Crime and Violence Studies in the Immigration Field: Interactions between Disciplines and Emerging Concepts

Ali Unlu[1]
Finnish Institute for Health and Welfare, Helsinki, Finland

Cuneyt Gurer[2]
The George C. Marshall European Center for Security Studies, Germany

Abstract: This paper uses bibliometric analysis to evaluate the literature on immigration, crime, and violence to find out how these concepts are studied across disciplines. The paper gave specific attention to the field of Criminology to demonstrate the variation of the use of these concepts in the literature and how much it differs from other disciplines. To meet these expectations, we examined how journals are categorized based on covering how immigration and crime interact in social science disciplines. Moreover, the analysis maps how research articles interact in different journals and what types of topics receive the most attention among researchers by looking at cross-citation data and keyword selection. The findings show that, overall, the number of publications used at least one of the studied items (immigration, crime, and violence) as a keyword increased tremendously in the last two decades. The most studied concept amongst all disciplines is violence, followed by gender and crime with the combination of migration, immigration, immigrants. The topic has been mostly studied from the 'receiving country' perspective and funding leads to an increase in publications. The findings suggest Criminology is the top field producing most of the studies in the field followed by public health-related research. These findings suggest that migration, when it is connected to crime and violence, is considered an individual- and social-level challenge requiring the attention of experts in understanding criminal and deviant behavior as well as experts from public health.
Keywords: Immigration, immigrant, crime, violence, bibliometric analysis.

Human displacement as a general concept referring to immigration, migration, forced displacement, and refugee studies gained remarkable attention from researchers for decades (Pisarevskaya et al., 2020). Although considered an overall concept referring to various forms of displacement, human displacement as a specific concept did not garner much attention in the social science literature. Different forms of human mobility are named differently based on their normative definitions in international and national texts and that has also been reflected in the terminology of social sciences. The basic difference exists between *migration* and *refugees*

is that the former refers to voluntary and mostly economic base mobility, and the latter refers to forced displacement due to conflict or persecution. Nevertheless, these and other terms in the literature are mostly used interchangeably across disciplines. Therefore, we can argue that the concept we use in this study has terminological variation, and hence should include at least three terms to capture the entire concept of human displacement. These terms are *migration*, *immigration*, *forced displacement*, and *refugee studies*.

Migration studies is considered a multidisciplinary field in the social sciences and included studies on both regular and irregular migration issues (Hollifield, 2020). The interdisciplinary nature of the field increased the number of studies published which cross-reference findings in different research areas, which necessitates the connection of disciplines such as individual and social psychology, public administration, security studies, as well as regional and international relations (Gurer & Akgul, 2020). Earlier research connected voluntary displacement, in the form of migration, with social, economic, political, demographic, and environmental changes in the source countries which in return also created concerns at the destination countries (Foresight, 2011; Longhi et al., 2006; Massey, 1998). At the host nation level, beyond its economic dimension, immigrants also create public concerns related to their involvement in crime and creating disorder in those countries (Bianchi et al., 2012; Foresight, 2011).

Studies also found associations between migration and negative public perceptions. For example, at the European level, Stockemer et al. (2018) conducted a meta-analysis examining the relationship between immigration and Euroscepticism and found that negative attitudes toward immigration cause skepticism towards European integration, which requires a certain level of openness between European countries. The literature provides a wide range of results for immigrants' involvement in crime, from views supporting a general increase to a reduction in crime that serves a protective function. These variations mostly rely upon the mediating factors (education, socio-economic status, etc.) that significantly affect the outcomes rather than the background of the immigrant itself (Chen & Zhong, 2013; Leiva et al., 2020). Nevertheless, it is argued that moral panic in society, fueled by media hype and populist politics, leads to a plethora of anti-immigration laws and policies, which in turn makes immigrants and their communities less safe (Eberl et al., 2018). Particularly, vulnerable sub-groups, such as women and the most impoverished, become more vulnerable and are at risk of victimization (Zatz & Smith, 2012). Thus, the association between crime/violence and immigration has many dimensions studied beyond criminology/criminal justice.

This paper selects a unique approach to understanding the connection between immigration, crime, and violence in the social science literature by applying bibliometric analysis to answer how immigration, crime, and violence are studied in various fields of social sciences. Connecting with this objective, this study looks at how journals from different social science disciplines are grouped in terms of covering how immigration and crime interact. By looking at the cross-citation data and keyword selection, this study also maps how research articles interact in different journals and what type of issues take most of the attention amongst researchers in various fields.

Background of the Study Framework

The nexus between immigration and crime has been studied in various disciplines. Amongst others, within the social sciences, sociology, psychology, and political science are the major fields covering issues related to immigration and crime. For instance, Ousey and Kubrin (2018) analyzed the immigration-crime relationship by examining the data collected from studies between 1994 and 2014. Their findings suggest that the overall relationship between immigration and crime is negative but this relationship is not very strong, meaning academic literature cannot provide a clear picture of the relationship between immigration and crime. The

difference in study design, measurement, selection of the unit of analysis, temporal and local context all affects the outcomes of the research (Adelman et al., 2018; Boateng et al., 2021; Ousey & Kubrin, 2018). However, if there is a significant relationship between immigration and crime, it is negative. Even large cities with substantial immigrant populations have lower crime rates, on average, than those with minimal immigrant populations (Adelman et al., 2017; Ousey & Kubrin, 2009). Current research highlights the limitations of the existing literature, namely failures to explain the intervening variables between immigration and crime (Adelman et al., 2018).

Moreover, biased media coverage (Caviedes, 2018) and unemployment rates (Joyner, 2018) trigger stigma and perception of threat in society (Adelman et al., 2018). It is argued that the moral panic about immigration has contributed to unprecedented levels of new legislation and intensified enforcement practices (Zatz & Smith, 2012). For instance, there is a relationship between perceived immigration problematization in society and deportation rates (King & Obinna, 2018), but these types of public discussions and policies also put extra pressure on immigrants, which results in feelings of isolation and being unwanted (Leyro & Stageman, 2018) as well as distrust of the police and other institutions (Cervantes & Menjivar, 2018).

Pisarevskaya et al. (2020) examine the topical development of migration studies and look into detail regarding what type of issues were studied and how different disciplines approached these issues. Growing attention of nation-states in immigration as a policy field increased funding for research activities, which eventually produced more publications on the topic. However, since states mostly focus on integration, as Pisarevskaya et al. (2020) argue, most studies covered a narrow number of topics (i.e., integration and migration control) and developed a nation-state-based methodology. Nevertheless, a thorough analysis of measuring the contribution of different social science disciplines to immigration crime research is still rare. In a recent study, Hollifield (2020) highlights unique aspects of migration studies by looking at the bibliographic analysis of journal articles and presents several features distinguishing migration studies from other social science research. According to his analysis, which is mostly affected by the historical context and its Western orientation, migration is difficult to understand from the perspective of a single discipline and there is a significant amount of exchange among different disciplines of the social sciences. He also argues that migration studies should focus on a common set of research questions and examine them from an interdisciplinary perspective, a process he calls "bridge-building" across disciplines (Hollifield, 2020, p. 6). The research on immigration and crime could be considered a bridge connecting migration studies to criminology research. However, those two concepts connect more fields due to their multidisciplinary nature. This paper is intended to fill the gap of understanding how immigration and crime are studied in the literature by providing an understanding of which social science field contributes to immigration and crime research and how that has been shaped over the years. By taking a holistic approach, this study applies Bibliometric analysis and examines the broader perspective of immigration research and how it interacts with various disciplines through the immigration-crime nexus.

Bibliometric studies have been used in various fields and despite their limitations, it provides a critical snapshot of national and international contributions to literature in a specific field (Sweileh, 2018b). It enables a balanced assessment of the academic fields, which particularly avoids local biases (Van Raan, 2005). Bibliometric analysis has also been used in immigration studies in recent years, such as studying drivers of environmental migrations (Priovashini & Mallick, 2021), international scientific migrations (Moed & Halevi, 2014), health research in global migration (Sweileh et al., 2018), international cooperation on migration (Khaldi & Prado-Gascó, 2021), mapping migration studies (Pisarevskaya et al., 2020), organ trafficking and migration (Gonzalez et al., 2020), human trafficking (Sweileh,

2018b), internal migration in Mexico (Miranda-González et al., 2020) and Syrian refugees (Sweileh, 2018a).

Thus, this study first maps out how current literature on migration and crime varied across different fields of social sciences and how different fields connect to one another. In this study, the following questions will also be addressed: what type of changes were observed in research questions? Is there any difference between the criminology field and the rest of the disciplines in terms of study concepts? Is author collaboration different between criminology and the rest of the field? Is there any increase in funding in the last decade on immigration research? Which field journals influence the field and to what extent does it differ across disciplines?

Method

The study aims to summarize existing literature on immigration, crime, and violence by identifying key themes and issues as well as suggesting future grounds for research. The study employs the bibliometric analysis method that includes statistical analysis of the published articles and their citations. The method shows how academic disciplines emerge, how they interact with and influence other fields, and how their intellectual structure evolves (Aria & Cuccurullo, 2017). The ISI Web of Knowledge Social Sciences Citation Index (SSCI) database is used in this study to collect bibliographic components in the literature set. The data set contains two types of information: raw publication data and journal citation.

Publication records include information related to authors, author affiliation, keywords, year of publication, source of publications (e.g., journal). The first data set includes journal articles collected with the keywords shown in Table 1 and enables researchers to identify the most productive journals, the development of the scholarly efforts in the field over time, and what academic disciplines contribute to these efforts. In the second stage, journal citation is used as a unit of observation to explore the intellectual boundaries and interactions between academic disciplines and predict which journals will be more influential in shaping scholarly efforts.

The data was extracted from the SSCI by using two sets of keyword combinations. The sets were developed through pre-analysis of the data set. For instance, when only the crime and immigration combination is used, analysis shows that some concepts are used interchangeably in the literature such as migrant, immigrant, migration, immigration, and refugee. Nevertheless, although we aimed to limit the study only to crime and delinquency, most of the research includes violence in the same publication. Therefore, the first set includes the words crime, delinquency, and violence, while the second set contains immigration, migration, immigrants, migrants, and refugees. The keywords in the first set were coupled with each keyword in the second set. The query then searches for articles fulfilling the conditions of combinations, such as immigrant + crime, immigrant + violent, etc.[3] The WOS provided 6,260 articles published between 2001-2021 when filtered by only peer review articles.

Since we aimed to provide the general picture of the whole literature, we refrained from limiting the study to certain disciplines, which results in a very wide range of studies on this topic. Nevertheless, unrelated articles were filtered by excluding fields out of the social science disciplines. With the inclusion of subfields, there are 306 Web of Science categories in our data set.

Four analytical techniques were used to explore the intellectual structure of the subject. First, the Bibliometrix package in the R software is employed to analyze the raw journal

---

[3] The search query of the study: ("immigrant" OR "immigration" OR "migrant" OR "migration" OR "refugee") and ("crime" OR "delinquency" OR "violent" OR "violence").

publication counts and other bibliometric inputs such as keywords or journal statistics. The Bibliometrix package calculates the summary statistics of the articles, citation counts, and rankings and provides an overview of the dataset. The package creates 65 variables from the raw data set. In the second stage, data was analyzed for discipline, country, and funding comparisons.

In the third stage, the VosViewer software was used to analyze and visualize the article citation for bibliographic co-citation networks, bibliographic coupling networks, keyword networks, and country collaboration networks (Van Eck & Waltman, 2013). The analysis of citation data reveals the map of collaboration between journals of different disciplines (Aria & Cuccurullo, 2017). A journal citation network represents the strength of the intellectual relationships that exist between journals from various backgrounds. Journal bibliographic coupling data were analyzed to identify the shared mental and intellectual roots of articles. Finally, the fourth one will be the PageRank scores of the journal by using Gephi software (Bastian et al., 2009), which shows the most influential journals in the future on this subject (Demiroz, 2020).

Results

Table-1 presents a basic descriptive analysis of yearly aggregate-level publications and citations between 2001-2021. As a result of the data inquiry, 12,419 authors produced 6,260 articles published in 1,859 journals. According to the collaboration index, 2,551 articles were single-author publications, documents per author scores is 0.504 and finally, the collaboration score is 2.86 (Table 1).

Table 1
Summary Statistics

Timespan	2001:2021
Sources (Journals)	1859
Articles	6260
Average citations per document	14.2
Authors	12419
Authors of single-authored documents	2247
Authors of multi-authored documents	10172
Single-authored documents	2551
Documents per Author	0.504
Co-Authors per Document	2.74

Since we did not limit the language preferences, the dataset includes articles from 27 languages. Although these articles were written in other languages, they have relevant contents (keywords, abstract, title, etc.) in the English language. While 5,785 (92.4%) of articles are in English, it is followed by Spanish 203 (3.24%), German 85 (1.36%), Russian 55 (0.08%), and French 49 (0.07%).

WOS categorizes journals into one or more science disciplines and 306 discipline combinations came as a result of the preliminary analysis. Table 2 shows the distribution of disciplines that was listed as the first assigned field. Criminology/penology constitutes the leading discipline (7.40%) but when all articles are combined from the secondary or tertiary field as criminology/penology, the ratio increases to 731 (11.6%) articles. Besides, public health (6.9%), sociology (4.4%), and psychiatry (3.3%) are the other major fields that have more publications. This distribution is also used as a reference point for field comparisons. Put

differently, the data set was divided into two parts; 731 articles for criminology and 5,529 articles representing the rest of the fields.

Table 2
Publications in disciplines

	Web of Science Categories	Articles	Percentage
1	Criminology & Penology	463	7.40 %
2	Public, Environmental & Occupational Health	435	6.95 %
3	Sociology	278	4.44 %
4	Psychiatry	210	3.35 %
5	Demography	190	3.04 %
6	Law	184	2.94 %
7	Women's Studies	180	2.88 %
8	Political Science	177	2.83 %
9	History	153	2.44 %
10	Demography; Ethnic Studies	150	2.40 %

In spite of crime dimension, most of the articles in our data set are related to the health studies on this topic. According to Table 2, immigration-related violence and crime are mostly considered social problems but at the same time as public health issues. Its political and legal components come later in the ranking of disciplines based on the journals in which the articles are published. This data does not directly reference that most of the research is related to these specific areas, however, indicates the preference of journals by researchers. Nevertheless, it still gives us an idea of how the published research is connected to those disciplines through the choice of journals. A further analysis connecting journals, keywords, and cross citation will provide better insights.

Figure 1 presents the growth in the annual scientific production for the last two decades on immigration, crime, and violence. There is a slight decrease in 2021[4], most probably, due to the attention curbed towards Covid-19-related research, however, in the long run, the trend could be expected to remain stable. One of the reasons for the expected increase is a possible connection between the consequences of the pandemic on immigration and crime. With the impact of the pandemic felt more in developing countries, economic hardships are more likely to create displacements which will eventually take the attention of policymakers and scholars. The results presented in Figure 1 also show a linear increase in scientific production with two points of dramatic acceleration, one after 2008 and one after 2015. Nevertheless, the size of the publications in the whole literature is 8.6 times larger than the publications in Criminology and Penology on the same subject. It shows that the literature on immigrants, crime, and violence attracts attention in various areas and disciplines and, as mentioned above, it tends to increase in subsequent years.

The results of the corresponding author's countries show that Western countries are the main source of publications. While the USA is the leading country (2,486 publications, 40%) among 101 countries, it is followed by UK (630, 10.2%), Canada (346, 5.6%), Australia (256, 4.1%), Germany (237, 3.8%), Spain (168, 2.7%), Netherland (159, 2.7%), South Africa (136, 2.2%), Sweden (119, 1.9%), and Mexico (112, 1.8%). Our results indicate that most of the publications are from the host and destination countries, and not in countries of origin, which may either be related to the limited resources in these countries to conduct research or less

---

[4] The query was run at the beginning of January 2022 and the WoS is still indexing journals. The total number of publications in 2022 will be higher the more recently the same query is run.

interest, not being a target country for immigration and even non-existence of the research community. On the other hand, growing interest may be related to the size and availability of resources for research, coupled with the national, political, and human rights agendas of Western countries (Sweileh et al., 2018).

Figure 1

Annual Scientific Production on Immigration, Crime, and Violence
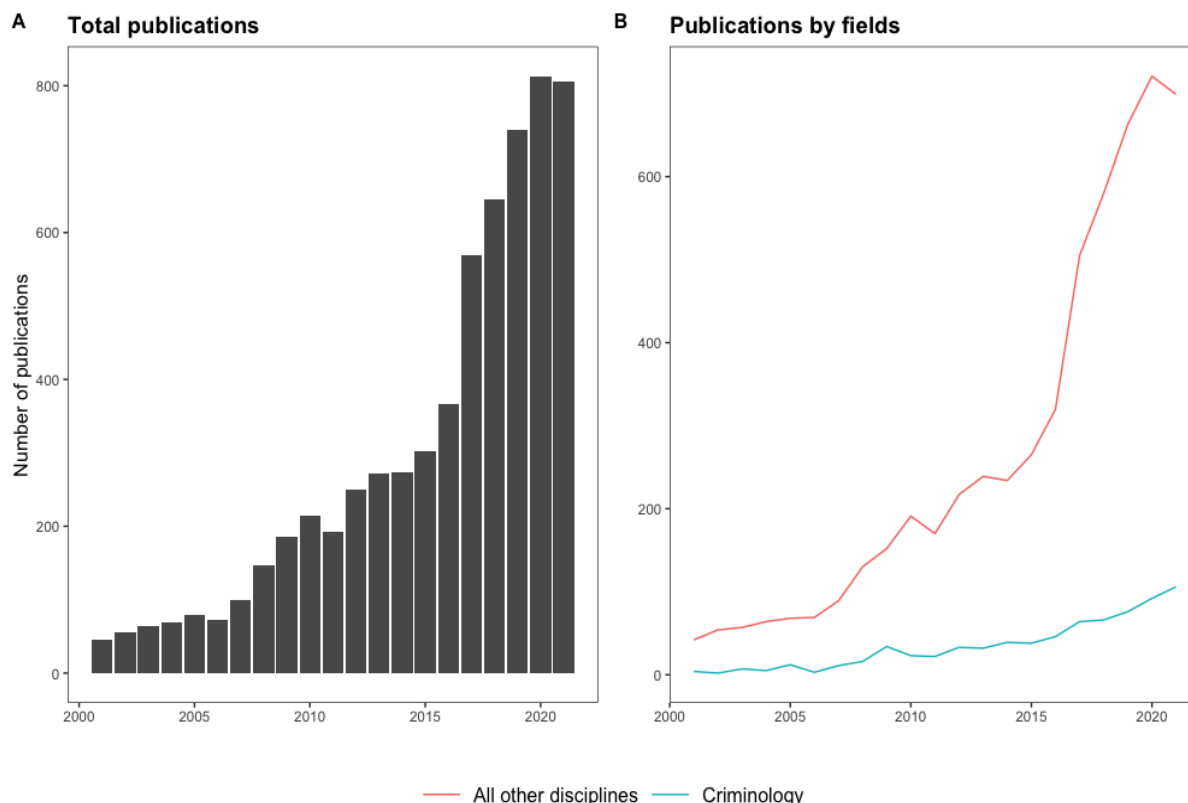
Note. Source 1: Authors own analysis and elaboration.

Table 3

Country Comparison of Authors of Criminology Publications

	Criminology			All Other Fields		
	Country	*Freq*	*Percentage*	*Country*	*Freq*	*Percentage*
1	USA	352	48.75 %	USA	2134	39.31 %
2	United Kingdom	81	11.22 %	United Kingdom	549	10.11 %
3	Australia	42	5.82 %	Canada	317	5.84 %
4	Canada	29	4.02 %	Australia	214	3.94 %
5	Netherlands	27	3.74 %	Germany	211	3.89 %
6	Germany	26	3.60 %	Spain	151	2.78 %
7	Spain	17	2.35 %	South Africa	136	2.51 %
8	Israel	16	2.22 %	Netherlands	132	2.43 %
9	China	14	1.94 %	Mexico	110	2.03 %
10	Norway	13	1.80 %	Sweden	106	1.95 %

Country comparison of authors (Table 3) shows that around half of the publications on this topic in the USA were published in the criminology field, which was followed by the UK, but the difference between the two countries is significantly different favoring the USA. There are slight differences in the order of countries in Table 3, in some countries, criminology research ranks higher than the rest of the disciplines. In Australia, for example, more research on criminology is conducted than the rest of the literature combined.

Funded Research

WOS also provides funding information on the articles, such as grant number and funding agency. The articles were divided into two parts, funded vs. unfunded, and we calculated relevant statistics from this separation. Our results show that 2,092 (33.4%) articles received funding nevertheless when its distribution is calculated across years, it provides us an image of why the publications have increased in recent years. Initially, the years were categorized into three groups as indicated in yearly publication records (Figure 2), as before 2008, between 2009 and 2014, and after 2014.

Figure 2
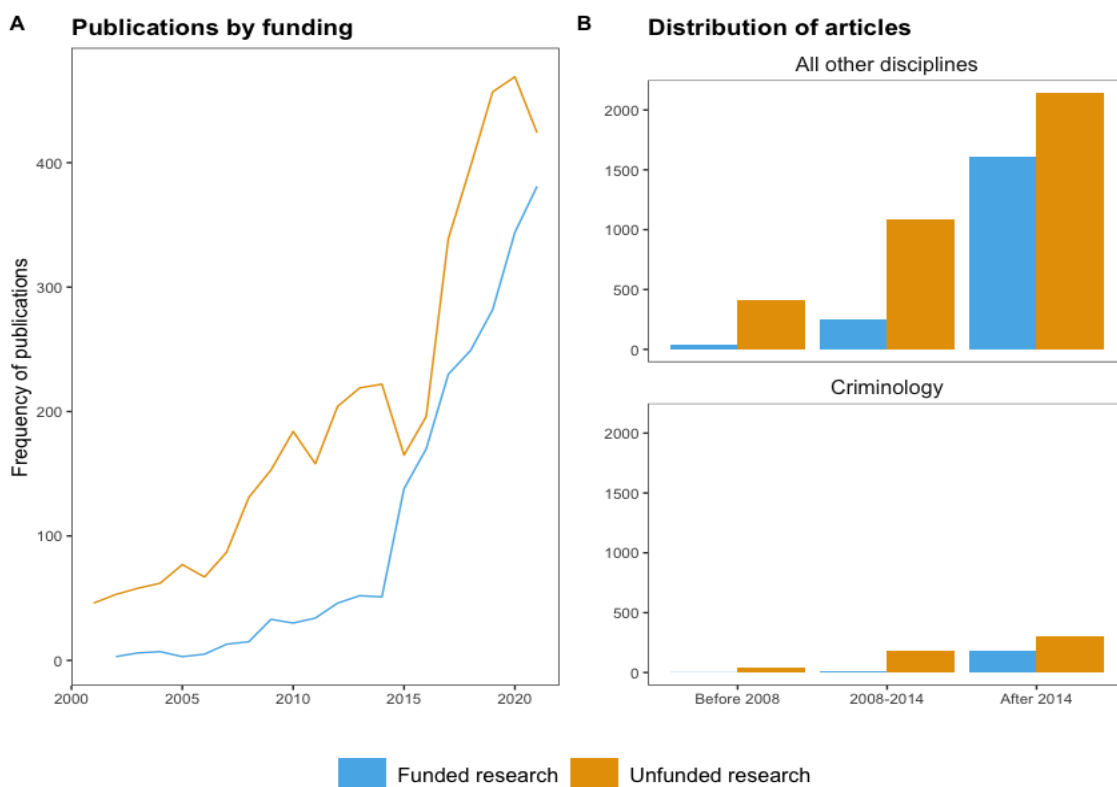*Research Funding Over the Years*

Figure 2 shows that research on immigration has received funds incrementally during the years but that the distribution varies across disciplines. The articles were grouped by publication periods and results show that before 2008, there were less available funding resources for research in all fields, only 7.6% of the articles have funding. Nevertheless, there are still differences between fields, for example, 8% (35 vs. 408) of articles published in all other fields have funding but for articles published in the criminology field, it is around 0.5% (2 vs. 42).

In the next period, the total amount of funding increased to 17% levels in all publications. While 6% (12 out of 187) articles in the criminology field have funding, this ratio for all other disciplines is 18.6 % (249 out of 1,084). On the other hand, the ratio of a paper published in criminology papers increased from 9% (44 vs 443) to 13% (199 vs. 1,333) between 2008-2014 among all publications.

Finally, after 2014, 42.3% of all publications have funding. Still, there is a huge gap between criminology and the rest of the other fields. While 42.8% (1,610 vs. 2,143) of the publications in all other fields have funding, this ratio is 41% (184 vs. 304) for criminology papers. In the third period, the ratio of funded research in the criminology field became equal to the rest of the disciplines. Since the size of the total publications has increased tremendously, the portion written in the field of criminology becomes smaller 10.6% (448 vs. 3753).

Intellectual Topography of the Subject

According to Bradford's Law (Bradford, 1934) "when equally dividing all references in a given subject into 3 groups (or zones), the citations for the first zone would come from a small "core" group of journals. The second zone would require more journals to achieve the same number of citations, and the third zone exponentially would have more journals but fewer publications." (Venable et al., 2016, p. 569). Bradford's law allows us to select the most productive journals and the most relevant journals covering a given area of knowledge, which in our study, are immigration and crime. Our results show that among 1,859 journals, only 79 (0.04%) journals constitute the most productive field journals when publishing on this topic. Although our inclusion criteria deepen the variation, counting the total publication numbers shows that the vast majority of the publications are out of the main publication streams that would have the potential for citation.

Table 4
Most Productive Journals in Immigration, Crime and Violence

	Journal Names	Articles	Percentage
	Criminal Justice / Criminology		
1	Journal of Interpersonal Violence	87	11.90 %
2	Crime Law and Social Change	40	5.47 %
.3	British Journal of Criminology	34	4.65 %
4	European Journal of Criminology	25	3.42 %
5	Crime & Delinquency	24	3.28 %
6	International Journal for Crime Justice and Social Democracy	24	3.28 %
7	Theoretical Criminology	23	3.15 %
8	Journal of Criminal Justice	18	2.46 %
9	European Journal on Criminal Policy and Research	17	2.33 %
10	Justice Quarterly	17	2.33 %
	Rest of the literature		
1	Violence Against Women	103	1.86 %
2	Journal of Immigrant and Minority Health	100	1.81 %
3	Journal of Ethnic and Migration Studies	98	1.77 %
4	Plos One	67	1.21 %
5	Social Science & Medicine	67	1.21 %
6	Journal of Refugee Studies	52	0.94 %

7	International Migration	51	0.92 %
8	Int. Journal of Environmental Research and Public Health	45	0.81 %
9	Children and Youth Services Review	38	0.69 %
10	Journal of Family Violence	37	0.67 %

When considering the overall publication records, the top 10 most productive journals that published articles on immigration, crime, and violence is Violence against Women with 103 articles, which is followed by the Journal of Immigrant and Minority Health (100), the Journal of Ethnic and Migration Studies (98). Table 4 shows that journals prioritizing violence studies publish more articles on this topic in criminology and the rest of the fields. The second most important field among the non-criminology journals (designated 'the rest of the literature' in Table 4), is health-oriented studies showing the importance of the health aspect of migration, crime & violence research in the literature. The health component received significant attention with regard to the previous studies.

Journal Influence

Bibliometric Citation analysis is also a useful tool to evaluate journal performance. The PageRank analysis estimates the influence of the journals on their potential citation projections. The PageRank scores of each journal were calculated with the Gephi software (Bastian et al., 2009). The results presented in percentage show the probability of a node being visited by a scholar when the scholar randomly visits a node in the network (Demiroz, 2020). Violence Against Women has the highest PageRank score (3.9 percent) (see Table 5). That means articles published in the journal of Violence Against Women have a 3.9 percent chance of being cited when authors develop their bibliography by using the bibliography of articles they read. It is followed by the Zeitgeschichte journal (3.4%) and the Journal of Youth Violence and Juvenile Justice (3.2%) respectively. Considering the total number of journals (1,859) that contain a publication on this subject, these journals have more potential for being cited.

Table 5
Page Rank Scores of Journals

	Journal names	Percentage
1	Violence Against Women	3.96 %
2	Zeitgeschichte	3.45 %
3	Youth Violence and Juvenile Justice	3.22 %
4	Women's Studies International Forum	3.19 %
5	Youth & Society	2.38 %
6	Victims & Offenders	2.10 %
7	Social Science & Medicine	1.82 %
8	Women & Therapy	1.24 %
9	Theoretical Criminology	1.22 %
10	Sociological Quarterly	1.13 %

Intellectual Boundaries and Interactions between Disciplines

Citation relations show how ideas spread across journals and disciplines. In this part of the analysis, this study used two citation analyses, coupling and co-citation analysis, to illustrate the diffusion of ideas across journals from different disciplines. Bibliographic coupling (BC), introduced by Kessler (1963) links publications that reference the same set of cited documents.

In other words, it calculates the number of common references between two articles. It proposes that the greater number of common references between two articles, the more intellectually related they are. BC is useful to obtain intellectual relatedness between two documents using common references that are reportedly more recent. It is used for science mapping, research front detection, and information retrieval (Van Raan, 2005).

Since the number of resources in the dataset is large, the minimum number of documents of a source was set to 10 to simplify the graph for visualization purposes; 116 of them were coupled out of 1,860 journals in the analysis. Each circle (node) in the network represents a journal. The size of the label and the circle of an item is determined by the weight of the item. The higher the weight of an item, the larger the label and the circle of the item. The strength of a link indicates the number of cited references two publications have in common.

The findings of the BC analysis indicate that journals are grouped into three clusters with respect to the references they share. In other words, as Figure 3 indicates, research on immigration and crime has three major groups of research trends that are surrounded by the three journal clusters. The first cluster colored in red spreads sparsely across the British Journal of Criminology, the Journal of Ethnic and Migration Studies and the Journal of Refugee Studies. On the upper edge, there are political science and international relations journals and although they have noticeable distance, their citation records still keep them in this cluster. Moreover, the British Journal of Criminology is in the middle of the diagram, which functions as a hub between these three clusters.

The second cluster is formed around Violence Against Women and the Journal of Immigrant and Minority Health. The diagram indicates that the cluster has two sub-clusters, one grouped in women's studies and the other one public and mental health-oriented journals. Nevertheless, the citation commonalities between these two fields make them a unique cluster. Put differently, their strong connections refer to how they closely interact with each other. The final cluster (blue) has a considerable distance to two other clusters and the cluster does not have a center journal. It is more likely that other social science journals have fewer references from other clusters and fields.

Figure 3

Result of the Bibliographic Coupling
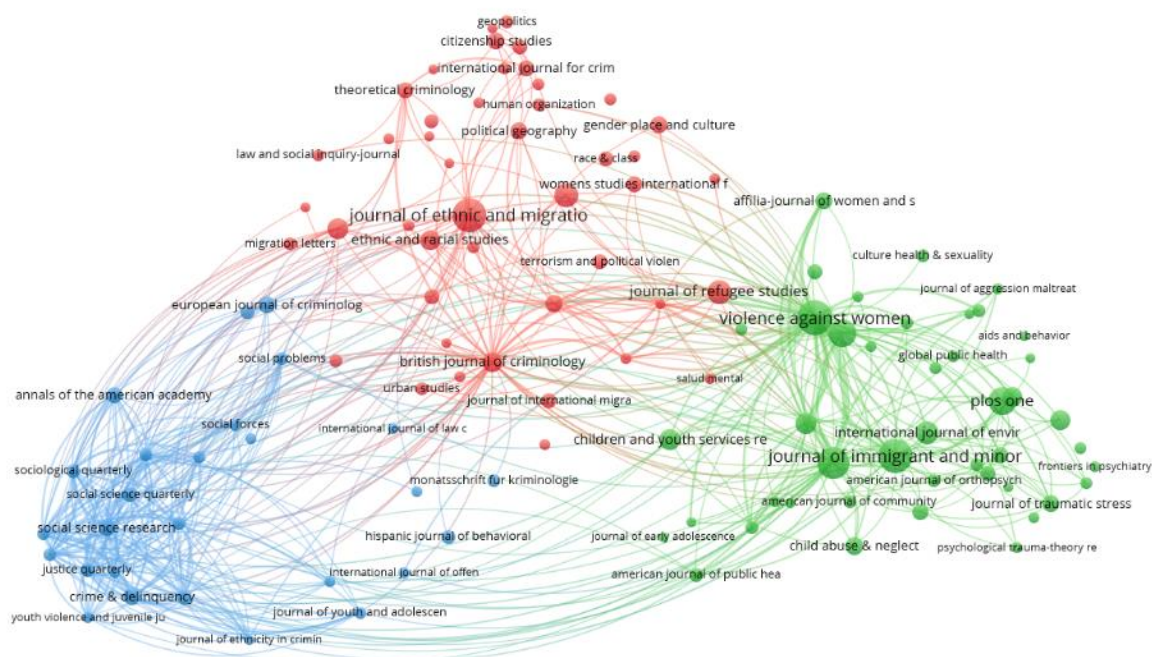
On the other hand, the co-citation (CC) analysis is used to establish a subject similarity between two documents. It refers to published articles to build their research on similar articles reportedly published previously in scholarly journals (Van Raan, 2012). Put differently, it calculated the frequency of two articles cited by another article. For instance, if an article references two documents together, then those documents are called 'co-cited'. It helps us to identify the formation of research clusters by tracking co-cited articles. The higher the co-citation strength, the greater the similarity of the study subject. CC clustering benefits from the use of external references, which enable us to identify the research front clusters and *link the old ones with current clusters* (Boyack & Klavans, 2010). To simplify the graph, we set the minimum number of citations of a source to 200, and out of the 109,451 sources, 151 met the threshold level.

The findings (Figure-4) show that journals are grouped in four clusters with respect to the references they share. The distance between two journals in the graph approximately indicates the relatedness of the journals in terms of co-citation links. In general, the closer the two journals are located to each other, the stronger their relatedness is. The strongest co-citation links between journals are also represented by lines. According to the analysis related to co-citation data, studies within sociology, criminology, and crime research mostly cite one another with a closer connection to Political Science and policy-related issues. They are significantly more distant from public health, psychology, and law-related research than the social aspects of the research. This further indicates that public/mental health journals and immigration journals are very close to each other. Besides, this cluster isolates itself clearly from other clusters. Social and political interaction is much more common than their interaction with the health-related literature. The fourth cluster (in green) most likely represents communication and media studies.

Figure 4

Journal Co-Citation Network Based on the Articles
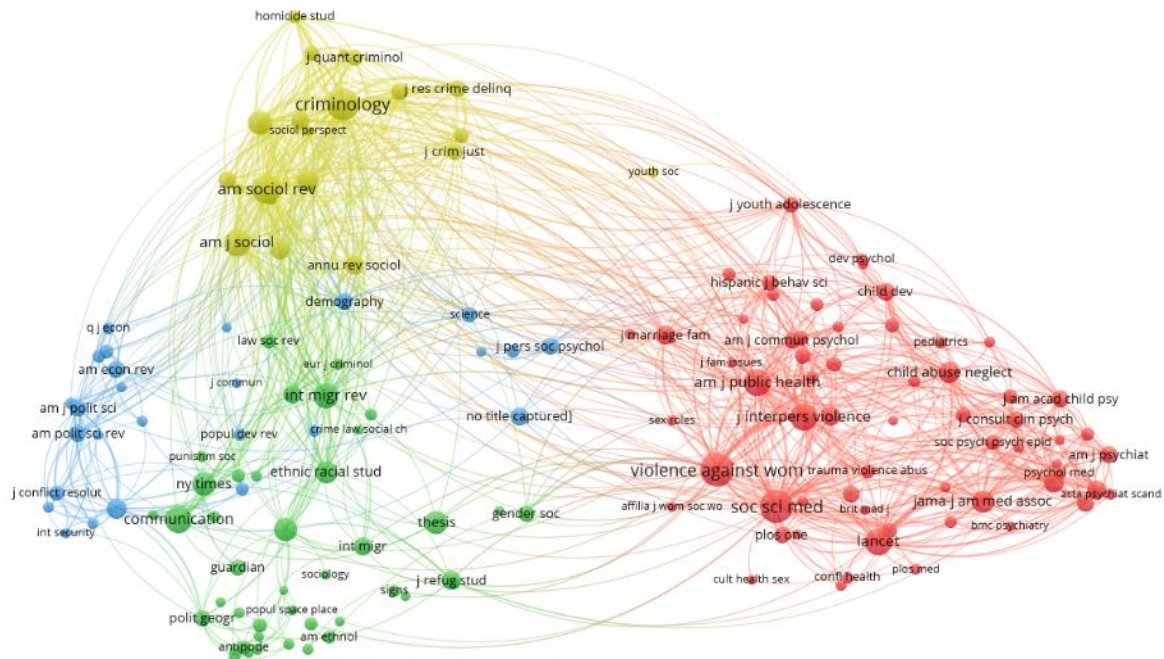
The CC analysis results show a different pattern compared to BC; there are four clusters here. Since CC includes external references, it greatly increases the number of papers in the research front that can be clustered (Boyack & Klavans, 2010). That is the reason CC produces

more clusters. In other words, while BC created the "nowadays landscape" of the scientific literature based on citation of older literature, CC created the landscape of "older literature" by analyzing the contemporary publications (Van Raan, 2005). Thus, BC analysis shows that the contemporary publications on immigration on the crime and violence nexus were grouped around three clusters. The distance between clusters is closer to each other compared to CC analysis, which indicates that the subject has been studied more interconnectedly across disciplines nowadays resulting in fewer journal clusters. On the other hand, CC analysis indicates that the literature on the subject was generated from four clusters (Figure 4). The distinctive characteristics of the disciplines can be more visible in clusters, for instance, blue nodes show the political and international relations journals whereas the green nodes more likely represent communication, media outlets and law journals. Furthermore, distances between clusters indicate that journals of criminology are situated on the edges of the network diagram.

Study Concepts

Bibliometrics analysis employs diverse sources to reveal semantic structure, such as title, revised keywords from a database, the author suggested keywords, and abstract. The WOS dataset includes two types of keywords; Author Keywords that were provided by authors and Keywords Plus that were generated with an automatic computer algorithm from the titles of the cited references, developed by Thomson Reuters (Garfield & Sher, 1993). The 10 most frequently used keywords in criminology and the rest of the field are provided in Table 6.

Table 6
Top Author Keywords in Criminology and Rest of the Literature

|	Criminology			Rest of the fields		
	Author Keywords	**Freq**	**Percentage**	**Author Keywords**	**Freq**	**Percentage**
1	Immigration	107	3.44 %	Migration	509	2.10 %
2	Domestic Violence	53	1.70 %	Refugees	462	1.90 %
3	IPV	46	1.48 %	Immigration	376	1.55 %
4	Migration	42	1.35 %	Violence	370	1.52 %
5	Crime	37	1.19 %	Mental Health	176	0.72 %
6	Violence	36	1.16 %	Gender	173	0.71 %
7	Victimization	28	0.90 %	IPV	167	0.69 %
8	Immigrants	27	0.87 %	Domestic Violence	165	0.68 %
9	Policing	27	0.87 %	Immigrants	135	0.56 %
10	Homicide	21	0.67 %	Trauma	132	0.54 %

Note. IPV = Intimate Partner Violence

Results show that policing, homicide, crime and victimization are the distinctive keywords in the top ten list of criminology fields, whereas trauma, mental health, gender, and refugees are the distinct features of other fields (Table 6). The resulting keyword co-occurrence network map shows various information including the most frequently used keywords, their relations with other concepts, thematic clusters, and network development. As mentioned above, a link represents relations between terms; it specifically refers to the number of publications in which two terms occur together (Van Eck & Waltman, 2013). Thus, the higher this value, the stronger (thicker) the link in co-occurrence analysis.

Figure 5

Co-Occurrence of Author Keywords Network Visualization
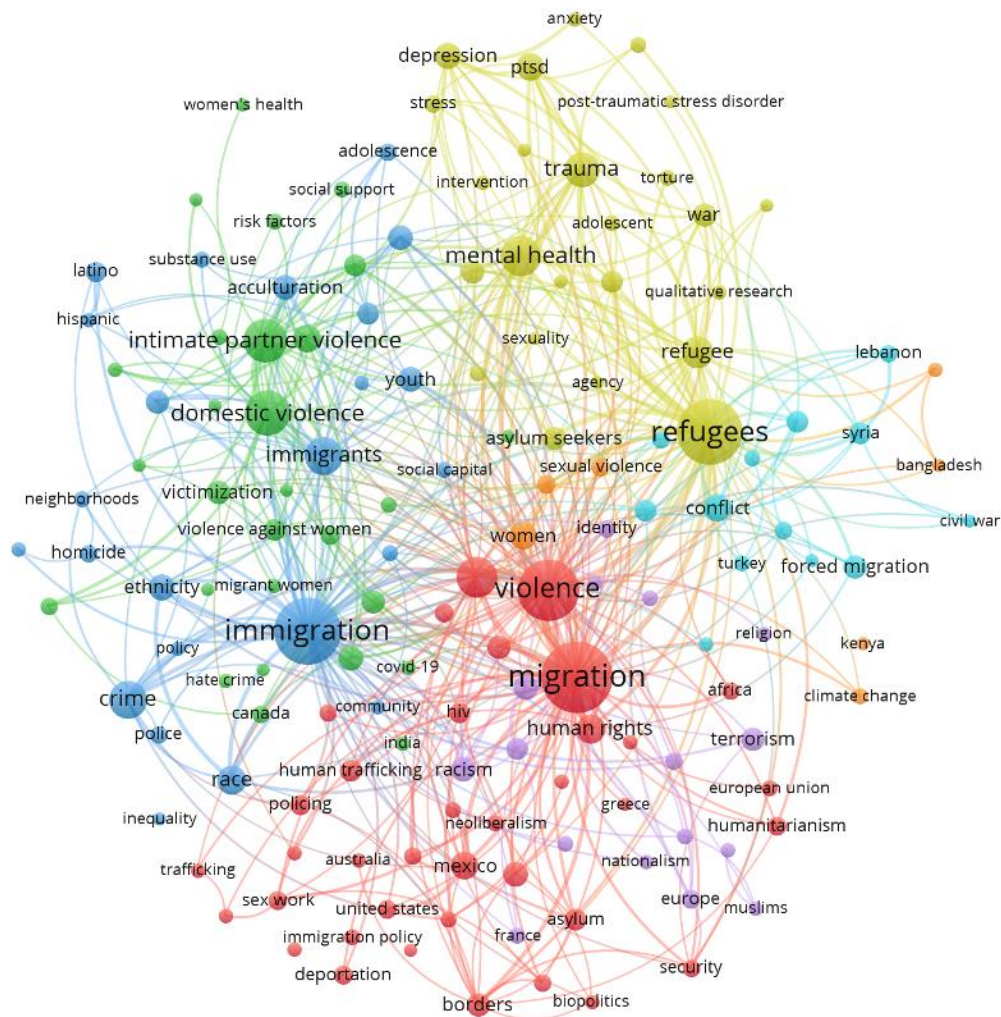
When a minimum number of keyword occurrences is set to 20 to simplify the graph, the VOSviewer software identifies entries are connected among 149 Author Keywords (Figure 4). As seen in the graph (Figure 5), 7 clusters are formed and represented by different colors in the diagram. It shows that disciplines prefer specific keywords for studying the immigration concept. For instance, mental health and wellbeing are more likely to be studied under the refugee term while the keywords like crime, homicide, police, neighborhood tend to be used under the immigration term. Feminist studies focusing on domestic violence, migrant women, intimate-partner violence have formed a unique cluster (green) and embedded in criminology-related studies (blue cluster). Although these two fields interact very closely with each other, they still constitute their clusters. Overall results show that immigration research has been mostly studied from the "receiving country" perspective (Dinbabo, 2018). It is also noticeable that studies focusing on the latest conflict in the Middle East have formed their cluster (turquois) and include such keywords as *conflict*, *civil war*, *Turkey*, *Syria*, and *Lebanon*.

Figure 6

*Co-Occurrence of Author Keywords Overlay Visualization*
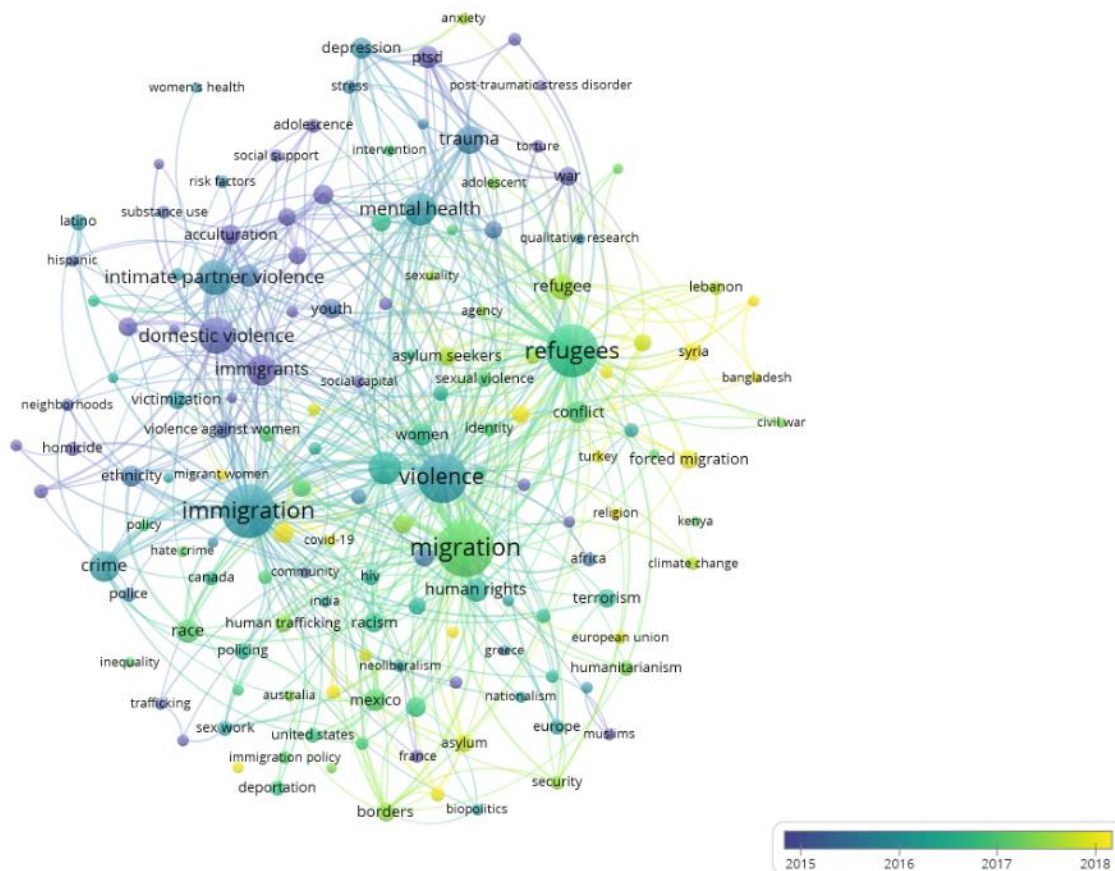
On the other hand, the VOSviewer software provides overlay visualization, which is identical to network visualization but colors the items differently. The color of the keywords is determined by their scores (year of publication), whereby in our case, the colors range from blue (lowest score - early years of publications) to green to yellow (highest score - most recent years) (Van Eck & Waltman, 2013). The keywords on the bottom-right side of the graph with yellow colors are the most current concepts studied in the field. For instance, researchers paid attention to regional conflicts such as in Syria, Rohingya, or Central America, and those concepts were studied closely with displacement, asylum, gender-based violence, and mobility. Likewise, concepts such as Covid-19, intersectionality, domestic violence, immigration, and media comprise others among the newest and most closely studied issues in the literature with more than 20 occurrence keywords. On the other hand, acculturation, posttraumatic stress disorder (PTSD), delinquency, or culture seem to be topics of lower preference nowadays.

Research Cooperation

Since immigration is a cross-border issue, the collaboration between countries is worthy of analysis. Co-authorship analysis was conducted in the VOSviewer software to map the collaboration efforts. The unit of analysis in the network diagram is a country and weighed nodes represent the number of documents published by country origin of authors (Van Eck & Waltman, 2013). To simplify the diagram, only countries with over 10 publications are included in network analysis, which results in producing a network of 61 countries out of 135.

Figure 7
Co-Author Cooperation on Publications Overlay Visualization
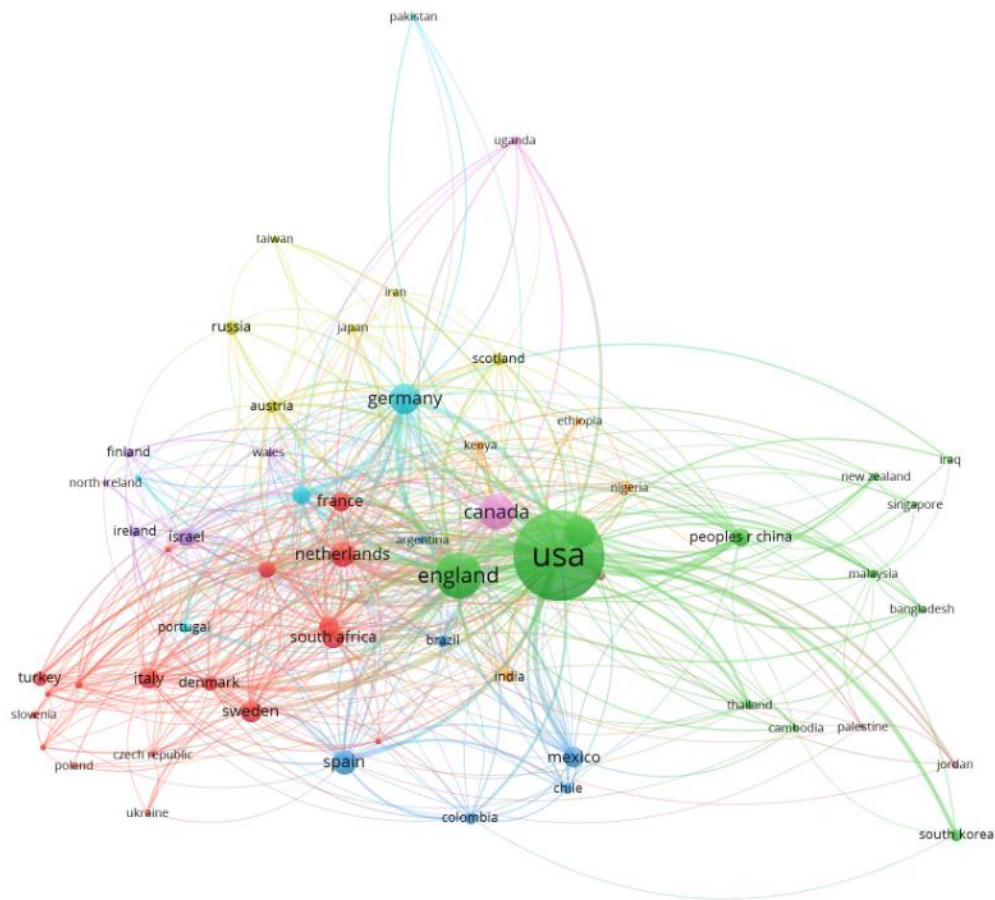
The analysis produces nine clusters nevertheless, some clusters are only represented by two countries such as Uganda and Canada or by three such as Jordan, Lebanon, and Palestine, which means that the trend of the cooperation isolated them from other clusters and created their clusters. On the other hand, geographical and cultural closeness seems to facilitate author cooperation such as among East-Asian and European countries. Nevertheless, the US authors have the leading role in scientific cooperation.

Discussions, Limitations, and Conclusion

Using the bibliometric analysis, this study examined the literature on immigration, crime, and violence between 2001-2021 and identified key themes and issues studied in the literature. Data for the analysis was extracted from the ISI Web of Knowledge Social Sciences Citation Index (SSCI) database including raw publication data and journal citation data. Analysis of the first data allowed us to identify the journals producing most of the studies on immigration, crime, and violence. According to the results, the Journal of Ethnic and Migration Studies, Violence Against Women and the Journal of Interpersonal Violence are the top three journals and produce almost 40% of the studies on migration, crime, and violence. This finding suggests that migration research connects with the criminology research in the field of violence, more specifically violence against women. Findings should be carefully interpreted here since the connection is at the journal level and not at the study level.

In the second stage of the analysis, journal citation is used as a unit of analysis to examine the interactions between academic disciplines. According to co-citation network

analysis criminology, public health, ethnic and racial studies and political science came out as the major fields creating most of the interaction across various topics. However, public health and medical journals are more distant from other social science topics, suggesting that studies in these fields cite similar studies within their field. Put differently, however, there is a lot of research being done in public health and medical fields, it is almost disconnected from the social sciences and vice versa. In other words, the connection between health and other aspects of the social sciences regarding migration research is limited and health research is mostly connected within its field.

According to our analysis, looking at the field producing most of the studies, Criminology has a leading role, however, most of the studies in this area were published in journals of other fields. These findings suggest that studies on immigration, crime, and violence in the field of criminology can find a place in journals that are not directly criminology journals. The selection of the journals may be related to research questions and variables that the studies focus on. Public health, sociology, and political science follow criminology in producing most of the studies in the literature. Among many other reasons, funding seems to be the driving force behind the increase in publications. The comparison shows that the Psychology and Public Health fields overwhelmingly acquired funding for their studies, even more than half of the articles published in Public Health have funding. Nevertheless, publications in the criminology field closed this gap recently.

The amount of increase in the number of publications annually for the last two decades can be explained by reasons directly related to the increasing number of events resulting in the displacement of more people and more people becoming immigrants due to economic hardships in the source countries. As a result, the increasing numbers of migrants and other displaced individuals have led to an increase in the number of studies with an increasing amount of funding provided by governments and international institutions. In 2008 and 2015, we can observe this trend easily and dramatically (Sweileh et al., 2018). In addition to increasing government funds for immigration research, such as through calls for proposals or direct commissioning, some governments have also implemented formal migration research programs (Dinbabo, 2018). Advancement in analytical techniques and the computational capacity of analyzing large datasets has become widely available. More data is necessary to understand the trend in the increasing amount of research, however, we can predict that in spite of having been interrupted by Covid-19 in 2020, this trend could continue due to changes created by the pandemic.

In a recent study, Pisarevskaya et al. (2020) conducted a bibliometric analysis to examine the academic field related to migration studies and to understand the structure of the field. Their analysis shows that the migration studies field developed no consistent trend for more fragmentation, and instead the diversity of the topics studied in the field was relatively stable. They argue that migration studies follow its "oldest" path, which mainly relies upon demographic studies of migration and diversity. The more recent themes in immigration are gender, family, diversity, and health studies (Pisarevskaya et al., 2020). Our results also confirm their findings and show that demographic studies focus on the impact of recent regional or country-specific conflicts, including but not limited to Syria, Lebanon, Kenya, Greece, and Central America. Likewise, study concepts, such as deportation, asylum, displacement, mobility, and gender-based violence, hate speech and fake news, are part of diversity research.

The term preferences by disciplines require additional scrutiny, for instance, Priovashini and Mallick (2021) find in their study that scholars avoid using refugee terms and prefer migrants when studying environmental refugees. Nevertheless, in our study, the term *refugee* is more preferred in the health field, focusing on victims of displacement and their psycho-social position in the process. Likewise, the migration cluster (red) is more likely formed from

political science and international relations concepts which study asylum, immigration policy, deportation, security, and human trafficking focusing on regions and countries.

Refugees are mostly associated with individual-level psychological research, but their connection with the research related to integration and policy is limited. Therefore, the first suggestion of this research is to connect refugee studies with more integration and policy-level research (Figure 4) as well as connecting health science and social science as mentioned above. Our findings also highlight further study topics. Firstly, it would still be interesting to study whether criminal acts by migrants also affect their home countries, especially with considerations of studies of organized crime. It would be worth investigating why certain authors and disciplines prefer certain terms over others in this field.

Our study also has some limitations. First, our results only include peer-reviewed articles in English indexed by the Web of Science. In the immigration field, the volume and the impact of grey literature gain significant importance, particularly considering reports and policy documents published by governments and international organizations (Dinbabo, 2018). Thus, our analysis does not reflect the grey literature, which would have a significant contribution to this area of study. Besides, WOS has some limitations to index journals published from African and Asian countries, such as India, China, and Indonesia, which were also not included in the analysis. Instead, the results are more likely to be limited to countries in which more resources are being allocated.

In conclusion, this study provides a holistic understanding of migration studies as a separate field by focusing on the relationship between immigration, crime, and violence. Our findings suggest that criminology is the top field producing most of the studies in the field looking at how immigration, crime, and violence, followed by public health-related research. These findings suggest that migration, when it is connected to crime and violence, is considered an individual and social-level challenge requiring the attention of experts to understand criminal and deviant behavior as well as experts from public health. To produce better results, these two fields need closer connections with political science, public administration, and policy-level journals. Although the connection between criminology and political science is promising, a similar connection between public health and political science is missing.

Similarly, more studies are required to understand the connection between criminal behavior and violence, while the source country and international and regional studies need to look at how individual and social-level dynamics that are connected to the source country affects the criminal behavior. Other issues that need to be addressed are whether or not migrants, due to non-integration, are forced to be part of the gangs and mafia groups in their host countries. In other words, a closer look at how different integration policies affect crime and violence in the immigration or displacement context is a matter for future research.

References

Adelman, R., Kubrin, C. E., Ousey, G. C., & Reid, L. W. (2018). New directions in research on immigration, crime, law, and justice. *Migration Letters*, *15*(2), 139–146.

Adelman, R., Reid, L. W., Markle, G., Weiss, S., & Jaret, C. (2017). Urban crime rates and the changing face of immigration: Evidence across four decades. *Journal of Ethnicity in Criminal Justice*, *15*(1), 52–77.

Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, *11*(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

Bastian, M., Heymann, S., & Jacomy, M. (2009). *Gephi: An open source software for exploring and manipulating networks*. International AAAI Conference on Weblogs and Social Media.

Bianchi, M., Buonanno, P., & Pinotti, P. (2012). Do immigrants cause crime? *Journal of the European Economic Association*, *10*(6), 1318–1347.

Boateng, F. D., Pryce, D. K., & Chenane, J. L. (2021). I may be an immigrant, but I am not a criminal: Examining the association between the presence of immigrants and crime rates in Europe. *Journal of International Migration and Integration*, *22*, 1105–1124. https://doi.org/10.1007/s12134-020-00790-1

Boyack, K. W., & Klavans, R. (2010). Co-citation analysis, bibliographic coupling, and direct citation: Which citation approach represents the research front most accurately? *Journal of the American Society for Information Science and Technology*, *61*(12), 2389–2404.

Bradford, S. C. (1934). Sources of information on specific subjects. *Engineering*, *137*, 85–86.

Caviedes, A. A. (2018). The Migration-Crime Nexus and the Press in France, Germany, and the United Kingdom. *Migration Letters*, *15*(2), 167–181.

Cervantes, A. G., & Menjivar, C. (2018). "Bad Hombres": The effects of criminalizing Latino immigrants through law and media in the rural Midwest. *Migration Letters*, *15*(2), 182–196. https://doi.org/10.33182/ml.v15i2.36

Chen, X., & Zhong, H. (2013). Delinquency and crime among immigrant youth—An integrative review of theoretical explanations. *Laws*, *2*(3), 210–232.

Demiroz, F. (2020). The use of social media during disasters: The development of the literature, its current topography, and future challenges. *Journal of Emergency Management*, *18*(3), 221–235. https://doi.org/10.5055/jem.2020.0468

Dinbabo, M. (2018). *Migration research and analysis: Growth, reach and recent contributions* (World Migration Report, pp. 318–320). International Organization for Migration. https://publications.iom.int/system/files/pdf/wmr_2018_en_chapter4.pdf

Eberl, J.-M., Meltzer, C. E., Heidenreich, T., Herrero, B., Theorin, N., Lind, F., Berganza, R., Boomgaarden, H. G., Schemer, C., & Strömbäck, J. (2018). The European media discourse on immigration and its effects: A literature review. *Annals of the International Communication Association*, *42*(3), 207–223. https://doi.org/10.1080/23808985.2018.1497452

Foresight. (2011). *Migration and Global Environmental Change: Final Project Report*. The Government Office for Science. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/287717/11-1116-migration-and-global-environmental-change.pdf

Garfield, E., & Sher, I. H. (1993). Brief Communication Keywords PlusAlgorithmic Derivative Indexing. *Journal of the American Society for Information Science (1986-1998)*, *44*(5), 298.

Gonzalez, J., Garijo, I., & Sanchez, A. (2020). Organ trafficking and migration: A bibliometric analysis of an untold story. *International Journal of Environmental Research and Public Health*, *17*(9), 3204. https://doi.org/10.3390/ijerph17093204

Gurer, C., & Akgul, A. (2020). Conflict, Human Displacement, and Integration: Exploring the Vulnerability of Refugees. In *Globalization and its impact on violence against vulnerable groups* (pp. 26–51). IGI Global. https://doi.org/10.4018/978-1-5225-9627-1.ch002

Hollifield, J. F. (2020). Is migration a unique field of study in social sciences? A response to Levy, Pisarevskaya, and Scholten. *Comparative Migration Studies*, *8*(1), 1–9. https://doi.org/10.1186/s40878-020-00192-3

Joyner, K. (2018). Arresting Immigrants: Unemployment and Immigration Enforcement. *Migration Letters*, *15*(2), 215–238.

Kessler, M. M. (1963). Bibliographic coupling between scientific papers. *American Documentation*, *14*(1), 10–25.

Khaldi, H., & Prado-Gascó, V. (2021). Bibliometric maps and co-word analysis of the literature on international cooperation on migration. *Quality & Quantity: International Journal of Methodology*, *55*(5), 1845–1869. https://doi.org/10.1007/s11135-020-01085-4

King, R. D., & Obinna, D. N. (2018). Violent crime and immigrant removals: Reasons and determinants of immigrant deportations, 1908-1986. *Migration Letters*, *15*(2), 239–254.

Leiva, M., Vasquez-Lavín, F., & Oliva, R. D. P. (2020). Do immigrants increase crime? Spatial analysis in a middle-income country. *World Development*, *126*, 104728.

Leyro, S. P., & Stageman, D. L. (2018). Crimmigration, deportability and the social exclusion of noncitizen immigrants. *Migration Letters*, *15*(2), 255–265. https://doi.org/10.33182/ml.v15i2.372

Longhi, S., Nijkamp, P., & Poot, J. (2006). *The Fallacy of Job "Robbing": A Meta-Analysis of Estimates of the Effect of Immigration on Employment* (Tinbergen Institute Discussion Paper No. 06-050/3). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=907025

Massey, D. (1998). *Worlds in Motion Understanding International Migration at the End of the*. Oxford.

Miranda-González, A., Aref, S., Theile, T., & Zagheni, E. (2020). Scholarly migration within Mexico: Analyzing internal migration among researchers using Scopus longitudinal bibliometric data. *EPJ Data Science*, *9*(1), 34.

Moed, H. F., & Halevi, G. (2014). A bibliometric approach to tracking international scientific migration. *Scientometrics*, *101*(3), 1987–2001.

Ousey, G. C., & Kubrin, C. E. (2009). Exploring the connection between immigration and violent crime rates in US cities, 1980–2000. *Social Problems*, *56*(3), 447–473.

Ousey, G. C., & Kubrin, C. E. (2018). Immigration and crime: Assessing a contentious issue. *Annual Review of Criminology*, *1*, 63–84.

Pisarevskaya, A., Levy, N., Scholten, P., & Jansen, J. (2020). Mapping migration studies: An empirical analysis of the coming of age of a research field. *Migration Studies*, *8*(3), 455–481.

Priovashini, C., & Mallick, B. (2021). A bibliometric review on the drivers of environmental migration. *Ambio*, *51*(1), 241–252. https://doi.org/10.1007/s13280-021-01543-9

Stockemer, D., Niemann, A., Rabenschlag, J., Speyer, J., & Unger, D. (2018). Immigration, anti-immigrant attitudes and Euroscepticism: A meta-analysis. *French Politics*, *16*(3), 328–340.

Sweileh, W. M. (2018a). Bibliometric analysis of peer-reviewed literature on Syrian refugees and displaced people (2011–2017). *Conflict and Health*, *12*(1), 1–4.

Sweileh, W. M. (2018b). Research trends on human trafficking: A bibliometric analysis using Scopus database. *Globalization and Health*, *14*(1), 1–12.

Sweileh, W. M., Wickramage, K., Pottie, K., Hui, C., Roberts, B., Sawalha, A. F., & Zyoud, S. H. (2018). Bibliometric analysis of global migration health research in peer-reviewed literature (2000–2016). *BMC Public Health*, *18*(1), 1–18.

Van Eck, N. J., & Waltman, L. (2013). VOSviewer manual. *Leiden: Univeristeit Leiden*, *1*(1), 1–53.

Van Raan, A. F. (2005). Reference-based publication networks with episodic memories. *Scientometrics*, *63*(3), 549–566.

Venable, G. T., Shepherd, B. A., Loftis, C. M., McClatchy, S. G., Roberts, M. L., Fillinger, M. E., Tansey, J. B., & Klimo, P. (2016). Bradford's law: Identification of the core journals for neurosurgery and its subspecialties. *Journal of Neurosurgery*, *124*(2), 569–579.

Zatz, M. S., & Smith, H. (2012). Immigration, crime, and victimization: Rhetoric and reality. *Annual Review of Law and Social Science*, *8*, 141–159.

Notes on Contributors

Dr. Ali Ünlü is a visiting researcher at the Finnish Institute for Health and Welfare. His research interests include public policy, drug policy, youth studies, crime, immigration and online radicalization. Email: ali.unlu@thl.fi; aliunlu@gmail.com; Profile page: https://www.aliunlu.com

Dr. Cüneyt Gürer is a professor of Transnational Security Studies at the Marshall Center. His research interests and areas of expertise comprise transnational security issues, regional security dynamics, human displacement and nonstate actors in contemporary conflicts. He lectures on the interaction of Turkey's domestic politics with its regional security policy process. E-Mail: cueneyt.guerer@marshallcenter.org; cuneytgurer@gmail.com;

Profile page: https://www.marshallcenter.org/en/directory/dr-cuneyt-gurer