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Pöttschke, Steffen; Rinke, Sebastian

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Chapter 1

Introduction: Using Innovative Technologies to Tackle Methodological Challenges in Migration Research



Steffen Pöttschke and Sebastian Rinken

Mobility is a defining feature of mankind, a fact which led some authors even to label our species *homo migrans* (Bade, 2003). In recent years, however, the surging volume of human mobility in general, and of cross-border movements in particular, has situated international migration as a major driving force of social change on a global level. The United Nations Department of Economic and Social Affairs estimates that there were 173 million international migrants in 2000 and 281 million in 2020 (UNDESA, 2020). Thus, the number of individuals who live outside their country of birth has grown by more than 60% within just two decades. These figures include international refugees and asylum seekers, whose numbers have more than doubled to about 33.8 million.¹ While (formally) voluntary migration in the pursuit of happiness, career opportunities, or improved living conditions continues to predominate, migration that is forced as a result of man-made or natural disasters has grown even faster, exposing those affected to tremendous hardships.

In this context, migration has come to occupy a prominent place in the public debates and political discourse of many countries around the globe. Human mobility, immigration, and emigration have profound social, economic, and political implications. To illustrate this complexity, we shall limit ourselves to mentioning a small selection of the most salient issues here. The aggregate economic effects of international migration are widely thought to be beneficial: for example, many states are

¹This number includes Palestine refugees (under the mandate of the United Nations Relief and Works Agency for Palestine Refugees in the Near East) and displaced Venezuelans.

S. Pöttschke (✉)

GESIS – Leibniz Institute for the Social Sciences, Mannheim, Germany

e-mail: steffen.poetzschke@gesis.org

S. Rinken

Spanish Research Council (CSIC), Institute for Advanced Social Studies (IESA),
Córdoba, Spain

e-mail: srinken@iesa.csic.es

actively trying to attract (highly-) qualified migrants (Weinar & Klekowski von Koppenfels, 2020). This approach holds particularly true for countries in the Global North that use selective immigration as a strategy to counterbalance the negative labor market effects of declining birth rates. Migrants, who usually maintain continuing ties to those they left behind, also are of considerable economic importance to their countries of origin: in 2019, the combined value of remittances totaled 689 billion US-dollars, a fivefold increase since 2000 (IOM, 2019). Whether the migration of skilled workers might benefit the economic development of their countries of origin by means of a so-called “brain circulation” or, rather, constitutes a “brain drain” seems to depend on specific context factors (Atte, 2021; de Haas, 2012; Singh & Krishna, 2015). An undisputable downside, however, is that the institutional fabric of destination countries and supra-national organizations, such as the European Union, is strained by political actors who seek to exploit the increase of voluntary and involuntary migration for their own gain. Populist politicians have fanned perceptions of negative impacts on less qualified labor-market segments, conjured up cultural conflicts, and depicted redistributive policies as skewed against the interests of natives (Lucassen, 2018). Political actors and scholars aiming to preserve social inclusion have struggled to counter the false narratives that aim to stir public opinion against immigrants without, at the same time, neglecting the legitimate questions and concerns of natives.

In recent decades, these developments and a myriad of related issues have led to a considerable intensification of academic engagement with migration. This is evident not only in the surging volume of scientific projects (Isernia et al., 2018; Morales et al., 2020) and publications (Pisarevskaya et al., 2020; Pritchard et al., 2019) but also in the continuously growing number of dedicated postgraduate programs. In line with this expansion, research centers focusing specifically on migration-related issues have been established or consolidated in many countries, and the International Migration Research Network (IMISCOE) has grown from 24 founding institutes in 2004 to 61 institutional members in 2022 (IMISCOE, 2022; Levy, 2020).

Despite this increase in scientific activity, significant knowledge gaps still exist. Reliable, timely, and comparable data on the size, composition, and characteristics of immigrant and refugee populations (“stocks”) and, especially, on recent migratory movements (“flows”) are often lacking. Thus, key players in international migration governance have recently acknowledged the need to improve the quality and breadth of this data. Both of the United Nations’ recent milestone agreements—the Global Compact for Safe, Orderly and Regular Migration and the Global Compact on Refugees—have highlighted the need to collect accurate data and commit signatory states to deepen and support corresponding efforts (UN, 2018a, objective 1, 2018b, item 3.3.). The establishment of the International Organization for Migration’s (IOM) Global Migration Data Analysis Centre in 2015 (GMDAC, 2019) also bears witness to such enhanced interest in the collection and distribution of rigorous data on migrant populations and flows. The growing relevance and salience of international migration suggest that demand for such data will continue to grow in the foreseeable future, with a view to serving as input for academic research and for planning and delivering a wide range of services and policies. The ever more complex nature of international migration requires correspondingly sophisticated

data; for example, today many regions and countries are experiencing combinations of immigration, emigration, and transit mobility at the same time (Triandafyllidou, 2018).

While administrative statistics play an important role in answering many research questions, they tend to be more useful for identifying general patterns (e.g., flows and stocks of immigrants at given time points) than for revealing their underlying causes. Therefore, additional data generated by quantitative and qualitative research projects have long been indispensable for achieving a better understanding of migration. However, primary data collection is a demanding endeavor under the best of circumstances. It becomes even more challenging in a research domain in which scholars are regularly faced with manifold cultural and linguistic differences, potentially vulnerable or even traumatized target groups, and missing or incomplete sampling frames, to name just a few notorious issues. Such an abundance of difficulties and constraints implies that from a methodological viewpoint, migration research is extraordinarily complex and, by the same token, a promising breeding ground for creative and innovative solutions.

Given this situation, one might expect migration scholars to engage profusely in methodological debates. However, this is not the case. Instead, in the publications and conference presentations of migration scholars, research methods tend to play a marginal role; rarely are they the main topic.² In this regard, it seems indicative that—to the best of our knowledge—no international academic journal has sought explicitly and proactively to foster a debate on the methodological dimension of migration research. This assessment is substantiated by a recent bibliometric analysis of the field's development during the last decades. Pisarevskaya et al.'s (2020, Supplementary Data A) list of relevant outlets, which drew on input from senior migration scholars among other sources, did not identify a single publication channel (journal or book series) that had a methodological emphasis.³

Also attesting to the relative scarcity of methodological reflection among migration scholars is the fact that throughout the past decade, only a handful of edited volumes have been published in English, the lingua franca of the global scientific community, specifically on this vital dimension of migration research. None of these

²With a view to changing this state of affairs, the editors of this volume are among the founding members of IMISCOE's Standing Committee "Methodological Approaches and Tools in Migration Research" (Meth@Mig).

³Our assessment is based on the descriptions of scope provided on the websites of the journals listed in the online supplement to Pisarevskaya et al. (2020). The authors name a total of 47 journals as important outlets in the field, 44 of which continue to be published as of November 22, 2020. Only in seven cases (*Comparative Migration Studies*, *Cultural Diversity and Ethnic Minority Psychology*, *Ethnicity and Health*, *International Migration Review*, *Migration Studies*, *Movements*, and *Population Space and Place*) could we find hints suggesting that they might accept methodological contributions. Only three of those seven journals (*Comparative Migration Studies*, *International Migration Review*, and *Migration Studies*) are English-language publications with a clear international focus and interdisciplinary scope. However, even in these instances, none of their descriptions stress the importance of a thorough methodological debate in the field, present such a debate as a core concern of the journal, or specifically encourage submission of methodological contributions.

publications have focused on the new methodological options made possible by innovative information and communication technologies (ICTs).

The *Handbook of Research Methods in Migration*, edited by Carlos Vargas-Silva (2012), is perhaps the most comprehensive publication regarding the methodological dimension of migration research. It covers both qualitative and quantitative approaches and, as the “handbook” characterization suggests, touches on a broad range of topics. Its 27 chapters include introductions to different research methods, and also explore issues such as the management of large migration research projects and the translation of research findings into publications. However, most of the chapters that discuss specific research techniques focus on well-established procedures and issues, and only one (Crush et al., 2012) details the authors’ experience when employing web-based resources such as personalized messages on social networking sites (SNS), in this case used for recruiting members of the African diaspora in Canada. Except for this chapter, and due perhaps to the fact that it was published a decade ago, the use of emerging technologies or data types is not a key concern of this otherwise extremely valuable collection.

The IMISCOE volume *Surveying Ethnic Minorities and Immigrant Populations: Methodological Challenges and Research Strategies* (Font & Méndez, 2013) focuses on quantitative methods, covering issues related to dedicated migrant surveys and the inclusion of migrants in general population surveys. Most contributions to this collection refer to situations in which relatively appropriate sampling frames for migrant surveys were available, or in which the migrant subsamples of general population surveys were large enough to enable their separate analysis. Complementing the *Handbook of Research Methods in Migration*, this book constitutes an important source of information for migration scholars who are interested in quantitative data collection. However, since *Surveying Ethnic Minorities and Immigrant Populations* was based on papers presented at a 2008 workshop, most of which reported on studies fielded several years earlier, it does not represent the latest state-of-the-art.

More recently, *Qualitative Research in European Migration Studies*, edited by Ricard Zapata-Barrero and Evren Yalaz (2018), was also published in IMISCOE’s Research Series. As the title indicates, this book complements the volume edited by Font and Méndez in that it specifically addresses the issues raised by using qualitative research methodologies in migration studies; in this case, the territorial focus on Europe is made explicit. This publication addresses a vast range of concerns relating to the complete research process, from choosing the most appropriate methodological approach to developing policy implications. In doing so, it mainly focuses on established methods, except for one chapter that discusses research on migrants’ use of ICTs, and how scholars might employ comparatively new ICT-based opportunities to collect qualitative data (Leurs & Prabhakar, 2018).

The general-population surveys discussed in Font and Méndez (2013) also attest to the broader survey research community’s growing awareness of the need for generic (as opposed to dedicated, migrant-specific) data collections to address the reality of ever more diverse societies. Many survey design aspects that are of the highest importance to migration research have been discussed increasingly within

the general survey research community. These efforts have been flagged by labels such as *cross-national* or *cross-cultural survey research*. However, despite some noteworthy exceptions, debates on identical or very similar challenges have largely proceeded in parallel within the survey methods and migration research communities, respectively. Due to this disconnection, migration researchers often have failed to properly appreciate the relevance of the methodological expertise nurtured in the broader survey research community, and to seize on that know-how when preparing and conducting migration-related data collections. Relevant publications in this regard include some that discuss a broad array of topics and issues, such as *Survey Methods in Multinational, Multiregional, and Multicultural Contexts* (Harkness et al., 2010) and *Hard-to-Survey Populations* (Tourangeau et al., 2014), and others that focus specifically on linguistic and cultural issues in survey research, such as questionnaire translation and measurement equivalence in cross-cultural and cross-national studies (Behr, 2018).

Finally, a growing body of literature has highlighted the importance of communication technology for individuals and families during the planning of migratory projects, on the move, and after arrival (e.g., Akanle et al., 2021; Benítez, 2012; Borkert et al., 2018; Sanchez et al., 2018). Similarly, various authors (e.g., Martin & Singh, 2019; Rango, 2017; Sîrbu et al., 2020) have stressed that new digital data sources (often summarized under the umbrella term *big data*) can provide insights of great relevance to the study of migration. While some examples of innovative research exist in this area, such as the leveraging of mobile phone records to analyze forced migration (Salah et al., 2019), it seems fair to say that the migration research community has not generally paid much attention to the methodological opportunities and challenges arising in its field of studies due to the availability of new digital technologies and data types.

The present book aims to contribute to changing that state of affairs. It adds to the small number of extant publications on the methodological dimension of migration research by placing distinctive emphasis on the potential of technological innovations to provide new avenues for research on migrants and mobile populations. To achieve this goal, the book interconnects the expertise of both migration researchers and research methodologists. Based on the authors' hands-on involvement in empirical research, all chapters provide detailed accounts of the practical implementation of innovative research strategies. However, this publication was not conceived as a step-by-step handbook for using these strategies in future studies. Rather, our aim was to highlight various aspects and scenarios in which the research process might be enhanced by new methodological approaches and data sources. This includes the assessment of established methods, discussion of previous innovations, and identification of the challenges associated with using these new strategies and sources. The contributions to this book are diverse in their geographical scope, and they include studies based on projects realized in individual countries of the Global North and South, as well as chapters regarding data collection at a truly worldwide scale.

This edited collection is primarily aimed at migration scholars worldwide, especially, but not exclusively, those concerned with methodological issues in general and quantitative methods in particular. Yet, the topics discussed also will be of

interest to survey researchers, irrespective of their substantive focus. In addition, since methodological options are considered with regard to specific research needs, the collection will be useful for graduate courses in migration studies and related subjects, as well as graduate courses in research methodology. Finally, since the collection facilitates insights into the dynamics of using innovative methods to describe migration phenomena, it also will appeal to the migration policy community.

The nine contributions to this volume are grouped into two sections: the first is dedicated to data collections that are purposefully designed by researchers, whereas the second shifts attention to scholars' use of "found" data. The first section comprises five chapters on how new technologies might be used to address two major issues—sampling and linguistic diversity—that arise in "classical" surveys of migrant populations. The second section includes four chapters discussing a range of opportunities and challenges that arise from the use of various kinds of massive ("big") data collected, or indeed generated, for reasons alien to migration research.

In their chapter *Innovative Sample Designs for Studies of Refugees and Internally Displaced Persons*, Stephanie Eckman and Kristen Himelein discuss various strategies for sampling forced migrants in developing countries. Considering both international refugees and internally displaced persons, they focus on how to achieve probability samples of these hard-to-reach populations. Central to their exposition is the concept of *coverage error*, which they introduce to readers who might not be experts in survey research. Importantly, their chapter presents approaches that could be applied to different settings, for example, when target populations are housed in dedicated settlements (e.g., refugee camps), dispersed across urban areas, or still on the move. While building on established sampling techniques for recruiting participants of quantitative face-to-face research, the authors highlight how these techniques can be enhanced or adapted by incorporating new technologies, such as aerial images from satellites or drones, telephone trace data, and computational methods.

The chapter *Targeting on Social Networking Sites as Sampling Strategy for Online Migrant Surveys: The Challenge of Biases and Search for Possible Solutions* by Anna Rocheva, Evgeni Varshaver, and Nataliya Ivanova shifts the focus to online surveys. To address a situation in which appropriate sampling frames for migrants in their country of settlement are missing, the authors detail how advertisements on social networking sites can be used to recruit respondents. This approach enables scholars to reach hidden, and potentially geographically dispersed, populations in a timely and inexpensive manner. This chapter stands out from the still scarce literature on the implementation of this method by discussing Russian-based social media and networking sites *Vkontakte* and *Odnoklassniki* instead of focusing mainly on Facebook as the platform that monopolizes the extant literature almost completely. In addition to providing an informative description of the procedures employed in their research, Rocheva and her co-authors discuss the challenges associated with this approach and propose ways to address them.

The chapter *Web-Based Respondent-Driven Sampling in Research on Multiple Migrants: Challenges and Opportunities* by Agata Górny and Justyna Salamońska explores another innovative way of employing electronic communication and

personal networks to sample survey participants. Respondent-driven sampling has been developed specifically to recruit hard-to-reach populations. The authors discuss their experience with adapting the respondent-driven sampling (RDS) technique to the recruitment of Polish migrants who have been on the move several times (multiple-migrants), a scenario in which traditional RDS is not feasible for logistical and financial reasons. This chapter introduces the RDS method and examines the commonalities and differences of its face-to-face and web-based implementation, thus highlighting both the strengths and the weaknesses of the latter. Importantly, the authors provide first-hand experience and reflections on how the challenges they encountered when studying Polish multiple migrants might be addressed in future research.

In the chapter *Computer-Assisted Migration Research: What We Can Learn about Source Questionnaire Design and Translation from the Software Localization Field*, Dorothée Behr's point of departure is the fact that migration research is not the only kind of endeavor aimed at linguistically very diverse populations. With respect to the survey design process, she proposes, therefore, an emulation of the procedures developed by multinational corporations to adapt the user-facing part of consumer electronics software to global markets. In practice, globalization means localization—the capacity to adjust user interfaces and interactive menus to a wide range of languages, including those with different alphabets and page directionality. Behr shows how the localization industry's painstaking protocols are suitable for improving the quality of multilingual migrant surveys. Thus, she suggests that for such surveys to be successful, the following are required: very ambitious levels of logistic complexity, forward planning, multi-disciplinary co-operation, and financial resources.

The chapter *Surveying Illiterate Individuals: Are Audio Files in Computer-Assisted Self-Interviews a Useful Supportive Tool?* by Florian Heinritz, Gisela Will, and Raffaella Gentile shows how survey respondents' illiteracy in their native tongue is a relevant issue, especially in surveys that target recently arrived refugees. Traditionally, studies of such populations have relied on native speakers to conduct face-to-face interviews. However, apart from being expensive, this option may be prone to inducing response bias due to interviewer error and social desirability dynamics, which are potentially exacerbated by gender issues and ethnic cleavages. Based on their first-hand experience with a study of refugees from various Middle-Eastern and Asian countries, the authors examine the usefulness of audio recordings incorporated into digital self-interview questionnaires, an innovative tool that may enable illiterates to respond to surveys on their own.

In their chapter *Leveraging the Web for Migration Studies: Data Sources and Data Extraction*, which serves as introduction to the book's second section, Sebastian Rinken and José Luis Ortega familiarize migration researchers with web-based data sources, and encourage them to incorporate data science into their methodological repertoire. By pointing out that specific skills are required to handle the huge amounts of data available through the web, the authors seek to motivate migration scholars to widen their skill sets and cooperate actively with data scientists. First, the chapter introduces the basic concepts of *big data*, *open data*, and

linked data, and then describes the various types of data portals and repositories from which migration researchers can retrieve structured data. Finally, the authors provide a glimpse at some techniques that enable researchers to collect or access unstructured data from the web, such as the use of application programming interfaces (APIs) and web scraping.

How Canada's Data Ecosystem Offers Insights on the Options for Studying Migration in an Unprecedented Era of Information, by Howard Ramos and Michael Haan, examines how distinct data sources might contribute to migration studies. Taking the Canadian data ecosystem as an example, they begin by examining the use of censuses and national surveys, pointing out their particular strengths and weaknesses in the Canadian context and beyond. Next, they provide a thorough discussion of administrative records. While not new as such, these data sources are, to-date, highly underappreciated by migration researchers. Consequently, the authors make a compelling argument that this situation could be remedied through innovative research designs and linked data-analysis. The authors then turn their attention to new data sources, such as mobile phone records, before making a general plea for the creation of encompassing data spines, common protocols of data management, and international cooperation in this area.

The chapter *Assessing Transnational Human Mobility on a Global Scale* by Emanuel Deutschmann, Ettore Recchi, and Michele Vespe focuses on the basic fact of border-crossing that is both the foremost precondition of any more permanent settlement ("migration") and a more general trait of our contemporary world. Their contribution puts international migration into perspective by deriving a reliable estimate of global mobility from the innovative use of large, previously un-tapped datasets. To this end, they combine extant datasets on air-passenger traffic and tourism to construct a novel database of cross-country mobility, which is a complex task given that the data sources contain huge volumes of vastly different kinds of information. Thus, this chapter offers a fascinating example of how large sets of data that were not collected for research purposes can be handled and recomposed in a way that generates information on a relevant and previously under-researched topic.

Finally, in *Google Trends as a Tool for Public Opinion Research: An Illustration of the Perceived Threats of Immigration*, Reilly Lorenz, Jacob Beck, Sophie Horneber, Florian Keusch, and Christopher Antoun explore a source of big data that is available to any Internet user at just a click of the mouse. Google Trends (GT) facilitates information on the relative frequency of queries run on the world's leading search engine, scaling results from 0 to 100. Users can define the time period (starting in 2006) and geographical area (usually a country), and up to five search terms can be compared. Thus, the interface offers retrospective and/or current information regarding the relative popularity of specific search terms. The scope and timeliness of such data are evidently out of reach of any traditional research tool. However, these benefits come with some strings attached, including the unavailability of information on sociodemographic covariates. To assess the usefulness of GT for migration researchers, the authors focus on an empirical test case—the political fallout of threat perceptions associated with the so-called refugee crisis in Germany. Specifically, they examine whether the salience of various threat

perceptions, as revealed by negatively charged search terms, correlates with voting intentions for the “Alternative for Germany,” a notorious anti-immigrant party.

In their conclusion, entitled *Migration Research in Times of Ubiquitous Digitization*, Sebastian Rinken and Steffen Pötzschke discuss the collection’s contributions against the backdrop of a shifting data landscape in which innovative technology and “found” data are assuming increasing relevance. However, neither the book’s editors nor any of the contributing authors are naïve about the manifold challenges entailed by the digital revolution. Salient issues include access to proprietary data, as well as guaranteeing the protection of personal information at all stages. That said, all the contributors are adamant that migration research, and most other fields of social research for that matter, have much to gain from the creative and responsible use of innovative data sources and data processing techniques.

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