. M.	Renewable and Sustainable Energy Reviews	Middle East Tech Univ.	2020	21
A multi-dimensional scale for measuring residential satisfaction (rs) in mass housing projects	Diñç, P., Özbilen, E., Bilir, M. B.	Indoor and Built Environment	Gazi University	2014	18
Web-based contractor evaluation system for mass-housing projects in Türkiye	Arslan, G	Journal of Civil Engineering and Management	Anadolu University	2012	17
An example of facade colour design of mass housing	Ünver, R., Dokuzer Öztürk, L.	Colour Research and Application	Yıldız Technical University	2002	17

The first four publications in the table are analyzed in the analysis section. Content analysis of other publications is important in terms of observing the perspectives from which the mass housing concept is approached. For this reason, the publications in the table were analyzed in terms of the content method and method.

The publication *Cost-based analysis of quality in developing countries: A case study of building projects* examines the costs of construction quality in Türkiye. This study presents a model for quality costing and evaluates this model in a mass housing project. Within the scope of the study, issues such as the importance of construction quality and the calculation of the percentages of quality costs were examined in depth through a survey of 655 house owners (Kazaz ao., 2005).

The study titled *Environmental Quality and User Satisfaction in Mass Housing Areas: The Case of Istanbul* focused on the quality of housing and its surroundings. The study developed a model for user satisfaction research, and the results presented suggestions for increasing the level of satisfaction with housing and its surroundings. A survey was conducted with 400 users in the mass housing areas of Istanbul. The survey results were statistically evaluated. The results showed that especially access to various functional areas in the housing area, environmental characteristics of the housing, satisfaction with the surrounding facilities, environmental safety, neighborhood relations, and the appearance of the housing have an increasing effect on the level of satisfaction (Berköz ao., 2009).

The study titled *Embodied carbon assessment of residential housing at urban scale* focuses on neighborhood-scale settlements and conducts a *Life Cycle Assessment* with carbon assessment. Considering that previous studies have remained at the scale of individual buildings and that this situation ignores urban factors such as infrastructure, distance to the city center, and transport, the researchers selected three mass housing areas at the neighborhood scale in Ankara for the field study. The information obtained within the scope of this study revealed that the results obtained from large-scale building groups are important for designers and urban planners (Kayaçetin & Tanyer, 2020).

The study *A multi-dimensional scale for measuring residential satisfaction in mass housing projects* focuses on the concept of user satisfaction in mass housing. In this context, a questionnaire was designed for 80 users in TOKİ housing projects in Eryaman, Ankara. The scope of the survey covers the user's general satisfaction level with housing and the characteristics of the housing area. In an area with different housing typologies, it has been observed that concepts such as duration of residence and space size are important phenomena affecting the level of satisfaction (Dinç ao., 2014).

The study *Web-based contractor evaluation system for mass-housing projects in Türkiye* focuses on a different topic. Choosing the right contractor is one of the most important factors that affect the overall performance of a project. Within the scope of the study, 52 construction personnel working in TOKİ were surveyed, and relative weighting of the criteria for contractor selection was requested. In the study, a web-based contractor selection model was proposed to select the right contractors (Arslan, 2012).

The study titled *An example of façade color design of mass housing* focuses on the concept of color, one of the basic elements of architecture. This study, in which building facades form basic fiction, includes color experiments for a new mass housing to be built in Istanbul. This study, which includes color contrast, color arrangement, and color design stages, offers various suggestions (Ünver & Dokuzer Öztürk, 2002).

Keyword Analysis and Bibliographic Mapping

Keyword analysis was conducted in WoS to reveal the conceptual structure of publications on mass housing. Figure 6 shows the frequency of the keyword use. At this point, 26 of the 1430 keywords were repeated more than five times. The red clusters are *adaptability, architecture, flexibility, mass customization, planning, social housing, Türkiye social number, units* with 7 keywords. The word *architecture* occurred 13 times and was used together with 7 different keywords 15 times. At this point, the green cluster with 6 keywords *affordable housing, construction, developing countries, energy efficiency, housing, sustainability* has the second highest number of units. In this cluster, the word "housing" occurred 39 times and was used together with 13 different keywords, 20 times. This is followed by the blue cluster *housing estates, housing policy, mass housing, residential satisfaction, and urban regeneration* with five keywords. The most active word in this group is

mass housing with 68 occurrences. This word was used 39 times with 20 keywords. The following yellow cluster was formed with 3 keywords *mass housing estates*, *space syntax*, *urban design* and the purple cluster was formed with 3 keywords *modernism*, *participation*, *urban planning*.

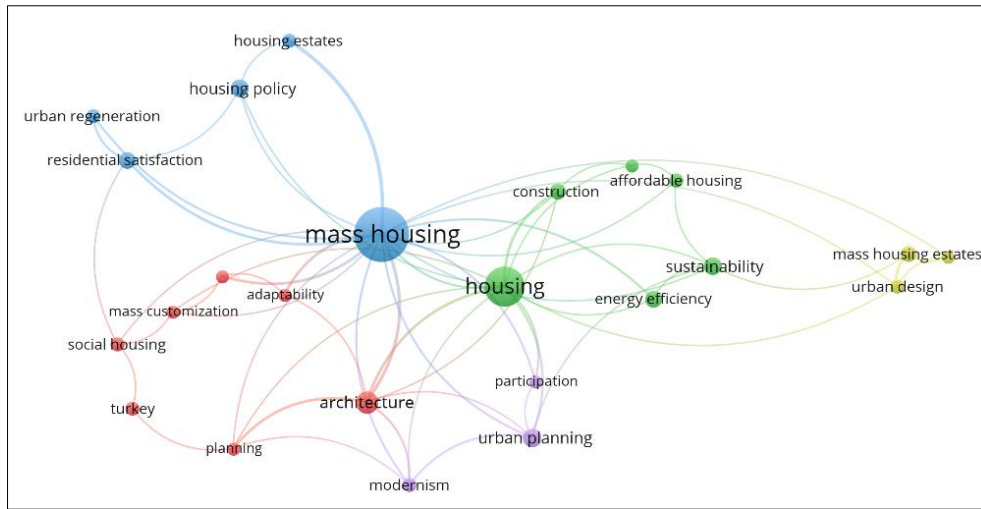


Figure 6. Bibliometric map of keywords

From a general perspective, as seen in Table 3, *mass housing*, *housing*, and *architecture* are the words with the highest frequency of use. When the meanings of the words were examined, it was observed that very general keyword selection was made in the studies on the subject. The words with less frequency of use are *urban planning*, *housing policy*, *sustainability*, *energy efficiency*, and *residential satisfaction*. These words were found to be more detailed.

Table 3. Frequency of keyword use

Keyword	Occurrences	Total connection power	Keyword	Occurrences	Total connection power
Mass housing	68	39	Housing estates	6	6
Housing	39	20	Social housing	6	4
Architecture	13	15	Türkiye	6	2
Urban planning	10	9	Urban design	6	6
Housing policy	9	4	Urban regeneration	6	4
Sustainability	9	6	Adaptability	5	5
Energy efficiency	8	5	Developing countries	5	3
Residential satisfaction	8	7	Flexibility	5	5
Construction	7	6	Mass customization	5	4
Mass housing estates	7	6	Participation	5	5
Mass housing projects	7	0	Planning	5	7
Affordable housing	6	4	Space syntax	5	4

Efficiency Analysis and Bibliographic Map of Journals

Among the publications on mass housing, an analysis was conducted to identify the journals that played an active role in the field and the cooperation of journals. A dataset consisting of 315 articles obtained from the WoS database was loaded into the program. During the analysis, the minimum number of publications of a journal was selected as one, and the minimum number of citations was selected as five to determine collaboration. The analysis was conducted in 109 journals. Table 4 lists the most cited journals. An evaluation based on the number of articles shows that the journal *Open House International* stands out with 15 articles. This is followed by the journals *Planning Perspectives* and *Sustainability*. According to the number of citations, *Building and Environment* comes first, with six articles and 123 citations.

Table 4. Number of articles and citations of the journals

Resource name	Number of articles	Number of citations	Total connection power
Building and environment	6	123	1
Sustainability	11	72	50
Habitat international	8	69	8
Planning perspectives	12	51	55
Open house international	15	47	19
Journal of urban history	6	43	26
Journal of housing and the built environment	7	30	46
Journal of Asian architecture and building engineering	5	28	3
Journal of architecture	8	24	7
International journal of housing policy	5	20	29
Urban planning	9	20	29

As can be seen in Figure 7, 33 of 109 journals have established citation links with each other. There were four clusters in the classification. Red cluster with four units and *Open House International* is in a central position with 15 articles, 47 citations, and 19 links to other journals. It is followed by the green cluster with four units and *Planning Perspectives* with 12 articles, 51 citations, and 55 links to other journals. In the blue cluster, there are also three units, *Sustainability* is the most active journal with 11 articles, 72 citations, and 50 links to other journals.

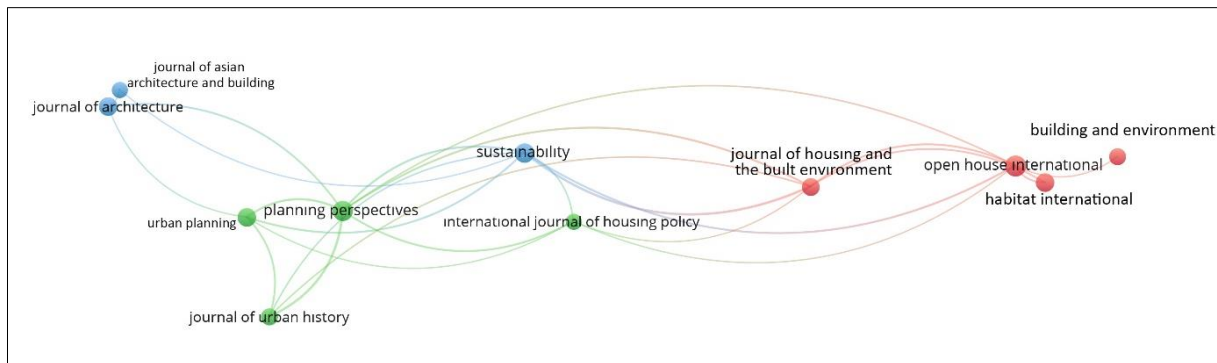


Figure 7. Bibliometric map of journal effectiveness and collaboration

Author and Publication Analysis

In the author analysis conducted in the WoS database, the 20 most-cited publications out of 522 publications are given in Table 5. A detailed analysis of publications that have a priority position in the field of mass housing is important in terms of establishing the scope and boundaries of the subject.

Table 5. Most cited authors and their publications

Publication Name	Authors	Year of publication	Number of Citations (WoS)	Number of Citations (Scopus)
A discursive grammar for customizing mass housing: the case of Siza's houses at Malagueira	Duarte, J. P.	2005	89	110
Towards the mass customization of housing: the grammar of Siza's houses at Malagueira	Duarte, J. P.	2005	79	113
Evaluation of ornamental plant resources to urban biodiversity and cultural changing: A case study of residential landscapes in Trabzon city (Türkiye)	Acar, C., Acar, H., Eroglu, E.	2007	76	-
Urban regeneration and hegemonic power relationships	Türkün, A.	2011	69	81
Assessment of Social Sustainability Indicators in Mass Housing Construction: A Case Study of Mehr Housing Project (Karji ao., 2019)	Karji, A., Woldesenbet, A., Khanzadi, M., Tafazzoli, M.	2019	67	83

Does housing create votes? Explaining the electoral success of the AKP in Türkiye	Marschall, M., Aydoğan, A., Bulut, A.	2016	55	-
Mass Housing in Europe: Multiple Faces of Development, Change and Response	Rowlands, R., Musterd, S., Van Kempen, R.	2009	50	45
Khrushchev modern- Agency and modernization in the Soviet home (Home building)	Reid, S. E.	2006	44	-
The Role of the Public Sector in the Provision of Housing Supply in Türkiye, 1950-2009	Ozdemir, D.	2011	43	-
A guideline for assessing the suitability of earth-sheltered mass-housing in hot-arid climates	Al-Temeemi, A. A., Harris, D. J.	2004	43	-

First of all, Duarte's publications *A discursive grammar for customizing mass housing: the case of Siza's houses at Malagueira* and *Towards the mass customization of housing: the grammar of Siza's houses at Malagueira* were examined. Published in 2005, the first article had 89 citations in WoS and 110 citations in Scopus; the second article had 79 citations in WoS and 113 citations in Scopus, making it a pioneer in mass housing. When the content of the publications is analyzed, it is seen that they are the products of a study that is a continuation and complementary to each other. Both studies covered an area of 1200 houses by architect Ivaro Siza in Malagueira, Portugal. These studies aimed to develop an interactive computer system for designing mass housing. Using a method called "discursive grammar," studies aim to transform user requirements into design parameters. Many apartment typologies were examined within the scope of these studies. These two studies have an important place in the mass housing design literature in terms of developing a new method and approach (Duarte, 2005a; Duarte, 2005b).

One of the most cited publications in WoS with 76 citations is *Evaluation of ornamental plant resources to urban biodiversity and cultural change: A case study of residential landscapes in Trabzon City (Türkiye)*. When the publication was analyzed in terms of content, it was found to be an article in the basic field of landscape architecture. This study provides quantitative information about the plant species in Trabzon City and explores the use of plants in residential landscapes. The questionnaire study was based on an assessment of human and plant interactions in urban landscapes. In this context, in the study which has become an important source in the field of landscape architecture, the selected mass housing constituted the field study part of the article (Acar ao., 2007).

The article titled *Urban Regeneration and Hegemonic Power Relationships* received 69 citations in WoS and 81 citations in Scopus. This study, which aims to analyze the power of the urban coalition that has increased in Türkiye since the 2000s, draws a theoretical framework for urban regeneration. Focusing on the city of Istanbul in particular, the study discusses the effects of the increased powers of central and local government actors as well as institutions such as TOKİ. This study, which also discusses the spatial effects of this situation, is important in terms of the theoretical framework and new discourse it has drawn in the literature (Türkün, 2011).

Another important study in the field of mass housing is the *Assessment of Social Sustainability Indicators in Mass Housing Construction: A Case Study of the Mehr Housing Project*. The study received 67 and 83 citations in WoS and Scopus, respectively. This article aims to examine the social sustainability of mass housing in the Mehr Housing Project in Parand, Iran. In this context, internationally recognized rating systems, such as LEED, Envision, BREEM, CASBEE, and Green Globes, were used. An expert team evaluated the 33 indicators. The study is an important point in terms of examining social sustainability in mass housing (Karji ao., 2019).

Does housing create votes? Explaining the electoral success of the AKP in Türkiye is research in the field of international relations and has 55 citations in the WoS database. The article analyzes TOKİ's mass housing projects by using political, economic, and socio-demographic data from 900 municipalities (Marschall ao., 2016).

Mass Housing in Europe: Multiple Faces of Development, Change and Response is an important book in the area, with 50 citations in the WoS database and 45 citations in the Scopus database. The book covers mass housing in 15 European cities, and through empirical research, issues such as the problems of mass housing and the daily experiences of users have been explored in detail (Musterd, 2009).

The article titled *The Role of the Public Sector in the Provision of Housing Supply in Türkiye, 1950-2009* received 43 citations in the WoS database and 46 citations in the Scopus database. The article analyzed the housing production processes in Türkiye in three periods: 1950-1980, 1980-2000, and post-2000. At this point, it examines the role of the public sector in housing production patterns in detail. In addition, the periodic analysis also discusses the housing boom, the emergence of mass housing, and the phenomenon of urban transformation. This study, which includes evaluations made specifically for Türkiye, is considered important for understanding the production models and housing policies that differ periodically from each other in Türkiye (Özdemir, 2011).

A guideline for assessing the suitability of earth-sheltered mass-housing in hot-arid climates, cited 43 times in the WoS database on mass housing, is an important guideline for important researchers. In this study, guidelines for assessing the suitability of earth-sheltered or underground structures, a new but very old architectural type, were created. The study, which examined the advantages and disadvantages of earth-sheltered housing systems, especially for hot-arid climates, contains important information that can serve as a guide for planners (Al-Temeemi & Harris, 2004).

CONCLUSION

This study evaluated the scope of mass housing in the literature by focusing on key issues and trends. A comprehensive information pool was created using the WoS database, which offers a vast network of information. This study highlights the current relevance of the mass housing concept, noting a significant increase in the literature contributions in recent years. This trend has been observed both internationally and domestically, but the topic remains current. In particular, practices by TOKİ and local governments in Türkiye, which have gained increased authority since 2002, have brought about much criticism. These criticisms target issues such as uniform housing design, lack of site-specific architecture, physical appearance, material quality, and workmanship. Content analysis of relevant publications reveals that many studies provide solution-oriented suggestions for creating more qualified and livable housing environments. Mass housing, as a rapid production system, significantly impacts urban areas, prompting researchers to evaluate its positive and negative aspects from diverse perspectives. Many studies on mass housing have adopted a user-oriented approach. Pioneering research has addressed the physical characteristics of spaces, housing quality, and environmental quality. Another critical area of study is housing construction technologies, with new technologies expected to enhance housing production processes. Furthermore, in today's digital age, concepts such as virtual reality and digital spaces are being increasingly explored in mass housing research.

When research on public housing is evaluated from a general perspective, it is remarkable that studies on Turkey are particularly concentrated. Mass housing, which has been a much more active production area in Turkey since 2000, has been the subject of research in many different aspects. Housing, which has a significant share of production through local governments, ministries, and TOKİ, has been analyzed from many different perspectives. In particular, TOKİ and local government applications have been examined under many headings, such as spatial configuration and the relationship established with the environment, social life, neighborhood, and street structure. These topics, which have been subject to criticism many times in the fields of design, planning, and implementation, have been the subject of academic studies. Generally, the content of studies consists of due diligence, user opinions, and recommendations. Therefore, these studies are important data sources for decision-makers, designers, planners, and practitioners.

When the papers were analyzed from a specific perspective, many different aspects of the design were examined in detail. Studies such as the life cycle have examined the link between sustainability and energy-efficient building design. Ecological design, which has become the main subject of engineering and architecture in recent years, has been examined in the context of housing projects. This examination covers a wide range of topics, such as materials and construction techniques. At this point, the effectiveness of journals such as *Building and Environment* and *Environment and Planning b-Planning and design*, and *Sustainability* in public housing reveals the importance of the subject. Another important point in these studies is user opinion and satisfaction. Studies focusing on user satisfaction conducted in different cities have emphasized concepts such as accessibility, spatial satisfaction, and satisfaction with the environment. In addition, the most cited

studies focused on transforming user needs into design parameters that pave the way for user-participatory approaches in this field. In general, housing is not treated as a single phenomenon in the articles, but its relationship with its surroundings and urban fabric is also analyzed. Many studies have repeated this situation, showing that housing is an active structure that cannot be considered independent of its environment. At this point, housing production methods, the international situation, and the effectiveness of institutions have been investigated. The differences in public housing perspectives in different countries are also reflected in production. Therefore, public housing researchers need to be aware of these differences and develop a design approach accordingly.

A thorough literature review of mass housing is anticipated to offer valuable insights for researchers, planners, and practitioners. This study aims to serve as a key reference for future research by outlining the current state and future projections of mass housing. For planners and practitioners, it addresses domestic and international studies, key focus areas, and crucial parameters in the design process, thereby helping resolve various issues. It is important to use both theoretical and practical knowledge on the planning, design, implementation, and utilization processes of mass housing to develop livable environments. This study's broad perspective and evaluations are expected to contribute significantly to this process.

Author's Contributions

The study was created by a single author.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

This study doesn't require ethics committee approval.

REFERENCES

- Acar, C., Acar, H., Eroğlu, E. (2007). Evaluation of ornamental plant resources to urban biodiversity and cultural changing: a case study of residential landscapes in Trabzon City (Türkiye). *Building and Environment*, 42(1), 218-229. <https://doi.org/10.1016/j.buildenv.2005.08.030>
- Alkılınç, E., Palabıyık, S. (2023). Bibliyometrik analiz yöntemi üzerinden yer seçimi ile ilgili karar destek sistemi yöntemlerinin incelenmesi. *International Journal of Social Humanities Sciences Research*, 10(98), 2016-2026. <https://doi.org/10.5281/zenodo.8306910>
- Al-Temeemi, A. A., Harris, D. J. (2004). Guideline for assessing the suitability of earth-sheltered mass-housing in hot-arid climates. *Energy and Buildings*, 36(3), 251-260. <https://doi.org/10.1016/j.enbuild.2003.12.005>
- Arcan, E. F., Evcı, F. (1999). *Mimari tasarıma yaklaşım: bina bilgisi çalışmaları*. Tasarım Yayın Grubu.
- Arslan, G. (2012). Web-based contractor evaluation system for mass-housing projects in Türkiye. *Journal of Civil Engineering and Management*, 18(3), 323-334. <https://dx.doi.org/10.3846/13923730.2012.698892>
- Aydın, Ö., İsmailoğlu, S., Akkan, A., Şanlı, E. (2022). Evaluation of buildings and building physics master's thesis in architectural education in Türkiye. *Gazi University Journal of Science*, 35(1), 1-12. <https://doi.org/10.35378/gujs.843574>
- Berkoz, L., Turk, Ş. Ş., Kellekci, Ö. L. (2009). Environmental quality and user satisfaction in mass housing areas: The case of Istanbul. *European Planning Studies*, 17(1), 161-174. <https://doi.org/10.1080/09654310802514086>
- Burkut, E. B., Köseoğlu, E. (2022). Mimarlık alanında çocuklarla ilgili yayınların bibliyometrik analizi ve bibliyografik haritaları. *Journal of Architectural Sciences and Applications*, 7(2), 511-527. <https://doi.org/10.30785/mbud.1099993>
- Cao, Y., Zhang, C., Li, H., Su, L., Kuinkel, M. S. (2023). Research status and trends of PPP in the US and China: Visual knowledge mapping analysis. *Journal of Asian Architecture and Building Engineering*, 22(6), 3598-3611. <https://doi.org/10.1080/13467581.2023.2208197>
- Dinç, P., Özbilen, E., Bilir, M. B. (2014). A multi-dimensional scale for measuring residential satisfaction in mass housing projects. *Indoor and Built Environment*, 23(6), 864-880. <https://doi.org/10.1177/1420326x13484619>
- Doğruer, F. S. (2022). Bibliometric analysis of the Anatolian vernacular architecture literature (1983-2021). *Kesit Akademi Dergisi*, 8(30), 1-19. <https://doi.org/10.29228/kesit.57546>

- Duarte, J. P. (2005a). A discursive grammar for customizing mass housing: The case of Siza's houses in Malagueira. *Automation in Construction*, 14(2), 265-275. <https://doi.org/10.1016/j.autcon.2004.07.013>
- Duarte, J. P. (2005b). (2005). Towards the mass customization of housing: The grammar of Siza's houses at Malagueira. *Environment and Planning B: Planning and Design*, 32(3), 347-380. <https://doi.org/10.1068/b31124>
- Ersoy, Z. (2002). *A Comparative analysis between the concepts of house and home* [Doctoral Thesis, Dokuz Eylül University, İzmir].
- Guo, Y. M., Huang, Z. L., Guo, J., Li, H., Guo, X. R., Nkeli, M. J. (2019). Bibliometric analysis on smart cities research. *Sustainability*, 11(13), 3606. <https://doi.org/10.3390/su11133606>
- Gülsün, B. (2021). *Alternatif konut üretimi: "Sosyal Konut."* Yapı Dergisi. <https://yapidergisi.com/alternatif-konut-uretimi-sosyal-konut/> (20.05.2023)
- Kahraman, M. (2022). Web of Science veri tabanına göre Türkiye'de kent çalışmaları. *Planlama*, 32(3), 510-518. <https://doi.org/10.1016/j.resconrec.2015.05.017>
- Karji, A., Woldesenbet, A., Khanzadi, M., Tafazzoli, M. (2019). Assessment of social sustainability indicators in mass housing construction: a case study of Mehr housing project. *Sustainable Cities and Society*, 50, 101697. <https://doi.org/10.1016/j.scs.2019.101697>
- Kayaçetin, N. C., Tanyer, A. M. (2020). Embodied carbon assessment of residential housing at urban scale. *Renewable and Sustainable Energy Reviews*, 117, 109470. <https://doi.org/10.1016/j.rser.2019.109470>
- Kazaz, A., Birgonul, M. T., Ulubeyli, S. (2005). Cost-based analysis of quality in developing countries: a case study of building projects. *Building and Environment*, 40(10), 1356-1365. <https://doi.org/10.1016/j.buildenv.2004.11.010>
- Köseoğlu, E., Burkut, E. B. (2023). *Bibliometric analysis of the relationship between urban morphology and health*. Türkiye Kentsel Morfoloji Ağı.
- Lawrence, R. J. (1987). *Housing, dwelling, and home*. Wiley.
- Marschall, M., Aydoğan, A., Bulut, A. (2016). Does housing create votes? Explaining the electoral success of the AKP in Türkiye. *Electoral Studies*, 42, 201-212. <https://doi.org/10.1016/j.electstud.2016.02.010>
- Marsilio, M., Cappellaro, G., Cuccurullo, C. (2011). The intellectual structure of research into PPPs: A bibliometric analysis. *Public Management Review*, 13(6), 763-782. <https://doi.org/10.1080/14719037.2010.539112>
- Musterd, S. (2009). *Mass housing in Europe: Multiple faces of development, change and response*. Springer.
- Özdemir, D. (2011). The role of the public sector in the provision of housing supply in Türkiye, 1950-2009. *International Journal of Urban and Regional Research*, 35(6), 1099-1117. <https://doi.org/10.1111/j.1468-2427.2010.00974.x>
- Özeren, E., Dinç Kalaycı, P. (2022). Mimari tasarım stüdyolarının bibliyometrik veri analizi üzerine bir okuma. A. Çabuk, H. S. Aşikkutlu (Ed.). *Mimarlık, planlama ve tasarım alanında yeni trendler* İçinde (s. 113-136). Duvar.
- Özsoy, A. (2011). Toplu Konut Uygulamalarının Gelişimi. *EkoYapı Dergisi*. <https://www.ekoyapidergisi.org/toplu-konut-uygulamalarinin-gelisimi>.
- Öztürk Akbıyık, S., Arslan Selçuk, S. (2023). Analysis of Global Research Trends on BIM Studies in the Field of Architecture. *ICONARP International Journal of Architecture and Planning*, 11(1), 346-370. <https://doi.org/10.15320/ICONARP.2023.245>
- Rapoport, A. (1977). *Human aspects of urban form*. Prentice-Hall.
- Roemer, R. C., Borchardt, R. (2015). *Meaningful metrics: A 21st century librarian's guide to bibliometrics, altmetrics, and research impact*. Association of College and Research Libraries.
- Sajovic, I., Tomc, H. G., Podgornik, B. B. (2018). Bibliometric study and mapping of a journal in the field of visualization and computer graphics. *COLLNET Journal of Scientometrics and Information Management*, 12(2), 263-287. <https://doi.org/10.1080/09737766.2018.1453677>
- Scopus (n.d.). *Scopus preview*. Scopus. <https://scopus.com/search/form.uri?display=basicandzone=headerandorigin=sbrowse#basic> (15.08.2023).
- Türk Dil Kurumu (TDK). (n.d.). Konut. In *Türkçe Sözlük*. <https://sozluk.gov.tr/> (05.08.2023).
- Türkün, A. (2011). Urban regeneration and hegemonic power relationships. *International Planning Studies*, 16(1), 61-72. <https://doi.org/10.1080/13563475.2011.552473>
- Ünlü, T. (2015). Toplu konutun kent formuna etkisi. *XXI Dergisi*. <https://xxi.com.tr/i/toplu-konutun-kent-formuna-etkisi> (25.05.2023).

Ünver, R., Dokuzer Öztürk, L. (2002). An example of facade colour design of mass housing. *Color Research and Application*, 27(4), 291-299. <https://doi.org/10.1002/col.10068>

VOSviewer-Visualizing scientific landscapes. (n.d.). *VOSviewer*. <https://www.vosviewer.com/> (10.08.2023).

Web of Science | Clarivate. (n.d.). *Academia and Government*. WOS. <https://clarivate.com/products/scientific-and-academic-research/research-discovery-and-workflow-solutions/webofscience-platform> (15.08.2023).

Figure References

Figure 2-3-4: Created by the author using WoS and Scopus databases (30.09.2023).

Figure 5-6-7: Created by the author using VOSviewer software (05.10.2023).

Table 1-2-3-4-5: Created by the author using the WoS database (10.10.2023).

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